COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings

Volume X

A GUIDE TO THE USE OF THE DOCUMENTATION

Prepared by the
Department of Trade and Industry
Library Services

London
Her Majesty's Stationery Office
1972

Printed image digitised by the University of Southampton Library Digitisation Unit

© Crown copyright 1972

SBN 11 510246 9*

Printed image digitised by the University of Southampton Library Digitisation Unit

The Commission on the Third London Airport was set up by the Board of Trade (since October 1970 incorporated into the Department of Trade and Industry) in July 1968 to enquire into the timing of the need for a third London airport.

The programme of work was divided into five stages as follows:

Stage I	Receipt and consideration of written evidence – public hearings of oral evidence – publication of short list of sites
Stage II	Public hearings of a local character at short listed sites
Stage III	Research by Commission into short listed sites
Stage IV	Consideration by Commission of material produced at earlier stages
Stage V	Public hearing at which interested parties can contest the material produced during the earlier stages; announcement of Commission's decision

The final Report was published in January 1971.

From the beginning, the policy of the Commission was to publish as much evidence and other documentation as possible while the work was progressing. The list of publications on p 7 shows the Stages I-III material published by HMSO at this time. No publications arose from Stage IV, and none of the Stage V material was published by HMSO before the Commission had reported although the transcripts and evidence were made available to the parties. After the Report had been published, further evidence was published on microfilm only, for the benefit of research workers. This microfilm material includes the written evidence which was submitted for Stages I and II by parties not seeking leave to appear at the hearings. It was listed in Volume I (p 270) and Volume II (p 129 and 130), and now appears for the first time on Reels 1-3 of the microfilm. A further category of more detailed evidence on the selected sites was submitted at Stage III. This material is listed in Volume IX (p 163) and appears on reel 3 of the microfilm. In addition, the microfilm includes on Reels 4-10 the Stage V material. This consists of the transcripts of the public hearings together with the proofs of evidence, written evidence and the *Further Research Team Work* papers. A fuller note on the contents of the Stage V material appears on p 208 of this volume.

Printed image digitised by the University of Southampton Library Digitisation Unit

This present volume has been designed both as a guide to the documentation for parties and individuals who were concerned with the work of the Commission and also as an aid to the user of the microfilm. The volume reprints all the indexes produced during the course of the Commission's work, some of which are already available in published form. Others were produced for internal use and were distributed to some of the interested parties, but are hitherto generally unpublished. It also includes a list of abbreviations used throughout the Commission's publications.

The private papers of the Commission, including the Minutes of their meetings, are deposited at the Public Record Office.

Printed image digitised by the University of Southampton Library Digitisation Unit

Volume X CONTENTS

	Page
Introduction	
List of publications	7
List of items on each microfilm reel	8
Members of Commission	10
Members of Research Team	11
Abbreviations	12
Index and notes to Stage I Vols I and II Papers and Proceedings Stage III Vols VII to IX Papers and Proceedings	15
Indexes to Stage II Local Hearings Vol III Foulness (offshore)	93
Vol IV Nuthampstead	116
Vol V Cublington (Wing)	130
Vol VI Thurleigh	167
Lists of Stage II Written representations	186
Stage V material. For details see special contents list.	209

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

List of Publications
(all published by Her Majesty's Stationery Office)

Papers and Proceedings

Vol I — Stage I: *Public hearings:* Part 1. Written and oral evidence 1 Nov-6 Dec 1968. 1969. 369p.

Vol II — Stage I: *Public hearings:* Part 2. Other written evidence. 1969. 137p.

Vol III — Stage II: *Local hearings:* Foulness (offshore) 1969. 528p.

Vol IV — Stage II: *Local hearings:* Nuthampstead. 1969. 321p.

Vol V — Stage II: *Local hearings:* Cublington (Wing) 1969. 778p.

Vol VI — Stage II: *Local hearings:* Thurleigh (Bedford). 1969. 502p.

Vol VII — Stage III: *Research and investigation: Assessment of short-listed sites. Part 1* Proposed research methodology. *Part 2* Results of research team's assessment. 1970. 510p.

Vol VIII — Stage III: *Research and investigation. Part 1* Specially commissioned studies. 1970. 550p.

Part 2 Section 1. Speically commissioned studies. 1970. 228p.

Part 2 Section 2. Specially commissioned studies. 1969. 174p.

Part 2 Section 3. Specially commissioned studies. 1970. 140p.

Part 2 Section 4. Specially commissioned studies. 1970. 101p.

Vol IX — Stage III: *Research and investigation.* Public evidence. 1970. 163p.

Vol X — *A Guide to the use of the documentation.* 1972. 400p.

Microfilm supplement. 10 reels. (Contents of reels at p).

Printed image digitised by the University of Southampton Library Digitisation Unit

Papers and Proceedings
Microfilm supplement (10 reels)

Reel 1	Stages I and II. Written evidence.		
Reel 2	Stage II (cont.). Written evidence.		
Reel 3	Stage II (cont.). Stage III. Written evidence.		
Reel 4	Stage V	Opening speeches	Days 1-2
		Cost benefit analysis and Valuation of time (A1)	
		Proofs of evidence	
		Transcript	Days 3-12 (cont. on reel 5)
Reel 5	Stage V	Cost benefit analysis and Valuation of time (A1) (cont.)	
		Transcript	Days 13-20 (end)
		Timing of the need (B2)	
		Proofs of evidence	
		Transcript	Days 21-26A (end)
Reel 6	Stage V	Air matters (C3)	
		Proofs of evidence	
		Transcript	Days 26B-31A (end)
		Site matters (D4)	
		Proofs of evidence	
		Transcript	Days 31B-36A Day 47A (end)
		Defence matters	
		Transcript	Days 44-45 Day 67A (end)
Reel 7	Stage V	Surface access (E5)	
		Proofs of evidence	
		Transcript	Days 34B-43 Days 46-47B (end)

Printed image digitised by the University of Southampton Library Digitisation Unit

Reel 8	Stage V	Noise (1) (F6)	
		Environment and planning (2) (F6)	
		Proofs of evidence	
		Transcript	Days 47C-53
			(cont. on reel 9)
Reel 9	Stage V	Noise (1) (F6)	
		Environment and planning (2) (F6) *(cont)*	
		Transcript	Days 54-65
			Days 67B-69A (end)
		Miscellaneous (G7)	
		Proofs of evidence	
		Transcript	Days 66, 68-69B (end)
Reel 10	Stage V	Closing speeches	
		Proofs of evidence	
		Transcript	Days 69C-74
	Stage V	Written representations	

Further Research Team Work series.

Printed image digitised by the University of Southampton Library Digitisation Unit

Members of the Commission

The Hon. Mr Justice Roskill	*Chairman*
Professor Colin Buchanan	Professor of Transport, Imperial College of Science and Technology
Mr A Goldstein	Partner in R. Travers Morgan and Partners, Consulting Engineers
Mr A J Hunt	Principal Planning Inspector, Department of the Environment
Professor David Keith-Lucas	Professor of Aircraft Design, Cranfield Institute of Technology
Mr Arthur Knight	Deputy Chairman, Courtaulds Ltd
Professor A A Walters	Cassel Professor of Economics in the University of London
Mr J Caines	*Secretary*
Mr F P Thompson	*Director of Research*

Printed image digitised by the University of Southampton Library Digitisation Unit

Members of the Research Team

Director of Research

F P Thompson

Director's Group

H J M Jones
P W Abelson
A E Smith

Central Operational Research Group

A D J Flowerdew (Deputy Director of Research)
S B Abrahams
Miss H M Barton
F W Colbourne
H M Dale
D Lee
J U M Smith

Surface Access Group

R D Law
R C Carruthers
A E H Hornig
M F James

Planning and Amenity Group

J A Colley
R F Coombs
V C Nwaneri
D D Singh
Miss A Webb

Civil Engineering Group

J L Dawson
K Coomber
H Richards

Printed image digitised by the University of Southampton Library Digitisation Unit

ABBREVIATIONS

AONB	Area of outstanding natural beauty
APT	Advanced passenger train
ARC	Aeronautical Research Council
ASA	Approach sequencing area
ATC	Air traffic control
AUD	Associated urban development
BAA	British Airports Authority
BACAN	British Association for the Control of Aircraft Noise
BALPA	British Airline Pilots' Association
BARA	Bedfordshire Airport Resistance Association
BC	Borough Council
BEA	British European Airways
BOAC	British Overseas Airways Corporation
BOT	Board of Trade
BP	British Petroleum Co Ltd
BR	British Railways Board
BTA	British Travel Association
BUA	British United Airways
CASC	Cublington Airport Supporters Committee
CBC	County Borough Council
CBI	Confederation of British Industry
CC	County Council
CTLA	Commission on the Third London Airport
Chel & Ken ACAN	Chelsea and Kensington Action Committee on Aircraft Noise
CLA	Country Landowners Association
CPRE	Council for the Protection of Rural England
DC	Development Corporation
FAA	Federal Aviation Administration
GLC	Greater London Council
GPS Ltd	General Precision Systems Ltd
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IDC	Industrial development certificates
IFR	Instrument flight rules
ILS	Instrument landing system
KACAN	Kew Association for the Control of Aircraft Noise

Printed image digitised by the University of Southampton Library Digitisation Unit

LAANC	Local Authorities Aircraft Noise Council
LSERP	
[Stand Conf]	Standing Conference on London and South East Regional Planning
LTB	London Transport Board
MAFF	Ministry of Agriculture Fisheries and Food
MHLG	Ministry of Housing and Local Government
MOD	Ministry of Defence
MOT	Ministry of Transport
MPBW	Ministry of Public Buildings and Works
NAS	Noise Abatement Society
NATCS	National Air Traffic Control Services
NBA	National Building Agency
NFU	National Farmers' Union
NGTE	National Gas Turbine Establishment
NNI	Noise and number index
PC	Parish Council
PLA	Port of London Authority
Pres Assn	Preservation Association
RAE	Royal Aircraft Establishment, Bedford
RDC	Rural District Council
RIBA	Royal Institute of British Architects
RS	Research Station
RSPB	Royal Society for the Protection of Birds
SBR	Standard busy rate
SCR	Sustained capacity rate
SEEPC	South East Economic Planning Council
SEJPT	South East Joint Planning Team
SEPC	Scottish Economic Planning Council
SNP	Scottish National Party
SSSI	Sites of special scientific interest
STOL	Short take off and landing
TAG	Thames Aeroport Group
T&CPA	Town and Country Planning Association
TECDA	Thurleigh Emergency Committee for Democratic Action
TEDCO	Thames Estuary Development Ltd
TGWU	Transport and General Workers' Union
TMA	Terminal area capacity

Printed image digitised by the University of Southampton Library Digitisation Unit

U	University
UDC	Urban District Council
UKAEA	United Kingdom Atomic Energy Authority
UKFAAN	United Kingdom Federation Against Aircraft Nuisance
VTOL	Vertical take off and landing
WARA	Wing Airport Resistance Association
WI	Women's Institute

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

INDEX

to

Papers and Proceedings

Vols I and II Stage *I*
Vols VII – IX Stage *III*

and

Selected written evidence

Printed image digitised by the University of Southampton Library Digitisation Unit

Preface

This index was prepared primarily as a working document for the use of Counsel to the Commission. It is an index to the following volumes in the Commission's *Papers and Proceedings:* Volumes I and II (Stage I Public hearings, oral and written evidence), Volume VII (Stage III Research teams proposed methodology and results of their assessment); Volume VIII (Stage III Specially commissioned studies) and Volume IX (Stage III Evidence from the public). It also indexes some of the more significant documents submitted as written evidence at Stages I and III. Complete lists of this material appear on the succeeding pages with indexed items starred. All this material is on Reels 1 and 3 of the microfilm.

Printed image digitised by the University of Southampton Library Digitisation Unit

Stage I List of other organisations that submitted written evidence

Written evidence and representations on noise, other than evidence which was the subject of the Public Hearing on 22 November 1968, were received from the following and are published in full on reel 1 of the Microfilm Supplement (10 reels)

Mr O D Bennett
Lord Bledisloe
Chelsham Parish Council
Mr A Coomber
Datchet Residents' Association
Ealing Federation of Residents' Associations
East Grinstead Urban District Council
Egham Riverside Residents' Association
Gatwick Anti-noise Executive
*Hampstead Association for Aircraft Noise Control
Heathrow Campaign Committee
Hertfordshire Federation of Womens' Institutes
Heston Ratepayers Association
Horley Private Residents' Association
London Borough of Bexley
London Borough of Enfield
London Borough of Merton
London Borough of Wandsworth
London Federation of Trade Councils Transport Council
Longford Residents' Association
Molesey Residents' Association
*National Council on Inland Transport
Messrs K E Parker, V F Desbrough, J Jarratt
Mr John Regan
Science of Life Fellowship
*Southend Jet Aircraft Protest Association
Strawberry Hill Residents' Association
Tendring Rural District Council
Welwyn Rural District Council
Windsor and Eton Society
Windsor Noise Abatement Group
Wraysbury Association

* Indexed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Stage I Other Submissions

General evidence was also submitted by the following and is published in full on Reel 1 of the Microfilm Supplement (10 reels)

Aeromedical International
*Association of British Chambers of Commerce
F D B Folkstone
Lt Cdr W G Boaks
Mr A S Braithwaite
British Eagle International Airlines Ltd
*British Road Federation
*British United Airways Ltd
Mr Cyril Cadman
Mr A H Carter
Castle Donnington Rural District Council
Council for the Preservation of Rural England
Countryside Commission
Mrs E Crosbie-Trench
Mr Angus C Dargleish
*Foreign airlines serving London (including Scandinavian Air Services, Swissair, Aer Lingus, Quantas, Trans-World Airlines)
Mr C A Haygreen
Joint Airports Committee of Local Authorities
Kingsclere and Whitchurch Rural District Council
Mr J L Lean
Maldon Rural District Council
Marshall of Cambridge (Engineering) Ltd
*National Council on Inland Transport
Mr R E Norton
Mr G R Polgreen
Aerodrome Manager, Rolls Royce Limited
Mr P D A Taylor
Tracked Hovercraft Limited
Youth Hostels Association (England and Wales)

* Indexed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Stage I Site Suggestions

Site suggestions were submitted by the following and are published on Reel 1 of the Microfilm Supplement (10 reels)

Mr William Bunting
Cardiff Incorporated Chambers of Commerce
*Bernard L Clark and Partners
Communication Analysis Limited
County Council of the West Riding of Yorkshire
Mr R A Cust
Dart Aircraft Limited
Devereux, Mitchell and Price Davies
Russell Diplock Associates
Economic-Planning Council (South West Region)
*Essex and Hertfordshire County Councils
Mr W C Goldacre
*Hampstead Association for Aircraft Noise Control
Harris and Sutherland
*Sir John Howard
Mr H F Lane
Mr Leslie Lane
Leeds School of Town Planning
M. B L Le Gassick
Mr M Lutt
Mr M H Makins
Anthony Masters and Associates
Nachshen, Crofts and Leggatt
Mr G E Newson and Mr I M Fulton
*Noise Abatement Society
Sir Ian Scott
Mr D J Steel
Mr H Teggin
*Thames Aeroport Study Group
Thorne Rural District Council
Mr R Trotter
Mr R G Turner
Mr Brian Waters and Mr Max Boisot
Sir Owen Williams and Partners
Anonymous (forwarded by the Town and Country Planning Association)

* Indexed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Published in full on Reel 3 of the Microfilm Supplement (10 reels)

*Braughing Rural District Council.
*Buckinghamshire County Council.
*Cambridgeshire and Isle of Ely, Essex and Hertfordshire County Councils.
*Bernard Clark and Partners.
*MBM Powercels Ltd.
*National Council on Inland Transport.
*Shell (UK) Ltd.
*Standing Conference on London and South East Regional Planning.
*Thames Estuary Development Company.
*Tracked Hovercraft Limited.
*Mr R Trotter.
*Mr B Waters and Mr Max Boisot.

* Indexed.

Printed image digitised by the University of Southampton Library Digitisation Unit

INDEX

p = page Q = question

\+ indicates material not published by the Commission.
For details of availability see p IV-VI

APT see Surface access: rail: advanced passenger train

ATC see Air traffic control

AUD (Associated urban development) see Urbanisation

Acton Residents Association
Vol I: Q 595

Advanced passenger train see Surface access: rail: advanced passenger train

Advisory Committee for Civil Aviation for Northern England: evidence
Vol IX: p 1

Advisory Committee for Civil Aviation for the North West of England: evidence
Vol IX: p 1

Advisory Committee for Civil Aviation for the West Midlands of England: evidence
Vol IX: p 1

Aerodromes see Airports; Defence

Aerotrain see Surface access: hovertrain: aerotrain

Age groups: social survey
Vol VIII 2(4): p 7 (Essex U)

Agriculture
Vol I: Q 302 (SEJPT)
Q 362, 392-394 (Stand Conf LSERP)
p 172 (Cranford & Dist Res Amen Assn)
Vol II: p 46-48 (CLA)
p 53 (Fed of Essex WI's)
p 54 (Herts Fed of WI's)
p 91-94 (NFU)

Printed image digitised by the University of Southampton Library Digitisation Unit

Agriculture (Cont)
Vol VIII 1: I/32-33; II/13, 75-76; III/9, 74-75; IV/11, 72; V/11, 68; VI/17-20
2(3): p 45-97 (G Wibberley)
Vol IX: p 82-91 (NFU)
+Stage I Essex & Herts CC Submission 2, p 13
+Stage III Cambs & Isle of Ely, Essex & Herts CC
2/18-2/20, 7/5-7/7, 12/1-12/23
Stand Conf on LSERP p 12

Agriculture: costs
Vol VII 2: 22.1-22.7 (CTLA)

Agriculture Fisheries and Food, Ministry of (MAFF)
Vol VIII 2(3): Study 5 p 131-140

Air movements: costs see Costs: air movements

Air pollution
Vol I: p 191-192 (UKFAAN)
Vol VII 2: 27.8-27.9 (CTLA)
Vol VIII 2(1): p 47-49 (NGTE)
Vol IX: p 89 (NFU)

Air route structure see Air traffic control: air route structure

Air safety
Vol I: p 188-191 (UKFAAN)
p 206-207, 208 (LAANC)
Vol VII 1: 118-127 (CTLA)
2: 14.1-14.54 (CTLA)
Vol VIII 1: I/9-10 (Urb Studs)
Vol IX: p 2-7 (Air Safety Group)
p 17-18 (BAA)
p 154 (WARA)
+Stage I TEDCO Report 1A, p 2-3
+Stage III Shell UK Ltd p 19-23
TEDCO Report 3, p 40-42

Air safety: birdstrike
Vol VII 1: 127 (CTLA)
2: 14.42-14.53 (CTLA)
Vol VIII 2(3): p 131-140 (MAFF)
Vol IX: p 3 (Air Safety Group)
+Stage III TEDCO Report 3, p 42-45

Air safety: costs
Vol VII 2: 14.34, 14.42-14.54 (CTLA)

Air safety: legal aspects
Vol IX: p 4-5 (Air Safety Group)

Air Safety Group: evidence
Vol IX: p 2-7

Printed image digitised by the University of Southampton Library Digitisation Unit

Air terminal see Terminal: air terminal

Air traffic
Vol I: Q 4 (BAA)
Vol VIII 2(1): p 1-4 (BOT)
Vol IX: p 16 (BAA)
p 150-151 (WARA)
+Stage III TEDCO Report 3, p 42
Tracked Hovercraft Ltd p 9
Waters & Boisot p 1

Air traffic: freight
Vol I: Q 103-116 (BAA)
Vol II: p 42-44 (CBI)
p 51-52 (East Midlands Airport Joint Comm)
Vol VII 1: 47 (CTLA)
2: 4.28-4.31, 4.33-4.35, 4.44-4.45 (CTLA)
Vol VIII 2(1): p 30 (BOT)
Vol IX: p 115, 116 (Regional Studies Assn, East Anglia Group)
+Stage I TEDCO Report 1A, p 3
TEDCO Report 2, p 61-2
+Stage III Bucks CC (Vol 2) 6/16-6/20
Cambs & Isle of Ely, Essex & Herts CC 6/16-6/20
TEDCO Report 3, p 54-55
Waters & Boisot p 4, 7

Air traffic: freight: containers
Vol I: Q 111 (BAA)
Vol II: p 43 (CBI)

Air traffic: passenger
Vol I: Q 12, 234 (BAA)
Q 331-339 (T&CPA)
p 286-288 (MOT)
Vol II: p 35 (BOAC)
p 36 (BTA)
Vol VII 2: 4.1-4.27, 4.32, 4.35-4.43, 4.46-4.51, 5.6-5.8, 8.7-8.8, 28.77-28.79 (CTLA)
Vol VIII 2(1): p 25-43 (BOT)
Vol IX: p 15-16 (BAA)
p 109-116 (Regional Studies Assn, East Anglia Group)
+Stage I Essex & Herts CC Submission 2, 1/1-1/7
NAS p 3-5, 7, 9-10
TEDCO Report 1A, p 3
+Stage III Bucks CC (Vol 2) 6/6-6/7
Cambs & Isle of Ely, Essex & Herts CC 6/6-6/7
Stand Conf on LSERP p 4
TEDCO Report 3, p 29-30
TEDCO Report 5, p 16-17
Tracked Hovercraft Ltd p 9, 12-13
Waters and Boisot p 2-3

Printed image digitised by the University of Southampton Library Digitisation Unit

Air traffic: passenger: origin and destination
*Stage III BOT Origin and destination survey

Air traffic: passenger: proposed research methodology
Vol VII 1: 39-46 (CTLA)

Air traffic control (ATC)
Vol I: Q 30-45, 121-123, 149-160 (BAA)
Q 928-1050 p 333-339 (NATCS)
Vol II: p 66-67 (London Gliding Club)
p 79-81 (A J Lucking)
Vol VIII 2(2) (GPS Ltd)
Vol IX: p 102 (Nuthampstead Pres Assn)
p 144 (TGWU)
p 151 (WARA)
+Stage I British United Airways p 1
Clark & Ptnrs p 19
Essex & Herts CC Submission 2, p 13-14, 12/1-12/4, 13/1-13/2
TEDCO Report 1A, p 2
TEDCO Report 2, p 39-42
Thames Aeroport Study Group p 23-24
+Stage III Bucks CC (Vol 2) 10/1-10/3
Cambs & Isle of Ely, Essex & Herts CC 10/1-10/3
TEDCO Report 3, p 39-40

Air traffic control (ATC): air route structure
Vol I: Q 935-954, 973-974 p 337-339 (NATCS)
Vol VII 2: 3.18-3.21 (CTLA)
Vol VIII 2(2): 10-11, 15, 23, 172-173 (GPS Ltd)

Air traffic control (ATC): coastal site
Vol I: Q 952-956, 1011-1021 (NATCS)

Air traffic control (ATC): conflict resolution
Vol VII 2: 3.4-3.10 (CTLA)

Air traffic control (ATC): criteria
Vol I: p 333 (NATCS)

Air traffic control (ATC): future developments
Vol I: Q 1036-1037, 1044-1048 (NATCS)
Vol VIII 2(1): p 7-9, 13-21 (NATCS)
(2): p 161-173 (GPS Ltd)

Air traffic control (ATC): inland site
Vol I: Q 933-953 (NATCS)

Air traffic control (ATC): proposed research methodology
Vol VII 1: 61-68 (CTLA)

Air traffic control (ATC): sequencing
Vol I: Q 1044-1048 (NATCS)

* BOT publication. Available from HMSO

Printed image digitised by the University of Southampton Library Digitisation Unit

Air traffic control (ATC): stacking
Vol I: Q 119 (BAA)
Q 756-759, 763, 775-785 (LAANC)
Q 954, 971, 985-995, 1024, 1044-1048 (NATCS)

Air traffic control (ATC): take off and landing
Vol VII 2: 3.23 (CTLA)

Air traffic control (ATC): United States
Vol I: Q 963-967, p 338 (NATCS)

see also Runways; Terminal area simulation model

Air traffic movements see Movements: air traffic

Aircraft see Helicopters; Hypersonic aircraft; Jumbo jets; Short take off and landing; Subsonic aircraft; Supersonic aircraft; Vertical take off and landing

Aircraft capacity
+Stage I TEDCO Report 2, p 58-59

Aircraft envelope
Vol I: p 20-21 (BAA)

Aircraft manufacture: noise reduction
Vol I: Q 655-659, 724-732 (NAS)
Vol II: p 14 (BOT)

Airfields: private: costs
Vol VII 2: 17.1-17.24 (CTLA)

see also Airports; Defence

Airline operations
Vol I: Q 16-17, 20-21, 99, 102 (BAA)
Q 346-355 (T&CPA)
Vol II: p 102-104 (North West, Northern and West Midlands of England Advisory Committees for Civil Aviation)
+Stage I Essex & Herts, Submission 2 suppt
NAS p 22, 63-65
+Stage III TEDCO Report 5, p 15
Waters & Boisot p 2-3

Airline Scheduling Committee
Vol I: Q 117 (BAA)

Airlines: foreign
+Stage I submissions (SAS, Swissair, Aer Lingus, Qantas, TWA, KLM)
see also names of individual airlines

Printed image digitised by the University of Southampton Library Digitisation Unit

Airport capacity
Vol I: Q 4, 121 p 15-16, 18 (BAA)
Q 1024-1026 (NATCS)
Vol VII 1: 49-50 (CTLA)
2: 3.1-3.75, 12.13 (CTLA)
+Stage I NAS p 6-7
TEDCO Report 1A, p 4
TEDCO Report 2, p 59-60
Thames Aeroport Study Group
p 26-27

Airport capacity: ground-side limitations
Vol VII 2: 3.65-3.75 (CTLA)

Airport capacity: United States
Vol I: Q 117-123 (BAA)
Q 1050 (NATCS)

Airport city: urbanisation studies for the third London airport
Vol VIII 1

Airport design
Vol VII 1: 108-112 (CTLA)
2: 7.1-7.163 (CTLA)

Airport design: studies
Vol VII 2: 7.26-7.28, 7.148-7.156 (CTLA)

Airport layout
Vol I: Q 1039-1043 (NATCS)
p 19-24 (BAA)
Vol VII 2: 7.14-7.15, 7.34-7.66, 9.1-9.22 (CTLA)
Vol IX: p 154 (WARA)

Airport layout: BAA comments
Vol I: Q 134-160, 165-171 p 7-10 (BAA)

Airport layout: Central Development Zone
Vol I: p 23-24 (BAA)
Vol II: p 41 (CBI)

Airport layout: Cublington
Vol VII 2: 9.16, 9.21 (CTLA)

Airport layout: Foulness
Vol VII 2: 9.14, 9.19 (CTLA)

Airport layout: installations
Vol I: p 8-9 (BAA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Airport layout: Nuthampstead
Vol VII 2: 9.15, 9.20 (CTLA)

Airport layout: overshoot
Vol I: Q 148-152 (BAA)
Q 1040-1043 (NATCS)

Airport layout: Thurleigh
Vol VII 2: 9.17, 9.22 (CTLA)
see also Runways

Airport resistance organisations
Vol VIII 2(4): p 71-74 (Essex U)
see also names of individual organisations

Airport revenue
Vol VII 2: 5.13-5.16 (CTLA)
see also Landing fees

Airport/seaport
Vol I: Q 431-436 (SEEPC)
p 284-285 (MOT)
Vol II: p 106-108 (PLA)
Vol VII 1: 16-18 (CTLA)
2: 6.1-6.13 (CTLA)
Vol IX: p 29 (BP)
p 54 (Hon Company of Master Mariners)
p 127-131 (Regional Studies Assn, East Anglia Group)
p 139-140 (Sheppey Group)
+Stage I Clark & Ptnrs p 16-17, pt 2, p 1-18
TEDCO Report 1A, p 10
Thames Aeroport Study Group 30-32
+Stage III Shell Group letter from Mr. McFadzean
TEDCO Report 3, p 14-18, 54-55
TEDCO Report 4 & 5

Airport specification
Vol I: p 7-10, 19-27 (BAA)
Vol VII 2: 7.9-7.11, 7.31-7.32 (CTLA)
+Stage III Stand Conf LSERP p 3-4

Airports
Vol IX: p 39-44 (C B Edwards)

Printed image digitised by the University of Southampton Library Digitisation Unit

Airports: effect of third London airport
Vol VII 1: 115-117 (CTLA)
2: 16.2-16.3 (CTLA)
+Stage I Clark and Ptnrs p 19
Essex & Herts CC Submission 2, p 13-14, 13/1-13/3
TEDCO Report 2, p 43
Thames Aeroport Study Group p 25-27
+Stage III Bucks CC (Vol 2) 11/1-11/5
Cambs & Isle of Ely Essex & Herts CC 11/1-11/5
TEDCO Report 3, p 53

Airports: future developments
Vol VIII 2(1): p 1-4 (BOT)

Airports: National Airports Plan
Vol I: Q 308 (T&CPA)
Vol II: p 44-45 (CBI)
p 102-104 (NW, N&W Midlands of England Advisory Comms for Civil Aviation)
p 113-123 (SNP)
+Stage I Assn of British Chambers of Commerce p 1-2

Airports: omnidirectional
Vol I: Q 98-102 (BAA)
Q 311-315 p 94-96, 99 (T&CPA)
Q 383 (Stand Conf on LSERP)
Vol VII 1: 30-34 (CTLA)
2: 2.18-2.25 (CTLA)

Airports: regional
Vol VII 1: 35-38 (CTLA)
2: 2.1-2.17 (CTLA)

Airports: sectorisation
Vol I: Q 98-102 (BAA)
Q 565-567 (BACAN)
Vol VII 1: 31 (CTLA)
2: 2.18-2.23 (CTLA)
see also Airfields; Defence

Amenity
Vol I: Q 3, 128-133 (BAA)
Vol VII 2: 19.1-19.13, 24.1-24.29 (CTLA)
Vol IX: p 63-64 (Inter-Diocesan Working Party)
p 103-105 (Nuthampstead Preservation Association)
p 134, 136 (RIBA)
+Stage I Clark & Ptnrs p 20
Essex & Herts CC Submission 2, p 12
9/1-9/4
TEDCO Report 2, p 36
Thames Aeroport Study Group p 20
+Stage III Bucks CC (Vol 1) p 5
Cambs&Isle of Ely Essex & Herts CC 7/1-7/29
TEDCO Report 3, p 36, 45

Printed image digitised by the University of Southampton Library Digitisation Unit

Amenity: costs and benefits
Vol I: Q 128-133 (BAA)
Q 300-301 (SEJPT)
Q 337-338 (T&CPA)
Q 392-402 (Stand Conf LSERP)
Q 424 (SEEPC)
Q 746-753 (LAANC)
p 159-160, 165-166 (KACAN)
p 171 (Cranford & Dist Res Amenities Assn)
p 280-281, 305-306 (MOT)

Amenity: proposed research methodology
Vol VII 1: 86-92 (CTLA)

Amenity: survey questionnaires
Vol VII 2: 19.9-19.13 (CTLA)

see also Land; Recreation

Ancient monuments see Churches; Historic buildings

Anti-Concorde Project Association
Vol 1: Q 595

Areas of outstanding natural beauty see Land: landscape

Association of British Chambers of Commerce
+Stage I Submission

Associations: social survey
Vol VIII 2 (4): p 59-74 (Essex U)

Atmospheric pollution see Air pollution

Aviation fuel see Fuel: aviation

BAA see British Airports Authority

BACAN see British Association for the Control of Aircraft Noise

BEA see British European Airways

BOAC see British Overseas Airways Corporation

BOT see Trade, Board of

BP see British Petroleum Co. Ltd

BR see British Railways Board

BUA see British United Airways

Balance of payments
Vol I: Q 123-125 (BAA)

Baldock Urban District Council
+Stage III Cambridge & Isle of Ely, Essex & Herts CC submission

Printed image digitised by the University of Southampton Library Digitisation Unit

Barrages see Water: sea defences

Basildon Urban District Council
+Stage III Cambs and Isle of Ely, Essex & Herts CC submission

Beddington, Mr H C: evidence
Vol IX: p 8-11

Bedford airfield
Vol IX: p 76-81 (Mintech)

Bedfordshire County Council: evidence
Vol IX: p 12

Bedfordshire Water Board: evidence
Vol IX: p 13-14

Beesley, Michael see Lichfield, Nathaniel and Associates

Benfleet Urban District Council
+Stage III Cambs and Isle of Ely, Essex & Herts CC submission

Bennett, Mr O D
Vol II: p 1-3

Biggin Hill
Vol I: Q 27 (BAA)

Birds: conservation
Vol VIII 2(3): p 134-140 (MAFF)
Vol IX: p 68 (International Wildfowl Research Bureau)
p 92 (Nature Conservancy)
+Stage III TEDCO Report 3, p 42-45

Birdstrike see Air safety: birdstrike

Bishop's Stortford Season Ticket Holders' Association
Vol II: p 4-8

Bishop's Stortford Urban District Council
+Stage I Essex & Herts CC Submission 2
+Stage III Cambs & Isle of Ely Essex & Herts CC Submission

Bledisloe, Lord
Vol II: p 9-10

Board of Trade see Trade, Board of

Boddington, Michael
Vol VIII 2(3): Study 3 p 45-97

Boeing 747 see Jumbo jets

Boisot, Max
+Stage III submission

Braughing Rural District Council
+Stage I Essex & Herts CC Submission 2
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission
Submission letter 19.5.1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Brentwood Urban District Council
+Stage I Essex & Herts CC Submission 2

British Airports Authority (BAA): airport specification
Vol I: p 7-10, 19-27 (BAA)

British Airports Authority (BAA): submission
Vol I: p 1-18 (BAA Chairman)

British Airports Authority (BAA): evidence
Vol I: Q 1-243
p 1-32
Vol II: p 17-29
Vol IX: p 15-23

British Airports Authority (BAA): legal position
Vol I: Q 76-90

British Airports Authority (BAA): revenue
Vol VII 2: 5.13-5.16 (CTLA)

British Association for the Control of Aircraft Noise (BACAN): evidence
Vol I: Q 439-590 p 143-144 (BACAN)
Vol IX: p 24

British Association for the Control of Aircraft Noise (BACAN): letter to local authorities
Vol I: p 148-150

British European Airways (BEA): evidence
Vol II: p 30-31
Vol IX: p 25-26

British European Airways (BEA): landing fees
Vol I: Q 127 (BEA)

British European Airways (BEA): maintenance staff
Vol I: Q 174 (BAA)
Q 316-318, 342-346 (T&CPA)

British Gliding Association: evidence
Vol II: p 32-34
Vol IX: p 27

British Overseas Airways Corporation (BOAC): evidence
Vol II: p 35
Vol IX: p 28

British Overseas Airways Corporation (BOAC): landing fees
Vol I: Q 127 (BAA)

British Overseas Airways Corporation (BOAC): maintenance staff
Vol I: Q 174 (BAA)
Q 316-318, 342-346 (T&CPA)

Printed image digitised by the University of Southampton Library Digitisation Unit

British Petroleum Co.Ltd (BP): evidence
Vol IX: p 29

British Railways Board (BR)
Vol VIII 2(1): Study 6, p 54-123

British Road Federation Ltd
+Stage I submission
British Travel Association (BTA)
Vol II: p 36
British United Airways (BUA)
+Stage I submission
Buckinghamshire County Council
Vol II: p 37
+Stage III submission
Burns, Dr. W see South East Joint Planning Team

Butts Society
Vol I: Q 595

Cambridge University: evidence
Vol IX: p 30-32

Cambridgeshire and Isle of Ely County Council
+Stage III submission

Canvey Island Urban District Council
+Stage III Cambs and Isle of Ely, Essex and Herts CC submission

Cardington Research and Development Establishment
Vol IX: p 80 (Mintech)

Cargo see Air traffic: freight

Central Development Zone see Airport layout: Central Development Zone

Channel tunnel
Vol I: Q 430 (SEEPC)
Vol VIII 2(1): p 28-29 (BOT)

Chelmsford inquiry see Stansted

Chelsea: property values
Vol I: Q 531-554 (BAA)

Chelsea and Kensington Action Committee on Aircraft Noise: evidence
Vol I: Q 440 p 152-158

Chesterton Rural District Council
+Stage III Cambs and Isle of Ely, Essex and Herts CC submission

Printed image digitised by the University of Southampton Library Digitisation Unit

Chicago: O'Hare Airport
Vol I: Q 94 (BAA)
Q 334 (T&CPA)
Q 963-967 (NATCS)

Chigwell Urban District Council
+Stage I Essex & Herts CC submission 2

Church associations
Vol VIII 2(4): p 63 (Essex U)

Church attendance
Vol VIII 2(4): p 68-71 (Essex U)

Churches
Vol IX: p 57-63 (Inter-Diocesan Working Party)
+Stage III Bucks CC (Vol 2) 8/8
Cambs & Isle of Ely, Essex & Herts CC 8/8

Churches: costs
Vol VII 2: 24.11-24.12, 24.14-24.19, 24.22, 24.25, 24.29 (CTLA)
see also Historic buildings

Civil aerodromes see Airports

Clacton Urban District Council: evidence
Vol IX: p 33

Clapham Junction of the air
Vol I: Q 99 (BAA)

Clark, Bernard L and Ptnrs
+Stage I submission
+Stage III submission

Clubs: social survey
Vol VIII 2(4): p 65-66 (Essex U)

Commerce see Industry and commerce

Commission: members
Vol I: Q 1 (CTLA)

Commission: terms of reference
Vol I: Q 1 (CTLA)

Community life: social survey
Vol VIII 2(4) (Essex U)

Community Plans Incorporated, Los Angeles: evidence
Vol I: Q 794-806

Complexity index see Terminal area simulation model

Concorde see Supersonic aircraft

Confederation of British Industry (CBI)
Vol II: p 38-45

Printed image digitised by the University of Southampton Library Digitisation Unit

Conservation
Vol IX: p 47-53 (Herts & Mddx Trust for Nature Conservation)
p 68 (International Wildfowl Research Bureau)
p 90 (NFU)

Conservation: birds
Vol VIII 2(3): p 134-140 (MAFF)
Vol IX: p 68 (International Wildfowl Res Bur)
p 92 (Nature Conservancy)
+Stage III TEDCO Report 3, p 42-45

Conservation areas see Land: landscape

Construction
Vol I: Q 46-57, p 10, 24-27 (BAA)
Vol VII 2: 8.1-8.21 (CTLA)
+Stage I NAS p 38-40
TEDCO Report 2, p 67-74
+Stage III TEDCO Report 3, p 10-18

Construction: costs
Vol I: Q 236-242 p 4 (BAA)
Q 555-561 (BACAN)
Vol VII 1: 113 (CTLA)
2: 7.157-7.163, 8.11-8.12, 9.2-9.3 (CTLA)
Vol VIII 1: I/25-30; II/68-74; III/67-72, 73; IV/67-72; V/63-67; VI/7.16 (Urb Studs)
Vol IX: p 95 (Nuthampstead Preservation Association)
p 144-145 (TGWU)
+Stage I Clark & Ptnrs p 15-16
Essex & Herts CC submission 2 p 9, 4/1-4/10
NAS p 38-40
TEDCO Report 1A, p 9
TEDCO Report 2, p 13-20, 76-79
Thames Aeroport Study Group p 9
+Stage III Bucks CC (Vol 2) 4/1-4/9
Cambs & Isle of Ely Essex & Herts CC 4/1-4/9
Stand Conf LSERP p 14
TEDCO Report 3, p 10-18
TEDCO Report 4

Construction: Foulness
Vol VII 2: 8.13-8.14 (CTLA)
+Stage I NAS p 38-40
TEDCO Report 2, p 67-74
+Stage III Mr J D Steel p 9-15
TEDCO Report 3, p 10-18

Construction: resources
Vol VII 2: 8.11-8.12, 8.15-8.21, 27.10-27.13 (CTLA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Construction: seadrome scheme
+Stage III Shell UK Ltd

Construction: timetable
Vol 1: Q 46-49 p 6 (BAA)
Vol VII 2: 8.7-8.11 (CTLA)

Consumer surplus survey
Vol VII 2: ch.20 Appendix 1
see also Property values
Containers see Air traffic: freight: containers

Controlled air space see Air traffic control: air route structure

Cost-benefit analysis: general principles
Vol VII 1: 1-18 (CTLA)
2: 1.1-1.31 (CTLA)
Vol VIII1: I/25-35; II/68-80; III/67-79; IV/67-77; V/63-70 (Urb Studs)
Vol IX: p 102-105 (Nuthampstead Preservation Association)
p 149-154 (WARA)
+Stage I Essex & Herts CC Submission 2, p 20-21, 14/1-14/13
NAS p 62-73
+Stage III Cambs & Isle of Ely Essex & Herts CC ch.14
TEDCO Report 4, p 13

Cost-benefit analysis: results
Vol VII 2: 29.1-29.13 (CTLA)

Cost-benefit analysis: urbanisation
Vol VII 2: 25.6-25.14 (CTLA)

Costs
Vol VII 1: 54-55, 59-60 (CTLA)
2: 5.4-5.5, 27.5-27.7 (CTLA)
+Stage I Clark & Ptnrs p 15-16
TEDCO Report 1A, p 9

Costs: agriculture
Vol VII 2: 22.1-22.7 (CTLA)
+Stage III Cambs and Isle of Ely, Essex and Herts CC, 12/1-12/23

Costs: air movements
Vol VII 2: 11.29-11.36, 12.1-12.21 (CTLA)

Costs: air safety
Vol VII 2: 14.34, 14.42-14.54 (CTLA)

Costs: amenity
Vol VII 2: 24.21-24.26, 24.28-24.29 (CTLA)

Costs: churches
Vol VII 2: 24.11-24.12, 24.14-24.19, 24.22, 24.25, 24.29 (CTLA)

Costs: construction
Vol I: Q 236-242 p 4 (BAA)
Q 555-561 (BACAN)
Vol VII 1: 113 (CTLA)
2: 7.157-7.163, 8.11-8.12, 9.2-9.3 (CTLA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Costs: construction (Cont)
Vol VIII 1: I/25-30; II/68-74; III/67-72, 73; IV/67-72; V/63-67; VI/7-16 (Urb Studs)
Vol IX: p 95 (Nuthampstead Preservation Assn)
p 144-145 (TGWU)
+Stage I Clark & Ptnrs p 15-16
Essex & Herts CC Submission 2 p 4/1-4/10
NAS p 38-40
TEDCO Report 1A p 9
Thames Aeroport Study Group p 9
+Stage III Bucks CC (Vol 2) p 4/1-4/9
Cambs&Isle of Ely Essex & Herts CC p 4/1-4/9
Stand Conf LSERP p 14
Mr J D Steel Appendix B
TEDCO Report 3, p 10-18

Costs: cost responsibility
Vol I: Q 555-561, 576-581 (BACAN)
Q 744-753 (LAANC)

Costs: defence
Vol VII 2: 15.1-15.10 (CTLA)

Costs: Foulness
Vol VII 2: 6.4-6.13 (CTLA)

Costs: gliding
Vol VII 2: 17.5-17.10 (CTLA)

Costs: historic buildings
Vol VII 2: 24.11-24.13, 24.21, 24.23-24.24, 24.28-24.29 (CTLA)

Costs: hospitals
Vol VII 2: 21.21-21.28 (CTLA)

Costs: industry and commerce
Vol VII 2: 23.1-23.12 (CTLA)

Costs: land
Vol VIII 1: I/31-32, II/76-78, III/75-76, IV/73, V/69, VI/20-22 (Urb Studs)

Costs: Luton Airport
Vol VII 2: 12.22-12.25 (CTLA)

Costs: meteorology
Vol VII 2: 10.5-10.19 (CTLA)

Costs: movements: air traffic
Vol VII 2: 11.29-11.36, 12.1-12.21 (CTLA)

Costs: movements: air traffic: delays
Vol VII 2: 28.50-28.61 (CTLA)

Costs: private airfields
Vol VII 2: 17.1-17.24 (CTLA)

Costs: public buildings
Vol VII 2: 21.29-21.33 (CTLA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Costs: recreation
Vol VII 2: 24.8-24.10, 24.21, 24.23-24.24, 24.28-24.29 (CTLA)

Costs: schools
Vol VII 2: 21.1-21.17 (CTLA)

Costs: scientific establishments
Vol VII 2: 16.1-16.5, 23.11-23.12 (CTLA)

Costs: seadrome scheme
+Stage III: Shell UK Ltd, p 29-30, 33, appendix A

Costs: services and utilities
Vol VII 2: 7.16-7.17, 7.67-7.133 (CTLA)
+Stage III Stand Conf LSERP, p 5

Costs: surface access
Vol I: p 277-280, 283 (MOT)

Costs: surface access: rail
Vol VII 2: 13.61 (CTLA)

Costs: surface access: road
Vol VII 2: 13.59-13.60 (CTLA)

Costs: telecommunications
Vol VII 2: 7.124 (CTLA)

Costs: urbanisation
Vol VII 2: 25.15-25.36 (CTLA)

Costs: user costs
Vol I: Q 194 (BAA)
Q 400-402 (Stand Conf on LSERP)
Q 472-480 (BACAN)
Q 855-882 p 277-280, 299-302, 305-306 (MOT)
Vol VII 1: 19-28 (CTLA)
2: 11.1-11.28, 13.28-13.37, 13.55-13.58, 13.62-13.64, 25.18-25.21, 25.32-25.34 (CTLA)
Vol VIII 1: I/32, II/74-75, III/72, IV/72, V/68, VI/16-17 (Urb Studs)
Vol IX: p 158-162 (MOT)

Country Landowners' Association (CLA)
Vol II: p 46-48

Coventry Gliding Club: evidence
Vol IX: p 34

Cranford and District Residents' Amenities Association
Vol I: Q 440 p 170-173

Printed image digitised by the University of Southampton Library Digitisation Unit

Crockett, Mrs M L see Community Plans Incorporated, Los Angeles

Cublington
Vol V: Local hearing (see separate index)
+Stage III Stand Conf LSERP p 9-10
Mr R Trotter

Cublington: agriculture
Vol IX: p 84, 87 (NFU)
+Stage III Cambs and Isle of Ely, Essex and Herts CC 12/5-7, 12/12, 12/17, 12/21-22

Cublington: air traffic control: terminal area simulation (TMA)
Vol VIII 2(2): 35-56 (GPS Ltd)

Cublington: airport layout
Vol VII 2: 9.16, 9.21 (CTLA)

Cublington: amenity
Vol IX: p 64 (Inter-Diocesan Working Party)

Cublington: construction costs
+Stage III Bucks CC (Vol 2), 4/8
Cambs & Isle of Ely, Essex and Herts CC 4/8

Cublington: cost-benefit analysis
Vol VIII 1: IV/67-77 (Urb Studs)

Cublington: defence
+Stage III Bucks CC (Vol 2) 9/3-9/4
Cambs & Isle of Ely, Essex and Herts CC 9/3-9/4

Cublington: defence: costs
Vol VII 2: 15.7 (CTLA)

Cublington: employment
+Stage III Cambs and Isle of Ely, Essex and Herts CC, 3/5-6

Cublington: employment: labour resources
Vol VIII 2(3): p 41 (NBA)

Cublington: housing
+Stage III Cambs and Isle of Ely, Essex and Herts CC, 3/5-6

Cublington: landscape
+Stage III Bucks CC (Vol 1) p 5-6

Cublington: noise
Vol IX: p 62 (Inter-Diocesan Working Party)

Cublington: regional planning
Vol IX: p 56 (Inter-Diocesan Working Party)

Printed image digitised by the University of Southampton Library Digitisation Unit

Cublington: services and utilities
Vol VII 2: 7.82-7.85, 7.116 (CTLA)
Vol IX: p 56 (Inter-Diocesan Working Party)

Cublington: sewage
Vol VII 2: 7.82-7.85 (CTLA)

Cublington: site
Vol VIII 2(3): p 69-71, 77, 79 (G Wibberley)

Cublington: social survey
Vol VII 2(4) (Essex U)

Cublington: soil survey
Vol VII 2: 7.137-7.138 (CTLA)

Cublington: surface access: rail
Vol VIII 2(1): p 89-101 (BR)

Cublington: surface access: road
Vol VIII 2(1): p 211-228 (MOT)
+Stage III Bucks CC (Vol 1) p 6-7, (Vol 2) 6/37
Cambs & Isle of Ely, Essex and Herts CC 6/37

Cublington: surface access: tracked hovercraft
+Stage III Tracked Hovercraft Ltd p 10, 14

Cublington: urbanisation studies
Vol VIII 1: IV (Urb Studs)
Cublington see also under main subject headings

see also Wing Airport Resistance Association

Culcheth Society
Vol I: Q 595

Deep water terminal see Docks: proposed schemes

Defence
Vol I: Q 946-950, 958-963 (NATCS)
Vol VII 1: 116 (CTLA)
2: 15.1-15.10 (CTLA)
Vol VIII 2(1): p 7-9 (NATCS)
+Stage I Clark & Ptnrs p 20
Essex & Herts CC Submission 2 9/1-9/5
TEDCO Report 1A, p 9
TEDCO Report 2, p 37-38
Thames Aeroport Study Group p 21
+Stage III Bucks CC (Vol 2) 9/1-9/5
Cambs & Isle of Ely Essex & Herts CC 9/1-9/5
TEDCO Report 3, p 37

Printed image digitised by the University of Southampton Library Digitisation Unit

Defence: costs
Vol VII 2: 15.1-15.10 (CTLA)

Discount rate see Cost-benefit analysis: general principles

Docks: proposed schemes
Vol I: Q 431-436 (SEEPC)
p 284-285 (MOT)
Vol II: p 106-108 (PLA)
Vol VII 1: 16-18 (CTLA)
2: 6.1-6.13 (CTLA)
Vol IX: p 29 (BP)
p 54 (Hon Company of Master Mariners)
p 127-131 (Regional Studies Association, East Anglia Group)
p 139-140 (Sheppey Group)
+Stage I Clark & Ptnrs p 16-17, pt 2, p 1-18
TEDCO Report 1A, p 10
Thames Aeroport Study Group 30-32
+Stage III Shell Group letter from Mr McFadzean
TEDCO Report 3, p 14-18, 54-55
TEDCO Report 4 & 5

Dolphin Square Residents Association
Vol I: Q 595

Dorking and Horley Rural District Council: evidence
Vol I: Q 439 p 145-151

Drainage see Sewage; Water

Dulles Airport see Washington: Dulles Airport

East Anglia Consultative Committee
Vol II: p 49
East Anglia Economic Planning Council
Vol II: p 50
East Midlands Airport Joint Committee
Vol II: p 51-52
Economic Planning Council, East Midlands Region: evidence
Vol IX: p 35-36
Economic Planning Council, West Midlands Region: evidence
Vol IX: p 37

Economic Planning Council, Yorkshire and Humberside Region: evidence
Vol IX: p 38

Education: social survey
Vol VIII 2(4): p 24, 26 (Essex U)

see also Schools

Edwards, Mr C (University of East Anglia): evidence
Vol IX: p 39-45

Printed image digitised by the University of Southampton Library Digitisation Unit

Electricity
Vol VIII 1: II/58 (Urb Studs)
+Stage I Clark & Ptnrs p 18
Essex & Herts CC Submission 2, 5/1-5/2
NAS p 61
TEDCO Report 2, p 21
Thames Aeroport Study Group p 10
+Stage III Bucks CC (Vol 2) 5/1-5/2
Cambs & Isle of Ely Essex & Herts CC 5/1-5/2

Electricity: costs
Vol VII 2: 7.110-7.116 (CTLA)

Ely, Isle of, County Council see Cambs and Isle of Ely County Council

Employment
Vol I: Q 316-317 p 26 (BAA)
Q 642-646 (UKFAAN)
Q 885-887 p 285 (MOT)
Vol VII 2: 27.2 - 27.4 (CTLA)
Vol VIII 1: II/25, 46; III/21,47; IV/21,49; V/21, 45-48,61 (Urb Studs)
Vol IX: p 56 (Inter-Diocesan Working Party)
p 72-73 (Luton CBC)
p 90 (NFU)
p 117-118 (Regional Studies Assn East Anglia Group)
p 142-144 (TGWU)
+Stage I Clark & Rtnrs p 16
Essex & Herts CC Submission 2, p 8, 3/1-3/22
TEDCO Report 2, p 11-12
Thames Aeroport Study Group p 8
+Stage III Cambs & Isle of Ely Essex & Herts CC 3/1-3/10
Stand Conf LSERP p 4
TEDCO Report 3, p 8-9
Waters & Boisot p 4

Employment: effect of third London airport
Vol VIII 1: I/9, 11-14; II/46-51, 64; III/47-52; IV/49-52, 65; V/45-48, 61; VI/1-4 (Urb Studs)
+Stage I TEDCO Report 2, p 60-61

Employment: labour costs
+Stage III Cambs and Isle of Ely, Essex and Herts CC, 2/17

Employment: labour resources
Vol VIII 2(3): p 40-42 (NBA)

Employment: social survey
Vol VIII 2(4): p 22, 23, 25 (Essex U)

Environment see Amenity

Printed image digitised by the University of Southampton Library Digitisation Unit

Epping and Ongar Rural District Council
+Stage I Essex & Herts CC Submission 2

Epping Urban District Council
+Stage I Essex & Herts CC Submission 2

Essex County Council
+Stage I Essex & Herts CC Submission 1 & 2 and suppl
+Stage III Cambs & Isle of Ely Essex & Herts CC Submission
Essex University
Vol VIII 2(4) Social survey
Essex Women's Institutes, Federation of
Vol II: p 53
Eton Rural District Council
Vol I: Q 595

Families: social survey
Vol VIII 2(4): p 8 (Essex U)

Farming see Agriculture
Faversham Society
Vol I: Q 595, 647
Federation of Essex Women's Institutes
Vol II: p 53
Field report: social survey
Vol VIII 2(4): p 95-99 (Essex U)

Floating pavements see Seadrome

Flooding see Water: flooding

Fog see Meteorology

Forecasts see Air traffic: freight; Air traffic: passenger

Foreign exchange earnings see Cost-benefit analysis: general principles
Foulness
Vol I: Q 338 (T&CPA)
Q 461-463, 471-480, 514, 526 (BACAN)
Vol II: p 37 (Bucks CC)
p 65-66 (London Gliding Club)
Vol III: Local hearing (see separate index)
Vol IX: p 2-3 (Air Safety Group)
p 142-143 (TGWU)
+Stage I Clark & Ptnrs p 1, 4
Essex & Herts CC Submission 2
p 7, 11/2-11/8
Hampstead Assn for Aircraft Noise Control p 4-5
NAS p 32-36
TEDCO Report 1A, p1
+Stage III Bucks CC (Vol 1), p 4-5
Clark & Ptnrs
Stand Conf LSERP p 9, 16
TEDCO Report 3, p 2-3, 56-58

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: agriculture
Vol IX: p 83, 86-87 (NFU)
+Stage III Cambs and Isle of Ely, Essex and Herts CC 12/3-4, 12/9-10, 12/14-15, 12/21

Foulness: air safety
+Stage I TEDCO Report 1A, p 2-3
+Stage III TEDCO Report 3, p 40-42

Foulness: air safety: birdstrike
+Stage III TEDCO Report 3, p 42-45

Foulness: air traffic control
Vol I: Q 981, 1011-1015, 1018-1021 (NATCS)
+Stage I Clark & Ptnrs p 19
Essex & Herts CC Submission 2, p 13-14, 12/1-12/4
NAS p 45
TEDCO Report 1A, p 2
TEDCO Report 2, p 39-42
Thames Aeroport Study Group p 23-24
+Stage III TEDCO Report 3, p 39-40

Foulness: air traffic control: terminal area simulation
Vol VIII 2(2): 35-56 (GPS Ltd)

Foulness: airport capacity
+Stage I TEDCO Report 1A, p 4
TEDCO Report 2, p 59-60
Thames Aeroport Study Group p 26-27

Foulness: airport layout
Vol VII 2: 9.14, 9.19 (CTLA)

Foulness: airport layout: runways
Vol I: Q 739-742 (NAS)
Foulness: airport/seaport see Airport/seaport
Foulness: amenity
Vol IX: p 64 (Inter-Diocesan Working Party)
+Stage I Clark & Ptnrs p 20
Essex & Herts CC Submission 2, p 12 9/1-2
TEDCO Report 2, p 36
+Stage III TEDCO Report 3, p 36, 45

Foulness: construction
Vol VII 2: 8.13-8.14 (CTLA)
+Stage I NAS p 38-40
TEDCO Report 2, p 67-74
+Stage III Mr J D Steel p 9-15
TEDCO Report 3, p 10-18

Foulness: construction costs
+Stage I Clark & Ptnrs p 15
Essex & Herts CC Submission 2, p 9, 4/2-4/6
NAS p 38-40

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: construction costs (Cont)
TEDCO Report 1A, p 9
TEDCO Report 2, p 13-20, 76-79
Thames Aeroport Study Group p 9
+Stage III Bucks CC (Vol 2) 4/5-4/7
Cambs & Isle of Ely, Essex & Herts CC 4/5-4/7
Mr J D Steel Appendix B
TEDCO Report 3, p 10-18

Foulness: cost-benefit analysis
Vol VIII 1: II/68-80 (Urb Studs)
+Stage III TEDCO Report 5

Foulness: costs
Vol VII 2: 6.4-6.13 (CTLA)

Foulness: defence
Vol VIII 2(1): p 7-9 (NATCS)
+Stage I Clark & Ptnrs p 20
Essex & Herts CC Submission 2, p 12-13, 10/1-10/3
TEDCO Report 2, p 37-38
Thames Aeroport Study Group p 21
+Stage III Bucks CC (Vol 2) 9/1-9/2
Cambs & Isle of Ely, Essex & Herts CC 9/1-9/2
TEDCO Report 3, p 37

Foulness: defence: costs
Vol VII 2: 15.3, 15.8 (CTLA)

Foulness: employment
Vol IX: p 56 (Inter-Diocesan Working Party)
+Stage I Clark & Ptnrs p 16
Essex & Herts CC Submission 2, p 8, 3/11-3/16
TEDCO Report 2, p 60-61
Thames Aeroport Study Group p 8
+Stage III Cambs & Isle of Ely, Essex & Herts CC 3/3
TEDCO Report 3, p 8-9

Foulness: employment: labour resources
Vol VIII 2(3): p 40-41 (NBA)

Foulness: housing
Vol IX: p 57 (Inter-Diocesan Working Party)
+Stage I Clark & Ptnrs p 18
Essex & Herts CC Submission 2, p 9, 6/3-6/4
TEDCO Report 2, p 24
Thames Aeroport Study Group p 12-13
+Stage III Cambs & Isle of Ely, Essex & Herts CC 3/3
TEDCO Report 3, p 20-22

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: land
+Stage I Essex & Herts CC Submission 2, p 13, 11/2-11/8
TEDCO Report 2, p 39-42
Thames Aeroport Study Group p 22
+Stage III TEDCO Report 3, p 38-39

Foulness: land reclamation
Vol VII 1: 113-114 (CTLA)
2: 7.21-7.22, 7.134-7.136 (CTLA)
+Stage I Clark & Ptnrs p 7-10
Essex & Herts CC Submission 2 p 4/3-4/6
TEDCO Report 1A, p 8
+Stage III TEDCO Report 3, p 10-18, 36, Appendix A
TEDCO Report 5, p 28-33

Foulness: landscape
Vol IX: p 65 (Inter-Diocesan Working Party)
+Stage III Bucks CC (Vol 1) p 5

Foulness: meteorology
Vol IX: p 46 (Foulness Is Residents' Comm)
+Stage I NAS p 41-44
TEDCO Report 1A, p2
+Stage III TEDCO Report 3, p 45-52

Foulness: noise
Vol IX: p 33 (Clacton UDC)
p 63 (Inter-Diocesan Working Party)
+Stage I Clark & Ptnrs p 19-20
Essex & Herts CC Submission 2, p 11-12
Hampstead Assn for Aircraft Noise Control p 2-3
NAS p 48
Southend Jet Aircraft Protest Assn p 1-2
TEDCO Report 1A, p 3
TEDCO Report 2, p 33-35
Thames Aeroport Study Group p 19
+Stage III TEDCO Report 3, p 33-35

Foulness: operational costs
+Stage I NAS p 63-65

Foulness: regional planning
Vol IX: p 56 (Inter-Diocesan Working Party)
+Stage I Clark & Ptnrs p 15
Essex & Herts CC Submission 2, p 8
2/7, 11/4-11/8
TEDCO Report 2, p 10
Thames Aeroport Study Group p 6-7
+Stage III TEDCO Report 3, p 6-7

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: services and utilities
Vol VII 2: 7.86-7.87, 7.116 (CTLA)
Vol IX: p 56 (Inter-Diocesan Working Party)
+Stage I Clark & Ptnrs p 17-18
Essex & Herts CC Submission 2, p 9
NAS p 61
TEDCO Report 1A, p 8
TEDCO Report 2, p 21-23
Thames Aeroport Study Group p 10-11
+Stage III TEDCO Report 3, p 19

Foulness: sewage
Vol VII 2: 7.86-7.87 (CTLA)
+Stage I TEDCO Report 2, p 23

Foulness: site
Vol VIII 2(3): p 63-66, 78 (G Wibberley)
Vol IX: p 107 (Oxfordshire CC)
p 108 (Ramblers' Association)
+Stage I TEDCO Report 1 & 1A
TEDCO Report 2
+Stage III TEDCO Report 3, 4 & 5

Foulness: social survey
Vol VIII 2(4) (Essex U)

Foulness: soil survey
Vol VII 2: 7.139-7.141 (CTLA)

Foulness: surface access
Vol I: Q 518-521 (BACAN)
Q 818 (MOT)
Q 823 (GLC)
+Stage I Clark & Ptnrs p 10-14
Essex & Herts CC Submission 2,
NAS p 51-54
TEDCO REPORT 1A, p 4-7
TEDCO REPORT 2, p 25-32, 49-56, 62-63
Thames Aeroport Study Group p 14-18
+Stage III National Council on Inland Transport
letter 3.4.1969
TEDCO Report 3, p 23-32
TEDCO Report 5, p 29

Foulness: surface access: rail
Vol VIII 2(1): p 75-82 (BR)
+Stage I Clark & Ptnrs p 10, 12, 14
Essex & Herts CC Submission 2,
p 10-11, 7/11, 7/19-7/20
NAS p 51-53
TEDCO Report 1A, p 5,7
TEDCO Report 2, p 27-29, 30-32,
49-51, 53, 64-65
Thames Aeroport Study Group p 14, 18
+Stage III National Council on Inland Transport
letter 3.4.1969
TEDCO Report 3, p 26,32
TEDCO Report 4, p 18-19, 21-23

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: surface access: rail: advanced passenger train
+Stage I Essex & Herts CC Submission 2, p 11, 7/9, 7/17-7/18
TEDCO Report 1A, p 5-7
+Stage III TEDCO Report 3, p 27-28

Foulness: surface access: road
Vol VIII 2(1): p 157-171 (MOT)
Vol IX: p 129-130 (Regional Studies Assn East Anglia Group)
+Stage I Clark & Ptnrs p 10-14
Essex & Herts CC Submission 2, p 10
7/12-7/13
NAS p 51-53
TEDCO Report 1A, p 6-7
TEDCO Report 2, p 29-32, 49-52, 65-66
Thames Aeroport Study Group p 14, 17-18
+Stage III Bucks CC (Vol 1) p 6-7 (Vol 2) 6/36
Cambs & Isle of Ely, Essex & Herts CC 6/36
TEDCO Report 3, p 23-26
TEDCO Report 4, p 17, 19, 21, 23-24

Foulness: surface access: tracked hovercraft
+Stage III Tracked Hovercraft Ltd p 10-11, 15, 23-35

Foulness: surface access: user costs
Vol VII 2: 25.34 (CTLA)

Foulness: telecommunications
+Stage I TEDCO Report 2, p 23

Foulness: timing of the need
+Stage I Essex & Herts CC Submission 2, p 8
Thames Aeroport Study Group p 5
+Stage III TEDCO Report 3, p 4-5

Foulness: urbanisation studies
Vol VIII 1: II (Urb Studs)
Foulness see also under main headings
see also Docks: proposed schemes; Seadrome
Foulness Island Residents' Committee: evidence
Vol IX: p 46

Freight see Air traffic: freight

Friends: social survey
Vol VIII 2(4): p 45-58 (Essex U)

Friends of Old Isleworth
Vol I: Q 595

Fuel
+Stage I Essex & Herts CC Submission 2, p 5/4
NAS p 61
TEDCO Report 1A, p 8
TEDCO Report 2, p 22-23

Printed image digitised by the University of Southampton Library Digitisation Unit

Fuel: aviation
+Stage III Bucks CC (Vol 2) 5/7-5/8
Cambs & Isle of Ely Essex & Herts CC 5/7-5/8
TEDCO Report 3, Appendix B

Fuel: aviation: costs
Vol VII 2: 7.117-7.123 (CTLA)

Fuel: domestic: costs
Vol VII 2: 7.130, 7.132-7.133 (CTLA)

GPS Ltd see General Precision Systems Ltd

Gas
Vol VIII 1: II/58, III/57 (Urb Studs)
+Stage I Clark & Ptnrs p 17-18
NAS p 61
TEDCO Report 2,p 23
Thames Aeroport Study Group p 10
+Stage III Bucks CC (Vol 2) 5/6
Cambs & Isle of Ely, Essex & Herts CC, p 5/6

Gas: costs
Vol VII 2: 7.130-7.131 (CTLA)

Gatwick
Vol I: Q 96-97 (BAA)
Q 448-449 (BACAN)
p 145-147 (Dorking and Horley RDC)

Gatwick: air traffic control
Vol VIII 2(2): 27-56 (GPS Ltd)

Gatwick: air traffic control: air route structure
Vol I: Q 941-946, 974 (NATCS)

Gatwick: air traffic growth
Vol VIII 2(1): p 31-32 (BOT)

Gatwick: movements: air traffic
Vol I: Q 5, 8 (BAA)

Gatwick: movements: air traffic: capacity
Vol I: Q 34, p 13-14, 18 (BAA)
Vol IX: p 19-23 (BAA)

Gatwick: movements: air traffic: growth rate
Vol I: p 14-18 (BAA)

Gatwick: noise
Vol I: Q 582 (BACAN)

Printed image digitised by the University of Southampton Library Digitisation Unit

Gatwick: property values
Vol I: Q 504 (BACAN)
Vol IX: p 24 (BACAN)

Gatwick: surface access: rail
Vol I: Q 204 (BAA)

General Precision Systems Ltd (GPS)
Vol VIII 2(2)

Geology see Land: geology

Gliding
Vol I: Q 956-957 (NATCS)
Vol II: p 32-34 (British Gliding Assn)
p 64-73 (London Gliding Club)
Vol IX: p 27 (British Gliding Assn)
p 34 (Coventry Gliding Club)

Gliding: costs
Vol VII 2: 17.5-17.10 (CTLA)

Gravel see Sand and gravel

Gravity model see Surface access: gravity model

Greater London Council Development Plan
Vol 1: Q 822 (GLC)

Printed image digitised by the University of Southampton Library Digitisation Unit

Hampstead Association for Aircraft Noise Control
†Stage I Submission - noise evidence

Harlow Urban District Council
†Stage I Essex & Herts CC Submission 2

Harlow New Town
Vol I: Q 181-182 (BAA)

Harris and Sutherland
†Stage III Submission Shell UK Ltd

Health see Noise: medical effects

Health institutions see Hospitals

Heathrow: air traffic: passenger
Vol I: Q 210 (BAA)
Vol II: p 38-39 (CBI)

Heathrow: air traffic control
Vol I: Q 963 (NATCS)
Vol VIII 2(2): 35-56 (GPS Ltd)

Heathrow: air traffic control: air route structure
Vol I: Q 937-946 (NATCS)

Heathrow: air traffic growth
Vol VIII 2(1): p 32-33 (BOT)

Heathrow: employment
Vol I: Q 95, 172 (BAA)
Q 325 (T&CPA)
Q 421 (SEEPC)
Vol II: p 17-23 (BAA)

Heathrow: future
Vol I: Q 319 (T&CPA)
Q 458, 562-575 (BACAN)
p 156-157 (Chelsea & Kensington Action Comm on Aircraft Noise)

Heathrow: movements: air traffic
Vol I: Q 15 (BAA)

Heathrow: movements: air traffic: capacity
Vol I: p 13-14, 18 Q 4, 8, 34 (BAA)
Vol IX: p 19-23 (BAA)

Heathrow: movements: air traffic: growth rate
Vol I: p 14-17 (BAA)
p 157 (Chelsea & Kensington Action Comm on Aircraft Noise)

Heathrow: noise
Vol I: Q 447-449, 563-565 (BACAN)
p 152-153 (Chelsea & Kensington Action Comm on Aircraft Noise)

Printed image digitised by the University of Southampton Library Digitisation Unit

Heathrow: property values
Vol I: Q 490-493 (BACAN)

Heathrow: surface access: rail
Vol I: Q 204, 211 (BAA)

Heathrow: surface access: roads
Vol I: Q 197-199, 210-216 (BAA)
Q 828, 832 (GLC)

Helicopters
Vol I: Q 161, 162 (BAA)

Hemel Hempstead Borough Council
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Hertford Rural District Council
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Hertfordshire and Middlesex Trust for Nature Conservation: evidence
Vol IX: p 47-53

Hertfordshire Association of Parish Councils
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Hertfordshire County Council
+Stage I Essex & Hertfordshire CC Submissions 1 & 2
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Hertfordshire Federation of Women's Institutes
Vol II: p 54-55

Historic buildings
Vol VII 2: 24.27 (CTLA)
Vol IX: p 57-63 (Inter-Diocesan Working Party)

Historic buildings: costs
Vol VII 2: 24.11-24.13, 24.21, 24.23-24.24, 24.28-24.29 (CTLA)

see also Churches

Hitchin Rural District Council
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Hitchin Urban District Council
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Hoddesdon Urban District Council
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Printed image digitised by the University of Southampton Library Digitisation Unit

Holding areas see Air traffic control: stacking

Honourable Company of Master Mariners: evidence
Vol IX: p 54

Horley and Dorking Rural District Council: evidence
Vol I: Q 439 p 145-151

Hospitals
+Stage III Bucks CC (Vol 2) 8/6-8/7
Cambs & Isle of Ely, Essex & Herts CC
p 8/6-8/7

Hospitals: costs
Vol VII 2: 21.21-21.28 (CTLA)

Housing
Vol I: Q 255 (SEJPT)
Q 760-788 (LAANC)
Vol VIII 1: I/4 (Urb Studs)
2(3): p 23-42 (NBA)
Vol IX: p 57 (Inter-Diocesan Working Party)
p 133-134 (RIBA)
+Stage I Clark & Ptnrs p 18
Essex & Herts CC Submission 2, p 9,
6/1-6/7
TEDCO Report 2, p 24
Thames Aeroport Study Group p 12-13
+Stage III Cambs & Isle of Ely, Essex & Herts CC
3/1-3/10
TEDCO Report 3, p 20-22
see also Property values

Housing and Local Government, Ministry of
Vol II: p 85-90

Hovercraft
Vol VIII 2(1): p 29 (BOT)

Hovercraft: tracked hovercraft
+Stage III Tracked Hovercraft Ltd Submission

Hovertrain
Vol I: Q637-641 (UKFAAN)

Howard, Sir John see Thames Estuary Development Co.Ltd

Humberside Region see Yorkshire and Humberside Region

Humphreys, Howard, & Sons
Vol VIII 2(1): p 135-228 (MOT)

Hydrology see Water

Hypersonic aircraft
Vol I: p 21 (BAA)

Printed image digitised by the University of Southampton Library Digitisation Unit

ICAO see International Civil Aviation Organization

IFR see Instrument Flight Rules

ILS see Instrument Landing System

Imperturbables see Noise: imperturbables

Income: rents
Vol VIII 1: I/33-34, II/79-81, III/78-79,
IV/74, V/70, VI/24-27 (Urb Studs)

Income: social survey
Vol VIII 2(4): p 24, 26 (Essex U)

Industry and commerce
Vol I: Q 315, 326 (T&CPA)
Q 403-405 (Stand Conf LSERP)
Q 430 (SEEPC)
Vol II: p 107-108 (PLA)
+Stage III Cambs & Isle of Ely, Essex & Herts CC
2/12-2/17
Stand Conf LSERP p 7-9, 12-13

Industry and commerce: costs
Vol VII 2: 23.1-23.12 (CTLA)

Industry and commerce: distribution of industry policy
Vol II: p 125-128 (BOT)

Industry and commerce: social survey
Vol VIII 2(4): p 22-27(Essex U)

Instrument Flight Rules (IFR)
Vol I: Q 31 (BAA)

Instrument Landing System (ILS)
Vol I: Q 149-150, 155 (BAA)
Q 1031 (NATCS)

Insulation see Noise: soundproofing

Inter-Diocesan Working Party: evidence
Vol IX: p 55-67

International Civil Aviation Organization (ICAO)
Vol I: Q 991 (NATCS)

International Wildfowl Research Bureau: evidence
Vol IX: p 68

In-town terminal see Terminal: town terminal

Printed image digitised by the University of Southampton Library Digitisation Unit

Isle of Ely County Council see Cambridgeshire and Isle of Ely County Council

Isleworth, Friends of Old
Vol I: Q 595

John Evelyn Society (Wimbledon)
Vol I: Q 595

Jumbo jets
Vol I: Q 739-742 (NAS)
p 21-22 Q 13, 102, 116, 163-164 (BAA)
Vol II: p 41-42 (CBI)
Vol VIII 2(1): p 14 (NATCS)

KACAN see Kew Association for the Control of Aircraft Noise

Kennedy Airport see New York: Kennedy Airport

Kensington: property values
Vol I: Q 531-554 (BAA)

Kensington and Chelsea Action Committee on Aircraft Noise: evidence
Vol I: Q 440 p 152-158

Kent County Council
Vol II: p 56-59

Kew Association for the Control of Aircraft Noise (KACAN): evidence
Vol I: Q 440, 159-169

Kew Society
Vol I: Q 595

Kinship: social survey
Vol VIII 2(4): p 30-45 (Essex U)

Knutsford Society
Vol I: Q 595

LAANC see Local Authorities Aircraft Noise Council

La Guardia Airport see New York: La Guardia Airport

Labour see Employment

Printed image digitised by the University of Southampton Library Digitisation Unit

Land
Vol IX: p 64 (Inter-Diocesan Working Party)
p 144 (TGWU)
+Stage I Essex & Herts CC Submission 2,
p 11/1-11/25
TEDCO Report 2, p 39-42
Thames Aeroport Study Group p 22
+Stage III Cambs & Isle of Ely, Essex & Herts CC
7/1-7/29
TEDCO Report 3, p 38-39

Land: costs and benefits
Vol VIII 1: I/31-32, II/76-78, III/75-76,
IV/73, V/69, VI/20-22 (Urb Studs)
+Stage I NAS p 69-72

Land: geology
Vol VII 2: 7.24-7.25, 7.137-7.147 (CTLA)
Vol VIII 1: II/7-11, 19; III/7, 17; IV/9, 19;
V/9-10, 19 (Urb Studs)
+Stage I TEDCO Report 2 Appendix B
+Stage III Mr J D Steel

Land: landscape
Vol VIII 1: I/34-35; II/78-79; III/13-15,
77-78; IV/15-18, 73-74; V/15, 69;
VI/22-24 (Urb Studs)
Vol IX: p 136 (RIBA)
+Stage III Cambs & Isle of Ely, Essex & Herts CC
2/18-2/20, 7/7-7/15
Bucks CC (Vol 1) p 5-6
Stand Conf LSERP p 13

Land: reclamation
Vol I: p 29-32 (BAA)
Q 514-516 (BACAN)
Vol II: p 106 (PLA)
Vol VII 1: 113-114 (CTLA)
2: 7.21-7.22, 7.134-7.136 (CTLA)
+Stage I Clark & Ptnrs p 7-10
Essex & Herts CC Submission 2, p 4/3-4/6
NAS p 38-40
TEDCO Report 1A, p 8
TEDCO Report 2, Appendix B
+Stage III TEDCO Report 3, p 10-18, 36, Appendix A
TEDCO Report 5, p 28-29, 30-33

Land: topography
Vol VII 2: 7.18-7.20, 7.23 (CTLA)
Vol VIII 1: II/13, III/7, IV/9, V/9-10 (Urb Studs)

see also Agriculture; Amenity; Recreation

Printed image digitised by the University of Southampton Library Digitisation Unit

Landing fees
Vol I: Q 126-127 (BAA)
Q 350-355 (T&CPA)
Q 505-511 (BACAN)
Vol VII 1: 50, 59-60 (CTLA)
2: 5.6-5.7, 5.13-5.16 (CTLA)

Landscape see Land: landscape

Large, Professor J B
Vol VIII 2(3): Study 4 p 121-127

Layout see Airport layout

Le Bourget Airport see Paris: airports

Letchworth Garden City Corp.
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Letchworth Urban District Council
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Lichfield, Nathaniel, and Associates and Beesley, Michael
+Stage III TEDCO Report 5

Livesey & Henderson
Vol VIII 2(1): Study 6, p 54-123
(3): Study 1, p 3-19

Llewelyn-Davies, Weeks, Forestier-Walker and Bor
Vol VIII 1 (Urb Stud)

Local Authorities Aircraft Noise Council (LAANC): evidence
Vol I: Q 743-793 p 206-209

Local Authorities (Airport) Committee: evidence
Vol I: p 216-225

Local planning
Vol VII 2: 26.10 (CTLA)
Vol VIII 1: II/23-28, III/21-26, IV/21-25, V/21-25 (Urb Stud)
+Stage III Braughing RDC letter

see also Regional planning; Urbanisation

London: airports see Gatwick; Heathrow

London and South East Regional Planning, Standing Conference on: activities
Vol I: Q 390-391

Printed image digitised by the University of Southampton Library Digitisation Unit

London and South East Regional Planning, Standing Conference on: evidence
Vol I: Q 358-405 p 75-85

London and South East Regional Planning, Standing Conference on:
+Stage III submission

London and South East Regional Planning, Standing Conference on: terms of reference
Vol I: p 75

London and Thames Haven Oil Wharves Ltd
+Stage III TEDCO Report 3, p 2

London Chamber of Commerce (Inc)
Vol II: p 60-63

London Gliding Club
Vol II: p 64-73

London Transport Board
Vol II: p 74-75

Lord'sBridge Observatory
Vol IX: p 30-32 (Cambridge U)
p 137-138 (Science Research Council)

Los Angeles
Vol I: Q 153-156 (BAA)
Q 352-355 (T&CPA)
Q 794-806 (Community Plans Inc LA)

Lucking, Mr A J
Vol II: p 76-84

Luton Airport
Vol IX: p 73-75 (Luton CBC)

Luton Airport: air traffic control
Vol VIII 2(2): 35-56 (GPS Ltd)

Luton Airport: air traffic control: air route structure
Vol I: Q 942-946, 973 (NATCS)

Luton Airport: costs
Vol VII 2: 12.22-12.25 (CTLA)

Luton Airport: movements: air traffic
Vol I: Q 5-6 (BAA)

Luton County Borough Council: evidence
Vol IX: p 69-75

Printed image digitised by the University of Southampton Library Digitisation Unit

MAFF see Agriculture, Fisheries and Food, Ministry of

MBM Powercels Ltd
+Stage III submission

MOT see Transport, Ministry of

Manchester Airport
Vol VIII 2(1): p 2, 3 (BOT)

Maplin Sands see Foulness: defence

Master Mariners, Honourable Company of: evidence
Vol IX: p 54

Meteorology
Vol VII 2: 7.6-7.8, 7.30, 10.1-10.19 (CTLA)
Vol IX: p 46 (Foulness Is Residents' Comm)
+Stage I NAS p 41-44 TEDCO Report 1A, p 2
+Stage III TEDCO Report 3, p 45-52

Meteorology: costs
Vol VII 2: 10.5-10.19 (CTLA)

Meteorology: statistics
Vol VII 2: 10.1-10.4 (CTLA)

Methodology
Vol I: Q1 (CTLA)

Methodology: proposed research methodology
Vol VII 1 (CTLA)
Vol IX: p 15-18 (BAA)
p 149 (WARA)
+Stage III Bucks CC Memorandum
Stand Conf LSERP letter 5th Dec 1969

Methodology: urbanisation studies
Vol VIII 1: I (Urb Stud)

Middlesex Trust for Nature Conservation see Hertfordshire and Middlesex Trust for Nature Conservation

Military airfields see Defence

Milton Keynes New Town
Vol I: Q267 (SEJPT)
Q417-421, 437 (SEEPC)
+Stage III Mr R Trotter

Mineral deposits see Land: geology; Sand and gravel

Ministry of Agriculture, Fisheries and Food see Agriculture, Fisheries and Food, Ministry of

Ministry of Defence see Defence

Ministry of Housing and Local Government see Housing and Local Government, Ministry of

Ministry of Technology see Technology, Ministry of

Printed image digitised by the University of Southampton Library Digitisation Unit

Ministry of Transport see Transport, Ministry of

Mintech see Technology, Ministry of

Modal split see Surface access: modal split

Monorail see Surface access: rail: monorail

Motorway box see Surface access: roads: development

Movements: air traffic
Vol VII 2: 4.32-4.35, 28.26-28.31, 28.77-28.79 (CTLA)

Movements: air traffic: capacity
Vol I: Q4-45 p 12-18 (BAA)
Q1024-1030, 1044, 1050 (NATCS)
Vol II: p 82-84 (A J Lucking)
Vol VII 2: 3.11-3.17, 3.22-3.64, 28.4-28.7 (CTLA)
Vol IX: p 41-42 (C B Edwards)
+Stage I TEDCO Report 2, p 57-58

Movements: air traffic: costs
Vol VII 2: 11.29-11.36, 12.1-12.21 (CTLA)

Movements: air traffic: delays
Vol I: Q4, 117 (BAA)
Q1026-1030 (NATCS)
Vol VII 1: 49-50 (CTLA)
2: 3.25-3.28, 28.32-28.49 (CTLA)

Movements: air traffic: delays: costs
Vol VII 2: 28.50-28.61 (CTLA)

Movements: air traffic: growth rate
Vol I: p 15-17, Q6-27 (BAA)
Q568-575 (BACAN)

Movements: air traffic: peak rate
Vol I: Q30-34 (BAA)

Movements: air traffic: standard busy rate (SBR)
Vol I: Q1031-1036, 1044 (NATCS)

Movements: air traffic: statistics
Vol I: Q4-11, 17-27, 61-75, 86-88 p 13-14 (BAA)
p 191-193 (UKFAAN)

Movements: air traffic: sustained capacity rate (SCR)
Vol I: Q 30-34, 45 p 13-14 (BAA)
Q 1031-1036, 1050 (NATCS)

Movements: air traffic: training flights
Vol I: Q 71 (BAA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Mowlem, John, and Co Ltd
+Stage III TEDCO Report 3, p 2

Mullard Radio Astronomy Observatory see Lord's Bridge Observatory

NAS see Noise Abatement Society

NATCS see National Air Traffic Control Services

NBA see National Building Agency

NFU see National Farmers' Union

NGTE see National Gas Turbine Establishment

NNI see Noise and number index

National Air Traffic Control Services (NATCS)
Vol I: Q 122 (BAA)
Q 928-1050 p 333-339 (NATCS)
Vol VIII 2(1): Study 2, p 7-9; Study 3, p 13-21

National Air Traffic Control Services (NATCS): responsibilities
Vol I: Q 928 p 333-334 (NATCS)

National Airports Plan see Airports: National Airports Plan

National Building Agency (NBA)
Vol VIII 2(3): Study 2 p 23-42

National Council on Inland Transport
+Stage I submission : evidence on noise
+Stage III submission: letter 3.4.1969

National Farmers' Union (NFU): evidence
Vol II: p 91-94
Vol IX: p 82-91

National Gas Turbine Establishment (NGTE)
Vol VIII 2(1): Study 5, p 47-49

National Union of Vehicle Builders, East London Office
Vol II: p 95-96

Nature Conservancy: evidence
Vol X: p 92

Nature conservation see Conservation

Navigational aids
Vol I: p 23 (BAA)
Vol VII 2: 7.125-7.129 (CTLA)
Vol VIII 2(1): p 15-17 (NATCS)

Printed image digitised by the University of Southampton Library Digitisation Unit

Navigational aids: seadrome scheme
+Stage III Shell (UK) Ltd, p 21-22

New York: Kennedy Airport
Vol I: Q 2, 117 (BAA)
Q 782 (LAANC)
Q 967 (NATCS)

New York: La Guardia Airport
Vol I: Q 967 (NATCS)
Q 230-232 (BAA)

Newmarket Rural District Council
+Stage III Cambs and Isle of Ely, Essex and Herts CC submission

Noise
Vol I: Q 91, 221-222 (BAA)
Q 323 p 98 (T&CPA)
Q 377-378 (Stand Conf on LSERP)
Q 438-806 (oral evidence)
Q 438 (Chairman of CTLA)
Q 439-591 p 143-144 (BACAN)
Q 592-649 p 175-196 (UKFAAN)
Q 650-742 p 197-205 (NAS)
Q 743-793 p 206-209 (LAANC)
Q 794-806 (Community Plans Inc LA)
p 143-270 (written evid)
p 145-151 (Dorking & Horley RDC)
p 152-158 (Chel & Ken ACAN)
p 159-169 (KACAN)
p 170-173 (Cranford & Dist Res Amen Assn)
p 174 (Putney Soc)
p 211-215 (GLC Scientific Adviser)
p 216-218 (Local Authorities (Airport) Comm)
p 219-225 (Borough Planning Officer, Hounslow)
Vol II: p 11-16 (BOT)
p 53 (Fed of Essex WI's)
p 54 (Herts Fed of WI's)
p 58-59 (Kent CC)
p 93-94 (NFU)
Vol VIII 1: I/9, II/29, III/27, IV/29, V/27 (Urb Studs)
2(3): p 121-123 (Prof Large)
Vol IX: p 62 (Inter-Diocesan Working Party)
p 66-67 (Church of England Board for Social Responsibility)
p 134-136 (RIBA)
p 144 (TGWU)
p 154-155 (WARA)
+Stage I Clark & Ptnrs p 19-20
Essex & Herts CC Submission 2, p 11-12, 8/1-8/7

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise (contd.)
+Stage I Hampstead Assn for Aircraft Noise Control p 3-4
National Council on Inland Transport p 1
NAS p 23-24, 48
Southend Jet Aircraft Protest Assn p 1-2
Thames Aeroport Study Group p 19
TEDCO Report 1A, p 3
TEDCO Report 2, p 33-35
+Stage III Bucks CC (Vol 2) 8/1-8/8
Cambs & Isle of Ely, Essex & Herts CC p 2/11-2/12, 8/1-8/8, 13/1-13/3
TEDCO Report 3, p 33-35
Waters & Boisot p 4-5

Noise: churches
Vol IX: p 57-63 (Inter-Diocesan Working Party)
+Stage III Bucks CC (Vol 2) 8/8
Cambs & Isle of Ely, Essex and Herts CC 8/8

Noise: Commission's comments
Vol I: Q 438 (Chairman CTLA)

Noise: historic buildings
Vol VII 2: 24.27 (CTLA)
Vol IX: p 57-63 (Inter-Diocesan Working Party)

Noise: hospitals
Vol VII 2: 21.18-21.28 (CTLA)

Noise: imperturbables
Vol I: Q 586 (BACAN)
Q 606-609 (UKFAAN)
Q 767-788 (LAANC)

Noise: industry and commerce
Vol VII 2: 23.1-23.2, 23.4-23.7 (CTLA)

Noise: local authorities' actions
Vol I: Q 582-584 (BACAN)
Q 632-634 (UKFAAN)

Noise: medical effects
Vol I: Q 669-671 (NAS)
p 155 (Chelsea & Kensington ACAN)
p 180-183 (UKFAAN)

Noise: ministerial responsibility
Vol I: Q 621-631 (UKFAAN)
p 161-163 (KACAN)

Noise: property values
Vol I: Q 488-504, 531, 545-554, 585-591 (BACAN)
Q 596-598 (UKFAAN)
p 201-205 (NAS)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise: property values (contd.)
Vol VII 1: 93-99 (CTLA)
2: 20.1-20.43 (CTLA)
Vol IX: p 24 (BACAN)

Noise: public buildings
Vol VII 2: 21.31-21.33 (CTLA)

Noise: rating appeals
Vol I: Q531-540 (BACAN)

Noise: road traffic
Vol I: Q 475 (BACAN)
Q 635-636 (UKFAAN)
p 156 (Chelsea & Kensington ACAN)
p 222-225 (Borough Planning Officer, Hounslow)

Noise: schools
Vol VII 2: 21.1-21.4, 21.10-21.17 (CTLA)

Noise: social costs
Vol I: Q 541-554 (BACAN)
Q 596-601, 609 p 177-185 (UKFAAN)
p 155 (Chel & Ken ACAN)
p 163-165 (KACAN)
p 170-173 (Cranford and District Residents' Amenities Association)
p 174 (Putney Society)
p 206-209 (LAANC)
+Stage I NAS p 65-68

Noise: soundproofing
Vol I: p 172 (Cranford & District Residents' Amenities Association)
p 217 (Local Authorities (Airport) Comm)
p 220-223 (Borough Planning Officer, London Borough of Hounslow)
Vol VII 2: 21.10-21.17, 21.21-21.28, 24.16-24.17, 24.25 (CTLA)

Noise: supersonic aircraft
Vol I: Q 105 (BAA)
Q 447 (BACAN)

Noise: take off and landing
Vol I: Q614-619 (UKFAAN)
p 155 (Chelsea & Kensington ACAN)

Noise: vertical take off and landing
Vol I: Q 162 (BAA)
Vol II: p 16 (BOT)

Noise Abatement Society (NAS): evidence
Vol I: Q 650-742 p 197-205
+Stage I submission

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise and number index (NNI)
Vol I: Q 480-487 (BACAN)
Q 602-609 (UKFAAN)
Q 650-655 (NAS)
Q 789-793 (LAANC)
Q 928 (Chairman CTLA)
p 211 (Scientific Adviser GLC)
Vol II: p 13-16 (BOT)
Vol VII 2: 18.3-18.11, 18.29 (CTLA)
+Stage I Essex & Herts CC Submission 2 p 8/2-8/5
+Stage III Bucks CC (Vol 2), 8/1-8/8
Cambs & Isle of Ely, Essex & Herts CC p 8/1-8/8
Stand Conf LSERP p 4
TEDCO Report 3, p 33-35

Noise certification plan
Vol I: p 163 (KACAN)
p 194 (UKFAAN)
Vol VII 2: 18.19 (CTLA)

Noise: final report (Wilson Report) - quoted extensively throughout

Noise levels
Vol I: Q 480-487 (BACAN)
Q 602-609, 619-628 (UKFAAN)
Q 650-671, 698-723 (NAS)
p 98 (T&CPA)
p 161, 168-169 (KACAN)
p 170-173 (Cranford & District Residents' Amenities Assn)
p 178, 184-187, 194 (UKFAAN)
p 199 (NAS)
p 211-215 (GLC Scientific Adviser)
p 217 (Local Authorities (Airport)Comm)
p 219-225 (Bor.Planning Officer, Hounslow)
Vol II: p 11-16 (BOT)
Vol VII 2: 18.1-18.29 (CTLA)
+Stage I Essex and Herts CC Submission 2 p 8/1-8/7

Noise levels: proposed research methodology
Vol VII 1: 66-67 (CTLA)

Noise measurement see Noise & number index; noise levels

Noise zones
Vol I: Q 582-584 (BACAN)
Q 760 (LAANC)
North West Essex & East Hertfordshire Preservation Association
Vol II: p 97-101
North West, Northern and West Midlands of England Advisory Committees for Civil Aviation
Vol II: p 102-104
Northamptonshire County Council
Vol II: p 105

Printed image digitised by the University of Southampton Library Digitisation Unit

Nuthampstead
Vol IV: Local hearing (see separate index)
Vol IX: p 93-106 (Nuthampstead Preservation Association)
+Stage III: Stand Conf LSERP, p 9

Nuthampstead: agriculture
Vol IX: p 83-84, 87 (NFU)
+Stage III: Cambs and Isle of Ely, Essex and Herts CC, 12/4-5, 12/11, 12/16, 12/21

Nuthampstead: air traffic control: terminal area simulation
Vol VIII 2(2): 35-56 (GPS Ltd)

Nuthampstead: airport layout
Vol VII 2: 9.15, 9.20 (CTLA)

Nuthampstead: amenity
Vol IX: p 64 (Inter-Diocesan Working Party)

Nuthampstead: construction costs
+Stage III Bucks CC (Vol 2) 4/7-4/8
Cambs & Isle of Ely, Essex & Herts CC p 4/7-4/8

Nuthampstead: cost-benefit analysis
Vol VIII 1: III/67-79 (Urb Stud)

Nuthampstead: defence
+Stage III Bucks CC (Vol 2) p 9/2
Cambs & Isle of Ely, Essex & Herts CC p 9/2

Nuthampstead: defence: costs
Vol VII 2: 15.9 (CTLA)

Nuthampstead: employment
+Stage III Cambs and Isle of Ely, Essex and Herts CC, 3/3-5

Nuthampstead: employment: labour resources
Vol VIII 2(3): p 42 (NBA)

Nuthampstead: housing
Vol IX: p 57 (Inter-Diocesan Working Party)
+Stage III Cambs and Isle of Ely, Essex and Herts CC, 3/3-5

Nuthampstead: landscape
Vol IX: p 65 (Inter-Diocesan Working Party)

Nuthampstead: noise
Vol IX: p 59-61 (Inter-Diocesan Working Party)

Nuthampstead: regional planning
Vol IX: p 55 (Inter-Diocesan Working Party)

Printed image digitised by the University of Southampton Library Digitisation Unit

Nuthampstead: services and utilities
Vol VII 2: 7.88-7.92, 7.116 (CTLA)
Vol IX: p 13 (Bedfordshire Water Board)
p 56 (Inter-Diocesan Working Party)

Nuthampstead: sewage
Vol VII 2: 7.88-7.92 (CTLA)

Nuthampstead: site
Vol VIII 2(3): p 66-69, 77, 78 (G Wibberley)
+Stage III Braughing RDC letter

Nuthampstead: social survey
Vol VIII 2(4) (Essex U)

Nuthampstead: soil survey
Vol VII 2: 7.142-7.144 (CTLA)

Nuthampstead: surface access: rail
Vol VIII 2(1): p 83-88 (BR)
Vol IX: p 8 (Mr H C Beddington)
+Stage III National Council on Inland Transport
letter 3.4.1969

Nuthampstead: surface access: road
Vol VIII 2(1): p 173-189 (MOT)
Vol IX: p 10 (Mr H C Beddington)
+Stage III Bucks CC (Vol 2) 6/36
Cambs and Isle of Ely, Essex & Herts CC
6/36

Nuthampstead: surface access: tracked hovercraft
+Stage III Tracked Hovercraft Ltd p 11, 16

Nuthampstead: urbanisation studies
Vol VIII 1: III

Nuthampstead see also under main subject headings

Nuthampstead Preservation Association: evidence
Vol IX: p 93-106

Occupation see Employment

O'Hare Airport see Chicago: O'Hare Airport

Oil see Fuel

Omnidirectional airports see Airports: omnidirectional

Ongar and Epping Rural District Council
+Stage I Essex & Herts CC Submission 2

Organisations: social survey
Vol VIII 2(4): p 5, 59-74 (Essex U)

Origin and destination see Air traffic: freight;
Air traffic: passenger

Printed image digitised by the University of Southampton Library Digitisation Unit

Orly Airport see Paris: airports

Ornithology see Birds

Outdoor activities see Gliding; Recreation

Oxfordshire County Council: evidence
Vol IX: p 107

PLA see Port of London Authority

Paris: airports
Vol I: Q 153, 194 (BAA)

Passenger traffic see Air traffic: passenger

Pavements: floating see Seadrome: proposed scheme

Planning see Local planning; Regional planning; Urbanisation

Political organisations: social survey
Vol VIII 2(4): p 61-62 (Essex U)

Pollution see Air pollution; Sewage

Population
Vol I: Q 268-301 (SEJPT)
Q 309, 337 (T&CPA)
Q 386-389 (Stand Conf LSERP)
Vol VIII 1: II/25, 31, 46-51; III/21, 30, 47-52; IV/21, 49, 65; V/21, 45-48 (Urb Stud)
2(4): p 2, 5 (Essex U)
+Stage III Cambs & Isle of Ely, Essex & Herts CC p 2/12-2/17
Stand Conf LSERP p 6, 10-11
TEBCO Report 3, p 21

Population: displacement
+Stage III TEDCO Report 5, p 18-20

Population: effect of third London airport
Vol I: Q 255-258, 271 (SEJPT)
Q 173-284 (BAA)
Q 325-326 (T&CPA)
Q 360 (Stand Conf LSERP)
Q 420-422, 426-430 (SEEPC)
Vol II: p 17-26 (BAA)
p 58 (Kent CC)
Vol VIII 1: I/11-14; II/31, 46, 64; III/30, 47-52; IV/49, 65; V/45-48, 61; VI/1-6 (Urb Stud)

Printed image digitised by the University of Southampton Library Digitisation Unit

Port of London Authority (PLA)
Vol II: p 106-108
+Stage III TEDCO Report 3, p 2

Ports see Docks

Price assumptions see Cost-benefit analysis: general principles

Private airfields see Airfields: private; Gliding

Property values
Vol I: p 201-205 (NAS)
Vol VII 1: 93-99 (CTLA)
2: 20.1-20.43 (CTLA)

Property values: Heathrow
Vol I: Q 672-696 (NAS)

Property values: Kensington and Chelsea
Vol I: Q 531-554 (BAA)

Property values: Los Angeles
Vol I: Q 796-806 (Community Plans Inc, LA)

Property values: rents
Vol VIII 1: I/33-34, II/79-81, III/78-79, IV/74, V/70, VI/24-27 (Urb Studs)

see also Housing

Public bodies: social survey
Vol VIII 2(4): p 61 (Essex U)

Public buildings: costs
Vol VII 2: 21.29-21.33 (CTLA)

see also Churches; Hospitals: Schools

Putney Society: evidence
Vol I: Q 595 p 174

RAE see Royal Aircraft Establishment, Bedford

Radar see Navigational aids

Rail see Surface access: rail

Ramblers' Association: evidence
Vol IX: p 108

Rateable values: industry and commerce
+Stage III: Stand Conf LSERP, p 7-9

Rating appeals
Vol I: Q 531-540 (BACAN)

Rayleigh Urban District Council
+Stage III Cambs and Isle of Ely, Essex and Herts CC Submission

Printed image digitised by the University of Southampton Library Digitisation Unit

Reclamation see Land: reclamation

Recreation
Vol I: Q 362-368, 396-399 (Stand Conf LSERP)
Vol II: p 59 (Kent CC)
Vol VIII 1: VI/24 (Urb Studs)
Vol IX: p 90 (NFU)
+Stage III Cambs & Isle of Ely, Essex & Herts CC p 7/16-7/17, 24-25

Recreation: costs
Vol VII 2: 24.8-24.10, 24.21, 24.23-24.24, 24.28-24.29 (CTLA)

Recreation: proposed research methodology
Vol VII 1: 100-107 (CTLA)

See also Amenity; Gliding; Walking

Recreational associations: social survey
Vol VIII 2(4): p 65 (Essex U)

Regional airports see Airports: regional

Regional Local Authorities, Standing Conference of
Vol I: Q234 (BAA)

Regional planning
Vol I: Q 244-306 p 86-88 (SEJPT)
Q 307-357 p 93-100 (T&CPA)
Q 358-405 p 75-85 (Stand Conf LSERP)
Q 406-437 p 89-92 (SEEPC)
p 147 (Dorking and Horley RDC)
Vol II: p 49 (East Anglia Consultative Comm)
p 50 (" " Econ Planning Comm)
Vol VII 2: 26.1-26.18 (CTLA)
Vol VIII 1: I/4 (Urb Studs)
Vol IX: p 109-131 (Regional Studs Org E Anglia Group)
+Stage I Clark & Ptnrs p 15
Essex & Herts CC Submission 2, p 8, 2/1-2/8, 11/4-11/8
NAS p 26-29, 59-60
Thames Aeroport Study Group p 6
+Stage III Cambs & Isle of Ely, Essex & Herts CC p 2/8-2/10
Stand Conf LSERP p 1-17
TEDCO Report 3, p 6-7

Regional planning: controls
Vol I: Q 327 (T&CPA)

Regional planning: East Midlands
Vol IX: p 35-36 (Economic Planning Council, E Midlands)

Printed image digitised by the University of Southampton Library Digitisation Unit

Regional planning: efects of third London airport
Vol I: Q 172-188, 234-235 (BAA)
Q 246 (SEJPT)
Q 355-357 p 96-98, 99-100 (T&CPA)
Q 360-362 p 76-80, 82-83 (Stand Conf on LSERP)
p 91 (SEEPC)
Vol IX: p 17 (BAA)
p 55-56 (Inter-Diocesan Working Party)
p 69-71 (Luton CBC)
p 87-91 (NFU)
p 119-126 (Regional Studs Assn E Anglia Group)
p 133 (RIBA)
p 152-154 (WARA)
+Stage I TEDCO Report 2, p 10

Regional planning: housing
Vol I: Q 760-788 (LAANC)

Regional planning: proposed research methodology
Vol VII 1: 73-75 (CTLA)

Regional planning: South-east
Vol I: Q247-253, 262 p 86-87 (SEJPT)
Q 309, 327-345, 356-357 p 96-98 (T&CPA)
Q 359-367, 374-375 p 79-80, 83-85 (Stand Conf on LSERP)
Q 407-437 SEEPC)
Vol II: p 85-90 (MHLG)

Regional planning: West Midlands
Vol IX: p 37 (Economic Planning Council, W. Midlands)

Regional planning: Yorkshire and Humberside
Vol IX: p 38 (Economic Planning Council, Yorks and Humberside Region)

see also Local planning; Urbanisation

Regional Studies Association, East Anglia Group: evidence
Vol IX: p 109-131

Relationships: social survey
Vol VIII 2(4): p 5, 29-58 (Essex U)

Relief see Land: topography

Religious organisations: social survey
Vol VIII 2(4): p 63 (Essex U)

Rents see Income; Property values

Rescue see Air safety

Printed image digitised by the University of Southampton Library Digitisation Unit

Research establishments see Scientific establishments

Research methodology see Methodology

Residence: social survey
Vol VIII 2(4): p 9-21 (Essex U)

Residential property see Housing; Property values

Revenue see Airport revenue; Landing fees

Ringway see Manchester Airport

River Thames Society
Vol I: Q 595

Roads see Surface access: roads; Noise: road traffic

Roissy Airport see Paris: airports
Royal Air Force see Defence
Royal Aircraft Establishment, Bedford (RAE)
Vol IX: p 76-81 (Mintech)
+Stage III Bucks CC (Vol 2) 11/5
Cambs & Isle of Ely, Essex & Herts CC 11/5

Royal Dutch/Shell Group
+Stage III Letter from Mr. McFadzean

Royal Institute of British Architects (RIBA): evidence
Vol IX: p 132-136

Runways
Vol VII 2: 7.35-7.39, 7.56-7.64 (CTLA)

Runways: capacity
Vol VII 2: 3.22-3.64, 28.4-28.7 (CTLA)

Runways: cross wind
Vol I: Q 60, 141-148, 153 (BAA)

Runways: number required
Vol I: Q 92-94 (BAA)
Q 137-148, 153-160, 166 p 7-8, 11 (BAA)
Q 315, 322-325, 339-348 p 93-94, 98-99 (T&CPA)
Q 383-385 (Stand Conf on LSERP)
Q 450-470, 512-516 (BACAN)
Q 739-742 (NAS)
Q 1024-1025, 1038-1043 (NATCS)
Vol II: p 70-72 (London Gliding Club)

Runways: orientation/alignment
Vol I: Q 36-39, 56-60, 141-160 p 8 (BAA)
Q 940 (NATCS)
Vol VII 2: 3.24 (CTLA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Runways: orientation/alignment: United States
Vol I: Q 967 (NATCS)

Runways: seadrome scheme
+Stage III: Shell (UK) Ltd

see also Airport layout

SBR see Movements: air traffic: standard busy rate

SCR see Movements: air traffic: sustained capacity rate

SEEPC see South East Economic Planning Council

SEJPT see South East Joint Planning Team

STOL see Short take off and landing

Safety see Air safety

Saffron Walden Borough Council
+Stage I Essex and Herts CC Submission 2
+Stage III Cambs & Isle of Ely, Essex & Herts Submission

Saffron Walden Rural District Council
+Stage I Essex and Herts CC Submission 2
+Stage III Cambs & Isle of Ely, Essex & Herts Submission

St. Albans Rural District Council
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Sampling: social survey
Vol VIII 2(4): p 95-96 (Essex U)

Sand and gravel
Vol VIII 1: II/19, III/17, IV/19, V/19 (Urb Studs)

see also Land: geology

Sawbridgeworth Urban District Council
+Stage I Essex & Herts CC Submission 2
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Schools
Vol IX: p 57-63 (Inter-Diocesan Working Party)
+Stage III Bucks CC (Vol 2) 8/4-5
Cambs & Isle of Ely, Essex & Herts CC 8/4-5, 13/1-3

Schools: costs
Vol VII 2: 21.1-21.17 (CTLA)

Science Research Council: evidence
Vol IX: p 137-138

Scientific establishments: costs
Vol VII 2: 16.1-16.5, 23.11-23.12 (CTLA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Scottish Advisory Committee for Civil Aviation
Vol II: p 109
Scottish Economic Planning Council
Vol II: p 110-112
Scottish National Party
Vol II: p 113-123
Sea defences see Water: sea defences

Seadrome: proposed scheme
+Stage III Shell UK Ltd

Seaport see Airport/seaport

Sectorisation see Airports: sectorisation

Sequencing see Air traffic control: sequencing

Services and utilities
Vol I: Q 185-193 p 25-28 (BAA)
Q 303-304 (SEJPT)
Vol VIII 1: II/19, 28, 58; III/17, 25, 57-58; IV/19; V/19 (Urb Studs)
Vol IX: p 56-57 (Inter-Diocesan Working Party)
p 90 (NFU)
p 95 (Nuthampstead Preservation Assn)
+Stage I Clark & Ptnrs p 17-18
Essex & Herts CC Submission 2 p 9, 5/1-5/4
NAS p 61
TEDCO Report 1A, p 8
TEDCO Report 2, p 21-23
Thames Aeroport Study Group p 10-11
+Stage III Bucks CC (Vol 2) 5/1-5/8
Cambs & Isle of Ely, Essex & Herts CC p 2/18-2/20, 5/1-5/8
Stand Conf LSERP p 5, 13
TEDCO Report 3, p 19

Services and utilities: costs
Vol VII 2: 7.16-7.17, 7.67-7.133 (CTLA)

Sewage
Vol VIII 1: II/58, III/59, IV/59, V/53-54 (Urb Studs)
+Stage I Essex & Herts CC Submission 2 p 5/3-5/4
TEDCO Report 2, p 23
Thames Aeroport Study Group p 11
+Stage III Bucks CC (Vol 2) 5/5
Cambs & Isle of Ely, Essex & Herts CC p 5/5

Sewage: costs
Vol VII 2: 7.78-7.97 (CTLA)

Sex: social survey
Vol VIII 2(4): p 7 (Essex U)

Printed image digitised by the University of Southampton Library Digitisation Unit

Shankland, Cox and Associates
Vol VIII 1 (Urbanisation Studies)

Shaw, Archibald & Partners
+Stage III Shell UK Limited Submission

Shell Group/Royal Dutch
+Stage III Letter from Mr McFadzean

Shell UK Ltd
+Stage III Seadrome submission
TEDCO Report 3, p 2

Sheppey
+Stage I Essex & Herts CC Submission 2, p 14-16, 2/7, 3/16-3/17, 4/6-4/7, 6/4, 7/13, 9/3-9/4

Sheppey Group: evidence
Vol II: p 124
Vol IX: p 139-40
Sheppey Terminal
+Stage III Waters & Boisot, p 8-9

Shoeburyness see Foulness: defence

Shopping: social survey
Vol VIII 2(4): p 27, 29 (Essex U)

Short list: publication
Vol I: Q1

Short take off and landing (STOL)
Vol I: Q 161 p 20-23 (BAA)
Vol VIII 2(1): p 14 (NATCS)
p 29 (BOT)

Silverstone
+Stage I Essex & Herts CC Submission 2, p 17-20, 2/7, 3/17-3/18, 4/7-4/8, 6/4-6/5, 7/14-7/15, 9/3

Simons, N E
+Stage I: TEDCO Report 2, Appendix B

Site search
Vol I: Q 120, 193-195 p 4-6 (BAA)
Q 246, 259-304 (SEJPT)
Q 309-314, 328, 357 (T&CPA)
Q 369-382 (Stand Conf on LSERP)
Q 409-437 (SEEPC)
Q 460-480 (BACAN)
p 159-161 (KACAN)
Vol II: p 1 (Mr O D Bennett)
p 27-29 (BAA)
p 32-34 (Brit Gliding Assn)
p 49 (East Anglia Consultative Comm)
p 50 (" " Econ Planning Coun)

Printed image digitised by the University of Southampton Library Digitisation Unit

Site search (contd)
Vol II: p51-52 (East Midlands Airport Joint Comm)
p 56-59 (Kent CC)
p 60-63 (London Chamber of Commerce)
p 65-66, 68 (London Gliding Club)
p 97-101 (NW Essex and E Herts Pres Assn)
p 110-112 (SEPC)
p 113-123 (SNP)
p 124 (Sheppey Group)

Site search: accessibility
Vol I: p 4-5 (BAA)
Vol II: p 39-40 (CBI)
p 110 (SEPC)

Site search: air traffic control
Vol I: Q 1017-1023 p 336 (NATCS)

Site search: BAA's statement
Vol I: Q 233 (BAA)

Site search: coastal
Vol I: Q 221-222, 226-232 p 4-5 (BAA)
Q 378 (Stand Conf on LSERP)
Q 460-463, p 143-144 (BACAN)
p 92 (SEEPC)
p 97-98 (T&CPA)
p 148, 150 (Dorking & Horley RDC)
p 156-157 (Chelsea & Ken ACAN)
p 195-196 (UKFAAN)
p 200 (NAS)
Vol II: p 37 (Bucks CC)
p 105 (Northants CC)

Site search: Commission's statement
Vol I: Q1 (CTLA Chairman)

Site search: criteria
Vol I: Q 246 (SEJPT)
p 2-4, 9-10 (BAA)
Vol II: p 27-29 (BAA)
p 9-10 (Lord Bledisloe)
p 30-31 (BEA)
p 35 (BOAC)
p 36 (BTA)
p 97-98 (NW Essex & E Herts Pres Assn)
p 109 (Scottish Advisory Comm for Civil Aviation)
+Stage I BUA p 1
Hampstead Assn for Aircraft Noise Control p 3
NAS p 2
+Stage III Cambs & Isle of Ely, Essex & Herts CC p 2/7-2/22
Stand Conf LSERP p 5-6

Site search: inland
Vol I: Q 128-133, 221 p 4-5 (BAA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Sites
Vol IX: p 42-44 (C B Edwards)
p 109-126 (Regional Studies Association, East Anglia Group)
p 144 (TGWU)
+Stage I Clark & Ptnrs p 19
Essex & Herts CC Submission 1
Essex & Herts CC Submission 2 p 2/2-2/8
NAS p 12-16
+Stage III Cambs & Isle of Ely, Essex & Herts CC p 2/3-2/7
Braughing RDC letter
Stand Conf LSERP p 3, 6-17
TEDCO Report 5 p 12-26

Sites: airspace factors
Vol VIII 2(2) (GPS Ltd)

Sites: coastal
Vol IX: p 2-7 (Air Safety Group)
+Stage I TEDCO Report 1, 1A & 2
+Stage III TEDCO Report 3, 4 & 5

Sites: economic effects
Vol IX: p 116-20 (Regional Studies Association, East Anglia Group)

Sites: local opinion: social survey
Vol VIII 2(4): p 6, 75-84 (Essex U)

Sites of special scientific interest
Vol VII 2: 24.20, 24.27 (CTLA)

Snow see Meteorology

Snow, Sir Frederick & Partners
+Stage I TEDCO Report 2, Appendix A

Social class: social survey
Vol VIII 2(4): p 24, 25-6, 103 (Essex U)

Social clubs: social survey
Vol VIII 2(4): p 65-6 (Essex U)

Social survey
Vol VIII 2(4) (Essex U)

Societies: social survey
Vol VIII 2(4): p 5, 59-74 (Essex U)

Socio-economic profiles: social survey
Vol VIII 2(4): p 7-29 (Essex U)

Soil see Land: geology

Soundproofing see Noise: soundproofing

Printed image digitised by the University of Southampton Library Digitisation Unit

South Cambs Rural District Council
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

South East Economic Planning Council (SEEPC): evidence
Vol I: Q 406-437 p 89-92

South East Joint Planning Team (SEJPT)
Vol VII 1: 73 (CTLA)
2: 26.13-26.15 (CTLA)

South East Joint Planning Team (SEJPT): establishment
Vol I: Q 390 (Stand Conf LSERP)

South East Joint Planning Team (SEJPT): evidence
Vol I: Q 244-306 p 86-88

South East Joint Planning Team (SEJPT): programme
Vol I: Q 247-253 (SEJPT)

South East Joint Planning Team (SEJPT): terms of reference
Vol I: p 86, 88 (SEJPT)

Southend Airport
+Stage I Clark & Ptnrs p 19
Essex & Herts CC Submission 2 p 13-14, 13/1
Thames Aeroport Study Group p 25
+Stage III TEDCO Report 3, p 53

Southend Airport: movements: air traffic
Vol I: Q 5-6 (BAA)

Southend County Borough
+Stage III TEDCO Report 3, p 2

Southend Jet Aircraft Protest Association
+Stage I submission - evidence on noise

Sports see Gliding; Recreation

Stacking see Air traffic control: stacking

Standard busy rate see Movements: air traffic: standard busy rate

Standing Conference of Regional Local Authorities see Regional Local Authorities, Standing Conference of

Standing Conference on London and South East Regional Planning see London and South East Regional Planning, Standing Conference on

Printed image digitised by the University of Southampton Library Digitisation Unit

Stansted
Vol I: Q 271 (SEJPT)
Q 331 (T&CPA)
Q 414 (SEEPC)
p 4-5 (BAA)
Vol II: p 95-96 (Nat Un Vehicle Builders, E London office)
p 97-101 (NW Essex & E Herts Pres Assn)
p 115-118 (SNP)
+Stage I Essex & Herts CC Submission 2, p 4-5
NAS p 32-36

Stansted: air traffic control
Vol I: Q 975-979, 1004-1010 (NATCS)
+Stage I NAS p 45

Stansted: amenity
+Stage I Essex and Herts CC Submission 2, p 9/4

Stansted: BAA statement
Vol I: Q 3 (BAA)

Stansted: construction costs
+Stage I Essex and Herts CC Submission 2
p 4/8-4/9

Stansted: cost-benefit analysis
+Stage I NAS p 62-73

Stansted: employment
+Stage I Essex and Herts CC Submission 2
p 3/18-3/22

Stansted: housing
+Stage I Essex and Herts CC Submission 2
p 6/5

Stansted: movements: air traffic
Vol I: Q5, 17-20, 61-74, 86, 88 (BAA)

Stansted: new terminal building
Vol I: Q 63-90 (BAA)

Stansted: regional planning
+Stage I NAS p 59-60

Stansted: runways
Vol I: Q 58-60 (BAA)

Stansted: surface access
Vol I: Q 839 (MOT)
Vol II: p 4-8 (Bishop's Stortford Season Ticket Holders Assn)
+Stage I Essex & Herts CC Submission 2
p 7/15-7/16
NAS p 53-56

Printed image digitised by the University of Southampton Library Digitisation Unit

Steel, Mr J D
+Stage III submission

Stevenage Urban District Council
+Stage III Cambs & Isle of Ely, Essex and Herts CC Submission

Subsonic aircraft
Vol I: p 20-23 (BAA)

Supersonic aircraft
Vol I: p 20-23 (BAA)
p 196 (BACAN)
p 207 (LAANC)
p 217 (Local Authorities (Airport) Comm)
Q 102 (BAA)
Vol II: p 122 (SNP)
Vol VIII 2(1): p 14 (NATCS)

Supersonic aircraft: noise
Vol I: Q105 (BAA)
Q 447 (BACAN)

Surface access
Vol I: Q 3, 193-220 (BAA)
Q 283-287, 298-301 (SEJPT)
Q 357 (T&CPA)
Q 362 (Stand Conf LSERP)
Q 409-411, 422-424 (SEEPC)
Q 462-467, 472-480 (BACAN)
Q 806-927 (MOT/GLC)
p 273-306 (MOT)
Vol II: p 40-41 (CBI)
p 57-58 (Kent CC)
Vol VII 2: 13.1-13.64 (CTLA)
Vol VIII 1: II/15, 53-57; III/11, 55-57; IV/11; V/13; VI/27-29 (Urb Studs)
2(1): p 29 (BOT)
Vol IX: p 87-88, 90 (NFU)
p 98-100 (Nuthampstead Pres Assn)
p 134 (RIBA)
p 152 (WARA)
+Stage I Clark & Ptnrs p 10-14
Essex & Herts CC Submission 2, p 9-11, 7/1-7/23
NAS p 17-20, 51-56
TEDCO Report 1A, p 4-7
TEDCO Report 2, p 25-32, 49-56
Thames Aeroport Study Group p 14-18, 11/20-11/25
+Stage III Bucks CC (Vol 2) p 6/1-6/12
Cambs & Isle of Ely, Essex & Herts CC p 2/8-2/10, 6/1-6/12
National Council on Inland Transport letter 3.4.1969
Stand Conf LSERP p 5
TEDCO Report 3, p 23-32
TEDCO Report 5, p 29
Waters & Boisot p 3, 5-8

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface access: attracted traffic
Vol VII 2: 13.11-13.24 (CTLA)

Surface access: cost-benefit analysis
+Stage I NAS p 65-68

Surface access: costs
Vol I: p 277-280, 283 (MOT)

Surface access: gravity model
Vol VII 2: 13.1-13.27 (CTLA)

Surface access: hovercraft: tracked hovercraft
Vol VIII 2(3): p 10-19 (Livesey & Henderson)
+Stage III Tracked Hovercraft Ltd

Surface access: hovertrain
Vol I: Q 637-641 (UKFAAN)
Q 909 (GLC)
p 304 (MOT)
Vol VIII 2(3): p 1-19 (Livesey & Henderson)

Surface access: hovertrain: Aerotrain
Vol VIII 2(3): p 7-10, 14, 19 (Livesey & Henderson)

Surface access: hovertrain: Urbatrain
Vol VIII 2(3): p 6-7, 10 (Livesey & Henderson)
+Stage III MBM Powercels Ltd

Surface access: inter-airport communications
Vol IX: p 10 (Mr H C Beddington)

Surface access: modal split
Vol IX: p 156-157 (MOT)

Surface access: proposed research methodology
Vol VII 1: 69-72 (CTLA)

Surface access: rail
Vol I: Q 196-199, 210-220 (BAA)
Q 409-411 (SEEPC)
Q 465-467, 472-480, 518-521 (BACAN)
Q 828-829, 835-838, 846-854, 917 (MOT/GLC)
p 289, 293-295 (MOT)
Vol II: p 75 (London Transport Board)
Vol VII 2: 13.38 (CTLA)
Vol VIII 1: II/57, III/57, IV/59, V/53, VI/28 (Urb Studs)
2(1): p 54-123 (BR)
+Stage I Clark & Ptnrs p 10-14
Essex & Herts CC Submission 2 p 10-11, 7/1-7/11
NAS p 51-54
TEDCO Report 1A, p 5-7
TEDCO Report 2, p 27-29, 30-32, 49-51, 53
Thames Aeroport Study Group p 14-17

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface access: rail (contd)
+Stage III Cambs & Isle of Ely, Essex & Herts CC p 6/25-6/34
National Council on Inland Transport letter 3.4.1969
Stand Conf LSERP p 11
TEDCO Report 3, p 26, 32
TEDCO Report 4, p 18-19, 21-23
TEDCO Report 5, p 16

Surface access: rail: advanced passenger train (APT)
Vol I: Q 28-29 (BAA)
Q 902-908, 912-916 (MOT/GLC)
p 165 (KACAN)
Vol VIII 2(1): p 117-118 (BR)
(3): p 5, 12-19 (Livesey & Henderson)
+Stage I Essex & Herts CC Submission 2, p 7/5-7/6, 7/8-7/11, 7/17-7/21
TEDCO Report 1A, p 5-7
+Stage III Bucks CC (Vol 2) 6/23-6/34
Cambs & Isle of Ely, Essex & Herts CC p 6/23-6/34
TEDCO Report 3, p 27-28

Surface access: rail: costs
Vol I: p 298-299 (MOT)
Vol VII 2: 1361 (CTLA)
+Stage I Essex & Herts CC Submission 2 p 7/16-7/21
TEDCO Report 2, p 64-65

Surface access: rail: monorail
Vol I: Q 196 (BAA)
Q 637 (UKFAAN)
Q 906-908 (MOT/GLC)
p 302-303 (MOT)

Surface access: roads
Vol I: Q 28-29, 196-200 (BAA)
Q 518-521 (BACAN)
Q 637-641 (UKFAAN)
Q 896-916, 924-927 (MOT/GLC)
p 296-304 (MOT)
Vol II: p 74-75 (LTB)
Vol VIII 1: II/27, 57, 64; III/23, 55-57, 63; IV/25, 55, 65; V/25, 51, 61; VI/27-29 (Urb Studs)
2(1): p 127-228 (MOT)
Vol IX: p 11 (Mr H C Beddington)
p 95-98, 105-107 (Nuthampstead Pres Assn)
p 156-162 (MOT)

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface access: roads (contd.)
+Stage I British Road Federation p 1-2
Clark & Ptnrs p 10-14
Essex & Herts Submission 2, p 7/12-7/16
TEDCO Report 1A, p 6
TEDCO Report 2, p 29-32, 49-52
Thames Aeroport Study Group p 17-18
+Stage III Bucks CC (Vol 1) p 6-7 (Vol 2) p 6/13-6/24, 35-37
Cambs & Isle of Ely, Essex & Herts CC p 6/13-6/24, 35-37
Stand Conf LSERP p 10
TEDCO Report 3, p 23-26
TEDCO Report 4, p 17, 19, 21, 23-24
TEDCO Report 5, p 15-16

Surface access: roads: capacity
Vol I: p 289-291 (MOT)

Surface access: roads: costs
Vol I: Q 888-894 p293-295 (MOT)
+Stage I Essex and Herts CC Submission 2, p 7/21-22
TEDCO Report 2, p 65-66

Surface access: roads: development
Vol I: Q 808-854, 917-927 (MOT / GLC)
p 289-292, 303-304 (MOT)

Surface access: roads: planning preliminaries
Vol I: Q 850-854 (MOT/GLC)

Surface access: user costs
Vol VII 2: 11.1-11.28, 13.28-13.37, 13.55-13.58, 13.62-13.64, 25.18-25.21, 25.32-25.34 (CTLA)

Surface access: user costs: Foulness
Vol VII 2: 25.34 (CTLA)

Surface access: user costs: time
Vol VII 1: 19-28 (CTLA)
2: 11.2-11.15 (CTLA)
see also Costs: user costs

Surface access: user estimates
Vol VII 2: 13.41-13.54 (CTLA)

Surface access: user statistics
Vol I: Q 831-832, 883-884 (MOT/GLC)
p 286-288 (MOT)
+Stage I TEDCO Report 2 p 62-3

see also Terminal

Surface drainage see Water: surface drainage

Sustained capacity rate see Movements: air traffic: sustained capacity rate

Printed image digitised by the University of Southampton Library Digitisation Unit

T&CPA see Town and Country Planning Association

TECDA see Thurleigh Emergency Committee for Democratic Action

TEDCO see Thames Estuary Development Co Ltd

TGWU see Transport and General Workers Union

TMA see Terminal area capacity; Terminal area simulation model

Technology, Ministry of: airfields
Vol I: Q 946-950, 958 (NATCS)
Vol VII 2: 16.2-16.3 (CTLA)
Vol IX: p 154 (WARA)

Technology, Ministry of: evidence
Vol IX: p 76-81

Telecommunications
+Stage I TEDCO Report 2 p 23

Telecommunications: costs
Vol VII 2: 7.124 (CTLA)

Terminal: air terminal
+Stage I Essex & Herts CC Submission 2, p 7/8
TEDCO Report 1A, p 5-6
Thames Aeroport Study Group p 28-29

Terminal: town terminal
Vol I: Q 200-209 (BAA)
Q 518-521 (BACAN)
Q 824, 896-900 (MOT/GLC)
p 281-283 (MOT)
p 157 (Chel. & Ken ACAN)
Vol II: p 7-8 (Bishop's Stortford Season Ticket Holders Assn)
Vol VII 2: 13.38 (CTLA)
Vol VIII 2(1): p 111-114, 121-123 (BR)
Vol IX: p 8-10 (Mr H C Beddington)
p 100-102 (Nuthampstead Pres Assn)
+Stage III Bucks CC (Vol 2) p 6/1-6/5, 6/10-6/12, 6/25-6/26
Cambs & Isle of Ely, Essex & Herts CC p 6/1-6/5, 6/10-6/12, 6/25-6/26
TEDCO Report 3, p 32
Tracked Hovercraft Ltd p 10
Waters & Boisot p 7-8

see also Surface access

Terminal area capacity (TMA)
Vol VIII 2(2): 162-165 (GPS Ltd)

Printed image digitised by the University of Southampton Library Digitisation Unit

Terminal area simulation model (TMA): air route structure
Vol VIII 2(2): 10-11, 15, 23 (GPS Ltd)

Terminal area simulation mode (TMA): analysis of results
Vol VIII 2(2): 17-20 (GPS Ltd)

Terminal area simulation model (TMA): complexity index
Vol VIII 2(2): 166-167 (GPS Ltd)

Terminal area simulation model (TMA): data
Vol VIII 2(2): 8-22 (GPS Ltd)

Terminal area simulation model (TMA): description
Vol VIII 2(2): 12-22 (GPS Ltd)

Terminal area simulation model (TMA): presentation of results
Vol VIII 2(2): 23-25 (GPS Ltd)

Terminal area simulation mode (TMA): simulations of the short-list sites
Vol VIII 2(2): 35-56 (GPS Ltd)

Terms of reference: Commission
Vol I: Q1 (CTLA)

Thames Aeroport Study Group
+Stage I submission

Thames Estuary Development Co. Ltd (TEDCO)
Vol I: Q 433

Thames Estuary Development Co. Ltd (TEDCO)
+Stage I submission Reports 1, 1A and 2

Thames Estuary Development Co. Ltd (TEDCO)
+Stage III submission Reports 3, 4 and 5

Thames Estuary Development Co. Ltd (TEDCO): consortium
+Stage III TEDCO Report 3, p 2

Thamesmead
Vol I: Q 925 (MOT)

Thurleigh
Vol VI: Local hearing (see separate index)

Thurleigh
+Stage III Stand Conf LSERP, p 9

Thurleigh: agriculture
Vol IX: p 84-5, 87 (NFU)

Printed image digitised by the University of Southampton Library Digitisation Unit

Thurleigh: agriculture (contd)
+Stage III Cambs & Isle of Ely, Essex & Herts CC, 12/7-8, 12/13, 12/18, 12/22

Thurleigh: air traffic control: terminal area simulation (TMA)
Vol VIII 2(2): 35-56 (GPS Ltd)

Thurleigh: airport layout
Vol VII 2: 9.17, 9.22 (CTLA)

Thurleigh: construction costs
+Stage III Bucks CC (Vol 2) 4/9
Cambs & Isle of Ely, Essex & Herts CC 4/9

Thurleigh: cost-benefit analysis
Vol VIII 1: V/63-70 (Urb Studs)

Thurleigh: defence
+Stage III Bucks CC (Vol 2) 9/3
Cambs & Isle of Ely, Essex & Herts CC 9/3

Thurleigh: defence: costs
Vol VII 2: 15.10 (CTLA)

Thurleigh: employment
+Stage III Cambs & Isle of Ely, Essex & Herts CC 3/6-7

Thurleigh: employment: labour resources
Vol VIII 2(3): p 41-2 (NBA)

Thurleigh: housing
+Stage III Cambs & Isle of Ely, Essex & Herts CC 3/6-7

Thurleigh: noise
Vol IX: p 57-59 (Inter-Diocesan Working Party)

Thurleigh: regional planning
Vol IX: p 55 (Inter-Diocesan Working Party)

Thurleigh: services and utilities
Vol VII 2: 7.93-7.96, 7.116 (CTLA)
Vol IX: p 14 (Beds Water Board)

Thurleigh: sewage
Vol VII 2: 7.93-7.96 (CTLA)

Thurleigh: site
Vol VIII 2(3): p 72-77, 80 (G Wibberley)
Vol IX: p 141 (TECDA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Thurleigh: social survey
Vol VIII 2(4) (Essex U)

Thurleigh: soil survey
Vol VII 2: 7.145-7.147 (CTLA)

Thurleigh: surface access: rail
Vol VIII 2(1): p 103-109 (BR)

Thurleigh: surface access: road
Vol VIII 2(1): p 191-209 (MOT)

Thurleigh: surface access: road
+Stage III Bucks CC (Vol 2) 6/37
Cambs & Isle of Ely, Essex & Herts CC 6/37

Thurleigh: surface access: tracked hovercraft
+Stage III Tracked Hovercraft Ltd, p 11, 17

Thurleigh: urbanisation studies
Vol VIII 1: V

Thurleigh see also under main subject headings

see also Royal Aircraft Establishment, Bedford

Thurleigh Emergency Committee for Democratic Action (TECDA): evidence
Vol IX: p 141

Timing of the need
Vol I: Q 2, 4, 92, 234 p 2 (BAA)
Vol II: p 38 (CBI)
p 62-63 (Exec Comm of the Air Transport Section of the London Chamber of Commerce)
p 64-65 (London Gliding Club)
Vol VIII 2(1): p 18-19 (NATCS)
Vol IX: p 93-94 (NPA)
p 109-126 (Regional Planning Assn East Anglia Group)
p 150-151 (WARA)
+Stage I Clark & Ptnrs p 5-7
Essex & Herts CC Submission 2 p 8, 1/1-1/10
Hampstead Assn for Aircraft Noise Control p 1
TEDCO Report 2 p 4-9
Thames Aeroport Study Group p 5
+Stage III Bucks CC (Vol 2) p 1/4-1/5
Cambs & Isle of Ely, Essex & Herts CC p 1/1-1/5
TEDCO Report 3 p 4-5

Printed image digitised by the University of Southampton Library Digitisation Unit

Timing of the need: costs and benefits
Vol VII 2: 28.1-28.85 (CTLA)

Timing of the need: proposed research methodology
Vol VII 1: 48-60 (CTLA)

Topography see Land: topography

Toronto Airport
Vol I: Q 606 (UKFAAN)

Town and Country planning see Local planning; Regional planning; Urbanisation

Town and Country Planning Association (T&CPA): evidence
Vol I: Q 307-357 p 93-100

Town terminal see Terminal: town terminal

Tracked hovercraft see Hovercraft: tracked hovercraft

Tracked Hovercraft Ltd
+Stage III submission

Trade, Board of (BOT): evidence
Vol II: p 11-16, 125-128
Vol VIII 2(1): p 1-4, 25-43
/Stage III Origin and destination survey, available from HMSO

Traffic forecasts see Air traffic; Surface access

Training flights see Movements: air traffic: training flights

Transport see Surface access
Transport, Ministry of (MOT)
Vol I: Q 806-927 p 273-306
Vol VIII 2(1): Study 7, p 127-228
Vol IX: p 156-162

Transport and General Workers' Union, Civil Aviation Section: evidence
Vol IX: p 142-145

Travellers' time see Costs: user costs

Trotter, Mr R
+Stage III submission

UKFAAN see United Kingdom Federation Against Aircraft Nuisance

/ BOT publication available from HMSO

Printed image digitised by the University of Southampton Library Digitisation Unit

United Kingdom Federation Against Aircraft Nuisance (UKFAAN)
Vol I: Q 592-649 p 175-196

United States: air traffic control
Vol I: Q 963-967, p 338 (NATCS)

Urbanisation
Vol I: Q 267, 288 (SEJPT)
Q 368-382, 386-389 (Stand Conf on LSERP)
Vol VII 2: 25.1-25.36 (CTLA)
Vol VIII 1: II/17, 21, 25, 28, 52-53, 60-62, 64;
III/11, 17-20, 21, 25, 52-55, 60-62, 63;
IV/ 13, 21-25, 53, 61-62, 65;
V/13, 21-25, 51, 57-58, 61;
VI/4-7, 29-31 (Urb Studs)
Vol IX: p 90 (NFU)
p 133-134 (RIBA)
+Stage I Essex and Herts CC Submission 2, p 2/4-2/5

Urbanisation: cost-benefit analysis
Vol VII 2: 25.6-25.14 (CTLA)

Urbanisation: costs
Vol VII 2: 25.15-25.36 (CTLA)

Urbanisation: proposed research methodology
Vol VII 1: 76-85 (CTLA)

see also Local planning; Regional planning

Urbanisation studies
Vol VIII 1: II Foulness; III Nuthampstead; IV Cublington; V Thurleigh

Urbanisation studies: cost-benefit analysis
Vol VIII 1: I/25-35, II/68-80, III/67-79, IV/67-77, V/63-70

Urbanisation studies: methodology
Vol VIII 1: I, II/31-42, III/30-45, IV/31-44, V/31-45

Urbatrain see Surface access: hovertrain: urbatrain

User costs see Costs: user costs

Utilities see Services and utilities

VTOL see Vertical take off and landing

Value of time see Costs: user costs

Printed image digitised by the University of Southampton Library Digitisation Unit

Value to the nation
Vol VII 1: 58-60 (CTLA)
2: 5.1-5.16 (CTLA)

Vertical take off and landing (VTOL)
Vol I: Q161 p 20-23 (BAA)
p 71 (London Gliding Club)
Vol VIII 2(1): p 14 (NATCS)
p 29 (BOT)

Vertical take off and landing (VTOL): noise
Vol I: Q 162 (BAA)
Vol II: p 16 (BOT)

Visibility see Meteorology

WARA see Wing Airport Resistance Association

Walking: recreation
Vol IX: p 108 (Ramblers' Association)

Ware Rural District Council
+Stage I Essex & Herts CC Submission 2
+Stage III Cambs & Isle of Ely, Essex & Herts CC submission

Ware Urban District Council
+Stage III Cambs & Isle of Ely, Essex & Herts CC Submission

Washington: Dulles Airport
Vol I: Q 3 (BAA)

Washington: National Airport
Vol I: Q 193-194 (BAA)

Water: flooding
Vol VII 2: 7.21-7.22 (CTLA)
+Stage I Clarke and Ptnrs p 15

Water: sea defences
Vol VIII 1: II/11, 63 (Urb Studs)

Water: supply
Vol VIII 1: II/58 (Urb Studs)
Vol IX: p 13-14 (Beds Water Board)
p 146-148 (Water Resources Board)
+Stage I Clark & Ptnrs p 18
Essex & Herts CC Submission 2 p 5/2-5/3
NAS p 61
TEDCO Report 2 p 21-22
Thames Aeroport Study Group p 10

Printed image digitised by the University of Southampton Library Digitisation Unit

Water: supply (contd)
+Stage III Bucks CC (Vol 2) 5/3-5/4
Cambs & Isle of Ely, Essex & Herts CC
p 5/3-5/4

Water: supply: costs
Vol VII 2: 7.72-7.77 (CTLA)

Water: surface drainage
Vol VII 2: 7.98-7.109 (CTLA)
Vol VIII 1: II/13, 60; III/7, 59; IV/9, 59;
V/11, 55-56 (Urb Studs)
+Stage III Bucks CC (Vol 2) 5/5-5/6
Cambs & Isle of Ely, Essex & Herts CC
5/5-5/6

Water Resources Board: evidence
Vol IX: p 146-148

Waters, Brian
+Stage III submission

Weather see Meteorology

Welfare associations: social survey
Vol VIII 2(4): p 64 (Essex U)

Welwyn Garden City Urban District Council
+Stage III Cambs & Isle of Ely, Essex & Herts CC
Submission

Welwyn Rural District Council
+Stage III Cambs & Isle of Ely, Essex & Herts CC
Submission

West Midlands Region Economic Planning Council see
Economic Planning Council, West Midlands Region

Wibberley, Gerald
Vol VIII 2(3): Study 3 p 45-97

Wildfowl see Birds

Wildlife conservation see Conservation

Wilson Report (Noise: Final report) - quoted
extensively throughout

Wimbledon: John Evelyn Society
Vol I: Q 595

Wind see Meteorology

Wing see Cublington

Printed image digitised by the University of Southampton Library Digitisation Unit

Wing Airport Resistance Association (WARA)
Vol IX: p 149-155

Work see Employment

Work places: social survey
Vol VIII 2(4): p 27, 28, 60-61 (Essex U)

Yorkshire and Humberside Region Economic Planning Council see Economic Planning Council, Yorkshire and Humberside Region.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

INDEXES

to

Papers and Proceedings

Volumes III, IV, V, VI

Stage II Local hearings

Note: Indexes do not include Stage II Written evidence published on *Microfilm supplement* Reels 1, 2 and 3

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

AONB see Land: landscape

APT see Surface access: rail: advanced passenger train

ATC see Air traffic control

AUD (Associated urban development) see Urbanisation

Action Committee against Foulness: evidence
p 137-148 Q 1672-1675

Advanced passenger train see Surface access: rail: advanced passenger train

Aerodromes see Airfields; Airports; Defence

Agriculture
p 15, 41-44, 272 Q 825-937 (Essex CC)
p 113 (Paglesham PC)
Q 1471-1472 (Clacton UDC)
p 129-130 Q 1642-1646 (Foulness Is Residents' Comm)
p 141-142 (Action Comm against Foulness)
Q 1944-1945 (Southend & District Chamber of Trade and Industry)
p 203-211, 472-474 Q 2242-2244, 2254-2303 (NFU)
p 214-216, 477-479 Q 2306-2316 (CLA)

Agriculture: land classification
Q 838-840, 846-851 (Essex CC)
see also Horticulture; Livestock

Air pollution
p 44 (Essex CC)
p 45 (Chatham BC)
p 142-143 (Action Comm against Foulness)
p 190 (Sheppey Group)

Air route structure see Air traffic control: air route structure

Air safety
p 29, 272 Q 452-457, 580-581 (Essex CC)
p 351 (Southend CBC)
p 148 (Action Comm against Foulness)
p 171-172, 177 Q 2023-2026 (Sheppey Group)
p 259, 520 Q 2746-2747 (Clark & Ptnrs)

Printed image digitised by the University of Southampton Library Digitisation Unit

Air safety: birdstrike
p 49-58, 272 Q 938-1126 (Essex CC)
p 98-99 (J S Orchard)
p 190 (Sheppey Group)
p 225-226 (Nature Conservancy)
p 230-233, 237-238 (RSPB)

Air traffic: interchange links
Q 556-566, 606-608 (Essex CC)
p 84 Q 1277-1278 (Southend CBC)
Q 2141-2147 (NAS)
p 253 (M King)

Air traffic: passenger
p 82 Q 1314-1315 (Southend CBC)

Air traffic control (ATC)
p 27-29 Q 391-610 (Essex CC)
p 195-196 (NAS)

Air traffic control (ATC): air route structure
p 27-28 Q 406-416, 436-444, 497-498, 537, 576-579 (Essex CC)
p 148 (Action Comm against Foulness)

Air traffic control (ATC): stacking
Q 458-478, 489-492, 500-501, 538-552, 583-593 (Essex CC)
p 34-35, 322 (B Braine, MP)
p 84 Q 1290 (Southend CBC)
p 98 Q 1399-1405 (J S Orchard)
p 149 (Clacton UDC)
p 118 Q 1487-1490 (Tendring RDC)
p 119 (Witham UDC)
Q 1619-1625 (Maldon BC)
Q 2636-2642 (TEDCO)

Air traffic control (ATC): take off and landing
p 28 Q 392-393, 479-488, 493-497, 518-536, 594-596, 602-605 (Essex CC)
Q 1279-1286 (Southend CBC)
Q 2517-2518, 2629-2634, 2643-2648, 2654-2660, 2662, 2665-2669 (TEDCO)
see also Runways

Aircraft see Helicopters; Jumbo jets; Supersonic aircraft; Vertical take off and landing

Airfields: private
Q 567-570 (Essex CC)
p 126 (Rochester City Council)
see also Airports; Defence

Airline operations
Q 413-416, 428-435, 445-447 (Essex CC)

Written evidence pages 3-259 Oral evidence pages 267-519

Printed image digitised by the University of Southampton Library Digitisation Unit

Airport layout: installations
Q 215-217 (Essex CC)
Q 2542-2552 (TEDCO)
see also Runways

Airports: effects of third London airport
p 177 (Sheppey Group)
see also Airfields; Defence; Southend Airport

Amalgamated Union of Engineering and Foundry Workers: evidence
p 192, 448-449 Q 2103-2109

Amenity
p 15-16 Q 154-161, 341-344 (Essex CC)
p 21 (Basildon UDC)
p 22 (Benfleet UDC)
p 67 Q 1222-1238 (Southend CBC)
p 88 (Kent CC)
p 98 Q 1396-1398 (J S Orchard)
p 103 (Ashingdon PC)
p 113-114 (Paglesham PC)
p 124-125 Q 1626-1629 (Maldon BC)
p 127 (Strood RDC)
p 136 (R Newbery)
p 138 (Action Comm against Foulness)
p 153-154, 411 (Thorpe West Residents' Assn)
p 165 Q 1946-1947 (Southend & District Chamber of Trade and Industry)
p 176-177, 179, 180, 439-440 (Sheppey Group)
p 197-198, 460 Q 2207-2208 (Prof J P Quilliam)
p 462-463 Q 2232-2234 (G Porter)
p 215 Q 2317-2319, 2322 (CLA)
p 218 Q 2374-2378 (CPRE)
p 495 (Miss W M Barron)
p 249, 512 (RIBA)
see also Land; Recreation

Ancient monuments see Historic Buildings

Areas of outstanding natural beauty see Land: landscape

Ashingdon Parish Council: evidence
p 103, 381

Atmospheric pollution see Air pollution

Aviation fuel see Fuel: aviation

Printed image digitised by the University of Southampton Library Digitisation Unit

Barling Magna Parish Council: evidence
p 104-108, 111-115 Q 1406-1442

Barron, Miss W M: evidence
p 495

Basildon Development Corporation: evidence
p 122-123, 400 Q 1586-1618

Basildon Urban District Council: evidence
p 21

Benfleet Urban District Council: evidence
p 22

Birds: conservation
p 56-57, 58, 272 Q 953-958, 1099-1106, 1108-1113 (Essex CC)
p 139-140 (Action Comm against Foulness)
p 189-190, 191, 440 (Sheppey Group)
p216-217, 480 Q 2334-2338 (CLA)
p 219-229 (Nature Conservancy)
p 235-236, 239-242 Q 2398-2464 (RSPB)

Birdstrike see Air safety: birdstrike

Boeing 747 see Jumbo jets

Braine, Bernard, MP: evidence
p 34-35, 321-323 Q 756-770

Bryant, J H: evidence
p 161-162 Q 1919-1920

CLA see Country Landowners' Association

CPRE see Council for the Preservation of Rural England

Canewdon Parish Council: evidence
p 109, 385-386

Chatham Borough Council: evidence
p 45

Clacton Urban District Council: evidence
p 149, 390-391 Q 1471-1478

Clark, Bernard L & Partners: evidence
p 259-260, 519-521 Q 2745-2792

Clarke, D W: evidence
p 496-497 Q 2473-2480

Cockling see Fishing

Commerce see Industry and commerce

Printed image digitised by the University of Southampton Library Digitisation Unit

Commuters
p 12-13 (Essex CC)
p 146, 147 (Action Comm against Foulness)
p 212-213 (NFU)

Concorde see Supersonic aircraft

Conservation: birds
p 56-57, 58, 272 Q 953-958, 1099-1106, 1108-1113 (Essex CC)
p 139-140 (Action Comm against Foulness)
p 189-190, 191, 440 (Sheppey Group)
p 216-217, 480 Q 2334-2338 (CLA)
p 219-229 (Nature Conservancy)
p 235-236, 239-242 Q 2398-2464 (RSPB)

Conservation areas see Land: landscape

Construction
p 8 Q 5-7, 28-30, 37-38, 52-57, 89, 98-105 (Essex CC)
p 181-182 (Sheppey Group)
see also Land: reclamation

Costs
p 196 Q 2153-2154 (NAS)

Costs: land reclamation
Q 2748-2753, 2781-2782 (Clark & Ptnrs)

Costs: surface access
p 8, 269 (Essex CC)
p 144, 145 (Action Comm against Foulness)

Costs: urbanisation
p 17, 269 Q 45, 371-375 (Essex CC)
Q 1410-1417 (Barling Magna PC)
p 146-147, 148 (Action Comm against Foulness)
Q 2736-2739 (Thames Aeroport Group)

Council for the Preservation of Rural England (CPRE): evidence
p 218, 483 Q 2351-2391

Country Landowners' Association (CLA): evidence
p 214-217, 477-480 Q 2304-2350

Deep water terminal see Docks: proposed schemes

Defence
p 28, 41-42, 270 Q 703, 832-834 (Essex CC)
p 177 (Sheppey Group)
p 448 Q 2104 (Amalgamated Union of Engineering and Foundry Workers)
p 259 (Clark & Ptnrs)

Printed image digitised by the University of Southampton Library Digitisation Unit

Docks: proposed schemes
p 3-4 Q 24-26, 218-220 (Essex CC)
p 355 (Southend CBC)
p 155 Q 1690-1825 (PLA)
p 165, 167-168 (Southend & District Chamber of Trade and Industry)
p 459 (Prof J P Quilliam)
Q 2553-2565, 2595-2596 (TEDCO)
p 248 (RIBA)
p 255, 258 Q 2736-2742 (Thames Aeroport Group)
p 259 (Clark & Ptnrs)

Drainage see Sewage; Water

Education see Schools

Electrical inteference
p 188-189 (Sheppey Group)

Electricity
p 5-6 Q 8-14 (Essex CC)
p 67 (Southend CBC)

Ellis, H: evidence
p 498 Q 2481-2484

Employment
p 12-13 (Essex CC)
p 62-63, 65 (Southend CBC)
p 146, 147 (Action Comm against Foulness)
p 164, 165 (Southend & District Chamber of Trade and Industry)
p 192, 448-449 Q 2103-2109 (Amalgamated Union of Engineering and Foundry Workers)
p 212-213 (NFU)
p 497 (D W Clarke)
Q 2759, 2777-2778 (Clarke & Ptnrs)

Employment: effect of third London airport
p 12-13 (Essex CC)
p 146, 147 (Action Comm against Foulness)
p 212 (NFU)
p 497 (D W Clarke)
p 249 (RIBA)

Employment: estimates: third London airport
p 11-12 (Essex CC)
p 82 Q 1314-1315 (Southend CBC)
p 212-213 Q 2239-2240, 2248-2253 (NFU)
p 255 (Thames Aeroport Group)

Environment see Amenity

Essex County Council: evidence
p 3-20, 27-33, 36-44, 49-58, 267-273, 523-525
Q 1-753, 772-1126

Printed image digitised by the University of Southampton Library Digitisation Unit

Essex River Authority: evidence
p 120-121, 393 Q 1492-1585

Europoort
p 166-167 (Southend & District Chamber of Trade and Industry)
p 520 Q 2765-2771, 2790-2792 (Clarke & Ptnrs)

Farming see Agriculture

Fishing
p 272 (Essex CC)
p 113 (Paglesham PC)
Q 1555-1562, 1583 (Essex River Authority)
p 130-131 Q 1664-1665 (Foulness Is Residents' Comm)
p 156-160, 427-429 Q 1832-1850, 1894-1918 (Leigh Shellfish Merchants' Assn)
p 197, 459 Q 2224-2225 (Prof J P Quilliam)
p 215 (CLA)
p 254 Q 2710 (M King)

Flooding see Water: flooding; Water: surface drainage

Fog see Meteorology

Foulness Island Parish Council: evidence
p 110, 386

Foulness Island Residents' Committee: evidence
p 128-134 Q 1636-1665

Francis, G V K: evidence
p 514-515

Fuel: aviation
p 6 (Essex CC)

Gas
p 67 (Southend CBC)

Gravel see Sand and gravel

Health institutions see Hospitals

Helicopters
Q 562-566, 606-608 (Essex CC)
p 196 Q 2141-2147 (NAS)

Historic buildings
p 88-89 (Kent CC)
p 126 (Rochester City Council)
p 215 Q 2317-2319, 2322 (CLA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Holding areas see Air traffic control: stacking

Horticulture
p 43 Q 859-862, 901-905 (Essex CC)
p 203, 204 (NFU)

Hospitals
p 32, 33 (Essex CC)

Housing
p 13-14 Q 221-225, 250-255, 376-381 (Essex CC)
p 62, 68-69 (Southend CBC)
p 146, 147 (Action Comm against Foulness)
p 210, 213 (NFU)
p 249 Q 2676-2690 (RIBA)

IDC see Regional planning: controls

ILS see Instrument Landing System

Industrial development certificates see Regional planning: controls

Industry and commerce
p 17 Q 171-175, 334-339 (Essex CC)
p 59-60, 62-63, 69 Q 1222-1238 (Southend CBC)
Q 1810-1815 (PLA)
p 164, 165, 431 Q 1961-1963 (Southend & District Chamber of Trade and Industry)
p 435 Q 1974-1981 (Tucker Browns Ltd)
p 496-497 (D W Clarke)
Q 2533-2538 (TEDCO)
p 249 (RIBA)
Q 2772-2776 (Clarke & Ptnrs)

Instrument Landing System
Q 394, 417-418 (Essex CC)

Insulation see Noise: soundproofing

Interchange links see Air traffic: interchange links

Jumbo Jets
Q 513-517 (Essex CC)
p 165 (Southend & District Chamber of Trade and Industry)
p 520 Q 2746-2747 (Clark & Ptnrs)

Printed image digitised by the University of Southampton Library Digitisation Unit

Kent County Council: evidence
p 86-93, 369-370 Q 1324-1371

Kent University: evidence
p 234, 490-491 Q 2465-2472

King, M: evidence
p 253-254, 515 Q 2700-2728

Labour see Employment

Land
p 16, 41 Q 210-212 (Essex CC)
p 88 (Kent CC)
p 219-220 (Nature Conservancy)

Land: landscape
p 15 (Essex CC)
p 177 Q 2046-2048 (Sheppey Group)

Land: reclamation
p 4-5, 269 Q 3-4, 20, 69-74, 95-97 (Essex CC)
p 95 (Rochford RDC)
p 143, 145 (Action Comm against Foulness)
p 155 Q 1783-1797 (PLA)
p 195 (NAS)
p 459 (Prof J P Quilliam)
p 216, 479 Q 2330-2333 (CLA)
p 499-500 Q 2506-2511, 2569-2580, 2597-2613 (TEDCO)
p 258 (Thames Aeroport Group)
p 259, 520-521 (Clark & Ptnrs)

Land: reclamation: costs
Q 2748-2753, 2781-2782 (Clark & Ptnrs)
see also Agriculture; Amenity; Horticulture; Recreation

Land classification see Agriculture: land classification

Landscape see Land: landscape

Layout see Airport layout

Leigh -on-Sea Shellfish Merchants' Association: evidence
p 156-160, 427-429 Q 1832-1918

Livestock
p 44 Q 877-884 (Essex CC)
p 473 (NFU)
p 215 (CLA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Local planning
p 14, 16-17 Q 134-148, 259-262, 333-340, 362-370 (Essex CC)
p 61-71 Q 1203-1208 (Southend CBC)
p 86-87, 369 Q 1341-1361, 1370-1371 (Kent CC)
p 122-123, 400 Q 1586-1602 (Basildon Dev Corp)
Q 2175-2176 (NAS)
see also Regional planning; Urbanisation

Maldon Borough Council: evidence
p 124-125 Q 1619-1629

Meteorology
Q 394, 417-422, 506-507 (Essex CC)
p 131 (Foulness Is Residents' Comm)
p 195 (NAS)

Military airfields see Defence

Mineral deposits see Sand and gravel

Ministry of Defence see Defence

NAS see Noise Abatement Society

NFU see National Farmers' Union

NNI see Noise and number index

National Farmers' Union (NFU): evidence
p 203-213, 467, 472-474 Q 2235-2303

Nature Conservancy: evidence
p 219-229, 484 Q 2392-2397

Navigation (shipping)
p 155, 422 (Royal Burnham Yacht Club)
p 163, 430 (F G Williams)
p 188 Q 2096-2102 (Sheppey Group)
p 197, 199 Q 2215-2216 (Prof J P Quilliam)

Newbery, R: evidence
p 136 Q 1666-1671

Noise
p 4, 5, 15, 270-271 Q 86-88, 111-113, 116-133, 208-209, 310-321, 350, 382-388, 395-405, 407, 571-573 (Essex CC)
p 24 (Rayleigh UDC)
p 34-35, 321-322 Q 758-760 (B Braine, MP)
p 45 (Chatham BC)
p 59, 82-84 Q 1129-1155, 1178-1205, 1260-1276, (Southend CBC)
p 86-93, 369-370 Q 1362 (Kent CC)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise (Cont)
p 94-95 Q 1373-1375 (Rochford RDC)
p 98 Q 1399-1405 (J S Orchard)
p 104-105 Q 1419-1425 (Barling Magna PC)
p 385-386 (Canewdon PC)
p 111-112, 387 Q 1447, 1449, 1453-1455 (Paglesham PC)
p 389-390 (Rochford PC)
p 149 (Clacton UDC)
p 117-118 (Tendring RDC)
p 122 (Basildon Dev Corp)
p 126 (Rochester City Council)
p 127 (Strood RDC)
p 131-132 (Foulness Is Residents' Comm)
p 138, 143, 145 (Action Comm against Foulness)
p 411 (Thorpe West Residents' Assn)
p 432 Q 1928-1931 (Southend & District Chamber of Trade and Industry)
p 169 Q 1964-1973 (Working Men's Club & Institute Union Ltd)
p 175-177, 179, 439-440 (Sheppey Group)
p 195-196 Q 2159, 2171-2203 (NAS)
p 198 (Prof J P Quilliam)
p 209, 473 Q 2284-2286, 2288-2289 (NFU)
p 217 (CLA)
p 281 (CPRE)
Q 2466-2472 (Kent U)
p 248-249 (RIBA)
p 514 (G V K Francis)
p 259, 520 (Clark & Ptnrs)

Noise: effect on livestock
p 44 Q 877-884 (Essex CC)
p 473 (NFU)
p 215 (CLA)

Noise: helicopter
p 196 (NAS)

Noise: hospitals
p 32, 33 (Essex CC)

Noise: local authorities' actions
p 87-88 (Kent CC)
p 175-176 Q 2068-2078 (Sheppey Group)

Noise: property values
p 176, 439 (Sheppey Group)

Noise: road traffic
Q 660-661 (Essex CC)

Noise: schools
p 31-33, 36-40, 271 Q 696-699, 772-824 (Essex CC)
Q 1420-1424 (Barling Magna PC)
p 141 (Action Comm against Foulness)

Written evidence pages 3-259 Oral evidence pages 267-519

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise: social cost
Q 256-258 (Essex CC)

Noise: soundproofing
p 37-40 (Essex CC)
Q 1216-1218 (Southend CBC)
Q 1969 (Working Men's Club and Institute Union Ltd)
Q 2685-2690 (RIBA)

Noise: supersonic aircraft
Q 664-671, 708-711 (Essex CC)
p 352 (Southend CBC)
p 198 (Prof J P Quilliam)

Noise: take off and landing
p 27-28 Q 505, 574-575 (Essex CC)
p 83 Q 1260-1266 (Southend CBC)
p 95 (Rochford RDC)

Noise Abatement Society (NAS): evidence
p 195-196, 453 Q 2110-2203

Noise and number index (NNI)
p 30, 270 Q 672-675, 726 (Essex CC)
p 34, 321 (B Briane MP)
p 83-84, 352 (Sothend CBC)
p 153 Q 1676-1678 (Thorpe West Residents' Assn)
p 256 (Thames Aeroport Group)

Noise certification plan
p 30 Q 617-618, 655-656, 678-693 (Essex CC)
p 84 Q 1274-1276, 1297-1310 (Southend CBC)
p 138, 140 (Action Comm against Foulness)

Noise: final report (Wilson Report) Cmnd - quoted extensively throughout

Noise levels
p 30-33, 270-271 Q 182-192, 611-753 (Essex CC)
p 45 (Chatham BC)
p 352-354 Q 1140 (Southend CBC)
p 369-370 Q 1326-1339, 1367-1368 (Kent CC)
Q 1419 (Barling Magna PC)
Q 1651 (Foulness Is Residents' Comm)
p 135 (St. Clement's Ward Municipal Electors' Assn)
p 138, 140-141 (Action Comm against Foulness)
p 161-162 (J H Bryant)
p 163-430 (F G Williams)
p 170-171, 173-174, 438-439 Q 1996-2022, 2027-2031, 2068-2075 (Sheppey Group)
Q 2226, 2229-2231 (Prof J P Quilliam)
p 483, Q 2361-2373 (CPRE)
p 234, 491 Q 2469-2472 (Kent U)
p 245, 499 Q 2661, 2672-2674 (TEDCO)
p 512 (RIBA)
p 253 Q 2702-2704 (M King)
p 256 (Thames Aeroport Group)
p 521 (Clark & Ptnrs)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise measurement see Noise and number index; Noise levels

Noise zones
p 175-176 (Sheppey Group)

Occupation see Employment

Orchard, J S: evidence
p 98-99, 375-376, 381-382 Q 1395-1405

Ornithological Societies and Interests: evidence
p 235-242

Ornithology see Birds: conservation

Outdoor activities see Fishing; Recreation; Sailing

PLA see Port of London Authority

Paglesham Parish Council: evidence
p 111-115, 386-387 Q 1443-1466

Passenger traffic see Air traffic: passenger

Planning see Local planning; Regional planning; Urbanisation

Pollution see Air pollution; Sewage; Water pollution

Population
p 16 (Essex CC)
Q 1187-1196 (Southend CBC)
p 132-133 (Foulness Is Residents' Comm)
p 175 Q 2065-2067 (Sheppey Group)
Q 2713-2721 (M King)

Population: displacement
p 110, 386 (Foulness Is PC)
p 132-133 (Foulness Is Residents' Comm)
p 498 (H Ellis)

Population: estimates: third London airport
p 13, 268-269 Q 233-240, 285-309, 347-349 (Essex CC)
p 35 (B Briane, MP)
Q 1429-1434 (Barling Magna PC)
Q 1456 (Paglesham PC)
Q 2148-2149 (NAS)
p 255 (Thames Aeroport Group)
see also Employment

Printed image digitised by the University of Southampton Library Digitisation Unit

Port of London Authority (PLA): evidence
p 155, 412-413 Q 1690-1825

Porter, G: evidence
p 462-463 Q 2232-2234

Ports see Docks: proposed schemes

Private airfields see Airfields: private

Quilliam, Professor J P: evidence
p 197-200, 459-460 Q 2204-2231

RIBA see Royal Institute of British Architects

RSPB see Royal Society for the Protection of Birds

Radio interference see Electrical interference

Rail see Surface access: rail

Rayleigh Urban District Council: evidence
p 23-24

Reclamation see Land: reclamation

Recreation
p 15-16 (Essex CC)
p 67 (Southend CBC)
p 176-177, 180 Q 2045 (Sheppey Group)
p 249 (RIBA)
see also Amenity; Fishing; Sailing

Regional planning
p 3-4, 10-11, 268-269 Q 21-24, 193-200, 355-361, (Essex CC)
p 68 (Southend CBC)
p 86-87 (Kent CC)
p 105 (Barling Magna PC)
p 123 (Basildon Dev Corp)
p 143, 144, 145-146, 147 (Action Comm against Foulness)
p 195, 196 (NAS)
p 198 (Prof J P Quilliam)
p 211-212 (NFU)
p 497 (D W Clarke)
p 246 (RIBA)

Regional planning: controls
p 17 Q 302 (Essex CC)
see also Local planning; Urbanisation

Richard Montgomery
p 35 (B Braine MP)
p 177, 181 Q 2049-2051 (Sheppey Group)
Q 2788-2789 (Clark & Ptnrs)

Roads see Noise: road traffic; Surface access: roads

Printed image digitised by the University of Southampton Library Digitisation Unit

Rochester City Council: evidence
p 126 Q 1630-1632

Rochford Parish Council: evidence
p 116, 389-390 Q 1467-1470

Rochford Rural District Council: evidence
p 94-97, 100, 373-374 Q 1372-1394

Royal Air Force see Defence

Royal Burnham Yacht Club: evidence
p 155, 422-423 Q 1826-1831

Royal Institute of British Architects, Eastern Region (RIBA): evidence
p 246, 248-252, 511-512 Q 2675-2699

Royal Society for the Protection of Birds (RSPB): evidence
p 230-233, 235-242, 485 Q 2398-2464

Runways: cross wind
p 27 (Essex CC)
p 253 (M King)

Runways: orientation/alignment
p 27 Q 395-405, 422-427, 610 (Essex CC)
p 83 (Southend CBC)
p 149 (Clacton UDC)
p 117 (Tendring RDC)
p 195 (NAS)
Q 2514-2516, 2566-2568, 2582-2592, 2619-2627, 2670-2671 (TEDCO)
p 258 (Thames Aeroport Group)

SSSI see Sites of special scientific interest

Safety see Air safety

Sailing
p 96 (Rochford RDC)
p 155, 422 Q 1826-1831 (Royal Burnham Yacht Club)
p 163, 430 (F G Williams)
p 435-436 Q 1982-1984 (Tucker Browns Ltd)
p 440 (Sheppey Group)
p 197, 198, 199-200, 459 (Prof J P Quilliam)
p 217, 479-480 (CLA)

St. Clement's Ward Municipal Electors' Association: evidence
p 135

Printed image digitised by the University of Southampton Library Digitisation Unit

Sand and gravel
p 8 Q 5-7, 37-38, 52-53, 98-105 (Essex CC)
p 182 (Sheppey Group)
p 215 (CLA)

Schools
p 31-33, 36-40, 271 Q 696-699, 772-824 (Essex CC)
Q 1420-1424 (Barling Magna PC)
p 141 (Action Comm against Foulness)

Sea flooding see Water: flooding

Seaport see Docks: proposed schemes

Services and utilities
p 5-6 Q 48 (Essex CC)
p 323 Q 756 (B Braine MP)
p 67-68, 71 Q 1250-1253 (Southend CBC)
p 96 Q 1388-1391 (Rochford RDC)
p 103 (Ashingdon PC)
p 135 (St. Clement's Ward Municipal Electors' Assn)
p 411 (Thorpe West Residents' Assn)
p 196 (NAS)
p 497 (D W Clarke)

Sewage
p 6 Q 15-17, 39-41 (Essex CC)
p 67-68, 71 (Southend CBC)
p 121 Q 1538-1585 (Essex River Authority)
p 132 Q 1640-1641 (Foulness Is Residents' Comm)
p 143, 145 (Action Comm against Foulness)
Q 1749-1756 (PLA)
Q 2212 (Prof J P Quilliam)

Sheppey Group: evidence
p 170-191, 436-440 Q 1989-2102

Shoeburyness see Defence

Shoeburyness Residents' Association see Action Committee against Foulness

Site: location
p 34, 322 Q 770 (B Braine, MP)
p 353-354 Q 1318-1321 (Southend CBC)
p 164 Q 1933-1939 (Southend & District Chamber of Trade and Industry)
p 198 Q 2210-2211 (Prof J P Quilliam)
Q 2628, 2649-2653 (TEDCO)
p 515 Q 2705-2706 (M King)
p 519-520 Q 2745, 2754-2758 (Clark & Ptnrs)

Site information
p xv - xvi (CTLA)

Written evidence pages 3-259 Oral evidence pages 267-519

Printed image digitised by the University of Southampton Library Digitisation Unit

Sites of special scientific interest (SSSI)
p 88 (Kent CC)
p 219, 223 (Nature Conservancy)

Soundproofing see Noise: soundproofing

Southend Airport
p 64-65, 70, 84-85, 355 Q 1146-1155 (Southend CBC)
Q 1462-1464 (Paglesham PC)
p 217 (CLA)

Southend Airport: air traffic control
p 28 Q 448-451, 570 (Essex CC)
p 84 (Southend CBC)

Southend Airport: noise
p 15, 17, 31, 37-39, 271 Q 385-388, 657-659, 815-821 (Essex CC)
p 147, 148 (Action Comm against Foulness)
Q 2029-2031 (Sheppey Group)

Southend-on-Sea and District Chamber of Trade and Industry: evidence
p 164-168, 431-432 Q 1926-1963

Southend-on-Sea County Borough Council: evidence
p 59-85, 351-356 Q 1127-1323

Southend Ratepayers' Association see Thorpe West Residents' Association

Sports see Fishing; Recreation; Sailing

Stacking see Air traffic control: stacking

Strood Rural District Council: evidence
p 127 Q 1633-1635

Supersonic aircraft
Q 509-513, 516, 574-575, 664-668 (Essex CC)
p 352 (Southend CBC)
p 165 (Southend & District Chamber of Trade and Industry)

Surface access
p 3-4, 6-8, 16, 273 Q 42-45, 58-61, 153-155, 865-869, 906-912, 925-937 (Essex CC)
p 21 (Basildon UDC)
p 24 (Rayleigh UDC)
p 95-96 (Rochford RDC)
p 112 (Paglesham PC)
p 132 (Foulness Is Residents' Comm)
p 135 (St. Clement's Ward Municipal Electors' Assn)
p 138-139, 143, 144 (Action Comm against Foulness)
p 153, 411 (Thorpe West Residents' Assn)

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface access (Cont)
p 196 (NAS)
p 214, 217, 478-479 (CLA)
p 496 (D W Clarke)
Q 2593-2594 (TEDCO)
p 246-248 (RIBA)
p 254 (M King)
p 520 (Clark & Ptnrs)

Surface access: costs
p 8, 269 (Essex CC)
p 144, 145 (Action Comm against Foulness)

Surface access: rail
p 7-8, 44 Q 34-36, 50-51 (Essex CC)
p 64-65, 70-71 Q 1209-1214, 1248-1249 (Southend CBC)
p 122 (Basildon Dev Corp)
p 144, 145 (Action Comm against Foulness)
p 248 (RIBA)
p 258 (Thames Aeroport Group)

Surface access: rail: advanced passenger train (APT)
p 3, 6, 7-8 (Essex CC)
p 144, 145 (Action Comm against Foulness)

Surface access: roads
p 7, 44 Q 26-27, 49, 243-249, 263-265, 923-924 (Essex CC)
p 63-64, 69-70 Q 1239-1246 (Southend CBC)
p 89 Q 1363-1365 (Kent CC)
p 119 (Witham UDC)
p 122, 400, Q 1609-1612 (Basildon Dev Corp)
p 143-144, 145 (Action Comm against Foulness)
Q 1799-1800 (PLA)
p 176, 179 (Sheppey Group)
p 210, 474 (NFU)
p 248, 512 Q 2693-2698 (RIBA)
p 258 (Thames Aeroport Group)

Surface drainage see Water: surface drainage

TEDCO see Thames Estuary Development Company Ltd

Tendring Rural District Council: evidence
p 117-118, 391-392 Q 1479-1491

Thames Aeroport Group: evidence
p 255-258, 517-518 Q 2729-2744

Thames Estuary Development Company Ltd (TEDCO): evidence
p 245, 247, 498-500 Q 2485-2674

Thorpe West Residents' Association: evidence
p 153-154, 411-412 Q 1676-1689

Written evidence pages 3-259 Oral evidence pages 267-519

Printed image digitised by the University of Southampton Library Digitisation Unit

Timing of the need
p 4, 269 (Essex CC)
p 142, 143, 144 (Action Comm against Foulness)
p 495 (Miss W M Barron)
p 459-460 (Prof J P Quilliam)

Town and country planning see Local planning; Regional planning; Urbanisation

Transport see Surface access

Tucker Browns Ltd: evidence
p 435-436 Q 1974-1988

Turbulence
p 44 (Essex CC)

UKAEA see United Kingdom Atomic Energy Authority

United Kingdom Atomic Energy Authority (UKAEA)
p 192, 448-449 Q 2104-2109 (Amalgamated Union of Engineering and Foundry Workers)

University of Kent at Canterbury see Kent University

Urbanisation
p 14-15, 43-44, 271-272 Q 149-192, 201-207, 226-232, 266-284, 322-330, 350-354, 841-844, 874, 896-898, 913-914 (Essex CC)
p 21 (Basildon UDC)
p 24 (Rayleigh UDC)
p 35, 323 Q 764-765 (B Braine, MP)
p 354-355 (Southend CBC)
p 95, 374 Q 1376-1385 (Rochford RDC)
Q 1435-1438 (Barling Magna PC)
p 112 Q 1449-1452, 1458 (Paglesham PC)
Q 1480-1481 (Tendring RDC)
Q 1603-1608 (Basildon Dev Corp)
p 139 (Action Comm against Foulness)
Q 1684-1689 (Thorpe West Residents' Assn)
p 196 Q 2120-2140, 2179-2188 (NAS)
p 463 Q 2232-2234 (G Porter)
p 204-205, 213, 472-474 Q 2241, 2244-2245 (NFU)
p 218, 483 Q 2385-2389 (CPRE)
Q 2524-2529 (TEDCO)
p 248-249, 512 (RIBA)
p 253-254 (M King)
p 255-258 (Thames Aeroport Group)
Q 2759-2762, 2777-2780 (Clark & Ptnrs)

Urbanisation: cost responsibility
p 21 (Basildon UDC)
p 22 (Benfleet UDC)
p 23 (Rayleigh UDC)
p 355 (Southend CBC)
p 97 (Rochford RDC)
p 518 (Thames Aeroport Group)

Printed image digitised by the University of Southampton Library Digitisation Unit

Urbanisation: costs
p 17, 269 Q 45, 371-375 (Essex CC)
Q 1410-1417 (Barling Magna PC)
p 146-147, 148 (Action Comm against Foulness)
Q 2736-2739 (Thames Aeroport Group)
see also Housing; Local planning; Regional planning

Utilities see Services and utilities

VTOL see Vertical take off and landing

Vertical take off and landing (VTOL)
p 459-460 (Prof J P Quilliam)

Visibility see Meteorology

Water: flooding
p 5, 273 Q 1-2, 76-85, 106-110 (Essex CC)
p 35, 322-323 (B Braine MP)
p 96 (Rochford RDC)
p 113 (Paglesham PC)
p 120, Q1513-1516, 1528-1530 (Essex River Authority)
p 128-129, 131 (Foulness Is Residents' Comm)
p 139 (Action Comm against Foulness)
p 177, 182 Q 2054-2057 (Sheppey Group)
p 198-199, 459 Q 2213-2214, 2222-2223 (Prof J P Quilliam)
p 215, 479 Q 2326-2329 (CLA)
p 499-500 (TEDCO)

Water: supply
p 6 Q 30-33, 62-68 (Essex CC)
p 21 (Basildon UDC)
p 67 Q 1247 (Southend CBC)
p 96 (Rochford RDC)
p 113 (Paglesham PC)
p 120 Q 1505-1506, 1527 (Essex River Authority)
p 122 (Basildon Dev Corp)
p 132 (Foulness Is Residents' Comm)
p 139 (Action Comm against Foulness)
p 154 (Thorpe West Residents' Assn)
Q 2152 (NAS)
p 473-474 (NFU)
p 217, 479 Q 2312-2316 (CLA)

Water: surface drainage
p 6 (Essex CC)
p 67-68 (Southend CBC)
p 120-121 Q 1497, 1500-1504, 1508-1512, 1531 (Essex River Authority)
p 177 (Sheppey Group)

Written evidence pages 3-259 Oral evidence pages 267-519

Printed image digitised by the University of Southampton Library Digitisation Unit

Water pollution
p 190 (Sheppey Group)
p 460 (Prof J P Quilliam)
see also Sewage

Weather see Meteorology

Whiteweed
p 157, 427-429 Q 1851-1893 (Leigh Shellfish Merchants' Assn)

Whitstable Urban District Council: evidence
p 179

Wildfowl see Birds: conservation

Williams, F G: evidence
p 163, 430 Q 1921-1925

Wilson Report (Noise: final report) Cmnd 2056 - quoted extensively throughout

Witham Urban District Council: evidence
p 119, 393

Work see Employment

Working Men's Club and Institute Union Ltd: evidence
p 169, 434-435 Q 1964-1973

Yachting see Sailing

Printed image digitised by the University of Southampton Library Digitisation Unit

INDEX TO VOLUME IV

NUTHAMPSTEAD

p = page Q = question

AONB see Land: landscape

APT see Surface access: rail: advanced passenger train

ATC see Air traffic control

AUD (Associated urban development) see Urbanisation

Advanced passenger train see Surface access: rail: advanced passenger train

Aerodromes see Airports; Defence

Agricultural Research Council: Institute of Animal Physiology see Institute of Animal Physiology

Agriculture
p 645-649, 830 Q 2851, 2854, 2942-2944, 2949 (Cambs, Essex, Herts CC)
p 658-659, 663-665, 848 (H C Beddington)
Q 3041-3044 (Stevenage Dev Corp)
p 686, 687, 691, 695-697 (Nuthampstead Pres Assn)
p 699-702, 712-717, 720-736, 875-877 (NFU)
p 737-738, 878-879, 880-881 Q 3359-3361 (CLA)
p 739 (J L Logue)

Agriculture: land classification
p 620, 645, 830 Q 2873-2874, 2936-2938, 2942 (Cambs, Essex, Herts CC)
p 876 (NFU)
see also Livestock

Air route structure see Air traffic control: air route structure

Air safety
p 854 (Stevenage Dev Corp)
p 783, 898-899 (Decca)

Written evidence pages 607-821 Oral evidence pages 827-920

Printed image digitised by the University of Southampton Library Digitisation Unit

Air traffic: freight
p 651 (Luton CBC)
p 707-708 (NFU)

Air traffic: passenger
p 650-651 (Luton CBC)

Air traffic control (ATC)
p 614-615 (Cambs, Essex, Herts CC)
p 651 (Luton CBC)
p 804, 916-917 (Cambridge U Gliding Club)
p 805-806, 917 (Cranfield Glding Club)

Air traffic control (ATC): air route structure
p 615 (Cambs, Essex, Herts CC)

Air traffic control (ATC): stacking
p 614 Q 2814-2815 (Cambs, Essex, Herts CC)

Airport design
p 686 (Nuthampstead Pres Assn)

Airports: effects of third London airport
p 614-615 (Cambs, Essex, Herts CC)
see also Defence; Luton Airport; Stansted Airport

Amenity
p 648, 829 Q 2850-2851 (Cambs, Essex, Herts CC)
p 657 (Royston UDC)
p 857 (Stevenage Dev Corp)
p 686, 687-688, 690, 697, 863-865 Q 3194-3195 (Nuthampstead Pres Assn)
p 700 (NFU)
p 738, 878, 879 (CLA)
p 773-774, 778-779, 896 (Herts Soc)
p 786 (Mrs S Williams, MP)
p 803, 903, 904 (Cambridge U)
p 813-817, 918 (CPRE)
see also Land; Recreation

Ampthill Rural District Council
p 844

Ancient monuments see Churches; Historic buildings

Areas of outstanding natural beauty see Land: landscape

Aviation fuel see Fuel: aviation

Beddington, H C: evidence
p 658-665, 848 Q 2988-3000

Bedfordshire County Council
p 844

Biggleswade Rural District Council
p 844

Printed image digitised by the University of Southampton Library Digitisation Unit

CLA see Country Landowners' Association

CPRE see Council for the Preservation of Rural England

Cambridge City Council: evidence
p 655, 847

Cambridge University: evidence
p 789-803, 903-909 Q 3420-3492

Cambridge University Gliding Club: evidence
p 804, 916-917

Cambridgeshire and Isle of Ely County Councils: evidence
p 607-649, 827-831 Q 2793-2953

Cargo see Air traffic: freight

Chapels see Churches

Chesterford Park Research Station: evidence
p 757-763, 890-894 Q 3399-3403

Churches
p 747-755, 885-887 Q 3367-3370 (Rev F L Morris)
p 774-778 (Herts Soc)
p 801-802 (Cambridge U)
p 811-813 (CPRE)

City of Cambridge see Cambridge City Council

Commerce see Industry and commerce

Commuters
p 622-623 Q 2884, 2887 (Cambs, Essex, Herts CC)
p 675 Q 3034 (Stevenage Dev Corp)
p 703 (NFU)

Conservation
p 694 (Nuthampstead Pres Assn)
p 818 (Nature Conservancy)

Conservation areas see Land: landscape

Construction
p 608-609, 828 Q 2807-2811 (Cambs, Essex, Herts CC)
p 685-686 (Nuthampstead Pres Assn)

Costs: Lord's Bridge Observatory
Q 3469-3472 (Cambridge U)

Written evidence pages 607-821 Oral evidence pages 827-920

Printed image digitised by the University of Southampton Library Digitisation Unit

Costs: scientific establishments
p 762 (Chesterford Park RS)
p 765 (Welding Inst)
p 768-769 (Inst of Animal Physiology)
p 772 (Tube Investments)

Council for the Preservation of Rural England (CPRE): evidence
p 811-817, 918-919

Country Landowners' Association (CLA): evidence
p 737-738, 878-881 Q 3356-3362

Cranfield College of Aeronautics Gliding Club: evidence
p 805-806, 917

Decca Navigator Company Ltd: evidence
p 782-783, 897-899

Defence
p 615 (Cambs, Essex, Herts CC)

Drainage see Sewage; Water

Dunstable Borough Council
p 844

Education see Schools

Electrical interference
p 615 (Cambs, Essex, Herts CC)
p 899 (Decca)
p 792-796, 797-799, 905 Q 3427-3428, 3441-3468, 3473-3480 (Cambridge U)

Electricity
p 610 (Cambs, Essex, Herts CC)
p 879-880 (CLA)

Employment
p 620, 621-622 Q 2832-2835 (Cambs, Essex, Herts CC)
p 654 (Luton CBC)
p 673 Q 3067-3070, 3074-3076, 3078-3082 (Stevenage Dev Corp)
p 703, 706 (NFU)
p 785, 899 (Mrs S Williams, MP)
p 920 (R H F Parker)

Employment: effect of third London airport
p 654, 846 (Luton CBC)
p 674, 675, 854-855 Q 3076 (Stevenage Dev Corp)
p 687 (Nuthampstead Pres Assn)
p 803 (Cambridge U)

Printed image digitised by the University of Southampton Library Digitisation Unit

Employment: estimates: third London airport
p 620-621 Q 2867-2872 (Cambs, Essex, Herts CC)
p 707-708 (NFU)

Environment see Amenity

Essex County Council: evidence
p 607-649, 827-831 Q 2793-2953

Farming see Agriculture

Fisons Ltd see Chesterford Park Research Station

Flooding see Water: surface drainage

Freight see Air traffic: freight

Fuel: aviation
p 610 (Cambs, Essex, Herts CC)

Geology see Land: geology

Gliding
p 624 (Cambs, Essex, Herts CC)
p 804, 916-917 (Cambridge U Gliding Club)
p 805-806, 917 (Cranfield Gliding Club)

Gravel see Sand and gravel

Great Ouse River Authority: evidence
p 744-746 Q 3363-3366

Health see Noise: medical effects

Health institutions see Hospitals

Hertfordshire County Council: evidence
p 607-649, 827 -831 Q 2793-2953

Hertfordshire Society: evidence
p 773-781, 895-897 Q 3404-3419

Historic buildings
p 624, 633 (Cambs, Essex, Herts CC)
p 658, 660-663 (H C Beddington)
p 688-689, 696 (Nuthampstead Pres Assn)
p 706 (NFU)
p 738 Q 3362 (CLA)
p 774-778, 780-781, 897 Q 3406-3407 (Herts Soc)
p 811-813 (CPRE)
see also Churches

Holding areas see Air traffic control: stacking

Hospitals
p 638-639 (Cambs, Essex, Herts CC)
p 653-654 (Luton CBC)

Printed image digitised by the University of Southampton Library Digitisation Unit

Housing
p 622, 630 Q 2826-2831, 2875, 2885-2887
(Cambs, Essex, Herts CC)
p 673, 674, 854 Q 3035 (Stevenage Dev Corp)
Q 3348-3351 (NFU)

ICAO see International Civil Aviation Organisation

IDC (Industrial development certificate) see
Regional planning controls

Industry and commerce
p 653, 654 (Luton CBC)
p 673; 676 Q 3071-3073, 3077 (Stevenage Dev Corp)
p 707-708 (NFU)
p 785 (Mrs S Williams, MP)

Institute of Animal Physiology: evidence
p 768-769, 890-894 Q 3396-3398

Insulation see Noise: soundproofing

International Civil Aviation Organisation (ICAO)
p 898 (Decca)

Labour see Employment

Land
p 624-625, 633-634 (Cambs, Essex Herts CC)
p 685 (Nuthampstead Pres Assn)
p 712 (NFU)
p 818 (Nature Conservancy)

Land: geology
p 624, 633-634 (Cambs, Essex, Herts CC)
p 712 (NFU)
p 743 (Gt Ouse River Authority)

Land: landscape
p 620, 623-624, 633, 828 Q 2822, 2887
(Cambs, Essex, Herts CC)
p 688 (Nuthampstead Pres Assn)
p 706 (NFU)
Q 3411-3419 (Herts Soc)
p 918 (CPRE)
see also Agriculture; Amenity; Recreation

Land classification see Agriculture: land
classification

Landscape see Land: landscape

Livestock
p 649 Q 2945-2947 (Cambs, Essex, Herts CC)
p 768 (Inst of Animal Physiology)
p 801 (Cambridge U)

Printed image digitised by the University of Southampton Library Digitisation Unit

Local opinion: statistics
p 677-684, 689-690, 862-863 Q 3089-3090, 3093-3095, 3103 (Nuthampstead Pres Assn)

Local planning
p 616, 625, 630-633, 634 Q 2830-2835, 2876-2881, 2895-2896 (Cambs, Essex, Herts CC)
p 845-846 (Luton CBC)
p 656 Q 2977-2978 (Royston UDC)
p 673-675, 853, 854 Q 3034-3035, 3041-3065 (Stevenage Dev Corp)
p 685, 697 (Nuthampstead Pres Assn)
p 705-706 (NFU)
p 789, 903, 907-909 (Cambridge U)
see also Regional planning; Urbanisation

Logue J L: evidence
p 739

Lord's Bridge Observatory
p 631 (Cambs, Essex, Herts CC)
p 786, 900 (Mrs S Williams, MP)
p 790-799, 905-906 Q 3420-3480 (Cambridge U)

Lord's Bridge Observatory: costs
Q 3469-3472 (Cambridge U)

Lord's Bridge Observatory: electrical interference
p 615 (Cambs, Essex, Herts CC)
p 792-796, 797-799, 905 Q 3427-3428, 3441-3468, 3473-3480 (Cambridge U)

Luton Airport
p 650-654, 845-846 Q 2959-2961 (Luton CBC)

Luton Airport: air traffic control
p 614-615 (Cambs, Essex, Herts CC)
p 651 (Luton CBC)

Luton Airport: noise
p 619, 620, 636, 641 Q 2836-2839 (Cambs, Essex Herts CC)
p 653-654, 845-846 Q 2967-2976 (Luton CBC)
p 899 (Mrs S Williams, MP)

Luton County Borough Council: evidence
p 650-654, 845-846 Q 2954-2976

Luton Rural District Council
p 844

Written evidence pages 607-821 Oral evidence pages 827-920

Printed image digitised by the University of Southampton Library Digitisation Unit

Meteorology
p 614 (Cambs, Essex, Herts CC)

Military airfields see Defence

Mineral deposits see Land: geology; Sand and gravel

Morris, Rev F L: evidence
p 747-755, 885-887 Q 3367-3370

Mullard Radio Astronomy Observatory see Lord's Bridge Observatory

NFU see National Farmers' Union

NNI see Noise and number index

National Farmers' Union (NFU): evidence
p 699-736, 874-877 Q 3196-3355

Nature Conservancy: evidence
p 818-819, 919 Q 3499

Nature conservation see Conservation

Navigational aids
p 782-783, 898-899 (Decca)

Noise
p 608, 619-620, 830 Q 2836-2839, 2899-2905 (Cambs, Essex, Herts CC)
p 653-654 (Luton CBC)
p 655, 847 (Cambridge City Council)
p 657 (Royston UDC)
p 856-857 (Stevenage Dev Corp)
p 686, 688, 865 (Nuthampstead Pres Assn)
p 700, 734 (NFU)
p 737-738, 880 (CLA)
p 785-786, 899 (Mrs S Williams, MP)
p 789, 800-803, 908-909 Q 3483-3485 (Cambridge U)
p 808 (RIBA)
p 815, 816 (CPRE)
p 920 (R H F Parker)

Noise: churches
p 747-749, 886 Q 3367-3368 (Rev F L Morris)
p 801-802 (Cambridge U)

Noise: effects on livestock
p 649 Q 2945-2947 (Cambs, Essex, Herts CC)
p 768 (Inst of Animal Physiology)
p 801 (Cambridge U)

Written evidence pages 607-821 Oral evidence pages 827-920

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise: hospitals
p 638-639 (Cambs, Essex, Herts CC)
p 653-654 (Luton CBC)

Noise: medical effects
p 757-758 (Chesterford Park RS)

Noise: schools
p 636-638, 640-644, 830 Q 2925-2934 (Cambs, Essex, Herts CC)
p 653-654 (Luton CBC)
p 671-672 (Stevenage Dev Corp)
p 749, 886 (Rev F L Morris)
p 800-801 Q 3486-3489 (Cambridge U)

Noise: scientific establishments
p 638-639 (Cambs, Essex, Herts CC)
p 759, 761-762 (Chesterford Park RS)
p 764-765 (Welding Inst)
p 768 (Inst of Animal Physiology)
p 771 (Tube Investments)
p 891-892 (Chesterford Park RS, Inst of Animal Physiology, Tube Investments, Welding Inst)

Noise: soundproofing
p 636, 640-642, 644, 830 Q 2927-2933, 2947 (Cambs, Essex, Herts CC)
p 671-672 Q 3013-3014 (Stevenage Dev Corp)
p 748, 886 (Rev F L Morris)
p 762 (Chesterford Park RS)
p 771-772 (Tube Investments)
p 892 (Chesterford Park RS, Inst of Animal Physiology, Tube Investments, Welding Inst)
p 802, 908 (Cambridge U)

Noise: vibration
p 764 Q 3382-3383 (Welding Inst)
p 771 Q 3392-3395 (Tube Investments)
p 894 (Chesterford Park RS, Inst of Animal Physiology, Tube Investments, Welding Inst)
p 801-802 (Cambridge U)

Noise and number index (NNI)
p 635, 829 Q 2906-2907 (Cambs, Essex, Herts CC)
Q 3378-3380 (Welding Inst)
p 892 (Chesterford Park RS, Inst of Animal Physiology, Tube Investments, Welding Inst)
p 800 Q 3489-3491 (Cambridge U)

Noise certification plan
Q 2908-2913 (Cambs, Essex, Herts CC)
p 670, 855-856 Q 3007, 3022-3023 (Stevenage Dev Corp)

Noise: final report (Wilson Report) Cmnd 2056 - quoted extensively throughout

Written evidence pages 607-821 Oral evidence pages 827-920

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise levels
p 635-639 Q 2914-2915, 2918-2921 (Cambs, Essex, Herts CC)
p 669-672, 820-821, 855-856 Q 3007, 3015-3021, 3025-3026, 3500-3501 (Stevenage Dev Corp)
p 757-759, 761 (Chesterford Park RS)
p 892-894 (Chesterford Park RS, Inst of Animal Physiology, Tube Investments, Welding Inst)
p 786 (Mrs S Williams, MP)

Noise measurement see Noise and number index; Noise levels

Nuthampstead Preservation Association: evidence
p 677-698, 861-866 Q 3083-3195

Occupation see Employment

Opinion polls see Local opinion: statistics

Outdoor activities see Gliding; Recreation

Parker, R H F: evidence
p 920

Passenger traffic see Air traffic: passenger

Planning see Local planning; Regional planning; Urbanisation

Pollution see Sewage; Water pollution

Population
p 620, 622 (Cambs, Essex, Herts CC)
p 673, 853-854 (Stevenage Dev Corp)
p 752-755 (Rev F L Morris)
p 784-785, 899 (Mrs S Williams, MP)
Q 3495, 3497-3498 (Premier Travel)
Q 3103-3106 (Nuthampstead Pres Assn)

Population: displacement
p 691-695, 698 (Nuthampstead Pres Assn)

Population: effect of third London airport
p 687, 865-866 (Nuthampstead Pres Assn)
p 749-750 (Rev F L Morris)

Population: estimates: third London airport
p 708, 875 (NFU)
see also Employment

Premier Travel Ltd: evidence
p 807 Q 3495-3498

Private airfields see Gliding

Printed image digitised by the University of Southampton Library Digitisation Unit

RIBA see Royal Institute of British Architects

Radio interference see Electrical interference

Rail see Surface access: rail

Recreation
p 624 (Cambs, Essex, Herts CC)
p 738 (CLA)
p 810 (RIBA)
see also Amenity; Gliding

Regional planning
p 607-608, 616-618, 625-626, 828, 829 Q 2852-2855, 2882, 2953 (Cambs, Essex, Herts CC)
p 703-705, 706-707, 876 (NFU)
p 896 (Herts Soc)
p 784 (Mrs S Williams, MP)
p 789 (Cambridge U)
p 810 (RIBA)
p 814, 816 (CPRE)

Regional planning: controls
Q 2822, 2868-2870 (Cambs, Essex, Herts CC)
p 707 (NFU)
see also Local planning; Urbanisation

Research establishments see Scientific establishments

Roads see Surface access: roads

Royal Institute of British Architects, Eastern Region (RIBA): evidence
p 808-810, 918

Royston Urban District Council: evidence
p 656-657, 847 Q 2977-2978

Runways: orientation/alignment
p 614 (Cambs, Essex, Herts CC)
p 893-894 (Chesterford Park RS, Inst of Animal Physiology, Tube Investments, Welding Inst)
p 785-786 (Mrs S Williams MP)

SSSI see Sites of special scientific interest

Safety see Air safety

Sand and gravel
p 609 (Cambs, Essex, Herts CC)
p 738 (CLA)

Sandy Urban District Council
p 844

Printed image digitised by the University of Southampton Library Digitisation Unit

Schools
p 636-638, 640-644, 830 Q 2925-2934 (Cambs, Essex, Herts CC)
p 653-654 (Luton CBC)
p 671-672, 674 Q 3029-3033 (Stevenage Dev Corp)
p 749, 886 (Rev F L Morris)
p 800-801 Q 3486-3489 (Cambridge U)

Scientific establishments
p 638-639 (Cambs, Essex, Herts CC)
p 757-763 (Chesterford Park RS)
p 764-767 (Welding Inst)
p 768-769 (Inst of Animal Physiology)
p 770-772 Q 3385-3391 (Tube Investments)
p 890-894 (Chesterford Park RS, Inst of Animal Physiology, Tube Investments, Welding Inst)
p 899-900 (Mrs S Williams, MP)

Scientific establishments: costs
p 762 (Chesterford Park RS)
p 765 (Welding Inst)
p 768-769 (Inst of Animal Physiology)
p 772 (Tube Investments)
see also Lord's Bridge Observatory

Services and utilities see Electricity; Fuel; Sewage; Water

Sewage
p 609-610 Q 2805-2806 (Cambs, Essex, Herts CC)
p 718-719 (NFU)
p 745-746 Q 3366 (Gt Ouse River Authority)

Sharpe, Pritchard & Co, Messrs: evidence
p 756

Site
p 624, 633, 645 (Cambs, Essex, Herts CC)
p 920 (R H F Parker)

Site information
p 601-603 (CTLA)

Sites of special scientific interest (SSSI)
p 818-819, 919 Q 3499 (Nature Conservancy)

Soil see Land: geology

Soundproofing see Noise: soundproofing

Sports see Gliding; Recreation

Stacking see Air traffic control: stacking

Stansted Airport
p 617, 618, 620 (Cambs, Essex, Herts CC)

Stansted Airport: air traffic control
p 614 (Cambs, Essex, Herts CC)

Printed image digitised by the University of Southampton Library Digitisation Unit

Stevenage Development Corporation: evidence
p 669-676, 820, 853-857 Q 3001-3082, 3500-3501

Stevenage Industrial Employers Group: evidence
p 676

Surface access
p 610-611 (Cambs, Essex, Herts CC)
p 920 (R H F Parker)

Surface access: rail
p 611-612, 634, 649 Q 2794-2802 (Cambs, Essex, Herts CC)
p 896-897 (Herts Soc)
p 808-809 (RIBA)

Surface access: rail: advanced passenger train (APT)
p 610-611, 612, Q 2801 (Cambs, Essex, Herts CC)

Surface access: roads
p 611, 619, 634, 649 Q 2807-2811, 2817, 2950-2952 (Cambs, Essex, Herts CC)
p 657 (Royston UDC)
Q 3036 (Stevenage Dev Corp)
p 687 (Nuthampstead Pres Assn)
p 880 (CLA)
p 896-897 (Herts Soc)
p 807 Q 3495-3496 (Premier Travel)
p 808-809 (RIBA)
p 816 (CPRE)

Surface drainage see Water: surface drainage

Timing of the need
p 608 (Cambs, Essex, Herts CC)

Town and country planning see Local planning; Regional planning; Urbanisation

Transport see Surface access

Tube Investments Ltd: evidence

Turbulence
p 649 Q 2948 (Cambs, Essex, Herts CC)

Universities see Schools

University of Cambridge see Cambridge University

Printed image digitised by the University of Southampton Library Digitisation Unit

Urbanisation
p 622-623, 625, 630, 631, 632-633, 647-649, 828-829, 830 Q 2822-2825, 2840-2886, 2890-2893 (Cambs, Essex, Herts CC)
Q 3036-3038 (Stevenage Dev Corp)
p 686 (Nuthampstead Res Assn)
p 700, 708-711, 713, 876 Q 3334-3347 (NFU)
p 896 Q 3408-3419 (Herts Soc)
p 786 (Mrs S Williams, MP)
p 906-907 (Cambridge U)
p 809-810 (RIBA)
p 816-817 (CHRE)
see also Housing; Local planning; Regional planning

Utilities see Electricity; Fuel; Sewage;

Vibration see Noise: vibration

Water: supply
p 609 Q 2803-2804 (Cambs, Essex, Herts CC)
p 738, 879 (CLA)
p 743-744 Q 3365 (Gt Ouse River Authority)

Water: surface drainage
p 610, 646, 648 (Cambs, Essex, Herts CC)
p 700, 715, 718-719, 877 Q 3201-3203, 3208-3217, 3222-3229 (NFU)
p 879 (CLA)
p 743 Q 3363-3364 (Gt Ouse River Authority)

Water pollution
p 718-719 (NFU)
p 745 (Gt Ouse River Authority)
see also Sewage

Weather see Meteorology

Welding Institute: evidence
p 764-767, 890-894 Q 3371-3383

Wildlife conservation see Conservation

Williams, Mrs Shirley, MP: evidence
p 784-786, 899-900

Wilson Report (Noise: final report) Cmnd 2056
-quoted extensively throughout

Work see Employment

Printed image digitised by the University of Southampton Library Digitisation Unit

p = page Q = question

AONB see Land: landscape

APT see Surface access: rail: advanced passenger train

ATC see Air traffic control

AUD (Associated urban development) see Urbanisation

Addis, Lt Col I B : evidence
p 1420, 1729

Advanced Passenger Train see Surface access: rail: advanced passenger train

Aerodromes see Airfields; Airports; Defence

Agriculture
p 1051, 1056-1063 (Bucks CC)
p 1081 (Herts CC)
p 1130 (Newton Longville PC)
p 1137 (Wingrave with Rowsham PC)
p 1153 (Ploughley RDC)
p 1156, 1590 (Great Haseley PC)
p 1192, Q 4128-4131 (WARA)
p 1235-1237, 1243-1251, 1253-1258, 1657-1660 (NFU)
p 1258-1286, 1667-1668 (CLA)
p 1311 (Weedon WI)
p 1313 (Bucks Assoc of PCs)
p 1324, 1688-1689 Q 4709-4715 (Dr D M Allen)
p 1327 (Capt D J Bellingham)
p 1337-1338 (D and J E Midwinter)
p 1339 (Mrs P M Murphy)
p 1344, 1345 Q 4817-4852 (CASC)
p 1346, 1348-1349 Q 4921-4935, 4962-4 (R Bramwell)

Printed image digitised by the University of Southampton Library Digitisation Unit

Agriculture (cont)
p 1380 (Cublington PC)
p 1381, 1722 (A J Biggs)
p 1389, 1724 (A C Read)
p 1390 (Mrs R A Roger)
p 1412, 1413 (Drayton Parslow PC)
p 1422 (Mrs P Johnston Bolton)
p 1431 (Dunton Parish Meeting)
p 1449 (A B Cozens)
p 1452 (J D Faulkner)
p 1457, 1745 (P E Wheeler)
p 1469 (Stoke Hammond PC)
p 1487 (Whitchurch PC)
p 1491, 1761 (L Coates)
p 1496 (Wing PC)
p 1722 (Mrs C Bodington)
Q 3736-3765 (Bucks, N'hants, Oxon CC)
Q 4702-4707 (Mid Bucks Liberal Assoc)

Agriculture: land classification
p 1236, 1244-1245, 1249-1250, 1657 (NFU)

Agriculture: small holdings
p 1057-1058 (Bucks CC)
p 1536 Q 3736-3738 (Bucks, N'hants, Oxon CC)
see also Horticulture; Livestock

Air pollution
p 1040 (Bucks, Beds, N'hants, Oxon CC)
p 1058 (Bucks CC)
Q 3627-3630, 3767-3768 (Bucks, N'hants, Oxon CC)
p 1073 (Beds CC)
p 1103 (Winslow RDC)
p 1125 (Newport Pagnell Assoc of Parish Councils)
Q 3944-3947 (Pitstone PC)
p 1139 (Winslow PC)
p 1149 (Leighton-Linslade UDC)
p 1154 (Aston Rowant PC)
p 1188 Q 4355-4356 (WARA)
p 1277 (CPRE)
p 1283 (Chiltern Soc)
p 1291, 1293 (Beacon Villages Soc)
p 1311 (Weedon WI)
p 1355 (Ashendon PC etc)
p 1376 (S F Jones)
p 1420 (Lt Col I B Addis)
p 1422, 1730 (Mrs P Johnston Bolton)
p 1425 (Mrs J M V Tinworth)
p 1426, 1731 (J G C Spencer Bernard)
p 1438 (Oving PC)
p 1458, 1745-1746 (D B Head)
p 1461 (Dr D MacCarthy)
p 1470 (W G Bates)
p 1487 (Whitchurch PC)
p 1489 (Mr I and Mrs R A Beckett)
p 1690-1691 Q 4719-4725 (Capt D J Bellingham)
p 1695 Q 4740-4742 (Dr B W A Ricketson)

Printed image digitised by the University of Southampton Library Digitisation Unit

Air route structure see Air traffic control: air route structure

Air safety
p 1040 (Bucks, Beds, N'hants, Oxon CC)
p 1068-1069 (Oxon CC)
p 1157 (Hethe PC)
p 1229 (W H Ruthven)
p 1289 (Beacon Villages Soc)
p 1328 (D Brown)
p 1355 (Ashendon PC etc)
p 1422 (Mrs P Johnston Bolton)
p 1426, 1731 (J G C Spencer Bernard)
p 1438 (Oving PC)
p 1461 (Dr D Mac Carthy)
p 1475, 1757 (F O Gregg)
p 1728 (A K Jones)

Air safety: Birdstrike
p 1218-1219, 1600, Q 4408, 4416-4420, 4457-4477 (WARA)

Air traffic
Q 4413 (WARA)

Air traffic: freight
Q 3508 (Bucks, N'hants Oxon CC)

Air traffic: passenger
p 1011 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1027 Q 3503 (Bucks, N'hants, Oxon CC)

Air traffic control (ATC)
p 1015-1016 (Bucks Beds Herts N'hants Oxon CC)
p 1209-1210, 1211-1214, 1216-1217, 1600, 1602 Q 4399-4401, 4404-4408, 4426-4428 (WARA)
p 1531 Q 3513-3589 (Bucks N'hants Oxon CC)
Q 3833-3834, 3857 (Luton CB)

Air traffic control: air route structure
p 1209, 1213 (WARA)
p 1230 (W H Ruthven)
p 1473, 1756 (J R Jeffries)

Air traffic control: stacking
p 1015, 1016 (Bucks, Beds, Herts, N'hants, Oxon CC)
see also Runways

Air traffic movements see Movements: air traffic

Aircraft see Vertical take off and landing

Airfields: private
p 1473, 1756 (J R Jeffries)
see also Airports; Defence

Printed image digitised by the University of Southampton Library Digitisation Unit

Airport capacity
p 1641 (W H Ruthven)

Airport design
Q 3619-3621 (Bucks, N'hants Oxon CC)
p 1347 (R Bramwell)

Airports: effect of Third London airport
p 1081 (Herts CC)
p 1084-1086, 1088-1089, 1563 (Luton CB)
p 1209, 1213-1214 (WARA)
see also Airfields; Defence

Allen, Dr D M: evidence
p 1324, 1688-1689
Q 4709-4715

Amenity
p 1024-1026, 1030 (Bucks, Beds, N'hants, Oxon CC)
p 1533-1535, Q 3640-3641 (Bucks, N'hants, Oxon CC)
p 1065 (Oxon CC)
p 1071 Q 3777 (Milton Keynes)
p 1074, 1557-1558 (Beds CC)
p 1080-1081 (Herts CC)
p 1092 (Aylesbury RDC)
p 1093 (Berkhampsted UDC)
p 1101 (Wing RDC)
p 1573 (Aylesbury BC)
p 1120 (Bletchley UDC)
p 1131 (North Marston PC)
p 1131, 1576 (Pitstone PC)
p 1136, 1137, 1578 (Wingrove with Rowsham PC)
p 1140 (Winslow PC)
p 1144 (Kingsey PC)
p 1148 (Leighton-Linslade UDC)
p 1150 (Stone with Bishopstone PC)
p 1151-1152 (Thame UDC)
p 1153 (Ploughley RDC)
p 1154 (Aston Rowant PC)
p 1158 (Towersey PC)
p 1172, 1179, 1184-1185, 1186, 1188, 1599
Q 4276 (WARA)
p 1223, 1635-1636 (Stewkley Action Committee)
p 1231-1232, 1233-1234, 1643-1644 Q 4567-4584
4623-4624 (CASC)
p 1262 (Nature Conservancy)
p 1259-1260 (Nat Trust)
p 1263-1264, 1265-1274, 1276-1278, 1279, 1663-
1664 (CPRE)
p 1283, 1665 (Chiltern Soc)
p 1286-1287 (CLA)
p 1289-1292 (Beacon Villages Soc)
p 1307-1308 (Bucks Fed of Women's Institutes)
p 1309-1310 (Mrs S L Sargeant)

Printed image digitised by the University of Southampton Library Digitisation Unit

Amenity (cont)
p 1311, 1680 (Weedon WI)
p 1313, 1681-1682 (Bucks Assoc of PCs)
p 1322, 1686, 1687 (Mid Bucks Liberal Assoc)
p 1329-1330 (Mrs P Brunner)
p 1335 (A C Lovejoy)
p 1337-1338, 1694 (D and J E Midwinter)
p 1341, 1696 (Mrs B Taylor)
p 1345 Q 4853 (CASC)
p 1347 (R Bramwell)
p 1350, 1710 (M J M Cornwell)
p 1351, 1711-1712 Q 4980 (Stewkley Labour Party)
p 1355-6 (Ashendon etc)
p 1362 (A E Toy)
p 1382, 1722 (Mrs C Bodington)
p 1393-5 (CPRE)
p 1418 (Great Brickhill PC)
p 1421 (S E Baker)
p 1426 (J G C Spencer Bernard)
p 1435 (Hardwick PC)
p 1463, 1749 (Mr P G Medcalf)
p 1469, 1755 (Stoke Hammond Parish Council)
p 1477 (Weedon Parish Anti-Airport Committee)
p 1483 (Mr M H J Radcliffe)
p 1484, 1759 (Mr D F Ryder Richardson)
p 1486, 1759 (Mr K Walker)
p 1487 (Whitchurch PC)
p 1496 (Wing PC)
p 1499, 1764 (Mr A G Harris)
p 1509 (Mr D J Barrington)
see also Land; Recreation

Ancient monuments see Historic Buildings; Churches

Andrews, W E: evidence
p 1375, 1720

Area of outstanding natural beauty see Land: landscape

Armstrong, Dr W B: evidence
p 1467, 1754

Ashendon Parish Council: evidence
p 1355-7, 1717 Q 4984

Association of Parish Councils, County of Buckingham see County of Buckingham Association of Parish Councils

Aston Rowant Parish Council: evidence
p 1154, 1589

Aylesbury Borough Council: evidence
p 1111-1117, 1573-1574

Written evidence pages 1007-1515 Oral evidence pages 1529-1771

Printed image digitised by the University of Southampton Library Digitisation Unit

Aylesbury Industrial Group: evidence
p 1319-1321
Q 4689-4701

Aylesbury Rural District Council: evidence
p 1091-1092, 1749-54
Q 3861-3867

Atmospheric pollution see Air pollution

Aviation fuel see Fuel: aviation

Baker, S E: evidence
p 1421, 1729

Ball, A R S: evidence
p 1488, 1760

Ball, S R K: evidence
p 1439, 1740

Barff, Mrs F J: evidence
p 1440, 1740-1

Barrington, D: evidence
p 1509, 1768-9

Bateman, B: evidence
p 1325-1326, 1690
Q 4716-4718

Bates, Mrs D: evidence
p 1444, 1741-2

Bates W J: evidence
p 1470, 1755

Beacon Villages Society: evidence
p 1289-1293, 1669-1672

Beckett, Mr I & Mrs R A: evidence
p 1489, 1760

Bedford Corporation: evidence
p 1145-1146, 1585

Bedfordshire County Council: evidence
p 1007-1049, 1072-1075, 1556-1559
Q 3791-3821

Bellingham Capt D J: evidence
p 1327, 1690
Q 4720-4725

Printed image digitised by the University of Southampton Library Digitisation Unit

Berkhamsted Rural District Council: evidence
p 1093-1095, 1749-1754
Q 3868-3872

Berkshire, Buckinghamshire and Oxfordshire Naturalists' Trust: evidence
p 1276-1278

Bernard, J G C Spencer see Spencer Bernard, J G C

Biggs, A J: evidence
p 1381, 1722

Birds: conservation
p 1664 (CPRE)

Birdstrike see Air safety: birdstrike

Black, Mrs F R: evidence
p 1498, 1764

Bletchley Urban District Council: evidence
p 1119-1120, 1574

Bodington, Mrs C: evidence
p 1382, 1722

Bolton, Mrs P Johnson: evidence
p 1420, 1729-30

Boyd, P J: evidence
p 1471, 1755

Bramwell R: evidence
p 1346-1349
Q 4882-4973

Bratton, V F: evidence
p 1446, 1742

Brown C: evidence
p 1490, 1760-1

Brewer, C: evidence
p 1107

British Airports Authority
p 1284 (letter with evidence from the Chiltern Society)

British Medical Association, Buckinghamshire Division: evidence
p 1182-1183
Q 4237-4268

Brown, D: evidence
p 1328, 1691-1692

Printed image digitised by the University of Southampton Library Digitisation Unit

Brown, Mr & Mrs J B: evidence
p 1447, 1742

Brown, Dr P S: evidence
p 1379, 1722

Brunner, Mrs P: evidence
p 1329-1330, 1692

Buckinghamshire County Council: evidence
p 1007-1063
Q 3501-3768

Buckinghamshire Small Holdings Committee
p 1056-1063 (Bucks CC)

Buckinghamshire Federation of Women's Institutes: evidence
p 1307-1308, 1679-1680

Bucks Water Board: evidence
p 1159, 1591
Q 4045-4058

Bullingdon Rural District Council: evidence
p 1096, 1749-1754
Q 3873-3877

Canals see Surface access: Canals

Cargo see Air traffic: freight

Carpenter, Miss E P: evidence
p 1692

Chandler A C: evidence
p 1331-1332, 1692-1693

Chearsley Parish Council: evidence
p 1355-6, 1357-8, 1717, Q 4984

Cheney, G A: evidence
p 1723

Chiddick, R W: evidence
p 1479, 1757-8

Chiltern Society: evidence
p 1283-1284, 1665-1666

Chilterns Standing Conference
p 1077 (Herts CC)

Chinnor Parish Council: evidence
p 1589-1590

Printed image digitised by the University of Southampton Library Digitisation Unit

Churches
p 1019, 1022 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1026 (Bucks, Beds, N'hants, Oxon CC)
p 1225, 1637 (Rev J E H Williams)
p 1299-1306, 1677-1679 (St Michaels Church)
p 1331 (A C Chandler)
p 1393-1395, 1399-1401 Q 5005-5009 (CPRE)
p 1418 (Great Brickhill PC)
p 1420, 1729 (Lt Col I B Addis)
p 1431 (Dunton Parish Meeting)

Coates, L: evidence
p 1491, 1761-2

Cole, F R: evidence
p 1448, 1742-3

Coleman, Mr & Mrs C W: evidence
p 1436, 1739

Coles F C: evidence
p 1450, 1743

College of Aeronautics, Cranfield: evidence
p 1211-1214
Q 4422-4429

Civil aerodromes see Airports; Airfields

Commerce see Industry & commerce

Commuters
p 1079-1080 (Herts CC)

Conservation
p 1261-1262 (Nature Conservancy)
p 1277-1278 (Berks, Bucks, Oxon Naturalists Trust)
p 1393, 1663-1664 (CPRE)

Conservation: birds
p 1664 (CPRE)

Conservation areas see Land: landscape

Conservators of the River Thames: evidence
p 1464-6, 1749

Construction:
p 1008-1009 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1531 Q 3501, 3509-3511 (Bucks, N'hants Oxon CC)
p 1032-1033 (Bucks, Beds, N'hants, Oxon CC)
p 1064-1065 (Oxon CC)
p 1187 (WARA)
p 1343 (CASC)

Construction: costs
p 1032 (Bucks, Beds, N'hants Oxon CC)
p 1065 (Oxon CC)

Printed image digitised by the University of Southampton Library Digitisation Unit

Controlled air space see Air traffic control: air route structure

Cornock, Mrs J: evidence
p 1480, 1758

Cornwall, M J M: evidence
p 1350, 1710

Cost-benefit analysis
p 1600 (WARA)

Costs: agriculture
p 1057 (Bucks CC)
p 1103 (Winslow RDC)
p 1235-1236, 1246-1247 (NFU)
p 1324, 1689 (Dr D M Allen)

Costs: construction
p 1032 (Bucks Beds N'hants, Oxon CC)
p 1065 (Oxon CC)

Council for the Preservation of Rural England: evidence
p 1263-1279, 1662-1664

Council for the Preservation of Rural England (Buckinghamshire Branch): evidence
p 1392-1401, 1724-1726, Q 4989-5017

Country Landowners' Association: evidence
p 1285-1287, 1666-1669
Q 4667-4668

County of Buckingham Association of Parish Councils: evidence
p 1312-1314, 1680-1682
Q 4672

Cox, Long and Company: evidence
p 1288

Cozens, A B: evidence
p 1449, 1743

Crabbe, Raymond: evidence
p 1333-1334 Q 4726-4733

Cublington Airport Supporters' Committee: evidence
p 1231-1234, 1342-1345
Q 4496-4640, 4746-4880

Cublington Parish Council: evidence
p 1380, 1721-2

Printed image digitised by the University of Southampton Library Digitisation Unit

Dancer, S T: evidence
p 1472, 1755-6

Davis, G: evidence
p 1432, 1737-8

Day, F A: evidence
p 1419, 1729

Deep water terminal see Docks: proposed schemes

Defence
p 1016, 1026 (Bucks, Beds, N'hants, Oxon CC)

Docks: proposed schemes
p 1483 (M H J Radcliffe)

Dorton Parish Meeting: evidence
p 1355-6, 1358-9, 1717 Q 4984

Drayton Parslow Parish Council: evidence
p 1403-14, 1727

Dunton Parish Meeting: evidence
p 1431, 1735-6

Drainage see Sewage; Water

East Midlands Economic Planning Council
p 1030 (Bucks, Beds, N'hants, Oxon CC)
p 1192-1193 (WARA)

Education see Schools

Electrical interference
p 1120 (Bletchley UDC)
p 1123 (Newport Pagnell RDC)
p 1140 (Winslow PC)
p 1155 (Great Haseley PC)
p 1355 (Ashendon PC etc)
p 1513, 1769 (A Tomkins)

Electricity
p 1011 (Bucks, Beds, Herts, N'hants, Oxon CC)
Q 3512 (Bucks, N'hants, Oxon CC)
p 1027 (Bucks, Beds, N'hants, Oxon CC)
p 1140 (Winslow PC)
p 1230 (W H Ruthven)
p 1343 (CASC)

Printed image digitised by the University of Southampton Library Digitisation Unit

Employment
p 1191 Q 4338-4342 (WARA)
p 1312-1313 (Bucks Assoc of PCs)
p 1319 Q 4700 (Aylesbury Industrial Group)
p 1344-1345 Q 4507-4511, 4516-4532 (CASC)
p 1028-1029, 1032 (Bucks, Beds, N'hants, Oxon CC)
Q 3631-3639, 3656-3658 (Bucks, N'hants, Oxon CC)
p 1554, Q 3773-3778 (Milton Keynes DC)
p 1073, 1074, 1553 Q 3797 (Beds CC)
p 1078-1080 (Herts CC)
p 1115 (Aylesbury BC)
p 1152 (Thame UDC)

Employment: effect of Third London Airport
p 1028-1029, 1032 (Bucks, Beds, Northants, Oxon CC)
p 1532 (Bucks, N'hants, Oxon CC)
p 1070-1071, 1554 Q 3777 (Milton Keynes DC)
p 1073, 1074, 1553 Q 3798-3801 (Beds CC)
p 1078-1080 (Herts CC)
p 1088, 1089 (Luton CB)
p 1115 (Aylesbury BC)
p 1119-1120 (Bletchley UDC)
p 1140 (Winslow PC)
p 1146 (Bedford Corp)
p 1148 (Leighton-Linslade UDC)
p 1150 (Stone with Bishopstone PC)
p 1172-1173, 1191 Q 4337 (WARA)
p 1231, 1233-1234, 1642-1643 Q 4506, 4561-4566 (CASC)
p 1239-1240, 1246, 1248 (NFU)
p 1294 (New College)
p 1319 (Aylesbury Industrial Group)
p 1687 (Mid-Bucks Liberal Assoc)
p 1331 (A C Chandler)
p 1502 (E F Kidd)
Q 4310-4316 (WARA)

Environment see Amenity

Farming see Agriculture

Faulkner, A B: evidence
p 1451, 1744

Faulkner, J D: evidence
p 1452, 1744 Q 5019

Fehr, P: evidence
p 1437, 1739

Flooding see Water: surface drainage

Fog see Meteorology

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulgar, Mrs D: evidence
p 1492, 1762

Fraser, Mr & Mrs C E: evidence
p 1481, 1758

Freight see Air traffic: freight

Fuel
p 1027-8 (Bucks, Beds, N'hants, Oxon CC)
Q 3618 (Bucks, N'hants, Oxon CC)
p 1343 (CASC)

Fuel: aviation
p 1011 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1348 (R.Bramwell)

Fuller, B H: evidence
p 1364, 1718

Gas
p 1027 (Bucks, Beds, N'hants, Oxon CC)
p 1343 (CASC)

Gliding
p 1216-1217, Q 4430-4454 (WARA)
p 1473, 1756 (d R Jeffries)

Grace, Mrs E M: evidence
p 1453, 1744

Grace, Mrs F W: evidence
p 1445, 1742 Q 5018

Granborough Parish Council: evidence
p 1127, 1575

Gravel see Sand and gravel

Graves, D C T: evidence
p 1363, 1718

Great Brickhill Parish Council: evidence
p 1417-18, 1728-9

Great Haseley Parish Council: evidence
p 1155-1156, 1590-1591
Q 4039-4044

Great Ouse River Authority: evidence
p 1141-1143
Q 3954-4001

Written evidence pages 1007-1515 Oral evidence pages 1529-1771

Printed image digitised by the University of Southampton Library Digitisation Unit

Green belt see Local planning; Regional planning

Greenacre, C: evidence
p 1427, 1731-2

Gregg, F O: evidence
p 1475, 1757

Haddenham Parish Council: evidence
p 1128-1129, 1575

Hague, H: evidence
p 1482, 1758

Harding, A C: evidence
p 1106

Hardings, M A: evidence
p 1454, 1744

Hardwick Parish Council: evidence
p 1434-5, 1738-9

Harris, A G: evidence
p 1499, 1764

Harris, Miss C E: evidence
p 1378, 1721

Harris, Miss D M: evidence
p 1500, 1764-5

Hart, Dr V E Lloyd see Lloyd Hart, Dr V E

Head, D B: evidence
p 1458, 1745-6

Health see Noise: medical effects

Health institutions see Hospitals

Heley, R G F: evidence
p 1501, 1765

Hertfordshire County Council: evidence
p 1007-1022, 1076-1082, 1561-1563
q 3822-3825

Hethe Parish Council: evidence
p 1157

Printed image digitised by the University of Southampton Library Digitisation Unit

Historic buildings
p 1025-1026 (Bucks, Beds, N'hants, Oxon CC)
p 1175-1178, 1181, 1184, 1187 Q 4137-4140 (WARA)
p 1259-1260, 1661 (Nat Trust)
p 1265-1274 (CPRE)
p 1286 (CLA)
p 1299-1306, 1677-1679 (St Michael's Church)
p 1329-1330, 1690 (Mrs P Brunner)
p 1363, 1718 (D C T Graves)
p 1376 (S F Jones)
p 1380 (Cublington PC)
p 1381 (A J Biggs)
p 1722 (Mrs C Bodington)
p 1393 Q 5011, 5014-15, 5017 (CPRE)
p 1426, 1731 (J G C Spencer Bernard)
p 1431 (Dunton Parish Meeting)
p 1442 (Stewkley PC)
p 1451 (A B Faulkner)
p 1495 (Wing PC)
p 1764 (A G Harris)
p 1765 (R G F Heley)
see also Churches

Holding areas see Air traffic control: stacking

Holmes, S: evidence
p 1365, 1718

Horticulture
p 1368 (V J Scott)
p 1369 (R G Parsons)

Hospitals
p 1018-1019, 1021 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1026, 1040-1044 (Bucks, Beds, N'hants, Oxon CC)
p 1534, Q 3542-3545, 3558, 3665-3687, 3693-3694 (Bucks, N'hants, Oxon CC)
p 1136 (Wingrave with Rowsham PC)
p 1151 (Thame UDC)
p 1188, 1189 (WARA)
p 1281-1282, 1664-1665 (St John's Hospital)
p 1377, 1721 (Dr V E Lloyd Hart)
p 1738 (Dr L S Michaelis)

Housing
p 1032 (Bucks, Beds, N'hants, Oxon CC)
Q 3799-3801 (Beds CC)
p 1078-1079, 1082 (Herts CC)
p 1094 (Berkhamsted UDC)
p 1098 (Tring UDC)
p 1114 (Aylesbury BC)
Q 4005-4006 (Leighton-Linslade UDC)
p 1173, 1223 (WARA)
p 1344 (CASC)
p 1496 (Wing PC)
see also Property values

Printed image digitised by the University of Southampton Library Digitisation Unit

Housing and Local Government, Ministry of
p 1030, 1031 (Bucks, Beds, N'hants, Oxon CC)
p 1073 (Beds CC)
p 1076 (Herts CC)
p 1112, 1113 (Aylesbury BC)
p 1191 (WARA)
p 1668 (CLA)

ILC see Regional planning: controls

Industrial development certificates see Regional planning: controls

Industry and Commerce
p 1029 (Bucks, Beds, N'hants, Oxon CC)
p 1079 (Herts CC)
p 1089 (Luton CBC)
p 1114-1115 (Aylesbury BC)
p 1240 (NFU)
p 1312-1313, 1681 (Bucks Assoc of PCs)
p 1319-1321 Q 4690-4699 (Aylesbury Industrial Group)
p 1373-4 (D J Watts)
p 1385 Q 4986-8 (B G Osborn)
p 1451, 1744 (A B Faulkner)
p 1463, 1749 (P G Medcalf)
p 1483, 1758 (M H J Radcliffe)
p 1484, 1759 (D F Ryder Richardson)
p 1532 Q 3602-3605, 3635 (Bucks, N'hants, Oxon CC)
p 1554 Q 3773, 3778 (Milton Keynes DC)
Q 3797, 3821 (Beds CC)

Ipswich New Town
p 1668 (CLA)

Insulation see Noise: soundproofing

Jeffries, J R: evidence
p 1473, 1756

Jennings, Mrs S W: evidence
p 1510, 1769

Johnston Bolton, Mrs P see Bolton, Mrs P Johnston

Jones, A K: evidence
p 1415-16, 1727-8

Jones, S F: evidence
p 1376, 1720

Judd, D: evidence
p 1366, 1719

Printed image digitised by the University of Southampton Library Digitisation Unit

Kidd, E F: evidence
p 1502-3, 1766-7

Kingsey Parish Council: evidence
p 1144, 1585

Labour see Employment

Lambourne, D A: evidence
p 1756

Land
p 1322, 1686, Q 4702-4707 (Mid-Bucks Liberal Assoc)

Land: costs and benefits
p 1246-1247 (NFU)

Land: landscape
p 1024 (Bucks, Beds, N'hants, Oxon CC)
p 1533 (Bucks, N'hants, Oxon CC)
p 1073, 1074, 1557-1558 (Beds CC)
p 1077, 1080-1081, 1082, 1562 (Herts CC)
p 1088 (Luton CB)
p 1092 (Aylesbury RDC)
p 1093 (Berkhamsted UDC)
p 1098 (Tring UDC)
p 1113 (Aylesbury BC)
p 1137 (Wingrave with Rowsham PC)
p 1148 (Leighton-Linslade UDC)
p 1174-1175, 1176-1177, 1179, 1184, 1192, 1599, Q 4128, 4135-4136 (WARA)
p 1259-1260 (Nat Trust)
p 1263-1264, 1265-1274, 1276-1277, 1279, 1663-1664 (CPRE)
p 1283, 1665-1666 (Chiltern Soc)
p 1287 (CLA)
p 1289-1291 (Beacon Villages Soc)
p 1329-1330 (Mrs P Brunner)
p 1393, Q 5012-5013 (CPRE)
p 1417-1418, 1728 (Great Brickhill PC)
p 1441, 1741 (Mr and Mrs A Morrison)
p 1496 (Wing PC)
p 1510, 1769 (S W Jennings)
p 1737-1738 (G Davis)
p 1761-1762 (L Coates)
see also Agriculture; Amenity; Horticulture; Recreation

Land classification see Agriculture: land classification

Landscape see Land: landscape

Printed image digitised by the University of Southampton Library Digitisation Unit

Leighton Buzzard Arts Club: evidence
p 1295, 1672-1673

Leighton-Linslade Urban District Council:
evidence
p 1147-1149, 1585-1586
Q 4002-4033

Livestock
p 1058 (Bucks CC)
p 1286, 1667 (CLA)
p 1413 (Drayton Parslow PC)
p 1485 (D G M Smart)
p 1491, 1761 (L Coates)
p 1736-1737 (P K Wolf)
Q 4710 (Dr D M Allen)

Lloyd Hart, Dr V E: evidence
p 1377, 1720-1

Local opinion: statistics
p 1163-1173, 1598 Q 4059-4069, 4073-4121 (WARA)
p 1223-1224, 1635 Q 4492-4495 (Stewkley Action Committee)
p 1232 Q 4496-4506, 4533-4560, 4585-4614, 4631-4640 (CASC)
p 1658 (NFU)
p 1669 (CLA)
Q 4746-4777, 4856-4859 (CASC)
p 1346 (R Bramwell)
p 1350, 1710 (M J M Cornwall)
p 1713-1714 Q 4975-4982 (Stewkley Labour Party)

Local planning
p 1030-1031 (Bucks, Beds, N'hants, Oxon CC)
p 1070-1071, 1554 (Milton Keynes DC)
p 1073, 1074, 1556-1559 Q 3795-3821 (Beds CC)
p 1076-1078, 1082, 1562 (Herts CC)
p 1088-1090 (Luton CB)
p 1091 (Aylesbury)
p 1093 (Berkhamsted UDC)
p 1097-1098, 1099 (Tring UDC)
p 1101 (Wing RDC)
p 1112-1116 (Aylesbury BC)
p 1574 (Bletchley UDC)
p 1135, 1136, 1137 Q 3948-3950 (Wingrave with Rowsham PC)
p 1148, 1586, Q 4005-4008 (Leighton-Linslade UDC)
p 1590 (Chinnor PC)
p 1239 (NFU)
p 1348 (R Bramwell)
see also Regional planning; Urbanisation

Printed image digitised by the University of Southampton Library Digitisation Unit

Lock, Squadron Leader B: evidence
p 1312-1314
Q 4672

London and South East Regional Planning Standing Conference
p 1030 (Bucks, Beds N'hants, Oxon CC)
p 1077 (Herts CC)
p 1668 (CLA)

Lovejoy, A C: evidence
p 1335, 1694

Lower Winchendon Parish Meeting: evidence
p 1355-6, 1359, 1717 Q 4984

Lumb, Dr J R: evidence
p 1474, 1757

Luton airport
p 1015 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1081 (Herts CC)
p 1084-1086, 1088-1089, 1563 Q 3831-3857 (Luton CB)

Luton County Borough Council: evidence
p 1084-1090, 1563-1564
Q 3826-3860

MacCarthy, Dr D: evidence
p 1461-2, 1749

McMahon, Mrs C M: evidence
p 1423, 1730

Main, R E: evidence
p 1493, 1762

Males, A E: evidence
p 1383, 1723

Manley, Mrs P O: evidence
p 1384, 1723

Mead, J W: evidence
p 1455, 1744-5

Medcalf P G: evidence
p 1463, 1749

Meredith, R S: evidence
p 1511-12, 1769

Meteorological Office: evidence
p 1293

Written evidence pages 1007-1515 Oral evidence pages 1529-1771

Printed image digitised by the University of Southampton Library Digitisation Unit

Meteorology
p 1015 (Bucks, Beds, Herts, N'hants, Oxon CC)
Q 3518-3533 (Bucks, N'hants, Oxon CC)
Q 3833-3837 (Luton CB)
p 1230 (W H Ruthven)
p 1233 (CASC)
p 1293 (Beacon Villages Soc)
p 1346 Q 4946-4954 (R Bramwell)

Michaelis, Dr L S: evidence
p 1433, 1738

Mid-Bucks Liberal Association: evidence
p 1322, 1686-1687
Q 4702-4708

Midwinter, D and J E: evidence
p 1336-1338, 1694

Military airfields see Defence

Milton Keynes Development Corporation: evidence
p 1070-1071, 1553-1554
Q 3771-3790

Milton Keynes New Town
p 1007-1008 (Bucks, Beds, Herts N'hants Oxon CC)
p 1023-1027, 1030-1033 (Bucks, Beds, N'hants, Oxon CC)
p 1532, 1533 Q 3605, 3608, 3648-3653 (Bucks, N'hants, Oxon CC)
p 1070-1071, 1553-1554 Q 3771-3790 (Milton Keynes DC)
p 1562 (Herts CC)
p 1103 (Winslow RDC)
p 1122, 1575 (Newport Pagnell RDC)
p 1193 Q 4317, 4322-4327 (WARA)
p 1658 (NFU)
p 1668 (CLA)
p 1312 (Bucks Assoc of PCs)
p 1324 (Dr D M Allen)

Mineral deposits see Sand and gravel

Ministry see name of individual ministry

Minnitt, H: evidence
p 1441, 1741

Morton, C: evidence
p 1504, 1767

Morrison, Mr & Mrs A McL: evidence
p 1441, 1741

Movements: Air traffic: training flights
p 1212-1214, 1600 Q 4426-4427 (WARA)

Murphy, Mrs P M: evidence
p 1339, 1694
Q 4735-4738

Printed image digitised by the University of Southampton Library Digitisation Unit

NATCS see National Air Traffic Control Services

NFU see National Farmers Union

NNI see Noise and number index

National Air Traffic Control Service (NATCS)
p 1016 (Bucks, Beds, Herts, N'hants, Oxon CC)
see also Air traffic control

National Farmers Union: evidence
p 1235-1258, 1653-1654, 1656-1660
Q 4641-4658

National Spinal Injuries Centre, Stoke Mandeville
p 1182-1183, Q 4237-4268 (WARA)
p 1486 (K Walker)
p 1738 (L S Michaelis)
Q 3680-3687, 3699-3700 (Bucks, N'hants, Oxon CC)

National Trust: evidence
p 1259-1260, 1661
Q 4659-4665

Nature Conservancy: evidence
p 1261-1262, 1662

Nature Conservation see Conservation

New College, Oxford: evidence
p 1294, 1672
Q 4670-4671

Newport Pagnell and District Association of Parish Councils: evidence
p 1125-1126

Newport Pagnell Rural District Council: evidence
p 1121-1123

Newton Longville Parish Council: evidence
p 1130, 1576

Noise
p 1017-1022 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1023-1027 (Bucks, Beds, N'hants, Oxon CC)
p 1045-1046 (Bucks, Beds, Oxon CC)
p 1533, Q 3538-3589, 3642-3647 (Bucks, Beds, N'hants, Oxon CC)
p 1071 (Milton Keynes DC)
p 1072-1073, 1074, 1075, 1557-1558 (Beds CC)
p 1081 (Herts CC)
p 1091 (Aylesbury RDC)
p 1095 (Berkhamsted UDC)
p 1096 (Bullingdon RDC)
p 1100 (Wing RDC)
p 1103 (Winslow RDC)
p 1116-1117 (Aylesbury BC)
p 1120 (Bletchley UDC)
p 1121-1122 (Newport Pagnell RDC)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise (cont)
p 1128, 1575 (Haddenham PC)
p 1130, 1576 (Newton Longville PC)
p 1131 (North Marston PC)
p 1144 (Kingsey PC)
p 1145 (Bedford Corp)
p 1148-1149 & 4022-4027 (Leighton-Linslade UDC)
p 1150 (Stone with Bishopstone PC)
p 1155 (Great Haseley PC)
p 1157 (Hethe PC)
p 1158 (Towersey PC)
p 1172, 1187-1189, 1199-1204, 1601-1603
Q 4215, 4224-4228, 4233-4235, 4275-4277, 4361-4394 (WARA)
p 1230 (W H Ruthven)
p 1236, 1256 (NFU)
p 1265, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274-1275, 1393, 1395, 1396 (CPRE)
p 1283, 1666 (Chiltern Soc)
p 1307 (Bucks Fed of W I's
p 1311, 1680 (Weedon WI)
p 1316 (E G R Taylor)
p 1323, 1688 (Sir John Rothenstein)
p 1327 (Capt D J Bellingham)
p 1333-1334 Q 4726-4732 (R Crabbe)
p 1335 (A C Lovejoy)
p 1340, 1695 Q 4743-4744 (Dr B W A Ricketson)
Q 4801-4816 (CASC)
p 1346 Q 4897-4903 (R Bramwell)
p 1355 Q 4984 (Ashendon PC etc)
p 1362, 1718 (A E Toy)
p 1364, 1718 (B H Fuller)
p 1365 (S Holmes)
p 1366 (D Judd)
p 1368 (V J Scott)
p 1369 (R G Parsons)
p 1372 (T Warren)
p 1373-4 (D J Watts)
p 1375 (W E Andrews)
p 1376 (S F Jones)
p 1721 (Dr V E Lloyd Hart)
p 1384 (Mrs P O Manley)

p 1402, 1727 (V G Walker)
p 1410-11 (Drayton Parslow PC)
p 1415 (A K Jones)
p 1418, 1728 (Great Brickhill PC)
p 1419 (F A Day)
p 1420 (Lt Col I B Addis)
p 1421 (S E Baker)
p 1422, 1729-30 (Mrs P Johnston Bolton)
p 1423 (Mrs C M McMahon)
p 1424, 1730 (M R Rakusen)
p 1425, 1731 (Mrs J M V Tinworth)
p 1426 (J G C Spencer Bernard)
p 1433 (Dr L S Michaelis)
p 1434-5 (Hardwick PC)
p 1437 (P Fehr)
p 1438, 1740 (Oving PC)
p 1441 (Mr & Mrs A McL Morrison)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise (cont)
p 1432 (G Davis)
p 1458 (D B Head)
p 1467 (Dr W B Armstrong)
p 1468-1469 (Stoke Hammond PC)
p 1470 (W G Bates)
p 1475 (F O Gregg)
p 1477 (Weedon Parish Anti-Airport Committee)
p 1479, 1757 (R W Chiddick)
p 1480, 1758 (Mrs J Cornock)
p 1758 (C E Fraser)
p 1482, 1758 (H Hague)
p 1484, 1759 (D F Ryder Richardson)
p 1485 (D G M Smart)
p 1487 (Whitchurch PC)
p 1488 (A R S Ball)
p 1489 (I & Mrs R A Beckett)
p 1491 (L Coates)
p 1494 (Mrs J Ryder Richardson)
p 1496 (Wing PC)
p 1498 (F R Black)
p 1502 (E F Kidd)
p 1504 (C Morton)
p 1506 (N V Rogers)
p 1507, 1768 (Mrs K H Royal)
p 1508 (Mr & Mrs J R West)
p 1768-9 (D J Barrington)
p 1511 (R S Meredith)
p 1513 (A Tomkins)
p 1514 (Mrs J White)

Noise: effects on livestock
p 1058 (Bucks CC)
p 1286, 1667 (CLA)
p 1413 (Drayton Parslow PC)
p 1485 (D G M Smart)
p 1491, 1761 (L Coates)
p 1736-1737 (P K Wolf)
Q 4710 (Dr D M Allen)

Noise: medical effects
p 1038-1042 (Bucks, Beds, N'hants, Oxon CC)
p 1182-1183, 1601, Q 4243-4268 (WARA)
p 1232 Q 4625-4630 (CASC)
p 1280-1282, 1664-1665 (St John's Hospital)
p 1461, 1749 (Dr D MacCarthy)
p 1474, 1757 (Dr J R Lumb)
p 1482, 1758 (H Hague)
p 1692 (Miss E P Carpenter)
p 1722 (Dr P S Brown)
Q 3665-3700 (Bucks, N'hants, Oxon CC)

Noise: property values
p 1050-1051 (Bucks CC)
p 1091 (Aylesbury RDC)
p 1149 (Leighton-Linslade UDC)
p 1188 (WARA)

Written evidence pages 1007-1515 Oral evidence pages 1529-1771

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise: rating appeals
p 1051 (Bucks CC)

Noise: social cost
p 1024-1027 (Bucks, Beds, N'hants, Oxon CC)
p 1533-1535 Q 3546, 3581, 3585-3586 (Bucks, N'hants, Oxon CC)
p 1557 (Beds CC)
p 1121-1122 (Newport Pagnell RDC)
p 1125 (Newport Pagnell Assoc of Parish Councils)
p 1139 (Winslow PC)
p 1586 (Leighton-Linslade UDC)
p 1188 (WARA)
p 1295, 1673 (Leighton Buzzard Arts Club)
p 1471 (P J Boyd)
p 1472 (S T Dancer)
p 1756 (D A Lambourne)
p 1494 (Mrs J Ryder Richardson)
p 1501 (RGF Heley)
p 1513, 1769 (A Tomkins)

Noise: soundproofing
p 1046-1049 (Bucks, Beds, Oxon CC)
p 1557 (Beds CC)
p 1100 Q 3888 (Wing RDC)
p 1221-1222, Q 4264-4268 (WARA)
p 1316 (E G R Taylor)

Noise: take off and landing
p 3573-3574 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1602 (WARA)
p 1284 (BAA)

Noise: vibration
p 1128 (Haddenham PC)
p 1140 (Winslow PC)
p 1154 (Aston Rowant PC)
p 1307 (Bucks Fed of Women's Institutes)
p 1376 (S F Jones)
p 1395 (CPRE)
p 1420 (Lt Col I B Addis)

Noise and number index
p 1017-8 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 3543-3589 (Bucks, N'hants, Oxon CC)
p 1149, 1588 (Leighton-Linslade UDC)
p 1199-1200, 1601 (WARA)
p 1340, 1695 Q 4743-4744 (Dr B W A Ricketson)

Noise certification plan
p 1200 (WARA)

Noise: final report (Wilson report) Cmnd 2056
quoted extensively throughout

Noise levels
p 1018-1022 (Bucks, Beds, N'hants, Herts, Oxon CC)
Q 3541-3589 (Bucks, N'hants, Oxon CC)
p 1046 (Bucks, Beds, N'hants, Oxon CC)
p 1188, 1199-1203 Q 4389-4391 (WARA)
p 1340, Q 4739 (Dr B W A Ricketson)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise measurement see Noise levels: Noise and Number Index

North Marston Parish Council: evidence
p 1131-1132, 1576

Northamptonshire County Council: evidence
p 1007-1044
Q 3501-3768

Occupation see Employment

Oil see Fuel

Opinion polls see Local opinion: statistics

Origin and destination see Air traffic: freight; Air traffic: passenger

Ornithology see Birds: conservation

Osborn, B G : evidence
p 1385, 1723, Q 4986-8

Outdoor activities see Gliding: Recreation

Oving Parish Council: evidence
p 1438, 1739-40

Oxfordshire County Council: evidence
p 1007-1049, 1064-1069
Q 3501-3770

Panter, Mrs S L: evidence
p 1386, 1723-4

Parsons, R G: evidence
p 1369, 1719

Passenger traffic see Air Traffic: Passenger

Pearse, J: evidence
p 1505, 1768

Phillips, A W: evidence
p 1515, 1770-71

Pitstone Parish Council: evidence
p 1133, 1576
Q 3942-3947

Planning see Local planning; Regional planning; Urbanisation

Printed image digitised by the University of Southampton Library Digitisation Unit

Ploughley Rural District Council: evidence
p 1153, 1589

Pollution see Air pollution; Sewage; Water pollution

Population
p 1008 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1073, 1558-1559, Q 3800, 3802-3804 (Beds CC)
p 1078 (Herts CC)
p 1088 (Luton CB)
p 1097-1098 (Tring UDC)
p 1191, Q 4322-4329 (WARA)
p 1590 (Chinnor PC)
Q 3607-3615 (Bucks, N'hants, Oxon CC)
p 1393, Q 5010 (CPRE)

Population: displacement
p 1102 (Winslow RDC)
p 1106 (A C Harding)
p 1107 (C Brewer)
p 1187, 1223, 1635-1636, Q4486-4495 (WARA)
p 1226 (Mrs P Gallimore)
p 1307 (Bucks Fed of Women's Institutes)
p 1335 (A C Lovejoy)
p 1341 (Mrs B Taylor)
p 1347-1348 (R Bramwell)
p 1351, 1712 (Stewkley Labour Party)
p 1382 (Mrs C Bodington)
p 1449 (A B Cozens)
p 1496 (Wing PC)
p 1679 (Mrs S L Sarjeant)

Population: effect of Third London Airport
p 1033 (Bucks, Beds, N'hants, Oxon CC)
p 1532 Q 3608-3613, 3648-3654 (Bucks, N'hants, Oxon CC)
p 1070-1071 (Milton Keynes DC)
p 1078-1079 (Herts CC)
p 1088 (Luton CB)
p 1098 (Tring UDC)
p 1139 (Winslow PC)
p 1229-1230 (W H Ruthven)
p 1241, 1248 (NFU)

Population: estimates: Third London Airport
p 1487 (Whitchurch PC)
Q 4310-4317 (WARA)
see also Employment

Ports see Docks: proposed schemes

Private airfields: see Airfields: private; Gliding

Powell Duffryn Technical Services: evidence
p 1104-1105
Q 3910-3941

Premier Farm Products Ltd see Rakusen, M R

Printed image digitised by the University of Southampton Library Digitisation Unit

Preston, P J: evidence
p 1456, 1745

Property values
p 1050-1063 (Bucks CC)
p 1102 (Winslow RDC)
p 1140 (Winslow PC)
p 1149, 1589 Q 3721-3730 (Leighton-Linslade UDC)
p 1246-1247, 1250-1251, 1254, 1255-1256, 1660 (NFU)
p 1294, 1672 Q 4670-4671 (New College)
p 1335 (A C Lovejoy)
p 1364, 1718 (B H Fuller)
p 1365 (S Holmes)
p 1369 (R G Parsons)
p 1372 (T Warren)
p 1373 (D J Watts)
p 1380 (Cublington PC)
p 1384 (Mrs P O Manley)
p 1385 (B G Osborn)
p 1390 (Mrs R A Roger)
p 1402 (V G Walker)
p 1415 (A K Jones)
p 1419 (F A Day)
p 1420 (Lt Col I B Addis)
p 1422 (Mrs P Johnston Bolton)
p 1423 (Mrs C M McMahon)
p 1424 (M R Rakusen)
p 1432 (G Davis)
p 1434-1435 (Hardwick PC)
p 1437, 1739 (P Fehr)
p 1446 (V F Bratton)
p 1448, 1743 (F R Cole)
p 1461-1462 (Dr D MacCarthy)
p 1463 (P G Medcalf)
p 1468, 1755 (Stoke Hammond PC)
p 1471 (P J Boyd)
p 1472 (S T Dancer)
p 1474, 1757 (Dr J H Lumb)
p 1475 (F O Gregg)
p 1477 (Weedon Parish Anti-Airport Committee)
p 1479, 1757 (R W Chiddick)
p 1480, 1758 (Mrs J Cornock)
p 1482, 1758 (H Hague)
p 1484, 1759 (D F Ryder Richardson)
p 1485 (D G M Smart)
p 1488 (A R S Ball)
p 1490, 1760-1 (C Brown)
p 1493 (R E Main)
p 1494 (Mrs J Ryder Richardson)
p 1498 (F R Black)
p 1765 (R G F Heley)
p 1506 (N V Rogers)
p 1507, 1768 (Mrs K H Royal)
p 1513 (A Tomkins)
p 1536 Q 3721-3730 (Bucks N'hants, Oxon CC)
p 1669 (CLA)
p 1680 (Weedon Wl)
Q 4905-4915 (R Bramwell)
see also Housing

Written evidence pages 1007-1515 Oral evidence pages 1529-1771

Printed image digitised by the University of Southampton Library Digitisation Unit

Public buildings see Churches; Hospitals; Schools

Radar see Navigational aids

Radcliffe, M H J: evidence
p 1483, 1758-9

Radio interference see Electrical interference

Radwell, A J: evidence
p 1387-8, 1724

Rail see Surface access: rail

Rakusen, M R: evidence
p 1424, 1730

Read, A C: evidence
p 1389, 1724

Recreation
p 1074, 1557-1558 (Beds CC)
p 1077-1078 (Herts CC)
p 1101 (Wing RDC)
p 1286-1287, 1668 (CLA)
p 1288 (Cox Long & Co)
p 1291 (Beacon Villages Soc)
p 1347 (R Bramwell)
see also Amenity: Gliding

Regional Planning
p 1007-1008, 1013 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1023-1034 (Bucks, Beds, N'hants, Oxon CC)
p 1532, Q 3592-3658 (Bucks, N'hants, Oxon CC)
p 1070-1071 (Milton Keynes DC)
p 1556-1559, Q 3795-3821 (Beds CC)
p 1076-1078, 1082, 1562 (Herts CC)
p 1094 (Berkhamsted UDC)
p 1112-1113 (Aylesbury BC)
p 1136-1138 (Wingrove with Rowsham PC)
Q 4005-4008 (Leighton-Linslade UDC)
p 1189-1193, 1603-1604 Q 4317-4329 (WARA)
p 1237-1242, 1658-1659 (NFU)
p 1668 (CLA)
p 1312-1313, 1681 (Bucks Assoc of PC's)
p 1690, Q 4716-4718 (B Bateman)

Regional planning: controls
Q 3821 (Beds CC)
p 1320 (Aylesbury Industrial Group)

Rescue see Air safety

Residential property see Housing; Property values

Printed image digitised by the University of Southampton Library Digitisation Unit

Richardson, D F Ryder see Ryder Richardson, D F
Richardson, Mrs J Ryder see Ryder Richardson, Mrs J

Ricketson, Dr B W A: evidence
p 1340, 1695
Q 4739-4744

Roads see Surface access: roads

Roger, Mrs R A: evidence
p 1390, 1724

Rogers, Mrs D R: evidence
p 1315, 1683

Rogers, N V: evidence
p 1506, 1768

Rothenstein, Sir John: evidence
p 1323, 1688

Royal, Mrs K H: evidence
p 1507, 1768

Runways: orientation
p 1015, 1016 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1563 (Herts CC)
Q 4965 (R Bramwell)

Ruthven W H: evidence
p 1229-1230, 1641

Ryder Richardson, D F: evidence
p 1484, 1759

Ryder Richardson, Mrs J: evidence
p 1494, 1762-3

Safety see Air safety

St John's and Manor House Hospital Management Committee: evidence
p 1280-1282, 1664-1665
Q 4666

St Michael's Church Preservation Committee, Stewkley, Buckinghamshire: evidence
p 1299-1306, 1677-1679

Sand and Gravel
p 1009 (Bucks, Beds, Herts, N'hants, Oxon CC)
Q 3509-3511 (Bucks, N'hants, Oxon CC)
p 1032-1033 (Bucks, Beds, N'hants, Oxon CC)
p 1064 (Oxon CC)
p 1074, 1075, Q 3810, 3817 (Beds CC)
p 1148, 1586 (Leighton-Linslade UDC)
p 1392-1393 (CPRE)

Sarjeant, Mrs S L: evidence
p 1309-1310, 1679

Printed image digitised by the University of Southampton Library Digitisation Unit

Seaport see Docks: proposal scheme

Schools
p 1018-1020 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1026, 1041-1042 (Bucks, Beds, N'hants, Oxon CC)
p 1045-1049 (Bucks, Beds, Oxon CC)
p 1121,1574-1575 (Newport Pagnell RDC)
p 1135-1136 (Wingrave with Rowsham PC)
p 1151 (Thame UDC)
p 1220-1222, 1600 Q 4482 (WARA)
p 1225 (Rev J E H Williams)
p 1307 (Bucks Fed of WI's)
p 1309 (Mrs S L Sarjeant)
p 1315 (Mrs D R Rogers)
p 1316 (E G R Taylor)
p 1363, 1718 (D C T Graves)
p 1412 (Drayton Parstow PC)
p 1418 (Great Brickhill PC)
p 1449, 1743 (A B Cozens)
p 1683 Q4673-4688 (E G R Taylor)
Q 4666 (St John's Hospital)

Scott, V J: evidence
p 1368, 1719

Services and utilities
p 1009-11 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1027 (Bucks, Beds, N'hants, Oxon CC)
p 1094 (Berkhamsted UDC)
p 1097, 1099 (Tring UDC)
p 1294 (New College)

Sewage
p 1010-1011 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1071 (Milton Keynes DC)
p 1073, 1559 Q 3800, 3805-3809 (Beds CC)
p 1092 (Aylesbury RDC)
p 1094 (Berkhamsted UDC)
p 1098-1099 (Tring UDC)
p 1101 (Wing RDC)
p 1102, 1103 (Winslow RDC)
p 1104, 1105 (Powell Duffryn Tech. Services)
p 1122 (Newport Pagnell RDC)
p 1141, Q 3954-3964, 3970 (Great Ouse River Authority)
p 1149 Q 4013-4016 (Leighton-Linslade UDC)
p 1159 (Bucks Water Board)
p 1230 (W H Ruthven)
p 1252 (NFU)

Site: coastal
p 1392 (CPRE)
p 1422 (Mrs P Johnston Bolton)
p 1433 (Dr L S Michaelis)
p 1502-3 (E F Kidd)
p 1507 (K H Royal)
p 1511-12 (R S Meredith)

Site: location
p 1530-1531, 1533 Q 3710-3720 (Bucks, N'hants, Oxon CC)

Printed image digitised by the University of Southampton Library Digitisation Unit

Site: location (Cont)
p 1100 (Wing RDC)
p 1187, 1193 (WARA)
p 1233 (CASC)
p 1244-1248 (NFU)
p 1331 (A C Chandler)
p 1346 (R Bramwell)

Site information
p 1001-1003 (CTLA)

Sites of special scientific interest (SSSI)
p 1261-1262, 1662 (Nature Conservancy)
p 1277-1278 (CPRE)

Smart, D G M: evidence
p 1485, 1759

Smith, R: evidence
p 1391, 1724

Small holdings see Agriculture

South East Economic Planning Council
p 1030 (Bucks, Beds, N'hants, Oxon CC)

Spencer Bernard, J G C: evidence
p 1426, 1731

Sports see Gliding; Recreation

Stacking see Air Traffic control: stacking

Standing Conference on London and South East Regional Planning see London and South East Regional Planning Standing Conference

Stansted
p 1015-6 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1081 (Herts CC)

Stewkley Action Committee: evidence
p 1223-1224

Stewkley Local Labour Party: evidence
p 1351, 1711-1712, 1713-1714
Q 4974-4982

Stewkley Parish Council: evidence
p 1442-3, 1741

Stoke Hammond Parish Council: evidence
p 1468-9, 1754-5

Stoke Mandeville hospital see National Spinal Injuries Centre, Stoke Mandeville

Stone with Bishopstone Parish Council: evidence
p 1150, 1585

Printed image digitised by the University of Southampton Library Digitisation Unit

Stud Farms
p 1286, 1667 (CLA)
p 1736-1737 (P K Wolf)

Surface access
p 1008, 1011 (Bucks, Beds, N'hants, Oxon CC)
p 1531 (Bucks, N'hants, Oxon CC)
p 1193, 1603 (WARA)
p 1233 (CASC)
p 1290 (Beacon Villages Soc)

Surface Access: canals
p 1343 (CASC)
Q 4958, 4966-4973 (R Bramwell)

Surface Access: rail
p 1012-1013 (Bucks, Beds, N'hants, Herts, Oxon CC)
p 1027 (Bucks, Beds, N'hants, Oxon CC)
p 1148, 1586 (Leighton-Linslade UDC)
p 1193, 1210 Q4409-4412 (WARA)
p 1325-1326 (B Bateman)
p 1342-1343 Q4871-4879 (CASC)
p 1483 (M H H Radcliffe)
p 1642 (CASC)
Q 3502-3508, 3622-3623 (Bucks, N'hants, Oxon CC)
Q 3843-3908 (Winslow RDC)
Q 3951-3953 (Winslow PC)
Q 4959-4961 (R Bramwell)

Surface access rail: advanced passenger train
p 1012-3 (Bucks, Beds, Herts, N'hants, Oxon CC)

Surface access: rail: underground
Q 3502-3508 (Bucks, N'hants, Oxon CC)
p 1346 Q 4891-4895 (R Bramwell)

Surface access: road
p 1011-12 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1027, 1033 (Bucks, Beds, N'hants, Oxon CC)
p 1064-1065 (Oxon CC)
p 1554 (Milton Keynes DC)
p 1081, 1082, 1562 (Herts CC)
p 1083 (Watford BC)
p 1092 (Aylesbury RDC)
p 1095 (Berkhamsted UDC)
p 1098, 1099 (Tring UDC)
p 1115-1116 (Aylesbury BC)
p 1119 (Bletchley UDC)
p 1133, 1576 Q 3942-3943 (Pitstone PC)
p 1139 (Winslow PC)
p 1146 (Bedford Corp)
p 1148 (Leighton-Linslade UDC)
p 1151 (Thame UDC)
p 1589 (Aston Rowant PC)
p 1193, 1210 Q 4343-4350, 4402-4403 (WARA)
p 1229 (W H Ruthven)
p 1233, 1642, 1643 (CASC)
p 1265 (CPRE)
p 1307 (Bucks Fed of Women's Institutes)
p 1320 (Aylesbury Industrial Group)
p 1325-1326 (B Bateman)
p 1342 (CASC)
p 1355 (Ashendon PC etc)
p 1433, 1738 (Dr L S Michaelis)

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface access: road (cont)
p 1435 (Hardwick PC)
p 1470, 1755 (W J Bates)
p 1477 (Weedon Parish Anti-Airport Committee)
p 1483 (M H J Radcliffe)
p 1513, 1769-1770 (A Tomkins)
Q 5029-5030 (Wing PC)

Surface drainage see Water: surface drainage

Taylor, Mrs B: evidence
p 1341, 1696

Taylor, E G R: evidence
p 1316-1317, 1683-1684
Q 4673-4688

Terminal: town terminal
p 1012 (Bucks, Beds, Herts, N'hants, Oxon CC)

Terminal see also Surface access

Thame Urban District Council: evidence
p 1151-1152, 1589
Q 4034-4035

Timing of the need
p 1008 (Bucks, Beds, Herts, N'hants, Oxon CC)

Tinworth, Mrs J M V: evidence
p 1425, 1730-31

Tomkins, A P: evidence
p 1513, 1769-70

Tourism
p 1344 (CASC)

Towersey Parish Council: evidence
p 1158, 1591

Toy, A E: evidence
p 1362, 1717-18

Transport see Surface access

Trickey, W S: evidence
p 1370, 1719-20

Tring Urban District Council: evidence
p 1097-1099, 1749-1754
Q 3878-3881

Printed image digitised by the University of Southampton Library Digitisation Unit

Underground see Surface access: rail: underground

Urbanisation
p 1008 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1070-1071, 1554, Q 3771-3778 (Milton Keynes DC)
p 1073-1074, 1558-1559, Q 3797-3809 (Beds CC)
p 1078 (Herts CC)
p 1088 (Luton CB)
p 1097-1098 (Tring UDC)
p 1101 (Wing RDC)
p 1103 (Winslow RDC)
p 1113-1114, 1116, 1573 (Aylesbury BC)
p 1122, 1575 (Newport Pagnell RDC)
p 1125, 1126 (Newport Pagnell Assoc of Parish Councils)
p 1127, 1575 (Granborough PC)
p 1128 (Haddenham PC)
p 1130, 1576 (Newton Longville PC)
p 1131 (North Marston PC)
p 1133, 1576 (Pitstone PC)
p 1135, 1578 Q 3948-3950 (Wingrave with Rowsham PC)
p 1144 (Kingsey PC)
p 1148 (Leighton-Linslade UDC)
p 1150 (Stone with Bishopstone PC)
p 1172, 1190-1193, 1603 (WARA)
p 1231-1232, 1642 (CASC)
p 1237, 1241-1242, 1248-1249, 1250, 1659 (NFU)
p 1283, 1666 (Chiltern Soc)
p 1290 (Beacon Villages Soc)
p 1312, 1681 (Bucks Assoc of PC's)
p 1325-1326, 1690 (B Bateman)
p 1331 (A C Chandler)
p 1356 (Ashendon PC, etc)
p 1395 (CPRE)
p 1412 (Drayton Parslow PC)
p 1425, 1730 (Mrs J M V Tinworth)
p 1435 (Hardwick PC)
p 1447 (Mr & Mrs J B Brown)
p 1532 Q 3595-3617, 3648-3655 (Bucks, N'hants, Oxon CC)
p 1686 (Mid-Bucks Liberal Assoc)
Q 4794-4795 (CASC)

Urbanisation see also Housing; Local planning; Regional Planning

Utilities see Services & Utilities

VTOL see Vertical take off and landing

Vertical take off and landing
Q 4414-4415 (WARA)

Vibration see Noise: vibration

Visibility see Meteorology

Printed image digitised by the University of Southampton Library Digitisation Unit

WARA see Wing Airport Resistance Association

Waddesdon Parish Council: evidence
p 1355-6, 1359-60, 1717, Q 4984

Walker, K: evidence
p 1486, 1759-60

Walker, V G: evidence
p 1402, 1726-7

Ward, F K: evidence
p 1371, 1720

Warren, T: evidence
p 1372, 1720

Water: supply
p 1010 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1027, 1028 (Bucks, Beds, N'hants, Oxon, CC)
Q 3624-3625 (Bucks, N'hants, Oxon CC)
p 1071 (Milton Keynes DC)
p 1559 Q 3800, 3813-3820 (Beds CC)
p 1120 (Bletchley UDC)
p 1141, 1142-1143, Q 3970-3976 (Great Ouse River Authority)
p 1159, 1591 Q 4049 - 4058 (Bucks Water Board)
p 1230 (W H Ruthven)
p 1285, 1667-1668 (CLA)
p 1464-1466 (Conservators of the River Thames)

Water: surface drainage
p 1010-1011 (Bucks, Beds, Herts, N'hants, Oxon CC)
p 1028 (Bucks, Beds, N'hants, Oxon CC)
p 1065-1067 (Oxon CC)
p 1071, Q 3782-3783 (Milton Keynes Dev Corp)
Q 3800 (Beds CC)
p 1091 (Aylesbury RDC)
p 1096 (Bullingdon RDC)
p 1100-1101 (Wing RDC)
p 1103 (Winslow RDC)
p 1104-1105 Q 3916, 3921-3941 (Powell Duffryn Tech Services)
p 1123, 1575 (Newport Pagnell RDC)
p 1136 (Wingrave with Rowsham PC)
p 1141-1142 Q 3982-4001 (Great Ouse River Authority)
Q 4010-4019 (Leighton-Linslade UDC)
p 1236, 1251-1252, 1256-1257 1659 Q 4654-4658 (NFU)
p 1265 (CPRE)
p 1285 (CLA)
p 1294 (New College)
p 1694 Q 4735-4738 (Mrs P M Murphy)
p 1465-6 (Conservators of the River Thames)
p 1469 (Stoke Hammond PC)
p 1755 (Mr P J Boyd)

Water pollution
p 1104, 1105 Q 3917-3920 (Powell Duffryn Tech Services)
p 1141 Q 3954, 3965-3969 (Great Ouse River Authority)

Printed image digitised by the University of Southampton Library Digitisation Unit

Water pollution (cont)
p 1146 (Bedford Corp)
p 1159 (Bucks Water Board)
p 1252 (NFU)
p 1277 (CPRE)
p 1466 (Conservators of the River Thames)
see also Sewage

Watford Borough Council: evidence
p 1083

Watts, D J: evidence
p 1373-4, 1720

Weather see Meteorology

Weedon Parish Anti-Airport Committee: evidence
p 1476-8, 1757

Weedon Women's Institute: evidence
p 1311, 1679-1680

West, Mr & Mrs J R: evidence
p 1508, 1768

Westcott Parish Council: evidence
p 1355-6, 1360-61, 1717, Q 4984

Wheeler, P E: evidence
p 1457, 1745

Whitchurch Parish Council: evidence
p 1487, 1760

White, Mrs J: evidence
p 1514, 1770

Wild Life Conservation see Conservation

Wilson Report (Noise: final report) Cmnd 2056 -
quoted extensively throughout

Wind see Meteorology

Wing Airport Resistance Association (WARA):
evidence
p 1163-1224, 1598-1604
Q 4059-4484

Wing Parish Council: evidence
p 1495-7, Q 5020-30

Wing Rural District Council: evidence
p 1100-1101, 1749-1754
Q 3882-3888

Wingrove with Rowsham Parish Council: evidence
p 1134-1138, 1577
Q 3948-3950

Printed image digitised by the University of Southampton Library Digitisation Unit

Winslow Parish Council: evidence
p 1139-1140, 1578
Q 3951-3953

Winslow Rural District Council: evidence
p 1102-1103, 1749-1754
Q 3889-3909

Wolf, Miss P K: evidence
p 1736-7

Work see Employment

Wotton Underwood Parish Council: evidence
p 1355-6, 1361, 1717, Q 4984

Youth Hostels Association (England and Wales): evidence
p 1279

Printed image digitised by the University of Southampton Library Digitisation Unit

AONB see Land: landscape

APT see Surface access: rail: advanced passenger train

ATC see Air traffic control

AUD (Associated urban development) see Urbanisation

Advanced passenger train see Surface access: rail: advanced passenger train

Aerodromes see Airports; Defence

Agriculture
p 1813 (Beds CC)
p 1833 (Hunts CC)
p 2177 Q 5046-5050 (Beds, Bucks, Hunts, N'hants CC)
p 1884, 1890 (Bletsoe PC)
Q 5283-5293 (Gt Ouse River Authority)
p 1917-1919, 1933-1949, 1952-61, 2216-2219
Q 5346-5351, 5359-5369 (NFU)
p 1981-1982, 2223-2224 (CLA)
p 2022, 2029, 2039, 2053, 2059 (BARA)
p 2295 (Unilever Ltd)
p 2168 (Cory & Son)
p 1843 (N'hants CC)
p 1934, 1939, 1943 Q 5343-5345 (NFU)
p 2223 (CLA)
see also Livestock

Air pollution
p 1869 (Beds, Bucks, Cambs, Hunts, N'hants CC)
p 1900 (Lavendon PC)
p 1985 (N Beds Preservation Soc)
p 2062, 2087 (BARA)
p 2158, 2297 (Unilever Ltd)

Air route structure see Air traffic control: air route structure

Air safety
p 1869 (Beds, Bucks, Cambs, Hunts, N'hants CC)
p 1900 (Lavendon PC)
p 2023, 2086, 2232 (BARA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Air traffic: freight
p 1923-1924 (NFU)

Air traffic: passenger
p 2056-2057 (BARA)

Air traffic control (ATC)
p 1851-1853 (Beds, Bucks, Hunts, N'hants CC)
p 2165, 2300 (Cambridge U Gliding Club)
p 2166-2167, 2301 (Cranfield Gliding Club)

Air traffic control (ATC): air route structure
p 1852-1853 (Beds, Bucks, Hunts, N'hants CC)
p 2149 (Harpur Trust)

Air traffic control (ATC): crop spraying
p 2219 (NFU)
p 1981 (CLA)

Air traffic control (ATC): stacking
p 1851-1852 Q 5099-5105 (Beds, Bucks, Hunts, N'hants CC)
see also Runways

Aircraft see Jumbo jets; Supersonic aircraft; Vertical take off and landing

Airport layout
p 2069-2070 Q 5686-5687 (BARA)
see also Runways

Airports: effect of third London airport
p 1852-1853 (Beds, Bucks, Hunts, N'hants CC)
see also Defence

Amenity
p 1820-1823 (Beds CC)
p 1843 (N'hants CC)
p 2177 (Beds, Bucks, Hunts, N'hants CC)
p 2189-2190 (Bucks CC)
p 1880 (Bedford RDC)
p 1884-1885, 1890 (Bletsoe PC)
p 1894-1895, 1896 (Newport Pagnell RDC)
p 1898-1899, 2197 (Gayhurst PC)
p 1965-1967, 1974-1975, 2221-2222 (CPRE)
p 1982 (CLA)
p 1983-1984 (N Beds Preservation Soc)
p 1993, 1995, 2002, 2003-2004, 2008-2009, 2017, 2018-2019, 2022-2023, 2027-2028, 2031-2032, 2042, 2070, 2073-2074, 2082-2083, 2230 (BARA)
p 2095 (Bucks Assn of PCs)
p 2096-2098, 2258-2260 (N'hants Assn of PCs)
p 2125, 2127-2128, 2129, 2270 (Cambridge U)
p 2136, 2140, 2291-2292 Q 5887-5892, 5961-5970, 6023-6034 (TECDA)
p 2157, 2158, 2161, 2295, 2297 Q 6133 (Unilever Ltd)

Printed image digitised by the University of Southampton Library Digitisation Unit

Amenity: costs
p 1984 (N Beds Preservation Soc)
p 2083, 2087 (BARA)
see also Land; Recreation

Ancient monuments see Churches; Historic buildings

Archaeology
p 1986-1988 (N Beds Archaeological Soc)

Areas of outstanding natural beauty see Land: landscape

Atmospheric pollution see Air pollution

Aviation fuel see Fuel: aviation

BARA see Bedfordshire Airport Resistance Association

Bedford Corporation: evidence
p 1881-1883, 2194-2195

Bedford Rural District Council: evidence
p 1879-1880, 2193-2194 Q 5180a-5183a

Bedford Society: evidence
p 2041-2045

Bedfordshire Airport Resistance Association (BARA): evidence
p 1993-2093, 2229-2236 Q 5408-5687

Bedfordshire Airport Resistance Association (BARA): organisation
p 1993-2000 (BARA)
Q 6035-6041 (TECDA)

Bedfordshire Association of Parish Councils: evidence
p 2035-2037

Bedfordshire County Council: evidence
p 1807-1827, 1845-1872, 2173-2180
Q 5021-5171

Birds: conservation
p 1979-1980 (CPRE)

Bletsoe Parish Council: evidence
p 1884-1891 Q 5184a-5192

Boeing 747 see Jumbo jets

Printed image digitised by the University of Southampton Library Digitisation Unit

Bovril Ltd: evidence
p 2046-2047

British Legion, Keysoe Branch: evidence
p 2102-2105, 2261-2262 Q 5715-5717

Bromham Parish Council: evidence
p 2003-2007

Buckinghamshire Association of Parish Councils: evidence
p 2094-2095, 2255-2256 Q 5688-5694

Buckinghamshire County Council: evidence
p 1845-1876, 2173-2180, 2189-2191
Q 5021-5179

CLA see Country Landowners' Association

CPRE see Council for the Preservation of Rural England

Cambridge City Council: evidence
p 1903, 2198-2199

Cambridge University: evidence
p 2111-2129, 2267-2270 Q 5718-5736

Cambridge University Gliding Club: evidence
p 2165, 2300

Cambridge and Isle of Ely Association of Parish Councils: evidence
p 2039-2040

Cambridgeshire and Isle of Ely County Council: evidence
p 1863-1872, 1877-1878, 2191-2193
Q 5180-5190

Cargo see Air traffic: freight

Chesterton Rural District Council: evidence
p 1904-1905, 2199

Churches
p 1968-1973 (CPRE)
p 2001, 2010, 2013-2014, 2024, 2064 (BARA)
p 2106 (Keysoe Parochial Church Council)
p 2107 (Keysoe Baptist Churches)

City of Cambridge see Cambridge City Council

Commerce see Industry and commerce

Printed image digitised by the University of Southampton Library Digitisation Unit

Commuters
p 1813-1814 (Beds CC)
p 1920-1921 Q 5328-5330 (NFU)

Concorde see Supersonic aircraft

Conservation
p 1962-1963 Q 5370-5393 (Nature Conservancy)
p 1976-1978, 2222 (CPRE)

Conservation: birds
p 1979-1980 (CPRE)

Conservation areas see Land: landscape

Construction
p 1824 (Beds CC)
p 1846-1847 Q 5074-5075 (Beds, Bucks, Hunts, N'hants CC)

Cory & Son: evidence
p 2168, 2301

Cost-benefit analysis
p 2190 (Bucks CC)
p 2236 (BARA)
p 2269- 2270 (Cambridge U)
p 2152 (Harpur Trust)

Costs: amenity
p 1984 (N Beds Preservation Soc)
p 2083, 2087 (BARA)

Costs: Lord's Bridge Observatory
Q 5723 (Cambridge U)

Costs: private airfields
p 2050-2051 (BARA)

Costs: scientific establishments
p 2156 (Unilever Ltd)

Council for the Preservation of Rural England (CPRE): evidence
p 1965-1980, 2221-2222 Q 5394-5401

Country Landowners' Association (CLA): evidence
p 1981-1982, 2223-2224 Q 5402-5404

Cranfield College of Aeronautics
p 2048-2052 Q 5615-5618 (BARA)

Cranfield College of Aeronautics Gliding Club: evidence
p 2166-2167, 2301

Crop spraying see Air traffic control: crop spraying

Printed image digitised by the University of Southampton Library Digitisation Unit

Defence
p 1852 (Beds, Bucks, Hunts, N'hants CC)
p 2062-2063 (BARA)
p 2136 (TECDA)

Drainage see Sewage; Water

Education see Schools

Electrical interference
p 1896 (Newport Pagnell RDC)
p 2032 (BARA)
p 2114-2118, 2121-2123, 2268 Q 5719-5722 (Cambridge U)

Electricity
p 1849 Q 5080-5081 (Beds, Bucks, Hunts, N'hants CC)

Employment
p 1813-1814, 1816 (Beds CC)
p 1838 (N'hants CC)
p 1884 (Bletsoe PC)
p 1925-1926, 1946, 2218 Q 5346-5351 (NFU)
p 2224 (CLA)
p 2022, 2039, 2043, 2060-2061, 2070-2071, 2231 (BARA)
p 2094 (Bucks Assn of PCs)
p 2098 (N'hants Assn of PCs)
p 2135-2136, 2137-2142, 2143, 2146, 2292 Q 5739-5746, 5754-5762, 5974-6008, 6014-6023 (TECDA)

Employment: effect of third London airport
p 1832 (Hunts CC)
p 1878 (Cambs CC)
p 1882 (Bedford Corporation)
Q 5354-5358 (NFU)
Q 5659-5669, 5678 (BARA)
Q 5734-5736 (Cambridge U)
p 2130-2132, 2134, 2142, 2146, 2291 Q 5862-5866, 6009-6013 (TECDA)
p 2158-2159 (Unilever Ltd)

Employment: estimates: third London airport
p 1814-1817 (Beds CC)
Q 5032-5035 (Beds, Bucks, Hunts, N'hants CC)
p 1923-1924 Q 5331 (NFU)

Environment see Amenity

Printed image digitised by the University of Southampton Library Digitisation Unit

Farming see Agriculture

Fishing
p 1891 (Bletsoe PC)
p 2232-2233 (BARA)

Flooding see Water: surface drainage

Fog see Meteorology

Freight see Air traffic: freight

Fuel: aviation

p 1848-1849 (Beds, Bucks, Hunts, N'hants CC)

Gayhurst Parish Council: evidence
p 1898-1899, 2197

Geology see Land: geology

Gliding
p 2087 (BARA)
p 2165, 2300 (Cambridge U Gliding Club)
p 2166-2167, 2301 (Cranfield Gliding Club)

Gravel see Sand and gravel

Great Ouse River Authority: evidence
p 1909-1914 Q. 5202-5324

Great Ouse Water Authority: evidence
p 1915-1916

Harpur Trust: evidence
p 2147-2154, 2294-2295 Q 6079-6110

Health see Noise: medical effects

Health institutions see Hospitals

Historic buildings
p 1821 (Beds CC)
p 1832 (Hunts CC)
p 1839-1840, 1842-1843 (N'hants CC)
p 1874-1875 (Bucks CC)
p 1885-1886 (Bletsoe PC)
p 1968-1973 (CPRE)
p 1982 (CLA)
p 2008-2009, 2014, 2015, 2023-2024, 2034, 2044-2045 (BARA)

Printed image digitised by the University of Southampton Library Digitisation Unit

Historic buildings (cont)
p 2147 Q 6083-6086, 6090-6091 (Harpur Trust)
see also Churches

Holding areas see Air traffic control: stacking

Hospitals
p 1855-1856, 2179 (Beds, Bucks, Hunts, N'hants CC)
p 1869-1872 (Beds, Bucks, Cambs, Hunts, N'hants CC)
p 2003, 2043-2044 (BARA)

Housing
p 1816-1817 (Beds CC)
p 1882 (Bedford Corporation)
p 1925 (NFU)
p 2073, 2075 (BARA)
p 2128-2129 (Cambridge U)
see also Property values

Huntingdon and Peterborough County Council: evidence
p 1831-1836, 1845-1872, 2173-2180 Q 5021-5171

Huntingdon and Peterborough Parish Councils' Association: evidence
p 2039-2040

Huntingdonshire Constituency Labour Party see Thurleigh Emergency Committee for Democratic Action

IDC (Industrial development certificates) see Regional planning: controls

Industry and commerce
p 1923-1924 (NFU)
p 2021-2022, 2031, 2065 (BARA)
p 2094, 2255-2256 (Bucks Assn of PCs)
p 2129 Q 5736 (Cambridge U)
p 2142-2143 (TECDA)

Insulation see Noise: soundproofing

Jumbo Jets
p 2087-2088 (BARA)

Keysoe Baptist Churches: evidence
p 2107, 2263

Keysoe Branch of the British Legion: evidence
p 2102-2105, 2261-2262 Q 5715-5717

Printed image digitised by the University of Southampton Library Digitisation Unit

Keysoe Parochial Church Council: evidence
p 2106

Kimbolton School: evidence
p 2147-2148

Labour see Employment

Land: geology
p 1934 (NFU)
p 1962 (Nature Conservancy)

Land: landscape
p 1813, 1820-1821 (Beds CC)
p 1832-1833 (Hunts CC)
p 1839, 1842 (N'hants CC)
p 1873, 1874 (Bucks CC)
p 1922 (NFU)
p 1967-1968 (CPRE)
p 2023 (BARA)
see also Agriculture; Amenity; Recreation

Land classification see Agriculture: land classification

Landscape see Land: landscape

Lavendon Parish Council: evidence
p 1900, 2198 Q 5195-5198

Layout see Airport layout

Livestock
p 1982 (CLA)
p 2029, 2046-2047, 2232 (BARA)
p 2156-2158, 2160-2161, 2163-2164 (Unilever Ltd)

Local opinion: statistics
p 2001, 2003, 2010, 2012, 2013, 2016, 2018, 2027, 2029, 2033, 2035-2036, 2039, 2065, 2230-2231
Q 5413-5472, 5494-5526, 5534-5540, 5551-5572, 5582-5605 (BARA)
p 2257-2258 Q 5707-5714 (N'hants Assn of PCs)
p 2102 (Keysoe British Legion)
p 2134-2135, 2289-2291 Q 5775-5802, 5831-5832, 5854-5861, 5903-5918, 5923, 5936-5960, 6048-6066, 6078 (TECDA)

Local planning
p 1809-1810, 1812-1813, 1817-1818, 1823 (Beds CC)
p 1831-1832 (Hunts CC)
p 1837-1838, 1841-1842, 1843 (N'hants CC)
p 2178 Q 5057-5059, 5068, 5074 (Beds, Bucks, Hunts, N'hants CC)

Printed image digitised by the University of Southampton Library Digitisation Unit

Local planning (cont)
p 1875-1876 (Bucks CC)
p 1877-1878 (Cambs CC)
p 1881, 2194 (Bedford Corporation)
p 1892-1893, 2195-2196 Q 5193-5194 (Milton Keynes Dev Corp)
p 1901 (Olney PC)
p 1904-1905 (Chesterton RDC)
p 2039 (BARA)
p 2256 (Bucks Assn of PCs)
p 2097-2098 (N'hants Assn of PCs)
p 2128 (Cambridge U)
Q 5747-5753 (TECDA)
see also Regional planning; Urbanisation

Lord's Bridge Observatory
p 1877 (Cambs CC)
p 2111-2123, 2267-2268 (Cambridge U)

Lord's Bridge Observatory: costs
Q 5723 (Cambridge U)

Lord's Bridge Observatory: electrical interference
p 2114-2118, 2121-2123, 2268 Q 5719-5722 (Cambridge U)

Meteorology
p 1851 (Beds, Bucks, Hunts, N'hants CC)

Military airfields see Defence

Milton Keynes Development Corporation: evidence
p 1892-1893, 2195-2196 Q 5193-5194

Mineral deposits see Land: geology; Sand and gravel

Mullard Radio Astronomy Observatory see Lord's Bridge Observatory

NFU see National Farmers' Union

NNI see Noise and number index

National Farmers' Union (NFU): evidence
p 1917-1961, 2216-2219 Q 5325-5369

Nature Conservancy: evidence
p 1962-1964 Q 5370-5393

Nature conservation see Conservation

Newport Pagnell Rural District Council: evidence
p 1894-1897, 2196-2197

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise
p 1821-1822 (Beds CC)
p 1838-1840 (N'hants CC)
p 2177 (Beds, Bucks, Hunts, N'hants CC)
p 1871 (Beds, Bucks, Cambs, Hunts, N'hants CC)
p 1873-1874, 1876, 2190-2191 (Bucks CC)
p 2192-2193 Q 5182-5189 (Cambs CC)
p 1882, 2194 (Bedford Corporation)
p 1892-1893 (Milton Keynes Dev Corp)
p 1894-1895 (Newport Pagnell RDC)
p 1898 (Gayhurst PC)
p 1900 (Lavendon PC)
p 1903, 2198-2199 (Cambridge City Council)
p 1904 (Chesterton RDC)
p 1949 (NFU)
p 1965-1966 (CPRE)
p 1985 (N Beds Preservation Soc)
p 2003, 2009, 2023, 2030, 2032, 2035, 2042, 2064, 2071, 2073-2074, 2086, 2230, 2231 (BARA)
p 2098 (N'hants Assn of PCs)
p 2125-2127, 2268-2269 (Cambridge U)
p 2130, 2131, 2133 Q 5833-5842 (TECDA)
p 2149 Q 6096-6097 (Harpur Trust)
p 2168 (Cory & Son)

Noise: effects on livestock
p 1982 (CLA)
p 2029 (BARA)
p 2156-2158, 2160-2161, 2163-2164 (Unilever Ltd)

Noise: hospitals
p 1855-1856, 2179 (Beds, Bucks, Hunts, N'hants CC)
p 1869-1872 (Beds, Bucks, Cambs, Hunts, N'hants CC)
p 2003, 2043-2044 (BARA)

Noise: jumbo jets
p 2087-2088 (BARA)

Noise: medical effects
p 1867-1869, 1870, 1871 Q 5139-5144 (Beds, Bucks, Cambs, Hunts, N'hants CC)
p 1894 (Newport Pagnell RDC)
p 2085-2086 (BARA)

Noise: property Values
p 2009 Q 5672-5676 (BARA)

Noise: schools
p 1855, 2178-2179 (Beds, Bucks, Hunts, N'hants CC)
p 1863-1866 (Beds, Bucks, Cambs, Hunts, N'hants CC)
p 2003, 2033-2034, 2065, 2073 (BARA)
p 2124-2126, 2127 (Cambridge U)
p 2147, 2151-2152, 2294-2295 Q 6096-6097, 6106-6110 (Harpur Trust)

Noise: scientific establishments
p 2158-2159, 2296-2297 Q 6125-6127 (Unilever Ltd)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise: social cost
p 2073, 2085 (BARA)

Noise: soundproofing
p 2178-2179 Q 5113-5122 (Beds, Bucks, Hunts, N'hants CC)
p 1863-1866 (Beds, Bucks, Cambs, Hunts, N'hants CC)
p 2044, 2073 (BARA)
p 2124-2125, 2270 (Cambridge U)
Q 5970-5973 (TECDA)
p 2147, 2151-2152 Q 6088-6089, 6106, 6109 (Harpur Trust)
p 2156, 2297 (Unilever Ltd)

Noise: supersonic aircraft
p 2088 (BARA)

Noise: vibration
p 2158 (Unilever Ltd)

Noise and number index (NNI)
p 1854 (Beds, Bucks, Hunts, N'hants CC)
p 2083-2084, 2236 (BARA)
p 2126-2127, 2268-2269 (Cambridge U)

Noise certification plan
p 2078-2080 (BARA)

Noise: final report (Wilson Report) Cmnd 2056
- quoted extensively throughout

Noise levels
p 1854-1862 (Beds, Bucks, Hunts, N'hants CC)
p 2016, 2054-2055, 2077-2085, 2087-2088 (BARA)
p 2125-2126 Q 5724-5729 (Cambridge U)

Noise measurement see Noise and number index; Noise levels

North Bedfordshire Archaeological Society: evidence
p 1986-1989

North Bedfordshire Preservation Society: evidence
p 1983-1985 Q 5405-5407

Northamptonshire Association of Parish Councils: evidence
p 2096-2101, 2257-2260 Q 5695-5714

Northamptonshire County Council: evidence
p 1837-1872, 2173-2180 Q 5021-5171

Written evidence pages 1807-2168 Oral evidence pages 2173-2301

Printed image digitised by the University of Southampton Library Digitisation Unit

Occupation see Employment

Olney Parish Council: evidence
p 1901-1902, 2198 Q 5199-5201

Opinion polls see Local opinion: statistics

Ornithology see Birds: conservation

Outdoor activities see Fishing; Gliding; Recreation; Sailing; Walking

Passenger traffic see Air traffic: passenger

Pavenham Parish Council: evidence
p 2060-2068

Planning see Local planning; Regional planning; Urbanisation

Pollution see Air pollution; Sewage; Water pollution

Population
p 1814 (Beds CC)
p 1831-1832, 1835 (Hunts CC)
p 1837, 1841-1842 (N'hants CC)
p 1886-1889 (Bletsoe PC)
p 1920 (NFU)
p 2024-2025, 2035 (BARA)
p 2140 (TECDA)

Population: displacement
p 2011-2012, 2015, 2030, 2232 Q 5487 (BARA)
p 2102-2103 (Keysoe British Legion)
p 2107, 2263 (Keysoe Baptist Churches)

Population: effect of third London airport
p 1882, 2194-2195 (Bedford Corporation)
p 1886 (Bletsoe PC)
p 2035, 2042 (BARA)

Population: estimates: third London airport
p 1924 Q 5332-5333 (NFU)
see also Employment

Private airfields see Cranfield College of Aeronautics; Gliding

Property values
p 2009, 2232 Q 5670-5676 (BARA)
p 2103-2105 Q 5715-5717 (Keysoe British Legion)

Printed image digitised by the University of Southampton Library Digitisation Unit

RAE see Royal Aircraft Establishment, Bedford

Radio interference see Electrical interference

Rail see Surface access: rail

Recreation
p 1822 (Beds CC)
p 1832-1833 (Hunts CC)
p 1840, 1842 (N'hants CC)
p 2178 (Beds, Bucks, Hunts, N'hants CC)
p 1875 (Bucks CC)
p 1898-1899 (Gayhurst PC)
p 1912 (Gt Ouse River Authority)
p 1915-1916 (Gt Ouse Water Authority)
p 1922, 1927 (NFU)
p 1966 (CPRE)
p 2028, 2029, 2033, 2039, 2042, 2054-2055, 2065, 2072-2074 (BARA)
p 2094-2095, 2256 (Bucks Assn of PCs)
see also Amenity; Fishing; Gliding; Sailing; Walking

Regional planning
p 1808-1812 (Beds CC)
p 1841, 1843 (N'hants CC)
p 1845-1846, 2175, 2176-2177 (Beds, Bucks, Hunts, N'hants CC)
p 1892 (Milton Keynes Dev Corp)
p 1921-1923, 1925-1928 (NFU)
p 1965 (CPRE)
p 2256 (Bucks Assn of PCs)
p 2129 (Cambridge U)
p 2136-2137, 2143-2146 (TECDA)

Regional planning; controls
p 1923 (NFU)
p 2060-2061 Q 5677 (BARA)
p 2139-2140, 2142-2143 (TECDA)
see also Local planning; Urbanisation

Research establishments see Scientific establishments

Roads see Surface access: roads

Royal Aircraft Establishment, Bedford (RAE)
p 2065-2068, 2086 (BARA)

Runways: number required
p 2057, 2081 (BARA)

Runways: orientation/alignment
p 1851 (Beds, Bucks, Hunts, N'hants CC)
p 2003 (BARA)
p 2149 Q 6097 (Harpur Trust)

Written evidence pages 1807-2168 Oral evidence pages 2173-2301

Printed image digitised by the University of Southampton Library Digitisation Unit

SSSI see Sites of special scientific interest

Safety see Air safety

Sailing
p 2054-2055, 2233 Q 5624-5630 (BARA)

Sand and gravel
p 1823-1825 (Beds CC)
p 1833 (Hunts CC)
p 1847, 2180 (Beds, Bucks, Hunts, N'hants CC)
p 1876 (Bucks CC)
p 2032, 2043, 2072 (BARA)

Schools
p 1855, 2178-2179 (Beds, Bucks, Hunts, N'hants CC)
p 1863-1866 (Beds, Bucks, Cambs, Hunts, N'hants CC)
p 2001, 2003, 2016-2017, 2027, 2033-2034, 2065, 2073 (BARA)
p 2124-2126, 2127 (Cambridge U)
p 2147-2148, 2150-2154, 2294-2295 Q 6081-6091, 6096-6097, 6106-6110 (Harpur Trust)

Scientific establishments
p 2150-2151 (Harpur Trust)
p 2155-2164, 2295-2298 Q 6116-6127, 6138-6143 (Unilever Ltd)

Scientific establishments: costs
p 2156 (Unilever Ltd)
see also Lord's Bridge Observatory; Royal Aircraft Establishment, Bedford

Services and utilities
p 1825 (Beds CC)
p 1847-1849 (Beds, Bucks, Hunts, N'hants CC)
p 2032, 2061 (BARA)

Sewage
p 1835-1836 (Hunts CC)
p 1848 Q 5026-5027, 5079, 5082-5087, 5147-5157, 5160-5171 (Beds, Bucks, Hunts, N'hants CC)
p 1882-1883 (Bedford Corporation)
p 1895 (Newport Pagnell RDC)
p 1912-1914 Q 5204-5215 (Gt Ouse River Authority)
p 1950-1951 (NFU)
p 2234 (BARA)

Sharnbrook social survey
p 2021, 2024-2026 (BARA)

Site
p 1807, 1821 (Beds CC)
p 1933-1934, 1940-1941 (NFU)

Printed image digitised by the University of Southampton Library Digitisation Unit

Site information
p 1801-1803 (CTLA)

Sites of special scientific interest (SSSI)
p 1821 (Beds CC)
p 1832 (Hunts CC)
p 1842 (N'hants CC)
p 1962, 1963 Q 5376-5378 (Nature Conservancy)

Soil see Land: geology

Soundproofing see Noise: soundproofing

Sports see Fishing; Gliding; Recreation; Sailing; Walking

Stacking see Air traffic control: stacking

Stud farms
p 2046-2047 (BARA)

Supersonic aircraft
p 2088 (BARA)

Surface access
p 1849 (Beds, Bucks, Hunts, N'hants CC)
p 2043 (BARA)

Surface access: rail
p 1850, 2179 (Beds, Bucks, Hunts, N'hants CC)
p 2056 (BARA)

Surface access: rail: advanced passenger train (APT)
p 1850 (Beds, Bucks, Hunts, N'hants CC)

Surface access: roads
p 1818-1820, 1824-1825 (Beds CC)
p 1832 (Hunts CC)
p 1841 (N'hants CC)
p 1849-1850, 2179 (Beds, Bucks, Hunts, N'hants CC)
p 1882, 1883 (Bedford Corporation)
p 1898 (Gayhurst PC)
p 1900 (Lavendon PC)
p 1927 (NFU)
p 1965-1966 (CPRE)
p 2025-2026, 2028, 2061, 2064-2065, 2071-2072, 2233 (BARA)

Surface drainage see Water: surface drainage

Printed image digitised by the University of Southampton Library Digitisation Unit

TECDA see Thurleigh Emergency Committee for Democratic Action

Thurleigh Emergency Committee for Democratic Action (TECDA): evidence
p 2130-2146, 2289-2292 Q 5737-6078

Thurleigh Emergency Committee for Democratic Action (TECDA): organisation
p 2133-2134 Q 5763-5774, 5804-5827, 5878-5886, 5896-5902, 5191-5922, 6042-6047, 6067-6076 (TECDA)

Timing of the need
p 1846 (Beds, Bucks, Hunts, N'hants CC)
p 2056-2058, 2061-2062, 2235 Q 5634-5635 (BARA)

Town and country planning see Local planning; Regional planning; Urbanisation

Transport see Surface access

Unilever Ltd: evidence
p 2155-2164, 2295-2298 Q 6111-6143

Universities see Schools

University of Cambridge see Cambridge University

Urbanisation
p 1811-1812, 1817-1818, 1822-1823 (Beds CC)
p 1832 (Hunts CC)
p 1840-1841, 1843 (N'hants CC)
p 2175-2177 Q 5036-5062 (Beds, Bucks, Hunts, N'hants CC)
p 1876 (Bucks CC)
p 2192 (Cambs CC)
p 1895, 2197 (Newport Pagnell RDC)
p 2197 (Gayhurst PC)
p 1901-1902 (Olney PC)
p 1926-1928, 1938-1939, 1943-1945, 2217-2218. (NFU)
p 1985 (N Beds Preservation Soc)
p 2035-2036, 2072, 2074, 2231-2232, 2233-2234 Q 5684-5685 (BARA)
p 2095, 2256 (Bucks Assn of PCs)
p 2098 (N'hants Assn of PCs)
p 2128-2129, 2269 (Cambridge U)
see also Housing; Local planning; Regional planning

Utilities see Services and utilities

Printed image digitised by the University of Southampton Library Digitisation Unit

VTOL see Vertical take off and landing

Vertical take off and landing (VTOL)
p 2057 (BARA)

Vibration see Noise: vibration

Visibility see Meteorology

Walking: recreation
p 1983-1984 (N Beds Preservation Soc)
p 2087, 2232 (BARA)

Water: supply
p 1835-1836 (Hunts CC)
p 1848 (Beds, Bucks, Hunts, N'hants CC)
p 1910, 1912 Q 5304-5314 (Gt Ouse River Authority)
p 1915 (Gt Ouse Water Authority)
p 2219 (NFU)
p 1981 (CLA)
p 2234 (BARA)

Water: surface drainage
p 1848, 2179-2180 Q 5076-5079, 5088-5090 (Beds, Bucks, Hunts, N'hants CC)
p 1883, 2194 (Bedford Corporation)
p 1895-1896, 2197 (Newport Pagnell RDC)
p 2197 (Gayhurst PC)
p 1909, 1914 Q 5216-5303, 5315-5324 (Gt Ouse River Authority)
p 1918, 1941, 1945-1946, 1950-1951, 2219 (NFU)
p 2223-2224 (CLA)
p 2062, 2074-2075, 2234 (BARA)

Water pollution
Q 5026-5027, 5079 (Beds, Bucks, Hunts, N'hants CC)
p 1914 (Gt Ouse River Authority)
p 1950 (NFU)
p 2158 (Unilever Ltd)
see also Sewage

Weather see Meteorology

Westley, R: evidence
p 2077-2093

Wildfowl see Birds: conservation

Wildlife conservation see Conservation

Wilson Report (Noise: final report) Cmnd 2056
- quoted extensively throughout

Printed image digitised by the University of Southampton Library Digitisation Unit

Wind see Meteorology

Woburn Sands and District Society see North Bedfordshire Preservation Society

Work see Employment

Yachting see Sailing

Written evidence pages 1807-2168 Oral evidence pages 2173-2301

Printed image digitised by the University of Southampton Library Digitisation Unit

***Written Representations Without Application for Leave to Appear were Received from the Following:**

Mr E H Adcock 559
Mr M A Adcock 549
Mr D J Astell 531
Mr J M Barney
Mr E H Benson 571
Messrs Birkbeck, Julius, Coburn and Broad 528
Mr K B Board 541
Mr C C Brett 560
Mr V T Brown 568
Burnham-on-Crouch Urban District Council
Miss V A Burroughs 570
Mr F H Burtan 513
Miss G and Miss D R Crofts 515
Mr E J Dempsey 544
Mr L Dobson 561
Mr L Edwards 562
Epping Urban District Council
Mr D E Everett 569
Miss W Everett 537
Mr R Finbow 550
Mr J L Finding 522
Mr P P Fox 525
Miss C Gallehawk 508
Mr M Galley 513
Mr K S Gee 567
Miss C E George 508
Gillingham Borough Council
Mr P Goodingham 529
Miss K M Green 538
Mr J Guthrie 516
Mr A J Humby 532
Mr C A J Hurst 542
International Wildfowl Research Bureau
Mr W J Irven 517
Miss V Joyce 530
Mr J Maxwell James 547
Mr D R M James 558
Mr F J Long 527
Mr B A Lovell 514
Mr G M Lynch 510
Sir Stephen McAdden 551
Mr C McDonald 526
Mrs M E Martin 563
Mr C L Maundrell 534
Mersea Island Society 552
Mr R D Miller 521
Mr R D Moate 572
Mr B L Norris 501
Miss E E Peach 507
Mr A J Peatson 565
Mr A E Popham 535
Mr B Popham 509
Mr L H J Protheroe 533
The Ramblers' Association 573
Mr A R Rainbow 513
Mr E Robinson 546
Mr G E Rye 536
Rochford Hundred Amenities Association
Sea-Fern Products Co 523
Mr E D Seymour 554
Mr A Smith 539
South-East Essex Constituency Labour Party
Mr I Straight 520
Mr L E Streak 564
Mr F Strowlger 519
Southend Waterworks Company
Mr P G Tait 566
J R C Thatcher & Co 502
Mr H R Tutt 505
Mr J E M Vose 540
Miss N Watts 504
Mr L V A Wilkinson 545
Messrs E P and C A Williams 557
Mr T J Willshere 524
Mr P G Wilson 548
Wivenhoe Society
Mr N D Woodhead 506
Mr L R Worthington 512
The Youth Hostels' Association 574

* These items are not indexed.
The majority have been published in full on Reel 1 of the *Microfilm supplement* (10 reels).
We apologise for any missing items and for some cases of poor reproduction.

Printed image digitised by the University of Southampton Library Digitisation Unit

Stage II Local hearing: Nuthampstead

Written Representations

**Representations were also submitted by the following who did not appear, or did not seek leave to appear.*

Mr K Allsop	2584
Mr S Alper	2598
Anstey Parish Council	2515
Arkesden Parish Council	
Arkesden Women's Institute	2611
Mr M Ashby	2632
Aspenden Parish Council	2529
Babraham Parish Council	2572
Mr A Baird	2619
Mr G V Baker	
Balsham Parish Council	2601
Balsham Women's Institute	2538
Mr C G E Barclay	
Barkway Parish Council	2595
Mr F H Barrel	
Mr L Barters	
W J Bates & Sons	
Miss V C Bearman	2568
Mr R E Beddington	
Bedfordshire Old Peoples Welfare Council	2586
Mr & Mrs E Bennett	2547
Dr G C L Bertram	2520
Biggleswade Rural District Council	2662
Miss P Biggs	2642
Bishop's Stortford Urban District Council	2634
Col R V Blott	2639
Mr R W H de Boulay	
Mr W Bowtell	2522
Braughing Parish Council	2582
Mr & Mrs G Butler	
Cambridge Civic Society	
Cambridge Preservation Society	
Cambridge University	2635
Cambridge Water Company	
Mr R Carter	2546
Mr P Chalkley	2509
Chrishall Parish Council	
Chrishall Preservation Association	
Clare Rural District Council	2581
Clavering Parish Council	2580
Mr A Clayton	2628
Mr L E Coleman	2501
Miss L Cornes	2633
Mr J C Crane	2525
Mrs K F Crossman	
Mr R Crow	
Mrs D E Cunnel	
Mr W H Darling	2514
Baron Dimsdale	
Mrs D Dixon	
Mr S S Donald	2526
Mr E J Douglas	
Mrs B Driver	2502
Mr L A Drury	2657
Duxford Parish Council	2557
Eastern Federation of Amenity Societies	2603
Mr E E Edwards	
Mr A R Ellis	2655
Mr & Mrs B E Erith	2600
Essex Residents (Petition)	
Miss D H Evans	
Mr H W Faure Walker	2503
Mr & Mrs R J Franklin	2622
Mr S French	2609
Mrs S French	2608
Mr W Fordham	2532
Furneux Pelham Parish Council	2554
Gibson Women's Institute	2641
Mr & Mrs P Groves	2534
Great Abington Parish Council	2531
Mr A S Greenwood	2517
Mrs D E Gunnell	2552
Hadham Hall School	2629
Mr W S Hales	2553
Mr & Mrs J Hands	2537
Harlow Urban District Council	
Harlton Women's Institute	2654
Mrs J M Harrison	
Mr G E Hawthorn	2624
Mrs G E Hawthorn	2640
Mrs E M Hayes	2551
Mr & Mrs B Haylock	2518
Hertfordshire and Middlesex Trust for Nature Conservation	2565
Mr J W F Hindcliffe	2645
Hitchin Association for the Control of Aircraft Noise	
Mr E Hollett	2614
Mrs P M Holyoake	2570
Homerton College Cambridge	2651
Miss D M Hooper	2527
Hormead Parish Council	2504
Hormead Women's Institute	
Miss A M Huskinson	2540

* These items are not indexed.
The majority have been published in full on Reel 2 of the *Microfilm supplement* (10 reels). We apologise for any missing items and for some cases of poor reproduction.

Printed image digitised by the University of Southampton Library Digitisation Unit

Ickleton Parish Council 2571
Ickleton Women's Institute
Capt J James
Mrs G Jones 2575
Mr J A Jones 2605
Mr D A W Kay 2621
Mrs A M Kelly 2536
Mr P G Ketteridge
Mr F K Kidd 2511
Mr D E Kiddy
Miss M Lambert 2643
Langley Women's Institute
Mrs F Lawdon 2610
Mr A W Lawson
Mr J K Lee 2516
Lee Conservancy Catchment Board 2588
Linton Action Group Nuthampstead Preservation Association 2585
Litlington Parish Council 2576
Little Hadham Branch Nuthampstead Preservation Association
Little Hadham Parish Council
Little Walden Women's Institute
Mr R Loveday 2626
Miss C M Lowe 2635
Mr R H Luckock 2577
Lucy Cavendish College Cambridge 2542
Mr E S McCombie 2512
Dr M G MacDonald Smith 2573
Mr I P McMullen 2594
Mr & Mrs R P McMullen 2590
Maldon Rural District Council 2563
Mr N W Marriot
Miss E Maughan 2625
Mrs M E Maughan 2638
Mr J E F Mawer 2636
Meridan Women's Institute
Methodist Church Bishop's Stortford Circuit 2583
Mid-Bedfordshire Constituency Liberal Association 2513
Mr J H N Molesworth 2523
Mr F D Newton 2543
Mr & Mrs J F Nicholls 2556
Mr E D Nightingale 2530
Nuthampstead Parish Meeting 2528
"The Occupier" Ashford House
Mr D H Oliver 2578
Mr E N C Oliver 2571
Pampisford Parish Council 2589
Mr R J Paterson 2618
Mr S Paterson
Mr R Payne 2646
Mrs E M Phillips 2555
Major & Mrs C R Philipson
Mrs M J Pickering 2539
Pye of Cambridge Ltd 2602
Mr F Pym 2596
Mrs A Revell 2664
Mr L F Revell 2521
Mr C Rhodes 2623
Mr T S Riches
Mr D R Robertson
Mr C H W Root 2541
Mr P A Rosenthal 2549
Mr M Rowland 2507
Miss B Rowland 2507
Royston & District Chamber of Commerce 2592
St Albans Rural District Council 2505
Borough of Saffron Walden 2558
Saffron Walden College 2506
Sandon Parish Council 2508
Mr R W Schoop 2613
Mr B W Shepherd 2519
Mr J D Skinner 2566
Smith, Kline & French Laboratories Ltd.
Mr I J Spencer Thomas 2510
Mr H C Stacey
Stansted Parish Council
Steeple Morden Parish Council 2535
Mr D Stinson 2612
Mr A A M Stripp
Mr & Mrs Sweatman 2617
Mr E R Taylor 2604
Miss J I Teak 2652
Tewin Parish Council 2569
Therfield Regulation 2637
Mr R S Titmarsh
Arthur Tucker & Spearmans Ltd
Mr A R Tucker
Mrs M C Turner 2631
Miss P Turner
United Cambridge Hospitals
Sir F Vallat
Mr A Vandome 2545
Mr P F Vowles 2620
Walkeron Parish Council
Mr D B Wardle 2524
Mr & Mrs C B Watson
Watton-at-Stone Parish Council
Welwyn Rural District Council
West Suffolk County Council 2560
West Wickham Parish Council 2559
Mr I Whitehead 2579
Mr J C Wilkerson 2562
Mr J C Wilson 2564
Mr H C Wilson 2561
Mr & Mrs T Winterbottom 2567
Wicken Bonhunt & Clavering Women's Institute 2533
Wymondley Parish Council
Youth Hostels Association

Printed image digitised by the University of Southampton Library Digitisation Unit

*List of Written Representations

Adams, C	3906
Addy, Marion	3622
Adstock, P C	3665
Ailken, Mrs E S	3602
Alcock, G H	3521
Alderman, Mrs D	3828
Alderman, Mr & Mrs F E	3788
Alderman, Mrs H	3771
Allen, J H	3772
Anderson, Mrs G	3715
Archaeological, The Royal Institute	3703
Architects, Society of Bucks	3850
Arnold, J E	3697
Ash, Mr & Mrs	3776
Ash, D	3797
Ashendon Parochial Church Council	3893
Aslett, P R G	3584
Atkinson, Mrs M	3702
Ayris, H R	3817
Ayris, Mrs S A	3900
Baker, Mrs C	3864
Ballantyne, Mrs A	3677
Barnard, Mrs J M	3861
Barrett, Eleanor	3617
Barton, Mrs F M	3535
Bass, M K	3551
Bates, A J	3719
Bates, F G	3632
Baylis, D W	3852
Beasley, A E	3591
Beasley, B A	3585
Beck, Mrs K	3877
Bell, Miss E	3613
Berkhamsted RDC	3822
Betjeman, John	3712
Betts, L	3803
Bishop, Mrs M G	3794
Bishop, M G	3820
Blake, T W	3799
Bliss, F W	3561
Blunt, Sir Anthony	3596
Bocock, C W	3649
Bodsworth, Mrs M	3635
Bodsworth, S W	3664
Bonar, Miss M E	3536
Bonham, Mr & Mrs J A	3768
Boothman, F	3721
Boughton, M	3893
Boughton, M	3898
Boughton, R	3789
Bowman, Mrs M E	3801
Brackley RDC	3851
Bradshaw, J M	3694
Brewer, F J	3550
Briggs, G M B	3505
Brockless, T	3661
Brooks, A	3773
Brooks, J W	3845
Brown, Mrs E L	3512
Brown, L G	3669
Buckingham, Mrs C and Bird, Miss I	3847
Bunyan, Mr & Mrs S	3760
Burt, F W	3667
Bucks, Association of Horticultural Societies	3916
Business & Professional Women's Club Leighton Buzzard	3583
Campbell, Mrs A	3784
Campbell, Mr & Mrs J	3802
Campbell, M J	3844
Cann, Miss B J	3853
Capp	3724
Capp, H	3686
Capp, Mrs M	3554
Carr, C R	3562
Castle, J H	3881
Catholic Women's League, Princes Risborough Section	3836
Cattle, E M	3901
Chapman, W	3647
Chappel, A M	3541
Chappel, M I	3532
Chappel, W	3555
Children's National Deaf Society	3700
Claridge, A E J	3809
Clark, A E & F	3619
Clark, F L	3526
Clarke, G	3566
Clarke, W F	3662
Clarkson, Mr & Mrs L	3501
Claxton, Miss R M	3909
Cole, Mr & Mrs F R	3531
Coleman, Mrs M	3510
Colgrove, S W K	3778
Coltman, M A	3509
Coman, Miss B	3729

*These items are not indexed.
The majority have been published in full on Reel 2 of the *Microfilm supplement* (10 reels). We apologise for any missing items and some cases of poor reproduction.

Printed image digitised by the University of Southampton Library Digitisation Unit

Congregational Churches, Burcott, Wingrave, 3571
Cook, G E 3806
Cooke, H W R 3575
Corbett, P J 3848
Council for Preservation of Rural England, Northants Br. 3912
Coward, Mr & Mrs 3728
Cowper, Miss J M 3577
Cox, D A 3673
Cox, D A V 3854
Cox, Long & Co Ltd 3720
Cranwell, S 3514
Crompton, Mrs M E 3576
Cruse, Miss S 3506
Cuddesdon & Denton Parish Council 3746
Cuddington Parish Council 3507
Cuddington Parish Council 3723

Dancer, E A C 3754
Dancombe, F J 3626
Dancombe, L 3629
Davey, Mrs M G 3645
Davies, Mrs K 3533
Dawkins, H M 3747
Dawson, J G 3843
Denton & Cuddesdon Parish Council 3746
Deung, Mrs A C 3542
Deung, E J 3759
Devereux, Miss W M 3707
De Weerd, Mrs D J 3522
Dibb, Miss D O 3915
Dickens, Miss M A 3557
Dickens, R F 3597
Dicks, Miss R K J 3552
Dillamore, Mrs D 3584
Dodds, J 3607
Dolton, A G 3508
Dolton, A G 3517
Donaldson, Mrs O M 3836
Dorling, J A 3751
Dovey, H O 3812
Dowdall, Mrs A B 3651
Drage, I 3826
Drayton-St Leonard Parish Council 3835
Dubberly, Mrs N R 3783
Dyke, F C 3769

Edlesborough Parish Council 3876
Elliot, J H 3726
Elliott, L 3764
Evans, H A C 3588
Evers, M 3895
Ewers, A 3896

Faulkner, A B 3604
Faulkner, Mrs B 3580
Faulkner, Mr & Mrs C N 3603
Faulkner, H 3559
Faulkner, H 3818
Faulkner, Mrs M I 3599
Featherstone, E M 3883
Field, C 3739
Flewin, J 3640
Ford, Mr & Mrs W F 3658
Fox, Mrs W 3676
Fremantle, J 3681
Froggatt, C A 3567

Gadsdon, K T 3785
Galliford, Mr & Mrs D W 3682
Gallimore, Mrs P M 3565
George, Mrs M 3858
Gerrards Cross Parish Council 3885
Gibb, R M S 3855
Gibbs, W J 3534
Ginge, F W 3857
Ginn, G I 3579
Ginn, B B 3574
Gowin, E F - S B & B J (Mrs) 3756
Grace, F W 3716
Graves, D C T 3563
Great Horwood Parish Council 3829
Great Missenden Parish Council 3587
Great Ouse Fishery Consultative Association 3710
Green, Miss L M 3548
Greenacre, Mrs L 3625
Griffiths, O E
Gueterbock, Brig and the Hon Mrs E 3824
Guillaume, Mrs E 3823
Gurnett, W A 3787
Gurrey, Mrs P 3755

Hall, Mrs E E 3830
Hall, Mrs P 3742
Hansen, E J 3705
Hardings, M S 3609
Harman, Mrs E 3609
Harris, Miss J 3870
Harrison, R 3875
Harwood, D 3770
Harwood, J B 3545
Haughey, E J 3633
Hayes, R 3657
Hedes, T 3655
Heley, R G 3698
Henley, H S 3538
Hewett, Miss P 3701
Hibbard, Mrs J A 3780

Printed image digitised by the University of Southampton Library Digitisation Unit

Higgs, C H 3825
Hill, M G 3793
Hockley, H F 3639
Hone, Sir Evelyn 3757
Hone, Sir Evelyn 3758
Honor, Miss D 3571
Horner, J 3608
Hounslow, F V 3628
Hoy, B 3581
Hughes, Mr & Mrs G K 3849

Icknield Court Home 3826
Ingram, Professor J I 3578
Inner London Education Authority
Innis, Miss M K 3537
Irons, B 3586

Johnson, R 3618
Jones, Mrs J 3894
Jones, P D 3693

Keen, E J 3612
Keen, J 3891
Kennedy, G E 3718
Kibble, Mrs S E 3805
Kilty, J 3650
Kilty, Mrs B 3652
Kilty, Miss W N 3569
Kinvig, C G 3624
Kirk, A C S 3646
Kirk, Miss P M 3727
Knight, R 3872
Knocker, P B 3699

Lacey, G E 3863
Lambourne, Mrs M 3786
Lasham Gliding Soc Ltd (J A Atkinson) 3600
Lawrence, S 3740
Lawson, D 3827
Leighton Buzzard Methodist Church 3853
Lewis, L 3573
Liberal Assoc Mid Bedfordshire Constituency 3506
Lightley, B H W 3518
Lilley, R E 3637
Line, Beatrice 3610
Little, V 3811
Local Labour Party, Stewkley 3522
Loch, R 3687
Lomas, E J P 3879
Long Crendon Parish Council 3725
Long, Mrs J P 3761
Long, Mr & Mrs R E 3688
Lonie, A 3560
Lonie, A H I 3831
Lukes, M W 3766

Luton & Leighton Monthly Meeting 3594
Luxembourg, M 3722

Madelor, L J 3572
Maldon Rural District Council 3601
Manasse, Dr O E 3892
Markcrow, P 3850
Marshall, Mrs M A 3523
Mathers, Mrs K C 3706
Mayne, M E 3692
McCarthy, A C 3859
McCarthy, Mrs J 3815
McDonald, K J 3641
Mackenzie, R K 3659
McIntyre, K 3795
Mead, Mrs M E 3748
Mead, Mr and Mrs M F 3547
Mead, Mr and Mrs W J 3544
Methodist Church Aylesbury Circuit 3717
Methodist Church, Leighton Buzzard Circuit 3853
Methodist Church, London, N W District 3598
Methodist Church, Stewkley Circuit 3878
Midwinter, D 3816
Midwinter, D M 3691
Milton, J P 3528
Minch, Mrs E 3792
Mitchell, G O 3867
Mitton, H M 3840
Morris-Adams, R E 3511
Morris, M H 3743
Mursley Evergreen Club 3512
Mursley Parish Council 3694

National Assoc of Local Government Officers 3695
National Federation of Business and Professional Womens Clubs, Leighton Buzzard, Linslade and District Club 3583
National Union of Agricultural Workers, Oxfordshire Committee 3879
Neville-Rolfe, Miss M A, D 3595
Noble, J 3738
North, B F 3620
North Crawley Parish Council 3911
North, G E 3630
North Marston Parish Council 3542

Oak, E G F 3671
Oliver, J 3767
Oram, J A 3593
Osborn, A E 3648
Owen, E 3594
Oxford City Council 3869
Oxford University 3868

Printed image digitised by the University of Southampton Library Digitisation Unit

Painter, B J S 3839
Parker, F A and F E 3899
Parker, Mrs N E 3540
Parker, S N 3546
Parrott, S R 3765
Pelham-Reid, R M C 3813
Pinckard, Mrs N J G 3539
Pitkin, A H 3621
Price, J T 3884
Princes Risborough Parish Council 3528
Princes Risborough Women's Institute 3861
Pryer, R R L 3750
Puckey, G 3644
Purslow, Mr and Mrs N 3519

Radcliffe, H C 3862
Ramblers Association 3844
Randall, W E 3842
Raven, J M 3838
Read, A T 3736
Reading, R J 3796
Redding, M L 3886
Reed, E C 3675
Rick, W 3568
Rickes, M J 3538
Rimmer, G H 3902
Roade Parish Council 3518
Roads, J 3798
Roberts, D B 3589
Robinson, E 3601
Rolls, H A and Partners 3708
Rose, P 3524
Rose, Rev R H, B D 3598
Rove, L 3800
Rowe, S A 3656
Russell, V F 3753
Rutaven, P M 3846

Sablury, J 3614
Saint Michaels, Stewkley Parochial Church Council 3565
Savory Messrs J G, J S, D J and Mrs C 3837
Sawyer, E E 3520
Sawyer, W 3840
Scott, J B 3860
Scott-Smith, J B 3834
Scott-Smith, Mrs R A 3874
Selby-Lowndes, E 3890
Sharman, L H 3731
Shirburn Parish Council 3841
Shrimpton, H 3507
Simmons, A G 3732
Smith, E A 3910
Smith, Mr and Mrs K 3530
Smith, L 3907
Smith, Mrs M R 3543
Smith, R 3791
Smith-Cresswell, Mrs I 3888
Snexell, S 3631
Stadhampton Parish Council 3696
Stamp, Mrs S 3763
Stanton St John Parish Council 3880
Stanton St John Women's Institute 3877
Steeple Claydon Parish Council 3685
Stewkley Parish Council 3554
Stewkley Women's Institute 3535
Stiggers, D 3913
Stiggers, Mrs G M S 3714
Stokechurch Parish Council 3687
Stone, G 3615
Store, J 3666
Swain, F P F 3730
Swanbourne Parish Council 3709

Tattam, Miss A 3623
Tattm, A T 3672
Tattam, Mrs L R 3643
Tatton, Marie 3605
Tatton, Mrs S K 3611
Taylor, Mrs B C 3515
Tennant, N 3616
Thorley, R T 3904
Thrower, Mrs R 3781
Tingrith Parish Council 3551
Toddington Old People's Welfare Committee 3577
Tomlinson, Mrs D M 3905
Tricker, R S 3737
Tring Society 3833
Tunstall, Mrs P R 3592
Turney, Mrs E M 3556
Turney, K G 3592
Twyman, H R 3749

Viceais, F G 3790
Vincent 3679

Waldock, W J 3734
Walduck, R 3627
Walduck, W J 3634
Walker, Mrs F 3636
Walker, M M 3711
Walton, Miss J 3866
Warburton, T 3525
Ward, G H 3871
Ward, P J 3903
Warwick, Rev F S 3878

Printed image digitised by the University of Southampton Library Digitisation Unit

Watson, C M and W 3606
Watson, Miss G 3704
Watson, J F 3887
Watson, Miss L M 3807
Watson, W J 3741
Watts, J 3733
Welsh, E H 3674
Wenman, H E 3670
Wheeler, H F 3642
Wheeler, P E 3549
Wheeler, W 3582
Whitchurch Women's Institute 3502
Whitfield, M J 3819
Wildsmith, I 3814
Wiles, W 3638
Willis, Mrs C E 3713
Willis, Miss R 3590
Willmott, G E 3752
Wills, S 3684
Wingrave Women's Institute 3509
Winsor, Mrs E 3678
Woburn Parish Council 3508
Woburn Parish Council 3517
Wolverton Urban District Council 3545
Wollatt, R 3503
Wright, Mrs D 3808
Wright, H L 3835
Wycombe Air Park (J Atkinson) 3865

Yates, B J 3553

Printed image digitised by the University of Southampton Library Digitisation Unit

ALPHABETICAL LIST

OF OBJECTORS (SPONSORED BY BUCKS. C.C.)

A.	WENDY ADAMS	5212
	I. B. ADDIS	5003
	DR. D. M. ALLEN	5042
	MRS. H. A. ALDERMAN	6003
	MRS. M. M. ALDERMAN	6004
	W. G. ANDREWS	5012
	E. ANGRYK	5189
	MRS. F. S. ARMSTRONG	6098
	DR. W. B. ARMSTRONG	5026
	C. ASHALL	6131
B.	MRS. L. A. BAKER	6038
	S. E. BAKER	5006
	A. R. S. BALL	6051
	S. R. K. BALL	5071
	W. G. BANDY	6074
	MRS. F. J. BARFF	5247
	J. G. C. SPENCER BARNARD	5121
	MISS M. G. BARNARD	5056
	D. J. BARRINGTON	5248
	C. E. BARROW	5049
	MRS. D. BATES	5057
	W. J. BATES	5063
	MRS. G.R. WELCH BARTRAM	6095
	C. BEASLEY	5193
	MRS. N. BEASLEY	5112
	MR. MRS. R. A. BECKETT	5068
	MRS. K. BEESON	6044
	A. J. BIGGS	5075
	MRS. L. BIGGS	6053
	F. R. BLACK	5131
	S. H. BLACKMORE	6043
	MISS C. BODINGTON	5161
	I. A. BONAR	5136
	MR. MRS. J. BOND	5046
	A. BOND	5015
	SIR BRYAN BONSOR	5089
	A. BOOTHMAN	5214
	MRS. B. BOWKETT	6008
	MRS. A. P. BOWLEY	6057
	P. W. BOYD	5084
	MRS. I BRANDON	6115
	V. F. BRATTON	5052
	E. G. BRAYNE	5165
	MRS. F. D. BRAZIER	5239
	MRS. M. E. BRAZIER	5241
	C. BREWER	5224
	G. BREWER	6039
	H. L. BROOMFIELD	5223
	S. C. BROOMFIELD	6107

Printed image digitised by the University of Southampton Library Digitisation Unit

B.(contd.)

V. A. BOTHERTON	6133
W. E. BOWSHER	5106
C. BROWN	5004
D. W. BROWN	6069
MR. MRS. J. B. BROWN	5206
DR. P. P. BROWN	5162
MR. MRS. C. E. BROWNING	5055
E. BUNWOOD	6059
J. BURRELL	6019

C. M. A. CALEY	5194
DR. C. D. CAMPBELL	5139
MRS. E. M. CAPP	6009
J. CAPP	5176
MRS. A. CARTER	6049
C. C. CARTER	5227
MISS M. G. J. CARTER	5002
F. CASSIDY	6073
MRS. C. CHAPMAN	6005
A. CHAPPELL	6113
F. CHAPPELL	5135
J. A. CHAPPELL	6045
P. F. CHAPPELL	5222
V. E. CHAPPELL	5093
W. CHAPPELL	5083
W. CHAPPELL	5201
MR. MRS. CHENEY	5120
MISS J. CHENEY	6132
MRS. C. J. CHESHIRE	6070
H. CHESHIRE	5108
MR. MRS. J. CHESHIRE	5096
R. W. CHIDDICK	5067
MR. MRS CLARK & F. MEAD	6068
MRS. G. M. CLARK	5138
MRS. G. P. CLARK	6092
F. J. CLARKE	6111
P. J. CLARKE	6109
S. T. CLARKE	5202
A. G. CLEAVER	6076
MRS. M. C. CLEAVER	6033
L. COATES	5038
MR. MRS. F. R. COLE	5179
MR. MRS. L. W. COLEMAN	5251
F. C. COLES	5061
L. T. COLES	5032
M. A. COPELIN	6100
A. H. CORKETT	6104
J. M. CORNISH	6137
JOAN CORNOCK	5152
MR. D. A. COX	6024
A. J. COZENS	5221
J. F. CROWTHER	6022
R. H. CUMMINGS	6071
MR. MRS. G. CUTTER	6141

Printed image digitised by the University of Southampton Library Digitisation Unit

D.	MRS. M. DANBURY	5076
	S. T. DANCER	5170
	A. C. DASHWOOD	5190
	F. DAVEY	6055
	H. J. DAVIES	6011
	G. L. DAVIS	5017
	J. M. DAVIS	5062
	F. A. DAY	5125
	T. E. DICKENS	6121
	F. W. DOWDEY	6075
	D. J. DUNN	5199
E.	DORA M. EDMUNDS	5183
	R. A. EDMUNDS	5119
	B. EDWARDS	6116
	MRS. D. M. EDWARDS	6031
	L. J. EDWARDS	5220
	W. E. EDWARDS	6016
	D. Z. ELLIOTT	5059
	MR. MRS. K. R. EMBLETON	5047
	M. EVANS	5041
	M. V. EVANS	6047
	MRS. R. EVANS	6077
	D. H. EYERS	6134
F.	J. D. FAULKNER	5148
	MRS. M. J. FAULKNER	6029
	M. R. FAULKNER	6108
	R. FAULKNER	5058
	P. FEHR	5234
	MRS. D. M. FLATT	6028
	MRS. J. FORD	5011
	H. O. FORSTER	5005
	MRS. D. FOULGER	5050
	A. H. FOULKES	5024
	R. FANCIS	6127
	K. FRASER	5236
	B. H. FULLER	5039
G.	MR. MRS. GALBRAITH	5232
	D. R. GAMMON	6060
	P. F. GIBBINS	5104
	D. F. GILBY	6120
	D. J. GOLDNEY J	5215
	J. H. GOODMAN	5153
	MRS. F. GRACE	5160
	MRS. F. W. GRACE (M.U.)	5014
	M. F. GRANT	6080
	MRS. E. GREEN	6013
	C. GREENACRE	5023
	A. W. GREENSLADE	5078
	F. O. GREGG	5117
	A. J. GREGORY	5036
	C. W. GURNETT	6101
	H. O. GURR	6093

Printed image digitised by the University of Southampton Library Digitisation Unit

H.	H. HAGUE	5087
	MISS J. HAINSWORTH	5235
	MR. MRS. C. A. HALL	5021
	MRS. M. HALL	5244
	W. G. HANCE	6122
	H. W. HANDFORD	5066
	D. HANKINS	5217
	A. C. HARDING	5233
	G. D. HARDING	6114
	P. J. HARDING	6110
	M. A. HARDINGS	5207
	DR. V. E. LLOYD HART	5123
	W. J. HARDWICKE	5029
	A. G. HARRIS	5129
	MISS C. E. HARRIS	5147
	MISS D. M. HARRIS	5242
	MRS. E. HARRIS	5178
	E. F. HARRUP	5198
	D. B. HASBERRY	5130
	A. G. HATCHER	5129
	D. B. HEAD	5226
	MRS. E. E. HEDGES	6036
	E. F. HEDGES	5043
	MR. MRS. J. HEDGES	5191
	MR. MRS L. H. HEDGES	5171
	S. F. HEDGES	5154
	F. HELEY	5103
	F. J. HELEY	5181
	R. G. F. HELEY	5018
	K. P. HENLEY	5169
	MR. MRS F. HINDS	5149
	BESSIE HINTON	5200
	MR. MRS. E. G. HOLLIS	6082
	M. HOLMAN	5037
	S. HOLMES	5155
	D. H. HOOPER	6124
	MRS. K. M. HOSLER	5022
	G. E. W. HOUSEHOLD	6081
	MR. MRS S. G. HOUNSLOW	6096
	G. HULME	6091
	C. M. HUMPHREYS	6135
	K. S. HUNTER	6199
	P. HUTBER	5218
I.	C. W. ISHERWOOD	6020

Printed image digitised by the University of Southampton Library Digitisation Unit

J.	L. J. P. JAMES	6017
	J. R. JEFFRIES	5254
	S. W. JENNINGS	5095
	MRS. P. JOHNSTON	5177
	A. K. JONES	5126
	D. G. JONES	6042
	N. G. SYMONDS-JONES	6054
	S. F. JONES	5175
	T. A. JONES	6087
	D. JUDD	5182
	MRS. E. JUDD	5100
	P. A. E. JUMP	5016
K.	J. W. KAYE	5184
	M. KEAN	5166
	MRS. H. KEARSEY	6021
	W. S. KEASEY	5034
	MRS. A. M. KEEN	5080
	DORA KEEN	6105
	F. KEEN	6103
	R. J. KEEN	6089
	MRS. E. KEENAN	5185
	J. W. KELLNER	5208
	C. KEMPSTER	5216
	MRS. G. KEMPSTER	5213
	A. H. KENLOCK	5081
	MRS. E. KENT	5122
	MRS. M. KENT	6094
	E. F. KIDD	5090
	MISS L. R. KIMBLE	6025
	MRS. M. R. KING	5079
	F. L. KITELEY	5151
L.	MISS P. LACEY	6035
	B. M. LACK	5197
	J. L. LAMBERT	5118
	S. M. LANTHER	5195
	G. C. LAWRENCE	6072
	K. LEWIS	6052
	DR. V. E. LLOYD-HART	5123
	D. LOADER	5013
	L. R. W. LONG	5009
	R. J. LONGHURST	5192
	E. A. LUDDINGTON	8048
	DR. J. R. LUMB	5246
	J. W. LUXFORD	5142

Printed image digitised by the University of Southampton Library Digitisation Unit

M.	DR. D. MACARTHY	5163
	J. A. E. MACLEAN	5116
	R. E. MAIN	5073
	A. MALES	5099
	MRS. P. O. MANLEY	5094
	P. H. MARKES	6030
	C. MARLOW	5250
	H. J. MARSH	6001
	V. MATHIAS	5048
	R. J. MAYNE	5053
	R. McGREGOR	6123
	MRS. C. M. McMAHON	5116
	F. MEAD & MR. MRS. CLARK	6068
	F. C. MEAD	5210
	G. E. MEAD	6032
	J. MEAD	6064
	J. W. MEAD	5064
	MRS. M. E. MEAD	6058
	P. W. MEAD	6007
	R. M. MEAD	5209
	W. J. MEAD	6041
	P. G. MEDCALF	5253
	R. S. MEREDITH	5040
	MRS. M. MERRY	6046
	L. S. MICHALIS	5031
	H. MINNITT	5010
	H. N. MORRIS	6078
	MR. MRS. A. Mch. MORRISON	5134
	C. MORTON	5158
	S. A. MUNRO	5150
	I. B. H. MURRAY	5188
	SIR RALPH MURRAY	5028
N.	H. NEAL	5088
	MRS. D. E. NEWTON	5137
O.	C. G. O'CALLAGHAN	5196
	B. G. OSBORN	5145
	E. M. OSBORN	5111
P.	R. J. PACKARD	5025
	S. L. PAINTER	6118
	R. C. PLAMER	5180
	A. K. PARADINE	6006
	MRS. D. E. PARKER	5168
	N. D. PARROTT	6040
	R. G. PARSONS	5109
	J. PATCHING	5187
	J. PEARSE	5245
	B. PERRY	5205
	A. W. PHILLIPS	5230

Printed image digitised by the University of Southampton Library Digitisation Unit

P.(contd.)

G. R. PICTON	6066
C. J. PIKE	6128
G. R. PINKNEY	5255
J. Y. POLLOCK	6102
C. PRATT	6026
P. J. PRESTON	5238
D. PROTHEROE	6130
D. S. PULLINGER	6034

Q. -

R.	M. H. J. RADCLIFFE	5256
	S. J. RADWELL	5069
	M. R. RAKUSEN	5007
	EDITH J. RANDALL	5140
	A. C. READ	5231
	MRS. M. REID	6079
	L. RICHARDS	6012
	D. F. RYDER RICHARDSON	5179
	MRS. J. R. RICHARDSON	5098
	E. J. ROBINSON	5167
	T. W. ROBINSON	5082
	DR. T. RODEN	5044
	R. A. ROGER	5102
	N. V. ROGERS	5001
	J. M. & T. B. ROWE	5225
	MRS. K. H. ROYAL	5008

S.	J. H. SAWYER	6014
	V. J. SCOTT	5110
	J. F. SCRIVENER	5252
	S. H. SERVANTE	6061
	MRS. V. E. SERVANTE	6067
	G. W. SHARP	5173
	W. J. SHEPHARD	5020
	MRS. A. SHORT	6125
	REV. H. J. SILLTOE	5097
	A. E. SIMMONS	6023
	G. S. SIMMONS	5243
	T. W. SIMMONS	5077
	Wg. Cdr. G. L. SINCLAIR	5159
	D. E. SMALE	5074
	D. G. M. SMART	5019
	MRS. E. SMITH	5141
	E. V. SMITH	5240
	H. A. SMITH	6037
	I. E. SMITH	6018
	J. M. B. SMITH-CRESSWELL	6112
	J. S. SMITH	5072
	R. SMITH	5204
	R. E. SMITH	5132

Printed image digitised by the University of Southampton Library Digitisation Unit

S.(contd.)

	MRS. C. N. H. SOLLOWAY	6083
	MISS M. E. SOUTHERN	5101
	C. W. SPARKES	5054
	F. SPEAR & MISS B. WALTER	6051
	J. G. C. SPENCER BARNARD	5121
	E. STAMP	6062
	E. V. STARR	6065
	W. S. STELL	5128
	M. STEVENS	6070
	MISS P. STEWART	5091
	STEWKLEY RECREATION ASSN.	5219
	I. H. STONEHILL	5060
	H. M. SYLMAN	5228
	W. K. SYMERS	6097
	J. H. SYMN	5203
	F. SZOSTIK	5211
T.	MRS. F. J. TAYLOR	5186
	R. J. TAYLOR	6129
	MISS C. TERRY	5172
	P. I. THOMAS	6063
	S. L. THOMAS	5035
	MRS. J. M. V. TINWORTH	5143
	A. P. TOMKINS	5229
	MISS I. O. TOWERS	6056
	A. EDGAR TOY	5155
	W. S. TRICKEY	5070
	D. M. TYSON	5124
U.	-	
V.	E. J. VENN	5092
	S. W. M. VICCARS	6117
W.	K. WALKER	5144
	V. G. WALKER	5113
	MISS B. WALTER & F. SPEAR	6051
	F. W. WALTER	6027
	K. F. WARD	5157
	T. WARREN	5027
	MR. MRS. D. WARRICK	5133
	C. J. WATTS	6050
	D. J. WATTS	5105
	R. J. WEATHERHEAD	5114
	MRS. G. R. WELCH-BARTRAM	6095
	MRS. T. R. WEST	5237
	C. C. WESTLEY	5030
	A. J. WHEELER	5085
	P. E. WHEELER	5065
	D. B. WHITE	5033

Printed image digitised by the University of Southampton Library Digitisation Unit

W. (Contd.)

	J. S. WHITFIELD	5045
	W. G. WHITEHEAD	6099
	S. C. WILLEY	5164
	H. WILLIAMS	6088
	R. F. WILLIAMS	6015
	A. WILLIS	6085
	KATHLEEN F. WILLIS	6126
	G. WINFIELD	5249
	W. WINSOR	6086
	T. E. WOOD	6002
	MRS. A. WOODWARD	6136
	J. A. W. WOODWARD	6090
X.	-	
Y.	R. C. YORKE	6106
	P. R. YOUNG	5156
	S. N. YOUNG	5146
Z.	Z. ZELENT	6084

Printed image digitised by the University of Southampton Library Digitisation Unit

Stage II Local hearing: Thurleigh (Bedford)

*List of Written Representations

Alleway, A E	4522
All Saints Church Parish Meeting, Odell	7025
Ampthill and District Preservation Society	7004
Ampthill Rural District Council	7006
Bedford and District Trades Council	7022
Bedford Federation of Towns Women's Guilds	7015
Bedfordshire Association of Parish Councils	4518
Bedfordshire Competitive Musical Festival	7011
Bedfordshire Federation of Women's Institutes	7038
Bedfordshire Old People's Welfare Council	4511
Bedfordshire Preservation Society	7002
Bletsoe Parochial Church Council	7024
British Legion, Keysoe Branch	4501
British Legion, Milton Ernest Branch	4552
British Legion, Womens Section	7010
Buckinghamshire Federation of Women's Institutes	7013
Caddick Edith (Mrs)	4544
Calverton Residents Association	4553
Cambridgeshire Federation of Women's Institutes	7019
Cambridge Water Company	4539
Carter, W B	7016
Civic Society of St Ives	4532
Clerical and Administrative Workers' Union	4533 and 7008
Clifton Preservation Society	7005
Corby UDC	4562
Countryside Committee	4561
D'Arcy and Rosamunde	4559
Felmersham Parochial Church Council	4535 and 7026
Franklin M (Mrs)	4525
Galbraith, C	7033
Great Staughton Parish Council	4508
Green, Mr and Mrs P	7028
Hertfordshire County Council	4558
Hancock, J (Miss)	4502
Harding, R A	4542
Higham Ferrers Chichele Townswomen's Guild	7063

* These items are not indexed.
The majority have been published in full on Reel 3 of the *Microfilm Supplement* (10 reels).
We apologise for any missing items and for some cases of poor reproduction.

Printed image digitised by the University of Southampton Library Digitisation Unit

Hinwick Hall Residential School	4548
Huntingdon and Peterborough Federation of Women's Institutes	7014
Huntingdon Rural District Council	4534
Jackson, Mr and Mrs P	4504 and 7034
Jones, E M (Miss)	4523
Jones, L H Esq	4524 and 7029
Keysoe County Primary School Parent/Teachers Assoc	4543
Kimbolton School, Huntingdonshire	4549
Liddon, D	4515
London Gliding Club	7012
Low, R	4550
Luton County Borough	4551
Luton & Leighton Monthly Meeting of the Society of Friends	4527 and 7021
Marks, D A	4557
Mayes, A J	4517 and 7035
Mid-Bedfordshire Constituency Liberal Association	4503
Milton Ernest Over 60's Club	7023
National Federation of Anglers	4529, 7027 and 7039
Newland, W F	7032
North Cranley Parish Council	4531
Northamptonshire Federation of Women's Institutes	7036
Ogilvy, D F	7001
Parkyn, Brian, MP	4556
Peaton, E M	4530
Pottersbury & Yardley Gobion Parish Councils	4509
Prentice, Mary D (Miss)	4516 and 7030
Ramblers' Association	4554
Renhold Parish Council	4520
Roade Parish Meeting	4507
Roberts, E R	7017
Rural Industries Committee	7007
Rushden Urban District Council	4537
Rushton, P S (Miss)	4506
Saint Ives Rural District Council	4526
Sharnbrook Parish Council	4505
Shillington Parish Council	4521
South Bedfordshire Preservation Society	7003
Stagsden Bird Gardens	7018

Printed image digitised by the University of Southampton Library Digitisation Unit

Stapleton, C L (Miss)	4545
Stevington Petition	4555
Strachan, W E	4519
Sheard, John T	4560
Totternhoe Old Peoples Welfare Council	4528
Wessel, W P	4538
Woburn Sands and District Society	7020
Wolverton Urban District Council	4512
Women's Institutes:	
Abbotsley	7040 and 4541
Arlesey	7041
Beeston	7042
Biddenham	7043
Bletsoe	7044
Blunham	7045
Bluntisham St Helens	4546
Bolnhurst	7046
Bromham	7047
Broom	7048
Campton	7049
Cardington	7050
Carlton and Chellington	7054
Clapham	7051
Clapham Evening	7052
Clifton	7053
Colmworth	7055
Dean	7095, 4510 and 4536
Eynesbury	7037
Felmersham and Radwell	7056
Gamlingay	7057
Gravenhurst	7058
Great Barford	7059
Hail Weston	7060
Harrold	7061
Henlow	7062
Houghton Conquest	7064
Kempston Rural	7065
Keysoe	7066
Langford	7067
Orlingbury	7100
Little Staughton	7068
Milton Ernest	7069 and 4547
Mogerhanger	7070
Oakley	7071
Odell	7072

Printed image digitised by the University of Southampton Library Digitisation Unit

Offords 7073
Old Warden 7074
Pavenham 7075
Pertenhall 7076
Podington, Hinwick and Farndish 7077
Potton 7078
Ravensden 7079
Renhold 7080
Riseley 7081
Roxton 7082
Sharnbrook 7083
Shillington 7084
Silsoe 7085
Souldrop 7086
Stagsden 7087
Stevington 7088
Stondon 7089
Stotfield 7090
Sutton 7091
Tempsford 7092
Thurleigh 7093
Turvey 7094
Wharley End 7096
Whittlebury 7097
Wrestlingworth 7098
Wyboston and Chawston 7099
Woodward, M 7037

Youth Hostels Association (England and Wales) 4540

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

STAGE V
PUBLIC HEARING

held at the
Piccadilly Hotel
London W1

from

Monday 6 April – Tuesday 11 August 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

The Stage V material falls into four categories: proofs of evidence from parties seeking leave to appear; the daily transcripts of the hearing; written evidence submitted by parties not wishing to appear; and *Further Research Team Work* papers. All this material has been put on microfilm. The Commission arranged its work in seven subject areas lettered A-G (sometimes referred to in figures as 1-7).

Vol X of Papers and Proceedings *A Guide to the use of the documentation* contains subject indexes to all the material except proofs of evidence, written evidence, opening and closing speeches and defence matters. To assist readers, the proofs of evidence and transcripts of the hearings have been assembled together according to the seven subjects, and occupy Reels 4-10 of the film. Where a party submitted a single document covering proofs of evidence on several subjects, the document has been split into its separate subject parts.

At an early stage in the Stage V proceedings it was decided that *Valuation of time* which originally appeared with Subject E(5) *Surface transport,* should be transferred to Subject A(1) *Cost benefit analysis.* As some of the evidence overlapped it is advisable to consult the evidence on both topics together.

Subject F(6) was dealt with in two parts – *Noise* (1), and *Environment and planning* (2). However in most cases the two subjects intermingled to such an extent that it has been thought advisable to leave all the evidence on Subject F in one sequence, though the transcripts for each subject are arranged in separate sequences.

The *Further Research Team Work* papers, produced during the five months' hearings and not hitherto published, are reproduced complete on Reel 10 since it was not possible to divide them by subject. Reel 10 also contains the closing speeches and the complete set of the written evidence submitted for Stage V and also not previously published.

The numbering system used for evidence is as follows: *Proofs of evidence .* Parties submitting proofs of evidence (ie those submitting oral evidence) were each allotted a number in a three figure number sequence commencing at 500. A fourth digit was added to each reference to represent one of the seven subjects under which the Commission arranged its' programme of hearings. (Sometimes the seven subjects were referred to by letters A-G instead of 1-7). Where 8 is the fourth digit it refers to the closing speeches. Parties frequently submitted more than one piece of evidence on a subject and they were asked to add another digit, or digits, usually after a /, to distinguish the different parts of their evidence on a single topic. The citation 5204/10, therefore, represents the tenth piece of evidence submitted on topic 4 (ie D *Site matters)* by party 520 (ie *Thames Estuary Development Company TEDCO).*

Written evidence. Parties submitting written evidence only were given a number in a four figure number sequence starting at 6000, each partly being numbered consecutively on receipt of evidence.

Printed image digitised by the University of Southampton Library Digitisation Unit

	Page
Explanatory preface	208
Work programme Stage V	210
List of items on each microfilm reel	212
List of legal representatives for Commission	213
List of legal representatives for parties in alphabetical order	214
List of witnesses in alphabetical order showing party represented and days of appearance	316
List of parties with legal representation in alphabetical order	223
List of Opening speeches	225
List of Closing speeches	227
List of parties in numerical order	229
List of proofs of evidence arranged by subject	231
List of written representations in alphabetical order	245
List of written representations in numerical order	249
List of papers in *Further Research Team Work* series	251
Index to papers in *Further Research Team Work* series	254
Index to Subject A(1) Cost benefit analysis	259
Index to Subject B(2) Timing of the need – Valuation of Time	284
Index to Subject C(3) Air matters	304
Index to Subject D(4) Site matters	320
Index to Subject E(5) Surface access	334
Index to Subject F(6)(1) Noise	352
Index to Subject F(6)(2) Environment and planning	376
Index to Subject G(7) Miscellaneous	400
Index to (final) Report	406

Printed image digitised by the University of Southampton Library Digitisation Unit

Stage V

Work programme

Subject Group A (1) Cost benefit analysis and valuation of time

Contents
Proofs of evidence
Transcript of public hearing
Day 1—2 April 6th-7th 1970 Opening speeches
Days 3—20 April 8th-May 7th 1970

Subject Group B (2) Timing of the need

Contents
Proofs of evidence
Transcript of public hearing
Days 21—26A May 11th-May 19th 1970

Subject Group C (3) Air matters

Contents
Proofs of evidence
Transcript of public hearing
Days 26B—31A May 19th-May 28th 1970

Subject Group D (4) Site matters

Contents
Proofs of evidence
Transcript of public hearing
Days 31B—36A May 28th-June 8th 1970
Day 47A June 25th 1970

Defence matters
Transcript of hearing
Day 44—45 June 22nd-23rd 1970
Day 67A July 30th 1970

Subject Group E (5) Surface access

Contents
Proofs of evidence
Transcript of public hearing
Days 34B—43 June 3rd-18th 1970
Days 46—47B June 24th-25th 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

Subject Group F (6) Noise (1)
Environment and planning (2)

Contents
Proofs of evidence
Transcript of public hearing
1) Days 47C–55 June 25th-July 9th 1970
2) Days 55–65 July 9th-28th 67B–69A July 30th-August 4th 1970

Subject G (7) Miscellaneous

Contents
Proofs of evidence
Transcript of public hearing
Day 66 July 29th 1970
Days 68–69B August 3rd-4th 1970

Closing speeches Contents
Proofs of evidence
Transcript of public hearing
Days 69C–74 August 4th-12th 1970

N.B. Proofs of evidence; opening and closing speeches and *Defence matters* are not indexed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Stage V

Contents of Reels

Reel 4	Subject Group A(1)	*Cost benefit analysis and valuation of time* Proofs of evidence Transcript of Public Hearing Days 1–12
Reel 5	Subject Group A(1) *cont.*	Transcript of Public Hearing Days 13–20(end)
	Subject Group B(2)	*Timing of the need* Proofs of evidence Transcript of Public Hearing Days 21–26A(end)
Reel 6	Subject Group C(3)	*Air matters* Proofs of evidence Transcript of Public Hearing Days 26B–31A(end)
	Subject Group D(4)	*Site matters* Proofs of evidence Transcript of Public Hearing Days 31B–36A Day 47A(end) *Defence matters* Transcript of Public Hearing Days 44–45 Day 67A(end)
Reel 7	Subject Group E(5)	*Surface access* Proofs of evidence Transcript of Public Hearing Days 34B–43 Days 46–47B(end)
Reel 8	Subject Group F(6)	*Noise (1)* *Environment and planning (2)* Proofs of evidence Transcripts of Public Hearing Days 47C–53
Reel 9	Subject Group F(6) *cont.*	Transcripts of Public Hearing Days 54–65, 67B–69A(end)
	Subject Group G(7)	*Miscellaneous* Proofs of evidence Transcripts of Public Hearing Day 66 Days 68–69B(end)
Reel 10	*Closing speeches*	Proofs of evidence Transcripts of Public Hearing Days 69C–74
	Written representations	
	Further Research Team Work Series	

Printed image digitised by the University of Southampton Library Digitisation Unit

STAGE V

LEGAL REPRESENTATIVES FOR THE COMMISSION

Arthur BAGNALL QC

Anthony EVANS

Nicholas LYELL

Printed image digitised by the University of Southampton Library Digitisation Unit

ALPHABETICAL LIST OF LEGAL AND OTHER SPOKESMEN

Dennis BARKER QC	Buckinghamshire and Oxfordshire County Councils (502)
Richard BODY	Council for the Protection of Rural England (509)
Peter BOYDELL QC	Nuthampstead Preservation Association (514)
C COLSTON	Stevenage Development Corporation (512)
Michael BRODRICK	Bedfordshire Airport Resistance Association (513)
Lord COLVILLE	Bedfordshire, Huntingdonshire and Northamptonshire County Councils (501)
Peter CONDER	Royal Society for the Protection of Birds (524)
Michael CONNELL	Bedfordshire, Huntingdonshire and Northamptonshire County Councils (501)
J CURRAN	Thurleigh Emergency Committee for Democratic Action (535)
C A P ELLIS	London Gliding Club (533)
Michael FITZGERALD	The National Trust (547)
Alan FLETCHER	Buckinghamshire and Oxfordshire County Councils (502)
Hugh FORBES QC	Bedfordshire Airport Resistance Association (513)
Douglas FRANK QC	Cambridgeshire, Essex and Hertfordshire County Councils (503) Thames Estuary Development Company (520)
C A H GIBSON	British Airports Authority (500)
Michael GREGORY	Country Landowners' Association (510)
I O GRIFFITHS	Thames Aeroport Group (519)
Michael HARRISON	Nuthampstead Preservation Association (514) Thames Estuary Development Company (520)
Geoffrey HOLMES	United Kingdom Federation Against Aircraft Nuisance (537) Local Authorities Aircraft Noise Council (538)
Ian JACKMAN	British Overseas Airways Corporation (529)
David KEENE	Cambridgeshire Essex and Hertfordshire County Councils (503)
Mr KING	Thurleigh Emergency Committee for Democratic Action (535)
J LAWSON-ROGERS	Sheppey Group (516)

Printed image digitised by the University of Southampton Library Digitisation Unit

R D LYMBERY QC	Stevenage Development Corporation (512)
Niall MACDERMOT QC	Wing Airport Resistance Association (515)
Michael MANN	Thames Estuary Development Company (520)
	Port of London Authority (521)
Peter MARTIN	British Light Aviation Centre (532)
R G MIDDLETON	Burnham, River Crouch and Seaward Approaches Protection Association (523)
T R A MORISON	British Railways Board (531)
John NEWEY	Sheppey Group (516)
Michael OGDEN QC	Southend-on-Sea County Borough Council (507)
Robin OSBORN	Bedfordshire Airport Resistance Association (513)
Philip OTTON	Wing Airport Resistance Association (515)
Raymond PHILLIPS QC	British Railways Board (531)
A H PURCHASE	Bernard L Clark and Partners (526)
A T SMITH	British Overseas Airways Corporation (529)
A R VANDERMEER	Greater London Council (522)
Timothy WALKER	British European Airways (530)
Rt Hon Sir Derek WALKER-SMITH QC	Bedfordshire, Huntingdonshire and Northamptonshire County Councils (501)
Nevile WALLACE	National Farmers' Union (508)
Peter WEBSTER QC	British Airports Authority (500)
Martin WHITE	Kent County Council (504)
Captain P WILKS	Sheppey Group (516)
Councillor D C WOOD	Action Committee Against Foulness Airport (527)
Michael WRIGHT	Southend-on-Sea County Borough Council (507)

Printed image digitised by the University of Southampton Library Digitisation Unit

STAGE V

ALPHABETICAL LIST OF WITNESSES

W A ALLEN	Royal Institute of British Architects (525) Cambridge University (517) Day 49: 4-23 Day 64: 47-60
Roger Arthur Simon AMES	British Light Aviation Centre (532) Day 29: 106-end
Maurice ASH	Town and Country Planning Association (518) Day 14: 32-33 (see also Professor SELF)
G BERRY	Stevenage Development Corporation (512) Day 53: 15-23
John N BLACK	Port of London Authority (521) (see Mr N N B ORDMAN)
J W BLAIR	Stevenage Development Corporation (512) Day 62: 97-100
Dr W R P BOURNE	Royal Society for the Protection of Birds (524) Day 27: 61-88 Day 33: 78-84
F J H BRACKETT	Cambridge and Isle of Ely, Essex and Herts County Councils (503) Day 33: 16-37
John William Sefton BRANCKER	Thames Estuary Development Company Ltd (520) Day 27: 88-110
Arthur BRANDON-HOWELL	Standing Conference on London and the South East Regional Planning (528) Day 64: 67-77
R BRIGGS	Kew Association for the Control of Aircraft Noise (539) Day 26: 2-17
John BROOKE-HUNT	Nuthampstead Preservation Association (514) Day 15: 62-70
J G V BROWN	British European Airways (530) Day 27: 119-end
Dr W BURNS	South East Joint Planning Team Day 55: 46-116 Day 56: all, Day 58: 68 - end Day 59: 3 - 57
Lord CAMPBELL	Milton Keynes Development Corporation (511) Day 61: 45-101
C B CHAPMAN	Buckinghamshire County Council (502) (see Professor WISE)
B L CLARK	Bernard L Clark and Partners (526) Day 47: 2-16

Printed image digitised by the University of Southampton Library Digitisation Unit

J CONNELL	Noise Abatement Society (536) Day 54: 71-84
R D COOLING	British Overseas Airways Corporation (529) (see H E SMITH)
Sir Duncan CUMMING	Joint County Councils (501, 502, 503) Day 26: 2-21
J CURRAN	Thurleigh Emergency Committee for Democratic Action (535) Day 15: 76-end, Day 16: 2-10 40-56 Day 53: 45-57 Day 60: 2-5, Day 63: 55-56
William H DEAKIN	Kent County Council (504) Day 32: 21-85 Day 51: 89-end Day 52: 2-9 Day 57: 2-52
H DOUGLAS-PENNANT	Country Landowners Association (510) Day 51: 2-11
G I W DUNFORD	Joint County Councils (501, 502, 503) Day 26: 22-27, Day 28: 2-59, 65-87 Day 31: 3-7
Sir John ELLIOT	Nuthampstead Preservation Association (514) Day 16: 11-39 Day 25: 95-107
C A P ELLIS	London Gliding Club (533) Day 15: 60-62 Day 26: 23 Day 28: 60-64
Dr D E C EVERSLEY	Greater London Council (522) Day 24: 29-33 Day 60: 7-46
M FLEMING	Joint Country Councils Day 47: all
Gerard F FIENNES	Joint County Councils (501,502,503) Day 34: 2-18
Michael J FROST (METRA)	British Airports Authority (500) Day 7: 98 - Day 8 - Day 9: 15 Day 68: 11-44 (see also Jacques Lesourne)
Leonard Charles GALE	Bedfordshire Airport Resistance Association (513) Day 63: 11-32
A E T GRIFFITHS	British Railways Board (531) Day 13: 68-end, Day 14: 2-31 Day 24: 69-88 Day 42: 71-119 - Day 43: 2-85
David HALL	Town and County Planning Association (518) (see Professor SELF)

Printed image digitised by the University of Southampton Library Digitisation Unit

Professor Peter HALL	Nuthampstead Preservation Association (514) Day 16: 94-end Day 63: 102 - end
F A HAMMOND	Thames Estuary Development Company Ltd (520) Day 54: 7-31
Tom Hancock	Wing Airport Resistance Association (515) Day 11: 2-68 Day 61: 101-end Day 62: 22-51
Captain P J A HARPER	British Airline Pilots Association (534) Day 29: 2-9 Day 33: 2-13 Day 54: 93-99
Duncan G D HAWS	Joint County Councils (501, 502, 503) Day 6: 25-53
G R HEATH	Livesey and Henderson (see A E T GRIFFITHS)
Dr A J HENDRIKS	Thames Aeroport Study Group (519) Day 64: 77-81
Stanley William HILL	Cambridge & Isle of Ely, Essex & Herts County Councils (503) Day 66: 102-120 Day 69: 17-19
Geoffrey HOLMES	1) United Kingdom Federation Against Aircraft Nuisance (537) 2) Local Authorities' Aircraft Noise Council (538) 3) Local Authorities' Airport Committee Day 26: 17-22 (see also J CONNELL Noise Abatement Society) (536)
Dr S HOOKER	British Airports Authority (500) Day 50: 35-67
Sir John HOWARD	Thames Estuary Development Company Ltd (520) Day 66: 2-19
J A HOWARD	Thames Estuary Development Company (520) Day 32: 78-end Day 33: 37-78
J R HUBBARD	Bedfordshire, Northamptonshire, Huntingdon and Peterborough County Councils (501) Day 60: 62-95
Laurence C Kitching	Cambridge and Isle of Ely, Essex and Hertfordshire County Councils (503) Day 59: 78 - end.
Dr W G P LAMB	Action Committee Against Foulness Airport (527) (see Councillor D C Wood)
J A LE PIVERT	Livesey and Henderson (see A E T GRIFFITHS)
Jacques LESOURNE (METRA)	British Airports Authority (500) Day 6: 93-end Day 7: 1-58

Printed image digitised by the University of Southampton Library Digitisation Unit

Professor N LICHFIELD	Joint County Councils (501, 503) Thames Estuary Development Company (520) Day 3: 9-Day 6:1-25 Day 36: 2-60 Day 37: 88-102
Richard F LLOYD-JONES	Southend County Borough Council (507) Day 34: 4-5
D M LUMB	Wing Airport Resistance Association (515) Day 25: 8-37 Day 29: 63-88 Day 41: 74-106
N R J MACCREATH	Burnham River Crouch and Seaward Approaches Protection Association (523) Day 58: 32-34
A W B MACDONALD	Economist Intelligence Unit for Livesey and Henderson (see A E T Griffiths)
Peter W MACFARLANE	Council for the Protection of Rural England (509) Day 63: 4-11
Keith Morison MCLEOD	British Airports Authority (500) Day 66: 45-102
P MASEFIELD	British Airports Authority (500) Day 22: 104-112, Day 23: 11-66 100-129 , Day 24: 2-28
METRA Consulting Group Ltd	(see LESOURNE and FROST)
John William Gibson MEYER	Thames Estuary Development Company Ltd (520) Day 27: 110-119
Tito J NARDECCHIA	Nuthampstead Preservation Association (514) Day 16: 56-93
F C NEERVOORT	Thames Estuary Development Company (520) (see MR J A HOWARD)
N N B ORDMAN	Thames Estuary Development Company (520) Port of London Authority (521) Day 32: 39-68
Professor J PARRY-LEWIS	Thames Aeroport Group (519) Day 14: 72-end, Day 15: 2-59 Day 40: 74-111 Day 41: 2-55
R J PATRICK	Sheppey Group (516) Day 29: 97-105 Day 53: 34-45
Norman J PAYNE	British Airports Authority (500) Day 21: 23-110, Day 22: 3-104
D W PEARCE	Buckinghamshire County Council (502) (see Professor WISE)
Walter D PETERS	Joint County Councils (501,502,503) Day 7: 78-98 Day 57: 52-end Day 58: 37-66

Printed image digitised by the University of Southampton Library Digitisation Unit

S P C PLOWDEN	British Airports Authority (500) Day 49: 53-end Day 50: 2-35
Frederick B POOLEY	Buckinghamshire County Council (502) Day 60: 96 - end Day 61: 2-44
W A PRICE	Thames Estuary Development Company (520) Day 33: 87-106
A D RABY	Cambridge, Isle of Ely, Essex & Herts County Councils (503) Day 48: 93-118
M J ROBERTS	Bedfordshire, Northamptonshire, Huntingdon and Peterborough County Councils (501) (see J R HUBBARD)
Dr P RUDGE	Royal Society for the Protection of Birds (524) Day 27: 61-88
P SATCHWELL	British Railways Board (531) Day 34: 83-end Day 35; 2-23 (see also A E T GRIFFITHS)
Dr G W SCHAEFER	Joint County Councils (501, 502, 503) Day 27: 2-59
Peter SCOTT	Royal Society for the Protection of Birds(524) Day 62: 2-19
Raymond SCOTT-WHITE	Thames Aeroport Group (519) Day 41: 55-73
Brian SCRUBY	Thames Estuary Development Company Limited (520) Day 39: 35-54
Professor P J O SELF	Town and County Planning Association (518) Day 14: 33-64 Day 62: 19-21
Frederick A SHARMAN	Joint County Councils (501, 502, 503) Day 6: 53-93, Day 7: 59-78 Day 23: 4-10 Day 31: 3-end Day 32: 2-20 Day 35: 2-86 Day 36: 2-38 Day 37: 4-87 Day 38: 2-37 Day 42: 50-71 Day 49: 23-53
E G SIBERT	Surrey County Council (542) Day 25: 6-8
Dr N E SIMMONS	Thames Estuary Development Company (520) Day 33: 84-87

Printed image digitised by the University of Southampton Library Digitisation Unit

A E SLOCOMBE	British European Airways (530) Day 12: 46-59 Day 24: 33-68 Day 25: 92-95 Day 27: 119-end Day 32: 25-38 Day 38? 44-78 Day 66: 20-44
H E SMITH	British Overseas Airways Corporation (529) Day 12: 60-84 Day 23: 67-82 Day 29: 50-63 Day 38: 78-99 Day 53: 24-34
Frederick W SPENCER	Thames Aeroport Group (519) Day 33: 107-110
Mrs C STEVENS	Kew Association for the Control of Aircraft Noise (539) Day 52: 61-66
Frank STOWER	representing William Holford and Partners Thames Aeroport Study Group (519) Day 63: 33-37
Alan H STRATFORD	KENT County Council (504) (see Mr W H DEAKIN)
D E TANTON	Joint County Councils (501, 503) Day 64: 81-108
Robert L TRILLO	Thames Estuary Development Company Ltd (520) Day 39: 55-79
O TURNER	(see A E SLOCOMBE)
Michael TWIGG	Thames Aeroport Study Group (519) Day 59: 69-78
Ralph B VERNEY	Buckinghamshire County Council, (502) Day 12: 87-101 Day 60: 46-62
L G VINCENT	Stevenage Development Corporation (512) Day 62: 100-102
Dr J B WALKER	Burnham River Crouch and Seaward Approaches Protection Association (523) Day 58: 10-31
C V WALLACE	National Trust (547) Day 63: 37-48
R A WALLER	Wing Airport Resistance Association (515) Day 12: 101- end, Day 13:5-52 Day 52: 10-61 Day 62: 51-96
Martin A WARSKOW	British Airports Authority (500) Day 28: 87-end Day 29: 10-50

Printed image digitised by the University of Southampton Library Digitisation Unit

C S WATERS	Surrey County Council (542) (see E G SIBERT) Kent County Council (504) (see W H DEAKIN)
W F WESTBURY	Thames Estuary Development Company (520) Day 33: 87-106
Robert WESTLEY	Bedfordshire Airport Resistance Association (513) Day 50: 68-end
Stephen F WHEATCROFT	British Airports Authority (500) Day 23: 82-100 Day 31: 2-3
M WHITBREAD	Joint County Councils (501,503) Day 48: 2-93
R WHITBY	British European Airways (530) Day 25: 92-95
T J WIDDAKER	Greater London Council (522) Day 39: 4-35
Professor J WISE	Buckinghamshire County Council (502) Day 9: 17-end Day 10: Day 11: 68-end Day 12: 2-38 Day 41: 106-117 - Day 42: 4-48 Day 51: 11-82
Councillor D C WOOD	Action Committee Against Foulness Airport (527) Day 13: 53-65 Day 25: 92-95, 108-109 Day 32: 69-75 Day 52: 66-101 Day 63: 48-53
D W WOODHALL	Bedfordshire, Northamptonshire, Huntingdon and Peterborough County Councils (501) (see J R HUBBARD)
Dr H B WRIGHT	Nuthampstead Preservation Association (514) Day 15: 71-76

Printed image digitised by the University of Southampton Library Digitisation Unit

LIST OF PARTIES WITH LEGAL AND OTHER SPOKESMEN

Action Committee Against Foulness Airport (527)	Councillor D C Wood
Bedfordshire Airport Resistance Association (513)	Hugh Forbes QC Michael Brodrick Robin Osborn
Bedfordshire Huntingdonshire and Northamptonshire County Councils (501)	Rt Hon Sir Derek Walker-Smith QC Lord Colville Michael Connell
British Airline Pilots Association (534)	—
British Airports Authority (500)	Peter Webster QC C A H Gibson
British European Airways (530)	Timothy Walker
British Light Aviation Centre (532)	Peter Martin
British Overseas Airways Corporation (529)	Ian Jackman A T Smith
British Railways Board (531)	Raymond Phillips QC T R A Morison
Buckinghamshire and Oxfordshire County Councils (502)	Dennis Barker QC Alan Fletcher
Burnham River Crouch and Seaward Approaches Protection Association	R G Middleton
Cambridge University (517)	J Lawson-Rogers
Cambridgeshire Essex and Hertfordshire County Councils (503)	Douglas Frank QC David Keene
Bernard L Clark and Partners (526)	A H Purchase
Council for the Protection of Rural England (509)	Richard Body
Country Landowners' Association (510)	Michael Gregory
East Sussex County Council (544)	
Greater London Council (522)	A R Vandermeer
Kent County Council (504)	Martin White
Kew Association for the Control of Aircraft Noise (539)	—
Local Authorities' Aircraft Noise Council (538)	Geoffrey Holmes
London Gliding Club (533)	C A P Ellis
Luton County Borough Council (506)	—

Printed image digitised by the University of Southampton Library Digitisation Unit

Milton Keynes Development Corporation (511)	–
National Farmers Union (508)	Nevile Wallace
National Trust (547)	Michael Fitzgerald
Noise Abatement Society (536)	–
Nuthampstead Preservation Association (514)	Peter Boydell QC Michael Harrison
Port of London Authority (521)	Michael Mann
Royal Institute of British Architects (524)	–
Royal Society of the Protection of Birds (524)	Peter Conder
Sheppey Group (516)	John Newey Captain P Wilks
Southend-on-Sea County Borough Council (507)	Michael Odgen QC Michael Wright
Standing Conference on London and South East Regional Planning (528)	–
Stevenage Development Corporation (512)	R D Lynbery QC C Colston
Surrey County Council (542)	–
Thames Aeroport Group (519)	I O Griffiths
Thames Estuary Development Company (520)	Douglas Frank Michael Mann Michael Harrison
Thurleigh Emergency Committee for Democratic Action (535)	J Curran
Town and Country Planning Association (518)	–
United Kingdom Federation Against Aircraft Nuisance (537)	Geoffrey Holmes
West Sussex County Council (543)	–
Wing Airport Resistance Association (515)	Niall MacDermot QC Philip Otton

Printed image digitised by the University of Southampton Library Digitisation Unit

List of Opening Speeches

Days 1 and 2

Opening Speech by Mr Bagnall — Day 1 all Day 2, 2-20

Opening Speech by Mr Frank
on behalf of Cambs, Essex, Herts County Councils — 21

Opening Speech by Sir Derek Walker-Smith
on behalf of Beds, Hunts and Northants County Councils — 25

Opening Speech by Mr Barker,
on behalf of Bucks and Oxon County Councils — 34

Opening Speech by Mr White,
on behalf of Kent County Council — 38

Opening Speech by Mr Ogden,
on behalf of Southend-on-Sea County Borough Council — 43

Opening Speech by Mr Webster,
on behalf of British Airports Authority — 45

Opening Speech by Mr Walker,
on behalf of British European Airways — 57

Opening Speech by Mr Jackman,
on behalf of British Overseas Airways Corporation — 59

Opening Speech by Mr Phillips,
on behalf of British Railways Board — 62

Opening Speech by Mr Mann,
on behalf of Port of London Authority and TEDCO — 68

Opening Speech by Mr Lymbery,
on behalf of Stevenage Development Corporation — 70

Opening Speech by Mr MacDermot,
on behalf of Wing Airport Resistance Association — 70

Opening Speech by Mr Forbes,
on behalf of Bedfordshire Airport Resistance Association — 77

Opening Speech by Mr Wood,
on behalf of the Action Committee against Foulness Airport — 82

Opening Speech by Mr Purchase,
on behalf of Bernard L Clark & Partners — 86

Opening Speech by Mr Body,
on behalf of the Council for the Protection of Rural England — 89

Opening Speech by Mr Gregory,
on behalf of the Country Landowners' Association. — 92

Printed image digitised by the University of Southampton Library Digitisation Unit

Opening Speech by Mr Boydell,
on behalf of Nuthampstead Preservation
Association — Day 8: 4-13

Opening Speech by Mr Griffiths,
on behalf of Thames Aeroport Group — Day 14: 65-72

Printed image digitised by the University of Southampton Library Digitisation Unit

List of Closing Speeches

Days 69C–74

Closing Speech by Mr Frank, on behalf of Cambs, Essex and Herts County Councils	Day 69C: 1
Closing Speech by Mr Webster, on behalf of British Airports Authority	Day 69C: 55-end Day 70: 1
Closing Speech by Mr Vandermeer, on behalf of the Greater London Council	Day 70: 59
Closing Speech by Sir Derek Walker-Smith, on behalf of Beds, Northants and Hunts County Councils	Day 70: 67 Day 71: 1
Closing Speech by Mr Lymbery, on behalf of Stevenage Development Corporation	Day 71: 44
Closing Speech by Mr Walker, on behalf of British European Airways	Day 71: 54
Closing Speech by Mr Barker, on behalf of Bucks County Council	Day 71: 79
Closing Speech by Mr Phillips, on behalf of British Railways Board	Day 71: 90
Closing Speech by Mr Forbes, on behalf of Bedfordshire Airport Resistance Association	Day 71: 92-end
Closing Speech by Mr Body, on behalf of Council for the Protection of Rural England	Day 72: 1
Closing Speech by Mr Goss, on behalf of Local Authorities Aircraft Noise Council and United Kingdom Federation Against Aircraft Nuisance	Day 72: 5
Closing Speech by Mr Boydell, on behalf of Nuthampstead Preservation Association	Day 72: 8
Closing Speech by Mr Ogden, on behalf of County Borough of Southend-on-Sea	Day 72: 16
Closing Speech by Councillor Wood, on behalf of Action Committee Against Foulness Airport	Day 72: 26
Closing Speech by Mr Griffiths, on behalf of Thames Aeroport Group	Day 72: 42
Closing Speech by Mr Wallace, on behalf of the National Farmers Union	Day 72: 82
Closing Speech by Mr Briggs, on behalf of Kew Association for the Control of Aircraft Noise	Day 72: 90

Printed image digitised by the University of Southampton Library Digitisation Unit

Closing Speech by Mr Jackman, on behalf of British Overseas Airways Corporation	Day 72: 104-end
Closing Speech by Mr MacDermot, on behalf of Wing Airport Resistance Association	Day 73: 2
Closing Speech by Mr White, on behalf of Kent County Council	Day 73: 62
Closing Speech by Mr Mann, on behalf of Thames Estuary Development Company Ltd	Day 73: 67
Closing Speech by Mr Purchase, on behalf of Bernard L Clark and Partners	Day 73: 87
Closing Speech by Mr Connell, on behalf of Noise Abatement Society	Day 73: 90
Closing Speech by Mr Curran, on behalf of Thurleigh Emergency Committee for Democratic Action	Day 73: 91
Closing Speech by Mr Bagnall,	Day 73: 104-end Day 74: 4–68

Printed image digitised by the University of Southampton Library Digitisation Unit

500	British Airports Authority
501	Bedfordshire Huntingdonshire and Northampton County Councils
502	Buckinghamshire and Oxfordshire County Councils
503	Cambridgeshire Essex and Hertfordshire County Councils
504	Kent County Council
506	Luton County Borough Council
507	Southend-on-Sea County Borough Council
508	National Farmers Union
509	Council for the Protection of Rural England
510	Country Landowners' Association
511	Milton Keynes Development Corporation
512	Stevenage Development Corporation
513	Bedfordshire Airport Resistance Association
514	Nuthampstead Preservation Association
515	Wing Airport Resistance Association
516	Sheppey Group
517	Cambridge University
518	Town and Country Planning Association
519	Thames Aeroport Group
520	Thames Estuary Development Company
521	Port of London Authority
522	Greater London Council
523	Burnham River Crouch and Seaward Approaches Protection Association
524	Royal Society for the Protection of Birds
525	Royal Institute of British Architects
526	Bernard L Clark and Partners
527	Action Committee Against Foulness Airport
528	Standing Committee on London and Southeast Regional Planning
529	British Overseas Airways Corporation

Printed image digitised by the University of Southampton Library Digitisation Unit

530 British European Airways

531 British Railways Board

532 British Light Aviation Centre

533 London Gliding Club

534 British Airline Pilots Association

535 Thurleigh Emergency Committee for Democratic Action

536 Noise Abatement Society

537 United Kingdom Federation Against Aircraft Nuisance

538 Local Authorities Aircraft Noise Council

539 Kew Association for the Control of Aircraft Noise

542 Surrey County Council

543 West Sussex County Council

544 East Sussex County Council

547 The National Trust

Printed image digitised by the University of Southampton Library Digitisation Unit

Cost benefit analysis and valuation of time A(1)
Published in full on Reel 4 and 5 of the *Microfilm Supplement* (10 reels)

5001	British Airports Authority	Jacques Lesourne M Frost
5011 5021 5031	Bedfordshire, Huntingdon, Peterborough, Northamptonshire County Councils Buckinghamshire and Oxfordshire County Councils Cambridge and Isle of Ely, Essex and Hertfordshire County Councils	F A Sharman *Statement of evidence and supplementary statement of evidence* D R Anderson M Haddon-Grant G W Hart C A Skidmore
5011 5021 5031	Bedfordshire, Huntingdon and Peterborough and Northamptonshire County Councils Cambridge and Isle of Ely, Essex and Hertfordshire County Councils Buckinghamshire and Oxfordshire County Councils	Professor N Lichfield *Statement of evidence and supplementary statement of evidence* R B Verney Professor T Wise *Part I* C B Chapman *Part II* D W Pearce *Supplement*
5031	Cambridgeshire and Isle of Ely, Essex and Hertfordshire County Councils	W D Peters
506	County Borough of Luton	
5141	Nuthampstead Preservation Association	J Brooke-Hunt Sir John Elliot *Proof and supplement* Professor Peter Hall T J Nardecchia Dr H B Wright
5151	Wing Airport Resistance Association	Tom Hancock *Proof and addition* R A Waller *Proof and supplement* *2nd supplement*
5161	Sheppey Group	R J Patrick
5181	Town and Country Planning Association	M Ash *Statement*

Printed image digitised by the University of Southampton Library Digitisation Unit

519	Thames Airport Group Limited	Professor J Parry Lewis *Statement and supplement*
524	Ornithological Societies and Interests	
5271	Action Committee Against Foulness Airport	
5291	British Overseas Airways Corporation	
5301	British European Airways	
531	British Railways' Board	
5331	London Gliding Club	
535	Thurleigh Emergency Committee for Democratic Action	

Printed image digitised by the University of Southampton Library Digitisation Unit

Timing of the need B(2)
Published in full on Reel 5 of the *Microfilm Supplement* (10 reels)

5002	British Airports Authority	S F Wheatcroft
5002A	" " "	N J Payne
5002B	not used	
5002C	British Airports Authority	
5002D	" " "	
5012	Bedfordshire, Huntingdon and Peterborough Northamptonshire County Councils	F A Sharman *Evidence plus supplement*
5022	Buckinghamshire and Oxfordshire County Councils	
5032	Cambridgeshire, Isle of Ely, Essex and Hertfordshire County Councils	
5012	Bedfordshire, Huntingdon and Peterborough Northamptonshire County Councils	Professor N Lichfield
5032	Cambridgeshire and Isle of Ely, Essex and Hertfordshire County Councils	
5152	Wing Airport Resistance Association	D M Lumb *Evidence plus supplement*
5192	Thames Aeroport Group Limited	Professor J Parry Lewis
5192A	" " " "	" " "
5192B	" " " "	" " "
5192C	" " " "	" " "
5192D	" " " "	" " "
5222	Greater London Council	Dr D E C Eversley
5222	" " "	" " " *Supplement*
5262	Bernard L Clark & Partners	
5272	Action Committee Against Foulness Airport	
5292	British Overseas Airways Corporation	
5302	British European Airways	
5302	" " "	*Supplement*
5302	" " "	*Further supplement*
5312	British Railways Board	
5332	London Gliding Club	
535	Thurleigh Emergency Committee for Democratic Action	

Printed image digitised by the University of Southampton Library Digitisation Unit

5372	United Kingdom Federation Against Aircraft Nuisance	
5382	Local Authorities Aircraft Noise Council	
5392	Kew Association for the Control of Aircraft Noise	
5432	West Sussex County Council	P W Bryant

Printed image digitised by the University of Southampton Library Digitisation Unit

Stage V Evidence

Air matters C(3)
Published in full on Reel 6 of the *Microfilm Supplement* (10 reels)

5003	British Airports Authority	M A Warskow
5003 A	" " "	"
5003 B	" " "	"
5003 C	" " "	"
5003 D	" " "	"
5003 E	" " "	"
5003 F	" " "	"
5003 G	" " "	"
5013	Bedfordshire, Huntingdon and Peterborough and Northamptonshire County Councils	Sir D Cumming G I W Dunford *Evidence and 2 supplements & 5013/5023/5033 A & B (maps)*
5023	Buckinghamshire and Oxfordshire County Councils	
5033	Cambridgeshire and Isle of Ely, Essex and Hertfordshire County Councils	Dr G W Schaefer *Evidence and supplement & 5033A (letter)* F A Sharman
5013	Bedfordshire, Huntingdon and Peterborough and Northamptonshire County Councils	Professor N Lichfield
5033	Cambridgeshire and Isle of Ely, Essex and Hertfordshire County Councils	
5153	Wing Airport Resistance Association	D M Lumb *Evidence plus supplement*
5163	Sheppey Group	
5173	University of Cambridge	Sir M Ryle
5203/1	Thames Estuary Development Company Ltd	J W S Brancker
5203/2	" " " "	J W G Meyer
5243	Ornithological Societies	
5243	" "	*Appendix*
5243A	" "	*Letter and article*
5243B	" "	*Article*
5243	" "	*Supplement*
5263	Bernard L Clark & Partners	
5273	Action Committee Against Foulness Airport	

Printed image digitised by the University of Southampton Library Digitisation Unit

5293	British Overseas Airways Corporation	
5293	" " " "	*Additional evidence*
5303	British European Airways	
5323	British Light Aviation Centre	
5333	London Gliding Club	
5343	British Air Line Pilots Association	

Printed image digitised by the University of Southampton Library Digitisation Unit

Site matters D(4)
Published in full on Reel 6 of the *Microfilm Supplement* (10 reels)

5004	British Airports Authority	S F Wheatcroft
5014 5024 5034	Bedfordshire, Huntingdon, Peterborough Northamptonshire County Councils Buckinghamshire and Oxfordshire County Councils Cambridgeshire and Isle of Ely, Essex and Hertfordshire County Councils	F A Sharman *Evidence plus supplement*
5044	Kent County Council	A H Stratford
5074	County Borough of Southend-on-Sea	R F Lloyd Jones
5164	Sheppey Group	
5194	Thames Airoport Group Ltd	Professor Bijker Professor Leo H Klaassen F W Spencer
5204/1	Thames Estuary Development Co Ltd	J A Howard
5204/2	" " " " "	N N B Ordman
5204/3	" " " " "	Professor N Lichfield
5204/4	" " " " "	J A Howard
5204/5	" " " " "	Dr N E Simons
5204/6	" " " " "	F C Neervoort
5204/6A	" " " " "	M H Greaser
	" " " " "	A D Pistilli
5204/6B	" " " " "	J A Howard
5204/7	" " " " "	J A Howard
5204/7A	" " " " "	J A Howard
5204/8	" " " " "	W F Westbury
5204/9	" " " " "	W A Price
5204/10	" " " " "	J A Howard
5204/11	" " " " "	J A Howard F C Neervoort
5204/12	" " " " "	F J H Brackett
5214	Port of London Authority	
5244	Ornithological Societies	
5264	Bernard L Clark & Partners	
5264	" " " "	*Supplement D6*
5264A	" " " "	

Printed image digitised by the University of Southampton Library Digitisation Unit

5274	Action Committee Against Foulness Airport
5294	British Overseas Airways Corporation
5304	British European Airways
5304/A	" " "
5344	British Air Line Pilots Association

Printed image digitised by the University of Southampton Library Digitisation Unit

Stage V Evidence

Surface access E(5)
Published in full on Reel 7 of the *Microfilm Supplement* (10 reels)

5005	British Airports Authority	M Frost
5005A	" " "	"
5005B	" " "	"
5005C	" " "	"
5015 5025 5035	Essex, Hertfordshire, Cambridgeshire and Isle of Ely, Bedfordshire, Huntingdon and Peterborough, Northamptonshire, Buckinghamshire County Councils	F A Sharman D G D Haws C F Fennes Professor N Lichfield *Evidence and supplement*
5025A	Buckinghamshire County Council	
5025B	" " "	
5025C	" " "	
5025D	" " "	
5135	Bedfordshire Airport Resistance Association	
5145	Nuthampstead Preservation Association	T J Nardecchia
5155	Wing Airport Resistance Association	R A Waller D M Lumb *Evidence and supplement*
5195	Thames Aeroport Group Ltd	J Parry Lewis
5205/1	Thames Estuary Development Co Ltd	B Scruby
5205/1A	" " " " "	
5205/2	" " " " "	R L Trillo
5225	Greater London Council	T J Widdaker *Evidence and amendment*
5265	Bernard L Clark & Partners	
5275	Action Commission Against Foulness Airport	
5295	British Overseas Airways Corporation	*Evidence and supplements*
5295/A	" " " "	
5305	British European Airways	*Evidence and supplements*
5305/A	" " "	
5315	British Railways Board	*Evidence*
5315/A	" " "	*Supplement*

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise and Environment and planning F(6)1 and 2
Published in full on Reels 8 and 9 of the *Microfilm Supplement* (10 reels)

5006	British Airports Authority	METRA SPC Plowden
5006A	" " "	*Tech appendices*
5006B	" " "	Dr S Hooker
5006C	" " "	METRA SPC Plowden
5006D	" " "	*Steps towards quieter aircraft*
5006E not used		
5006F	" " "	METRA SPC Plowden
5016 5026 5036	Essex, Hertfordshire, Cambridgeshire Bedfordshire, Huntingdonshire, Northamptonshire Buckinghamshire and Oxfordshire County Councils	F A Sharman *Original proofs and supplementary evidence and maps*
5016 5026 5036	Essex, Hertfordshire, Cambridgeshire, Bedfordshire, Huntingdonshire, Northamptonshire, Buckinghamshire and Oxfordshire County Councils	N Fleming
5016 5036	Essex, Hertfordshire, Cambridgeshire, Bedfordshire, Huntingdon and Northamptonshire County Councils	D E Tanton
503/501 5016 5036	Essex, Hertfordshire, Cambridgeshire, Bedfordshire, Huntingdon and Northamptonshire County Councils	Professor N Lichfield *Evidence and supplement*
5036	Essex, Hertfordshire, Cambridgeshire, Bedfordshire, Huntingdon and Northamptonshire County Councils	W D Peters *Evidence and supplements*
5036	Essex, Hertfordshire, Cambridgeshire, Bedfordshire, Huntingdon and Northamptonshire County Councils	L C Kitching *Evidence and supplement* *Appendix 1* *Amendment* A D Raby *Supplement and maps* *LCK 6, 7, 8, 9*
5016 5016 5016A 5016B 5016C	Essex, Hertfordshire, Cambridgeshire, Bedfordshire, Huntingdon and Northamptonshire County Councils " " " " " "	J R Hubbard D M Woodhall L G Robinson
5036	Essex, Hertfordshire, Cambridgeshire, Bedfordshire, Huntingdon and Northamptonshire County Councils	B H Mellor
5026	Buckinghamshire and Oxfordshire County Councils	R B Verney *Evidence and supplement*

Printed image digitised by the University of Southampton Library Digitisation Unit

5026	Buckinghamshire and Oxfordshire County Councils " " " " " "	Professor J Wise *See* C B Chapman *Subject A* D W Pearce *Part I for this* *Part II evidence*
5026A 5026B	" " " " " "	F B Pooley *Evidence and supplements*
5026	Buckinghamshire and Oxfordshire County Councils	D P Davison Dr J J A Reid A C Bennett
5046 5046 5046 5046 5046 5046	County of Kent " " " " " " " " " " " " " " "	W H Deakin *Evidence* *Suppl. proof no 1 (red)* " " *no 2 (yellow)* " " *no 3 (green)* " " *no 4 (blue)* C S Waters
5086	National Farmers Union	N G Wallace
5096	Council for the Protection of Rural England	P W MacFarlane Mr Osmond
5106	Country Landowners Association	H Douglas-Pennant
5116	Milton Keynes Development Corporation	
5126 5126 5126/A 5126 5126 5126/1	Stevenage Development Corporation " " " " " " " " " " " " " " "	G Berry *Evidence and supplements* J W Blair L G Vincent *Evidence and supplement*
5136 513 5136	Bedfordshire Airport Resistance Association " " " " " " " "	L C Gale *Evidence and supplement* R Westley
5146 5146 5146	Nuthampstead Preservation Association " " " " " "	T J Nardecchia *Evidence and supplement* Professor Peter Hall *Supplement*
5156 5156A 5156 5156 5156/SC 5156	Wing Airport Resistance Association "	T Hancock *Evidence and supplement* R A Wallier *1st supplement* *2nd supplement* *3rd supplement* Mrs I Smith Cresswell J A G Wilkinson D M Lumb *Supplement*
516	Sheppey Group	R J Patrick

Printed image digitised by the University of Southampton Library Digitisation Unit

5176	Cambridge University	W A Allen
518	Town and Country Planning Association	*Evidence and supplement*
5186A	" " " " "	
519	Thames Aeroport Group	M Twigg
5196	" " "	*Evidence and supplements*
5196A	" " "	
5206/1	Thames Estuary Development Company Ltd	F A Hammond
5206/1	" " " " "	*Addendum*
5206/1	" " " " "	*Supplementary statement*
5206/1	" " " " "	*TED 112 statement*
5226	Greater London Council	Dr D E C Eversley
5226/A	" " "	" "
523	Burnham River Crouch and Seaward	
5236A	Approachers Protection Association	
5236B	" " "	
524	Ornithological Societies	
5256	Royal Institute of British Architects	
526	Bernard L Clark & Partners	*Evidence and supplement*
5266	" " " "	
5276	Action Committee Against Foulness Airport	Councillor D C Wood
5276A	" " " " "	Dr W G P Lamb
5276B	" " " " "	" "
5286	Standing Conference on London and South East Regional Planning	A Brandon Howell *Evidence and supplement*
529	British Overseas Airways Corporation	
5346	British Airline Pilots Association	
535	Thurleigh Emergency Committee for Democratic Action	
5366	Noise Abatement Society	
5396	Kew Association for the Control of Aircraft	*Impact of aircraft noise*
5396	Noise	*Noise and number index*
5426	County Council of Surrey	
5476	National Trust	M J Rogers

Printed image digitised by the University of Southampton Library Digitisation Unit

Miscellaneous G(7)
Published in full on Reel 9 of the *Microfilm Supplement* (10 reels)

5007	British Airports Authority	K M McLeod
5007/A	" " "	*Evidence and supplement*
5007/B	" " "	M Frost
5007/C	" " "	A R Macrae
5007/D	" " "	
5017	Bedfordshire, Huntingdon and Peterborough	S W Hill
5027	County Councils	
5037	Northamptonshire, Buckinghamshire, Essex, Hertfordshire, Cambridgeshire, Isle of Ely, Essex, County Councils	F A Sharman R B Verney
5207	Thames Estuary Development Co Ltd	Sir J Howard
5237	Burnham, River Crouch and Seaward Approaches Protection Association	
5267	Bernard L Clark & Partners	
5277	Action Committee Against Foulness Airport	

Printed image digitised by the University of Southampton Library Digitisation Unit

Stage V Evidence

Closing speeches
Published in full on Reel 10 of the *Microfilm Supplement* (10 reels)

5008	British Airports Authority	Subject group A
	" " "	" " B Speech I & II
	" " "	" " C
	" " "	" " D
	" " "	" " E Part I & II
	" " "	" " F Part I & II
5008/A	" " "	
5008/B	" " "	
5018/1 1A 1B	Bedfordshire County Council	F A Sharman
5018/2 2A	" " "	
5018/3	" " "	
5018/4 4A	" " "	
5018/5 5A 5B	" " "	
5018/6	" " "	
5018/7 7A	" " "	
5018/8	" " "	
5018/9	" " "	
5018/A/ 5038A	Essex and Bedfordshire County Councils	
5028	Buckinghamshire and Oxfordshire County Councils	
5028/1		
5028/2	" " " "	
5038	Cambridgeshire, Isle of Ely, Essex and Hertfordshire County Councils	D Frank
5038/1	" " "	"
5038/2	Essex County Council	"
5048	Kent County Council	
5108	County Landowner's Association	M A Gregory
5148	Nuthampstead Preservation Association	
5158	Wing Airport Resistance Association	N MacDermot P Otton
5248	Royal Society for the Protection of Birds & Associated Organizations	
5298	British Overseas Airways Corporation	
5308	British European Airways	
5318	British Railways Board	
5358	Thurleigh Emergency Committee for Democratic Action	James Curran
5368	Noise Abatement Society	John Connell

Printed image digitised by the University of Southampton Library Digitisation Unit

Published in full on Reel 10 of the Microfilm Supplement (10 reels)

A

Albert Murray, MP constituents of	6053
Allhallows and Stoke Parish Councils	6006
Allhallows and Stoke Womens Institute	6017
Amalgamated Union of Engineering and Foundry Workers	6051
Architectural Association	6024
Archibald Shaw & Partners	6027
Arnold, P A	6021

B

Baillie, A	6012
Birmingham, City of	6055
Breachwood Green Campaign for the Control of Aircraft Noise	6073
Bridle and Cross Ltd	6054
British Association for the Control of Aircraft Noise	6008
British Gliding Association	6011
British United Airways	6060
Bruce White, Wolfe Barry and Partners	6052

C

Caledonian Airways	6061
Calverton Residents Association	6028
Charlwood Society	6063
Cheney, G A	6007
Chelsea and Kensington Action Committee on Aircraft Noise	6037
Chesterton R D C	6039
City of Birmingham	6055
Constituents of Albert Murray, MP	6053
Corporation of London	6015
County Borough of Luton	6033
County of East Sussex	6046
County of Surrey	6031
County of West Sussex	6038
Countryside Commission	6036
Cranfield Institute of Technology	6069

D

Donaldson Line (Air Services) Ltd	6061A
Dorking and Horley RDC	6045
Drayton Parslow Parish Council	6030

Printed image digitised by the University of Southampton Library Digitisation Unit

E

East Anglia Consultative Committee 6014
East Midlands Airport Joint Committee 6066
East Sussex County Council 6046
Economic Planning Council 6044

F

Faversham Society 6048
Foreign Airlines 6022
Forest Row Parish Council 6064
Friends of the Vale of Aylesbury 6018
Fry, Peter, MP 6025

G

Gatwick Airport Group 6063
Gatwick Anti Noise Executive 6058
Glasgow Chamber of Commerce 6067
Grain Parish Council 6053
Great Ouse River Authority 6026
Gunner, Mrs M G L 6053

H

Hampstead Association for Aircraft Noise Control 6016
Hastings, Stephen, MP 6019
Hoo St Werburgh Parish Council 6051

K

Kent University 6023

L

LAANC 6047
LADACAN 6070
Lamb, W G P 6062
Local Authorities Aircraft Noise Council 6047
Local Authorities (Airport) Committee 6057
London, Corporation of 6015
London Federation of Trade Councils 6010
Lucking, A J 6013
Luton and District Association for the Control of Aircraft Noise 6070
Luton Corporation 6033

Printed image digitised by the University of Southampton Library Digitisation Unit

M

Maxwell, Robert MP 6068
Members of Parliament:
Peter Fry 6025
Stephen Hastings 6019
Robert Maxwell 6068
Brian Parkyn 6035
Rt Hon Sir David Renton 6020
Sir Spencer Summers 6041
Mills, R 6005

N

National Association of Parish Councils 6003
North West Advisory Committee for Civil Aviation 6001

O

Open University, The 6071
Ottaway, R 6053

P

Parish Councils, National Association of 6003
Parkyn, Brian MP 6035
Political and Economic Planning 6034

R

Rainham and Wigmore Community Association 6056
Rayleigh UDC 6002
Renton, Rt Hon Sir David, MP 6020
Residents Association, Calverton 6028
Richards, E J 6074
River Authority, Great Ouse 6026

S

St Michael's Church Preservation Committee 6075
St Neots Airport Resistance Association 6032
St Neots RDC 6009
St Neots UDC 6049
School of Architecture 6024
Sir Bruce White, Wolfe Barry and Partners 6052
Sir John Cass College 6062
Smoothy, L 6050
South East Economic Planning 6040
Stock and Allhallows Parish Councils 6006
Summers, Sir Spencer, MP 6041
Surrey County Council 6031
Sussex, East, County Council 6046
Sussex, West, County Council 6038

Printed image digitised by the University of Southampton Library Digitisation Unit

T

Tilley, Dr R 6053
Trade Councils, London Federation of 6010
Traffic Research Centre 6072
TUC Advisory Committee 6059

U

UKFAAN 6029
University of Kent 6023

V

Vale of Aylesbury, Friends of 6018

W

Wales Tourist Board 6004
Walker, R 6053
Welland and Nene River Authority 6043
West Sussex County 6038
Wildfowl Trust 6042
Womens Institute, Allhallows and Stoke 6017

Printed image digitised by the University of Southampton Library Digitisation Unit

North West Advisory Committee for Civil Aviation	6001
Rayleigh Urban District Council	6002
National Association of Parish Councils	6003
Wales Tourist Board	6004
R Mills Esq	6005
Allhallows and Stoke Parish Councils	6006
G A Cheney Esq	6007
British Association for the Control of Aircraft Noise	6008
St Neots Rural District Councils	6009
London Federation of Trade Councils	6010
British Gliding Association	6011
A Baillie Esq	6012
A J Lucking Esq	6013
East Anglia Consultative Committee	6014
Corporation of London	6015
Hampstead Association for Aircraft Noise Control	6016
Allhallows and Stoke Women's Institute	6017
Friends of the Vale of Aylesbury	6018
Stephen Hastings, MP	6019
Rt Hon Sir David Renton, MP	6020
P A Arnold Esq	6021
Foreign Airlines	6022
Reply by Mr Bergstrom of SAS to a letter from McKenna & Co	6022A
University of Kent	6023
Architectural Association	6024
Peter Fry, MP	6025
Great Ouse River Authority	6026
Archibald Shaw & Partners	6027
Calverton Residents' Association	6028
United Kingdom Federation Against Aircraft Noise	6029
Drayton Parslow Parish Council	6030
St Neots Airport Resistance Association	6032
Political and Economic Planning	6034
Brian Parkyn, MP	6035
Countryside Commission	6036
Chelsea and Kensington Action Committee on Aircraft Noise	6037
County of West Sussex	6038
Chesterton Rural District Council	6039
South East Economic Planning Council	6040
Sir Spencer Summers, MP	6041
The Wildfowl Trust	6042
Welland & Nene River Authority	6043
Economic Planning Council	6044
Dorking and Horley Rural District Council	6045
County of East Sussex	6046
Local Authorities Aircraft Noise Council	6047

Printed image digitised by the University of Southampton Library Digitisation Unit

The Faversham Society	6048
St Neots Urban District Council	6049
Amalgamated Union of Engineering and Foundry Workers	6050
Hoo St Werburgh Parish Council	6051
Sir Bruce White, Wolfe Barry and Partners	6052
Constituents of Albert Murray, MP	6053
Bridle and Cross Ltd	6054
City of Birmingham	6055
The Rainham and Wigmore Community Association	6056
Local Authorities (Airport) Committee	6057
Gatwick Anti Noise Executive	6058
Eastern Region TUC Advisory Committee	6059
British United Airways	6060
Caledonian Airways and Donaldson Line	6061
Note on the Acoustic Propagation Characteristics of Coastal and Inland Sites	6062
The Charlwood Society, Gatwick Airport Group	6063
Forest Row Parish Council	6064
Franci Pym, MP	6065
East Midlands Airport Joint Committee	6066
Glasgow Chamber of Commerce	6067
Robert Maxwell MP	6068
Cranfield Institute of Technology	6069
Luton and District Association for the Control of Aircraft Noise (LADACAN)	6070
The Open University	6071
Traffic Research Centre	6072
Breachwood Green Campaign for the Control of Aircraft Noise (BRECCAN)	6073
Richards, E J	6074
St Michael's Church Preservation Committee	6075
Hawker Siddeley Aviation	6076

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

LIST OF PAPERS IN 'FURTHER RESEARCH TEAM WORK' SERIES

Published in full on Reel 10 of the Microfilm Supplement (10 reels)

(1) Substantive revisions to Volume VII, circulated with the Secretary's letter of 23 February 1970

(2) Amendments to Volume VIII, Parts 1 and 2; [printing errors and omissions]

(3) Amendments to Volume VIII, Parts 1 and 2

(4) 'Consumer Surplus in Housing: Report of Survey Work' circulated with the Deputy Commission Secretary's letter of 25 February 1970

(5) Nuthampstead Noise Drawings (NUT/NOISE/1A-3A), circulated with the Secretary's letter reference TA/1/12

(6) 'Sensitivity Analyses: Tables 29.32-29.36', circulated with Mr Twyman's letter of 13 March 1970

(7) Views of Ministry of Technology and Board of Trade on STOL, circulated with the Secretary's letter of 24 March 1970

(8) Letter dated 2 April 1970 from Ministry of Defence concerning Shoeburyness P & EE, circulated with the Secretary's letter of same date

(9) Sensitivity Analysis Table 29.37: High Rail Modal Split

(10) Air Passenger Forecasts

(11) Further report (dated March 1970) from the British Railways Board's Consultants, Messrs Livesey and Henderson circulated with the Deputy Secretary's letter of 8 April 1970

(12) Sensitivity Analysis: Constant Air Transport Movements after 1990

(13) Sensitivity Analyses: Foulness and Nuthampstead with 50:50 and 80:20 mode utilisations

(14) Personal statement by Mr F P Thompson on equity weighting

(15) Informal note from Ministry of Transport on the valuation of travel time

(16) Sensitivity Analysis: Upper and Lower Estimates of Traffic

(17) Amendments to Volume VII: Chapters 22 and 7

(18) Revisions to certain noise contours, population figures and noise costs

(19) Note by Mr J R Collingbourne of the Ministry of Technology on the Valuation of Time Saving for Air Travellers

(20) Board of Trade Working Party on Traffic and Capacity paper 'Revisions to the Traffic Forecast'

Printed image digitised by the University of Southampton Library Digitisation Unit

(21) Empirical studies related to the value of time which may be referred to by the Research Team.

(22) Timing of the Need

(23) Ministry of Defence, Foulness Island

(24) Comparison of Air Traffic Forecasts

(25) Air Traffic Forecasting; letter of 11 May 1970 from the Board of Trade

(26) Incomes of Business Travellers by Rail and Air within UK; Further note by J R Collingbourne

(27) Further Evaluation by General Precision Systems Ltd of Air Traffic Control Factors.

(28) Supplementary note by NATCS on Air Traffic Control considerations at the four third London airport sites, together with comments by General Precision Systems Ltd.

(29) Additional Matters arising under Subject B

(30) Treatment of Uncertainty and Margins of Error in the Research Team's assessment of TLA Sites.

(31) Copies of transparencies provided by Mr Allen M Morrissey, Chief of the Evaluation Staff, Flight Standards Service, Federal Aviation Administration

(32) Costs of Foulness Reclamation and Earthmoving at Inland Sites

(33) Effects on Airport City; paper by Llewelyn-Davies, Weeks, Forestier-Walker and Bor, and, Shankland Cox and Associates

(34) Fifth Memorandum by the Ministry of Transport.

(35) Aggregate Prices

(36) Additional Meteorological Information.

(37) Airport-Seaport

(38) Heathrow Link Steering Group

(39) Minutes of Surface Access meeting.

(40) Logic Diagram – surface access model.

(41) Ministry of Transport map – air passengers – Cublington.

(42) Population and noise costs

(43) Trip generation procedure.

(44) Paper by Mr R Colegate on European air fares policy.

(45) Revised Flight Paths and Noise Contours at Foulness (80/20 operation)

Printed image digitised by the University of Southampton Library Digitisation Unit

(46) Scatter Diagrams shown by the Research Team on Day 47

(47) Earth Moving – Inland Sites

(48) Sensitivity Analyses – lower estimates of traffic, Revised tables 29.52 and 29.53

(49) Prediction of the future value placed on residential peace and quiet,

(50) Aircraft Noise Certification, Board of Trade Press Notice

(51) Effect of Aircraft Noise on House Prices

(52) Commuter Drawback

(53) SEJPT Table: New Towns and TDA Planned Moves

(54) Amendment to FRTW 53

(55) Noise Cost Model Diagrams;

(56) Realignment of the Foulness BI Site on 31°

(57) Value of Agricultural Land: Foulness.

(58) Revisions to Defence Costs

(59) Noise contours for the TEDCO BII Site

Printed image digitised by the University of Southampton Library Digitisation Unit

Accessibility: scatter diagrams
FRTW 46

Aggregates: haulage costs
FRTW 35

Agricultural land: Foulness
FRTW 57

Air fares
FRTW 44

Air passengers: forecasts
FRTW 10

Air traffic: forecasts
FRTW 10, 20, 24, 25, 29, 41

Air traffic control: General Precision Systems
FRTW 27, 28

Airport-seaport: Foulness
FRTW 37

Amendments: Vol VII;
FRTW 17 and 18

Amendments: Vol VII, Pt 2
FRTW 42

Amendments: Vol VIII, Pts 1 and 2
FRTW 2, 3

British Railways Board: further report
FRTW 11

Commuter drawback
FRTW 52

Consumer surplus: housing: report of survey work
FRTW 4

Defence: costs
FRTW 58

Defence, Ministry of: letters regarding Shoeburyness
FRTW 8 23

Earth moving costs: inland sites
FRTW 32, 47

Forecasts: air traffic
FRTW 10, 20, 24, 25 and 29

Foulness: site realignment
FRTW 56

General Precision Systems: air traffic control
FRTW 27, 28

Printed image digitised by the University of Southampton Library Digitisation Unit

Meteorology: Foulness
FRTW 36

Movements: air transport
FRTW 12

New Towns: South East Joint Planning Team
FRTW 53, 54

Noise: costs
FRTW 42

Noise: effect on house prices
FRTW 51

Noise: Foulness
FRTW 45, 59

Noise: noise cost model
FRTW 55

Noise: Nuthampstead noise drawings
FRTW 5

Noise: value of quiet
FRTW 49

Noise certification: Statutory Instrument
823/1970 RTW 50

Nuthampstead: noise drawings
FRTW 5

Rail *see* Surface access: rail

Reclamation costs: Foulness
FRTW 32

Revisions: Vol VII
FRTW 1

Revisions: Vol VII Ch 28
FRTW 22

Revisions: Vol VIII Pt 1 : 11-47
FRTW 33

Road costs: Ministry of Transport
FRTW 34

STOL *see* Short take off and landing

Sensitivity analyses: Vol VII Pt 2 tables
FRTW 6, 9, 12, 13, 16, 48

Shoeburyness: letters from Ministry of Defence
FRTW 8, 23

Printed image digitised by the University of Southampton Library Digitisation Unit

Short take off and landing (STOL): views of Ministry of Technology and Board of Trade
FRTW 7

Site assesments: margins of error
FRTW 30

South East Joint Planning Team: new towns list
FRTW 53, 54

Surface access: gravity model
FRTW 39, 40

Surface access: rail
FRTW 9, 11

Technology, Ministry of: short take off and landing
FRTW 7

Technology, Ministry of: valuation of time
FRTW 19, 26

Timing of the need
FRTW 22

Trade, Board of: air traffic forecasting
FRTW 25

Trade, Board of: short take off and landing
FRTW 7

Transport, Ministry of: road costs
FRTW 34

Transport, Ministry of: valuation of time
FRTW 15, 38

Turbulence
FRTW 31

Valuation of time
FRTW 15, 19, 38

Valuation of time: reading list
FRTW 21, 26

Volume VII: additions
FRTW 6, 9, 12, 13, 40, 43 and 48

Volume VII: amendments
FRTW 17, 18 and 42

Volume VII: revisions
FRTW 1, 22 and 58

Volume VIII: additions
FRTW 27 and 28

Printed image digitised by the University of Southampton Library Digitisation Unit

Volume VIII: amendments
FRTW 3 and 12

Volume VIII: revisions
FRTW 33

Weighting: equity weighting
FRTW 14

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Stage V Public Hearing

INDEX

to

Subject A

Principles and Methods of Valuation in the cost benefit analysis, including the valuation of time savings transferred from Subject E.

Before:-

THE HON. MR. JUSTICE ROSKILL (in the Chair)

PROFESSOR COLIN BUCHANAN

A. GOLDSTEIN, Esq

A. J. HUNT, Esq

PROFESSOR DAVID KEITH-LUCAS

ARTHUR KNIGHT Esq and

PROFESSOR A.A. WALTERS

J. CAINES, Esq.
(Secretary)

Printed image digitised by the University of Southampton Library Digitisation Unit

x examined by

xx cross examined by

Rx re-examined by

Q questioned by the Chairman or a member of the Commission

Action Committee Against Foulness Airport (527)
Day 13 p 53-65

Agriculture: noise costs
Day 16: 67 (Nardecchia xx Wood)

Airline Operations
Day 6: 61-64 (Sharman xx Walker)
Day 12: 49-50 (Slocombe xx Walker-Smith)

Airlines: fares
Day 14: 4-7 (Griffiths Rx Phillips)

Airlines: operating costs
Day 7: 19-21 (Lesourne xx Walker-Smith)
12: 47 (Slocombe xx Barker)
: 53-57 (Slocombe xx Walker-Smith)
16: 14-16 (Elliott Q Chmn xx Walker)
24-25 (Elliott xx Wood)

Airport revenue
Day 12: 11-15 (Wise Q Chmn)
16: 27-38 (Elliott xx Bagnall)

Airport/seaport
Day 11: 23-24 (Hancock xx White)

Airports: car parking charges
Day 6: 28 (Haws xx Walker)

Airports: future developments
Day 14: 89-90 (Parry-Lewis xx Barker)
: 96-99 (Parry-Lewis xx Ogden) (Q Chmn)

Airports: regional
Day 6: 30 (Haws xx Wood)
41-46 (Haws Q Buchanan Q Keith-Lucas)
50-51 (Haws xx Barker)
Day 11: 37 (Hancock xx Webster)
Day 13: 38-41 (Waller Rx MacDermott)
Day 17: 8-11 (Thompson xx Frank)
54-55 (Thompson xx Barker)

Air traffic: foreign
Day 9: 41-46 (Wise xx Webster)

Printed image digitised by the University of Southampton Library Digitisation Unit

Air traffic: passenger
Day 5: 3-4 (Lichfield xx Bagnall)
112 (Lichfield Rx Walker-Smith)
12: 54-55 (Slocombe xx Walker-Smith)
73-76 (Smith xx Walker-Smith) (Q Chmn)
15: 71-72 (Wright xx Jackman)
16: 57-58 'Nardecchia xx Walker-Smith)
17: 6 (Thompson xx Frank)
41-43 (Thompson xx Walker-Smith)
53 (Thompson xx Barker)

Amenity
Day 10: 17-20 (Wise xx Curran)
Day 11: 41-41A (Hancock xx Wood)
12: 102-103 (Waller x MacDermot)
14: 51-53 (Self: opening speech)
15: 80-98 (Curran xx Walker-Smith)
16: 67 (Nardecchia xx Wood)
104 (Hall xx Bagnall)
17: 33-38 (Thompson xx Walker-Smith)
18: 31-36, 39-40 (Thompson xx Boydell)

Bedfordshire County Council see Bedfordshire, Huntingdonshire and Northamptonshire County Councils (501)

Bedfordshire, Huntingdonshire and Northamptonshire County Councils (501)
Day 3: 9 - Day 6: 25-93
Day 7: 59-78

Bedfordshire Times Survey see Local opinion surveys

Birds: Conservation
Day 12: 88 (Verney xx Wood)

British Airports Authority (500)
Day 6: 93 - Day 7: 58
Day 7: 98 - Day 8 - Day 9: 15

British European Airways (530)
Day 12: 46-59

British European Airways: Future plans
Day 12: 58-59 (Slocombe Rx Walker)

British Overseas Airways Corporation (529)
Day 12: 60-84

British Railwats Board (531)
Day 13: 68 - end
Day 14: 2-31

Buckinghamshire County Council (502)
Day 6: 25-93
Day 7: 59-78
Day 9: 17 - Day 10 all
Day 11: 68 - end
Day 12: 2-38, 87-101

Burns Team see South East Joint Planning Team

Printed image digitised by the University of Southampton Library Digitisation Unit

Cambridgeshire County Council see Cambridgeshire, Essex and Hertfordshire County Councils (503)

Cambridgeshire, Essex and Hertfordshire County Councils (503)
Day 3 p 9 - Day 6 p 93 Day 7 p 59-98

Charter flights/Inclusive tours
Day 6: 27-28 (Haws xx Walker)
34-40 (Haws xx Bagnall)
47-48 (Haws xx Frank)
16: 16-17 (Elliott xx Walker)
80-85 (Nardecchia xx Evans)
19: 26 (Flowerdew xx Frank)

Churches: Stewkley
Day 12: 99-101 (Verney Q Chmn)

Common market
Day 3: 13-16 (Lichfield xx Barker)
5: 106-109 (Lichfield Rx Walker-Smith)
7: 27-29 (Lesourne xx Barker)
9: 40-46 (Wise xx Webster)
10: 92-94 (Wise xx Bagnall)
17: 50-53 (Thompson xx Barker)

Compensation
Day 7: 13-14 (Lesourne xx Walker-Smith)
56-57 (Lesourne xx Webster)
9: 21-25 (Wise x Barker)
29-32 (Wise Q Chairman, Walters)
33-38 (Wise xx Webster).
10: 8-17 (Wise xx Curran)
13: 6 (Waller xx Barker)
29-31 (Waller xx Bagnall)
17: 74-79 (Thompson xx Webster)
18: 12-14 (Thompson xx MacDermott)

Construction: costs
Day 4: 3-4 (Lichfield xx Webster)
16: 74-77 (Nardecchia xx Evans) (Q Walters)
85-86 (Nardecchia xx Evans)
105 (Hall xx Bagnall)

Consumer surplus
Day 9: 73-75 (Wise xx Webster)
10: 88 (Wise xx Bagnall)
14: 40 (Self: opening speech)
96 (Parry-Lewis xx Ogden) (Q Walters)
16: 69 (Nardecchia xx Evans)
17: 99-101 (Thompson xx Forbes)

Printed image digitised by the University of Southampton Library Digitisation Unit

Cost/benefit analysis

3: 9-70 (Lichfield xx Barker)
72-117 (Lichfield xx Webster)
4: 41-
95-115 (Lichfield xx Bagnall)
5: 88-109, 111 (Lichfield Rx Walker-Smith)
6: 55-57 (Sharman xx Webster)
74-75 84-89 (Sharman xx Bagnall)
94-97 (Lesaurne x Webster)
100-107 (Lesourne xx Walker-Smith)
7: 16-17 (Lesourne xx Walker-Smith)
59 (SharmanRx Frank) (Q Walters, Goldstein)
11: 35-36 (Hancock x Ogden)
12: 103-107 (Waller x MacDermot)
14: 32-33 (Ash opening speech)
60-61 (Ellis Q Chmn)
15: 56 (Parry Lewis Q Buchanan)
17: 3 (Thompson xx Frank)
13 (Thompson xx Walker-Smith)
44-61 (Thompson xx Barker)
73-79 (Thompson xx Webster)
18: 2-10 (Thompson xx MacDermot)
41-42 (Thompson xx Griffiths)
58-68, 68-71, 72-86 (Thompson x Bagnall)

Cost/benefit analysis: base load benefits
Day 3: 13-17 (Lichfield xx Barker)
5: 106-107 (Lichfield Rx Walker-Smith)
6: 19-20 (Lichfield Rx Frank)
82A-83 (Sharman xx Bagnall)
7: 26-27 (Lesourne xx Barker)
9: 100-113 (Wise xx Curran)
10: 88-94 (Wise xx Bagnall)
12: 96-98 (Verney xx Bagnall)
17: 66-73 (Thompson xx Ogden) (Q Walters)
18: 63-68 (Thompson x Bagnall)

Cost/benefit analysis: common denominator
Day 4: 49 (Lichfield xx Forbes)

Cost/benefit analysis: methodology
Day 4: 44 (Lichfield xx Forbes)
7: 21-25 (Lesourne xx Barker)
34-41 (Lesourne xx MacDermott)
10: 47-56 (Wise xx Bagnall)
11: 53-55 (Hancock xx Evans)
14: 33-53 (Self -, opening speech)
16: 67-69 (Nardecchia xx Evans)
114-117 (Hall xx Evans)
17: 79 (Thompson xx Forbes)

Printed image digitised by the University of Southampton Library Digitisation Unit

Cost/benefit analysis: methods of valuation
Day 3: 63-73 (Lichfield xx Forbes)
14: 35 (Self: opening speech)
92-96 (Parry-Lewis xx Ogden) (Q Chmn, Goldstein)
15: 7-9 (Parry Lewis xx MacDermot)
21, 29 (Parry Lewis xx Bagnall)
17: 79 (Thompson xx Forbes)
104-112 (Thompson xx MacDermot)
18: 72-83 (Thompson x Bagnall)
90-95 (Flowerdew xx Frank)
102 (Flowerdew Q Goldstein)

Cost/benefit analysis: principles
Day 18: 70-71 (Thompson x Bagnall)

Cost/benefit analysis: site decision
Day 4: 48 (Lichfield xx Forbes)
17: 104-112 (Thompson xx MacDermot)

Cost/benefit analysis: site decision: Margin of error
Day 13: 10-12 (Waller xx Webster)

Cost/benefit analysis: social welfare
Day 12: 2-10 (Wise Q Goldstein)
28-32 (Wise Rx Barker)

Cost/benefit analysis: subsidies
Day 17: 74-79 (Thompson xx Webster)

Cost/benefit studies: foreign
Day 7: 57 (Lesourne Q Chmn)

Costs: construction
Day 6: 53-54 (Sharman x Frank)
16: 74-77 (Nardecchia xx Evans)
85-86 (Q Walters)
88-92 (Nardecchia Rx Boydell) (Q Chmn, Walters, Knight)
105 (Hall xx Bagnall)

Costs: defence
Day 17: 49 (Thompson xx Barker)

Costs: foreign passengers
Day 20: 25-34 (Flowerdew xx Webster)

Costs: User Costs
Day 20: 74-80 (Flowerdew xx MacDermot)

Cripps' model see Planning: models

Cublington: hooliganism
Day 10 p 2

Printed image digitised by the University of Southampton Library Digitisation Unit

Decision
Day 7: 48 (Lesourne xx Bagnall)
10: 45-56 (Wise xx Bagnall)
11: 46 (Hancock xx Evans Q Buchanan)
55 (Hancock xx Evans)
56 (Hancock Q Goldstein)
15: 57-59 (Parry Lewis Rx Griffiths)

Decision: planning aspects
Day 11: 311-12 (Hancock x MacDermot)
13, 18-20 (Hancock xx Walker-Smith)
25-26 (Hancock Q Chmn)
18: 46-47 (Thompson xx Griffiths)

Defence

11: 28 (Hancock Q Chmn)
12: 47 (Slocombe xx Barker)

Defence: costs
Day 17, 49 (Thompson xx Barker)

Discount rates
Day 3: 44-47 (Lichfield xx Barker)
91-92 (Lichfield xx Webster)
114-117 (Lichfield Q Chmn)
4: 51-55 (Lichfield xx Forbes)
5: 43-50 (Lichfield xx Bagnall)
105-106 (Lichfield Rx Walker-Smith)
12: 37-38 (Wise Rx Barker)
13: 18-19 (Waller xx Bagnall)
14: 43-44 (Self: opening speech)
90 (Parry-Lewis xx Barker)

Distribution of income
Day 9: 30-32 (Wise Q Chmn, Walters)
51-59 (Wise xx Webster)
10: 4 (Wise xx Curran)
38-40 (Wise xx Bagnall)
11: 15-16 (Wise Q Chmn)
15: 14-15 (Parry Lewis xx MacDermot)
17: 19-24 (Thompson xx Walker-Smith)
18: 21 (Thompson xx MacDermot)
60-63 (Thompson x Bagnall)
see also Weighting: marginal utility of income and Taxation

Dynamic simulation models see Planning: models

Economic growth
Day 4: 38-40 (Lichfield xx MacDermot)
73-74 (Lichfield xx Griffiths)
20: 96-107 (Flowerdew xx MacDermot) (Q Chmn)

Printed image digitised by the University of Southampton Library Digitisation Unit

Economic Welfare
Day 10: 24-27 (Wise xx Bagnall)
see also taxation

Economically rational man
Day 10: 20-24 (Wise xx Bagnall)
12: 32-33 (Wise Rx Barker)

Employment
Day 4: 84-89
9: 103-110 (Wise xx Curran)
10: 3-8, 13 (Wise xx Curran)
11; 26 (Hancock xx White)
12: 98 (Verney Rx Barker)
13: 7-8 (Waller xx Ogden)
19-20 (Waller xx Bagnall)
59-60 (Wood xx Walker-Smith)
14: 90-92 (Parry-Lewis xx Ogden)
15: 76-80 (Curran xx Frank)
16: 78-79 (Nardecchia xx Evans)
17: 63-73 (Thompson xx Ogden) (Q Chmn)
18: 18-20 (Thompson xx MacDermot)
22-23 (Thompson Q Goldstein)

Employment: benefits
Day 15: 80-111 (Curran xx Walker-Smith)
16: 44-46 (Curran xx Ogden)
48-52 (Curran xx Otton)
17: 56-61 (Thompson xx Ogden)
18: 47-51, 56-57 (Thompson xx Curran)
see also Cost benefit analysis: base load benefits and weighting

Employment: inter regional
Day 11: 26 (Hancock xx White)

Essex County Council see Cambridgeshire Essex and Hertfordshire County Councils (503)

Foulness
Day 9: 40-46 (Wise xx Webster)
11: 19 (Hancock Q Buchanan)
23-24 (Hancock xx White)
60-61 (Hancock Q Buchanan)
12: 88-90 (Verney xx Wood)
13: 54-56 (Wood xx Franks)
16: 26-27 (Elliott xx Bagnall)

Foulness: cost benefit analysis
Day 13: 58-59 (Wood xx Walker-Smith)

Foulness: noise
Day 15: 60-61 (Ellis xx Bagnall)
16: 40-44 (Curran Q Chmn xx White)

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: site
Day 6: 75-75A (Sharmann xx Bagnall)
13: 63 (Wood xx Griffiths)

Gatwick
Day 12: 58-59 (Slocombe Rx Walker)
13: 2 (Chmn)

Gatwick: runways
Day 13: 2 (Chmn)

Gravity model see Surface access gravity model

Heathrow: noise
Day 7: 66-67 (Sharman Rx Frank)
12: 61 (Smith x Jackman)

Heathrow: runways
Day 6: 55-57 (Sharman xx Webster)
59 (Sharman xx Webster)
67 (Sharman xx MacDermot)
70-71 (Sharman xx Griffiths)
84-85 (Sharman xx Bagnall)
7: 66, 68, 72-75 (Sharman Rx Frank) (Q Goldstein)

Heathrow: surface access
Day 15: 53-54 (Parry Lewis Q Goldstein)
16: 26-27 (Elliott xx Bagnall)

Hertfordshire County Council see Cambridgeshire, Essex and Hertfordshire County Councils (503)

Historic buildings: costs
Day 18: 31-36 (Thompson xx Boydell)

Huntingdonshire County Council see Bedfordshire, Huntingdonshire and Northamptonshire County Councils (501)

Inclusive tours see Charter flights/Inclusive tours

Land: costs and benefits
Day 4: 18-19 (Lichfield xx MacDermot)
13: 31-35 (Waller xx Walker)
42-45 (Waller Rx MacDermot)

Printed image digitised by the University of Southampton Library Digitisation Unit

Land: reclamation
Day 15: 60 (Ellis xx Wood)

Land use
Day 10: 17-20 (Wise xx Curran)
11: 13 (Hancock x MacDermot)
18: 36-39 (Thompson xx Boydell)

Land valuation
Day 13: 17 (Waller xx Bagnall)
15: 4-7 (Harry Lewis xx MacDermot)
16: 102-103 (Hall xx Griffiths)

Local opinion surveys
Day 13: 60-61 (Wood xx Walker-Smith
16: 2-10 (Curran xx Walker-Smith)

London Gliding Club (533)
Day 15 p 60-62

Lowry model see Planning: models

Luton airport
Day 12: 72-73 (Smith xx Walker-Smith)

Luton airport: noise costs
Day 15: 70 (Ogden)

Manchester airport see Airports: regional

Meteorology
Day 12; 80 (Smith xx MacDermot)

Methodology
Day 3: 72-75 (Lichfield xx Webster)
7: 75-78 (Sharman Rx Frank)

New York airport
Day 11: 67-68 (Hancock Q Chmn)

Noise
Day 6: 58-61 (Sharman xx Webster)
7: 66 (Sharman Rx Frank)
9: 68-69 (Wise xx Webster)
12: 22-28 (Wise Q Chmn)
16: 74 (Nardecchia xx Evans)
17: 55-56 (Thompson xx Ogden)

Noise: compensation
Day 10: 15-17 (Wise xx Curran)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise: costs
Day 12: 88-90 (Verney xx Wood)
93-96 (Verney xx Bagnall)
16: 40-44 (Curran Q Chmn xx White)
17: 78-79 (Thompson xx Webster)
18: 25 (Thompson xx Boydell)
72-74) (Thompson x Bagnall)
79-83) (Thompson x Bagnall)

Noise: restrictions
67-69 (Smith xx Walker-Smith)
Day 12: 77-79 (Smith xx MacDermot)
82-83 (Smith xx Wood) (Q Chmn)
84 (Smith Rx Jackman) (Q Chmn)

Noise: social costs
Day 3: 81-82 (Lichfield xx Webster)

Noise: value of
Day 4: 4-7 (Lichfield xx Webster)
63-73 (Lichfield xx Forbes)
12: 25-28 (Wise Q Chmn)

Noise model
Day 7: 25 (Frost xx Barker)

Northamptonshire County Council see Bedfordshire, Huntingdonshire and Northamptonshire County Councils (501)

Nuthampstead Preservation Association (514)
Day 15 : 62-76
Day 16 : 11-39, 56-93, 71-76, 94-end

Optimal income see Distribution of income

Planning
Day 5: 58-61 (Prof Buchanan, Walker)
89-96 (Lichfield Rx Walker-Smith)
11: 2-12 (Hancock x MacDermot)
14: 45-53 (Self: opening speech)
16: 118-119 (Hall xx Bagnall) (Q Buchanan)
17: 2-10 (Thompson xx MacDermot)
see also Regional planning

Planning: inter regional benefits
Day 11: 21-22 (Hancock xx Walker-Smith)
22 (Hancock xx White)
13: 5-6 (Waller xx Barber)
12-13 (Waller xx Webster)
15 (Waller xx Bagnall)
38-41 (Waller Rx MacDermot)

Printed image digitised by the University of Southampton Library Digitisation Unit

Planning: models
Day 11: 7-12 (Hancock x MacDermot)
14-15 (Hancock xx Walker-Smith)
19-22 (Hancock Q Buchanan xx Walker-Smith)
25-26 (Hancock xx White Q Chmn)
30 (Hancock Q Buchanan)
32-34 (Hancock Q Walters)
34-35 (Hancock Q Goldstein)
42-53 (Hancock xx Evans Q Buchanan)
56-59 (Hancock Q Goldstein)
14: 45-53 (Self: opening speech)

Planning: models: TLA
Day 11: 38-40 (Hancock xx Webster)

Planning: planning balance sheet
Day 4: 43-46 (Lichfield xx Forbes)
: 83 (Lichfield xx Curran)
96-115 (Lichfield xx Bagnall)
5: 61 (Buchanan) 88-96 (Lichfield Rx Walker-Smith)
15: 7 (Parry Lewis xx MacDermot)

Planning balance sheet see Planning: planning balance sheet

Profitability: business
Day 5: 13 (Lichfield xx Bagnall)

Property values
Day 13: 29-31 (Waller xx Bagnall)
16: 69-72, 79-80 (Nardecchia xx Evans)
92-93 (Nardecchia Rx Boydell)
17: 94-97 (Thompson xx Forbes)
18: 25-36 (Thompson xx Boydell)
72-80 (Thompson x Bagnall)
88-95 (Flowerdew xx Frank)
20: 15 (Flowerdew xx Webster)

Property values: noise
Day 7: 53-54 (Frost Q Walters)
12: 25-28 (Wise Q Chmn)

Redhill Bypass see Surface access: roads

Regional planning
Day 4: 16-17 (Lichfield xx MacDermot)
7: 54-55 (Lesourne xx Webster)
55-56 (Lesourne Q Buchanan)
11: 16-19 (Hancock xx Walker-Smith)
20-22 (Hancock xx Walker-Smith)
52-54 (Hancock xx Evans)
59 (Hancock Q Goldstein)
62-67 (Hancock Q Chmn)
16: 51-52 (Curran xx Otton)
17: 5-6 (Thompson xx Frank)
62-63 (Thompson xx Ogden) (Q Goldstein)
18: 49-51 (Thompson xx Curran)
59 (Thompson x Bagnall)

Printed image digitised by the University of Southampton Library Digitisation Unit

Regional Planning: Cripp's model
Day 16: 94-102 (Hall xx MacDermot)
see also Planning: models

Research Team
Days 17-20

Resources and costs: commitments
Day 5: 50-53 (Prof. Walters) 58-59 (Prof. Buchanan)

Runways
Day 12: 61-62 (Smith xx Frank)

Selective employment tax see Taxation

Site decision: cost benefit analysis
Day 4: 41-44 (Lichfield xx Forbes)
48 (Lichfield xx Forbes)
12: 63-64 (Smith xx Frank)
64-66 (Smith xx Walker-Smith)
71-76 (Q Chmn)
81-82 (Smith xx Osborn)
92-96 (Smith xx Bagnall)
15: 23, 27 (Parry Lewis xx Bagnall)
18: 83-86 (Thompson x Bagnall)

Social survey
Day 18: 20 (Thompson xx MacDermot)

South-east Joint Planning Team
Day 11: 9 (Hancock x MacDermot)
52-54 (Hancock xx Evans)
59 (Hancock Q Goldstein)
64-67 (Hancock Q Chmn)
17: 6-10 (Thompson xx MacDermot)

Southend
Day 12: 72-73 (Smith xx Walker-Smith)
17: 55 (Thompson xx Ogden)

South Hampshire Airport see Airports: regional

Stage V Hearing: conduct
Day 3: 86-91 (Lichfield xx Webster)

Stanstead
Day 12: 72-73 (Smith Q Chmn)

Subsidies
Day 18: 15-17 (Thompson xx MacDermot)

Surface access
Day 9: 42-46 (Wise xx Webster)
12: 50-57 (Slocombe xx Walker-Smith)
13: 64 (Wood xx Bagnall)
15: 53-54 (Parry Lewis Q Goldstein)
16: 28-38 (Elliott xx Bagnall)
19: 32-43 (Flowerdew xx Walker-Smith)

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface access: commuter drawback
Day 17: 56-61 (Thompson xx Ogden)

Surface access: costs
Day 20: 45-46, 48 (Flowerdew xx Webster)

Surface access: gravity model
Day 5: 4 (Lichfield xx Bagnall)
9: 41-42, 46 (Wise xx Webster)
11: 62-63, 66 (Hancock Rx MacDermot)
19: 114 (Flowerdew xx Webster)

Surface access: rail
Day 6: 65-67 (Sharman xx MacDermot)
71-73 (Sharman Q Chmn)
81 (Sharman xx Bagnall)
7: 59-63 (Sharman Rx Frank)
13: 66-67 (Griffiths x Phillips) (Q Chmn)
14: 2-7 (Griffiths Rx Phillips)
18-24 (Griffiths xx Bagnall)
19: 28-30 (Flowerdew xx Frank)

Surface access: rail: advanced passenger train
Day 4: 76-81 (Lichfield xx Griffiths)
7: 69-71 (Sharman Rx Frank) (Q Walters, Goldstein)

Surface access: rail: continental services
Day 14: 27-28 (Griffiths Q Chmn)

Surface access: rail: fare structure
Day 14: 18-24 (Griffiths xx Bagnall)
28-31 (Griffiths Rx Phillips)
see also Surface access: user costs
Surface access: rail: short time savings
Day 14: 9-24 (Griffiths xx Bagnall)
28-31 (Griffiths Rx Phillips)

Surface access: rail: subsidies
Day 18: 15-17 (Thompson xx MacDermot)

Surface access: roads
Day 5: 19, 23-27, 36-38 (Lichfield xx Bagnall)
6: 8-22 (Lichfield Rx Frank Q Walters Q Buchanan)
65-67 (Sharman xx MacDermot)
80 (Sharman xx Bagnall)
90-93 (Sharman Rx Walker-Smith)
7: 63-66, 68-69 (Sharman Rx Frank)

Surface access: subsidies
Day 16: 17-23 (Elliott xx MacDermot)
23-24 (Elliott xx Wood)
32-38 (Elliott xx Bagnall)
18: 15-17 (Thompson xx MacDermot)

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface access: user costs
Day 4: 39-41 (Lichfield xx MacDermot)
63-73 (Lichfield xx Forbes)
6: 3, 8-11 (Lichfield Rx Frank)
11-13 (Lichfield Q Walters) 17-22 (ditto)
14-15 (Lichfield Q Buchanan)
25-27 (Haws xx Webster)
34-40 (Haws xx Bagnall)
29-32 (Haws xx Wood)
48-49 (Haws Rx Walker-Smith)
49-51 (Haws xx Barker)
51-53 (Haws xx Smith)
64 (Sharman xx MacDermott)
62-64 (Sharman xx Walker)
67-69 (Sharman xx Wood)
7: 59 (Sharman Q Chairman)
8: 110-111 (Frost xx Phillips)
13: 69-76 (Griffiths x Phillips)
80-87 (Griffiths xx Walker-Smith)
94-97 (Griffiths xx Webster) (Q Walters)
97 (Griffiths xx Otton)
15: 50-51 (Parry Lewis xx Bagnall)
18: 74-78 (Thompson x Bagnall)
19: 30 (Flowerdew xx Frank)

Surface access: user costs: time

3: 47-61, 63-66, 68-70 (Lichfield xx Barker)
4: 7-16 (Lichfield xx Webster)
8: 96-100 (Frost xx Barker)
12: 62-64 (Smith xx Frank)
66-67 (Smith xx Walker-Smith)
79-81 (Smith xx MacDermot)
82 (Smith xx Wood)
13: 80-87 (Griffiths xx Walker-Smith)
89-97 (Griffiths xx Webster) (Q Goldstein)
14: 88 (Parry-Lewis xx Barker)
16: 66 (Nardecchia xx Newey) (Q Chmn)
20: 75-80 (Flowerdew xx MacDermot)

Taxation
Day 7: 43-45 (Lesourne xx MacDermot)
10: 27-45 (Wise xx Bagnall)
14: 74-75 (Parry-Lewis xx Frank)
76-77 (Parry-Lewis xx Barker)
19: 54-55 (Flowerdew xx Walker-Smith)
see Also Distribution of income

Taxation: regressive/progressive
Day 10: 39-45 (Wise xx Bagnall)
17: 24-31 (Thompson xx Walker-Smith)

Thames Aeroport Group (519)
Day 14: 72-end
15: 2-59

Printed image digitised by the University of Southampton Library Digitisation Unit

Thames Estuary Development Company (520)
Day 3: 9- Day 6: 25

Thurleigh
Day 12: 63-64 (Smith xx Frank) (Q Chmn)
64-66 (Smith xx Walker-Smith)
71-76 (Q Chmn, Buchanan)

Thurleigh Emergency Committee for Democratic Action (535)
Day 15: 76-end
16: 2-10, 40-56

Time see Valuation of time

Timing of the need
Day 13: 2-3 (Chmn)
3-4 (Forbes)
17: 82-87 (Thompson xx Forbes)

Town and Country Planning Association (518)
Day 14: 32-64

Town terminal
Day 6: 51 (Haws xx Smith)

Trade Unions
Day 15: 90-96 (Curran xx Walker-Smith)

Trade Unions: representation
Day 16: 2-4 (Curran xx Walker-Smith)

Urbanisation
Day 4: 89-91 (Lichfield xx Curran)
11: 41A (Hancock xx King)
50-52 (Hancock xx Evans)
16: 94-102 (Hall xx MacDermot)

Valuation of time
Day 3: 47-66, 68-70 (Lichfield xx Barker)
Day 4: 3-16 (Lichfield xx Webster)
53-58 (Lichfield xx Forbes)
76-81 (Lichfield xx Griffiths)
Day 5: 3-50 (Lichfield xx Bagnall)
Day 6: 5-11, 11-13 (Lichfield Rx Frank) (Q Walters)

Printed image digitised by the University of Southampton Library Digitisation Unit

Valuation of time (cont)

Day 6: 14-15 (Lichfield Q Buchanan)
47-48 (Haws Rx Frank)
75A-80 (Sharman xx Bagnall)
Day 7: 67-68 (Sharman Rx Frank)
Day 8: 13-50 (Frost xx Frank) (Q Walters, Chmn, Goldstein)
51-60 (Frost xx MacDermot)
60-62 (Frost Q Walters)
62-65 (Frost Q Buchanan)
Day 9: 70-72 (Wise xx Webster)
89-100 (Wise xx MacDermot)
Day 10: 84-87, 94-109 (Wise xx Bagnall) (Q Chmn)
Day 11: 69-103 (Wise xx Bagnall)
Day 12: 16-22 (Wise Q Chmn)
33-36 (Wise Rx Barker)
40 (Bagnall commenting on Lichfield, Lesourne, Wise, Frost)
50-57 (Slocombe xx Walker-Smith)
69 (Smith Q Buchanan)
Day 13: 14 (Waller xx Webster)
20-31 (Waller xx Bagnall)
35-38 (Waller Q Walters)
44-52 (Waller Rx MacDermot)
69-76 (Griffiths xx Phillips)
Day 13: 76-78 (Griffiths xx Frank)
80-88 (Griffiths xx Walker-Smith)
Day 14: 38-40 (Self - opening speech)
78-87 (Parry-Lewis xx Barker)
92-96 (Parry-Lewis xx Ogden)
Day 15: 9-19 (Parry-Lewis xx MacDermot)
19-20 (Parry-Lewis xx Wood)
30-51 (Parry-Lewis xx Bagnall)
54-55 (Parry-Lewis Q Goldstein)
Day 17: 93, 97-104 (Thompson xx Forbes)
Day 18: 71-72 Thompson x Bagnall)
88-95 (Flowerdew xx Frank)
Day 19: 2-30 (Flowerdew xx Frank)
Day 20: 63-80 (Flowerdew xx MacDermot)

Valuation of time: accompanying persons

Day 3: 66-68 (Lichfield xx Barker)
109-113 (Lichfield xx Webster)
Day 4: 35-37 (Lichfield xx MacDermot)
56-58 (Lichfield xx Forbes)
Day 5: 17-20 (Lichfield xx Bagnall)
29-33 (Lichfield xx Bagnall)
Day 11: 102-103 (Wise xx Bagnall)

Valuation of time: business

Day 3: 50-66 (Lichfield xx Barker)
Day 4: 7 (Lichfield xx Webster)
21-32, 39-41 (Lichfield xx MacDermot)
77-78 (Lichfield xx Griffiths)
Day 5: 7-17 (Lichfield xx Bagnall)
63-70 (Lichfield xx Webster)
109-110, 111-114 (Lichfield Rx Walker-Smith)
Day 6: 5-6,21-22 (Lichfield Rx Frank)
31-32 (Haws xx Wood)
Day 7: 80 (Peters xx Barker)
86 (Peters xx Griffiths)
Day 8: 15-44,49-50 (Frost xx Frank)
68-74 (Frost xx Walker-Smith)
94-95,101-107 (Frost xx Barker)
107-109 (Frost xx Phillips)

Printed image digitised by the University of Southampton Library Digitisation Unit

Valuation of time: business (cont)

Day 9: 4-9, 11-15 (Frost Rx Webster)
77 (Wise xx Webster)
Day 10: 84-87 (Wise xx Bagnall)
Day 11: 89-101 (Wise xx Bagnall)
Day 12: 33-36 (Wise Rx Barker)
107-109 (Waller x MacDermot)
Day 13: 21-24, 27 (Waller xx Bagnall)
37-38 (Waller Q Walters)
44-52 (Waller Rx MacDermot)
74-76 (Griffiths x Phillips)
84-87 (Griffiths xx Walker-Smith (Q Chmn, Goldstein)
88-89 (Griffiths xx Barker)
91-97 (Griffiths xx Webster)
Day 14: 79-81, 89 (Parry-Lewis xx Barker)
108-113 (Parry-Lewis xx Webster)
Day 15: 9-14 (Parry-Lewis xx MacDermot)
33 (Parry-Lewis xx Bagnall)
62-64 (Brooke-Hunt xx Frank)
64-67 (Brooke-Hunt xx Lyell)
67-70 (Brooke-Hunt Q Chmn)
72-76 (Wright xx Bagnall)
Day 16: 107-114 (Hall xx Bagnall)
Day 17: 97-104 (Thompson xx Forbes)
Day 18: 104-110 (Flowerdew xx Frank)
Day 19: 2-10, 17 (Flowerdew xx Frank)
31-59 (Flowerdew xx Walker-Smith)
89-101 (Flowerdew xx Barker)
Day 20: 2-14 (Flowerdew xx Webster)
34-63 (Flowerdew xx MacDermot)
80-93 (Flowerdew xx MacDermot) (Q Chmn)
112-113 (Flowerdew x Bagnall)

Valuation of time: business: Company aircraft
Day 6: 32-33 (Haws xx Griffiths)

Valuation of time: business: hours of work
Day 19: 45-46 (Flowerdew xx Walker-Smith)
57-59 (Flowerdew Q Chmn)
Day 20: 2-3, 46-48, 53 (Flowerdew xx Webster)

Valuation of time: business: incomes
Day 19: 105-117 (Flowerdew xx Webster)
Day 20: 63-73 (Flowerdew xx MacDermot)

Valuation of time: business: 'overheads'
Day 19: 21-23 (Flowerdew xx Frank)
Day 19: 49-51 (Flowerdew xx Walker-Smith)

Valuation of time: business: productivity/profitability
Day 3: 101-106 (Lichfield xx Webster)
Day 7: 31-32 (Lesburnexx Barker)
Day 9: 94 (Wise xx MacDermot)
Day 11: 89-93, 99-101 (Wise xx Bagnall)
Day 13: 38 (Waller xx Walters)
78-80 (Griffiths xx Walker-Smith)
Day 18: 104-110 (Flowerdew xx Frank)
Day 19: 60-65 (Flowerdew xx Walker-Smith)
Day 20: 85-88 (Flowerdew xx MacDermot)

Printed image digitised by the University of Southampton Library Digitisation Unit

Valuation of time: business: surveys
Day 7: 80-84 (Peters xx Webster)
84-86 (Peters xx MacDermot)
86-89 (Peters xx Wood)
89, 94, 97 (Peters xx Bagnall)(Q Goldstein)
94-97 (Peters Rx Frank)
see also Valuation of time: surveys

Valuation of time: children
Day 3: 67-68 (Lichfield xx Barker)
Day 4: 34-37 (Lichfield xx MacDermot)
Day 5: 17-20, 32-33 (Lichfield xx Bagnall)
Day 19: 26 (Flowerdew xx Frank)

Valuation of time: commuter
Day 3: 106-109 (Lichfield xx Webster)
Day 4: 22-23 (Lichfield xx Forbes)
Day 5: 79-80 (Lichfield xx Webster)
Day 13: 23-24 (Waller xx Bagnall)
89-90 (Griffiths xx Webster)
Day 14: 24-25 (Griffiths Q Goldstein)
81-86 (Parry-Lewis xx Barker)
Day 15: 13-14 (Parry-Lewis xx MacDermot)
Day 19: 12-15, 18-25 (Flowerdew xx Frank
31-32, 76-78 (Flowerdew xx Walker-Smith)

Valuation of time: foreign travellers
Day 5: 27-29 (Lichfield xx Bagnall)
Day 7: 17-19 (Lesourne xx Walker-Smith)(Q Walters)
34-43 (Lesanne xx MacDermot)
Day 8: 67-68 (Frost xx Walker-Smith)
Day 13: 28-29 (Waller xx Bagnall)
Day 14: 81 (Parry-Lewis xx Barker)

Valuation of time: leisure
Day 3: 50-66, 68-70 (Lichfield xx Barker)
Day 4: 7- (Lichfield xx Webster)
32-37 (Lichfield xx MacDermot)
78-81 (Lichfield xx Griffiths)
Day 5: 17-27, 32-41, 53-58 (Lichfield xx Bagnall)(Q Goldstein)
71-75 (Lichfield xx Webster)
110-111, 114-115 (Lichfield Rx Walker-Smith)
Day 6: 7-13 (Lichfield Rx Frank)(Q Walters)
16-22 (Lichfield Rx Frank)
25-27 (Haws xx Webster)
28-29 (Haws xx Webster)
77-80 (Sharman xx Bagnall)
Day 7: 89-102 (Frost x Webster)
Day 8: 23-44, 47-50 (Frost xx Frank)
80 (Frost xx Walker-Smith)
103-107 (Frost xx Barker)
107-111 (Frost xx Phillips)
Day 9: 76-77, 80 (Wise xx Webster)
89, 96-100 (Wise xx MacDermot)
Day 10: 84-87 (Wise xx Bagnall)
Day 11: 70-89, 98 (Wise xx Bagnall)(Q Chmn Q Walters)
Day 13: 23-29 (Waller xx Bagnall)
41-42 (Waller Rx MacDermot)
Day 14: 99-100 (Parry-Lewis xx Webster)
Day 15: 2-3 (Parry-Lewis xx Webster)
33 (Parry-Lewis xx Bagnall)

Printed image digitised by the University of Southampton Library Digitisation Unit

Valuation of time: leisure
Day 16: 12-13 (Elliott xx Keene)
64-66 (Nardecchia xx Newey)(Q Goldstein)
80-85 (Nardecchia xx Evans)
86-88 (Nardecchia Q Goldstein)
105-107 (Hall xx Bagnall)
Day 17: 101-104 (Thompson xx Forbes)
Day 19: 7-17 (Flowerdew xx Frank)
71-78 (Flowerdew xx Walker-Smith)(Q Chmn)
Day 20: 3-14 (Flowerdew xx Webster)
61-62 (Flowerdew xx MacDermot)
112-113 (Flowerdew x Bagnall)

Valuation of time: leisure: surveys
Day 5: 22-23 (Lichfield xx Bagnall)
75-79 (Lichfield xx Webster)
see also Valuation of time: surveys

Valuation of time: medical effects
Day 15: 72-76 (Wright xx Bagnall)

Valuation of time: Ministry of Transport
Day 4: 23, 38 (Lichfield xx Barker)
79-81 (Lichfield Q Chmn)
Day 5: 25-27, 32-34, 36-38 (Lichfield xx Bagnall)
38-41 (Lichfield xx Walker-Smith)
Day 6: 10-11, 18-22 (Lichfield Rx Frank)
Day 7: 63-66 (Sharman Rx Frank)
Day 12: 57-58 (Slocombe xx Bagnall)
Day 19: 21-25 (Flowerdew xx Frank)
50-53, 65-71, 78-79 (Flowerdew xx Walker-Smith)(Q Chmn)
Day 20: 40-41) (Flowerdew xx MacDermot)
93-96)

Valuation of time: modal split
Day 20: 109-111 (Flowerdew Rx Bagnall)

Valuation of time: short time savings
Day 4: 7-11 (Lichfield xx Webster)(Q Chmn)
Day 5: 75, 80-84 (Lichfield Rx Walker-Smith)
Day 6: 35-37 (Haws xx Bagnall)
Day 8: 13-15, 23-36, 40-42 (Frost xx Frank)
62-65 (Frost Q Buchanan)
68-74 (Frost xx Walker-Smith)
Day 9: 9-11 (Frost Q Buchanan)
Day 12: 69 (Smith Q Buchanan)
Day 13: 74 (Griffiths x Phillips)
77 (Griffiths xx Frank)
Day 14: 9-24 (Griffiths xx Bagnall)
28-31 (Griffiths Rx Phillips)
87 (Parry-Lewis xx Barker)
Day 15: 43-46 (Parry-Lewis xx Bagnall)
62-64 (Brooke-Hunt xx Frank)
64-67 (Brooke-Hunt xx Lyell)
67-70 (Brooke-Hunt Q Chmn)

Printed image digitised by the University of Southampton Library Digitisation Unit

Valuation of time: short time savings (continued)

Day 16:	13	(Elliott xx Walker)
	36	(Elliott xx Bagnall)
	60-63	(Nardecchia xx Walker)
	114	(Hall xx Bagnall)
Day 18:	98-102	(Flowerdew xx Frank)(Q Chmn, Goldstein)
Day 19:	8-9, 27	(Flowerdew xx Frank)
	48	(Flowerdew xx Walker-Smith)
	97-99	(Flowerdew xx Barker)
	101-105	(Flowerdew xx Ogden)(Q Goldstein)
	105-117	(Flowerdew xx Webster)
Day 20:	19-25	(Flowerdew xx Phillips)
	41-44, 62	(Flowerdew xx MacDermot)

Valuation of time: surveys

Day 5:	84-87	(Lichfield xx Webster)
Day 7:	89-102	(Frost x Webster)
	102-105	(Frost xx Frank)(Q Walters, Chmn, Buchanan)
Day 8:	15-44, 44-47	(Frost xx Frank)
	51-60	(Frost xx MacDermot)
	60-62	(Frost Q Walters)
	66-93	(Frost xx Walker-Smith)(Q Chmn, Goldstein)
	93-107	(Frost xx Barker)(Q Goldstein), Buchanan)
	107-111	(Frost xx Phillips)
	111-113	(Frost xx Griffiths)
Day 9:	2-9	(Frost Rx Webster)
	25-28	(Wise x Barker)
	89-100	(Wise xx MacDermot)
Day 11:	96	(Wise xx Bagnall)
Day 13:	100	(Griffiths xx Otton)
Day 14:	8	(Griffiths xx Bagnall)
	81-87	(Parry-Lewis xx Barker)(Q Walters)
	110-112	(Parry-Lewis xx Webster)
Day 15:	34-43	(Parry-Lewis xx Bagnall)
	51-53	(Parry-Lewis Q Walters)
Day 19	7-27	(Flowerdew xx Frank)
	31-32	(Flowerdew xx Walker-Smith
	65-78, 80	(Flowerdew xx Walker-Smith)(Q Goldstein)
Day 20:	3-14	(Flowerdew xx Webster)
	15-18	(Flowerdew xx Phillips)
	63-80	(Flowerdew xx MacDermot) (Q Walters, Goldstein)
	107	(Flowerdew xx Griffiths)
	111-112	(Flowerdew xx Bagnall)
	114-118	(Flowerdew Q Walters)

Valuation of time: Surveys: Heathrow survey

Day 19:	105-117	(Flowerdew xx Webster)

Valuation of time: Surveys: Metra survey

Day 5:	84-87	(Lichfield xx Webster)
Day 7:	89-102	(Frost x Webster)
	102-105	(Frost xx Frank)(Q Walters, Chmn, Buchanan)
Day 8:	60-62	(Frost Q Walters)
	66-93	(Frost xx Walker-Smith)(Q Chmn, Goldstein)
	93-107	(Frost xx Barker)(Q Goldstein, Buchanan)
	107-111	(Frost xx Phillips
	111-113	(Frost xx Griffiths)

Printed image digitised by the University of Southampton Library Digitisation Unit

Valuation of time: Surveys: Metra survey (continued)
Day 9: 2-9 (Frost Rx Webster)
26-27 (Wise x Barker)
80-83 (Wise xx Webster)
89 (Wise xx MacDermot)
Day 14: 87 (Parry-Lewis xx Barker)
Day 19: 105-117 (Flowerdew xx Ogden)
Day 20: 3 (Flowerdew xx Webster)
77-80 (Flowerdew xx MacDermot)

Valuation of time: survey: Peters
Day 9: 25-26 (Wise x Barker)
Day 13: 76-77 (Griffiths xx Frank)
Day 14: 86 (Parry-Lewis xx Barker)
Day 18: 95-102 (Flowerdew xx Frank)
Day 19: 99-101 (Flowerdew xx Walker-Smith)

Valuation of time: time over time
Day 4: 3-7 (Lichfield xx Webster)
73-74 (Lichfield xx Griffiths)
Day 5: 42 (Lichfield xx Bagnall)
Day 9: 15 (Frost Rx Webster)
Day 14: 82-86 (Parry-Lewis xx Barker)
Day 20: 96-107 (Flowerdew xx MacDermot)
see also Discounting

Valuation of time see also Surface access: user costs: time

Valuation of working time
Day 3: 101-106 (Lichfield xx Webster)
Day 5: 7-14 (Lichfield xx Bagnall)

Value to the nation

Day 3: 14-17 (Lichfield xx Barker)
Day 5: 28 (Lichfield xx Bagnall)
Day 7: 18 (Lesourne Q Walters)
24-25 (Lesourne xx Barker)
27-29 (Lesourne xx Barker)
34-45 (Lesourne xx MacDermot)

Printed image digitised by the University of Southampton Library Digitisation Unit

Weighting
Day 3: 17-47 (Lichfield xx Barker)
75-92 (Lichfield xx Webster)
4: 17-21 (Lichfield xx MacDermot)
47 (Lichfield xx Forbes)
75 (Lichfield xx Griffiths)
81-94 (Lichfield xx Curran)
100-115 (Lichfield xx Bagnall)
5: 96-106 (Lichfield Rx Walker-Smith)
6: 2-3 (Chmn)
22-24 (Lichfield Rx Frank)
85-89 (Sharman xx Bagnall)
89-90 (Sharman Rx Walker-Smith)
95-97 (Lesourne x Webster)
101-107 (Lesourne xx Walker-Smith)
7: 2-16 (Lesourne xx Walker-Smith)
29 (Lesourne xx Barker)
49-51 (Lesourne xx Bagnall)
8: 100-101 (Frost xx Barker)
9: 18-25 (Wise xx Barker)
46-59)(Wise xx Webster)
60-76)
102-110 (Wise xx Curran)
10: 10-13 (Wise xx Curran)
39-40 (Wise xx Bagnall)
57-87 (Wise xx Bagnall)
11: 104-118 (Wise xx Bagnall)
12: 10-16 (Wise Q Walters)
29-32, 36 (Wise Rx Barker)
38-40 (Bagnall commenting on Lichfield, Lesourne, Wise & Frost)
48 (Slocombe xx MacDermot)
88-90 (Verney xx Wood)
90-96 (Verney xx Bagnall)
105-107 (Waller x MacDermot)
13: 6 (Waller xx Barker Q Chmn)
14-15 (Waller xx Bagnall)
40-41 (Waller Rx MacDermot)
14: 36-40 (Self: opening speech)
15: 23-26
82-98 (Curran xx Walker-Smith) (Q Chmn)
16: 56-57 (Nardechia x Boydell)
67 (Nardecchia xx Evans)
119-121 (Hall xx Bagnall) (Q Walters)
17: 11-13 (Thompson xx Frank)
15-24 (Thompson xx Walker-Smith)
44-48 (Thompson xx Barker)
91-93 (Thompson xx Forbes)
18: 10-14 (Thompson xx MacDermot)
23 (Thompson xx Boydell)
42-45 (Thompson xx Griffiths)
51-54 (Thompson xx Curran)
59 (Thompson x Bagnall)
see also compensation

Printed image digitised by the University of Southampton Library Digitisation Unit

Weighting: base load
Day 9: 38-46 (Wise xx Webster)
10: 2 (Wise xx Curran)
17: 39-43 (Thompson xx Walker-Smith)

Weighting: Commission's approach
Day 3: 18 (Lichfield Q Chmn)
6: 98-100 (Lesourne xx Frank)

Weighting: Common market
Day 9: 40-46 (Wise xx Webster)

Weighting: discounting
Day 5: 44-45 (Lichfield xx Bagnall)

Weighting: efficiency
Day 6: 22-24 (Lichfield Rx Frank)
9: 36 (Wise xx Webster)
12: 106-107 (Waller x MacDermot)

Weighting: employment
Day 4: 84-89 (Lichfield x Curran)

Weighting: equity
Day 17: 31-33 (Thompson xx Walker-Smith)
48 (Thompson xx Barker)

Weighting: equalisation of voting power
Day 9: 20-21 (Wise x Barker)
70-72 (Wise xx Webster)
10: 10-13 (Wise xx Curran)
54-56 (Wise xx Bagnall)

Weighting: equalisation of incomes
Day 3: 21-22 (Lichfield xx Barker)
6: 22-24 (Lichfield Rx Frank)
14: 99-108 (Parry-Lewis xx Barker)

Weighting: for posterity
Day 7: 14-16 (Lesourne xx Walker-Smith)

Weighting: government objectives
Day 3: 29, 39-42 (Lichfield xx Barker)
4: 17-20 (Lichfield xx MacDermot) (Q Chmn)
7: 11-12 (Lesourne xx Walker-Smith)
29-31 (Lesourne xx Barker)
32-34 (Lesourne Q Chmn)
44-45 (Lesourne xx MacDermot)
45-47 (Lesourne Q Goldstein)
12: 92 (Verney xx Bagnall)

Weighting: land
Day 4: 18-19 (Lichfield xx MacDermot)

Weighting: marginal utility of income
Day 3: 23-24 (Lichfield xx Barker)
4: 103-115 (Lichfield xx Bagnall)
5: 100-104 (Lichfield Rx Walker-Smith)
7: 2-7 (Lesourne xx Walker-Smith)
31-32 (Lesourne xx Barker)
49-50 (Lesourne xx Bagnall)

Printed image digitised by the University of Southampton Library Digitisation Unit

Weighting: marginal utility of income (cont)
Day 7: 51-52 (Lesourne xx Webster)
9: 19-21 (Wise x Barker)
60-69 (Wise xx Webster)
83-89 (Wise xx MacDermot)
103-110 (Wise xx Curran)
10: 10-13 (Wise xx Curran)
54-56 (Wise xx Bagnall)
66-68, 78-83 (Wise xx Bagnall)
11: 112-118 (Wise Q Goldstein)
12: 2-10 (Wise Q Goldstein)
14: 75-77 (Parry-Lewis xx Barker)
99-108 (Parry-Lewis xx Webster)
17: 19 (Thompson xx Walker-Smith)
44-47 (Thompson xx Barker)
18: 10 (Thompson xx MacDermot)

Weighting: methods
Day 3: 77-80, 82-85 (Lichfield xx Webster)

Weighting: noise
Day 7: 4-6, 10-12 (Lesourne xx Walker-Smith)

Weighting: principles
Day 3: 30-44 (Lichfield xx Barker)
75-85, 91 (Lichfield xx Webster)
4: 47-49 (Lichfield xx Forbes)

Weighting: uncompensated loses
Day 17: 18-22 (Thompson xx Walker-Smith)
31-33 (Thompson xx Walker-Smith)
18: 53-57 (Thompson xx Curran)

Weighting: Wises formulae
Day 10: 47-56, 69-87 (Wise xx Bagnall)

Welfare State: National Health Service
Day 10: 31-36 (Wise xx Bagnall)

Wing Airport Resistence Association (515)
Day 11: 2-68
Day 12: 101-end
Day 13: 5-52

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Stage V Public Hearing

INDEX

to

Subject B

Timing of the Need

Before:-

THE HON. MR. JUSTICE ROSKILL (in the Chair)

PROFESSOR COLIN BUCHANAN

A. GOLDSTEIN, Esq

A. J. HUNT, Esq

PROFESSOR DAVID KEITH-LUCAS

ARTHUR KNIGHT Esq and

PROFESSOR A. A. WALTERS

J. CAINES, Esq
(Secretary)

Printed image digitised by the University of Southampton Library Digitisation Unit

x = examined by

xx = cross-examined by

Rx = re-examined by

Q = Questioned by the Chairman or a member of the Commission

Action Committee Against Foulness Airport (527)

Day 25: 108-109

Advanced passenger train see Surface access: rail: advanced passenger train; Rail: competition

Air safety: birdstrike

Day 21: 4 (Webster)
23: 62 (Masefield xx Wood)

Air traffic: freight: forecasts

Day 21: 25 (Payne x Webster)

Air traffic: general aviation

Day 21: 58-59 (Payne Q Keith-Lucas)
: 59-62 (" Q Chairman)
22: 30-41 (" xx Otton)
: 64-68 (" xx Griffiths)
: 98-99 (" Rx Webster)
23: 17, 28-29, 46-47 (Masefield xx MacDermot)
: 65-66 (Masefield xx Griffiths)
24: 48-49 (Slocombe & Turner xx MacDermot)
26: 52A-53 (Flowerdew & Smith xx Walker)

see also Charter flights/inclusive tours

Air traffic: interchange links

Day 23: 29-31 (Masefield xx MacDermot)
24: 26 (" xx ")

Air traffic: interline

Day 24: 50 (Slocombe & Turner xx MacDermot)

Air traffic: movements see Movements: air traffic

Air traffic: overload

Day 21: 29, 32-33, 40-41 (Payne x Webster)
: 87 (Payne xx Walker)
22: 60-62 (" xx Vandermeer)
: 83-85 (" xx Bagnall)
: 92-93 (" xx Vandermeer)
: 93-94 (" xx Holmes)
23: 69 (Smith xx Jackman)
: 104-105 (Masefield xx Holmes)
24: 32-33 (Eversley x Vandermeer)

Printed image digitised by the University of Southampton Library Digitisation Unit

Air traffic: passenger

Day 24: 55-59 (Slocombe & Turner xx MacDermot)
: 60 (" " " xx Griffiths)
: 95-97 (Jones xx Barker)
: 99-102 (" xx MacDermot)
26: 24-25 (Flowerdew & Smith xx Evans)
: 38 (" " " xx Holmes)

Air traffic: passenger survey 1969

Day 24: 57-59 (Slocombe & Turner xx MacDermot)
: 96 (Jones xx Barker)
: 99-100 (" xx MacDermot)
26: 38 (Flowerdew & Smith xx Holmes)

Air traffic: passengers: foreign

Day 23: 26 (Masefield xx MacDermot)
: 88-89 (Wheatcroft xx Barker)
24: 23 (Masefield xx MacDermot)
: 103-104, 106-120 (Jones xx MacDermot)

Air traffic: passenger: forecasts

Day 21: 9-21 (Webster)
: 23-25 (Payne x Webster)
: 49-57 (" xx Frank)
: 62-66 (" xx Barker)
: 72-86 (" xx Walker
: 93-98 (" xx Phillips)
: 104-109 (" xx Otton)
22: 15-16, 29-32 (Payne xx Otton)
: 96-97 (Payne Rx Webster)
23: 28-29, 32-47 (Masefield xx MacDermot)
: 83-89 (Wheatcroft xx Barker)
: 90-93 (" xx Walker)
: 98-100 (" xx Otton)
24: 34-35 (Slocombe & Turner x Vandermeer)
: 69-70, 75-76 (Griffiths x Phillips)
: 80-81 (Griffiths xx Webster)
: 84-87 (" xx Evans)
: 90-94 (Jones xx Frank)
: 102-105 (" xx MacDermot)
25: 13-14 (Lumb x MacDermot)
: 20 (" xx Webster)
: 33-34 (" Rx MacDermot)
26: 26 (Flowerdew & Smith xx Evans)
: 27-28 (" " " xx Frank)
: 61-73 (" " " xx MacDermot)

Air traffic: passenger: groundside limitations

Day 26: 27 (Flowerdew & Smith xx Frank)

Printed image digitised by the University of Southampton Library Digitisation Unit

Air traffic control

Day 21: 4 (Webster)
22: 27-28, 32-33 (Payne xx Otton)
23: 62 (Masefield xx Payne)
: 72-73 (Smith xx Evans)
: 80 (Wheatcroft xx Barker)
26: 55-57 (Flowerdew & Smith xx Ellis)
: 61-62 (" " " xx MacDermot)

Air traffic control: air route structure

Day 23: 10 (Sharman xx Walker)
: 68-69 (Smith xx Jackman)

Air traffic control: turbulent wake

Day 21: 20 (Webster)
: 32, 42 (Payne x Webster)
: 58-59 (" Q Keith-Lucas)

Aircraft manufacture: noise reduction

Day 26: 7-8 (Briggs xx Osbourne)

Airline operations

Day 22: 3-5 (Payne xx Wood)
23: 29, 32-34 (Masefield xx MacDermot)
: 63-66 (Masefield xx Griffiths)
: 67-71 (Smith xx Evans)
: 75 (" xx MacDermot)
24: 35-36 (Slocombe & Turner xx Vandermeer)
: 38-42 (" " " xx Webster)
: 48-54 (" " " xx Evans)
: 79-80 (Griffiths xx Walker)

Airline Scheduling Committee

Day 23: 17-19, 20, 32 (Masefield xx MacDermot)
: 64 (Masefield xx Griffiths)
: 75 (Smith xx MacDermot)
24: 48 (Slocombe & Turner xx MacDermot)

Airlines: domestic: subsidies

Day 24: 79-80 (Griffiths xx Walker)

Airport capacity

Day 21: 26-43 (Payne x Webster)
: 48-66 (" xx Frank)
: 87-93 (" xx Walker)
22: 75-76 (" xx Bagnall)
23: 70-72 (Smith xx Evans)
: 106-120 (Masefield xx Bagnall)
24: 2-8 (" Q Goldstein)
: 14-16 (" Q Chairman)
: 16-22 (Masefield xx Frank)
: 62-67 (Slocombe & Turner xx Evans)
: 41-43 (Flowerdew & Smith xx Webster)

Printed image digitised by the University of Southampton Library Digitisation Unit

Airport capacity: United States

Day 22: 88-89 (Payne Q Chairman)
23: 64-65 (Masefield xx Griffiths)

see also Movements: air traffic: capacity; Runways: capacity

Airports: effect of third London airport

Day 21: 4 (Webster)
22: 27-29, 32-33 (Payne xx Otton)
23: 80 (Smith xx MacDermot)
24: 16-22 (Masefield xx Frank)

Airports: future development

Day 22: 88-89 (Payne Q Chairman)
23: 73-75 (Smith xx Evans)
: 110-112, 126 (Masefield xx Bagnall)

Airports: interchange links see Air traffic: interchange links

Airports: National Airports Plan

Day 22: 10-15, 18 (Payne xx Otton)
: 51-53 (Payne Q Buchanan)
: 108-109 (Masefield xx Frank)
23: 12-14 (Masefield xx Barker)
: 15-16, 21 (Masefield xx MacDermot)

Airports: omnidirectional

Day 23: 28-31 (Masefield xx MacDermot)

Airports: regional

Day 21: 50-51 (Payne xx Frank)
: 63-66 (" xx Barker)
: 70-71 (" Q Chairman)
: 106-110 (" xx Otton)
22: 10-21 (" xx ")
: 47-49 (" xx ")
: 51-54 (" Q Buchanan)
: 87-88 (" Q Chairman)
23: 21-22, 34-39 (Masefield xx MacDermot)
: 80-82 (Smith xx MacDermot)
: 84-85 (Wheatcroft x Webster)
: 87-89 (" xx Barker)
: 95-98 (" xx Otton)
24: 45-46 (Slocombe & Turner xx MacDermot)
: 52-53 (" " " xx ")
: 100-105 (Jones xx MacDermot)
25: 10-13 (Lumb x MacDermot)
: 23-24 (" xx Webster)
: 28-32 (" xx Evans)
: 34,36 (" Rx MacDermot)

Printed image digitised by the University of Southampton Library Digitisation Unit

Airports: regional: South-East

Day 22: 51-56 (Payne Q Buchanan)
23: 13-14 (Masefield xx Barker)
24: 24-27 (" xx MacDermot)
: 45-46 (Slocombe & Turner xx MacDermot)

Aviation, General see Air traffic: general aviation

Bedfordshire, Northamptonshire, Huntingdonshire & Peterborough County Councils (501)

Day 23: 4-10

Birdstrike see Air safety: birdstrike

Birmingham Airport see Elmdon Airport

Board of Trade see Trade, Board of

British Airports Authority (500)

Day 21: all
22: all
23: 11-66
: 82-end
24: 2-28

British Airports Authority: revenue

Day 23: 120-126 (Masefield xx Bagnall)
24: 8-10 (" Q Walters)

British Eagle

Day 21: 78 (Payne xx Walker)
: 102-103 (" xx Otton)

British European Airways (530)

Day 24: 33-68
25: 92-95

British Overseas Airways Corporation (529)

Day 23: 67-82

British Railways Board

Day 24: 69-88

Buckinghamshire County Council (502)

Day 23: 4-10

Printed image digitised by the University of Southampton Library Digitisation Unit

CAAS see Computer assisted approach system

Cambridge and Isle of Ely, Essex and Hertfordshire County Councils (503)

Day 23: 4-10

Cargo see Air traffic: freight

Castle Donnington Airport

Day 21: 64,70 (Payne xx Barker)
23: 9 (Sharman xx Barker)
25: 17-19 (Lumb xx Barker)

Channel Islands: air traffic

Day 21: 72, 75-79 (Payne xx Walker)

Channel tunnel

Day 21: 97-98 (Payne xx Phillips)
23: 94-95 (Wheatcroft xx Phillips)
24: 43-45 (Slocombe & Turner xx Phillips)
: 71-74 (Griffiths x Phillips)
: 87-88 (" Rx ")
26: 71-73 (Flowerdew & Smith xx MacDermot)

Charter flights / inclusive tours

Day 21: 102-109 (Payne xx Otton)
22: 46-49 (" xx ")
23: 16-21, 27-28, 32-37, 43-44
(Masefield xx MacDermot)
: 85-86 (Wheatcroft x Webster)
: 98-100 (" xx Otton)
24: 38-42 (Slocombe & Turner xx Webster)
: 48-59 (" " " xx MacDermot)
: 97 (Jones xx Barker)
: 100-102 (" xx MacDermot)
25: 19-20 (Lumb xx Webster)
26: 24-25 (Flowerdew & Smith x Evans)
: 69-70 (" " " xx MacDermot)

see also Air traffic: general aviation

Computer assisted approach system (CAAS)

Day 21: 20,26,27,29,32,41-43 (Payne x Webster)
: 62-63 (Payne xx Barker)
22: 93 (" xx ")
23: 11 (Masefield xx Holmes)

Cost-benefit analysis: Gatwick: runways

Day 21: 18-19 (Webster)

Construction: costs

Day 22: 49-50 (Payne xx Otton)

Printed image digitised by the University of Southampton Library Digitisation Unit

Construction: timetable

Day 21: 43-46 (Payne x Webster)

Cost-benefit analysis: noise

Day 22: 86 (Payne xx Bagnall)
26: 12-17 (Briggs xx Evans)
: 18-20 (Holmes)
: 39-41 (Flowerdew & Smith xx Holmes)
: 63-64 (" " " xx MacDermot)

Costs: construction

Day 22: 49-50 (Payne xx Otton)

Costs: defence

Day 21: 29 (Payne x Webster)

Costs: timing of the need

Day 21: 29 (Payne x Webster)
26: 43-45 (Flowerdew & Smith xx Webster)

Costs: user costs

Day 26: 64-66 (Flowerdew & Smith xx MacDermot)

Cublington: air traffic: forecasts

Day 21: 5 (Webster)
: 104-105 (Payne xx Otton)
22: 21-25, 31-32 (Payne xx Otton)

Cublington: air traffic control

Day 21: 4 (Webster)
23: 72-73 (Smith xx Evans)

Cublington: site

Day 21: 4-6 (Webster)

Cublington: surface access

Day 21: 4-5 (Webster)
22: 21-22, 27-28 (Payne xx Otton)

Dallas airport

Day 22: 88 (Payne Q Chairman)

Defence: costs

Day 21: 29 (Payne x Webster)

Printed image digitised by the University of Southampton Library Digitisation Unit

East Midlands Airport see Castle Donnington Airport

Eastleigh Airport see Southampton Airport

Elmdon Airport

Day 21: 64-66 (Payne xx Barker)
: 107-110 (" xx Otton)
22: 7-10, 17-20 (Payne xx Otton)
: 108 (Masefield xx Frank)
23: 97-98 (Wheatcroft xx Otton)
24: 45-47 (Slocombe & Turner xx MacDermot)

Essex County Council see Cambridge & Isle of Ely, Essex and Hertfordshire County Councils (503)

Foreign passenger traffic see Air traffic: passenger: foreign

Foulness: air safety: birdstrike

Day 21: 4 (Webster)
23: 62 (Masefield xx Wood)

Foulness: air traffic: forecasts

Day 21: 3 (Webster)
: 104-105, 108 (Payne xx Otton)
22: 5 (Payne xx Wood)
: 55-56 (Payne Q Chairman)
23: 61 (Masefield xx Wood)
26: 62 (Flowerdew & Smith xx MacDermot)

Foulness: air traffic control

Day 21: 4 (Webster)
23: 62 (Masefield xx Payne)

Foulness: meteorology

Day 21: 4 (Webster)

Foulness: noise

Day 26: 8-11 (Briggs xx Wood)

Foulness: operational costs

Day 24: 10 (Masefield Q Walters)

Foulness: surface access

Day 21: 3 (Webster)
23: 62-63 (Masefield xx Wood)

Printed image digitised by the University of Southampton Library Digitisation Unit

Gatwick

Day 21: 2-23 (BAA Statement)

Gatwick: air traffic: passenger

Day 21: 9-21 (Webster)
: 104,106-107 (Payne xx Otton)
22: 33-41 (Payne xx Otton)
23: 17-21, 25-27 (Masefield xx MacDermot)
24: 41-42 (Slocombe & Turner xx Webster)
: 48-51 (" " " xx MacDermot)
: 60-61 (" " " xx Evans)
26: 70-71 (Flowerdew & Smith xx MacDermot)

Gatwick: movements: air traffic: capacity

Day 21: 32-34, 41 (Payne x Webster)
: 58-59 (Payne Q Keith-Lucas)
: 59-62 (Payne Q Chairman)
: 87 (" xx Walker)
22: 64-68 (" xx Griffiths)
: 86-87 (" xx Bagnall)
: 95 (" Rx Webster)
23: 71 (Smith xx Evans)
24: 62 (Slocombe & Turner xx Evans)
26: 36-37 (Flowerdew & Smith xx Holmes)

see also Air traffic: overload

Gatwick: noise

Day 21: 101 (Payne xx Otton)
22: 81 (" xx Bagnall)
25: 5-6 (Siebert & W a.ters xx Frank)

Gatwick: runways

Day 21: 6-8, 13-22 (Webster)
25: 3-7 (Siebert and Waters xx Frank)

Gatwick: runways: capacity

Day 21: 6-10 (Webster)
: 26-27, 31-38, 41 (Payne x Webster)
: 49 (Payne xx Frank)
: 59-62 (" Q Chairman)
: 62-63 (" xx Barker)
: 80-87 (" xx Bagnall)
: 94 (" xx Holmes
22: 104 (" Rx Webster)
: 105 (Masefield x Webster)
23: 115-117 (" xx Bagnall)
24: 2-8 (" Q Goldstein)
26: 28-34 (Flowerdew & Smith xx Frank)
: 38-39 (" " " xx Briggs)
: 73-75 (" " " x Bagnall)

Printed image digitised by the University of Southampton Library Digitisation Unit

Gatwick: surface access: rail

Day 24: 67-68 (Slocombe & Turner xx Evans)

Gliding

Day 26: 55-57 (Flowerdew & Smith xx Ellis)

Greater London Council (522)

Day 24: 29-33

Groundside limitations see Air traffic: passenger: groundside limitations

Heathrow: air traffic: passenger

Day 21: 102-103 (Payne xx Otton)
23: 17-20, 25-27 (Masefield xx MacDermot)

Heathrow: movements: air traffic: capacity

Day 21: 13-18 (Webster)
: 29, 31-33, 40-41 (Payne x Webster)
: 87 (Payne xx Walker)
22: 60-62 (" xx Vandermeer)
23: 71 (Smith xx Evans)
: 103-104 (Masefield xx Holmes)
26: 27 (Flowerdew & Smith xx Frank)
: 45-47 (" " " xx Holmes)
: 54-55 (" "C " xx Webster)

see also Air traffic: overload

Heathrow: noise

Day 21: 71 (Payne xx Vandermeer)
22: 86 (" xx Bagnall)
24: 30-33 (Eversley x Vandermeer)
26: 2-6 (Briggs)
: 7-8 (Briggs xx Osbourne)
: 12-17 (" xx Evans)
: 18-20 (Holmes)
: 21-22 (" xx Lyell)
: 39-41 (Flowerdew & Smith xx Holmes)

Heathrow: noise: costs

Day 22: 86 (Payne xx Bagnall)
26: 12-20 (Briggs xx Evans)
: 39-41 (Flowerdew & Smith xx Holmes)
: 63-64 (" " " xx MacDermot)

Printed image digitised by the University of Southampton Library Digitisation Unit

Heathrow: surface access

Day 24: 30-31 (Eversley x Vandermeer)

Hertfordshire County Council see Cambridge & Isle of Ely, Essex & Hertfordshire County Councils (503)

Hotels

Day 24: 106-120 (Jones xx MacDermot)
26: 67-68 (Flowerdew & Smith xx MacDermot)

Huntingdonshire & Peterborough County Council see Bedfordshire, Northamptonshire, Huntingdon and Peterborough County Councils (501)

Interchange links see Air traffic: interchange links; Surface access: inter-airport communications

Interlining see Air traffic: interline

Kew Association for the Control of Aircraft Noise (539)

Day 26: 2-17

Landing fees

Day 22: 40-41 (Payne xx Otton)
: 89-91 (" Q Walters)
: 107 (Masefield x Webster)
23: 123-125 (" xx Bagnall)
: 126-129 (" Q Walters)
24: 8-10 (" Q ")

London Gliding Club (533)

Day 26: 23

Luton Airport: air traffic: forecasts

Day 21: 104-107(Payne xx Otton)

Luton Airport: air traffic control

Day 21: 4 (Webster)
23: 72-73 (Smith xx Evans)
26: 55-57 (Flowerdew & Smith xx Ellis)
: 61-62 (" " " xx MacDermot)

Printed image digitised by the University of Southampton Library Digitisation Unit

Luton Airport: future developments

Day 24: 65-67 (Slocombe & Turner xx Evans)

Luton Airport: movements: air traffic: capacity

Day 21: 39 (Payne x Webster)
: 52-55 (" xx Frank)
: 62 (Slocombe & Turner xx Evans)
25: 27-28 (Lumb xx Evans)
26: 49-52 (Flowerdew & Smith xx Walker)
: 55-57 (" " " xx Ellis)

Luton Airport: noise

Day 21: 100-101, 106-107 (Payne xx Otton)
22: 99 (Payne Rx Webster)

Luton Airport: revenue

Day 25: 10-12 (Lumb x MacDermot)

Luton Airport: runways: capacity

Day 21: 5 (Webster)
: 39 (Payne x Webster)
22: 28-29 (" xx Otton)
26: 23 (Ellis)
: 29-34 (Flowerdew & Smith xx Frank)
: 38-39 (" " " xx Briggs)
: 49-52 (" " " xx Walker)
: 73-75 (" " " x: Bagnall)

Luton Airport: surface access: user costs

Day 26: 66-67 (Flowerdew & Smith xx MacDermot)

Manchester Airport

Day 21: 70-71 (Payne xx Barker)
22: 21 (" xx Otton)
: 87 (" Q Chairman)
23: 84 (Wheatcroft x Webster)

Meteorology

Day 21: 4 (Webster)

Ministry of Technology see Technology, Ministry of

Movements: air traffic: capacity see Airport capacity; and subheadings of entries for particular airports

Printed image digitised by the University of Southampton Library Digitisation Unit

Movements: air traffic: growth rates see Air traffic: passenger: forecasts

Movements: air traffic: training flights

Day 21: 49 (Payne xx Frank)
: 58-59 (" Q Keith-Lucas)
: 59-62 (" Q Chairman)
22: 97-98 (" Rx Webster)

National Airports Plan see Airports: National Airports Plan

National Exhibition Centre

Day 21: 65 (Payne xx Barker)
: 109-110 (" xx Otton)
22: 9 (" xx ")
24: 47 (Slocombe & Turner xx MacDermot)

Night flights see Noise: night flights

Noise

Day 22: 60-62 (Payne xx Vandermeer)
: 76-80 (Payne xx Bagnall)
: 102 (Payne Rx Webster)
23: 100-103 (Masefield xx Holmes)
24: 10-11 (" Q Chairman)
: 30-33 (Everlsey x Vandermeer)
26: 2-6 (Briggs)
: 7-8 (" xx Osbourne)
: 8-11 (" xx Wood)
: 12-17 (" xx Evans)
: 18-20 (Holmes)
: 21-22 (" xx Lyell)
: 39-41 (Flowerdew & Smith xx Holmes)
: 63-64 (" " " xx MacDermot)

Noise: costs

Day 22: 86 (Payne xx Bagnall)
26: 12-17 (Briggs xx Evans)
: 18-20 (Holmes)
: 39-41 (Flowerdew & Smith xx Holmes)
: 63-64 (" " " xx MacDermot)

Noise: night flights

Day 21: 71 (Payne xx Vandermeer)
: 99-102, 106-107 (Payne xx Otton)
22: 99 (Payne Rx Webster)
23: 70 (Smith xx Jackman)
: 78-80 (" xx MacDermot)

see also Aircraft manufacture: noise reduction

Printed image digitised by the University of Southampton Library Digitisation Unit

Northamptonshire County Council see Bedfordshire, Northamptonshire, Huntingdonshire & Peterborough County Councils (501)

Nuthampstead: air traffic control

Day 21: 4 (Webster)
22: 27-28 (Payne xx Otton)

Nuthampstead: surface access

Day 22: 69-70 (Payne xx Bagnall)

Nuthampstead Preservation Association (514)

Day 25: 8-37, 95-108

Omnidirectional airports see Airports: omnidirectional

Overload see Air traffic: overload

Passenger traffic see Air traffic: passenger

Rail: competition

Day 21: 83-84 (Payne xx Walker)
: 95-96 (" xx Phillips)
23: 93-95 (Wheatcroft xx Phillips)
24: 42-45 (Slocombe & Turner xx Phillips)
: 70-74, 76-79 (Griffiths x Phillips)
: 82-83 (Griffiths xx Webster)
: 84-87 (" xx Evans)

Rail: competition: advanced passenger train

Day 24: 70-74 (Griffiths x Phillips)

see also Surface access: rail

Regional airports see Airports: regional

Research Team

Day 24: 89-end
26: 24-end

Ringway Airport see Manchester Airport

Runways: capacity see subheadings for Gatwick; Luton Airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Short take-off and landing

Day 21: 66-70 (Payne xx Barker)
22: 41-45 (" xx Otton)
: 95-96 (" Rx Webster)
: 106-107 (Masefield x Webster)
23: 45-46, 47-54, 56-59 (Masefield xx MacDermot)
24: 17-20 (Masefield xx Frank)
25: 15-16 (Lumb x MacDermot)
: 25-26 (" xx Harrison)
: 26 (" xx Griffiths)
: 39-79 (Williams xx MacDermot)
: 80-84 (" xx Griffiths)
: 84-90 (" xx Bagnall)
: 90-91 (" Q Keith-Lucas)
: 92-95 (Whitby xx MacDermot)
: 96-100 (Elliot xx ")

Short take off and landing: air traffic: forecasts

Day 22: 95 (Payne Rx Webster)
25: 44-46, 48, 55, 58, 60-62, 64
(Williams xx MacDermot)

Short take off and landing: air traffic control

Day 25: 46-48 (Williams xx MacDermot)

Short take off and landing: development problems

Day 25: 49-53, 57-60, 66-77 (Williams xx MacDermot)
: 71 (Williams Q Chairman)
: 71-73 (" Q Walters)
: 80-84 " xx Griffiths)

Short take off and landing: Stol ports

Day 25: 44-46, 48, 53-56 (Williams xx MacDermot)

Site search: criteria

Day 22: 109-110, 112 (Masefield xx Frank)

Site: location

Day 21: 2-23 (Webster)
22: 30-32 (Payne xx Otton)
: 51-56 (" Q Buchanan)

South Hampshire Airport

Day 21: 50-51 (Payne xx Frank)
: 64 (" xx Barker)
22: 71 (" xx Bagnall)
26: 35 (Flowerdew & Smith xx Frank)

Southampton Airport

Day 21: 50-51 (Payne xx Frank)

Printed image digitised by the University of Southampton Library Digitisation Unit

Southend Airport

Day 23: 14-15 (Masefield xx Barker)
: 60-61 (" xx Wood)
25: 26-27 (Lumb xx Wood)
: 32-33 (" xx Evans)
26: 59-60 (Flowerdew & Smith xx MacDermot)

Stansted: air traffic control

Day 21: 4 (Webster)
22: 33 (Payne xx Otton)

Stansted: airport capacity

Day 21: 5 (Webster)
22: 28-29 (Payne xx Otton)
: 68-75, 80-82 (Payne xx Bagnall)
: 102-104 (Payne Rx Webster)
: 105-106 (Masefield x Webster)
: 109-112(Masefield xx Frank)
23: 13-14 (" xx Barker)
: 22-24 (" xx MacDermot)
: 117-120 (" xx Bagnall)
24: 13 (" Q Chairman)
: 24-25 (" xx MacDermot)
: 36-38 (Slocombe & Turner xx Vandermeer)
: 65-67 (" " " xx Evans)
26: 37 (Flowerdew & Smith xx Holmes)

Stansted: movements; air traffic: capacity

Day 21: 28,40 (Payne x Webster)
: 49, 53-55 (Payne xx Frank)
: 59-60 (Payne Q Chairman)
: 87-93 (" xx Walker)
: 62-64 (Slocombe & Turner xx Evans)
: 100-104 (Elliott xx Lyell)
: 107-108 (" xx ")
26: 51-52 (Flowerdew & Smith xx Walker)
: 58-59 (" " " xx MacDermot)

Stansted: site

Day 22: 68 (Payne xx Bagnall)
: 109-112 (Masefield xx Frank)

Stansted: surface access

Day 22: 69-70 (Payne xx Bagnall)

Subsidies see Airlines: domestic: subsidies

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface access

Day 21: 3-5 (Webster)
22: 21-22, 27-28 (Payne xx Otton)
: 69-70 (Payne xx Bagnall)
23: 62-63 (Masefield xx Wood)
24: 30-31 (Eversley x Vandermeer)

Surface access: inter-airport communications

Day 24: 26 (Masefield xx MacDermot)
25: 16-17 (Lumb x MacDermot)

Surface access: rail

Day 24: 67-68 (Slocombe & Turner xx Evans)

Surface access: rail: advanced passenger train

Day 21: 83-84 (Payne xx Walker)

Surface access: user costs

Day 26: 64-66 (Flowerdew & Smith xx MacDermot)

Surrey and West Sussex County Councils

Day 25: 2-8

Technology, Ministry of

Day 25: 37-91

Terminal: town terminal

Day 22: 56-59 (Payne xx Osborn)

Thurleigh: air traffic: forecasts

Day 21: 4 (Webster)
22: 15-27, 31-33 (Payne xx Otton)
: 87-88 (Payne Q Chairman)
: 100 (Payne Rx Webster)
24: 26-27 (Masefield xx MacDermot)

Thurleigh: air traffic control

Day 22: 32-33 (Payne xx Otton)
23: 72-73 (Smith xx Evans)
: 80 (Wheatcroft xx Barker)

Thurleigh: airport capacity

Day 21: 5 (Webster)

Printed image digitised by the University of Southampton Library Digitisation Unit

Thurleigh: surface access

Day 21: 4 (Webster)

Timing of the need

Day 22: 30-32 (Payne xx Otton)
: 76-80 (" xx Bagnall)
: 102 (" Rx Webster)
23: 5-8 (Sharman x Frank)
: 67-68 (Smith xx Jackman)
: 70 (" xx MacDermot)
: 106-120 (Masefield xx Bagnall)
25: 9-10 (Lumb x MacDermot)
: 21-23 (Lumb xx Webster)
: 34-36 (Lumb Rx MacDermot)
: 104-105 (Elliot xx Lyell)

Timing of the need: costs and benefits

Day 21: 29 (Payne x Webster)
: 56-57 (" xx Frank)
26: 43-45 (Flowerdew & Smith xx Webster)

Tourism

Day 24: 106-120 (Jones xx MacDermot)
26: 68 (Flowerdew & Smith xx MacDermot)

Town terminal see Terminal: town terminal

Trade, Board of

Day 25: 37-91

Training flights see Movements: air traffic: training flights

Turbulent wake see Air traffic control: turbulent wake.

United Kingdon Federation against Aircraft Nuisance (537)

Day 26: 17-22 (Holmes)

United States: airport capacity see Airport capacity: United States

User costs see Surface access: user costs

Printed image digitised by the University of Southampton Library Digitisation Unit

Vertical take-off and landing

Day 23: 54-59 (Masefield xx MacDermot)
24: 17-20 (Masefield xx Frank)
25: 14-16 (Lumb x MacDermot)
: 21, 24-25 (Lumb xx Webster)
: 25-26 (Lumb xx Harrison)
: 26 (" xx Griffiths)
: 34-37 (" Rx MacDermot)
: 39-41, 66-71, 77-79 (Williams xx MacDermot)
: 80-84 (Williams xx Griffiths)
: 84-90 (" xx Bagnall)
: 90-91 (" Q Keith-Lucas)
: 96-100 (Elliot xx MacDermot)

West Midlands Advisory Committee for Civil Aviation

Day 22: 19 (Payne xx Otton)

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Stage V Public Hearing

INDEX

to

Subject C

Air Matters

Before:-

THE HON. MR. JUSTICE ROSKILL (in the Chair)

PROFESSOR COLIN BUCHANAN

A. GOLDSTEIN, Esq

A. J. HUNT, Esq

PROFESSOR DAVID KEITH-LUCAS

ARTHUR KNIGHT, Esq and

PROFESSOR A. A. WALTERS

J. CAINES, Esq.
(Secretary)

Printed image digitised by the University of Southampton Library Digitisation Unit

x = examined by
xx = cross-examined by
Rx = re-examined by
Q = Questioned by the Chairman
or a Member of the Commission

Accidents see Air safety

Air route structure see Air traffic control: air route structure

Air safety

Day 29: 104-105 (Patrick xx Wood)
31: 79-80 (Colbourne xx Walker)

Air Safety: birdstrike

Day 27: 2-3 (Schaefer x Frank)
: 4-28 (" xx Webster, Q Goldstein)
: 28-33 (" xx Walker)
: 34-36 (" xx Harrison)
: 36-44 (" xx Wood)
: 45-54 (" xx Conder)
: 54-56 (" xx Bagnall)
: 56-58 (" Rx Frank)
: 58-59 (" Rx Barker)
: 60-61 (Conder)
: 62-67 (Bourne & Rudge x Conder)
: 68 (" " " xx Frank)
: 69-79 (" " " xx Walker-Smith)
: 80-82 (" " " xx Harrison)
: 85-88 (" " " xx Bagnall)
: 89-90 (Brancker x Harrison)
: 93-95 (" xx Walker)
: 95-102 (" xx Wood)
: 103-105 (" xx Bagnall)
: 105-110 (" Rx Harrison, Q Chairman, Q Walters)
: 120-125 (Slocombe & Brown xx Walker-Smith)
29: 52 (Smith x Jackman)
: 61-62 (" xx Wood)
31: 29-30 (Colbourne xx Frank)
: 31-33 (" xx Walker-Smith)
: 72-76 (" xx ")
: 77-79 (" xx Walker)
: 82-83 (" xx Wood)

Air safety: birdstrike: costs

Day 27: 10-11 (Schaefer xx Webster)
: 85-88 (Bourne & Rudge xx Bagnall)
: 126-128 (Slocombe & Brown xx Bagnall)

Printed image digitised by the University of Southampton Library Digitisation Unit

Air safety: birdstrike: Kennedy airport

Day 27: 91-93 (Brancker xx Webster)

Air safety: birdstrike: preventive methods

Day 27: 11-27 (Schaefer xx Webster, Q Goldstein)
: 32-33 (" xx Walker)
: 34-36 (" xx Harrison)
: 46-48 (" xx Conder)
: 54-55 (" xx Bagnall)
P 57-58 (" Rx Frank)
: 58-59 (" Rx Barker)
: 65-66 (Bourne & Rudge x Conder)
: 94-95 (Brancker xx Walker)
: 104-105 (Brancker xx Bagnall)?
: 121-125 (Slocombe & Brown xx Walker-Smith)

Air safety: costs

Day 31: 81-82 (Colbourne xx Otton)

Air safety: rescue services

Day 27: 90-91 (Brancker x Harrison)
: 102-103 (" x Wood)
: 111 (Meyer xx Webster)
: 112-116 (" xx Wood)
: 116-119 (" xx Bagnall)
29: 99-102 (Patrick xx Harrison)
31: 26-28 (Colbourne x Evans)
: 80-81 (" xx Harrison)
: 83-85 (" xx Wood)

Air space see Air traffic control: air route structure

Air traffic: freight

Day 29: 74-75 (Lumb xx Wood)
: 79-81, 86 (Lumb xx Evans)
: 87-88 (Lumb Rx Otton)
31: 56-57 (Smith xx Wood)

Air traffic: general aviation

Day 29: 81-84 (Lumb xx Evans)
: 106-110 (Martin)
: 112-116 (Ames x Martin)
: 117-120 (" xx Bagnall)
30: 63 (Dickie xx Barker)
31: 52-53 (Smith xx Otton)

Air traffic: night flights

Day 29: 69-71 (Lumb xx Webster)
: 76-79 (" xx Evans)
: 87-88 (" Rx Otton)

Printed image digitised by the University of Southampton Library Digitisation Unit

Air traffic: night restrictions see Noise: night restrictions

Air traffic control: air route structure

Day 26: 2-3 (Cumming xx Barker)
28: 5-6,20-21 (Dunford xx Walker-Smith)
: 91 (Warskow x Webster)
29: 27-29 (" xx Barker)
: 84-85 (Lumb xx Evans)
30: 56-59 (Dickie xx Walker-Smith)
: 74-77 (" xx Webster)
: 95-97 (" Rx Evans)
31: 21-24 (Holden &Robinson Rx Evans)
: 51-53 (Smith xx Otton)

Air traffic control: Computer assisted approach-systems

Day 28: 17-19 (Dunford xx Walker-Smith Q Keith-Lucas)

Air traffic control: cost-benefit analysis
Day 29: 26 (Warskow xx Walker-Smith)

Air traffic control: criteria

Day 28: 34-35, 36-37 (Dunford xx Webster)
: 88 (Warskow x Webster)
: 96 (" xx Keene)
: 105-106 (" xx Walker-Smith)
29: 14-15 (" xx ")

Air traffic control: Eurocontrol

Day 28: 56-57 (Dunford xx Evans)
: 100 (Warskow xx Keene)
: 103 (" xx Walker-Smith)
29: 35 (" xx Griffiths)
30: 82 (Dickie xx Griffiths)

Air traffic control: flight information regions

Day 28: 29-33 (Dunford xx Webster)

Air traffic control: future developments

Day 28: 53-54 (Dunford xx Evans)
29: 51-52 (Smith x Jackman)
: 57 (Smith xx Walker-Smith)
30: 38-41 (Dickie xx Keene)

Air traffic control: holding areas

Day 28: 12-19 (Dunford xx Walker-Smith)
: 25-27; 35-43 (Dunford xx Webster)
: 83-84 (Dunford Rx Keene, Q Keith-Lucas)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 28: 89-91 (Warskow x Webster)
: 94-98 (" xx Keene)
: 105-106 (" xx Walker-Smith)
29: 10-22 (" xx ")
: 38-41 (" xx Evans)
: 50 (" Q Keith-Lucas)
: 63-64 (Lumb xx Otton)
30: 44-46 (Dickie xx Keene)
: 54-56 (" xx Walker-Smith)

Air traffic control: inland site

Day 28: 8-19 (Dunford xx Walker-Smith Q Keith-Lucas)
29: 42-44 (Warskow xx Evans)

Air traffic control: international co-ordination

Day 26: 23-25 (Dunford x Keene)
28: 28-34 (" xx Webster)
: 43-46 (" xx Jackman)
: 55-59 (" xx Evans)
: 65-66 (" Rx Evans)
: 85-87 (" Rx Keene)
: 92-93 (Warskow x Webster)
: 98-102 (" xx Keene)
29: 9 (Harper Q Chairman)
: 35-36 (Warskow xx Griffiths)
30: 49-52 (Dickie xx Keene)
: 66-68 (" xx Webster)
: 80-81 (" xx Wood)
: 81-83 (" xx Griffiths)
: 84-85 (" Rx Evans)

Air traffic control: jumbo jets

Day 28: 68-69 (Dunford Rx Evans)

Air traffic control: simulations

Day 28: 51-52 (Dunford xx Evans)
: 66-82 (" Rx Evans)
: 82-83 (" Rx Keene)
29: 25 (Warskow xx Walker-Smith)
: 49 (" Rx Webster)
: 61 (Smith xx Wood)
: 66 (Lumb xx Walker-Smith)
30: 39-41 (Dickie xx Keene)
: 70-72 (" xx Webster)
: 85-95 (" Rx Evans, Q Walters)
31: 2-4 (Evans)
: 5-9 (Holden & Robinson x Evans)
: 9-18 (" " " xx Keene)
: 18-20 (" " " xx Webster)
: 21-25 (" " " Rx Evans)
: 33-35 (Smith xx Keene)
: 58-59 (" Rx Evans)
: 65-71 (" Rx " xx Frank)

Printed image digitised by the University of Southampton Library Digitisation Unit

Air traffic control: stacking see Air traffic control: holding areas

Air traffic control: take off and landing

Day 28: 71 (Dunford Rx Evans)

Air traffic control: turbulent wake

Day 30: 3-20 (Morrissey x Bagnall)
: 20-22 (" xx Keene)
: 23-28 (" xx Colville Q Buchanan, Q Chairman)
: 28-32 (" xx Webster)
: 32-33 (" xx Otton)
: 34-37 (" Rx Bagnall, Q Keith-Lucas, Q Chairman)
: 42-43 (Dickie xx Keene)

Air traffic control: United States see New York: airports

Air traffic control: upper information regions

Day 28: 29-32 (Dunford xx Webster)

Air traffic control see also Cublington; Foulness; Heathrow; Luton Airport; Nuthampstead; Runways; Stansted; Thurleigh

Air traffic movements see Movements: air traffic

Airline operations

Day 26: 4-7 (Cumming xx Webster)
: 10-13 (" xx Walker)
29: 53 (Smith xx Walker-Smith)
: 62 (Smith xx Griffiths)

Airlines: foreign

Day 26: 15-16 (Cumming xx Jackman, Q Chairman)

Airport/Seaport see Foulness: seaport

Airports: New York see New York: airports

Amenity

Day 29: 97 (Newey)

Birds: conservation

Day 27: 46-50 (Schaefer xx Conder)
: 56 (" Rx Frank)
: 59-61 (Conder)
: 62-65 (Bourne & Rudge x Conder)
: 75-77 (" " " xx Walker-Smith)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 27: 82-85 (Bourne & Rudge xx Wood)
: 85-88 (" " " xx Bagnall)
: 99-101 (Brancker xx Wood)

Birdstrike see Air safety: birdstrike

British Airports Authority (500)

Day 28: 87-end
29: 2-50

British European Airways (530)

Day 27: 119-end

British Light Aviation Centre (532)

Day 28: 106-end

British Overseas Airways Corporation (529)

Day 29: 50-63

CAAS see Air traffic control: computer assisted approach systems

Cambridge and Isle of Ely, Essex and Hertfordshire County Councils (503)

Day 26: 2-27
27: 2-59
28: 2-59, 65-87

Cargo see Air traffic: freight

Charter flights/inclusive tours

Day 31: 54-55 (Smith xx Otton)

Computer assisted approach systems see Air traffic control: computer assisted approach systems

Conservation: birds see Birds: conservation

Continental air traffic control see Air traffic control: international co-ordination

Controlled air space see Air traffic control: air route structure

Cost-benefit analysis

Day 29: 26 (Warskow xx Walker-Smith)
: 81-84 (Lumb xx Evans)
31: 52-56 (Smith xx Otton)
: 65-71 (" Rx Evans xx Frank)
: 86-87 (Chairman)

Printed image digitised by the University of Southampton Library Digitisation Unit

Cost-benefit analysis see also Foulness: cost-benefit analysis

Costs: air movements

Day 26: 2-3 (Cumming xx Barker)

Costs: air safety

Day 27: 10-11 (Schaefer xx Webster)
: 85-88 (Bourne & Rudge xx Bagnall)
: 126-128 (Slocombe & Brown xx Bagnall)
31: 81-82 (Colbourne xx Otton)

Costs: general aviation

Day 29: 81-84 (Lumb xx Evans)
31: 52-53 (Smith xx Otton)

Costs see also Foulness: operational costs; Scientific establishments: costs
Cross wind components see Runways: cross wind components
Cublington: air traffic control

Day 28: 13-19 (Dunford xx Walker-Smith)
: 22-23 (" xx Barker)
: 23-24 (" Q Walters)
: 40-42 (" xx Webster)
: 89-91 (Warskow x Webster)
: 106 (" xx Walker-Smith)
29: 10-12 (" xx ")
: 16-19 (" xx ")
: 27-19 (" xx Barker)
: 46 (" xx Evans)
: 81 (Lumb xx Evans)
30: 47-48 (Dickie xx Keene)
: 60-62 (" xx Barker)
: 77-79 (" xx Otton)
31: 49-51 (Smith xx Otton)

Cublington: cost-benefit analysis

Day 29: 81-84 (Lumb xx Evans)

Defence

Day 30: 64-65 (Dickie xx Webster)

Delays see Movements: air traffic: delays

Printed image digitised by the University of Southampton Library Digitisation Unit

Essex County Council see Cambridge and Isle of Ely, Essex and Hertfordshire County Councils (303)

Eurocontrol see Air traffic control: Eurocontrol: Air traffic control: international co-ordination

Federal Aviation Authority criteria see Air traffic control: criteria

FIR see Air traffic control: flight information regions

Flight information regions see Air traffic control: flight information regions

Foreign airlines see Airlines: foreign

Foulness: air safety: birdstrike

Day 27: 2-3 (Schaefer x Frank)
: 18-21 (" xx Webster)
: 34 (" xx Jackman)
: 34-36 (" xx Harrison)
: 36-44 (" xx Wood)
: 47-48, 53 (Schaefer xx Conder)
: 54-55 (Schaefer xx Bagnall)
: 57-58 (" Rx Frank)
: 60-61 (Conder)
: 62-65 (Bourne & Rudge x Conder)
: 68 (" " " xx Frank)
: 71-73 (" " " xx Walker-Smith)
: 80-82 (" " " xx Harrison)
: 82-85 (" " " xx Wood)
: 89-90 (Brancker x Harrison)
: 95-103 (" xx Wood)
:107-110 (" Rx Harrison, Q Chairman Q Walters
:127-128 (Slocombe & Brown xx Bagnall)
29: 61-62 (Smith xx Wood)
31: 29-30 (Colbourne xx Frank)
: 32-33 (" xx Walker-Smith)
: 72-74 (" xx " ")
: 82-83 (" xx Wood)

Foulness: air safety: rescue services

Day 27: 90-91 (Brancker x Harrison)
:102-103 (" xx Wood)
:112-116 (Meyer xx Wood)
29: 99-102 (Patrick xx Harrison)
31: 26-28 (Colbourne x Evans)
: 80-81 (" xx Harrison)
: 83-85 (" xx Wood)

Foulness: air traffic control

Day 26: 3 (Cumming xx Barker)
: 23-25 (Dunford xx Keene)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 28: 5-8, 20-21 (Dunford xx Walker-Smith)
: 28-33 (Dunford xx Webster)
: 43 (" xx Jackman)
: 49-50 (" xx Wood)
: 53-55, 58 (Dunford xx Evans)
: 78 (" Rx Evans)
: 92-93 (Warskow x Webster)
: 98-100 (" xx Keene)
:104 (" xx Walker-Smith)
29: 9 (Harper Q Chairman)
: 24-25 (Warskow xx Walker-Smith)
: 24-30 (" xx Barker)
: 34 (" xx Otton)
: 58 (Smith xx Barker)
: 62-63 (" xx Griffiths)
: 64 (Lumb xx Otton)
: 81 (Lumb xx Evans)
: 94-96 (Newey)
:107, 109 (Martin)
:117 (Ames xx Bagnall)
30: 49-53 (Dickie xx Keene)
: 54, 56-57 (Dickie xx Walker-Smith)
: 66-68 (Dickie xx Webster)
31: 4 (Evans)
: 15-18 (Holden & Robinson xx Keene)
: 18-20 (" " xx Webster)
: 34-37 (Smith xx Keene)
: 41-49 (" xx Otton)

Foulness: amenity

Day 29: 97 (Newey)

Foulness: cost benefit analysis

Day 26: 3 (Cumming xx Barker)
: 7 (" xx Webster)
: 13-14 (" xx Jackman)
31: 46-49 (Smith xx Otton)
: 65-71 (Smith Rx Evans xx Frank)

Foulness: defence

Day 30: 64-65 (Dickie xx Webster)

Foulness: noise

Day 26: 7 (Cumming xx Webster)
: 17 (" xx MacDermot)
: 19-20 (" xx Wood)
28: 47-49 (Dunford xx MacDermot)
29: 73-74 (Lumb xx Wood)
: 89-97 (Newey)
: 98-99 (Patrick xx Frank)

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: operational costs

Day 26: 3 (Cumming xx Barker)
: 7 (" xx Webster)
29: 53 (Smith xx Walker-Smith)

Foulness: seaport

Day 29: 97 (Newey)

Foulness: suface access

Day 26: 18-19 (Cumming xx Wood)

Freight see Air traffic: freight

General Precision Systems (GPS) simulation see Air traffic control: simulations

General Precision Systems Ltd

Day 31: 5-25

General aviation see Air traffic: general aviation

Heathrow: air traffic control

Day 28: 23 (Dunford xx Barker)
29: 16-18 (Warskow xx Walker-Smith)
: 27-29 (" xx Barker)
30: 47-48 (Dickie xx Keene)
: 73 (" xx Webster)

Hertfordshire County Council see Cambridge and Isle of Ely and Hertfordshire County Councils (503)

Holding areas see Air traffic control: holding areas

Holiday trade see Tourism

Hovercraft: rescue services

Day 27:111 (Meyer xx Webster)
:112-116 (" xx Wood)
:116-119 (" xx Bagnall)
29: 99-102 (Patrick xx Harrison)
31: 27 (Colbourne x. Evans)
: 81 (" xx Harrison)
: 83-85 (" xx Wood)

Printed image digitised by the University of Southampton Library Digitisation Unit

International Civil Aviation Organisation: criteria see Air traffic control: criteria

Jumbo jets

Day 28: 68-69 (Dunford Rx Evans)
: 81-82 (" Rx ")

Jumbo jets see also Air traffic control: turbulent wake

Kennedy Airport see New York: airports

London Gliding Club (533)

Day 28: 60-64

Lord's Bridge Observatory: costs

Day 28: 64-65 (Bagnall)

Luton Airport

Day 26: 23-24 (Dunford x Keene)

Luton Airport: air traffic control

Day 28: 5-19 (Dunford xx Walker-Smith)
: 25-27 (" xx Webster)
: 46 (" xx Jackman)
: 47 (" xx MacDermot)
: 67 (" Rx Evans)
: 83 (" Rx Keene)
: 89-90 (Warskow x Webster)
: 94-98 (" xx Keene)
: 104-106 (" xx Walker-Smith
29: 11-12, 20-22 (Warskow xx Walker-Smith)
: 42-46 (Warskow xx Evans)
: 47 (" Rx Webster)
: 51 (Smith x Jackman)
: 53-55 (" xx Walker-Smith)
: 60A (" xx Otton)
: 67-68 (Lumb xx Walker-Smith)
30: 43-44
31: 18-21 (Holden & Robinson xx Webster)
: 49-51 (Smith xx Otton)

Printed image digitised by the University of Southampton Library Digitisation Unit

Luton Airport: runways

Day 31: 38-39 (Smith xx Keene)

Meteorology: cross wind components

Day 29: 2-3 (Harper xx Webster)

Movements: air traffic: capacity

Day 29: 36-38 (Warskow xx Evans)

Movements: air traffic: costs

Day 26: 2-3 (Cumming xx Barker)

Movements: air traffic: delays

Day 31: 34-37 (Smith xx Keene)
: 58-60 (" Rx Evans)
: 65-71 (" Rx Evans xx Frank)

National Air Traffic Control Service

Day 30: 37-97

National Air Traffic Control Services (NATCS) simulation see Air Traffic control: simulations

New York: airports

Day 27: 91-93 (Brancker xx Webster)
28: 94 (Warskow x Webster)
29: 44-45 (" xx Evans)
: 58-59 (Smith xx Harrison)
30: 44 (Dickie xx Keene)
: 80 (" xx Wood)

Night flights see Air traffic: night flights

Night restrictions see Noise: night restrictions

Noise

Day 29: 89-97 (Newey)
: 98-99 (Patrick xx Frank)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise: night restrictions

Day 26: 4, 7-9 (Cumming xx Webster)
: 17 (" xx MacDermot)
: 19-20 (" xx Wood)
: 20-21 (" Rx Frank)
28: 47-49 (Dunford xx MacDermot)
: 59-60 (Smith xx Otton)
: 73-74 (Lumb xx Wood)
31: 41-49 (Smith xx Otton)
: 56 (" xx Wood)
: 61-62 (" Rx Evans)

Nuthampstead: air traffic control

Day 28: 25-27, 38 (Dunford xx Webster)
: 89-90 (Warskow x Webster)
29: 47 (" Rx Webster)
30: 43-44 (Dickie xx Keene)
: 47-48 (" xx ")

Private Flying see Air traffic: general aviation

Research Team

Day 31: 26-end

Rescue services see Air safety: rescue services

Royal Society for the Protection of Birds (524)

Day 27: 61-88

Runways: capacity

Day 31: 34-37 (Smith xx Keene)
: 58-60, 62-63 (Smith Rx Evans Q Chairman)

Runways: cross wind components

Day 29: 2-3 (Harper xx Webster)
: 4-6 (" xx Bagnall)

Safety see Air safety

Scientific establishments: costs

Day 28: 64-65 (Bagnall)

Printed image digitised by the University of Southampton Library Digitisation Unit

Seaport see Foulness: seaport

Sheppey Group (516)

Day 29: 89-105

Shoeburyness see Foulness: defence

Short take off and landing

Day 27: 44 (Schaefer xx Wood)
28: 71 (Dunford xx Evans)

Simulations see Air traffic control: simulations

Sites: airspace factors

Day 29: 8 (Harper xx Bagnall)

Stacking see Air traffic control: holding areas

Stansted: air traffic control

Day 28: 40-43 (Dunford xx Webster)
29: 29 (Warskow xx Barker)
: 42-44 (" xx Evans)
: 67-68 (Lumb xx Walker-Smith)
30: 61-62 (Dickie xx Barker)
: 73-74 (" xx Webster)

STOL see Short take off and landing

Surface access

Day 26: 18-19 (Cumming xx Wood)

TEDCO see Thames Estuary Development Company Ltd (520)

Thames Estuary Development Company Ltd (520)

Day 27: 88-119

Thurleigh: air traffic control

Day 28: 11-14 (Dunford xx Walker-Smith)
: 46 (" xx Jackman)
: 47 (" xx MacDermot)
: 78 (" Rx Evans)
29: 20-22 (Warskow xx Walker-Smith)
: 51 (Smith x Jackman)
: 53-56 (" xx Walker-Smith)
: 59-60A (" xx Otton)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 30: 52-53 (Dickie xx Keene)
: 78-79 (Dickie xx Otton)
31: 41-42 (Smith xx Otton)
: 56 (" xx Wood)

Tourism

Day 29: 96-97 (Newey)

Turbulent wake see Air traffic control: turbulent wake

UIR see Air traffic control: upper information regions

United States Department of Commerce
Department of Transportation

Day 30: 2-37

Upper information regions see Air traffic control: upper information regions

Vertical take off and landing

Day 27: 44 (Schaefer xx Wood)
28: 71 (Dunford xx Evans)

Wake turbulence see Air traffic control: turbulent wake

WARA see Wing Airport Resistance Association (515)

Wind see Meteorology

Wing Airport Resistance Association (515)

Day 29: 63-88

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Stage V Public Hearing

INDEX

to

Subject D

Site Matters

Before:-

THE HON. MR. JUSTICE ROSKILL (in the Chair)

PROFESSOR COLIN BUCHANAN

A. GOLDSTEIN, Esq

A. J. HUNT, Esq

PROFESSOR DAVID KEITH-LUCAS

ARTHUR KNIGHT Esq and

PROFESSOR A. A. WALTERS

J. CAINES, Esq
(Secretary)

Printed image digitised by the University of Southampton Library Digitisation Unit

SUBJECT D INDEX

x examined by
xx cross examined by
Rx re-examined by
Q questioned by the Chairman
or a member of the Commission.

AUD (Associated Urban Development) see Urbanisation

Action Committee Against Foulness Airport (527)

Day 32: 69-75

Aggregates

Day 32: 97-99 (Howard x Mann)
: 99-101 (" xx Barker)
33: 45-47 (" xx Wood)
: 71-73 (" xx Lyell)
: 75-76 (" xx Ogden)
34: 85 (Dawson xx Fletcher)
35: 22-23 (Dawson xx Frank)

Aggregates: transport costs

Day 34: 8-12 (Dawson xx Fletcher)
: 34-44 (" xx MacDermot)
: 44-46 (" xx Osborne)
: 47-54 (" xx Mann)
: 83-84 (" xx Griffiths)
: 86-90 (" xx MacDermot)
35: 2-13 (" xx "
(Q Goldstein)
: 14-21 (" xx Mann)
(Q Goldstein)

Air traffic control

Day 31: 6-7 (Dunford xx Lyell)

Air traffic control: air route structure

Day 32: 6 (Sharman xx Wood)

Airport design

Day 31: 9-11 (Sharman xx Fletcher)
34: 79-83 (Chairman's comments)

Airport layout

Day 33: 8-11 (Harper xx MacDermot)
: 12-13 (" xx Griffiths)

Printed image digitised by the University of Southampton Library Digitisation Unit

Airport/seaport

Day 31: 2 (Wheatcroft x Webster)
: 3 (" xx Frank)
32: 21-23 (Deakin x MacVarish)
: 41-43 (Ordman xx Webster)
: 46-47 (" xx Griffiths)
: 47-67 (" xx Lyell)
: 78-99 (Howard x Mann)
33: 33-34 (Brackett xx Lyell)
(Q Goldstein)
34: 17-18 (Dawson xx MacVarish)
36: 2 (Lichfield x Frank)
: 12-33 (" xx MacVarish)
: 33-34 (" xx Wood)
: 35-52 (" xx Lyell)
: 54-59 (" Rx Frank)
: 61-69 (Thompson xx Frank)

Airport/seaport see also Foulness; Seaport; Marine Industrial Development Area.

Airport/seaport: Commission's approach

Day 36: 12-26 (Lichfield xx MacVarish)

Airport/seaport: costs

Day 36: 36-52 (Lichfield x Lyell)

Airport/seaport: disbenefits

Day 32: 23 (Deakin x MacVarish)
33: 108-110 (Spencer xx MacVarish)
36: 28-30 (Lichfield xx ")
: 50-51 (" xx Lyell)

Airport/seaport: land use

Day 32: 41-43 (Ordman xx Webster)
: 46 (" xx MacDermot)
: 50-67 (" xx Lyell)

Bird hazard

Day 33: 78-83 (Bourne Q Chairman)
: 83-84 (" xx Lyell)

Bedfordshire, Northamptonshire, Huntingdonshire and Peterborough County Councils. (501)

Day 31: 3-end
32: 2-20

Printed image digitised by the University of Southampton Library Digitisation Unit

British Airline Pilots Association (534)

Day 33: 2-13

British Airports Authority (500)

Day 31: 2-3

British European Airways (530)

Day 32: 25-38

Buckinghamshire County Council (502)

Day 31: 3-end
32: 2-20

Cambridge and Isle of Ely, Essex and Hertfordshire County Councils (503)

Day 31: 3-end
32: 2-20
33: 16

Car parks

Day 34: 80, 82-83 (Chairman's comments)

Clark, Bernard L. and Partners (526)

Day 47: 2-16

Construction

Day 33: 44-45 (Howard xx Wood)

Construction: costs

Day 31: 11-12 (Sharman xx Fletcher)
: 17-19 (" xx Wood)
33: 101-102 (Price xx Lyell)
See also Sea wall: construction costs
Cost/benefit analysis

Day 36: 7 (Lichfield x Frank)
(Q Goldstein)
: 19-20 (Lichfield xx MacVarish)

Costs

Day 32: 12-15 (Sharman Q Goldstein)
: 16-16 (" Rx Frank)

Printed image digitised by the University of Southampton Library Digitisation Unit

Costs: defence

Day 33: 42-44 (Howard xx Wood)

Costs: maintenance

Day 32: 25-26 (Slocombe x Phillips)
: 31-32 (" xx Mann)
: 33-36 (" xx Lyell)
(Q Chairman, Knight)
: 36-39 (Slocombe Q Chairman, Goldstein)

Costs: reclamation

Day 32: 7-8, 10 (Sharman xx Lyell)
: 81-90 (Howard x Mann)
33: 37-41, 47-49 (Howard xx Wood)
: 49-55 (Howard xx Lyell)
: 101-102 (Price xx Lyell)
See also Reclamation: costs
Costs: reclamation: risks

Day 33: 37-41 (Howard xx Wood)
(Q Chairman, Goldstein)
64-71 (Howard xx Lyell)
(Q Chairman, Goldstein)
34: 77 (Dawson xx Griffiths)
See also Surface access: costs
Cross runways see Runways

Cublington

Day 31: 9-11 (Sharman xx Fletcher)
34: 12-17 (Dawson xx ")

Cublington: churches

Day 34: 16-17 (Dawson xx Fletcher)

Cublington: employment

Day 34: 15-16 (Dawson xx Fletcher)
See also headings under Employment
Cublington: runways

Day 34: 12-13 (Dawson xx Fletcher)
See also headings under Runways
Cublington: terminal buildings

Day 34: 13-15 (Dawson xx Fletcher)

Printed image digitised by the University of Southampton Library Digitisation Unit

The Decision

Day 32: 19-20 (Sharman Rx Frank)
(Q Chairman)
36: 33-34 (Lichfield xx Wood)

Discounting

Day 36: 36-38 (Lichfield xx Lyell)

See also Land values: discounting

Dredging

Day 32: 88-90 (Howard x Mann)
(Q Goldstein)
: 104-110 (Howard xx Wood)
33: 47 (Howard xx Wood)
: 55-64 (Howard xx Lyell)
: 103-105 (Price Q Goldstein)
34: 76-77, 78-79, 84-85
(Dawson xx Griffiths)
47: 3-16 (Film by Bernard Clark)

See also Reclamation; Aggregates

Employment

Day 34: 15-16 (Dawson xx Fletcher)
36: 28 (Lichfield xx MacVarish)
: 57-59 (Lichfield Rx Frank)
(Q Walters, Chairman)

Employment: labour costs

Day 33: 42-44 (Howard xx Wood)

Essex County Council (503) see Cambridge and Isle of Ely, Essex and Hertfordshire County Councils

Flooding see Water: flooding

Foulness

Day 31: 9-11 (Sharman xx Fletcher)
32
36: 12-26 (Lichfield xx MacVarish)

See also individual headings for specific references e.g. Dredging

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: costs

Day 31: 2 (Wheatcroft x Webster)

Foulness: design: hydraulic model

Day 33: 96-99 (Price xx Lyell)
: 105 (" Rx Mann)

Foulness: industrial development

Day 33: 25 (Brackett xx Lyell)
: 36-37 (" Rx Frank)

See also Marine Industrial Development Area (MIDA)

Foulness: noise

Day 31: 13-16 (Sharman xx Ogden)
36: 56-57 (Lichfield Rx Frank)
(Q Walters, Chairman)

See also Noise
Foulness: reclamation

Day 32: 48-50 (Ordman xx Lyell)

Foulness: runways

Day 32: 2 (Sharman xx Wood)

Foulness: site

Day 31: 8-9 (Sharman x Frank)
34: 6-8 (Dawson xx Frank)
: 19-22, 28-34 (Dawson xx Ogden)
36: 4-12 (Lichfield x Frank)

See also TEDCO: site
Foulness: site: Bernard Clark

Day 47: 3-16 (Film and Comments)
TEDCO

Foulness: visibility

Day 31: 3-4 (Dunford x Frank)
4-5 (" xx Wood)
(Q Chairman)
33: 111-113 (Briggs xx Wood)

Printed image digitised by the University of Southampton Library Digitisation Unit

Gatwick: additional runway

Day 32: 15-16 (Sharman Rx Frank)

Heathrow

Day 33: 22 (Brackett x Frank)
: 28 (" xx Lyell)
: 35-36 (" Rx Frank)

Hertfordshire County Council (503) see Cambridge and Isle of Ely, Essex and Hertfordshire County Councils

Huntingdon and Peterborough County Council see Bedfordshire, Northamptonshire, Huntingdon and Peterborough County Councils (501)

Industry and commerce: effect of TLA

Day 33: 20-25 (Brackett xx Lyell)

Kent County Council (504)

Day 32: 21-25

Land values

Day 33: 16-47 (Brackett x Frank)
: 17-22 (" xx Lyell)
: 32-33 (" xx ")
36: 2-4 (Lichfield x Frank)
: 9-12 (" x ")
: 38-50 (" xx Lyell)
: 52-53 (" Rx Frank)
: 54-59 (" Q Knight, Walters)
: 63-69 (Thompson xx Frank)

Land values: discounting

Day 36: 10-12 (Lichfield x Frank)

Luton Airport: noise: costs

Day 32: 9-10 (Sharman xx Lyell)

Printed image digitised by the University of Southampton Library Digitisation Unit

Luton Airport: profitability

Day 32: 8-9 (Sharman xx Lyell)

MIDA see Marine Industrial Development Area

Maplin Sands: reclamation: industrial development

Day 33: 29-32 (Brackett xx Lyell)
See also Reclamation and Foulness
Marine Industrial Development Area (MIDA)

Day 32: 39-41 (Ordman x Mann)
: 41 (" xx MacVarish)
: 46 (" xx MacDermot)
: 48-67 (" xx Lyell)
: 67-68 (" Rx Mann)
33: 21-22 (Brackett xx Lyell)
34: 17-18 (Dawson xx MacVarish)
36: 13-33 (Lichfield xx MacVarish)
: 51-52 (" xx Lyell)
: 69 (Thompson xx Frank)

Marine Industrial Development Area: iron ore

Day 32: 67 (Ordman Rx Mann)

Marine Industrial Development Area: steel

Day 32: 56-59 (Ordman xx Lyell)

Marine Industrail Development Area: Oil

Day 32: 52-56 (Ordman xx Lyell)

Meteorological Office: evidence

Day 33: 110-113

Meteorology

Day 31: 12-13 (Sharman xx Fletcher)
32: 69 (Wood Q Chairman)
: 70 (Wood xx Frank)
: 71-75 (Wood xx Lyell)
(Q Chairman)
33: 111-113 (Briggs xx Wood)
See also Foulness: visibility
Methodology

Day 36: 36-52 (Lichfield xx Lyell)
: 62-69 (Thompson xx Frank)

Printed image digitised by the University of Southampton Library Digitisation Unit

Movements: air traffic: general aviation

Day 31: 4-5 (Dunford xx Wood)
: 5-6 (" xx Griffiths)

See also Night flights

Navigational aids

Day 31: 5-6 (Dunford xx Griffiths)
: 6-7 (" xx Lyell)

Night flights

Day 32: 26-29 (Slocombe xx Webster)

Night flights: costs

Day 32: 29-31 (Slocombe xx MacDermot)

Noise

Day 31: 8-9 (Sharman x Frank)
32: 24 (Deakin Q Chairman)
33: 26-27 (Brackett xx Lyell)
34: 4-5 (Lloyd-Jones xx Lyell)
36: 28 (Lichfield xx MacVarish)

Noise: Costs
Day 32: 9-10 (Sharman xx Lyell)
Day 32: 12-14 (Sharman Q Goldstein)
: 17-18 (" Rx Frank)
34: 19-34 (Dawson xx Ogden)
(Q Goldstein)

See also Foulness: noise
Northamptonshire County Council see Bedfordshire, Northamptonshire, Huntingdon and Peterborough County Councils

Planning

Day 36: 55 (Lichfield Rx Frank)
(Q Walters, Chairman)
: 63-69 (Thompson xx Frank)

Population: effect of Third London Airport

Day 36: 34 (Lichfield xx Wood)

Port of London Authority (521)

Day 32: 39-68

Printed image digitised by the University of Southampton Library Digitisation Unit

Reclamation

32: 48-50 (Ordman xx Lyell)
32: 104-113 (Howard xx Wood)
33: 29-32 (Brackett xx Lyell)
36: 4 (Lichfield x Frank)
: 38-50, 51-52 (Lichfield xx Lyell)

Reclamation see also Aggregates; Sea wall

Reclamation: Costs

Day 32: 7-8,10 (Sharman xx Lyell)
: 81-90 (Howard x Mann)
33: 37-41, 47-49 (Howard xx Wood)
: 49-55 (Howard xx Lyell)
: 77-78 (" Rx Mann)
: 101-102 (Price xx Lyell)

Reclamation: drainage

Day 33: 50-52 (Howard xx Lyell)

Reclamation: effects on currents/velocities

Day 33: 90-93 (Price x Mann)
: 93-94 (Price xx Wood)

Reclamation: settlement

Day 33: 86-87 (Simons xx Wood)

Regional planning

Day 36: 17-26 (Lichfield x Frank)

Research Team

Day 34: 5-end
35: 2-23
36: 61-69

Royal Society for the Protection of Birds (524)

Day 33: 78-84

Runways: cross wind

Day 33: 3-5 (Harper xx Lyell)
(Q Chairman, Keith-Lucas)
: 6 (Harper xx Osborn)
: 8-11 (" xx MacDermot)
: 11-13 (" xx Griffiths)
: 73-75 (Howard xx Ogden)
: 107-108 (Spencer x Griffiths)
34: 77-78 (Dawson xx Griffiths)

Printed image digitised by the University of Southampton Library Digitisation Unit

Runways: number required

Day 31: 7-8 (Sharman x Frank)
32: 2-5 (" xx Wood)
33: 6 (Harper xx Osborn)
(Q Buchanan)

Runways: orientation/alignment

Day 31: 16-17 (Sharman xx Griffiths)
: 101-104 (Howard xx Ogden)
33: 73-75 (" xx ")
34: 12-13 (Dawson xx Fletcher)

Sand and gravel see Aggregates

Sea wall

Day 32: 91-94 (Howard x Mann)
: 110-113 (" xx Wood)
33: 76 (" xx Ogden)
: 89 (Price x Mann)
: 99-101 (" xx Lyell)
36: 71 (Colville Q Chairman)

Sea wall: construction: costs

Day 32: 2 (Sharman xx Wood)
: 7 (" xx Mann)
33: 54-55 (Howard xx Wood)
(Q Chairman, Buchanan)

See also Construction: costs
Seaport

Day 32: 39-41 (Ordman x Mann)
: 43-46 (" xx Wood)
33: 21-22 (Bracket xx Lyell)
36: 5-12 (Lichfield x Frank)
(Q Chairman)
: 13-33 (Lichfield xx Mac Varish)
(Q Chairman)
: 30-31 (Lichfield Q Goldstein)

see also Airport/seaport; Foulness; Marine Industrial Development Area.

Seaport: deep water docks

Day 32: 53-56, 64-65 (Ordman xx Lyell)
(Q Walters)
33: 106-107 (Mann)

Southend

Day 34: 4 (Lloyd-Jones xx Wood)

Printed image digitised by the University of Southampton Library Digitisation Unit

Southend on Sea County Borough (507)

Day 34: 4-5

Surface access: costs

Day 36: 7-9 (Lichfield x Frank)

Surface access: modal split

Day 32: 18-19 (Sharman Rx Frank)

Surface access: rail

Day 34: 21-22 (Dawson Q Buchanan)
: 22 (" xx Fletcher)

Surface access: road

Day 34: 13-14 (Dawson xx Wood)

Surface access: routes

Day 32: 5 (Sharman xx Wood)

Surface access: user costs: time

Day 33: 23 (Brackett xx Lyell)

TEDCO: site

Day 32: 78-99 (Howard x Mann)
: 103-104 (Howard xx Ogden)
: 104-110 (" xx Wood)
36: 61-62 (Thompson xx Frank)

TEDCO: site see also Foulness

TEDCO: site: B2

Day 32: 93-96 (Howard x Mann)

TEDCO: site: noise

Day 31: 13-16 (Sharman xx Ogden)

Thames Aeroport Study Group (519)

Day 33: 107-110

Printed image digitised by the University of Southampton Library Digitisation Unit

Thames Estuary Development Corporation (TEDCO) (520)

Day 32: 39-68, 76-end
33: 37-78, 84-106

Timing of the need

Day 36: 23-24, 26 (Lichfield xx MacVarish)

Urbanisation

Day 32: 63 (Ordman xx Lyell)

Water: flooding

Day 32: 70 (Wood xx Frank)
33: 88 (Price x Mann)
: 94-96 (Price xx Wood)
: 99-101, 102-103 (Price xx Lyell)

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Stage V Public Hearing

INDEX

to

Subject E

Surface Transport

Before:-

THE HON. MR. JUSTICE ROSKILL (in the Chair)

PROFESSOR COLIN BUCHANAN

A. GOLDSTEIN, Esq

A. J. HUNT, Esq

PROFESSOR DAVID KEITH-LUCAS

ARTHUR KNIGHT Esq and

PROFESSOR A. A. WALTERS

J. CAINES, Esq
(Secretary)

Printed image digitised by the University of Southampton Library Digitisation Unit

INDEX

x = examined by
xx = cross-examined by
Rx = re-examined by
Q = questioned by the Chairman
or Members of the Commission

Accessibility: Parry-Lewis formulae

Day 41: 2-48 (Parry-Lewis xx Bagnall)

Accessibility Index: zones

Day 35: 15-34 (Sharman x Colville)
: 76 (" xx Forbes)
36: 36-38 (" xx Bagnall)
37: 6, 19-40, 43-45, 76-80
(Sharman xx Bagnall)
: 89 (" xx MacDermot)
40: 76-88 (Parry-Lewis x Griffiths)
: 93-100 (" xx Colville)
: 107-111 (" xx Bagnall)
41: 8-48 (" xx " , Q Walters, Q Chairman,
Q Goldstein)
: 52-55 (Parry-Lewis Rx Fletcher)
: 108-111 (Wise x Fletcher)
42: 25-28 (" xx Griffiths, Q Walters)
43: 86-94 (Flowerdew x Bagnall)
: 101-110, 115-120 (Flowerdew xx Colville)
46: 7-41 (Flowerdew xx Colville)
: 76-84 (" xx Fletcher)
47: 4-10 (" xx Forbes)
: 23-37 (" xx Otton)
: 44-57 (" xx Griffiths)

Aggregates

Day 43: 11-12 (Griffiths xx Fletcher)

Air traffic: freight

Day 35: 38-40 (Sharman xx Fletcher)
39: 41-42 (Scruby xx Wood)
40: 100-101 (Parry-Lewis xx Fletcher)
46: 42 (Flowerdew xx Fletcher)
47: 14-20 (" xx ")
: 42-43 (" xx Wood)

Air traffic: passenger

Day 36: 2-14 (Sharman x Colville)
: 14-16 (" xx Webster)
: 16-19 (" xx Griffiths)
: 26-38 (" xx Bagnall)
38: 19-37 (" Rx Colville)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 39: 17-18 (Widdaker xx Walker)
: 21-23 (" xx Jackman)
40: 75-80 (Parry-Lewis x Griffiths)
: 101-104 (" xx Webster)
: 104-107 (" xx Bagnall)
42: 44-46 (Wise xx Bagnall)
43: 42-51 (Griffiths xx MacDermot)
: 66-70 (" xx Forbes)
: 110-120 (Flowerdew xx Colville)
46: 48-56 (" xx Fletcher)
: 96-103 (" xx Walker)
: 104-113 (" xx Forbes)
47: 2 (" xx " Q Goldstein)
: 20-37 (" xx Otton)
: 58-63 (" Rx Bagnall)

Air traffic: passenger: forecasts

Day 35: 19-34 (Sharman x Colville)
: 41-44 (" xx Fletcher)
: 53-56 (" xx Webster)
: 72-75 (" xx MacDermot)
: 76-83 (" xx Forbes)
37: 6-8 (" xx Bagnall)
39: 19-24 (Widdaker xx Jackman, Q Chairman)
: 44-45 (Scruby xx Lyell)
40: 75-88 (Parry-Lewis x Griffiths)
41: 2-30 (" x Bagnall, Q Chairman, Q Walters Q Goldstein)
: 103-105 (Lumb Rx MacDermot)
42: 26-28 (Wise xx Griffiths, Q Walters)
43: 16-18 (Griffiths xx Webster)
: 28-37 (" xx Walker)
46: 3-41 (Flowerdew xx Colville)
: 84 (" xx Webster)
47: 44-57 (" xx Griffiths)

Aircraft maintenance

Day 38: 78-80 (Smith x Jackson)
: 85 (" xx Walker)
: 97-99 (" xx Wood)

Airport/seaport

Day 39: 50-53 (Scruby xx Lyell)
: 55 (Trillo x Harrison)
: 55-63 (" xx White)
: 88 (Garlick xx Colville)
41: 60-62 (Scott-White xx Lyell)

Airports: inter-line links

Day 38: 44-45 (Slocombe x Walker)
: 58-60 (" xx MacDermot Q Chairman)
: 69-72 (" xx Lyell)
: 80-81 (Smith x Jackman)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 38: 85-86 (Smith xx Walker)
: 96-97 (" xx Harrison)
39: 20-23 (Widdaker xx Jackman)

Airports: omnidirectional

Day 42: 40-44

Airports: regional

Day 35: 44 (Sharman xx Fletcher)
41: 74-80 (Lumb x MacDermot)
: 83-85 (" x Fletcher)
47: 34-37 (Flowerdew xx Otton)

Airports: regional: Manchester

Day 46: 43-48 (Flowerdew xx Fletcher)
: 88-90 (" xx Webster)
47: 4-10 (" xx Forbes)
: 17-20 (" xx Fletcher)

Airports: regional: midlands

Day 38: 47 (Slocombe xx MacDermot)
: 63-65 (" xx Forbes)
: 66-68 (" xx Wood)
: 73-78 (" xx Lyell)
: 95-96 (" xx Forbes)
46: 43-48 (Flowerdew xx Fletcher)
: 66-74 (" xx ")
47: 14-15 (" xx Forbes)

Bedfordshire, Huntingdonshire and Northamptonshire County Councils

Day 34: 2-18
35: all day
36: all day
37: all day
38: 2-37
42: 50-71

Behavioural costs see User costs

Birmingham airport see Airports: regional: Midlands

British European Airways

Day 38: 44-78

British Overseas Airways Corporation

Day 38: 78-end

Printed image digitised by the University of Southampton Library Digitisation Unit

British Railways Board

Day 42: 71-end
43: 6-85

Buckinghamshire County Council

Day 34: 2-18
35: all day
36: all day
37: 4-87
38: 2-37
41: 106-end
42: 2-48, 50-71

Cambridgeshire County Council see Essex, Hertfordshire and Cambridgeshire County Councils

Charter flights/inclusive tours

Day 35: 55-57 (Sharman xx Webster)
41: 74-80 (Lumb x MacDermot, Q Chairman)
: 86-91 (" xx Webster)
: 94 (" xx Wood)
: 103-105 (" Rx MacDermot)
47: 20 (Flowerdew xx Otton)
: 58-63 (" Rx Bagnall)

Consumer surplus

Day 46: 80-84 (Flowerdew xx Fletcher)

Costs

Day 38: 10-17 (Sharman Rx Colville)
39: 48-53 (Scruby xx Lyell)
40: 69-71 (Garlick xx Harrison, Q Goldstein)
41: 58-59 (Scott-White x Griffiths)
: 60-71 (" xx Lyell)
: 75 (Lumb x MacDermot)
42: 110-113 (Griffiths xx Colville)
: 114-117 (" xx Frank)
43: 75 (" xx Lyell)
: 93-94 (Flowerdew x Bagnall)
: 95-110 (" xx Colville)
46: 41-43 (" xx Fletcher)

Costs: subsidies

Day 38: 10-12 (Sharman Rx Colville)
42: 5-14 (Wise xx Morrison)
43: 61-66 (Griffiths xx Forbes)

Costs see also User costs

Printed image digitised by the University of Southampton Library Digitisation Unit

Cublington

Day 36: 24-38 (Sharman xx Bagnall)
39: 111-115 (Garlick xx Fletcher)
40: 42-65 (" xx MacDermot)
42: 15 (Wise xx Morrison)
43: 7-10 (Griffiths xx Fletcher)
: 19-27 (" xx Webster)
: 110-114 (Flowerdew xx Colville)
46: 43-48 (" xx Fletcher)
: 84-88 (" xx Webster)
47: 39-41 (" xx Otton)

Cublington: capacity

Day 46: 70-74 (Flowerdew xx Fletcher)

Defence costs

Day 38: 9-10 (Sharman xx Fletcher)

Discounting

Day 42: 97-109 (Griffiths xx Colville, Q Goldstein)
: 114-117 (" xx Frank)
43: 2-6 (" Q Goldstein)
: 18-27 (" xx Webster)

Dulles Airport see Washington: Dulles Airport

Elmdon Airport see Airports: regional: Midlands

Employment: Foulness

Day 39: 31 (Widdaker xx MacDermot)
: 55-63 (Trillo xx White)
: 73-77 (" xx Wood)

Essex County Council: statement

Day 38: 37-42 (Colville)

Essex, Hertfordshire and Cambridgeshire County Councils

Day 34: 2-18
35: all day
36: all day
37: all day
38: 2-37
42: 50-71

Printed image digitised by the University of Southampton Library Digitisation Unit

Fares see User costs

Foulness

Day 36: 19-38 (Sharman xx Bagnall)
37: 55-57 (" xx ")
38: 67-68 (Slocombe xx Wood)
39: 36-37 (Scruby x Harrison)
: 37-39 (" xx Wright)
: 39-41 (" xx Wood)
: 42-53 (" xx Lyell)
: 53-54 (" Rx Harrison)
: 88-100 (Garlick xx Colville)
: 113-115 (" xx Fletcher)
40: 13-16 (" xx Wright)
: 65-68 (" xx Wood)
41: 81-82 (Lumb x MacDermot)
: 93-94 (" xx Wood)
: 99 (" xx Bagnall)
42: 14-15 (Wise xx Morrison)
: 44-46 (" xx Bagnall)
: 61 (Sharman Rx Colville)
: 118-119 (Fletcher, Griffiths)
43: 15-16 (Griffiths xx Wright)
: 19-27 (" xx Webster)
: 53-54 (" xx MacDermot)
: 70-71 (" xx Mann)
46: 43-48 (Flowerdew xx Fletcher)
: 86-90 (" xx Webster)
: 104-113 (" xx Forbes)
47: 2-7 (" xx ")
: 37-41 (" xx Otton)

Gatwick

Day 41: 10-30 (Parry-Lewis xx Bagnall, Q Chairman, Q Walters, Q Goldstein)
46: 43-48 (Flowerdew xx Fletcher)
: 105-113 (" xx Forbes)
47: 25-37 (" xx Otton)
: 60-63 (" Rx Bagnall)

Gatwick: capacity

Day 46: 68-74 (Flowerdew xx Fletcher)
: 96-98 (" xx Walker)

Gatwick: runways

Day 46: 72-74 (Flowerdew xx Fletcher)
47: 32-37 (" xx Otton)

Printed image digitised by the University of Southampton Library Digitisation Unit

Gravity model see Models: gravity model

Greater London Council

Day 39: 4-35

Heathrow

Day 35: 2-14 (Sharman x Frank)
37: 16-19 (" xx Bagnall, Q Chairman)
41: 10-30 (Parry-Lewis xx Bagnall, Q Walters, Q Goldstein, Q Chairman)
42: 16-18 (Wise xx Walker)
46: 43-48 (Flowerdew xx Fletcher)
: 56 (" xx ")
: 105-113 (" xx Forbes)
47: 2-7 (" xx ")
: 17-20 (" xx Fletcher)
: 25-27 (" xx Otton)
: 60-63 (" Rx Bagnall)

Heathrow: air traffic: passenger

Day 35: 42-44 (Sharman xx Fletcher)

Heathrow: capacity

Day 35: 53-56 (Sharman xx Webster)
40: 90-91 (Parry-Lewis xx Colville)
46: 96-98 (Flowerdew xx Walker)

Heathrow: rail link

Day 46: 101-103 (Flowerdew xx Walker)

Helicopters

Day 39: 42 (Scruby xx Wood)

Hertfordshire County Council see Essex, Hertfordshire and Cambridgeshire County Councils

Hovercraft

Day 39: 55 (Trillo x Harrison)
: 55-63 (" xx White)
: 65-73 (" xx Wilks)
: 73-77 (" xx Wood)
: 77-78 (" xx Lyell)
: 78-79 (" Rx Harrison)
41: 93-94 (Lumb xx Wood)
47: 37-39 (Flowerdew xx Otton)

Huntingdonshire County Council see Bedfordshire, Huntingdonshire and Northamptonshire County Councils

Printed image digitised by the University of Southampton Library Digitisation Unit

Industry and commerce

Day 40: 100-101 (Parry-Lewis xx Fletcher)

Inter lining see Airports: inter-line links

Landing fees

Day 42: 19-24 (Wise xx MacDermot)
47: 11-14 (Flowerdew xx Forbes)

Luton Airport

Day 37: 89-90 (Sharman xx MacDermot)
41: 75 (Lumb x MacDermot)
42: 118-119 (Fletcher, Griffiths)
43: 42-51 (Griffiths xx MacDermot)
46: 88-90 (Flowerdew xx Webster)
47: 17-20 (" xx Fletcher)
: 21-24 (" xx Otton)

Luton Airport: capacity

Day 46: 68-74 (Flowerdew xx Fletcher)

Luton Airport: future developments

Day 46: 72-74

Manchester airport see Airports: regional: Manchester

Ministry of Transport see Transport, Ministry of

Mixed mode link

Day 35: 45-50 (Sharman xx Webster)

Modal split

Day 35: 80-83 (Sharman xx Forbes)
36: 11-12 (" x Colville)
: 17-19 (" xx Griffiths)
37: 44, 64, 66 (Sharman xx Bagnall)
39: 18 (Widdaker xx Jackman)
: 29-30 (" xx MacDermot)
: 45-48 (" xx Lyell)
: 81-86, 89, 91 (Garlick xx Colville)
40: 44-65 (Garlick xx Walker)
: 67-68 (" xx Wood)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 41: 80-81 (Lumb x MacDermot)
: 99-100 (" xx Bagnall, Q Goldstein)
: 101-105 (" Rx MacDermot)
: 109-117 (Wise x Fletcher)
42: 14-15 (" xx Morrison)
: 46-48 (" xx Bagnall)
: 95-96 (Griffiths x Phillips)
: 114-117 (" xx Frank)
43: 6-12 (" xx Fletcher)
: 12-14 (" Q Chairman)
: 57-59 (" xx Wood)
: 61-66 (" xx Forbes)
: 74-75 (" xx Lyell)
46: 41 (Flowerdew xx Fletcher)
: 78-84 (" xx ")
47: 10-14 (" xx Forbes)
: 20-37, 39-41 (Flowerdew xx Otton, Q Chairman)

Models: elasticity concept

Day 37: 19-40, 41-44, 46-49, 58-60, 74-80, 91-102
(Sharman xx Bagnall)
: 89 (" xx MacDermot)
40: 91-100 (Parry-Lewis xx Colville)
41: 2, 33-48 (Parry-Lewis xx Bagnall)
: 48-55 (Parry-Lewis Rx Fletcher)
: 111-114 (Wise x Fletcher)
43: 85-94 (Flowerdew x Bagnall)
: 95-110 (" xx Colville)
46: 13-41 (" xx ")

Models: gravity model

Day 35: 2-14 (Sharman x Frank)
: 41-44 (" xx Fletcher)
: 73-75 (" xx MacDermot)
37: 24, 44-49 (Sharman xx Bagnall)
: 90-102 (Sharman xx Bagnall)
: 88-90 (" xx MacDermot)
40: 75-88 (Parry-Lewis x Griffiths)
: 89-100 (" xx Colville)
: 107-111 (" xx Bagnall)
41: 2-48 (" xx ")
: 49-55 (" Rx Griffiths)
: 74-82 (Lumb x MacDermot)
: 86 (" xx Webster)
: 98-99 (" xx Bagnall)
: 106-117 (Wise x Fletcher)
42: 4-5 (" x ")
: 26-28 (" xx Griffiths, Q Walters)
43: 86-94 (Flowerdew x Bagnall)
: 110-120 (" xx Colville)
46: 3-41 (" xx ")
47: 2-10 (" xx Forbes)
: 20-37 (" xx Otton)
: 44-57 (" xx Griffiths)

Printed image digitised by the University of Southampton Library Digitisation Unit

Models: Sharman's model

Day 35: 2-14 (Sharman x Frank)
: 15-34 (" x Colville)
: 73-75 (" xx MacDermot)
: 83-86 (" xx Bagnall)
36: 2-14 (" x Colvile)
: 14-16 (" xx Webster)
: 16-19 (" xx Griffiths)
: 19-38 (" xx Bagnall)
37: 74-84 (" xx Bagnall)
38: 8 (" xx Fletcher)
: 17-37 (" Rx Colville)
40: 88-100 (Parry-Lewis xx Colville)
41: 35-48 (" xx Bagnall, Q Walters, Q Goldstein)
: 48 (" Rx Griffiths)
42: 10-13 (Wise xx Morrison, Q Chairman, Q Walters)
: 64-66 (Sharman Rx Colville)
: 67-69 (" xx Bagnall, Q Walters, Q Keith-Lucas, Q Chairman)
43: 88-94 (Flowerdew x Bagnall)
: 98-110 (" xx Colville)
46: 3-41 (" xx ")

Models: Wise's model

Day 41: 106-117 (Wise x Fletcher)
42: 30-48

Movements: air traffic: growth rate

Day 41: 91-93 (Lumb xx Walker)

Movements: air traffic: scheduled flights

Day 41: 83-85 (Lumb xx Fletcher)
: 86-91 (" xx Webster)
: 94-96 (" xx Wood)
: 103-105 (" Rx MacDermot)

Northamptonshire County Council see Bedfordshire, Huntingdonshire and Northamptonshire County Councils

Parking

Day 46: 99-101 (Flowerdew xx Walker)
47: 49-51 (" xx Otton)

Profitability: business

Day 36: 19-38 (Sharman xx Bagnall)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 35: 2-14 (Sharman x Frank)
: 46-50 (" xx Webster)
: 57-67 (" xx Morrison)
: 67-68 (" xx MacDermot)
: 80-83 (" xx Forbes)
37: 55-57, 67-74 (Sharman xx Bagnall)
38: 10-17 (Sharman Rx Colville)
: 68-69 (Slocombe xx Lyell)
39: 19-23 (Widdaker xx Jackman)
: 29-33 (" xx MacDermot)
: 36-37 (Scruby x Harrison)
40: 20-24 (Garlick Q Chairman)
41: 55-56 (Scott-White x Griffiths)
: 60-71 (" xx Lyell, Q Goldstein)
: 80-81 (Lumb x MacDermot)
42: 14-15 (Wise xx Morrison)
: 16-18 (" xx Walker)
: 73-75 (Griffiths x Phillips)
: 76-87 (" x ")
: 88 (" xx Colville)
: 101-113 (" xx ")
: 118-119 (Fletcher, Colville)
43: 12-14 (Griffiths xx Fletcher)
: 37-38 (" xx Walker)
: 39-42 (" xx Jackman)
: 42-57 (" xx MacDermot)
: 57-59 (" xx Wood)
: 70-71 (" xx Mann)
: 110-114 (Flowerdew xx Colville)
46: 37-38 (" xx ")
: 42 (" xx Fletcher)
: 62-66 (" xx ")
: 100-103 (" xx Walker)
47: 10-14 (" xx Forbes)
: 37-41 (" xx Otton)
: 43 (" xx Wood)

Rail: advanced passenger train

Day 34: 3-5,13(Fiennes xx Lyell)
37: 61-62, 67-74 (Sharman xx Bagnall)
42: 85-87 (Griffiths x Phillips)

Rail: costs

Day 34: 2-3 (Fiennes x Frank)
37: 67, 71-74
39: 37-39 (Scruby xx Wright)
40: 5-6 (Garlick xx Fletcher)
42: 74-87 (Griffiths x Phillips)
: 88-113 (" xx Colville, Q Goldstein)
43: 2-6 (" Q Goldstein)
: 9-12 (" xx Fletcher)
: 16-27 (" xx Webster)
: 27-37 (" xx Walker)
: 30-32 (" Q Chairman)
: 71 (" xx Griffiths)
: 78-79 (" Rx Phillips, Q Chairman)

Printed image digitised by the University of Southampton Library Digitisation Unit

Rail: commuters

Day 39: 19-23 (Widdaker xx Jackman)
: 31-33 (" xx MacDermot, Q Chairman)
43: 76-78 (Griffiths xx Lyell)
: 79-80 (" Rx Phillips, Q Chairman)

Rail: exclusive link

Day 34: 7-11 (Fiennes xx Lyell, Q Chairman, Q Goldstein)
: 14-18 (" Rx Frank)
35: 2-3 (Sharman xx Frank)
37: 70-74 (" xx Bagnall,Q Goldstein)
39: 44-53 (Scruby xx Lyell)
41: 97 (Lumb xx Wood)
43: 15-16 (Griffiths xx Wright)
: 55-57 (" xx MacDermot)
: 62-70 (" xx Forbes)
: 76-78 (" xx Lyell)
: 80-83 (" xx MacDermot, Q Chairman)

Rail: improved services

Day 34: 11-14 (Fiennes xx Lyell)
42: 92-94 (Griffiths xx Colville)

Rail: inter-line links

Day 38: 53-54 (Slocombe xx MacDermot)

Rail: profitability

Day 35: 59-67 (Sharman xx Morrison, Q Chairman, Q Goldstein)
: 67-68 (" xx MacDermot)
36: 19-38 (" xx Bagnall)

Rail: Underground

Day 41: 56-58 (Scott-White x Griffiths)

Research team

Day 43: 85-end
46: all day
47: all day

Resource costs

Day 37: 49-54, 60-63, 75-80, 84
(Sharman xx Bagnall)
46: 90-96 (Flowerdew xx Webster)

Ringway airport see Airports: regional: Manchester

Ringroad development see Road: London: motorway system

Printed image digitised by the University of Southampton Library Digitisation Unit

Road

Day 37: 63-67 (Sharman xx Bagnall)
38: 10-17 (" Rx Colville)
39: 8-17 (Widdaker xx Webster)
: 24-30 (" xx MacDermot)
: 36-39 (Scruby x Harrison)
: 39-41 (" xx Wood)
: 42-53 (" xx Lyell)
: 53-54 (" Rx Harrison)
: 81-86, 88-100 (Garlick xx Colville, Q Chairman)
: 111-115 (Garlick xx Fletcher)
40: 5-10 (" xx ")
: 13-16 (" xx Wright)
: 17-24 (" Q Chairman)
: 42-65 (" xx MacDermot)
: 69-71 (" xx Harrison, Q Goldstein)
41: 60-71 (Scott-White xx Lyell, Q Goldstein)
: 96-97 (Lumb xx Wood)
: 102 (" Rx MacDermot)
43: 51-54 (Griffiths xx MacDermot)
46: 41 (Flowerdew xx Fletcher)
: 84-86 (" xx Webster)
: 99-101 (" xx Walker)
47: 33-37 (" xx Otton)
: 43 (" xx Wood)

Road: coach links

Day 41: 96-97 (Lumb xx Wood)
43: 42-51 (Griffiths xx MacDermot)
: 111-114 (Flowerdew xx Colville)
46: 38 (" xx ")

Road: costs

Day 37: 63-67 (Sharman xx Bagnall)
39: 37-39 (Scruby xx Wright)
: 90-100, 105-109 (Garlick xx Colville, Q Chairman, Q Buchanan, Q Walters, Q Goldstein)
40: 14 (Garlick xx Wright)
42: 50-66 (Sharman Rx Colville)
: 67-69 (" xx Lyell)

Roads: London: motorway system

Day 37: 64 (Sharman xx Bagnall)
39: 8-17 (Widdaker xx Webster, Q Chairman)
: 17-18 (" xx Walker)
: 24-30 (" xx MacDermot)
: 100-104 (Garlick xx Colville)
40: 3-5 (" xx Fletcher)
: 24-40 (" xx Webster)
: 41-42 (" xx Walker)
: 69-71 (" xx Harrison, Q Goldstein)
46: 84-86 (Flowerdew xx Webster)

Printed image digitised by the University of Southampton Library Digitisation Unit

Road: Tilbury bridge

Day 47: 37-39 (Flowerdew xx Otton)
: 42 (" xx Wood)

Runways see Gatwick: runways

Scheduled flights see Movements: air traffic

Stansted

Day 46: 88-90 (Flowerdew xx Webster)

TAG see Thames Aeroport Group

TEDCO see Thames Estuary Development Corporation

Terminal: town terminal

Day 34: 9-10 (Fiennes xx Lyell)
36: 18-19 (Sharman xx Griffiths)
38: 15-17 (" Rx Colville)
39: 5-6 (Widdaker xx Griffiths, Q Chairman)
: 7-8 (" Q Chairman)
: 18,21 (" xx Jackman)
41: 56-58 (Scott-White x Griffiths)
: 60-71 (" xx Lyell)
: 71-73 (" Rx Griffiths, Q Chairman)
42: 83 (Griffiths x Phillips)
43: 39-42 (" xx Jackman)
: 51-54 (" xx MacDermot)

Terminal: town terminal: Brent

Day 35: 48-50 (Sharman xx Webster)
37: 16 (" xx Bagnall)
43: 57-58 (Griffiths xx Wood)

Terminal: town terminal: King's Cross

Day 35: 45-50 (Sharman xx Webster)
39: 5-6 (Widdaker xx Griffiths)
43: 12-14 (Griffiths Q Chairman)

Terminal: town terminal: traffic congestion

Day 38: 81-83 (Smith x Jackman)
: 83-85 (" xx Evans)
: 86-95 (" xx MacDermot, Q Chairman, Q Goldstein)
39: 33-34 (Widdaker xx Lyell)
40: 20-24 (Garlick Q Chairman)

Printed image digitised by the University of Southampton Library Digitisation Unit

Terminal: town terminal: travalator

Day 41: 62-63 (Scott-White xx Lyell)

Thames Aeroport Group

Day 40: 74-end
41: 2-73

Thames Estuary Development Company

Day 39: 35-79

Thames Estuary Development Company: statement

Day 38: 37-42 (Colville)

Thurleigh

Day 38: 66-68 (Slocombe xx Wood)
40: 42-65 (Garlick xx MacDermot, Q Goldstein)
43: 62-70 (Griffiths xx Forbes)
46: 104-113 (Flowerdew xx Forbes)
47: 2-10,14(" xx ")

Thurleigh: capacity

Day 46: 70-74 (Flowerdew xx Fletcher)

Timing of the need

Day 37: 4-6 (Sharman xx Bagnall)
46: 66-74 (Flowerdew xx Fletcher)

Transport, Ministry of

Day 39: 80-115
40: 3-74

User costs

Day 35: 46-57 (Sharman xx Webster)
: 57-67 (" xx Morrison)
: 68-75 (" xx MacDermot)
: 79-83 (" xx Forbes)
36: 6 (" x Colville)
: 31, 38 (" xx Bagnall)
37: 6-19 (" xx ")
: 34-40,75(" xx ")
38: 68-72 (Slocombe xx Lyell)
39: 2-4 (Morrison)
40: 21-24 (Garlick x Chairman)
41: 2, 35 (Parry-Lewis xx Bagnall)
: 107-117 (Wise x Fletcher)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 42: 14-15 (Wise xx Morrison)
: 20-24 (" xx Webster)
: 29-36 (" xx Bagnall)
: 94 (Griffiths x Phillips, Q Goldstein)
: 114-117 (" xx Frank)
43: 6-12 (" xx Fletcher)
: 19-27 (" xx Webster)
: 27-37 (" x Walker)
: 54 (" xx MacDermot)
: 58-59 (" xx Wood)
: 61-66 (" xx Forbes)
: 72-75 (" xx Lyell)
: 91-94 (Flowerdew x Bagnall)
: 95-110 (" xx Colville)
: 113-114 (" xx ")
46: 51-55,62(" xx Fletcher)
47: 11-14 (" xx Forbes)
: 27-37 (" xx Otton)
: 39-41 (" xx ")

User costs: time

Day 37: 8-16, 31-32 (Sharman xx Bagnall)
38: 53-55 (Slocombe xx MacDermot)
40: 10 (Garlick xx Fletcher)
: 41-42 (" xx Walker)
46: 48-56, 74-84 (Flowerdew xx Fletcher)
: 90-96 (Flowerdew xx Webster)

Urbanisation

Day 39: 39-41 (Scruby xx Wood)

Valuation of time

Day 34: 6 (Fiennes xx Lyell)
35: 14 (Sharman x Frank)
: 69 (" xx MacDermot)
36: 7-8 (" x Colville)
: 14-16 (" xx Webster)
37: 8-16, 31-32 (Sharman xx Bagnall)
: 62-63, 71 (Sharman xx Bagnall)
: 80-84 (Sharman Q Goldstein)
: 85-86 (" Q Buchanan)
38: 48-50 (Slocombe xx MacDermot)
40: 74 (Parry-Lewis x Griffiths)
: 101-104 (" xx Webster)
: 104-107 (" xx Bagnall)
42: 24 (Wise xx Wood)
46: 48-55 (Flowerdew xx Fletcher)
: 62-66 (" xx ")

Valuation of time: business

Day 46: 62-66 (Flowerdew xx Fletcher)

Printed image digitised by the University of Southampton Library Digitisation Unit

Valuation of time: leisure

Day 36: 11-14 (Sharman x Colvill, Q Goldstein)

Valuation of time: short time saving

Day 46: 62-66, 74-84 (Flowerdew xx Fletcher)

WARA see Wing Airport Resistance Association

Washington: Dulles Airport

Day 41: 82 (Lumb xx Fletcher)
: 91-93 (" xx Walker)
: 98 (" xx Wood)
: 100-101 (" xx Bagnall)

Weighting

Day 35: 27-34 (Sharman x Colville)

Wing Airport Resistance Association

Day 41: 74-106

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Stage V Public Hearing

INDEX

to

Subject F

NOISE (1)

Before:-

THE HON. MR. JUSTICE ROSKILL (in the Chair)

PROFESSOR COLIN BUCHANAN

A. GOLDSTEIN, Esq

A. J. HUNT, Esq

PROFESSOR DAVID KEITH-LUCAS

ARTHUR KNIGHT, Esq and

PROFESSOR A. A. WALTERS

J. CAINES, Esq
(Secretary)

Printed image digitised by the University of Southampton Library Digitisation Unit

INDEX

x = examined by
xx = cross-examined by
Rx = re-examined by
Q = questioned by the Chairman
or Members of the Commission

ACAFA see Action Committee Against Foulness Airport

Acoustics see Sound propagation: water

Action Committee Against Foulness Airport (ACAFA) (527)

Day 52: 66-101

Aircraft: future developments

Day 50: 37-38 (Hooker xx Barker)
: 39-43 (" Q Chairman)
: 58 (Hooker Q Keith-Lucas)

Aircraft: future developments see also Aircraft: noise levels

Aircraft: Noise certification

Day 50: 73-77 (Westley xx Webster)
: 91-92 (" xx White)

Aircraft: noise levels

Day 50: 36-37 (Hooker x Webster)
: 46-51 (" xx Forbes)
: 60-62 (" xx Evans)
: 65-66 (" Q Keith-Lucas)
Day 54: 48-49 (Green xx Jackman)
: 68-71 (" xx Holmes)
: 95-99 (Harper xx Lyell)

Aircraft: noise reduction

Day 50: 35-37 (Hooker x Webster)
60-62, 66 (Hooker xx Evans)

Aircraft: noise reduction: costs

Day 50: 41-43 (Hooker Q Chairman)
: 49 (" xx Forbes)
: 59-60 (" xx Griffiths)
: 62 (" xx Evans)

Printed image digitised by the University of Southampton Library Digitisation Unit

Aircraft: noise reduction: methods

Day 50: 49-56 (Hooker xx Forbes)
: 58-60 (" xx Griffiths)
: 70-79 (Westley xx Webster)
Day 53: 36-37 (Patrick xx Keene)
Day 54: 94-99 (Harper xx Lyell)
Day 55: 39 (Thompson xx Lawson Rogers)

Airport/seaport

Day 53: 27 (Smith xx Griffiths)

Air traffic control

Day 53: 43-44 (Patrick xx Bagnall)
: 83-86 (Thompson xx White)
Day 54: 8-14 (Hammond xx Mann)
: 21 (" xx Lyell)

Amenity: loss of see Costs: social

BAA see British Airports Authority

BALPA see British Airline Pilots' Association

BARA see Bedfordshire Airport Resistance Association

BEA see British European Airways

BOAC see British Overseas Airways Corporation

BOT see Trade, Board of

Bedfordshire Airport Resistance Association (BARA) (513)

Day 50: 68 - end

Bedfordshire, Huntingdonshire and Northamptonshire County Councils (501)

Day 47: all
Day 48: 2-93
Day 49: 23-53

Birmingham Airport

Day 49: 34 (Sharman xx Webster)

Board of Trade see Trade, Board of

British Airline Pilots' Association (BALPA) (534)

Day 54: 93-99

Printed image digitised by the University of Southampton Library Digitisation Unit

British Airports Authority (BAA) (500)

Day 49: 53 - end
Day 50: 2-67

British European Airways (BEA) (530)

Day 55: 2-4 (statement)

British Overseas Airways Corporation (BOAC) (529)

Day 53: 24-34

Buckinghamshire County Council (502)

Day 47: all
Day 49: 23-53
Day 51: 11-82

Cambridge and Isle of Ely County Council see Essex, Hertfordshire Cambridge and Isle of Ely County Councils

Cambridge University (517)

Day 49: 4-23

Cambridge University

Day 49: 5 (Allen x Frank)
: 6-9 (" Q Chairman)
: 13 (" xx Evans)

Caravan/chalet sites

Day 51: 100-101 (Deakin xx Frank)
: 103 (" xx Mann)
: 109 (" Rx White)

Certification see Aircraft: noise certification

Charter flights/Inclusive tours

Day 50: 62 (Hooker Q Chairman)
Day 54: 49-51 (Green xx Webster)

Churches: valuation

Day 48: 20-22 (Whitbread xx Barker)

Civil Aviation Act

Day 54: 71-72 (Connell Q Chairman)

Printed image digitised by the University of Southampton Library Digitisation Unit

Compensation

Day 48: 5-6 (Whitbread xx Barker)
: 88 (" Q Goldstein)
Day 49: 67-69 (Plowden xx Frank)
: 74-75 (" xx ")
: 78-80 (" xx Barker)
: 107-109 (" xx Evans)
Day 50: 33-34 (" xx ")
Day 51: 80-81 (Wise Rx Barker)
Day 52: 30-33 (Waller xx Webster)
Day 54: 80-83 (Connell xx Bagnall)
Day 55: 23-25 (Thompson xx Otton)

Compulsory Purchase Order

Day 48: 22 (Whitbread xx White)

Concorde see Supersonic aircraft

Consumer surplus

Day 48: 18-19 (Whitbread xx Barker)
: 84-87 (" xx Evans)
Day 51: 26-33 (Wise xx Webster)
: 43-45 (" xx ")
: 51-53 (" Q Buchanan)
: 63-64 (" xx Otton)
: 67-77 (" xx Evans)
Day 52: 33-36 (Waller xx Webster)
: 46-49 (" xx Evans)
Day 54: 102 (Thompson xx Webster)
Day 55: 25-27 (" xx Otton)

Consumer surplus: rented properties

Day 48: 31-33 (Whitbread xx Webster)

Consumer Surplus Survey: property values

Day 48: 6-9 (Whitbread xx Barker)
: 23-25 (" xx Webster)
: 25-26 (" Q Goldstein)
: 26-29 (" xx Webster)

Costs

Day 48: 2-4 (Whitbread x Frank)
: 34-47 (" xx Webster)
: 47-48 (" xx Wood)
: 91-93 ((" Rx Frank)
: 94-95 (Raby x Frank)
Day 49: 53-59 (Plowden x Webster)
: 64-75 (Plowden xx Frank)
: 88-100(Plowden xx Forbes Q Goldstein)
: 104-109 (Plowden xx Evans)
Day 50: 14-23 (" xx ")
: 97-100 (Westley Q Goldstein)
: 110-112 (" xx Lyell)

Printed image digitised by the University of Southampton Library Digitisation Unit

Costs (cont)

Day 51: 34-45 (Wise xx Webster)
: 55-64 (" xx Otton)
: 64-75 (" xx Evans)
: 80-81 (" xx Barker)
Day 52: 7-8 (Waters xx Otton)
: 11-15 (Waller x Otton)
: 20-24 (" xx Webster)
: 44-49 (" xx Evans)
Day 53: 39-43 (Patrick xx Bagnall)
: 45-54 (Curran xx Colville)
: 58-64 (Thompson xx Keene)
: 66-67 (" xx Barker)
: 69-70 (" xx ")
: 86-93 (" xx White)
: 98-115(" xx Ogden)
Day 54: 75-83 (Connell xx Bagnall)
Day 55: 12-15 (Thompson xx Otton)

Costs see also Noise: endurance costs

Costs: four sites

Day 48: 83 (Whitbread xx Evans)
Day 49: 103-104 (Plowden xx Harrison)
Day 52: 14-15 (Waller x Otton)
: 15-18 (" xx White)
Day 53: 86-93 (Thompson xx White)

Costs: Kent

Day 53: 38-43 (Patrick xx Bagnall)
: 55-57 (Curran xx Bagnall)
: 94-97 (Thompson xx White)

Costs: social

Day 48: 5-20 (Whitbread xx Barker)
Day 49: 65-68 (Plowden xx Frank)
: 73-75 (" xx ")
: 100-103(" xx Otton)
Day 50: 109-110 (Westley xx Lawson Rogers)
Day 51: 15-17 (Wise x Barker)
: 20-45 (" xx Webster)
: 51-53 (" Q Buchanan)
Day 52: 27-30 (Waller xx Webster)
Day 53: 38-43 (Patrick xx Bagnall)
: 45-54 (Curran xx Colville)
: 55-57 (" xx Bagnall)
: 74-81 (Thompson xx Barker)
: 81-82 (" Q Buchanan)
Day 54: 75-83 (Connell xx Bagnall)
Day 55: 4-6 (Thompson xx Brodrick)
: 9-12 (" Q Goldstein)
: 15-19 (" xx Otton)

Printed image digitised by the University of Southampton Library Digitisation Unit

Country Landowners Association (510)

Day 51: 2-11

Courts End

Day 53: 108-112 (Thompson xx Ogden)

Cranfield Institute of Technology

Day 53: 66-67 (Thompson xx Barker)

Cublington

Day 49: 24-26 (Sharman xx Barker)
Day 54: 56-59 (Green xx Otton)
: 95-96 (Harper xx Lyell)

Cublington: night flights

Day 54: 41-46 (Green xx Colville)
: 51-53 (" xx Lymbery)
: 109-114 (Abrahams xx Lymbery)

Cublington: runways

Day 49: 40-46 (Sharman xx Evans)
: 52-53 (" Rx Frank)

Elmdon see Birmingham airport

Employment

Day 48: 101-102 (Raby xx Webster)
Day 51: 108 (Deakin xx Evans)
Day 52: 3-6 (Deakin Rx White)
Day 53: 34 (Patrick x Lawson Rogers)
: 38 (" xx Bagnall)
: 45-54 (Curran xx Colville)
: 93-97 (Thompson xx White)

Essex, Hertfordshire and Cambridge and Isle of Ely County Councils (503)

Day 47: all
Day 48: all
Day 49: 23-53

Printed image digitised by the University of Southampton Library Digitisation Unit

Flight paths

Day 53:	43-44	(Patrick xx Bagnall)
:	83-86	(Thompson xx White)
Day 55:	40-41	(Thompson xx Griffiths)

Foulness

Day 48:	96-100	(Frank Q Chairman)
:	108	(Raby xx Lawson-Rogers)
:	110-111	(" Q Goldstein)
Day 49:	27	(Sharman xx Webster)
Day 50:	87-97	(Westley xx White)
:	100-102	(" xx
:	105-110	(" xx Lawson-Rogers)
:	110-112	(" xx Lyell)
Day 52:	36-39	(Waller xx Wood)
:	54-57	(" Rx Otton)
:	66-69	(Wood)
:	70-79	(Wood xx Frank)
Day 53:	84-93	(Thompson xx White)
Day 54:	98-99	(Harper xx Lyell)
:	106-108	(Thompson xx Webster)
Day 55:	38-39	(" xx Wood)

Foulness: B1 and B2 sites

Day 51:	82-88	(Ogden/Chairman)
:	88	(Wood)
:	89-94	(Deakin x White)
:	102	(" xx Mann)
Day 52:	2	(" Rx White)
:	58-60	(Chairman)
Day 53:	97-115	(Thompson xx Ogden)
Day 54:	8-14	(Hammond x Mann)
:	26-27	(" xx Lyell)
:	28-31	(Mann/Chairman)
Day 55:	35-37	(Thompson xx Wood)

Foulness: night flights

Day 47:	9-13	(Fleming xx White)
	13-15	(" xx Wood)

Foulness: runways

Day 47:	9-13	(Fleming xx White)
:	13	(" xx Ogden)
:	13-15	(" xx Wood)
:	21	(" xx Evans)
Day 49:	40-46	(Sharman xx Evans)
:	52-53	(" Rx Frank)

Foulness: site costs

Day 53:	97-115	(Thompson xx Ogden)
Day 54:	26-27	(Hammond xx Lyell)
:	28-31	(Mann/Chairman)
:	85-86	(Thompson Rx Evans)

Printed image digitised by the University of Southampton Library Digitisation Unit

Gatwick

Day 49: 28-31A (Sharman xx Webster)
Day 53: 94-97 (Thompson xx White)
Day 54: 72-73 (Holmes)

Gatwick: night flights

Day 48: 9-11 (Whitbread xx Barker)
Day 49: 30-31A (Sharman xx Webster)
Day 54: 34-37 (Green xx Frank)

Health

Day 53: 79-80 (Thompson xx Barker)

Heathrow

Day 49: 24 (Sharman x Frank)
: 28-31A (Sharman xx Webster)
Day 52: 61-66 (Mrs Stevens)
: 64-65 (Chairman)
Day 53: 20-22 (Berry xx Evans)
: 94-97 (Thompson xx White)
Day 54: 63-67 (Green xx Holmes)
: 75-80 (Connell xx Bagnall)

Heathrow: night flights

Day 48 9-11 (Whitbread xx Barker)
Day 53: 24 (Smith x Jackman)
Day 54: 59-60 (Green xx Lyell)

Heathrow: noise survey

Day 47: 24-25 (Fleming Q Chairman)

Hertfordshire County Council see Essex, Hertfordshire and Cambridge & Isle of Ely County Councils

Hospitals

Day 48: 19-20 (Whitbread xx Barker)
Day 49: 11-12 (Allen Q Buchanan)
: 12-13 (" xx Evans)
Day 51: 35-37 (Wise xx Webster)

Huntingdonshire County Council see Bedfordshire, Huntingdonshire and Northamptonshire County Councils

Hushkits see Aircraft: noise reduction: methods

Printed image digitised by the University of Southampton Library Digitisation Unit

ICAO regulations see Noise regulations: ICAO

Imperturbables

Day 50: 22-23 (Plowden xx Evans)
Day 53: 50A (Curran xx Colville Q Chairman)

Industry & Commerce

Day 55: 28-30 (Thompson xx Otton)

Insulation

Day 47: 21-22 (Fleming xx Evans)
Day 51: 35-37 (Wise xx Webster)
Day 54: 59-63 (Green xx Lyell)
: 63-67 (" xx Holmes)

KACAN see Kew Association for the Control of Aircraft Noise

Kent County Council (504)

Day 51: 89-end
Day 52: 2-9

Kew Association for the Control of Aircraft Noise (KACAN) (539)

Day 52: 61-66

Land value: agricultural

Day 51: 2-5 (Douglas Pennant xx Wood)
: 5-7 (" " xx Griffiths)
Day 52: 39 (Waller xx Wood)
: 51 (" xx Evans)

Luton

Day 48: 94 (Raby x Frank)
: 95-100 (Frank Q Chairman)
: 100-101 (Raby xx Barker)
: 103, 105-108 (Chairman)
: 103 (Raby xx Lawson-Rogers)
: 110-111 (" Q Goldstein)
: 113 (" xx Evans)
Day 52: 6-8 (Waters xx Otton)
: 19-20 (Waller xx Webster)
: 36-39 (" xx Wood)
: 40-42 (" xx Evans)
: 55-57 (" Rx Otton)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 53: 14 (Keene)
: 18 (Berry xx Barker)
: 20-23 (" xx Evans Q Buchanan)
: 54 (Curran Q Chairman)
: 54-57 (" xx Bagnall)
Day 54: 3-5 (Evans statement)
: 5-7 (Frank Q Chairman)
: 53-54 (Green xx Lymbery)
: 103-108 (Thompson xx Webster)
Day 55: 12-15 (" xx Otton)

Luton: closure

Day 49: 2-4 (Bagnall)
: 101-103 (Plowden xx Otton)
Day 51: 49-50 (Wise xx Wood)
Day 54: 107-108 (Thompson xx Webster)

Luton: movements: air traffic

Day 48: 109-110 (Raby xx Lawson-Rogers)
: 111 (Raby xx Evans)
Day 49: 26 (Sharman xx Webster)
: 30-31A (" xx ")
: 48 (" xx Evans)
: 51-53 (" Rx Frank)

Luton: night flights

Day 48: 103 (Raby xx Lymbery)
Day 54: 37-38 (Green xx Frank)

Luton: runways

Day 47: 22-23 (Fleming xx Evans)
Day 52: 6-8 (Waters xx Otton)
: 19-20 (Waller xx Webster)
: 37-39 (" xx Wood)
: 40-42 (" xx Evans)
: 54-55 (" Rx Otton)
Day 53: 58-64 (Thompson xx Keene Q Chairman)
: 65-66 (" xx Barker)
Day 54: 3-5
: 85-86 (Thompson Fx Evans)
: 103-106 (" xx Webster)
Day 55: 12-15 (" xx Otton)

Luton Airport Development by Sir Frederick Snow and Partners

Day 53: 61-63 (Thompson Q Chairman)

Printed image digitised by the University of Southampton Library Digitisation Unit

McKennell survey

Day 50: 21-22 (Plowden xx Evans)
Day 51: 16-17 (Wise x Barker)
Day 53: 76-77 (Thompson xx Barker)
: 81-82 (" Q.Buchanan)
Day 55: 16-17 (" xx Otton)

Models see Noise: research team model

Montreal Airport: St. Scholastique

Day 50: 91-94 (Westley xx White)

Movements: air traffic

Day 49: 30-31A (Sharman xx Webster)
Day 53: 71-73 (Thompson xx Barker)

Movements: air traffic see also Night flights

Movements: air traffic: forecasts

Day 50: 85-87 (Westley xx Webster)
Day 53: 64-65 (Thompson xx Keene)
54: 6-7 (Frank Q Chairman)

Movements: air traffic: Gatwick

Day 49: 30-31A (Sharman xx Webster)

Movements: air traffic: Luton

Day 48: 109-110 (Raby xx Lawson-Rogers)
: 111 (Raby xx Evans)
Day 49: 26 (Sharman xx Webster)
: 30-31A (" xx ")
: 48 (" xx Evans)
: 51-53 (" Rx Frank)
Day 53: 64-65 (Thompson xx Keene)
: 65-66 (" xx Barker)

Movements: air traffic: training flights

Day 48: 117-118 (Raby Rx Frank)

NAS see Noise Abatement Society

NNI see Noise and number index

Nationalised Industries, Select Committee

Day 54: 40 (Green xx Frank)

Printed image digitised by the University of Southampton Library Digitisation Unit

Night flights

Day 47: 5 (Fleming xx Barker)
: 8-13 (" xx White)
: 13-15 (" xx Wood)
: 16 (" xx Lawson-Rogers)
: 17-22 (" xx Evans)
Day 48: 9-11 (Whitbread xx Barker)
: 103 (Raby xx Lymbery)
Day 49: 30-31A (Sharman xx Webster)
Day 53: 19 (Berry xx Walker)
: 24 (Smith x Jackman)
: 30-32 (" xx Lyell)
Day 54: 14 (Hammond xx Barker)
: 18 (" xx Wood)
: 32-41 (Green xx Frank)
: 41-46 (" xx Colville)
: 49-51 (" xx Webster)
: 51-53 (" xx Lymbery)
: 59-60 (" xx Lyell)
: 109-114 (Abrahams xx Lymbery)

Night flights see also under individual airports e.g. Gatwick: night flights

Noise see also Sound propagation

Noise: costs see Costs

Noise: endurance costs

Day 50: 14-23 (Plowden xx Evans)
Day 53: 76-79 (Thompson xx Barker)
: 81-82 (" Q Buchanan)

Noise: estate agents survey

Day 49: 84-87 (Plowden xx Barker)

Noise: METRA survey

Day 48: 43 (Whitbread xx Webster)
: 53-54 (" xx Evans)
: 70-74 (" xx Evans)
Day 49: 56-63 (Plowden x Webster)
: 64-73 (" xx Frank)
: 80-87 (" xx Barker)
: 104-113 (" xx Evans)
Day 50: 2-14 (" xx Evans)
Day 54: 100-101 (Thompson xx Webster)

Noise: monitoring

Day 50: 69-70 (Westley xx Webster)
: 113-117 (" Rx Forbes)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise: Professer Wise's approach

Day 48: 13-19 (Whitbread xx Barker)
Day 51: 12-17 (Wise x Barker)
: 17-45 (" xx Webster)
: 45-49 (" Q Walters)
: 55-64 (" xx Otton)
: 67-80 (" xx Evans)
Day 53: 73-79 (Thompson xx Barker)

Noise: regulations

Day 50: 91-92 (Westley xx White)
Day 53: 29-31 (Smith xx Lyell)

Noise: regulations: Heathrow

Day 50: 43 (Hooker xx Forbes)
Day 53: 29-31 (Smith xx Lyell)

Noise: regulations: ICAO

Day 47: 5 (Fleming xx Barker)
Day 50: 43-51,56 (Hooker xx Forbes)
: 69-77 (Westley xx Webster)
: 81-81 (" xx ")

Noise: regulations: United Kingdom

Day 50: 79-85 (Westley xx Webster Q Chairman)

Noise: regulations: United Kingdom see also Trade, Board of: noise abatement procedures

Noise: research team model

Day 48: 48-83 (Whitbread xx Evans)
: 91-93 (" Rx Frank)
Day 54: 86-91 (Walters)
: 91-93 (Thompson/Chairman)
: 100-103 (" xx Webster)
Day 55: 42-43 (" xx Bagnall)

Noise: value of

Day 48: 48-83 (Whitbread xx Evans)
: 90-93 (" Rx Frank)
Day 49: 60-63 (Plowden x Webster)
: 75-80 (" xx Barker)
: 88-100 (" xx Forbes Q Goldstein)
Day 50: 16-23 (" xx Evans)
Day 51: 12-15 (Wise x Barker)
: 34-45 (" xx Webster)
: 45-49 (" Q Walters)
: 55-64 (" xx Otton)
: 64-75 (" xx Evans)
Day 52: 10-15 (Waller x Otton)
Day 53: 86-93 (Thompson xx White)
Day 55: 4-7 (" xx Brodrick)
: 16-19 (" xx Otton)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise: Whitbread formula

Day 48: 2 (Whitbread x Frank)
: 50-56 (" xx Evans)
: 70-83 (" xx Evans)
: 90-93 (" Rx Frank)

Noise abatement procedures see Trade, Board of: noise abatement procedures

Noise Abatement Society (NAS) (536)

Day 54: 71-84

Noise and number index (NNI)

Day 47: 23-25 (Fleming Q Chairman)
Day 49: 93-94 (Plowden xx Forbes)
Day 52: 61-66 (Mrs Stevens)
: 66-69 (Wood)
: 82-85 (Lamb Q Chairman xx Ogden)
: 86-89 (Lamb xx Bagnall)

Noise and number index see also Noise contours

Noise contours

Day 47: 16-21 (Fleming xx Evans)
Day 49: 34-36 (Sharman xx White)
: 39-40 (" xx Wood)
Day 50: 102-104 (Westley Q Buchanan)
: 104-110 (" xx Lawson-Rogers)
: 110-112 (" xx Lyell)
Day 52: 79-80 (Wood xx Barker)
: 98-101 (Wood/Lamb xx Bagnall)
Day 53: 71-73 (Thompson xx Barker)
: 84-90 (" xx White)
: 97-102 (" xx Ogden)
Day 54: 42-46 (Green xx Colville)
: 60-61 (" xx Lyell)
: 108-114 (Abrahams xx Lymbery)
Day 55: 35-37 (Abrahams xx Wood)

Noise contours: Cambridge

Day 49: 6-9 (Allen Q Chairman)
: 16-21 (" xx Evans)

Noise contours: Cublington

Day 49: 24-26 (Sharman xx Barker)
Day 53: 71-73 (Thompson xx Barker)
Day 54: 42-43 (Green xx Colville)
: 47 (" xx Jackman)
: 52-53 (" xx Lymbery)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise contours: Foulness

Day 51: 84-88 (Ogden/Chairman)
Day 52: 18-19 (Waller xx Ogden)
: 66-69 (Wood)
: 72-79 (Wood xx Frank)
: 79-80 (Lamb xx Barker)
: 86-101 (" xx Bagnall)
Day 53: 71-73 (Thompson xx Barker)
Day 54: 8-14 (Hammond x Mann)
: 15-16 (" xx Ogden)
: 17-18 (" xx Wood)
: 21-26 (" xx Lyell)

Noise contours: Kent

Day 47: 8-13 (Fleming xx White)
Day 50: 93-97 (Westley xx White)
: 105-110 (Westley xx Lawson-Rogers)
Day 51: 90-94 (Deakin x White)
: 103-106 (" xx Wood)
: 106 (" xx Griffiths)
Day 52: 2 (" Rx White)
Day 53: 34 (Patrick x Lawson-Rogers)
: 37-38 (Patrick xx Wood)
Day 54: 17-18 (Hammond xx Wood)

Noise contours: Luton

Day 47: 2-4 (Fleming x Frank)
: 6-7 (" xx Lymbery)
Day 49: 33 (Sharman xx Webster)
Day 54: 103-106 (Thompson xx Webster)

Noise contours: Nuthampstead

Day 49: 14-21 (Allen xx Evans)
: 21-23 (Frank/Evans/Chairman)

Noise contours: Stevenage

Day 48: 102-108 (Raby xx Lymbery)

Noise contours: Thurleigh

Day 54: 43-46 (Green xx Colville)

Noise costs <u>see</u> Costs

Noise levels

Day 47: 5 (Fleming xx Barker)
: 12-13 (" xx White)
: 19-22 (" xx Evans)
: 23 (" Rx Frank)
: 24-25 (Fleming Q Chairman)
Day 49: 47 (Sharman xx Evans)
Day 50: 35-37 (Hooker x Webster)
: 45-48 (" Q Chairman)
: 110-112 (Westley xx Lyell)
: 113-117 (" Rx Forbes)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise levels (Cont)

Day 51: 100-101 (Deakin xx Frank)
Day 52: 110-112 (Large xx Holmes)
Day 53: 21-23 (Berry xx Evans Q Buchanan)
Day 54: 38-39 (Green xx Frank)
: 76-82 (Connell xx Bagnall)

Noise levels see also Aircraft: noise levels; Surface access: noise

Noise levels: certification

Day 47: 4-5 (Fleming xx Barker)

Noise levels: night

Day 50: 94-97 (Westley xx White)
Day 52: 8-9 (Waters xx Evans)

Noise levels: night see also Night flights

Northamptonshire County Council see Bedfordshire; Huntingdonshire and Northamptonshire County Councils

Nuthampstead

Day 48: 97-100 (Frank Q Chairman)
Day 53: 15-17 (Berry x Lymbery)
: 20-23 (" xx Evans Q Buchanan)
Day 54: 97-98 (Harper xx Lyell)
: 110-114 (Abreahams xx Lymbery)

Order in Council 1970 Civil Aviation Air Navigation Noise Certification 1970

Day 50: 74 (Westley xx Webster)
: 79-85 (" xx ")

Planning: blight

Day 49: 54-59 (Plowden x Webster)
: 62-63 (" x ")
: 71-73 (" xx Frank)
Day 51: 7 (Douglas-Pennant xx Evans)
Day 52: 16-18 (Walker xx White)
: 20-24 (" xx Webster)
: 43-49 (" xx Evans)
Day 54: 56-57 (Green xx Otton)
Day 55: 19-22 (Thompson xx Otton)

Planning: Kent

Day 51: 95-97 (Deakin x White)
: 109-111 (" Rx White)

Printed image digitised by the University of Southampton Library Digitisation Unit

Population: Stevenage

Day 48: 113-115 (Raby Q Buchanan)
Day 53: 16-17 (Berry x Lymbery)
: 19-22 (" xx Evans)

Property values

Day 48: 5-19 (Whitbread xx Barker)
: 23-25 (" xx Webster)
: 25-26 (" Q Goldstein)
: 26-29 (" xx Webster)
: 89 (" Q Goldstein)
Day 49: 54-59 (Plowden x Webster)
: 78-80 (" xx Barker)
: 84-87 (" xx Barker)
: 106-113 (" xx Evans)
Day 50: 24-30 (" Q Walters)
: 30-34 (" xx Evans)
Day 51: 2-5 (Douglas Pennant xx Wood)
: 7-11 (" " xx Evans)
: 14-15 (Wise x Barker)
: 17-33 (" xx Webster)
: 41-45 (" xx Webster)
Day 51: 64-75 (" xx Evans)
: 77-80 (" xx Evans)
Day 52: 3-6 (Deakin Rx White)
: 33-36 (Waller xx Webster)
Day 53: 39 (Patrick xx Bagnall)
: 78-79 (Thompson xx Barker)
: 94-97 (" xx White)
Day 54: 99-101 (" xx Webster)
Day 55: 19-22 (" xx Otton)

Property values: depreciation

Day 48: 9-13 (Whitbread xx Barker)
: 36-47 (" xx Webster)
: 55-68, 72-74, 78-83 (Whitbread xx Evans)
: 90-93 (Whitbread Rx Frank)
Day 49: 62-63 (Plowden x Webster)
: 71-73 (" xx Frank)
Day 50: 16-23 (" xx Evans)
: 24-30 (" Q Walters)
: 32-34 (" xx Evans)
Day 51: 8-11 (Douglas Pennant xx Evans)
: 14-15 (Wise x Barker)
: 17-20 (" xx Webster)
: 25-33 (" xx Webster)
: 53-57 (" xx Otton)
: 75-77 (" xx Evans)
Day 52: 25-27 (Waller xx Webster)
: 42-49 (Waller xx Evans)
Day 55: 43-44 (Thompson xx Bagnall

Printed image digitised by the University of Southampton Library Digitisation Unit

Property values: Gatwick

Day 48: 42 (Whitbread xx Webster)
Day 51: 95-97 (Deakin x White)
: 108 (" xx Evans)
Day 52: 3-6 (" Rx White)
: 25-27 (Waller xx Webster)

Property values: Heathrow

Day 52: 25-27 (Waller xx Webster)

Property values: industrial

Day 51: 37-38 (Wise xx Webster)

Property values: Kent

Day 48: 23 (Whitbread xx White)
Day 53: 41 (Patrick xx Bagnall)

Property values: rented properties

Day 48: 31-33 (Whitbread xx Webster)
: 85-86 (" xx Evans)
Day 49: 66-68 (Plowden xx Frank)
: 72-73 (" xx Frank)

Research Team

Day 52: 102-end
Day 53: 58 -end
Day 54: 31-71 (Board of Trade)
: 85-93
: 99 -end
Day 55: 4-45

Routing structure see Air traffic control

Royal Aircraft Establishment: wind tunnel

Day 53: 90-93 (Thompson xx White)

Runways

Day 47: 9-13 (Fleming xx White)
: 13 (" xx Ogden)
: 13-15 (" xx Wood)
: 21 (" xx Evans)
: 22-23 (" xx Evans)
Day 49: 25-26 (Smarman xx Barker)
: 40-46 (" xx Evans)
: 52-53 (" Rx Frank)
Day 53: 71-73 (Thompson xx Barker)

Printed image digitised by the University of Southampton Library Digitisation Unit

Runways see also Luton: runways

Runways: orientation

Day 50: 115-116 (Westley Rx Forbes)
Day 51: 84-88 (Ogden/Chairman)
Day 53: 99-115 (Thompson xx Ogden)
Day 54: 9-11 (Hammond & Mann)
: 15-16 (" xx Ogden)
: 17-18 (" xx Wood)
: 103-106 (Thompson xx Webster)

Schools
Day 49: 5 (Allen x Frank)
: 9-11 (" Q Buchanan)
: 12 (" xx Evans)

Sheppey Group (516)

Day 53: 34-45

Sheppey Isle of

Day 51: 98-101 (Deakin xx Frank)
: 103-106 (" xx Wood)
: 109-111 (" Rx White)

Sleep see Costs: social

Snow report see Luton airport development by Sir Frederick Snow & Partners

Sonic boom: effects

Day 52: 109-110 (Large Rx Bagnall)

Soundproofing see Insulation

Sound propagation

Day 52: 104-109 (Large xx Wood)
: 109-112 (" Rx Bagnall)

Sound propagation: jet aircraft

Day 52: 103-109 (Large xx Wood)

Sound propagation: temperature inversion

Day 52: 70-75 (Wood/Lamb xx Frank)
: 86-89 (Lamb xx Bagnall)
Day 54: 18 (Hammond xx Wood)

Sound propagation: water

Day 52: 70-75 (Wood/Lamb xx Frank)
: 86-101 (Lamb xx Bagnall)
: 103-109 (Large xx Wood)

Southend airport

Day 55: 34 (Thompson xx Wood)

Printed image digitised by the University of Southampton Library Digitisation Unit

Stacking areas: Foulness

Day 54: 19-20 (Hammond xx Wood)
: 20-21 (" xx Griffiths)

Stansted

Day 48: 95-100 (Frank Q Chairman)
Day 54: 5 (Evans statement)
Day 55: 30-32 (Thompson xx Otton)

Standsted: air traffic: training flights

Day 48: 117-118 (Raby Rx Frank)

Stansted employment

Day 48: 101-102 (Raby xx Webster)

Stansted: movements: air traffic

Day 49: 30-31A (Sharman xx Webster)

Stevenage

Day 47: 6-7 (Fleming xx Lymbery)
Day 48: 102-108 (Raby xx Lymbery)
Day 49: 38-39 (Sharman xx Ogden)
Day 53: 15-17 (Berry x Lymbery)
: 18 (" xx Barker)
: 20-23 (" xx Evans Q Buchanan)
: 60-61 (Thompson/Abrahams Q Chairman)

Stevenage Development Corporation (512)

Day 53: 2-14 (Lymbery opening speech)
: 15-23

STOL: Southend

Day 49: 32-33 (Sharman xx Webster)

Supersonic aircraft: noise levels

Day 50: 65-66 (Hooker Q Keith Lucas)

Surface access: noise

Day 47: 15-16 (Fleming xx Wood)

Surface access: noise: GLC tests

Day 47: 23 (Fleming Rx Frank)

Surface access: noise: MOT tests

Day 47: 23 (Fleming Rx Frank)

Printed image digitised by the University of Southampton Library Digitisation Unit

Surveys: Board of Trade noise survey

Day 55: 41 (Thompson Rx Bagnall)

Surveys: Heathrow

Day 53: 51-54 (Curran xx Colville)

Surveys: McKennall Survey

Day 53: 53-54 (Curran xx Colvile)

TECDA see Thurleigh Emergency Committee for Domocratic Action

TEDCO see Thames Estuary Development Company Limited

Temperature inversion see Sound propagation: temperature inversion

Thames Estuary Development Company Limited (TEDCO) (520)

Day 54: 7-31

Thurleigh

Day 53: 26-27 (Smith xx Wood)
: 32-34 (" xx Lyell)
Day 54: 44-46 (Green xx Colville)
: 95-97 (Harper xx Lyell)

Thurleigh Emergency Committee for Democratic Action (TECDA) (535)

Day 53: 45-57

Trade, Board of

Day 54: 31-71

Trade, Board of: Noise abatement procedures

Day 53: 29-32 (Smith xx Lyell)
: 84-85 (Thompson xx White)
Day 54: 19 (Hammond xx Wood)
: 32-41 (Green xx Frank)
: 41-46 (" xx Colville)
: 47-49 (" xx Jackman)
: 49-51 (" xx Webster)
: 54-59 (" xx Otton)
: 59-62 (" xx Lyell)
: 63-71 (" xx Holmes)
: 94 (Harper xx Lyell)
: 109-114 (Abrahams xx Lynsery)
Day 55: 8-9 (Thompson xx Brodrick)
: 42 (" Rx Bagnall)

Printed image digitised by the University of Southampton Library Digitisation Unit

Trade, Board of: noise abatement procedures see also Night flights; Noise: regulations: United Kingdom

Training flights see Movements: air traffic: training flights

University: Open university

Day 53: 67-69 (Thompson xx Barker)

Urbanisation

Day 50: 102-104 (Westley Q Buchanan)
Day 51: 9-11 (Douglas Pennant xx Evans)
Day 54: 76-80 (Connell xx Bagnall)
: 83 (Holmes Q Goldstein)
: 110-114 (Abrahams xx Lymbery)

Valuation of time

Day 49: 88-100 (Plowden xx Forbes Q Goldstein)

Walters, Prof A A: Statement on research team model
Day 54: 86-93

WARA see Wing Airport Resistance Association

Wilson report on Noise Cmnd 2056

Day 53: 16 (Berry xx Lymbery)
: 21 (Berry xx Evans)
: 51-54 (Curran xx Colville)

Wing Airport Resistance Association (WARA) (515)

Day 52: 10-61

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Stage V Public Hearing

INDEX

to

SUBJECT F (2)

Environment and Planning

Before:-

THE HON. MR. JUSTICE ROSKILL (in the Chair)

PROFESSOR COLIN BUCHANAN

A. GOLDSTEIN, Esq

A. J. HUNT, Esq

PROFESSOR DAVID KEITH-LUCAS

ARTHUR KNIGHT Esq and

PROFESSOR A. A. WALTERS

J. CAINES, Esq
(Secretary)

Printed image digitised by the University of Southampton Library Digitisation Unit

x = examined by
xx = cross-examined by
Rx = re-examined by
Q = questioned by the Chairman or a member of the Commission

Accidents see Air safety

Action Committee against Foulness Airport (527)

Day 63: 48-53

Aerodromes see Airports

Aggregate

Day 57: 100-102 (Peters xx Harrison)

Agriculture: costs

Day 59: 41 (Burns xx Bagnall)
64: 82-89 (Tanton x Keene Q Chairman)
: 92-108 (" xx Evans)
: 110-117 (Wibberley xx Keene)
65: 40-46 (" xx Fletcher Q Chairman)
: 46-53 (" xx Harrison)
: 54-68 (" xx Wallace Q Chairman)
: 68-71 (" xx Gregory)
: 71-76 (" Rx Evans)

Agriculture: costs see also Land: costs and benefits

Agriculture: land classification

Day 64: 89-92 (Tanton xx Wood)

Air safety

Day 58: 29-30 (J B Walker xx Evans, Q Goldstein)

Air safety: birdstrike

Day 60: 51 (Verney xx Wood, Q Chairman)

Air traffic: passenger

Day 58: 36 (Frank)
64: 76 (Brandon-Howell xx Bagnall)

Air traffic: passenger: forecasts

Day 59: 59-65 (Walker-Smith)

Airport capacity

Day 57: 44-45 (Webster)

Printed image digitised by the University of Southampton Library Digitisation Unit

Airport/seaport

Day 56: 3-4 (Burns xx White)
: 70-71 (" Q MacDermot)
: 108-109 (" xx Wood)
: 113-114 (" xx Griffiths)
58: 61-62 (Peters Q Goldstein)
59: 69-71 (Twigg x Griffiths)
: 71-72 (" xx Keene)
: 72-78 (" xx Lyell)
63: 35 (Stower xx ")
64: 78 (Hendriks x Griffiths)
: 79-81 (" xx Lyell)

Airports: effect of Third London Airport

Day 59: 91-93 (Kitching xx Wood)

Airports: National Airports Plan

Day 56: 42-43

Airports: regional

Day 56: 41-43 (Burns xx MacDermot)
62: 38-41 (Hancock xx Bagnall)
: 49-50 (" xx MacDermot)
: 95-96 (Waller Rx MacDermot)
68: 49-55 (Thompson xx MacDermot)

Airports: South-East

Day 62: 20 (Self)

Amenity

Day 59: 47-51 (Burns Q Buchanan)
: 95-98 (Kitching xx Wood)

Amenity see also Conservation; Cublington; Foulness; Thurleigh.

Barrages see Water: sea defences

Basildon see South Essex

Bedfordshire Airport Resistance Association (513)

Day 63: 11-32

Bedfordshire, Northamptonshire, Huntingdonshire and Peterborough County Councils (501)

Day 60: 62-95

Printed image digitised by the University of Southampton Library Digitisation Unit

Birds: conservation see Conservation: birds

Birdstrike see Air safety: birdstrike

Bishops Stortford
Day 55: 51-56, 64 (Burns xx Frank)
Day 58: 114-116 (Burns xx Bagnall)

Buckinghamshire County Council (502)

Day 60: 46-62, 96-end
61: 2-44

Building see Construction

Burnham River Crouch and Seaward Approaches Protection Association (523)

Day 58: 3-34

Burns, Dr. Wilfred see South East Joint Planning Team

Cambridge and Isle of Ely, Essex and Hertfordshire County Councils (503)

Day 57: 52-end
58: 35-66
59: 78-end
64: 81-108

Cambridge University (517)

Day 64: 54-60

Churches: costs

Day 67: 30-33 (Flowerdew xx Fletcher)
68: 44-47 (Thompson xx MacDermot)

Churches: Stewkley

Day 60: 47 (Verney x Fletcher)
: 48-49, 52-54 (Verney xx Wood Q Chairman)
: 55-59 (Verney xx Bagnall)
: 60-61 (" Q Goldstein, Q Buchanan)
62: 58 (Waller xx Evans)
68: 44-47 (Thompson xx MacDermot)

Civil aerodromes see Airports

Commerce see Industry and commerce

Commuters see Surface access: commuter drawback

Conservation

Day 59: 47-51 (Burns Q Buchanan)

Printed image digitised by the University of Southampton Library Digitisation Unit

Conservation: birds

Day 60: 50-53 (Verney xx Wood, Q Chairman)
62: 2-9 (Scott x Conder)
: 10-13 (" xx Fletcher)
: 14-15 (" xx Wood)
: 15-19 (" xx Bagnall, Q Chairman, Q Goldstein, Q Walters)

Conservation: nature

Day 63: 43-47 (Wallace xx Evans)

Conservation see also Amenity

Construction

Day 62: 59-60 (Waller xx Evans)
: 101-102 (Vincent xx Lyell)
68: 47-49 (Thompson xx MacDermot)

Construction: resources
Day 55: 92-94 (Burns xx Walker-Smith)
Day 60: 91-92 (Hubbard Rx Walker-Smith)
61: 47 (Campbell xx Walker-Smith)
64: 62-63 (Walker-Smith)
65: 3-26 (Cleeve-Barr xx Walker-Smith, Q Goldstein)
: 26-32 (" xx Fletcher)
: 32-34 (" xx Otton)
: 34-40 (" xx Wood, Q Chairman)

Cost-benefit analysis
Day 55: 66-68 (Burns xx Frank)
Day 56: 57-59 (Burns xx MacDermot)
57: 50-51 (Deakin xx Bagnall)
59: 59-65 (Walker-Smith)
60: 56-60 (Verney xx Bagnall, Q Chairman)
65: 113-115 (Flowerdew xx Fletcher)
68: 49-55 (Thompson xx MacDermot)
: 58-68 (Thompson xx MacDermot)

Cost-benefit analysis: social welfare

Day 68: 56-58 (Thompson xx MacDermot)

Cost-benefit analysis: urbanisation

Day 68: 58-68 (Thompson xx MacDermot)

Cost-benefit analysis see also Land: costs and benefits

Costs: agriculture see Agriculture: costs

Costs: churches see Churches: costs

Costs: operational see Foulness: operational costs

Printed image digitised by the University of Southampton Library Digitisation Unit

Council for the Protection of Rural England (509)

Day 63: 4-11

Cranfield Institute of Technology

Day 65: 111-112 (Flowerdew xx Fletcher)

Cublington: agriculture

Day 64: 114 (Wibberley xx Keene)
65: 43-44 (Wibberley xx Fletcher)
: 65-67 (Wibberley xx Wallace)

Cublington: air traffic

Day 64: 76 (Brandon-Howell xx Bagnall)

Cublington: amenity
Day 55: 105-106 (Burns xx Fletcher)
Day 56: 99-101 (Burns xx MacDermot)
59: 27-28 (" xx Bagnall)
: 79-80 (Kitching xx Fletcher)
60: 46-47 (Verney x Fletcher)
: 48-49 (" xx Wood)
: 101-104 (Pooley xx Gibson)
62: 58-59 (Waller xx Evans)
63: 9-10 (MacFarlane xx Lyell)
: 38-42 (Wallace xx Evans)
68: 56-58 (Thompson xx MacDermot)

Cublington: amenity see also Churches: Stewkley

Cublington: commuter drawback

Day 64: 40-41 (Bor xx MacDermot)

Cublington: construction

Day 65: 27-28 (Cleeve-Barr xx Fletcher)
: 34 (" xx Otton)

Cublington: employment
Day 55: 97 (Burns xx Fletcher)
Day 60: 66-67 (Hubbard xx Fletcher)
61: 41-44 (Pooley xx Fletcher)
62: 98-109 (Blair xx Lyell)

Cublington: industry and commerce

Day 56: 44 (Burns xx MacDermot)
60: 16-17 (Eversley xx Walker-Smith)
: 26-27 (" xx MacDermot)
67: 34-36 (Flowerdew xx Fletcher)

Printed image digitised by the University of Southampton Library Digitisation Unit

Cublington: land

Day 62: 62-84 (Waller xx Evans, Q Chairman, Q Goldstein, Q Walters)
: 88-94 (Waller Rx MacDermot, Q Goldstein, Q Walters)
68: 4-44 (Thompson xx MacDermot)

Cublington: local planning

Day 61: 37-38 (Pooley xx Evans)
63: 3-4 (Chairman)

Cublington: noise

Day 60: 21-22 (Eversley xx Fletcher)
: 100-101 (Pooley xx Fletcher)
62: 84 (Waller xx Evans)
65: 111-113 (Flowerdew xx Fletcher)

Cublington: regional planning
Day 55: 97-107 (Burns xx Fletcher)
Day 59: 34-35 (Burns xx Bagnall)
: 79-80 (Kitching xx Fletcher)
60: 23-25 (Eversley xx MacDermot)
: 68-71 (Hubbard xx Gibson)
61: 3-14 (Pooley xx MacDermot, Q Chairman, Q Buchanan)
: 65 (Campbell Q Chairman)
: 106-107 (Hancock xx MacDermot)
: 114-120 (" xx Walker-Smith)
62: 24-27 (" xx ")
: 46-50 (" xx MacDermot)
: 105-107 (Hall xx Bagnall, Q Chairman)

Cublington: surface access: roads

Day 56: 87-88 (Burns xx MacDermot)
59: 79-80 (Kitching xx Fletcher)
: 80-83 (" xx Webster)
60: 46-47 (Verney x Fletcher)
: 106-107 (Pooley xx Gibson)
: 110-111 (" xx ")
61: 2-3 (" xx MacDermot)
: 22 (" xx Evans)

Cublington: ufbanisation

Day 56: 29-31 (Burns xx Webster)
: 89, 92-103 (Burns xx MacDermot)
60: 96-97 (Pooley xx Fletcher)
61: 25-31 (" xx Evans)
: 52 (Campbell xx Walker-Smith)
: 65 (" Q Chairman)
: 67-70 (" xx Gibson)
: 71-79 (" xx MacDermot)
: 80-81,83-91,98-99 (Campbell xx Bagnall)
62: 32-33 (Hancock xx Gibson)
63: 13-14 (Gale x Forbes)
: 15-16 (" xx Fletcher)
: 17-24 (" xx MacDermot)
: 30-31 (" xx Forbes)
: 31-83, 87-92 (Bor xx Fletcher)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 64: 9-16 (Bor xx MacDermot)
67: 2-7, 8(Flowerdew xx Fletcher)
68: 58 (Thompson xx MacDermot)

Defence

Day 59: 41-42 (Burns xx Bagnall)

East Midlands region
Day 55: 83 (Burns xx Walker-Smith)
Day 56: 60 (Burns)
: 103-106 (Burns xx Walker-Smith)

Employment: effect of Third London Airport
Day 55: 74-77 (Burns xx Walker-Smith)
Day 56: 5-8 (Burns xx Ogden)
58: 75-76 (" xx Curran)

Employment: London overspill programme see London overspill programme

Employment see also Cublington; Foulness; Gatwick; Heathrow; Nuthampstead; South Essex; Stansted; Thurleigh.

Essex County Council see Cambridge and Isle of Ely, Essex and Hertfordshire County Councils

Essex, South see South Essex

Farming see Agriculture

Fishing

Day 65: 75-76 (Wibberley Rx Evans)

Foulness: agriculture

Day 64: 89-92 (Tanton xx Wood)
: 108 (Tanton xx Keene)
65: 40-43 (Wibberley xx Fletcher)
: 54 (" xx Wood)
: 55-68 (" xx Wallace, Q Chairman)
: 72-76 (" Rx Evans)

Foulness: air safety

Day 58: 29-30 (J B Walker xx Evans, Q Goldstein)

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: air safety: birdstrike

Day 60: 51 (Verney xx Wood, Q Chairman)

Foulness: amenity

Day 56: 14-15 (Burns xx Webster)
: 69-70 (" xx MacDermot)
: 109-112 (" xx Wood)
57: 46-47 (Deakin xx Wood)
: 89-90, 93-94, 96-100 (Peters xx Wood)
58: 4-5 (Middleton)
: 33 (McCreath xx Purchase)
: 57-59 (Peters xx Evans)
59: 95-98 (Kitching xx Wood)
60: 26-34 (Eversley xx Wood)
: 101, 104-105 (Pooley xx Gibson, Q Chairman, Q Goldstein)
61: 16-19 (Pooley xx Wood)
62: 8-9 (Scott x Conder)
: 11-13 (" xx Fletcher)
: 17 (" Q Chairman)
63: 43-47 (Wallace xx Evans)
: 48-49 (Wood xx Keene)
: 50-52 (" xx Bagnall)
67: 43-45 (Flowerdew xx White)
68: 70,73 (Thompson xx Wood)

Foulness: amenity <u>see also</u> Sailing

Foulness: commuter drawback
Day 55: 78-79 (Walker-Smith)
Day 56: 6-8 (Burns xx Ogden)
: 52-56 (" xx MacDermot)
: 110-111 (" xx Wood)
57: 59-61 (Peters xx Ogden)
: 95-96 (" xx Wood)
58: 47-54 (" xx Evans)
59: 38-39 (Burns xx Bagnall)
: 71-72 (Twigg xx Keene)
: 74-77 (" xx Lyell)
: 104-106 (Kitching xx Bagnall)
60: 40-46 (Eversley)
62: 52-55 (Waller xx Ogden)
: 86-87 (" xx Evans)
63: 93-95 (Bor xx Ogden)
64: 23-34 (" xx Keene)
: 34-37 (" xx Ogden)
: 39-40 (" xx MacDermot)
: 41-44 (" xx Evans)
65: 82-101 (Flowerdew xx Ogden, Q Chairman, Goldstein, Walters)
67: 9-24 (Flowerdew xx Keene)
68: 68-69 (Thompson xx MacDermot)
69: 7-11 (" xx Evans)

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: construction

Day 62: 59-60 (Waller xx Evans)
65: 37-39 (Cleeve-Barr xx Wood)
68: 47-49 (Thompson xx MacDermot)

Foulness: cost-benefit analysis

Day 65: 114-115 (Flowerdew xx Fletcher)

Foulness: costs

Day 57: 50-51 (Deakin xx Bagnall)

Foulness: defence

Day 59: 41-43 (Burns xx Bagnall, Q Chairman)

Foulness: employment

Day 55: 57, 65 (Burns xx Frank)
: 76-78 (Burns xx Walker-Smith)
Day 56: 5-8 (Burns xx Ogden)
: 33-34 (" Q Goldstein)
: 71-77 (" xx MacDermot)
: 112-113 (" xx Wood)
57: 41-43 (Deakin xx MacDermot)
: 45-46 (" xx Wood)
: 59-61 (Peters xx Ogden)
: 65-69 (" xx Webster)
: 72 (" xx Walker)
: 74-75 (" xx Lymbery)
: 82-84 (" xx MacDermot)
: 91-93 (" xx Wood)
: 104-111 (" xx Evans)
58: 40-41A (" xx ")
: 44-48 (" xx ")
: 54-55 (" xx ")
: 59-62 (" Q Goldstein)
: 63-64 (" Q Frank)
59: 43-44 (Burns Q Walters)
: 45-46 (" Q Buchanan)
60: 22-23 (Eversley xx MacDermot)
61: 39-41a (Pooley xx Fletcher)
62: 59-60 (Waller xx Evans)
: 85-86 (" xx ")
67: 36-42 (Flowerdew xx Fletcher)
68: 56 (Thompson xx MacDermot)
: 72-73 (" xx Wood)
69: 11-14 (" xx Evans)
: 15-16 (" xx Keene)

Foulness: housing

Day 55: 65 (Burns xx Frank)
Day 57: 61-64 (Peters xx Webster)

Foulness: land

Day 62: 75-79 (Waller Q Walters)
: 88-90 (" Rx MacDermot)
: 94-95 (" Rx ")

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 68: 35-40 (Thompson xx MacDermot)
69: 2-4 (" xx ")

Foulness: landscape

Day 59: 95-98 (Kitching xx Wood)
63: 5-7 (MacFarlane xx Wood)

Foulness: noise

Day 57: 19-20 (Deakin xx Walker-Smith)
58: 14-15 (J B Walker xx Keene)
: 20 (" xx Wood)
: 22-23 (" xx Griffiths)
60: 71-72 (Hubbard xx Gibson)
64: 70 (Brandon-Howell xx White)

Foulness: operational costs

Day 61: 111 (Hancock Q Chairman)

Foulness: population see South Essex population

Foulness: regional planning
Day 55: 114 (Burns Q Buchanan)
Day 56: 2-5 (Burns xx White)
: 13-25 (" xx Webster)
57: 9-14 (Deakin xx Frank)
: 20-24 (" xx Walker-Smith)
: 27-30 (" xx Fletcher)
: 40-44 (" xx MacDermot)
: 88-90 (Peters xx Wood)
: 116-118 (" xx Evans)
58: 106-113 (Burns xx Bagnall)
60: 112-113 (Pooley xx Gibson)
61: 102-106 (Hancock xx MacDermot)
: 110-112 (" Q Chairman)
: 114,120 (" xx Walker-Smith)
62: 20 (Self)
: 42-44 (Hancock xx Bagnall)
: 50-51 (" xx MacDermot)
64: 67-68 (Brandon-Howell x Vandermeer)
: 72-75 (" " xx Bagnall)

Foulness: seaport

Day 64: 79-81 (Hendriks xx Lyell, Q Chairman)

Foulness: seaport see also Airport/seaport; Mida

Foulness: site

Day 60: 2-5 (Curran)

Foulness: surface access

Day 63: 49-50 (Wood xx Fletcher)

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: surface access: roads

Day 56: 34-36 (Burns Q Buchanan)
58: 110-113 (" xx Bagnall)

Foulness: urbanisation

Day 56: 2-5 (Burns xx White)
: 13-25 (" xx Webster)
: 61-69 (" xx MacDermot)
: 71-77 (" xx ")
57: 9-14 (Deakin xx Frank)
: 20-24 (" xx Walker-Smith)
: 27-30 (" xx Fletcher)
: 40-44 (" xx MacDermot)
: 53-54 (Peters xx Frank)
: 55-56 (" xx Fletcher)
: 89-90 (" xx Wood)
58: 13-14 (J B Walker xx Keene)
: 15-16 (" xx Fletcher)
: 32-33 (McCreath xx Keene)
: 33-34 (" xx Purchase)
: 56-59 (Peters xx Evans)
60: 27-34 (Eversley xx Wood)
61: 19-20 (Pooley xx Wood)
: 32-36 (" xx Evans)
: 71 (Campbell xx Gibson)
63: 33 (Stower x Griffiths)
: 33 (" xx Keene)
: 34-36 (" xx Lyell, Q Goldstein)
: 36-37 (" Rx Griffiths)
: 56-61, 65 (Bor xx Keene, Q Buchanan)
: 81-87 (Bor xx Fletcher, Q Goldstein)
64: 17-20 (" xx Wood)
: 21-22 (" xx Evans)
67: 4 (Flowerdew xx Fletcher)
: 7 -8 (" xx Evans, Q Goldstein)
68: 58 (Thompson xx MacDermot)

Foulness see also South Essex

Gatwick: employment

Day 56: 9-11 (Burns xx Mann)

Gatwick: future development

Day 55: 115 (Burns Q Goldstein)
Day 56: 9-11 (Burns xx Mann)

Gravel see Aggregate

Greater London Council (522)

Day 60: 7-46

Printed image digitised by the University of Southampton Library Digitisation Unit

Harlow
Day 55: 53-56, 64 (Burns xx Frank)
Day 58: 114-116 (Burns xx Bagnall)

Heathrow: employment

Day 57: 69-72 (Peters xx Walker)
: 72-73 (" xx Jackman)

Hertfordshire County Council see Cambridge and Isle of Ely, Essex and Hertfordshire County Councils

Historic buildings

Day 63: 38-47 (Wallace xx Evans)
64: 53 (Allen xx Fletcher)
67: 34 (Flowerdew xx Fletcher)

Holiday trade see Tourism

Housing
Day 55: 65 (Burns xx Frank)
Day 56: 51-52 (Burns xx MacDermot)
: 77-78 (" xx ")
57: 61-64 (Peters xx Webster)
65: 3-26 (Cleeve-Barr xx Walker-Smith, Q Goldstein)
: 26-32 (" xx Fletcher)
: 32-34 (" xx Otton)

Housing see also London overspill programme

Huntingdonshire and Peterborough County Council see Bedfordshire, Northamptonshire, Huntingdonshire and Peterborough County Councils.

Industry and commerce see Cublington; South Essex, Thurleigh

Isle of Sheppey see Sheppey

Kent County Council (504)

Day 57: 2-52

Printed image digitised by the University of Southampton Library Digitisation Unit

Land: classification see Agriculture: land classification

Land: costs and benefits

Day 62: 62-84 (Waller xx Evans, Q Chairman, Q Goldstein, Q Walters)
: 88-94 (Waller Rx MacDermot, Q Goldstein, Q Walters)
64: 110-117 (Wibberley xx Keene)
65: 72-75 (" Rx Evans)
67: 24-30 (Flowerdew xx Fletcher)
68: 2-44 (Thompson xx MacDermot)
69: 2-4 (" xx ")
: 4-7 (" xx Evans)

Land: costs and benefits see also Agirculture: costs

Land: landscape

Day 55: 52-53 (Burns xx Frank)
59: 85-89 (Kitching xx Otton)
: 95-98 (" xx Wood)
63: 5-7 (MacFarlane xx Wood)
67: 24-30 (Flowerdew xx Fletcher)

Land see also Agriculture

Llewelyn-Davies, Weeks, Forestier-Walker and Bor

Day 63: 53-54, 56-end
64: 4-44

Local planning

Day 57: 44-45 (Webster)
60: 84, 88-90 (Hubbard xx Bagnall, Q Chairman)
61: 37-38 (Pooley xx Evans)
62: 33-34 (Hancock xx Gibson)
: 48 (" Rx MacDermot)
63: 3-4 (Chairman)

Local planning see also Regional planning

Local planning: controls

Day 67: 24-30 (Flowerdew xx Fletcher)
68: 2-44 (Thompson xx MacDermot)
69: 4-7 (" xx Evans)

London overspill programme

Day 55: 62-63 (Burns xx Frank)
: 71-74 (" xx Walker-Smith)
: 108-109, 111-112 (Burns xx Fletcher)
56: 47-54, 61-69, 77-78 (Burns xx MacDermot)
57: 75-78 (Peters xx MacDermot)
: 103-109, 111-113, 118 (Peters xx Evans)
58: 84-89 (Burns xx Curran)
59: 7-22 (" xx Bagnall)
: 45-46 (" Q Buchanan)
: 54 (" Q Chairman)
: 93-95 (Kitching xx Wood)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 60: 7-9 (Eversley xx Keene)
: 9-17 (" xx Walker-Smith)
: 20-21 (" xx MacDermot)
: 34 (" xx Griffiths)
: 35-37 (" xx Curran)
: 39-40 (" xx Bagnall)
62: 109-111 (Hall xx Bagnall)

Luton Airport: future development
Day 55: 80-81 (Walker-Smith)
: 104-105 (Burns xx Fletcher)
Day 56: 38 (Burns xx Colston)
59: 91-93 (Kitching xx Wood)
: 98-102 (" xx Bagnall)
60: 65-66 (Hubbard xx Walker-Smith)

Manche s ter Airport

Day 68: 49-55 (Thompson xx MacDermot)

Marine Industrial Development Area

Day 63: 33 (Stower x Griffiths)
: 33 (" xx Keene)
: 34-36 (" xx Lyell, Q Goldstein)
: 36 (" Rx Griffiths)
64: 77-78 (Hendriks x Griffiths)
: 78-81 (Hendriks xx Lyell)

Marine Industrial Development Area see also Airport/seaport

MIDA see Marine Industrial Development Area

Milton Keynes Development Corporation (511)

Day 61: 44-101

Milton Keynes New Town
Day 55: 101-103 (Burns xx Fletcher)
Day 56: 33 (Burns xx Webster)
: 46, 49-51, 89-90 (Burns xx MacDermot)
59: 28-31 (Burns xx Bagnall)
: 54-56 (" Q Chairman)
60: 21-22 (Eversley xx Fletcher)
: 24-26 (" xx MacDermot)
: 107-110 (Pooley xx Gibson)
: 118 (" xx MacDermot)
61: 3-14 (" xx " , Q Chairman, Q Buchanan)
: 45-52 (Campbell xx Walker-Smith)
: 52-66 (" xx Fletcher, Q Chairman, Q Buchanan, Q Goldstein)
: 67-70 (Campbell xx Gibson)
: 71-80 (" xx MacDermot)
: 80-101 (" xx Bagnall)
: 118-119 (Hancock xx Walker-Smith)
62: 22-23 (" xx Fletcher)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 63: 88-90 (Bor xx Fletcher)
: 108-109 (" xx MacDermot)
64: 8-12 (" xx ")
65: 28-31 (Cleeve-Barr xx Fletcher)
: 34 (" xx Otton)
68: 40-41 (Thompson xx MacDermot

Milton Keynes, Northampton, Wellingborough area

Day 55: 69-70 (Burns xx Frank)
: 85 (" xx Walker-Smith)
: 98, 106-107 (Burns xx Fletcher)
56: 80-92 (Burns xx MacDermot)
57: 24-25 (Deakin xx Walker-Smith)
58: 68-74 (Burns xx MacDermot)
: 89-90 (" xx Curran)
60: 11-17 (Eversley xx Walker-Smith)
: 67 (Hubbard xx Fletcher)
: 69 (" xx Gibson)
: 74-75 (" xx MacDermot)
: 96-97, 100 (Pooley xx Fletcher)
61: 76-78 (Campbell xx MacDermot)
: 85-86 (" xx Bagnall)
62: 46-47 (Hancock Rx MacDermot)
63: 21-24 (Gale xx MacDermot)
: 29-30 (" Rx Forbes)
: 68-69 (Bor xx Walker-Smith)
: 98-100 (" xx Forbes)
64: 13-15 (" xx MacDermot)

National Airports Plan see Airports: National Airports Plan

National Building Agency

Day 65: 3-40

National Trust (547)

Day 63: 37-48

Nature conservation see Conservation: nature

Noise

Day 56: 84-87 (Burns xx MacDermot)
57: 19-20 (Deakin xx Walker-Smith)
58: 14-15 (J B Walker xx Keene)
: 20 (" xx Wood)
: 22-23 (" xx Griffiths)
59: 48-51 (Burns Q Buchanan)
60: 21-22 (Eversley xx Fletcher)
: 71-72 (Hubbard xx Gibson)
: 100-101 (Pooley xx Fletcher)
62: 84 (Waller xx Evans)
64: 70 (Brandon-Howell xx White)

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 65: 45-46 (Wibberley xx Fletcher, Q Chairman)
: 46-51 (Wibberley xx Harrison)
: 111-113 (Flowerdew xx Fletcher)

Noise: effects on livestock

Day 65: 45-46 (Wibberley xx Fletcher, Q Chairman)
: 47 (" xx Harrison)

Northampton see Milton Keynes, Northampton Wellingborough area

Norhamptonshire County Council see Bedfordshire, Northamptonshire, Huntingdonshire and Peterborough County Councils

Nuthampstead: commuter drawback

Day 59: 104-106 (Kitching xx Bagnall)
: 111-112 (" Q. Buchanan)
: 112-113 (" xx Frank)

Nuthampstead: construction

Day 62: 101-102 (Vincent xx Lyell)

Nuthampstead: employment

Day 62: 97-98 (Blair x Lymbery)
: 101-102 (Vincent xx Lyell)

Nuthampstead: regional planning
Day 55: 51-55, 66 (Burns xx Frank)
Day 56: 5 (Burns xx White)
: 12 (" xx Webster)
: 79-80 (" xx MacDermot)
57: 7-8 (Deakin xx Frank)
58: 98-102 (Burns xx Bagnall, Q Chairman)
59: 109-111 (Kitching xx Bagnall, Q Buchanan)
64: 68-69 (Brandon-Howell xx White)
: 71 (" xx Bagnall)

Nuthampstead: surface access: roads

Day 59: 83-85 (Kitching xx Lymbery)

Nuthampstead: urbanisation

Day 56: 12 (Burns xx Webster)
: 79-80 (Burns xx MacDermot)
57: 109-110 (Peters xx Evans)
59: 102-104 (Kitching xx Bagnall)
63: 61-64 (Bor xx Keene)
: 96-97 (" xx Lymbery)
: 101-102 (" xx Forbes)
64: 4 (" xx MacDermot)
: 38-39 (" xx Fletcher)
: 54,60 (Allen xx Keene)

Nuthampstead Preservation Association (514)

Day 62: 102-111

Printed image digitised by the University of Southampton Library Digitisation Unit

Open University

Day 65: 112-113 (Flowerdew xx Fletcher)

Operational costs see Foulness: operational costs

Passenger traffic see Air traffic: passenger

Planning see Local planning; Regional planning

Population

Day 56: 9-11 (Burns xx Mann)
63: 71-79 (Bor xx Walker-Smith)
65: 106-110 (Flowerdew xx Keene)

Population: breakdown into classes

Day 56: 36 (Burns xx Walker)

Population: effect of Third London Airport

Day 56: 2-5 (Burns xx White)

Population: growth

Day 56: 22-25 (Burns xx Webster)
: 40-41 (Burns xx MacDermot)

Population see also South Essex: population

Regional airports see Airports: regional

Regional planning

Day 55: 48-50 (Burns xx Frank)
: 113 (Burns Q Buchanan)
Day 57: 2-6 (Deakin xx Frank)
: 26-27 (" xx Fletcher)
: 30-32 (" xx MacDermot)
58: 91-99 (Burns xx Bagnall)
: 107-109 (" ")

Regional planning: controls

Day 56: 32 (Burns Q Buchanan)
58: 64 (Peters Q Frank)
59: 55-56 (Burns Q Chairman)
67: 24-30 (Flowerdew xx Fletcher)
68: 2-44 (Thompson xx MacDermot)
69: 4-7 (" xx Evans)

Printed image digitised by the University of Southampton Library Digitisation Unit

Regional planning: effect of third London airport

Day 56: 2-5 (Burns xx White)
: 41-43, 46-51 (Burns xx MacDermot)
57: 32-40 (Deakin xx MacDermot)
59: 39-41 (Burns xx Ragnall)
: 52-53 (" Q Chairman)
60: 2-5 (Curran)
63: 2-4 (Chairman)

Regional planning: sectoral development

Day 56: 18-20 (Burns xx Webster)

Regional planning see also Cublington; Foulness; Local planning; Nuthampstead; South Essex; Thurleigh; Town Development Act schemes

Research Team

Day 65: 77-end
67: all
68: all
69: all

Roads see Surface access: roads

Royal Institute of British Architects (525)

Day 64: 47-53

Royal Society for the Protection of Birds (524)

Day 62: 2-19

Safety see Air safety

Sailing

Day 58: 3-8 (Middleton)
: 10-13 (J B Walker)
: 14-19 (" xx Fletcher, Q Chairman)
: 19-20, 25-26 (J B Walker xx Wood)
: 20-23 (J B Walker xx Griffiths)
: 23-25 (" xx Clark)
: 26-30 (" xx Evans, Q Goldstein)
: 31-32 (McCreath xx Harrison)
: 34 (McCreath xx Evans)

Sand see Aggregate

Seaport see Airport/seaport; Foulness seaport

Sectoral development see Regional planning: sectoral development

Printed image digitised by the University of Southampton Library Digitisation Unit

Shankland, Cox and Associates

Day 63: 53-54, 56-end
64: 4-44

Sheppey

Day 57: 15-17 (Deakin xx Walker-Smith)
: 48-51 (" xx Bagnall)
60: 37-38 (Eversley xx Bagnall)

Shoeburyness see Foulness: defence

Silverstone

Day 61: 92-96 (Campbell xx Bagnall)

Sites: coastal see Foulness: site

Social welfare

Day 59: 45-46 (Burns Q Buchanan)

Social welfare see also Cost benefit analysis: social welfare

South East Joint Planning Team
Day 55: 46 - end
56: all
58: 68-end
59: 3-57
South Essex: employment
Day 55: 57 (Burns xx Frank)
: 112 (Burns xx Fletcher)
Day 56: 61-69, 71-77 (Burns xx MacDermot)
: 106-107 (Burns xx Wood)
57: 65-69 (Peters xx Webster)
: 74-75 (" xx Lymbery)
: 75-84 (" xx MacDermot)
: 103-123 (" xx Evans, Q Chairman, Q Walters, Q Buchanan)
58: 59-62 (Peters Q Goldstein)
: 63-66 (" xx Frank)
: 76-77,81 (Burns xx Curran)
59: 6-25 (Burns xx Bagnall)
: 43-44 (" Q Walters)
: 45-46 (" Q Buchanan)
: 53-54 (" Q Chairman)
: 90-91 (Kitching xx Wood)
60: 7-9 (Eversley xx Keene)
: 22-23 (" xx MacDermot)
: 27-28 (" xx Wood)
: 40-41 (" xx Bagnall)
: 97-99 (Pooley xx Fletcher)
61: 15 (" xx Wood)
: 23-25 (" xx Evans)

Printed image digitised by the University of Southampton Library Digitisation Unit

South Essex: industry and commerce

Day 56: 44-46, 61-69 (Burns xx MacDermot)
57: 80-82 (Peters xx MacDermot)
: 85-86, 90 (Peters xx Wood)
: 114-116, 119-121 (Peters xx Evans)
58: 64-66 (Peters Q Frank)
59: 5-7, 23-25 (Burns xx Bagnall)
: 55-56 (Burns Q Chairman)
60: 18-20 (Eversley xx Walker-Smith)
: 113-115 (Pooley xx Gibson)
: 115-118 (" xx MacDermot)

South Essex: population

Day 55: 60-63 (Burns xx Frank)
: 71-73 (" xx Walker-Smith)
: 111-112 (" xx Fletcher)
57: 102-123 (Peters xx Evans, Q Chairman, Q Walters, Q Buchanan)
58: 37-47 (" xx ")
: 56-57 (" xx ")
: 59-62 (" Q Goldstein)
59: 7-25 (Burns xx Bagnall)
: 71-72 (Twigg xx Keene)
: 72-78 (" xx Lyell)
65: 106-110 (Flowerdew xx Keene)

Southe Essex: regional planning

Day 55: 57-65 (Burns xx Frank)
: 109-112 (" xx Fletcher)
57: 9-14 (Deakin xx Frank)
: 20-24 (" xx Walker-Smith)
: 27-30 (" xx Fletcher)
: 40-44 (" xx MacDermot)
: 88-90 (Peters xx Wood)
: 116-118 (" xx Evans)
58: 106-113 (Burns xx Bagnall)
59: 4-25, 35-36 (Burns xx Bagnall)
61: 102-106 (Hancock xx MacDermot)

South Essex: urbanisation

Day 56: 61-69 (Burns xx MacDermot)
: 107-108 (" xx Wood)
57: 9-14 (Deakin xx Frank)
: 20-24 (" xx Walker-Smith)
: 27-30 (" xx Fletcher)
: 53-54 (Peters xx Frank)
: 55-58 (" xx Fletcher)
: 102-123 (" xx Evans, Q Chairman, Q Walters, Q Buchan
60: 42-43 (Eversley Q Goldstein)
61: 33-35 (Pooley xx Evans)

South Essex <u>see also</u> Foulness

Southend

Day 60: 27-29, 33-34 (Eversley xx Wood)
: 40 (Eversley xx Bagnall)
: 97-99 (Pooley xx Fletcher)
61: 15-19 (" xx Wood)

Printed image digitised by the University of Southampton Library Digitisation Unit

Southend see also Foulness; South Essex

Southend Airport

Day 65: 104-105 (Flowerdew xx Ogden)

Standing Conference of London and South East Regional Planning (528)

Day 64: 67-77

Stansted: employment

Day 56: 28-29 (Burns xx Webster)

Stansted: movements: air traffic

Day 58: 36 (Frank)

Stansted: urbanisation

Day 56: 27-29 (Burns xx Webster)

Stevenage Development Corporation (512)

Day 62: 97-102

Stewkley Church see Churches: Stewkley

Strategic Plan for the South East see South East Joint Planning Team

Surface access

Day 63: 49-50 (Wood xx Fletcher)

Surface access: commuter drawback
Day 55: 78-79 (Walker-Smith)
Day 65: 78-102 (Flowerdew xx Ogden, Q Chairman, Walters, Goldstein)

Surface access: commuter drawback see also Foulness: commuter drawback; Nuthampstead: commuter drawback

Surface access: roads
Day 55: 56-60 (Burns xx Frank)
Day 56: 34-36 (Burns Q Buchanan)
: 87-88 (" xx MacDermot)
58: 110-113 (" xx Bagnall)
59: 79-80 (Kitching xx Fletcher)
: 80-83 (" xx Webster)
: 83-85 (" xx Lymbery)
60: 46-47 (Verney x Fletcher)
: 106-107 (Pooley xx Gibson)
: 110-111 (Pooley xx Gibson)
61: 2-3 (" xx MacDermot)
: 22 (" xx Evans)

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface access: roads: development

Day 56: 13-14 (Burns xx Webster)
: 87-88 (" xx MacDermot)

TDA see Town Development Act schemes

Thames Aeroport Study Group (519)

Day 59: 69-78
63: 33-37
64: 77-81

Thamesmead

Day 60: 42-43 (Eversley Q Goldstein)

Thurleigh: amenity

Day 58: 83 (Burns xx Curran)
59: 27-28 (" xx Bagnall)
60: 85-86 (Hubbard xx Bagnall)
62: 31 (Hancock xx Walker-Smith)
: 35-36 (" xx Forbes)
63: 9-10 (MacFarlane xx Lyell)

Thurleigh: construction

Day 64: 62-63 (Walker-Smith)
65: 10, 15-16, 24 (Cleeve-Barr xx Walker-Smith)
: 34 (Cleeve-Barr xx Otton)

Thurleigh: employment

Day 55: 83-84, 91-95 (Burns xx Walker-Smith)
Day 58: 87-90 (Burns xx Curran)
60: 75-78 (Hubbard xx MacDermot)
: 86-87 (" xx Bagnall)

Thurleigh: employment: labour resources

Day 61: 47-48, 50-51 (Campbell xx Walker-Smith)

Thurleigh: industry and commerce

Day 56: 44 (Burns xx MacDermot)
60: 16-17 (Eversley xx Walker-Smith)
61: 48-51 (Campbell xx Walker-Smith)
67: 34-36 (Flowerdew xx Fletcher)

Thurleigh: local planning

Day 61: 37-38 (Pooley xx Evans)
63: 3-4 (Chairman)

Thurleigh: noise

Day 56: 84-87 (Burns xx MacDermot)

Printed image digitised by the University of Southampton Library Digitisation Unit

Thurleigh: regional planning
Day 55: 69-70, 90-95 (Burns xx Walker-Smith)
Day 59: 34-35 (Burns xx Bagnall)
60: 68-71 (Hubbard xx Gibson)
: 72-79 (" xx MacDermot)
: 80-83 (" xx Curran)
: 83A-91 (" xx Bagnall, Q Chairman)
: 92-95 (" xx Walker-Smith)
61: 65 (Campbell Q Chairman)
: 106-109 (Hancock xx MacDermot)
: 114-115, 117-120 (Hancock xx Walker-Smith)
62: 23-31 (Hancock xx Walker-Smith)
: 46-50 (" xx MacDermot)
: 105-107 (Hall xx Bagnall, Q Chairman)
63: 55-56 (Curran xx Bagnall)

Thurleigh: surface access: roads

Day 56: 87-88 (Burns xx MacDermot)
60: 46-47 (Verney x Fletcher)

Thurleigh: urbanisation

Day 56: 80-92 (Burns xx MacDermot)
58: 78-82 (" xx Curran)
60: 72-75 (Hubbard xx MacDermot)
: 84-85 (" xx Bagnall)
61: 48-51 (Campbell xx Walker-Smith)
: 65 (" Q Chairman)
: 67-70 (" xx Gibson)
: 89,100 (" xx Bagnall)
63: 13-14 (Gale x Forbes)
: 17-24 (" xx MacDermot)
: 25-27 (" xx Bagnall)
: 28-32 (" Rx Forbes)
: 66-81 (Bor xx Walker-Smith)
: 97-103 (" xx Forbes)
: 108-109 (" xx MacDermot)
64: 8-9, 13-16 (Bor xx MacDermot)
: 54-60 (Allen xx Keene)

Thurleigh Emergency Committee for Democratic Action (535)

Day 60: 2-5
63: 55-56

Time see Valuation of time

Tourism

Day 64: 76 (Brandon-Howell xx Bagnall)
67: 43-45 (Flowerdew xx White)

Town and Country Planning Association (518)

Day 62: 19-21

Town Development Act schemes

Day 55: 86-89, 93-95 (Burns xx Walker-Smith)

Printed image digitised by the University of Southampton Library Digitisation Unit

Universities see Open University

Urbanisation see Cost-benefit analysis; Cublington; Foulness; Nuthampstead; South Essex; Stansted; Thurleigh

Valuation of time

Day 56: 58 (Burns xx MacDermot)

Water: sea defences

Day 58: 13-14 (J B Walker xx Keene)
: 15-16 (" xx Fletcher)
: 27-28 (" xx Evans)

Wellingborough see Milton Keynes, Northampton Wellingborough area

Wing Airport Resistance Association (515)

Day 61: 101-end
62: 22-96

Yachting see Sailing

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Stage V Public Hearing

INDEX

to

Subject G

Miscellaneous

Before:-

THE HON. MR JUSTICE ROSKILL (in the Chair)

PROFESSOR COLIN BUCHANAN

A. GOLDSTEIN Esq

A. J. HUNT, Esq

PROFESSOR DAVID KEITH-LUCAS

ARTHUR KNIGHT Esq and

PROFESSOR A. A. WALTERS

J. CAINES, Esq

(Secretary)

Printed image digitised by the University of Southampton Library Digitisation Unit

SUBJECT G

INDEX

x = examined by
xx = cross-examined by
Rx = re-examined by
Q = questioned by

Air traffic: passenger: forecasts

Day 66: 89-90, 92-93 (McLeod xx MacDermot)

Air traffic movements see Heathrow: movements: air traffic

Airlines: costs see Landing fees

Airport revenue

Day 66: 71-83 (McLeod xx Walker-Smith, Q Chairman, Q Walters)
: 85-88 (" Q Walters)
: 89-97 (" xx MacDermot, Q Goldstein)
: 99-101 (" Rx Webster)
: 102-104 (Hill x Walker-Smith)
: 104-116 (" xx Webster, Q Goldstein)
: 117-119 (" Rx Walker-Smith)
68: 11-13 (Frost x Webster)
: 13-41 (" xx Bagnall)
69: 2-9 (Thompson xx Webster)
: 10-14 (" Rx Bagnall)
: 17-19 (Hill x Walker-Smith)

Airport revenue see also Landing fees

Airport/seaport

Day 66: 3-5 (Howard xx Wood)
: 5-10 (" xx Purchase)
: 10-19 (" xx Lyell, Q Chairman, Q Walters)
: 19 (" Rx Mann)

Airports: regional

Day 66: 41-43 (Slocombe xx Bagnall)

Bedfordshire, Northamptonshire, Huntingdonshire and Peterborough County Councils (501)

Day 66: 121-122

British Airports Authority (500)

Day 66: 45-102
68: 11-44

Printed image digitised by the University of Southampton Library Digitisation Unit

British European Airways (530)

Day 66: 20-44

Charter flights/inclusive tours

Day 66: 41 (Slocombe xx Bagnall)

Construction: costs

Day 66: 50-54 (McLeod xx Walker-Smith)

Cost-benefit analysis

Day 66: 45-47 (McLeod x Webster)
: 48-63 (" xx Walker-Smith)
: 99-101 (" Rx Webster)
: 102-104 (Hill x Walker-Smith)
: 104-116 (" xx Webster, Q Goldstein)
: 117-119 (" Rx Walker-Smith)
68: 2-11 (Discussion)
: 11-13 (Frost x Webster)
: 13-41 (" xx Bagnall)
: 41-44 (" Q Goldstein)
69: 2-9 (Thompson xx Webster)
: 10-14 (" Rx Bagnall)
: 17-19 (Hill x Walker-Smith)

Costs: airlines see Landing fees

Costs: construction

Day 66: 50-54 (McLeod xx Walker-Smith)

Costs: Foulness see Foulness: costs

Costs: user costs see Surface access: user costs

Foulness: costs

Day 66: 46-47 (McLeod x Webster)
: 49, 53-54, 79, 83 (McLeod xx Walker-Smith, Q Chairman, Q Walters)
: 89-91, 94-96 (McLeod xx MacDermot)
: 107-108, 110, 116 (Hill xx Webster, Q Goldstein)
: 117 (Hill Rx Walker-Smith)
68: 16-18, 27-28, 34-39 (Frost xx Bagnall)
: 42-44 (Frost Q Goldstein)
69: 8 (Thompson xx Webster)
: 17-18 (Hill x Walker-Smith)

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness: seaport

Day 66: 2-5 (Howard xx Wood)
: 5-10 (" xx Purchase, Q Chairman)
: 10-19 (" xx Lyell, Q Chairman, Q Walters)
: 19 (" Rx Mann)

Foulness: urbanisation

Day 66: 9 (Howard Q Chairman)

Gatwick: runways: capacity

Day 66: 39-41 (Slocombe xx Bagnall)

Gatwick: surface access: rail

Day 66: 24-25 (Slocombe xx Bagnall)

Heathrow: movements; air traffic: capacity

Day 66: 29-30 (Slocombe xx Bagnall)
: 92-93 (McLeod xx MacDermot)

Heathrow: noise

Day 66: 40 (Slocombe xx Bagnall)

Hill, S.W.

Day 66: 102-120
69: 17-19

Housing

Day 66: 121-122 (Colville)

Huntingdonshire and Peterborough County Council see Bedfordshire, Northamptonshire, Huntingdonshire and Peterborough County Councils

/Journey time see Surface access: user costs: time

Printed image digitised by the University of Southampton Library Digitisation Unit

Landing fees

Day 66: 46-47 (McLeod x Webster)
: 63-74, 78, 83 (McLeod xx Walker-Smith, Q Chairman, Q Walters)
: 85-88 (McLeod Q Walters)
: 98 (" xx Bagnall)

Landing fees see also Airport revenue

Manchester Airport

Day 66: 42 (Slocombe xx Bagnall)

Marine industrial development area

Day 66: 2-4 (Howard xx Wood)
: 10-19 (" xx Lyell, Q Chairman, Q Walters)

Marine industrial development area see also Foulness: seaport

MIDA see Marine industrial development area

Movements: air traffic see Heathrow: movements: air traffic

Noise

Day 66: 40 (Slocombe xx Bagnall)

Northamptonshire County Council see Bedfordshire, Northamptonshire, Huntingdonshire and Peterborough County Councils (501)

Nuthampstead: site

Day 66: 34 (Slocombe xx Bagnall)

Passenger traffic see Air traffic: passenger

Profits see Airport revenue

Rail see Surface access: rail

Research Team

Day 69: 2-16

Revenue see Airport revenue

Printed image digitised by the University of Southampton Library Digitisation Unit

Roads see Surface access: roads

Runways: capacity see Gatwick: runways: capacity

Seaport see Foulness: seaport

Stansted: future development

Day 66: 34-35, 39-41 (Slocombe xx Bagnall)
: 43-44 (Slocombe xx Walker)

Stansted: surface access

Day 66: 30-32 (Slocombe xx Bagnall)

Surface access: rail

Day 66: 22-25, 32 (Slocombe xx Bagnall)

Surface access: road

Day 66: 28-29 (Slocombe xx Bagnall)

Surface access: user costs: time

Day 66: 21-32, 37-39 (Slocombe xx Bagnall)

Thames Estuary Development Company (520)

Day 66: 2-19

Time see Surface access: user costs: time

Timing of the need

Day 66: 39,43 (Slocombe xx Bagnall)

User costs see Surface access: user costs.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Report

Chairman

The Hon Mr Justice Roskill

INDEX

LONDON

HER MAJESTY'S STATIONERY OFFICE

1971

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

REPORT

Index

Notes to the user

1. All references are to paragraph numbers in the report, unless otherwise indicated. p = page.

2. Only general references to the subject are entered under a particular subject heading. References to the subject in relation to a particular site are indexed under the name of the site. For example:-

Air traffic control
Cublington
  air traffic control
Foulness
  air traffic control [etc.]

3. Entries are provided under the names of all organisations and individuals whose views have been referred to in the report.

Abercrombie, Patrick
  County of London Plan, p 119-120

Accessibility see Surface access

Accidents see Air safety

Action Committee Against Foulness Airport
  views on: air freight traffic distribution, 10.47; Foulness, 7.12, 8.44, 9.7, 9.10

Aerotrain, 10.49

Aggregates, 9.11, 9.24, Appendix 12

Agriculture
  agricultural land: valuation, 4.22; cost/benefit analysis, 12.7, 12.30
  Commission's view, 6.64-6.66
  evidence, 6.56-6.63, Appendix 4, Appendix 9
(see also Land)

Printed image digitised by the University of Southampton Library Digitisation Unit

Air Navigation Act 1920, 7.2

Air pollution, 6.69

Air route structure see Air traffic control

Air safety
  accident statistics, 8.30, 8.38
  bird-strike, 8.32, 8.35-37, 8.41, 12.23
  Commission's views, 8.38-42
  evidence, 8.29-37
  revised cost/benefit analysis, 12.7, 12.23, 13.37

Air Safety Group, 8.29

Air traffic
  distribution predictions: Ministry of Transport computer model, 4.16
  forecasts, 2.14, 5.13-17, 10.5-10, Appendix 6; in cost/benefit analysis, 12.7, 12.33; problem of uncertainty, 5.10
  freight: cost/benefit analysis, 12.7, 12.21; surface access, 10.47
  from outside SE England: Commission's attitude, 2.12-13, 10.38
  general aviation, 5.36; airspace needs, 8.18-21, 12.44
  test flying, 8.21
  third London airport: air services offered, 10.15, 10.41; effect on air traffic, 10.2, 13.38-40; traffic flow, 2.15
  training flights, 8.21

Air traffic control
  air routes structure, 8.3-8.24
  airspace: demands on, 8.18-21; military flying needs, 11.3, 11.5-7; movement costs, 8.23
  Commission's views, 8.25-8.28
  computer assistance for approach sequencing, 5.39-5.41
  computer simulations, 8.4-8.5
  cost/benefit analysis, 12.43
  effect of third London airport on other airports, 8.10-8.20
  holding areas, 8.17
  international co-ordination problems, 8.9
  site comparison, 4.7, 4.13, 4.17, 4.20, 4.26, 8.4-6, 13.49-50
  turbulent wake, 5.37-5.39
(see also National Air Traffic Control Services)

Air Traffic Control Evaluation Unit, Hurn, 8.5, 8.7, 8.16

Air traffic movements
  capacity measurement, 5.6
  cost/benefit analysis, 12.7, 12.19, 13.36
  delays, 5.6, 5.9
  site comparison, 13.48

Air transport
  UK's role in world air transport, 1.5, 1.23, 10.2, 12.2

Air travel
  benefits to the community, 2.11, 13.67

Printed image digitised by the University of Southampton Library Digitisation Unit

Air travellers
Board of Trade survey of London area traffic, 4.16
business travellers, 13.38, 13.54
costs and benefits of short-listed sites, 3.35
foreign, 5.15-16, 10.42-44
incomes, 10.16, 13.41, Appendix 16
leisure travellers, 13.39
needs, 5-7, 2.9, 13.3, 13.41-42
representations to the Commission, 2.10
user cost figures, 12.7, 12.20, p 125
valuation of time, 10.20-22

Aircraft
maintenance costs due to corrosion, 8.46
noise reduction, 7.3-7.6
STOL and VTOL aircraft, 5.18-20, 13.33

Airfields
military, 4.10, 11.3
private: cost/benefit analysis, 12.7, 12.26, 13.16, 13.51;
effects of airport sites, 8.4, 8.21

Airlines
commercial success of operations at the new airport, 2.16
costs, 8.24
second force airline, 5.53
(see also British European Airways; British Overseas Airways Corporation)

Airlines, Foreign
views on: Gatwick, 5.28; inter-airport links, 10.71; passenger user costs, 10.20; tourist traffic, 10.8

Airport/seaport
Commission's views, 9.22, 13.11-12
cost/benefit analysis, 12.45-47
(see also Foulness: seaport)

Airports
capacity of existing airports, 5.3, 5.5, 5.11-5.12, 5.20-5.36, 5.44, 5.48-5.51
efficiency, 10.1
expansion: noise disbenefits, 7.24
inter-airport links, 10.71-72
national policy, 2.1, 2.12, 6.82, 13.26; Prof. Buchanan's views p 119, p 126-127
revenue, 2.16
third London airport: construction see Construction of third London airport
third London airport: design see Design of third London airport
third London airport: effects on other airports, 6.80, 6.82, 8.10-20

Printed image digitised by the University of Southampton Library Digitisation Unit

Airspace see Air traffic control: air route structure; Air traffic control: airspace movement costs

Alconbury, 11.10, 13.50

Aldershot, 11.14

Allhallows, 6.72

Amenity
  Commission's view, 6.76-6.78
  damage to the environment, 6.69-6.75, 13.5, 13.22, 13.25, 13.52-53
  problems of evaluation, 6.67-6.68, 12.37
  Prof. Buchanan's views, 13.2, p 124
  social costs, 6.75; effects of noise, 7.7, 7.26-7.29, 7.31
  wild life conservation, 6.67, 6.72, 13.22; valuation, 12.7

Ampthill, 6.71, p 123

Amsterdam airport, 1.23

Anstey, 6.68, 6.73

Anstey, Mr.
  evidence on house prices, 4.11, 4.24

Army
  needs, 11.8
  troop concentrations, 11.14
(see also Pembrey, Shoeburyness)

Asheldham, 6.72

Aspley Guise, 6.71, p 123

Aston Abbots, 6.71, p 122

Audley End, 6.73

Aylesbury, 4.32, 7.13, p 123

BAA see British Airports Authority

Baldock, 6.73

BALPA see British Airline Pilots' Association

Bedford (Thurleigh) see Thurleigh

BARA see Bedfordshire Airport Resistance Association

BEA see British European Airways

Printed image digitised by the University of Southampton Library Digitisation Unit

Bedfordshire Airport Resistance Association
evidence: at local hearings, 3.29; on Thurleigh's surface access traffic, 10.11
views on: air travellers' representations, 2.10; aircraft noise, 7.4, 7.10; third London airport's effect on other regions, 6.80; valuation of noise nuisance, 12.56

Bedfordshire County Council see "Bedfordshire Group" of county councils

"Bedfordshire Group" of county councils (Bedfordshire, Huntingdon and Peterborough and Northamptonshire)
criticisms of Ministry of Transport road cost estimates, 10.61, 10.62, Appendix 19
noise model, Appendix 22
traffic forecasts methodology, 10.9, 10.33, Appendix 14
views on:
air traffic control, 8.2, 8.7, 8.9, 8.13-17
airport design costs, 9.13
airport system, 10.11
Foulness air safety, 8.37, 8.41
surface access: gravity model, 10.28; rail travel costs, 10.23; traffic distribution, 10.32
third London airport: agricultural effects, 6.60-61; employment benefits, 6.52
Thurleigh: regional planning effects, 6.19, 6.80; road access, 10.65
timing of the need, 5.21
traffic forecasts, 10.7
urban development problems, 6.38

Benefit/cost analysis see Cost/benefit analysis

Benington, 4.14, 4.25, 6.73

Betjeman, Sir John
evidence, 6.68

Bird-strike, 8.32, 8.35-37, 8.41, 12.23

Birds: conservation, 6.67, 6.72

Birmingham airport see Elmdon airport

Bishops Stortford, 6.35

Blackbushe airport, 1.4, 1.6, 1.8

Bletchley, 7.13

Bletsoe, 6.74

BOAC see British Overseas Airways Corporation

Printed image digitised by the University of Southampton Library Digitisation Unit

Board of Trade see Trade, Board of

Bobbing, 6.72

Boeing 747 aircraft, 3.36

Bolnhurst, 6.74

Bordon (Kent), 6.72

Boscombe Down, 11.15

Bovingdon airport, 1.4

Brackley, 4.33

Bradwell, 4.40

Brent geese, 6.67, 6.72

Brickhills, 6.71, p 123

British Airline Pilots' Association
  views on: air traffic control, 8.9; noise restrictions, 7.13; runways, 9.16, 9.17, 9.20

British Airports Authority
  air traffic forecasts, 5.10, 5.13
  airport design studies, 9.2
  established, 1.12
  estimates of site preparation costs, 4.13
  evidence on aircraft noise, 7.4
  evidence to Committee on Air Transport, 2.1
  noise model, Appendix 22
  traffic forecasts to 1985, 10.7
  views on:
    air traffic control, 8.2, 8.7, 8.9, 8.13-19
    airport capacity: measurements, 5.8-9; regional airports, 5.26
    airport design costs, 9.13
    Brize Norton, 11.13
    cost/benefit analysis, 12.40-41, 13.33
    cross-wind runways, 9.17
    Cublington, 2.10, 6.15, 8.13, 9.11, 13.54
    European Common Market: air traffic consequences of UK membership, 12.42
    Foulness, 8.9
    Gatwick, 5.28, 5.47, 5.53
    general aviation, 5.36
    inter-airport links, 10.71
    Luton, 5.33
    Nuthampstead, 8.16
    Shoeburyness firing range, 11.17
    South Essex development, 6.9, 6.12
    Stansted, 5.34
    Thurleigh, 8.15
    timing of the need, 5.1, 5.2, 5.4, 5.21, 5.22, 5.30, 5.43

Printed image digitised by the University of Southampton Library Digitisation Unit

British Airports Authority (Continued)
views on:
traffic forecasts, 10.7, 10.42
turbulent wake, 5.39
value of travel time, 10.17, 10.18, 12.52
weighting, 12.62

British European Airways
air traffic forecasts, 5.13, 5.14, 5.16, 10.7
views on:
bird-strike, 8.36, 8.41
corrosion, 8.46, 8.47
Cublington, 10.11, 13.54
Foulness, 10.71
Luton, 5.33
STOL and VTOL aircraft, 5.18
timing of the need, 5.21-23, 5.30

British Gliding Association, 8.18

British Light Aviation Centre, 8.18, 8.20, 12.44

British Overseas Airways Corporation
air traffic forecasts, 5.14
views on: corrosion, 8.47; Cublington, 8.13; noise restrictions, 7.13, 7.19; rail access, 10.56; Thurleigh, 8.15, 10.11, 13.54

British Rail
advanced passenger train, 10.51-52
advice on: rail capital costs, 4.9, 12.22; surface access implications of medium list sites, 4.13
evidence on: rail fares, 10.24-25, 10.41, Appendix 19; town terminal, 10.69
rail infrastructure proposals, 10.54
views on: air traffic forecasts, 5.17, 10.7; valuation of time, 10.19

British Tourist Authority
air traffic forecasts, 5.15-5.16, 10.5, 10.7

British United Airways, 5.53

Brize Norton RAF air support base, 11.6, 11.10, 11.12, 11.13-16, 11.20, 11.21-22, 11.29, 13.17, 13.34, 13.50, 13.56

Buchanan, Prof. Colin
note of dissent, 13.2, 13.62-67, p 119-130
views on airport/seaport, 13.11, p 126

Buckinghamshire County Council
evidence at local hearings, 3.29
views on:
construction costs, 9.11
Cublington, 6.15, 6.18
Heathrow noise, 5.24
Milton Keynes, 6.10, 6.34
motorways across the Chilterns, 10.64
South Essex development, 6.12
(see also "Buckinghamshire Group" of county councils)

Printed image digitised by the University of Southampton Library Digitisation Unit

"Buckinghamshire Group" of county councils (Buckinghamshire and Oxfordshire)
  criticisms of: road cost estimates, 10.63, Appendix 19;
    surface access gravity model, 10.34, Appendix 17
  noise model, Appendix 22
  views on:
    air freight traffic distribution, 10.47
    air traffic control, 8.2, 8.7, 8.13-17
    airport system, 10.11
    European Common Market: air traffic consequences of UK membership, 12.42
    Foulness, 8.37, 8.41, 9.7, 10.8, 10.26
    inter-airport links, 10.71
    Luton, 5.32
    third London airport: effect on regional airports, 6.80
    traffic forecasts, 10.7
    valuation of noise costs, 12.54
    weighting, 12.61, 12.65

Buntingford, 6.73

Burnham-on-Crouch, 6.68, 7.31

Burns, Dr. W.
  evidence, 10.59, 13.65
  views on regional planning and cost/benefit analysis, 12.36
(see also South East Joint Planning Team)

CAAS see Air traffic control: computer assistance for approach sequencing

Cambridge, 6.19, 6.73, 13.9

Cambridge University
  views on Thurleigh, 6.19

Cambridgeshire and Isle of Ely County Council see "Essex Group" of county councils

Canvey Island, 6.72

Capacity of airports see Airports: capacity

Cardington R.A.F. base, 11.10

Cargo see Air traffic: freight

Castle Ashby, 6.74

Castle Donington airport, 10.12

Printed image digitised by the University of Southampton Library Digitisation Unit

Chalgrove, 4.25

Channel Tunnel, 5.17

Charter traffic
  growth, 10.7

Chelmsford inquiry see Stansted: public inquiry

Chicago
  Commission's visit, 3.40

Chicheley, p 123

Chilterns, 4.32, 6.71, 10.64

Choice of site see Site search

Chrishall, 6.73

Churches
  Stewkley, 6.67, 6.76, 13.52, 13.53
  valuation, 12.7

Civil Aviation Act 1949, 7.2

Clark (Bernard L.) and Partners
  Foulness site proposals, 6.5, 7.15, 9.6, 9.8, 9.17
  reclamation costs estimate, 9.25

Clifton Reynes, 6.74

Coastal site
  advantages and disadvantages, 2.6

Coastline
  destruction, 13.22

Cockle beds, 6.72

Colerne, 11.15

Colmworth, 6.74

Commerce
  cost/benefit analysis, 12.7, 12.29

Commission on the Third London Airport
  appointment, 1.22
  Director of Research: views on weighting, 12.63
  expenditure, Appendix 2
  historical background, 1.1-23
  independence, 3.1-2
  main events in the Commission's work, Appendix 2

Printed image digitised by the University of Southampton Library Digitisation Unit

Commission on the Third London Airport (Continued)
procedure, 3.3, 3.6-7, 3.20-38, 3.41-46
recommendation, 13.1-67
Research Team, 3.11, 3.17-18, 3.31, 3.41-42, 3.46
staff, 3.17, Appendix 1
visits: overseas, 3.39-40; to medium list sites, 4.30

Committee on the Problem of Noise (Wilson Committee), 7.9, 7.17

Commuter traffic studies
relevance to valuation of time, 10.18

Commuting see Foulness: commuter drawback

Compensation
cost/benefit analysis, 12.7, 12.28
law, 2.5, 7.2, 7.28, 13.42, 13.61, 14.10-11
to households on site, 13.55
uncompensated loss, 12.63, 12.64, 14.9

Computer assistance for approach sequencing see Air traffic control

Concorde
noise levels, 7.3

Confederation of British Industry
call for national airports plan, 2.12

Conservation see Amenity

Construction of third London airport
Commission's view, 9.19-9.26
costs, 9.11-13, 9.25-26, Appendix 12, Appendix 13; cost/benefit analysis, 12.7, 12.13, 12.15, 13.28
evidence, 9.2-18
land required, 6.70
resources, 6.36, 6.37, 6.42
time-table, 5.4, 5.55

Coolham, 4.12

Copenhagen
Kastrup Airport, 8.46

Corrosion, 8.46-47

Cost/benefit analysis
common base year, 12.9-11
discount rate, 12.9-10
margins of error, 12.5, 12.31-34, Appendix 21
Prof. Buchanan's view, p 119, p 124-126
Research Team's work, 3.31-38, 12.1, 12.2, 12.3, 12.5, 12.6-34, Appendix 20

Printed image digitised by the University of Southampton Library Digitisation Unit

Cost/benefit analysis (Continued)
revised results, 12.6-34, Appendix 20
site comparison, 12.1-66
site efficiency, 12.40-41
use by the Commission, 3.5, 3.6, 3.8-16, 13.66

Costs
noise see Noise: costs
reduced medium list sites, Appendix 5
resource costs and differences in disbenefits, 12.31, Appendix 20
user costs, 10.3, 12.7, 12.20, p 125

Cottesford, p 123

Council for the Protection of Rural England, 6.68

Country Landowners' Association
views on: agricultural land, 6.57, 6.59; Foulness, 6.63

Countryside
preservation, 12.7, 13.22

Countryside Commission, 6.68

Countryside
preservation: valuation, 12.7

Courtsend, 6.72

Cranfield Institute of Technology, 3.37, 8.21, 8.28, 13.51

Cross-Channel airlanes, 4.12

Cross-wind components see Design of third London airport: runways

Croydon Airport, 1.4

Cublington
advantages and disadvantages, summary, 13.46-60
agriculture, 6.61, 6.63, 6.65-6.66
air traffic control, 8.5, 8.7, 8.13, 8.16, 8.17, 8.21-23, 8.25, 8.26, 8.28, 12.43, 13.49-50
air traffic forecasts, 10.9-11, 13.47, 13.54
air traffic movements, 12.7, 13.36, 13.48
airport design: costs of services, 9.18
amenity aspects, 6.75, 13.52, 13.59-60
Commission's recommendation, 13.46-61; implementation, 14.1-12
construction costs, 9.11, 12.7, 13.28
cost/benefit analysis, 3.35, 12.7, 12.20-22, 12.31
defence issues, 11.10, 11.12, 11.29; Brize Norton, 11.12, 11.13, 11.21, 13.17, 13.34, 13.50, 13.56

Printed image digitised by the University of Southampton Library Digitisation Unit

Cublington (Continued)
effects on: airports in other regions, 6.80; Heathrow noise, 13.43; Milton Keynes, 6.34, 6.44, 7.30; national airports policy, 13.26; scientific establishments, 8.22, 13.51
European Common Market: air traffic consequences of UK membership, 12.42
housing problems, 6.34, 6.45
local hearing, Appendix 4
meteorological conditions, 8.45
noise, 6.69, 12.55, 13.18, 13.24, 13.55, p 122-123; comparison with other airports and sites, 7.16, 7.23, 7.32; contours, 6.71 7.15, 14.2; effect on Milton Keynes, 7.30; restrictions, 7.13
preferred site, 2.10, 6.80, 10.11, 13.44
Prof. Buchanan's view, p 122-124
regional planning aspects, 6.5, 6.15-19, 6.24, 6.27, 6.40, 6.84, 13.52, 13.59
runways, 9.5, 14.1-2
site: physical features, 6.71
site search, 4.14, 4.25, 4.27, 4.31, 4.32, 4.40
surface access:
freight traffic, 10.47
inter-airport links, 10.71, 10.72
investment considerations, 10.32
journey time: rail, 10.53; road, 10.60; to Heathrow, 10.71
passenger traffic, 10.45
rail, 10.54-57, 14.4-6
road, 10.59, 10.64, 10.66, 13.23, 14.4-6, p 123-124
surface links: cost, 12.7, 12.22, 13.33
traffic distribution, 10.29, 10,35
urban development, 6.34, 6.40, 6.44

Cuddington, p 123

Dallas Airport, 3.40, 9.14

Defence issues
Commission's view, 11.19-29
cost/benefit analysis, 12.7, 12.24, 13.8, 13.34, 13.50
costs, 11.27-28
defence assessments of: long list sites, 4.7, 4.10; medium list sites, 4.13, 4.17-19
defence policy, 11.4
site comparison, 11.1-29

Defence, Ministry of
air space needs, 8.18
assessment of defence implications of sites, 4.10, 4.17-19

Printed image digitised by the University of Southampton Library Digitisation Unit

Defence, Ministry of (Continued)
estimates of costs of redeployments, 11.27-28
evidence, 11.1, 11.2, 11.3-18, 12.24
views on corrosion, 8.47

Delays to air traffic, 5.6, 5.9

Dengie peninsula, 6.72, p 124

Design of third London airport
buildings and pavements: costs, 9.13
Commission's view, 9.19-26
evidence, 9.2-18
provision of services: cost/benefit analysis, 12.7, 12.17, 13.8, 13.15; costs, 9.18
Research Team's studies, 9.2-4
runways: cross-wind component, 9.15-17, 9.20; layout, 9.5, 9.15
traffic capacity, 9.14

Dixon Speas Associates Ltd
evidence, 8.2

Dunsfold, 1.6

Dunstable, 4.32, 6.34, 6.68

Dunton, 6.71, p 122

East Anglia
RAF bases, 11.6

East Anglia Economic Planning Council, 6.80

East Hoathley, 4.12

East Midlands Economic Planning Council, 6.80

Economic aspects of airport siting, 2.7, 2.9

Elmdon Airport, 5.44, 10.11, 10.12, 13.25, p 126

Elmdon (Essex), 6.73

Emberton, 6.74

Employment
benefits, 6.46-55
cost/benefit analysis, 12.39
effect of third London airport, 2.16, 6.22-23, 12.64, Appendix 8

Environment see Amenity

Printed image digitised by the University of Southampton Library Digitisation Unit

Essex
coastline, 13.45
South Essex:
commuter drawback, 6.48-49, 6.54
employment growth, 6.47
regional planning, 6.3, 6.5-14, 6.23, 6.84, 10.59, p 128

Essex County Council
survey of business time valuation, 10.17
views on: Foulness commuter drawback, 6.49; Foulness employment, 6.26; Foulness urban development, 6.25, 6.33; South Essex development, 6.3, 6.7, 6.12, 6.14
(see also "Essex Group" of county councils)

"Essex Group" of county councils (Essex, Hertfordshire and Cambridgeshire and Isle of Ely)
air traffic forecasts, 10.5
cost/benefit appraisal of short-listed sites, 3.34
criticisms of Ministry of Transport road cost estimates, 10.61, 10.62, Appendix 19
noise model, Appendix 22
traffic forecasts methodology, 10.9, 10.33, Appendix 14
views on:
air traffic control, 8.2, 8.7, 8.8, 8.13-17
airport design costs, 9.13
airport system, 10.11
cost/benefit analysis, 12.10-11
European Common Market: air traffic consequences of UK membership, 12.42
Foulness, 6.62, 8.37, 8.41, 9.6, 9.7, 9.17
Gatwick, 5.53
Luton, 5.32
noise: night flights, 7.17-18
Stansted, 5.34, 5.50
surface access: advanced passenger train, 10.51; gravity model, 10.28; rail access, 10.55; rail travel costs, 10.23; traffic distribution, 10.32; unconventional methods of mass transit, 10.50
third London airport: agricultural effects, 6.60-61
timing of the need, 5.1
weighting, 12.60

Essex University, 6.75

Estimates Committee see House of Commons Estimates Committee

European Common Market
UK membership: consequent advantages of Foulness site, 10.8, 12.42

Eversley, Dr.
assessment of medium list sites, 4.29

Evidence
list of authorities, organisations and individuals who provided evidence, Appendix 3

Exeter College, Oxford
Commission's meeting, 4.14

Printed image digitised by the University of Southampton Library Digitisation Unit

Fairford, 11.15

Fares
rail fares, 10.19, 10.23-26, 10.28, 10.41, 13.31, Appendix 18, Appendix 19

Farming see Agriculture

Felmersham, 6.74

Foreign passenger traffic, 5.15-16, 10.42-44

Foulness
advantages and disadvantages, summary 13.15-45
agriculture, 6.61-63, 6.65-66
air pollution, 6.69
air safety, 8.30-31, 8.34, 8.39-42, 12.7, 12.23, 13.37; bird-strike, 8.32, 8.35-37, 8.41; rescue services, 8.33, 8.40
air traffic control, 8.4, 8.5, 8.8, 8.20, 8.25, 8.28, 12.43, 13.16; effects on other airports, 8.10-12, 12.16; effects on private airfields, 12.7, 12.26; international co-ordination, 8.9
air traffic forecasts, 6.81, 10.8, 12.42; freight, 10.47; generated traffic, 10.9-10
air traffic movements, 12.7, 13.36
airport design: costs of services, 9.18
amenity aspects, 13.22-23, 13.27
Commission's recommendation, 13.10-45
commuter drawback, 6.48-49, 6.54
construction costs, 9.11-12, 9.26, 12.7, 12.15, 12.48-51, 13.28, 13.35
corrosion problem, 8.46-47
cost/benefit analysis, 3.35, 12.7, 12.20, 12.31, 12.34, 12.40-41
defence issues, 11.10, 11.12, 11.20, 11.25-26, 11.29, 12.7, 12.24, 13.34
effect on Lord's Bridge Observatory, 8.22
employment: benefits, 6.51, 6.53; labour resources, 6.47, 6.50
housing of airport workers, 6.45
land-take, 13.19
local hearing, 3.23, 3.24, Appendix 4
meteorological conditions, 8.44-45, 12.7, 12.18
noise, 6.69, 7.3, 7.6, 7.23, 7.29, 7.32-33, 12.55, 13.18, 13.27; comparison with Heathrow, 7.16; contours, 7.12-15; effects on other airports' noise, 7.24, 7.33; effects on Sheppey, 7.30; night flights, 7.20, 7.22; restrictions, 7.13
preferred site, 13.6
Prof. Buchanan's view, p 124-126
reclamation, 9.10; costs, 9.25, Appendix 13
regional planning aspects, 6.3, 6.5-14, 6.23, 6.84
runways, 9.7, 9.17, 9.20
seaport proposals, 6.23, 6.26, 9.8, 9.22 (see also Airport/seaport)
site search, 1.19, 4.14, 4.25, 4.31, 4.34, 4.37
sites, 4.23, 6.72, 9.6-10, 9.21, 9.22, Appendix 11

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness (Continued)
surface access:
inter-airport links, 10.71
journey times: rail, 10.53; road, 10.60; to Heathrow, 10.71; to St. Katherine's Dock terminal, 10.68
passenger traffic, 10.45
rail, 10.24-26, 10.29, 10.54, 10.55, 10.57
road, 10.59, 10.64-66, 13.23
surface links: costs, 12.7, 12.22, 13.29-33
traffic distribution, 10.29, 10.35, 10.37
urban development, 6.33; risk of overcrowding, 6.24-27

Gatwick Airport
air traffic control: CAAS, 5.41, 5.47
air traffic forecasts, 10.5-7, 10.9
air traffic movements: capacity, 5.47-49, 5.51-53, 5.58; capacity constraints, 5.24, 10.2, 10.31; forecasts of capacity, 1.13
attractiveness for traffic, 5.23
BEA's attitude, 5.23
development, 1.4, 1.6, 1.7, 3.24; future development, 2.1, 13.25
effect on site search for third London airport, 4.12
incomes of air travellers: survey, 10.16, Appendix 16
noise nuisance, 7.7, 13.27, 13.43, 13.45, 13.60
passengers handled, 12.13
runways, 5.28-30, 5.52-53, 5.58
surface access traffic, 10.9, 10.11, 10.28-29, 10.31-32

General aviation see Air traffic: general aviation

General Precision Systems
advice on air traffic control, 8.2
computer simulation, 8.4, 8.7

Gillingham, 6.72, p 124

Gliding, 6.68, p 125

Godmanchester, 6.74

Good Easter, 4.14, 4.25

Grafham Water, 6.68, 6.74, 7.31

Grain (Kent), 6.72, p 124

Gravel see Aggregates

Gravity model see Surface access: gravity model

Great Hormead, 6.73

Printed image digitised by the University of Southampton Library Digitisation Unit

Great Paxton, 6.74

Great Wakering, 6.72, p 124

Greater London Council
evidence on Ringway 3 road, 10.62
views on: Heathrow, 5.9; Milton Keynes, 6.18; regional planning, 6.24; South Essex development, 6.7, 6.14

Hall, Prof. Peter, 6.19, 6.27

Hardwick, 6.71, p 123

Hare Street, 6.73

Hatfield, 6.73, p 122

Hawker Siddeley Aviation Limited
submission on STOL aircraft, 5.19

Heathrow Airport
air traffic control, 8.16, 8.25, 13.49; CAAS, 5.40
air traffic forecasts, 10.5-7
air traffic movements: capacity, 5.7-9, 5.27, 5.45; capacity constraints, 5.24, 10.2, 10.31; forecasts of capacity, 1.13; restrictions, 5.27
attractiveness for traffic, 5.23
defence issues: Brize Norton, 11.13
development, 1.4, 1.5, 1.10
effect on site search for third London airport, 4.2, 4.12, 4.25
incomes of air travellers: survey, 10.16, Appendix 16
international traffic handled, 1.23
noise nuisance, 5.42, 5.56-57, 6.69, 7.7, 7.16, 12.55, 13.27, 13.43, 13.45, 13.57, 13.60, p 128-129; restrictions, 7.19; surveys, 7.10, 7.17
passengers handled, 12.13
surface access traffic, 10.9, 10.11, 10.28-29, 10.31-32; journey times to Cublington and Foulness, 10.71

Hemel Hempstead, 5.32

Henfield, 4.12

Hertfordshire County Council
views on Luton Airport expansion, 5.32
(see also "Essex Group" of county councils)

High Halstow, 6.72

Hockliffe, 4.14, 4.25, 4.27, 4.31-32

Printed image digitised by the University of Southampton Library Digitisation Unit

Holding areas, 8.17

Hooker, Dr., 7.4

Hospitals
  cost/benefit analysis, 12.7, 12.29

House of Commons Estimates Committee
  Report on London's airports, 1.9-10

House of Commons Select Committee on Nationalised Industries, 5.21

House prices
  affected by access to an airport, 12.57
  affected by noise, 4.11, 4.24, 12.28; valuation of noise nuisance, 12.54, 12.56-57
  householders' surplus, Appendix 23

Housing problem, 6.30-31, 14.7

Housing and Local Government, Ministry of
  Luton Airport planning decisions, 5.32
  population data, 4.13
  site search, 4.1, 4.3, Appendix 5

Hovercraft
  rescue services, 8.33
  tracked hovercraft, 10.49

Hullavington, 11.15

Hunt, A. J.
  Report upon the local hearings, Appendix 4

Huntingdon, 6.74

Huntingdon and Peterborough County Council see "Bedfordshire Group" of county councils

Hydraulics Research Station
  studies on Foulness reclamation, 9.10

Ickford, 4.12

Ickleton, 6.73

Implementation of the Commission's recommendation, 14.1-12

Inclusive tour traffic
  growth, 10.7

Printed image digitised by the University of Southampton Library Digitisation Unit

Income
air travellers' incomes: Research Team survey, 10.16, Appendix 16

Industry
cost/benefit analysis, 12.7, 12.29
(see also Employment)

Inland sites
evaluation by Research Team's cost/benefit analysis, 3.35
support at local hearings, 3.24
(see also Cublington, Nuthampstead, Thurleigh)

Interdepartmental Committee on the Third London Airport, 1.11, 1.13-17, 4.38

International Aeradio Limited
evidence on air traffic control, 8.2, 8.7

Isle of Ely and Cambridgeshire County Council see "Essex Group" of county councils

Journeys to work, 12.7
(see also Foulness: commuter drawback)

Kemsley, 6.72

Kennedy Airport (New York), 1.23

Kent
medium list sites, 4.25
North Kent: coastline, 13.45; uncompensated loss, 12.64

Kent County Council
Isle of Sheppey development scheme, 7.30
Medway seaport scheme, 9.22
views on: Foulness, 6.51, 9.6; noise, 7.17; South Essex development, 6.13

Kew Association for the Control of Aircraft Noise
views on: benefits of air travel, 2.11; Heathrow noise, 5.24, 5.27

Keysoe, 6.74

King's Cross
rail link town terminal, 10.67-70, 14.4-6

Knebworth, 6.73

Printed image digitised by the University of Southampton Library Digitisation Unit

Labour see Employment

Land
  agricultural: cost/benefit analysis, 12.7, 12.30
  compulsory purchase, 14.8
  land-take: site comparison, 4.7
  land use planning: Prof. Buchanan's view, p 119, p 125
  valuation, 12.37; Foulness reclamation, 12.46
(see also Agriculture)

Langley, 6.73

Large, Prof. J. B., 7.12

Leighton Buzzard, 4.32

Letchworth, 6.73, p 122

Lindsell, 4.14

Linslade, 6.71, p 123

Little Chesterford, 6.73

Little Staughton, 6.74

Livesey and Henderson
  advice to the Commission, 10.49

Local hearings, 3.23-30, Appendix 4

Local planning
  agriculture, 6.56-66
  amenity, 6.67-78
  Commission's views, 6.39-45, 6.53-55, 6.64-66, 6.76-78, 13.22
  cost/benefit analysis, 12.38
  employment benefits, 6.46-55
  evidence, 6.28-38, 6.46-52, 6.56-63, 6.67-73
  urban development, 6.28-45
(see also Planning; Regional planning)

London
  overspill programme, 6.14
  planning, p 119-120

London Airport Development Committee
  report, 1.10

London Gliding Club, 8.18

London's Airports (Cmd 8902, 1953), 1.4-6

Printed image digitised by the University of Southampton Library Digitisation Unit

London's Airports (House of Commons Estimates Committee, 5th Report, Session 1960-61), 1.9-10

Lord's Bridge Observatory, 6.67, 8.22, 13.9, 13.51

Lower Halstow, 6.72

Luton, 4.32, 6.34

Luton Airport
  agricultural loss, 6.63
  air traffic control: effects of third London airport sites, 8.11, 8.13-15, 8.17, 8.26
  air traffic movements: capacity, 5.24, 5.31-33, 5.46
  attractiveness for traffic, 5.23
  development, 1.8, 2.1
  future use, 8.27, 12.7, 12.15, 12.16, 13.28, p 128
  noise, 5.24, 6.69, 7.23, 7.30, 13.18, 13.24, 13.45, 13.60
  noise contours, 7.15
  noise costs, 12.7, 12.27
  runways, 5.31
  surface access traffic, 10.9, 10.11, 10.31

Lyneham
  RAF air support base, 11.6, 11.14, 11.15

Manchester see Ringway Airport

Maplin Sands, 6.72, 9.9, 9.22, 11.8, 11.18, p 124

Market approach to airport siting, 2.9

Masefield, Peter
  advice on short list of sites, 4.40

Matching Green, 4.25, 4.40

Meesden, 6.73

Meteorological conditions, 8.43-45, 12.7, 12.18, 13.8, 13.46

Midlands
  international airport, 2.13, 13.26, p 126

Military airfields
  effect of third London airport, 4.10
  operational requirements, 11.3
(see also Brize Norton, Lyneham, Royal Air Force, United States Air Force)

Printed image digitised by the University of Southampton Library Digitisation Unit

Military flying see Royal Air Force, United States Air Force

Milton Ernest, 6.74

Milton Keynes, 4.32, 6.4, 6.5, 6.10, 6.16, 6.18, 6.27, 6.34, 6.44, 7.30, 13.52, 13.59, 14.7, p 121, p 124

Milton Keynes Development Corporation
views on: Cublington site, 6.18, 6.24; employment, 6.10; Silverstone Airport, 6.44

Ministry of Defence see Defence, Ministry of

Ministry of Housing and Local Government see Housing and Local Government, Ministry of

Ministry of Public Building and Works see Public Building and Works, Ministry of

Ministry of Technology see Technology, Ministry of

Ministry of Transport see Transport, Ministry of

Minster, 6.72

Morrissey, Allen M.
evidence, 5.38

Movements, Air traffic see Air traffic movements

National Air Traffic Control Services
advice to the Commission, 4.12, 4.13, 4.17, 4.20, 8.2, 8.3
computer simulation, 8.5; comparison with General Precision Systems study, 8.7
design of air route structure, 8.4
studies on air routes over Thames Estuary, 11.11
studies on airport design, 9.2
views on air traffic control, 8.9, 8.13, 8.15-17; airspace needs, 8.18-19, 8.20, 11.9; Brize Norton, 11.13, 11.22

National airports plan see Airports: national policy

National Building Agency, 6.29, 6.37, 6.42

National Farmers' Union
estimates of agricultural land market value, 4.22
views on: agricultural implications of third London airport, 6.56, 6.59; Foulness site, 6.61-63, 6.65; land valuation, 12.38

National Gas Turbine Establishment, 6.69

Printed image digitised by the University of Southampton Library Digitisation Unit

National Trust, 6.68

Nationalised Industries Select Committee see House of Commons Select Committee on Nationalised Industries

Need for a third London airport
  not questioned, 2.11
  Research Team's analysis, 12.2
  timing see Timing of the need

Newick, 4.12

Newington, 6.72

Newport Pagnell, 6.71, 6.74, p 123

New York
  airports, 1.23, 2.2
  Commission's visit, 3.40

Night flights see Noise: night flights

NNI see Noise: noise and number index

Noise
  aircraft noise reduction, 7.3-6
  certification scheme, 7.3
  compensation, 7.2, 7.28
  contours: site comparison, 3.25, 6.70-74, 7.15, 7.32-33
  cost/benefit analysis, 12.7, 12.27-29, 13.8
  costs: Research Team's estimating methods, 12.27, 12.32, Appendix 22; Prof. Buchanan's view, p 125
  effects of increased traffic at existing airports, 5.24, 5.44, 7.25, 7.33
  effects on development, 7.30
  legal protection, 7.2
  night flights, 7.17-21
  noise and number index, 5.24, 7.9, 7.10-11
  restrictions, 7.3, 7.13, 7.19-21
  site search problem, 2.5, 4.7, 4.11, 4.13, 4.24
  social costs, 2.10, 7.7, 7.26-29, 7.31-32; criticism of Research Team's valuation, 12.54-58, Appendix 22; Gatwick development, 1.7
  soundproofing, 7.2, 7.29
  supersonic aircraft, 7.3
  Wilson Committee on the Problem of Noise, 7.9, 7.17

Noise Abatement Society, 4.11

North Atlantic Treaty Organisation, 11.5, 11.6

North Crawley, 4.14

North West Region Economic Planning Council, 6.80

Printed image digitised by the University of Southampton Library Digitisation Unit

Northampton, 6.4, 6.10, 6.16, 6.34, 6.36, 6.80

Northamptonshire County Council see "Bedfordshire Group" of county councils

Northern England
  growth of airports, 10.12
  international airport, 13.26

Northolt Airport, 1.4

Note of dissent, 13.62-67, p 119-130

Nuthampstead
  advantages and disadvantages, 13.7-9
  agriculture, 6.61, 6.64, 13.9
  air traffic control, 8.5, 8.7; airspace movement costs, 8.23; effects on other airports, 8.14, 8.16, 8.26
  air traffic forecasts, 10.9-10
  Commission's recommendation, 13.7-9
  cost/benefit analysis, 12.34
  defence issues: Brize Norton, 11.16, 11.21; Ministry of Defence site assessment, 11.12, 11.20, 11.23, 11.29
  effects on scientific establishments, 8.21-22, 12.7, 12.25
  local hearing, Appendix 4
  noise, 2.10, 5.57, 12.55; comparison with other airports and sites, 7.16, 7.32; contours, 6.73; effect on Stevenage, 7.30; restrictions, 7.13, 7.15
  Prof. Buchanan's view, p 122
  regional planning aspects, 6.5, 6.21, 6.41, 6.84, 13.8
  site search, 4.14, 4.25, 4.27, 4.31, 4.36, 4.40
  surface access:
    journey times: rail, 10.53; road, 10.60
    passenger traffic, 10.45
    rail, 10.54
    road, 10.59, 10.66
    surface links: cost, 12.7, 12.22
    traffic distribution, 10.29, 10.37
  urban development, 6.35, 6.41

Nuthampstead Preservation Association
  Comparison of Cublington and Thurleigh sites, 6.19
  evidence at local hearings, 3.29
  views on: agriculture, 6.61, 6.65; Stansted, 5.34; STOL and VTOL aircraft, 5.20

Off-shore sites see Foulness: sites

Olney, 6.74

Overload see Air traffic movements: delays

Overseas visits by the Commission, 3.39-40

Oving, 6.71

Printed image digitised by the University of Southampton Library Digitisation Unit

Oxford, p 123

Oxfordshire County Council see "Buckinghamshire Group" of county councils

Paddock Wood, 4.12

Paris
  Commission's visit, 3.39

Paris Airport, 1.23

Passengers see Air travellers

Pembrey, 11.8, 11.11, 11.18, 11.26-27, 13.17

Pendine Sands see Pembrey

Peterborough, 6.36, 6.80

Peterborough and Huntingdon County Council see "Bedfordshire Group" of county councils

Planning
  blight, 5.59
  Commission's treatment of planning issues, 3.4, 4.28-29, 6.1, 6.84; Prof. Buchanan's views, 13.2, p 119-120
  land use planning: Prof. Buchanan's view, p 119, p 125
  London, p 119-120
  national airports plan, 2.1, 2.12, 6.82, 13.26; Prof. Buchanan's view, p 119, p 126-127
(see also Local planning; Regional planning)

Planning approach to airport siting, 2.9

Political and Economic Planning, 6.26

Population
  effects of third London airport, 6.31-32, Appendix 8
  Ministry of Housing and Local Government population data, 4.13
(see also Employment)

Port of London Authority, 9.10

Princes Risborough, 6.71, p 123

Private flying see Air traffic: general aviation

Property values see House prices

Public buildings
  cost/benefit analysis, 12.7, 12.29

Printed image digitised by the University of Southampton Library Digitisation Unit

Public Building and Works, Ministry of
estimates of: defence implications costs, 11.9; site preparation costs, 4.13, 4.21
work on airport design, 9.2

Public hearings
fifth stage hearings, 3.43-46
local hearings, 3.23-30, Appendix 4

Public participation, 3.3, 3.6

Queenborough, 6.72, p 124

Rail transport
capital costs of rail links, 10.57, 12.7, 12.22, Appendix 19
fares, 10.19, 10.23-26, 10.28, 10.41, 13.31, Appendix 18, Appendix 19
operating costs, 10.23-26
surface access infrastructure, 10.48-57, 13.9, 13.31, 13.33, Appendix 19; town terminal links, 10.67-70
valuation of travellers' time, 10.19

Raunds, 6.36

Recreation
cost/benefit analysis, 12.7, 12.29
gliding, 6.68, p 125
sailing, 6.68, 7.31
(see also Amenity)

Regional planning
application of cost/benefit analysis, 3.12, 12.7, 12.36
Commission's views, 6.20-38, 6.84, 13.24, 13.52, 13.65
effects of third London airport on other regions, 6.79-83
evidence submitted, 6.2-19

Report of an Inquiry into the Proposed Development of Gatwick Airport, 1.7

Report of the Inquiry into Local Objections to the Proposed Development of Land at Stansted as the Third Airport for London, 1.18

Research Team see Commission on the Third London Airport: Research Team

Ringway Airport, 6.81, 10.12, 10.30, 10.31, 13.25, p 126

Roads
costs, 10.3, 10.23, 10.61-63, 12.7, 12.22, Appendix 19
South East England: proposed new major roads, 10.30
surface access infrastructure, 10.58-66, 13.23, Appendix 19

Printed image digitised by the University of Southampton Library Digitisation Unit

Royal Aircraft Establishment, Bedford, 6.67, 8.21, 13.51

Royal Aircraft Establishment, Farnborough, 8.21

Royal Air Force
needs, 8.18, 11.5-6, 13.56
redeployments: costs, 11.28; site comparison, 11.10, 13.16

Royal Institute of British Architects, 14.12

Royal Society for the Protection of Birds, 6.68, 8.35

Runways
number required, 5.62
(see also Design of third London airport)

Saffron Walden, 6.73

Sailing, 6.68, 7.31

St. Albans, 6.73

St. Katherine's Dock, 10.68

St. Neots, 4.33, 6.74, 7.30

Salcey Forest, 6.74

Salisbury Plain, 11.14

Scandinavian Airlines System, 8.46

Schools
cost/benefit analysis, 12.7, 12.29

Scientific establishments
cost/benefit analysis, 12.7, 12.25, 13.16, 13.51, 13.56
effects of airport sites, 8.4, 8.21-22

Scott, Peter, 6.76

Sealy, Kenneth
site search, 4.1, 4.3

Second force airline, 5.53

Sheerness, 6.72, p 124

Shelswell, 6.71, p 123

Sheppey, 6.72, 7.30, p 124

Printed image digitised by the University of Southampton Library Digitisation Unit

Sheppey Group
views on Foulness air safety, 8.33

Shoeburyness
Ministry of Defence firing range, 1.15, 4.19, 5.42, 6.67, 11.11, 11.12, 11.17, 11.20, 11.24-27, 12.24, 13.16-17, 13.45, 13:50
town, 6.72
Short-listed sites see Site searches: Commission's short-list

Short take-off and landing aircraft, 5.18-20, 13.33

Silverstone Airport
benefit to Milton Keynes, 6.44
Commission's assessments, 4.12, 4.14, 4.26, 4.27, 4.31, 4.33
examined in 1967 white paper, 1.19
on Mr. Masefield's short list, 4.40

Site search criteria
Commission's approach, 3.6, 4.2
detailed criteria, Appendix 5
for London's second airport, 1.6
Interdepartmental Committee's criteria, 1.15
Mr. Masefield's criteria, 4.40
Research Team's studies, 3.31-38

Site searches
Commission's approach, 2.14-17
Commission's long list, 4.5-13, Appendix 5
Commission's medium list, 4.7, 4.13-30, Appendix 5
Commission's reduced medium list, 4.14
Commission's short list: land requirements, 6.70; non-publication of reasons for selection, 3.7; selection, 4.1-40; site information, 3.25 (see also Cublington, Foulness, Nuthampstead, Thurleigh)
Dr. Kenneth Sealy's search, 4.1, 4.3
Ministry of Housing and Local Government search, 4.1, 4.3
problems, 2.1-18

Sites
canvassed at Stansted public inquiry, 1.19
Interdepartmental Committee's list, 1.16

Sittingbourne, 6.72, p 124

Social costs see Amenity

Social policy aspects, 2.5, 6.14, p 119, p 127-128

Soulbury, 6.71, p 122

Soundproofing, 7.2, 7.29

South East Economic Planning Council
evidence, 6.2
views on Foulness, 6.47

Printed image digitised by the University of Southampton Library Digitisation Unit

South East England
regional planning, 3.4, 4.28, 6.4-5, 13.65
surface access air passenger traffic distribution, 10.36

South East Joint Planning Team
advice to the Commission, 4.28
appointment, 3.4
evidence, 6.2-3, 13.65
proposals: for Gatwick area, 5.28; new major roads, 10.30
strategy for South East England, 6.4-5
views on: construction resources, 6.42; effects of third London airport on other regions, 6.80; Foulness, 6.48; Nuthampstead, 6.64

South Hampshire airport, 10.11

Southend, 6.33, 6.53, 10.66

Southend Airport
air traffic control, 8.10, 8.27
air traffic movements: capacity, 5.35
noise: effect of Foulness site, 7.24

Southend County Borough Council
views on Foulness site, 6.49, 7.12-13, 9.6-7, 9.17, 9.23

Southminster, 4.14, 4.25, 4.34, 6.72

Standing Conference on London and South East Regional Planning
evidence, 6.2

Stansted Airport
agriculture, 6.63
air traffic control, 8.13-15
air traffic movements: capacity, 5.34, 5.46, 5.51
compatibility with third London airport, 8.27
development, 1.1, 1.2, 1.4, 1.6, 1.20; future development, 13.25
effect of Shoeburyness firing range, 4.19, 11.20
generated traffic, 10.9
proposed site for third London airport, 1.8-12; Commission's assessments, 4.14, 4.35-38, 13.9; on Mr. Masefield's short list, 4.40
public inquiry, 1.18, 1.19, 3.2, 3.24, 3.27, 4.11, 4.38

Stevenage, 6.73, 7.30, p 122

Stevenage Development Corporation
evidence on Luton Airport expansion, 5.32

Stewkley, 6.67, 6.71, 6.76, 13.52, 13.53, p 122

Stocking Pelham, 4.14, 4.25

Stoke (Kent), 6.72

Stoke Hammond, 6.71, p 122

Printed image digitised by the University of Southampton Library Digitisation Unit

Stoke Mandeville, p 123

Stowe, 4.33

Supersonic aircraft
  noise problem, 7.3

Surface access
  air freight traffic, 10.48
  construction costs of surface access links: cost/benefit analysis, 12.7
    12.13, 12.22, 13.29-33
  evaluation, Appendix 18
  gravity model, 10.27, Appendix 17
  journey time to short listed sites, 10.21
  site comparison, 10.1-72; criteria, 10.4; Commission's view, 10.46;
    long list sites, 4.7, 4.9; medium list sites, 4.13
  traffic distribution, 10.27-35, Appendix 17; alternative method for
    calculating traffic volumes, 10.33, Appendix 14
  traffic forecasts, 10.5-10
  user travel costs, 10.3, 12.7, 12.20, p 125
(see also Rail transport; Roads)

Surrey County Council
  Gatwick planning policies, 7.7
  views on Gatwick expansion, 5.29

Sussex (East and West) County Councils
  views on Gatwick expansion, 5.29

Tadley, 4.12

TAG see Thames Aeroport Group

Technology, Ministry of
  effect of Thurleigh on Mintech establishments, 8.21
  wind tunnel complex, 4.33, 13.51

TEDCO see Thames Estuary Development Company

Terling, 4.14

Test flying, 8.21

Thame, 6.71, p 123

Thames Aeroport Group
  Foulness site proposals, 9.6; effect on noise, 7.14, 7.15; effect on
    regional planning, 6.5, 6.26
  generated traffic forecasts methodology, 10.9, 10.33, Appendix 14
  views on:
    advantages of Foulness airport/seaport project, 12.45
    air safety, 8.37
    Foulness: cost, 9.25, 12.50; cross-wind runways, 9.17
    town terminal, 10.68
    valuation of time, 10.22

Printed image digitised by the University of Southampton Library Digitisation Unit

Thames Estuary
air routes, 11.11
hydrological studies, 9.10
trial borings, 4.23

Thames Estuary Development Company
airport/seaport project: analysis of advantages, 9.22, 12.45, 12.46
Foulness reclamation studies, 9.10
Foulness site proposal, 9.6, 9.8; effect on noise, 7.14, 7.15; effect on regional planning, 6.5, 6.23, 6.26
views on: construction time-table, 5.4; cost of Foulness to taxpayer, 12.48-51; Foulness air safety, 8.33, 8.37; Foulness construction costs 9.11, 9.12, 9.25; surface access traffic distribution, 10.32

The Third London Airport (Cmnd 3259, 1967), 1.1, 1.2, 1.19-21

Thorpe Bay, 6.72, p 124

Thurleigh
advantages and disadvantages, summary, 13.46-60
agriculture, 6.61, 6.64
air traffic control, 8.5, 8.15, 8.21, 8.26, 8.28, 13.49-50
air traffic forecasts, 10.9-11, 13.47, 13.54
air traffic movements, 12.7, 13.48
amenity aspects, 6.74, 13.52, 13.59
Commission's recommendation, 13.46-61
construction costs, 9.26, 12.7, 12.15, 13.28
cost/benefit analysis, 12.34
defence issues, 11.10, 11.23, 11.29, 13.34, 13.56; Brize Norton, 11.16
effects on: airports in other regions, 6.80; East Midlands region, 6.80; national airports policy, 13.26; scientific establishments, 8.21-22, 8.28, 12.7, 12.25, 13.51
examined in 1967 white paper, 1.19
housing problems, 6.36-37, 6.42, 6.45
local hearing, Appendix 4
meteorological conditions, 13.46
noise, 13.18, 13.55; comparison with other airports and sites, 7.16, 7.32; contours, 6.74, 7.15; effect on Heathrow noise nuisance, 13.43; effect on St. Neots, 7.30; restrictions, 7.13
preferred site, 6.80, 10.11, 13.44
regional planning aspects, 6.5, 6.15-19, 6.24, 6.27, 6.36-37, 6.42, 6.84, 13.52
runways, 9.5
site: physical features, 6.74, 13.46
site search, 4.12, 4.14, 4.27, 4.40
surface access:
investment considerations, 10.32
journey times: rail, 10.53; road, 10.60
passenger traffic, 10.45
rail, 10.24, 10.54-57
road, 10.59, 10.62, 10.65, 10.66, 13.23
surface links: cost, 12.7, 12.22, 13.33
traffic distribution, 10.29, 10.37
urban development, 6.36-38, 6.42, 6.75

Printed image digitised by the University of Southampton Library Digitisation Unit

Thurleigh Emergency Committee for Democratic Action
views on: cost/benefit analysis, 12.64; employment benefits, 6.50; social and economic welfare, 2.5

Tillingham, 6.72

Time see Valuation of time

Timing of the need
Commission's investigation, 5.1-62
Heathrow noise considerations, 5.42
Prof. Buchanan's view, p 119
Research Team's investigations, 3.31-33, 3.36; Team's revised calculations, Appendix 7

Tiptree, 4.14

Tourist traffic, 10.7-8

Town and Country Planning Act 1947, p 119

Town and Country Planning Association
evidence, 6.2
views on: cost/benefit analysis, 3.12; four runway airport, 5.60

Town terminal, 10.67-70, 14.4-6

Tracked Hovercraft Limited
advice to the Commission, 10.49

Trade, Board of
advice to the Commission, 2.13
Directorate of Aerodromes (Technical): work on airport design, 9.2
Economic Services Division: assistance given to the Commission, 3.11
President's statement on Ministry of Defence evidence, 11.2
survey of Heathrow noise, 7.10
survey of passenger origins and destinations of London area traffic, 4.16, 5.15
views on noise restrictions, 7.13, 7.19-21
Working Party on Traffic and Capacity, 5.13

Trade and Industry, Department of
estimate of effects of Heathrow noise, 5.57

Training flights see Air traffic: general aviation

Transport
unconventional means of transport, 10.48-50
(see also Air transport; Rail transport; Roads; Surface access)

Transport and General Workers' Union
views on Foulness site, 6.24

Printed image digitised by the University of Southampton Library Digitisation Unit

Transport, Ministry of
advice on: capital and user costs, 4.9, 10.3, 12.22; new road requirements, 10.58-60; surface access, 4.13
computer model for predicting traffic distribution, 4.16
evidence on: surface access costs, 10.3, 10.16; unconventional means of transport, 10.48
road capital costs estimates, 10.61-63, Appendix 19
time values, 10.16

Travel time - valuation see Valuation of time

Turbulent wake, 3.36, 5.37-39

Turvey, 6.74

United Kingdom Federation Against Aircraft Nuisance, 7.17

United States
airports, 1.23, 2.2, 3.40, 9.14
Commission's visit, 3.40, 14.11

United States Air Force
airfields, 11.7, 11.10, 11.12, 13.16

United States Federal Aviation Administration, 5.38, 8.2

Upchurch, 6.72

Upper Heyford, 11.10, 13.50

Urban development, 4.29, 6.28-45, 14.7

User travel costs (surface access), 10.3, 12.7, 12.20, p 125

Vale of Aylesbury, 4.32, 6.71, 6.75, p 123

Valuation of time, 10.3, 10.15-22, 10.39-41, p 125, Appendix 15, Appendix 18; cost/benefit analysis, 12.7, 12.32; Research Team's approach criticised, 12.52-53

Value to the nation, 2.11, 13.3

Verney, Ralph, 6.76

Vertical take off and landing aircraft, 5.18, 13.33

Visits by the Commission
overseas, 3.39-40
to medium list sites, 4.30

Printed image digitised by the University of Southampton Library Digitisation Unit

Waddesdon, 6.71, p 123

Wales Tourist Board, 11.11

Washington
  Commission's visit, 3.40

Watton-at-Stone, 6.73

Weedon, 6.71

Weighting, 12.59-66

Wellingborough, 6.4, 6.10, 6.16, 6.36, 6.80

Welwyn, 6.73, p 122

West Midlands Economic Planning Council, 6.80

Wethersfield, 13.50

Whitchurch, 6.71, p 122, p 123

Whiteweed, 6.72

Wild life see Amenity

Wilson Committee on the Problem of Noise, 7.9, 7.17

Wing airport see Cublington

Wing Airport Resistance Association
  evidence at local hearings, 3.29
  views on:
    air pollution, 6.69
    air traffic control, 8.7; effect of Cublington on other airports, 8.13; turbulent wake, 5.39
    air traffic forecasts, 5.16, 10.7, 10.9
    construction costs, 9.11
    cost/benefit analysis: common base year, 12.11; valuation of countryside preservation, 12.37
    Cublington: amenity aspects, 6.75; regional planning aspects, 6.16-18, 6.27, 6.80
    development of existing airports, 2.1, 2.11, 5.25, 5.35, 5.36
    Foulness: commuter drawback, 6.49; South Essex development, 6.8-9
    Luton Airport expansion, 5.33
    noise, 5.24, 7.21
    surface access, 10.32, 10.41, 10.55, 10.56, 10.71, Appendix 18
    timing of the need, 5.21, 5.26

Wing village, 6.71, p 122

Woburn, 6.71, p 123

Working Party on Traffic and Capacity, 5.13

Printed image digitised by the University of Southampton Library Digitisation Unit

Yachting, 6.68, 7.31

Yardley Chase, 6.74

Yeovilton, 11.15

Yorkshire and Humberside Economic Planning Council, 6.10, 6.80

Produced in England for Her Majesty's Stationery Office by
Hobbs the Printers Ltd., Southampton

(1250) Dd 507192 K16 8/72 G3313

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Advisory Committees for Civil Aviation for North West, Northern and West Midlands of England

In preparation for the next phase of the Commission's work it had been intended to develop some of the arguments put forward in a Paper from the above Committees dated September 1968. The Commission's release* of June 1969 has, however, covered much of the ground but the following points on some of its Chapters are submitted.

Chapter 1. General principles

It is surprising to find no proposal for research into the cost/benefit of an airport site with no or minimum restriction on aircraft movements due to noise at night. The cost/benefit of noise nuisance by day will obviously be fully covered but the very different night problem surely warrants special attention. Heathrow is, it is understood, already suffering some diversion of night traffic through restriction and the British Airports Authority anticipate intensification of this trend with the next generation aircraft. It would appear that the cost/benefit of a site providing unrestricted movements particularly at night might be a decisive factor.

Chapter 3. Airport policy issues

From Chapter 5, paragraph 51, the sentence beginning "an appropriate deduction" poses a very important airport issue. Obviously the four existing Aiports in the South East area (Gatwick, Luton, Stansted and Southend) are of prime importance, but Birmingham and Manchester, possibly also East Midlands, must be brought into the picture. These four South East aerodromes took about 25 per cent of South East traffic in 1968 but clearly as they contain four runways—five with two at Gatwick—they are capable of holding at least this proportion for as far as can be foreseen ahead provided they are not interfered with and are allowed to develop. It seems almost certain that one of them will suffer interference for only the choice of Thurleigh would result in non-interference. But even then if development of International Services from Provincial Airports is pursued and brought fully into the forecast picture it seems reasonable to assume that up to one half of South East area traffic could in the foreseeable future be catered for by existing airports other than Heathrow. The effect of this on the scale and timing of the third London Airport may be considerable but cannot be known until the Commission's work is further advanced.

On a general point the existing accessibility of Gatwick and Luton compared to any of the four chosen sites should surely lead to full exploitation of these airports before a vast new one at a more remote location is contemplated.

On "omnidirectionality" and "sectorisation" the Committees wonder how either is going to be achieved bearing in mind experience at Gatwick and Luton since the war. Both would appear to be as well placed for development of scheduled services as any of the chosen four and yet the former has so far only achieved about one-third of such traffic in its total and the latter virtually nil. If the Commission's aims in this respect are to be achieved the sooner full development of Gatwick starts the better.

Chapter 5. Timing of the need for the third airport

Timing of the need is important but it is thought that need itself on the scale being considered by the Commission merits separate consideration. Just as 25 years ago when Heathrow was being planned a 250-seat aircraft was thought to be about the limit so in the next 25 years development of aircraft may have such a profound effect on airports as to make them obsolete in scale, shape and location. If increased use of existing airports and thoughts of the future can reduce the scale of the new airport then the importance to the whole of the Commission's work cannot be overstated.

* *Papers and Proceedings*, volume VII, part 1.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Air Safety Group

Introduction

1.1. Much genuine emotion was aroused by the prospect of Stansted being selected as the site of the third London Airport. Preliminary findings of the Roskill Commission having short-listed one coastal and three inland sites, the time seems appropriate to discuss dispassionately the merits of these two categories, the definition "coastal" being adopted to include such locations as Foulness, where reclaimed land would be used entirely for this purpose.

1.2. While appreciating that many other aspects must also be taken into account, in this Paper an attempt is made to present views mainly related to safety. It does not represent any particular interest for or against one site although, as Foulness is the only coastal site short-listed, this locality inevitably comes largely into the picture. This being so and despite the disclaimer in the previous sentence, it has been thought justifiable to refer to any local peculiarities of this area, where they have a bearing on the arguments put forward.

1.3. Drawbacks of coastal sites are relatively few and are far outweighed by the benefits they may bring. While, therefore, it is tempting to set these out side by side with relevant qualities of inland sites, various considerations are so disparate that little purpose would be served.

Threat to populous areas

2.1. At any of the suggested inland sites, there is bound to be serious disturbance of amenities for the population of many neighbouring towns and villages whereas, at Foulness, this would be virtually the minimum attainable. The former would moreover involve sacrifice of valuable agricultural land, not only for occupation by the airport itself and for necessary local industrial development but even more by the limitations imposed on the use to which adjacent land could be put; e.g. disturbance to any kind of livestock is likely to be little if any less acceptable than that tolerable for human occupation, hence any future agricultural use would be largely limited to the growing of crops.

2.2. Account must be taken of the likelihood of death of or injury to innocent third parties, through aircraft crashing on populated areas. In this country, we have mercifully been spared the worst of such tragedies but the two recent accidents at Gatwick and Stockport are reminders of more serious ones, such as that in Venezuela on 16th March 1969 when, in addition to total loss of life in the aircraft, some 70 people on the ground were killed. Other such accidents have occurred elsewhere; there are bound to be recurrences with jumbo jets, perhaps carrying 500 to 1,000 passengers and with far more terrible consequences. *We* have no claim to special immunity!

Rescue problems in built-up areas

3.1. Casualties apart, problems of rescue of survivors both from the aircraft and on the ground are greatly increased by the difficulties of manoeuvring rescue appliances through built-up areas, in streets cluttered with wreckage and obstructed by other vehicles, inquisitive sightseers, etc., quite apart from more intractable problems now introduced by tower blocks of offices or flats. All this at a time when seconds are vital.

3.2. While there is no wish to over-dramatise such situations, accidents during the take-off and landing phases of flight are becoming the most dominant pattern in air disasters, and it can be only a matter of time before we are faced with such a major tragedy in this country, the effects of which could however be so largely avoided by selection of a coastal site.

Reclaimed coastal areas

4.1. The value of reclaimed land in such localities represents a total and positive gain, particularly for an airport, where soil fertility would be an actual disadvantage. On the other hand, sterilisation of a large tract of agricultural land would be a direct and heavy loss to the community. The Foulness proposal also has advantages unparalleled by any other site within such easy reach of the metropolis, through the possibility of combining with it a modern deep-water seaport, with ready access by air or sea—including, of course, hovercraft—to several major European ports.

4.2. It is understood that the future Netherlands international airport is to be on reclaimed land in the Zuyder Zee, with take-off and approach paths over water, to keep jets away from inhabited areas. A similar project is envisaged for Chicago's new airport and all logical arguments point in this direction, for the future.

4.3. If the Foulness proposal is not adopted, there can be little doubt that all the benefits which would accrue from such a site would be reaped by the Netherlands project, with regrettable loss of trade to this country, while we shall stand condemned, in the eyes of future generations, for our lack of vision and foresight.

4.4. Another major advantage which the use of Foulness would permit is inclusion in the project of the long-debated Thames barrage, with a motorway

Printed image digitised by the University of Southampton Library Digitisation Unit

link between the industrial North, East Anglia, the Channel Tunnel and South East England, which would go far to relieve London traffic problems and, at the same time, would reduce the threat of flooding, to which a large proportion of London's millions are at present exposed.

4.5. Since the east coast has been slowly sinking for many centuries, land reclamation on this scale, while no more than a reassertion of our rightful, national heritage, would not be expected to lead to any disastrous change in the balance of tidal flows in the North Sea and English Channel; in any case, these effects can be verified by hydrokinetic model experiments.

Bird life

5.1. The Foulness area is reputed to be the haunt of certain rare species of wild birds. Disruption of nature, however regrettable it may be, has had to be accepted as part of the price we must pay in the cause of progress of mankind. In this case, it would not seem necessary that the bird population should be destroyed. Considerable success has been achieved in recent years with humane methods of discouraging birds from frequenting airfields and work on this subject is still progressing, with promising results. In the present state of knowledge of ornithology, it may well prove possible, by appropriate means of discouragement and persuasion, to effect a change in their habitat,without other adverse results.

5.2. While in the past bird strikes on aircraft and aero-engines have sometimes had serious consequences, these problems too are being overcome, by greater attention, in the design stages, to the vulnerability of both. It is not, therefore, considered that birds need present an unduly serious hazard at Foulness.

Fog

6.1. The Commission will doubtless have considered climatic conditions at all the proposed sites before arriving at their short list and, in view of the inclusion therein of Foulness, it is permissible to assume that this was not thought to be a limiting factor. Progress achieved in automatic landing and also in fog dispersal give strong support to this view, while the potentialities of lasers as yet seem to have been largely unexplored.

6.2. It is, however, desirable to inquire more deeply into possible consequences of a sudden emergency arising in an aircraft approaching the airport in fog, necessitating an immediate forced landing.

6.3. Consider, for instance, the accident to BOAC Boeing 707*, G-ARWE, at Heathrow on 8th April 1968. Number 2 engine caught fire after take-off and fell away, setting fire to broken fuel lines in the wing. The pilot managed to return, without the aid of the Instrument Landing System, and made a smooth landing on a cross-wind runway, most of the occupants escaping but the aircraft being burned out.

6.4. Had this same situation arisen when operating in zero-zero conditions (no forward nor vertical visibility), which it is understood that BOAC propose to do on full adoption of the Automatic Landing System (Autoland), and had the pilot been unable to regain a position whence he could secure guidance from Autoland but been forced to put down as best and where he might, there could be little doubt that, if operating from an inland airfield, the consequences would have been a disastrous crash, almost certainly killing all on board with the further possibility that, if he had come down in a populous area, untold casualties might have resulted on the ground as well.

6.5. On the other hand, at a coastal airport, the pilot would know that, at least on certain headings, he would have reasonably clear water ahead of him, with the prospect of making a moderately safe ditching. In this, he would be helped by the fact that in foggy weather seas are usually calm hence, despite his difficulties, such an operation might well result in the saving of all on board.

6.6. At such a site as Foulness, assuming that there would be a deep-water port alongside, it might well be arranged that, in thick weather anyway if not as a permanent arrangement, certain areas of water were kept clear of shipping, so that any risk of collision could be avoided.

Consequences of ditching

7.1. What are the probable consequences of accidents to aircraft near inland or coastal sites, as regards involvement of passengers and crew? Those affecting third parties on the ground have already been mentioned, with some reference to the problems of rescue in built-up areas. The use of larger and still larger aircraft, which will have become general by the time the new airport comes into use, is bound to involve many more people, both in the aircraft and on the ground. But when effective steps are being taken, in respect of every other means of transport, to achieve a positive reduction of casualties, this prospect cannot be regarded with complacency.

7.2. From perusal of this paper so far, it will have become evident that coastal sites possess many advantages from the safety aspect which are not available at inland airports. All indications are that we must expect more and more airports to be built on coastal sites or on reclaimed land, where problems similar to the above will usually apply. Thus we have to accept that, with accidents now occurring mainly in the take-off and landing phases of flight, an increasing proportion will end in ditching.

7.3. It is therefore desirable to refer briefly to some aspects of this manoeuvre on which there is little pub-

* Civil Aircraft Accident Report 324 (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

lished information. For survival of the maximum possible number of occupants, the most important desiderata are:

i) Aircraft ditchability, i.e. hydrodynamic behaviour, flotation attitude after coming to rest, and flotation time.

ii) Escape from the ditched aircraft, covering all occupant actions and movements from the moment of leaving their seats, after the aircraft comes to rest, to that when they emerge from it.

iii) Survival after escape, which may entail a substantial wait for rescue, during which all must be kept together, and as dry and warm as possible, this only being attainable by provision of out-of-water support and protection from exposure.

iv) Final rescue, by shipping, hovercraft, helicopters or a combination of all three. This phase may of course be preceded by an appreciable period needed to get rescuers organised and on their way and to locate the exact scene of the accident.

7.4. The above are referred to in more detail in paragraphs 9 to 13 but the following authoritative opinion, issued by the US Civil Aeronautics Board five years ago, demands close attention:—

> "All factors being equal, premeditated ditchings should have an equal or greater number of survivors than a forced landing on land, if adequate survival and rescue facilities are provided" (Reference 1).

This view is strongly supported by all experts on the subject and is amply confirmed by factual experience. However, it may never be known in how many disastrous land crashes the pilot would have opted to ditch if he had had adequate sea survival and escape facilities on board.

Some legal aspects of current safety provisions

8.1. In the last few years national and international requirements in regard to safety in air accidents have undergone important changes and the position, in many respects, is still fluid. It thus seems desirable to present some background to this subject before elaborating on paragraph 7.3. For the sake of brevity, only bare essentials of such legislation are indicated in what follows, it being assumed that, if required, the Commission will obtain full details from the relevant official documents.

8.2. The International Standards and Recommended Practices, for safe operation of aircraft, promulgated by ICAO (the International Civil Aviation Organisation), have the support of well over a hundred States including Britain and the USA. Under the ICAO Convention, all Signatory States have agreed to implement these Standards in their national regulations as minimum requirements, and it is worth noting that in many respects the USA have gone far beyond ICAO in their own regulations. Also that the conclusions of the Board of Trade special inquiry into air safety which were accepted by the present Government as recently as last May, were that safety levels in this country were below those of the United States and Australia.

8.3. As regards the present study, the most important ICAO Standards are those concerning over-water flights, which require that public transport aircraft:—

i) flying over water beyond 30 minutes from a suitable airfield which it can reach in the event of one engine failing should carry life jackets for all on board.

ii) on 'long' overwater flights, equivalent to a sea crossing of 600 to 800 nautical miles, according to performance, should carry, additional to i) life rafts sufficient to accommodate all persons on board.

8.4. The disparity between i) and ii) especially when related to modern aircraft, will at once be apparent as it permits an aircraft flying at a mere 500 mph to effect a 1,000 mile sea crossing without so much as a life jacket and, in respect of Supersonic Transports, the rule becomes ridiculous. This situation arose, however, because ii) was revised in 1963, to take better account of the performance of modern jets, whereas i) was left as it stood.

8.5. It is fair to point out in regard to i) that British regulations (Reference 2) do call for life jackets, when flying beyond gliding distance from shore.

8.6. The USA have never been in agreement with ii) and require life rafts to be provided on every flight beyond 50 miles from land and, despite assertions by British authorities that this was not enforced, it has been confirmed in writing by the Civil Aeronautics Board that no exceptions to this rule have been permitted. Other organisations, including the International Federation of Air Line Pilots' Associations, the British Air Line Pilots' Association and the Air Safety Group, have always been opposed to the wide exemptions permitted under this rule. Nonetheless, it still forms the basis of UK regulations on this matter, over-water crossings of less than 800 nautical miles (over 900 statute miles) still being permissible without life rafts.

8.7. Quite recently, the CAB, acting through its newly constituted National Transportation Safety Board, has declared its policy to be determined in favour of the air passenger, and this has been apparent in the above and other legislation, although other States, not excluding the United Kingdom, seemed to have framed their own in favour of the operator. Of this attitude, the above is a good example.

8.8. Early in 1966, the US Federal Aviation Agency required civil transport aircraft "operating over virtually any body of water" to provide individual survival equipment "within easy reach of each passenger," excepting only when such water was "not of such size

Printed image digitised by the University of Southampton Library Digitisation Unit

and depth that life preservers or flotation means would be required for survival." Such water were defined as including "inland bodies of water, such as lakes and rivers, as well as coastal waters." (Reference 3.)

8.9. At about the same time, the British Ministry of Aviation issued a draft proposal that life-jackets should be provided for all occupants, on flights taking off from or landing over water, even though the rest of the flight was over land. An example quoted was the Leeds-Southend run, where an aircraft might be over water at Southend for a very limited time. This move was welcomed as an official admission that the Ministry recognised the increased risk in such operations. However, difficulties in its implementation were pointed out and it was suggested that life rafts would be a more practical proposition. Slow progress seems to have been made in subsequent definition of this requirement but, while its final form is still not known, there is reason to believe that it will be issued soon.

8.10. Another significant move by the USA was the adoption of a rule that all passenger exits more than 6 ft above ground level must be provided with escape slides which would be self-supporting and automatically erected. Inflatable slides, which had proved their worth in limited use over some years prior to this, offered the only means of implementing the new requirement with reasonable economy of weight, space and bulk. Until this time, fabric slides had been largely used, which had to be held in place by two or more crew members at the foot. The modest height of 6 ft involves all modern transports while, on such types as the Boeing 747 where the height may approach 30 ft, such slides become large and important items of safety equipment.

8.11. This new rule led to action on an old idea, not previously implemented, to combine the functions of escape slides and life rafts, the device hereafter being described as a slide/raft. A number of promising developments are known to be in hand, although it is not yet certain that any have reached production. There is strong pressure, however, to secure their adoption on such aircraft as the 747, subject to official approval.

8.12. The pre-eminent position of American aviation in world air transport and the importance of the American aircraft market to Britain and other European countries make it fairly certain that this initiative will be followed by similar developments and legislation here and that the next decade will see all transport aircraft fitted with slide/rafts as normal equipment. This should resolve the vexed question of making adequate provision for safety of passengers in the event of an unpremeditated ditching at such coastal airports as Foulness. Slide/rafts are never likely to match the performance of conventional life rafts on the high seas, but they do afford reasonable promise of survival in the event of an aircraft suddenly having to ditch during the take-off or approach.

Safety of survivors in ditching

9.1. Much could be written concerning the four factors mentioned in paragraph 7.2 which affect ditching survival, but within the scope of a Paper such as this it is only possible to indicate in briefest outline where the expertise in these matters has brought us today. The extremely reassuring statement in a report issued by the Civil Aeronautics Board and quoted in paragraph 7.4 should be sufficient in itself, but this is too broad a sweep of the brush to indicate what shortcomings need to be made good. Some further information may be found in References 4, 5 and 6, while a shorter outline is indicated in the succeeding paragraphs of this Paper.

Aircraft ditchability

10.1. At the start of World War II this was an almost unheard-of term, but without some attempt to achieve good and predictable behaviour of a landplane after contact with the sea it was clearly almost pointless to provide survival equipment or indeed to make any serious attempt at rescue: without it, survival and rescue would have been merely face-saving gestures in the hope of boosting morale, but in due course these could have rebounded with dire results.

10.2. In the 1930s, some courageous work had been done by the Royal Navy on small carrier-borne aircraft of those days, by catapulting a few of them into the sea, sometimes with a live crew on board. Mainly, however, we had to learn the hard way, with the help of some background knowledge of flying-boat design, studying form, construction and the more obviously good or bad features which might influence ditching. As the war proceeded, we were able to examine the damage sustained by various ditched aircraft and gained valuable information from survivors. Eventually a technique was developed for making tests of scale models in a ditching tank. Since those days, this has developed into quite an exact science, which enables us to predict with good accuracy what the ditching behaviour of any new type of aircraft is likely to be. A good example of the modern approach, on the DC10, is given in Reference 7.

10.3. Good hydrodynamic behaviour should bring an aircraft smoothly, if firmly, to rest, afloat, as nearly as possible facing in the same direction as its original approach, although the pilot, attempting to touch down along the top of a swell, may have to vary this, and the aircraft itself, after coming to rest, may weathercock or be swung round by the subsequent action of waves or swell. It should remain afloat, as nearly as possible in a level attitude fore-and-aft, and should sustain the minimum of structural damage, enabling it to float long enough for all on board to

Printed image digitised by the University of Southampton Library Digitisation Unit

escape to life rafts. In very exceptional conditions, survivors have remained on board until rescued, but few aircraft can long withstand the racking of heavy seas, hence it is generally best for survivors to get clear of the aircraft.

Escape from ditched aircraft

11.1. The problems here are closely allied to those of escape in a crash-landing, the principal difference being that emergency exits used in the one case are often unsuitable in the other, and vice versa. Expert assistance by cabin and flight deck crew is vital, in mustering and directing passengers and in ensuring correct deployment of survival equipment. If slide/rafts are fitted at exits only suitable for a crash landing, they will need to be moved to ditching exits for use on water. Development of this equipment is still in its early stages, and abandon-aircraft drills for use in ditching will need to be very carefully worked out. American requirements now include actual demonstrations of such emergency drills by the aircraft constructor, an essential prerequisite to approval, which should be adopted in this country. It has long been practised by the RAF.

11.2. Using either life rafts or slide/rafts, it is essential that at least one crew member should be in charge of each. With existing provisions, this will be difficult as, under British regulations, one cabin crew member on jumbo jets must be available for every 50 passengers. The maximum life raft capacity being of the order of 30 persons, even using all the flight deck crew as well, there may not be enough to go round. This, however, is a problem for the jumbo jets, rather than for coastal airports, but it is one that must be resolved.

Survival after escape

12.1. This is an acute problem which many aircraft constructors and operators seem anxious not to recognise. However, Figure 1 of Reference 4, "Survival in Water at Various Temperatures"makes this problem painfully clear. Around these shores, for six months of the year, the sea temperature is only 40°F and prospects of survival in water, supported solely by a life jacket, are slim. A young and fit man or woman may survive up to two hours, but an older person not 30 minutes. A large flotilla of rescue craft would need to be on constant standby, to ensure that enough could be on the spot in time to rescue 500 survivors from a jumbo jet, if all were in water. If they were on slide/rafts, the situation would be better but even here, to avoid deaths from exposure to a freezing wind, in wet clothing, the position would need most careful watching. In better weather, their plight would be less acute but, as the Ministry of Aviation has long been made fully aware, the only satisfactory answer is to provide life rafts for all on board.

12.2. Slide/rafts have great possibilities, but the various manufacturers have had such arduous conditions imposed upon them by aircraft constructors and operators that they have as yet been unable to develop their fullest potential as life savers. For example, on the Boeing 747, for a slide length in excess of 30 ft and capable of accommodating some 40 or more passengers, it is understood that the constructors have insisted that the space available for stowage of the slide/raft with all ancillary equipment shall be less than 4 cu. ft! This is virtually an impossible demand to meet.

Final rescue

13.1. Search for the disaster area itself may be a major operation, even though it may be quite near to the intended destination. While seemingly well on the way to being defeated as regards air operations, fog presents other difficulties to rescuers, afloat or ashore. Sir John Briscoe, Director of Operations, British Airports Authority, has said:—

> "Heathrow is the only aerodrome in UK . . . equipped with ASMI (Airfield Surface Movement Indicator) Radar and it has been fire service policy to practise navigation in the quiet hours of the night with the assistance of the ATC ASMI operators . . . So long as an appliance is on a runway or taxiway, it gives quite a good return on the ASMI screen . . . ASMI also helps to enable the appliance to avoid any obstruction which may show up on the screen but it will not show up an aircraft which has ended up in the grass because a wavelength of 3 cm results in the grass itself giving a strong return (Reference 8)."

13.2. The writer has no claim to expert knowledge of radar but has himself witnessed radar experiments at sea, on the detection of quite large life rafts afloat in nearly calm water and clearly visible to the naked eye (no fog was needed for these experiments) when "sea clutter" from small wavelets drowned out the echo from the raft itself.

13.3. Such a situation could thus conceivably apply, while the aircraft remains afloat. If it sinks, however, leaving 500 people floating in life jackets, not only is the magnitude of the search task vastly increased but every survivor becomes an individual rescue operation. A prominent rescue expert, of world-wide repute, has confirmed that such a task would occupy a matter of hours. Of how much avail then for pilots in the sea to explain to their passengers, while the latter are dying by the dozen from exposure, that "it should not have happened on the basis of statistics"! Nor would the time-honoured doctrine of survival of the fittest be of outstanding appeal to those past the prime of life!

13.4. The airlines have a heavy responsibility for ensuring the safety of passengers who entrust their

Printed image digitised by the University of Southampton Library Digitisation Unit

lives to their care. Not to provide either life rafts or slide/rafts would show them to be devoid of all moral sense. As indicated, however, in para 12.1, many seem anxious not to recognise the grim reality of the problems of sea survival. With slide/rafts or preferably life rafts available, there should be a reasonable prospect of saving the lives of all occupants.

Conclusions

14.1. Within the short space of this Paper, it has been difficult to present as forcefully as one could wish all the arguments for and against inland and coastal airport sites. The problems of safety in land crashes are fairly generally appreciated, especially as such accidents unfortunately happen in our very midst.

14.2. Ditchings in these days, and especially of jets, are comparatively few. Also, they generally occur at positions inaccessible to the majority of the public and to inquisitive press reporters. By reason of these facts and since public memory is short, it has been felt essential to expand more particularly on the problems associated with it, in the presentation of this Paper.

14.3. For well over half a century, we have applied all our ingenuity to making aircraft ever safer and the writer would be among the first to agree that those of today are vastly safer than in the days of "stick-and-string". Safety is, however, a relative term. In our search for the most appropriate site for a new major airport, we cannot ignore the accident aspect. We have, moreover, no iota of moral right to dismiss the probability of ditching, on the grounds of calculated risk, which, deplorable as it may be, some interests would like to do.

14.4. Considerations of public convenience, the saving of time, airline operating costs and airport profitability, must on no account be permitted to outweigh those of safety, not only the safety of air travellers but, even more, of those hapless people who may otherwise find their lives and their homes in the very track of disaster.

Bibliography

15.1. The writer knows of no comprehensive treatise on the subjects discussed in this Paper but hopes that study of some of the references indicated below, with the material provided here, may assist the Commission in arriving at its final decision.

15.2. Copies of reference 4 and reprints of references 5 and 6 are in the private possession of the writer and may be obtained on application to him at the following address:

B. W. Townshend, Little Gables, Crooksbury Road, Farnham, Surrey.

References

1. A Study of US Air Carrier Water Accidents. CAB. Doyle and Roepe. 10/64.
2. The Air Navigation Order (HMSO) S.I. 1184. 1966.
3. Safety Requirements for Life Preservers broadened by FAA (press release). 2/2/66.
4. Ditch or Crash-Land? (second edition). Townshend. 12/65.
5. "Escape, Survival, Search and Rescue". *Journal of Royal Aeronautical Society*. Townshend. 12/66.
6. Ditching the Air Bus. *The Central*. Townshend. Winter 1967.
7. DC10 Airplane: Design Ditchability. US Dept. of Transportation, Pacific SAR Symposium. Goodwin. 10/68.
8. The Air Bus and the Air Port. British Air Line Pilots' Association Symposium. Briscoe. 11/66.

Printed image digitised by the University of Southampton Library Digitisation Unit

During the Stage II (Nuthampstead) Hearing at Royston, the proposed rail routes to give access to the proposed airport were shown on a map exhibited on the platform during the joint County Councils' evidence, in the course of which Mr. Sharman was cross-examined by Counsel for Stevenage as to the feasibility of one of the proposed rail links, particularly in view of the existing bottleneck in the line north of Welwyn Garden City, and it was mentioned that this rail link would be provided by British Rail's Advance Project trains running on their own exclusively reserved tracks.

The question of rail and road access also formed part of the joint County Councils' evidence.

It seems that the rail proposals rightly envisage the use of existing British Rail land, wherever possible.

The Commission is probably aware that the following factors may be relevant to its cost benefit analysis. If so, I request the Commission's forgiveness for wasting its time.

Rail communications—Nuthampstead to London

i) *Great Northern main line route*—(partly on new formation, partly on existing):

The existing railway into King's Cross has about the widest cuttings and embankments of any railway in the British Isles. Historically, I believe it is a fact that the line had to be built this way as, with narrower cuttings and embankments (and their consequent steeper sides), there was a considerable tendency for the earth to slide, to the detriment of the stability of the track.

Therefore, if two new high-speed tracks are to be dovetailed into the existing railway land, the unstable soil of many embankments and cuttings will need extensively stabilising or, alternatively, considerable lengths of retaining wall will need to be built if the acquisition of additional land is to be avoided. In some places it may be possible to avoid land acquisition by siting the "airport" lines on land vacated by tracks no longer serving a useful purpose.

Many ancillary works will be needed at virtually all stations en route, probably involving their entire rebuilding, as well as the construction in the early development stage of additional viaducts and tunnels.

Similar remarks apply if the trains are diverted to follow the slower Hertford Loop Line.

ii) *Great Eastern (Lee Valley) route:*

This route has only recently been remodelled for electric traction, the last sector of which came into public operation in May, 1969; where four tracks existed hitherto south of Ponders End, two tracks have now generally been removed and, in some cases, the posts carrying the overhead wires for the newly electrified lines have been sited on the land thus vacated.

North of Ponders End additional tracks could be laid, provided some land is acquired, but several new minor bridges have been built over the track and these would require widening, as they have been built to span two tracks only.

Much ancillary work and station rebuilding would be needed so as to provide the airport trains with a fast straight route wherever possible.

However, the Advance Project trains are unlikely to be able to realise their potential for speed and rapid transit on this route owing to its curvature north of Broxbourne and also, more particularly, south of Tottenham, beyond which the trains could be routed into either Liverpool Street or St. Pancras; access to King's Cross could also be arranged, but with greater difficulty.

In the case of both King's Cross and St. Pancras the vital junction near Tottenham has only recently been removed, but, however access is replanned, a severe speed restriction is likely in this area unless extensive demolition of industrial property takes place so that the track can be satisfactorily realigned.

Rail communications—possible factors affecting the siting of the London rail terminal(s) serving London airports, both existing and now being considered

It seems that air traffic desires to go to the West End of London. Much talk has, therefore, been made of rebuilding Victoria Station so as to serve Gatwick from there, as at present, and also Heathrow in the future. Though not impossible, it would not be easy to serve any of the Third London Airport sites at present under consideration, nor for that matter Stansted, really efficiently from this station.

In September, 1967 the Chief Planning Officer of British Rail wrote to me that the airport north of London would probably be served from a terminal in the King's Cross area. (This correspondence could be made available to the Commission, if it so desires.)

Since this time, the names of King's Cross and St.

Printed image digitised by the University of Southampton Library Digitisation Unit

Pancras have been put forward fairly indiscriminately, but the cost of using one is likely to be very different from the other.

British Rail has surplus capacity in this part of London and has already expressed the wish that it should be relieved of the use of either one or the other of these terminals, although schemes to this effect are believed to have been at least temporarily shelved.

Whilst it is possible to divert the King's Cross traffic into St. Pancras and vice versa, neither station appears to have sufficient spare capacity to take the other's traffic entirely. St. Pancras enjoys on balance, perhaps, rather better links with the existing and proposed London Airports.

It has also been shown that the existing services into St. Pancras could be diverted to Euston and Moorgate conjointly at reasonable cost and with relatively little inconvenience, thus leaving St. Pancras unused.

St. Pancras Station is partially a scheduled building subject to a Preservation Order. It also has a largish hotel (at present used by British Rail for staff purposes) and, like King's Cross, reasonable access by Underground to all parts of London.

King's Cross Station, though a convenient terminal if the Nuthampstead site is chosen, is severely limited in its passenger handling abilities and will remain so unless very extensive remodelling takes place. The provision of adequate car parking facilities, etc., is also likely to be more difficult, than at St. Pancras also.

King's Cross is not endowed with quite the same universal ability to serve all the London Airports, existing and proposed, as is St. Pancras, which enjoys:

i) Almost direct rail communication with the old London and North Western Main Line, which could be used if additional tracks were provided, though it is not certain if these would be needed for the entire route (revised junctions may also be necessary in the Camden Road and/or Willesden areas) if Wing is the airport site finally selected.

ii) Almost direct access to the old Great Central and Metropolitan and Great Central and Great Western Joint Lines, with which junctions could be arranged in the West Hampstead area to provide an alternative route to the site at Wing; but for lineside engineering reasons and length of journey, this is likely to be more costly and a less satisfactory solution than that mentioned in (i) above, even when additional tracks have been provided, which in this case would seem to be needed from an earlier date.

iii) Direct communication with the old Midland Line, of which it is the London terminal and which, if the diversions of this line's existing traffic, already mentioned, took place, would provide the use exclusively for airport traffic of two of the existing four tracks, giving high-speed potential, if the Thurleigh site is chosen.

iv) Direct communication with the Great Northern Main Line and Hertford Loop Lines (providing the necessary junction is installed near the London rail terminal) and also with the Great Eastern (Lea Valley) Line, all of which could be used if Nuthampstead is selected, subject to the already-mentioned bottlenecks and additional track requirements being taken care of. This last-mentioned route could also be used if, in the end, Stansted is selected.

v) Direct communication by means of the Kentish Town and Barking Line with the Great Eastern Main Line and the London, Tilbury and Southend Line, both of which could be used if additional tracks are provided, should Foulness be chosen.

vi) Good access to Heathrow via Camden Road or Gospel Oak, Willesden, Acton, the Great Western Main Line and the largely disused Staines Branch (which itself would need rebuilding). This route might possibly involve less expense and disturbance than the proposed Southern route from Victoria, though some junctions would require relaying and some additional track may possibly be required.

vii) Reasonable access to Gatwick by way of the Metropolitan Widened Line and Holborn Viaduct and a Southern Region Line. This route may well not be quite so rapid as that from Victoria, but this would not seem likely to be a great handicap as Gatwick must, by reason of its present size and its limitations as to future expansion, remain subordinate to Heathrow and the Third London Airport now being considered.

At St. Pancras new "Metropolitan Widened Line" platforms would probably be needed under the main station to serve Gatwick, as the existing ones are perhaps too remote to be of practical value for airport passengers.

These Gatwick airport trains would have to share the Metropolitan Widened Line with the diverted Midland Line Suburban trains between St. Pancras and Aldersgate, but for the reason stated this should not be a great difficulty.

As a town terminal, St. Pancras is probably less well sited in relation to the West End than Victoria, but its accessibility by public transport from all parts of London is probably marginally better.

It has yet to be established whether the existing structure, even after interior remodelling, could provide sufficient space for all the passenger and baggage-handling facilities that would be needed,

Printed image digitised by the University of Southampton Library Digitisation Unit

though there probably is adequate room for expansion, multi-storey car-parks and so forth on the site of the adjacent and partially derelict goods depot.

Meanwhile, there is the problem of providing sufficient capacity in both track and trains to the south of London, including the widening of the Grosvenor Bridge over the Thames, which would be needed if Victoria is to be used for Heathrow and Gatwick; added to which, passenger handling facilities will then be needed for airport passengers at two London rail terminals instead of one, due to the relative inaccessibility of Victoria to Stansted and any of the four sites now under consideration.

Rail communications—other existing rail terminals and conclusions as to choice of the rail terminal for London's airports

No other London rail terminal provides the same flexibility of choice over the siting of the Third London Airport, coupled with possible access to the existing Airports, as does St. Pancras.

Broad Street is fairly good in this respect if the inability to serve Gatwick is discounted. However, whilst it is well sited in relation to the City, its access to the West End is poor, the distribution of passengers by Underground could not be made as good without considerable expense, and there is little or no room for improving road traffic circulation in this area.

Several other terminals, particularly Marylebone, are perhaps better sited for serving the West End, but existing and foreseeable urban communications make the distribution of passengers to other parts of London, in almost all cases, less easy.

Either a single terminal in the King's Cross/St. Pancras area or two terminals (i.e., one at this site and one at Victoria) will greatly aggravate road traffic problems in their respective vicinities. In the King's Cross/St. Pancras area this seems likely to be more serious if King's Cross is used instead of St. Pancras, as in this case it would almost certainly be necessary to build extensively on the site at present occupied by various hutments, etc. between the station and Euston Road; thus severely reducing the amount of land available for road improvements.

All prospective terminals will strain the capacities of the London Transport Underground Lines serving them, but on all counts it seems probable that the cheaper, more flexible, and more comprehensive solution lies in the King's Cross/St. Pancras area, with King's Cross fulfilling its role of a domestic rail terminal and St. Pancras taking on that of the terminal serving all of London's Airports, present and future.

Rail communications—access to the Midlands and North relative to the Airport sites now under consideration

Of the three inland sites proposed, only Wing and Thurleigh seem likely to be able to provide access to the Midlands at reasonable cost, whilst Wing could reasonably be expected to be provided with links to the North West.

From the Nuthampstead site, trains to London could be stopped at a convenient point en route, if the Great Northern Main Line is used, to provide connections to the North East; but this would not apply if the Lea Valley or Hertford Loop Lines were used.

From Foulness, the only satisfactory route would be via London; and this would also seem to apply to Stansted.

Inter-airport communications

By rail

If St. Pancras is used as the town terminal, inter-airport communication could conveniently be done by rail, because of the station's good access to all sites.

British Rail would probably be glad to have what is presently a semi-redundant terminal put to work to capacity and retained exclusively for airport traffic for the foreseeable future.

By air

Mention has been made elsewhere of performing this task either by helicopter or by short-haul aircraft. Surely a policy such as this must directly limit the capacity of any airport for long-haul work by the amount the airport is used for such local communication.

By road

Inter-airport communication by public transport, except via specially-built Motorways, would very likely be too slow to be acceptable.

It would, however, probably remain acceptable by private or hire cars.

Road communications—access to Nuthampstead

From the map mentioned at the beginning of this Memorandum, it would seem to be suggested that the main road route to London from Nuthampstead would be by an upgraded A10.

The existing A10 is already overloaded and, even if upgraded, would seem unlikely to be able to handle the additional traffic the airport would generate.

A new Motorway route will thus have to be found into London, particularly as the A1, it is believed, can only cope with but little more traffic and then at certain times of the day only, whilst the remodelling of the London end, yet to be completed, will only be sufficient for the natural growth of road traffic. Furthermore, the projected M11 is thought to have only a small reserve capacity, whilst the A11, itself, is already heavily overloaded and, in any case, both these routes

Printed image digitised by the University of Southampton Library Digitisation Unit

serve the eastern part of London, instead of the west, which is not satisfactory.

Any Motorway providing an east-west link would probably have to go at least as far west as the A40 trunk route to serve the Midlands, etc., or alternatively extend to any new Motorway that might be constructed to relieve the already well loaded M1.

Road communications—access to other airport sites now under consideration; urbanisation costs, etc.

It may well be that factors similar to those pertaining at Nuthampstead also affect the other inland sites, but the latter's geographical locations would seem more promising.

As for the coastal site, the Commission will already be aware of the problems, but it seems possible that the saving in expense on the associated urban development, by virtue of the proximity of existing largish towns wishing to attract additional employment, may well partly offset the extra construction cost of the airport, itself, and perhaps even part of the additional cost of the rail and road links.

For the inland sites, the whole cost to the associated urban development will almost certainly have to be added in to the airport costs and at Wing there is the further possible complication of finding yet another site for a new town to house the industry and population at present budgeted for Milton Keynes, where the airport workers would presumably now have a prior claim.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire County Council

You will recall that in the introduction to the joint Stage III submission by the County Councils, it is made clear that the Bedfordshire, Huntingdon and Peterborough and Northamptonshire County Councils reserved the opportunity to submit additional Stage III evidence, or to comment on the evidence contained in the remainder of the Stage III submission.

These County Councils do not wish to present separate evidence at Stage III, but they would remind the Commission that the joint Stage III evidence was prepared before the evidence of the three County Councils at the Thurleigh Stage II local hearing was produced. Thus, where there is a difference of emphasis between the three Counties' evidence at Stage II and the evidence contained in the joint Stage III submission the Stage II evidence should be preferred as representing the more considered view of the Counties, having been prepared after more detailed technical research.

The Commission's attention is particularly drawn to Chapter 2 of the joint Stage III submission, on regional planning considerations. Certain statements made in this Chapter conflict with the views expressed in Chapter 2 of Mr. Cowley's evidence at the Thurleigh local hearing. For example, whereas the Stage III submission, at paragraph 2.34, suggests that the establishment of the Third London Airport at Thurleigh would help to develop an effective "counter magnet" of well over 1,000,000 people in the Milton Keynes area, Mr. Cowley concludes, at paragraph 2.21 of his evidence, that there must be "very real doubt whether it is possible for the construction industry to undertake the work load associated with both the airport and with such planned expansion schemes as Milton Keynes, and whether it would be desirable or even feasible to concentrate so much capital investment in one relatively small area over the next 30 years." The three County Councils would wish the Commission to accept the opinion expressed in Mr. Cowley's evidence as the Counties' preferred view on this matter.

The three Counties also wish to make a different assessment of the Nuthampstead site to that which is expressed in the Introduction to the Stage III submission. They are not satisfied that the totality of the evidence submitted at Stages II and III rules out Nuthampstead completely. They consider that, while Foulness should unquestionably be the preferred site, the difference between the three inland sites is, in many respects, very marginal.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Bedfordshire Water Board

General

1. The Bedfordshire Water Board would be affected to some degree by the siting of the Third London Airport at any of the three inland sites, namely Nuthampstead, Cublington and Thurleigh.

2. The Board is a statutory water undertaking and supplies water for domestic and non-domestic use to a present population of about 235,000 persons within an area of about 425 square miles, shown coloured pink on the map.

3. The Board has nine sources of supply directly under its own operation, eight of these sources being wells and boreholes in the Lower Greensand formation, and one direct river abstraction source at Bedford. All the source works are located within the Board's area of supply. In addition the Board receives a bulk supply from the Great Ouse Water Authority and also receives a very small supply from the Higham Ferrers and Rushden Water Board.

4. Although some minor development at the Board's existing sources may be possible in the future, the major source of the Board's future supplies will be the bulk supply from the Great Ouse Water Authority. The Board has reservation under the Great Ouse Water Act 1961, to take up to 2.75 m.g.d. in respect of the Works at present constructed and up to 8 m.g.d. when second stage works envisaged in the Act are completed. Water Orders revising these quantities and providing for a greater ultimate reservation from enlarged works are about to be submitted to the Ministry of Housing and Local Government.

5. The principal effects on the Board's activities of a Third London Airport at any of the inland sites would be twofold.

i) It would create large demands for water in the Board's area of supply either from "primary employment" or "secondary employment" or both.

ii) It would create problems in respect of the pollution of water sources, mainly from surface water run off and increased sewage effluent. discharges.

The effect of these two factors on each of the inland sites is now considered.

A. Nuthampstead

(i) Water demand

For the purpose of this evidence it is assumed that the major effects of "urbanisation" would be felt within a 20 miles radius of the airport. (Lines showing the 20 miles radius are marked on the enclosed plan.) Part of the Board's area would probably feel the impact of the additional population. Without detailed planning knowledge it is impossible to quantify the extent to which demand for water would increase but since the area is on the fringe of the 20 miles radius it is unlikely that any great water supply difficulties would result. It would be a demand which has not been allowed for and as such would accelerate the need for additional bulk supplies from the Great Ouse Water Authority.

(ii) Pollution of sources

It is unlikely that surface water run off or effluent discharges will present a pollution problem for any of the Board's existing sources.

B. Cublington

(i) Water demand

Whilst the airport itself would appear to be outside the Board's area of supply, there would clearly be a very substantial increase in demand resulting from urbanisation in the southern part of the Board's area. Provided additional water resources were made available it is not envisaged that there would be any major distribution problems.

(ii) Pollution of sources

(a) *Underground sources*

It is unlikely that surface water run off or effluent discharge will present a pollution problem for any of the Board's underground sources.

(b) *Surface source*

The Board has a river intake at Clapham, near Bedford, where water is abstracted from the River Great Ouse, and after suitable treatment, is distributed to a large area of North Bedfordshire. The catchment area of the River Great Ouse upstream of the Board's intake includes part of the site of the proposed airport at Cublington and a large area within a 20 miles radius of the airport which would be subjected to "urbanisation". It is shown hatched pink on the enclosed plan. The catchment area also includes the proposed new city at Milton Keynes.

The Ministry of Housing and Local Government in a letter to the Clerks of the Bedfordshire and Buckinghamshire County Councils in 1958 stated on the subject of Development in the catchment area of the River Ouse above Bedford:

"As your Council are aware, the Minister thinks that special caution should be exercised in controlling development in the above mentioned area;

Printed image digitised by the University of Southampton Library Digitisation Unit

since the amount of sewage effluent being discharged in the area already constitutes an exceptionally high proportion of the dry weather flow of the River Great Ouse."

Nevertheless, despite this caution to the County Councils, the Ministry of Housing and Local Government itself promoted an Order setting up the new city of Milton Keynes. The Board were, and still are, concerned with the quality of the water in the River Great Ouse, particularly the effect when a large quantity of effluent from the new city is discharged into the river, and made representations to this effect at the Inquiry at Bletchley on the North Buckinghamshire New Town Designation Order. The Inspector in his report stated:—

"The case put forward by the Bedfordshire Water Board is amply confirmed by past official records to the effect that sewage effluent already constitutes a problem to the Board in exercising its rights to abstract water from the river at Clapham, Bedford."

Without detailed information on the location of the urbanisation resulting from the airport, it is difficult to know where the main effluent discharges would take place, but it seems clear that it would result in yet another substantial effluent load being placed on the River Great Ouse upstream of the Board's intake at Bedford. It could well be that the additional effluent load would so alter the character and composition of the water in the River Great Ouse that it would create serious treatment difficulties and at times would make it unsuitable for treatment for water supply purposes.

C. Thurleigh

(i) Water demand

An airport sited at Thurleigh would have the most serious effect on water demand on the Board of any of the three sites, since not only is the airport itself sited within the Board's area of supply but a large part of the urbanisation would also take place in the Board's area. No allowance for any such development has been allowed for in the Board's estimates for future water requirements but provided the necessary water resources were made available no major distribution problems are envisaged.

(ii) Pollution of sources

(a) *Underground sources*

It is unlikely that surface water run off or effluent discharge will present a pollution problem for any of the Board's underground sources.

(b) *Surface sources*

It would appear that the airport itself will be situated on land, the natural drainage of which would be into the catchment of the River Great Ouse, downstream of the Board's river intake at Clapham, Bedford. If this is so, then the danger of surface water contamination due to oil spillages, etc., affecting the Board's works would be small, although indirectly it would affect the Board's bulk supply source, namely the Great Ouse Water Authority, since drainage would be into the Ouse catchment upstream of their intake at Offord.

Some of the urbanisation associated with the airport would probably take place within the catchment area whose natural drainage is into the River Great Ouse upstream of the Board's Bedford Works. Any substantial increase in effluent discharges in the near vicinity upstream of the Board's intake would be a very serious matter. Although the effluent load in the River Great Ouse is already very high, particularly in dry weather flows, a large proportion of the discharges take place many river miles upstream of the Bedford intake and there is the opportunity for some "self-purification" to take place in the river before the water reaches the Board's intake. No such opportunity would take place if additional discharges took place nearer Bedford resulting from the "urbanisation".

A large part of the effluent resulting from the urbanisation, even if not discharging upstream of Bedford, would discharge into the River Ouse upstream of the Great Ouse Water Authority's intake and so would indirectly affect the quality of some of the Board's water supply.

SEE MAP AT END OF VOLUME

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the British Airports Authority

Comments on "Proposed Research Methodology"*

Chapter 1—General Principles

Paragraphs 3, 4 and 5

We fully support the attempt to quantify all factors and to fix monetary values for them. We understand that non-material aspects may well be difficult to value and that some of the considerations will be likely to raise controversy. But the alternative of relying simply on subjective judgment would, of course, throw the whole process open to challenge. Furthermore, in spite of the difficulties of putting values on non-material aspects it is obvious that the treatment of them in quantitative terms, in the same way as other aspects are treated, will demonstrate their sensitivity in a logical framework. If, in spite of every effort, there have to be some elements of subjective judgment, we trust that they will be clearly identified, that their basis will be stated, and that they will be expressed in quantitative and monetary terms, not merely by means of general expressions of relative importance. We believe that this is at the root of the Commission's intention—and we welcome it.

Paragraph 6

We agree that it is most important to establish and define who is receiving benefit and who is paying costs. This is—of course—basic to the whole examination. Reference is made to costs and benefits accruing to airlines and air travellers. The Authority has consistently emphasised, in its evidence, the importance of achieving an airport which is commercially viable, is acceptable to the airlines and to the travelling public, and is appropriately sited in relation to the traffic catchment area, with particular regard to *the role of London* in the national and international air transport environment. It is not immediately clear from the document that what we believe are such essential aspects are fully covered in the *Methodology*. In addition, aggregation will, we understand, be a cardinal feature of the final analysis. In addition to the "weighting" mentioned in this paragraph, aggregation should, we submit, include some form of "probability analysis" to take account of the different degrees of certainty attaching to the quantitative and monetary estimates.

There is also the question of costs and benefits of related industries. For example, the extent to which Heathrow—and now Gatwick as well—is attracting investment in hotel accommodation largely for foreign visitors by air is relevant to the considerations set out in this paragraph. Discussion with hoteliers brings out the point that they seek hotel sites which have quick and easy access to and from an airport and to and from central London.

A point of some relevance is that there will, to some extent at least, be competitive advantages and disadvantages between airlines operating from Heathrow and others from a remote new airport. A large difference in time or in cost between airports to the major centre of traffic could have significant effects.

Paragraph 8

Some sites may have much more commercial and operational risk attached to them than others because they may be less attractive to the airlines and the travelling public. In such instances, we suggest that the appropriate discount rate should be higher than the rate chosen for relatively "risk-free" projects—at any rate for those who take the extra risks.

Paragraphs 16-18

We agree that the primary objective is the optimum siting of the *airport*. The juxtaposition of a seaport must be viewed against the benefits and disadvantages which may be conferred upon the airport through that situation.

The viability of a Foulness seaport, taken by itself, is material to the question of a joint airport-seaport project. The Commission will be aware that a number of areas in the United Kingdom, including Thames-Medway, are being considered for possible seaport development. If a joint airport-seaport project should emerge as a desirable project for consideration at Foulness there might well be an argument that joint ventures of a different kind at other sites might also prove desirable. For example, subject to planning considerations, an inland site might have an industrial complex established nearby which might be as attractive—or even more attractive—as joint ventures elsewhere. Such a consideration does not, necessarily, mean that from the airport point of view, joint ventures are essential or even desirable. The establishment of an airport in a particular area might, however, usefully carry with it the establishment of other major activities which could be accommodated in the area beneficially to the economics of the area and of the country—though not necessarily linked directly with air transport. Our present view is that the interrelation between an airport and a seaport is relatively small.

Chapter 2—The Value of Travellers' Time

Paragraph 22

We share the Commission's feeling that the Ministry of Transport's figure of 10 per cent gross income may

* *Papers and Proceedings*, vol. VII, *Proposed Research Methodology* (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

be too low. We are looking into this and may be able to provide some guidance later.

Paragraph 25

Similarly, it appears to be worth checking whether air travellers place a higher value on travel time than travellers who use slower means of transport. If so, the Ministry of Transport's figure for leisure time is low in this context. In addition, the value of time to the air traveller may, on analysis, prove not to be a fixed proportion of gross income.

Chapter 3—Airport Policy Issues

Paragraphs 30-34

We agree that, in practice, "omnidirectionality" need not necessarily mean unimpeded access to *all* air lanes at *all* times for *all* air traffic. By the nature of the air traffic pattern some degree of specialisation is bound to occur for particular airlines. Nevertheless, for a Third London Airport the other extreme of "sectorisation" would impose serious penalties and inconveniences and could not be accepted, particularly for airlines operating *through* London. We are not quite sure what the Commission has in mind in suggesting that sectorised solutions possessing obvious benefits must be investigated—unless this means differing degrees of "omnidirectionality"? There is now much evidence that airports do not have to be anything like 50 to 60 miles apart to avoid interference one with another.

No mention is made in paragraph 33 of Gatwick. Gatwick is rapidly being developed by the Authority as London's second airport. The Commission will presumably apply the same criteria to Gatwick as to Heathrow and to the third airport, although the eventual volume of traffic at Gatwick may not be able to be developed to the same extent as elsewhere—for reasons of both air traffic control and topography.

Paragraph 38

On the basis of the Commission's arguments about the inclusion of Ringway, Manchester, we believe that Foulness should be charged with at least the extra costs involved in getting from the Southern Midlands to Manchester, in comparison with sites more convenient for this traffic. Even so, for Manchester to be a reckonable force in the argument it would have to be sufficiently attractive to the travelling public originating in the Southern Midlands area. Thus the airline services which Manchester offered would have to be sufficiently attractive to this traffic.

Chapter 4—Air Traffic Forecasting

Paragraph 42

We support the Commission's strategy that it will certainly be better to err on the side of "preparing for the worst" than to underestimate the traffic requirements and have to direct substantial traffic overseas—which may then never return. Unexpected developments in technology and/or promotion have always given fillips to rates of traffic growth when they might otherwise have begun to falter.

Paragraph 46

We believe that the assumption about foreign tourist travel is open to challenge and, as the Commission will know from our evidence, we are concerned about the possibility of an unattractive location seriously discouraging or frustrating foreign tourist travel to the United Kingdom. The airline industry will, we believe, be able to assist the Commission on this point.

Chapter 5—Timing of the Need for the Third Airport

Paragraph 50

We do not agree that differential landing fees constitute a practical measure. Control of capacity and timings is already exercised through airline scheduling committees. Landing fees are, indeed, such a relatively small element of airline costs that to have any significant effect differentials would have to be enormous, even possibly to the extent of offering "negative" fees. There will always remain the preference—and, indeed, the insistence—of the travelling public upon travelling during certain times of day—which airlines must continue to satisfy.

Paragraph 51

We believe that no major airport should have less than two adequate parallel runways in the future and we are considering the possibility of additional STOL/GA runways at both Heathrow and Gatwick. We assume that the Commission will not overlook the existence of Stansted which has, in operation, a 10,000 ft long runway and remains one of the Authority's responsibilities.

Paragraphs 52 and 55

We consider that the extent to which "peak smoothing" is likely to be achievable should not be overemphasised. For many years the airlines, with the cooperation of the Authority (and, previously, the Ministries concerned), have achieved a degree of scheduling control at Heathrow which has had the effect of some peak spreading. The pattern of air traffic and the preferred travelling times, plus the efforts already made at Heathrow, will not, in our view, offer much opportunity for further peak spreading. Recent experience in New York has demonstrated the difficulties. Moreover, scheduling control cannot be viewed on an insular basis: it has wide international repercussions. Here again the airline industry will, we think, be able to assist the Commission in its considerations.

Printed image digitised by the University of Southampton Library Digitisation Unit

Paragraph 53

We shall be very interested to see, in due course, the criteria which the Commission propose to develop and we readily offer any help which may be considered useful.

Paragraph 54

We feel that the references to "the loss of agricultural land" and other effects on the environment may come better under the category of "change of use of land" and the effects thereon. These effects may well have a net positive value.

Paragraph 60

We support the Commission's belief that their detailed analysis will show that lack of adequate airport capacity for any significant period could have a serious effect upon the nation's trade and prosperity. The value of imports, exports and re-exports through the airports is increasing at three times the rate of increase at ports as a whole and exports are, increasingly, transferring from seaports to airports to avoid delays. In addition useful sums are being spent in the vicinity of airports by employees of foreign airlines.

Chapter 8—Regional and Local Planning and Environmental Effects
Paragraphs 80-83

We agree with the strategy of proceeding on the basis of Plans 1, 2 and 3. The proposal that Plan 1 should not be costed does, however, raise serious doubts about the process by which the plan will be chosen. We assume that, before Plan 1 is settled, alternative possibilities will have been considered and that existing development plans will not be regarded as immutable. These existing plans may include attractive, but unrealisable, projects. They may also include expenditure of taxpayers' money for ratepayers' benefit. It seems to us, therefore, that the Plan 1 is a key factor in the planning exercise and should be presented as the result of demonstrated quantitative analysis and not of subjective judgment.

Paragraphs 81 and 82

The employment figures of 65,000 and 45,000 are those which the Commission published originally in its earlier documentation. The Authority submitted to the Commission information relating to the forecasting of primary employment and would welcome the opportunity of discussing this matter in more detail with the Commission's Research Team.

Paragraphs 86-92

The whole question of analysing environmental damage is—of course—extremely important and complex. At this stage we confine our comments to points of a general character.

We do not think that the differing situations between tenants and house owners (paragraph 89) is necessarily as stated. A tenant may well have considerable difficulty in finding alternative rented accommodation because of its scarcity (particularly in the case of council property). The owner, on the other hand, may not be so badly placed. There is also inertia on the part of individuals—well known in cases of environmental disturbance. Many people affected in varying degrees by proposed development may initially react strongly against them but take no immediate measures to seek alternatives and may later, on reflection, prefer to remain where they are rather than go elsewhere. We consider that this aspect must be taken into account. In addition there are now prospects that within a decade of the start of operations at a Third London Airport airport noise levels will begin to be significantly reduced. Some of the problems will ease.

Rateable values are not necessarily a safe guide to freehold values, because the multiplier may vary between 40 and 80 and varies from district to district.

The cost/benefits of reclaiming land at a remote site for agricultural development would appear to be interesting.

Presumably the Commission will be seeking advice from as many sources as possible in this difficult exercise—including the Authority. We shall be pleased to help so far as we are able. We shall be specially interested to see the data sought for purposes of the analysis (paragraph 92).

Paragraphs 93-99

The value of a property affected by noise may, indeed, initially fall by a modest amount. But the phenomenon of inertia, already referred to, together with longer term developments, may produce a buoyant situation for property demand as shown by the Wilson Report.* Moreover, land values in an area of increased development can, in general, be expected to appreciate in the course of time. We shall be most interested to see the results of the surveys referred to in paragraph 99. There appear prospects that noise levels around Heathrow, for instance, may reach a peak and thereafter steadily improve.

Paragraphs 100-107

Although these paragraphs refer to the loss or transfer of outdoor activities, it seems relevant to consider that an airport in a suitable location does offer the public an outdoor attraction for spectators. The public already spends considerable time and money as spectators. We suggest that this should also be weighed in the balance.

Chapter 11—Air Safety
Paragraphs 120 and 122

The proposed analysis may well prove inconclusive because of the size and character of the sample and the

* Cmd. 2056 (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

difficulty of making comparisons between airports. Accidents caused by local geographical factors will not necessarily be distinguishable from others which could equally well have occurred elsewhere. For example, the accident last year at Heathrow to a BKS Ambassador, caused by flap failure, could equally well have happened anywhere, though not necessarily with the same result.

The Commission is, we understand, investigating separately special problems such as bird strike hazard, the importance of which would not appear to be fully identifiable by the analysis proposed in paragraph 120.

General Comments

The information contained in the Commission's document is, of course, general in character. We have confined ourselves to offering comment on those areas of the *Methodology* which have at this stage raised certain important issues. It may well be that the Commission would, in any case, be taking these points into account in the detailed application of the *Methodology*. As time goes on there seems no doubt that further points will arise as a result of further studies of the document itself as well as in the light of more data on the detailed application and methods of evaluation which the Commission may publish. In particular, we shall wish to consider further the implications of those aspects of especial concern to us (including chapter 8). We trust that we may be permitted to offer further comment in due course. It will be particularly helpful if the Commission can publish guidance material on the more detailed application of the *Methodology*.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the British Airports Authority

Demand and capacity—Heathrow and Gatwick

1. During recent months, the Authority has been concentrating attention upon two matters of major concern to its commercial future:

a) *Forecasts* of traffic demands at Heathrow and Gatwick and

b) *Assumptions* of the probable capacities of these two airports.

2. Looking ahead, one of the Authority's primary tasks is to endeavour to provide adequate capacity for the demands of air traffic in its various forms, and to do so while achieving a satisfactory return on investment. We can best do this by keeping capacity and demand in close relation, with capacity sufficiently ahead of demand to avoid unacceptable delays or diversions of traffic.

3. On runway capacity, the Authority is—of course—dependent upon the views of the National Air Traffic Control Service. The capacities currently declared by NATCS for both Heathrow and Gatwick are obviously somewhat less than the eventual figures because of developments in technique which are either planned or in course of action. For its own planning purposes, the Authority must, of necessity, take a considered view of future capacity.

4. The development of technology during the next decade will, we believe, provide a probably hourly sustainable runway capacity of 72 movements at Heathrow and up to 60 at Gatwick (when a second runway is available), assuming no unfavourable interaction between the traffic at the two airports. (In 1969, during the four peak hours of day in the summer months, average rates of 64 movements at Heathrow and 30 an hour at Gatwick have been recorded.)

5. Forecasts of traffic demands for air transport movements have been made by the Authority in the form of a range between Upper and Lower limits and are set out in the annex to this memorandum. Our traffic forecasts make allowances for both some further spreading of peaks and for a substantial growth in aircraft size. For planning purposes the Authority must pay due regard to potential demand at the forecast upper level, lest—through inadequate provision—traffic should have to be turned away. If traffic should in the event fall below the forecast upper level, the rate of implementation can be adjusted.

Heathrow

6. The forecast upper level demand for hourly air transport movements at Heathrow at the Standard Busy Rate exceeds the sustainable runway capacity in 1973. By that date we would expect annual air transport movements to reach 300,000 and total aircraft movements to come to 330,000. This would mean that Heathrow would not be capable of satisfying this demand and, if traffic was not to be frustrated, the excess would have to be accommodated elsewhere. Because the forecast excess in 1973 is marginal, actual transfers of traffic may not arise until 1974.

7. If traffic grows only at the lower level, demand would not exceed capacity at Heathrow until 1976.

8. Thus Heathrow will steadily move towards saturation, which appears likely to occur between 1973 and 1976.

Gatwick

9. The traffic at Gatwick is currently increasing at a high rate. In the year ended 30th September 1969, air transport movements were up by 24·6 per cent and passenger numbers up by 42·1 per cent, compared with the previous year. We expect a further substantial increase there in 1970 with the start of BEA's "Air Tours" services.

10. By 1974—when significant transfers of aircraft movements from Heathrow may first occur—the Authority's upper level forecast of demand for Gatwick's traffic (in terms of air transport movements at SBR) is 28. At the lower level it is 25. At Gatwick there is, in addition, a substantial volume of non-air transport movements in the busy hours. The addition of transfers from Heathrow from 1974 onwards will bring about a rapid saturation of the capacity of the single runway at Gatwick—which is assumed to be about 36 movements at a sustained rate. Furthermore, the growth of traffic on a single runway will severely increase the consequences which will flow when that runway has to be taken out of service for maintenance or other causes.

11. For these reasons, the Authority has accepted in principle the necessity for the construction of a second runway at Gatwick.

12. On the assumption that capacity at Gatwick with two runways will eventually reach a sustained rate of 60 movements an hour, the total capacity at Heathrow and Gatwick will become 132 sustained movements an hour. On this basis, and assuming *uninhibited* transfers from Heathrow to Gatwick, on the upper level of forecasts the combined capacities of the two airports would be sufficient to cope with demand until 1977/78, when the annual total at the two airports will be 480,000 air transport movements. Taking into account the extent of non-air transport movements at both airports (currently 60,000 a year) the total combined for the two airports would, by then, be at least 550,000 movements in the year.

Printed image digitised by the University of Southampton Library Digitisation Unit

13. The fact that Gatwick is situated 28 miles from London, that good rail access is available to the airport, and that during the early 1970s good road access will be provided by a spur off the M23 Motorway, render that airport second only to Heathrow as a site convenient both to the travelling public and to the airlines.

14. The policy of the Authority, therefore, is:

14.1. *To develop Heathrow and Gatwick* to meet the traffic demands.

14.2. *To look to the Third London Airport* to meet the demand which cannot be accommodated satisfactorily at other London airports.

In its implementation of this policy the Authority must continue to have regard to its commercial interests and to those of the airlines and the travelling public.

ANNEX TO MEMORANDUM

General

1. The Authority has just completed a thorough review and recalculation of its forecasts of traffic demand at Heathrow and Gatwick. We have also reviewed all the available evidence on the probable ultimate runway capacity of the two airports.

2. The resulting forecasts have been approved by the Authority's Board as the basis of the current planning work of the Authority, ahead of the forecasts which will be forthcoming from the Board of Trade Working Party at which both the Authority and the Commission are represented.

3. Clearly a number of uncertainties must exist on all aspects of such forecasts including, specifically, the rate of growth of aircraft size towards the end of the next decade and Heathrow's probable ATC capacity. We have taken a considered view of the probable range of these factors and the results are set out below.

Traffic demand

4. Table 1 attached sets out the Authority's forecasts of demand in terminal passengers and Table 2 demand in air transport movements. Separate forecasts are given in these tables for Heathrow and for Gatwick *which—for this purpose—do not take account of capacity limitations.*

5. The number of assumptions on which the forecasts are based cover a wide range and these can be given if required. Two of the most important assumptions on rates of growth of terminal passengers and of growth in average aircraft passenger load are shown in Tables 3 and 4.

Heathrow ATC capacity

6. Heathrow ATC capacity is expressed in terms of the hourly rate of aircraft movements which can be sustained for a number of hours without causing delays to develop cumulatively to an unacceptable level. This measure has then to be compared with traffic demand.

7. Over a number of years a procedure has been worked out at Heathrow whereby National Air Traffic Control Services "declare" a runway capacity for airline scheduling purposes for the ensuing year. Over recent years the "sustained rate" declared by NATCS has been gradually increased. It was 50 in 1967, 54 in 1968, 56 in 1969 and 60 has been declared for the summer of 1970. In addition, NATCS, at airline request, declare a peak rate for one or two hours, for which schedules can be allocated. Examination of all the available evidence leads us to assume that this process of a gradual increase each year in the "declared" sustainable rate will continue up to at least 72 movements/hour.

8. The measure of demand which has hitherto been compared with sustained capacity is the Standard Busy Rate (SBR) for air transport movements. This has been taken as the hourly level of movements reached or exceeded on at least 30 occasions during the three peak months of mid-June to mid-September.

9. In recent years, however, the actual SBR has exceeded the "declared" sustainable capacity. This is partly because actual movement rates achieved differ from "planned" movement rates as a result of inevitable deviations from schedules and because NATCS have allowed a peak rate scheduling. This situation is also indicative of the effect of the scheduling arrangements in spreading out peaks.

10. Thus, so long as NATCS continue to declare a peak hour capacity above the sustainable capacity, we now believe that the measure of SBR demand used to compare with sustainable capacity should be more generous than the "thirtieth busiest hour".

11. The following table compares NATCS declared capacities for Heathrow in 1968 and 1969 with the rate of air transport movements actually achieved and also our assumptions of what NATCS may declare ultimately (on two bases, lower and upper):

	1968	*1969*	*Assumed ultimate probable range*
"Declared" capacity			
Peak hour	62	62	76 to 80
Sustained rate	54	56	72 to 76
Achieved air transport movements			
Hourly (mid-June to mid-September)			
Peak hour rate	67	67	80 to 84
SBR— 30th busiest hour	60	61	
100th busiest hour	55	58	72 to 76
Daily—average day in July and August	777	793	1,000 to 1,050
Annual air transport movements	229,200	234,000 (est.)	300,000 to 315,000
TOTAL ANNUAL MOVEMENTS	247,400	256,000 (est.)	330,000 to 345,000

12. The figures for ultimate probable range for "declared" capacity assume that NATCS will continue

Printed image digitised by the University of Southampton Library Digitisation Unit

to declare two rates, peak hour and sustained and that the two rates will move closer together. In view of the close relationship between the achieved SBR at "the 100th busiest hour" and the achieved sustainable capacity we now assume that "the 100th busiest hour" is the most significant measure of "demand" to be equated with the measure of "supply", the sustainable rate. The other measures of demand; maximum hourly rate, daily average in July and August and annual movements are derived from "the 100th busiest hour".

Traffic at Heathrow post ATC saturation

13. The application of the figures in paragraph 11 to the range of traffic demand forecasts at Heathrow provides the measure of the range of unsatisfied demand at Heathrow which has to be accommodated elsewhere. This is shown in Table 5. It can be seen that, on the upper forecasts of traffic demand, an unsatisfied demand first appears in 1973. On the lower forecast of traffic demand the unsatisfied demand may not appear until 1977—but these figures take account only of air transport movements.

TABLE 1

Forecast traffic demand, Heathrow and Gatwick

Annual terminal passengers (*millions*)

	Lower forecast			*Upper forecast*		
	Heathrow	*Gatwick*	*Total*	*Heathrow*	*Gatwick*	*Total*
1968 (actual)	13·2	2·1	15·2	13·2	2·1	15·2
1969	14·1	2·7	16·8	14·8	2·8	17·6
1970	15·5	3·0	18·6	17·1	3·4	20·4
1971	17·2	3·4	20·5	19·5	3·8	23·3
1972	19·0	3·8	22·7	21·6	4·2	25·8
1973	21·0	4·2	25·2	23·9	4·7	28·6
1974	23·2	4·7	27·9	26·5	5·2	31·7
1975	25·7	5·2	30·9	29·4	5·8	35·2
1976	27·8	5·6	33·4	32·3	6·4	38·7
1977	30·0	6·1	36·0	35·5	7·0	42·6
1978	32·5	6·5	38·9	39·1	7·7	46·8
1979	35·0	7·1	42·0	43·0	8·5	51·5
1980	37·8	7·6	45·4	47·3	9·4	56·6

TABLE 2

Forecast traffic demand, Heathrow and Gatwick

Annual air transport movements (*thousands*)

	Lower forecast			*Upper forecast*		
	Heathrow	*Gatwick*	*Total*	*Heathrow*	*Gatwick*	*Total*
1968 (actual)	229	38	266	229	38	266
1969	232	44	276	243	47	290
1970	240	47	287	264	52	316
1971	248	50	298	284	56	340
1972	257	52	309	294	59	352
1973	269	54	323	308	61	367
1974	281	57	338	322	64	387
1975	295	60	356	339	68	407
1976	310	63	372	362	73	434
1977	325	66	391	387	77	464
1978	340	69	410	413	83	496
1979	357	73	430	441	88	529
1980	374	76	451	471	94	565

TABLE 3

Forecast rate of growth of terminal passengers, by market

Heathrow and Gatwick

	Channel Isles	*Other domestic*	*Continent scheduled*	*Continent charter*	*Irish Republic*	*Long haul scheduled*	*Long haul charter*
Lower forecast							
1969	4	8	9	14	8	14	17
1970	4	8	9	14	8	14	17
1971	4	8	10	11½	9	14	14
1972	4	8	10	11½	9	14	14
1973	4	8	10	11½	9	14	14
1974	4	8	10	11½	9	14	14
1975	4	8	10	11½	9	14	14
1976-1980*							
Upper forecast							
1969	6	15	15	22	15	16	20
1970	6	15	15	22	14	16	20
1971	6	14	15	11½	13	15	14
1972	4	8	10	11½	9	15	14
1973	4	8	10	11½	9	15	14
1974	4	8	10	11½	9	15	14
1975	4	8	10	11½	9	15	14
1976-1980*							

*Note: For 1976-80 it is assumed that total traffic grows by 8 per cent per annum lower forecasts and 10 per cent per annum upper forecasts.

Printed image digitised by the University of Southampton Library Digitisation Unit

Traffic at Gatwick after Heathrow ATC saturation

14. We have made the assumption that Heathrow's unsatisfied demand must be accommodated at Gatwick—at least initially. How much can be accommodated depends, of course, upon the rate of growth of Gatwick's own demand, upon Gatwick's capacity and upon airline attitudes towards transfers of services.

15. Table 6 combines Gatwick's own forecast demand with the forecast unsatisfied Heathrow demand.

16. Gatwick's ultimate capacity presents, perhaps, more difficulty than at Heathrow. Gatwick's present traffic is highly seasonal. The superimposing on this traffic of that transferred from Heathrow would, in our view, exhaust the capacity of Gatwick's existing single runway on air transport movements alone some time between 1975 and 1978. If allowance is made for the fairly high volume of non-air transport activity at Gatwick these dates would be advanced.

17. Similarly, in our view, even with a second runway Gatwick's ATC capacity would be fully taken up by *air transport* traffic some time between 1977 and 1981—but earlier if "other than air transport movements" are taken into account.

TABLE 4

Heathrow plus Gatwick Forecast terminal passengers per air transport movement

	Channel Isles	*Other domestic*	*Continent scheduled*	*Continent charter*	*Irish Republic*	*Long haul scheduled*	*Long haul charter*	*Total*
1968 actuals	44	59	52	74	53	61	100	57
1969	45	61	55	76	56	68	105	61
1970	46	65	58	80	59	75	111	65
1971	47	68	61	84	62	83	117	69
1972	48	71	64	88	66	93	124	74
1973	50	75	68	93	69	99	131	78
1974	51	78	71	98	73	105	138	82
1975	53	82	75	104	77	109	144	87
1976	55	85	77	107	80	112	149	90
1977	56	87	80	110	82	116	153	92
1978	58	90	82	113	84	119	158	95
1979	59	93	85	117	87	123	163	98
1980	61	95	87	120	89	126	167	101

TABLE 5

Heathrow: forecast demand

	Terminal passengers (millions)				*Air transport movement (thousands)*			
	Satisfied demand		*Unsatisfied demand*		*Satisfied demand*		*Unsatisfied demand*	
Lower forecast								
1968	13·2		—		229		—	
1969	14·1		—		232		—	
1970	15·5		—		240		—	
1971	17·2		—		249		—	
1972	19·0		—		257		—	
1973	21·0		—		269		—	
1974	23·2		—		281		—	
1975	25·7		—		295		—	
	(i)	(ii)	(i)	(ii)	(i)	(ii)	(i)	(ii)
1976	27·0	27·8	0·8	—	300	310	10	—
1977	27·9	29·2	2·1	·8	300	315	25	10
1978	28·9	30·3	3·6	2·2	300	315	40	25
1979	29·8	31·2	5·1	3·7	300	315	57	42
1980	30·9	32·3	6·9	5·5	300	315	74	59

	Terminal passengers (millions)				*Air transport movement (thousands)*			
	Satisfied demand		*Unsatisfied demand*		*Satisfied demand*		*Unsatisfied demand*	
Upper forecast								
1968	13·2		—		229		—	
1969	14·8		—		243		—	
1970	17·1		—		264		—	
1971	19·5		—		284		—	
1972	21·6		—		294		—	
	(i)	(ii)	(i)	(ii)	(i)	(ii)	(i)	(ii)
1973	23·4	23·9	·5	—	300	308	8	—
1974	24·8	25·9	1·7	·6	300	315	23	8
1975	26·2	27·4	3·1	1·9	300	315	39	24
1976	27·2	28·4	5·1	3·9	300	315	61	46
1977	28·2	29·5	7·4	6·1	300	315	87	72
1978	29·2	30·5	9·9	8·6	300	315	113	98
1979	30·3	31·7	12·7	11·3	300	315	141	126
1980	31·4	32·8	15·8	14·4	300	315	171	156

(i) Assumes lower Heathrow capacity limitation. (ii) Assumes upper Heathrow capacity limitation.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 6

Gatwick demand and Heathrow unsatisfied demand

	Terminal passengers (millions)				*Air transport movement (thousands)*			
	Gatwick demand	*Heathrow unsatisfied demand*		*Total*	*Gatwick demand*	*Heathrow unsatisfied demand*		*Total*
Lower forecast								
1968 actual	2·1	—		2·1	38	—		38
1969	2·7	—		2·7	44	—		44
1970	3·0	—		3·0	47	—		47
1971	3·4	—		3·4	50	—		50
1972	3·8	—		3·8	52	—		52
1973	4·2	—		4·2	54	—		54
1974	4·7	—		4·7	57	—		57
1975	5·2	—		5·2	60	—		60
		(i)	(ii)	(i) (ii)		(i)	(ii)	(i) (ii)
1976	5·6	·8	—	6·4— 5·6	63	10	—	73— 63
1977	6·1	2·1	·8	8·2— 6·9	66	25	10	91— 76
1978	6·5	3·6	2·2	10·1— 8·7	69	40	25	109— 94
1979	7·1	5·1	3·7	12·2—10·8	73	57	42	130—115
1980	7·6	6·9	5·5	14·5—13·1	76	74	59	150—135
Upper forecast								
1968 actual	2·1	—		2·1	38	—		38
1969	2·8	—		2·8	47	—		47
1970	3·4	—		3·4	52	—		52
1971	3·8	—		3·8	56	—		56
1972	4·2	—		4·2	59	—		59
		(i)	(ii)	(i) (ii)		(i)	(ii)	(i) (ii)
1973	4·7	·5	—	5·2— 4·7	61	8	—	69— 61
1974	5·2	1·7	·6	6·9— 5·8	64	23	8	87— 72
1975	5·8	3·1	1·9	8·9— 7·7	68	39	24	107— 92
1976	6·4	5·1	3·9	11·5—10·3	73	61	46	134—119
1977	7·0	7·4	6·1	14·4—13·1	77	87	72	164—149
1978	7·7	9·9	8·6	17·6—16·3	83	113	98	196—181
1979	8·5	12·7	11·3	21·2—19·8	88	141	126	229—214
1980	9·4	15·8	14·4	25·2—23·8	94	171	156	265—250

(i) Assumes lower Heathrow capacity limitation.
(ii) Assumes upper Heathrow capacity limitation.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the British Association for the Control of Aircraft Noise

Report on survey into house prices in vicinity of Gatwick Airport

When the Chairman of BACAN gave evidence before the Roskill Commission on the Third London Airport, he was asked whether he had any concrete evidence to support the statement that house prices in the Gatwick area had been adversely affected by aircraft noise. Such evidence was not then available, but BACAN, with the assistance of the Gatwick Anti-Noise Executive, has now remedied the omission by carrying out a survey. A questionnaire has been sent to all the leading Estate Agents in the area, and replies have been received from 27 firms, whose offices are situated in Horley, Crawley, Redhill, Reigate, East Grinstead, Lingfield, Bletchingley and Horsham. It must be borne in mind that some of these places are outside the noise zone and that flying over the larger towns is forbidden, but all these Agents may deal, to a larger or less extent, in houses inside the area.

The survey clearly proves that aircraft noise has a very significant effect on house prices. Twenty-one Agents stated that house prices were adversely affected, three said they had not sufficient evidence on which to base an opinion and three said that they had found no effect.

The effect is clearly most pronounced on the more expensive properties. Ten Agents said that the effect was large on houses valued at over £7,500, six said the effect was small in this price range and four said there was no effect. In the price range £5,000-£7,500, four said the effect was large, 11 said it was small and five said it was nil. Under £5,000, only one said the effect was large, eight small and 11 nil. In each range, seven Agents had not enough evidence to justify a statement.

Thirteen Agents said the effect was large within five miles of the Airport, six said the effect was small in that radius and three said it was nil. Between five and ten miles, two said the effect was large, ten small and 11 nil. Between ten and 15 miles, four said the effect was small and 16 said it was nil. These distances should be considered as being along the flight paths and not as all round radius.

Fourteen Agents said the impact on prices was increasing, six thought it was static and seven were unable to give an opinion.

Seventeen Agents could cite cases where houses had been put up for sale because of the noise—several knew of several cases and usually noise was the only reason. Six knew of no cases and four others could not give a definite affirmative because vendors were reluctant to give this as a reason for selling. Twenty-one Agents knew of purchasers who had withdrawn on becoming aware of the noise nuisance; two only gave a negative reply and three had no evidence.

Agents were not asked to quantify the extent of any reduction in price, but an indication of this is given by a house owner close to the Airport who offered a house for sale in February 1968 at £6,250, being prepared to drop £250. He finally sold in July 1969 for £5,250, and attributes the drop of 12½ per cent entirely to the noise nuisance. In another case an owner had to reduce his price by £1,500 for the same reason.

Some small comfort may be obtained by owners of less expensive houses in that 16 Agents said the fall in prices was partially arrested by the demand for houses by Airport employees.

Nevertheless, this survey presents a gloomy picture for property owners. Gatwick is not yet working to full capacity, but prices have already sagged. The planned extension of the present runway at both ends will cater for more powerful, and therefore noisier jets. Air traffic is increasing year by year. Although there is a limit of 3,500 night jet movements per summer season at London Airport, there is no such limit at Gatwick, so Gatwick will take Heathrow's night overspill. The projected second runway will widen the affected area. A large noise slum is being created.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the British European Airways

1. British European Airways submits the following in response to the Commission's invitation to interested parties to supply evidence appropriate to Stage III of its task not later than 31st July 1969.

2. Much still remains unclear, in particular the timing of the need, and we cannot give further detailed consideration to the size and nature of our problem until the Board of Trade Working Party on Forecasts of Expected Traffic and Airport Capacity at Heathrow has completed its work. Meanwhile, BEA's general view has crystallised.

3. We consider each of the four sites to be entirely unsuitable as a "London" airport for the purpose of short-haul air transport operations.

4. Our main reason for holding this view is the distance of each site from the city centre—and from Heathrow. The Appendix shows the road distances between city centre and airport at a number of major airports, taken for the most part from Aeronautical Information Publications and the *World Airways Guide*. The distances from the four short-listed sites are the straight line distances to Charing Cross, increased, perhaps optimistically, by only 10 per cent.

5. It will be seen that the nearest site—Nuthampstead—is about 40 per cent more distant than the "notorious" Foster Dulles is from Washington, and more than two and a half times as far as the new Roissy airport will be from Paris.

6. We have read the evidence as to ground access given by the Ministry of Transport and the Greater London Council. We see nothing there to encourage us in the belief that dramatic improvements are likely which would offset the effect of these great distances. Rail links offer the best possibilities, but in the best case a journey time of less than 45 minutes to the rail terminus seems unlikely. Road journeys to Central London will take longer.

7. Government policy is directed towards closer links with Europe, including eventual entry into the Common Market. The economic well-being of the country depends on the ability to produce and sell goods and services in rigorous competition with other countries in Europe. Unless the staff of firms and companies in the London area—and their foreign customers—have convenient and rapid access between their offices and counterpart offices in such places as Frankfurt, Zurich, Copenhagen and Paris, and this access is at least as convenient as that enjoyed by their competitors between, say, Brussels and Paris, or Frankfurt and Zurich, the British effort starts with a built-in handicap.

8. It is for this reason that we are dissatisfied with the overall transport system as it exists at the moment, using Heathrow and Gatwick. The coach from West London Air Terminal (not Central London) to Heathrow takes 30 minutes; rather longer at times of traffic congestion. The "fast" trains from Gatwick to Victoria, on average, have a 40 minute schedule.

9. We consider these times to be excessive, and are actively supporting proposals to reduce the journey time to Heathrow.

10. Against this background, proposals which at best must extend ground access times by at least 50 per cent over present experience can only be considered as incompatible with the type of short-haul transport system of which we form part.

11. Having reached this important conclusion, we have considered what might be done to preserve a satisfactory short-haul air transport service for London. We note that it is now thought that Heathrow will be "saturated" rather later than was expected at the time when the Interdepartmental Committee on the Third London Airport produced its report, and

Comparative distances—city centre to airport

City	*Airport*	*Distance from city centre to airport (statute miles)*
London	Nuthampstead	39
	Cublington	43
	Foulness	51
	Thurleigh	58
	Heathrow	14
	Gatwick	27
Paris	Orly	9
	Le Bourget	7½
	Roissy en France (Paris-Nord)	14½
Brussels	National	7½
Amsterdam	Schiphol	5½
Copenhagen	Kastrup	6
Oslo	Fornebu	5
	Gardemoen	22
Stockholm	Arlanda	23
Cologne	Wahn	11½
Dusseldorf	Lohausen	5½
Frankfurt	Rhein Main	6
Hamburg	Fuhlsbuttel	7½
Zurich	Kloten	5½
Rome	Fiumicino	22
Madrid	Barajas	8
Lisbon	Portela	5
Athens	Athens	5
Istanbul	Yesilkoy	15
New York	J. F. Kennedy	14
	La Guardia	8
	Newark	13
Chicago	O'Hare	22½
	Midway	10½
Los Angeles	Los Angeles	12½
Washington	Foster Dulles	27

Printed image digitised by the University of Southampton Library Digitisation Unit

that a fully developed Gatwick with dual runways will similarly have a greater ultimate capacity than was thought to be the case at that time. We also see interest being taken by the aircraft manufacturers, and by the responsible Ministries, in the development of serious VTOL/STOL transport aircraft which might be available by about 1980.

12. Bearing these points in mind, it is the BEA view that the right course is to:

a) accept that the Third London Airport—assuming that it must be far from London—is clearly unsuitable for short-haul, and is primarily for long-haul traffic;

b) arrange immediately for full development of Gatwick by 1975; this would be a very great project and planning would need to start by the end of this year;

c) plan to concentrate development of short-haul scheduled services at Heathrow and Gatwick;

d) "encourage" transfer of long-haul operators to the third airport;

e) decide at a much later date, on purely economic grounds, the need to provide short-haul connections for the long-haul interline traffic at the third airport;

f) support with determination the development of suitable VTOL/STOL aircraft and sites, as the only practicable means of preserving satisfactory short-haul operations when Heathrow and Gatwick together are "saturated".

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the British Gliding Association

You have requested evidence which may contribute to the cost/benefit analysis of the four short-listed sites from interested parties by 31st July 1969; this letter sets out the "benefit" analysis as seen by the British Gliding Association.

We have already sent you our views on the general effect of a Third London Airport on gliding* and indicated the size and value of the gliding movement. Since the publication of the short-listed sites we have sought to obtain air space information concerning them; this we have been unable to do, consequently we cannot at this time be specific about the exact effects on gliding in this country of the possible sites.

Individual gliding clubs have given evidence at individual enquiries concerning the local effects of particular sites on these clubs; in this letter we deal only with the effect on general gliding.

The main concentration of gliding clubs is in the southern half of UK. The sport of gliding (as opposed to the training for gliding) is mainly concerned with cross-country flying. The sport involves competition either comparatively between glider pilots or against absolute international standards in order to gain the various levels of Federation Aeronautique Internationale Gliding Badges. This cross-country flying involves setting up courses of lengths varying from as little as 100 km to as much as 500 km.

There are two major constraints on gliding, the first being weather, and the second being controlled airspace. The weather problem is such that it is seldom possible to set courses in any direction from a particular site; it is generally unsatisfactory to go near the sea and equally, areas of high or medium cloud cut off the sun and hence the thermals on which gliding depends. Controlled airspace is already a severe constraint; where the base is 3,000 ft or below, cross-country gliding is unlikely to be practical, and a base of 5,500 ft or higher is required to reduce the degree of restriction to a satisfactory level.

The area of greatest difficulty with regard to controlled airspace lies to the West and North of London. Restrictions in this area already often make it difficult to set an acceptable course on days which are otherwise suitable for gliding.

We have examined the likely layout of controlled airspace which we think likely to be established in connection with the four short-listed sites.

The effect of Cublington and Thurleigh will be disastrous in that either of these sites are likely to lead to what will be, in effect, a broad fence of controlled airspace from the London area to North of Birmingham. Several gliding clubs will disappear within the area concerned and the general effect will be to constrain the surviving clubs on either side to operate in areas in which it will not be possible to set adequate cross-country courses on a large number of otherwise suitable days.

The effect of Nuthampstead will not be quite as severe as Cublington and Thurleigh, as it will probably still leave some possibility of a route South of Birmingham. However, it too will eliminate several existing clubs as well as cutting off a route towards the East Coast which is much used particularly by early aspirants to the International Gold C award, since it follows the prevailing wind.

This leaves Foulness. It is perfectly practical to put the greater part of the associated controlled airspace over the sea and provided this is done, the effect of Foulness on general cross-country gliding in UK will not be severe.

To sum up, therefore, the effect on gliding of a Third London Airport at Cublington or Thurleigh would be so restrictive as to put in doubt the continued viability of the sport. The choice of Nuthampstead would be severely restrictive. Only Foulness provides a solution which is reasonable from the gliding point of view.

I am sorry I cannot quantify the "benefits" to general gliding of the various sites more closely, but in the absence of detailed information about controlled airspace it is not possible to be more specific.

---

* Reprinted in *Papers and Proceedings*, vol II, stage I, part 2, other written evidence (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

As you know, we have taken the view that any formal submission by BOAC to the Commission would be premature and unlikely to be helpful to the present phases of your Enquiry. Your Commission is well aware that convenience of access from London is a crucial factor, but that many other technical and sociological considerations must also apply. We have had several requests for help on the technical aspects of your work and I hope you feel that our full cooperation has been forthcoming.

We do know that BEA have taken a different view from our own and I have recently seen their Second Submission to the Commission. We do not agree with four of the main recommendations made by BEA as set out in paragraph 12 (a), (c), (d) and (e) of their Submission and I think you should know of the extent to which our views differ. Needless to say we shall be ready to re-state and support our views if you so wish at a time most suitable and convenient in relation to the progress of your Commission's work.

At this stage I should like just to register three points:

i) The choice of site is limited by a formidable range of influences, constraints and prejudices, and the final selection can be no better than the best compromise—a position we may not like, but understand and accept.

ii) In the interests of both long- and short-haul carriers, all London airports both present and future should be available for both types of service. The important position of London as a gateway to Europe and connection point for worldwide traffic can only be maintained and further developed if comprehensive interlining arrangements continue to be encouraged. We do not accept the BEA view, which would ultimately isolate short-haul services at some airports, and long-haul at others.

iii) In the course of time, the right balance of long- and short-haul services at each of London's airports will emerge. BOAC policy will be, as now, to endeavour to meet the requirements of the travelling public, and the extent of our operations into the various London airports will be predicated upon this factor above all others. BOAC must maintain its main base at Heathrow—our vast capital investment at Heathrow, coupled with our belief that the consumer will also continue to prefer this airport to others, leaves no other choice. BOAC will however be ready to share in the use of airports other than Heathrow, providing consumer demand and economic viability support such development.

I do hope you will be able to confirm that these views will be considered at the proper time, and especially in relation to the proposals put forward in their submission by BEA.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the British Petroleum Co. Ltd.

Following our recent conversation, I am writing to outline BP's position in regard to the project for developing a deep-water port at Foulness, as part of a wider scheme embracing the development of dry dock and container cargo facilities and a site for a third London Airport.

In looking at this project we have largely had in mind the supply of crude oil to the Isle of Grain Refinery where present draught restrictions in the Thames Estuary and the Medway approaches limit the size of crude oil carrier we may use fully laden to about 70,000 dwt.

You may be aware that the BP Group is entering on a programme to introduce a large number of 200,000-tonners into our fleet. We have recently taken delivery of the first of these vessels and by 1972 will have as many as 30 of them, mostly on long-term charter, trading predominantly from the Middle East and Nigeria to North-West Europe. We are, therefore, considering plans for jetty strengthening works at the Isle of Grain to enable part-laden 200,000-tonners to be routed there at reduced draught on second port discharge.

However, if the Foulness project were to proceed and we were able to discharge the cargoes from fully-laden 200,000-tonners at Foulness and transfer them by pipeline to the Isle of Grain, we estimate that we might take delivery of between five and seven million tons of crude oil in this way each year, and that our savings in avoiding the two-port discharge operation would amount to about 2s. 2d. per ton. This would give an annual saving of between £550,000 and £750,000 to be set against whatever costs would arise for BP from the Foulness project.

At this stage we have only preliminary information about such costs:

a) A few months ago Sir John Howard furnished us with an estimate of £9·7 million capital expenditure for a deep-water approach channel and a further £5·4 million for jetty and berthing facilities.

b) We have also provisionally estimated that the capital cost of six miles of 18 in. underwater pipeline from Foulness to Kent, together with associated storage tanks, pipework and pumping equipment, which would be required for receiving 200,000-ton cargoes at Foulness and transferring them to the Isle of Grain, would be in the region of £4 million. To this would be added annual operating costs estimated at £100,000.

Thus we may say, supposing BP were to install the oil storage and transfer facilities described in b), that after deducting the operating costs of these facilities from our estimated annual savings, we would be left with a net benefit of between £450,000 and £650,000 per annum. This would provide a DCF return, calculated over 20 years, of between 11 per cent and 17 per cent on the estimated capital expenditure of £4 million, after allowing for an investment grant of 20 per cent on the eligible part of this cost.

While I might be prepared to regard returns in this area as reasonably commercial, I must recognise that the calculation does not provide for any contribution by BP to the capital and operating costs of the deep-water channel and jetties at Foulness, although there is evidence from a) above to suppose that these costs would be substantial and I imagine that oil carriers would be asked to bear their due proportion of these costs. If, therefore, we assume a level of shipping and cargo dues at Foulness in line with current PLA rates (about 11d. per ton), then the extra shipping costs for BP by comparison with current charges in the Medway (about 2d. per ton) would reduce our annual net saving to between £260,000 and £390,000. These figures would give DCF returns upon our oil storage and transfer investment of between 4 per cent and 10 per cent, which I could hardly regard as acceptable in the interest of my shareholders. Moreover, for every 1d. per ton by which the Foulness charges might increase above the figure I have assumed, the DCF return on our investment would reduce by something in the region of 1 per cent depending on the rate of throughput.

You will appreciate, therefore, that the impact of Foulness ship and cargo dues would be critical to BP's decision to invest and that until we have more information about these dues we cannot say that we support the Foulness project.

Conceivably, the economics might be improved if the Foulness scheme were developed to provide for the next generation of very large crude carriers which could be 500,000 dwt. or more. While BP at present have no definite plans for building or chartering such vessels, and while I must stress the grave reservations our marine experts hold about the possibility of their safe access into the Thames Estuary, we are keeping an open mind about the potential savings they may offer.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Cambridge University

Consideration of alternative sites for radio astronomy in East Anglia

Introduction

The effects on the work of the radio astronomy observatory at Lord's Bridge of the siting of the third London airport at either Nuthampstead or Thurleigh have been discussed by Sir Martin Ryle in his proofs of evidence (paragraph 7) for the Stage II hearings for each of these sites.* The conclusion (paragraph 7.1) in each case was that the present work of the observatory could not be carried out and the observatory would have no alternative but to move. A preliminary assessment of the possibilities of finding an alternative site and the problems likely to arise was made (paragraphs 7.2, 7.3) and the likely detrimental effects of such a move on the continuing work of the Observatory was also considered (paragraph 7.4).

Preliminary information which we have received from the Roskill Commission concerning the probable future developments of the airways in southern England reinforces the conclusions mentioned above concerning the sites for the third London airport at Nuthampstead and Thurleigh. In the case of the Foulness site, the future rerouting of airways might bring them closer than at present to the radio astronomy observatory, but the situation would not be so serious as for the former two sites.

We have been asked by the Roskill Commission to investigate possible alternative sites and to estimate the cost of moving the observatory if such an alternative site existed. This paper presents the results of that investigation.

In Sir Martin Ryle's proof of evidence for the Thurleigh hearing (paragraph 2.3) the importance of the links between the observatory and the university of Cambridge are explained and it is stressed in particular that the teaching commitments of the staff of the observatory impose an upper limit of about 50 miles for the distance of the observatory from Cambridge. We have concluded that the operation of the observatory at a distant site would not be a practical possibility in the context of an observatory operated by the university and consideration has therefore been devoted to regions closer to Cambridge.

At the request of the Roskill Commission the search was extended beyond 50 miles to all areas within 80 miles of Cambridge except to the west and south where the presence of both existing and future airways and a generally much higher level of population excluded the possibility of finding a suitable site. The area studied included the whole of East Anglia. Extension of the distance limit to 120 miles does not in fact include any other land suitable for an observatory site, the otherwise suitable flat land in Lincolnshire not providing the stability of foundations which are necessary for the construction of large radio telescopes.

The search for sites in East Anglia

The main features of the region determine where suitable sites are likely to be found. The areas of the Broads and the Fens have overlying peat which makes the construction of stable foundations impracticable. The southern half of East Anglia is in general too hilly and too close to existing airways and their future extension northwards. Much of the eastern coastal plain presents difficulties due to the presence of high power radar systems. Of the remainder, part is excluded by its proximity to Norwich and to several high powered broadcast transmitters. Over the whole of the area due account has to be taken of the existence of airfields and other military activities.

The initial selection of possible sites was made by searching an Ordnance Survey 1 inch-to-the-mile map for sites having an east-west line with height variations of less than 50 ft over a total length of 10 km. This choice of baseline was determined by the need to situate telescopes accurately on a line without involving very large amounts of earthmoving and allowing, as does the topography of Lord's Bridge, a modest development of the scale of existing telescopes.

It is clear that many sites satisfying this criterion could be found in the Fens and in Broadland but, as has already been mentioned, the further requirement of a satisfactory subsoil necessary for the construction of very stable foundations excludes these areas. The further need for avoiding close proximity to large towns led to the exclusion of all but six of the sites found in the initial search. These sites are listed below:

Place name	*Map references of east-west line*		*Miles to Cambridge*
	W end	*E end*	
Dersingham	TF/700300	TF/800300	55
East Dereham	TG/000150	TG/100150	67
Coltishall	TG/230230	TG/330230	73
Saxlingham Green	TM/240960	TM/340960	72
Winfarthing	TM/080870	TM/180870	59
Mundford	TL/730920	TL/830920	35

For each of these areas further consideration was given to other factors determining the suitability or

* Commission on the Third London Airport. *Papers and Proceedings*, vols. IV and VI. (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

otherwise of the site, including the situation of towns, airfields, radars, broadcast transmitters and high voltage power lines. An estimate was made of likely developments in the neighbourhood of the site based on the indications given in the first report of the East Anglian Economic Planning Council and an assessment of any existing natural screening of the site from man-made interference. No account was taken of the existing land use or of the likelihood of land acquisition at any of the sites. These sites are now considered in turn.

Dersingham

Population. The population density in the neighbourhood is low with only small villages. King's Lynn lies 10 miles to the SW.

Airfields. The bases at Sculthorpe and West Raynham lie at distances of 2 miles and 4 miles from the eastern end of the baseline.

Radars. There appear to be high power radars associated with the airfield at West Raynham.

Broadcast transmitters. None in the neighbourhood.

Likely developments. In the immediate neighbourhood changes in the operations at Sculthorpe and West Raynham might be very significant. Any large scale development associated with any growth of King's Lynn to the north would need to be controlled.

Natural screening. The ground is slightly undulating with trees offering a measure of screening. The whole area lies somewhat higher than the surroundings and reception of radio interference from long distances would be possible, but the proximity of the sea to the north and west and the large area of Fenland to the southwest offers substantial long-term protection.

East Dereham

Population. The eastern end of the baseline lies six miles WNW of the present outskirts of Norwich. Substantial growth in Norwich, both residential and industrial, would make the site unacceptable.

Airfields. The airfield of Swanton Morley lies only 2 miles to the north of the baseline; operations there would probably present serious problems from radio interference. Norwich airport lies 5 miles to the east.

Radars.

Broadcast transmitters. The BBC transmitter at Tacolneston lies 10 miles to the south and would probably present no problems.

Likely developments. The growth of Norwich presents the most serious threat to this site.

Natural screening. The eastern end of the baseline is situated on high ground with a line of sight view over a river valley towards Norwich. Other parts of the line are not so exposed.

Coltishall

Population. Norwich lies 9 miles to the south. The density of population in the immediate neighbourhood is low.

Airfields. The baseline crosses the operational airfield of Coltishall making this site evidently impossible at the present time.

Radars.

Broadcast transmitters. None in the area.

Likely developments. None known to us.

Natural screening. The ground is low-lying with no substantial features providing additional protection.

Saxlingham Green

Population. The site lies 10 miles south of Norwich. The population density in the immediate neighbourhood is low.

Airfields. None in the neighbourhood.

Radars.

Broadcast transmitters. The BBC high power television transmitter at Tacolneston lies only 4 miles to the west, an unacceptably small distance for a high power transmitter.

Likely developments. Major growth of Norwich would jeopardise operations on this site.

Natural screening. The site lies in undulating country but with no major features providing screening.

Winfarthing

Population. The density of population in the immediate neighbourhood is low.

Airfields. None in the neighbourhood.

Radars.

Broadcast transmitters. The BBC high power television transmitter at Tacolneston lies only 5 miles away and would make operations at this site impossible.

Likely developments. None known.

Natural screening. The ground is undulating but offers no significant measure of screening from interference.

Mundford

Population. The density in the immediate neighbourhood is very low indeed due to the extensive afforestation.

Airfields. The bases at Lakenheath, Mildenhall and Watton lie at distances of 9 miles, 12 miles and 9 miles respectively. In addition the MoD Stanford Battle Training Area lies immediately to the east of the site. The existing use of radio equipment here would make observations on this site impossible.

Radars. High power radars exist in the area associated with the airfields above.

Broadcast transmitters. None in the neighbourhood.

Printed image digitised by the University of Southampton Library Digitisation Unit

Likely developments. The development of some types of industry associated with Thetford New Town might present problems from radio interference. Other development in the area is likely to be very small.

Natural screening. The large areas of forest surrounding the site offer an excellent degree of protection from local sources of radio interference.

Discussion

The studies presented above of the six places which satisfied the basic physical requirements for an observatory site show that, at the present time, no suitable alternative site exists in East Anglia. Possible developments in the operations at the airfields listed consequent upon the establishment of the third London airport at Nuthampstead or Thurleigh would make several of the sites still less suitable in the future.

Two of the sites mentioned, those at Dersingham and Mundford, could be satisfactory if the Ministry of Defence were to agree to cease operations in the neighbourhood. For the Dersingham site this would imply the closure, as operational airfields, of the bases at Sculthorpe and West Raynham. For the Mundford site it would be necessary to close the Stanford battle training area, and examine in detail the operational use planned for the airfields at Lakenheath and Mildenhall. Further investigation of the installations at Watton would be necessary.

In addition to these closures which would be immediately necessary to make the sites acceptable from the point of view of radio interference, further measures would be required to protect the observatory from development in the neighbourhood over a long term. Standing agreements would be needed with a number of authorities designed to protect the observatory from developments concerned with residential and industrial growth, military activities involving radio equipment, broadcast transmitters and high voltage power lines. Without such agreements the long-term future of any site would not be assured and the construction of an observatory there could not be justified.

Conclusions

None of the sites considered are at present acceptable as possible sites for a radio astronomy observatory. Two of the sites, those at Mundford and Dersingham, would be satisfactory but only if agreement could be reached with the Ministry of Defence for the closure of certain existing installations. This problem is likely to prove much more difficult than the provision of funds for the construction of the observatory particularly in view of the probable need for moving operational airfields into East Anglia as a result of the third London airport. If agreement could be reached then the cost of the observatory alone, as discussed in the paper submitted by the Science Research Council, would be approximately £6 million, a figure small compared with the probable cost of the whole operation.

Setting aside the question of military activities, the site at Mundford appears on present evidence to be the most suitable from the point of view of topography and subsoil, the probable continuing low level of development and natural screening provided by forests. It has the further substantial advantage that land acquisition is not likely to present problems.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Clacton Urban District Council

The Clacton Urban District Council have studied closely the plan showing the proposed alignment of the runways at the Foulness (off-shore) site and the probable Noise and Number Index contours. It is noted that no contour line below 40 NNI has been shown on such map and my council feel that, in all probability, those lines would pass through the Urban District.

The Report of the Committee on the Problem of Noise did reach the tentative conclusion that the critical range of disturbance was 50-60 NNI by day and 30-45 NNI by night and, having regard thereto, it has been suggested that, if a scheme to use Foulness came to fruition, aircraft would, when approaching the suggested four-runway airport which would be some 12 miles distant from the urban district, use an air corridor approximately four miles in width and, from enquiries made, the implications would be that aircraft would pass approximately two miles off this coast or nearer. My council further consider that aircraft landing at Foulness, the number of which it is understood would be in the region of 600 per day, could, in certain circumstances, be flying at approximately 600 ft and, on the basis that the contour line through the urban district would be 30 NNI, such intrusion would create a tolerable level of noise by day but which level could well prove intolerable at night.

As the principal industry in the urban district is that of the holiday trade, my Council are particularly concerned that, in the event of the aforementioned proposal being adopted, such trade would be adversely affected to a considerable degree.

My Council hope, therefore, that their views will be given very careful consideration.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Coventry Gliding Club

The British Gliding Association have recently informed us of the way in which the extensions of controlled airspace, resulting from the third London airport being sited either at Foulness, Nuthampstead, Thurleigh, or Wing, would be likely to affect the flying activities of this club.

Details of the probable restrictions which we have been given are indicated in the attached schedule.

In considering the recommendations which the Roskill Commission will make to the Government in due course, I trust that appropriate regard may be taken to the interests of the Coventry Gliding Club, particulars of which are set out below.

1. **Location**

The gliding site is located at 52° 7′ N. 1° 3′ W., approximately ten statute miles north-east of Rugby.

2. **Acquisition of site**

The site was acquired in 1964 in substitution for flying facilities which had previously been exercised under licence from the Coventry Corporation at Coventry (Baginton) airport. The move to Husband's Bosworth was prompted by reason of the desirability of getting away from an area of numerous commercial aircraft movements and into a location with free airspace overhead and in the vicinity.

3. **Vested interests**

Many other gliding clubs in the south of England are lessees or licensees of various aerodrome owners, whereas Coventry Gliding Club are freeholders with a capital investment in land and buildings which was shown at a cost of £14,267 6s. 8d. in the balance sheet of the Club as at 31st December 1968.

Further buildings are presently in course of construction.

4. **Aircraft movements**

During the 12 months ended 30th September 1969 3,819 gliders were launched from the site, and 24 powered aircraft visited it.

Approximately 75 per cent of the launches were by aerotow and therefore about 13,500 aircraft movements took place, counting each take-off and each landing as one movement.

5. **Gliding competitions**

Regional competitions were held at the site in 1965 and in 1967, and the national championships (open class) in 1968.

The club have been invited to accommodate one class of the national championships during 1970, which is indicative of the benefit which the club affords to the gliding movement generally.

Having outlined the club's interests above, I would wish to state on behalf of the club that of the four proposed sites, Thurleigh would be the most objectionable on the grounds that it would interfere the most with the free movement of aircraft from our site.

On similar grounds we would object next to Nuthampstead and Wing equally, and least of all to Foulness.

However, any one of these sites would ultimately impose—as I am presently informed—a ceiling above us at Flight Level 45, and I would urge that such ceiling be lifted to Flight Level 60.

SCHEDULE

Effect of Third London Airport on Gliding Site at Husband's Bosworth

Height of NATCS controlled airspace overhead and distance and bearing to free airspace

	Phase 1(1975)				*Phase 2(1980)*				*Phase 3(1985)*			
Airport site	*Vfr. Ht.*	*Ifr. Ht.*	*Bear. Deg(T)*	*Dist. NM*	*Vfr. Ht.*	*Ifr. Ht.*	*Bear. Deg.(T)*	*Dist. NM*	*Vfr. Ht.*	*Ifr. Ht.*	*Bear. Deg.(T)*	*Dist. NM*
Thurleigh	35	35	025	16	30	30	040	19	30	30	045	25
Nuthampstead	—	—	—	—	—	—	—	—	45	45	050	15
Wing	—	—	—	—	45	45	040	4	35	35	125	9
Foulness	—	—	—	—	45	45	030	4	45	45	030	6

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Economic Planning Council, East Midlands Region

1. The East Midlands Economic Planning Council approaches the problem of siting the third London Airport on the restricted basis of its significance to the East Midlands economy. It believes that the provision of full and convenient international air services are vital both to the welfare of the East Midlands and to the maximisation of the contribution this Region can make to the national economy. It accepts that, although some international services from the East Midlands Airport or Birmingham Airport are likely to be of economic value to the Region, the required range of services will, within the foreseeable future, be confined to the London Airports and to Ringway.

2. Communications between the East Midlands and Foulness would be long, relatively expensive and not very easy. Were Foulness to be chosen, therefore, East Midlands traffic would be likely to be routed through Ringway as early and as fully as possible. The other sites under consideration for the third London Airport would not have so marked an effect, though the balance would vary appreciably between them. The detail is suggested in the Appendix.

3. With the provision of comparable air services Ringway would appear to be competitive in road access from this region with Cublington or Nuthampstead and, for part of the region, with Thurleigh. Concentration on efficient rail access would certainly improve the competitiveness of Thurleigh as against Ringway.

4. In view of this competitive situation the choice of site and prime mode of access can have a marked effect on the efficiency of investment over and above that revealed by different transportation models. Thus the Council fears that investment in a site which would not attract sufficient Midlands traffic would inevitably lead to the need to invest more money on the expansion of Ringway whilst facilities at the new site would remain under-utilised. As far as this region is concerned Thurleigh appears to be the only new site which might avoid any such waste of investment; otherwise it might be more profitable to adopt Ringway as an alternative to a third London airport.

5. Thurleigh fits in better than any other new site with new town developments and expansions.

6. If the pace of development of air transport is as rapid as expected by the Commission the need for a fourth airport will arise quite soon; there does not seem to be any adequate reason why Ringway could not be allowed to develop its international services more rapidly as part of a national policy. Even so in practical terms the Council sees the more immediate contributions to the economy of the East Midlands as accruing from the siting of the third London airport at Thurleigh or Cublington.

7. On balance the Council favours the siting of the third London airport at Thurleigh, with Cublington the second choice.

APPENDIX A

Assessment of short-listed sites

Distances to various sites

1. The straight-line distances between the various sites and a number of regional locations are given in Table A below. Both Nottingham and Derby are over 20 miles nearer to Ringway than to Cublington whilst Birmingham is roughly equidistant from Ringway, Cublington and Thurleigh. Given the major road pattern suggested in the Green Paper "Roads for the Future" (March 1969) there seems to be little reason to expect access time from the more populous parts of the Midlands to Ringway to be slower than to Cublington. Indeed the distance of Cublington from M1 might place it at a disadvantage.

TABLE A

Straight-line distances in miles

Airport site	*East Midlands*				*Birmingham*	*London*
	Nottingham	*Derby*	*Leicester*	*Northampton*		
Nuthampstead	85	92	68	44	90	35*
Cublington	76	78	54	24	63*	39
Thurleigh	61	66	41*	19*	65*	51
Ringway	54*	45*	70	96	64*	160

*Nearest airport site.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. Thurleigh is some 10-15 miles nearer the major population centres of the East Midlands than Cublington. Nevertheless, the Nottingham and Derby area, which contains over half the region's population, is still nearer to Ringway.

3. The choice of Nuthampstead would also lead to the diversion of traffic to Ringway from the Nottingham and Derby areas. Nuthampstead remains in our list of alternatives but at this stage Foulness must be excluded from consideration on grounds of distance alone.

4. These views can be summarised as follows:

i) The choice of Foulness would certainly divert Midlands traffic to Ringway.

ii) The choice of Nuthampstead would divert the major part of Midlands traffic to Ringway.

iii) If either Cublington or Thurleigh were to be chosen a significant part of Midlands traffic might be diverted to Ringway, especially that originating in the East Midlands.

iv) Thurleigh is nearer the major centres of the East Midlands than Cublington which is marginally (two miles) closer to Birmingham.

Transport facilities

5. Distance alone is an inadequate criterion of accessibility since access time is also related to the quality of transport. Nothing less than high standard dual-carriageway trunk roads and motorways is likely to be adequate and we have judged road access on the basis of the roads of this calibre constructed or planned for the 1970s. Rail access has been judged on the basis of reasonable proximity to existing well-developed trunk routes serving the main centres.

6. In our view road access from the major centres of this region to all the northern sites, including Ringway, is likely to be good, but with the following qualifications:

i) Cublington is over 12 miles from M1.

ii) The route from Nottingham to Ringway will be relatively longer than the straight-line distance indicates because of the need to avoid the Pennines and the Peak National Park.

7. Rail access to Nuthampstead from the Midlands is poor. Good connections could be made to Cublington from the East Midlands via Market Harborough and Northampton to the LMR electrified line which would give high speed access to Leighton Buzzard (four miles from the airport) provided that airport traffic did not lead to track congestion. Access to Thurleigh by rail would be direct, the site lying less than three miles from the Sheffield-Derby-Nottingham-Leicester-St. Pancras main line which is four-track from Kettering to St. Pancras. If rail were considered to be the dominant mode then this track formation, which is at present under-utilised, would appear to be better than any other. Rail access to Ringway is only moderate but could be improved.

8. Briefly, all of the sites listed in Table A are likely to be easily accessible by road from this region provided proper airport links are constructed. Rail access to Thurleigh is ideal whilst access to Cublington and Ringway is likely to be fair.

Planned local urbanisation

9. Two of the airports are close to the North Bucks, Northants and Bedford area where large-scale developments are planned for the future; at Wellingborough and Bedford a start has already been made. The expansion of Northampton will convert it effectively into a new city whilst at Milton Keynes a new city is to be built. It is not possible to forecast the pace of development of both places with great accuracy but there can be no doubt that Milton Keynes will be subordinate to Northampton for many years, largely because Northampton already possesses the facilities of a large town.

10. Of the two airport sites close to these planned new developments Cublington appears to be less favourably placed than Thurleigh. Cublington would be 10-12 miles from Milton Keynes and over 20 miles from any other developments in the North Bucks/Northants/Bedford area, though Luton and Hemel Hempstead are within 16 miles. On the other hand Thurleigh is only six miles and ten miles respectively from the town expansion schemes at Bedford and Wellingborough and about 16 miles from Northampton itself. Planned population increases at these three locations are expected to reach nearly 200,000 by 1981 (and 250,000 by 1991) compared with 70,000 (1991: 150,000) at Milton Keynes in the same period.

11. The Commission is naturally interested in these new developments as sources of manpower for the airport and its ancillaries but the Council is more concerned with the need to provide the new developments with adequate employment generators. Airport operation on the scale envisaged would be a great help in securing the viability of planned developments. Current trends indicate that manufacturing employment will remain relatively static and that in future any major expansion of employment will have to be in the service sector.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Economic Planning Council, West Midlands Region

1. The West Midlands Economic Planning Council have discussed the work of the Roskill Commission in relation to the future economic development of the region.

2. The region's main requirement is for easy access to a wide range of international passenger and freight services, particularly to the main European centres. The Council have already expressed their view that Elmdon must be the region's main international airport for the foreseeable future and we are sure that this basic requirement would best be met by a considerable expansion of services from that airport, which has good runway and technical facilities and whose terminal accommodation for both passengers and freight is planned to be substantially expanded.

3. The eventual siting of the third London airport will have repercussions for the West Midlands since however successfully international air services develop from Elmdon, the most extensive network with the greatest frequency of services is likely to remain in the London area and hence the question of access is important to West Midlands users of passenger/freight services.

4. Of the four sites, two (Cublington and Thurleigh) are reasonably accessible to the West Midlands and one (Foulness) relatively inaccessible with Nuthampstead in between. From the point of view of developing good services from Elmdon there is something to be said for siting the new airport at Foulness since the natural tendency of airlines to concentrate their operations at a new airport of this scale could inhibit the future development of provincial airports over a wide area.

5. Because of the distance factor it would be essential to develop intensive feeder services between West Midlands and Foulness if the latter were chosen. Hitherto such services have been very unremunerative and although the recommendations of the Edwards Committee for a limited degree of subsidisation may help their development in certain areas, this is not something on which we can prudently count. We are aware that there are possibilities of new types of vertical take-off aircraft providing such services from city centres in the 1980s but again we do not think that prospects are sufficiently firm to be a basis for our recommendations. One of the principal arguments for Foulness is that fewer people would be disturbed by aircraft noise but if, as it appears to us, such a site would need a much more extensive network of feeder services from all over the country, then the total noise generated at Foulness and at provincial terminals would be much greater than if the site were close to existing main lines of surface communication.

6. It seems to us therefore that there is a great deal to be said for siting the airport on the main industrial axis of the country running roughly from London through Birmingham to the Northern industrial complex, i.e., somewhere near the M1. Such a site would be readily accessible by both road and rail not only from London but also from the Midlands and the North. Of those listed, either Cublington or Thurleigh would meet these requirements but we have a preference for Cublington which is rather more accessible both from the West Midlands and from London.

7. We see some attractions in Foulness since a decision to go ahead there would clarify the future of Elmdon. However, in the time scale envisaged we feel that Elmdon has opportunity to develop its potential. From the point of view of using the international services from the third airport, accessibility is the key factor. If this is not provided by expanded feeder services then users would rely on surface transport, and for the West Midlands this would mean that an inland site would be the most advantageous.

8. The Council hope that these West Midlands points of view will be taken into account in the Commission's Stage III consideration.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Economic Planning Council, Yorkshire and Humberside Region

SUBMITTED BY THE CHAIRMAN

My Council have now considered the four alternative sites put forward by the Commission for detailed consideration for the location of the third London airport and I have been asked to let you know our views.

We recognise the environmental advantages of the proposed Foulness site but feel that this would be, in effect, a site that would benefit London only. Of the remaining three, Cublington and Thurleigh are particularly well sited for communications with our region, whereas Nuthampstead is perhaps not so well sited in that respect. We attach particular importance, however, to the possibility that siting the third London airport at Cublington could provide a considerable proportion of the jobs which will be required to maintain the greatly expanded population of the new town at Milton Keynes. This could, in our view, result in a smaller demand on the limited pool of mobile industry being required for the new town and in consequence more being available for the Intermediate and Development Areas to the north.

For these reasons we consider that the Cublington site would be the best location for a third London airport from our regional point of view.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. C. B. Edwards (University of East Anglia)

This brief report sets out some of the background to the controversy over the third London airport, suggests the sort of analysis that should have been attempted or should now be attempted, and therefore how some at least of the discussions on the need for, and siting of, the airport could have been made more constructive. It does not however because of lack of data and time* for analysis come to any policy conclusions on the need for, siting or timing of a "third airport", but is intended purely as a basis for discussion.

The report is split into five parts as follows:

1. The background to May 1969.
2. Problems of assessing airport capacity.
3. Demand considerations.
4. Cost and technical considerations.
5. Evaluation and conclusions.

1. The background

To put the third airport controversy into some sort of perspective requires that the history of civil aviation planning and co-ordination in the UK be considered. This section briefly summarises some of the landmarks; for a fuller account, see references 1, 2 and 3.

Airport development in this country has never been systematically controlled and co-ordinated. At the end of the war in 1945 there were about 700 airfields in the country—and the White Paper on *British Air Services* of the same year (see ref. 4) seemed to accept the need for central co-ordinated planning by deciding that all airfields from which scheduled Air Services operated should be acquired and managed by the Ministry of Civil Aviation.

In July 1947 a programme for the acquisition of 44 airports was announced (ref. 5), but few had been taken over by 1951 when the Labour Government went out of office.

Because of losses on airport operation, the Ministry became increasingly eager for local authorities to take over airports and between 1950 and 1955 seven airports were handed over to local authorities, including Ringway at Manchester. At the same time other local authorities were developing their own airports, although under the 1949 Civil Aviation Act, the Ministry had statutory powers over airport development.

In the meantime planning for airports "serving" London was proceeding separately. In 1937 the Maybury Committee (ref. 6) had recommended a ring of airports around London, but a year later the Cadman Committee (ref. 7) suggested that four would be enough—one for each of the four cardinal points. Six years later, in 1944, the Greater London Plan favoured one major airport (Heathrow) and nine others in a ring around London.

In 1953 the then Ministry of Civil Aviation operated seven airports in the London area—Heathrow, Northolt, Blackbushe, Bovingdon, Croydon, Gatwick and Stansted. In the same year, the White Paper on *London's Airports* was published (ref. 8). It was planned that Heathrow would deal with all London's traffic except for the summer peaks. The seasonal overflow and some charter operations would be handled at two other airports—a redeveloped Gatwick* and, in a supplementary role, Blackbushe. It was proposed to hold Stansted in reserve in case a further airport should be needed later. In 1960 Blackbushe was closed largely because its nearness to Heathrow produced insuperable air routing difficulties; it held no prospect of contributing significantly to London's airport capacity.

In 1961 the White Paper on *Civil Aerodromes and Air Navigational Services* (ref. 10) was published. This decided that the Government would divest itself of 22 airports still under Ministry of Aviation ownership and that the four international airports still under Ministry control (Heathrow, Gatwick, Stansted and Prestwick) should be taken over by a public corporation. In 1965 the Airports Authority Act created the British Airports Authority with an initial capital debt of £53 million which took over the four airports on 1st April 1966.

Civil airports are now therefore managed by the BAA (e.g. Heathrow), the Board of Trade (e.g. Belfast), private companies (e.g. Lydd and Exeter), the Ministry of Defence (e.g. Newquay), BEA Helicopters Ltd. (Land's End), and of course local authorities (e.g. Manchester, Castle Donington and Cardiff).

In the meantime between the publication of the 1961 White Paper and the establishment of the BAA in 1966, it had been proving expensive to keep Stansted open as a reserve airport for London and the Select Committee on Estimates (ref. 11) concluded that the time had come to reassess whether Stansted was really necessary. They therefore recommended that the Ministry of Aviation should undertake an immediate study of Stansted's prospects as a future third airport for London.

The study was carried out by an Inter-Departmental

* The report was prepared and written in four days.

* In 1954 a public inquiry was held into this proposal to establish Gatwick as London's second airport (ref. 9).

Printed image digitised by the University of Southampton Library Digitisation Unit

Committee (IDC) and published in 1964 (ref. 12). There were 15 members of the IDC but it was a highly technical membership—eight members were from the Ministry of Aviation, two from the Ministry of Transport and one from the Ministry of Housing and Local Government—there were no members to represent the economic or regional planning ministries or departments. The IDC concluded that "our forecasts show that Heathrow and Gatwick with two runways will from about 1972 be unable to handle all London's air traffic. London must therefore have a third airport by about 1973 if it is not to turn traffic away"—

> that " the new airport should have a potential capacity similar to that of Heathrow—two parallel runways operating independently"—
>
> that "the new airport will be needed mainly for international short-haul passenger services, which account for the greatest proportion of aircraft movements"—
>
> and that "if both Heathrow and the third airport are to be omni-directional (i.e. to handle traffic to and from all points of the compass) the third airport will have to be more than 80 miles from central London—much too far for a 'London' airport. Even if only one is to be omni-directional, the third airport must be at least 50 miles from central London... and this is still too far away. Eventually, therefore, neither Heathrow nor the third airport can be fully omni-directional."

Following the report of the IDC, a Preservation Society "dedicated to resisting the third London airport at Stansted" raised over £20,000 and largely as a result of their protests a discretionary public inquiry was ordered by the Ministry of Housing and Local Government. The inquiry's terms of reference were:

> to hear and report on local objections relating to the suitability of the choice of Stansted for an airport and the effect of the proposed development on local interests. It will be open to objectors to suggest modifications to the outlined scheme of development or to propose alternative sites, *but not to question the need to provide a third major airport to serve London.* [My italics.]

The inquiry ended in February 1966 and the inspector's report was submitted at the end of May 1966. He recommended that a further review should be undertaken of the whole problem. Subsequently this was done and the results were published in a White Paper in May 1967 (ref. 13). The White Paper stated that "now that it has reviewed the various arguments for and against the Stansted proposal, the Government believes that the time has come when a decision must be taken and that the decision should be to go ahead with Stansted, as the best of all the alternatives" (para. 75).*

However, following further protests, a new inquiry into Stansted was ordered. The form of the inquiry and its terms of reference were announced in the House of Commons in May 1968 (ref. 14).

The non-statutory Commission's terms of reference for this inquiry are:

> To inquire into the timing of the need for a *four-runway* airport to cater for the growth of traffic at existing airports serving the London area, to consider the various alternative sites, and to recommend which sites should be selected. [My italics.]

The Commission under the Chairmanship of Mr. Justice Roskill had its attention drawn by the Government to

> "the following matters which were of particular relevance to its inquiry, namely:
>
> a) general planning issues, including population and employment growth, noise, amenity, and effect on agriculture and existing property;
>
> b) aviation issues, including air traffic control and safety;
>
> c) surface access;
>
> d) defence issues;
>
> e) cost, including the need for cost/benefit analysis."

The Government also envisage that the Commission will work roughly as follows:

> Stage 1 will consist of a screening process, narrowing the possibilities down to a small number.
>
> Stage II would consist of local hearings of evidence relating to the short-listed sites. At the same time, detailed research into the sites would be carried out—this is referred to as Stage III. Stage IV would consist of an examination and reconciliation of the Stage III material.
>
> Stage V will then consist of a public examination of the material produced by Stages II and III.
>
> Finally the Commission will consider the whole of the evidence, and then prepare its report and recommendations.

In February 1969, the Commission announced that it had completed Stage I and had short-listed four sites:—

i) Cublington (Wing)

ii) Foulness (off-shore)

iii) Nuthampstead

iv) Thurleigh (Bedford)

The Commission decided at the outset of its work that it must go back to the beginning and search for

* The analysis contained in the White Paper will be considered under the relevant sections below.

Printed image digitised by the University of Southampton Library Digitisation Unit

every site within a wide radius of London which might prove suitable. But how wide a radius? And why did the terms of reference specify a four-runway airport? Much of the investigation could be prejudged as a result of too narrow terms of reference or too narrow an interpretation of the terms of reference.

The Roskill Commission has now completed the hearings on Foulness; the other hearings will be completed by October 1969; and it is hoped that Stage II will be completed by the end of 1969 (ref. 15). What factors should the Roskill Commission take into account and how should a cost/benefit analysis be carried out? The next sections attempt to answer these questions.

2. Problems of assessing airport capacity

As the 1967 White Paper (ref. 13) stated "the need for a third London airport depends fundamentally on two considerations—the capacity of the existing major London airports (Heathrow and Gatwick) and the likely growth of the traffic wishing to use them".

The growth of traffic (i.e. demand considerations) is considered in section 3 below, although it cannot be emphasised too strongly that in an evaluation of the need for additional airport capacity and its timing, all factors have to be considered in relation to one another —that is the system must be considered as a whole (see section 5).

Reports prepared by the Airborne Instruments Laboratory for the US Federal Aviation Agency in and around 1963 (see ref. 16) stress that the term "airport capacity" has little meaning by itself. It can only be considered in the light of an acceptable range of delays to incoming and/or outgoing aircraft.

The 1967 White Paper stated that "when credit is taken for the improvements that can be expected in ATC and piloting procedures and technology, these considerations point to maximum sustainable hourly capacities in all weathers at the existing two London airports of 64 movements an hour at Heathrow and 45 movements an hour at Gatwick in the early years of the next decade. Higher rates of movement than this will be achieved from time to time, but if a higher sustainable capacity is used for airport planning an unacceptably high incidence of delay and diversion will result".

What does "unacceptably" mean here? For example, the Annual Report and Accounts of the British Airports Authority for 1967/68 states that "Heathrow operates to an average peak delay on take-off and landing which does not exceed four minutes. Very much greater periods of delay—around 30 minutes at peak periods—are now regarded as normal at the major United States airports" (p. 45, ref. 17). But what is the optimum average delay given that there will be a trade-off between excess capacity in non-peak periods and delay to aircraft in peak periods?

Furthermore what does "maximum sustainable hourly capacity" mean? It seems that this refers to the rate of traffic in the "standard busy hour", which is the thirtieth busiest hour of the summer (see p. 24, ref. 13). The White Paper goes on to state that "the rate of traffic in this hour is normally equivalent to about 80 per cent of the peak figure for the year and constitutes a useful measure of near-peak activity against which to plan capacity" (p. 24, ref. 14). But in what sense is this a useful measure?

The White Paper's figures of capacity presuppose a number of projected developments—e.g. the lengthening of the No. 1 runway at Heathrow and the construction of a second runway at Gatwick—at present, Heathrow has four runways and Gatwick two—brief details of facilities at Heathrow, Gatwick and Stansted are:

	Heathrow	Gatwick	Stansted
Area (*acres*)	2,721	1,229	879
Distance from Central London (*miles*)	15	28	35
Number of runways	4	2	2
Runway lengths (*ft*)	9,300 (No. 1)	8,200	10,000
	7,734		42,000
	12,000		
	6,254		

Sources of information: p. 49, ref. 17; p. 58, ref. 17; p. 62, ref. 17.

Heathrow consists essentially of two parallel east-west runways with shorter intersecting runways running between from SW to NE. The reason for lengthening the No. 1 runway is so that an aircraft, whatever its size or load, may use the runway appropriate to its outbound routing.

3. Demand considerations

The forecasts of air transport movements contained in the IDC report were revised by the White Paper of 1967.

The White Paper made three forecasts (lower, most likely, upper) of air transport movements up to 1980; the saturation point at Heathrow varied between 1969 and 1971 depending on the forecast. Air transport movements at Heathrow grew at an average rate of 7·5 per cent p.a. between 1958 and 1968 while the total number of passengers handled grew at 15 per cent p.a. These statistics reflect the growing number of passenger miles travelled per plane mile—i.e. the increase in the average seating capacity (see also ref. 18). The White Paper did not unfortunately show its analysis of demand by traffic type, by month, or by time of day.

Passenger traffic is the most significant item in total demand since more than half of air freight is carried on passenger flights (paras. 24/25, ref. 13).

Printed image digitised by the University of Southampton Library Digitisation Unit

But how feasible is peak-spreading by differential pricing? This is impossible to predict without more information on the significance of price changes on airline operations and the role of international agreements in landing charge structures.

The 1967 White Paper thought that there was little potential in spreading seasonal or weekly peaks and stated that "after a careful study the Government considers that . . . enforced peak-spreading at Heathrow could postpone the need for new airport facilities by up to three years". (para. 14, ref. 14). The details of the study were not contained in the White Paper, but presumably the general pricing principle, in the absence of other constraints, should be as follows:

1. Assuming that optimum conditions of production and exchange are satisfied elsewhere in the economy—otherwise introduce "second-best" analysis (see ref. 19). (Optimum conditions probably not fulfilled but relationships of price/marginal cost for complements to, and substitutes for, air travel not known.)
2. Taking the existing income distribution as given, i.e. weighting all costs and benefits equally to whomsoever they may accrue.
3. Assuming peak demand to be independent of non-peak demand.
4. Then prices to non-peak users will be equal to short-run marginal cost (i.e. the cost imposed by the users themselves) and prices to peak users will be close to or identical with the long-run marginal cost—that is, the peak users will be paying most of and possibly more than the cost of the additional capacity (see ref. 20). This analysis applies to indivisible plant—i.e. to the London airport situation where extra capacity will represent a significant proportion of the existing capacity.

Thus landing charges at Heathrow should probably be less in the winter than in the summer, less on some days of the week than others and less during some parts of the day than others.* In fact, it seems that there is a single charge levied irrespective of the peak, which is based on the certificated loaded weight of each aircraft (see p. 24, ref. 17).

Apart from an analysis of demand by type in order to forecast growth, an analysis of passengers by ultimate destination in the UK is required in order to assist in the analysis of the location of the additional capacity, since journey time and cost taken by passengers:

i) between airports when in transit;† and

ii) between terminal and UK destinations;

is a cost to be considered in the evaluation.

Studies by the Board of Trade in 1965 (see ref. 21) and by the Ministry of Aviation (see ref. 2) indicate that something like 80 per cent of London's international traffic is generated by the London conurbation and south-east England, and around three-quarters of all passengers through Heathrow and Gatwick originate from or terminate in or close to London. On the other hand, little seems to be known of the degree of frustration and extra cost that would be incurred by passengers if the "next" airport were sited well away from London. Furthermore, no attempt seems to have been made to consider the airport's location in the context of regional planning.

4. Cost and technical considerations

The 1967 White Paper stated that "the Government is therefore convinced that there are no grounds for expecting that the need for a new airport to serve London can be postponed beyond the middle years of the next decade, and believes that in practice the requirement for the airport may come rather earlier than this" (para. 17, ref. 13).

If it is decided following a detailed study of traffic development at Heathrow and Gatwick that a third airport will be needed within the next decade, what are some of the costs and technical considerations that would need to be taken into account in deciding on its location, timing and initial capacity, apart from the cost already considered, namely the cost of passengers' journeys from and to their origins and destinations. This cost would, of course, include the cost of additional facilities provided and any congestion costs caused or saved.

The major costs and technical considerations would be:

i) *Air traffic control and safety factors*

Air traffic considerations were considered in detail at the Stansted inquiry, by the IDC in its report (see pages 8-10, ref. 12), and by the White Paper (see especially Appendix 4). It seems that on any given weekday the ratio of military aircraft to civil aircraft airborne over the UK is about 2:1. And so, the air traffic control factors will, given a safety constraint, possibly:

a) influence the capacity of the new or existing civil airports depending on the degree of interference with each other; and/or
b) influence the operations of the existing or new airports (by, for example, preventing the new airport from being omni-directional)—this could, in turn, influence the time spent in travel by transit passengers;
c) impose an extra cost by causing military opera-

* One complication would be introduced by the restrictions on night operations at Heathrow—this would constitute an additional capacity constraint.

† In 67/68, 1·6 per cent of the total passengers handled at Heathrow were in transit.

Printed image digitised by the University of Southampton Library Digitisation Unit

tions to be resited or restricted (e.g. the Wethersfield military airfield near Stansted or the Shoeburyness firing range near Foulness). Of course, if, as a result of the civil airport, the military activities affected were abandoned, there could be a net saving or benefit attributable to the airport—this does of course imply that the particular military activities were not contributing towards defence objectives.

ii) *The site costs of the new airport*

A new airport with two parallel runways would need something like 2,000 plus acres, one with four parallel runways would require 7,500 acres, and one with six parallel runways would require something like 17,500 acres (see para. 31, ref. 13). At an opportunity cost of something like £500* per acre the cost of land for a four runway airport would be a maximum of £4 million; compared to a total estimated site and buildings cost of something like £45 million† (see para. 49, ref. 13).

iii) *Airport operating costs and employment*

Presumably between the possible sites, there will be little difference in the operating costs. The employment directly generated by the airport is likely to be between 45,000 and 65,000 (Heathrow currently employs about 42,000—see Appendix 8, ref. 17), but since between the areas being considered, unemployment is not relatively different, there will be no significant differences in the real cost to the economy. There might, on the other hand, be some differences in the cost of providing housing and services to the airport workers.

iv) *Noise, nuisance and amenity considerations*

In general, the control of aircraft noise in the UK is the responsibility of the Board of Trade; but the main reference source on the problem is the report of the Wilson Committee (see ref. 22). In 1961 the Central Office of Information carried out a social survey on the effects of aircraft noise in the vicinity of Heathrow; the Wilson Committee on the basis of the survey constructed a combined "noise and number index" since annoyance increased with the number of aircraft heard and with their average peak noise level. The concept of a noise and number index (NNI) implies that if the average noise level of the aircraft heard increases, the annoyance can be kept constant, by reducing the number of aircraft, and vice-versa. A noise and number index of 60 for example, corresponds to 80 aircraft per day at a mean noise level of 95 dBA†, and quadrupling the number of flights is equivalent to increasing the noise level by 9 dBA. The NNI=average peak noise $+15_{\log 10}$ N-80 where N is the number of aircraft heard in the specified period (e.g. one day or night), and where the average peak noise level is the logarithmic average of the individual noise levels, thus:

$$\text{average peak noise level} = 10_{\log 10}(\mathrm{I/N}) \sum_{\mathrm{I}}^{\mathrm{N}} 10^{L/10}$$

—where L is the peak noise level† occurring during the passage of each aircraft and N is the number of aircraft concerned.

The Wilson Committee emphasised that annoyance varied according to conditions (e.g. noise appears to annoy people more indoors than outdoors) but it thought that the maximum acceptable level during the day lies between 50 and 60 NNI and between 30 and 45 at night.

But can we attach any estimate of cost to various noise levels?

Presumably a social survey might be able to derive some estimate of how much people would pay to reduce the noise level by varying amounts, but apart from the obvious physical difficulties of carrying out such a survey, there is the fundamental difficulty that in such a situation the individual has an incentive to understate the amount he would be willing to pay.

No guidance is available from compensation paid through legal actions. Sections 40 and 41 of the Civil Aviation Act, 1949 broadly prohibit actions for nuisance arising from civil aircraft in flight or on aerodromes—a statutory right of action exists only when physical loss or damage can be proved since noise caused by aircraft is also excluded from the provisions of the Noise Abatement Act, 1960.

Can we then get some guidance from the cost actually incurred or likely to be incurred? The costs incurred at Heathrow are broadly as follows:

Extra costs of operating aircraft incurred through the use of noise suppressors—estimated as £16,500 p.a. for Boeing 707s (see para. 263, ref. 22)—but this cost would probably be incurred in any case to meet the requirements of other airports.

Restrictions on night flying—loss of capacity at Heathrow—from 1st April to 31st October the number of flights between 23.30 and 06.00 was limited to 3,500, i.e. an average of about two to three

* The cost of good agricultural land in Essex varies between £300 and about £600 per acre, though this probably overstates the cost to the economy.

† And if, for one site compared to another, the extra cost of access were for each passenger an average of, say, 10s., the additional cost over 15 years for 12 million passengers per annum using a discount rate of 8 per cent per annum would be about £50 million.

* "Decibels", quoted in the report on *Noise*, are the readings on a particular kind of noise measuring instrument, the "Sound level meter with A weighting" and are written dBA.

† Measured in PNdB, a unit of perceived noise level, a measure of "noisiness" derived from sound pressure levels in frequency bands by a procedure described by K. D. Kryter. *J. Acoust. Soc. Amer.* 31. 1415 (1959).

Printed image digitised by the University of Southampton Library Digitisation Unit

an hour. Without knowing more about the demand pattern, the pricing system and the long run marginal cost, it is impossible to estimate the cost of this capacity loss.

The cost of providing mufflers and earthbanks to reduce ground running noise.

Most airlines are required to get their planes as high as possible as soon as possible. This may mean higher operating costs.

The cost of insulating nearby dwellings, schools and offices against the noise. The Wilson Committee recommended that grants be paid towards the cost of insulation and a soundproofing grants scheme has since been introduced (see p. 9, ref. 17). The ultimate cost is difficult to estimate; the BAA have a soundproofing reserve of about £250,000; the Wilson Committee estimated the cost of soundproofing a room as £300 (para 318) and the number of people living within the NNI contour of 50 as between 20,000 and 40,000. On this basis the cost could be as high as £12 million on the basis of one person per insulated room or as low as £1 million or £2 million working on the basis of 20,000 people affected and one insulated room per household. These calculations do, of course, ignore the much larger number of people who are "seriously annoyed" by the noise. According to the Wilson report there were in 1961 almost 400,000 people "seriously annoyed" by aircraft noise. This total represented just over a quarter of the 1·4 million people living within a ten mile radius of Heathrow. On the other hand the Wilson Committee's report stated that "there is evidence that the demand for houses in the areas affected by noise from the Airport is buoyant" (para. 256). On the other hand, there is no indication of whether or not rents and house prices have risen more slowly than they would otherwise have done without the increasing noise, and to what extent people have left the area because of the noise level.

The cost of any deleterious effects on mental health, communication (e.g. interference with teaching) and working efficiency. These, because of the lack of studies carried out, are largely non-quantifiable.

It is therefore difficult to say what the "cost of noise" per person is at various noise levels. A capital cost per household of £300 is equivalent over 20 years at an 8 per cent interest rate to something like £10 per person per annum or £30 per household per day. A cost of £1,000 would be equivalent to a cost per person per day of about £30. If the average annual cost for every person for whom the noise from a "new" airport was "intrusive" or "annoying" (corresponding to a NNI of 40 and above) is taken to be £10, the total annual cost would for:

a two runway airport at Foulness be £75,000;
a four runway airport at Foulness be £195,000;
a two runway airport at Nuthampstead be £185,000;
a four runway airport at Nuthampstead be £515,000.

At Stansted the cost for a two runway airport would be about £200,000 per annum on the above assumptions.

5. Evaluation and conclusions

Within the time and resources available, it is impossible to make even the vaguest recommendations on the need for, location of, or timing of a third London airport. In order that a reasoned decision can be made one would need to carry out a simulation study of flying and landing operations within a considerable radius of London as well as at Heathrow itself, in order to identify the various constraints. A large number of factors would need to be studied together—e.g. the pricing system in operation at Heathrow, the likely developments in surface communications which might affect the growth and pattern of air travel, the military operations which might be affected by the airport's locations, and so on.

The objective of the whole exercise would presumably be to maximise social surplus* weighting various years in accordance with some measure of society's time preference or with an opportunity cost of capital. In fact, of course, because of the difficulty of stating with any accuracy the costs of developing various sites at various times, it would be sensible to test the sensitivity of various alternatives to likely variations in the different types of costs.

From the above analysis it would, however, seem that access costs, the costs of replacing military installations, construction costs and air traffic control considerations (which affect capacity) are likely to be the most important items with the cost of land being relatively unimportant, and the "cost of noise" being an unknown factor.

References

1. "Airport Planning and Administration: A critique". R. Doganis. *Political Quarterly*, 1966.
2. "The Implications of the Demand for Air Transport on Airport Planning". R. Doganis. Unpublished Ph.D thesis, LSE, 1967.
3. *A National Airport Plan.* R. Doganis. Fabian Tract 377, 1967.
4. *British Air Services.* (Cmd. 6718.) 1945.
5. *Hansard*, 9th July, 1947.
6. "Committee to Consider the Development of Civil Aviation in the UK". Chairman: H. P. Maybury. December 1926 (Cd. 5351).

* Measuring the benefits and costs purely in terms of National Income might exclude some costs and benefits which one might want to include, e.g. the costs of noise or travel costs incurred by foreign tourists.

Printed image digitised by the University of Southampton Library Digitisation Unit

7. "Committee of Inquiry into Civil Aviation". Chairman: Lord Cadman. February 1938 (Cmd. 5685).

8. *London's Airports.* (Cmd. 8902.) 1953.

9. *Gatwick Airport.* (Cmd. 9215.) 1954.

10. *Civil Aerodromes and Air Navigational Services.* (Cmnd. 1457.) August, 1961.

11. Select Committee on Estimates, Fifth Report for the Session 1960/61.

12. *Report of the Inter-Departmental Committee on the Third London Airport.* (Civil Aviation Paper 199.) HMSO, 1964.

13. *The Third London Airport.* (Cmnd. 3259.) HMSO, May 1967.

14. *Hansard,* 20th May, 1968.

15. *Short List of Sites and Site Information for Stage I Local Hearings—I Foulness (off shore).* HMSO, 1969.

16. "Airport Capacity", "Operational Evaluation of Airport Runway Design and Capacity", and "Airport Terminal Plan Study". AIL for the FAA, 1963.

17. Annual Report and Accounts, BAA, 1967-68. HMSO, 1968.

18. "Forecasts of Exploding Technologies by Trend Extrapolation" (Ralph C. Lenz) in *Technological Forecasting for Industry and Government.* Edited by J. R. Bright. Prentice Hall, 1968.

19. "In Defence of Public Utility Price Theory" (M. J. Farrell) in *Public Enterprise.* Edited by R. Turvey. Penguin, 1968.

20. "Peak-load Pricing" (O. E. Williamson) in *Public Enterprise.* Edited by R. Turvey. Penguin, 1968.

21. "International Passenger Survey for 1965". *Board of Trade Journal,* 16th September, 1966.

22. *Noise.* Report of the Committee on the Problem of Noise. (Cmnd. 2056.) HMSO, 1964.

Other references

G. Fromm:

General

"Civil Aviation Expenditures" in *Measuring Benefits of Government Investments,* R. Dorfman (Ed.). Brookings Inst., 1965.

Capacity simulation

Report of the Second Simulation Symposium. Amer. Inst. of Industrial Engineers, 1959.

Economic Feasibility of Alternative Programmes for Washington National Airport, prepared for FAA in January, 1966. Operations Research Inc.

Demand

Who Travels by Air. Dept. of Transportation and Environmental Planning, Univ. of Birmingham, 1967.

Certain aspects affecting the provision of a single inter-continental airport for the UK. Dept. of Transportation and Environmental Planning, Univ. of Birmingham, 1966 (unpublished).

Forecasting for Air Transport—Methods and Results. Inst. du Transport Aerien, Paris, 1966. Besse and Desmas.

The Changing Travel Market, Lansing and Blood. Institute for Soc. Research, Univ. of Michigan, 1964.

Cost, technical considerations

Studies of the Site for a Third London Airport. NW Essex and East Herts Preservation Association, July, 1966.

"The Control of Air Traffic—its origin, development and future requirements." *J. of Inst. of Transport,* May, 1958.

"Airports and the Supersonic Transport." *Proc. Amer. Soc. of Civil Eng., Journal of the Aerospace Transport Division,* Vol. 92, Jan., 1966.

"Engineering the World's Airport Passenger Terminals." Inst. of Civil Eng. Symposium, January, 1966.

G. Lanka:

A Report on Benefit-cost Analysis and Performance Measurement of the Air Traffic Control System. (Unpublished paper, Federal Aviation Agency, April, 1963.)

"The Nuisance of Noise." J. L. Burn. *Three Banks Review,* December, 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Foulness Island Residents' Committee

Three items were submitted by the Foulness Island Residents' Committee:

1) Hourly record of fog taken from the log of the Mid-Barrow Lightship 51° 35′N, 1° 10′E, 20th December, 1962-8th February, 1969.
2) Daily wind record of the Mid-Barrow Lightship 51° 35′N, 1° 10′E, 1963. The logs of the lightship show the wind direction and force at two-hourly intervals. The entries shown are the strongest wind of the day avoiding where possible the first and last entries of any day.
3) The inhabitants of Foulness and Havengore Islands, Essex, March, 1969. The list gives name, address and occupation. Population: Foulness, 234; Havengore, 7.

All these items may be inspected by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Hertfordshire and Middlesex Trust for Nature Conservation

1. Introduction and scope

This report has been prepared in order to present to the Commission on the Third London Airport certain major facts about the ecology of the region about Nuthampstead and to evidence changes which would take place should the required airport be sited there. The evidence offered here has been based on a scientific assessment of the natural environment, i.e. geology, flora and fauna, and is not concerned with the effects of the proposed development on people at home or at work.

The information does not presently exist which would have enabled quantification of certain statements, however it is emphasised that this report deals with fact rather than opinion. It is for this reason that the Hertfordshire and Middlesex Trust for Nature Conservation Limited (hereinafter known as the Trust) have preferred to submit written evidence. However, if requested, the Trust will be pleased to make available a representative for questioning.

It is suggested (*Site Information for Stage II Local Hearings, 2. Nuthampstead*)* that a four-runway airport will require some 11½ square miles of land and will generate primary employment for 65,000 people. The facts about existing airports indicate that the ratio of service to primary employment will exceed 2:1. Further, the population/employment factor for the south-east of England is typically 2·4. Using these factors it would appear that the new airport will have a dependent population of 312,000 (i.e. 2×2·4× 65,000), not allowing for any manufacturing industries. In 1961 the population of the City of Nottingham was 312,000 and the land occupied by the City was 28½ square miles.

In addition land will be required for communication trunks, recreation and extracting gravel for construction contracts. The remaining countryside will be accessed by greater numbers of people and the resulting disturbance and destruction of habitats would be expected to reduce if not eliminate many of the sensitive, and therefore scarce, forms of animal and plant life.

On consideration of these points it seems that the region which would incur the major impact, should the required airport be sited at Nuthampstead, will include that area of Hertfordshire to the east of a line from Baldock to Harlow, Essex. It is this area (see map† in Appendix A) to which this report has been restricted although adjacent parts of Cambridgeshire and Essex will be similarly affected.

* HMSO.

† Available for inspection by arrangement at the offices of the Commission.

2. The region at present

The area under consideration lies in the north-eastern corner of the county of Hertford and its main feature is the rolling countryside of the eastern Chilterns. The region is rich in wildlife, over 400 species of flowering plants, 30 species of mammals, more than 120 species of birds, with at least 70 species breeding, are known to occur at present.

There are many vulnerable sites in the region, more lying within five miles of Nuthampstead than toward the boundaries of the region. Many areas within the region are of great landscape value and the scientific interest in these is correspondingly high. In particular the famous beauty spot, Therfield Heath, is an important scientific site. The Conservators of Therfield Heath are associated with the Trust in their concern for the conservation of wildlife on the Heath.

The region has long been known to Hertfordshire and Cambridgeshire naturalists and is rich in wild habitats largely as a by-product of the limited human activity. The region may be conveniently divided into three sub-regions based on the main geological features. It is well documented, especially in Dony, 1967, and Hine, 1934.

2.1. *The Ashwell sub-region*

This is part of the Chalk Marl/Gault Clay Plain that lies immediately to the north of the Chilterns. In Hertfordshire it is a small area, mostly of arable land with few woods and little pasture. Its chief interest is in the edge of the chalk escarpment where several chalk pits remain, some of considerable scientific and educational value. The famous series of springs rising at the top of the Totternhoe Stone reaches a maximum development at Ashwell where the springs have long been famous as a site of relict alpine fauna and are much valued for teaching purposes. The springs are already threatened by the Slip End pumping station which will be allowed to reduce their flow by two-thirds. Further water extraction elsewhere would cause them to dry up, with consequent loss of the important fauna.

2.2. *The chalk escarpment*

The eastern end of the Hertfordshire Chilterns is now an area of intense agricultural activity but nevertheless retains considerable scientific interest. The East Anglian Heights are a link between the Breckland and the main mass of the Chilterns so downland relics are precious. Chalk downland attains its richest development on parts of Therfield Heath. Church Hill is the most important scientific site in Hertfordshire and the finest chalk grassland in East Anglia. As the site of pasque flower (*Anemone pulsatilla*) and many rare and

Printed image digitised by the University of Southampton Library Digitisation Unit

beautiful organisms (see Appendix A) it is very vulnerable to any increase in public recreation. Representations have already been made in an attempt to give the site Nature Reserve status.

Several small areas of woodland and chalk pit are of scientific interest and the Trust has four Nature Reserves in this sub-region.

2.3. *The boulder-clay plateau*

The richest agricultural land in the county, this sub-region is also noted for its woodlands, many of them being of great scientific interest. They form an undisturbed reservoir of wildlife. There are several areas of undrained land forming marshes, as at Sandon, or wet heath, as at Patmore Heath, which give rise to rare examples of vegetation types once characteristic of wider areas of Hertfordshire.

The woods harbour over 200 fallow deer (*Dama dama*) as well as the increasing muntjac (*Muntiacus muntjak*); the badger (*Meles meles*) is common. The sparrow hawk (*Accipiter nisus*) now rare and decreasing generally still persists in the district and in the agricultural land of the sub-region, especially around Nuthampstead itself, are the last breeding areas in the county of the stone curlew (*Burhinus oedicnemus*) and the quail (*Coturnix coturnix*).

Bibliography to Section 2

Dony, J. G. 1967. *Flora of Hertfordshire*. Hitchin.

Hine, R. L. 1934. *The Natural History of the Hitchin Region*. Hitchin.

3. **Impact of the proposed airport**

3.1. *Development area*

This has been defined in the introduction.

3.2. *Water supply*

The rainfall of the district is 23 inches per annum. Of this percolation averages 7 inches per annum. This figure would be reduced if the present soil surface were covered with tarmac, concrete and buildings. At present the available water is inadequate for increasing demands and further large-scale extraction would a) cause stoppage of springs, b) lessen flow of rivers, c) lower water table and d) dry up other sources of water. (See Fordham, 1965.)

3.3 *Sewage disposal*

A large new population in the area would necessitate particularly effective sewage disposal systems because of the importance of ground water in the district. Pollution of water in this area would result in the loss of many plants and animals which are rare in the county and would endanger supplies for the existing rural population.

3.4. *Climatic change*

North-eastern Hertfordshire is one of the least polluted parts of southern England, this being largely due to the low density of population. Pollution from Greater London and south-west Herts passes mostly to the east of the region. The trunks of the trees do not exhibit the characteristic acid deposits of soot, nor the low viability of lichen growth found elsewhere in the county (see Gilbert, 1965).

The *most* serious aspects of potential pollution are not those associated with domestic fuel consumption or motor cars, dangerous as these are known to be, but to the large amount of exhaust gases from large jet aircraft.

Aircraft such as "Concorde" burn up to 70 tons of hydrocarbon fuel on take-off and the residues from this are dispersed at low altitude at high concentration over the surrounding countryside. Until the Ministry of Technology has conducted research on the effects of gases from "Concorde" it is suggested that this factor be regarded as a supreme hazard to all forms of life. More insidious is the evolution of carbon dioxide which has increased in the world's atmosphere by nearly 10 per cent during this century. It has been shown (Conservation Foundation, 1963) that regular flights of supersonic airliners could produce a blanket of carbon dioxide which will initially act as a "greenhouse" over the Earth and ultimately will shield us from the Sun's radiation. This blanketing effect will be considerably stronger at those places where aircraft are landing or taking off.

In coastal sites, by way of contrast, air turbulence and presence of water vapour produces conditions which tend to disperse the carbon dioxide and residual hydrocarbons.

A large development of population produces side effects such as increased concentration of dust and smoke particles in the atmosphere which may induce smog and fog. The climatic pattern may be further altered by the heat generated by the urban areas and by increased wind resistance. All these factors operating together could produce dramatic changes in the climate of the region.

3.5. *Loss of wildlife habitats*

The habitats listed in Appendix A are very vulnerable to developments of all kinds and an airport would not only use large areas of land for direct construction, but the subsequent urban development would result in clearance of woodland, drainage of wetlands, use of pits as refuse dumps and a great increase in public recreation which would produce further problems for the remaining natural environment.

The pressure of recreational motoring and picnicking within a diminishing area of countryside could eliminate species sensitive to various types of human disturbance. These include trampling, picking, uprooting or

Printed image digitised by the University of Southampton Library Digitisation Unit

accidental fire in the case of plants, or more general disturbance such as frightening and interference with nesting sites.

The loss of habitats and spoilation of those not completely lost would greatly reduce the present richness of the wildlife in the region.

Bibliography to Section 3

Conservation Foundation. 1963. *Implications of rising carbon dioxide content of the atmosphere*. New York.

Gilbert, O. L. 1965. Lichens as indicators of air pollution in the Tyne valley. *Ecology and the industrial society*, pp. 35-47. British Ecological Society Symposium. Oxford.

4. The potential bird strike problem

The problems of birds striking aircraft have been well documented (see below) particularly with reference to airports situated near estuaries where there occur large concentrations of medium to large birds. In fact, except on migration, many shore birds rarely fly at heights at which they represent a major hazard to aircraft. Further, because of specialised feeding habits the loss of habitats causes such birds to move elsewhere, particularly if suitable areas are conserved for this purpose. Neither of these last points would be true of the large concentrations of medium and large-sized migrant birds which pass along traditional routes over the Nuthampstead area.

In Hertfordshire many low flying diurnal migrants concentrate along routes which may be related to certain physical features such as river valleys. From October to March large numbers of gulls pass daily along the valley of the River Quin between their feeding areas on farmland and their roosts in Cambridgeshire and the larger of the Lea Valley Reservoirs near Chingford and Walthamstow. In the late afternoon these birds congregate in "spirals", recorded as containing between 500 and 2,500 birds each, before flighting to their roosts. These "spirals" may extend up to 800 feet above ground level and in the Barkway-Royston-Nuthampstead area may represent a threat to aircraft.

At times of migration large numbers of gulls pass north-south along the Quin valley to the east of the chalk escarpment near Royston. At peak periods counts of 3-4,000 birds per hour are frequently recorded. Other large movements of medium and large-sized birds occur along the Chiltern Hills at most seasons. These movements, which include lapwings, gulls, swifts and other species, also pass over the chalk escarpment at Royston.

Large flocks of woodpigeons, rooks and jackdaws are to be found around Nuthampstead. The movements of these easily disturbed birds are unpredictable and they are also seen as a hazard to aircraft.

In addition fallow deer (over 200 in the district) and muntjac occur near the proposed airport site and any airfield would need to be fenced to prevent their wandering on to the runways.

Bibliography to Section 4

Caithness, T. A. *et al.* 1967. Birds and aircraft: a problem on some New Zealand airfields. *Proc. N.Z. Ecol. Soc.* 14: 58-62.

Harrison, F. L. 1967. Report of the Associate Committee on Bird Hazards to Aircraft. *Bull. Nat. Res. Council*, No. 5. Ottawa.

Murton, R. K. and Wright, E. N. 1968. *The problems of birds as pests*. Institute of Biology Symposia 17. London.

5. Conclusion

This report evidences the loss to educational and scientific interests which will occur if the Third London Airport is sited at Nuthampstead. In addition some of the problems associated with airport development are described in relation to the changes which they would induce in the remaining countryside. These include the lowering of the water table, drainage, felling of woods, dumping of urban rubbish, water and air pollution, aircraft hazards and increased public pressure on the environment.

The Trust therefore wishes to record its concern that these factors should be seriously considered by the Commission and that Nuthampstead should not be chosen as the site for the Third London Airport.

Appendix A

A.1. Sites of special scientific interest

1. *Ashwell Springs* (*TL 270398*)

The finest example, and oft quoted in textbooks, of a rheocrene spring in southern England. The relict fauna includes seven species of planarian flatworms, notably *Crenobia alpina* and *Polycelis felina* and several rare spring crustaceans. The site is used regularly by students from the Zoology Department, University of Cambridge. It is an important source of the River Cam. The site is extremely vulnerable to increased water extraction from the chalk. (See Ball, 1964, and Fordham, 1965.)

2. *Biggin Moor* (*TL 380336*)

A small marsh, all that remains of the famous natural history site of the 19th century—Barkway Moor, with a vegetation unique in this part of Britain. Such Hertfordshire rarities as marsh pennywort (*Hydrocotyle vulgaris*) occur and there is a fine colony of marsh orchids. The insects associated with the sallows are also of great interest, notably in the Coleoptera and

Printed image digitised by the University of Southampton Library Digitisation Unit

Hemiptera. Vulnerable to drainage and increased public pressure. (See Habitat Study 31 in Dony, 1967.)

3. *Green End and The Moor, Sandon (TL 32-33-)*

Two areas of wetland vegetation, the former a cattle-grazed marsh, one of the richest plant sites in Hertfordshire. Here is found early marsh orchid (*Dactylorhiza incarnata*), southern marsh orchid (*D. praetermissa*) and few-flowered spike-rush (*Eleocharis quinqueflora*), this being very rare in southern Britain. The latter site provides a rich tall-herb vegetation found nowhere else in north-east Herts. Very vulnerable to drainage, ploughing and increased public pressure. (See Habitat Studies 29 and 30 in Dony, 1967.)

4. *Patmore Heath (TL 443258)*

A rare example of a marshy area on Reading Beds, unusual for its natural ponds. The site is one of the few wet heaths in Hertfordshire. Vulnerable to drainage and increased public pressure. (See Habitat Study 26 in Dony, 1967.)

5. *Plashes Wood (TL 38-20-)*

The finest wood remaining in Hertfordshire with a rich flora on clay and gravel. It is notable for the abundance of golden saxifrage (*Chrysosplenium oppositifolium*) and thin-spiked sedge (*Carex strigosa*), a Hertfordshire speciality. The site is also a breeding area for the wood warbler (*Phylloscopus sibilatrix*) and has abundant deer. Vulnerable to felling, drainage and increased public pressure. (See Habitat Studies 42 and 43 in Dony, 1967.)

6. *Royston Erratic (TL 35-40-)*

An erratic boulder, probably of millstone grit, of glacial origin. Of interest both as an erratic and as an ancient landmark—"Roy's Stone!"

7. *Sawbridgeworth Marsh (TL 49-15-)*

The finest marsh in the region situated on Lea Gravels in the valley of the River Stort. The richness of the flora is matched by the variety of insect and bird life. Marsh orchids and arrow-grass (*Triglochin palustris*) are among the more interesting species. Vulnerable to drainage and increased public pressure. (See Habitat Study 76 in Dony, 1967.)

8. *Therfield Heath (TL 35-40-)*

The most important scientific site in the county and the finest stretch of chalk grassland in East Anglia. Used by the Botany School, University of Cambridge for the teaching of ecology. The headquarters in the British Isles of the pasque flower (*Anemone pulsatilla*). The rich flora also includes such rarities as bastard toadflax (*Thesium humifusum*), lesser meadow-rue (*Thalictrum minus*) and dwarf orchis (*Orchis ustulata*) and many other species of interest. The insect life is also rich, the site being famous for the chalk-hill blue butterfly (*Lysandra coridon*). A number of rare fungi occur, including the rusts *Puccinia thesii* and *Phragmidium filipendulae*. The most recent breeding site in Herts for the red-backed shrike (*Lanius collurio*) is on the Heath. Representations have been made to accord Nature Reserve status to the site. Very vulnerable to increased public pressure. (See Habitat Studies 1 and 2 in Dony, 1967; Kingston, 1961; Wells, 1967.)

9. *Wallington Chalkpit (TL 28-33-)*

A pit showing an excellent exposure of the highly fossiliferous chalk rock. Vulnerable to dumping.

10. *Wateringplace Green (TL 329266)*

The area known as Bury Mead has a fascinating flora characteristic of wet meadows and is especially important in containing two orchids, which make a brilliant display here. They are marsh helleborine (*Epipactis palustris*) and marsh fragrant orchid (*Gymnadenia conopsea* ssp. *laxiflora*). Vulnerable to drainage and increased public pressure. (See Habitat Studies 27 and 28 in Dony, 1967.)

A.2. Sites of special scientific interest which are County Trust Nature Reserves

11. *Barkway Pit (TL 382365)*

A fine exposure, perhaps unique, of the chalk showing the crushing by the movement of the pleistocene ice sheet. Some of the chalk has been thrust over the boulder clay. Fossil record of interest. The pit also shows a nice development of different mulleins, *Verbascum* spp. Geologists travel from all parts of the British Isles to view this site. Vulnerable to road widening and dumping. (See Bromley, 1966; Jones, 1938; Woodward, 1903.)

12. *Reed Chalkpit (TL 358372)*

Complete series of chalk strata in this deep pit. The fossil evidence is excellent and this is the type locality for the brachiopod *Rhynchonella reedensis*. Important evidence of disturbance of strata by glacial action. Vulnerable to dumping. (See Jones, 1938; Woodward, 1903.)

A.3. County Trust Nature Reserve

13. *Fox Covert, Royston (TL 334397)*

A block of beech woodland bordering Church Hill, the Reserve supports a large colony of white helleborine (*Cephalanthera damasonium*) and other chalk woodland plants. A good example of Beech/Sanicle woodland on exposed chalk. Vulnerable to increased public pressure. (See Dony, 1967.)

Printed image digitised by the University of Southampton Library Digitisation Unit

A.4. Educational Nature Reserve owned by County Trust

14. *Royston Chalkpit* (*TL 359405*)

A disused chalk pit in the Upper Chalk showing interesting return to ashwood conditions. Some grassland at the upper margin. Interesting plants include yellow archangel (*Lamiastrum luteum*) which is rare on the chalk and butcher's broom (*Ruscus aculeatus*) in its only site in North Herts. An educational reserve used by local schools. Vulnerable to road-widening, dumping and increased public pressure.

A.5. Educational Nature Reserve owned by County Council

15. *Quarry Hill Springs* (*TL 253397*)

A small pair of springs with some of the characteristic "Ashwell" species. Used for educational purposes by Ashwell Rural Studies Centre, Herts County Council. A minor source of the Cam. Vulnerable to extra water demands. (See Ball, 1964.)

A.6. Sites of Local Scientific interest

16. *Beeches Wood, Brent Pelham* (*TL 446309*)

An interesting example of boulder clay woodland important for the rare sedge, *Carex strigosa*, and several species of woodland orchids. Vulnerable to felling, drainage and increased public pressure. (See Habitat Studies 33 and 34 in Dony, 1967.)

17. *Earls Wood, Barkway* (*TL 39-35-*)

A mature wood with an interesting, if not outstanding flora, but with a rich population of woodland birds. Vulnerable to felling and increased public pressure.

18. *Great Hormead Park Wood* (*TL 417295*)

A boulder clay wood notable in having the only Hertfordshire colony of oxlips (*Primula elatior*). Vulnerable to felling and increased public pressure. (See Habitat Study 36 in Dony, 1967.)

19. *New England Wood and Pond, Nuthampstead* (*TL 419358*)

The wood is one Herts station for the rare grass, *Festuca heterophylla* (the other is Plashes Wood). Herb paris (*Paris quadrifolia*) also grows here. The pond produces the rare (in Herts) dragonfly *Erythroma najas*. Vulnerable to felling, drainage and increased public pressure. (See Habitat Study 37 in Dony, 1967.)

20. *Patmore Hall Wood, Albury* (*TL 452254*)

An interesting small wood with the best known local colony of wild daffodil (*Narcissus pseudonarcissus*). Vulnerable to felling and increased public pressure.

21. *Quarry Hill Chalkpit, Ashwell* (*TL 253396*)

A disused pit with interesting chalk flora including pyramidal orchid (*Anacamptis pyramidalis*), fragrant orchid (*Gymnadenia conopsea*), musk thistle (*Carduus nutans*) and tall broomrape (*Orobanche elatior*). The butterfly population is one of the richest in the county. Vulnerable to dumping and increased public pressure. (See Habitat Study 5 in Dony, 1967.)

22. *Scales Park, Nuthampstead* (*TL 419337*)

Interesting recolonisation by native woodland and Forestry Commission from wartime airfield. Bee orchid (*Ophrys apifera*) and herb paris (*Paris quadrifolia*) occur. Fallow and muntjac deer are breeding in the park which is used as a Nature Trail for schools in North Hertfordshire. Vulnerable to felling. (See Habitat Study 32 in Dony, 1967.)

23. *Standon Lordship* (*TL 394213*)

Marshes bordering the River Rib, noted for well developed wetland vegetation and marsh birds. Vulnerable to drainage.

A.7. Other valuable natural history sites (not marked on the map)

24. *Arbury Banks, Ashwell* (*TL 261388*)

Ancient earthwork, the only Herts locality for moon carrot (*Seseli libanotis*). Vulnerable to public pressure. (See Dony, 1967.)

25. *Ashwell Church* (*TL 267398*)

The wall of the churchyard is of Totternhoe Stone and supports the richest saxicolous lichen flora, including six species of *Caloplaca*, to be found in Hertfordshire. Vulnerable to pollution of the atmosphere.

26. *Capons Wood, Buckland* (*TL 368324*)

A good example of a disturbed wood with a very varied flora. (See Habitat Study 35 in Dony, 1967.)

27. *Wallington Common* (*TL 292326*)

A good example of colonisation of scrub woodland with grassland species being replaced by those of woodland. (See Habitat Studies 25 and 40 in Dony, 1967.)

Bibliography to Appendix A

Ball, I. R. 1964. Preliminary observations on the freshwater Tricladida of North Hertfordshire. *Trans. Herts. Nat. Hist. Soc.* 26: 37-43.

Bromley, R. G. 1966. Field meetings on the Chalk of Cambridgeshire and Hertfordshire. *Proc. Geol. Assoc.* 77: 277-279.

Dony, J. G. 1967. *Flora of Hertfordshire*. Hitchin.

Printed image digitised by the University of Southampton Library Digitisation Unit

Fordham, W. H. 1965. Ground-water in the Royston district. *Trans. Herts. Nat. Hist. Soc.* 26: 94-106.

Jones, O. T. 1938. Report of visit to the Sedgwick Museum, Cambridge, and field meeting at Royston. *Proc. Geol. Assoc.* 49: 405-406.

Kingston, A. 1961. *The Heath and its wild flowers.* Royston.

Wells, T. C. E. 1967. Pulsatilla vulgaris and changing land use in *The biotic effects of public pressures on the environment*, pp. 143-149. Nature Conservancy.

Woodward, H. B. 1903. On some disturbances in the Chalk near Royston, Hertfordshire. *Quart. J. Geol. Soc., Lond.* 59: 362-374.

Appendix B

Introduction

As part of the survey of breeding birds for the projected Ornithological Atlas of Hertfordshire the area of the proposed airport at Nuthampstead was surveyed by the organisers of the scheme.

The basis of recording is the "tetrad" which is a four square kilometre area bounded by the even-numbered kilometre lines of the National Grid used on Ordnance Survey maps. The tetrads are lettered using the system adopted in Dony's *Flora of Hertfordshire*, and those tetrads involved are listed in Table 1.

Several visits during the breeding season enable the observer to record birds in the following status categories, used in Table 1:

1. present in suitable habitat but no additional evidence of breeding taking place obtained.

2. as (1) but additional evidence in the form of territorial behaviour, persistent song, etc., that breeding was taking place.

3. species proved breeding (nest found, dependent young seen, etc.).

The results for the Nuthampstead area in 1968 and Spring 1969 are presented in Table 1.

No woodland was visited in "H", "L" or "M" and "N" was insufficiently studied.

Variety of species

The Nuthampstead area compares favourably with the rest of Hertfordshire and is above average in the number of species breeding. It is less rich than the north-western region of the county and this largely due to the paucity of suitable woodland close to Nuthampstead itself. The area is surprisingly rich, however, in view of the scarcity of standing water.

Particular species

No interesting water birds were recorded and this is no doubt due to the lack of water. Birds of prey were not recorded, except for a sparrow hawk from Scales Park. Both species of partridge and pheasant were widely distributed. Woodcock probably occurs but no

Table 1

Birds recorded from the area of the proposed site for the Third London Airport at Nuthampstead

Ten kilometre square	*TL33*						*TL43*				
Tetrad letter	V	W	A	B	C	F	G	H	L	M	N
Species											
Mallard			1	3		1	3		1		
Sparrowhawk				1							
Red-legged partridge		2	1	1	1	2		1	1	2	
Common partridge		2		1	2	2		1		1	
Pheasant	1	3	2	2	2	2	2	2	2	2	1
Moorhen		3		2			3	3	1	1	
Lapwing		1		2			2		2		
Stock dove	1	1	1	2	1	1	1	1	3		
Woodpigeon	3	1	3	2	1	3	3	1	3	3	2
Turtle dove	1	2	1	2	1	2	2	2	2	2	2
Collared dove	1										
Cuckoo		2		2			2			2	2
Tawny owl		1					2				
Swift				1			1			1	
Lesser spotted woodpecker				2							
Skylark	2	2	3	3	3	2	3	3	3	3	2
Swallow	1	3	3	3		3	3	1	3	3	
House martin		3		3		3		3		3	
Carrion crow	1	1	3	3		1	2	1	2	3	
Rook	1	3	1	3	1	3	3	1	1	1	
Jackdaw		1	3	1		3	2	3	3	3	
Magpie		3	1	3	3						
Jay				1			1				
Great tit	2	2	2	2	1	2	3		2	2	2
Blue tit	2	3	2	2	2	2	2	2	2	2	2
Coal tit			1				2				
Marsh tit				1							
Willow tit	2			1							
Long-tailed tit				1		1					
Treecreeper		1					1				
Wren	2	3	2	2	2	2	2	2	2	2	2
Mistle thrush	1	3		2		1	2				
Song thrush	3	3	2	3	3	2	3	3	3	2	1
Blackbird	3	3	3	3	3	3	3	3	3	3	3
Redstart				1							
Nightingale				2	2	2					
Grasshopper warbler				2						2	2
Sedge warbler		2			2				2		2
Blackcap	2	1		2	2	2	2		2	2	
Garden warbler				2		2	2				
Whitethroat	2	3	1	2	2	3	2	2	2	2	
Lesser whitethroat						2	1	2		2	
Willow warbler	2	2	2	2	2	2	2	2	2	2	2
Chiffchaff	2	2		2		2	2		2	2	
Goldcrest			2				2				
Spotted flycatcher		2									
Dunnock	2	2	1	2	1	2	3	1	2	2	
Tree pipit				2						2	2
Pied wagtail	1			1							
Starling	3	3	3	3	3	3	3	3	3	3	3
Greenfinch	1	2	2	2	2	2	2	2	2	1	
Goldfinch		2	2	2	2	2	2	2	2	2	
Linnet	1	2	2	1	3	2	2	3	2	1	1
Redpoll				1			1				1
Bullfinch	1			2		2	3		2		
Chaffinch	1	3	2	2	1	2	2	2	2	2	
Corn bunting	1	3	2		2	2	2			2	
Yellowhammer	1	2	2	2	1	2	2	1	3	3	
Reed bunting			1			2				2	2
House sparrow	3	3	3	3	1	3	3	3	3	3	3
Tree sparrow	1	3	1	2		3	3	1	3	1	1
Total number of species	32	40	33	52	29	40	45	30	34	38	20
Number of visits	1	2	2	2	2	2	2	2	2	2	1

Printed image digitised by the University of Southampton Library Digitisation Unit

evening visits were made and it was not recorded, likewise the nightjar. Similarly owls are under-recorded. Doves and pigeons were widely distributed but the collared dove was only found at the large chicken farm in "V". The lack of woodpeckers is surprising. The less common species of tit are under-recorded but this is because the area was visited at a less favourable time of year.

Singing nightingales were recorded in several places and are probably more common here than elsewhere in the county. The uncommon grasshopper warbler occurred wherever suitable habitats were found and is common in Scales Park. There are no reed-beds available for *Acrocephalus* warblers but sedge warbler was found in four tetrads. The distribution of other warblers follows the pattern of the rest of the county. There are no woodlands left suitable for wood warblers. Spotted flycatcher was only recorded for "W" as a result of one visit in summer 1968—it is undoubtedly present in many tetrads. Tree pipits, not common in north-east Hertfordshire, were found in two areas. Reed buntings were present in "dry" habitats.

Conclusion

The airport site presents a rich variety of bird life and there are some particularly good habitats, such as the north-western edge of the area which has a wide variety of open/scrub/woodland species.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Honourable Company of Master Mariners

The Technical Committee of the Honourable Company of Master Mariners, representing a large body of very experienced Master Mariners, has considered the current proposals to establish a combined air and deep-water marine terminal at Foulness and wishes to express its whole-hearted support for this project.

Though we are not in a position to offer informed views on the merits of the site as an air terminal pure and simple we are convinced that the deep-water marine terminal is of paramount importance to our future maritime trade. It seems unlikely that the Foulness project would materialise as a purely marine venture on economic grounds, even though the absence of such a terminal could, in our view, have a disastrous effect on our future national trading position. We would, therefore, urge that the site be used for an air terminal on the grounds that such a development must greatly improve the prospects of developing a marine terminal there.

Our reasons for supporting the construction of a deep-water marine terminal at Foulness are as follows:

1. Unless a UK terminal which can handle the deep-draughted vessels now in service and the even deeper-draughted vessels now being built or planned is built, it is likely that all or most of the ocean traffic will, within a few years, be routed to Europort or the other major ports developing on the Continent. This would have two major effects.

a) Substantial increased costs added to both the imports and exports of this country to cover transhipment from continental ports to UK ports or land haulage via the Channel tunnel.

b) A marked run-down in our ocean-going tonnage with a serious reduction in invisible earnings and an increase in overseas payments resulting.

2. Whilst Foulness is not ideally accessible to deep-draughted shipping it is accessible and offers compensating advantages over other possible UK sites in the form of a) an ideal situation for transhipment to northern European and Baltic ports, b) being better situated to provide reasonably short and economic land access to a major part of British industry.

3. The economics of modern shipping demand elimination of any waste of time in port approach work, i.e. access at all states of tide to non-enclosed quays with a minimum of reduced speed time in narrow, winding and congested channels. The enclosed tidal docks of London and most other UK ports, situated well up-river, cannot fulfil these requirements and modern tonnage will be driven to increasing use of competitive ports on the Continent.

4. With rapid increases in average deadweight, draught and speed of ships and bulk carriage of noxious, explosive and dangerous cargoes the risk of accidents carrying serious consequences for heavily populated areas increases year by year. An offshore terminal would dramatically reduce these risks.

5. The dock layout and congested land access to London docks adds immensely to the costs of all shipments, whilst the bulky road transport approaching the docks is a major factor in road congestion in at least certain sections of the metropolis. The Foulness site would provide opportunities for an imaginative system of approach roads which would impose no strain on urban areas and dramatically reduce costs of road transport to and from the docks.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Inter-Diocesan Working Party

This evidence is submitted on behalf of an Inter-Diocesan Working Party established at the instigation of the Bishop of St. Albans, whose diocese contains two of the short-listed sites (Nuthampstead and Thurleigh). Adjoining dioceses are seriously affected by both of these sites, whilst Oxford Diocese contains the Cublington site and Chelmsford Diocese the Foulness site. The working party therefore comprises representatives of the dioceses of St. Albans, Chelmsford, Oxford, Ely and Peterborough. Their aim has been to present an objective statement of evidence in respect of each suggested site under some of the headings set out on page 5 ("Arrangements for submitting stage III evidence") of the Commission's booklet *Short list of Sites and Site Information for Stage II Local Hearings: 1: Foulness (off-shore)*.

The headings under which the working party wishes to comment are:

1) Regional planning considerations.

2) Employment benefits.

3) Provision of services and utilities.

4) Housing requirements.

5) Noise and nuisance considerations.

6) Amenity considerations.

7) Land use.

8) Conclusion.

1. Regional planning considerations

a) Thurleigh

As a very large influx of people is to be expected, plans will need to be made either for the building of a new town or the absorbing of the increase in neighbouring communities. It may well be that the new developments already planned would be able to take a percentage of it and might well welcome the opportunity.

Major development is already taking place at Northampton (20 miles from Thurleigh) and Wellingborough (15 miles from Thurleigh) and smaller expansion is probable at Rushden (5 miles) and Kettering (20 miles).

It is for consideration whether the integration of the influx into existing communities would be preferable to building a new town. The Peterborough diocesan representatives expressed the view that *such integration is preferable*.

The construction of a vast new town within reasonable reach of Thurleigh to house 265,000 people would swallow up thousands of acres of valuable agricultural land and dispossess many farmers.

The Commission reports that the actual airport would occupy about 7,500 acres, but the possibility of a larger land-takeover being required cannot be excluded. About 2,000 people at present live in this area and would have to leave.

The airport would consume all known gravel resources in the Ouse valley from Buckingham to Earith, and the rapid run-off from thousands of acres of runway, roads, etc. would inevitably cause frequent flooding as the water level rose in water courses and rivers.

In all our consideration of this matter, people have been our first concern: it is not simply a question of thinking of people as more important than economic factors and national planning, for in economics and planning, people are involved.

The cost of a third London airport will figure largely in the Commission's investigation. We would wish to affirm that the value of one human life cannot be measured, nor can the quality of life, in terms of security and happiness and freedom from excessive noise and fear.

b) Nuthampstead

The area is at present planned to remain rural—Green area for London—and the proposed Nuthampstead development would tend to seal off London to the north, causing solidification of urban development. The development of a New Town of 230,000 north of Royston would have its advantages to Counties of Cambs. and Isle of Ely, and to Ely Diocese, provided Royston came into County of Cambs. and Diocese of Ely, but would probably cause conurbation—spread from Cambridge to the SW as far as Royston and almost to Biggleswade.

The "necklace" development of 170,000 proposed in the Sawbridgeworth/Bishop's Stortford/Stansted area would cause increased congestion in the area, as it would be only just north of Harlow New Town.

In short, Nuthampstead would not accord with the future use of the general area as a means of rural refreshment for Londoners, which sociologically is regarded by the Church as most important.

The representative of the diocese of Ely feels, however, that a new town sited north of Royston could be of benefit to his diocese, which is overwhelmingly rural, and would provide much-needed work opportunities in this area which is singularly lacking in large conurbations. There are already ten churches within the designated area, others would be required. These advantages do not apply to the other dioceses involved.

Printed image digitised by the University of Southampton Library Digitisation Unit

c) Foulness

The major planning authorities concerned in the establishment of extra industry and increased population in the Southend-Basildon-Foulness area stated at the Stage II enquiry that the Foulness proposals do not conflict with any planning goals already accepted. The Diocese of Chelmsford concurs in this view. Whilst not pressing for the Foulness development at this stage, it is felt that should the development come, great opportunities for first-class planned development of the whole area would present themselves, particularly in the Shoeburyness area, which at present is in a very down-at-heel condition. Adversely, the Diocese accepts that the development would entail an increase of transport routes cutting right across the county into London, but in view of the existing trends in the development of the southern part of Essex and of East London even these might bring benefits to the general population. The Church concurs with paras. 7.1 and 7.2 of Mr. F. A. Sharman's evidence on behalf of the County Council of Essex at the Stage II local hearing, provided that adequate compensation is made, particularly to the displaced tenant farmers and the Leigh-on-Sea cockle fishers.

d) Cublington

Plans are already well ahead for the proposed building of a new city at Milton Keynes. The airport at Cublington would render this project obsolete in our view.

With the electrifying of the railway line to Euston, the county of Buckingham on its east side has increasingly become a commuter area and many people are buying their own property. The building of the airport in this area would also completely ruin an already acknowledged beautiful part of the county. Furthermore, the flight path (being sited over Woburn Park) would threaten the preservation of an area of outstanding beauty with its unique wild life. Further motorway access would be necessary and this in itself would create greater havoc to the countryside between Wing and London.

2. Employment benefits

a) All four sites

It is inevitable that although the present population may enjoy job opportunities which did not exist before, yet nevertheless, only a proportion will be suitable for the kind of work available, and again, although some will share in the increased prosperity which extra money may bring in, there is a very real danger that small businesses will be squeezed out by large firms. There is also the serious problem of the displacement of tenant farmers with inadequate compensation to take up farming anew elsewhere in England. An airport would on the other hand provide greater scope of opportunity for younger people with the necessary technical training and opportunities for unskilled labour to work on construction projects in the development period: much of these opportunities might be taken up by labour brought into the area from outside and not, therefore, of direct benefit to the existing population, who would be faced with the alteration of their existing environment without obtaining a proportionate share of the subsequent benefits.

b) Foulness

With the exception of the displaced tenant farmers, whose compensation at present levels is unlikely to be sufficient to enable them to start afresh elsewhere in this country, and the Leigh-on-Sea cockle fishers, the effects of the proposed Foulness development should be widely beneficial. At present, some 40,000 of the lower paid as well as more prosperous city workers commute to the City of London from Southend. With the trend of moving offices from London to outlying areas and the increased transport costs in and out of London, many of these workers might well prefer to make the much shorter journey to the airport at Foulness. Since such workers are already resident in the Southend area, should such a transfer of employment take place on any large scale, the resultant need for new housing would be correspondingly less, as would the pressure on the commuter transport services between London and Southend. Ancillary industry for the airport would also produce enhanced employment potential.

3. Provision of services and utilities

a) Cublington

Should the airport be built at Cublington, the following provisions are likely to be needed:

A new town for the airport to house something like 200,000 people in 50,000 houses. This in turn would necessitate 18 secondary schools, 30 junior schools and 60+ primary schools.

At least one regional hospital would be required or a considerable extension to the new Milton Keynes hospital, the Luton and Dunstable hospital or one of the Aylesbury hospitals. In addition, it is thought that eight medical, welfare and social centres would be required.

b) Nuthampstead

The existing population are adequately served by present utilities, electricity, water, sewage, etc., these would be unlikely to be materially improved by the Nuthampstead development. Transport services would undoubtedly be improved, but these would be of an urban rather than a rural type and many of the present population prefer to suffer the present inadequacies in a rural setting rather than enjoy the improved transport facilities in urban conditions.

Printed image digitised by the University of Southampton Library Digitisation Unit

c) Foulness

Present facilities are already generally excellent for the existing population who would be unlikely to experience much improvement, if any, should the Foulness development take place. On the other hand, the development would bring greater revenue to the local authorities who would be able to improve civic facilities of all kinds, parks, libraries, etc. as has proved the case in the area of Heathrow. This would enhance Southend as a resort and bring increased trade.

The cost of additional schools should lie between £10 million and £12 million for every 100,000 people: in addition a total of £500,000 would be needed for higher education.

There are now 1,066 hospital beds in the area, rising to 1,226 by 1971. This is equivalent to 5 per 1,000 population whereas the official yardstick is 2-3 per 1,000 for serious illness. Present provision for old people is insufficient. Staff is a limiting factor.

d) All sites

A greatly expanding population brings great problems to the church who are faced with vast expenditure (for which adequate resources do not exist) on building new churches, halls, clergy houses and the like. St. Albans Diocese has already carried a great burden in this respect because of the growth of several large new towns within it (Hemel Hempstead, Hatfield and Stevenage). Chelmsford has had to contend with Harlow and Basildon apart from large scale outer-London development; Peterborough and Oxford dioceses are now faced with similar difficulties over the new city of Milton Keynes and the expansion of Northampton and Wellingborough. The churches will, of course, face the task of coping with new population wheresoever it comes, but this is an increasing burden to which the Commission's attention is drawn.

4. Housing requirements

Apart from what has already been said under "Planning Consideration", the following comments may be helpful:

a) Nuthampstead

The combined County Councils' proposals at the Stage II Enquiry hearing would seem to be adequate to meet the needs of the proposed development. The Church's approach to these proposals would be to provide the necessary pastoral care (see under "Provision of Services and Utilities" above). In the "necklace" development area, where the development would take the form of enlargement of existing local centres of population, the 170,000 people due to come to the Sawbridgeworth/Bishop's Stortford/Stansted area would be able to make use of existing village churches and there should therefore be no major problem in terms of churches and church buildings: sociologically there would be pastoral problems of integration of old established populations and "newcomers" in each place, which have proved particularly difficult in other areas. In the New Town of 230,000 there are ten churches already strategically placed, which with appropriate neighbourhood planning could initially be made to serve the pastoral needs of the majority of the new population, provided that the Church were able to house and staff each church with a minimum of two clergymen. Outline planning suggestions for possible additional churches and/or church halls and parsonage houses ought to be included in the planning of the new town in the initial stages so that the necessary sites would be available for subsequent development in the later stages of the town's construction.

On a cost/benefit analysis of the Nuthampstead development, the major financial strain would initially have to be borne by the Diocese of Ely, now largely rural, though after completion the greater balance in the overall pastoral and financial pattern of the Diocese would prove beneficial.

b) Foulness

As pointed out under "Employment Benefits" above, the development of Foulness might entail the employment of many of the present local residents thus cutting down considerably the cost of providing new accommodation and facilities for workers coming into the area. This in turn would enable the Church to make optimum use of its existing facilities in ministering pastorally to the increased population, thus easing the financial strain which will come upon the church in whichever area the airport is developed.

5. Noise and nuisance considerations

The working party regards these considerations as of the utmost importance and has assembled the following facts and data which it hopes will be helpful to the Commission:

a) Thurleigh

i) *Demolition of existing villages*

Bletsoe, Keysoe, Keysoe Row, Riseley, and possibly the whole or part of Thurleigh would be demolished. At least three and perhaps four or five ancient churches would be destroyed.

ii) *Areas affected by noise*
Area of 60+ NNI

Within this area, churches and schools would be useless. The noise factor would make life for everyone intolerable.

This area includes:

Sharnbrook Souldrop Felmersham Thurleigh if not demolished Great Staughton Little Staughton Bolnhurst	All St. Albans Diocese.

Printed image digitised by the University of Southampton Library Digitisation Unit

Area between 50+ and 60 NNI

Sound-proofing would be essential in this area if churches, schools, factories and homes are to be used.

This area includes:

Odell
Harroid
Carlton
Yardley Hastings
Lavendon

Area between 40+ and 50 NNI

Here, too, sound-proofing would probably be necessary in every building.

The large area includes:

North Buckinghamshire (including Olney)

Part of Northamptonshire (including perhaps part of Northampton itself)

Whole of Bedfordshire, north of Bedford

Part of Huntingdonshire (coming very near to St. Neots, Huntingdon and Godmanchester).

iii) *Architects' comments on some of the churches within noise zone*

I. *Peterborough Diocese (within 45 NNI zone)*

Yardley Hastings. Structure sound. On a hill and would, therefore, be affected by any excessive vibrations.

Grandon. Stonework liable to be affected by undue vibrations. On high ground.

Castle Ashby. Certain subsidences might be worsened by undue vibrations.

Bozeat, Easton Maudit, Ecton, Earls Barton, Piddington, All Hallows, Wellingborough — With the exception of Easton Maudit and All Hallows, Wellingborough, the architect reports the structure of all these churches is sound and he does not think it possible to calculate accurately the possible effect of NNI.

Cogenhoe, Denton — Both churches in a good state of repair. The architect does not consider it within his competence to comment on possible vibration effects.

II. *Ely Diocese (within 40/50 NNI zone)*

St. Ives. Tower and spire of ashlar. Tendency to crack, buttress S.E. and turret. Walls rubble and barnack stone. Periodical pointing trouble. Windows include clerestory.

Hemingford Grey. Tower and spire, pointing. Chancel roof slate. Walls rubble and barnack stone.

Hemingford Abbots. Tower late 14th century with restored spire. Pinnacles. Chancel roof slate. Walls—N. aisle leans outwards. Settlement cracks, pointing. Windows include clerestory.

Fenstanton. Tower 13th-14th century features. Broach spire. Tendency to crack, tower staircase and spire. Roofs—nave slate, chancel peg tiles. Walls pebble rubble, pointing. Windows, some large and fine.

Hilton. Tower 14th century. Parapets vulnerable. Roofs—nave slate, chancel tile. Aisles lead, splitting. Walls pebble rubble and stone with clunch. Cracks pointing.

Godmanchester. Mainly 15th century. Tower and spire 150 ft, very large and fine church and also, although low lying, very exposed. Constant pointing problems, including parapet. Roofs old lead. Windows include clerestory.

Offord D'Arcy. Tower, generally decayed joints, spire twisted due to vibration from trains. Roofs—nave slate, chancel tile. Walls, with clunch quoins, generally defective pointing. East chancel wall leans outwards, twisted. Windows include clerestory.

Offord Cluny. Tower 15th century. Roofs—nave lead, chancel tile. Much of nave 13th century. Walls—pointing problem. Windows include clerestory.

Great Paxton. Tower 14th century. High nave roof. Solid structure, some 11th century but situated on slope to SW.

Little Paxton. Tower 14th century with tile roof. Cracks in tower and church roofs tile; aisles slate.

Hail Weston. Tower timber, with oak shingles facing. 13th-15th century church. Roof tile. Walls some clunch.

Southoe. Tower of brick with tile roof. Parapet and pinnacle leaning out. Roofs—nave lead, chancel slate, aisles lead. Date as Hail Weston. Walls—limestone with pebble rubble and brick. Pointing problem.

Diddington. Tower and clerestory 15th century, chancel c.1350. Roofs lead copper and slate. Ancient glass in south chapel.

Buckden. Tower and spire, exposed, vertical fracture E. wall and staircase. Roofs lead. Walls rubble of pebble and ironstone, limestone. Pointing throughout rendering on west wall vulnerable. Also all glazing.

Brampton. Tower 1638, ashlar faced. Roofs, lofty, nave and aisles lead, chancel slate. Walls—rubble, barnack and ketton stone. Window tracery, especially chancel, vulnerable.

Grafham. Tower and broach spire, 13th-14th century, of ashlar. Top 7 ft displaced due to blast; fractures below this, also pinnacles. Roof tile. Some cracking in walls. Pointing problem. Windows include dormer.

Great Staughton. Tower and spire (lead-covered) 13th-16th century. General problem of walls including tower and buttresses, due to long straight joints. Clerestory and transept cracks. Roof of nave Westmorland slate, shaped, fragile. Windows include 14th century tracery.

Churches outside inner belt but within radius of 16 miles—area of severe noise

Brington with Molesworth and Old Weston.

Great Catworth. Covington. Easton. Hamerton.

Printed image digitised by the University of Southampton Library Digitisation Unit

Keyston with Bythorn. Spaldwick with Barham and Woolley. Winwick.
Alconbury with Alconbury Weston.
Great Stukeley. Little Stukeley.
Abbotsley. Great Grandsden.
Little Grandsden. Waresley.
Gamlingay. Eltisley. Croxton.

Although research as to the effect of noise and vibration on old church buildings is largely a field unexplored, the chances are that they would be seriously threatened in the long term. The noise problem would also involve tremendous expense in soundproofing if that was considered feasible.

b) Nuthampstead

Wherever the location of an airport may be, the involvement of the "Church" contains a complex of component parts: worship, prayer, education, healing, social work and fellowship. At the centre of the Church's work in each place is the parish church, most of which bear witness to the varied history of the district. Besides the church building, there are also vicarages, church halls, schools, etc. In addition, the Church consists of people, so that people as well as buildings must be considered.

Worship: In many churches, as indicated below, the continued use of the existing churches for worship will be impossible through noise. In the NNI 50+ areas it is doubtful whether many, or indeed any, of the churches can be made sufficiently silent inside for worship to take place. In the NNI 45-50 areas some soundproofing would be possible. The areas just outside the NNI 40 will also find the services interrupted by noise and vibration.

Education: Here again, the effects of noise will be severe and notes are given below on the expected effects on church schools affected by Nuthampstead.

Church Fellowship: Christian fellowship shows itself in many ways in addition to the worship in the churches themselves. All parishes have some sort of organisations to build up the church fellowship: e.g. Church of England Men's Society, Mothers' Union, youth clubs, study groups, discussion groups, social groups, all of which will be badly affected and restricted by noise and vibration, unless soundproofed buildings are available in each parish for their use.

Effect on family life. Hardships. Mental illness. This, it might be said, is more a general problem than a specific issue for the Church. However, the Church has a responsibility to look after the minds and souls and bodies of the population in its care and any realistic cost/benefit analysis for Stage III of the Enquiry must take into account these factors, however imponderable their calculations may be in terms of actual finance. The naming of Nuthampstead on the Short List Sites has already caused great distress and mental strain to the population in the affected area which would be correspondingly increased should Nuthampstead be finally selected. This is, of course, true for all sites.

The situation. There are four dioceses involved: St. Albans, Ely, Chelmsford and Bury St. Edmunds (the boundaries of the area involved by the proposed airport being the towns of Letchworth, Great Shelford, Haverhill and Hertford). It is calculated that the number of people directly affected by the proposed development would be:

In St. Albans Diocese: 88,000 by noise + 25,000 by New Town.

In Chelmsford Diocese: 27,000 by noise + 7,500 by New Town.

In Bury St. Edmunds Diocese: 8,000 by noise.

In Ely Diocese: 10,000 by noise + 8,300 by New Town.

A minimum of 1,000 people will have to be directly evacuated and many more will find life intolerable in the villages and towns like Buntingford, Great Hormead, Saffron Walden and Haverhill. Amongst this number are tenant farmers whose compensation at the indicated rate would be completely inadequate to put them into new farms in this country. There are also many people who have bought their homes with their hard-won savings. A number of them have deliberately come to live in this area because of its peace, quietness and rustic beauty; amongst them are some retired people as well as young couples who commute to their work. For them and for the tens of thousands who will be affected by intolerable or near-intolerable noise, vibration and contamination of the atmosphere, the airport must necessarily mean a complete change in their chosen way of life.

Noise effects on diocesan organisation and on the churches. There would obviously need to be considerable pastoral reorganisation, with new churches, halls, and vicarages to be built, and some churches and vicarages to be resited. The direct effect on the churches in the dioceses concerned can be summarised as follows:

(St. A=St. Albans; C=Chelmsford; E=Ely; B=Bury St. Edmunds.)

1) *To be demolished*
Anstey (St. A)
Nuthampstead Mission Church (St. A)
Langley (C)
Little Chishill (C)
St. Mary Meesden (St. A)
Duddenhoe End Mission Church (C).

Printed image digitised by the University of Southampton Library Digitisation Unit

2) *Immediately at the end of runway, NNI 60+*
Great and Little Hormead (St. A)
Wyddial (St. A)
Brent Pelham (St. A)
Elmdon (C)
(St. Hugh, Hare Street—R.C.)

3) *Within the area NNI 50+*
Buntingford (St. A)
Buntingford (R.C.)
Aspenden (St. A)
Westmill (St. A)
Ardeley (St. A)
Throcking (St. A)
Littlebury (C)
Strethall (C)
Little Chesterford (C).

4) *Within the area NNI 45-50+*

Cottered	St. A	Bartlow (E)
Walkern		Linton (E)
Hitchin		Gt. Chesterford (C)
Wallington		Hadstock (C)
Knebworth		Woolmer Green (St. A)
Datchworth		Arkesden (C)
Benington		Horseheath (E)
		Whittlesford (E)

5) *Within the area 40-50 NNI*

Thriplow	E	Watton-at-Stone
Duxford		Welwyn
West Wickham		Ayot St. Lawrence
Weston Colville		Codicote
West Wratting		Kimpton
Balsham		Aston
Hildersham		Bygrave
Ickleton		Sandon
Hinxton		Braughing
Fowlmere (E)		Weston
Haverhill (B)		Clothall
Saffron Walden (C)		Gt. Wymondley
Wendens Ambo (C)		Graveley
		Offley
		Lilley
		Stotfold
		Stevenage (part)

6) *Within the area below 40 NNI*
St. Albans Diocese

Barkway	Lt. Munden	Kelshall	Lt. Hadham
Reed	Gt. Munden	Royston	Much Hadham
Buckland	Ashwell	Furreaux	Standon
Barley	Therfield	Pelham	High Cross
	Thundridge	Stocking Pelham	
		Sacombe	

Chelmsford Diocese	*Ely Diocese*	
Gt. Chishill	Melbourn	Meldreth
Heydon	Pampisford	Foxton
Newport	Haslingfield	Shepreth
Wicken Bonhunt		

It is possible that areas with an NNI as low as 35, if cloud cover is low and winds unfavourable, can find their worship and their social activities seriously hampered. To those in the higher ranges of NNI from the experience of London diocese, soundproofing of churches is nearly impossible and to quote one of their experts, "the only thing to do is to knock the church down and rebuild it underground". It is possible to soundproof a few rooms in a vicarage, and in London diocese, the authorities in the most acute cases are prepared to pay a grant of £90 towards the soundproofing of four rooms, the cost of which would total some £220. Some help can be given to the churches by double glazing, but this also is a very expensive business with the large windows of churches, and the problem of ventilation is also a difficulty. The education authorities have calculated that it would cost some £10,000,000 to soundproof schools in the area to make education possible, and at a rough estimation £1,500,000-£2,000,000 would be necessary if a similar job were to be done for the churches in the area.

Many of the churches to be demolished, e.g. Anstey, and many of those in which worship will be virtually impossible are of considerable historic importance and their loss would impoverish the English country scene and the aesthetic life of the people.

There will be problems about exhumations in churchyards which are to be swallowed up in the airport site, and the maintenance of disused churchyards of closed parish churches.

Effects on church educational establishments

In the following schools, education will almost certainly be discontinued owing to demolition or high NNI rates:

Langley	J.M.I.	C. of E. aided
Gt. Hormead		C. of E. aided
Buntingford		C. of E. aided
Buntingford Comprehensive Middle School, C. of E. controlled (due to be completed 1970)		
Buntingford St. Francis R.C. School for mentally handicapped		
Westmill	J.M.I.	C. of E. controlled
Ardeley	J.M.I.	C. of E. controlled
Elmdon		C. of E. controlled
Cottered		C. of E. controlled
St. Ippolyts	J.M.I.	C. of E. (A)
Benington	J.M.I.	C. of E. controlled
Datchworth	J.M.I.	C. of E. (A)
Woolmer Green	J.M.I.	C. of E. (A)
Welwyn	J.M.I.	C. of E. (A)
and infants		C. of E. (A)
Aston	J.M.I.	C. of E. (A)
Weston and Graveley	J.M.I.	C. of E. controlled
Offley and Lilley	J.M.I.	C. of E. (A)
Stotfold	G.I.	C. of E. controlled
Stevenage		C. of E. (A)

Printed image digitised by the University of Southampton Library Digitisation Unit

The following will be affected by flight paths, stacking areas, traffic problems and industrial growth:

Barkway	Thundridge
Barley	High Cross
Little Munden	Much Hadham
Great Munden	Standon
	Puckeridge (R.C.)

The following comments have been received on churches in the Ely diocese which lie within the 35-50 NNI zone.

Duxford: St. Peter—13th/14th century church. Built of flint and rubble. Tower: six bells. No great area of glass. Sound condition. In take-off path—would suffer great interruption of services. St. John—12th/13th century church. Clunch. Fine central tower. Not used for worship. In dilapidated condition: future uncertain, but noise vibration would quickly render this building a danger to the public which could involve a very heavy expense.

Fowlmere: 13th/14th century church. Flint and rubble: flint facing. South gable wall of south transept subject to cracking. Pointing of tower weathered brick: not serious at present but stress could accelerate deterioration. Tracery of window of south transept is dislocated. The window is of considerable size and would be vulnerable. Disturbance of services could be considerable.

Thriplow: 13th and following centuries. Extensive restoration 1876/7 under Sir Giles Gilbert Scott. General condition good. Flint facing of walls: vibration could affect pointing and accelerate the existing need for repair. Slate roof: likely to be more vulnerable than lead. The bells are not safe for ringing up: the wood framework is decayed. Vibration could cause danger here and involve heavy expense in repair.

Balsham: Large church in a high exposed position, 14th/15th century. Walls mostly clunch ashlar, a lot of it rather deteriorated. Chancel faced with fitted flints. This is a magnificent building already presenting serious problems of maintenance. The tower, massive, late Norman, clunch rubble. This tower has been subject to movement for years and is tending to push over the south-west corner and west face of the south aisle. Excessive disturbance could cause collapse. There are large areas of glass, some of it mediaeval: a large and good east window by A. K. Nicholson. South-west chancel window by Christopher Webb. The nave is very lofty and the whole structure of great delicacy. This church would be impossible to soundproof and would be placed at very great risk indeed.

Bartlow: 12th/13th century. Thoroughly and not badly restored 19th century. Plastered ceilings. Round tower which is not easy to maintain. In 1962 defects were reported in the parapet. The tower is important: there is only one other round tower (Snailwell) in Cambridgeshire. The fenestration is not great in area: as noise could be considerable soundproofing might be necessary and not impossible to carry out.

Hinxton: Dates from Norman times. Pebbles and flint rubble faced walls: generally sound. The tower has an important 15th century spire covered with lead at a very steep pitch. Prolonged severe vibration could cause this to slip and repair would be very expensive. Hinxton is close in on the take-off path, and would be very vulnerable and subject to much disturbance. Though there are no huge areas of glass the windows are of good size in proportion to the church. If soundproofing were necessary, it would be expensive.

Horseheath: Late 15th century. Flint rubble, limestone buttresses tracery, etc. Tower flushed up with plaster, now defective: vibration could cause serious falling. The fenestration is large in relation to the size of the church. The east window is of considerable size. It would be difficult and costly to prevent serious noise disturbance in this church.

Ickleton: "A cruciform church of great interest and antiquity" (Survey). Construction mainly rubble faced with rubble flint. The nave contains exceptionally good Norman arcading on top of monolithic cylindrical pillars probably taken from a Roman temple. Damage to this structure would be a very serious thing indeed. South transept and aisle rebuilt in 15th century wider than the nave. The fenestration is of considerable area. Ickleton is close in to the flight path and not far from the runway and noise disturbance could be great. Protection would be difficult and costly. There is a fine peal of bells in a steel frame. The spire is covered with lead, old, at a very steep pitch. Vibration could cause, as at Hinxton, serious damage which would be extremely costly to repair.

Linton: 13th/14th century church. Flint and rubble and flint facing: general condition good. In relation to the size of the building, the fenestration is not so large. This church would not be such a problem as others.

West Wickham: 13th/14th century. Flint and pebble rubble. Church tracery, quoins, etc. General condition sound, though this form of construction always becomes a problem with age. For the size of the church the area of glass is considerable, protection would be fairly simple.

Shudy Camps: 13th/14th century. Flint and rubble. Tiled roof is in poor repair: considerable vibration might easily cause disintegration. The general condition of this building is poor and could be placed at risk.

West Wratting: 14th century with considerable later modifications. Construction mainly flint rubble with stone dressings. Generally, the structure needs considerable maintenance. The area of window is considerable for the size of the church. Problems could easily arise in this church from constant vibration.

Weston Colville: Flint construction: sound condition. No special comment.

Printed image digitised by the University of Southampton Library Digitisation Unit

c) Cublington

The noise factor would affect parishes in regard to worship and meetings in the following way: On any given Sunday morning, within the affected area, there are something in the region of 1,200 persons in church for worship or instruction in the Oxford diocese and 900 in the St. Albans diocese. Three hundred and fifty persons would be affected in regard to evening worship in the Oxford diocese and 320 in the diocese of St. Albans. During the week, approximately 400 persons would be affected at meetings, etc. in the Oxford diocese and 375 in the diocese of St. Albans.

At least 1,200 people would have to be evacuated if the airport were built at Cublington and many others in the surrounding villages would find that their lives and work would become almost intolerable, from a noise point of view.

Of the incumbents in the directly affected parishes, almost all commented upon the fact that the worship in their churches would be seriously impaired by noise; preaching and instruction would be rendered difficult (to say the least) and in the area centred upon Aylesbury (with at least four hospitals) it has been pointed out that in addition to the care of patients within these, there is the important factor of communication with those who are mentally sick—Stone Hospital being mentioned in particular.

Some comments have been received from architects responsible for some of the churches in St. Albans diocese which are affected by the Cublington proposal.

Ridgmont, Marston Morteyne, Lidlington and Millbrook

Marston Morteyne and Millbrook are basically of 13th century; they are built of a soft sandstone and the nature of the stone and mortar makes them very susceptible to vibration. Lidlington church, although of later date, is built on clay, and has at present a number of settlement cracks which are likely to be affected should there be further vibration. Ridgmont church has a spire and commands a high position in the vicinity, also the roof of this church is of tiles which even under normal circumstances require constant attention.

All the churches have leaded light windows, and some of them have very narrow mullions; the older ones consisting of soft crunchstone which is liable to disintegrate if vibrated.

In the case of Marston Morteyne, the nave roof is particularly high and the tower is separate, so that any additional thrust imposed on the arches to the nave arcade cannot be buttressed adequately by the tower as in the normal case of a church. The parapets on this church have required constant attention, and there are also settlement cracks.

Extra vibration and aircraft noise will affect the fabric of each of these churches to some degree, as in fact is so in the Huntingdon district where there are three smaller military airfields in the vicinity.

St. Michael, Woburn Sands

No serious structural instability at the present time.

St. Botolph, Aspley Guise

Some settlement cracks present which might be aggravated. Stained glass windows are far from sound —some glazing is very thin indeed and would certainly be a vibration risk.

St. Mary, Woburn

This church is a cause for concern both in the short and long term. Considerable movement has taken place over the years and our quinquennial reports indicate settlement cracks in all walls and in roof brickwork arches above the stone roof vaulting. Collapse of the fabric would certainly be precipitated by the type of vibration likely to arise from the airport traffic.

St. Leonard, Heath and Reach

This church is the closest to the proposed airport site and could well be subject to considerable vibration risk. However, the fabric is in sound condition and the building is not a high one.

All four churches must be subject to long term risks and from what has been said above, it is clear that both Aspley Guise and Woburn are of special concern. The movements at Woburn will be accelerated and the Church Council will already know that we regard the present settlements and cracks with more than usual concern, especially those in the roof space. Sources of likely trouble are:

Roofs

Heath and Reach—slates. Woburn Sands—roof tiles. Woburn—roof tiles and roof vaulting. St. Botolphs, Aspley Guise—roof tiles on certain areas.

Windows

Exposure on the east/west flight path of large west and east windows in all four churches. Window masonry at Aspley Guise is also in need of attention and the present defects will clearly worsen from vibration effect.

Walls

Woburn—settlement cracks in masonry of roof space, main walls and windows.

Noise

It is clear that the effect of noise in all four churches will be at the intrusive/annoying level, and clearly disastrous to the quiet and peace necessary for church services. The fenestration at all four churches will certainly be a governing factor particularly so at Woburn, but not so significant in the east/west direction at Heath and Reach and Aspley Guise.

In our view, the feasibility of soundproofing these churches is very much open to question and we should advise all church councils involved to call in acoustic engineers for advice. We would suggest that apart from Heath and Reach, the cost would be very high indeed, and roof insulation particularly expensive at Woburn.

Printed image digitised by the University of Southampton Library Digitisation Unit

d) Foulness

Population: In the rural areas east of the A130 and south of the River Crouch, there are about 12,300 people. In the detached centres of Hawkwell, Hockley and Rochford, there are about 32,250. The official statement says that 200 people live within five miles of the centre of the runways and 500 within the 50 NNI contour.

There are 6,500 between the 45 and 50 contours and 19,500 between the 40 and 45 contours.

North of the River Crouch, the 40 NNI line comes within two miles of Burnham (population 4,500) and touches the marshes opposite Dengie. The latter may be the most important amenity area. The glide paths from the north-westerly stack appear to cross Colchester, Clacton and urban areas on both sides of the Thames Estuary.

Churches: There are 12 in the rural areas, with eight parsonages, now serving 12,300 people: none are large. In Hawkwell, Hockley and Rochford, there are four with three parsonages and one curate's house, serving a total of 32,250 people.

Five churches, at least three of which are ancient, are within the 45 NNI contour and eight more are in or close to the 40 NNI contour: the latter include four in Canterbury diocese and one in Rochester. Foulness church itself is outside the 40 line but seems certain to be affected somehow.

Other denominations have at least eight churches in the area, including six inside the 45 NNI line and a further nine in or near the 40 NNI line in Canterbury.

General: In view of the offshore nature of the proposed site the noise and nuisance effects of the Foulness development would be much less than in any of the inland sites, particularly in view of the fact that much of the area already suffers from the noise of gunfire from the Foulness ranges and from aircraft using Southend Airport. The number of churches, church halls, schools, etc., requiring expensive soundproofing would be only something like a quarter of those that would be affected at any of the inland sites.

e) All sites

The airport is planned to deal with many more and much larger aircraft than we have ever experienced before. It will be a constant danger to all who live within the area around the airport. One aircraft crash might kill 300 people inside it and as many again in its path.

In addition to this positive danger, there is the fear in the minds of people that it might happen. No one can estimate or measure the cost of this in terms of human suffering.

6. Amenity considerations

a) Thurleigh

The following comments have been received from an architect much concerned with five churches in St. Albans diocese which would be demolished if the airport went to Thurleigh.

"As I progressed around the area, I became increasingly appalled at the thought that any one of these churches might have to be demolished. It would be invidious to try and single out any particular one as they are all in their different ways fine examples of the best period of English country church architecture.

"They each enshrine local history and tradition and they are the only changeless features of a changing world and it would be criminal vandalism to interfere with them in any way.

"One becomes very conscious of the efforts that each successive generation must have made to maintain and improve these legacies of the past, often, I am sure, a great sacrifice and hard work". The five churches threatened are:

St. Mary's church, Bletsoe

A large stone-built church, cruciform in plan, with a central tower. Built about 1320 and beautifully maintained. The nave roof has recently been retiled. The north transept is a mortuary chapel containing some particularly fine alabaster monuments, some of great antiquity and beauty and of historical interest. The tower contains a peal of five ancient inscribed bells with one relatively modern addition. The setting of the church is particularly attractive being surrounded by a well kept churchyard with some fine old trees.

St. Dunstan's church, Bolnhurst

An isolated building standing off the road and surrounded by cornfields and approached by a long path. Built of stone with a nave and chancel and a fine massive tower containing four ancient bells. There is a mediaeval mural on the north wall depicting St. Christopher carrying the infant Christ. An interesting mixture of Early Decorated and Perpendicular styles of architecture with some good stained glass and a fine carved oak screen dividing the chancel from the nave.

St. Denys' church, Colmworth

A fine example of the Perpendicular period of English church architecture. Built of stone with a lofty and well lit nave with a lower chancel and an elegant spire at the west end. There is a magnificent marble monument in the chancel dated 1641. There are five bells, four of which are mediaeval.

All Saints church, Riseley

A rather unusual example of English church architecture from the 12th to the 15th centuries. Built in stone with a nave and south aisle of equal widths, each having a chancel. A fine perpendicular tower with battlements and pinnacles at the west end of the nave containing an old striking clock and two 17th century bells and three 19th.

St. Mary's church, Keysoe

Set in glorious isolation on the top of a hill and completely surrounded by trees, the fine spire is visible

Printed image digitised by the University of Southampton Library Digitisation Unit

for miles around and is the dominant feature of the building which is of stone in the Decorated and Perpendicular styles and consists of a chancel clerestoried nave with a north aisle extending to the full length of the chancel. There are five bells and the font is reputed to be over 750 years old.

The charming stone villages of North Bedfordshire are irreplaceable and many fine churches and their surroundings would suffer badly apart from those to be demolished, notably the beautiful church and village of Felmersham.

b) Nuthampstead

Additional factors to those already mentioned that will affect everybody in the area will be a vast increase of traffic in country roads or in new motorways, a distorted urbanisation of the district and the engulfing of tens of thousands of acres of beautiful and good farm land, not only by the airport and its ancillary services, but by railway lines, factories, warehouses, offices and housing estates involved in the new town of approximately 230,000 north of Royston in Ely diocese plus the further 170,000 in the Bishop's Stortford/Sawbridgeworth area. The Nuthampstead area is one of the few areas of unspoilt beauty still reasonably near to London. Unless amenities (particularly recreational and youth service) were built *ab initio* in the new areas, there would be a serious lack of facilities of all kinds for the use of leisure throughout the development.

c) Cublington

The building of the airport at Cublington would destroy much of the beauty of the surrounding countryside, especially in view of the increased motorway access which would have to be provided. Considerable private development of housing in the area concerned, making this a pleasant commuter belt, would be stifled, and the noise element would undoubtedly cause an exodus of those who desire to own their own property and live in the peaceful countryside. It is felt doubtful whether those in the management class of airport employment would desire themselves to live so closely to their work within the higher NNI rating, and therefore the present private development may well become redundant.

Should the airport be built on this site, it is certain that the Norman church of Stewkley and the 14th century church of Cublington will be demolished; the churches at Dunton, Hoggeston and possibly Aston Abbotts will be rendered unusable if not actually demolished; and many others in the vicinity where worship and preaching will be made difficult, if not unbearable! Apart from the obvious gem of Stewkley, Wing church is seriously affected; the proposed airfield would come within about half a mile of this church, which stands at about 400 ft. on a slight elevation from the west, and with a tower 86 ft. high. The fabric would therefore be acutely exposed to possible accidents and collisions by low-flying aircraft; and it would suffer from vibration. Noise would also interrupt the services held in it.

The extreme importance of the church of Wing from the historical and archaeological standpoints needs to be borne in mind. It was built towards the end of the seventh century, about 680 or so, and was modified in the tenth century. This pre-Conquest work, which survives in excellent condition, comprises the apse with crypt below; the north aisle of the nave, the centre of the nave with its two arcades. The south aisle was rebuilt in the 14th century; the clerestory, tower, porch and font were added towards the end of the 15th century. Hence the church is substantially a pre-Conquest building as old as the seventh century. Sir Eric Fletcher, our greatest authority in this country on Saxon building, describes Wing as "in many respects unique". Only 12 churches of seventh century foundation survive in England in any substantial way; and of these one of the two most complete is that at Wing.

d) Foulness

Adverse effects: The life of the world-renowned marshes would be seriously affected as would the sailing interests in the Crouch area and the peacefulness of the Dengie flats. On the question of bird life and population, however, the Church welcomes and commends the humane suggestion set out by Dr. G. W. Schaefer on behalf of the County Council of Essex at the Stage II Local Hearing, particularly with regard to the conservation of little terns and brent geese.

Beneficial: As pointed out in Section III above, the increased revenue of the local authority could be used to improve the existing poor conditions of the Shoeburyness area with its dismal aspect and make it and many of the poorer parts of Southend much more habitable and much more attractive than at present.

7. Land use

a) All sites

The Church is concerned that the best possible use should be made of the good earth which surrounds our villages and towns.

We should plan as a nation, not five years ahead, but 50 years ahead, and have due regard to the population problems of the next century.

Considerations of the cost of the proposed airport should take account of the present value of all the land and all the property which would be taken over by such a scheme, but most important of all we would urge that the effect on the lives of people should be given first consideration. Essential in this is the provision of really adequate compensation to those who are displaced. We regard this point as being of utmost importance.

Printed image digitised by the University of Southampton Library Digitisation Unit

b) Nuthampstead

The designated development area of Nuthampstead and its environs is a major food-producing area of the highest quality, its virtual destruction from an agricultural point of view would be a serious loss to the nation and would necessitate the additional import of foodstuffs into the country. The siting of the airport anywhere would naturally result in the loss of some food production, but the land associated with the Nuthampstead scheme is of extremely high yield potential.

c) Foulness

The Church, believing that in a small highly populated country such as England, the conservation of good and useful land is of permanent sociological importance, wishes to draw attention to and commend the important figures submitted in para. 7.3 of Mr. D. E. Tanton's evidence on behalf of the County Councils of Essex, Hertfordshire, Cambridge and the Isle of Ely, at the Stage II Local Hearing which show that out of a total area of 32,700 acres required for urbanisation, only 900 acres are "very good" and 2,100 acres "good" agricultural land.

8. Conclusion

In particular, we would especially stress the following points to which reference has been made:

1) the importance of people in our thinking as distinct from economic factors. (See paragraph 4, page 55.)
2) the importance of adequate integration of newcomers to an area either by creation of suitable new communities or absorption into existing communities. On balance, we feel that the second course is usually preferable. (See last paragraph, page 55.)
3) the importance of really adequate compensation to those displaced as a result of the siting of the new airport. (See second paragraph, page 56 and third paragraph under "land use", page 64.)
4) the financial burden on the churches to provide new church buildings to serve the new population. In this connection, it should be pointed out that our thinking is, in these days, increasingly ecumenical: that is to say, involving as many as possible in the various church bodies. In view of the shortage of time available to the Working Party to draw up this evidence, it has not been possible to consult with representatives of other denominations but we feel sure that they will agree with the Church of England that it is unfair that local congregations or even the whole body of the Church should have to pay for the necessary buildings to serve vast new areas of population. The provision of places of worship is regarded as an important social service by many people and there is a strong case for a state contribution in these circumstances. (See paragraph "d", "All sites", page 57.)
5) the importance of the noise and nuisance factor. (See section 7 of the evidence beginning on page 57.) In this connection, we would draw attention to the separate comment enclosed which we have received from the Board of Social Responsibility on the effects of aircraft noise.

The Working Party submits the above evidence for the Commission's consideration, our aim as mentioned at the beginning, having been to be as objective as possible. The evidence has been accumulated by small groups within the Working Party and these have inevitably approached this task in differing ways. We trust that this paper is not disjointed as a result and that our comments and conclusions will receive the Commission's earnest study.

Representatives appointed to serve on the Inter-diocesan Working Party

Diocese of Chelmsford
Sir Henry Warner, Bt.,
Brettenham House, Lancaster Place, W.C.2.
The Reverend John Matthews,
The Vicarage, Dunmow, Essex.

Diocese of Ely
The Reverend E. de T. W. Longford,
Gamlingay Rectory, Sandy, Beds.
The Reverend R. S. Meadows,
Kimbolton Rectory, Huntingdon.

Diocese of Oxford
The Right Reverend the Lord Bishop of Buckingham,
Sheridan, Great Missenden, Bucks.
The Reverend F. E. W. Lewis,
Linslade Vicarage, Leighton Buzzard, Beds.
The Reverend H. N. Smith,
Ivinghoe Vicarage, Leighton Buzzard, Beds.

Diocese of Peterborough
The Venerable F. N. Towndrow, Archdeacon of Oakham,
18 Minster Precincts, Peterborough, Northants.
The Reverend L. Harman,
Hardingstone Vicarage, Northampton.

Diocese of St. Albans
The Venerable B. C. Snell, Archdeacon of St. Albans,
43 Holywell Hill, St. Albans, Herts.
The Reverend B. Butler,
The Rectory, Turvey, Beds.
The Reverend T. Wenham,
The Vicarage, Woburn, Bletchley, Bucks.
The Reverend T. Lloyd Jones,
Holy Trinity Vicarage, 33 Apton Road, Bishop's Stortford.
D. W. Yates, Esq.,
41 Holywell Hill, St. Albans, Herts.

Printed image digitised by the University of Southampton Library Digitisation Unit

Board for Social Responsibility

Some notes on aircraft noise

1. Aircraft noise affects people in different ways but such information as is available indicates that in the worst affected areas (on approach routes to large airports and in their immediate vicinity) the percentage of people who develop a reasonable tolerance is only about 30 per cent. The rest either find noise a great nuisance or are more seriously affected by it. (See Kensington Report p. 28.) There is no need to develop in further detail the case for stating that aircraft noise is a serious human and social problem. The Board of Trade report of an international conference on the subject, *Aircraft Noise* (1966) says "The problem of disturbance from noise is already so serious and—because of the continual traffic growth—is rapidly affecting so many new areas that every practicable means of reducing noise must be employed concurrently" (para. 34 (v)). "Aircraft noise has become a major social problem and it is essential that steps be taken to keep the disturbance to a minimum" (J. Banfield, Board of Trade, 1968). "The aircraft noise question . . . has to be viewed as yet another of the important problems involving environmental pollution affecting the rights of individual privacy" (*Noise and Man*, William Burns, 1968).

Anyone living close to the Thames in London would have experienced great difficulty in listening to the first man landing on the moon. The sky was, for two hours, never clear of low-flying aircraft which drowned radio voices with persistent regularity. To telephone with windows open, on a hot evening, is possible in only short bursts. To concentrate on serious work is possible only to the immune.

2. How can the problems associated with aircraft noise be tackled?

a) The basic need, assuming a rapid growth in air traffic, is to produce aircraft which make appreciably less noise both in taking off from airports and in their approach to airports, especially if these are located near cities. Pressure in the direction of technological changes of this kind can be brought to bear by fixing international standards through "noise certification". It is evident that, although some improvements are being made in existing aircraft to reduce noise, both engine and aircraft design may need radical modification. Experiments are being conducted along these lines and their results are not unpromising. Noise certification, if insisted upon, would doubtless speed up these researches and their embodiment in practice (See *Aircraft Noise* —Board of Trade 1966, pp. 61-62). Certification is only of real value if it speeds up these technological changes in engine and aircraft design.

b) In the meantime steps are already being taken to reduce noise through baffles in the jets, through sound banks and fences at airports, through seeking to sharpen the angle of descent so as to maintain a tolerable height over a longer distance when the approach is, as at Heathrow, over a large city. In addition subsidised soundproofing of houses near airports has been introduced. All these are, however welcome, palliative measures and none are real solutions. The Board of Trade in its pamphlet on *Aircraft Noise* (July 1967) indicates the cost of these measures. They may be necessary so long as Heathrow is visited by noisy aircraft but they are very clearly making the best of a bad job. Until we have nearly silent aircraft, Heathrow can only be regarded as a model of what must be avoided in the future.

c) "There are no sparsely populated areas in this country which are suitable sites for large civil airports, and any new major airports or expansions of existing ones must, therefore, be in areas which are already well populated" (*Noise—Final Report* (Cmnd 2056) 1963, para. 334). This Report goes on to say that, in consequence, development around a chosen site must be controlled from the very beginning so as to avoid building of dwellings in the noisy areas and along approach routes near the airport. Some zoning of this kind is being attempted at Gatwick but it is almost too late. (See J. Banfield, p. 5.) If it is to be done, it must precede the construction of the airport and must be associated with rapid transport direct to the main centres of population the airport seeks to serve. With the possible exception of soundproofed hotels, and maintenance workshops and factories, no residential provisions should be within the area of approach (at present a minimum radius of 8-10 miles from the airport).

d) It is evident from the protests so far received concerning all the inland sites proposed for the third London Airport that most people would affirm that "There are no sparsely populated areas in this country which are suitable sites for large civil airports"—and stop there. (See quotation in para. c above.) If this is the case then the only alternative is a site which, whilst within reach of London, ensures that aircraft approach and take-off takes place over the sea. In addition the inhibitions outlined in the preceding paragraph apply, i.e. no residential properties to be permitted within 8-10 miles of the airport. In terms of noise alone, such a solution commends itself. Whilst the Foulness proposal may meet serious objections for other reasons it is, in terms of noise, the best proposal so far made for a site for the third London Airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

e) There is no reason to believe that vertical take-off will be possible for the large aircraft required for commercially viable airlines covering considerable distances. In the vicinity of take-off these machines are still very noisy. (See *Noise* (Cmnd 2056), pp. 82-83.) No solution along these lines would, at present at least, appear technologically possible.

3. It is clear from reports, both official and unofficial, that emphasis must be placed upon redesigning both aircraft and aircraft engines to render them a good deal quieter than they now are. So long as a tolerable level of noise is not relieved by these means, there is no acceptable site for a third London Airport unless the approach and take-off can take place over the sea.

References:

Noise : Final Report (Cmnd 2056; 1963).

Aircraft Noise (Board of Trade 1966: HMSO).

Aircraft Noise—an exploration of the measures being taken to reduce aircraft noise (Board of Trade 1967).

A study of the effects of aircraft noise upon the Royal Borough of Kensington and Chelsea (1968) (30 Mallard Street, Chelsea).

Noise and Man. Prof. William Burns (Murray, 1968).

Address given by Mr. J. Banfield (Board of Trade) to the Aerodrome Owners' Conference (Sept. 1968).

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the International Wildfowl Research Bureau

submitted by Dansk Ornithologisk Forening

In consequence of the plans of the placing of the third London Airport on Foulness Island, Essex, the writer takes the liberty on behalf of the Danish ornithologists and the Danish Ornithological Society, of giving an opinion on the seasonableness of destroying a feeding ground, very important to the Dark-bellied Brent Geese (*Branta b. bernicla*).

From investigations carried out by scientists and ornithologists throughout the last 15 years, we know that the feeding grounds of the Dark-bellied Brent Geese are very restricted. We also know these birds to be returning each year to the same localities, solely due to their dependence on the feeding on Zostera and Enteromorpha, two plants growing on the shallowed flats.

In Denmark, we for instance have three-four feeding grounds similar to the one at the mouth of the Thames, where the birds perch during the migration periods in spring and autumn. Most certainly in a high degree the very same population wintering in England. We, therefore, are greatly concerned about a destruction of the winter season-feeding grounds. Such a destruction will no doubt in Denmark affect the highly appreciated population both in the spring and in the autumn.

Both the Danish Ornithological Society and the Danish ornithologists in general are in the light of the above-mentioned compelled to urge that a placing of the coming airport will be considered to take place outside such an important feeding ground.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Luton County Borough Council

The Commission has invited evidence to be submitted at Stage III of the Commission's work on the following matters:

> the timing of the need, regional planning considerations, the employment benefits, cost of construction, the provision of services and utilities, housing requirements, surface transport aspects, noise and nuisance considerations, effect on defence installations, land use, air traffic control and other operational considerations and effect upon other airports.

The Council wish to submit evidence on certain of the above matters for consideration by the Commission during the detailed research work now being undertaken.

1. Regional planning considerations

1) Urbanisation

The proofs of evidence of the Deputy Planning Officer for both the Nuthampstead and the Cublington Stage II Hearings gave estimates of either the total amount of urbanisation or the total amount of employment resulting from a third London Airport. The basis of the calculations given in the proofs of evidence is as follows:

The Commission has estimated that "On-site" employment with two fully operational runways (the mid-1980s) will be about 45,000 people, rising to 65,000 when all four runways are fully operational (the mid-1990s). It can be assumed that 80 per cent of this employment will be male. This assumption is based upon a survey of Heathrow Airport carried out in 1966 (and quoted in the joint submission of Essex and Hertfordshire County Councils to the Commission in October 1968, entitled "Statement on Proposed Sites") when 78 per cent of airport employment was male. A ratio of 1:3·42 (*source:* Central Statistical Office, *Abstract of Regional Statistics:* 1967) can be used to convert male employment to total dependent population, and so the following figures are derived from a consideration of "on-site" employment:

	1985	*1995*
Total employment	45,000	65,000
Male employment	36,000	52,000
Dependent population	123,000	178,000

The Essex and Hertfordshire submission previously mentioned assumed that employment directly serving the airport, such as hotels and car hire firms, would represent about 10 per cent of "on-site" employment, but that only 50 per cent of such workers would be male. These figures can be converted to "total dependent population" figures as follows:

	1985	*1995*
Total employment	4,500	6,500
Male employment	2,250	3,250
Dependent population	7,700	11,100

The Essex and Hertfordshire submission also made an assumption of 15,000 jobs in manufacturing industry and associated offices generated by the airport. If anything, this assumption possibly errs on the conservative side, but lacking any other information on this aspect it is accepted for the purposes of this calculation. Males commonly constitute about 70 per cent of the workforce in manufacturing industry (the figures for Luton is 76 per cent, but the motor vehicle industry is very low female-employing), and it is assumed that manufacturing industry associated with the airport will grow at the same rate as "on-site" employment. Thus, if there are 15,000 manufacturing employees in 1995 when the total "on-site" employment is expected to be 65,000, the 1985 employment in manufacturing with 45,000 jobs "on-site" will be of the order of 10,400. These assumptions can be converted to "total dependent population" figures as follows:

	1985	*1995*
Total employment	10,400	15,000
Male employment	7,280	10,500
Dependent population	24,900	35,900

Multipliers have to be used to calculate the total employment in service industry generated by the presence of the airport. Dr. Sealy in an article published in the *Geographical Journal* in 1967 entitled "The Siting and Development of British Airports", and referred to in the joint submission of Essex and Hertfordshire County Councils, has calculated that the multiplier effect of Heathrow is 2·66, and there seems no reason to doubt that the situation at a third London Airport would build up towards this level.

An assumption will therefore be made that, by 1995, with four runways fully operational, the multiplier will be close to the maximum (say 2·5), and that, by 1985, it will therefore be of the order of 2·0 (in other words the multiplier is assumed to grow at approximately the same rate as "on-site" employment). Studies of service industry in Luton have shown that, by 1981, about 50 per cent of service industry employees will be males, and if this is applied to the third London airport situation, the total dependent population would be as follows:

Printed image digitised by the University of Southampton Library Digitisation Unit

	1985	*1995*
"On-site" employment	45,000	65,000
"Directly serving" employment	4,500	6,500
Manufacturing employment	10,400	15,000
Total non-service employment	59,900	86,500
Multiplier	2·0	2·5
Total service employment	59,900	129,750
Male service employment	29,950	64,875
Dependent population	102,400	221,900

Thus the total workforce and the total dependent population can be calculated by tabulating the results of each of the individual calculations mentioned above:

	1985		1995	
	Employment	*Total dependent population*	*Employment*	*Total dependent population*
"On-Site" employment	45,000	123,000	65,000	178,000
"Directly serving"	4,500	7,700	6,500	11,100
Manufacturing	10,400	24,900	15,000	35,900
Service	59,900	102,400	129,750	221,900
Totals	119,800	258,000	216,250	446,900

In round-figure terms, the total dependent population can be expected to be of the order of 250,000 (with two fully operational runways) and 450,000 (with four fully operational runways), with a total employment of the order of 120,000 in the former situation and 215,000 in the latter.

Such figures can only give an approximate indication of the magnitude of the urbanisation problem and it is not suggested that there is any substantial degree of precision attached to them. Mr. F. B. Pooley (County Architect and Planning Officer of Buckinghamshire County Council), in his proof of evidence to the Cublington Stage II Hearing, estimated that the total population dependent upon the airport might be of the order of 390,000 to 400,000. Because of the number of assumptions involved in such calculations it is not submitted that the figures given by Mr. Pooley are necessarily incorrect but it is, however, submitted that it is possible to reach a higher figure, based on the assumptions given above, and that therefore the pattern of urbanisation proposed in his proof could well fall short of what would be necessary to accommodate the total generated population of a third London airport.

A second reason for feeling that the urbanisation proposals contained in the proof of evidence of Mr. F. B. Pooley are too optimistic is the suggestion that, whilst Milton Keynes should retain its existing designated area and target population which, according to the Consultants' interim report published in December 1968, is likely to reach a quarter of a million during the 1990s (the existing population within the designated area is estimated as being nearly 45,000), it should become solely an airport city, absorbing 225,000 of the airport's total generated population. From their own experience of development control, the Council suggest that it will not be possible so to control development that the total workforce of the city is either directly or indirectly employed as a result of the airport. Again, from the Council's own experience of attempting to diversify the economy of a town with a heavy dependence upon a single main employer, it is suggested, that, even if it were possible so to arrange things that Milton Keynes became solely an airport city, it most certainly would be extremely undesirable. In the introduction to the Consultant's interim report referred to in the previous paragraph, Lord Campbell of Eskan (Chairman of Milton Keynes Development Corporation) emphasised the importance of developing Milton Keynes as a balanced City, both economically and socially. The Council endorses this concept of balance and, indeed, have been attempting for some time to secure a better balanced base for the economy of the County Borough. Heavy dependence upon a single main employer creates a situation of potential economic difficulty, and is socially harmful both because the range of job opportunities is limited and also because the enriching effect of diversity of contacts is missing. An airport city at Milton Keynes would become an extreme example of these phenomena.

In oral evidence to the Cublington inquiry, Lord Campbell of Eskan pointed out that the Development Corporation had already received inquiries from industries which would employ 20,000 persons in the city. If the local service multiplier only proved to be 1·5, this would, in fact, represent 30,000 jobs. If 70 per cent of the major industries' employees are males, and 50 per cent of the employees in service industry are male, the total dependent population would be of the order of 65,000. In addition, whilst it is not possible to give any figures for the total employment and the multiplier effect of the establishment of the Open University at Milton Keynes, it is unlikely to be insignificant, and it is possible that the University will enable Milton Keynes to develop as a substantial telecommunications centre. It could be that these developments, in total, will support a population of approaching 100,000. If the Third London Airport was sited at Cublington and Milton Keynes was to become the airport city, the industries which have already indicated a wish to be located in this area will have to be located in a similar geographical area.

To summarise, therefore, it is suggested that the urbanisation pattern outlined by Buckinghamshire County Council may significantly under-represent the pressures which would be placed upon South Bedford-

Printed image digitised by the University of Southampton Library Digitisation Unit

shire by the establishment of a third London airport at Cublington for the following reasons:

i) the total amount of urbanisation dependent upon the third London airport could well be higher than Mr. Pooley estimates.

ii) it is not considered to be either possible or desirable to convert Milton Keynes into a city totally dependent upon the airport.

iii) existing industrial inquiries and the commitment to the Open University at Milton Keynes (which would be developments unrelated to the airport) might of themselves support a dependent population of the order of 100,000 and which would be deplaced.

Taken together, these arguments indicate that the pressures upon the area around Cublington are likely to be greater than envisaged by Buckinghamshire County Council, and it appears likely that South Bedfordshire would be expected to accommodate a larger generated population than the 65,000 ascribed to Leighton Buzzard.

2) **Sub-regional growth in South Bedfordshire**

The South Bedfordshire Sub-Regional Study was commissioned in 1966, and work on the Study has been undertaken by the Council and Bedfordshire County Council (the two planning authorities in the area), in conjunction with the Ministry of Housing and Local Government and with the District Councils. The study area comprises the County Borough of Luton and the County Districts of Dunstable Borough, Leighton-Linslade Urban District and the Luton Rural District. The publication of the Study's conclusions has been deferred until after the South East Joint Planning Team has reported in 1970, but technical work is still continuing.

The population of the sub-region in 1966 was 235,010, and initial projections expected this to rise to 300,000 by 1981 and to 400,000 by the end of the century. Further work, using a cohort survival model, has indicated that these figures may well under-estimate the amount of growth which is likely, even making conservative assumptions about the balance of net inward migration. In terms of round figures South Bedfordshire may well grow by a further 200,000 people from 1966 until the end of the century. It should be emphasised that this is growth expected without the stimulus of a third London airport in the vicinity.

In fact, there are several constraints upon urban growth in the sub-region. These can be listed as follows:

i) *Urban structure.* Luton has grown northwards and westwards to coalesce with Dunstable and Houghton Regis. This has resulted in a marked structural imbalance, with the town centre being located fairly close to the southern periphery of the town, and Vauxhall Motors' main factory to the south-east of the town centre. This produces large-scale cross-town traffic flows, with resultant congestion, and any further development to the north and west will exacerbate this problem.

ii) *Communications.* The sub-region is extremely well endowed with major north-south communications (M1, A5, A6, St. Pancras and Euston railways lines), but is very poorly served by east-west communications.

iii) *Recreation.* The Chilterns Area of Outstanding Natural Beauty (which, within the sub-region, includes Whipsnade Zoo) and the proposed Woburn Area of Outstanding Natural Beauty constitute a recreational resource for a wide area of north of London. Together, they utilise approximately 30 per cent of the land surface of the sub-region.

iv) *Luton airport.* The continued growth of Luton airport, both as a centre for inclusive tours and as a regional airport in its own right, has placed a constraint upon potential growth to the south of Luton.

v) *Drainage and sewage.* The Great Ouse River Authority have stated their concern about increased discharges of treated sewage effluents in their area, and are anxious to avoid any further large-scale growth (other than Milton Keynes) draining to the Ouse upstream of Bedford.

vi) *Minerals extraction.* The Leighton Buzzard sands, deposited to the east of Leighton-Linslade, would naturally force the town to expand westwards.

Taking all these constraints into consideration, the task of accommodating the anticipated population growth of nearly 200,000 from 1966 until the turn of the century is going to prove extremely difficult. Several possible ways of accommodating this growth are being examined, and it may well be that some of this anticipated population growth may have to be located beyond the boundaries of the sub-region.

This would not be desirable because, in an area where the labour market is extremely tight, Luton/Dunstable has less chance of retaining the labour it needs the further away that labour is located.

If therefore the third London Airport was established at Cublington the effect on urbanisation as is indicated in this submission would be to increase the pressure on the sub-region by about 50 per cent (that is, by about a further 100,000 people directly dependent upon the airport and/or spilled out from a Milton Keynes which has become almost totally an airport city), which would make the accommodation problem far worse whilst at the same time reducing the possible number of locations by virtue of the intrusion of aircraft noise.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. Employment benefits

The Deputy Planning Officer's proof of evidence for the Nuthampstead and Cublington Stage II Hearings mentioned the harm that the establishment of an airport at these locations might well do to the economy of the area, because of the effect upon the labour supply position. It was argued that South Bedfordshire is in an area where the labour market is extremely tight, and that the intrusion of a large-scale employment generator such as the third London airport would greatly aggravate the existing situation.

The following tables present unemployment and vacancies statistics for the three Employment Exchange Areas of Luton, Dunstable and Leighton Buzzard.

	Luton		Dunstable		Leighton Buzzard	
Month	*Registered unemployed*	*Vacancies*	*Registered unemployed*	*Vacancies*	*Registered unemployed*	*Vacancies*
May 1969	1,082	1,983	264	306	59	154
April 1969	1,098	1,861	161	324	61	138
March 1969*	4,677	1,826	370	309	82	149
February 1969	1,181	1,521	152	198	70	148
January 1969	1,059	1,403	171	232	78	155
December 1968	959	1,525	163	206	52	125
November 1968	906	1,569	156	218	52	201
October 1968	888	1,668	160	187	52	198
September 1968	925	1,445	139	219	35	187
August 1968	960	1,614	143	240	47	184
July 1968	1,024	1,689	146	262	42	250

* Strike in motor vehicle industry.

The population of these three Employment Exchange Areas is just over 10,000 more than that of the sub-region as already defined, but in the following table the phrase "sub-regional total" refers to the area covered by the Employment Exchange areas. The average figures exclude the abnormal month of March 1969.

Sub-regional totals

Month	*Registered unemployed*	*Vacancies*	*Excess vacancies over registered unemployed*
May 1969	1,405	2,443	+1,038
April 1969	1,320	2,323	+1,003
March 1969*	5,129	2,284	−2,845
February 1969	1,403	1,867	+ 464
January 1969	1,308	1,790	+ 482
December 1968	1,174	1,856	+ 682
November 1968	1,114	1,988	+ 874
October 1968	1,100	2,053	+ 953
September 1968	1,099	1,851	+ 752
August 1968	1,150	2,038	+ 888
July 1968	1,212	2,201	+ 989
Average	1,228·5	2,041	+ 812·5

*Strike in motor vehicle industry.

On average, then, in South Bedfordshire there are approximately five vacancies for every three unemployed persons.

The structure of the economy of the sub-region is as follows (based upon 1965 figures):

	Per cent (of employment)
Agricultural and extractive industries	1·7
Manufacturing industries	65·3
Service industries	33·0

Thus the economy of the sub-region is very heavily geared towards manufacturing industry, in sharp contrast to the position in the South East Standard Region which in (1966) was as follows:

	Per cent
Agricultural and extractive industries	1·6
Manufacturing industries	32·5
Service industries	65·9

The structure of manufacturing industry within the sub-region is as follows:

	Per cent (of manufacturing employment)
Food, drink and tobacco	1·8
Chemicals and allied trades	2·7
Metal manufacture	0·6
Engineering and electrical	26·7
Vehicles (including aircraft)	47·4
Metal goods	1·8
Textiles	1·5
Leather goods	0·2
Clothing and footwear	7·0
Bricks, cement, etc.	2·0
Timber and furniture	0·8
Paper, printing and publishing	4·6
Other manufacturing	2·9

Printed image digitised by the University of Southampton Library Digitisation Unit

The dominance of the vehicles and engineering and electrical sectors is clearly shown by the above table. Together they account for virtually three-quarters of the employment in manufacturing industry in the sub-region and both are strongly export-oriented. For example, Vauxhall Motors alone put the export figure from their Luton and Dunstable works at 35 per cent of their total output for 1968.

The fact that 65 per cent of the work-force of the sub-region is employed in manufacturing industry, and that 75 per cent of these are employed in vehicles and engineering and electrical manufacture, indicate the lack of diversification of the economy of the sub-region.

Virtually, half of the employees of the sub-region work in these two main sectors of manufacturing industry. This figure emphasises how susceptible the economy of the sub-region might be to greatly increased competition for its supply of labour, which could well prove to be the case if the third London airport is located either at Cublington or at Nuthampstead, and the Council therefore contend that no employment benefits would result to the county borough and the sub-region in such event.

3. Effect on other airports

The evidence submitted by the council at the Stage II Hearings in respect of the Nuthampstead, Cublington (Wing) and Thurleigh sites indicated the present level of operations at Luton airport, the growth of the airport in recent years and the substantial contribution which the airport is making to the pattern of international air traffic in this country. The Council are at present considering provisional estimates of traffic supplied by the airline operators for the period 1st November 1969 to 31st October 1970 and these indicate a further substantial increase in traffic, with total passenger movements in this period amounting to approximately 2·4 millions, an increase of 70 per cent compared with the numbers for 1969 and that commercial air traffic movements could increase by 65 per cent.

The Report of the Committee of Inquiry into Civil Air Transport (Cmnd 4018) has assessed the likely future air traffic growth to the year 1980. The Report indicates in paragraph 446 that "the inclusive tour and charter traffic will grow at a substantially faster rate than scheduled traffic and by 1975 this type of traffic will account for about a quarter of the total long haul traffic of British airlines." This finding is supported by the substantial growth of traffic at Luton airport, which largely caters for inclusive tour traffic. Approximately 98·3 per cent of the total commercial transport operations at the airport between the 1st January 1969 and the 31st July 1969 catered for inclusive tour traffic and such traffic for the year 1969 will comprise approximately 20 per cent of the total inclusive tour traffic throughout the country based upon the estimates published by the Board of Trade.

The best information available to the Council indicates that a continued growth of such traffic at the airport can be anticipated and that by 1975 the inclusive tour traffic movements will total 20,910. It is submitted therefore that not only is the airport now making a valuable and probably indispensable contribution in catering for inclusive tour traffic but that this will increase in the foreseeable future.

In addition to this type of traffic the aircraft operators based at the airport carry out trooping and other charter passenger work as well as the carriage of freight. Certain scheduled services emanate from Luton airport to Jersey and Guernsey, and Luton airport is an intermediate stop on the daily bus-stop service between Southend and Aberdeen. Luton airport is also a diversion airport for Heathrow and Gatwick airports. There are prospects of additional scheduled services operating from Luton airport if licences, in respect of which application has been made by certain operators, are granted. British Midland Airways have been granted a licence to operate a daily service from Luton to Glasgow and it is hoped to commence this service on the 1st April 1970.

Any curtailment of the present level of operations at Luton Airport consequent upon the establishment of the Third London Airport would increase very considerably the amount of traffic at present using other airports in the region. In addition Heathrow and Gatwick Airports are stated to be reaching their full traffic capacity and any increase following curtailment of traffic at Luton Airport could not readily be accommodated at these airports.

The report of Sir Frederick Snow & Partners referred to in the evidence of the Airport Director at the Stage II Hearings has now been received by the Council. A copy of the Report is submitted herewith*. No decisions have yet been taken by the Council on the recommendations contained in the Report. However it is clear from the Report that Luton Airport is capable of expansion in order to cater for the continued and anticipated growth of traffic.

As indicated later in this submission the establishment of the Third London Airport at any of the short-listed inland sites will not only inhibit the future growth of Luton Airport but will also affect the present level of operations to such an extent that it is probable that commercial traffic will be forced away from the Airport. Of the inland sites the nearest (Cublington) is only some 17 miles from Luton Airport and the farthest (Thurleigh) is 25 miles distant. The establishment of an airport of the size and character of the Third

* Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

London Airport within such close proximity to Luton would have the following major consequences:

1) The imposition of restrictions on aircraft landing at and taking off from Luton Airport.

2) The transfer of operators based at Luton Airport to either the Third London Airport or to other existing airports in the region with consequent effect upon the financial investment in Luton Airport.

3) Shortage of labour at Luton Airport.

1) Restrictions on aircraft

a) If it is accepted that the Third London Airport must have such access to the airways, particularly to the south, as will not impose additional costs upon that airport, the volume of the air traffic anticipated must impose restrictions upon the access of other airports to such airways. Based on the anticipated volume of traffic at Luton Airport in 1970 it is necessary for a rate of 12 to 14 movements per hour at peak times to be obtained and such figure will be insufficient in future years as traffic growth continues. In the event of any expansion of Luton Airport as referred to in the Report of Sir Frederick Snow & Partners and the provision of an additional runway and associated taxiways the number of movements per hour would further increase and could attain 20 at peak times by 1975.

b) The Third London Airport will require a Control Zone and the plan attached hereto and marked A indicates the possible extent of such zones for each of the inland sites. As can be seen, such zones infringe upon the immediate vicinity of Luton Airport very considerably and aircraft using Luton Airport would have to enter such zones. Discussions have taken place between the Board of Trade, the Council and other interested parties concerning the establishment of a Special Rules Zone at Luton. The probable extent of the Special Rules Zone for Luton upon which discussions have taken place has also been indicated on the plan. The Board of Trade will receive a report from a Study Panel, established to consider the matter, by the end of this year with a view to the possibility of implementing such proposals which may be recommended by the summer season of 1970.

c) The Third London Airport will require Holding Areas, the position of which will primarily be dependent upon the degree of restriction which will be placed upon access to the airways by traffic from both the Third London Airport and other existing airports, and whether any sectorisation will be in operation with respect to traffic at the Third London Airport and existing airports. Such Holding Areas are likely, wherever situate, to inhibit the amount of traffic capable of using Luton Airport and, moreover, prevent the establishment of a Holding Area for Luton Airport.

d) Until the location of the flight paths, Control Zones and Holding Areas are promulgated for the Third London Airport the exact effect upon operations at Luton Airport cannot be ascertained. Any proposed change in the existing airways will also require examination in order to determine the effect upon Luton Airport. The Council cannot attempt to put forward detailed evidence which would necessitate dealing with the future planning of air traffic control for this part of the country, and can only present to the Commission evidence relating to the requirements of Luton Airport if Luton is to remain a commercially viable airport. The Council will therefore require to consider the information on such matters which is to be published by the Commission in due course, and at that time to give detailed evidence as to the effect of such proposals upon operations at Luton Airport. The evidence submitted on behalf of the Joint County Councils at the Nuthampstead, Cublington and Thurleigh Stage II Hearings relating to air traffic control show on the information at present available that restrictions on aircraft movements from Luton Airport would result if the Third London Airport was established at any of these sites, and the Council fully adopt such evidence as part of this submission.

2) Transfer of operators

a) The total capital expenditure incurred or in hand at Luton Airport exceeds £4,000,000 and the revenue anticipated in the current year will provide a net surplus of £193,025 as indicated on the attached Schedule marked B. The present capital investment in the airport is therefore very considerable and in the Council's view such investment must be protected for the benefit of the County Borough. A statement of account, marked C, of the Luton Airport Fund for the year ending 31st March 1969 is attached to this evidence and gives details of the investment of the Council in the Airport. Since the 1st April 1969 further capital expenditure has been incurred and this now exceeds £4,000,000. It will be noted that for a number of years prior to 1968-69 there was a net deficiency charged to the General Rate Fund but that in 1968-69 a surplus was achieved. It is now anticipated that the level of operations at the airport is such that a substantial benefit to the General Rate Fund will accrue in future years. Although no decision has yet been taken by the Council on the recommendations contained in the Report of Sir Frederick Snow & Partners, the Council, for the reasons stated in the Report, will be required to take early decisions affecting the future planning of Luton Airport. Such decisions may increase the capital investment in Luton Airport and if the recommendations for the interim works contained in the Report are adopted by the Council, a further

Printed image digitised by the University of Southampton Library Digitisation Unit

capital investment of 1·23 million pounds would be necessary by 1972.

b) If restrictions are imposed upon operations at Luton Airport as a result of the matters mentioned in 1 above, it is submitted that the operators based at Luton Airport will be obliged to transfer to the Third London Airport or other existing airports where such restrictions are not imposed and maximum utilisation of aircraft and facilities can be realised. The capital expenditure incurred and the long-term commitments entered into in respect of operations at Luton Airport will involve severe financial repercussions upon the operators in the event of a move from Luton being necessary.

c) If the operators transfer to the Third London Airport or to other airports the extent of the Council's investment in the airport will not be realised. The loss to the Council cannot be ascertained until the extent of any transfer is known, but it is submitted that a very considerable loss would result and would thereby impose a heavy burden upon the General Rate Fund.

3) **Labour**

The attraction of a Third London Airport at any of the inland sites will create a magnet for specialist employees who now work at Luton Airport and for such employees who will be required in the future. Even if operations from Luton Airport were not curtailed to a significant extent, the establishment of the Third London Airport at one of the inland sites would affect severely the labour supply to the airport with consequent difficulties for the operators based at the airport in the maintenance of their operations.

Summary

The Council are therefore opposed to the establishment of the Third London Airport at any of the inland sites and consider that the Foulness proposal is the only site which will allow Luton Airport to operate as a commercially viable airport in accordance with the policy adopted by the Council with the full approval of Central Government. It would further enable the Council and the operators to realise the extent of their investment in Luton Airport and to carry out the long-term commitments into which the Council and the operators have entered in the expectation that Luton Airport will continue for many years to contribute to the pattern of international air traffic in the country.

SCHEDULE B

Luton Airport

Revenue estimate 1969-70

	£
Expenditure	
Employees	255,000
Airfield and premises	66,690
Supplies and services	12,685
Vehicles	13,885
Establishment charges	53,275
Miscellaneous	1,390
	402,925
Income	
Rents	140,500
Concessions	29,500
Aircraft movement and parking fees	451,800
Levy on sale of petrol and oil	31,000
Car parking	70,000
Passenger and freight handling services	78,000
Surplus on sale of bonded goods	75,000
Miscellaneous	3,500
	879,300
Gross trading surplus	476,375
Deduct	
Debt charges	283,300
Taxation	50
	283,350
Net surplus	193,025

SEE MAP AT END OF VOLUME.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Ministry of Technology

This statement expands the information given by Ministry of Technology in their application to the Commission to present evidence in connection with the Hearing in relation to the possible choice of Thurleigh (Bedford) as the site for the Third London Airport. Ministry of Technology explained in their application the origins of RAE Bedford, its aims, location and number of staff. The approximate cost of moving the facilities if this proved necessary was given, the effect on research and development programmes and on staff was briefly discussed, and it is mainly these aspects which are further discussed in this statement. Account is taken of the Additional Site Information contained in the Press Notice issued on 27th June 1969.

2. The nature of the present use of the airfields at Farnborough and Bedford, and the use of the Bedford Tunnels

2.1. The airfields

2.1.1. It is useful to start with a classification of the types of flying that arise in the R and D field. While there are endless shades and subvarieties, a fourfold subdivision seems adequate for this purpose.

A) Flying that is associated very closely with an airfield, and its surrounding airspace. The airfield must have full supply of technical aids (guidance systems, measurements systems) and be relatively rural in surroundings. It must (by airport standards) be under utilised. There must not be severe impediments from local ATC.

B) Flying which uses the airfield solely as a base providing maintenance and experimental fitting facilities. The flying can be done at a distance from base (the aircraft usually has adequate range), and therefore the local ATC regulations are not important.

C) Flying which uses the airfield as a base providing maintenance and fitting facilities, but which, because of the limitations on the range of the aircraft, must be carried out local to the airfield. The flying is of such a nature that it is incompatible with tight ATC requirements. Consequently the airfield, too, should be in an area with little restriction from ATC.

D) Flying involving co-operation with a range or dropping zone: frequently these have their own associated airfields, and hence the location of the parent airfield with reference to the range is unimportant. Occasionally the range has no local airfield and the distance of the parent airfield from the range can then be important.

2.1.2. The nature of the flying generated by the various RAE Departments and other organisations is as follows:

a) *BLEU*

This Department is concerned with research and development of civil and military landing aids (both piloted and automatic, ground based and aircraft based). It is essentially of type A above and consequently done at Bedford. Farnborough is considered less suitable.

b) *Avionics*

This is the Department concerned with automatic flying, instrument displays, navigation, weapon aiming; the work is partly civil, partly military. Flying is largely of type B, but a certain small amount of type A and type C goes on. Farnborough is used as the main base, with a small amount carried out at Bedford, but the policy has been to move more of this flying to Bedford.

c) *Weapons*

This Department is concerned with guided and unguided weapons R and D. Flying is mainly of type D (and the ranges used can be Larkhill, Aberporth and West Freugh) but preliminary studies may be of type B. The main base is Farnborough.

d) *Radio*

This Department is concerned mainly with communications, radio aids to navigation, the ground radio aids for landing, and airborne anti-submarine location devices.

The majority of the work is of type B, although there is clearly some of type A (which is partly done at Farnborough and partly at Bedford) and some work of type D.

e) *Engineering Physics*

This Department is concerned with the R and D of the internal mechanical engineering of aircraft (air conditioning, etc.) and pilot AEA parachute development, supply dropping and the overall Human Engineering. About half of the work is type B, and half of type D.

f) *Naval Air*

Essentially concerned with R and D of the equipment (both on carrier and on the aircraft) associated with aircraft carrier operation. This involves heavy catapult and arrester gear which have been located at Bedford. Essentially of type A work and only

Printed image digitised by the University of Southampton Library Digitisation Unit

Bedford is appropriate: this work, in accord with present Defence policy on carriers, should taper off in the early 1970's. Provided Defence policy remains unchanged, therefore, the location of this capital equipment is hardly relevant.

g) *Aerodynamics and Structures*

This work is essentially concerned with flight research on the airframe. A good deal is concerned with the landing and take-off phases, where most flight research is needed. Special research aircraft are built for certain purposes, and the constraints on cost, etc., occasionally lead to poor take-off and landing characteristics, associated with short-time endurances. Consequently the work tends to be type A and B, with a strong leavening of type C work. This led to the decision to move the Aerodynamics Flight to Bedford from Farnborough. While Structures Department flying contains more B work, again there has been a tendency for Aero. Department to act as agents for Structures Department for type C flying.

h *External flying*

Bedford is used by operating companies in crew training on ILS systems, and by Aerospace firms during the development period of new landing aids, or airframe developments. The amount of this use is approximately 45 per cent of the total flying from Bedford. Essential reasons for this are:

i) the ground aids (both for guidance and measurement) at Bedford

ii) its relatively low utilisation

iii) its convenient location

iv) the essentially rural character of surrounding area.

2.1.3. There is a strong message in this, that, while flying now done from Farnborough *could* all be done from Bedford* less than half the flying now done at Bedford could conveniently be done from Farnborough. Farnborough is expected to become less suitable with time because of further encroachment of civil airlanes.

2.2. Tunnels at Bedford

The original intention in 1946 was to move gradually the whole of Aerodynamics Department and Structures Department, RAE, to Bedford. In pursuit of this policy, the new post-war tunnels were all erected at Bedford. Consequently the Government capability in testing new aircraft at transonic, supersonic and high supersonic speeds are concentrated at Bedford, and even for the low speed testing, a major amount is done at Bedford, either in the 13 ft by 9 ft tunnel, or in the 8 ft by 8 ft "supersonic" tunnel, operated at superatmospheric pressures, but at subsonic speeds.

The tunnels have played a major role in most post-war military aircraft (Lightning, Harrier, Jaguar) and of course in the Concorde, VC10 and Trident. They are being used now in addition for MRCA and VSTOL research work. They have also been used to provide research information in the guided weapon field.

3. The Shape of aviation and its R and D in 1980-1990

a) There will be a much greater volume of civil aviation. This will quite apart from the design and development of new civil airframes, with the high efficiency which will be needed in a competitive environment, lead to an increasing demand for R and D on operational and safety matters.

b) There will be continued interest and need for R and D work in the blind landing and automatic blind approach field. 1975 is the year up to which the present ILS system is "protected" by ICAO. Until then and in the ten years following this, we can envisage a great deal of jockeying for position for a replacement system. Airfield facilities of the type at Bedford will be essential for this work.

c) The congestion at UK airfields and in UK airspace will grow. This will demand R and D work on new ATC and TMA systems, and on the best operation of existing systems. Airfield facilities of the Bedford type will be required.

d) R and D effort on noise alleviation, by new aircraft designs, by modification of existing designs, and by new operational procedures, will increase in importance. The latter will require Bedford type airfield facilities.

e) New avionics systems will need R and D work to maintain the UK position in this field.

f) VTOL and STOL aircraft present a new solution to both civil and military aviation. R and D work will be needed throughout the whole spectrum of RAE Departments, but with most concentration on Aerodynamics, Avionics and Radio, and particularly in relation to terminal areas of flight. Airfield facilities of the Bedford type will be required.

g) There will be a determined attack on the problem of reducing the noise problem at source. Ideas are now germinating which could lead to major R and D projects in this time scale. The concentration of effort will be largely on the airframe, and the take-off and landing problems will figure prominently. The Bedford tunnel facilities will be fully used.

h) Military aircraft will still be needed. A possible successor to the Harrier, and the MRCA can be foreseen on this timescale. This will again involve the Bedford tunnel facilities.

i) Weapons and Avionics systems will continue to be needed.

* But at the expense of new hangars, difficulty in moving staff and industrials, fragmentation of departments, etc.

Printed image digitised by the University of Southampton Library Digitisation Unit

4. The need to replace Bedford airfield and tunnel facilities

In their application to submit evidence, the Ministry of Technology took account of the inevitability of moving the airfield facilities, and of the possibility of moving the tunnel facilities also. The Additional Site Information proposes shifting the runways some 2,500 yds to the south east. If this plan were adopted, the whole of RAE Bedford would have to move, the airfield site soon after the decision to use Thurleigh was taken, and the tunnel site probably before the second runway was completed. In these circumstances, we see the situation as follows.

i) The trend forecast in para. 3 will increase the need for both an airfield of the Bedford type, and a complex of tunnels of the nature of those at Bedford, including certainly at least one major high speed, continuous operation, tunnel, and other supporting facilities.

ii) If the present Bedford airfield were absorbed, then a new airfield with its complex of facilities would need to be created. The original difficulties that led to BLEU going to Bedford from Martlesham rather than to Farnborough are still, to a considerable extent, present: indeed some of them—encroachment of the Heathrow Aircontrol lanes on Farnborough airspace—have been accentuated. It is possible that Farnborough could be used (and there are good financial and organisational reasons why it should be used if at all possible): it may prove impossible.

iii) If the present Bedford tunnels are destroyed, they will need replacement by the equivalent facilities. The best place for these would be at Farnborough. There would, however, be a grave risk of a serious hiatus arising in the transitional period.

iv) A solution involving the retention of Farnborough, of the existing tunnel complex at Bedford, and a new airfield elsewhere, has obvious serious management disadvantages, and should be avoided if possible.

5. Costs of moving or replacing facilities elsewhere

a) Tunnel site

In view of the possibility of the airport being sited at Thurleigh and making the tunnel site untenable eventually, consideration has been given to the cost of moving the wind tunnels to or replacing them at another site. The new site would almost certainly be at Farnborough, any other site involving somewhat greater cost and much more inconvenience. The 8 ft by 8 ft tunnel is a special case in these considerations, as it is a unique facility as far as Western Europe is concerned. It is essential to the development of aircraft and missile projects in this country alone, or in conjunction with other European countries, and there can be no question of accepting the stand-down time of at least four to five years if it were moved elsewhere. Therefore a replacement facility must be built which would come into action before the 8 ft by 8 ft tunnel is shut down. On the dates quoted, the 8 ft by 8 ft tunnel could probably continue until about 1980, and the time scale for building a replacement implies that this must be started by 1972. The second major facility, the 3 ft by 4 ft tunnel, is equally unique but it is newer and its construction is such that it would be much easier to dismantle and transfer elsewhere. Also, arrangements could be made to cover to some extent the shorter stand-down time expected. It would be necessary to provide buildings, foundation and services at the new site before dismantling commenced at Bedford.

Of the remaining facilities, some would not be transferred in their present form because of changing needs and the intermediate development of new facilities such as the 5 metre low speed tunnel currently being designed.

A rough estimate of the total cost of carrying out this plan gives a figure of £20 to £24 million at 1969 prices. For comparison the cost of transferring the existing tunnel site facilities, replacing parts which cannot be transferred, is at least £25 million at 1969 prices. The work, if new tunnels are to be erected, is expected to span about ten years and the rate of spend is likely to be about 1 per cent in the first year, 4 per cent in the second, rising to 10 per cent in the third year and probably reaching 15 per cent in the peak year of activity.

The value of the work is not likely to be changed, in real terms, whatever the date of starting but the cost in monetary terms is likely to rise, on this type of engineering, which has a high labour/technology content, at the rate of about 7 per cent per annum compound interest. Details of the estimates and the assumption made are available.

b) Airfield site

Thurleigh airfield is accepted as a first class experimental airfield, and it would not be possible to perform all the flight research carried out there at any other existing Ministry of Technology airfield. The runway is long and flat; it has long clear approaches and it is excellent for photo-recording of airfield area operations. Consideration has been given in the past, on grounds of economy, to the possibility of transferring Bedford flying activity to Farnborough, but this has been felt to be unattractive for a number of reasons, including safety, because of the increasing urbanisation of the airfield there and of the proximity to London Airport. In addition, it has not been possible to install Standard ILS landing guidance aids up to the necessary ICAO standards on the Farnborough runway because of interference from the many nearby buildings. However, the question will have to be re-examined in the light of the now firm policy with regard to Naval Air requirements and the possibility of development of new ILS facilities freed of siting difficulties.

In the event of RAE having to move from Thurleigh, and Farnborough proving technically unsuitable, an

Printed image digitised by the University of Southampton Library Digitisation Unit

existing airfield with a potentially suitable runway and surrounding terrain would have to be found: or if this proves unavailable, another airfield constructed.

The costs of doing this have been estimated at £4·7 million if an existing airfield can be developed, and £7·3 million if a new one has to be constructed (1969 cost index prices). The difference is largely represented by the cost of the site, an adequate runway, taxiways and roads. No assumptions have been made about the usefulness of buildings on an existing airfield but it might well be that hangars and buildings could be used. The figure for developing the airfield to our needs could then be rather less. This work is expected to take about three years and the rate of spend is likely to be 5 per cent in the first year, 35 per cent in the second, 50 per cent in the third, leaving 10 per cent to be paid in the year after completion of the work. As pointed out for the tunnel site, the cost is expected to rise with the passing of time at about 7 per cent per annum compound interest. Details of the estimates and assumptions made are available.

Should Farnborough prove suitable, the costs of moving would be considerably less: previous estimates of this brought up to date and translated to a 1969 cost index price would suggest a figure of about £1½ to £2 million.

6. Effects on research and development programmes and on other future plans

a) **Tunnel site**

Based on the plan set out in 5 a), it is assumed that the existing tunnels would continue to be usable up to about 1980. If the 8 ft by 8 ft tunnel replacement is completed before this date, the effects on its research programme would be minimal, but the great difficulty of providing staff to design, monitor construction, and commission the replacement facility whilst continuing to use existing tunnels is an important consideration. Other facilities would be out of action for two to three years and arrangements would be needed to continue some of their work programme elsewhere, but with a clear loss in progress in research, and much reduced support for aircraft projects.

An important result of Thurleigh being short-listed for the new airport is the difficulty which arises in regard to decisions on the building of urgently required new facilities. The most important of these is the proposed 5 metre low-speed, high Reynolds No. tunnel, a £4 million facility, planned for Bedford. A limited expenditure on design has been approved over the next year with the proviso that the work is restricted to that which would be common to building the tunnel at Farnborough if it cannot be built on the Bedford site. If delay is to be avoided, a decision on siting this tunnel must be taken by the end of 1969; thus, it will be built at Farnborough if the possibility of siting the airport at Thurleigh is not ruled out by the end of 1969. Other, less major, developments for RAE Bedford are also in abeyance, pending decision on the siting of the new airport.

b) **Airfield site**

It is assumed that preparatory work in constructing a third London airport would begin shortly after the decision as to its location is taken. By that time a firm decision by Ministry of Technology will have been taken as to the new location for the airfield site so that work can be started without delay. It is assumed that until the new site is constructed and instrumented, the existing facilities, including all electronic equipment such as simulators, would continue to operate. The alternative of moving and recalibrating the electronic equipment, including simulators, from Thurleigh, would give an unacceptable interruption of working activities. Apart from the unavailability of the special experimental facilities, testing technology is a rapidly developing art and loss of facilities, like simulators, would rob RAE of its leading position in this field and present it with an extra difficult task in catching up.

In addition to its RAE utilisation, the instrumented runway and tracking system at Thurleigh are used by industry for the development and certification of landing and take-off systems, and by the airlines for training; this utilisation has risen rapidly in recent years. In recent months the level of activity is about 1,200 movements per month, nearly double the rate of two years ago. The Establishment's own movements have remained about the same during this time. It is believed that the increasing use by outside users is a reliable trend. The industry is known to value the facilities highly, and the main aircraft groups have both stated, informally, that the closure of Thurleigh for this work would have considerable disadvantages for them, unless equivalent facilities were quickly and conveniently provided elsewhere.

An early decision on the siting of the Third London Airport is important also to the airfield site, because various experimental installations, and costly replacements such as airfield radars, are being held up until a decision is taken.

7. Recruitment and transfer of staff

To avoid interference with essential research programmes extra staff of all grades would be necessary to design and monitor the installation of new facilities such as wind tunnels, computers, simulators, etc., at new locations, while existing staff operate existing facilities. The difficulty of obtaining suitable staff may prove insuperable, because the qualified scientific and experimental staff with the required expert knowledge are not generally available outside RAE. Even if such a major difficulty can be overcome and the necessary new facilities completed, experience has shown that the highly skilled workmen required to maintain the aircraft, wind tunnels and ancillary equipment and services would not transfer from the Bedford area. It

Printed image digitised by the University of Southampton Library Digitisation Unit

would be extremely difficult to replace such skilled workmen at any other location and to replace locally recruited scientific and clerical assistants.

Whilst it is expected that the majority of qualified scientists, engineers, etc., would move with the facilities, a considerable increase would be required for a period to participate in the specification, design and development of the new sites and to man when some parts of both sites were active.

8. Effect on other R and D aerodromes

There is no doubt that the siting of the airport at Thurleigh, and indeed at any of the possible inland sites, would demand a complete revision of the air traffic control system in Southern England. We are not in a position to anticipate the extent of these changes since this is a matter for the planning department of NATCS, but there is every indication that increasingly severe restrictions would be imposed on flying at both Farnborough and Boscombe Down. It appears, in fact, that if R and D flying is forced out of Thurleigh, there might well be no fully suitable site providing the facilities required within convenient distance of other major aeronautical research activities.

It will be necessary for the Ministry of Technology to put forward a further submission on this aspect when more detailed information becomes available.

9. Research and Development Establishment, Cardington

The balloon flying operations at Cardington for test and meteorological purposes will not be possible if the new airport is based at Thurleigh. It would be necessary for them to equip and use another site at an estimated cost of £0·75 million. The same considerations regarding transfer and recruitment of skilled and unskilled workmen would apply as described for RAE Bedford.

10. Housing and transfer allowances

RAE Bedford owns at present 150 houses and is permitted to nominate tenants for 220 council houses. As has been stated it is expected that the new airfield site would need to be constructed without delay and as the new location is likely to be in some fairly remote area it will be necessary to provide housing for those employees who are willing to transfer and to attract new labour to the area. It is estimated that about 600 staff will be required to man the new airfield site and housing would be required for many of this number. These figures would be considerably reduced if the flying were transferred back to Farnborough.

Farnborough where the new tunnel site complex would be moved, is an increasingly highly populated area. Housing for employees moving from Bedford would be unlikely to be available. To attract employees to move and to help attract additional labour to offset the loss of existing tunnel site employees, extra housing at RAE Farnborough would be required. Allowing for existing staff at RAE Farnborough which could to some extent provide support service to tunnels staff it is estimated that about 400 extra employees would be required at RAE Farnborough. Housing for many of this number would be required.

Taking into account transfer grants and other allowances, the cost of providing the required number of houses and other amenities is estimated at £4·5 million after allowance is made for the sale of the 150 houses owned at RAE Bedford.

11. Summary of effects and implications if Thurleigh is chosen as the site for third London airport

The preceding paragraphs explain the measures considered necessary if RAE Bedford are forced to move their facilities from the area. Until a final decision is taken as to the detailed layout of runways it is not possible to decide whether the tunnel site will be forced to move, but it is certain that the airfield site must move whatever the layout of runways. It has to be assumed at this stage that facilities will be built at a new airfield site. If the tunnel site is forced to move, it is expected that the activities will be transferred to RAE Farnborough where new facilities will be required. The estimated costs can be summarised at 1969 prices as follows:

	£ Million
Removal of the airfield site	£7 (£5 if existing airfield chosen)
Removal of the tunnel site	£20 to £24
Provision for housing and staff transfer costs:	
Airfield	£3·0
Tunnels	£2·0
Total cost of moving airfield	£10·0 (£8 if existing airfield chosen)
Total cost of moving tunnels	£22 to £26
Total approximate cost of moving both tunnel and airfield sites	£30 to £36
Cost of moving R and DE, Cardington	£0·75

It should be noted, when comparing these figures with those submitted in our preliminary application, that the latter were based on 1974 average construction cost index prices, which are about 27 per cent higher, i.e. £36 million to £44 million.

The move of the sites must be planned to a schedule which would cause the minimum interruption to research and development work. The costs therefore allow in the main for duplicate facilities being built whilst existing facilities continue to operate. What cannot, however, be overcome by extra expenditure is the

Printed image digitised by the University of Southampton Library Digitisation Unit

great difficulty in providing staff of the required background and experience at the new locations. It is clear that the highly qualified staff at present engaged on aeronautical research work, will not be fully effective over the period when planning, etc., of the duplicate or replacement facilities is being undertaken. This ineffectiveness, from the time of initiation of planning to final acceptance of the new facilities, could amount to an additional equivalent cost of £2 million or more. What cannot be quantified but which would in fact be much more significant, is the consequential loss due to the seriously detrimental effect this loss of effectiveness would have on the nationally important programmes listed in Section 3. Delay in the support of advanced military or civil projects could have expensive consequences.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

Agriculture House,
Knightsbridge,
London SW1
16th October 1969

Commission on the Third London Airport,
Templar House,
81-87, High Holborn,
London WC1

Dear Mr. Caines,

Commission on the Third London Airport Stage III Evidence

I attach herewith proofs of evidence from Mr. Giles, our agricultural adviser in relation to the third London airport, and Mr. Hawkes, our planning adviser in relation to the third London airport. We would be grateful if you could take these as official NFU stage III submissions.

I am sorry that we have delayed sending these in to you. This was occasioned partly because our advisers were committed elsewhere for a time, and partly because we have been trying to think how we might best assist you in relation to the economic arguments, and not least in relation to your proposed methodology set out in Volume VII of the Commission's procedures.

After considerable reflection, we have come to the conclusion that our views can best be stated very simply. In our opinion the proposed methodology set out in Volume VII of your proceedings would be likely to provide a convenient way of ranking the four sites according to their agricultural importance, but as a method of accurately assessing their agricultural value, the Union does not feel that it is a very satisfactory procedure.

It might be possible for the Union to help your Commission best in relation to the economics of the matter at stages IV and V.

We would also draw your Commission's attention to the fact that on moral grounds, and also to some extent on legal grounds there is a case for saying that owners of land required for the airport should obtain substantially more than existing use value. In view of the fact that the sites on which an airport of this magnitude could be sited are so few, the value of that land to a potential airport developer would be far in excess of this existing use value.

The Union has, as you will know, done a considerable amount of research on this whole problem, and is likely, having assessed all the agricultural arguments, to come out before long with its conclusions and the reasons which justify its own recommendation as to which site is best on agricultural grounds. This will be sent to you as soon as a decision has been reached.

If there are any matters that we can assist you with, please do not hesitate to let us know.

Yours sincerely,

N. G. WALLACE

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission by Mr. A. K. Giles

Introduction

This evidence is presented in four parts:

A) A brief summary of the Agricultural Evidence presented at each of the four Local Hearings constituting Stage II of the Roskill Commission's work*.

B) A comparison, in so far as the four sets of evidence make this possible, of certain agricultural characteristics of the four sites and their surrounds.

C) The principal agricultural criteria to be considered in the siting of a third London airport.

D) A consideration of the four shortlisted sites in the light of the criteria suggested at C).

A) Summary of Stage II Agricultural Evidence

Foulness

An airport at Foulness might be sited wholly on reclaimed land on the Maplin Sands, or partly on Foulness Islands and partly on the reclaimed land.

The Maplin Sands, extending about three miles offshore, are completely submerged by the sea at high tide, and if they, exclusively, are used for an airport, then the site itself would involve no loss of agricultural land at all. On the contrary, it has been estimated that in these circumstances, the release of land currently used by the War Department, could mean a restoration to agricultural use of some 3,000 acres.

Alternatively, it has been estimated that a shore site would require 2,420 acres, mainly on Foulness Island, still leaving, however, a net return to agriculture (not allowing for road and rail links to the mainland) of 580 acres.

Foulness Island in no place reaches the 25 ft contour. It is completely flat, with, in the main, a deep, productive alluvial soil, requiring little drainage. The main arable crops form a rotation of cereals, legumes and seeds. Remoteness, plus restrictions by the MOD on grazing and on the erection of fixed equipment, prevents the full productive potential of the area from being achieved. Even so, the area is "extremely well farmed and productive within these limitations". Except for New England Island (grade 4) most of this island area has been classed as grade 3 land. A semicircular segment on Foulness Island, however, extending inland from the coastline has been graded 2, and this would be part of the land required should a shore site be selected.

Immediately to the west of the island peninsula, between Southend and the River Crouch, are substantial areas of grades 1 and 2 land devoted primarily to arable farming with some horticulture. If ancillary development associated with an airport is to avoid this land, then it must be concentrated to the west of these areas "within the Southend, South Benfleet, Basildon axis and the Southend, Rayleigh, Wickford axis, and again, in a triangular area bounded roughly by the lines from Wickford and Rayleigh; and Wickford to Rayleigh and Southend". In these circumstances, "there would be little agricultural opposition to the Foulness proposal (but) were there to be any major developments outside these areas, agricultural opposition would be very strong indeed".*

Nuthampstead

This site lies in the north east corners of the East Hertfordshire plateau at a height of 400 to 500 ft with a mainly boulder-clay soil.

The MAFF's recent Provisional Agricultural Land Classification placed this site almost exclusively in grade 2. With about 25 inches of rainfall, the area is predominantly one of arable farming.

A typical farm pattern is about 70 per cent cereals (of which a third would be wheat) with an area of potatoes (and sometimes sugar beet) forming part of the balance. Few farms have much livestock apart from pigs. Of the 39 farms believed to be directly affected by the site, all but one grow cereals, nearly a half keep pigs and nearly a third keep some beef cattle. Only three keep dairy cows. A quarter of the farmers have no livestock at all.

Published Farm Management Survey data for farms in this area suggest a gross margin per acre of £40-3† and an average farm size of 410 acres. One full-time hired worker is employed for every 90 acres.

It is concluded from these figures and from the investigation that accompanied them that the land in this area is amongst the best of the arable farming districts in the eastern counties, apart, of course, from the Fens and Silts and that the actual level of farming practised in the area is well above average for the region.

In terms of land required for ancillary development, much of the area immediately surrounding this site has, like the site itself, been classified as grade 2 land, but (unlike the site) contains significant pockets of grade 3 land as well. Immediately to the north, soils are lighter, with more chalk, and barley may account for more than 80 per cent of the acreage with, again, few livestock other than pigs. To the south, soils contain more boulder clay and while cereals still dominate the farming, wheat becomes more important and livestock,

* In this context, agricultural evidence refers only to the evidence submitted by Mr. D. E. Tanton (Foulness), Mr. D. B. Wallace (Nuthampstead) and Mr. A. K. Giles (Cublington and Thurleigh) and published in *Papers and Proceedings*, vol III (Foulness) (HMSO), vol. IV (Nuthampstead) (HMSO), vol. V (Cublington) (HMSO), vol VI (Thurleigh) (HMSO).

* *Papers and Proceedings*, vol. III.

† This level of Gross Margin might be expected to correspond to a Net Output of approximately £50 per acre, and a Management and Investment Income of between £10 and £12 per acre. These calculations have been made with the help of data contained in "Farm Management Survey"—Interim Bulletin for the harvest year 1967. University of Cambridge.

Printed image digitised by the University of Southampton Library Digitisation Unit

especially dairy cattle, play a larger part in the farm economy. In these two areas average farm size remains at slightly over 400 acres, whilst Gross Margins of £35·1 and £39·3 per acre respectively have been estimated.

Cublington

Located mainly within the 300 ft and 450 ft contours, this site is an undulating one, especially towards its northern and southern extremities. Parent clays give rise to a dominance of clay-loam or loam top soils with small areas of better drained stony loams on pockets of glacial gravels.

According to the MAFF's recent Agricultural Land Classification of this area, the site has a large proportion of grade 3 land, with a significant proportion also of grade 4. An evenly distributed rainfall of 25 inches combines with the local relief and soil to provide high class pastures that are part of the Aylesbury Vale. In accordance with its grade 3 classification, the land can be described, in layman's terms, as "good" and in parts "very good". Land value approximates to £300 per acre, and rents are above average for the farming type.

Sixty per cent of the area is in grassland with slightly more permanent pasture than leys. The majority of farmers produce some form of beef; a half produce milk and a half keep sheep. Almost all of the 40 per cent arable is in cereals with the emphasis on barley. Whilst the main emphasis is on grass, therefore, the area can be described as fairly mixed with a significant degree of concentration on the enterprises which feature in the Government's latest programme for selective expansion.

A total of 67 farms is believed to be directly affected by the possibility of an airport site. The average size of a 48 per cent sample of these farms is 270 acres, so that despite a segment of relatively small holdings, the area cannot be described, overall, as one of small farms. One full-time hired worker is employed for every 116 acres.

"Gross output", "net output" and "Management and Investment Income" have all been assessed at slightly above published "Farm Management Survey" results for a comparable farming pattern. These results confirm the impression that there is little about the farmers in this area—most of whom are full-time farmers and wish to remain in farming—that distinguishes them from any other section of the industry. The results confirm also that it would be impossible to justify the selection of this site on the grounds that, agriculturally speaking, it is of low economic potential or is in any way inferior to many other areas with which it has been graded.

Assuming that most of the ancillary development associated with an airport would take place roughly within the Aylesbury - Leighton Buzzard - Milton Keynes-Buckingham quadrangle, then the land affected would be similar to that affected by the site itself, i.e. predominantly grade 3, with a substantial area of grade 4 and small pockets of grade 2. Systems of farming and performance levels would also be similar to those already described.

Thurleigh (A and B)

Contained largely within the 250 ft contour, with a noticeable falling away in the north-eastern and south-western corners, both sites embrace substantial areas of RAE land. Agriculturally speaking, the two sites are virtually identical and are composed of heavy clays and loams based on the parent boulder clays.

The area will be classified by the MAFF as mostly grade 2 land* with small pockets in grade 3. Rainfall is 22 to 23 inches, and the yields obtained from the dominant crops (wheat, barley, potatoes and sprouts) confirm that this is a high quality arable district. Land values have recently been a little over £300 per acre.

Eighty-five per cent of the area is devoted to arable farming, with 72 per cent of that in cereals, and the barley acreage nearly twice that of wheat. Livestock output accounts for about one-fifth of the total. Of the 37 farms likely to lose some land to site A (site B would affect a few more), the average size is 238 acres, with one quarter of them over 400 acres. One full-time worker is hired per 127 acres, and supported by a heavy use of casual labour.

Standard gross and net output per acre are both remarkably high for essentially cereal growing areas and reflect the high yields obtainable and the use in rotations of high output vegetable type crop, e.g. potatoes, sprouts, peas, beans, onions, etc.

Correspondingly, standard "Management and Investment Income" reflects a high level of potential profit in this area—supporting the impression that farmers here possess a high degree of business acumen. A very high proportion of them (85 per cent) wish to remain in farming come what may.

It will be concluded that, apart from the fact that about a quarter of each of these sites is already in aeronautical rather than agricultural use, it would be impossible to argue in selecting a site that, agriculturally, this area is inferior in any way. The evidence is to the contrary.

In the event of a "tight" strategy for ancillary development contained, say, by Rushden, Bedford, St. Neots and Spaldwick, the land and farming affected would be similar to that which exists at sites A and B. If a significantly wider urban strategy is adopted, no single set of figures could be used to

* The appropriate MAFF Land Classification map has yet to be published.

Printed image digitised by the University of Southampton Library Digitisation Unit

assess the agricultural potential of the land required. In most directions the farming pattern changes fairly rapidly. Along the Bucks/Northamptonshire borders, grade 2 land gives way to grade 3 and the emphasis changes from arable to grassland farming. To the east, around Sandy, market gardening is located on a large triangle of grade 1 land, while much of the intervening land continues in grade 2. South of Bedford, the emphasis is on more conventional cereal growing. Economic performance in these various areas covers a very wide range indeed and any reliable assessment of them would need standard input/output data to be applied to the actual areas of land which, in the event, are to be affected.

B) A comparison of certain agricultural characteristics for the four sites

	Foulness	Nuthampstead	Cublington	Thurleigh
Altitude	0-25 ft	400-500 ft	300-400 ft	250 ft
Relief	flat	part of East Hertfordshire plateau	undulating especially towards north and south	relatively level in centre but falls away to NE and SW
Soils	alluvial	boulder clays	clay loam or loam	heavy clays and loams
ALS Land Classification	grade 3 with segment of 2 on coast	almost exclusively grade 2	large proportion of 3 and significant proportion of 4	mostly grade 2, small pockets of 3
Land values			approx. £300 p.a.	over £300 p.a.
Average farm size		410 acres	270 acres—but there are two distinctly different structures	238 acres
Number of farmers directly affected		39	67	37 (site A); a few more in site B
Full-time hired workers		1 per 90 acres	1 per 116 acres	1 per 127 acres+casual
Predominant pattern of farming	cereals, legumes and seeds. Limited grazing	about 70% cereals with large minority growing a cash root crop. 50% keep pigs	grassland 60% (beef, dairy and sheep). Arable 40%, mainly cereals	85% arable, 72% of which cereals, remainder vegetables
Economic performance	MOD restrictions prevent full potential being realised, but land is farmed well despite this	gross margin (from FMS)=£40·3 per acre (see text for note on estimates of Net Output and profit)	Standard Gross Output £63·0 per acre, Standard Net Output £43·5 per acre, Standard Management and Investment Income £8·5 per acre	Standard Gross Output £75·6 per acre, Standard Net Output £60·8 per acre, Standard Management and Investment Income £14 per acre
Land classification of possible ancillary development areas	grades 2 and 1 to the immediate west of islands returning to grade 3 north and west of Southend	predominantly grade 2, but with significantly sized parcels of grade 3	largely 3 with significant proportion of 4 and small areas of 2	much of central Beds is grade 2. Bucks and N. Hants borders grade 3. Sandy area to east grade 1
Type and potential of farming in possible ancillary development areas	generally arable, with some horticulture	lighter soil *to north*; with more emphasis on barley; Gross Margin per acre=£35·1 p.a. Heavier soil to south—greater reliance on wheat and dairying; Gross Margin p.a.=£39·3	closely similar to site area	a wide variety of farming types surround this area of Beds. No single set of figures could appraise land lost to agriculture

C) Principal agricultural criteria to be considered in the siting of a third London airport

When stating in general terms the criteria to be considered in the siting of a third London airport, it is usual to divide them into those criteria which relate to the site itself and to its viability, and those which relate to its effect on the environment in which it might be placed. The issues raised by the first type of criteria are largely of a technical nature, and it is not the task of this witness to discuss them from a layman's point of view—except to mention, briefly, the question of priorities. In this context it goes without saying that if the main object is to provide a focal point of international air-routes, convenient for

Printed image digitised by the University of Southampton Library Digitisation Unit

passengers and freight from the United Kingdom and from overseas alike, and to be able to contribute in an unimpeded way to the economy of the country, then all other considerations should be secondary to this.

To the extent, however, that the four shortlisted sites have already been selected by the Roskill Commission (at Stage I) from a "long list of possible sites", it is reasonable to assume that the differences between those four sites in terms of the most vital site criteria, was, at the least, not so great as to eliminate any one of these sites from the final short list. In these circumstances other important considerations which may not be at all equal as between the sites could then become increasingly important, and one of these considerations is agriculture.

The *principal agricultural criteria* to be considered are as follows:

1. The use of valuable agricultural land should be avoided or kept to a minimum wherever possible, not only in respect to the site itself, but (even more important for agriculture) in respect to the land required by ancillary development.
2. In trying to rank the relative merits of agricultural land, classification systems should be used with extreme care. Published definitions of the classifications employed by the MAFF do, in fact, make apparent the arbitrariness of any dividing lines, as well as the fact that land in the middle and lower grades cannot be regarded as poor agricultural land. Such land therefore cannot be regarded as expendable for all planning requirements.
3. Attention should be paid to the structure of farming that exists in each area, with special reference to the viability of units, in terms of size, the availability of existing fixed equipment and the current levels of investment. Any indication of pending changes in the existing structure of agriculture are also important. Regard should also be given to existing systems of farming in relation to stated government policies for the future development of agriculture.
4. Situations should be avoided in which ancillary development can be allowed to take place, in a piecemeal fashion, without regard to the fragmentation of individual holdings and without regard to the existence of natural or planned barriers to the severance of agricultural communities in the wider sense. In this context it is probably true to say that while there may be clear and important differences in the intrinsic value of agricultural land as between one site and another, these differences may, in fact, be relatively marginal in their importance when compared with the longer term strategic interests of the industry.
5. Most agricultural regions have an amenity value over and above—but less easy to measure than—their strictly farming value. All urban development should have regard to this. Airports, with their often widespread ancillary development and noise effect should have special regard to it. Beauty, however, is usually "in the eye of the beholder" and it may be impossible to say in any objective way whether the amenity value of a particular section of the countryside is superior to that of any other. Since emotional claims tend to be made for an area *after* it is threatened by development, comparisons might most usefully be made here in terms of the number of persons known to be positively using an area for recreational or educational interest *before* such a threat existed.

D) A consideration of the four shortlisted sites in the light of the criteria suggested at C)

Foulness

One agricultural feature that is peculiar to this site (amongst the four shortlisted sites) is the fact that so far as the site itself is concerned, it could produce a restoration of land to agriculture; and this restoration would be considerably more significant in the case of an off-shore site than it would be in the case of a shore site.

To the extent, however, that a shore site (and road and rail links to either type of site) would, inevitably, encroach on *some* good agricultural land it has been pointed out (in Stage II Agricultural Evidence) that this potentially productive land is nevertheless an area in which the "full productive potential of the farm has been restricted" and on which "the provision of fixed equipment on the farm has also been limited by the MOD policy".

To this extent, it is likely that the actual adverse effect on food supplies would be less at Foulness than elsewhere, whilst, in contrast to two other sites, carefully sited ancillary development would be located on exclusively grade 3 land in a sector already suggested by the South East economic Planning Council for "future growth". In a locality sparsely populated with livestock (and people) and with flight paths concentrated over sea rather than land, such noise-nuisance as an airport presents to agriculture is likely to be less here than at other sites.

It must not, however, be overlooked that the most damaging impact of any site on agriculture is not from the site itself, but from the much larger demands of ancillary development. Whatever site is chosen this demand must be largely at the expense of agricultural land, so that the difference between a coastal site and an inland site could well be exaggerated from an agricultural standpoint. In fact, if ancillary development

Printed image digitised by the University of Southampton Library Digitisation Unit

were to take place immediately to the West of Foulness Islands, important areas of grade 1 and grade 2 land could be lost to the industry.

Nuthampstead

More grade 2 land, and less of any other grade would be lost to agriculture by the adoption of Nuthampstead than at any of the other sites. Most of the surrounding land is also either grade 2 or grade 3, with the emphasis on the former. Here, also, the structure of farming, in terms of average farm size, is superior to the other three sites and husbandry and businesswise the area ranks high amongst Eastern Counties arable farming.

The site is the closest of the four to central London but it is also the closest to the Stansted site which has now been rejected. It is also the only one of the four sites which is not situated in, or very close to one of SEEPC's "future growth" areas. It is, in fact, firmly situated in one of the Council's "country zones" designed to separate growth areas.

Cublington

As mainly grade 3, with a sizeable area of grade 4 land, Cublington has the lowest land classification of the three inland sites. Ancillary development would be likely to occur on similar land—which, according to the definition of grade 3 and the upper levels of grade 4 land, is nevertheless "good" agricultural land.

Despite the overall average farm size (270 acres) there are in fact "two structures" in the area, with the smaller farms and smallholdings located around Stewkley. This means that considerably more individual farmers would be affected than at the other sites.

This site is just out of the"growth sector"containing Milton Keynes, the Development Corporation of which regards the proposal as incompatible with the declared objectives of that city. The airport and presumably much of its ancillary development would be located in a "green sector" which the SEEPC envisage as a buffer area to "include very wide areas of countryside with varying degrees of importance in terms of agricultural value, national beauty or landscape value". With no obvious barriers to contain ancillary development, the effect of severance and fragmentation in a piecemeal fashion could, as at Nuthampstead, be very detrimental to agriculture in the long term.

Thurleigh

The two sites at Thurleigh consist of mainly grade 2 land, with intrusions of grade 3, and the agricultural potential and achievement here are probably greater than at any of the other sites. Depending on its exact location, ancillary development could affect a wide range of agricultural land, some of it inferior and some of it superior to the site land itself. An area of some 2,500 acres is occupied by the Royal Aircraft Establishment but, again, it can be stressed that so far as agriculture is concerned, the greatest damage will come from ancillary airport development rather than from the site itself. This is the furthest of the four from Central London, an important factor in assessing "user" costs. On the other hand, like Cublington, it offers ready access to the industrial Midlands and may have the long term advantage to agriculture in a national context, that an airport sited here would be contained by a ring of new and expanding towns. It is sited within the Luton/Northampton growth sector envisaged by the South East Economic Planning Council.

Submission by Mr. J. E. Y. Hawkes

Planning criteria

This paper sets out the main planning criteria that should be taken into account in comparing alternative locations for the Third London Airport and in broad terms indicates the degree to which the four suggested sites meet these criteria. The criteria fall into two general categories—firstly, those governing the successful operation of the airport itself and secondly, those concerning the quality of the environment in the sub-region around the airport both from the point of view of disruption to the existing community and that of creating a good environment for the new population that would be attracted by the airport. The various criteria are dealt with on this basis below.

Airport function

Access:

1. The airport must be conveniently sited in relation to the region/hinterland it serves. It is therefore essential to define as precisely as possible the breakdown of airport users by destination/origin and by type of use. The location of the airport will itself affect this breakdown. It is necessary to establish how far the airport will serve national or regional needs outside the immediate London area and if it is to serve a larger region, what is the extent of this region? In this context a gravity model should be set up to assess airport traffic in relation to comparable airports in other regions.

2. Maximum efficiency might be achieved if the airport fulfilled a limited number of specialist functions. These could comprise any combination of the following: international airport; domestic interchange airport; passenger or freight only airport; Europort and Airport; regional airport; airport for only subsonic or supersonic aircraft, or jumbo-jets. The possibility of the airport being used for specialised purposes should be considered as these would effect the desirable locational criteria.

3. Evidence available to date points to the airport being used predominantly for London, but the distri-

Printed image digitised by the University of Southampton Library Digitisation Unit

bution of users in the London area is not clear. In any case, usage with the London area may vary from time to time. On this assumption ease of access to Central London will be of prime importance, not only will this serve the passengers destined for the centre but it will provide easy interchange to the existing radial communications system to all parts of the London region or the rest of the country.

4. The main criteria for passengers will be direct, fast and inexpensive communication links with London by both private and public transport. New surface communication links to Central London will ultimately be required from whichever site is selected. Travel time and costs will vary with the cost and complexity of the new systems required and with the site's distance from London, though the cost differential between surface travel distances is likely to be minimal in relation to air transport costs and other criteria.

5. In selecting routes for London-Airport communications, lines of least resistance must be sought. Access to London from the north and north-west is already difficult (refer to the London Traffic Plan, Vol. 2), whereas access from the east and north-east is still relatively easy. Foulness is the only site where river ferry/hovercraft services to a Central London terminus could be exploited as an alternative travel mode to car and rail. If the predicted ceiling flow volumes materialise this "bonus" could prove valuable.

6. Access to South London will be difficult from all the sites, especially those to the north of London. Foulness seems most favourably related as ferries and tunnels could be provided at points along the river in addition to those that exist and are planned.

7. The distance of the airport from London is not in itself the main criterion. Travel time and cost relationships will be modified by other factors. For instance, a site close to London, but on a communication axis of high demand, might suffer higher costs as a result of congestion than a site remote from main traffic corridors. Congestion of existing routes could be partially avoided by a link reserved exclusively for travellers to/from the airport, but such a provision is unlikely to be justified economically for any site. Although Cublington is close to London, journey times would be bound to suffer on account of general congestion on the main London-Midland routes. On the other hand, routes to Foulness would be much less susceptible to overloading by non-airport traffic as there is no major traffic attraction/generator beyond Southend.

8. Because of their proximity to the Midlands, Cublington and Thurleigh would doubtless attract a considerable amount of traffic destined for/from the Midlands and the North. This would inevitably prejudice the development of some regional airports and could accelerate the need for a fourth London Airport. Generation of non-essential extra-regional traffic might result in much higher costs being incurred to improve communication routes throughout the developing corridor of growth north of London.

Development potential

9. The airport should be located where the economic advantages of the airport can be fully utilised. It should not be sited where growth might be restricted by regional/national policies. On the other hand, it should not be sited where it could deprive other regions of the opportunity of developing their own airports to a higher standard.

10. The increasing importance of air transport (both passenger and freight) in international trade is likely to continue and it is essential that the new airport is sited so as to fulfil the requirements of international trading. This requires correct relationships to both existing facilities and to those that may develop in the future as a result of the establishment of the airport.

11. Greater long-term national benefit will derive from the airport if it is located to serve a future pattern of freight and passenger origins and destinations than if it merely meets current requirements for bulk movement. For instance, its siting in association with a port might have major advantages, e.g. in the dual utilisation of secondary industries and service trades. Such possibilities need careful consideration. In any case, the airport must be sited where development, long-term and overall economic benefits deriving from investment in the airport and ancillary urbanisation and movement systems will be maximised, even if the initial (short-term) costs appear high.

12. At the same time it would be advantageous to site the airport in an area with a well developed service infrastructure, a current labour surplus and with a flexible and under-utilised communications network. This would facilitate a rapid build up in the early years of the airport.

13. The site should be close to a large "local" urban service area, reasonably close to a conurbation and to industrial and commercial centres, but not so close that airport development would be inhibited nor natural industrial growth retarded. By reason of the population that will be attracted to, and required by, the airport, it should be located in a designated growth area. Cublington, Thurleigh and Foulness are all on the fringe of projected major growth areas.

Regional planning models should be set up to assess the likely effect that the airport would have on the future structure of the South East and Midlands.

14. The four sites have extremely varying characteristics:

i) *Foulness:* has a reasonably large local population and a surplus labour supply; it also lies at the landward limit of South Essex, an area which is growing steadily in population and employment and has recently been considered in planning

Printed image digitised by the University of Southampton Library Digitisation Unit

studies as an area suitable for further growth. It is the only site that could be developed in conjunction with a port.

ii) *Nuthampstead:* lies in a fairly rural area of high landscape value which has long been considered suitable for rural conservation. There is no surplus labour supply available and the nearest service centre, Cambridge, has serious growth problems.

iii) *Cublington:* lies in the semi-urbanised London-Birmingham corridor, where further growth has been proposed in general terms. New towns proposals, such as Milton Keynes, could contribute to the airport needs. The exact site, however, lies in green sector area and future congestion along the M1 axis may mean that full development of the site could not be achieved. The site is in an area of labour shortage.

iv) *Thurleigh:* is the furthest site from London and lies in a rural area. There is an existing labour shortage and the existing service structure is minimal. However, the site is close to a number of large new town and town expansion projects.

15. It is absolutely essential that population models are set up for each of the four sites, so that the scale of population that may be attracted because of the airport and other strategic factors is known. It is highly unlikely that the same order of population would be attracted to all sites. For instance, Cublington is in the centre of a major growth axis, whereas Foulness is a terminal location in an area of job opportunity shortage.

Resources

16. The airport must be sited in an area where the resources for development are available, both in terms of construction labour force and materials, and of airport and service employment. It is also desirable that this should be done without straining or deferring existing commitments.

17. If suitable resources are not available in the early years, this could result in serious delays in the quality of operation that the airport can provide and could lead to set-backs in international trading. The existing commitments in the Cublington and Thurleigh areas will already strain resources in these areas.

Environmental quality

These criteria affect the existing population and the population that will be attracted to the airport.

Social disruption

18. Minimal social disruption should be caused to the existing population by siting the airport in an area that is basically capable of servicing it. The eventual population should be well balanced and have a choice of jobs in addition to the airport employment. Existing social habits must be respected; for instance, an airport within an established commuter belt would be less disruptive than an airport in a rural area which is, at present, fairly self-contained and socially detached from London.

19. Minimal social disruption is of major importance, although it cannot be assessed in precise cost terms. Changes are likely in five areas:

i) *The airport site:* the area lost to all existing uses.

ii) *The noise zone:* in part of which the continuation of existing uses would be intolerable and in the remainder unpleasant.

iii) *Local urbanisation area:* the area that would entirely change in character due to new population and employment growth—this would include not only new development areas, but the changes that would occur inevitably in the character of existing settlements.

iv) *Communication routes:* increased passenger and freight traffic would cause congestion of existing routes and require supplementary ones. These would inevitably create severance and disturbance, not only immediately around the airport site, but over the whole area of local urbanisation, and along lines of linkage with central London.

v) *Recreational areas:* the demand of the new population for rural recreation would lead to demands for greater access to the countryside outside the area of urbanisation.

Severance

20. Minimal severance and disturbance should be caused to agriculture by delimitation of zones of urbanisation in order to reduce sprawl and encroachment into agricultural land, including in the limitation the network of road and rail communications and services in the surrounding area. It is equally important to provide open rural recreational areas so as to reduce unplanned recreational activities in agricultural areas.

21. Prevention of sprawl will require careful definition and consolidation of urbanised areas. This would be easiest to achieve in areas with well-defined natural boundaries, e.g. bordering the sea. It would be hardest where the airport was sited in the centre of a region of small and expanding towns where a scattered radial growth could easily take place—this to varying degrees applies to all the inland sites.

Pollution

22. The airport should be sited where it causes minimal disturbance due to noise and other pollution. Pollution will be most troublesome and offensive where dispersion occurs over land. On this count each of the inland sites has major disadvantages.

Printed image digitised by the University of Southampton Library Digitisation Unit

Employment disruption

23. Minimal disruption should be caused to the existing employment structure. The airport should be sited, if possible, where there is a labour surplus that can be used in the initial stages to both the advantage of the area and the airport. (Similarly, this will apply to areas of potential housing surplus.) The three inland sites lie in areas of low unemployment, so that a sudden increase in labour demand could artificially inflate wages and create labour shortages in existing industries and service firms. On the other hand, Foulness lies in an area of comparatively high unemployment and where a high proportion of the existing employed population have to commute towards London to find employment. The airport at Foulness could well complement the existing employment structure during the initial development stages, e.g. employees of the existing Municipal Airport would be assured of re-employment when Southend Airport closes.

Conservation

24. The airport development, its noise zone and new urbanisation should not cover areas of high landscape value, historic villages or building of architectural value. Similarly, it should not adversely affect areas of scientific or recreational value such as Nature Reserves or rivers with recreational potential.

Agriculture

25. The loss to agriculture can be assessed from two aspects—firstly, the quality of land lost and secondly, the total acreage required. (Severance has been dealt with above.) In all cases, the aim should be the minimal loss of land due to five uses:

i) *Airport site:* will require some 7,500 acres at the very least. In the case of Nuthampstead and Cublington, this will be virtually all agricultural land. At Foulness and Thurleigh less agricultural land would be required, although this advantage would be offset if present uses, i.e. RAF Station or firing range, were transferred to new sites at present in agricultural use. However, the reclamation of 7,500 acres at Foulness must result in a net gain, as the land retained in agriculture in the adjoining area is of first-class quality. Reclaimed ground, which normally has no immediate economic return, would provide the most satisfactory site as it would necessitate the minimum displacement of farmers and would not involve the loss of existing land uses.

ii) *Local urbanisation:* The amount of land required for this may vary from site to site, and this needs careful consideration of both the total population that may be attracted by the airport and the extent to which existing urbanisation in the area can be used to meet this need. Superficially it would appear that Foulness could absorb the greatest amount of airport population within the framework of present development.

Of equal importance to the total acreage required is the type of land to be taken—that is, its quality and agricultural productivity. This can be affected by the soil type and by proximity to existing development, severance and trespass. It would be preferable for development to take place in semi-urbanised areas in the form of infill rather than as new settlements in wholly rural areas.

iii) *Communications:* The loss due to communications would comprise both the acreage required and the effect of severance on farm units. The minimal need for new routes is therefore important. An airport site such as Thurleigh, which would generate heavy traffic in all directions, would therefore be likely to create greater loss and severance than a site at the end of a linear cul-de-sac, such as Foulness.

iv) *Recreational facilities:* These will be required for the new population in the surrounding rural areas and must be given careful consideration. There is a general shortage of major open spaces such as National Parks and areas of outstanding natural beauty in the vicinity of all the sites. The proximity of Foulness to the sea would satisfy the needs for many water-based recreational activities, which are all too infrequently available inland.

v) *Natural resources:* Further land will be lost to agriculture due to the extraction of sand and gravel and other resources. Similarly land may be required for utility uses such as water storage, and in all cases this should be minimised.

Utilities

26. The ability to provide all public services for the airport and urbanisation without straining existing facilities is essential. Service lines should minimise physical and visual severance and disruption. The effect of changed land drainage, run-off and flooding of land is of great importance to agricultural interests in the whole drainage area, and though run-off at inland sites could be conserved for industrial/recreational use, proximity to the sea, as at Foulness, would have advantages in this respect.

Environment

27. The airport should be sited where its associated urbanisation can contribute to national, regional and local planning policies and where the best environmental quality can be achieved. The airport and its associated development must not be contiguous with the peripheral development area of London; nor should it be at the heart of any urbanised area (this applies to both the existing and future urban complexes).

Printed image digitised by the University of Southampton Library Digitisation Unit

28. For instance, urbanisation between Cublington or Nuthampstead and London would inevitably destroy the green belt and form a major extension of the metropolitan area over a wide front. Continuous development might also occur in the case of Foulness but this would be restricted in width by the physical barrier of the Thames. Development at Thurleigh would be least likely to create a continuous extension of London because of its distance from London and because of the existing settlement pattern, which is conducive to the formation of a "counter-magnet" to London.

29. In the case of Cublington and particularly Thurleigh, there is, however, the danger that the airport and noise zone will eventually become the centre of a fairly heavy urbanised area. This could lead to low general level of environment. It would be less likely at Nuthampstead and could not occur at Foulness where all development and urbanisation must occur on the landward side of the airport and noise zone.

30. The airport induced growth must be capable of controlled manipulation at all stages of the airport build-up to facilitate the most economic use of resources, and to achieve the most satisfactory planned environment. It is important that the site is one where such control can be exercised; there is danger that the development of the airport together with the already planned expansion schemes in the Cublington and Thurleigh areas could lead to over rapid growth, with consequent social problems.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Nature Conservancy

1. The construction of a third London Airport on the Maplin Sands will involve the reclamation of a substantial area of intertidal sand and mud flats at present frequented by very large numbers of waders, wildfowl and gulls. Of particular concern to conservationists is the fact that the feeding grounds of at least one-fifth of the total world population of the Dark-Bellied form of the Brent goose will be destroyed. In addition the nest site of an important colony of Little Terns at Foulness could disappear as the result of coastal physiographic changes resulting from the construction of the airport.

2. Feasibility studies are in hand on the practicability of establishing a number of refuges which, with appropriate management, might provide the habitat conditions required by at least some of those birds whose natural terrain is destroyed by the airport. Such refuges might attract away from the vicinity of the airport some of those species likely to present a hazard to aircraft, but further detailed observations on the flight behaviour of the birds which occur in the area are required before firm predictions on this point can be made.

3. Apart from the considerations of safety which are obviously of prime importance, refuges of the kind described could contribute substantially to the conservation of wildlife which would otherwise suffer serious loss through the development of the Foulness site. However, on the present limited state of knowledge only general indications can be given of the localities where such refuges might be established.

4. Although on conservation grounds it would be highly desirable to provide alternative feeding grounds for the large numbers of Brent geese which would be affected by the construction of the airport at Foulness, it is considered that this is, for practical reasons, probably impossible. The most that can be achieved is to increase the degree of protection afforded to other sites in south-east England which are frequented by this species in the hope that some at least of the birds displaced from Foulness can be accommodated in these other areas.

5. Much more information about the distribution of *Zostera*, the principal food plant of Brent geese, is required before any individual sites can be named. However, it seems likely that five areas on the south and east coasts at present frequented by Brent geese, and consisting mainly of saltings and intertidal foreshore, would have to be afforded protection. It is anticipated that the cost of acquiring these refuges would amount to about £175,000 and that each would cost about £4,000 per annum to warden and manage in the interests of conservation.

6. The particular features of scientific interest of the Foulness area are not exactly paralleled anywhere else in the British Isles and if an airport was developed here it would not be possible to find a replacement. Nevertheless, it would be essential to establish as nature reserves one or more sites on the Essex coast which would, as far as circumstances permit, act as partial substitutes for the Foulness area. Although it would only be possible to decide on the exact localities and sizes of these reserves when further information becomes available, the two areas most likely to be chosen are situated on the eastern shore of the Dengie Peninsula and on the northern shore of the Blackwater Estuary. Both sites are frequented by many of the birds and plants characteristic of the Foulness area, and there seems little doubt that with appropriate management their present scientific interest could be considerably enhanced. In order to ensure that this potential could be realised, these reserves would have to contain at least 1,500 acres of salt marsh and 10,000 acres of tidal foreshore, backed by a substantial acreage of grazing marshland. The estimated cost of acquiring reserves of this size would amount to some £210,000 and each would cost about £6,000 per annum to manage.

7. The construction of an airport at Foulness would accentuate the already high scientific importance of "The Swale" on the north Kent coast and make it the more desirable for a National Nature Reserve to be established in this area as soon as possible.

8. If it became apparent that coastal physiographic changes resulting from the construction of the airport were likely to result in the loss of the shingle spit near Foulness Point used by nesting Little Terns, an investigation would have to be made as to the practicability of resiting this spit elsewhere. A sum of £30,000 is included to cover the cost of doing this, but for obvious reasons this figure must be regarded as being purely notional.

9. The overall estimated cost of acquiring five areas as refuges for Brent geese, a further two areas as Reserves as partial substitutes for the Foulness area and the possible resiting of a shingle spit for Little Terns amounts to £415,000 with recurrent management costs estimated at a further £32,000 per annum.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Nuthampstead Preservation Association

Introduction

The Stage II submission of the Nuthampstead Preservation Association has referred to the local implications of the following factors:

1. Regional planning
2. Employment benefits
3. Housing requirements
4. Noise and nuisance considerations
5. Amenity considerations
6. Land use.

This submission is made with two objects in view. The first object is to present additional evidence not restricted to purely local matters in connection with Nuthampstead dealing with factors of:

Timing of the need for the airport;
Cost of construction including provision of services and utilities;
Surface transport aspects;
Air traffic control and other operational considerations.

It is not intended to submit evidence as to effect on defence installations.

The second object is to point to factors which the Commission's cost/benefit research will need to take into consideration, both as to the purely local factors raised at Stage II and as to the evidence now submitted.

It is the submission of the Association that the grounds submitted to the Commission at Stage I upon which it was decided to consider Nuthampstead as a possible site for the third London airport were incorrect and inadequate. The case of the Association is that on its merits the Nuthampstead area is a wholly unsuitable choice for the site of the third London airport viewed either on its own account or by comparison with the other short listed sites.

The Commission will have recently been sent the report (LRP 1275 dated 25th June 1969) of the Standing Conference on London and South East Regional Planning which fully endorses the views submitted by the Association in support of its case. In particular, it has now been stated with the authority of the Conference that "major urban growth around Nuthampstead would be in absolute conflict with the Conference's strategy".

1. **Timing of the need**

1.1. Evidence has already been submitted at Stage II to show that a new airport at Nuthampstead would require a long period of construction and thus a new airport on this site would not be available in time to meet the need as expressed in the evidence of the British Airport Authority at Stage I of the Commission's investigation.

1.2. The evidence of the Chairman of that Authority on Day 1 of the Stage I evidence* was to the effect that Heathrow would reach its capacity for air movements by about 1971 and on the assumption that overspill to Gatwick Airport would then take place it, in its turn, would reach its maximum capacity by about 1974/1975. It is visualised by the British Airport Authority, however, that even if a Government decision as to the location of a third London airport were given as early as January 1971 it would not be possible, on a virgin site, for the first runway of a third London airport to be in operation before June 1976, i.e. a period of 5½ years. A difficult inland site was estimated to take 6½ years or even longer and an off-shore site was estimated to require between 7½ and 8 years from 1971 to reach the same stage of development namely, that of one runway with air terminal buildings.

1.3. It is clear, moreover, that in the view of the Airport Authority it would be helpful if an existing runway were established on the site finally approved. Such a runway must be sufficiently long and sufficiently strong to be of value. There was such a runway at Stansted which lies some 9 miles to the south-southeast of Nuthampstead and is a location which the Commission has rejected in their choice of sites. Consequently, no assistance towards meeting the need for an airport by the mid-1970s can be secured from the physical characteristics of Nuthampstead and, indeed, the evidence is wholly to the contrary effect. Mention was made at Stage II of the rolling and undulating nature of the site. Deep valleys intersect the area and there is a wide range of contour levels as between different parts of the site, hence it is submitted that the nature of the site at Nuthampstead is such as to require extremely extensive works of site preparations, levelling and consolidation which will cost a great deal, both in money and in time.

1.4. What is perhaps a much greater factor influencing the possibility of constructing an airport at Nuthampstead to match the timing of the airport requirements lies in the fact that there is no basic framework from which to commence to undertake the vast construction of:

1) the airport itself;
2) the associated new towns required to accommodate the labour force which will have to move into the area;

* *Papers and Proceedings*, vol. 1.

Printed image digitised by the University of Southampton Library Digitisation Unit

3) the ancillary services without which the airport cannot operate;

4) the requirement already authorised by the Government to construct the M11 with a programme commencing in 1970 and due for completion as far as Stump Cross by 1974.

1.5. By virtue of the totally inadequate communications of the Nuthampstead area and the vast construction works envisaged it seems inevitable that the attempt to carry out three or four major developments during the same period of time in this area is likely to lead to an utterly chaotic situation particularly as regards the surface transport of materials and the provision of utility services in an area where very few now exist.

1.6. The evidence submitted on behalf of the County Councils of Essex, Hertfordshire, Cambridge and the Isle of Ely by Mr. Sharman stated that total requirements for sand and gravel for the airport would amount to 3·8 million cu. yds. Thus for this one item of material required for the construction of the airport about 300 15-ton trucks per working day would be required from gravel pits at the extensive peak working times. As far as Nuthampstead is concerned, the Ministry of Housing and Local Government Review of Sand and Gravel Production in South East England in 1967 showed that the East Anglian Region in which the site is situated was expected to have a shortfall of gravel bearing land in the region of 1,375 acres for the period 1973-1977. It is stressed in this Review that such a forecast does not take account of major constructional works, i.e. in respect of this area:

1) a new airport;

2) the associated New Towns;

3) the construction of the M11 and other new road links.

More detailed information is available from the Essex County Council Report on the First Review of the County Development Plan in November 1964. This states that the deposits in north-west Essex are poorer than elsewhere in Essex, and with the exception of four pits in the Stort-Cam Valley, there are no deposits to the north or west of Braintree worth working. The 120 acres permitted in this area were expected to provide supplies for a further 30 years at the current rate of output, i.e. to meet local demand. It was also thought doubtful whether the Saffron Walden area deposits were to be considered an economic proposition for large scale exploitation. The Report also stated that the Chelmsford Service Area could produce 1½ million cu. yds of sand and gravel for the next 10-12 years (from 1964), but due to the limited reserves in south Essex and the Lee Valley areas, it was thought that the north and west section of the Chelmsford area were suitably located to supplement the declining resources nearer London. The implications at that time were that there was increasing pressure on the Chelmsford area to meet the demands of the London market. On the latest figures, however, and with the expected deficit in the 1970s it is now thought to be unrealistic to count on a contribution from this region towards the future needs of Greater London.

1.7. Nuthampstead is, however, close enough to the Middle Anglia Region for the Cambridge and Eastern half of the Bedford Service Areas to be considered as sources of sand and gravel. It is, however, stated in the Ministry of Housing and Local Government Review of 1963 that there are only relatively small deposits south of Cambridge and that the best deposits are north of the City in the Chippenham-Kennett Area and the area north of Landbeach. For sand and gravel in these areas to be used for an airport site at Nuthampstead, it would be necessary for hauls of considerable length to be undertaken and they would have to pass either through Cambridge or Newmarket to reach the site. As far as the Bedford Service Area is concerned, while there are considerable deposits throughout the area, the Advisory Committee on Sand and Gravel recommended that no significant new working should take place on the high quality horticultural land to the east of Bedford, i.e. along the Valley of the Ouse and up the Valley of the Ivel as far as Henlow. It was considered that this policy should be maintained in the Middle Anglia Gravel Region Review in 1963.

1.8. Hence it is submitted that the supply of sand and gravel in the quantities required cannot be met within convenient haulage distance and that, consequently, the haulage costs will substantially increase the cost of sand and gravel delivered to the site. Having regard to the rapidly shrinking reserves of sand and gravel in the south east, it may even be necessary for such supplies to be imported from the Midlands during the end of the 1970s.

1.9. If an average yield of 15,000 cu. yds per acre is adopted, the airport alone will require 253 acres of land to be quarried—resulting in a further loss of agricultural land. Moreover, the quantities of such material required for the M11, the new towns and all the other associated works will dwarf the sand and gravel requirements for the airport. The total requirement is likely to involve several thousand acres of land with a consequent disruption of agriculture, amenity and road traffic over a wide area.

1.10. Consequently, the evidence demonstrates that the timing of the construction of an airport at Nuthampstead is unlikely to match the need for the airport and by virtue of the combination of factors referred to above could well add up to a delay of several years as compared with a site with better contours and better served by existing roads, and by an existing general economic infrastructure.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. Cost of construction

2.1. The cost of construction is closely related to the factors of timing and the physical characteristics of the site. In both cases it has been demonstrated that circumstances are disadvantageous at Nuthampstead and, consequently, it is to be anticipated that the cost of the physical construction of the airport runways and terminal buildings is likely to be higher at Nuthampstead than in the case of sites which have either, or both, better contours or better access to an existing road network, raw materials and other services. Thus it follows that a site with some disadvantages but served by an existing main road network or with convenient access to sand and gravel supplies would be preferable as a site for construction to Nuthampstead which has neither the advantage of agreeable contours nor access to any existing main road network or to gravel supplies.

Provision of services and utilities

2.2. In regard to these matters the Nuthampstead Preservation Association adopts the evidence of the County Councils of Essex, Hertfordshire, Cambridgeshire and the Isle of Ely and, in particular, the evidence of Mr. Sharman* given to the Royston Inquiry on Day 1 with particular reference to surface water drainage and the difficulties arising from the extensive levelling operations which are likely to change the run-off characteristics of natural rainfall. The vulnerability of this area to flooding was dramatically shown by the recent floods at Bishop's Stortford following only two days' heavy rain. It is clear that the natural drainage of the area is near its critical capacity under present circumstances and the construction of an airport at Nuthampstead might well have serious effects upon land drainage on areas far removed from the airport site itself.

3. Road access

3.1. Reference has been made in the Stage II submission to the fact that the local roads serving the Nuthampstead area could not be expected to carry the heavy material required for the construction of an airport and for the associated new towns and utility services. Even the construction of the new motorway, M11, would place an intolerable strain on existing routes and especially at the road intersections. It seems apparent, therefore, that until the northern end of the M11 is completed, the construction of the airport must be delayed. It is unlikely that the M11 will be an effective major communication link for the airport site before 1974.

3.2. It is the case of the Preservation Association that at Nuthampstead the road facilities are very bad and even the building of a new motorway, the M11, does not lift it out of this class. It was said in evidence by the Ministry of Transport on Day 4 of the Stage I Inquiry* that a firm decision had already been taken to build the M11 as a dual three-carriage way road and the witness from the Ministry confirmed that the design of the M11 was conceived in 1950 and was justified by traffic requirements which did not envisage any airport need. It was also confirmed by the Ministry witness that the M11 will be built as a dual three-lane carriage way road whether an airport is based near the M11 or not.

It was, however, suggested by the Ministry that although the design capacity of the M11 provides for a peak hour flow in one direction of 3,000 pcus per hour it would be possible to overload the motorway by 100 per cent above its designed capacity before matters became so serious as to result in an unacceptable level of traffic delays and of accidents. Thus it was argued by the Ministry of Transport that the fact that the M11 is about to be built would provide a bonus of traffic carrying capacity to serve a site in the Stansted or Nuthampstead areas which could be achieved by exceeding the design capacity of the road and overloading it by 100 per cent. This argument is, in fact, ineffective and is challenged by the Association because the basic assumptions made by the Ministry of Transport are demonstrably incorrect and hence the conclusions arrived at by the Ministry at Stage I are wrong.

It should be noted, however, that the traffic for which the M11 was designed, i.e. the non-airport traffic, was estimated by the Ministry's witness as having a peak hour flow in one direction of 2,250 pcus per hour in 1985. Even if merit is seen in the argument that by contemplating the overloading of the design capacity of the motorway, even before it is built, spare capacity would be available to the airport, the remaining figures and argument put forward by the Ministry of Transport to the Commission at Stage I are not accepted.

In particular, the amount of road traffic towards London in the evening peak hour generated by the airport shown in Table 2 of the Ministry's evidence as giving rise to between 1,400 and 1,850 pcus by 1985 and a total of between 2,250 and 3,000 pcus by 1990 on the basis of the traffic forecasts and assumptions made by the Ministry is considered to be quite inaccurate.

3.3. The basic assumption made by the Ministry of Transport is that by 1985 the passenger traffic at the third London airport will total 18 million passengers per annum, rising by 1990 to a total of 31 million passengers per annum. This assumption is clearly in conflict with the basis laid down by the Roskill Commission in their booklets on Nuthampstead and on all the other airport sites that the third London airport

* *Papers and Proceedings*, vol IV.

* *Papers and Proceedings*, vol. I.

Printed image digitised by the University of Southampton Library Digitisation Unit

is to handle 45 million passengers from a two-runway airport by the mid-1980s. It is also in conflict with the evidence of the Chairman of the British Airport Authority at Stage I of the Inquiry.

3.4. It is clear that the Ministry of Transport's calculations in the Stage I evidence were based on a very serious under-estimate of the number of passengers to be handled at the airport in 1985. Moreover, the Ministry's calculations were confined to the traffic generation in respect of airport passengers and in respect of airport service vehicles only. The evidence submitted to the Commission by the Ministry at Stage I did not include for the traffic generation of the employees at the airport. The result of making such necessary adjustments to the Ministry's calculations shows that the total traffic to be carried by the M11 is about 10,000 pcus in a peak hour in one direction on the same method of calculation as was adopted by the Ministry at Stage I in Case I. The equivalent Case II figure is approximately 8,500 pcus per hour. The additional airport traffic is a figure of between 7,500 pcus (Case I) and 6,000 pcus (Case II) and not the figures of between 1,850 pcus (Case I) and 1,400 pcus (Case II) put forward by the Ministry at Stage I.

3.5. With regard to the question of the airport employees, namely a total of 45,000 persons to be employed at the airport by 1985, it is, of course, to be anticipated that a substantial proportion of such employees will live in new towns or housing areas from which new roads to give direct communication to the airport could be constructed. However, it is certain that a substantial proportion of such employees will not live in the new towns or housing areas but would live in and travel to work from other towns and areas, including the northern suburbs of London, with the result that a proportion of such traffic must be expected to use the M11 for journeys to work. A high proportion of the employees will have to make their journey to work by car and such traffic is likely to be of very considerable proportions. Thus when the total demands are added together, namely the airport passenger traffic, the airport service traffic, and the airport employee traffic it is abundantly clear that a dual three-carriage motorway will be totally inadequate to meet the need.

3.6. Attention is drawn to the evidence submitted by the Ministry of Transport at Stage I of the Inquiry, and in particular to paragraph 4.2.5 of that evidence. The Ministry states that where design standards are overloaded, speeds become low and delays high, particularly at intersections, and gives as examples modern single three-lane carriage ways where such conditions occur at an overload of 60 per cent above design capacity. The evidence as to practical experience of travelling conditions on overloaded modern dual two-lane and three-lane roads was stated to be inevitably more limited but observations of the two-lane section of the M4 suggested that an overload of 100 per cent probably represents the critical limiting capacity on such dual carriage way roads and that beyond that point conditions must be expected to deteriorate rapidly.

Thus, even if it were thought appropriate to bring into account the overloading of the capacity of the M11 up to its critical limiting capacity of 100 per cent above design capacity this would give a maximum capacity of only 6,000 pcus per hour in one direction (compare Table 3 of the Ministry's evidence at Stage I). By 1985 the motorway would have to carry approximately 10,000 pcus per hour at peak periods. The detailed calculations to prove this figure are given in Appendix I attached to this Memorandum. It is thought possible also that the Ministry's figures as to freight traffic are under-estimated and some addition to the figures may be required on this account. Generally speaking, the Ministry's method of working is not accepted as a method which fully reflects the traffic generation on the M11, for example, nothing is allowed for the non-airport traffic of the new towns which will use the M11.

3.7. The revision in the estimate of the traffic generation of the airport radically alters the Ministry's evidence of cost/benefit set out in Table 5 of the Stage I evidence. Such Table seeks to prove the hypothesis that until well into the 1990s the M11, without further expenditure of a significant nature, could carry the whole of the airport traffic plus the whole of the non-airport traffic. This statement was, in any event, deficient in that it ignored the traffic needs of airport workers. Consequently, the evidence of the Ministry of Transport at Stage I is strongly challenged and put in issue.

It is submitted that if the airport is located at Nuthampstead, it is inevitable that a second motorway will be required to be built immediately following the construction of the M11 in order to accommodate the traffic to be generated by the airport by 1985. If such additional major work of construction were to be undertaken the chaotic local traffic conditions already referred to previously would be intensified and extended in time with consequent further delays in the efficient operation of the new airport.

3.8. A further consideration left out of account in the evidence of the Minister of Transport is that the cost/benefit analysis submitted as Table 5 in the Stage I evidence, refers only to a partial journey, namely, to the length of the journey between the airport and the C-Ring Road in London. It is suggested by the Ministry that traffic at this point is likely to diverge into many different journey directions and will join the general road network of the London conurbation and hence can be ignored as an immaterial weight of traffic.

This assumption is not correct because a substantial proportion of the traffic using the M11 as the main access to the airport at Nuthampstead would originate in Central London or from an Air Terminal located

Printed image digitised by the University of Southampton Library Digitisation Unit

in Central London. The most likely situations for such an air terminal appear to be in the King's Cross area or the St. Marylebone area. A large proportion of the total number of passengers using the airport would be likely to travel by road from such a terminal or from other central points of origin even if rail facilities were developed in such a way as to give a constant and frequent service to the airport in due course. Consequently, there will be a considerable pressure of vehicles seeking to travel from the terminal to the junction of the M11 with the C-Ring Road. In addition, other vehicles such as private cars will commence their journeys from the major hotel locations in Central London.

3.9. The hotels of the London area tend to be situated on the west side of the Central Area and hence are badly situated for road journeys towards the M11 motorway.

The handbook entitled *Hotels and Restaurants in London, 1969* in fact divides the London hotels which meet their standards into five areas, as follows:

i) *The West End and Victoria.* This area has a total of 62 hotels of which 43 have over 100 bedrooms each.

ii) *Holborn and the City.* This area has a total of 26 hotels of which 17 have over 100 bedrooms each.

iii) *Kensington* (including Earls Court and the area south of Hyde Park). This area has a total of 37 hotels of which 17 have over 100 bedrooms each.

iv) *Lancaster Gate and Bayswater.* This area has a total of 32 hotels of which 11 have over 100 bedrooms each.

v) *North West London* (including Hampstead and the Regent's Park area). This area has a total of nine hotels of which two have over 100 bedrooms each.

Consequently it will be observed that a total of 166 hotels are listed, of which 90 have over 100 bedrooms each and such hotels are predominantly situated on the west side of the centre of London.

3.10. In assessing journey times, it is necessary to pay regard to both the point of origin and the destination of the journey. It is inappropriate to base cost/benefit calculations upon an intermediate point such as the junction of the M11 with the C-Ring Road or even from an air terminal building in Central London. A high proportion of travellers will commence their journeys at some considerable distance from either of these points. Passengers travelling to the new airport by private car will clearly be concerned with a door to door journey and passengers using public transport will be concerned with the journey to the air terminal and thereafter the journey to the airport.

3.11. In order for there to be reasonable access from the Central London area to the M11 it will be necessary for the London Motorway Box or roadworks on similar lines to be constructed and for a feeder road from such Motorway Box to be constructed to join the junction of the C-Ring Road (i.e. the North Circular Road) and the M11.

There are, of course, serious weaknesses in the general road pattern of London and, in particular, there is a substantial weakness in the lines of communication between the centre of London and the North East. The present communications along the lines of the A10 and A11 are utterly incapable of carrying any major additional traffic as they pass through shopping streets, narrow residential streets and the like. In the north east quadrant of London the GLC General Strategy Plan proposes new roads by way of the M11 and radial route 7 (which links Hackney Wick to the A12 and the A127). These roads are already committed for early construction as part of the national road programme and commence from a junction point with the North Circular Road. The existing North Circular Road is, of course, one of the most heavily overloaded major routes in London and is not yet constructed to a consistent standard of width. No new route from Central London to this junction point is proposed until after the London Motorway Box is constructed.

3.12. The North Circular Road is programmed for substantial improvement and widening, together with important works at inter-sections. Even after such works have been carried out, the capacity of that road will remain inadequate to carry the volume of traffic estimated to desire to use it. The North Circular Road will be the principal east/west communication for main distribution of traffic until such time as the North Cross Route of the London Motorway Box is constructed if this is, in fact, approved by the Minister in due course. The North Cross Route has, of course, been the subject of much public discussion recently and it is thought probable that at the inquiry into the GLC Structure Plan in 1970 the question of the London Motorway Box will form one of the most contentious issues.

At the present time, the Motorway Box scheme represents no more than a proposal on the part of the Planning Authority and the situation must be faced that the M11 is planned to terminate at the C-Ring Road (the North Circular Road) and that this position is likely to remain for a considerable number of years.

Whilst certain works have been put in hand in respect of the West Cross Route of the London Motorway Box and in respect of the East Cross Route south of the River, it is considered likely that only a very small section of road works in the Hackney Wick area is likely to be accomplished by 1983. Even if the London Motorway Box is approved the present programming envisages that a start on the North Cross Route cannot be made until 1983. Cars and coaches travelling towards London on the M11 arriving at the North Circular Road or continuing on to the Hackney

Printed image digitised by the University of Southampton Library Digitisation Unit

Wick area (once that improvement has been achieved), will be faced with slow journeys through very congested streets to reach the centre of London. If their destination lies at the Central London hotels or at a terminal at St. Marylebone such journeys will obviously take even longer than if the destination point is at a terminal at King's Cross.

3.13. The road communications out of London to the North East are much less convenient and much less adequate than communications out of London to the North and to the North West. They depend also on the completion of ring road routes. Consequently, it is necessary that in the preparation of any cost/benefit analysis a point of origin and destination in the centre of London should be taken and not the C-Ring Road. This will make a substantial difference in distance, in time and in cost to the overall journey by road between the assumed point of origin and the various sites in the cost/benefit analysis.

3.14. Progress has already been made in connection with the East Cross Route south of the Thames and that part of the East Cross Route which is north of the River Thames is programmed to be commenced in about 18 months' time and will finish in about 1974. The point where the M11 joins on to the East Cross Route has already been settled although the link road between the East Cross Route and the M11 itself is still under consideration by the Ministry of Transport. There will consequently be the prospect of a link on the east side of London connecting the M2 with the M11 being in operation by 1974 but such road link is unlikely to be of substantial value to an airport situated at Nuthampstead because the bulk of the airport traffic will come from Central London and from the most thickly populated residential areas of London which do not lie in its south eastern quadrant. There is the further question that the third London airport ought to be sited in a location to serve the substantial populations of the Midlands.

3.15. In summary the road access problems of an airport in the Nuthampstead sector are as follows:

1) The construction of the M11 will not be in time to be of any real short term advantage to the airport.
2) The construction of the M11 will itself contribute to a chaotic traffic situation in the period when the airport is being constructed.
3) When in operation the airport will absorb the whole of the traffic carrying capacity of at least one motorway.
4) The London end of the M11 gives on to a wholly inadequate road system beyond the C-Ring Road and there is a considerable distance of congested and narrow streets to traverse before the destination of the journeys is completed.
5) The approach to London arrives at an inconvenient sector, being diametrically opposed to the sector of London in which journeys are likely to terminate.

3.16. In addition to the question of passenger traffic there is the important question of freight traffic. The Chairman of the British Airport Authority said in his evidence at Stage I that his estimate of traffic by the mid-1980s was 40 million passengers plus one million tons of cargo per annum. (Day 1—Stage I.) He also said on that day that 50 per cent of cargo will continue to fly in passenger aircraft and for that reason it was not appropriate to have airports devoted solely to cargo. Air cargo, however, has showed a very substantial growth rate and in the last ten years has increased by over 17 per cent per annum with the result that cargo was doubling its volume every four years. There are no statistics available to show the origin and destination of cargo comparable to the information available concerning passenger traffic where it is known, for example, that over 80 per cent of all passengers wish to visit London at some point of their stay. It is probable, however, that a substantial proportion of cargo traffic is destined for the manufacturing centres of the Midlands as well as to the London area. If this should be the case the cost of hauling cargo in such volumes from the third London airport to its place of destination in the manufacturing centres should clearly form part of the cost/benefit analysis and it would appear that the journey from Nuthampstead is one likely to involve greater distance, time and cost than in the case of some other airport sites.

4. Rail access

4.1. The most suitable railway line to which an airport site at Nuthampstead might be connected is the double line between Hitchin and Cambridge which feeds directly into the East Coast Main Line between London (King's Cross), North East England, the West Riding, Lincolnshire and Scotland.

4.2. A spur could be constructed connecting the airport site to a point on the railway either east of Baldock or alternatively to the south of Stevenage (as shown in the plans submitted by the County Councils at the Stage II Inquiry). The distance from the King's Cross terminal to the airport at Nuthampstead via Hitchin and Baldock would be about 46 miles. The distance via a spur from south of Stevenage would be somewhat less, about 37 miles. A non-stop rail journey from King's Cross would take approximately 45 to 55 minutes under conventional conditions depending upon the approach spur.

4.3. The line between Hitchin and King's Cross carries an intensive, high-speed express inter-city passenger service, some semi-fast services and suburban stopping services which are intensive at peak periods. All trains at present are diesel operated—the majority

Printed image digitised by the University of Southampton Library Digitisation Unit

by diesel electric locomotives—but electrification of the GN suburban services is in an advanced state of consideration. Both the inter-city express services and the suburban services—if and when the latter are electrified—can be expected to expand.

4.4. Between Hitchin and King's Cross there are four passenger lines except between Woolmer Green and Digswell where there are two tunnels and a viaduct which carry two lines only for a distance of about 2 miles 11 chains. In order to avoid this restrictive stretch it would be necessary at times to use the line between Langley Junction and Wood Green via Hertford North which is an alternative subsidiary route to the east of the main line. This alternative route adds 1 mile 35 chains to the distance and, owing to the lower ruling speeds, its use would extend the journey time under present operating conditions by about 20 minutes. Under present and foreseeable conditions, both physical and operational, the foregoing existing routes and tracks could not be made over entirely for sole use by non-stop passenger trains between an airport at Nuthampstead and London. Indeed, during existing periods of peak demand under present line and terminal operating conditions an adequate airport service could not be operated.

4.5. As, however, none of the lines is electrified and as the signalling is not of the most advanced design, it follows that modernisation in these fields would increase track capacity. To some extent increased capacity so obtained would be needed to encourage, and provide for, natural growth of both long distance and commuter travel. Also it would be necessary to complement increased line capacity by terminal reconstruction or by new construction in the King's Cross/St. Pancras area.

4.6. Provision of additional tracks on the route between King's Cross and Hitchin, if such a course were ever to be contemplated, would be complicated by the extensive tunnelling involved. The table which follows is indicative of the present position.

Tunnels between King's Cross and Hitchin: main line

Tunnel location	*No. of tunnels*	*No. of bores*	*No. of tracks*	*Length of tunnels (yards)*
*Gas works (London)	1	3	6—2 in each bore	528
*Copenhagen (London)	1	3	6—2 in each bore	594
Wood Green	1	3	4—2 in 1 bore and 1 each in 2 bores	705
Barnet	1	3	4—2 in 1 bore and 1 each in 2 bores	605
Hadley S	1	2	4—2 in each bore	384
Hadley N	1	2	4—2 in each bore	232
Potters Bar	1	2	4—2 in each bore	1,214
Welwyn S	1	1	2	446
Welwyn N	1	1	2	1,046

*Under modernised conditions no new tunnels would be required.

4.7. Direct services by rail from an airport at Nuthampstead, rail connected via Hitchin, to the Midlands and the North West would be almost non-existent. Some connections to and from the North East of England and the West Riding could be effected at Hitchin or via Cambridge, March and Peterborough, possibly on the connecting coach pattern now operative between certain rail centres outside London and Heathrow. It would be more than likely, however, that intending passengers for the areas mentioned would make their way to London to catch services.

4.8. An alternative rail route between an airport site at Nuthampstead and London is available by using the line between Bishop's Stortford and Cambridge but any suggestion of using Liverpool Street Station as the London terminal, to which such line runs directly, would be quite unacceptable because of existing density of traffic. Also it is expected that suburban traffic between Liverpool Street and Bishop's Stortford will increase further. Consequently, if this route were to be considered, services would need to run into the King's Cross/St. Pancras area by direct connection via Tottenham Hale and the Tottenham and Hampstead line. Extensive demolition and new works would be necessary. The existing Lea Valley line—now double track—would require duplication almost immediately. There are some ten level crossings on this route and, looking ahead to the impact of future levels of traffic and speeds, it would be essential to give consideration to the construction of a good portion of the new track on stilts.

4.9. Direct rail services to the Midlands, the North West, West Riding, North East, East and Scotland, avoiding London, would hardly be feasible.

4.10. Taking these factors into consideration it is clear that it will not be sufficient in deciding the part the railway can play in providing an adequate service for airport traffic merely to take account of immediate capacity which stems from modernisation which is likely to take place for other reasons than the emergence of the third airport. There must be certainty that the growing rail requirements arising from *all* foreseeable developments, including the airport, can be progressively and satisfactorily met as they arise until the ultimate need is satisfied.

4.11. On the basis of available forecasts regarding the maximum potential passenger volume which will, of course, be subject to seasonal, daily and even hourly peaks, and with inward and outward peaks not necessarily coinciding with each other, it is clear that only a purpose built and operated railway, embodying in its structure and operations all existing and potential technological advances, will meet the ultimate requirements if they are as large as forecasted. Such a railway would need unimpeded access to terminal facilities designed adequately to accept, process and redistribute by road, rail and the Underground system in London,

Printed image digitised by the University of Southampton Library Digitisation Unit

the continuous flow of passengers and accompanied luggage which will be generated. It is only by this means that high speed—125 to 150 m.p.h.—and high frequency of airport only services, unaffected by the present and future pattern, frequency and characteristics of equally important rail services serving other essential needs, could be provided.

4.12. In the event of the Railway Board's advanced passenger train project being regarded as the solution of the need to bring down the time distance, as compared with the physical distance, between any airport site and the centre of London, a reserved and completely new track would be a necessity for the whole, or for the greater part, of the distance. Allowing for starting, stopping and possible approach restrictions substantially reduced journey times might be contemplated. This takes no account of the pattern of train working which may have to be adopted within the airport satisfactorily to effect connections between incoming trains with up to, say, 1,000 passengers and luggage, connecting with many flights. Questions of cost, environmental disturbance, demolition and the associated drawbacks of major construction will all have to be taken into account. As, however, such will be inevitable in some degree if the speed of connecting services is to counter physical distance, it becomes a matter of determining where best in relation to the selected sites the advanced passenger train concept can best be applied to airport generated travel.

5. The London terminal

5.1. It is plain that a matter of great importance is the question of the location of an airport terminal in central London to accept passengers and baggage and to be a staging point to and from the airport.

Hitherto, roads have been the accepted mode of access to airports. Only in a few places in the world have alternatives been provided.

The available figures in regard to the ultimate passenger throughput at the projected third London airport indicate that, eventually, the movement volume between the airport and London may be on such a scale as to make it essential that some system of conveyance, complementary to road, and exclusively for airport purposes, should be provided.

It will not be sufficient just to devise means of providing for initial and intermediate requirements which cannot be expanded as the traffic expands.

Any system will need to be sufficiently attractive in speed, comfort and convenience when related to ultimate destinations as to ensure that it has customer appeal.

5.2. In the present state of technological development the most likely alternative system to cope with the anticipated traffic volume, at the high speed which physical distance may make necessary, is likely to be the British Railway Board's Advanced Passenger Train concept envisaging speeds of 125-150 m.p.h. over conventional duo-rail tracks.

Such a rapid transit system must be non-stop, must meet peak demands, should provide for luggage and must not be unduly restricted by the pattern of other rail services necessarily provided over the same routes for different requirements at lower speeds. Consequently, it will need an exclusive or virtually exclusive track.

5.3. An operational APT track could be provided at a cost by new construction throughout with all the attendant displacement, demolition, environmental disturbance, compulsory purchase of land, houses, and buildings which would be involved. It might be part of motorway construction. In, and approaching parts of London, the cost would be fantastic and, presumably, the consequences unacceptable. So within certain limits, use of existing rail routes or way leaves, if available, or made available, would be essential.

Use of existing routes would be dependent upon location, present and future use, and whether enough capacity could be made available, in whole or in part, to provide the exclusive, or virtually exclusive, track.

5.4. In each case, there will be a London terminal problem which will require to be related to the availability of distributive road, rail and Underground capacity.

Each of the four sites is located near to a main-line railway. The construction of a connecting spur to any of them would present no difficulty. The distances by existing rail, plus an airport spur line, to the London terminals would not vary to a degree that the development of the Advanced Passenger Train, and indeed of conventional high speed electrification and signal control, could not counter.

5.5. However, each route and terminal area directly served needs to be examined in the light of its present and future use—air traffic apart—its present and potential capacity in trains, the possibilities of modernisation and expansion and the cost thereof and the extent to which facilities which may be acceptable at intermediate stages can be expanded to meet the ultimate demand.

In the initial stages of airport traffic a varying number of train services, which would have to conform to the pattern of existing services and be largely excluded at commuter and other peak times, could be provided over the main line routes into Euston, St. Pancras and King's Cross. Electrification and associated signalling modernisation and terminal rebuilding, where not already undertaken, would increase the number. However, expansion in both main line express and commuter services, which electrification would promote, would be expected to take precedence.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.6. So far as railway line capacity is concerned, it is clear that whilst available routes have some capacity outside peak periods and that more could be made available through electrification and modernisation of signalling—but still limited in the peaks—there is no possibility of existing tracks being made available for sole use by an intensive airport service on the APT pattern. Entirely new construction with all that that would involve would be necessary, and there are, and would be, stretches and areas where this would be impracticable or excessively costly.

5.7. On the assumption that advantage is taken of the anticipated development of the Advanced Passenger Train concept which has the merit—where the occupation by trains of lower categories permits—of being able to make use of existing tracks, it is clear that one should look for rail routes to and terminals in London where spare capacity or possibilities for expansion exist on the scale ultimately necessary to cater adequately for maximum envisaged movement by rail.

5.8. It must be accepted that the King's Cross/St. Pancras area as a London terminal does possess certain advantages. The fact that the existing King's Cross and St. Pancras stations are not now to be combined, the diminution in freight traffic in the area, the availability, either now or in the future, of land areas for development, the accessibility via alternative rail routes—these collectively constitute reasons why the area must be considered. Additionally, from King's Cross and St. Pancras, there are frequent inter-city rail services to and from Edinburgh, the North East of England, the West Riding of Yorkshire and the East Midlands, whilst Euston nearby has electrified services to Birmingham and the Midlands, to Manchester, Liverpool and it is to be hoped ultimately to Glasgow.

5.9. There are, however, some disadvantages. The King's Cross/St. Pancras complex is situated some distance away from the main hotel centres and this would add considerably to cross-town journeys in central London, a disadvantage which would be lessened if an alternative air terminal further to the west were available, despite the fact that there are, of course, hotels in the Bloomsbury area, including some new ones. In addition, the King's Cross area has no convenient road links at present in a north/north easterly direction to link up with the M11 motorway. No such links will be available until such time as the London Motorway Box and the M11 link route are constructed.

5.10. The situation of King's Cross in relation to the London Underground system might be considered as an added reason for the choice of the terminal in this area because King's Cross has direct access to five Underground lines including the new Victoria Line which would form a link to what is intended to be the departure point for Gatwick and Heathrow. However, it is necessary to contemplate how air passengers who detrain at a terminal in this area are going to complete their journeys to their homes, hotels or other ultimate destinations. It is quite unrealistic to suggest that the London Transport Tube system could carry these passengers with their baggage, particularly as several trains an hour will presumably be arriving at the London terminal in due course. The London Underground system does not and cannot function on a 24 hours per day basis and at rush hour periods it is so congested as to be unattractive to airport travellers and reliance on Tube services would prove a sad end to a high speed journey.

It seems clear that in considering the question of dispersal from the in-town terminal, a substantial proportion of the traffic must be taken by road. Hotel buses and coaches could take some passengers and no doubt the Tube system a further proportion, but the bulk of the traffic is likely to be in private cars, hired cars and taxi cabs. The congestion which such traffic would cause in the King's Cross area would probably be totally unacceptable because of the poor nature of the road links at King's Cross.

The point of rapid dispersal is a formidable one and has a real bearing on the journey time as a whole. If the London terminal is placed at King's Cross then the journey time to the airport by train or by road from that point must take account of delay at the terminal. There could well be a strong case for choosing a terminal with better road communications to serve the London area generally even though this might require a slightly increased length of journey time from the terminal to the airport if by so doing the overall time of the journey would be shortened.

5.11. The main alternative to King's Cross as a terminal could be Marylebone. The present station and surroundings would, of course, require to be redeveloped to meet airport terminal needs but it is assumed that new buildings would, in any event, be required whatever location were chosen.

The distributive facilities of Marylebone by rail and Underground are admittedly not as good as those of King's Cross. Marylebone is served by the Bakerloo Line of the Underground system which gives direct access to Charing Cross and Waterloo but for access to Victoria and to King's Cross, St. Pancras or Euston it would be necessary to change either at Oxford Circus or at Baker Street respectively. It might, however, be practicable to make a direct connection with the Metropolitan Line.

5.12. It is suggested that the much improved pattern of road communications on the north west side of London would more than outweigh the disadvantage that Marylebone, at present, has no direct link to the Metropolitan Line services of London Transport. Also Marylebone is better situated generally in the distributive road pattern of London. Marylebone and King's Cross are, of course, connected by the improved Euston Road/Marylebone Road link and Marylebone

Printed image digitised by the University of Southampton Library Digitisation Unit

is close to the focus of the communications of north west London. From the point of view of passenger transit, moreover, road journeys from Marylebone to hotels and most main line stations would pass immediately through areas recognisable as one of the great cities of the world with prestige buildings and Hyde Park lining the route as compared with the commercial areas surrounding King's Cross.

It is consequently submitted that an air terminal at Marylebone, coupled with an airport coach service to the main line railway stations (including Victoria), would give an adequate pattern of distribution and could be a real alternative to the King's Cross/St. Pancras complex.

5.13. With regard to rail capacity serving Marylebone, the Aylesbury to Marylebone via Harrow line is a double tracked diesel multiple unit operated line with no existing spare capacity in the peak over the section shared by London Transport services between Amersham and Harrow-on-the-Hill, on the direct route to Marylebone. The provision of additional tracks on this section of the line would present major engineering problems and involve intensive social and environmental disturbance in the acquisition of land occupied by residential property.

However, there is another route via Princes Risborough, High Wycombe and Northolt Junction into Marylebone. This alternative route has a capacity at present of up to six trains per hour. Electrification, associated modern signalling, doubling of a single line section, and re-alignment of track would improve capacity to a degree which would provide for any likely level of traffic and the journey could be reduced to something in the vicinity of 40 minutes.

By new construction, quadrupling where necessary and possible, restoration of track, modernisation of signalling and some diversion of existing High Wycombe-Marylebone commuter trains into Paddington, it may also be possible so to develop the Princes Risborough route as to make it suitable and available for the operation of APT services at a speed of up to 150 m.p.h. for some considerable portion of the total distance of approximately 51 miles.

6. Air traffic control and other operational considerations

6.1. The most obvious factor which emerges from a consideration of Nuthampstead as a possible site for the third London airport lies in the fact that its operation would clearly require the cessation of operations at Stansted Airport or at least a very severe limitation of the use that can be made of that airport.

6.2. Stansted Airport is to play an increasingly important part in the general pattern of air traffic of London over the next few years having regard to the congestion which has already been reached at Heathrow and which is anticipated shortly at Gatwick. On Day 1, Stage I, evidence was given to show that Stansted would have 10,000 air transport movements by 1976 and total air movements of 50,000 in all, i.e. there would be 20,000 business air movements and 20,000 training air movements in addition to air transport movements. In order to handle this amount of traffic, it is clear that money will have to be spent to improve the facilities at Stansted Airport in the next few years. If, in fact, Nuthampstead is chosen and Stansted Airport consequently has to close down in the late 1970s, any further capital expenditure incurred at Stansted will have to be written off and reflected in the cost/benefit analysis calculations. The value of the present runway and facilities together with any further capital expenditure to be incurred would clearly have a life stretching far beyond the late 1970s and much of that value would have to be written off. On the other hand, if one of the other three sites were chosen it is probable that continued use could be made of Stansted Airport for business flying and training flights although the number of its air transport movements might have to be restricted according to the pattern of flight paths which emerges from the study of this complex problem.

6.3. It will also be necessary to take into account in the cost/benefit analysis the costs of the transference of the services now provided by Stansted and to be provided in growing volume by the mid and late 1970s. In essence, all these services are essential and will have to be accommodated within the general London region of flying. If they are limited or prohibited at Stansted then a choice must be made as to where such air movements can be transferred with the associated problems of access, terminal buildings, fuel and maintenance installation, etc.

6.4. There is the further factor that if, at any future stage, it becomes necessary to contemplate a fourth London airport (which may be a conclusion forced upon the Commission by virtue of the severe difficulties of providing adequate surface access to handle more than a particular number of passengers per annum) it seems probable that the location of a third London airport at Nuthampstead would have a limiting effect upon the choice of future sites. It is appreciated that the Commission's function is concerned only with a third London airport at this stage but if, in fact, a choice of the airport is such as to limit severely further airports in the London region this would be a disadvantage to be avoided if possible and, again, should be reflected in the cost/benefit analysis.

7. The cost/benefit analysis: general note on valuation

7.1. Volume VII of the *Papers and Proceedings* of the Commission states on page 3 (para. 10) that the Commission will assume a life for the third London airport of 30 years from its coming into service. Thus the benefits to be derived from the airport will have a limited life.

Printed image digitised by the University of Southampton Library Digitisation Unit

7.2. The base date adopted for cost and benefit calculations is taken to be 1975 (para. 9).

7.3. The bulk of the capital expenditure at the third London airport is to take place between 1975 and 1995 and the rate of interest to be used in the calculations is 8 per cent (para. 8).

7.4. It is reasonable to assume that the airport will come into operation in 1977 and thus its life will expire in the year 2007, for cost benefit purposes—i.e. a period of 32 years from 1975.

7.5. These assumptions have certain valuation consequences of considerable weight—especially in the assessment of amenity and existing land use values as follows:

a) The years purchase attributable to a capital investment over a limited life of 32 years at 8 per cent (providing for a sinking fund at 8 per cent also over that period) is 11·435 YP. However, the whole of the expenditure will not have been incurred by 1975. It would be realistic to adopt a date midway between 1975 and 1995 as representing the average date from which the *whole* of the capital expenditure to be made (i.e. that after 1985 equally as that before that date) creates benefit.

   Thus the capital expenditure in total will have an average life of 22 years for which the appropriate years purchase at 8 per cent is 10·201 YP.

b) When considering the cost of the project in relation to existing values to be destroyed, e.g. landscape amenity, agricultural value, existing buildings and the like—the damage done is permanent. Hence it is appropriate, on the cost side of the calculation, to compare the years purchase in perpetuity at 8 per cent which is 12·5 YP.

c) The difference of 2·299 YP represents 18 per cent of the figure of YP in respect of perpetuity. Thus to compare the costs and benefits it will be necessary to increase the values ascribed to the existing permanent elements to be destroyed by the airport by 18 per cent in order that a fair comparison can be made.

7.6. In the year 2007 when the expected life of the airport ends, it will be necessary to incur capital expenditure to restore the land to a reasonable condition. The present value of £1 to be spent in 32 years from the base date of 1975 is £0·0852 (at 8 per cent) and such terminal expenditure (over and above the residual value created) should be reflected in the analysis as an addition to costs.

8. The valuation of the environment in the cost/benefit analysis

8.1. Cost benefit analysis studies in the past have failed to give due weight to the assessment of amenity factors and to the value of the quality of good environment because the yardstick of assessment has been based upon economic values determined from individual market price transactions.

8.2. In other words it is argued that if no one is prepared to purchase land and/or buildings at the prevailing market price in order to preserve the existing uses then the market price (which includes the development value) determines that the value for development purposes is greater than the value of the loss to amenity that such development would necessarily cause by the cessation of the existing uses and/or the demolition of the buildings in which they are carried on. Similarly it is argued also that the market price of an existing house (without development potential) reflects all the environmental advantages and disadvantages attaching to it.

8.3. Such an approach, however, begs the question of the relative nature of the values. A market price is the amount agreed between a specific vendor and an individual purchaser who has the ability to command the purchase price. It is a transaction between two parties only—fixed in accordance with the economic climate of the moment.

Amenity values, however, are social values and should not be assessed by reference to the actions of individuals—who are, as a general rule, motivated in their capital transactions by principles of advantage arising from individual investment rather than from social considerations.

8.4. To give a practical illustration of the difference between market values and social values, take the case of a building plot worth £2,500 for the erection of a house and having a mature and beautiful tree on the plot which would necessarily have to be cut down and destroyed if a house is built on the site. The overwhelming majority of persons could not even begin to contemplate the expenditure of £2,500 to preserve one tree and a small area of land from development. If, however, the tree is in a prominent location and its beauty enjoyed by many persons who pass the site, or who have a view of it—then it is wholly within the bounds of practical economic reality that 20,000 persons might be prepared each to contribute the modest sum of 5s. for such enjoyment, namely a sum of £5,000. Because there has been, until comparatively recently, no machinery for such social values to be expressed, the operations of the market have placed the preservation of such commonplace but socially important scenes out of the scope of practical possibilities. Factors of time as much as of money place the large and unco-ordinated number of persons who would regret the loss of amenity and who are, in reality, prepared to place a social value upon the *status quo* greater than the market price for development, at an overwhelming disadvantage in acting positively and in time.

Printed image digitised by the University of Southampton Library Digitisation Unit

The open market is concerned only with the realisation of an economic need, i.e. to find a single purchaser with the money at hand to pay for his purchase immediately.

8.5. In like manner the market value of a house does not necessarily represent its social or amenity value. If the house, for example, is a building of special architectural or historic interest the value to the community of preserving it in use as a house may well substantially exceed its value as a residence. Moreover the demolition of one house forming part of an architectural group of aesthetic charm and appeal may destroy amenity value even though the remaining houses continue to maintain their former market prices.

8.6. In neither case, therefore, can the market price of an individual property be accepted as expressing the value of the property as part of the environment, such prices are merely those which individual purchasers with access to the necessary funds will pay in competition with other persons in the open market, for that specific property.

8.7. The environmental advantages enjoyed by an individual property are often at risk since they are not owned or within the control of the freeholder. Thus the risk of the possible loss of such amenities is reflected in the market price. Where, however, the area under consideration is a large area containing within its own boundaries all or many of the factors which create the quality of the environment and there is also continuity of ownership, control and management, then it is found that market prices rise to a level greater than that of comparable houses elsewhere, e.g. the Dulwich College Estate in London. Thus it can be seen that the social value or amenity value of a residential property forming part of a protected area may be reflected in the individual market price, where certain criteria are met.

8.8. It is because social values are as real as market prices, and in many cases exceed them, that the climate of public opinion has accepted the restrictions, inconveniences and cost of the system of Town and Country planning control, the very substantial costs of its administration being borne by the taxpayer and ratepayer. Moreover, the costs of such administration bears more heavily upon individual property owners and taxpayers than upon the Ministry and the planning authorities despite the heavy costs incurred by them. For example, it costs much more to prepare and make a planning application than it costs to grant consent—and the overwhelming proportion of applications for planning permission are granted. In so far as it is possible to quantify such total costs and to allow for all the imperfections of our present town planning system the sum expended is at least an earnest of the existence of social values and of the emphasis placed by the community on the desirability of maintaining as good an environment as is possible in modern conditions.

8.9. In order to ascertain whether or not the social values of properties in a given area are likely to exceed the totality of the individual market prices of those properties, it is suggested that the following criteria be applied to areas of countryside such as the Commission are considering:

1) Is the landscape of good quality and attractive in its contours, woods and other natural features?
2) Is the area free from disfiguring industry or commerce which might cause loss of visual amenity, or interruption by noise or air pollution and heavy commercial traffic?
3) Is the countryside in full and productive activity or does it show signs of economic decay and decline?
4) Are the buildings of positive value aesthetically with a high proportion of those with architectural merit?
5) Is the area recognised by the planning authorities as of high landscape value and the villages and buildings as fit subjects for conservation areas under the Civic Amenities Act?

If the answer to all these questions is yes then the area clearly possesses a high degree of visual and residential amenity and is likely to possess a social or amenity value in excess of its market value.

8.10. The attempt to quantify such social or amenity value is exceedingly difficult since the amount will depend largely on the number of people who will be able to enjoy the environment. Clearly an open space in a highly congested urban area will have a far greater social value than an equal area of much greater beauty far removed from large centres of population and rarely visited. Consequently it is necessary to relate the land to the degree of usefulness it possesses in this social sense. The following further questions need to be answered:

a) What is the number of resident population in the area of countryside and are those numbers being maintained?
b) What number of visits is made to the area by non-residents for countryside recreation, e.g., cycling, walking, picnics, the Sunday drive in the car—and how frequently are the visits made? (Additionally, the total number of visits per annum should also be ascertained.)
c) Whether the urban areas which resort to this part of the countryside are expanding in population and therefore likely to make increasing use of the area.
d) What firm planning proposals exist which will make the area more easily accessible to large urban populations than heretofore?

Printed image digitised by the University of Southampton Library Digitisation Unit

e) What level of prosperity and car ownership is enjoyed by the urban areas associated with the countryside and whether such level is likely to increase?

f) What alternative areas of similar attraction (i.e., similar types of countryside) are readily accessible to the urban populations in question?

8.11. The answer to such questions will tend to indicate the scale of the existing access to and the likely future availability of the amenities and hence their social and planning importance. The greater the degree of such accessibility and the associated populations, the greater should the social value be assessed over and above the aggregate of the individual market values in the area.

8.12. Consequently, it is suggested that in a cost/benefit analysis of a project as large as that of the third London airport—which is probably the largest single development project mooted in this country and which involves the construction of new towns as a mere by-product—it is necessary to multiply the market values of the properties and countryside affected by a factor representing the social or amenity value. Whilst it is not possible to suggest specific or definite factors of multiplication (as this is largely an uncharted and unresearched problem) there can be a relative assessment of the criteria in respect of the four sites being considered by the Commission.

8.13. It is appreciated that the views expressed above may be applicable to other inland sites as well as to Nuthampstead. It is no part of the case of the Nuthampstead Preservation Association to decry the merits of the alternative inland sites, although it is considered fair to remark that the likely injury to amenities at Foulness falls far below that to be anticipated at the three inland sites, but it is pertinent to point out that on the application of such criteria the Nuthampstead area qualifies in every particular and the loss in amenity and social value must be as high—if not higher—than in any other case under consideration. For this reason the Association is anxious that due weight be given by the Commission to the particular and valuable contribution, which the Nuthampstead area is making and will increasingly continue to make to the quality of environment and amenity not only for its own residents but also to the many tens of thousands of visitors who resort to the area each year in increasing numbers to refresh their spirits with a rural scene which is in such contrast to their own urban environment.

8.14. In essence it is argued that the application of a strict research methodology conceived in purely market/price terms cannot fairly reflect the intangible qualities of good environment and of amenity in our present state of understanding of these problems. It would, therefore, produce an inaccurate and unfairly low assessment of the existing environment in the cost/benefit analysis unless due weight is given to the social and amenity factors mentioned above. It is proven from many practical examples that a high value attaches to amenity considerations. There are, for example, numerous cases of local housing authorities who could discharge their duty of providing dwellings for those on their housing lists most cheaply and quickly by building on virgin land. Many authorities have decided that the value of such open land from the amenity point of view justifies them in retaining such land in agricultural or open space uses and expensive flat development on urban sites has been undertaken specifically to conserve the virgin land. The added costs of the flat development are a measure of the amenity value of the land preserved from development.

8.15. The value to be placed upon amenities will rise proportionately to the ability of the population to enjoy and appreciate them. Such ability derives from an adequate level of income in many cases. Thus it follows that as the level of real income rises the value to be placed upon amenities and good environment by the community will also rise and, in all probability, rise at a faster rate than market prices. Thus the present value of future amenity factors should be deferred or discounted by reference to a rate of interest which recognises the growth factor of such values and if 8 per cent is considered appropriate for normal capital investment a much lower rate may well prove appropriate for the assessment of amenity values.

Appendix I

Calculation of road traffic towards London to be generated by the airport in 1985

(using the method adopted by the Ministry of Transport in Case I and Case II but allowing further for the traffic of airport employees)

1. Total passenger traffic in 1985 (both directions)	=	45 million passengers
2. Standard Busy Rate (one direction) in passengers per hour	=	11,250 passengers
3. Deduct 15% transfer passengers who do not leave the airport	=	1,688
∴ Passengers leaving airport	=	9,562 per hour
4. Assume 85% wish to travel to London	=	8,128 per hour
5. Assume peak for air passenger traffic to be 20% above SBR ∴ Add		1,625 per hour
Total to London	=	9,753 per hour

Printed image digitised by the University of Southampton Library Digitisation Unit

6. Assume volume of such traffic commencing with peak hour on the road to be two-thirds = 6,251 per hour

7. Assume (Case I) that 50% travel by coach with 25 passengers each
∴ 3,125÷25=125 coaches per hour
Convert to pcus 3 — 375 pcus

8. Assume remainder travel by private car
∴ 3,125×1 = 3,125 pcus

9. Assume service traffic in a ratio 750 vehicles per hour (one way) for each 20 m. passengers per annum
∴ 750×2·25 = 1,687 vehicles
Convert to pcus×1·55

2,614 pcus
Allow 50% — 1,307 pcus

4,807 pcus

Add

Employee traffic at peak hour of road
No. of employees 45,000
Allow 1 car to each 2½ employees 18,000 cars
Assume 15% of employees will use the M11 in a London direction — 2,700 pcus

Total airport traffic — 7,507 pcus
Add non-airport traffic (MoT estimate (p. 316, para. 839, Vol. I of *Proceedings*)) — 2,250 pcus

Total traffic on M11 (one way) — 9,757 pcus
say 10,000 pcus in the peak hour (one direction only)

Case II

7. Two-thirds of passengers by rail leaving one-third by car=
2,083 passengers×1 — 2,083 pcus
8. Service traffic as before — 1,307 pcus
9. Employees as before — 2,700 pcus

Total Airport traffic — 6,090 pcus
Add Non-airport traffic — 2,250 pcus

Total traffic (one way) — 8,340 pcus

say 8,500 pcus in the peak hour (one direction only)

N.B. (1) It is considered that the Ministry of Transport's allowance for service traffic probably makes an insufficient allowance for the carriage of freight which is growing at a faster rate than passenger traffic.

(2) Nothing has been allowed in the Ministry of Transport's method of calculation to revise the non-airport traffic requiring to use the M11. The establishment of New Towns to house the large populations serving the airport and the new industries attracted to the area will generate very substantial additional traffic some of which is likely to use the M11.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Oxfordshire County Council

SUBMITTED BY MR. G. G. BURKITT (*Clerk of the Council*)

On the instructions of my Council's County Planning and Countryside Committee I am to make the following Stage III Submission, namely that although the site at Foulness will involve heavy engineering costs in making up the area required for the airport, this will make a worthwhile addition to the total land stock of the country which is a wasting and irreplaceable national asset. On the other hand, if an inland site were chosen, the country would lose for all time a substantial area of valuable agricultural land. Moreover, whilst the land required for any inland site would need to be purchased at current market values, the area required at Foulness would involve no substantial acquisition costs.

Whilst these factors will no doubt be dealt with in the cost/benefit analysis being undertaken by the Commission, as they are not specifically referred to in the Buckinghamshire County Council's Stage III Submission, my Council's County Planning and Countryside Committee thought it right to lay particular emphasis on this aspect of the evidence in support of locating the third London airport at Foulness.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Ramblers' Association

The Ramblers' Association has a membership of approximately 100,000 individuals and members of affiliated clubs, of whom some 12,500 are resident in the Southern Area, an administrative division covering roughly the Home Counties and East Anglia.

Those we represent are people who seek their recreation on foot in places as remote as possible from the bustle and noise of the 20th century urban environment. We find that this desire for space to exercise the legs in the fresh air and peace of the countryside is a growing one, as life in the towns and movement on the roads become less tolerable. Spectacular beauty and freedom to roam at will are not essential to this purpose. Much pleasure can be derived from walking footpaths and lanes which give "access of the eye" to agricultural land in good heart.

We have followed with interest the lengthy debate on the siting of the third London airport. The earlier selection of Stansted we viewed with concern and apprehension, but it is our business to take a regional, rather than a purely local, view of these matters and we knew that if Stansted were rejected there could be few places in the South East to which similar objections in terms of human values could not be applied. Now we are presented with four feasible alternatives: Cublington, Nuthampstead, Thurleigh and Foulness.

In urging the rejection of the first three of these, we have in mind that an airport, unlike most other forms of land-use change, can benefit but little from any attempted landscaping. It is not simply a matter of a strip of asphalt and a few hangars, but the creation of a virtual new town, the imposition of intrusive noise over a very wide area and the necessity for improved land communications with the metropolis have to be taken into account. (This is quite apart, of course, from technical factors which we are not qualified to judge.)

We believe that, now that several studies have indicated its feasibility, the use of Foulness offers the possibility of disturbance to the least acreage of existing agricultural land and the smallest number of people of the four sites. The operations of the Ministry of Defence will presumably have to be conducted elsewhere and we must admit to some apprehension on this score, but we can think of only one major factor which could conceivably make the choice of Cublington, Nuthampstead or Thurleigh more attractive—that of cost.

Undoubtedly the reclamation of land and the establishing of acceptable rail and road links with London present a formidable challenge to the choice of Foulness on financial grounds. However, we believe that there are tremendous human values which cannot be measured in financial terms. If it has been proved that a third London airport is necessary to this country's economic future, then the extra cost must be faced and paid for as far as possible in the long run by those who will benefit most from its existence.

Inevitably our thoughts must turn to the future and the possibility that in 15 or 20 years' time we shall hear that a *fourth* London airport has become imperative. We believe that such a prospect will be intolerable to the people of this region and that consideration must be given *now* to how far we are prepared to go in accommodating the fastest and biggest and how far such accommodation may disregard the undoubted truth that this country is first and foremost a place for human beings to live in.

It is not the intention of this Association to appear at, or make representations to, the individual local inquiries which are being arranged. This would merely involve the repetition on each occasion of the arguments we have set out in this letter, and which we hope your Commission will consider when making its final judgment. We are making the terms of this letter available to the press.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Regional Studies Association, East Anglia Group

Preface

"To inquire into the timing of the need for a four runway airport to cater for the growth of traffic at existing airports serving the London area, to consider the various alternative sites, and to recommend which site should be selected." (*Hansard*, May 1968 (1a) Col. 33.)

The basis for Part I of this submission is the view that these terms of reference contain an ambiguity which, unless explicitly considered, could vitiate the conclusions made by the Commission.

The ambiguity arises if the growth of traffic at existing airports serving the London area is likely to include traffic not generated by the London area. Evidence presented later suggests that a substantial fraction of the present traffic at airports serving the London area is generated outside the South East Standard Region. The evidence also implies that, other things being equal, at least the same proportion of the growth of traffic at these airports would be generated outside the South East. It is not clear, therefore, whether the Commission is intended to recommend a site for an airport to serve the London area, or to serve a much larger area extending (as the origins of the present traffic through London's airports do) over the whole U.K.

The only way of removing the possibility of contradiction would be to assume that by the "London area" is meant the whole U.K. This would be a rather extreme assumption, and in any case does not appear to have been the intention of the Minister: "It is generally agreed . . . that whatever plans one might have for other airports there is almost certainly a need for a third to serve the London area. Therefore the terms of reference which I have given will, I think, be adequate for the enquiry." (*Hansard*, May 1968 (1a) Col. 36.)

However, the Commission, from the as yet small amount of published evidence, would appear to be planning for an airport to serve the nation (e.g. "It is envisaged that new high standard dual carriageway links would be needed to M.11 for London traffic and to A.1 for Midlands and Northern traffic" (1b, p. 3)).

It therefore appears that the ambiguity is a real one and, it might be inferred, that the Minister and the Commission envisage different solutions. The Minister's statement also implies that an airport serving the London area could be satisfactorily planned in isolation from other new airports which might arise to serve the rest of the country. This implication is questionable from the point of view of national efficiency, and an indication of the size of its effect on national efficiency should be one of the by-products of considering the ambiguity. The two alternative solutions considered are consequently:

i) The third London airport as a national airport.

ii) The third London airport, primarily serving the London area, as part of a more general airport plan.

The alternatives are considered in relation to their effect on the location and the timing of the need for the specified four runway airport. Neither involves going outside the strict terms of reference. The considerations advanced do suggest that the Commission's results might be difficult to state as a final decision about a specific site without qualifying statements as to what other site might be favoured if the assumptions (especially political) were different. However, such qualifications could be omitted from the final report. This does not reduce the need for explicit consideration of this ambiguity during the Commission's work: later analysis tends to show that both location and timing are greatly affected by the alternative chosen.

I. Location and Timing of the Need

Outline

This part of the submission is set out in the form of answers to a series of questions. The questions are raised by the lack of clarity in the terms of reference noted in the preface, but most of them would be relevant whatever solution to it was chosen, i.e. would also be relevant if the contradiction were ignored. Answers are attempted partly to emphasise the relevance of the questions, and partly to show that the questions are not unrealistically demanding in relation to the resources of the Commission. While effort has been made to see that the answers are as comprehensive as possible, in view of the very limited time available the main part of whatever value they have must be as illustrations of what the Commission might attempt to do more fully. Consequently at the end of this part a procedure is suggested which would allow a more comprehensive analysis to be made.

1. What is the present regional pattern of air traffic generation in the U.K.?

This question should, to provide a basis for the Commission's findings, refer to the future rather than the present. However, the present pattern is sufficiently obscure for further analysis of it to be a prerequisite to projection. An answer to this question does not cover all the necessary ground but does provide an indication of the present importance of the above-mentioned ambiguity in the terms of reference.

The obscurity of the present pattern of traffic generation is implicit in a comparison of rows (a) and

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) of Table I. The first row gives the distribution of U.K. population by standard region and the second gives the percentages of the air passenger total using airports in the various regions. The most striking difference is that the South East with 31 per cent of the population handles 68 per cent of the passenger traffic. From Table IV(d) it can be seen that this region handles about 76 per cent of the freight total. Over half the national total for both classes of traffic is handled by Heathrow airport alone. This difference at least suggests that there may be a difference between the pattern of air traffic generation and that of points of transhipment to and from air travel.

The analysis made here is mainly devoted to breaking down Heathrow's traffic regionally. Standard Regions are used not because they are necessarily a good framework for treating airports, but because they are the smallest sub-unit of the U.K. for which we can present data (a list of the abbreviations of their names is given in Appendix A). The break-down of Heathrow's traffic is made by assuming causal correlations to exist between certain known regional distributions and the classes of traffic using the airport. Evidence as to causal factors has been difficult to find. The main source used is the CEIR report on the New Jersey-New York metropolitan area (CEIR (3) 1960). This raises questions as to the validity of using the results of a U.S. study done in 1959 to interpret U.K. data which is mainly for 1967. In most cases no U.K. analysis has been found. However, the use of CEIR results can be defended on other grounds. One possible source of justification is that innovations in the mass use of air transport might be assumed to reach the U.K. from the U.S. with some time lag. Another point is that several of the relationships transferred from the CEIR study to U.K. data may be thought to hold generally—for instance, the relationship between income and frequency of trips by air and the fact that certain echelons of business employment have higher trip frequencies than others. In view of the mixture of U.S. and U.K. relationships used the abbreviations (U.S.) and (U.K.) are inserted where the context does not make clear the origin of a given item of data.

Unless otherwise stated all CEIR data is for trips made to points outside the New Jersey-New York metropolitan region but within the U.S. Sixty-three per cent of the passenger traffic (out of the 78 per cent for which destinations are specified) travelled to points within 1,100 miles of the region (CEIR, 1960 (3) p. 74). This is equivalent to the range of most European trips made from London.

One way of simplifying the identification of causal factors is to separate as far as possible different classes of traffic. Stratford identifies five:

(1) Business (2) private (3) tourist (4) cargo (5) government

each having distinct characteristics (Stratford (4) 1967 p. 5). This classification is followed here except that no way has been found to distinguish private from tourist passengers.

A. Passenger traffic

Firstly it should be stated that all calculations are made in terms of international passengers on scheduled flights only (and also excluding transfer passengers except where stated). The gross figures for Heathrow passenger traffic have been broken down by using relationships established in a 1966 study of the airport (London Airports Traffic Study 1967 (5)). Its use requires a number of major assumptions which are listed below:

i) This survey is based on outgoing passengers only. It is assumed that, taken over a year, incoming passengers will show the same gross characteristics. Since migration and trips lasting more than a year may be expected to be a small part of the total this assumption does not seem very unrealistic.

ii) The data is presented for peak season (August) weekdays and Sundays and off-peak (November) weekdays and Sundays. These are near the extremes of the annual cycle, and it is assumed that their mean gives a good indication of the true mean. No direct supporting evidence can be cited for this assumption. Indirectly the fact that all passengers are divided fairly equally between business and pleasure purposes agrees with figures for New York's airports in 1959 (CEIR 1960 (3) p. 6).

iii) No distinction is made here between U.K. residents and non-U.K. residents as to journey purpose. It is assumed that the proportions are the same.

iv) The business/pleasure dichotomy must be accepted as it was applied in this survey, simply on the basis of a question in the departure lounge at the airport.

Evidently no great precision can be assigned to results based on these assumptions, hence the figures are expressed in rounded form.

From Table 3-5 of the Traffic Survey it is calculated, following the assumptions listed above, that about a fifth of the total number of passengers were generated by areas outside the "Metropolitan region". This aggregate figure conceals a variation between U.K. residents (for which it is higher) and non-U.K. residents (lower). The metropolitan region covers much, but not all, of the South East region. Thus these figures do not give a clear indication of the proportion generated in the South East. There is a further reason for treating them with caution. About 40 per cent of these outgoing passengers gave origins lying in the small area classified as Central London (30 per cent of U.K. residents and 70 per cent of non-U.K.). It is not impossible that some of these might be over-night

Printed image digitised by the University of Southampton Library Digitisation Unit

hotel stays representing intermediate points on journeys originating outside the South East and ending at the airport. Errors of this kind do occur in such traffic surveys (e.g. National Ports Council Report 1968 (6) p. 62). For these reasons and in order to break down the passenger traffic into classes indirect methods will be used to make another set of regional allocations.

A further assumption necessary to make these allocations is that the relationships found for Heathrow obtain for all U.K. traffic, excluding approximately 10 per cent of the traffic which goes through airports other than those of the South East, Manchester, Glasgow and Northern Ireland. This excluded 10 per cent is assumed to be entirely domestic. Support for this comes from an examination of flight schedules which show that these other airports have relatively few international compared with domestic flights (Airport Times, 1968 (29)). In 1967 Heathrow accounted for about 12 million, its overflow Gatwick for about two, the remainder of the South East for another two, Manchester for 1·5, Glasgow for 1·75 and Northern Ireland for 1 million of the total of about 20·25 million for which the Heathrow relationships are assumed to hold.

A further preliminary is to remove the domestic portion of the four regions' traffic. This is done because it would seem likely that the main part of the U.K. domestic air traffic originates fairly close to the airport it uses. The small size of the U.K. suggests that domestic journeys involving long trips to an airport would probably be made wholly by surface means. In looking at the pattern of traffic generation compared with points of transhipment to and from air travel, the main difference between the two patterns is likely to be caused by international traffic, which has few airports to serve it and which usually involves longer total journeys and (excluding Irish border traffic) at least one change in transport mode.

From the Traffic Study Table 3-6 (5) it is calculated that about 23 per cent of Heathrow's traffic is domestic. Applying this to the 20·25 million passengers referred to above this produces a domestic fraction of 3·6 million. In order to break down the assumed 15·6 million international passengers by type, two further relationships were obtained from the Traffic Study. From Tables 3-5 and 3-6 (5) are derived the facts that the proportion of U.K. resident travellers to non-residents is 53:47, and of business to pleasure purposes is 36:64. These relationships are then applied to the U.K. international traffic:

U.K. 15·6m.			
U.K. residents (53%) 8·3m.		**non-residents (47%)** 7·3m.	
Business (36%)	Pleasure (64%)	Business (36%)	Pleasure (64%)
3·0m.	5·3m.	2·6m.	4·7m.

These groups will now be discussed separately. All the distributions used to allocate these totals involve the extra assumption that the length of trip to and from the airport has no effect on traffic generation (considered from another point of view this amounts to assuming that airport facilities of equal quality are available in all regions). The plausibility of this assumption is considered later (pp. 114-115).

1) *Non-residents (pleasure)*

This total has not been allocated, beyond assigning the appropriate fractions of the total to the four international areas considered (Table III(d)). This leaves the South East with the majority of the traffic (79 per cent). It is taken that all this part of the traffic will enter and leave by way of the South East.

2) *U.K. residents (pleasure)*

The various distributions relevant to this class of passenger have been expressed as percentages which facilitates comparison with the 1967 distributions of population (a) and passengers (b) Table I.

The simplest method would be just to use overall population distribution Table I (a). This would greatly reduce the passenger total generated by the South East. More realistic methods involve using relationships from the CEIR study. Income has been shown to be closely associated with the propensity to use air travel. The percentage of U.S. population who took at least one air trip is quantified by Lansing for 1962 in relation to classes of family income (Lansing 1966 (12) p. 309). This shows a rapid increase with income particularly in the very high income classes. A cruder CEIR classification for *all* trips by income class for (a) all (non-transfer) passengers, (b) personal trips, shows a similar curve (CEIR Table 2-4). The CEIR curve is used because it is expressed for all trips per individual.

The question is then how to fit this curve on to the U.K. income data (Regional Statistics 1968 (7) Table 45). The curve is very strongly skewed to the right so that if, for instance, the propensity to use air travel differed between a given U.S. high income class and the equivalent U.K. one the results of a direct application of the U.S. curve to U.K. data could be very misleading. Consequently the results of a range of fittings were considered. In each case the rate of air travel per 10,000 U.S. population was applied to suitably aggregated U.K. income groups and the resulting regional distributions expressed as percentages of their total.

Table I gives the results. Row (c) gives the distribution for "personal" trips with the curves fitted directly. The distributions differ very little if all trips are considered. Business, official and other trips show the same relationship with income as do personal trips. The curve was then moved one income class down so that if, for instance, middle income classes were less

Printed image digitised by the University of Southampton Library Digitisation Unit

Table I. Percentage distributions used in distributing U.K. (pleasure) traffic

	N	Y	EM	A	SE	SW	W	WM	NW	S	NI
(a) U.K. population (1967)	4	9	6	3	31	7	5	9	12	9	2
(b) Air passengers (1967)	2	1	1	—	68	1	1	2	9	12	4
(c) Personal trips (income)	4	8	5	2	38	6	4	9	11	8	2
(d) 1967 personal (metrop./non. metrop.)	6	9	5	2	36	5	4	10	14	9	2
(e) 1981 personal (metrop./non. metrop.)	6	9	5	3	33	6	4	10	14	9	2

The origins of these distributions are discussed in the text, pp. 110-115.

Table II. Regional distributions used in distributing U.K. and non-U.K. (business) traffic

	N	Y	EM	A→SE	SW	W	WM	NW	S	NI
(a) All non-industrial Civil Servants (G.B.)	6	4	4	52	8	4	5	9	8	
(b) Crown Rateable Value (E. & W.)	5	4	5	61	8	4	7	7		
(c) Civil Service headquarters staff (E. & W.)	..	..	..	71	..	..	..	..		
(d) Office Business I.V. (E. & W.)	1	2	1	79	1	1	2	5		
(e) Office Employment (E. & W.)	4	6	—	49	6	3	14	20		
(f) Business trips (based on CEIR Report)	6	9	6	2 33	6	5	10	12	9	2

.. Percentages not calculated.
Sources of distribution discussed on pp. 113-115.

Table III. Regional allocation of passenger traffic (millions of passengers)

	N	Y	EM	A	SE	SW	W	WM	NW	S	NI
(a) U.K. (pleasure)	0·21	0·42	0·27	0·10	2·01	0·32	0·21	0·48	0·58	0·42	0·10
(b) Business (U.K. and non-U.K.)	0·04	0·08	0·04	—→	3·00	0·04	0·04	0·08	0·19		
(c) Government (U.K. and non-U.K.)	0·01	0·005	0·01	—→	0·73	0·01	0·005	0·01	0·01		
(d) Non-U.K. (pleasure)	—	—	—	—	3·70	—	—	—	0·35	0·40	0·20
(e) U.K. domestic	0·38	0·32	0·18	0·01	3·70	0·25	0·15	0·56	0·96	0·14	0·23
(f) Total	0·64	0·825	0·50	—→	13·25	0·62	0·405	1·13	2·09	(2·76)[1]	(0·98)[1]
As percentages of the sum of row (f)	2·7	3·5	2·1	—→	57·1	2·6	1·7	4·7	7·3	11·6	4·1

[1] Since the totals for Scotland and Northern Ireland are incomplete, the actual 1967 figures are given. ((2) Table IV. 1.)
Sources: (e) U.K. domestic passengers taken from ((2) Table IV. 1) except that SE, NW, S and NI totals are adjusted as discussed on p. 111.
The derivation of the other rows is discussed pp. 111-115.

Table IV. Regional air freight shipments

	N	Y	EM	A→SE	SW	W	WM	NW	S	NI
(a) Great Britain*	5	4	5	53	3	4	14	8	5	
(b) Heathrow (Sept. 66)	4	5	5	63	2	1	10	3	7	1
(c) U.K. (67)	3	3	3	58	1	1	6	11	9	5
(d) U.K.*	5	4	5	51	3	2	13	7	5	5
(e) U.K. 1967	0·5	0·4	0·4	76·4	0·4	0·1	0·9	9·5	5·2	4·2
(f) Electrical engineering goods employment (G.B.)	5	7	7	40	4	2	14	14	8	

(b) Source: Smith (6) p. 240.
(c) Source: Edwards Committee (2) Table IV.1 combined with Smith (6).
(d) Method of derivation discussed in text p. 115.
(e) Source: Edwards Committee (2) Table IV.1.
(f) Source: Humphrys, 1964 (15).

Printed image digitised by the University of Southampton Library Digitisation Unit

strongly represented in the South East than elsewhere, the percentage of trips generated by that region would fall. In fact, in the highly rounded terms used, there is no change in the regional distribution. Next the curve was moved up by one income class which reduces the dominance of the very high income classes. After rounding, the only significant change is the reduction of the South East percentage from 38 to 35, although this is still much higher than its population share of 31 per cent. In short, all the income-based allocations which were tried strongly favour the South East and the way in which the U.S. curve is fitted is not important.

A somewhat different method of allocation is suggested by Fig. 2-5 of the CEIR study. This shows a considerable difference between traffic generation per head of the New Jersey-New York metropolitan region compared with that of the other parts of these two states (even though the latter are quite highly urbanised). The difference is almost the same for business and for personal trips and is in the approximate ratio of 7:4. It is not known to what extent this difference may be due to income inequalities. The U.K. statistics contain a breakdown for conurbations (*Regional Statistics*, 1968 (7) Table 5). The above ratio figures were applied to conurbation and non-conurbation populations by region. This was done for both 1967 and 1981 projected figures with the difference that since no projections are given for the conurbations this assumes in effect that none of the conurbations will grow during the interval. Table I shows that this operation produces a lower concentration on the South East region for 1967 (9) than did the income method, which falls in 1981 (h) almost to the current South East proportion of the U.K. population.

A better method of allocation would depend upon a more comprehensive analysis of the many variables which might be expected to affect traffic generation. Long (U.S.) has attempted such a calculation, but his empirical application was hampered by data problems and, for example, produced a negative correlation between number of air trips and income about which he expresses some doubts (Long 1967 (14) pp. 203-204).

The income distribution (row (c) of Table I) has been used to distribute the total of 5·3 million U.K. residents (pleasure) to produce row (a) of Table III. If population distribution (row (a) of Table I) is used the South East total falls from 2·01 million to 1·6 million and if the metropolitan/non-metropolitan distribution (row (d) of Table I) is used the total for the South East is hardly affected.

3) *U.K. residents and non-residents (business)*

These are treated together, in the absence of evidence that the national origin of businessmen affects their regional generation within the U.K. First a comprehensive breakdown can be made based on CEIR Table 5-4 and the U.K. regional employment figures (*Regional Statistics* 1968 (7) Table 8). The former gives the number of trips made to points outside the New Jersey/New York region by business residents of the region per thousand employees for each of a number of industrial categories (excluding only agriculture). By roughly aligning this industrial classification with the U.K. one (a process which is set out in Appendix B) a set of U.K. business passenger figures can be calculated. The actual figures are meaningless since the U.S. data pertains to a metropolitan region only, and should be applied, if at all to the U.K., only to London. When reduced to percentage distributions (Table II (f)) it is seen that the regional pattern closely resembles that of the population as a whole. The number of trips per industrial group varies widely. So, assuming that the non-working population is distributed roughly in proportion to population, it appears that (to the extent that U.S./U.K. industry groups are comparable) existing regional differences of industrial structure may have little inherent effect on air traffic generation.

A less insensitive allocation can be made by trying to separate commercial business and government sectors of this traffic. Separation was made by combining the trips per thousand employees of CEIR "government" and "transportation and public utilities" categories and relating this to the total of trips per thousand employees for other non-agricultural categories. This yields a government to business trip ratio of 23:77.

The distributions used to allocate these types of traffic were available, with one exception, for England and Wales only. It therefore has to be assumed that Northern Ireland and Scotland are self-contained for these types. The figures used are hence those for the South East and Manchester. In the case of Manchester there is some evidence that the airport's catchment area lies to the north of the airport, in the shadow of London's catchment area.* Although this would suggest that airport and catchment area lie within the same region it is not known to what extent the region is self-contained, and hence follows the need to treat Manchester's total as part of the total for England and Wales.

i) *Commercial business*

An indication of the differences in the use of air travel by type of employee (U.S.) is given by CEIR Table 5-5:

	per cent of business trips
Professional, technical	49
Manager, official	35
Salesman	13
Other	3

These figures cover all non-agricultural employment, and therefore include government employees as well.

* Asterisks are used throughout this submission to indicate statements or data whose source is confidential.

Printed image digitised by the University of Southampton Library Digitisation Unit

However, the same table shows that nearly 70 per cent of the total number of trips were made for the purpose of commercial business negotiations and sales. For both commercial and government classes this table emphasises the importance of office and especially head office employment in generating business air travel.

Hence in order to allocate these trips the distribution of commercial offices and office employment was considered. Wright gives rateable values and office employment in 1961 for the South East region and for seven selected urban areas in England and Wales outside this region. These urban areas contain half the remaining rateable value of offices in England and Wales (Wright, 1961 (7) p. 231). The use of his figures for the present purpose requires the assumption that the remaining rateable value is found in the same regions as these seven lie and in the same proportions as the urban areas show (this only involves the exclusion of East Anglia, which is either ignored or included with the South East in all the office calculations).

Using this assumption Wright's Table 2 ((7) p. 220) can be recalculated and expressed in percentage form (Table IV (d)). In the same manner his figures for office employment (Table 9 (7) p. 231) can be recalculated and expressed as percentages (Table II (e)). It should perhaps be emphasised that since these distributions are for England and Wales, and in one case Great Britain, the percentages have to be adjusted downwards for comparison with the U.K. figures in the other tables. As might be expected rateable value shows a much greater concentration on the South East than does employment. Wright states that rateable value is more an index of the concentration of offices than of absolute floor space (p. 219). He also cites the great and growing concentration of the head offices of national and international organisations on London (p. 222). These presumably compete favourably with other offices for the expensive London office space, so that the concentration of nearly four-fifths of the rateable value on London may be a reasonable guide to air traffic generation. These rateable value percentages are therefore used to allocate the commercial business traffic, producing row (b) in Table I.

ii) *Government*

A similar treatment can be carried out using data from Hammond (1967 (9)). The figures are for the non-industrial civil service. Rateable values (p. 262) and office employment (p. 259) are expressed as percentages in rows (a) and (b) of Table II. There is also a partial estimate of headquarter staffs employment (p. 261) from which the figure (in percentage form) for the combined South East/East Anglia regions is given in row (c) of Table II. For the same reasons as given above the rateable values were used to allocate government air passengers (Table I (c)). If the headquarter staffs figure were used the number of trips for the South East/East Anglia combined region would rise by 50,000.

Summary of passenger traffic

The total in Table III gives the supposed pattern of U.K. passenger traffic generation if the income allocation of U.K. residents (pleasure) is used. If the *pro rata* population allocation is used the percentage of traffic generated by the South East falls from 57 per cent to 55 per cent (this includes the small fraction represented by East Anglia). Other things being equal, these calculations therefore suggest that 11-13 per cent of U.K. passenger traffic is generated outside the South East, but uses its airports as compared with the 20 per cent outside the London metropolitan area given by the Traffic Study mentioned earlier.

There is one major reason why, even if the allocation made above were perfectly reasonable, other things could not be equal. It is the existence of other modes of transport which vary in availability between different regions. As Lansing (U.S.) emphasises, the reason for using air transport is that it minimises *total* journey costs (Lansing 1966 (12) p. 334). While surface transport is at present cheaper than air (Anon, 1969 (10) p. 88), when the cost of time and transhipment are considered over the whole journey air transport will in some cases be the cheapest mode. With rising cost of time it becomes desirable to substitute more and more air travel into the total journey time until in the end the whole door to door journey is by air. Such a substitution function will have different values (for given costs of time) for different lengths of journey since transhipment costs between mode are relatively invariable in time and direct cost. Thus for a short journey time must have a higher value to justify a change from surface to air travel than would be the case on a longer journey.

The allocations made in this section are liable to error, even if the causal inferences are correct, due to the fact that the actual length of journey to South East airports has been shown to vary, and because the quality of access by different routes varies. Reasons can be cited which suggest that the estimated traffic into and out of the South East could have been under or overestimated. The fact that the greater journey length to London from points outside the South East was not considered suggests that this estimate is too high, but the presence of better alternative transport facilities in the South East (e.g. Channel boat services) may mean that less than the expected amount of air traffic would be generated in the South East, suggesting that the estimate might be relatively too low.

At the end of this part of the submission suggestions are made as to methods which might be employed to obtain a more effective knowledge of the present and future demand for air passenger facilities. For the present it is simply noted that the evidence suggests that

Printed image digitised by the University of Southampton Library Digitisation Unit

there is a significant flow of traffic from other regions using airports in the South East.

B. Freight

A more comprehensive regional break-down is possible than for passengers. Several sources exist which give partial information. One is for Great Britain* and is expressed in percentage form in Table IV (a). Another distribution, for the U.K., can be made by combining data from two sources. One is the Edwards report (*op. cit.*) which gives freight tonnage handled by airports and which is given as regional percentages in row (e) of Table III. The other is an unpublished analysis based mainly on B.E.A. waybills for Heathrow (Smith, 1967 (4) p. 240). This gives a regional break-down of the origins of freight shipped during the month of September 1966 ((b) Table IV). Apart from covering only one way movement these data are likely to give an imperfect representation of the annual pattern. However, being the only source found for Heathrow, it is used to break down the 1967 annual total for Heathrow. The resulting figures were then added to the Edwards Committee figures (excluding Heathrow) to give an annual regional pattern ((c) Table IV).

Comparing (c) with (a) some considerable disagreements are noted. In view of the partial nature of the Heathrow figures (b) it is likely that (a) is more reliable. To put (a) on an U.K. basis it is assumed that the figure in row (c) for Northern Ireland is fairly accurate (which is supported by the airport figures of row (e) and by the relative isolation of this region). This adjustment produces figures for the U.K. (d) which probably represent the best estimate which can be made with these figures. By comparison with (e) it appears that about 25 per cent of U.K. air freight is generated outside the South East but is handled by airports located in that region (including East Anglia, but the one airport in this region is small and handles only a tiny fraction of U.K. air freight).

In considering the cost of carrying this freight into and out of the South East the same points concerning total costs are relevant as for passengers. However the passenger allocations tend to show what the situation would be if access to airports were equally good over the country, the freight figures are based more directly on actual data and do not show this. Hence the possible cost to the firms which would benefit from air freight services but are inhibited by poor access from doing so cannot be assessed from them.

One important factor which would assist estimation of this cost would be a very detailed regional break-down of types of industry. None has been found in the time available to make this submission. One very crude distribution can be given. The sources of data on the commodity break-down of air freight lack precision and comparability (Smith, 1967 (11) Table 9.7 (U.K.), CEIR 1960 (3) Tables 7-3 to 7-6 (U.S.) and Stratford, 1967 (4) p. 22 (U.S.)) but suggest that a loosely defined machinery class is represented by 40-50 per cent of the weight handled. A break-down of 1961 employment in electrical and engineering goods industries is reproduced ((f) Table IV) as a rough proxy for this class (Humphrys, 1964 (15)).

This distribution shows a relatively low concentration on the South East, but represents employment in firms producing goods with widely differing suitability for air transport.

Apart from better knowledge of regional industrial structure, it would also be very valuable to know in more detail the characteristics of the freight shipped through the South East from different regions. Important variables are the value to weight ratio and volume as well as the weight alone. For instance the value to weight ratio of cargo from existing sources may rise with increasing difficulty of access to Heathrow and, to the extent that this is not accounted for by industrial structure, this would be an indicator of air freight opportunities forgone.

* * *

The present pattern of air traffic generation has been detailed as far as the data allows, and when compared with the pattern of airports suggests that the main apparent imbalance is that considerable quantities of traffic generated elsewhere use airports located in the South East. Perhaps 10-20 per cent of U.K. passenger traffic and 25 per cent of freight traffic is in this category. The cost of this imbalance is not known nor is the cost to regions away from existing major airports. In terms of present traffic the amount handled by London's airports does appear to be significantly larger than that generated by the London area alone.

Therefore the ambiguity in the terms of reference is not merely semantic but has practical importance. This means that (if future growth does not occur entirely within the London area) a real decision has to be taken as to whether the third London airport is to serve the London area or the nation (or at least England and Wales).

2. Is the future growth of regional traffic generation likely to differ from the present pattern?

The poverty of data relevant to the present pattern means that no systematic attempt at projection is possible in the context of this submission. The answer to this question is therefore confined to suggesting the possible range of a number of factors affecting traffic generation.

A. Rates of growth—passengers

In the case of passenger traffic a major reduction in seat costs per mile occurred with the introduction of jets in the late 1950s. Larger size and quicker turnover

Printed image digitised by the University of Southampton Library Digitisation Unit

meant an increased return on capital even when run at an average of 55 per cent capacity (Lansing, 1966 (12) p. 315). A new generation of subsonic jets of the early 1970s can be expected to increase the scope for reductions in fares (Enke, 1967 (17) pp. 71-72), and with these size is again increased (Schiphol report, 1968 (8) p. 5).

Consideration of technological change must include the supersonic transport (SST). On U.S. evidence Enke states that SSTs would in the early 1970s be competing with subsonics having perhaps 20-30 per cent lower costs per seat mile, that perhaps less than 5 per cent of the U.S. population would use SSTs at their higher fares and that the possible rate of return on (government) investment should be at least 10 per cent to justify beginning construction (current best estimates being 0-5 per cent). Also that associated meteorological costs involved in setting up commercial SST operations would probably cost over one billion dollars spread over the next two decades (17). In the discussion of this paper it was suggested that partly by reducing the funding of new air traffic control and high altitude meteorological systems that the U.S. could effectively delay any rival SST (e.g. Concorde). It is not known whether this advice has been carried into effect. Enke's discussion implies that it may be premature to introduce SST capabilities into air traffic calculations, and that in any case only a small fraction of the traffic will be affected.

U.K. passenger traffic has grown at about 10 per cent in recent years, but the rate has tended to decline (19). However Fulton states that a 50 per cent fall in U.S. passenger air fares would increase the number of passengers by 30 millions. (Fulton, 1967 (13) pp. 211-212.)

B. Freight

Revenue per ton mile is little more than half that of an equivalent weight of passengers (Stratford, 1967 (4) p. 151), consequently it has often been carried in spare space in passenger aircraft, thus incurring little or no fixed cost. This has tended to limit the type of goods carried and towards high labour costs for handling. However by carrying fuller loads specialised air freighters can evidently reduce the differential between freight and passengers while at the same time, by providing a more comprehensive service, generate new traffic. The timing of this process is given by the fact that the freight rate was 22.69 cents in 1950, the same in 1960 but began to decline after 1962, and is (1966) expected to decline to about 10 cents by the end of the decade (Lansing (U.S.), 1966 (12) p. 333). Accompanying these declines have been large percentage increases in air freight (*op. cit.* p. 336). There is evidence that a 20 per cent decrease in freight rate would bring a 33 per cent increase in traffic ((4) p. 222). Combined with this is evidence that surface transport profit margins are sufficiently low to prevent much price cutting in that sector (*op. cit.* p. 229).

These figures suggest that prospective decreases in air freight rates may lead to large increases in air freight traffic. The rate of increase for the recent past in the U.K. has been about 12 per cent (excluding air mail, which forms only about 8 per cent of the total) (31). However Lansing expresses some caution: "how far this impetus will carry the industry is one of the interesting and difficult problems of forecasting developments in transportation" ((12) p. 163).

* * *

There appears therefore to be a likelihood of continued growth in the use of air transport. Will this growth occur differentially among the regions of the U.K.? It appears from the figures produced earlier that the South East generates proportionately more passenger traffic (excluding non-resident tourists) and freight than its share of population and industry would suggest. Even ignoring Government policy future regional rates of growth may be faster outside the South East as the other regions expand their use of air transport. At the least it does not seem likely that growth will be confined to the South East except perhaps (and in the absence of other changes) with regard to non-resident tourist traffic.

In short, it does not appear that future growth of air traffic will remove the need to make a decision as to the geographical scope of the third London airport.

3. What economic effects does airport location have?

First, the economic effects are considered in general. These depend on two factors, the characteristics of a given economy and the repercussions caused by the introduction of a given set of airport services.

A. Existing economic characteristics

This requires consideration of the variables affecting demand, some of which was cited in answering the first question. In the real world these characteristics require modification to allow for lack of market awareness. Evidence about this is available for the commercial sector: "it was the conclusion of a widely quoted report of the Harvard Business School Research Division that the fullest use of air transport in the United States was made rather by the younger and more alert industries not yet tied to conventions of organisation and supply" (Stratford, 1967 (4) p. 163). Firms were often found to have no good idea of the components of their total freight costs, prerequisite to a rational decision as to what proportion of each transport mode to use. As might be expected, the near presence of an airport tend to heighten market awareness (e.g., Smith, 1967 (11) p. 245, Stratford, 1967 (4) p. 251). Some consideration of awareness would ap-

Printed image digitised by the University of Southampton Library Digitisation Unit

pear sensible in assessing the effects on an economy of the provision of air services.

B. The effect of airport services once located

General statements as to the magnitude of this effect are quite easy to find, for example "it is clear, regardless of a fairly wide latitude of possible error, that in this age of fast communication and fast travel, New York's economy is heavily dependent on and heavily supported by the availability of good air services for sellers and buyers of the Region's production of goods and services" (CEIR, 1960 (3) p. 55). But it is also typical that two pages later it is stated that the degree to which air transport as a mode is necessary to the regional economy cannot be at all clearly identified. Slightly better indications are given by the graphs in a recent publication of the U.S. Federal Aviation Administration which suggests in some cases that economic growth (usually of relatively small cities) increased in pace following the opening of an airport (F.A.A., 1967 (32)). However, this analysis does not assess the interrelationships involved with very much precision.

The significant aspects of this effect can be detailed by making the conventional rough classification of the types of employment generated:

a) primary (direct) airport employment

b) Secondary (service) employment generated by (a)

c) Tertiary (other non-service industry) employment

d) Secondary employment generated (c)

using the terms "primary", etc., as in Isard (16). The discussion should include consideration of a range of airport sizes (although some part of it applies regardless of size) but most of the existing U.K. evidence seems to be for existing or proposed large airports connected with London.

a) and b)

Employment in these categories would tend to be invariant with the location of an airport since the operations involved in running an airport are for a given state of technology fairly closely defined and the associated service sector, assuming it to be newly created (as is likely at least in the case of a large airport), would tend to use the current technology in that field. The population of dependents for these two types would also tend to be uniform for a large airport since employment would probably be drawn from a wide area, probably obscuring any local regional variations in family size.

An example is provided by a study of Seattle-Tacoma International Airport, although this was limited to the U.S. county within which the airport is located, possibly omitting employment effects outside this area. Using the terminology of the study, primary impact employment was estimated as 6,000 and secondary impact employment also as 6,000. To include dependents a multiplier of 2·6 people per job was taken (22). The methodology of this study is not clearly detailed in the publication from which these figures are drawn and so its results must be treated with added caution.

Evidence already presented to the Commission gives a quarter to a half million people as the total population which would be generated by these two types of employment (Hall, 1968 (28) p. 940). Without solely emphasising this giant development it does appear that airports are fairly large generators of direct employment (although we have found no evidence which shows the amount of employment generated per unit of capital by airports versus other types of development).

c) Tertiary employment

This, as applied to airport generated industry, is a catch-all category and is therefore not likely to show homogeneous characteristics. One element of it can however be isolated and mentioned separately since it is only generated by an airport under the special circumstances of a decision to create extra employment.

It is that carried on within the customs fence as at Shannon (23) and Schiphol (18). Such industry would tend in theory to use air transport for both raw materials and finished products, drawing only employment from the hinterland but also adding to the income of the airport and airlines concerned. In practice it is not certain how much contact such industry has with its hinterland; no significant analysis seems to have been made of the industries located at Shannon*. However the point of separating this type of development from the rest is that it is evidently more a tool of development policy than a spontaneous result of airport provision.

A prerequisite to the study of new industrial development of this kind is to develop a function of airport attraction with increasing distance (measured by *total* cost) from the airport. This function would provide a basis on which the importance of the airport location for such industry could be assessed. Accessibility to air transport will, apart from the special type just mentioned, be only one of many factors to be considered in the optimal location decision. The others include accessibility to that part (in terms of type of good, and geographically) of the supply and market area for which air travel is not the cheapest means of access, and agglomeration economics (c.f. Isard (16) Chap. 7). Except where quality of surface access is unimportant this means that the location of an airport with regard to existing economic distributions may considerably affect the location and amount of such tertiary develop-

Printed image digitised by the University of Southampton Library Digitisation Unit

ment. These points may appear obvious, but an appreciation of them does not appear to be implicit in many of the statements made about the pull of airports on tertiary industry.

For example Fulton, in discussing the third London airport, states "An all-freight airport will be a vast employment generator. Even the mixed passenger and freight airports with which we are familiar generate employment on an increasing scale. The Los Angeles airport provides work for 32,000 people and more than 100,000 others are employed in airport-related jobs within a half-mile radius. The airport area complex has become the second biggest employment centre in the Los Angeles area." (Fulton, 1968 (24) p. 1049.) If by "airport-related" Fulton means what is here called tertiary employment, his example provides no guide as to what might develop within a half-mile radius of an airport located anywhere else, since Los Angeles is probably near the centre of supply and market areas for many activities and very little pull by the airport would account for the existing concentration of industry. Nor is the strength of the relationship with the airport quantified. His example does not, in short, go far towards justifying the initial general statement.

Many similar statements have been made by well-known authorities. Stratford says "Airports attract industry. The site of a new airport will become the centre, in ten to 15 years, of an industrial area which will resemble West Middlesex and the Heathrow environs." (Stratford, 1967 (4) p. 247.) The same confusion is apparent as in Fulton's statement. "The airport will also inevitably be a focal point for growth . . . it will be most important for the economy that we should take as much advantage as possible of this situation, and the Council has also expressed the view that it would not be practicable to restrict growth around the third London airport too much." ((25) pp. 5-6.) Even as a point of view this appears somewhat sweeping, when not supported by evidence.

Further quotations include Self's statement that the location of a major airport "will influence the site preferences of perhaps a million people and thousands of firms (as quoted in Cook, 1967 (26) p. 68), and also that "there is no doubt about the enormous growth effects of a big airport." (Self, 1969 (27) p. 147.) Submissions to the Commission cite 80,000 tertiary jobs as "willy-nilly" growth around the airport (Hall, 1968 (28) p. 940).

Taking these statements at their face value, what supporting evidence can be cited? The only U.K. evidence for an airport of the relevant size is for Heathrow (which grew up in an area of already expanding industry and is therefore not comparable with proposed locations for the third London airport). One study of Heathrow* indicates that tertiary employment in the vicinity could be regarded as amounting to well over 100,000 people. However, this study made very little attempt to assess precisely the importance of the airport in the firms' decision to locate, so that this evidence yields little indication as to where new industry generated by a third airport would locate. The lack of comparability between the environment of Heathrow and that of the proposed site may mean too that the actual amount of such employment at Heathrow is not equivalent to that which may be generated by the new sites. In another study which considered industry within a ten-mile radius of Heathrow, Smith found no evidence that shippers of air freight tended to congregate near the airport (Smith, 1967 (11) pp. 242-245). Such evidence as has been found does not therefore clearly support any of the statements quoted as to the located or the amount of tertiary development.

These statements cite no adequate supporting evidence, and none has been found which does unequivocally support them. To repeat: there appears to be no clear indication of the influence of air transport (*vis-à-vis* other modes) on different types of economic structure, nor any good evidence as to the decrease in this influence with increasing (total cost) distance from the airport. The above statements tend to assume that the former influence is great and invariant and that the latter influence ceases at the edge of the city which is assumed to be located at the airport.

It is true, that, due to the agglomeration economies referred to above, such a distance cost function is likely to be stepped (rising after each urban area from the airport city). However references to "willy-nilly" growth and "important for the economy" suggest that the first step rises almost to the ceiling. This is implausible on general grounds. The types of activity which might be expected to rely most on air transport —light industry and office development—fall to a considerable extent into the "footloose" category, those which are relatively insensitive to sub-optimal locations. Consequently even if the optimal location for new industry were at the third London airport (which is doubtful in view of the possibly peripheral location of the latter) the cost of containing it within some planned area well away from the airport might well not be very great.

d) Secondary employment dependent on c)

This will tend to vary with the size of the tertiary sector and, like it, to vary with the location of the airport.

4. What are the constraints on the location of airports in the U.K.?

These are discussed even less completely than are the other questions, but some of the constraints seem to have received relatively little attention, which at least justifies their being listed here. They all empha-

Printed image digitised by the University of Southampton Library Digitisation Unit

sise the fact that equality of access to air transport facilities over the country is unlikely to be an economically or socially feasible goal.

A. Economies of scale

This topic has at least three important aspects: economies of scale for airline operation, airport construction and operation, and the provision of surface access.

a) *Airline operation*

The main question here is at what cost to the airlines could the present concentration of international airline services be disaggregated to progressively large numbers of airports, located so as to shorten progressively the total cost of access to air facilities. The cost of decentralising international services will evidently vary with the frequency of service in given directions and the geographical pattern of traffic generation for given services. An equivalent exercise is required for domestic services. A knowledge of the cost of steps in the regional disaggregation of air services is one of the important factors in the national/regional decision.

b) *Airport construction and operation*

Even fairly small airports cost large capital amounts to build (e.g., Doganis, 1967 (20)). Information is needed on the costs of building a range of airport sizes. In the same way the curve relating cost of airport facilities' operation per passenger and freight unit for increasing volumes of traffic is unlikely to be a straight line, and knowledge of values for it is necessary.

c) *Surface access*

As has been emphasised (16) these costs are very important in airport location decisions. Also expenditure on roads in the U.K. has at the moment a high cost at the margin (Beesley, 1968 (35) p. 413). Moreover the higher the interest rate used the stronger is the incentive to postpone investment. These points suggest that from this point of view increasing disaggregation of airport services would, if planned to take advantage of existing or initiated road developments, be increasingly economical.

B. Airways

There seems to have been a tendency in the discussions about sites for the third London airport to regard the current pattern of air traffic control as inflexible (e.g., Cook. 1967 (26); Hall, 1968 (28) p. 942). This seems surprising. Although the number of alternatives may be quite limited air traffic systems would appear relatively amenable to analysis. Equally the chief cost of alternative patterns involves knowledge simply of the opportunity cost-plus running costs of the vehicle once in the air and the cost of time to the traffic.

A related point concerns military air traffic (U.K. or NATO). Again the pattern of air bases and traffic is not immutable (c.f. Wethersfield (Cook, 1967) (26) pp. 33-34). Military requirements can presumably be specified in enough detail for it to be possible to calculate and cost alternative patterns of military investment in air bases. It would be particularly unwise not to cost such changes in this pattern as might significantly improve the pattern of civil air service in view of the possibly large-scale and long-term nature of the latter investment (in relation to the fact that changes in military technology may shorten the life of current fixed investment in military air bases).

C. Social factors

The term social is used here in the non-economic sense and with reference to localised reactions to the siting of airports. Without criticising the need to rank alternative sites for any airport in terms of amount of population affected and degree of amenity cost it would seem that some of the localised social effects are liable to be exaggerated. As Gaffney says, where a locational decision represents clearly the optimum for the nation as a whole, disadvantages to an individual or a fraction of the population should not be allowed to weigh too heavily. If compensated for the cost of moving, the individual or minority retains the same freedom of choice of a new location as the rest of the population (Gaffney, 1961 (33) pp. 161-167).

This raises the question as to the definition of the area affected by airport location including noise and noise-related variables (Wall, 1968 (34) Table 9·3). A major influence on this must be the alignment of runways and resulting NNI contours. The precise criteria for this choice in the case, for instance, of Nuthampstead (1b) are not clear. One extreme is presumably the minimisation of cost to air lines while the other is minimisation of noise to existing and forecast population distributions. The criteria upon which a balance is struck should, surely, be made as far as possible quantitively explicit.

5. What implications do national and regional planning considerations have for the alternative solutions?

An answer to this question requires some definition of the goals of such planning. There is not space, nor is the writer qualified, to state these goals comprehensively. In order to focus the answer as far as possible the following general statement is given, which it is hoped covers a significant part of the relevant objective; That such planning aims to make possible (or to generate, depending on the breadth of government authority) a steady rate of growth of national income subject to the constraint that inequalities (both between income classes and geographically) tend to be reduced (c.f. Friedman and Alonzo, 1964 (36) Chap. 29.)

First the current approach to airport planning is summarised and then possible changes in it are considered with reference to this general statement.

Printed image digitised by the University of Southampton Library Digitisation Unit

A. Current approaches to airport planning

The source upon which this is based is the previously mentioned report of the Edwards Committee (2). Airports are in general run separately from the airlines which use them (*op. cit.*, para. 159) and tend not to make a substantial margin of profit even when the initial capital cost is treated separately (para. 909). Partly as a result of this the "subsidising of the aviation infrastructure is common across the world" (para. 912). In the U.S.A. the Federal Government has authority to meet up to 50 per cent of capital investment (*ibid.*).

What is the U.K. situation in this respect? The early policy of centralising control of airports, begun in 1945 (para. 162), has been gradually replaced by one of decentralisation (paras. 163-165). The general pattern of ownership is now that the central government directly controls only a few small peripheral airports in Scotland while a public undertaking (the British Airports Authority) controls the airports of London and one in Glasgow (i.e. the majority of U.K. air traffic). Between these extremes a fairly large number of usually small airports run mainly by local authorities or consortia of local authorities (*op. cit.* Table IV. 1).

As to future changes in airport location more research is needed (para. 901) but "nothing we saw in the actual operation of airports suggested that central ownership of them all was necessary for efficient operation" (para. 905). Possible lack of market awareness and future shape of economic planning policy are not likely to be visible in the current operation of airports and (as far as these factors bear on central ownership) their influence is ignored by this statement.

"Moreover, it has been the deliberate policy of the Government . . . That the primary motivating force in aerodrome development (other than the principal international gateways) should be that of the local interests concerned and not a matter of dictation by Whitehall" (para. 898).

B. Current approaches in relation to national economic planning criteria

The current approach to airport planning, like that of planning in general, appears to be based on the view that "national planning should be built up from, and in turn influence, regional planning" (*op. cit.* para. 902). It has been argued that the emphasis should be the other way round (21). The main reason for this is clear. If a local sub-region were able to do the necessary research it could decide on an allocation of resources for airport development to serve it.

At least two sub-optimal national effects might follow from such an allocation. Firstly, some of the allocated resources might better be spent on airport provision elsewhere, or on a different type of airport provision, and secondly the proportion of resources allocated to airport development might differ from the national optimum (both bad effects measured in terms of the general criterion stated above). In view of the phenomenon of the increasing tendency towards polarisation of rich and poor areas (*c.f.* 36) this sub-optimal national effect is positively likely. The effect would be heightened if international airports were also assessed on a regional basis, in view of their probably having a larger minimum size than domestic airports (so only large and rich regions could afford them).

It therefore seems that current airport planning policy and practice are both far from optimal in terms of the criterion stated. Not only is this the case but the fact that the U.K.'s major trading competitors undertake substantial centrally subsidised airport development suggests that the U.K. may be at a comparative disadvantage to its competitors in this respect (Fromm, in Dorfman (40) discusses subsidisation).

C. Airports as economic development stimuli

The conclusion just reached poses the question as to how important an influence airports actually are on the goals of national planning. From the answers to questions 1–3 it appears that air transport is an important asset to an economy, whose importance is likely to grow, and also that the beneficial influence of an airport decreases with distance from it, although to an uncertain degree. The fact that the South East, with by far the best airport facilities in the U.K., generates a disproportionately large share of air traffic may to some extent be evidence of localisation of this effect.

What the latter phenomenon certainly does suggest, combined with the concentration of high incomes in the South East (*c.f.* Table I (c)), is that airport construction as a development stimulus should occur outside that region. The current decentralised structure of airport planning is unlikely to favour this, and certainly not to the degree suggested by the national criterion. It also conflicts with the history of government attempts at the economic stimulation of "Development" and "Grey" areas.

6. What alternative should be chosen?

While answers to the previous questions would allow a sound decision to be taken, the answers attempted are certainly inadequate and any decision based on them must be highly tentative. It will be approached by considering each alternative as it affects: (a) the location of the third London airport and (b) the timing of the need for it.

A. The third London airport as a national airport

a) *Location*

Assuming, as the proposed sites for the airport indicate, that any airport will be a considerable distance from the centre of the conurbation then the location which minimises cost of access for traffic (including

Printed image digitised by the University of Southampton Library Digitisation Unit

that generated by regions outside the South East) is evidently somewhere to the north west of London, i.e., Thurleigh or Cublington.

Such a national airport would require new surface access, since existing roads and planned roads are presumably gauged to handle existing and planned traffic from other sources. On the other hand, given a high interest rate (and ignoring social time preference) a site which allowed existing or planned surface access to be used during the build-up period might have a significant advantage. On the other hand again, there are all the other constraints considered under question 4 and for which no costs can be provided here. Also there is the problem of the present and future traffic generation pattern within the South East. Here the factors affecting traffic generation discussed under question 1 are important, since the present pattern may be distorted by factors such as market awareness and the total cost-distance function of existing airports. The effect of the points covered in this paragraph may well alter the conclusion of the previous one.

In other words consideration of location under this heading can be no more than a rough guess, given the evidence available for this submission.

b) *The timing of the need*

There is some evidence which suggests that the introduction of more efficient methods into the running of existing London airports could delay the need for another airport (Cook, 1967 (26) pp. 65-67). It would also seem necessary to consider the economic and social case for providing more of the service to the London area from other existing or new regional airports. Apart from these possibilities, using the projected figures already given to the Commission (Hall, 1968 (28) p. 939), it would appear that the need is urgent and that the time scale of development should be as brief as possible.

B. The third London airport as part of a regional airport development

As soon as it is allowed that some part of the existing and future traffic of London's airports could be served by new airports other than the third London one the situation outlined above is likely to be completely changed.

As far as the previous analysis has uncovered the true position it appears that a substantial quantity of passenger and freight traffic is generated in a generally north westerly direction away from the South East. The scale of this movement is quite large (for instance, the freight total of about 0·13 million tons compares with a 1967 total of about 0·11 million tons through the large new airport at Schiphol, Amsterdam (18)). Since present lines of communication radiate from London it is evidently not realistic to consider all of this traffic as being accessible to a new airport at a considerable distance from London. However, on the evidence of the tables presented earlier, an international airport located for instance to the north east of Birmingham would be in a position to tap the bulk of this traffic through present surface access networks. Since the evidence suggests that the rate of traffic generation may be faster in future outside the South East, future development may increase the need for such an airport (or airports).

The previous paragraph merely considers extra-South East traffic generation in the absence of other changes such as the use of airports as development tools (as discussed above under question 5). Such use would, of course, tend to generate more traffic outside the South East. This also would tend to reduce the flow of traffic to and from airports in the latter region. To the extent that it attracted new development to other regions from the South East such a policy would also reduce the rate of traffic generation in that region.

A conservative assumption, however, might be some new international airport development in the vicinity of Birmingham. Its implications will be considered in relation to the third London airport.

a) *Location*

The equilibrium location for the third airport as given in the previous subsection of this answer would evidently be changed under the second alternative. Assume the London conurbation to be a circular area with uniform traffic generation over it, uniform access out of it and that no airport may be located inside it. The postulated Midland airport might not only absorb most of the traffic now flowing to and from the South East to use airports located there, but also carry some of the traffic generated by the northern and western periphery of the London conurbation. The equilibrium location for a third London airport evidently moves to the south east edge of the conurbation.

Some of the more obvious factors ignored by these assumptions will now be mentioned. Perhaps the most obvious is the Thames estuary, which interferes with access around the eastern periphery of the conurbation. Another is the existence of Heathrow (at whatever level of service it may be planned to operate in future). Heathrow tends to serve the western side of the conurbation better than the east, which suggests that a new one might compensate by serving the latter. However, a further important fact is the existing radial system of communications from the centre of London, which means that for many trips the most efficient route to an airport at the periphery lies through the centre. To the extent that radial access is of uniform quality in all directions from the centre this implies that for such trips the critical factor is the distance of a new airport from the centre, not its direction. The great cost of distance is given by evidence already presented to the Commission (Hall, 1968 (28) pp. 940-941). However,

Printed image digitised by the University of Southampton Library Digitisation Unit

the projected ring road system (37) will increase the importance of direction.

Even so 50 per cent of the traffic is said to wish to go to the centre (28). There are two reasons for which these figures ought to be investigated further. One is the possibility that some of the traffic found to be coming from the centre by the traffic survey may have been doing so merely because of the constricting effect of the existing radial system (c.f. the comment on this survey on p. 110). The second is the possibility that the provision of suitable hotel accommodation at some point between a new airport and the centre of London might serve to deflect a proportion of the centre-bound traffic which is now drawn in by the existing hotel facilities there. Such provision might also even out peaks in that part of the traffic which requires to go to the centre for other reasons. If this function were fulfilled the scale (and hence cost) of access provision to the centre might be reduced and also employment at the centre moved further out with consequent likely reduction in commuting. The creation of unnecessary amounts of access to the centre could also have the perhaps undesired effect of increasing the economic advantage of the centre. This discursion has the effect of suggesting that the importance of distance versus direction of a new airport from the centre cannot yet be properly assessed (judging only by data made public).

The introduction of some real world complications into the idealised location arrived at previously appears to leave the advantage still with the east side of London, but not decidedly north or south of the blank wedge represented by the Thames estuary.

b) *The timing of the need*

The timing of the need for a third London airport is also quite different when the second alternative is considered. There may be existing runways (civil or military) positioned in the Midlands which could be more quickly got into operation to serve part of existing and future traffic at London's airports than could the completely new airports required by the short-listed sites in the South East. Any national development policy aimed at raising the growth rate of regions outside the South East would also require investment in an economic stimulus (such as an international airport appears to be) to occur as far as possible with a time preference for these regions versus the South East.

On the other hand, if the cost to the nation of forgoing immediate large scale airport development in the South East is greater than the benefit of evening out regional income disparities, it may still be desirable to develop another international airport outside the South East simultaneously with or at some time later than the third London one.

There are consequently at least two possible time paths of development within the second alternative. One would involve delaying the construction of a third London airport for some, possibly long, time. The other would mean delaying construction slightly if at all but stretching out the phases of development over a longer period than would be relevant for the first alternative.

7. What are the requirements for an adequate choice?

The choice refers to the contradiction in the Commission's terms of reference, but the information needed for it covers the majority of the requirements for the decision as to the location of the third London airport (excluding mainly the localised factors relevant to the choice of precise sites within generally defined areas). Therein is its importance. But it may be asked what point there is in raising such broad issues at a stage in the Commission's work when a short list of sites has already been made? The answer is partly that the sites cover a fairly wide geographical area but mainly that their selection implies no irrevocable decision as to timing, and it is upon timing, rather than the location of the airport within the South East, that this decision has the more important effect. Moreover, the questions raised bear indirectly upon the kind of urban development which may arise as a response to the airport's location.

A second question might be—do the requirements for this decision not demand more time and money than the Commission can afford? If the importance of the contradiction has been assessed correctly, then the decision cannot be avoided without the possibility that the investment might involve considerable loss to the nation—in terms of opportunities forgone. It is the latter qualification which is ignored by statements as that a very large new airport near London "would certainly be worth the cost" (*Times*, 1969 (38)). Such statements tend to lay stress on "prestige" which, surely, is subsumed in the *Commission's* calculations as part of social (in the economic sense) benefit.

It was partly to show that the task is not necessarily impracticable that answers were made to the series of questions posed above. However, many of the points raised by these questions cannot be answered for lack of data, and even where data was available round-about methods were usually required to enable an answer to be made. In order therefore to emphasise the feasibility of the approach used in this part of the submission a summary of it is set out below. The references are to pages of the text in which the given topics were discussed.

Outline method of approach

The computational sequence will first be outlined, and then the necessary series of data collecting exercises. The "ranges" of projection and assumptions

Printed image digitised by the University of Southampton Library Digitisation Unit

referred to may include as many or as few as may be wished.

Computational sequence

1. The existing regional pattern of air traffic generation projected to some future point. New industry location to be regarded as controlled by government policy except for that generated by alterations to the existing transport structure. The development of new transport facilities (excluding air transport and surface transport requirements generated by new air facilities) to be regarded also as located as a direct effect of government policy, and their repercussions on industry and population taken into account (ideally all transport facilities should be planned in relation to one another, but such an exercise would be unrealistically demanding in the present context).

2. A network of airports (of specified service type) to serve existing and projected traffic. A least cost pattern could be calculated through using values for cost-distance functions (p. 117) and transport mode substitution functions (p. 114). These costs should include constraint costs.

3. Repercussions on 1 of the airport location in terms of a) primary and associated secondary and dependent populations, b) tertiary and associates (p. 117), under the same government policy as to location of new development.

4. Airport location recalculated to serve new distributions, involving recalculations of access cost and transport substitution functions and constraint costs.

5. Iteration of steps 2 and 3 until the change in airport locations ceases to be significant. These steps should be carried out under a range of assumptions about important factors such as government policy and other transport development.

6. Consideration of these ranges of airport networks in terms of national and regional income changes and selection of those regarded as tolerable.

7. Choice of a net, or selections from a combination of networks, which give the least cost time paths at a range of discount rates.

Data requirements and associated calculations

I Regional demand for air transport services in the U.K.

i) The current pattern of air traffic generation (by types of traffic) (c.f. p. 110)

a) private/tourist (p. 111): sample surveys are needed to gather data on actual use of air transport and cost of access to it related to an array of personal characteristics—income, education, age, etc.

b) Business and government passengers and freight (pp. 113, 114, 115): further sample surveys are needed to gather data on the rate of passenger generation by industrial class, size of firm, and type of passenger (c.f. p. 114). In the same way data is required on the type of air freight generated by industrial class and size of firm. Both sets of data should include the current cost of access to the relevant type of airport facility.

The results of (i) would indicate not only the current pattern of air traffic generation, but could be processed to yield a measure of how much new traffic would appear at successively lower costs of access to air facilities. They would also provide the basis for an estimate of the effect of air facilities in creating market awareness (p. 116).

ii) Projected pattern of demand for air transport (p. 116).

Any projection is liable to considerable error through changes in cost relationships (V(i) below). Since population and industry patterns are also liable to unforeseen changes, a range of projections needs to be made. A range of assumptions is also required concerning regional economic policy (IV(i) below). In view of the complexity of making regional projections for industry it might be necessary to assume that government effectively controls the location of new industry, and therefore base the projections upon the regional economic policy assumptions.

II The economic effects of airports

i) Primary and related secondary employment plus associated dependants (p. 116).

The analysis of this class of employment requires data which might be obtained as part of the surveys required for I. Employment figures should be obtained for a range of airport sizes and types. This would probably in some cases require data from airports in other countries, particularly the U.S., in order to make up adequate samples.

ii) Tertiary and related secondary development plus associated dependants (pp. 117-118).

Data for these groups might also be collected in the survey done for I(i)b. Foreign data might be required (with suitable precautions to allow comparability) in view of the small U.K. sample of airports in the larger size groups.

In both these cases, but particularly for (ii), it would be important to quantify the total cost/distance function of access to airport facilities discussed in the text (p. 117). The aim would be to isolate the effect of air transport from other transport modes (p. 117, p. 118).

III Constraints

i) Airlines (p. 119).

It is necessary to calculate the cost of disaggregating international and domestic services

Printed image digitised by the University of Southampton Library Digitisation Unit

to fit the networks mentioned at the end of I. Although there seems to be little evidence that these data have been analysed, airline files must contain much of the relevant cost data.

ii) Airways (p. 120).

This refers to the range of airway patterns needed to allow the realisation of the same range of airport networks. The method of costing, described on p. 119, would also rely mainly on data which airlines (or military authorities, in the case of military facilities) may be expected to collect in the course of their operations.

iii) Cost of construction of fixed airport facilities (p. 119).

This is also required for the above range of airport networks. Again in order to obtain a satisfactory sample foreign cost data would probably be required, and would have to be adjusted to fit regional factors (such as the efficiency of the construction industry). The cost of site provision would be omitted since it is likely to be highly variable and because the aim of the procedure described here is to select approximate locations for airports of given size, not precise sites.

iv) Cost of surface access (p. 119).

Again costed for the above range of airport networks. In order to calculate how much new surface access would be required in each case some adjustments to these networks would probably be necessary. The major line of communication might be taken as a line joining the population centre of gravity of the area to be served (adjusted to fit existing route networks) to the area in which the airport is to be located. It would probably be impracticable to cost these lines of access in detail, but a ranking of alternatives in terms of cost should be feasible.

This section simply provides costs, or rankings in terms of probable cost, of the various constraints. Social factors (p. 119) are omitted since, together with amenity, they can only be adequately assessed in the context of alternative precise sites. The population density constraint ((iv) above) provides some safeguard at this geographical scale of analysis.

IV Planning considerations

i) National (pp. 119-120).

The cost of these ranges of airport networks in relation to that part of national income growth (given by II in relation to I) which would result from their implementation.

ii) Regional (p. 121).

Analysed as in (i) but in terms of regional income growth.

The comparison of these two sets of results would show how far the goals of regional economic policy could be coincident with those of national economic policy (p. 121), and would allow the selection of a set of networks considered tolerable at both scales.

V Timing

i) Future changes.

Apart from any other sources of error in projection, cost relationships may change over time. In some cases, such as perhaps the cost of certain types of air transport versus surface methods, relationships may be projected for a few years with fairly high accuracy. However, since the planning horizon for the third London Airport may be 20-30 years (Hall, 1968 (28) p. 940) the likelihood of projecting changes in cost relationships accurately over this period is small. Consequently it is desirable to choose a time path of development which is as flexible as possible (c.f. the fact that in the U.S. the FAA national airport plan, covering 4,000 airport sites, includes 800 still in the planning stage (Burckhardt, 1967 ((39) p. 143)). The set of airport networks produced at the end of Stage IV should be analysed to see how far their implementation (both as a whole, and by airport) would affect the range of possible future airport locations.

ii) Finally a minimum cost time path of airport development can be selected. The extent to which it will be possible to combine items from various networks would depend on the way in which the geographical framework for the original framework had been set up (the larger the regions the greater the possibility of interchange, but the lesser the precision of airport location). The network, or combination of networks, chosen will probably be much affected by the rate of discount chosen (the higher it is the smaller the cost justified in the earlier stages of the time path, benefits being equal). Hence a range of time paths should be calculated for different rates.

This represents the end of the procedure as far as deriving a phased airport plan is concerned.

The level of detail of the above analysis is left open: it could be carried out at a range of intensities. Without prejudice to the level of complexity chosen, it does seem likely that even a cursory application of this approach would bring into relief the grosser inefficiencies which might arise through ignoring the ambiguity in the terms of reference.

It remains to emphasise the way in which this analysis can be fitted to the present stage of the Commission's work. As was pointed out in the Preface (and through the hypothetical example on p. 121) both

Printed image digitised by the University of Southampton Library Digitisation Unit

alternatives, national and regional, require analysis at a national scale to reduce the possibility of an inefficient decision.

The results of the above procedure will show what scale and timing of airport provision is desirable within whatever region is chosen to be called the London area. It will also show the general location desired for these facilities. However, it will, using the fact that a range of networks has been analysed, probably be possible to show the cost, if any, of adapting these locations to those of the shortlisted sites.

Further, the cost of treating the third London airport as in varying degrees national and regional will then be clearly visible. This provides an answer to the ambiguity in the terms of reference. It would then be at the discretion of the Commission to state the implications of each alternative, or to make a decision internally before the report is made.

Appendix A

List of Standard Region abbreviations used

N — North
Y — Yorkshire and Humberside
EM — East Midlands
A — East Anglia
SE — South East
SW — South West
W — Wales
WM — West Midlands
NW — North West
S — Scotland
NI — Northern Ireland

Appendix B

The rough cross classification of U.S. and U.K. employment categories used to produce row (i) of Table II

	CEIR (3) *Table* 5-4	*Abstract of Regional Statistics* (7) *Table* 8
1.	petroleum and coal products mining	mining and quarrying
2.	transportation equipment	shipbuilding and marine engineering, vehicles
3.	stone, clay and glass products	bricks, pottery, glass, cement, etc.
4.	chemicals	chemicals and allied industries
5.	electrical equipment machinery except electrical	engineering and electrical goods
6.	metals and metal products	metal manufacture metal goods not elsewhere specified
7.	lumber, furniture and paper products	timber, furniture, etc.
8.	textiles and apparel products	textiles clothing and footwear
9.	construction	construction
10.	wholesale and retail trades	distributive trades
11.	government	public administration
12.	business and personal services medicine, law, religion and education entertainment	professional and scientific services miscellaneous services
13.	transportation and public utilities	gas, electricity and water transport and communications
14.	finance, insurance and real estate	insurance, banking and finance
15.	printing and publishing	paper, printing and publishing
16.	food and tobacco products	food, drink and tobacco
17.	miscellaneous manufacturing leather and rubber goods	other manufacturing industries leather, leather goods and fur

Printed image digitised by the University of Southampton Library Digitisation Unit

References cited in text (excluding items given in confidence which are denoted in the text by asterisks).

1a. *Hansard*, 5th Series Vol. 765 (Vol. 13 of 1967-68), May 20th, 1968.

1b. Commission on the Third London Airport: *Site Information for Stage II Local Hearings: 2. Nuthampstead.* HMSO 1969.

2. Report of the Edwards Committee, Cmnd. 4018. HMSO 1969.
(N.B.—Owing to a strike no copy of this publication was available at the time of completing this submission. References to it are based on final typed drafts of Chapters IV and XVII.)

3. CEIR Inc. for the Port of New York Authority. *The Economic Relationship of Air Transportation to the Economy of the New Jersey-New York Metropolitan Area.* New York 1960.

4. A. H. Stratford: *Air Transport Economics in the Supersonic Era.* London, 1967.

5. London Airports Traffic Study—Heathrow Airport: Part 1: 1966 Traffic Characteristics. London 1967.

6. National Ports Council. Port Progress Report 1969.

7. Central Statistical Office: *Abstract of Regional Statistics* No. 4. HMSO 1968.

8. M. Wright: "Provincial Office Development." *Urban Studies*, 1967, pp. 218-257.

9. E. Hammond: "Dispersal of Government Offices: A Survey." *Urban Studies*, 1967, pp. 258-275.

10. Anonymous: "Two Studies—an appraisal." *Official Architecture and Planning*, January 1968, pp. 87-93.

11. P. S. Smith: *A Study of the Economic and Social Effects of a Major Airport, with Special Reference to Heathrow Airport.* M.Phil. thesis, London University, December 1967.

12. J. B. Lansing: *Transportation and Economic Policy.* New York, 1966.

13. I. Fulton: "Airport 2000". *Official Architecture and Planning.* February 1967, pp. 210-218.

14. W. H. Long: "City Characteristics and the Demand for Interurban Air Travel." *Land Economics*, May 1968, pp. 197-204.

15. G. Humphrys: "The Growth Industries in Britain." *Geography*, 1964, pp. 288-293.

16. W. Isard: *Location and Space—Economy.* Cambridge, Mass. 1956.

17. S. Enke: "Government—Industry Development of a Commercial Supersonic Transport." *American Economic Review*, 1967, Vol. 57, pp. 71-79, Discussion pp. 101-107.

18. Schiphol Airport Authority, Press, Publicity and Information Bureau: Schiphol Airport Amsterdam, Amsterdam, 1968.

19. Board of Trade, Civil Aviation Statistics. CA2, January 1969.

20. R. S. Doganis: "Towards a National Airports Programme." *Official Architecture and Planning*, February 1967, pp. 247-249.

21. P. M. Smith: "What kind of regional planning? A review article". *Urban Studies*, November 1966, pp. 250-257.

22. Port of Seattle Commission: Seattle/Tacoma International Airport and its impact upon the economy of King County, Seattle 1964.

23. Shannon Free Airport Development Company Limited: Annual Report 1967-68.

24. I. Fulton: "Strategic Choice in Regional Planning". *Official Architecture and Planning*, August 1968, pp. 1046-52.

25. South-East Economic Planning Council: *Location of Third London Airport.* Planning Council's Evidence to Commission. Press notice 10th September 1968.

26. O. Cook: *The Stansted Affair*, London 1967.

27. P. Self: "The Airport Equation". *Town and Country Planning*, April 1969, pp. 146-149.

28. P. Hall: "Roskill's Airport: The First Days." *New Society*, 26th December, 1968, pp. 939-942.

29. *Airport Times* (monthly): Scheduled Flights from Given Airports, August and November 1968.

30. J. H. Appleton: *The Geography of Communications in Great Britain.* Hull, 1962.

31. Board of Trade: Civil Aviation Statistics. CA3 January 1969.

32. Federal Aviation Administration: *The Airport —Its Influence on the Community Economy.* Washington D.C. 1967.

33. M. Gaffney: Land and Rent in Welfare Economics, in Land Economics Research (Papers presented at a Symposium at Lincoln, Nebraska, June 16-23, 1961). Resources for the Future, Washington, 1962.

34. J. F. Wall: *Airport Environment Planning.* M.C.D. thesis, Department of Civic Design, University of Liverpool, March 1968.

35. M. E. Beesley: The Technical Possibility of Special Taxation in Relation to Congestion Caused by Private Users (paper read at 2nd International Symposium on transport economics, 1967) European Conference of Ministers of Transport, Brussels, 1968.

36. J. Friedmann and W. Alonzo (ed.): *Regional Development and Planning.* Cambridge, Mass., 1964.

37. South East Economic Planning Council: *A Strategy for the South East.* HMSO 1967.

38. *The Times*, in Supplement on the Paris Air Show: Super Port could end Congestion (N. Travers), 28th May, 1969.

39. R. Burckhardt: *The Federal Aviation Administration*, New York, 1967.

40. G. Fromm: Civil Aviation Expenditures, pp. 172-230 in R. Dorfmann: *Measuring Benefits of Government Investments*, Washington DC, 1965.

Printed image digitised by the University of Southampton Library Digitisation Unit

II. Foulness Shortlisted Site:
The costs and returns of moving the general cargo functions of the port of London to Foulness

1. Purpose

The movement of port functions may seem peripheral to the work of the Commission on the Third London Airport. The purpose of these calculations is to show that such a movement is a potentially important factor in evaluations of the Foulness airport site. There are two reasons:

a) Existing proposals for a port at Foulness are based on a bulk terminal with some container facilities and do not envisage a transfer of the general cargo functions of London to Foulness ((1) and personal communication). Such facilities would not require highly developed landward access other than pipelines. Since there is unlikely to be very great interaction between freight and passenger flows in the two modes (sea and air transport having such different characteristics) the only major justification for locating port and airport together (from the airport's point of view) is the provision of a flat site.

b) As discussed (p. 114) land access to the present port of London is almost entirely by road. An airport would not necessarily rely so heavily on road transport, but certainly requires good road access. A general cargo port and an airport therefore share a need for good road access and the cost of road access is an important factor in airport siting. The existing port of London is not very highly efficient, having grown by accretion within an already congested city. A recent suggestion is that the functions of the port should be concentrated on the existing downriver development at Tilbury (2). Apart from the point that there would be no airport to share the road access at Tilbury, the latter requires an impounded dock system with higher initial and running costs than would be necessary at Foulness.

2. Method

The analysis presented here is simple and is not nearly detailed enough to produce comprehensive answers. It is cast in the form of an elementary cost-benefit analysis (e.g. Litchfield's much fuller example (3)). It does not go into the ramifications of the change under consideration, as a fuller analysis would.

For instance, an increase on the scale proposed of residential housing in central London might affect the general housing price level, although intuitively it might appear that the demand for houses in the London area is sufficiently high to prevent a substantial fall, particularly in view of the time lag of development. Another unanswered question is—would the improvement of the dockland environment outweigh the possibly deleterious effect of urbanisation in the Foulness area? The cost of moving the necessary population and industry to Foulness is by no means fully measured (p. 113). On the other hand the benefit to the dockers' community of living in what, if suitably planned, would be a better environment is only measured in so far as it is assumed to improve labour efficiency at work (p. 115).

However, these omitted repercussions do not appear to contain any items of sufficient importance to outweigh the effect of those included. A further analysis could include these and any other "intangibles" which can be priced in terms of opportunity cost. Self appears to favour a definition of cost benefit analysis which would exclude some classes of such repercussions and consider them under the heading of "town and country planning" ((4) pp. 146-147). However, he does not put forward any methodology for doing so, and there does not seem to be any reason for departing from the standard (Prest & Turvey) approach of regarding cost-benefit as a method of taking decisions within a preconceived political/social/planning framework.

3. Scope

These calculations exclude bulk handling and hence inter alia most coastwise trade ((5) p. 30). They include 22 of the total of 60 million tons of the port's trade (ibid.) and nearly all of that part which uses the docks and wharves of the port.

The analysis also excludes consideration of wider aspects of port planning, and assumes that a general cargo port to carry out functions similar to those now carried out by London is necessary in the South East, and within the region that the location of Foulness at the mouth of the Thames estuary makes it one of the more attractive sites.

4. Results

The table gives the results of the calculations. It is necessary to take into account the notes on each item which follow the table in assessing the significance of these figures.

As given, the result is a large net benefit even when including the total cost of a 2×3 lane dual carriageway from Foulness to London. In terms of the main items for which values are given, the value of the present dock areas about equals the cost of new docks at Foulness. Also the benefit of increased dock efficiency far outweighs the cost of the road. It is not necessary to assume nearly so large an increase in efficiency for the port to pay for this road. In fact it is probable (assuming a change in the institutional constraint with the move) that most of this benefit would accrue only with a move, in view of the short run of

Printed image digitised by the University of Southampton Library Digitisation Unit

the 20 year discounting period and the state of the present port environment and labour relations (p. 115).

At their face value these calculations suggest

a) that a movement of the general cargo function of the port of London to Foulness is desirable,

b) that such a port could support the cost of its access route. This would significantly cheapen the cost of providing road service to the airport since extension of a road is less expensive than the creation of an entirely new one. Moreover, since the traffic peak of an airport is likely to be at weekends and that of a port to be on weekday, they are complementary, and the cost to the airport (as well as the port) of providing a joint road is further reduced.

In fact these results cannot be treated as more than an indication that further research on this topic is important to the consideration of Foulness as an airport site. The Commission may not wish to assume so large an economic change in making its decision, but if further research bears out these preliminary results it might be considered desirable to point out the profitability of such a joint development in stating its conclusions.

Table: The returns and costs of moving the general cargo functions of the Port of London to Foulness* *£million*

	Return	*Cost*	*Benefit less cost*
(1) Land	215	24	+191
(2) Buildings (part only)	16	2 (but because of other omissions assumed to equal return)	0
(3) Surface access	?	89	— 89
(4) Sea access	22-25	? (assumed to equal return)	0
(5) Docks	?	200	—200
(6) Deck operations (indirect benefit)	330	—	+330
(7) Dredging	0·5 p.a.	? (assumed to equal return)	0
(8) Other operating expenses	?	?	? (probably small +)
(9) Change in traffic due to new location	?	?	? (possibly large +)
			+232

* See notes which follow.

Notes

1) Land

Return

The PLA's estate comprises approximately 4,300 acres ((5) p. 34). Of this about 1,000 is represented by Tilbury docks, which are well downriver of the centre of London, but the rest of the acreage is readily accessible to the centre. St. Katharine Dock land was sold to the GLC in January 1969 as residential building land, and fetched £50,000 per acre. If the total PLA estate could be sold at this price its value would be £215 million. The Authority's estate officer values the land at about £89 million (*op. cit.* p. 23) but in doing so took into account existing planning constraints which would be altered if a large scale land use change were permitted, since higher class residential development would be feasible.

The higher value is rendered more plausible by the fact that if the PLA estate were sold, and the dockers moved elsewhere a large area of low quality land use outside the docks would be likely to undergo radical change (see (2) below). As a result the area now regarded as "Dockland" would become attractive riverside property and its value would rise correspondingly. Its value would also be measured by the reduction in commuter time which would be achieved by those employed in central London (the employment imbalance of central London is given by Thomas ((6) p. 458) who moved their place of residence into the centre. If a large area were to become available it would be correspondingly well known and attractive to people who wished to substitute a larger capital investment for a quantity of commuter time. Consequently a valuation based on existing land use considerations, as is the PLA estimate, is likely to be very much lower than that realisable under the conditions assumed here.

It is necessary to justify the inclusion of Tilbury at £50,000 per acre, since this area does not have the same potential attraction as a residential district. As mentioned ((5) p. 6 and shown in the new plans (7)) this area has good and improving surface communication, and would be a good site for industry generated by an airport at Foulness. Hence its value as industrial land under the assumptions of this analysis would, in view of the constraints on the expansion of industrial land in the South East, be high and at least as great as £50,000 per acre. The opportunity cost of the PLA estate may therefore be taken as £215 million.

Cost

The cost per acre of reclaimed land at Maplin Sands beside Foulness has been estimated by one of the consortia involved (Thames Estuary Development Co. verbal communication) at £3-6,000 per acre. The cost of buying 4,000 acres of such land to replace the PLA's present estate would therefore, using the highest estimate, be £24 million. In fact an efficient modern port

Printed image digitised by the University of Southampton Library Digitisation Unit

carrying out the functions of the Port of London would probably occupy more land than this, but on the other hand at least some of the land used for a new port could come from existing coastal land, whose (opportunity) cost before development would be very low (assuming that existing land use controls were relaxed only for the specified port and airport development).

2) Buildings

Return

Newsom states that there are 11,000 acres of "Dockland" outside the PLA estate (2). There are 35,894 employees in the port of London ((8) p. 72). Assuming a 1: 1 ratio for services this produces a total (in round figures) of 72,000 jobs generated directly by port activities. Multiplying by 2·5 to allow for dependants this produces a crude total of 180,000 which is an estimate of the total population directly based on the port. If these people were assumed to live at a density of 110 per net residential acre ((10) Fig. 5-3) then they would occupy 1,636 acres. The remaining 9,364 acres of dockland is by this calculation occupied by residential land not directly linked to port activities and by industrial land which may or may not be dependent upon location close to the docks. A problem parallel to that discussed in Part I of this submission then arises. What is the distance time-cost function of these activities and workers from the port? Only when this is known can it be calculated how many people and how much industry must (economically) move to Foulness with the port, how much to some intermediate area, and how much is either indifferent or must for other reasons remain in its present location.

Being unable to quantify this function in the time available, comparison will be confined to the fraction which can be identified as having to move, i.e. the dockers and associated population. The return to the existing residential land is represented by the net increment in value due to the change from present to future use. That part of the increment due to the replacement of a cross-section of buildings of various ages with new ones is incorporated in the estimate given below under the heading of cost (the topic is discussed by Stone (9) pp. 100-104).

However there is another source of increment in value. At present GLC policy is to replace housing in this area with low-rent houses which can be afforded by the existing inhabitants. The assumption in this submission is that the area would be made attractive to central London commuters with much higher incomes without detriment to the present inhabitants who would be moved, in the case of the dockers, to Foulness. The value added by this change in the average income of persons living in the area might be considerable. The present GLC purchase price, for blocks of reasonable size (exceeding one-tenth of an acre) is about £40,000 per acre, slightly lower than the price paid for immediate riverside land. A fairly cautious estimate of the increase due to radical environmental change might be an extra £10,000 per acre. For the 1,636 acres estimated to be occupied by the dockers' community this represents an increment of £16 million (in round figures).

Cost

The cost of housing the assumed population of 180,000 can only be estimated very roughly. Using Stone's figures ((9) p. 130) and using the category "peripheral neighbourhood on virgin site 5 miles from existing housing" the cost, for two-storey houses at 14 to the acre, is £114,000 for 10,000 people. For the assumed population this produces a total cost of £2 million. The values used in Stone's work are now fairly old and may have changed differentially so that while the sum includes some benefits as well as costs its total has probably risen in 1969 terms. However this change is difficult to measure in view of the composite nature of the figures.

3) Surface access

Return

This is twofold. One aspect is the reduction in congestion cost in the movement of goods to and from the projected port at Foulness compared with the present port.

The other is the reduction in congestion cost to remaining commuters due to the increase in central London residence of central London workers. Combined with this is the reduction in transport equipment and costs due to the reduced commuter traffic.

No attempt is made here to put a monetary cost on these benefits. To do so effectively would require among other things an estimate of the number of commuters who could (and would) move to live in central London which in turn requires much more complete analysis than is possible here.

Cost

The parallel cost is that of constructing surface access from Foulness to London. In fact if the port were placed at Foulness much of the trade would bypass London if the projected ring roads were built (using 1964 data only 34 per cent of the port's exports (probably more reliably estimated than imports) originated in the whole South East region, (10) p. 21).

Only a very rough estimate will be made, since the Commission will be making detailed estimates in connection with the airport site. Calculations are made only for two by three-lane motorway, since only 3 per cent of imports and 9 per cent of exports are estimated to go by rail (*op. cit.* p. 17, p. 35).

It is assumed that there would be about 30 miles of

Printed image digitised by the University of Southampton Library Digitisation Unit

rural motorway and 15 miles of urban in a route from Foulness to central London. In fact this distance is longer than that needed to carry the goods to the entrance of the existing docks, from Tilbury upriver, would be. The latter route would give the exact amount of extra access cost required by the movement of the port, but would not be economically realistic. Nor would it serve Foulness airport satisfactorily, so the longer route is used in these calculations. A construction cost of £0·75 million per mile is quoted by Goldstein for rural motorway ((11) Table 6). Acquisition costs (rural) are negligible for the present purpose. Kerensky gives a range of costs for urban motorway based on a cross section of London data. If the category "depressed motorway with retained embankment" is used its cost would also cover a combination of embanked and viaducted motorway. The cost per mile for two by three-lane dual carriageway is £4·2 million ((2) Table 3). Acquisition costs might be taken to average about £0·2 million ((2) Table 4).

Combining these costs for the assumed mileage a total cost of £89 million is reached. For the present the full cost is included, although in fact the port traffic might not require all of such a motorway.

4) Sea access

Return

The return in this case is the value of the time, etc., saved on the stretch from Foulness to existing docks, and the cost is that of moving the goods from Foulness by land.

The sea time from Foulness is estimated at three—six hours and the annual cost £2—£5 million* discounted over 20 years at 7 per cent a sum of £22—55 million is produced.

Cost

No estimate of the cost of moving an equivalent volume of goods by land has been made because the type and costs of the road transport which would be used have not been established. Congestion costs (assumed to be savings) enter into the benefit side of (3) above and so the only costs to be included are the capital and running costs of the vehicles involved. Except in the case of bulk cargo (for which facilities would probably have to be moved to Foulness) all goods have to support transhipment costs at the present port and so there is no additional cost due to the movement of the port.

Compared with sea movement the time factor would be much reduced by surface transport, but the running costs increased.

The overall cost of land movement might exceed that of sea movement, but the sums involved are not very large in relation to the total for costs and benefits.

* As in Part I of the submission asterisks indicate data based on confidential information.

5) Docks

Return

The land value is included under (1) above. The values to be included here are those of the docks as tipping areas during the land use change and the residual value of old fixed plant. Tipping rights appear to yield quite substantial capital sums (e.g. (5) p. 4 where the tipping rights for Lady Dock and part of Lavender Dock are quoted as being worth £92,000).

Cost

The port of London's total trade in goods other than fuels in 1968 was 22 million tons ((5) p. 30). Not all of this was general cargo, as it includes wood, cereals and sugar in bulk, but since only the costs of general cargo berths are available for this submission it will all be treated as such for the present purpose.

Figures are available which show the tonnage throughput of berths of different kinds ((8) p. 64). Conventional berths on average throughput 30-50,000 tons per annum (say 40,000 on average). However it is stated in the same source that efficient operation should raise this to 100,000 tons per annum. Since a new port would have all the physical necessities for efficient operation, and since a radical change of milieu might permit the introduction of some of the known efficiencies in labour utilisation which are now infeasible due to poor labour relations, it might be expected that such a port would achieve throughputs of this order.

The cost of a berth will be taken as excluding any share of an enclosed dock system, since this would not be necessary at Foulness. On this basis a recent estimate for a modern conventional general cargo berth is £1.07 million*.

If the throughput were as low as 40,000 tons p.a. the cost of berths for the existing port's traffic would be of the order of £500 million. If 100,000 tons p.a. were achieved, as seems reasonable, the cost would fall to £220 million (220 berths). In fact the PLA has at present 167 berths ((5) p. 34) but there are substantial numbers of river wharves outside the PLA estate.

The various methods of unitisation greatly increase the annual throughput per berth ((8) p. 64) but raise the capital investment per berth, although not in proportion. A capacity ten times that of a conventional berth is quoted as typical ((13) p. 155). Container berths might be taken to cost £1·5 million (with no impounded dock system) and with a throughput ten times that of a conventional berth the present port's trade could be handled by 22 container berths, costing £33 million. However, if £200 million were allowed for berth construction this would allow scope for some container berth construction and hence higher capacity. This cost includes transit sheds. It compares with a PLA estimate of the gross replacement cost of

Printed image digitised by the University of Southampton Library Digitisation Unit

its fixed assets other than land (which includes, of course, impounded dock systems) of £223 million ((5) p. 26).

6) Dock operation

Return

It is difficult to identify precisely what increase in the efficiency of dock operations would follow from the development of a wholly new port. This is because calculations of methods of increasing efficiency normally include both capital and labour elements and labour is subject to strong institutional constraints in the port of London. As suggested in the cost section of (5) it would appear much more likely that an improvement in labour relations could be achieved if a completely new environment were created. The success of Felixstowe in this respect is to some extent an indication of this. It is somewhat difficult to see that a sudden revolution in labour relations could occur with the existing fixed plant and living conditions of the London dockers. It might take the best part of the 20-year period over which these returns are discounted to achieve a proportionate increase in efficiency in the present location and with present plans for development.

There are a number of calculations of ways in which the turnround of ships in port could be made more efficient. Goss estimates that the time spent in port by each ship could be cut by two-thirds ((12) p. 148). More comprehensive studies of port operations produce estimates which suggest that the total *net* cost of port handling could be reduced by one-third,* and by one-quarter*.

Taking an average value for port charges per ton (near sea, short sea and deep sea) of £5 16s.*, these increases in efficiency would produce a net saving of about £30 (one-quarter) or £40 (one-third) million p.a. Using the more conservative figure, and discounting it at 7 per cent over 20 years a sum of £330 million is produced.

Cost

The above calculations are net of increased labour and other costs and so no further costs arise.

7) Dredging

Dredging costs (including maintenance and renewal of plant) vary sharply from year to year, so the 1967-68 average was used. It is approximately £0·5 million p.a. It is assumed that dredging at the new terminal would cost about the same amount.

8) Other operating expenses

It is possible that dock operation beyond those mentioned here, e.g., services such as the police force (£1·5 million p.a.) would be rendered more efficient by the move. Another example is savings in time due to the elimination of impounded dock systems. However, no attempt is made here to quantify these.

9) Change in volume of traffic due to new location

Such changes are likely only in a positive direction and would mainly come if the new port developed an entrepôt function (in 1968 only about 3 per cent of the total trade came under the heading of transhipment ((6) p. 30)). London once had such a function, now held by Rotterdam and Antwerp. The saving in cost of port operation could to some extent be passed on to users, and value of time, etc. saved (item (4)) would be a net gain to the entrepôt trade. No figures can be attached to this possibility, but research into it would seem desirable.

A less profitable change (in regional terms) would probably be that all the small ports (such as Felixstowe and King's Lynn) which benefit from the present inefficiency of the port of London might lose trade to the new port.

Bibliography

1. Thames Estuary Development Co. Ltd.: *The Third London Airport: The Case for Foulness.* Amended April 1969.
2. G. Newsom: "A Thames Plan". *Official Architecture and Planning.* March 1969 pp. 296-304.
3. P. Hall: "Roskill's Airport: The First Days". *New Society*, 26th December 1968, pp. 939-942.
4. P. Self: "The Airport Equation". *Town and Country Planning*, April 1969, pp. 146-149.
5. N. Litchfield: "Cost Benefit Analysis in Town Planning—A Case Study". Swanley *Urban Studies* 1967, pp. 215-249.
6. Port of London Authority: Annual Report and Accounts Year ended 31st December 1968, London, 1969.
7. R. Thomas: *London's New Towns.* Political and Economic Planning (PEP) Vol. XXXV, Broadsheet 510, April 1969.
8. SE Economic Planning Council: *Regional Strategy Proposals Showing Shortlist Sites for London Airport III* (map). No date.
9. National Ports Council: Port Progress Report 1969.
10. *London Traffic Survey.* 2 vols. London County Council, July 1964.
11. P. A. Stone: "Housing Town Development Land and Costs". *Estates Gazette*, London, 1963.
12. Martech Consultants Ltd.: *Britain's Foreign Trade.* Port of London Authority, no date (1964 data).
13. A. Goldstein: Motorway Route Location Studies, TPI: Proceedings of Town and Country Planning Summer School at University of Keele, September 1966, pp. 24-40.
14. O. Kerensky: Urban Motorways and Their Environment, Rees Jeffries Triennial Lecture 1968, TPI 1968.
15. R. O. Goss: *Studies in Maritime Economics.* CUP Cambridge, 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Royal Institute of British Architects

Introduction

1. At a time when the technology of air travel has reached the astonishingly advanced stage of supersonic flight in machines with the capability of the Concorde it has become clear that demands are growing for a comparable quality of intellectual and technical effort to be applied to the problems of life on the ground. This means that something like the equivalent quality of design in architecture and town planning must be aimed at both in the comprehensive design of airports themselves and in their integration with the future land use and communications pattern of the country as a whole. It also means that adequate time for thinking—for really adequate preplanning—must be given before development is started. The RIBA, which includes many of the most highly skilled town planners amongst its members, has a major interest in ensuring that the opportunity afforded to the Commission by the Government to reappraise the whole question of the siting of a third London airport should really be grasped by ensuring that the widest implications of such a project in social, economic, architectural and town planning terms are fully considered and planned for.

2. Quite apart from the actual third London airport proposal, it will be a most encouraging sign for the success of the new Planning Inquiry Commission system itself if the conclusions of this study are generally felt to be soundly based on an exhaustive study of all the factors involved. There was some anxiety among architects and planners when the Commission was appointed that the remit seemed to suggest merely a Board of Trade attempt to establish the comparative disadvantages of the shortlisted sites, rather than a comprehensive planning exercise to decide the pattern of airport facilities within the framework of a national transportation plan. It would be fatal if a very rigid interpretation of the terms of reference*—for example, relating need only to London and its immediate area—prevented the Commission from assessing the regional and national implications of this project.

3. Local architects, through the appropriate RIBA Regions, are giving evidence to the Commission on the four sites that were shortlisted earlier in the year: this memorandum is concerned rather to highlight some of the wider issues which architects in general feel to be of particular importance. These are grouped under the broad headings suggested by the Commission, the discussion opening with considerations which affect the selection of site; followed by considerations which affect the way the development is carried out wherever it is sited; and finally a number of considerations which, if realistically assessed in terms of feasibility as well as cost, could affect both the choice of site and the way in which it is to be developed.

The need

4. This is clearly the first consideration: it is significant that whilst nobody seriously questions the need for an additional airport, there has been very little discussion of the type of airport that is required nor has there been a definite indication of the government's intentions in this respect. Any airport, of course, performs a multiplicity of roles, but one or two must predominate. Is this to be principally a terminal airport, an international inter-change airport, or a domestic inter-change airport? Is it the intention to syphon off the growing freight traffic to the new airport? The siting requirements naturally differ enormously. Heathrow is currently a major international inter-change. Is it suggested that the new airport can relieve this particular load? To spotlight just one of the implications of this choice of role, the relative importance of the surface-transport relationship with the proposed interchange facilities at Victoria cannot be assessed until this role is clearer. It has undoubtedly been one of the restraints on the success of Gatwick that these considerations were not fully explored when it was first developed.

5. The scale of this development is quite unprecedented in this country. In effect it involves the siting of a new kind of city, ultimately containing perhaps ½ million people, and it cannot but profoundly influence the present and future pattern of development and of transportation over a very wide area—in some respects nationally. The air traffic aspect is the least difficult part of the problem. While air traffic predictions are notoriously unreliable, present estimates of maximum airport traffic density are likely to be exceeded. As saturation at any one level of utilisation approaches, new devices and methods are always forced into existence to increase efficiency and capacity. An example, one of many, is the new Radar process recently announced which is claimed to give Heathrow 10 per cent more capacity, so sidestepping for the moment the need for another runway, although exacerbating other congestion problems. It is the latter problems which seemed to be so difficult to solve, and hence the obstacles encountered getting to and from the aircraft on the ground.

* "To inquire into the timing of the need for a four-runway airport to cater for the growth of traffic at existing airports serving the London area, to consider the various alternative sites, and to recommend which site should be selected." *Hansard*, 20 May 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

6. Before the new airport is actually in operation, Heathrow, Gatwick, Luton, Stansted and others will have had to develop to meet new demands, and these developments in themselves could have a considerable bearing on the choice of site and the role which it will play in the future development of air traffic in this country.

7. Present operation peaks, levelled by faster aircraft, will produce a new situation on the ground. In London, Paris and New York they occur in the morning and evening at present, due to the seven hour overnight or day-time transatlantic journey time: if this is reduced to three hours, the peaks may be extended considerably and the pressure for night operations would then increase. "Jumbo" jets carrying 300 or more passengers will proportionately reduce traffic problems in the air, but will increase traffic problems on the ground. All these developments will have fundamental implications for the surface transport links of the new airport.

8. Thus, the concept of need must first be related to the intended role of the new airport and the geographical distribution of potential users.

National and regional planning considerations

9. Given the context and background of the Inquiry there might be political attractions in seeking merely to establish which of a small number of shortlisted sites would cause the least obvious hardship and damage, and provoke the least protest. The purpose of the present Inquiry must be to select the site on which a new airport, with a clearly identified role in the projected development of air traffic, can most effectively operate with the minimum disruption to the immediate environment, and where the attendant urbanisation and transport development can make a positive contribution to the region (and even the country) as a whole. This must take into account the nation-wide repercussions that are involved, and not just be a judicial assessment of the apparent demerits of the shortlisted sites.

10. However, the Commission's title itself seems to pre-judge one of the major issues with which it must clearly be concerned. In national and regional planning terms it is not clear whether the search is for a site for a third *London* airport, a south east *regional* airport, or an additional *national* airport to serve the Midlands, East Anglia and the South East. The Midlands-Merseyside "crescent" of population will obviously need further airport facilities in the near future, and if these are provided within that area, this could mean that the actual siting of the project now under consideration need not be greatly influenced by the distribution of population outside the South East. Again, concern with the siting of a third London airport should not exclude consideration of further possible future requirements, of the eventual need for a Fourth. This must inevitably affect the choice of the present site. To recognise now that this problem will arise before long will help to ensure that work on any subsequent major airport is both methodical and started in good time.

11. It is thus the relation of the site to the overall distribution pattern of potential users for which the airport is intended, rather than merely the distance from central London, which is the crucial regional planning issue.

12. The lessons of our experience with the development of New Towns would suggest that such a project should be preceded by very full analysis of the likely effect on existing communities, on the transport network, on the employment pattern, on the visual attractions of the area, on the recreational potential of the neighbourhood and so on. The present problem is far more difficult in both degree and kind. Not only is there likely to be a sizeable city placed near the actual airport, but the peculiar effects of busy air traffic will extend the affected area out of all proportion to the size of the actual development.

Associated urbanisation, including housing problems

13. Turning to considerations that affect the development of any site, and thus indirectly the choice of the site itself, the new communities associated with the airport must be carefully planned in the social/economic sense as well as physically if they are not to be unbalanced. There is a danger not only that they will be too heavily dependent on the direct employment pattern of the Airport, but also that they will be selectively low-income since higher income groups will be prepared to face the cost of longer journeys to work and they are less likely to tolerate high noise-nuisance. All this would suggest that the siting of the "air city", its visual attractions and protection from the worse effects of the noise problems, are of great importance. Similarly, the transport links with the actual airport must be of a standard of convenience, and at levels of fare, which will make it possible for the residential areas to be separated from the actual airport by a suitable noise reduction space.

14. Clearly, although the lessons of recent New Town or Town Development projects will be valuable, this will be a city of a very different sort. Judging from foreign experience there will be little difficulty in encouraging some types of industry to go there, and indeed the problem may be to control the influx to make possible the evolution of a balanced and economically diverse community. The provision of adequate travel-to-work links to neighbouring towns will be essential if these wider employment prospects are to be achieved, and full advantage taken of the economic potential of the new city. The nature of the industrial

Printed image digitised by the University of Southampton Library Digitisation Unit

satellite could be strongly influenced by the amount and type of air freight traffic, and this is yet another reason for clarifying the airport's role in this respect. It is encouraging that the Commission have appointed Planning Consultants to advise on these urbanisation implications: just as travel speeds are stimulating engineering advance, so must the challenging requirements of an "air city" serve as a stimulus to the architecture and town planning professions. This will only occur, however, if the choice of site for the airport enables the establishment of a balanced community to be associated with it. The problem of noise will be dealt with more fully below, but it should be recognised from the start that housing presents the critical problem. Factories and offices, even schools, can be sited within an area in which noise levels are such that they can be reduced to tolerable limits by incorporating special insulation. Dwellings are in an entirely different category. A residential area should be one in which one can sit in the garden or carry on a conversation with one's neighbour without being seriously interrupted by passing aircraft. In a school, office or factory double glazing can reduce the nuisance—in the home this is merely an expensive and irritating palliative.

15. In terms of the living conditions of the inhabitants there is no way in which the city can be designed to afford protection from all the unpleasant side-effects of a nearby airport as cheaply and effectively as increasing the distance between the airport and the city.

Surface transport

16. We have already commented on the relative importance of surface transport facilities, as opposed to air traffic problems, in the choice of site (paragraphs 5 and 7 above). We would simply reiterate that the adequacy of links with the *whole* area to cater for the expected rise in air passengers seems to us to be of crucial significance. If it seems that the most desirable site from all other points of view is not thus well served, it should then be seriously questioned whether the area selected for the airport to serve is the right one. It is in our view impossible to over-emphasise the importance of these surface transport links. Previous experience would suggest that the bottlenecks which will extend travel-time, if not determine actual saturation point of the airport, are as likely to be brought on by the inadequacy of these links as by the facilities for air movement. Certainly present day air passengers suffer the majority of their frustrations and physical discomfort while still on the ground. Moreover, if the airport is to have any interchange function—as it must—these links will form an intricate pattern with those of the existing airports in the region, and the danger of overloading or lack of co-ordination at any point will be correspondingly greater.

Environment considerations

17. The scale and character of the whole project increases the necessity for careful study of its effect on the "environment", in its widest sense. The Airport Development Authority must be charged with reinstating and improving the environment throughout the whole of the area which is adversely affected by the nearness of the airport. This is one of our major recommendations. Under no circumstances should the responsibilities of the Authority be allowed to stop at the airport boundary fence. Its major effects will extend far beyond the land acquired, and the responsibilities for compensation, improvement, protection, etc., should in some way, or to some degree, be laid on the Authority. Economic demands for airports may be expected to outweigh purely local objections when there is a conflict, and therefore we would argue that, once the site is settled and while it is growing, the principle of "quid pro quo" should operate. Airports cause loss of amenity: a fair deal for communities in the vicinity demands special financial help to overcome such problems as are capable of solution. A new type of promoting and controlling organisation, perhaps on the New Town Development Corporation model, will in our view be necessary for this purpose. This should not be looked upon as just an attempt to mitigate the worst effects of the airport, but as an opportunity to substantially improve the convenience and environmental attractions of the whole of the surrounding area. For this reason the new development should proceed consecutively with the general renewal of this area. Properly tackled this could be an object lesson in the integration of a major airport in a predominantly non-urbanised area, at the same time using the massive new input to co-ordinate or hasten other necessary development.

Noise

18. The noise problem is one of the considerations which must obviously influence the way in which the development takes place, but which should also, if its implications are thought through, have a considerable bearing on the choice of site. The first priority must be to seek further and more effective ways of reducing noise *at source* by making aircraft quieter. If all the effects of excessive noise were realistically costed, and remedial action taken, we are convinced that there would be great financial pressure to mitigate the need for excessive curative expenditure by developing all means of prevention or reduction at source. The second priority should be skilful use of the terrain. In addition to being sited at an appreciable distance away from the airport itself (see para. 15 above), residential areas should be insulated as much as possible from the airport, by belts of mature trees or natural features, and the minimum number of people should find themselves in the area of the main flight paths. The experience of the US Air Force in siting

Printed image digitised by the University of Southampton Library Digitisation Unit

their residential areas behind substantial tree belts at their East Anglian bases would be of interest to the Commission. Needless to say it will be imperative to start tree planting to strengthen existing wooded areas immediately the site is known if even this very limited benefit is to be enjoyed within 20 years. The third priority is to design the layout of the residential units, and social buildings, in such a way that they are also insulated to some extent from excessive noise nuisance. This has been relatively easy where the source is at or near ground level, and such features as the London Inns of Court and Cambridge courts are very effective minimisers of traffic noise. Indeed, much of our urban environment has developed in a defensive posture against street noise. We have formed shelter against this type of noise whenever possible: exposed to the noise nuisance from the air such urban forms are all the worse hit for being otherwise protected. Fourth on the priority list is to adapt the construction of the actual building to absorb or exclude excessive noise. This seems to be by far the most expensive and ineffective way of combating the noise pollution of our environment.

19. At its meeting in February 1969 the RIBA Council endorsed the recommendations of a special study of the noise aspects of this problem undertaken for the RIBA London Region, and these were communicated to the Commission. In this memorandum we merely draw attention to the major issues that arise from all the research undertaken on this problem of which the Commission will certainly be aware. The Commission is no doubt alive to the fact that its appraisals of social and material costs depend first and fundamentally on the reliability of their criteria of acceptable annoyance or interference. Yet there is no evidence available to us that the NNI data*, upon which so much is being based, have been firmly and properly established, nor the criteria of interference with such specific activities as teaching, study, 'phoning and numerous other normal activities requiring either quiet or aural communication. The only evidence known publicly about the NNI curves is related to the Wilson Committee. It was done ten years ago, in haste, and went inadequately into night conditions or conditions of severe apprehension. It is understood that more information is now available, but this, if so, must be exposed to the normal criticisms of science before the country can be expected to trust it, and the data about schools, etc., is at present little more than supposition. On this basis, far more schools needing protection have been found to lie outside the 35 NNI contour than within it. Far too much emphasis has been placed on these inadequately supported NNI curves, and far too little on the real extent of noise-affected areas. The Commission appears to be showing no urgency, at least in public, to rectify deficiencies, yet the data are fundamental and can and must be available for the final arguments.

20. In short, there is still much to be done in this direction, and three particular areas of concern for architects and planners are drawn to the Commission's attention:

a) Thorough data have been prepared on the costs of protecting new and existing buildings. Insofar as protection by design and construction is relevant and practicable it will add upwards of £2 per sq. ft. (i.e. 30-40 per cent) to the costs to which we are accustomed for economical public buildings, and £3 to £5 for existing affected property, which would be equal to roughly the present inventory value. For low-cost housing, a minimal treatment costs upwards of £250 a dwelling which is 6/- or 7/- per sq. ft. The inquiry for Nuthampstead indicated that just short of £10 million would be required to protect all the schools affected. This reflects the evident fact that a great many schools needing treatment lie outside the 35 NNI contour; probably four or five times as may lie within it.

b) If the airport is sited in a populous area, the difficulties of carrying out protective treatments are formidable beyond all common supposition. Basically they involve abandoning open windows and a shift to artificial ventilation, often with conditioned air and double glazing. It is difficult and unattractive work to the industry and it has to be done with minimal interference to the use of the buildings; loss of use is part of the economic equation. Almost every building has to be treated as one-off work, and the professional load will be immense. And all this draws on the same labour force as is needed to build the new communities generated by the airport, the airport itself, and its surface communication system, all at the same time. It could prove impracticable, and it is certainly formidable almost to that point. In the end it is all too likely that the construction industry of the area will be incapable as well as unwilling to do this work (except at uneconomic prices) and any remedial work will be left to the "do-it-yourself" householder or not get done at all. If this is likely to happen the public should be warned now, not presented with a "fait accompli" when the site is decided.

c) For some activities, especially the enjoyment of the open air, noise above a certain NNI level is simply unacceptable and no protection can be given.

* NNI=Noise and Number Index, a formula introduced for the Wilson Committee on the Problem of Noise which is based on the level of noise and the number of instances, in order to arrive at a nuisance value, rather than simply a maximum sound level which may have only a short duration.

Printed image digitised by the University of Southampton Library Digitisation Unit

21. Finally, excluding the enjoyment of the open air, one must say it is technically possible to build new towns and cities where enclosed spaces can be adequately protected, but it would be at least 20 or 30 per cent more expensive to do so, and other factors would have to be strongly attractive to overcome the reluctance of many people to live there. In respect of new Airport communities, that 20 to 30 per cent could be better spent by building the new communities away from the noise, and giving them really good, and perhaps subsidised, transport.

Effect on existing communities

22. One can distinguish between the smaller scale problems of individual buildings of historic or architectural interest, and the large scale impact on whole communities. Techniques for the movement of whole buildings have been extensively developed abroad, notably in the United States and Canada and there is no reason why they should not be employed here in particular cases. However undesirable it may be to uproot it from its context, a medieval church found to be in the immediate area of the airport could be resited as the Airport Chapel. A tithe barn could be transferred to form the centrepiece of the new city recreational area. But it is impossible to uproot a whole community. Similarly it is possible to cost the removal of a building (and there is considerable experience of tithe barn reconstruction in Hertfordshire for example) but it is impossible to cost the obliteration of a village or the truncation of a small town. When it comes to villages and their related rural hinterland there is a hitherto-unspecified value system which must be given further thought. What value does the community—and its agent the present Commission —place on villages of special character and architectural interest? Now that the Civic Amenities Act has given the official interpretation of conservation it should be possible to undertake a crash programme of appraisal of all communities in the neighbourhood of the shortlisted sites, and we are sure local architects will be willing to assist the Commission in any way they can in this respect. In this way the relative damage that would be done if any of the sites were chosen can at least be suggested, even if it is still not feasible to balance this against all the other, more easily quantifiable, factors affecting the choice.

23. It is physically possible to resite even the most complicated Defence establishment. It may cost a considerable sum, but it can be done. Indeed the opportunity could undoubtedly be taken to modernise it, thus saving future expenditure. It is not in the same sense possible to resite a market town, to recreate the economic, social, visual interaction that makes up a living community. We accept that a number of buildings, groups of buildings, villages and towns must inevitably be affected. Our plea is that, wherever the airport itself or its service facilities physically destroy or damage them, the opportunity should be taken to recreate. In the case of buildings, removal may be appropriate. In the case of whole communities their framework will have to be replanned.

Landscape

24. In exactly the same way landscaping should not be thought of as an after-thought to soften the sharp edges of the development. Given the right site a comprehensive landscape plan, combined with suitable existing landscape features, could provide a setting for a major international airport which would not only give some protection for the surrounding area, but also be of visual quality to compare favourably with other world airports. The airport itself, the transport links and the related urban development, should all be integrated in an overall, comprehensive landscape plan. In this way the unavoidable damage to the existing environment could be retrieved to some extent by a carefully designed new large scale landscape.

Summary

25. a) The Commission should have before it a clear, definitive assessment of the need which the new airport is intended to meet, and, where the forecast is less than firm, some flexibility of purpose should be built into the choice of site;

b) if a numerical equation between sophisticated cost/benefit analyses is attempted, the quantitative assessment of the loss of amenity and environmental considerations must be as full and authoritative as that of other factors;

c) accepting that the viability of the site is fundamental, the choice should take full account of the need to select an area in which as small a population as possible is affected (and not just those within the predicted 35 NNI contour);

d) recognising the construction problems this project involves, both in terms of new work and protection, a new kind of Airport Development Authority must be set up, with power and resources to ensure that the impact on existing communities and the land transport network is mitigated where it is negative, and maximised where it is positive.

26. As the traditional champions of the heritage of our man-made environment, architects and architect/planners cannot obviously ignore the inevitable damage a development of this nature, and on this scale, must cause. The RIBA, however, would rather at this stage emphasise the opportunity that will be created, if the planning priorities on the national, regional and local level are imaginatively interpreted, for the construction of an airport and air city which will both avoid unnecessary damage to the existing physical framework, and provide a project of real economic, social and environmental quality.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Science Research Council

Possible costs of removing the Lord's Bridge Observatory

1. Earlier documents submitted by Cambridge University and the Science Research Council referred to the endorsement in the Fleck Report on Radio Astronomy of the leading position held in this branch of science by the Cambridge and Manchester Groups. Those documents also explained the importance attached by the University and the SRC to maintenance of the close involvement of the Cambridge Group in the corporate life and teaching of the University. Attention was drawn to the steady flow into science based industry of Cambridge radio astronomy students. Special emphasis was placed on the importance of measures to prevent man-made electrical interference.

2. The Commission invited the Cambridge Group and the SRC, in consultation with the Commission's staff, to furnish the best possible indication of the costs that would have to be incurred to move the Lord's Bridge Observatory if the choice of site for the Third London Airport should make it impossible to continue doing radio astronomy at Lord's Bridge. The consultations were held and information helpfully provided by the Commission's staff on probable air lanes associated with the possible sites formed an essential background to the exercise.

3. The consultations showed that

a) selection of Nuthampstead or Thurleigh would make radio astronomy impossible at Lord's Bridge from the date of operation of the new airfield i.e. on present information, from the mid Seventies;

b) selection of Foulness would be followed by development of an air lane pattern that would probably make Lord's Bridge unusable from the mid Eighties;

c) selection of Cublington with a suitable pattern of air lanes might not interfere with radio astronomy at Lord's Bridge.

4. In seeking possible alternative sites map searches and local inspections have been made over the greatest area to the North and East of Cambridge which would permit the highly valued participation of the Observatory in the life and teaching of the University to be continued. The outcome is described in a separate paper prepared by Cambridge University. Not one of the possible locations would be acceptable without guarantees from central and local government authorities as described in that paper.

5. No new site would be adequate unless it afforded at least the degree of protection from man-made electrical interference which has been built up at Lord's Bridge over the years of its use for radio astronomy. That protection has however been built up by constant effort over many years on the part of the Radio Astronomy Group and the valued cooperation of the County and Planning Authorities. To create comparable conditions elsewhere would inevitably involve changes in the existing local arrangements—e.g. of any local radio services, the need to fit suppressors to industrial and domestic equipment etc.—as well as prevention of future harmful developments. Heavy initial charges and even compensation to existing users of electrical equipment might have to be paid to create the right environment for the Observatory in any new location. The actual cost would of course depend on the state of affairs found to exist at the new site. For the present the best guess that can be made is that the cost of providing the necessary protection might amount to about £250,000.

6. The capital costs of a move to an unspecified site assumed to be suitable, yet needing to be brought to an acceptable state of protection from interference, present and future, can only be estimated in broad terms. As an interruption of operations would destroy the work of Sir Martin Ryle's Group over a critical period, it is assumed that new instruments similar to those at Lord's Bridge would be built at a new site. A rough estimate of the capital cost of moving, allowing for the contingency provision of about 10 per cent which experience shows is necessary, is at 1968 prices:

	£M
Site, civil engineering works, building and services	1·25
Instruments and equipment	4·0
Total estimated capital costs	5·25

7. Removal to a new site further than Lord's Bridge from Cambridge would necessitate building and running of additional on-site facilities, increased staff and greater travel costs than are foreseen in present plans for development of Lord's Bridge. Allowing for fourteen extra staff and travel it is estimated that the increased running costs might on average amount to about £40,000 a year. It is reasonable to assume a 20 year life for the telescopes now on or building at

Printed image digitised by the University of Southampton Library Digitisation Unit

Lord's Bridge. The total extra running costs over that 20 year period for an Observatory on a more distant site would be about £800,000.

8. Thus, if a new site could be found and brought to a suitable level of protection from interference, the initial and capital costs of the move might amount to £5·5 million (paragraphs 5 and 6) to which would be added extra annual running costs of about £40,000 a year (paragraph 7).

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Sheppey Group

SUBMITTED BY MR. P. WILKES

On May 13th last, I gave evidence at the Southend Stage II Hearing before Mr. A. J. Hunt. As required by the Commission, this evidence was strictly confined to the local consequences arising from building the airport at Foulness viz., its effect on the Thames Estuary and Kent Coast.

I am concerned, however, at the way in which a number of civil engineering interests linked a seaport with the airport, in both written evidence and the many maps on display. At the same time, there has been a full scale press and TV coverage designed to link the two in the minds of the public.

My attempts to question witnesses on May 19th were cut short by Mr. Hunt, who referred me to Stage III of the Inquiry. Accordingly I submit a Memorandum on some aspects of the deep water port project and ask the Commission to consider these views when weighing the cost benefit of the two projects. It is my considered opinion, that the airport should stand on its own feet as far as cost viability is concerned. The plan to build a seaport on an adjacent site will surely prove very costly too, and may take years to evaluate properly.

I have concentrated on the Thames Estuary Development Co. Scheme because it has been given wide press coverage, also, I was present when the plan was presented to the Elder Brethren of Trinity House and fellow representatives of the Thames Pilotage Districts, on 13th February, 1969. From the limited information given, other schemes appear more grandiose in scale to the point of being irresponsible.

In order to assist the Commission in evaluating my views, I should like to state that I am a Master Mariner and Pilot licensed by Trinity House for the Medway and Thames Estuary. I have served fifteen years in cargo liners and thirteen years as a pilot. I am a member of the Queenborough-in-Sheppey Council.

Thames Estuary Development Co. Ltd. abbreviated plan (Taken from press release dated 13th February, 1969).

(1) Feasibility study, which includes a very large hydraulic model in order to test the effect of large scale interference with the regime of the Thames Estuary.

(2) For the purpose of building an airport, port and industrial complex.

(3) Assuming the model tests are favourable; to dredge a channel with depth of 90 ft at high water from the Maplin Sands area to a position off the Long Sand Head, a distance of approximately 40 miles.

(4) The above being designed to accommodate tankers of up to 500,000 tons.

(5) To construct pipelines to connect existing refineries at Thameshaven and Grain with the Maplin Sand Port.

(6) Comparison with Europort.

Observations

(1) Feasibility study using hydraulic model

The proposed hydraulic model will be some 150 ft in diameter and will take in the whole of the Thames Estuary, the project is on a scale which is probably bigger than anything ever attempted before. While parts of the Estuary are under almost constant hydrographic survey, other parts are surveyed at much greater intervals and a complete survey is spread over many months, even years. The model will therefore be based on information, which is at best months old and must therefore be considered approximate.

Should the model prove that the regime of the river will be disastrously affected or the dredging costs prove too high, then the project will have to be dropped.

It is expected that the model will take some eighteen months to two years to construct and test.

(2) Construction of port

Through all history, ports and harbours have been havens to shelter ships from storm and tempest. They may be natural harbours such as Milford Haven, Southampton and the Medway; or artificial harbours like Dover and Folkestone. Maplin Sand is only partly sheltered and would therefore require costly breakwaters to provide the necessary shelter from the elements.

(3) Dredged channel 90 ft deep at high water

No channel of this length (40 miles) and depth has ever been constructed in the world, special dredging equipment would be required to dredge at these depths, wrecks and other obstructions would have to be removed. The costing of this proposal would be at best an approximation. The cost of maintaining such a channel would need careful appraisal and might well prove prohibitive.

To reach the entrance of the proposed channel a very deep tanker would have approximately 40 miles of

Printed image digitised by the University of Southampton Library Digitisation Unit

intricate navigation from off Dover to Long Sand Head. This water is comparatively shallow and there are numerous shoals and wrecks to be avoided. It is also the most heavily congested shipping bottle-neck in the world.

(4) Tankers of 500,000 tons

The combination of the above i.e., 40 miles of intricate navigation through congested shipping channels, followed by another 40 miles of dredged channels in an area where fog is frequently encountered makes the entry of a "monster tanker" one of extreme risk.

An alternative site exists at Dungeness, where the necessary 90 ft of water is available at this moment. A tanker discharging point could be constructed near Dungeness at small cost, while there is ample space for storage tanks on the barren peninsula.

Alternative sheltered deep water for other ships exists in the Medway Estuary.

In the meantime, Shell and B.P. are experimenting with techniques of transferring oil from "monster" tanker to "super" tanker at sea, off the UK coast. It is reported that this technique is proving very successful and may well do away with the need for expensive port facilities for the 500,000 tonner.

(5) Connecting pipelines

The distance from Maplin to Thameshaven is approximately 20/25 miles, from Dungeness 40/50 miles.

(6) Europort

Europort is the Dutch port constructed at the mouth of the river Maas (or Rhine) to accommodate "monster" tankers. The promoters of schemes for Maplin make continuous comparisons between Europort and Maplin, in fact, there is a great deal of difference between the two.

Europort is barely a mile from the river entrance.

Maplin is some 40 miles from the river entrance.

The height of Mean High Water Spring Tide Europort is 6·7 ft.

The height of Mean High Water Spring Tide Maplin is about 17 ft.

The larger tides produce fast flowing currents, which will have a considerable effect on port construction work and the stability of the proposed approach channel.

The Dutch have recently commenced deepening the North Sea on an east/west line approaching Europort —this involves dredging the tops off the sand dunes formed on the bed of the sea—and is very different to the type of channel postulated by the Thames Estuary Development Co.

Time element. The Dutch are generally acknowledged as the world's leading reclamation, dredging and port building engineers; they have spent some ten years on the construction and testing of a model for their Europort project and so far some six years building same. The estimate for the construction of the Thames model is only two years.

Road and rail communications. It has been suggested that a port industrial complex at Maplin might, with advantage, share the road and rail communications of the airport. One body has estimated that the airport alone will generate enough traffic to require an eighteen lane motorway. If this is only half true, then it is a matter for the road engineers to estimate what a major port industrial complex in the same area will require in additional motorway.

Employment. The airport is estimated to generate 45/65,000 jobs, this is equivalent to a population figure of about 150,000 people. If a port industrial complex were added to the above, then a city the size of Cardiff or a town nearly twice the size of Southend would be needed to house the resultant population flow into Essex.

In support of the above observations, I attach a copy of the press statement released by Thames Estuary Development Co. Ltd.* on 13th February, 1969 and in particular draw your attention to the words of:

Lord Simon (Chairman, PLA) page 2.

Mr. Dudley Perkins (Director General, PLA) pages 1, 2 and 3.

Sir John Howard (John Howard & Co.) page 1.

* Not reproduced. Available from the Thames Estuary Development Corporation.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Thurleigh Emergency Committee for Democratic Action

SUBMITTED BY MR. G. J. HOW

I, Gerald James How, of 2 Alexandra Place, Bedford, a Civil Servant, member of the Air League, having served in HM Royal Air Force from 1947 to 1950 on Air Traffic Control and Radio Navigation duties, am hereby asked to submit EVIDENCE on behalf of the Thurleigh Emergency Committee for Democratic Action.

Due to the relatively small amount of information made available by the Roskill Commission, this Committee has found it very difficult to complete its evidence in the time given. However, a careful study has been carried out in the following stages:

(1) This country's present airways system.

(2) Other existing airports and their traffic within the area of the proposed site for London's third airport.

(3) Military airfields within the area.

(4) Britain's aerospace programme for the future.

(5) Thurleigh's geographical location.

(1) It is obvious that the time is imminent for the reorganising of this country's present airways. The ever increasing build up of air traffic within the Metropolitan area and the introduction of the Jumbo jets and Concordes into service, it must be that London's third airport (Europe's No. 1) be sited outside the Metropolitan area, preferably to the north of London to enable the reshaping of a complete new airways system centred upon this airport; and to ensure that the country does not lose any of its transatlantic traffic to the continent due to the inconvenience caused by its complex airways system within the London Control Zone as at present.

(2) Reconsideration must be given to all existing major airports owned by local authorities within the area of the site for London's third airport. The Government must ascertain that these airports are efficient and that the traffic cannot be absorbed into London's third airport.

(3) The closing down of some military airfields in East Anglia during the recent months allows further air space for civil aviation within this area. The Government should consider the moving of existing military airfields to sites nearer the coast.

(4) The future of the Royal Aircraft Establishment at Bedford must be the key to the whole plan for the siting of London's third airport. What is the future of the British Aerospace programme?

The Concorde is soon to enter airline service and the Government being undecided whether to go ahead with any further new aircraft in the supersonic range makes the future look very bleak indeed for the RAE.

Surely this country, in its present financial state, cannot afford to have three (Farnborough, Boscombe Down and Bedford) experimental flying establishments in existence?

(5) Thurleigh is suitably situated in the finest part of the country for flying, with the open flat country to the east of the site of which many BOAC and BEA pilots must now have been very well acquainted with during their many practice flights from the present RAE airfield.

Situated 13 miles to the east of Amber Two Airway, this should cause no major difficulty in siting London's third airport at Thurleigh within the present airways system.

Having now completed the summary of my evidence on behalf of the Thurleigh Emergency Committee for Democratic Action, I do not wish to give further evidence at this stage unless requested by the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Transport and General Workers' Union, Civil Aviation Section

Faced with the short list of four recommended sites, the TGWU Civil Aviation Group would naturally tend to distinguish between the sites on technical, economic and social grounds. This is not, in theory, a difficult task. In the course of the whole debate over the last six years about London's third airport, the criteria by which a final decision should be made have become fairly clear.

For example, questions of cost are paramount. There is the question of noise, the question of the speed with which an airport can be brought into operation, bearing in mind that Heathrow and Gatwick will reach saturation point in 72/73. Proximity to London, and the speed and nature of transport to London and other airports are also very important. The amount of valuable agricultural land to be destroyed should be taken into account. There are air traffic control factors to be considered, as well as the future attractiveness of the chosen site for international air operators, who provide so much of the revenue of any airport. Also there is the question of social and economic planning, with particular relation to housing and available labour force. Also of course there is the weighing on a cost/benefit basis on all the above factors, taking into account the impact of the chosen site on existing airport facilities and investment. This is not of course an exhaustive list of criteria, but its components should be beyond dispute.

The problem the TGWU now faces is that it cannot believe that Stansted was dropped from the Commission's short list by reference to these grounds. The rejection of Stansted was overwhelmingly political, being a defensive withdrawal from a position taken up in the first instance by the Government and the BAA on the sort of technical, economic and social grounds which we have enumerated above. The question we now ask is, will the correct criteria be brought into operation for assessing the relative merits of the four sites? or will the political and public pressure group criteria used to drop Stansted be used to discredit three of the four recommended sites?

Below we discuss the case of Foulness on the assumption that it is already a strong candidate which invites very close assessment in the light of the above criteria, rather than political pressure group criteria.

The problems of Foulness as a site

There is an immediate general point concerning the time period within which Foulness could be brought into operation. Obviously an operational date would be very late indeed, toward the end of the 70s given land reclamation requirements, negotiations with the Ministry of Defence and the absence of transport facilities as well as the absence of a labour force. These are objections to Foulness in their own right, but for the moment it is the timing factor which is of concern.

Firstly we cannot see any reason for your commission's exclusion of the time factor at this stage of investigations. The 72/73 saturation date for existing London airports should be one of the outstanding determinants of any opinion formation. It should not be dropped at this or any stage.

Secondly since there is no doubt that Foulness would take a long time to build, we ask what will happen in the interim? Our belief is that Stansted will become the effective third London airport for a period, continuing to grow and receive investment by virtue of the BAA's duties to provide adequate airport facilities. What this might mean for the workpeople at Stansted is a rapid increase in their short term prospects combined with a subsequent decline in their prospects, involving no doubt some redundancy when Foulness air traffic demand impinges upon and takes precedence over Stansted.

So there is the question of the social impact of the late operating date of Foulness, as well as the possible waste of national resources which a temporary expansion and subsequent contraction will mean at Stansted. Any cost benefit analysis should include the impact on Stansted as a major cost item.

Also any cost/benefit analysis should include estimates of traffic revenues lost because internationally attractive facilities will not be available during the period of years while Foulness is being built. The current BAA expansion at Stansted has been determined by commercial pressures. If facilities are not expanded airlines will be forced to bypass London in the next two or three years. Advance planning means that international airlines must already be considering re-routing from London. The exclusion of the time factor from your commission's investigations can only encourage uncertainty and subsequent re-routing, to the detriment of the balance of payments and the civil air transport industry.

There is a further aspect of the timing question which is of major importance. We are well aware that the ideas circulating from the two consortia on building a dock terminal adjacent to the Foulness site will add some weight to the arguments in favour of Foulness. However, in one case at least, it has been stated that a feasibility plan will take two years to

Printed image digitised by the University of Southampton Library Digitisation Unit

assemble and that a plan itself will take four years to draw up. Given that your Commission will draw its conclusions in 1970, it could well be 1976/7 before work on a dock started and 1980 before any sort of operations were possible. It is obvious that integrated and dependent development would be desirable for the dock and the airport. Taking this into account our feeling is that the dock scheme will not encourage the *rapid* building of Foulness, while at the same time, the possibility of building a large dock will tip great weight behind Foulness as the final recommended site.

Given the over-riding necessity for speed in building London's third airport, we can only suggest that the prospect of a dual airport and dock development at Foulness is, in the final *analysis,* not an argument for Foulness, but an argument against Foulness because of the time delays involved in the joint development. Our conclusion is reinforced the more distant is the operational date for either of the docks schemes. In short, the airport site and the Europort questions should not be separated.

Our conclusion is further reinforced by the view that there is no certainty about the docks development.

Foulness—third airport or first?

We mentioned above the question of possible redundancy at Stansted. Our concern is not limited to Stansted. It seems to us that to develop a 2-runway airport (a third airport for London) at Foulness would not be justifiable given the vast expenditure on infrastructure required on the site. Foulness is highly likely to be four runways or nothing.

On the assumption that it is four runways, we are concerned that there will be a considerable impact on Heathrow and Gatwick.

There are several factors that are to be taken into account. Firstly we cannot envisage a stable relationship arising between Heathrow and Foulness in particular where neither airport will be at a competitive advantage over the other. There will be the emergence of a *best* airport. This will probably attract excessive demand from airlines. If Foulness is to be built, one cannot envisage it being built to provide lower standard airport facilities than Heathrow. If it is large enough to handle all major traffic, then Heathrow will not only be at a competitive disadvantage in terms of the quality of its facilities, but will very likely have to change its function in the light of the capacity of Foulness.

On the other hand if Foulness is not large enough to serve the overwhelming majority of airlines, particularly international airlines, then it can be foreseen that international airlines at the bottom of the London queue will take retaliatory action against British airlines in the sort of power battle which exists in the market for airport facilities throughout the world. What could happen is that BOAC and BEA could be relegated to second class airports abroad, with detrimental effects for British air transport. In particular, the future of the servicing and maintenance bases at Heathrow should be investigated.

To summarise, Foulness is not likely except as London's first airport and in that position its development could result in a waste of resources at Heathrow and severe problems for the workforce and the communities dependent on Heathrow.

For those workpeople, the prospect of long run stable expansion at Heathrow has created a whole community and set of living patterns. The disruption of schools, residential planning, homes and community interdependence is a cost which would be difficult to accept even if Foulness were for other reasons the best location for the new airport. Similarly, the community development aspects of Foulness require quite detailed exploration from the very outset.

The disadvantages of Foulness

Although we understand that submissions to your commission at this stage are not to be on the basis of comparing sites, we feel that reference to other sites can illuminate our arguments.

In the matter of an available labour force for Foulness, we believe that Foulness' inadequacy is highlighted by the extremely sympathetic situation at the rejected Stansted site.

Although Southend airport would provide some labour even in the initial phase of operations this would be extremely inadequate for a large four runway London Premier airport. Stansted would have been a 3rd London airport, and could have drawn on the existing manpower which at about 1,000 employees plus several hundred in the factories on the airport's territory is much below the available manpower in the area. In the mid-50's between 4,000 and 5,000 people were directly employed at Stansted, before the rundown. Looking back at Foulness in comparison, we are bound to ask where the labour will be found for the Southend holiday season if the casual workers there at present become permanent airport employees.

And of course where will the labour force for the docks come from? Have the consortia worked out the impact of their plans on current dock facilities and dock labour?

We have argued that the two projects cannot be separated. The consequence of the double development is that the estimates of the required labour force should be revised upwards very heavily indeed. The impact of such revision compounds the problems of Foulness on the grounds of labour shortage.

Printed image digitised by the University of Southampton Library Digitisation Unit

The location of the airport

The location of the airport is not just a question of motorways and railway facilities to and from London, and the other airports. That these are highly unsatisfactory is quite obvious. However the actual geographical location of Foulness away from the midlands, completely cut off from the home counties, away from the industrially developing vertical northern belt—(Harlow, Stevenage, Hatfield)—and to the west, Luton and Leicester, will mean that two access systems will be required. The first will be from London, and one can envisage public investment being required for another access route across country from the East Midlands and the North.

In short, the Foulness site runs counter to the radial communications network spreading out from London which in the case of the other sites make transport across the radii relatively easy. A considerable amount of airport business comes from the South East of England. An airport in one of the extreme isolated corners of this area will be at a severe disadvantage in terms of home customers, and in terms of cost if compensating access by motorway and rail has to be provided.

Specifically, the motor access to Foulness is very poor. Roads hardly exist at all into Foulness from Southend, and already the main trunk road to London from Southend is heavily used. From the point of view of railways, there has been a suggestion that a rapid mono-rail railway could be constructed. Should this happen, either the route would be detrimental to the stopping service feeding the length of the Fenchurch Street-Southend commuter belt, or an alternative route would need to be constructed. The cost of this in terms of land and residential demolitions would need to be taken into account.

Air traffic control

The timing question can be seen as the main problem again. If Foulness takes a long time to operationalise, then Heathrow overflow will have to be absorbed. This creates problems at Gatwick, where one stacking area is already needed. A second stacking area will be required, which is difficult since the available air space is over Epsom which is already used by Heathrow. What this means is expansion at another airport which could well be Stansted. Once again, Foulness airport requires that other airports and their facilities might have to expand and then contract in order to accommodate the new premier airport. The waste of resources must be reckoned in any calculation. What is required is detailed examination of phasing possibilities.

Noise levels

No one would deny that noise is unwelcome and should be minimised where possible. However not everyone would put such heavy value on the noise factor in decision making as was put by the anti-Stansted campaigners and residents in the areas of some suggested sites. Foulness would appear to have some advantages, though the noise impact on the new town required to house employees needs careful consideration. The point is that for employees, who are both residents *and* economically dependent on airports, a secure job with good prospects is of much greater value than noise avoidance. In short, Foulness' merits from a noise point of view should not be given great weight in assessing pros and cons. The interest of employees should be borne in mind, both from the point of view of their prospects, and from the consideration that they appear to be less concerned about noise than other residents.

The destruction of valuable land and regional planning

The direct destruction of agricultural land at Foulness will be low, but when the complete absence of road and rail links is taken into account, as well as the absence of an adequate first phase labour force, it can be argued that quite considerable amounts of land will be needed to serve the site with communications and labour. In comparison, Stansted's communications could have been perfected with little extra expenditure or extra destruction of land for residential accommodation. Foulness will be very different. Two motorways of 50 miles length at least, and a new rail link will add large sums to the bill. Further the new town required for a four runway airport will be large and will cut into the agricultural land in the area between Southend and Chelmsford. Also, regional planning will need to be reversed. When one considers the number of years and the amount of resources invested into regional planning, the possibility of reversing the conclusions and the criteria of the South East plan cannot be lightly ignored.

Costs

It is our distinct impression that the direct and indirect costs of Foulness will be considerably higher than those for the other airports. The direct costs of providing an airport in an area with no facilities at present is going to be high for a two runway airport, and considerably higher for a four runway airport. The land reclamation costs would perhaps run into the order of £150m. Motor and rail access which do not exist for Foulness at the moment could cost over £100m. plus compensation for urban land purchases on the Southend-London route. Then there are a whole host of indirect costs, which need to be assessed. For example any temporary expansion at Heathrow and Gatwick and Stansted will no doubt result in the scrapping of equipment and organisations before their effective life is up, in addition to a change of role later on. Also the delay in building at Foulness will probably bring about some loss of international

Printed image digitised by the University of Southampton Library Digitisation Unit

business for the BAA. Some estimate of this might be made. Though Stansted has been dismissed, it should be borne in mind that the White Paper's estimate was £47m. for direct and indirect costs, including access for the initial phases. At Foulness for two extra runways, one can anticipate that the cost will be of the order of £300m. without taking into account the indirect costs arising from the investment and other airports required in the intermediate phase of expansion.

Full economic and social planning required before site decisions are made

Though of course no decision is to be made at this stage of the enquiries, the range of information, and the way in which it is evaluated in relation to the four sites is open to question. We have already seen how broadly political factors have determined the dropping of Stansted from a list of recommended sites. In the light of this, we have suggested that the criteria by which assessment should be made are now fairly clear.

The case of Foulness is complicated because of the timing factor, and the isolation of the site both from centres of population and from the home-base customers. Even on a conservative estimate, the costs of building a premier airport at Foulness will be very high. In the light of these negative factors, and the arguments against Foulness enumerated above, we believe that the Foulness site requires a very detailed development plan to be produced illustrating the way in which population movement, job development, and financial support for the social costs to employees and potential employees might be made available.

Strictly from the point of view of employees at Heathrow and Stansted and Gatwick at the moment, the Foulness site demands that the Government comes forward with firm commitments to financing the social costs to employees of movement at some later stage of the airport's development. From the point of view of the airlines which would use the new airport, we believe that it is absolutely necessary in the case of Foulness, that the airlines receive advance information about the details of traffic phasing from one airport to another. These examples could be multiplied. However for the moment the point is quite clear.

Firstly, there are severe disadvantages for Foulness as the premier London airport. Secondly, the social, economic and technical problems of the site suggest that the only grounds on which an investigation can go forward would be the production of a phased airport development plan.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Water Resources Board

Introduction

1. Under the Water Resources Act 1963 executive responsibility for the management of water resources in England and Wales rests with 29 river authorities, with the Water Resources Board at the centre to advise them on water resources matters and to advise the Minister of Housing and Local Government and the Secretary of State for Wales on national water policy.

2. Because of the difficulties of meeting the growing demands for water in South East England the Board's first major task was to carry out a study* of the future demands for water in that area and the resources available to meet them. The study extended over about 19,000 square miles and embraced ten river authorities in an area roughly bounded by a line drawn from the Wash to Lyme Regis.

Demands for water

3. The present population of between 19 and 20 million within the area of the Board's study receives its water supply from 93 water undertakings which supply nearly 1,100 million gallons per day (m.g.d.). This water is used both for domestic purposes and by the many industries which take metered supplies from water undertakings. 1,100 m.g.d. is equivalent to about 55 gallons per head per day (g.h.d.).

4. Estimates obtained from the Ministry of Housing and Local Government indicated that the population of the study area would increase to just over 22 millions by 1981 and to about 28 millions by 2001. The board estimated that the demand for water by water undertakings would increase to about 1,600 m.g.d. and 2,200 m.g.d. respectively: in other words, that present demands would have doubled by the turn of the century. The estimated populations and water demands and the implied average per capita use in each river authority area are shown in Table A annexed.

5. Estimates were also made of the future requirements of industry for direct abstraction from rivers and of the requirements of agriculture for spray irrigation. After allowance for the re-use of water returned to rivers, and for local storage by farmers, it was concluded that new resources would have to be developed by river authorities and water undertakings in the South East to meet the needs of public water supply, industry and agriculture, as follows:

Year	*Amount* (m.g.d.)
1971	100
1981	400
2001	1,100

Water resources

6. The Board concluded that five river authority areas had potential resources capable of meeting their estimated demands until the turn of the century. They were the Avon and Dorset, Hampshire, Sussex, Kent (except for that part supplied by the Metropolitan Water Board), and East Suffolk and Norfolk (except for Ipswich) River Authorities.

7. The other five River Authorities—Welland and Nene, Great Ouse, Essex, Lea and Thames—form what the Board called the central area of the South East in which there are already substantial transfers of water across river authority boundaries and for which the future development of water resources must be planned as a whole. It was estimated that new sources providing the following yields would be required for the central area:

Year	*Amount* (m.g.d.)
1971	85
1981	270
2001	650

8. In coming to these conclusions the Board assumed that continuing and increasing re-use of water discharged to rivers would be possible, both for industry and for public water supply. Such re-use is particularly important in the Thames, the Lea and the Great Ouse areas; and without it substantially greater amounts would be required from new sources. The quantity and character of future discharges of effluent to the upper reaches of these rivers are significant in this respect and reference is made to this problem below (paragraphs 19 and 20).

9. In considering how these deficiencies could best be met the Board examined not only conventional direct supply reservoirs and boreholes but the use of storage (both surface and underground) to regulate the flows in rivers; artificial recharge of underground storage; estuarial barrages, particularly the Wash; the desalination of sea water; and the transfer of water into the area from the West or South West.

10. The Board found that, of these possibilities, only the abstraction of water from underground strata and the construction of surface storage could be relied upon in the short-term. They therefore recommended a programme of such works to ensure adequate water supplies until the mid-1970s, and an urgent programme of investigations—including seven major reservoir sites and two potential ground-water storage areas—to be completed by the early 1970s when the situation would be reviewed.

11. During the past three years the river authorities concerned have taken action to implement both programmes. Investigations have been made at five reservoir sites and investigations of ground-water

* *Water Supplies in South East England.* (HMSO, 1966.)

Printed image digitised by the University of Southampton Library Digitisation Unit

storage schemes in the Thames and Great Ouse catchments are well under way. The Board's staff are currently engaged on a study of the possible allocation of resources to meet future demands in the central area. They are also examining the problem of operating a regional delivery network. These studies form an essential part of the review mentioned in paragraph 10 and are unlikely to be completed before 1971. A further report on the South East is programmed for 1972.

Third London airport demand

12. At the time of the preparation of the Board's Report on the South East it was thought that the third London airport would be at Stansted. The population included in table A (see paragraph 4) for a new town in the Stansted area was 100,000 (75,000 by 1981) and some additional urbanisation was also allowed for in the areas surrounding Stansted.

13. In assessing the future growth of water demand in the South East account was taken of local estimates of demand, accompanied in some instances by estimates of population growth, but these had to be compared critically with the Ministry of Housing and Local Government estimates of population growth referred to above and with the expectations of the Ministry regarding future town expansions and sponsored development. The allowances referred to in paragraph 12 above were arrived at in this context.

14. Especially in the case of the central area, for which an integrated water resources plan was considered to be necessary, the Board's over-riding concern was to arrive at as sound an estimate as was possible of the *overall* demand and to formulate a plan of development accordingly, although there would necessarily be greater uncertainty as to the local pattern of demand within the area. Changes in the proposed location of the Airport, like other population shifts within the area, are unlikely to affect the viability of strategic water planning on this scale, although clearly they will pose major problems for the water supply undertakings concerned. All the proposed sites for the third Airport lie within the central area.

15. It may be that present estimates of the population to be associated with the airport differ substantially from those referred to in (12) above, but even if such changes were to be regarded as changes in the total population of the central area they would affect overall demand by only a few per cent and would certainly be far smaller than the probability of error in other estimates involved in the Board's study.

16. There need therefore be no doubt that the prospective water demand can be met at any of the four sites, given sufficient notice. The longer this notice can be the better, of course, for the planning of an economical service.

17. The strategic cost of water will vary: broadly speaking there will be a gradient of increasing cost from North West to South East across the country. Although the real cost at points within any region will depend upon the plan to which resources are developed there seems little doubt that water cost at the Foulness site will be higher than at any of the other short-listed sites. However, it seems to us unlikely that this could be a material factor in the choice of a site.

18. We cannot comment on the difficulties or costs of local distribution at any of the sites, which would be additional to any costs with which our studies are concerned. On this point reference should be made to the water undertakings involved.

Effluents from the airport site

19. The three sites other than Foulness all lie in the headwaters of rivers which are sensitive from the point of view of effluent disposal because of the re-use of water discharged into them; see paragraph 8 above. The volume of sewage effluent involved, and the character of any other discharges, such as surface run-off from the runway and servicing areas, will therefore be of great concern to the river authorities responsible. In this respect the Foulness site would not pose such major problems.

20. This is, of course, a general issue affecting the future of urban and industrial development in the headwaters of these rivers, and in this respect the problem of airport effluents should not be considered in isolation. It is the case, nevertheless, that any development which prejudiced the re-use of water from these rivers could have economic consequences far outweighing not only the differences in the cost of water supplies to an airport, referred to in paragraph 17 above, but also possibly the other advantages of the inland sites. These important matters will need to be considered further when more detailed information is available on the possible development linked with each airport site.

The Whitchurch reservoir site

21. The Cublington airport site would apparently overlap one of the seven major sites which have been considered for pumped storage reservoirs (Whitchurch). This is one of a pair of sites in Buckinghamshire, having similar characteristics and potential, which have been investigated by the Thames Conservancy and the Bucks Water Board.

22. Pending completion of the Board's studies of resource development in the central area it is not pos-

Printed image digitised by the University of Southampton Library Digitisation Unit

sible to say how the value of this site will compare with that of alternatives or what priority it might be accorded in development. It is impossible to say at present that all seven of the sites referred to in paragraph 10 above will be recommended for development in the foreseeable future, but the Whitchurch site is important and potentially very valuable.

23. In these circumstances it seems appropriate for the studies of the Commission and those of the Board to proceed, including in each case the Cublington/Whitchurch site. When it can be seen what status the site enjoys in each sphere, in the light of further studies, and what considerations are involved it may be necessary to take a decision or to reach an accommodation between the two forms of development.

Conclusions

24. There is no reason why the demands for water for a new airport and the accompanying urbanisation should not be met at any of the four short-listed sites.

25. The cost of providing water is likely to be highest at Foulness, but the cost differentials are unlikely to be a factor which would influence the choice of an airport site.

26. The possible effect of increased sewage effluent and surface water discharges on the quality of the water in rivers is a matter of concern requiring detailed discussion as soon as more information can be given on probable areas of growth around each site and on revised estimates of population. This might be a serious problem at all sites other than Foulness.

27. The Cublington airport site and the Whitchurch reservoir site overlap. Further study of the merits of the sites for each purpose should proceed before an attempt is made to resolve this conflict.

TABLE A

Estimated populations, demands and implied per capita use in river authority areas

	1964			1971			1981			2001		
River Authority Area	*Population (thousands)*	*Average daily demand (m.g.)*	*Per capita use g.p.d.*	*Population (thousands)*	*Average daily demand (m.g.)*	*Per capita use g.p.d.*	*Population (thousands)*	*Average daily demand (m.g.)*	*Per capita use g.p.d.*	*Population (thousands)*	*Average daily demand (m.g.)*	*Per capita use g.p.d.*
Welland and Nene	630	29	46	720	41	57	910	74	81	1,270	119	94
Great Ouse	960	49	51	1,120	71	63	1,310	107	82	1,900	171	90
East Suffolk and Norfolk	770	31	40	820	40	49	930	56	60	1,210	92	76
Essex	1,910	90	47	2,070	121	58	2,250	154	69	2,820	222	79
Lea, Thames and (i) London excluded area	10,440	585	56	10,910	665	61	11,540	785	68	13,570	1,010	74
Kent	1,730	86	50	1,890	110	58	2,080	141	68	2,730	209	77
Sussex	1,000	50	50	1,070	61	57	1,130	76	67	1,340	105	78
Hampshire (ii)	1,020	65	64	1,160	90	78	1,370	122	89	2,110	194	92
Avon and Dorset	640	36	56	700	47	67	770	60	78	990	95	96
Total/Mean	19,100	1,021	53	20,460	1,246	61	22,290	1,575	71	27,940	2,217	80

Notes: (i) In this table only, the Lea Conservancy area has been combined with the Thames Conservancy and the London Excluded Area because of uncertainties over the distribution of population between the Lea and London areas.

(ii) The relatively high per capita figures for the Hampshire area are largely due to the allowance for bulk supplies to Fawley Oil Refinery.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Wing Airport Resistance Association

Introduction

We are in general agreement with the methodology proposed by the Commission's Research Team in the *Papers and Proceedings*, Volume VII*. We have one major proviso that we would like to make—all aspects of the choice of site should be treated in an equal fashion.

In particular we consider that it is most important that the planning aspects should be studied in sufficient detail to enable them to be quantified. We do not agree with para. 75 which suggests that the Research Team may be content with a ranking of the sites from the regional planning point of view without further quantification. We consider that if the Commission were to arrive at that situation it would, to a large extent, negative the whole cost benefit approach as we feel that regional planning is one of the most important factors affecting the choice of sites.

We think that in places the published account of methodology is somewhat vague and in other places self-contradictory. However we accept that this is a preliminary document and that such things will be ironed out as the work proceeds. Our detailed comments on the methodology follow. One particular aspect to which we wish to draw attention is our comments on para. 6 referring to the weighting of the various costs.

We have divided our comments into three sections. These sections are broadly the comments we wish to make on the suggested methodology, items which we think may have been overlooked which should be costed and included in the cost-benefit analysis and lastly our suggestions as to what programmes of research could be usefully undertaken now in order to improve the accuracy of the analysis. These comments follow the chapter headings used in the published methodology.

The responsibility of the various consultants to the Wing Airport Resistance Association is broadly as follows:— Mr. T. Hancock, town planning; Mr. D. M. Lumb, air traffic and surface transport; Mr. R. A. Waller, noise and the valuation of amenity. Any approach to the consultants should be made via Mr. R. E. Smith of Lovell, White & King, the Association's solicitors so that our activities may be co-ordinated.

Chapter 1—General Principles

Paragraph 6—We agree wholeheartedly that it is important to define who is receiving what benefit, and who is paying what cost. We hope that this will be followed through meticulously in the cost-benefit analysis.

We are concerned however with the suggestion of weighting costs and benefits depending on whom receives them. We think that this is a dangerous procedure. The magnitude of these weighting factors can clearly affect the choice of site.

In our opinion if the estimate of cost and benefits are properly carried out weighting factors are superfluous. If there is a good reason to suppose that certain costs or benefits are over-estimated (or under-estimated) then we think that this is a reason to modify the estimates. If there is no good reason for modifying the 'Best estimates' then they should remain as they are. There do not seem to be any good grounds for applying a weighting (or 'fudge') factor.

It may be that politically some costs or benefits will be deemed to be of more importance but we suggest that such weighting is not part of the cost-benefit study. A possible example is the benefit accruing to foreign travellers in the form of reduced travelling time. It might be argued that these benefits should be weighted downwards because we are primarily concerned with benefits accruing to the United Kingdom community or it might be argued that ought to be weighted upwards because these savings are indicative of a much larger benefit than the United Kingdom would derive from increased exports. In our view if either of these effects is considered significant enough to justify considering a weighting factor then they ought to be investigated in more detail and estimated more accurately. If it is felt that this item may require a political weighting it should appear as a separate unweighted item in the balance sheet.

A more difficult problem arises in this context when considering the effect of income upon value. There is perhaps some justification in saying that just because a man has a low income that this does not mean that we should ascribe a low value to his enjoyment of the environment. It is nonetheless probably true that the value that he attaches to his environment is low but from time to time the more affluent parts of the community decide that it is prepared to pay for the environment of the less wealthy to be maintained at a higher level than the value the less wealthy put on it would produce. The more wealthy are in effect prepared to pay in order not to see others apparently suffering. It is perhaps more likely that the Government will decide that the more affluent should subsi-

* Part I. *Proposed Research Methodology*. (HMSO, 5s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

dise the environment of the less wealthy. In either case the situation should not be hidden by the use of a weighting factor. Any adjustment on account of income level other than its direct effect on value to the individual requires a full justification or a political decision after the cost-benefit analysis.

Paragraph 18—We are a little puzzled by this paragraph as we cannot see the difference in principle between the siting of an airport at Foulness acting as a catalyst to the construction of a sea port adjacent to it and the construction of an airport at Cublington acting as a catalyst of urbanisation and industrialisation which is not directly attributable to the employment at the airport. These two things seem to be examples of an airport influencing development in its area and it is a little hard to see why the two effects should be treated differently.

One general comment on this chapter is that we would like to make sure that the cost of land, for example, is costed on the basis of opportunity cost rather than on the basis of its value for present usage (we have no wish to point out the obvious to the Commission but we feel it is as well to cover all points to be on the safe side). For example, at an inland site it would not be right to cost the land use for the airport at agricultural values if in the absence of an airport it would be developed for housing.

Another general comment is on the question of things such as the costs incurred due to disruption of our defence facilities. To what extent are we going to be able to examine these and to question their validity?

Additional item for cost/benefit analysis

We could see no reference in the *Proposed Research Methodology* to the relative cost of operation of the airport at the various sites. In particular we are given to understand that aircraft fuel can be provided more cheaply at coastal sites than inland ones.

Chapter 3—Airport Policy Issues

Paragraph 33—We have understood previously, and Para. 33 would tend to confirm this, that it was a prerequisite of the Third London Airport that it should be omni-directional. We assume that in conjunction with Para. 34 that the Commission are saying that complete omni-directionality is an ideal which is unlikely to be obtained at any site; it will be a question of balancing the degree of omni-directionality against the cost of obtaining it and that the sites with less omni-directionality will have a corresponding disbenefit assigned to them. We would, however, welcome some clarification of this issue.

Paragraph 35 et seq.—The Commission has accepted that the effect on other major international airports needs to be considered. Whilst the Commission says that it will not devise a national airport plan, it should at least attempt to define what impact the proposed location will have on the following airports: Elmdon, Castle Donington, Ringway, Luton and Southampton/Hurn. These all have or will have during the time scale either very important scheduled traffic flows or international tourist flows. The effect on these flows of the various proposed locations needs to be included in the cost-benefit calculation. It is a little surprising to read 'the future of Birmingham Airport (Elmdon) is critical'. We would have thought that the choice of site for the Third London Airport was critical as far as Elmdon was concerned but not vice versa.

Additional items for cost/benefit analysis

If Cublington is chosen as the final site it would surely attract traffic (passenger, freight and mail) from the Midlands area and away from airports such as Ringway. This would result in the service available at Ringway being less comprehensive than it would otherwise be. This in itself is a disadvantage for people living near and to the North of Ringway and is a disbenefit of the Cublington site which ought to be included. This may be partially reflected in the increased costs of surface transport for people travelling from the Midlands to Cublington rather than Ringway.

There is the further point that Foulness not attracting traffic from the Midlands could cope with the demand upon it for a longer period and possibly puts off the necessity for a fourth London Airport until developments in air travel such as V/STOL make a fourth airport unnecessary in the form envisaged for the Third Airport. This is a factor which ought to be costed and included.

Chapter 4—Air Traffic Forecasting

Paragraph 39 et seq.—In our view it is not sufficient to break down air passenger traffic into just two categories, namely tourist and business. The inclusive tour flights and charter flights respond to different stimuli than do the individual tourist and will be a major part of future air traffic flows. The flow of group and inclusive tour passengers and the split between the inclusive tourist carried on scheduled and non-scheduled flights will have an effect on the choice of site because of the different surface movement characteristics. We consider that these should be considered as separate items to be included in the cost-benefit analysis. This involves a significant amount of effort to determine the forecasts of air traffic for the various sites and this will require a detailed origin and destination survey in order to break down the passengers into these categories and in order to differentiate between the different sites. We would also point out that the possibility of a channel tunnel may well be significant in terms of some of the shorter air journeys to the continent.

Chapter 5—Timing of the Need for the Third Airport
Paragraph 15—This paragraph implies the need to

Printed image digitised by the University of Southampton Library Digitisation Unit

offer inducements to airlines to operate outside the hours 07.00 to 22.00, i.e. to operate during the night to a greater extent than they would do so as the result of normal commercial pressures. The Commission seemed to be suggesting that for the airport to operate economically the rate of night flights should approach the rate during the day. In this case the night-time nuisance would be much worse than has been indicated by either the Commission or the Experts at Stage II, certainly the night would be the critical time for noise nuisance rather than the day. Conversely it would be a significant disbenefit for an inland site to have restrictions placed on the number of night-time flights, let alone to have restrictions placed on any flight procedures as the result of noise nuisance.

Paragraphs 58-60—It has never been clear to us whether the defined need was for a Third London Airport or for a further major national airport. Although we agree that the further airport is necessary we consider that there are cogent reasons leading to alternative locations. The Commission's Research Team is suggesting that Cublington or Thurleigh (para. 38) would have an advantage in that they would draw traffic both from London and from the Midlands. If a further major national airport is required then this is a reasonable argument, although the question does arise as to where the next major national airport ought to be sited. There is a case to be made out for agreeing at this stage provisional locations for the next two international airports and there would be arguments in favour of one serving essentially the South-East of England and one serving the Midlands area. To put the next airport between the two makes the problems of siting the next one even greater. The alternatives seem to be to site the next airport in such a position that it saturates quickly or alternatively to put forward several strategically placed airports throughout the country which individually would develop more slowly but which might lead to a more satisfactory solution of our air travel problems in a longer term.

Paragraph 54—We broadly agree with this paragraph although the fourth item of costs, namely the effect on the local environment in terms of the damage to the environment and local amenities we feel is not something which can necessarily be treated as a deferred cost. For example, it is well known that as soon as it is proposed that a motorway be routed through a certain area planning blight occurs. The value of the houses in that vicinity drops significantly because people anticipate that the environment will be degraded even though this will not occur for perhaps 5 years. Indeed people not only anticipate the loss of the environmental quality but they exaggerate it and their sense of loss before the proposed development actually happens is generally speaking greater than when it does happen. Therefore we feel that the loss of the consumer surplus with regard to environment and amenity can occur before the physical effect causing it and indeed, to some extent, has occurred already at the four sites.

Chapter 6—Air Traffic Control
Detailed Comments

Paragraph 62 et seq.—As queried in our comments on Para. 33 we ask whether the Commission is now proposing sectorisation as a possibility? This question of omni- or preferential-directionality is very important. The best site with omni-directional capabilities may well be different from the best sectorised site.

Paragraph 64—We feel that the basis and assumptions of the three computer programs should be made available for inspection.

Paragraph 65—The Commission mention the disbenefits of avoiding conflicts by lengthening flight paths. As air traffic control systems become more sophisticated, so it will be possible to operate successfully at sites which would at present be considered rather difficult from the point of view of air traffic control. This we accept but would point out that such sophisticated methods applied at a site where such problems did not exist would enable delays and safety risks to be avoided with the consequent benefits. The assumptions the Commission are making in the advance of navigational aids and ATC techniques should be made available for inspection.

Paragraph 67—We feel that the results of this survey will require careful interpretation. There has been a tendency in the past for surveys of this nature to ascribe the reactions of people already living in an area subject to noise to people at present living in a quiet area who may find themselves more or less suddenly exposed to noise. These two populations are clearly different as in the case of the population which has been exposed to noise for some time it is quite likely that the people more sensitive to noise will have moved away. Those moving in, being aware of the noise will tend to be the less sensitive.

Additional items in cost/benefit analysis

The extension of the controlled air space is a disbenefit which should be costed. It is suggested that some of the major effects of the increase in controlled air space result from the sterilisation of air space for other purposes such as gliding, unrestricted business, R.&D., private and military flying. In para. 65 the Commission have mentioned the possibility of ATC conflicts, the fact that these will result in disbenefits as a result of delays and possibly safety hazards. This should obviously represent the nett effect over the whole of the London terminal area rather than the effect on the flights into the Third London Airport alone.

Printed image digitised by the University of Southampton Library Digitisation Unit

Chapter 7—Surface Transport

Detailed Comments

Paragraph 69 et seq.—Our comments on Chapter 4 are equally applicable to Chapter 7. We feel there is a possibility that the information derived from Heathrow and Gatwick studies might underestimate the level of non-public transport travel to sites such as Cublington and hence unfairly weight the surface access cost-benefit in its favour. We would like to be able to examine at the earliest opportunity the assumptions which are made in generating the traffic figures, the origin and destination figures and the modal splits.

Additional items for cost/benefit analysis

The surface transport required to bring materials etc. to the construction sites can cause significant congestion and disbenefit to the local population and industry.

Chapter 8—Regional and Local Planning and Environmental Effects

Paragraph 75—As indicated in our general comments we feel that the problem of evaluating the regional planning effects to be a most important one which should not be passed over lightly. We would have thought that it was meaningless to take into account any strategy of the SEJPT formed without taking a Third London Airport into account. A Third London Airport is such a major factor in regional planning that it would inevitably influence the strategy of SEJPT. The SEJPT and the Commission cannot have valid separate strategies.

We consider that it is necessary to set up a calibrated model to investigate the effects on employment and regional growth and to estimate the pattern of urbanisation and land use which will occur with and without the Third London Airport at the various sites. The results of this model could also be used in assessing the generation of surface transport. The effect of the different patterns of urbanisation will be reflected in different costs of surface transport, in the costs of water, electricity and other services, in the cost of transporting resources such as sand and gravel. In particular we understand that there may be a problem in supplying sufficient electrical power to industrialisation which will be associated with the Airport if sited at Cublington.

The siting of an airport is also an important factor in influencing regional development; for example, putting the airport at Foulness might be considered a benefit in that it would stop the flow of population out of East Anglia and cause an increase in population in an area which could sustain it rather than further increase the demand for houses in areas where the pressure is already considerable in terms of housing demand.

We recognise that this is a simple view of the situation and that the model itself would of necessity be most complex. We recognise that in the time available it will not be possible to study this in as much detail as we would like. We do feel, however, that the planning considerations represent a most important factor in the selection of the site for the Third London Airport and must be gone into as thoroughly as possible. We do not feel that they can be dismissed as easily as is suggested in para. 73-75.

Paragraph 76—Surely this paragraph should refer to the scale and the potential of the various sites. It does not seem to us to be reasonable to assume that the scale and the potential will be the same for the four sites.

Paragraph 82—The meaning of the penultimate sentence of this paragraph is not clear but the sense of this whole section appears to be that the increases in population due to attracted employment are to be discounted. These increases are, of course, a major part of the argument against the selection of Cublington. This problem falls into the same conceptual category as the Foulness seaport (paras. 16-18) about which it is concluded that it is for others to provide evidence about the ability of the seaport to alter the balance. We do not subscribe to this view. The full consequences of locating the airport at any of the sites must be considered at this stage.

Paragraph 86 et seq.—There appears to be a conflict between the various statements made in several of the succeeding paragraphs. Para. 87 states that the proposed methodology is 'to assess what sum of money would be sufficient to leave the sufferer in no worse a situation than he was before'. We agree with this. However, para. 91 (b) in estimating the total capital at risk does not include the consumer surplus which is correctly included in the subsequent paras. 93 (c) and 98. Schools, hospitals etc. are situated where they are because they are better (on the average) there than anywhere else. Therefore the value of their present sites is greater than the replacement costs, that is to say that convenience of position is also 'capital'. This also applies to houses but would be included in the reduction of the consumer surplus. As in para. 95 et seq. market value is not the value to the resident as stated in para. 94.

Paragraph 91 (c)—Industry is under considerable pressure at the present time to reduce noise and in the future industry may be subject to legislation which will make them reduce noise to levels below that to which they may be exposed due to aircraft. In time, therefore, aircraft noise will represent a more serious disbenefit to industry.

Paragraph 93 et seq.—The assessment of noise and the disbenefit it causes has been dealt with fairly fully in Mr. Waller's Stage II evidence.* The main point is

* *Papers and Proceedings*, vol. V.

Printed image digitised by the University of Southampton Library Digitisation Unit

that noise nuisance does not stop at some arbitrary value of NNI. It continues albeit at a lower rate per capita down to low values of NNI but the numbers of people affected can increase rapidly with decreasing NNI. For a more detailed discussion and a summary of the Stage II evidence see the Appendix.

Additional items for cost/benefit analysis

Paragraphs 86 & 93—Relating to the costs of noise as it affects the local residents it is important to consider the pattern of urbanisation in relation to the airport as this will determine the nuisance to the incoming population. Costs may well be incurred in this development if standards of sound proofing and so on are specified as part of planning approval. Further in relation to existing as well as new development it may be found necessary at some sites to institute noise control measures and these will undoubtedly involve a cost penalty on the operation of the airport and this should be included.

Paragraph 91—Significant environmental damage will be caused during and due to the construction work, e.g. haulage of materials will produce noise, fumes, congestion, accidents, etc. and should be costed.

Paragraph 97—The costs of finding a new house and moving goods and chattels the Commission's Research Team estimate may amount to 10% of the value of the property sold. This 10% we have assumed to apply to basic financial cost and the following costs are therefore in addition to this:

—Upset.

—Time spent in finding new house and selling existing and in negotiation and dealing with solicitors etc.

—Time spent by seller in settling in, for example, laying carpets, redecorating, etc.

—The inconvenience and disruption to working life and indeed the possible need to change jobs, the possible loss of holiday time in moving, disruption of education etc.

—The loss of a garden, trained and kept as the householder would like.

—The disruption of association with friends and relatives, the loss of community life.

—Much of this latter may be reflected in reduction in the consumer surplus. The new house in any event is unlikely to be as convenient and as much to the liking of the owner as the previous one. Although individuals may find houses which suit them better, taken over the population as a whole the consumer surplus will be reduced and this reduction may be particularly severe when people are forced to move.

This increased demand for houses in quiet rural areas may result in higher building densities and a reduction in the quality of these areas. This problem would only be avoided if it could be assumed that the people displaced by the airport could move to an unpopulated area, for example to the North of Scotland but this would involve, of course, additional costs in any case. In short, the continued erosion of the unspoilt and quiet areas of the country is a disbenefit which ought to be costed.

Paragraphs 100-107—The Commission has mentioned the value of certain items such as parks, churches etc. to people who visit them. We agree in principle that such items can be costed and in the context of a cost benefit balance should be costed. We feel that it is necessary however to be most careful that this valuation is not over-simplified and the value under-estimated. For example just to assess the value of something in terms of the value put on it by the people visiting it may considerably under-estimate the value to the community at large. After all some things are of significant value to people who do not visit them. Television has caused some people to put a value on things such as Wimbledon tennis and historic buildings described on BBC-2. Also some things have the value of being there should one want them, for example areas where one could get away from it all; the possibility of going is often as effective as going. The quiet rural area has a benefit in excess of that experienced by those who visit it.

Paragraph 93 et seq.—In addition to the existing population the incoming population will be affected by noise and this social cost should be included as well as the possible alternative costs resulting from the planning regulations stipulating certain degrees of sound-proofing in certain areas. Costs of noise control procedures if necessary must clearly be also taken into account. The effect of stacking whilst waiting for landing clearance is to produce areas in excess of 10 square miles in which the noise exposure can reach 35 NNI during peak periods of the year. Although this is a relatively low level exposure it does result in significant noise nuisance and these should be included in the assessment of the costs of noise, if it is assumed aircraft holding in these areas will occur on a significant number of occasions.

Items for research

As in our detailed comments we consider that it is necessary to produce a model of regional development in order to investigate the implications of the construction of the airport at the various sites so that the planning considerations can be quantified and costed.

With regard to noise, a number of effects have been discussed (see Appendix) and the more important are the following, which we feel could be the subjects of further investigation:

—Effect of sensitivity of population to noise, i.e. the difference between the reactions of the population around Heathrow and that living around

Printed image digitised by the University of Southampton Library Digitisation Unit

Cublington at present. This may result in putting different losses of value on noise for the existing population and for the in-coming population.

—Effect of background noise on NNI. A report published in December 1967 by the Federal Aviation Administration—*The Effects of Background Noise Upon Perceived Noisiness* confirms our thinking but its findings which were based on experiments, could usefully be checked in practice.

—A noise survey to determine present background noise levels and also present exposure to noise nuisance, particularly aircraft noise, would refine the predictions.

—The effect of night flights which, bearing in mind para. 50 is likely to be most significant.

—There is little doubt that one of the major things that worries people about the airport is the possible medical effects of noise. The risk of hearing loss is minimal but doctors generally agree that noise can tip the balance of somebody hovering on the brink of a nervous breakdown. There does not seem to be a risk that the normal healthy person will be affected but the number of 'borderline' cases in a community can form quite a large proportion of it—the aged, those in hospital, young children. Unfortunately, there is no substantiated evidence available to prove the effect of noise and the case goes by default. In our view the Commission would be well advised to assemble and criticise the available evidence and if possible generate some themselves. The onus is on them to quote a figure for the 'cost' which they can demonstrate as reasonable.

—The effect of NNI fluctuating from day to day is unknown. In particular the nuisance caused by flights in the 'reverse' direction may be underestimated by averaging out the number of flights. In other words the fact that after, say 3 quiet days people are subject to one noisy one may make its effect relatively more severe in terms of annoyance.

—There is some justification for thinking that people who are in overall favour of an airport near them will be less annoyed by noise. The appropriate 'cost' or 'disbenefit' would then be less than the contrary case.

Chapter 9—Airport Layout and Site Preparation

Additional item for cost/benefit analysis

Paragraph 110—If for various reasons not connected with the site it is shown that the long narrow layout of airport is better than the overlapping case and if for some site due to topographical reasons it is necessary for it to be overlapping then this constitutes some disbenefit appropriate to that site.

Chapter 10—Implications for Defence, Ministry of Technology and Private Air Fields

Paragraph 116—As mentioned in our general comments on Chapter 1 we feel that the details of the costs and disbenefits accruing in this area should be published so that they can be examined. Further the alternatives available should be discussed to some extent at least. In short, how is the information going to be made available so that the various parties can examine the relevant data?

Chapter 11—Air Safety

Paragraph 118—We feel that the analysis of accidents should be accompanied by an analysis of incidents. This is because incidents are just as important in establishing dangerous trends as are accidents.

Many figures have been published for the value of life. There is room for considerable disagreement on this however; we feel that there is some evidence to suggest that many of the figures quoted are low and we could produce some justification for this if this factor is at all significant.

Appendix

Chapter 8—paras. 93-99: Effect of noise on local Residents

In terms of the summation of the total effect of the noise nuisance previous research* into this aspect indicates that the total nuisance is doubled for each increase in the NNI of 10. That is to say that 50 NNI is twice as bad per capita as 40 NNI or, alternatively, 200 people subject to 30 NNI is equivalent to 100 people subject to 40 NNI. In this way it is possible to aggregate the total exposure to noise. By way of example the numbers given by Mr. Waller in his Stage II evidence for Cublington are reproduced in table 1.

Table 1

Effective number of people exposed to 45-55 NNI by day within 25 miles of airport (no adjustments 2-runway above 25 NNI)

NNI	*Number of Residents*	*Modifying factor*	*Effective number*
25-35	104,100	0·25	26,025
35-45	51,600	0·50	25,800
45+	9,000	1·00	9,000
		Total	60,825

Further, as a general rule, people do not perceive noise in an absolute sense. They tend to relate what they hear to a datum level. Commonly, this is the background noise which exists in their own environment. Background noise can be defined as that level of noise in which it is not possible to distinguish any particular individual source of noise. In towns, the

* *Environmental Quality, its Measurement and Control*, by R. A. Waller. International Seminar on Urban Renewal, Brussels. October 3-6, 1967.

Printed image digitised by the University of Southampton Library Digitisation Unit

background noise consists largely of noise due to traffic. In rural areas, and to some extent in villages and small towns, the background noise will be less than it is at present around Heathrow.

For urban areas it is assumed that the present noise climate is similar to that of West London without the aircraft noise and that the effect of the NNI contours will be the same. In rural areas the background noise is commonly 10 dB less than in suburban or urban areas and the population is not exposed to noise nuisance to nearly the same extent, in particular there is less traffic. The effect of a given value of NNI contour in a rural area is thus equivalent to one ten units higher around Heathrow. There is a possibility, however, with the higher levels of aircraft noise that the reaction to the noise is not related so much to the background noise, which would be very low compared to it, but to something nearer to it in magnitude such as the normal levels of speech. One would not expect these to be significantly different in rural and urban areas, and therefore for noise and number indices above 50 no adjustment is suggested. For areas which are intermediate between rural and urban intermediate values of the adjustment are taken. Table 2 summarises these adjustments.

TABLE 2

Summary of proposed adjustments to NNI for comparative purposes

	Nature of area		
NNI as plotted	*Urban*	*Urban rural*	*Rural*
30	0	+5	+10
40	0	0	+5
50	0	0	0

We have visited the Cublington area but have not carried out a noise survey and have divided the area into the three categories in order to indicate the magnitude of the effect as in table 3.

TABLE 3

Effective number of people exposed to 45-55 NNI by day within 25 miles of airport (2-runway above 25 NNI) allowing for background noise

NNI actual	*Number of Residents*		*Effective NNI allowing for background noise*	*Modifying factor*	*Effective number*
25-35	Rural	67,000	35-45	0·50	33,500
	Urban/rural	26,600	30-40	0·35	9,300
	Rest	10,500	25-35	0·25	2,650
35-45	Rural	26,900	40-50	0·71	19,100
	Rest	24,700	35-45	0·50	12,350
45+		9,000	45+	1·00	9,000
				Total	85,900

The Noise and Number Index was developed from a study in 1961 around Heathrow Airport and several years after the Airport became a significant source of noise nuisance. The Index represents, therefore, the result of an experiment around an established airport. It is not a predictive measure and it does not purport to allow us to predict accurately the effect of aircraft noise on a previously unexposed population. Accepting that it is likely that the annoyance will broadly correlate with NNI in the vicinity of a new airport, it may be more severe in the early years until people either adapt to the noise or the more sensitive ones move away. We believe that this may be significant but we have no data on which to base a reasonable prediction. Also the relationship between NNI and nuisance was established many years ago and it is possible that there has been a change in the reaction to aircraft noise due, for example, to the increase of the standard of living.

The noise nuisance in the two-runway case is dominated by the effect on the existing population. This effect will be function of the existing background noise in the area, of the existing character of the area and of the sensitivity to noise of the existing population.

The four-runway configuration represents a time when the present population will be in a minority as large numbers of people will have moved into the area to satisfy the demand for employment ("primary", "secondary" and "service") generated by the Airport. The total nuisance due to noise is likely to be dominated by considerations of where the new population is housed rather than where people live at the moment. Further, by this time the character of the area will have changed and the background noise will be higher than it is at the present, particularly in those areas which were previously rural. The background noise will have been increased due to the higher level of road traffic and due to the presence of light industry. In this situation the annnoyance to individuals caused by a particular level of aircraft noise is likely to be less severe than it was in the two-runway case. The existing population, although perhaps less annoyed by a particular level of aircraft noise, will, of course, be annoyed by other things as well and the situation would correspond quite closely to that which exists now at Heathrow.

It is important therefore to consider the way in which the area is likely to develop in the vicinity of the airport and within the noise affected areas.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Ministry of Transport

Surface access: second memorandum

The effect of progressive change in modal split

Introduction

1. The Ministry's first memorandum* to the Commission drew attention to the importance, in calculating surface transport costs associated with the proposed airport, of determining the likely division of travellers between car and public transport. It pointed out also that the further the airport was sited from London the greater would be the proportion of travellers likely to find the advantage of a fast public transport link outweigh those of travel by car. In other words "modal split" would vary with distance.

2. Inadequate data is at present available on which to predict modal split for journeys to different possible airport sites. The memorandum therefore confined itself to estimating, on the basis of certain general assumptions, road construction costs and "user costs" (vehicle operating costs, plus cost of accidents and of time consumed in reaching the airport) for three different, but fixed, divisions of traffic between car, coach and train.

3. The user costs estimated were those for the marginal mile, i.e. the extra costs incurred for each mile added to the distance between the airport and London, on the implicit assumption that modal splits would remain constant for small changes in distance. The purpose of the present memorandum is to examine the effect of the contrary and probably more realistic assumption that a small change of distance could have a significant effect on modal split.

Effect of a progressive change in modal split

4. If attention is confined to the costs quantified in chapter 6† of the Ministry's first memorandum then the general effect of a progressive change in modal split is to reduce the rate of increase of user costs with distance. This is because travellers who transfer from private car to train experience an apparently substantial decrease in costs. A fairly small transfer of travellers to train caused by an increase in distance may therefore produce a saving sufficient to offset the extra costs suffered by those who do not change mode. Indeed, on some assumptions, total costs may appear to decrease over certain ranges of distance.

5. This, however, is an unrealistic result. It arises, because, as pointed out in chapter 6, the costs quantified there are not comprehensive. They do not, for example, include costs to rail travellers of reaching the town terminals; these are likely to be greater per head as people are drawn from further afield to the terminal. Nor do they take account of the benefits, in the form of additional convenience, forgone by people transferring from car to public transport; these can in principle be valued in similar fashion to accidents or time. Individuals must be assumed in practice to transfer from car to train only at the point at which, when all such factors are considered, their costs by car begin marginally to exceed their costs by train. The total costs of those who switch modes therefore remain substantially unaltered by the fact of switching. Thus, if the distance between the airport and London were significantly increased the complete costs of all travellers would rise; those of road travellers at the marginal rate for roads, those of rail travellers at the marginal rate for railways, and those of travellers who switch modes first at one rate and then at the other.

6. Given data or assumptions about the variation of modal split with distance it is possible on the above principles to calculate the variation of total user costs with distance. The attached diagram illustrates the type of result produced. The lines OC and OT represent the increase of costs with distance if all travellers use car or train respectively. The line OD represents total costs if a progressive shift in modal split is assumed. In mathematical terms the slope of OD at any distance is equal to a mean of the slopes of lines OC and OT weighted to take account of the assumed proportion of travellers using each mode at that distance. The line OBT represents the costs specifically quantified in chapter 6 of the Ministry's first memorandum. The difference between OBT and OD may therefore be taken as an indication of the additional costs incurred (or benefits forgone) by travellers transferring between the two modes.

7. The line OD curves over progressively until, in theory, it becomes parallel to line OT at a distance where all traffic has been transferred to rail. The speed with which it curves over depends upon the assumptions made about the rate of change of modal split with distance. The effective marginal user cost per mile at any particular distance therefore depends largely on this rate of change. The Ministry's accompanying third memorandum,* "Effects of Changes in Assumptions

* *Commission on the Third London Airport. Papers and Proceedings*, vol. 1, p. 293. (HMSO, £4 10s. 0d.)

† Ibid. p. 299.

* P. 158.

Printed image digitised by the University of Southampton Library Digitisation Unit

Relating to User Costs", gives, in paragraph 3.2.1, figures which illustrate the importance of this factor.

8. It may therefore be important to the Commission to estimate this rate of change. Knowledge in this field is unfortunately at present slight. As paragraph 3.2.5 of the first memorandum* points out most of the work that has hitherto been done on prediction of modal split has been in relation to journeys to and from work. Journeys between city and airport are more complex and involve many factors. Besides time, cost, the frequency and reliability of services, and the relation to the requirements of air passengers and their means, these would include, for example, level of comfort, relative convenience of transporting baggage and the extent to which the passenger may wish to be accompanied by friends and relatives.

* *C.T.L.A. Papers and Proceedings*, vol. 1, p. 287.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Ministry of Transport

Surface access: third memorandum

Effects of changes in assumptions regarding user costs

1. Introduction

1.1. The purpose of this memorandum is firstly to describe fully the assumptions on which the user cost calculations in chapter 6 of the Ministry's first memorandum* to the Commission were made and secondly to demonstrate the sensitivity of the calculations to variation in certain of these assumptions. For the reasons explained below in paragraph 2.2.2 the figures differ in some respects from those presented in the first memorandum.

2. Description of the assumptions

2.1. The flow diagram shows the basis components of the calculation for the present value of user costs per mile distant from Central London for air passengers and related traffic. From this it can be seen that the basis assumptions are of two categories; behavioural assumptions, and costing assumptions. Where possible the behavioural assumptions have been based on the existing traffic surveys for both Heathrow and Gatwick Airports. The costing assumptions are based on values which are commonly used by the Ministry, arrived at from empirical research currently available.

2.2. Costing Assumptions

2.2.1. *Time costs:* It was assumed that the value of time varies with trip purpose, leisure time being valued at 3s per hour, and working time at 13s 6d per hour. An assumed split of 80 per cent of the air passengers going on pleasure trips, and 20 per cent on business trips, then enabled the calculation of the mean value of air passengers time (5·1s per hour). It was further assumed that accompanying drivers and any extra passengers that travelled to the airport by car with the air passengers would have a time valuation the same as that for the air passengers themselves. Coach drivers' time, being entirely working time, was valued at 13s 6d an hour. These values of time are 1967 values. It is assumed they will increase in real terms at approximately the rate of growth of incomes. The values of time have therefore been increased at the rate of three and a quarter per cent per annum for subsequent years.

2.2.2. *Operating costs:* Road vehicle operating costs were calculated from formulae that have been produced in the Ministry from empirical research. They include all vehicle running costs such as fuel and lubrication, tyre and maintenance but exclude, in the case of coaches, the drivers' labour costs, as these have been taken into account as drivers' time costs. The figures presented in the Ministry's first memorandum included provision for depreciation. As private cars depreciate with age more than on a mileage basis, and as travel to the airport will be only a minor and auxiliary use for most of the cars driven there, depreciation has been excluded from the car operating costs embodied in the figures in the present memorandum. However depreciation costs are included in the case of coaches.

The values used were:

Vehicle operating costs per mile in pence

	35 mph	*50 mph*
Cars	2·31	2·25
Coaches	12·22	12·61

Train operating costs were assumed to be 10s per mile. This includes no allowance for the possible need to re-schedule some existing services to accommodate airport trains.

2.2.3. *Accident costs:* The current estimate used is £1,285 per personal injury in rural areas which covers damage to vehicles, medical and police expenses, loss of output, and an element for personal suffering. It was assumed that there were two personal injuries per million vehicle miles for vehicle speeds of 35 mph, and one per million vehicle miles at 50 mph. The reason for the lower accident rate at the higher speed is that the higher speed is assumed to be associated with better and therefore safer roads. Train accident rates are so low that their inclusion makes no significant difference to the estimates.

2.3. The behaviour assumptions

2.3.1. *Vehicle occupancy rates:* The mean occupancy rates for cars was obtained from the Heathrow traffic study. This produced a mean occupancy of 2·4 persons for cars entering the airport to pick up or set down air passengers (or returning from so doing). It was assumed that about half of the air passengers' associated cars would be entering to deliver the air passengers, while the other half were entering to collect them. The derived mean occupancy of the former was: 1 driver, 2 air passengers, and 0·4 of a visitor per car, while the mean occupancy of the

* *Commission on the Third London Airport. Papers and Proceedings*, vol. I, p. 273.

Printed image digitised by the University of Southampton Library Digitisation Unit

latter was: 1 driver, no air passengers, and 0·4 of a visitor. The converse relationship was assumed to apply to passenger-associated cars leaving the airport. Thus the mean occupancy for all passenger-associated cars was 1 driver, 1 passenger and 0·4 of a visitor. The mean occupancy for coaches was taken to be 25 air passengers per coach, no allowance being made for visitors who go by coach to see off air passengers at the airport. Coaches were assumed to carry the same average number of air passengers on both the outward and the return journeys. The train calculations were based on a mean load of 340 air passengers per train in both directions.

2.3.2. *Vehicle speeds:* Road speeds depend upon a great many factors that will vary with type of road to be provided, its route characteristics and the volume of traffic using it. The calculation was performed for road speeds of both 50 mph (current average vehicle speed on a rural dual-carriageway road) and 35 mph (a speed representative of a long-standing single-carriageway trunk road) to give an indication of the sensitivity to the road speed assumption. The train speed was taken as 100 mph, this being the speed relevant to costing the marginal mile, and not the average start-to-stop speed of the train.

2.3.3. *Air traffic forecasts:* The Board of Trade and the British Airports Authority are already jointly engaged on preparation of new traffic forecasts for the London Airports, and no doubt the Commission will itself be studying this question. In the meantime the calculations used the mean values of two earlier estimates of airport traffic as follows:

Total passenger traffic (both directions) in millions

1975	*1980*	*1985*	*1990*	*1995*	*2000*	*2005*
1·25	8·50	18·00	31·00	31·00	31·00	31·00

2.3.4. *Proportion of passengers transferring between aircraft:* The existing airport surveys indicated that about 15 per cent of the total air passengers were in transit, and therefore did not leave the airport. This proportion of 15 per cent was assumed to apply for the entire 30 year period.

2.3.5. *Proportion of passengers travelling towards London:* In the Heathrow traffic study it was found that of the non-transfer passengers about 40 per cent started from Central London, a further 30 per cent from the rest of Greater London, and altogether 80 per cent started from the London Metropolitan Region. In the calculations it was assumed that 85 per cent of the non-transfer traffic will travel to, from or via London.

2.3.6. *Modal split assumptions:* Three examples of possible modal splits were treated. The first with a 50-50 per cent split between car and coach with no air passengers going by train. The second was with two-thirds of the traffic going by rail, the remainder by car, and the third with one-third by rail and two-thirds by car and coach. No assumption was made about the rate of switch from one means to another with increasing distance.

3. The sensitivity tests

3.1. A description of the general method used in calculating sensitivities is given in Appendix 1. As in the first memorandum the figures quoted are aggregate discounted values at 1975 for the 30-year period 1975 to 2005.

3.2.1. *Modal Split:* The Ministry's second memorandum to the Commission dealt with the effect on estimates of user costs of assuming a progressive change of modal split with distance. The first sensitivity test examines the effect of alternative assumptions about the rate air passenger traffic switching from car to train with distance. All other assumptions are held at the same values as in the first memorandum.

3.2.2. Four possible rates of switch have been considered. In all of them the rate at which the number of people going by car declines with distance is assumed to be an exponential function of the distance. The formulae are given below. In the first two, the number of people going by car is expressed as a percentage of total passengers, and in the second two as a percentage of passengers travelling by rail. In all cases it is assumed that all passengers travel either by car or by train, with no coaches: i.e.

$$\%\text{ by car} + \%\text{ by train} = 100$$

Rate

A $\%$ by car $= 100 \times e^{-3d.}$

B $\%$ by car $= 100 \times e^{-1d.}$

C $\dfrac{\%\text{ by car}}{\%\text{ by train}} = e^{-3d.}$

D $\dfrac{\%\text{ by car}}{\%\text{ by train}} = e^{-1d.}$

d=distance of airport from London.

3.2.3. The effect of these assumed rates is that the percentage of total air passengers who will travel by car at different distances of the airport from London would be as shown in table 1 below:

TABLE 1

% of total passengers

Rate of switch from car to train	*Passengers travelling by car (miles)*							
	20	*30*	*40*	*50*	*60*	*70*	*80*	*90*
A	54·9	40·7	30·1	22·3	16·5	12·2	9·0	6·8
B	81·5	74·1	67·1	60·7	54·9	49·6	44·9	40·7
C	35·5	28·9	23·1	18·2	14·1	10·9	8·3	6·4
D	44·9	42·6	40·1	37·8	35·4	31·0	28·9	26·9

Note. At zero distance the number of car travellers at rates A and B would be 100 per cent; at rates C and D would be 50 per cent.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.2.4. The variations in total user costs (road plus rail) corresponding to these rates of switch, at the alternative car speeds of 35 and 50 mph, are shown in table 2 below. The figures shown are the sums of the incremental mileage costs, i.e. they represent only the extra costs incurred on account of increased distance on the centre part of the journey. They are given in ten-mile brackets and should be summed across the table to produce cost differences over wider changes in mileage.

TABLE 2 — £ million

Rate of switch from car to train	*Car speed*	*Incremental cost in ten-mile brackets (road and rail)*						
		20-30 mls.	*30-40*	*40-50*	*50-60*	*60-70*	*70-80*	*80-90*
A	35	36·2	29·2	24·1	20·2	17·4	15·3	13·8
	50	28·2	23·3	19·7	17·0	15·0	13·6	12·5
B	35	53·1	49·1	45·3	41·9	38·8	36·0	33·4
	50	40·0	37·2	34·6	32·2	30·0	28·0	26·2
C	35	27·5	24·0	21·0	18·5	16·4	14·7	13·4
	50	22·0	19·6	17·5	15·7	14·3	13·1	12·1
D	35	34·0	32·6	31·2	29·9	28·6	27·4	26·2
	50	26·6	25·7	24·7	23·8	22·9	22·0	21·1

3.2.5. It can be seen that the user cost estimates are sensitive to the assumptions made about rate of switch of mode with distance both in terms of differences within any mileage band and in the rate at which the incremental cost changes with increasing distance.

3.2.6. In presenting the results of the other sensitivity tests, figures are quoted separately assuming 100 per cent of the traffic going by each mode—car, train and coach. This reduces the tables to easily manageable size and facilitates easy calculation of the sensitivity to the other assumptions for any chosen modal split assumptions.

3.3.1. *Value of time:* Five alternative values of leisure time per hour were tested between no value and 6s with working time value held constant at 13s 6d: then five values of working time from 8s to 20s with leisure at 3s. The results are shown in table 3 below.

TABLE 3 — £ million per mile

Leisure time	*Working time*	*Mean*	*100% by car*		*100% by coach*		*100% by rail*
			50 mph	*35 mph*	*50 mph*	*35 mph*	*100 mph*
0d	13/6	2/8½	3·27	4·26	1·20	1·59	0·60
1/6	13/6	3/11	4·19	5·42	1·55	2·08	0·77
3/–	13/6	5/1	4·88	6·56	1·88	2·56	0·93
4/6	13/6	6/5	5·70	7·74	2·22	3·05	1·10
6/–	13/6	7/6	6·52	8·90	2·56	3·53	1·27
3/–	8/–	4/–	4·13	5·50	1·50	2·03	0·78
3/–	10/–	4/5	4·40	5·89	1·64	2·22	0·83
3/–	13/6	5/1	4·88	6·56	1·88	2·56	0·93
3/–	16/–	5/7	5·22	7·05	2·05	2·80	1·00
3/–	20/–	6/5	5·76	7·82	2·32	3·19	1·12

3.3.2. It can be seen from these figures that the sensitivity to changes in the value of leisure time is greater than the sensitivity to changes in the value of working time. This results from the assumed 80-20 per cent split for air passengers between leisure and work trips. The sensitivity to changes in time costs increases as vehicle speeds decrease, as lower speeds magnify the importance of the time element in user costs.

3.3.3. Appendix 1 of the Ministry's first memorandum* drew attention to the question whether the air passengers time should be valued higher than the average, and in particular than the accompanying passengers to the airport. Tests were carried out increasing the air passengers time above the average, with accompanying passengers at the average, and holding air passengers at the average whilst reducing accompanying passengers below the average. The results are shown in table 4 below for car travel only as no accompanying passengers were assumed to go by coach or rail.

TABLE 4 — £ million per mile

Average value of time[1] *for air passengers*	*Average value of time*[1] *for accompanying passengers*	*100% by car*	
		50 mph	*35 mph*
5/–	0	2·84	3·64
5/–	1/6	3·63	4·49
5/–	3/–	4·02	5·34
5/–	5/–	4·85	6·52
7/6	5/–	5·52	7·47

[1]Assuming 80 per cent leisure, 20 per cent business purpose split as in first memorandum.*

The results show this aspect of time valuation will also have a very important impact on user cost comparisons.

* *Commission on the Third London Airport. Papers and Proceedings*, vol. I, p. 305.

* *CTLA Papers and Proceedings*, vol. I, p. 273.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.4.1. *Ratio of working time to leisure time:* Five ratios of working time to leisure time for air passengers were tested, from the originally assumed 80 per cent leisure and 20 per cent work, to 20 per cent leisure and 80 per cent work. The Heathrow Airport Study indicated that business trips accounted for 20-30 per cent of the total in the peak season, and 60-70 per cent in the off-peak season. The lowest value for the proportion of work trips was assumed for the third airport because it was considered that the leisure trip demand would grow more rapidly than business trips. Table 5 below shows the sensitivity of the cost figures to changes in this assumption.

TABLE 5 — *£ million per mile*

Work trips	*Leisure trips*	*100% by car*		*100% by coach*		*100% by rail*
		50 mph	*35 mph*	*50 mph*	*35 mph*	*100 mph*
20%	80%	4·88	6·56	1·88	2·56	0·93
40%	60%	6·30	8·60	2·47	3·41	1·23
50%	50%	7·02	9·62	2·77	3·83	1·38
60%	40%	7·72	10·63	3·06	4·25	1·52
80%	20%	9·14	12·66	3·66	5·10	1·82

3.4.2. These changes are equivalent to varying the average value of all passengers time from a lower limit of about 5s per hour to an upper limit of about 11s 6d per hour. This can be compared with equivalent variation of between 2s 8½d and 7s 6d per hour average value at the extreme in the test of working and leisure time above.

3.5.1. *Vehicle occupancy rates:* Tables 6 to 8 below show test results of varying vehicle occupancy rates, presented separately for each vehicle type. The occupancies are the mean occupancies for a two-way trip. The implications of this are explained in paragraph 2.3.1 above.

TABLE 6: CAR OCCUPANCY — *£ million per mile*

Drivers	*Air passengers*	*Visitors*	*100% by car*	
			50 mph	*35 mph*
1	0·5	0·4	8·34	11·07
1	0·75	0·4	6·02	8·06
1	1·0	0·4	4·88	6·56
1	1·25	0·4	4·19	5·66
1	1·5	0·4	3·73	5·05
1	1·0	0·2	4·59	6·15
1	1·0	0·0	4·30	5·74

TABLE 7: COACH OCCUPANCY — *£ million per mile*

Air passengers per coach	*100% by coach*	
	50 mph	*35 mph*
15	2·17	2·89
20	1·99	2·67
25	1·86	2·56
30	1·81	2·47
35	1·75	2·41

3.5.2. It can be seen from these figures that the sensitivity to vehicle occupancy is far greater for cars than for coaches, as would be expected. This is because the air passenger time costs are a much smaller proportion of the total user costs. For rail where the air passenger time costs account for a very large part of total user costs per passenger, the sensitivity to changes in train occupancy is extremely small.

TABLE 8: TRAIN OCCUPANCY — *£ million per mile*

Air passengers per train	*100% by rail at 100 mph*
250	1·01
300	0·96
340	0·93
400	0·90
480*	0·87

*100 per cent capacity of type of stock used in cost calculations.

3.6. **Other important causes of variations in user cost**

3.6.1. Costs will vary considerably with differences in the accessibility of the Central London public transport terminal. The effect will be both direct, as a further cost component of those actually using public transport, and indirect in influencing the modal split. Terminal access costs, which have not been included in any of the calculations, will depend very largely on the particular location of the terminal. They are likely to be substantial, and the Commission will no doubt wish to consider them in some detail at a later stage. This could probably best be done by use of a distribution model and work carried out in the London Transportation Study may be adaptable for this purpose.

3.6.2. User costs will also vary significantly with the spatial distribution of demand generated by the airport. This would affect both the assumption of 85 per cent of passenger traffic assumed to travel towards London, and the cost rates of the proportion not travelling via London which are not included in the calculations. It is not possible to test the effects on a "per mile" basis without making elaborate additional assumptions for which no reliable basis exists. There may also be significant cost differences for different sites between traffics to and from different parts of London, which cannot be derived within the framework of assumptions adopted. Both these sources of variation could also be identified by use of distribution model techniques. Work has been done in the Department to develop distribution models for testing trunk and regional road programme investment strategies which may be adaptable for this purpose and available knowledge of techniques is being placed at the disposal of the Commission's research staff.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.6.3. The sensitivity tests presented in this memorandum do not deal with service traffic. The figures relating to service traffic in the Ministry's first memorandum* took account of the costs of business trips to and from airport installations, freight traffic, friends travelling to the airport independently of air passengers and sightseers not accompanying passengers. It was assumed that 50 per cent of service traffic circulated within 10 miles of the airport and that the costs of only the remaining 50 per cent would be affected by increasing distance from London. In practice the costs of different categories of service traffic are likely to be affected in different ways by changing distance from London. Freight traffic may, for example, be grouped into larger loads at increased distances, or diverted onto rail, or to competing airports in the London area; fewer friends may go to meet arriving air passengers, and there may be fewer sightseers. Again, sensitivity of the figures given to variations of this kind could be assessed only against further elaborate assumptions.

3.6.4. The figures in the first memorandum excluded travel costs of airport workers, but these were referred to in chapter 2. They may vary considerably according to the actual location; differences would also best be explored by use of a distribution model requiring planning inputs of the distribution of areas of population and employment within commuting range.

3.6.5. The first memorandum gave alternative estimates of cost for road vehicle speeds of 50 mph and 35 mph but only for one speed (100 mph) for a fixed link. No further sensitivity tests have been attempted. In practice variation of fixed-link speed would have a dual effect: directly on the costs of travellers already using the link and indirectly through its influence on modal split. Since the marginal costs per mile of those already using a fixed link are small any increase in speed could have only a small direct effect on total costs. The sensitivity tests on modal split presented in paragraph 3.2.1 above give an indication of the possible indirect effect, although no data are at present available upon which it would be possible reliably to relate variations in modal split to changes in modal speeds.

* *CTLA Papers and Proceedings*, vol. I, p. 273.

Appendix I

The Method of Calculation of Sensitivities

(1) The time costs associated with each air passenger per incremental mile were calculated for each mode using the following formula:

$$(a + bR_1 + cR_2)/V$$

Where a = the value of time for air passengers
b = the value of time for visitors
c = the value of time for drivers
R_1 = Ratio of visitors to air passengers in the vehicle
R_2 = Ratio of drivers to air passengers in the vehicle
V = the speed of vehicle

(2) The operating costs associated with each air passenger per incremental mile = P/N

Where P = Operating costs per vehicle mile
N = Number of air passengers carried per vehicle

(3) Accident costs associated with each air passenger per incremental mile = z The accident rate per vehicle mile x the cost of an accident divided by the number of air passengers per vehicle for car and coach (x)

The accident costs for rail were negligible compared to time and operating costs.

Assuming that 100% of the air passengers travelled by a particular mode, the present value of the future user cost per mile associated with each mode may then be calculated using the formula

$$\frac{(85)^2}{(100)^2}\left[\left[\begin{array}{c}\text{accident costs +}\\ \text{operating costs for}\\ \text{air passenger per}\\ \text{mile for the mode}\end{array}\right] \times 184{\cdot}9 + \left[\begin{array}{c}\text{time costs per air}\\ \text{passenger per mile}\\ \text{for the mode}\end{array}\right] 389{\cdot}0\right]$$

The factors 184·9 and 389·0 represent the combined effects of the air passenger forecasts, the discount rate of 8%, and the 3½% assumed growth rate for values of time.

Thus

$$184{\cdot}9 = \sum_{t=o}^{30} \frac{N(1975 + t)}{(1 + 0{\cdot}08)^t} \qquad 389{\cdot}0 = \sum_{t=o}^{30} \frac{N(1975 + t)\, e^{0{\cdot}035\,(t + 8)}}{(1 + 0{\cdot}08)^t}$$

The discounting has thus been performed to a base year of 1975.

Printed image digitised by the University of Southampton Library Digitisation Unit

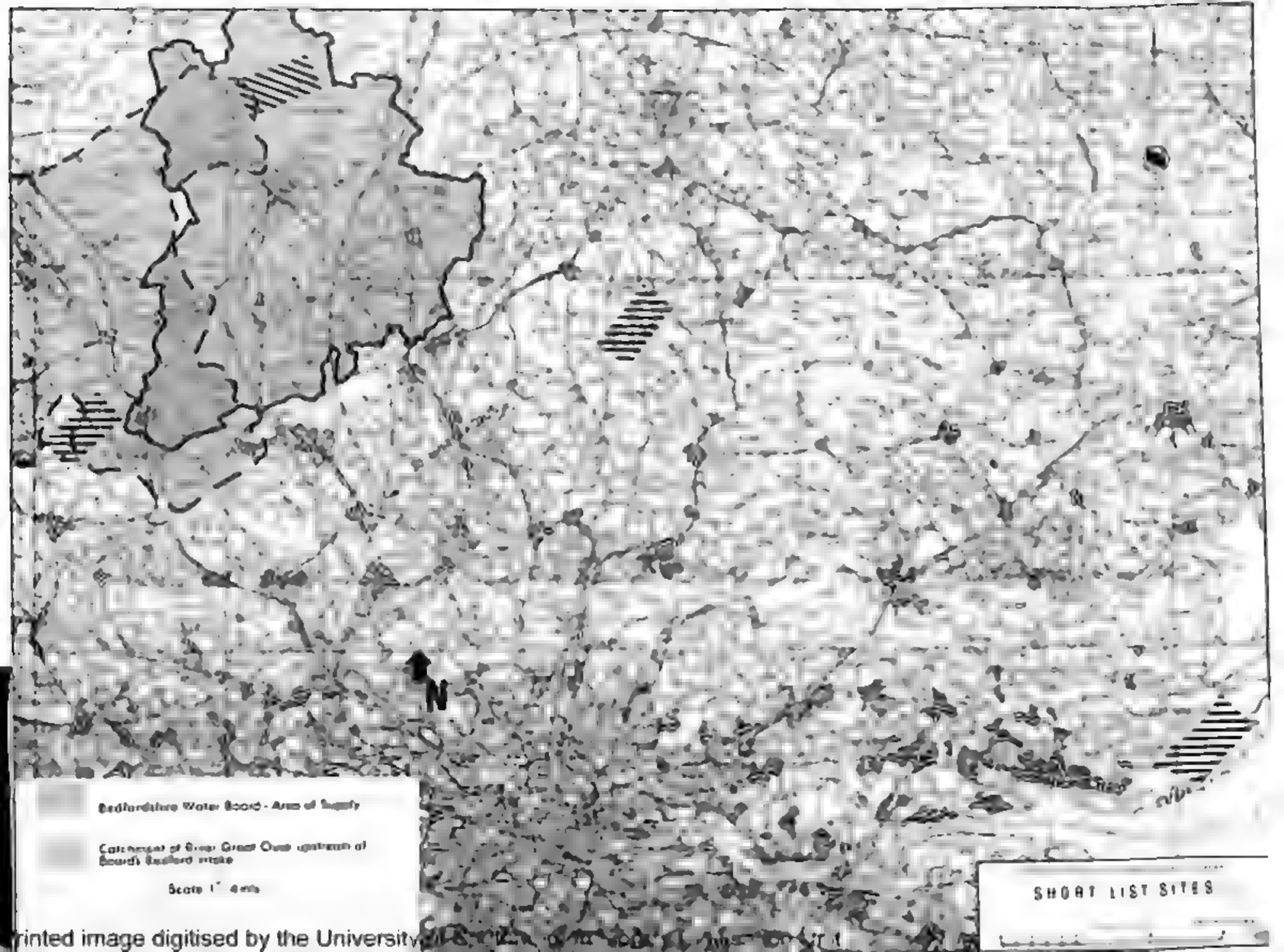
Other Submissions

* Braughing Rural District Council.
† Buckinghamshire County Council.
† Cambridgeshire and Isle of Ely, Essex and Hertfordshire County Councils.
† Bernard Clark and Partners.
* Coventry Gliding Club.
* MBM Powercels Ltd.
* National Council on Inland Transport.
† Shell (UK) Ltd.
† Standing Conference on London and South East Regional Planning.
† Thames Estuary Development Company.
† Tracked Hovercraft Limited.
* Mr. R. Trotter.
‡ Mr. B. Waters and Mr. Max Boisot.

* Available for inspection by arrangement at the offices of the Commission.
† Copies can be obtained from, or inspected at, the offices of the authority concerned.
‡ Published in *Official Architecture and Planning* Dec. 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

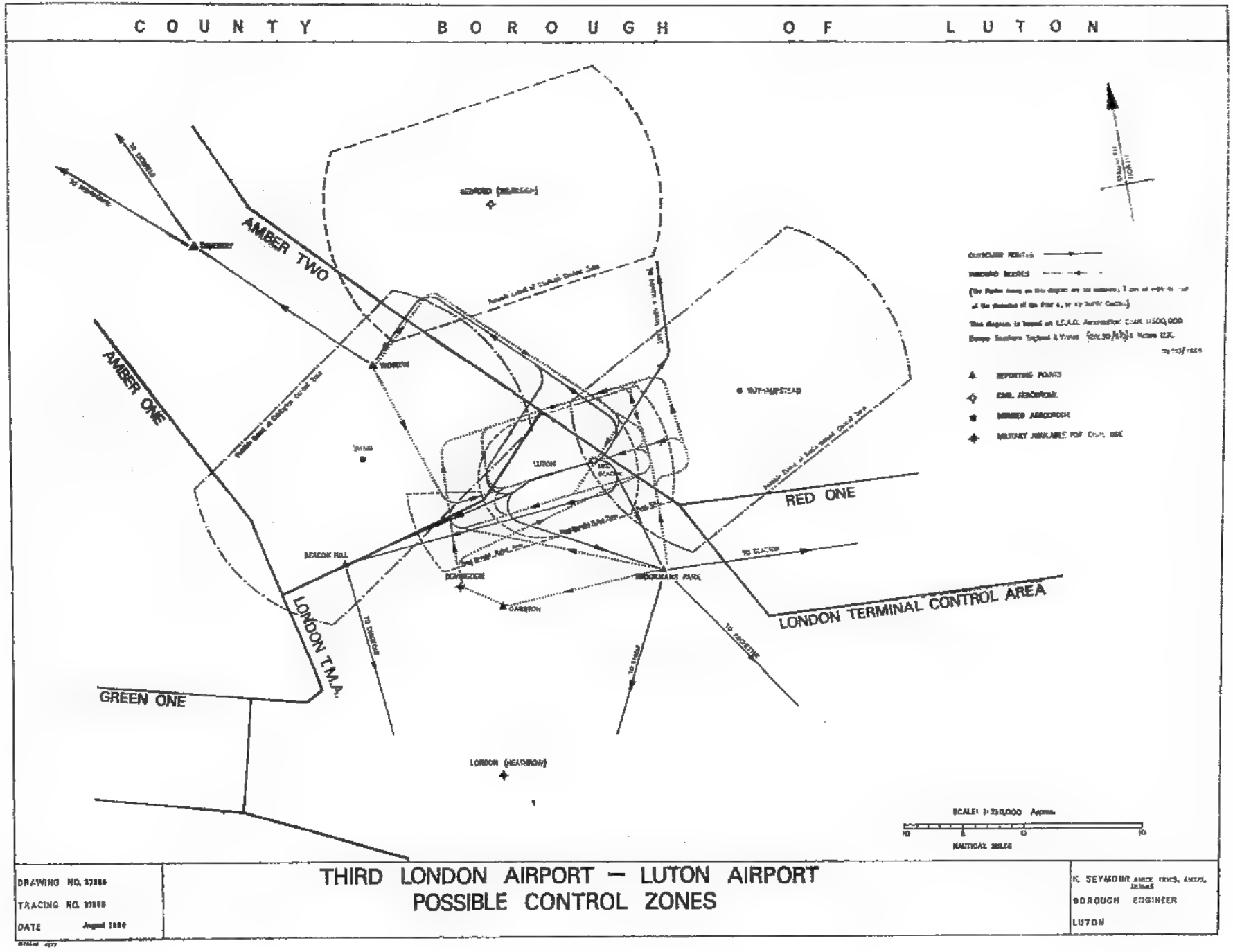
Printed image digitised by the University of Southampton Library Digitisation Unit



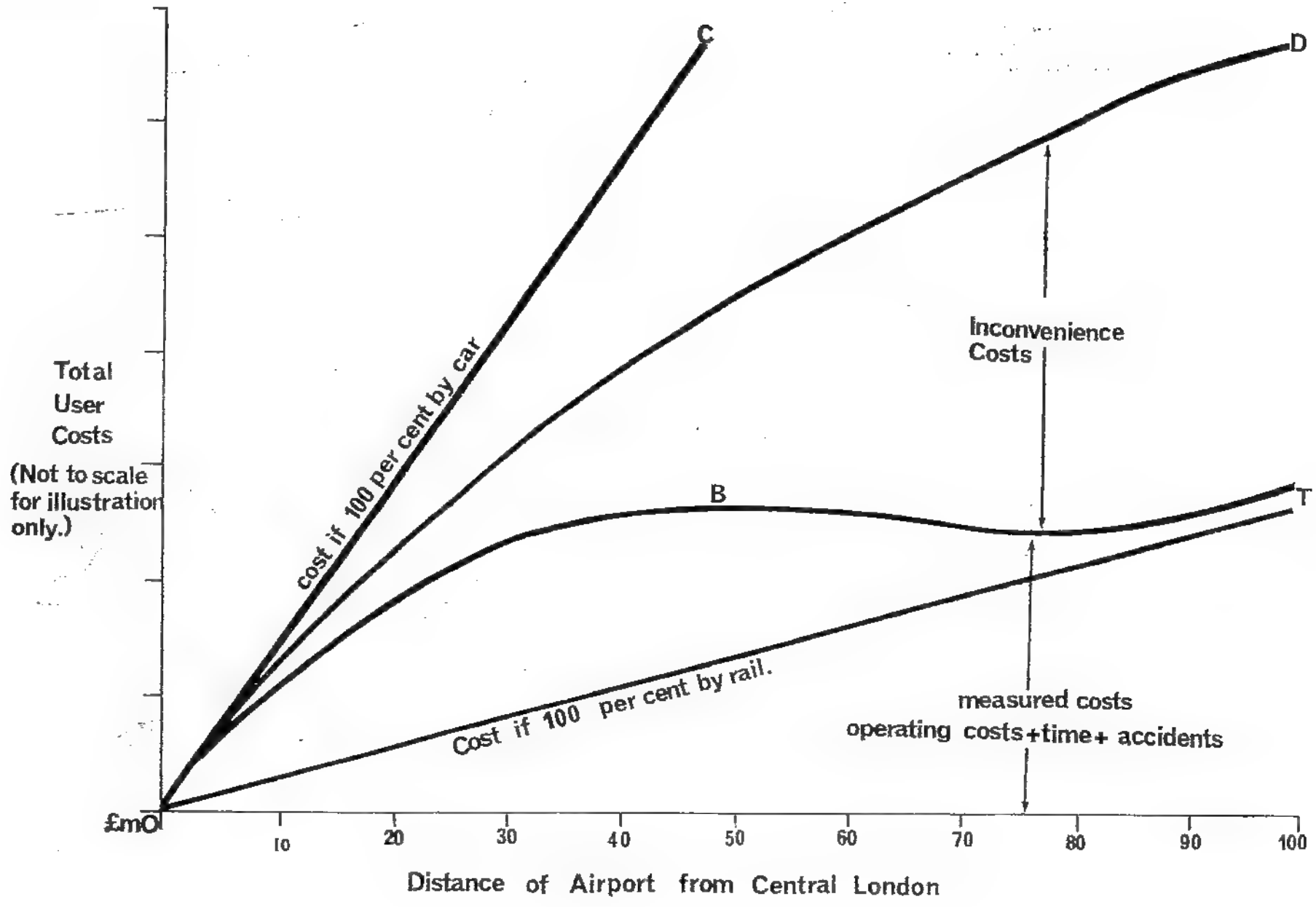
rinted image digitised by the University

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

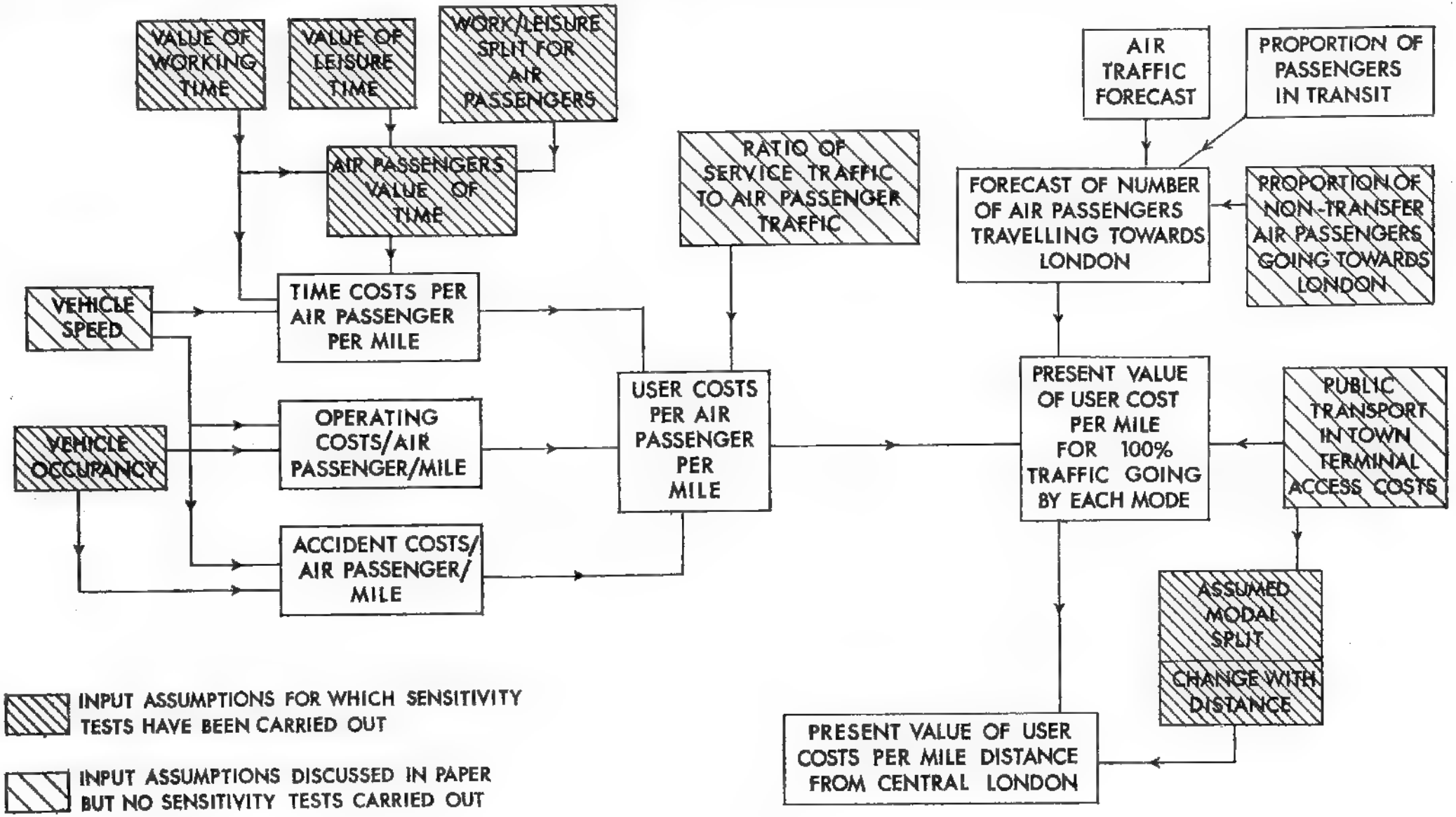


Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

DIAGRAM SHOWING INPUTS TO ESTIMATION OF USER ACCESS COSTS PER MILE



OP.1100.120.145

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings volume IX

Stage III: Research and Investigation Public evidence

LONDON
HER MAJESTY'S STATIONERY OFFICE
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed in England for Her Majesty's Stationery Office
by BPC Letterpress Ltd., at Kelihers London, S.E.1.

Dd. 501454 12/69

SBN 11 510165 9

Printed image digitised by the University of Southampton Library Digitisation Unit

Preface

When the Commission published its *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore)** in February 1969, it invited evidence likely to contribute usefully to the detailed research and cost/benefit analysis of the short-listed sites during Stage III of the Commission's work.

The greater part of this evidence is reproduced in full in this volume. As indicated on page 163, the remainder has either been published by the contributors or is available for inspection at the offices of the Commission or at the offices of the contributors.

In addition this volume contains two further memoranda from the Ministry of Transport received by the Commission during Stage I. The original memorandum was published on page 273 of volume I of *Papers and Proceedings.*

*HMSO.

A*

Printed image digitised by the University of Southampton Library Digitisation Unit

Contents

	Page
Advisory Committees for Civil Aviation for the North West, Northern and West Midlands of England	1
Air Safety Group	2
Mr. H. C. Beddington	8
Bedfordshire County Council	12
Bedfordshire Water Board	13
British Airports Authority	15
British Association for the Control of Aircraft Noise	24
British European Airways	25
British Gliding Association	27
British Overseas Airways Corporation	28
British Petroleum Co. Ltd.	29
Cambridge University	30
Clacton Urban District Council	33
Coventry Gliding Club	34
Economic Planning Council, East Midlands Region	35
Economic Planning Council, West Midlands Region	37
Economic Planning Council, Yorkshire and Humberside Region	38
Mr. C. Edwards (University of East Anglia)	39
Foulness Island Residents Committee	46
Hertfordshire and Middlesex Trust for Nature Conservation	47
Honourable Company of Master Mariners	54
Inter Diocesan Working Party	55
International Wildfowl Research Bureau	68
Luton County Borough Council	69
Ministry of Technology	76
National Farmers' Union	82
Nature Conservancy	92
Nuthampstead Preservation Association	93
Oxfordshire County Council	107
Ramblers' Association	108
Regional Studies Association, East Anglia Group	109
Royal Institute of British Architects	132
Science Research Council	137
Sheppey Group	139
Thurleigh Emergency Committee for Democratic Action	141
Transport and General Workers' Union, Civil Aviation Section	142
Water Resources Board	146
Wing Airport Resistance Association	149
Ministry of Transport (*further Stage I evidence*)	156
Other submissions	163

Illustrations

Bedfordshire Water Board: area of supply. (*Bedfordshire Water Board*)	165
Third London airport—Luton airport: possible control zones. (*Luton County Borough Council*)	167
Distance of airport from Central London. (*Ministry of Transport*)	168
Diagram showing inputs to estimation of user access costs per mile. (*Ministry of Transport*)	169

Printed image digitised by the University of Southampton Library Digitisation Unit

I. INTRODUCTION

The findings in this report comprise data submitted to the Commission on the Third London Airport for use alongside and in conjunction with findings from other studies.

The nature of the survey undertaken is given by our terms of reference:

Terms of reference

"The Commission wishes to have information on the disruption of community life on any of the 4 short-listed sites which would be a consequence of the siting of the Third London Airport on them. The areas with which it is concerned will be defined by maps produced by the Commission and will coincide roughly with the 55 noise and number contour line.

A social survey will be carried out by a market research firm appointed by the Commission. In conjunction with the Commission's research team, the Department of Sociology of the University of Essex will decide the questionnaire and the procedures to be adopted for this survey.

On the basis of the results of this survey and other information as required, particularly the 1966 sample survey, the Department will report to the Commission. There will be a comparative analysis of the disruption of community which would result from the siting of the Third London Airport, including:

1. Socio-economic description of the people living on the sites including population stability and mobility into and out of the area, occupational, industrial and social class profiles.
2. Measures of community structure of the area including kinship and friendship and participation in local organisations and activities.
3. To survey individual's general reactions of the prospect of a Third London Airport in his home area.

So far as is possible, the Commission will wish to have a broad comparison not only between sites but more generally with other rural areas in England."

The parishes from which our sample was drawn were those within the 55 noise and number contour and those parishes where the main settlement was within one mile of this line. These parishes are listed in appendix 2 together with a description of the research procedure. The estimated total population with which we are concerned at each site are:

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness	284
Nuthampstead	6,550
Thurleigh	9,160
Cublington	7,590

The size of the population on Foulness presents various problems. Because of the great disparity in population sizes between Foulness and the inland sites it is clear that simply in terms of the total number of people affected by the siting of an airport, no real comparison can be made. The disruption at each of the inland sites would be of an entirely different magnitude to that at Foulness. For Foulness to be in any way comparable with the other sites it would have to exhibit rates approximately 24 times as great.

However, Foulness has been included in the great majority of our comparisons between the sites and in terms of our indices of community emerges as quite distinct from the inland sites. The numbers at Foulness are so small that in the majority of cases comparisons with the inland sites are not reliable. For distributions of a single variable comparisons can in general be made but beyond that they cannot. However, a more serious difficulty centres on the nature of Foulness. It is a community that is bounded by a clear natural boundary. Each of the inland sites is not a natural social area but an arbitrary one. Each inland site has been selected in terms of technological criteria (NNT index) and in terms of social criteria they are arbitrarily selected areas of rural England. If we had sampled within a particular village on each inland site this would have been more comparable with Foulness. As it is, we sampled from within and between sub-communities. Nevertheless Foulness has been included in most comparisons but these differences must be borne in mind when drawing conclusions.

The data that were available to us are a result of interviews based on the questionnaire reproduced as the first appendix. Where possible we have compared our data to that in the report produced by Research Services Ltd. for the Royal Commission on the Reorganisation of Local Government in England (Research Studies 9, Community Attitudes Survey: England). We shall henceforth refer to this document as the Community Attitudes Survey. Unfortunately for our purposes this report is based on a national sample and so some comparisons are not particularly relevant but where they are we compare our data to that for rural districts in England and Wales.

This report is a description of the people who live on the four

Printed image digitised by the University of Southampton Library Digitisation Unit

proposed airport sites, who they are and what they do. It is also an analysis of the pattern of their relationships - with family and relatives, with friends and their associational participation together with their leisure activities. Taken together we feel that these are reasonable indicators of community structure and certainly this is a description of the present community life on these four sites. This is what will disappear, or be so altered as to be no longer recognisable, should the airport be sited in one of these areas. In many ways we feel that the word 'total' should be inserted before disruption in the first line of our terms of reference, or even destruction substituted for the word disruption. We are under no illusions that the social changes that would follow the choice of one of these areas for the airport site would be minor or slow or localised: they would be rapid and major and widespread. Although our report is limited to the actual proposed site areas together with those areas immediately adjacent to them, this is in no way to suggest that there will be no disruption outside these areas.

Although differences within sites are not unimportant, we have throughout the report placed more emphasis on differences between sites. We have either distinguished particular sites or where we can, rank ordered them in terms of particular social criteria. These cannot be considered as an ultimate ranking.

We should like to emphasise the extreme time constraint under which this report was produced; this was necessitated by the time-table of the Roskill Commission's activities. The analysis reported in the following pages is based upon a research project that only lasted (on a part-time basis) something under five months from its earliest inception - a very short period by social research standards. Had we had more time at our disposal we would certainly have wished to pursue our analysis to greater depth. In particular, we would not have remained content merely with comparisons of univeriate distributions and simple bivariate analyses but attempted some more ambitious multivariate analyses. However, we feel that with the modest period of time we have managed to amass a clear comparative analyses of the four sites and feel that, in a descriptive sense, the following report is reasonably exhaustive.

Throughout this report significance tests have been used, but only as a guide. Where differences between proportions or means are labelled as "significant" it means that the difference is statistically significant using a two-tailed test at the $p = 0.05$ level. Also where distributions are compared using the X^2 statistic, the level of significance used is $p = 0.05$.

Printed image digitised by the University of Southampton Library Digitisation Unit

It is worth emphasising, however, that significant differences of this sort are not necessarily of practical significance. In many cases the differences between sites are only barely significant but in other cases, the differences are quite dramatic and in these cases the reader's attention has usually been drawn to them.

The views expressed in this report are solely the responsibility of the authors, not of the Commission nor of the Department of Sociology, University of Essex.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. SUMMARY OF SALIENT FINDINGS

Foulness is in no sense really comparable to the three inland sites for the reasons already stated in the introduction. The populations on the inland sites, while not equal, are comparable. We can clearly distinguish Cublington from Nuthampstead and Thurleigh but find it more difficult to distinguish the last two from each other.

The past stability of the population is particularly relevant to the amount of disruption consequent upon the siting of the airport. Foulness is much more stable than any of the inland sites (having a higher proportion of 'natives', a lower proportion of 'recent migrants' and those migrants there having come less far). Cublington is more stable than the other inland sites. We have attempted to measure the overall social standing of the inhabitants of these four areas (by income, occupation, social class, education and tenure) and whilst we can clearly distinguish Cublington as 'lower' than Nuthampstead and Thurleigh (Foulness is even lower) we have difficulty distinguishing Nuthampstead and Thurleigh from each other. However, Thurleigh does tend to be 'higher' than Nuthampstead by most indicators. There is nothing about the demographic, economic or industrial structure of the inland sites that allows us to say one site is remarkably different to the others - though fewer of those working at Cublington actually work on the proposed site than at Thurleigh or Nuthampstead. Nuthampstead has the highest proportion working over 10 miles away.

When we examined the pattern of social relations on the sites, Foulness is clearly different to the inland sites and Cublington is distinguishable from Nuthampstead and Thurleigh. Again we have difficulty distinguishing Nuthampstead and Thurleigh. Those living at Cublington have more relatives living locally than is so at Nuthampstead and Thurleigh, and more see relatives at Cublington than at Nuthampstead and Thurleigh. There are, however, no striking differences in rates of kin contact between the inland sites. At Cublington more people have all or most of their friends in the same parish than at Nuthampstead and Thurleigh and more of their friends know each other. There is, in our terms a closer knit social network at Cublington (and Foulness) than at Nuthampstead and Thurleigh.

We take participation in voluntary associations as an important indicator of the vitality of community life. A higher proportion belong to associations that are more localised at Cublington than at Nuthampstead and Thurleigh (or at Foulness). Membership of the airport resistance association is higher at Cublington than at Nuthampstead and Thurleigh (or at Foulness). There is no difference in church membership between the sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

The inhabitants of Cublington are more opposed to the airport and to having to move than are those of Thurleigh and Nuthampstead (or Foulness). At all sites those most opposed are older and the owner occupiers. Resistance to the airport and to moving does not seem to be related to length of residence.

These very briefly are our salient conclusions. The body of this report provides the data that substantiates them. Regardless of where the airport is sited there will be disruption and it seems unquestionable to us that there is less (but not nothing) to disrupt at Foulness. Of the inland sites there is less to disrupt at Thurleigh and Nuthampstead than at Cublington. However, Thurleigh and Nuthampstead do not seem to us different enough to be able to say with confidence that one is preferable to the other.

Printed image digitised by the University of Southampton Library Digitisation Unit

3. COMPARATIVE ANALYSIS OF THE FOUR SITES

A: Socio-Economic Profiles

(a) demographic profiles

(i) Age and sex (table A.1)

We begin our descriptive section of the overall characteristics of the four sites with a consideration of the age structure and the ratios between the sexes. The figures we have of course refer to our sample, i.e. those over 16, and not the population as a whole. Table A.1 shows the age structure of our samples and the proportion that are of each sex.

At all the sites there are more women than men - but this is also true of the country as a whole. When the proportion of old people is high the proportion of women in the population as a whole increases, because women have a longer life expectancy than men. So at the sites where there are more elderly people the ratio of women to men increases. This is particularly noticable at Foulness. However, the inland sites do not differ significantly from each other as regards their overall age structure. (Nor do they on the basis of census data - see appendix 3).

There were however, variations in the number of children under 16 within the households in which we interviewed. At Foulness there were 38 children, whereas at Thurleigh there were 247. The smallest number of children at an inland site was at Nuthampstead, 156. There were 195 children under 16 at Cublington. We also collected data to show the distribution of pensioners and found that although there was a higher proportion at Foulness there were no significant differences between the sites. As the only difference between the sites that we found was in the proportion of school age children - Thurleigh having the most, we would expect differences in proportions at stages in the family cycle between the sites.

Table A.1 Sex and age (% rounded)

	Sex				Age								
	M	F	%	N	16/20	21/24	25/34	35/44	45/54	55/64	65+	%	N
Foulness	40	61	101	84	10	7	7	14	14	30	18	100	84
Nuthampstead	44	56	100	276	6	8	17	13	21	20	16	100	276
Thurleigh	46	54	100	290	6	8	13	19	23	15	16	100	290
Cublington	49	51	100	290	4	9	14	15	22	13	22	100	290

Printed image digitised by the University of Southampton Library Digitisation Unit

Table A.2 Family life cycle (% rounded)

	All children at home	Some children at home	All children left home	No children (incl. not yet married)	%	N
Foulness	40	15	24	20	99	84
Nuthampstead	30	31	19	21	101	276
Thurleigh	33	32	14	20	99	290
Cublington	43	20	18	19	100	290

Table A.3 Tenure (% rounded)

	Private rented	Council house	With job/ from firm	Own/ mortgaged	Other	%	N
Foulness	85	-	15	-	-	100	84
Nuthampstead	13	28	12	45	3	101	276
Thurleigh	10	19	12	60	*	101	290
Cublington	10	34	8	44	4	100	290

(ii) family life cycle (see table A.2)

The proportion of the population who are eigher not yet married or who have no children is very similar at all four sites. However, the proportion of "young families" - i.e. those still having all their children at home is higher at Foulness and Cublington than at Thurleigh and Nuthampstead, but the proportion of "middle-aged families" - i.e. having some of their children still at home is lower at Foulness and Cublington than at the other two sites. As would be expected from the data already presented on age Foulness has the highest proportion of "old" families - i.e. those with all their children having left home. The lowest proportion of "old" families is at Thurleigh which is consistent with this site having the highest proportion of children under 16. We must emphasise then that there are differences in the stage in family cycle between the sites that are obscured in table A.1 on sex and age particularly between Cublington and the other two inland sites. The point that we wish to make is that the stage in the family life cycle that a family has reached is an important factor in the potential mobility of that family. Other things being equal families are usually more reluctant to move when all their children are still at school.

* less than 1%.

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) residence

(i) tenure (see table A.3)

Differences in the proportions in tenure categories are indicative of social status differences between the four sites - a point that we shall return to later. The housing situation at Foulness is unique as the whole island is owned by the Defence Department. Whilst the islanders once owned their own property, 85% of them now live in property that is owned by the armed forces - the remaining 15% have their accommodation by virtue of their jobs. This fact makes even more difficulty any comparison between Foulness and the inland sites using this variable. Nuthampstead and Cublington have approximately the same proportions of owner occupiers. And at both sites the proportion of owner occupiers is the same as council house and private tenants together - although Cublington has the highest proportion of council house tenants of any of the sites. Thurleigh not only has the highest proportion of owner-occupiers (60%) but this is twice the number of council house and private tenants together - this is consistent with data presented below on income. Thurleigh is significantly different to both Cublington and Nuthampstead as regards tenure, although Nuthampstead and Cublington are not significantly different from each other.

(ii) length of residence (see table A.4)

This is a key variable in our analysis for we believe that in any consideration of the disruption caused by moving people away from their homes, how long they have lived in those homes will be fundamental in assessing this disruption. This variable is also an important indicator of the stability of the population. Over half the population of Foulness have been there since birth. Of the inland sites, Cublington with about a third of its population "natives", has been more stable than both Thurleigh and Nuthampstead where only a fifth have lived there since birth. (All four sites have a higher proportion of natives than the country as a whole or rural districts in England and Wales). The proportion of "recent immigrants" - those who have moved into the area in the last five years is lowest at Foulness (11%) and at Cublington (26%) although at Nuthampstead and Thurleigh it is only slightly higher - 28% and 29% respectively. But note, however, that at all the inland sites a higher proportion of the population has moved into these areas during the last five years than have in rural districts in England and Wales. We conclude from this that the inland sites have both a higher proportion of long established residents and a higher proportion of recent arrivals than is the case in rural districts generally. So paradoxically all three inland sites can be thought of both as places of relatively rapid and recent change and as places of relative stability.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table A.4 Length of residence (% rounded)

	Less than one year	1-3 yrs	3-5 yrs	5-10 yrs	10-20 yrs	20+ yrs	Born there	%	N
Foulness	4	6	1	6	4	23	58	102	84
Nuthampstead	7	14	7	14	12	26	20	100	276
Thurleigh	4	16	9	12	16	23	20	100	290
Cublington	7	12	7	10	9	23	32	100	290
Community Attitudes Survey* total	2	13	8	14	20	26	17	100	
R.Ds/	16		23		18	28	15	100	

* Table 25
/ Table 26 for 'home area'

Table A.5 Length of residence (% rounded)

	Up to 5 years "recent migrants"	Over 5 years "older migrants"	Natives	%	N
Foulness	10	33	58	102	84
Nuthampstead	28	52	20	100	276
Thurleigh	29	51	20	100	290
Cublington	26	42	32	100	290

Table A.6 Previous place of residence (% rounded)

	On site			Off site						
	adjacent parish	non-adj parish	Total on site	adjacent parish	non-adj parish 10 miles	non-adj parish 10 miles	total off site	born there	%	N
Foulness	5	-	5	-	4	35	39	58	100	84
Nuthampstead	10	5	15	4	12	49	65	20	100	276
Thurleigh	9	1	10	7	21	43	71	20	100	290
Cublington	5	2	7	7	11	41	59	32	100	290

Printed image digitised by the University of Southampton Library Digitisation Unit

If, as is suggested in the "Community Attitudes Survey", length of residence may have consequences for the degree of involvement of the individual with the locality, two other factors should also be considered; firstly, how far the migrants moved to live in the area and secondly, and more importantly, why the migrants came - what were the "pull" factors? what did the migrants value positively enough about these localities to move to them?

Where had the migrants come from? (see table A.6). Here we introduce for the first time a distinction that runs throughout this report - between being on or off the site. We feel that it is relevant whether or not for example someone previously lived elsewhere on the proposed airport site (or works there, worships there etc). And that this distinction is sometimes more relevant than sheer physical distance - how far someone travels for a particular activity. 15% of those we call migrants at Nuthampstead had in fact previously lived elsewhere on the proposed airport site, compared to 10% and 7% at Thurleigh and Cublington respectively. The three inland sites have not attracted migrants in greatly differing proportions from further away - though Cublington has the smallest proportion (41%) and Nuthampstead the highest (49%) who had previously lived over 10 miles away. The differences in previous place of residence of migrants are significant. 32% of the population studied in the "Community Attitudes Survey" had moved from over 10 miles away to their present addresses - so perhaps surprisingly the three inland sites are more mobile in this sense than is the population of England and Wales as a whole.

The reasons given for moving to these areas by the migrants provide important indicators of what social functions these localities were seen as performing in the first instance by the newcomers (see table A.7). Although an attempt has been made to categorise these reasons, the categories must not be thought of as mutually exclusive - it is for example particularly difficult to delineate "accommodation" from "area" reasons. (Having liked the area, one then looks for a house, or one is looking for a house and finds it in a particular area).

We have pointed out the varying proportions of "natives" at the different sites above, and in table A.7 include with them those who came with their parents. These two categories account for 60% of the population at Foulness and about a third at the inland sites - Cublington having the largest proportion (38%). There are no great differences between the proportions who moved to the sites on marriage. The most important single reason that immigrants to these areas gave for first moving there was their

Printed image digitised by the University of Southampton Library Digitisation Unit

job - this is true at all four sites but least of all at Cublington but even there it was one in five of the population). Particularly relevant for this report is the proportion of people who give as a reason for moving to the area, some positively valued attribute of the area. None did at Foulness but 16% did at Thurleigh, 14% at Nuthampstead and 10% at Cublington. (These differences are significant).

If the reasons for immigration to these areas are compared to those given in the national sample reported in the "Community Attitudes Survey" (pp 38-9), some wide differences can be noted. 38% of the national sample gave accommodation as the main reason for coming to the area (none did at Foulness, 11% at Cublington, 7% at Nuthampstead and 6% at Thurleigh). 24% of the Community Attitudes Survey's sample gave 'job' as a reason - this is very similar to our figures for all four sites. But only 5% of the national sample came because of what we are calling "area" reasons. The three inland sites are apparently more highly valued and attractive as places to live than other areas of the country in general. It is however possible that the threat of the airport has increased peoples' attachment to the area. It is, therefore of interest to know what it is the inhabitants particularly value about the areas in which they live (see table A.8) and what it is, if anything, they dislike about living in these areas. (see table A.9).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table A.7 Reasons for residence in locality (% rounded)

	Foulness	Nuthampstead	Thurleigh	Cublington	%	N
Born there	58	20	20	32	100	84
came with parents	2	11	14	6	100	274
TOTAL	60	31	34	38	100	290
home of spouse	10	8	9	8	100	290
to be near relatives	4	4	1	4	100	290
TOTAL KIN REASONS	14	12	10	12		
only place could get house	-	4	2	7		
liked the house	-	2	3	3		
inherited the property	-	1	1	1		
houses cheaper to rent	-	*	*	-		
TOTAL ACCOMMODATION REASONS	-	7	6	11		
because of job	23	23	22	18		
near to job	-	4	5	2		
near ml/central for travelling	-	*	-	-		
TOTAL JOB REASONS	23	28	27	20		
liked the village	-	2	3	1		
liked peace and quiet	-	4	2	4		
liked living in the country	-	4	4	3		
liked place/area	-	3	5	*		
good schools	-	-	1	1		
retired to area	-	1	*	2		
TOTAL AREA REASONS	-	14	16	10		
health reasons	-	1	1	1		
during war	-	1	1	1		
Other	-	2	1	4		
D.K. or unclassifiable	3	4	4	3		

* less than 1%

Printed image digitised by the University of Southampton Library Digitisation Unit

When the answers to the question "what do you most like about living here in .... (parish)"? were analysed it was found that at all the sites the most important and most frequently mentioned are those we call "area" reasons - to do with the physical attributes or the location of the area. This is more so at the inland sites, particularly Thurleigh where 64% of the reasons are in this category. "People" reasons are highest at Foulness and at Cublington which is consistent with data presented below on kinship and friendship ties. However, one point that we feel should be stressed is that at all the sites it was the place more than the people that appears important to the inhabitants. This is still true at Foulness but less so, and of the inland sites Cublington appears marginally less place orientated than the other sites and more people orientated than the other two. The differences are significant between Thurleigh and Cublington but are not between them and Nuthampstead.

When we examine the inhabitants dislikes about the area in which they live the majority of the inhabitants at the inland sites said there was nothing that they disliked - this is highest at Cublinton and lowest at Nuthampstead. The dislikes are centred on what may be thought of as the 'rural' attributes of the areas - poor and expensive public transport and lack of amenities. A small proportion of the complaints at the inland sites are associated with what can be thought of as consequences of social change, particularly in a rural environment - traffic, 'newcomers' and village growth. Particularly irksome at Foulness are its remoteness and isolation and the official restrictions that are a consequence of the owners activities - but even here 47% of our respondents found nothing to dislike about living on the island. The 'summary' dislikes are significantly different between the inland sites.

We thought it was possible that the reasons for coming to an area may have changed over time. On analysis this did not prove to be so.

Many studies have shown that geographical mobility varies between social classes - that the higher classes have a higher rate of geographical mobility than the lower classes. It is also relevant to this report to know whether or not the recent migrants into the four proposed airport sites are different sorts of people than those who have lived there all their lives. Table A.10 shows the length of residence, of the inhabitants of the four areas by their social class (the definitions used are to be found in appendix 4). Table A.11 simplifies table A.10 by collapsing length of residence into "recent migrants" - those who have come in the last 5 years, "older migrants" - all other non-natives, and those who were born in the area. At Nuthampstead and Thurleigh non-manual workers are

Printed image digitised by the University of Southampton Library Digitisation Unit

over represented among the recent migrants but that at all sites manual workers are over-represented among the older migrants. Also the natives at all four sites are more likely to be manual workers than non-manual workers - this is especially well marked at Foulness, and at Cublington of the inland sites. So at Thurleigh and Nuthampstead a fifth of the population are living in households that have moved in the last five years where the principle breadwinner is in a non-manual occupation. Not only do Foulness and Cublington have more manual workers (a point to be elaborated below) but a higher proportion of them have been in the area for a longer time.

Another question that must be answered at this point is whether the migrants work in different industries at the different proposed sited (see table A.12 - note that this table is based on those respondants that were working and not on the total sample). We were particularly concerned to find out whether the agricultural population contained more natives than other industries. Agriculture (the industrial structure of these four areas will be discussed in detail below) employed a third of the working population at Foulness, a quarter at Nuthampstead and Thurleigh and just under a fifth at Cublington. Only at Foulness were natives in a majority in agriculture but at all the sites over half of the population employed in agriculture had either been born there or had lived there for over 20 years. Table A.12 suggests that no other industry employs notably different proportions of recent migrants and people who have been established for a longer time in the areas of the inland sites.

In any given population there will be those who can expect to experience in the relatively near future what might be termed "occupationally induced geographical mobility". They will change jobs for promotion or be moved with or without promotion by the organisation for whom they work. This mobility is built into the career expectations of many jobs especially into managerial, professional and higher administrative jobs. Our motive in asking a question about previous considerations of movement was to ascertain what proportion of the population on the four sites thought that it was likely that they would move out of the area - for how many did the area represent a relatively temporary stopping place? Unfortunately, because of the high proportion of our respondents - around 95% on all four sites who denied any consideration of movement in the year before the airport was suggested we have come to the conclusion that a positive answer was at least partially interpreted by our respondents as weakening their position in opposing the siting of the airport in their area. It is

Printed image digitised by the University of Southampton Library Digitisation Unit

Table A.8 Likes about the area (all reasons given) (% rounded)

	peace and quiet	countryside	the village	good for the children	clean and healthy	not far from town	fishing/shooting/swimming	TOTAL AREA REASONS	area job	good land	good business	TOTAL JOB REASONS	like the house	like the garden	TOTAL ACCOMMODATION REASONS	people are friendly	to be near relatives	TOTAL PEOPLE REASONS	like living here	freedom and independance	"always lived here"	other answers	D.K.	TOTAL OTHER REASONS	%	N
Foulness	28	10	*	1	6	-	6	47	2	1	-	3	-	6	6	13	2	16	7	2	8	8	*	27	100	184
Nuthampstead	25	23	8	*	*	2	-	59	5	*	*	6	5	2	7	12	*	13	5	-	6	3	-	15	100	510
Thurleigh	25	21	12	2	3	1	-	64	3	-	-	3	4	*	5	13	-	13	6	-	5	2	*	14	100	558
Cublington	19	16	9	3	4	5	*	58	3	*	*	4	6	*	6	13	*	14	10	*	6	2	*	18	100	815

Printed image digitised by the University of Southampton Library Digitisation Unit

Table A.9 Dislikes about the area (all reasons given) (% rounded)

| | | |

Table A.10 Length of residence by social class (% rounded)

	less than year	1-3 yrs	3-5 yrs	5-10 yrs	10-20 yrs	Over 20 yrs	Born there	TOTAL	
AB	-	2	-	-	-	8	-	12	
CI	1	2	-	-	-	-	1	6	Foulness
C2	1	-	-	3	-	1	12	18	
DE	1	-	1	3	3	13	45	65	
	4	6	1	6	4	23	58	100	N = 84
AB	3	7	3	6	3	4	2	28	
CI	3	2	3	4	2	3	2	18	Nuthampstead
C2	*	1	*	2	4	7	6	20	
DE	*	4	*	3	4	13	9	34	
	7	14	7	14	12	26	20	100	N = 276
AB	1	7	6	6	5	4	4	33	
CI	1	3	1	3	3	3	4	18	
C2	1	3	*	1	5	6	4	22	Thurleigh
DE	*	2	1	2	3	10	8	27	
	4	16	9	12	16	23	20	100	N = 290
AB	1	5	1	3	2	3	5	21	
CI	2	2	3	2	1	4	6	19	Cublington
C2	2	3	1	3	4	7	11	30	
DE	2	2	2	1	2	8	11	29	
	7	12	7	10	9	23	32	100	N = 290

Printed image digitised by the University of Southampton Library Digitisation Unit

Table A.11 Length of residence by social class (% rounded)

	Recent migrants	Older migrants	Natives	Totals	
AB	2	8	-	12	
CI	4	-	-	6	Foulness
C2	1	4	12	18	
DE	2	19	45	65	
	10	33	58	101	N = 84
AB	13	13	2	28	
CI	8	9	2	18	Nuthampstead
C2	2	13	6	20	
DE	5	20	9	34	
	28	52	20	100	N = 276
AB	14	15	4	33	
CI	5	9	4	18	Thurleigh
C2	5	12	4	22	
DE	4	15	8	27	
	29	51	20	100	N = 290
AB	7	8	5	21	
CI	7	7	6	19	Cublington
C2	6	14	11	30	
DE	6	11	11	29	
	26	42	32	100	N = 290

Printed image digitised by the University of Southampton Library Digitisation Unit

Table A.12 Length of residence by industry (of those working) (% rounded)

	Agriculture/forestry/fishing	Mining quarrying	Manufacturing/engineering	Transport	Distributive/civilian services	National/local government	Inadequately described	TOTAL		
Recent migrants	-	-	-	-	2	6	-	8		
Older migrants	11	-	2	-	4	14	-	31		Foulness
Born there	21	-	6	2	14	16	2	61		
TOTAL	33	-	9	2	22	37	2	100	N = 46	
Recent migrants	6	*	4	*	13	2	-	27		
Older migrants	15	*	11	1	12	8	3	50		Nuthampstead
Born there	4	-	9	2	4	1	2	22		
TOTAL	24	1	25	4	29	11	5	100	N = 166	
Recent migrants	1	1	9	*	8	5	*	25		
Older migrants	15	-	12	*	11	8	*	49		Thurleigh
Born there	9	-	7	1	4	2	1	25		
TOTAL	25	1	27	2	24	17	3	100	N = 162	
Recent migrants	4	-	8	1	9	3	*	26		
Older migrants	8	*	10	2	8	7	*	36		Cublington
Born there	5	2	14	3	8	5	*	38		
TOTAL	16	2	31	6	26	15	2	100	N = 170	

Printed image digitised by the University of Southampton Library Digitisation Unit

Table A.13 "Had you considered moving in the year before the airport was suggested?"

	YES	NO	D.K.	%	N
Foulness	6	94	-	100	84
Nuthampstead	4	93	2	100	276
Thurleigh	7	90	3	100	290
Cublington	4	95	1	100	290

Table A.14 Specific plans to move

	YES	NO	D.K.	%	N
Foulness	5	2	-	6	5
Nuthampstead	2	2	-	4	12
Thurleigh	1	5	1	7	19
Cublington	2	2	-	4	12

Table A.15 Economic activity (% rounded)

	working full time	part time	not working	full-time student	other	working full time	part time	not working	full-time student	other	%	N
	MALES					FEMALES						
Foulness	40	-	8	1	1	5	10	33	-	-	100	84
Nuthampstead	42	4	13	2	-	5	9	24	-	*	100	276
Thurleigh	39	2	9	2	*	7	9	32	-	*	100	290
Cublington	40	2	11	2	*	8	9	28	-	-	100	290

proportion in some sort of paid employment:

	%
Foulness	63
Nuthampstead	60
Thurleigh	57
Cublington	59

Community Attitudes Survey R.Ds. 55%

Printed image digitised by the University of Southampton Library Digitisation Unit

probable that more than the 5% or so who said they had previously considered moving would have answered positively to the question if it had not been for the threat of the airport. For this reason and the fact the numbers involved are very small we do not present a detailed analysis of the answers. Table A.13 shows the answers to the question "had you considered moving in the year before the airport was suggested?" Just under half of those who had considered moving in the year before the airport was announced had made specific plans to move (see table A.14) - these can be thought of as the serious movers: proportionally they were the most at Foulness and at the inland sites at Nuthampstead and Cublington. To repeat, the numbers involved here are too small for further analysis.

(c) industrial and occupational profiles

(i) economic activity rates (see table A.15)

The proportion of people working will reflect both the age and sex structure of the population - (the former at least has been shown above not to vary much between the sites) and the number of jobs available - the latter is particularly relevant when considering female activity rates. The proportion of economically active men, though very similar across all four sites is highest at Nuthampstead. The female part-time activity rate is higher at Thurleigh and Cublington which is slightly surprising as both of these sites have a smaller proportion of families in the final stage of the family cycle and a larger proportion in the first stage than does Nuthampstead. The differences in female activity rates between the inland sites are not significant. 55% of those living in rural districts interviewed for the Community Attitudes Survey were currently undertaking some form of paid employment (p.48). The economic activity rates at the four proposed sites are very similar to other rural areas in England and Wales.

(ii) industrial categories (see table A.16)

We have stressed our concern with the agricultural population above (see table A.12). Though, of course, more than those returned as working in agriculture - for instance those employed in the various manufacturing and engineering trades and in some services will be the 'secondary' and 'tertiary' industries are dependent even locally to some considerable extent on the 'primary' sector of agriculture. Table A.16 must not be thought of as providing a direct and accurate description of the industrial structure of the four sites. Some of those we interviewed may work well away from the site area (although not many as we shall show below) and others living elsewhere may well move onto the site area to work. With

Printed image digitised by the University of Southampton Library Digitisation Unit

Table A.16 Industrial categories (of those who are working) (% rounded)

	Agriculture/forestry/fishing	Mining/quarrying	Manufacturing/engineering	Transport	Distributive services	National and local governments	Inadequately described	%	N
Foulness	33	-	9	2	22	37	2	100	46
Nuthampstead	24	1	25	4	29	11	5	100	166
Thurleigh	25	1	27	2	22	17	5	100	162
Cublington	16	2	31	6	26	15	2	100	170

Table A.17 Occupation (of those who are working) (% rounded)

	Professional	Employers and managers	Clerical workers	Foremen and skilled manual workers	Shop Assistants and semi-skilled manual workers	Unskilled manual workers	Other	%	N
Foulness	4	9	7	15	41	26	-	100	46
Nuthampstead	10	14	8	20	26	21	1	100	166
Thurleigh	10	14	14	21	21	18	2	100	162
Cublington	5	14	13	22	25	20	-	100	170

Printed image digitised by the University of Southampton Library Digitisation Unit

Table A.18 Social class (% rounded)

	AB	CI	C2	DE	%	N
Foulness	12	6	18	65	100	84
Nuthampstead	28	18	20	34	100	276
Thurleigh	33	18	22	27	100	290
Cublington	21	19	30	29	100	290

Table A.19 Income (of those working) (% rounded)

	up to £260 p.a.	£260–540	£540–780	£780–1000	£1000–1300	£1300–1550	£1550–2100	£2100–2600	£2600 +	Refused	%	N
Foulness	11	14	28	26	11	2	–	–	–	2	100	46
Nuthampstead	11	8	16	14	15	3	6	2	7	19	100	166
Thurleigh	12	9	16	9	14	10	7	3	4	16	100	162
Cublington	8	11	9	17	18	8	6	1	2	21	100	170

Table A.20 Age finished full time education (% rounded)

	14 and under	15 and 16	over 16	%	N
Foulness	68	30	2	100	84
Nuthampstead	43	35	22	100	276
Thurleigh	49	28	23	100	290
Cublington	49	36	15	100	290

Printed image digitised by the University of Southampton Library Digitisation Unit

this in mind, we are categorising the population living on the site, not the employment available on the site itself. We can nevertheless show differences between the four sites. Foulness has the highest proportion of its working population in agriculture and the highest proportion employed in national and local governmental services reflecting the local importance of the military as an employer. The differences between the three inland sites are not significant. At all three inland sites manufacturing industries together with distributive services employ over twice as many people as agriculture, and over three times as many at Cublington. Cublington in the sense of having the lowest proportion of its population in agriculture is the least rural of the four sites.

(iii) occupation (see table A.17)

Like most sociologists we would lay some stress on occupation as a general indicator of social standing in the locality and as such the occupational distributions within the four localities have considerable relevance in giving a sociological picture of the area. An indicator of social differences between the areas is the differing proportion who are manual or non-manual workers. On Foulness 20% are non-manual workers, 13% of whom are professional workers or employers or managers. At Thurleigh 38% are non-manual, 24% are in the higher two groups, at both Nuthampstead and Cublington 32% are non-manual workers, 24% and 19% respectively in the higher grades. So, of the inland sites Thurleigh has the greatest proportion of higher grade workers, Cublington the least. (This is also reflected in the income data). However, the overall distribution between the occupational categories is not significantly different.

The "self employed" were asked how many they employed, in terms of over and under 25 and having no employees. There were no differences between the sites.

(iv) social class (see table A.18)

One reservation about the nature of these social classes - they are what is known as 'market research classes' (see appendix 4) and reflect more than anything else 'spending power'. They are not social classes as sociologists would usually define them - for example 'DE' includes both unskilled manual workers and all state pensioners. However, the relative proportions in these four classes does vary between the four sites and reflects the data we have already presented on tenure and occupation and will present below on income. Foulness is exceptional - over 80% of the population being in the bottom two classes (semi and unskilled manual workers

Printed image digitised by the University of Southampton Library Digitisation Unit

together with state pensioners). Of the three inland sites - Thurleigh has the highest proportion of non-manual workers (51%) and lowest proportion of manual workers (49%), Cublington the lowest proportion of non-manual workers (40%) and highest proportion of manual workers (59%). In this sense (and this is reinforced by the tenure and income data) Thurleigh is the most 'middle class' of the three inland sites and Cublington the least, or put the other way, Cublington is the most"working class"of the inland sites and Thurleigh the least. Nuthampstead occupies a position between the two. The difference between Cublington and Thurleigh is statistically very significant but that between Cublington and Nuthampstead is not.

(v) income (see table A.19)

The marked inequality as regards income between Foulness and the three inland sites is the most obvious thing shown in table 19. However, there are differences between the inland sites. 49% of the income at Nuthampstead are below £1000 p.a. compared to 36% and 35% at Thurleigh and Cublington (and 80% at Foulness). However, at Thurleigh and Nuthampstead 14% and 15% of all incomes respectively are over £1550 p.a. compared to 9% at Cublington. So of the inland sites Nuthampstead has what appears to be the greatest range (and is under-represented in the £1000 - £1550 p.a. group). There was for this question (except at Foulness) the highest refusal rate for an individual question. Although our income data is consistent with data on occupations tenure and social class the high refusal rate for the question makes further analysis hazardous.

(vi) age finished full-time education (see table A.20)

The data on the age at which individuals finished their full-time education can be used (along with social class, tenure, occupation and income) to indicate the general differences in social status of the different areas. Particularly indicative are the proportions who stayed on over 16 and those who left at 14 and under. Table A.20 shows that Thurleigh and Nuthampstead have the highest proportion of "late leavers" (7% and 9% stayed on till 19 and beyond). And that at Foulness two-thirds left at 14 and earlier. Of the inland sites Nuthampstead had the lowest proportion that left at 14 and earlier. The differences between Thurleigh and Cublington are significant.

These data are consistent with those on social class, occupation, income and tenure in indicating that Foulness is clearly the most working class of the four sites and that Cublington is the most working class of the inland sites. And that Thurleigh and Nuthampstead are very similar, though the former has both more non-manual workers and owner occupiers than the latter.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table A.21 (i) Location of work (% rounded)

	Same parish	Adjacent parish	Non-adjacent parish	TOTAL ON SITE	Adjacent parish	Non-adjacent parish 10 miles	Non-adjacent parish 10 miles not G.L.C.	G.L.C.	Travels about	TOTAL OFF SITE	%	N
	ON SITE				OFF SITE							
Foulness	81	9	-	90	-	2	9	-	-	11	100	46
Nuthampstead	39	5	1	45	1	11	7	8	28	55	100	166
Thurleigh	48	10	1	59	6	20	5	1	10	42	100	162
Cublington	38	2	2	42	20	21	11	1	6	59	100	170

Table A.22 Location of shopping (of housewives only) (% rounded)

	Same parish	Adjacent parish	Non-adjacent parish	TOTAL ON SITE	Adjacent parish	Non-adjacent parish 10 miles	Non-adjacent parish 10 miles not G.L.C.	TOTAL OFF SITE	Mobile shop/other	%	N
Foulness	58	8	-	64	-	5	28	33	5	100	40
Nuthampstead	41	6	3	50	6	37	6	49	3	100	108
Thurleigh	43	4	-	47	4	47	1	52	-	100	138
Cublington	38	5	1	44	32	21	3	56	-	100	130

Printed image digitised by the University of Southampton Library Digitisation Unit

(d) location of work and shopping

(i) location of work (see table A.21)

The location of the place of work of those respondents who were working is very different at Foulness compared to the inland sites. 90% of the work force living on Foulness works within the survey area, compared to 59% at Thurleigh which has the most localised workforce of the inland sites - Cublington is lowest with 42%. However, if a more generous definition is taken of the localisation of the work force, say those working within 10 miles, Nuthampstead has the least localised workforce with 57% working within ten miles (compared to 92% at Foulness and 85% at Thurleigh and 83% at Cublington). Nuthampstead has the highest proportion who work within the area of the G.L.C. (8%) and a very high proportion who 'travel about' with their work (28%). The differences between the inland sites are all highly significant.

At all the inland sites there is a significant tendency for the recent migrants to be more likely to work off the proposed airport site. However, the tendency for natives to be working on the site is not significant. The point we would stress here is that the relatively recent arrivals to these areas are not only less entrenched by this fact alone but also by the fact that they are less likely to work on the site area. We have already shown that many of the recent migrants are in the higher classes (AB and C1) and these classes also have a tendency to be working further away from their homes. This is most marked at Nuthampstead but there are no significant differences between the inland sites.

Table A.21(ii) Where works (for those working) by length of residence (% rounded)

	Less than 5 yrs 'recent migrants'	More than 5 yrs 'older migrants'	Natives	Total	
On site	6	32	52	90	Foulness
Off site	2	2	6	11	
TOTAL	8	34	58	100	N = 48
On site	8	25	12	45	Nuthampstead
Off site	19	24	11	55	
TOTAL	27	49	23	100	N = 166
On site	12	32	15	59	Thurleigh
Off site	15	19	8	42	
TOTAL	27	51	23	100	N = 162
On site	6	18	18	42	Cublington
Off site	19	19	20	59	
TOTAL	25	37	38	100	N = 170

Printed image digitised by the University of Southampton Library Digitisation Unit

(ii) Location of shopping (see table A.22)

At all the sites the greatest proportion of the bulk of the shopping was within the parish that they lived, but at all the inland sites there was an important subsidiary centre within 10 miles but off the proposed airport site (noticeably a quarter of the housewives at Foulness travelled over 10 miles for the bulk of their shopping - far more than at the inland sites). At Cublington shopping appears to be more localised than at the other inland sites.

It might be expected that the distance that housewives travelled to shop would vary with social class, for example, that the higher social classes might travel further. This point has been analysed and was not found to be true. At none of the sites are there marked class differentials in the location of shopping. The age of the housewife and how long she had been resident in the area were also examined to see whether either of these factors affected the location of shopping. The only age group whose shopping pattern was markedly more localised than the rest of the population was the over 65s. All of the housewives over 65 at Foulness as opposed to 58% of the total population shopped in the same parish, 62% at Thurleigh (as opposed to 43% of the total population) 56% at Nuthampstead (as opposed to 41%) though at Cublington it was almost the same proportion as in the whole population 39% and 38%.

Do the natives and the longer established residents have different shopping patterns when compared to the more recent migrants? At Foulness, Thurleigh and Nuthampstead the natives are more likely to shop in the same parish than the population as a whole (Foulness 78% to 58%, Thurleigh 65% to 43%, Nuthampstead 50% to 41%). This, however, is not true at Cublington where no group deviates greatly from the general pattern.

B: Patterns of Social Relations

As part of our survey of activity on each of the proposed sites were examined kinship and friendship relations. These relations are among the most salient and important social relations an individual has. We have therefore attempted to assess the extent to which these particular relations, and the behaviour involved with them, are localised within each particular site area. Our definition of local area is that of the parish in which the individual lives. Of course, we recognise that an administrative area like that of a parish may be socially artificial. However, given that our brief is confined to each site area (and, because of the method of sampling, the area immediately adjacent to the site) we have attempted to assess attachment to, and localisation in, the areas that would be destroyed were an airport located there. Basically we would submit that the more 'social activity' there is in an area the more there is to disrupt, and furthermore, the greater the localisation of that activity the more disruptive, to the individuals concerned, is the removal of that activity.

Printed image digitised by the University of Southampton Library Digitisation Unit

(a) kinship

Our analysis of kinship relations deals with (i) residence patterns of relatives and (ii) contact with relatives.

kinship residence

We consider first the extent to which peoples' relatives live within the same parish. Table B.1 shows both the proportion of respondents with

Table B.1 Per cent with relatives living in the same parish

Site	Relatives in Parish		
	with	without	
Foulness	81%	19	100% (84)
Nuthampstead	41%	59	100% (276)
Thurleigh	40%	60	100% (190)
Cublington	57%	43	100% (290)

relatives living in the same parish and the proportion without. Foulness has a much greater proportion of people with relatives living in the same parish. Cublington can similarly be distinguished from the other two inland sites. The difference between Nuthampstead and Thurleigh is not significant. Throughout this section Foulness will be seen to be significantly different from each of the inland sites. If we consider the three inland sites only, then Cublington will emerge as being significantly different to Nuthampstead and Thurleigh. The differences between Nuthampstead and Thurleigh are less clear.

Each respondent was asked to give the number of families of relatives located within the same parish. Table B.2 displays this. On each site the

Table B.2 Number of families of relatives in the same parish

Site	No relatives in same parish	Number of families of relatives					
		0	1-5	6-10	11-19	20+	
Foulness	19%	-	45	26	7	4	99% (84)
Nuthampstead	59%	3	33	5	-	-	100% (276)
Thurleigh	60%	1	38	1	-	-	100% (290)
Cublington	43%	2	44	8	2	4	

+ Some respondents who had relatives in the same parish did not have families of relatives there.

Printed image digitised by the University of Southampton Library Digitisation Unit

majority of those respondents having families of relatives living in the same parish had between 1 and 5 such families. However, comparison of the distributions shown in table B.2 does suggest differences between the sites. In addition to having the highest proportions of families in the modal category, Foulness and Cublington also have respondents with large numbers of families of relatives living in the same area. This can be examined more closely by considering the mean number of families of relatives in the same parish for those respondents having such families. For convenience we label this mean F' and table B.3 shows the value of F' for each site.

Foulness is clearly (and significantly) distinct from each of the inland sites with a far higher value of F'. Of the inland sites Cublington has the

Table B.3 Mean number of families of relatives in the same parish per respondent with such families

Site	F'	Number of respondents with families of relatives in the same parish
Foulness	6.4*	(68)
Nuthampstead	3.1	(106)
Thurleigh	2.2	(112)
Cublington	3.6*	(156)

* For two cases at Foulness and one at Cublington, 20+ was taken to be 20 for calculating F'. This also applies to table B.4.

highest value of F' which is also significantly greater than both the values of F' for the remaining inland sites. While the value of F' is greater at Nuthampstead than at Thurleigh it is not significantly greater. Thus not only did Foulness and Cublington have a greater proportion of respondents having families of relatives living in the local area but they also had more such families per person. The two differences can be summarised jointly if we consider simply the mean number (F) of families of relatives per respondent in each site. As would be expected Foulness and Cublington stand out from the two remaining sites (and from each other). However, the use of F allows us also to distinguish between Nuthampstead and Thurleigh. Table B.4 shows the values of F for the four sites. In terms of the mean number of families

Printed image digitised by the University of Southampton Library Digitisation Unit

Table B.4 Mean number of families of relatives in the same parish per respondent

Site	Mean number of families of relatives in the local area per respondent (F)	(N)
Foulness	5.2	(68)
Nuthampstead	1.2	(276)
Thurleigh	0.9	(290)
Cublington	1.9	(290)

of relatives in the same parish we can distinguish between and order (from highest to lowest) the sites as follows; Foulness, Cublington, Nuthampstead and Thurleigh.

The residence patterns of relatives can be considered further if we look at adult and child relatives separately. Not surprisingly the conclusions that arise from this are consistent with those for families of relatives (but for child relatives the pattern of residence does not differentiate so sharply between sites). Table B.5 shows the distribution of the proportions of respondents with different numbers of adult relatives living within the local area (parish). For each of the inland sites the modal category is 1-5 adult relatives living in the same parish whereas for

Table B.5 Number of adult relatives in the same parish

Site	No relatives at all	Adult relatives in the same parish							
		0	1-5	6-10	11-15	16-20	20-25	26+	
Foulness	19%	-	16	15	21	10	8	12	101% (84)
Nuthampstead	59%	1	24	10	3	1	1	1	100% (276)
Thurleigh	60%	-	29	11	-	1	-	-	101% (290)
Cublington	43%	2	34	9	7	5	*	1	101% (290)

Foulness it is 11-15 such adults. The distribution for Foulness is spread more evenly across all the categories. As before, comparison of the distributions suggests differences between the sites.

The proportions of respondents with no adult relatives living in the local area is much the same as for table B.1 and we again can distinguish Foulness and Cublington from the other two sites. If we confine our attention solely to those respondents having adult relatives living in the same parish,

Printed image digitised by the University of Southampton Library Digitisation Unit

the mean values for these respondents (A') allow us to distinguish between the four sites. Table B.6 shows the value of A' for each site. We can order the sites according to A', from highest value to lowest values as follows; Foulness, Cublington, Nuthampstead and Thurleigh. Now while the value of A' for Foulness is significantly greater than the values for all of the inland sites and the value of A' for Thurleigh is significantly lower than for the remaining sites, we cannot distinguish Nuthampstead and Cublington from each other. However, if we effectively combine the results in tables B.5 and B.6 by considering the mean number of adult relatives

Table B.6 Mean number of adult relatives in the same parish per respondent with such relatives

Site	A'	Number of respondents with adult relatives in the same parish
Foulness	14.4*	(68)
Nuthampstead	6.3*	(109)
Thurleigh	4.3	(114)
Cublington	7.0*	(161)

* For 10 cases in Foulness, 2 in Nuthampstead and 4 in Cublington, 29+ was taken as 29 in calculating A'. The same applies to table B.7.

living in the same parish (A) all four sites can be distinguished from each other. Table B.7 shows the values of A for the four sites and we can

Table B.7 Mean number of adult relatives in the same parish per respondent

Site	A	(N)
Foulness	11.7	(84)
Nuthampstead	2.6	(276)
Thurleigh	1.7	(290)
Cublington	3.9	(290)

distinguish the four sites (in descending values of A); Foulness, Cublington, Nuthampstead and Thurleigh. All the differences in A are significant.

Finally we consider child relations in the same manner. Table B.8 gives the distribution of proportions of people with various child relatives living in the same parish. The proportions of people with no child relatives (but with at least one adult relative) are very similar in each of the sites, and the proportion of people without child relatives still distinguishes Foulness and Cublington as having significantly lower proportions from the other two

Printed image digitised by the University of Southampton Library Digitisation Unit

Table B.8 Child relatives in the same parish

Site	No relatives at all	Child relatives in the same parish					
		0	1-5	6-10	11-15	16+	
Foulness	19%	20	37	8	8	8	100% (84)
Nuthampstead	59%	19	16	6	–	–	100%(276)
Thurleigh	60%	18	18	4	–	–	100%(290)
Cublington	43%	18	25	9	2	3	100%(290)

sites. Confining our attention solely to those respondents who have child relatives living in the same parish, we can examine the mean number of child relatives living in the parish (C'). The values of C' for each site are given in table B.9. Foulness with a significantly higher value of C' can be clearly distinguished from each of the inland sites. However, among the inland sites only the difference between Cublington and Thurleigh is significant. Although we can order the three inland sites with respect to C' the differences between Cublington and Nuthampstead and between Nuthampstead and Thurleigh are not significant.

Table B.9 Mean number of child relatives in the same parish per respondent with such relatives

Site	C'	Number of respondents with child relatives in the same parish
Foulness	7.0	(52)
Nuthampstead	4.2	(61)
Thurleigh	3.6	(64)
Cublington	5.4	(114)

As before, we can combine the results of table B.8 and B.9 by considering the mean number of child relatives per respondent (C). The values of C are shown in table B.10. Foulness has a significantly higher value of C than each of

Table B.10 Mean number of child relatives in the same parish per respondent

Site	C'	(N)
Foulness	4.3	(84)
Nuthampstead	0.9	(276)
Thurleigh	0.8	(290)
Cublington	2.1	(290)

the inland sites. Considering just the inland sites Cublington can be distinguished from Nuthampstead and Thurleigh but the latter two cannot be distinguished from one another.

Printed image digitised by the University of Southampton Library Digitisation Unit

We have used the mean number of families of relatives living in the parish (F), the mean number of adult relatives in the parish (A) and the mean number of child relatives in the parish (C) to distinguish the proposed sites from each other. The values of these indices are dependent both upon the proportions of respondents with the appropriate relatives living in the same parish and, among these respondents, the number of such relatives. Having established overall differences between the sites we can then examine these differences more closely. To avoid repetition we used only one of these indices and have chosen F because it differentiates the sites most clearly.

Length of residence should co-vary with residence of relatives. Table B.11 shows the values of the various indices (of residence of families of relatives in the same parish) for different categories of length of residence. We have divided our sample into recent migrants (migrants who have lived in the parish for five years or less), older established residents (migrants who have lived for more than five years in the parish) and natives (people born in the parish who have remained there). For each of the four sites, a significantly greater proportion of natives have families of relatives living in the parish than either of the other two length of residence categories (table B.11(a))and, similarly, the older established residents can be distinguished from the recent migrants.

Comparing across the sites, Foulness has a higher proportion of the older established residents and natives with families of relatives in the same parish (Table B.11(a)). Among the inland sites Cublington has significantly larger proportions of recent migrants and older established residents having families of relatives in the same parish. However, for natives, Cublington cannot be distinguished from the other two inland sites, and for each length of residence category Nuthampstead and Thurleigh cannot be distinguished from each other.

Confining our attention solely to those respondents with families of relatives in the same parish (table B.11(b) Foulness can be distinguished from the inland sites with much higher values of F'. (However, comparisons of F' between the sites is made somewhat tenuous by the low number in each recent migrant category for the four sites). Considering the natives on each site, Cublington, Nuthampstead and Thurleigh can be distinguished from each other and ranked in that order. All of the differences are significant. For the older established residents no distinctions can be made between the inland sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table B.11 Indices of residence of families of relatives in the same parish by length of residence

Site	Overall value	Length of residence: recent migrants	older established residents	natives
Foulness	21%	22%	64%	92%
Nuthampstead	38%	12%	39%	78%
Thurleigh	39%	15%	37%	72%
Cublington	57%	25%	54%	78%

(a) Proportions with families of relatives in the same parish.

Foulness	6.4	$4.5_{(2)}$	$5.2_{(18)}$	$6.6_{(45)}$
Nuthampstead	3.1	$2.6_{(9)}$	$2.6_{(57)}$	$3.6_{(43)}$
Thurleigh	2.2	$1.5_{(13)}$	$2.3_{(56)}$	$2.4_{(42)}$
Cublington	3.6	$1.8_{(19)}$	$2.7_{(66)}$	$5.2_{(73)}$

(b) Mean number of families of relatives in the same parish per respondent with such relatives (F')

Foulness	5.2	$1.0_{(9)}$	$5.4_{(27)}$	$6.1_{(49)}$
Nuthampstead	1.2	$0.3_{(77)}$	$1.0_{(145)}$	$2.8_{(55)}$
Thurleigh	0.9	$0.2_{(82)}$	$0.9_{(150)}$	$1.7_{(58)}$
Cublington	1.9	$0.5_{(75)}$	$1.4_{(122)}$	$4.1_{(93)}$

(c) Mean number of families of relatives in the same parish per respondent (F).

If we now consider the mean number of families of relatives living in the same parish (table B.11(c)) the highest values of F for each site is the value for those born on the site. For both the older established residents and the natives, Foulness can be clearly distinguished from the inland sites. As far as the inland sites are concerned we can distinguish Cublington, Nuthampstead and Thurleigh in that order for natives. For the older established residents and recent-migrants no differences can be seen between the inland sites. Among the inland sites Cublington stands out mainly because there are more natives there (although the proportions with families of relatives are not different across the sites) and the values for F' for natives at Cublington are much higher. The differences between Nuthampstead and Thurleigh can also be seen mainly in the category of natives.

Printed image digitised by the University of Southampton Library Digitisation Unit

On the assumption that kinship behaviour may vary according to social class we have examined the residence patterns of families of relatives with this in mind. We have used the definition of social class as given in appendix 4 although we are aware of the limitations of this definition. The relevant figures are given in table B.12. From table B.12(a) it is clear that the proportions with families of relatives in the same parish among the lower of the two working classes is much higher at Foulness than at each of the inland sites. The small numbers of the remaining two categories for Foulness makes comparison in terms of them unreliable and we turn therefore to consider the inland sites. In the lower middle class and in both of the working classes the proportions with families of relatives in the parish at Cublington are higher than at the other inland sites. The differences between the sites are significant for the working class (DE), but for the other two categories only the extremes, Cublington and Nuthampstead for the lower middle class and Cublington and Thurleigh for the skilled working class, are significantly different.

Turning our attention to the index F' we find that the two working class categories at Foulness have much higher values of F' than do the corresponding categories at the inland sites. Among the inland sites, Cublington can be distinguished in terms of F' from the other two sites but only for the lower middle class. Nuthampstead and Thurleigh cannot be distinguished from each other in a consistent manner in table B.12(b) although the differences in the table are not significant.

The differences between the inland sites in terms of F (table B.12(c)) reflect the differences discussed in table B.12(a) and (b). Thus we would suggest that the overall difference between Cublington and the other inland sites stems from the higher proportions of respondents in the two working class categories with families of relatives in the same parish and the higher values of F' in the lower middle class and the working class category. This

Table B.12 Indices of residence of families of relatives in the same parish by social class

Site	Overall value	Social class			
		middle class A3	lower middle class C1	skilled working class C2	working class DE
Foulness	81%	70%	20%	80%	89%
Nuthampstead	38%	11%	36%	53%	56%
Thurleigh	39%	24%	47%	41%	48%
Cublington	57%	22%	57%	63%	69%

(a) Proportions with families of relatives in the same parish

Printed image digitised by the University of Southampton Library Digitisation Unit

Site	Overall value	Social class			
		middle class A3	lower middle class C1	skilled working class C2	working class DE
Foulness	6.4	$3.7_{(7)}$	$1_{(1)}$	$6.0_{(12)}$	$6.7_{(49)}$
Nuthampstead	3.1	$3.1_{(8)}$	$2.1_{(18)}$	$3.0_{(29)}$	$3.5_{(53)}$
Thurleigh	2.2	$1.9_{(23)}$	$2.4_{(25)}$	$2.1_{(26)}$	$2.7_{(38)}$
Cublington	3.6	$2.2_{(13)}$	$4.5_{(32)}$	$2.5_{(55)}$	$3.9_{(59)}$

(b) Mean number of families of relatives in the same parish per respondent with such relatives (F')

Foulness	5.2	$2.7_{(10)}$	$0.2_{(5)}$	$4.8_{(15)}$	$6.0_{(55)}$
Nuthampstead	1.2	$0.3_{(76)}$	$0.9_{(50)}$	$1.6_{(55)}$	$1.9_{(95)}$
Thurleigh	0.9	$0.7_{(95)}$	$1.1_{(53)}$	$0.9_{(63)}$	$1.3_{(79)}$
Cublington	1.9	$0.5_{(60)}$	$2.6_{(56)}$	$1.6_{(88)}$	$2.7_{(85)}$

(c) Mean number of families of relatives in the same parish per respondent (F)

difference can be seen more clearly if we collapse the two middle class categories into one and similarly for the two working class categories. By doing this we obtain table B.13.

Table B.13 Indices of residence of families of relatives in the same parish by collapsed categories of social class

Site	Overall value	Social Class	
		middle classes	working classes
Foulness	81%	53%	87%
Nuthampstead	38%	21%	51%
Thurleigh	39	30%	45%
Cublington	57%	39%	66%

(a) proportions with families of relatives in the same parish

Foulness	6.4	$3.5_{(8)}$	$6.6_{(61)}$
Nuthampstead	3.1	$2.4_{(26)}$	$3.2_{(82)}$
Thurleigh	2.2	$2.1_{(48)}$	$2.5_{(64)}$
Cublington	3.6	$3.9_{(45)}$	$3.2_{(114)}$

(b) Mean number of families of relatives in the parish per respondent with such relatives (F')

Printed image digitised by the University of Southampton Library Digitisation Unit

Site	Overall value	Social Class	
		middle classes	working classes
Foulness	5.2	$1.9_{(15)}$	$5.7_{(69)}$
Nuthampstead	1.2	$0.5_{(126}$	$1.7_{(160)}$
Thurleigh	0.9	$0.7_{(158)}$	$1.1_{(142)}$
Cublington	1.9	$1.5_{(116)}$	$2.1_{(173)}$

(c) Mean number of families of relatives in the parish per respondent.

On each of the sites a greater proportion of working class respondents have families of relatives living in the same parish. These proportions at Foulness and Cublington are significantly higher than those at the other two sites. They can also be distinguished from each other. When we consider the middle classes the small number of such respondents on Foulness preclude reliable comparisons with the inland sites. Considering only the inland sites, Cublington again can be distinguished in terms of the proportion of respondents in the middle classes who have families of relations in the same parish. The values of F' for the working classes do not show distinctions between the inland sites. However, the value of F' for the middle classes is higher at Cublington than at the other two inland sites. Again these differences are shown in the values of F for each of the sites (table B.13(c)).

Together with length of residence and social class, tenure can also be used to show variations between respondents. Table B.14 shows the various indices of residence according to tenure categories. As has been mentioned earlier, Foulness is different from the inland sites as there are no people who live in council housing or who own their houses. Our comparisons are therefore confined to the inland sites. The majority of our respondents either live in council houses or own their own houses, and it is those categories that the major differences between the inland sites emerge. Cublington has the highest proportion of respondents in each tenure category (except 'with job') who have families of relatives in the same parish. These differences are significant. Thurleigh has significantly higher proportions than Nuthampstead among the owner/occupiers. Values of F' for owner/occupiers are significantly higher at Cublington and Nuthampstead than at Thurleigh. When we consider the values of F, Cublington has values significantly higher than the other inland sites among the owner occupiers and those in council housing. Cublington also has higher values in the remaining tenure categories but these are not significant.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table B.14 Indices of residence of families of relatives in the same parish by tenure

Site	Overall value	Tenure: rented	council	with job	owner/ occupier
Foulness	81%	82%	-	79%	-
Nuthampstead	38%	37%	66%	38%	10%
Thurleigh	39%	39%	61%	30%	32%
Cublington	57%	68%	78%	32%	40%
(a) Proportions with families of relatives in the same parish					
Foulness	6.4	$5.7_{(57)}$	-	$8.5_{(11)}$	-
Nuthampstead	3.1	$2.5_{(13)}$	$3.1_{(50)}$	$2.2_{(13)}$	$3.7_{(31)}$
Thurleigh	2.2	$2.1_{(11)}$	$2.3_{(53)}$	$1.9_{(10)}$	$2.1_{(56)}$
Cublington	3.6	$2.7_{(19)}$	$3.4_{(78)}$	$3.9_{(8)}$	$4.5_{(51)}$
(b) Mean number of families of relatives in the same parish per respondent with such relatives (F').					
Foulness	5.2	$4.6_{(70)}$	-	$5.6_{(14)}$	-
Nuthampstead	1.2	$0.9_{(35)}$	$2.0_{(76)}$	$0.9_{(34)}$	$0.9_{(125)}$
Thurleigh	0.9	$0.8_{(28)}$	$1.4_{(54)}$	$0.6_{(33)}$	$0.7_{(174)}$
Cublington	1.9	$1.8_{(28)}$	$2.7_{(99)}$	$1.2_{(25)}$	$1.8_{(127)}$
(c) Mean number of families of relatives in the same parish per respondent (F).					

Table B.15 Respondents seeing no relatives

Site	Per cent responding 'no relative seen'	(N)
Foulness	-	(84)
Nuthampstead	8%	(276)
Thurleigh	11%	(290)
Cublington	4%	(290)

Table B.16 shows the response to the question: "Which relatives do you see most often nowadays?". Because of multiple answers the percentages for each site should not necessarily sum to 100%. Only the proportion seeing their mothers, fathers, daughters, sons, sisters and brothers are included in table B.16, as the proportion naming more distant relatives were much smaller, and showed little or no variation between sites. (The largest proportion in any of the excluded categories is 8%).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table B.16 Per cent naming particular relatives as 'seen most often'

Site	Relative					
	mother	daughter	sister	father	son	brother
Foulness	23%	17%	23%	11%	14%	21%
Nuthampstead	34%	17%	23%	23%	15%	15%
Thurleigh	32%	12%	19%	22%	13%	8%
Cublington	32%	16%	29%	24%	13%	17%

Table B.17 shows the mean number of relatives named as being 'seen most often' and no differences between the sites can be observed.

Table B.17 Mean number of kin contacts per respondent

Site	Mean number of kin contacts per respondent
Foulness	1.4
Nuthampstead	1.5
Thurleigh	1.4
Cublington	1.4

kinship contact

The importance of kinship relations cannot be equated solely with the geographical distribution of the places of residence of relatives. Working on the assumption that the extent to which people have contact with their relatives indicates the importance of particular kinship relations, we have examined kinship contact. We asked people to name those relatives they saw most often. Multiple answers to this question were permitted and the tables B.15 andB.16 give the response to this question. Respondents were restricted to naming people outside their own household. In one respect this is misleading as it is possible, perhaps likely, that an individual's most important relative comes from the same household. However, if a family had to move because of the siting of an airport it is reasonable to assume that the family moves and resettles as a whole. If this is the case then relations within the particular family (or household) will not be disrupted. If two relatives belong to separate households and both of these households are formed to move, then unless the two households resettle near each other there is some disruption to the particular relation between the two particular relatives. It is clear that a household may well split up on having to leave a particular house. Cases such as this are necessarily ignored by our analysis. We therefore concentrated on kin relations not contained within a single household as these are more likely to be disrupted than those relations contained completely within a single household.

Printed image digitised by the University of Southampton Library Digitisation Unit

A full comparison of kinship contact would involve obtaining information from an individual about all of the relatives he has contact with. However, we confined our attention to the most important relative, or more accurately the relative from outside the household that an individual saw most often.

Table B.15 shows the proportion of respondents who see no relatives at all. On Foulness there are no such respondents and for each of the inland sites the proportions are low. The proportion of such respondents at Cublington is significantly lower than the corresponding proportions for each of the other inland sites.

We now confine our attention to the most frequently seen relative for each respondent. Table B.18 shows the distribution of the most frequently seen relative by geographical area. We have distinguished between areas that are on or off the site, between non-adjacent parishes and the same or adjacent parish and, for the off site areas, between distant and near non-adjacent parishes.

Table B.18 Location of most frequently seen relative

Site	ON SITE		OFF SITE			
	same or adjacent parish	non-adjacent parish	adjacent parish	non-adjacent parish near	non-adjacent parish distant	(N)
Foulness	75%	-	1%	1%	23%	84
Nuthampstead	34%	7%	5%	7%	33%	276
Thurleigh	32%	3%	4%	16%	28%	290
Cublington	37%	3%	9%	13%	31%	290

Row percentages do not sum to 100% because of some respondents not seeing relatives.

From table B.18 it is clear that for Foulness a very much greater proportion of the most frequently seen relatives live in the same parish as the respondents. (For Foulness there is no adjacent parish that is also on the site area).

Table 4 can be collapsed to give table B.19(a) which simply distinguishes the proportion of the most frequently seen relatives that live on or off the site area. Again, Foulness has a very much greater proportion of most frequently seen relatives living on the site than any of the inland sites and the inland sites cannot be distinguished from each other. Except for the case of Foulness where there is a natural boundary, it is unlikely that 'site area' defines a meaningful social boundary. However we have sampled parishes that contain part of the actual sites and so when we talk of on/off site distinctions we are in fact talking of in/out of the most severely affected parishes. If we collapse table 4 slightly differently to obtain

Printed image digitised by the University of Southampton Library Digitisation Unit

a dichotomy between the same parish (and adjacent parishes) and non-adjacent parishes we obtain table B.19(b). The only appreciable change causes by the change of definition of geographical area is at Cublington where the per cent with the most frequently seen relative on the site area is 44% when the corresponding figure for the same or adjacent parish is 50%. However, both in table B.19(a) and in table B.19(b) there are no significant differences

Table B.19 Location of Most frequently mentioned relative

Site	On Site	Off Site	Same or adjacent parish	Non-adjacent parish	(N)
Foulness	75%	25%	76%	24%	(84)
Nuthampstead	48%	45%	46%	47%	(276)
Thurleigh	40%	48%	41%	47%	(290)
Cublington	44%	53%	50%	47%	(290)
	(a) by site		(b) by parish		

between the three inland sites. Because of the nature of our enquiry we shall use the distinction between on site and off site throughout this section rather than the alternative definition in terms of parishes.

We turn now to consider the frequency with which each respondent sees their most frequently seen relative. We have distinguished between daily contact, weekly contact (which is anything from every two days to once a week), monthly contact (which stands for less than weekly to once a month) and less frequent contact. The distribution of responses is shown in table B.20. Again Foulness stands out from the inland sites by having a much higher

Table B.20 Frequency of contact with first named relative

Site	Daily	Weekly	Monthly	Less often	Don't know	(N)
Foulness	49%	32%	10%	11%	-	(84)
Nuthampstead	22%	28%	22%	11%	9%	(276)
Thurleigh	19%	32%	19%	15%	4%	(290)
Cublington	25%	34%	21%	13%	2%	(290)

proportion of respondents seeing the most frequently seen relative daily and a lower proportion seeing the most frequently seen relative monthly. However, no distinctions can be made between the inland sites.

Both the residence of the most frequently seen relative and the frequency with which this relative was seen were examined within categories of other variables. In some cases (notably sex and age) there were no differences at

Printed image digitised by the University of Southampton Library Digitisation Unit

all when comparisons were made across the sites. For social class, tenure, life cycle and occupation no systematic variation between the sites could be observed. (For particular categories significant differences could be seen between pairs of sites. However, to search such tables for these differences and then point them out would be a misuse of significance testing). For length of residence there were distinctions and these are shown in table B.21. Not surprisingly the natives for each site have much higher

Table B.21 Residence and frequency of contact with most frequently seen relative

Site	Location	Length of residence: Recent migrant	older established	natives
Nuthampstead	On site	14%	51%	87%
	Off site	73% (77)	43% (145)	11% (55)
Thurleigh	On site	20%	46%	74%
	Off site	62% (82)	54% (150)	18% (58)
Cublington	On site	19%	45%	62%
	Off site	79% (75)	50% (122)	34% (93)

(a) Residence of most frequently seen relative

Nuthampstead	Daily	5%	22%	45%
	Weekly	18%	28%	36%
	Monthly	53%	21%	7%
	Less often	16% (77)	12% (145)	2% (55)
Thurleigh	Daily	12%	17%	36%
	Weekly	13%	41%	36%
	Monthly	26%	17%	14%
	Less often	26% (82)	14% (150)	2% (58)
Cublington	Daily	10%	25%	38%
	Weekly	27%	36%	37%
	Monthly	29%	24%	11%
	Less often	27% (75)	11% (122)	6% (93)

(b) Frequency with which the most frequently seen relative is seen

Percentages do not sum to 100% because some respondents do not see their relatives. If percentages were based upon those who saw their relatives they would all be slightly raised. The effect is greatest on the figures for Thurleigh. Also for part (b) the responses 'varies' and 'don't know' have been omitted.

proportions with the most frequently seen relative living on the site and the recent migrants have the lowest such proportions. Among the natives, a significantly higher proportion at Nuthampstead have their most frequently seen relative living on the site than do the natives of Thurleigh and Cublington. Otherwise there are not significant differences between the sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

Considering simultaneously the location of the most frequently seen relative and the frequency with which that relative is seen we obtain table B.22. There are no significant differences between the sites.

Table B.22 Location by frequency of contact for the most frequently seen relative (raw scores)

Site	Location	Frequency			
		daily	weekly	monthly	less often
Foulness	On site	41	19	3	-
	Off site	-	8	5	8
Nuthampstead	On site	59	43	14	-
	Off site	1	33	47	30
Thurleigh	On site	51	46	8	6
	Off site	5	46	46	38
Cublington	On site	67	46	12	-
	Off site	5	53	21	39

Of those relatives seen daily the overwhelming majority are resident on the site. A smaller proportion of those seen weekly live on the site, a still smaller proportion of those seen monthly live on the site and only at one site are there any who are seen less frequently and live on a site.

(b) friendship

Without doubt one of the most important social relations involving an individual is that of friendship. Furthermore, there are few people without any friends at all. This is true for each of the samples where the lowest percentage of people with friends is 92%. When people move they do retain some of their existing friendships and they also make new friends wherever they happen to go. This does not minimise the importance of particular friendships and we were concerned therefore with examining the extent to which friendship on each site is localised. Unfortunately our data on friendship is less extensive than our corresponding data for kinship and our analysis here is not so detailed as it was for kinship relations.

Table B.23 gives the percentage distribution of the response to the question: "Of the people you are most friendly with, not counting your relatives, how many live in (parish)?". It shows the extent to which people's friendships are localised. From this table it is straight-forward to construct table B.24 which gives the proportions of people with and without friends in the same parish. The category without friends comprises those people without any friends and those who have friends but have none of them within the same parish. Foulness and Cublington have the greatest proportion of people with friends in the same parish. Comparing the inland

Printed image digitised by the University of Southampton Library Digitisation Unit

sites the rank order is (in descending order), Cublington, Nuthampstead and Thurleigh. All differences between the inland sites are significant.

Table B.23 Localisation of friendships

Site	No friends	Friendship in parish: none	half or less	most	all		(N)
Foulness	2%	6	30	34	29	101%	(84)
Nuthampstead	3%	10	32	41	15	101%	(276)
Thurleigh	8%	12	28	31	22	101%	(290)
Cublington	2%	6	30	36	26	100%	(290)

Table B.24 Friends in the same parish

Site	Friends: with	without		(N)
Foulness	92%	8	100%	(84)
Nuthampstead	87%	13	100%	(276)
Thurleigh	80%	20	100%	(290)
Cublington	92%	8	100%	(290)

For each site the greatest proportion of people have most of their friends in the same parish and the second lowest group is that of people who have half or less of their friends in the same parish. Recognising that these are fairly crude categories, we have collapsed the categories 'all' and 'most' into a single category and collapsed the remaining categories into a single category for much of the subsequent analysis. Elsewhere we have commented that the actual site area and, for that matter, administrative areas like parishes are socially artificial. Of those people who had at most half of their friends in the parish we asked whether or not the majority of their friends lived within 10 miles. Although this too is somewhat artificial we have considered also the gross category made up of those people who have all or most of their friends in the same parish, together with those who do not but do have most of their friends living within 10 miles.

Table B.25 Localisation of friendship (a) in parish (b) in local area

Site	Most friends in parish: with	without		Most friends in local area: with	without		(N)
Foulness	63%	38	101%	79%	21	100%	(84)
Nuthampstead	56%	45	101%	79%	21	100%	(276)
Thurleigh	53%	47	100%	72%	28	100%	(290)
Cublington	62%	38	100%	84%	16	100%	(290)

Printed image digitised by the University of Southampton Library Digitisation Unit

As would be expected, the inclusion of cases where most friends live within 10 miles but not in parish increases the proportions of people having most of their friends in the local area. This is true of all sites with the increase for Foulness being the smallest. This too would be expected given the natural boundary and the control over access to Foulness Island. The three inland sites are ordered in the same way for both cases in table B.25, namely Cublington, Nuthampstead and Thurleigh. Differences (except for the two extremes) are not, however, significant.

Each respondent was also asked whether or not their friends knew each other well. This particular question was intended to examine how people perceived the friendship networks in which they were involved. Although the categories used are again rather crude, we were interested in examining whether people saw themselves involved in highly connected and closed friendship networks, or in more loosely connected networks where the relations between other people in the friendship network were not clearly visible.

Table B.26 Friendship network+

Site	all know each other well	most know each other well	half or less know each other well	none know each other well	
Foulness	58%	34	7	1	100% (N = 83)
Nuthampstead	22%	61	17	1	101% (N = 264)
Thurleigh	28%	51	18	3	100% (N =262)
Cublington	42%	44	11	2	99% (N = 283)

+ We have taken the various proportions to be proportions among those people who have friends. By so excluding people without friends from our analysis little bias is introduced. The effect of this is greatest for Thurleigh where all the figures would be slightly lowered. Examining proportions based upon the full sample size does not alter the inferences made from them.

From table B.26 it is clear that Foulness is clearly distinct from each of the inland sites with a much greater proportion of respondents' friends all knowing each other. When we compare the inland sites it is possible to again see clear differences. Cublington has a much higher proportion of respondents having friends who (according to their perception) all know

Printed image digitised by the University of Southampton Library Digitisation Unit

each other well. Nuthampstead and Thurleigh can also be distinguished from each other. A greater proportion of respondents from Thurleigh claim that all their friends know each other whereas in Nuthampstead a greater proportion of respondents claim that only most of their friends know each other.

In order to consider more closely the localisation of friendship we considered the extent to which the connectedness of a friendship network is dependent upon that network being concentrated in the same parish. Table B.27 shows the cross tabulation of 'friends in the parish' by 'friendship network'.

Table B.27 Friends in parish by friendship network

Site	Friends in parish	Friendship network*		
		all know each other well	most know each other well	half or less know each other well
Foulness	All	48%	4%	-
	Most	38%	39%	17%
	Half or less	13% (N = 48)	46% (N = 28)	83% (N = 6)
Nuthampstead	All	46%	9%	-
	Most	32%	53	20%
	Half or less	16% (N = 57)	30% (N = 160)	66% (N = 44)
Thurleigh	All	42%	23%	2%
	Most	32%	42%	19%
	Half or less	16% (N = 74)	27% (N = 133)	66% (N = 47)
Cublington	All	46%	14%	3%
	Most	43%	42%	3%
	Half or less	11% (N = 121)	38% (N = 126)	81% (N = 32)

* We have ignored those people who think that none of the friends know each other because of the very small numbers involved.

It is clear that there is a tendency for those people with all their friends in the same parish to think that all of their friends know each other, and that for those people with most of the friends in the parish there is a tendency for them to think that most of their friends know each other. Similarly for those people with at most half their friends in the same parish there is a (more marked) tendency for them to think that no more than half their friends know each other.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table B.28 displays the proportion of people in each category of the variable we have called friendship network who have all or most of their friends living either in the same parish or within 10 miles (or, of course, both).

Table B.28 Friendship network for those with all or most of their friends in the parish or within 10 miles

Site	Friendship network		
	all know each other well	most know each other well	half or less know each other well
Foulness	99% (N = 48)	72% (N = 28)	34% (N = 6)
Nuthampstead	93% (N = 57)	87% (N = 160)	55% (N = 44)
Thurleigh	88% (N = 74)	95% (N = 133)	49% (N = 47)
Cublington	99% (N = 121)	75% (N = 126)	63% (N = 32)

For each of the inland sites, those people with all of their friends living in the same parish tend to see themselves in a highly connected and closed network table B.27). Nuthampstead has a significantly lower proportion of people with all their friends in the same parish than have Cublington and Thurleigh table B.23). If we consider simply the proportion of respondents who have highly connected and closed friendship networks then Cublington has a significantly greater proportion of such people than do either of the other two inland sites. We would argue that the destruction of highly connected and closed structures is of greater importance to the individuals involved than is the destruction of looser networks.

If we consider simply the proportions of people with friends in the parish (table B.24), then among the inland sites, Cublington has the highest proportion, Nuthampstead comes next and Thurleigh has the lowest proportion. All the differences between these sites are significant. When we confine our attention to those people with most or all of their friends in the same parish (table B.25(a)) the same ordering of the sites emerges but the differences are no longer significant (except between the extremes). Using the broader definition of local area (table B.25(b)), the same ordering of the sites is obtained but again without significant differences.

friendship and length of residence

In the previous section some differences between the sites with respect to the extent of friendship networks and the proportions of people with

Printed image digitised by the University of Southampton Library Digitisation Unit

friends in the same parish. This and the subsequent sections that deal with friendship explore these differences further.

A reasonable hypothesis is that the longer people reside in an area the more likely it is that most of their friends will also live in the same area. This could, of course, be due to a variety of reasons. The data shown in table B.29 conforms to the hypothesis for each of the inland sites. On each site a greater proportion of natives claim that all or most of their friends live in the same parish than do the older established residence who, in turn have a greater proportion claiming that all or most of their friends live in the same parish than do the recent migrants. For all of the inland sites over 60% of the natives and older established residents have all or most of their friends living in the same parish, whereas the corresponding proportion for the recent migrants is under 40%. Within each site the proportions for the recent migrants is significantly below those for the older established residents and natives. However, only for Cublington are the differences of proportions for the older established residents and for the natives significantly different. Comparing across the sites, the proportion of natives at Cublington with all or most of their friends in the parish is significantly higher than at both of the other inland sites. Differences for the other two categories across the sites are not, however, significant.

Table B.29 Friends in parish by length of residence

Site	Friends in parish	Length of residence		
		recent migrants	older established residents	natives
Nuthampstead	All or most	36%	61%	69%
	Half or less	64%	39%	31%
		(N = 77)	(N = 145)	(N = 55)
Thurleigh	All or most	32%	60%	65%
	Half or less	68%	39%	36%
		(N = 82)	(N = 150)	(N = 58)
Cublington	All or most	38%	63%	80%
	Half or less	62%	37%	20%
		(N = 75)	(N = 122)	(N = 93)

Printed image digitised by the University of Southampton Library Digitisation Unit

Table B.30 Friendship network by length of residence

Site	Friendship network	recent migrants	older established residents	natives
Nuthampstead	All	14%	22%	35%
	Most	55%	65%	52%
	Half or less	29%	12%	12%
	None	1	*	2%
		99%	99%	101%
		(N = 76)	(N = 140)	(N = 52)
Thurleigh	All	27%	30%	25%
	Most	45%	51%	55%
	Half or less	26%	14%	18%
	None	1%	5%	2%
		99%	100%	100%
		(N = 73)	(N = 140)	(N = 55)
Cublington	All	25%	42%	56%
	Most	51%	43%	40%
	Half or less	20%	12%	3%
	None	4%	2%	1%
		100%	99%	100%
		(N = 71)	(N = 119)	(N = 93)

* The N's for this table only involve people with friends.

From table B.30 it is clear that a significantly higher proportion of older established residents and natives at Cublington claim that all of their friends know each other. If we compare simply the combined category corresponding to the proportions with all or most of their friends knowing each other, Cublington still has a significantly higher proportion than the other two sites for the natives. For the older established residents and natives there are no significant differences between the sites for the combined category.

We turn now to consider whether or not friendship, for both of our variables, is more localised according to social class. If destruction of friendship relations and networks is significant for the people in those networks, and more so for localised friendship, then the impact of this loss will be felt differently according to the extent of localisation.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table B.31 Friends in parish by social class

Site	Friends in parish	Social class			
		middle class	lower middle class	skilled working class	working class
Nuthampstead	All or most	35%	49%	67%	68%
	Half or less	65	51	33	32
		100% (N = 76)	100% (N = 50)	100% (N = 55)	100% (N = 95)
Thurleigh	All or most	44%	51%	54%	62%
	Half or less	56	49	46	38
		100% (N = 95)	100% (N = 53)	100% (N = 63)	100% (N = 79)
Cublington	All or most	46%	61%	57%	77%
	Half or less	54	38	42	23
		100%	99% (N = 60)	99% (N = 88)	100% (N = 85)

Table B.31 shows the proportions of people with all or most of their friends (and with half or less) for each of the social classes. In Cublington the proportion with all or most of their friends in the parish is much greater for the second non-manual and both manual classes. For the other inland sites this is true only for the two manual classes. Comparing the proportions within each social class with all or most of their friends in the parish does not reveal a systematic variation between the inland sites. Within each site, the proportions with all or most of their friends in the same parish show the same ordering (except for the inversion of the second non-manual and the first manual social class at Cublington) from the smallest proportion in the upper non-manual class to the highest proportion in the second manual class.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table B.32 Friendship network by social class

Site	Friendship network*	Social class: middle class	lower middle class	skilled working class	working class
Nuthampstead	All	20%	6%	26%	28%
	Most	61	69	61	56
	Half or less	19	24	9	15
	None	-	-	4	1
		100%	99%	100%	100%
	(N)	(74)	(49)	(54)	(88)
Thurleigh	All	30%	23%	25%	33%
	Most	41	50	61	53
	Half or less	25	23	14	10
	None	3	4	-	4
		99%	100%	100%	100%
	(N)	(87)	(49)	(57)	(70)
Cublington	All	19%	43%	43%	58%
	Most	64	46	44	29
	Half or less	12	9	10	12
	None	5	2	2	1
		100%	100%	99%	100%
	(N)	(58)	(54)	(88)	(83)

* N's for this table only involve people with friends.

Table B.32 shows the proportions of people of each social class according to how they perceive the friendship network in which they are involved. Again Cublington stands out as the proportions of people from the two manual class with all of their friends knowing each other is significantly higher than for the two other inland sites. The proportion of 58% for the second manual class is the only value where the highest proportion (within a class for each site) is not that for the category 'most friends know each other'. The proportion of people from the second non-manual class (at Cublington) with all their friends knowing each other is also significantly higher than for the other two sites. For the first non-manual social class a significantly higher proportion at Thurleigh have all their friends knowing each other than at the other two sites. When we consider the combined category of people where all or most of their friends know each other, the proportions in this category is the same for each site for both of the manual classes. The first

Printed image digitised by the University of Southampton Library Digitisation Unit

non-manual class at Thurleigh has a significantly lower proportion of people in the combined category than do the other two sites which have very similar proportions in this category. The second non-manual class at Cublington has a significantly higher proportion of people in this combined category than the other inland sites which have similar proportions in this category.

friendship and tenure

Having found that localisation tends to be greatest for those who belong to the two manual classes, and knowing that tenure is also related to social class we would expect that tenure would also reveal variations in the localisation of friendship. This is not to say that the various variables that characterise aspects of peoples general social standing and economic power are independent of each other.

Table B.33 shows the proportion of people having all or most of their friends in the parish within each tenure category. Comparing those in privately rented accommodation across the inland sites reveals no significant

Table B.33 Friends in parish by tenure

Site	Friends in parish	Tenure - rent privately	council house	with job	owner/ occupier
Nuthampstead	All or most	60%	70%	68%	44%
	Half or less	41	31	33	56
		100%	101%	101%	100%
	(N)	(35)	(77)	(34)	(125)
Thurleigh	All or most	57%	54%	45%	53%
	Half or less	43	46	54	47
		100%	100%	99%	100%
	(N)	(28)	(54)	(33)	(174)
Cublington	All or most	62%	71%	48%	67%
	Half or less	37	28	52	43
		99%	99%	100%	100%
	(N)	(28)	(99)	(25)	(127)

differences among them. For people in council housing, a significantly lower proportion at Thurleigh have all or most of their friends living in the same parish than is the case for the other two sites. Of those in accommodation that goes with their (or the head of the household's) job a significantly higher proportion at Nuthampstead have all or most of their friends living in the same parish. Finally when we consider the owner-occupiers we find that a significantly higher proportion at Cublington have all or most of their

Printed image digitised by the University of Southampton Library Digitisation Unit

friends living in the same parish than at the other two inland sites. Furthermore a significantly higher proportion of owner occupiers at Thurleigh have all or most of their friends living in the same parish than is true for Nuthampstead. We note also that for each site the larges two groups (according to tenure) are the owner-occupiers and those in council housing.

In table B.34 there are the proportions, for each tenure category, of those in the various friendship network categories. Within both Nuthampstead

Table B.34 Friendship network by tenure

Site	Friendship network*	Tenure			
		rent privately	council housing	with job	owner/ occupier
Nuthampstead	All	26%	26%	21%	19%
	Most	57	60	59	61
	Half or less	17	13	21	19
	None	-	-	-	2
		100%	99%	101%	101%
	(N)	(35)	(68)	(34)	(124)
Thurleigh	All	26%	28%	19%	29%
	Most	57	55	52	48
	Half or less	17	11	19	20
	None	-	6	10	2
		100%	100%	100%	99%
	(N)	(23)	(47)	(31)	(161)
Cublington	All	62%	52%	39%	34%
	Most	19	43	30	50
	Half or less	12	4	26	14
	None	8	1	4	2
		101%	100%	99%	100%
	(N)	(26)	(97)	(23)	(125)

* N's for this table only involve people with friends

and Thurleigh there is no significant variation between the various tenure categories. When the two sites are compared they are found to be very similar. There is greater variation between the tenure categories at Cublington and there are differences between Cublington and the other two inland sites. In each tenure category (except for owner-occupiers) a significantly greater proportion of people at Cublington have friends all of

Printed image digitised by the University of Southampton Library Digitisation Unit

whom know each other and a significantly lower proportion of people at Cublington have friends most of whom know each other. The pattern is somewhat different for the owner-occupiers. A significantly smaller proportion of owner-occupiers at Nuthampstead have friends all of whom know each other and a significantly larger proportion of owner-occupiers at Nuthampstead have friends most of whom know each other, than is the case at Cublington and Thurleigh.

friendship by sex, age and stage of family life cycle

We turn now to consider whether there is any variation in the incidence of friendship between the sites when we consider variables that characterise individuals and families rather than their general social standing. Within each of the inland sites no significant differences between men and women can be found with respect to the proportion of friends they have living in the same parish (table B.35(a)). When we compare across the sites for men and women with respect to the proportion having all or most of their friends in the village no significant differences are found. There is a tendency for a greater proportion of older people to have all or most of their friends living in the same parish (table B.35(b)) although when we compare across sites no significant differences are found. Finally, for comparisons within categories according to the stage of the family life cycle, there are no significant differences between the sites (except between extremes for families with all the children at home).

Considering friendship network, there are no significant differences between men and women within each site. However, Cublington has significantly larger proportions of both men and women having friends who all know each other than do either of the other two inland sites. However, if we consider those whose friends all know each other together with those where most friends know each other there are no significant differences between the sites. The same general conclusions as for table B.35 apply to all of the age categories in table B.36(b) and similarly for stage of life cycle categories in table B.36(c).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table B.35 Friends in parish by (a) sex (b) age (c) stage of life cycle

Site	Friends in parish	Sex		Age				Life cycle (children at home)			
		male	female	16–24	25–44	45–64	65+	all	some	none	no children
Nuthampstead	All or most	56%	58%	37%	48%	59%	70%	63%	56%	52%	51%
	Half or less	43	43	63	52	41	30	38	43	49	49
		99%	101%	100%	100%	100%	100%	101%	99%	101%	100%
	(N)	(120)	(147)	(38)	(82)	(113)	(43)	(52)	(86)	(82)	(57)
Thurleigh	All or most	56%	58%	36%	51%	50%	73%	54%	60%	46%	54%
	Half or less	45	42	64	49	50	26	46	41	53	46
		101%	100%	100%	100%	100%	99%	100%	101%	99%	100%
	(N)	(122)	(146)	(41)	(93)	(110)	(46)	(43)	(93)	(97)	(58)
Cublington	All or most	63%	63%	48%	51%	59%	76%	72%	69%	57%	54%
	Half or less	36	37	53	49	40	23	28	30	43	46
		99%	100%	101%	100%	99%	99%	100%	99%	100%	100%
	(N)	(139)	(145)	(40)	(84)	(102)	(63)	(51)	(59)	(126)	(54)

Printed image digitised by the University of Southampton Library Digitisation Unit

Table B.36 Friendship network by (a) sex (b) age (c) Stage of family life cycle

Site	Friendship network*	Sex		Age				Life cycle (children at home)			
		male	female	16–24	25–44	45–64	65+	all	some	none	no children
Nuthampstead	All	22%	21%	23%	15%	23%	28%	23%	25%	14%	25%
	Most	59	62	56	65	58	63	60	65	62	54
	Half or less	18	15	21	20	17	8	13	9	25	20
	None	1	1	–	–	2	3	4	–	–	2
		100%	100%	100%	100%	100%	100%	100%	99%	101%	101%
	(N)	(119)	(155)	(40)	(79)	(107)	(40)	(47)	(85)	(81)	(56)
Thurleigh	All	27%	29%	25%	18%	34%	37%	30%	35%	23%	23%
	Most	51	51	39	60	47	49	51	51	53	48
	Half or less	20	16	33	19	15	12	19	11	22	23
	None	2	4	3	3	4	2	–	4	2	6
		100%	100%	100%	100%	100%	100%	100%	101%	100%	100%
	(N)	(121)	(142)	(36)	(85)	(100)	(43)	(37)	(83)	(91)	(52)
Cublington	All	47%	38%	41%	33%	46%	52%	53%	52%	39%	29%
	Most	40	49	49	48	43	39	35	38	47	53
	Half or less	12	11	10	14	10	8	10	10	11	14
	None	1	3	–	5	1	2	2	–	2	4
		100%	101%	100%	100%	100%	101%	100%	99%	99%	100%
	(N)	(138)	(144)	(39)	(83)	(100)	(62)	(49)	(58)	(125)	(51)

* N's in this table include only those people who have friends.

Printed image digitised by the University of Southampton Library Digitisation Unit

C. Participation in Voluntary Associations/Organisations

One important aspect of community life is membership of voluntary associations. We were concerned, therefore, to study the general level of membership and activity in such organisations both on and off the sites. Clearly the former would be disrupted if the airport were sited in a particular site but we may assume also that activity in voluntary associations off the sites may be affected, in the sense that a person's residential location may be "suitable" for such membership. Though one should perhaps be cautious in this latter respect, since a person may well belong to an association, say in London, where his membership is compatible oreven more compatible with a very wide range of alternative places of residence.

Assuming that in some way the sites represent social communities, then for a given level of activity in voluntary associations, the higher the ratio of on site to off site membership and activity, the greater the level of cummunity on the site.

Respondents were asked about their membership and activity in the following types of organisation (see appendix 1).

(i) Organisations connected with work.
(ii) Public bodies or committees.
(iii) Organisations connected with politics.
(iv) Organisations connected with education and training.
(v) Organisations connected with church and religious groups.
(vi) Organisations connected with welfare.
(vii) Civic or community group.
(viii) Other groups connected with leisure activities.
(ix) Other social clubs.
(x) Any additional activities not included in (i) to (ix).

In the following paragraphs we explore the membership patterns in those types of organisations for the four alternative sites. Although questions were asked about frequency of activity as well as actual membership only results on the latter are presented as the numbers are fairly low and activity counts do not discriminate between the sites any differently from the membership counts.

It is perhaps worth re-emphasising that Foulness has a far smaller population than the three inland sites and as a consequence, even where it has the same (or even a higher) proportion of "memberships", in terms of the population the total number is far lower. In the following analysis we have, therefore, where possible, given estimates of the number of memberships in the population on the sites. It is, of course, this number that would be "disturbed" if the proposed airport were constructed on a particular site.

Printed image digitised by the University of Southampton Library Digitisation Unit

Organisations connected with work

Table C.1 shows a marked variation in membership of organisations connected with work.

Table C.1 Membership of organisations connected with work

	Trade union	Professional association	Benevolent society	Business group	Social/ sports club at work	Other	No membership
Foulness	39%	9%	15%	4%	11%	-	22%
N = 46	(18)	(4)	(7)	(2)	(5)	(-)	(10)
Nuthampstead	16%	11%	4%	3%	11%	3%	52%
N = 160	(26)	(17)	(7)	(5)	(17)	(5)	(83)
Thurleigh	6%	4%	2%	1%	12%	8%	67%
N = 155	(9)	(6)	(3)	(2)	(19)	(12)	(104)
Cublington	22%	13%	8%	1%	21%	2%	34%
N = 160	(35)	(21)	(12)	(1)	(33)	(3)	(55)

N = the number of respondents in full or part-time work.

Thurleigh has a very high proportion of persons who have no affiliations at all and approximately one-half of the respondents at Nuthampstead are also not members of any work organisations. Seventy-eight per cent of Foulness's residents are members of one sort of organisation or another; 66% of Cublington's, 48 per cent of Nuthampstead's and only 33% of Thurleigh's. As might be expected from the social class composition, a significantly higher proportion of the Foulness residents are members of trade unions.

Table C.2 depicts the proportions of the total membership in work organisations on and off the sites. It clearly shows a significant difference in proportions of memberships on the site. Foulness has the greatest proportion and Cublington the least.

Table C.2 Membership of organisations connected with work on and off site

	Memberships on the site	Memberships off the site
Foulness	53%	47%
N = 36	(19)	(14)
Nuthampstead	44%	56%
N = 77	(34)	(43)
Thurleigh	26%	74%
N = 50	(13)	(37)
Cublington	16%	84%
N = 105	(17)	(88)

N = the total number of memberships

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness then, has the highest proportion of total memberships and the highest proportion on the site. Cublington, on the other hand, with the second highest total membership has a significantly lower proportion on the site than any of the other three sites. In summary then, the two rankings are as follows:

Proportional membership: Foulness Cublington Nuthampstead Thurleigh.

Proportional membership on the site: Foulness Nuthampstead Thurleigh Cublington.

No estimate could be made of the total number of memberships as we had no estimate of the working population. However, even with the most generous estimate we can be certain that Foulness would come out at the bottom of any rankings.

Membership of public bodies or committees

Respondents were asked about their membership of any public bodies or committees and table C.3 shows this membership both on and off the site. The total number of memberships is very low, so no attempt has been made to put the results in proportional terms, nor to estimate the total number of memberships.

Table C.3 Membership of public bodies and committees on and off site

	Number of memberships on site	Number of memberships off site
Foulness	*	*
N = 3	(1)	(2)
Nuthampstead	*	*
N = 15	(12)	(3)
Thurleigh	*	*
N = 4	(1)	(3)
Cublington	*	*
N = 14	(9)	(5)

N = the total number of memberships

Membership of organisations connected with politics

Respondents were asked about their membership of any political party or organisation, or any other political group; table C.4 shows this membership both on and off the site. Once again, the number of memberships is fairly low and there are no significant differences between Nuthampstead, Thurleigh and Cublington. Foulness has negligible personal affiliations with political organisations.

Printed image digitised by the University of Southampton Library Digitisation Unit

The estimates of total memberships on the inland sites vary somewhat due to the variation in absolute population on the site. Thurleigh has the most memberships followed by Cublington, Nuthampstead having the least.

Table C.4 Membership of organisations connected with politics on and off the site

	Memberships on the site	Memberships off the site	Estimated total memberships on the site+
Foulness	*	-	-
N = 1	(1)	(-)	
Nuthampstead	76%	24%	432
N = 29	(22)	(7)	
Thurleigh	71%	29%	284
N = 17	(12)	(5)	
Cublington	73%	27%	383
N = 26	(19)	(7)	

N = the total number of memberships

\+ based on estimates of total population on the site over the age of 16

Membership of organisations connected with education and training

Respondents were asked about their membership of organisations connected with further education, military training, youth training, nursing or first-aid and any other related organisation. These various categories were, however, collapsed, since the absolute numbers of membership was so low. Table C.5 shows the membership of these organisations both on and off the sites. Thurleigh has a significantly higher proportion of its membership on the site, then Nuthampstead which in turn, has a significantly higher proportion than Cublington; once again, Foulness has a negligible membership. Furthermore, because Thurleigh has the highest population, the estimated number of memberships in the population exceeds the other two inland sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C.5 Membership of organisations connected with education and training

	Memberships on the site	Memberships off the site	Estimated total memberships on the site+
Foulness	*	*	-
N = 2	(1)	(1)	
Nuthampstead	55%	45%	235
N = 22	(12)	(10)	
Thurleigh	69%	31%	473
N = 29	(20)	(9)	
Cublington	42%	58%	202
N = 24	(10)	(14)	

N = the total number of memberships.

\+ based on estimates of total population on the site over the age of 16

Membership of organisations connected with church or other religious groups

Respondents were asked about their membership of church clubs, church social clubs and any other religious organisation or group. These three categories were collapsed for the sake of analysis because of the low numbers. Table C.6 shows that Thurleigh and Cublington are very similar with a very high proportion of the memberships on the site; Nuthampstead a significantly lower proportion; and Foulness has a negligible number. Because of the high population on Thurleigh, this means a very significantly greater number of memberships on this site.

Table C.6 Membership of organisations connected with church or other religious group

	Memberships on the site	Memberships off the site	Estimated total memberships on the site+
Foulness	*	*	-
N = 6	(5)	(1)	
Nuthampstead	76%	24%	628
N = 42	(32)	(10)	
Thurleigh	86%	14%	875
N = 43	(37)	(6)	
Cublington	85%	15%	606
N = 35	(30)	(5)	

N = the total number of memberships.

\+ based on estimates of total population on the site over the age of 16.

Printed image digitised by the University of Southampton Library Digitisation Unit

Membership of organisations connected with welfare

Respondents were asked about their membership of charitable organisations, and voluntary welfare organisations. Table C.7 indicates that the number of memberships is extremely low and thus no attempt was made to compute proportions.

Table C.7 Membership of organisations connected with welfare

	Memberships on the site	Memberships off the site
Foulness	-	*
N = 4	(-)	(4)
Nuthampstead	*	*
N = 15	(11)	(4)
Thurleigh	*	*
N = 12	(8)	(4)
Cublington	*	*
N = 27	(7)	(20)

N = the total number of membershisp.

Membership of civic or community group

Respondents were asked about their membership of tenants' or ratepayers' associations, parent-teachers' associations, residents' club or community centre or any other civic group. These categories were, however, collapsed because of the low numbers. Table C.8 shows the membership both on and off the site. There are significant differences between the proportions for, on the one hand, Nuthampstead and Thurleigh and on the other, Cublington. Foulness, once again, has an extremely low membership. Thurleigh has the greatest number of estimated memberships on the site.

Table C.8 Membership of civic or community groups

	Memberships on the site	Memberships off the site	Estimated total memberships on the site+
Foulness	*	*	-
N = 3	(2)	(1)	
Nuthampstead	66%	34%	451
N = 35	(23)	(12)	
Thurleigh	68%	32%	307
N = 19	(13)	(6)	
Cublington	44%	56%	141
N = 16	(7)	(9)	

N = the total number of memberships

\+ based on estimates of total population on the site over the age of 16.

Printed image digitised by the University of Southampton Library Digitisation Unit

Membership of any other group connected with leisure activity

Respondents were asked about their membership of clubs connected with hobbies, music and drama, motoring and walking, and any other societies connected with leisure activities. Table C.9 gives the (collapsed) memberships on and off the site, Nuthampstead has a significantly lower proportion of this sort of activity on the site than either Thurleigh or Cublington. In this case, Foulness shows, in proportional terms, a comparable level of membership with Thurleigh and Cublington.

Table C.9 Membership of other groups connected with leisure activity

	Memberships on the site	Memberships off the site	Estimated total memberships on the site+
Foulness	61%	39%	50
N = 33	(20)	(13)	
Nuthampstead	46%	54%	628
N = 69	(32)	(37)	
Thurleigh	57%	43%	969
N = 71	(41)	(30)	
Cublington	57%	43%	1,596
N = 137	(79)	(58)	

N = the total number of memberships

\+ based on estimates of total population on the site over the age of 16.

Membership of any other social club

Respondents were asked about their membership of other social clubs like Townswomens' Guild, clubs for old people, youth clubs, etc. Table C.10 gives the (collapsed) membership on and off the site.

Foulness has the highest proportion of its memberships on the site, followed by Nuthampstead, which does not have a significantly greater proportion than Thurleigh, but does have a significantly greater proportion than Cublington. Thurleigh and Cublington do not have significantly different proportions. In terms of the total population effect, Nuthampstead comes out at the top of the list followed closely by Thurleigh, then Cublington and finally Foulness.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C.10 Membership of any other social club

	Memberships on the site	Memberships off the site	Estimated total memberships on the site+
Foulness	90%	10%	44
N = 20	(18)	(2)	
Nuthampstead	84%	16%	707
N = 43	(36)	(7)	
Thurleigh	79%	21%	1,301
N = 70	(55)	(55)	
Cublington	74%	26%	1,111
N = 74	(55)	(19)	

N = the total number of memberships

\+ based on estimates of total population on the site over the age of 16

Membership of any other organisations

In case the list of organisations explicitly included in the questionnaire was not exhaustive, respondents were asked about their membership of any other organisations. Table C.11 gives the memberships both on and off the site. There is a significant number of such memberships at Thurleigh and Cublington; Nuthampstead has a negligible membership, and Foulness none.

Table C.11 Membership of any other organisations

	Memberships on the site	Memberships off the site	Estimated total memberships on the site+
Foulness	-	-	-
N = 0	(-)	(-)	
Nuthampstead	*	*	-
N = 12	(3)	(9)	
Thurleigh	59%	41%	378
N = 27	(16)	(11)	
Cublington	53%	47%	383
N = 36	(19)	(17)	

N = the total number of memberships

\+ based on estimates of total population on the site over the age of 16

Total membership of voluntary associations organisations

In order to obtain an overall picture of the membership pattern on the four sites, summary measures of the memberships in any type of voluntary

Printed image digitised by the University of Southampton Library Digitisation Unit

association/organisation have been computed. In Table C.12 we show all the memberships of these organisations and the mean number of memberships per person both on and off the sites; the final column depicts the ratio of the mean memberships on and off the sites.

able C.12 Membership of all voluntary organisations

	All memberships on the site	All memberships off the site	Total memberships/person	All membership/person on the site	All membership/person off the site	All membership on site / All membership off site
ulness	(67)	(41)	1.28	0.79	0.48	1.6
thampstead	(142)	(142)	1.30	0.78	0.51	1.5
rleigh	(216)	(126)	1.17	0.74	0.43	1.7
blington	(252)	(242)	1.70	0.86	0.83	1.0

The differences in these various means are, however, relatively small. Cublington has the highest membership per person followed by Nuthampstead with Foulness very close behind and finally Thurleigh. Also if we turn to membership on the site; again Cublington comes out at the top of the list followed by Nuthampstead and Foulness, which are not significantly different, and at the bottom we find Thurleigh. But Table C.13 shows rather different rankings in terms of total population effects. Cublingt. has the greatest number of memberships, then Thurleigh followed by Nuthampstead with Foulness last. But purely in terms of total memberships on the site there is nothing to choose between Cublington and Thurleigh, they have approximately the same number of memberships, both being greater than Nuthampstead and, quite naturally, Foulness falls at the bottom of the list.

Table C.13 Estimated total membership of voluntary organisations

	Total membership	Total memberships on the site	Total memberships off the site
Foulness	268	165	103
Nuthampstead	7,046	4,227	2,819
Thurleigh	8,026	5,076	2,950
Cublington	9,962	5,039	4,923

N.B. The totals in this table are not identical with the sum of the estimates in the previous tables as in this aggregate table, memberships have been included that were not computed in individual cases because of low numbers.

In summary then, the survey suggests the following rankings for the four sites:

Printed image digitised by the University of Southampton Library Digitisation Unit

Proportional membership:	Cublington	Nuthampstead	Foulness Thurleigh.
Proportional membership on the site:	Cublington Thurleigh.	(Foulness = Nuthampstead)	
Total membership:	Cublington Foulness.	Thurleigh	Nuthampstead
Total membership on the site:	Cublington Foulness	Thurleigh	Nuthampstead

The Community Attitude Survey also secured information about membership of voluntary associations which inited comparison with out data. Unfortunately, however, the survey data is not immediately comparable with ours for two reasons. Firstly, their membership distribution was curtailed by including a category 'four and more membership' and secondly, the question asked referred to numbers of organisations belonged to 'in home area'. Since our spatial categories are 'on and off' the site, the comparison is difficult. Nevertheless, in table C.14 we have computed the mean number of memberships on the basis of table 55 in the Community Attitude Survey.

Table C.14 Mean number of organisations belonged to in 'home area' by type of local authority

(Community Attitude Survey)

Type of local authority	Mean
Rural districts	0.89
Metropolitan & urban districts	0.74
County boroughs	0.47

Since all four sites are rural districts the appropriate comparative figure seems to be 0.89. Bearing in mind that this will slightly underestimate the mean (as high number memberships are recorded as only four) we see that 0.89 falls somewhere between our values for total mean membership and mean membership on the site. We can therefore conclude, with some caution, that our results are very similar to the national average for rural districts since we may expect the category 'home area' to be somewhere between our categories of 'on and off' the site.

Church attendance

In rural areas, church attendance is often a good indicator of the intensity of community life as a great deal of the social activities are centred around the church. Table C.14 shows a remarkably similar pattern of church attendance on all four sites; in Foulness 46 per cent visit a church on the site, 45 per cent in Nuthampstead, 40 per cent in Thurleigh and 40 per cent in Cublington. There seems, therefore, to be little to choose between the sites in terms of church attendance.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C15 Church attendance

	On site			Off site			No attendance
	Same parish	Adjacent parish	non-adjacent parish	adjacent parish	non-adjacent parish	over 10 miles away	
Foulness	45%	1%	-	-	-	1%	53%
= 84	(38)	(1)	(-)	(-)	(-)	(1)	(44)
Nuthampstead	42%	3%	-	2%	3%	1%	49%
= 276	(115)	(9)	(-)	(6)	(8)	(2)	(136)
Thurleigh	43%	3%	-	2%	2%	-	50%
= 290	(124)	(9)	(-)	(5)	(5)	(-)	(147)
Cublington	37%	3%	-	2%	2%	-	56%
= 290	(107)	(10)	(-)	(7)	(7)	(-)	(159)

In table C.15 we have shown the attendance at church both on and off the site, against length of residence in the area. On Foulness a very high proportion (90%) of the church-goers were either born on the site or have lived there for over 20 years. On the three inland sites, however, this pattern is not repeated; there are a significant number of church-goers amongst the recent migrants (resident for less than one to five years) and those who have been on the site between five and 20 years.

Table C.16 Church attendance against length of residence

		Less than 1 to 5 years	5 to 20 years	More than 20 years	Born on site
Foulness N = 40	On site	8% (3)	- (-)	20% (8)	70% (28)
	Off site	2% (1)	- (-)	- (-)	- (-)
Nuthampstead N = 140	On site	20% (28)	22% (31)	25% (35)	21% (30)
	Off site	(6)	4% (5)	4% (5)	- -
Thurleigh N = 143	On site	18% (26)	29% (42)	27% (39)	18% (26)
	Off site	5% (7)	- (-)	2% (3)	- (-)
Cublington N = 131	On site	17% (22)	21% (28)	22% (29)	29% (38)
	Off site	5% (7)	2% (3)	- (-)	3% (4)

Base: Total number of church attenders on each site.

Table C.16 shows church attendance against age and as might be expected there is a general tendency for the church attenders to be drawn from the older members of the communuty. On Nuthampstead and Cublington a high

Printed image digitised by the University of Southampton Library Digitisation Unit

proportion of the 16 to 20 year olds appear to attend church but because of the low numbers involved, we cannot place much reliance on these figures.

Table C.17 Church attendance against age

		16–20	21–24	25–34	35–44	45–54	55–64	65+
Foulness	Attends	* (1)	* (1)	* (5)	* (7)	* (6)	* (14)	* (7)
	No attendance	* (7)	* (5)	* (1)	* (5)	* (6)	* (11)	* (8)
Nuthampstead	Attends	44% (9)	18% (4)	48% (22)	47% (17)	60% (35)	58% (32)	55% (25)
	No attendance	66% (9)	82% (18)	52% (24)	53% (19)	40% (23)	42% (23)	45% (20)
		100%	100%	100%	100%	100%	100%	100%
Thurleigh	Attends	16% (3)	35% (8)	32% (12)	50% (28)	59% (36)	67% (29)	59% (27)
	No attendance	84% (15)	65% (15)	68% (25)	50% (28)	41% (31)	33% (14)	41% (19)
		100%	100%	100%	100%	100%	100%	100%
Cublington	Attends	53% (7)	15% (4)	43% (17)	47% (21)	52% (33)	54% (21)	48% (30)
	No attendance	47% (6)	85% (23)	57% (23)	53% (23)	48% (30)	46% (18)	52% (33)
		100%	100%	100%	100%	100%	100%	100%

Localisation of Saturday evening activity

In order to obtain some idea of the overall picture concerning the level of social activity on the sites, respondents were asked how they spent the previous Saturday evening. Table C.17 indicates the proportions that 'stayed in', 'went out on the site in their own parish', 'went out in another parish on the site', and 'went off the site'.

Table C.18 Previous Saturday evening activity

	Stayed in	Went out in own parish	Went out other parish on the site	Went out off the site	Not applicable
Foulness	67%	12%	5%	17%	-
N = 84	(56)	(10)	(4)	(14)	(-)
Nuthampstead	65%	11%	6%	17%	-
N = 276	(179)	(29)	(16)	(47)	(5)
Thurleigh	56%	10%	7%	26%	-
N = 290	(163)	(30)	(20)	(76)	(1)
Cublington	58%	15%	2%	23%	-
N = 290	(168)	(43)	(7)	(68)	(9)

Printed image digitised by the University of Southampton Library Digitisation Unit

There are no dramatic differences between the sites. A greater proportion of people stayed in on Foulness and Nuthampstead than on the other two sites. Identical proportions - namely 17 per cent - went out on the site. A higher proportion of people from Thurleigh and Cublington went off the site than on the other two sites.

If activity on a Saturday evening can be construed as indicative of general patterns of activity, then we may conclude that there are no major differences between the sites in terms of activity (on the site) outside the home. But there is a greater tendency for people at Cublington and Thurleigh to go off the site.

Membership of the airport resistance organisation

Resistance organisations have arisen on all four sites since they were publicly announced. On some of the sites, small supportive organisations have also arisen. Respondents were asked if they were members of any organisation connected with the proposed airport. The question did not discriminate between resistance and supportive organisations and so a straightforward analysis of the responses to the question is in appropriate. However, those answering the question in the affirmative were cross-checked against their responses to the question on attitude to the airport and the assumption has been made that people who are opposed to the airport and answer the question about membership of an airport organisation in the affirmative are in a resistance organisation. This showed that on all sites over 98% of the members were in resistance organisations. Table C.18 indicates a very similar pattern of membership on the three inland sites but with Foulness having a significantly lower proportion of members.

Table C.19 Membership of the sirport resistance organisation

	Member of resistance organisation	Not a member of resistance organisation
Foulness	10%	90%
N = 84	(8)	(76)
Nuthampstead	17%	83%
N = 276	(47)	(229)
Thurleigh	17%	83%
N = 290	(48)	(242)
Cublington	22%	78%
N = 290	(63)	(227)

It would not seem an unreasonable assumption that the people who are members of a resistance organisation would be more deeply entrneched in the area than those that are not.

Printed image digitised by the University of Southampton Library Digitisation Unit

However, table C.19 shows the membership of the airport resistance organisation against length of residence in the area and does not seem to indicate any general tendency of this sort. On Nuthampstead, for instance, the strongest representation in the resistance organisation is amongst the recent migrants (resident for less than five years) and the lowest proportions are amongst the long-standing residents and those born on the site. The latter may, of course, be because those born on the site are the younger individuals in the sample. Thurleigh has its highest representation amongst those that have been on the site between five and 20 years, but a significantly higher proportion of the recent migrants than of those resident for over 20 years are members. Cublington exhibits a similar pattern but with slightly higher rates of membership.

Table C.20 Membership of airport resistance organisation against length of residence

		One to 5 years	5-20 years	Over 20 years	Born on site
Foulness	Member	* (1)	– (1)	– (–)	12% (6)
	Not a member	* (7)	* (8)	* (18)	88% (43)
					100%
Nuthampstead	Member	26% (20)	21% (15)	20% (9)	5% (3)
	Not a member	74% (57)	79% (55)	80% (35)	95% (52)
		100%	100%	100%	100%
Thurleigh	Member	19% (15)	24% (20)	9% (6)	12% (7)
	Not a member	81% (67)	76% (64)	91% (60)	88% (52)
		100%	100%	100%	100%
Cublington	Member	26% (19)	28% (16)	17% (11)	19% (17)
	Not a member	74% (55)	72% (40)	83% (55)	81% (76)
		100%	100%	100%	100%

It cannot therefore, be concluded that length of residence exerts any systematic effect on membership of the airport resistance organisation.

If we turn to membership of resistance organisation against type of tenure (table C.20) then, in general, on the inland sites owner occupiers are much more likely to be members than private tenants, which, in turn, are more likely to be members than council house tenants.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C.21 Membership of resistance organisation against tenure

		Owner occupier	Private rent/with job	Local authority	Other
Foulness	Member	– (–)	10% (8)	– (–)	– (–)
	Not a member	(–)	90% (76)	– (–)	– (–)
			100%		
Nuthampstead	Member	28% (34)	14% (9)	4% (3)	– (–)
	Not a member	72% (87)	86% (59)	96% (72)	(7)
		100%	100%	100%	
Thurleigh	Member	21% (37)	16% (10)	4% (2)	– (–)
	Not a member	79% (136)	84% (52)	96% (52)	(1)
		100%	100%	100%	
Cublington	Member	39% (49)	9% (5)	7% (7)	– (2)
	Not a member	61% (78)	91% (48)	93% (92)	– (9)
		100%	100%	100%	

These results seem to be in accord with the proposition that those entrenched in the area are more likely to be opposed to the airport. Moreover, since they tend to be owner occupiers they will also tend to be middle class.

Table C.21 seems, in general, to indicate no systematic relationship between membership and number of friends in the parish except for Foulness where members have all or most of their friends in the parish. Similarly for relatives in the parish, this factor also seems to exert no influence over membership.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C.22 Membership of airport resistance organisation against relatives and friends in the parish

		Friends			Relatives (No. of families)			
		All or most	Half or less	None	None	1 - 5	6 - 10	10+
Foulness	Member	17% (9)	- (-)	- (-)	- (-)	14% (5)	9% (2)	* (2)
	Not a member	83% (46)	100% (25)	100% (7)	100% (16)	86% (32)	91% (20)	- (7)
		100%	100%	100%	100%	100%	100%	
Nuthampstead	Member	18% (26)	29% (18)	8% (3)	24% (39)	8% (7)	- (1)	- (-)
	Not a member	82% (129)	71% (68)	92% (33)	76% (129)	92% (83)	* (13)	- (-)
		100%	100%	100%	100%	100%		
Thurleigh	Member	16% (24)	17% (13)	14% (8)	17% (30)	17% (18)	- (-)	- (-)
	Not a member	84% (130)	83% (63)	86% (48)	83% (148)	83% (88)	* (4)	- (-)
		100%	100%	100%	100%	100%		
Cublington	Member	20% (35)	31% (27)	4% (1)	28% (37)	13% (16)	39% (7)	* (2)
	Not a member	80% (144)	69% (61)	96% (22)	72% (93)	87% (111)	61% (17)	* (6)
		100%	100%	100%	100%	100%	100%	

In conclusion then, it appears that by far the most important variable correlating with attitude to the airport is type of tenure. Not surprisingly, it is this factor that exhibits a systematic link with attachment to the area and attitude to the airport (see section on attitude to airport and attachment to the area).

Printed image digitised by the University of Southampton Library Digitisation Unit

D. Attitudes to the Airport and Attachment to Area

Since the proposed alternative sites for the airport were announced a considerable amount of public debate has taken place. Well organised resistance movements have become established, particularly on the inland sites and there is some feeling that this organised opposition may well swamp a certain amount of sympathetic feeling, particularly amongst those who may see an economic advantage if the airport were sited in their vicinity. It was decided, therefore, to solicit people's general attitudes to the airport and their attachment to the area. Attitude studies of this sort are, of course, notoriously difficult. When an issue is a current topic of debate, one must expect some instability in the proportions of persons holding particular views. In particular, people's attitudes to the airport will be a function of their knowledge of the likely consequences if it were sited in their district. And we might expect that this knowledge is not particularly stable at the moment, the organised opposition and, to a much lesser extent, the organised promotion, are seeking to disseminate information about these consequences. Nevertheless, we deemed it worthwhile to study general attitudes whilst recognising that they must be interpreted with a certain amount of caution given the volatile nature of public opinion.

Respondents were asked whether they were "very much in favour", "quite in favour","indifferent", "quite opposed" or "very much opposed" to the proposed site for the Third London Airport in their vicinity. Table D1 shows the distributions of replies to the question. They are remarkably similar across the four sites. But Cublington has a significantly higher proportion of people opposed to the airport than the other three sites, which are not significantly different in this respect among themselves.

Table D1

Attitude to airport siting

	Very much in favour	Quite in favour	Indifferent	Quite opposed	Very much opposed	Don't know No answer
Foulness	8%	11%	12%	8%	60%	-
N = 84	(7)	(9)	(10)	(7)	(50)	(1)
Nuthampstead	4%	6%	18%	14%	58%	-
N = 276	(10)	(16)	(51)	(40)	(159)	(-)
Thurleigh	8%	8%	18%	12%	53%	-
N = 290	(22)	(24)	(52)	(36)	(155)	(-)
Cublington	6%	4%	10%	10%	70%	-
N = 290	(16)	(14)	(29)	(28)	(203)	(-)

Printed image digitised by the University of Southampton Library Digitisation Unit

Very similar results are revealed in table D2 which shows the distributions of responses to a question about reactions to having to move as a consequence of the siting of the airport. A notable feature of both of these tables is the small proportion of "Don't knows" and "no answers", clearly indicating a high level of knowledge and concern about the issues. This gives us some confidence that the distributions reported are a fairly stable state of affairs.

Table D2

Reactions to having to move

	Very sorry	Quite sorry	Indifferent	Quite pleased	Very pleased	Don't know No answer
Foulness	68%	6%	11%	5%	7%	4%
N = 84	(57)	(5)	(9)	(4)	(6)	(3)
Nuthampstead	6%	9%	17%	5%	2%	1%
N = 276	(181)	(26)	(47)	(14)	(6)	(2)
Thurleigh	64%	13%	16%	3%	2%	2%
N = 290	(187)	(37)	(46)	(10)	(5)	(5)
Cublington	76%	9%	9%	5%	1%	-
N = 290	(221)	(26)	(26)	(14)	(3)	(-)

It might be reasonably supposed that people who have been resident in the area for a long time would show a greater hostility to the proposed airport than those who arrived relatively recently. If, however, we examine attitudes to the airport against length of residence on the site (table D3) this shows that, on the whole, length of residence has little systematic influence on these attitudes.

On Nuthampstead 77% of the recent migrants (resident less than 4 years) were opposed compared with 82% of the older established residents (resident 4 years and over). But on Thurleigh the marginal difference is reversed, 69% of the recent migrants are opposed, compared with 63% of the well-established. On Cublington there is no difference whatsoever. On Foulness, Nuthampstead and Thurleigh, very similar proportions of those born on the site (68%, 65% and 65% respectively) are opposed to the airport; a slightly higher proportion (74%) are opposed at Cublington.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table D3

Attitude to airport against length of residence

		Less than 1 to 3 years	4 to 20+ years	Natives
Foulness	In favour	* (2)	14% (4)	20% (10)
	Indifferent	* (1)	14% (4)	12% (6)
	Opposed	* (5)	72% (20)	68% (34)
			100%	100%
Nuthampstead	In favour	8% (5)	10% (16)	9% (5)
	Indifferent	15% (9)	18% (29)	26% (14)
	Opposed	77% (45)	82% (118)	65% (35)
		100%	100%	100%
Thurleigh	In favour	16% (9)	14% (24)	25% (14)
	Indifferent	15% (8)	23% (40)	11% (6)
	Opposed	69% (40)	63% (110)	64% (37)
		100%	100%	100%
Cublington	In favour	6% (3)	9% (12)	16% (15)
	Indifferent	13% (7)	9% (13)	10% (9)
	Opposed	81% (45)	82% (116)	74% (70)
		100%	100%	100%

Printed image digitised by the University of Southampton Library Digitisation Unit

If we turn to attitude to airport against tenure, we see that on all three inland sites a higher proportion of owner-occupiers are opposed to the airport than either council or private tenants. This finding is in accord with the pattern of membership in the airport resistance organisation and is supportive evidence for the thesis that those people most deeply entrenched in the district exhibit the greatest opposition.

Table D4

Attitude to airport against tenure

		Council rent	Private rent	Owner occupier	Other and with job
Foulness	In favour	- (-)	19% (13)	- (-)	* (1)
	Indifferent	- (-)	11% (8)	- (-)	* (4)
	Opposed	- (-)	70% (50)	- (-)	* (8)
			100%		
Nuthampstead	In favour	13% (10)	9% (3)	4% (7)	19% (8)
	Indifferent	26% (20)	24% (9)	9% (11)	30% (12)
	Opposed	61% (46)	67% (24)	87% (107)	51% (21)
		100%	100%	100%	100%
Thurleigh	In favour	27% (14)	30% (9)	12% (19)	14% (5)
	Indifferent	30% (16)	23% (7)	11% (20)	32% (12)
	Opposed	43% (23)	47% (14)	77% (135)	54% (19)
		100%	100%	100%	100%
Cublington	In favour	20% (20)	9% (3)	4% (4)	16% (6)
	Indifferent	11% (11)	25% (7)	2% (3)	23% (8)
	Opposed	69% (69)	66% (19)	94% (121)	61% (21)
		100%	100%	100%	100%

Table D5 shows attachment to the area against tenure and exhibits a very similar pattern to the previous table.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table D5

Attachment to area against tenure

		Council rent	Private rent/with job	Owner/ occupier	Other
Foulness	Sorry and very sorry	- (-)	76% (60)	- (-)	- (-)
	Indifferent	- (-)	11% (9)	-	- (-)
	Pleased and very pleased	- (-)	13% (10)	- (-)	- (-)
Nuthampstead	Sorry and very sorry	63% (48)	66% (45)	88% (110)	(4)
	Indifferent	19% (15)	24% (16)	10% (13)	(3)
	Pleased and very pleased	18% (13)	10% (7)	2% (2)	- (-)
Thurleigh	Sorry and very sorry	62% (34)	64% (38)	87% (150)	- (-)
	Indifferent	25% (14)	29% (17)	9% (16)	- (-)
	Pleased and very pleased	13% (6)	7% (4)	4% (6)	- (-)
Cublington	Sorry and very sorry	73% (70)	86% (45)	97% (123)	(8)
	Indifferent	17% (16)	14% (7)	3% (4)	- (-)
	Pleased and very pleased	10% (10)	- (-)	- (-)	(-)

Table D6 shows attachment to area against age; there is, on all sites, a significantly greater tendency for the older people to be "sorry" or "very sorry" about having to move as a consequence of the siting of the airport. The high percentage (39%) of the under 34's on Foulness who would be pleased, should be regarded with caution because of the low numbers.

Printed image digitised by the University of Southampton Library Digitisation Unit

If those who are indifferent are categorised with those that are "pleased" or "very pleased" (i.e. in total, those not opposed), then there are, under the age of 34, 40% in Nuthampstead, 41% on Thurleigh and 26% on Cublington.

Table D6

Attachment to area against age

		AGE		
		16-34	35-55	55 and above
Foulness	Sorry and very sorry	61% (11)	84% (21)	80% (32)
	Indifferent	-	12% (3)	15% (6)
	Pleased and very pleased	39% (7)	4% (1)	5% (2)
		100%	100%	100%
Nuthampstead	Sorry and very sorry	60% (50)	78% (73)	86% (83)
	Indifferent	28% (23)	15% (14)	10% (10)
	Pleased and very pleased	12% (10)	8% (7)	4% (4)
		100%	100%	100%
Thurleigh	Sorry and very sorry	59% (45)	89% (108)	80% (70)
	Indifferent	30% (23)	7% (8)	18% (16)
	Pleased and very pleased	11% (8)	4% (6)	2% (2)
		100%	100%	100%
Cublington	Sorry and very sorry	74% (59)	85% (91)	95% (98)
	Indifferent	16% (13)	7% (8)	5% (5)
	Pleased and very pleased	10% (8)	8% (8)	- (-)
		100%	100%	100%

Printed image digitised by the University of Southampton Library Digitisation Unit

It is a fairly reasonable assumption that those people with many friendship ties in their community would be more opposed to the airport than those with only a few ties. Table D.7 shows, however, that there is no marked relationship of this sort. There is a slightly greater tendency, on all four sites, for those with half or less of their friends in the parish to be in favour of the airport than for those with all or most of their friends in the parish. At Nuthampstead and Thurleigh where there are people with no friends in the parish, they are also more likely to be in favour of the airport than those with all or some of their friends in the parish. But because of the unsystematic variation of those who are indifferent, there are not in all cases analogous reverse trends for those opposed to the airport. For instance, at Thurleigh 62% of those with all friends in the parish are opposed whereas 74% with only half of their friends there are opposed. We must conclude then that the number of friendship ties does not markedly influence attitudes to the airport.

If we turn to attitudes of the airport against the number of relatives in the parish (Table D8) we obtain very similar unsystematic results. At Nuthampstead and Thurleigh the number of relatives seems to have no influence on attitudes, whereas at Cublington those with 3 to 5 relatives show a slightly greater tendency to be opposed to the airport than those with 1 to 2 relatives in the parish. On all of these sites there is no significant relationship between opposition and the number of relatives.

Table D9 shows attitude to airport against membership of voluntary associations (coded as some or no memberships). Once again we can discern no systematic trends. At Foulness more of those people with no affiliations are opposed than those with affiliations; this is reversed on the three inland sites though the differing proportions though significant, are not very marked, except perhaps for Cublington.

In conclusion then, on all four sites, there is a very marked opposition to the proposed airport, Cublington showing a rather greater opposition than the rest. Furthermore, owner-occupiers show a greater tendency to be opposed to the airport than either council tenants or private tenants. On all sites, the older members of the population are more opposed to the proposed airport than the younger members.

Attitude to the airport bears little systematic relation to number of friends or relatives in the parish nor to membership of the voluntary associations.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table D7

Attitude to airport against friends in parish

		Friends in parish				
		All	Most	Half or less	None	No friends
Foulness	In favour	12% (3)	3% (1)	26% (6)	- (3)	- (2)
	Indifferent	21% (5)	8% (2)	18% (4)	- -	- -
	Opposed	67% (16)	89% (26)	56% (14)	- (1)	- -
		100%	100%	100%		
Nuthampstead	In favour	7% (3)	6% (6)	13% (12)	14% (4)	- (1)
	Indifferent	15% (6)	24% (27)	13% (11)	23% (6)	- (2)
	Opposed	78% (32)	70% (79)	74% (65)	63% (17)	- (7)
		100%	100%	100%	100%	
Thurleigh	In favour	13% (8)	13% (12)	18% (14)	23% (8)	27% (6)
	Indifferent	25% (16)	11% (10)	8% (6)	31% (11)	41% (9)
	Opposed	62% (40)	76% (66)	74% (60)	46% (16)	32% (7)
		100%	100%	100%	100%	100%
Cublington	In favour	10% (7)	10% (10)	12% (11)	- -	- (1)
	Indifferent	7% (5)	11% (11)	8% (7)	- (5)	- (2)
	Opposed	83% (61)	79% (80)	80% (70)	- (13)	- (4)
		100%	100%	100%		

Printed image digitised by the University of Southampton Library Digitisation Unit

Table D8

Attitude to airport against relatives in parish

		Relatives in parish				
		None	1-2	3-5	6-10	10+
Foulness	In favour	– (7)	– (4)	– (1)	– (3)	– (1)
	Indifferent	– (2)	– (2)	– (2)	– (3)	– (1)
	Opposed	– (7)	– (8)	– (19)	– (16)	– (5)
Nuthampstead	In favour	9% (15)	12% (6)	11% (4)	– (1)	– –
	Indifferent	14% (24)	24% (14)	24% (9)	– (5)	– 0
	Opposed	77% (131)	64% (36)	65% (24)	– (8)	– –
		100%	100%	100%	–	–
Thurleigh	In favour	18% (32)	13% (10)	18% (5)	– –	– –
	Indifferent	17% (31)	20% (16)	11% (3)	– (1)	– –
	Opposed	65% (115)	67% (53)	71% (20)	– (2)	– –
		100%	100%	100%		
Cublington	In favour	7% (9)	13% (11)	14% (6)	8% (2)	– (1)
	Indifferent	10% (13)	18% (15)	5% (2)	– –	– –
	Opposed	83% (109)	69% (58)	81% (36)	92% (22)	– (16)
		100%	100%	100%	100%	–

Printed image digitised by the University of Southampton Library Digitisation Unit

Table D9

Attitude to airport against membership of voluntary organisations

		Some memberships	No memberships
Foulness	In favour	20% (7)	18% (9)
	Indifferent	14% (5)	10% (5)
	Opposed	66% (23)	72% (35)
		100%	100%
Nuthampstead	In favour	7% (12)	13% (15)
	Indifferent	17% (27)	21% (25)
	Opposed	76% (121)	66% (78)
		100%	100%
Thurleigh	In favour	17% (29)	15% (18)
	Indifferent	15% (23)	23% (28)
	Opposed	68% (118)	62% (77)
		100%	100%
Cublington	In favour	9% (19)	14% (12)
	Indifferent	6% (12)	20% (17)
	Opposed	85% (176)	66% (55)
		100%	100%

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix 1 : QUESTIONNAIRE

NON-CONTACT
ENTER X HERE

Interviewer No: .....

Serial Number
(OFFICE USE)

NOP/3763

NOP MARKET RESEARCH LIMITED

Airport Community Study

PERSONAL DETAILS

Name: .....

Address (in full): .....

..... Telephone No. (if any): .....

Parish: ..... Site: .....

INTERVIEWED AT: Day: (13) Time

1st call 1	Mon. ... 1	(	)
2nd call 2	Tues. .. 2	(	)
3rd call 3	Wed. 3	(	)
4th call 4	Thurs. . 4	(	)
5th call 7	Fri. ... 5	(	)
NON-CONTACT .. 6	Sat. ... 6	(	)
	Sun. ... 7	(	)

REASONS FOR NON-CONTACT: (14)

Refused 1
Demolished/Empty 2
Too ill 3
On holiday 4
Away during survey 5
Not available after 4 or more recalls . 6
Other (write in)
..... 7

HOUSEHOLD INFORMATION (including informant)

Total No. in Household:
1 2 3 4 5+ (15)

Total No. in Paid Employment:
0 1 2 3 4 5+ (16)

No. of Women in Household Over 60:
0 1 2 3+ (17)

No. of Men in Household Over 65:
0 1 2 3+ (18)

Total No. in Household 16 and Over:
1 2 3 4 5+ (19)

No. of Children Under 16 in Household:
0 1 2 3 4 5+ (20)

No. in Household in Full-Time Education (including further education)
0 1 2 3 4 5+ (21)

No. of Registered Electors:
1 2 3 4 5+ (22)

SEX: (23)

Male 1
Female 2

AGE: (23)

16 - 20 4
21 - 24 5
25 - 34 6
35 - 44 7
45 - 54 8
55 - 64 9
65 + ... 0

CLASS: (24)

AB 1
C1 2
C2 3
DE 4

AGE FINISHED FULL-TIME EDUCATION:

(25) [ ][ ] (26)

FAMILY SITUATION: (27)

All children (any age) left home . 1
Some children (any age) at home .. 2
All children (any age) at home ... 3
No children 4

HOME: (28)

Rented privately 1
Council home 2
Rent free/with job 3
Rented from firm 4
Own/mortgaged 5
Other 6

P.1. INFORMANT WORKING/NOT WORKING:

	Non House-wife	House-wife	
Works full-time (30+ hrs. per week)	1	6	(29)
Works part-time (less than 30 hrs. per week)	2	7	
Not working	3	8	
Full-time student	4	9	
Other (state)	5	0	

IF WORKS AT ALL ASK P.2. OTHERS GO TO P.4.

Printed image digitised by the University of Southampton Library Digitisation Unit

P.2. What is your exact occupation? (write in full)

.....

Industry: ..... (30)

Employment Status: ONLY ONE RING

Professional	1	(31)
Employers and Managers	2	
Foreman/skilled manual	3	
Clerical	4	
Shop Assistant/Service industry/ semi-skilled manual	5	
Unskilled manual	6	
Other (state)	7	

If Self-Employed Ask No. of Employees:

25 +	9	
Under 25	0	
No employees	X	

Q.3. Where is your place of work? REFER TO MAP AND CHECK CAREFULLY

ON SITE - Same parish	1	(32)
Adjacent parish	2	
Non-adjacent parish	3	
OFF SITE - Adjacent parish	4	
Non-adjacent parish within 10 miles	5	
over 10 miles (not G.L.C.)	6	
over 10 miles (GLC)	7	

ASK ALL:

P.4. Are you the head of the household?

Yes ... (Go to P.7.)	1	(33)
No .... (Go to P.5.)	2	

IF "NO", ASK:

P.5. What is his/her exact occupation? (Write in full)

.....

Industry: ..... (34)

Employment Status: ONLY ONE RING

Professional	1	(35)
Employers and Managers	2	
Foreman/skilled manual	3	
Clerical	4	
Shop assistant/Service industry/ semi-skilled manual	5	
Unskilled manual	6	
Other (state)	7	

If Self-Employed Ask No. of Employees:

25 +	9	
Under 25	0	
No employees	X	

P.6. Where does the head of the household work? REFER TO MAP AND CHECK CAREFULLY

ON SITE - Same parish	1	(36)
Adjacent parish	2	
Non-adjacent parish	3	
OFF SITE - Adjacent parish	4	
Non-adjacent parish probe for :-		
within 10 miles	5	
over 10 miles (not GLC)	6	
over 10 miles (GLC)	7	

P.7. INFORMANT'S NET INCOME:

Wage earner	1	(37)
Salaried	2	
Up to £260 p.a.	1	(38)
Over £260 - £540 p.a.	2	
Over £540 - £780 p.a.	3	
Over £780 - £1,000 p.a.	4	
Over £1,000 - £1,300 p.a.	5	
Over £1,300 - £1,550 p.a.	6	
Over £1,550 - £2,100 p.a.	7	
Over £2,100 - £2,600 p.a.	8	
Over £2,600 p.a.	9	
Refused	0	

CHECKS ON QUESTIONNAIRE	INITIALS
Checked by Interviewer	
Field checked/accompanied by Supervisor	
Edited	
Coded	
Checked in Office	

Signature of Interviewer:

.....

Date: .....

Printed image digitised by the University of Southampton Library Digitisation Unit

INTRODUCTION:

We are carrying out a survey among people living around here for the Roskill Commission on the Third London Airport. The Commission is concerned to find out about the people who live around each of the possible sites and what they do at work and during their leisure hours. But firstly, could I ask you ....

Q.1. How long have you lived here in ..... (Read out parish from map)?

PROBE to establish whether "born there"

Less than 1 year	1	(39)
1 - 3 years	2	
3 - 5 years	3	
5 - 10 years	4	
10 - 20 years	5	
Over 20 years	6	
Born there/all life	7 Go to Q.4.	

IF NOT BORN IN ..... (PARISH), ASK:

Q.2a. Why did you first come to live here in .....(parish)?

Husband/wife lived here	1	(40)
To be near relatives	2	
Came with parents	3	
Only place could get a house	4	
Liked the house	5	
Moved here because of job	6	
Nearest place to job	7	
Liked the village	8	
Liked the place/area	9	
Like living in the country	0	
Moved for peace and quiet	X	
Other answers (write in)		(41)
.....		
.....		

IF MORE THAN ONE REASON GIVEN, ASK

Q.2b. What was the main reason?

Husband/wife lived here	1	(42)
To be near relatives	2	
Came with parents	3	
Only place could get a house	4	
Liked the house	5	
Moved here because of job	6	
Nearest place to job	7	
Liked the village	8	
Liked the place/area	9	
Like living in the country	0	
Moved for peace and quiet	X	
Other answers (write in)		(43)
.....		
.....		

Q.3. Where did you live before you came to live here in .....(parish)?

Record Actual Name of Place: .....

REFER TO MAP AND CHECK CAREFULLY:

ON SITE:		OFF SITE:		
Adjacent parish	2	Adjacent parish	4	(44)
Non-adjacent parish	3	Non-adjacent parish		
		probe within 10 miles	5	
		for: over 10 miles	6	

Printed image digitised by the University of Southampton Library Digitisation Unit

ASK ALL:

Q.4a. How do you feel about the possibility of having the third London Airport here?
PROBE: Anything else?

.....

.....

.....

.....

.....

Q.4b. Would you be in favour or opposed to having it here?

READ OUT:-
Very much in favour 1
Quite in favour 2
Indifferent 3
Quite opposed 4
Very much opposed 5 (45)

Q.4c. If the third London Airport was sited here and you had to move, would you be .....

READ OUT:-
Very sorry 1
Quite sorry 2
Indifferent 3
Quite pleased 4
Very pleased 5 (46)

Q.4d. If you had to move and you/head of household were offered a job in this district or in another area right away from here, which would you choose?

This district 7
Right away from here 8

Q.5a. Had you considered moving in the year before the airport was suggested, or not?

Yes 1 (47)
No ..... 2 Go to Q.6.
Don't know 3

IF "YES", ASK:

Q.5b. Why were you thinking of moving? (48)

.....

.....

.....

IF MORE THAN ONE REASON GIVEN, ASK:

Q.5c. Which of these is the most important reason? (49)

.....

.....

Q.5d. Had you made any specific plans to move?

Yes 1 (50)
No 2
Don't know 3

Printed image digitised by the University of Southampton Library Digitisation Unit

ASK ALL:

Q.6a. Which relatives do you see most often nowadays?

	(51)		(52)	(51 & 52)
Mother (own or in-law)	1	Father (own or in-law)	1	
Daughter (own or in-law)	2	Son (own or in-law)	2	
Grandmother (own or in-law)	3	Grand-father (own or in-law)	3	
Sister (own or in-law)	4	Brother (own or in-law)	4	
Aunt (own or in-law)	5	Uncle (own or in-law)	5	
Grand-daughter	6	Grandson	6	
Other female relatives	7	Other male relatives	7	
No relatives seen (Go to Q.6d.)	8			

Q.6b. Ask in respect of most frequently seen relative(s) (If two 'sets' of relatives seen equally, check for both)

First Mentioned Relatives:		Second Mentioned Relatives:		
Where do they live?		Where do they live?		
Record actual name of place:		Record actual name of place:		
.....		.....		
REFER TO MAP AND CHECK CAREFULLY.		REFER TO MAP AND CHECK CAREFULLY		
ON SITE:	(53)	ON SITE:	(54)	(53 & 54)
Same parish	1	Same parish	1	
Adjacent parish	2	Adjacent parish	2	
Non-adjacent parish	3	Non-adjacent parish	3	
OFF SITE:		OFF SITE:		
Adjacent parish	4	Adjacent parish	4	
Non-adjacent parish within 10 miles	5	Non-adjacent parish within 10 miles	5	
Non-adjacent parish over 10 miles	6	Non-adjacent parish over 10 miles	6	

Q.6c. How often do you see them?

First Mentioned Relatives:		Second Mentioned Relatives:		
Every day	1 (55)	Every day	1 (56)	(55 & 56)
Every 2 days - 1 x 1 week	2	Every 2 days - 1 x 1 week	2	
Less than 1 x 1 week to 1 x 1 month	3	Less than 1 x 1 week to 1 x 1 month	3	
Less often	4	Less often	4	

ASK ALL:

Q.6d. Have you any relatives (either your own or wife's/husband's) living here in ..... (parish)?

Yes	1	(57)
No	2 Go to Q.7.	

PROBE FOR:

Number of Adult Relatives	(58)	(59)	(58 & 59)
Number of Child Relatives	(60)	(61)	(60 & 61)
Number of Families of Relatives	(62)	(63)	(62 & 63)

If Estimated, tick here ☐

Q.7a. Of the people you are most friendly with, not counting your relatives, how many live here in ..... (parish)?

PROMPT WITH:

All	1	Go to Q.7c.	(64)
Most	2		
Half or less	3	Go to Q.7b.	
None	4		
No friends	5	Go to Q.8a.	

Printed image digitised by the University of Southampton Library Digitisation Unit

ALL SAYING "HALF OR LESS" OR "NONE" AT Q.7a., ASK:

Q.7b. Do most of your friends live within 10 miles of you, or over 10 miles away?

Within 10 miles	1	(65)
Over 10 miles	2	
Both	3	

ASK ALL:

Q.7c. How many of your friends also know each other well?

PROMPT WITH:

None of them	1	(66)
Half or less of them	2	
Most of them	3	
All of them	4	

Q.8a. I would like to ask you some questions about your leisure activities both in this village and outside. I will read out a list to you of the sort of things people belong to. I would like you to tell me if you belong to any of these at present
(Record Below)

Q.8b. Ask for Each Belonged to:

Where abouts is this .....? PROBE for 'last meeting'
REFER TO MAP AND CHECK CAREFULLY.
(Record Below)

Q.8c. When did you last go to a meeting at this .....?

Read out and Probe with the Words in Brackets:	Q.8a. Belong	Q.8a. Not Belong	Q.8b. This Parish	Q.8b. Others On Site	Q.8b. Others Off Site	Q.8c. When Last Went: In Last Week	In Last Month	1 - 6 Months Ago	Longer Ago	
A. Organisations Connected with Your Work										
Trade Union	1	2	3	4	5	6	7	8	9	(67)
Professional Association	1	2	3	4	5	6	7	8	9	(68)
Club to help your workmates or colleagues (Benevolent Society/Sick Club)	1	2	3	4	5	6	7	8	9	(69)
Business Group or Club (Rotary or Chamber of Commerce)	1	2	3	4	5	6	7	8	9	(70)
Social or Sports Club at work	1	2	3	4	5	6	7	8	9	(71)
Anything else connected with work	1	2	3	4	5	6	7	8	9	(72)
B. Public Bodies or Committees										
(A public or statutory committee or board of governors, i.e. national savings, hospital management, school governors)	1	2	3	4	5	6	7	8	9	(73)
C. Organisations Connected with Politics										
A political party or organisation (WE DO NOT WANT TO KNOW WHICH ONE)	1	2	3	4	5	6	7	8	9	(74)
Any other political group	1	2	3	4	5	6	7	8	9	(75)

Printed image digitised by the University of Southampton Library Digitisation Unit

CARD II

Read out and Probe with words in Brackets:	Q.8a. Belong	Q.8a. Not Belong	Q.8b. Others: Same Parish	Q.8b. Others: On Site	Q.8b. Others: Off Site	Q.8c. When Last Went: In Last Week	In Last Month	1 - 6 Months Ago	Longer Ago	
D. Organisations Connected with Education and Training										
Organisation for further education (WEA, Evening Institute)	1	2	3	4	5	6	7	8	9	(39)
Military training group (Territorials, Civil Defence, Cadets, etc.)	1	2	3	4	5	6	7	8	9	(40)
Youth training organisation (Scouts, Guides, Boys or Girls Brigade)	1	2	3	4	5	6	7	8	9	(41)
Nursing or First Aid Organisation (St. Johns Ambulance, Red Cross)	1	2	3	4	5	6	7	8	9	(42)
Anything else giving education or training)	1	2	3	4	5	6	7	8	9	(43)
E. Organisations Connected with the Church or other Religious Groups										
A church club or group (missionary society, church council)	1	2	3	4	5	6	7	8	9	(44)
A social club connected with the Church	1	2	3	4	5	6	7	8	9	(45)
Any other religious organisation or group	1	2	3	4	5	6	7	8	9	(46)
F. Organisation Connected with Welfare										
Charitable organisation (e.g. spastics society)	1	2	3	4	5	6	7	8	9	(47)
Voluntary welfare organisations (WVS, National Council for Social Welfare(	1	2	3	4	5	6	7	8	9	(48)
G. Civic or Community Group										
Tenant's or ratepayers association	1	2	3	4	5	6	7	8	9	(49)
A parent's association (parent/teacher's)	1	2	3	4	5	6	7	8	9	(50)
A resident's club or community centre	1	2	3	4	5	6	7	8	9	(51)
Any other civic group	1	2	3	4	5	6	7	8	9	(52)
H. Any Other Group Connected with Leisure Activities										
A sports club or team (darts, rifle, tennis)	1	2	3	4	5	6	7	8	9	(53)
A club for games (bingo billiards, bridge)	1	2	3	4	5	6	7	8	9	(54)
A dance club	1	2	3	4	5	6	7	8	9	(55)

Printed image digitised by the University of Southampton Library Digitisation Unit

Read out and Probe with words in Brackets:	Q.8a. Belong	Q.8a. Not Belong	Q.8b. Same Parish	Q.8b. On Site	Q.8b. Off Site	Q.8c. When Last Went: In Last Week	In Last Month	1 - 6 Months Ago	Longer Ago	
H. Any other Group Connected with Leisure Activities										
A club for hobbies or pets (gardening, stamps, cats etc.)	1	2	3	4	5	6	7	8	9	(56)
A music, drama, jazz or art club, or anything like that	1	2	3	4	5	6	7	8	9	(57)
A motoring association, car, scooter, or cycling club	1	2	3	4	5	6	7	8	9	(58)
Walking club	1	2	3	4	5	6	7	8	9	(59)
Anything else concerned with leisure activities	1	2	3	4	5	6	7	8	9	(60)
J. Any other Social Club										
A fraternal or ex-serviceman's club (Free-Masons, British Legion)	1	2	3	4	5	6	7	8	9	(61)
A woman's social club (Townswoman's Guild, Woman's Institute)	1	2	3	4	5	6	7	8	9	(62)
A working men's club	1	2	3	4	5	6	7	8	9	(63)
A youth club	1	2	3	4	5	6	7	8	9	(64)
A club for old people	1	2	3	4	5	6	7	8	9	(65)
Any other social club	1	2	3	4	5	6	7	8	9	(66)
K. Anything else not Covered Here										
.....	1	2	3	4	5	6	7	8	9	(67)
.....	1	2	3	4	5	6	7	8	9	(68)
.....	1	2	3	4	5	6	7	8	9	(69)
No clubs or groups at all	1									(70)

L. Do you belong to any organisation connected with the proposed third London Airport or not?

Yes 1
No 2 (71)

CHECK IF ANY CHILDREN UNDER 16 IN FAMILY. IF NOT GO TO INSTRUCTION ABOVE Q.10.

Printed image digitised by the University of Southampton Library Digitisation Unit

CARD III

Q.9. Check for each child under 16 :-

	(39) 1st Child	(40) 2nd Child	(41) 3rd Child	(42) 4th Child	(43) 5th Child	(39 to 43)
AGE OF CHILD:						
0 - 4 years	1	1	1	1	1	
5 - 9 years	2	2	2	2	2	
10 - 11 years	3	3	3	3	3	
12 - 15 years	4	4	4	4	4	
TYPE OF SCHOOL:						
Nursery/play group	5	5	5	5	5	
Primary	6	6	6	6	6	
Secondary	7	7	7	7	7	
Not at school	8	8	8	8	8	
SCHOOL SITUATED:	(44)	(45)	(46)	(47)	(48)	(44 to 48)
On Site - Same parish	1	1	1	1	1	
Adjacent parish	2	2	2	2	2	
Non-Adjacent parish	3	3	3	3	3	
Off Site - Adjacent parish	4	4	4	4	4	
Non-adjacent parish						
probe for: within 10 miles	5	5	5	5	5	
over 10 miles	6	6	6	6	6	

IF INFORMANT NOT THE HOUSEWIFE, GO TO Q.11.

Q.10. (Ask Housewives Only)

Where do you do the bulk of your shopping for food?
(If informant says 'varies' Probe for last occasion)

Record Actual Name of Place: .....

REFER TO MAP AND CHECK CAREFULLY

ON SITE:		OFF SITE:		(49)
Same parish	1	Adjacent parish	4	
Adjacent parish	2	Non-adjacent parish		
Non-adjacent parish	3	probe within 10 miles	5	
Mobile shop/other	7	for: over 10 miles	6	

ASK ALL:

Q.11a, Do you ever visit a public house?

Yes 1 (50)
No ..... 2 Go to Q.12a.

IF "YES", ASK:

Q.11b. Is there a public house which you visit more often than any other?

Yes 1 (51)
No ..... 2 Go to Q.12a.

IF "YES", ASK:

Q.11c. Where is that?

Record Actual Name of Place: .....

REFER TO MAP AND CHECK CAREFULLY.

ON SITE:		OFF SITE:		(52)
Same parish	1	Adjacent parish	4	
Adjacent parish	2	Non-adjacent parish		
Non-adjacent parish	3	probe within 10 miles	5	
		for: over 10 miles	6	

Printed image digitised by the University of Southampton Library Digitisation Unit

ASK ALL:

Q.12a. Do you attend any church or chapel nowadays?

Yes 1 (53)
No ..... 2 Go to Q.13.

IF "YES", ASK:

Q.12b. Where is that?

Record Actual Name of Place: .....

REFER TO MAP AND CHECK CAREFULLY.

ON SITE:		OFF SITE:		
Same parish	1	Adjacent parish	4	(54)
Adjacent parish	2	Non-adjacent parish		
Non-adjacent parish	3	probe within 10 miles	5	
		for: over 10 miles	6	

ASK ALL:

Q.13a. Thinking about last Saturday evening, did you stay at home, or did you go out?

Stayed at home ..... 1 Go to Q.14. (55)
Went out 2

IF "WENT OUT", ASK:

Q.13b. Where did you go?
Probe for place not activity.

Own parish 1 (56)
Other on site 2
Other off site 3

ASK ALL:

Q.14a. What do you most like about living here in ..... (parish)?

Peaceful/quiet 1 (57)
Nice countryside/like the countryside .. 2
Like the village 3
People are friendly/friendly atmosphere 4
Good for the children 5
Clean/healthy 6
Not too far from a town 7
Near my job 8
Like the house 9
Like living here 0
Always lived here X
Others (state) (58)

.....

.....

Q.14b. Is there anything you dislike about living here in ..... (parish)? (59)

.....

..... (60)

.....

Q.15a. Have you previously been interviewed on this subject or not?

Yes 1 (61)
No ..... 2 Close Interview

Q.15b. Do you know who was carrying out that survey? (62)

.....

.....

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix 2: FIELD REPORT (prepared by N.O.P.)

1. Location

Interviewing was confined to those people living on the proposed airport sites and the immediately adjacent areas. The precise areas were defined by the Commission on the Third London Airport, and a list of those parishes sampled at each site is appended.

2. Sampling procedure

Within each site the electorate within each parish was listed and a cumulative total formed. The total number of electors was then divided by the number of household required. This provided the sampling interval. A ramdom number between one and the total number of electors was selected, this random number identifying the starting point. Thereafter the sampling interval was accumulated to that number and the whole area was sampled, each household having an equal chance of selection.

As the population of Foulness Island was small, every household was sampled.

Within each household only one person was selected for interview, using a procedure proposed by Kish, which was as follows. The interviewer obtained a complete list of all those people in the household who were 16 or over. These were written in on a grid, part of which is shown below as an example. The interviewer listed in the left hand part of the grid the members of the household alphabetically from A to Z by surname, and within surname by Christian name. The interviewer then checked on the right hand part of the grid under "Number of People Over 16 In Household" which person was to be interviewed, e.g. if there were four people at the first address, the second person was interviewed, and so on.

Electoral register order	Names of people 16+ in household						Number of people 16+ in household					
	1	3	3	4	5	6+	1	2	3	4	5	6+
1							1	2	2	2	4	4
2							1	1	3	3	5	5
3							1	2	1	4	1	6
.							.	.	.	.	.	.
.							.	.	.	.	.	.
.							.	.	.	.	.	.

The above procedure for selecting the person within a household to be interviewed resulted in a bias towards people from small households. This was weighted for at the processing stage.

Printed image digitised by the University of Southampton Library Digitisation Unit

3. Sample sizes

In Foulness all 92 households were selected. In each of the other three areas, Thurleigh, Cublington and Nuthampstead, 340 households were selected. Contact rates are as follows:

	Foulness		Thurleigh		Nuthampstead		Cublington	
Addresses issued	92		340		340		340	
House empty/ demolished	2		5		12		9	
Total attempted interviews	90		335		328		331	
Reasons for non-contact	%	++	%	++	%	++	%	++
Refused	-	-	2	8	3	10	2	8
On holiday	2	2	8	26	5	16	6	21
Away during survey	1	1	1	2	2	5	2	6
Too ill	-	-	1	3	3	9	1	3
Not available	-	-	2	6	2	6	1	2
Others								
In armed forces/ too senile/too deaf/mentally retarded	3	3	-	-	2	6	+	1
Total interviews obtained	93	84	87	290	84	276	88	290

N.B.

Percentages are rounded to the nearest whole number

++ Actual figures

\+ Less than 0.5%

4. Interviewing

Interviewing was carried out by fully trained N.O.P. Market Research interviewers. All interviewers were briefed by the Research Director in charge of the survey. Four of N.O.P. Market Research's full-time supervisors accompanied interviewers in the field during the course of the survey, and personal checks were made by them on at least half of every interviewer's work. In addition, a 10% postal check was carried out on the remainder. Interviewing was carried out between 8th and 11th August, 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

5. Parishes sampled

Foulness:	Foulness Island
Nuthampstead:	Chrishall
	Elmdon
	Wenden Lofts
	Strethall
	Littlebury
	Wendens Ambo
	Arkesden
	Langley
	Clavering
	Nuthampstead
	Meesden
	Brent Pelham
	Anstey
	Great Hormead
	Wyddial
	Buntingford
	Aspenden
	Westmill
Cublington:	Heath and Reach
	Little Brickhill
	Great Brickhill
	Soulbury
	Stoke Hammond
	Cublington
	Aston Abbotts
	Wing
	Drayton Parsloe
	Stewkley
	Dunton
	Creslow
	Whitchurch
	Hardwick
	Weedon
	Pitchcott
	Quarrendon
	Waddesdon
	Fleet Marsden
Thurleigh:	Southoe and Midloe
	Staploe
	Great Staughton
	Hail Weston
	Little Staughton
	Bolnhurst and Keyso
	Colmworth
	Risely
	Thurleigh
	Sharnbrook
	Bletsoe
	Milton Ernest
	Odell
	Felmersham
	Pavenham
	Harrold
	Carlton and Chellington

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix 3: COMPARISONS WITH 1966 CENSUS

The 1966 Census was based upon a 10% sample. To assume common varience between our four samples may well be illegitimate but it is even more illegitimate to assume common varience between our samples and the sample census - for example, one could not refuse the census enumerator as one could one of our interviewers. The second point is that our surveys were carried out three and a half years after the census so a decision must be made whether we are to use the census to validate our sample in some way or to see what changes have occurred in the four areas recently. It is difficult to see how comparisons with the census can be used honestly in both ways - compounding sampling errors and the passage of time since the census makes direct comparisons doubly hazardous.

The third point is that on Foulness only 21 people were enumerated by the 1966 census; this is far too few to allow comparisons to be made. Whilst we have enumeration district (E.D.) data available to us for exactly the same parishes at Thurleigh and Nuthampstead as we have our own survey data, at Cublington we surveyed in two more parishes (Waddesdon and Fleet Marsden) than we have E.D. data for. This oversight was not realised unfortunately until it was too late to rectify.

We therefore only present data from the 1966 sample census for the three inland sites and for the first and second reasons given above are hesitant to directly compare our data with it. Also the census data are not always in the form that allows direct comparisons to be made, e.g. age categories are different.

Total population

	Census data (1966)	N.O.P. data (1969)
Thurleigh	927(0)	9160
Nuthampstead	692(0)	6550
Cublington	758(0)	7560
Foulness	21(0)	248

Age	0-4	5-14	15-19	20-24	25-29	30-44	54-59	60-64	65+	%	N
Thurleigh	8	14	9	8	6	18	19	5	13	100	927
Nuthampstead	9	14	9	5	4	20	19	5	16	100	692
Cublington	6	15	9	7	6	20	19	3	15	100	758

Printed image digitised by the University of Southampton Library Digitisation Unit

Economic activity: industry

% of economically active males (1966)

	Agriculture	Mining	Manufacturing	Transport	Distribution	National and local government.	%	N
Thurleigh	27	*	39	2	25	7	100	297(0)
Nuthampstead	25	-	31	3	37	4	100	214(0)
Cublington	19	2	40	9	23	6	100	252(0)

N.B. this table is for men, our table is for all respondents who were working (of both sexes).

Occupation and social class

	Registrar-Generals Socio-economic groups*							
	3,4	1,2,13	8,9,12,14	5,6	7,10,15	11	16,17	%
Thurleigh	7	12	34	13	22	6	6	100
Nuthampstead	8	16	30	10	28	8	-	100
Cublington	5	14	38	9	22	10	2	100

N.B. this table is for economically active males

Registrar-Generals socio-economic groups. 1: Employers and Managers in large establishments, 2: Employers and Managers in small establishments, 3: Professional workers - self-employed, 4: Professional workers - employees, 5: Intermediate non-manual workers, 6: Junior non-manual workers, 7: Personal service workers, 8: Foremen and supervisors - manual, 9: Skilled manual workers, 10: Semi-skilled manual workers, 11: Unskilled manual workers, 12: Own account workers (other than professional), 13: Farmers - employers and managers, 14: Farmers - own account, 15: Agricultural workers, 16: Members of armed forces, 17: Unclassifiable.)

Social class

Our 'market research' social classes are <u>not</u> directly comparable with the Registrar-Generals however but are useful as they allow us to make comparisons between the sites. (This table is for economically active males - our social class table is for households).

	Registrar- Generals Social Classes				
	I	II	III	IV	V
Thurleigh	7	23	33	25	7
Nuthampstead	8	21	33	29	8
Cublington	5	22	38	23	10

(Registrar-Generals Social Classes. I: Professional (etc.) occupations, II: Intermediate occupations, III: Skilled occupations, IV: Partly skilled occupations, V: Unskilled occupations.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Though neither our social class data nor the census are statistically significantly different between sites both tend in the same direction.

Tenure

	Owner occupied	Council House	Private Rent	Other
Thurleigh	53	14	18	15
Nuthampstead	48	24	13	15
Cublington	38	31	19	13

(N.B. our tenure table is presented in a slightly different form)

The rank ordering of the sites as regards the proportion of owner-occupiers and council house tenants from the census data and our data is the same.

Mobility

The census has data about the movement of individuals over Local Authority boundaries and within Local Authority boundaries. (In these cases always Rural Districts). No direct comparison is possible with our data on length of residence because this is not collected by the Registrar-General. However, the census data does allow us again to rank order the inland sites by the stability of their populations.

	% of total population			
	moving within L.A. area during last year	moving within L.A. area dr. last 5 years	moving into L.A. area dr. last year	moving into L.A. area dr. last 5 years
Thurleigh	3	9	10	25
Nuthampstead	5	12	9	20
Cublington	6	13	7	22

If the proportion moving into the L.A. area during the last year and the last 5 years is considered as one index of stability, Thurleigh is the least stable of the inland sites - also a lower proportion at this site have moved within that L.A. than at the other four sites. So at both Nuthampstead and Cublington those who have moved, are less likely to have moved from outside the L.A. area and more likely to have moved within the L.A. area than is the case at Thurleigh.

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix 4: SOCIAL CLASS DEFINITIONS

This appendix contains a brief list of social class definitions as used by the I.P.A. These groups are standard on all surveys carried out by NOP Market Research Ltd.

	SOCIAL CLASS	OCCUPATION OF HEAD OF HOUSEHOLD
Non-manual	A Upper middle class	Higher managerial, administrative or professional
	B Middle class	Intermediate managerial, administrative or professional
	C1 Lower middle class	Supervisory or clerical and junior managerial, administrative or professional
Manual	C2 Skilled working class	Skilled manual workers
	D Working class	Semi and unskilled manual workers
	E	State pensioners, etc., with no other earner
		Those at the lowest levels of subsistence

UNIVERSITY LIBRARY CAMBRIDGE
OP
5 MR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

C O N T E N T S

		Page
1.	INTRODUCTION	1
2.	SUMMARY OF SALIENT FINDINGS	5
3.	COMPARATIVE ANALYSIS OF THE FOUR SITES	7
	A: Socio-economic profiles	7
	(a) demographic profiles	7
	(b) residence	9
	(c) industrial and occupational profiles	22
	(d) location of work and shopping	28
	B: Patterns of social relations	29
	(a) kinship	30
	(b) friendship	45
	C: Participation in voluntary associations/ organisations	59
	D: Attitudes to the airport and attachment to area	75
APPENDICES		
1.	Questionnaire	85
2.	Field report (prepared by N.O.P.)	95
3.	Comparisons with 1966 Census	98
4.	Definitions of Social Class (prepared by N.O.P.)	101

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLES

			Page
A:	1	Sex and age	7
	2	Family life cycle	8
	3	Tenure	8
	4	Length of residence	10
	5	Length of residence	10
	6	Previous place of residence	10
	7	Reasons for residence in the locality	13
	8	Likes about the area	16
	9	Dislikes about the area	17
	10	Length of residence by social class	18
	11	Length of residence by social class	19
	12	Length of residence by industry	20
	13	Previous consideration of movement	21
	14	Specific plans to move	21
	15	Economic activity (and proportion in paid employment)	21
	16	Industrial categories	23
	17	Occupation	23
	18	Social Class	24
	19	Income	24
	20	Age finished full-time education	24
	21(i)	Location of work	27
	21(ii)	Location of work by length of residence	29
	22	Location of shopping	27
B:	1	Per cent with relatives living in the same parish	30
	2	Number of families of relatives in the same parish	30
	3	Mean number of families of relatives in the same parish per respondent with such families	31
	4	Mean number of families of relatives in the same parish per respondent	32
	5	Number of adult relatives in the same parish	32
	6	Mean number of adult relatives in the same parish per respondent with such relatives	33
	7	Mean number of adult relatives in the same parish per respondent	33
	8	Child relatives in the same parish	34
	9	Mean number of child relatives in the same parish per respondent with such relatives	34
	10	Mean number of child relatives in the same parish per respondent	34
	11	Indices of residence of families of relatives in the same parish by length of residence	36
	12	Indices of residence of families of relatives in the same parish by social class	37
	13	Indices of residence of families of relatives in the same parish by collapsed categories of social class	38
	14	Indices of residence of families of relatives in the same parish by tenure	40
	15	Respondents seeing no relatives	40
	16	Per cent naming particular relatives as 'seen most often'	41
	17	Mean number of kin contacts per respondent	41
	18	Location of most frequently seen relative	42
	19	Location of most frequently mentioned relative	43
	20	Frequency of contact with first named relative	43
	21	Residence and frequency of contact with most frequently seen relative	44

Printed image digitised by the University of Southampton Library Digitisation Unit

			Page
B:	22	Location by frequency of contact for the most frequently seen relative (raw scores)	45
	23	Localisation of friendships	46
	24	Friends in the same parish	46
	25	Localisation of friendship	46
	26	Friendship network	47
	27	Friends in parish by friendship network	48
	28	Friendship network for those with all or most of their friends in the parish or within 10 miles	49
	29	Friends in parish by length of residence	50
	30	Friendship network by length of residence	51
	31	Friends in parish by social class	52
	32	Friendship network by social class	53
	33	Friends in parish by tenure	54
	34	Friendship network by tenure	55
	35	Friends in parish by (a) Sex (b) Age (c) Stage of family life cycle	57
	36	Friendship network by (a) Sex (b) Age (c) Stage of family life cycle	58
C:	1	Membership of organisations connected with work	60
	2	Membership of organisations connected with work on and off site	60
	3	Membership of public bodies and committees on and off site	61
	4	Membership of organisations connected with politics on and off site	62
	5	Membership of organisations connected with education and training	63
	6	Membership of organisations connected with Church or other religious group	63
	7	Membership of organisations connected with welfare	64
	8	Membership of civic or community groups	64
	9	Membership of other groups connected with leisure activity	65
	10	Membership of any other social club	66
	11	Membership of any other organisations	66
	12	Membership of all voluntary organisations	67
	13	Estimated total membership of voluntary organisations	67
	14	Mean number of organisations belonged to (from a "Community Attitude Survey")	68
	15	Church attendance	69
	16	Church attendance against length of residence	69
	17	Church attendance against age	70
	18	Previous saturday evening activity	70
	19	Membership of the airport resistance organisation	71
	20	Membership of airport resistance organisation against length of residence	72
	21	Membership of resistance organisation against tenure	73
	22	Membership of airport resistance organisation against relatives and friends in the parish	74
D:	1	Attitude to airport siting	75
	2	Reactions to having to move	76
	3	Attitude to airport against length of residence	77
	4	Attitude to airport against tenure	78
	5	Attachment to airport against tenure	79
	6	Attachment to area against age	80
	7	Attitude to airport against friends in parish	82
	8	Attitude to airport against relatives in parish	83
	9	Attitude to airport against membership of voluntary organisations	84

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings volume VIII part 2, section 4

Stage III: Research and Investigation

Specially commissioned studies

LONDON
HER MAJESTY'S STATIONERY OFFICE
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed in England for Her Majesty's Stationery Office by
Croform Techniques Ltd., London E.C.1.

Dd. 501460 K 16 1/70

SBN 11 510169 1

Printed image digitised by the University of Southampton Library Digitisation Unit

DISRUPTION OF COMMUNITY LIFE: A COMPARATIVE STUDY OF FOULNESS, NUTHAMPSTEAD, THURLEIGH AND CUBLINGTON

A Report Prepared for the Commission on the Third London Airport

by

Peter Abell

Colin Bell

Patrick Doreian

Department of Sociology
University of Essex

November 1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Foreword by the Chairman

The Hon. Mr. Justice Roskill

Stage III of the Commission's work has consisted of investigation and research into the timing of the need for a third London airport and into matters relevant to the choice to be made between the short-listed sites. The work has been carried out by the Commission's Research Team with the help of consultants, government departments and others.

Studies undertaken by consultants, government departments and others form volume VIII of the Commission's *Papers and Proceedings*. Part I of volume VIII contains the study by the consultants on urbanisation. Part 2 contains the remainder of these studies and is divided into four sections.

The advice given by the Commission's consultants, by government departments and by others in these studies has been reflected in the work of the Research Team which forms volume VII of the Commission's *Papers and Proceedings*. Nevertheless, this in no way implies that the Commission has accepted that advice since it will enter upon the Stage V hearings with an open mind about the conclusions to be drawn from the work carried out during Stage III. Similarly, the Commission wishes it to be understood that, in publishing these studies, it is expressing no view on the merits of the advice which they contain; this is for examination during Stage V.

EUSTACE ROSKILL

Templar House,
81-87 High Holborn,
LONDON, W.C.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

STUDY 1

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

LIVESEY & HENDERSON

Consulting Engineers

1 Finsbury Square
London EC2

Telephone: 01–638 0441
Cables:
Livesey London EC2

Partners
Neil B Henderson CEng
FICE FIMechE
Andrew B Henderson MA CEng
FICE FIMechE
JA Le Pivert BSc CEng FICE FIArb
Livesey & Henderson Associates Ltd
Associates
R Monkman CEng MIMechE
AJ Syms CEng MICE FIStructE
Consultants
D McClure Fisher FRICS FIArb
ET Williams CMG CEng MICE
Secretary
IN Edge-Partington

ABH/B

26 November 1969.

The Secretary
Commission on the Third London Airport,
Templar House,
81-87 High Holborn,
London, W.C.1.

Dear Sir,

Third London Airport - Surface Access

With reference to your letter of 6th June 1969, I have much pleasure in enclosing our Report on Hovertrains.

You will note that the aspects mentioned in your letter have been covered as far as possible within the present knowledge of these various vehicles which are within, or virtually still within, the design stages.

If more accurate and detailed information is required I believe that a study of an actual route by an independent organisation is required.

Yours Faithfully

Andrew Henderson

Printed image digitised by the University of Southampton Library Digitisation Unit

DEFINITIONS

Throughout this report the following definitions are used:-

(a) Hovertrain - indicates any of the three types of train referred to in (b), (c) and (d) below.

(b) Tracked Hovercraft - refers to equipment designed by Tracked Hovercraft Ltd. of U.K.

(c) Aerotrain - refers to equipment designed by La Société l'"Aérotrain" of France.

(d) Urbatrain - refers to equipment designed by Compagnie d'énergétique linéaire of France.

Printed image digitised by the University of Southampton Library Digitisation Unit

TERMS OF REFERENCE

The Terms of Reference given for the Hover-train and any other partially similar systems in your letter dated 6th June 1969 are as follows:-

(i) State of Development - if it is unlikely to allow an operational system to be implemented by 1990, no further work is required.

(ii) Effect on alignment of new routes. It is not intended that an actual route shall be determined but only any major alteration in the constraints applicable to A. P. T. system routes selected and the approximate effect on infrastructure cost - will it increase/decrease by 20 per cent, 40 per cent, 60 per cent, say.

(iii) Effect on operating costs (including rolling stock), travel time and fares compared with A. P. T. It would appear unlikely that the potential travel time savings would cover any substantial increase of operating cost and if the former can be determined it may limit the amount of work required on the latter.

(iv) Any significant general effect on distribution problems within the Airport or at the London terminal.

(v) Comparison of noise effect through built-up areas.

Printed image digitised by the University of Southampton Library Digitisation Unit

We have investigated the developments in the area of "Air-Cushion" type transport systems and we find that there are three separate designs under advanced study of which two are running over limited length test tracks and the third is expected to run tests during 1970. These three are:-

(i) URBATRAIN

(ii) AEROTRAIN

(iii) TRACKED HOVERCRAFT

The first two mentioned are of French design and development and both have been constructed in prototype form and are running on limited lengths of experimental track.

(i) URBATRAIN

This train is running experimentally over a track of about 100 metres in length and can be run, at present, in the form of one or two units.

The general design is a suspended monorail in some general ways similar to the "Safege" system and by definition can be described as a true monorail.

Briefly the track which requires to be suspended from an overhead structure consists of a metal box section and in the lower half of the box there is a lift chamber with horizontal track members for the lift and vertical guide member. In the centre of the lower half of the box section there is the reaction rail for the linear motor.

The propulsion of the passenger units is by linear electric motors which are mounted in the suspension unit.

The developers of the system stated that they did not intend to develop this system for high speed in the near future,

Printed image digitised by the University of Southampton Library Digitisation Unit

if ever. Their reasons for this were that they considered that there was a very large market for lightweight suburban transit systems, there were comparatively few major developments necessary prior to constructing a commercial system if the speed parameter was kept within 0 to 120 k.p.h., linear motors of sufficient power for low speeds were available and, finally, development costs rise rapidly with the speed.

We therefore do not consider that this transit system need be considered further in any detail but certain points noted may be of interest in other developments.

Despite the short length of track the acceleration was smooth and rapid as was also the deceleration. The reaction rail for the linear motor was in short lengths and quite considerable noise was noticeable at the joints reminiscent of the noise from rail joints on an orthodox railway. The overall noise was not great and it was not easy to distinguish between the noise from the linear motor and noise from air escaping from the suction-suspension system.

Over the limited length of available track the noise was lower than would be expected with a wheeled vehicle.

(ii) AEROTRAIN

The Aerotrain with its track has been developed considerably to a greater degree than the Urbatrain. Near Orleans 12 km. of track has been constructed and an eighty-seat passenger unit is under intensive development.

The Aerotrain train runs on an inverted "T" section post-tensioned concrete track which is pre-cast in units of 20 m. in length and six units are assembled together and post-tensioned to give units 120 metres in length. Track already constructed was built on

Printed image digitised by the University of Southampton Library Digitisation Unit

concrete piers about 7 metres high; the track has been laid with easy curves and slight grades in order to ascertain the effect on the Aerotrain of these changes in conditions.

The Aerotrain straddles the leg of the inverted concrete "T" and is guided by air pressure on either side of the leg of the "T" and the lift is obtained by air pressure on the horizontal surfaces of the cross-bar of the inverted "T".

The Aerotrain running on this track is a single unit of eighty seats equipped with three gas turbines, one to provide lift and two to a propellor at the back for propulsion.

The braking of the unit is fourfold, firstly by reversing the pitch of the propellor which brings the speed from the higher range rapidly down about 30 k.p.h., secondly clasp brakes with special hardwood pads are then applied to the leg of the inverted "T" section. For emergencies there is a third system of two parachutes and finally, in extreme emergency, the lift air can be cut and the unit will slide forward on skids already provided on the lower surfaces.

In the trial runs on which we were present a speed of 260 k.p.h. was reached in a short time, the acceleration and deceleration from 0 - 260 - 0 was easily accomplished in a 6 km. stretch of track without resort to very heavy or uncomfortable braking.

Several features were very noticeable, firstly the smoothness of both the acceleration and deceleration of the Aerotrain was deceptive and it was not easy to realise that such speeds had been reached and lost in short periods of time. The riding at 260 k.p.h. was exceptionally smooth and the vertical and horizontal movements and accelerations were of a low order. In fact it was easily possible to walk from one end of the unit to the other at the top speed achieved without any form of handhold.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inside the unit the noise level never reached objectionable levels but unfortunately the opportunity to judge the noise from outside the vehicle did not occur.

Future developments were discussed with the promoters of the Aerotrain and certain clear pictures emerged as to the suitability of the system as now designed and expected to be developed.

With propellor propulsion it will not be possible to run in multiple unit and therefore, in order to satisfy the high passenger density for the Third London Airport link it will be necessary to run units at intervals as close as every thirty seconds. Despite the development of modern electronics and other safety devices it is considered that such close intervals between very high speed units would not be acceptable for public passenger transport.

From the reaction of the general public watching the trials and the fact that there are three gas turbines driving one propellor and various other auxiliaries, including the air cushions, we consider that the noise level of the Aerotrain as now built would not be acceptable if running close to blocks of flats and houses.

We were also informed and shown plans and photographs of an Aerotrain fitted with a linear electric motor for propulsion and this design is being developed for suburban service with comparatively low speeds.

We see no reason why at a later stage of development a linear motor or a series of linear electric motors should not be fitted and a performance obtained virtually similar to that anticipated for the Tracked Hovercraft discussed later in this report.

Printed image digitised by the University of Southampton Library Digitisation Unit

Our general broad conclusions are that: -

(i) The Urbatrain is not being developed for high speeds and therefore for a link from Terminus to Airport has no advantage over methods of transportation already developed and proven.

(ii) The Aerotrain is being developed for high speed transportation and where this is required the development so far is promising. We do not, however, consider that gas turbine propulsion with propellor is suitable for Terminus to Airport transportation due to noise and difficulty in running multiple unit vehicles. If linear electric motors of large power are fitted we consider that in the correct circumstances the Aerotrain or similar air-cushioned vehicle has a future for services to particular airport sites.

(iii) TRACKED HOVERCRAFT

The Tracked Hovercraft is a U. K. developement based on the master patents of the original Hovercraft. So far no large scale prototype has been constructed; during 1970 a test track of about 5 kms. in length and the necessary vehicles will be constructed in order that the future of such vehicles can be fully evaluated and the many technical problems solved.

The Tracked Hovercraft will run on a hollow concrete box approximately 1. 8 metres deep and 1. 4 metres wide, the lift pad will be above the top of the concrete box and the guidance pads will lie on either side. The propulsion will be by linear electric motor and the reaction rail will lie in the top of the concrete box.

Printed image digitised by the University of Southampton Library Digitisation Unit

From the basic principles we see no reason why the Tracked Hovercraft should not be developed for use as a commercial passenger carrying rapid transit system. It does, however, seem quite clear that for the Tracked Hovercraft - as for the Aerotrain and Urbatrain - a very great deal of development work is required in order to proceed from the basic prototype to an accepted public-carrying transport system.

Not only do the basic and accepted Hovercraft systems require to be developed but in order to cater for very high speed many safety devices will have to be developed in order to ensure that every advantage can be taken of a new mode of transport. On the simpler side, such as the track, a number of developments are required which, though soluble, may take time before the developments reach a practical stage and the best and economic solutions to the problems are satisfactorily evaluated.

As is said in the Tracked Hovercraft pamphlet "None of the components of the system is new in itself. What is novel is the manner in which the components have been combined."

We are in agreement with this statement as a generality but have found by experience that components new to a system very often give troubles which have not previously been experienced and therefore further development work is necessary.

The details we are considering include crossings from one track to another, servicing facilities, turning of trains, wear of various parts and a number of similar problems.

The linear motor required will be of a power of more than 2000 H.P. and will be considerably larger than any yet built for a similar work. There is, however, considerable knowledge of the theory of linear motors and some practical knowledge of smaller sizes and we therefore do not consider that any major difficulty will

Printed image digitised by the University of Southampton Library Digitisation Unit

arise in the development period, though we consider that large scale experimental work will be required in order to solve satisfactorily the practical tolerances in the air gap between the motor and reaction rail.

TERMS OF REFERENCE

(i) State of Development - if it is unlikely to allow an operational system to be implemented by 1990, no further work is required.

We have considered this most carefully and are of the opinion that this is largely a matter of development of existing equipment and providing sufficient funds are available we see no difficulty in Hovertrains for high speed links between Terminal and Airport reaching operational status by 1990. To confirm our views we would mention as examples the times taken to develop new aeroplanes which are in most ways more complex than Tracked Hovercraft.

(ii) Effect on alignment of new routes. It is not intended that an actual route shall be determined but only any major alteration in the constraints applicable to A. P. T. system routes selected and the approximate effect on infrastructure cost - will it increase/decrease by 20% 40% 60% say.

A comparison of the A. P. T. train with its tilting body and the Tracked Hovercraft, with the information at present available in terms of infrastructure cost associated with alignment is briefly as follows:

Assuming the same maximum speed range for both types of transport, the A.P. T. train because of its tilting body will allow for more flexible design of alignment and therefore reduced infrastructure costs.

Printed image digitised by the University of Southampton Library Digitisation Unit

The Tracked Hovercraft has a small vertical adjustment in the length of the supports that would enable gradients to be reduced in particular conditions or curves flattened marginally.

Should a tilting body be introduced into the Tracked Hovercraft design, which is not at present envisaged, a slight advantage would lie with the Tracked Hovercraft.

The permitted limits of superelevation, and out of balance "G" forces of either of the two types of transport serving a third London Airport by an exclusive link could have an effect on the flexibility of the design of the alignment. The Tracked Hovercraft which straddles a concrete box beam is basically more stable than the duo rail train, and may be allowed higher limits giving added flexibility. However one drawback of this design is that the minimum radius of curvature around which it will travel will require to be much flatter than the radius around which an A. P. T. train will travel due to its overall length and side air cushion clearance. Construction in built up areas would present considerable problems.

The higher speeds envisaged by the Tracked Hovercraft would reduce the flexibility of the design of the alignment in terms of both horizontal and vertical curves and thus increase infrastructure costs.

One final factor that must affect infrastructure costs is the construction of the concrete box beam track to meet the requirements of horizontal curves and transitions, vertical curves, superelevation and the variation of the latter through the transition. A combination of all these requirements could place restricting standards on the alignment to meet constructional feasibility and raise costs.

In view of the fact that the actual route has not been determined it is difficult to put an accurate cost difference to the two types of transport system, but from the foregoing it would appear to be in the range of 20% - 40% greater for the Tracked Hovercraft.

Printed image digitised by the University of Southampton Library Digitisation Unit

(iii) Effect on running costs (including rolling stock), travel time and fares compared with A. P. T. It would appear unlikely that the potential travel time savings would cover any substantial increase of operating cost and if the former can be determined, it may limit the amount of work on the latter.

We have not considered fares as these depend on many commercial considerations and, in practice, often bear little relation to the costs.

It appears meaningful to classify costs under two categories, fixed and variable, the former relating to overhead charges such as depreciation and amortisation of the route infra-structure and the latter varying in approximately linear relationship to the number of passenger journeys made.

In order to obtain an idea of costs for the Tracked Hovercraft, the information put forward by both the British builders of this sytem and the information supplied by the builders of the French Aerotrain was compared and assessed and generally it was possible to reach a reasonable agreement between the different sets of figures.

In this study of available information based on both types of hovertrain the track construction costs are said to be those actually negotiated with firms who have tendered for the construction of the track.

This study suggests that for a route of 50 miles in length with 6 miles in areas where the speed will be restricted due to the alignment going through existing built-up areas the orders of the costs covering the periods up to 1990 are as follows:-

Printed image digitised by the University of Southampton Library Digitisation Unit

Type of Traction	Max. Running Speed m.p.h.	Journey Time minutes	Fixed Costs £m.p.a.	Variable Cost in pence per passenger mile
Tracked Hovercraft	250	22	4.5	2.30
Tracked Hovercraft	200	25	4.0	2.00
A.P.T.	150	30	4.2	1.25/1.50
A.P.T.	125	35	4.0	1.00/1.25

The estimated costs and journey times given in the table are intended to relate to alternative new, exclusive routes for Tracked Hovercraft and A.P.T. over a distance of 50 miles between a London Terminal and the Airport. A common basis for comparison of the two transport forms is created by the assumption that a new route would be constructed for either form of transport, and that for practical reasons this would follow a speed restricted alignment over the last few miles into the London Terminal. In practice it might be possible for A.P.T. services to share tracks with other B.R. trains and for hovercraft routes to be constructed along existing railway alignments. Evidence from the Tracked Hovercraft and rail link reports to the Commission suggest that the infrastructure costs of an exclusive 50-mile airport link as described would be about £30 million both for a 125 m.p.h. A.P.T. link and for a 200 m.p.h. hovercraft link, with corresponding annual costs up to 1990 of about £4.0 million per annum. It is estimated that increases in running speed to 150 m.p.h. and 250 m.p.h. for the two forms of traction would raise the annual costs to £4.2 million and £4.5 million per annum respectively.

Whilst not assessing the maintenance costs of the rail track required for A.P.T. and the maintenance costs of the concrete box section track for the Tracked Hovercraft, we have examined the problem generally.

We consider that with the light axle-loading and special steering of the A.P.T. vehicles the rail wear will be less than

Printed image digitised by the University of Southampton Library Digitisation Unit

on existing duo-rail. This will be particularly pertinent on curves where the A. P. T. has been designed to avoid contact between the flange and the rail.

With Tracked Hovercraft due to the air-pressure system there is no physical contact between the train and the concrete track and therefore any wear can be considered negligible.

It is therefore considered that the life of A. P. T. track will be 25-30 years and hovertrack about 40 years.

> Note: In the case of Tracked Hovercraft costs of right of way, wayleave and disturbance are omitted.
>
> It is contended that these costs will be small in proportion to the totals given above, but we feel that the likely actual figure cannot be assessed unless a route is studied in detail.

(iv) Any significant effect on the distribution problems within the Airport or at the London terminal.

Without detailed examination of actual routes only the broadest effects on distribution problems of one type of transport as compared to another can be made.

Due to the less flexible requirements of the Tracked Hovercraft, partly because of its higher speed and partly due to the secondary suspension of the A. P. T. it is clear that the layout and in turn the entry of trains into the Airport and terminal areas will be more restricted and therefore the nearest approach to ideal layout may not be achieved.

We do not consider that the restrictions will be serious at the Airport end and providing the full Tracked Hovercraft design parameters are considered when the overall layout of the Airport is planned. We do generally consider that there is considerable likelihood that the area over which the Tracked Hovercraft will run will require to be greater than that for the A. P. T. The general reasoning

Printed image digitised by the University of Southampton Library Digitisation Unit

being that for slow speeds the A. P. T. can use normal points and crossings whereas for any form of monorail there has in the past been considerable difficulty in achieving the same flexibility of movement as on a duo-rail.

At the London terminal considerable difficulties are anticipated due to the restrictions on the curvature due to the length of the vehicles. The fact that the Tracked Hovercraft will most probably be carried on an overhead structure could be allowed for in the design of the terminal. It is not anticipated that in actual operation of the vehicles there should be difficulties in running the trains in either direction, as the linear propulsion units are unaffected by the direction of travel.

We therefore consider that at the Airport the distribution problem will be virtually similar whether for Tracked Hovercraft or A. P. T.

At the terminal we consider that due to the restrictions on curvature the ideal layout may not be achieved. Until a detailed study over selected routes is carried out, it cannot be positively stated whether the effect on distribution problems within the London terminal will be of sufficient magnitude to be of noticeable consequence.

(v) Comparison of noise effect through built up areas.

This problem is one that can only be examined from a general theoretical viewpoint, as until large linear motors have been built and have run at the speeds being discussed their noise potential can only be guessed at by interpolation from smaller units at much lower speeds.

The other noise making factors on the Tracked Hovercraft are the main lift fan and the escape of air between the skirt and the track. Once again the noise potential can only be guessed at.

On A. P. T. if propulsion system is electric and the track all welded the noise can be considered to be little, if any,

Printed image digitised by the University of Southampton Library Digitisation Unit

greater than for the latest electric stock in use on the recently electrified main lines.

In view of the fact that with the Tracked Hovercraft there is no metal to metal contact, as the wheel to rail, and no actual physical contact between the linear motor and the reaction rail it is fair to assume that the Tracked Hovertrain will be less noisy than A.P.T.

The noise of the modern electric trains is acceptable through built up areas and in view of the fact that neither the Tracked Hovercraft nor the A.P.T. will be running at top speeds in these areas due to curvature and other speed restricting factors it can be assumed that the noise of Tracked Hovertrain and the electrically propelled A.P.T. will not be greater than that of the present design of electric stock on all welded rail in built up areas, and the Tracked Hovercraft will be less noisy than A.P.T.

We must, however, point out that we do not consider that any very high speed vehicle can run at its maximum speed through built-up areas adjacent to buildings, not only due to the fact that the greater the speed the greater the noise, but also due to the shock effects of the high pressure generatred by any form of vehicle at high speed.

We confirm that we consider that Tracked Hovercraft will be generally quieter than modern duo-rail stock on continuously welded rail, at equal speeds and therefore the Tracked Hovercraft can also run under conditions where electric duo-rail stock is acceptable.

Printed image digitised by the University of Southampton Library Digitisation Unit

CONCLUSIONS

(i) That the Tracked Hovercraft or Aerotrain (if fitted with Linear Electric Motors) can be developed sufficiently to be operational by 1990 but the Urbatrain is unlikely to be available for high speed travel in the foreseeable future.

(ii) That A. P. T. facilitates slightly the alignment of new or existing rails as compared to the Tracked Hovercraft as the former can traverse sharper curves.

(iii) That the operating costs of A. P. T. and Tracked Hovercraft, within their own speed ranges, are not too dissimilar. This assumes Tracked Hovercraft are running at higher speeds than A. P. T.

(iv) That Tracked Hovercraft will make the layout both at terminal and airport less flexible to some small extent due to the flatter curves it can traverse.

(v) That Tracked Hovercraft will make less noise than A. P. T. in built-up and country areas and the restrictions on the use of either of these trains in built-up areas will be due to many factors other than noise.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

STUDY 2

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

FEASIBILITY STUDY ON HOUSEBUILDING OUTPUT RATES FOR A THIRD LONDON AIRPORT

Report by the
National Building Agency
for the Commission on the
Third London Airport

December 1969

Printed image digitised by the University of Southampton Library Digitisation Unit

CONTENTS

SECTION			Page
I	TERMS OF REFERENCE - INTRODUCTION.		3
II	EXPERIENCE TO DATE OF BUILDING 1,000 DWELLINGS OR MORE.		4
III	HOUSING OUTPUT LEVELS - CONCLUSIONS AND RECOMMENDATIONS.		6
IV	OTHER FACTORS EXAMINED OR ASSUMED:		10
	(i)	Social and economic constraints.	
	(ii)	Professional staff resources.	
	(iii)	Materials.	
	(iv)	Housing standards, densities and forms of development.	

APPENDICES

A	HOUSING OUTPUTS BY LOCAL AUTHORITIES AND NEW TOWNS.		12
B	PRODUCTIVITY IN HOUSE-BUILDING - STATISTICS.		15
C	SITE LABOUR OUTPUTS FOR DIFFERENT FORMS OF CONSTRUCTION.		17
D	RESOURCES IN THE FOUR SUB-REGIONS.		18

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION I.

Terms of Reference

The report on the feasibility of achieving certain output rates of housing which might be generated by the third London Airport, taking into account the experience of public and private developers in Britain to date, and also any changes in technology and building organisation which may occur in the next quarter century; to comment also on sub-regional variations which might arise in the four areas under consideration.

Introduction

The terms of reference were arrived at as a result of discussion between officers of the Commission and of the National Building Agency. The study examines the possibility of achieving volumes of housing output from 2,500 to 5,000 houses a year between 1975 and 2000. It is assumed that building will start in 1975. Possible output figures will be reviewed at five-yearly intervals thereafter. These volumes of housing are regarded as over and above that generated by other local requirements. Certain sub-regional differences are examined in Appendix D.

In the short time available, the study is of necessity based on information currently available within the NBA or on data which is readily accessible. The views of certain major contractors have also been canvassed. It is considered, however, that the shortness of time available is not likely to invalidate the broad outline of the conclusions reached.

The views expressed in the report, unless otherwise stated, are those of the National Building Agency and do not represent in any way views or information attributable to the Ministry of Housing and Local Government. The report has been prepared by staff of the NBA - principally by John Drage, FIStructE, AMBIM, Simon Hobson, BSc.Econ., Ken Price, AIOB, under the direction of Cleeve Barr, FRIBA. FIOB, Managing Director, and Dr. W. Chan, FICE., FIStructE, Chief Executive, Operational Division.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION II

Experience to date in building 1000 dwellings a year

It will be noted from Appendix A that an output of 2500 to 5000 new houses a year is higher than that so far achieved by any of the new town corporations individually. It is certainly higher than that achieved in any comparable area by private builders operating under normal market conditions. It is also higher than that reached to date by most local housing authorities in the country except in major conurbations. We have therefore examined briefly what methods have been adopted in regions with high housing output and what constraints have operated in other areas.

By itself an additional output of 5000 dwellings a year would be a small item in the nation's total housing production - say 1.3% of annual completions of dwellings in England and Wales. In the last few years five major contractors have achieved outputs well over 2000 dwellings a year each in England and Wales and twelve have achieved between 1000 and 2000 dwellings a year each. In the private sector six firms have achieved over 1000 dwellings a year and seventeen between 500 and 1000 dwellings.

It can be seen therefore that the country has both the capacity and the contracting firms capable of undertaking housebuilding at this rate. The main problems are likely to be those of local organisation and management and of labour availability in the areas concerned at normal price levels.

Where housing output rates by local authorities have been high they have usually relied heavily on system building and direct negotiations with building firms to increase production. This is most clearly illustrated by the example of the Birmingham Corporation where the output of dwellings was increased over four years from around 2000 dwellings a year in 1963 to 9000 dwellings a year in 1967 (8000 in 1968), without sacrifice of design and environmental standards. A large proportion of the new housing built by Birmingham Corporation during these years has in fact taken place on the periphery of the city, on a few major sites such as Chelmsley Wood and Castle Bromich airfield.

The methods adopted by the Corporation to achieve this output of housing are strongly recommended for further examination by the Commission or its successors. They are described in a special report by the NBA and include:

(i) making a thorough survey and classification of contractors in the region according to capacity and type of work,

(ii) standardising design principles and documentation over a number of schemes,

(iii) negotiating contracts to continue work over several years with four major firms using advanced methods of construction (after initial selection by price competition),

(iv) providing similar continuity of work for smaller firms using traditional methods on infill sites.

A number of other housing authorities have successfully adopted similar methods.

Printed image digitised by the University of Southampton Library Digitisation Unit

In the new towns generally only about 10% of housing output has been built by industrialised techniques although the range is from zero to over 30%. In some instances the elaborate planning and financial control procedures adopted in the new towns have inhibited the economic use of building systems. In others there have been failures on the part of system sponsors to appreciate the nature of the controls they would be operating under - particularly the detailed and sophisticated architectural and planning complexity of the work. In most cases, however, social, economic and financial constraints have led to a comparatively slow annual building programme of the order of 500 to 1000 houses, and this has been met in the main by traditional means.

Experience to date in the application of new ideas to housing indicates that technology tends to have outstripped the ability of management, both of the clients and the professions as well as of industry, to make economic and effective use of the best techniques available within current market conditions. There has been heavy investment in new plant for use in both on-site works and off-site factories and yet, according to a recent NBA survey, only 40% of the capacity of the system-building industry at normal production levels is currently being used and factories are being converted to non-housing uses. It would seem that for the next decade the major task of both client bodies and builders is to improve the efficiency of building management, to integrate more closely the working relationships between architects and contractors, and to improve methods of procuring building contracts generally so that better advantage can be taken of the techniques currently available.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION III.

HOUSING OUTPUT LEVELS - CONCLUSIONS AND RECOMMENDATIONS.

In this section possible annual rates of house-building in the areas of the proposed new airport are considered. "Low" and "high" estimates are made of the likely annual output of houses for a given labour force on the basis of certain assumptions, which are set out below or in the following section.

It is assumed that the airport sponsoring authorities will wish to do everything possible to avoid creating a situation in which high cost premiums have to be paid to attract labour. Such a situation could have a serious effect in draining labour away from quite a wide area of the country to the detriment of the local interests and industries.

We have therefore assumed a "base" figure, on which to calculate forward projections of increases in productivity, of 1000 dwellings a year. This has been for several years a generally accepted rate which can be achieved without serious and costly consequential effects in a new town area, to which the area surrounding the proposed new airport is likely to be comparable. Factors affecting the failure of many new towns to achieve this rate in the last few years (Appendix A) tend to be financial, social and economic rather than a limitation of building resources.

Using only a small proportion of industrialised building, as has been the case in typical new town areas to date, and, for the moment, also assuming the great majority of housing to be provided by the public sector, these 1000 dwellings would require a labour resource on building sites of about 1150 man/years. This is a fairly conservative estimate (cp 1968 national statistics, Appendix B, which would give 1590 dwellings per 1000 men in the private sector, or 1030 dwellings in the public sector.)

If these figures - 1150 men producing 1000 dwellings a year under new town conditions - are projected forward on the basis of statistical trends in recent years (Appendix B) which in our opinion are likely to continue, we estimate that by 1980 under similar conditions the same-sized labour force would produce around 2100 dwellings a year.

We have next considered what steps could be taken by the authorities responsible for providing housing in the sub-region of the airport to improve upon the national average increase in productivity and have arrived at our "low" and "high" estimates of what could be achieved. The "low" estimate assumes (i) that private enterprise participation will be increased to 50% so that further productivity increases can be achieved by current methods of financing and organising work and engaging labour in the private sector, (ii) that the percentage of industrialised housing systems, or organised methods of building on the lines of present typical systems, can be increased to 50% in the public sector, and (iii) that there can be a further small increase in the public sector in traditional building by methods of providing continuity to the smaller contractors in both design and work on-site. The "high" estimate assumes that, whether the work is organised by public or private agencies, three quarters of the total can be undertaken on the basis of forward rolling programmes, utilising advanced factory methods of construction (Categories (v) and (vi) in Appendix C). It also assumes improvements in productivity, resulting from some industrialisation of house sub-structures, and site-works especially in the co-ordination of public utility services on the lines recently advocated by the Ministry of Public Building and Works.

Printed image digitised by the University of Southampton Library Digitisation Unit

Allowance has also been made in both estimates, in the later years of this century, for a substantial extension of factory-made and finished components to all housing contracts.

The estimates are based on a central client organisation being able to co-ordinate the forward work-load in the manner necessary to make the foregoing assumptions achievable.

Table 1

Estimates of numbers of dwellings that could be completed per year in any one of the four proposed airport sites on the basis of a site labour force of 1150 men.

YEAR	"LOW" ESTIMATE	"HIGH" ESTIMATE
1975	1500	1500
1977	2200	2800
1980	2400	3400
1985	2800	3700
1990	3400	4200
1995	4200	4800
2000	5100	5500

Table 2

As above but with a labour force of 1500 men.

YEAR	"LOW" ESTIMATE	"HIGH" ESTIMATE
1975	1500	1500
1977	2800	3800
1980	3100	4400
1985	3600	4800
1990	4400	5500
1995	5400	6300
2000	6600	7200

Note House design is assumed to start in 1972. The 1975 figure is affected by the likely build-up rate. At 1977 the stated labour force is estimated to be fully employed on the building programme.

Printed image digitised by the University of Southampton Library Digitisation Unit

The building industry labour forces currently available within the four sub-regions under consideration are as follows, assuming that labour can normally be drawn from a radius of about one-hour's travelling time:-

Wing	47,800
Nuthampstead	40,100
Thurleigh	33,200
Foulness	30,500

(Excluding labour from the Greater London area)

While it is impossible accurately to predict the future availability of labour in these areas, without foreknowledge of likely changes in national economic conditions, it is not considered, in the light of commitments as we now know them, that the utilisation of 1,150, or even 1,500 men for additional housing in any one of these areas will present any great difficulties. The importation of a small proportion of labour from further afield would also not necessarily cause any bidding-up of house prices if contractors were careful, as they have been in other areas, to be selective in the kind of labour imported, and to adopt adequate bonus incentives to achieve higher productivity. The availability of other building industry resources is discussed in Section IV.

Given that the supply of labour is likely to be a crucial factor affecting the supply of housing in the area of the proposed airport, the way in which labour is used becomes of vital importance in determining the actual outputs achieved. If a housing output much above 2,000 dwellings a year, from 1977 on, is to be realised special steps will have to be taken to make the best use of all building industry resources. The traditional methods normally adopted by the mark II new towns would not achieve the figures outlined in Tables I or II. Methods assumed in the "low" estimates column are already being pursued by several of the mark III new towns. The improved methods assumed in the "high" estimates column include a higher ratio of advanced factory production and of forward programming than we have so far experienced in the new towns field.

RECOMMENDATIONS:

We therefore strongly advise the developing authority to adopt the following recommendations:-

(i) There should be a strong central client organisation, set up well in advance of the start of construction work, that would not only establish principles of land use but also co-ordinate the forward programming and letting of building contracts. It should also be able to ensure the adequate provision of public utility services.

(ii) Steps should be taken to encourage the creation of a constant sized permanent local labour force for house building. Additional labour could be brought in on a temporary basis to provide extra output, but in the long run a permanent force would be more effective, especially in regard to productivity and costs. The provision of permanent housing for building workers and continuity of employment are inducements which should prove helpful.

Printed image digitised by the University of Southampton Library Digitisation Unit

(iii) The central authority should concern itself mainly with co-ordination and programming, and not necessarily be responsible itself for detailed housing layouts, design and construction. A better use of resources could be achieved if development bids are invited from forward-looking constructional and/or manufacturing firms, in association with leading architectectural practices of proved experience. This would have the advantage of bringing architects and builders into a more effective working relationship and would combine the management skills of private enterprise with the overall development controls of the public authority.

(iv) The central authority should ensure that whether the housing is publicly or privately financed, continuity of work over four to five years is provided for building firms, for the manufacturing industry, for professional design staffs and for site labour.

(v) Contracts should be prepared on the basis of design continuity and standard documentation (cp. Birmingham or the American Operation Breakthrough) with the maximum use of factory-produced elements, both complete house assemblies and pre-finished building components.

If these recommendations were applied skilfully, we feel that the necessary conditions for achieving the "high" estimates given in the tables above would have been created.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION IV.

OTHER FACTORS EXAMINED OR ASSUMED.

(i) Social and Economic Constraints.

For the purposes of this study we have assumed that the area of the new airport will attract industry and provide employment and that it will not suffer from the constraints which sometimes affect new towns in this respect. We have also assumed that basic local communications and transport systems, as well as adequate facilities for schools, shops and other community activities, either exist or can be provided in step with housing. Moreover, we have further not questioned the availability of finance, both public and private, for investment in capital works on the scale required.

It has been generally assumed that housing in such a new community would be provided by both public and private agencies on roughly a fifty-fifty basis. If there were considerable variations in these proportions, the effects on productivity would not be crucial if effect were given to the recommendations on organisation and management outlined in Section III. In the public sector, the substantial increase in productivity achieved in the last five years (27% in the period 1963-68, see Appendix B) have been mainly due to the use of industrialised building systems. On the other hand, the private sector has shown consistently higher output rates than the public sector, due only in part to slightly lower space standards and mainly to the different conditions of finance and site control under which it operates.

(ii) Professional Staff Resources.

The shortage of professional and technical staff, particularly architects, is often referred to as a constraint which has held back the building programmes of new towns and local housing authorities. This is difficult to understand, particularly in view of the fact that relative to other countries the number of architects available per thousand population is high in the United Kingdom. The reason for an apparent shortage at peak building periods probably lies in a failure to organise the resources of the profession effectively.

Many local authorities and new towns are all too unwilling to employ private consultants, often on the assumption that they can obtain much cheaper professional services by employing their own staffs. There are several good reasons for public offices employing their own staffs, but a large financial saving is not one of them if full professional services of reasonable quality are to be obtained.

Authorities often employ private firms only as gap-fillers and then only in crisis situations or on small and uneconomic projects. While it is admitted that a very large number of firms in the profession are of too small a size to undertake substantial works efficiently, there are sufficient very adequate firms who could be associated with long-term housing projects in new development areas on a continuity basis. If they were associated with long-term programmes and with contracting firms, as suggested in the recommendations above, they could make a substantial contribution, not only on the design side, but to increasing output as well.

Printed image digitised by the University of Southampton Library Digitisation Unit

(iii) Materials.

The building materials industry, with the possible exception of bricks and aggregates, no longer operates on a local or sub-regional level. It is not anticipated that a programme of housing, such as would be generated by the proposed airport, would be likely in itself to generate any particular difficulties which would not be solved by normal methods.

(iv) Housing standards, densities and forms of development.

The "base" figure used in the calculations in Section III assumes a gross density of 12 persons per acre. This would permit considerable areas of relatively low density housing as in the new towns, with urban centres of much closer development. The repetition of simple planning units and components (bathrooms, kitchens, floor spans) is, however, much more significant from the point of view of housing output than the density whether the dwellings themselves are houses or flats in multi-storey blocks. Highly complex housing forms involving a great variety of levels, profiles, staggers and internal plan variations may well take two to three times the normal amount of labour to build, even with a large degree of factory prefabrication.

In regard to space standards, improved heating and other services and equipment, the effect of advances in recent years will already have been taken into account in the output figures given in Appendix B. It is assumed that in the next two decades, there are unlikely to be dramatic changes that will have a greater effect on output than those allowed for in the straightforward projection of current trends.

Printed image digitised by the University of Southampton Library Digitisation Unit

HOUSING OUTPUTS BY LOCAL AUTHORITIES AND NEW TOWNS

Local Authorities which completed over 1000 dwellings in 1967 and 1968 by Regions
(Note: Figures represent the authority's own building programme. They do not include overspill housing, private building nor programmes of adjacent district councils which are often substantial).

	1966	1967	1968
Northern			
Newcastle upon Tyne	Under 1,000	1,110	1,119
Sunderland	1,289	1,519	Under 1,000
Yorkshire and Humberside			
Kingston upon Hull	1,714	1,185	Under 1,000
Leeds	2,799	2,933	1,722
Sheffield	2,413	2,158	1,939
North West			
Liverpool	2,857	2,790	3,200
Manchester	1,424	2,121	2,271
Salford	1,468	Under 1,000	Under 1,000
Wigan	1,002	Under 1,000	Under 1,000
East Midlands			
Nottingham	Under 1,000	1,273	Under 1,000
West Midlands			
Birmingham	4,728	8,576	4,188
Coventry	Under 1,000	1,327	1,012
Dudley	Under 1,000	Under 1,000	1,018
Warley	Under 1,000	1,032	Under 1,000
West Bromwich	1,598	1,546	Under 1,000
Wolverhampton	Under 1,000	1,128	Under 1,000

Printed image digitised by the University of Southampton Library Digitisation Unit

	1966	1967	1968
South East Greater London			
GLC	4,845	5,024	5,574
Croydon	1,127	1,205	Under 1,000
Enfield	Under 1,000	Under 1,000	1,845
Southwark	Under 1,000	1,199	Under 1,000
Waltham Forest	Under 1,000	1,038	Under 1,000
New Ham	1,349	Under 1,000	Under 1,000
South East Southern Counties			
Southampton	1,278	Under 1,000	1,208
Basingstoke	1,003	Under 1,000	Under 1,000
South West			
Plymouth	Under 1,000	Under 1,000	1,008
Bristol	1,365	Under 1,000	Under 1,000

Printed image digitised by the University of Southampton Library Digitisation Unit

HOUSING OUTPUTS BY LOCAL AUTHORITIES AND NEW TOWNS

New Towns which have completed over 500 dwellings in 1961 to 1968 by region
(Note: New Town figures include only the corporation's own building programme and do not include private building nor housing by local district councils).

	1961	1962	1963	1964	1965	1966	1967	1968
North West								
Skelmersdale	-	-	-	-	-	-	840	-
East Midlands								
Corby	-	798	-	-	-	-	633	-
West Midlands								
Telford	-	-	-	-	-	-	-	724
South East								
Basildon	1015	918	502	1064	1221	795	992	526
Bracknell	-	-	-	-	-	-	665	994
Harlow	1007	762	535	671	629	717	1119	1168
Hemel Hempstead	685	677	-	-	-	-	-	-
Stevenage	-	1215	522	-	759	921	702	-

- Indicates 500 or fewer dwellings completed in the year.

Printed image digitised by the University of Southampton Library Digitisation Unit

PRODUCTIVITY IN HOUSE BUILDING

The table below gives the number of dwelling completions, Great Britain, in both the public and private sectors, and the average number of men engaged.

YEAR	NUMBER OF COMPLETIONS (000's)			HOUSING LABOUR FORCE (000's)		
	PUBLIC SECTOR	PRIVATE SECTOR	TOTAL	PUBLIC SECTOR	PRIVATE SECTOR	TOTAL
1958	146	128	274	173	126	299
1959	126	151	277	157	146	303
1960	129	169	298	150	166	316
1961	119	178	296	147	170	317
1962	131	175	305	152	168	320
1963	124	175	299	154	161	315
1964	156	218	374	180	175	355
1965	168	214	382	179	171	350
1966	180	205	386	187	154	341
1967	204	200	404	193	143	336
1968	192	222	414	186	139	325

The number of house completions per operative calculated from the above figures is as follows:

EAR	COMPLETIONS PER OPERATIVE YEAR		
	PRIVATE SECTOR	PUBLIC SECTOR	TOTAL
58	1.02	0.84.	0.92
59	1.03	0.80	0.91
60	1.02	0.86	0.94
61	1.04	0.81	0.94
62	1.04	0.86	0.95
63	1.09	0.81	0.95
64	1.24	0.86	1.05
65	1.25	0.94	1.09
66	1.33	0.96	1.13
67	1.40	1.06	1.20
68	1.59	1.03	1.27

(contd)

Printed image digitised by the University of Southampton Library Digitisation Unit

The number of house completions per operative, calculated from this table, shows an average annual increase over the ten year period of 2.3% in the public sector, 5.6% in the private sector, and 3.8% for all housing.

It should be noted that the figures of the two sectors are not directly comparable and that the rates of increase reflect net gains and losses from all sources, e.g. increased industrialisation, labour productivity and changes of house standards.

Printed image digitised by the University of Southampton Library Digitisation Unit

SITE LABOUR OUTPUTS FOR DIFFERENT FORMS OF CONSTRUCTION

The site labour outputs for different methods of construction, which form the basis of statistics used in this report, are shown below. They are derived from NBA surveys of productivity on housing sites and other research data.

METHOD OF CONSTRUCTION

			Man-years per dwelling (1970)
(i)	Traditional methods, with good house builders and schemes of about 100 dwellings (public sector)	Superstructure	0.53
		Substructure	0.07
		Site development	0.12
		total	0.72
(ii)	'Rationalised traditional methods' with good house builders and schemes of about 100 dwellings (public sector)	Superstructure	0.44
		Substructure	0.07
		Site development	0.12
		total	0.63
(iii)	Private housing with good house builders using traditional building methods	Superstructure	0.42
		Substructure	0.04
		Site development	0.11
		total	0.57
(iv)	Typical industrialised building systems (in-situ concrete, pre-cast concrete, timber components, steel frame) in schemes of about 150 dwellings	Superstructure	0.32
		Substructure	0.07
		Site development	0.12
		total	0.51
(v)	(Estimated). Private housing with good house builders, 50% of which is built using industrialised building methods	Superstructure	0.30
		Substructure	0.04
		Site development	0.11
		total	0.45
(vi)	(Estimated). More completely factory based systems (complete box or sectionalised buildings) with rolling programmes of about 750/1000 dwellings per annum for 5 years, together with a highly co-ordinated client organisation.	Superstructure	0.15
		Substructure	0.04
		Site development	0.10
		total	0.29

Printed image digitised by the University of Southampton Library Digitisation Unit

RESOURCES IN THE FOUR SUB REGIONS

In this section factors in the regional environment which may be expected to influence both the build-up rates and the housing output over the forecast period are considered under each of the four proposed alternative sites. It is not possible, nor is it within the scope of this report, to forecast labour availability, reserves or mobility patterns accurately. What, therefore, is given are indications of the operative labour positions, the catchment areas of employment and large industrial expansion areas which may influence and be influenced by the housing demand generated by the airport city. It should be noted that references to difficulties in attracting labour to any of these areas would be likely to arise only for housing outputs seriously above those assumed in Section III of this report. References to bid-up prices for labour also do not take account of the improved building techniques design to increase the productivity of labour, which are described in Section III.

General

The likely extensions of the A.12 and the improvements in rail connections with Ipswich, Colchester and Peterborough, the improved access north-west to Milton Keynes and Northampton expansion areas, and the possible linkage of Chelmsford with Basildon and Southend are likely to bring the three sites - Nuthampstead, Wing and Foulness - within approximately equal travelling time to London. The influence of the labour shortages and nett attractiveness of easing potential in the Greater London and outer metropolitan areas well into the 1980's is likely to be equally felt in these three areas. The Thurleigh area, while being further from London, is nearer to the catchment areas of the East and West Midlands.

Foulness

Labour resources in the South-East will be in short supply in the 1980's and beyond. In addition there is the likelihood of a heavily industrialised area along the Thames, east of London, forming a complex encompassing Basildon, Rayleigh and Southend, and north-eastward it is likely that future growth will be concentrated along the A.12 from Billericay to Chelmsford. These overspill arrangements will necessitate a high rate of activity for the infrastructure of communications and housing needs. As available resources will be limited, and industrial manpower shortages will be common both in this micro region of the South East and the Greater London area, one must expect possible bidding-up of the rates of pay. The possibility of developments to the north of the Foulness area, in the Haven ports, will further intensify labour difficulties.

The impact on the industrial and town expansion foreseen in this area is even more difficult to assess. This is due firstly to the overall dominance of the demands of the London area in the situation, and secondly to the lack of information about the proposed developments which may be affected by the siting of the Airport city at Foulness. The programmes at Basildon are hardly likely to be greatly influenced by the resource demands of a Foulness siting; even if the labour requirements of the housing output foreseen in this report were exceeded, the effect on Basildon's housing output would only be minimal.

Printed image digitised by the University of Southampton Library Digitisation Unit

The experience of the GLC in building on the marshes at Thamesmead may be of direct relevance to any proposed developments at Foulness. At Thamesmead it is interesting to note that the very high costs of site development - protective earthworks against flooding, covering the marshy land with several feet of sand, piling under drains and sewers as well as under all buildings - were fully offsett in comparison with normal development by the low cost of the land itself. The physical difficulties of the site, combined with the consequential effects of the Ronan Point disaster, caused a build-up period of about $2\frac{1}{2}$ years from the award of the contract to steady-flow production (about 900 dwellings a year). The time taken from revised development plan approvals to the areas of the main contract was about 18 months.

Wing

Like the proposed site at Foulness, the dominant influence for contractors and operatives is likely to be the outer metropolitan area and its associated labour demands. In addition, this site will be dominated by the construction demands of the Milton Keynes New Town and the designated expansion areas of Aylesbury, Houghton Regis, Letchworth and the proposed developments at Bicester and Bedford. Any extension of the already highly developed communications network to the London area may mean severe local shortages of operatives in an area where resource supply will be already stretched. While the additional imposition of a likely "base" labour demand of 1150 operatives is unlikely to be a problem in itself, it may help to cause a bidding-up of the labour price, as could be the case at Foulness. In a situation of gross labour shortage any additional demands imposed require a net attraction factor to call forth the required work force. In this area there will be little labour reserve in the 1980's and the impact on the requirements of other expanding areas may - depending on construction and organisational methods used - be important.

In addition, future expansions in the Luton, Dunstable, Hitchin and South-East Bedfordshire areas will increase the shortage of construction industry resources for the Wing site. The primary need, therefore, in this proposed site would be to integrate as closely as possible the authorities concerned with urban and industrial development.

Thurleigh

While the construction demands of Milton Keynes, Huntingdon, Bedford and Sandy are likely to affect the resource position in this site, the demands imposed by the London area are likely to be less. But the Thurleigh area does not contain a large operative labour force, and the expansions of Northampton and Wellingborough will be critical to the functioning of the housing output in this site.

Shortages of site labour are likely to be in evidence and the possibilities of recruiting labour from the western areas of Northampton are limited - firstly since it lies in the catchment area of the West Midlands, secondly because it will probably still have inadequate communications with Thurleigh, and thirdly since labour is likely to be in scarce supply well into the 1980's. Attraction of labour resources from the South, while not unlikely, will involve a relatively high bid-up price. But labour may be obtained from Cambridgeshire and Huntingdon and Peterborough, and although contractors and operatives

Printed image digitised by the University of Southampton Library Digitisation Unit

in the East Anglia EPR will be fully employed in their own urban expansion schemes, the bid-up price for labour will be less than in the previously examined sites. This area has in the past drawn extensively for contractors' labour on the working population freed by productivity increases in agriculture. Further, the construction industry in East Anglia has in the past shown that it can adapt and expand its total of employees quickly when the demand exists.

Thus, while the effect of an additional demand of 1150 site operatives will increase labour difficulties, with this site it is more likely that labour will be obtained from a larger area. In addition, the bid-up price necessary to attract the operatives needed may not be so great as at either Foulness or Wing.

Nuthampstead

The proposed expansions of Letchworth, Hitchin and Haverhill, in addition to the Stevenage area, are likely to impinge on the labour position on this site. Shortages of site operatives will again be apparent in the 1980's and the little spare capacity existing to the north of this area will disappear. As in the case of Thurleigh, a small increase in the bid-up price of labour may call forth the resources needed from the north. However, the existing labour resource concentrations are almost exclusively located to the west of Nuthampstead an area along the A.1 that is likely to experience considerable industrial growth over the next 30 years.

Therefore the resources necessary for the housing output though available, will come from the area east of Nuthampstead - the Essex and southern East Anglian EPR. The volume of labour resources needed will be obtained from over a wider area than the Foulness, Thurleigh or Wing sites, and the strains that these additional requirements pose will also be spread over a wider area and as such are not easily identified. Although the situation is likely to be not unlike that at Thurleigh, the bid-up price needed to attract labour may be higher although lower than at Wing and Foulness.

(References used in this Section:

A Strategy for the South-East. HMSO 1967

The South-East Study. HMSO 1964

East Anglia : A Study. HMSO 1968

Northampton, Bedford and North Bucks Study. HMSO 1968

Employment and Productivity Gazette. March 1969

Monthly Digest of Statistics. April 1969

Census of Population

MoPBW and MoHLG Digests and Bulletins).

Printed image digitised by the University of Southampton Library Digitisation Unit

STUDY 3 .

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

THE ASSESSMENT OF THE AGRICULTURAL IMPLICATIONS OF A THIRD LONDON AIRPORT

By Gerald Wibberley and Michael Boddington
(Wye College, University of London)

1. AGRICULTURE AND LAND PLANNING

1.1 The Importance of Agriculture in Long Term Land Use Changes

Agriculture must be taken into account in the planning of any new use of land simply because it is in possession of most of the surface area of Great Britain[1]. It is, therefore, the use which must be displaced by the new development. Arising out of such a status quo are two propositions, the first being that the promoters of the new use must make and prove their case for the displacement of agriculture, and, the second, that agriculture, as the existing user, must be prepared to show why it should retain the land it now occupies.

Farming, even in some of its more intensive forms of fruit and vegetable production, is an extensive user of land when compared with most other forms of permanent land use. Except for buildings (glasshouses, crop drying and storage plants and intensive indoor livestock units are getting more and more capital intensive and specialised) the surface of the land is the main productive resource of agriculture and, although this can vary greatly in its natural and manmade properties of fertility, there are few individual crop or livestock enterprises which can gross more than £150 per acre per annum. This extensive nature of production is, then, a major characteristic of agriculture and it poses some unique problems in land planning decisions since, when measured either by its productivity per acre or by its market value per acre, it would appear to be an inferior use of land.

It is often argued that agricultural production has certain characteristics which demand a valuation procedure different to the usual market criterion. Its contribution is said to be an annual or seasonal one in perpetuity. This is not strictly true since, in order to get agricultural output in perpetuity, there must be annual inputs of labour, capital and management; cultivations and harvesting must be carried out, seed sown, fertilizers applied and weeds controlled and, most important of all, skill must be used in deciding what, where and when to cultivate, plant and harvest.

---

[1] In 1965 agriculture occupied about 82 per cent of the total land area in Great Britain.

rinted image digitised by the University of Southampton Library Digitisation Unit

Another argument put forward is that in a country like Britain, which is not self-sufficient in food production, there is an overall shortage of land for agricultural purposes and, therefore, there is an added scarcity value to farm land, especially to land of high natural fertility. The scarcity value is present today and will continue and increase with the pressures of a growing population and more lavish use of land for non-agricultural purposes. There is much reality in this argument but it is not so much an overall shortage of land as a growing scarcity and competition for areas which have special advantages in low costs, high fertility, good farm infrastructure and flexibility for production in the future.

A problem facing agriculture, in common with many other industries, is that it suffers from undue interference by other interests. Cases of theft and trespass become more important in the countryside with the increased mobility of the population and intermingling of urban with rural areas. These involve the damage and removal of crops, especially at harvest time, the harrassment of livestock by untrained dogs, damage to machinery both directly and indirectly, leaving open gates and breaking down hedges and fences. All of these directly increase the costs of farming operations and restrict the range of economic agricultural activities.

Such increases in cost are, however, very difficult to isolate. But that they exist is a reality and it cannot be doubted that many would-be owners or tenants alter their farming patterns and the price they offer in anticipation of the damage or trespass they expect to experience. In practice, the direct line of contact between commercial food production and major urban areas has been kept as short as possible. The nucleated form of city with a 'green belt' (statutory or otherwise) around it has produced a cordon sanitaire between the urban population and the farm business. With different forms of urban development, present and contemplated, such as those in the form of a necklace of beads or corridors, with excellent road and rail access, new ways of insulating farming areas from undue urban pressures will be needed. It is most important, in addition, that new population growth areas are not located in hitherto undisturbed agricultural regions, unless they are suffering from too few economic opportunities.

It is inevitable that in the future some of the foods which we consume today and the fibres from which we manufacture our cloth will be replaced by synthetic substitutes. Synthetic fibres are already an accepted part of our everyday life and they will become even more important as time passes. At present very few artificially manufactured foodstuffs are available which effectively substitute for the protein element in our diet. In the U.S.A. meat substitutes are being manufactured from soya beans, but at present these are apparently inferior to traditional meat goods in consumer acceptability whilst retailing at a similar price. These commodities are being sold in some supermarkets on the European Continent. Other methods of manufacturing protein foods are being tested, notably hydroponics which involves growing small organisms in water and then extracting the protein from the organisms. It is possible that this method may become important. Elsewhere on the Continent experiments are being conducted in growing organisms in oil and extracting protein from these organisms.

All of these methods may prove to be economic in producing protein foods in the future, along with greater use of the oceans. All, except the first,

Printed image digitised by the University of Southampton Library Digitisation Unit

are land intensive and will result in a very great saving in land. We are consuming world oil reserves rapidly at present and oil cultures will have a limited life. The method depending upon the extraction of proteins from plant material will still rely upon large areas of land for its raw materials and will thus be a land extensive food source. As it will by-pass the animal in the production of meatstuffs there will be a net saving in land.

It seems unlikely that synthetic substitutes for foodstuffs will play any great part in the economy before the end of this century, and even during the next century traditional forms of food will continue to be important for some considerable time. In so far as manufactured foodstuffs rely upon an agricultural raw material it would appear that our good cereal and legume growing lands will increase in importance.

These good arable lands capable of producing large amounts of cereal and other crops at low cost have many advantages. Work carried out in the Department of Economics at Wye College[2] indicates that it is these lands which will be mostly required to meet the country's food needs at the end of this century, when large scale cereal farming, together with beef production, are likely to dominate the farming pattern of large parts of the countryside. Where it is possible to intensify by heavy capitalisation regardless of land quality this will probably occur, but great reliance will be placed on our ability to produce cheap cereals to feed our livestock. Cereal production, unlike some other enterprises, relies only to a very small extent upon inputs imported from overseas so that their value is created almost entirely at home with consequent saving of foreign currency. It is therefore these lands which we are concerned to keep in agricultural production.

In the event of Britain becoming a member of the European Economic Community the emphasis in food production could well change in this country. Under their existing price policy for agricultural commodities it would appear that cereals would still be important. However, it is not certain that the price policy used currently in the EEC will continue for very much longer and with the general doubt as to whether Britain will join it is difficult at this stage to make any assumptions about the likely pattern of agricultural production which would eventually arise.

1.2 Agricultural and the Land Requirements for a Third London Airport together with its Associated-Urban Development

The agricultural geography of England is characterised by a broad band of both good and excellent arable lands running up the east coast and to some extent along the south coast. Well known amongst these lands are the fens and arable lands of the Eastern Counties, the fruit and hop lands of Kent, and the Vale of Pickering in Yorkshire. As one moves west and north the quality of the land declines through the heavy and difficult clays of much of the south and central midlands to the rough and barren moorlands of the Pennines.

---

[2] A.M. Edwards. Town and Country Planning, Vol. 37, No. 3. March 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

It is unfortunate that the greatest concentration of population in the country has chosen to settle upon the better agricultural land. The south east corner of England has a large proportion of excellent agricultural land and it is here that our greatest city is situated. It is also here that the population is growing most rapidly and where more land is being used for new urban and non-agricultural purposes; it is also in this area that we must accommodate a new international airport and a supporting city with an eventual population of about a quarter of a million.

It seems likely that the airport and its associated safety zone will take about 7,000 acres of agricultural land (except in the case of the off-shore solution at Foulness which will probably require no agricultural land). Urban development arising directly from it is likely to require a further 18,000 acres over time. The total acreage will thus be in the order of 25,000 acres and this is very much greater than any other land use change of this nature that we have experienced in recent decades. The nearest size equivalent is the 15,000 acres of open farm land designated for the new city of Milton Keynes in North Buckinghamshire. If we accept an approximate total of 25,000 acres passing out of agricultural and horticultural use by the end of this century this will represent, on average estimates, a loss of farm produce of about £1.5 million each year, the cessation of farm employment by about 300 farmers and 400 farm workers and a permanent change of use of land valued at about £7 million, on the market, for agricultural purposes.

Having due regard to the importance of food production in the economy it is vital that these losses be minimised. It has been our purpose, in the work we have carried out for the Commission, to ensure that the Commission has to hand the best information available so that they can form an opinion as to how agricultural losses may be made minimal. In our calculations and appraisals we have been greatly helped by evidence provided by the Ministry of Agriculture, Fisheries and Food and the National Farmers Union; we have also had the agricultural evidence presented at the four local public enquiries on the four short-listed sites. The decisions on the way in which the evidence should be quantified and all errors of omission and commission belong to the authors and we take the responsibility, in particular, for all qualitative comments and judgements. There are many qualities in a stretch of long-settled farmed English countryside which are real but hard to measure. They should not be over- or under-valued but finding the correct valuation is most difficult. We have tried to be as objective as possible.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. METHODOLOGY AND MEASUREMENT

2.1 The Mobility of Agricultural Factors of Production

Agricultural production involves the combination of many resources together with the land upon which they operate. The development of the airport and its associated urban areas will not involve the disappearance of all agricultural and horticultural resources and the returns that they are currently earning. Some resources are imported from other farms or from other industries whilst others are located at the site of production, either permanently or semi-permanently. Those located semi-permanently at the site of production are, in fact, capable of being transferred to other areas or other forms of employment whilst those which are located there permanently will be lost to agricultural production when a permanent change of land use occurs.

These different forms of resource may be listed as follows:

(i) Resources imported from other farms or industries

- -Animal feedingstuffs
- -Seeds
- -Fertilisers
- -Machinery repairs and maintenance costs
- -Fuel and power
- -Miscellaneous items

(ii) Resources located on the farm but capable of transfer

- -Labour - paid
  - unpaid family
- -Managerial effort
- -Working capital - livestock
  - crops and stores
  - machinery
  - other

(iii) Resources located on the farm but incapable of transfer

- -Land: the natural and indestructible powers of the soil
- -Capital embodied in the land - drainage
  - added fertility
  - farm roads and bridges
  - fences, hedges and shelter belts
- -Fixed equipment - barns
  - glasshouses
  - pig and poultry buildings
  - dairies, yards and parlours
  - crop drying and storage facilities.

Also added to the list under (iii) are other items which contribute to agricultural productivity to a greater or lesser extent. These are:

- -Farm structure, field size and layout.
- -Location with respect to market and other facilities
- -Private amenity and recreational value of farm land.

Printed image digitised by the University of Southampton Library Digitisation Unit

The loss which the nation will incur as a result of transferring the land from its present use to another will be the loss of revenue earned by the non-transferable resources. Those factors of production which are imported from other farms or industries may be saved or used profitably elsewhere in the economy; those which are farm-located but mobile may be transferred to other profitable employment, but the earnings of those which are not mobile will be lost to agriculture and should, therefore, be regarded as a cost to set against any benefits which arise from the new use of the land.

This representation is, in fact, an oversimplification of the cost of the disruption of the rural economy. Costs arise directly out of the displacement of all factors of production. Firms currently marketing the first category of resources will be put to the inconvenience of replacing their lost sales elsewhere and redistributing their resources, perhaps even carrying surplus capacity for a short time. The second category of resources will have to be physically moved from one part of the country to another where they may not be so well or so happily employed. This transfer operation will thus incur costs which will be both financial and social. In practice it is not possible to calculate these costs so that no more can be done than mention that they will be incurred.

The transfer cost and the cost of disrupting the operation of agricultural merchants are, therefore, incoming costs whilst the loss of income to non-transferable resources will be an outgoing cost. It is the calculation of this last item of cost which concerns this report.

Before outlining the method of calculation used it is proposed to outline the nature of some of these resources in rather more detail to assist in the understanding of the farm economy an the problems of measurement.

Some of the more important of the rural resources which will be transferable, at least in theory, to other rural areas or elsewhere in the national economy, are the following:

(a) The people now engaged in agricultural and horticultural production in the area to be taken out of such production. These are the existing agricultural and horticultural staff, whether regular or seasonal. They may move to jobs in other rural areas or they can remain and work in existing or new jobs outside food production, in which case it is arguable that their earnings will be improved. This argument applies to some extent to the farmer and his family although the degree of mobility here depends upon the age structure of the farmers and is reduced by the strong inbred nature of farming as an occupation. Since the great majority of farmers are the sons of previous farmers and few of them have training or experience in other employment, their effective mobility and their transfer earnings will be relatively low. The management ability of farmers is very specific to farming and it is very doubtful whether they would be enabled to use their expertise in this field in other businesses in the event of their being unable to replace their current farm business elsewhere.

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) The capital used in the day to day operation of farms and horticultural holdings should also be available for transfer to other productive uses either in food production elsewhere or in a different emplpyment. Such working capital comprises the farm livestock (cows, and other cattle, sheep, pigs and poultry) which is generally readily saleable, crops sown but not yet harvested (these are not readily saleable), those harvested but in store, which may be disposed of easily, and a host of other items which it may be difficult to sell if the farmer does not intend continuing his occupation elsewhere. These items include such things as small tools and other pieces of equipment which may still pay a vital part in the farm economy but which are not in great demand on other farms, part-used containers of sprays, disinfectants, detergents, insecticides and fertilisers which may have to be thrown away and a number of miscellaneous items which are in constant demand around the farm.

Rural Resources which Will be Permanently Lost

Present resources, used in food production, which are incapable of effective transfer are varied and considerable. They include:

(a) The land itself; that is, the unique characteristics of the particular site - its soil, subsoil, natural fertility and adaptability, its topography and local climate and its unique situation.

(b) The capital invested in the land in a permanent form. Examples of this include man-made improvements in farm roads and bridges, the main structures of farm buildings, improvements in drainage of both fields and farmsteads, existing hedges, fences and shelter-belts and past investments in improvements in soil structure and plant nutrient levels. Specialised types of farm fixed equipment are generally incapable of being moved or found viable employment in other uses. Such specialised equipment includes pig and poultry installations, dairies and yard and parlour equipment in milk production, grain drying stores and other crop handling or storing facilities, heated and static glasshouses and fruit packing and storage sheds.

(c) Permanent land use changes involve the total loss of the existing physical structure of food production which man has imposed upon the local natural resources. This is, basically, the size and layout of the individual holdings, the relevance of these to present day production needs and the flexibility for alternative forms of farming in the future.

(d) Rural land which becomes urbanised loses almost all those aspects of amenity which arise from the very nature of the rural economy. These are difficult to value but they are no less real because of their subjective nature. We understand that the Commission intends to make an assessment of these losses.

(e) Farm houses and farm workers' cottages might be considered as part of the capital of the business, but to treat them as such would be to plead a special case for agriculture. Whilst a farm is a home as well as a small factory and family life is interwoven with the task of making a living to a much greater extent than in any other major industry, there

Printed image digitised by the University of Southampton Library Digitisation Unit

can be few businesses which regard housing their staff as a legitimate expense. No payment is actually made by an owner-occupier of a farm for his house, and very often farm workers receive their cottages rent free, but it cannot be assumed that this is a charge to the business. In areas chosen for urban development existing farm houses and cottages will become available for general residential use and their value may even increase because of their individuality in architectural style and their age-old character and situations. On the airfield site itself farm houses and cottages will be swept away and close to the airport, within the excessively noisy zones, rural residences will become unpleasant to live in, although they will probably remain in existence.

The next section examines the method of costing these various elements.

2.2 Financial Measures for Assessing Agricultural Losses

The terminology used in this section is explained as follows:

(i) Gross Output is the value of total receipts and inclusive of the value of produce used in the farmhouse, less purchases of livestock and plus or minus any change in the valuation of working capital.

(ii) Net Agricultural Product, or Net Product, is Gross Output less expenditure on inputs imported from other farms or industries.

(iii) 'Value Added' is Net Product less expenditure on those farm-located inputs which are transferable.

Other terms will be explained in the text.

The size of the total revenue accruing to any farming activity will depend upon the nature of production and the level of yield. Agricultural production is a function of many different enterprises and the intensity of land use. A farmer producing high value outputs and using his land intensively will earn a higher total return than his neighbour who produces low value crops and livestock and uses his land extensively. In this context one can imagine an horticultural holding under glass with tomatoes and lettuces as end products compared with an upland farm producing mutton and lamb. To exclude the possibilities of anomolies arising where a farmer uses his land as an holding area for cattle and other livestock between purchase and sale in dealing operations, purchases of livestock are deducted from the figure of Total Revenue to give Gross Output which is taken to be a measure of the current intensity of land use.

If the precise division of land use between various enterprises and the level of yield of each enterprise can be established, it is possible, knowing the likely price received for each unit of production, to calculate the level of Gross Output for a farming area. Further, knowing the distribution of enterprises, it is possible to calculate the level of expenditure on imported inputs and to deduct this figure from Gross Output to arrive at Net Product. A similar calculation can be made for returns to farm-based transferable resources to get a figure for 'Value Added'.

Printed image digitised by the University of Southampton Library Digitisation Unit

Net Agricultural Product: is the social return to agriculture, embracing interest on tenant's and Landlord's capital, payments to all forms of labour and the return to land itself. 'Value Added' is the income earned by the land itself and the capital invested in and upon it; it is the payment to non-transferable resources and is the loss which would be sustained by the nation as a result of re-allocating an area of land to other uses or the cost which must be charged to the new development.

A further measure of the loss to agriculture is the Market Value of farm land. This is the price paid by a willing buyer to a willing seller for farm land on a free market. It is a payment for the following benefits:

- the use of the natural and indestructible powers of the soil
- the use of capital invested in the land
- the use of buildings and other fixed farm equipment
- the use of the existing farm structure, field size and layout
- location in relation to markets and other amenities
- the use of the farmhouse and tied cottages
- the accounting advantage to be gained from including some items of private expenditure in farm expenses
- the private amenity value
- the expectation of capital gains
- the advantages to be gained from current legal and fiscal benefits accruing to farm land.

Gross Rent is the level of the payment by a tenant to a landlord for the advantage of the first seven benefits and part of the eighth listed above. It also includes payments to the landlord in respect of certain expenses incurred by him for maintenance, insurance and certain statutory charges.

Net Rent removes from the figure of Gross Rent the various expenses and charges incurred by the Landlord, and which have nothing to do with the productive potential of the land. The sum remaining is for those items which are directly concerned with the land and the farm business.

Some Practical Drawbacks to the Use of these Financial Measures

Market Value

The current Market Value of farm land contains many elements which have little or no bearing upon its productive potential. These are related to the value and importance of the farm house relative to alternative employment opportunities, the legal and fiscal benefits available to farm land owners, the accounting benefits, amenity value and the expectation of capital gains. Thus Market Value is not a good measure of the present or potential productivity of agricultural land.

Gross Rent

Gross Rent has similar drawbacks to Market Value as a yardstick for the Commission's purposes, although it has the advantage that it removes some of the extraneous benefits accruing to landlords. Besides including payments to the landlord for the various charges incurred by him, rental figures are notorious in the way they lag behind changes in agricultural prosperity.

Printed image digitised by the University of Southampton Library Digitisation Unit

Net Rent

In excluding the landlord's statutory and legal charges Net Rent represents a better measure than Gross Rent, although it inherits the latter's other defects. However, so little is known about the level of the various charges from farm to farm that it is only possible to say, very generally, that Net Rent is about two thirds of Gross Rent. Net Rent will tend to vary in accordance with the relative importance of the farm house, tied cottages and farm buildings and will tend to cover up the differences in capital investment between areas.

In concluding this discussion on Market Value and the level of Rent, it is interesting to note the conflict which arises when land is sold either with or without vacant possession. It was previously suggested that Net Rent is a payment to seven of the benefits and part of the eighth accruing to an owner of land. In this case it can be deduced that the other part of the eighth benefit, together with the ninth and the tenth, will go to the landlord and that the sum of a landlord's and a tenant's benefits is equivalent to an owner-occupier's benefits.

Evidence available[3] suggests that this is not the case that land without vacant possession makes only about 60 or 70 percent of the price received for land sold with vacant possession. From this it may be concluded that a tenant does not pay a market rate for the benefits he receives, as suggested above, or that the sum of the tenant's and landlord's benefits are not in fact equal to the sum of an owner-occupier's.

Gross Output

The Gross Output of good and poor land may vary much less than the contribution of the land itself. The level of costs in achieving a Gross Output are not revealed so that it is possible that two farms with identical Gross Output figures may yield very different net returns to the farmer. Gross Output figures will tend to favour intensive livestock areas which import a greater proportion of their inputs in comparison with arable areas. Again, Gross Output varies with size of farm; small farms tend to import a larger proportion of their inputs than do large farms so that small farm areas will be favoured by a comparison of Gross Outputs.

Net Product

Net Agricultural Product is an aggregate of value added by land, labour,, management, fixed capital and working capital. Net Product would be a good comparative measure on its own if it could be presumed that the returns to all factors mentioned above were proportionately constant for all areas being measured. This presumption cannot be made since we know that the input pattern is very different in arable areas compared with that on livestock farms. It is also an unsuitable figure for the Commission to use in its cost-benefit studies since it includes the returns to many factors which cannot be regarded as lost to the nation.

---

[3] See for example: THOMAS, H.A. 'Aspects of the Economics of Landownership'. J.A.E.S. vol XVIII, no.2,May 1967. p.202.

Printed image digitised by the University of Southampton Library Digitisation Unit

'Value Added'

Theoretically 'Value Added' by agricultural land and its associated capital is the best figure for comparative purposes and for the cost-benefit analysis. The main drawback is the degree of estimation required to obtain it. This is a drawback which militates mostly against its use in cost-benefit analysis rather than as a comparative measure since the same estimates have been made across the board and the figures for all sites have been treated similarly. A further problem with 'Value Added' is that it includes the return to capital invested in and upon the land. Properly, this capital should be amortized over its average length of life and then considered as of no further value at the point it will cease to earn a return. No data are available to us to indicate the level of investment in non-transferable items so that we are unable to make the required calculations; it is perforce assumed that the amount involved is sufficiently low to be within the margin of error and to note that the 'Value Added' figure is slightly inflated.

2.3 The Growth of Agricultural Productivity

The calculations used for assessing the agricultural loss incurred by the siting of a Third London Airport, together with its ancillary urban growth, have been based upon observations made of prices and yields at a moment in time - during the harvest year of 1967. This is the latest date for which suitable data were available when the calculations were made. But like most other industries, agriculture experiences a growth in productivity over the years and there is no reason to suppose that such growth will not continue. Through time there are variations in this growth rate from one type of enterprise mix to another and also from one region to another. An analysis of these different growth rates has been carried out for the period 1945 to 1965. The results of this analysis suggest that different areas of land, incorporating different farming systems are likely to experience different growth rates in the future. Clearly emerging as of extreme importance for food production in this country are areas suited to cereal and large scale livestock production. Those parts of the countryside with large, well-structured farms on good land will be of major importance in the future.

The figures calculated to demonstrate differential growth rates are given in Table I. They are all calculated at current prices.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE I: THE GROWTH OF AGRICULTURAL PRODUCTIVITY BY FARMING TYPE.

	£ per acre at current prices				Annual Growth Overall
	1945	1950	1960	1965	
(a) Specialist Dairy Farms					
Gross Output	19.64	33.02	50.76	62.47	6.0%
Net Product	11.39	14.99	21.23	27.94	4.6%
Value Added	2.09	0.91	2.11	4.49	4.0%
Annual Growth of Value Added (compound)		-18%	+8.7%	+13.5%	
(b) Livestock Farms					
Gross Output	10.14	15.04	15.60	21.05	4.8%
Net Product	6.69	7.95	8.04	12.32	3.1%
Value Added	0.56	-0.35	0.72	2.18	7.0%
Growth rate				+24.5%	
(c) Mixed Farms					
Gross Output	16.45	24.42	44.19	52.35	6.0%
Net Product	9.70	12.02	21.40	25.26	5.1%
Value Added	2.07	1.20	5.92	6.40	5.9%
Growth Rate		-11.5%	+17%	+1.5%	
(d) Arable Farms					
Gross Output	18.91	30.20	49.39	62.23	6.1%
Net Product	11.68	15.95	32.55	34.41	5.6%
Value Added	3.12	2.53	13.12	11.72	6.9%
Growth Rate		-4.3%	+18.0%	-2.3%	
(e) Horticultural Holdings					
Gross Output	65.14	101.26	145.72	240.68	5.2%
Net Product	45.20	57.85	79.47	132.67	5.8%
Value Added	15.57	11.28	13.63	25.57	2.5%
Growth Rate		-6.7%	+2.0%	13.2%	

These figures show that livestock farms have experienced the greatest rate of growth although arable farms are not far behind. The growth rate in the case of mixed farms is some way further down and dairy farms and horticultural holdings take up the lowest position. Whilst livestock farms show a very high rate of growth it is of importance to note that the level of Gross Output achieved by them is low in comparison with other farms and that the smallness of the figures for value added makes their accuracy rather more dubious. A change of £0.5 per acre at this level can make a very great difference.

Since output has all been valued at the prices existing in the individual year in question it is of interest to note the way in which price per unit of output has moved over this period for some of the major items of farm output.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 2: CURRENT PRICES OF INDIVIDUAL ITEMS OF FARM OUTPUT

		1945	1950	1955	1960	1965	Change 1945-1965
Wheat	£ per ton	19.66	26.60	31.00	27.08	25.30	+28.68
Barley	£ per ton	24.75	28.50	25.9	28.88	25.45	+ 2.82
Potatoes	£ per ton	7.88	10.60	15.15	12.22	14.00	+77.66
Sugar Beet	£ per ton	4.46	5.65	6.45	6.33	6.88	+54.26
Beef	£ per cwt	3.14	5.70	7.87	8.05	8.95	+183.03
Lamb	s. per lb. d.c.w.	1/7d.	2/4d.	3/2d.	3/3d.	3/3d.	+105.26
Milk	s. per gallon	2/1d.	2/10d.	3/3d.	3/-	3/3d.	+ 56.00

Prices include subsidies where applicable

Table 2 demonstrates that the arable farmer growing cereals has experienced falling prices in recent years whilst prices received by the beef producer, for example, have been rising. Thus a revaluation of output will do no more than increase the growth rate of cereal farms whilst militating against livestock farms.

From a combination of various quantitative and qualitative judgements it was possible to ascribe appropriate likely growth rates in future agricultural productivity to each of the four possible airport sites together with their relevant urban strategies. This work has involved the assessment of each type of enterprise combination now being carried on, a judgment of the level of yields in these areas, an appreciation of the different permanent farm structures and use of land classification maps. The growth rates thus calculated represent the rate at which, in the authors' opinion, the value added by continued agricultural and horticultural use of the sites in question can be expected to increase up to the end of this century.

2.4 The Relationship between the 'Value Added' Approach and the Cost of Replacing Agricultural Output Lost.

We have shown above that 'Value Added' broadly signifies the exess of agricultural output over the aggregate cost of the transferable inputs. It is thus a measure of the contribution to output made by the site, its soil and other non-transferable assets.

Estimates of agricultural losses could be made by a very different method, namely the amount it would cost to replace the output lost as a result of the depredations of the airport and urbanisation. Losses of farm output will clearly be made good in some way, most probably by increases in output from land elsewhere in Britain. Treated as a problem of replacement, the net cost will amount to the cost at which output could be made good elsewhere, less the savings on transferable inputs as already outlined. Thus, if the lost output could be replaced at the same cost as it has been valued in the estimates of the value of Gross Output in this analysis, then the output replacement method would give an identical result to the 'Value Added' method we have used. If, however, the replacement costs were to exceed the gross value of output, as estimated here, then the 'Value Added' assessment would under-estimate the true loss.

Printed image digitised by the University of Southampton Library Digitisation Unit

A report[4] has been published on the results of a series of studies, made in the middle 1950's, which assessed the costs involved in replacing elsewhere in Britain the agricultural output lost on each acre taken over for urban purposes. The lowest of these costs were found to lie in the intensification of cultivation of existing farmland and the reclamation of small pieces of under-utilised land in the lowlands. The highest costs, as expected, were incurred in the permanent reclamation of marginal hill land. But even forms of agricultural land improvement which showed the lowest relative cost still implied that agricultural output lost from land required for urbanisation could not be replaced at comparable cost.

It might be argued that one should consider the import of additional food where this represents the most economic form of replacement. This alternative is open to two objections. Firstly, it would be difficult to forecast the effect of increased United Kingdom imports on future food prices in the world market. Secondly, over recent years there has been a trend towards much greater self-sufficiency in United Kingdom agricultural food supply, and there seems no reason to suspect that this trend will be reversed in the future. Irrespective, therefore, of the costs of replacing lost farm output on the world market, it must be assumed that it is British costs which are relevant to this exercise.

As there is no reason to believe that the situation in the mid 1950's has substantially changed, it is appropriate to increase the estimates of the gross value of output sufficiently to raise by a factor of two the average estimates of 'Value Added' for the sites and urban areas.

2.5 The Approach to Areas for Possible Urbanisation

The programme for advising on agricultural matters relating to ancillary urban growth was as follows:

(a) A general appreciation was made of the agricultural characteristics of the airport regions to the urbanisation consultants with a view to directing the selection of possible urban strategies towards agriculturally less disadvantageous areas,

(b) Ranking selected strategies on a subjective scale,

(c) costing out short-listed strategies using Gross Output figures,

(d) Costing out the selected optimum for each airport site, using Gross Output, Net Product and 'Value Added' figures.

The methods used in this programme will now be presented more fully.

(a) A professional appraisal of the entire area of search (within a radius of 20 miles of the airport site) was made for each of the airport sites. This was supplemented by an examination of the land classification maps (where available) produced by the Ministry of Agriculture, Fisheries and Food, and of other land quality data, and by assessments of the existing physical and financial productivity of the land under cultivation. Land classification maps take account of the climate, relief, and soil characteristics such as depth, drainage, texture, structure and water-holding capacity. Other data revealed the type of farming practised in each area.

---

[4] Wibberley, G.P., "Agriculture and Urban Growth" Michael Joseph, 1959. Especially chapters 9, 10 and 11.

Printed image digitised by the University of Southampton Library Digitisation Unit

A guiding aim was the retention, for present and future agricultural and horticultural use, of the areas of open land which have the highest quality soils and productivity, the best physical field and farm lay-out, an efficient farm size structure and a flexibility in use which will be of considerable value in the production of future food requirements. Preference was also given to those rural areas which form part of the countryside without a large degree of present urbanisation or urban containment. Whereever possible the attention of the urbanisation consultants was directed towards those areas of land with poorer soils, difficult topography, poor farm structure, low value output and an high degree of existing urban infringement. Unfortunately our work was commissioned too late for this initial approach to be applied to the whole of the Foulness area of search.

(b) Once the urbanisation consultants had decided upon possible areas for urban growth (about eight possible strategies were chosen for each airport site) these could be evaluated as to their likely effects upon agriculture. A method of evaluation was devised by the consultants for use at this stage of the programme. Each item under consideration was ranked on the following scale:

\+ + considerable advantages
\+ some advantages
o neither advantageous nor disadvantageous
\- some disadvantages
\- - considerable disadvantages.

Whilst no take over of land for urban purposes can be considered at all advantageous to local agriculture in a highly urbanised and mobile society it was decided that we should regard the scale as relative rather than absolute so that urban development might be considered as considerably advantageous in one area as compared with another area. Professional judgment was thus exercised as to the order of merit of the various strategies, using the criteria mentioned in the preceding paragraphs. The selection process thus involved both quantitative and qualitative measurements and judgments.

(c) The ranking procedure was used to eliminate various strategies which showed few or no advantages from any point of view. The remaining strategies were then subjected to a more exacting appraisal involving the calculation of some financial measure of comparison. It was possible, in the limited time available, to calculate Gross Output figures for each of the short-listed strategies for each airport site. The following methodoly was used:

(1) the total area for each urban strategy was calculated from the plans provided,

(2) from this was subtracted the non agricultural area (built-up areas, woodlands, roads, etc.),

(3) each possible urban area was broken down into smaller areas according to existing farming types. These were ascertained from various University and Ministry of Agriculture studies and other agricultural land-use sources,

Printed image digitised by the University of Southampton Library Digitisation Unit

(4) Gross Output figures were obtained for each farming type, chiefly from 'Farm Incomes in England and Wales, 1967' (H.M.S.O.),

(5) these figures were then adjusted upwards or downwards according to the criteria listed under paragraphs (a) of this section,

(6) the Gross Output for each urban strategy could then be calculated according to the proportion of the total acreage in each farming type,

(7) the lowest Gross Output figure for any urban strategy was taken as the norm and subtracted from the figures for other urban strategies to give the difference in Gross Output between the lowest total figure and the other total figures,

(8) these differences were capitalised by multiplying by 12% (eight per cent over 50 years. Since these calculations were made the Commission has approved a rate of 10 per cent).

This system was not intended to be accurate but merely to give a rough order of magnitude of the differences between the different strategies in financial terms.

(d) Quantitative and qualitative measures for each strategy short-listed were compared by the planning consultants in consultation with us to arrive at the optimum urban strategy for each airport site. This optimum urban strategy was costed out more fully, taking cognizance of the fact that whilst the whole of the revenue from the land will eventually be lost, certain elements of input may be used profitably elsewhere in the economy. Thus the most realistic figure for this final phase was judged to be the 'Value Added' figure described earlier. The calculation of 'Value Added' for the optimum urban strategies was done in the following manner:

(i) Each year the Ministry of Agriculture, Fisheries and Food conducts a census of the acres of different crops and numbers of different categories of livestock on hand on every farm in the British Isles on June 4th. Information is also given about the quantities of certain stores on hand. The return filled in by an individual farmer is then aggregated with the data from other farmers in the same parish and a parish summary of the census is produced. The Ministry of Agriculture have available the parish summaries for the whole country. The acres of crops and grass and the numbers of livestock was thus available to the Ministry for each of the areas in question. Local officers of the National Agricultural Advisory Service, with an intimate knowledge of local conditions, supplied the level of yield which could be expected for each enterprise in each parish and also provided information on local price levels per unit output where national figures were not appropriate. Knowing these items of information the Ministry then calculated the level of Gross Output in each parish concerned, making estimates of the level of consumption of produce on the farm, valuation changes and purchases of livestock.

Printed image digitised by the University of Southampton Library Digitisation Unit

(ii) Apart from collecting physical agricultural data every year in the annual census the Ministry commissions University departments of agricultural economics to collect complete financial information from about 2,500 farms in England and Wales every year. This information is classified into different farming types, depending upon the number of man-days spent upon each enterprise on the farm, and into different regions. The results of the analysis are published in 'Farm Incomes in England and Wales' which appears annually. A complete breakdown of costs and returns is given for each farming type in each region and the Ministry were able to use this information in calculating the level of expenditure on imported inputs for each farming type in the South-East region. Since parish census data also show the distribution of farms within each farming type for each parish the likely level of expenditure on imported inputs could be estimated for every parish concerned. In this way figures of Net Product were estimated.

(iii) 'Farm Incomes in England and Wales' also provides figures for the returns to the farm-based transferable resources. Returns to paid and unpaid labour are given (unpaid labour is further broken down into 'family labour' and 'labour of farmer and his wife') together with the level of investment in the various items of working capital. No figures for management income of the farmer are supplied and these were estimated from the data for the unpaid labour of the farmer and his wife. It is assumed that the more time a farmer devotes to his manual function the less time he will have available to fulfil his managerial tasks. If it is assumed that all farmers will earn a similar total return from both their manual and managerial work and if an arbitrary total is assigned then the difference between such a total and the amount imputed to manual work will represent the farmer's managerial return. The arbitrary total figure chosen was £1,000 so that a farmer earning £400 from his manual efforts will receive £600 for his managerial function. Whilst £1,000 may appear a small sum for a man in such a position to earn in total it must be remembered, firstly, that he also enjoys the benefit of the income earned by the capital invested in the business and that, secondly, for reasons mentioned previously the transfer earnings of a farmer's managerial ability are likely to be rather low. For the purpose of assigning an annual value to the working capital of the business a market rate of 10% was chosen.

Having thus determined the level of returns to the various mobile resources it was possible to express the total as a percentage of Gross Output for each farming type and treat the calculation similarly to that described for imported inputs under (ii) above. The residual figure is 'Value Added' by agricultural land and non-transferable capital items. All calculations were made on a parish basis and subsequently expressed on a per acre basis for each parish.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.6 The Approach to Possible Airport Sites

The case of the airport sites is very much simpler than that of the urbanisation studies since a set of provisional plans were already available at the beginning of the period when our agricultural assessment was set under way. Our situation was thus an analogous one to that when the final selection of the optimum urban strategies was made and the same methods of calculation were used.

A slight difference arises in the treatment of farm houses and cottages, which will all be lost on the airport site; it will be necessary to add back in the value of such properties. Since the Commission's research officers are handling the problem of valuing the loss of residential property on the airport sites we have agreed that they should also properly include the value of farm houses and cottages in their calculation.

We have been unable to discover sufficient evidence on the effect of noise on farm productivity, and especially its effect on farm animals and on farm working conditions. Accordingly we include no estimates of the losses which could possibly arise out of this factor.

Printed image digitised by the University of Southampton Library Digitisation Unit

3. AGRICULTURE AND THE POSSIBLE URBAN SITES

3.1 Foulness

(i) Appraisal of the Area of Search

The Foulness area of search is considerably restricted due to the coastal nature of the airport site. Nonetheless it is notable for the wide agricultural differences which occur, ranging from the highly intensive and productive horticultural areas between Rochford and Wakering and between Burnham and Bradwell to the ragged agricultural 'slumlands' of the plots north of Basildon.

Rich lands south of the Roach produce high value crops such as early potatoes, Brussels sprouts, lettuces and other horticultural crops, and they may produce two or even three crops during the course of one year. The region has a number of notable advantages, namely a good, rich, brick earth type of soil which is classified as Grade I by the Ministry of Agriculture, good natural drainage, high light intensity and large, well-structured farms with big fields. There are also good communications to major markets for horticultural produce.

This picture is mirrored to a lesser extent north of the Roach in the Stambridge/Canewdon area, and again north of the Crouch along the Burnham-Bradwell axis. In both of these regions horticultural crops are grown in some abundance but there is a higher proportion of lower value crops such as cereals. The soils are brick earths and light sandy loams and are classified as Grade I and Grade 2.

Moving in a westerly direction the value of agricultural output slowly declines as does the general level of agricultural and horticultural practice. Farms are not so large or well laid out, soils are poorer and the topography becomes rather more unsuited to better types of agricultural production. This is generally an area where urban fringe enterprises have grown up between the Southend urban complex and the Crouch; small, untidy farms broken up by the infiltration of spasmodic urban development, roads and power installations. The physical scene is, however, in contrast to the high financial returns of the area since dairying, poultry and horticultural enterprises have grown up in response to the stimulus of a strong local market. Further to the west are the unproductive plotlands of Basildon, the agricultural 'badlands' of Essex.

North of the Crouch the situation is rather different with a considerable emphasis on dairy and livestock farms and a larger size of holding compared with that around Southend. Most farms have some form of arable production and this is generally some cereal crop with potatoes grown as a high value crop.

Apart from the horticultural areas to the east, most of the land is classified as Grade 3 with some Grade 4, mostly around Canvey and Benfleet and bordering the Roach and the Crouch.

Printed image digitised by the University of Southampton Library Digitisation Unit

(ii) The Gross Agricultural Output Linked to the Short Listed Urban Strategies

TABLE 3: ANNUAL GROSS OUTPUT ON SHORT-LISTED URBAN STRATEGIES

Strategy	Acres	Gross Output £ per annum	Gross Output per acre £ per annum
North of Crouch	2,556	168,000	66
South of Crouch	25,704	2,347,000	91
TOTAL	28,260	2,515,000	89
TOTAL	23,948	2,422,000	101
North of Crouch	13,996	1,168,000	84
South of Crouch	14,130	1,672,000	118
TOTAL	28,126	2,840,000	100
North of Crouch	13,252	1,113,000	84
South of Crouch	13,844	1,340,000	97
TOTAL	27,096	2,453,000	91
North of Crouch	13,338	1,258,000	94
South of Crouch	16,401	1,929,000	118
TOTAL	29,739	3,187,000	107

In this case strategy 8 was strongly favoured since it involved the lowest total loss in Gross Output and contained urban growth between the Thames Estuary and the Crouch. In spite of this grave reservations were registered with regard to the use of land east of Rochford for urban purposes. It was noted that the high Gross Output figure per acre was in part due to the inclusion of this land and in part to the distorting factors between Southend and the Crouch. The selected strategy bears strong resemblance to strategy 8 even though some alterations were made in it.

(iii) Selected Strategy - Physical Appraisal

Whilst the optimum strategy is confined to the area south of the Crouch, with the exception of some scattered village developments, it involves the best horticultural and agricultural land in the region without reaching sufficiently far to the west to include the worst. The eastern section of the proposed new urban area is composed almost entirely of the Grade I and 2 land described in 3.1 (i) above, and it is this part which will be developed initially. West of Rochford, and from Canewdon through Ashingdon to Hullbridge, the land is of much poorer quality and agriculture has been eroded by urban development and fringe recreational activities. The topography here does not assist efficient agricultural practice and farming is mostly dairying with some intensive livestock and horticultural production.

Printed image digitised by the University of Southampton Library Digitisation Unit

The small pockets of possible development both to the North and the South of the Crouch will not interfere unduly with agriculture provided it is sensibly arranged to take maximum advantages of the possibilities for in-filling and the creation of compact village or town entities.

TABLE 4: AGRICULTURAL LAND CLASSIFICATION

Development Phase		Grade I	Grade 2	Grade 3	Grade 4	Total
Plan 2	acres	4,470	3,040	2,030	610	10,150
	%	44	30	20	6	100
Plan 3	acres	360	1,360	6,000	280	8,000
	%	4.5	17	75	3.5	100
Plan 2 + 3	acres	4,830	4,400	8,030	890	18,150
	%	27	24	44	5	100

It can be seen that nearly one half of the Plan 2 area, which will be developed first, is composed of Grade 1 agricultural land, and a further third of Grade 2 land. Of the total proposed urban area one half is of Grade 2 quality or better.

(iv) Selected Strategy - Financial Measures of Annual Agricultural Loss

TABLE 5: FINANCIAL MEASURES

Strategy phase	Acres	Gross Rent	Gross Output	Net Product	'Value Added'
		£ per annum	£ per annum	£ per annum	£ per annum
Plan 2 total	10,150	87,190	2,230,260	1,213,230	376,192
per acre	-	8.6	220	120	37.1
Plan 3 total	8,000	56,320	610,800	318,480	91,765
per acre	-	7.0	76	40	11.5
Plan 2 total + 3	18,150	143,510	2,841,060	1,531,710	467,957
per acre	-	7.9	157	84	25.8

These figures may be adjusted to exclude enterprises (mainly pigs and poultry) unrelated to the physical characteristics of the site.

TABLE 6: ADJUSTED FINANCIAL MEASURES

Strategy phase	Gross Output £ per annum	Net Product £ per annum	'Value Added' £ per annum
Plan 2 per acre	170	87	24.6
Plan 3 per acre	42	18	3.0
Plan 2 + 3 per acre	114	57	15.1

Printed image digitised by the University of Southampton Library Digitisation Unit

The penalties incurred by building on the highly graded land in the Plan 2 area are clearly demonstrated. It is probable that the figures for Plan 3 would be even lower further to the west.

It is expected that the annual rate of growth in 'Value Added' is likely to be 8 per cent compound in the Plan 2 Area and 4% compound in the Plan 3 area. An overall figure for the Plan 2 plus the Plan 3 area would be of the order of 6 per cent compound per annum. These growth rates are at current market prices.

3.2 Nuthampstead

(i) Appraisal of the Area of Search

The Nuthampstead area of search consists almost entirely of an open, undisturbed countryside on the fringe of the fenlands. It forms the southern extremity of the broad eastern agricultural plain of England which is so important in our national food production programme. To the north are the productive fenlands of East Anglia and to the west the horticultural areas of Sandy and St Neots.

At its southern urban/rural boundary the region has a very diversified agriculture with dairying, horticulture, livestock enterprises and general arable farming intermixed. This pattern follows the valley of the Stort and the line of the A1 trunk road through Stevenage to Baldock, but gives way to predominantly arable areas, growing mostly cereals and roots, to the centre and north of the area of search. In the west the mixed agriculture of Baldock and Stevenage gives way to the rich and productive horticultural areas of Biggleswade, Sandy and St Neots further up the A1.

The agricultural picture, away from the domesticated countryside and urban sprawl of the southern boundary, is one of a strong farming region in the best tradition of the agriculture of this country. Farms are very well structured, with good square fields ideally suited to the existing nature of production.

The land is mostly classified as Grade 2 with fingers of Grade 3 extending along the courses of the rivers Rib, Ash, Stort, Cam and Rhee and other pockets scattered across the area. Grade I land occurs in the Horticultural areas to the west but very little Grade 4 is in evidence.

Printed image digitised by the University of Southampton Library Digitisation Unit

(ii) The Gross Agricultural Output Linked to the Short Listed Urban Strategies

TABLE 7: ANNUAL GROSS OUTPUT ON SHORT LISTED URBAN STRATEGIES

Strategy	Acres	Gross Output £ per annum	G.O./Acre £ per annum
Total	22,477	1,510,000	67
North of Airport	11,115	1,024,000	92
South of Airport	11,856	836,000	71
Total	22,972	1,860,000	81
North of Airport	6,175	714,000	116
South of Airport	19,019	1,306,000	69
Total	25,194	2,020,000	80
Total	23,218	1,622,000	70

All split strategies were strongly opposed on the grounds that urban development to the north of the airport would further exascerbate the high level of interference with agriculture which would be inevitable with any development in this area. All northerly solutions would carry urban infringement into otherwise unspoilt agricultural countryside. The strategy ultimately chosen was number 6 although the final structure plan reduced the degree of agricultural objection by incorporating most of the development in the plan to the south of the airport. Nevertheless, we still have serious reservations about this plan and the damaging effect that it would have upon agricultural production.

(iii) Selected Strategy - Physical Appraisal

To the north of the airport selected village expansion, kept to a minimum, should not have any great damaging effect upon farming. It is not possible to describe the physical nature of production in these areas since they have not been sufficiently identified. Suffice it to say that here is a large area of well structured agricultural land where any urban development could prove most destructive.

South of the proposed airport the area proposed for development between Bishops Stortford and Quendon, along the A11 truck road and up to the main Cambridge railway line, is a mixed arable and livestock area with some dairying and a small amount of horticultural activity around Bishops Stortford and Stansted Mountfitchet. The undulating relief and urban intrusion both make good agricultural husbandry rather more difficult and the average size of holding is rather smaller than to the west. Farms to the west of the A11 tend towards specialist cereal farms over rolling countryside, reminiscent of south country downlands. Farms are large, well equipped and well structured for this type of production.

The whole of the area is classified as Grade 2 except for two narrow bands reaching up along the Stort and the A11 and a block around Stansted which are Grade 3.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 8: AGRICULTURAL LAND CLASSIFICATION

Development phase	Grade 2	Grade 3	Total
Plan 2 acres	7,000	3,025	10,025
%	69.5	30.5	100
Plan 3 acres	2,230	3,970	6,200
%	36	64	100
Plan 2 acres + 3	9,230	6,995	16,225
%	57	43	100

The Plan 2 area is predominantly classified as Grade 2 land and, as in the case of Foulness, it is this area which would be developed first and thus incur early agricultural penalties. The proportions of Grade 2 and Grade 3 are roughly reversed in the Plan 3 map, but overall rather more than half of the total area is classified as Grade 2.

(iv) Selected Strategy - Financial Measures of Annual Agricultural Loss

TABLE 9: FINANCIAL MEASURES

Strategy phase	Acres	Gross Rent £ per annum	Gross Output £ per annum	Net Product £ per annum	'Value Added' £ per annum
Plan 2 total	10,025	56,140	621,550	320,800	104,260
per acre	-	5.6	62	32	10.4
Plan 3 total	6,200	37,820	545,600	279,000	84,320
per acre	-	6.1	88	45	13.6
Plan 2 total + 3	16,225	93,960	1,167,250	599,800	188,580
per acre	-	5.8	72	37	11.6

When the above figures are adjusted to remove returns to those enterprises (mainly pigs and poultry) unrelated to the physical characteristics of the site, the following table results.

TABLE 10: ADJUSTED FINANCIAL MEASURES

Strategy phase	Gross Output £ per annum	Net Product £ per annum	'Value Added' £ per annum
Plan 2 per acre	49	22	6.7
Plan 3 per acre	73	37	10.5
Plan 2 + 3 per acre	56	28	8.2

In this case the damaging effects of building on better agricultural land are not in evidence. This is due in part to the fact that the figures for the Plan 3 areas are increased by the presence of some horticultural

Printed image digitised by the University of Southampton Library Digitisation Unit

enterprises which will, in effect, be able to continue until their present stock of capital is exhausted both by virtue of the fact that they are located in an area scheduled for later development and also they take up so little room that they will not necessarily be required to vacate the land they occupy until quite late in the Plan 2 phasing.

The compound annual rate of growth of 'Value Added' is likely to be about 7% at current market prices.

3.3 Cublington

(i) Appraisal of the Area of Search

The Cublington area of search is characterised by very mixed farming whose character changes constantly within very short distances. Around Aylesbury is a substantial dairy and livestock belt, although cereals, some roots and a few horticultural crops are also grown. Further to the north the emphasis on dairying falls off and a large arable and livestock area is a feature of the central region. To the east this merges with a horticultural belt which runs to the north east from Luton and Leighton Linslade through Ampthill to Biggleswade, surrounded to the north and south by more dominantly arable areas with some livestock and dairying. Dairying again features strongly to the north of Buckingham. To the west arable farms become more important. Throughout the region there is a liberal scattering of pig and poultry farms, some of which are very large and well equipped. Notable concentrations occur around Wing, Buckingham, Bletchley, Dunstable and Hemel Hempstead.

There is, thus, a very variable agricultural scene with a large number of different enterprises. This is to be expected in a rather traditional agricultural area such as this part of the Midlands where the soil and farm economy are not generally of a nature to encourage large scale modern farming.

Small areas of land are classified as Grade 2 and these are located mostly in the Vale of Aylesbury and along a broad line from Buckingham, through Stony Stratford, to Emberton and Lavington. Rather more substantial areas occur to the north of Luton and around Ampthill. Apart from this most of the region is classified as Grade 3 with large areas of Grade 4 and some Grade 5 on Ot Moore.

As the nature of farming practice varies so also does the level of investment and the farm structure and layout. Generally the farm fixed equipment is rather better than would be expected and in some parts, especially where the land is of better quality, the level of investment is quite considerable. Farm structure is mostly good, with large, well laid-out fields. The situation of farmsteads in the villages, as is the general rule in this part of the country, offsets some of the advantages of good structure.

Printed image digitised by the University of Southampton Library Digitisation Unit

(ii) The Gross Agricultural Output Linked to the Short Listed Urban Strategies

TABLE 11: ANNUAL GROSS OUTPUT ON SHORT LISTED URBAN STRATEGIES

Strategy	Acres	Gross Output £ per annum	G.O./acre £ per annum
A TOTAL	15,808	910,000	58
B North of	9,139	526,000	58
South	8,151	526,000	65
TOTAL	17,290	1,052,000	61
C TOTAL	12,597	703,000	56
E North	8,892	500,000	56
South	10,127	643,000	64
TOTAL	19,019	1,143,000	60

Any areas of urban strategies which coincided with land designated for the new city of Milton Keynes have not been included in the costings procedure since it was felt that this land is already committed to urban development and thus will eventually be taken out of agricultural use regardless of whether or not the airport comes to Cublington. In the analysis of the optimum strategy, which includes a large proportion of land within the Designated Area, all of the land was costed apart from that already committed for development up to the year 1981.

The guiding aim in the case of urban strategies at this site was to keep urban development away from the Vale of Aylesbury and to contain it, as far as possible, in areas where growth is already occurring or likely to occur. For this reason plans incorporating all or part of the Milton Keynes Designated Area were favoured. It happened that Strategies A and C were of this nature and also appeared to sustain the lowest loss of Gross Output. In the event it was a combination of these strategies which was chosen as the optimum one for more detailed costing.

(iii) Selected Strategy - Physical Appraisal

Within a mixed farming sub-region the section covered by the selected strategy is very much simpler. The Horwood-Winslow area is predominantly grassland, supporting dairy and beef cattle and sheep. To the east, in the Newton Longville - Mursely area slightly more cereals are grown but the basic picture is very similar to that around the Shenleys. The emphasis changes quite sharply to the north of the Shenleys, and the east of the A5 trunk road, to a predominantly cereal farming type with some dairying and cattle rearing.

Almost all the area is Grade 3 land with two or three very small patches of Grade 2 around Stoney Stratford and Wolverton and Milton Keynes village. Grade 4 land occurs along the river Ouzel, on Bradwell Common, at Shenley, and between Addington and Great Horwood.

Farms are generally well structured and the level of investment in fixed farm equipment is average.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 12: AGRICULTURAL LAND CLASSIFICATION

Development phase	Grade 2	Grade 3	Grade 4	Total
Plan 2 acres	475	9,155	2,260	11,890
%	4	77	19	100
Plan 3 acres	200	8,650	1,090	9,940
%	2	87	11	100
Plan 2 + 3 acres	675	17,805	3,350	21,830
%	3	82	15	100

The Plan 2 area has a slightly greater proportion of Grade 4 land and a smaller proportion of Grade 3, although there is very little to distinguish them. The quanity of Grade 2 land involved is very small.

(iv) Selected Strategy - Financial Measures of Annual Agricultural Loss

TABLE 13: FINANCIAL MEASURES

Development phase	Acres	Gross Rent £ per annum	Gross Output £ per annum	Net Product £ per annum	'Value Added' £ per annum
Plan 2 total	11,890	61,828	594,500	285,360	64,206
per acre	-	5.2	50	24	5.4
Plan 3 total	9,940	53,676	675,920	308,140	79,520
per acre	-	5.4	68	31	8.0
Plan 2 total + 3	21,830	115,504	1,270,420	593,500	143,726
per acre	-	5.3	58	27	6.6

Figures adjusted by the removal of returns to enterprises (mainly pigs and poultry) unrelated to the physical characteristics of the soil are:

TABLE 14: ADJUSTED FINANCIAL MEASURES

Development phase	Gross Output £ per annum	Net Product £ per annum	'Value Added' £ per annum
Plan 2 per acre	38	15	3.0
Plan 3 per acre	42	13	2.8
Plan 2 + 3 per acre	40	14	2.9

Preference is not given to any particular area in the case of this strategy. If, however, Cublington is the final chosen airport site, before development proceeds, it should be possible to construct a phasing programme which takes into account the differences in agricultural quality within the area.

The likely annual growth in 'Value Added' is likely to be about 4% compound per annum at current prices.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.4 Thurleigh

(i) Appraisal of the Area of Search

The Thurleigh sub-region contains very sharp differences in agricultural practice. It is bounded on the east by the A1 and by the Biggleswade - Huntingdon horticultural land which is an immensely productive area with heavy investment in glasshouses, growing horticultural crops on a field scale to supply the London market. Up to three crops may be grown on the same piece of land each year and this results in very high levels of Gross Output.

Travelling west from the A1 the horticultural belt extends down from Biggleswade, through Ampthill to Luton and Leighton Linslade. Another finger stretches out from St Neots towards Bedford, and yet another from Sandy towards Kimbolton. The central and western strips of the area of search are much more variable, but generally the emphasis changes from horticultural crops to general arable crops, with a degree of horticultural activity in the centre of the region, and again to livestock farming with some cash cropping in the west. To the south and west there is considerable mixed farming with some pigs and poultry. Urban and industrial infringement has created areas of rather poorer agricultural tenor. The bricklands to the south west of Bedford is one such area and the urban complex of Wellingborough, Kettering Rushden and Thrapston another. The latter area is further hampered by a more severe topography than the rest of the region which makes the conditions of agricultural practice more difficult.

The region is mostly of high agricultural value with good fixed equipment and farm structure. The land around Bedford to the west, north and east, the airport site and the Ampthill - Biggleswade - Huntingdon regions are classified as Grade I or 2 soils, and the majority of the remainder is classified as Grade 3.

(ii) The Gross Agricultural Output Linked to the Urban Strategies

No strategies were discarded as a result of the preliminary appraisal and figure were produced for all solutions.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 15: ANNUAL GROSS OUTPUT OF URBAN STRATEGIES

Strategy	Acres	Gross Output £ per annum	G.O./acre £ per annum
A TOTAL	22,601	1,221,000	54
B TOTAL	25,812	2,898,000	112
C South of Airport	11,856	1,051,000	89
North of Airport	10,868	513,000	47
TOTAL	22,724	1,564,000	69
D TOTAL	22,107	1,179,000	53
E TOTAL	21,366	1,242,000	58
F South of Airport	13,091	1,271,000	97
North of Airport	11,115	563,000	51
TOTAL	24,206	1,834,000	76
G South of Airport	8,646	726,000	84
North of Airport	18,155	947,000	52
TOTAL	26,801	1,673,000	62

These figures showed considerable differences between urban strategies and proved instrumental in eliminating certain urban solutions on their own merit. It was decided that figures more representative of 'Value Added' should be calculated to reinforce the agricultural argument for eliminating these strategies. It proved possible to make rapid calculations of Net Output which differs from 'Value Added' only in that it contains the returns to the farmer's manual and managerial labour, his wife's manual labour, and to working capital.

Accordingly these Net Output figures are set out in the next table.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 16: ANNUAL NET OUTPUT OF URBAN STRATEGIES

Strategy	Net Output £ per annum	Net Output per acre £ per annum
A TOTAL	405,500	18
B TOTAL	988,300	38
C South of Airport	353,000	30
North of Airport	168,700	16
TOTAL	521,700	23
D TOTAL	378,200	17
E TOTAL	413,600	19
F South of Airport	428,500	43
North of Airport	183,200	16
TOTAL	611,700	25
G South of Airport	244,700	28
North of Airport	312,600	17
TOTAL	557,300	21

The Net Output figures served to reinforce the earlier decision that Strategies A and D were most suitable for development from the agricultural view point and it was a combination of these strategies that was chosen for detailed costing.

(iii) Selected Strategy - Physical Appraisal

The area for proposed urban development takes in a large part of the Rushden, Higham Ferrers, Wellingborough, Irthlingborough urban-cum-agricultural complex. It is an area which has been agriculturally degraded by continued urban intrusion and the oppression of noxious fumes from local industries. It is mostly a mixed livestock area with dairying and pigs and poultry as high value enterprises.

East of Higham Ferrers and Rushden the countryside is much more rural in appearance with cereals an important part of farm production. The Melchbourne and Yielden area show a renewed emphasis on dairying with some cash cropping. The eastern extremity of the strategy map approaches the horticultural and cash crop area of Kimbolton.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 17: AGRICULTURAL LAND CLASSIFICATION

Development phase	Grade 2	Grade 3	Grade 4	Total
Plan 2 acres	2,360	9,440	625	12,425
%	19	76	5	100
Plan 3 acres	2,075	2,075		4,150
%	50	50		100
Plan 2 + 3 acres	4,435	11,515	625	16,575
%	27	69	4	100

Most of the plan 2 map is classified Grade 3 with only about one fifth grade 2. The plan 3 area is evenly split between Grade 2 and Grade 3 land.

(iv) Selected Strategy - Financial Measures of Annual Agricultural Loss

TABLE 18: FINANCIAL MEASURES

Strategy phase	Acres	Gross Rent £ per annum	Gross Output £ per annum	Net Product £ per annum	'Value Added' £ per annum
Plan 2 total	12,425	69,580	757,925	360,325	88,218
per acre	-	5.6	61	29	7.1
Plan 3 total	4,150	23,240	265,600	128,650	40,255
per acre	-	5.6	64	31	9.7
Plan 2 total	16,575	92,820	1,023,525	488,975	128,473
per acre	-	5.6	62	30	7.8

The figures were then adjusted to remove the returns to enterprises (mainly pigs and poultry) unrelated to the physical characteristics of the site.

TABLE 19: ADJUSTED FINANCIAL MEASURES

Strategy phase	Gross Output £ per annum	Net Product £ per annum	'Value Added' £ per annum
Plan 2 per acre	42	15	3.1
Plan 3 per acre	46	19	4.2
Plan 2 + 3 per acre	43	16	3.4

It would appear that early development will take place on the less productive land.

The growth of 'Value Added' is likely to be about 4% compound per annum at current prices.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.5 Comparison of the Selected Urban Proposals

The following table compares the financial measures and the grades of agricultural land for each of the optimum urban proposals.

TABLE 20: COMPARISON OF SELECTED URBAN PROPOSALS

	Foulness £ per annum	Nuthampstead £ per annum	Cublington £ per annum	Thurleigh £ per annum
Gross Rent Total	143,510	93,960	115,504	92,820
per acre	7.9	5.8	5.3	5.6
Gross Output Total	2,861,060	1,167,150	1,270,420	1,023,525
per acre	157	72	58	64
Net Product Total	1,531,710	599,800	593,500	488,975
per acre	84	37	27	30
'Value Added' Total	467,957	188,580	143,726	128,473
per acre	25.8	11.6	6.6	7.8
Adjusted Figures				
Gross Output per acre	114	56	40	43
Net Product per acre	57	28	14	16
'Value Added' per acre	15.1	8.2	2.9	3.4
Land Quality				
Grade I acres	4,830	-	-	-
%	27	-	-	-
Grade 2 acres	4,400	9,230	675	4,435
%	24	57	3	27
Grade 3 acres	8,030	6,995	17,805	11,515
%	44	43	82	69
Grade 4 acres	890	-	3,350	625
%	5	-	15	4
Total Acreage	18,150	16,225	21,830	16,575

Foulness shows an high acreage loss which, combined with an overall high 'Value Added' figure per acre, serves to make the highest financial loss of all strategies. It is the only proposed urban area with any Grade I land, of which there is a considerable quantity, and it also has a large proportion of Grade 2.

Printed image digitised by the University of Southampton Library Digitisation Unit

The early development, proposed in Plan 2, hits the very best of this land, but land quality is very much poorer in the later development proposed in Plan 3. If the whole of the projected urban development were moved to the west so that it occupied land of an equal output and quality to the Plan 3 area then the Foulness urban proposal would show the lowest total adjusted value added.

	Adjusted 'Value Added'
Foulness (west site)	54,450
Nuthampstead	133,045
Cublington	63,307
Thurleigh	56,355

Nuthampstead is the second most costly although the lowest acreage out of all the urban strategies is involved here. Well over half of the land is classified as Grade 2. Again, were the emphasis of the proposed city shifted to the Stort valley a great deal less of the better graded land would be required, although higher 'Value Added' figures occur on the poorer land in this particular case.

Cublington incurs relatively high total figures in spite of low figures per acre. This is brought about by the fact that this strategy takes up about 25 per cent more land than either the Nuthampstead or Thurleigh alternatives and about 17 per cent more than Foulness.

It must be assumed that the South East region will be faced with major urban development problems regardless of any decision on a Third London Airport; the population to be housed in the associated urban proposals described above would require accommodation somewhere in the region even if no airport were to be built. From this point of view it is hard to envisage that there are many other areas of suitable land for development in the South East with much lower figures of agricultural 'Value Added' than that shown either for Thurleigh or the hypothetical West Site at Foulness.

Printed image digitised by the University of Southampton Library Digitisation Unit

4. AGRICULTURE AND THE AIRPORT SITES

4.1 Foulness

(i) Physical Appraisal of the Site

If the airport and its safety zone are entirely based upon the Maplin Sands then there will be no loss of land to agriculture; indeed there could be a net gain if land currently used by the War Department were returned to agricultural production. This could amount to 3000 acres. The Ministry of Defence also exercise some control over the nature of production on Foulness Island and the possible lifting of these restrictions could benefit agricultural production.

4.2 Nuthampstead

(i) Physical Appraisal of the Site

The proposed airport site is situated in a predominantly arable area on boulder clay. Only a very small proportion of the land is in permanent pasture whilst over two-thirds is in cereals, principally wheat and barley. Potatoes and sugar beet are grown as high value cash crops.

Few livestock are kept apart from pigs and some poultry and beef cattle. Very little dairying is practised.

Farms are mostly large (rather over 400 acres) and are extremely well suited to large scale arable production, with big, well structured fields and a heavy investment in the appropriate equipment for handling such produce.

TABLE 21: AGRICULTURAL LAND CLASSIFICATION

Grade	Acres	Percent
2	6,860	98
3	140	2
TOTAL	7,000	100

(ii) Financial Measures of Annual Agricultural Losses

TABLE 22

	Gross Rent	Gross Output	Net Product	'Value Added'
	£	£	£	£
Total	42,700	379,638	230,525	67,830
per acre	6.1	54	33	9.7

Printed image digitised by the University of Southampton Library Digitisation Unit

4. AGRICULTURE AND THE AIRPORT SITES

4.1 Foulness

(i) Physical Appraisal of the Site

If the airport and its safety zone are entirely based upon Sands then there will be no loss of land to agriculture; indeed be a net gain if land currently used by the War Department were agricultural production. This could amount to 3000 acres. The Defence also exercise some control over the nature of production Foulness Island and the possible lifting of these restrictions c agricultural production.

4.2 Nuthampstead

(i) Physical Appraisal of the Site

The proposed airport site is situated in a predominantly ara on boulder clay. Only a very small proportion of the land is in pasture whilst over two-thirds is in cereals, principally wheat a Potatoes and sugar beet are grown as high value cash crops.

Few livestock are kept apart from pigs and some poultry and cattle. Very little dairying is practised.

Farms are mostly large (rather over 400 acres) and are extre suited to large scale arable production, with big, well structured and a heavy investment in the appropriate equipment for handling produce.

TABLE 21: AGRICULTURAL LAND CLASSIFICATION

Grade	Acres	Percent
2	6,860	98
3	140	2
TOTAL	7,000	100

(ii) Financial Measures of Annual Agricultural Losses

TABLE 22

	Gross Rent	Gross Output	Net Product
	£	£	£
Total	42,700	379,638	230,525
per acre	6.1	54	33

Printed image digitised by the University of Southampton Library Digitisation Unit

4.4 Thurleigh

(i) Physical Appraisal of the Site

This is a very strong arable area with a predominance of cereals. Half of the site is in barley and half of the residue in wheat. Potatoes and vegetables are also grown. Farm structure is very good and there is considerable investment in fixed equipment.

The average size of farm is rather lower than would be expected at about 220 acres.

TABLE 25: AGRICULTURAL LAND CLASSIFICATION

Grade	Acres	Percent
2	6,440	92
3	560	8
Total	7,000	100

(ii) Financial Measures of Annual Agricultural Loss

TABLE 26

	Gross Rent	Gross Output	Net Product	Value Added
	£	£	£	£
Total	42,000	513,494	269,025	87,555
per acre	6.0	73	39	12.5
Adjusted				
Total	-	472,016	239,540	79,100
per acre	-	67	34	11.3

Annual growth is put at 7% compound for 'Value Added' at current prices.

Printed image digitised by the University of Southampton Library Digitisation Unit

4.5 Comparison of the Airport Sites

TABLE 27: COMPARISON OF FINANCIAL MEASURES AND GRADES OF AGRICULTURAL LAND FOR EACH OF THE PROPOSED AIRPORT SITES

	Nuthampstead £	Cublington £	Thurleigh £
Gross Rent, Total	42,700	38,760	42,000
per acre	6.1	5.1	6.0
Gross Output, Total	379,638	378,332	513,494
per acre	54	50	73
Net Product, Total	230,525	170,650	269,025
per acre	33	22	39
'Value Added', Total	67,830	32,013	87,555
per acre	9.7	4.2	12.5
Adjusted figures			
Gross Output, per acre	43	37	67
Net Product, per acre	25	13	34
'Value Added', per acre	7.5	1.5	11.3
Land Quality			
Grade 2, acres	6,860	152	6,440
%	98	2	92
Grade 3, acres	140	5,700	560
%	2	75	8
Grade 4, acres	-	1,748	-
%	-	23	-
Total acres	7,000	7,600	7,000

The most expensive airport site in agricultural terms is Thurleigh. This site is about 25% more expensive than Nuthampstead which is the runner up. It is roughly two and half times as expensive as Cublington in terms of 'Value Added' figures.

Printed image digitised by the University of Southampton Library Digitisation Unit

Nuthampstead fares worse for agriculture on the financial side but has a great many physical qualities to its advantage; size of farm is very much bigger, there is a greater proportion of Grade 2 land involved (about 10 percent more than the Thurleigh site) and the general farm structure would seem to be slightly better than at Thurleigh. Also the Nuthampstead site is not enclosed and disected by urban development to quite the same extent as at Thurleigh.

The agricultural case at Cublington is poorer on both the financial and the physical side. Again, farm size is not in favour of this site and it would be difficult to argue for it in terms of either structure or investment in fixed farm equipment. The one point of debate on which it may score over Thurleigh is its more rural setting with open access to the countryside to the north and to the west. Even so the development of Milton Keynes will tend to alter the balance here.

In this context Foulness is not mentioned. It is assumed that any losses to fishing interests will be balanced by the gains experienced by the agricultural industry as the result of the release of Ministry of Defence land and the relaxation of certain restrictions on farming. It may be that the result of a full costing, when the siting proposals are more fully known, will show a negative cost to the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

5. A FINAL AGRICULTURAL ASSESSMENT

Like so many other aspects of the problem of choosing the optimum site for the Third London Airport, agricultural considerations are partly measureable and partly subjective. An attempt has been made to quantify the contribution of agriculture and this is the reason for the detailed calculations of output and costs, ending in the final estimates of the 'Value Added' by the different airport sites and the various urban strategies linked with them.

TABLE 28: ACRES REQUIRED FOR URBANISATION AND THE AIRPORT SITE

	acres
Cublington	29,430
Thurleigh	23,575
Nuthampstead	23,225
Foulness	18,150

TABLE 29: AGRICULTURAL 'VALUE ADDED' (ADJUSTED) ON THE AIRPORT AND URBAN SITES

	£/annum
Foulness	273,974
Nuthampstead	184,594
Thurleigh	131,636
Cublington	74,413

TABLE 30: AGGREGATED FIGURES FOR EACH AIRPORT SITE TOGETHER WITH ITS ASSOCIATED URBAN AREA

Site	Agricultural Land Acres	Gross Rent £	Gross Output £	Net Product £	'Value Added' £
Total					
Foulness	18,150	143,510	2,841,060	1,531,710	467,957
Nuthampstead	23,225	136,660	1,546,788	830,325	256,410
Cublington	29,430	154,264	1,648,752	764,150	175,739
Thurleigh	23,575	134,820	1,537,019	758,000	216,028
Per acre					
Foulness	–	7.9	157	84	25.8
Nuthampstead	–	5.9	67	38	11.0
Cublington	–	5.2	56	26	6.0
Thurleigh	–	5.7	65	32	9.2
Adjusted total					
Foulness	–	–	2,065,130	1,027,355	273,974
Nuthampstead	–	–	1,168,729	626,249	184,594
Cublington	–	–	1,205,312	409,564	74,413
Thurleigh	–	–	1,163,721	485,053	131,636

Printed image digitised by the University of Southampton Library Digitisation Unit

Site	Agricultural Land Acres	Gross Rent £	Gross Output £	Net Product £	'Value Added' £
Adjusted per acre					
Foulness	-	-	114	57	15.1
Nuthampstead	-	-	50	27	7.9
Cublington	-	-	41	14	2.5
Thurleigh	-	-	49	21	5.6
Growth rate					
Foulness	6%				
Nuthampstead	7%				
Cublington	4%				
Thurleigh	5%				

TABLE 31: AGRICULTURAL LAND CLASSIFICATION OF THE INDIVIDUAL AIRPORT SITES WITH THEIR SELECTED URBAN STRATEGIES

Site	Grade 1	Grade 2	Grade 3	Grade 4	Total
			Acres		
Foulness	4,830	4,400	8,030	890	18,150
Nuthampstead	-	16,090	7,135	-	23,225
Cublington	-	827	23,505	5,098	29,430
Thurleigh	-	10,815	12,075	625	23,575
			Percent		
Foulness	27	24	44	5	100
Nuthampstead	-	69	31	-	100
Cublington	-	3	80	17	100
Thurleigh	-	46	51	3	100

We would like to remind the reader, at this stage, of the definitions of the various terms we have used in this report and the above table. (Gross Rent is the amount paid by a tenant to a landlord for the use of the landlord's land and buildings.) Gross Outpit is a measure of the total returns to farming activity, adjusted to include the value of farmhouse consumption and changes in valuation and less any purchases of livestock. Net Product removes from Gross Output expenditure on imported inputs and 'Value Added' is equal to Net Product less the returns to farm-based transferable resources.

The adjusted figures show the returns only to farming activities which are dependent upon the physical qualities of the site to some extent.

The combined table of airport sites and their selected urban strategies show the lowest 'Value Added' totals to be for Cublington, followed by Thurleigh, Nuthampstead and Foulness - in that order. This is almost the reverse of the picture given on acreage alone.

Printed image digitised by the University of Southampton Library Digitisation Unit

We have argued in Chapter 2, section 3 for the use of different levels of growth in agricultural productivity in the capitalisation of the annual figures of 'Value Added' and we have suggested the appropriate rate of growth for the different selected urban strategies. The rates, compound, proposed are for Foulness 6 per cent, Nuthampstead 7 per cent, 5 per cent for Thurleigh and 4 per cent for Cublington. Though the whole question of discounting annual flows of costs or returns for all aspects of the alternative airport sites is still under discussion by the Commission itself, it is quite obvious that, if these differential rates of growth of this order are accepted, the listing of the four airport sites and their associated urban strategies in terms of the least loss of present and potential output of food is still more strongly in the order:

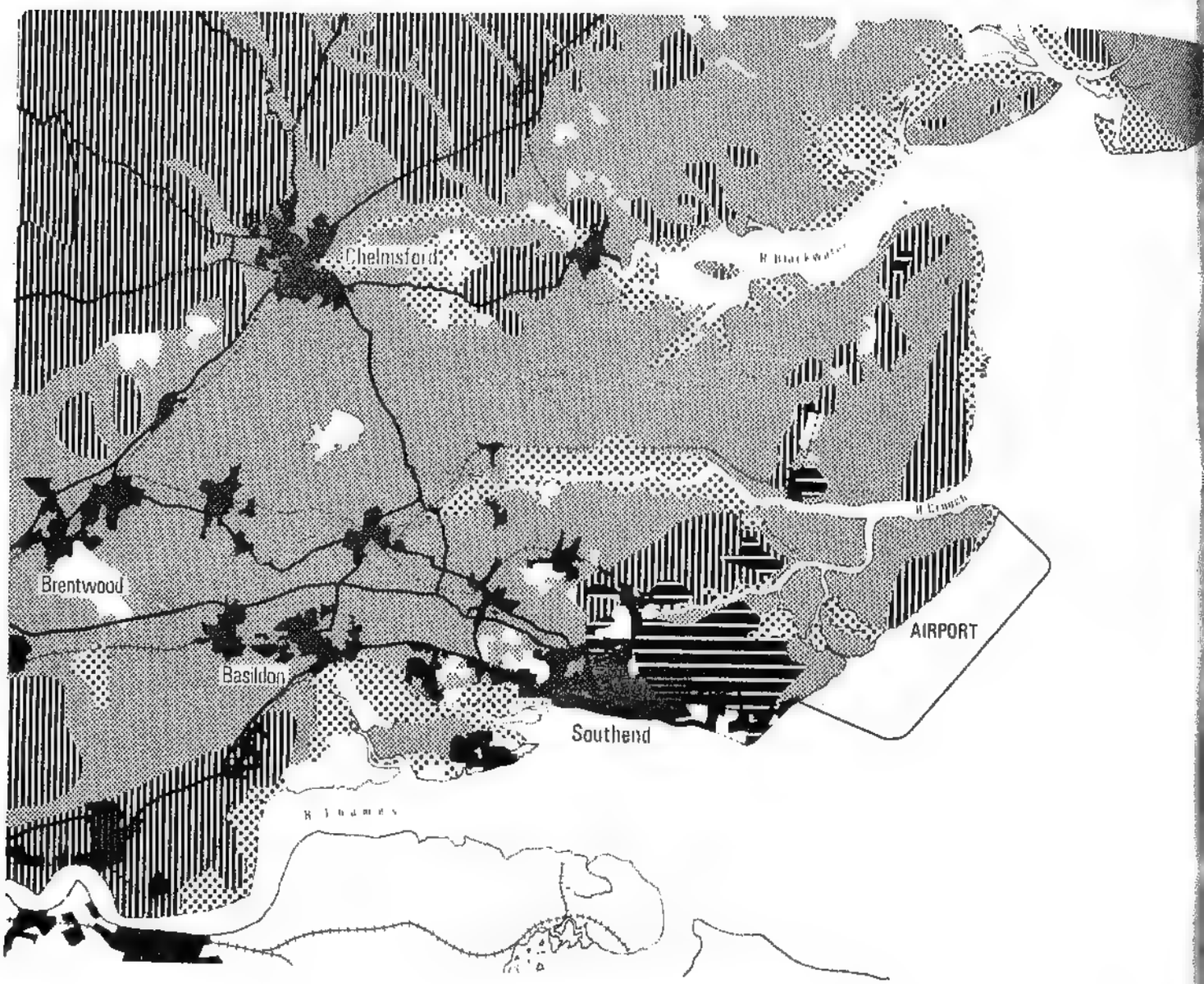
Cublington
Thurleigh
Nuthampstead } close together
Foulness }

In general terms it can be said that the agriculture of the Cublington area is mediocre in terms of both present and future productivity and in terms of farm and field structure. At Thurleigh the potential airport sites themselves are now agriculturally productive but the chosen urban strategy takes land of poorish quality, productivity and structure which is already in a generally urbanised area. It is unfortunate, in agricultural terms, that the smaller land demands of the whole Foulness proposal are vitiated by the high quality and productivity of the area chosen as the best urban strategy. However, both the airport and the urban strategy would make a tight self-contained urban area. Finally, the agricultural case against both the airport site and the optimum urban strategy at Nuthampstead is strong. Land of high productivity is involved and this is farmed in large scale efficient units and with great scope for future increases in productivity. The rural area involved is also much less disturbed by existing urban development than any one of the other three airport alternatives.

It is realised that the creation of a new international airport in an area now rural will create many opportunities for agricultural and horticultural development on the land which is left for the production of food. Not the least of these improvements will be the new and better web of roads, rail and other communications. But it is thought that the pattern and value of these opportunities will not vary greatly between the four short listed airport sites. None of the sites being considered can be called, by any stretch of imagination, a remote rural area needing extra opportunities, mobility and better communications. All lie close to thriving urban areas and the metropolis of London itself. It would be wrong, therefore, to postulate any relative differences in these advantages for specific sites.

The real but intangible assets of these parts of the English lowland countryside in rural shape, form and colour, in rural activities and recreation and in contrast to the crowded noisy metropolis and suburbia which lie close by have not and cannot be quantified. The authors know, however, that these subjective assets have not been ignored in the discussions with the urbanisation consultants and we believe that the subjective gradings are not in conflict with the findings that have emerged from our professional and quantitative assessments.

Printed image digitised by the University of Southampton Library Digitisation Unit



Agricultural Land

Grade 1

Grade 2

Grade 3

Grade 4

Non-Agricultural Land

Land in urban use

Other land

Miles 0 10

Kilometres 0 10

FOULNESS AGRICULTURE

Figure 2.6

Printed image digitised by the University of Southampton Library Digitisation Unit

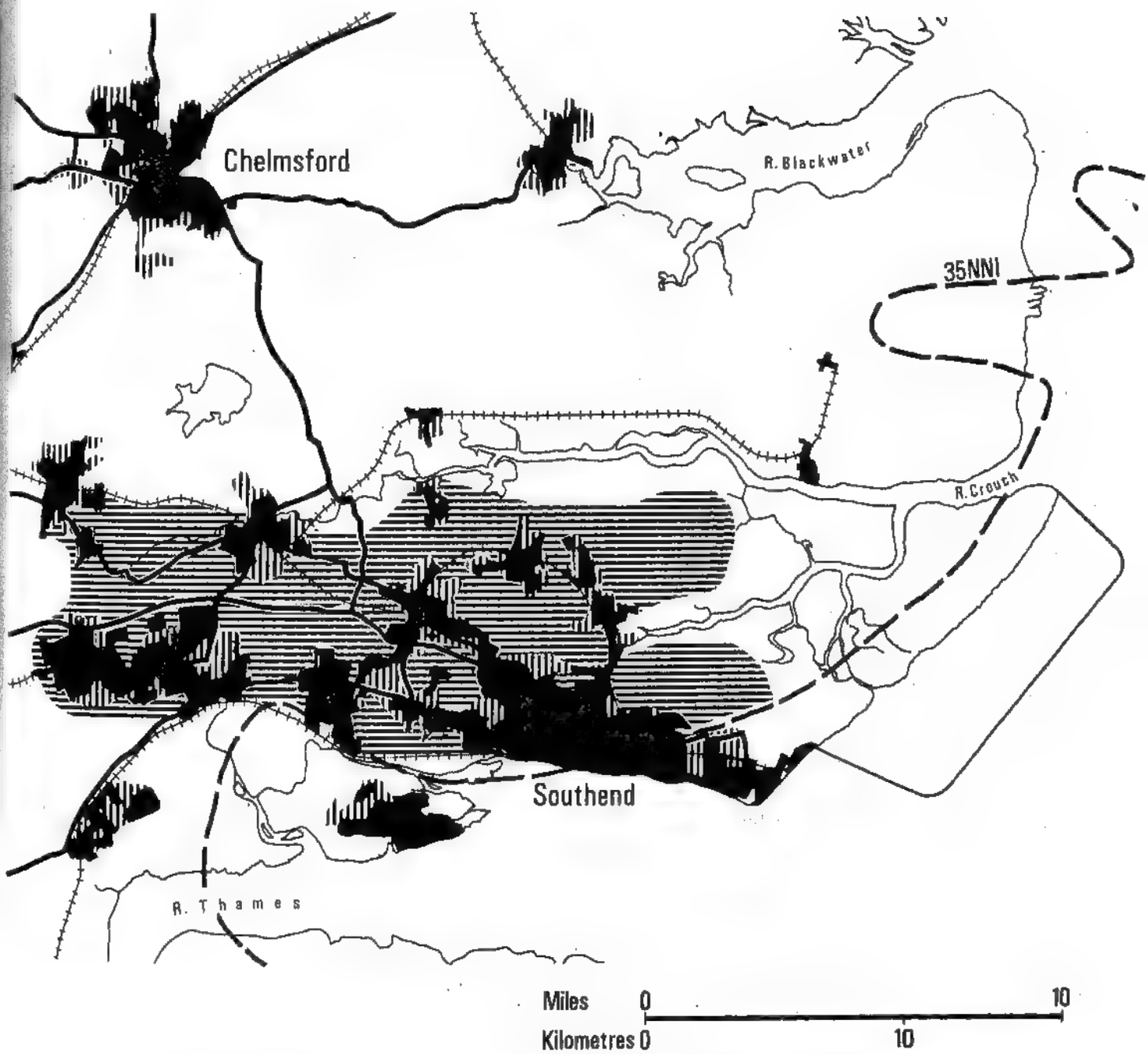


Figure 2.16 FOULNESS STRATEGY A

Printed image digitised by the University of Southampton Library Digitisation Unit

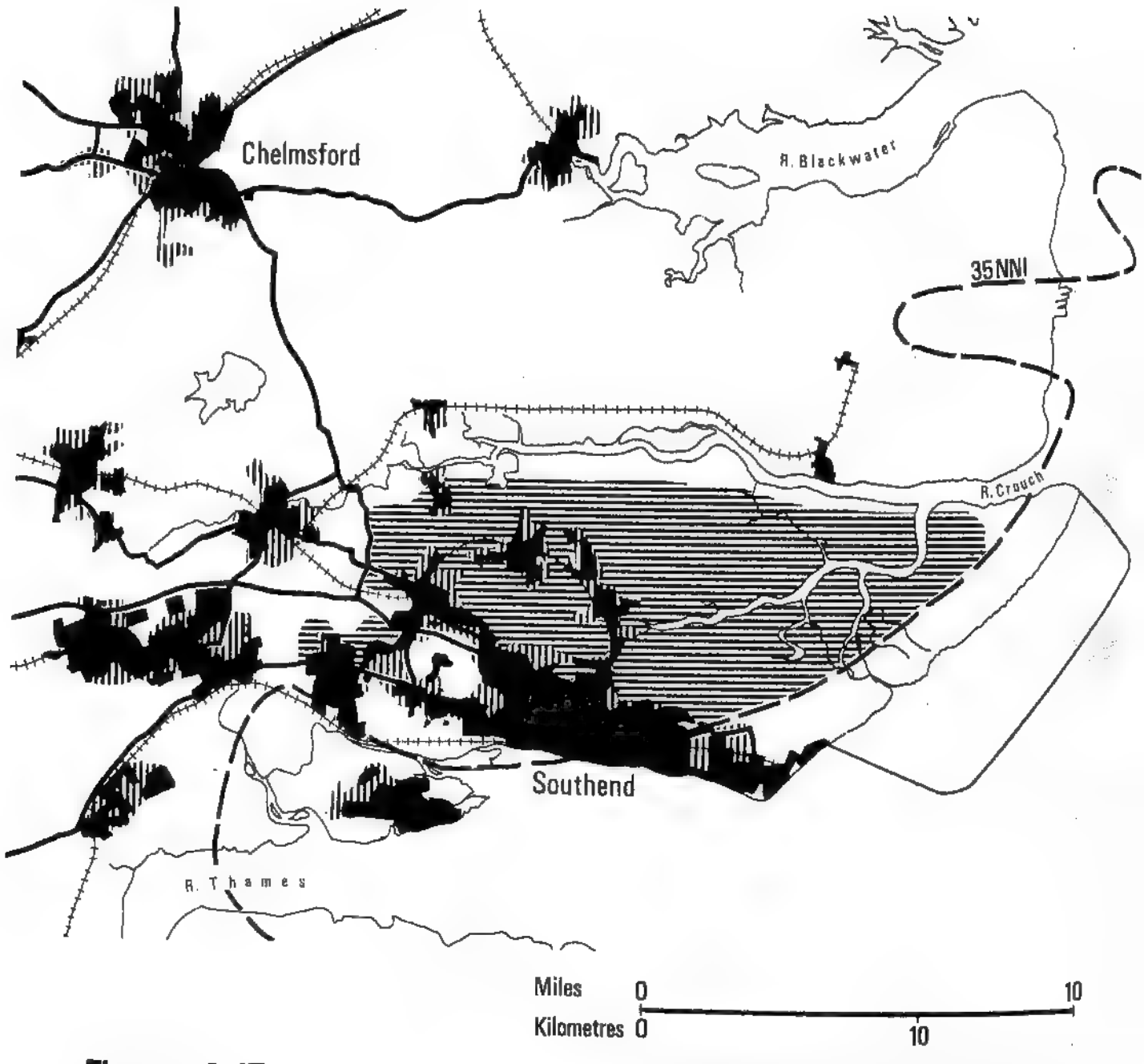


Figure 2.17 FOULNESS STRATEGY B

Printed image digitised by the University of Southampton Library Digitisation Unit

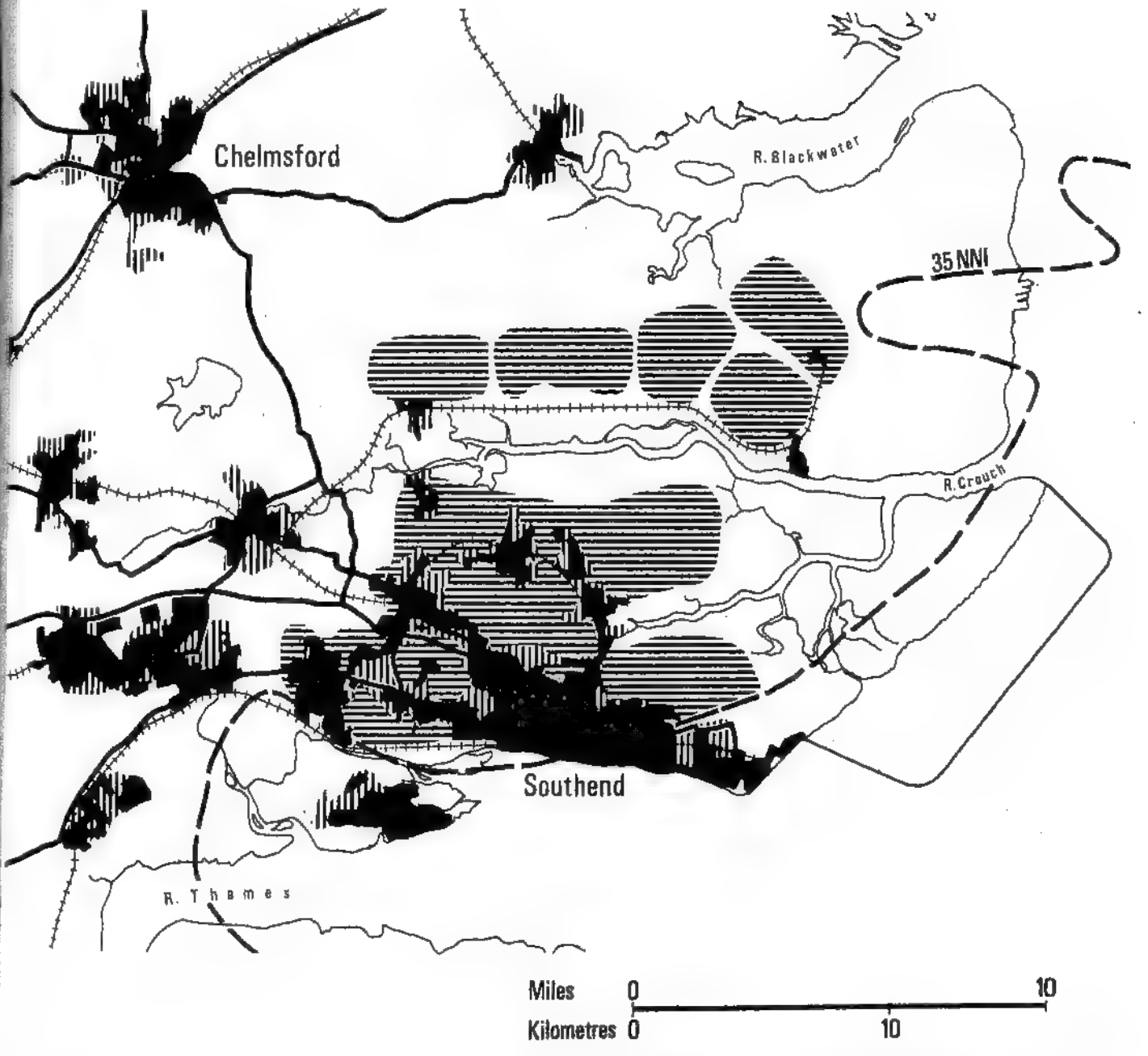


Figure 2.18 FOULNESS STRATEGY C

Printed image digitised by the University of Southampton Library Digitisation Unit

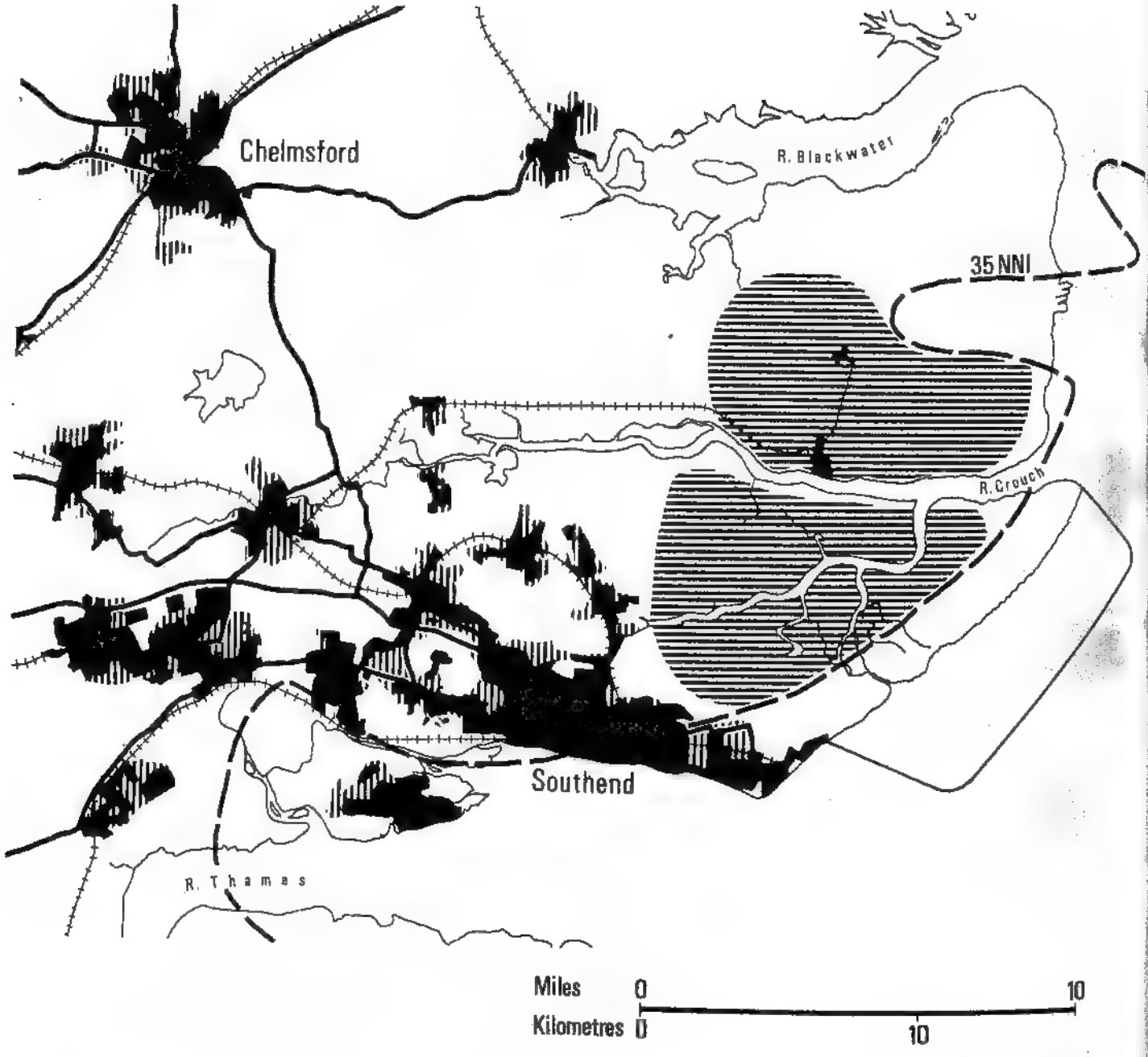


Figure 2.19

FOULNESS STRATEGY D

Printed image digitised by the University of Southampton Library Digitisation Unit

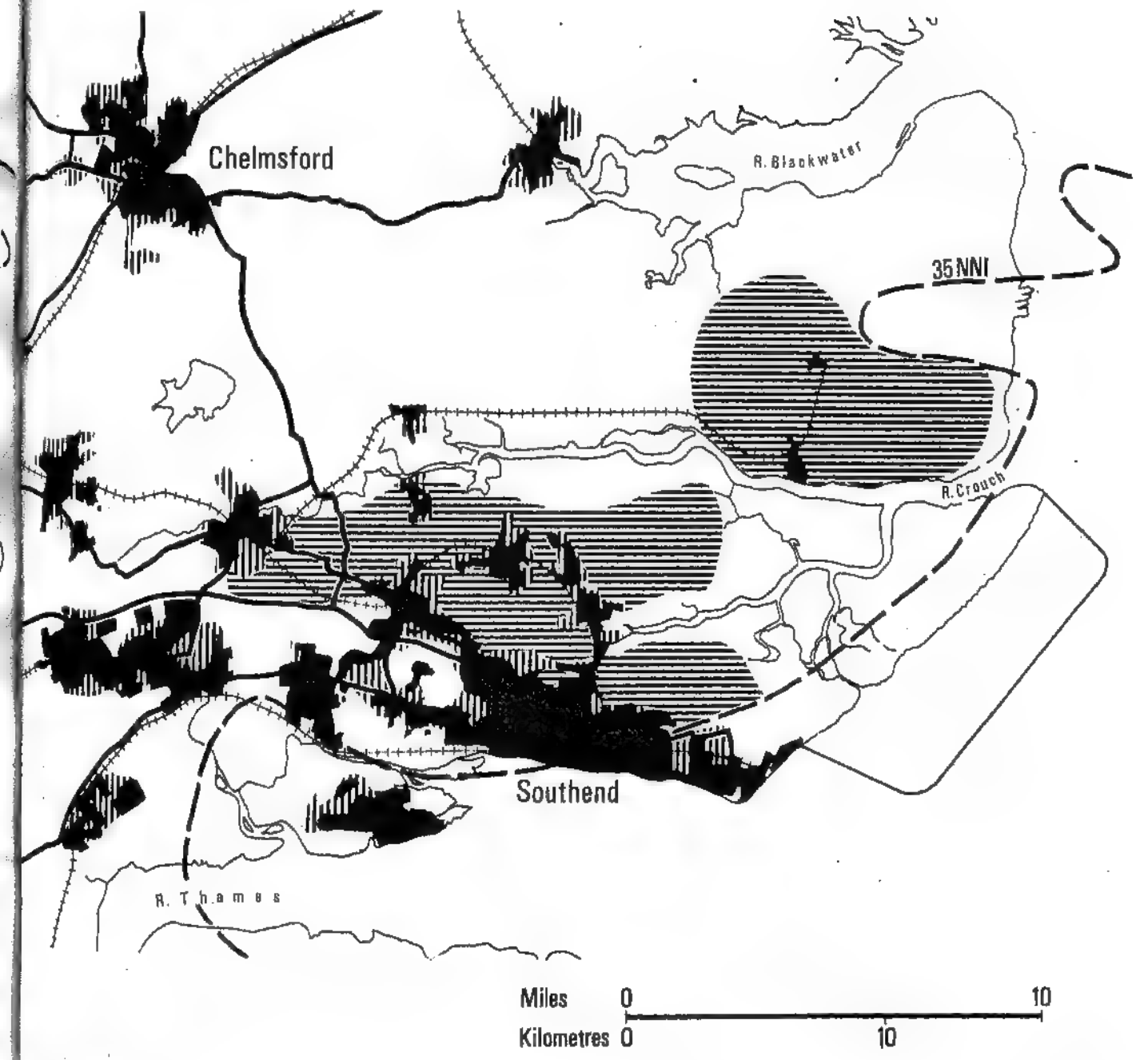
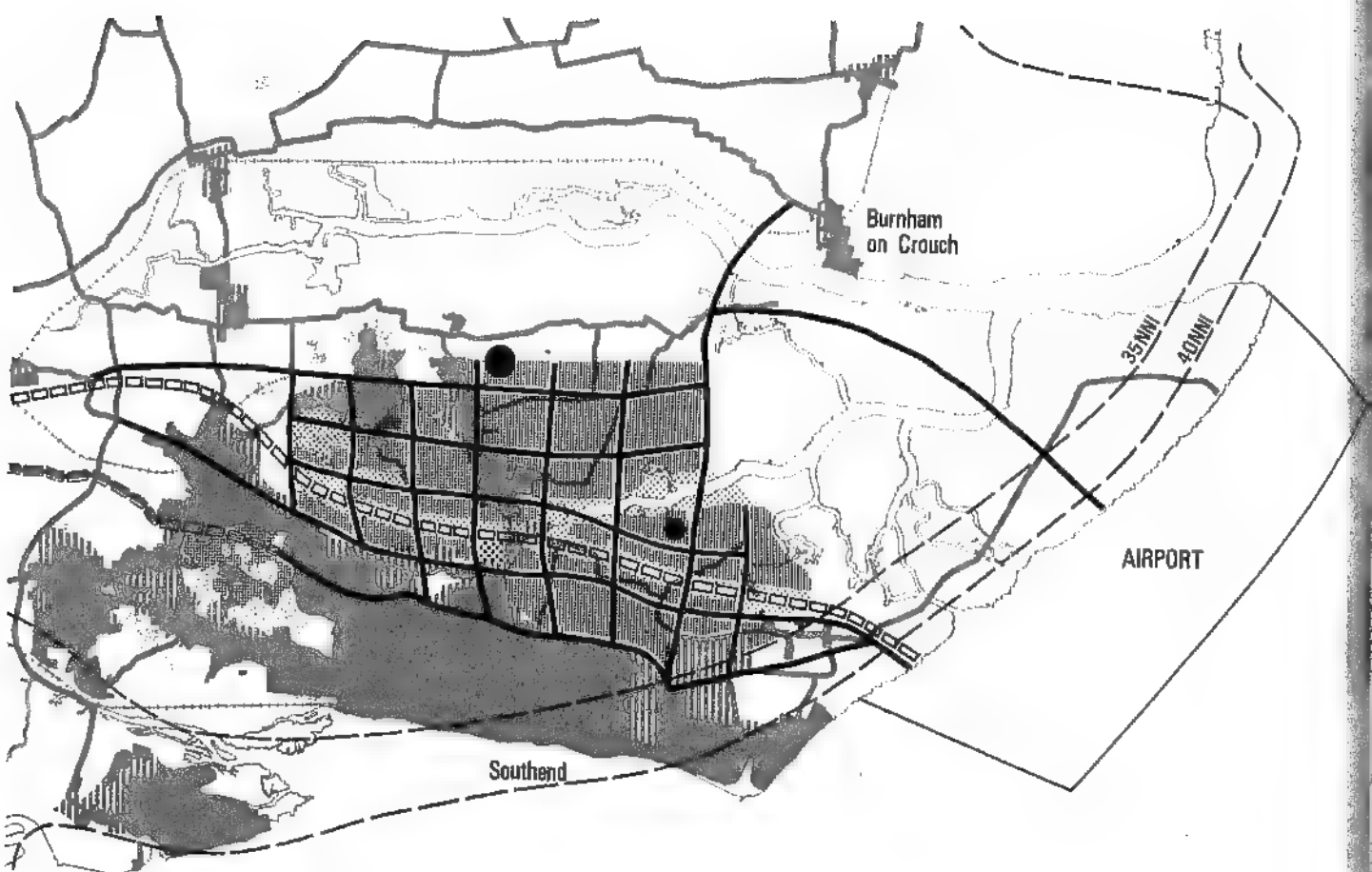


Figure 2.20 FOULNESS STRATEGY E

Printed image digitised by the University of Southampton Library Digitisation Unit



Miles 0 5
Kilometres 0 5

Existing urban areas

Proposed development to 1981

Main woodland and parks

Proposed road network at 1981

Residential areas including other local uses

Major open space including other extensive uses

Major industrial areas

Town centre

District centre

Noise corridor

Possible line for MOT Strategy Route

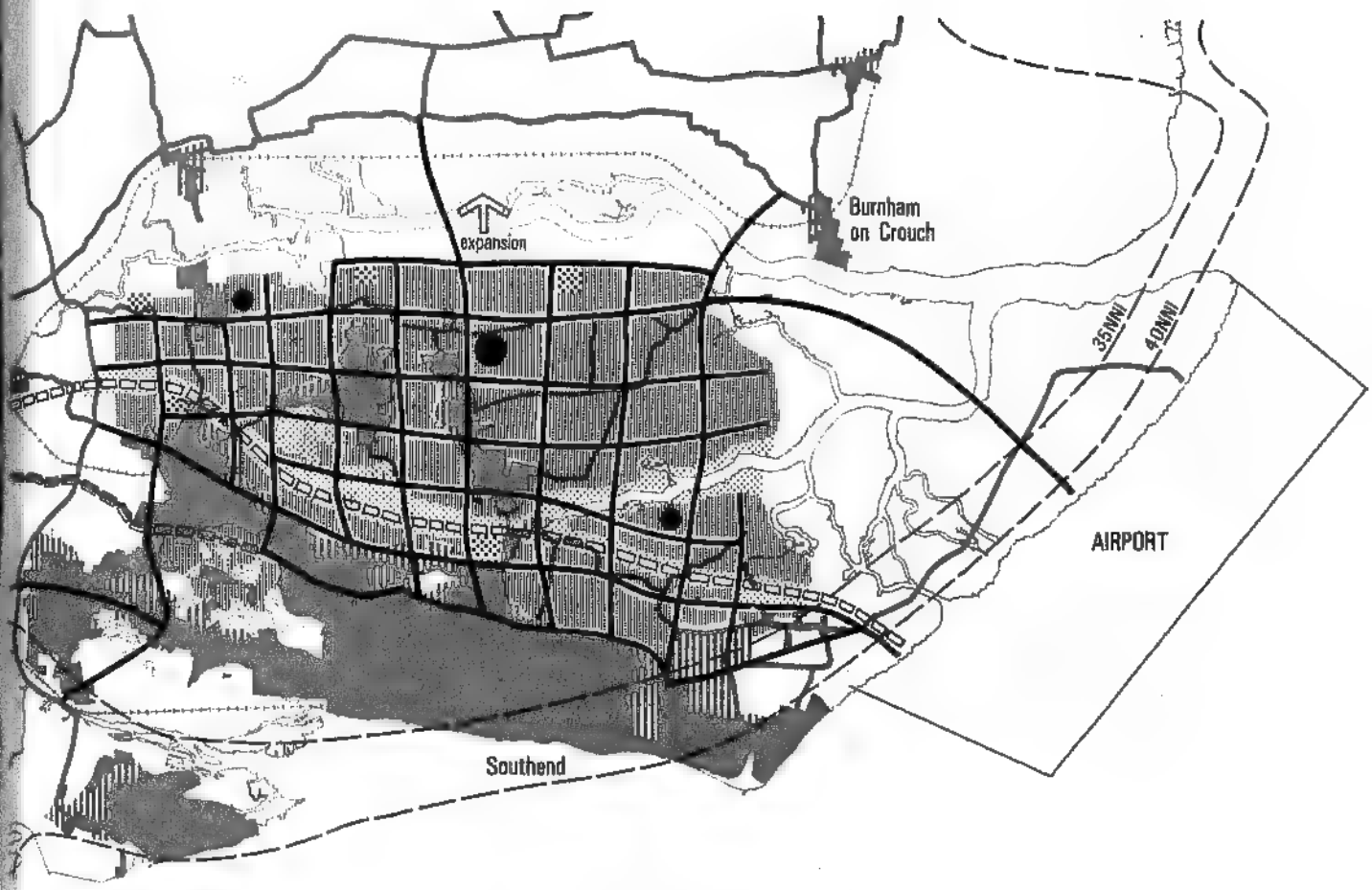
Plan 2 road network

Possible road link to London

Figure 2.27

FOULNESS
PLAN 2 – AIRPORT CITY

Printed image digitised by the University of Southampton Library Digitisation Unit



Miles 0 5
Kilometres 0 5

Existing urban areas

Proposed development to 1981

Main woodland and parks

Proposed road network at 1981

Residential areas including other local uses

Major open space including other extensive uses

Major industrial areas

Town centre

District centre

Noise corridor

Possible line for MOT Strategy Route

Plan 3 road network

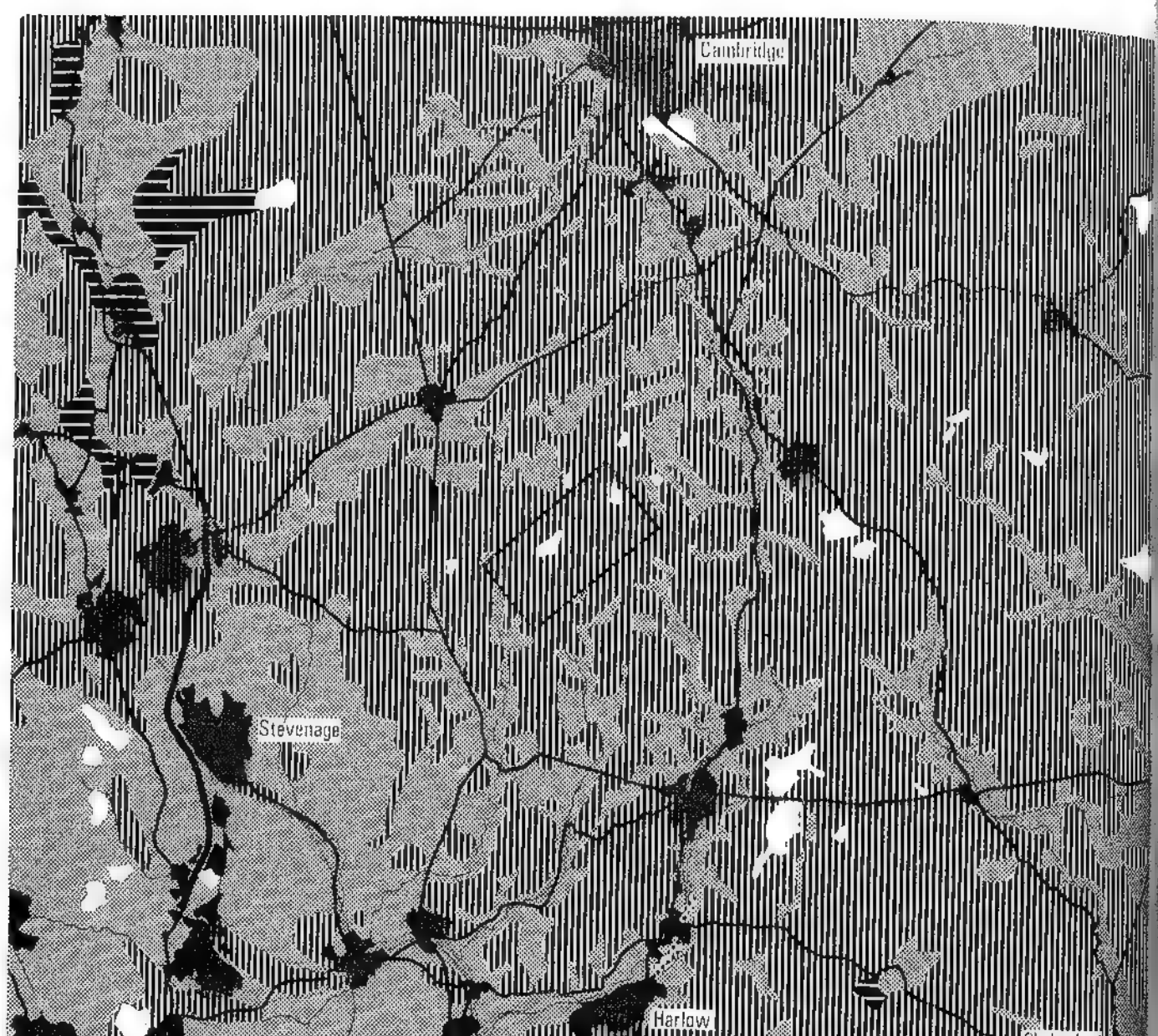
Possible road link to London

FOULNESS

PLAN 3 – AIRPORT CITY

Figure 2.21

Digitised image digitised by the University of Southampton Library Digitisation Unit



Agricultural Land

Grade 1

Grade 2

Grade 3

Grade 4

Non-Agricultural Land

Land in urban use

Other land

Proposed airport

Miles 0 10

Kilometres 0 10

NUTHAMPSTEAD AGRICULTURE

Figure 3.4

Printed image digitised by the University of Southampton Library Digitisation Unit

Figure 3.15 NUTHAMPSTEAD STRATEGY B

Printed image digitised by the University of Southampton Library Digitisation Unit

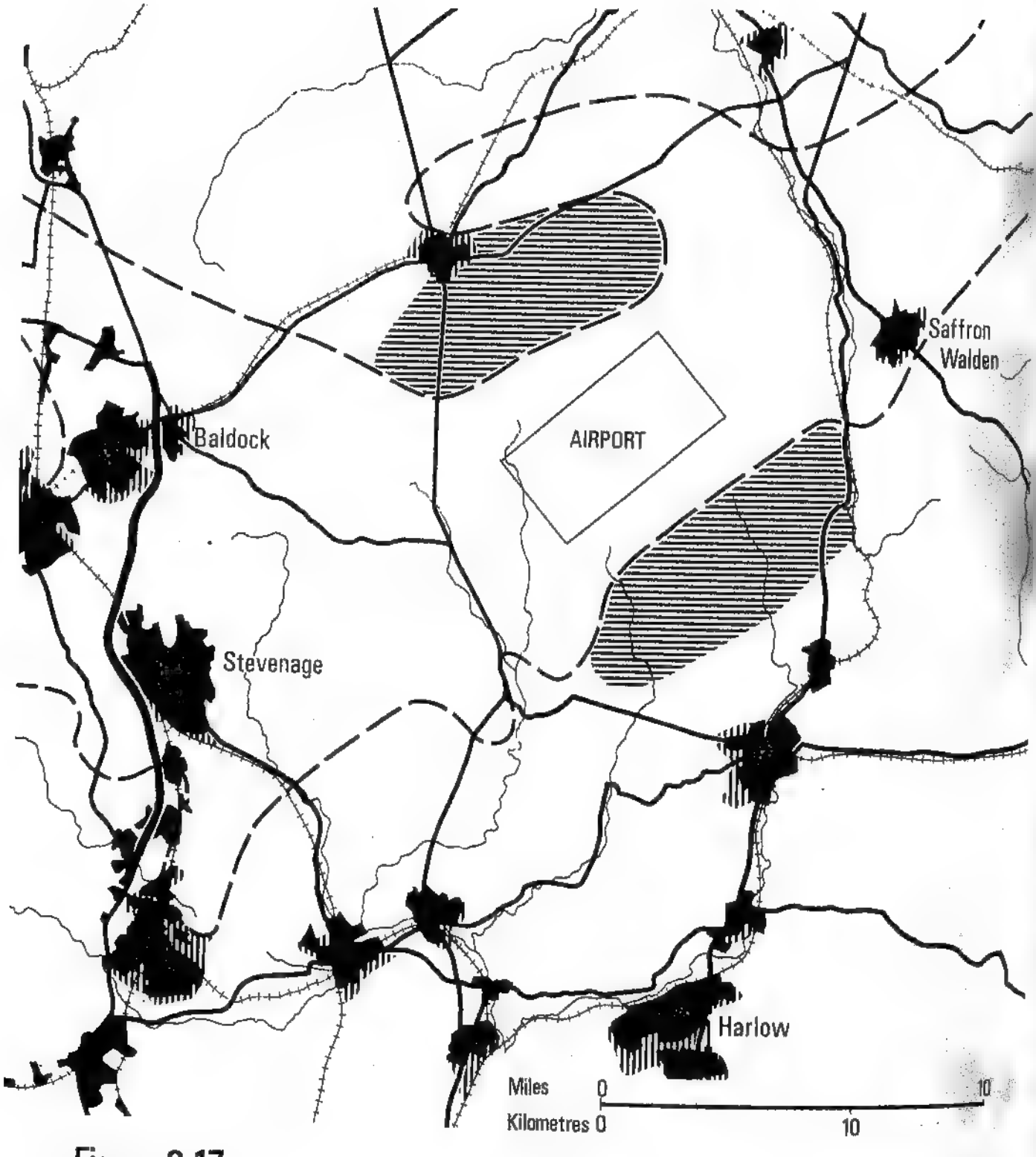


Figure 3.17 NUTHAMPSTEAD STRATEGY D

Printed image digitised by the University of Southampton Library Digitisation Unit

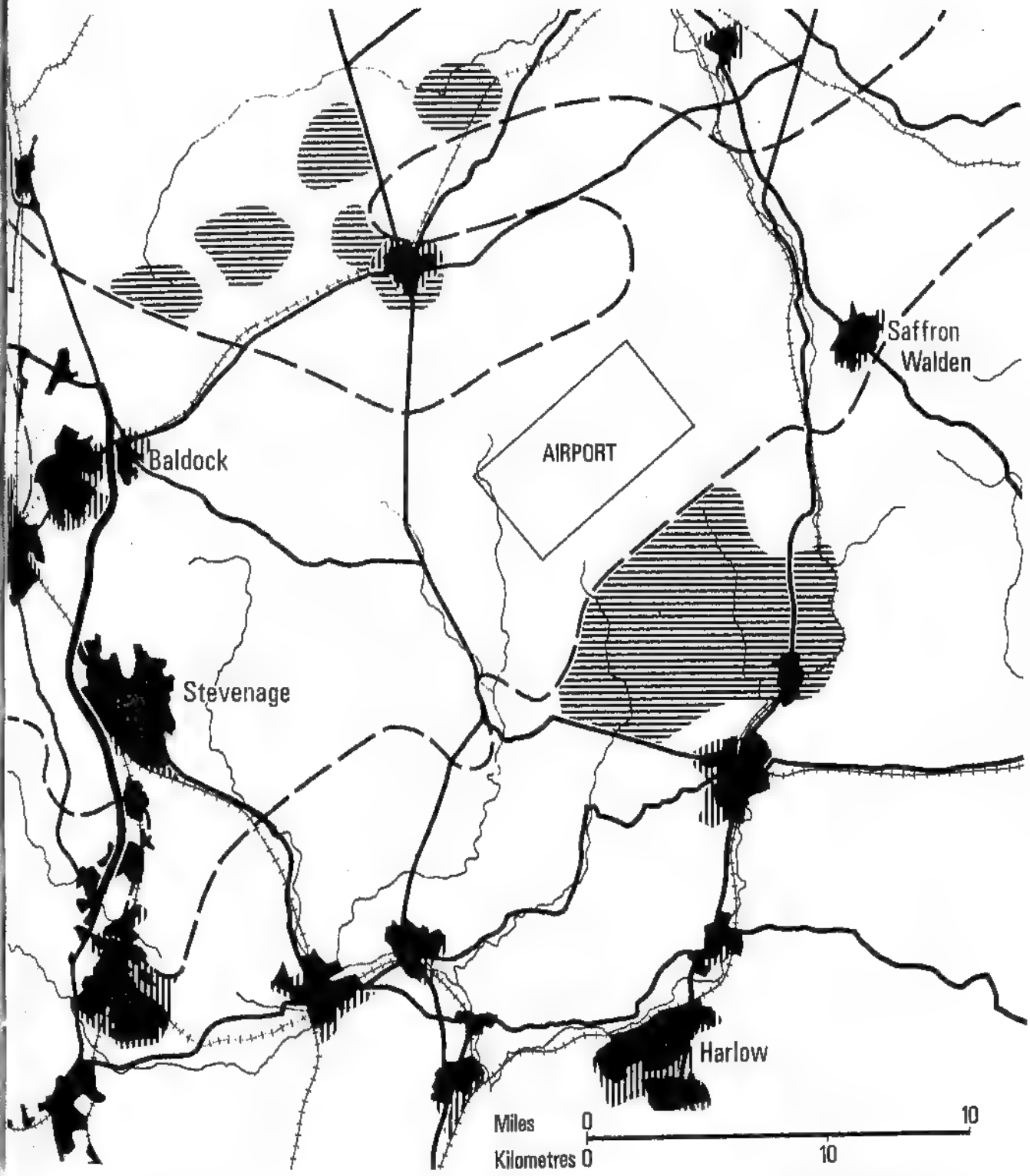


Figure 3.18 NUTHAMPSTEAD STRATEGY E

Printed image digitised by the University of Southampton Library Digitisation Unit

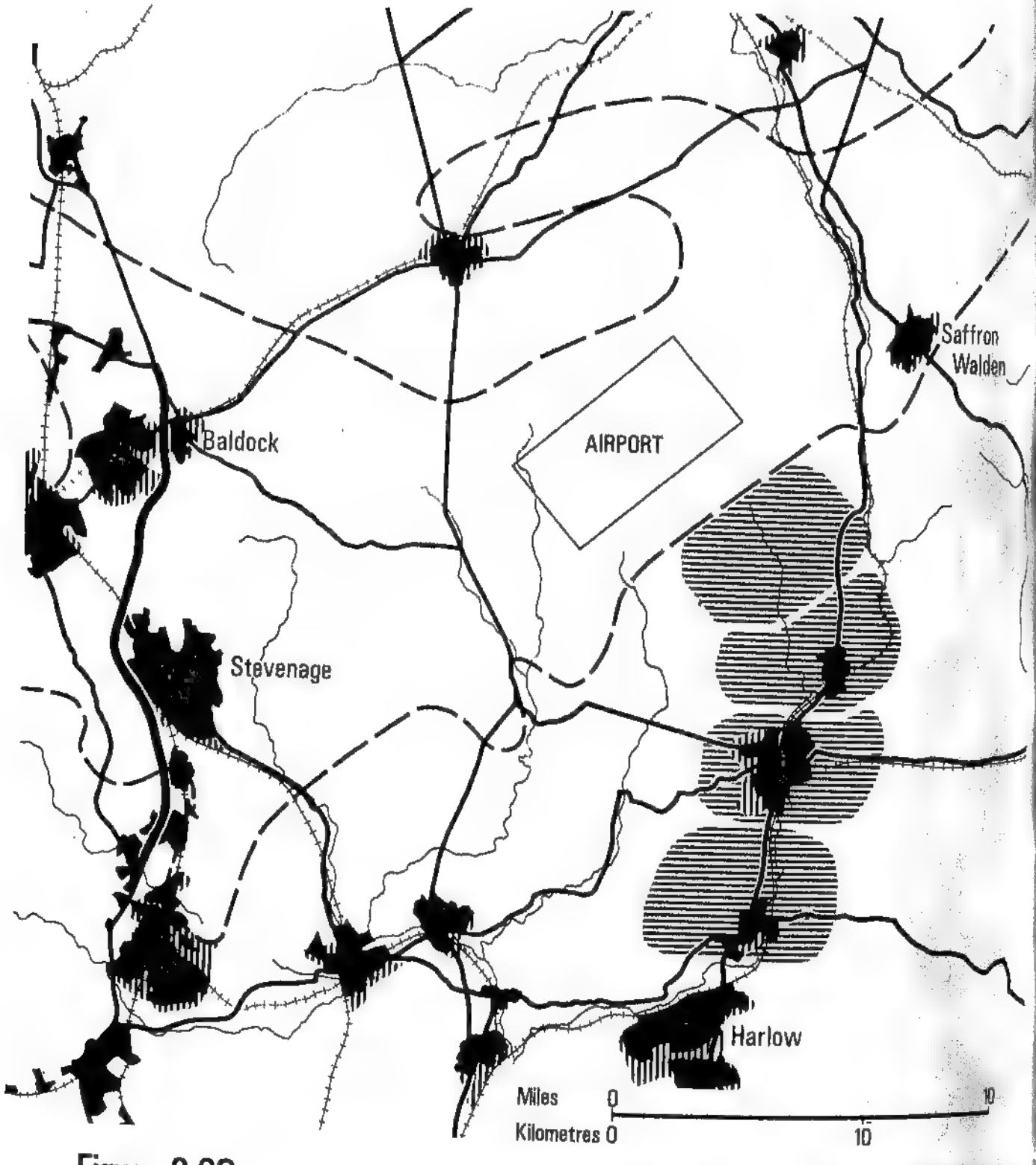
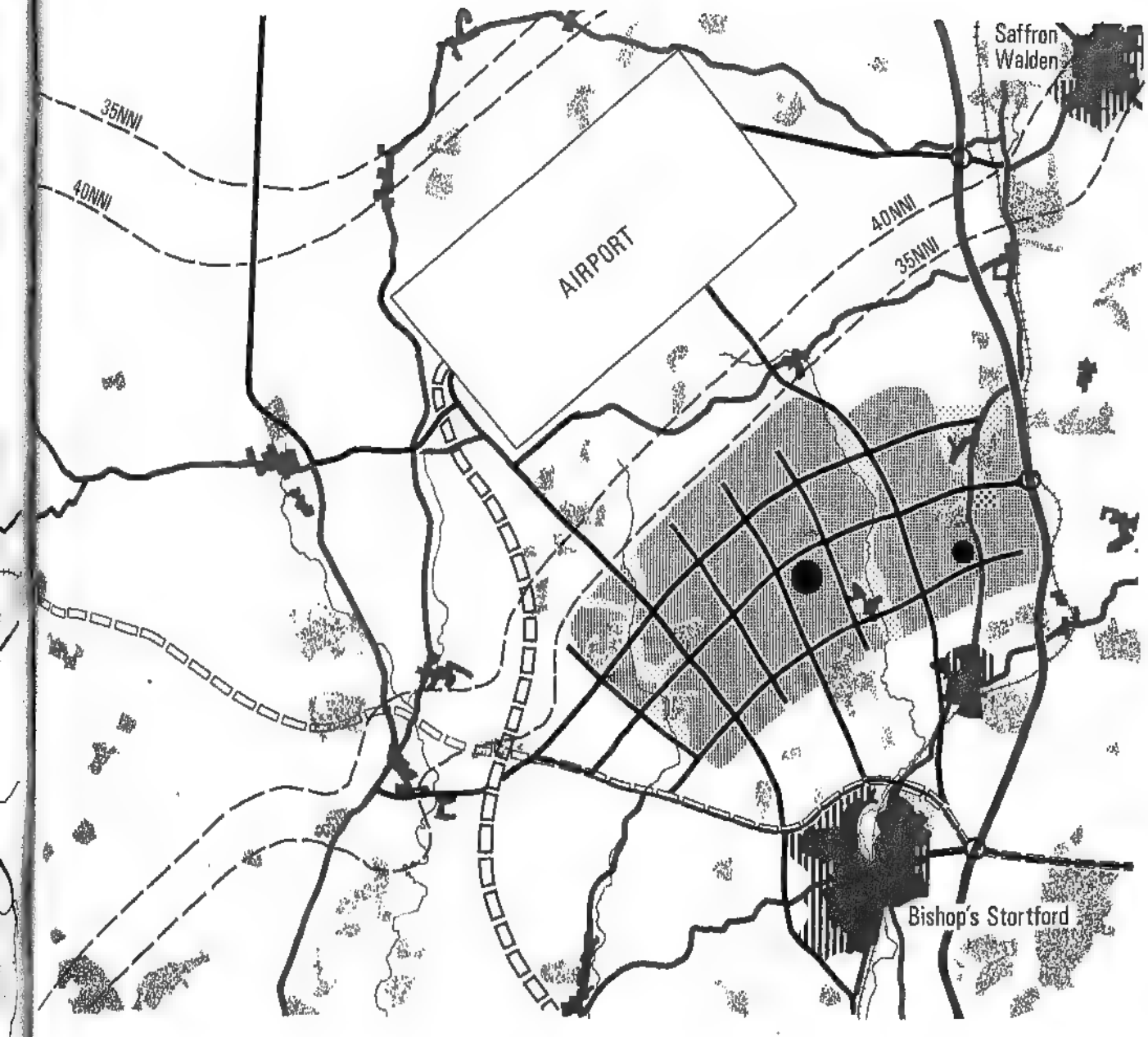


Figure 3.20

NUTHAMPSTEAD STRATEGY G

Printed image digitised by the University of Southampton Library Digitisation Unit



NUTHAMPSTEAD
PLAN 2 – AIRPORT CITY

Figure 3.28

Printed image digitised by the University of Southampton Library Digitisation Unit

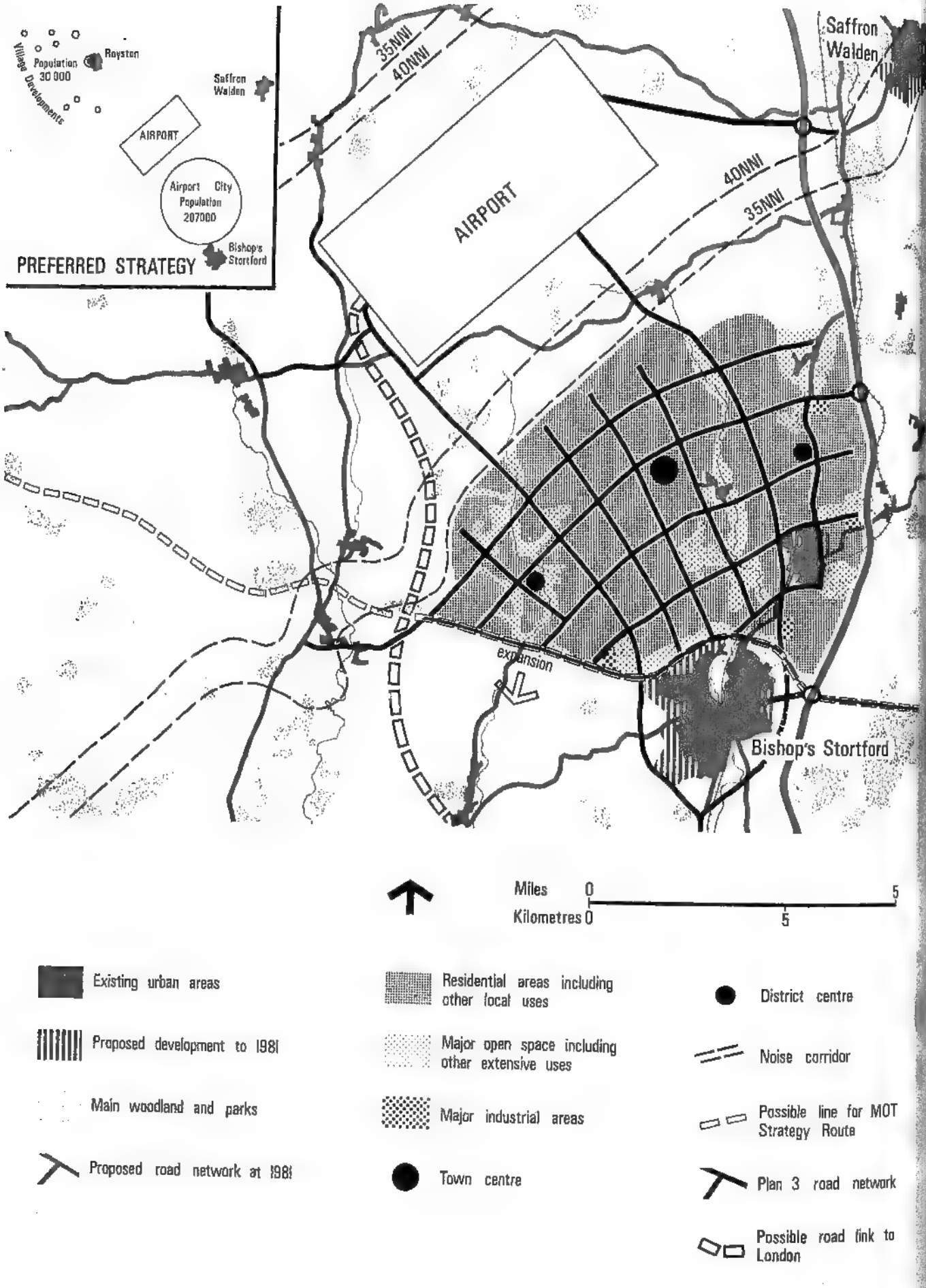
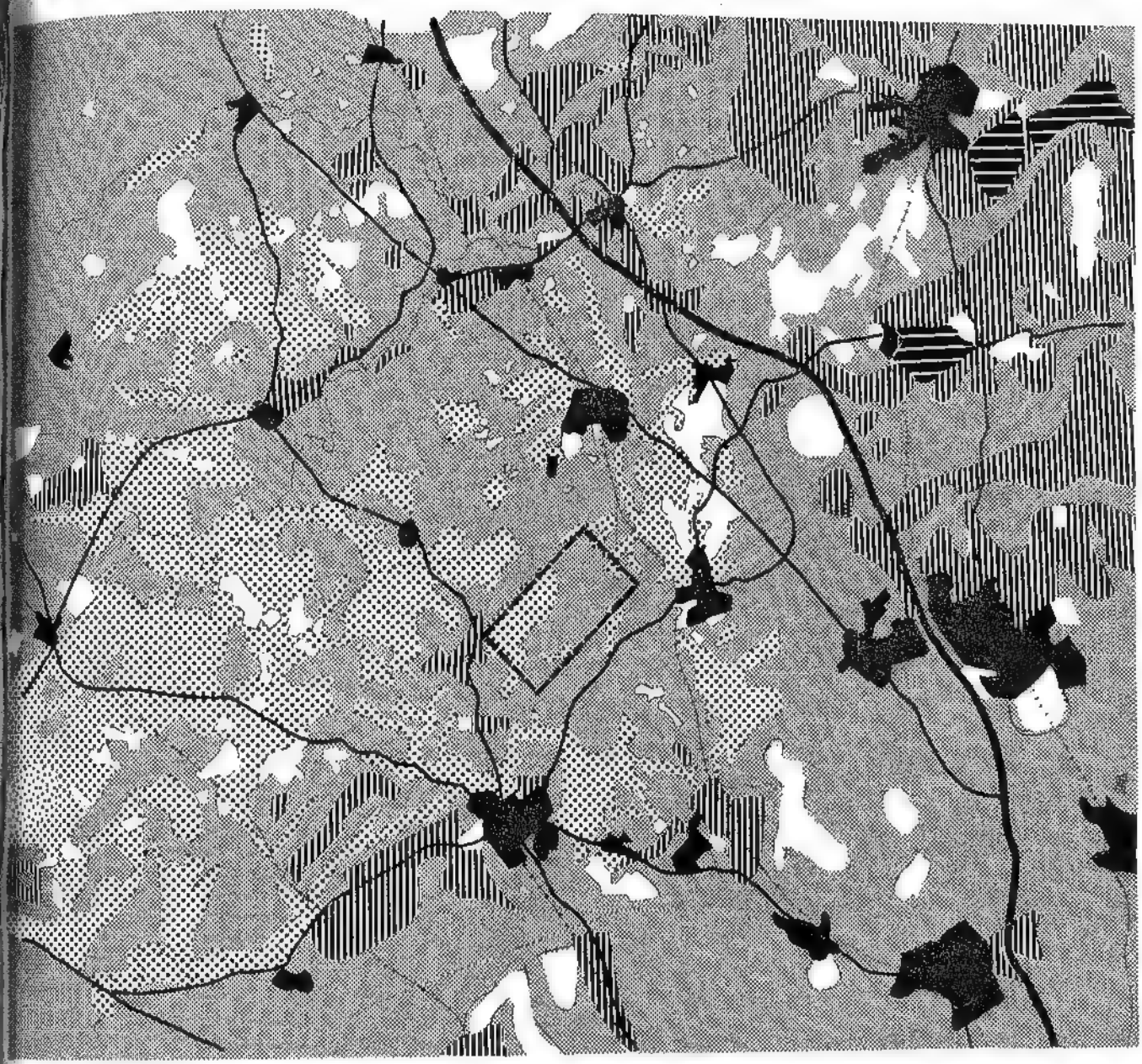


Figure 3.22

NUTHAMPSTEAD
PLAN 3 – AIRPORT CITY

Printed image digitised by the University of Southampton Library Digitisation Unit



AGRICULTURAL LAND

Grade 1

Grade 2

Grade 3

Grade 4

Grade 5

NON AGRICULTURAL LAND

Land in urban use

Other land

Proposed airport

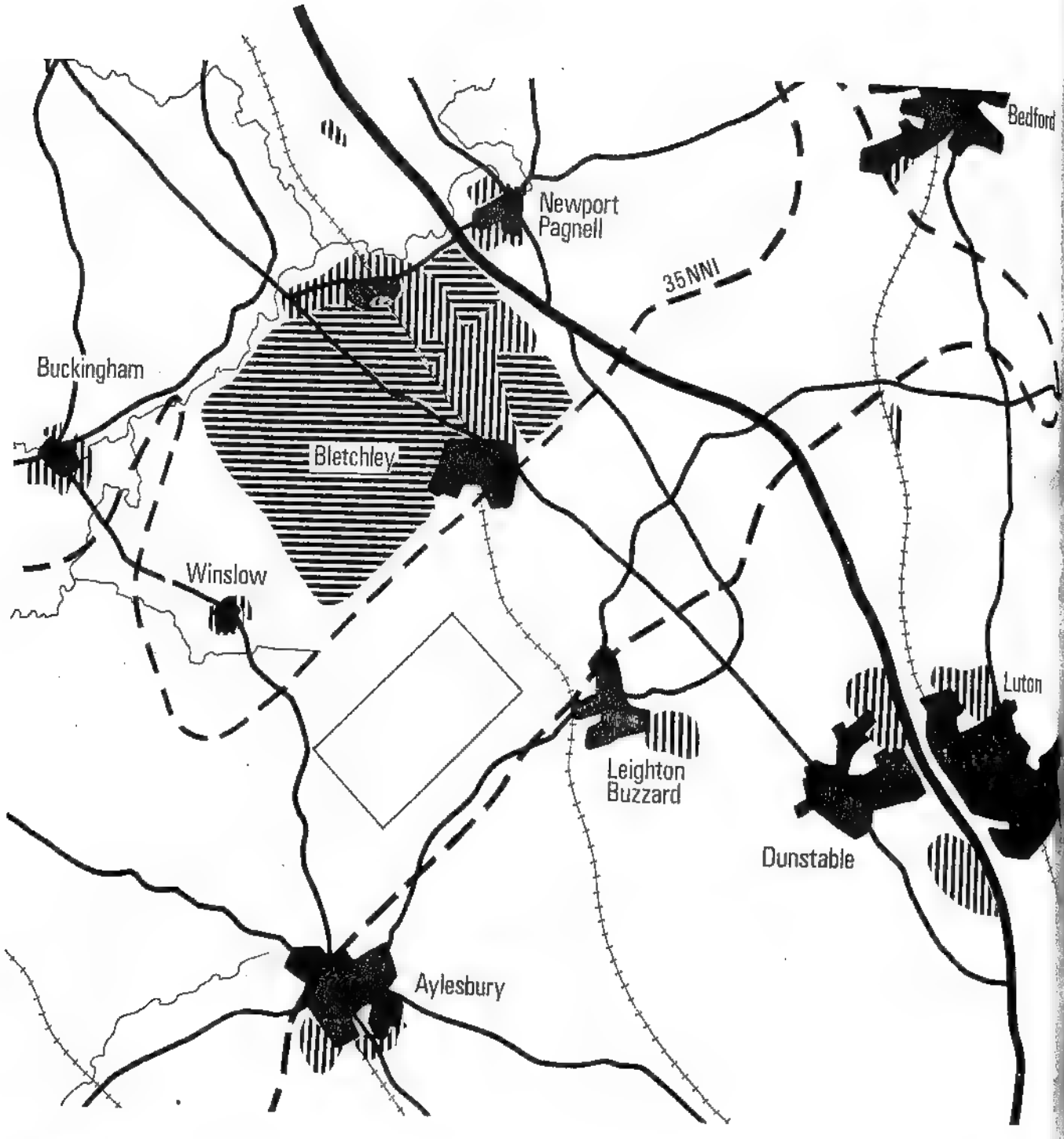
miles 0 10

kilometres 0 10

CUBLINGTON
AGRICULTURE

Figure 4.4

ed image digitised by the University of Southampton Library Digitisation Unit



Existing Urban Areas

Proposed Development to 1981

Population increase of 280,000

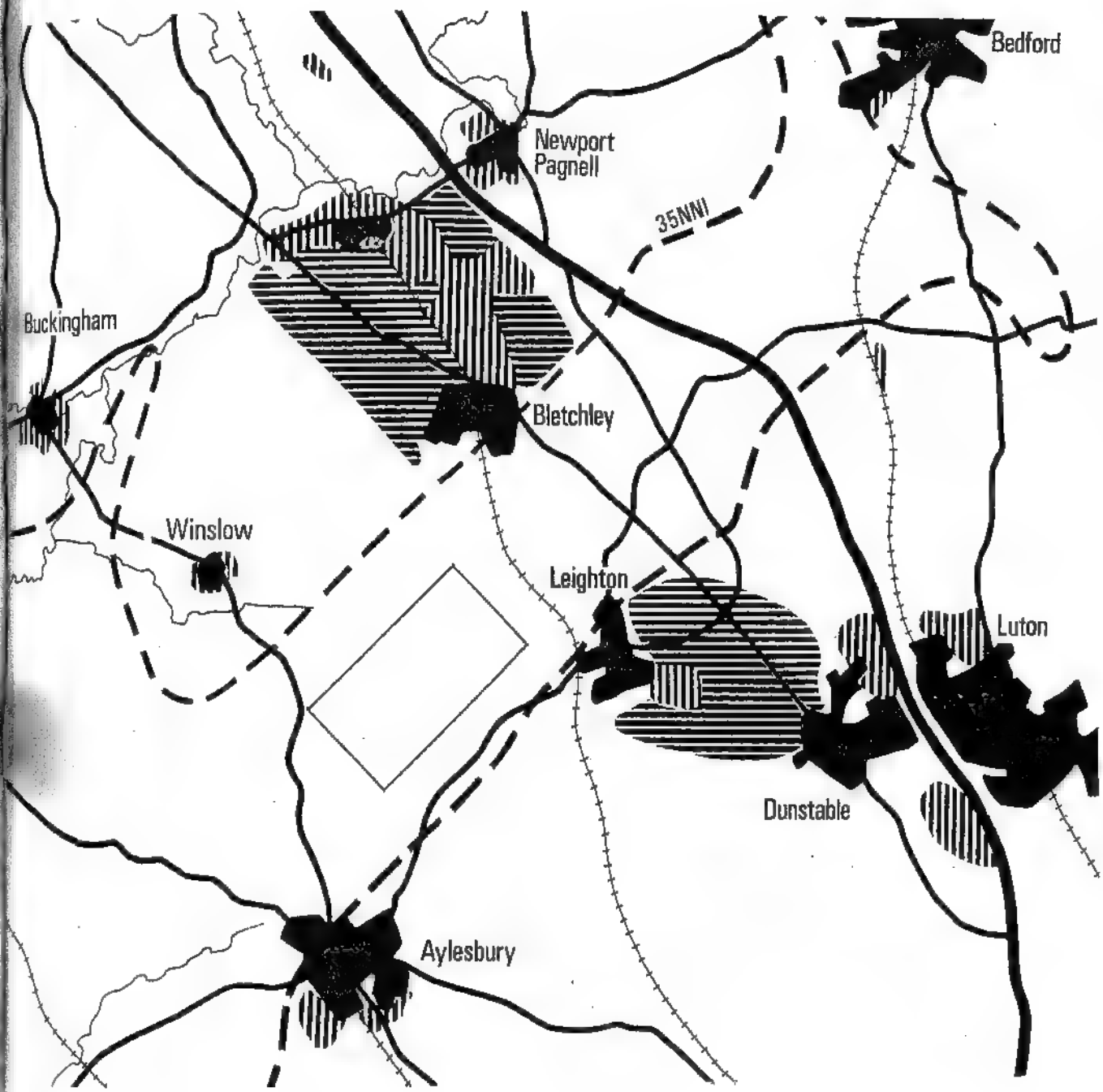
Miles 0 10

Kilometres 0 10

Figure 4·15

CUBLINGTON STRATEGY A

Printed image digitised by the University of Southampton Library Digitisation Unit



Existing Urban Areas

Proposed Development to 1981

Population increase of 280,000

Miles 0 10

Kilometres 0 10

Figure 4.16

CUBLINGTON STRATEGY B

Printed image digitised by the University of Southampton Library Digitisation Unit

Figure 4.17

CUBLINGTON STRATEGY C

Figure 4.19 CUBLINGTON STRATEGY E

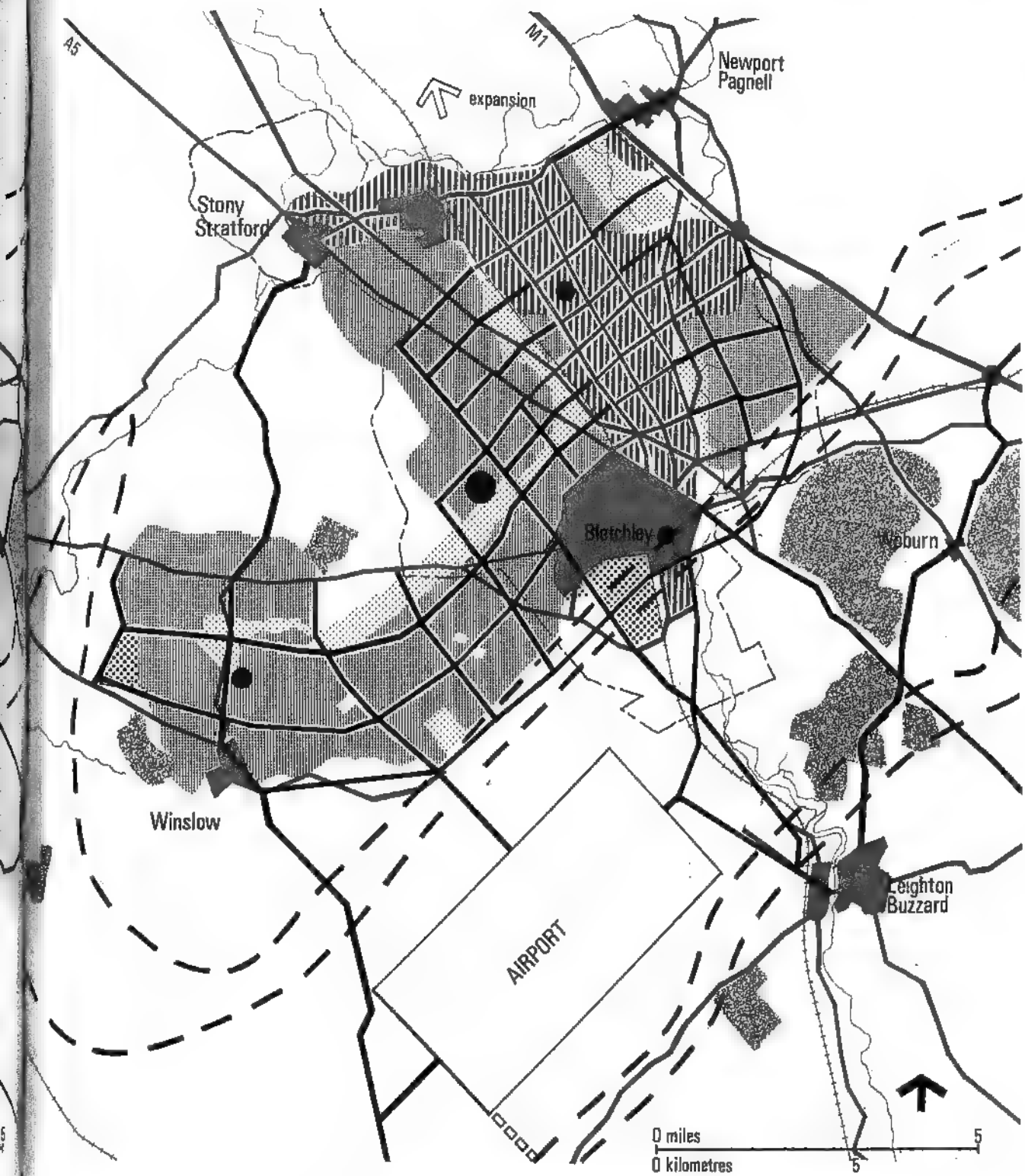
Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

PLAN 2 – AIRPORT CITY

Figure 4.28

Printed image digitised by the University of Southampton Library Digitisation Unit



Existing urban areas

Proposed development to 1981

Main woodland and parks

Proposed road network at 1981

Residential areas including other local uses

Major open space including other extensive uses

Major industrial areas

Town centre

District centre

Noise corridor 35 and 40 NNI

Possible road link to London

Plan 3 road network

Boundary of designated area of Milton Keynes

CUBLINGTON

PLAN 3 – AIRPORT CITY

Figure 4.21

Printed image digitised by the University of Southampton Library Digitisation Unit

AGRICULTURAL LAND

Grade 1

Grade 2

Grade 3

Grade 4

Grade 5

NON AGRICULTURAL LAND

Land in urban use

Other land

Proposed airport

miles 0 10

kilometres 0 10

THURLEIGH

AGRICULTURE

Figure 5.4

Printed image digitised by the University of Southampton Library Digitisation Unit

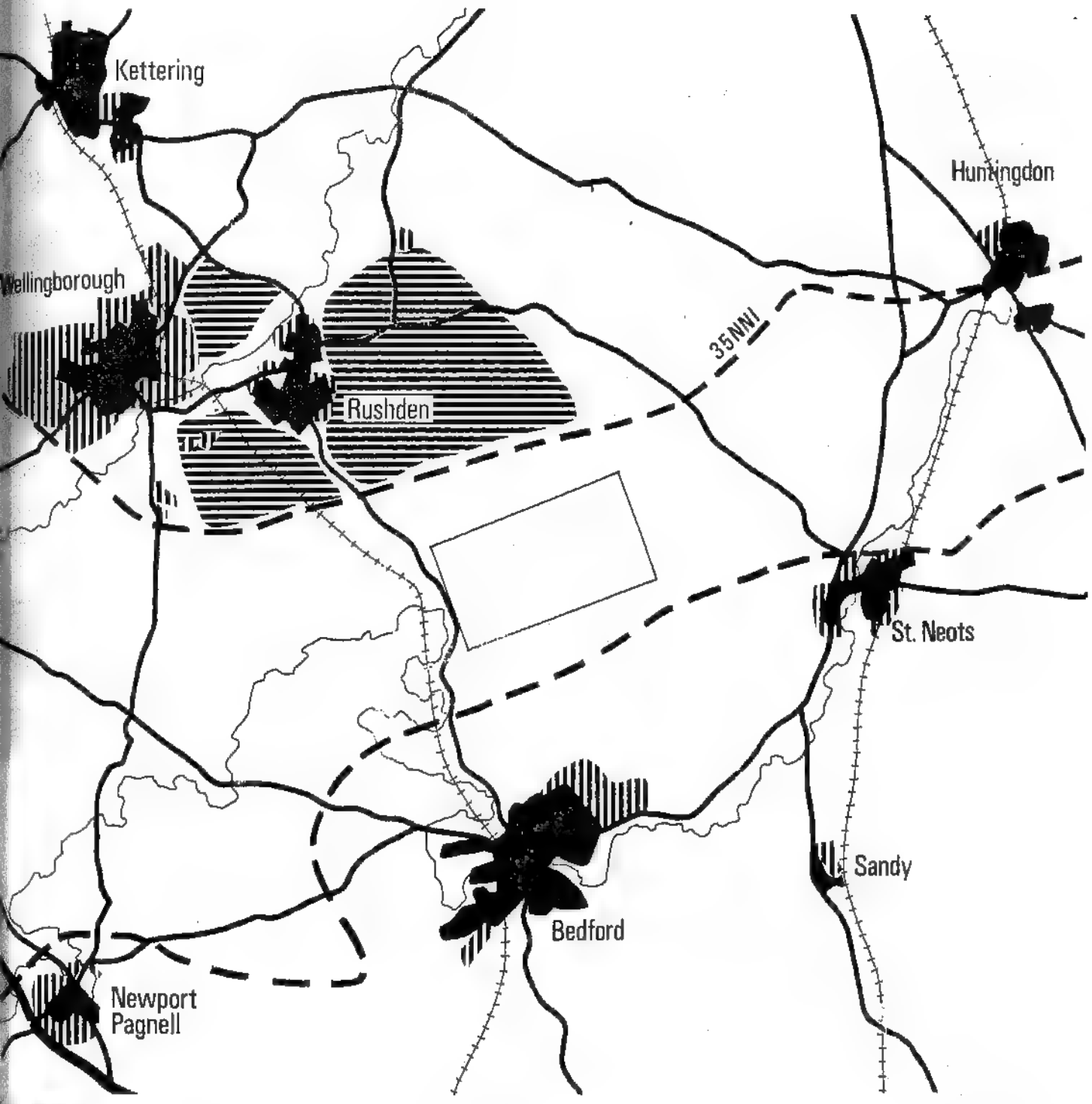


Figure 5.15

THURLEIGH STRATEGY A

Printed image digitised by the University of Southampton Library Digitisation Unit

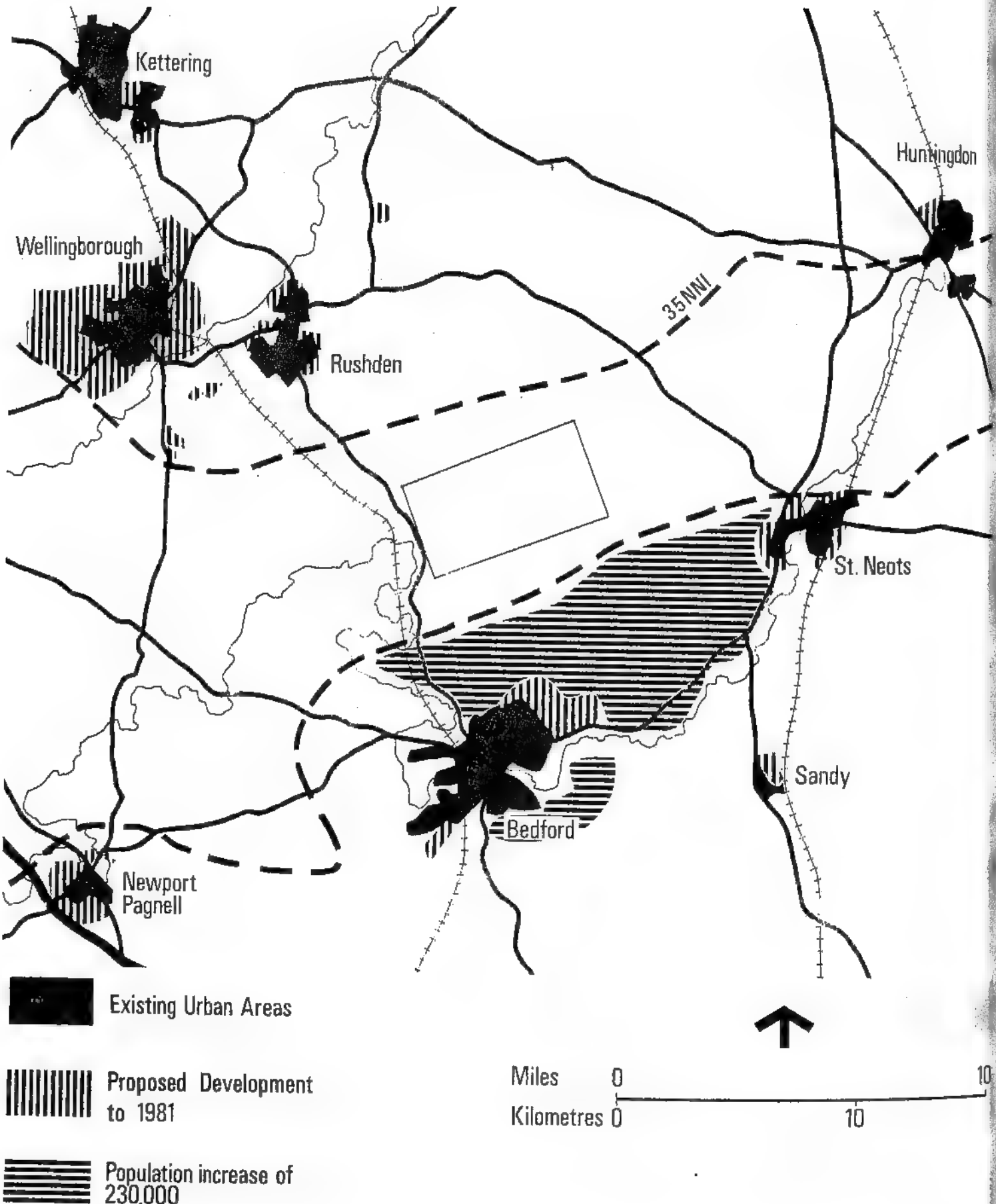


Figure 5.16

THURLEIGH STRATEGY B

Printed image digitised by the University of Southampton Library Digitisation Unit

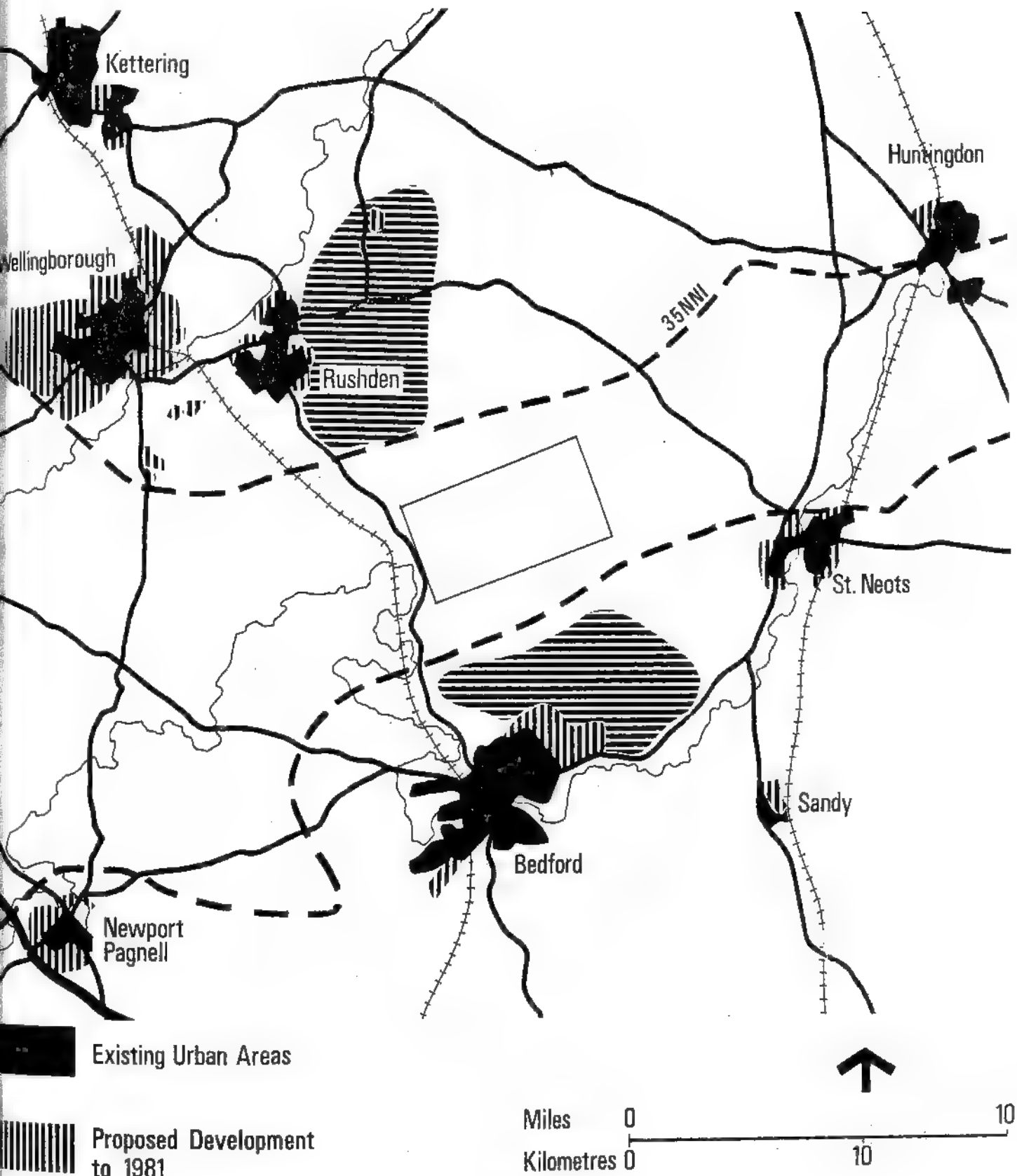


Figure 5.17

THURLEIGH STRATEGY C

Printed image digitised by the University of Southampton Library Digitisation Unit

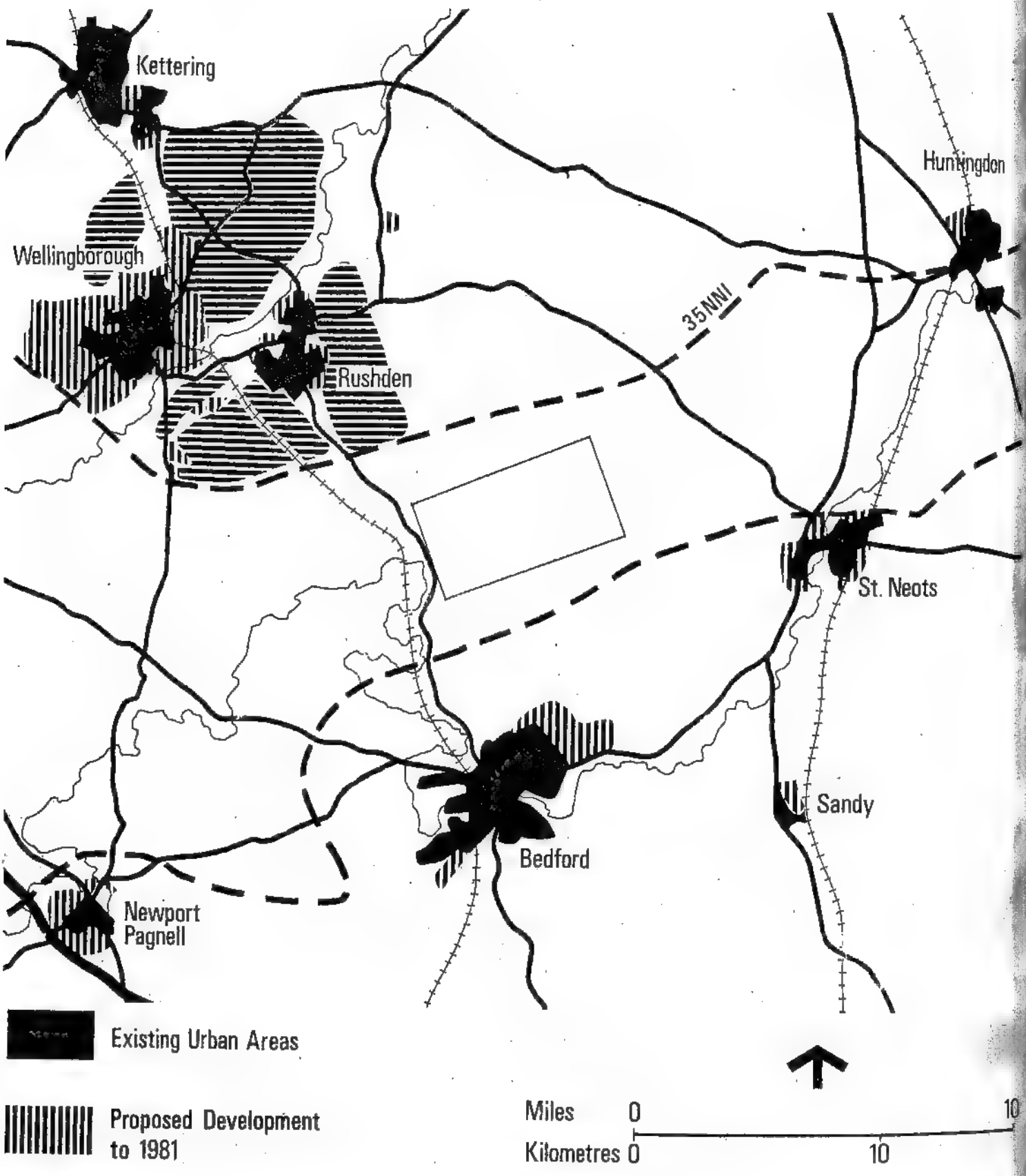


Figure 5.18

THURLEIGH STRATEGY D

Printed image digitised by the University of Southampton Library Digitisation Unit

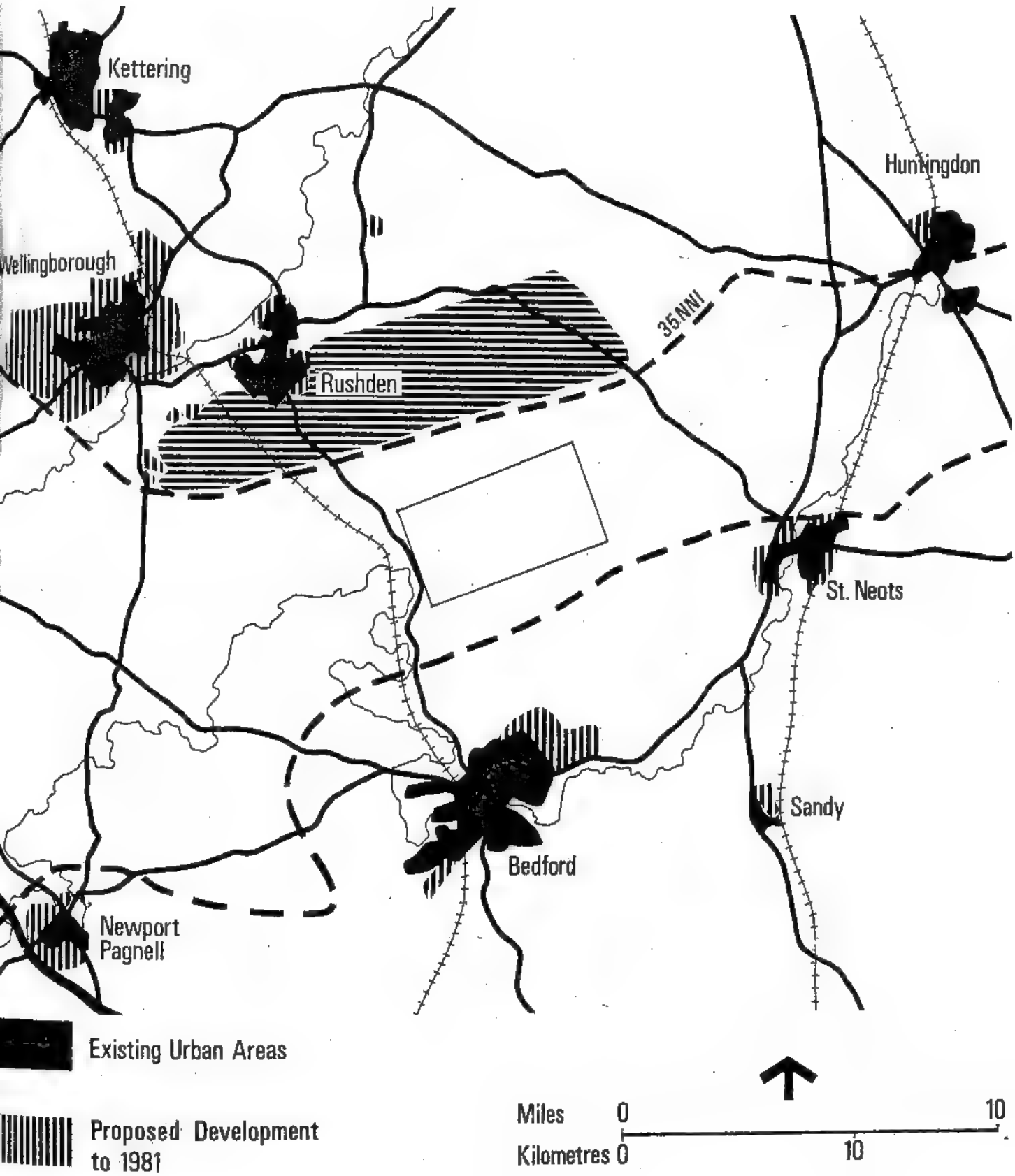


Figure 5.19

THURLEIGH STRATEGY E

Printed image digitised by the University of Southampton Library Digitisation Unit

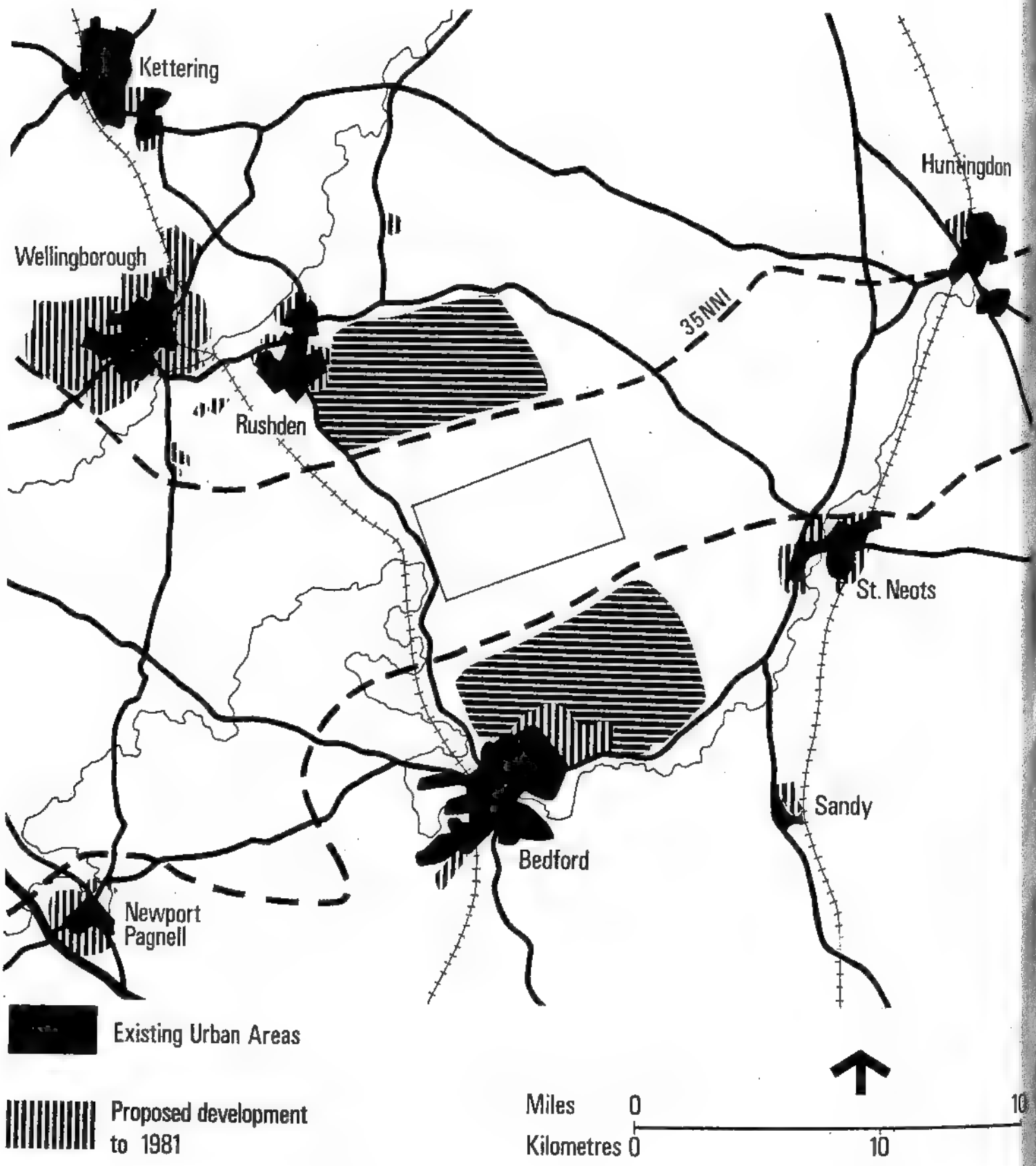


Figure 5.20

THURLEIGH STRATEGY F

Printed image digitised by the University of Southampton Library Digitisation Unit

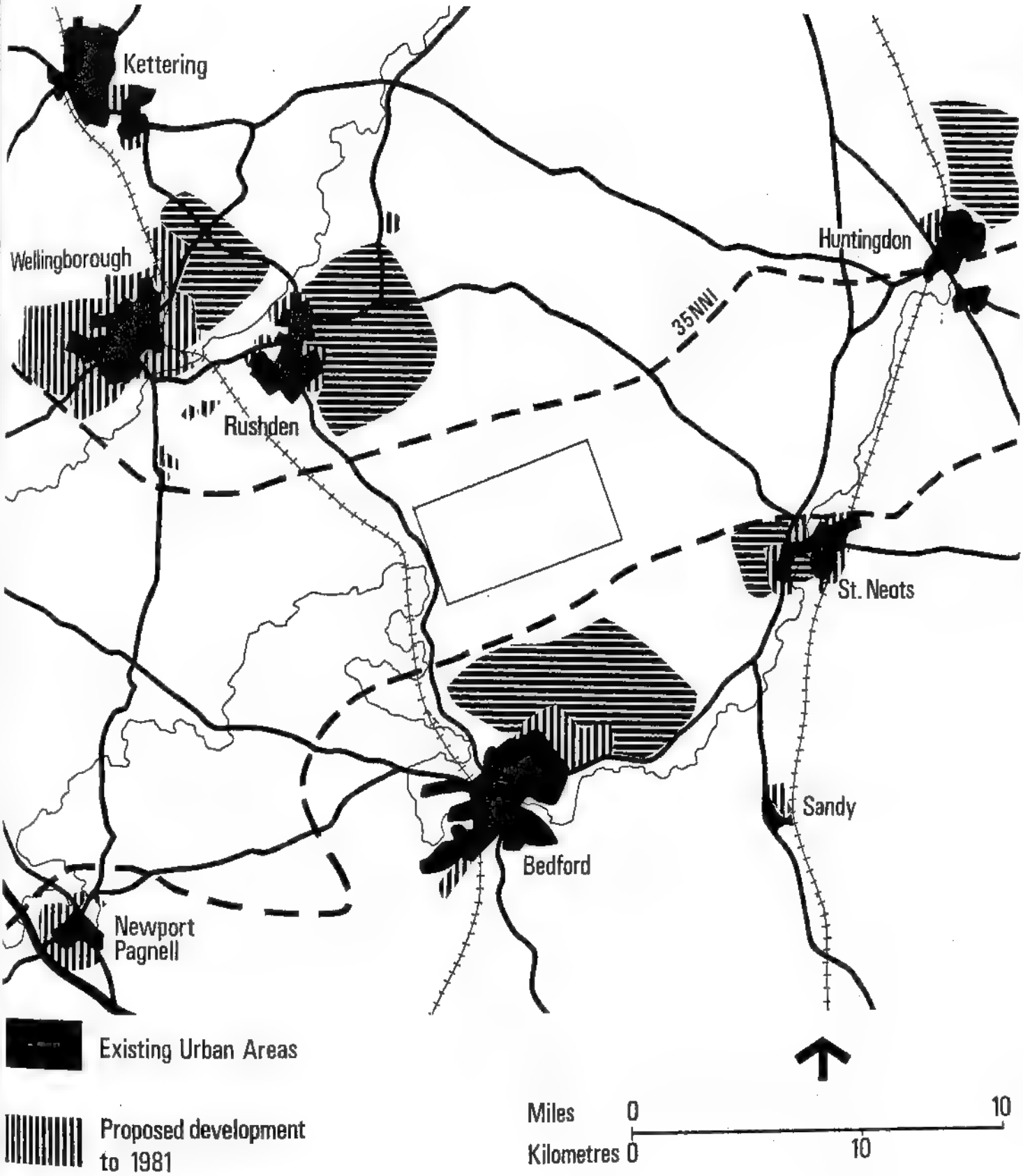
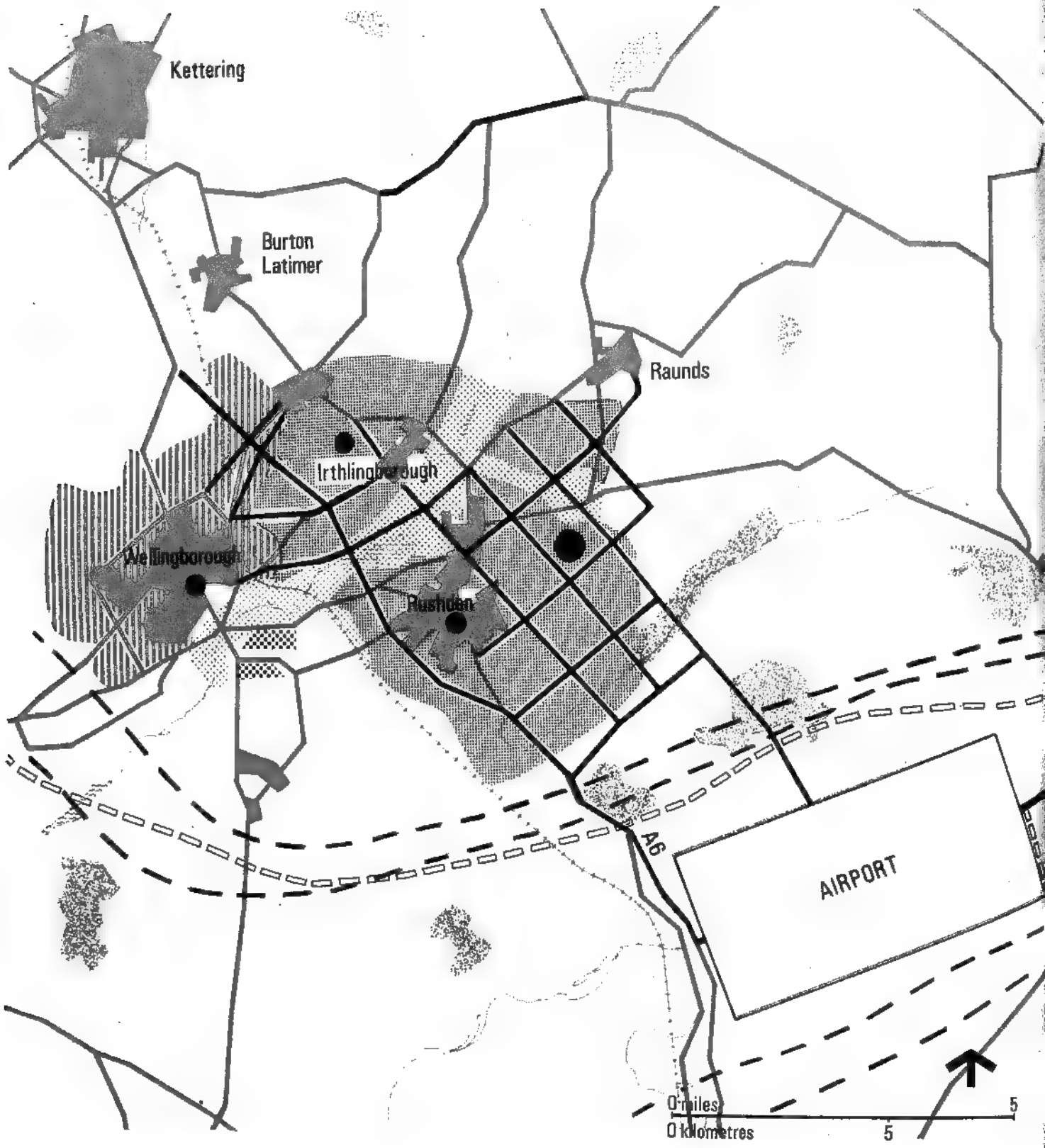


Figure 5.21

THURLEIGH STRATEGY G

Printed image digitised by the University of Southampton Library Digitisation Unit



Existing urban areas

Proposed development to 1981

Main woodland and parks

Proposed road network at 1981

Residential areas including other local uses

Major open space including other extensive uses

Major industrial areas

Town centre

Possible road link to London

District centre

Noise corridor 35 and 40 NNI

Possible line for MOT Strategy Route

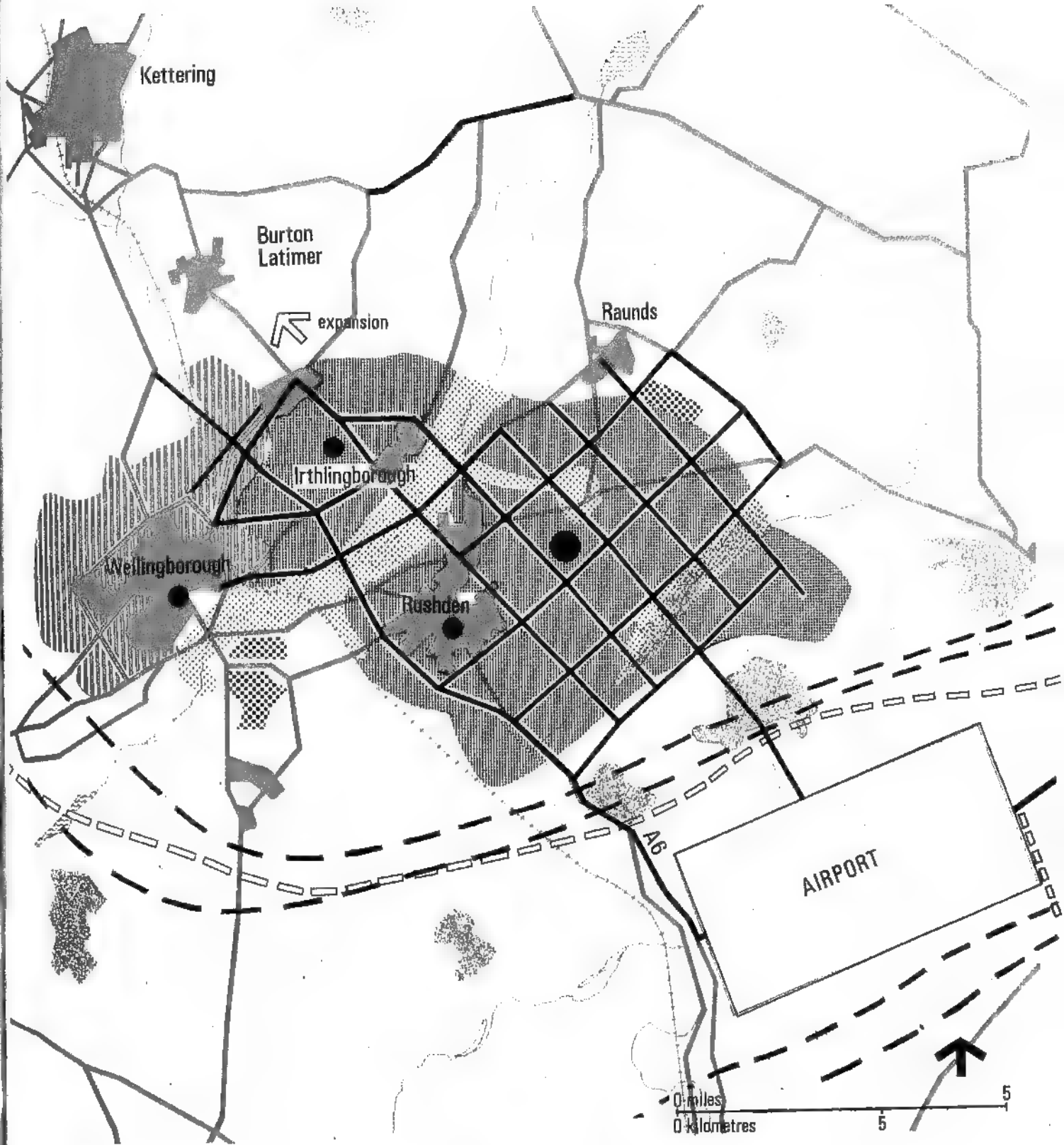
Plan 3 road network

THURLEIGH

PLAN 2 – AIRPORT CITY

Figure 5.29

Printed image digitised by the University of Southampton Library Digitisation Unit



Existing urban areas

Proposed development to 1981

Main woodland and parks

Proposed road network at 1981

Residential areas including other local uses

Major open space including other extensive uses

Major industrial areas

Town centre

Possible road link to London

District centre

Noise corridor 35 and 40 NNI

Possible line for MOT Strategy Route

Plan 3 road network

THURLEIGH

PLAN 3 – AIRPORT CITY

Figure 5.22

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

STUDY 4

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

A Note on the Propagation of Aircraft Noise

By Professor J.B. Large of the Institute of Sound and Vibration Research, University of Southampton

The noise field produced by an aircraft is constituted of a variety of individual sources, each having distinct characteristics of distribution and directivity (fig 1).

How this complex source propagates to a distant receiver involves many factors:

1) altitude above ground,

2) distance between source and receiver,

3) temperature,

4) humidity,

5) wind gradients along propagation paths,

6) temperature gradients along propagation paths,

7) turbulence along propagation paths,

8) humidity gradients along propagation paths,

9) impedance of ground along propagation paths,

10) topography.

For "standard day" conditions, wind less than 10 knots, relative humidity 30 per cent - 70 per cent, temperature 30°F - 90°F, the first four factors only are considered. The attenuation data used for these calculations are based on a combination of field and laboratory experiments (ref 1). In my opinion this data can only be used up to moderate distances from the source, approximately 3,000 ft, with any degree of reliability. It must also be appreciated that the so called noise footprints produced around airports, resulting from either a single aircraft operation, or due to a mix of aircraft types over an extended time period, such as used in producing NNI contours, have never been measured. These estimates of an aircraft's acoustic performance are also derived from a mixture of field data and engineering theory, taken over a limited range of conditions and extrapolated.

After about a mile from the source all aircraft noise spectra become of similar shape, although the overall noise levels may differ (ref 2) (fig 2). The high frequencies decay rapidly leaving a spectrum dominated by the low frequency jet noise. This is a cause for additional difficulty in predicting noise levels at great distances from the source. Recent research

rinted image digitised by the University of Southampton Library Digitisation Unit

has shown that significant jet noise radiates along a length many jet pipe diameters downstream (ref 3 & 4), and therefore the source radiator cannot be considered a point source. Also this source, which has the turbulent flow of the jet as its origin, produces noise in a temporal random fashion along the length of the jet fig 3). Therefore the use of ray theories from point sources to estimate propagation paths and intensities must be viewed with considerable caution, although this technique can be quite adequate for predicting the propagation of explosive sources. It should also be noted that high amplitude sources such as explosive charges or guns decay more gradually, as in the case of the sonic boom wave fronts rather than acoustic sources. It is for this reason that the propagation of sound waves produced by explosives is not indicative of the behaviour of sound waves produced by aircraft.

When considering the characteristics of aircraft noise propagating through "non-standard" atmospheres, the prediction of noise-nuisance becomes even more speculative. I have measured a change in noise levels of 10 dB within a 10 minute interval (ref 5), even though the gross atmospheric conditions, temperature, humidity, wind, did not change. In 'non-standard' atmospheres it is virtually impossible to predict a noise contour within $\pm$ 10 dB.

It is now apparent that much more experimental data is needed, taken under a great variety of atmospheric conditions, and that these conditions must be known over the entire field of propagation between source and observer. For example, wind gradients vary over the ground with terrestrial pressure gradients, local topography, and ground surface conditions, therefore these conditions must be known. Temperature profiles causing inversions (ref 5), occur almost anywhere at certain times of the year, and vary greatly in profile shape both from seasonal and local effects. Inversions generally occur with the same frequency over land and water, although some climatalogical features, e.g. high desert conditions, give rise to a much greater frequency of occurrence than normal. This, coupled with the random nature of the propagation of noise from an aircraft source, makes it very unlikely that the noise propagation under temperature inversion conditions should be any the worse at a coastal airport site than at an inland airport site.

In summary, I feel that noise from individual aircraft can be estimated with reasonable accuracy $\pm$ dB over a relatively small range of atmospheric conditions, at modest distances from the source up to about 3,000 ft (fig 4), but this does not hold true of conditions that involve non-uniform surfaces, winds (particularly unsteady winds), temperature inversions and turbulence. The average levels of aircraft noise indicated by NNI contours should be somewhat more accurately predictable than the noise from individual aircraft.

References

1. 866 Standard Values of Atmospheric Absorption as a Function of Temperature and Humidity for use in Evaluating Aircraft Noise, Aerospace Recommended Practice, Society of Automotive Engineers.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. *Aircraft Noise and Sonic Boom.* J.B. Large, Symposium on Evaluating the Noise of Transportation, University of Washington, March 1969.

3. *Jet Noise Suppression, A Status Report.* J.B. Large, the Boeing Company.

4. *Effects of Source Extension on Sound Fields Monitored near a Ground Surface.* R.R. Panko, the Boeing Company.

5. *Propagation of Aircraft Noise,* Miller Large, ICAS International Congress of Aeronautical Sciences, Munich, September 1969.

6. *Meteorological Aspects of the Sonic Boom,* 1964, Federal Aviation Administration Report, Contract No FA-WA-4717.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

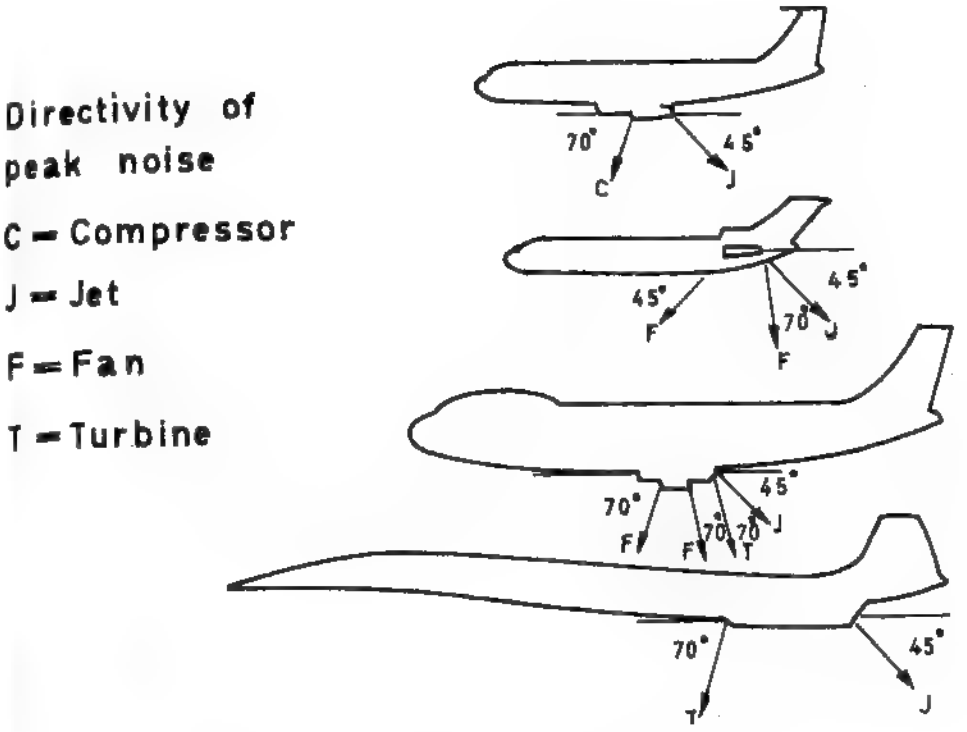


Fig 1 Aircraft noise sources

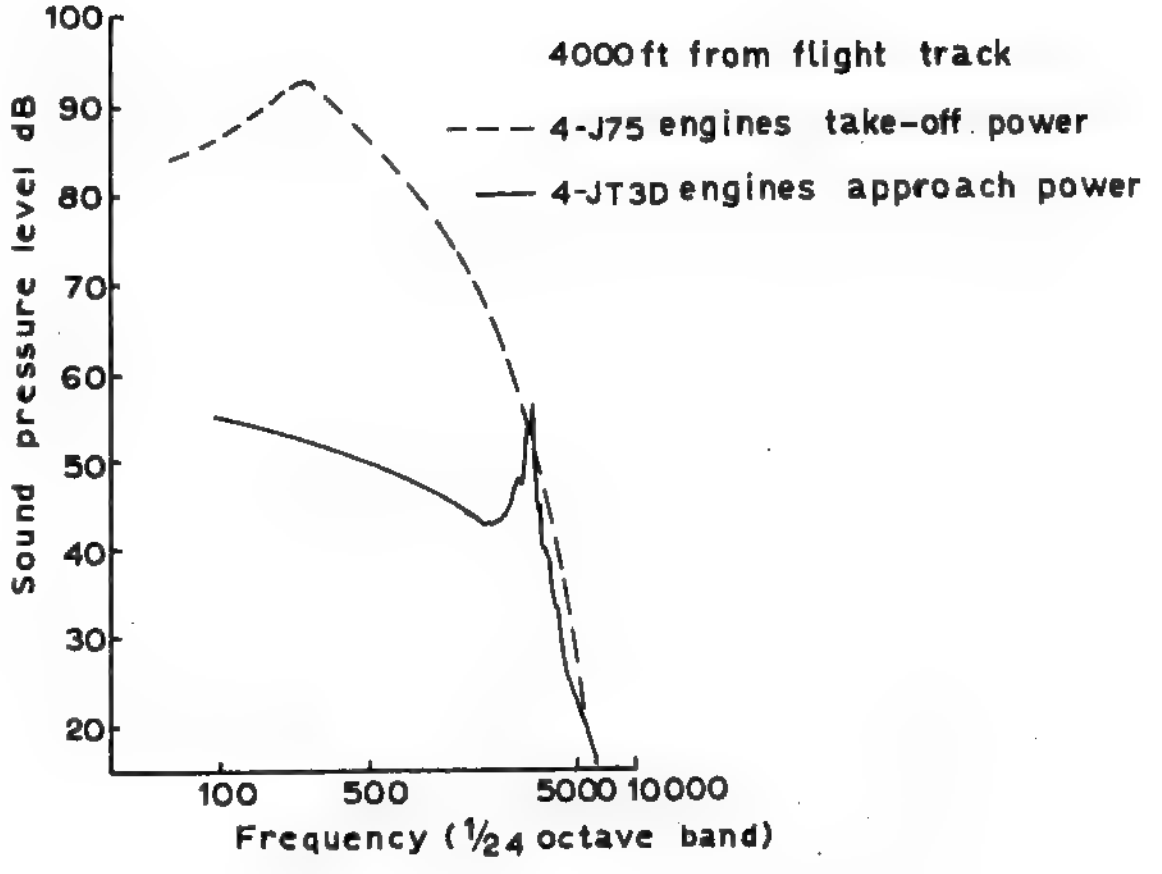


Fig 2 Far field spectra of turbo fan and turbo jet engines

Printed image digitised by the University of Southampton Library Digitisation Unit

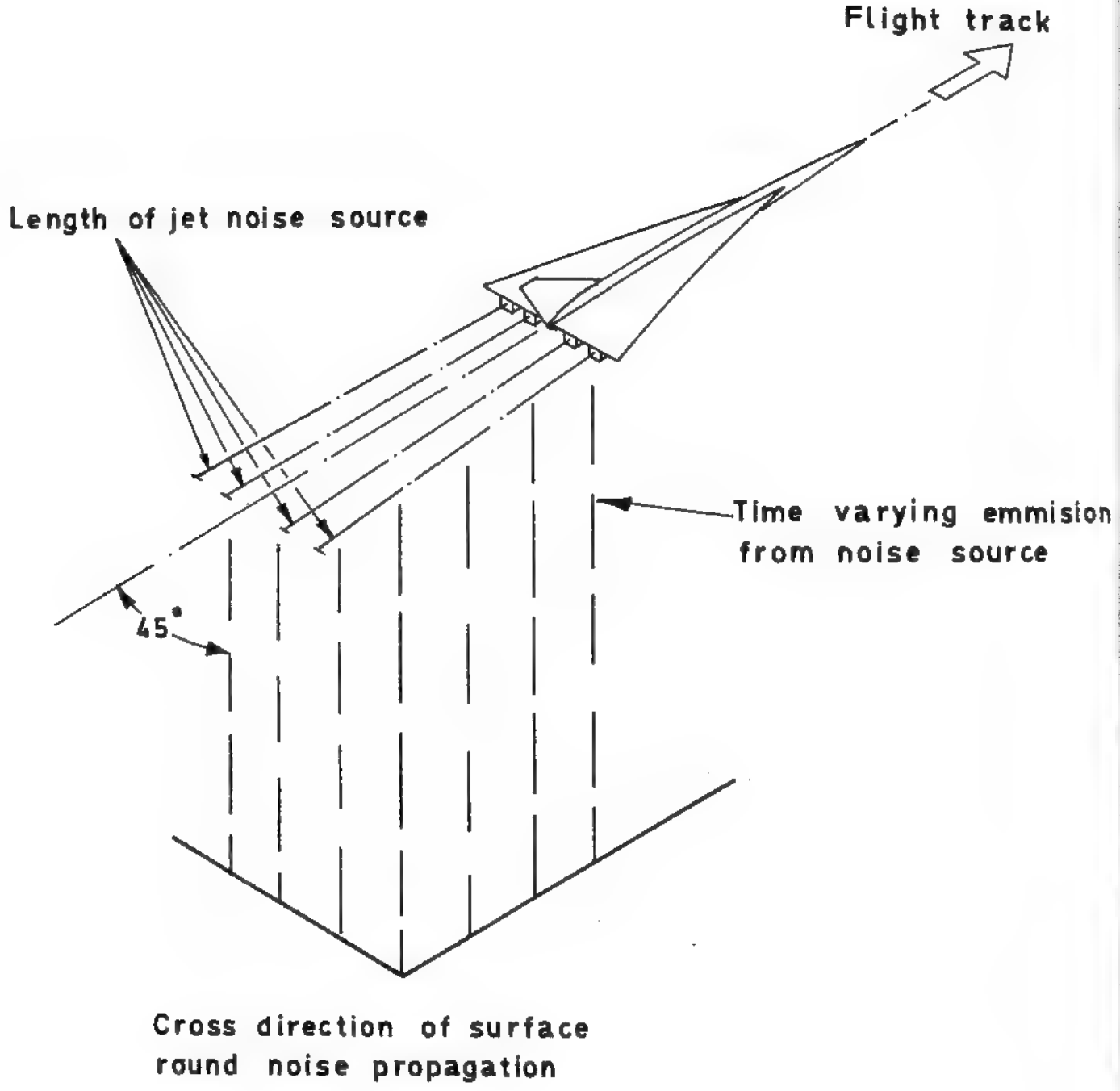


Fig 3 Jet noise propagation

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

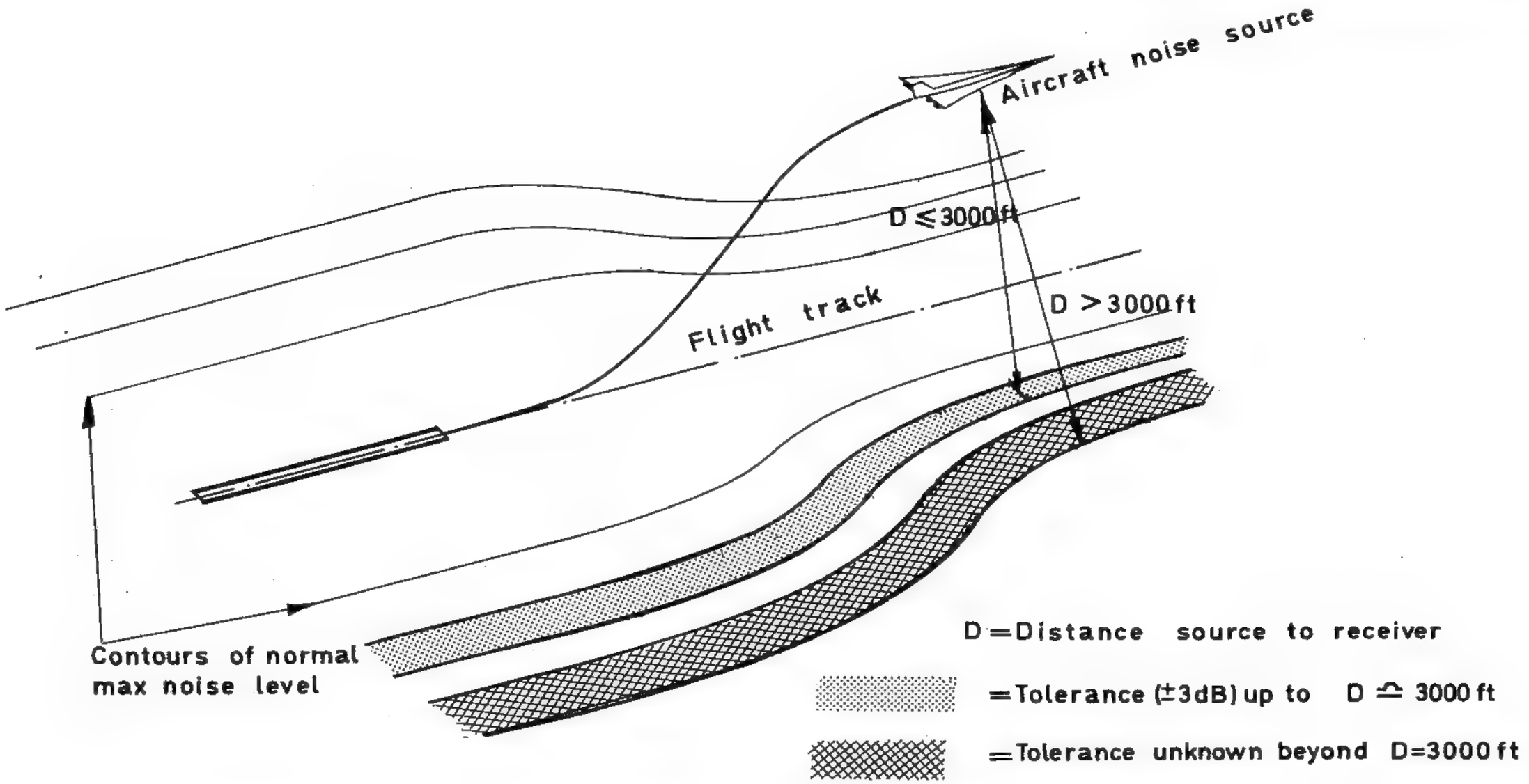


Fig 4 Accuracy of noise contours under standard day conditions

Printed image digitised by the University of Southampton Library Digitisation Unit

STUDY 5

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Bird-strike Hazard at Foulness

By the Infestation Control Laboratory, Ministry of Agriculture, Fisheries and Food

Introduction

1 On the 10th June 1969 the Infestation Control Laboratory of the Ministry of Agriculture, Fisheries and Food accepted, as an agent of the Bird Impact Research and Development Committee of the Ministry of Technology, a brief from the Commission on the Third London Airport viz:

(i) To advise the Commission's engineer on construction criteria for a "bird-free" airport with special reference to the Foulness site. In particular to advise on the reduction or elimination of roosting and feeding grounds in the environs of the site including land between low and high water and off-shore sands.

(ii) To advise the Commission on the design and costs of an adequate programme of environmental management including operational aspects of bird deterrents and reduction in the supply of food provided as a by-product of human activities.

(iii) To report on the likely effects on wildlife conservation of (i) and (ii), including the desirability and costs of establishing and maintaining one or more wildfowl refuges on the Essex coast to accommodate birds displaced from the Foulness area.

2 This paper attempts to answer, insofar as is possible, the points raised in the brief. It is axiomatic that before any detailed advice can be given about the alleviation of the bird-strike hazard at any particular site, a sound knowledge of the birds of the area and of their daily and seasonal movements and changes in numbers is required. Such knowledge is not at present available for Foulness partly because the Ministry of Defence has limited the number of amateur ornithologists visiting this restricted area and also because those who have been allowed access have not for the main part been making the sort of observations on the commoner and more numerous species which would assist in the present context. At most British airfields the greatest numbers of birds occur outside the breeding season during the autumn and winter months when the more hazardous species are in flocks either on migration or at their wintering places. The short period of time available for the investigation of the situation at Foulness has precluded observations during these critical times of the year. Moreover, in order to obtain a reasonable picture of the bird situation it would be necessary to study the area for a minimum period of three years as conditions in successive years are rarely alike. Because this basic

Printed image digitised by the University of Southampton Library Digitisation Unit

data is unavailable it is impossible at present to give detailed advice on, for example, the elimination of precise roosting and feeding grounds and for the present general criteria will have to suffice. Meanwhile some investigations are being carried out at Foulness including the filming of bird movements as detected by radar.

Construction criteria

3 Compared to an inland region, the proposed Foulness site carried a relatively high population of birds because it is part of an extensive area of intertidal mud and sand flats providing food and safety for wildfowl, waders and gulls. Some birds, notably the brent geese, during their stay, rarely forsake the intertidal zone, feeding mainly on exposed plants and resting on the water at high tide; some gulls with different food requirements behave similarly, others move inland, as the tide rises to return as it ebbs while some visit the area solely to roost by night on the exposed flats or water and fly to inland feeding places at dawn; waders for the most part frequent the exposed flats and gather into compact flocks at fairly restricted roosting places at high tide. Reclamation will deprive these birds of a large part of this habitat but unless it can be extended to low water mark an airport at Foulness would still be bounded to a large extent by intertidal areas attractive to birds which may remain in sufficient numbers to be a considerable nuisance when they fly over or on to the airfield and in its approach lanes. No method is known of making these large areas unattractive unless they can in some part be removed to provide material for the airfield construction.

4 The brent geese are expected to suffer a marked decline in numbers with the removal by land reclamation of their preferred food, *zostera*, which at present grows in a relatively narrow band about 100 yd beyond the sea wall for much of the length of Foulness Island. It is possible in the course of time that *zostera* may become established outside any new sea wall laid down but insufficient is known about the requirements of this plant to suggest easy ways of preventing its growth in order to avoid attracting geese.

5 There is a real danger that at times of high tide, and indeed on other occasions, many of the gulls and waders displaced from the intertidal zone may attempt to roost on the airfield and in this event they will have to be dispersed by the bird scaring patrols referred to later. Ordinarily waders, which cannot rest on the water, assemble in compact flocks on small islets or shingle banks above high water mark until the tide returns. It may be possible to level some of these roosting sites in the vicinity of the airport so that the birds have to venture further afield.

6 Within the confines of the reclaimed area itself there should be no bodies of open water because these invariably attract birds. For example, large areas of deep water form convenient feeding and resting places for some species of wildfowl and gulls also gather there. The Shelford and New England creeks on Foulness harbour up to 100 mute swans during the winter and should be drained. Shallow waters are additionally attractive to wading birds. Unavoidable open waters should have steep-sided banks in order to avoid the shallows normally sought after by waders and dabbling duck. Drainage ditches, if they cannot be covered, should also be steep-sided and

Printed image digitised by the University of Southampton Library Digitisation Unit

kept free from weeds and thick vegetation. Attention should be paid to surface drainage since gulls are frequently drawn to surface pools which sometimes linger after rain showers. Decorative ponds in any landscaping planned for the terrestrial approaches of the airport should be avoided. Similarly any ponds created in nearby inland areas by the extraction of sand or ballast for the construction of the airport should be filled in (preferably with industrial waste because of the highly desirable nature of domestic refuse for gulls). This will prevent the habitat in the vicinity of the airport becoming even more varied and desirable and obviate some of the bird movements which would inevitably occur between the fresh water and coastal areas.

7 It is believed that a large part of the airport will be laid to grass which, if cut short, as is the usual practice on British airfields, might provide ideal feeding conditions for gulls, lapwings, starlings and other birds. Some recent experiments suggest that by maintaining the grass at a height of about 8 inches many birds feeding on soil-living invertebrates can be deterred and that these long grass areas are unacceptable as resting places for most birds. Should these findings be confirmed and the growth of long grass prove acceptable on airfields it may be possible at a later date for some advice to be given on the kinds of grasses to be grown since some species are better than others in standing upright. No alternative ground cover has so far been efficacious in repelling birds.

8 Advice should be sought before ornamental trees or bushes or any other form of vegetation is planted on an airfield because it is undesirable to provide food (e.g. berries) or cover which may harbour birds. Architects should ensure that all the airport buildings are designed so far as possible to exclude birds and deny them nesting and perching sites,for it is often a tedious if not impossible exercise to bird-proof large buildings after they have been constructed. Particular attention should be paid to eaves, hangar doors and ventilation shafts and to avoid or protect openings to the interior. Birds in hangars may foul aircraft and carry metal objects as well as more normal nesting material into relatively inaccessible parts of aircraft thereby causing unnecessary delays and hazards.

Bird deterrents and environment management

9 It is most important that the airport, when operational, should have on its staff some suitably trained personnel responsible not only for the day to day control of birds on the airfield but also for keeping a close watch on changes in the bird situation and for seeking external advice when necessary. The bird hazard is likely to change as the airport grows in size and it is to be hoped that with time there will also be some improvements in the methods of bird control available. The Board of Trade (Civil Aviation Department) already makes recommendations about bird scaring practices on airfields and it is expected that this advice will be followed. It is unnecessary here to review the current bird scaring techniques and sufficient to say that the use of bioacoustics supplemented if necessary by pyrotechnics is the general practice. Some very rough estimates on the costs of bird scaring are given in appendix A.

10 Although there is an abundant source of natural foods for a variety of birds in the Foulness area it is folly for man to make available further

Printed image digitised by the University of Southampton Library Digitisation Unit

sources of food which will allow the total population to increase by favouring one species or another. Methods of reducing the supply of food provided as a by-product of human activities are therefore of some importance. At the airport itself some species may find food in the form of scraps left lying about in car parks, spectators' galleries, on the verandahs and around the refuse bins of restaurants and by the careless handling of food wastes from the airline catering services. This can only be avoided by providing suitably covered litter and swill bins together with efficient methods of waste collection and disposal and by exhorting people to be tidy and not to feed the birds. Active publicity campaigns may be necessary. The hazard caused by birds frequenting terminal buildings is a real one. It is quite feasible for some unsuspecting pigeon, although accustomed to the sight and sounds of stationary jet airliners, to become sucked into a running jet engine.

11 Some kinds of intensive poultry keeping and stock rearing often provide easily obtained food for birds and consequently should not be tolerated in the vicinity of an airport. The disposal of raw sewage also attracts gulls and should not be allowed. To a lesser extent sewage treatment works also provide food. Starlings frequently feed on sprinkler beds (now obsolescent) and gulls find food floating on sedimentation tanks and in grit lagoons. It is undesirable therefore to locate such works close to airfields.

12 The most prolific source of food supplied by man is provided at local authority domestic refuse dumps where literally thousands of gulls and hundreds of starlings, rooks and jackdaws can be seen scavenging amongst the bottles and tins. These are particularly important feeding places for gulls which visit them daily during the autumn and winter months. The present recommendations of the Ministry of Housing and Local Government concerning the covering of refuse each day with a layer of inert material do little to deter birds which commence feeding as soon as the refuse is shot from the delivery vehicle. When these dumps are adjacent to airfields gulls often rest between bouts of feeding in the comparative safety of the wide open spaces of the airfield and there is a constant movement of birds. There can be little doubt that the ready availability of this food plays an important part in the maintenance of large numbers of gulls in any area in the winter. Moreover, since gulls may travel daily up to 25 miles or more from their nocturnal roosting place in search of food it is not only tips in the immediate vicinity of airfields which need consideration. Certainly the tipping of domestic refuse within 10 miles of an airfield should be strictly controlled and measures taken to ensure that only improved methods of refuse disposal such as incineration which will present little attraction for birds are used.

Wildlife conservation

13 With the possible exception of the establishment of safe high tide roosting places for waders, there seems to be no advantage from the air safety point of view in creating refuges for birds displaced from the airport site. From conservation and amenity viewpoints, however, there is good reason for reserves to be created as discussed in the submission from the

Printed image digitised by the University of Southampton Library Digitisation Unit

Nature Conservancy at appendix B and in its evidence (published in volume IX of the Commission's *Papers and Proceedings*)* with which we are in accord. Although we are sympathetic to the conservation of little terns, however, the preservation of a colony of any species of bird in close proximity to the flight lanes of an airport conflicts with the general policy of making airfields and their environs as unattractive as possible for birds.

**CTLA Papers and Proceedings,* volume IX (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix A

Cost factors in bird scaring at inland and coastal airfields

You have asked for the difference between an inland and a coastal airport in the likely costs of bird scaring measures.

Recommendations about possible modifications of the habitat, which would affect a coastal site more than an inland site, have been excluded in this context as has the possible use of special radar equipments for bird detection and expenditure on refuges.

It is scarcely feasible to compare the only coastal site under consideration, Foulness, with any of the proposed inland sites about which we know very little but it is informative to compare it with our largest existing airport, Heathrow, on which we have some data provided by the British Airports Authority.

Heathrow airport is about 2½ miles long and covers some 3¾ square miles. An airport at Foulness would probably be about 8 miles long and cover an area of roughly 16 square miles. The proposed Foulness site will therefore be approximately four times larger than Heathrow. In addition the strike rate at coastal airfields is known to be generally three times as great as that at inland airfields. Bearing these facts in mind we can quote approximate present day costs for Heathrow and suggest possible costs for Foulness (please see annex).

The difference between the figures for the two sites might appear to result solely from the much greater acreage of the Foulness site but the relatively more frequent and numerous birds at Foulness have not been overlooked as it is envisaged that the increased hazard can be met by greater vigilance and efficiency of the bird scaring teams operating there rather than by acquiring further equipment and staff. A site of the size and configuration of Foulness, if located inland, would not require so much in the way of men and materials.

The Foulness figures should in practice be less than indicated over the 30 year period because it is understood that it may take 20 (?) years for a four-runway airport to reach completion, hence the staff and equipment will be acquired progressively. During this period it may become apparent that we have overestimated the requirement. Nevertheless, other unforeseen bird scaring measures may also prove necessary so it is suggested that the present estimate stands as it is to offset such eventualities.

You will appreciate that the figures quoted are very crude but it is the best that can be done in the present circumstances.

Printed image digitised by the University of Southampton Library Digitisation Unit

Annex

Heathrow: present day costs

	Cost	*Cost over 30 years*
One "Sappho" bird scaring system incl installation, tapes, vehicle R/T	£800	
Life of "Sappho" 5-10 yr. Say 10?		£2,400
Maintenance of Sappho	£100 pa	£3,000
One vehicle (average life 6 yr?)	£1,000?	£5,000
Running costs, maintenance and fuel for annual mileage 25,000 miles	£1,000	£30,000
Shellcrackers 4,000/year	£230	£6,900
2 men, 12 h day, 7 day week, incl superannuation, SET, National Health etc.	£6,500/yr	£195,000
	Total	£242,300
	or	£8,077 pa

Foulness: possible costs

	Cost	*Cost over 30 years*
4 'Sapphos' (4 x £800)	£3,200	
		£9,600
Maintenance 4 x £100	£400	£12,000
4 vehicles	£4,000?	£20,000
Running costs	£4,000	£120,000
Shellcrackers. 4 x Heathrow expenditure? i.e. 16,000 yr?	£920	£27,600
Say 8 men	£26,000	£780,000
	Total	£969,200
	or	£32,306 pa

Digitised image digitised by the University of Southampton Library Digitisation Unit

Appendix B

The Nature Conservancy

I am writing with reference to Mr. Thompson's letter of 11th July to Dr. Holdgate in which our advice was sought on the conservation implications and the desirability and practicability of establishing and maintaining one or more wildfowl refuge on the Essex coast as counter attractions to the use of the Foulness area by birds, in the event of an airport being sited on the Maplin Sands.

Consideration has been given as to (a) whether the brent geese, waders and gulls, whose feeding and resting grounds would be destroyed by the new airport, could be provided with the required habitat conditions elsewhere, and (b) whether all the different species could be attracted to one refuge area, or whether their habitat conditions were sufficiently dissimilar to necessitate the provision of a number of different reserves.

On conservation grounds, it is highly desirable that every possible effort should be made to conserve the dark-bellied form of the brent goose in view of the fact that at least one-fifth of the total world population at present over-winter in the Foulness area. If an airport is sited here, the main feeding grounds of this species would be destroyed, and although birds might continue to frequent the area afterwards, this would only be for a time. All other major sites on the east and south coasts of England which are frequented by this species during the winter months, would not be capable of accommodating all the birds displaced from Foulness, unless some way could be found of increasing the amount of the principal food plant *zostera*. There is no evidence that *zostera* can be successfully transplanted; all the experimental transplants attempted in America and Holland had proved abortive. The only possible way in which the right habitat conditions for *zostera* could be provided on sites where this species did not at present occur in any significant quantity would involve major engineering works, such as training walls, etc. These would be extremely expensive and even when constructed, might not provide the particular conditions required by this plant. It is considered that the best that could be achieved would be to manage some or all of the sites on the east and south coasts in such a way that they would form refuges for at least some of the birds displaced from Foulness by the construction of an airport. The most important requirements for such refuges would be the control of disturbance and irresponsible shooting, and to safeguard them from development.

On conservation grounds it would also be desirable to provide alternative high tide roosts to attract waders away from the Foulness areas, although it was not possible to predict whether these would prevent the birds from

Printed image digitised by the University of Southampton Library Digitisation Unit

roosting on reclaimed land associated with an airport. The siting of these could be decided after further observations on the behaviour patterns of the birds if and when constructional work at Foulness gets underway. If Dengie Marsh was chosen as one roosting site, others would need to be sited beyond the runways, possibly at Shoeburyness and on the sea side of the airfield, so that waders would never need to fly across the runways to reach a roost. It is stressed that freedom from human disturbance on such a refuge is most important. It would not be practicable to provide alternative feeding grounds as a method of drawing waders away from the Maplin Sands.

The number of duck affected is relatively small and these birds do not, therefore, constitute a serious conservation problem. If an area of grazing pastureland, perhaps with shallow water, was provided on the Dengie peninsula, this would prove particularly attractive to wigeon.

About 100 pairs of mute swan at present frequent the Foulness area. Although these would not present a conservation problem they would, in terms of their size and weight, probably present the biggest single hazard to aircraft. It is considered that the population would tend to decline once an airport was built, particularly if the "fleets" on the island were drained.

Gulls do not pose a conservation problem, but the very large numbers known to fly to and fro across the airport site would present a serious hazard to aircraft flight. It seems doubtful whether this pattern of behaviour would alter significantly, even if an airport was built. It is recommended that regulations should be introduced to prevent the establishment of sites such as rubbish tips likely to attract gulls near the airport.

Little terns would create a negligible hazard to aircraft. Nevertheless, their status in Great Britain is declining, and every effort should therefore be made to protect the colony on the shingle spit at the northern end of Foulness Island. Unfortunately, this species is conservative in its choice of a nesting site, and will normally only breed on beaches and shingle spits. It is impossible to predict whether the Foulness shingle spit will remain unchanged if a major reclamation is carried out on the Maplin Sands. Although it would be technically possible to transport this shingle spit elsewhere, this could only be done after careful study of the physiographical implications of the whole airport project, using a tidal model of the area. In the meantime, it is recommended that additional protection should be given to the Little Tern nesting sites on the Colne and Bradwell shingle spits.

It is stressed that these views form an interim report only and it is hoped that further advice could be offered when the findings of the Roskill Commission are known. Meanwhile it is desirable that the following research projects should be carried out as soon as possible:

(1) A detailed survey of the birds that frequent the Maplin Sands, to include (a) a study of the flight habits of waders between feeding ground and roosts (particularly when normal patterns are disturbed for one reason or another), in order to provide the information required to find the best sites for wader refuges, (b) a study of the movements and feeding areas of gulls, and (c) a survey of the distribution of *zostera*, elsewhere in Essex and Kent.

Printed image digitised by the University of Southampton Library Digitisation Unit

(2) A detailed survey of the Blackwater estuary, Leigh marsh and the Swale, to pinpoint alternative sites for brent geese.

(3) A study of the distribution of *zostera* elsewhere on the east and south coasts, and its ecological requirements.

Printed in England for Her Majesty's Stationery Office by
McCorquodale & Co. Ltd., London

HM 2764 Dd 501464 K16 1/70 51/1601 SBN 11 510167 5

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings volume VIII part 2, section 3

Stage III: Research and Investigation

Specially commissioned studies

LONDON
HER MAJESTY'S STATIONERY OFFICE
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

Contents

Study		*page*
1	Unconventional mass transit systems. Report by Livesey and Henderson	3
2	Feasibility study on housebuilding output rates for a third London airport. Report by the National Building Agency	23
3	The assessment of the agricultural implications of a third London airport, by Gerald Wibberley and Michael Boddington (Wye College, University of London)	45
4	A note on the propagation of aircraft noise by J.B. Large (Institute of Sound and Vibration, University of Southampton)	121
5	Bird-strike hazard at Foulness. Report by the Infestation Control Laboratory, Ministry of Agriculture, Fisheries and Food	131

Illustrations

Study 3

Land classification map of the Foulness area	86
Map showing the urban strategies A, B, C, D and E of Foulness	87-91
Structure plan for the optimum strategy, showing plan 2 and plan 3 areas, Foulness	92-93
Land classification map of the Nuthampstead area	94
Map showing urban strategies B, D, E and G proposed for the Nuthampstead area	95-98
Map showing selected urban strategies for Nuthampstead: plan 2 and 3	99-100
Land classification map of the Cublington area	101
Map showing the various urban strategies for Cublington: A, B, C and E	102-105
Map showing the selected strategy for Cublington: plan 2 and 3	106-107

Printed image digitised by the University of Southampton Library Digitisation Unit

Study 3

	page
Land classification map of the Thurleigh area	108
Map showing the various urban strategies for the Thurleigh area: A - G	109-115
Map showing the selected urban strategy for Thurleigh: plan 2 and 3	116-117

NB. The maps used to illustrate Professor Wibberley's study have been extracted from the urbanisation consultants' studies. The figure numbers and titles do not therefore fully accord with Professor Wibberley's descriptions. .

Study 4

Fig 1. Aircraft noise sources	125
Fig 2. For field spectra of turbo-fan and turbo-jet engines	125
Fig 3. Jet noise propagation	126
Fig 4. Accuracy of noise contours under standard day conditions	127

Printed image digitised by the University of Southampton Library Digitisation Unit

Foreword by the Chairman

The Hon. Mr. Justice Roskill

Stage III of the Commission's work has consisted of investigation and research into the timing of the need for a third London airport and into matters relevant to the choice to be made between the short-listed sites. The work has been carried out by the Commission's Research Team with the help of consultants, government departments and others.

Studies undertaken by consultants, government departments and others form volume VIII of the Commission's *Papers and Proceedings.* Part I of volume VIII contains the study by the consultants on urbanisation. Part 2 contains the remainder of these studies and is divided into four sections.

The advice given by the Commission's consultants, by government departments and by others in these studies has been reflected in the work of the Research Team which forms volume VII of the Commission's *Papers and Proceedings.* Nevertheless, this in no way implies that the Commission has accepted that advice since it will enter upon the Stage V hearings with an open mind about the conclusions to be drawn from the work carried out during Stage III. Similarly, the Commission wishes it to be understood that, in publishing these studies, it is expressing no view on the merits of the advice which they contain; this is for examination during Stage V.

EUSTACE ROSKILL

Templar House,
81-87 High Holborn,
LONDON, W.C.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

CONTENTS - VOLUME I

	Paragraphs
SECTION 1 - INTRODUCTION AND MAJOR ASSUMPTIONS	
Introduction	1.1 - 1.8
SECTION 2 - MODEL DESCRIPTION	
Introduction	2.1
General Description and Modelling Process	2.2
Data Generation	2.3 - 2.7
Critical Event Simulation	2.8 - 2.13
Analysis of Results	2.14 - 2.15
The Aircraft Proximity Analysis Program	2.16 - 2.23
The General Analysis Program	2.24 - 2.25
SECTION 3 - MEASURES OF SYSTEM PERFORMANCE AND METHOD OF PRESENTING RESULTS	
Measures of System Performance	3.1
Route Structure Feasibility and Comparisons	3.2
Implied Cost to Operators	3.3
TMA System Performance	3.4
Method of Presenting Results	3.5 - 3.6
Route Structure Charts	3.7
SECTION 4 - MODEL ACCEPTANCE TRIALS	
Model Acceptance Trials	4.1 - 4.3
SECTION 5 - CONSIDERATION AND INTERPRETATION OF THE RESULTS OF THE SIMULATIONS	
GATWICK TWO-RUNWAY SIMULATIONS	
Introduction and Assumptions	5.1 - 5.6
GATWICK 521A AND 521B - ABSTRACT OF RESULTS AND THEIR INTERPRETATION	
Aircraft Proximity Counts	5.7
Airports' Performance	5.8
TMA System Performance	5.9

Printed image digitised by the University of Southampton Library Digitisation Unit

	Paragraphs
CONSIDERATION OF RESULTS	
Base Level of Proximity Counts	5.10
General Discussion	5.11 - 5.20
CONCLUSIONS RELATING TO THE EFFECT OF A TWO-RUNWAY GATWICK AIRPORT ON THE TIMING OF THE NEED FOR A THIRD LONDON AIRPORT	
Conclusion	5.21
THE SIMULATION OF THE SHORT-LIST SITES	
Introduction and Assumptions	5.22 - 5.27
ABSTRACT OF RESULTS	
Aircraft Proximity Counts	5.28
Airports' Performance	5.29
TMA System Performance	5.30
CONSIDERATION OF THE RESULTS	
Comparisons of Aircraft Proximity Counts	5.31 - 5.37
Comparison of Airports' Performance	5.38 - 5.45
TMA System Performance	5.46 - 5.47
Interpretation of the Results	5.48
GENERAL CONCLUSIONS IN RELATION TO THE SITING OF THE THIRD LONDON AIRPORT	
Conclusions	5.49 - 5.50
Acknowledgements	

LIST OF APPENDICES

		page
APPENDIX A	- THE TRAFFIC SAMPLES	58
APPENDIX B	- FOULNESS SIMULATION	69
APPENDIX C	- NUTHAMPSTEAD SIMULATION	89
APPENDIX D	- CUBLINGTON SIMULATION	106
APPENDIX E	- BEDFORD/THURLEIGH SIMULATION	123
APPENDIX F	- GATWICK - TWO SIMULATION	140

Printed image digitised by the University of Southampton Library Digitisation Unit

CONTENTS - VOLUME II

	Paragraphs
SECTION 1 - INTRODUCTION	
Objectives of Volume I	1.1 - 1.3
Objectives of Volume II	1.4
SECTION 2 - FACTORS AFFECTING TERMINAL AREA CAPACITY	
Airport and Airspace Capacity Limitations	2.1 - 2.2
The Nature of Airport Limitations	2.3
The Nature of Airspace Limitations	2.4
Airspace Restrictions on Terminal Area Capacity	2.5 - 2.7
Relationship Between Route Structure, ATC Procedures and Capacity	2.8 - 2.13
SECTION 3 - CONSIDERATION OF THE SIMULATION RESULTS	
Use of Proximity Count	3.1 - 3.2
Derivation of a Complexity Index	3.3 - 3.5
Implied Magnitude of the ATC Task up to 1980-1985	3.6 - 3.9
Implied Magnitude of the ATC Task by the Year 2000	3.10 - 3.11
Possible Methods of Reducing the Proximity Count	3.12 - 3.13
Conclusions Regarding Effects on Other Airspace Users	3.14 - 3.16
SECTION 4 - THE EFFECT OF IMPROVED OPERATIONAL TECHNIQUES	
The Problem of Defining the Future Environment	4.1
Factors to be Taken into Account	4.2
Optimisation of the Route Structures and ATC Procedures	4.3 - 4.7
Conclusions Regarding the Basis of Comparison	4.8

Printed image digitised by the University of Southampton Library Digitisation Unit

ABSTRACT

Introduction

1. The study to which this report relates was undertaken by General Precision Systems Limited to assist the Commission on the Third London Airport by evaluating the Air Traffic Control Terminal Area airspace factors affecting the timing of the need for, and the location of, a Third London Airport.

2. The report consists of two volumes. Volume I contains a factual presentation of numerical results which are used to enable necessary comparisons to be made. The second Volume gives the opinion of the Consultants, based on work undertaken not in connection with this study, concerning the extent to which future changes in aircraft operating and Air Traffic Control (ATC) techniques might affect these comparisons.

Objectives of the Study

3. The principal objective of the study has been to make comparisons, from both Air Traffic Control and Airline Operators' standpoints, between terminal area route structures designed for each of the Commission's short list of sites, viz:- Foulness, Nuthampstead, Cublington and Thurleigh.

4. Additionally, ATC problems were examined in a Terminal Area (TMA) environment, without a Third London Airport but with an assumed second runway at Gatwick and assuming an enhanced single runway capacity at Luton.

Method of Study

5. To investigate these problems General Precision Systems Limited has made use of a large computer based air movement simulation model which has been developed by them for the Ministry of Technology.

6. Terminal Area airspace problems are best investigated against a background of high sustained air traffic demands, but this has made it necessary to assume airport capacities at Gatwick and Luton which could not be met by their existing facilities. The assumptions of a second runway at Gatwick and of improvements at Luton have therefore been made but only for the purpose of the study.

Printed image digitised by the University of Southampton Library Digitisation Unit

7. Within the time available for the study, it has been possible to relate the investigations only to the case of westerly runway operations at all Terminal Area Airports, which is the most common mode of operation under the weather conditions prevailing in the London Terminal Area.

Conclusions

8. From the analyses reported upon in Volume I, the Consultants have reached the following principal conclusions:-

a) In connection with the timing of the need for a third London Airport :-

"That :-

i) a feasible route structure could be designed capable of handling a traffic sample, prepared by the Commission's Research Team, which contains sustained high air transport movements rates at Heathrow, Gatwick and Luton airports

ii) such a route structure could be satisfactorily operated, without undue penalties, using present-day Air Traffic Control techniques and currently available equipment

iii) the airspace problems arising from the operation of the airports would not have a consequential detrimental effect upon the assumed airport capacities.

(Volume I, Paragraphs 5.1 - 5.21 refer)

Printed image digitised by the University of Southampton Library Digitisation Unit

b) In connection with the siting of a Third London Airport :-

"That :-

i) there is no significant difference in the complexity of the Air Traffic Control task apparent in any of the route structures related to the four short list sites, prepared by the National Air Traffic Control Services and tested against a traffic sample considered by the Commission's Research Team to be representative of the airspace demand at the turn of the century

ii) the Foulness site shows significant benefit in terms of reduced airport-related ATC delays. The extent of this benefit is, however, entirely dependent upon assumptions regarding airport capacities incorporated in the traffic sample, and upon the assumption that, of the four short list sites, only Foulness is compatible with the continued operation of Luton as a major airport

iii) certain small, but quantifiable benefits accrue within the Terminal Area to the Foulness site in terms of aircraft route mileage and flying times. It is not certain to what extent these benefits might be modified by the route structures optimisation processes which the Consultants consider to be necessary for viable TMA operations in conjunction with any of the four sites simulated".

(Volume I, Paragraphs 5.28 - 5.50 refer)

9. From detailed consideration of the simulation results presented in Volume I and amplified in the large scale proximity count charts lodged with the Commission, it has been concluded in Volume II that :-

a) The traffic levels forecast for the period up to 1980-1985, given adequate optimisation of route structures and ATC procedures, could be handled by existing ATC and navigational techniques and without undue penalties through any of the TMA configurations examined (Paragraphs 3.6 - 3.9 refer)

Printed image digitised by the University of Southampton Library Digitisation Unit

b) all of the route structures related to the four sites simulated are incapable of handling the given 2000 AD traffic demand using existing ATC and navigational techniques without considerable penalties to operators, and would require to be optimised against a background of planned improvements in these operating techniques before the forecast demand could be safely and efficiently met
(Paragraphs 3.10 - 3.13 refer)

c) beyond 1980-1985, planned improvements in ATC and navigational facilities ought to ensure that the route structures and ATC procedures planned for the Third London Airport can be optimised to handle the forecast 2000 AD traffic demand without excessive increases in Terminal Area airspace requirements
(Paragraphs 3.14 - 3.16 refer)

d) no evidence has been found to indicate that any one of the airport sites presents inherently easier or more difficult optimisation problems than any of the other sites
(Paragraphs 4.3 - 4.7 refer)

e) against the background of c) and d) above the simulated route structures can be regarded as the best bases of comparison available within the Commission's timescale, and the findings reached in Volume I are unlikely to be upset by foreseeable future developments in TMA operating techniques
(Paragraph 4.8 refers).

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION I - INTRODUCTION AND MAJOR ASSUMPTIONS

1.1 This report is concerned with that part of the Air Traffic Control consultancy contract, placed upon General Precision Systems Ltd. (GPS) by the Board of Trade, to use a computer-based Terminal Area (TMA) air movement simulation model to assist the Commission on the Third London Airport into their investigation into the timing of the need for, and the location of, a third London Airport.

1.2 Basically, the contract calls for GPS to use the model to process traffic samples, provided by the Commission's Research Team, through route structures provided by the National Air Traffic Control Services (NATCS) of the Board of Trade. The one exception is that the route structure and ATC procedures for the simulation of a two runway airport at Gatwick and no Third London Airport, were designed by GPS against assumptions agreed with NATCS and the Commission's Research Team.

1.3 The purpose of the simulations which have been undertaken was to enable :-

a) the examination from a civil air traffic control viewpoint of the feasibility of various TMA route structures, against stated air transport demands

b) the comparison, against stated air transport demands, of route structures related to particular Third London Airport sites in terms of :-

   i) the implied complexity of the resultant Air Traffic Control task

   ii) the implied cost to airline operators in terms of ATC delay etc.

c) the examination of TMA system performance.

1.4 The TMA simulations listed in the table overleaf form the subject of this report. Simulations 521 A and B are related to the timing of the need for the Third London airport; the remainder relate to the question of its siting.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 1.1 - LIST OF SIMULATIONS

REF NO.	THIRD AIRPORT SITE	OTHER AIRPORTS SIMULATED	APPROXIMATE POINT IN TIME	REMARKS
521A and 521B	Not included	Gatwick Heathrow Luton	1980-5	* Two parallel runways assumed at Gatwick. The 521B simulation incorporates "Tunnelling" procedures permitting procedural vertical separation of selected traffic streams at their crossing points.
142	Foulness	Heathrow Gatwick Luton	2000	* Four parallel runways at Foulness Two parallel runways at Gatwick
241	Nuthampstead	Heathrow Gatwick	2000	Four parallel runways at third airport site * Two parallel runways at Gatwick
341	Cublington			
441	Thurleigh			

* Note 1 - Assumed only for the purpose of examining airspace problems resulting from operation of high capacity airports. This assumption must not be construed as implying that a second runway will necessarily be constructed at the Gatwick airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

1.5 In this latter respect, the comparisons involved are based upon route structures, prepared by a department of the National Air Traffic Control Services, which have not been subjected to any significant amount of optimisation. These comparisons, from an Air Traffic Control aspect, are based upon a knowledge of aircraft relative positions which gives a measure of the implied complexity of the control task when analysed against pre-determined proximity criteria.

1.6 This measure can be influenced by the quality of the route structure design and it is therefore desirable, in the context of this study, to compare structures of similar quality, insofar as this can be determined. The report shows that the optimisation process required to achieve this equality is complex and lengthy. However, the route structures in question have all been designed by the responsible planning authorities to achieve the same objectives against the same background of assumptions. They must therefore be accepted as the best basis of comparison available within the limited timescale.

1.7 It is, consequently, a study assumption that the route structures related to the Commission's short-listed sites are of comparable quality. The following major additional assumptions are common to all the simulations :

a) Route structure omni-directionality i.e. all airports serve, and are served, by all airways
b) Westerly operation of all runways
c) Two parallel runways at Gatwick airport (See footnote to Table 1.1)
d) A simulated geographical area lying between 5000N and 5300N and between 0300W to 0300E

1.8 There are two volumes to this report. The first contains a factual presentation of the numerical results but, in the case of the short-list site comparisons, does not consider the implications of the absolute values of the measures used for consideration of the implied complexity of the control task. In the second volume the Consultants consider these absolute values in relation to the severity of the control tasks posed by the TMA air traffic situation likely to occur as a result

Printed image digitised by the University of Southampton Library Digitisation Unit

of processing the air transport demand, predicted for the turn of the century, through the proposed route structures. The opinions which the Consultants express are based upon their experience of systems studies of a variety of complex Air Traffic Control environments and of route structure optimisation in particular.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 2 - MODEL DESCRIPTION

Introduction

2.1 The TMA computer model has been developed by GPS under contract from the Ministry of Technology. It is essentially an airspace model and has been designed to investigate problems in the airspace around airports where a large proportion of the air traffic requires to climb and descend as it departs to, or arrives from, the airways feeding a terminal area. It does not simulate, in detail, airport runway operations and the precise ordering of aircraft for landing, but particular attention has been paid to the accurate representation of airport performance (see Appendices B to F) since the airports must be seen to make reasonable and acceptable demands upon the airspace. The model has been designed for maximum flexibility, and, subject only to limitations on computer storage, can represent any number of airports and the routes necessary to connect them to an airways system of any complexity.

General Description and Modelling Process

2.2 The model is basically a set of related computer programs (see figure 2.1) which, for maximum versatility, minimum running costs and ease of handling, has been divided into three separate, sequential modules :-

a) Data Generation

b) Critical Event Simulation

c) Analysis.

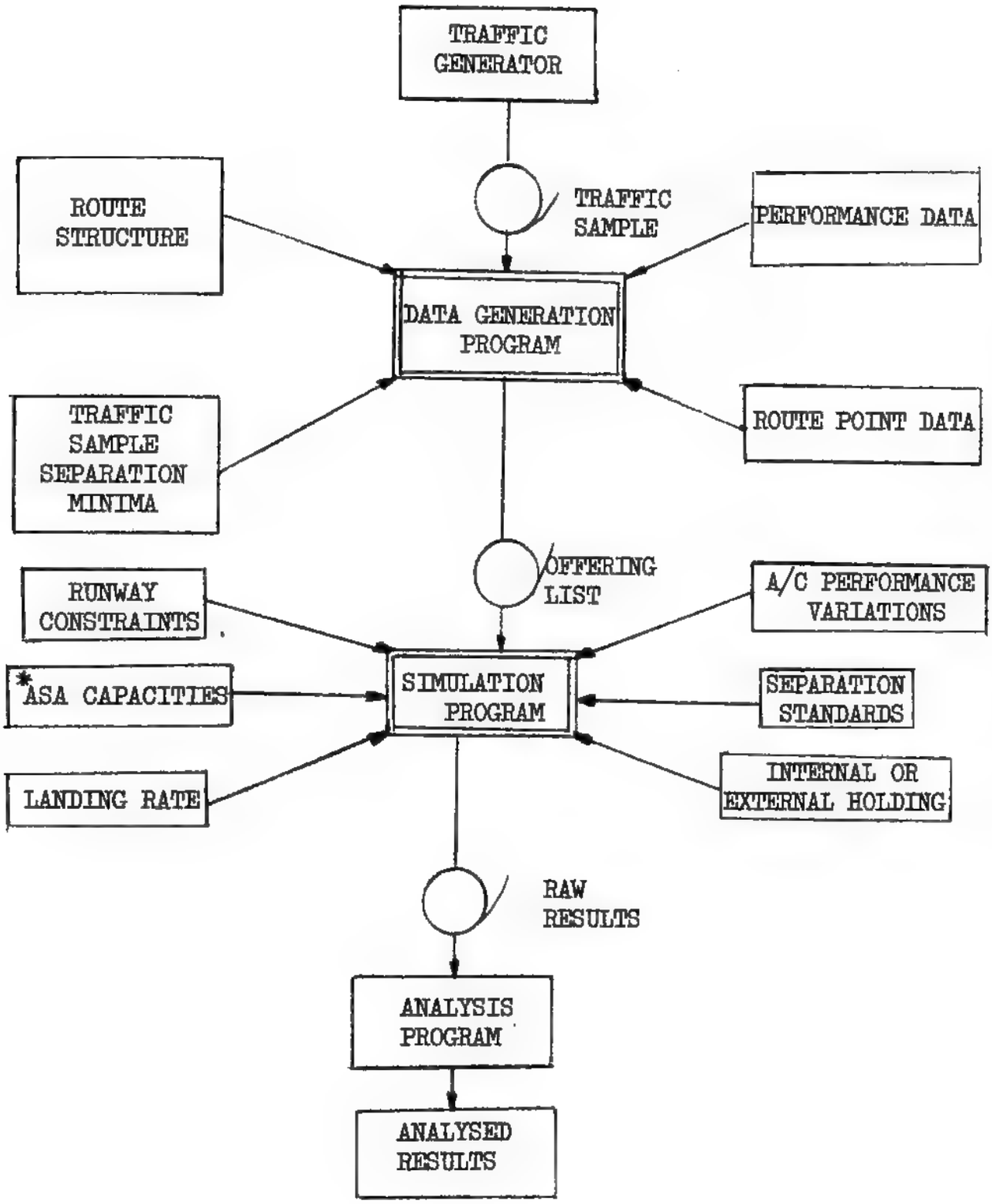
Data Generation

2.3 This stage of the model prepares aircraft data required for simulation and results in a pre-determined demand upon the simulated TMA (see figure 2. It may be compared with the process, in real life, of preparing and submitting aircraft flight plans which formulate a demand upon the system by requesting a departure and arrival time, a particular route and a cruising level whilst at the same time specifying proposed aircraft performance.

Printed image digitised by the University of Southampton Library Digitisation Unit

T.M.A. SIMULATION MODEL

Figure 2.1

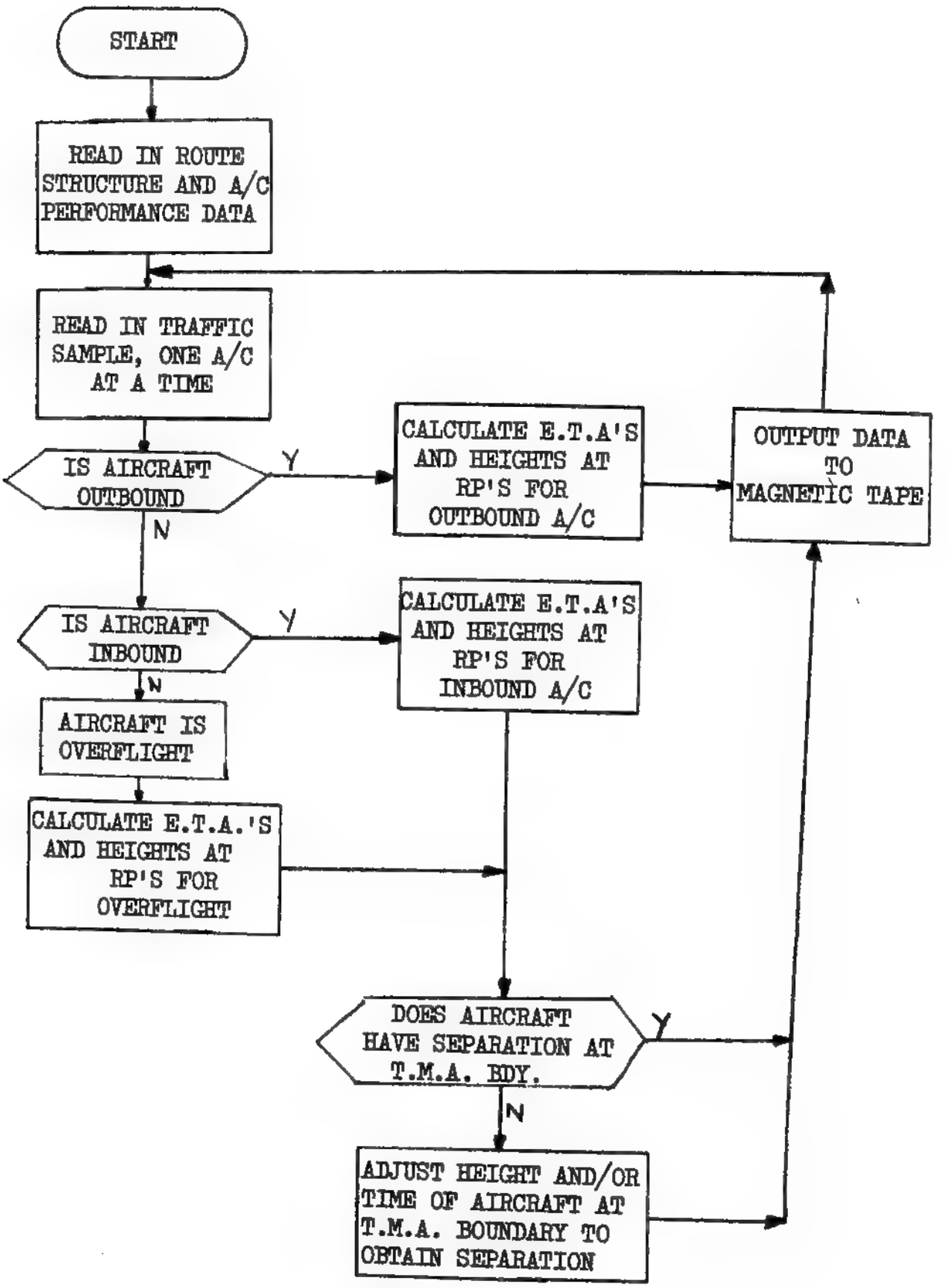


* NOTE:- ASA = Approach sequencing area i.e. the airspace reserved for the sequencing and manoeuvring of aircraft for landing.

Printed image digitised by the University of Southampton Library Digitisation Unit

DATA GENERATION PROGRAM

Figure 2.2



Printed image digitised by the University of Southampton Library Digitisation Unit

2.4 To achieve this in the model, a traffic sample is prepared which consists of a list of aircraft offering to the system and giving the following basic data for each aircraft :-

a) origin
b) destination
c) aircraft performance type
d) requested cruising level
e) scheduled time.

2.5 Already stored in the computer are details of the route structure and tables of aircraft performance for all the types of aircraft in the traffic sample. The route structure is represented by an irregular matrix of numbered route points (see Appendices B to F) spaced between 5 and 10 miles apart. Routes can therefore be defined by an appropriately ordered listing of route point numbers and these routes allocated to individual aircraft by reference to the previously specified aircraft origin and destination.

2.6 The route point data stored in the model contains information on geographical position. The model is designed to calculate distances between route points as required, and, when these distances are allied with the knowledge of aircraft performance, aircraft heights and estimated times of arrival can be determined.

2.7 The end product of the Data Generation program is an Offering List, ranked in chronological order of the times at which aircraft are offered to the TMA system for input to the next stage of the model. Data Generation can, therefore, be seen to be representative of the flight planning process.

Critical Event Simulation

2.8 The Critical Event Simulation Program has been designed to process the air traffic demand, as output by data generation program, through the simulated TMA in accordance with specified ATC rules and procedures built into the model.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.9 Computer-based simulations are often referred to as "fast-time" simulations because the simulated clock may be made to record the passage of time much faster than real time by disregarding those periods during which significant changes to the operation of the systems do not occur. For example, this particular simulation program can process well over 5,000 aircraft through a 24 hour simulated day in some 15 minutes of actual time. One way in which simulated time can be made to advance in the manner referred to, is by examining the system being simulated to identify those events which are critical to, and exert a potential effect, upon system operation. Successful identification and selection of these "critical events" allows the time interval between these events to be ignored, provided all possible effects have been foreseen and either avoided or recorded, and the simulated time can therefore be advanced from one critical event time to the next. It is, however, essential that each activity associated with a critical event occurs in the correct time sequence.

2.10 The simulation program processes aircraft through the TMA environment in four stages each of which has an associated activity and critical time. These are :-

a) a planning stage - which deals with the air traffic control (ATC) actions before the aircraft enters the TMA, such as ensuring that aircraft are adequately separated, from an ATC viewpoint, on entry into the system

b) a supervision stage - which represents the actions of ATC on an aircraft as it progresses through the TMA and which tests for aircraft proximity against criteria specified by model parameters (see para. 2.19)

c) an executive sequencing stage - for landing aircraft, where a landing time is allocated to an aircraft, due consideration having been given to all other aircraft in the landing streams

d) an exit stage - which removes the aircraft from the simulation.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.11 The simulation process, which consists of the reading in of the aircraft as required, the advancement of simulated time and the chronological ordering and carrying out of the various activities in their correct time sequences, together with selection of the next activities, is illustrated in a simplified flow diagram at figure 2.3.

2.12 Control of the running of the modelled TMA system is achieved by a set of input parameters whose values may be readily varied. Some examples of such controlling parameters are :-

a) longitudinal and vertical criteria for the tests for aircraft proximity (see para. 2.19).

b) limitations on the number of aircraft which areas allocated for sequencing for approach and landing (approach sequencing areas) can hold

c) maximum airport arrival and departure rates

d) constraints on departure rates due to the numbers of aircraft being sequenced for landing.

2.13 A large amount of data essential for system evaluation is produced during this simulation process. The raw results are not in an easily assimilable form and require processing by suitable analysis programs.

Analysis of Results

2.14 A family of analysis programs allows a data processing operation to be undertaken, each individual program being tailored to particular aspects of system performance (Figure 2.4 refers). The resultant output of graphs and tables facilitate :-

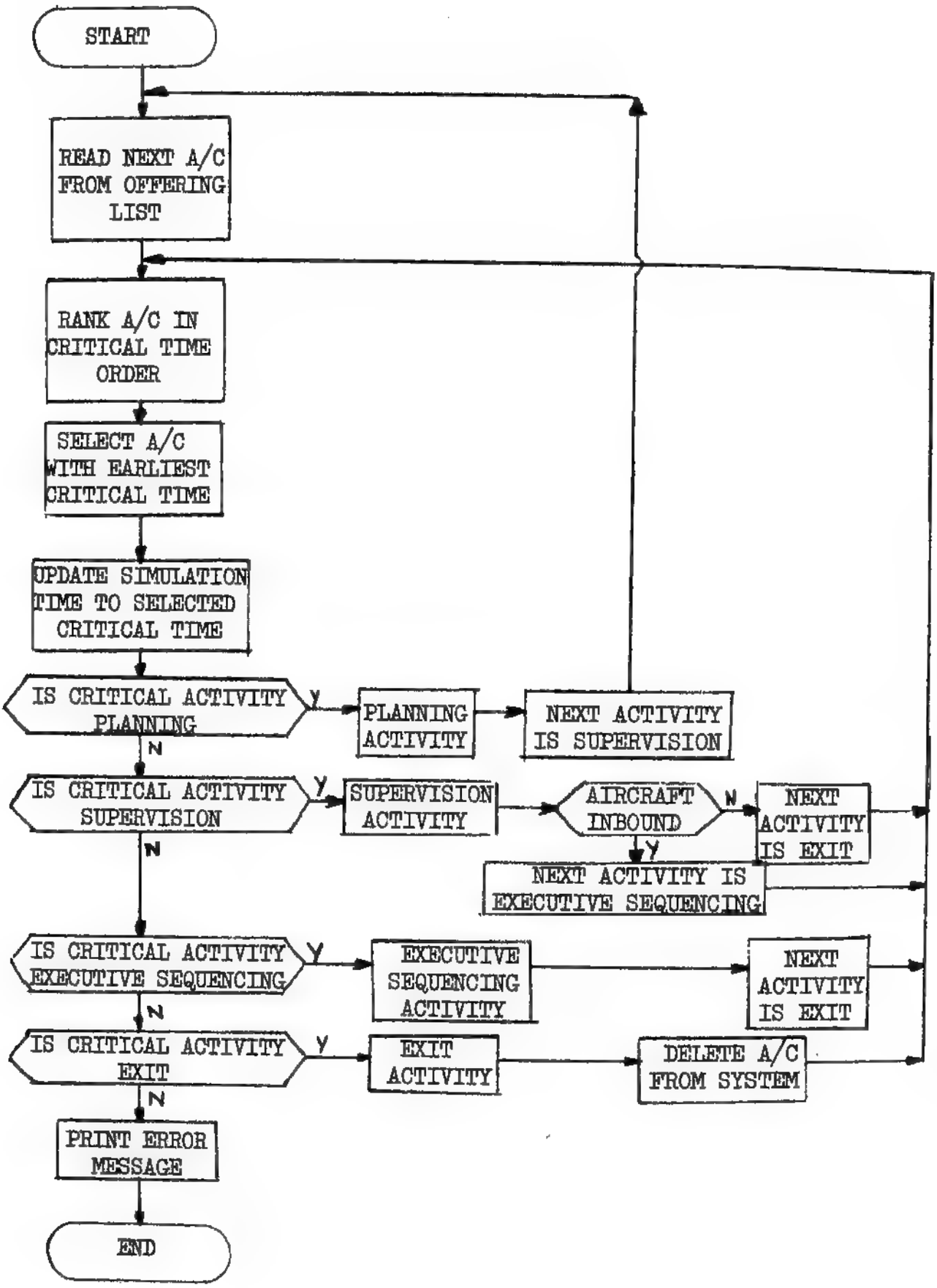
a) the replanning of further simulations

b) the incorporation of improvements to the model and, more importantly, for this study

c) the comparison of different TMA systems and the drawing of conclusions about the behaviour of the TMA system under investigation.

Printed image digitised by the University of Southampton Library Digitisation Unit

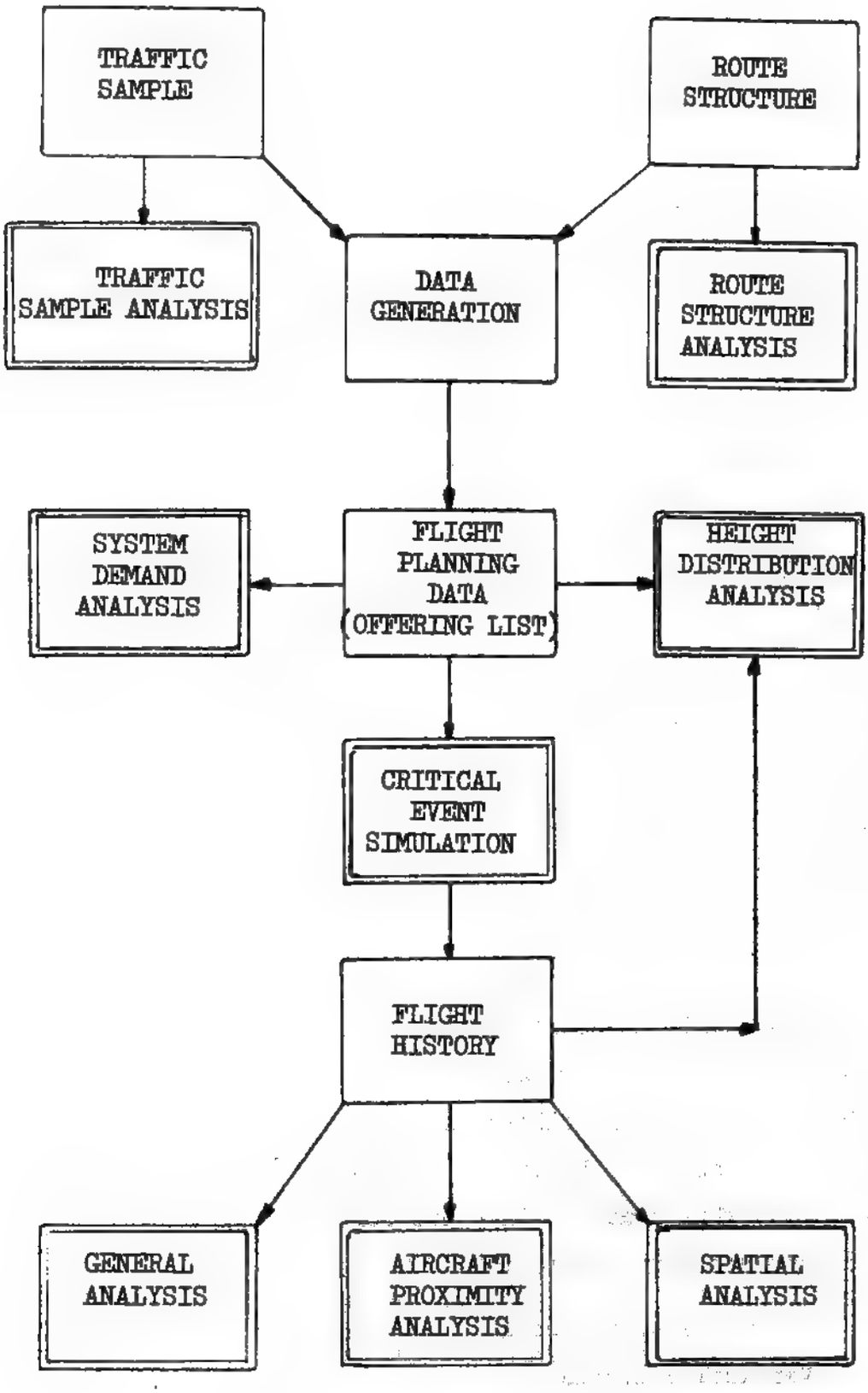
SIMPLIFIED SIMULATION PROCESS Figure 2.3



Printed image digitised by the University of Southampton Library Digitisation Unit

MODEL ANALYSIS PROGRAMS

Figure 2.4



Printed image digitised by the University of Southampton Library Digitisation Unit

2.15 Of several such programs available, the two of immediate relevance for establishing measures of system performance are :-

a) the aircraft proximity analysis program, and

b) the general analysis program.

The Aircraft Proximity Analysis Program

2.16 Tests for route structure feasibility and comparisons in respect of the complexity of the Air Traffic Control task require data on the relative proximity of aircraft under control to be output by the model. This requirement calls for :-

a) definition of the term "aircraft proximity"

b) specification of the criteria against which the model can test for "aircraft proximity"

2.17 Infringement of the specified criteria is held to indicate in the context of current techniques, an occasion on which an air traffic controller would have required to monitor the aircrafts' positions to consider whether or not some controlling action would be necessary to avoid a potential "conflict".

2.18 All the route structures under consideration employ multi-tracking techniques.* In the Gatwick route structure (representing the period up to about 1985) parallel, separated tracks are 10 n.ms. apart. In all other cases (representing a later point in time and further sophistication of the navigational capability) track spacing is 6 n.ms.

2.19 In the model, the remaining proximity criteria are variable parameters. The following values have been selected by GPS and agreed by practising controllers of the National Air Traffic Control Services as a reasonable basis for aircraft proximity detection in the context of this study. They are common to all the simulations reported upon and have the following values :-

Longitudinal criteria	1½ minutes
Vertical criteria	
- Both aircraft level	1000 ft.
- One aircraft level	4000 ft.
- Neither aircraft level	8000 ft.

*NOTE : Where traffic demand is such that any route of a route structure is heavily loaded, this technique provides an adequate number of discrete tracks so that the demands on individual tracks are reasonable. It is the practice, where these tracks are parallel, to space them sufficiently far apart for their traffic streams to be assumed not to interact.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.20 The model distinguishes between three categories of proximity, each with three sub-divisions dependent upon aircraft state :-

a) Along-track - same direction

b) Along-track - opposite direction

c) Across-track.

2.21 The sub-divisions are :-

a) Both aircraft level

b) One aircraft level

c) Neither aircraft level.

2.22 The "proximity counts" contained in the model output are counts, related to specified periods of time or geographical locations, of the occasions on which two aircraft infringe the foregoing criteria.

2.23 The aircraft proximity analysis program has therefore been designed to analyse aircraft proximity, previously detected in the simulation program, and to output data in respect of :-

a) Along-track counts
b) Across-track counts
c) Total counts

} both by time and by spatial distributions

d) Counts related to proximity count category
i.e. one aircraft level etc. (see paragraph 2.21).

e) Interaction between routes

f) Total proximity counts by routes.

The General Analysis Program

2.24 The object of this program is to elicit information about the behaviour of the systems under review to allow consideration of both TMA system and airports' performances. Additionally, it provides data which allows comparisons to be made between route structures in terms of implied costs to airline operators.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.25 The following data is output by the general analysis program in respect of :-

a) TMA system performance

i) number of aircraft processed in the simulated period
ii) total aircraft route mileage
iii) individual aircraft type route mileage (average)
iv) total aircraft flying time
v) individual aircraft type flying time (average)
vi) the mean and maximum number of aircraft airborne instantaneously in the TMA during any stated period (excluding those undergoing approach sequencing)

b) Airport performance

i) arrival delay
ii) departure delay
iii) number of aircraft undergoing approach sequencing
iv) number of aircraft in the outbound queue
v) achieved arrival/departure rates
vi) flow rates along individual routes.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 3 - MEASURES OF SYSTEM PERFORMANCE AND METHOD OF PRESENTING RESULTS.

Measures of System Performance

3.1 At paragraph 1.3 it was stated that the purpose of the simulations was to enable :-

a) the feasibility of various TMA route structures to be examined

b) the comparison of TMA route structures in terms of :-

i) the implied complexity of the Air Traffic Control task

ii) the implied cost to airline operators

c) the examination of TMA system performance.

3.2 Route Structure Feasibility and Comparisons. The output of the aircraft proximity analysis is used as a measure in both the testing of route structure feasibility and in the comparison of route structures from an ATC aspect. The format of the analysed output has been arranged in such a manner that reference may be readily made to either the time or spatial distributions of the detected proximity counts. For route structure feasibility more emphasis is placed upon the absolute values of the counts, whilst for route structure comparisons the relative values of the counts are regarded as having the greater importance.

3.3 Implied Costs to Operators. In connection with implied costs to airline operators, measures are made of :-

a) TMA flying times

b) aircraft route mileage

c) arrival and/or departure delays.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.4 TMA System Performance. The measures for TMA system performance relate to :-

a) aircraft counts

b) queue counts

c) airport arrival/departure rates.

Method of Presenting Results.

3.5 The presentation of the proximity count output is best achieved pictorially. This form however requires large scale charts, displaying proximity counts and relevant flow rates along routes, to be prepared for each airport site. Such charts have been prepared but their size and number preclude their inclusion in this report. Similarly, the analysed computer output is also unsuitable for inclusion and the following procedure has therefore been employed.

3.6 Proximity count charts and copies of all the relevant analysed outputs have been lodged with the Commission and are available for inspection. Extracts from the proximity count analyses have been prepared and, in conjunction with graphs and tables derived from the general analyses, have been used as a basis for consideration and interpretation of the simulation results. The general analysis graphs and tables are contained in individual appendices to this report (each related to a particular simulation) and contain the following data :-

a) specification of simulation conditions

b) total hourly airport movement rates

c) for each airport in the simulation

   i) moving average movement rate (hourly)

   ii) arrival rates with mean landing delay and maximum and mean approach sequencing area counts (hourly)

   iii) departure rates with maximum and mean outbound delays and outbound queue counts (hourly)

d) aircraft flight times and route mileage - totals and means

e) TMA hourly traffic counts - maxima and means

Printed image digitised by the University of Southampton Library Digitisation Unit

3.7 Route Structure Charts. Aircraft progress through the simulated TMA is represented by determining aircraft position at pre-determined points (route points) which are numbered. Diagrams showing these numbered route points for each route structure are contained in the appropriate appendices and are intended to assist in identifying particular areas of the TMA.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 4 - MODEL ACCEPTANCE TRIALS

4.1 Before commencing the main series of simulations, the Commission's Research Team required GPS to undertake simulations of the present-day (1968) London TMA with a view to proving the model. The work involved has been separately reported on to the Research Team (Ref.1). The model input data, the simulated operational conditions and the model output were discussed with representatives of the various government departments concerned with research into, and the operation of, the London TMA.

4.2 All the input data and operational assumptions were agreed with the appropriate authorities. Only minor objections were raised to the model output and the report concludes that the model is capable of processing data representative of the present-day London TMA and producing results recognised to be valid.

4.3 Two additional valuable by-products resulted from the series of meetings held to discuss the present-day TMA simulation output :-

a) the GPS proposals for the criteria to be used for the detection of aircraft proximity in the future route structures were considered by all concerned and held to be reasonable and acceptable (see para. 2.19)

b) by discussion with practising and previously experienced controllers, it was possible to relate the measure of proximity counts (see para. 3.2 above), output by the model in respect of current critical points in the present TMA, to the workloads currently regarded as acceptable. By agreement with these experienced staff, proximity counts relating to critical points in the present TMA environment have been selected to represent a complexity index, or base level of acceptable complexity, against which to compare the values of proximity counts output by the model for critical points in the future TMA environment.

Ref.1 : Acceptance trials of the GPS Terminal Movement Area Airspace Model - 26th. June 1969. This report is available from the Commission's offices.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 5 - CONSIDERATION AND INTERPRETATION OF THE RESULTS OF THE SIMULATIONS

THE GATWICK TWO-RUNWAY SIMULATIONS

Introduction and Assumptions

5.1 Two simulations were undertaken with the principal aim of determining whether feasible route structures and ATC procedures could be devised which, against assumed increased runway capacities at Heathrow, Gatwick and Luton airports, would not result in airspace problems which would feed back to, and inhibit, the operation of the airports at these increased capacities.

The demands posed by the traffic sample (See Appendix A) provided by the Commission's Research Team for testing the route structures were such as to require the assumption of the availability of a second runway at Gatwick and of improvements to the airport lay-out and facilities at Luton*.

5.2 Reference to the appropriate graphs in Appendix 'F' shows that the processing of the Commission's traffic sample through a simulated terminal area required the following air transport movement rates at the simulated airports :-

a)	Heathrow	-	approx 70 per hour	over a large part of the simulated day
b)	Gatwick	-	approx 50 per hour	
c)	Luton	-	approx 30 per hour	

5.3 In addition to airport generated movements a total of some 600 overflights with appropriate routeings was included in the traffic sample.

* Note :- These assumptions are discussed by the Commissions' Research Team when dealing with the question of the timing of the need for a Third London Airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.4 The necessary route structure* was designed by General Precision Systems based upon the following assumptions which were previously agreed with planning staff of NATCS :-

a) the following modes of runway operation :-

   i) Heathrow with parallel runway operation (i.e. arrivals and departures on both parallel runways)

   ii) Gatwick with dual runway operation (i.e. one runway for arrivals only and the other for departure only)

   iii) Luton with single runway operation (i.e. one runway used for both arrivals and departures)

b) the route structure to be designed for operation in conjunction with an ATC system using procedures based upon current techniques and currently available equipment.

c) parallel tracks to be spaced 10 n.ms. apart and deemed laterally separated.

5.5 Before simulation the GPS design was the subject of further discussions with NATCS and, after the incorporation of suggested amendments to aircraft holding area arrangements, the route structure was agreed as a suitable basis for simulation.

* Note :- See Appendix 'F' for design concepts.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.6 Two simulations were undertaken; one in which aircraft were allowed to climb and descend without restriction; a second in which a reduction in across-track proximity counts was attempted by the introduction of strategic "tunnelling" procedures.

NOTE : "Tunnelling" is an accepted ATC procedure in which height restrictions are applied in advance to separate streams of crossing traffic at the crossing point. For example, an outbound traffic stream from one airport may be held down to, say, 4000 ft at the crossing point and a similar stream from another airport not allowed through that point below 5000 ft.

Gatwick 521A and 521B - Abstract of Results and their Interpretation

5.7 Aircraft Proximity Counts

TABLE 5.1 SUMMARY OF 24 HOUR PROXIMITY COUNTS
GATWICK 521A and 521B

CATEGORY OF COUNTS	WITHOUT TUNNELLING		WITH TUNNELLING	
ALONG-TRACK				
Same Direction				
both aircraft level	33		79	
one aircraft level	488		511	
neither aircraft level	756		735	
Total		1277		1325
Opposite Direction				
both aircraft level	24		24	
one aircraft level	48		47	
neither aircraft level	6		6	
Total		78		77
GRAND TOTAL ALONG-TRACK		1355		1402
ACROSS-TRACK				
both aircraft level	11		19	
one aircraft level	190		136	
neither aircraft level	675		202	
Total		876		357
GRAND TOTAL - ALL COUNTS		2231		1759

Printed image digitised by the University of Southampton Library Digitisation Unit

5.8 Airports' Performance

TABLE 5.2 - ALL AIRPORTS

DATA	HEATHROW		GATWICK		LUTON	
	Tunnelling		Tunnelling		Tunnelling	
	No	Yes	No	Yes	No	Yes
Max. Arrival Rate (hourly)	50	50	32	31	25	24
Max. Departure Rate (hourly)	54	51	34	34	24	24
Total Movement Rate-Max. (hourly)	86	84	60	60	43	42
Total Arrival Delay - 24 hour period	16h 17m	16h 30m	14h 25m	14h 28m	6h 30m	6h 46m
Total Departure Delay - 24 hour period	28h 02m	31h 02m	3h 14m	3h 15m	9h 8m	9h 14m
Total Movements - 24 hour period	1145	1145	815	815	452	452

5.9 TMA System Performance

TABLE 5.3 - TMA SYSTEM PERFORMANCE

DATA	Without Tunnelling	With Tunnelling	Difference
Total nos. of Aircraft Processed	3020	3020	-
Total Flying Time within TMA	1,185h 54m	1,199h 48m	+13h 54m
Average Flying Time within TMA	23.6 m	23.8 m	+ .2 m
Total Aircraft Route Mileage	419,475n.ms	419,475n.ms	-
Average Aircraft Route Mileage	139	139	-
Maximum no. of aircraft Airborne in TMA (excluding Approach Sequencing)	93	94	+1
Highest Mean Hourly Count of Aircraft Airborne in TMA (excluding Approach Sequencing)	76.2	77.3	+1.1

Printed image digitised by the University of Southampton Library Digitisation Unit

Consideration of Results

5.10 Base Level of Proximity Counts. The establishment of a base level of proximity counts was discussed at para. 4.3 b, above. As the result of the discussions referred to, proximity counts in the range 50-99 over 24 hours are taken as being representative of "busy" or "difficult" points in the present TMA system.

5.11 General Discussion. The proximity count output shows that, for the structure without tunnelling there are 26 of the 241 total route points with 24 hour counts between 50 and 99, and 8 points exceed 100, the maximum count being 144. With tunnelling, these numbers are reduced to totals of 20 and 7 route points respectively, the maximum count value being reduced to 115.

5.12 Reference to table 5.1 shows that the total 24 hour across-track proximity count is reduced substantially from 876 to 357 and that there is, as foreseen, a slight increase in along-track counts from 1277 to 1325.

5.13 The tunnelling procedures remove all across-track proximity infringements between outbound streams from different airports up to 30 n.mls. from the airports. Over this same area all across-track infringements between inbound and outbound streams are eliminated and the holding area airspaces are protected from intrusion by outbound climbing aircraft. The results in the previous paragraph reflect the effectiveness of these tunnelling procedures in reducing across-track proximity counts. The penalties involved in tunnelling procedures are, often, increases in along-track proximity counts, outbound delays and aircraft flying times.

5.14 All these penalties stem from the vertical compression of the traffic streams which causes aircraft separation to be more dependent upon the longitudinal element and also causes aircraft to fly non-optimum flight profiles or flow rates to be reduced.

5.15 The simulation shows the penalties incurred by the simulated tunnelling procedures (tabulated below) to be of relatively small importance :-

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 5.4 - PENALTIES RESULTING FROM TUNNELLING PROCEDURES

ITEM		WITHOUT TUNNELLING	WITH TUNNELLING	PENALTY
Along track proximity counts		1277	1325	+48
Outbound delay in worst hour* (mins)	Heathrow	7.4 mean 12.9 max	9.5 mean 16.1 max	+2.1 mean +3.2 max
	Gatwick	N E G L I G I B L E		
	Luton	9.3 mean 13.9 max	9.6 mean 15.4 max	+.3 mean +1.5 max
Aircraft Flying Times	Total	1185h 54m	1199h 48m	+13h 54m
	Average	23.6 min	23.8 min	+ .2 min

* Reference to table 5.2 shows that a total outbound delay penalty of 3h 7 mins was incurred.

5.16 A review of those route points with proximity counts in excess of the base level count, after tunnelling, has been undertaken with the aim of reducing the count values. Details of the review are contained in Table 5.5 below. Reference to the map in Appendix A will allow the areas under discussion to be identified from the route point numbers.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 5.5 REVIEW OF PROBLEM ROUTE POINTS

ROUTE POINT NUMBER	PROXIMITY COUNT NO TUNNELLING		PROXIMITY COUNT TUNNELLING		COMMENTS
	ALONG TRACK	ACROSS TRACK	ALONG TRACK	ACROSS TRACK	
134	71	53	65	45	Reduce traffic density at these points by moving Amber 1S Luton inbound stream and Northerly overflights 5n.ms. to the East
77	65	79	74	31	
220	100	-	100	-	These route points are very close to the Gatwick approach sequencing area and will present only a minor problem *
221	107	-	107	-	
37	97	11	102	-	In this area the Luton and Heathrow outbound streams are overloaded. Space exists for the provision of an extra track which would alleviate the situation.
106	86	19	86	-	
108	109	29	94	15	
163	71	47	70	45	Reduce traffic density at this route point by moving Northerly inbound stream to Luton and Garston holding area 5n.ms. to the West.

5.17 Consideration of the proximity counts has shown that undue difficulty would not be encountered in containing, without excessive penalties, the detected values at route points to within those values which are representative of difficult, but operable, points within the present TMA system.

* NOTE : All the detected counts at these route points are in the along-track category. These points are sufficiently near the Gatwick airport for Air Traffic Control to have started the sequencing process which orders and monitors the longitudinal spacings between aircraft to ensure that they arrive at the runway at appropriate intervals for landing.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.18 Reference to Table 5.2 shows that satisfactory high peak movement rates have been achieved at all the airports and also that the total delay figures are acceptably low. Further reference to the appropriate graphs at Appendix 'F' illustrates that the achieved airport movement rates are satisfactory, the distributions of the delays are acceptable and that both the inbound and outbound queue counts are reasonable.

5.19 It is the Consultant's opinion that all the airports are processing the posed traffic demand satisfactorily and that there is no evidence to suggest that airspace considerations are inhibiting airports' operations to any significant extent.

5.20 The results at Table 5.3 indicate that the general simulation of the TMA is satisfactory.

CONCLUSIONS RELATING TO THE EFFECT OF A TWO-RUNWAY GATWICK AIRPORT ON THE TIMING OF THE NEED FOR A THIRD LONDON AIRPORT

5.21 The Consultants conclude :-

a) that the Commission's Research Team's traffic sample, which requires the assumption of a second runway at the Gatwick airport and the capability of the expanded airport to sustain movement rates of some 50 air transport movements per hour, can be processed through a feasible route structure without undue penalty and without consequential Terminal Area airspace problems likely to have a detrimental effect upon the assumed high airport capacities

b) that such a feasible route structure can be satisfactorily operated using present-day Air Traffic Control techniques and currently available equipment

c) that these findings are of relevance to the timing of the need for a Third London Airport, and, in this respect, should be taken into account by the Commission's Research Team.

Printed image digitised by the University of Southampton Library Digitisation Unit

THE SIMULATIONS OF THE SHORT-LIST SITES

Introduction and Assumptions

5.22 The remainder of this section discusses, in comparative terms, the results of simulations related to route structures* designed by staff of the National Air Traffic Control Services for each of the Commission's short-list of potential Third London Airport sites. All the route structures involved in the simulations are designed for the Westerly operation of all airports and, for valid comparisons to be made, are all contained within the same "geographical area". It is not considered that route structures designed for the Easterly operations of airports would pose a significantly more complex or difficult ATC task than the all Westerly case.

5.23 The four sites are :-

a) Foulness

b) Nuthampstead

c) Cublington

d) Thurleigh.

5.24 The following runway modes of operation are assumed for all the simulations :-

a) Third London Airport - two runways for departures and two for arrivals, all having the same orientation

b) Heathrow Airport - two parallel runways with arrivals and departures using both runways

c) Gatwick Airport - **two parallel runways with one used for arrivals only and the other for departures only

d) Luton Airport - one single runway used for both arrivals and departures.***

*Note :- Referred to in Chapter 3 of the research team's material (Papers and Proceedings, Volume VII Part 2).

**Note :- See footnote to Table 1.1

***Note :- The traffic demand simulated implies improvements to the airport lay-out and facilities at Luton Airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.25 The traffic sample (see Appendix A), with which to test the route structures, has been provided by the Commission's Research Team to represent the likely airspace demand about the year 2000. The sample requires that, in 24 hours of simulated time the model processes 5,446 aircraft, of which 4,434 are air transport movements generated by the airports. The remainder are air transport movements overflying the TMA. The method of airport movement generation (Chapter 3 of the research team's material refers) is such that all airports are arranged to generate high sustainable movement rates throughout the major part of the day and near-maximum demands on the TMA airspace are posed by the simulated airports. To achieve these movement rates an excess demand, during peak periods, over total model airport capacities is created and all the excess movements at the other airports are allocated to the Third London Airport being simulated. The larger arrival and departure queues and their associated high delays at the various Third Airport sites must therefore be considered to have arisen, in the main, from this excess demand.

5.26 The graphs and tables prepared from the model general analysis programs are given in the appendices as follows :-

a) Foulness - Appendix 'B'

b) Nuthampstead - Appendix 'C'

c) Cublington - Appendix 'D'

d) Thurleigh - Appendix 'E'.

5.27 It is particularly important to bear in mind when considering any of the model results that :-

a) no attempt has been made to optimise any of the route structure designs and they are assumed to be of equal quality

b) Luton airport is included only in the Foulness simulation, since the Commission's Research Team consider* that it is unlikely to continue operating as a major airport simultaneously with Nuthampstead, Cublington or Thurleigh. The total demand is constant for all the simulations and the Luton movements (420 in 24 hours) are transferred to the Third London Airport in the simulations of these three sites.

* NOTE :- Vol 7, Part II, Chapter II, Paragraph 2.16 of the Commission's Report refers.

Printed image digitised by the University of Southampton Library Digitisation Unit

Abstract of Results

5.28 Aircraft Proximity Counts

TABLE 5.5 SUMMARY OF 24 HOUR PROXIMITY COUNTS

CATEGORY OF COUNTS	SIMULATED SITE			
	FOULNESS	NUTHAMPSTEAD	CUBLINGTON	THURLEIGH
ALONG-TRACK				
Same Direction				
both aircraft level	90	84	77	70
one aircraft level	1429	1612	1417	1397
neither aircraft level	1917	2251	1951	1690
Total	3436	3947	3445	3157
Opposite Direction				
both aircraft level	81	57	7	39
one aircraft level	346	23	7	195
neither aircraft level	157	183	-	38
Total	584	263	14	272
GRAND TOTAL ALONG-TRACK	4020	4210	3459	3429
ACROSS-TRACK				
both aircraft level	40	29	25	32
one aircraft level	506	383	237	548
neither aircraft level	1372	1397	1636	1553
Total	1918	1809	1898	2133
GRAND TOTAL ALL COUNTS	5938	6019	5357	5562

Printed image digitised by the University of Southampton Library Digitisation Unit

5.29 Airports' Performance

TABLE 5.6 THIRD LONDON AIRPORT & LUTON

DATA	THIRD AIRPORT SITE				LUTON	FOULNESS & LUTON COMBINED
	FOULNESS	NUTHAMP-STEAD	CUBLINGTON	THURLEIGH		
Max. Arrival Rate (hourly)**	86	85	86	87	22	92*
Max. Departure Rate (hourly)**	85	92	93	97	29	108*
Max. Total Movement Rate (hourly)**	163	170	170	173	37	189*
Total Inbound Movements - 24 hr. period	822	1033	1033	1033	211	1033
Total Outbound Movement - 24 hr. period	872	1081	1081	1081	209	1081
Total Movement 24 hr. period	1694	2114	2114	2114	420	2114
Total Arrival Delay - 24 hr. period	33h 48m	85h 26m	98h 02m	97h 49m	9h 29m	43h 17m
Total Departure Delay - 24 hr. period	110h 04m	310h 10m	287h 46m	238h 48m	8h 00m	118h 04m
Total ***	143h 52m	395h 36m	385h 48m	336h 37m	17h 29m	161h 21m

* NOTE :- These values relate to peaks in the combined rates.

** NOTE :- Achieved rates

*** NOTE :- See para. 5.25.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 5.7 HEATHROW AIRPORT

DATA	SIMULATED SITE			
	FOULNESS	NUTHAMPSTEAD	CUBLINGTON	THURLEIGH
Max. Arrival * Rate (hourly)	60	59	59	58
Max. Departure* Rate (hourly)	51	50	49	49
Max. Total * Movement Rate (hourly)	91	90	90	89
Total Inbound Movements - 24 hr. period	724	724	724	724
Total Outbound Movements - 24 hr. period	669	669	669	669
Total Movement 24 hr. period	1393	1393	1393	1393
Total Arrival Delay - 24 hr. period	33h 49m	28h 58m	34h 24m	40h 34m
Total Departure Delay - 24 hr. period	46h 51m	47h 41m	46h 18m	49h 02m
Total	80h 40m	76h 39m	80h 42m	89h 36m

* NOTE :- Achieved rates

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 5.8 GATWICK AIRPORT

DATA	SIMULATED SITE			
	FOULNESS	NUTHAMPSTEAD	CUBLINGTON	THURLEIGH
Max. Arrival * Rate (hourly)*	30	29	30	30
Max. Departure Rate (hourly)*	31	31	31	31
Max. Total Movement Rate (hourly)	53	54	55	55
Total Inbound Movements - 24 hr. period	457	457	457	457
Total Outbound Movement 24 hr. period	457	457	457	457
Total Movement 24 hr. period	914	914	914	914
Total Arrival Delay - 24 hr period	15h 57m	15h 50m	15h 19m	16h 31m
Total Departure Delay - 24 hr. period	3h 43m	3h 17m	3h 18m	3h 19m
Total	19h 40m	19h 01m	18h 37m	19h 50m

* NOTE :- Achieved rates

Printed image digitised by the University of Southampton Library Digitisation Unit

5.30 TMA System Performance

TABLE 5.9 TMA SYSTEM PERFORMANCES

DATA	SIMULATED SITE			
	FOULNESS	NUTHAMPSTEAD	CUBLINGTON	THURLEIGH
Total numbers of Aircraft Processed	5443	5443	5443	5443
Total Flying Time within TMA	2063h 48m	2126h 00m	2134h 00m	2148h 05m
Average Flying Time within TMA	22.8m	23.5m	23.5m	23.7m
Total Aircraft Route Mileage	773,289	802,029	804,245	811,282 nms
Average Aircraft Route Mileage	142	147	148	149
Maximum Number of Aircraft Airborne in TMA (excluding Approach Sequencing)	139	138	142	146
Highest Mean Hourly Count of Aircraft Airborne in TMA (excluding Approach Sequencing)	116	123	126	128

Printed image digitised by the University of Southampton Library Digitisation Unit

Consideration of the Results

5.31 Comparisons of Aircraft Proximity Counts. Table 5.5, shows the comparative totals of proximity counts detected in each route structure throughout the 24 hour simulated periods. It can be seen that there are no important differences between the route structures, bearing in mind that none of them have undergone any optimisation process. Of the four sites, the Cublington structure has the lowest total proximity count, but on the other hand the Nuthampstead structure records the lowest number of across-track proximity counts, which are generally considered by controllers to pose a more difficult ATC problem in a multi-track environment. It is the Consultants' opinion that, when analysed in detail, the 24 hour totals of proximity counts do not favour any of the four short listed sites. Further consideration has therefore been given to the more detailed proximity count data contained in the appropriate analysis programs (para. 2.23 refers) with the object of eliciting any major differences between the sites.

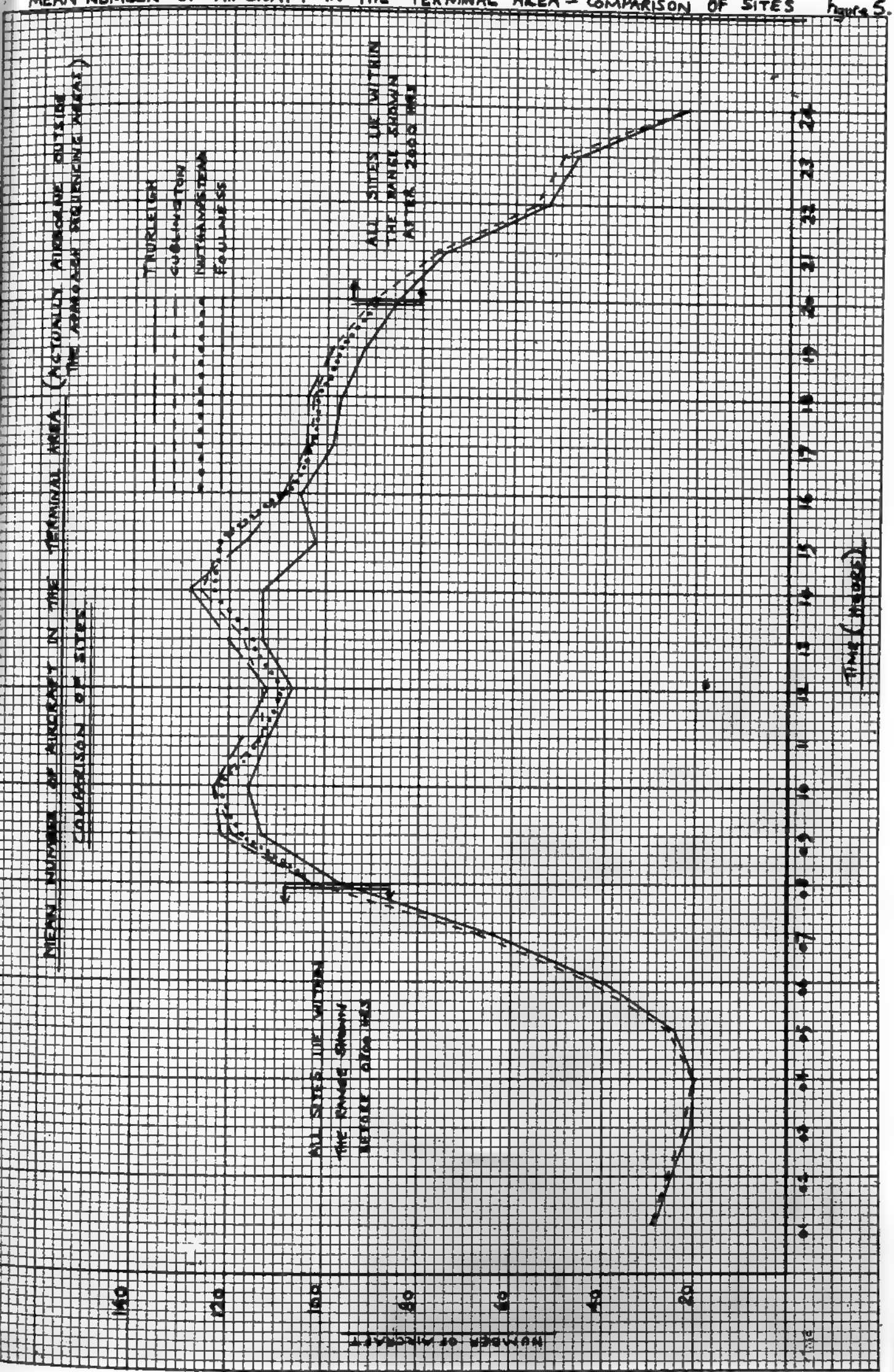
5.32 One obvious major factor in the number of proximity counts detected must be the number of aircraft which are airborne in the system at any given time. Figure 5.1 shows the mean number aircraft airborne in the TMA, for all sites, analysed by hourly periods. The Foulness structure has a mean instantaneous aircraft count, during peak demands, of approximately 5% lower than the other structures, due largely to the lower average aircraft route mileage involved (See Table 5.9). This fact should be remembered when considering proximity counts.

5.33 Figure 5.2 to 5.8 contain the following information for each site :-

Figure 5.2	Total of all proximity counts by each two hours
Figure 5.3	Across-track proximity counts by each two hours
Figure 5.4	Along-track proximity counts by each two hours
Figure 5.5	Total of all proximity counts by TMA routes for the simulated day
Figure 5.6	Total proximity count density by route points for the simulated day
Figure 5.7	Across-track proximity counts density by route points for the simulated day
Figure 5.8	Across-track proximity count density by route points for the peak 2 hour periods.

Printed image digitised by the University of Southampton Library Digitisation Unit

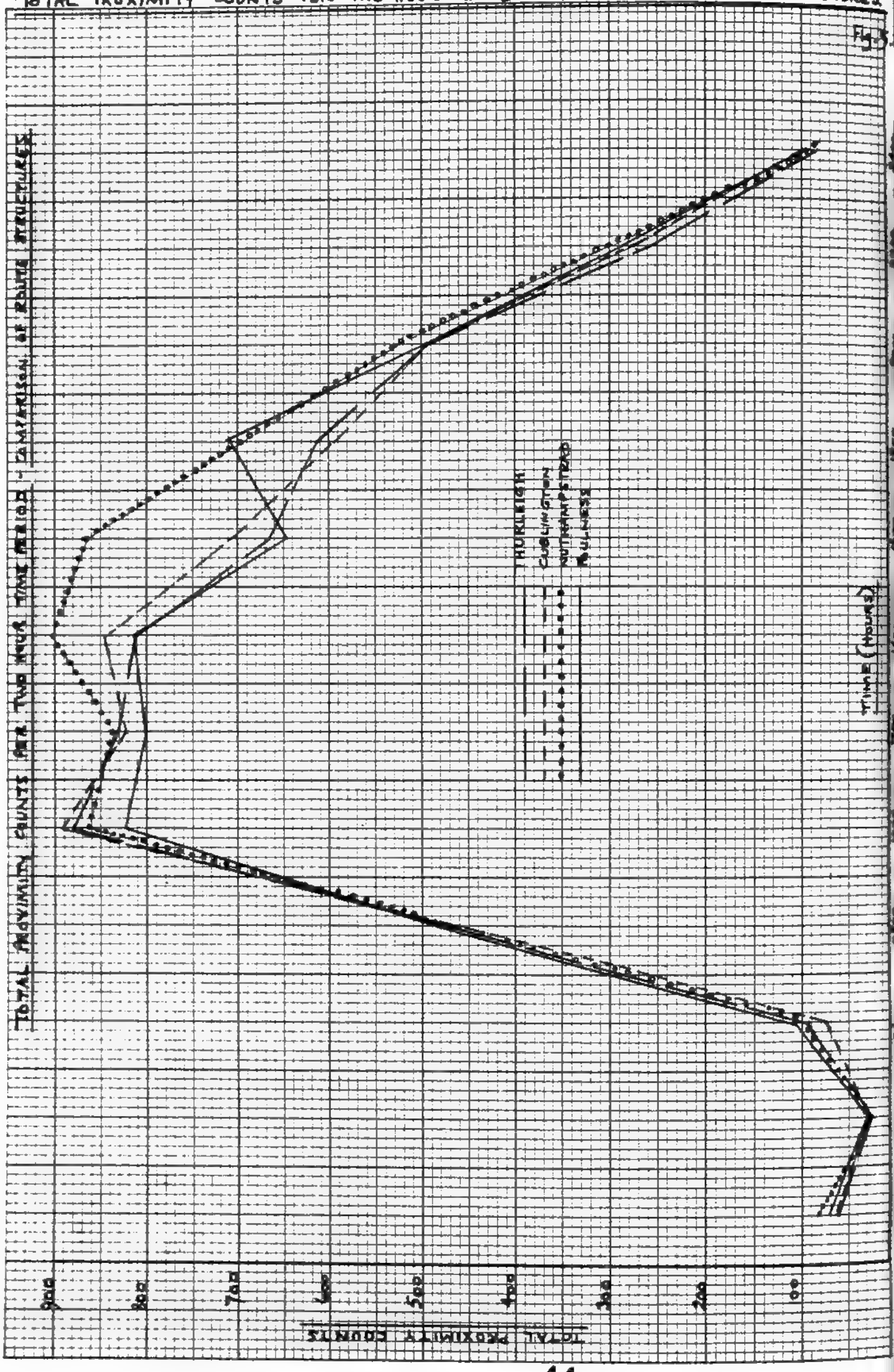
MEAN NUMBER OF AIRCRAFT IN THE TERMINAL AREA – COMPARISON OF SITES Figure 5.1.



Printed image digitised by the University of Southampton Library Digitisation Unit

TOTAL PROXIMITY COUNTS PER TWO HOUR PERIOD - COMPARISON OF ROUTE STRUCTURES

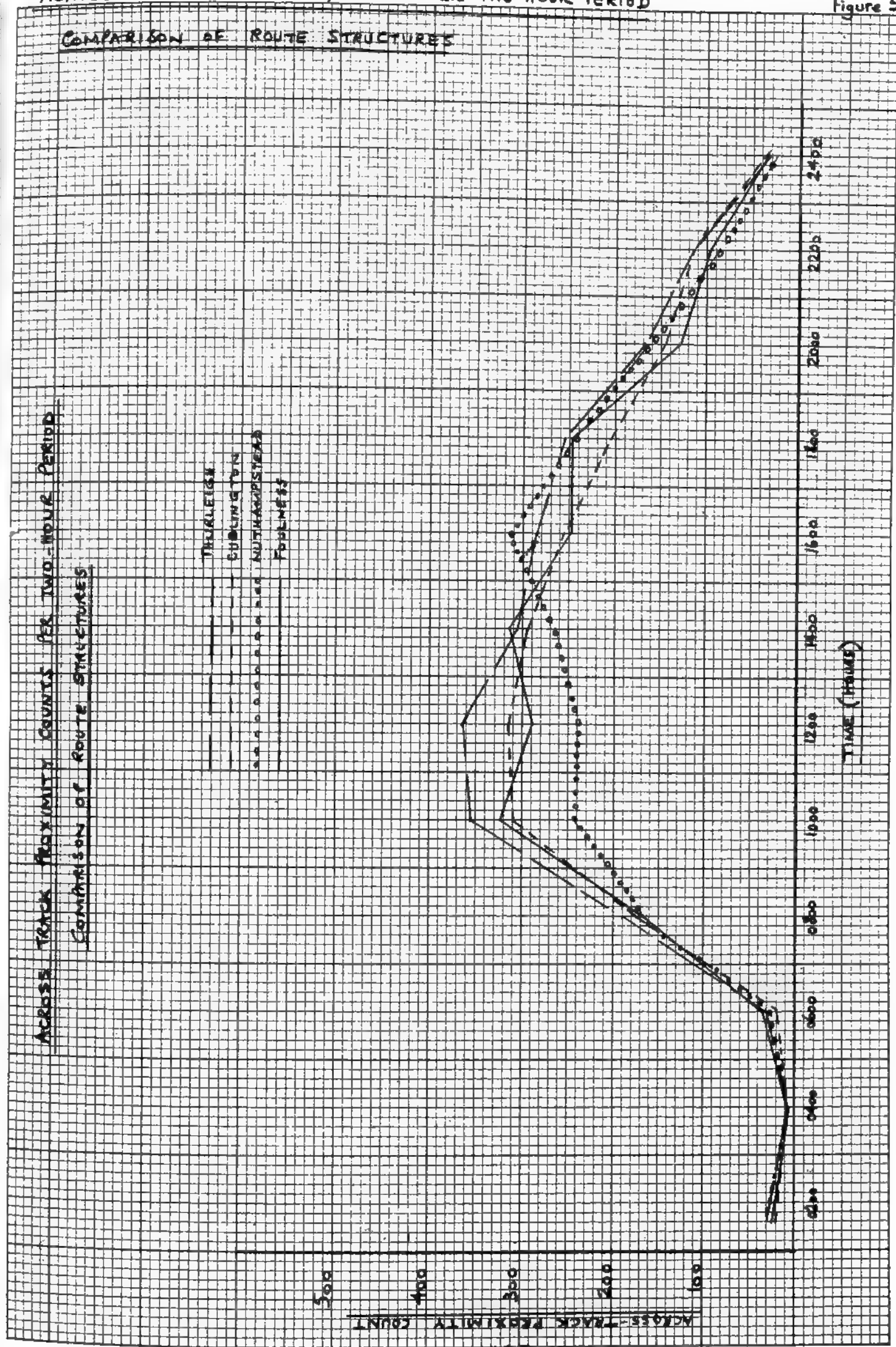
Fig 5



Printed image digitised by the University of Southampton Library Digitisation Unit

ACROSS-TRACK PROXIMITY COUNT PER TWO HOUR PERIOD

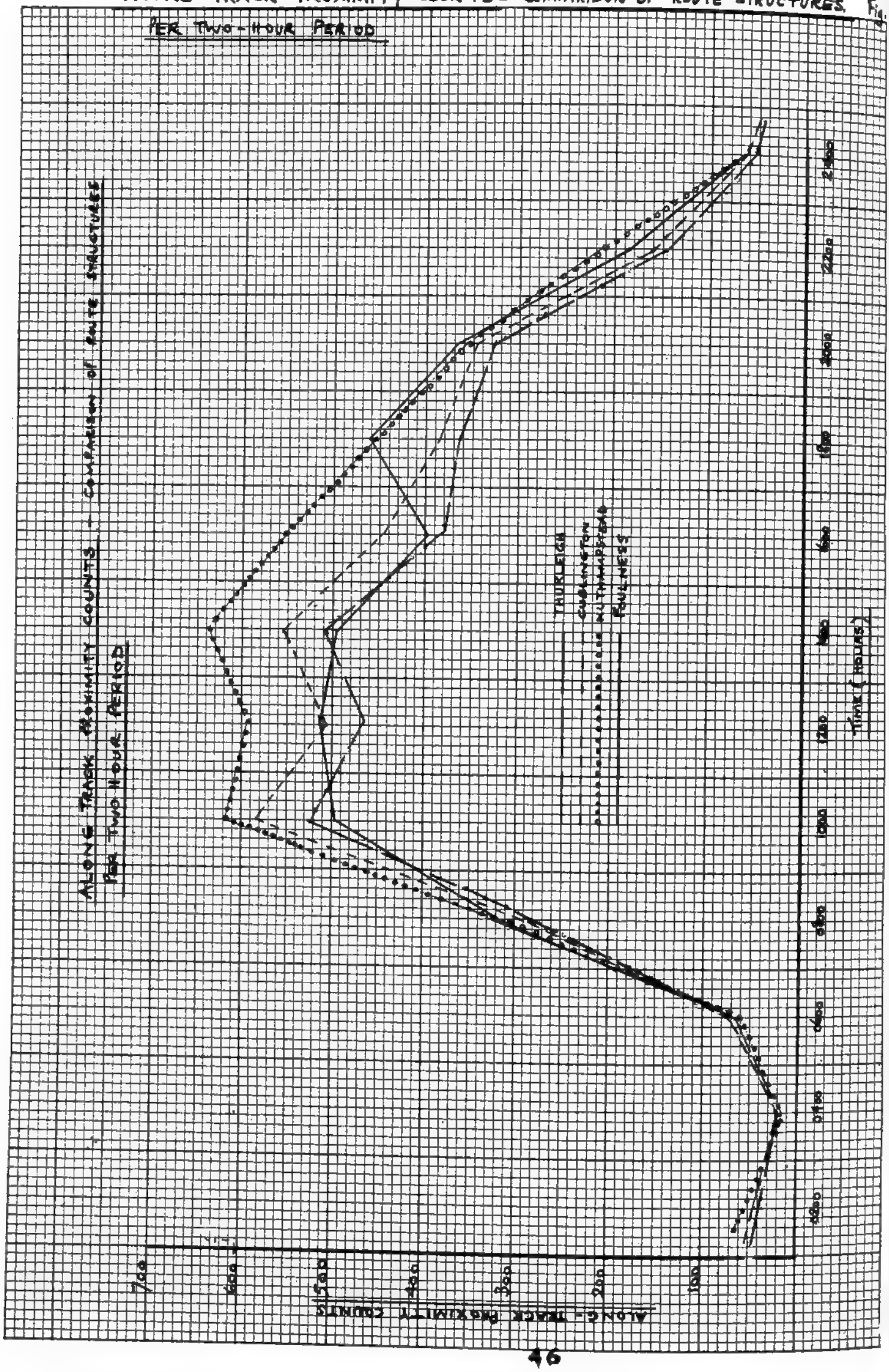
Figure 5.



Printed image digitised by the University of Southampton Library Digitisation Unit

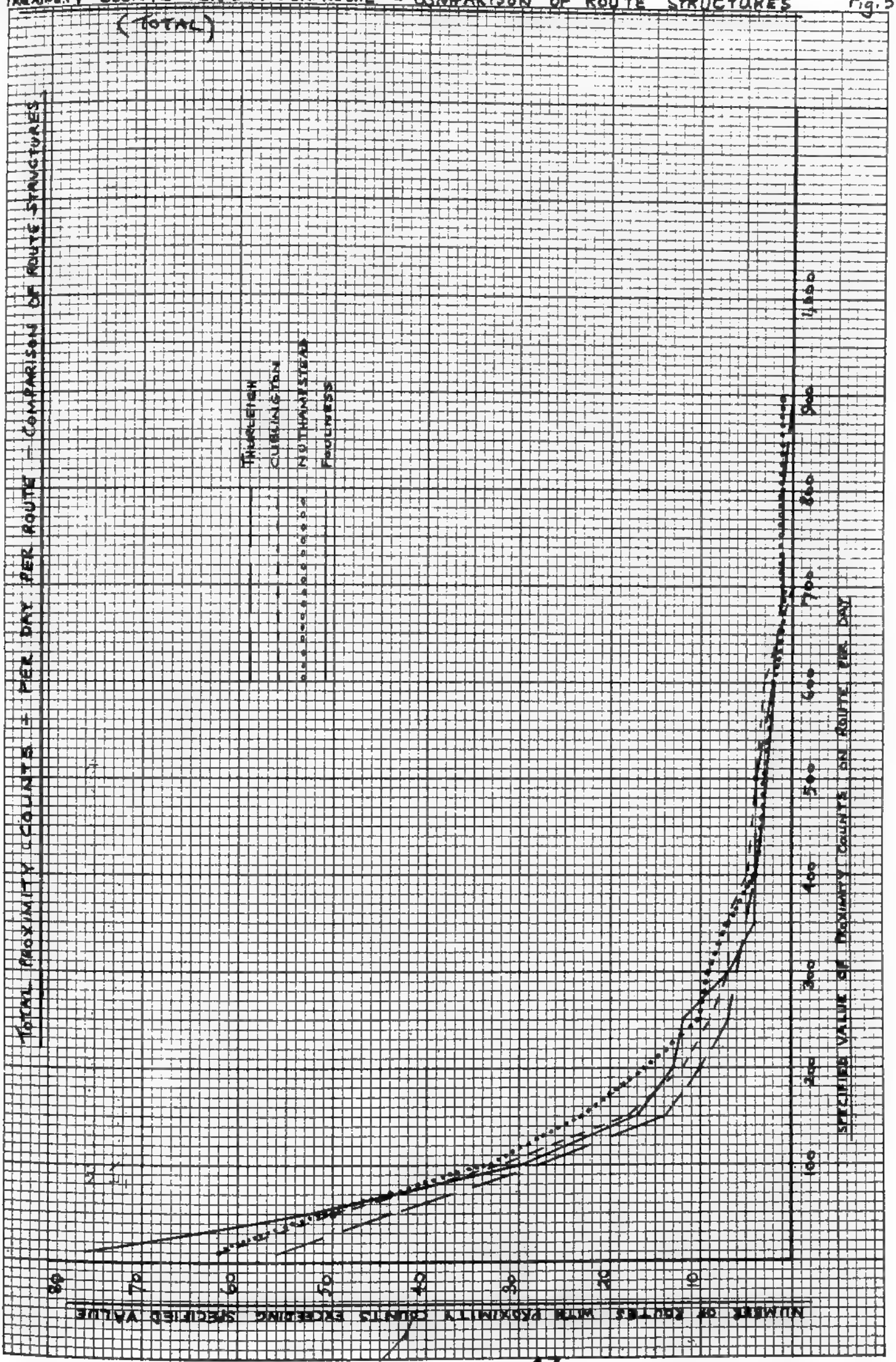
ALONG TRACK PROXIMITY COUNTS – COMPARISON OF ROUTE STRUCTURES. Fig. 3

PER TWO-HOUR PERIOD



Printed image digitised by the University of Southampton Library Digitisation Unit

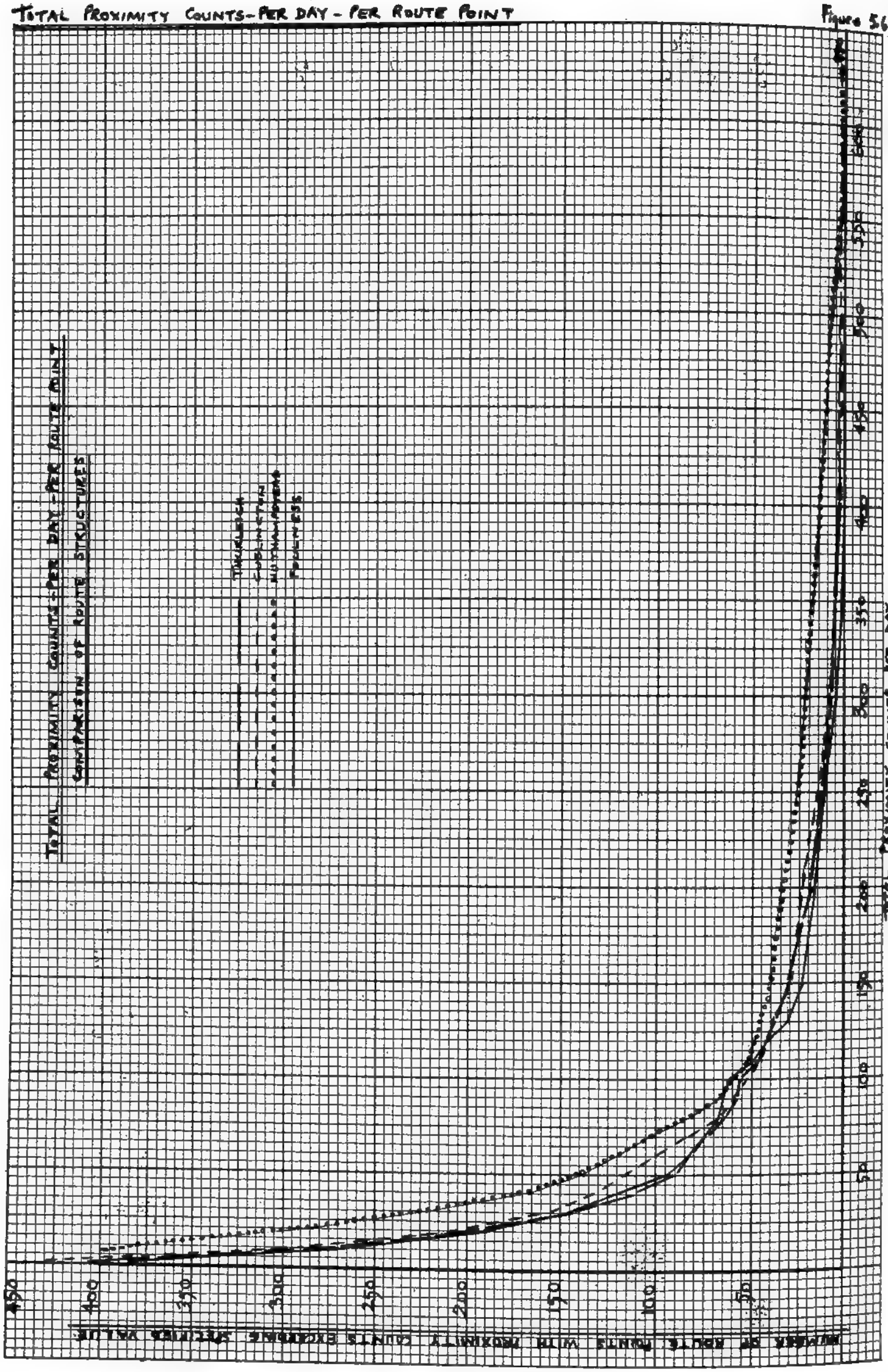
PROXIMITY COUNTS PER DAY PER ROUTE - COMPARISON OF ROUTE STRUCTURES Fig. 5.5.



Printed image digitised by the University of Southampton Library Digitisation Unit

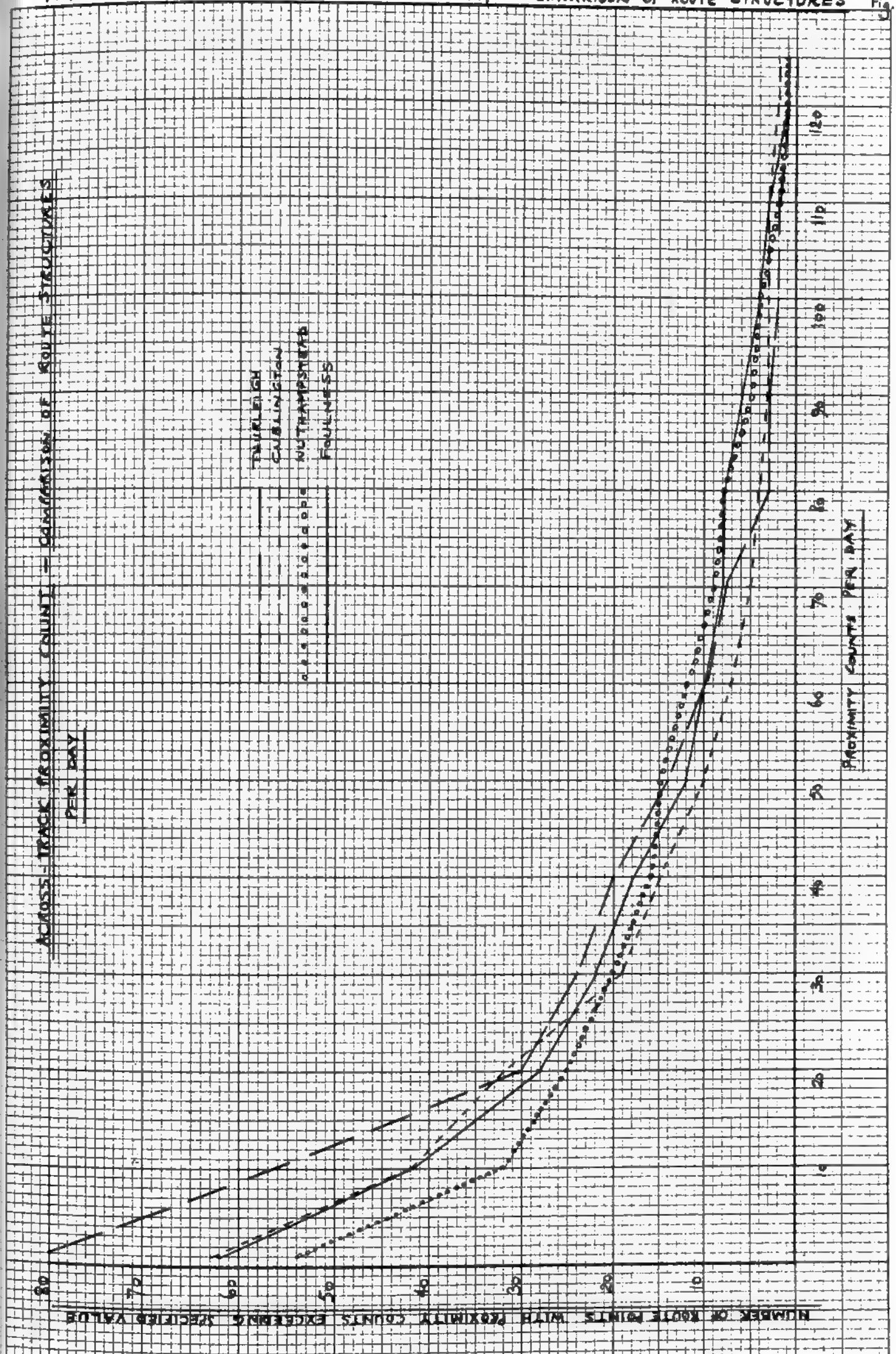
TOTAL PROXIMITY COUNTS - PER DAY - PER ROUTE POINT

Figure 56.



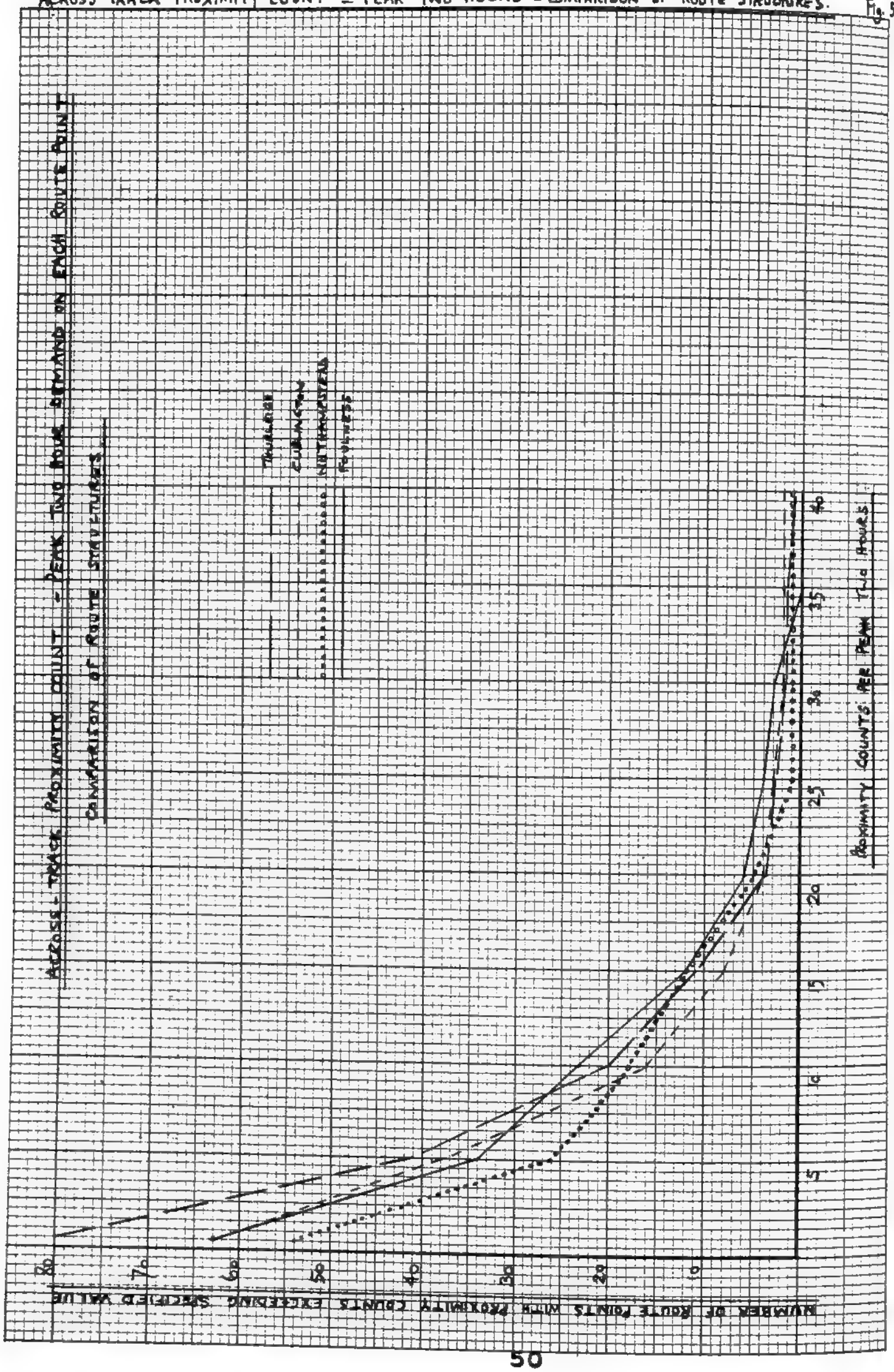
Printed image digitised by the University of Southampton Library Digitisation Unit

ACROSS TRACK PROXIMITY COUNT PER DAY — COMPARISON OF ROUTE STRUCTURES Fig. 5.7.



Printed image digitised by the University of Southampton Library Digitisation Unit

ACROSS TRACK PROXIMITY COUNT – PEAK TWO HOURS – COMPARISON OF ROUTE STRUCTURES. Fig. 5.



Printed image digitised by the University of Southampton Library Digitisation Unit

5.34 Figure 5.2 shows that, when the total along and across track counts relating to the 24 hour period (see Table 5.5) are analysed with respect to time, there is little difference between the Foulness, Cublington and Thurleigh structures and also that the extra counts of Nuthampstead are spread over a six hour period. When these total counts are considered in their two main constituent parts (figs. 5.3 and 5.4), the Nuthampstead structure is seen to have an advantage over the other structures in the across-track case for some 4 hours of the peak counts, and a disadvantage in respect of along-track counts for some six hours of the peak periods. In view of the generally high levels of the counts, which clearly indicate a requirement for route structure optimisation, the Consultants do not attach any vital importance to these relatively small differences.

5.35 When the total 24 hour along and across track counts are analysed with respect to the individual routes which form the TMA route structures (figure 5.5) the only differences worthy of note are that both the Thurleigh and Nuthampstead structures have one route which has considerably more proximity counts than the other two structures and that, marginally, Nuthampstead could be considered the worst structure. Again, this indicates the needs for route structure optimisation, and that in most other respects the four route structures are not very dissimilar.

5.36 From Fig. 5.6, it can be seen that when the 24 hr. total along and across track counts are analysed with respect to route points (i.e. spatially), the same slight disadvantage to the Nuthampstead structure can be discerned, but which is counterbalanced when the spatial distribution of the across-track counts alone are considered (see Fig. 5.7.) This is confirmed when these across-track results are related to the peak two hour proximity count shown at Fig. 5.8.

5.37 The Consultants are of the opinion that, however analysed, the aircraft proximity counts do not favour any one of the four short-listed airport sites, when all the relevant factors have been taken into account.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.38 Comparison of Airports' Performance As explained in the description of the model, the detailed simulation of the runways' operations is not attempted, since this in itself is a major simulation problem and requires the development of a suitable "runway" model. In the TMA "airspace" model, individual airport operation is controlled by a careful selection of parameters and their associated values. In Section 4 it is pointed out that after scrutiny of the model output, experienced TMA controllers concluded that the model output was satisfactory. However, the airport delays determined by the model again result from the selected parameters and their values, and care must be taken when considering these absolute delay values. Comparatively, since the same airport operating parameters and their values (apart from minor necessary changes dependent upon the geographical relationship between holding areas and the Third London Airport site) are common to all simulations, the delay values produced by the model may be used to assess relative airport performance between different route structures.

5.39 The results at Tables 5.7 and 5.8 demonstrate that the maximum movement rates shown for the Heathrow and Gatwick airports, although differing in detail, are sensibly similar for all the simulations. The Nuthampstead structure favours the Heathrow airport as far as arrival delay is concerned whereas Thurleigh structure in the same respect, disfavours it. The departure delays for Heathrow and all delays for Gatwick show no important differences.

5.40 When considering the results relating to the Third Airports at Table 5.6 the method of allocating aircraft movements to airports outlined in Chapter 3 of the research team's material must be kept in mind. Its relevance is, that only the Foulness simulations include the Luton airport and, therefore, the excess traffic demand over the capacities of Heathrow and Gatwick are divided between Luton and the Third London Airport. As the total traffic demand is constant for all simulations, the demand on the Foulness airport is lower than for the other three airport sites by the amount of traffic allocated to Luton. This results, in terms of overall airport performance, in an expected

Printed image digitised by the University of Southampton Library Digitisation Unit

advantage to the Foulness site, since the provision of an extra outlet and inlet for the same traffic demand must reduce both the arrival and departure queues. Smaller queues are, by nature, more readily dispersed and are less self-perpetuating than larger ones.

5.41 At Table 5.6 therefore, it is the Foulness and Luton combined results which must be compared with the remaining sites. Of these three sites, Thurleigh has a clear advantage of some 50 to 60 hours of combined arrival/departure delays over Nuthampstead and Cublington. This advantage is completely overshadowed by the much smaller total combined arrival/departure delays in respect of Foulness and Luton together. This total, at 161 hours 21 mins is 48% lower than the Nuthampstead structure and 40% lower than the Thurleigh site. When the aggregated airport delays are considered for all the airports simulated for each of the four sites (see table 5.10 below), the Foulness site has an advantage of 47% over the Nuthampstead site and 40% over the Thurleigh site. The Foulness/Cublington comparison would be very similar to the Foulness/Nuthampstead. The Thurleigh site has a relatively minor advantage over both the Nuthampstead and Cublington sites, whose results are very similar.

TABLE 5.10 AGGREGATED AIRPORT DELAYS

DELAY	SIMULATED SITE			
	FOULNESS	NUTHAMPSTEAD	CUBLINGTON	THURLEIGH
Total Inbound Delay	93H 03M*	130H 14M	147H 45M	154H 54M
Total Outbound Delay	168H 38M*	361H 08M	337H 23M	281H 09M
Total System Delay	261H 41M*	491H 22M	485H 08M	436H 03M

* Note : Foulness and Luton delays aggregated.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.42 The extent of this benefit to the Foulness site would be increased if a second runway at Gatwick were not available during the timescale under consideration, but would be reduced if proposed airport improvements at Luton were not implemented to provide the capacity assumed for this airport, or if the traffic demand for the period under consideration were significantly less than that represented by the traffic sample simulated.

5.43 As indicated at paragraph 5.25 above the traffic sample provided for the purposes of the simulation is not an entirely suitable basis for the assessment of relative airport dealys. It can, however, be deduced that, if total demand for air transport movements in the London area regularly reaches the hourly movement rates posed by the traffic sample, it is unlikely to be adequately met by the Heathrow airport, a two-runway airport at Gatwick and a four-runway third airport. Therefore, if later traffic forecasts indicate that this situation is likely to arise within the timescale with which the Commission is concerned, then the requirement for ATC compatibility with the additional airport or airports needed to meet this demand will become an important factor in the choice of Third Airport site.

5.44 In the route structure designed for Westerly operations at Foulness, aircraft noise considerations in connection with a possible site for a new airport related town precluded outbound aircraft from turning to the right for some 14 n.ms. This airspace restriction is likely to result in a consequent increase in outbound delay and hence an adverse effect upon airport capacity. This disadvantage over the three other potential sites is not revealed in the simulation results because of the lower demand at Foulness occasioned by the operation of Luton airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.45 The Consultants conclude that, in terms of airport performance, a significant benefit accrues from the location of the Third London Airport at Foulness. However this benefit is considered to arise almost entirely from the fact that the Foulness site does not inhibit the operation of Luton airport and that the other three sites are assumed to do so.

5.46 TMA System Performance The results tabulated in Table 5.9, concerning TMA system performance, show an advantage to the Foulness site in every item except in the maximum number of aircraft airborne in the TMA, where it is one greater than Nuthampstead. The highest mean count is, however, considerably lower at 116 against the 123 of Nuthampstead. The Foulness structure has a total aircraft route mileage (i.e. the sum of all the mileages flown by individual aircraft) which is 28,740 n.miles less than Nuthampstead, the next best site and a consequent benefit of 62 hours 12 mins total flying time and 0.7 minutes in average flying time. The performance of the Nuthampstead and Cublington structures are quite similar but with a tendency for the latter to have more aircraft airborne in the system. The Thurleigh structure has a slight disadvantage over both Nuthampstead and Cublington in all the items. Compared with the Foulness site, the Thurleigh site is at a disadvantage of 37,993 n.ms of aircraft route mileage and a related 84 hours 17 minutes total, and 0.9 minutes average flying time.

5.47 The Foulness site route structure in this respect is considered by the Consultants to have a significant and quantifiable advantage over the three remaining sites. However, any requirement to optimise the four route structures might, in the opinion of the Consultants, modify this particular advantage to some degree.

5.48 Interpretation of the Results The Consultants place the following main interpretations on the foregoing consideration of the results :-

a) the aircraft proximity counts, which are shown to be a measure of the complexity of the Air Traffic Control task, do not favour any particular site

Printed image digitised by the University of Southampton Library Digitisation Unit

b) in terms of airport performance, a significant benefit accrues to the Foulness site.

c) in terms of aircraft route mileage and flying times, a significant and quantifiable benefit accrues to the Foulness site.

GENERAL CONCLUSIONS IN RELATION TO THE SITING OF THE THIRD LONDON AIRPORT

5.49 The principal conclusion of the Consultants, after due consideration of the simulation results, is that there is no significant difference between any of the Commission's four short-list Third London Airport sites in terms of the implied complexity of the Air Traffic Control task, as predicted by the simulations to arise from processing the Commission's traffic sample through the relevant route structures provided by the National Air Traffic Control Service.

5.50 The Consultants further conclude that only in the case of the Foulness site can significant benefits be discerned in the comparisons relating to airport and general TMA system performance. These benefits manifest themselves in terms of reduced aircraft delays, aircraft route mileage and flying times. However, the large delays which have been recorded for each of the Third Airport sites result from the assumed traffic demand, the division of that demand between the available airports, and the assumed airport capacities. The indicated reduction in delays for the Foulness site in relation to the inland sites is a function of these assumptions, and of the assumption that only the Foulness airport is compatible with the continued operation of Luton. The benefits in respect of aircraft route mileage and flying times may be modified by any optimisation process which the route structures may be required to undergo.

Printed image digitised by the University of Southampton Library Digitisation Unit

ACKNOWLEDGEMENTS

The Consultants wish to acknowledge their indebtedness to the Ministry of Technology for permission to use the TMA Simulation Model for the purposes of this study. In addition they express their appreciation of the co-operation and assistance which they have received from the National Air Traffic Control Services, and various Board of Trade Departments including the staffs of the London Air Traffic Control Centre, London (Heathrow) Airport, and the Air Traffic Control Evaluation Unit.

Printed image digitised by the University of Southampton Library Digitisation Unit

THE TRAFFIC SAMPLES

Introduction

A1 This appendix contains certain details of the two traffic samples which GPS have used in their TMA airspace investigations, together with a simplified description of the method of generation which the Commission's Research Team has used.

Method of Generation

A2 Reference to Volume I para 2.4 of this report shows that the model requires the following input data in respect of each aircraft to be processed :-

a) origin

b) destination

c) aircraft performance type

d) requested cruising level

e) scheduled entry time.

A3 To provide this data a set of world markets, which the London Terminal Area is assumed to serve, has been defined as follows, each with its own growth rate and seasonal and diurnal pattern :-

a) Domestic including N. Ireland and the Channel Islands
b) European comprising N. and S. Europe, Mediterranean and Middle East
c) North Atlantic - comprising N. America and Caribbean
d) Irish Republic
e) Other long-haul comprising S. Africa, S. America and Far East.

A4 To each of these markets an airway (or airways, as appropriate) is allocated thus defining an origin or destination, as the case may be, for the aircraft selected to serve these markets. From knowledge of the appropriate markets' growth curves and of the present-day diurnal and seasonal patterns of aircraft movements, forecasts of demands for each hour of an appropriate day (say the 15th busiest of the year) can be made for the year or years being considered. This total of TMA hourly movements can then be allocated by market to the TMA airports by pre-determined percentages, taking care that, unless intended, assumed hourly airport capacities are not exceeded. The complementary origin (or destination) to that defined by market has now been specified.

Printed image digitised by the University of Southampton Library Digitisation Unit

A5 In order to complete the required data it is now necessary to add aircraft performance type, cruising level and scheduled entry time to these proposed movements. Discussion between the Commission's Research Team and GPS resulted in the selection of the following five performance categories as a suitable basis for representing aircraft performance :-

a) Type 1. - Supersonic Transport (SST)

b) Type 2. - Low Performance Aircraft

c) Type 3. - Subsonic Jet - Domestic Market

d) Type 4. - Subsonic Jet - European Market

e) Type 5. - Subsonic Jet - N. American and other long-haul Markets.

Appropriate performance tables and permissible performance variations were specified by GPS in a report (Reference 2)* to the Research Team.

A6 A suitable mix of aircraft types is allocated to individual markets, e.g. the North American market mix would consist of Subsonic North - American Jets and SST's, thereby enabling aircraft performance type to be allocated to selected origin/destinations. The combination of the knowledge of aircraft types and destinations permits the selection of appropriate cruising levels.

A7 For each airport demanded airway movements can now be summed for all the markets, giving a traffic sample by :-

a) hour of day

b) aircraft type (and therefore performance)

c) airway to or from

d) cruising level

A global distribution of proposed movements within each hour may now be assumed and used to allocate scheduled entry times by a random selection process, thus completing the model requirements indicated at para. A2 above.

* Reference 2 - GPS Report - "Aircraft Performance Data for Input to the GPS TMA Airspace Model" - Available for inspection at the Commission's offices.

Printed image digitised by the University of Southampton Library Digitisation Unit

A8 Overflight movements for inclusion in the traffic sample are derived in a similar manner, but by specifying a set of pairs of markets, e.g. European/ N. American Subsonic, Europe and Domestic etc.,

The Traffic Samples

A9 It will be seen from the following tables that airport omni-directionality (ie. all airports are served by or serve all airways)is preserved in the traffic samples.

A10 Allocation of Airways to Markets

TABLE A1 - ALLOCATION OF AIRWAYS TO MARKETS

AIRWAY NUMBER *	MARKETS SERVED
1	N. America, other long haul
2	N. America, other long haul, Irish Republic
3 **	N. America, Domestic, Irish Republic, other long haul
4	European and other long haul
5	European and other long haul
6	European and other long haul
7	European and other long haul
8	European and other long haul
9	European and other long haul
10	European, Domestic and other long haul

*NOTE:- REFER TO MAP AT APPENDIX 'F'

**NOTE:- IN THE THURLEIGH ROUTE STRUCTURE AIRWAY 3 IS DIVIDED INTO TWO AIRWAYS, NOS. 3 AND 11.

Printed image digitised by the University of Southampton Library Digitisation Unit

All The Gatwick Two Traffic Sample

TABLE A2 - HEATHROW DEMAND - TOTAL 24 HOUR MOVEMENTS

AIRCRAFT PERFORMANCE TYPE	AIRWAY NUMBER										
	1	2	3	4	5	6	7	8	9	10	TOTAL
SST	17	25	0	0	2	8	0	3	4	1	60
LOW PERFORMANCE	0	1	13	3	16	8	4	2	2	10	59
DOMESTIC SUBSONIC JET	0	22	208	0	0	0	0	0	0	35	265
EUROPEAN SUBSONIC JET	0	8	10	107	141	180	66	72	39	54	677
N. AMERICAN SUBSONIC JET	5	49	17	1	6	3	1	2	1	2	87
TOTAL ALL TYPES	22	105	248	111	165	199	71	79	46	102	1148

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE A3 - GATWICK DEMAND - TOTAL 24 HOUR MOVEMENTS

AIRCRAFT PERFORMANCE TYPE	AIRWAY NUMBER										TOTAL
	1	2	3	4	5	6	7	8	9	10	
SST	0	6	0	1	3	5	0	1	2	0	18
LOW PERFORMANCE	0	0	5	3	6	9	4	7	3	12	49
DOMESTIC SUBSONIC JET	4	6	91	0	0	0	0	0	0	15	116
EUROPEAN SUBSONIC JET	0	5	6	74	114	151	60	60	39	73	582
N.AMERICAN SUBSONIC JET	0	23	13	0	11	2	1	1	1	1	53
TOTAL ALL TYPES	4	40	115	78	134	167	65	69	45	101	818

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE A4 - LUTON DEMAND - TOTAL 24 HOUR MOVEMENTS

AIRCRAFT PERFORMANCE TYPE	AIRWAY NUMBER										TOTAL
	1	2	3	4	5	6	7	8	9	10	
SST	0	0	0	0	4	0	0	0	0	0	4
LOW PERFORMANCE	0	0	0	4	4	8	4	4	2	4	30
DOMESTIC SUBSONIC JET	0	2	20	0	0	0	0	0	0	2	24
EUROPEAN SUBSONIC JET	2	8	6	48	60	90	32	46	14	58	364
N.AMERICAN SUBSONIC JET	2	10	12	0	2	4	0	0	0	0	30
TOTAL ALL TYPES	4	20	38	52	70	102	36	50	16	64	452

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE A5 - TOTAL TMA MOVEMENTS (24 HRS.)

AIRPORT	AIRWAY NUMBER										TOTAL
	1	2	3	4	5	6	7	8	9	10	
HEATHROW	22	105	248	111	165	199	71	79	46	102	1148
GATWICK	4	40	115	78	134	167	65	69	45	101	818
LUTON	4	20	38	52	70	102	36	50	16	64	452
TOTAL ALL AIRPORTS	30	165	401	241	369	468	172	198	107	267	2418
OVERFLIGHT TOTAL											608
TOTAL ALL MOVEMENTS											3026

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX A

TABLE A6 - HEATHROW DEMAND - 24 HOUR MOVEMENTS

AIRCRAFT PERFORMANCE TYPE	AIRWAY NUMBER										
	1	2	3	4	5	6	7	8	9	10	TOTAL
SST	22	39	1	2	10	7	1	1	5	3	91
LOW PERFORMANCE	0	2	26	7	15	13	6	4	5	5	83
DOMESTIC SUBSONIC JET	0	18	341	0	0	0	0	0	0	50	409
EUROPEAN SUBSONIC JET	0	3	5	105	168	205	46	79	40	62	703
N. AMERICAN SUBSONIC JET	4	48	34	1	6	7	2	1	3	2	108
TOTAL ALL TYPES	26	110	407	115	199	232	55	85	53	122	1404

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE A7 - GATWICK DEMAND - 24 HOUR MOVEMENTS

AIRCRAFT PERFORMANCE TYPE	AIRWAY NUMBER										
	1	2	3	4	5	6	7	8	9	10	TOTAL
SST	2	11	1	0	4	2	0	0	1	1	22
LOW PERFORMANCE	0	0	4	7	15	16	4	3	4	16	69
DOMESTIC SUBSONIC JET	0	6	45	0	0	0	0	0	0	10	61
EUROPEAN SUBSONIC JET	0	10	17	76	142	179	50	84	56	106	720
N. AMERICAN SUBSONIC JET	1	11	14	0	9	2	2	2	0	1	42
TOTAL ALL TYPES	3	38	81	83	170	199	56	89	61	134	914

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE A8 - THIRD AIRPORT AND LUTON DEMAND - TOTAL 24 HOUR MOVEMENTS

AIRCRAFT PERFORMANCE TYPE BY AIRPORT	AIRWAY NUMBER										
	1	2	3	4	5	6	7	8	9	10	TOTAL
SST											
NUTHAMPSTEAD											
CUBLINGTON	13	39	0	1	9	11	3	3	4	7	
THURLEIGH											90
FOULNESS	11	32	0	1	7	9	2	2	3	6	
LUTON	2	7	0	0	2	2	1	1	1	1	
LOW PERFORMANCE											
NUTHAMPSTEAD											
CUBLINGTON	0	0	21	9	24	22	10	16	7	24	
THURLEIGH											133
FOULNESS	0	0	17	7	20	18	8	13	6	20	
LUTON	0	0	4	2	4	4	2	3	1	4	
DOMESTIC SUBSONIC JET											
NUTHAMPSTEAD											
CUBLINGTON	0	14	226	0	0	0	0	0	0	39	
THURLEIGH											279
FOULNESS	0	11	183	0	0	0	0	0	0	33	
LUTON	0	3	43	0	0	0	0	0	0	6	
EUROPEAN SUBSONIC JET											
NUTHAMPSTEAD											
CUBLINGTON	0	12	3	243	290	386	138	158	100	192	
THURLEIGH											1522
FOULNESS	0	10	2	197	235	315	112	128	81	154	
LUTON	0	2	1	46	55	73	26	30	19	38	
N. AMERICAN SUBSONIC JET											
NUTHAMPSTEAD											
CUBLINGTON	3	51	24	1	4	5	2	2	0	0	
THURLEIGH											92
FOULNESS	2	41	20	1	3	4	2	2	0	0	
LUTON	1	10	4	0	1	1	0	0	0	0	
TOTAL	16	116	274	254	327	424	153	179	111	262	2116

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE A.9 - TOTAL TMA MOVEMENTS (24 HRS.)

AIRPORT	AIRWAY NUMBER										TOTAL
	1	2	3	4	5	6	7	8	9	10	
THIRD LONDON AIRPORT AND LUTON FOR FOULNESS ONLY	16	116	274	254	327	424	153	179	111	262	2116
HEATHROW	26	110	407	115	199	232	55	85	53	122	1404
GATWICK	3	38	81	83	170	199	56	89	61	134	914
TOTAL ALL AIRPORTS	45	264	762	452	696	855	264	353	225	518	4434
OVERFLIGHT TOTAL											1012
TOTAL ALL MOVEMENTS											5446

Printed image digitised by the University of Southampton Library Digitisation Unit

FOULNESS SIMULATION

CONTENTS

SUMMARY OF CONDITIONS

TABLE B1 - B2	GENERAL ANALYSIS - FLYING TIMES AND ROUTE MILEAGE
FIGURE B1	ALL AIRPORTS TOTAL MOVEMENTS IN EACH HOUR
FIGURE B2	FOULNESS MOVING AVERAGE MOVEMENT RATE
FIGURE B3a - B3b	FOULNESS ARRIVALS AND APPROACH SEQUENCING AREA COUNT (ASA COUNT)
FIGURE B4a - B4b	FOULNESS DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE B5	LUTON MOVING AVERAGE MOVEMENT RATE
FIGURE B6	LUTON ARRIVALS AND ASA COUNT
FIGURE B7	LUTON DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE B8	HEATHROW MOVING AVERAGE MOVEMENT RATE
FIGURE B9	HEATHROW ARRIVALS AND ASA COUNT
FIGURE B10	HEATHROW DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE B11	GATWICK MOVING AVERAGE MOVEMENT RATE
FIGURE B12	GATWICK ARRIVALS AND ASA COUNT
FIGURE B13	GATWICK DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE B14	INSTANTANEOUS TERMINAL AREA TRAFFIC COUNT
FIGURE B15	THE FOULNESS SIMULATED ROUTE STRUCTURE

Printed image digitised by the University of Southampton Library Digitisation Unit

TMA SIMULATION - FOULNESS

ROUTE STRUCTURE 142

CONDITIONS

1. POINT IN TIME : C. 2000
2. WESTERLY AIRPORT OPERATIONS
3. ROUTE STRUCTURE DESIGNED FOR 4 RUNWAY AIRPORT AT FOULNESS
4. HOLDING AREAS INTERNAL TO TMA
5. CRITERIA FOR PROXIMITY DETECTION :-

   a) 1.5 minutes - longitudinal

   b) 1,000' between level aircraft } vertical

   c) 4,000' where one aircraft level } vertical

   d) 8,000' where neither aircraft level } vertical

6. ONE ITERATION OF TRAFFIC SAMPLE
7. TOTAL NUMBER OF AIRCRAFT PROCESSED : 5,443 (INCLUDING OVER-FLIGHTS)
8. SIMULATION PERIOD : 24 HOURS - 0001 to 2400 HOURS
9. AIRFIELDS SIMULATED :

HEATHROW	1,401 aircraft
GATWICK	914 aircraft
FOULNESS	1,694 aircraft
LUTON	420 aircraft
All airports total	4,430 aircraft

10. OMNI-DIRECTIONAL ROUTE STRUCTURE I.E. ALL AIRPORTS SERVE, AND ARE SERVED BY, ALL AIRWAYS.

Printed image digitised by the University of Southampton Library Digitisation Unit

GENERAL ANALYSIS - FOULNESS (RS 142)

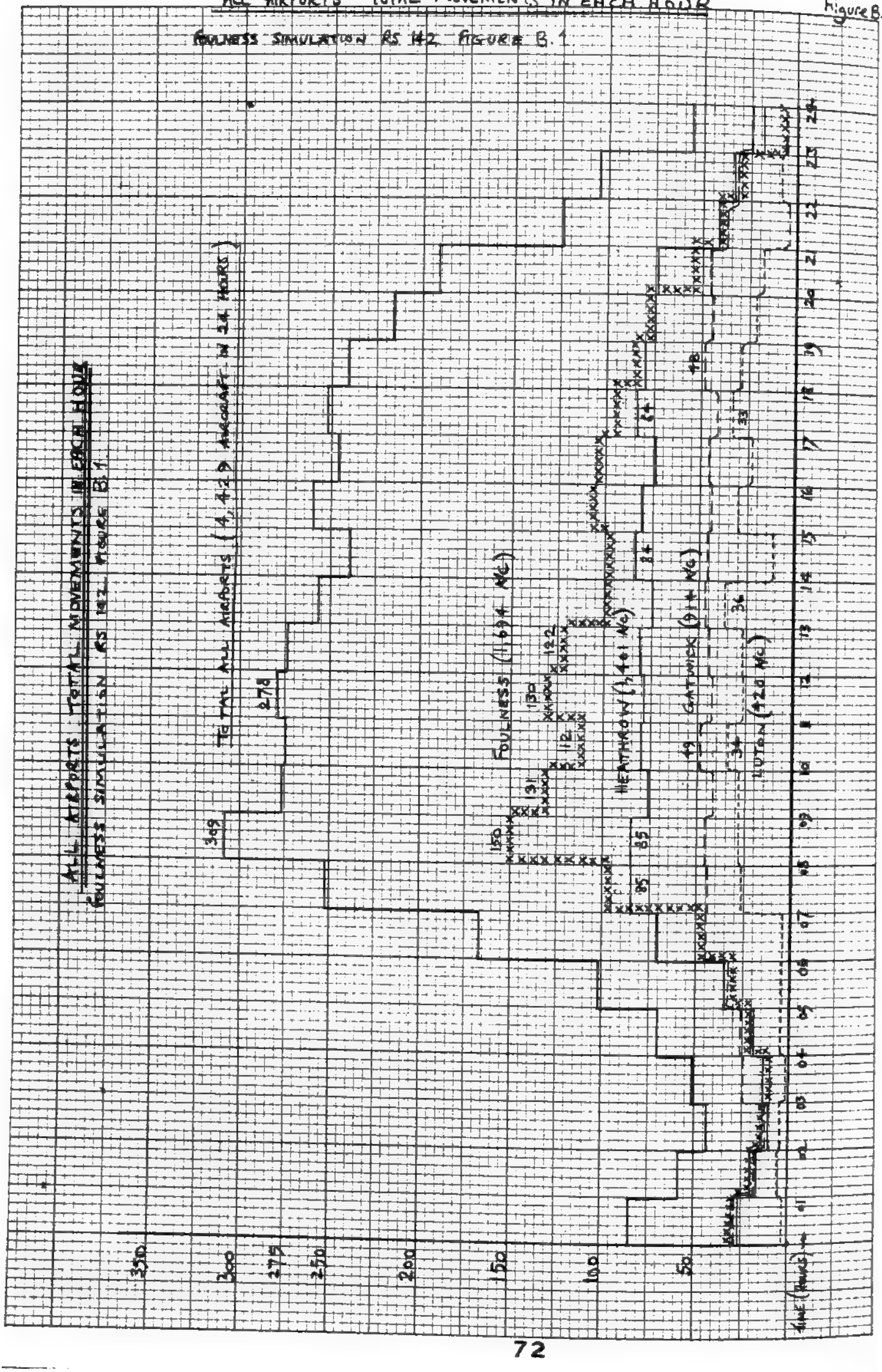
TABLE B1: AIRCRAFT FLIGHT TIME IN TMA

	NUMBER PROCESSED	AVERAGE TIME (MINS.)	TOTAL TIME HOURS	MINS
ALL AIRCRAFT	5,443	22.7	2,063	48
TYPE 1 - SST	283	19.2	90	24
TYPE 2 - LOW PERFORMANCE	338	37.2	209	30
TYPE 3 - SUBSONIC JET - DOMESTIC	958	22.8	363	42
TYPE 4 - SUBSONIC JET - EUROPEAN	3,502	21.7	1,266	54
TYPE 5 - SUBSONIC JET - AMERICAN	362	22.1	133	12

TABLE B2: AIRCRAFT ROUTE MILEAGE IN TMA

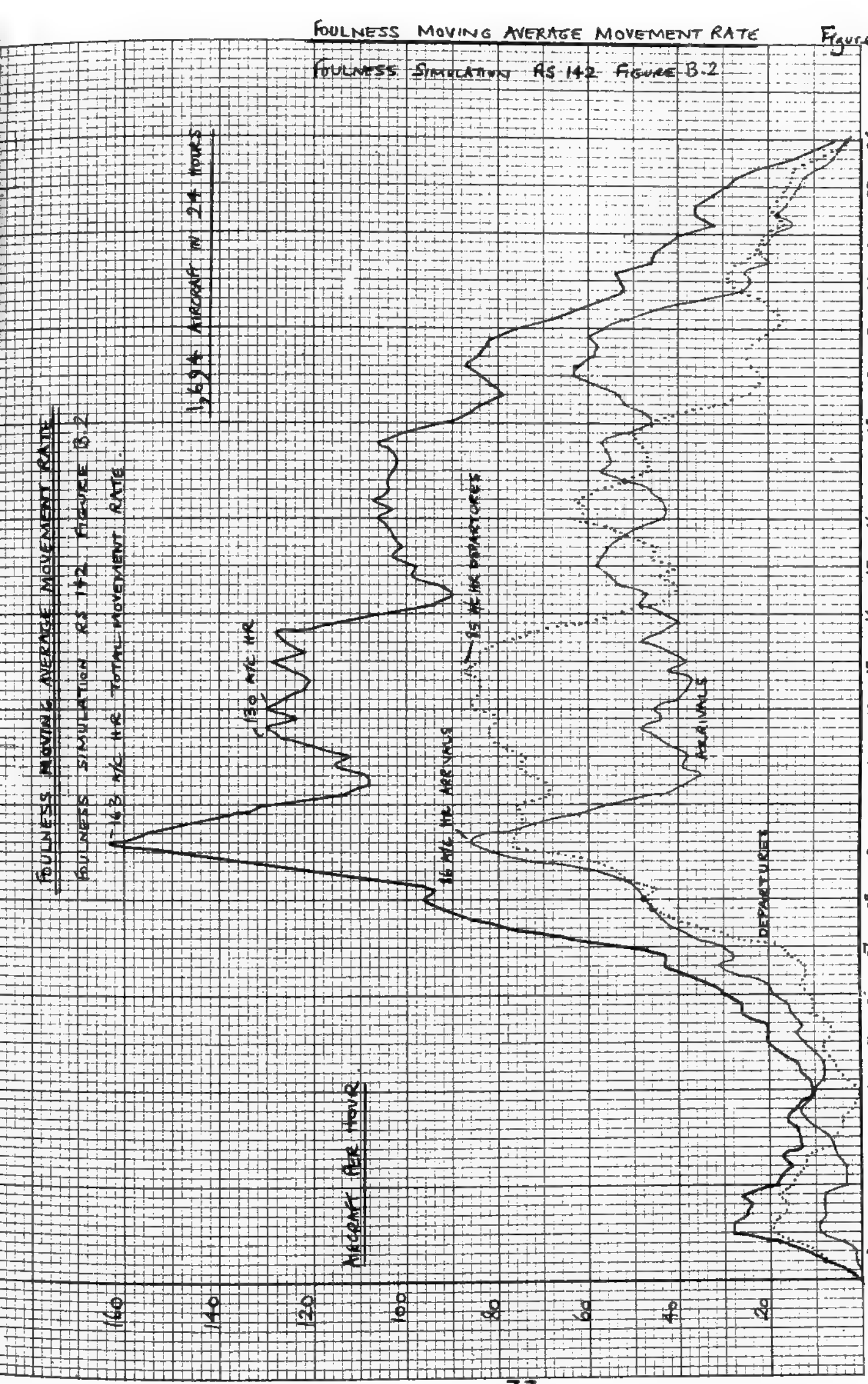
	NUMBER PROCESSED	AVERAGE MILEAGE (NEAREST MILE)	TOTAL MILEAGE
ALL AIRCRAFT	5,443	142	773,288
TYPE 1 - SST	283	155	43,874
TYPE 2 - LOW PERFORMANCE	338	141	47,645
TYPE 3 - SUBSONIC JET - DOMESTIC	958	148	141,882
TYPE 4 - SUBSONIC JET - EUROPEAN	3,502	137	481,370
TYPE 5 - SUBSONIC JET - AMERICAN	362	162	58,518

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

FOULNESS MOVING AVERAGE MOVEMENT RATE Figure B2



Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

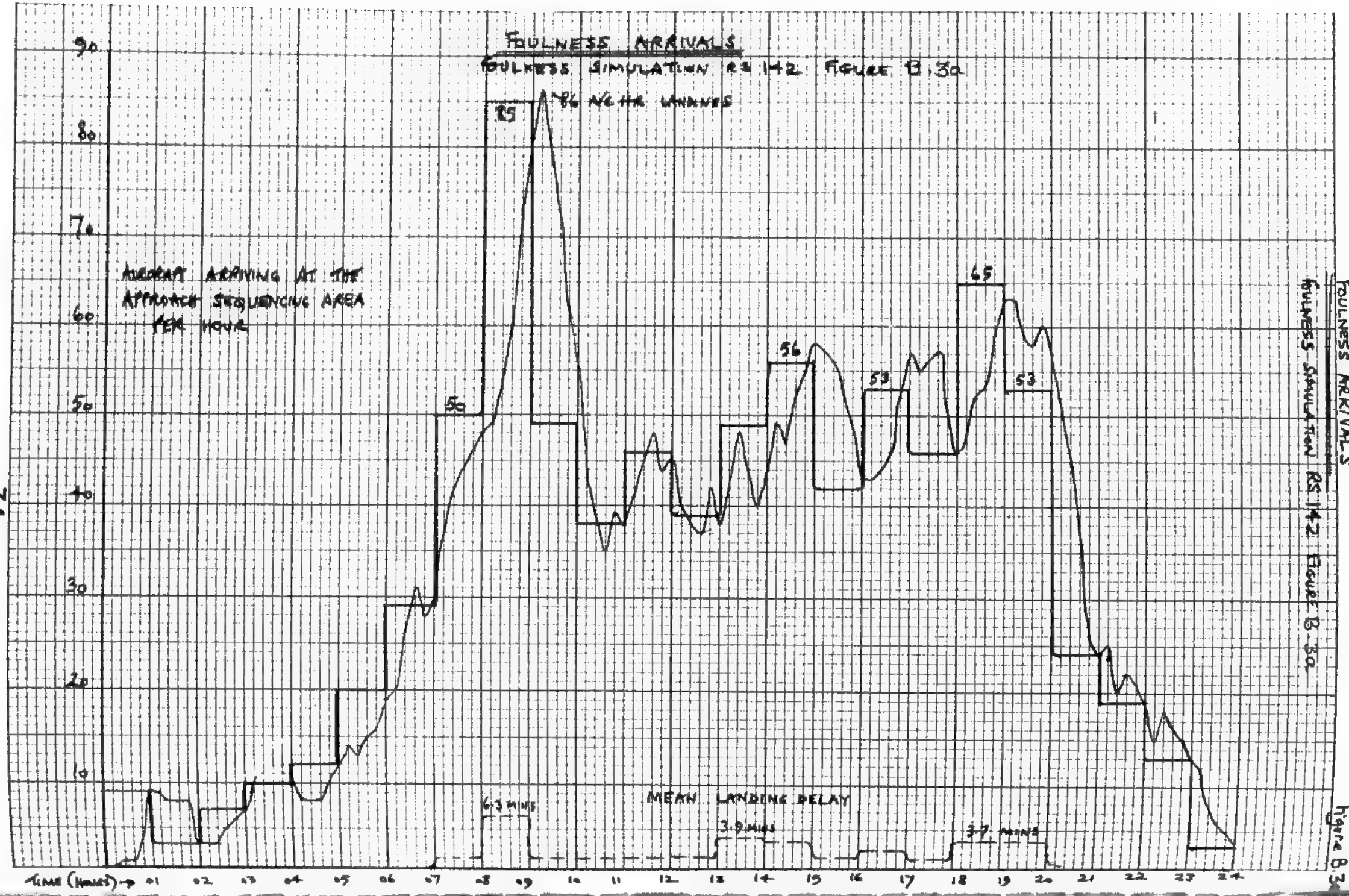
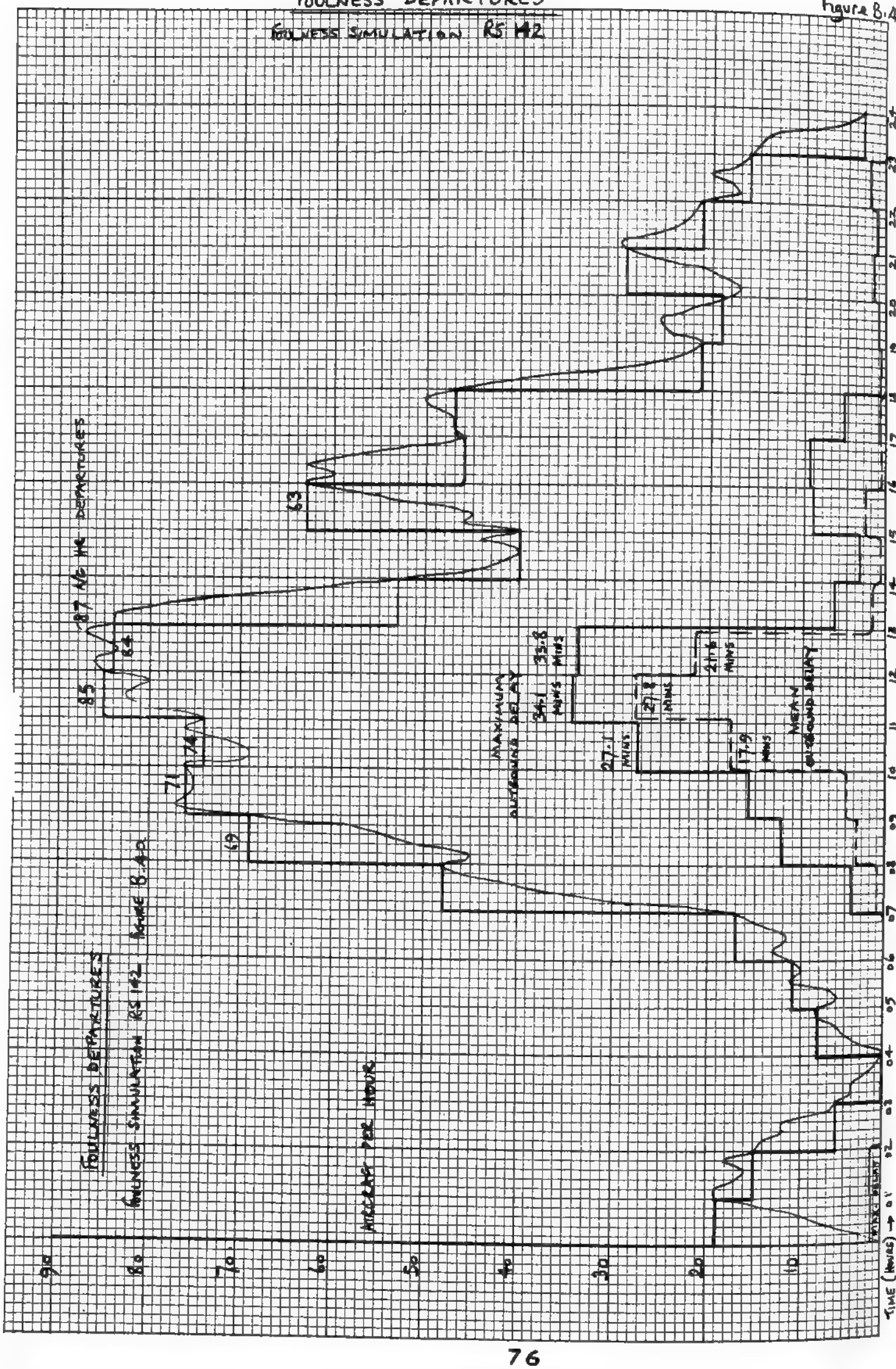


Figure B.3

Printed image digitised by the University of Southampton Library Digitisation Unit

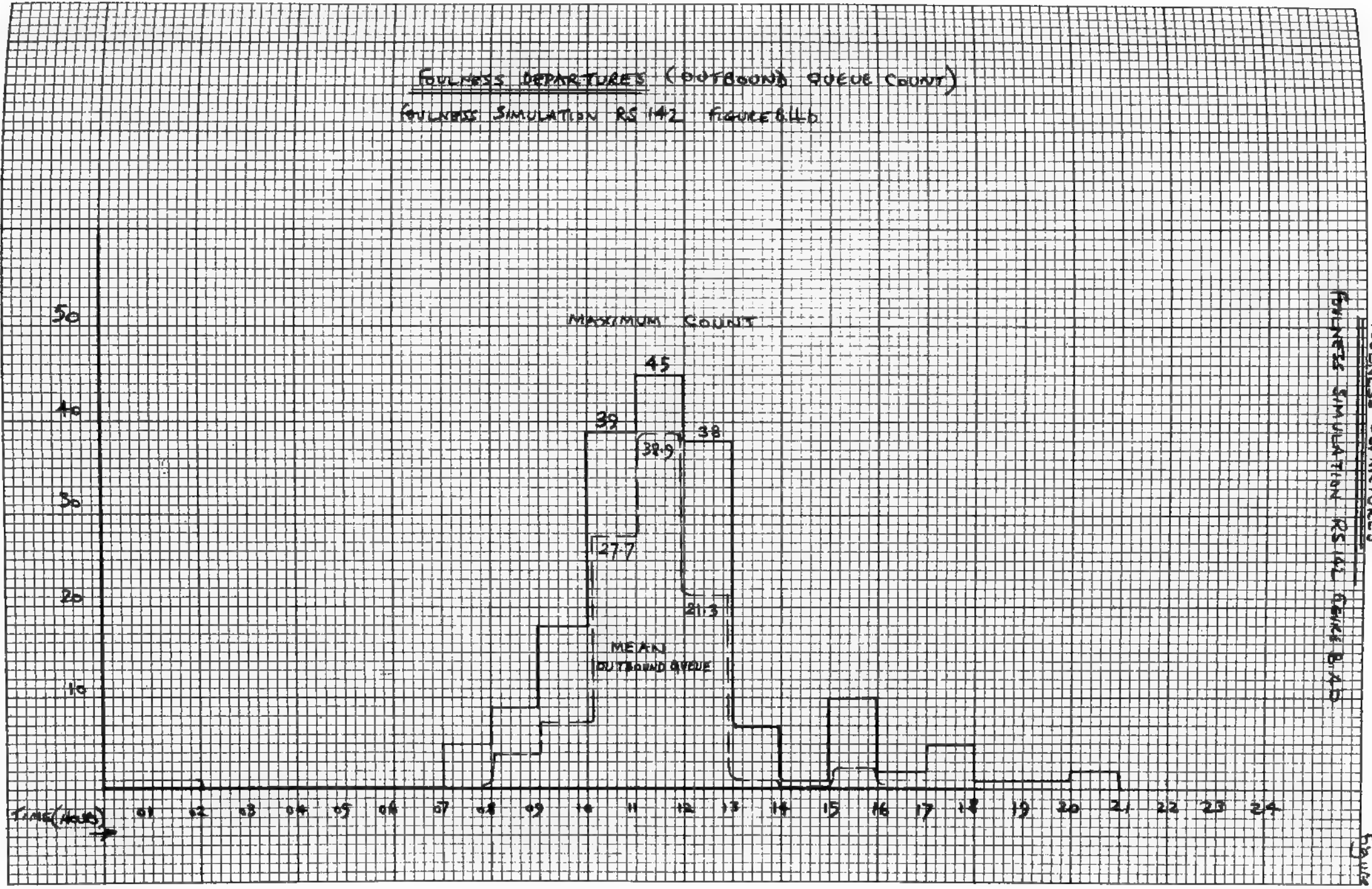


Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

FOULNESS DEPARTURES (OUTBOUND QUEUE COUNT)

FOULNESS SIMULATION RS 142 FIGURE B.4.b

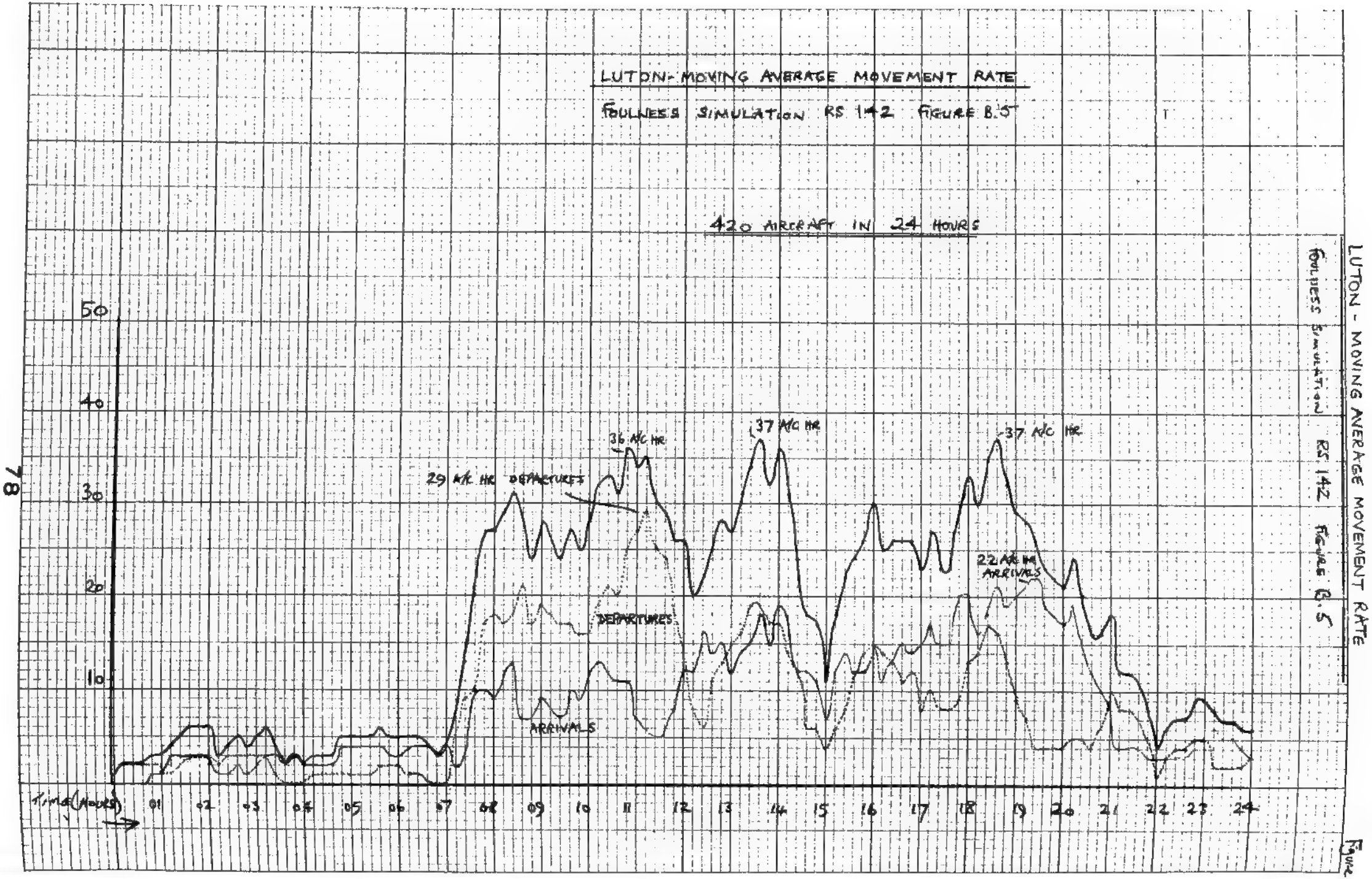


FOULNESS DEPARTURES

FOULNESS SIMULATION RS 142 QUEUE B.4.b

Figure B.4.b

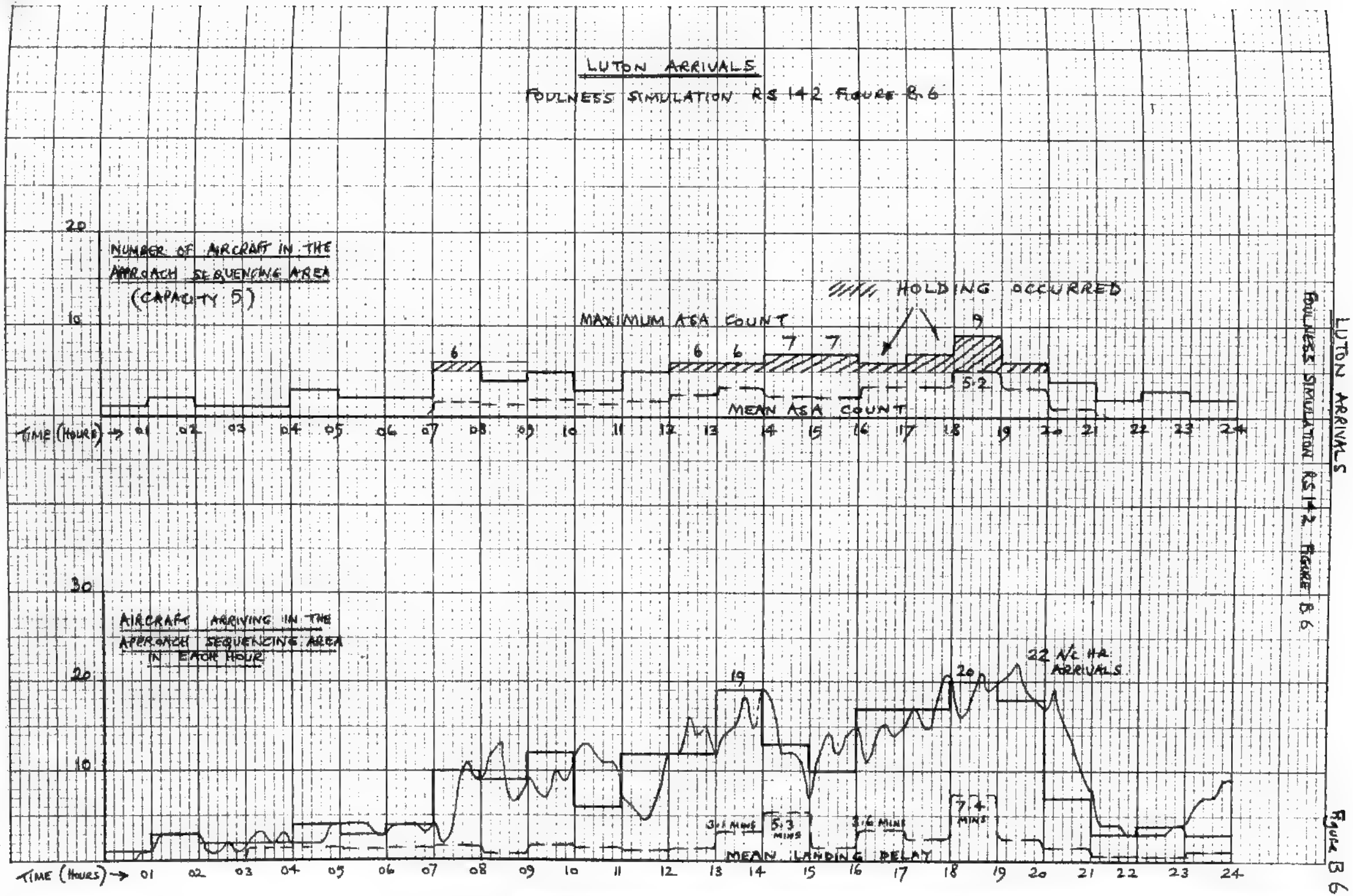
Printed image digitised by the University of Southampton Library Digitisation Unit



LUTON - MOVING AVERAGE MOVEMENT RATE
FOULNESS SIMULATION RS 142 FIGURE B.5

Figure B

Printed image digitised by the University of Southampton Library Digitisation Unit



LUTON ARRIVALS
FOULNESS SIMULATION RS 142 FIGURE B.6

FIGURE B.6

Printed image digitised by the University of Southampton Library Digitisation Unit

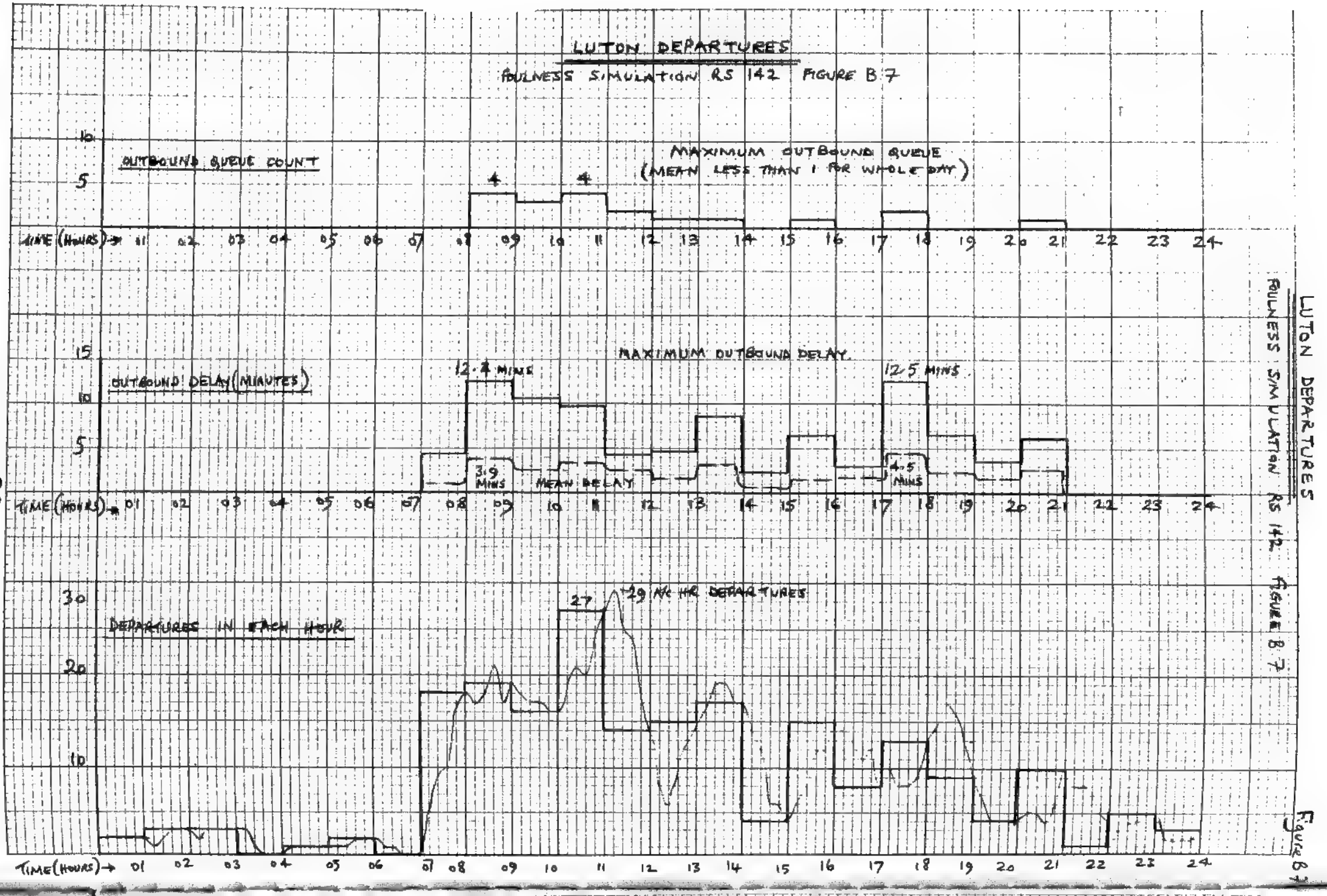


Figure B 7

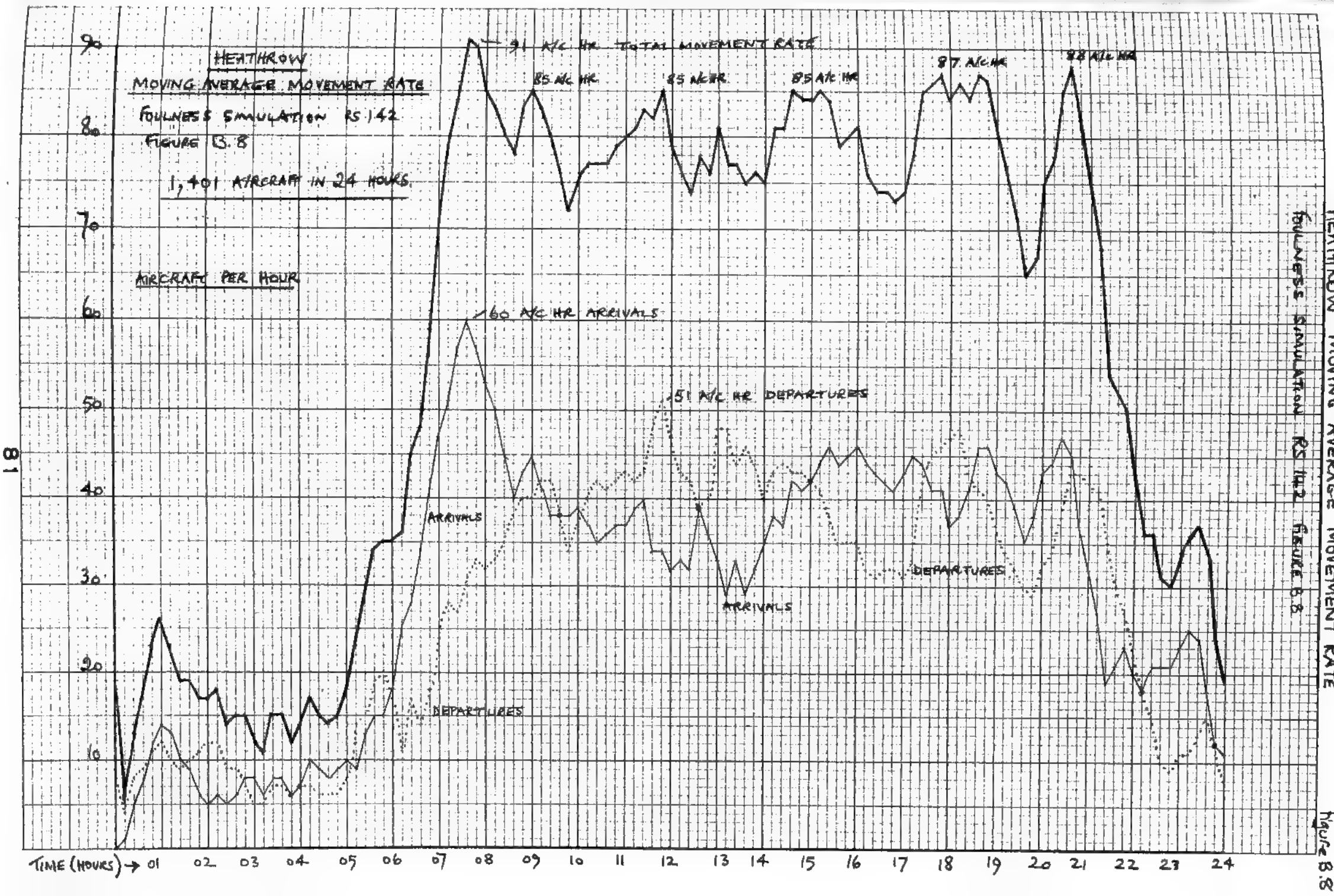
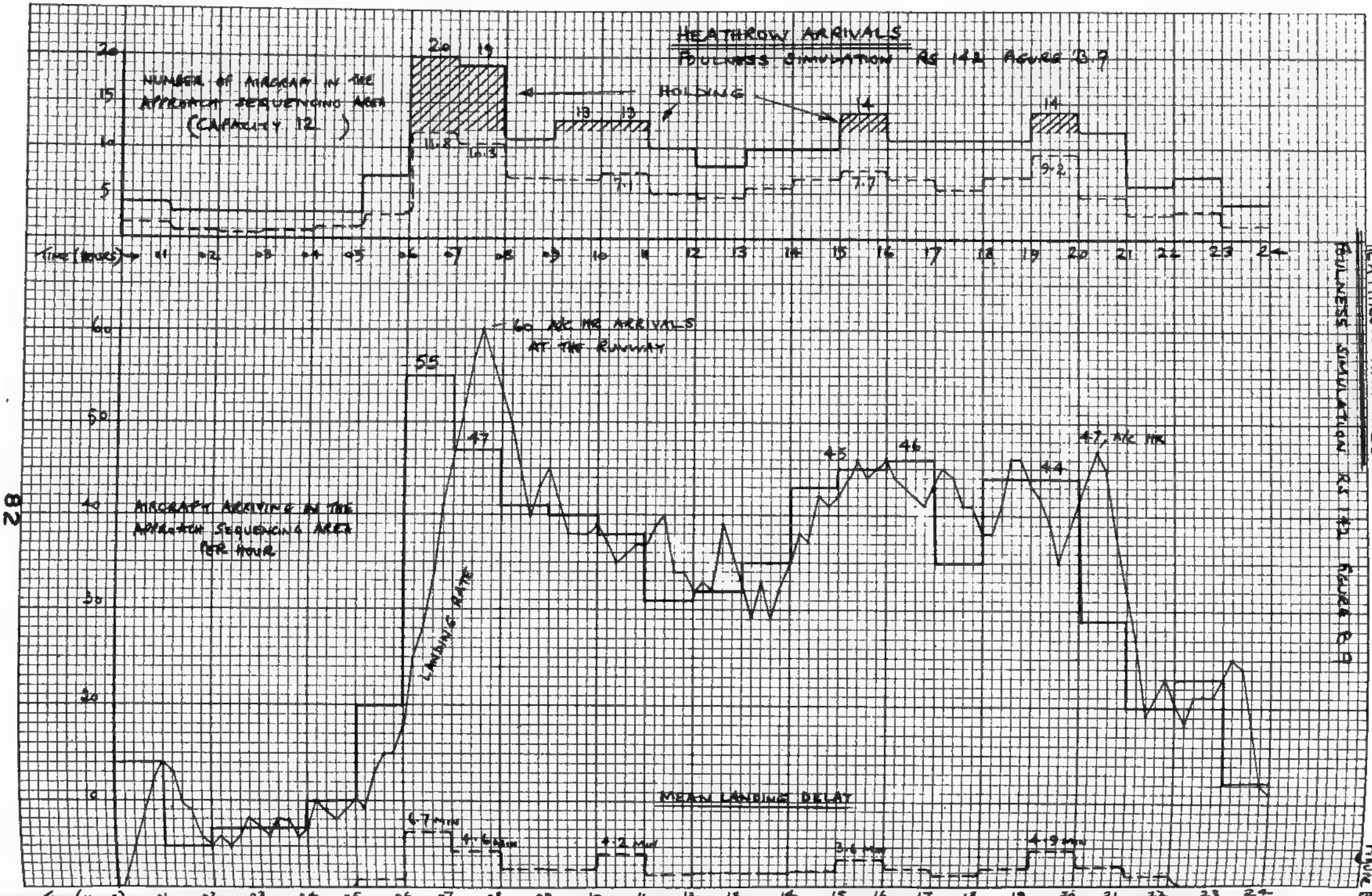
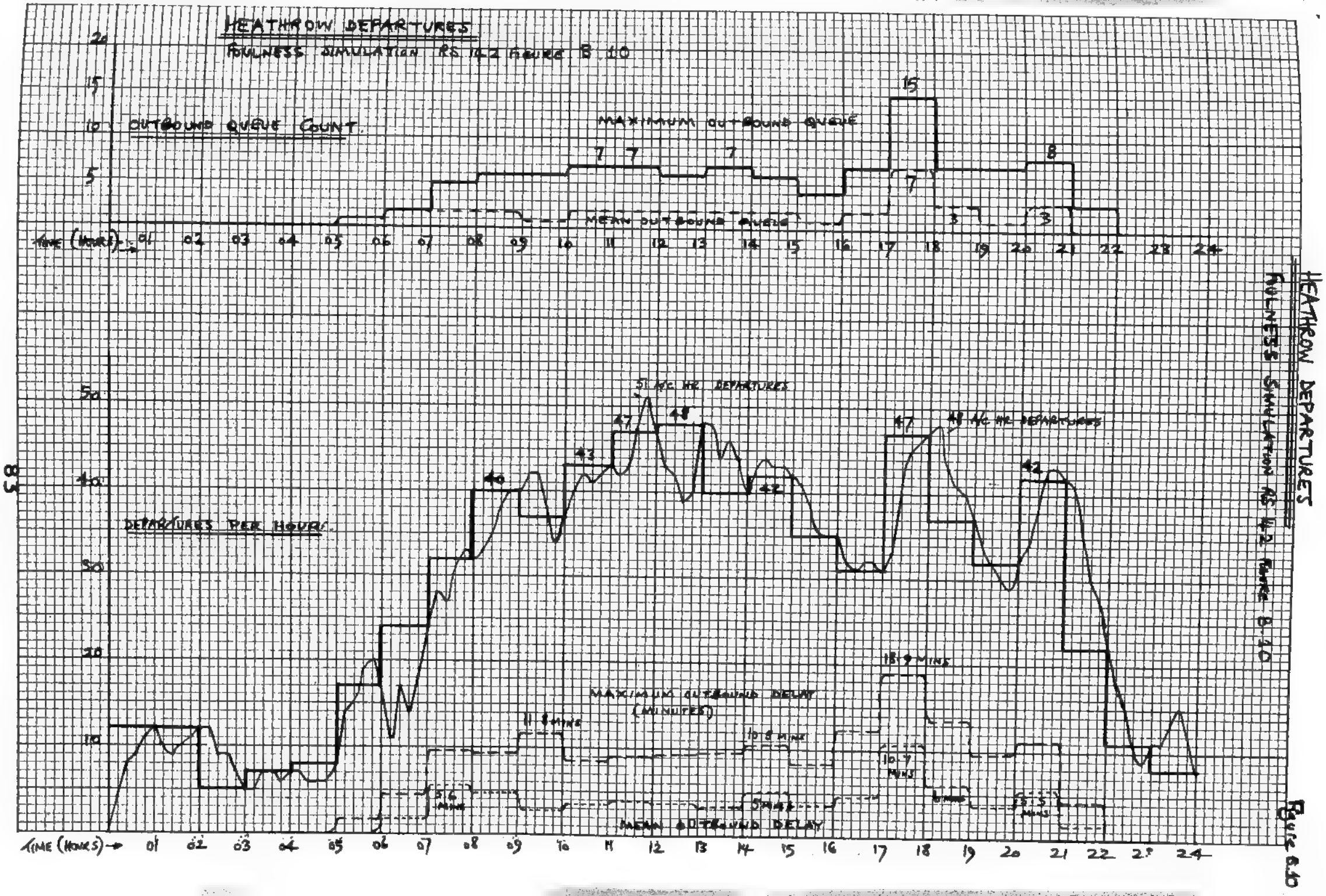


Figure B.8

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

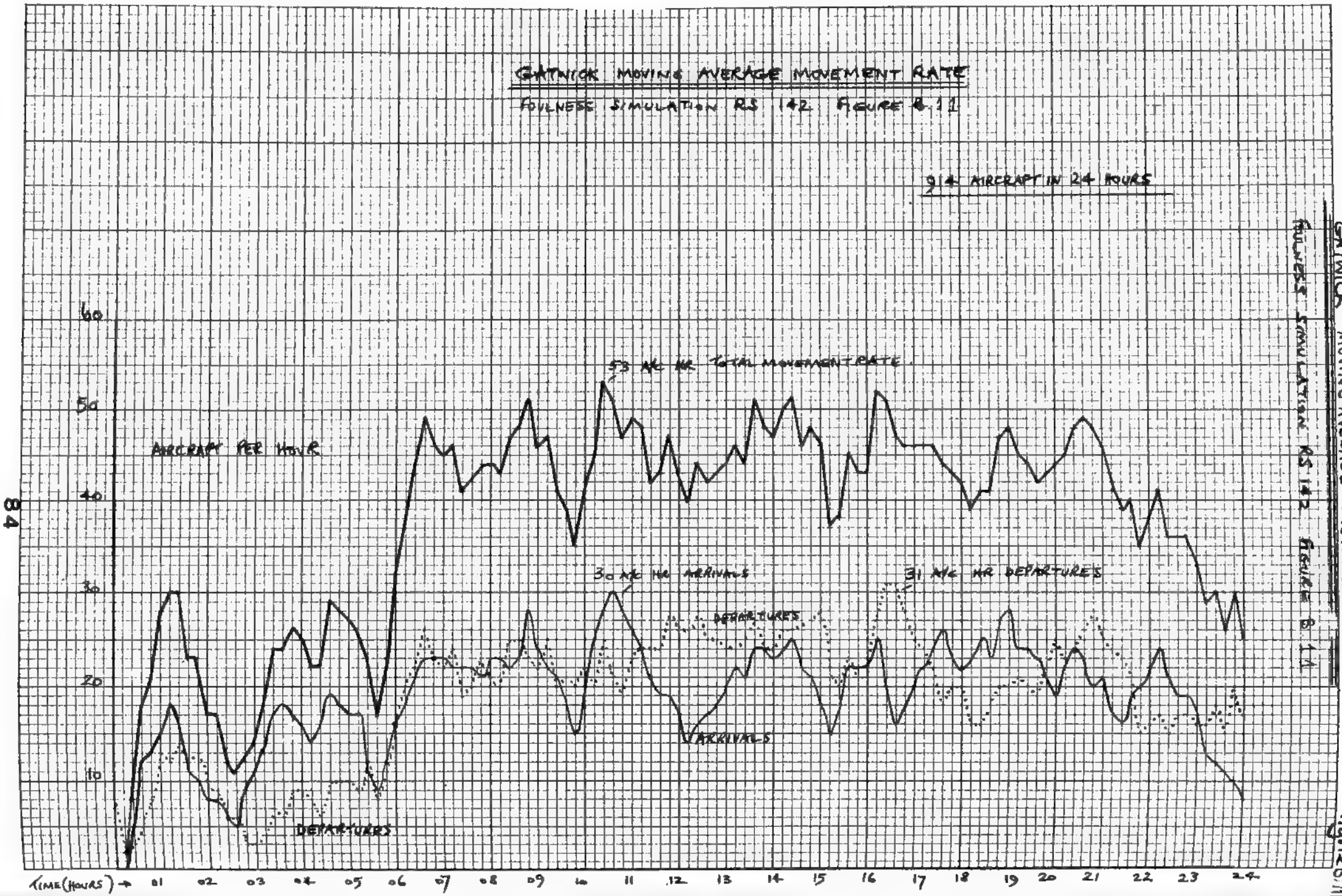
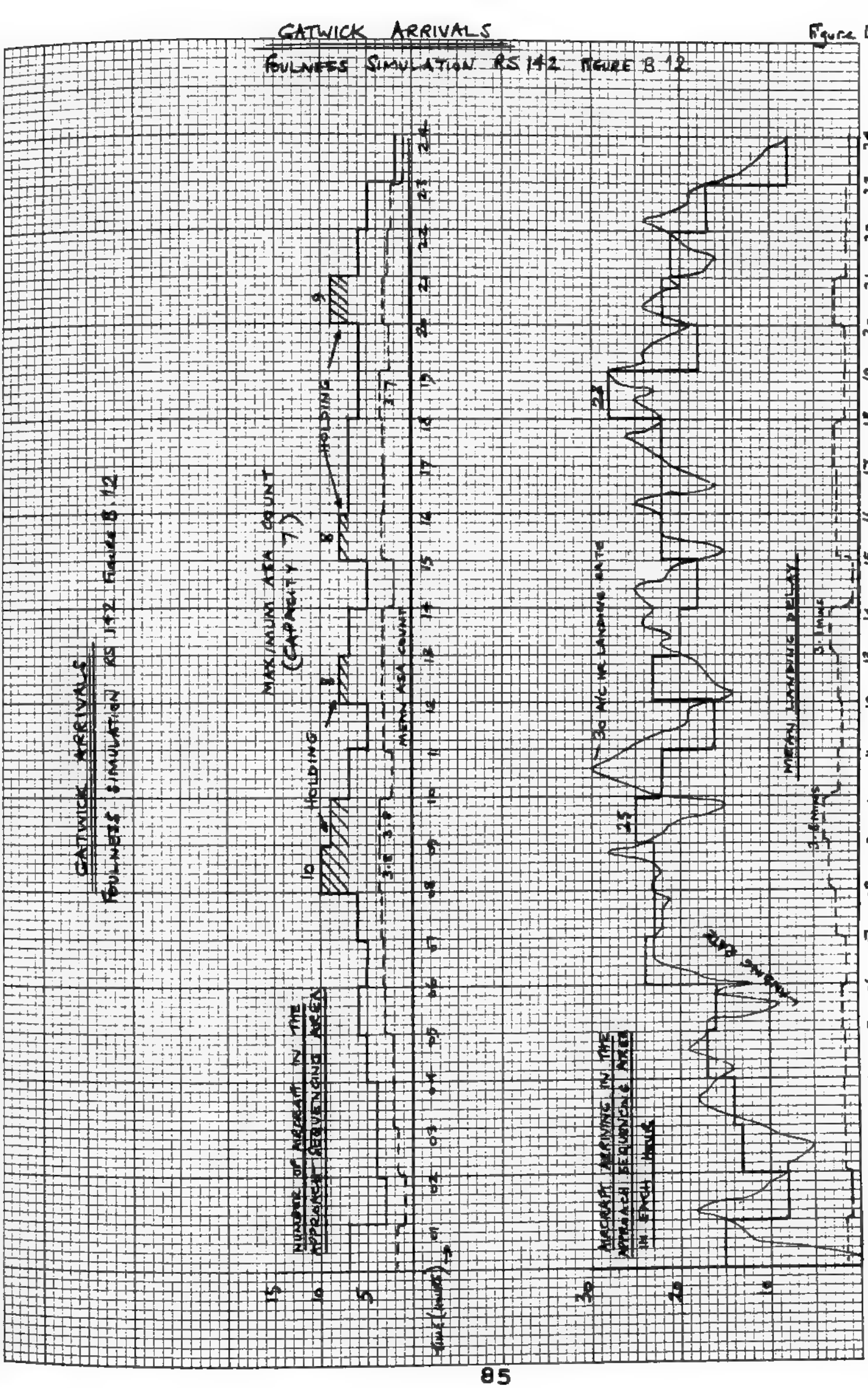
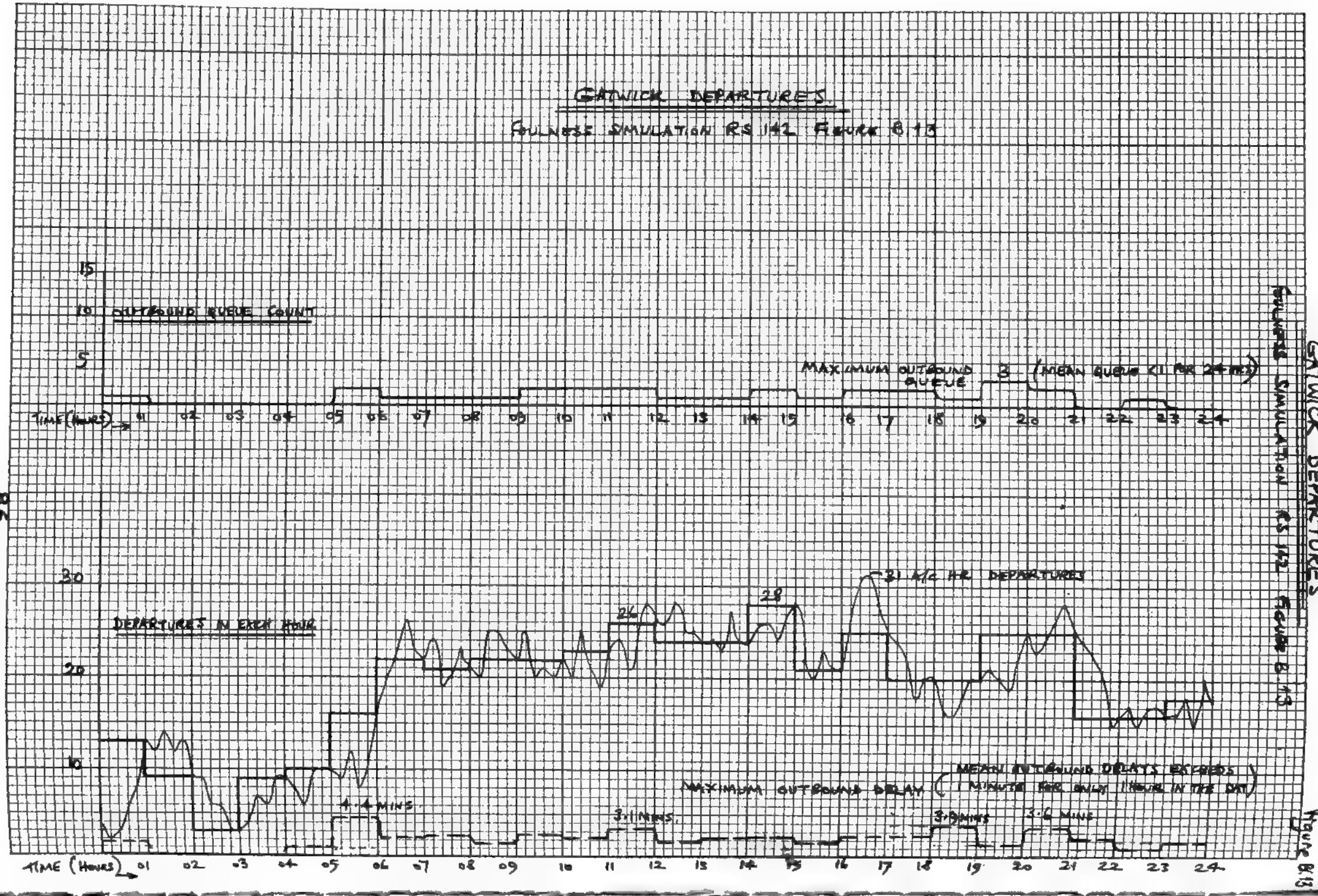


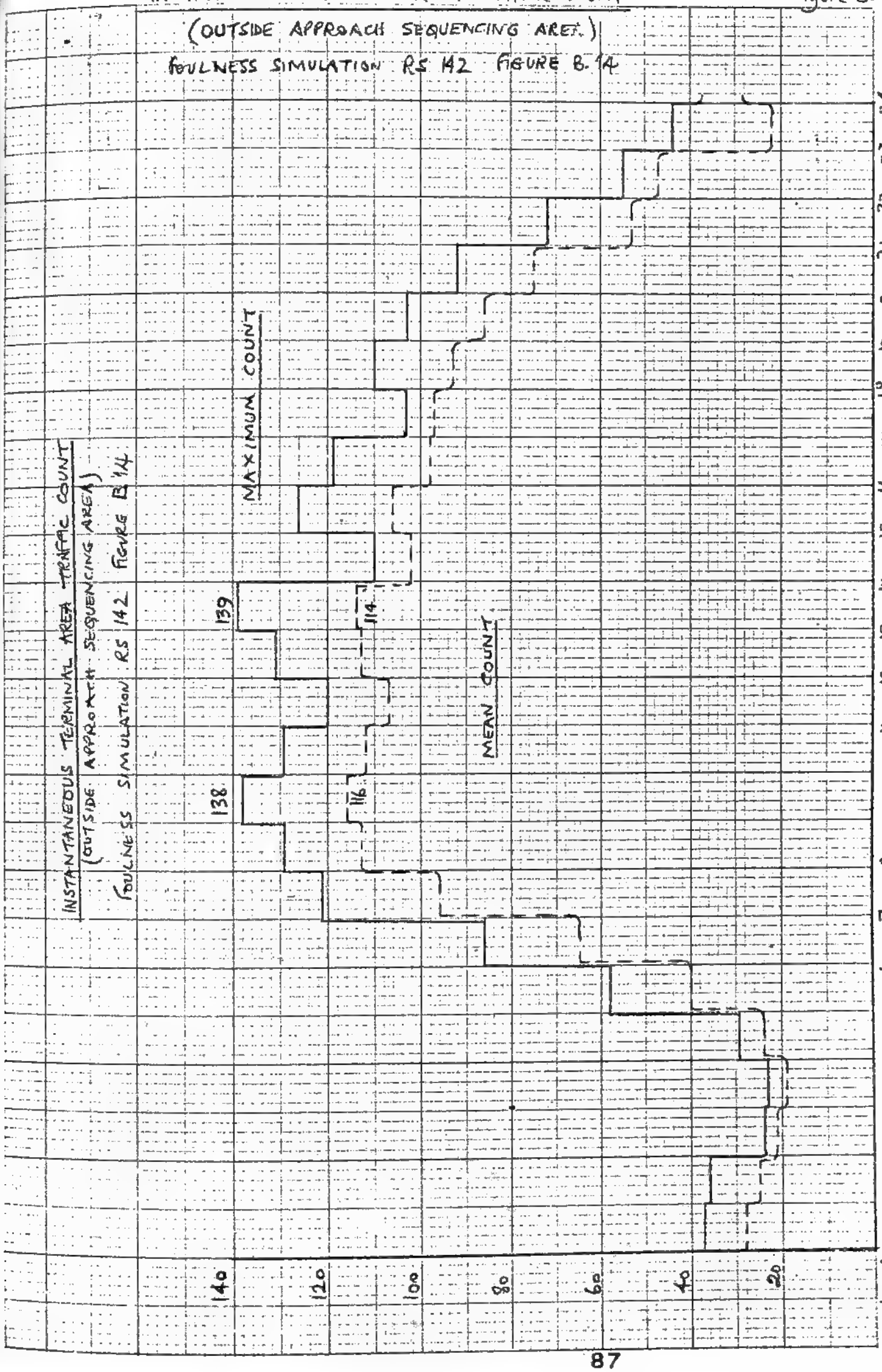
Figure 8.11



Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



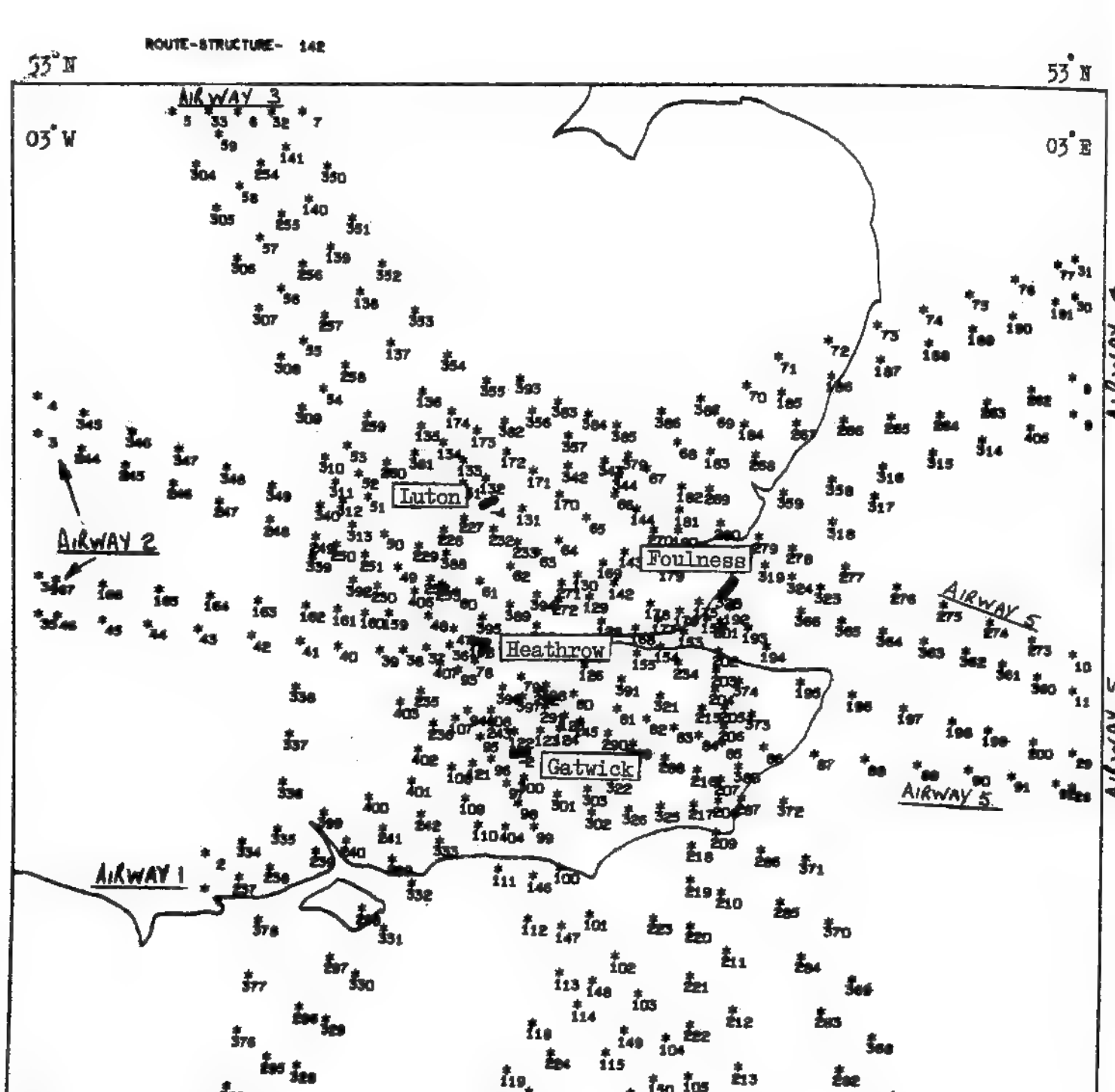


Printed image digitised by the University of Southampton Library Digitisation Unit

Figure B.15

The Foulness Simulated Route Structure

Route points defining Simulated Route Structure



Printed image digitised by the University of Southampton Library Digitisation Unit

NUTHAMPSTEAD SIMULATION

CONTENTS

SUMMARY OF CONDITIONS	
TABLE C1 - C2	GENERAL ANALYSIS - FLYING TIMES AND ROUTE MILEAGE
FIGURE C1	ALL AIRPORTS TOTAL MOVEMENTS IN EACH HOUR
FIGURE C2	NUTHAMPSTEAD MOVING AVERAGE MOVEMENT RATE
FIGURE C3a - C3b	NUTHAMPSTEAD ARRIVALS AND APPROACH SEQUENCING AREA (ASA COUNT)
FIGURE C4a - C4b	NUTHAMPSTEAD DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE C5	HEATHROW MOVING AVERAGE MOVEMENT RATE
FIGURE C6	HEATHROW ARRIVALS AND ASA COUNT
FIGURE C7	HEATHROW DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE C8	GATWICK MOVING AVERAGE MOVEMENT RATE
FIGURE C9	GATWICK ARRIVALS AND ASA COUNT
FIGURE C10	GATWICK DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE C11	INSTANTANEOUS TERMINAL AREA TRAFFIC COUNT
FIGURE C12	THE NUTHAMPSTEAD SIMULATED ROUTE STRUCTURE

Printed image digitised by the University of Southampton Library Digitisation Unit

TMA SIMULATION - NUTHAMPSTEAD

ROUTE STRUCTURE 241

CONDITIONS

1. POINT IN TIME : C. 2000

2. WESTERLY AIRPORT OPERATIONS

3. ROUTE STRUCTURE DESIGNED FOR 4 RUNWAY AIRPORT AT NUTHAMPSTEAD

4. HOLDING AREAS INTERNAL TO TMA

5. CRITERIA FOR PROXIMITY DETECTION :-

   a) 1.5 minutes - longitudinal
   b) 1,000' between level aircraft)
   c) 4,000' where one aircraft level) vertical
   d) 8,000' where neither aircraft level)

6. ONE ITERATION OF TRAFFIC SAMPLE

7. TOTAL NUMBER OF AIRCRAFT PROCESSED : 5,443 (INCLUDING OVER-FLIGHTS)

8. SIMULATION PERIOD : 24 HOURS - 0001 to 2400 hours.

9. AIRFIELDS SIMULATED :

HEATHROW	1,402	aircraft
GATWICK	914	aircraft
NUTHAMPSTEAD	2,114	aircraft
All airports total	4,430	aircraft

10. OMNI-DIRECTIONAL ROUTE STRUCTURE I.E. ALL AIRPORTS SERVE, AND ARE SERVED BY, ALL AIRWAYS

Printed image digitised by the University of Southampton Library Digitisation Unit

GENERAL ANALYSIS - NUTHAMPSTEAD (241)

TABLE No C1- AIRCRAFT FLIGHT TIME IN TMA

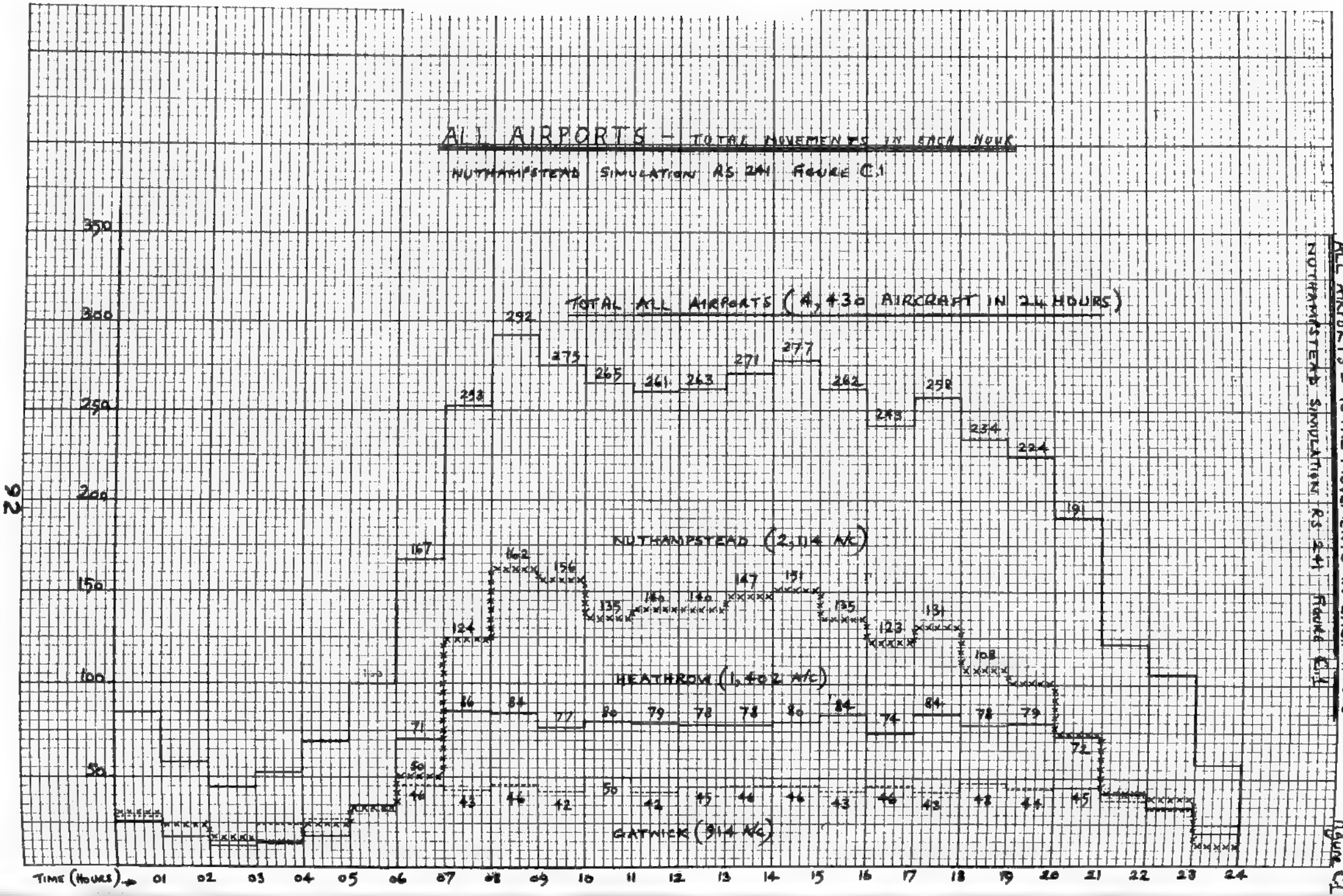
	NUMBER PROCESSED	AVERAGE TIME (MINS.)	TOTAL TIME HOURS	MINS
ALL AIRCRAFT	5,443	23.5	2,128	27
TYPE 1 - SST	283	19.5	91	58
TYPE 2 - LOW PERFORMANCE	338	38.2	215	08
TYPE 3 - SUBSONIC JET-DOMESTIC	958	21.6	344	40
TYPE 4 - SUBSONIC JET-EUROPEAN	3,502	23.1	1,345	43
TYPE 5 - SUBSONIC JET-AMERICAN	362	21.7	130	06

TABLE No C2- AIRCRAFT ROUTE MILEAGE IN TMA

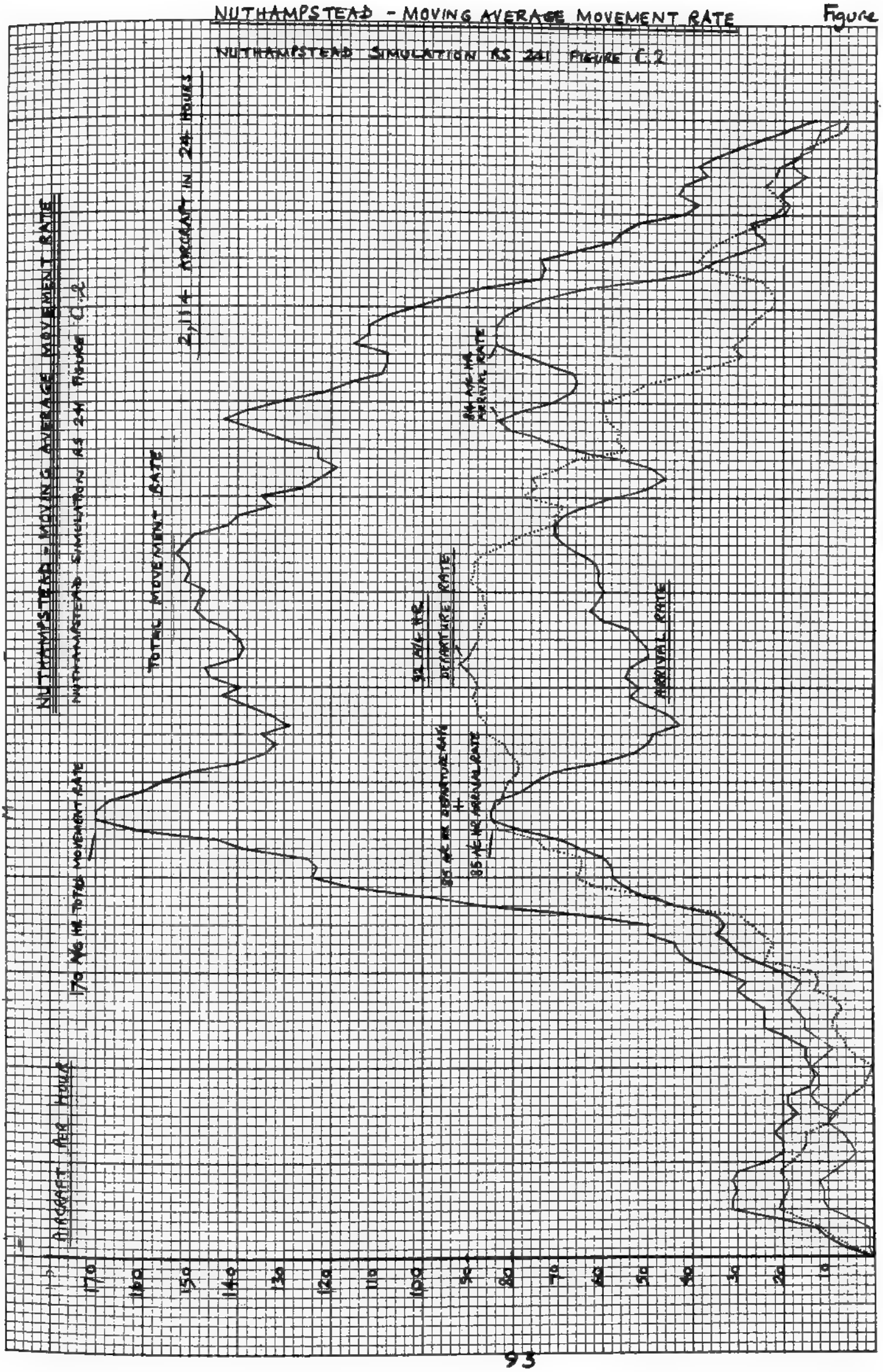
	NUMBER PROCESSED	AVERAGE MILEAGE (NEAREST N. MILE)	TOTAL MILEAGE
ALL AIRCRAFT	5,443	147	802,029
TYPE 1 - SST	283	157	44,459
TYPE 2 - LOW PERFORMANCE	338	145	49,061
TYPE 3 - SUBSONIC JET-DOMESTIC	958	139	133,030
TYPE 4 - SUBSONIC JET-EUROPEAN	3,502	148	518,186
TYPE 5 - SUBSONIC JET-AMERICAN	362	158	57,293

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



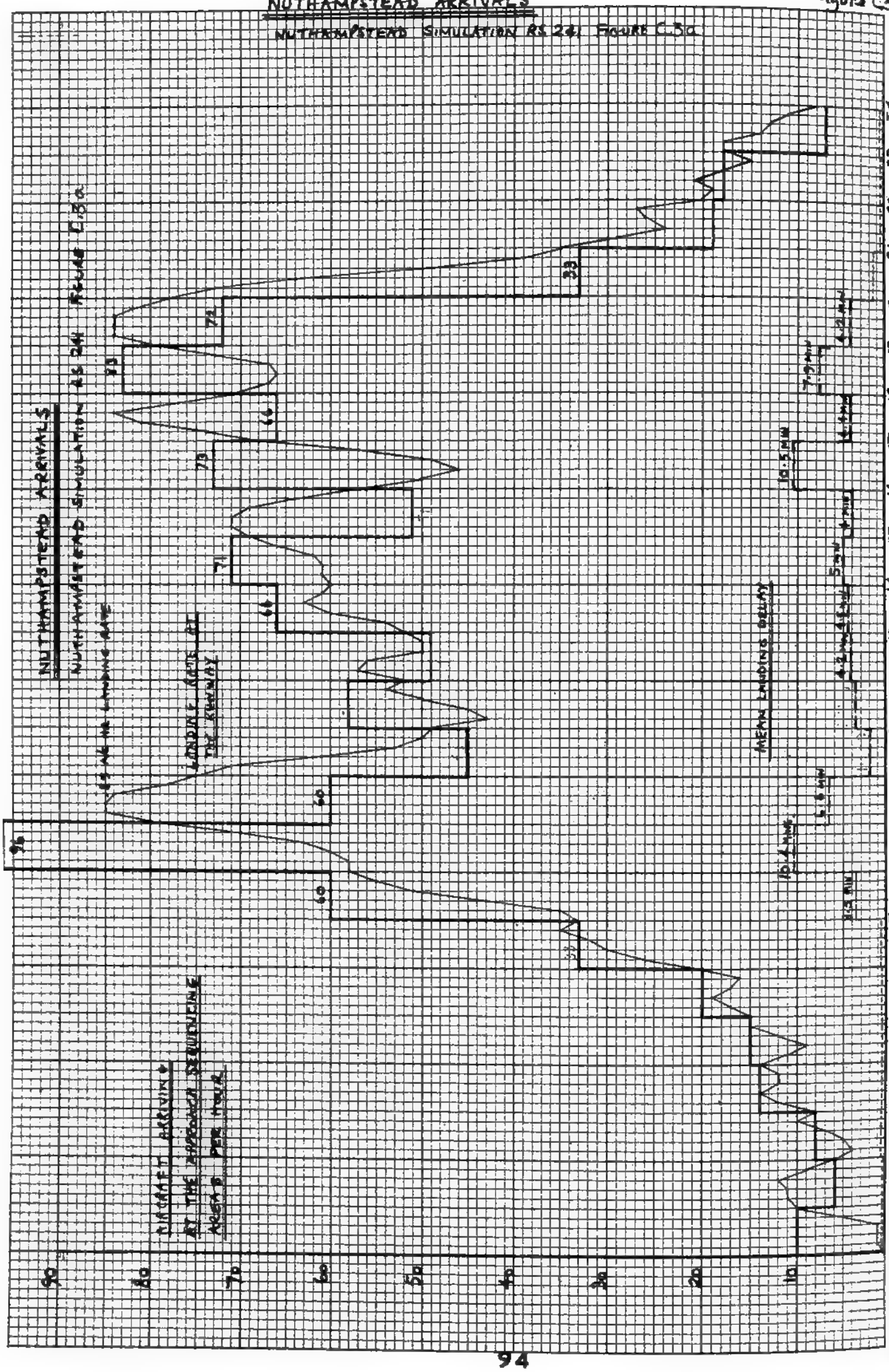
Figure



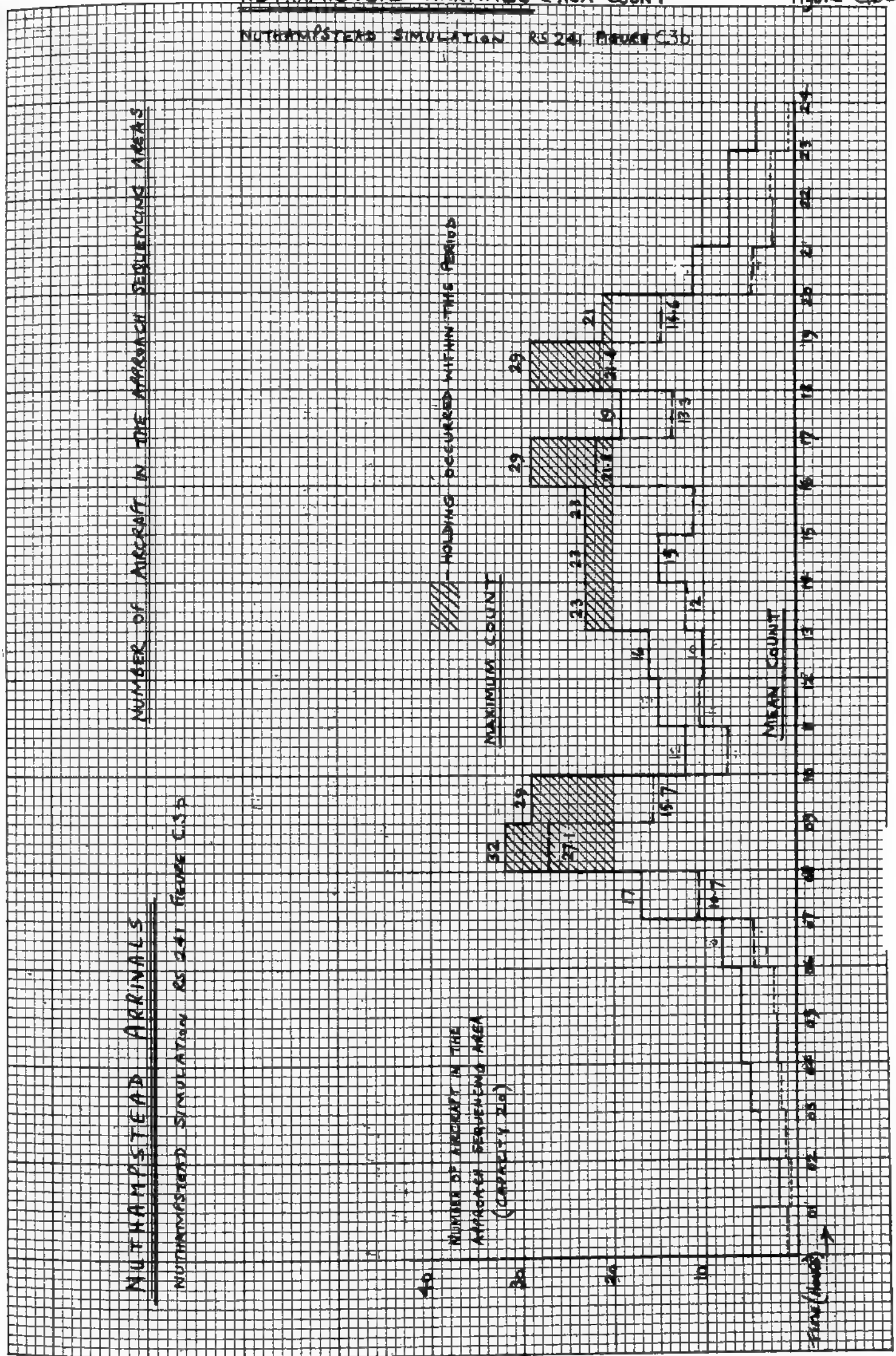
Printed image digitised by the University of Southampton Library Digitisation Unit

NUTHAMPSTEAD ARRIVALS

NUTHAMPSTEAD SIMULATION RS 24 FIGURE C.3a



Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

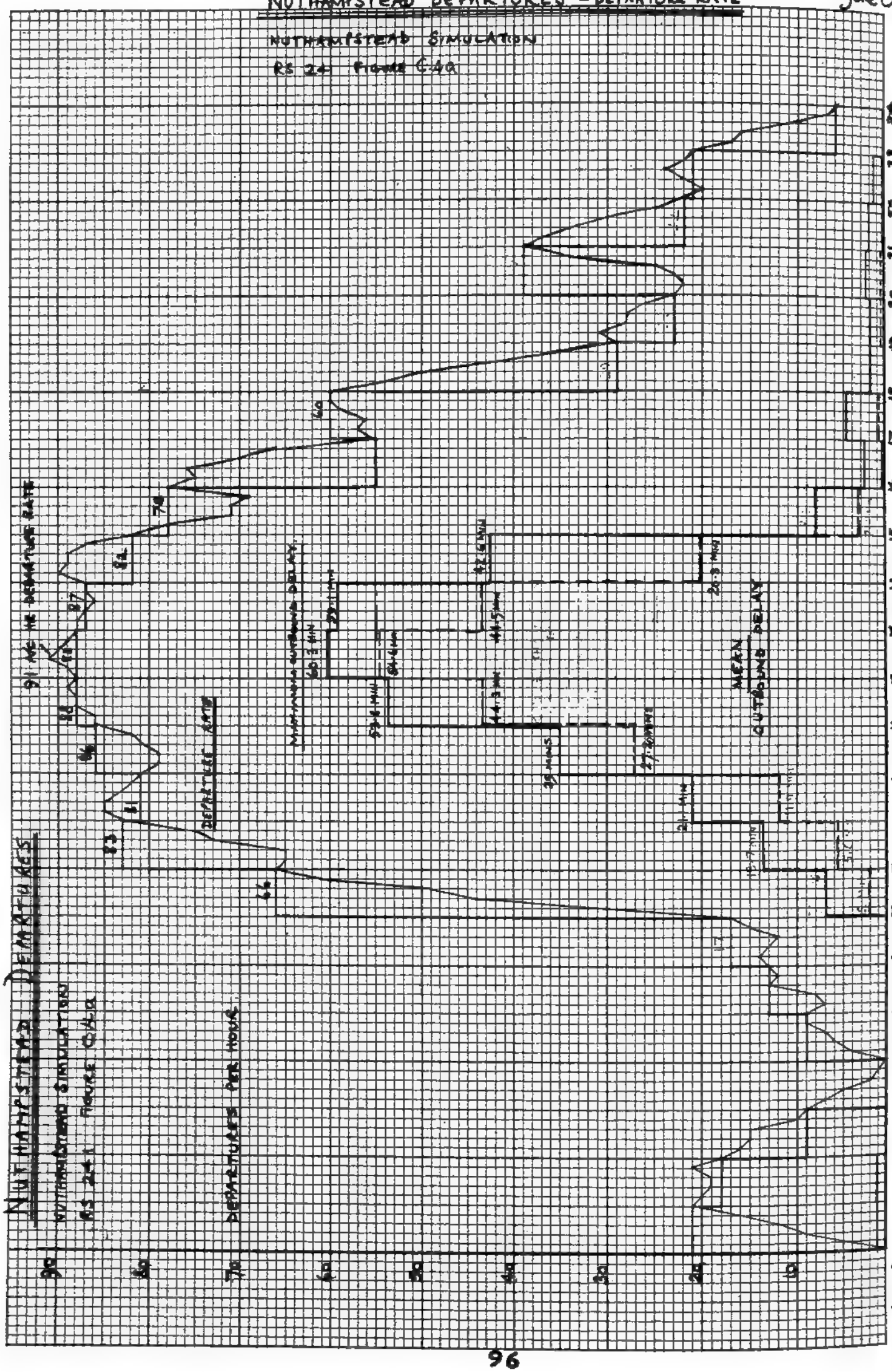
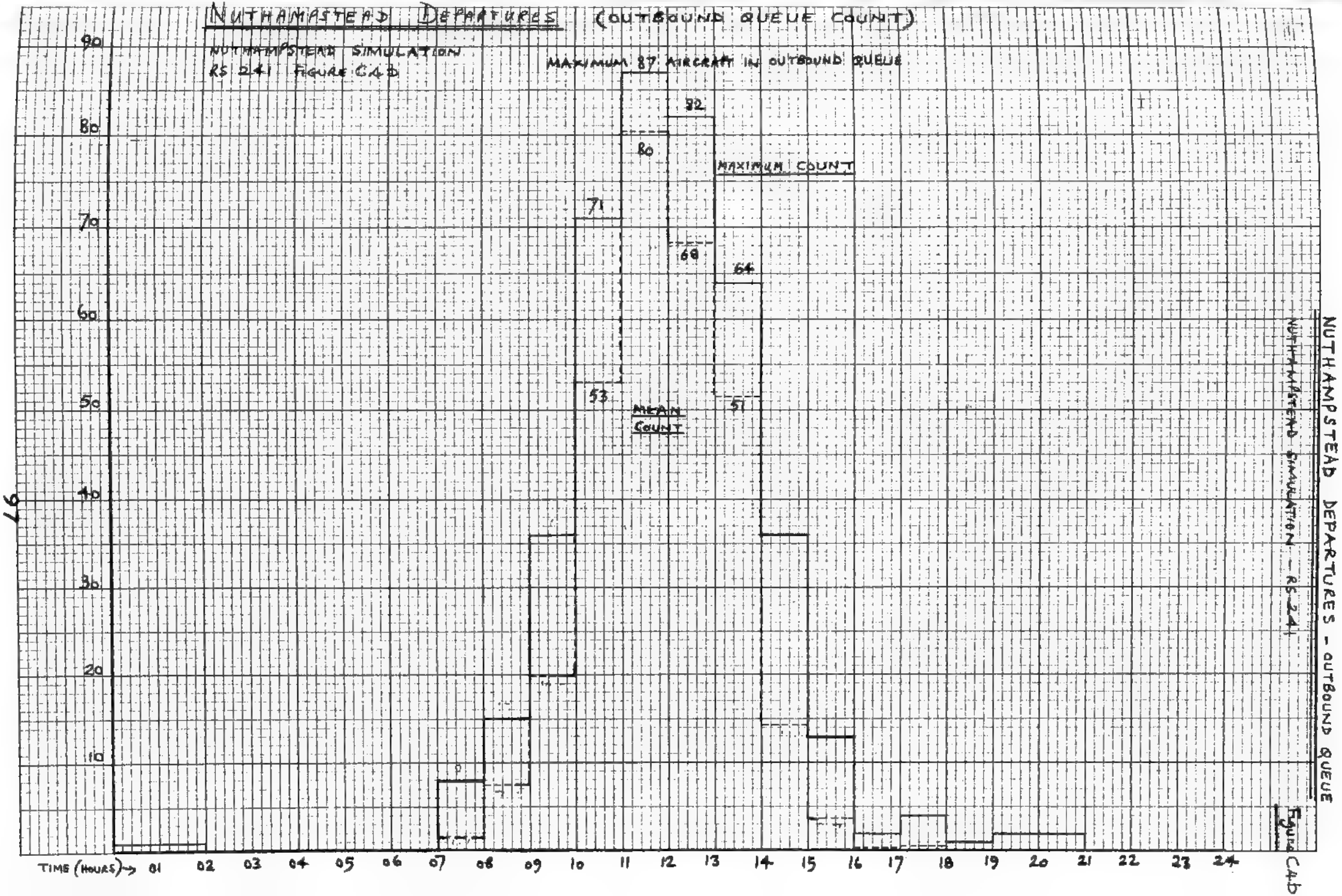


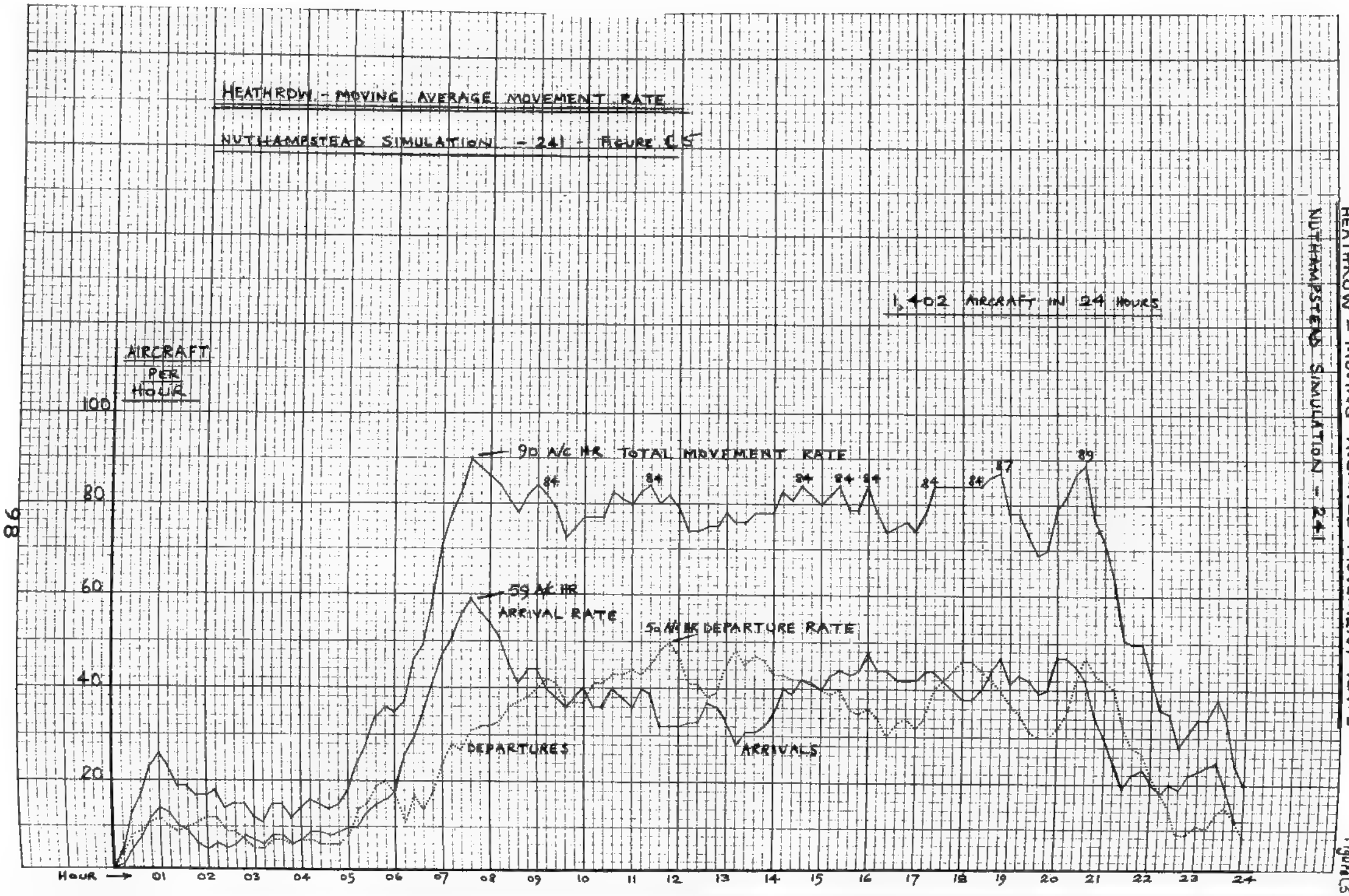
Figure C4a

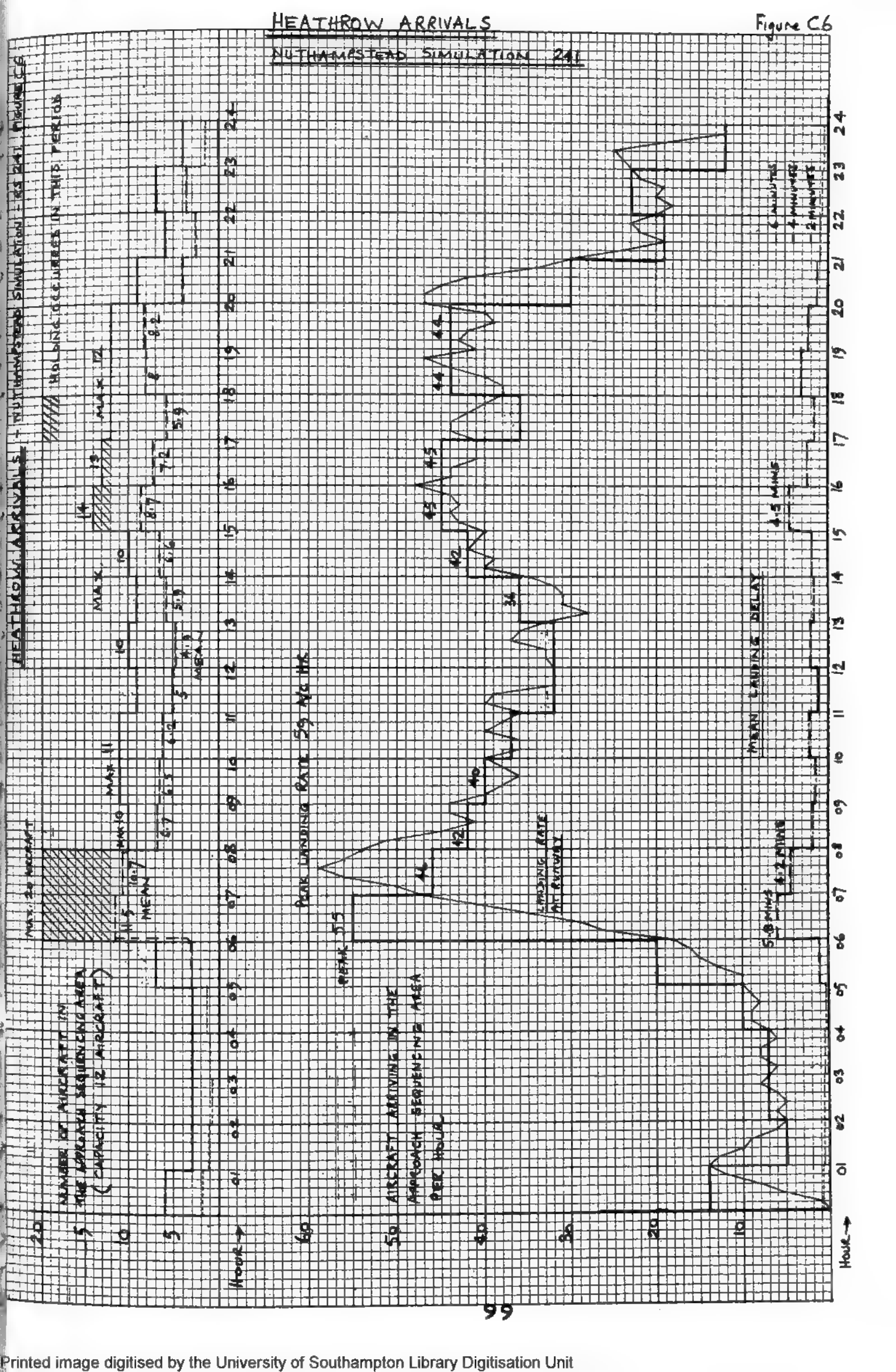
Printed image digitised by the University of Southampton Library Digitisation Unit



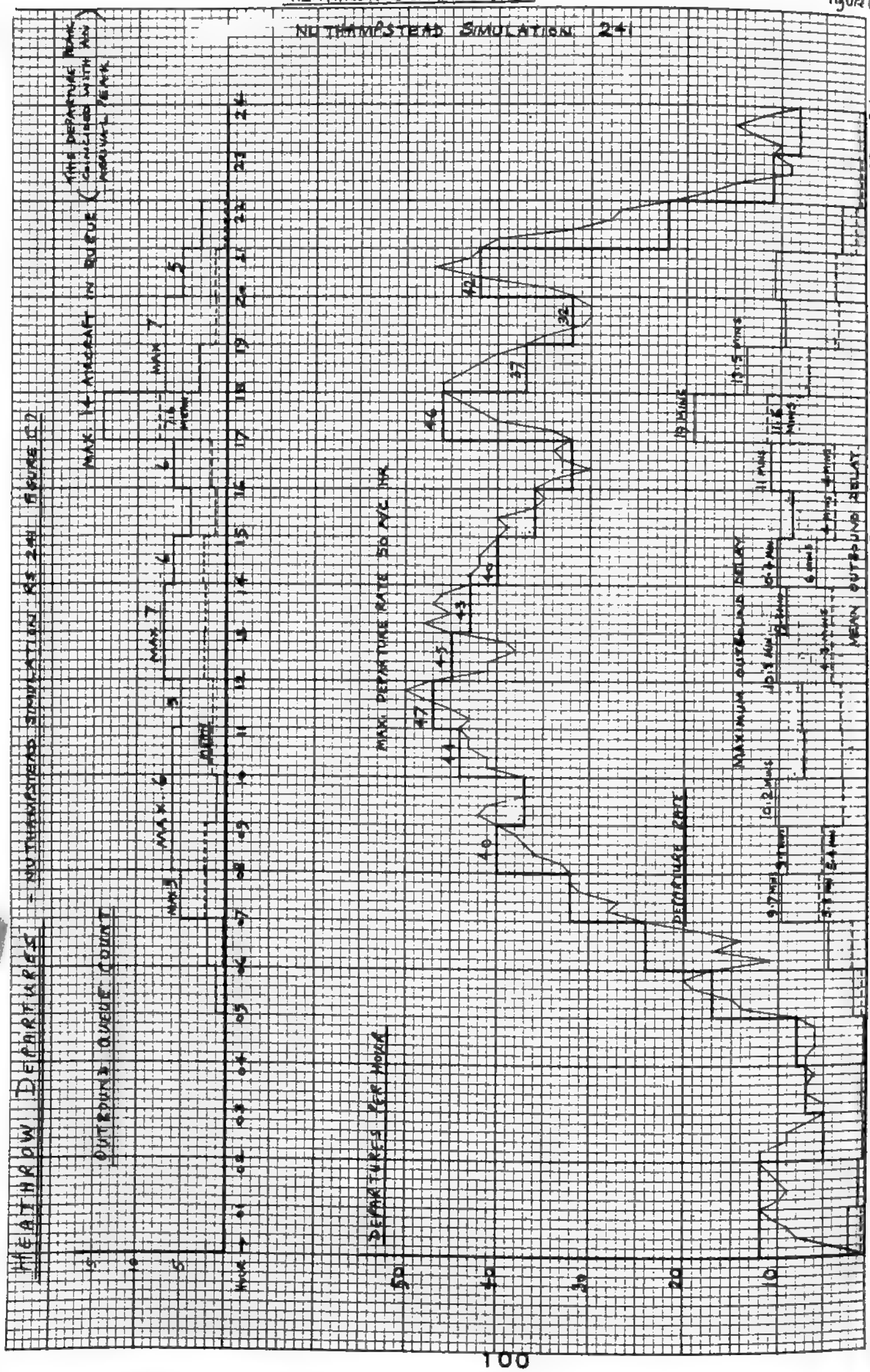
Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit





Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

GATWICK – MOVING AVERAGE MOVEMENT RATE

NUTHAMPSTEAD SIMULATION RS 241 FIGURE C8

914 AIRCRAFT IN 24 HOURS

AIRCRAFT PER HOUR

60

40

20

34 A/C HR TOTAL MOVEMENT RATE

29 A/C HR ARRIVAL RATE

31 A/C HR DEPARTURE RATE

ARRIVAL RATE

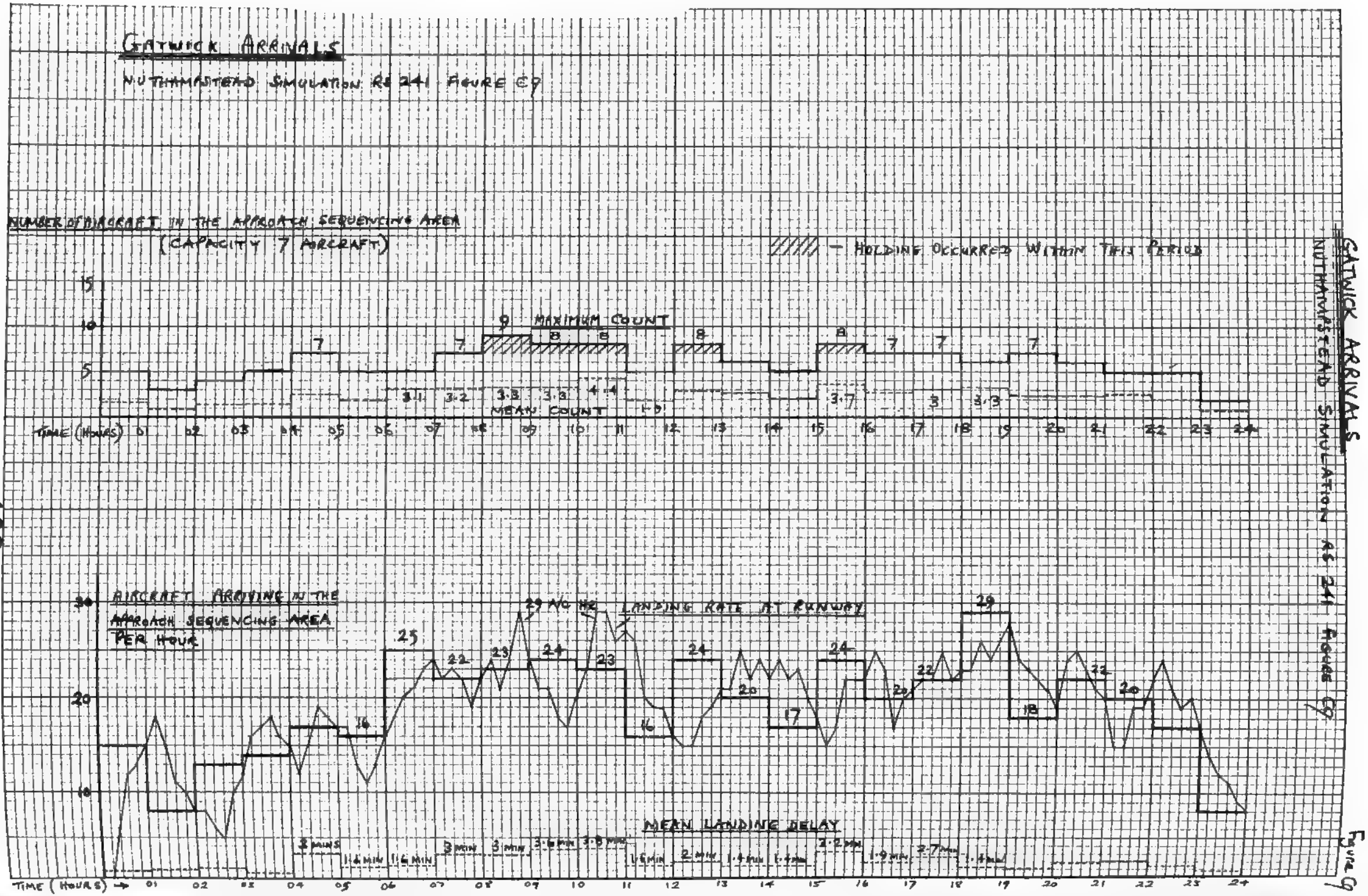
DEPARTURE RATE

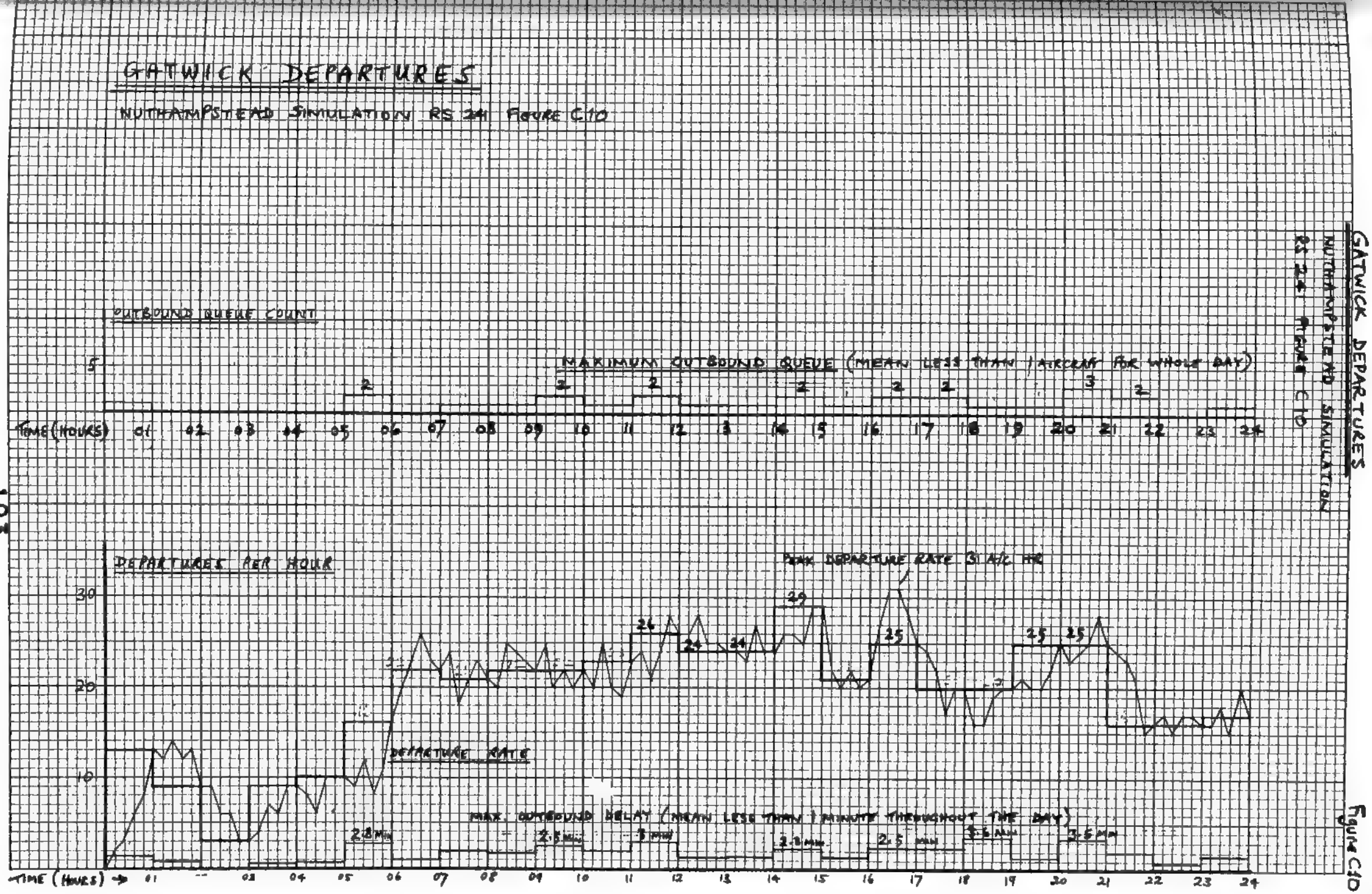
TIME (HOURS) → 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

GATWICK – MOVING AVERAGE MOVEMENT RATE
NUTHAMPSTEAD SIMULATION RS 241 FIGURE C8

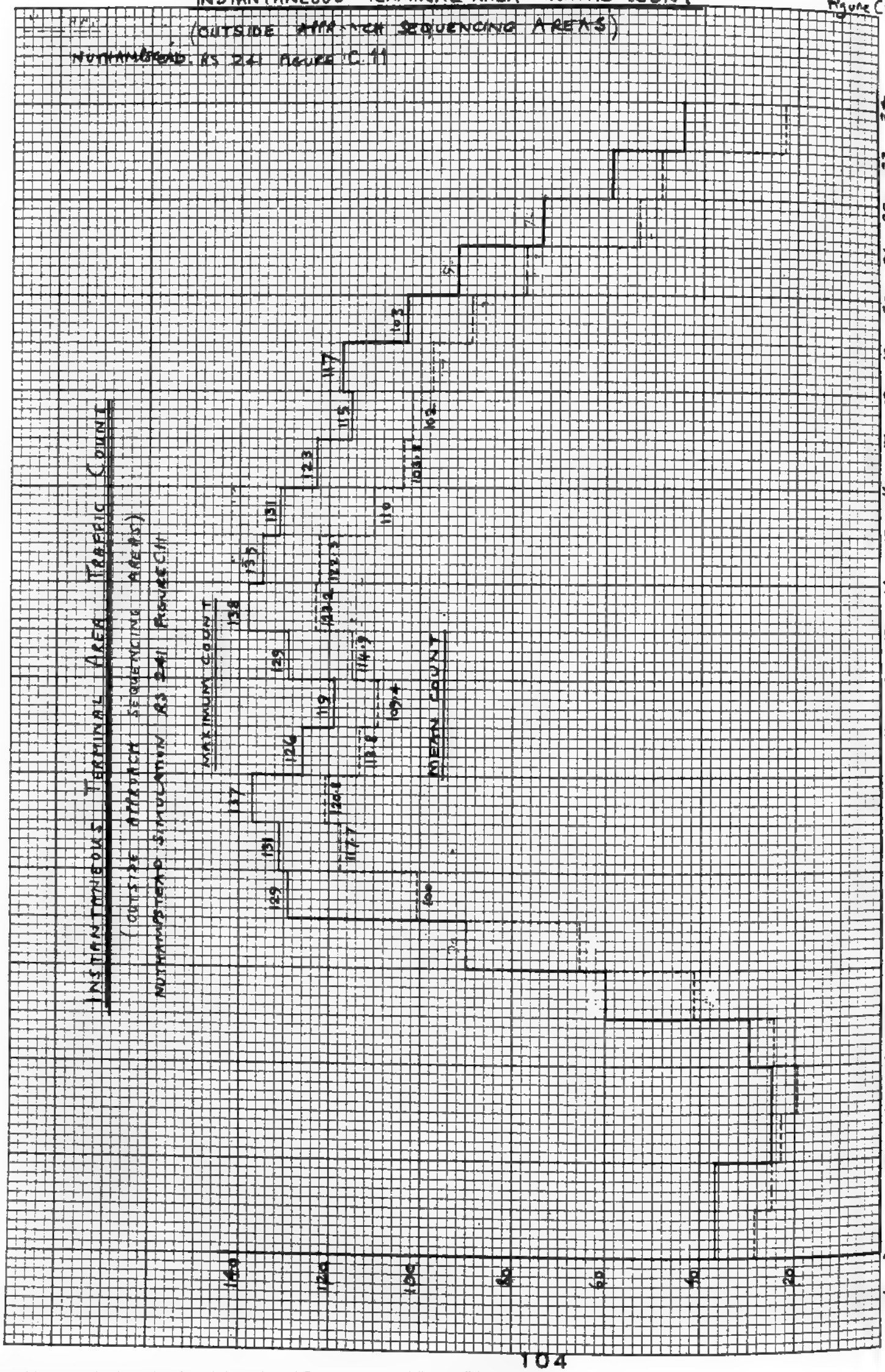
Figure C8

Printed image digitised by the University of Southampton Library Digitisation Unit





Printed image digitised by the University of Southampton Library Digitisation Unit

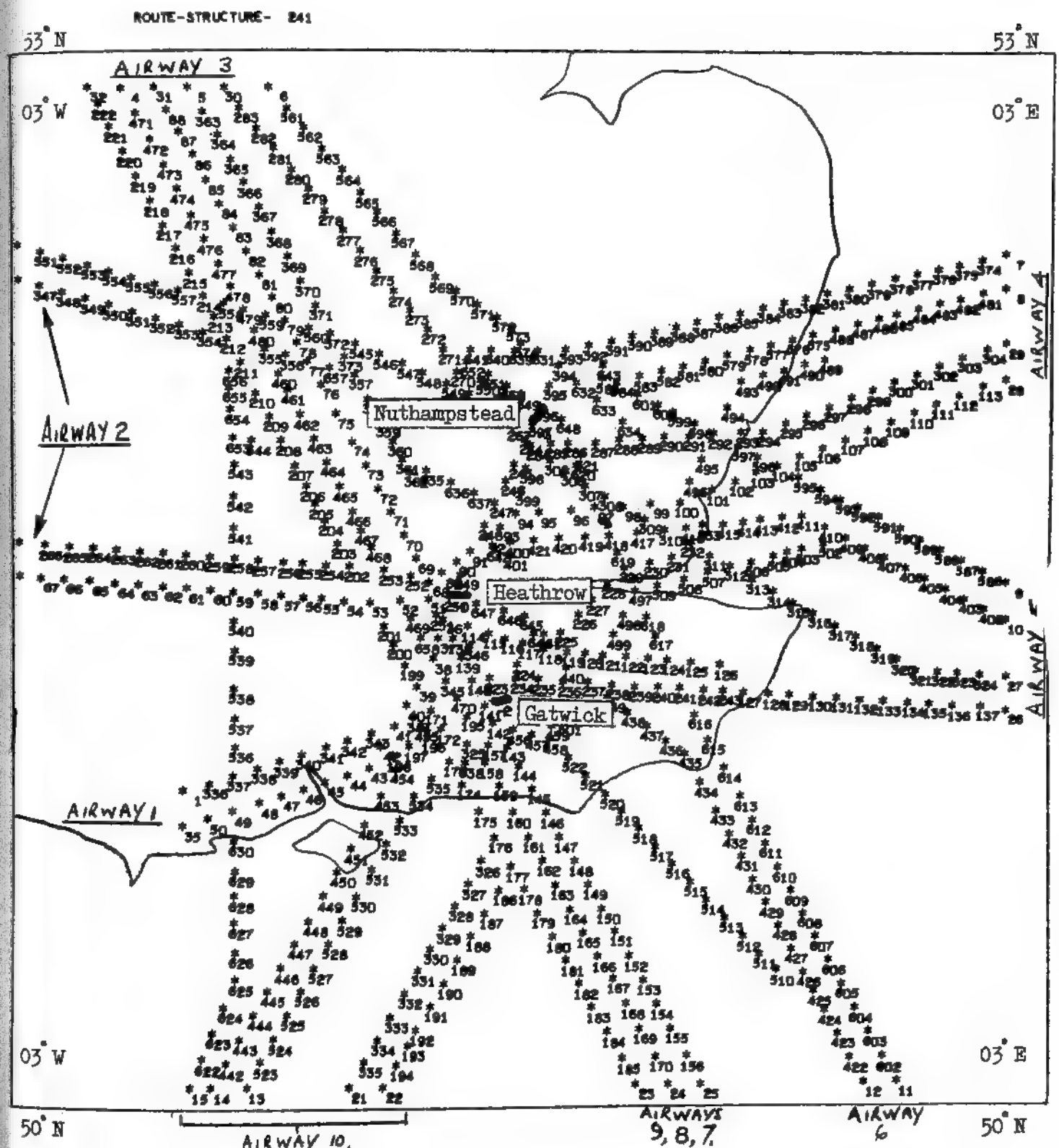


Printed image digitised by the University of Southampton Library Digitisation Unit

Figure C.12

The Nuthampstead Simulated Route Structure

Route points defining Simulated Route Structure



Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON SIMULATION

CONTENTS

SUMMARY OF CONDITIONS

TABLE D1 - D2	GENERAL ANALYSIS - FLYING TIMES AND ROUTE MILEAGE
FIGURE C1	ALL AIRPORTS TOTAL MOVEMENTS IN EACH HOUR
FIGURE C2	CUBLINGTON MOVING AVERAGE MOVEMENT RATE
FIGURE C3a - C3b	CUBLINGTON ARRIVALS AND APPROACH SEQUENCING AREA (ASA COUNT)
FIGURE C4a - C4b	CUBLINGTON DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE C5	HEATHROW MOVING AVERAGE MOVEMENT RATE
FIGURE C6	HEATHROW ARRIVALS AND ASA COUNT
FIGURE C7	HEATHROW DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE C8	GATWICK MOVING AVERAGE MOVEMENT RATE
FIGURE C9	GATWICK ARRIVALS AND ASA COUNT
FIGURE C10	GATWICK DEPARTURES AND OUNTBOUND QUEUE COUNT
FIGURE C11	INSTANTANEOUS TERMINAL AREA TRAFFIC COUNT
FIGURE C12	THE CUBLINGTON SIMULATED ROUTE STRUCTURE

Printed image digitised by the University of Southampton Library Digitisation Unit

TMA SIMULATION - CUBLINGTON SITE

ROUTE STRUCTURE 341

CONDITIONS

1. POINT IN TIME: C 2000
2. WESTERLY AIRPORT OPERATIONS
3. ROUTE STRUCTURE DESIGNED FOR 4 RUNWAY AIRPORT AT CUBLINGTON
4. HOLDING AREAS INTERNAL TO TMA
5. CRITERIA FOR PROXIMITY DETECTION:-

   a) 1.5 minutes - longitudinal

   b) 1,000' between level aircraft

   c) 4,000' where one aircraft level

   d) 8,000' where neither aircraft level

   } vertical

6. ONE ITERATION OF TRAFFIC SAMPLE
7. TOTAL NUMBER OF AIRCRAFT PROCESSED: 5,443 (INCLUDING OVER-FLIGHTS)
8. SIMULATION PERIOD: 24 HOURS - 0001 to 2400 hours
9. AIRFIELDS SIMULATED:

HEATHROW	1,402	aircraft
GATWICK	914	aircraft
CUBLINGTON	2,114	aircraft
All Airports Total	4,430	aircraft

10. OMNI-DIRECTIONAL ROUTE STRUCTURE I.E. ALL AIRPORTS SERVE, AND ARE SERVED BY, ALL AIRWAYS

Printed image digitised by the University of Southampton Library Digitisation Unit

GENERAL ANALYSIS - CUBLINGTON (RS 341)

TABLE No D1- AIRCRAFT FLIGHT TIME IN TMA

	NUMBER PROCESSED	AVERAGE TIME NEAREST MINUTE	TOTAL TIME HOURS	MINS
ALL AIRCRAFT	5,443	24	2,134	00
TYPE 1 - SST	283	18	86	50
TYPE 2 - LOW PERFORMANCE	338	38	215	06
TYPE 3 - SUBSONIC JET-DOMESTIC	958	21	336	39
TYPE 4 - SUBSONIC JET-EUROPEAN	3,502	24	1,370	18
TYPE 5 - SUBSONIC JET-AMERICAN	362	21	125	56

TABLE No D2- AIRCRAFT ROUTE MILEAGE IN TMA

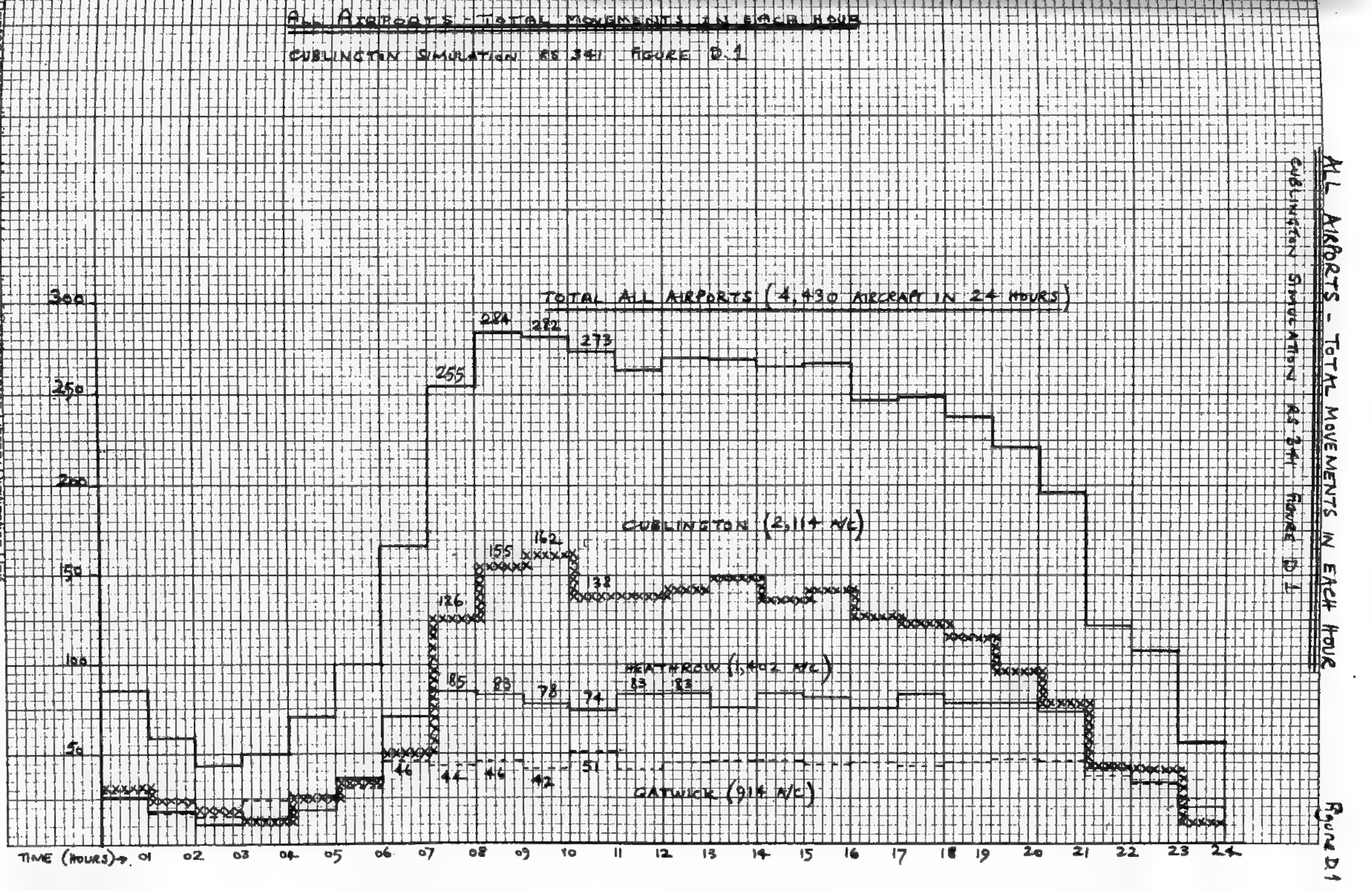
	NUMBER PROCESSED	AVERAGE MILEAGE (NEAREST N. MILE)	TOTAL MILEAGE
ALL AIRCRAFT	5,443	148	804,245
TYPE 1 - SST	283	148	41,849
TYPE 2 - LOW PERFORMANCE	338	145	49,040
TYPE 3 - SUBSONIC JET-DOMESTIC	958	135	128,935
TYPE 4 - SUBSONIC JET-EUROPEAN	3,502	151	529,682
TYPE 5 - SUBSONIC JET-AMERICAN	362	151	54,740

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

ALL AIRPORTS - TOTAL MOVEMENTS IN EACH HOUR

CUBLINGTON SIMULATION RS 341 FIGURE D.1

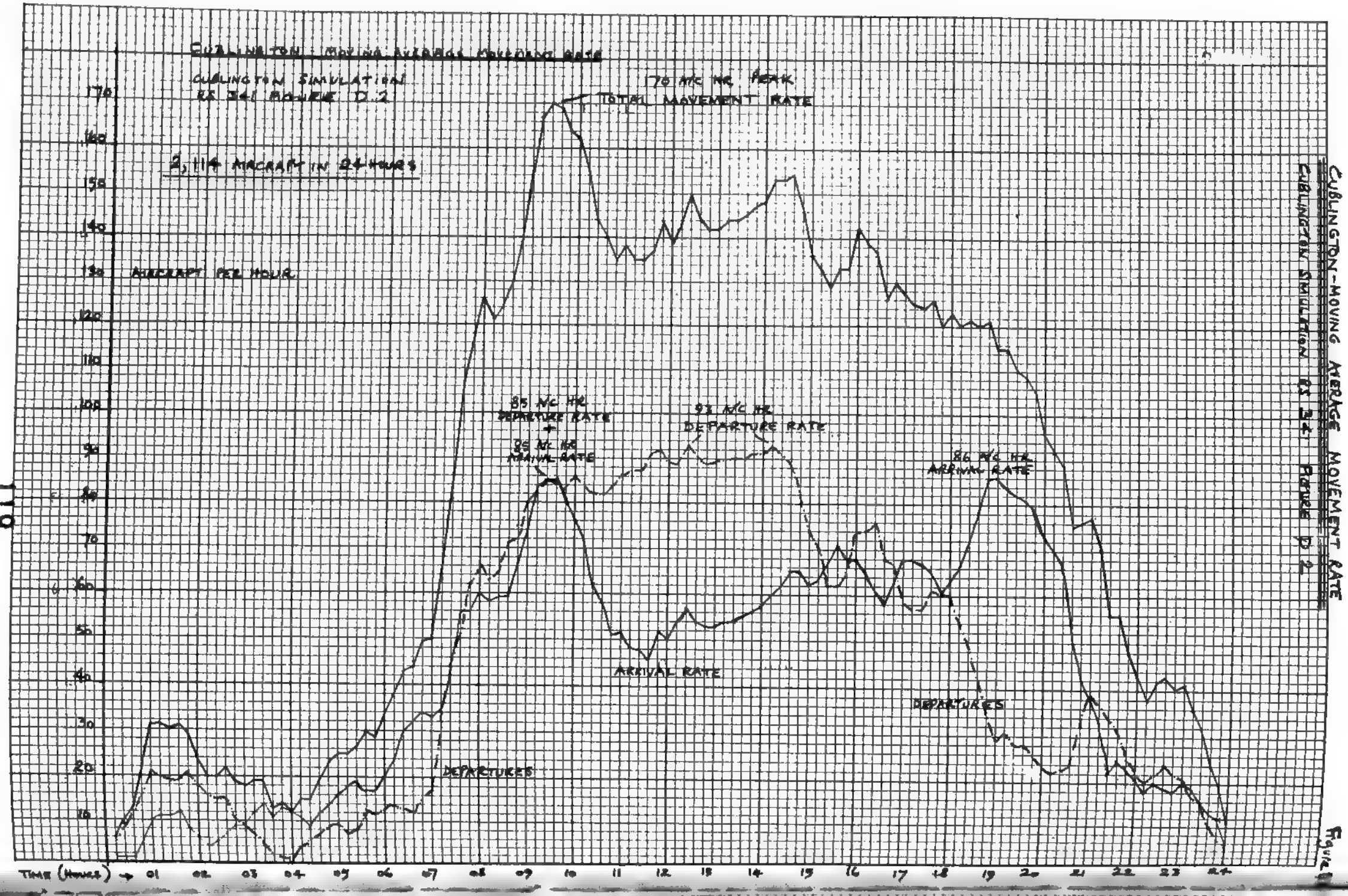


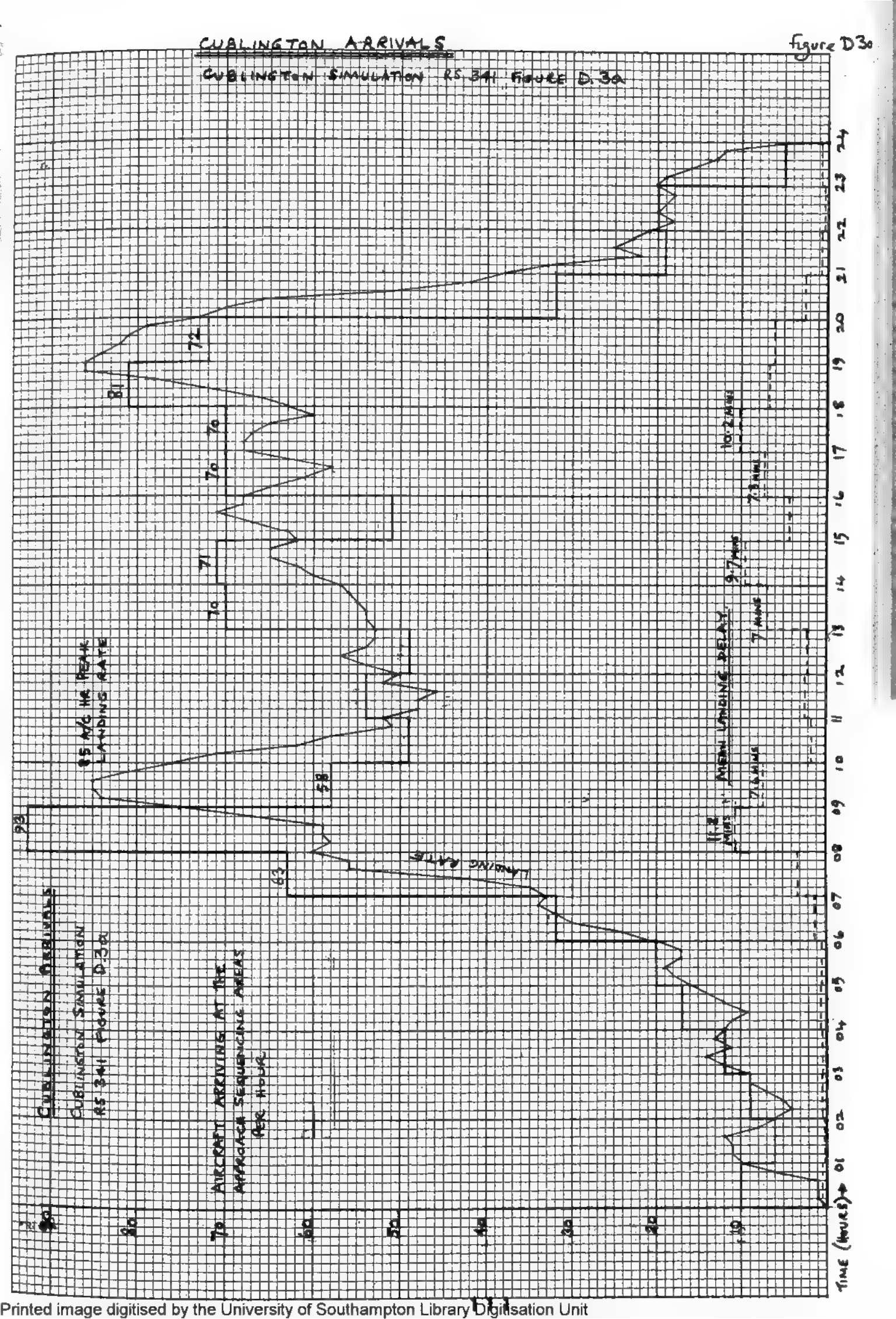
ALL AIRPORTS - TOTAL MOVEMENTS IN EACH HOUR

CUBLINGTON SIMULATION RS 341 FIGURE D.1

FIGURE D.1

Printed image digitised by the University of Southampton Library Digitisation Unit





Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

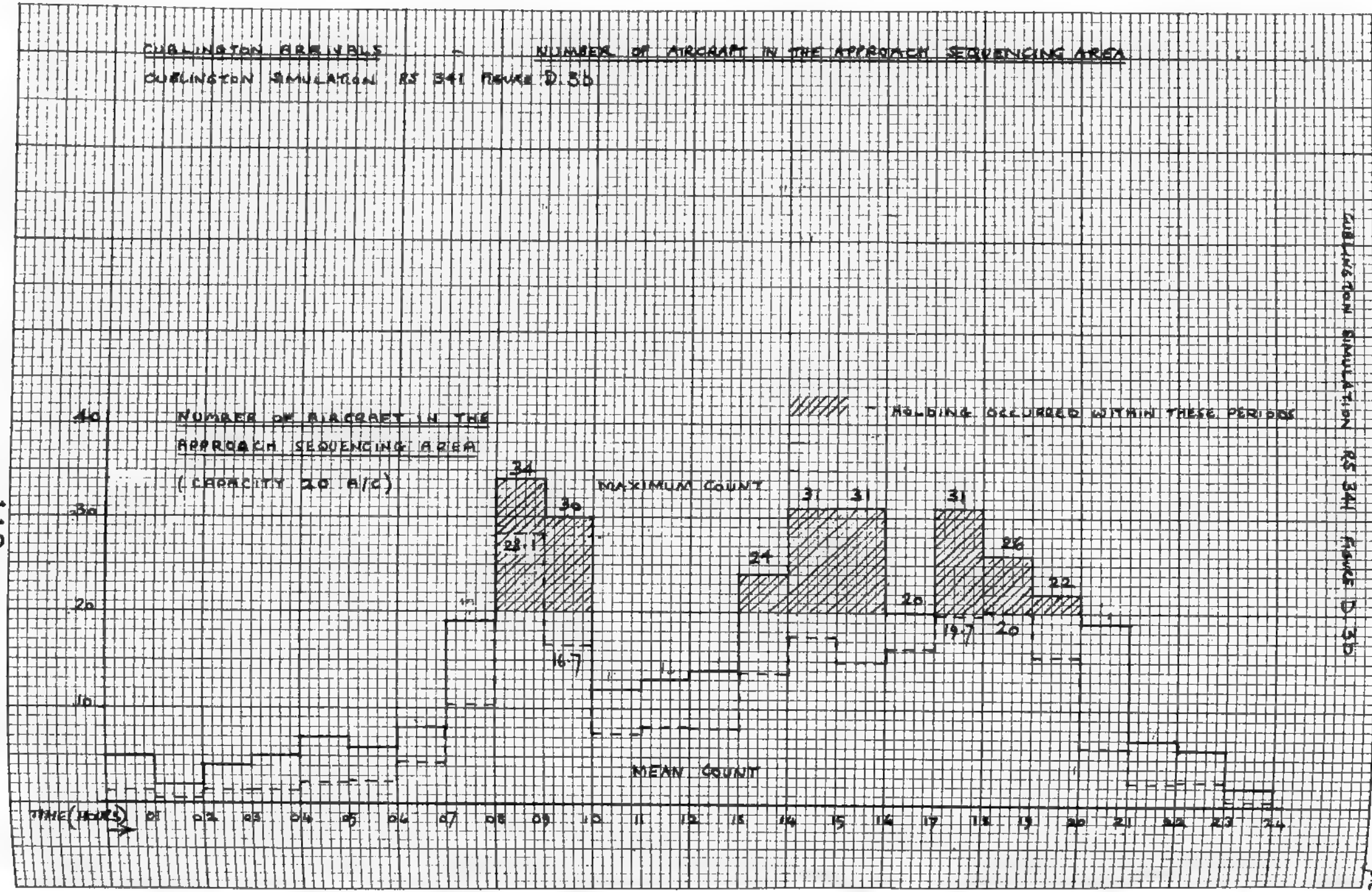
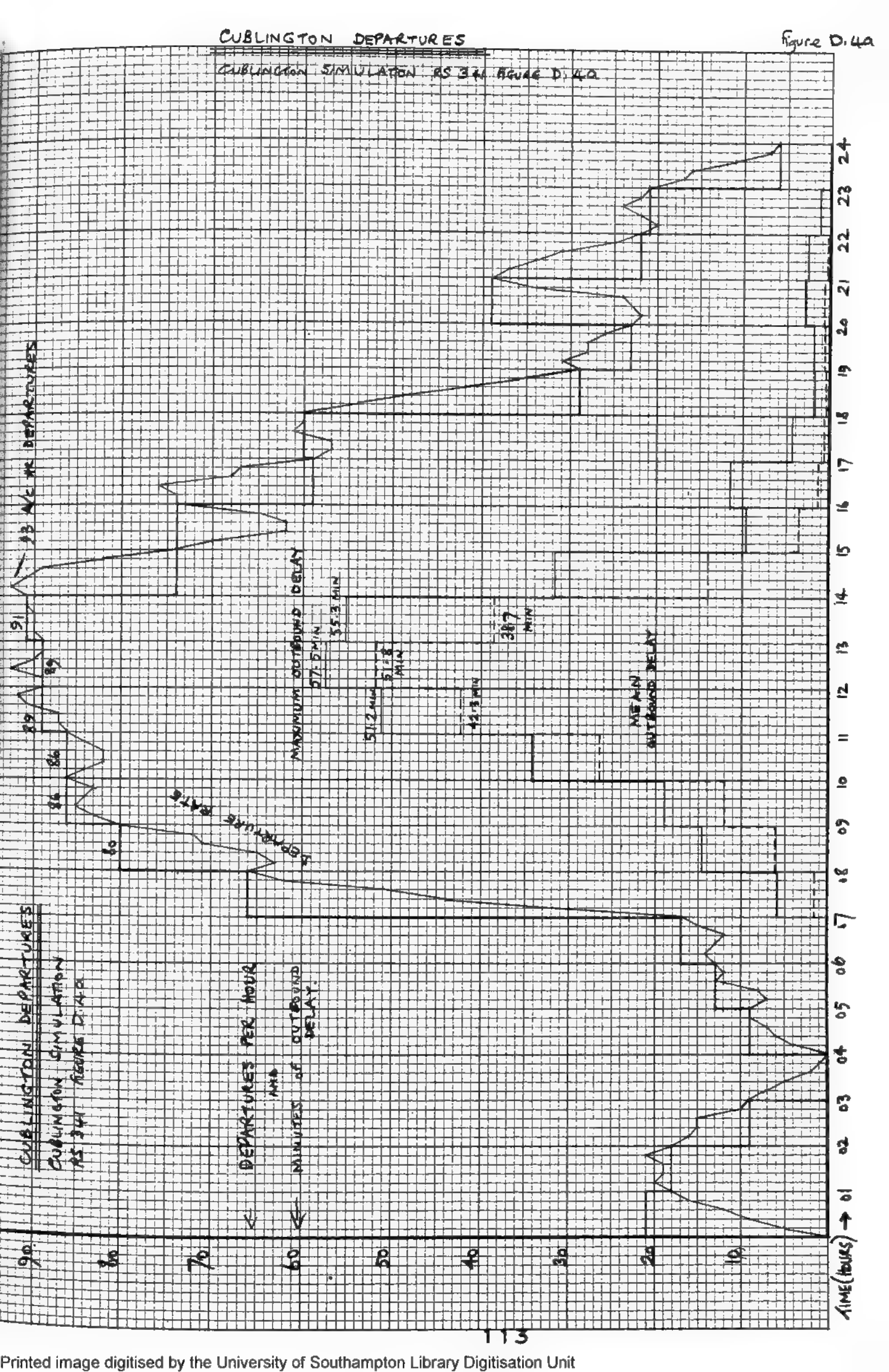
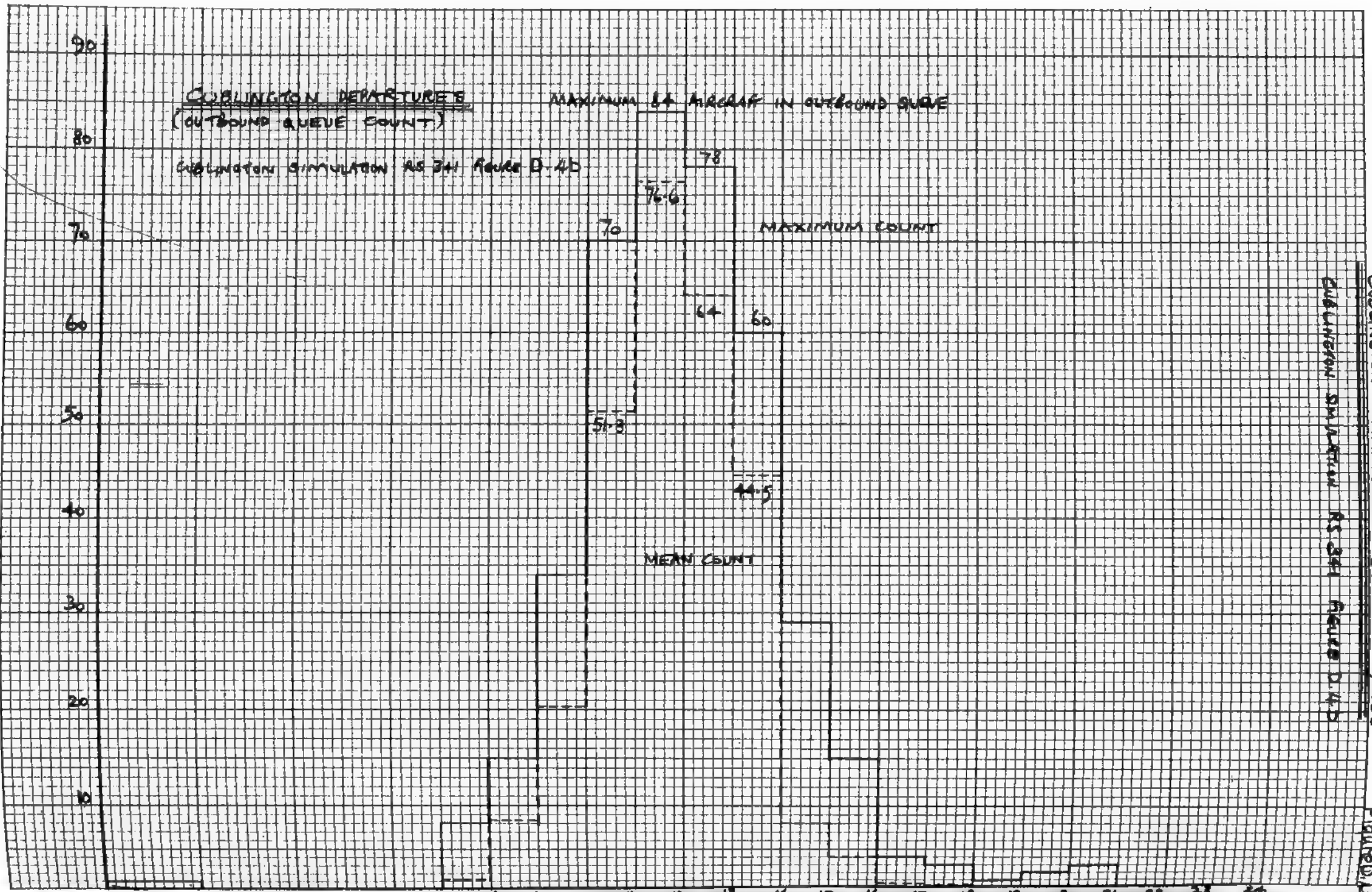


Figure D.4a

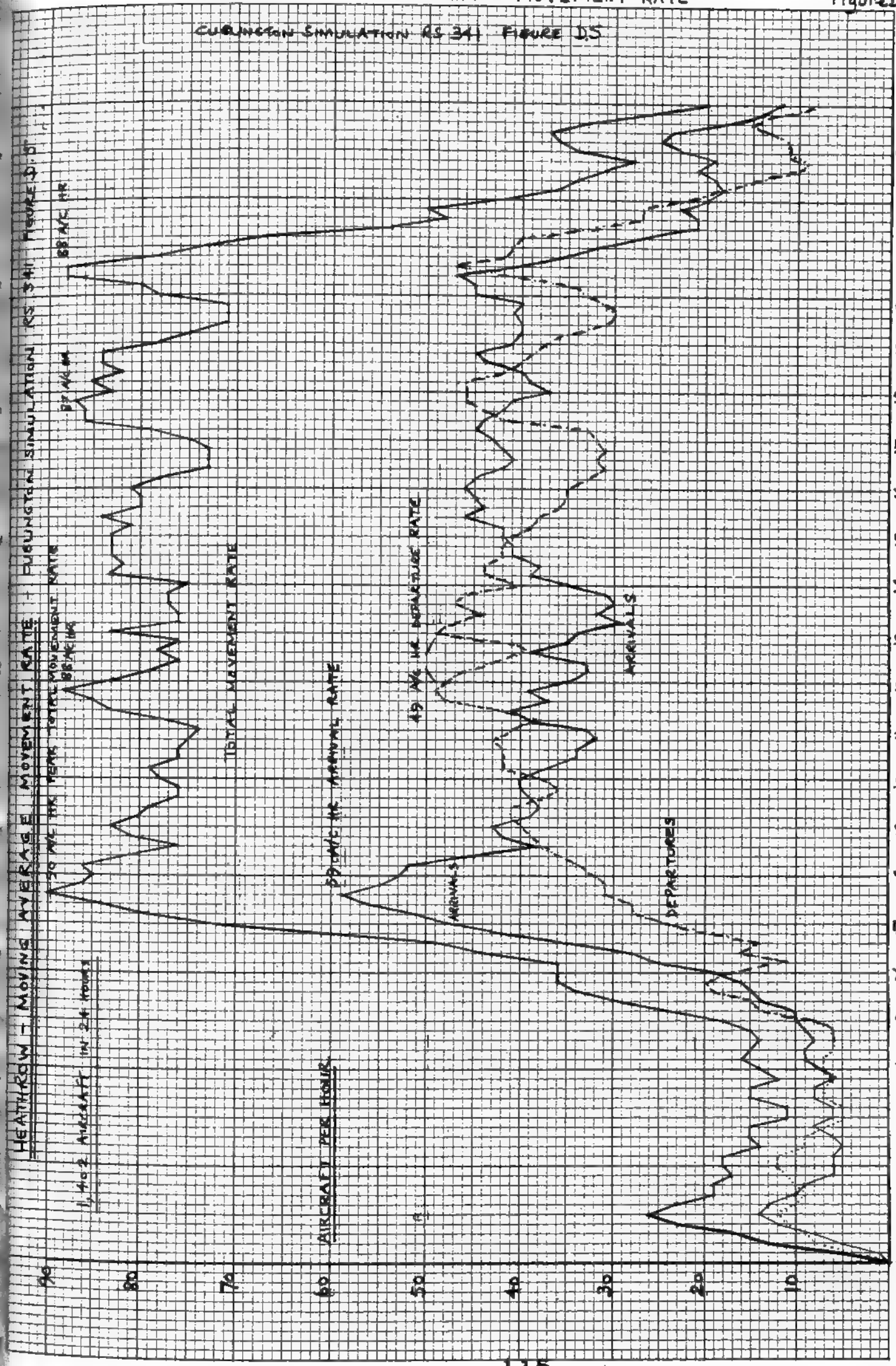


Printed image digitised by the University of Southampton Library Digitisation Unit



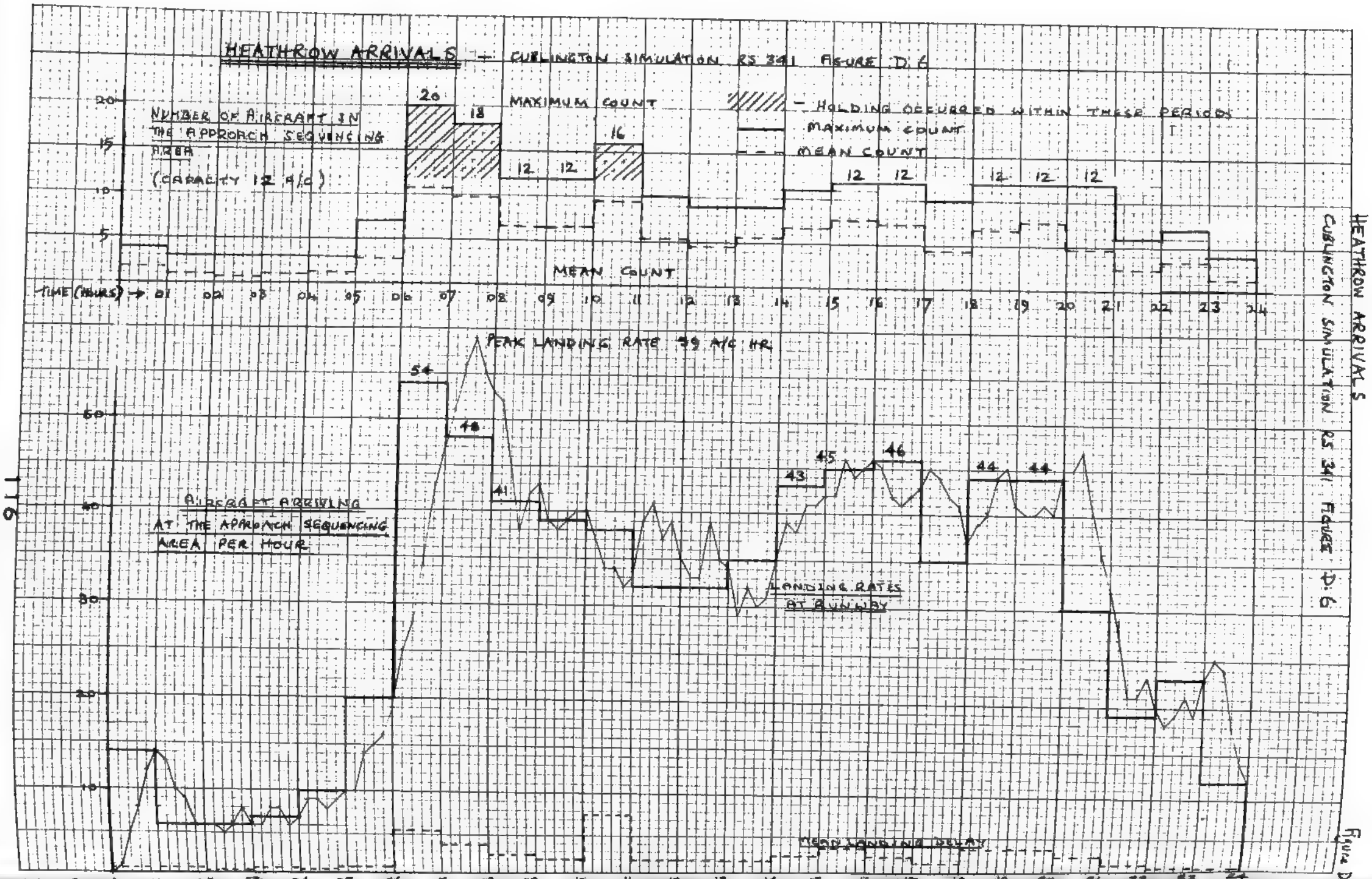
Printed image digitised by the University of Southampton Library Digitisation Unit

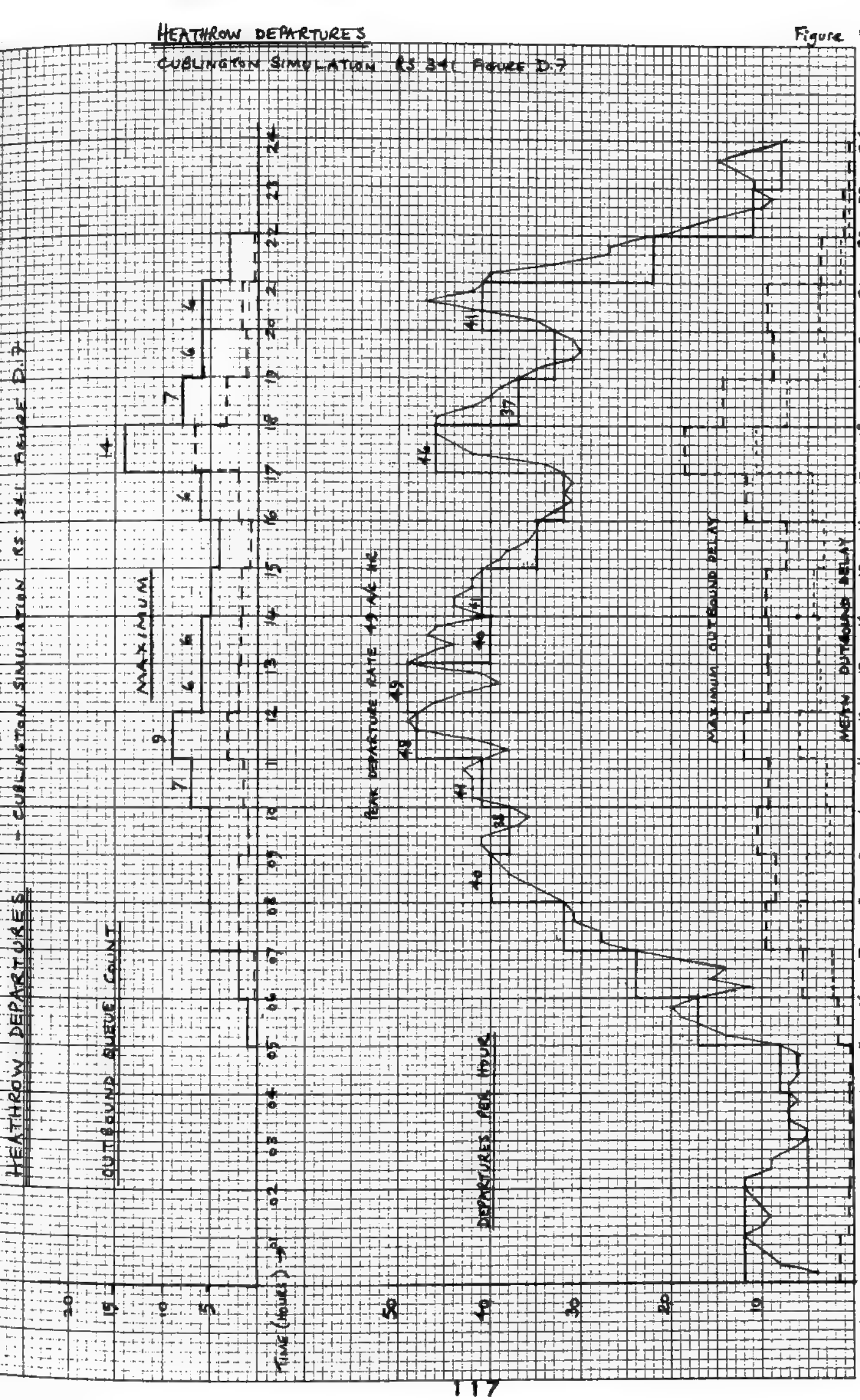
HEATHROW - MOVING AVERAGE MOVEMENT RATE



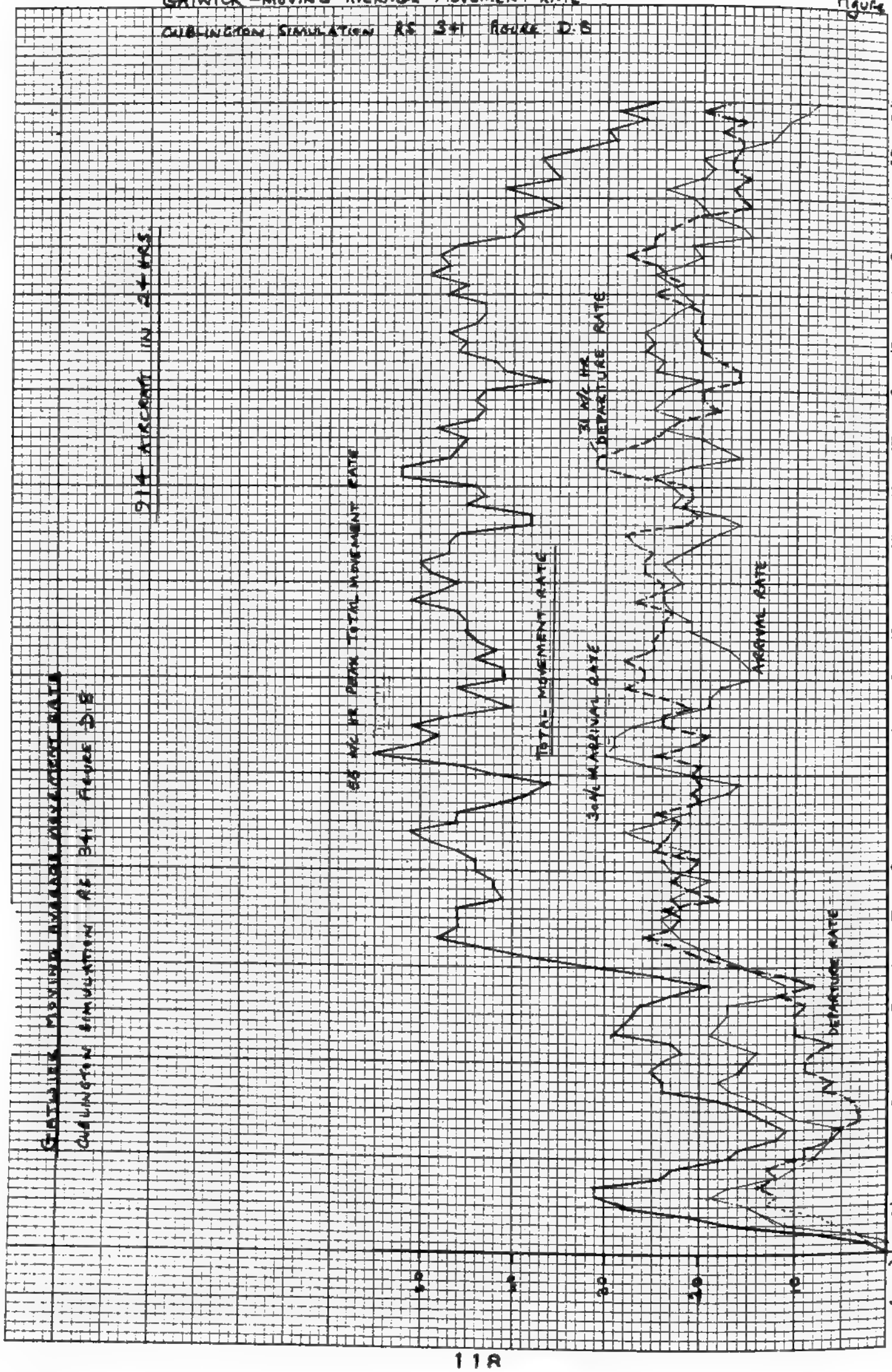
Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



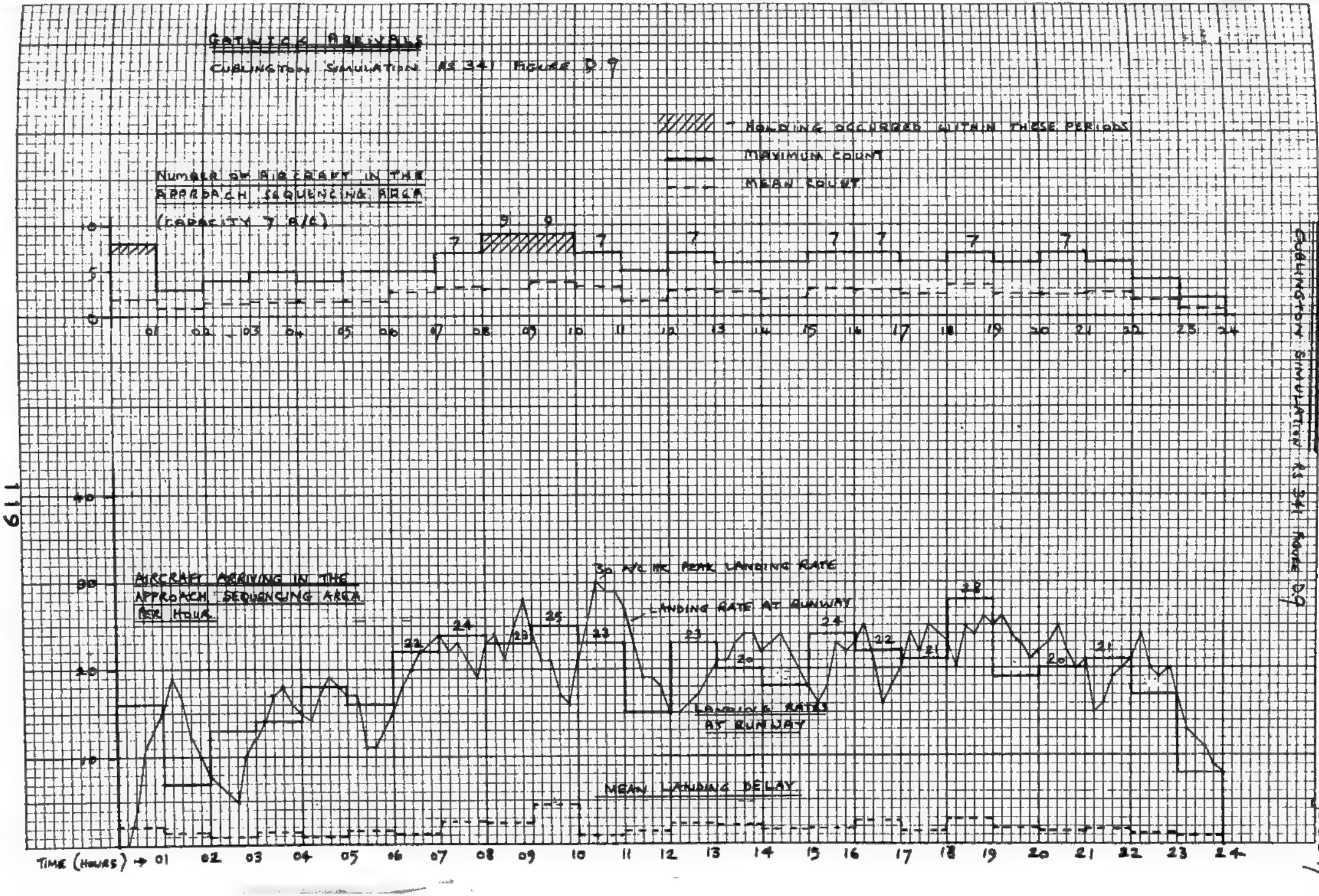


Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

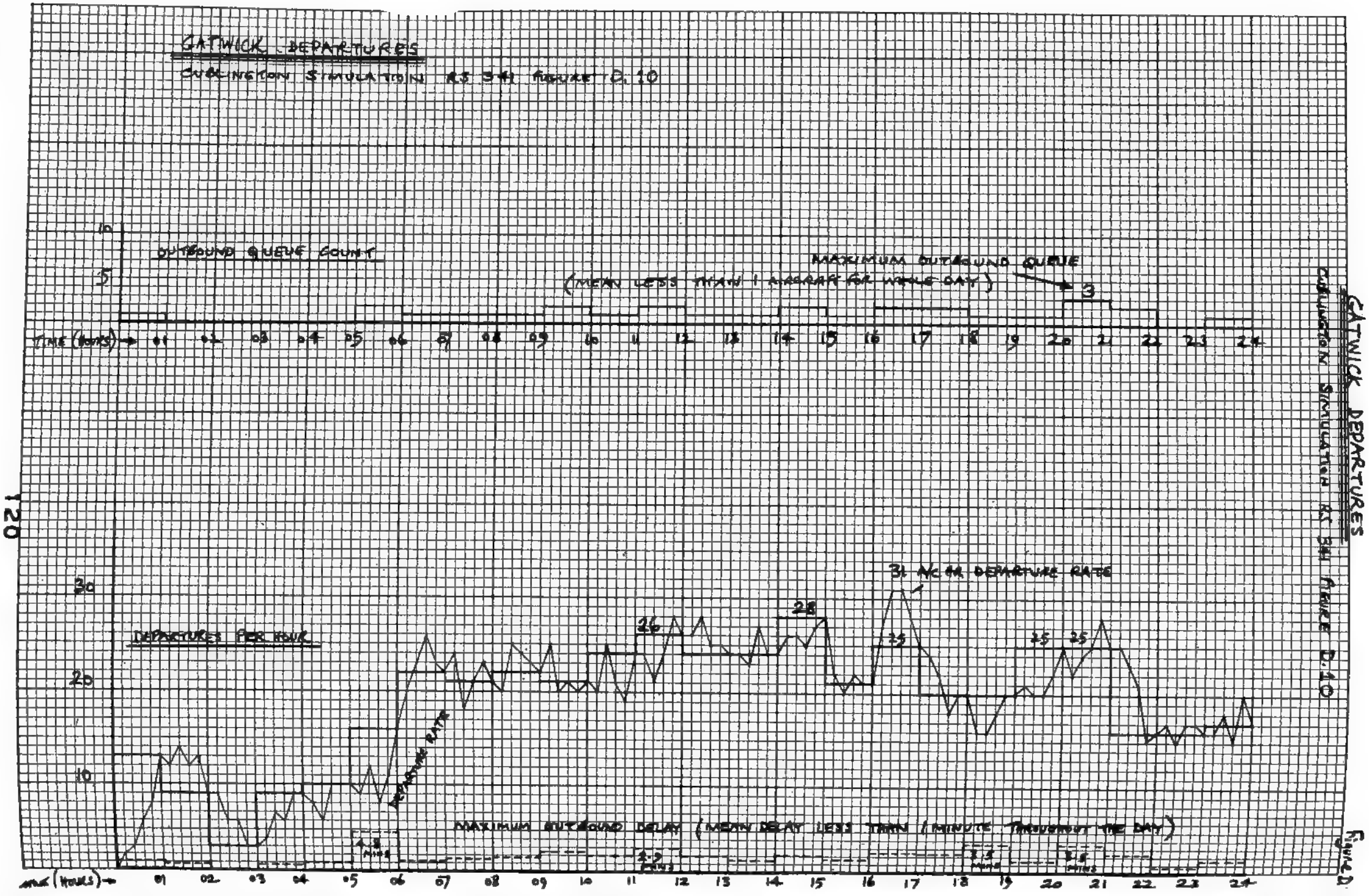
Printed image digitised by the University of Southampton Library Digitisation Unit

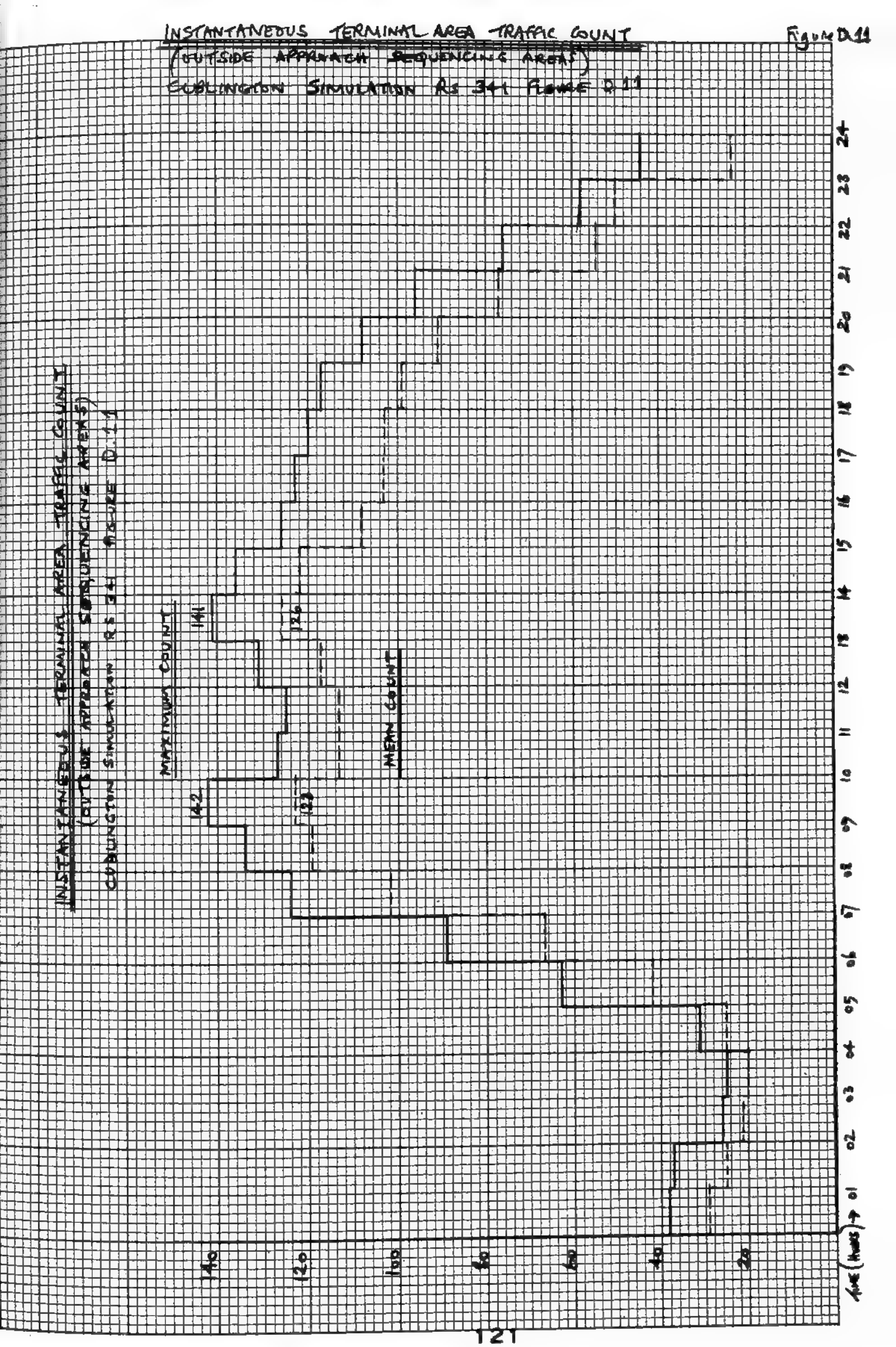


GATWICK ARRIVALS
CUBLINGTON SIMULATION AS 341 FIGURE D.9

Figure D.9

Printed image digitised by the University of Southampton Library Digitisation Unit

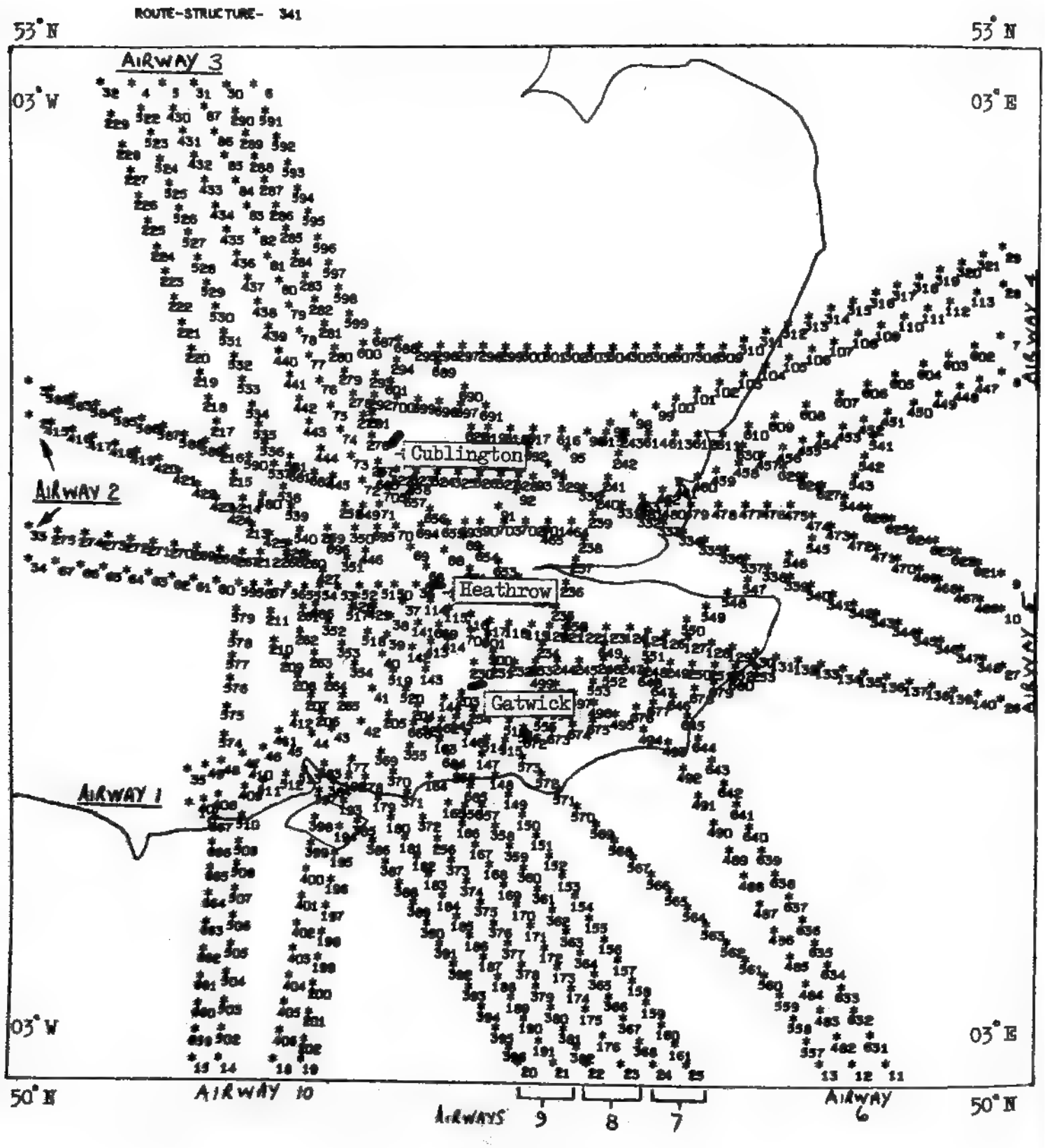




Printed image digitised by the University of Southampton Library Digitisation Unit

The Cublington Simulated Route Structure

Route points defining Simulated Route Structure



Printed image digitised by the University of Southampton Library Digitisation Unit

BEDFORD/THURLEIGH SIMULATION

CONTENTS

SUMMARY OF CONDITIONS

TABLE E1 - E2	GENERAL ANALYSIS - FLYING TIMES AND ROUTE MILEAGE
FIGURE E1	ALL AIRPORTS TOTAL MOVEMENTS IN EACH HOUR
FIGURE E2	THURLEIGH MOVING AVERAGE MOVEMENT RATE
FIGURE E3a - E3b	THURLEIGH ARRIVALS AND APPROACH SEQUENCING AREA (ASA COUNT)
FIGURE E4a - E4b	THURLEIGH DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE E5	HEATHROW MOVING AVERAGE MOVEMENT RATE
FIGURE E6	HEATHROW ARRIVALS AND ASA COUNT
FIGURE E7	HEATHROW DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE E8	GATWICK MOVING AVERAGE MOVEMENT RATE
FIGURE E9	GATWICK ARRIVALS AND ASA COUNT
FIGURE E10	GATWICK DEPARTURES AND OUTBOUND QUEUE COUNT
FIGURE E11	INSTANTANEOUS TERMINAL AREA TRAFFIC COUNT
FIGURE E12	THE BEDFORD/THURLEIGH SIMULATED ROUTE STRUCTURE

Printed image digitised by the University of Southampton Library Digitisation Unit

TMA SIMULATION - BEDFORD/THURLEIGH SITE

ROUTE STRUCTURE 441

CONDITIONS

1. POINT IN TIME : C 2000

2. WESTERLY AIRPORT OPERATIONS

3. ROUTE STRUCTURE DESIGNED FOR 4 RUNWAY AIRPORT AT BEDFORD/THURLEIGH

4. HOLDING AREAS INTERNAL TO TMA

5. CRITERIA FOR PROXIMITY DETECTION :-

a)	1.5 minutes - longitudinal	
b)	1,000' between level aircraft	vertical
c)	4,000' where one aircraft level	vertical
d)	8,000' where neither aircraft level	vertical

6. NUMBER OF ITERATIONS OF TRAFFIC SAMPLE : ONE

7. TOTAL NUMBER OF AIRCRAFT PROCESSED : 5,443 (INCLUDING OVER-FLIGHTS)

8. SIMULATION PERIOD : 24 HOURS - 0001 to 2400 hours

9. AIRFIELDS SIMULATED :

HEATHROW	1,402	aircraft
GATWICK	914	"
BEDFORD/THURLEIGH	2,114	"
All Airports Total	4,430	aircraft

10. OMNI-DIRECTIONAL ROUTE STRUCTURE I.E. ALL AIRPORTS SERVE, AND ARE SERVED BY, ALL AIRWAYS

Printed image digitised by the University of Southampton Library Digitisation Unit

GENERAL ANALYSIS - BEDFORD THURLEIGH (441)

TABLE NO E1: AIRCRAFT FLIGHT TIME IN TMA

	NUMBER PROCESSED	AVERAGE TIME (MINS)	TOTAL TIME HOURS	MINS
ALL AIRCRAFT	5,443	23.7	2,148	05
TYPE 1 - SST	283	19.0	89	25
TYPE 2 - LOW PERFORMANCE	338	38.5	216	37
TYPE 3 - SUBSONIC JET-DOMESTIC	958	20.4	326	16
TYPE 4 - SUBSONIC JET-EUROPEAN	3,502	23.8	1,389	00
TYPE 5 - SUBSONIC JET-AMERICAN	362	21.0	126	45

TABLE NO E2: AIRCRAFT ROUTE MILEAGE IN TMA

	NUMBER PROCESSED	AVERAGE MILEAGE (NEAREST N. MILE)	TOTAL MILEAGE
ALL AIRCRAFT	5,443	149	811,282
TYPE 1 - SST	283	153	43,325
TYPE 2 - LOW PERFORMANCE	338	146	49,429
TYPE 3 - SUBSONIC JET-DOMESTIC	958	130	124,724
TYPE 4 - SUBSONIC JET-EUROPEAN	3,502	154	538,559
TYPE 5 - SUBSONIC JET-AMERICAN	362	153	55,244

Printed image digitised by the University of Southampton Library Digitisation Unit

ALL AIRPORTS - TOTAL MOVEMENTS IN EACH HOUR

THURLEIGH SIMULATION - RS 441 Figure E.1

Figure E

ALL AIRPORTS - TOTAL MOVEMENTS IN EACH HOUR

THURLEIGH SIMULATION RS 441 FIGURE E.1

TOTAL ALL AIRPORTS (4,430 AIRCRAFT IN 24 HOURS)

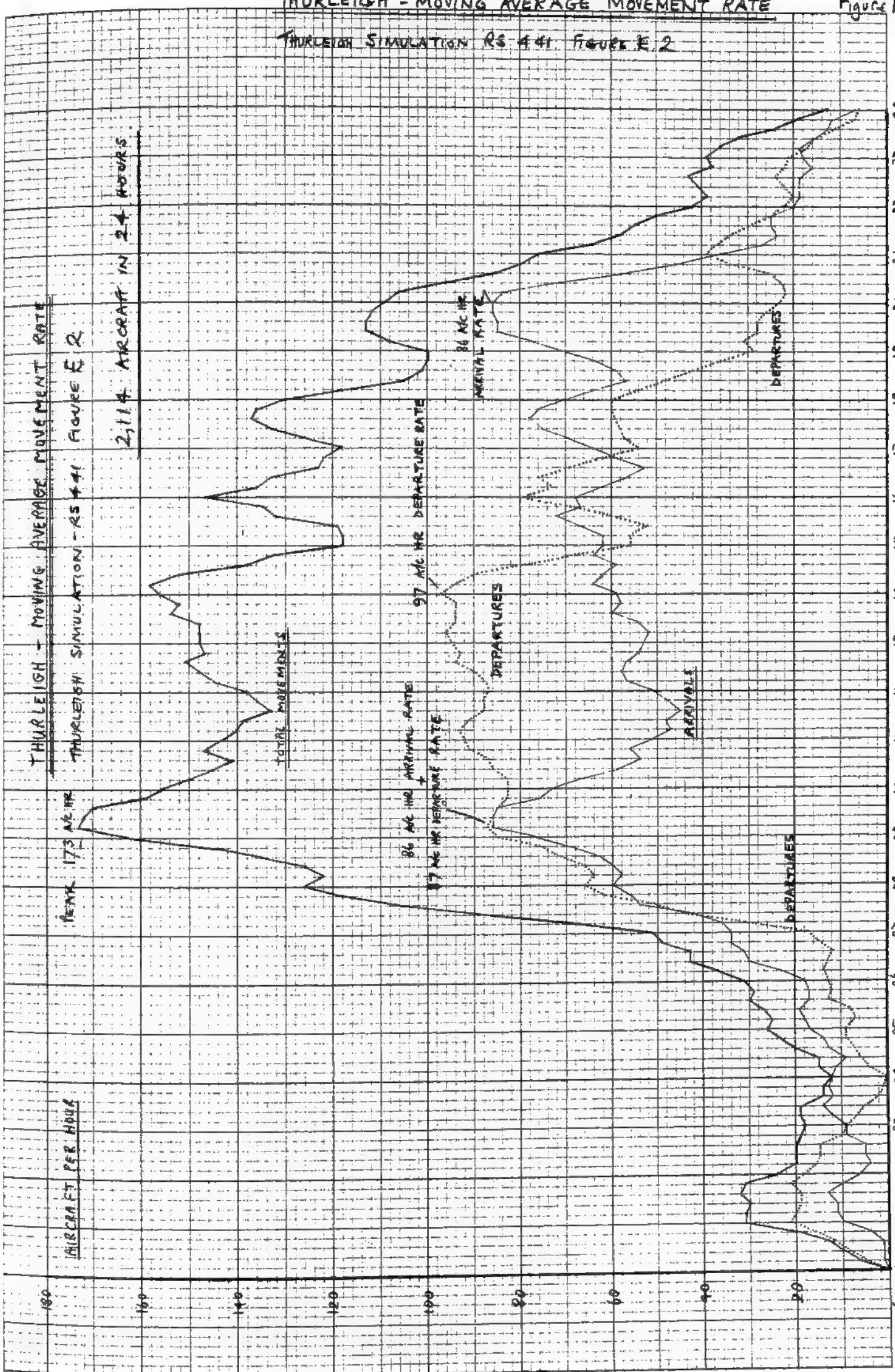
THURLEIGH (2 MC IN 24 HRS)

HEATHROW (1402 MC)

GATWICK (914 MC)

TIME (HOURS)

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

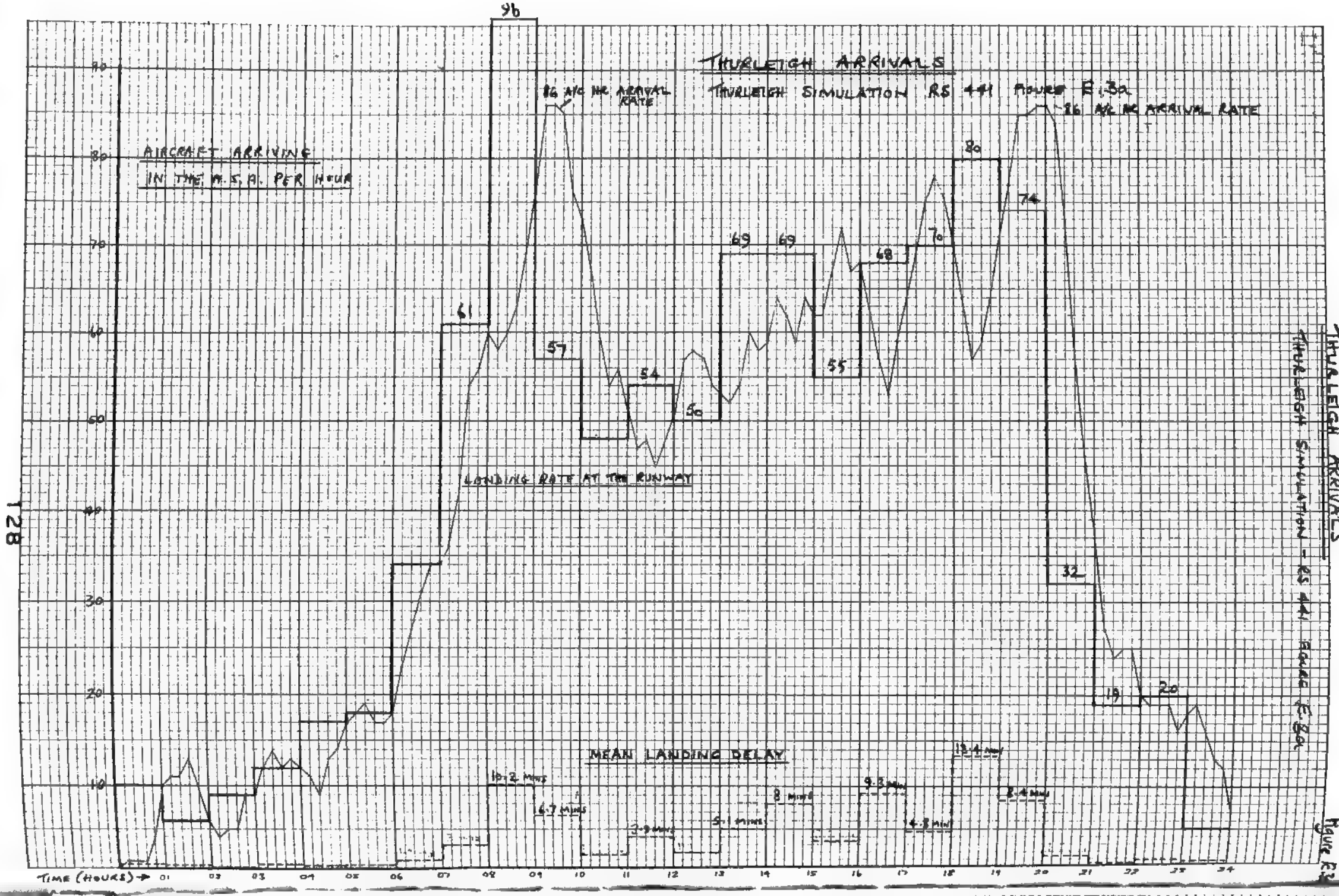
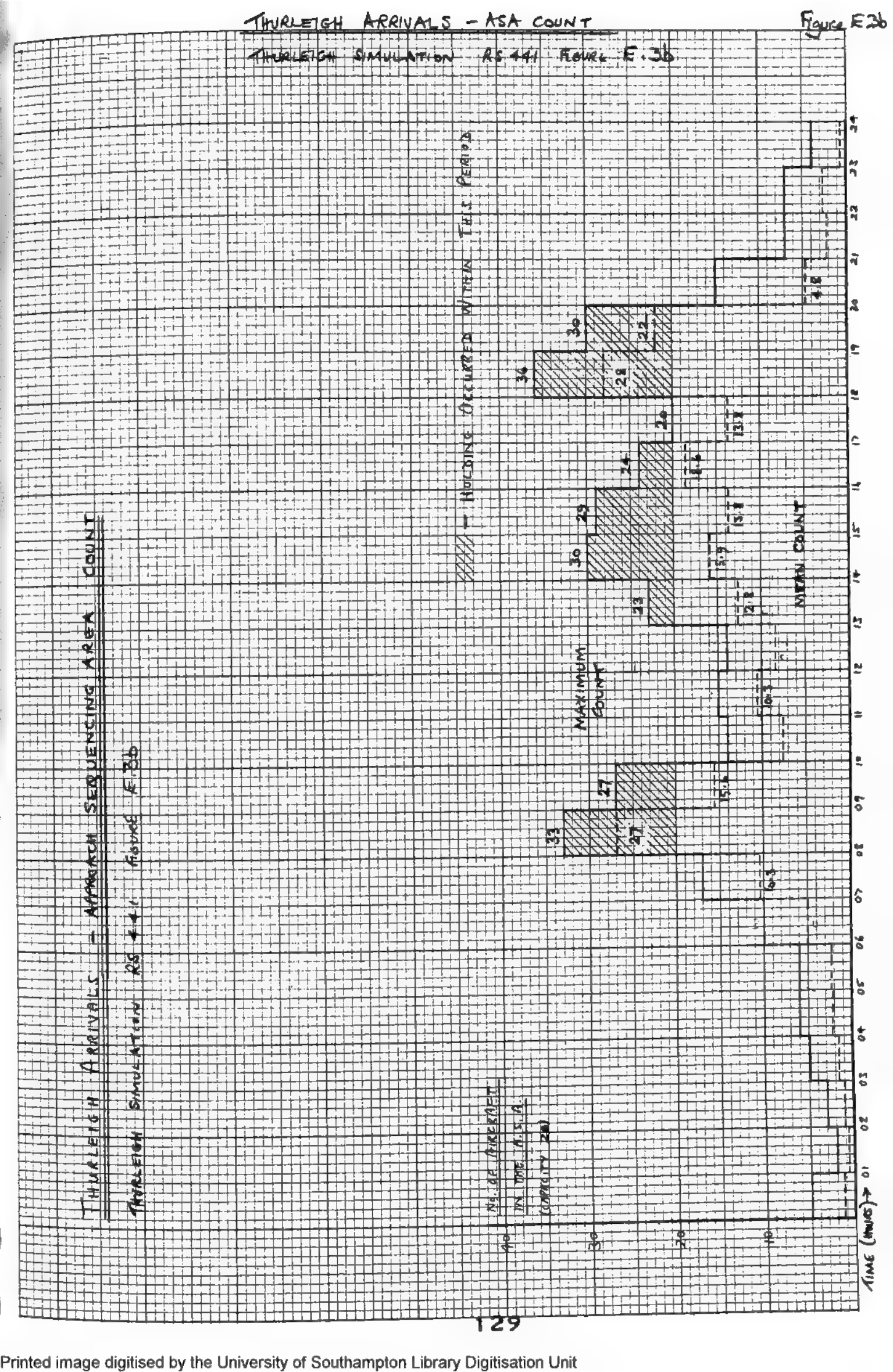
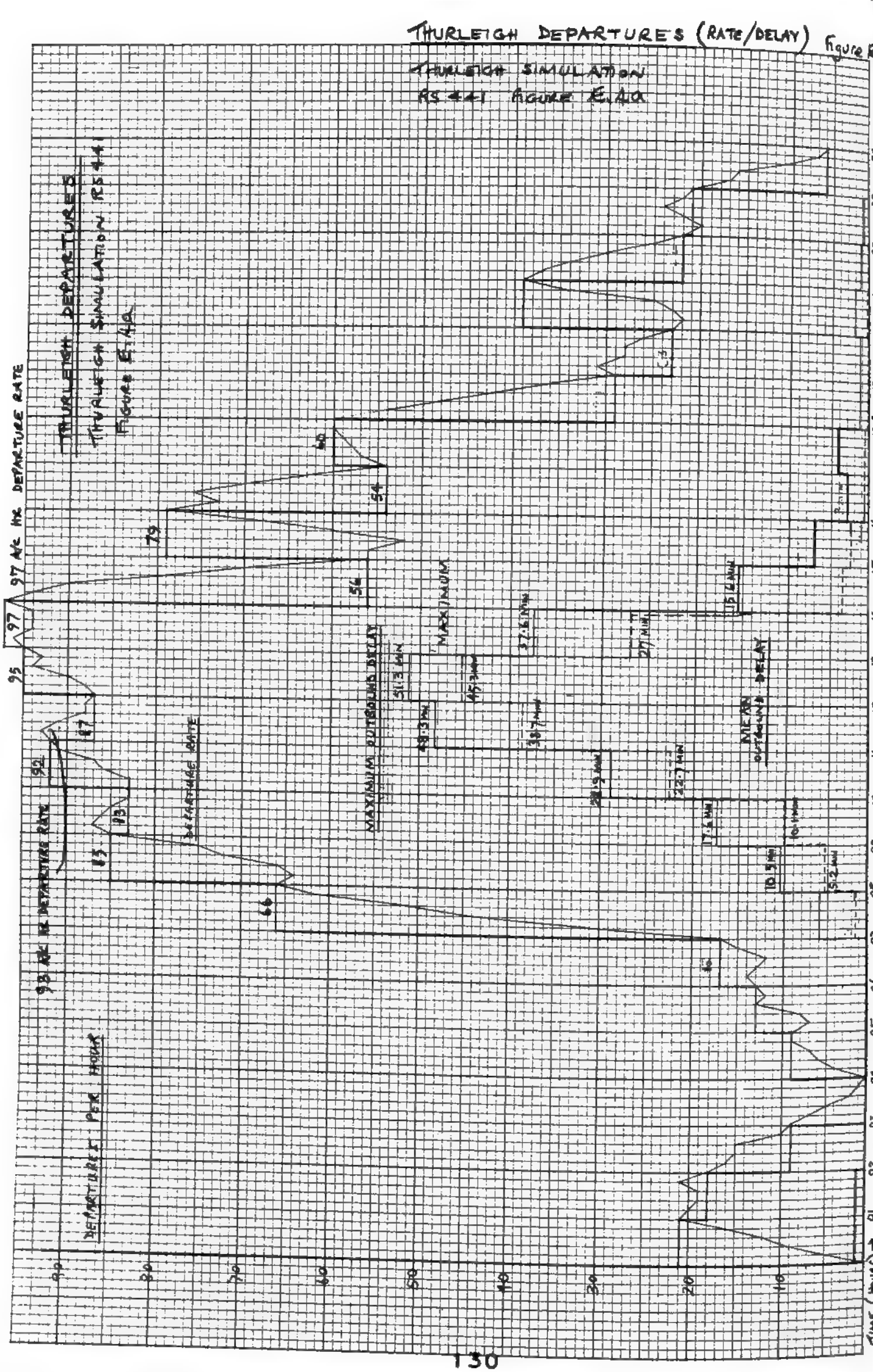


Figure E3

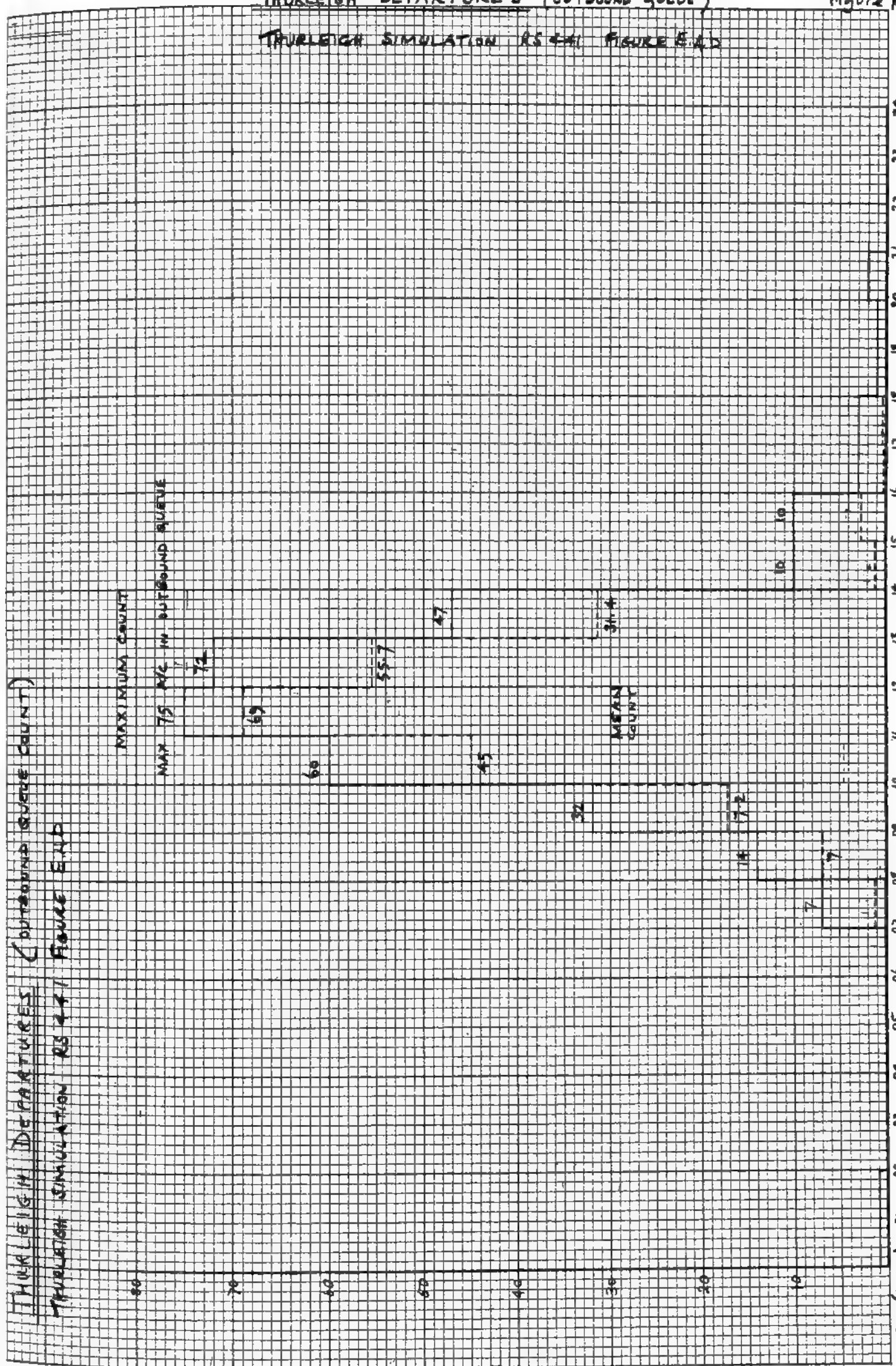


Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

THURLEIGH DEPARTURES (OUTBOUND QUEUE) Figure E.4.b



Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

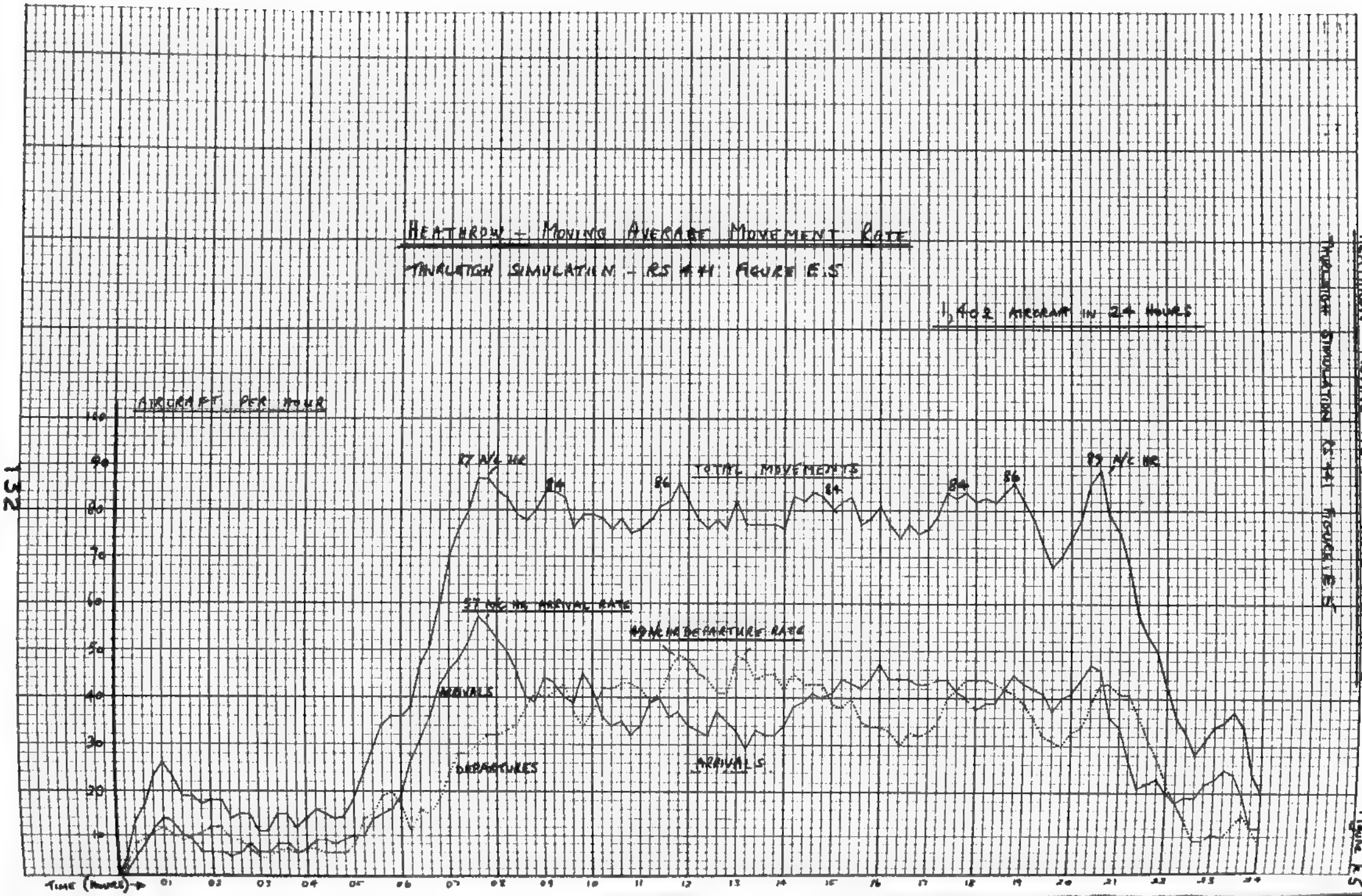
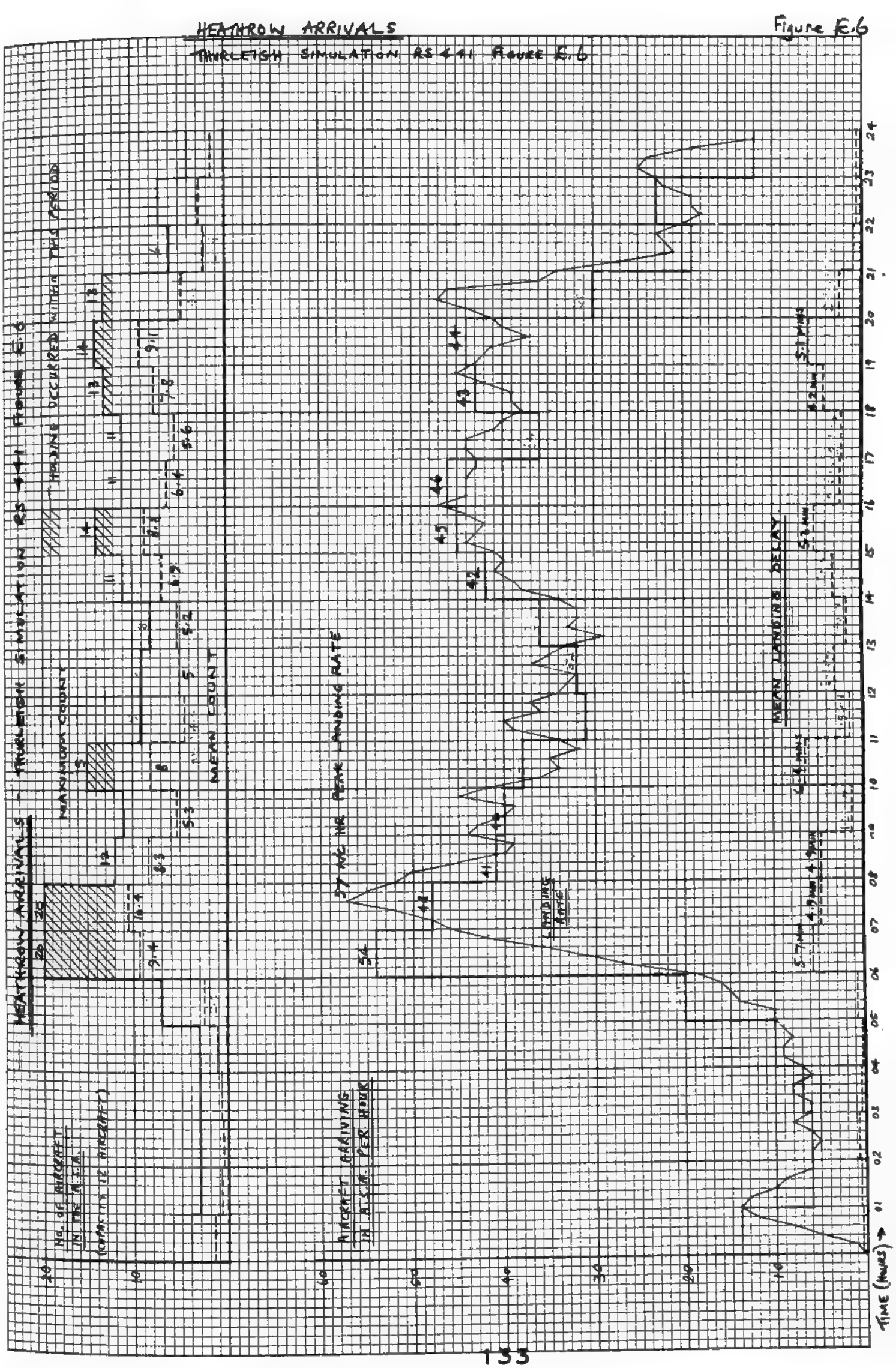
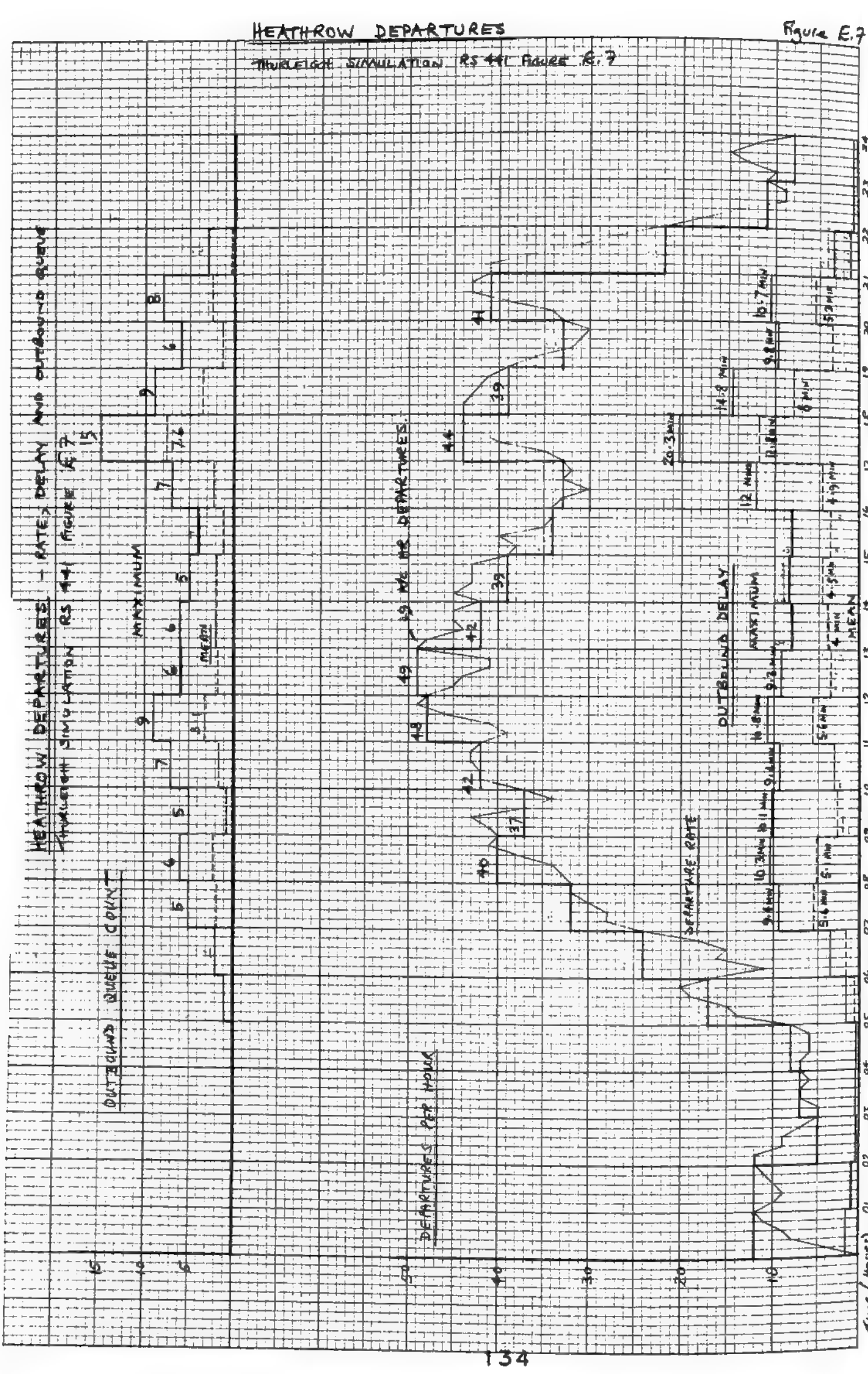


Figure E.5

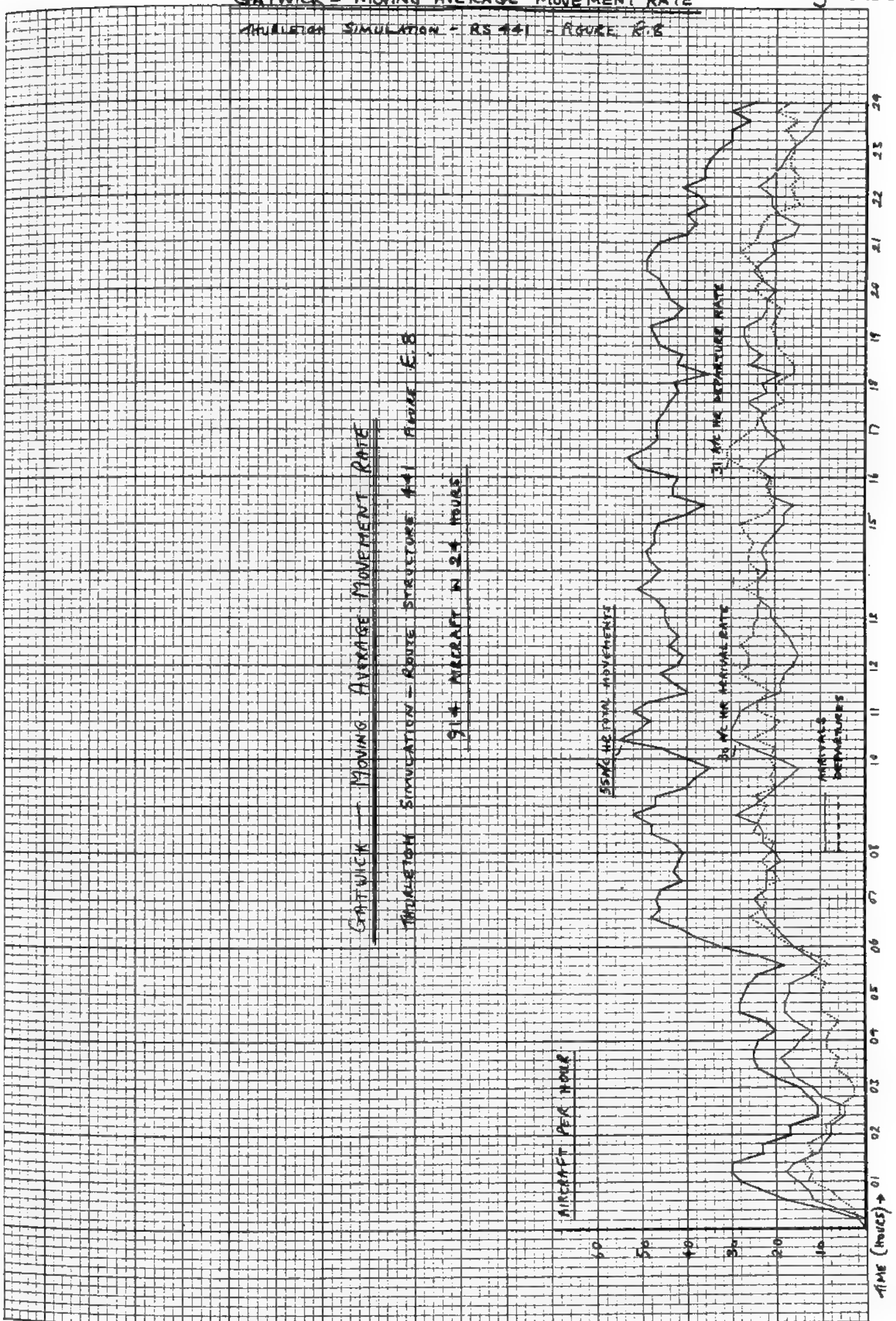


Printed image digitised by the University of Southampton Library Digitisation Unit



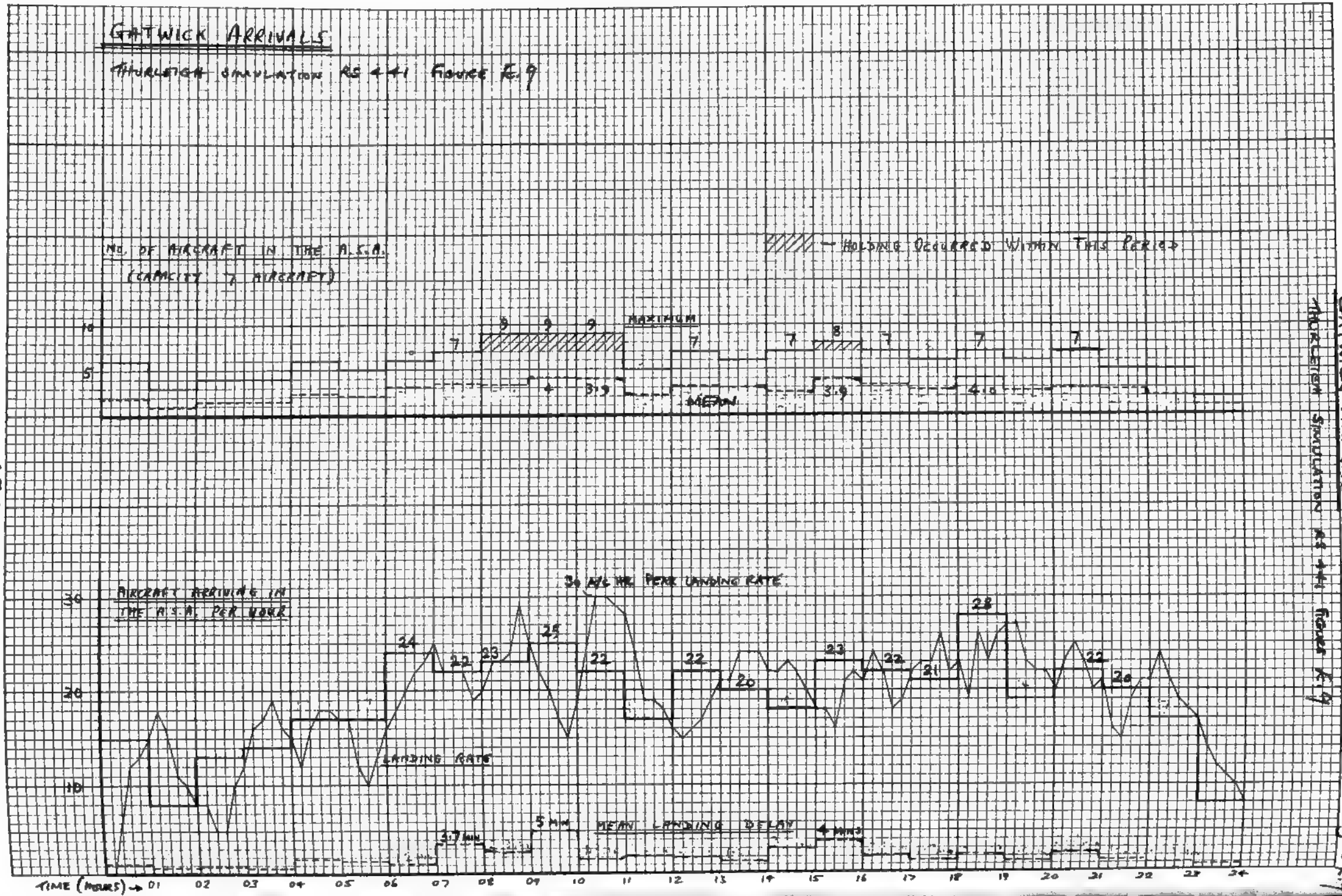
Printed image digitised by the University of Southampton Library Digitisation Unit

Figure E.8

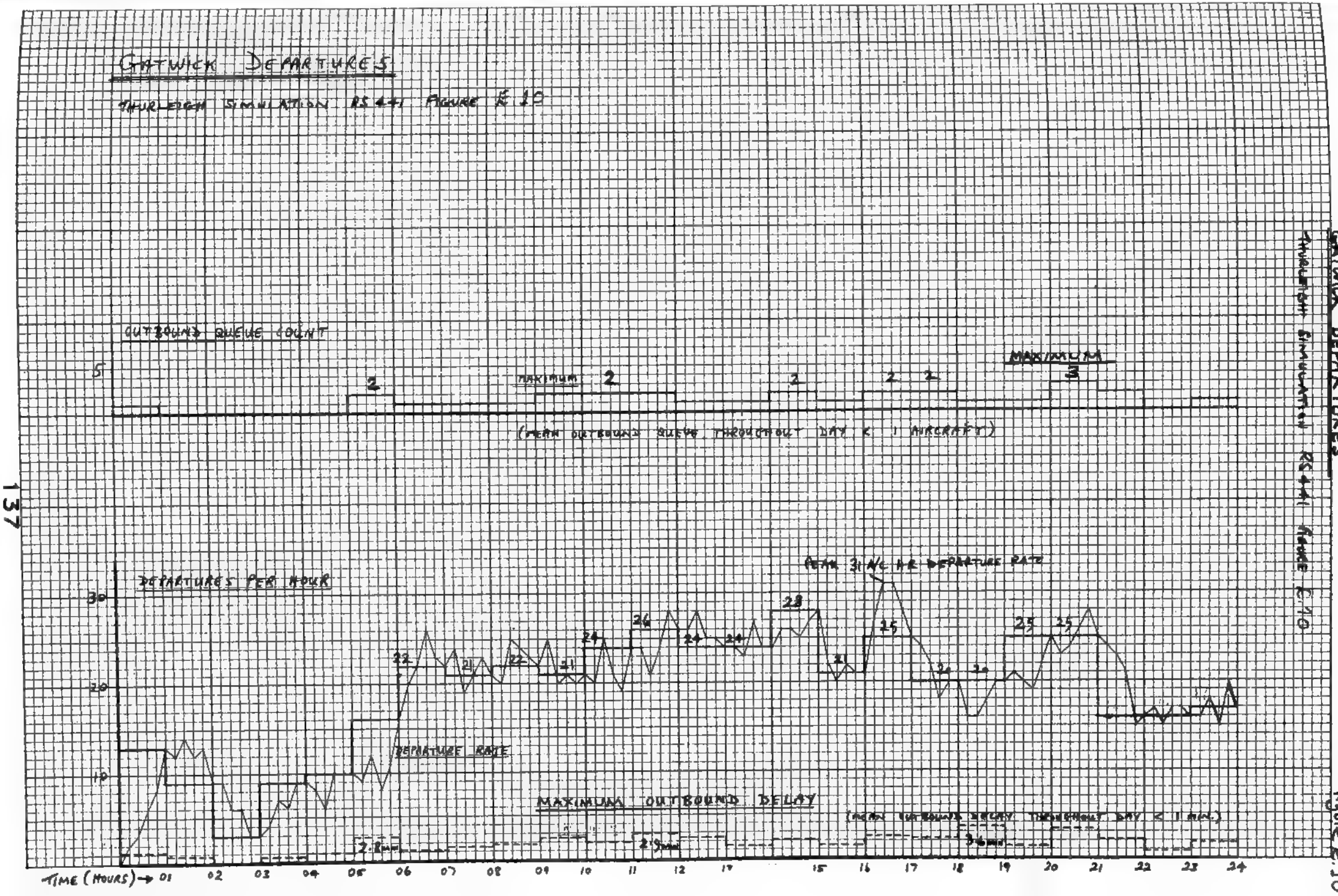


Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

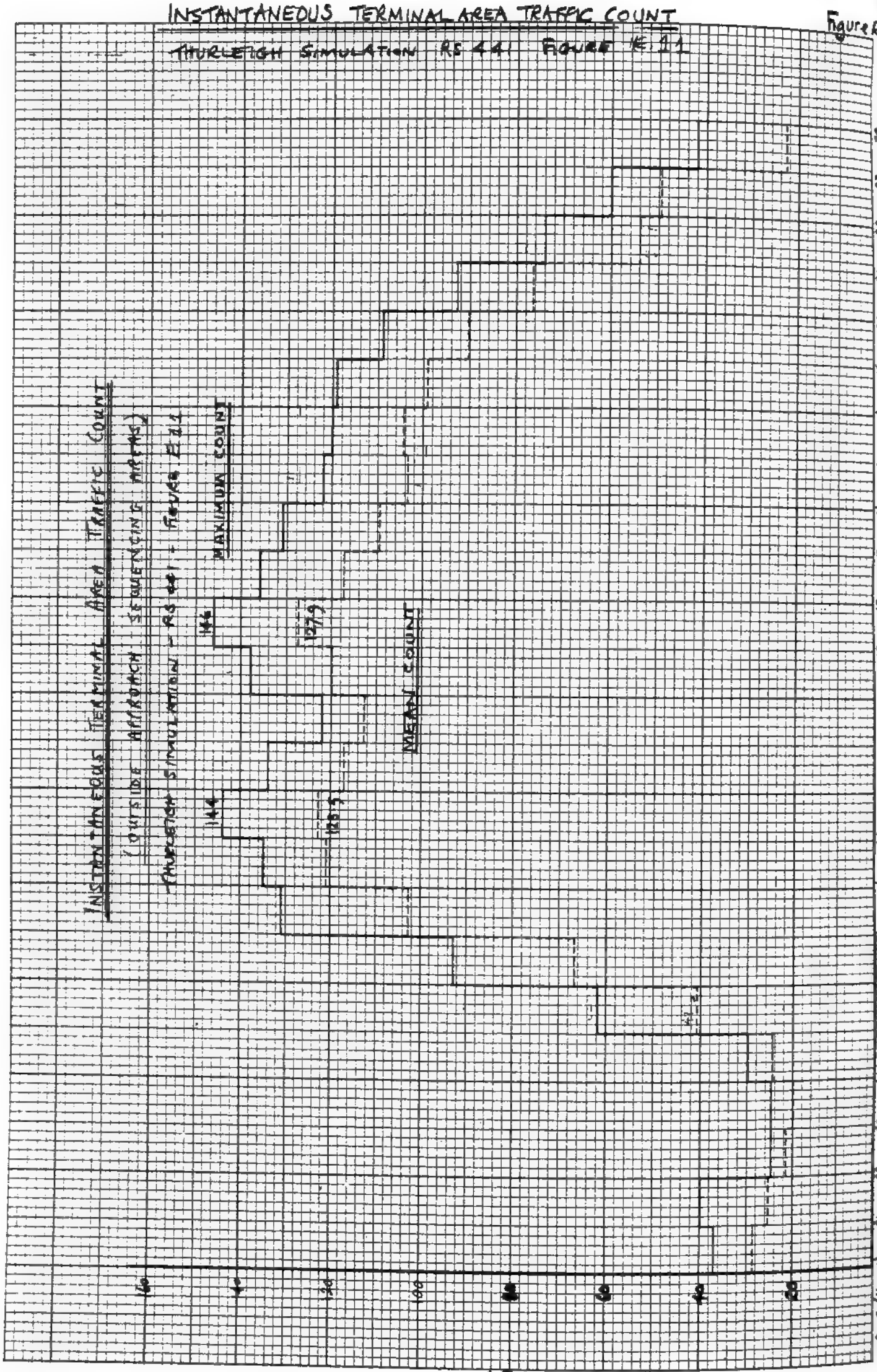


GATWICK DEPARTURES
THURLEIGH SIMULATION RS441 FIGURE E.10

Figure E.10

INSTANTANEOUS TERMINAL AREA TRAFFIC COUNT

THURLEIGH SIMULATION RS 44 FIGURE E 11

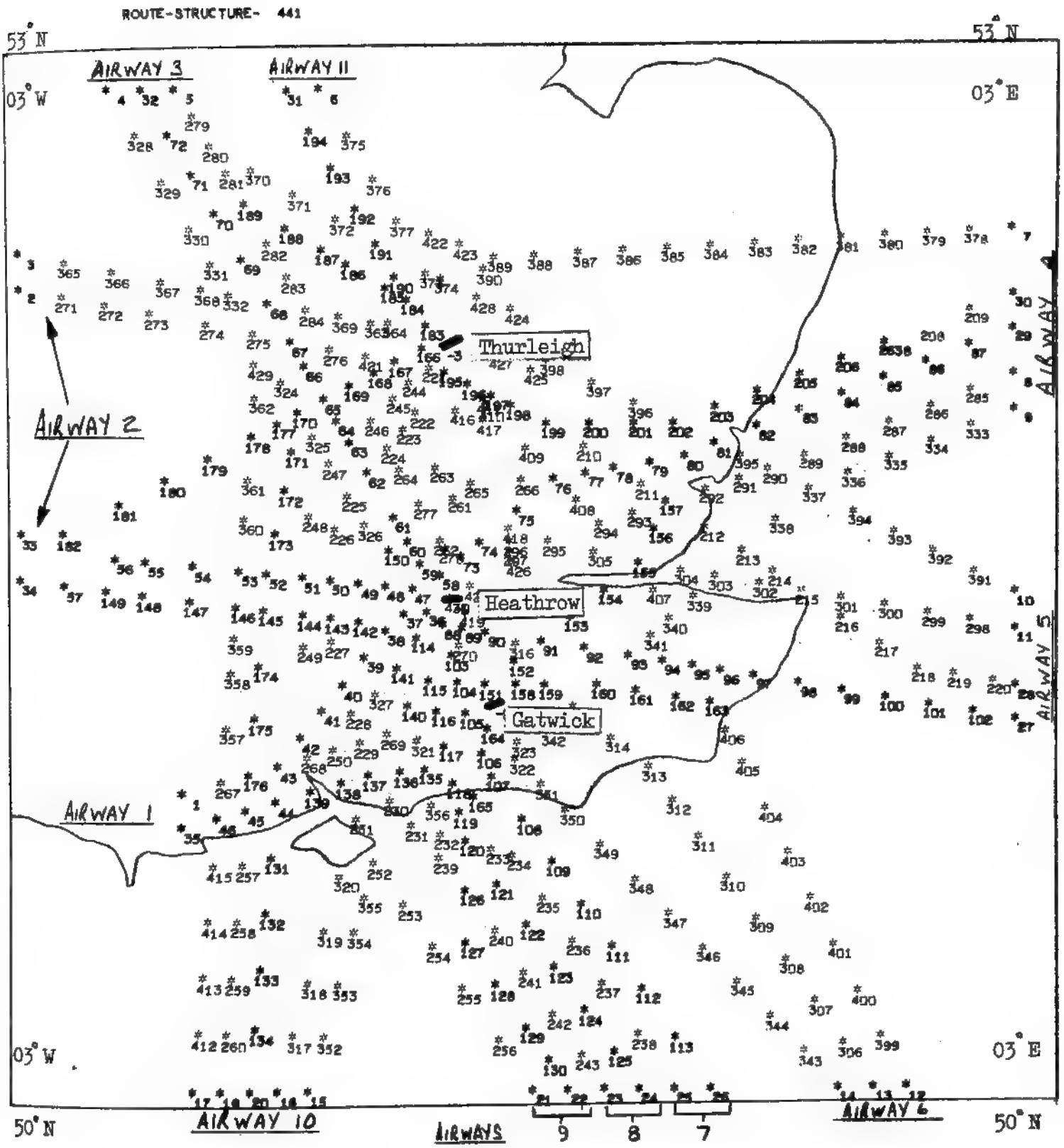


Printed image digitised by the University of Southampton Library Digitisation Unit

Figure E.12

The Thurleigh Simulated Route Structure

Route points defining Simulated Route Structure



Printed image digitised by the University of Southampton Library Digitisation Unit

GATWICK TWO SIMULATION

CONTENTS

SUMMARY OF CONDITIONS

TABLE F 1 - F4	GENERAL ANALYSIS - FLYING TIMES AND ROUTE MILEAGE
FIGURE F1	ALL AIRPORTS TOTAL MOVEMENTS IN EACH HOUR
FIGURE F2	HEATHROW MOVING AVERAGE MOVEMENT RATE
FIGURE F3	HEATHROW ARRIVALS AND ASA COUNT
FIGURE F4	HEATHROW DEPARTURES
FIGURE F5	HEATHROW DEPARTURES WITH TUNNELLING
FIGURE F6	GATWICK MOVING AVERAGE MOVEMENT RATES
FIGURE F7	GATWICK ARRIVALS
FIGURE F8	GATWICK DEPARTURES
FIGURE F9	LUTON MOVING AVERAGE MOVEMENT RATE
FIGURE F10	LUTON ARRIVALS
FIGURE F11	LUTON DEPARTURES
FIGURE F12	INSTANTANEOUS TERMINAL AREA TRAFFIC COUNT
FIGURE F13	THE GATWICK TWO SIMULATED ROUTE STRUCTURE

THE GATWICK TWO RUNWAY ROUTE STRUCTURE.

Printed image digitised by the University of Southampton Library Digitisation Unit

TMA SIMULATION - GATWICK TWO-RUNWAY

ROUTE STRUCTURE 521(A) NO TUNNELLING AND 521(B) TUNNELLING

SIMULATED CONDITIONS

1. POINT IN TIME C. 1980-1985

2. WESTERLY OPERATIONS AT HEATHROW, GATWICK, LUTON

3. ROUTE STRUCTURE DESIGNED FOR PARALLEL RUNWAY OPERATIONS AT HEATHROW, DUAL RUNWAY OPERATIONS AT GATWICK AND SINGLE RUNWAY OPERATIONS AT LUTON

4. HOLDING AREAS INTERNAL TO TMA

5. CRITERIA FOR PROXIMITY DETECTION :-

   a) 1.5 minutes longitudinal

   b) 1,000' between level aircraft)
   c) 4,000' where one aircraft level) vertical
   d) 8,000' where neither aircraft level)

6. NUMBER OF ITERATIONS OF TRAFFIC SAMPLE : ONE

7. TOTAL NUMBER OF AIRCRAFT PROCESSED 3,020 (INCLUDING OVER-FLIGHTS)

8. SIMULATION PERIOD : 24 HOURS - 0001 TO 2400 HOURS

9. AIRFIELDS SIMULATED :

HEATHROW	1,145	air transport movements
GATWICK	815	air transport movements
LUTON	451	air transport movements
All airports total	2,411	aircraft

10. OMNI-DIRECTIONAL ROUTE STRUCTURE I.E. ALL AIRPORTS SERVE, AND ARE SERVED BY, ALL AIRWAYS

NOTE:- 1) Data concerning the 521(B) simulation are given only where significant differences from 521(A) results exist

2) General route structure design considerations are given at the end of this appendix.

Printed image digitised by the University of Southampton Library Digitisation Unit

GENERAL ANALYSIS - GATWICK TWO(A)

TABLE F1: AIRCRAFT FLIGHT TIME IN TMA

	NUMBER PROCESSED	AVERAGE TIME (MINS)	TOTAL TIME HOURS	MINS
ALL AIRCRAFT	3,020	23.6	1,185	54
TYPE 1 - SST	152	20.7	52	18
TYPE 2 - LOW PERFORMANCE	161	38.5	103	24
TYPE 3 - SUBSONIC JET - DOMESTIC	476	22.4	177	24
TYPE 4 - SUBSONIC JET - EUROPEAN	1,908	23.0	731	00
TYPE 5 - SUBSONIC JET - AMERICAN	323	22.6	121	42

TABLE F2: AIRCRAFT ROUTE MILEAGE IN TMA

	NUMBER PROCESSED	AVERAGE MILEAGE (NEAREST MILE)	TOTAL MILEAGE
ALL AIRCRAFT	3,020	139	419,475
TYPE 1 - SST	152	170	25,792
TYPE 2 - LOW PERFORMANCE	161	134	21,568
TYPE 3 - SUBSONIC JET - DOMESTIC	476	139	66,140
TYPE 4 - SUBSONIC JET - EUROPEAN	1,908	132	252,210
TYPE 5 - SUBSONIC JET - AMERICAN	323	166	53,765

Printed image digitised by the University of Southampton Library Digitisation Unit

GENERAL ANALYSIS - GATWICK 2B

RS 521 (B) WITH TUNNELLING

TABLE F3 : AIRCRAFT FLIGHT TIME IN TMA

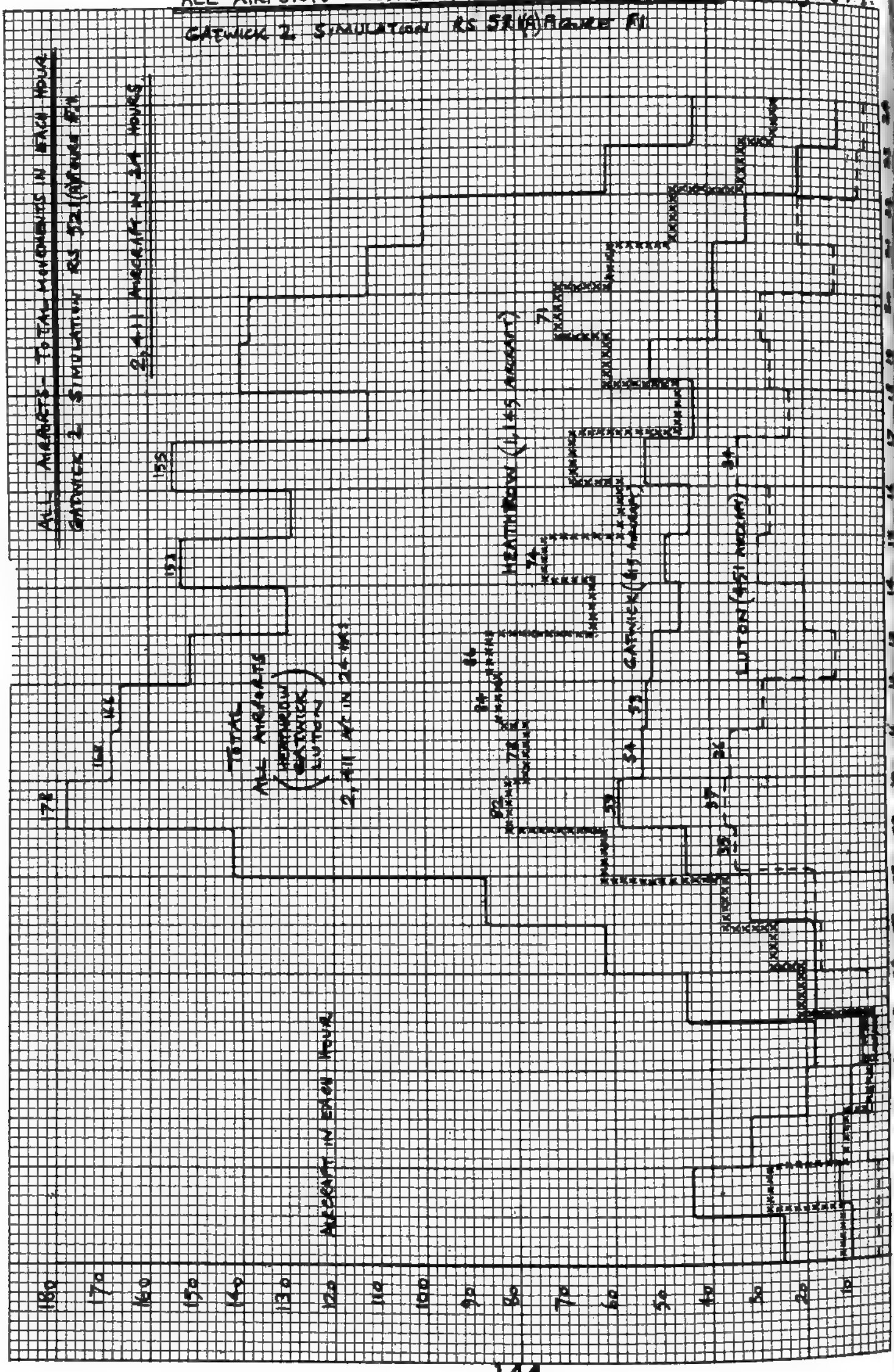
	NUMBER PROCESSED	AVERAGE TIME (MINS)	TOTAL TIME HOURS MINS.
ALL AIRCRAFT	3,020	23.8	1,199 48
TYPE 1 - SST	152	20.9	52 54
TYPE 2 - LOW PERFORMANCE	161	38.6	103 30
TYPE 3 - SUBSONIC JET - DOMESTIC	476	22.7	179 48
TYPE 4 - SUBSONIC JET - EUROPEAN	1,908	23.3	741 24
TYPE 5 - SUBSONIC JET - AMERICAN	323	22.7	122 00

TABLE F4 : AIRCRAFT ROUTE MILEAGE IN TMA

	NUMBER PROCESSED	AVERAGE MILEAGE (NEAREST MILE)	TOTAL MILEAGE
ALL AIRCRAFT	3,020	139	419,476
TYPE 1 - SST	152	170	25,792
TYPE 2 - LOW PERFORMANCE	161	134	21,568
TYPE 3 - SUBSONIC JET - DOMESTIC	476	139	66,140
TYPE 4 - SUBSONIC JET - EUROPEAN	1,908	132	252,210
TYPE 5 - SUBSONIC JET - AMERICAN	323	166	53,765

Printed image digitised by the University of Southampton Library Digitisation Unit

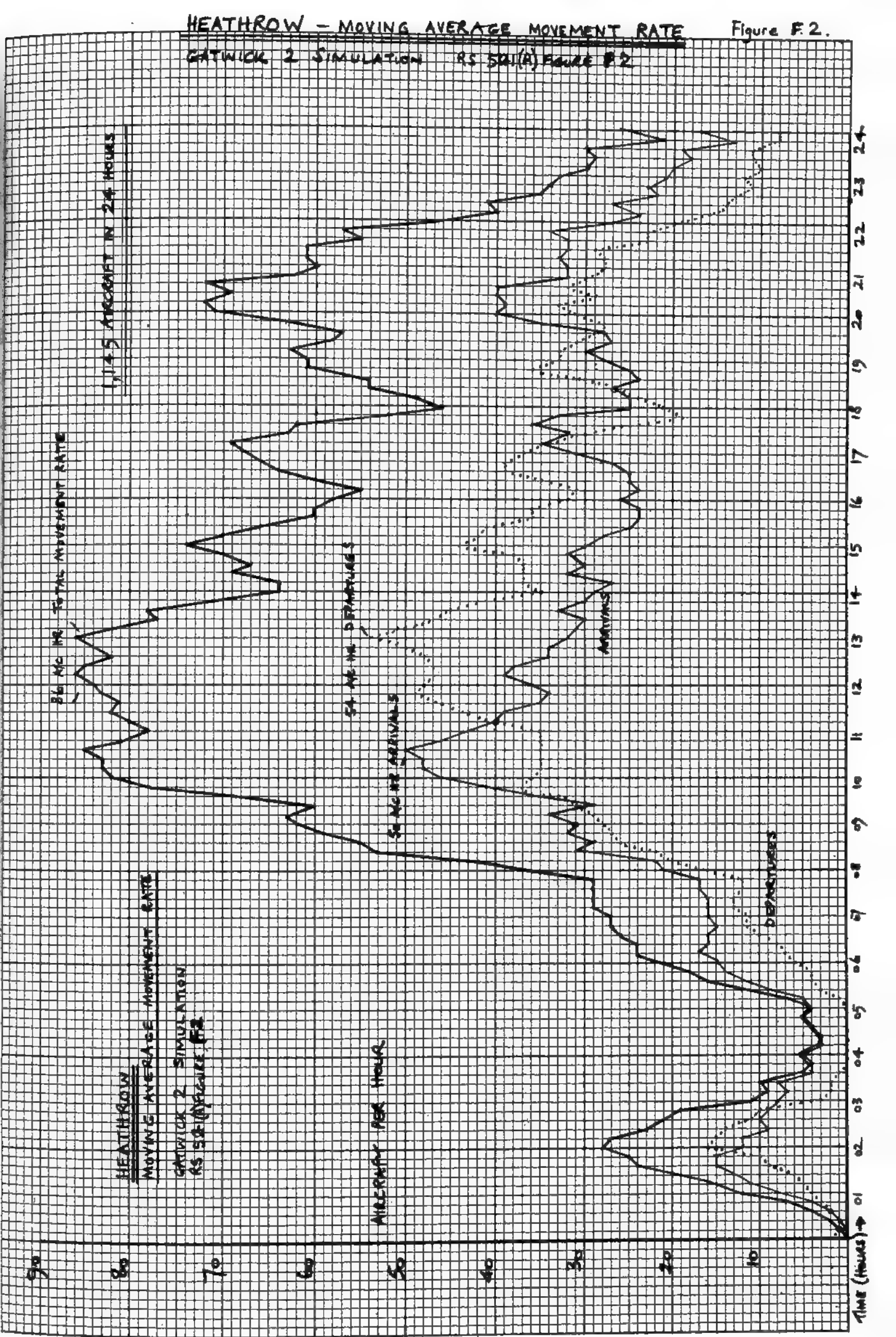
ALL AIRPORTS - TOTAL MOVEMENTS IN EACH HOUR Figure F1.



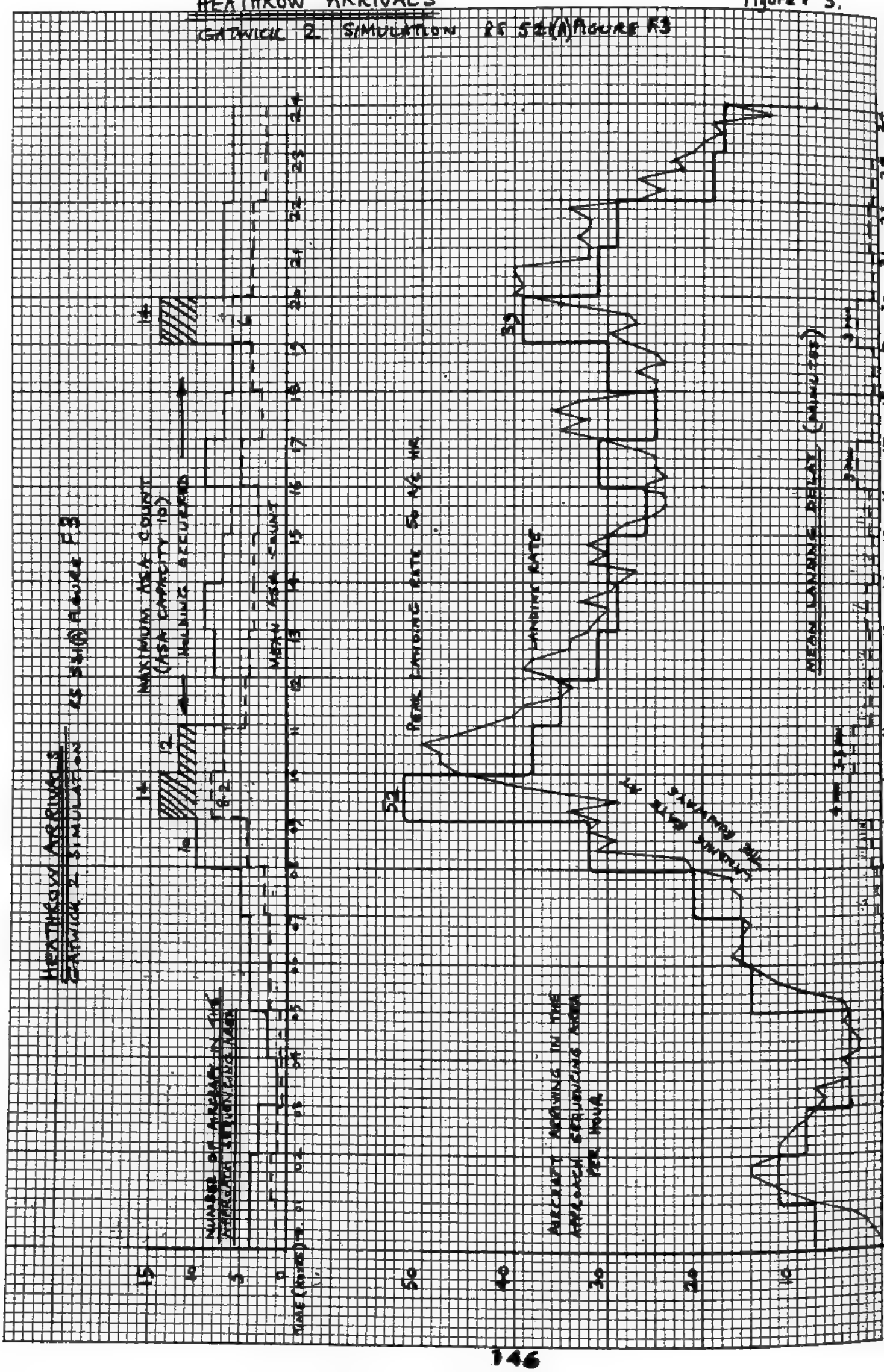
Printed image digitised by the University of Southampton Library Digitisation Unit

HEATHROW – MOVING AVERAGE MOVEMENT RATE Figure F.2.

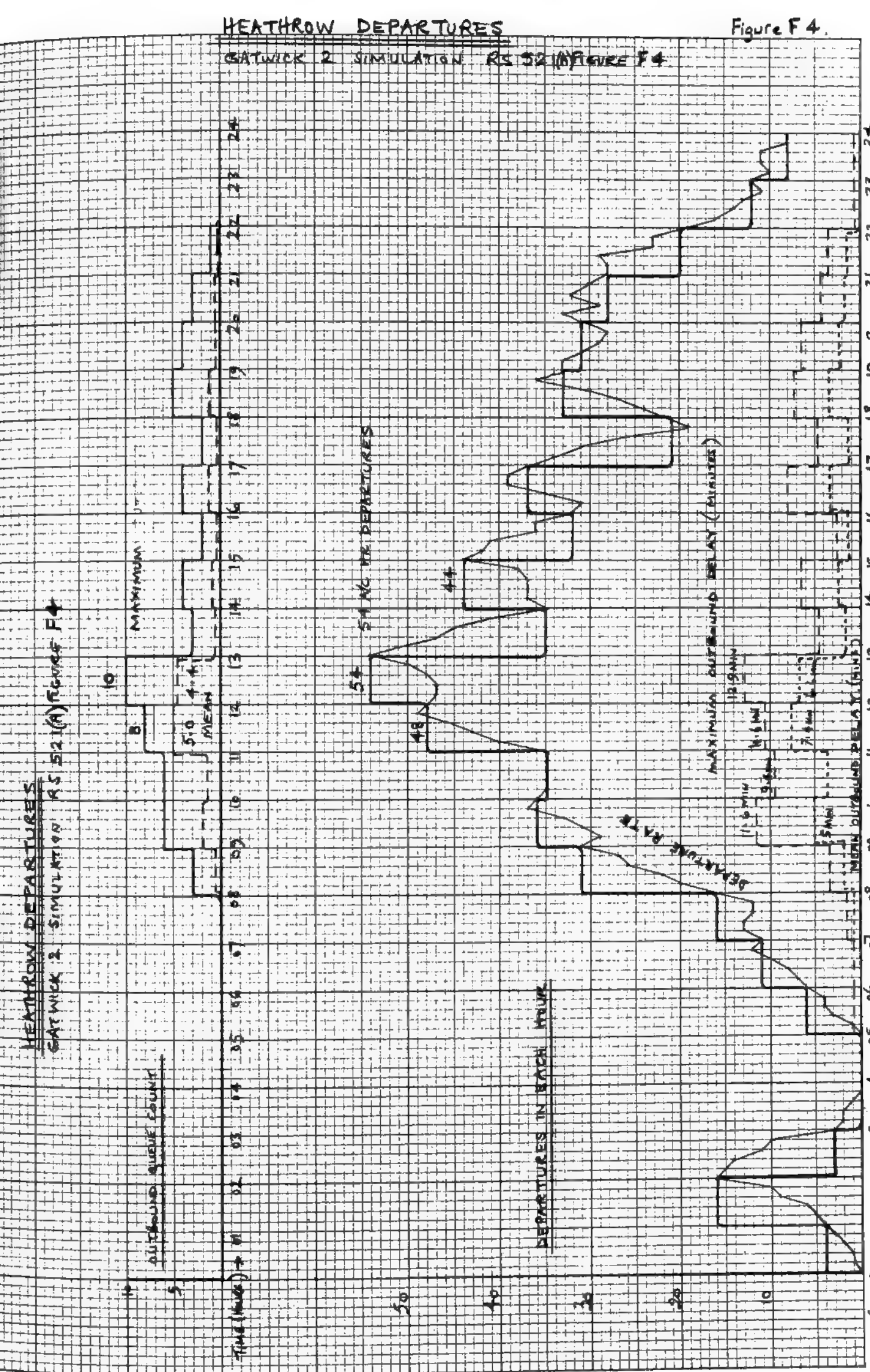
GATWICK 2 SIMULATION RS 521(A) FIGURE F.2



Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



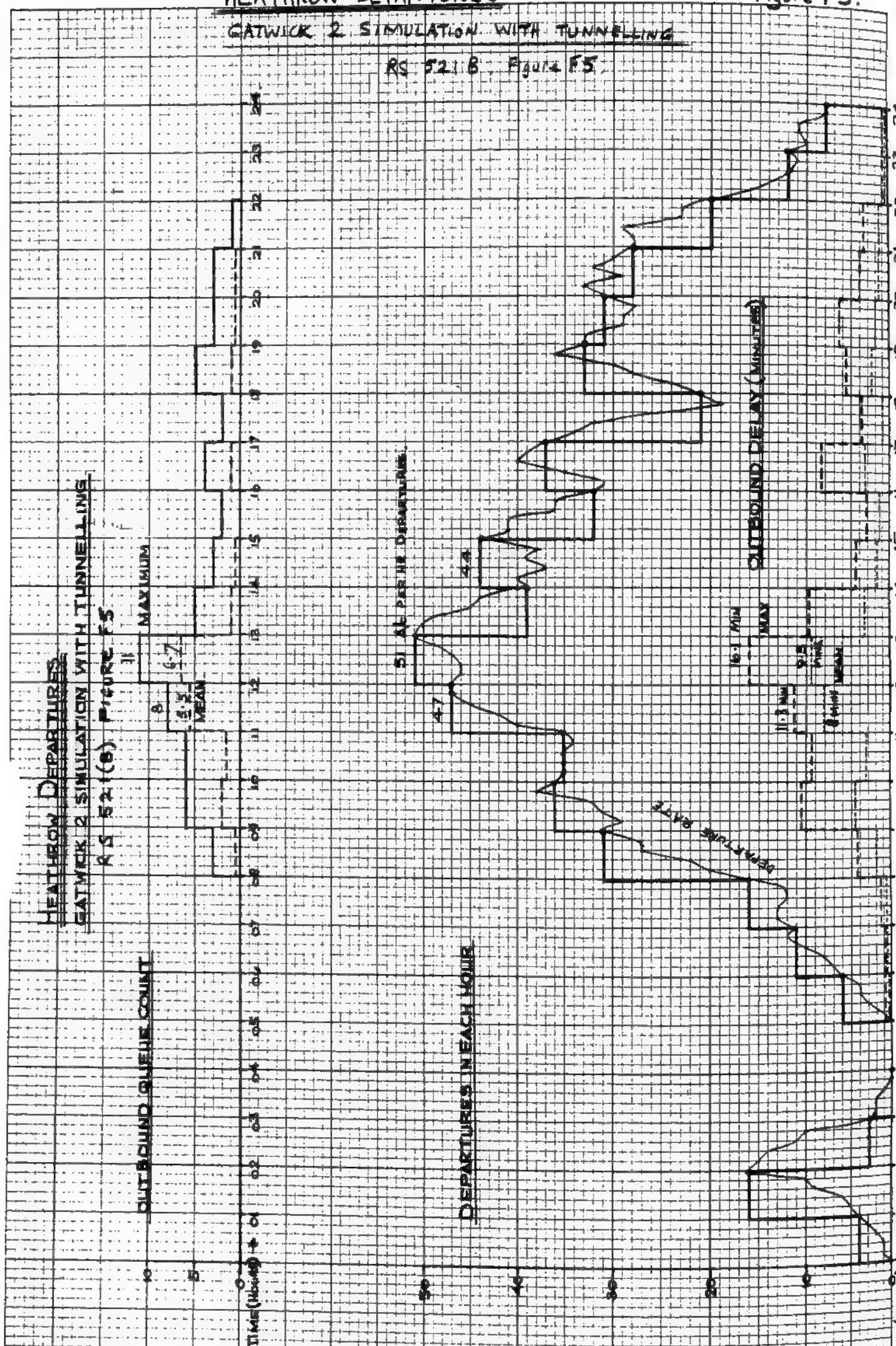
Printed image digitised by the University of Southampton Library Digitisation Unit

HEATHROW DEPARTURES

Figure F5.

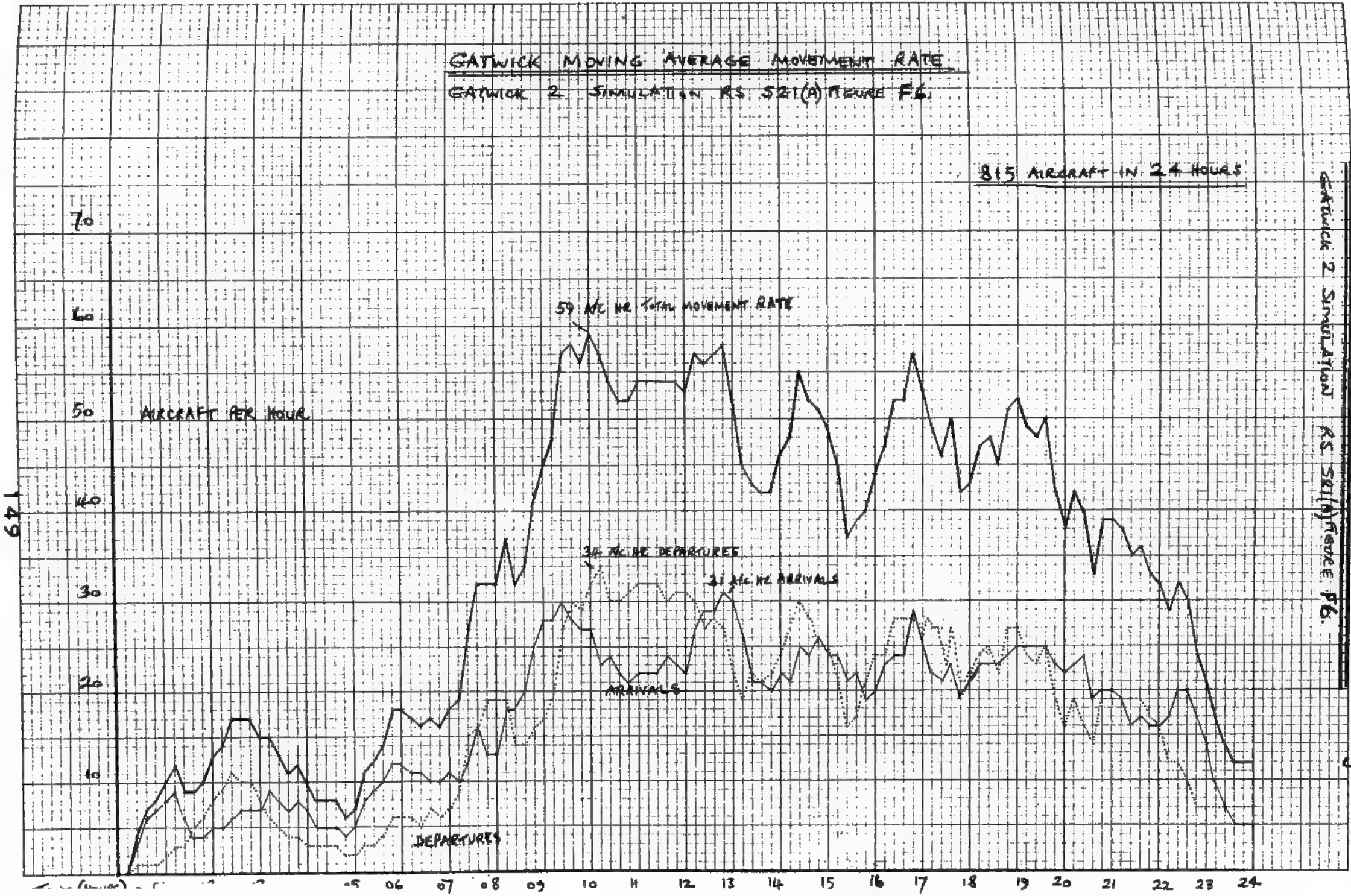
GATWICK 2 SIMULATION WITH TUNNELLING

RS 521 B. Figure F5.



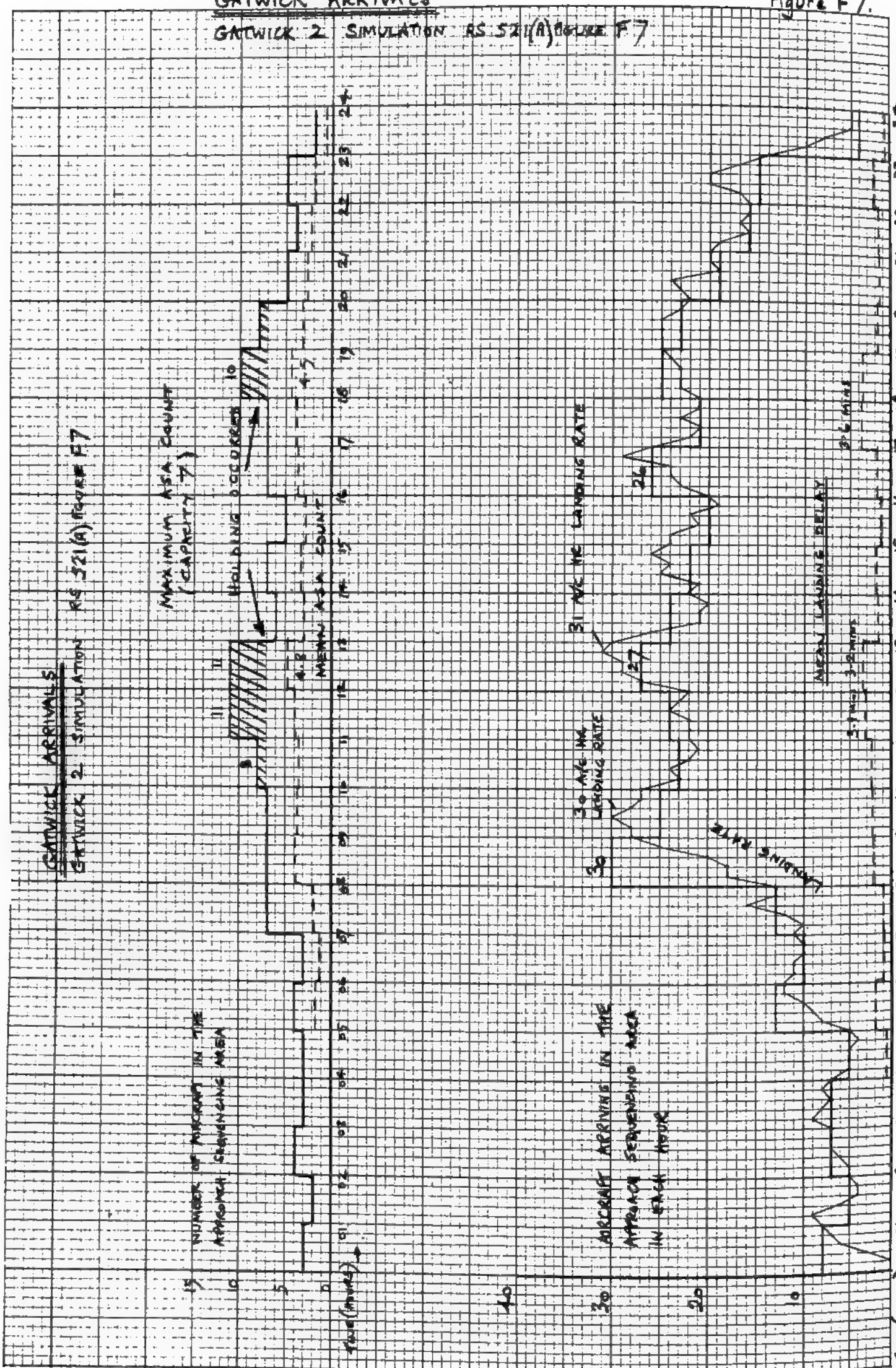
Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



GATWICK MOVING AVERAGE MOVEMENT RATE Figure F6.
GATWICK 2 SIMULATION RS 521(A) FIGURE F6.

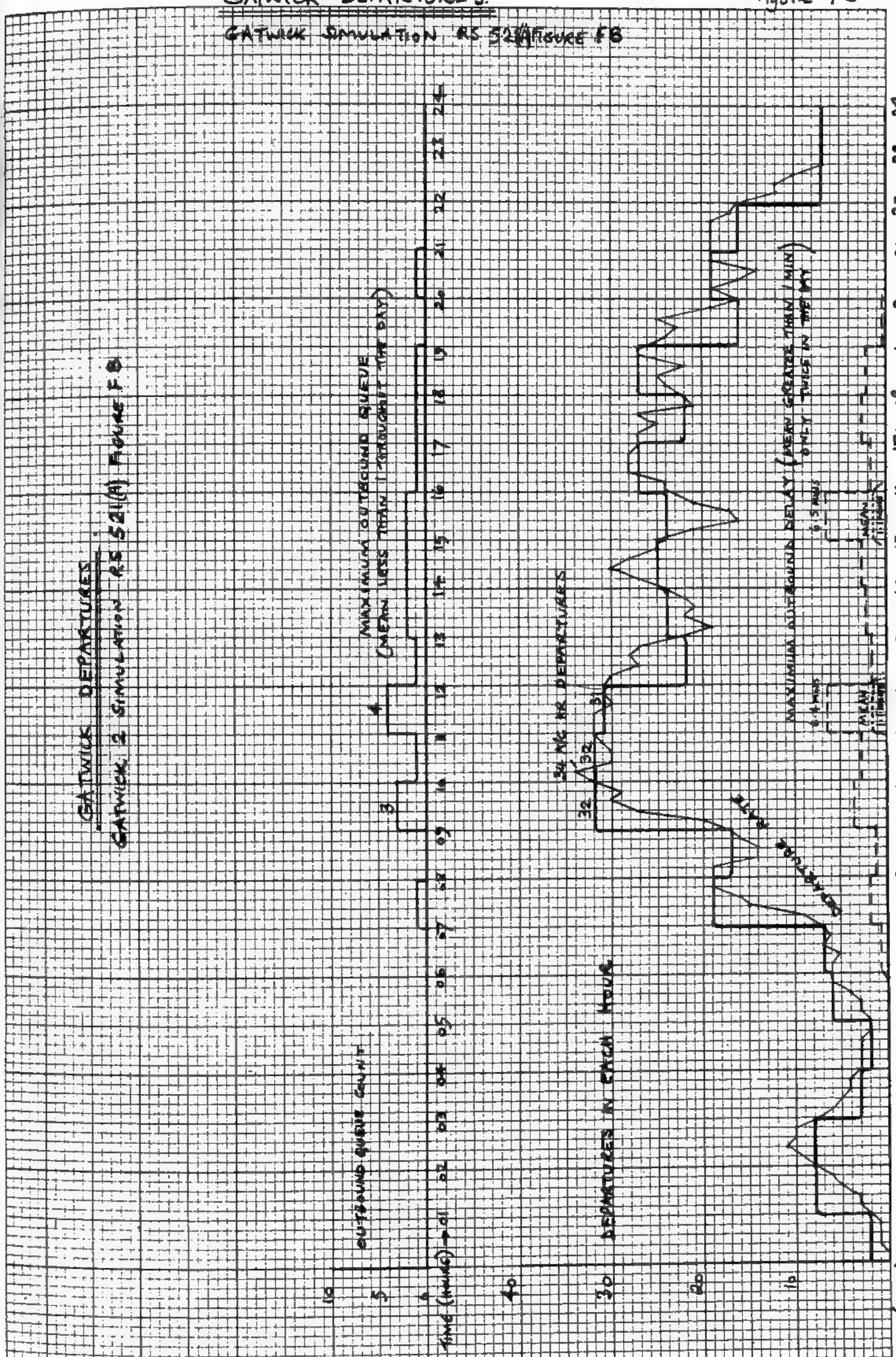
Figure F7.



Printed image digitised by the University of Southampton Library Digitisation Unit

GATWICK DEPARTURES.

Figure F8



Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

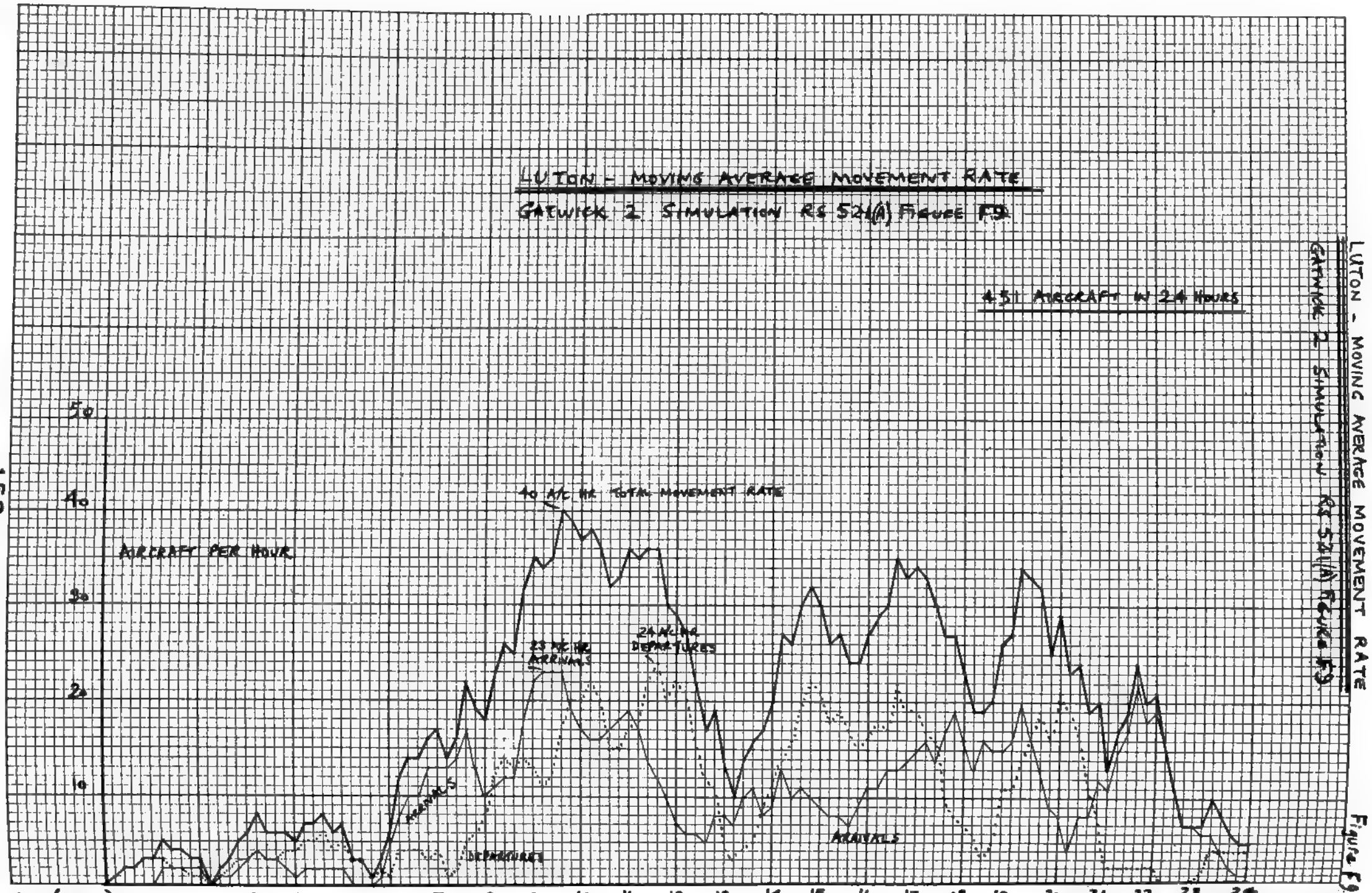
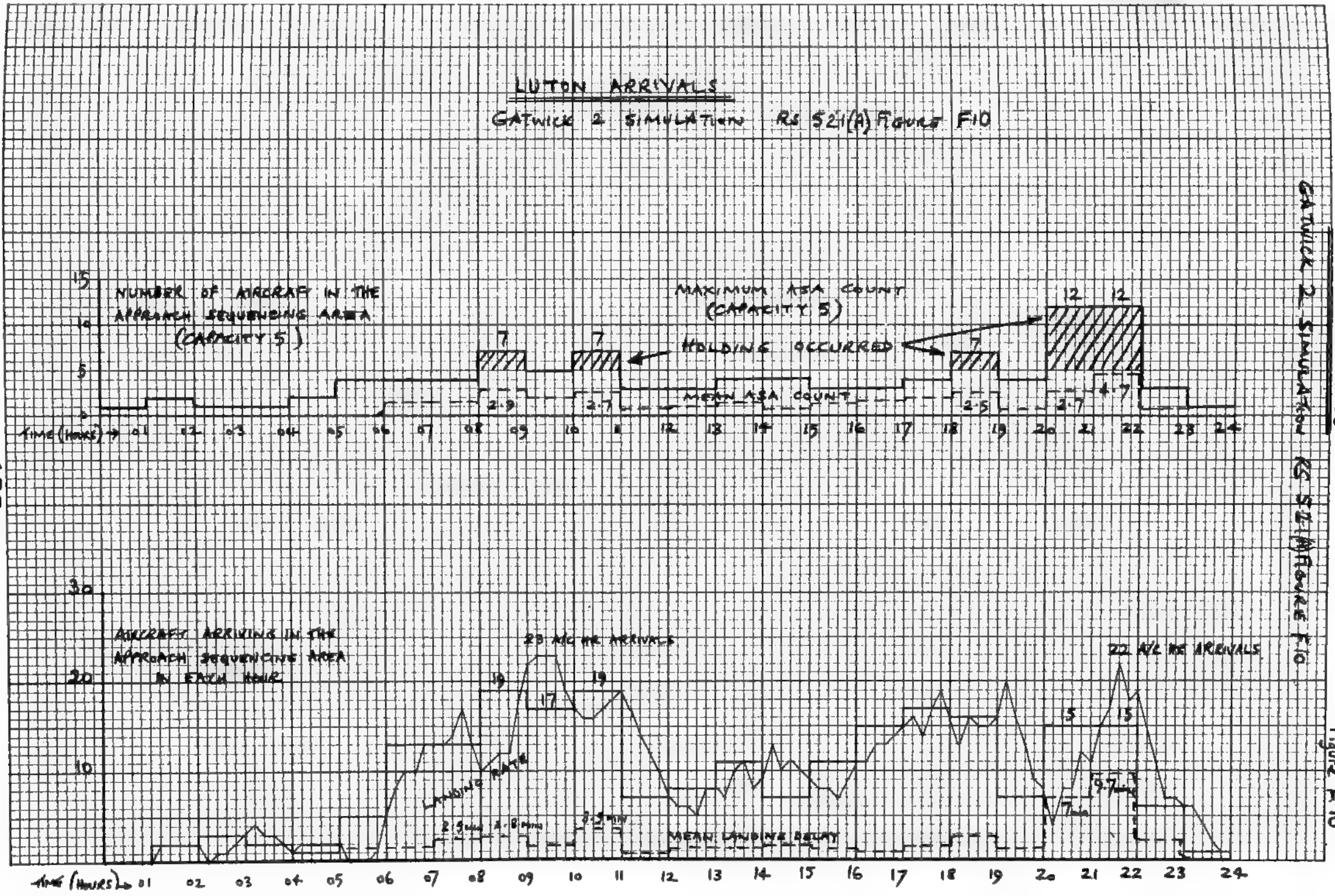


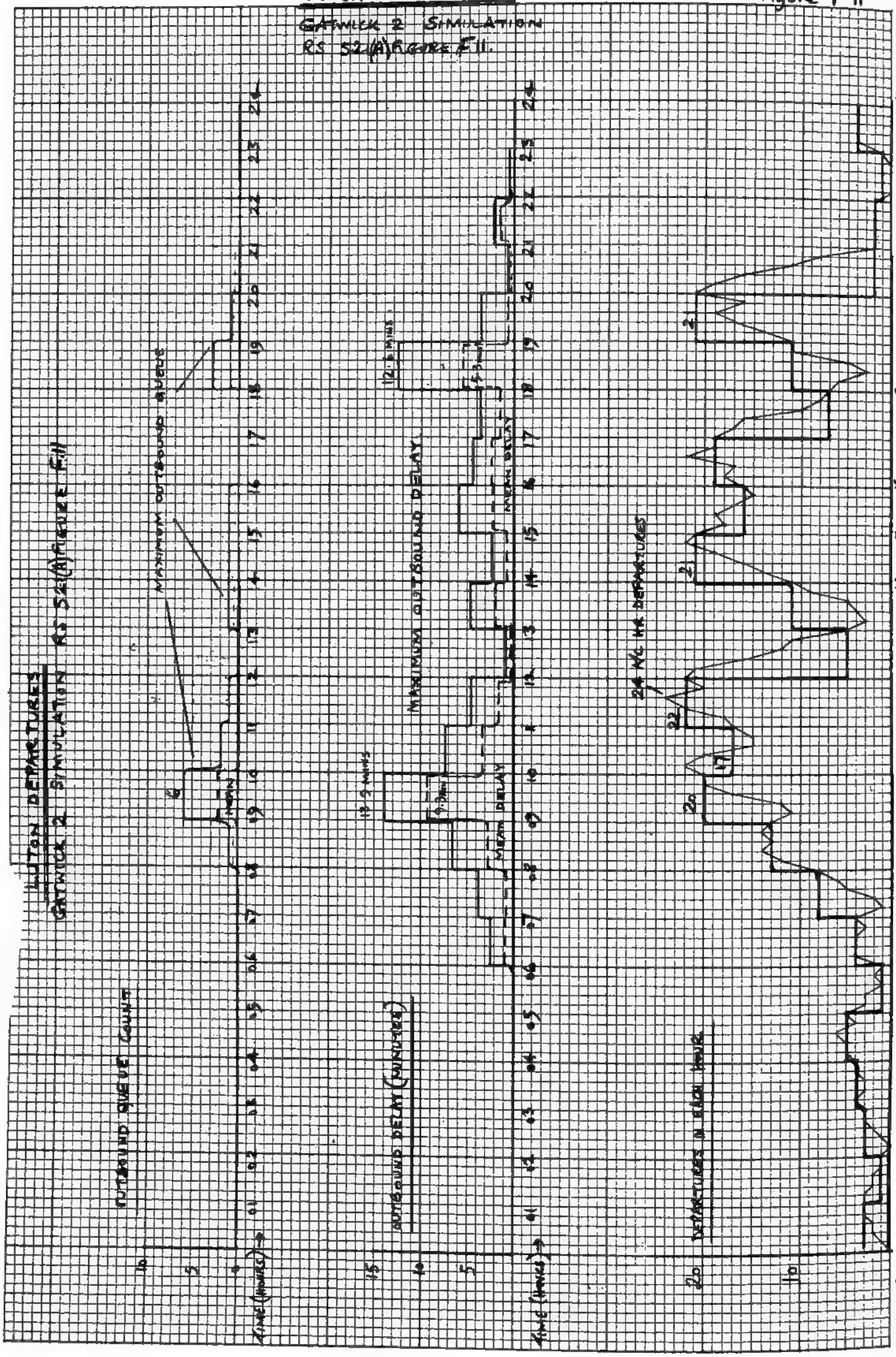
Figure F9

Printed image digitised by the University of Southampton Library Digitisation Unit



GATWICK 2 SIMULATION RS 521(A) FIGURE F10 LUTON ARRIVALS

Figure F10



Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

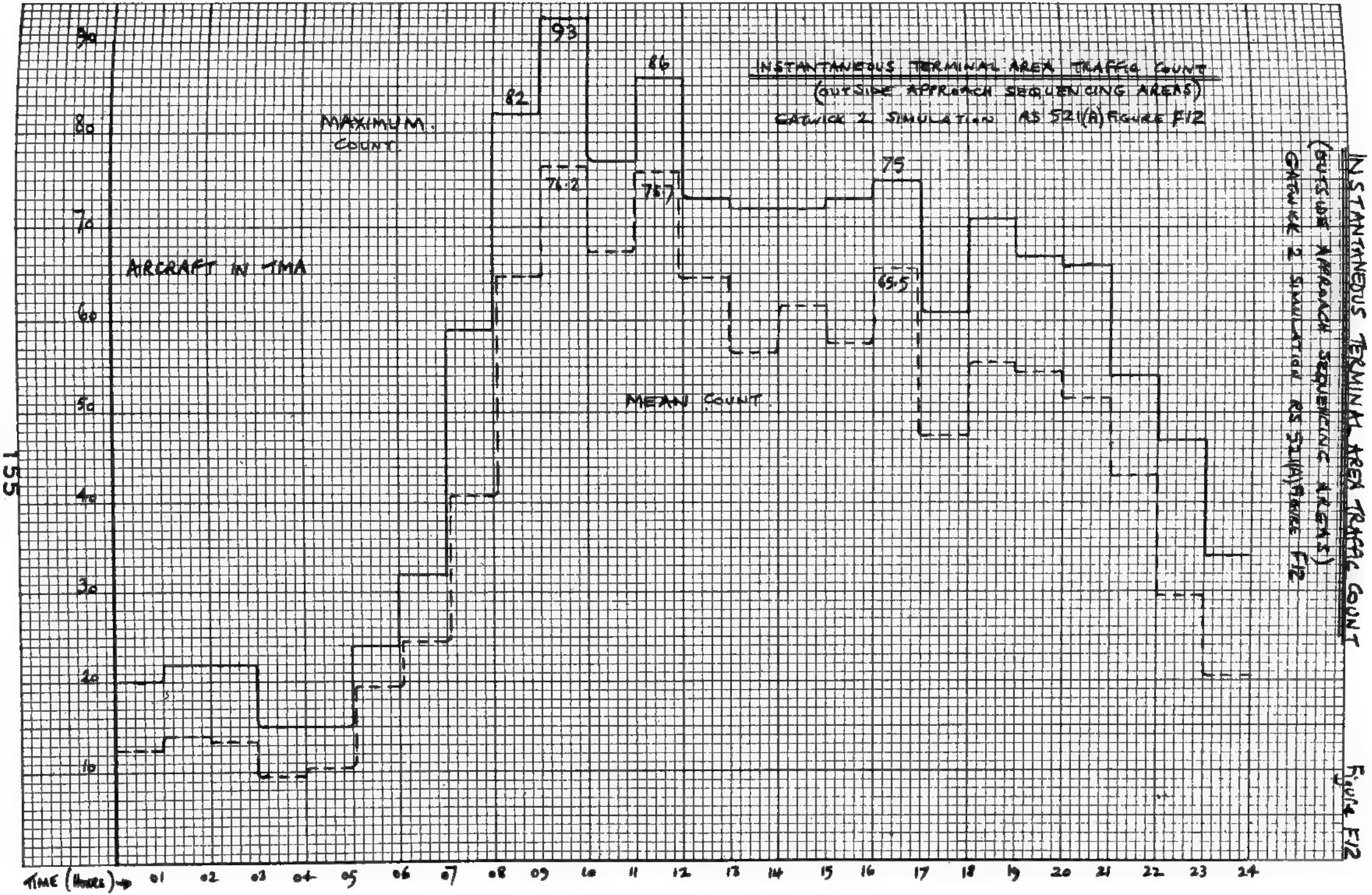


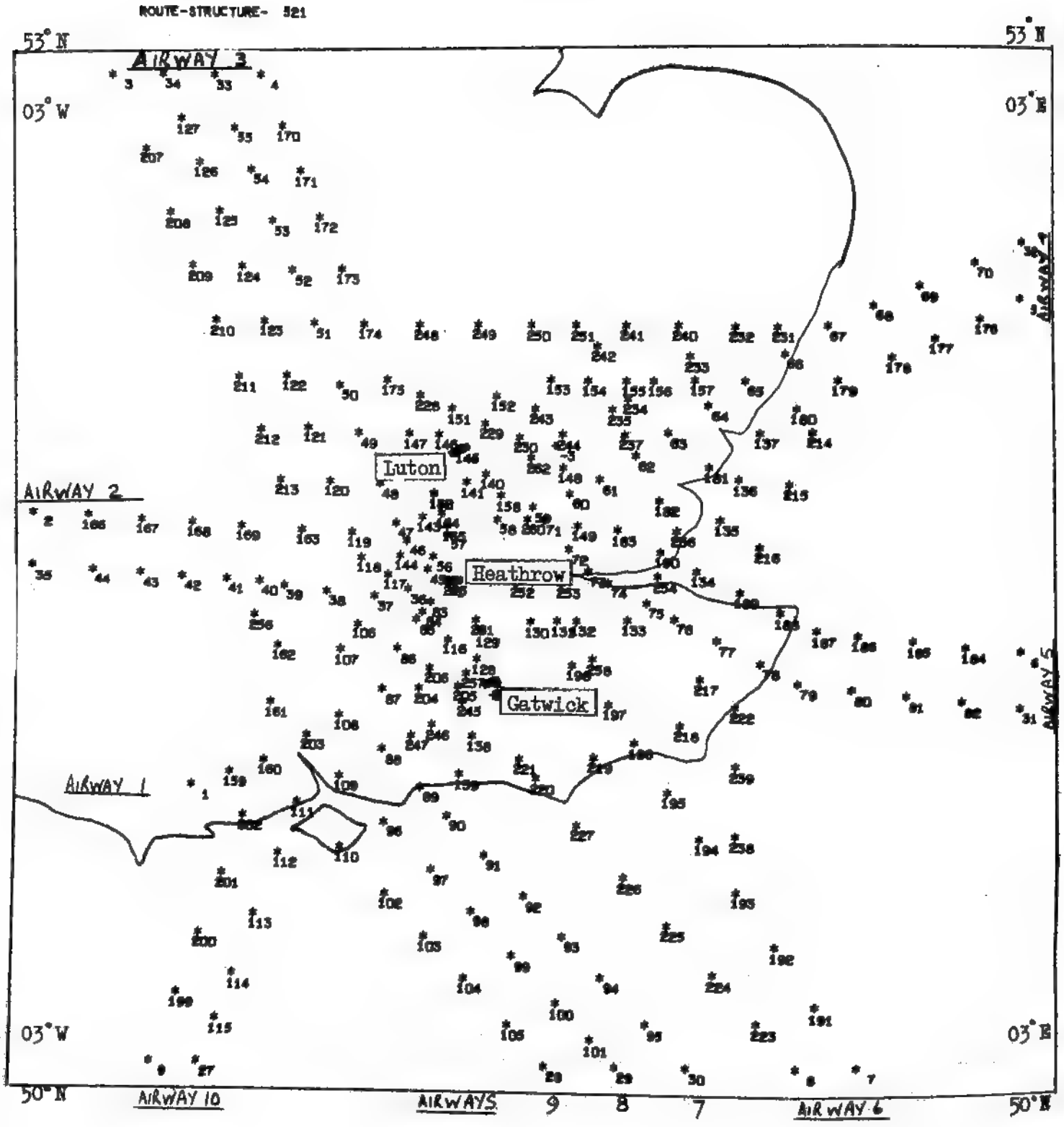
Figure F12

Appendix F

Figure F.13

The Gatwick Simulated Route Structure

Route points defining Simulated Route Structure



Printed image digitised by the University of Southampton Library Digitisation Unit

THE GATWICK TWO RUNWAY ROUTE STRUCTURE

General Design Considerations

1. The general concepts behind the Gatwick Two-Runway route structure are not radically different from the concepts of the traffic organisation of the present-day London Terminal Area. For example, current operating techniques employ parallel laterally spaced tracks which are established and maintained by radar controllers as required. In the simulated TMA it is assumed that there is some additional basic navigational support, provided by airborne navigational equipment, which enables aircraft to navigate a track to an accuracy sufficient for the existence of parallel tracks which, for the purposes of Air Traffic Control, can be deemed separated from each other. The track spacing provided in the route structure is deliberately coarse and, at 10n ms, is the same as currently used in parts of the United States between centre lines of their "Victor" airways, which are based on VOR (VHF Omni-range) beacons.

2. The aim of the design is to minimise the traffic friction between the Heathrow, Gatwick and Luton airports and to provide each airport with adequate holding areas, and inbound and outbound routes to and from each airway. The holding areas accord in size and shape with those used by NATCS in their route structure design and are based upon ICAO (International Civil Aviation Organisation) assumptions for the holding of jet aircraft at heights of up to 14,000 ft. employing point source aids.

3. Heathrow airport has three holding areas, Gatwick two and Luton one. The assumptions as to size and shape are considered pessimistic, in that some form of area navigation capability would almost certainly be required to cope with the navigational problems posed by the route structure. Area cover allows uncertainty to be removed about the duration of the outbound leg of the holding pattern and about the navigation of the turn at the end of the pattern away from the point source aid. Reduction in the size of holding area requirements would ameliorate tunnelling restrictions to outbound aircraft and produce a route mileage saving.

Printed image digitised by the University of Southampton Library Digitisation Unit

4. The principal differences between the simulated route structure and the present-day traffic flows are, for Westerly operation as follows :-

a) the Gatwick route to the Amber 1 North airway is to the West of the TMA and not the East, and passes almost overhead Heathrow

b) inbound routes to Heathrow from the West and South West are routed into the Garston not the Epsom holding areas (i.e. North of the airport as against South)

c) Heathrow aircraft outbound to Green One East from Heathrow are routed North of the airport, not South, to proceed as far as Brookman's Park with the Heathrow Clacton departures before heading for Dover

d) Airway Blue 29 inbounds for Heathrow are routed abeam Dover to an Ongar holding area with the inbound flow from Clacton, instead of into the Garston holding area.

Printed image digitised by the University of Southampton Library Digitisation Unit

CONSULTANTS REPORT TO THE COMMISSION ON THE THIRD LONDON AIRPORT ON AIRSPACE FACTORS AFFECTING THE CHOICE OF SITE

VOLUME II

POTENTIAL FUTURE DEVELOPMENTS OF THE LONDON TMA ENVIRONMENT IN RELATION TO THE STUDY FINDINGS

Issue 2 - 5 NOVEMBER 1969

Reference : KH/C/8638/CB65A1

GENERAL PRECISION SYSTEMS LTD.,
Abbey House,
282/292 Farnborough Road,
Farnborough, Hants.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 1 - INTRODUCTION

Objectives of Volume I

1.1 Volume I of this report was concerned with ATC factors affecting the timing of the need, and the choice between four short-listed sites, for the Third London Airport (TLA).

1.2 In that part of the work undertaken for the Commission on the Third London Airport emphasis was placed on the factual comparison of the complexity of the ATC task implied in processing a traffic sample representative of the civil air transport demand, forecast by the Commission's Research Team for the turn of the century, through route structures designed by the National Air Traffic Control Services for each choice of site.

1.3 For this purpose, use was made of an air movement simulation model, described in Volume 1, to predict the relative complexity of the ATC task in terms of an aircraft proximity count, and it was concluded by comparison of the predicted values of this count that there was no major difference between the four sites in this respect.

Objectives of Volume II

1.4 In that comparative assessment, no special attention was directed to the absolute values of the count. This Second Volume of the report discusses the implications of these results in terms of the severity of the ATC task posed by the forecast traffic demands, and gives the opinion of the Consultants, based on work undertaken outside the present contract, concerning the extent to which future changes in aircraft operating and Air Traffic Control (ATC) techniques might affect the study findings.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 2 - FACTORS AFFECTING TERMINAL AREA CAPACITY

Airport and Airspace Capacity Limitations

2.1 Before considering the implications on future terminal area operational requirements, it is important to understand that from the ATC viewpoint, capacity limitations in a multi-airport terminal area can arise from two interacting, but separable causes:-

a) inherent restrictions on the capacity or utilisation of each runway or airport system of runways, regarded in isolation from the rest of the terminal area

b) restrictions placed on the optimum capacity or utilisation of each runway or airport in the terminal area, because of the inability of the air traffic control system to monitor and control the total volume of traffic capable of being generated both within the terminal area and in the adjacent en-route airspaces.

2.2 It is worth pointing out that in general, the ultimate limitations on these two separable elements of the system, which have been dealt with separately in the work undertaken for the Commission on the Third London Airport, are likely to be entirely different.

The Nature of Airport Limitations

2.3 In the case of airport restrictions on system capacity, and even if assuming unlimited expenditure on airport facilities, (taxiways, ATC and navigational facilities, etc.), the ultimate limit on runway capacity will be the minimum safe longitudinal separation which can be accepted between successive runway movements. (In this connection the runway can be defined as that part of the system between the last point on final approach when all vertical or lateral separation must inevitably be lost, and the first point after take-off at which some form of vertical or lateral separation can be regained.) This minimum separation has to take account of such physical limitations as turbulent wake etc., and is ultimately likely to be little affected by the sophistication of the ATC system.

Printed image digitised by the University of Southampton Library Digitisation Unit

The Nature of Airspace Limitations

2.4 By contrast, airspace restrictions (such as circuitous routeing, profile interruptions, non-optimum cruising levels or outbound delay) are imposed solely to avoid possible overloading of the capability of the control system to resolve conflicts as they might arise, too closely spaced in either area or time, if aircraft were allowed to take off or enter the area unchecked and fly their individual optimum flight paths. These airspace restrictions on potential terminal area capacity, and therefore on the utilisation of potential airport capacity, are therefore totally dependent on the sophistication of the ATC, navigational and other supporting facilities provided, the airspace itself having virtually unlimited physical capacity to handle as much traffic as the airports could generate, in the absence of control system restrictions.

Airspace Restrictions on Terminal Area Capacity

2.5 Any consideration of airspace restrictions on the terminal area capacity is therefore meaningless except in the context of a specified terminal area ATC environment or traffic control system, including not only the detail of the supporting navigational, data collection and data processing facilities on which it depends, but also the ATC procedures in use.

2.6 In the context of the air traffic control system, facilities and procedures currently employed in the London Terminal Area, the basic unit of the control system is the ATC sector, and the limit on capacity is imposed by the flow rate through each sector which the controllers can safely handle. The capacity of each sector is limited by the individual workloads of the controllers working that sector.

2.7 In this type of ATC environment the physical and measurable workloads, which may overload a controller to the point where he does not have sufficient thinking time available to discharge his function of ensuring a safe, orderly and expeditious traffic flow, are mainly:-

a) his total speech workload involved in R/T communications with aircraft and in liaison and co-ordination with other ATC controllers or control sectors, airports etc.

b) acquisition and processing of information on current and proposed aircraft movements

Printed image digitised by the University of Southampton Library Digitisation Unit

c) study and interpretation of the flight progress and radar displays.

Relationship Between Route Structure, ATC Procedures and Capacity

2.8 In any ATC system, as traffic density increases, successive individual controllers will reach a point at which they will become overloaded, unless some measures are taken to restrict the flow of traffic entering their sectors. The threshold values, beyond which any one or more of these measures of controller activity will become unacceptable, are critically dependent on the complexity of the traffic pattern for which these controllers are responsible.

2.9 In every situation of this kind, three basic methods of increasing ATC system capacity can be considered:-

a) more controllers can be employed on the overloaded sectors, or these overloaded sectors can be sub-divided into two or more sectors, to permit a higher volume of traffic to be handled through the same airspace; this method has the disadvantage of increasing the amount of inter-controller and/or inter-sector liaison and co-ordination, and therefore is subject to the law of diminishing returns for the considerable expenditure involved

b) the complexity of the traffic pattern can be simplified, in order to raise the acceptable workload thresholds of the overloaded controllers

c) the problem of interpreting the flight progress and radar displays can be simplified, (e.g. by providing computer driven labelled plan displays which associate aircraft identity, height and intentions with current aircraft position on one display).

2.10 In practice, most ATC system developments in the world's busier terminal areas can be expected to embrace a combination of all three measures, and in the United Kingdom research and development is now in hand to evaluate the most cost-effective combination for the future development of the London Terminal Area. In general, the costs associated with measures (a) and (c) above fall largely on the Administration, and the costs associated with simplifying the complexity of the traffic pattern (sub para. (b) above) fall largely on the aircraft operators.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.11 It is this necessity for simplifying the traffic pattern, (e.g. by the introduction of parallel tracks to separate opposite direction climbing and descending traffic within the same airway, or to provide sufficient capacity within the terminal area for heavy departure flows from the same airport and proceeding in the same general direction) which gives rise to the concept of multi-tracking in the terminal area; and it is the resultant necessity to curtail route mileage increases and excessive airspace demands which gives rise to the requirement for an improved navigational capability which can permit the closer spacing of these parallel tracks.

2.12 To further simplify the complexity of the ATC task, and to permit sufficient sectorisation within the terminal area to handle the predicted traffic growth without creating impossible liaison and co-ordination problems, it is necessary to develop ATC procedures which ensure vertical separation at all times between the crossing tracks within a terminal area which are more densely used by aircraft climbing and descending from and to the various airports, if TMA capacity is not to be unduly restricted by the controller liaison problems.

2.13 It is this close inter-relationship between the ATC environment (i.e. the detailed sectorisation, equipment standard, airborne navigational capability and ATC procedures) and its implications on route structure design which has made difficult the evaluation of the ATC factors affecting the choice of site over a time scale within which this environment is not yet defined, which provides the basis for the discussion of the simulation results in the ensuing section of this report.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 3 - CONSIDERATION OF THE SIMULATION RESULTS

Use of Proximity Count

3.1 The considerations outlined in the preceding section of this report led to the selection of the proximity counts, capable of being determined by an existing simulation model, as a measure of the complexity of the ATC function to be discharged in dealing with a given traffic situation through any specified route structure, which is largely independent of the particular ATC environment existing, or likely to exist, during the period under evaluation.

3.2 The definition and method of derivation of these proximity counts is covered in Volume 1 of this Report (Paragraphs 2.16 - 2.23 refer). The very nature of their independence from the ATC techniques and procedures used to discharge the ATC function whose complexity they are used to measure does, however, raise some difficulty in relating them to an acceptable ATC workload or system capacity limitation in any particular ATC environment under investigation, especially if this environment is so far in the future that it cannot be specified, or even postulated, in detail at this time. This uncertainty indeed emphasises their value for comparison of the relative complexity of the task for different route structures in the same ATC environment, which is the context in which the simulation results were used and reported upon in Volume I of this report.

Derivation of a Complexity Index

3.3 In this volume, the objective is to interpret the significance of the general level of absolute values of the proximity counts predicted for specific points in the postulated future route structures. For this purpose, it was necessary to derive a base level of complexity, or Complexity Index, which relates the numerical values derived from the model to situations of known complexity within the existing ATC environment of the London TMA.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.4 As reported in Volume I (Paragraph 4.1 refers) the model was used to process a traffic sample representative of 1968 peak traffic conditions through a route structure as closely as possible representing the tracks followed by the aircraft, using current ATC procedures. Detailed discussion of the resultant model outputs with practising and experienced TMA controllers led to the conclusion that a 24 hour proximity count of between 50 and 99 indicated a busy or difficult point in the present-day London TMA.

3.5 A proximity count of 100 was therefore arbitrarily selected as a Complexity Index, or base measure of ATC complexity at a single route point, against which to compare and evaluate the implications of proximity counts predicted for critical points in the future route structures simulated.

Implied Magnitude of the ATC Task up to 1980-1985

3.6 In connection with the assessment of ATC factors affecting the timing of the need for the Third London Airport a route strucutre incorporating only the existing airports (suitably developed) at London, Gatwick and Luton, was designed by GPS and tested against a traffic sample prepared by the Commission's Research Team to represent peak movement rates which would be likely to arise during the years 1980 to 1985, if the Third London Airport were not available by that time.

3.7 After only one attempt at the optimisation of ATC procedures for the use of this route structure, it was shown in Volume I of this report (Paragraph 5.11 refers) that only 7 route points had a proximity count exceeding 100 in 24 hours, the maximum value being 115, achieved without the optimisation measures (introduced to simplify the complexity of the ATC task) introducing intolerable capacity restrictions or unacceptable penalties to operators.

3.8 It was further concluded from detailed inspection of these "problem area" route points that successive stages of optimisation of the route structure and ATC procedures could be expected to contain, without excessive penalties, the complexity of the ATC task at all of these points within the Complexity Index selected to be representative of difficult, but operable, points within the present TMA system.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.9 Taking this finding in conjunction with the experience gained by simulating the route structures designed for each of the short-listed sites, the Consultants are of the opinion that viable route structures and ATC procedures could be designed and optimised for any of the four sites to handle this level of traffic during the period up to about 1980-1985, (i.e. before any great variation from existing ATC and navigational capabilities can be expected to be implemented on a sufficient scale to be extensively exploited.)

Implied Magnitude of the ATC Task by the Year 2000

3.10 From the graph at Fig. 5.6 in Volume I it can be seen that all the route structures simulated at 2000 traffic levels for each of the four short-listed sites have some 50 route points with counts in excess of 100 and counts in excess of 300 are not uncommon. One route point alone in one of the simulated route structures has a 24 hour count of 890, which is approximately half of the total proximity counts recorded throughout the whole of the TMA for the London, Gatwick and Luton only route structure, when simulated at 1980 traffic levels. The geographical distribution of these high count values is also of importance and, therefore, a true appreciation of the proximity count situation requires reference to the large scale charts lodged with the Commission.

3.11 Detailed examination of the magnitude and distribution of these counts has led the Consultants to the conclusion that none of the route structures, in their present form, would be capable of handling the forecast 2000 A.D. traffic demand using present-day navigational and ATC techniques, and clearly therefore, some combination of route structure redesign, in conjunction with improved navigational and ATC capabilities (such as are envisaged in the current United Kingdom long-term ATC plans) will be required to reduce the complexity of the ATC task indicated by these high proximity counts, before this traffic demand could be safely and economically handled.

Printed image digitised by the University of Southampton Library Digitisation Unit

Possible Methods of Reducing the Proximity Count

3.12 From detailed examination of the nature and distribution of potential conflict situations indicated by the proximity counts output from the simulation model, it is concluded that, prior to the introduction of radical changes in current operating procedures, three main ways of reducing the proximity counts would be:-

a) by optimisation of the route structure with the objective of minimising the interactions of the traffic patterns (and placing less emphasis on the minimising of route mileages)

b) by optimisation of ATC procedures to minimise the number of counts by giving priority to conflict resolution(and placing less emphasis on deviations from aircraft optimum profiles)

c) by a reduction of the count criteria (separation standards).

3.13 From their previous use of the model, it is evident to the Consultants that none of the aforementioned measures could, in isolation, reduce the ATC task complexity as indicated by the proximity counts to a level comparable to that pertaining today. It is considered probable that a combination of measures to optimise route structure design and ATC procedures could be devised to do so with existing ATC and navigational techniques, but only at the expense of considerable penalties to airline operators in terms of route mileage, deviations from optimum operating profiles and ATC delays, in the unlikely event that the traffic growth reaches these proportions before the planned improvements in ATC and navigational capabilities can be implemented.

Conclusions Regarding Effects on Other Airspace Users

3.14 In this unlikely event, the necessary route structure re-design would undoubtedly involve some extension of the airspace required for TMA operations. This could have implications on other airspace users in the vicinity of the TMA, and therefore the route structures simulated might not form a valid basisfor comparison of all the ATC factors affecting the choice of site for the Third London Airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.15 However, as discussed in Paragraphs 3.6 - 3.9 above, the London, Gatwick and Luton simulations reported upon in Volume I do indicate that traffic up to the levels predicted for the period 1980 - 1985 could be handled, by existing ATC and navigational techniques, through a three-airport TMA without undue penalties. Beyond this period, planned improvements in the ATC and navigational facilities, in conjunction with the optimisation of route structures and ATC procedures discussed in the next section of this report, ought to contain the forecast traffic growth within a volume of airspace comparable to that required by a three-airport TMA.

3.16 On the assumption that this is possible, it is considered that the simulated route structures can be regarded as a reasonable basis for comparison of the implications of each choice of site on other airspace users, in spite of the demonstrated inadequacy of any of these route structures to handle by current techniques the traffic flow forecast for the turn of the century.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 4 - THE EFFECT OF IMPROVED OPERATIONAL TECHNIQUES

The Problem of Defining the Future Environment

4.1 The problems of looking over 30 years ahead to the turn of the century in the context of the London TMA may be placed in perspective by posing a similar problem in the year 1938. Deductions would have had to be made then about the nature of the 1969 air traffic environment without knowledge of the impacts, for example, of:-

a) radar
b) the jet engine
c) reliable air/ground voice communication based on very high frequency techniques (VHF)
d) VHF navigational and guidance facilities (e.g. VOR and ILS)
e) the transistor, and microminiaturised computer techniques
f) the explosive growth of Inclusive Tour traffic.

Factors to be Taken into Account

4.2 Apart from the necessary improvement in the accuracy of navigational data, perhaps the most important future technological development, which is already under way, will be the introduction of the digital computer into both aircraft operation and the ATC system. Among equipment developments which may be foreseen, and which will almost certainly rely upon digital computers are:-

a) improved airborne navigational capabilities including the capability for accurate guidance and control in the vertical as well as the horizontal plane (i.e. profile navigation)
b) improved radar data gathering and processing systems, including automatic tracking and better height finding capability
c) digital data links to relieve the present overloaded voice communication channels of routine messages
d) highly stable time/frequency (T/F) equipment for collision avoidance and station keeping, particularly to facilitate the resolution of potential along-track conflict situations
e) improved ATC techniques, particularly to facilitate the resolution of potential across-track conflict situations between crossing streams of aircraft which may be in the climb or descent phase of flight.

Printed image digitised by the University of Southampton Library Digitisation Unit

f) an increase in the flexibility of aircraft performance within the TMA to facilitate their integration into an effective transport system

g) the increasing capability for effective segregation of conventional from V/STOL, C/STOL, Supersonic and Hypersonic transport aircraft.

Optimisation of the Route Structures and ATC Procedures

4.3 The Consultants consider that a comprehensive approach to the optimisation of the four route structures, based upon the foregoing possibilities and a reduction of proximity criteria to the levels representative of the tighter separation standards which could be expected from currently feasible navigational capabilities, could result in the reduction of the individual route point proximity counts to values comparable to these occurring in the present day system and without undue penalties to operators. The greater complexity, relative to the present day, of any structure developed to this level would render the overall ATC task more complex than at present, but future possible developments of data gathering and processing systems, together with new ATC techniques and equipment, offer the prospect of rendering this task manageable.

4.4 Figure 4.1 illustrates the progress of such an optimising process (in connection with another study) which is related to TMA route structures designed against assumptions of profile navigation and tested against proximity criteria comparable to those referred to above. The process is lengthy and involved - the example in question requiring seven simulations before it was considered that the optimisation process had achieved its objective.

4.5 In the light of these considerations, and of their previous experience of the optimisation process, the Consultants have examined in detail the distribution and causes of the proximity counts for the major conflict points in the simulated route structures for each of the four short-listed sites for the Third London Airport.

4.6 From this detailed examination, no evidence has been found to indicate that any one of the airport sites presents inherently easier or more difficult optimisation problems than any of the other sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

4.7 It is however stressed that, at this time, this finding can only be based upon subjective impressions which could be confirmed or disproved only by actually undertaking the optimisation process for all four sites. This is clearly impracticable within the Commission's timescale.

Conclusions Regarding the Basis of Comparison

4.8 It is therefore concluded that :-

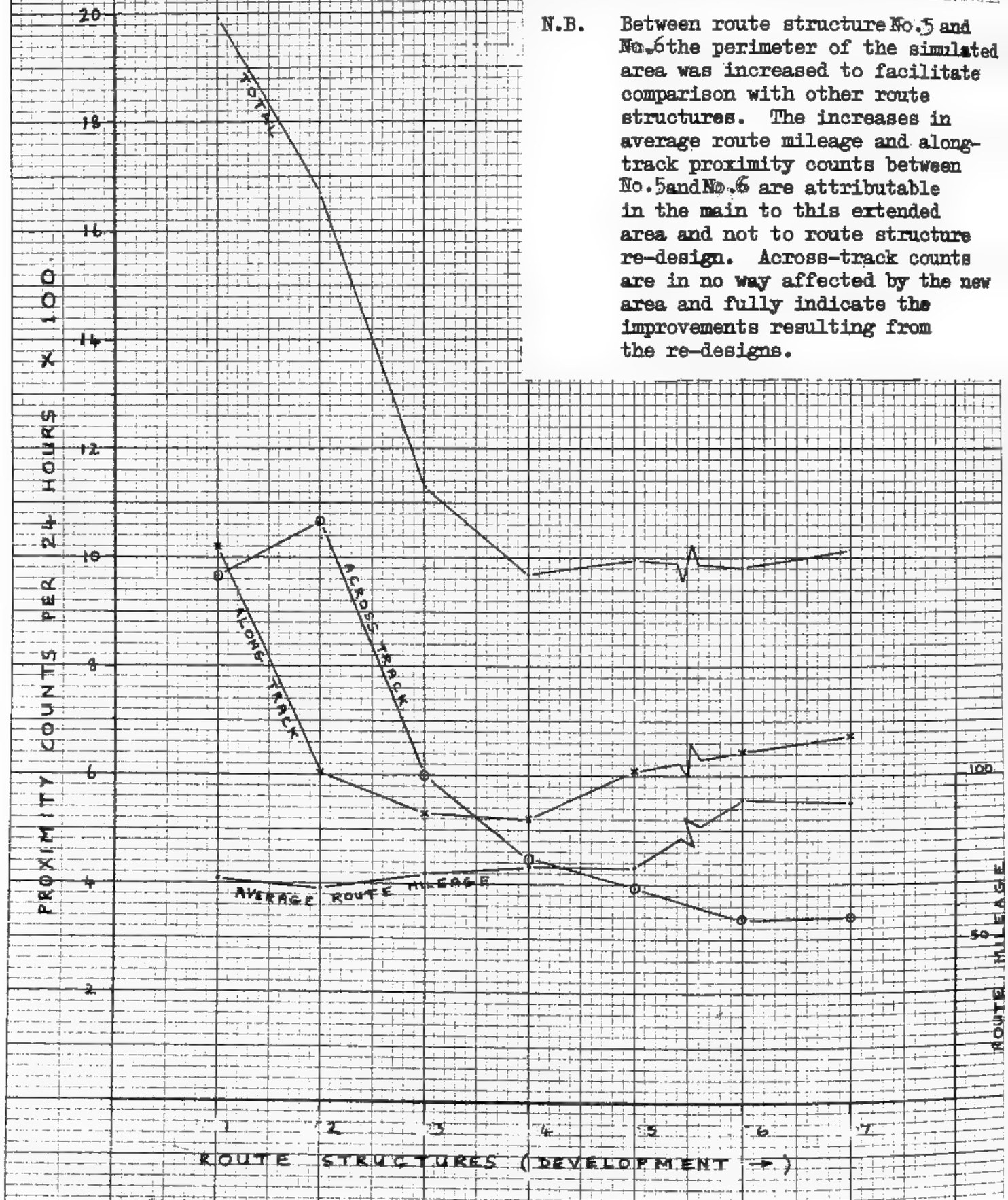
a) although the magnitude of the proximity counts indicates that all of the simulated route structures would be infeasible without optimisation in the light of improved future techniques, there is no evidence to suggest that they do not represent a reasonable and valid basis of comparison, which is also the best basis available within the present timescale

b) the findings reached in Volume I are unlikely to be upset by possible future developments in TMA operating techniques.

Printed image digitised by the University of Southampton Library Digitisation Unit

EXAMPLE OF ROUTE STRUCTURE OPTIMISATION

N.B. Between route structure No.5 and No.6 the perimeter of the simulated area was increased to facilitate comparison with other route structures. The increases in average route mileage and along-track proximity counts between No.5 and No.6 are attributable in the main to this extended area and not to route structure re-design. Across-track counts are in no way affected by the new area and fully indicate the improvements resulting from the re-designs.



Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings volume VIII part 2, section 2

Stage III: Research and Investigation

Specially commissioned studies

LONDON
HER MAJESTY'S STATIONERY OFFICE
1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed in England for Her Majesty's Stationery Office by
Croform Techniques Ltd., London E.C.1.

Dd. 501451 K16 12/69

SBN 11 510163 2

Printed image digitised by the University of Southampton Library Digitisation Unit

Foreword by the Chairman

The Hon. Mr. Justice Roskill

Stage III of the Commission's work has consisted of investigation and research into the timing of the need for a third London airport and into matters relevant to the choice to be made between the short-listed sites. The work has been carried out by the Commission's Research Team with the help of consultants, government departments and others.

Studies undertaken by consultants, government departments and others form volume VIII of the Commission's Papers and Proceedings. Part 1 of volume VIII contains the study by the consultants on urbanisation. Part 2 contains the remainder of these studies and is divided into four sections.

The advice given by the Commission's consultants, by government departments and by others in these studies has been reflected in the work of the Research Team which forms volume VII of the Commission's *Papers and Proceedings.* Nevertheless, this in no way implies that the Commission has accepted that advice since it will enter upon the Stage V hearings with an open mind about the conclusions to be drawn from the work carried out during Stage III. Similarly, the Commission wishes it to be understood that, in publishing these studies, it is expressing no view on the merits of the advice which they contain; this is for examination during Stage V.

EUSTACE ROSKILL

Templar House,
81-87 High Holborn,
LONDON, W.C.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

CONSULTANTS REPORT TO THE COMMISSION ON THE THIRD LONDON AIRPORT ON AIRSPACE FACTORS AFFECTING THE CHOICE OF SITE

VOLUME I

THE EVALUATION OF AIR TRAFFIC CONTROL FACTORS AFFECTING THE TIMING OF THE NEED FOR, AND THE SITING OF, A THIRD LONDON AIRPORT

5 NOVEMBER 1969

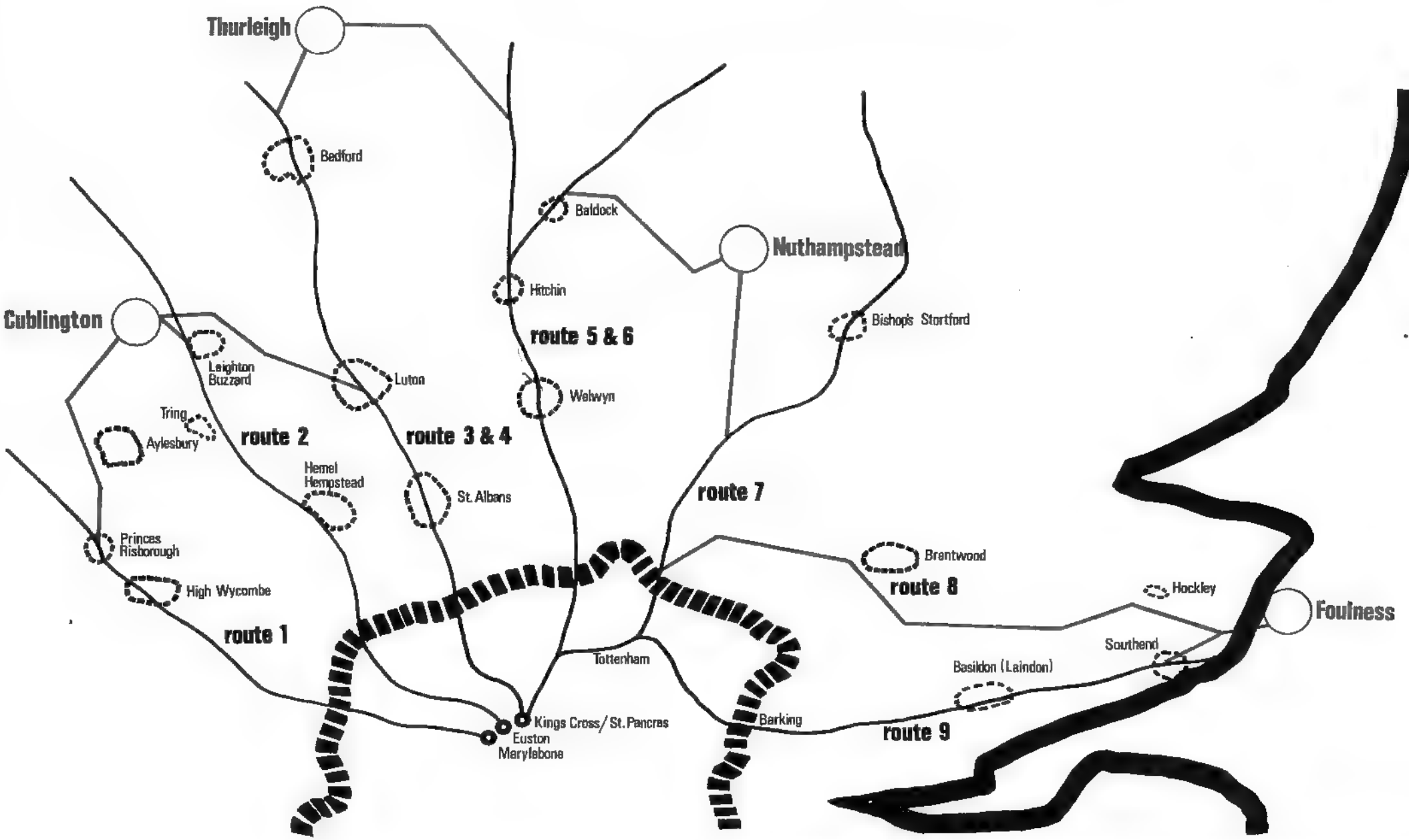
Reference : KH/C/8638/CB65A1

GENERAL PRECISION SYSTEMS LTD.,
Abbey House,
282/292 Farnborough Road,
Farnborough, Hants.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Key Plan
Routes 1 to 9



Printed image digitised by the University of Southampton Library Digitisation Unit

route 1 route mileage 51

	a	b	c	d	e	f	g	h	existing	proposed
existing speed ml/hr	40	50	40	25	45	up 60 dn 45	up 80 dn 60	–		
proposed speed ml/hr	40	50	70	70	70	80	80	70		
cost of improvement £m			0.05	0.32	0.75	0.11	0.26			1.49
basic cost £m									9.40	9.40
cost of o/electrification & associated structures £m										4.14

max speed ml/hr 70 Marylebone – Neasden
100 Neasden – Cublington

total cost £m 9.40 15.03

available train paths/hour 8

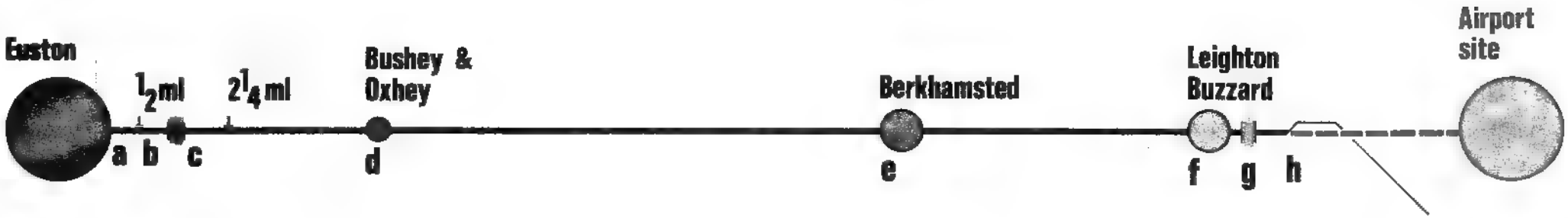
journey time mins 49 44

not to scale

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface Link Study

route 2 route mileage 46



	a	b	c	d	e	f	g	h
existing speed ml/hr	20	40	55	90	90	80	90	–
proposed speed ml/hr	20	40	55	90	90	80	90	70

max speed ml/hr 80 Euston – Willesden 6 mp
100 Willesden – Cublington

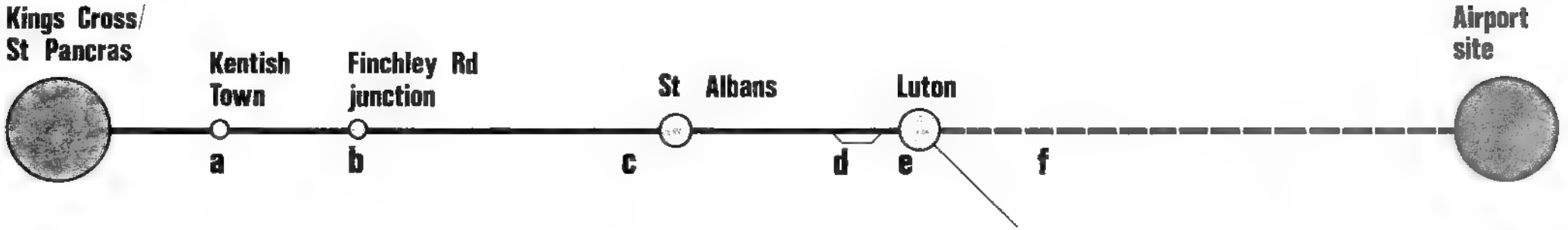
available train paths/hour 4

not to scale

	existing	proposed
cost of improvement £m		
basic cost £m	3.08	3.08
cost of o/electrification & associated structures £m		0.08
total cost £m	3.08	3.16
journey time mins	39	–

Printed image digitised by the University of Southampton Library Digitisation Unit

route 3 route mileage 48



	a	b	c	d	e	f	existing	proposed
existing speed ml/hr	65	65	up 80 dn 75	80	—	—		
proposed speed ml/hr	65	65	90	80	70	80		
cost of improvement £m			0.05					0.05
basic cost £m							5.60	5.60
cost of o/electrification & associated structures £m								2.93
max speed ml/hr			75 St Pancras — Hendon 100 Hendon — Cublington				total cost £m	5.60	8.58
available train paths/hour			8				journey time mins	41	40

not to scale

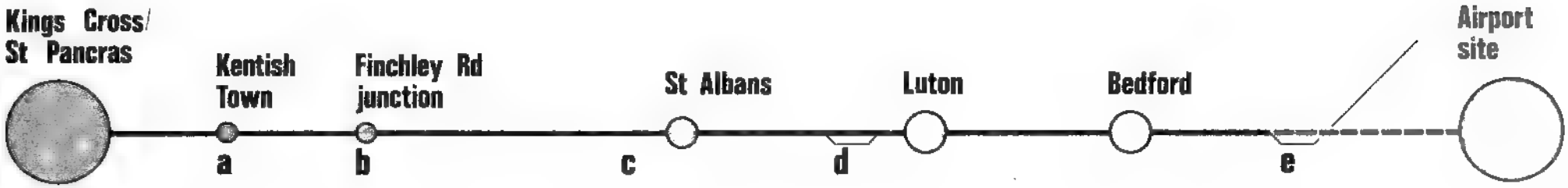
Printed image digitised by the University of Southampton Library Digitisation Unit

Kings Cross St Pancras — Bedford — Thurleigh

Third London Airport Surface Link Study

5

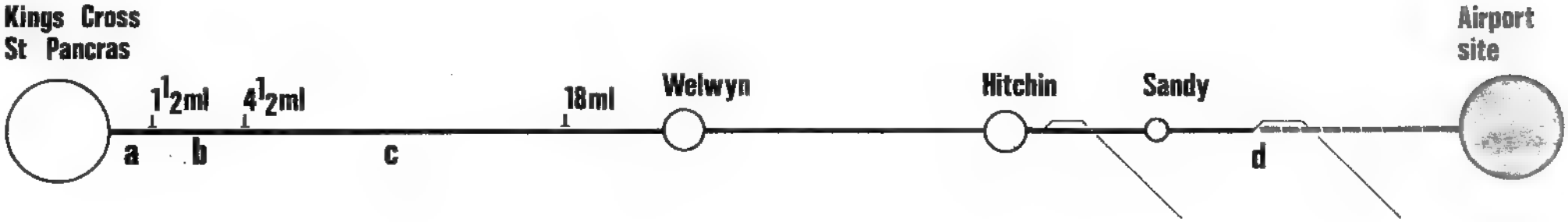
route 4 route mileage 59



		a	b	c	d	e	existing	proposed
existing speed	ml/hr	65	65	up 80 dn 75	80	–		
proposed speed	ml/hr	65	65	90	100	70		
cost of improvement	£m			0.05	0.66			0.71
basic cost	£m						2.13	2.13
cost of o/electrification & associated structures	£m							3.89
							total cost £m	2.13	6.73
		max speed ml/hr		75 St Pancras–Hendon			4 passenger lines £m	0.25	0.25
				100 Hendon–Thurleigh			total cost £m	2.38	6.98
		available		5, or 8 with 4 passenger lines between					
not to scale		train paths/hour		Kings X/St Pancras & Finchley Road			journey time mins	49	47

Printed image digitised by the University of Southampton Library Digitisation Unit

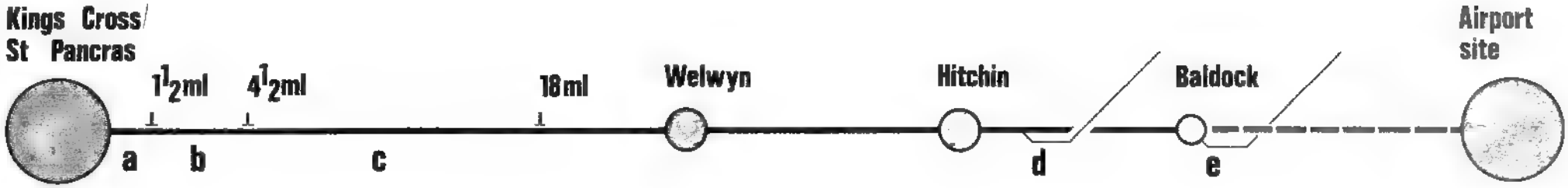
route 5 route mileage 58



		a	b	c	d		existing	proposed
existing speed	ml/hr	40	60	80	–			
proposed speed	ml/hr	45	80	100	70			
cost of improvement	£m	covered by G.N. electrification						
basic cost	£m						3.29	3.29
cost of o/electrification & associated structures	£m							1.59
		max speed ml/hr		100 Kings Cross–Thurleigh		total cost £m	3.29	4.88
						duplication at Welwyn £m	2.93	2.93
						total cost £m	6.22	7.81
not to scale		available train paths/hour		4, or 7 with duplication at Welwyn		journey time mins	–	45

Printed image digitised by the University of Southampton Library Digitisation Unit

route 6 route mileage 48



		a	b	c	d	e	existing	proposed
existing speed	ml/hr	40	60	80	20	–		
proposed speed	ml/hr	45	80	100	40	70		
cost of improvement	£m	covered by G.N. electrification						
basic cost	£m						3.57	3.57
cost of o/electrification & associated structures	£m							0.62

max speed	ml/hr	100	Kings Cross – Hitchin	total cost	£m
		70	Hitchin – Baldock	duplication at Welwyn	£m
		100	Baldock – Nuthampstead	total cost	£m
available train paths/hour		4, or 7 with duplication at Welwyn		journey time	mins

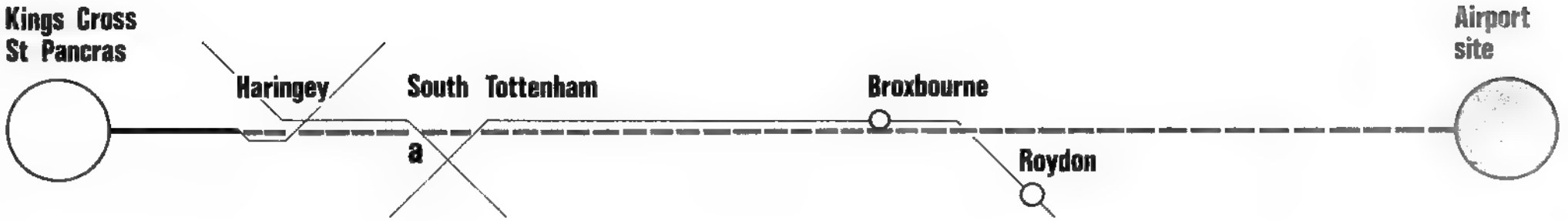
existing	proposed
3.57	4.19
2.93	2.93
6.50	7.12
–	40

not to scale

Printed image digitised by the University of Southampton Library Digitisation Unit

Kings Cross St Pancras — Haringey — South Tottenham — Broxbourne — Nuthampstead

route 7 route mileage 35



	a	existing	proposed
existing speed ml/hr	—		
proposed speed ml/hr	70		
cost of improvement £m			
basic cost £m		13.88	13.88
cost of o/electrification & associated structures £m			1.73
max speed ml/hr	40 Kings Cross — Haringey	total cost £m	13.88	15.61
	100 Haringey — Nuthampstead		
available train paths/hour	exclusive	journey time mins	—	32

not to scale

Printed image digitised by the University of Southampton Library Digitisation Unit

route 8 route mileage 56

	a	existing	proposed
existing speed mi/hr	—		
proposed speed mi/hr	70		
cost of improvement £m			
basic cost £m		28.40	28.40
cost of o/electrification & associated structures £m			2.78
max speed mi/hr	40 Kings Cross — Haringey 100 Haringey — Foulness	total cost £m	28.40	31.18
available train paths/hour	exclusive	journey time mins	—	45

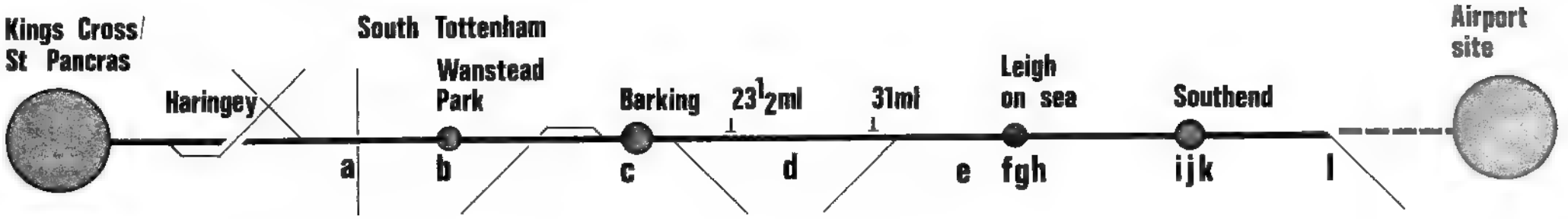
not to scale

Printed image digitised by the University of Southampton Library Digitisation Unit

Kings Cross St Pancras — Barking — Southend — Foulness

Third London Airport Surface Link Study

route 9 **route mileage 51**

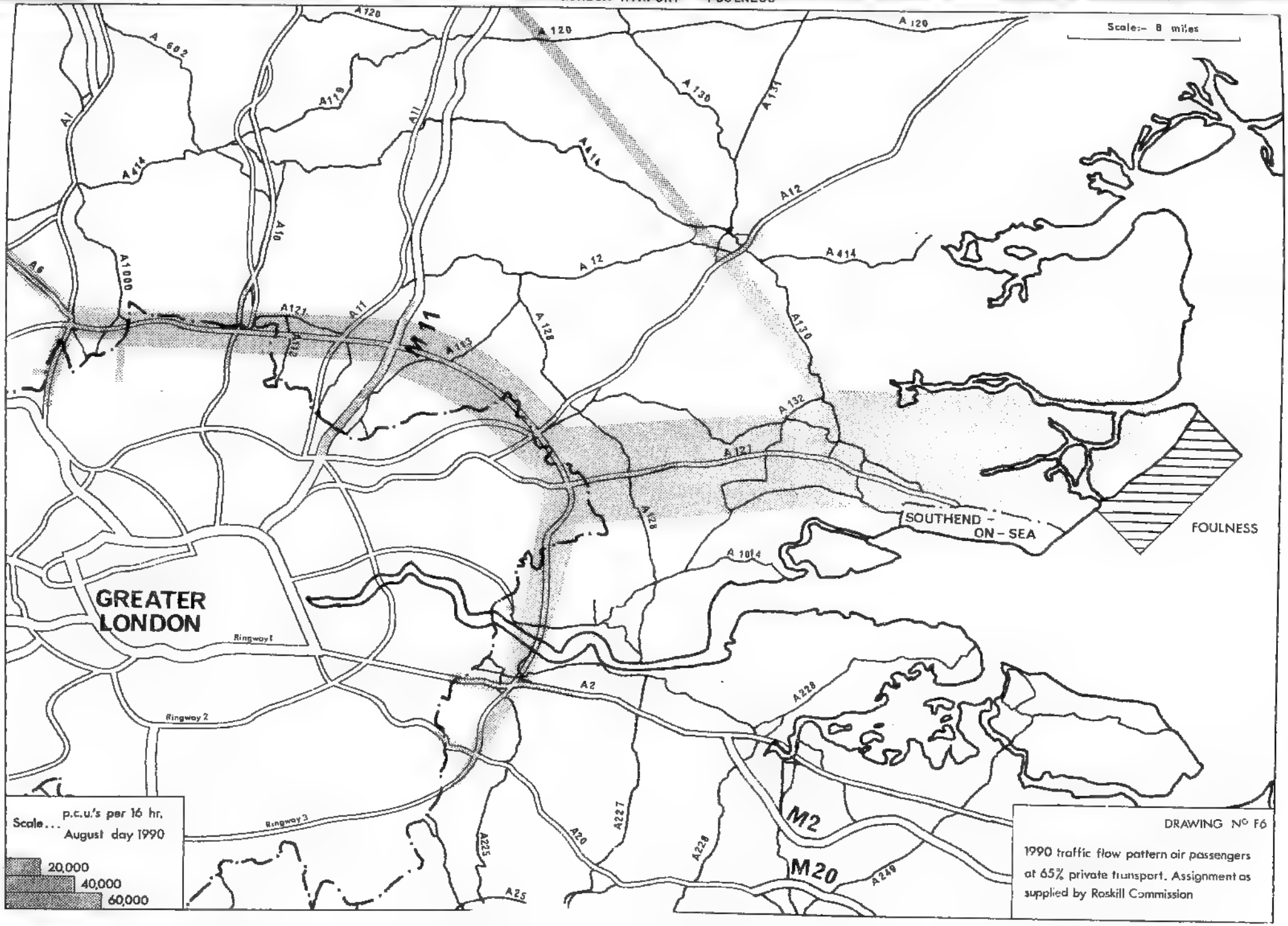


	a	b	c	d	e	f	g	h	i	j	k	l	existing	proposed
existing speed ml/hr	25	40	60	60	70	60	55	up 70 dn 65	60	70	55	—		
proposed speed ml/hr	70	40	60	60	75	60	55	up 70 dn 65	60	70	70	70		
cost of improvement £m														
basic cost £m													9.71	9.71
cost of o/electrification & associated structures £m														1.19
max speed ml/hr	40 Kings Cross — Haringey													
	75 Haringey — Thorpe Bay													
	100 Thorpe Bay — Foulness													
total cost £m													9.71	10.90
available train paths/hour	2													
journey time mins													56	—

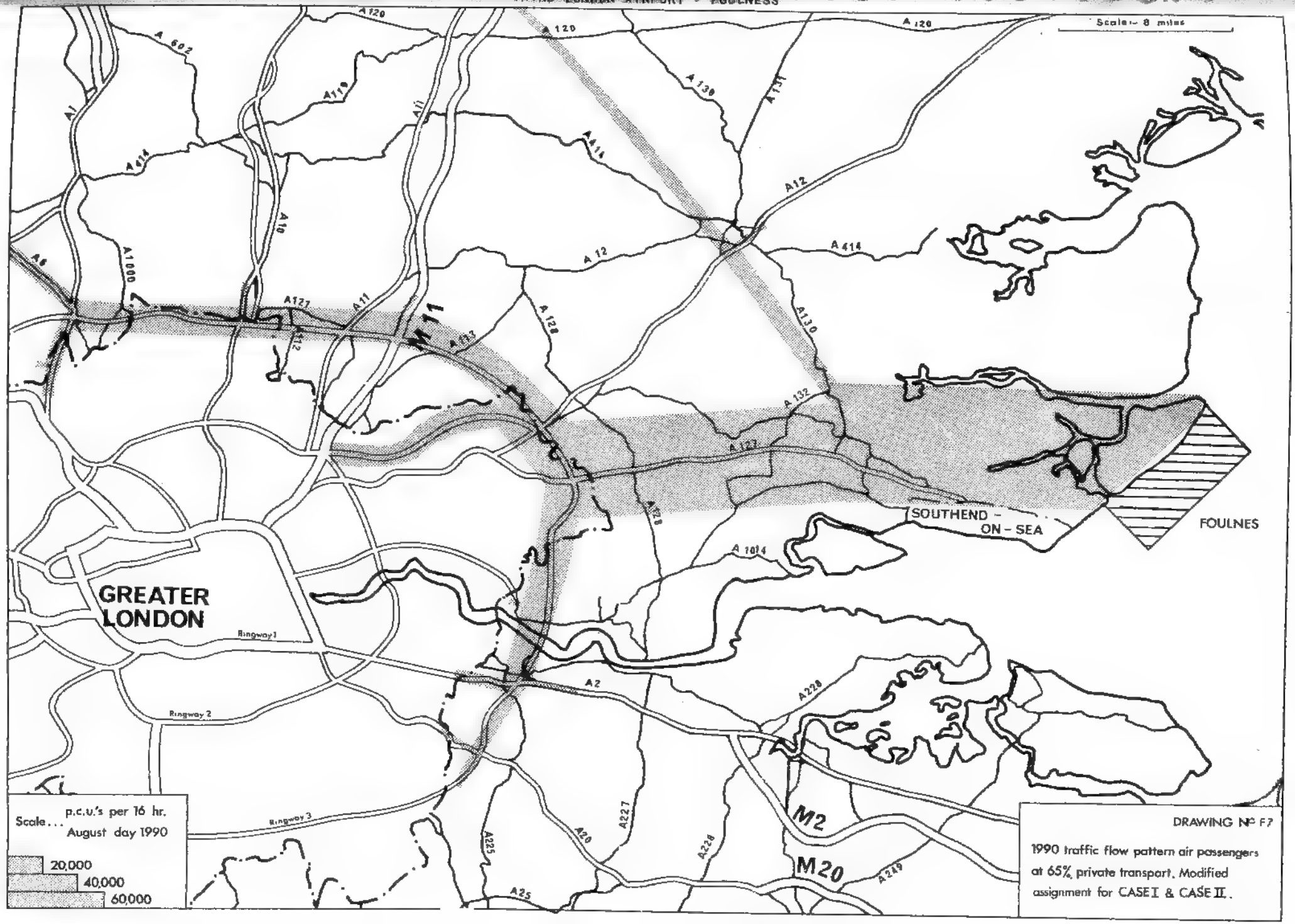
not to scale

Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT - FOULNESS



Printed image digitised by the University of Southampton Library Digitisation Unit

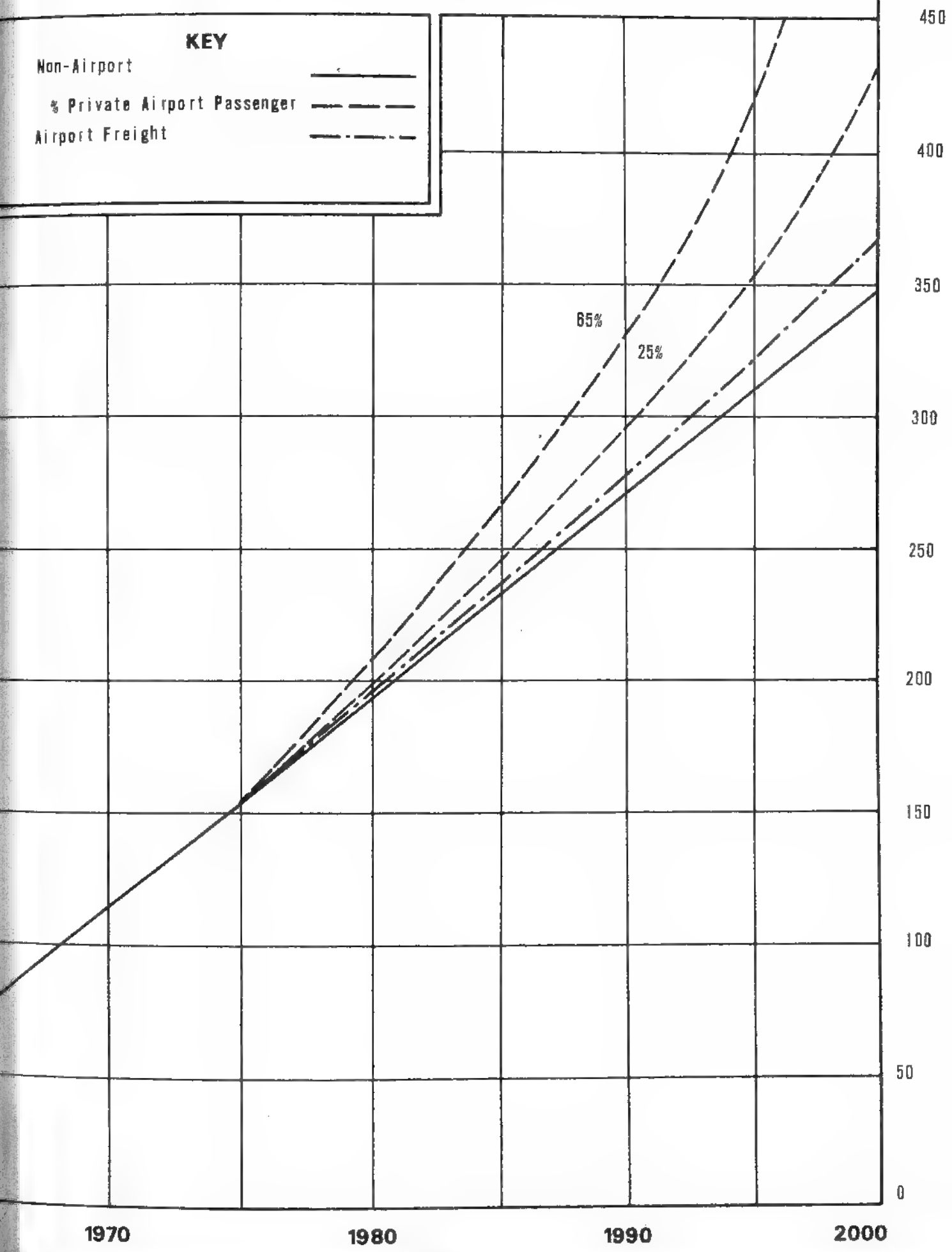


THIRD LONDON AIRPORT – FOULNESS

CUMULATIVE TRAFFIC FLOWS

Site-Between junction with A130 and Ringway 3

(All flows in 1000's p.c.u. per August 16 hour day)



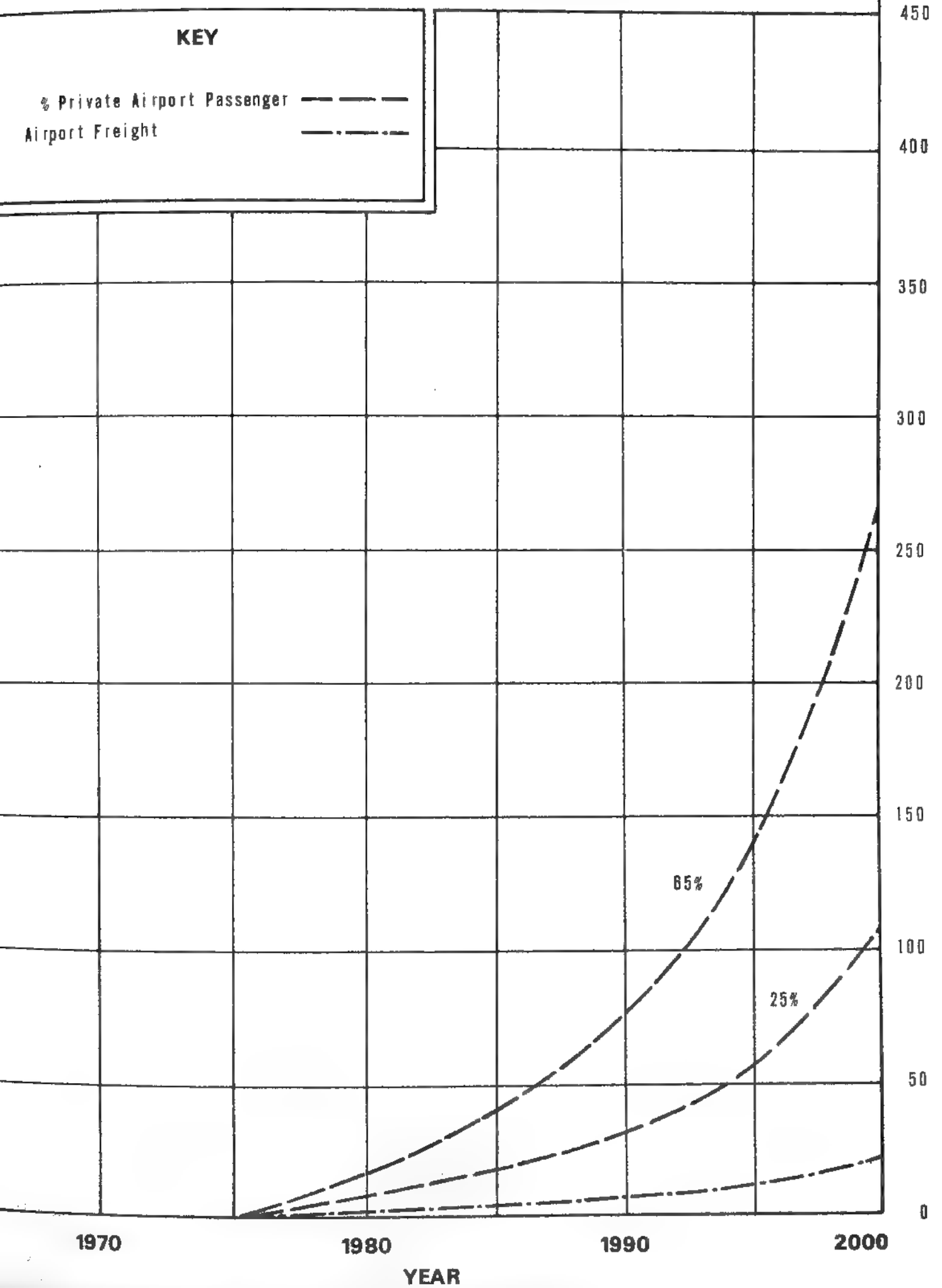
Digitised image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT – FOULNESS

CUMULATIVE TRAFFIC FLOWS

Site- Between Airport and junction with A130

(All flows in 1000's p.c.u. per August 16 hour day)



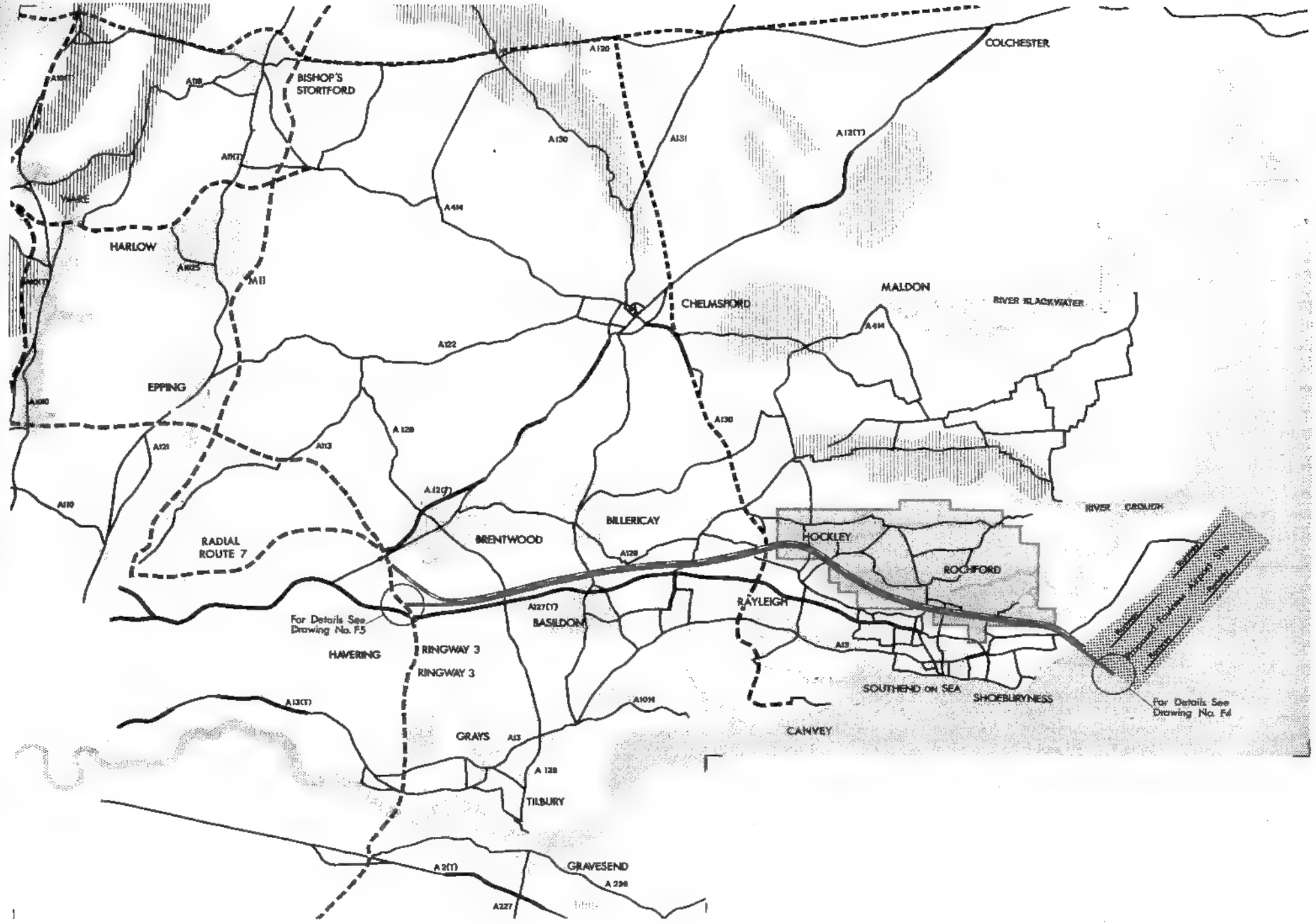
Digitised image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT

FOULNESS

Surface Access Proposals

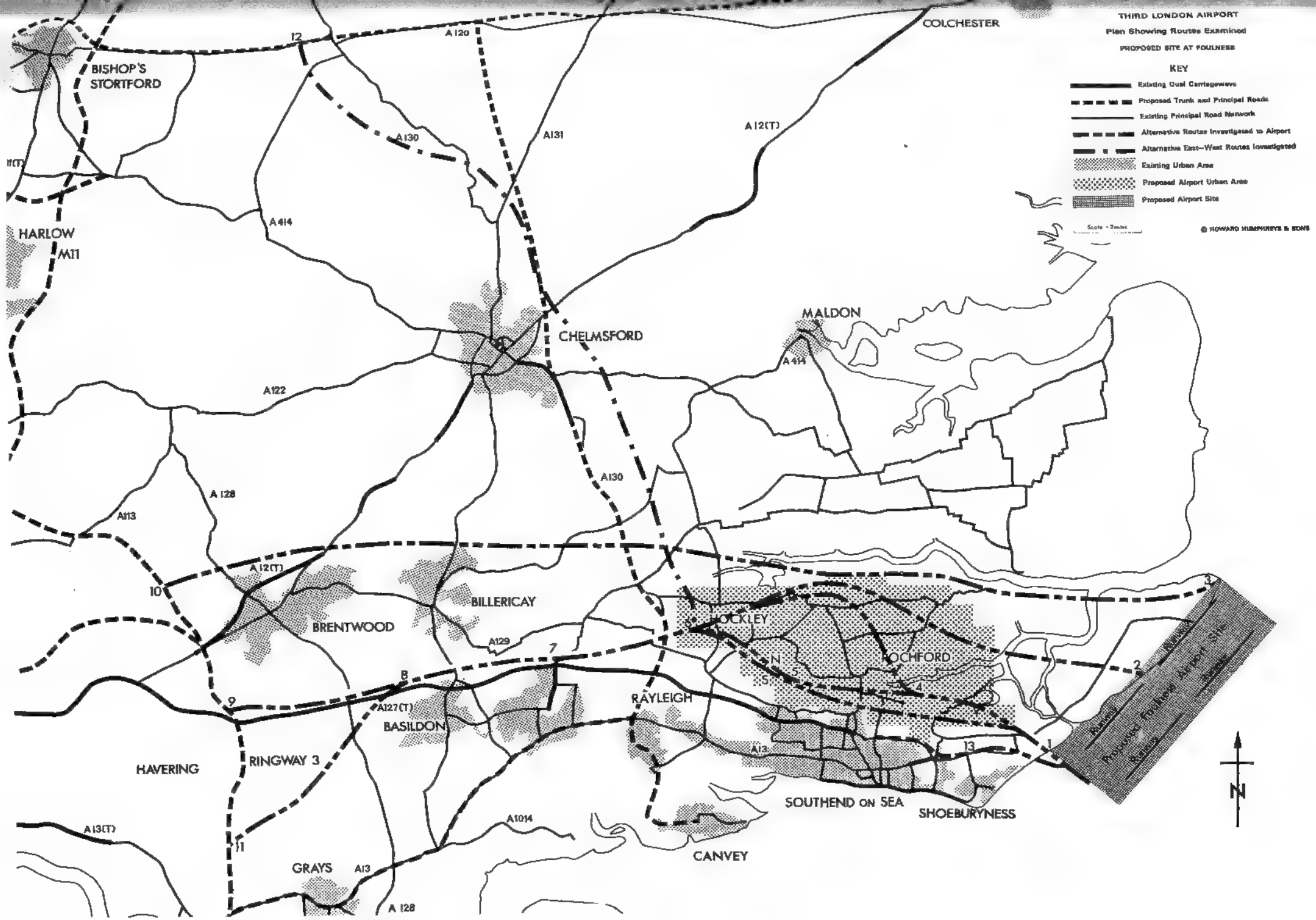


KEY

- Existing Motorways
- Proposed Motorways
- Existing Dual Carriageways
- Proposed Trunk and Principal Roads
- Existing Principal Road Network
- Proposed Motorway Access to Airport
- Suggested East - West Route
- Proposed Rail Link
- Existing Urban Area
- Proposed Airport Urban Area
- Proposed Airport Site
- Areas of High Landscape Value

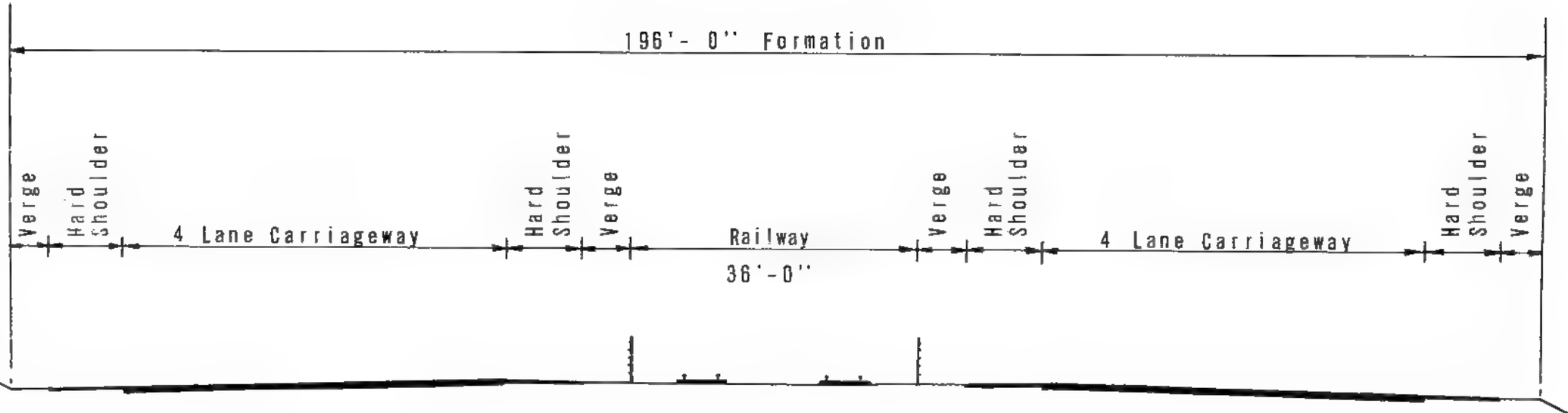
1 0 1 2 3 4 5
Miles

© Howard Humphreys & Sons



Printed image digitised by the University of Southampton Library Digitisation Unit

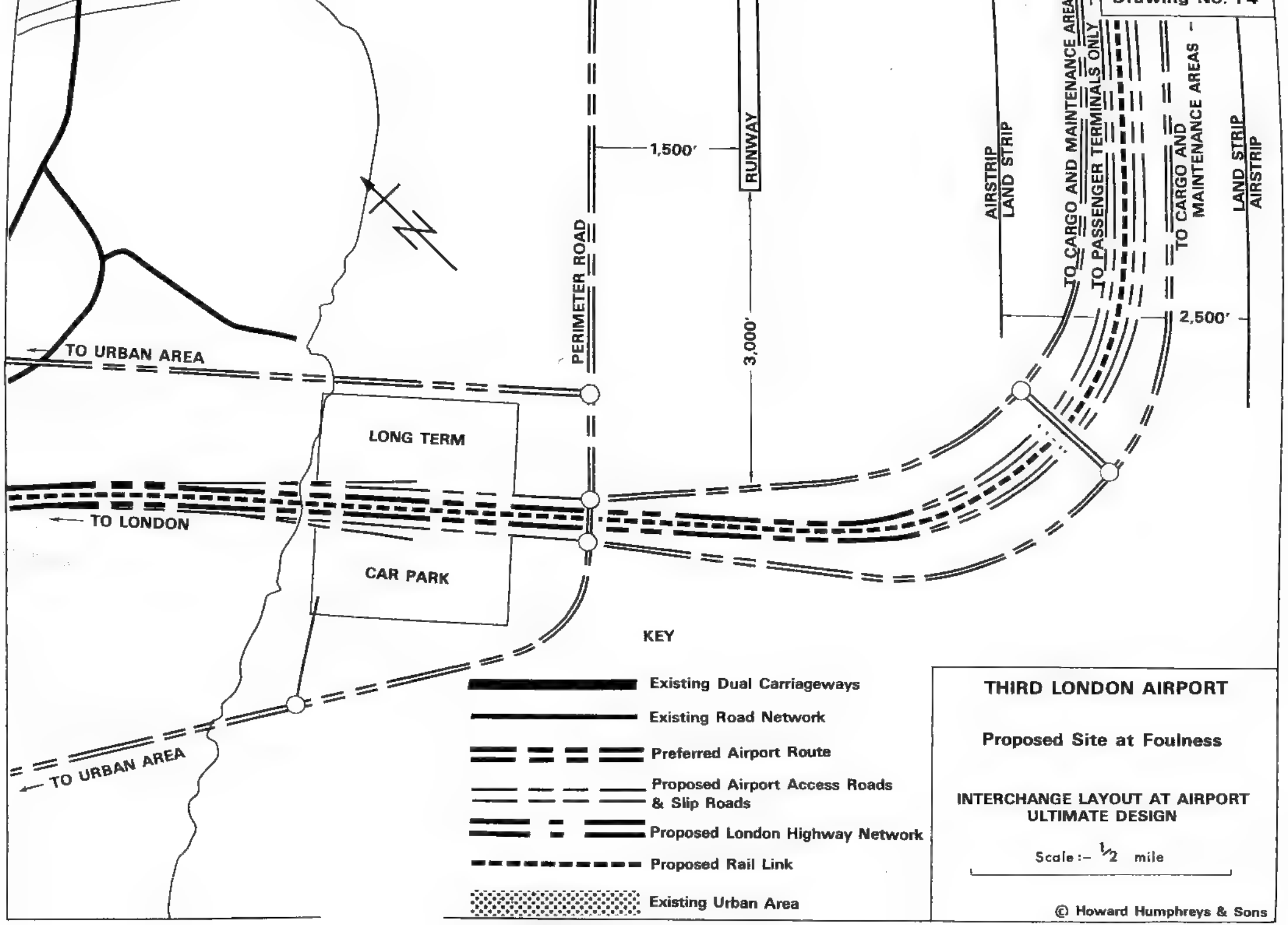
Printed image digitised by the University of Southampton Library Digitisation Unit



THIRD LONDON AIRPORT

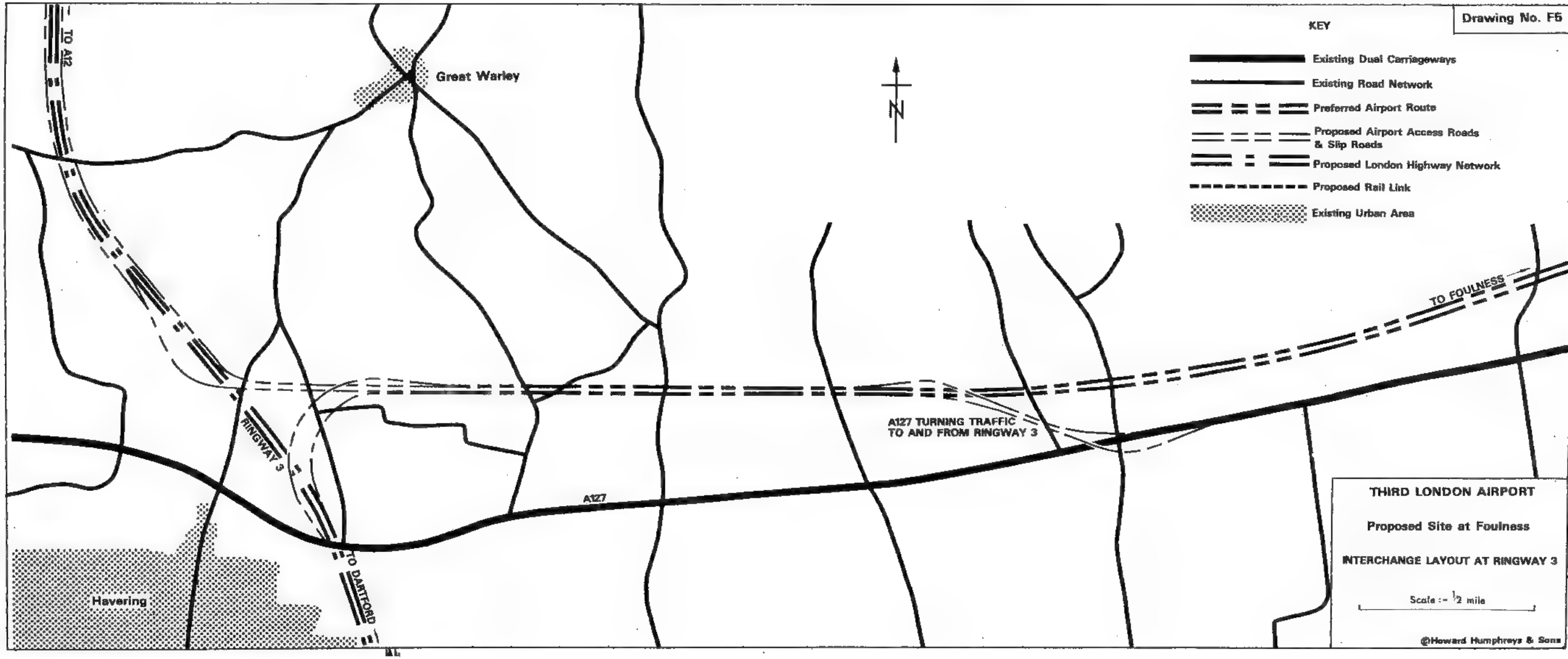
Typical Cross-Section Combined Road/Rail Link

DRAWING No. 3

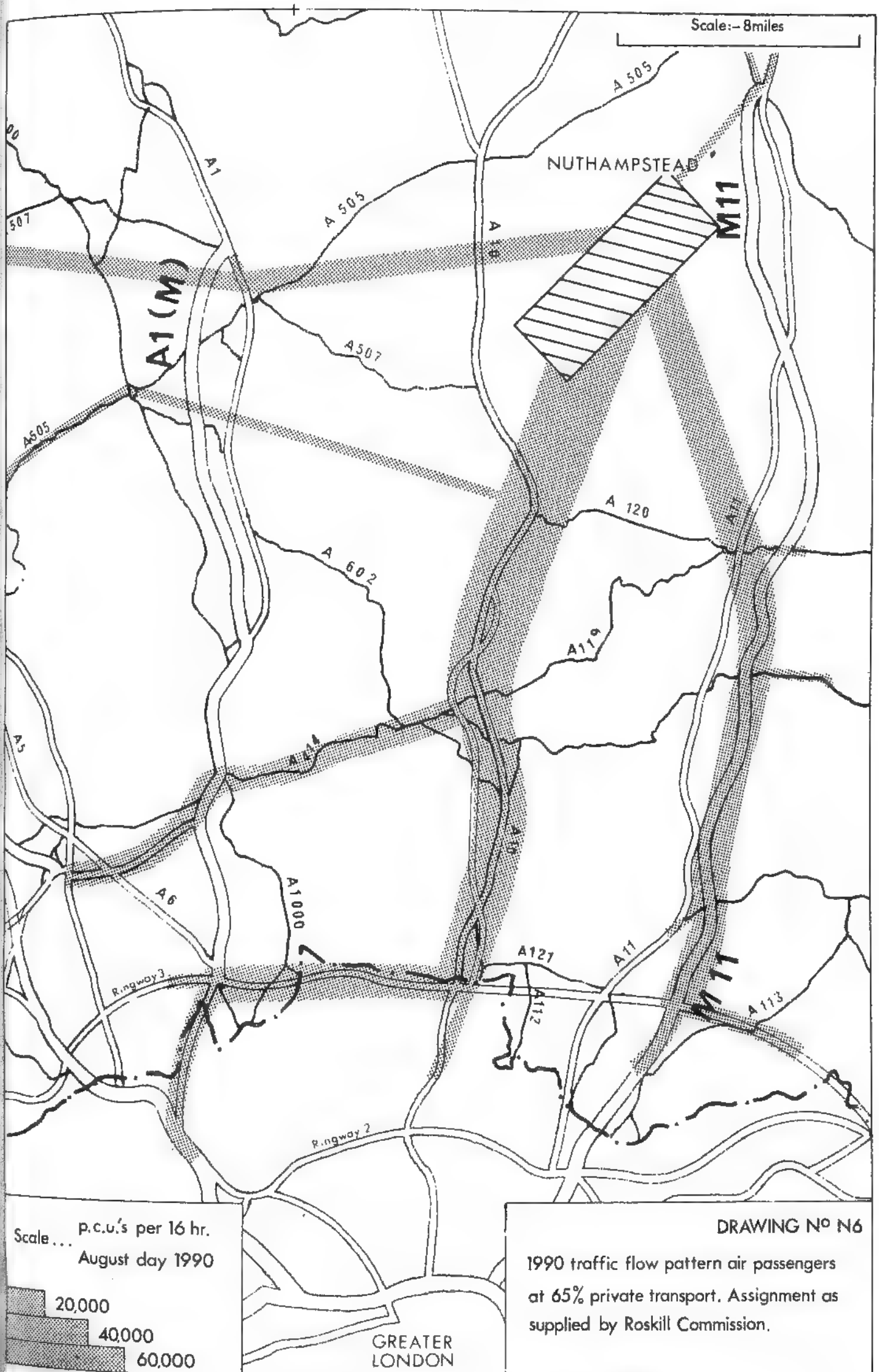


Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

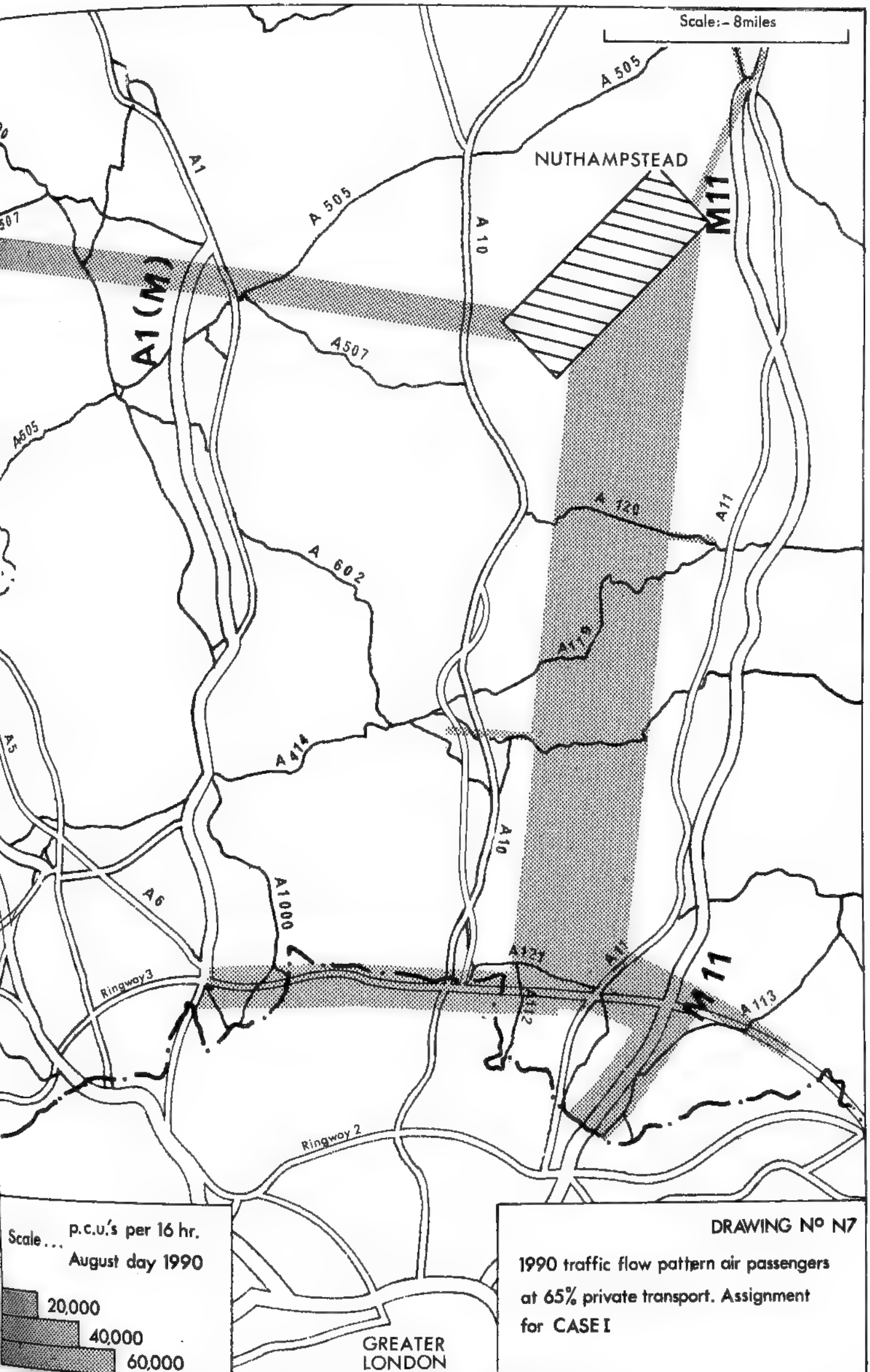


THIRD LONDON AIRPORT NUTHAMPSTEAD



Printed image digitised by the University of Southampton Library Digitisation Unit

- THIRD LONDON AIRPORT NUTHAMPSTEAD -



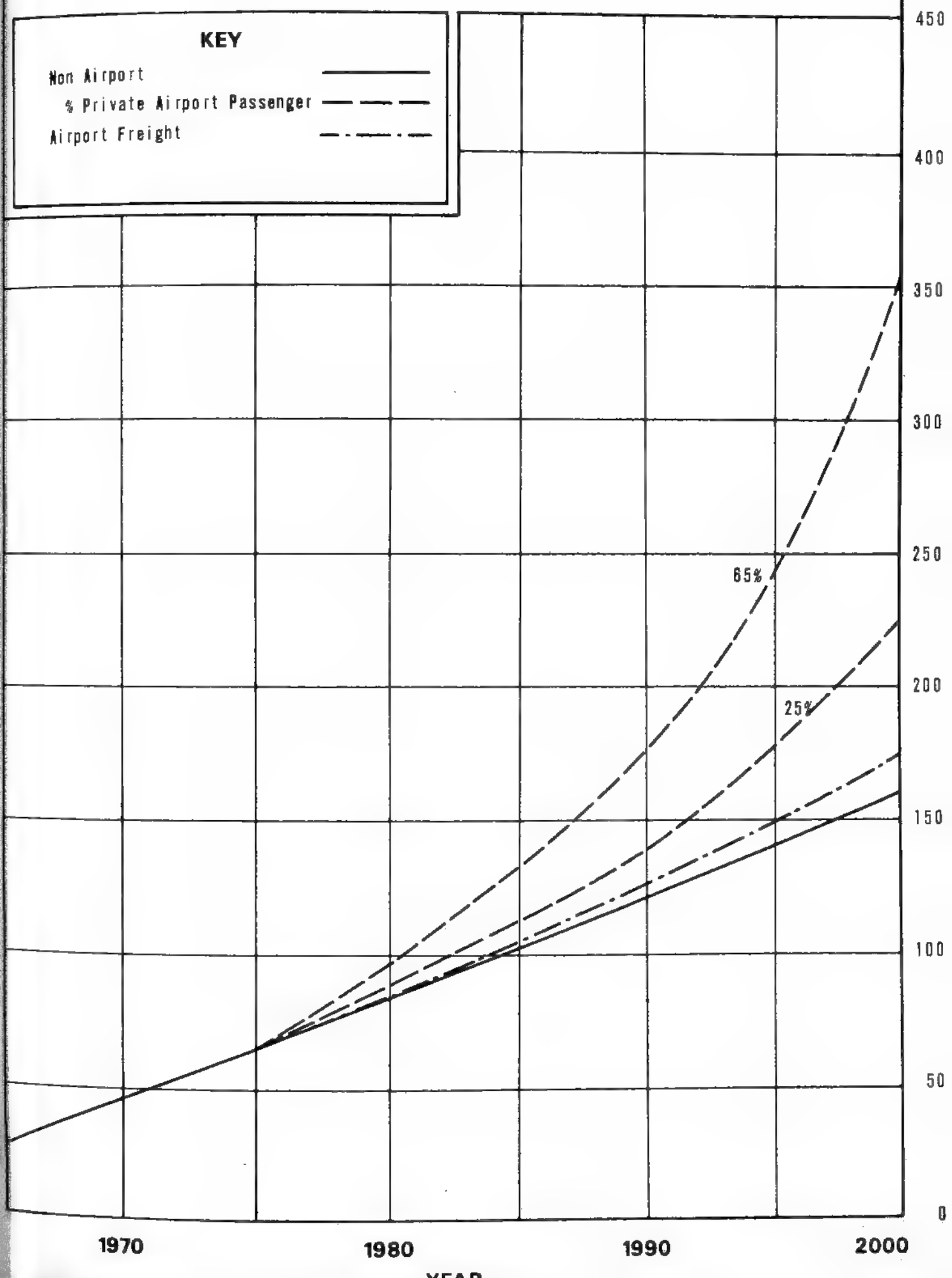
Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT — NUTHAMPSTEAD

CUMULATIVE TRAFFIC FLOWS

Site- Between Airport and junction with A414

(All flows in 1000's p.c.u. per August 16 hour day)



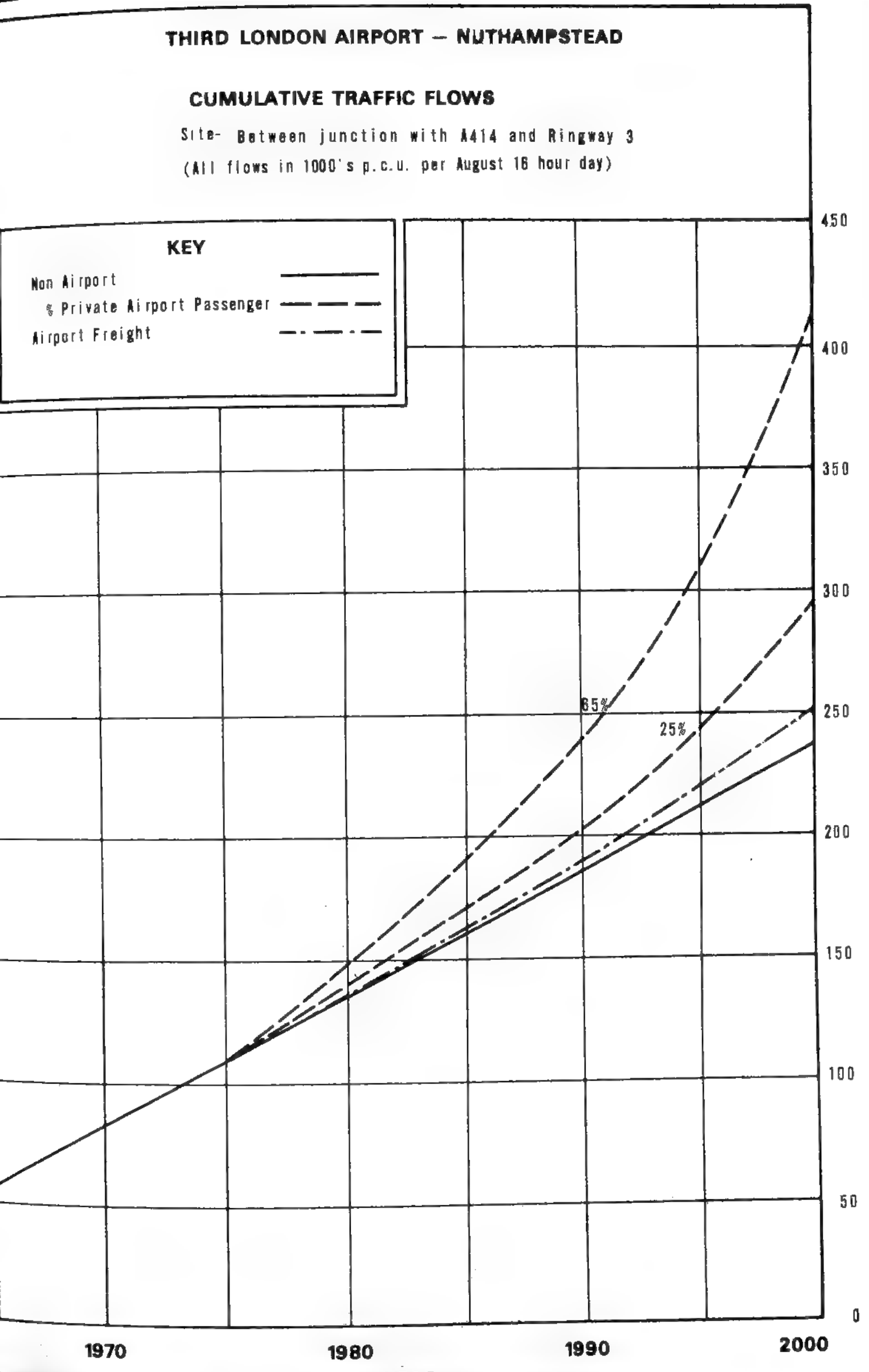
Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT — NUTHAMPSTEAD

CUMULATIVE TRAFFIC FLOWS

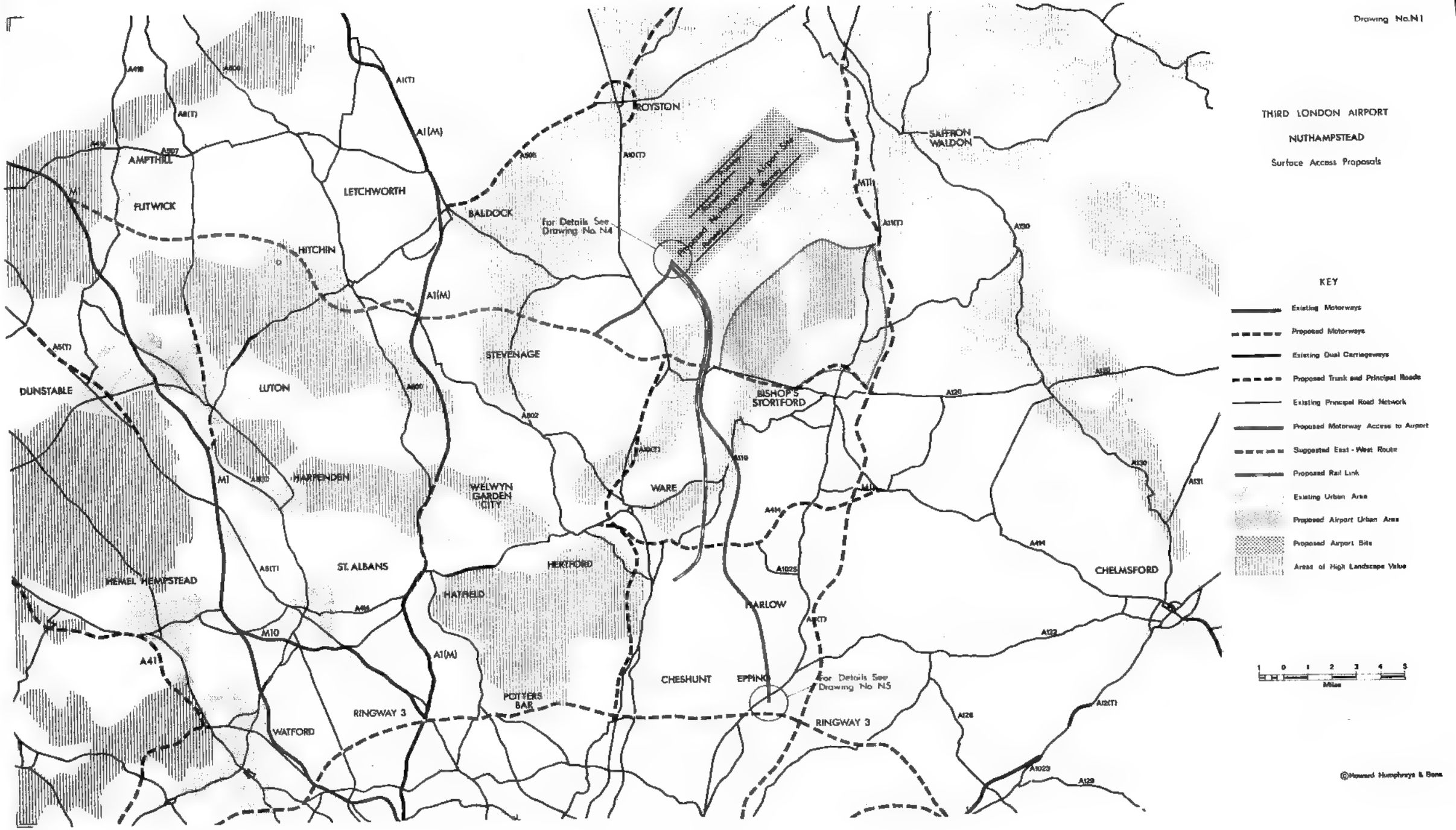
Site- Between junction with A414 and Ringway 3

(All flows in 1000's p.c.u. per August 16 hour day)

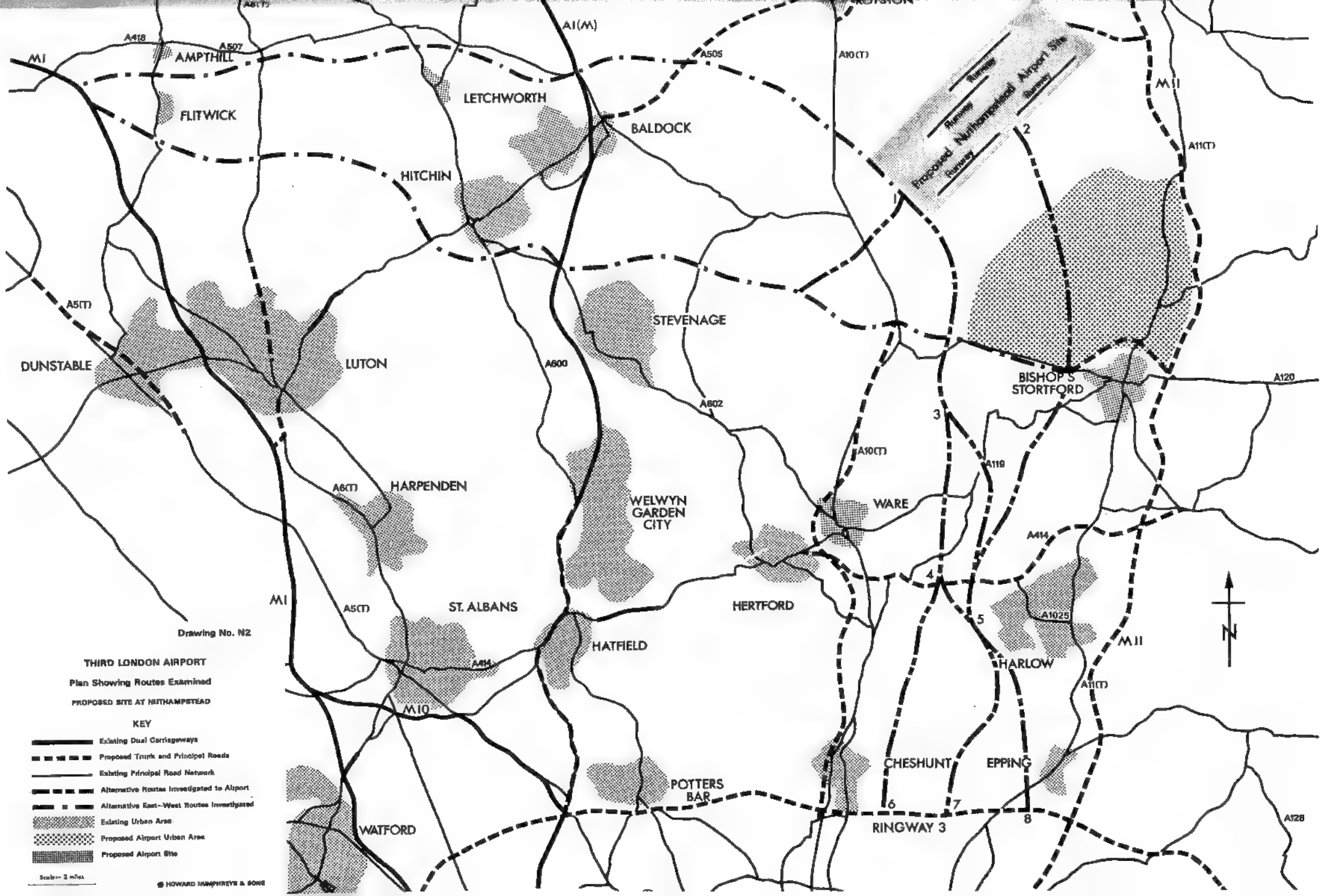


Printed image digitised by the University of Southampton Library Digitisation Unit

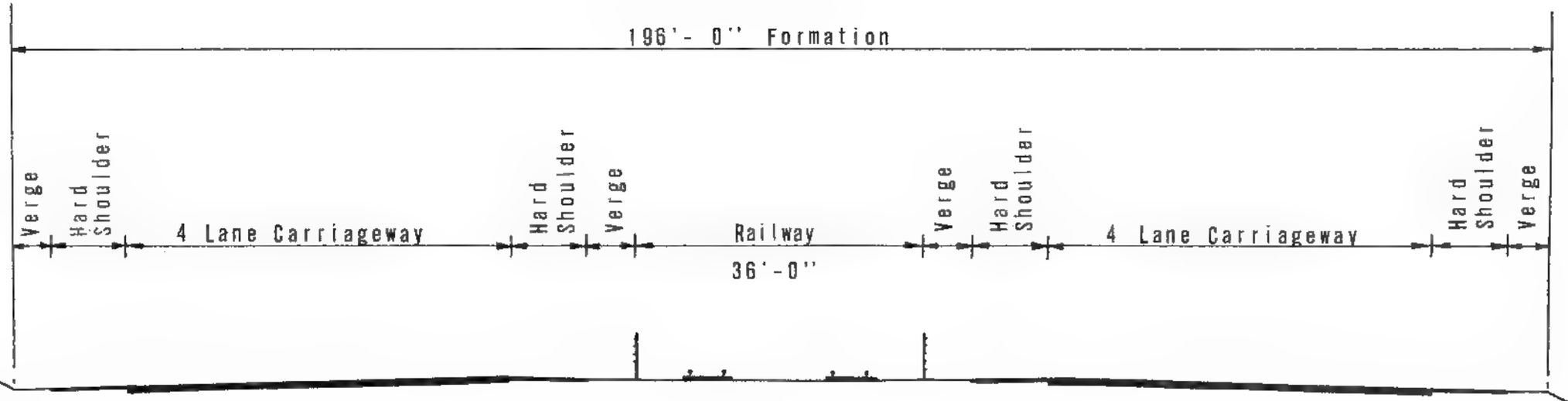
Digitised image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



Digitised image digitised by the University of Southampton Library Digitisation Unit



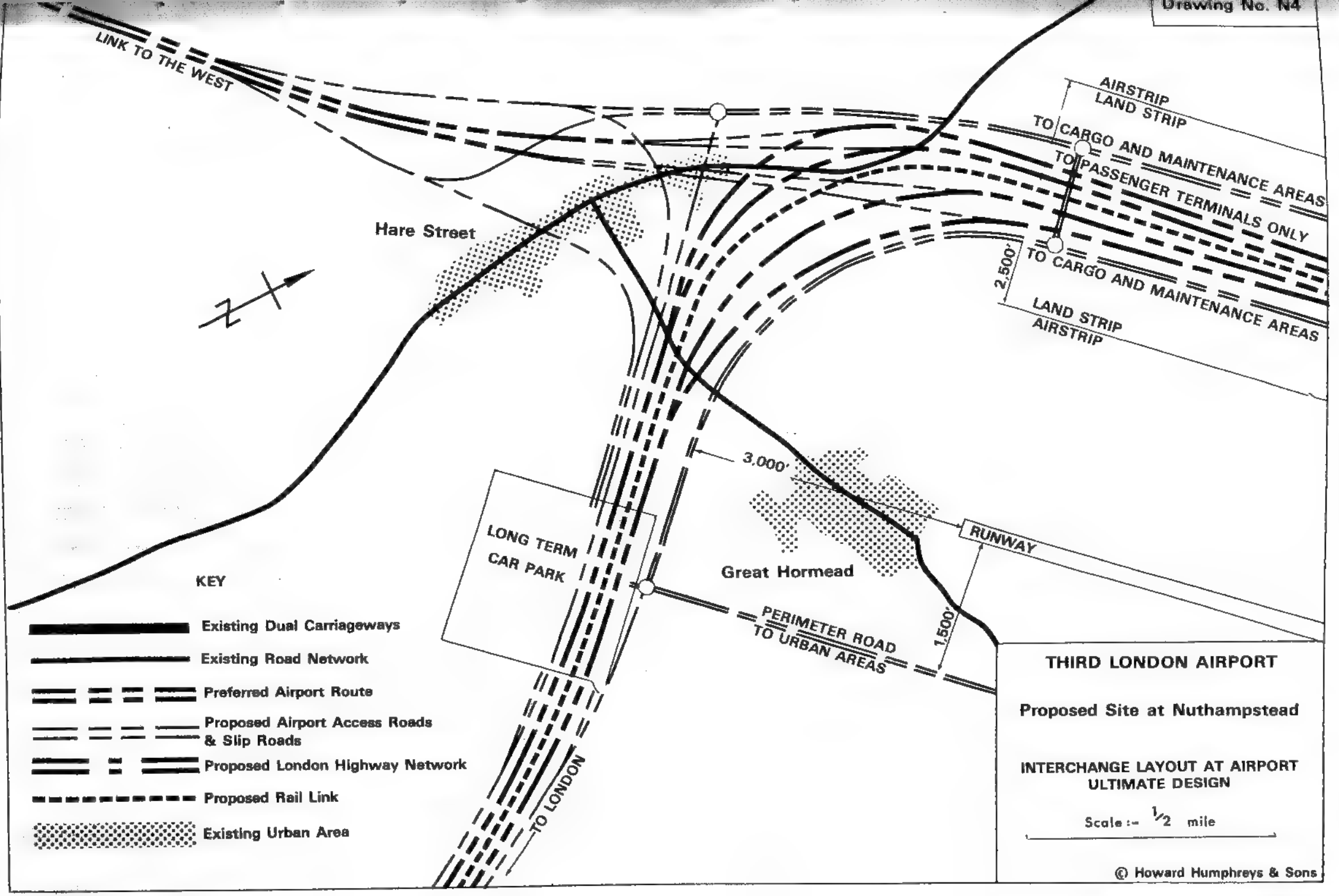
THIRD LONDON AIRPORT

Typical Cross-Section Combined Road/Rail Link

DRAWING No. 3

Printed image digitised by the University of Southampton Library Digitisation Unit

Drawing No. N4



THIRD LONDON AIRPORT

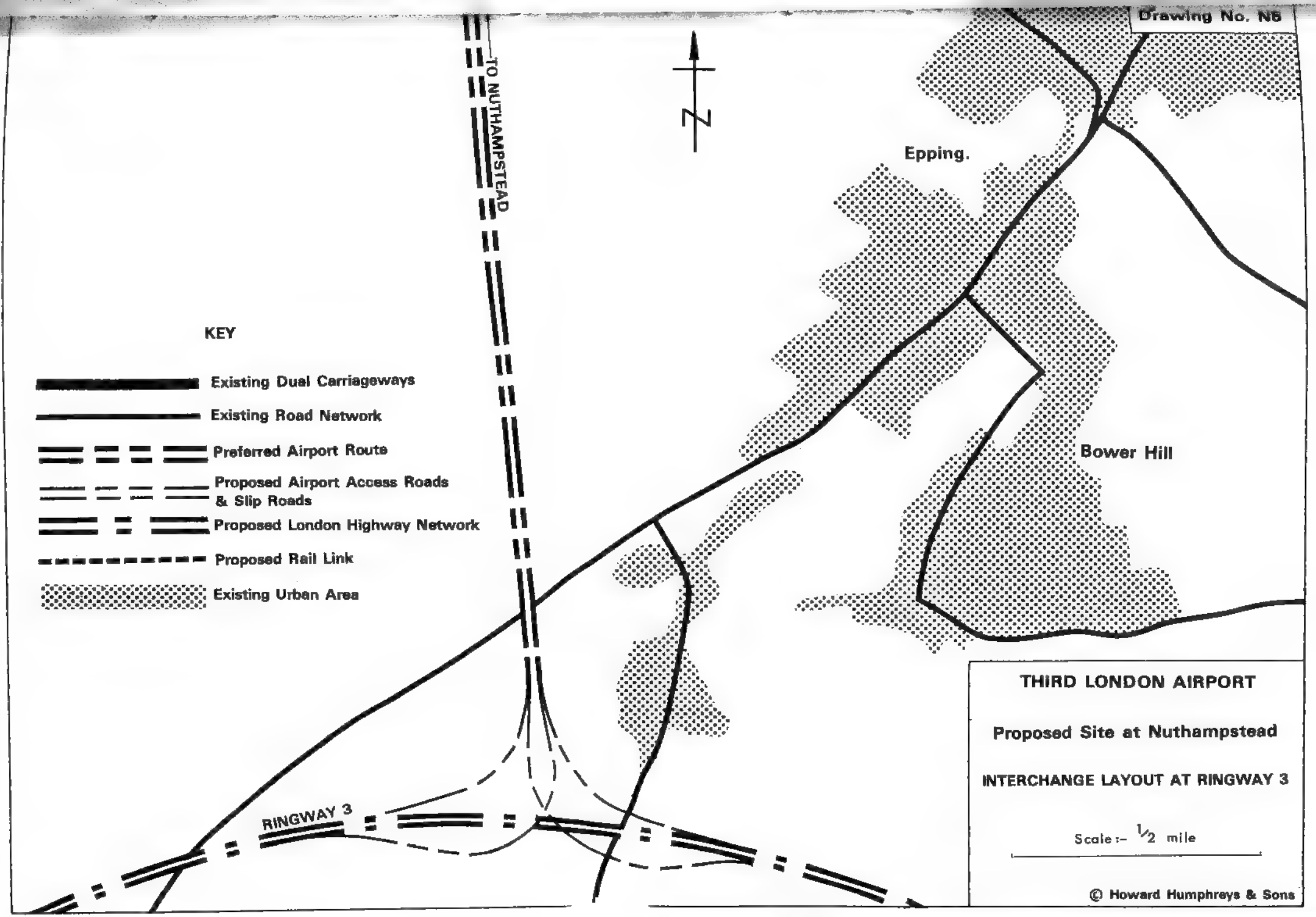
Proposed Site at Nuthampstead

INTERCHANGE LAYOUT AT AIRPORT ULTIMATE DESIGN

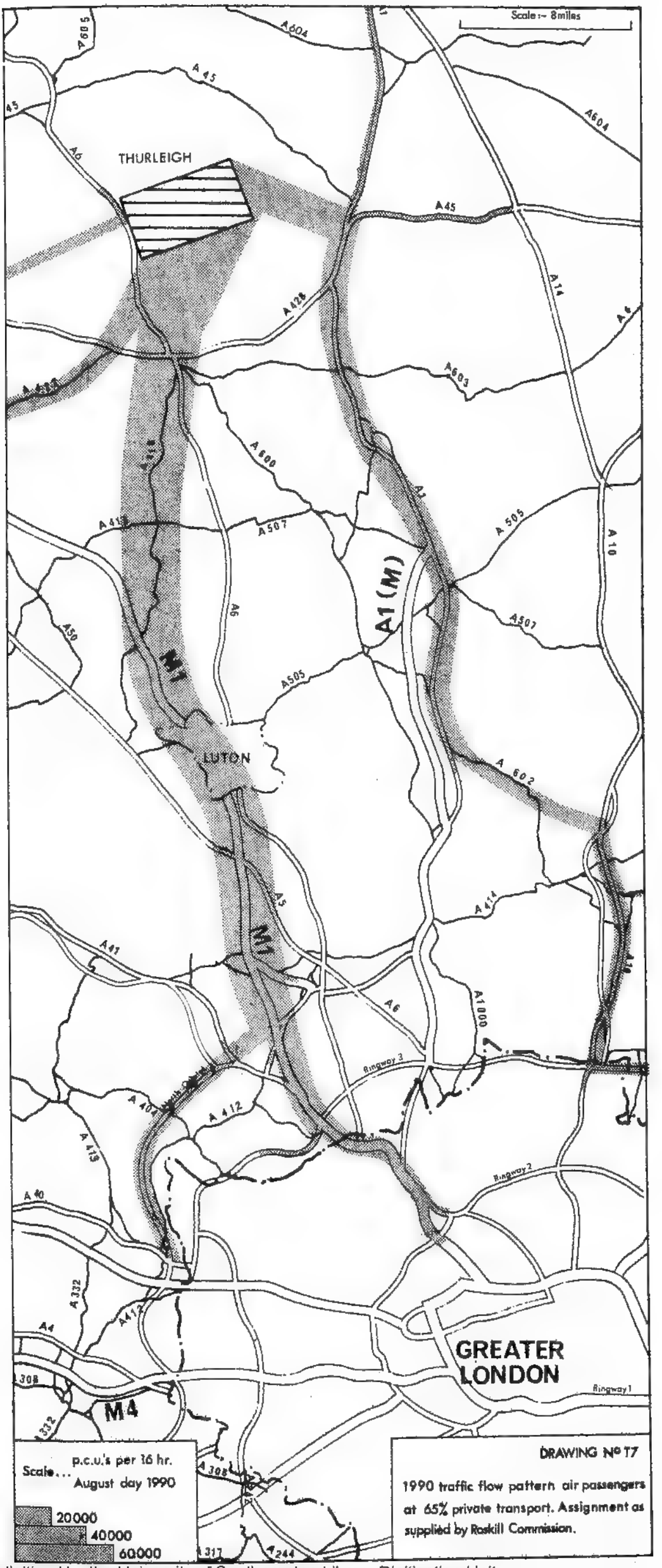
Scale :- 1/2 mile

© Howard Humphreys & Sons

Printed image digitised by the University of Southampton Library Digitisation Unit

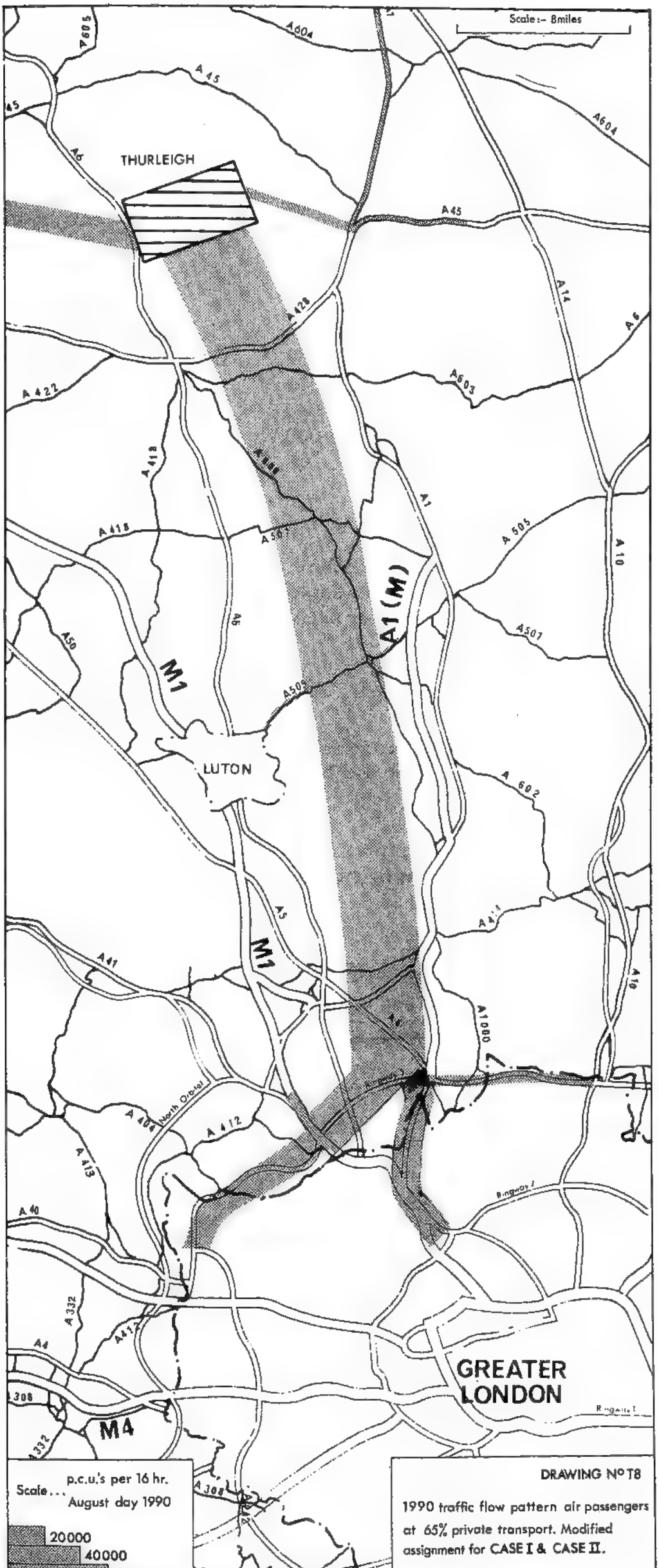


THIRD LONDON AIRPORT THURLEIGH



Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT- THURLEIGH



Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT — THURLEIGH

CUMULATIVE TRAFFIC FLOWS

Site- Between Airport and junction with A505.

(All flows in 1000's p.c.u. per August 16 hour day)

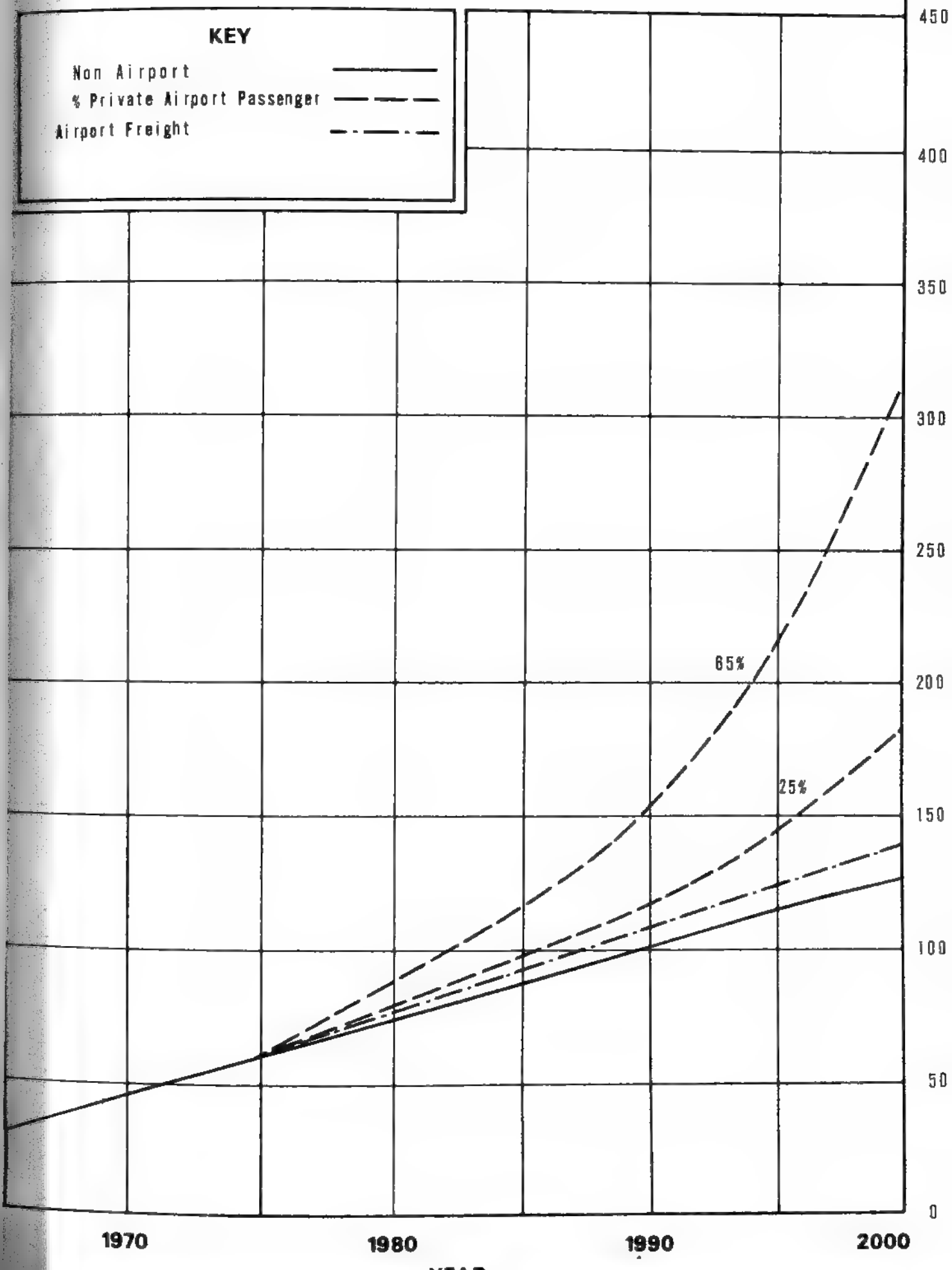


image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT – THURLEIGH

CUMULATIVE TRAFFIC FLOWS

Site- Between junction with A505 and Ringway3

(All flows in 1000's p.c.u. per August 18 hour day)

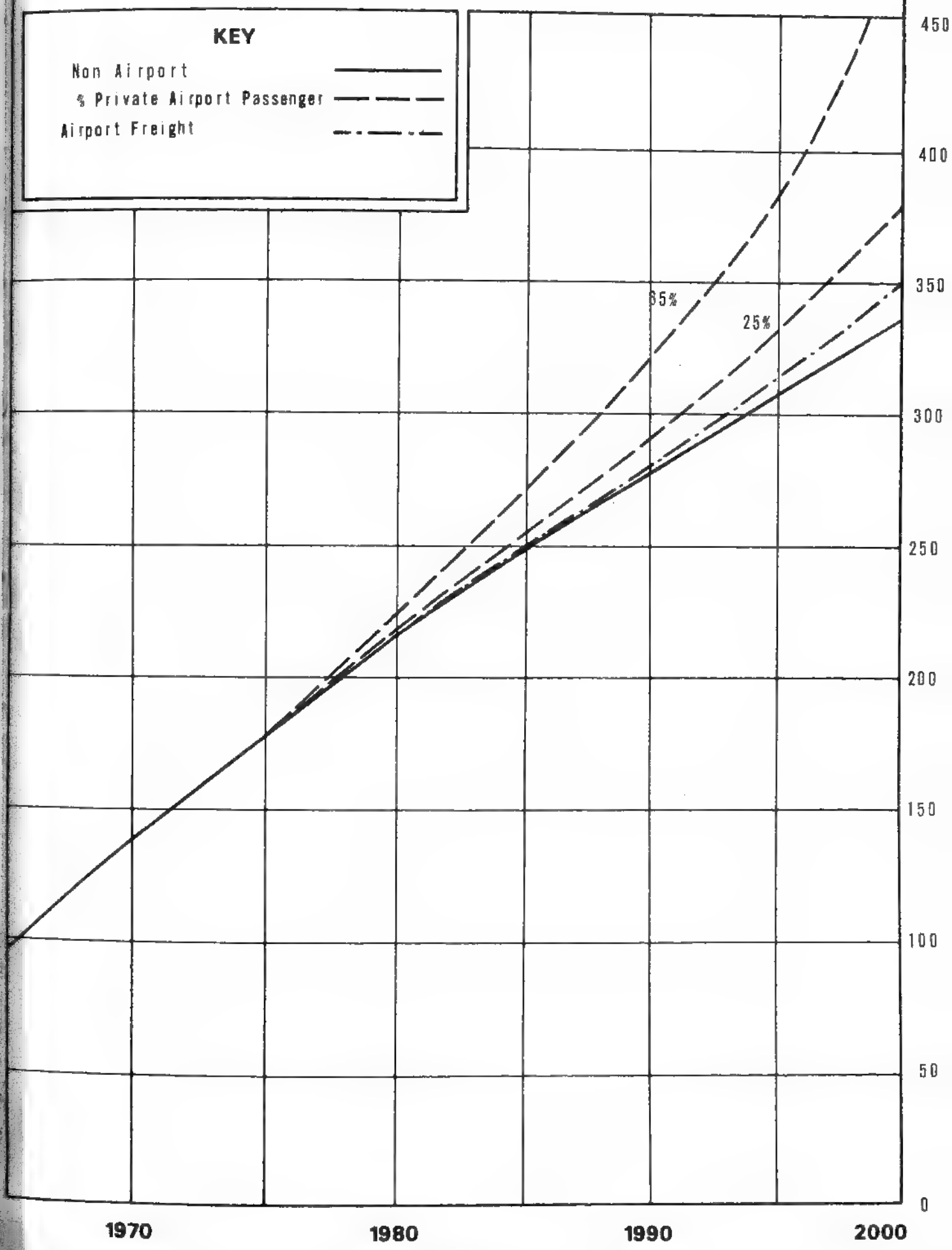
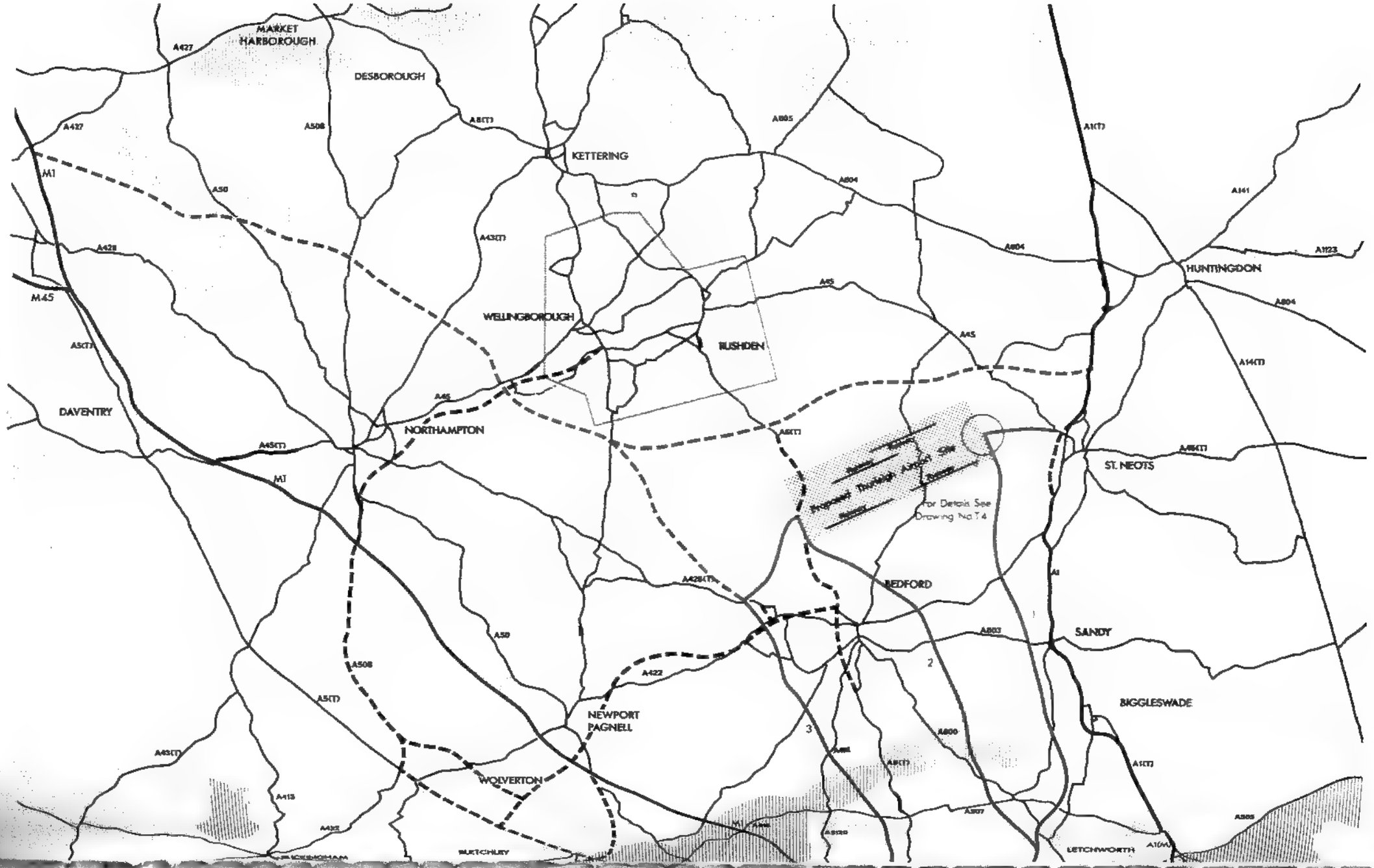


Image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

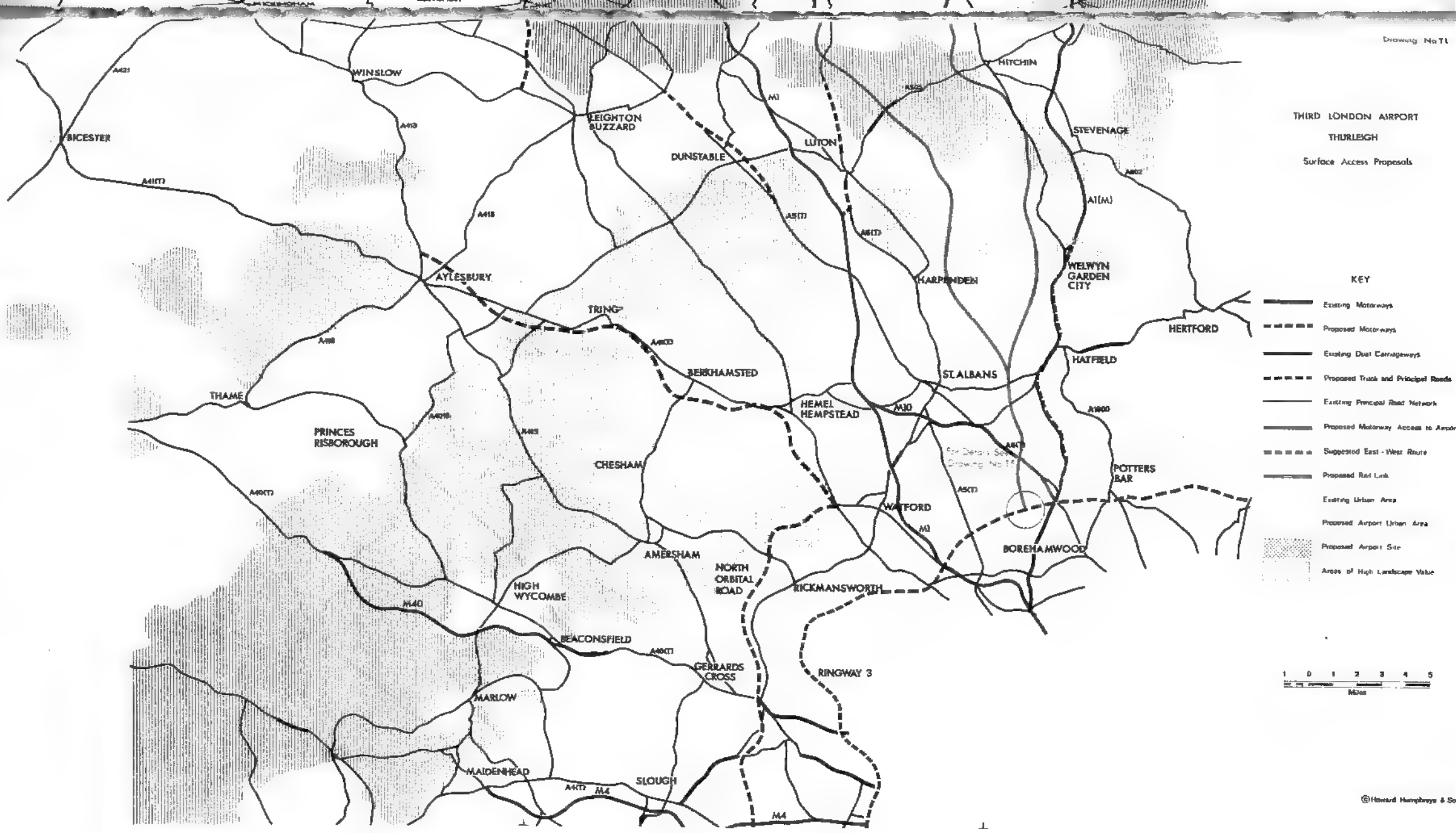
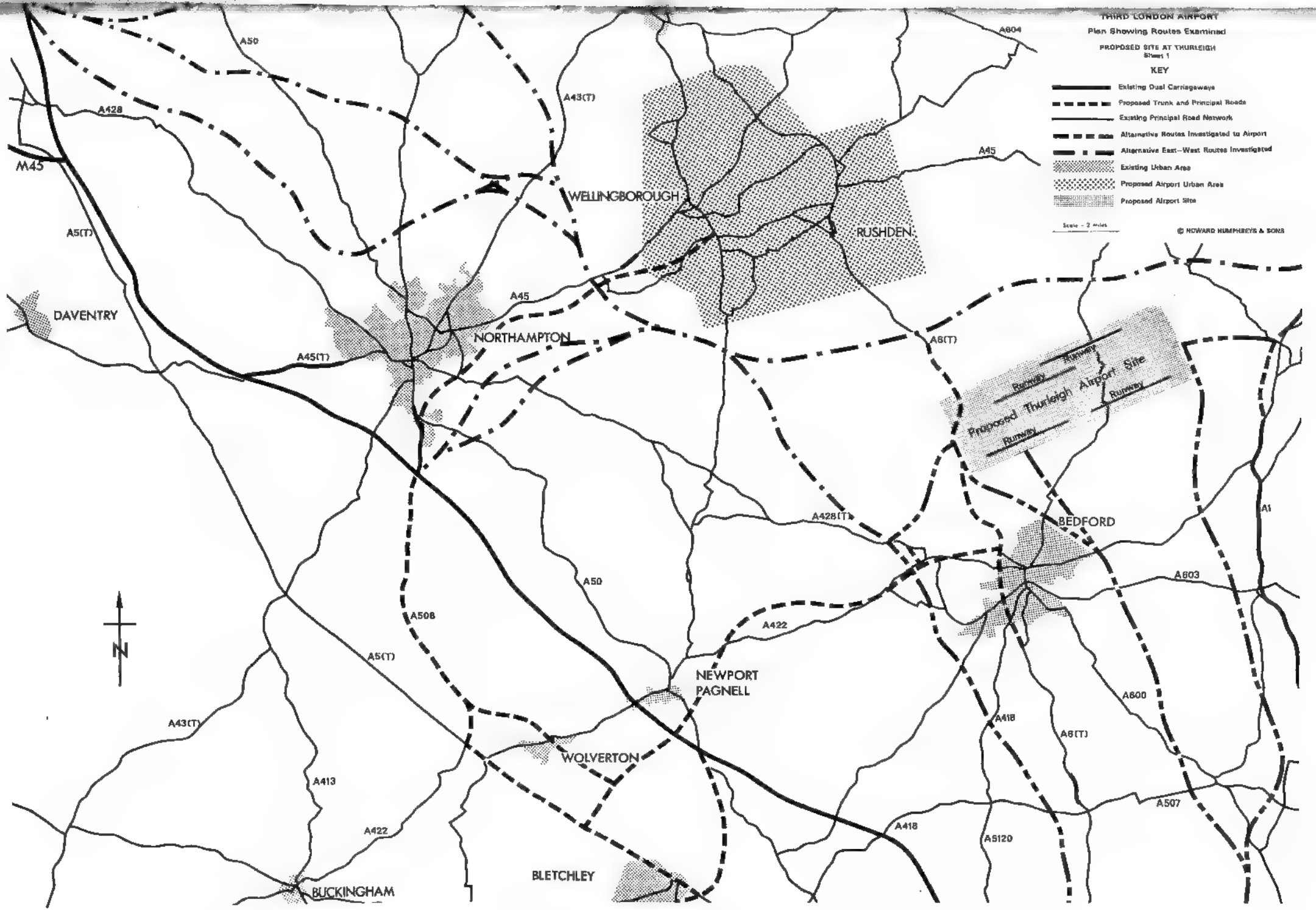
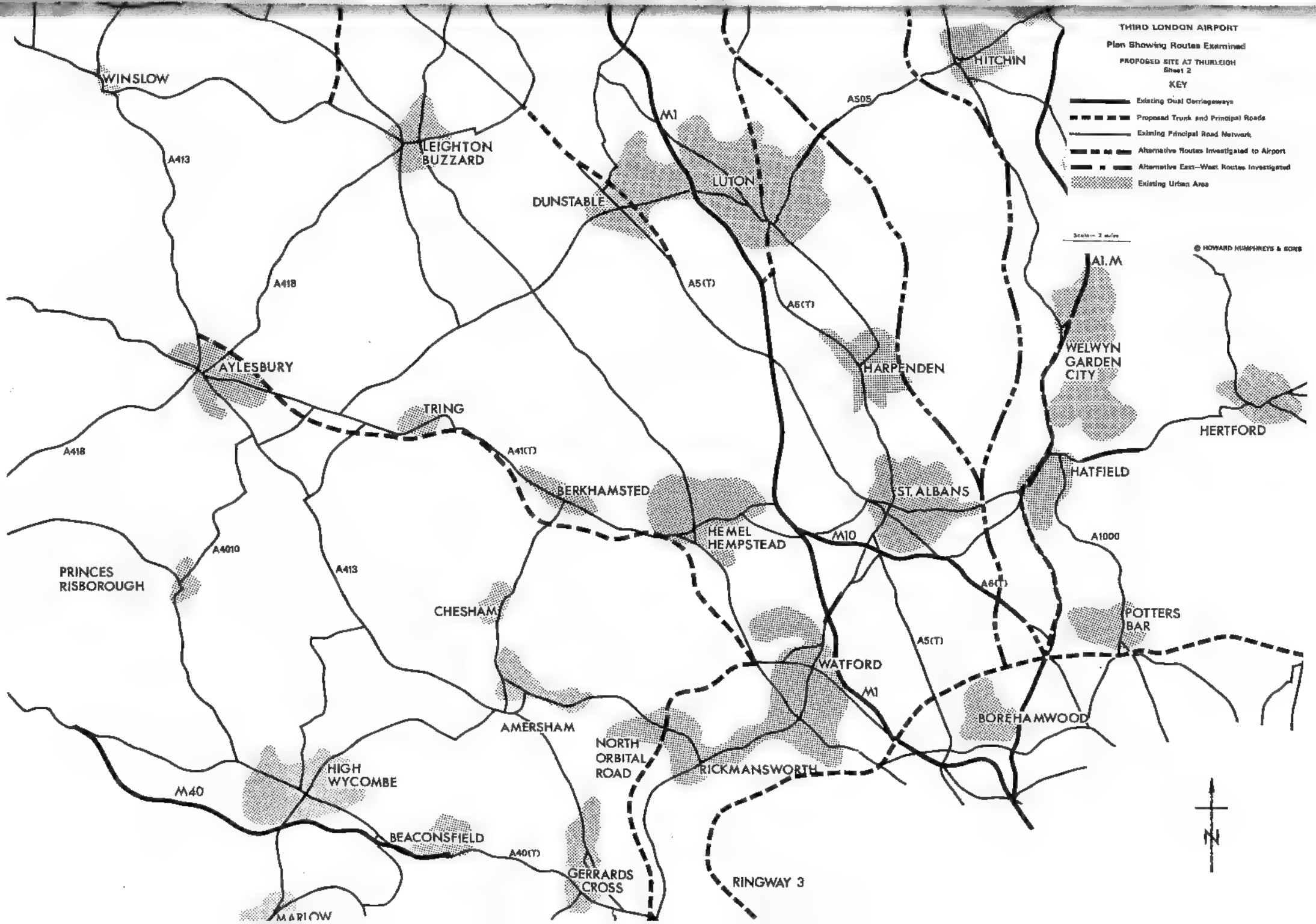


Image digitised by the University of Southampton Library Digitisation Unit

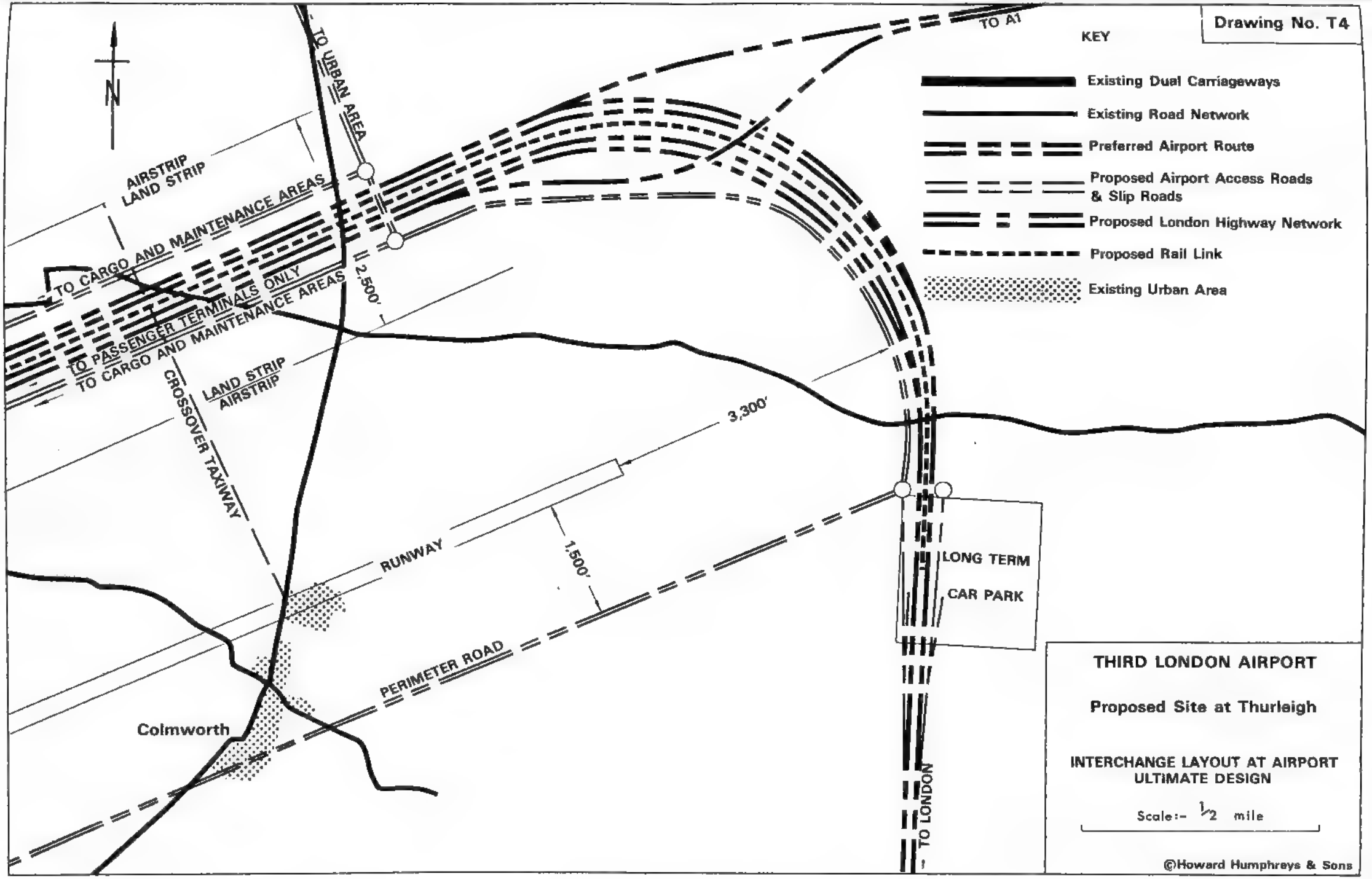


This image digitised by the University of Southampton Library Digitisation Unit

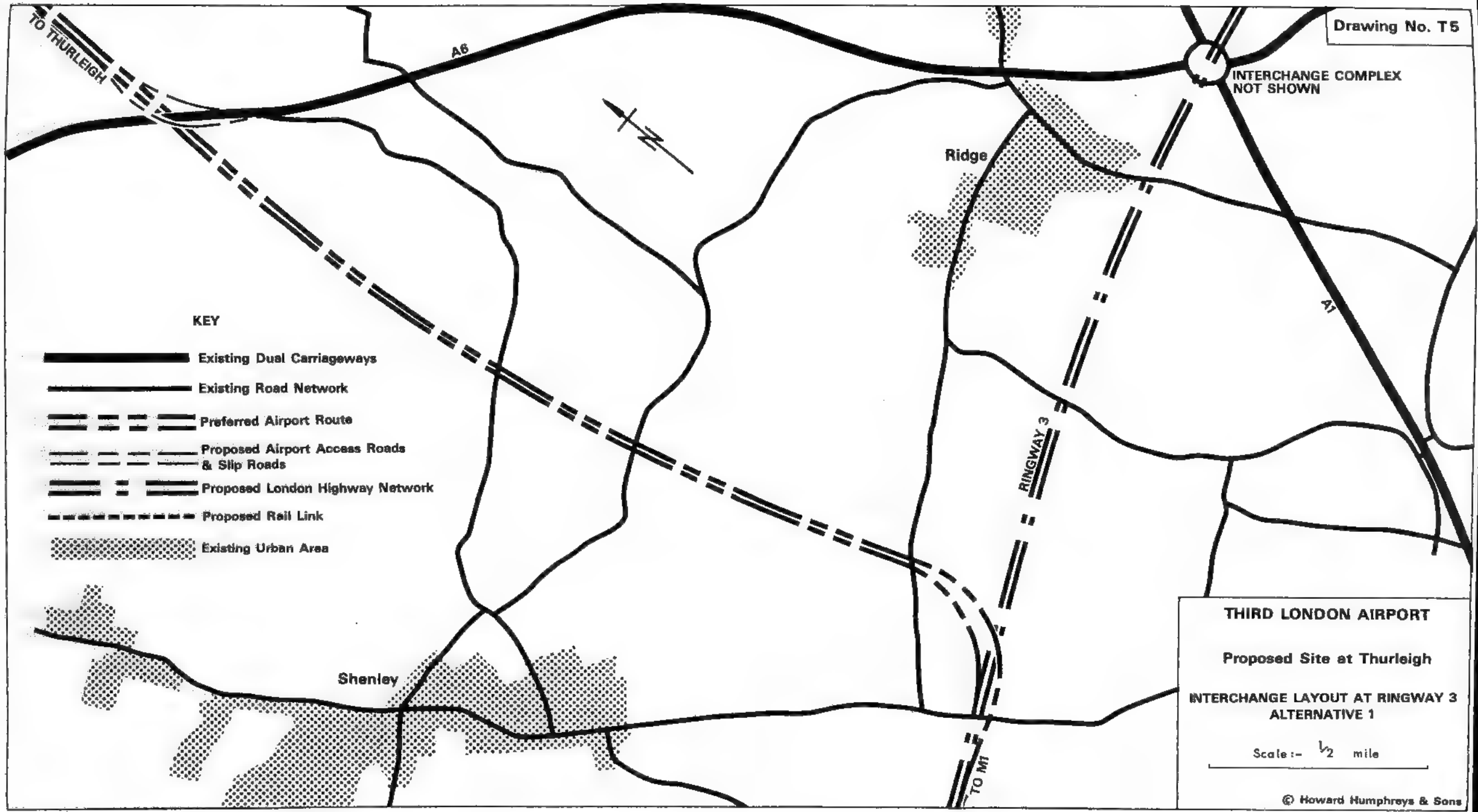


Digitised by the University of Southampton Library Digitisation Unit

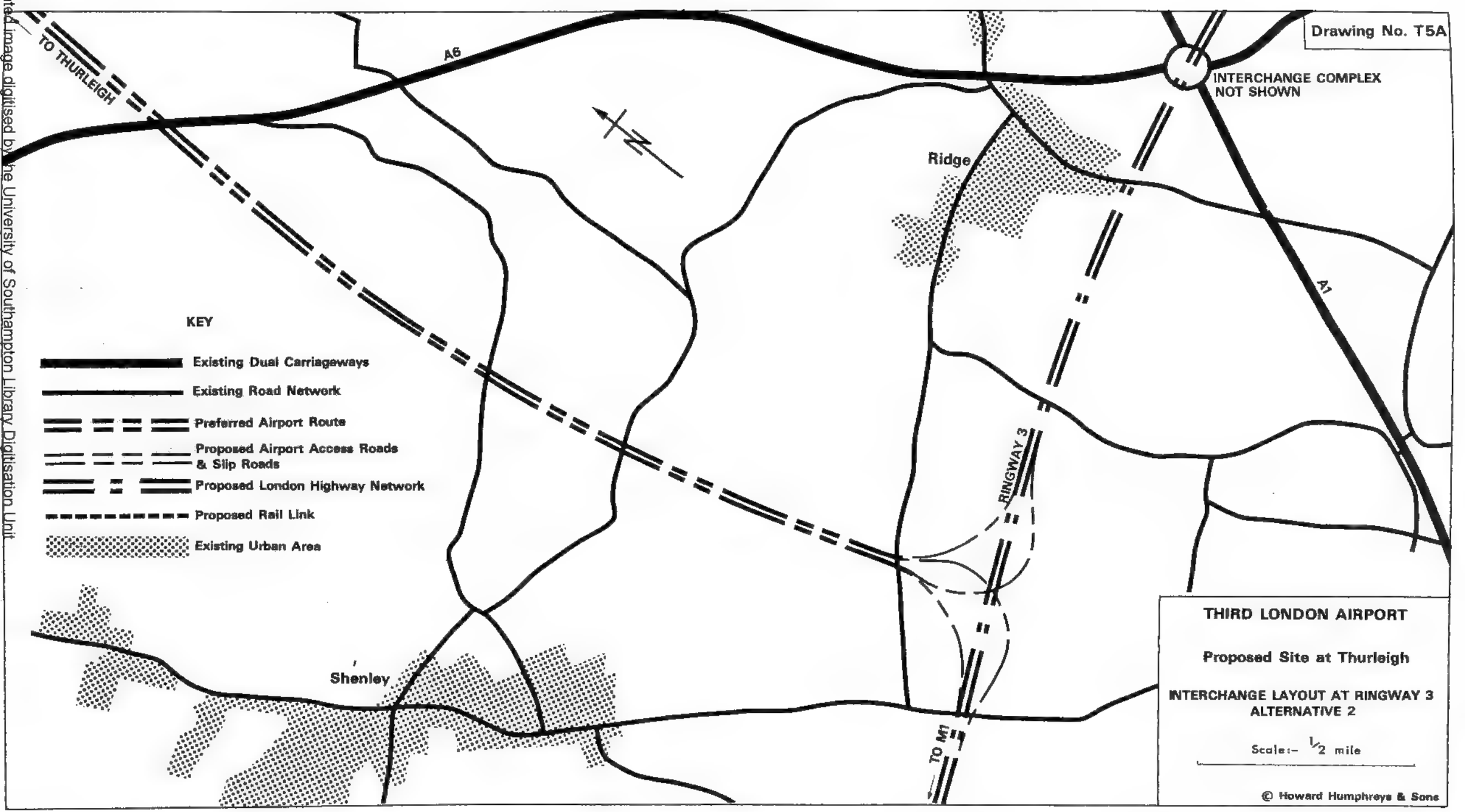
Printed image digitised by the University of Southampton Library Digitisation Unit



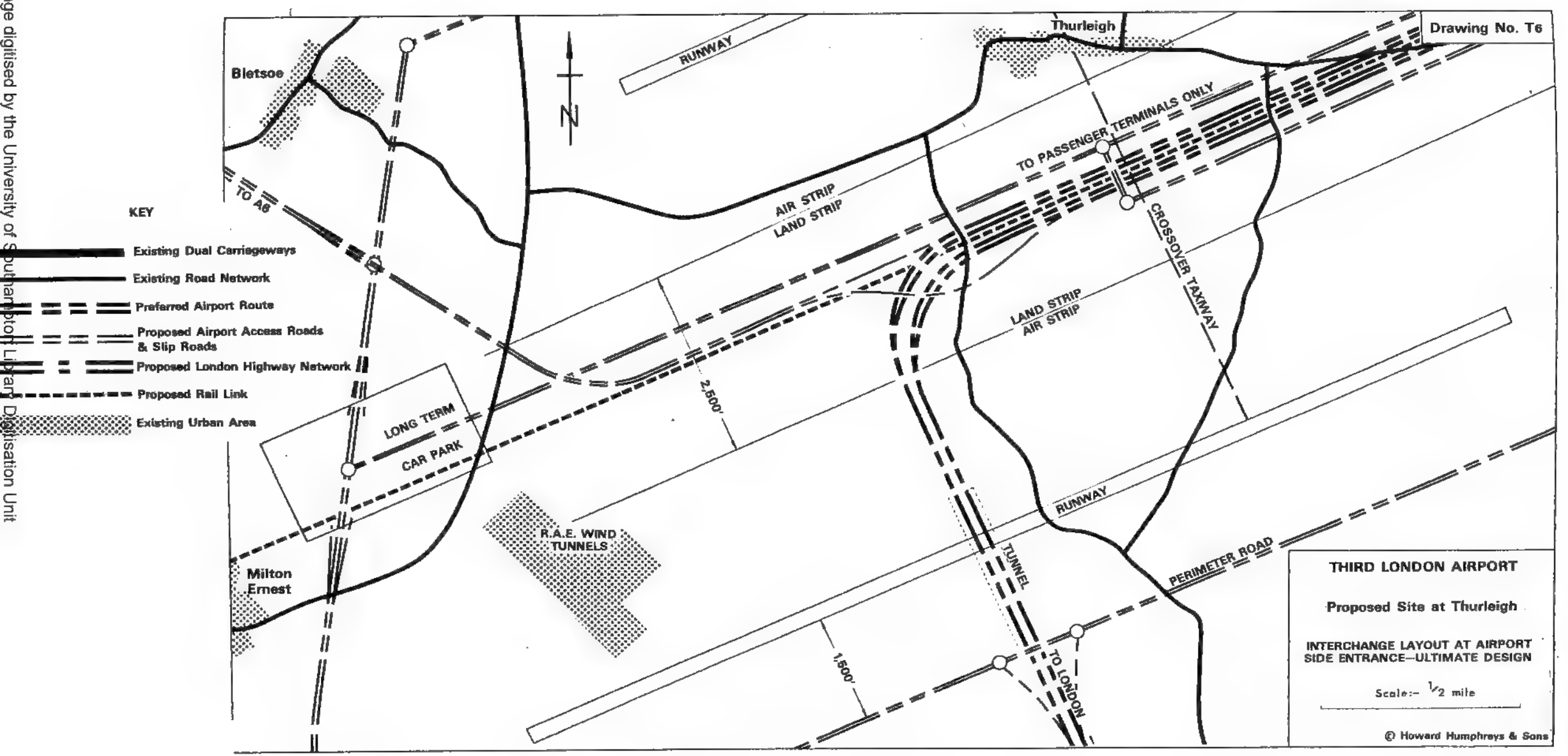
Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

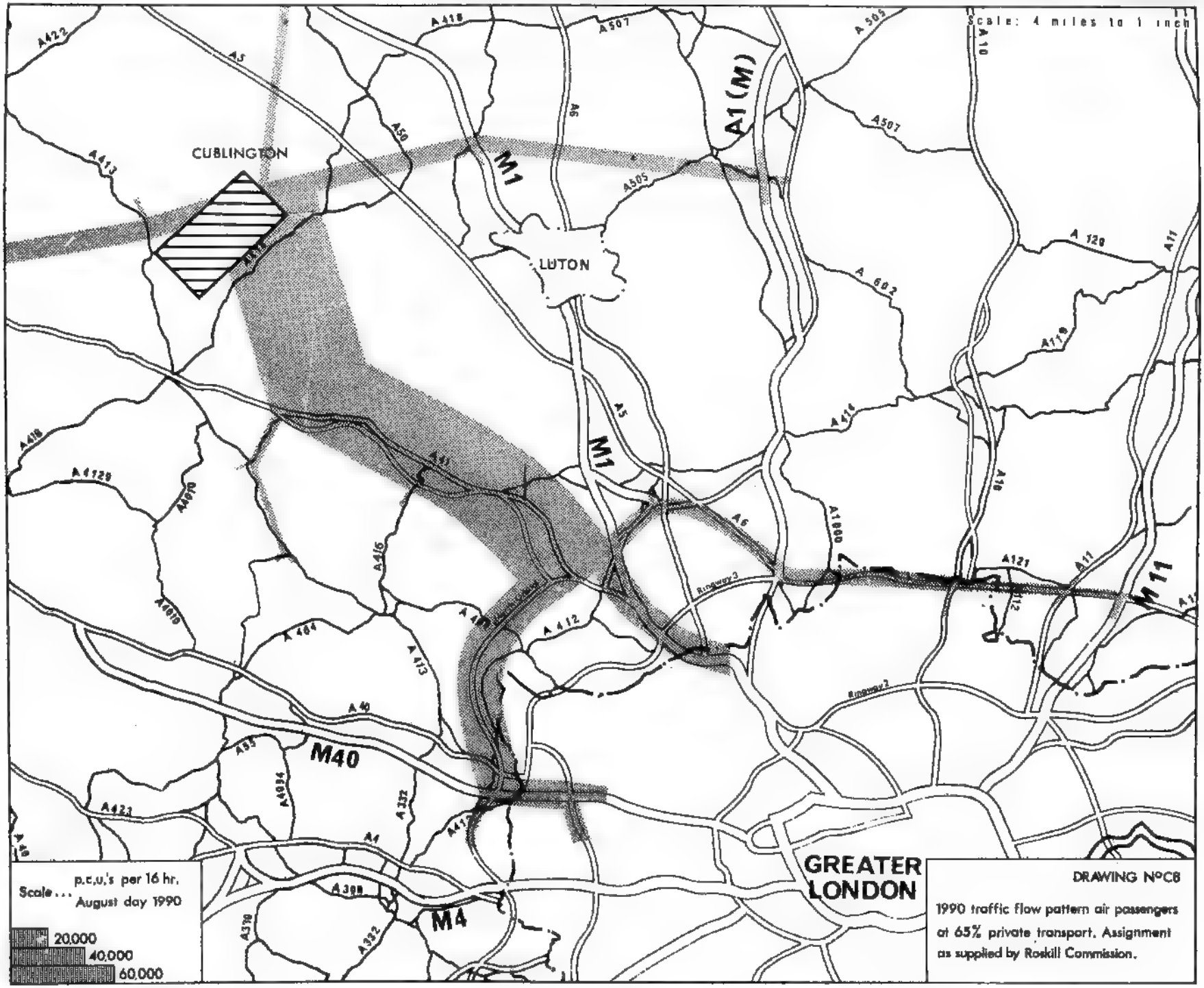


Printed image digitised by the University of Southampton Library Digitisation Unit



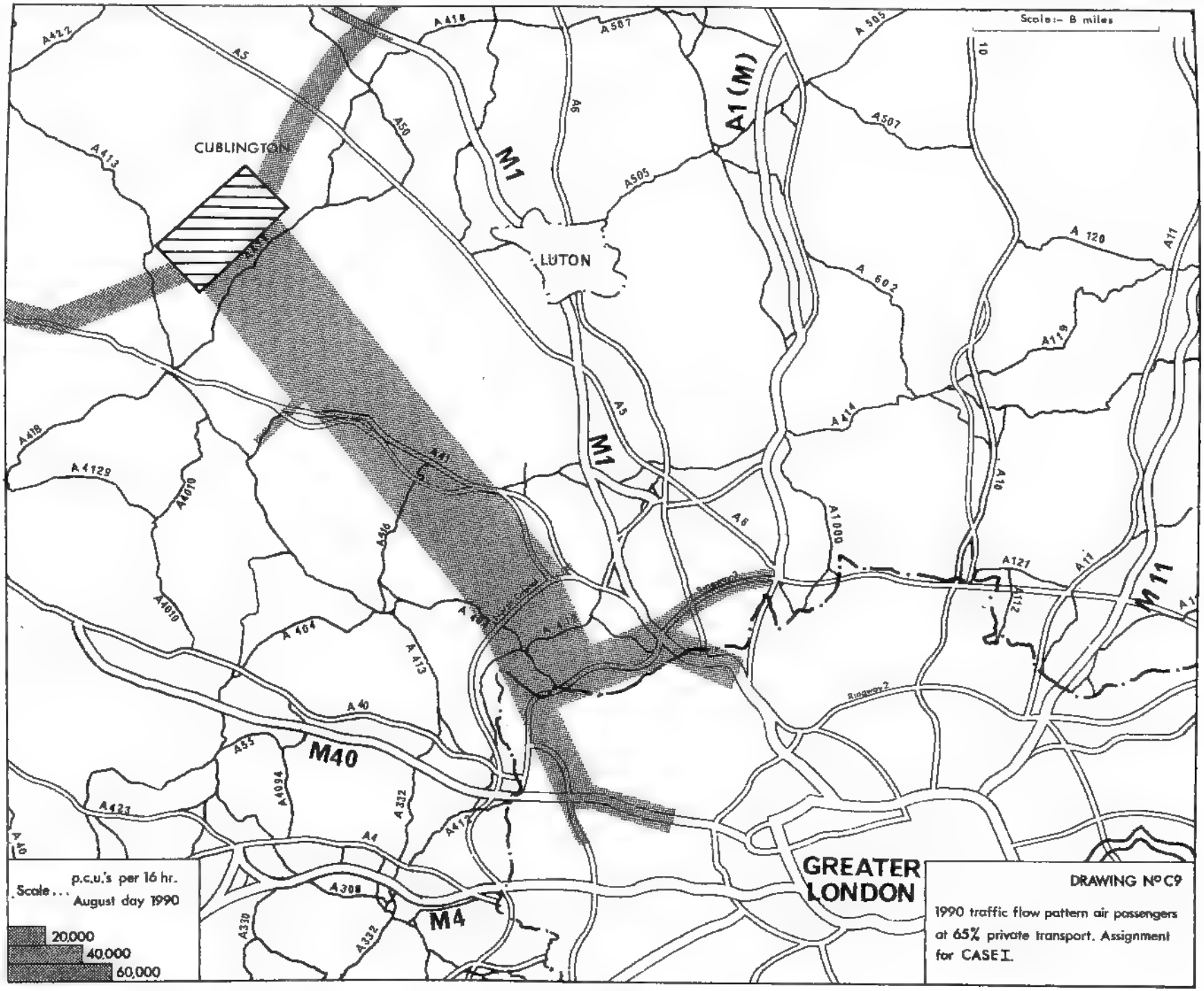
Printed image digitised by the University of Southampton Library Digitisation Unit

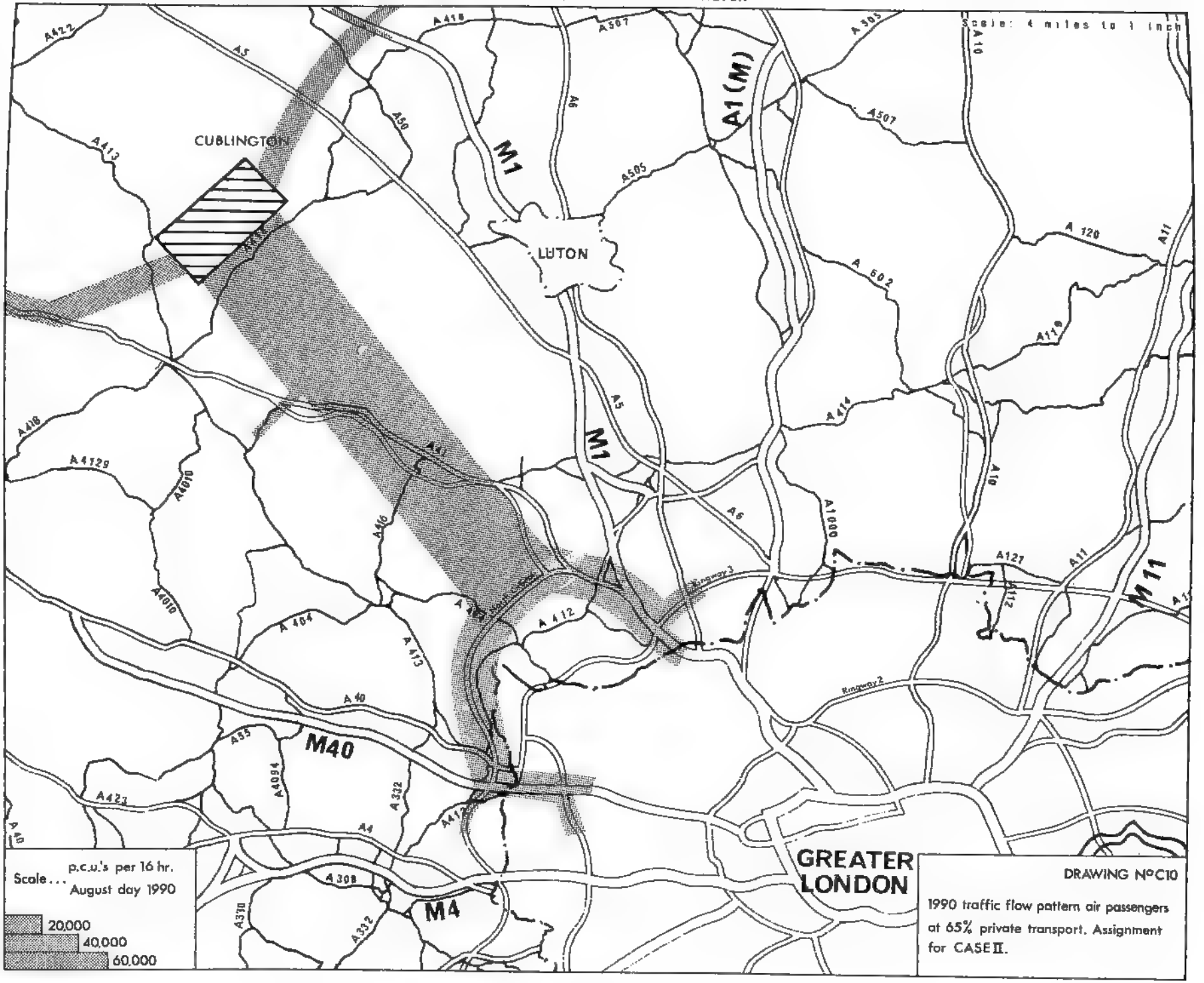
THIRD LONDON AIRPORT - CUBLINGTON



Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT - CUBLINGTON





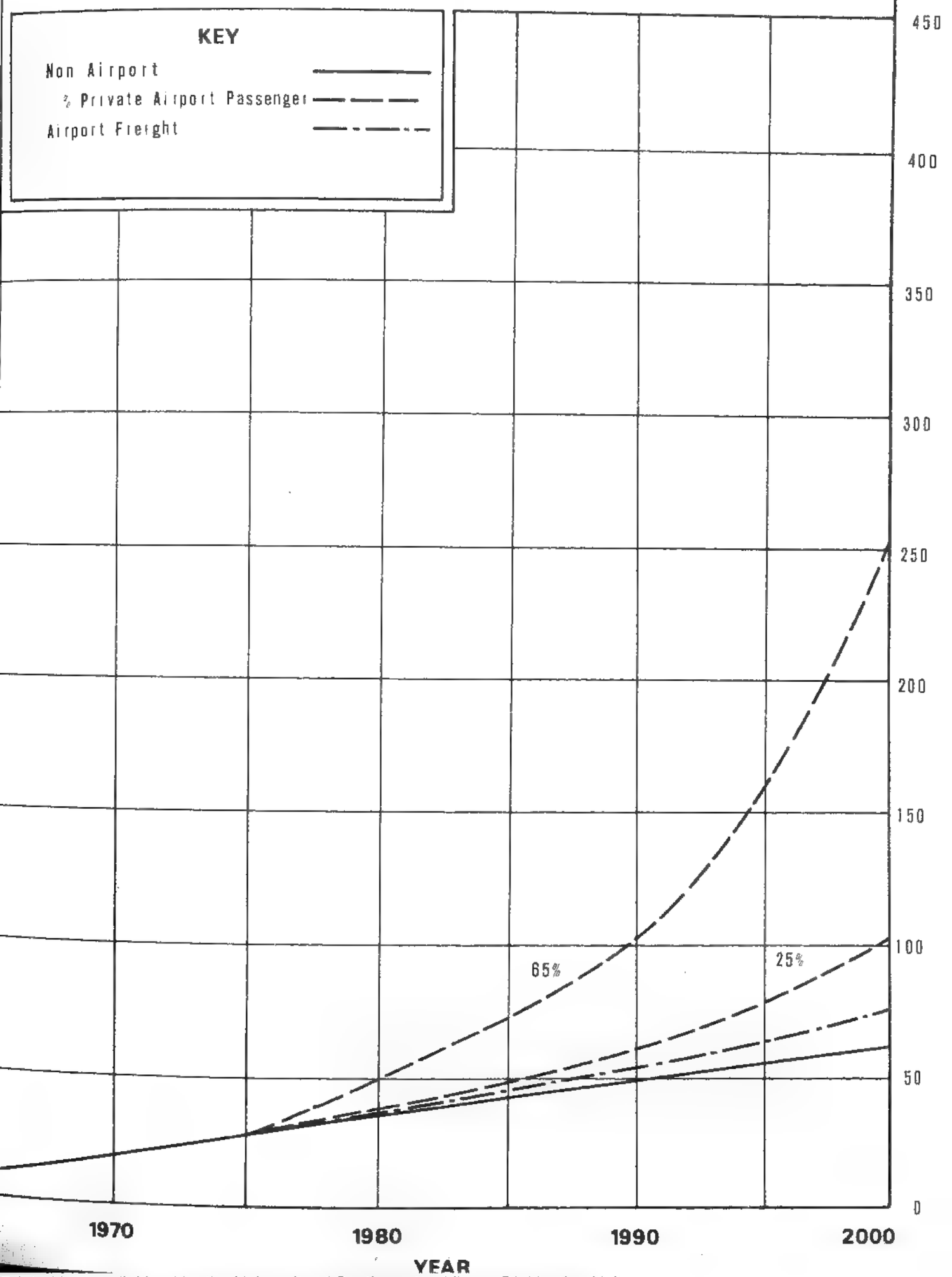
Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT — CUBLINGTON

CUMULATIVE TRAFFIC FLOWS

Site Between Airport and junction with A416

(All flows in 1000 s p.c.u. per August 16 hour day)



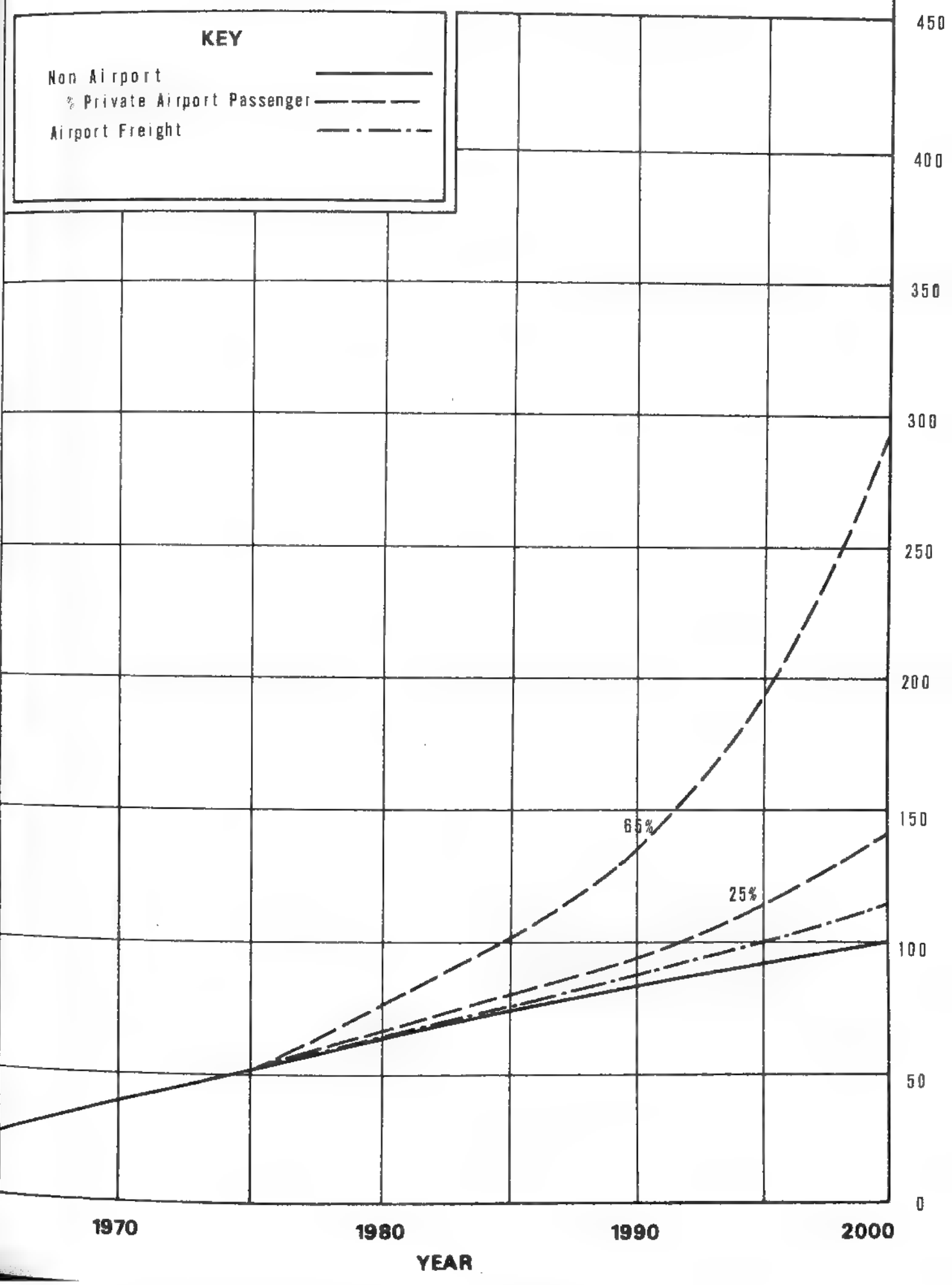
Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT — CUBLINGTON

CUMULATIVE TRAFFIC FLOWS

Site Between junction with A416 and North Orbital

(All flows in 100C s p.c.u. per August 16 hour day)



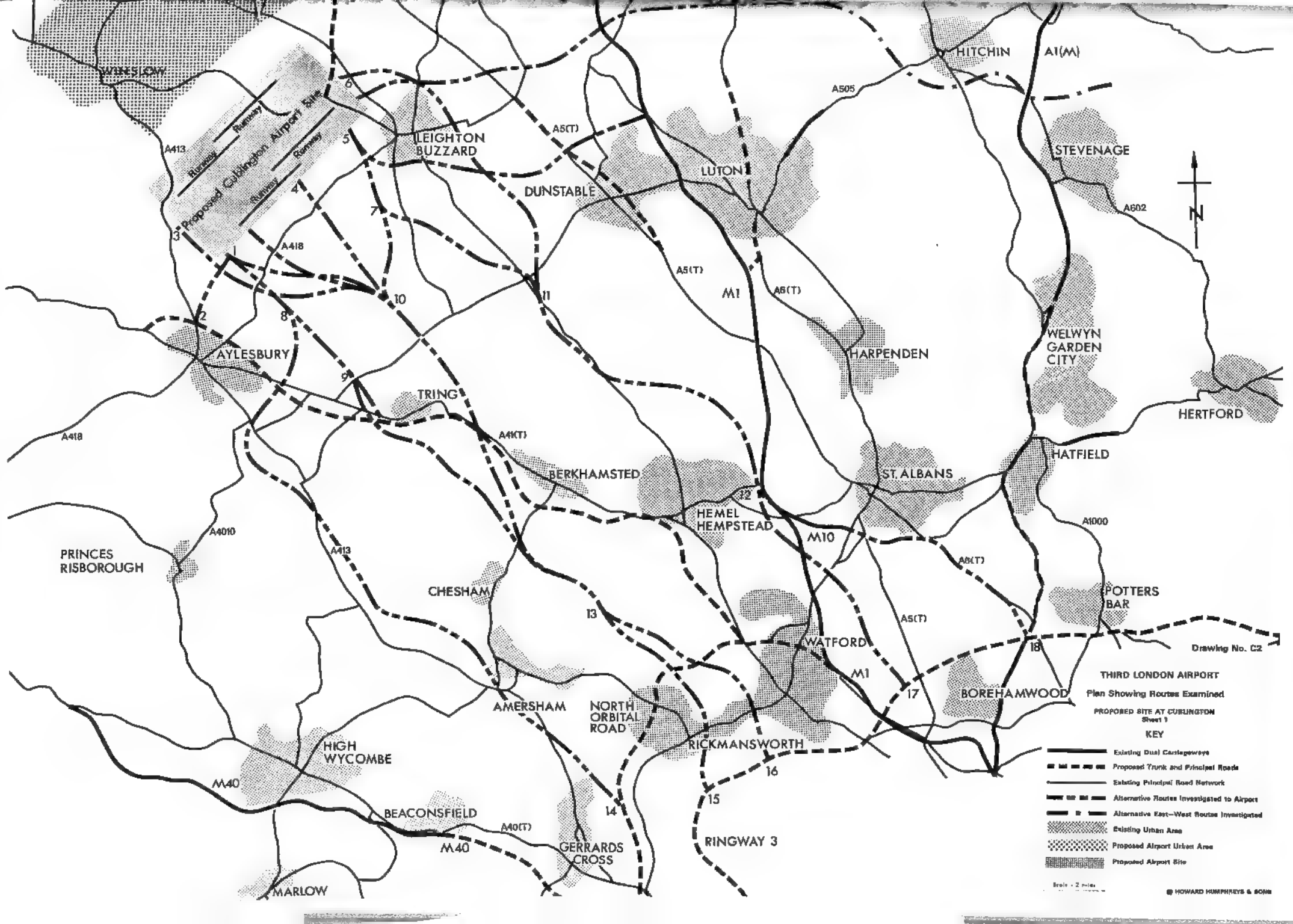
Printed image digitised by the University of Southampton Library Digitisation Unit

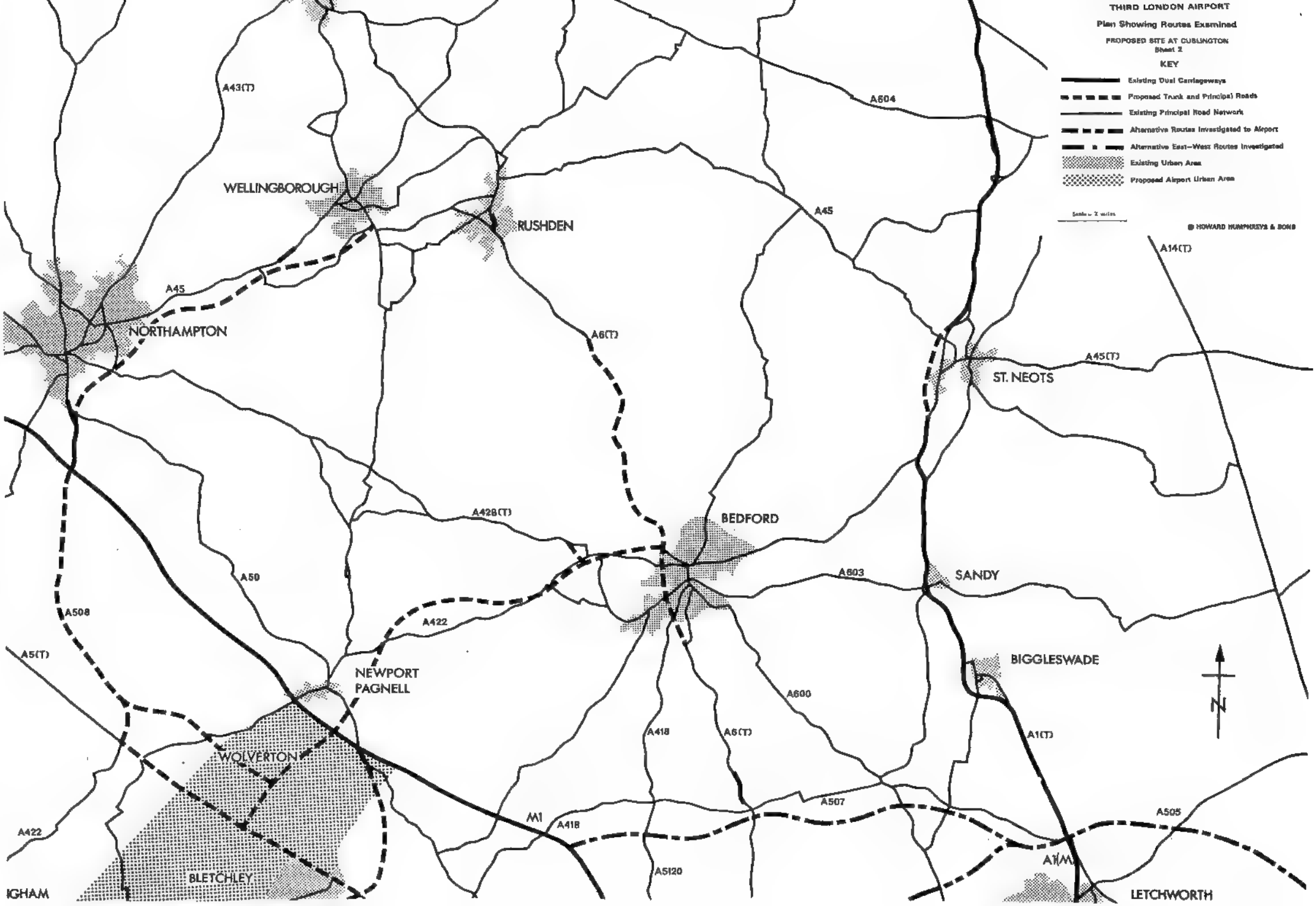
Printed image digitised by the University of Southampton Library Digitisation Unit

Drawing No. C 1

Printed image digitised by the University of Southampton Library Digitisation Unit

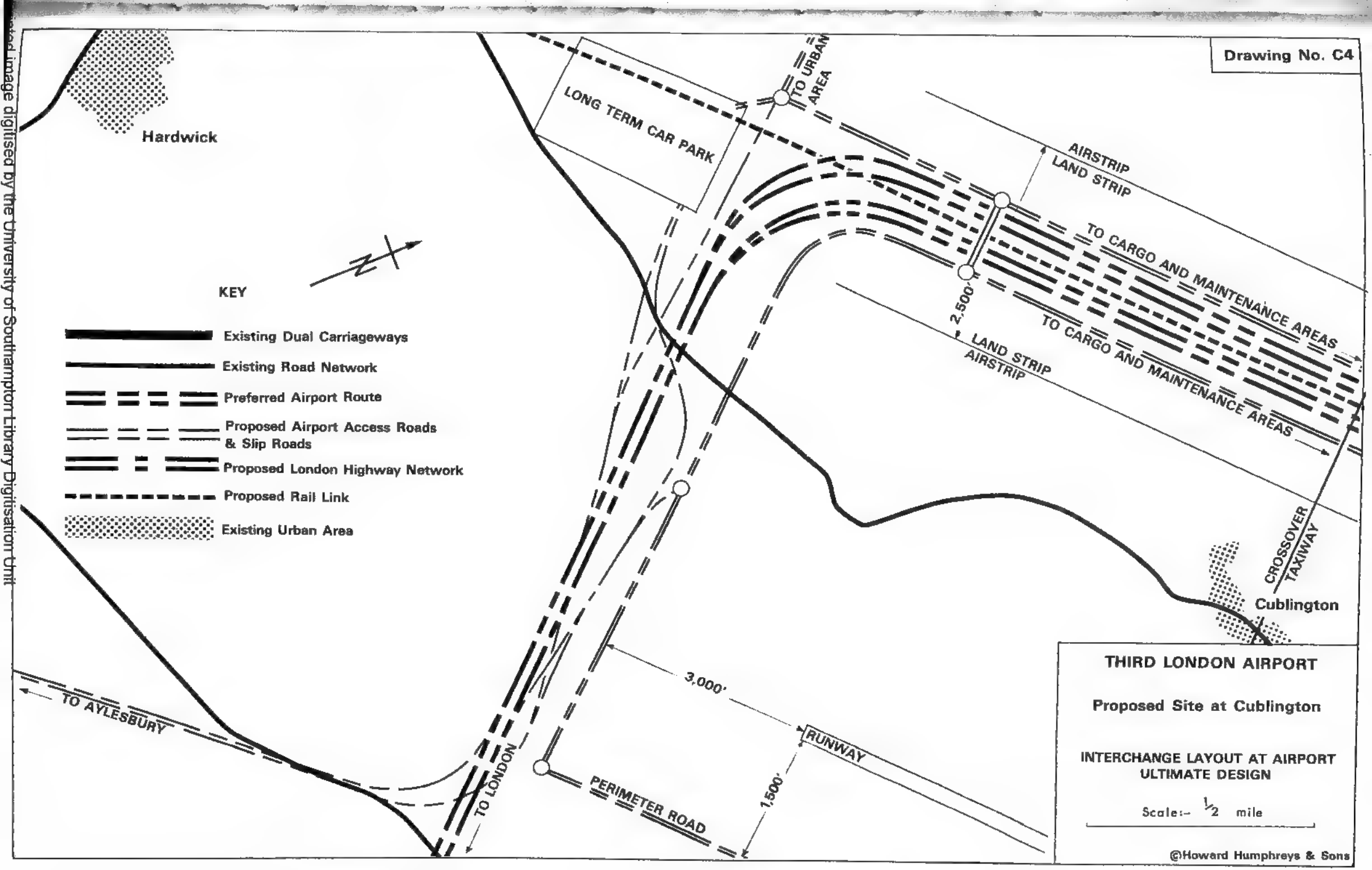
Printed image digitised by the University of Southampton Library Digitisation Unit



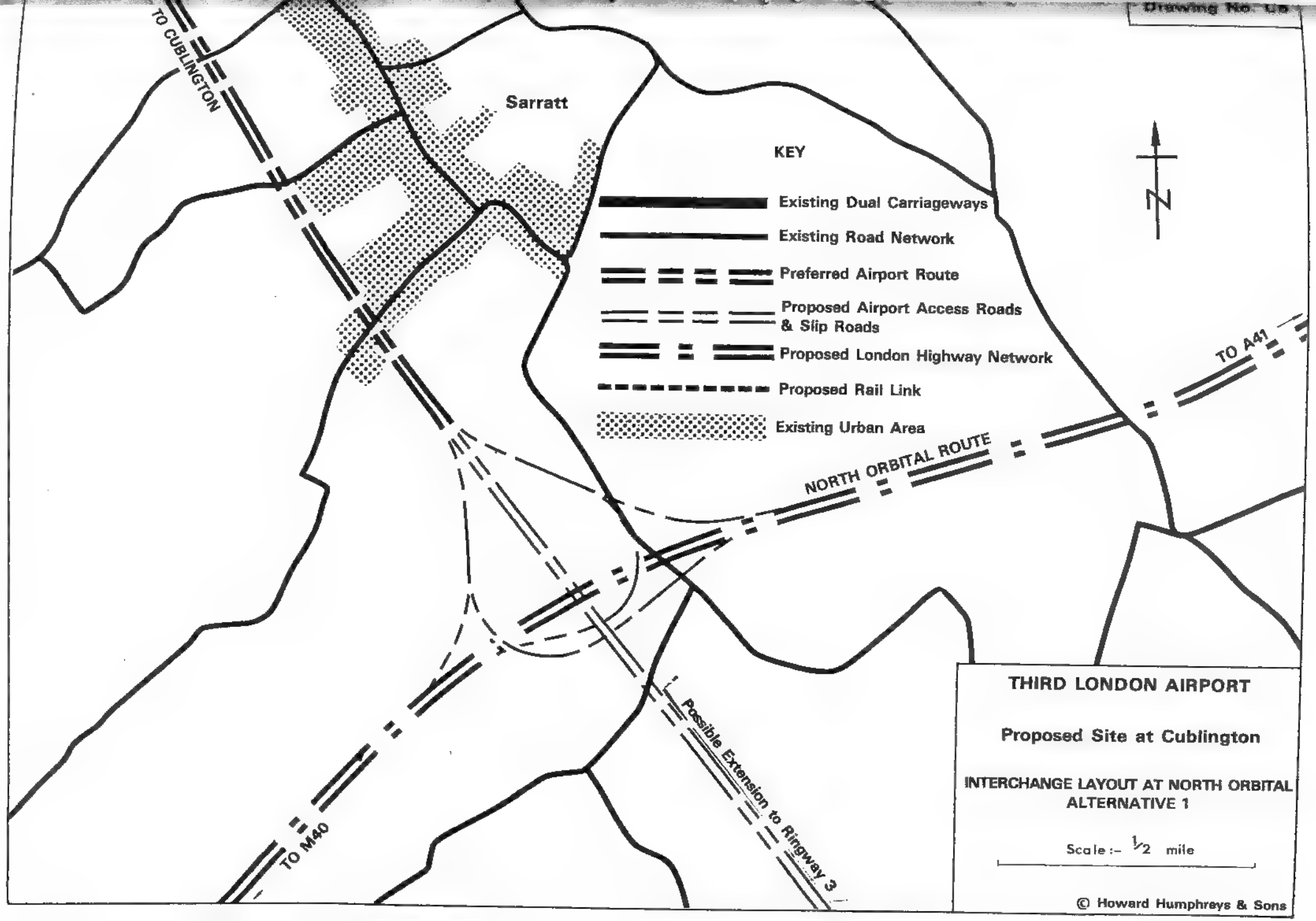


Printed image digitised by the University of Southampton Library Digitisation Unit

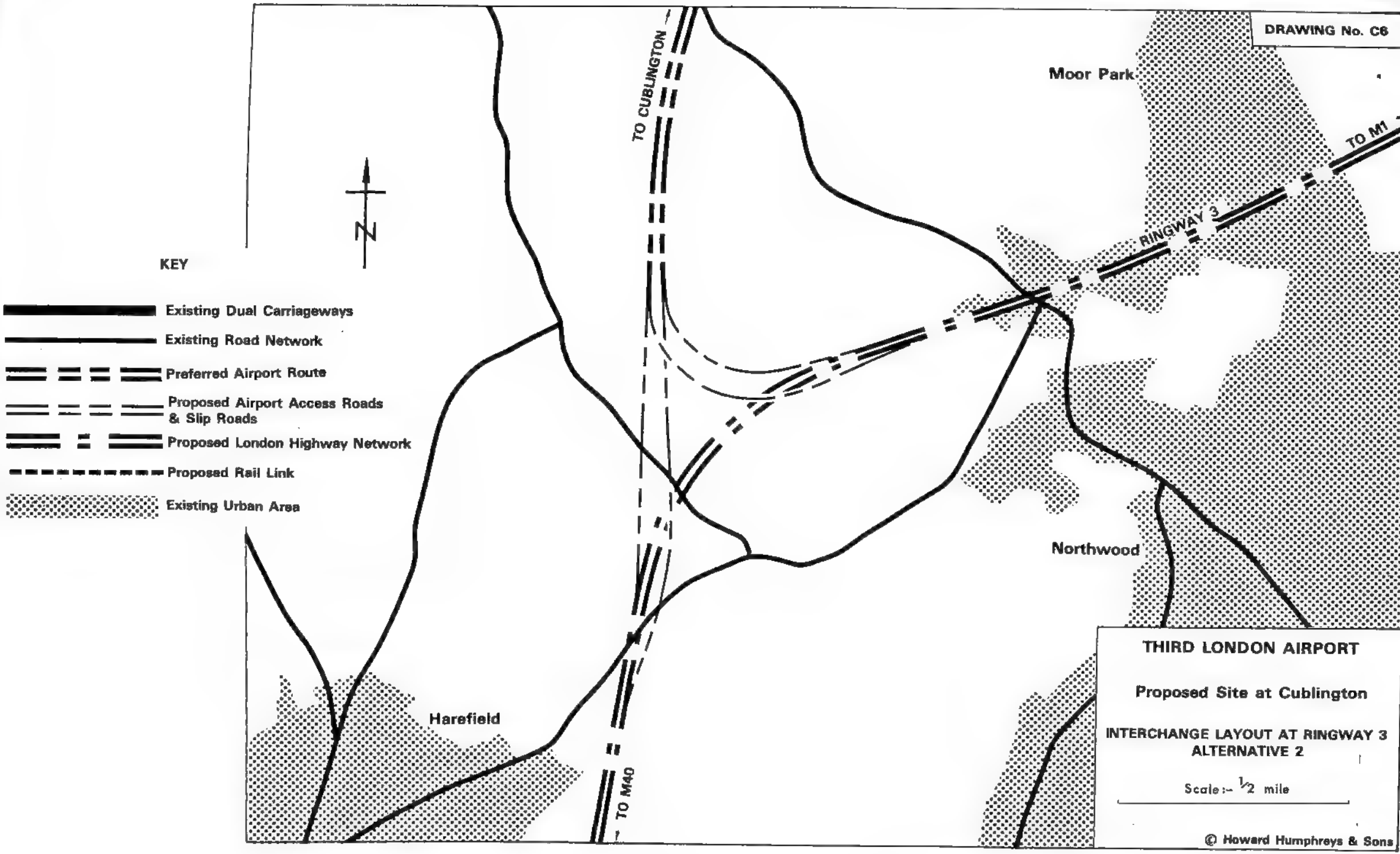
Digitised image digitised by the University of Southampton Library Digitisation Unit

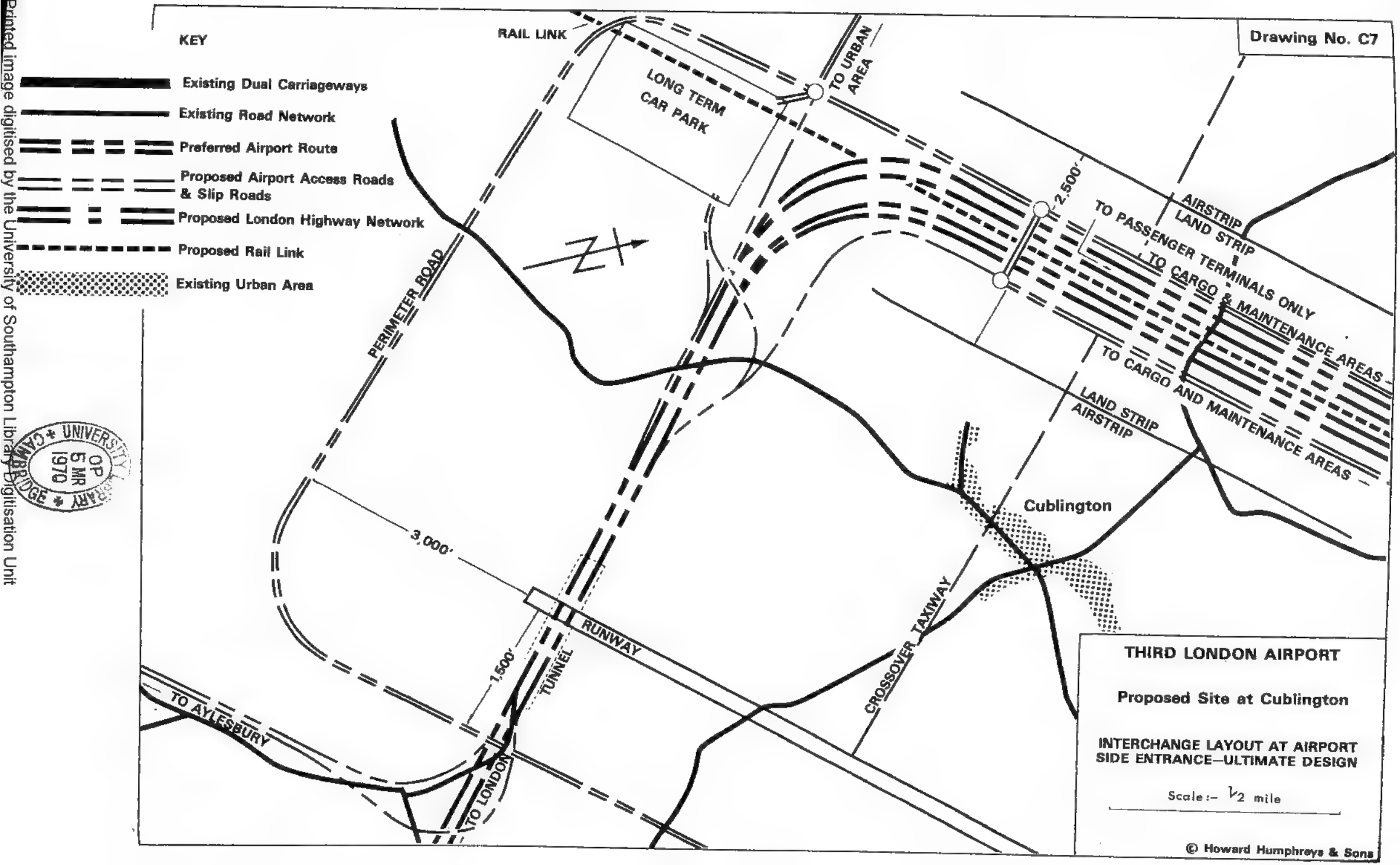


Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit





UNIVERSITY LIBRARY CAMBRIDGE OP 6 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

STUDY 1 **Future Pattern of International Airports**

*By the Board of Trade**

Background

1.1 Aerodrome ownership in the UK, as for example in the US, is diverse. The few remaining in direct Government ownership may confidently be expected to change hands within the next two or three years, probably before a decision has been taken on the third London airport (TLAP).

1.2 Positive development of airports therefore depends in the last analysis o the willingness of their owners (including the BAA) or potential owners to spend money whatever such planning as is done in Whitehall (or in the proposed CAA) may suggest. As the Edwards Committee recognise, an aerodrome licence is scarcely a licence to print money (though a few, notably Heathrow, are profitable on a conventional accounting basis). An aerodrome licence, incidentally, is not an economic regulator but is solely concerned with safety matters.

1.3 This state of affairs might be different if the Government were prepared to give substantial financial support to aerodrome development as it had to when the majority of any importance were under its direct ownership and management. This financial burden was, indeed, one of the main factors which has led it to encourage ownership by local authorities (or groups of such authorities) apart from the four now owned by the BAA which collectively were financially self-supporting and which were or were expected to become the UK's main international gateways. The Edwards Committee have endorsed the policy of control by the interested community despite a recognition of the difficulties this brings in regard to the implementation of central planning.

1.4 Some financial assistance is given but mainly because of long standing commitments. Thus, under contract, NATCS provide the aerodrome navigation services at six municipal airports (including Manchester, Birmingham and Liverpool) at a substantial loss though there is a charge on airlines, as well as at BAA airports (profitable) and the few that remain with us. The objective is progressively to reduce these losses - charges were increased at certain aerodromes by 50 per cent from 1 May 1969 - and they should be largely extinguished by 1980.

*The following paper was prepared by the Board of Trade at the request of the Commission, which had sought its advice about the likely pattern of regional international airports and particularly about the prospects up to the end of the century for the development of Elmdon Airport (or some substitute in the Birmingham area) and of Ringway Airport. This advice was needed by the Commission to guide it in its forecasts of the levels of passenger and freight traffic at each of the short-listed sites and of the likely distribution of such traffic between those sites, the existing airports in the London area, and airports in the Midlands and North-West.

Printed image digitised by the University of Southampton Library Digitisation Unit

1.5 Birmingham, by virtue of an agreement which does not expire until 1981, enjoys the today unique right to a 60 per cent grant in aid of approved capital development.

1.6 Some small ad hoc grants have been made in recent years but the assumption must be, short of a major policy change, that Government assistance to airports will be very small in future.

1.7 On the other hand, the Government enjoys a variety of powers to prevent aerodrome owners doing as they please. They are, control of pricing, control of investment (loan sanction in the case of municipal authorities, approved financial investment in the case of the BAA), refusal to allow aerodromes to be established (municipal) or to assume the ownership or management of further aerodromes (BAA), and the various land use planning powers. These latter, though doubtless rightly in the broader public interest, sometimes prevent the aviation result which we would wish to see. But, given that the financial consequences and responsibility for management rest elsewhere, no attempt is made to subject owners to a detailed supervision except in the safety field.

1.8 Nevertheless the practical result has been that the UK enjoys a good spread of aerodrome capacity though there are one or two difficult areas. The critic would say that there is already too much capacity in certain areas and, perhaps with a little hindsight, not all of it ideally sited.

1.9 It should also be remembered that aerodrome capacity cannot be neatly subdivided, e.g. into intercontinental, continental, major domestic and feeder. Each category substantially overlaps its fellows and changes in the airfield characteristics of each new generation of aircraft tend also to distort this kind of classification. Of the airports of immediate concern to the Commission, Luton, East Midlands (Castle Donington), Birmingham, Manchester and Liverpool are all capable of catering for services to Europe (the bulk of the traffic) to a much greater degree than they do today without the need for significant new development.

1.10 Manchester, together with Prestwick, has also a very good intercontinental capability and until recently was grant aided with that policy objective.

1.11 Southend, on the other hand, though enjoying some short haul European services, is physically restricted and planning difficulties militate against its expansion. If Foulness is not selected as the TLAP, it will probably continue to enjoy its present busy role but with a restricted range of services.

1.12 Capacity, then, is ready and waiting in the Midlands and in the North-West and, for that matter, elsewhere. The spread by overseas destinations of air services from these aerodromes is, however, disappointing with Manchester the most favourably placed. So, too, is the frequency of such services and this often makes a journey via Heathrow much more convenient despite the inter-change. This latter situation is aggravated by the fact that beyond, say, 200 miles the air service to Heathrow is usually the one with the highest frequency. The result is that there has not been the relief to Heathrow by way of direct international services from other aerodromes to the extent that aerodrome planners might wish.

Printed image digitised by the University of Southampton Library Digitisation Unit

1.13 While, as with airports, there are powers to prevent airline operators doing what they wish to do, there are none to make them provide particular services of a given frequency. The Edwards Committee have recommended some direct but limited subsidies but it remains to be seen whether this recommendation will be accepted - legislation would be required - and in practice applied on a scale sufficient substantially to change the situation described above. For the purposes of this paper it is assumed that this situation will not be significantly changed. First and foremost the provision of air services depends upon the commercial judgment of airlines.

Possible developments

1.14 The likely developments in airports (i) in the North-West, (ii) in the Midlands can be considered against the above background and against the four possible sites for a TLAP. The views expressed are opinions, in some cases best guesses, and do not derive from some detailed and approved plan.

1.15 Whatever site is chosen for the TLAP it is unlikely that the 'North' will be denied the airport facilities for all kinds of air services any more than it, or Scotland, has been denied them in the past. Apart from a continuing desire to assist the economic development of these areas, the work of the Commission has demonstrated the major importance, in terms of airport siting, of surface journey costs.

1.16 Manchester is likely to continue to be the focal point of international services for the area for the next decade and for much longer if planning permission is given for a second runway. Such an application is likely to be made within the next few years, possibly soon. Its chances of success are most uncertain. If this development does not take place it is very probable that a search, involving in turn another Commission, for an airport capable of handling intercontinental operations on one side or other of the Pennines, will be necessary. One of the factors in its location would presumably be the 'northness' or otherwise of the TLAP. Apart from runway length (and it would probably be prudent to insure against the possibility of needing two eventually) it probably would not be comparable in scale of operation with the TLAP for a very long time.

1.17 But even assuming the continuing availability of a full range of airport capacity some considerable part (though decreasing as a proportion) of demand from the North, as elsewhere will, for the reasons described above, be satisfied at Heathrow and eventually, as services and frequencies build up, at the TLAP. As regards the latter the order of preference of site for those travelling by surface is obvious. For those travelling by air from Manchester and other northern airports the order could be reversed, e.g. Manchester-Foulness would offer a more attractive stage length, or not matter at all.

1.18 In conditions of limited seat availability from Heathrow no distinction can be made between demand from the South East and that from elsewhere. Thus the Mancunian who books early at Heathrow could compel a more dilatory inhabitant of Kensington to fly from the TLAP.

1.19 As regards the development of Midlands airports, the chance of any one being allowed to develop to intercontinental standards before the TLAP is operational is remote. And certainly none if there were the serious

Printed image digitised by the University of Southampton Library Digitisation Unit

operational conflict with the TLAP that a consideration of pairs of each existing and each potential site suggests in several cases. Moreover in the Thurleigh and Cublington case it is difficult to see what incentive there would be (certainly none for the Board of Trade's 60 per cent stake in Elmdon) for municipal authorities to shoulder the very high capital cost of the TLAP, together with operating losses for a substantial period, if the BAA are doing it for them.

1.20 As regards the Midlands demand which is not satisfied from its existing airports the remarks above regarding the use of Heathrow and the TLAP relating to Northern demand apply except that:

(i) an air link between, say, Birmingham and one of the three inland sites does not seem feasible and with Foulness less likely than the Manchester case;

(ii) some relief may be obtained via Manchester, if the services are there and at the cost of a somewhat higher fare ('add-ons' are modest in amount) for air journeys - they are the majority - over the south coast.

Printed image digitised by the University of Southampton Library Digitisation Unit

Study 2

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

STUDY 2 **Development of the United Kingdom Air Traffic Control System and its effect on the Proof and Experimental Establishment at Shoeburyness**

By the National Air Traffic Control Services

Introduction

2.1 The Shoeburyness range, operated by the Army Department of the Ministry of Defence on behalf of all three services, lies on the north side of the Thames Estuary. It is about 18 nautical miles long by 6 nautical miles wide (see the hatched area on the outline map at appendix A) with a top limit of 35,000 ft, raised on occasions to 60,000 ft. The danger area formed by the range therefore constitutes a barrier about 12 miles wide obstructing the path of desirable additional east-west air routes between the London area and the Continent.

Present situation

2.2 Even at present (1969) levels of traffic, the Shoeburyness range has a restrictive effect on the efficient operation of air traffic control services during busy periods. The airspace it occupies is, in fact, used by air traffic control when the range is inoperative at week-ends.

The future

2.3 By the late 1970's it is expected that the volume of commercial air traffic wishing to cross the southern North Sea will have doubled. This amount of traffic cannot be contained within the lateral boundaries of existing controlled airspace even after due allowance is made for improvements expected in navigation accuracy and in the ground monitoring facilities. As traffic grows it will therefore become necessary to expand controlled airspace to accommodate additional east-west routes between the London areas and the Continent.

2.4 The geographical and traffic relationship between the United Kingdom and the Continent (see appendix A) is such that additional controlled airspace over the Thames Estuary for such routes would be more advantageous than a comparable area farther north. This is true both of civil and military flying because, from the civil point of view, going north would add to route distances and so adversely affect airline economics while, from the military point of view, any penetration of controlled airspace into East Anglia will restrict military flying and the farther north such penetration goes the steeper the rise in costs of military re-deployment.

Printed image digitised by the University of Southampton Library Digitisation Unit

Airspace utilisation

2.5 It seems probable that airspace utilization could, in the long term, prove to be the dominant factor governing the ultimate location of military danger areas. The amount of airspace available over the United Kingdom is relatively small* when considered against the amount of flying which takes place. Provision has to be made for military training and operational flying of many different kinds, for research and development and test flights and for civil aviation ranging from commercial operation of supersonic transport aircraft to private flying and gliding. It is thus becoming increasingly important to plan the use of airspace, sharing it where this is practicable, segregating incompatible types of flying and ensuring that all the airspace is used to the best advantage.

2.6 Except at very high flight levels, and for some low level cross-channel flights, the airspace between the existing airways Blue 29 & Green 1 (see the stippled area on the map at appendix A) is at present of very little use to civil aviation because of the barrier imposed by the Shoeburyness range: it is of even less use for military flying since it is enclosed on all sides by controlled airspace. If the range were removed this area could be fully utilised for aircraft using the airways control system and the spread of controlled airspace into East Anglia could be checked.

Short-listed sites

2.7 If Foulness were selected as the site for the new airport all open range gun firing would almost certainly have to cease as soon as work on land reclamation starts. This would precede the opening of the airport by several years so that air traffic control considerations are immaterial in this case.

2.8 The other three sites can be considered together, the material factor being the total amount of traffic flying from the London area as a whole on routes linking up with the air traffic control systems of the Belgian and Netherlands authorities.

2.9 At the request of the Ministry of Defence (Army) a study was made of the extent to which the air traffic situation might be alleviated if aircraft were able to overfly the range at heights of 20,000 ft and above, assuming this to be acceptable in principle. This study allowed for the future replacements of piston-engined aircraft by turbine powered aircraft, which would reduce the proportion of aircraft having to fly below 20,000 ft in the area purely on performance grounds. Account was also taken of the improvement expected in the capacity of the existing airway over Clacton.

2.10 Other factors considered were the need for aircraft inbound to the existing London airports to be below 20,000 ft by Shoeburyness, in order to reach the altitude in the sequencing area at a manageable rate of descent, and the degree of restriction on climb and cruising levels that has sometimes to be imposed by the London, Belgian and Netherlands control centres when, for traffic separation purposes, lower flight levels have to be used than those achievable on the basis of aircraft performance alone.

**CTLA Papers and Proceedings,* vol. I (HMSO), fig. 6.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.11 Finally, provisional route patterns designed for Nuthampstead, Cublington and Thurleigh were examined and note was taken of their effect on the existing arrival and depature routes for Heathrow and Gatwick.

2.12 This study showed that, if the minimum safe height at which the range could in theory be over-flown with safety were reduced from the existing 35,000 ft to 20,000 ft, it would have the effect of increasing the capacity of the route system in the area by the equivalent of half an airway. On the assumption that the first runway at the new airport would be needed in the mid 1970's, with the other three coming into use at five year intervals, it was concluded that the situation might be contained on this basis but only until the second runway came into use. Traffic forecasts indicate that between 1980 and 1985 pressure would become increasingly strong either for a further reduction in the height of the range or for more airspace north of Clacton. To make a significant difference to the situation, all airspace over the range down to 10,000 ft would, in fact, be required by about 1985. This would mean limiting the operational ceiling of the range to some 5,000 ft and it is understood that maintaining the range facilities for such work as would be practicable under these circumstances would not be a viable proposition.

Conclusion

2.13 It is concluded that:

(a) as traffic grows in the 1970's it will be necessary to expand controlled airspace to accomodate additional east-west routes between the London area and the Continent (paragraph 3),

(b) both from a civil and a military point of view, these additional routes should be accommodated in the airspace above the Thames Estuary (paragraph 4),

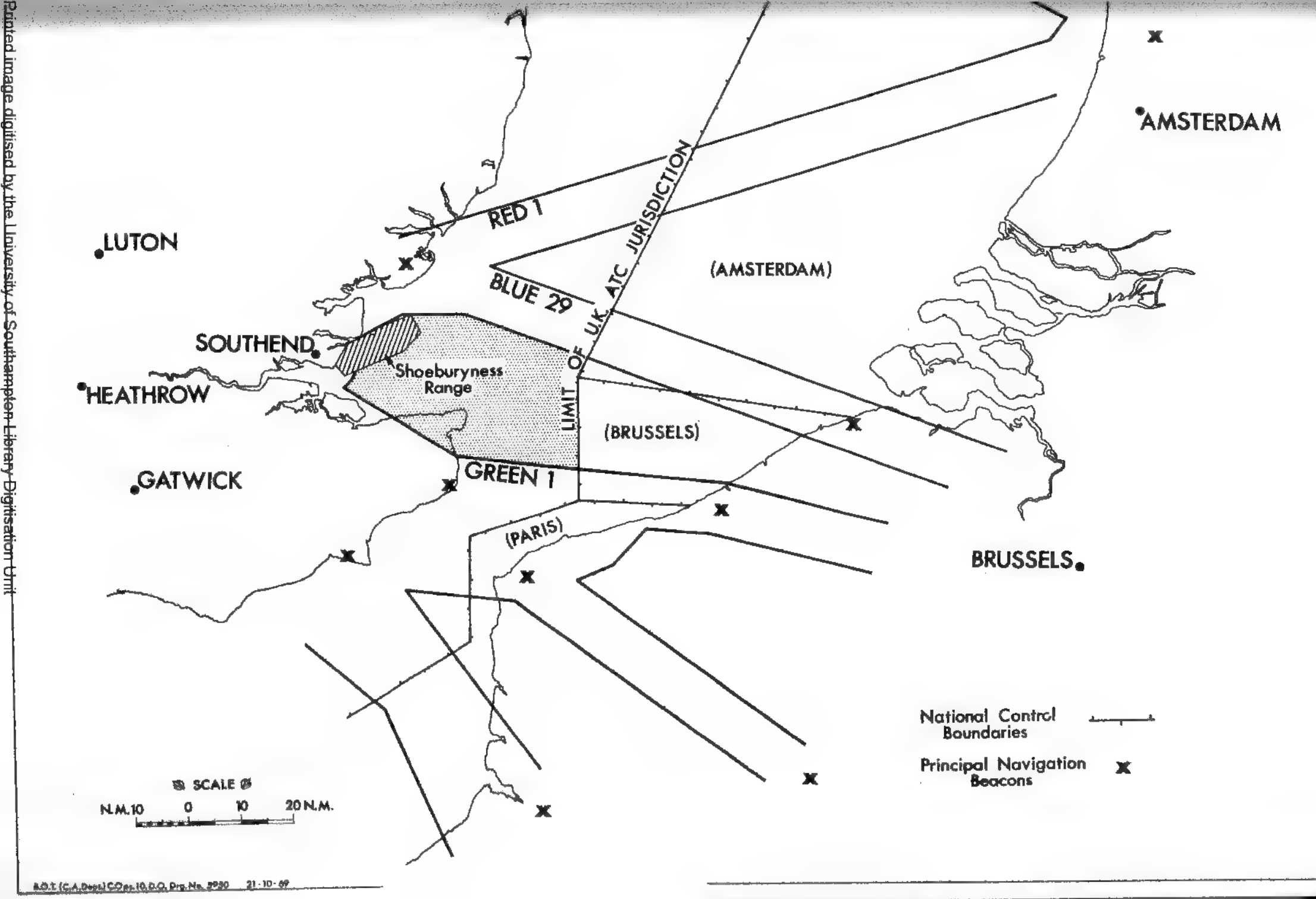
(c) if the Shoeburyness range were removed, the area between Airways Blue 29 and Green 1 could be fully utilized for aircraft using the airways control system and the spread of controlled airspace into East Anglia could be checked (paragraph 6),

(d) if the minimum safe height for overflying the range was reduced to 20,000 ft, the traffic situation might be contained until 1980 (paragraph 12),

(e) between 1980 and 1985, the traffic situation would require the operational ceiling of the range to be reduced to some 5,000 ft. It is understood that maintaining the range facilities in these circumstances would not be a viable proposition (paragraph 12).

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



A.O.T. (C.A. Dept.) C.O. no. 10, D.O. Pro. No. 5930 21-10-69

Printed image digitised by the University of Southampton Library Digitisation Unit

Study 3

Printed image digitised by the University of Southampton Library Digitisation Unit

STUDY 3 **Developments Affecting the Air Traffic Control System in the United Kingdom (South) 1975-1985**

By the National Air Traffic Control Services

Introduction

3.1 This paper has been prepared with the object of assisting the Commission on the third London airport to decide what effect developments affecting ATC in the UK may have on the timing of the need for the new airport and on the relative advantages of the four short-listed sites.

3.2 As was stated in the introductory paper on air traffic control considerations produced for the Commission in November 1968*, aircraft using the new airport will require the full ATC service provided by the "controlled airspace system" (CAS) consisting of airways, terminal areas and control zones. The paper therefore deals mainly with this system.

3.3 Some information on developments in the rest of the airspace as well as in CAS has been given to the Commission by the "Linesman/Mediator" Directorate responsible for development of en route ATC services at the new London air traffic control centre. Improved radar control services are also being introduced from selected airfields for aircraft flying en route in the "lower airspace" (below 8,000 ft outside controlled airspace) but none of these developments will directly affect the traffic handling capacity of the London airports. Their object is to improve the lot of aircraft flying outside controlled airspace and to minimise to the extent possible the restrictive effect of controlled airspace on "off-airways" flying by providing better facilities e.g. for traversing an airway when the aerodrome of departure lies one side of it and destination on the other.

3.4 The most important factor governing the design and operation of an ATC system, apart from the volume of traffic, is probably the handling characteristics of the aircraft it is to serve, i.e. their turning circles, rates of climb and descent, preferred cruising levels and optimum forward speeds. Following a close second in the case of civil aircraft is the communication, navigation and other airborne equipment carried in conformity with International agreements. These, together with route requirements largely determine the volume of airspace needed and the ground based facilities required.

3.5 This paper is divided into four sections covering (a) aircraft characteristics, (b) airborne equipment, (c) ground facilities and (d) timing of the need for a new airport.

**CTLA Papers and Proceedings*, vol. I page 333 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Aircraft characteristics

3.6 Four new types of civil aircraft are either known or likely to come into service during the period 1970-1985. They are (a) the so-called Jumbo jet, (b) the Supersonic aircraft (SST), (c) the Short Take-off/Landing aircraft (STOL) and (d) the Vertical Take-off/Landing aircraft (VTOL). All types of aircraft currently in service will remain in use with the proportion of propeller-driven aircraft continuing to decline.

3.7 Within the terminal areas and adjacent airways the performance of both the large sub-sonic aircraft and the SST is expected to be very similar to that of conventional jet aircraft already in regular service. The SST will be particularly sensitive to delays at low altitudes but, unless scheduled to operate in off-peak periods, it seems certain to be subjected to the same order of traffic delays as other aircraft. It may prove possible to make some use of the capability of the SST to absorb some delay by reducing speed while still at very high altitude but this technique cannot be fully exploited until there is a high degree of automation throughout the entire air transport system. The reason for this is that, at the material time, aircraft on short-haul routes will not have taken-off and the traffic situation cannot be forecast with the requisite degree of accuracy sufficiently far in advance to allocate a fixed landing time for the SST; neither is there any guarantee that the SST could arrive at precisely the right moment to take up a slot in the landing pattern reserved for it half an hour or more ahead.

3.8 The STOL types of aircraft are able to fly at low forward speeds and to manoevre within confined spaces - admirable qualities from the ATC point of view provided fast and very slow aircraft are not required to mix - but are expected to utilize the lower flight levels not frequented by long-haul and conventional short-haul aircraft. Here they could, if introduced in large numbers, compete for airspace with the smaller private and executive types of aircraft and create a need for a lowering of the base of controlled airspace in the terminal area. Opinions vary widely as to whether they are likely to be introduced in large numbers in the London area in the period under review (1970-1985).

3.9 The characteristics of the VTOL aircraft are quite different. They are expected to operate at medium flight levels, in the region of 10,000 ft to 20,000 ft - i.e. generally below the conventional jets. They could, however, present a difficult problem in the terminal area during climb and descent unless they remain at low levels, but noise considerations may prevent this method of operation. It is not possible at present to say whether in the period 1970-1985 they will materialize in any significant quantity.

3.10 It is to be hoped that the period 1970-1985 will see the birth of a generation of aircraft capable, when required, of being flown accurately and continuously at a given *ground* speed. As explained in paragraph 14 below, the effect of such an innovation could be quite dramatic but history suggests it is not likely to be felt for many years to come, certainly not within the next fifteen years.

Printed image digitised by the University of Southampton Library Digitisation Unit

Airborne equipment

Air navigation

3.11 In the past it was possible to relate the capacity of any air traffic control system to the accuracy of the air navigation aid used because controllers had to rely on the pilot to tell them where their aircraft were and had to use these "position reports" for keeping aircraft safely separated. This is no longer so. In busy areas ground radar is now used for this purpose and the information it provides on the traffic situation is extremely accurate and is constantly renewed. Thus for establishing that safe separation exists between aircraft at any given instant in time the accuracy of air navigation is no longer relevant.

3.12 It is not enough, however, to survey the current situation. The task of ATC is to ensure not only that safe separation exists but that it will be maintained and the technique differs according to the type of separation provided. With vertical separation the controller has few problems. Aircraft speeds in the vertical plane are relatively low and the modern altimeter provides the pilot with very accurate information. Thus if the controller tells one pilot to fly at 15,000 ft and another at 16,000 ft he knows that safe separation between them can be maintained by the pilots without any assistance from the ground organisation.

3.13 In the case of lateral separation the situation is different. Again speeds are low in the lateral plane but the pilot cannot establish displacement from a given track with anything like the accuracy with which he can detect displacement from a given flight level. Moreover, the choice of tracks is limited by the current internationally accepted airways navigation system since each must at present lie along a radial line from a VHF omnirange radio beacon (VOR) located on the ground. Later developments are referred to in paragraph 15.

3.14 The third type of separation - longitudinal - is the most difficult one of all because closing speeds in this plane can be very high indeed (several hundred feet per second in the case of opposing tracks) and pilots flying along the same track are quite unable to maintain their own safe separation longitudinally since they cannot be expected to exercise precise control over forward speed. Data from the altimeter can now be fed directly to the auto-pilot so that an aircraft will adhere quite accurately to a given flight level. If the ground-speed output from e.g. a Doppler navigation aid could be similarly used to control forward speed then many ATC problems would be greatly eased and airspace could be used more economically. But no such development can be contemplated within the time-scale with which we are concerned. As a longer term development still, control over forward speed by a ground-based ATC computer would greatly simplify control in terminal areas but an innovation of this kind seems likely to involve the production of a new generation of aircraft if full advantage is to be taken of its potential for safe operation at really high traffic densities.

3.15 The major improvement expected within the period up to 1985 in the navigation field is the general adoption of improved airborne navigation equipment. This will present navigational information in pictorial form and make it possible for pilots readily to follow tracks other than those forming VOR radials. The way will then be clear for twin tracks, seven

Printed image digitised by the University of Southampton Library Digitisation Unit

miles or so apart, to be established within each airway and present indications are that once this becomes possible satisfactory route systems can be provided to meet traffic demands in the London area at least until 1985 without undue penetration into the airspace needed for military and research and development flying and by many other users of the "free" air outside the controlled airspace system.

3.16 It is not expected, however, that such a Pictorial Display (PD) equipment, even when fed by standard VOR supplemented by Distance Measuring Equipment (DME beacons), will enable pilots to follow tracks seven miles apart with sufficient accuracy to be left to their own resources. It will be one of the duties of the radar controller to check constantly that no aircraft wanders off its allotted track if he can see that this might bring about a risk of collision with another aircraft.

3.17 Some improvement in performance of the VOR element will result from the progressive replacement of older installations by the improved Doppler VOR (DVOR) during the next 5/10 years. Further improvements could result from the universal use of high accuracy airborne receivers but, again, it will be many years before enough aircraft are equipped and the ground deployment of DVORs is sufficiently extensive to enable separation standards to be reduced on this account.

3.18 In designing route systems associated with the short-listed sites it has been assumed that PD will be a standard item of equipment by the time the new airport is handling a significant volume of traffic. Twin-track airways are therefore employed but it has been considered prudent not to assume any greater tracking accuracy than that provided by standard VOR/DME in the period up to 1985. For this reason, although route networks are being devised that will have sufficient capacity for the forecast traffic demand in later years, no attempt is being made to finalise airspace requirements beyond 1985.

3.19 Subject to a substantial improvement in navigational tracking accuracy being achieved by international agreement in the long term (and there are now signs that other countries are beginning to have more sympathy for the UKs long-standing views on the need for it) events could show that the volume of controlled airspace deemed no more than adequate for 1985 traffic could in subsequent years accommodate appreciably more but whether this will prove to be the case can only be a matter for speculation at the present time. Given also a commensurate measure of speed control it is possible to visualize considerable savings in airspace demands. More than one aircraft, for example, could be held at a given flight level in a holding pattern but the area covered by these "stacks" could not be made smaller unless forward speeds were substantially reduced.*

Secondary Surveillance Radar

3.20 The ground radar surveillance equipment that has been in use for many years is known as 'primary' radar. It provides the controller with 'plan position' information by detecting radio energy bounced off the aircraft and measuring its bearing and range. A major advance in ATC is

**CTLA Papers and Proceedings,* vol. I (HMSO) page 335.

Printed image digitised by the University of Southampton Library Digitisation Unit

expected from the introduction, as a standard item of equipment, of Secondary Surveillance Radar (SSR) transponders in aircraft using the upper airspace and airways systems and in all military aircraft likely to fly above about 3,000 ft. This equipment, by telemetering aircraft height and identity, will greatly improve the quality of the information available to the control staff and reduce the load on VHF/RT radio communication channels.

Air ground communications

3.21 By the time the new airport is opened SSR is expected to be fitted in all aircraft using the major airports serving London. This should help to contain the VHF/RT channel situation which has given rise to some anxiety. The number of frequencies available for air/ground communication might soon have become insufficient to meet all requirements without some reduction in the number and length of messages needed for each flight.

3.22 In the course of time other forms of air-ground data link may become universal to reduce still further the need for voice communication and eventually to exchange data direct between ground to airborne computers. Such developments, however, are not expected to affect ATC system capacity or airspace requirements over the next fifteen years.

Ground facilities

3.23 Provided the runway and taxiway layout at the new airport is suitably designed it is not expected that any ground movement control problems will arise in the next decade. There may, however, be a need for a fully automatic-ground guidance and control system when the new airport is running to full four-runway capacity, probably earlier if there is a rapid increase in the incidence of landings in really low visibility. This system would make use of computer techniques to ensure that available taxiways, runways and departure and arrival flight paths in the vicinity of the airport were used to best advantage. Studies on the feasibility of achieving such a system, and of its cost effectiveness, are being pursued by the Ministry of Technology with NATCS support. First priority is being given to the approach paths (see paragraph 24 (d) below).

3.24 The control tower at the new airport will be designed to accommodate the latest ATC devices for sustaining a high rate of traffic flow; these will include:

(a) Primary and secondary radar surveillance - to give controllers accurate up-to-date information on the position, height and identity of all aircraft flying under their control.

(b) Airport surface movement radar (ASMI) - which will enable them to locate aircraft and vehicles on the runways and taxiways whatever the visibility conditions.

(c) Distance from threshold indicators (DFTI) - to tell them precisely where arriving aircraft are along the approach paths so that, when required, arriving and departing aircraft can safely share the same runway without loss of time.

Printed image digitised by the University of Southampton Library Digitisation Unit

(d) Computer assistance for approach sequencing (CAAS) - a system now being developed to reduce time losses on the approach paths by using an electronic computer to assist the controller in marshalling aircraft one behind the other, correctly spaced for landing.

(e) Data link to the ATC centre computers - for the rapid transfer of traffic information between the airport and the control centre.

(f) Comprehensive air-ground and ground-ground communications systems - to ensure that the many vital messages about air traffic, weather conditions, serviceability of equipment and so on can be accurately and speedily transmitted between pilots and controllers and between ATC and other units on the ground.

Air Traffic Control Centres (ATCC)

3.25 The ATC staff in the control tower is, as a general rule, responsible only for aircraft using the airport itself. Once clear of local traffic patterns a departing aircraft is handed over to the Air Traffic Control Centre. Similarly, arriving aircraft are controlled from the Centre until they reach a convenient position at which they can be handed over to the control tower.

3.26 The Centre is thus responsible for the control of aircraft from many different airports and for co-ordinating their movements en route and whilst within the terminal area outside the airports' own control zones. It follows that no airport can achieve a high traffic movement rate unless its local Centre can accept and deliver aircraft at the required rate.

3.27 There is a comprehensive programme, summarised in tabular form at Appendix A, for the progressive development of en route and terminal area facilities at the new London ATCC, West Drayton.

3.28 It will be appreciated that at times the traffic handling capacity of the London ATCC may be limited by the capacity of an adjacent centre, located in a different country. This is, of course, something over which the UK has no direct control and it has not been considered appropriate or necessary to take it into account when assessing the capacity of the UK ATC system. On the contrary, it has been thought right to assume that other States will, like the UK, take whatever steps are needed in due time to ensure that the capacity of their own ATC organisations keeps pace with traffic demands.

Timing of the need

3.29 Developments in air traffic control to increase capacity will certainly bear on the answer to the question "when is a third airport needed?" but the practicable increase foreseeable will not remove the need for another airport to accommodate the increased traffic forecast. This is because the deciding factor ultimately is the permissible rates of arrival and departure and control equipment and techniques already in existence and planned will match the maximum runway movement rates possible given the handling characteristics of the aircraft, the need for safety and the kind of weather conditions prevalent in the UK.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.30 It is accepted that somewhat higher movement rates can be achieved in clear weather than when pilots are flying "blind" but this is because the pilot is then able to obtain the information he needs in azimuth and in elevation simply by looking forward through the cockpit window and can, at the same time, watch the progress of the aircraft ahead of him and take immediate action if anything untoward happens to it. If he has to be told by a third party - the air traffic controller - to break off the landing and to overshoot there is an inevitable time lag not present in the clear weather case and this must be allowed for. To provide the pilot with still more instruments and require him not only to fly the aircraft but also continuously to monitor the actions of other aircraft and his position relative to them, would be to increase cockpit workload to an altogether unacceptable degree.

3.31 The capacity of a terminal area to handle air traffic is primarily related to the number of runways available within it and to their geographical relationship to each other and to the routes to be served. If the runways are so oriented that their departure and arrival paths conflict then air-spacespace has to be shared between them and their combined capacity will be less than it would have been otherwise. But even if none of these troubles exist, serious delays can still occur if the amount of traffic offering exceeds the capacity of the runways available.

3.32 No changes to the ATC system can affect this situation; the only remedy short of changing the aircraft themselves is to provide additional runways and to construct them where they can be used without interfering with those already in existence.

3.33 The traffic handling capacity of the existing London airports is governed in the first place by the number of runways available. With Heathrow having priority, the capacities of Gatwick and Luton are further constrained to some extent by their closeness to Heathrow and the limited volume of airspace available for manoeuvre. Their capacities might be marginally increased by an unacceptably rigid imposition of sectorization (e.g. no movements north from Gatwick or south from Luton) or equally unacceptable spread of controlled airspace to the west and northwest of London coupled with the introduction of detours which could play havoc with short-haul airline economics.

3.34 With the current generation of aircraft no developments in ATC can change the basic situation. Improvements in ATC already planned (e.g. the Linesman-Mediator project and computer assisted approach sequencing are expected to ensure that the handling capacity of the ATC system will match that of the runway and taxiway systems. Expected improvements in air navigation will affect the volume of controlled airspace needed to accommodate their traffic rather than the capacity of the airports themselves.

September 1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Key

CAAS:	Computer Assisted Approach Sequencing
CAS:	Controlled Airspace
FPPS:	Flight Plan Processing System
JATCRU:	Joint Air Traffic Control Radar Unit
LATCC:	London Air Traffic Control Centre
MAS:	Middle Air Space
RDPS:	Radar Data Processing System
SSR:	Secondary Surveillance Radar
UAS:	Upper Airspace
UHF:	Ultra High Frequency

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Planned date	Stage	Controlled airspace	Middle airspace (flight levels 80 to 245)	Upper airspace (flight levels 250 and above)	Common
April 1971	I	Integrated procedural/radar control positions brought into use at West Drayton. Radar control transferred to West Drayton from London Air Traffic Control Centre, Heathrow	Improved service to civil and military aircraft from 15 new radar control positions at West Drayton	Two new procedural positions introduced at West Drayton but radar service outside "Channel" area still provided from JATCRUs at Bishops Court, Boulmer, Lindholme, Watton, Sopley and Heathrow	Fully operational FPPS replaces interim Flight Strip Printer. Touch-wire displays provided at all control positions for limited internal liaison and co-ordination via the FPPS computer. SSR Plot and Code Extraction System introduced providing "labelled" information on radar displays Centralized Distress (civil/military) and Diversion (military) services introduced south of lat.55N employing UHF triangulation backed by radar south of lat.53N
October 1972	IA	Area of jurisdiction extended to lat.55N to absorb en route functions of Preston ATCC		Preston ATCC UAS sector transferred to West Drayton. Associated radar services remain at Bishops Court, Boulmer and Lindholme	Radar cover available for Distress and Diversion services extended north to lat.55N New primary radar and SSR station at Burrington (Devon) now fully operational
Spring 1974	IB/C			UAS radar services transferred from Lindholme, Sopley and Heathrow to new radar control positions at West Drayton with comprehensive SSR facilities. Area of jurisdiction extended to lat.55N in the west	New SSR station at Scillies brought into use
Early 1974	IIA		Evaluation and training		Facilities become available for proving and evaluation of the Stage II system, and for continuation and conversion training Stage I/Stage II. Keystone is automatic tracking based on SSR with a comprehensive track labelling system
End 1974	IIB			Area of jurisdiction extended to lat.57N	Automatic tracking of SSR fitted aircraft introduced and becomes complementary source of radar date for the FPPS with which it will, at this stage, be manually associated. Track labels showing call-sign, cleared and actual flight levels and other information will be available on all radar displays
Autumn 1975	IIC	Horizontal "conference" type displays replaced by separate near-vertical displays allowing individual selection of displayed data. Electronic data displays replace printed strips (subject to results of Stage IIA)	Computer provides automatic allocation of MAS and military UAS tasks under manual supervision		Selective automatic association of FPPS and SSR derived data replaces the manual association of Stage IIB. Periodic up-date of FPPS by radar data introduced. Flight categorization system provides measure of automatic control over the selection of labelled display data
Mid 1976	IID	Electronic Flow Control Planning displays introduced. Computer assistance provided for en route "streaming" of arrivals prior to [illegible]	Area of jurisdiction extended to lat.55/6N. LATCC assumes all remaining tasks of JATCRUs	Fully processed "synthetic" radar displays replace labelled "raw" radar displays	Continued development of automation techniques to reduce controller work-load. Automatic association of FPPS with RDPS completed. "Conflict Probe" computer programme introduced for automatic detection of occupied or reserved flight levels

Printed image digitised by the University of Southampton Library Digitisation Unit

Study 4

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Introduction

4.1 The Working Party on Traffic and Capacity at London's Airports, convened by the Board of Trade, including representatives of the BAA and the British airlines, and latterly assisted by members of the Secretariat of the Commission on the Third London Airport understands that the Commission is in urgent need of advice on forecasts of:

4.1.1 total passenger demand and demand for aircraft movements by market in the London area for each year up to 1985 on a long term trend basis.

4.1.2 the same traffic up to 1975 taking account of short term factors; and,

4.1.3 the hourly distribution of aircraft using Heathrow on selected busy days for each year up to 1975.

The rest of the paper accordingly presents and explains the Working Party's agreed forecasts on these topics.

Definition of London area

4.2 For the present purpose we have confined our London area forecast to forecasts of the growth of the traffic at present using Heathrow and Gatwick. Naturally, the development of traffic at all the airports in the home counties that serve public transport operations is relevant to the timing of the need for a third London airport.

4.3 Trend forecast of total annual air passenger demand in the London area up to 1980

4.3.1 *Forecasting methods used*

4.3.1.1 The forecasting work carried out by the Working Party was of two broad, but distinct, kinds. There were first projections made by fitting algebraical formulae to statistics of the past and using these formulae to predict the future; and secondly there were projections formed by modifying or continuing past trends in accordance with judgments on how these trends can be expected to be moulded by the economic and other forces that bear on them.

4.3.1.2 Both these methods have their advantages and disadvantages. The use of formulae based on data from the past may enable future air traffic to be derived from forecasts of other economic quantities which are more easily predicted than air traffic itself; and it ensures that tendencies that

Printed image digitised by the University of Southampton Library Digitisation Unit

have been present will continue to be reflected in the forecast, even though the causes are unknown. It is, however, possible that some part of a formula, relatively unimportant over the period to which the formula is fitted but serving to improve the approximation to the facts that the formula represents, may take on a more dominant role in the forecast period. The other method, which rests more on economic argument, is probably less precise, relies more on the quality of the forecasters' judgment, and renders more difficult a quantitative assessment of the confidence that can be placed in the range of the forecast.

4.3.1.3 The choice of method in such cases will probably rest heavily not only on whether it yields a forecast which has credibility and inspires confidence, but also on whether it affords explanations, in terms of the factors known to be operating, of the form it takes. The Working Party decided not on this occasion to base its forecast on an algebraic formula. The formulae that had been calculated for the London area did not make use of many of the economic and other variables widely thought to be important. These, and other similar formulae that could have been derived, were capable of giving different results during the forecast period whilst fitting past data equally well. Nevertheless the Working Party decided that it should not ignore the formulae that had been derived and that, if they produced forecasts markedly different from those produced by other methods, good explanations for the differences should be found before they were rejected.

4.3.2 *Confidence in the forecast and its range*

4.3.2.1 Forecasting is not exact: inexactitudes arise from the variability of the factors with which we are dealing, from uncertainties and errors in the statistics used and in estimates derived from them, and from possible misjudgements. Accordingly, the Working Party has produced, not a single projection, but a range of possibilities. The range widens the further ahead we look. The range selected is one in which there can be reasonable confidence that the outcome will be covered by the span of the forecast, though it is impossible to measure this degree of confidence precisely.

4.3.2.2 BEA have entered the reservation that their forecasts (based on the total short haul market and not on their own movements alone) are lower than the Working Party's – particularly in respect of "domestic" and "Irish" traffic. In the case of the forecast for total numbers of passengers BEA's figures are below the Working Party's lower limit; however, since BEA also envisage a slower rate of growth in the average number of passengers per aircraft than does the Working Party, their forecast of the numbers of movements to be expected falls between the Working Party's "most likely" and "lower limit" figures. The Working Party, while adhering to the forecast range expressed in this paper and its attached tables, has noted BEA's views.

4.3.3 *The passenger forecast : international*

4.3.3.1 The London area airports are primarily engaged in international transport and figure very largely as terminals for international passenger movement. About four-fifths of the passenger traffic at London's airports is international and this traffic is more than three-quarters of the international air traffic at all United Kingdom airports. More than 60 per cent of passengers entering and leaving the United Kingdom travel by air; this proportion has been growing and is likely to continue to grow. London

Printed image digitised by the University of Southampton Library Digitisation Unit

area air passenger traffic is, therefore, closely linked with total international passenger movement.

4.3.3.2 Leaving aside traffic across the land border with the Irish Republic, which is mainly local, the UK international travel market is made up of sea and air travel. In many ways these two transport modes cater for different kinds of demand for travel, yet the numbers of passengers carried by each have changed in ways similar to those that would have been expected of a single market composed of two parts – sea transport and air transport – with substitution at the margin.

4.3.3.3 The rate of growth of passenger traffic by sea and air together into and out of the United Kingdom has been remarkably stable at about 9 per cent a year over the last 15 - 20 years. We reviewed the forces at work, or expected to come into play in the next decade, that might operate to accelerate or retard the expansion of international passenger travel. On the side of buoyancy, the largest international markets – those to and from Europe and to and from North America – have been growing faster than total travel between the UK and the rest of the world. The increasing importance of the faster growing markets could raise the rate of increase of total international travel, although to the extent that these markets are gaining at the expense of slower growing markets the scope for these above average rates of growth will lessen. Continued growth of international travel at rates of similar order to those of the past implies an increasing share of disposable income spent on international travel by those groups of people from which travellers into and out of the United Kingdom are mainly drawn. However, consumers' expenditure on travel and associated items is a sufficiently small proportion of domestic income for this to impose no restraint on traffic growth at past, or somewhat higher than past, rates even though there will be other growing demands on consumers' discretionary income.

4.3.3.4 The Working Party decided that there were no strong reasons for forecasting the most likely growth of international passenger travel at a rate other than the 9 per cent of the past; any reasons that there were for taking a different view were covered by the inevitable uncertainties of forecasting – uncertainties arising from the errors of estimating underlying growth rates in the past and from the imprecision of any calculation of current trend values. In setting limits within which we have a high degree of confidence the traffic will lie we took account of the consequences for international travel of the recent slower growth stemming partly from policies at home (including devaluation) designed to achieve a permanent shift in the allocation of resources from consumption to exports and investment. Some of these policies, such as devaluation, may have the effect of increasing the number of overseas visitors to the United Kingdom; but these are fewer than the number of United Kingdom residents who travel abroad, and the boost to foreign traffic is not likely to outweigh the adverse effect on overseas travel by UK residents.

4.3.3.5 Methods and reasoning similar to those employed above in the context of total international travel have been used with some modifications to project international travel in each of the main markets and to estimate sea travel within the total. The modifications recognise that for the longer journeys there is less substitution between sea and air travel. This is what we would expect on general grounds and is in accordance with the evidence from the past.

Printed image digitised by the University of Southampton Library Digitisation Unit

4.3.3.6 International air passenger forecasts can now be made. Over the period 1968-1980 traffic growth is forecast at rates commencing at about 12 per cent a year and declining to about 11 per cent a year by the end of the period. These rates also apply to the large European market. Traffic to and from Ireland is likely to grow less quickly, at rates falling from about 8½ per cent a year to about 6½ per cent a year, whilst in the North American market they might run from 15 per cent a year down to about 11 per cent a year. Other long-haul traffic is forecast to expand at about 13 per cent a year. These forecasts continue the slow decline in the rate of growth of all passenger traffic carried by air that has been observed in the past. Within the total the forecast for the North American routes is, on the information available to us, consistent with the forecast of North Atlantic traffic now being made for ICAO. Most of the international air traffic to and from the United Kingdom will pass through London area airports. The proportion of total international air traffic that uses these airports will continue to rise as a consequence of the changing market pattern of the traffic, since the fast growing long-haul services are more concentrated at the major international airports than are short-haul services.

4.3.4 *Passenger forecast : domestic*

Domestic air traffic is more difficult to forecast. It is, however, a relatively small part of air traffic at London. The United Kingdom is limited in size and there is a network of railways and roads linking the main centres of population and industry. With easy and fairly rapid surface transport the proportion of total domestic traffic carried by air is very small. Considerations of what might happen to the total market are of little value in forecasting air traffic. For this same reason no sudden incursion of air transport into the markets of surface operators can be foreseen. There have been periods of rapid growth in domestic air travel in the past. These seem to have been associated with large fare reductions or special cheap tickets; domestic air fares have risen sharply in recent years and there may be further increases to come. Domestic air transport is little used by holiday-makers so that the buoyancy expected in international travel will be absent. Though domestic traffic may grow less quickly than international traffic there is evidence of substantial interlining between domestic and international services. Various estimates of the scale of this interlining at London have been made from the results of surveys made for other purposes. The estimates centre on a figure of about one-third of domestic journeys being for the purpose of making an air connection. This suggests that the growth of international traffic may prevent the growth rate of domestic traffic from sinking far. We decided to predict growth of domestic traffic at an average rate of 8½ per cent per year, with outer limits of 7 per cent and 10 per cent per year, until 1980, with a slowing down of the rate of expansion similar to that forecast for international traffic.

4.3.5 *Total passenger forecasts*

4.3.5.1 The line of reasoning we have so far followed assumes implicitly that the effects of a number of extraneous factors on air traffic at London are negligible or will continue to operate in future much as they have done in the past. However, some of these factors merit special consideration.

4.3.5.1.1 *Channel tunnel.* The biggest impact of the tunnel, if built, in diverting passenger traffic from other means of transport will be felt on the short routes between the south coast and nearby European countries. The tunnel is likely to be most attractive to travellers taking their cars with

Printed image digitised by the University of Southampton Library Digitisation Unit

them and most of these move by sea at present. Much of the air traffic diverted to the tunnel will be from routes at airports in south-east England outside the London area. The tunnel is likely to cause some reduction in air traffic at London on routes to near European capitals such as Paris, Amsterdam and Brussels; but the amount diverted is not expected to be large. Estimates used in planning the tunnel are small in relation to the forecast of European air traffic at London's airports.

4.3.5.1.2 *Hovercraft.* Much the same considerations apply as to the Channel tunnel. These vehicles are, primarily, an alternative to other forms of surface travel.

4.3.5.1.3 *Other technological developments in surface transport.* Faster and more frequent train services and a more extensive motorway network could well attract some passenger traffic from the domestic air routes. This is one of the factors taken into account in setting the growth rates for domestic air traffic.

4.3.5.1.4 *V/STOL.* It is not thought that these aircraft, apart from some small 'STOL' aircraft, could be in service much before 1980, if by then. Since these vehicles are aircraft the traffic they might carry is properly included in the forecast, and transfers of traffic to them from other kinds of aircraft do not alter the total volume of air traffic. If V/STOL services can operate cheaply they might generate new air traffic. This is not likely to be substantial by 1985. If a V/STOL airport were constructed in the London area specially for these aircraft, a deduction in respect of the traffic using it would have to be made to the "Heathrow/Gatwick" forecasts in the tables.

4.3.5.1.5 *International services at provincial airports.* New services have been introduced from time to time and this process will no doubt continue. The scope for faster development of provincial services is limited by the need for sufficient volume of traffic to permit mounting a viable service. While a large part of our international air traffic is generated in or attracted to south-east England, profitable new routes at other places will be few and difficult to find. Nearly half London's air passengers are overseas residents and most of these want to visit London.

4.3.5.2 The passenger forecasts are set out in table 1.

4.4 Trend forecast of total annual air transport movements in the London area up to 1980

4.4.1 *Aircraft loadings*

4.4.1.1 Advancing technology makes it possible to build ever larger aircraft. The growing efficiency of airframes and engines and the higher number of seats make the newer and larger aircraft cheaper to run (in terms of seat miles flown). At the same time airlines are aware that services with smaller aircraft at higher frequency often enable them to exploit the market more effectively. In the past they seem to have attached similar importance to increasing frequencies and to lowering operating costs by using larger aircraft.

4.4.1.2 An examination of the trends of average aircraft loadings of the past together with information obtained about the orders airlines have placed for new aircraft and their equipment plans suggest that average passengers per aircraft at London might rise at about 6 per cent a year. The rate of expansion will vary for different kinds of aircraft; faster for long-haul aircraft and slower for aircraft on domestic and Irish routes. As the traffic growth rate slowly declines, raising the average age of aircraft in airline fleets, the rate of growth of average aircraft loads is likely to slow down too. We estimate that this rate of expansion will sink from above 6 per cent a year in the near future to about 5½ per cent by 1980. This implies that the average number of terminal passengers per aircraft landing or taking off would double, from about 60 in 1968 to about 120 in 1980.

Printed image digitised by the University of Southampton Library Digitisation Unit

The rate of expansion will vary for different kinds of aircraft; faster for long-haul aircraft and slower for aircraft on domestic and Irish routes. As the traffic growth rate slowly declines, raising the average age of aircraft in airline fleets, the rate of growth of average aircraft loads is likely to slow down too. We estimate that this rate of expansion will sink from above 6 per cent a year in the near future to about 5½ per cent by 1980. This implies that the average number of terminal passengers per aircraft landing or taking off would double, from about 60 in 1968 to about 120 in 1980.

4.4.2 *Freighter movements*

The statistics of aircraft loadings in the past used in this study are of average terminal passengers per air transport aircraft landing or take-off, including movements of all-cargo aircraft. The examination of changes in airline fleets in the next few years as a result of aircraft orders placed also, covered all kinds of air transport aircraft. The increases of aircraft loading derived are, therefore, averages, which include some freighter movements on which there are no passengers, and the resulting aircraft movement forecast includes freighter movements.

4.4.3 *Forecast of aircraft movements*

The forecasts are derived by dividing the passenger forecasts by the estimated average aircraft loadings: they are set out in table 2.

4.5 Extension of passenger and air transport movement forecasts from 1980 to 1985

The passenger and air transport movement forecasts in tables 1 and 2 have been extended to 1985 by continuing the predicted growth of the international travel market and sea traffic for a further 5 years with further reductions in the rate of increase of domestic air traffic. This extension continues the slow decline in the rate of expansion of air traffic at Heathrow. The margin of uncertainty described by the upper and lower alternatives continues to widen. Though the arithmetical derivation of this extension is similar to that of the forecast to 1980 the Working Party has not given the same amount of thought and consideration to it and it should be regarded as an extrapolation rather than a forecast.

4.6 Short term forecasts of total annual air traffic demand in the London area

4.6.1 The Working Party has taken the view that air traffic in the London Area in 1968 was not on trend. In that year passenger traffic was less and aircraft movements were more than they would have been if traffic were following the trends that have been predicted. The factors leading to the kind of results obtained in 1968 are of two kinds. First, passenger traffic has been depressed. The causes of this depression are to be found in the general economic conditions obtaining, particularly in the United Kingdom, in recent years. The substantial deficit in the United Kingdom balance of payments since 1964 forced the Government both to adopt economic policies that restrained the growth of incomes and expenditure and to take measures to reduce expenditure in foreign currencies. These collectively reduced the demand for air travel. The Working Party takes the view that this depression of air travel is a temporary phenomenon and that there will be a return towards trend levels in the coming years. Secondly, coincident but not directly associated with the depression in the demand for passenger

Printed image digitised by the University of Southampton Library Digitisation Unit

travel, airlines are currently operating aircraft of a size not appreciably larger than they have been employing for some years whilst awaiting delivery of newer and substantially larger types. This has meant that for a period in the past and for a short while to come aircraft sizes, which have been growing steadily and are expected to continue to grow, are, for a spell, smaller than might have been expected. Both these departures from trend – in passenger growth and in aircraft size – will disappear in due course, but they will for a time cause passenger and aircraft movements to move differently from the forecasts that have been made. Because the prime need for these forecasts is to determine whether Heathrow is capable of accepting all the traffic offering in the next few years it is necessary to take account of these departures from trend.

4.6.2 Although growth of passenger traffic in the London area is low at the moment we expect a fairly sharp recovery some time in the next year or two. It is difficult to be precise about the timing of this, but it would probably be reasonable to expect passenger traffic to be on trend again by 1971. Thereafter passenger traffic might tend for a year or two to go above trend, but we have not felt confident enough of the timing or extent of this tendency to take account of it in our forecasts.

4.6.3 Although the average size of aircraft used in air transport continues to grow, this growth is spasmodic because of the spasmodic nature both of the development of new and larger types and of airline investment in such types. The airlines are now preparing for major re-equipment. On the longer inter-continental routes they are expecting to introduce the Boeing 747 towards the end of 1969 and this type will be appearing on the long routes in ever increasing numbers during 1970 and 1971. On the shorter routes the Boeing 727 and the Boeing 737 are entering the fleets of European operators. Before long DC9s in quantity will be in operation. BEA expect to take delivery of the Trident 3B in 1971. Because of the timing of this airline re-equipment the aircraft loadings are at present increasing less quickly than the trend rates that have been forecast. Before long these loadings will be increasing rapidly and the trend values may be regained during the period 1973-1976.

4.6.4 Using the information available about airline orders for new aircraft, adjustments have been made to the trend forecasts in tables 1 and 2. Tables 3 and 4 set out the short term forecasts of demand at airports (Heathrow and Gatwick) in the London area.

4. Traffic at Heathrow and Gatwick separately

4.7.1 Traffic has been growing more quickly at Gatwick than at Heathrow. There are two main reasons for different growth rates at these two airports. First, the market compositions of the traffics are different and the various markets are growing at different rates. Second, the division between scheduled and charter traffic is different and again growth rates for these two kinds of service are different. Another important reason for the faster rate of traffic growth at Gatwick may well be the greater spare capacity there than at Heathrow; we did not, however, take this factor into account in our forecasts.

4.7.2 The most important market at Gatwick is European international, although there are also domestic and long-haul (other than North American) scheduled services. The domestic and long-haul traffic at Heathrow and at

Printed image digitised by the University of Southampton Library Digitisation Unit

Gatwick are each expected to increase at the same rate as traffic in those markets in the London area as a whole. North Atlantic and Irish traffic in the London area are predominantly at Heathrow and the London area forecasts for these markets apply to Heathrow.

4.7.3 This leaves the European international traffic to be dealt with specially. At each airport it is expected that scheduled traffic will continue to expand at rates a little lower than those for European air traffic in the London area as a whole. The remainder will be charter traffic which will continue to grow faster than scheduled traffic. In 1967, 8 per cent of international European passengers at Heathrow were carried on charter flights and, at Gatwick, 83 per cent. By 1975 these proportions might have risen to 10 and 87 per cent, respectively.

4.7.4 The forecasts for Heathrow and Gatwick are set out in tables 5 - 8.

4.8 Daily aircraft movements at Heathrow

4.8.1 The purpose of forecasting traffic at Heathrow on particular days and the distribution of that traffic during those days is to discover whether, and if so when, Heathrow is likely to be unable to cater for the traffic offering until 1975. This is a real practical problem and it is appropriate to consider the traffic demand that is expected rather than the traffic trends that are predicted for this period as a segment of the longer term sweep of air traffic growth. The estimates put forward are, consequently, derived from the short term forecasts described in the preceding section.

4.8.2 The Working Party has chosen for analysis and projection the traffic of three different days in 1967, one in the peak, one in the shoulder and one in the off-peak period of the year. The days chosen were the 15th and about the 150th and 250th busiest days of the year; they occurred in August, April and January respectively. The forecasts presented here are for the corresponding days in each year until 1975. In the past some peak-spreading has occurred; traffic in the typical busy day in the peak period has been growing less quickly than the traffic for the year as a whole, in the off-peak period more quickly and in the shoulder at about the same rate. The forecast, in table 9, foresees a continuation of this trend until 1975 at least.

4.8.3 With these forecasts of daily traffic at Heathrow are associated upper and lower alternatives. For simplicity these have been derived from the upper and lower alternatives of the general forecast, though the confidence that can be placed in the out-turn lying within these limits is considerably less than the confidence associated with the limits of the annual forecast.

4.9 Hourly distributions of traffic at Heathrow on particular days

4.9.1 The timing of particular flights is determined by a number of factors some of which follow from the pattern of passenger demand for travel whilst others are constrained by airline scheduling requirements; e.g., the need to dispose aircraft over the network with high utilisation whilst avoiding night arrivals and departures, reducing the economic effects of noise restrictions and congestion, etc. The time patterns for particular categories of traffic, however, probably change only slowly over the years. The distributions for 1975, set out in table 10, are derived from the

Printed image digitised by the University of Southampton Library Digitisation Unit

distributions within each market on the three typical days in 1967 on which the daily distributions in table 9 are based. The market distributions are those for average August, April and January days in 1975. This has been necessary because the three typical days of 1967, chosen by the Working Party for further study, have proved unrepresentative in some respects; in particular there was too little domestic traffic on the 15th busiest day of the year.

4.9.2 These forecasts are of air transport movements. Other kinds of movement, and these are numerous, can generally be kept out of the busy hours and can be ignored. There are, however, some movements, mainly positioning and an occasional test flight, that are necessary in association with air transport operations. These are few and fairly randomly distributed. According to the Heathrow records there can, frequently, be as many as three or four such movements in an hour and occasionally more. These, when they occur, will be additional to those movements forecast in the table.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 1 **Long Term Forecasts of Terminal Passenger Demand at Airports in the London Area (Currently Heathrow and Gatwick)**
MILLIONS

	Europe			Irish Republic			North America			Other Long-Haul			Total International			Domestic			Total		
	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper
1967 (A)	7.8	7.8	7.8	0.8	0.8	0.8	1.7	1.7	1.7	1.0	1.0	1.0	11.3	11.3	11.3	3.1	3.1	3.1	14.4	14.4	14.4
1968	8.6	8.7	8.9	0.8	0.8	0.8	1.9	2.0	2.0	1.1	1.1	1.1	12.4	12.6	12.8	3.4	3.4	3.5	15.8	16.0	16.3
1969	9.4	9.7	10.1	0.9	0.9	0.9	2.2	2.3	2.3	1.2	1.2	1.3	13.6	14.1	14.6	3.6	3.7	3.9	17.3	17.9	18.4
1970	10.3	10.8	11.4	0.9	1.0	1.0	2.4	2.6	2.7	1.3	1.4	1.5	15.0	15.8	16.5	3.9	4.1	4.3	18.9	19.9	20.8
1971	11.3	12.0	12.8	1.0	1.1	1.1	2.7	2.9	3.1	1.5	1.6	1.7	16.4	17.6	18.7	4.2	4.5	4.7	20.6	22.1	23.4
1972	12.3	13.4	14.4	1.0	1.1	1.2	3.1	3.3	3.6	1.6	1.8	1.9	18.0	19.6	21.1	4.5	4.9	5.2	22.6	24.5	26.3
1973	13.5	14.9	16.1	1.1	1.2	1.3	3.4	3.8	4.1	1.8	2.0	2.2	19.8	21.8	23.7	4.9	5.3	5.7	24.6	27.1	29.5
1974	14.7	16.5	18.1	1.2	1.3	1.4	3.8	4.3	4.7	2.0	2.2	2.5	21.7	24.3	26.7	5.2	5.7	6.3	26.9	30.0	33.0
1975	16.1	18.3	20.3	1.2	1.4	1.6	4.2	4.8	5.3	2.2	2.5	2.8	23.8	27.0	30.0	5.5	6.2	6.9	29.3	33.2	36.9
1976	17.6	20.3	22.7	1.3	1.5	1.7	4.7	5.4	6.0	2.5	2.8	3.2	26.0	30.0	33.6	5.9	6.7	7.6	31.9	36.7	41.2
1977	19.2	22.5	25.4	1.4	1.6	1.8	5.2	6.1	6.8	2.7	3.2	3.6	28.5	33.4	37.6	6.3	7.2	8.3	34.8	40.6	45.9
1978	21.0	24.9	28.3	1.5	1.7	2.0	5.7	6.8	7.7	3.0	3.6	4.1	31.1	37.0	42.1	6.7	7.8	9.1	37.8	44.8	51.2
1979	22.9	27.6	31.6	1.5	1.8	2.1	6.2	7.5	8.6	3.4	4.1	4.7	34.0	41.1	47.0	7.1	8.4	9.9	41.2	49.5	56.9
1980	25.0	30.6	35.3	1.6	2.0	2.3	6.8	8.4	9.6	3.8	4.6	5.3	37.2	45.5	52.5	7.5	9.0	10.8	44.7	54.6	63.3
1981	27.3	33.9	39.3	1.7	2.1	2.4	7.5	9.3	10.8	4.2	5.2	6.0	40.6	50.4	58.6	8.0	9.7	11.8	48.6	60.1	70.3
1982	29.8	37.5	43.8	1.8	2.2	2.6	8.1	10.3	12.0	4.6	5.9	6.8	44.3	55.8	65.3	8.4	10.4	12.8	52.7	66.2	78.1
1983	32.4	41.5	48.9	1.8	2.4	2.8	8.9	11.4	13.4	5.2	6.6	7.8	48.3	61.8	72.8	8.9	11.2	13.9	57.3	72.9	86.7
1984	35.4	45.9	54.4	1.9	2.5	3.0	9.7	12.6	14.9	5.7	7.4	8.8	52.7	68.3	81.1	9.4	12.0	15.1	62.1	80.3	96.2
1985	38.5	50.7	60.6	2.0	2.7	3.2	10.6	13.9	16.6	6.3	8.4	10.0	57.4	75.6	90.3	9.9	12.8	16.4	67.4	88.4	106.7

Note: The above forecasts are based on the actual levels of traffic in each market in 1967.
Although trend values are preferable for long term forecasting currently available estimates display unresolved inconsistencies.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 2 **Long Term Forecasts of Demand for Air Transport Movements at Airports in the London Area (Currently Heathrow and Gatwick)**
THOUSANDS

	Europe			Irish Republic			North America			Other Long-Haul			Total International			Domestic			Total		
	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper
1967 (T)	142	142	142	14	14	14	23	23	23	17	17	17	196	196	196	54	54	54	250	250	250
1968	146	149	152	14	14	15	23	24	24	18	18	18	201	205	209	56	57	57	257	262	266
1969	151	156	162	14	15	16	24	25	26	18	18	19	207	214	222	58	60	61	265	274	283
1970	156	164	172	15	16	16	25	26	28	18	19	20	214	225	236	60	63	65	274	288	301
1971	161	172	183	15	16	17	25	27	29	18	20	21	220	234	250	62	66	69	282	300	319
1972	166	180	194	15	17	18	26	29	31	19	20	22	226	246	265	64	69	73	290	315	338
1973	171	189	205	16	17	19	27	30	33	19	21	23	233	257	280	66	72	78	299	329	358
1974	177	198	217	16	18	20	28	31	35	20	22	24	240	270	297	68	75	82	308	345	379
1975	183	208	230	16	19	21	29	33	37	20	23	26	248	282	313	70	78	87	318	360	400
1976	189	218	244	17	19	21	30	34	39	21	25	27	256	297	331	72	81	92	328	378	423
1977	195	229	258	17	20	22	31	36	41	22	26	29	265	310	349	73	84	97	338	394	446
1978	202	240	273	17	20	23	32	38	43	23	27	31	273	325	369	75	87	102	348	412	471
1979	209	252	288	17	21	24	32	40	45	24	29	33	283	341	389	76	90	107	359	431	496
1980	216	264	305	17	21	24	33	41	47	25	30	35	291	356	411	78	94	112	369	450	523
1981	223	277	322	17	22	25	34	43	49	26	32	37	301	374	434	79	97	117	380	470	551
1982	231	291	341	18	22	26	35	44	52	27	34	40	311	392	458	81	100	122	392	492	581
1983	239	306	360	18	23	27	36	46	55	28	36	43	321	411	484	82	103	128	404	513	612
1984	247	321	381	18	23	27	37	49	58	30	39	46	332	431	512	83	106	134	416	537	645
1985	256	337	403	18	24	28	38	51	61	31	41	49	344	452	541	85	109	139	428	561	680

Note: The above forecasts are based on estimated trend values in 1967

TABLE 3 **Short Term Forecasts of Terminal Passengers at Airports in the London Area (Currently Heathrow and Gatwick)**
MILLIONS

	Europe			Irish Republic			North America			Other Long-Haul			Total International			Domestic			Total		
	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper
1967 (Actual)	7.8	7.8	7.8	0.8	0.8	0.8	1.7	1.7	1.7	1.0	1.0	1.0	11.3	11.3	11.3	3.1	3.1	3.1	14.4	14.4	14.4
1968 (Prov.)	8.4	8.4	8.4	0.8	0.8	0.8	1.9	1.9	1.9	1.1	1.1	1.1	12.2	12.2	12.2	3.1	3.1	3.1	15.3	15.3	15.3
1969	9.1	9.5	9.7	0.9	0.9	0.9	2.1	2.2	2.2	1.2	1.2	1.3	13.3	13.7	14.1	3.2	3.4	3.5	16.5	17.1	17.6
1970	10.0	10.8	11.1	0.9	1.0	1.0	2.3	2.6	2.7	1.3	1.4	1.5	14.5	15.8	16.3	3.6	4.0	4.1	18.1	19.8	20.4
1971	11.0	12.0	12.8	1.0	1.1	1.1	2.6	3.0	3.1	1.5	1.6	1.7	16.1	17.7	18.7	3.9	4.5	4.7	20.0	22.2	23.4
1972	12.1	13.4	14.4	1.0	1.1	1.2	3.0	3.3	3.6	1.6	1.8	1.9	17.7	19.6	21.1	4.3	4.9	5.2	22.0	24.5	26.3
1973	13.3	14.9	16.2	1.1	1.2	1.3	3.4	3.8	4.1	1.8	2.0	2.2	19.6	21.9	23.8	4.7	5.3	5.7	24.3	27.2	29.5
1974	14.7	16.5	18.1	1.2	1.3	1.4	3.8	4.3	4.7	2.0	2.2	2.5	21.7	24.3	26.7	5.2	5.7	6.3	26.9	30.0	33.0
1975	16.1	18.3	20.3	1.2	1.4	1.6	4.2	4.8	5.3	2.2	2.5	2.8	23.7	27.0	30.0	5.5	6.2	6.9	29.2	33.2	36.9

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 4 **Short Term Forecasts of Air Transport Movements at Airports in the London Area (Currently Heathrow and Gatwick)**
THOUSANDS

	Europe			Irish Republic			North America			Other Long-Haul			Total International			Domestic			Total		
	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper
1967 (Actual)	149	149	149	14	14	14	22	22	22	17	17	17	202	202	202	57	57	57	259	259	259
1968 (Prov.)	154	154	154	16	16	16	24	24	24	18	18	18	212	212	212	55	55	55	267	267	267
1969	156	159	161	16	17	17	25	26	26	18	19	20	215	220	224	57	60	62	272	280	286
1970	158	167	170	16	17	17	25	27	28	19	20	21	218	231	236	60	67	69	277	297	306
1971	160	174	182	16	17	17	25	28	29	20	21	22	221	240	250	63	73	75	284	313	325
1972	163	180	194	16	17	18	26	29	31	20	21	22	225	247	265	68	77	80	293	324	345
1973	168	188	205	16	18	19	27	30	33	20	21	23	231	257	280	70	79	83	301	336	363
1974	176	198	217	16	18	20	28	31	35	20	22	24	240	269	296	72	80	86	312	349	382
1975	183	207	230	16	19	21	29	33	37	21	23	25	248	282	313	73	81	88	321	363	401

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 5 **Short Term Forecasts of Terminal Passengers at Heathrow**
MILLIONS

	Europe			Irish Republic			North America			Other Long-Haul			Total International			Domestic			Total		
	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper
1967 (Actual)	6.5	6.5	6.5	0.8	0.8	0.8	1.6	1.6	1.6	0.8	0.8	0.8	9.6	9.6	9.6	2.8	2.8	2.8	12.4	12.4	12.4
1968 (Prov.)	6.9	6.9	6.9	0.8	0.8	0.8	1.7	1.7	1.7	0.9	0.9	0.9	10.4	10.4	10.4	2.7	2.7	2.7	13.1	13.1	13.1
1969	7.4	7.7	7.9	0.9	0.9	0.9	1.9	2.0	2.1	1.0	1.0	1.1	11.2	11.6	12.0	2.9	3.1	3.2	14.1	14.6	15.1
1970	8.2	8.8	9.0	0.9	1.0	1.0	2.2	2.4	2.5	1.1	1.2	1.2	12.4	13.3	13.7	3.2	3.5	3.6	15.6	16.9	17.3
1971	9.0	9.7	10.2	1.0	1.1	1.1	2.4	2.7	2.9	1.2	1.3	1.4	13.6	14.8	15.6	3.5	4.0	4.2	17.1	18.8	19.8
1972	9.9	10.8	11.5	1.0	1.1	1.2	2.7	3.1	3.3	1.4	1.5	1.6	15.0	16.5	17.6	3.8	4.3	4.6	18.8	20.8	22.2
1973	10.8	11.9	12.8	1.1	1.2	1.3	3.1	3.5	3.8	1.5	1.7	1.8	16.5	18.3	19.7	4.2	4.7	5.1	20.7	23.0	24.8
1974	11.9	13.1	14.3	1.2	1.3	1.4	3.5	4.0	4.3	1.7	1.9	2.1	18.3	20.2	22.1	4.6	5.1	5.6	22.9	25.4	27.7
1975	12.9	14.4	15.8	1.2	1.4	1.6	3.9	4.5	4.9	1.9	2.1	2.4	19.9	22.4	24.7	5.0	5.5	6.2	24.9	28.0	30.9

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 6 **Short Term Forecasts of Air Transport Movements at Heathrow**
THOUSANDS

	Europe			Irish Republic			North America			Other Long-Haul			Total International			Domestic			Total		
	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Lower
1967 (Actual)	125	125	125	14	14	14	21	21	21	15	15	15	175	175	175	46	46	46	221	221	221
1968 (Prov.)	130	130	130	16	16	16	23	23	23	16	16	16	184	184	184	44	44	44	229	229	229
1969	130	132	134	16	17	17	24	25	25	16	17	17	186	191	193	46	50	50	232	240	243
1970	131	139	141	16	17	17	24	26	26	17	17	18	188	199	202	49	55	56	236	253	259
1971	132	144	150	16	17	17	24	26	27	18	18	19	190	205	213	51	60	62	240	264	274
1972	134	148	159	16	17	18	25	27	29	18	18	19	193	210	225	55	63	65	247	273	289
1973	138	154	166	16	18	19	26	28	31	18	18	20	198	218	236	57	64	67	255	283	304
1974	145	162	174	16	18	20	27	29	33	18	19	21	205	228	248	58	65	70	264	293	318
1975	151	168	182	16	19	21	28	31	35	18	20	22	212	238	260	59	66	72	271	304	332

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 7 **Short Term Forecasts of Terminal Passengers at Gatwick**
MILLIONS

	Europe			North America			Other Long-Haul			Total International			Domestic			Total		
	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper
1967 (Actual)	1.4	1.4	1.4	0.1	0.1	0.1	0.2	0.2	0.2	1.6	1.6	1.6	0.3	0.3	0.3	2.0	2.0	2.0
1968 (Prov)	1.5	1.5	1.5	0.1	0.1	0.1	0.2	0.2	0.2	1.8	1.8	1.8	0.3	0.3	0.3	2.1	2.1	2.1
1969	1.7	1.7	1.8	0.2	0.2	0.2	0.2	0.2	0.2	2.0	2.1	2.1	0.3	0.4	0.4	2.3	2.5	2.5
1970	1.8	2.0	2.3	0.2	0.2	0.2	0.2	0.2	0.2	2.1	2.4	2.7	0.4	0.4	0.4	2.5	2.9	3.1
1971	2.1	2.3	2.6	0.2	0.2	0.2	0.2	0.2	0.3	2.5	2.8	3.1	0.4	0.5	0.5	2.9	3.3	3.6
1972	2.2	2.6	2.9	0.2	0.3	0.3	0.3	0.3	0.3	2.7	3.2	3.5	0.5	0.5	0.6	3.2	3.7	4.1
1973	2.4	3.0	3.5	0.3	0.3	0.3	0.3	0.3	0.3	3.0	3.6	4.1	0.5	0.6	0.6	3.5	4.1	4.7
1974	2.8	3.4	3.8	0.3	0.3	0.4	0.3	0.4	0.4	3.4	4.1	4.6	0.6	0.6	0.7	4.0	4.7	5.3
1975	3.1	3.8	4.5	0.3	0.4	0.4	0.4	0.4	0.4	3.8	4.6	5.3	0.6	0.7	0.7	4.4	5.3	6.0

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 8 Short Term Forecasts of Air Transport Movements at Gatwick
THOUSANDS

	Europe			North America			Other Long-Haul			Total International			Domestic			Total		
	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper
1967 (Actual)	23	23	23	1	1	1	2	2	2	26	26	26	11	11	11	37	37	37
1968 (Prov.)	25	25	25	1	1	1	2	2	2	28	28	28	11	11	11	38	38	38
1969	26	27	27	1	1	1	2	2	3	29	30	31	11	11	12	40	41	43
1970	27	28	29	1	1	2	2	3	3	30	32	34	11	12	13	41	44	47
1971	28	30	32	1	2	2	2	3	3	31	35	37	12	13	14	43	48	51
1972	29	32	35	1	2	2	2	3	3	32	37	40	13	14	15	45	51	55
1973	30	34	39	1	2	2	2	3	3	34	39	44	13	15	16	47	54	60
1974	31	36	44	1	2	2	2	3	3	35	41	49	13	15	16	48	56	65
1975	32	39	48	1	2	2	3	3	3	36	44	53	14	15	17	50	59	69

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 9 Estimates of Typica. .mand for Air Transport Movements at Heathrow on three Representative Days

	Europe			Irish Republic			North America			Other Long-Haul			Domestic			Total		
	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper	Lower	Most Likely	Upper
Table 9a																		
Day in August																		
1967	416	416	416	64	64	64	77	77	77	65	65	65	150	150	150	772	772	772
1970	432	461	467	70	76	79	87	93	96	73	74	78	159	176	181	821	880	901
1971	433	476	491	71	77	80	89	95	99	74	75	80	164	191	198	831	914	948
1972	439	486	520	72	79	82	91	98	104	75	77	82	173	200	207	850	940	995
1973	451	505	545	72	81	85	93	101	110	76	79	85	181	203	216	873	969	1041
1974	472	524	565	72	82	89	96	104	117	76	81	89	183	206	222	899	997	1082
1975	483	543	587	72	84	93	99	109	124	77	84	92	186	209	228	917	1029	1124
Table 9b																		
Day in April																		
1967	339	339	339	41	41	41	54	54	54	68	68	68	138	138	138	640	640	640
1970	352	375	382	46	49	50	62	66	67	76	78	81	146	163	168	682	731	748
1971	355	388	402	46	50	51	63	68	70	77	80	84	152	177	184	693	763	791
1972	361	400	427	47	51	53	65	70	74	79	82	87	161	186	194	713	789	835
1973	374	417	449	47	52	56	67	72	79	80	84	91	169	192	203	737	817	878
1974	391	434	471	48	54	59	69	76	84	81	87	95	174	195	210	763	846	919
1975	405	453	494	48	56	62	71	80	89	82	91	99	177	198	215	783	878	959
Table 9c																		
Day in January																		
1967	273	273	273	32	32	32	48	48	48	63	63	63	114	114	114	530	530	530
1970	278	298	303	35	37	38	54	57	58	71	72	75	118	132	136	556	596	610
1971	282	310	322	35	38	39	55	59	61	72	73	77	124	145	150	568	625	649
1972	290	320	343	36	40	41	57	61	65	73	75	80	132	154	159	588	650	688
1973	301	335	362	37	41	43	59	64	70	75	78	84	138	159	168	610	677	727
1974	317	352	384	38	42	45	61	67	74	76	81	88	143	162	174	635	704	765
1975	329	372	404	38	43	48	64	70	79	78	85	93	146	165	178	655	735	802

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 10 Estimates of Typical Hourly Demand for Air Transport Movements at Heathrow on Three Representative Days of 1975
(Based on Most Likely Estimates)

Hour GMT	Day in August						Day in April						Day in January					
	Europe	Irish Republic	North America	Other Long-Haul	Domestic	Total	Europe	Irish Republic	North America	Other Long-Haul	Domestic	Total	Europe	Irish Republic	North America	Other Long-Haul	Domestic	Total
00.00 - 00.59	12	–	–	–	–	12	8	–	–	–	–	8	5	–	1	–	5	11
01.00 - 01.59	14	–	1	–	1	16	5	–	1	1	–	7	10	–	–	–	–	10
02.00 - 02.59	3	–	1	–	–	4	4	–	1	2	1	8	5	–	1	–	–	6
03.00 - 03.59	8	–	2	1	–	11	2	–	1	2	–	5	8	–	–	–	–	8
04.00 - 04.59	6	1	2	1	1	11	1	–	1	2	1	5	2	–	1	–	–	3
05.00 - 05.59	13	1	7	3	1	25	7	–	2	1	1	11	5	–	1	5	–	11
06.00 - 06.59	19	4	10	3	11	47	12	1	6	2	7	28	4	1	3	1	1	10
07.00 - 07.59	22	6	8	3	17	56	12	1	6	7	15	41	4	1	6	7	4	22
08.00 - 08.59	20	5	6	8	21	60	29	4	9	5	19	66	17	1	11	7	16	52
09.00 - 09.59	39	4	9	10	9	71	33	4	10	15	12	74	30	5	6	3	17	61
10.00 - 10.59	34	5	13	9	17	78	28	7	3	8	11	57	29	3	3	3	11	49
11.00 - 11.59	33	2	7	3	9	54	34	1	7	3	8	53	23	3	6	5	11	48
12.00 - 12.59	30	4	16	6	6	62	34	4	6	2	7	53	27	3	6	8	8	52
13.00 - 13.59	32	6	9	2	3	52	27	3	4	3	8	45	21	3	3	8	2	37
14.00 - 14.59	25	3	8	6	11	53	30	3	7	3	9	52	26	1	5	3	8	43
15.00 - 15.59	27	6	1	4	12	50	28	4	4	8	16	60	26	2	8	10	8	54
16.00 - 16.59	32	5	2	7	15	61	32	4	3	5	9	53	31	5	3	2	5	46
17.00 - 17.59	37	5	1	3	17	63	22	3	1	3	16	45	22	5	–	8	8	43
18.00 - 18.59	27	5	1	4	14	51	29	2	–	5	15	51	25	1	3	2	18	49
19.00 - 19.59	27	5	1	6	17	56	18	4	–	5	17	44	19	2	–	5	12	38
20.00 - 20.59	23	4	–	1	4	32	16	4	3	5	8	36	10	3	–	3	18	34
21.00 - 21.59	28	3	4	3	9	47	25	1	1	2	4	33	9	3	3	2	6	23
22.00 - 22.59	22	5	–	–	8	35	14	6	4	2	7	33	9	–	–	3	4	16
23.00 - 23.59	10	5	–	1	6	22	3	–	–	–	7	10	5	1	–	–	3	9
Totals	543	84	109	84	209	1,029	453	56	80	91	198	878	372	43	70	85	165	735

Printed image digitised by the University of Southampton Library Digitisation Unit

Study 5

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

STUDY 5 **Air Pollution from Aircraft Gas Turbine Engines**

By the National Gas Turbine Establishment

5.1 Introduction

There is growing public awareness of the problem of atmospheric pollution caused by the ever increasing use of hydrocarbon fuels in ground vehicles and aircraft. City centre pollution by toxic emissions from piston engine powered ground vehicles has already resulted in mandatory limitations being applied in the USA on the emission of carbon monoxide and unburned hydrocarbons (i.e. fuel) from automobile engines. The fact that a modern airport has to be sited in a flat, open area several miles in diameter with a large dilution air volume available within the airport boundaries means that the general pollution level in and around airports is unlikely to be a problem in the way that it is in large cities; but certain specific regions such as terminal areas, road approach tunnels, etc., where there is a heavy concentration of both ground vehicles and aircraft, may result in significant local pollution.

This paper is concerned principally with the known emissions from aircraft gas turbines. It surveys briefly the pollution constituents emitted; how these are likely to vary with the type of operation (e.g. taxi, take-off, etc.); and the current research programme on emission suppression.

5.2 Pollution constituents

Smoke

The emission of smoke is a noticeable feature during the take-off of certain aircraft. It is important to realise that this only represents a "visual nuisance" as the smoke consists mainly of minute particles of pure carbon and contains negligible amounts of unburnt fuel or carcinogenic constituents; in contradistinction, diesel engine smoke can contain a high proportion of carcinogenic compounds. The emission of carbon particles is peculiar to the gas turbine operated at maximum power and does not occur, in general, with well-tuned piston engines.

Carbon monoxide

This toxic gas is present in negligible proportions in the exhaust of gas turbines operating at reduced power for cruise or full power for take-off, unlike piston engines which produce significant qualities of carbon monoxide at all operating speeds. At lower power settings, the quantity of carbon monoxide produced by gas turbines tends to increase but is still well below the piston engine figures.

Printed image digitised by the University of Southampton Library Digitisation Unit

Oxides of sulphur and nitrogen

These toxic and irritant gases result from the oxidation in the combustion chamber of the sulphur in the fuel and the nitrogen in the inlet air. The concentration of sulphur dioxide in the exhaust plume of a jet engine is well below the minimum level which can be detected by the nose.

A reduction in the fuel sulphur content would result in a direct reduction in the sulphur dioxide emission, but 'tightening' the fuel specification would reduce world-wide availability of fuel and increase the price.

In the case of nitric oxide the quantity produced is related to the combustion chamber operating temperature and pressure and little can be done at present to minimise its formation. Emission levels from gas turbines are currently below proposed motor vehicle standards but the trend towards operation at higher gas temperatures and pressures may result in greater quantities of nitric oxide.

Unburned hydrocarbons

The unburned hydrocarbon fuel emissions are at an extremely low level at take-off and cruise power conditions. As in the case of carbon monoxide, there is a tendency for the emissions to increase at reduced power conditions, e.g. during the approach and taxi-ing.

Variation of emissions during taxi, take-off and landing

Measurements indicate that carbon monoxide and hydrocarbon concentrations in gas turbine exhausts vary inversely with engine power setting, i.e. there is insignificant emission of these products at or near full power (i.e. take-off and cruise), the concentration increasing at the reduced power settings used during landing and taxi-ing.

Emissions of smoke (carbon) and nitric oxide vary directly with power setting and are at a maximum at take-off.

The differing and complex environmental conditions for these various phases make estimation of ground level pollutant concentration extremely difficult, if not impossible. The open nature of airports results in rapid dispersion of localised pockets of pollutants in all but extreme calm or sheltered conditions. The maximum pollution would be expected to arise near the terminal area where there is a maximum number of aircraft operating at low power settings (idle and taxi) and also numerous service vehicles. The aircraft engine running time near the terminal area is short however and the hydrocarbon pollution arising from the piston engined service vehicles in the area has been found to mask the amount arising from stationary aircraft.

On the taxi track the pollutants would normally be expected to disperse rapidly, although once again a local concentration could arise in the ' holding area ' prior to clearance to the main runway for take-off. Hydrocarbon measurements have indicated however that 'free air' concentrations were extremely low in this area and only reached detectable levels in low wind velocity conditions. Within aircraft, pollutants can be detected by the nose, and sometimes the eyes, when

Printed image digitised by the University of Southampton Library Digitisation Unit

one aircraft is closely 'parked' behind another, the condition being analogous to using a car in heavy traffic with the blower in operation.

During the take-off phase smoke (carbon) and nitric oxide emissions are at a maximum for a period of about 2 minutes and in this case the gaseous and smoke emissions would disperse fairly rapidly.

During the landing phase there would be little smoke and nitric oxide emission and a level of hydrocarbon and carbon monoxide emission intermediate between those at taxi and take-off. Once again the dispersion of the exhaust plume would be great and ground level concentrations should be very small.

It is worth noting that the emissions from a gas turbine exhaust are contained in a relatively high velocity, high temperature gas stream, unlike those from a piston engined ground vehicle where exhaust velocities and temperatures are lower. It follows therefore that dispersion of aero gas turbine exhaust pollution will be much more rapid than in the case of motor vehicles, particularly in the 'open' environment of an airport.

5.4 Current research

A major research area in the gas turbine combustion field is currently concerned with improvement of the fuel/air distribution and mixing in the combustion chamber primary zone. This should produce better efficiencies at reduced power conditions and should go a long way towards reducing hydrocarbon and carbon monoxide emissions at low power settings. It should also be possible with improved fuel/air mixing to hold smoke emission levels at today's UK engine values and even offer some hope of achieving some reduction. Additives to the fuel are of some value in reducing carbon emission but as these can lead to other problems of engine corrosion they are not likely to be used in civil operations.

Experimental work has shown that reducing the amount of cooling of combustion chamber walls can be beneficial in reducing the amount of unburned hydrocarbon and carbon monoxide emitted at low power settings. The current design trend for fully annular combustion chambers minimises the chamber wall area for a given combustion volume and hence minimises the amount of wall cooling air; this reduction could result in almost complete elimination of unburnt fuel and carbon monoxide emissions during taxi conditions on the next generation of gas turbine engines.

In the case of sulphur dioxide the current emission levels are below those considered to be a health hazard; further reduction would involve treating the fuel to reduce sulphur content and would probably increase fuel costs.

The problem of reduction of nitric oxide emission is also receiving wide attention, particularly as future gas turbine engines will operate at higher temperature and pressure, which conditions are likely to increase nitric oxide formation. It seems likely that careful control of combustion primary zone conditions will minimise nitric oxide formation and the possibility of a chemical additive or inhibitor cannot be ruled out completely at this stage. As nitric oxide is only produced in significant quantities at take-off, the limited period at maximum power together with the favourable conditions for dispersion may well result in negligible contamination outside the airport boundaries.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Study 6

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

For the purposes of its studies reported in Volume VII Part 2 of the Commission's Papers and Proceedings, the Research Team has selected from the nine routes considered by the British Railways Board and its consultants those which offer the shortest journey times and which use King's Cross. Investigation has shown this to be the preferred town terminal. The following are the selected routes:

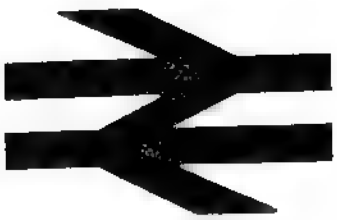
Cublington	- Route 2 (using King's Cross and not Euston)
Foulness	- Route 8
Nuthampstead	- Route 7
Thurleigh	- Routes 4 and 5 (both routes could be needed if capacity problems arise on Route 5)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

British Railways Board

Third London Airport Surface link study



LIVESEY & HENDERSON

1 Finsbury Square
London EC2
England

October 1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

British Railways Board

222 Marylebone Road
London NW1
01-262 3232

R. A. Long Executive Director (Passenger)

The Secretary,
Commission on the Third London Airport,
Templar House,
81 - 87 High Holborn,
LONDON, W.C.2.

y/r
o/r PP.

Date 14th November, 1969

Sir,

THIRD LONDON AIRPORT

Surface Transport Rail Links

With the Commission's agreement the Board arranged for independent Consultants, Messrs. Livesey & Henderson, to make a preliminary examination of the possible routes to the selected sites and the capital costs involved. The attached report represents the Consultants' findings.

The proposals and estimates now presented are based entirely on airport traffic data and forecasts provided by the Commission and on the estimates provided as to the time-scale of traffic growth and the incidence of peak demands. Any material change in any of these forecasts could substantially alter the rail access requirements.

The Board endorses the Consultants' Report. It will be appreciated, however, that the Consultants have endeavoured to adopt the most realistic and economic solutions, and in particular have tried to utilise existing or potential capacity, wherever this appeared to be available. This necessarily means that new construction has been adopted only where it appeared unavoidable. In assessing the opportunity for using spare or potential capacity on existing lines, the Consultants have taken a conservative view of the likely growth in non-airport traffic. We have considered what the effect might be on these assessments if non-airport traffic grew at a somewhat higher rate. In general, the conclusions would remain unaffected, although the constraints described in the Report would operate with greater force.

Printed image digitised by the University of Southampton Library Digitisation Unit

In the case of two routes, however - route 5 to Thurleigh and route 6 to Nuthampstead - we see a possibility that growth of both commuter and Inter-City services on the Great Northern route by the mid-70s would make significant inroads into the potential spare capacity on which the Consultants' assessment is based. This could mean that it might not be possible to run the projected airport service over this route without considerable additional capital investment. It would be prudent, therefore, to base further work of assessment of the relative costs attaching to the affected sites on the assumption that route 4 would be the most satisfactory route for a Thurleigh link and route 7 for Nuthampstead.

It should be further noted that the capital costs referred to in the Report exclude investment which will be necessary for both in-town and airport terminals, and also exclude the cost of rolling stock - on the preliminary assumption that these costs could be regarded largely as common to any of the selected routes.

The Consultants have adopted as a basis for their proposals and estimates the most modern type of proved rail technology. We consider that first estimates on this basis would be of greatest help to the Commission. However, the Commission may find it helpful to have estimates of the effect on journey times of introducing maximum speeds of 125 m.p.h. using conventional rolling stock. These are shown in Appendix 'A' to this letter. They have been arrived at by determining those stretches of existing or proposed routes over which it would be feasible to attain a maximum speed of 125 m.p.h. without major capital expenditure on realignment, resignalling, etc.

Yours faithfully,

Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT

Journey Times with maximum speeds of 125 m.p.h.

The times quoted below in respect of each of the proposed routes shown in Volume 2 of the Livesey & Henderson report are based on the possibility of running trains at a maximum speed of 125 m.p.h., using conventional rolling stock and without any major capital expenditure for realignment or resignalling beyond that which is already quoted. Given additional capital investment, further reduction in journey times could be achieved.

Route 1 - Marylebone - Neasden Junction - Northolt Junction - Princes Risborough - Cublington

Minutes saved - 2 minutes
Journey time - 42 minutes

Route 2 - Euston - Leighton Buzzard - Cublington

Minutes saved - 3 minutes
Journey time - 36 minutes

Route 3 - King's Cross/St. Pancras - Luton - Cublington

Minutes saved - 2 minutes
Journey time - 38 minutes

Route 4 - King's Cross/St. Pancras - Bedford - Thurleigh

Minutes saved - 3 minutes
Journey time - 44 minutes

Route 5 - King's Cross/St. Pancras - Welwyn - Thurleigh

Minutes saved - 4 minutes
Journey time - 41 minutes

Route 6 - King's Cross/St. Pancras - Welwyn - Nuthampstead

Minutes saved - 3 minutes
Journey time - 37 minutes

Printed image digitised by the University of Southampton Library Digitisation Unit

Route 7 - King's Cross/St. Pancras - Haringey - South Tottenham - Broxbourne - Nuthampstead

Minutes saved - 3 minutes
Journey time - 29 minutes

Route 8 - King's Cross/St. Pancras - Haringey - South Tottenham - Foulness

Minutes saved - 5 minutes
Journey time - 40 minutes

Printed image digitised by the University of Southampton Library Digitisation Unit

CONTENTS

1. Definitions

2. General Summary

3. Foulness

4. Nuthampstead

5. Cublington

6. Thurleigh

7. Town Terminal

8. Traction and Rolling Stock Considerations

9. Beyond 1990

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

	Section
Principles of Traffic Studies.	2.1.
Selection of Routes.	2.1.1.
Assessments of Route Capacities.	2.1.2.
Principles of Engineering Studies.	2.2.
Capital Costs.	2.3
Foulness.	3.
Traffic Studies.	3.1.
Engineering Studies	3.2.
Nuthampstead.	4.
Traffic Studies	4.1.
Engineering Studies	4.2.
Cublington.	5.
Traffic Studies	5.1.
Engineering Studies	5.2.
Thurleigh.	6.
Traffic Studies	6.1.
Engineering Studies	6.2.
Town Terminal.	7.
Traction and Rolling Stock Considerations.	8.
Beyond 1990.	9.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

DEFINITIONS

Up	To London
Down	From London
Class 4 Speed	The running speed of Class 4 freight trains i.e. freightliner, company and express freight trains timed to a maximum speed of 75 mph. These are the fastest running freight trains at the present time.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

1. This study was presented to the Research Team of the Commission on Third London Airport by the British Railways Board in the latter's capacity as advisors on railway matters.

2. The study was prepared with the assistance of the Board's Consulting Engineers, Livesey & Henderson.

3. The study is based upon the following assumptions provided by the Research Team of the Commission on Third London Airport:-

a) Total Traffic Forecasts.

The number of air passengers using the Third London Airport — 10 million in 1980 and 40 million in 1990.

b) Modal Splits

(i) High

75 per cent of surface access passengers by rail,

(ii) Low

35 per cent of surface access passengers by rail.

c) Peak Flow

Peak flows would be those circulated by the Commission in July, 1969, based upon the traffic forecasts given under (a).

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

PRINCIPLES OF TRAFFIC STUDIES 2.1.

Selection of Routes 2.1.1.

From each of the proposed airport sites, many route and terminal combinations presented themselves as preliminary possibilities for the rail link to Central London. The choice of terminal site was an important factor making it possible to short-list the following nine routes for closer consideration:- 2.1.1.1

1. Cublington - Princes Risborough - High Wycombe - Marylebone.
2. Cublington - Tring - Euston.
3. Cublington - Luton - King's Cross/St. Pancras.
4. Thurleigh - Luton - King's Cross/St. Pancras.
5. Thurleigh - Welwyn - King's Cross/St. Pancras.
6. Nuthampstead - Welwyn - King's Cross/St. Pancras.
7. Nuthampstead - Tottenham - King's Cross/St. Pancras.
8. Foulness - Hockley - Tottenham - King's Cross/St. Pancras.
9. Foulness - Southend Central - Barking - King's Cross/St. Pancras.

These routes may conveniently be classified under two heads:

A. non-exclusive routes: routes where tracks are shared for part of the distance with other British Rail services.

B. exclusive routes: routes where airport trains run over virtually the whole distance on reserved tracks which would not normally be used by other British Rail services.

Routes 1-6 and 9 belong to the former category, and Route 7 and 8 to the latter. For each site the capacity of the present rail system, with suitable improvements to carry an airport service, was considered. It is not foreseen that exclusive routes would be required before 1990 to the Cublington or Thurleigh sites; Route 7 to Nuthampstead, although exclusive, would run alongside existing lines on spare railway land for a large part of its length; only Route 8 to Foulness would follow a completely new alignment for the greater part of its length.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.1.2.1. The maximum throughput of the in-town terminal foreseen by the Commission for 1990 (high modal split, peak arrival or departure hour, average August day) is estimated at 5,000 passengers and accompanying friends per hour in one direction. It is anticipated that not more than 8 trains in each direction would be required in any one hour and that the low modal split would not require more than 4 trains in any one hour. Conversely, it is thought that a daytime service of 4 trains per hour, giving a 15-minute interval, would be the minimum acceptable, except perhaps in the airport's earliest days. At night time it is envisaged that the service would have a lower frequency, as indeed it would have to if essential route maintenance were to be performed. The problems of maintenance and of accidental disruption would be considerably eased on routes which ran parallel to B.R. tracks over a large part of the distance or where alternative routes from London to the airport exist.

For each site, therefore, possible routes were tested:

a) for their ability to carry 4 trains per hour in any one hour and

b) for their ability to carry a service rising to 8 trains per hour during the airport peak.

At the same time, these services were required to be compatible with the running of B.R.'s other expected passenger and freight requirements.

2.1.2.2. Detailed train-path exercises were carried out on a number of routes, the exact methodology varying according to specific route characteristics. In general it was assumed that a) airport trains would be powered by traction able to give train performance similar to that of the electric expresses on the Euston-Crewe route, with maximum route speed of 100 mph and b) modern advanced signalling would be introduced to allow timetable headways of 3 minutes between express trains. An exception was Route 9, where it was thought that the limited capacity for airport trains on the Barking-Southend line did not justify raising the line speed above the present maximum of 75 mph. It has also been assumed that, if and when the line speed limits on the Euston-Crewe, St. Pancras-Sheffield and King's Cross-Newcastle lines were raised to 125 for normal inter-city running, the running speed of airport trains to any site would also be increased to 125 mph to allow steady-stream working on the lines shared between airport trains and inter-city expresses.

Printed image digitised by the University of Southampton Library Digitisation Unit

As a general rule, the down evening peak period was found to be the critical time of the day for train-paths, as both down inter-city trains and down suburban trains are at a peak at this time; the anticipated movement of airport passengers is also at a high level. The train-path exercises were therefore performed in detail for the down lines in the period 1700-1800 hours or 1700-1900 hours. It was assumed that freight services would not be running during this congested period, but there is no evidence that an airport service of the intensity permitted by the evening peak would be incompatible with the running of freight trains at other periods when fewer B.R. passenger trains were running. However, an assessment has been made of spare capacity at other times and allowance has been made for the likely possible expansion of B.R. services before 1990. 2.1.2.3.

Where necessary, draft plans of track lay-out have been produced for the schemes connected with the nine short-listed routes for estimating purposes only. It was assumed in all cases that eight platform faces suitable for the rapid and simultaneous loading and unloading of passengers through sliding doors, would be required at the town terminal and at a single airport terminal. It has not been possible in the time available to prepare detailed plans of terminal lay-out. Maintenance, storage and cleaning facilities would be required at a suitable site or at the airport (or both). The requirements of transferring passengers from trains to a number of terminals and vice versa might require a lay-out more complex than a single four-platform station, but it is assumed that the marginal costs of the additional facilities would not be dissimilar enough for each site and terminal combination for their omission at this stage to be important. 2.1.2.4.

PRINCIPLES OF ENGINEERING STUDIES 2.2.

Following a paper examination of existing routes or combination of routes in terms of available capacity, two or more routes to each of the proposed sites were chosen for closer investigation. 2.2.1.

The choices were based on the following basic principles:-

a) all existing routes with available capacity to meet the low modal split requirements up to 1990,

b) all existing routes or combination of routes that have or could have the available capacity, by selective duplication of lines, to meet the high modal split requirements up to 1990,

c) new routes which may or may not follow existing railway alignments, where no existing routes have the required spare capacity.

Printed image digitised by the University of Southampton Library Digitisation Unit

The routes thus chosen terminate at a number of different existing rail terminals all of which could be considered in terms of an in-town terminal. One route from each site terminates at a rail terminal common to all four sites. 2.2.2.

CAPITAL COSTS 2.3.

The estimated costs shown on the cartoons in Volume 2 of this Report were arrived at in the following manner:-

Basic Cost 2.3.1.

This is the estimated capital cost of the following items:

a) twin track connection from airport boundary to London terminal to a standard necessary to cater for the proposed maximum speed limit and density of service, i.e. continuous welded rail, depth and width of ballast bed and stable formation. Where tracks would not follow existing railway formations as on new routes and on spurs to the airport sites, the estimated cost also covers land purchase, earthworks, drainage, fencing and associated structures. Any selective duplication of existing tracks, where tracks are shared with other traffic in order to increase available capacity, is also included;

b) the installation of modern signalling to meet the requirements of the proposed maximum speed limit for individual lines together with the required headways between trains.

Improvement Costs 2.3.2.

These are the capital costs of improving short sections of existing lines in terms of speed over which airport trains might run. These have been listed seperately so that they can be compared directly against journey time.

Overhead Electrification and Associated Structure Costs 2.3.3.

These are the capital costs of installing overhead electric wires and all necessary power supply equipment and signalling immunization together with the civil works necessary to give minimum overhead clearances. These again have been listed seperately so that a comparison can be made between the running costs of the various types of traction.

Accuracy of Measurement and Costs 2.3.4.

The rates used have been based on linear, square and cubic measurements for the various bulk items with suitable contingency allowances added to cover the minor items and the unforeseen.

Printed image digitised by the University of Southampton Library Digitisation Unit

Measurements have been made on plans and sections prepared from 6" to the mile ordinance survey maps for all new construction not on railway property. Where new routes or selective duplication of lines follow existing railway alignments, measurements were made from plans prepared using railway line plans of larger scale; sections were drawn from site surveys.

Line Speed Design Standards 2.3.5.

The maximum and minimum speed limits for airport trains of a conventional type have been assumed as 100 mph and 70 mph.

100 mph is the present accepted maximum speed limit of existing railway routes, 70 mph being the maximum speed limit where trains turn off from or join the main line.

Where the design speeds may not be achieved because of special difficulties, the reasons are given in the descriptions of the individual routes.

Approach to Airport Sites 2.3.6.

In all cases the approach of the railway alignment has been designed to meet the longitudinal centre line of the airport site at the perimeter.

Junctions 2.3.7.

Where flat junctions are required to connect airport spurs to existing main lines, a sum has been allowed in the basic cost to cover the construction of a single track flyover or flyunder to prevent confliction between fast trains moving in opposite directions. No allowance has been made to prevent confliction between airport trains and trains travelling in either direction on adjacent slow or goods lines. Where this arrangement is not satisfactory for operating purposes, it is described under the individual routes.

Gradients 2.3.8.

The ruling gradient to which we have worked is 1 in 100. This has been increased in special circumstances to a maximum of 1 in 70 on upgrades and 1 in 50 on down grades, these being mainly applicable to flyover and flyunder junctions and to the approaches to the high inland airport sites where speeds would be lower than the maximum line running speed.

Structure Gauge 2.3.9.

The structure gauge used in costing new tunnels and structures and the obtaining of overhead clearances for electrification is that giving required Ministry of Transport clearances with conventional stock.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Traffic Studies 3.1.

Selection of Routes for Detailed Study 3.1.1.

Two existing routes run from the site area towards London.

These are:-

(i) the Great Eastern line from Southend Victoria joining at Shenfield with the main line from Norwich and Ipswich to Liverpool Street,

(ii) the London, Tilbury and Southend (LTS) line from Shoeburyness to Fenchurch Street via Southend Central and Barking.

Great Eastern Route 3.1.1.1.

A 12-mile spur from Foulness to a junction near Rochford could give a link of 51 miles to Liverpool Street, following the double-track Southend branch from Rochford to Shenfield (19 miles) and the four-track main line from Shenfield to Liverpool Street (20 miles). Both the route and the Liverpool Street terminal are heavily congested by suburban and inter-city passenger services, to the extent that the construction of additional tracks all the way from Rochford to Liverpool Street would be necessary to permit any airport service to operate at commuter peak periods. The route congestion means that nothing could be gained by diverting the airport to an alternative terminal, say Fenchurch Street or King's Cross/St. Pancras, in order to avoid expensive reconstruction of Liverpool Street and its approaches.

This route was not selected for further consideration.

LTS Route 3.1.1.2.

An 8-mile airport spur to join the LTS route east of Thorpe Bay station could give a route of 46 miles to a Fenchurch terminus. Fenchurch Street, however, appears a most unsuitable site for the following reasons:

(i) the double-track approach between Barking and Stepney East (6 miles) already carries up to 20 trains an hour in each direction at the commuter peaks,

Printed image digitised by the University of Southampton Library Digitisation Unit

(ii) major alterations to the site would be necessary to provide even minimal facilities for airport trains,

(iii) passenger distribution facilities from Fenchurch Street are poor.

Three alternative route and terminal combinations were considered west of Barking. These were,

(i) by a flying junction at Bromley-by-Bow to the Victoria Docks-Willesden line, and thence via a reinstated Dalston Eastern Junction to Broad Street,

(ii) by a flying junction at Bromley-by-Bow to the Victoria Docks-Willesden line, and thence by a second flying junction west of Caledonian Road and Barnsbury station into a high-level King's Cross terminal,

(iii) from Barking via Woodgrange Park to South Tottenham and thence to King's Cross/St. Pancras on the alignments described for Route 7.

It would be undesirable to incude an airport terminal in any future Broad Street/Liverpool Street redevelopment; the cost of track approaches would be very high, the site is some miles from the likely West End "centre of gravity" of airport passengers origin and destination points and the passenger distribution facilities are poor. The route to King's Cross/St. Pancras via Bromley- by-Bow would involve major engineering works in negotiating the wide difference in levels of the approaches to the terminal. The most feasible route was considered to be that to King's Cross/St. Pancras via Barking and South Tottenham, giving a distance for the airport link of 51 miles.

An intensive electric passenger service operates between Shoeburyness, Southend Central and Fenchchurch Street, and a light local diesel service runs between Barking and Kentish Town. Freight working on the LTS line east of Barking is negligible, but the Barking, Tottenham and Hampstead line is part of a major inter-regional freight route from the Dagenham/Tilbury area. The route is double-track throughout the 41 miles between Haringey and Thorpe Bay, but spare B.R. land for four-tracking is owned over much of the Upminster-Leigh Section (17 miles).

While the King's Cross/St. Pancras-Tottenham-Barking-Foulness route is thought to be the best possibility among existing routes for use as an airport link, its potential capacity within the limits of reasonable expense for carrying airport trains appears to be significantly lower than that of any of the Routes 1-6 from Cublington, Thurleigh and Nuthampstead. Between Upminster and Tottenham it runs through 15½ miles of urban development where the

Printed image digitised by the University of Southampton Library Digitisation Unit

extensive provision of additional tracks would be very costly. Another adverse factor is the present maximum line speed of 75 mph (with many lower intermediate restrictions) over the LTS line between Barking and Shoeburyness, which could be raised to 100 mph only at very considerable expense. Therefore the question of a new exclusive link for the Foulness site was considered from the outset, and Route 8 was selected to run from Foulness on a new alignment to the Lea Valley line near Brimsdown and thence to a King's Cross/St. Pancras terminal on the exclusive alignment described for Route 7 (Section 4). The length of this route would be 56 miles. The King's Cross/St. Pancras-Tottenham-Barking-Foulness route, as the best non-exclusive route available, was selected as Route 9 in case it could be shown that its temporary use as an airport link could allow heavy capital expenditure on Route 8 to be deferred for a few years.

Train Path Exercises for Selected Routes 3.1.2.

Route 8. King's Cross/St. Pancras-Tottenham-Hockley Hill-Foulness 3.1.2.1.

Route 8 would follow the Nuthampstead Route 7 between King's Cross/St. Pancras and Brimsdown, running on a new exclusive alignment from there to Foulness, and the comments made in relation to train pathing for Route 7 (Section 4) apply almost without modification. Some problems, such as the question of access to Broxbourne power station, would not arise in connection with the Foulness route.

Route 9 King's Cross/St. Pancras-Tottenham-Barking-Foulness 3.1.2.2.

The train service on the Barking, Tottenham and Hampstead line consists of the following:

1. Suburban passenger service Kentish Town-Barking.

   Traction: diesel multiple units.

   Frequency:

   Through the week (Mondays to Fridays) the frequency of service is one train per hour in each direction, rising to two trains at peak periods.

   On Saturdays the service is two trains per hour throughout the day.

On Sundays the basic service is one train per hour, but this is increased to four trains an hour for morning and evening holiday peaks during the summer season.

2. Freight service Kentish Town/Gospel Oak-Barking.

   The Barking, Tottenham and Hampstead line is a major inter-regional freight route from the Dagenham/Tilbury area to Willesden, Brent and the Southern, Western and London Midland regions of British

Printed image digitised by the University of Southampton Library Digitisation Unit

Rail. Trains to and from Temple Mills yard also run over the sections west of South Tottenham and east of Woodgrange Park. Traffic is heaviest through the night, but even during the daytime there are hours in which the freight time-table requires four paths in one direction between South Tottenham and Barking. The number of trains at weekend (Sunday and most of Saturday) is reduced.

It is considered that it should be possible to run an airport service of four trains an hour through the day and two trains an hour through the night, given the following conditions:

(i) the provision of additional tracks between Haringey and South Tottenham (as for Routes 7 and 8),

(ii) the provision of a passing loop in each direction at a point roughly midway between Barking and South Tottenham.

It is, however, less easy for this route than for other routes to give a confident forecast that this level of airport service could be maintained along with other B.R. passenger and freight services up to 1990, or even past 1980; factors such as the possible development of a major port at Foulness, for instance, could greatly increase freight traffic over the line. Briefly, it may be said that the running of as many freight trains as possible at Class 4 speeds would help to create capacity; It could be necessary also either to reduce the frequency of the summer Sunday passenger service or to accept as a regular movement the stabling of passenger trains in the freight loop to allow airport trains to overtake.

3. Train service on the LTS line.
(Mondays to Fridays)

Surburban passenger service Fenchurch Street-Shoeburyness.

Traction: electric multiple units.

	Via Laindon	Via Tilbury
Off-peak frequency:	3	2
Maximum frequency:		
Down departures: 17.00-17.59	14	6
Up arrivals: 08.00 - 08.59	12	6

4. Freight service Barking-Southend Central

The freight service on the LTS route is light.

The critical problem is seen to be that of running an airport service during the commuter peak periods, especially during the down

Printed image digitised by the University of Southampton Library Digitisation Unit

evening peak. No effective pathing of airport trains was found to be possible on the existing double track and an exercise was carried out to assess the effects of selective quadrupling. It was assumed that airport trains would run at the existing line speed of 75 mph; this was because only if a very long section, such as the whole 17 miles between Upminster and Leigh, were to be quadrupled would much advantage derive from a higher line speed for airport trains; even then the heavy passenger service on other sections of the route would effectively reduce their line speed over those other sections.

The provision of additional tracks through the urban areas between Barking and Upminster (8 miles) and between Leigh and the Thorpe Bay junction (6 miles) would be much more costly per mile than in the relatively open country between Upminster and Leigh where land is already largely B.R. owned. Conversely the difficulties of pathing stopping passenger trains and non-stop airport trains together over a double track would be at their greatest through the Southend urban area, where it would seem to be commercially desirable to retain at least four peak-hour trains calling at all stations between Leigh and Thorpe Bay. The effects were therefore studied of quadrupling the 10-mile section between Laindon and Leigh, lying in the open country section but extending to the edge of the Southend bottle-neck. It was also considered prudent to allow for the conversion of the two bays at Southend Central station into through running platforms.

With these improvements it would be possible to run an off-peak service of four trains an hour, but it does not seem that more than two additional airport trains could be pathed along with a recast peak passenger service comparable to the present-day one. If additional paths were required in future for B.R. trains, because, for example, of travel to and from an airport town in the Southend area, it might be difficult to find paths for any airport trains in the peak periods.

The possible construction of a port at Foulness could mean a substantial future freight movement between Barking and Foulness, in addition to any new freight movement to the airport itself. While heavy freight movements could possibly be restricted to outside the commuter peak and diverted as necessary at other times to the Tilbury loop between Barking and Pitsea, serious pathing problems might occur at any time of day over the Leigh-Thorpe Bay section.

In the long term the King's Cross/St. Pancras-Tottenham-Barking-Foulness Route 9 could only run a high-speed service of eight trains

Printed image digitised by the University of Southampton Library Digitisation Unit

an hour or more if separate tracks were provided throughout. This would certainly be more expensive than building the new Route 8, running through open country for most if its length. Even in the short term when the minimum service of four trains an hour would operate, the LTS route could not carry the airport service unless additional tracks were provided east of Leigh. Rather than quadruple the existing alignment for this purpose, it might be feasible initially to construct the eastern end only of the exclusive Route 8, with a cross-spur of about 5 miles to join the LTS route somewhere around Pitsea. With possible quadrupling between Pitsea and Laindon (4 miles), this scheme could defer heavy expenditure on the construction of the western end of Route 8 (including the proposed tunnel beneath Epping Forest) and provide a reasonably rapid journey time for four trains an hour throughout the day and two trains at night. It would also provide an alternative route to the completed Route 8 for maintenance purposes or in emergency working.

If the 8-mile spur were constructed from Thorpe Bay to the airport some B.R. passenger trains presently terminating at Shoeburyness could be diverted to Foulness to provide a useful subsidiary airport service. Freight traffic to the airport could also use this route.

ENGINEERING STUDIES 3.2

King's Cross/St. Pancras-Haringey-Tottenham-Foulness 3.2.1.

From King's Cross to the new Junction at South Tottenham the proposed route is the same as that for Route 7 to Nuthampstead.

Beyond the junction the route runs on new formation adjacent to the existing Lea Valley line to Brimsdown. From Brimsdown the route swings due east across open country, under Epping Forest in tunnel and thence to the general site area via Brentwood and Hockley, again over open country.

The estimated cost of tunnelling under Epping Forest is £9 million.

From the east side of Epping Forest, the alignment is similar to that of the proposed D. Ring road to south of Brentwood. From this point the route again runs due east to site. Over the whole of this last section the railway lines could be combined, on a side or centre reservation, with a new motorway. The proposed gradients and curvatures are applicable to both road and rail construction at no extra cost in earthworks apart from Hockley Hill. Through this hill, heavy earthworks would be required to meet the

Printed image digitised by the University of Southampton Library Digitisation Unit

maximum railway gradient of 1 in 70.

An alternative route between South Tottenham and Noak Hill (to the west of Brentwood) passing through Walthamstow, would warrant further study. Estimates show that there is little difference in cost between this route and the route via Brimsdown and Epping Forest and three miles in length would be saved. However, detailed study would be required to confirm this estimate as the route runs through the built up area of Walthamstow where land purchase, compensation, road and service diversions are a major portion of the total cost.

King's Cross/St. Pancras-Haringey-Tottenham-Barking-Foulness 3.2.2

From King's Cross to the new junction at Haringey the proposed route is the same as that for Route 7 to Nuthampstead. From the junction at Haringey the route would run on new formation to South Tottenham station where it would join the Tottenham and Hampstead line. A 25 mph restriction is in force through the existing junction at South Tottenham; we propose this should be raised to 70 mph for airport trains in a revised layout. Between South Tottenham and Barking the route would follow the existing Tottenham and Hampstead line. The present line speed limit is 45 mph; we do not propose that it should be raised above 75 mph because of the heavy freight working over this section of the route. A passing loop would be required midway along this section which is mainly on viaduct.

At Barking the route joins the London Tilbury and Southend line. The present line speed restriction is 75 mph which we do not propose should be raised, our reason for this being that the running of 100 mph airport trains on a heavily used commuter line would reduce the existing spare capacity and that further intermediate speed restrictions would be introduced due to the present alignment. We also do not propose that existing speed restrictions be improved because the line is at present electrified and the presence of the 25 KV overhead wire system would increase costs out of proportion to journey time saved.

Passing loops would be required between Laindon and Leigh-on-Sea and at Southend Station in order to run airport trains during the commuter peak.

From a new flat junction to the east of Thorpe Bay Station the route approaches the airport site over open country. Speed through the junction would be restricted to 70 mph but from there to site maximum line speed would be 100 mph.

The four-tracking of this route from Thorpe Bay to South Tottenham was considered as an alternative to the route via Hockley and Brentwood.

Printed image digitised by the University of Southampton Library Digitisation Unit

Estimates showed that construction costs would be about 50% greater. This is due largely to the heavy construction between South Tottenham and Barking through a built up area on viaduct and in cut and between Leigh-on-Sea and Southend East where new sea walls and extensive demolition of existing buildings would b e required. For 100 mph running throughout, 4 ½ miles of existing line would require realignment in order to maintain the same alignment for all four tracks.

A further alternative exists to avoid the Southend built up area. This would be to branch off west of Pitsea Junction and run on new formation over open country to Hockley. The route would then be common to the proposed site at Foulness with Route 8 via Brentwood and Hockley. Costs would be reduced in total by about 10% but the route would be lengthened by one mile.

Printed image digitised by the University of Southampton Library Digitisation Unit

Traffic Studies 4.1

Selection of Routes for Detailed Study 4.1.1.

Three existing routes between the general site area and London have been considered for their capacity to carry the projected airport service. These are:-

(i) the former Great Northern Route (East Coast main line) from Newcastle to King's Cross via Welwyn,

(ii) the Hertford loop leaving the Great Northern line south of Stevenage and running via Hertford North to rejoin it at Wood Green,

(iii) the former Great Eastern (Lea Valley) route from King's Lynn to Liverpool Street via Bishops Stortford and Tottenham.

Great Northern Route 4.1.1.1.

A spur of about 11 miles to a junction with the Hitchin-Royston-Cambridge line east of Baldock station would give a route of 48 miles to King's Cross/St. Pancras. From Hitchin to King's Cross (32 miles) the route would follow the East Coast main line.

Traffic on the Hitchin-Cambridge line is relatively light and there should be no difficulty in running up to eight airport trains an hour on the double track. A flying junction would be necessary to avoid conflictions at Hitchin, and a second one at Baldock would be desirable for an airport service of eight trains an hour, though a flat junction might be adequate for a service of four trains an hour. The route between Hitchin and King's Cross is also discussed in relation to the Thurleigh site, (Section 6).

Alternatively, a longer spur of about 16 miles to a junction with the East Coast main line north of Woolmer Green would give a shorter route of 39 miles to King's Cross/St. Pancras.

The capital costs of the two schemes would probably be similar, with the greather length of new construction on the second route being balanced by the need for only one flying junction at Woolmer Green. The two routes

Printed image digitised by the University of Southampton Library Digitisation Unit

appear inferior to the Lea Valley route via Tottenham because of both route distance and line capacity and have, therefore, been considered likely to be of use only as secondary or emergency routes. However, it was considered desirable to select one of them for detailed study, so the alignment via Baldock, which would involve the shorter length of new construction, was selected at Route 6.

Hertford Loop 4.1.1.2.

A 14 mile spur to join the Hertford loop near Stapleford, north of Hertford, would give a 37 mile route to King's Cross/St. Pancras. The loop is double-track throughout and carries a suburban passenger service between Wood Green and Hertford (15 miles) of up to 9 trains an hour. The passenger service north of Hertford is light and the freight service is light over the whole loop. The intensity of the peak-hour commuter service south of Hertford North would require the provision of additional tracks for most of the Wood Green-Hertford section. The present alignment of the route, restricting the maximum speed to 55 mph, means that some heavy and expensive engineering works would be necessary, especially in the urban area, to permit running at speeds approaching 100 mph. For these reasons, the route was not selected for detailed study, though it could be useful as a diversionary route in case of blockage of the East Coast main line.

Lea Valley Route 4.1.1.3.

An airport spur of 16 miles could give access to the Lea Valley line south of Roydon. The B.R. service on this line runs via Tottenham and Hackney Downs to Liverpool Street, but the intensity of the many inter-city and suburban passenger services using Liverpool Street as the terminus means that, without major works to provide additional terminal space and additional approach tracks, it would be impossible to accommodate an airport service there. The only feasible alternative route to a central London terminal site seems to be via the Tottenham and Hampstead line to King's Cross/St. Pancras; although the double-track Lea valley line north of Tottenham Hale is itself heavily occupied by passenger and freight services, there is B.R. land for four-tracking on the east side of the line and a short section was, in fact, four-track until recently. A few problems would have to be resolved, though none appears too serious; these include, for instance, the questions of access

Printed image digitised by the University of Southampton Library Digitisation Unit

to the Northumberland Park coal concentration depot and of avoiding level crossings over four running lines. From Tottenham Hale, the best route appears to be similar to that formerly proposed by B.R. for a King's Cross-Stansted link i.e. by a flying junction at Tottenham, 2 miles of new formation alongside the Tottenham and Hampstead line, and a new flying junction at Haringey into the East Coast main line. An alternative route would be to continue along the Tottenham and Hampstead line to Kentish Town and from there down the Midland line to the St. Pancras approaches; this route would be longer, could involve either traffic conflictions or expensive new construction between Haringey and Kentish Town, and would be subject to a severe speed restriction round the Kentish Town curve. Assuming the implementation of Stage 1 of the G.N. suburban electrification scheme, the former route could give an exclusive or near-exclusive route of 35 miles from the airport to King's Cross/St. Pancras. An advantage of the route would be that, for maintenance purposes or in case of emergency, trains could be switched between the B.R. and airport tracks between Roydon and King's Cross/St. Pancras. If the electrification scheme (Stage 1) were not implemented, and the bulk of the G.N. suburban service continued to run to King's Cross, heavy expenditure on additional airport tracks would probably be necessary between Haringey and King's Cross and the alternative route via Kentish Town might be preferable.

The King's Cross/St. Pancras-Haringey Tottenham-Nuthampstead route was selected as Route 7 for detailed study.

Train Path Exercises for Selected Routes 4.1.2.

Route 6, King's Cross/St. Pancras-Welwyn-Baldock-Nuthampstead. 4.1.2.1.

The train path problem is very similar to that described for Route 5, King's Cross/St. Pancras-Welwyn-Thurleigh. Assuming G.N. suburban electrification, it should be possible to run an airport service throughout the day of 4 trains an hour between King's Cross/St. Pancras and Hitchin, increasing to 7 trains an hour with the provision of the additional down track over the two mile Welwyn bottleneck. The 5 mile Hitchin-Baldock double-track section should be able to carry this number of trains through the peak suburban services and throughout the daytime. Without implementation of at least Stage 1 of the electrification scheme, it is unlikely that even four airport trains an hour could be run.

Route 7. King's Cross/St. Pancras-Tottenham-Nuthampstead. 4.1.2.2.

A wholly exclusive line, signalled for high speed running with 3 minute booked headways, would have capacity for up to 20 trains an hour. While

Printed image digitised by the University of Southampton Library Digitisation Unit

a wholly exclusive route could be built with virtually no use of non-railway land south of Roydon, there are a few places, such as the entrances to Northumberland Park coal concentration depot and Broxbourne power station, where capital expenditure could be saved by permitting confliction with existing tracks. While such conflictions would reduce route capacity, a few such as those mentioned could be accepted without risk of the route being unable to carry 8 trains an hour throughout the daytime. Such conflictions could include some use by airport trains of the slow lines south of Finsbury Park.

A more serious restriction of route capacity would be caused if Stage 1 of the G.N. suburban electrification scheme were not implemented. In this case conflictions with B.R. peak passenger services south of Haringey could create great difficulties for the running of a service of eight trains an hour, necessitating the expensive construction of new tracks.

The possibility was examined of saving expenditure in the early years of the airport service by quadrupling only selected lengths of the Lea Valley line between Tottenham and Roydon. The intensity of the B.R. passenger service at the peak periods, however, would make it very difficult to run any additional airport trains, let alone the anticipated minimum service of 4 trains an hour, unless the section were quadrupled throughout.

NUTHAMPSTEAD 4.2

Engineering Aspects of the two Alternative Routes 4.2.1.

King's Cross/St. Pancras-Welwyn-Nuthampstead 4.2.1.1.

This route is the east coast main line from King's Cross to Hitchin and from there, via the Cambridge branch, to Baldock with a spur running eastwards over open country to the proposed airport site at Nuthampstead. The use of this line is based on the implementation of Eastern Region's rationalisation and electrification plans from King's Cross to Royston. It has also been assumed that the overall line speed would have been raised to the speeds proposed by the time an airport service was required.

In terms of basic cost, apart from the spur, the major works that would be required would be a flyunder at Hitchin for the down airport trains (this would be similar to the flyunder for the down Cambridge line mentioned under Thurleigh) and the electrification and upgrading to passenger line standard of 2 ½ miles of twin track between Finsbury Park and Wood Green.

In order to increase capacity beyond the minimum service, duplication would

Printed image digitised by the University of Southampton Library Digitisation Unit

be required between Welwyn and Woolmer. The present alignment of the east coast main line does not lend itself to quadruplication by a new twin track viaduct and tunnels because the up and down slow lines lie either side of the fast lines. It is proposed, therefore, only to duplicate the down-line to meet capacity requirements during the combined airport and commuter peaks. There would be a speed restriction of 40 mph at the junction at Hitchin that could be raised only at high cost. Owing to the proximity of the proposed junction at Baldock, it would not be proposed to raise the line speed between Hitchin and Baldock above 70 mph. The large radius turnouts at Baldock would be 70 mph in both directions.

An alternative spur to Nuthampstead which might be considered is one having a junction with the East coast main line north of Woolmer Green and thence to the airport site over open country. The length of the new spur would be increased by 4 miles but, to offset the extra cost, only one flying junction would be required as opposed to two via Baldock. The overall route mileage would be reduced by nine miles and, apart from the 70 mph restriction through the turnouts, no extra restrictions north of Woolmer would be in force. At the junctions with the east coast main line on both these alternatives, confliction would exist between the up airport and up slow lines and between the down airport and the down slow lines.

King's Cross/St. Pancras-Haringey-Tottenham-Nuthampstead 4.2.1.2.

This route is the East coast main line to a new flyunder junction at Haringey with the Tottenham and Hampstead line.

The use of this section of the East coast main line is based on the implement-ation of Stage 1 of Eastern Region's proposed rationalisation and electrification plans from King's Cross to Welwyn Garden City and Hertford North. Under this scheme, near exclusive use of the up and down goods lines could be made available to airport trains. Further study will be required to examine methods and costs of raising the speed restrictions between Haringey and King's Cross should this be found necessary.

The flyunder junction at Haringey would be a major civil engineering task, and in the event of Nuthampstead being chosen as the Third London Airport, the construction of the flyunder tunnel would be made easier if carried out after rationalisation but before electrification.

From Haringey the route would run on new formation adjacent to the existing Tottenham and Hampstead line to South Tottenham. A flyunder junction is proposed at this point to avoid confliction with the existing Lea Valley line. Curvature at this junction would restrict speed to 70 mph.

Printed image digitised by the University of Southampton Library Digitisation Unit

Beyond the junction, the route would run on new formation adjacent to the existing Lea Valley line to a point south of Roydon. Allowance has been made in the basic cost for the construction of road over-bridges at all level crossings in use. More detailed investigation might show a reduction in this amount. South of Roydon, the proposed airport lines would fly over the existing Lea Valley line and approach the proposed site at Nuthampstead over open country. Over this section of the route the railway lines could be combined, on a side or centre reservation, with a new motorway. From Haringey to Nuthampstead the proposed alignment would be suitable for 100 mph running with the exception of the flyunder junction at South Tottenham.

Printed image digitised by the University of Southampton Library Digitisation Unit

Traffic Studies 5.1.

Selection of Routes for Detailed Study 5.1.1.

Four existing routes between the general site area and London were considered for their capacity to carry the projected airport service. These were:

(i) the former Great Western route from Birmingham to Paddington via Princes Risborough and High Wycombe; this route has a branch from Northolt Junction to Marylebone,

(ii) the former Great Central route from Sheffield to Marylebone via Aylesbury and Amersham,

(iii) the former London and North Western route from Crewe to Euston via Leighton Buzzard and Watford,

(iv) the former Midland route from Sheffield to St. Pancras via Luton.

By the use of existing or proposed connections these routes could all be connected to a variety of alternative terminals but only King's Cross/St. Pancras, Euston and Marylebone are considered as serious possibilities, with a brief mention of Paddington as an alternative in one case.

Great Western Route 5.1.1.1.

With a 15-mile spur from Cublington to Princes Risborough, this route would provide an airport link of 50 miles to Paddington, or of 51 miles to Marylebone. Since the concentration of the high-speed London-Birmingham service on the electrified Euston route in 1967, passenger traffic on the G.W. route has consisted only of the relatively light Marylebone-High Wycombe-Princes Risborough-Aylesbury commuter service and a semi-fast Paddington-Banbury-Birmingham service of seven trains a day each way; freight traffic is at a relatively low level. With the exception of a short four-track section south of West Ruislip, the line is double-track from Princes Risborough to the

Printed image digitised by the University of Southampton Library Digitisation Unit

Paddington approaches, but B.R. land for four-tracking is owned throughout. The Marylebone branch from Northolt Junction is 11 ½ miles of double-track, sharing the last 5.½ miles from Neasden to Marylebone with the Marylebone-Amersham-Aylesbury line, which carries a small passenger commuter service.

If the Marylebone-High Wycombe-Aylesbury commuter service were to be transferred fromMarylebone to Paddington the tracks from Northolt Junction to Neasden Junction (6 miles) would no longer be required by B.R. and the tracks from Neasden Junction to Marylebone (5 ½ miles) would carry only the light Marylebone-Amersham-Aylesbury passenger service, giving near-exclusive use of the Marylebone terminal site and the Marylebone-Northolt Junction tracks to airport trains.

A study already made by British Rail has shown that it would be operationally feasible to handle the Marylebone-High Wycombe-Aylesbury trains at Paddington, although there would be some initial difficulties in connection with the provision of diesel maintenance facilities on the Western Region. The Marylebone-High Wycombe-Cublington route was therefore selected as Route 1 for study.

A possible alternative would be to run an airport service to Paddington leaving the Marylebone commuter service running over its present route. The fact that the use of Marylebone terminal would become near-exclusive to the airport services led to preference for the former scheme.

A connection to the King's Cross/St. Pancras area could be made in a number of ways, e.g.:-

(i) a connection to the St. Pancras-Sheffield line at West Hampstead,

(ii) a connection to the North London line at West Hampstead, and a second connection from the North London to the St. Pancras-Sheffield line at St. Pancras Goods or at Gospel Oak/Kentish Town.

All such connections would involve very heavy engineering works, and the Marylebone terminal is therefore preferred.

Great Central Route 5.1.1.2.

A double-track spur of 10 miles from Cublington to Aylesbury, following the present alignment of the little-used Aylesbury-Bletchley spur for about 3 miles North of Aylesbury station, would give a route of about 48 miles to Marylebone, some 3 miles shorter than the selected Route 1.

This line is double-track from Aylesbury to Amersham (14 miles) and also double-track from Amersham to Watford South Junction (8 miles) over which section use of the tracks is shared with London Transport. From Watford South Junction to Harrow-on-the-Hill (7 miles), there are four tracks, two

Printed image digitised by the University of Southampton Library Digitisation Unit

slow lines used exclusively by London Transport and two fast lines shared by London Transport and B.R. From Harrow-on-the-Hill to Marylebone (9 miles) there are two exclusive B.R. tracks, running parallel to four London Transport tracks as far as Finchley Road. The B.R. Marylebone-Amersham-Aylesbury diesel service is a relatively light commuter service, consisting in the peak hours of four trains in one direction. London Transport, whose services south of Moor Park are heavily congested at the peak periods, have advised us that they would experience great difficulty in absorbing more trains into their service; it is therefore assumed that the B.R. Marlebone-Aylesbury service would have to continue to run on it s existing tracks. This means that the provision of additional tracks from Harrow to Amersham (14 miles), through a developed residential area, would be necessary for the running of any airport service; further quadrupling north of Amersham would also probably be necessary for an airport service of more than four trains per hour in each direction.

Because of the major expenditure anticipated for the provision of additional tracks between Harrow and Amersham, the Great Central Route was not selected for study.

London and North Western Route 5.1.1.3.

A spur of about five miles could connect Cublington to the LNW route north of Leighton Buzzard, giving a route of 46 miles to a Euston terminal. The route has recently been extensively modernised and electrified, and could offer a running time from Euston to Cublington of under 40 minutes. An intensive passenger and freight service operates over the four tracks.

The addition of an airport service would require alterations to Euston station and to the approaches over the last mile south of Primrose Hill Tunnels. It has not been possible in the time available to undertake detailed examination of these alterations, but they would certainly be expensive, and could involve reconstruction of the recently modernised Euston station. Limited accommodation for airport trains could possibly be made available in the area of the Parcels Depot, which would itself have to be moved to another site.

Alternative terminal sites at King's Cross/St. Pancras and at Marylebone could also be connected to this route. The only feasible connection to the King's Cross area would appear to be by a new flyover at Willesden to the North London line via Hampstead Heath to Gospel Oak, with a long descending viaduct (¾ mile) from there to join the St. Pancras-Sheffield line just north of Kentish Town station.

A more direct route via Camden Road and Primrose Hill would face the problem

Printed image digitised by the University of Southampton Library Digitisation Unit

of connection without confliction to the fast lines on the far side of the LNW tracks, and it would seem doubtful whether this work was even physically feasible, let alone economically acceptable. The route via Hampstead Heath would itself be expensive, and might conflict with existing passenger and freight services on the Willesden-Gospel Oak section (4 miles) Access to Marylebone could be by a flying junction from the LNW main line either to the Aylesbury-Amersham-Marylebone route at Kenton or to the Northolt Junction-Marylebone branch at Wembley. Thus difficulties might be experienced in running the airport services to any of the three terminals mentioned.

However, in view of the excellent standard of the LNW line, the Euston-Tring-Cublington route has been selected as Route 2 for study.

Midland Route 5.1.1.4.

An 18-mile spur from Cublington to the Midland line immediately south of Luton station, using the alignment of the Dunstable-Luton line for about six miles, would give a route of 48 miles to a King's Cross/St. Pancras terminal. An alternative alignment would be via a junction north of Leagrave, but only the first alignment has been considered in detail.

From Luton to St. Pancras the Midland line has four tracks throughout, though south of Finchley Road (3 ½ miles from St. Pancras) two of these are presently designated goods lines and passenger trains are confined to two tracks. The Midland line rationalisation scheme now under consideration proposes the redesignation of one of the goods lines as a two-directional relief passenger lines over this section.

A heavy passenger commuter service runs to Luton and Bedford, and an inter-city service to Leicester, Nottingham, Sheffield and Leeds. A considerable freight service also operates over the line.

King's Cross/St. Pancras-Luton-Cublington has been selected as Route 3 for study.

Train Path Exercises for Selected Routes 5.1.2.

Route 1. Marylebone-High Wycombe-Cublington 5.1.2.1.

The train service on the Paddington/Marylebone-High Wycombe-Banbury route consist of the following (Mondays to Fridays):-

Printed image digitised by the University of Southampton Library Digitisation Unit

1. Suburban passenger service Marylebone-High Wycombe/Aylesbury.

Traction:	diesel multiple units.
Off-peak frequency:	1 train per hour (each direction)
Maximum frequency:	
Down departures	17.30 - 18.29 : 6(*)
Up arrivals:	08.00 - 08.59 : 6

2. Semi-fast passenger service Paddington-Banbury-Birmingham

Traction:	diesel-electric locomotives (except as below)
Frequency:	six trains daily Paddington-Birmingham one train daily Paddington-Banbury (**)
Maximum frequency:	
Down departures	15.55, 17.36, 18.16(Banbury) 19.33.
Up arrivals:	08.58(Banbury), 09.35, 11.00.

3. Freight Service.

The freight service is light on this route.

The critical problem would seem to be that of moving the following trains in one direction in a cycle of one hour:

6 slow commuter trains (4 to High Wycombe, 2 to Princes Risborough)

1 semi-fast Birmingham to Banbury train (e.g. minimum interval to become 1 hour)

8 airport trains.

It is thought that any foreseeable expansion of commuting on this line should be catered for by increasing train size while maintaining a service of six trains per hour.

(*excluding one local train to West Ruislip only.)
(**loco-hauled in up direction; diesel multiple unit in down direction.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Physical difficulties to track quadruplication between West Ruislip and High Wycombe are the following:

West Ruislip-Denham :	1 viaduct
Denham Golf Club-Gerrards Cross :	2 viaducts
Beaconsfield-High Wycombe :	1 tunnel, 1 viaduct.

In view of these physical features, it was decided to consider the capacity of the line if it were quadrupled between West Ruislip and Beaconsfield. Quadruplication of two shorter sections only (say West Ruislip-Denham and Gerrards Cross-Beaconsfield) would not greatly help in increasing line capacity because of the limited distance in each section for faster services to overtake slower ones.

It was assumed that airport trains would use two fast lines set between two slow lines and that all lines would be signalled so as to permit express trains to run up to 100 mph on timetabled headways of 3 minutes and commuter stopping trains on timetabled headways of 4 minutes. The commuter trains were assumed to have performances similar to todays diesel multiple units; any future improvement in commuter train performance would be reflected in some increase in line capacity.

On these assumptions a draft timetable was compiled for the down direction between Paddington-Marylebone and Cublington, showing that the required service was feasible, involving the passage of 15 trains over the double-track Beaconsfield-High Wycombe section (5 miles). Eight airport trains an hour would be close to maximum capacity, and further selective quadrupling would probably be necessary to run more trains. Thus it is likely that, with a high modal split of airport passengers travelling by rail, the provision of additional tracks from Beaconsfield to High Wycombe and perhaps from High Wycombe to Princes Risborough would be necessary soon after 1990.

Assuming the continuation of the Marylebone-Amersham-Aylesbury suburban service in its present form, it should be possible to run peak period requirements of four suburban trains an hour into Marylebone along with the 8 airport trains.

There should be no difficulty in running a service of 8 trains per hour throughout the day as long as it is feasible in the peak periods.

Printed image digitised by the University of Southampton Library Digitisation Unit

The train service on the Euston-Bletchley line consists of the following (Mondays to Fridays) :

1. Suburban passenger service Euston-Bletchley and beyond.

   Traction : electric multiple units.

   Off-peak frequency : 2 trains per hour (each direction)

   Maximum frequency :

   Down departures : 17.00 - 17.59 : 7

   Up arrivals : 08.00 - 08.59 : 8

2. Inter-city passenger service Euston-Birmingham/Liverpool/ Manchester/North West.

   Traction : electric locomotives

   Frequency : between 3 and 9 paths are required each hour (see below)

3. Freight services.

There is a considerable freight service on this line at most times of the day. However, it is reasonable to assume that few, if any, freight trains need run at the commuter peak times, and that the service could be accommodated off-peak on the slow lines.

Following the completion of electrification in 1966, it is likely that traffic on this route will increase substantially before 1990, both on commuter and inter-city services. A study of the capacity of the slow lines to carry a commuter peak showed that the following 12 trains might be pathed in one hour :-

4 inner suburban (Euston-Tring)
4 medium-distance suburban (Euston-Bletchley)
4 outer suburban (Euston-Rugby/Birmingham)

Since it will be possible to increase peak capacity by lengthening trains to 12-coach sets, it may be assumed that the slow lines are capable of carrying the full commuter peaks up to 1990, as long as freight train running is suitably restricted at the peak hours.

The critical problem is therefore that of determining how many 100 mph trains could be pathed on the fast lines in an hour, and how many paths would be left for airport trains during the peaks of long-distance trains.

Printed image digitised by the University of Southampton Library Digitisation Unit

The number of trains per hour which could be run at regular intervals of 3 minutes is 20; a more feasible number for this route, considering the problem of fitting in airport and up-mainline trains into steady-stream high-speed running south of Leighton Buzzard, might be 17-18. While running lines' capacity could be of this order, major realignment of the approaches to Euston in order to segregate fast line and slow line trains right into the platforms may be necessary if an unmanageable number of train conflictions are to be avoided there. It has not been possible in the time available to study this problem in detail.

The 1969-70 passenger timetable allows for the following numbers of paths including relief paths, to be available at the busiest hours: times given relate to arrival at our departure from Euston.

Down

17.00 - 17.59 6

18.00 - 18.59 9

Up

10.00 - 10.59 7

11.00 - 11.59 5

It is likely that the marked expansion in the inter-city services since 1966 will continue; indeed an expansion is already planned for the draft 1970-71 timetable, which for example requires 10 inter-city down paths in the period 18.00 - 18.59. Further, it must be assumed that on this busy main line there will be days when the number of paths required exceeds the number of regular and relief paths allowed in the timetable, and that such days may well be the v ry days when demand for the airport services is at a maximum. In these circumstances, it seems sensible to put the number of paths available for airport trains no higher than 4 per hour.

A further factor is the question of maintenance. London Midland Region are considering the undertaking of certain routine maintenance on weekdays in order to control the heavy expenses of weekend and night-time working; this would involve the regular practice of diverting inter-city trains to the slow lines at points where work was being done. The running of an airport service even of 4 trains per hour could make this impracticable and incur increased maintenance expenditure.

Printed image digitised by the University of Southampton Library Digitisation Unit

The train service on the St. Pancras-Luton-Bedford line consist of the following (Mondays to Fridays) :

1. Suburban passenger service St. Pancras-Luton-Bedford.

   Traction : diesel multiple units.
   Off-peak frequency : 2 trains per hour (each direction)
   Maximum frequency :

   Down departures : 17.30 - 18.29 : 10*
   Up arrivals : 08.00 - 08.59 : 10*

2. Inter-city passenger service St. Pancras-Nottingham/Derby/ Sheffield.

   Traction : diesel-electric locomotives.
   Off-peak frequency : 2 trains per hour.
   Maximum frequency :

   Down departures : 16.50, 17.05, 17.25, 17.50, 17.55, 18.25, 18.50.
   Up arrivals : 09.11, 09.40, 09.51, 09.58, 10.09, 10.45, 10.57, 11.33.

3. Freight service.

There is a moderate freight service on the Midland line, but during the daytime this is limited and, in particular, light over the St. Pancras-Brent 6-mile section. Again it was assumed that freight working requirements could be transferred outside the morning and evening peaks.

The main bottleneck on this route is the 3 ½ miles between St. Pancras and Finchley Road, from which point the slow and fast passenger lines join and the four tracks are designated two passenger and two goods. The Midland line rationalisation proposals now being considered would provide for the lines to be redesignated three passenger and one goods.

Various schemes of track realignment of the 8 miles between St. Pancras and Silkstream Junction (north of Hendon) might be developed to give capacity for the running of airport trains. The most ambitious of these would use the Hendon flyover to cross the slow lines over the 'down' side of the route, and bring four passenger lines right through the Finchley Road tunnels to the approaches to St. Pancras station, from where the airport lines would diverge from the B.R. fast lines into an airport terminal station constructed between the present King's Cross and St. Pancras stations. Less ambitious

(*Including services to and from Moorgate which could be diverted to St. Pancras in future).

Printed image digitised by the University of Southampton Library Digitisation Unit

schemes would have only three passenger lines between St. Pancras and Finchley Road.

The critical problem in the pathing of an airport service seems to be that of running airport trains during the down evening peak when both inter-city and suburban passenger services are at a high level and the airport demand is also relatively high.

A feature of the peak suburban service from St. Pancras is the inclusion of trains running non-stop to St. Albans. A draft timetable for the down lines during the evening peak has been prepared to include three of these trains per hour, running on the fast lines to Napsbury (south of St. Albans) and each overtaking one slower train. It was assumed that the line would be re-signalled to allow timetabled headways of 3 minutes between 100 mph airport and inter-city trains and of 4 minutes between present-day diesel multiple units. The replacement of the diesel multiple units with more modern sets could improve line capacity, but retention of the diesel multiple units was assumed so as to give a "least favourable case".

The draft timetable compiled for the most ambitious St. Pancras-Silkstream Junction layout scheme, with four passenger lines throughout, showed that the following service might be run:

Suburban trains :	12 per hour (including 3 non-stop to St. Albans)
Inter-city and airport trains :	13 per hour.

The commuter service up to 1990 should be capable of being conveyed in 12 trains per hour, though this might involve substantial alterations to St. Pancras station in order to allow the stabling of 12-coach trains at all or most platforms. The inter-city service should be capable of accommodation in four or five paths, leaving eight paths per hour for the airport service.

Outside peak hours there should be no difficulty in running 8 airport trains per hour along with inter-city, suburban passenger and freight trains.

ENGINEERING STUDIES 5.2.

Marylebone-Neasden Junction-Northolt Junction-Princes Risborough-Site 5.2.1.

From Marylebone to Neasden Junction the route is the former Great

Printed image digitised by the University of Southampton Library Digitisation Unit

Central Railway route to Aylesbury and the north. The existing 40 mph speed limit at Neasden Junction can be raised to 70 mph by the installation of a large radius turnout. Reconstruction of the overhead road bridge adjacent to the junction could possibly allow this restriction to be raised further by making the airport lines the through lines and transferring the turnout to the Aylesbury direct route. Should electrification be the chosen method of traction, one span of this bridge would require reconstruction. Between Neasden Junction and Northolt Junction extensive formation works are required together with stabilisation of embankments and cutting slopes. However, the cost of these works should not be prohibitive if they are carried out after the diversion of the Marylebone-High Wycombe train service to Paddington. The present junction arrangement at Northolt would not be satisfactory for the standards required for the airport service. The reconstruction of this junction would be a major task and a satisfactory solution would be to make the airport lines through lines, thus restricting the speed limit to curvature only. More detailed survey and planning may show that the proposed 70 mph limit could be raised.

From Northolt Junction to the Junction at Princes Risborough the route is the G.W.R. line from Paddington to Birmingham. Between High Wycombe and Princes Risborough a number of speed restrictions are in force. The proposed raising of the existing 45 mph to 70 mph at High Wycombe can be confirmed only by more detailed surveys and planning but it is unlikely that such work when carried out would show that the speed could be raised further except at high cost. The existing speed restriction at West Wycombe could be raised even further at extra cost but its proximity to High Wycombe discourages this. At Hemley Hill the route divides into two single line tracks with different existing restriction. It is proposed to double the up-line which at present is 80 mph. Beyond this speed, a completely new alignment would be required at heavy expense and its proximity to the proposed junction at Princes Risborough would probably not warrant the extra cost.

From Princes Risborough the route follows the existing single line track over railway property to Aylesbury. Before reaching Aylesbury Station the route by-passes Aylesbury Town and runs for a short length over the G.C. line utilising existing road and river bridge corssings before approaching the proposed airport site at Cublington over open country. The proposed junction at Princes Risborough has been limited to 70 mph by curvature and not by a flat junction, the airport lines again being the through lines. To raise this would mean either large scale demolition in Princes Risborough

Printed image digitised by the University of Southampton Library Digitisation Unit

itself, or the non-utilisation of railway property carrying the single line track between Princes Risborough and Aylesbury. The extra costs involved together with disruption of local amenities added to the cost of a new alignment at Hemley Hill which would be necessary might be a high price to pay for a small reduction in journey time. Electrification of this route should present no difficulties.

Euston-Leighton Buzzard-Cublington 5.2.2.

This route over the majority of its length is the existing London-North Western Railway to Crewe and beyond. The railway has overhead-electrification and is at present a high speed route. It is therefore not proposed to raise any of the existing speed restrictions because of the high cost of work adjacent to overhead electric wires and the limited spare capacity.

A detailed investigation of the approaches to Euston Station will be needed to determine the cost of accommodating the proposed airport service. For a simple rail terminal this would probably be less expensive than for the in-Town Check-in Terminal envisaged. The junction north of Leighton Buzzard is restricted to a 70 mph junction through which airport trains would use the turnouts.

Operating difficulties would be presented, if confliction between the Up airport and the Up and Down slow lines was accepted. The proposed junction is just north of Linslade Tunnels on a high bank overlooking the river valley. Detailed survey and planning would be required to arrive at the capital cost of avoiding this confliction.

King's Cross/St. Pancras-Luton-Cublington 5.2.3.

Over a large proportion of its length this route is the Midland line from St. Pancras to Luton and the North. Speed restrictions are in force at certain points appraching St. Pancras which we would not propose should be raised. The overall line restriction of 75 mph to Hendon Station might, however, be shortened back to London under a rationalisation and resignalling scheme.

The remaining existing restrictions on the route occur south of St. Albans and Luton. The restriction south of St. Albans is due to the combination of curvature and, on the up line, a diamond cross-over restricting cant; under rationalisation, the cross-overs could be removed and by increasing cant on both lines the speed raised to the proposed restriction of 90 mph but more detailed survey work and planning would be required to arrive at the costs for which the speed could be raised above 90 mph. Owing to the proximity of St. Albans station it is arguable whether the probable high costs involved would warrant the cut in journey time.

Printed image digitised by the University of Southampton Library Digitisation Unit

The existing restriction south of Luton is 80 mph and for this route no proposal to raise it is envisaged due to its proximity to the proposed junction at Luton which would be through large radius turnouts in both directions at 70 mph. This junction raises operating problems if confliction between the Up airport and the Up and Down slow lines is accepted. Various alternative layouts to avoid this confliction are possible but only detailed survey and planning would produce the best solution and in all cases the cost would be high.

From the junction at Luton the route follows the new single track branch to Dunstable and then over open country to the north of Leighton Buzzard and on to the airport site.

An alternative spur to the one proposed has been considered. This is common north of Leighton Buzzard but does not join the existing Dunstable branch. The route continues over open country joining the Midland line north of Luton. The overall length of this route is slightly greater and a large structure would be required over the M1 motorway. The speed, however, would be greater and journey time probably the same. Further investigation of this route to arrive at comparable capital costs would be advisable. No major problems should exist for the electrification of this route.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Traffic Studies 6.1

Selection of Routes for Detailed Study 6.1.1.

Two existing routes run from the general site area towards London. These are :-

(i) the former Midland route from Sheffield to St. Pancras via Luton.

(ii) the former Great Northern route (East Coast Main Line) from Newcastle to King's Cross via Welwyn.

It has been assumed that both routes would be connected to a King's Cross/ St. Pancras terminal.

Midland Route 6.1.1.1.

A spur of about 4 miles connecting the airport to the Midland line north of Bedford would give a 59-mile route to King's Cross/St. Pancras. From the proposed junction to St. Pancras the Midland line has four tracks throughout, presently designated two passenger and two goods north of Bedford (5 miles), four passenger between Bedford and Finchley Road (46 miles), and two passenger and two goods between Finchley Road and St. Pancras (3½ miles). The Midland line rationalisation scheme proposes the recovery of the slow and goods lines between Flitwick and the airport junction (15 miles) but these lines could be retained if necessary. The scheme also proposes the redesignation of one line as a two-directional relief passenger line between Finchley Road and St. Pancras (3 ½ miles) in order to give three passenger lines over this section.

A heavy passenger commuter service operates between Luton and Bedford, and an inter-city service to Leicester, Nottingham, Sheffield and Leeds. A considerable freight service also operates over the line.

King's Cross/St. Pancras-Luton-Thurleigh has been selected as Route 4 for study.

Printed image digitised by the University of Southampton Library Digitisation Unit

Great Northern Line 6.1.1.2.

A 10-mile spur to a junction near Little Barford would give a 58-mile route to King's Cross/St. Pancras. From the proposed junction to King's Cross the East Coast Main Line has four tracks throughout except at three places :-

(i) through the station at Sandy (44 miles from King's Cross)
(ii) through the station at Arlesey (37 miles from King's Cross)
(iii) over a two-mile stretch north of Welwyn Garden City between Digswell (21 miles) and Woolmer Green (23 miles from King's Cross), including the Welwyn viaduct, and two tunnels.

Eastern Region already plan to relieve the bottlenecks at Sandy and Arlesey by providing additional tracks. There are no plans, however, to improve the Welwyn bottleneck, where the provision of new tracks would be costly.

An important passenger commuter service operates between King's Cross and Hitchin, and an inter-city service to Leeds, Hull, Newcastle and Edinburgh. Freight working is also important.

King's Cross/St. Pancras-Welwyn-Thurleigh has been selected as Route 5 for study.

Joint use of Midland and G.N. Routes 6.1.1.3.

Since both Routes 4 and 5 run between Thurleigh and a King's Cross/ St. Pancras terminal, an intensive airport service could be operated over both routes together. As well as giving a high joint capacity for airport trains, such an arrangement would permit useful operating flexibility, especially in emergency conditions. The combined capacities of Routes 4 and 5 made possible by various combination of improvements to the two routes have therefore been assessed in the same way as the capacities of the individual routes.

Train Path Exercises for Selected Routes 6.1.2.

Route 4. King's Cross/St. Pancras-Luton-Thurleigh 6.1.2.1.

The train path exercise for Route 4 was largely common to that already described for Route 3 to Cublington, and gave the following conclusions:-

(i) with four passenger lines from St. Pancras to Finchley Road, eight airport trains per hour in each direction could be run throughout the daytime.

Printed image digitised by the University of Southampton Library Digitisation Unit

(ii) with three passenger lines from St. Pancras to Finchley Road the number of airport paths available would be reduced to about five. This conclusion is subject to more detailed study of train working at peak periods over the immediate approaches to the B.R. and airport terminals at St. Pancras,

(iii) retention of the slow and goods lines north of Flitwick would probably be necessary for the running of four trains per hour and would certainly be necessary for the running of eight trains per hour,

(iv) if airport urban development were concentrated at Rushden, extension of the St. Pancras-Bedford commuter service to Wellingborough would probably be necessary. It is not thought, however, that any of the above conclusions would be affected.

Route 5. King's Cross/St. Pancras-Welwyn-Thurleigh 6.1.2.2.

The train service on the King's Cross-Hitchin-Peterborough line consists of the following (Mondays to Fridays) :-

1. Suburban passenger service King's Cross/Moorgate/Broad Street-Welwyn Garden City/Hitchin/Hertford.

Traction :	diesel multiple units (also diesel locomotives at peak hours only)	
	Main line	Hertford line
Off-peak frequency :	3 to 4	2
Maximum frequency :		
Down departures :	17.00 - 17.59	
	13	8
Up arrivals :	08.00 - 08.59	
	13	8

Hertford line trains leave the East Coast main line at Wood Green, five miles from King's Cross and 2.½ miles north of Finsbury Park. Trains to and from Broad Street and Moorgate will leave the main line at Finsbury Park.

2. Inter-city passenger service King's Cross-Leeds/Hull/Newcastle/Edinburgh.

Traction :	diesel-electric locomotives.
	Main line
Off-peak frequency :	Average 2
Maximum frequency :	
Down departures :	17.00 - 17.59 = 4
Up arrivals :	09.45 - 10.44 = 5

Printed image digitised by the University of Southampton Library Digitisation Unit

3. Freight service.

The freight service is considerable, but should be capable of accommodation in spare capacity outside the busiest peak times.

The critical problem for this route is that of running airport trains during the down evening peak when inter-city service, commuter services and airport services would all be at a high level.

For the purposes of the train path exercise, implementation of the route rationalisation and resignalling proposals and of the G.N. suburban electrification scheme were assumed, because without these assumptions it seemed unlikely that even four trains perhour could be run. Stage 1 of the electrification scheme (diverting all inner suburban trains from King's Cross to Moorgate via the present London Transport Northern City line from Finsbury Park) would be particularly important in order to create capacity over the approaches to King's Cross and to allow suburban trains to run in rapid succession on the slow lines. The proposed G.N. electrification suburban timetable, already drafted by Eastern Region, was therefore taken as a base for a draft timetable including airport trains. It was considered prudent to allow for the wiring for suburban passenger trains of an additional pair of tracks between Finsbury Park and Wood Green (2 ½ miles), and with this improvement it was found possible to path the following number of evening peak-hour trains out of King's Cross and Moorgate.

9 main-line inner suburban trains (Moorgate-Welwyn Garden City)
9 Hertford line inner suburban trains (ex Moorgate)
6 main-line outer suburban trains (King's Cross-Hitchin/Royston)
1 main-line semi-fast to Peterborough
10 main-line inter-city trains (running speed 100 mph)

With six paths allowed for B.R. inter-city trains, four paths were found to be available for airport trains.

The path exercise was revised to assess the effect of providing an additional down track between Digswell and Woolmer Green, but it was found that this improvement would add only three 100 mph paths to the capacity of the down fast line giving a maximum of seven airport paths. This is because Welwyn Garden City (immediately south of the bottleneck) would be the terminal point of the inner suburban electrified services, whose heavy occupation of the slow lines would effectively extend the bottleneck south to Finsbury Park. It was, however, found possible to path three of the six outer suburban trains on the slow lines between Finsbury Park and Welwyn Garden City; the diversion of these three trains to the additonal track between Digswell

Printed image digitised by the University of Southampton Library Digitisation Unit

and Woolmer Green created the three additional main-line paths in the revised exercise.

In the morning peak period, the outer suburban up peak does not clash with an inter-city peak, and up to seven airport trains could be run without the provision of a fourth track between Digswell and Woolmer Green.

The number of suburban trains proposed for the Eastern Region draft timetable should be sufficient to carry passenger traffic up to 1990, with trains being extended to 12-coach formations as and when demand increases.

The airport timetable has been drafted on the assumption of a running speed of 100 mph (north of Wood Green) for inter-city and airport expresses. It is hoped that, by the airport opening date, the line speed for inter-city expresses on the East Coast route will have been raised to 125 mph. In this event, it would be logical to design airport stock for running at the raised line speed of 125 mph, thus reducing the airport journey time from 45 minutes to about 40 minutes. However, the problems of pathing outer suburban trains and the Peterborough semi-fast service on the fast line would be increased, because of the greater difference in train speeds. With many variables unresolved, it is difficult to discuss the problem or its possible solutions in much detail at this stage but it s thought that it should still be possible to run the same airport services of four or seven trains an hour, depending on the number of down tracks between Digswell and Woolmer Green. The problem would only exist over the 18 ½ miles between Wood Green and Woolmer Green, and, even if 125 mph running were authorised over the whole of this section, the decrease in running times would only be of the order of 2 minutes.

Outside peak hours there should be no difficulty in running 4 or 7 airport trains per hour along with inter-city, suburban passenger and freight trains.

Combination of Routes 4 and 5 6.1.2.3.

The capacities quoted above for the individual Routes 4 and 5 can be added to give joint capacities under various assumptions of route improvements :

Midland Line Improvements	G.N. Line Improvements	Airport Train Capacity - Trains Per Hour
3 passenger lines St. Pancras - Finchley Road.	Suburban electrification	9
3 passenger lines St. Pancras- Finchley Road.	Suburban electrification and Welwyn widening	12

Printed image digitised by the University of Southampton Library Digitisation Unit

4 passenger lines St. Pancras-Finchley Road.	Suburban electrification	12
4 passenger lines St. Pancras-Finchley Road.	Suburban electrification and Welwyn widening	15*

ENGINEERING STUDIES 6.2

King's Cross/St. Pancras-Bedford-Thurleigh 6.2.1.

This route is the Midland line from St. Pancras to Bedford and the north with a short spur north of Bedford over open country to the proposed airport site at Thurleigh.

Speed restrictions are in force at certain points approaching St. Pancras which we would not propose to raise. The overall line restriction of 75 mph to Hendon Station may, however, be shortened back to London under a rationalisation and resignalling scheme.

The remaining existing restrictions on the route occur south of St. Albans and Luton. The restriction south of St. Albans is due to the combination of curvature and, on the up line, a diamond crossover restricting cant. Under rationalisation, the crossovers could be removed and, by increasing cant on both lines, the speed raised to the proposed restriction of 90 mph. Beyond this speed, more detailed survey work and planning would be required; owing to the proximity of St. Albans Station it is questionable whether the probable high costs involved would warrant the cut in journey time.

The restriction south of Luton at present is 80 mph and is due to restricted reverse curves and, at the approaches to the station, to points and crossings. Under rationalisation, the points and crossings could be modified to allow for maximum cants and, by new construction works further south, it should be possible to raise the speed restriction to the overall line speed..

(*Since what are thought to be generous path allowances have been made for inter-city trains on both routes, a service of 16 trains per hour (e.g. 8 an hour to each of two airport distribution points, or 4 an hour to each of 4 points) might well be possible.)

Printed image digitised by the University of Southampton Library Digitisation Unit

The junction to the airport north of Bedford would be through 70 mph large radius turnouts in both directions. This junction raises operating problems if confliction between the up airport line and the up and down slow lines is accepted. Various alternative layouts to avoid this confliction are possible but only detailed survey and planning would show the best answer and in all cases the cost would be high. A further complication is that the junction is sited on embankment in the valley of the River Ouse, and, because of the proximity of the airport boundary, a large proportion of the spur would be on viaduct. Savings in cost could be achieved by allowing the railway to approach the proposed airport site south of the centre line on a curved alignment.

No major problems exist for the electrification of this route.

King's Cross/St. Pancras-Welwyn-Thurleigh 6.2.2.

This route is the East coast main line from King's Cross to Welwyn and the north, with a spur north of Sandy over open country to the proposed airport site at Thurleigh. The use of this line is based on the implementation of Eastern Region's rationalisation and electrification plans from King's Cross to Hitchin. It has also been assumed that quadruplication of the line at Arlesey and Sandy would have been completed under Eastern Region's own planning proposals and that the overall line speed would have been raised to the speeds proposed by the time an airport service was required.

In terms of basic cost, apart from the spur, the only works required would be a flyunder at Hitchin for the down Cambridge line and the electrification and upgrading to passenger line standard of 2½ miles of twin track between Finsbury Park and Wood Green.

To increase capacity beyond the minimum service, duplication would be required between Welwyn and Woolmer. The present alignment of the east coast main line does not lend itself to quadruplication by a new twin track viaduct and tunnels because the up and down slow lines lie either side of the fast lines. It is proposed therefore only to duplicate the down line to meet capacity requirements during the combined airport and commuter peaks.

The junction north of Sandy would be through 70 mph large radius turnouts in both directions. There would be confliction between the up airport and up slow line and similarly the down airport and the down slow line but these would not be so severe as on the Midland line which has a double line confliction.

Eastern Region electrification proposals are to electrify four lines to Welwyn and two to Hitchin. Extension of this scheme to Thurleigh should not present any difficulties.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

TRAIN FREQUENCY AND TRAIN PLATFORM REQUIREMENTS 7.1

Important factors determining the number of trains required for an airport service include the following :- 7.1.1

(i) the passenger accommodation of the trains,
(ii) the desirable frequency of service,
(iii) the number of locations to be served at the airport.

More detailed work will, of course, be necessary in the design of a suitable airport passenger train. Preliminary study suggests that trains could be formed of four-car multiple unit sets, combined where necessary to make 8, 12 or 16 cars. If check-in facilities were provided at the London terminal, one car or part of a car in each set could carry baggage, and it might be possible to accommodate over 300 passengers in the remainder of a set. In section 8.7 of this Report an optimum average loading figure of 1,250 passengers per 16-car train has been suggested for the busiest peak periods.

During the daytime, it is suggested that the minimum desirable service to and from each airport terminating point should be four trains per hour, giving a 15-minute service at as nearly equal intervals as possible. During the nighttime less frequent minimum service to each terminating point would probably be acceptable, say, two trains an hour.

It is envisaged that the final four-runway airport (after 2000) could be served by as many as eight terminal buildings on site, and that the rail link could satisfactorily be converted to the eight terminal buildings by four train terminating points each serving two adjacent terminal buildings. Before 1990 at least two terminal buildings may be in operation, but, as these might not necessarily be on adjacent sites, it was assumed that two train terminating points would be required. 7.1.2.

A service of four separate trains per hour to each of two terminating points would require a total of eight trains per hour; eight trains an hour should be a sufficient daytime service up to 1990, as the average loading of a peak 1990 hourly flow of 5,000 with the high 75 per cent modal rail split would be only 7.1.3.

Printed image digitised by the University of Southampton Library Digitisation Unit

625 passengers per train. With the low 35 per cent modal split, average train loadings of eight trains an hour would be around 300 at peak periods and considerably less for much of the day. It was therefore assumed that for the low modal split, trains would be combined between London and the airport, splitting there into two portions for the two terminating points. Thus the required maximum train frequency in 1990 for the low modal split would be 4 trains an hour.

The London terminal design provides for four platform lines, which should be quite adequate for accommodating a service of up to eight trains an hour in multiple unit formation. It is suggested that each platform line would be set between two platform faces so that well-loaded trains fitted with sliding doors could be emptied and rapidly refilled without serious passenger flow conflictions on the platforms. 7.1.4.

An increase in the number of trains after 1990 might eventually necessitate an increase in the number of platform lines. With 15-minute train stops, a service of 16 trains an hour could be accommodated in about seven platforms.

ENGINEERING STUDIES - IN TOWN TERMINAL 7.2

Three alternative sites for an in-Town Terminal with baggage handling and check-in facilities have been examined.

The first is the King's Cross/St. Pancras area which would serve all four proposed sites; the remaining two at Marylebone and Euston would serve only the proposed site at Cublington.

At King's Cross/St. Pancras the area available to site the in-Town Terminal would depend on the implementation of Stage 1 of Eastern Region's electrification plans for the East Coast Main line. Under these plans the suburban services would be diverted via the Northern City line to Moorgate. This would free the present suburban station for redevelopment.

Assuming that these plans are implemented, there would be two alternative layouts at King's Cross, one with low level platforms, the other with high level platforms. The low level layout would be applicable to trains using the East Coast Main line only but the high level layout would be applicable to trains using the Midland line and, by a new approach through the King's Cross Goods Yard, to trains using the East Coast Main line. The site to the east of St. Pancras station, including King's Cross main line station, is approximately 650,000 sq. ft. of which 260,000 sq. ft. would be taken up at ground floor

Printed image digitised by the University of Southampton Library Digitisation Unit

level by the existing main line station. In the low level layout, the remaining area at ground floor level would be taken up by platforms and an area reserved for car access to the upper floors. The high level layout would have the advantage that approximately 350,000 sq. ft. at ground level could be utilised by car and taxi arrival areas and car parking, allowing full utilisation of the area above ground floor level.

Another advantage of the high level layout would be that any expansion of platform facilities in the future could be accommodated at the same level. The available area at low level may not meet final requirements and double decking may be necessary.

Based on the areas quoted for the Victoria Terminal, an in-Town Terminal with a high level layout could be accommodated in two storeys for a two way passenger flow in 1990 of 10,000/hr. peak. However, to allow for future expansion an area at first floor level would have to be reserved for future platforms and a further storey would then be required. A peak two-way flow of 20,000/hr. would appear to be about the limit when a 4 storey building would probably be required. There would be difficulties in allowing for future expansion with a low level layout.

If the Third London Airport was sited at Thurleigh the proposed use of both the Midland line and the East Coast Main line would best be served at the in-Town Terminal by a high level layout.

Should Eastern Region's plans for electrification not be carried out, it may still be possible to site a high level terminal approached from the Midland line over the suburban and main line stations. Realignment of the existing suburban platforms would probably be required. The reduction in available area at ground level would restrict car parking facilities which would require to be transferred to high level creating more difficulties. Future expansion beyond the 1990 passenger flows may not be possible.

Detailed investigation of the site would be required to confirm the ground conditions to carry the loads from a high level track layout.

7.2.2. The proposed site at Marylebone would be over the existing station. The total plan area of the site is approximately 250,000 sq. ft. The majority of this would be taken up by platforms at ground level. The required area for baggage handling, check-in facilities etc. could probably be accommodated on two floors above the station with car parking on the roof.

Printed image digitised by the University of Southampton Library Digitisation Unit

For passenger forecasts beyond 1990, more platform space would probably be required and this could only be obtained by demolition of surrounding properties. If the number of platforms were kept to a minimum by a quicker turn round of trains, the remaining facilities required would probably involve demolition to limit the terminal to a practical height.

An in-Town Terminal at Euston would need to cater for a peak two-way flow of only 5,000/hr. because of the limited available capacity on the London-North Western line. 7.2.3.

Two tracks with four platform faces could be accommodated where the existing parcel platforms are at present. At first floor level the existing parcel depot occupies an area of 256,000 sq. ft. sufficient for baggage handling and check-in facilities. An area between the parcels depot and the main station concourse would give adequate car parking facilities on the same level. Road ramps are already in existence.

The Parcels Depot would have to be transferred to another site.

Printed image digitised by the University of Southampton Library Digitisation Unit

TRACTION AND ROLLING STOCK CONSIDERATIONS 8

Only conventional types of traction and rolling stock have been considered, the word 'conventional' being defined as the steel wheel on steel rail duorail system. 8.1

Motive Power 8.2

The motive power systems considered are three-fold (electric, diesel and gas-turbine) and the advantages and disadvantages of each system are briefly given. Electric and diesel are already used on virtually all the railway systems of the world, but due to its high power to weight ratio and rapid development in other forms of transportation, in particular air and sea, there appear to be indications that for high speed traction gas-turbines may well have advantages.

Operation 8.3

Operational factors indicate that for a high speed 'shuttle' system where optimum turn-round times are required and where passenger loadings vary widely between the peak and off peak hours, multiple unit trains are to be preferred to locomotive hauled coaching stock in order to give the necessary operational flexibility. From the engineering aspect also, the multiple unit train is preferred, having lower axle-loading, less damage to the track and greater power to train weight ratio.

Multiple unit trains, therefore, have been preferred to locomotive hauled stock for all the routes. 8.4

Speed 8.5

The British Railways Board foresee the possibility of increasing the speed of inter-city expresses to a maximum of 125 mph; there is every indication that this will be achieved by the time that the airport line will be required. Therefore, if existing rail systems are wholly or partially used for the airport link, the rolling stock must be designed for at least similar speeds.

Track 8.6

In order not to increase loading on the track at the higher speeds, the multiple

Printed image digitised by the University of Southampton Library Digitisation Unit

unit stock should be designed to keep the tare weight and also the unsprung masses to a minimum bearing in mind the operational requirements, particularly of adhesion, when accelerating and braking.

Electric Multiple Unit Stock 8.7

This type of stock has been developed over the years and is known to give efficient and reliable service which is essential to the successful operation of an airport rail link. As the traction equipment is underfloor mounted, maximum seating can be obtained. The units are relatively quiet in operation, produce no fumes and possess excellent standards of acceleration and braking. The first specially constructed high speed railway system in the world has proved the success and reliability of this method of traction at high speed and many lower speed units also run in this country with an exceptional degree of reliability.

The following brief specification for suitable stock for the airport link is suggested:-

Overhead electric supply 25KV A.C.
Four car units, with up to 50% of the axles motored.
Each four car unit to carry between 300/330 passengers with accommodation for baggage.
Entrance sliding doors (air operated).
Toilet accommodation.
Air conditioning, if required.
Only one class of travel.
Frontal area and bodywork suitable for high speed.
Four car units to be capable of being formed into eight, twelve or sixteen car trains.*

Diesel Multiple Unit Stock 8.8

Of the various types of diesel powered multiple unit stock i.e. diesel electric, diesel mechanical and diesel hydraulic in service, the diesel-electric has given reliable results and can be considered as an alternative to electric traction, although not giving all the advantages of electric traction except where electrification is considered not economically justified.

At the present time, no diesel powered multiple unit stock has been built in this country capable of running at a speed of 125 mph. Although electric transmission equipment can be provided to give this speed with little or no development work required as it is in many ways virtually similar to electric traction equipment, the same does not apply to mechanical and

*The above specifications would give accommodation in 16 car trains for 1,200 to 1,320 passengers. This suggests that an optimum figure for average peak hour loading could be 1,250 passengers/train i.e. 95% of 1,320.

Printed image digitised by the University of Southampton Library Digitisation Unit

hydraulic transmission; we are of the opinion that, whilst the latter transmissions are suitable for lower power, electric transmission gives greater reliability and lower maintenance for higher power and has the necessary user experience under the intensive conditions laid down for the airport link.

It is estimated that for a four-vehicle diesel-powered unit, a diesel engine of approximately 2,200 HP would be required, and would of necessity be accommodated above floor level. The seating capacity available would be approximately 250/275 passengers compared with the E.M.U. capacity of approximately 300/330 for similar units.

In general the other requirements would be as for the E.M.U. stock and the design would be similar.

Gas Turbine Powered Stock 8.9

The gas turbine has the great advantages of extremely low weight per horsepower, small bulk and small number of moving parts giving great simplicity as compared to the diesel engine. At the present time, the gas turbine is still under development for traction work and, therefore, efficiency and reliable performance comparable to diesel engines has not yet been proved but has been confirmed in both air and maritime application.

Future prospects would appear to be good, given the required development; it is in high performance passenger services where it is likely to give attractive economies, where the low weight permits reductions in the tare weight and the size allows for increased passenger accommodation.

The form of transmission to be used is open to conjecture and both electric and mechanical systems are under developemnt. Whereas mechanical transmission has higher overall efficiency than the electric, maintenance and reliability in intensive service have to be proven in practice.

It is considered, however, that extensive development is required and there is no indication when it will be completed and the engine and transmission proved in service before the stock is required for the airport link.

Advanced Passenger Train (APT) 8.10

The A.P.T. is required primarily for inter-city services where the distances warrant high speed to compete with other forms of passenger transport and distances are sufficient.

Printed image digitised by the University of Southampton Library Digitisation Unit

The function of the A.P.T. is basically to enable higher speeds to be obtained either on existing tracks through the application of the most up to date techniques which in turn permit these increases in speed whilst at the same time improving margins of safety and reducing overall stresses on the track.

The other advantages of this development will vary from route to route depending on local conditions and therefore it is not practically possible to lay down any reasonable advantage at this juncture.

Printed image digitised by the University of Southampton Library Digitisation Unit

ROUTE CAPACITY 9.1.

From 1990 it becomes increasingly difficult to forecast the numbers of passengers who would use an airport link, as estimates both of the total numbers of air passengers and of future local access modal splits between road, rail and other methods of transport become subject to wide variation. It is estimated in 1990, for which year the estimated total throughput of the airport is 40 million passengers, that a high modal split to rail of 75 per cent of passengers between London and the airport could give one-directional rail flows of up to 5,000 passengers an hour. The factors determining the demand for rail transport beyond 1990 would be firstly, the growth in airport throughput and secondly, the ability of rail to compete against alternative short-haul transport modes. In 2005, say, an airport throughput of 100 million passengers and a low rail split might give maximum rail flows of 5,000 passengers an hour; or an airport throughput of 200 million passengers and a high rail split might give maximum rail flows of 30,000 passengers an hour.

If the maximum rail flows for 2005 were at the anticipated lower limit of 5,000 per hour, the conclusions reached in relation to the carrying of the 1990 high modal split would hold with the important reservation that the available capacity on existing lines could have been significantly changed by technical advances or by changes in the volume or composition of other British Rail traffic. With little evidence to assist in the assessment of the effects of such factors, it is worth recounting that the following routes or route combinations appear able to carry services of eight trains an hour by day, and correspondingly fewer by night :-

Printed image digitised by the University of Southampton Library Digitisation Unit

	Route	Daytime trains per hour.
Route 1.	Marylebone-Princes Risborough-Cublington	8
Route 3.	King's Cross/St. Pancras-Luton-Cublington	8[a]
Route 4.	King's Cross/St. Pancras-Luton-Thurleigh.	8[a]
Routes 4. and 5. combined.	King's Cross/St. Pancras-Luton-Thurleigh. King's Cross/St. Pancras-Welwyn-Thurleigh.	9[b]/12[c]/16[d]
Route 7.	King's Cross/St. Pancras-Tottenham-Nuthampstead.	say 24
Route 8.	King's Cross/St. Pancras-Tottenham-Foulness.	say 24

The above is an indication, but no more, that routes named for the period up to 1990 might be capable of carrying airport services up to 2005 if the lowest assumptions on development of demand for the rail link were fulfilled. 9.2.

On the assumption that reasonable peak-hour loadings of 1,250 passengers could be achieved in 16-coach trains (see Section 8.7), peaks of 30,000 passengers per hour could be accommodated in a train service of 24 trains an hour. It would probably be practicable to run this number of trains on a wholly exclusive railway, where there was no problem of pathing high-speed trains to and from different routes at the ends of shared sections, and in particular of pathing up airport and up inter-city trains together into steady-stream running from the airport junction. 9.3

If the highest assumptions on development of demand for the rail link were fulfilled, it would seem that the exclusive Routes 7 and 8 from King's Cross/St. Pancras to Nuthampstead and Foulness might be capable of carrying all rail passengers. For the Thurleigh site, the named routes would 9.4

a) With 4 passenger lines through Finchley Road tunnels.

b) With 3 passenger lines through Finchley Road tunnels, and 2 tracks Digswell-Woolmer Green.

c) With 3 passenger lines through Finchley Road tunnels, and 3 tracks Digswell-Woolmer Green.

d) With 4 passenger lines through Finchley Road tunnels, and 3 tracks Digswell-Woolmer Green.

Printed image digitised by the University of Southampton Library Digitisation Unit

not be capable of carrying flows of up to 30,000 passengers an hour, and the maximum appears to be a service of about 16 trains an hour, giving a maximum flow of about 20,000 passengers an hour. To carry greater flows would involve the construction of a new, wholly exclusive link to Thurleigh. For the Cublington site it would be possible to make a near-exclusive route from Marylebone by providing additional tracks between Beaconsfield and Princes Risborough, and the use of Routes 2 and/or 3 along with Route 1 (which could involve the use of two London terminals instead of one) could bring the capacity of existing routes towards 30,000 passengers an hour. A major qualification must be made to the effect that the relatively slow Marylebone-Princes Risborough-Cublington link would probably not attract the high modal split to rail which would give flows of this order. The movement by rail of 30,000 passengers an hour to Cublington could probably only be achieved by a new, wholly exclusive link.

It should be emphasized that 30,000 passengers an hour is a very high forecast. It is to be hoped that, if necessary, effective steps might be taken to spread business and holiday travel peaks.

TERMINAL CAPACITY

9.5

The ultimate capacity of an exclusive rail link to a third London Airport in terms of passengers could be up to 30,000 in one direction. To realise this capacity, the function and design of the terminal at either end is critical.

9.6

At the London end there would appear to be two possible alternatives - a) the in-town check-in and baggage handling terminal and b) the simple rail terminal.

9.7

In order to supply the facilitites for baggage handling in-town check-in and associated office and amenity accommodation, a large area is necessary. Based on the areas required for the Victoria terminal, it would appear that, on a site such as King's Cross, a two way passenger flow of 20,000 an hour would be the practical limit. In terms of area, this would probably mean a 4 storey building over the whole of the area between King's Cross main line station and St. Pancras station and over the main line station itself. Therefore, to realise the full potential of an exclusive route a second terminal might be required.

Printed image digitised by the University of Southampton Library Digitisation Unit

With regard to a simple rail terminal, the area required is smaller. In terms of the passenger flows quoted, one such terminal would be sufficient. The rail terminals today at Waterloo and Liverpool Street receive and dispatch 40,000 to 50,000 commuters an hour at the peak. At both these terminals, the present underground distribution facilities are less than at King's Cross. The basic differences between the airport passenger and the commuter is the amount of baggage carried; this would naturally mean a greater demand for taxi and car parking space. With a simple rail terminal, these needs could be more easily supplied at a site such as King's Cross. The choice of a second in-town terminal should be based, in terms of the exclusive rail link, on a spur rather than an intermediate stop. The inclusion of an intermediate stop would restrict the design of the high capacity passenger coach in that allowance would have to be made for passengers alighting at the intermediate stop and high-capacity type seating could then not be used. Journey times for those passengers continuing to the end terminal would be lengthened. With a second terminal situated on a spur, alternate trains could leave from and arrive at each terminal. 9.8

POSSIBLE SITE OF SECOND LONDON TERMINAL 9.9.

The site for a second terminal in terms of onward distribution should be chosen to provide the facilities that were restricted at the first terminal. If a King's Cross/St. Pancras site were chosen initially the underground system would be adequate but road access could be a problem in the long term. Assuming that all passengers wishing to continue their journey by rail, would go to a King's Cross/St. Pancras terminal this leaves two types of passengers to be catered for, those wishing to go to a West End hotel and those wishing to continue their journey by road.

Taking the latter group first, a second terminal would best be situated near a proposed ring road. Two suitable terminal sites for the four proposed airports are at Brent for Cublington and Thurleigh and in the Tottenham area of the Lea Valley for Nuthampstead and Foulness. The Tottenham site is at the northern end of the new Victoria line.

Returning to the former group, i.e. those wishing to go to West End hotels, two alternative present themselves covering all four proposed airport sites. Taking Cublington and Thurleigh first, the common route for these sites, i.e. the Midland line from St. Pancras, runs parallel and adjacent to the Edgware Road for a length of two miles. The alignment of the Edgware Road is

Printed image digitised by the University of Southampton Library Digitisation Unit

straight and leads to the large open area of Hyde Park. A spur south of Hendon Station could then be constructed following the alignment of the Edgware Road in cut and cover, or a combination of cut and cover and tube construction to a sub-surface rail terminal under Hyde Park.

With regard to Nuthampstead and Foulness both proposed routes are common from South Tottenham inwards and, therefore, a new tube railway commencing at South Tottenham, following generally the new Victoria line could be constructed to a sub-surface rail terminal under Hyde Park.

The cost of the underground railways outlined above for these last two alternatives would in the region of 2 ½ million per mile, as no intermediate station works would be required.

MAINTENANCE

9.10.

Maintenance of an airport rail link carrying the density of traffic forecast beyond 1990 could be a problem. At present maintenance and renewal works are largely carried out during Sunday Possession working. With an airport rail link the peak flows tend to occur over the weekends which might mean possession working mid-week or other special arrangements.

If the link was exclusive and divorced from existing railway routes, maintenance would probably be carried out during mid-week night possessions without much difficulty but renewals could be a problem and, with the high density traffic involved, single line working may not be the answer. Therefore, on all sites an alternative route would be required to meet this contingency and any other emergency that may arise. All four sites could be given an alternative routing reasonably cheaply. In some cases this would be the short term spur to an existing line and, in other cases, a new spur that would also serve the urbanised areas.

If the link was shared by other traffic, mid-week night possessions would be shorter due to the earlier commuter peak; if the route also carried heavy freight at night this might prevent all possibility of mid-week possessions. However, on the credit side, the airport trains could possibly run on the slow lines on Sundays in the absence of commuter trains and thus allow maintenance and renewal of the fast lines to be carried out.

With the increasing speed of passenger trains beyond 100 mph track, maintenance will become more important. Consideration might then be given to a completely new type of track to give better running conditions and reduce maintenance. Capital cost would, no doubt, be higher than that of conventional track but longer rail life could well offset part of this amount and reduced maintenance and sleeper renewal the remainder.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Study 7

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Commission on the Third
London Airport

SURFACE ACCESS

Fourth Memorandum by the
Ministry of Transport
Road Needs of the Four Short-listed Sites

November 1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix B

THIRD LONDON AIRPORT
REPORT UPON
SURFACE ACCESS (ROADS)
(REVISED NOVEMBER 1969)

Ref. 13.032.0
November 1969

HOWARD HUMPHREYS & SONS,
8, Francis Street,
WESTMINSTER, S.W.1.

© Howard Humphreys & Sons 1969

Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT INQUIRY

Fourth Memorandum by the Ministry of Transport
Road Needs of the Four Short-Listed Sites

1. At the request of the Commission's research team we have examined the road needs associated with each of the four short-listed sites for the Third London Airport, and estimated their comparative capital costs. The work has been based on provisional estimates and assignments, supplied by the team, of the surface movement of air passengers and air freight to and from the airport up to 1990. To enable costs to be assessed on a comparable basis for each site various assumptions and conventions have been adopted; these are discussed in Appendix A.

Outside London

2. Outside London, the effect on road planning of airport traffic from any one of the sites can be identified with a fair degree of confidence, and the resultant costs estimated. This can be done by forecasting the dates at which relevant road improvements will be needed first with, and then without an airport. The estimated costs of the improvements are discounted to a common base year and the difference between the 'with' and 'without' airport cases found. The difference then gives a measure of the road capital costs resulting from the selection of the site under investigation. Possible new roads and road improvements to serve each site have been planned and costed on behalf of the Ministry by Messrs. Howard Humphreys & Sons. A copy of their report is at Appendix B. The following table shows, discounted to 1975, the capital costs estimated by them to be associated with each site for two possible modal splits.

Discounted Capital Costs—£m

	% of total passengers travelling by car	
	25%	*65%*
FOULNESS	12	14·4
NUTHAMPSTEAD	7·6	9·7
THURLEIGH	6·2	9·1
CUBLINGTON	3·7	9·4

Some of the above costs arise from the improvements needed to carry traffic between the airport and London and some from the need to link the airport locally with the national road network. For Cublington certain special improvements would probably be needed to cater for airport traffic westward of the site; the costs, which would be small (£0·5m for the 25% by car case and £0·8m for the 65% by car case) are included in the table above. Messrs. Howard Humphreys consider, and we accept, that it will be possible at the other sites to carry airport traffic, other than in the London direction, on the prospective national road network without special improvement. The costs do not include allowance for the structures likely to be necessary at Foulness to carry the road network of the urban development associated with the airport over the motorway to the site. Messrs. Howard Humphreys have estimated the possible discounted cost of these at £1 million for the '25% by car' case and £1·1m for the '65% by car' case.

Printed image digitised by the University of Southampton Library Digitisation Unit

3. The possible routes for new roads between the airport and Ringway 3 shown in Messrs. Howard Humphreys report are the result of a feasibility study. They are not to be taken as indicating definitive alignments. But the study indicates that it should be possible to find routes that would cause little destruction of house property between Ringway 3 and any of the sites. There is therefore unlikely to be any significant difference between the four sites in this respect.

Within London

4. Within London the detailed effects of traffic from the airport cannot be isolated to the same extent. But the traffic assignments provided by the research team indicate that flows attributable to the airport on individual roads within Ringway 3 are likely to remain small up to 1990 compared with the very large flows of other traffic. The Department of Planning and Transportation of the GLC have advised us on the basis of these assignments that, although the choice of site may marginally affect the order in which planned improvements to the network within Ringway 3 are carried out, total costs are unlikely to be affected.

Ringway 3

5. Ringway 3 presents particular difficulty. Both geographically and in terms of traffic conditions it is intermediate between the urban roads within London and the inter-urban roads leading to the airport. A complete strategy for the London outer orbitals is in process of formulation. It already seems likely that the lane capacity which can be provided on some sections of Ringway 3 will be heavily loaded before 1990, and a network comprising both Ringway 3 and the North Orbital will be needed. We cannot yet set out with confidence the details of this further network, nor say when it might be completed. Thus, although the research team's traffic assignments imply significant flows along Ringway 3 for certain of the sites, it is difficult to suggest what capital costs could realistically be attributed to individual sites in respect of these flows.

6. To provide an alternative means of comparison we asked Messrs. Howard Humphreys & Sons to set out for the northern and eastern sides of the Ringway, section by section, traffic flows attributable to an airport at each of the sites. These comparative flows appear on pp 13-14 of Appendix B. Messrs. Howard Humphreys consider that traffic from Cublington could most economically be distributed along the section of the North Orbital north-west of London already planned, rather than at Ringway 3 itself, and the tables also show the relevant flows on this road. It will be seen that the highest flows seem likely to be generated by an airport at Foulness, followed by Cublington, Thurleigh, and Nuthampstead in that order.

Beyond 1990

7. We and the research team consider that the capital costs of providing beyond 1990 for the road traffic associated with each site cannot be forecast with enough confidence to make comparison worthwhile. Messrs. Howard Humphreys have, however, at our request examined the possible physical implications of a continued growth of traffic beyond this date towards the estimated capacity of a four runway airport. It seems clear from their findings that difficulties could arise before the end of the century in dealing with road traffic between any of the sites and London unless a high proportion of airport traffic is carried by means other than the private car. Two or three separate motorways between the airport and London might be necessary, and serious difficulties could arise where these merge with the London network.

Printed image digitised by the University of Southampton Library Digitisation Unit

ROAD PROVISION BETWEEN LONDON AND THE THIRD LONDON AIRPORT
DISCUSSION OF ASSUMPTIONS AND METHODS

NUMBER OF AIR PASSENGERS

1. To meet the timetable of the Commission's inquiry it was necessary to start work before the Commission's research team had completed their work on the forecasting of air traffic. By agreement with the team this, and the parallel studies of rail and town terminal requirements, have been carried out on the basis of provisional estimates made by the team. These envisaged that the airport would open about 1975, and that annual traffic would grow to 9 million passengers by 1980 and 40 million passengers by 1990, continuing to increase rapidly thereafter towards the capacity of the airport. The team also provided analyses in some detail of the surface movement of air passengers to and from the Third London Airport.

MODAL SPLIT

2. Before the road requirements could be calculated it was necessary to forecast the numbers of air passengers who would travel by road, rather than by rail or other mass transit systems. Here again no firm guidance was available and, by agreement with the research team and British Rail (who are responsible for corresponding work on the comparative rail costs associated with the four sites) it was decided to investigate two situations:

1. 25% to road and 75% to rail

2. 65% to road and 35% to rail

In order to complete the study within the limited time available it was also necessary to assume that the modal split would not vary from year to year. In practice, of course, road and rail improvements would tend to be brought into use at different times, and the comparative attractiveness of the two modes of transport, and, hence, the modal split of passengers, would vary somewhat. Taking the period as a whole, however, it was considered that the modal split was likely to lie between the limits examined.

3. It was also assumed that, as all the sites lie some distance away from central London, any mass transit system would be of specialised vehicles on a reserved track, and that there would be no appreciable movement by coach. All the road movement would therefore be by private car. The research team estimated that each air passenger movement would be equivalent to one car movement, and we have used this estimate in our calculations.

PLANNING HORIZON

4. Estimating the differences in costs associated with the four sites involves forecasting future levels of air traffic, and the development of all the airports serving that traffic, and setting these in the context of the changes that will take place both in surface traffic generally and in the road and rail systems available to accommodate that traffic. Forecasts of this kind, and estimates of the associated cost, become increasingly unreliable as the period

Printed image digitised by the University of Southampton Library Digitisation Unit

under consideration moves farther into the future; the differences between costs for different sites become unreliable even more quickly. We and the research team consider that differences between the capital costs associated with the four sites can not be forecast with confidence beyond 1990.

ROAD COSTS ATTRIBUTABLE TO THE AIRPORT

5. The basic method of finding the road costs attributable to each site has been, as described in the covering memorandum: the dates that road improvements would become necessary in each of the relevant corridors around London have been estimated both with and without the airport, the improvements have been costed, the costs discounted at 10% to a common base year (1975) and the differences between the 'with airport' and 'without airport' cases found. To improve the comparison between sites, however, we have introduced a modification to this procedure.

6. In some cases a road improvement in the 'with airport' case is needed before 1990, whereas in the 'without airport' case the need for the improvement is deferred beyond 1990. The straightforward discounting of all costs arising up to 1990 would have the effect of saddling the airport with the entire cost of the improvement, not, as should be the case, the extra cost involved in carrying it out earlier than would otherwise have been necessary. In such an instance the cost of the improvement has been apportioned; there has been charged to the airport only that proportion of the total cost of the improvement which the extra traffic between the date of construction and 1990 bears to the extra traffic capacity provided. Notionally this is equivalent to providing only enough extra capacity to carry the traffic up to 1990, although this notional provision might be physically unrealistic. This correction minimises any error which might otherwise arise from the use of 1990 as a planning horizon.

7. In some cases, a road is required before 1990 in the 'with airport' case but will never be needed in the 'without airport' case (for example, a link road between the airport itself and the national road network). The costs of such roads have been wholly charged to the airport.

FORECASTS OF GENERAL SURFACE TRAFFIC

8. As a first step towards the forecasting of general surface traffic in each of the relevant corridors we have had to make assumptions about the size and nature of the populations generating this traffic. We are aware of the suggestions by the Commission's planning consultants that the Third London Airport is likely to affect to a different extent for each site the numbers of people living in its area, and that the population associated with servicing the airport are likely to generate less than average traffic in the London corridor. We have considered carefully whether these effects should be allowed for in the calculations, and have concluded that any attempt to do so could only result in a risk of bias.

9. Our conclusion stems from two fundamental assumptions that appear to be justified on general grounds. Firstly, we assume that the numbers of the total population in the S.E. will not be affected by the decision to site the Airport at one of the four sites, as opposed to any of the remaining three. As a consequence the decision to select one of the four listed sites will only affect, (and then only marginally) the distribution of population and of population characteristics over the South East. Our second fundamental assumption is that marginal differences in these distributions will not significantly affect total regional transport

Printed image digitised by the University of Southampton Library Digitisation Unit

costs. This assumption seems inherently reasonable; if the consequence of siting the Airport at Foulness would be, as the planning consultants suggest, an increase of 100,000 in the population in that corridor there would certainly be some associated increase in general surface traffic. But, somewhere else in the Region (and possibly, spread over a number of places), there would be 100,000 less people, and, consequently, less traffic in those other places. Similarly, if the airport-associated population do generate less than average traffic in the London corridor (and the evidence for this is in any case somewhat inconclusive, and there is none that would enable us to quantify the effect with confidence) this will be counter balanced by people in the areas of the three rejected sites making greater demands because they are not associated with an airport. We are encouraged in our second assumption by indications from work in other fields that total regional transport needs are not sensitive to movement of population of the orders involved here.

10. We have also concluded, following the line of reasoning above, that we could not take full account of the suggested differences in population characteristics in a study of each site and its associated London corridor in isolation; to do so would be to ignore the important effects elsewhere in the Region. It would therefore be necessary to mount a full regional study for each site, and time does not allow this. Nor does it seem likely that the considerable expenditure of resources needed by such a study would produce commensurate results.

11. For these reasons, therefore, we decided that Messrs. Howard Humphreys and Sons should carry out their detailed analysis of each site on the basis that the population in the relevant corridor would, both in the 'with airport' and 'without airport' cases, rise to the level suggested by the planning consultants for the 'with airport' case. We also asked them to assume that this population generated the same amount of traffic in the London corridor in each case. We are satisfied that, although these assumptions may result in slightly over-stating some of the costs in each corridor considered in isolation, they will lead to a more reliable comparison between the costs associated with each site.

DESIGN YEAR AND TIMING OF ROAD IMPROVEMENTS

12. It has been assumed that the new roads to serve airport traffic would initially be provided as dual two-lane carriageways with provision for subsequent widening. It is the Ministry's present practice, when planning a new or improved road, to provide capacity adequate to deal with the traffic growth expected during a period of about fifteen years. But it would be impossible to assess with confidence the capacities likely to be required on this basis for all the roads considered in the study as the design year for some of them would be well beyond 1990. We consider in the light of the analysis by Messrs. Howard Humphreys reported on pp 7 and 8 of Appendix B that their approach gives a reasonable and fair basis for assessing the costs attributable to individual sites.

13. It has also been assumed that road improvements will be timed to prevent major inter-urban roads becoming loaded to a level beyond twice their design capacity. Observations and experience of traffic conditions on heavily-loaded dual carriageway roads appear to show that delays to traffic attempting to enter at junctions are becoming high at this level of flow, that accident rates are increasing and that substantial suppression of traffic or diversion to lower quality routes is likely to occur. We consider that use of this criterion to assess the likely date for provision of roads serving the airport gives a suitable basis of comparison between sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

14. Road improvements that could be of relevance to one or other of the sites are already being planned. The plans are at differing stages of development and varying degrees of uncertainty attach to their likely dates of construction. Messrs. Howard Humphreys have assessed the likely dates of construction of such schemes, as they have the dates of the others needed to serve the airport, by using the 100% overload criterion. Some road improvements have for this reason been assumed to take place at dates slightly different from those tentatively planned. We consider however, that this approach gives the fairest comparison between sites.

SPEED/FLOW RELATIONSHIP

15. To calculate user costs assumptions are necessary about the speeds of flow on roads to the airport. Recent observations by the Road Research Laboratory have cast doubt on earlier assumptions that increases in flows on dual carriageway roads are likely to lead to substantial reductions in speed. We therefore consider that speeds on such roads may be taken for the purpose of user-cost calculations to be constant below the 100% overload level. This assumption might appear to imply that economic returns on improvements carried out to relieve dual carriageway roads of traffic in excess of 100% overload would be low. The total economic penalties associated with such overloads are, however, likely to be substantial for the reasons mentioned in para 13 above. Work is currently in hand to enable a full economic analysis incorporating these effects to be made.

PRICE LEVELS AND DISCOUNTING

16. All costs have been estimated at 1968 price levels, and discounted to 1975 at 10% p.a. It has been assumed that the actual cost of major road works carried out within the period up to 1990 will be spread over a period of two years and for discounting purposes the expenditure is assumed to fall in the middle of this period—i.e. one year before the improvement is brought into use.

HIGHWAY ASSUMPTIONS

17. The assumptions which have been made about future road schemes were solely for the purpose of this comparative study. Decisions on individual schemes will be reached only after the appropriate statutory procedures have been completed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Third London Airport
Report Upon
Surface Access (Roads)

CONTENTS

	Page
Introduction	
Our Brief	1
The Basis for the Study	1
Consideration of particular aspects of the Study	3
Road links to London — Case I	3
Case II	3
Capital Costs Attributable to the Airport	3
Cross Country Routes	4
Ringway 3 and Airport Interchanges	4
Airport Traffic on Ringway 3	4
Airport Access	4
Calculation of Capital and User Costs	5
Calculation of Air Passenger and Airport Freight Traffic Flows	5
Air Passenger Growth	5
Forecasts of Traffic Flows other than Air Passengers and Airport Freight Flows	6
Road Capacities	7
Balancing Flows	7
Staging of Construction of Airport Motorways	7
Capital Costs for the Study Period	8
Haul Roads	9
Summary of Results and Conclusions	10
Summary of Results	10
Conclusions	14
Appendix 1 — Road User Costs	16
Appendix 2 — Capital Costs—Limits of Capital Costing	17
Particular Study assuming the Airport to be located at Foulness	F1—F15
Particular Study assuming the Airport to be located at Nuthampstead	N1—N17
Particular Study assuming the Airport to be located at Thurleigh	T1—T19
Particular Study assuming the Airport to be located at Cublington	C1—C18

Printed image digitised by the University of Southampton Library Digitisation Unit

HOWARD HUMPHREYS & SONS
CONSULTING ENGINEERS.

PARTNERS
J. W. LOVATT, F.I.C.E., M.I.W.E., F.I.P.H.E., M.INST.W.P.C., M.CONS.E.
J. J. COLLINS, M.C., T.D., F.I.C.E., M.CONS.E.
R. B. JOHNSON, M.C., F.I.C.E., M.E.I.C., M.CONS.E.
J. R. MOTTRAM, F.I.C.E., M.INST.H.E., M.CONS.E.
W. IMRIE, F.I.C.E., M.I.W.E., M.I.P.H.E., M.CONS.E.
F. N. GRIFFITHS, F.I.C.E., M.I.W.E., M.CONS.E.
W. H. MEREDITH, B.SC., F.I.C.E., M.INST.W.P.C., M.CONS.E.

CONSULTANTS
J. D. WALL, B.SC., F.I.C.E., F.I.P.H.E., M.CONS.E.
D. W. COLEMAN, B.SC., F.I.C.E., M.I.W.E., M.CONS.E.
H. H. DIXON, M.A., F.I.C.E., F.ASCE., M.I.W.E., F.I.P.H.E., M.INST.H.E., M.CONS.E.

ASSOCIATES
P. NORMAN, M.I.C.E., A.M.I.STRUCT.E., A.M.I.W.E.
T. L. STILES, F.I.C.E., M.I.P.H.E., A.M.INST.W.P.C.
L. A. WINCE, M.C., F.I.C.E., M.ASCE., M.I.W.E.
C. DUPENOIS, B.SC., F.I.C.E., M.I.STRUCT.E.
M. J. BEASLEY, M.A., F.I.C.E., A.M.I.W.E., M.I.P.H.E., M.INST.W.P.C.
J. L. CHARLTON, C.ENG., A.M.I.MUN.E., M.I.P.H.E.
R. S. HARRIS, M.I.C.E.
A. D. MASKELL, B.SC.(ENG), M.I.C.E., M.I.P.H.E., A.M.INST.W.P.C.
J. D. WILLIAMS, M.ENG., M.I.C.E., M.ASCE., M.I.W.E.
P. I. HELMORE, M.I.C.E., M.I.P.H.E., A.M.INST.W.P.C.
(RESIDENT IN LIBYA)

SECRETARY
Miss D. M. PASSINGHAM

8, FRANCIS STREET,
WESTMINSTER, S.W.1.

TELEPHONE: 01-834 5875.
TELEGRAMS: CUTANEAL, LONDON SW1.

YOUR REF

OUR REF 13.032.0/RSH

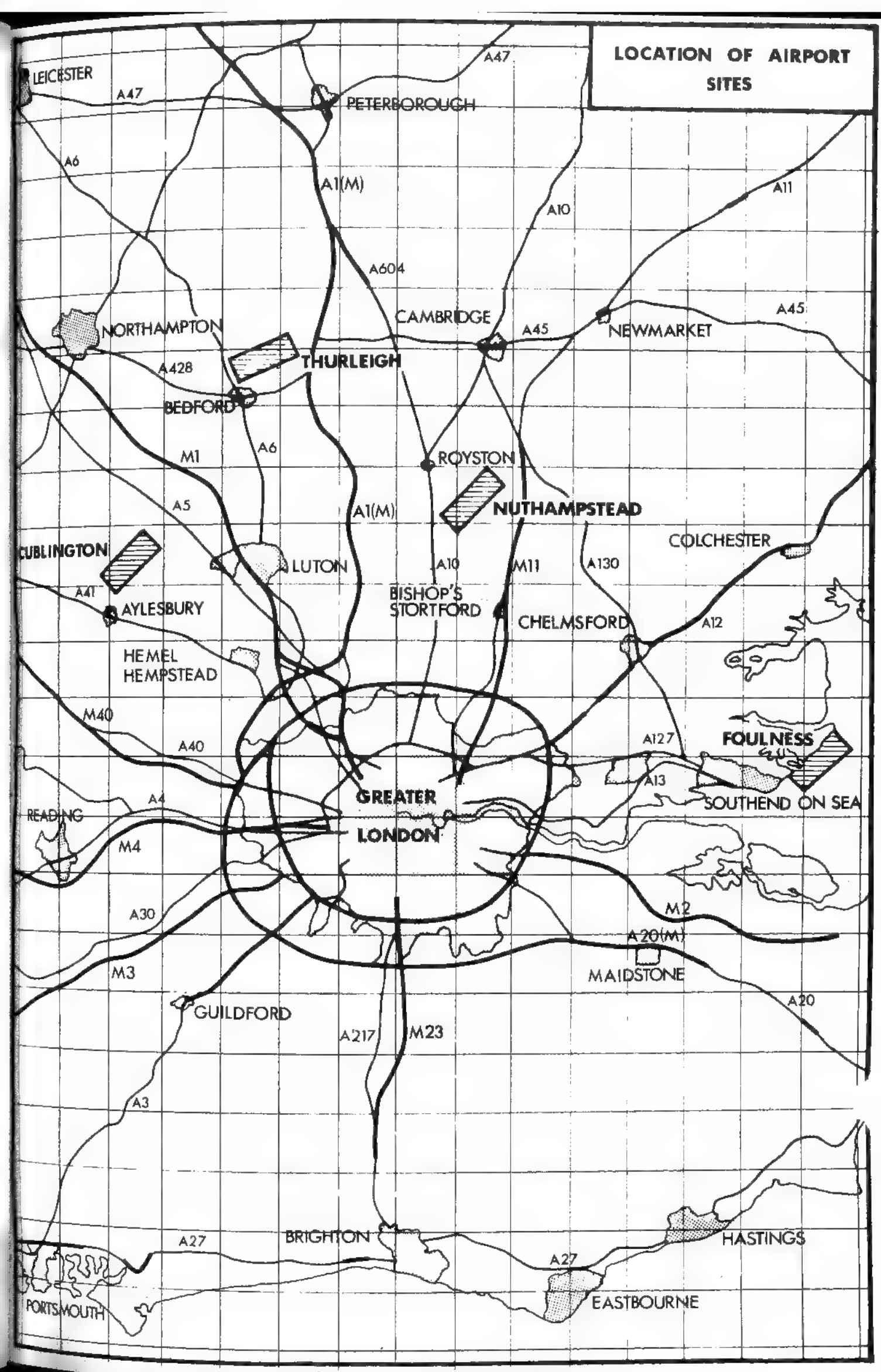
November 1969

THIRD LONDON AIRPORT

SURFACE ACCESS (ROADS)

We refer to the instructions contained in the Ministry of Transport letter to us dated 25th April 1969 reference GPH 20/2/07 and are now pleased to report upon the road access problems associated with the construction of a Third London Airport at each of the four sites selected for detailed comparison.

Printed image digitised by the University of Southampton Library Digitisation Unit



Digitised image digitised by the University of Southampton Library Digitisation Unit

For convenience, these two alternative cases are referred to throughout the report as '25% Private' and '65% Private'.

2. We have been asked by the Commission's Research Team to assume that one air passenger movement by private transport represents one passenger car unit of traffic flow.

3. For each of the four airport sites, two assignments of air passenger flows have been provided by the Commission's Research Team. Each gives air passenger loadings on main roads in terms of the flow in a 16-day period in August 1990.

4. We have been asked to calculate costs at 1968 values, and to discount them to a base year of 1975, using a discount rate of 10% per annum. It has been assumed that any major scheme will take about two years to construct and on this basis we have discounted costs back to 1975 from a date one year prior to the year when the scheme comes into operation.

5. Particulars of other data used for our study are as follows:—

(i) 1965 Ministry of Transport General Traffic Census.

(ii) Ministry of Transport Traffic Predictions for Rural Roads.

(iii) The Preliminary Report on Urbanisation Studies, prepared by the Commission's Planning Consultants.

(iv) Details of future road improvements and new planned routes supplied by Ministry of Transport, together with various reports listed below:

Hitchin, Letchworth, Baldock Transportation Study
Bedford, Milton Keynes, Northampton and Wellingborough Sub-Regional Study
London-Aylesbury Trunk Road A41, Watford to Tring, Preliminary Report
Hertford Ware Hoddesdon Transportation Study
Hertfordshire, East-West Route, Interim Report
Milton Keynes, Interim Report
Summary of Report on Radial Route 7
North Orbital Road Feasibility Study.

Not all of the improvements to the road network that we have considered have been approved, even in principle, by the Ministry of Transport.

(v) Local and particular traffic information supplied by the Ministry of Transport, Divisional Road Engineers and County Authorities.

(vi) Air Passenger traffic assignments supplied by the Commission's Research Group.

(vii) Road User Cost data supplied by the Commission's Research Group.

6. Running speeds of 63 m.p.h. for rural motorways and 56 m.p.h. for other dual-carriageway rural roads have been used; the latter are assumed to have grade-separated junctions.

Printed image digitised by the University of Southampton Library Digitisation Unit

CONSIDERATION OF PARTICULAR ASPECTS OF THE STUDY

Road Links to London

In general terms the Commission's Research Team has assigned 80% of the airport traffic to the London Corridor.

In order to assess the most economic way of dealing with this traffic we have compared for each of the four sites, the two main methods by which the necessary road capacity can be provided.

These are as follows:—

Case I The provision of a Motorway for the exclusive use of Air Passengers and Airport Freight (the opening of which to coincide with the opening of the Airport)

Reference to the plan showing the location of the four alternative airport sites, shows that each site is situated in a corridor of existing roads radiating from the Greater London Area.

This case assumes that the road network in each of these corridors is used in keeping pace with the demands of non-airport traffic, including the additional traffic arising from the airport urbanisation, and that a motorway will be provided for the exclusive use of air passengers and airport freight.

Case II Making maximum use of the existing Road Network (with improvements already planned) for all traffic including air passengers and airport freight in the early days of the airport development and later constructing a new Motorway when traffic volumes increase sufficiently to warrant the extra road capacity.

For this case, it has been necessary for us, to do our own forecasting of traffic growth in the corridors to the various airport sites, and these have been based upon the up-grading of the 1965 Traffic Census figures and the forecasts of urban growth calculated by the Commission's Planning Consultants. The traffic forecasts for each site are detailed in the particular site studies which follow later in this report.

Capital Costs Attributable to the Airport

Even without the airport, some capital costs will be incurred, during the study period, in providing new and improved roads within each of the four corridors being examined. In order, therefore, to assess the costs of roadworks properly attributable to the airport for Case II it has been necessary to examine these 'without' airport costs and deduct them from the 'with' airport costs.

The 'without' airport situation is not important when considering Case I, since for this case a new motorway is provided for air passenger and airport freight traffic, and the existing road network is not affected by the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross Country Routes

The 20% of airport traffic not assigned to the London Corridor will disperse to the north, east and west, and the indications are it could be absorbed on to the existing road network and ultimately on to the Strategy Routes referred to in the Ministry of Transport publication 'Roads for the Future', and on to other planned routes. In the case of Cublington, however, an improved east/west route is required and a proportion of the capital costs of this improvement has been attributed to the airport.

For the purposes of estimating the varying requirements of each airport site, we have prepared outline plans showing links between the airport and existing or planned main roads. These plans also show, where appropriate, possible links for relevant Strategy Routes. Capital costs in respect of these new links have been calculated and attributed to the airport, but no costs have been included for the Strategy Routes.

Ringway 3 and Airport Interchanges

Using the limited information available we have prepared outline interchange designs to enable estimates of costs to be calculated.

These designs however are not put forward as final plans.

The capital and user costs included in this study have been calculated between the particular limits defined in Appendix 2.

Airport Traffic on Ringway 3

We have assessed the effects of airport traffic on Ringway 3, but in the limited time available we have been unable to do more than forecast the volumes of airport traffic likely to use various sections of this road in the period up to 1990. These volumes are compared in Tables R6, R7 and R8 for all four sites, at three different dates.

We have made no attempt to cost the provision of extra road capacity required on Ringway 3, except for the purpose of comparing Case I with Case II for each site. For these comparisons it has been necessary to take into account the fact that the proposed new motorways together with the existing major trunk roads in each corridor, intersect Ringway 3 at different points. Where a section of Ringway 3 between these points requires an increase in capacity due to airport traffic, an estimate of the cost of widening has been included in the comparisons.

Airport Access

We understand that end or near end access to the airport is favoured by the British Airports Authority and our designs allow for this. At Cublington and Thurleigh connections to the centre of the airport might shorten journey distances sufficiently to show worthwhile savings in user costs and Drawings Nos C7 and T6 show possible layouts of central access to these sites. The maximum theoretical benefit would be given by routing roads direct to the centre of the terminal building complex, but this would not be possible without major effects on the airport design.

Printed image digitised by the University of Southampton Library Digitisation Unit

Because this particular aspect of the study could have some bearing on the choice of airport sites, we feel it necessary to set out in some detail the points we have accepted as controlling the design of routes which reduce journey distances to the airport.

These are as follows:—

(a) We have assumed that any routes proposed by us must fit with airport layout designs as put forward by the Commission, and must permit traffic distribution within the airport to operate broadly as envisaged within these airport designs.

(b) Although our brief calls for an examination of road access problems only up to the year 1990, we have considered that any access routes and major intersections within the airport must be capable of being further developed to deal with traffic growth beyond 1990, and up to the stage when the fourth runway is operational.

We have, therefore, provided an ultimate design for access to the airport, which can be constructed in stages as the airport develops.

These controlling factors appear to be most satisfactorily met by adopting end access, but details of savings in user costs which might result from the adoption of centre access at Cublington and Thurleigh are given in the particular site studies. It should be noted, however, that with central access, extra capital costs will be incurred which may offset any saving in user costs.

There would be no savings in cost by adopting centre access to sites at Foulness or Nuthampstead.

Calculation of Capital and User Costs

We must stress that the limited calculation of user costs prepared by us are for the purpose of comparing Case I with Case II for each site.

User costs have been calculated using the values set out in Appendix I.

Total user costs for air passenger and airport freight traffic for complete journeys will be calculated by the Commission's Research Team.

Calculation of Air Passenger and Airport Freight Traffic Flows

It has been necessary to bring all data relating to road traffic flows to a common base, so that combinations of the various traffic elements can be tested against road capacity, particularly when considering cases for roads which carry air passenger flows together with other traffic not connected with the airport.

The common base which has been adopted is the 16-hour August daily flow in passenger car units.

Air Passenger Growth

The following table has been prepared from information given to us by the Commission's Research Team. It shows the forecast build up of air passenger traffic requiring surface transport to and from the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Year	Total Air Passengers per annum at T.L.A. in millions	Percentage of 1990
1980	9	22·5
1985	23	57·5
1990	40	100·0
2000	More than 100	>250·0

For each airport site we have examined the road network links individually for the two assignments provided by the Commission Research Team and estimated the air passenger flows for each link for the 25% and 65% overall modal split to private transport. This individual examination has been necessary because, as assumptions regarding relative road and rail journey speeds and times are modified, the flows do not change uniformly on each road link. The flows on some links, which carry a large proportion of air passengers who have little opportunity to use any rail link that is likely to be provided, vary little as the overall modal split changes. The flows on other links, carrying air passengers who have a real choice between road and rail, change more sharply than does the overall modal split.

The Commission's Research Team have estimated that the airport freight flows will amount to 6000 p.c.u's per 16 hour day for August 1990; of this, 4000 p.c.u's are expected to be in the London Corridor. In the absence of forecasts of growth of airport freight, we have assumed that its growth rate will be similar to that of air passenger traffic.

Forecasts of Traffic Flows other than Air Passenger and Airport Freight Flows

In order to consider cases where air passenger and freight flows are carried on existing or already planned roads, or cases where new routes are introduced but not used exclusively by air passenger and freight flows, it has been necessary to make estimates of the total traffic flows likely to be using such routes.

Estimates of flows other than air passenger and airport freight have been prepared on the following basis.

The main source of information has been the Ministry of Transport General Traffic Census for 1965, which gives August 16-hour daily flows in p.c.u's. These 1965 flows have been up-dated, using the methods in the Advisory Manual on Traffic Prediction for Rural Roads.

A further consideration required is that of population growth. It can be shown that the Advisory Manual traffic growth calculations contain an assumption of overall growth in population of 30% between 1965 and 2000.

However, the populations of the areas in the vicinity of the airport sites, (containing the development necessary to support the airport) will grow by considerably more than 30% between 1965 and 2000. For the purposes of this study we have assumed population growth based upon the Preliminary Reports to the Commission on Urbanisation Studies.

In order to calculate the additional traffic flows in the London Corridor, we have assumed that an increase in population will generate an increase in traffic in the same proportion. The

Printed image digitised by the University of Southampton Library Digitisation Unit

Ministry of Transport have asked us to assume, in order to provide the fairest comparison between sites, that the population in the area around the airport is the same for both the 'with airport' and 'without airport' cases.

We are satisfied that these assumptions, while not necessarily providing the most realistic forecasts of the actual future traffic flows in each corridor, do provide the best basis for the comparisons of capital costs for road facilities between the four airport sites.

Road Capacities

We have been advised by the Ministry of Transport to use Rural Design Standards when new routes are envisaged and to regard 100% overload on design flows in August as representing the full capacity of any route.

For dual 2, 3 or 4-lane carriageways, design flows are 33,000 50,000 or 66,000 p.c.u's per 16-hour day and 100% overload capacities are 66,000, 100,000 or 132,000 p.c.u's per 16-hour day (p.c.u. represents passenger car unit).

Balancing Flows

For the purposes of this study we have distributed traffic flows on to the major roads in the London corridor in direct proportion to the individual capacity of each road. We realise that this will provide the maximum road usage and infers that all the roads will attain 100% overload capacity simultaneously, but we consider that without more detailed assignments being available, this assumption will provide the most realistic comparison to be made between the four sites.

Staging of Construction of Airport Motorways

The decisions to be made regarding the standards to be provided, in terms of numbers of lanes, for motorways which are to be used by air passengers and airport freight are influenced by the high rate of growth that is forecast for this traffic. Also, the high discount rate (10% per annum) used for this study results in substantial savings being shown if initial capital expenditure is kept to a minimum by matching the capacity provided by a new road with the forecast traffic flows.

For airport motorways, the minimum initial provision that can be made is a dual 2-laneroad with near-side emergency hard shoulders. The maximum provision that we envisage is a dual 4-lane road, for which we feel both near-side and off-side hard shoulders should be provided.

We have investigated, for the London Corridor routes to the four sites, the costs of construction of an initial dual 2-lane road both with and without provision for easy conversion later to a dual 4-lane road. In the case where this provision is made we have assumed that all earthworks and structures for the initial dual 2-lane road are those ultimately required for the dual 4-lane road. We have then considered the cost of the later provision of additional capacity, either by conversion from dual 2-lane to dual 4-lane or by building a separate 2-lane road. The following table of relative costs results:—

Printed image digitised by the University of Southampton Library Digitisation Unit

Comparative Costs—Two Dual 2-lane Road and Dual 2-lane Road converted to a Dual 4-lane Road (Cost of Dual 2-lane Road, without provision for widening = 100)

Number of years until conversion or duplication	(a) Initial cost of dual 2-lane Road PLUS Discounted cost of additional dual 2-lane Road	(b) Initial cost of dual 2-lane Road (with provision for later widening) PLUS Discounted cost of conversion to dual 4-lane Road	$\frac{b \times 100}{a}$
0	100 + 100 = 200	124 + 30 = 154	77
8	100 + 47 = 147	124 + 14 = 138	94
10	100 + 39 = 139	124 + 12 = 136	98
12	100 + 32 = 132	124 + 10 = 134	102
14	100 + 26 = 126	124 + 8 = 132	105
16	100 + 22 = 122	124 + 7 = 131	107
18	100 + 18 = 118	124 + 5 = 129	109
20	100 + 15 = 115	124 + 4 = 128	111

It can be seen from the above table that, if the period of time between initial construction of the dual 2-lane road and the conversion to dual 4-lane, or duplication, is less than about eleven years, it is cheaper to carry out the initial preparatory work and convert later to dual 4-lane than to provide an additional dual 2-lane road later. If the period of time is twenty years, the scheme involving later conversion is about 11% more expensive than the scheme involving later duplication.

Because of the high rate of growth of air passenger and freight flow, the period of time is short between initial construction of an airport motorway and the date when, at 100% overload, conversion or duplication is required. The scheme involving initial construction as dual 2-lane with later conversion to dual 4-lane is the one we recommend generally. At worst, a very small penalty in terms of total capital costs is involved and this is outweighed by the disturbance that would be created in locating a second route. There is no merit in going through an intermediate stage of widening to dual 3-lane before widening to dual 4-lane.

Capital Costs for the Study Period

We have referred earlier to the principles of costing which involve calculation of the 'with airport' road construction costs, discounted back from the year of construction to the base year 1975, and calculation of the 'without airport' costs, discounted on the same basis. A particular difficulty arises where capital costs for road construction are incurred within the study period for the 'with airport' situation, whereas the same improvement is not required in the 'without airport' situation until after the study period.

After discussion with the Ministry of Transport it was agreed that, when this situation does arise, a notional assessment of the costs to be allocated to the 'with airport' situation should be made on the following basis:—

(a) Estimate the capital cost of the improvement and the year when it is required for the 'with airport' situation.

(b) Estimate the additional capacity provided by the improvement, when taken up to 100% overload.

(c) Estimate the increase in the total traffic flow between the year of introduction of the improvement and the year 1990, for the 'with airport' situation.

Printed image digitised by the University of Southampton Library Digitisation Unit

The capital cost to be allocated to the 'with airport' situation is then given by multiplying the capital cost in (a) by the ratio of the increase in flow in (c) to the increase in capacity in (b). The cost thus obtained is then discounted back to the base year 1975.

Haul Roads

Our estimates of capital costs include for the provision of such haul roads as we consider necessary for the construction of new motorways only.

We have made no estimate of the extent or cost of haul roads required for the construction of the airport and its associated urban development.

It should also be noted that links to the airport, from the existing road networks, have been programmed and costed in relation to the dates upon which they will be required for use by air passenger and airport freight traffic. No allowance has been made for costs which will be entailed if these links are constructed earlier in order to provide access to the airport sites for constructional traffic.

Printed image digitised by the University of Southampton Library Digitisation Unit

SUMMARY OF RESULTS AND CONCLUSIONS

Summary of Results

Reference to the results and conclusions contained at the end of each site study shows that we have examined road access requirements for the 'with' and 'without' airport situations, and have considered alternative methods of providing access to the airport, Case I and Case II.

In broad terms Case I envisages a new motorway being constructed exclusively for air passenger and airport freight traffic from the beginning of the airport's existence and assumes that the existing road network would continue to serve the needs of all other traffic.

Case II, recognises that road improvements are planned within the four London Corridors and that some of these will be completed before the airport construction commences. It, therefore, takes into account that spare road capacity will be available in these corridors for use by air passengers and airport freight during the earlier years of the airport. The amount of spare capacity varies with each site under consideration and this becomes the controlling factor affecting the dates when new motorways within the corridors would be required.

The Case II method of providing road access gives the minimum combined capital and user costs for air passenger and airport freight traffic. The forecasts of the road access requirements, on the basis of Case II, are shown in the following tables together with the details of capital costs attributable to the airport, for each site.

Table R1

FOULNESS—Forecast of Road Access Requirements in the London Corridor

Existing or improved roads in operation before the year 1975	Forecast improvements required to the road network for the period 1975 to 1990	Without Airport Year of Improvement	With Airport—Year of Improvement	
			25% Private	65% Private
A13—dual 2 lane A127—dual 3 lane	A13:— (a) Upgraded to dual 3 lane	1977	1977	1977
	New Motorway:— (a) Constructed as dual 2 lane from Airport to Ringway 3	1981*	1980	1979
	(b) Upgraded to dual 4 lane for section A130 to Ringway 3	1989	1987	1985
	(c) Upgraded to dual 4 lane for section Airport to A130	Not required	beyond 1990	1989

* The section of the motorway between the Airport and the A130 is not required for the 'Without' airport situation.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table R2

NUTHAMPSTEAD—Forecast of Road Access Requirements in the London Corridor

Existing or improved roads in operation before the year 1975	Forecast improvements required to the road network for the period 1975 to 1990	Without Airport Year of Improvement	With Airport—Year of Improvement	
			25% Private	65% Private
A10—dual 2 lane A11—single carriageway M11—dual 3 lane	A10:— (a) Upgraded to dual 3 lane for section A414 to Ringway 3	1989	1987	1984
	New Motorway:— (a) Constructed as dual 2 lane from Airport to Ringway 3	beyond 1990	beyond 1990	1988

Table R3

THURLEIGH—Forecast of Road Access Requirements in the London Corridor

Existing or improved roads in operation before the year 1975	Forecast improvements required to the road network for the period 1975 to 1990	Without Airport Year of Improvement	With Airport—Year of Improvement	
			25% Private	65% Private
A6—single carriageway A1—dual 3 lane from Ringway 3 to Baldock by-pass —dual 2 lane from Baldock by-pass to beyond airport site	New Motorway:— (a) Constructed as dual 2 lane from Airport to Ringway 3	1981	1980	1979
	(b) Upgraded to dual 4 lane for section A505 to Ringway 3	beyond 1990	1989	1986
	(c) Upgraded to dual 4 lane for section Airport to A505	beyond 1990	beyond 1990	1990

Printed image digitised by the University of Southampton Library Digitisation Unit

Table R4

CUBLINGTON—Forecast of Road Access Requirements in the London Corridor

Existing or improved roads in operation before the year 1975	Forecast improvements required to the road network for the period 1975 to 1990	Without Airport Year of Improvement	With Airport—Year of Improvement	
			25% Private	65% Private
A41—single carriage way New A41(T)—dual 2 lane from Aylesbury by-pass to North Orbital	New A41(T):— (a) Upgraded to dual 3 lane for section A416 to North Orbital	1982	1980	1978
	New Motorway:— (a) Constructed as dual 2 lane from Airport to North Orbital	beyond 1990	beyond 1990	1984

The total discounted capital costs involved in providing surface access to the four alternative airport sites are shown in Table R5 below.

These costs apply only to the limits of this study as listed in Appendix 2 for each site.

Table R5

Discounted Capital Costs—£m

Airport Site	25% Private	65% Private
*Foulness	12·0	14·4
Nuthampstead	7·6	9·7
Thurleigh	6·2	9·1
Cublington	3·7	9·4

*An additional capital cost of £1·5 m should be allocated to Foulness in respect of the structures necessary to take the new motorway through the proposed urban development road network. These structures have been costed to span the ultimate dual 4 lane motorway. The discounted costs are:—

25% Private—£1·0 m
65% Private—£1·1 m

The estimates of Air Passenger traffic flows on Ringway 3 for the 65% Private modal split, are shown in Tables R6, R7 and R8 for the years 1980, 1985 and 1990 respectively, for each of the alternative airport sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table R6

Estimates of Air Passenger traffic flows for the year 1980

Section on Ringway 3	Traffic Flows in p.c.u's per 16 hour August day			
	Foulness	Nuthampstead	Thurleigh	Cublington
A2-A13	4,000	–	–	–
A13-A127	5,000	1,000	–	–
A127-RR7	8,000	1,000	1,000	1,000
RR7-M11	4,000	2,000	1,000	1,000
M11-A10	4,000	–	1,000	1,000
A10-A1	4,000	4,000	2,000	2,000
A1-M1	1,000	2,000	5,000	2,000
M1-A40	–	2,000	3,000	–
Section on the North Orbital:–				
A41 Junction via A41/M1 to Ringway 3	–	–	–	6,000
A41 to M40	–	–	–	5,000

Table R7

Estimates of Air Passenger traffic flows for the year 1985

Section on Ringway 3	Traffic Flows in p.c.u's per 16 hour August day			
	Foulness	Nuthampstead	Thurleigh	Cublington
A2-A13	11,000	1,000	1,000	1,000
A13-A127	13,000	2,000	1,000	1,000
A127-RR7	20,000	3,000	2,000	2,000
RR7-M11	11,000	5,000	2,000	2,000
M11-A10	10,000	–	3,000	3,000
A10-A1	10,000	10,000	4,000	5,000
A1-M1	3,000	5,000	12,000	5,000
M1-A40	1,000	4,000	9,000	–
Section on the North Orbital:–				
New Motorway Junction via A41/M1 to Ringway 3	–	–	–	14,000
New Motorway to M40	–	–	–	12,000

Printed image digitised by the University of Southampton Library Digitisation Unit

Table R8

Estimates of Air Passenger traffic flows for the year 1990

Section on Ringway 3	Traffic Flows in p.c.u's per 16 hour August day			
	Foulness	Nuthampstead	Thurleigh	Cublington
A2-A13	19,000	2,000	1,000	1,000
A13-A127	22,000	4,000	2,000	2,000
A127-RR7	34,000	6,000	3,000	3,000
RR7-M11	19,000	8,000	4,000	4,000
M11-A10	18,000	—	6,000	6,000
A10-A1	18,000	17,000	7,000	8,000
A1-M1	6,000	9,000	20,000	8,000
M1-A40	2,000	7,000	15,000	—
Section on the North Orbital:—				
New Motorway Junction via A41/M1 to Ringway 3	—	—	—	24,000
New Motorway Junction to M40	—	—	—	21,000

Conclusions

From the results of our study of the road access problems associated with the four alternative airport sites we conclude that, in every instance, the improved existing road networks in the London Corridors will have sufficient spare capacity to carry all the air passenger and airport freight traffic in the early years of the airport, without substantially affecting the other traffic flows on the road systems. Since our results show that it is clearly more economic to use the available spare capacity and to delay the construction of new motorways until this capacity is exhausted, we have no hesitation in recommending the implementation of our Case II schemes for any site selected.

It must be noted, however, that the predicted rate of increase in air passenger traffic, particularly during the period 1990 to 2000, is exceptionally rapid and the timely planning and construction of new motorways is essential if severe traffic problems are to be avoided.

Some advantage could apply to Nuthampstead and Cublington sites in that the improved existing road networks are capable of providing capacity for all non-airport traffic up to well beyond the year 1990. Thus the new motorway, when constructed, could, if necessary, function exclusively for airport traffic. Whereas at Foulness and Thurleigh non-airport traffic will require some of the new motorway capacity before the year 1990.

Based upon the Commission's traffic assignments, there is a clear need to ensure that the 'Strategy' and other improved east-west routes are available for use by airport traffic wishing to travel cross country or to the north in the 1980's. The tentative programme for 'Strategy' routes, indicated by the Ministry of Transport independently of any considerations of the airport, suggests that these routes will be in operation at the time when the cross country airport traffic reaches a level likely to cause difficulties on the existing road network.

Printed image digitised by the University of Southampton Library Digitisation Unit

Although we have examined the road capacity requirements for the period 1990-2000, we are unable to put forward our results with confidence, since detailed forecasts beyond the year 1990 cannot be accurately assessed.

In consequence, therefore, we feel that we should delay drawing conclusions at this stage but make the following observations based upon the provisional forecasts we have made:—

(1) It would not appear feasible to provide more than one new dual 4-lane motorway to sites at Nuthampstead, Thurleigh and Cublington. A second new dual 4-lane motorway to Foulness, connecting to the North Orbital may prove feasible but further study will be necessary.

    Apart from other considerations, the limiting factor is likely to be the capacity provided by Ringway 3 and the road network within the Greater London Area.

(2) Assuming that a new dual 4-lane motorway is constructed to serve each of the four airport sites, it would appear that in the year 2000, a higher modal split to private transport could be catered for in the case of Nuthampstead and Cublington than for the other two sites. In the case of Foulness it is unlikely that the demands of a 65% modal split to private transport could be met in the year 2000 even with the provision of a second new dual 4-lane motorway.

With regard to airport access, we consider that the build up of traffic likely to be experienced in the immediate vicinity of the airport will be so great, particularly in the period 1990-2000, that it will only be controlled by providing separate uninterruped connections between the motorways and each of the airport car parks and terminals. Available parking facilities will inevitably prove to be a controlling factor in obtaining these free flow conditions.

Only in the cases of Nuthampstead and Foulness are combined road/rail facilities likely to prove economic. In the former case further work to ascertain the optimum length of a road/rail route may well prove worthwhile. In our opinion great advantage is to be gained in combining as long a length as possible of the two systems in order to minimise land severance and intrusion into the countryside.

ACKNOWLEDGEMENTS

We wish to express our thanks and appreciation to those Authorities, Professional Firms and others who have assisted us in the preparation of this report.

HOWARD HUMPHREYS & SONS

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX I

Road User Costs

From information provided by the Commission's Research Team, we have built up a formula which gives the total user cost in terms of pence per mile, for different classes of vehicle.

The formula is:—

$$\text{Total User Cost (pence per mile)} = A + CV^2 + \frac{B + D(1+r)^n}{V}$$

Where A, B, C, D are constants, appropriate to vehicle class,

V is the vehicle speed in miles per hour.

r is the rate of growth per annum in the value of time, appropriate to vehicle class.

n is the number of years forward to a particular year from the base year 1968.

The values which have been given to us are as follows:—

Table 6.1

User Cost Constants

Vehicle Class	A	B	C	D	r
Business Air Passenger (a)	2·46	26·54	0·000188	591	0·0230
Leisure Air Passenger (a)	1·97	21·23	0·000188	112	0·0210
Light Goods Vehicle (a)	2·75	34·65	0·000238	179	0·0325
Other Commercial (a)	6·80	53·55	0·000053	154	0·0325

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 2

Capital Costs

Capital costs have been calculated using a cost model, and the results cross-checked by traditional engineering methods of estimating.

Limits of Capital Costing

(i) Foulness Site

We have considered for costing purposes all major routes in the London corridor between Ringway 3 and the Airport perimeter including the intersection between the New Motorway and Ringway 3 and including the Airport interchange.

The section of the Airport Motorway between the shore-line and the Airport interchange has been costed, at the request of the Commission's Research Team, excluding all earthwork costs.

(ii) Nuthampstead Site

All major routes in the London corridor between Ringway 3 and the Airport perimeter have been costed, together with the intersection between the New Mortorway and Ringway 3, and the Airport interchange.

(iii) Thurleigh Site

All major routes in the London corridor between Ringway 3 and the Airport perimeter have been costed, together with the intersection between the New Motorway and Ringway 3, and the Airport interchange.

(iv) Cublington Site

All major routes in the London corridor between the North Orbital and the Airport perimeter have been costed, together with the intersection between the New Motorway and the North Orbital, and the Airport interchange.

Capital costs have also been estimated for improvements required for the A41, A421 and A43 between Aylesbury and Oxford.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

PARTICULAR STUDY ASSUMING THE AIRPORT TO BE LOCATED AT FOULNESS

Details of our examination of this case follow, and reference should be made to the Drawings listed below which are included at the end of this section for Foulness.

Drawing No. F1 — Surface Access Proposals
Drawing No. F2 — Plan Showing Routes Examined
Drawing No. 3 — Typical Cross Section of Combined Road/Rail Arrangement
Drawing No. F4 — Interchange Layout at Airport (Ultimate Design)
Drawing No. F5 — Interchange Layout at Ringway 3 (Ultimate Design)

ROUTES WITHIN THE LONDON CORRIDOR

Existing Routes

The London Corridor between Foulness and Ringway 3 is served by two existing trunk roads both of which are shown on Drawing No. F1. The more important of these, the A127, starts at Gallows Corner and passes north of Havering and Basildon and progresses eastwards towards Southend, passing to the south of Rayleigh. It finishes at the junction with A13, in the urban area of Southend.

The A13, which is the other major trunk road in the corridor, is located further to the south and crosses the line of the proposed Ringway 3 at a point approximately 1½ miles north of Dartford Tunnel. It progresses eastwards through Grays and turns in a north-easterly direction, passing to the south of Basildon and thence eastwards through the centre of Southend to Shoeburyness.

Both of these roads are heavily trafficked and are programmed for future improvement. We understand from the Ministry of Transport that the A127 will become a dual 3-lane carriageway and that the A13 will be upgraded to a dual 2-lane carriageway as far as its junction with the proposed extension of A130 at South Benfleet.

Proposed New Routes

We have examined a number of alternative routes for new motorways within the London Corridor, the locations of which are detailed on Drawing No. F2.

Our preferred route is shown on Drawing No. F1, and it will be seen that for the first 10 miles it follows a line parallel to, and slightly to the north of, the A127. Along this line it passes through mainly open farmland, classified as Grade 3 under the 'Agricultural Land Classification', to a point just south of Wickford.

From this point it diverges from the A127 and progresses in a more northerly direction passing over the London/Southend railway, the A129 and the A130. It then by-passes Rayleigh, which is situated to the south, crossing further Grade 3 farmland.

Printed image digitised by the University of Southampton Library Digitisation Unit

Here, the proposed road will require to be situated on a high embankment, the precise height of which will be dictated in final design by the need for a further railway crossing and the necessity to reduce the depth of cutting in the ridge between Rayleigh and Hockley through which the road must pass. To avoid passing through this ridge would entail a diversion, involving substantial increases in user costs, and we are satisfied that this is not necessary provided that great care is exercised in the final design.

The road crosses the B1013 and then descends gently through Grade 3 arable land before passing across the existing Southend Airport to a point south of Little Wakering, thence to the western end of the airport site.

Between Southend Airport and the proposed new airport site the road passes through Grade 1 agricultural land, and although we consider this to be the major disadvantage of the route we are satisfied that the costs of avoiding this would be prohibitive.

Geology

The geological succession of the strata traversed by the preferred route is as follows:–

Alluvium	Recent
Brickearth	Post Glacial
Bagshot Beds London Clay	Eocene

The relative importance of each of these strata can be assessed in Table F1 where the percentage of the route underlain by each soil type is given.

Table F1

Soil Type	Percentage of Route Underlain by each Soil Type
Alluvium	5
Brickearth	18
Bagshot Beds	0·5
London Clay	76·5

Alluvium

No detailed work has been undertaken by us to ascertain the composition of the alluvium, but gravels, sands, silts and clays may occur.

These deposits, formed by existing rivers and streams, vary greatly from place to place, and considerably less of this material has been found along the preferred route than exists further to the north along the River Crouch–approximately 47% alluvium along the northern route compared with the 5% given in Table F1 above for the preferred route.

Printed image digitised by the University of Southampton Library Digitisation Unit

The variable nature of the alluvium could lead to uneven settlement and although in general it seems likely to have sufficient shear strength to prevent base failure below embankments it appears likely that extensive soft areas may occur in places.

Since the treatment of these areas can often prove costly, we have considered the fact that there is far less alluvium underlying the preferred route than other routes to be an important advantage in favour of this line.

London Clay

This clay is frequently fissured and these tend to reduce its shear strength. As a result cutting side slopes of 1 : 4 or indeed even 1 : 6 may be found necessary.

In embankments, however, London Clay is less troublesome and we have assumed that remoulded strengths should approximate to the intact soil strength. On this basis side slopes of 1 : 2½ have been used for earthworks estimating purposes.

Settlement within the London Clay is expected to be relatively small and mainly confined to the upper weathered layer.

Brickearth

Brickearth has a similar variable lithology to alluvium. As a result differential settlement is to be expected and some surcharging of embankments may be necessary to overcome this difficulty.

Bagshot Beds

These are mainly fine multicoloured sands with a few thin seams of pipe clay and local beds of gravel. They can be frost susceptible on being stressed and may exhibit 'cow belly' conditions due to a build up of pore water pressures.

Whilst the sands themselves are stable in cuttings at a batter of 2 to 1 the intercolated clays give rise to seepage which can render the cutting slopes unstable.

The main location of the Bagshot Beds in relation to the preferred route is through the high ground in the neighbourhood of Rayleigh.

Reasons for Preferring the Proposed Route

In selecting the proposed route from others examined we have been influenced by the following factors:—

(a) It is the shortest feasible route between Ringway 3 and the Airport Site, having regard to topographic constraints and other constraints mentioned below.

(b) It involves a minimum of intrusion into existing urban development.

(c) It can be conveniently incorporated into the urban development plans prepared by the Planning Consultants.

Printed image digitised by the University of Southampton Library Digitisation Unit

(N.B. We have examined a more northerly route suggested by the Planning Consultants and have found it to have serious disadvantages on capital and user cost grounds. Furthermore it presents difficulties in providing suitable road access to the south-western end of the airport site—now preferred by the Commission as the end for access. We have accepted the views of the Planning Consultants that, if the northerly route can not be adopted, the motorway should follow a line as close as possible to the existing urban area of Southend. This results in our route crossing the site of the present Southend Airport which we presume will be closed if the Third London Airport is ultimately at Foulness.)

(d) It has the least effect on the natural drainage of the region and avoids costly river crossings.

(e) Land of high landscape value is not affected nor are places of historic or architectural interest.

(f) Land severance is avoided for the first 10 miles of the route which is planned to follow closely the line of the A127.

Combined Road/Rail Route

The vertical and horizontal alignment of the proposed route provides gradients and curves which satisfy the limiting requirements of both road and rail transport, except for the short length preceding and passing through the Rayleigh/Hockley ridge.

This matter has been discussed with British Rail Consultants and we understand that the problem can be overcome and will be dealt with separately in their report.

A typical cross section of a combined road/rail arrangement is shown in our Drawing 3.

CROSS COUNTRY ROUTES

Air passenger assignments as given to us by the Commission show that approximately 10,000 p.c.u's per day (for the 65% Private case) will wish to travel along a corridor in the direction of the A130, in the year 1990.

There are firm proposals for improving the A130 between A127 and Chelmsford By-Pass, to dual 2-lane standards. Plans have been prepared for further improvements of A130 north of Chelmsford to dual 2-lane standards and it is intended that this new section of road will link with the proposed 'Strategy Route' being planned along the line of A120.

In general terms air passenger traffic assigned cross country is an uncertain proportion of the total traffic using the diverse routes available. With regard to the A130 we have some limited traffic data which we have updated to forecast the flows between 1975 and 1990. We have not been able to estimate the effects of possible transfer of traffic from other routes and furthermore, the effects of changes in the urban development concerned, over the period 1975-1990 are not known. Nevertheless, we anticipate that air passenger and airport freight traffic can be absorbed on to the road networks referred to above, but this again assumes 100% overload as being the limiting road capacity.

Printed image digitised by the University of Southampton Library Digitisation Unit

This, of course, results in no capital cost being attributable to the airport in respect of air passenger and freight traffic using cross country routes and routes to the north.

AIRPORT ACCESS

The layout shown on Drawing F4 is designed for the ultimate requirement, with a dual 4-lane motorway link to the airport; the motorway dividing into separate carriageway accesses to each terminal building. The urban areas are connected to the airport by a completely separate road system with direct access to the airport cargo and maintenance areas and to the service entrances of the air terminals. We have provided slip road connections from the new motorway to the airport works and service road system together with a connection to a long term car-park situated outside the airport perimeter road.

Initially a dual 2-lane motorway is required with appropriate links to the terminal buildings.

THREE-WAY INTERCHANGE AT RINGWAY 3

The preferred road intersects Ringway 3 at a point just north of Havering and Drawing No. F5 shows a plan of the proposed Three-Way Interchange. The interchange will have 'free traffic flow' in all cases at 50 m.p.h. design speed.

In order to provide for traffic between A127 and Ringway 3 a braided slip intersection located approximately 2 miles east of the Three-Way Interchange is proposed. This will permit the east-bound traffic from Ringway 3 to gain access to A127 and traffic from A127 to gain access to Ringway 3. The preferred route will ultimately need to be a dual 4-lane motorway and our investigations indicate that the traffic split at Ringway 3 will dictate 3-lane slip roads to the north and 2-lane slip roads to the south. Assuming that the through north-south traffic on Ringway 3 will require dual 3-lane carriageways then the road capacity requirements for Ringway 3 north and south of the Three-Way Interchange will ultimately be dual 5-lanes and dual 4-lanes respectively.

A high proportion of the traffic turning north is destined for Radial Route No. 7(M12) which intersects Ringway 3 approximately 2 miles north of the Three-Way Interchange. In view of this it may be considered desirable to separate this traffic from the Ringway 3 traffic. The drawing shows the separate dual 2-lane carriageway chain dotted. This separate carriageway would have the effect of reducing the capacity requirement for Ringway 3 from dual 5-lanes to dual 4-lanes.

In the short term the preferred route will be constructed as a dual 2-lane motorway with provision for improvement to the ultimate dual 4-lane. Similarly, the three-way interchange at Ringway 3 will be designed for the ultimate but initially constructed to be compatible with the capacity of the dual 2-lane motorway.

F5

Printed image digitised by the University of Southampton Library Digitisation Unit

INTERCHANGE AT A130

Where the motorway intersects A130 a grade separated roundabout interchange will be required to provide access to the airport.

COMPARISONS OF ALTERNATIVE CASES INVESTIGATED IN THE LONDON CORRIDOR

We have described above the improvements planned for the existing roads in the London Corridor and have selected a preferred route for a new motorway. Using this road network, the cases which follow are those examined in order to show the most economic solution to be obtained in providing surface access for air passengers and freight between Ringway 3 and the airport site.

The Alternative Cases Considered

Case I

That a new motorway will be constructed between the Airport Site and Ringway 3, with a single interchange at the A130, this only giving access to and from the airport. This motorway to be used exclusively by air passengers and airport freight from the opening of the Airport in 1975.

Case II

That the full 100% overload capacity of the existing trunk roads A13 and A127 will be used for all traffic including air passengers and airport freight initially. This will necessitate a new airport link between the Airport site and North Shoeburyness, together with the improvement to dual 2-lane carriageway standards of the road between North Shoeburyness and Prittlewell Priory along the northern boundary of the present built-up area. Both will be required in the year 1975 and will ultimately become urban area links. In the early years of the airport's existence, air passenger and airport freight traffic flows will be low and we consider use can be made of the planned highway improvements within the urban area (based upon 100% overload capacity). When 100% overload on the A13 and A127 is reached, a new motorway will be constructed for the use of all traffic. This highway will carry all airport traffic in the London Corridor. In this case the interchange on A130 will permit traffic to make full use of the new motorway in both directions.

SUMMARY OF RESULTS AND CONCLUSIONS

The analyses, shown in Appendix F1 to this section of the report, show that the road facilities in the London Corridor required for the 25% private and 65% private modal splits under Case I and Case II are as follows:—

Printed image digitised by the University of Southampton Library Digitisation Unit

Summary of Results

25% Private

Case I (1975-1990)

1975 (a) Provision of dual 3-lane A127 and dual 2-lane A13.

1975 (b) Construction of dual 2-lane motorway, between Ringway 3 and the airport for exclusive use of air passengers and airport freight.

1977 (c) Improvement of A13 to dual 3-lane standards.

1981 (d) Construction of additional dual 2-lane road, to supplement A127 and A13.

1989 (e) Improvement of new road, (d) above, to dual 4-lane standards.

Case II (1975-1990)

1975 (a) Construction of dual 2-lane link from airport to North Shoeburyness and improvement of road to Prittlewell Priory.

1975 (b) Provision of dual 3-lane A127 and dual 2-lane A13.

1977 (c) Improvement of A13 to dual 3-lane standards.

1980 (d) Construction of dual 2-lane motorway, between Ringway 3 and the airport.

1987 (e) Improvement of motorway, (d) above, to dual 4-lane standards between Ringway 3 and the A130 junction.

65% Private

Case I (1975-1990)

1975 (a) Provision of dual 3-lane A127 and dual 2-lane A13.

1975 (b) Construction of dual 2-lane motorway, between Ringway 3 and the airport, for exclusive use of air passengers and airport freight.

1977 (c) Improvement of A13 to dual 3-lane standards.

1981 (d) Construction of additional dual 2-lane road, to supplement A127 and A13.

1989 (e) Improvement of airport motorway, (b) above, to dual 4-lane standards between the airport and the A130 junction.

1989 (f) Improvement of new road, (d) above, to dual 4-lane standards.

Printed image digitised by the University of Southampton Library Digitisation Unit

Case II (1975-1990)

1975 (a) Construction of dual 2-lane link from airport to North Shoeburyness and improvement of the road to Prittlewell Priory.

1975 (b) Provision of dual 3-lane A127 and dual 2-lane A13.

1977 (c) Improvement of A13 to dual 3-lane standards.

1979 (d) Construction of dual 2-lane motorway, between Ringway 3 and the airport.

1985 (e) Improvement of motorway, (d) above, to dual 4-lane standards between Ringway 3 and the A130 junction.

1989 (f) Improvement of motorway, (d) above, to dual 4-lane standards between the A130 and the airport.

1990 (g) Construction of additional airport motorway, between the north-east end of the airport and the London North Orbital Route, ultimately to dual 4-lane standards, to supplement airport motorway, (e) and (f) above.

Conclusions

A comparison of the total capital and user costs attributable to the airport for both cases is given below.

Total Discounted Capital Costs and User Costs (£ M) for air passengers and airport freight (1975-1990)

Case	25% Private			65% Private		
	Road User Costs	Capital Costs	Total Costs	Road User Costs	Capital Costs	Total Costs
I	18·4	26·7	45·1	47·9	27·9	75·8
II	18·5	12·0	30·5	48·8	15·0	63·8

On the basis of these costs we recommend the adoption of Case II, which makes the maximum use of the existing and already planned road network.

Further conclusions drawn from our study are as follows:—

(a) The programme for development of the new urban area should permit the construction of the new airport motorway in the late 1970's for the 65% Private and the early 1980's for the 25% Private modal split. If the modal split of the air passengers remains above 25% to private transport, provision will have to be made for a second airport motorway in the 1990's, probably on a line just south of the River Crouch.

(b) We are satisfied that a single interchange between Ringway 3 and the new motorway is the best solution for the study period.

Printed image digitised by the University of Southampton Library Digitisation Unit

(c) The assignments of air passengers given to us by the Commission's Research Team indicate that greater flows will occur on Ringway 3 if the airport is located at Foulness than will be the case for the other three sites. The lengths of Ringway 3 affected are also greater for the Foulness case and include the section crossing the Thames at Dartford.

(d) The only significant air passenger flows not in the London Corridor are those along the route of the A130 towards and beyond Chelmsford. We estimate that the existing routes and proposed improvements will provide sufficient road capacity for the air passenger traffic through the period 1975 to 1990. No capital costs are attributable to the airport.

(e) The capital costs for Case II, to the Airport, between Ringway 3 and the Airport are as follows:—

25% Private — £12·0 M
65% Private — £14·4 M

(N.B. These costs exclude the notional costs included for the comparison of Case I and Case II.)

(f) For the period 1990-2000 the following further improvements may be necessary for Case II:—

25% Private

(i) Improvement of the dual 2-lane motorway (constructed in 1980), to 4-lane standard between the Airport and the junction with A130.

(ii) Construction of a second motorway between the north-east end of the Airport and the London North Orbital Road. This motorway may ultimately require to be dual 4-lane.

65% Private

(i) Construction of a third dual 4-lane motorway in the London Corridor.

(g) An additional capital cost of £1·5M should be allocated in respect of the structures necessary to take the new motorway through the proposed urban development road network. These structures have been costed to span the ultimate dual 4-lane motorway. The discounted costs are:—

25% Private — £1·0 M
65% Private — £1·1 M

Printed image digitised by the University of Southampton Library Digitisation Unit

Our 'Summary of Results and Conclusions' for the Foulness Study summarises the total costs of the alternative cases considered.

We set out below details of the analysis leading to these results and conclusions:–

TRAFFIC FORECASTS

(a) Assignment of Air-passenger flows

The air-passenger flows assigned by the Commission Research Team to the road network for 1990, modified to the 65% private modal split, are shown in diagrammatic form in Drawing No. F6 bound here.

Drawing No. F7, also bound here, shows the effect of introducing a new route between the airport and Ringway 3 (Case I). All flows from the airport have been assigned to this new route, the north-bound traffic leaving the new route at the interchange with the A130. The London Corridor traffic diverges at Ringway 3 with traffic bound for Central London using the proposed Radial Route 7 (M12).

Drawing No. F7 also shows the effect in 1990 of introducing a new motorway between the airport and Ringway 3 (Case II). However, before the introduction of this new motorway air passenger flows have been assigned in the following ways.

(i) Traffic having its origin south of the A13 has been assigned to the A13 and will go south at the Ringway 3 or will enter Greater London on A13.

(ii) Traffic having its origin north of the A127 has been assigned to the A127 and will go north at Ringway 3 and those wishing to enter Greater London will use either the A127 or Radial Route 7 (M12).

(b) Estimates of Traffic Flows in the London Corridor

Table F2 below shows the cumulative total traffic flows, excluding air passengers and airport freight, in p.c.u's per 16 hour August day for the London Corridor.

Table F2

London Corridor (A127 and A13) Traffic Flows

Year	Advisory Manual Flow	Flow Generated by additional population	Total flows excluding air passengers and airport freight
1965	77,000	–	77,000
1970	105,000	8,000	113,000
1975	128,000	24,000	152,000
1980	150,000	44,000	194,000
1985	167,000	65,000	232,000
1990	181,000	89,000	270,000
1995	194,000	114,000	308,000
2000	205,000	141,000	346,000

Printed image digitised by the University of Southampton Library Digitisation Unit

(c) Estimates of Total Flow

Table F3, below shows the total traffic flows obtained when the air passenger and airport freight traffic is added to the flows given in Table F2.

Table F3

London Corridor—Total Traffic Flows

Year	Total Flows excluding Air Passengers and Airport Freight	Airport Freight	Air Passenger Flows		Total Flows	
			25% Private	65% Private	including 25% Air Passenger and Airport Freight	including 65% Air Passenger and Airport Freight
1965	77,000	—	—	—	77,000	77,000
1970	113,000	—	—	—	113,000	113,000
1975	152,000	—	—	—	152,000	152,000
1980	194,000	1,000	4,000	13,000	199,000	208,000
1985	232,000	3,000	11,000	32,000	246,000	267,000
1990	270,000	6,000	19,000	56,000	295,000	332,000
1995	308,000	10,000	33,000	101,000	351,000	419,000
2000	346,000	22,000	67,000	203,000	435,000	571,000

ROAD CAPACITIES

Considering Case I

Table F4 below indicates the dates on which the road capacity demands of air passengers and airport freight will (judged by the criterion of 100% overload capacity) require a dual 2-lane motorway or a dual 4-lane motorway constructed for their exclusive use.

The road capacity demands for the 'Without Airport' situation do not have any effect on the cost of providing road access to the airport when considering the Case I analysis, and have therefore been omitted.

Table F4

The New Motorway
Date when required for air passenger and airport freight traffic

Section	Number of Lanes	Date required for 25% Private	Date required for 65% Private
Airport to the junction with A130	dual 2	1975	1975
	dual 4	Not required	1989
Junction with A130 to Ringway 3	dual 2	1975	1975

Printed image digitised by the University of Southampton Library Digitisation Unit

Considering Case II

Table F5 below shows the period over which the road capacity demands of the total traffic for both the 'With' and 'Without' Airport situations will be satisfied by first using the improved existing road network, followed later by the construction of new motorways.

The capacity of the roads in the London Corridor between the Airport and the junction with the A130 have not been considered in determining the date of the introduction of the new motorway because, in the early days of the airports existence, air passenger and airport freight traffic flows will be low and we consider that use can be made of the planned highway improvements within the urban area (based upon 100% overload capacity). Therefore the dates given in Table F5 refer to the section of the corridor between the A130 and Ringway 3.

Table F5

A13, A127 and New Motorway
Dates when improvements are required for total traffic

Road Reference	Number of Lanes	Without Airport Date Required	With Airport—Case II	
			Date required for 25% Private	Date required for 65% Private
A13 A127	dual 2 dual 3	1972	1972	1972
A13 A127	dual 3 dual 3	1977	1977	1977
A13 A127 New Motorway	dual 3 dual 3 dual 2	1981 (Not required)*	1980 (1980)*	1979 (1979)*
A13 A127 New Motorway	dual 3 dual 3 dual 4	1989 (Not required)*	1987 (Beyond 1990)*	1985 (1989)*

* Dates in brackets are those for the section of the new motorway, carrying airport flows only, between A130 and the airport, and therefore this section is not required for the 'Without' airport situation.

CAPITAL COSTS

The capital costs (at 1968 prices) have been estimated for all new routes and improvements, where in the period 1975-1990 these are relevant to the comparisons, and are shown below in Table F6.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table F6

Capital Costs

Route	Highway Improvement	Length Miles	Capital Cost £M
Airport link to North Shoeburyness and improvement to Prittlewell Priory	Dual 2 lane (All purpose). Single carriageway to dual 2 lane. (All purpose)	3·1	2·9
New Motorway —Ringway 3 to A130	Dual 2 lane	13·0	12·7
New Motorway —A130 to Airport	Dual 2 lane	12·4	11·6
New Motorway —Ringway to A130	Dual 2 lane to dual 4 lane.	13·0	2·3
New Motorway —A130 to Airport	Dual 2 lane to dual 4 lane.	12·4	2·2
*Ringway 3—New motorway junction to A13 junction	Dual 3 lane to dual 4 lane.	6·8	1·7

*N.B. In order to compare Case I with Case II, all costs have been calculated to points on Ringway 3, common to Case I and Case II, i.e. New motorway junction and A13 junction.

Tables F7 and F8 compare the discounted capital costs for the 'With' and 'Without' Airport situations for all new routes and improvements for the 25% Private modal split.

Dates are derived from Tables F4 and F5, and costs from Table F6. Costs are taken as falling, on average, one year before the date when the improvement is required to come into operation.

Table F7

Discounted Capital Costs. Case I

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
New Motorway Airport to Ringway 3 (dual 2-lane)	24·3	Not applicable	1975	—	26·7

Cost attributable to the Airport = £26·7M

Printed image digitised by the University of Southampton Library Digitisation Unit

Table F8 **Discounted Capital Costs. Case II.**

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
(a) Airport Link to N. Shoeburyness and improvement to Prittlewell Priory	2·9	Not required	1975	—	3·2
(b) New Motorway, Airport to A130 (dual 2-lane)	11·6	Not required	1980	—	7·9
(c) New Motorway, A130 to Ringway 3 (dual 2-lane)	12·7	1981	1980	7·9	8·7
(d) Improvement of (c) to dual 4-lane	2·3	1989	1987	0·7	0·8
			Totals	8·6	20·6

Cost attributable to the Airport = £12·0M

Tables F9 and F10 compare the discounted capital costs for the 'With' and 'Without' Airport situations for all new routes and improvements for the 65% Private modal split.

Table F9 **Discounted Capital Costs. Case I.**

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
(a) New Motorway Airport-Ringway 3 (dual 2-lane)	24·3	Not applicable	1975	—	26·7
(b) Improvement of (a) to dual 4-lane between Airport and A130	2·2	Not applicable	1989	—	0·6
			Sub Totals	—	27·3

Cost attributable to the Airport = £27·3 M

(c) Notional Improvement of Ringway 3, New Motorway junction to A13 (for comparison with Case II)	1·7	Not applicable	1987	—	0·6
			Totals	—	27·9

Cost attributable to the Airport = £27·9 M

Printed image digitised by the University of Southampton Library Digitisation Unit

Table F10

Discounted Capital Costs. Case II.

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
(a) Link Airport to N. Shoeburyness and improvement to Prittlewell Priory	2·9	Not required	1975	—	3·2
(b) New Motorway, Airport to A130 (dual 2-lane)	11·6	Not required	1979	—	8·7
(c) New Motorway, A130 to Ringway 3 (dual 2-lane)	12·7	1981	1979	7·9	9·5
(d) Improvement (c) to dual 4-lane	2·3	1989	1985	0·7	1·0
(e) Improvement (b) to dual 4-lane	2·2	Not required	1989	—	0·6
			Sub Totals	8·6	23·0

Cost attributable to the Airport = £14·4 M

(f) Notional Improvement of Ringway 3, New Motorway junction to A13 junction (for comparison with Case I)	1·7	Not required	1987	—	0·6
			Totals	8·6	23·6

Cost attributable to the Airport = £15·0M

Road User Costs

The discounted Road User Costs between Ringway 3 and the airport site for air passengers and airport freight, for the period 1975-1990, are as follows:—

Table F11

Discounted Road User Costs in £M

	25% private	65% private
Case I	18·4	47·9
Case II	18·5	48·8

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

PARTICULAR STUDY ASSUMING THE AIRPORT TO BE LOCATED AT NUTHAMPSTEAD

Details of our examination of this case follow, and reference should be made to the Drawings listed below which are included at the end of this section for Nuthampstead.

Drawing No. N1 — Surface Access Proposals
Drawing No. N2 — Plan Showing Routes Examined
Drawing No. 3 — Typical Cross Section of Combined Road/Rail Arrangement
Drawing No. N4 — Interchange Layout at Airport (Ultimate Design)
Drawing No. N5 — Interchange Layout at Ringway 3 (Ultimate Design)

ROUTES WITHIN THE LONDON CORRIDOR

Existing Routes

The London Corridor between Nuthampstead and Ringway 3 is served by two existing trunk roads both of which are shown on Drawing No. N1. The first of these, the A10, passes north through Enfield and crosses the line of the proposed Ringway 3 at Waltham Cross. It then continues northwards through the towns of Cheshunt, Hoddesdon, Ware and Buntingford, passing to the west of the proposed airport site, towards Royston.

The A11, which is the other major trunk road in the corridor, is located further to the east and crosses the line of Ringway 3 south of Epping. It then progresses northwards through Epping, Harlow, Bishops Stortford, and Stanstead Mountfitchet finally passing 2½ miles east of the proposed airport site on its route to Cambridge.

Both of these roads are heavily trafficked and are programmed for future improvement. The A10 is already dual 2-lane from a point south of Ringway 3 to just north of Cheshunt. From here it will be improved by constructing a dual 2-lane carriageway (with provision for upgrading to dual 3-lane as far as Ware) passing to the west of Hoddesdon and Ware and progressing northwards to join the existing line of the A10 at a point 3 miles south of Buntingford. The improvement to dual 2-lane standards is expected to be completed by 1975.

(N.B. We say later in the report that in the event of the airport being located at Nuthampstead, the A10 dual 2-lane improvement will require to be extended to a point near Buntingford where the airport access link joins the A10. This is not shown on Drawing No. N1 but is indicated on Drawing No. N2.)

We understand that although no major improvements of A11 are envisaged this road will be relieved by the construction of the M11 due to be completed by 1975.

Printed image digitised by the University of Southampton Library Digitisation Unit

Proposed New Routes

We have examined a number of alternative routes for new motorways within the London Corridor, the locations of which are detailed on Drawing No. N2 and we have selected the route shown on Drawing No. N1 as our preferred route.

Further routes east of Waltham Abbey (line 1–3–4–7) and via Lee Valley (line 1–3–4–6) have been considered, but both of these alternatives to the preferred route encroach upon the existing and planned developments in the Waltham Abbey area, although the former alternative appears to be compatible with the Hertfordshire County Council plan to link Harlow to Ringway 3 east of Waltham Abbey. It also avoids the planned Lee Valley Recreation Scheme.

Our preferred route is shown on Drawing Nos. N1 and N2 (line 1–3–5–8) and it will be seen that it starts from a point on Ringway 3 approximately 1 mile south-west of Epping and progresses northwards passing through mainly open farmland, classified as Grade 2 under the 'Agricultural Land Classification' to a point just east of Epping Green where it veers north-westwards to just east of Roydon.

From this point the road descends into the River Stort valley where it crosses the London/Cambridge railway, the Stort Navigation Canal and the River Stort. It then proceeds northwards passing east of Hunsdon and Widford, through Grade 2 farmland and woodland before descending into the River Ash valley, south of Much Hadham. Here it joins the line of a disused railway and follows parallel to this for a short distance before curving northwards to cross the A120 at a point approximately 1 mile north-east of Standon; thence through further Grade 2 farmland to the south-west end of the proposed airport site.

For the last 6 miles of its route it follows the line of one of the proposed rail access routes to the airport.

Geology

The geological succession of the strata traversed by the preferred route is as follows:–

Alluvium	Recent
Boulder Clay Glacial Sand and Gravel	Pleistocene
London Clay Reading Beds	Eocene
Chalk	Cretaceous

The relative importance of each of these strata can be assessed in Table N1 where the percentage of the route underlain by each soil type is given.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table N1

Soil Type	Percentage of Route Underlain by each Soil Type
Alluvium	4
Boulder Clay	48
Glacial Sand and Gravel	20
London Clay	17
Reading Beds	0·5
Chalk	10·5

The above table indicates that a total of 72% of the preferred route is underlain by drift deposits of which, Boulder Clay is by far the greatest.

Alluvium

No detailed work has been undertaken by us to ascertain the composition of the alluvium, of which there appears to be little, but gravels, sands, silts and clays may occur. Since they are deposits formed by existing rivers and streams, they occupy the floors of valleys. In the case of embankments both their settlement characteristics and their shear strengths are of importance. Due to their variable nature settlements can be uneven.

In general it is considered that the alluvium may be strong enough to prevent base failure below the embankments but soft areas may occur.

Boulder Clay

These widespread deposits are quite variable in composition. Work elsewhere suggests that cutting side slopes of the relatively shallow nature envisaged should be stable at 1 : 2 unless seepage occurs. Embankments can be constructed of Boulder Clay and side slopes of 1 : 2½ are usual. The clay is assumed to be sufficiently strong to support the proposed embankment and settlement is expected to be moderate.

Glacial Sand and Gravel

Glacial sand and gravels deposits also vary in composition. Where they rest on London Clay (i.e. in the southern portion of the proposed route) they may be water bearing. Springs may thus be expected in this type of ground and suitable drains will have to be constructed to carry the ground water away from the proposed road. This is particularly so in cuttings where side slopes of 1 : 2 may well be stable, if drained. It is excellent material for embankment construction where side slopes of about 1 : 2 may be considered to be safe. They may also be a source of concrete aggregates.

Printed image digitised by the University of Southampton Library Digitisation Unit

London Clay

This clay is frequently fissured; the fissures tending to reduce the shear strength of the clay. As a result cutting side slopes of 1 : 4 or even 1 : 6 may be found necessary. It is not so troublesome in embankments where side slopes of 1 : 2½ are usual. Settlement is anticipated to be relatively small.

Reading Beds

Reading Beds consist of mottled plastic clays and sands with thick beds of flint pebbles. They are, in this area, largely concealed by the drift deposits.

Chalk

The engineering properties of this fine grained limestone have been studied quite extensively. It usually forms safe cutting slopes varying between 1 to 1 and the vertical. Care must, however, be taken to avoid over-compaction when constructing embankments of this material. It is found that the compacted density is frequently some 10% to 13% higher than the in situ density and here again care must be taken in estimating the quantities of cut and fill material. Finally, chalk is frost susceptible and pavements greater than 18 inches are necessary if the frost hazard is to be avoided.

Reasons for Preferring the Proposed Route

In selecting the proposed route from others examined we have been influenced by the following factors:—

(a) It is the shortest feasible route between Ringway 3 and the airport site having regard to topographical constraints and other constraints mentioned below.

(b) It involves the least intrusion into existing urban development.

(c) It avoids the airport urban development area preferred by the Planning Consultants.

(d) Land of high landscape value is affected to the minimum extent and places of historic or architectural interest are avoided.

(e) The route can be combined with the rail access route for a worth-while distance thus avoiding unnecessary land severance. (N.B. In final design we feel that an even greater length of combined road/rail route may be possible, but this may well encroach into the area surrounding Blakesweare Monastery.)

(f) The connection with Ringway 3 is located at the nearest feasible point to M11, the southern end of which forms the only available planned Radial Route in this corridor. The A10 is already overloaded.

Combined Road/Rail Route

The horizontal alignment of the proposed road route provides curves which satisfy the limiting requirements of both road and rail transport. The most economic vertical alignment for the road, either side of the River Ash valley, however, would provide gradients of

Printed image digitised by the University of Southampton Library Digitisation Unit

approximately 2% and this would be too steep for rail transport. Nevertheless, it appears feasible that the railway could take an alternative vertical alignment over this section and we understand that reference to this will be made in the report being submitted by the British Rail Consultants.

A typical cross section of a combined road/rail arrangement is shown on Drawing No. 3.

CROSS COUNTRY ROUTES

Air passenger assignments, as given to us by the Commission's Research Group, show that approximately 11,000 p.c.u's per day (for the 65% Private case) will wish to travel from the Airport, in the year 1990, in a westerly direction. Smaller flows of 2,000 p.c.u's per day to the north and 2,000 p.c.u's per day to the east have also been estimated.

These smaller flows to the north and east can be accommodated on the existing and planned routes during the whole of the period 1975-1990.

The flows to the west can also be similarly accommodated in the early days of the airport's existence. Later these could be absorbed on the Harwich/M1 Strategy Route proposed in the Ministry of Transport publication 'Roads for the Future', or on any alternative provision for normal traffic in this direction.

We have shown on our Drawing No. N1 a feasible line for the 'Strategy Route' and the location of this has been chosen with due regard to both topography and the need to link successive urban areas along the route. We have also considered it practical to incorporate certain highway proposals already planned by other Authorities.

These include Bishops Stortford By-Pass and the Hitchin East/West Road. In addition we have avoided the areas suggested for the airport urbanisation by the Commission's Planning Consultants and have taken cognisance of areas of high landscape value and constraints imposed by existing urban areas.

The selected point of intersection with M1 shown on our drawing has been chosen to avoid interference with the existing intersections at Toddington and at Woburn Sands.

The traffic information available for the strategic route is limited to an assignment of 1964 traffic along the Hertfordshire section between A11 and M1 and this is made up of traffic transferring from existing east/west routes. We have updated the traffic information for the period 1975-1990 and from the estimates obtained we anticipate that a dual 2-lane carriageway (at 100% overload) will be able to absorb all cross country traffic in the year 1990 including that attracted by the airport.

The Ministry of Transport publication states that dual carriageway standards will be adopted for all 'Strategy Routes' and we have assumed for the purpose of this study that the small proportion of air passenger and airport freight traffic will not justify the advancing of the date of construction of this route or any alternative that may be adopted. This, of course, results in no capital cost being attributed to the airport in respect of roads for this particular traffic.

We are satisfied that this is a fair conclusion in respect of our comparison of road access requirements to the four sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

AIRPORT ACCESS

The layout shown on Drawing No. N4 is designed to cope with a dual 4-lane motorway connecting the airport to London's Ringway 3. At the airport each carriageway divides, thus providing direct access to the terminal buildings. Also shown is a dual 2-lane carriageway link road to the west connecting to the A10 and Strategy Route. The intersection is fully grade separated and provides free flow at 50 m.p.h. design speed.

The motorway would be provided with slip road connections to the 'service side' of the airport, which includes the cargo and maintenance areas as well as the 'service side' of the passenger terminals. Slip road links are also provided to a long term car park situated near the airport perimeter.

In the early years of the airport before construction of the motorway to London, the dual 2-lane link to the A10 would, together with a similar link to M11 from the north-east end of the airport, serve for all airport traffic.

The airport rail link to London is shown entering the airport site along the central reservation of the motorway route.

AIRPORT LINKS

Link to M11

We propose that a dual 2-lane link road should be provided from the north-east end of the airport site to connect with the planned M11 Motorway approximately 1 mile north of Wendens Ambo. This intersection point has been chosen to give a satisfactory economic solution taking into account the proportions of traffic from north and south.

Link to A10 and Strategy Route

We also propose that a dual 2-lane link road should be provided from the south-west end of the airport site connecting to the A10 at a point 1 mile south of Buntingford. This link would serve, in the main, for traffic using the A10 in the direction of London prior to the introduction of the new motorway between Ringway 3 and the airport.

This link would also serve cross country and north bound traffic and in later years could be extended to the south-west to provide a more direct access to the Strategy Route for west bound traffic.

INTERCHANGE AT RINGWAY 3

The preferred motorway has been routed to intersect Ringway 3 approximately 1 mile south-west of Epping, this has the effect of influencing traffic bound for London towards the most suitable radial route, M11. A 3-way interchange layout is shown on Drawing No. N5 (with 'free traffic flow' at 50 m.p.h. design speed).

The preferred route would ultimately need to be a dual 4-lane motorway and our investigations show that the traffic split at Ringway 3 would dictate 3-lane slip roads to the

Printed image digitised by the University of Southampton Library Digitisation Unit

east and 2-lane slip roads to the west. Assuming that the through traffic on Ringway 3 would require dual 3-lane then the capacity requirement for Ringway 3 east and west of the Three-Way Interchange would be dual 5-lane and dual 4-lane respectively. A considerable proportion of the traffic turning east at Ringway 3 is destined for the M11, which intersects Ringway 3 approximately 1½ miles east of the Three-Way Interchange, and in view of this it may be considered desirable to separate this traffic from the Ringway 3 traffic by means of separate 2-lane carriageways. The lane requirements for Ringway 3 over this length would then be reduced from dual 5 to dual 4-lane. No costs have been attributed to the airport for the additional lanes on Ringway 3.

In the short term the preferred route would be constructed as a dual 2 or 3-lane motorway with provision for improvement to the ultimate dual 4-lane. Similarly, the Three-Way Interchange at Ringway 3 would be designed for the ultimate but initially constructed to be compatible with the capacity of the dual 2 or 3-lane motorway.

OTHER INTERCHANGES

Where the motorway intersects A414 a grade separated roundabout interchange would be required to provide access to the airport.

(N.B. We do not consider that an interchange at the intersection of the new motorway with the 'Strategy Route' would be needed because cross country traffic will have access to the airport via M11 and A10.)

COMPARISONS OF ALTERNATIVE CASES INVESTIGATED IN THE LONDON CORRIDOR

We have described above the improvements planned for the existing roads in the London Corridor and have selected a preferred route for a new motorway. Using this road network the cases which follow are those examined in order to show the most economic solution to be obtained in providing surface access for air passengers and freight between Ringway 3 and the airport site.

The Alternative Cases Considered

Case I

That a new motorway will be constructed between the Airport Site and Ringway 3, with a single interchange at A414, this only giving access to and from the airport. This motorway to be used exclusively by air passengers and airport freight from the opening of the Airport in 1975.

Case II

That the full 100% overload capacity of the road network used for this study, which includes the A10 and the proposed M11, will be used for all traffic including air passengers and airport freight initially. The A11 has been assumed to be unsuitable for taking any part of the London Corridor air passenger and airport freight flows.

Printed image digitised by the University of Southampton Library Digitisation Unit

In 1975 the motorway standard link will be constructed from the south-west end of the Airport to a point on the improved A10, 1 mile south of Buntingford together with a similar link from the north-east end of the airport to a point on M11 1 mile north of Wendens Ambo.

When the 100% overload of design capacity is reached, a new motorway will be constructed from the Airport to Ringway 3. In this case the interchange on A414 will permit traffic to make full use of the new motorway in each direction.

SUMMARY OF RESULTS AND CONCLUSIONS

Summary of Results

The analyses shown in Appendix 1 to this section of the report indicate that the road facilities in the London Corridor for the 25% Private and 65% Private modal splits under Case I and Case II are as follows:—

25% Private

Case I (1975-1990)

1975 (a) Provision of dual 2-lane A10 and dual 3-lane M11.

1975 (b) Construction of dual 2-lane motorway, between Ringway 3 and the airport for the exclusive use of air passengers and airport freight.

Case II (1975-1990)

1975 (a) Provision of a dual 2-lane A10 and a dual 3-lane M11.

1975 (b) Construction of a dual 2-lane link from the airport to the A10 at a point 1 mile south of Buntingford and a dual 2-lane link from the airport to the M11 at Wendens Ambo.

1987 (c) Improvement of A10 to a dual 3-lane standards between Ringway 3 and the junction with the A414.

65% Private

Case I (1975-1990)

1975 (a) Provision of a dual 2-lane A10 and dual 3-lane M11.

1975 (b) Construction of a dual 2-lane motorway between Ringway 3 and the airport, for the exclusive use of air passengers and airport freight.

Case II (1975-1990)

1975 (a) Provision of a dual 2-lane A10 and a dual 3-lane M11.

Printed image digitised by the University of Southampton Library Digitisation Unit

1975 (b) Construction of a dual 2-lane link from the airport to the A10 at a point 1 mile south of Buntingford and a dual 2-lane link from the airport to the M11 at Wendens Ambo.

1984 (c) Improvement of A10 to dual 3-lane standards between Ringway 3 and the junction with the A414.

1988 (d) Construction of a dual 2-lane motorway between Ringway 3 and the airport.

Conclusions

A comparison of the total capital and user costs for both Case I and Case II is given below:—

Total Discounted Capital and User Costs for air passengers and airport freight (1975-1990)

Case	25% Private			65% Private		
	Road User Costs	Capital Costs	Total Costs	Road User Costs	Capital Costs	Total Costs
I	11·1	22·2	33·3	33·8	22·8	56·6
II	11·7	7·6	19·3	34·4	10·1	44·5

On the basis of these costs we recommend the adoption of Case II, which makes the maximum use of the existing and already planned road network.

Further conclusions drawn from our study are as follows:—

(a) The existing and already planned road network can accommodate all traffic including air passengers and airport freight up to 1988. Beyond 1988 a new motorway is required and for the air passengers 65% private case a second motorway is required later.

(b) In order to accommodate all air passenger and airport freight traffic for the 65% private modal split up to the year 2000, a second motorway would have to be provided in the London Corridor. In our opinion this second motorway would be difficult to integrate into this corridor and the resultant extra traffic could not be catered for on Ringway 3.

(c) The effects of air passenger flows on Ringway 3, based on the Commission's Research Team's assignments are shown in the Summary of Results and Conclusions on page 13.

(d) The air passenger flows in a northerly direction will make use of the A10 and M11, which will have links with the airport. The more significant flows are in an east-west direction and we estimate that the existing routes and proposed improvements will provide sufficient road capacity for air passenger traffic through the period 1975-1990. No capital costs are attributable to the airport in respect of these flows.

Printed image digitised by the University of Southampton Library Digitisation Unit

(e) The capital costs for Case II, attributable to the Airport, between Ringway 3 and the Airport are as follows:—

25% Private — £7·6 M
65% Private — £9·7 M

(N.B. These costs exclude the notional cost included for comparison of Case I with Case II.)

(f) For the period 1990-2000 the following further improvements may be necessary for Case II:—

25% Private

(i) Construction of a dual 2-lane motorway between Ringway 3 and the Airport.

(ii) Improvement to (i) to dual 4-lane standards between the A414 and Ringway 3.

65% Private

(i) Improvement of the dual 2-lane motorway (constructed in 1988) to dual 4-lane standards between the Airport and Ringway 3.

(ii) Construction of an additional dual 2-lane motorway between the Airport and Ringway 3.

Printed image digitised by the University of Southampton Library Digitisation Unit

Our 'Summary of Results and Conclusions' for the Nuthampstead Study summarises the total costs of the alternative cases considered.

We set out below details of the analysis leading to these results and conclusions:—

TRAFFIC FORECASTS

(a) Assignment of Air-passenger Flows

The air-passenger flows assigned by the Commission Research Team to the road network for 1990, modified for the 65% private modal split, are shown in diagrammatic form in Drawing No. N6 bound here.

For Case I, these flows have been manually re-assigned on to the new motorway between Ringway 3 and the Airport as shown on Drawing No. N7.

For Case II, we show later that the proposed upgraded A10 and M11 will be able to cope with all airport traffic up to the late 1980's. During this period, we have assumed an air passenger assignment which is similar to the Commission assignment except that a greater volume of air passengers has been transferred to M11 from the A10. We feel that our revised assignment is more realistic than that shown on Drawing No. N6 as the M11 will provide a high grade link into Central London.

After the introduction of the new motorway in the late 1980's, it is assumed that the air passenger assignment will follow a similar pattern to that for Case I.

(b) Estimates of Traffic Flows in the London Corridor

Table N2 below shows the cumulative total traffic flows, excluding air passengers and airport freight, in p.c.u's per 16 hour August day for the London Corridor.

Table N2

London Corridor (A10, A11 and M11) Traffic Flows

Year	Advisory Manual Flow		Flow generated by Additional Population	Total Flows excluding Air Passenger and Airport Freight	
	Airport to junction with A414	A414 to Ringway 3		Airport to junction with A414	A414 to Ringway 3
1965	28,000	56,000	—	28,000	56,000
1970	41,000	77,000	5,000	46,000	82,000
1975	50,000	94,000	14,000	64,000	108,000
1980	59,000	110,000	26,000	85,000	136,000
1985	66,000	123,000	38,000	104,000	161,000
1990	71,000	133,000	52,000	123,000	185,000
1995	76,000	143,000	67,000	143,000	210,000
2000	80,000	151,000	82,000	162,000	233,000

Printed image digitised by the University of Southampton Library Digitisation Unit

(c) Estimates of Total Flow

Tables N3 and N4 below, show the total traffic flows obtained when the air passenger and airport freight traffic is added to the flows given in Table N2.

Table N3

London Corridor—Total Traffic Flows
Section—Airport to junction with A414

Year	Total Flows excluding Air Passengers and Airport Freight	Airport Freight	Air Passenger Flow		Total Flow	
			25% Private	65% Private	including 25% Air Passengers and Airport Freight	including 65% Air Passengers and Airport Freight
1965	28,000	—	—	—	28,000	28,000
1970	46,000	—	—	—	46,000	46,000
1975	64,000	—	—	—	64,000	64,000
1980	85,000	1,000	3,000	11,000	89,000	97,000
1985	104,000	2,000	8,000	29,000	114,000	134,000
1990	123,000	4,000	15,000	50,000	141,000	176,000
1995	143,000	8,000	28,000	94,000	179,000	245,000
2000	162,000	14,000	52,000	178,000	228,000	354,000

Table N4

London Corridor—Total Traffic Flows
Section—Junction with A414 to Ringway 3

Year	Total Flows excluding Air Passengers and Airport Freight	Airport Freight	Air Passenger Flow		Total Flow	
			25% Private	65% Private	including 25% Air Passengers and Airport Freight	including 65% Air Passengers and Airport Freight
1965	56,000	—	—	—	56,000	56,000
1970	82,000	—	—	—	82,000	82,000
1975	108,000	—	—	—	108,000	108,000
1980	136,000	1,000	3,000	10,000	140,000	147,000
1985	161,000	2,000	8,000	26,000	171,000	189,000
1990	185,000	4,000	13,000	46,000	202,000	235,000
1995	210,000	8,000	25,000	88,000	243,000	306,000
2000	233,000	14,000	47,000	165,000	294,000	412,000

ROAD CAPACITIES

Considering Case I

Table N5 below indicates the dates on which the road capacity demands of air passengers and airport freight will, judged by the criterion of 100% overload capacity, require a dual 2-lane motorway or a dual 4-lane motorway constructed for their exclusive use.

Printed image digitised by the University of Southampton Library Digitisation Unit

The road capacity demands for the 'Without' Airport situation do not have any effect on the cost of providing road access to the airport when considering the Case I analysis, and have therefore been omitted.

Table N5

The New Motorway
Date when required for air passenger and airport freight traffic

Section	Number of Lanes	Date required for 25% Private	Date required for 65% Private
Airport to Ringway 3	dual 2	1975	1975

Considering Case II

Tables N6 and N7 below show the period over which the road capacity demands of the total traffic for both the 'With' and 'Without' Airport situations will be satisfied by first using the improved existing road network, followed later by the construction of a new motorway when necessary. The demand for increased capacity is assumed to occur when 100% overload of design capacity is reached.

Table N6

A10, A11, M11 and New Motorway
Dates when improvements are required for total traffic in the section—
Airport to junction with A414

Road Reference	Number of Lanes	Without Airport Date Required	With Airport—Case II	
			Date required for 25% Private	Date required for 65% Private
A10 A11 M11	single single dual 3	1974	1974	1974
A10 A11 M11	dual 2 single dual 3	Not Required	1975*	1975*
A10 A11 M11 New Motorway	dual 2 single dual 3 dual 2	Not Required	Not Required	1988

*Strictly on the basis of 100% overloads, the improvement of the A10 to dual 2-lane standards is not required until some time after 1975. However, we consider that a single carriageway road would be unsatisfactory as an access route for air passengers in the main London Corridor.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table N7

A10, A11, M11 and New Motorway

Dates when improvements are required for total traffic in the section—Junction with A414 to Ringway 3

Road Reference	Number of Lanes	Without Airport Date Required	With Airport—Case II	
			Date required for 25% Private	Date required for 65% Private
A10 A11 M11	dual 2 single dual 3	1970	1970	1970
A10 A11 M11	dual 3 single dual 3	1989	1987	1984
A10 A11 M11 New Motorway	dual 3 single dual 3 dual 2	Not Required	Not Required	1988

CAPITAL COSTS

The capital costs (at 1968 prices) have been estimated for all new routes and improvements, in the period 1975-1990, and are shown below in Table N8.

Table N8

Capital Costs

Route	Highway Improvement	Length Miles	Capital Cost £M
A10—A120 to Airport link.	Single carriageway to dual 2-lane (All purpose)	2·4	0·5
A10—A414 to Ringway 3	Dual 2-lane (All purpose) to dual 3-lane.	7·9	2·1
Airport link to A10.	Dual 2-lane motorway.	2·2	2·8
Airport link to M11.	Dual 2-lane motorway.	2·4	3·5
Airport links to A10 and M11.	Single carriageways.	4·6	1·5
New motorway—Airport to Ringway 3.	Dual 2-lane	20·0	18·6
*Ringway 3—New motorway junction to M11.	Dual 3-lane to dual 4-lane.	1·6	0·4
*Ringway 3—New motorway junction to A10.	Dual 3-lane to dual 4-lane.	6·1	1·6

*N.B. In order to compare Case I with Case II, all costs have been calculated to points on Ringway 3, common to Case I and Case II, i.e. A10 and M11 junctions.

Printed image digitised by the University of Southampton Library Digitisation Unit

Tables N9 and N10 compare the discounted capital costs for the 'with' and 'without' airport situations for all new routes and improvements for the 25% Private modal split.

Dates are derived from Tables N5, N6 and N7, and costs from Table N8. Costs are taken as falling, on average, one year before the date when the improvement is required to come into operation.

Table N9

Discounted Capital Costs. Case I

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
New motorway dual 2-lane. Airport to Ringway 3.	18·6	Not applicable	1975	—	20·5
Airport links to A10 and M11.	1·5	Not applicable	1975	—	1·7

Cost attributable to the Airport = £22·2M

Table N10

Discounted Capital Costs. Case II

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
Airport link to A10 (dual 2-lane)	2·8	Not required	1975	—	3·1
Airport link to M11 (dual 2-lane)	3·5	Not required	1975	—	3·9
A10 from the Airport link to A120	0·5	Not required	1975	—	0·5
A10 from A414 to Ringway 3	2·1	1989	1987	0·6	0·7
			Totals	0·6	8·2

Cost attributable to the Airport = £7·6M

Tables N11 and N12 compare the discounted capital costs for the 'with' and 'without' airport situations for all new routes and improvements for the 65% private modal split.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table N11

Discounted Capital Costs. Case I

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
New motorway dual 2-lane Airport to Ringway 3.	18·6	Not applicable	1975	—	20·5
Airport link to A10 and M11	1·5	Not applicable	1975	—	1·7
			Sub Total	—	22·2

Cost attributable to the Airport = £22·2M

Notional Improvement of Ringway 3, New motorway junction to M11 (for comparison with Case II)	0·4	Not applicable	1985	—	0·2
Notional Improvement of Ringway 3, New motorway junction to A10 (for comparison with Case II)	1·6	Not applicable	1990	—	0·4
			Total	—	22·8

Cost attributable to the Airport = £22·8M

Table N12

Discounted Capital Costs. Case II

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
Airport link to A10 (dual 2-lane)	2·8	Not required	1975	—	3·1
Airport link to M11 (dual 2-lane)	3·5	Not required	1975	—	3·9
A10 from the Airport link to A120	0·5	Not required	1975	—	0·5
A10 from the A414 to Ringway 3	2·1	1989	1984	0·6	1·0
New Motorway dual 2-lane. Airport to Ringway 3	18·6	Not required	1988	—	1·8
			Sub Total	0·6	10·3

Cost attributable to the Airport = £9·7M

Printed image digitised by the University of Southampton Library Digitisation Unit

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
Notional Improvement of Ringway 3, New motorway junction to A10 (for comparison with Case I)	1·6	Not required	1990	—	0·4
			Totals	0·6	10·7

Cost attributable to the Airport = £10·1M

ROAD USER COSTS

The discounted Road User Costs between Ringway 3 and the airport site for air passengers and airport freight, for the period 1975-1990, are as follows:—

Table N13

Discounted Road User Costs in £M

Case	25% Private	65% Private
I	11·1	33·8
II	11·7	34·4

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

PARTICULAR STUDY ASSUMING THE AIRPORT TO BE LOCATED AT THURLEIGH

Details of our examination of this case follow, and reference should be made to the drawings listed below which are included at the end of this section for Thurleigh.

Drawing No. T1 — Surface Access Proposals
Drawing No. T2 — Plan Showing Routes Examined. Sheet 1
Drawing No. T3 — Plan Showing Routes Examined. Sheet 2
Drawing No. T4 — Interchange Layout at Airport—Ultimate Design
Drawing No. T5 — Interchange Layout at Ringway 3 (Alternative 1)
Drawing No. T5A — Interchange Layout at Ringway 3 (Alternative 2)
Drawing No. T6 — Interchange Layout at Airport (Side Entrance)—Ultimate Design

ROUTES WITHIN THE LONDON CORRIDOR

Existing Routes

The London corridor between Thurleigh and Ringway 3 is served by two existing trunk roads, the A1 and A6, together with the M1 motorway south of Toddington Interchange (A5120), as shown on Drawing No. T1. Both trunk roads intersect Ringway 3 at a common point near South Mimms, which is situated to the west of Potters Bar. From here the A1 passes north through the urban area of Hatfield and the semi-urban area west of Welwyn Garden City to become the A1(M) motorway which by-passes Welwyn, Stevenage and Baldock. It reverts to an all-purpose road at its intersection with A507, subsequently by-passing Biggleswade and Sandy on its way to St. Neots which is situated approximately 3 miles east of the airport site.

The A1 is heavily trafficked and is programmed for future improvements. There are plans to improve the section between Ringway 3 and the A1(M), near Welwyn, to dual 3-lane motorway by the mid-1970's, and the A1(M) Stevenage By-Pass motorway to dual 3-lane by the late 1970's. The Eaton Socon/St. Neots By-Pass is currently under construction to dual 2-lane all-purpose standards and will be completed by 1971.

The A6, which is the other major trunk road in the corridor, passes through the urban areas of St. Albans, Harpenden, Luton and Bedford, and is of mostly 2-lane single carriageway standard with a generally poor alignment and has many sections with frontage development. The only lengths planned for improvement to dual 2-lane all-purpose standards are near the Luton and Bedford urban areas, as shown on Drawing No. T1.

The only section of M1 which could be considered usable by airport traffic is the length from Ringway 3 to a point south of Toddington Interchange. From this point the traffic would be routed via the A5120 to Bedford and thence via A6 to the airport.

The M1 is, of course, very heavily trafficked south of Toddington, and although the A5120 is a fair standard 2-lane single carriageway over much of its length, it is very restricted through Ampthill and Flitwick.

Printed image digitised by the University of Southampton Library Digitisation Unit

Proposed New Routes

We have examined a number of alternative routes for new motorways within the London corridor, the locations of three of these routes are shown on Drawing Nos. T1, T2 and T3.

Route 1—The Preferred Route

All three routes commence from a point on Ringway 3 approximately 1 mile south-east of Shenley and proceed northwards through undulating land, of Agricultural Classification Grade 3, to pass west of Colney Heath and Hatfield Aerodrome from which point Route 3 diverges to the north-west. Routes 1 and 2 continue mainly in a northerly direction through Grade 3 agricultural land crossing the River Lea valley and passing through 'The Ayots' situated to the west of Welwyn Garden City. This area is of high landscape value and care would be necessary to blend the motorway into the landscape. From here the route continues northwards through undulating farm land until it reaches a point about 2 miles south of Hitchin where it veers to the north-west to by-pass the urban area of Hitchin. It crosses the A505 near Offley Cross. From this point it again proceeds northwards through Grade 2 and 3 farmland passing to the east of Upper Stondon where Route 2 diverges towards the north-west. Route 1 continues generally northwards passing to the east of the Old Warden area, which is of high landscape value and has other features of historic and amenity interest. This route then approaches the airport site passing between Great Barford and Blunham en route. The agricultural land classification of this latter section being largely Grade 3.

Route 2

This diverges north-westwards from Route 1 at Upper Stondon, passing between Compton and Shefford, thence to the west of the Old Warden area and to the east of Cardington. It joins to the west end of the airport site having passed north-east of the present developed urban area of Bedford en route. It should be noted that plans exist for the development of Bedford towards the East as far as Renhold. The land through which Route 2 passes is again of generally Grade 3 classification.

Route 3

Route 3 is considered as a possible route affording the joint function of relief to the M1 motorway as well as an airport access road. It diverges to the north-west from Routes 1 and 2 near Hatfield Airfield and passes through a considerable amount of land of high landscape value to the east of Harpenden. It then continues north-east of Luton before decending through the chalk escarpment near Streatley to veer northwards through higher quality farm land (Grade 2, and a strip of Grade 1) before passing to the east of Maulden. From here it is routed through the brick quarries north-east of Stewartby and thence to the River Ouse valley west of Bedford.

The Route passes west of Bromham and continues north-westwards across the River Ouse valley in its M1 relief function, joining the East/West Strategy Route about 1 mile north of Bozeat.

To provide access to the airport a link road, approximately 3½ miles long has been shown on Drawing Nos. T1, T2 and T3, between Bromham and the western end of the airport site. This route crosses the River Ouse.

T2

Printed image digitised by the University of Southampton Library Digitisation Unit

Geology

The complete geological succession of the strata traversed by the three preferred routes is as follows:—

Alluvium Valley Gravel	Recent
Boulder Clay Glacial Sand and Gravel Clay with flints Pebbly Clay and Gravel	Pleistocene
London Clay Reading Beds	Tertiary
Chalk Gault and Upper Greensand Lower Greensand	Cretaceous
Ampthill Oxford Clay Cornbrash Great Oolite	Jurassic

The relative importance of each of these strata can be assessed in Table TI where the percentages of the routes underlain by each soil type is given.

Table T1

Soil Type	Percentage of Route Underlain by each Soil Type		
	Route 3	Route 2	Route 1
Alluvium	4	4	5
Valley Gravel	2	3·5	3
Boulder Clay	19	30·0	28
Glacial Sand and Gravel	5	17·25	28
Clay with Flints	12	0·75	1·0
Pebbly Clay and Gravel	3	1·25	1·0
London Clay	0·75	0·75	1·0
Reading Beds	2·75	2·75	3·0
Chalk	27·0	27·0	25·0
Gault and Upper Greensand	4	2	0
Lower Greensand	4	3	0
Ampthill Clay	0	1	0
Oxford Clay	14	5	5
Cornbrash	0·5	0·25	0
Great Oolite	2·0	1·5	0
	100·00	100·00	100·00

Printed image digitised by the University of Southampton Library Digitisation Unit

Alluvium

No detailed work has been undertaken by us to ascertain the composition of the alluvium, of which there appears to be little, but gravels, sands, silts and clays may occur. Since they are deposits formed by existing rivers and streams, they occupy the floors of valleys. In the case of embankments both their settlement characteristics and their shear strengths are of importance. Due to their variable nature settlements can be uneven.

In general it is considered that the alluvium may be strong enough to prevent base failure below the embankments but soft areas may occur.

Valley Gravels

These deposits, whilst still relatively young, are older than the present day alluvium. They occur mainly as terrace deposits in the larger river valleys. Whilst quite variable in composition they do not present any major engineering problems but springs may occur.

Boulder Clay

These widespread deposits are quite variable in composition. Work elsewhere suggests that cutting side slopes of the relatively shallow nature envisaged should be stable at 1 : 2 unless seepage occurs. Embankments can be constructed of Boulder Clay and side slopes of 1 : 2½ are usual. The clay is assumed to be sufficiently strong to support the proposed embankment and settlement is expected to be moderate.

Glacial Sand and Gravel

Glacial sand and gravel deposits also vary in composition. Where they rest on clay they may be water bearing. Springs may thus be expected in this type of ground and suitable drains would have to be constructed to carry the ground water away from the proposed road. This is particularly so in cuttings where side slopes of 1 : 2 may well be stable, if drained. It is excellent material for embankment construction where side slopes of about 1 : 2 may be considered to be safe. They may also be a source of concrete aggregates.

Clay with Flints

This deposit consists of flint nodules with a clay matrix. They appear to be quite widespread over chalk terrains. They can be expected to behave as a clay in both cuttings and embankments. Their base, when overlying chalk, is often highly irregular and the safety of cuttings may have to be assessed by examination of their structural geology.

Pebbly Clay and Gravel

This drift deposit is similar to 'clay with flints'. The matrix is usually clay but sand can occur. Cutting slopes of 1 : 2 to 1 : 3 seem appropriate but care will have to be taken with possible seepages of water which could render these side slopes unstable.

London Clay

This clay is frequently fissured; the fissures tending to reduce the shear strength of the clay. As a result cutting side slopes of 1 : 4 or even 1 : 6 may be found necessary

Printed image digitised by the University of Southampton Library Digitisation Unit

It is not so troublesome in embankments where side slopes of 1 : 2½ are usual. Settlement is anticipated to be relatively small.

Reading Beds

Reading Beds consist of mottled plastic clays and sands with thin beds of flint pebbles. Where clays occur cutting slopes may be cut at 1 : 4 with steeper slopes in the sands. Alternations of sand and clay can result in treacherous conditions, particularly if seepage also occurs. Suitable drainage may, however, stabilise these side slopes.

Chalk

The engineering properties of this fine grained limestone have been studied quite extensively. It usually forms safe cutting slopes varying between 1 : 2 and near vertical. Care must, however, be taken to avoid over-compaction when constructing embankments of this material. It is found that the compacted density is frequently some 10% to 13% higher than the in situ density and here again care must be taken in estimating the quantities of cut and fill material. Finally chalk is frost susceptible and pavements greater than 18 inches thick are necessary if the frost hazard is to be avoided.

Gault and Upper Greensand

The Gault is a stiff dark clay which passes upwards through sandy and marly clays into the fine grained, well bedded sandy clays and malmstones of the Upper Greensand. Its engineering properties are similar to those of London Clay.

Lower Greensand

These deposits are sands with subordinate beds of clay. They are frequently water bearing and care will have to be taken to provide adequate drainage in cuttings. It makes quite good fill for embankments and is usually sufficiently strong to provide adequate support for the road works.

Ampthill Clay

This clay is a facies variant of the Corallian. Its engineering properties are similar to London Clay. It does contain selenite and hence sulphate resisting cement may have to be used for concrete structures within it.

Oxford Clay

Oxford Clay is again similar in its engineering properties to London Clay. It is a bluish clay that turns brown on weathering. Bedding is often obscure, especially in the upper part. Thin limestone layers do occur. Like the Ampthill Clay it may be aggressive to concrete.

Cornbrash

This is a rubbly limestone which can be water bearing. It is never more than 25 feet thick but is remarkably persistent. It would be classified for engineering purposes as rock.

Printed image digitised by the University of Southampton Library Digitisation Unit

Great Oolite

This consists of limestone with marl layers. It is very variable. Again this material is largely rock.

Reasons for Preferring the Proposed Route

In selecting the preferred route from others examined we have been influenced by the following factors:—

(a) Although it is slightly longer than the other two routes it is lower in cost than Route 3 and avoids the planned development of Bedford which is seriously affected by Route 2.

(b) Route 3 has been compared with Route 1, but has been discarded on the grounds that its advantage over the preferred route lies only in the fact that it might provide future relief to M1. The evaluation of the apparent advantage would entail the overall assessment of costs and benefits, not only to M1 traffic, but also to traffic using the Strategy Routes. This could not be done in the time available and the advantages in any event would probably be mainly to traffic other than airport traffic. We have, therefore, chosen Route 1 which shows a lower combined capital and user cost for air passenger and airport freight traffic as being our preferred route for the comparative study.

(c) Land of high landscape value is affected to the least extent and places of historic or architectural interest are avoided.

CROSS COUNTRY ROUTES

In the early years of the airport's existence it is envisaged that traffic travelling in directions other than London will use the existing and planned routes shown on Drawing No. T1. Only the new link roads described under Airport Links will be required for airport traffic in these early years.

Later, further road capacity will be required for airport traffic and we envisage that this will be adequately catered for by using the Strategy Route indicated in the Ministry of Transport publication 'Roads for the Future'.

We have examined the line of the Ipswich-Northampton Strategy Route, and although we consider this to provide a possible cross country route for airport traffic, nevertheless, we think that a better line is to be found further south as shown on Drawings Nos. T1 and T3. Our reasons for preferring this more southerly route are that apart from it being located nearer to the airport site, it also utilizes the noise buffer zone and, therefore, minimises the overall disturbance which will result from the scheme as a whole.

The suggested route starts from a point on A1 about 2 miles north of St. Neots and passes north of Great Stoughton Riseley and Sharnbrook retaining a line of woodlands screening the planned urban area to the north. It then curves to the north west at Bozeat and continues on its journey, passing south west of Earls Barton and through undulating farmland to the M6 interchange on M1. The route as shown on Drawings Nos. T1 and T2 crosses the Pitsford Reservoir but an alternative feasible route avoiding the reservoir is possible by locating the road further to the north east passing close to Walgrave and Scaldwell.

Printed image digitised by the University of Southampton Library Digitisation Unit

It should be noted that the area lying between Wellingborough and Northampton is planned for use as a recreational centre and care will be necessary in the planning of a motorway through this area.

AIRPORT ACCESS

The layout shown on Drawing No. T4 is designed to provide in due course for a dual 4-lane motorway connecting the north-east end of the airport to Ringway 3. At the airport, each carriageway divides providing direct access to the terminal buildings. Also shown is a dual 2-lane carriageway link road between the north-east end of the airport and the A1 one mile north of Eaton Socon.

The intersection at the airport would be fully grade separated and provide 'free flow' at 50 m.p.h. design speed.

The motorway would be provided with slip road connections to the 'service side' of the airport, which would include cargo and maintenance areas as well as the service side of the passenger terminals. Slip roads are also provided to a long term car park situated near the airport perimeter.

In the early years of the airport, before the construction of the new motorway to London, the dual 2-lane link to A1 would serve all traffic travelling to London.

The alternative airport access layout shown on Drawing No. T6 provides similar facilities to those described above, except that it is located towards the south-western end of the airport with a new motorway entering from the side of the site, crossing the runway. The position of side entry is governed by the location of a cross taxiway, the limit of which is shown on the drawing. With the motorway crossing the runway, extensive 'cut and cover' tunnelling would be required. We suggest that a dual 4-lane motorway would require four tunnels each carrying a 2-lane carriageway together with hardshoulders.

The details of possible savings in user costs resulting from the adoption of side access are shown in the Summary of Results and Conclusions.

AIRPORT LINK ROADS

Link to A6

A short length of dual 2-lane carriageway road would be provided from the south-west end of the airport to connect with the A6, ½ mile south-west of Bletsoe. This will serve air passengers and air freight traffic travelling to the Midlands and West via the improved A6 and proposed East/West Strategy Route situated to the north of the airport site. The improvement to the A6 would be provided for the proposed Urban Development and therefore no cost has been attributed to air passengers and airport freight.

Link to A1

A dual 2-lane carriageway link road would be provided from the north-east end of the airport to connect with A1 at a point 1 mile north of Eaton Socon. This would serve air passengers and air freight traffic travelling to London (via A1), the North and the East in the early years of the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

INTERCHANGE AT RINGWAY 3

The preferred route would intersect Ringway 3 at a point approximately 1 mile south-east of Shenley and Drawings Nos. T5 and T5A show alternative interchange layouts for this intersection.

Drawing No. T5 shows the preferred route intersecting the A6 at a point near London Colney and slip road connections in the London (south-east) direction are provided. The preferred route would ultimately need to be a dual 4-lane motorway and our investigations indicate that the traffic split would dictate 3-lane slip roads to the south-east at A6 with a dual 2-lane motorway continuing southwards to Ringway 3 where slip road connections to the west only would be provided. The A6 would require increasing in capacity from the present dual 2-lane to dual 4-lane carriageways between the intersection with the preferred route and the intersection of the A1 and Ringway 3 just east of Ridge. At this latter intersection a major interchange is already planned and this would require modification to suit the new requirement with 2-lane 'free flow' slip roads to the A1 in a southerly direction and to Ringway 3 in an easterly direction.

Drawing No. T5A shows an alternative layout, with a three-way interchange at Ringway 3 located 1 mile south-east of Shenley. Again, for the ultimate condition the dual 4-lane motorway would split with 3-lane slip roads to the east and 2-lane slip roads to the west. This would probably necessitate dual 5-lanes to the east and dual 4-lanes to the west on Ringway 3, with modifications to the complex interchange planned for the intersection with A1 and A6. No costs have been attributed to the airport for the additional lanes on Ringway 3.

A considerable proportion of the traffic turning east at Ringway 3 would be bound for London via the A1. In view of this, it might be desirable to modify the interchange layout by extending the preferred route southwards beyond Ringway 3 to meet the A1 just east of Borehamwood. We have not, however, included for this in our capital or user costs as our brief is to terminate the study at Ringway 3.

In the short term the preferred route would be constructed as a dual 2 or 3-lane motorway with provision for eventual improvement to dual 4-lane. Similarly, the Interchanges described above would be designed for the ultimate but constructed to be compatible with the dual 2 or 3-lane motorway.

INTERCHANGE AT A505

Where the motorway intersects A505 a grade separated roundabout interchange would be required to provide access to the airport.

COMPARISONS OF ALTERNATIVE CASES INVESTIGATED IN THE LONDON CORRIDOR

We have described above the improvements planned for the existing roads in the London Corridor and have selected Route 1 as the preferred route for a new motorway. Using this road network, the cases which follow are those examined in order to show the most economic solution to be obtained in providing surface access for air passengers and airport freight between Ringway 3 and the Airport Site.

Printed image digitised by the University of Southampton Library Digitisation Unit

The Alternative Cases Considered

Case I

That a new motorway would be constructed between the Airport Site and Ringway 3, with a single interchange at the junction with the A505, this only giving access to and from the airport. This motorway to be used exclusively by air passengers and airport freight from the opening of the Airport in 1975.

Case II

That the full 100% overload capacity of the existing road network would be used for all traffic including air passengers and airport freight initially. This would necessitate a new link between the north-eastern end of the airport and the A1 one mile north of Eaton Socon.

When 100% overload is reached on the existing road network, a new motorway would be constructed between the Airport and Ringway 3 for use by all traffic. All airport bound traffic would be transferred to this new route from the A1, and the interchange with the A505 would permit all corridor traffic to make full use of the motorway in each direction.

SUMMARY OF RESULTS AND CONCLUSIONS

The analyses, shown in Appendix 1 to this section of the report indicate that the road facilities in the London corridor for the 25% Private and 65% Private modal splits under Case I and Case II are as follows:—

Summary of Results

25% Private

Case I (1975-1990)

1975 (a) Provision of single carriageway A6 and improved A1 as dual 3-lane between Ringway 3 and Baldock and as dual 2-lane from Baldock to beyond the airport site.

1975 (b) Construction of a dual 2-lane motorway between Ringway 3 and the airport for the exclusive use of air passengers and airport freight.

1981 (c) Construction of an additional dual 2-lane road between Ringway 3 and beyond the airport site to supplement A1, A6 and M1.

Case II (1975-1990)

1975 (a) Provision of single carriageway A6 and improved A1 as dual 3-lane between Ringway 3 and Baldock and as dual 2-lane from Baldock to beyond the airport site.

Printed image digitised by the University of Southampton Library Digitisation Unit

1975 (b) Construction of a dual 2-lane link from the airport to the A1 at a point 1 mile north of Eaton Socon.

1980 (c) Construction of a dual 2-lane motorway between Ringway 3 and the airport.

1989 (d) Improvement of motorway (c) above to dual 4-lane standards between Ringway 3 and the junction with the A505.

65% Private

Case I (1975-1990)

1975 (a) Provision of single carriageway A6 and improved A1 as dual 3-lane between Ringway 3 and Baldock and as dual 2-lane from Baldock to beyond the airport site.

1975 (b) Construction of a dual 2-lane motorway between Ringway 3 and the airport for the exclusive use of air passengers and airport freight.

1981 (c) Construction of an additional dual 2-lane road between Ringway 3 and beyond the airport site to supplement A1, A6 and M1.

Case II (1975-1990)

1975 (a) Provision of single carriageway A6 and improved A1 as dual 3-lane between Ringway 3 and Baldock and as dual 2-lane from Baldock to beyond the airport site.

1975 (b) Construction of a dual 2-lane link from the airport to the A1 at a point 1 mile north of Eaton Socon.

1979 (c) Construction of a dual 2-lane motorway between Ringway 3 and the airport.

1986 (d) Improvement of motorway (c) above to dual 4-lane standards between Ringway 3 and the junction with the A505.

1990 (e) Improvement of motorway (c) above to dual 4-lane standards between the junction with the A505 and the airport.

Conclusions

A comparison of the total capital and user costs attributable to the airport for Case I and Case II is given below:—

Printed image digitised by the University of Southampton Library Digitisation Unit

Table T3

London Corridor (A1, A6 and M1) Traffic Flows
Section—Junction with A505 to Ringway 3

Year	Advisory Manual Flow	Flow generated by additional population	Total flow excluding air passengers and airport freight
1965	97,000	—	97,000
1970	132,000	5,000	137,000
1975	161,000	13,000	174,000
1980	189,000	24,000	213,000
1985	210,000	35,000	245,000
1990	228,000	48,000	276,000
1995	244,000	61,000	305,000
2000	258,000	76,000	334,000

(c) Estimates of Total Flow

Tables T4 and T5 below show the total traffic flows obtained when the air passenger and airport freight traffic is added to the flows given in Tables T2 and T3.

Table T4

London Corridor Total Traffic Flows
Section—Airport to junction with A505

Year	Total Flows excluding Air Passengers and Airport Freight	Airport Freight	Air Passenger Flow		Total Flows	
			25% Private	65% Private	including 25% Air Passenger and Airport Freight	including 65% Air Passenger and Airport Freight
1965	31,000	—	—	—	31,000	31,000
1970	45,000	—	—	—	45,000	45,000
1975	59,000	—	—	—	59,000	59,000
1980	74,000	1,000	3,000	11,000	78,000	86,000
1985	88,000	2,000	6,000	28,000	96,000	118,000
1990	100,000	4,000	11,000	48,000	115,000	152,000
1995	114,000	8,000	23,000	92,000	145,000	214,000
2000	127,000	14,000	40,000	172,000	181,000	313,000

Printed image digitised by the University of Southampton Library Digitisation Unit

65% Private

(i) Construction of a second motorway, ultimately to dual 4-lane standards, between the Airport and Ringway 3.

(ii) Construction of a third motorway, to dual 2-lane standards, between the A505 and Ringway 3.

(g) For the 65% Private modal split the discounted road user cost saving which results from adopting side-access to the airport site, as shown on Drawing No. T6, is estimated at £2·5M for the full period 1975-1990, based on Case I. In the recommended Case II, where construction of the new motorway is delayed until 1979, the savings up to 1990 are less.

Printed image digitised by the University of Southampton Library Digitisation Unit

Our 'Summary of Results and Conclusions' for the Thurleigh Study summarises the total costs of the alternative cases considered.

We set out below details of the analysis leading to these results and conclusions:—

TRAFFIC FORECASTS

(a) Assignment of Air-passenger flows

The air-passenger flows assigned by the Commission Research Team to the road network for 1990, modified to the 65% Private modal split, are shown in diagrammatic form in Drawing No. T7 bound here.

Drawing No. T8, also bound here, shows the effect of introducing a new route between the airport and Ringway 3 for the analysis of Case 1. All airport traffic has been assigned to this route with provision for cross-country airport traffic to leave the new motorway at the interchange with the A505. The remaining London bound traffic diverges at Ringway 3 with the Central London traffic proceeding via A1 and thence M1.

The air passenger assignment for Case II in 1990, is similar to that for Case I, except that eastern and Central London bound flows will leave the new motorway at its junction with the A6 and continue on this road and thence A1 to Ringway 3, thereby allowing the reduced volume of southern and western bound traffic to remain on the new motorway. However, before the introduction of this new route, air passenger flows have been assigned to use the spare capacity of A1 with eastern and western bound traffic distributing at the intersection with Ringway 3, and Central London traffic continuing on the A1.

(b) Estimates of Traffic Flows in the London Corridor

Tables T2 and T3 below show the cumulative total traffic flows, excluding air passenger and airport freight, in p.c.u's per 16 hour August day for the London Corridor.

Table T2

London Corridor (A1 and A6) Traffic Flows
Section—Airport to junction with A505

Year	Advisory Manual Flow	Flow generated by additional population	Total flow excluding air passengers and airport freight
1965	31,000	—	31,000
1970	42,000	3,000	45,000
1975	51,000	8,000	59,000
1980	60,000	14,000	74,000
1985	67,000	21,000	88,000
1990	72,000	28,000	100,000
1995	78,000	36,000	114,000
2000	82,000	45,000	127,000

Printed image digitised by the University of Southampton Library Digitisation Unit

Total Discounted Capital and User Costs (£M)
for air passengers and airport freight (1975-1990)

Case	25% Private			65% Private		
	Road User Costs	Capital Costs	Total Costs	Road User Costs	Capital Costs	Total Costs
I	13·8	39·8	53·6	51·5	39·9	91·4
II	14·5	6·2	20·7	53·4	9·1	62·5

On the basis of these costs we recommend the adoption of Case II, which makes maximum use of the existing and already planned road network.

Further conclusions drawn from our study are as follows:—

(a) The existing road network, together with improvements already planned, can accommodate all traffic in the London corridor until the late 1970's for the 65% Private and the early 1980's for the 25% Private modal split. Later a new motorway is required between the airport and Ringway 3.

(b) In order to accommodate all air passengers and airport freight up to the year 2000 a second motorway would have to be provided in the London corridor. In our opinion this second motorway would be difficult to integrate into this corridor and the resultant extra traffic could not be catered for by Ringway 3.

(c) The effects of air passenger flows on Ringway 3 based on the Commission's Research Team's assignments are shown in the summary of results and conclusions on page 13.

(d) The air passenger flows, outside the London corridor, do not reach a level in the period 1975-1990 which exceeds our estimates of the spare capacity on existing routes and proposed improvements or new routes.

(e) The capital costs for Case II, attributable to the Airport, between Ringway 3 and the Airport are as follows:—

25% Private — £6·2 M
65% Private — £9·1M

(f) For the period 1990-2000 the following further improvements may be necessary for Case II:—

25% Private

(i) Improvement of the dual 2-lane motorway (constructed in 1980) dual 4-lane standards between the Airport and the junction with the A505.

(ii) Construction of a second dual 2-lane motorway between the A505 and Ringway 3.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table T5

London Corridor Total Traffic Flows
Section—Junction with A505 to Ringway 3

Year	Total Flows excluding Air Passengers and Airport Freight	Airport Freight	Air Passenger Flow		Total Flows	
			25% Private	65% Private	including 25% Air Passenger and Airport Freight	including 65% Air Passenger and Airport Freight
1965	97,000	—	—	—	97,000	97,000
1970	137,000	—	—	—	137,000	137,000
1975	174,000	—	—	—	174,000	174,000
1980	213,000	1,000	2,000	10,000	216,000	224,000
1985	245,000	2,000	5,000	25,000	252,000	272,000
1990	276,000	4,000	9,000	43,000	289,000	323,000
1995	305,000	8,000	17,000	73,000	330,000	386,000
2000	334,000	14,000	31,000	153,000	379,000	501,000

ROAD CAPACITIES

The major roads serving this corridor from Ringway 3 are the A6, A1 and M1. However, for our study, as the M1 diverges away from the main corridor to Thurleigh between Luton and Newport Pagnell, it has been omitted in the analysis of the section from the Airport Site to the junction with the A505.

Considering Case I

Table T6 below indicates the dates on which the road capacity demands of air passengers and airport freight will (judged by the criterion of 100% overload capacity) require a dual 2-lane motorway constructed for their exclusive use.

The road capacity demands for the 'without Airport' situation do not have any effect on the cost of providing road access to the airport, when considering the Case I analysis, and have therefore been omitted.

Table T6

The New Motorway
Date when required for air passenger and airport freight traffic

Section	Number of Lanes	Date required for 25% Private	Date required for 65% Private
Airport to the junction with A505	dual 2	1975	1975
Junction with A505 to Ringway 3	dual 2	1975	1975

Printed image digitised by the University of Southampton Library Digitisation Unit

Considering Case II

Tables T7 and T8 below show the dates on which the road capacity demands of the total traffic for both the 'with' and 'without' airport situations require improvements to the existing road network, followed later by the construction of a new motorway.

Table T7

A1, A6 and New Motorway
Dates when improvements are required for total traffic in the Section—Airport to junction with A505

Road Reference	Number of Lanes	Without Airport Date Required	With Airport—Case II	
			Date required for 25% Private	Date required for 65% Private
A1 A6	dual 2 single	1967	1967	1967
A1 A6 New Motorway	dual 2 single dual 2	1981	1980	1979
A1 A6 New Motorway	dual 2 single dual 4	Not Required	Not Required	1990

Table T8

A1, A6, M1 and New Motorway
Dates when improvements are required for total traffic in the Section—Junction with A505 to Ringway 3

Road Reference	Number of Lanes	Without Airport Date Required	With Airport—Case II	
			Date required for 25% Private	Date required for 65% Private
A1 A6 M1	dual 3 single dual 3	1969	1969	1969
A1 A6 M1 New Motorway	dual 3 single dual 3 dual 2	1981	1980	1979
A1 A6 M1 New Motorway	dual 3 single dual 3 dual 4	Not required	1989	1986

CAPITAL COSTS

The capital costs (at 1968 prices) have been estimated for all new routes and improvements, where in the period 1975-1990 these are relevant to the comparisons, and are shown below in Table T9.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table T9

Capital Costs

Route	Highway Improvement	Length Miles	Capital Cost £M
Airport link to A1	Dual 2-lane motorway	2·8	3·5
Airport link to A1	Single carriageway	2·8	0·8
New motorway –Airport to Ringway 3	Dual 2-lane	40·9	35·4
New motorway –A505 to A6	Dual 2-lane to dual 4-lane	17·3	2·1
New motorway –Airport to A505	Dual 2-lane to dual 4-lane	21·4	2·6
A6–New motorway junction to Ringway 3	Dual 2-lane (all purpose) to dual 3-lane	2·3	0·5
*Ringway 3–New motorway junction to A1	Dual 3-lane to dual 4-lane	1·2	0·3

*N.B. In order to compare Case I with Case II, all costs have been calculated to points on Ringway 3, common to Case I and Case II, i.e. A1 junction and new motorway junction.

Tables T10 and T11 compare the discounted capital costs for the 'with' and 'without' Airport situations for all new routes and improvements for the 25% Private modal split.

Dates are derived from Tables T6, T7 and T8, and costs from Table T9. Costs are taken as falling, on average, one year before the date when the improvement is required to come into operation.

Table T10

Discounted Capital Costs. Case I

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
New motorway– Airport to Ringway 3 (dual 2-lane)	35·4	Not applicable	1975	–	38·9
Airport link to A1	0·8	Not applicable	1975	–	0·9
			Total	–	39·8

Cost attributable to the Airport = £39·8M

Printed image digitised by the University of Southampton Library Digitisation Unit

Table T11

Discounted Capital Costs. Case II

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
Airport link to A1 (dual 2-lane)	3·5	Not Required	1975	—	3·9
New motorway—Airport to Ringway 3 (dual 2-lane)	35·4	1981	1980	22·0	24·2
New motorway—A505 to A6 (improvement to dual 4-lane)	2·1	Not Required	1989	—	0·1
			Totals	22·0	28·2

Cost attributable to the Airport = £6·2M

Tables T12 and T13 compare the discounted capital costs for the 'with' and 'without' Airport situations for all new routes and improvements for the 65% Private modal split.

Table T12

Discounted Capital Costs. Case I

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
New motorway—Airport to Ringway 3 (dual 2-lane)	35·4	Not applicable	1975	—	38·9
Airport link to A1	0·8	Not applicable	1975	—	0·9
			Sub Totals	—	39·8

Cost attributable to the Airport = £39·8M

Notional improvement of Ringway 3, New motorway junction to A1 (for comparison with Case II)	0·3	Not applicable	1987	—	0·1
			Total	—	39·9

Cost attributable to the Airport = £39·9M

Printed image digitised by the University of Southampton Library Digitisation Unit

Table T13

Discounted Capital Costs. Case II

Improvement	Capital Cost £M	Date without Airport Flows	Date with Airport Flows	Discounted Capital Costs £M	
				without Airport	with Airport
Airport link to A1 (dual 2-lane)	3·5	Not Required	1975	—	3·9
New motorway—Airport to Ringway 3 (dual 2-lane)	35·4	1981	1979	22·0	26·6
New motorway—A505 to A6 (improvement to dual 4-lane)	2·1	Not Required	1986	—	0·5
A6—New motorway junction to Ringway 3 (additional lane in each direction)	0·5	Not Required	1990	—	0·1
New Motorway—Airport to A505 (improvement to dual 4-lane)	2·6	Not Required	1990	—	0·0
			Total	22·0	31·1

Cost attributable to the Airport = £9·1M

Road User Costs

The discounted Road User Costs between Ringway 3 and the airport site for air passengers and airport freight, for the period 1975-1990, are as follows:—

Table T14

Discounted Road User Costs in £M

Case	25% Private	65% Private
I	13·8	51·5
II	14·5	53·4

T19

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

PARTICULAR STUDY ASSUMING THE AIRPORT TO BE LOCATED AT CUBLINGTON

Details of our examination of this case follow, and reference should be made to the Drawings listed below which are included at the end of this section for Cublington.

Drawing No. C1 — Surface Access Proposals
Drawing No. C2 — Plan Showing Routes Examined—Sheet 1
Drawing No. C3 — Plan Showing Routes Examined—Sheet 2
Drawing No. C4 — Interchange Layout at Airport (Ultimate Design)
Drawing No. C5 — Interchange Layout at North Orbital (Alternative 1)
Drawing No. C6 — Interchange Layout at Ringway 3 (Alternative 2)
Drawing No. C7 — Interchange Layout at Airport—Side Entry (Ultimate Design)

ROUTES WITHIN THE LONDON CORRIDOR

Existing Routes

The London Corridor between Cublington and Ringway 3 is served mainly by the A41, but the A413 and A5 pass within a few miles of the airport site.

The A41, which is the more direct route to the airport, crosses Ringway 3 just east of Bushey and runs parallel to M1 before by-passing Watford to the north. The road then follows the Grand Union Canal passing west of Hemel Hempstead and through the towns of Berkhamsted, Tring and Aylesbury on its route to Bicester. Its nearest point to the airport site is at Aylesbury which is approximately 3 miles south of the southern end of the site.

The A41 is at present heavily trafficked and is planned for improvement in the mid-1970's to a dual 2-lane road from the North Orbital Road to the Tring By-Pass, with provision for the addition of an extra lane in either direction between the North Orbital Road and Berkhamsted.

Proposed New Route

We have examined a number of alternative routes for new motorways within the London Corridor, the locations of which are detailed on Drawings Nos. C2 and C3.

Our preferred new route is shown as alternative '1' on Drawing No. C1. Routes 2 and 3 on that drawing would be more expensive but the additional cost might be offset if either of these routes were extended so as to provide relief for M1. However, because Route 1 is the most economic so far as the airport alone is concerned, it has been selected as our preferred route. It will be seen that from Ringway 3 it runs northwards through Rickmansworth and then crosses the River Colne Valley. From here it continues along the east bank of the River Chess and then passes through open farmland classified as Grade 3 under the 'Agricultural Land Classification' and intersects the proposed line of the North Orbital Road near Micklefield.

Printed image digitised by the University of Southampton Library Digitisation Unit

It is routed to a point south-west of Sarratt and then continues its crossing of the Chiltern Hills through further Grade 3 farmland, to intersect the A41 between Berkhamsted and Tring.

After descending from the Chilterns the route crosses Grade 2 farmland passing to the north of Marsworth and thence through Grade 2 and Grade 3 land, finally connecting to the south-west end of the airport site.

At the southern end of the preferred route a further alternative has been examined between points 13 and 16 on Drawing No. C2. This appears of equal merit to the line 13.15 chosen as our preferred route and further investigation would be required before a final choice was made. Meanwhile, since the two alternatives are closely comparable in costs, the choice we have made is unlikely to affect the overall comparisons of the four airport sites.

Geology

The geological succession of the strata traversed by the preferred route is as follows:—

Alluvium	Recent
Boulder Clay Glacial Sand and Gravel Pebbly Clay	Pleistocene
London Clay Reading Beds	Eocene
Chalk Greensand and Gault	Cretaceous
Kimmeridge Clay	Jurassic

The relative importance of each of these strata can be assessed in Table C1 where the percentage of the route underlain by each soil type is given.

Table C1

Soil Type	Percentage of Route Underlain by each Soil Type
Alluvium	2
Boulder Clay	26
Glacial Sands and Gravel	18
Pebbly Clay	4
London Clay	0·5
Reading Beds	5
Chalk	18
Gault and Greensand	16·5
Kimmeridge Clay	10
	100

Printed image digitised by the University of Southampton Library Digitisation Unit

The above table indicates that Boulder Clay is the most common soil type and that some 50% of the route is underlain by drift deposits.

Alluvium

No detailed work has been undertaken by us to ascertain the composition of the alluvium, of which there appears to be little, but gravels, sands, silts and clays may occur. Since these are deposits formed by existing rivers and streams, they occupy the floors of valleys. In the case of embankments both their settlement characteristics and their shear strengths are of importance. Due to the variable nature of the alluvium settlements can be uneven.

In general it is considered that the alluvium may be strong enough to prevent base failure below the embankments but soft areas may occur.

Boulder Clay

These wide spread deposits are quite variable in composition. Work elsewhere suggests that cutting side slopes of the relatively shallow depths envisaged should be stable at 1 : 2 unless seepage occurs. Embankments can be constructed of Boulder Clay and side slopes of 1 : 2½ are usual. The clay is assumed to be sufficiently strong to support the proposed embankment and settlement is expected to be moderate.

Glacial Sand and Gravel

Glacial sand and gravel deposits also vary in composition. Where they rest on London Clay (i.e. in the southern portion of the proposed route) they may be water bearing. Springs may thus be expected in this type of ground and suitable drains will have to be constructed to carry the ground water away from the proposed road. This is particularly so in cuttings where side slopes of 1 : 2 may well be stable, if drained. It is excellent material for embankment construction and side slopes of about 1 : 2 may be considered to be safe. They may also be a source of concrete aggregate.

Pebbly Clay

This drift deposit is similar to 'clay with flints'. The matrix is usually clay but sand can occur. Cutting slopes of 1 : 2 to 1 : 3 seem appropriate but care will have to be taken to drain possible seepages of water which could render these side slopes unstable.

London Clay

This clay is frequently fissured; the fissures tending to reduce the shear strength of the clay. As a result cutting side slopes of 1 : 4 or even 1 : 6 may be found necessary. It is not so troublesome in embankments where side slopes of 1 : 2½ are usual. Settlement is anticipated to be relatively small.

Reading Beds

Reading Beds consist of mottled plastic clays and sands with thin beds of flint pebbles. Where clays occur cutting slopes may be cut at 1 : 4 with steeper slopes in the sands. Alternations of sand and clay can result in treacherous conditions, particularly if seepage also occurs. Suitable drainage may, however, stabilise these side slopes.

Printed image digitised by the University of Southampton Library Digitisation Unit

Chalk

The engineering properties of this fine grained limestone have been studied quite extensively. It usually forms safe cutting slopes varying between 1 to 1 and the vertical. Care must, however, be taken to avoid over-compaction when constructing embankment of this material. It is found that the compacted density is frequently some 10% to 13% higher than the in situ density and here again care must be taken in estimating the quantities of cut and fill material. Finally chalk is frost susceptible and pavements greater than 18 inches thick are necessary if the frost hazard is to be avoided.

Gault and Greensand

The Gault is a stiff dark clay which passes upwards through sandy and marly clays into the fine grained, well bedded sandy clays and malmstones of the Upper Greensand. The Lower Greensand does not outcrop along this route. The engineering properties of these two groups are similar to those outlined for London Clay.

Kimmeridge Clay

Kimmeridge Clay is described as a 'bluish-grey, sandy, glauconitic clay'. It is assumed that this stiff, over-consolidated clay approximates in its engineering properties to the London Clay. Settlement is expected to be small. Cutting side slopes should be 1 : 4 and embankments of this material will probably be stable at 1 : 2½.

Reasons for Preferring the Proposed Route

Any route selected in the London Corridor between Ringway 3 and the Cublington site will cross land of high landscape value and in final design will require very careful location.

The routes we have examined appear to be of equal merit in this respect; our selection of the preferred route was guided mainly by considerations of capital and user cost.

Route 1, 8, 9, 13, 15 shown on Drawing No. C2 is shorter than the proposed route but involves the construction of a tunnel in the Chilterns. As a result it is more expensive than our preferred route.

Combined Road/Rail Route

There are no proposals for a combined road/rail route to the Cublington site, as the proposed rail link from the existing line north-west of Aylesbury would not be suitable for combining with a road link.

CROSS COUNTRY ROUTES

Air passenger assignments as given to us by the Commission show that approximately 12,000 p.c.u's per day (for the 65% Private case) will wish to travel from the airport in the year 1990 in a westerly direction. Smaller flows of 4,000 p.c.u's per day to the north and 9,000 p.c.u's per day to the east have also been estimated.

Printed image digitised by the University of Southampton Library Digitisation Unit

These small flows to the north and east could be accommodated on the existing routes together with the new routes in the area of the proposed airport urbanisation suggested by the Planning Consultants. We have also assumed that later the Strategy Routes as proposed in the Ministry of Transport publication 'Roads for the Future' or some equivalent improvements will become available at no cost to the airport. We envisage that use will also be made of the Wolverton to Bedford route proposed in the Bedford, Milton Keynes, Northampton and Wellingborough Study although the amount of airport traffic likely to use this road will be minimal.

The volume of airport traffic wishing to travel westwards towards Oxford cannot possibly be absorbed on to the existing road network in the year 1990. No improvements appear to be planned for the A41 between Aylesbury and Bicester, the A421 Bicester to Oxford, or the A418. Furthermore there are no Strategic Routes proposed for this east/west corridor.

Therefore, in the event of the airport being located at Cublington it will be necessary to carry out road improvements to the A41 and A421 between the airport and Oxford. The costs of these have been estimated and included in our summary of costs for the Cublington study.

The traffic information available is limited to the 1965 Traffic Census. Updating these traffic flows and compounding them with the air passenger and airport freight flows we estimate that a 3-lane single carriageway will be required after the late 1970's to carry this traffic until the year 1990.

For practical purposes we have allowed in our estimates for providing a dual 2-lane by-pass around Bicester.

AIRPORT ACCESS

The layout shown on Drawing No. C4 is designed to cope in due course with a dual 4-lane motorway connecting the airport to London's North Orbital Road and/or Ringway 3. At the airport each carriageway divides, thus providing direct access to the terminal buildings. The intersection is fully grade separated and provides 'free flow' at 50 m.p.h. design speed. Also shown is a dual 2-lane carriageway link road to the A41 near Aylesbury.

The motorway will be provided with slip road connections to the 'service side' of the airport, which includes cargo and maintenance areas as well as the 'service side' of the passenger terminals. Slip road links are also provided to a long term car park situated near the airport perimeter.

In the early years of the airport, before construction of the motorway to London, the dual 2-lane link to A41 would serve for all airport traffic to London and the West.

The alternative airport access layout shown on Drawing No. C7 is similar to that discussed above except that it is located approximately 4000' further to the north-east so that the new motorway enters the site from the side and crosses the runway. The location of this side entry access is governed by the position of a crossover taxiway, the limit of which is shown on the drawing.

Printed image digitised by the University of Southampton Library Digitisation Unit

With the motorway crossing the runway extensive 'cut and cover' tunnelling would be required. We suggest that a dual 4-lane motorway would require four tunnels, each carrying a 2-lane carriageway together with a hardshoulder.

The details of possible savings in user costs resulting from adoption of side access are shown in the Summary of Results and Conclusions.

AIRPORT LINK ROADS

Link to A41

A dual 2-lane carriageway link road would be provided from the south-west end of the airport to connect with the A41 (Aylesbury Northern By-Pass). This would serve traffic to London and the west in the years before the new motorway to London is constructed. Later it would serve air passenger and air freight traffic travelling to the west only.

(N.B. Reference Aylesbury Northern By-Pass see Appendix C1—Road Capacities)

Link to M1

As part of their urban area strategy the Planning Consultants have planned a new dual 2-lane carriageway link road from the north-east end of the airport to the A50 Interchange on M1, approximately 2 miles south of Newport Pagnell. We think that the road would be able to cater for air passengers and air freight bound for the Midlands and North together with traffic between the 'service side' of the airport and the urban area. In our study no extra cost has been attributed to the airport on this account.

THREE-WAY INTERCHANGE AT RINGWAY 3 (Case I)

The preferred route intersects Ringway 3 approximately 1 mile north-east of Harefield and Drawing No. C6 shows a plan of the proposed Three-Way Interchange which has free traffic flow in all directions to a 50 m.p.h. design speed.

The proportion of traffic turning to the east at Ringway 3 is larger than that turning to the south and considering the ultimate condition a dual 4-lane motorway would split into 3-lane slip roads to the east and 2-lane slip roads to the south. Assuming that the through traffic on Ringway 3 would require dual 3-lane, then the requirement for Ringway 3 east and south of the Three-Way Interchange would be dual 5-lane and dual 4-lane respectively. No costs have been attributed to the airport for the additional lanes on Ringway 3.

In the short term the preferred route would be constructed as a dual 2 or 3-lane motorway with provision for improvement to the ultimate dual 4-lane. Similarly, the Three-Way Interchange at Ringway 3 would be designed for the ultimate but initially constructed to be compatible with the capacity of the dual 2 or 3-lane motorway.

THREE-WAY INTERCHANGE AT NORTH ORBITAL ROAD (Case II)

The preferred route intersects the North Orbital Road at a point 1 mile south of Sarratt and Drawing No. C5 shows a plan of the proposed Three-Way Interchange, which has 'free traffic

Printed image digitised by the University of Southampton Library Digitisation Unit

flow' in all directions at 50 m.p.h. design speed. It also has the facility for the preferred route to be extended to Ringway 3, shown dotted on the plan, should this be found necessary.

Again, our investigations show that traffic to the east is greater than to the south-west and the lane requirements would be similar to those discussed under the Three-Way Interchange at Ringway 3 (Case I) above.

OTHER INTERCHANGES

Where the motorway intersects A416 a grade separated roundabout interchange would be required to provide access to the airport.

COMPARISONS OF ALTERNATIVE CASES INVESTIGATED IN THE LONDON CORRIDOR

We have described above the improvements planned for the existing roads in the London Corridor and have selected a preferred route for a new motorway. Using this road network the cases which follow are those examined in order to show the most economic solution to be obtained in providing surface access for air passengers and freight between Ringway 3 and the airport site.

The Alternative Cases Considered

Case I

That a new motorway would be constructed between the airport and Ringway 3, with a single interchange at the junction of the A416, this only giving access to and from the airport. This motorway would be used exclusively by air passengers and airport freight from the opening of the Airport in 1975.

Case II

That the full 100% overload capacity of the improved A41 would be used for all traffic including air passengers and airport freight, initially. This would necessitate a new airport link from the south-west end of the airport site, to a point on the proposed Aylesbury Northern By-Pass at the junction with the A413.

When 100% overload of design capacity is reached, a new motorway would be constructed from the Airport to the North Orbital road to relieve the A41 of all airport traffic. In this case the interchange on the A416 will permit traffic to make full use of the new motorway in each direction.

Printed image digitised by the University of Southampton Library Digitisation Unit

SUMMARY OF RESULTS AND CONCLUSIONS

Summary of Results

The analyses, shown in Appendix I to this section of the report, indicate that the road facilities in the London Corridor for the 25% Private and 65% Private modal splits under Case I and Case II are as follows:—

25% Private

Case I (1975 to 1990)

1975 (a) Provision of new A41 as dual 2-lane between the North Orbital and the Aylesbury By-Pass.

1975 (b) Construction of a dual 2-lane motorway, between Ringway 3 and the airport for the exclusive use of air passengers and airport freight.

1982 (c) Improvement of new A41 to dual 3-lane between the North Orbital and the A416.

Case II (1975 to 1990)

1975 (a) Provision of new A41 as dual 2-lane between the North Orbital and the Aylesbury By-Pass.

1975 (b) Construction of a dual 2-lane link from the airport to the A41 Aylesbury By-Pass at the junction with the A413.

1980 (c) Improvement of new A41 to dual 3-lane between the North Orbital and the A416.

65% Private

Case I (1975 to 1990)

1975 (a) Provision of new A41 as dual 2-lane between the North Orbital and the Aylesbury By-Pass.

1975 (b) Construction of a dual 2-lane motorway between Ringway 3 and the airport for the exclusive use of air passengers and airport freight.

1982 (c) Improvement of new A41 to dual 3 lane between the North Orbital and the A416.

Case II (1975 to 1990)

1975 (a) Provision of new A41 as dual 2-lane between the North Orbital and the Aylesbury By-Pass.

1975 (b) Construction of a dual 2-lane link from the airport to the A41 Aylesbury By-Pass at the junction with the A413.

Printed image digitised by the University of Southampton Library Digitisation Unit

1978 (c) Improvement of the new A41 to dual 3 lane between the North Orbital and the A416.

1984 (d) Construction of a dual 2-lane motorway between the North Orbital and the airport.

Conclusions

A comparison of the total capital and user costs for both cases is given below.

Total Discounted Capital Costs and User Costs for air passengers and airport freight (1975-1990)

Case	25% Private			65% Private		
	Road User Costs	Capital Costs	Total Costs	Road User Costs	Capital Costs	Total Costs
I	8·5	27·0	35·5	42·8	28·2	71·0
II	9·7	3·7	13·4	45·2	10·8	56·0

On the basis of these costs we recommend the adoption of Case II, which makes the maximum use of the existing and already planned road network.

Further conclusions drawn from our study are as follows:—

(a) The improvements indicated in the A41 Watford-Tring Report, planned for the mid 1970's, should be extended westwards to provide for an Aston Clinton By-Pass and a By-Pass to the north of Aylesbury, even without the traffic generated by the airport.

(b) Together with these improvements a new motorway to the airport is required in the mid 1980's for the 65% private case and the early 1990's for the 25% private case.

(c) In order to carry all traffic in the year 2000 for the 65% private case a second motorway is required. The routes shown on Drawing No. C2 linking the north-eastern end of the airport with the intersection of the M1 with the M10 would be possible lines for this second motorway. However, the additional airport traffic would create serious additional problems on this section of the North Orbital route.

(d) The effects of air passenger flows on the North Orbital, based on the Commission's Research Team's assignments, are shown in the Summary of Results and Conclusions on Page 13.

(e) Air passenger flows, outside the London corridor, can be accommodated, up to 1990, on the existing and already planned road network, with the exception of the flows westwards toward Oxford, which necessitate improvements to the A41, A421 and A43 between Aylesbury and Oxford.

Printed image digitised by the University of Southampton Library Digitisation Unit

(f) The capital costs for Case II attributable to the Airport, between the North Orbital and the Airport, are as follows:—

25% Private—£3·7m
65% Private—£9·4m

(N.B. These costs exclude the notional costs for the North Orbital, included for the comparison of Case I and Case II)

(g) For the period 1990-2000 the following further improvements may be necessary for Case II:—

25% Private

(i) Construction of a new dual 2-lane motorway between the Airport and the North Orbital.

65% Private

(i) Improvement of the dual 2-lane motorway (constructed in 1984), to dual 4-lane standards between the Airport and the North Orbital.

(ii) Construction of a second motorway, to dual 2-lane standards, between the Airport and the North Orbital.

(h) For the 65% Private modal split the discounted road user cost saving which results from adopting side access to the airport site, as shown on Drawing No. C7, is estimated at £1·7m for the full period 1975-1990, based on Case I. In the recommended Case II, where construction of the new motorway is delayed until 1984, the savings up to 1990 are, of course, substantially less.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX CI

Our 'Summary of Results and Conclusions' for the Cublington Study summarises the total costs of the alternative cases considered.

We set out below details of the analysis leading to these results and conclusions:—

TRAFFIC FORECASTS

(a) Assignment of Air-passengers flows

The air-passenger flows as assigned by the Commission Research Team to the road network for 1990, modified for the 65% private modal split, are shown in diagrammatic form in Drawing No. C8 bound here.

For Case I these flows have been manually re-assigned onto a direct link to Ringway 3 and then via M40 and M1 into London, as shown on Drawing No. C9.

For Case II the assignment, as shown on Drawing No. C10, is similar to that used for Case I except that the flows are distributed at the junction with the North Orbital road and not at Ringway 3 as applies for Case I. However, for the period between the opening of the Airport and the time that a new motorway is required, for Case II, all London bound air passengers and airport freight will be assigned to the improved A41 and will distribute at the intersection with the North Orbital, so that eastern and Central London flows travel to Ringway 3 via the M1 and the southern and western bound flows travel southwards on the North Orbital and re-distribute at the junction with M40.

(b) Estimates of Traffic Flows in the London Corridor

In our view, the improved A41 route is the only road capable of making a real contribution in carrying the air passenger and airport freight flows in the London Corridor, through the period 1975 to 1990. Our reasons for this view are:—

(a) The bulk of the traffic in the London corridor, generated by the additional population in the area around the airport site, is likely to be carried by the M1 and A5.

(b) It is unlikely that there will be significant spare capacity for air passenger and airport freight flows on the M1 and A5.

(c) The improved capacity of the A41 is unlikely to produce significant relief to M1 and A5, because of the lack of real opportunity for traffic transfer between these routes.

(d) The A41 route with suitable links to the airport can provide a direct route to London for air passengers and airport freight which compares favourably with routes via the A5 or M1, even if capacity were available on this routes.

We have therefore concentrated our attention on the A41 route for air passenger and airport freight flows.

Printed image digitised by the University of Southampton Library Digitisation Unit

The Ministry of Transport has made available to us a report on the A41 improvements which contains a detailed traffic analysis for the Tring-Watford section with 1990 traffic assignments. The figures for traffic flows which we have estimated for the A41 at Tring for 1990 fall within 5% to 10% of the A41 Report figures. We feel that use of the traffic assignment figures in the A41 Report gives the best basis for appraisal of the spare capacity available for air passenger and freight flows.

We have therefore used the A41 Report traffic figures in our analysis of the facilities required by the Cublington airport flows.

Table C2 below shows the cumulative total traffic flows, excluding air passengers and airport freight, in p.c.u's per 16 hour August day for the London Corridor.

Table C2

London Corridor (New A41) Traffic Flows

Year	Trend Flow from Watford Tring Report		Flow Generated by additional population	Total Flow excluding Air Passenger and Airport Freight	
	Section—Airport to junction with A416	Section—Junction with A416 to North Orbital		Section—Airport to junction with A416	Section—Junction with A416 to North Orbital
1965	11,000	24,000	—	11,000	24,000
1970	19,000	37,000	1,000	20,000	38,000
1975	26,000	47,000	3,000	29,000	50,000
1980	31,000	57,000	5,000	36,000	62,000
1985	36,000	65,000	7,000	43,000	72,000
1990	41,000	72,000	9,000	50,000	81,000
1995	45,000	78,000	12,000	57,000	90,000
2000	48,000	84,000	15,000	63,000	99,000

(c) Estimates of Total Flow

Tables C3 and C4 below show the total traffic flows obtained when the air passenger and airport freight traffic is added to the flows given in Table C2.

Table C3

A41 — Total Traffic Flows, Section—Airport to junction with A416

Year	Total Flow excluding Air Passengers and Airport Freight	Airport Freight	Air Passenger Flow		Total Flow	
			25% Private	65% Private	Including 25% Air Passengers and Airport Freight	Including 65% Air Passengers and Airport Freigh
1965	11,000	—	—	—	11,000	11,000
1970	20,000	—	—	—	20,000	20,000
1975	29,000	—	—	—	29,000	29,000
1980	36,000	1,000	2,000	11,000	39,000	48,000
1985	43,000	2,000	4,000	28,000	49,000	73,000
1990	50,000	4,000	7,000	49,000	61,000	103,000
1995	57,000	8,000	15,000	95,000	80,000	160,000
2000	63,000	14,000	27,000	177,000	104,000	254,000

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C4

A41—Total Traffic Flows, Section—Junction with A416 to North Orbital

Year	Total Flow excluding Air Passengers and Airport Freight	Airport Freight	Air Passenger Flow		Total Flow	
			25% Private	65% Private	Including 25% Air Passengers and Airport Freight	Including 65% Air Passengers and Airport Freight
1965	24,000	—	—	—	24,000	24,000
1970	38,000	—	—	—	38,000	38,000
1975	50,000	—	—	—	50,000	50,000
1980	62,000	1,000	2,000	11,000	65,000	74,000
1985	72,000	2,000	4,000	28,000	78,000	102,000
1990	81,000	4,000	7,000	49,000	92,000	134,000
1995	90,000	8,000	15,000	95,000	113,000	193,000
2000	99,000	14,000	27,000	177,000	140,000	290,000

ROAD CAPACITIES

Although the proposed A41 improvement is planned between the North Orbital and the Tring By-Pass, our estimated traffic flows indicate that the improvement to the A41 will be required to be extended to include the Aston Clinton By-Pass and Aylesbury Northern By-Pass. The traffic flows on the section between the Tring By-Pass and Aylesbury show 33,000 p.c.u's per 16 hour August day in 1975, thereby indicating that improvement should be provided to this section of single carriageway road before 1975, on the basis of 100% overload.

Considering Case I

Table C5 below indicates the dates on which the road capacity demands of air passenger and airport freight will (judged by the criterion of 100% overload capacity) require a dual 2-lane motorway or a dual 4-lane motorway constructed for their exclusive use.

The road capacity demands for the 'without airport' situation do not have any effect on the cost of providing road access to the airport, when considering the Case I analysis, and have therefore been omitted.

Table C5

The New Motorway

Date when required for air passenger and airport freight traffic

Section	Number of lanes	Date required for 25% Private	Date required for 65% Private
Airport to Ringway 3	dual 2	1975	1975

Printed image digitised by the University of Southampton Library Digitisation Unit

Considering Case II

Tables C6 and C7 below show the dates on which the road capacity demands of the total traffic for both the 'with' and 'without' airport situations require improvements to the existing road network, followed later by the construction of a new motorway.

Table C6

New A41 and New Motorway
Dates when improvements are required for total traffic for the Section—Airport to the junction with A416

Road Reference	Number of lanes	Without Airport Date Required	With Airport—Case II	
			Date Required for 25% Private	Date Required for 65% Private
New A41	dual 2	1968	1968	1968
New A41	dual 2	Not Required	Not Required	1984
New Motorway	dual 2			

Table C7

New A41 and New Motorway
Dates when improvements are required for total traffic for the Section—Junction with A416 to North Orbital

Road Reference	Number of lanes	Without Airport Date Required	With Airport—Case II	
			Date Required for 25% Private	Date Required for 65% Private
New A41	dual 2	Before 1965	Before 1965	Before 1965
New A41	dual 3	1982	1980	1978
New A41	dual 3	Not Required	Not Required	1984
New Motorway	dual 2			

CAPITAL COSTS

The capital costs (at 1968 prices) have been estimated for all new routes and improvements where in the period 1975-1990 these are relevant to the comparisons, and are shown below in Table C8.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C8

Capital Costs

Route	Highway Improvement	Length miles	Capital Costs £m
Airport link to A41 (Aylesbury By-Pass)	Dual 2 lane	3·1	2·8
Link from Aylesbury By-Pass to New motorway	Single carriageway	2·0	0·4
New motorway—Airport to Ringway 3	Dual 2 lane	25·6	23·7
New motorway—Airport to North Orbital	Dual 2 lane	20·3	17·6
A41, A421 and A43—Aylesbury to Oxford	2 lane to 3 lane carriageway and Dual 2 lane Bicester By-Pass	22·3	2·5
*Ringway 3—New motorway to M1	Dual 3 lane to dual 4 lane	5·8	1·5
*Ringway 3—New motorway to M40	Dual 3 lane to dual 4 lane	5·3	1·3
*North Orbital—New motorway to M1	Dual 3 lane to dual 4 lane	7·8	2·0
*North Orbital—New motorway to M40	Dual 3 lane to dual 4 lane	7·3	1·8
A41(T)—A416 to North Orbital	Dual 2 lane to dual 3 lane	7·4	0·8

* N.B. In order to compare Case I with Case II, all costs have been calculated to points on Ringway 3, common to Case I and Case II, i.e. M1 junction and M40 junction.

Tables C9 and C10 compare the discounted capital costs, for the 'with' and 'without' airport situations, for all new routes and improvements for the 25% Private modal split. Dates are derived from Tables C5, C6 and C7 and costs from Table C8. Costs are taken as falling, on average, one year before the date when the improvement is required to come into operation.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C9

Discounted Capital Costs Case I

Improvement	Capital Cost £m.	Date required		Discounted Capital Costs £m	
		Without Airport Flows	With Airport Flows	Without Airport Flows	With Airport Flows
New Motorway—Airport to Ringway 3—dual 2 lane	23·7	Not applicable	1975	—	26·1
Link from Aylesbury By-Pass to the new motorway	0·4	Not applicable	1975	—	0·4
			Sub Totals	—	26·5

Cost attributable to the Airport = £26·5m

A41, A421 and A43 Aylesbury to Oxford	2·5	1985	1981	1·1	1·6
			Totals	1·1	28·1

Cost attributable to the Airport = £27·0m

Table C10

Discounted Capital Costs Case II

Improvement	Capital Cost £m	Date required		Discounted Capital Costs £m	
		Without Airport Flows	With Airport Flows	Without Airport Flows	With Airport Flows
Airport link to A41	2·8	Not applicable	1975	—	3·1
A41 dual 2 lane to dual 3 lane A416 to North Orbital	0·8	1982	1980	0·5	0·6
			Sub Totals	0·5	3·7

Cost attributable to the Airport = £3·2m

A41, A421 and A43 Aylesbury to Oxford	2·5	1985	1981	1·1	1·6
			Totals	1·6	5·3

Cost attributable to the Airport = £3·7m

Printed image digitised by the University of Southampton Library Digitisation Unit

Tables C11 and C12 compare the discounted capital costs, for the 'with' and 'without' Airport situations, for all new routes and improvements for the 65% Private modal split.

Table C11

Discounted Capital Costs. Case I

Improvement	Capital Costs £m	Date required		Discounted Capital Costs £m	
		Without Airport Flows	With Airport Flows	Without Airport Flows	With Airport Flows
New dual 2-lane motorway Airport to Ringway 3	23·7	Not applicable	1975	—	26·1
Link from Aylesbury By-Pass to the New motorway	0·4	Not applicable	1975	—	0·4
			Sub Totals	—	26·5

Cost attributable to the Airport = £26·5m

A41, A421 and A43 Aylesbury to Oxford	2·5	1985	1979	1·1	1·9
			Sub Totals	1·1	28·4

Cost attributable to the Airport = £27·3m

Notional improvement of Ringway 3—New motorway to M1 junction	1·5	Not applicable	1986	—	0·5
Notional improvement of Ringway 3—New motorway to M40 junction	1·3	Not applicable	1987	—	0·4
(For comparison with Case II)			Totals	1·1	29·3

Cost attributable to the Airport = £28·2m

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C12

Discounted Capital Costs. Case II

Improvements	Capital Cost £m	Date required		Discounted Capital Costs £m	
		Without Airport Flows	With Airport Flows	Without Airport Flows	With Airport Flows
Airport link to A41	2·8	Not applicable	1975	—	3·1
A41 dual 2 lane to dual 3 lane A416 to North Orbital	0·8	1982	1978	0·5	0·7
New motorway—Airport North Orbital	20·3	Not required	1984	—	5·3
			Sub Totals	0·5	9·1

Cost attributable to the Airport = £8·6m

A41, A421 and A43 Aylesbury to Oxford	2·5	1985	1979	1·1	1·9
			Sub Totals	1·6	11·0

Cost attributable to the Airport = £9·4m

Notional improvement of North Orbital—New motorway to M1 junction	2·0	Not applicable	1986	—	0·8
Notional improvement of North Orbital—New motorway to M40 junction	1·8	Not applicable	1987	—	0·6
(For comparison with Case I)			Totals	1·6	12·4

Cost attributable to the Airport = £10·8m

Road User Costs

The discounted road user costs between Ringway 3 and the airport site, for air passengers and airport freight, for the period 1975-1990, are as follows:—

Table C13

Discounted Road User Costs

Case	25% Private	65% Private
I	8·5	42·8
II	9·7	45·2

C18

Printed image digitised by the University of Southampton Library Digitisation Unit

OP.1100.120.144

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings volume VIII

part 2, section 1

Stage III: Research and Investigation
Specially commissioned studies

LONDON
HER MAJESTY'S STATIONERY OFFICE
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed in England for Her Majesty's Stationery Office by
The Solicitors' Law Stationery Society Limited, London, E.C.4.

Dd. 501455 K 16 1/70

SBN 11 510166 7

Printed image digitised by the University of Southampton Library Digitisation Unit

Contents

Study		*page*
1	Future pattern of international airports - Board of Trade	1
2	Development of the United Kingdom air traffic control system and its effect on the Proof and Experimental Establishment at Shoeburyness - National Air Traffic Control Services	7
3	Developments affecting the air traffic control system in the United Kingdom (South) 1975-1985 - National Air Traffic Control Services	13
4	London air traffic forecasts - Board of Trade Working Party on Traffic and Capacity	25
5	Air pollution from aircraft gas turbine engines - National Gas Turbine Establishment	47
6	Surface access : rail - British Railways Board, with study by Livesey and Henderson	53
7	Surface access : road - Ministry of Transport, with study by Howard Humphreys	127

Plates		*following page*
	Surface access : rail	
1	Key plan. Routes 1 to 9	124
2	Marylebone - Neasden Junction - Northolt Junction - Princes Risborough - Cublington. Route 1	124
3	Euston - Leighton Buzzard - Cublington. Route 2	124
4	King's Cross/St Pancras - Luton - Cublington. Route 3	124
5	King's Cross/St Pancras - Bedford - Thurleigh. Route 4	124

Printed image digitised by the University of Southampton Library Digitisation Unit

Plates		*following page*
6	King's Cross/St Pancras - Welwyn - Thurleigh. Route 5	124
7	King's Cross/St Pancras - Welwyn - Nuthampstead. Route 6	124
8	King's Cross/St Pancras - Haringey - South Tottenham - Broxbourne - Nuthampstead. Route 7	124
9	King's Cross/St Pancras - Haringey - South Tottenham - Foulness. Route 8	124
10	King's Cross/St Pancras - Barking - Southend - Foulness. Route 9	124
	Surface access : road	
	Location of airport sites	138
	F6. Foulness. 1990 traffic flow pattern air passengers at 65 per cent private transport: assignment as supplied by Roskill Commission	166
	F7. Foulness. 1990 traffic flow pattern air passengers at 65 per cent private transport. Modified assignment for Case I and Case II	166
	Foulness. Cumulative traffic flows: site between junction with A130 and Ringway 3	172
	Foulness. Cumulative traffic flows: site between airport and junction with A130	172
	F1. Foulness. Surface access proposals	172
	F2. Foulness. Routes examined	172
	Drawing No 3. Typical cross-section combined road/rail link	172
	F4. Foulness. Interchange layout at airport - ultimate design	172
	F5. Foulness. Interchange layout at Ringway 3	172
	N6. Nuthampstead. 1990 traffic flow pattern air passengers at 65 per cent private transport. Assignment as supplied by Roskill Commission	184
	N7. Nuthampstead. 1990 traffic flow pattern air passengers at 65 per cent private transport. Assignment for Case I	184
	Nuthampstead. Cumulative traffic flows: site between airport and junction with A414	190
	Nuthampstead. Cumulative traffic flows: site between junction with A414 and Ringway 3	190
	N1. Nuthampstead. Surface access proposals	190

Printed image digitised by the University of Southampton Library Digitisation Unit

	following page
N2. Nuthampstead. Routes examined	190
Drawing no 3. Typical cross-section combined road/ rail link	190
N4. Nuthampstead. Interchange layout at airport: ultimate design	190
N5. Nuthampstead. Interchange layout at Ringway 3	190
T7. Thurleigh. 1990 traffic flow pattern air passengers at 65 per cent private transport. Assignment as supplied by Roskill Commission	204
T8. Thurleigh. 1990 traffic flow pattern air passengers at 65 per cent private transport. Modified assignment for Case I and Case II	204
Thurleigh. Cumulative traffic flows: site between airport and junction with A505	210
Thurleigh. Cumulative traffic flows: site between junction with A505 and Ringway 3	210
T1. Thurleigh. Surface access proposals	210
T2. Thurleigh. Routes examined. Sheet 1	210
T3. Thurleigh. Routes examined. Sheet 2	210
T4. Thurleigh. Interchange layout at airport: ultimate design	210
T5. Thurleigh. Interchange layout at Ringway 3: alternative 1	210
T5A. Thurleigh. Interchange layout at Ringway 3. alternative 2	210
T6. Thurleigh. Interchange layout at airport side entrance: ultimate design	210
C8. Cublington. 1990 traffic flow pattern air passengers at 65 per cent private transport. Assignment as supplied by Roskill Commission	222
C9. Cublington. 1990 traffic flow pattern air passengers at 65 per cent private transport. Assignment for Case I	222
C10. Cublington. 1990 traffic flow pattern air passengers at 65 per cent private transport. Assignment for Case II	222
Cublington. Cumulative traffic flows: site between airport and junction with A416	228
Cublington. Cumulative traffic flows: site between junction with A416 and North Orbital	228

Printed image digitised by the University of Southampton Library Digitisation Unit

	following page
C1. Cublington. Surface access proposals	228
C2. Cublington. Routes examined. Sheet 1	228
C3. Cublington. Routes examined. Sheet 2	228
C4. Cublington. Interchange layout at airport: ultimate design	228
C5. Cublington. Interchange layout at North Orbital: alternative 1	228
C6. Cublington. Interchange layout at Ringway 3: alternative 2	228
C7. Cublington. Interchange at airport side entrance: ultimate design	228

Printed image digitised by the University of Southampton Library Digitisation Unit

Foreword by the Chairman

The Hon. Mr. Justice Roskill

Stage III of the Commission's work has consisted of investigation and research into the timing of the need for a third London airport and into matters relevant to the choice to be made between the short-listed sites. The work has been carried out by the Commission's Research Team with the help of consultants, government departments and others.

Studies undertaken by consultants, government departments and others form volume VIII of the Commission's *Papers and Proceedings.* Part I of volume VIII contains the study by the consultants on urbanisation. Part 2 contains the remainder of these studies and is divided into four sections.

The advice given by the Commission's consultants, by government departments and by others in these studies has been reflected in the work of the Research Team which forms volume VII of the Commission's *Papers and Proceedings*. Nevertheless, this in no way implies that the Commission has accepted that advice since it will enter upon the Stage V hearings with an open mind about the conclusions to be drawn from the work carried out during Stage III. Similarly, the Commission wishes it to be understood that, in publishing these studies, it is expressing no view on the merits of the advice which they contain; this is for examination during Stage V.

EUSTACE ROSKILL

Templar House,
81-87 High Holborn,
LONDON, W.C.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Study 1

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX E: GEOTECHNICS AT FOULNESS

Geological horizons

1 Pleistocene and Recent Deposits:

i Alluvium - The youngest geological horizons in the search area are the alluvial sands, silts and organic clays that occur up to 40 feet thick adjacent to the smaller rivers, and also the estuarine alluvium associated with deposition from the River Thames. These latter deposits consist of sands, silts and clays often closely interbedded and containing shelly bands. With depth they grade into gravels overlying the London Clay. Just north of the River Crouch is a deep buried channel which was cut into the London Clay surface by glacial or fluvial action. In this area the alluvium reaches a maximum thickness of 120 feet.

ii Brickearth or Head - This consists of clays, silts and sands in various combinations and is derived either from the weathering of London Clay slopes and subsequent redeposition or from the transportation of soil particles by wind during a phase of the inter-glacial climate. (See Ref. paragraph 46 (ii) (d)). The brickearth deposits are in the majority of cases underlain by the terrace gravels described below.

iii Terrace river gravels - These deposits consist of 4 or 5 terraces directly overlying the London Clay and outcropping in a number of locations. They are generally composed of coarse, medium and fine, sands and gravels with subordinate clayey layers. The remains of the high level gravel terrace overlie the Bagshot Beds around Hadleigh and the Rayleigh Hills.

2 Boulder Clay: The southern limit of glaciation occurs to the north of the Crouch Valley and the ground to the south is free from glacial drift. Isolated occurrences of Boulder Clay overlying London Clay occur in the area bounded by Woodham Ferrers, East Hanningfield, South Hanningfield, Sandon and Woodham Mortimer.

3 Bagshot Beds: These horizontal beds occur as outliers on the high ground resting on the older underlying formations and in the Rayleigh area attain a maximum thickness of 40 feet. They are composed predominantly of fine grained sands.

4 Claygate Beds: The Bagshot Beds are everywhere separated from the London Clay by a variable thickness of Claygate Beds which consist of a regular alternation of sand and clay bands and in the Rayleigh area are about 12 feet

Printed image digitised by the University of Southampton Library Digitisation Unit

thick. The Claygate Beds were not recognised as such in the earlier mapping of this area and have been mapped as Bagshot Beds. They are hence not shown on the Geological Survey maps from which figure 2.3 was compiled.

5 London Clay : London Clay is the oldest horizon exposed within the search area and underlies the more recent deposits described above. It varies from stiff grey/brown silty clays to deeply weathered soft silty clays, and commonly contains aggregations of soluble minerals with sulphate radicals which are deleterious to concrete.

Areas of potential ground instability

6 Areas of potential ground instability occur where deposits of Boulder Clay, Bagshot and Claygate Beds, head and terrace gravels cap London Clay giving rise to steeper slopes than those to which London Clay would naturally degrade.

7 Where the capping deposits have been removed in relatively recent times, the London Clay slopes are still undergoing degradation to flatter slopes, giving rise to the areas of unstable ground between Maldon and Cold Norton and also to the north of Hockley and near Ashingdon.

8 These areas have been located from the examination of stereoscopic pairs of aerial photographs to scales 1:10,000 (for the area south of the River Crouch only) and 1:50,000, and are shown on Figure 2.3.

Geotechnical zones

9 For ease of description and relating the occurrences of different geological horizons to foundations, the area has been sub-divided into four main geotechnical zones (with two zones sub-divided). These zones directly relate to the geology, shown on figure 2.3, and are as follows:

I Zone IA : Estuarine Alluvium

II Zone IB : Alluvium

III Zone II : Head, Brickearth, Terrace Gravels

IV Zone III : London Clay

V Zone IVA : Bagshot and Claygate Beds

VI Zone IVB : Boulder Clay

Printed image digitised by the University of Southampton Library Digitisation Unit

Foundation considerations

10 The effects on foundation design of the soil and geological strata encountered in each of the zones are discussed below.

Zones IA and IB

11 Except within the south eastern part of Zone IA (Foulness Island), the low strength and high compressibility to depth of the soils preclude the adoption of conventional strip and pad foundations for all but the very lightest of structures. Domestic housing and heavier forms of construction will of necessity be carried upon piles or rafts or founded upon ground consolidated by one of the several geotechnical processes available.

12 For larger structures, replacement of the softest overlying deposits by a more suitable material, deep ground consolidation and caisson structures in which the weight of the building is balanced by the weight of the soil removed from the ground, are all well tried solutions appropriate to particular configurations.

13 Larger settlements than normal can be anticipated from all structures imposing a net increase in load upon the subsoil and structures should be flexible or founded on rafts designed to accommodate differential ground movements. Provision should be made for flexible joints for all services leading to structures.

14 Alternatively domestic and light structures can be founded on driven or bored piles of small diameter (20 inches or less) and up to a maximum economical length of approximately 40 feet. Larger structures may require piles up to a maximum length of approximately 120 feet and penetrating the London Clay. Settlements will be relatively small, but provision must be made for excess pile capacity to carry the imposed load of ground liable to consolidate after the piles are constructed.

15 All embankments and other placed fill will undergo substantial settlements, and allowances for a larger amount (up to 30%) of imported fill than given by the net filled volume should be made. Instability may arise if fill is placed too rapidly and adequate precautions including drainage blankets and filter drains will need to be installed.

16 In Zone IA SE adjacent to the Maplin Sands the superficial deposits are sandy and although the water table is high, the depth to which foundations will need to penetrate to achieve suitable bearing capacity is less than in the remainder of the Zone IA. Fill placed to raise the ground level will undergo rapid early settlement, and there will be little long term consolidation.

17 Thorough site investigation should be made of all building locations because ground conditions vary rapidly and randomly. In particular, it should be noted that layers of sand and gravel occur sporadically throughout the silts

Printed image digitised by the University of Southampton Library Digitisation Unit

and clays and these may be mistaken for a suitable founding stratum during the driving of piles. In general driven cast in situ piles are to be preferred for their flexibility in length and ability to overcome narrow bands of hard driving.

Zone II

18. It is probable that the majority of the terrace gravels and some of the exposed clays and silts are of adequate strength to enable conventional pad or strip foundations to be adopted for both light and heavy structures. Generally, however, the head or brickearth, being a recent deposit not subjected to consolidation by overburden, has low strength and high compressibility. In these circumstances raft foundations or short bored piles will be the most suitable foundation solution for light structures, and piles, either founded upon the underlying gravel or penetrating into the firm to stiff London Clay will be suitable for the municipal and heavy structures.

19. Where the terrace gravels thin out towards the outcrop of the London Clay heavier structures will require foundations of rafts or piles.

Zone III

20. Weathered London Clay exposed at the surface undergoes vertical movement due to the seasonal variations in the soil moisture content. The movement is accentuated by the presence of certain trees which have high rates of transpiration. Severe cracking of light domestic structures with shallow strip foundations is common in these areas. A suitable foundation has been found to be the socalled short bored pile.

21. Where dense undergrowth or trees are removed from the site shortly before development a swelling of the ground over a prolonged period due to the cessation of transpiration will result. The swelling occurs irregularly and light structures founded on conventional strip footings are frequently subjected to damaging strains. It is recommended that all tree roots be completely grubbed out, the resulting holes being filled with compacted clay fill and the entire site allowed to "weather" for at least one winter. Short bored pile foundations should be used as swelling is unlikely to have ceased. These piles may be some 5ft. to 10ft. longer than in open ground.

22. Generally the pressures generated by seasonal ground movements due to change of moisture content do not exceed $\frac{1}{2}$ ton per square foot and structures which exert a net increase in pressure on a total plan area exceeding this figure are generally free from damage. Municipal and heavy structures may, as appropriate to their configuration and the strength of the clay at the site, have pad or strip foundations, or piles.

23. In areas of instability and potential instability successful long term remedial measures chiefly consisting of extensive and deep (15ft to 25ft)

Printed image digitised by the University of Southampton Library Digitisation Unit

drainage works will be necessary to reduce the water table levels within the clay. The reduction in pore water pressures and the tendency for the shear strength of the soil to increase will reduce the possibility of further instability to within reasonable limits.

24 The ground in unstable areas has generally been disturbed by the movements and is softened. The necessary geometry of the stabilized slopes generally precludes deep terracing, i.e. is restrictive upon the layout. Basements can be used with advantage to reduce the imposed load of structures but the heaviest loads will need foundations designed to carry the imposed load to intact ground (generally 15 ft to 25 ft below ground level). It is economically feasible to build multi-storey blocks upon such sites as the plan area involved is small and the unit cost of such foundations is relatively small when spread over many dwellings.

25 For domestic and light structures rafts are the most appropriate foundation as these exert low pressure and will enable the structure to accommodate itself to movements during the period in which the unstable ground adjusts to the new conditions.

Zones IV A and IV B

26 Generally, conventional strip or pad foundations can be adopted for both light and heavy structures in these areas. However, pockets of softer soils occur and short bored piles for light structures and larger piles for heavy structures will be required.

27 In the areas immediately adjacent to the outcrop of the underlying London Clay there may be a tendency towards undermining. This can be generally rectified by suitable ground drainage and the structures founded on pad, raft or piled foundations as appropriate to the quality of the sub-strata.

28 In the areas of the Bagshot and Claygate Beds the sides of foundation excavations and sewer trenches are liable to collapse due to the non-cohesive sandy nature of the soils. Where the water table is high this condition is aggravated.

Foundation costs: Basis of analysis

29 We have examined in detail the topgraphy and superficial geology of the search area and have determined the most probable foundations. We have discussed the effect on cost of using different types of foundations with Quantity Surveyors, with Local Authority Engineers, with the GLC Thamesmead Design Team and with the Divisions of our own firm and have determined the probable excess cost of constructing foundations on other than "normal" ground. For domestic structures we take "normal" foundations to be ordinary Portland Cement concrete strip footings 3'0" below existing ground level and exerting allowable pressures of up to $1\frac{1}{2}$ tons per square foot. For larger

Printed image digitised by the University of Southampton Library Digitisation Unit

structures, we assume that normal foundations are pad or strip foundations made from ordinary Portland Cement concrete and exerting pressures of up to 2 tons per square foot.

30 We have made our estimates on excess costs from our knowledge of the area and similar areas presenting similar problems. Without having available the results of a far more detailed physical investigation of this complex area undertaken for the specific purpose of obtaining design data from which comparative costs could be extracted, we cannot be certain that we have considered every factor.

31 We estimate that the excess costs we quote as percentages above normal costs are accurate to within ± 50% per square kilometre and ± 25% overall.

Factors contributing to excess cost

32 There are within the area certain areas where foundations of any sort will clearly be more expensive than on the normal site. In other areas the reasons for excess cost are less obvious and we list below some of the factors we have considered.

a) Soft Alluvium: We have discussed the cost of foundations with the team associated with the GLC development at Thamesmead, which has considerable similarity to the problems in Zone IA (other than Zone IA SE) and Zone IB, and find that the cost of foundations only for domestic structures is about double the normal, i.e. £481 per 4 person dwelling. We have therefore allocated an excess cost of 100% to these zones. This excess is also realistic for the foundation costs of minicipal and other heavy structures. Structures normally associated with estuarine locations, i.e. outfalls, jettys, wharfs, etc. have not been considered to have excess costs since the problems are then "normal".

In Zone IA SE, the subsoil conditions are somewhat better and an excess cost of 20% is allocated to foundations in this zone.

b) Brickearth: There are many areas in which brickearth outcrops at the surface. Frequently this has been excavated to provide brick making material and almost as frequently the pits are backfilled with unconsolidated domestic refuse.

Foundation costs associated with brickearth workings may therefore locally reach an excess of 100% to 200% above normal, but as the incidence of outcrops and workings is small, we have allocated an average excess cost of 5% per square kilometre.

Printed image digitised by the University of Southampton Library Digitisation Unit

c) Shrinkable Clays: As already noted in paragraph 20 the most practical method of counteracting the damaging effect of seasonal swelling and shrinkage is to found all light structures on small piles (short bored piles), whereas heavier structures are not subject to damage on this account.

Our investigations concerning costs have confirmed that the use of short bored piles does not give rise to increased foundation costs when applied to the development of large housing estates, rather than individual houses. The extra expense in providing the piles together with the shallow reinforced concrete foundation beams is offset by the saving in depth of excavation and volume of concrete used. We anticipate that the urbanisation at Foulness will be a large scale undertaking so that possible excess cost of providing piled foundations for selected individual structures is not taken into account.

d) Unstable slopes and potentially unstable slopes: We have explained in detail under Zone III the physical reasons why certain existing slopes are, or may be, unstable, and the measures which are currently being employed on several sites to reduce water pressures and allow the soil to gain strength. We allocate an excess cost of 50% to development in these areas, but in areas such as to the north of the River Crouch where the occurrence of unstable areas is small, we have averaged the cost to give an overall excess of 5% per square kilometre.

e) Areas of clay soil at present covered by woodland: The excess cost allocated for remedial measures in existing wooded areas is of the order of 10%, but is included with excess costs incurred for other reasons.

f) Chemical attack: There are two soils which may contain chemicals deleterious to concrete:

i London Clay - Sulphates are commonly present, frequently occurring in particularly high concentrations at the base of the weathered zone. Local Authorities in the search area insist that sulphate resisting cement is used in all foundations, irrespective of underlying soil, since groundwater in the area contains dissolved sulphates. We have investigated the increase in cost per dwelling and find that it is of the order of £5 to £10. We have therefore not allocated an excess cost on this account since the increase is only of the order of 2% to 3%.

ii Peaty Soils - Strongly acid conditions are commonly

Printed image digitised by the University of Southampton Library Digitisation Unit

found when peat is present or groundwater derives from heathland containing a preponderance of organic, peaty soils and special cements may be necessary to counter the destructive effects. The incidence of peaty soils is invariably associated with difficult foundation conditions and the excess costs of suitable precautions are included in the overall excess percentages allocated.

Categories of foundation costs

33 From the considerations discussed paragraph 32, figure 2.4 was produced in which the five categories given below are represented.

Category I	100% i.e. "normal" costs
Category II	105%
Category III	120%
Category IV	150%
Category V	200% i.e. "very exceptional" costs

Secondary roads

34 In costing road construction, we have found that it is not feasible to adopt the five distinct categories as with foundations. Road costs are likely to be normal (or only marginally above normal) in areas categorised I, II and III in paragraph 33 in categories IV and V areas, road construction costs will be excessive in a similar degree to other foundation costs, because of the extra drainage and other stabilization works, and are allocated the same access costs as foundations.

Sea walls

35 The categories of wall condition are related to the crest height above the highest 1953 flood surge level. Thus Category I walls are all 2 feet or more above the highest surge level and allow for withstanding the highest flood based on a 100 to 200 year return period. Category II Walls are 1 foot or more above the 1953 surge level, and Category III Walls are less than 1 foot above the highest surge level.

36 We have allocated the cost of upgrading existing sea walls as follows:

Upgrading existing Category I	-	£100,000/km
Upgrading existing Categories II and III	-	£150,000/km
Constructing new sea walls	-	£300,000/km

37 Allowed in these figures are the costs of constructing or reconstructing existing associated works such as sluices, infilling the borrow pits on the

Printed image digitised by the University of Southampton Library Digitisation Unit

landward side so that the land right up to the sea walls may be used, and widening the top of the walls to 20 feet to provide a promenade or roadway.

River Roach barrage

38 Strategy B assumes urbanisation on the whole, low-lying area south of the river Crouch together with some of the higher ground to the west.

39 We believe that it will be desirable to close the mouth of the existing river Roach by means of a barrage and create a tide-free waterway system along the existing rivers and creeks.

40 The volume of the river Roach waterways will enable them to be used as a balancing reservoir to receive and store both normal and river discharge and storm water run off between ebb tides. The barrage will require multiple sluices which will be operated each tide cycle and locks to enable small pleasure craft to move in and out. We suggest that the cost of this barrage and associated works will be about £1 million.

41 If the barrage is constructed the tidal walls and embankments of the river Roach and tributaries will be redundant and can be removed thus allowing considerable "landscaping" of the area to be undertaken. The cost of levelling the embankments and providing entrainment continuously is estimated at £100,000 per kilometre.

River Crouch barrage

42 Strategy D assumes urbanisation almost entirely on the alluvial plains to the north and south of the river Crouch. The tides on the east coast give rise to a strong ebb and flow, the tidal range at spring tides, which occur once every two weeks being 15½ft. at Foulness Point. Water suitable for sailing and other sports is thus limited to about 4 hours around high tide near the mouth of the river Crouch and 2 to 3 hours near Hullbridge.

43 Almost all of the money that will need to be allocated towards reconstructing sea walls along the rivers and creeks can be used to provide a barrage at the mouth of the river Crouch. The area of water thus freed for amenity and pleasure uses will be considerable and provide the basis for an attractive community development. The full implications of this suggestion will require and extensive study.

44 We estimate that the cost of constructing the barrage with associated sluices and locks will of the order of £4 million. As with the river Roach barrage scheme additional expenditure will be desirable to "landscape" the banks of the rivers and creeks.

Summary of costs

45 In Table 1 the excess costs that each of the alternative strategies will incur is summarised.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 1 : Excess costs for alternative strategies

	Strategy A	Strategy B	Strategy C	Strategy D[4]
Foundations (expressed as sq. km/category[1&2])	I - 137 II - 81 III - 6 IV - 8 V - 14.5	I - 87 II - 84.5 III - 19 IV - 5 V - 47.5	I - 108 II - 103.5 III - 6 IV - 11.5 V - 12.5	I - 17 II - 46.5 III - 2 IV - Nil V - 51.5
Secondary roads (expressed as sq. km/category[3])	IV - 8 V - 14.5	IV - 5 V - 47.5	IV - 11.5 V - 12.5	IV - Nil V - 51.5
Sea wall Improvement at £100, 000/km	Nil	5km	Nil	13.5km
Sea wall Improvement at £150, 000/km	Nil	15km	Nil	13.5km
New sea walls at £300, 000/km	Nil	Nil	Nil	1km
River Roach barrage sluices and locks	Nil	£1m	Nil	£1m
River Roach amenity improvements to embankment at £100, 000/km	Nil	30km	Nil	30km

1 Distribution of categories on kilometre grid is given on figure 2.4

2 Categories on foundation costs

I	100% (normal)
II	105%
III	120%
IV	150%
V	200% (exceptional)

3 Categories of secondary road costs

I	100% (normal)
II	100%
III	100%
IV	150%
V	200%

4 Strategy D - An alternative to the river Roach barrage and improvements of sea walls of the rivers Roach and Crouch is a dam across the river Crouch with associated sluices and locks etc. at an estimated cost of £4, 000, 000. An additional 4 kms of seawalls improvements at £100, 000/km and 1 km of new sea walls at £300, 000 /km should also be included.

Printed image digitised by the University of Southampton Library Digitisation Unit

General sources of information

46. A comprehensive study of existing data was undertaken. This has involved the collecting of information from geological maps dated 1843, 1871, and 1883 and updating these with later information obtained from provisional maps being prepared by the Institute of Geological Sciences (IGS). Further geological and borehole information has been obtained from the existing literature and Local Authorities within the search area, and extensive use made of aerial photographs to the scales of 1:50, 000 and 1:10, 000. A full list of the sources of information and other bibliography is as follows :

(i) Institutions, Local Authorities, etc.

a) Geological Museum
b) Institute of Geological Sciences
c) British Airports Authority
d) Essex River Authority
e) Rayleigh Urban District Council
f) Rochford Urban District Council
g) Prittlewell and Priory Museum, Southend.

(ii) Bibliography

a) Clayton K.M. - "Landforms of parts of southern Essex", Trans, & Papers Inst. Brit. Geogr. Vol 28.

b) Clayton K.M. - "Some aspects of the glacial deposits of Essex" Proc. Geol. Assoc. Vol. 68, 1957

c) Greensmith J.T. and Tucker E.V. - "Foulness, some geological implications"
Civ. Eng. & Public Works Review, May 1968.

d) Gruhn R. and Bryan A.L. - "A contribution to Pleistocene geochronology in south east Essex"
Unpublished Thesis.

e) Wartime Pamphlet - "Water supply in south east England from underground sources"
No. 10, Part 2, Oct. 1940.

f) Whitaker W. & Thresh J.C. - "The Water supply of Essex from underground sources"
Memoir of the Geol. Survey 1916.

g) Woolbridge S.W. - "The geology of the Rayleigh Hills, Essex"
Proc. Geol. Assoc. Vol. 34, 1923.

Printed image digitised by the University of Southampton Library Digitisation Unit

h) Wooldbridge S.W. - "The Bagshot Beds of Essex" Proc. Geol. Assoc. Vol 35, 1924.

i) The Work of the Thamesmead Committee 1967/8 - Greater London Council.

j) Suthons, C.J. - "Frequency of occurrence of abnormally high sea levels on the east and south coasts of England". Proc. Inst. Civ.Engs. Vol. 25, August, 1963.

Printed image digitised by the University of Southampton Library Digitisation Unit

PLANNING TEAMS AND SUB-CONSULTANTS

Printed image digitised by the University of Southampton Library Digitisation Unit

PLANNING AND RESEARCH TEAMS

SHANKLAND/COX AND ASSOCIATES

Graeme Shankland MA (Cantab) AADipl ARIBA Dist TP MTPI
David Grove MA (Oxon)

Desmond Searle BSc ARICS AAI

Edwin Schoon MCD BArch ARIBA AMTPI
Anthony Meats AADipl ARIBA

Peter Eley AADipl MCP MArch (Penn)

John Kirke CEng MIMunE AMITE AMIHE Dip TE
Gillian Harwood AAI
Jennifer Moss MA (Cantab)

Tom Earley
Elaine Jenkins
Jim Carter
Patrick Smith

Administration

Caryl Holland
Jean Barrett
Susan Hardy

LLEWELYN-DAVIES, WEEKS, FORESTIER-WALKER AND BOR

Richard Llewelyn-Davies FRIBA MTPI

Walter Bor Dipl Arch FRIBA Dist TP MTPI

John de Monchaux MArchUD ARAIA

John Peverley MArchUD DiplArch Dip TP ARIBA AMTPI
Suzanne Beauchamp BA MCD AMTPI

Michael Brett AADipl ARIBA
Paul Buckhurst MArchUD DiplArch Dip TP ARIBA AMTPI
Nancy Hill BArch
Paddy Lawlor Dipl Arch
Peter Wickenden BSc
David Winterbottom BSc Dip TP AMTPI ARICS

Terry Odle

Jean Mapleston
Elizabeth Davis

Printed image digitised by the University of Southampton Library Digitisation Unit

SUBCONSULTANTS

Binnie and Partners	P.J. Norris FICE MIWE MIWPC MRSH E.W. Flaxman BSc(Eng) MICE MIWPC MRSH	Sewerage and drainage
Drivers, Jonas & Co	K. Clemens FRICS MTPI DipTP N. Stocks BA ARICS AMTPI R. Tym MA (Cantab) ARICS H. Rayner ARICS S. Morley BSc C. Howlett	Cost benefit and retail trade
Economic Associates Ltd.	T.E.M. McKitterick MA(Oxon) G. Manners MA (Cantab) J.B. Goddard BA N.A. Spence BSc Miss S. Webb BA MSc Mrs.I.A Macdonald MA BSc Miss M. Hadfield MA	Employment and population
James Nisbet and Partners	J. Nisbet FRICS P. Gray ARICS	Construction costs
Peat, Marwick, Kates and Co.	B. Helm BSc MSc PEng AMITE AMIHE FSS A. Niven BEd MA A. Kanen MSc BASc PEng A. Coleman BA(TP) AMTPI J.E. Dunford BSc MSc J.V. Calver BA(Econ) H.P. Gray MA MSc CEng MICE AMIHE	Transportation
Professor Alan Proudlove MEng FIMunE AMIHE		Transportation
Professor Peter Youngman MA PPILA MTPI		Landscape
Professor G.P. Wibberley PhD MSc BSc M.A.B. Boddington BSc NDA		Agriculture
Ove Arup and Partners	P. Dunican MICE FIStructE CEng K.W. Cole MSc MICE J. de Beer BSc(Hons) MSc CEng	Geotechnics at Foulness

UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX D : SEWAGE DISPOSAL

Foulness

1 Assuming a future sewage flow equivalent to 364 litres/head/day (80 gallons/head/day) the dry weather flow of sewage originating in the northern and western parts of the urbanisation, in the river Crouch catchment, would be 360 litres/sec (6.8 m.g.d.). The dry weather flow of sewage originating in the southern and eastern parts of the urbanisation, in the river Roach catchment, would be 720 litres/sec (13.6 m.g.d.).

2 In each case the volume of sewage would be too large to be discharged after treatment into any of the fresh water streams in the area. The flow would therefore have to be disposed of into tidal waters, by one of two alternative methods. The first method would be to convey the whole flow of sewage eastwards to an outfall discharging into the sea: the second method would be to discharge the flow into the principal estuaries.

3 The discharge of sewage into the sea can provide an acceptable means of disposal if the point of discharge can be located far enough off-shore and in deep enough water to ensure adequate dispersion of the flow. The degree of treatment required varies according to local conditions. In this case, screening and/or maceration of gross visible matter would be desirable from the viewpoint of amenity. We understand that the Port of London Authority would press for the sewage also to be given partial treatment by sedimentation prior to discharge because sewage solids discharged into the approaches to the Thames estuary have an adverse effect on the stability of the dredged channels.

4 The most difficult question to answer is how far such an outfall would have to extend. The point of discharge would have to be far enough east to ensure that the condition of the water in the Thames estuary was not significantly affected, it would probably have to be kept clear of shipping lanes and anchorages, and it would certainly have to be sited at a point where the pipe would not be subject to risk of silting or scour. Under normal circumstances a comprehensive hydrographic survey would be carried out to determine the appropriate point of discharge and also to provide information on seabed conditions and tidal currents so that the constructional techniques to be employed could be decided upon. In this case, however, such a survey could not, on its own, provide the necessary information. It would also be essential to have the results of the model study showing the effect of reclaiming the Maplin sands on the offshore regime. In the absence of all this essential information it is not possible at this stage to prepare a meaningful estimate of the cost of such an outfall.

5 We have therefore based our cost estimates on the alternative of discharging the sewage effluent into the major estuaries. The estuary of the river Roach is relatively shallow at its upstream end and it is doubtful whether it could satisfactorily be used for the discharge of substantial volumes of sewage

Printed image digitised by the University of Southampton Library Digitisation Unit

effluent. All the flow would therefore be discharged to the estuaries of the river Crouch and the river Thames.

6 In preparing estimates of cost for the necessary sewage treatment works we have assumed that standards of 30:20 (mg/1 suspended solids and biochemical oxygen demand respectively) would have to be met for the discharge of up to 360 litres/sec. (6.8 m.g.d.) to the river Crouch north of Canewdon. As there are oyster layings on the north side of the estuary we have allowed for the effluent to be chlorinated prior to discharge. It is not certain what standards would be applied to a discharge of up to 720 litres/sec. (13.6 m.g.d.) to the river Thames downstream of Southend. If the standard at present applying to the existing discharge from Southend were applied to the new discharge only partial treatment by sedimentation would be required. It appears possible, however, that an intermediate standard of the order of 100:100 necessitating high rate biological treatment would ultimately have to be met and we have therefore allowed for this in our estimates.

Nuthampstead

7 Assuming a future sewage flow equivalent to 364 litres/head/day (80 gallons/head/day) the dry weather flow of sewage brought together near Bishop's Stortford would amount to 775 litres/sec (14.7 m.g.d.). The dry weather flow of sewage originating in the western part of the urbanisation and brought together near Little Hadham in the river Ash catchment, would amount to 280 litres/sec (5.3 m.g.d.).

8 The total dry weather flow of sewage to be discharged into the rivers Stort and Ash would thus amount to 1055 litres/sec (20.0 m.g.d.). This quantity of sewage would require a high degree of treatment before it could be discharged into these watercourses because the volume is large compared with the natural flows. This point can be illustrated by reference to the records of flow in the river Ash near Ware some 10 km downstream of Little Hadham. The flow at this point frequently falls below 130 litres/sec. (2.5 m.g.d.) in summer and in July 1965 it fell as low as 60 litres/sec. (1.15 m.g.d.).

9 The standards which would be laid down by the Lee Conservancy Catchment Board governing these discharges would no doubt take into account not only the effects on amenity, recreational use and fishing, but also the fact that the river Lee is used as one of the major sources of water supply for London. Although the rivers Ash and Stort enter the river Lee downstream of the Metropolitan Water Board's nearest abstraction point at New Gauge, they still enter the river above the Board's second abstraction point at Chingford. The flow in the river Lee already contains a substantial proportion of sewage effluent which has been treated to high standards of quality and in preparing estimates of costs for the two necessary sewage treatment works we have assumed that stringent standards of 5:5 (mg/1 suspended solids and biochemical oxygen demand respectively) would ultimately have to be met for both these discharges.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cublington

10 Assuming a future sewage flow equivalent to 364 litres/head/day (80 gallons/head/day) the dry weather flow of sewage origininating in the eastern and central parts of the urbanisation and brought together near Newport Pagnell would amount to 1370 litres/sec (26.0 m.g.d.). This quantity of sewage would require a high degree of treatment before it could be discharged to the river Great Ouse because it is large compared with the natural flow. For instance, the flow in the river Great Ouse at Bedford frequently falls below 2100 litres/sec. (40 m.g.d.) in summer, and in September 1959 it was as low as 525 litres/sec. (10 m.g.d.).

11 The dry weather flow of sewage originating in the western part of the urbanisation and brought together near Adstock would amount to 360 litres/sec (6.8 m.g.d.). It would probably not be desirable to discharge this quantity of sewage effluent into the Claydon Brook, both because of the modest size of this watercourse and because it joins the river Great Ouse immediately upstream of Buckingham Water Board's point of abstraction at Foxcote. The only water-course in the catchment which can be considered for the reception of sewage effluent from the western part of the urbanisation is therefore the river Great Ouse, which will in any case receive the sewage effluent from the central and eastern parts of the urbanisation.

12 The capacity of the river Great Ouse to accept further discharges of sewage effluent is not, however, unlimited. In considering the effects of such discharges it is necessary to take into account not only questions of amenity, recreation and fishing, but also the fact that this river is a major source of water supply. In addition to the Buckingham Water Board's abstraction mentioned above there are also abstractions for public supply by the Bedford Water Board at Clapham, just upstream of Bedford, by the Nene and Ouse Water Board at Brampton, near Huntingdon; and by the Great Ouse Water Authority at Offord Cluny. This last abstraction feeds Grafham Water, from which supplies are provided to a substantial area covering parts of Bedfordshire, Buckinghamshire, Northamptonshire, Huntingdonshire and Hertfordshire.

13 When the proposals for Milton Keynes were under consideration several of the water undertakings expressed concern that the increased proportion of sewage effluent in the river, resulting from a city of 250,000 people in addition to natural population growth in the catchment area, would adversely affect the quality of the water which they would be abstracting in the future. In his evidence to the Stage 2 hearing on the Cublington site the Pollution Prevention Officer of the Great Ouse River Authority referred to the possibility that changes in the chemical and biological quality of the water would present formidable problems of treatment to the water undertakings and he concluded that it would be undesirable for any additional major discharges of sewage effluent to take place into the river Great Ouse.

14 Fortunately it would not be difficult to meet this requirement. The sewage effluent from the eastern and central parts of the urbanisation, totalling a dry weather flow of 1370 litres/sec. (26.0 m.g.d.) could be discharged

Printed image digitised by the University of Southampton Library Digitisation Unit

conveniently only to the river Great Ouse. The sewage effluent from the western part of the urbanisation could however, be pumped without undue expense out of the Great Ouse catchment southward into the catchment of the river Thames where, because of the greater dilution available, the impact of sewage effluents on water supplies is not the cause of so much concern. In this way the total flow discharged to the river Great Ouse would be only marginally greater than the dry weather flow of 1275 litres/sec. (24.2 m.g.d.) already allowed for at Milton Keynes.

15 The standard which would be laid down to govern the quality of these sewage effluent discharges would no doubt be stringent. In preparing estimates of cost for the necessary sewage treatment works we have assumed that standards of 10:10 (mg/1 suspended solids and biochemical oxygen demand respectively) would ultimately have to be met for the discharge of up to 360 litres/sec. (6.8 m.g.d.) to the river Thames catchment and 5:5 for the discharge to the river Great Ouse.

Thurleigh

16 Assuming a future sewage flow equivalent to 364 litres/head/day (80 gallons/head/day) the dry weather flow of sewage originating in the western and central parts of the urbanisation and brought together near Stanwick would be 1125 litres/sec. (21.4 m.g.d.). This quantity of sewage would require a high degree of treatment before it could be discharged into the river Nene because it is substantial compared with the natural flow. For instance the flow in the river at Orton, some 35 km downstream, frequently falls below 2100 litres/sec (40 m.g.d.) in summer and in September 1959 it fell as low as 1180 litres/sec (22.5 m.g.d.).

17 The standards which would be laid down by the Welland and Nene River Authority governing such a discharge would no doubt take into account not only the effects on amenity, recreational use and fishing but also the fact that the river is likely to be used in the future as a major source of water supply. The Welland and Nene (Empingham Reservoir) Bill which is now under consideration by the House of Lords provides for the abstraction of large volumes of water from the river Nene at Wansford for pumping to a reservoir at Empingham which would supply parts of Lincolnshire, Leicestershire and Northamptonshire including areas where the water demand is expected to increase rapidly as a result of developments already planned. In preparing estimates of costs for the necessary sewage treatment works near Stanwick we have therefore assumed that stringent standards of 5:5 (mg/1 suspended solids and biochemical oxygen demand respectively) would ultimately have to be met for the discharge of up to 1125 litres/sec. (21.4 m.g.d.) to the river Nene.

18 The dry weather flow of sewage originating in the eastern part of the urbanisation and brought together near Lower Dene would amount to 265 litres/sec. (5.0 m.g.d.). It would be undesirable to discharge such a volume of sewage effluent into the river Til. Not only is this river small, with a very low natural flow in dry weather, but it joins the river Great Ouse a few miles upstream of the Great Ouse Water Authority's major point of abstraction at Offord Clumy. We

Printed image digitised by the University of Southampton Library Digitisation Unit

have therefore made provision in our estimates for pumping the effluent from this sub-catchment eastward into the Ellington Brook. Part of this watercourse has recently been enlarged, and it has the advantage that it joins the river Great Ouse downstream of Offord Cluny. We have assumed that a standard of 10:10 would have to be met for this discharge.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX E: GEOTECHNICS AT FOULNESS

Ove Arup and Partners

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX E : GEOTECHNICS AT FOULNESS

Geological horizons	page	1
Areas of potential ground instability		2
Geotechnic zones		2
Foundation considerations		3
Zones IA and IB		3
Zone II		4
Zone III		4
Zone IVA and IVB		5
Foundation costs : basis of analysis		5
Factors contributing to excess costs		6
Categories of foundations costs		8
Secondary roads		8
Sea walls		8
Barrages - river Roach		9
River Crouch		9
Summary of costs		9
General sources of information		11

Printed image digitised by the University of Southampton Library Digitisation Unit

INTRODUCTION

1 The programme of our work is summarised in figure C.1. The main aspects of this programme comprised:

i The collection of information on existing and currently planned transportation systems. An inventory was compiled for an area of about 20 miles radius from the airport. This search area defined the limits within which a range of urban forms would be located.

ii The appraisal and selection of forecasting procedures. In order to accommodate changes in the work programme, the main emphasis was placed on a review of the appropriateness of readily available and proven forecasting techniques.

iii Advice on the formulation of plans. To assist the Planning Consultants in preparing alternative urban forms an examination was made of the potential demand for transportation services within the four search areas. This appraisal took account of the way in which spare capacity might influence the location and form of the new urban areas and led to the development of several alternative strategies.

iv The selection of the preferred urban strategy. A closer examination was made of the transportation advantages and disadvantages of a short list of strategies. Comparative estimates of capital and user costs were prepared from an assessment of likely travel patterns. This information assisted in the selection of the preferred plan from an overall point of view.

v Assessment of the transportation needs of the selected plan. To measure the impact of airport location a smaller area around the airport was defined; this study area was known as the internal zone area. It included the area which would accommodate the airport dependent population growth. Transportation networks which could handle the forecast peak hour traffic flows were defined and estimates were prepared of their associated development and operating costs.

2 The selected plan was translated into two stages of development and a full examination made of the transport requirements associated with the plans for each stage. The two plans for each site comprised a plan for an airport operating to capacity dated at the end of the century (Plan 3) and an undated plan representing an intermediate stage in the population build-up (Plan 2). The costs of meeting the transportation needs of the two planned developments were estimated from a comparison with a base 'no airport' situation (Plan 1).

Printed image digitised by the University of Southampton Library Digitisation Unit

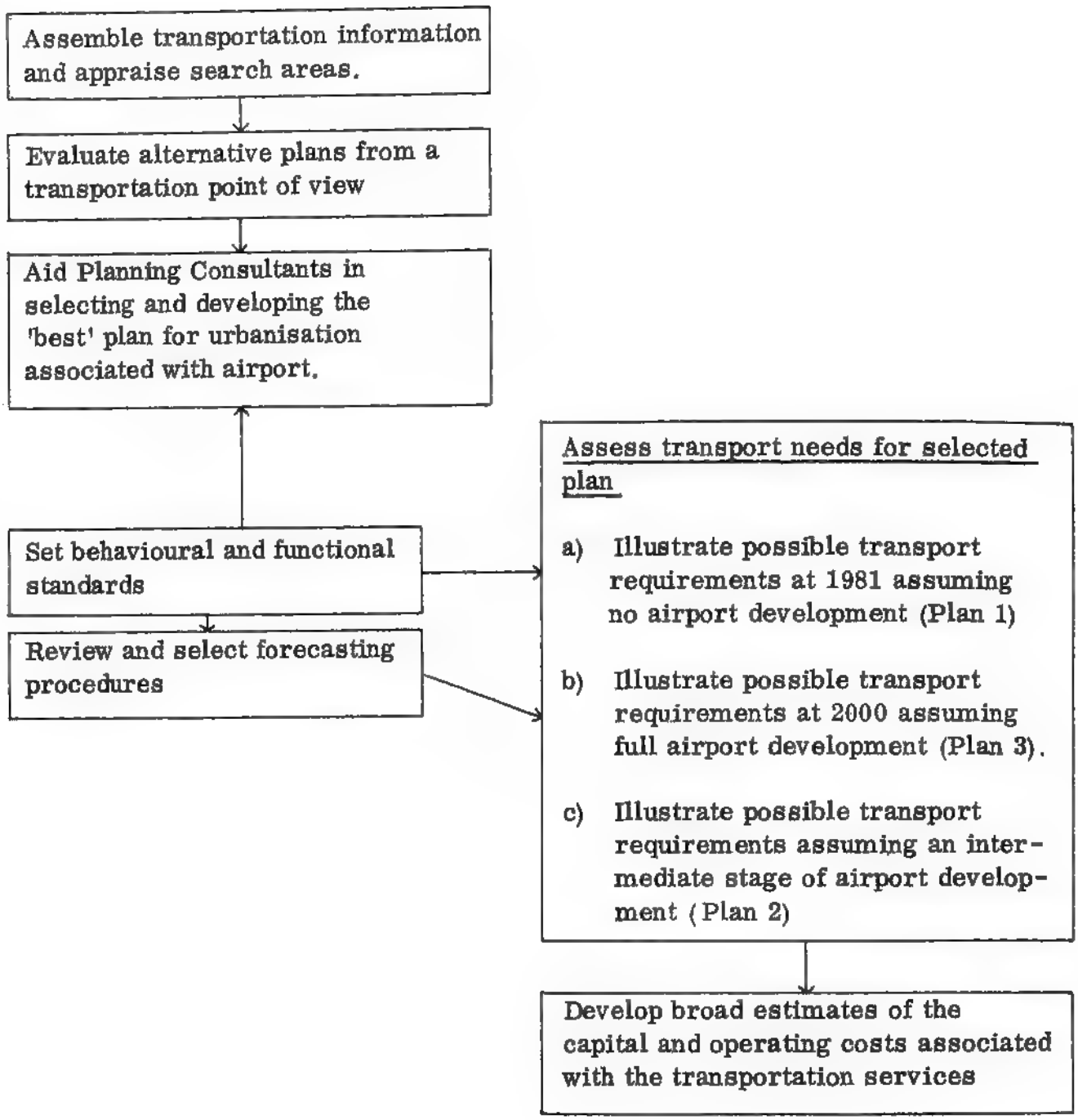


Figure C.1 Main Activities in Transportation Studies Work Programme

Printed image digitised by the University of Southampton Library Digitisation Unit

3 The approach adopted has placed the emphasis on relative, rather than absolute cost differences. We believe that this approach is consistent with the requirements set by the overall cost benefit approach adopted by the Commission and is in keeping with the number of uncertainties which surround population and employment forecasts derived directly from a projection of airport utilisation over a thirty year time scale. In consequence, the forecasting techniques used, the methods of analysis employed in translating the demands for movement into estimates of facility requirements, the principles adopted in network design, and the measurement of development and consumer costs, have all been applied in the same way at each of the four airport sites.

4 Our terms of reference have limited us to making an examination of the transportation needs arising from urban development; this reflects the view of the Commission that employee and service traffic should not be allowed to impede the free flow of passengers on the approaches to the airport. This means that the two types of movement will be handled by separate systems of transport facilities. In consequence, economies of scale have not been fully anticipated in highway design or route location.

5 Although our work on the development of transportation services has proceeded largely independently of the studies on road and rail ground access being made by Messrs Howard Humphrey and Sons for the Ministry of Transport, and Messrs Livesey and Henderson for British Rail, we have had discussions on proposed alignments and endeavoured to ensure that there are no basic conflicts. Nevertheless, it is probable that there still remains a tendency towards an over-statement of the cost of airport roads. For example, at Foulness, the road link from London passes through the centre of the proposed urban development and imposes a need for costly grade separated facilities if adequate links are to be provided between the two halves of the development. We understand that the Commission's research team will bring the three separate exercises to a common accord.

6 In addition, the views of the Commission's research team have been sought on such matters as:

i The location of employment activities within the airport perimeter and the likely division between maintenance and terminal areas.

ii The proportion of shift working of airport employees and their related peaking characteristics.

iii The provision of parking facilities for airport employees.

iv The effect of local road access on runway layout.

7 The results of studies being undertaken by the Commission on these matters were not available during the course of the transportation work programme. We were therefore requested to proceed on the basis of the assumption that all employment within the airport perimeter should be notionally located at one central point.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 1: PRINCIPLES ADOPTED IN THE TRANSPORTATION STUDIES

8 The heaviest flows of traffic in urban areas occur during the morning and evening peak periods. At these times the traffic is very largely made up of people journeying to and from work and of goods vehicles. The extent to which the construction of roads to cater for these peak movements can be justified economically depends on the advantages gained by users during the remainder of the day. Our studies elsewhere suggest that these advantages are likely to be sufficient with the scale and character of development anticipated in support of the airport; indeed in view of the substantially greater amount of shift working associated with airports and the less pronounced peaking of traffic during the morning and evening rush hours, it is likely that this will be even more so in the case of roads connecting the airport to urban development.

9 We have concentrated our analysis on determining what provisions will need to be made to meet the needs of people journeying to and from work and the movements of commercial vehicles during peak periods. In assessing these needs we had first to define a common basis on which to compare the needs for each of the four airport sites under examination.

10 The choice of airport employees between alternative housing or work opportunities is governed by time and cost considerations; the faster they can journey to work the further afield they are likely to live. In other words, the numbers of airport employees choosing to live in the planned urban development if the whole area was covered with a network of free flowing motorways would differ quite markedly from the proportions that would choose to live there if the area were merely served with heavily congested two lane roads. For similar reasons, the convenience of access from the planned urban growth to other parts of the region in turn influences the ease with which airport workers could in any case find suitable accommodation within the planned development. Thus, from a transportation point of view, the planned development can only be regarded as an overall addition to the general housing and employment stock within the area under study.

11 Furthermore, it is clear that the ease with which people can travel about the area will in itself influence the amount of new roads and public transport services necessary. In order to maintain comparability between sites we considered it essential to prescribe standards of behaviour and provision which would be common to all cases. In the first instance we have determined a standard representation of the the reluctance (or propensity) of people to spend a long time commuting to and from work. Secondly, we have established standard speeds of traffic for various categories of roads; these speeds reflect our work elsewhere which has indicated that the speed of traffic on a road has to fall quite close to that associated with 'optimum capacity' before there is an economic case to undertake widening or other improvement works. Associated with these standard speeds are, of course, vehicular flow capacities. Thirdly,

Printed image digitised by the University of Southampton Library Digitisation Unit

on the basis of these speeds we have assessed the choice which people are likely to make between travelling by private and public transport for a range of different journeys. Fourthly, in the light of these behavioural and performance standards we have defined a standard procedure for interpreting forecast movements of people by car and by public transport into highway and service requirements; these procedures include methods for estimating the movements of goods vehicles. Finally, we have prepared generalised estimates of cost through which to estimate the moneys required to cater for peak period movements.

12 We consider that these principles provide a satisfactory yard-stick on which to base a comparison of the costs of catering for urbanisation at each of the four sites for the Third London Airport. They are consistent with the assumptions which have been made during the comparative stages of some of the most recently completed land use/transportation studies in this country. It should however be stressed that the conclusions which can be drawn from an interpretation of these principles at any particular site would require further detailed investigation before firm urban and highway plans could be enunciated.

13 The principles and standards adopted for the purpose of the transportation studies in connection with the Third London Airport are discussed in the remainder of this section.

Ease of travel throughout the region

14 The four areas vary considerably in both the quality and quantity of transport services currently prevailing. To base the analysis of future needs solely on patterns of movement expressed through the existing system could therefore be quite misleading. This possibility has been avoided by providing the urban growth with a comprehensive network of facilities. By this means it has been possible to ensure that the new development at each site will equally share in the benefits to be enjoyed from new or improved transportation services.

15 The need to provide this uniformity of accessibility depends on the extent to which people would wish to travel between all points. This has been accounted for through the incorporation of measures of travel reluctance which apply both to airport and non-airport workers.

Speed of travel

16 The standards established for the optimisation of accessibility anticipate that the road systems will cater for traffic at speeds well above those normally associated with congestion, namely:

i Roads within the new urbanisation have been allocated a peak hour speed of 25 mph and associated with a capacity of 600 pcu per hour per lane.

ii Links to the airport, away from the continuously built-up area, have been assumed as limited access facilities with a speed of 40 mph, and

Printed image digitised by the University of Southampton Library Digitisation Unit

to have a lane capacity of between 1,000 and 1,200 pcu's per hour.

iii Roads within existing urban areas were generally assumed to have a speed of about 20 mph. This provides a notional indication of the relative ease of movement which can be expected through these areas; the analysis of such road requirements lay outside the scope of this broad study.

iv Trunk routes and other "A" roads in rural areas have been assumed to have speeds of between 30 and 35 mph and a capacity of about 800 pcu's.

17 In determining the facility needs arising from the new urbanisation it was assumed that sufficient facilities would be provided to cater for the expected travel demands; the need for and magnitude of new or improved highways being determined from optimum capacities, with the flow, rather than the speed, being the critical factor.

Mode of travel

18 In estimating the future proportion of travel by public transport we have made the following assumptions:

i That there will be no policies aimed specifically at restraining the use of private transport either by limiting the number of parking spaces available or by charging higher than 'break even' parking costs. Specifically, it has been assumed that sufficient parking spaces, either as lots or in multi-storey blocks will be provided for employees within the airport perimeter.

ii That only for longer journeys to major land use generators such as service centres, will it be possible to provide a public transport service which could compete favourably with travel times by car.

iii That in certain corridors it would, if appropriate, be possible to use existing rail lines or reinstate and modernise disused track so that, when backed by an integrated service of feeder buses, higher than average levels of public transport patronage could be induced.

Systems formulation

19 The transportation systems which have been proposed to serve the new urban areas are intended only to illustrate the possible differences in transport requirements between sites. For this purpose we have chosen to assess the requirements within the areas of proposed urbanisation by postulating in each case a grid system of roads. Compared with other hierarchical concepts, this approach offers a number of analytical advantages:

i It provides a convenient starting point from which to estimate likely future travel patterns. The grid concept is particularly suited for analysing

Printed image digitised by the University of Southampton Library Digitisation Unit

traffic movements in an area in which the intensity and pattern of these movements are indeterminate because of the absence of any existing lines of communications.

ii It simplifies the analysis procedures in consistently translating unconstrained travel demands in a corridor into estimates of acility requirements.

iii It provides reasonably uniform accessibility within each area.

20 The grid system has therefore been used solely as a device for evaluating possible differences in transport needs between urban plans. This means that although the highway requirements reflect real variations in the intensity and pattern of movement due to the selection of different urban structures at each site, the facilities themselves can only be interpreted as notional expressions of these differences. Furthermore, intensive analysis may well point to another type of solution as being more appropriate to the particular needs of urban growth associated with the airport.

Costing principles

21 In assessing the costs of meeting the transport needs of the urban growth we have leaned heavily on generalised inventories of cost which we have assembled from previous studies. The source of these costs and the various assumptions which have been used are described in Section 5.

22 No detailed analysis has been made of public transport operations. To do so would have required an intensive examination of the suitability of different types of public transport operation. We have anticipated that the volume of movement in a corridor would not be sufficient to justify on economic grounds the construction of a new right of way for the exclusive use of airport workers. However, there is a clear case to be made for examining the economies which might be realised from allowing the airport workers to share the use of any public transport 'tracks' planned to link the airport with London.

23 If this were possible it is unlikely that the benefits would be equally spread among all sites, since accessibility of the urban development to this link would vary between sites. For example, the areas of development at Foulness and Nuthampstead would possibly gain an advantage through consequential savings in highway construction costs.

24 We have also considered it unlikely that corridor volumes elsewhere in the areas would justify the construction of new rail lines. Fixed track costs of public transport are therefore not allowed for in our estimates of cost. However, appropriate allowances have been made for the fleet purchase and renewal costs of public service vehicles and these are included in the estimates of operating cost. (See Section 5).

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 2: TRAVEL FORECASTING PROCEDURES

25 The principles adopted for the transportation studies have been incorporated into the procedures applied in forecasting peak period movements of traffic.

26 Peak travel demands occur when journeys between residence and work-place are most intense and it is these work journey movements which contribute most to the peaking tendency. The forecasting procedures therefore resolve into:

i Estimating the total number and distribution pattern of home to work trips.

ii Determining the proportion that will take place during the peak hour.

iii Deciding how many will be made by private car and public transport.

iv Adding to these the movement of goods vehicles and other journeys occurring during this time period.

27 In view of the limited amount of time available for analysis and because of the broad comparative nature of the studies it has been considered appropriate to use a relatively simplified forecasting technique. The procedures used rely heavily on those we have developed elsewhere but have been modified to account for the particular characteristics likely to be associated with airport workers as well as those presently displayed by residents within the four subregions. An essential feature of the technique employed is that it allows for the fact that there will be competition for airport jobs between those living in the planned development and those living further afield.

Study area

28 At an early stage in the studies an area of search was established. This area was defined in terms of:

i A radius of about 20 miles from the airport, as it was judged that this range would encompass the bulk of the commuting movement.

ii An area which would be sufficiently large within which to judge the impact of a number of alternative urbanisation strategies dependent on the airport.

29 At a later stage, after a land use plan had been selected and its geographic location was known, the area of detailed study was reduced in size. This smaller area was known as the internal zone area; the insights gained from the comparative strategy evaluation showed that about 90% of the airport workers would live within its boundaries.

Printed image digitised by the University of Southampton Library Digitisation Unit

The movement of people during peak periods

30 In order to examine work trip demand and orientation these areas (at each of the two levels of analysis) were divided into geographical zones. To maintain simplicity during the preliminary phase of strategy analysis relatively few zones were used (about 25-30) and it was assumed that there would be a balance between the demand for and supply of labour within the search area. After strategy selection, a more detailed zone system was defined covering both the internal zone area and the surrounding external area. The number of zones chosen - about 75 on average, was decided both by the degree of detail in the information available on land use characteristics, and by the degree of definition required in the results of the analysis. Thus, whilst a fine zone system was used in the area of new urbanisation, the external zones were formed from an aggregation of local authority units. These zones were used to forecast movements between areas and formed the basis for interpreting the chosen plans in terms of specific transport structures and layouts.

31 The pattern of travel between zones was estimated by the following relationship:

$$Tij = K.G_i.A_j.TF_{ij}$$

Where

Tij is the number of trips starting in zone i and terminating in zone j.

Gi is the number of trips originating in zone i (the labour force in zone i).

A_j is the number of trips terminating in zone j (the employment opportunities of zone j).

TF_{ij} is a function of the spatial separation between zones i and j and is known as the travel factor function.

and K is such that the following equalities are satisfied:

$$\Sigma_i Tij = Gi$$

$$\Sigma_j Tij = Aj$$

32 In essence, the relationship reflects an increasing tendency to travel between two zones in direct proportion to the magnitude of activities and in inverse proportion to their separation.

33 The trips starting were represented by the number of residents in the labour force in each zone; the trips finishing were represented by the number of employment opportunities. This information, based on a participation rate of about 45% and a residenital density of 12 persons per acre, was supplied by the Planning Consultants. All employment at the airport was represented as occurring in one zone.

Printed image digitised by the University of Southampton Library Digitisation Unit

34 Analysis of work journey patterns at Heathrow and a number of North American airports showed that there was a tendency for airport workers to travel longer than average distances to work. This was explained partly by their higher incomes but, more importantly, was due to the fact that their residences are of necessity located beyond the noise corridor. Allowing for this difference, the underlying reluctance of airport workers to travel longer distances is not significantly different from workers generally. This meant that a single "travel factor function" based on the conclusions of our work elsewhere would be satisfactory as a basis for estimating the movement of workers throughout the region.

35 The function used is shown in figure C.2. The form of the function was checked against the Heathrow Travel Survey and the 1966 census data to ensure that it adequately represented:

i The fairly large number of short journeys made entirely within self-contained free-standing communities such as Luton, Bedford and Northampton.

ii The importance of London and other large centres in the surrounding region, where because of the range and variety of job opportunities provided people may be prepared to spend a longer time travelling to work.

36 Application of this function in the formula enabled an estimate to be made of the number of potential residence-workplace movements between all zones in the study area during an average weekday.

37 Certain estimates were made in order to convert the all day work trips to actual trips occurring in the peak hour. These were separately determined from available data for the three main types of person movement.

i Airport workers

a On a given day it was assumed that because of non-attendance such as absenteeism, holidays, sickness etc. and the particular pattern of activity at an airport, it has been assumed that only 66% of all workers would actually report for work. This figure is based on current experience at Heathrow.

b About one-quarter of these journeys to work might be expected to take place in the peak hour.

Thus, the peak hour movement of persons travelling to work at the airport is estimated to form 16% of the potential daily movement.

ii Other workers

a Walk to work movements were assumed to be made by 10% of the labour force.

b Average daily attendance at work could be 90%.

c About 80% of home to work trips might occur in the peak periods and of these two-thirds could take place in the busiest peak hour.

Printed image digitised by the University of Southampton Library Digitisation Unit

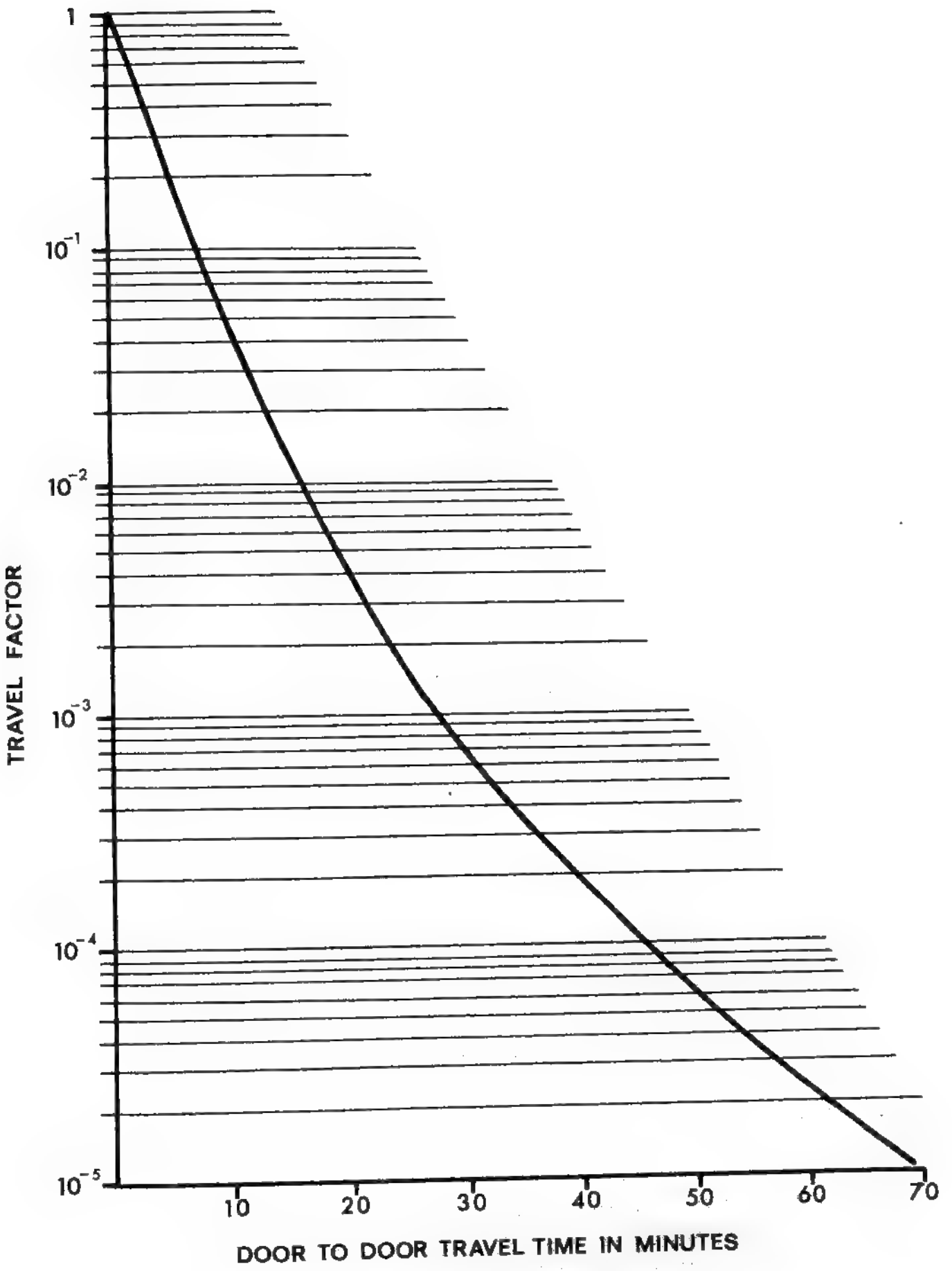


Figure C.2 Reluctance to Travel Function for Airport and Non-Airport Workers

Printed image digitised by the University of Southampton Library Digitisation Unit

iii Non work trips

Non work non-walk trips occurring in the peak hour could add a further 25% to work trips. However, since they will be, on average, about three-fifths of the length of an average work trip and since the demand for transport facilities is related to the lengths as well as the number of trips, this 25% of trips would be equivalent to a 15% increase in peak hour work trip volumes.

Thus, the peak hour movement of persons to non-airport destinations is expected to be 54% of the potential residence-workplace movement.

38 Not everyone could be expected to travel by car. Some would have no option but to use public transport and others would for one reason or another opt against driving. This latter choice could significantly influence the need for an magnitude of highway construction.

39 Beyond the 1980's, car ownership can be expected to have reached a level of about one car per worker. For those owning a car the predominant influences in choosing a mode of travel are convenient availability of public transport and relative differences of travel time and cost between modes. This has been clearly demonstrated in studies of people's travel habits made by ourselves and others both in Britain and North America. On the basis of these experiences, a simplified empirical expression of probable behaviour in choosing between private and public transport has been derived. It has been based on the following premises:

i That the actual time spent travelling in public transport vehicles could equal that of the private vehicles.

ii That walk, wait and transfer times could, for the range of journey lengths expected, add an amount almost equivalent to the actual travelling time and result in a door to door travel time of about twice that by car.

iii That it would be possible to introduce a good quality public transport service in corridors where travel demands are high e.g. in corridors where existing or reinstated rail services could, if integrated with feeder bus services, induce a higher than average use of public transport.

iv That as a result of their higher than average car ownership and the practical difficulties of providing a round the clock public transport service, the great majority of airport workers would travel by private transport.

v That there will be no restraint on employee parking either at the airport or elsewhere, i.e. that sufficient spaces will be made available at "break even' parking costs.

40 The relationship shown in figure C.3 indicates that the proportion of people with a choice of travel mode attracted to public transport in the peak hour decreases as the door to door travel time ratio increases. When the door to door time by public transport is twice as long, only about 17 per cent of people with a choice of travel mode will select public transport for their journey to work. This results in an overall diversion of about 70/30 in favour of private transport.
(0.15 x 100 = 0.85 x 17)

Printed image digitised by the University of Southampton Library Digitisation Unit

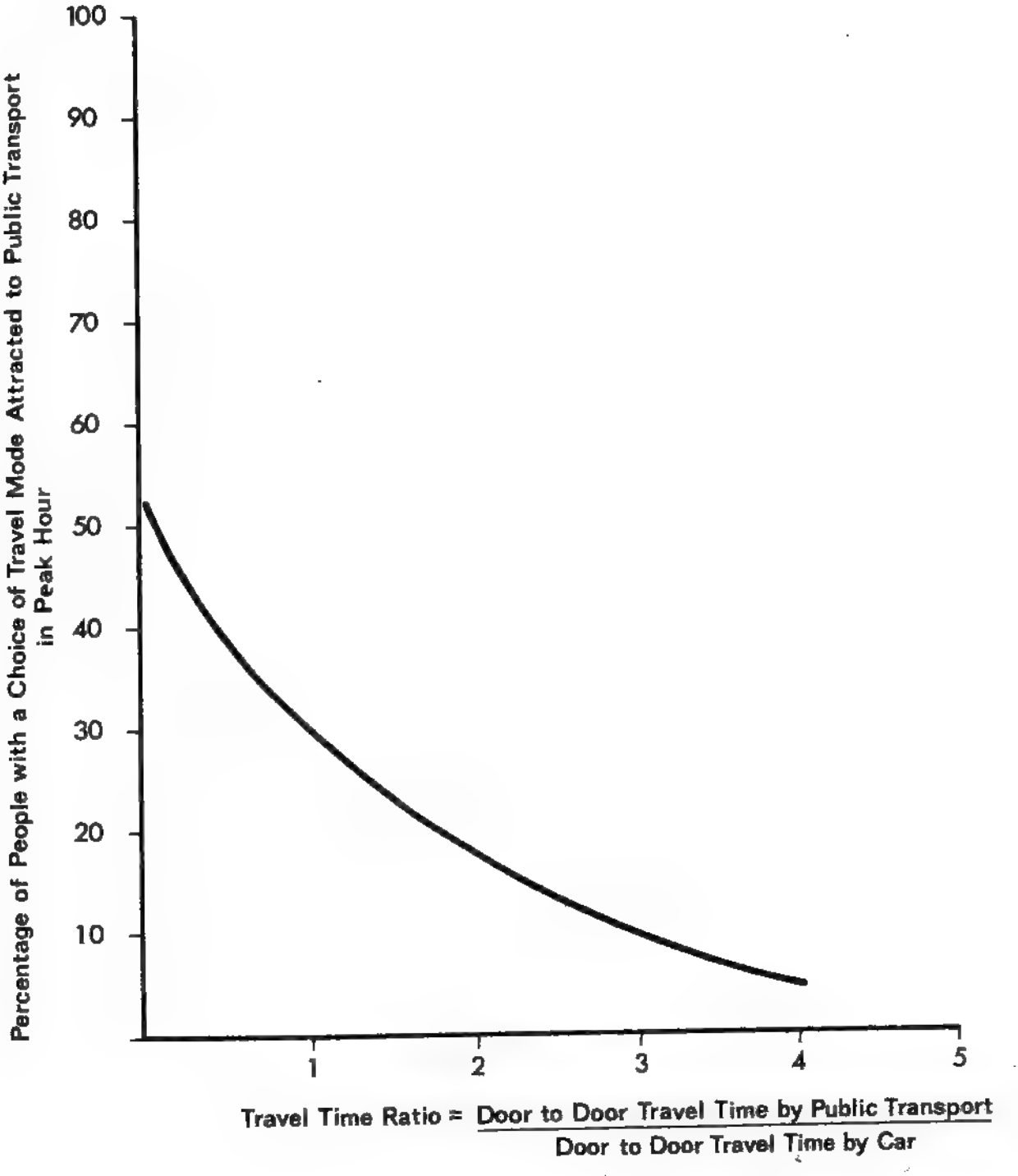


Figure C.3 Public Transport Usage Versus Door to Door Travel Time Ratio for Public and Private Transport Modes

Printed image digitised by the University of Southampton Library Digitisation Unit

41 For the period beyond the 1980's these assumptions have led to the application of a series of differential modal split factors and these are summarised below:

i For journeys to the airport an 80 per cent private/20 per cent public modal split.

ii For journeys to dispersed employment an 80 per cent private/ 20 per cent public modal split.

iii For journeys to service centres a 70 per cent private/30 per cent public modal split.

iv For journeys in rail corridors a 65 per cent private/35 per cent public modal split.

v For journeys to London a 30 per cent private/70 per cent public modal split.

42 In total, public transport is expected to cater for about one-quarter of all work journeys; only about one in five of the airport employees travelling to work in the peak is expected to travel by public transport.

The movement of vehicles during peak periods

43 The final step in the assessment of the peak hour demand for road space required a conversion of person movements into vehicle movements and the allocation of these traffic volumes to specific corridors or routes by a process known as "traffic assignment". The steps involved were:

i Peak hour person trips by private vehicle were translated into vehicle movements through the application of an average car occupancy factor of 1.2 persons per car.

ii The occurrence of local short distance commercial vehicle movements in the peak hour was represented empirically by factoring the private vehicle volumes by 20 per cent.

iii Additional allowances were made for the long distance inter-regional traffic volumes which would occur on those parts of the national motorway and trunk road system which carried traffic through the internal zone area. The factors derived were applied to the private vehicle flows and were estimated as 1.1 for trunk roads and 1.5 for motorways. These factors implicitly take account of the expected increase in the volume of goods transported due to increases in the level of economic activity, and were based on our experience of similar conditions observed in regional and conurbation studies.

iv Appropriate and consistent allowances were also made for local short distance journeys which might take place on the main urban roads. Such movements, although beginning and ending in the same zone, could, because of the size of zones used in the analysis, add between 10 and 15 per cent to the total road space requirements in any corridor.

Printed image digitised by the University of Southampton Library Digitisation Unit

v The peak hour person journeys by public transport were estimated to require no more than 5 per cent of road space and so were judged not to constitute a factor of any great significance in highway design.

vi The quickest routes for travel between zones were calculated from a computer simulation of the transportation system being tested.

vii The estimated patterns of vehicular movement, expressed in terms of equivalent passenger car units were then routed (using a minimum path technique) over symbolic networks representative of the proposed travel facilities.

44 These procedures were applied in simplified form in the preliminary transportation testing of alternative urban forms, and in a more comprehensive way, during the development of representative systems to serve the selected urban plans.

Overview

45 The foregoing procedure provides an effective means of comparing the need for new highways and public transport services at each of the airport locations.

46 The forecasting techniques have been applied at two differing levels of detail:

i In simplified form during the preliminary phase of testing alternative strategies.

ii In estimating future peak hour traffic flows associated with the selected pattern of urbanisation.

Printed image digitised by the University of Southampton Library Digitisation Unit

Existing communications

47 As an aid to the Planning Consultants in their preparation of alternative strategies, an assessment was made of the opportunities and constraints afforded by the existing and programmed pattern of communications in each search area. The surveys served to identify in broad terms:

i The areas in which location of an airport and its associated urbanisation could result in the greatest amount of strain on existing resources.

ii The way in which spare capacity in the existing and programmed transportation system might affect the location of new urban growth.

iii The benefits which each plan might offer to the general accessibility of the airport and other large concentrations of employment.

iv The areas in which exceptional construction costs might be incurred, for example, because of a need for costly bridgeworks or road building over abnormal ground conditions such as the land liable to flooding at Foulness.

48 For this examination an inventory of the supply and use characteristics of the transportation system in each search area was prepared with the help of local highway authorities and the Divisional Road Engineers' Offices of the Ministry of Transport. The information collected consisted of descriptions of routes classified by type, road widths, speeds, capacities, and where available, traffic count data and forecast vehicle flows. Information was also obtained on those highway improvement schemes and new road plans for which grant approval had been given, along with other schemes presently in preparation, but which on the best available evidence might be open to traffic by 1981. British Rail supplied maps of the rail system currently in use for passenger and freight traffic.

49 A brief description of the existing pattern of communications is provided in the reports prepared for each of the airport sites (chapter 2 in parts II, III, IV and V).

Plan appraisal

50 A three-tier approach was adopted in selecting a pattern of urban development for each airport site:

i An examination of the transportation advantages and disadvantages of a wide range of theoretical urban forms.

Printed image digitised by the University of Southampton Library Digitisation Unit

ii An appraisal of the transportation implications of a number of feasible alternative strategies of urbanisation.

iii A generalised assessment of the comparative transportation costs associated with a short list of alternative strategies of urbanisation.

51 Several factors were used to evaluate the plans from a transportation point of view:

i Accessibility to all job opportunities, which for plan testing purposes was measured by the amount of time likely to be incurred in travelling to work during the peak period. It was considered that since airport employment represented, on average, only about 25% of all employment within the search areas, it would be prudent to base plan selection largely on total travel effort and not just on an assessment of the relative lengths of airport work journeys.

ii The potential inherent in each plan for providing an efficient and attractive public transport system.

iii The transportation effect of the urban development on existing and planned communities.

iv The extent to which each of the plans would give rise to exceptional capital costs.

v The relationship of each plan to regional and national communications.

52 In the first stage the alternative strategies were ranked in respect of a number of criteria without costing. At the second stage, notional cost estimates were prepared to illustrate the broad order of magnitude differences between the short list of strategies which were considered to offer most advantages from the separate viewpoints of transportation and planning.

Theorectical urban forms

53 The two Planning Consultants adopted slightly different approaches to the generation of alternative strategies for urbanisation. These approaches are discussed in chapter 5 of parts II, III, IV and V. Both the approaches resulted in a range of alternative urban forms which can be summarised as follows:

i a single non-directional town;
ii a linear form perpendicular to the noise corridor;
iii a linear form parallel to the noise corridor;
iv a small number of dispersed medium sized towns;
v a large number of scattered towns and villages.

54 Each of these urban patterns could be located on one or other side of the noise contour or could be split between both sides. They were associated with

Printed image digitised by the University of Southampton Library Digitisation Unit

an upper population limit of about 500,000 and an airport employment of 50,000. The principal conclusions of the transportation appraisal were:

i That while linear urban forms parallel to and on one, or both sides of the airport, would give rise to shorter work journeys for airport employees, this advantage would be offset by the longer journeys to other employment opportunities.

ii That urban forms perpendicular to the airport would tend to increase the work journey lengths for all residents.

iii That dispersed urban forms would appear to add to the length of the journey to work.

iv That urban forms which split development on either side of the airport would shorten the distance for airport work travel, but would give rise to some extra costs because of the need to cater for interaction across the airport perimeter. This could lead to either user cost penalties (because of the extra time spent in travelling around the airport fence) or additional capital costs (because of the need to tunnel beneath the runways).

v That concentrated urban forms, because they would generate larger corridor volumes, would be most suitable from the viewpoint of providing an efficient, attractive and economic form of public transport service, both to the airport and within the urban areas.

55 The principal conclusion at this stage of the analysis was that concentrated forms which located development on one side of the airport offered the greatest number of advantages from a transportation point of view.

56 At each site the approach adopted by each of the Planning Consultants to the generation of alternative strategies resulted in the development of between 5 - 7 strategies for further evaluation.

First stage of strategy evaluation

57 The transportation testing of feasible alternatives was based on an estimate of the work journey patterns made within the search area for each airport site. This was derived from:

i Forecasts of the distribution of population and employment prepared by the Planning Consultants for a relatively small number of zones. To maintain simplicity in the computational procedures of this analysis phase it was assumed that there would be a balance between labour demand and labour supply within the search area.

ii Application in simplified form of the forecasting techniques described in Section 2. Estimates of travel time were obtained from a notional highway system which linked each of the zones with a driving speed of a least 20 mph.

Printed image digitised by the University of Southampton Library Digitisation Unit

58 The patterns of movement likely to be associated with each strategy were then translated into estimates of the lane mileage needed to handle the peak hour directional volumes.

59 To provide relative measures of the advantages and disadvantages and in particular of the accessibility afforded by each strategy, the expressions of travel effort were converted to a rank order index; the strategy displaying the least travel effort was used as the base and a value of 100 ascribed to it. The principal results are presented in chapter 6 of parts II, III, IV and V where the results are expressed by a five point scale of ranking.

Second stage of strategy evaluation

60 The final selection of the preferred strategy of urbanisation was made by comparatively costing the short list of alternative strategies obtained from the stage one selection. At all sites, the best strategy on transportation user cost grounds was included in this list along with those strategies judged to be most desirable from a planning point of view.

61 The results of the comparative costing exercise are presented in chapter 6 of parts II, III, IV and V of the report. It should be emphasised that the costs cannot be regarded as absolute values; they are intended only as a guide to final plan selection by indicating broad order of magnitude transportation cost differences between strategies.

62 Inevitably, a large number of assumptions had to be made in preparing these cost estimates. However, these have been consistently applied between strategies and although there are variations in the size of the search areas, and in the populations contained within them this does not invalidate any comparative results.

63 Of fundamental importance to the interpretation of the figures is the assumption that completely new road construction will be needed to meet the peak hour travel demands of airport work travel in the year 2000, i.e. no use will be made of existing or improved facilities in the search area. In assessing the capital costs required to accommodate the remaining traffic volumes within and between the urbanised areas we have assumed 100 per cent utilisation of the existing stock of the arterial road system. Since it is likely that some improvements would be necessary in any event simply to meet the traffic growth which would occur along with the anticipated non-airport development, this means that there is some degree of over-statement in the capital costs shown. It may, however, be argued that because these relate to movement between zones this over-statement could be offset by the costs which would be incurred in providing a secondary road system to meet intra zonal needs.

64 The capital cost estimates were prepared through the use of a simplified traffic assignment technique. The demands for peak hour vehicle mileage were converted to peak hour lane mileage requirements assuming 100 per cent efficiency of lane utilisation in the heavier direction of flow and an average capacity of 600

Printed image digitised by the University of Southampton Library Digitisation Unit

vehicles per lane per hour. A present day unit construction cost of £80,000 per lane-mile was then applied except to those sections where higher construction cost rates would be more appropriate. Differences in land acquisition costs have not been allowed for.

65 Capital costs were then converted to equivalent annual terms through the application of an appropriate capital recovery factor. For this purpose an 8 per cent interest rate and a facility life of 60 years were used.

66 User costs are also presented in annual terms for the year 2000, and these have been added to the equivalent annual capital costs to obtain an estimate of total annual transportation costs. The user costs shown relate to the all day journeys between residence and workplace and include the costs of time spent travelling, the costs of vehicle operation and public transport user costs. A value of travel time of just over seven shillings per hour in 2000 has been used; this figure was based on recommended Ministry of Transport values factored to allow for the growth in real incomes between now and the end of the century.

67 The results of the transportation appraisal were compared by the Planning Consultants against the results obtained for the non-transportation evaluation which was conducted in parallel by them and the Sub-Consultants. This led to the selection of a preferred plan at each site which was then developed and refined for more detailed transportation testing.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 4: PLAN TESTING AND ANALYSIS PROCEDURES

68 The preferred way of accommodating the urban growth at each airport site was expressed by two plans; one which represented the urbanisation for the full growth of the airport by the end of the century and one which represented an intermediate stage in the development.

69 In analysing the transportation systems to serve these plans, attention was focussed on an area which would house nearly all the airport workers. This study area contained the city which would be associated with the airport. It was considered that the comparative urbanisation costs and benefits could best be obtained from an incremental approach in which the additional costs arising from airport location would be assessed through a comparison with a "no-airport" situation. As the incremental costs were requested by the Commission for two stages in the development of the airport, this required the preparation of three urban plans.

i Plan 1: Based on known proposals up to 1981 which would show the expected pattern of development in each area without the airport.

ii Plan 2: The new urbanisation required to support the airport at an intermediate stage of development with 45,000 workers.

iii Plan 3: The new urbanisation required to support an airport with 65,000 workers, which is the assumed level of employment when four runways are operating at full capacity.

70 Estimates have been made of the transportation facility requirements which would be needed to accommodate the travel demands arising from the urban growth associated with each of these plans. This section describes the procedural steps involved in formulating transportation system proposals.

Traffic testing procedures

71 Using the system of internal and external zones into which each of the areas had been divided, estimates of the distribution of population and employment were made by the Planning Consultants for each plan. This data formed the basis for the transportation analysis made for each of the three plans.

72 Several steps were involved in the transportation analysis procedure, the end result of which was the development of a transportation system representative of the traffic needs of the land use plan. For each of the traffic tests work trip patterns were determined respecting the principles of freedom of choice and good accessibility between residence and workplace. The techniques described in section 2 were then used to translate these forecast movements into peak hour vehicle flows:

i An examination was made of the ability of the existing and committed transport system in each area to handle the forecast 1981 no-airport traffic flows.

Printed image digitised by the University of Southampton Library Digitisation Unit

ii Resultant overloads were converted into highway requirements, to meet the forecast needs of traffic i.e. new roads and improvement schemes were determined from an inspection of the volume capacity relationships.

iii In preparing estimates of the type and location of possible road improvements account was taken of the highway proposals in preparation by the local authorities.

iv The network tested for Plan 3 was based on the network derived for Plan 1. Included within this network was a first estimate of a series of notional road links needed to serve movements which could not be handled satisfactorily by the roads shown in Plan 1. These links which were discussed with the Planning Consultants included, for example, roads to carry traffic from the new urban area to the airport as well as other road links between the residential districts and the main service and industrial areas of the proposed development.

v An assignment of peak hour traffic volumes to the test network and an examination of its ability to handle the forecast loads revealed the need for a number of modifications.

vi The modifications were of two types - firstly, those designed to provide additional road capacity in corridors of high demand and secondly, those which were intended to ensure compatibility of the road proposals with a number of planning and environmental considerations.

vii This technique of translating flows into lane requirements permitted the formulation of an urban road system for Plan 3 in which, as far as possible, the supply was matched with the demand. Other highway improvements indicated by the traffic assignment to be required elsewhere within the internal zone area were assessed in a similar manner.

viii The results of the transportation testing of Plan 3 enabled several minor revisions to be made to the structure and allocation of activities proposed for Plan 2.

ix The network which would be needed to serve the travel patterns of Plan 2 was derived initially by excluding from the Plan 3 network those sections of road which were judged not to be required for this intermediate stage of the development.

x A functional evaluation of the assignment made to this test network led to the development of a highway system which would serve Plan 2 and which would be consistent with the long term transportation proposals contained in Plan 3.

xi The basis for formulating a highway system at each of the four sites was the analysis of forecast volumes of movement in broad corridors. Notional links were used to represent corridors of movement and the intensity of flow in them indicated the number of lanes required across the corridor. These results were used as the basis of discussion with the Planning Consultants in formulating a highway system at each site. In general, the intensity of movement expected showed that a spacing of about three-quarters of a mile between all purpose roads would be most appropriate.

Printed image digitised by the University of Southampton Library Digitisation Unit

73 Estimates of the facility requirements of Plans 1, 2 and 3 should not be interpreted as actual transportation systems recommended for construction, but as notional indications of requirements consistently prepared at all four sites in order to meet the principles of design set out in Section 1.

74 These procedures led to a broad assessment of the costs of developing transportation services at the four airport sites. Plan 1 has not been costed since the difference in facilities between Plans 1 and 2 provides a direct measure of the incremental transportation costs. The capital costs which could be incurred in constructing the roads shown in Plan 3 have been estimated and compared with the costs of those in Plan 2.

75 In developing these estimates of cost we have anticipated that no more road space will be provided than that required to meet the functional standards. The procedure adopted allows for an orderly progression in the scale of improvements required, e.g. from a single carriageway two lane road to a three lane road and only then to a dual carriageway. This reflects our understanding that the main purpose of the studies is the preparation of broad estimates of the investment requirements at each site. In practice, of course, it may often be found more appropriate when designing highway improvements, to allow for longer term needs by providing more than the capacity immediately required.

Public transport

76 Public transport is expected to cater on average for about 30% of the journeys made in the peak hour by the residents of the study areas. Only about 20% of the airport workers are estimated to use public transport. Whilst the intensity of demand for public transport services will probably be greatest in those corridors which contain a rail service or which focus on a centre, the patterns of development which have been proposed are unlikely to produce traffic loadings of a size which could alone justify economically the provision of fixed track services. We have therefore anticipated that the public transport service in the urban area would be essentially road based.

77 A good frequent bus service could be maintained to the airport. During the busiest hour about 2,000 people might require to use the public transport service to the airport. These movements could be handled by about 40 to 50 buses. Because of the shift working pattern likely to be experienced at the airport and the higher off peak utilisation which might result, this bus fleet could be used more efficiently than the normal bus operations in a densely built up area.

78 A bus service could also meet the needs of the non-airport employees. Indeed, careful routing of bus services to link residential areas with industrial, commercial and shopping centres as well as the airport could possibly produce further economies of scale in public transport operation.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 5: COMPARATIVE TRANSPORT COSTS AND BENEFITS OF THE SELECTED PLANS

79 The prime purpose of the transportation analysis has been the preparation of estimates of the costs of providing, operating and using the transportation services associated with the selected urban plan at each airport site.

80 The cost comparisons presented in the report are indicative of what seems likely to be required on the strength of the forecasts of urban growth which have been made available to us. The major assumptions we have accepted in relation to each site are:

i Forecasts of airport employment at two points in time.

ii The levels of population supported by the airport.

iii Indigenous employment and population growth potential.

81 For both the final and intermediate plans, airport dependent costs have been estimated in two parts:

i Capital costs of developing transportation services.

ii Operating and user costs.

Capital costs

82 Capital costs have been determined through a comparison of facility requirements needed for the selected plan with those at a base situation - the 1981 no airport plan (Plan 1).

83 A prime limitation on the interpretation of cost differences between plans arises from the inclusion of non-airport growth within the plans for accommodating the full development of the airport (Plan 3). By contrast, the intermediate plan (Plan 2) provides only for airport growth beyond 1981. This places an important qualification on the conclusions to be drawn from a comparison of the incremental costs of developing the airport from the intermediate to final stage.

84 Further limitations arise from the fact that capital costs within each study area are directly related to:

i The form of the particular plan which has been selected.

ii The configuration of the airport site and its relationship to the main urban area.

Printed image digitised by the University of Southampton Library Digitisation Unit

iii The use which can be made of existing or improved highways.

iv The need to devise a means of accommodating long distance inter-regional traffic passing through the area.

v The geographical extent of the search area and number of people contained within it.

85 Each of these factors can influence any statement of total development costs and bias any estimate of user costs. To minimise the importance of such deviations capital costs have been apportioned in relation to the journeys of traffic using each new road in the following way:

i Capital costs of transportation facilities needed to handle the peak hour flow of traffic to the airport. The costs of road linkages due to the airport workers have been estimated from a selective assignment procedure which has been used to determine the proportion of total traffic flow on each section of road represented by journeys to the airport. This proportion has then been applied to the cost of improvement or new construction.

ii Capital costs of transportation facilities needed to handle the non-airport peak hour traffic flows within the new urban area. This was determined from the total cost of each section of road within the development less that proportion of the cost directly attributable to the airport share of the total flow.

iii Capital costs of transportation facilities required to accommodate the peak hour traffic flows within the remainder of the study area.

86 This approach does not, however, fully overcome all the difficulties which arise in attempting to prepare strictly comparable estimates of cost for all sites. For instance, the proportions of growth dispersed away from the main centre of urbanisation vary from one preferred plan to another; those with the greater amount of dispersal could well gain a cost advantage, because there is a greater likelihood of handling the resulting traffic flows on existing roads.

87 Other problems also arise through the inability to distinguish the costs which might be incurred through the need for road improvement schemes in existing urban areas. The extent to which the exclusion of these costs understates the real costs associated with the airport urbanisation depends very much on the amount and location of this type of development relative to the airport and this varies between sites.

88 Estimates of capital cost have been prepared using generalised inventories of construction cost which we have prepared from previous studies. These are based on costs used in the West Yorkshire Transportation Study and the Merseyside Area Land Use/Transportation Study. They are also consistent with the costs given in Road Research Laboratory Technical Paper No. 50.

Printed image digitised by the University of Southampton Library Digitisation Unit

89 Within the Foulness study area information on the effect of exceptional site conditions on costs has been obtained from the report prepared for Ove Arup & Partners. (see Appendix E). This indicates a range of costs additional to normal costs of up to 100 per cent. These variations from normal costs have been appropriately applied to road works which might be needed within that area.

90 Special treatment has been given to the cost of the highway links to the airport at Foulness. In common with the three inland sites, the links have only been taken to the airport perimeter. However, costs of constructing road sections across the Maplin Sands allow only for the road pavement. They do not include the cost of foundation works. Earthwork and structure costs have been included only for inland sections as far as the Maplin Sands. We understand that the Commission's research team will include the foundation cost of roads over the sands as part of the construction cost of the airport itself.

91 Capital costs are therefore only broad order of magnitude indications of possible investment requirements. Detailed design investigations may well indicate significant variations from these cost estimates.

92 Typical examples of construction cost estimates used are shown in the table below. Additional allowances were made for bridgeworks and poor ground conditions.

Type of facility: improvement or new construction	Assumed cost per mile in £ 000s
New dual two lane carriageway	320
Improvement from single carriageway two lane to dual two lane carriageway	170
Improvement from three lane single carriageway to dual three lane carriageway	250

Minimum user costs to the airport

93 On the grounds of direct comparability there are merits in limiting travel cost comparisons to those of airport workers only, since their numbers are constant at each site. However, even the comparison of airport work journeys only is not simple. In comparing different locations there could well be substantial variations in how people respond when presented with a range of choice in housing or workplace location. The way in which the choice is exercised is unlikely to be the same at each site because of variations in the amount of existing development and accessibility to it. This variation in the amount of 'locational' benefit can partially be accounted for by considering the minimum possible user cost of travel to the airport from within the urban area. This particular approach has been proposed by the Commission's research team and has for convenience been used in estimating the minimum journey to work costs. To these has been added, at the Commission's request, an estimate of the costs which would be

Printed image digitised by the University of Southampton Library Digitisation Unit

incurred by commercial vehicles and by persons conducting their own and their employers' business at the airport. Goods vehicle travel costs have been estimated by a factoring of the forecast peak hour flows. The remaining service component has been estimated on the basis of the present Heathrow relationship of this traffic to airport work travel. Both are subject to margins of error, due partly to simplifications which have had to be made, and partly because of the sensitivity of the results to the assumptions about journey length and journey speed, the value of travel time, and the stability of present relationships over time. The contribution made by these elements to total travel costs is significant (because of the higher unit cost rates applied to time travelled during working hours) and there would be merit in making a more detailed examination of the characteristics of airport service traffic.

94 As Plan 2 is undated, user costs have been estimated using 1968 values. To facilitate a site comparison of these costs at two stages in plan development, and to enable the Commission's research team to attach an absolute monetary value when the time scale is established, costs of Plan 3 have been similarly calculated.

95 Table C.1 summarises the unit rates and parameters used in preparing estimates of travel costs.

Other methods of measuring costs and benefits

96 Several methods are available to compare costs and benefits resulting from investment in transportation.

97 An alternative approach to that of minimum user costs, is based on the measurement of total transport costs incurred by the community at a given point in time. By taking account of the costs of developing, operating and using a system, the attainment of a common set of functional standards at all four sites can be compared on a cost-effectiveness basis. The method implicitly assumes that the quality of transportation services provided at each site is constant; this has been the guiding principle in the formulation of transportation proposals serving the traffic needs of the new urbanisation. From a purely transportation viewpoint the best plan is that which meets the functional standards at least cost. Although the results are not presented in this report estimates have been made of the 'community costs' of travel at the end of the century. These have been prepared by adding the equivalent annual costs of capital to the actual travel costs incurred by all residents living in the airport community in the year 2000.

Costs of stages in plan development

98 We have been asked to prepare estimates of the costs of a number of incremental stages in the development of the plan. The purpose of this is to enable the Commission's research team to discount cash flow once the growth profile of the airport has been established from the air traffic forecasts.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C.1

Time Costs	Value in pence per hour 1968	Value in pence per hour 2000
Persons travelling to and from work	39d	100d
Commercial vehicle drivers	114d	292d (1)
Persons travelling on employer's business	259d	664d (2)
Persons travelling on personal business	39d	100d (2)

Running Costs	Value in pence per mile	Value in pence per mile
Private car	3d	3d
Commercial vehicle	5.7d	5.7d
Public transport	2.4d	3.9d (3)

Notes: 1 In calculating commercial vehicle time costs a vehicle occupancy of 1.5 has been assumed.

2 A composite service journey time cost based on 1966 Heathrow patterns has been derived accounting for the split between persons travelling on employers' and personal business. This composite value at 1968 prices = 193d per hour and at 2000 495d per hour. All persons making service journeys are assumed to travel by car at an occupancy of 1.4 persons per car.

3 This composite figure reflects estimated future volumes of travel by bus and rail and accounts for:

i bus operating costs

ii bus fleet purchase costs

iii plant costs of bus fleet

iv train operating costs

v train purchase costs

vi track running costs

but does not account for track construction costs. In calculating daily travel costs, actual attendance rates at work have been used:

i airport workers at 0.66 of airport employment

ii non-airport workers at 0.90 of other employment.

In calculating annual travel costs 300 working days per year have been assumed.

Printed image digitised by the University of Southampton Library Digitisation Unit

99 To achieve this, each plan has been divided into ten increments, the first six of which correspond to Plan 2 (except in the case of Thurleigh where the first seven increments are equal to Plan 2). From the traffic analysis undertaken a system has been developed to meet the travel patterns of Plans 2 and 3. But since highway requirements change at each increment of the plan, because of the differing volume and pattern of trip making, it does not follow that the costs of each stage will be the equivalent parts of the costs of the intermediate and 'end state' plans. Ideally, the costs at each stage should only be assessed by preparing successive traffic assignments, and converting the flows into highway needs. Such work lies outside the scope of this present study. A simplified procedure has therefore been used to estimate the build-up of capital costs. This related the build-up in capital costs to the population growth between each increment of development and took account of the occurrence of certain cost thresholds.

100 The phasing of the plans at each site has been determined on general planning grounds. Regard has been paid by the Planning Consultants to practical considerations such as the advantage which could be gained from attaching the first phases of the new development onto existing areas and planned expansions. This means that the sequence proposed is not necessarily the least cost method of phasing the development. It is possible that the procedure used could give rise to a distortion in a discounted cost comparison.

101 Conclusions based on costs must be preliminary since costs have not been discounted. Discounting will only be possible when an estimate of the growth profile of the airport has been obtained. It is understood that this work will be carried out by the Commission's research team.

Sensitivity analysis

102 To gain some appreciation of the way in which possible errors in costing might affect any overall order of preference we have carried out a series of sensitivity tests. The results of this analysis provided a broad indication of the reliability which could be attached to a purely monetary index of differences between sites.

103 There are potential sources of error in the forecasting and analysis procedure, which concern the assumptions about growth in employment and population. It is a task beyond the work of this present study to assess the implications of all potential errors. We have therefore selected a few of the possibilities and endeavoured to guage their effects on resultant costs. These are:

i Ranges of error normally associated with preliminary capital cost estimates of specific projects.

ii The effects of different rates of build-up in airport employment and associated urban development.

Printed image digitised by the University of Southampton Library Digitisation Unit

iii The effects of changes in the unit values of travel costs

iv Differing assumptions concerning the techniques of cost allocation.

Under this heading consideration was given to the possible effects on total cost of changes in the amounts attributable to airport and non-airport functions and also to the effect of including the costs of improvements to national routes passing through the areas.

104 The checks applied related only to the capital and user costs of Plan 3 at the end of the century.

105 Results of the sensitivity analysis indicated that no real significance should be attached to the minor differences in cost between the three inland sites but confirmed the cost differences between these and Foulness.

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION 6: INTANGIBLE COSTS AND BENEFITS

106 The scale and nature of the urban developments proposed at the alternative airport sites are likely to have significant and varying impacts on the future growth pattern of the four subregions. Transportation proposals designed in the first instance to cater for the peak hour traffic demands of the airport community are likely to give rise to a number of incidental benefits and costs. Improved accessibility, for example, will be enjoyed for off-peak travel purposes such as recreational and shopping journeys made by those living within existing communities. On the other hand it is possible that additional investment may be required to alleviate traffic congestion in existing urban centres caused by the travel demands of the airport dependent population.

107 Whilst it has not been possible to quantify the difference between sites in the incidence of these benefits and costs, we have made an appraisal of how the transportation proposals might affect all residents living within the sphere of airport influence.

108 To do this, we have established a set of transportation considerations against which to compare, in a qualitative way, the advantages offered by each plan. These considerations are:

A To minimise additional investment in transport in existing urban areas: Because of the broad methods used in the study, and the requirement to concentrate our attentions on the new urbanisation resulting from the airport, it has not been possible for us to take into account fully the additional investment which would be required in existing urban areas, particularly central areas, as a result of the location of the airport and its associated urban development.

B To provide good access by road to other parts of the country: It is in the interests of both the airport and the inhabitants of the associated urban development to have easy access to all other parts of the country. Although this could not be quantified within the present study it is possible to comment on the relevant attributes of each site.

C To provide good access by rail to other parts of the country: Again, this could not be quantified, but we have been able to make some relevant comments.

D To maximise the compatibility of the new urban development and its associated transportation system with known plans for the area: In each of the search areas, there are current plans for dealing with the problems which will arise without the airport. Particularly relevant to this aspect are existing plans for larger scale urban development and main transportation strategy route proposals. It is important that the airport development should complement such proposals whenever possible, and under this

Printed image digitised by the University of Southampton Library Digitisation Unit

heading, we have made subjective comments on the extent to which this may be achieved particularly from the transportation point of view.

E To improve accessibility to town centre activities: The construction of new transportation facilities required because of the airport development will lead to certain benefits in other areas. For example, they may improve accessibility between existing urban areas resulting in a wider range of choice in terms of jobs, housing, education and the like for residents of the existing settlements. In other cases, the construction of settlements of the size contemplated for the airport may result in the creation of much better shopping, educational and health facilities than would otherwise have been available to the residents of the existing urban areas.

F To improve accessibility to open countryside: As with urban facilities, construction of roads for the airport urbanisation may result in benefits in terms of increasing accessibility to rural areas, in particular, those suited to recreational uses. These considerations, whilst not measurable in a study of this kind, are capable of subjective comment.

G To reduce the probability of overloading existing corridors of movement: As several national transportation corridors are in danger of becoming overloaded in the near future, there would seem to be some advantage in locating the airport at a site which does not aggravate this problem. However, it is possible that a conflict exists between this objective and objective B, since the corridors which may become overloaded are often those which are most used for access to other parts of the country. The two objectives are, however, discussed separately.

H To minimise the effects of the growth in traffic on the environment: This consideration is relevant particularly to two cases; one where the urban environment is threatened because the needs of the transportation system are far in excess of the environmental capacity of that area; the other, where new routes cut through areas of pleasant countryside. This objective has not been studied in new urban areas, since it is expected that sympathetic design will be able to overcome these problems.

109 These considerations have been used as a framework against which to make subjective comments about each site which will broaden the basis of the study beyond an analysis of cost. The principal results of this evaluation are summarised in the following Table C.2.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C.2: Subjective transportation considerations

	Foulness	Nuthampstead	Cublington	Thurleigh
A To minimise additional investment in transport in existing urban areas	o	+	o	o
B To provide good access by road to other parts of the country	-	+	+	+
C To provide good access by rail to other parts of the country	-	-	+	+
D To maximise the compatibility of the new urban development and its associated transportation system with known plans for the area	+	o	-	+
E To improve accessibility to town centre activities	+	+	+	+
F To improve accessibility to open countryside	o	+	+	-
G To reduce the probability of overloading existing corridors of movement	+	+	-	+
H To minimise the effects of the growth in traffic on the environment	o	-	+	-

Note: + Favourable effects

o Both favourable and unfavourable effects

- Unfavourable effects.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C.3: Foulness - Annual user costs of travel to the airport in £ million at 1968 prices

	Work journeys				Commercial vehicle journeys		Service journeys		Total Costs
	Travel time costs		Running costs		Travel time costs	Running costs	Travel time costs	Running costs	
	Car	Public transport	Car	Public transport					
Increment 1	0.187	0.047	0.301	0.075	0.247	0.232	0.462	0.139	1.690
2	0.146	0.036	0.236	0.058	0.235	0.219	0.438	0.132	1.500
3	0.126	0.031	0.205	0.051	0.185	0.172	0.345	0.104	1.219
4	0.156	0.039	0.248	0.062	0.172	0.162	0.323	0.097	1.259
5	0.074	0.019	0.123	0.031	0.149	0.138	0.276	0.083	0.893
6	0.071	0.018	0.117	0.029	0.123	0.115	0.231	0.069	0.773
Plan 2	0.760	0.190	1.230	0.306	1.112	1.039	2.076	0.625	7.334
Increment 7	0.070	0.018	0.116	0.029	0.171	0.180	0.319	0.108	1.011
8	0.053	0.013	0.089	0.022	0.171	0.180	0.319	0.108	0.955
9	0.104	0.026	0.169	0.042	0.140	0.147	0.261	0.088	0.977
10	0.104	0.026	0.166	0.041	0.140	0.147	0.261	0.088	0.973
Plan 3 (including Plan 2)	1.091	0.273	1.770	0.440	1.733	1.692	3.235	1.017	11.250

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C.4: Nuthampstead - Annual user costs of travel to the airport in £ million at 1968 prices.

	Work journeys				Commercial vehicle journeys		Service journeys		Total Costs
	Travel time costs		Running costs		Travel time costs	Running costs	Travel time costs	Running costs	
	Car	Public transport	Car	Public transport					
Increment 1	0.079	0.020	0.118	0.028	0.187	0.174	0.346	0.107	1.059
2	0.094	0.023	0.139	0.033	0.175	0.164	0.326	0.102	1.056
3	0.103	0.026	0.154	0.037	0.175	0.164	0.326	0.102	1.087
4	0.091	0.023	0.137	0.033	0.154	0.143	0.286	0.089	0.956
5	0.091	0.023	0.136	0.033	0.175	0.164	0.326	0.102	1.050
6	0.038	0.010	0.056	0.013	0.122	0.113	0.225	0.071	0.648
Plan 2	0.496	0.125	0.740	0.177	0.989	0.922	1.834	0.572	5.855
Increment 7	0.075	0.018	0.115	0.028	0.127	0.142	0.240	0.089	0.834
8	0.099	0.024	0.151	0.036	0.184	0.206	0.348	0.128	1.176
9	0.078	0.019	0.119	0.029	0.156	0.174	0.294	0.108	0.977
10	0.050	0.012	0.076	0.018	0.099	0.111	0.187	0.070	0.623
Plan 3 (including Plan 2)	0.798	0.198	1.201	0.288	1.555	1.555	2.904	0.967	9.466

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C.5: Cublington - Annual user costs of travel to the airport in £ million at 1968 prices

	Work journeys				Commercial vehicle journeys		Service journeys		
	Travel time costs		Running costs		Travel time costs	Running costs	Travel time costs	Running costs	Total Costs
	Car	Public transport	Car	Public transport					
Increment 1	0.117	0.029	0.178	0.043	0.186	0.173	0.347	0.108	1.181
2	0.124	0.031	0.190	0.046	0.186	0.173	0.347	0.108	1.205
3	0.075	0.019	0.111	0.027	0.186	0.173	0.347	0.108	1.046
4	0.052	0.013	0.076	0.018	0.186	0.173	0.347	0.108	0.973
5	0.117	0.029	0.178	0.043	0.186	0.173	0.347	0.108	1.181
6	0.061	0.015	0.089	0.021	0.186	0.173	0.347	0.108	1.000
Plan 2	0.545	0.136	0.821	0.197	1.114	1.040	2.081	0.647	6.586
Increment 7	0.035	0.009	0.050	0.012	0.095	0.087	0.177	0.054	0.519
8	0.074	0.018	0.112	0.030	0.105	0.096	0.195	0.059	0.689
9	0.071	0.018	0.108	0.026	0.095	0.087	0.177	0.054	0.636
10	0.067	0.017	0.102	0.025	0.086	0.078	0.160	0.049	0.584
Plan 3 (including Plan 2)	0.793	0.198	1.195	0.287	1.495	1.388	2.791	0.863	9.014

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table C.6: Thurleigh - Annual user costs of travel to the airport in £ million at 1968 prices

	Work journeys				Commercial vehicle journeys		Service journeys		Total Costs
	Travel time costs		Running costs		Travel time costs	Running costs	Travel time costs	Running costs	
	Car	Public transport	Car	Public transport					
Increment 1	0.077	0.019	0.120	0.029	0.156	0.146	0.292	0.091	0.930
2	0.082	0.021	0.128	0.031	0.156	0.146	0.292	0.091	0.947
3	0.060	0.015	0.094	0.022	0.156	0.146	0.292	0.091	0.876
4	0.085	0.021	0.133	0.032	0.156	0.146	0.292	0.091	0.956
5	0.096	0.024	0.150	0.036	0.156	0.146	0.292	0.091	0.991
6	0.103	0.026	0.161	0.039	0.156	0.146	0.292	0.091	1.014
7	0.068	0.017	0.106	0.025	0.144	0.134	0.269	0.083	0.846
Plan 2	0.572	0.143	0.892	0.214	1.081	1.008	2.019	0.627	6.560
Increment 8	0.016	0.004	0.024	0.006	0.125	0.101	0.234	0.063	0.573
9	0.094	0.023	0.145	0.035	0.116	0.094	0.217	0.058	0.782
10	0.039	0.010	0.059	0.014	0.116	0.094	0.217	0.058	0.607
Plan 3 (including Plan 2)	0.721	0.180	1.120	0.269	1.439	1.296	2.688	0.806	8.522

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX D: SEWAGE DISPOSAL

Binnie and Partners

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX D: SEWAGE DISPOSAL

Foulness	page 1
Nuthampstead	2
Cublington	3
Thurleigh	4

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX B: EMPLOYMENT AND POPULATION

1 The methods used to calculate the size and structure of the urbanisation required for the airport would be similar to those employed for new towns generally if it were to be located on a greenfield site in which existing communities were insignificant. However, since all the airport sites are in areas with considerable population and prospects of growth, there was a need for an impact study, using unconventional methods.

Participation rate and population multiplier

2 The conventional method was used for relating population to total employment. In South East England in 1967, 46.5 per cent of the total population was in work. Those in work are described as the 'economically active population', and their ratio to total population (in percentage terms) as the 'participation rate'. If the economically active population is divided into total population, the resulting figure is the 'population multiplier', which in this case was 2.14 (the reciprocal of 0.465). All three terms are used in the calculations for each site in parts II to V. The population multiplier is not uniform over the country and is not constant over time. As time goes on, the age structure of the population will change; there will be more people above working age. There will also be fewer people in work if the school leaving age is raised or if, as is likely, more young people are in whole time further education. Thus the participation rate may be expected to fall and the population multiplier to rise. How great these changes will be in the next 10, 20 or 30 years is naturally uncertain. In the population forecasts in parts II to V alternative calculations have been made on the basis of participation rates of 45.4 and 40.0 per cent (equivalent to population multipliers of 2.2 and 2.5), and most of the recommended estimates are nearer the second, for reasons stated in each case.

Employment multipliers

3 The difficulties of using the more familiar methods arise when attempting to forecast the population and employment generated by the airport. For most planning purposes, it has proved simpler to forecast population growth by adopting assumptions about birth rates, death rates and net migration and then derive the employment structure from the future population size and structure. Standard employment multipliers have been devised for this process. In this study, population forecasts have had to be derived from the growth of one dominant form of employment (i.e. airport employment) and standard employment multipliers are not so useful.

Printed image digitised by the University of Southampton Library Digitisation Unit

4 The standard employment multipliers are derived from the 24 orders into which employment is divided in the Standard Industrial Classification (S.I.C.). These orders are conventionally grouped under three heads - extractive (Orders I and II), covering agriculture and fishing, mining and quarrying, etc; manufacturing (Orders III to XVI), covering all industries producing goods other than the extractive industries; and services (Orders XVII to XXIV) covering activities which provide services of all sorts, including construction.

5 The standard employment multiplier is normally used to calculate the relationship of employment in manufacturing industry to that in service industry or to total employment. There are wide variations from one part of the country to another, between urban and rural areas, and between old established and new towns. Thus in 1967 the multiplier from employment in manufacturing industry (Orders III to XVI) to total employment was 2.6 in the United Kingdom as a whole, but 3.1 in South East England - the difference reflecting the greater importance of services in the South East. In the six new towns of Essex and Hertfordshire, however, the multiplier was 1.7*, which means that manufacturing was proportionately more important.

6 At first sight, it would seem possible to regard the airport employees as analogous to manufacturing employees and calculate what the population of the airport based urban areas ought to be. Since they will have many of the characteristics of a new town, it should be sufficient, it might be said, to multiply 65,000 by 1.75 to give total employment in 2000 and then by, say 2.5 to give total population; the result would be a figure of about 284,000. There are, however, important weaknesses in this approach.

7 First, total airport employment cannot be treated as though it fell entirely within the manufacturing sector. It is in fact mostly in the service sector, though this need not matter greatly since a service occupation not performing a purely local function has much the same effects as a manufacturing occupation. More important is the fact that employment at the airport includes a certain proportion of its own derived service element (e.g. vehicle servicing, catering) and double counting must be avoided.

8 Secondly, employment of this order under a single heading generates not only other service employment as normally defined, but manufacturing employment as well, in those industries which provide goods for local consumption. The standard multiplier method leaves these out of account.

---

* 1966 Sample Census figures. The range was from 1.59 at Basildon to 1.97 at Hemel Hempstead and 3.42 in the anomalous case at Hatfield. If allowance is made for inward and outward movement to work, the range narrows between 1.70 and 1.80.

Printed image digitised by the University of Southampton Library Digitisation Unit

9 The third, and most important, weakness is that the standard multiplier is difficult to apply when airport employment and population have to be added to existing communities of considerable size with their own capacity for growth. In the Foulness area there are important existing towns, including Basildon new town. At Nuthampstead the site is ringed by existing communities including four new towns, of which two, Harlow and Stevenage, are within easy reach. At Cublington, Milton Keynes is already growing close to the site, and Luton and Dunstable are not far away. At Thurleigh, there are substantial towns to the north and south, and Wellingborough is already planned for expansion.

10 If, therefore, an accurate measure is to be made of the impact of an airport at any of the four sites, it must be on the basis of adding the airport employment and population to what is already there or likely to be there independently of the airport, and assessing how far airport induced growth and non-airport growth will merge. The standard multiplier method does not allow this to be done. Instead, a different method was used, known as the 'export surplus' method, which is described below.

The export surplus model

11 The export surplus method abandons the somewhat arbitrary distinction between extractive, manufacturing and servicing activities on which conventional multipliers are based. Instead, it distinguishes two main elements in employment. The first element is employment which exists to provide goods or services to the economy as a whole, sometimes known as 'basic' employment because it constitutes an area's economic base. The second is that which provides goods or services to the local community only, sometimes known as 'residentiary' employment. This local community may be variously defined, but it is taken here to mean a particular town and the surrounding area immediately associated with it.

12 The first element is the 'export' element. To define this more precisely, a further distinction has to be drawn between those S.I.C. orders in which the main purpose of employment is to provide goods and services to the wider community (i.e. for 'export'), and those orders in which part of the employment covered is for export purposes and part for local.

13 A typical export function order is shipbuilding. The people who live in a town where ships are built are, it is true, users of ships (however indirectly), but only as members of the wider community. On the other hand, a manufacturing order like Order XV (paper, printing and publishing) covers not only major paper mills and printing establishments serving the whole country, but also the local printer and the publisher of the local newspaper. It is thus not exclusively an export order. Similarly, in what is commonly called the service sector, Order XXII (professional and scientific services) comprises local doctors, teachers and lawyers, and also universities and major research establishments. These orders must thus be treated as having a dual function, providing both for the local community and for the whole economy.

Printed image digitised by the University of Southampton Library Digitisation Unit

14 The next stages are to isolate the export from the non-export elements in employment and to establish whether there is a consistent relationship between them. This may be done in various ways.

15 The method used here started with an analysis of the employment structure of about 70 towns in England and Wales in 1961 and 1966. 'Town' for this purpose means not only the administrative unit, but also the surrounding area dependent on it, taken as far as a notional line where inward and outward journeys to work balance. The definitions were derived by estimating from the workplace tables in the 1966 sample census, which could not be done very accurately. Difficulties of definition which could not be resolved in the time available led to the reduction of the original 70 towns to 22, which were mostly freestanding. The reduction in numbers did not appear to invalidate the analysis, though clearly further work on this would be desirable.

16 For the sample of towns, employment in each S.I.C. order was expressed as a percentage of total employment. Separate treatment was given to those orders identifiable as producing goods wholly for 'export' - i.e. for consumption by the community at large and not specifically by the residents of the town - and those in which part of the employment was attributable to local consumption of the goods or services provided. The first group are described as 'export function orders', the second as 'dual function orders'. All those which are conventionally described as 'service orders' (Orders XVII to XXIV) fall within the second category.

The two lists were as follows:

Export function orders		Dual function orders	
II	Mining and quarrying	I	Agriculture, forestry, fishing
IV	Chemicals and allied industries	III	Food, drink and tobacco
V	Metal manufacture	VI	Engineering and electrical goods
VII	Shipbuilding and marine engineering	XIV	Timber, furniture, etc.
VIII	Vehicles	XV	Paper, printing and publishing
IX	Metal goods n.e.s.	XVII	Construction
X	Textiles	XVIII	Gas, electricity and water
XI	Leather, leather goods and fur	XIX	Transport and communications
XII	Clothing and footwear	XX	Distributive trades
XIII	Bricks, pottery, glass, cement, etc.	XXI	Insurance, banking and finance

Printed image digitised by the University of Southampton Library Digitisation Unit

XVI	Other manufacturing industries	XXII	Professional and scientific services
		XXIII	Miscellaneous services
		XXIV	Public administration and defence

17 The next stage was to identify a minimum employment in each order which could be expected to exist in any town. Anything over this minimum is treated as the 'export surplus' element.

18 The eleven export function orders were classified, town by town, according to whether employment in each exceeded the corresponding average for England and Wales. In cases where it did, all employment in that order was treated as export surplus. In cases where it did not, it was treated as forming part of the normal activity of the town; in practice, it was usually negligible.

19 The thirteen dual function orders were differently treated. A weighted average of employment in each order was calculated for those towns in the sample in which employment in that order did not exceed the average for England and Wales. Anything above that minimum was then classed as export surplus.

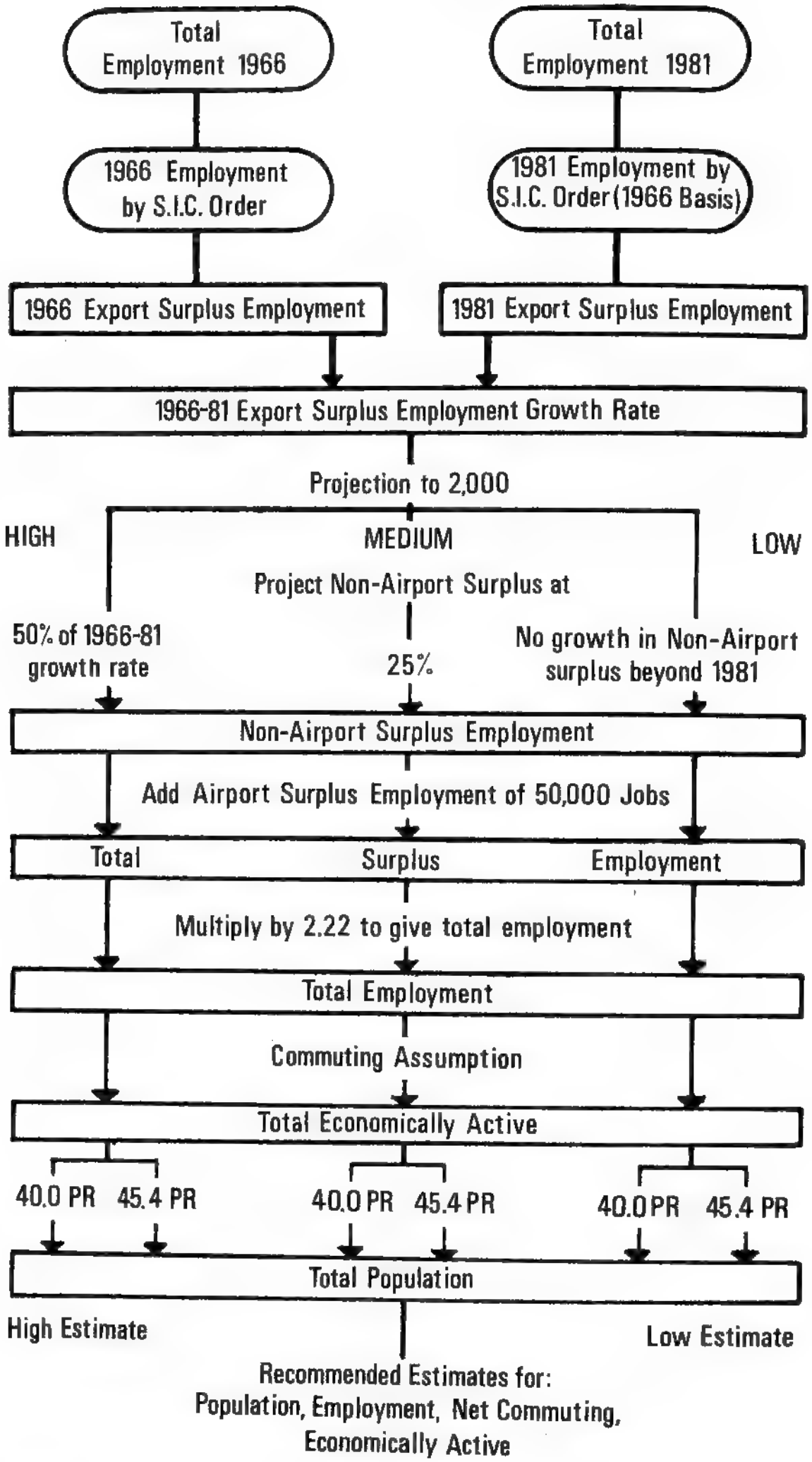
20 The export surpluses under both heads were then added up, town by town, and divided into total employment in each town. The results were reasonably consistent at around 45 per cent with a standard deviation of 3.3. This gives an 'export surplus multiplier' of 2.22.

21 As a check on consistency, the surpluses were re-calculated by two other economic base methods - those devised by Ullman and Dacey (The Minimum Requirements Approach to the Urban Economic Base, Regional Science Association, 1960) and by Mattila and Thompson (The Measurement of the Economic Base of the Metropolitan Area, Land Economics, 1955). The first gave a similar degree of consistency (a standard deviation of 3.66). The second was far less consistent, showing a standard deviation of 7.55.

22 It was recognised that the sample multiplier of 2.22 was derived from a limited sample of towns and from the data for only two years, but time did not allow the analysis to be carried further. It also had to be asked whether the same multiplier could be applied to a future year, and to a town which might become larger than any in the sample. Bearing in mind the margin of error necessarily involved in any forecasting method, it was decided to apply the multiplier without variation.

23 The likely future stability of the export surplus multiplier is in fact one of its advantages over the 'standard'multipliers. As time goes on, there will be a proportionate shift from manufacturing to service employment, so that the standard multiplier will change. The export surplus multiplier will not be subject to change for this reason, since it is irrelevant whether the surplus is in a manufacturing or a service industry. Variations over time are likely to

Printed image digitised by the University of Southampton Library Digitisation Unit



KEY

— Input data

— Computed data

Unboxed — Operators and constants

METHOD OF POPULATION FORECASTING FOR PLAN 3

Printed image digitised by the University of Southampton Library Digitisation Unit

be slight, and it was considered safe to ignore them.

Plan 3 (see figure on opposite page)

24 Population forecasts for Plan 3 were made by applying the techniques described above. For each internal zone area, estimates had to be made of total employment and of its export surplus component.

25 For 1981 (Plan 1) population and employment figures were substantially those of local authority projections. The export surplus element in employment in 1966 was identified by examination of data for local employment office areas and the same proportion was assumed to apply in 1981.

26 The imposition of an airport on any existing group of communities will inevitably affect the growth of non-airport employment there; it will probably but not necessarily reduce it, since airport employment and its generated activities may mop up a high proportion of available labour. This is one aspect of the problem known as "overlap" which is dealt with in part 1 of the report. Three possible situations were envisaged - that non-airport growth from 1981 to 2000 would be at 50 per cent and 25 per cent of the rate estimated between 1966 and 1981, and that there would be no non-airport growth at all.

27 It has already been pointed out (paragraph 7) that the figure of 65, 000 employed at the airport in 2000 contains a certain amount of its own service requirement. An analysis of 1968 employment at Heathrow indicated that 23 per cent of the total could be classified as providing services to the rest, equivalent to an internal service multiplier of 1. 3. The export surplus element at 2000 was taken, therefore, as 65, 000 ÷ 1. 3 or 50, 000.

28 The Plan 3 employment forecast for each internal zone area was made by calculating non-airport surplus employment on each of the three assumptions, airport surplus employment of 50, 000 was added, and the result was multiplied by the export surplus multiplier of 2. 2.

29 The expected total employment in the area is not the same as the expected economically active population, which is equivalent to employment plus net outward or minus net inward movement to work. By observation of existing airports, it was found that around 5 per cent of employees lived 15 or more miles away and a further 10 per cent over 5 miles away.* Other industries

---

* These figures are based mainly on journey-to-work studies at Heathrow, Orly and Le Bourget, which are all close to metropolitan areas. They are necessarily very rough. It does not follow that an airport further away from a metropolitan area will necessarily attract a higher proportion of its employees to its immediate vicinity. This is certainly not the case at Dulles, where a large part of airport employment is drawn from the Washington area - though this may change as traffic at the airport increases and employment grows.

Printed image digitised by the University of Southampton Library Digitisation Unit

also attract workers from outside. On the other hand, in the Southend area there is now, and is likely to be in future, a large outward movement to London, Dagenham and elsewhere, and the same is true on a smaller scale in the Nuthampstead area.

30 Assumptions therefore had to be made about the scale of inward and outward movement and the resulting net figure. These varied from site to site, and are explained in the relevant sections for each. They were, however, kept uniform in relation to the three alternative employment forecasts, since in any event the effect of the assumptions made is relatively small except at Foulness.

31 The alternative population multipliers of 2.2 and 2.5 described in paragraph 2 were then applied, so that for each internal zone area there were six population forecasts.

32 Except at Thurleigh, the recommended estimate is near the top of the range. This is because, first, a higher estimate of non-airport growth seems more likely, given the dynamism of the economy of South East England; and secondly, because the trends in the age-structure of the population and the extension of whole time education point toward falling participation rates even in new towns. It was also thought more prudent to err on the high side rather than the low. For the Thurleigh area, lower estimates were favoured because one of the main industries of the area, footwear manufacture, is likely to experience a fall in employment, so that there may be more switching from non-airport to airport employment, resulting in a lower total.

Plan 2

33 Plan 2 makes no allowance for the growth of non-airport employment beyond 1981, and therefore represents an addition of airport-generated population, common to all sites. It was assumed that the same internal service multiplier as in Plan 3 (1.3) applies to the total airport employment of 45,000, resulting in an export surplus employment of 34,600. The Plan 3 export surplus multiplier of 2.22 was used, giving a total airport-generated employment of 77,000. The 1981 population multiplier, 2.2 has been applied, so that the airport-dependent population is approximately 170,000.

34 At the intermediate stage, there will be substantial numbers of construction workers engaged on the building of the urban areas, and these should be treated as residents. Those engaged in the construction of the airport itself and its main access routes and other principal infrastructure are more likely to reside outside the area, and are therefore ignored. The method of calculating the size of the urban construction labour force and its dependent population was as follows.

35 In 1968, it was estimated that in an average year during the construction period of a new town, assuming a total construction period of 25 years, some 2,500 manual workers were required per 100,000 population. Managerial and supervisory staffs brought the total to about 3,000. Assuming improvements

Printed image digitised by the University of Southampton Library Digitisation Unit

in productivity and a high proportion of system building, the number required should fall substantially, perhaps to 2, 500 per 100, 000. The increment for Plan 3 for airport derived population is 275, 000 less 5 per cent living outside the area, or 261, 250. In addition, there will be certain number of workers in the construction industry (S. I. C. Order XVII) engaged on repair and maintenance, but this number should be lower than the 30 per cent regarded as normal in 1968. A notional 20 per cent of the total construction workforce has been allowed, giving a figure of 6, 500 plus 1, 625, or 8, 125.

36 However, the surplus multiplier of 2. 22 applied to airport surplus employment allows for an employment figure in Order XVII of 7 per cent or about 5, 400. The excess of construction workers required during the build-up of the urbanisation is thus 8, 125 minus 5, 400 or 2, 725. This must then be multiplied by the surplus multiplier (2. 22) and the population multiplier (2. 2). The result is the figure of 13, 303 which may be rounded off to 13, 000.

37 Thus the total additional population in Plan 2 is 183, 000 of whom it is assumed that 95 per cent (174, 000) will live within the internal zone area.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX C: TRANSPORTATION

Peat, Marwick, Kates and Company

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX C: TRANSPORTATION

INTRODUCTION		page 1
SECTION 1	PRINCIPLES ADOPTED IN THE TRANSPORTATION STUDIES	4
	Ease of travel throughout the region	5
	Speed of travel	5
	Mode of travel	6
	Systems formulation	6
	Costing principles	7
SECTION 2	TRAVEL FORECASTING PROCEDURES	8
	Study area	8
	The movement of people during peak periods	9
	The movement of vehicles during peak periods	14
	Overview	15
SECTION 3	APPRAISAL OF ALTERNATIVE PLANS FOR URBAN DEVELOPMENT	16
	Existing communications	16
	Plan appraisal	16
	Theoretical urban forms	17
	First stage of strategy evaluation	18
	Second stage of strategy evaluation	19
SECTION 4	PLAN TESTING AND ANALYSIS PROCEDURES	21
	Traffic testing procedures	21
	Public transport	23
SECTION 5	COMPARATIVE TRANSPORT COSTS AND BENEFITS OF THE SECOND PLANS	24
	Capital costs	24
	Minimum user costs to the airport	26
	Other methods of measuring costs and benefits	27

Printed image digitised by the University of Southampton Library Digitisation Unit

Costs of stages in plan development page 27

Sensitivity analysis 29

SECTION 6 INTANGIBLE COSTS AND BENEFITS 31

ILLUSTRATIONS

Figure C.1:
Main activities in transportation studies work programme. 2

Figure C.2:
Reluctance to travel function for airport and non airport workers. 11

Figure C.3:
Public transport usage versus door to door time ratio for public and private transport modes. 13

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX A: TERMS OF REFERENCE

Introduction

1 Each consultant will be required to study two sites. The studies must be carried out consistently for all four sites so that the results are comparable and the conclusions can be used with other factors to determine which airport on balance is the best. On conclusion of the planning study, the planning consultants will recommend the best urbanisation pattern for each airport together with its costs and benefits. The work must be of such quality that it can be used in the final public inquiry at Stage V. However, printing the reports and preparing for and appearing as witnesses at any inquiries does not form part of the initial contract.

Objectives

2 For each of the four short-listed sites, to study and report on:

i that portion of the work force which could be housed in existing urban areas.

ii the most appropriate way for the balance to be housed, either in extensions to existing urban areas or in new settlements or a single new town near the airport, having regard to the impact of the new urban areas on the surrounding districts.

iii approximate costs and benefits of development and when they might be incurred or realised.

iv the physical scope for further urban growth over and above the minimum required to support the airport itself.

Scope of work

3 The consultants are to consider the transport links between the homes of employees and the airport, whether from existing or proposed urban areas. They must also consider links between any groups of new settlements which may be proposed, and the links between these and regional/national routes. The study of communication links from the airport itself to London and the rest of the country is being carried out by the Commission and will be made available to the planning consultants, in so far as it is relevant to urbanisation proposals.

Printed image digitised by the University of Southampton Library Digitisation Unit

Liaison

4 The consultants will be expected to liaise closely with the Commission's research team, with other consultants employed by the Commission, and with the South East Joint Planning Team.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX B: EMPLOYMENT AND POPULATION

Economic Associates Limited

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX B: EMPLOYMENT AND POPULATION

Participation rate and population multiplier	page 1
Employment multipliers	1
The export surplus model	3
Plan 3	7
Plan 2	8

Printed image digitised by the University of Southampton Library Digitisation Unit

PART VI - COMPARISON OF AIRPORT URBANISATION PLANS

Introduction

1 In parts II - V of this report, a preferred pattern of urbanisation has been described for each of the four airport sites. The purpose of this part is to discuss the costs and benefits of urbanisation at each of the airport sites and to compare the plans for the four airport cities. It has not been within our terms of reference to study the regional implications of these cities; mention of this issue in the following pages is therefore confined to the regional implications for the residents of each airport city. No attempt has been made at a composite ranking of the four airport cities, since urbanisation represents only one element in a set of considerations which must be taken into account in making a fully balanced decision on the best airport site.

Population, employment and commuting

2 Tables 6.1 and 6.2 show the populations forecast for the internal zone area and the airport city at each of the sites. Foulness and Cublington are within the major growth zones of the various regional strategies for the South East. In the event of urbanisation, the Nuthampstead area could be expected to accommodate some industries moving out of London. For these reasons, the population forecasts for the subregion (known as the internal zone area) around each of these three airport sites have been selected from the high end of the range of population estimates. Whilst Thurleigh is also within a growth zone contained in the proposals of the South East Economic Planning Council, a lower population estimate has been used, because of the probable decline of the older industries in the area.

3 Table 6.3 gives estimates of economically active population and net commuting which result in the employment figures for the internal zone area at each of the airport sites. The Foulness internal zone area is expected to continue to have net outward commuting though the rate of growth of outward commuting is assumed to be halved and that of inward commuting significantly increased. At Cublington the existing rate of outward commuting is expected to be balanced by a high rate of inward commuting even allowing for the majority of workers at the airport living within the internal zone area. At Nuthampstead and Thurleigh there is expected to be a net reversal of commuting patterns from outward to inward. At Nuthampstead this is caused by a decline of employment opportunities in inner London and the transfer of London commuters to airport and airport-based employment, whereas at Thurleigh it is caused by a growth of new commuting patterns from surrounding towns to the job opportunities offered by the airport.

4 Taking account of the population already existing near the airport sites and the population generated by the growth of industries established by 1981,

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 6.1 : Population forecasts for the internal zone areas

		Foulness	Nuthampstead	Cublington	Thurleigh
A:	Existing population 1966	428,000	193,000	417,000	485,000
B:	Population growth 1966-81	124,000	68,000	172,000	223,000
C:(A+B)	Plan 1:Total Population 1981	552,000	261,000	589,000	708,000
D:	Plan 2 minus Plan 1: Population growth for airport employment of 45,000	174,000	174,000	174,000	174,000
E:(C+D)	Plan 2: Plan 1 population and population for airport employment of 45,000	726,000	435,000	763,000	882,000
F:	Plan 3 minus Plan 2: Population growth for extra airport employment of 20,000 and for non-airport employment growth 1981-2000	129,000	115,000	337,000	198,000
G:(D+F)	Plan 3 minus Plan 1: Population growth for airport employment of 65,000 and for non-airport employment growth 1981-2000	303,000	289,000	511,000	372,000
H:(C+G)	Plan 3: Plan 1 population and population for airport employment of 65,000 and for non-airport employment growth 1981-2000	855,000	550,000	1,100,000	1,080,000

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 6.2 : Population forecasts for the airport cities

		Foulness[1]	Nuthampstead[2]	Cublington[3]	Thurleigh[4]
A:	Existing population 1966	271,000	10,000	59,000	92,000
B:	Population growth 1966-81	48,000	1,000	72,000	51,000
C:(A+B)	Plan 1:Total Population 1981	319,000	11,000	131,000	143,000
D:	Plan 2 minus Plan 1: Population growth for airport employment of 45,000	131,000	128,000	156,000	156,000
E:(C+D)	Plan 2:Plan 1 population and population for airport employment of 45,000	450,000	139,000	287,000	299,000
F:	Plan 3 minus Plan 2: Population growth for extra airport employment of 20,000 and for non-airport employment growth 1981-2000	98,000	79,000	123,000	59,000
G:(D+F)	Plan 3 minus Plan 1: Population growth for airport employment of 65,000 and for non-airport employment growth 1981-2000	229,000	207,000	279,000	215,000
H:(C+G)	Plan 3: Plan 1 population and population for airport employment of 65,000 and for non-airport employment growth 1981-2000	548,000	218,000	410,000	358,000

NOTE:

1 Includes: Southend CB, Rayleigh UD, Benfleet UD, Rochford RD

2 Includes: Part of Saffron Walden RD, part of Braughing RD

3 Includes: Bletchley UD, Newport Pagnell UD, Newport Pagnell RD (part), Wolverton UD, Winslow RD, Buckingham RD(part) and the designated area of Milton Keynes falls within this area.

4 Includes: Wellingborough UD, Wellingborough RD(part), Rushden UD, Higham Ferrers MB, Oundle and Thrapston RD(part), Raunds UD, Irthlingborough UD, Bedford RD(part), St Neots RD(part) Huntingdon RD (part), Kettering RD(part).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 6.3 : Employment forecasts for the internal zone areas

	Foulness	Nuthampstead	Cublington	Thurleigh
Existing situation (1966)				
Population	428,000	209,000	417,000	485,000
Economically active	194,000	89,000	202,000	229,000
Net commuting	-53,000	-11,000	+500	+7,000
Employment	141,000	78,000	201,000	236,000
Plan 1 (1981)				
Population	552,000	261,000	589,000	708,000
Economically active	250,000	120,000	271,000	320,000
Net commuting	-76,000	-19,000	-2,000	-6,000
Employment	174,000	101,000	269,000	314,000
Plan 2				
Population	726,000	435,000	763,000	882,000
Economically active	326,000	196,000	338,000	389,000
Net commuting	-72,000	-15,000	+7,000	+2,000
Employment	254,000	181,000	346,000	391,000
Plan 3				
Population	855,000	550,000	1,100,000	1,080,000
Economically active	342,000	220,000	440,000	432,000
Net commuting	-32,000	+12,000	Zero	+22,000
Employment	310,000	232,000	440,000	454,000

during the period 1981-2000, together with the population generated by the airport, the total population of the four internal zone areas at 2000 (Plan 3), varies from site to site, ranging from 550,000 at Nuthampstead to 1,100,000 at Cublington. The population figures for the area of the airport city produces a variation ranging from 218,000 at Nuthampstead to 548,000 at Foulness.

Form of airport cities

5 At all the airport sites, our studies have led us to propose that the majority of the new population be located in a new city as close to the airport

Printed image digitised by the University of Southampton Library Digitisation Unit

as the noise corridor and local conditions would allow. In each case we rejected strategies based on patterns of dispersed settlements in favour of an airport city in order to reduce overall capital costs and user costs, improve the range of services and facilities and reduce the loss of agricultural land and rural character.

6 Figure 6.1 shows the proposals for the airport cities in relation to the airport sites and surrounding towns.

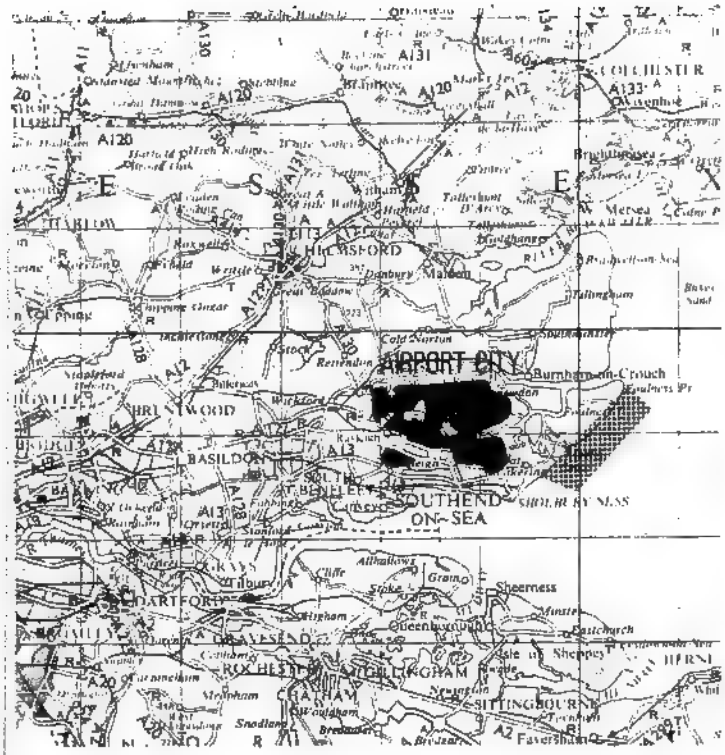
7 At Foulness the new airport city takes the form of a linear development running east-west from the airport site. It is essentially an expansion of Southend northwards to the banks of the river Crouch, infilling between the towns of Rayleigh and Rochford. This total urban area could have a population of about 550,000 by the end of the century. Immediately to the west, the growth of Basildon, Billericay and Wickford could result in a further 250,000 population by the same date. The airport city at Foulness would be an extension of a much larger existing urban area than those at the other three sites.

8 At Nuthampstead the airport city is a compact urban area located to the north and west of Bishop's Stortford and Stansted, and between them and the airport site. The city, which unlike those at any of the other airport sites, would not be attached to an existing major settlement, could have a population of about 220,000 by the end of the century. By that time Bishop's Stortford and Sawbridgeworth, just to the south, could be expected to have a population of about 50,000. In addition to the new city and the usual allowance made for population growth distributed through the internal zone area, a specific policy of expanding or developing a cluster of villages around Royston has been proposed. This is the only one of the four airport sites at which the selected urban strategy includes some specific clustering of major village developments.

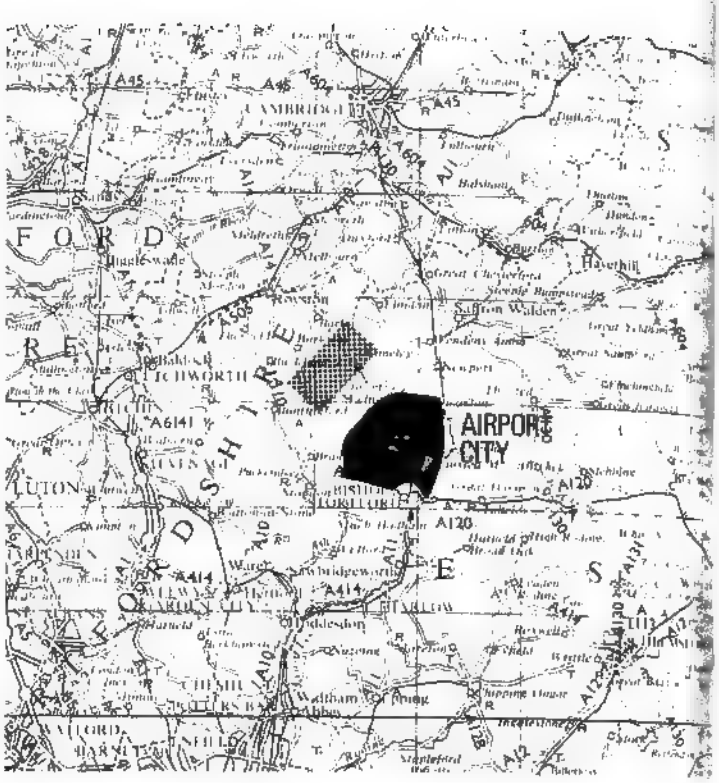
9 At Cublington, the airport city uses the designated area of Milton Keynes with a linear extension to the south-west, to give a total population of about 410,000 by the end of the century. This assumes that the growth of Milton Keynes and its supporting industries has been committed up to 1981. In addition to the airport city, the rapidly expanding area around Luton and Dunstable 24 km (15 miles) to the south-east, is expected to have a population in the order of about 250,000 by the end of the century and Northampton, 26 km (16 miles) to the north could have expanded to about 300,000 by the same date, if their growth was not inhibited by the establishment of the airport city.

10 At Thurleigh, the new airport city has been located in the area between the towns of Wellingborough, Rushden, Higham Ferrers, Irthlingborough and Raunds with an extension to the south-east. Wellingborough is being expanded as part of an agreement with the Greater London Council and the total urban area including the airport city could have a population of about 358,000 by the end of the century. By that time Northampton, 16 km (10 miles) to the west, could have expanded to a total population of about 300,000 and Milton Keynes 29 km (18 miles) to the south-west could have grown to about 250,000, if their growth was not inhibited by the establishment of the airport city.

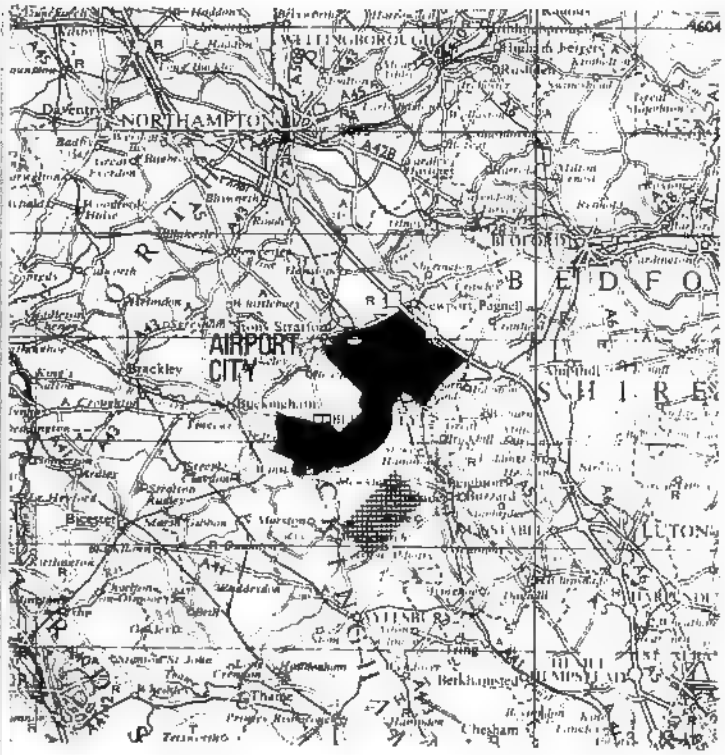
Printed image digitised by the University of Southampton Library Digitisation Unit



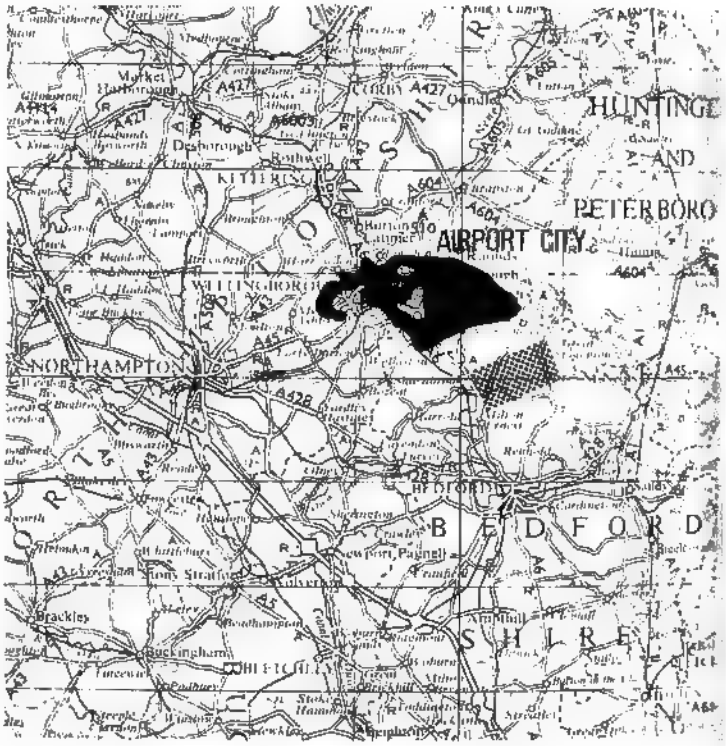
FOULNESS



NUTHAMPSTEAD



CUBLINGTON



THURLEIGH

Miles 0 10 20 25

Kilometres 0 10 20 30

Figure 6.1 SUBREGIONS OF THE AIRPORT CITIES

Printed image digitised by the University of Southampton Library Digitisation Unit

Subregional location of airport cities

11 At all the airport sites except Nuthampstead, it has been possible to locate the new airport city in association with an existing major town (Foulness), a developing town (Cublington) or a group of existing smaller towns (Thurleigh), so creating a combined urban area of some considerable size. This would help to establish a major centre of regional significance that would act as a counter magnet to the attraction of the metropolis. It would help to diversify the economic base of the city and reduce the dominance of an airport economy on the area and the dependence of the airport city entirely on the airport. The available labour pool would be greater and there would be a wider range of job opportunities. It would also mean a more economic use of resources, a greater opportunity to utilise improved means of communication and a wider variety of social, educational and recreational facilities. It would help to preserve agricultural areas and open countryside by concentrating the various demands for land for urban development into areas generally accepted for urban growth in the alternative regional planning strategies. It would mean that fewer towns and villages in rural areas were physically affected and that the economic hinterlands of major towns were not substantially altered.

12 Whereas at Foulness and Cublington and to a lesser extent Thurleigh, the new airport city could be located in a rapidly expanding subregion and thereby optimise the return on investments already required in these areas, the airport city for Nuthampstead is located in open countryside in a subregion not, as yet, proposed for further growth. However, the Ministry of Transport's proposed alignments of the M11 motorway and the east-west strategy route intersect just to the south-east of the site for the airport city and could help to establish the city as a regional growth point. Nevertheless, it would be a new city on a 'green field' site, unassociated with any existing major town and without further growth it could consequently become a city almost entirely dependent on the airport as a source of employment.

Capital costs - overall comparison

13 Tables 6.4, 6.5 and 6.6 show the estimated capital costs of construction per head in £ of providing a new city for the population growth attributable to the airport as follows:

Table 6.4: Plan 2 minus Plan 1:	The cost of urbanisation for a population of 174,000 generated by an airport with 45,000 employees.
Table 6.5: Plan 3 minus Plan 2	The cost of urbanisation for the population generated by an additional 20,000 airport employees, together with that part of the additional population generated by the growth of other industries established by 1981, during the

Printed image digitised by the University of Southampton Library Digitisation Unit

period 1981-2000, that has been located in the airport city.

Table 6.6:
Plan 3 minus Plan 1

The total of the construction costs contained in the above two tables.

Table 6.4 : Capital costs of construction per head in £ for Plan 2 minus Plan 1

	Foulness	Nuthampstead	Cublington	Thurleigh
Residential, education etc	1,620	1,620	1,620	1,620
Abnormal site conditions	5	Nil	Nil	Nil
Airport related industry	77	77	77	77
Shops, parking etc	40	55	46	51
Roads - in urban areas	101	57	62	83
- links to airport	64	30	22	33
Engineering services				
Sewerage & drainage	86	86	96	92
Water	99	108	108	113
Gas	17	25	37	19
Electricity	45	43	46	51
Grid lines	5	11	8	1
Telecommunications	85	86	89	93
Total cost per head in £	2,242	2,197	2,210	2,234
Total cost in £ million	390.126	380.267	384.464	388.661
Roads outside urban areas in £ million	2.900	6.932	2.566	3.633

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 6.5 : Capital costs of construction per head in £ for Plan 3 minus Plan 2

	Foulness	Nuthampstead	Cublington	Thurleigh
Residential, education etc	1,620	1,620	1,620	1,620
Abnormal site conditions	5	Nil	Nil	Nil
Airport related industry	77	77	77	77
Shops, parking etc.	38	52	43	50
Roads - in urban areas	105	54	62	49
- links to airport	49	20	23	25
Engineering services				
Sewerage and drainage	73	56	42	60
Water	45	33	32	27
Gas	17	24	35	21
Electricity	45	45	46	39
Grid lines	Nil	Nil	2	Nil
Telecommunications	124	134	125	123
Total cost per head in £	2,198	2,115	2,107	2,090
Total cost in £million	189.040	181.876	181.186	179.714
Roads outside urban areas in £ million	2.662	3.286	3.790	0.498

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 6. 6 : Capital costs of construction per head in £ for Plan 3 minus Plan 1

	Foulness	Nuthampstead	Cublington	Thurleigh
Residential, education etc	1, 620	1, 620	1, 620	1, 620
Abnormal site conditions	5	Nil	Nil	Nil
Airport related industry	77	77	77	77
Shops, parking etc	39	54	45	51
Roads - in urban areas	103	56	62	71
- links to airport	59	27	22	30
Engineering services				
Sewerage & drainage	82	76	78	82
Water	81	83	83	84
Gas	17	24	37	20
Electricity	45	44	46	47
Grid lines	3	7	6	1
Telecommunications	98	102	101	103
Total cost per head in £	2, 228	2, 170	2, 176	2, 186
Total cost in £ million	579. 166	564. 143	565. 650	568. 375
Roads outside urban areas in £million	5. 562	10. 218	6. 356	4. 131

14 There is little difference between the costs of urbanisation at any of the airport sites. A comparison of the costs of Plan 3 minus Plan 1 (Table 6. 6) shows that Foulness at £579. 2 millions (£2, 228 per head) is some £13 million (£50 per head) more expensive than the other three sites. These costs exclude any allowance for the provision of roads outside urban areas. It is unlikely however, that when the apportionment of this road cost between the airport and the remaining population is completed by the Commission, there will be any significant change in the overall relationship of costs between the sites.

15 The main reason for the small difference in cost between Foulness and the other three sites is in the extra cost of roads, which are between £60 - 80 per head more expensive at Foulness. This is counterbalanced by the lower cost of providing engineering services and shopping space at Foulness.

16 It should be noted that the cost of urbanisation at the four airport sites is rather lower than those costs normally quoted for town expansions and new towns, for the reason that the airport provides the major source of employment and because the effect on the infrastructure, principally roads within the existing urban areas to which some of the airport cities are attached, have not been costed. For an explanation of this see part I.

Printed image digitised by the University of Southampton Library Digitisation Unit

17 Table 6.7 summarises the capital cost of construction per head for Plans 2 and 3. The cost per head of the development of the first half of the airport cities, comprising the addition of Plan 2 to Plan 1, is higher at each of the sites than the cost per head of the second half of the airport cities, comprising the addition of Plan 3 to Plan 2. Table 6.8 shows the extent of these differences in costs per head between Plans 2 and 3, which in total are least at Foulness and most at Thurleigh.

Table 6.7 : Summary of capital cost of construction per head of population in £

	Foulness	Nuthampstead	Cublington	Thurleigh
Plan 2 minus Plan 1	2,242	2,197	2,210	2,234
Plan 3 minus Plan 2	2,198	2,115	2,107	2,090
Plan 3 minus Plan 1	2,228	2,170	2,176	2,186

Table 6.8 : Principal differences in capital cost of construction per head in £

	Foulness	Nuthampstead	Cublington	Thurleigh
Plan 2 minus Plan 1	2,242	2,197	2,210	2,234
Plan 3 minus Plan 2	2,198	2,115	2,107	2,090
Difference of Plan 3 from Plan 2	+ 44	+ 82	+ 103	+ 144
Roads in urban areas	- 4	+ 3	Nil	+ 34
Road links to airport	+ 15	+ 10	- 1	+ 8
Sewerage and drainage	+ 13	+ 30	+ 54	+ 32
Water	+ 54	+ 75	+ 76	+ 86
Telecommunications	- 39	- 48	- 36	- 30
Other components	+ 5	+ 12	+ 10	+ 14
Total difference	+ 44	+ 82	+ 103	+ 144

18 The items where the principal differences in cost occur, are also shown in table 6.8. In all the main items except telecommunications, there are large positive differences between Plans 2 and 3. These are mostly due to spare capacity in the facilities provided during the development of Plan 2, which can help to meet the needs of the additional populations accommodated during the development of Plan 3. The negative difference shown for telecommunications is due to the anticipated increase in demand for these services in the second half of the development of the airport city.

Printed image digitised by the University of Southampton Library Digitisation Unit

19 Each of the items listed in tables 6.3, 6.4, 6.5 and 6.8 concerning the comparison of capital construction costs per head are discussed individually in Chapter 9 of parts II - V. Further details on the comparative costing of roads, sewerage and drainage appear in the sections immediately following incremental capital costs.

Incremental capital costs

20 As described in part I, the development of the airport urbanisation has been divided into eleven parts comprising an 'initial' period of development followed by ten roughly equal population increments. At Foulness, Nuthampstead and Cublington, increments 1 - 6 comprise the new growth areas of Plan 2, and increments 7 - 10 comprise the new growth areas of Plan 3. At Thurleigh, increments 1 - 7 form Plan 2 and increments 8 - 10 form Plan 3.

21 Table 6.9 compares the capital construction costs incurred during the initial phase and the ten increments of growth. The costs incurred during the initial phase are mainly related to roads, sewage works and trunk sewers and water supply reservoirs and their trunk mains. The site having the lowest costs during the initial phase, before any significant population intake can occur, is Nuthampstead, while the site having the highest initial costs is Cublington.

Table 6.9 : Incremental capital construction costs attributable to airport related population

	Foulness		Nuthampstead		Cublington		Thurleigh	
	£ million	£ per head	£ million	£ per head	£ million	£ per head	£ million	£ per head
Initial phase	16.613	-	15.676	-	20.426	-	18.548	-
Increment 1	64.425	2,614	64.222	2,663	59.775	2,766	54.155	2,908
2	63.441	2,369	67.520	2,359	58.885	2,398	51.388	2,482
3	58.711	2,270	58.839	2,267	59.073	2,278	54.447	2,381
4	61.747	2,294	60.085	2,229	60.891	2,233	51.651	2,302
5	63.901	2,276	59.964	2,227	61.598	2,211	52,375	2,279
6	61.288	2,242	55.961	2,197	63.816	2,210	52.173	2,247
7	-	-	-	-	-	-	53.924	2,234
Total Plan 2 minus Plan 1	390.126	2,242	382.267	2,197	384.464	2,210	388.661	2,234
Increment 7	49.366	2,210	40.481	2,123	45.206	2,088	-	-
8	45.528	2,190	52.163	2,100	46.304	2,113	60.641	2,091
9	48.787	2,222	44.516	2,096	44.942	2,100	59,011	2,099
10	45.359	2,198	44.716	2,115	44.734	2,107	60.062	2,090
Total Plan 3 minus Plan 2	189.040	2,198	181.876	2,115	181.186	2,107	179.714	2,090
Total Plan 3 minus Plan 1	579.165	2,228	564.143	2,170	565.650	2,176	568.375	2,186

Printed image digitised by the University of Southampton Library Digitisation Unit

22 An increase between the cost per head of one population increment and the next increment gives some indication of financial thresholds. At Foulness, two thresholds occur, the first between increments 3 and 4, due mainly to the cost of road links to the airport and the provision of water storage and trunk mains, and the second between increments 8 and 9 due to the cost of road links to the airport and roads within urban areas.

23 At Nuthampstead a threshold occurs between increments 9 and 10 and is mainly due to the cost of roads in urban areas. At Cublington there are two thresholds, the first between increments 7 and 8 and the second between increments 9 and 10, both mainly due to the cost incurred in sewerage and drainage. At Thurleigh a threshold occurs between increments 8 and 9 and is mainly due to the cost of sewerage and drainage and the provision of link roads to the airport.

Capital costs: sewerage and sewage disposal

24 The cost per head of providing trunk sewers to cater for the new cities would be highest at Foulness, since a sizeable proportion of the development is situated on relatively flat land which would result in deeper sewers and more pumping than at the other sites. Of the three inland sites, the cost of sewers would be highest at Thurleigh, because it would be desirable for the sewers to be of sufficient capacity to be able to accept the sewage from the expanded towns of Wellingborough, Irthlingborough, Rushden, Higham Ferrers and Raunds.

25 All the rivers draining the three inland sites are either used at present or are proposed to be used in the future in their lower reaches, as major sources of public water supply. The natural flows of these rivers in some cases already contain a substantial proportion of sewage effluent and the River Authorities concerned are therefore likely to insist on a high degree of sewage treatment being given to any major additional discharges of sewage to these watercourses. The standard of sewage treatment required at Foulness is likely to be less stringent than at the other sites as no such problem of water quality in regard to public water supplies would arise. The cost of providing sewage treatment works, capable of producing high quality effluents, would therefore be higher at the three inland sites than at Foulness. As in the case of the trunk sewers, the cost per head for sewage treatment would be higher at Thurleigh than at the other two inland sites because it would be desirable, on grounds of amenity and economy, to provide additional capacity at the sewage treatment works so that the existing works, serving the five main towns, could in the future be phased out.

26 The cost per head for the final disposal of the sewage effluent would be highest at Foulness, because it would be necessary to convey the effluent out of the river Roach catchment before discharging it through an outfall into the river Thames. Effluent pipelines would also be required at both Cublington and Thurleigh to convey sewage effluents out of one catchment into another, but the cost of final disposal of the effluents at these two sites would still not be as high as at Foulness.

Printed image digitised by the University of Southampton Library Digitisation Unit

27 The cost per head of providing sewerage and sewage disposal is higher for the small scattered developments than for the new cities. The proportion of this scatter varies considerably from site to site, with the greatest at Nuthampstead and the least at Cublington, and this is therefore reflected in the build-up of the costs at the individual sites. However, if the additional cost of sewerage on the flat land at Foulness and the cost of providing additional capacity for the existing towns at Thurleigh are ignored, the overall cost per head of providing sewerage and sewage disposal would not significantly differ between the four sites.

Capital costs: drainage and surface water disposal

28 All the three inland sites are well drained by a system of streams and rivers; the lengths of individual trunk surface water drains, and hence the cost, could accordingly be kept to a minimum. The cost of providing the necessary surface water drains would be higher at Foulness owing to the fewer existing streams and to the sizeable proportion of development situated on relatively flat land.

29 The amount of balancing capacity required in the form of flood meadows and retention reservoirs, in order to temporarily store the peak flows, would not significantly differ amongst the three inland sites, but the total lengths of improvements to the smaller watercourses would probably be less at Cublington than at the other two sites resulting in a slightly reduced cost at Cublington. This is due to the urbanisation generally being located nearer to the main rivers. At Foulness the amount of watercourse improvement required would be less than at the three inland sites but the balancing capacity required to store the storm flows at high tides would be relatively expensive to provide because of the generally flat terrain.

30 For these reasons, the overall cost per head of providing drainage and surface water disposal would not differ significantly at Nuthampstead, Thurleigh and Foulness but it is likely that the cost at Cublington would be slightly less than at the other three sites.

Capital costs : roads

31 Tables in Chapter 9 of parts II - V show the total capital cost of highways at each of the airport sites and tables 6.3, 6.4 and 6.5 show the cost per head of highways. The figures for Plan 2 show that the highways at Foulness would be significantly more expensive than those at the other three sites owing to the greater distance between the edge of the airport city and the airport, the need for major river crossings and the extra cost of special highway foundations over the difficult ground conditions of the marshes. Other factors causing higher costs at Foulness would be that no part of the airport city would be close to the airport, as at the inland sites, and that the relationship of the new city to the airport would be constrained by the existing built-up area of Southend and the river Crouch, thus necessitating a linear form requiring longer internal

Printed image digitised by the University of Southampton Library Digitisation Unit

road links. The costs at Foulness would be dependent on the precise location of the airport site and on the possible construction of barrages on either or both the rivers Crouch and Roach which could significantly reduce the actual costs of highway construction, but which has not been allowed for in the calculations.

32 At Nuthampstead costs would be low for Plan 2 because early development could take place close to the airport on what is virtually a green field site. Cublington could gain a significant cost advantage over the other sites at Plan 2. because it has been assumed that the 1981 road requirement in the new city of Milton Keynes would also be used by the residents of the new airport city.

33 Of the three inland sites, Thurleigh appears to be about one third more expensive at Plan 2 than Nuthampstead or Cublington, whose costs are very similar. The extra costs incurred at Thurleigh would be due to the following factors:

i the limited access road needed to accommodate the peak hour traffic flows to the airport, and to cater for through movement across the new city would be very costly;

ii early development at Thurleigh occurs at some distance from the airport site and this tends to increase the costs of providing for roads to the airport at the Plan 2 stage;

iii road costs within the airport city would be high since the structure plan grafts the new city onto existing towns and movement between these towns occurs on roads within the new city;

iv the regional route A6 passes through the centre of the new city.

34 The cost of providing roads for the additional growth between Plan 2 and Plan 3 is again highest at Foulness. About a quarter of the cost results from the need to improve the northern link to the airport to dual three lane standard. At Nuthampstead a large proportion of the additional costs would be incurred outside the airport city and this is due to the dispersed nature of growth anticipated in the remainder of the internal zone area. At Cublington the high additional cost arises from the need to extend the urban road system into the elongated city form. At Thurleigh, the cost of providing for the additional growth between Plan 2 and Plan 3 is least. This could be explained partly by the fact that new development in this period takes place on a broad front parallel and close to the airport, and partly by the fact that the towns surrounding the new city could be linked to it by relatively small scale improvements to the existing inter-urban roads.

35 A comparison of total cost as expressed by the difference between Plan 1 and Plan 3 is difficult to make because of the variety of reasons which can explain the need for road improvement and new construction, e.g. increase in population in the external zones and growth in non-airport population within the internal zone area. A comparison could be made by considering only the costs within the urban area. This comparison shows that Nuthampstead would be the

Printed image digitised by the University of Southampton Library Digitisation Unit

most economical and Foulness would be the most costly. Cublington and Thurleigh would be approximately similar.

User costs : transportation

36 Using the technique proposed by the Commission's research team, estimates have been prepared of the minimum journey to work costs of the airport employees. To these have been added an estimate of the costs which would be incurred by commercial vehicles and by persons conducting their own and their employers' business at the airport. The costs allow for travel time and costs of vehicle operation.

37 The principal results of the Plan 2 tests set out in table 6.10 show that Foulness would be the most costly. It would have the highest user costs mainly because the edge of the airport city would be located further from the airport than at any of the inland sites. At Nuthampstead least user costs would be incurred because in the early stages development has been located close to the airport. At Cublington and Thurleigh a large proportion of the new urbanisation would be grafted on to existing communities and planned town developments and this results in relatively long journeys to the airport. However, it should be noted that there is little difference between Cublington and Thurleigh and there is a difference of less than £1 million between them and Nuthampstead, the most economical plan in terms of user costs. There is also a difference of less than £1 million between Foulness and Cublington and Thurleigh.

Table 6.10: Annual user costs of travel to the airport in £ million at 1968 values

	Foulness	Nuthampstead	Cublington	Thurleigh
Plan 2				
a Journey to work costs*	2.5	1.5	1.7	1.8
b Commercial vehicles travel costs	2.2	1.9	2.2	2.1
c Service journey costs	2.7	2.4	2.7	2.6
d Total user costs	7.4	5.8	6.6	6.5
Plan 3				
a Journey to work costs*	3.6	2.5	2.5	2.3
b Commercial vehicles travel costs	3.4	3.1	2.9	2.7
c Service journey costs	4.3	3.9	3.7	3.5
d Total user costs	11.3	9.5	9.1	8.5

* Calculated as minimum travel costs

Printed image digitised by the University of Southampton Library Digitisation Unit

38 The Plan 3 tests show that whilst Foulness would still be the most costly, Thurleigh would replace Nuthampstead as the most economical plan, mainly due to the broad front presented by the city to the airport site, whilst at Nuthampstead the later development occurs at some distance from the airport. Cublington improves its relative position because further population growth would occur in the westward extension of the airport city, parallel to and close to the airport. Once again there is little difference between the inland sites on grounds of transport user costs.

Effect of discounting costs

39 It is not within our terms of reference to discount the total capital costs and benefits of the plans for the airport cities. This work will be undertaken by the Commission's research team, using the information on costs, benefits and sequence of growth given in this report, when information on the programmed growth of airport employment becomes available.

40 Discounting the costs and benefits is necessary to obtain a true comparison between them when incurred over a long period of time, as the costs and benefits incurred during the early stages of development represent a greater real amount than those incurred during the latter stages. The discounted values when completed might show significant differences between some of the airport sites.

Agricultural loss

41 The following section is based upon studies undertaken by the Commission's agricultural consultant, Professor Wibberley. Table 6.11 shows the area of agricultural land required for the airport cities graded in accordance with the Ministry of Agriculture's system of land classification. The largest area of agricultural land lost to urbanisation, irrespective of quality, would occur at Cublington and the least at Nuthampstead.

42 Table 6.12 shows the annual financial implications of this agricultural loss, the significant figures being the net agricultural loss expressed by the term 'value added'. The greatest loss in value added would occur at Foulness where the inclusion of large scale horticultural farms on Grade 1 and Grade 2 land east of Rochford incurs a very high penalty. About half of the area required for the airport city is located on this land, but it has been impossible to avoid using this area for the city because of the extreme shortage of stable, well drained building land near to the airport site. The only alternative to using this land would be to develop either on the bleak marshland close to the airport which would incur high foundation costs, or on land west of Rayleigh which would involve high transport user costs, or by crossing the river Crouch which would mean high bridging costs. Land west of Rochford is not agriculturally notable, the value added being comparable to the figures at Thurleigh and Cublington.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 6.11 : Area of land required for the airport cities graded by agricultural land classification

	Foulness		Nuthampstead		Cublington		Thurleigh	
Plan 2 minus Plan 1	ha	acres	ha	acres	ha	acres	ha	acres
Grade 1	1,810	4,470	Nil	Nil	Nil	Nil	Nil	Nil
2	1,231	3,040	2,835	7,000	192	475	956	2,360
3	822	2,030	1,225	3,025	3,908	9,155	3,823	9,440
4	247	610	Nil	Nil	915	2,260	253	625
Total	4,110	10,150	4,060	10,025	4,815	11,890	5,032	12,425
Plan 3 minus Plan 2								
Grade 1	146	360	Nil	Nil	Nil	Nil	Nil	Nil
2	551	1,360	903	2,230	81	200	840	2,075
3	2,430	6,000	1,608	3,970	3,503	8,650	840	2,075
4	113	280	Nil	Nil	441	1,090	Nil	Nil
Total	3,240	8,000	2,511	6,200	4,025	9,940	1,680	4,150
Plan 3 minus Plan 1								
Grade 1	1,956	4,830	Nil	Nil	Nil	Nil	Nil	Nil
2	1,782	4,400	3,738	9,230	273	675	1,796	4,435
3	3,252	8,030	2,833	6,995	7,211	17,805	4,663	11,515
4	360	890	Nil	Nil	1,356	3,350	253	625
Total	7,350	18,150	6,571	16,225	8,840	21,830	6,712	16,575

Note: The information in the above table has been supplied by Professor Wibberley.

43 In a broader context the loss of agricultural land at Nuthampstead presents greater agricultural problems since this is an area of fine farms and good husbandry on Grade 2 land. If allowed to remain as it is at present largely undisturbed by urban development, this area offers great potential for future agricultural production. More than half the area required for the airport city is Grade 2 land although this has been kept as low as possible by using land near existing settlements and communications and in the river valleys.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 6.12 : Annual financial agricultural loss in £

	Foulness	Nuthampstead	Cublington	Thurleigh
Plan 2 minus Plan 1				
Hectares	4,110	4,060	4,815	5,032
Acres	10,150	10,025	11,890	12,425
Gross Output	2,230,260	621,550	594,500	757,925
per hectare	543	153	123	151
per acre	220	62	50	61
Net product	1,213,230	320,800	285,360	360,325
per hectare	296	79	59	71
per acre	120	32	24	29
Value added	376,192	104,260	64,206	88,218
per hectare	91.6	25.6	13.3	17.5
per acre	37.1	10.4	5.4	7.1
Gross rent	87,190	56,140	61,828	69,580
per hectare	21.2	13.8	12.8	13.8
per acre	8.6	5.6	5.2	5.6
Plan 3 minus Plan 2				
Hectares	3,240	2,511	4,025	1,680
Acres	8,000	6,200	9,940	4,150
Gross output	610,800	545,600	675,920	265,600
per hectare	188	217	168	158
per acre	76	88	68	64
Net product	318,480	279,000	308,140	128,650
per hectare	99	111	76	76
per acre	40	45	31	31
Value added	91,765	84,320	79,520	40,255
per hectare	28.4	33.6	19.7	23.9
per acre	11.5	13.6	8.0	9.7
Gross rent	56,320	37,820	53,676	23,240
per hectare	17.3	15.1	13.3	13.8
per acre	7.0	6.1	5.4	5.6
Plan 3 minus Plan 1				
Hectares	7,350	6,571	8,840	6,712
Acres	18,150	16,225	21,830	16,575
Gross output	2,861,060	1,167,150	1,270,420	1,023,525
per hectare	388	178	143	153
per acre	157	72	58	64
Net product	1,531,710	599,800	593,500	488,975
per hectare	207	91	67	74
per acre	84	37	27	30
Value added	467,957	188,580	143,726	128,473
per hectare	63.7	28.6	16.3	19.3
per acre	25.8	11.6	6.6	7.8
Gross rent	143,510	93,960	115,504	92,820
per hectare	19.5	14.3	13.1	13.8
per acre	7.9	5.8	5.3	5.6

Note: The information in the above table has been supplied by Professor Wibberley

Printed image digitised by the University of Southampton Library Digitisation Unit

44 The airport city at Cublington would use land with a lower potential for future production than Nuthampstead. This site would incur the lowest loss to agriculture of any of the urban strategies, more than three quarters of the land required for the airport city being of Grade 3 quality.

45 The area selected for the airport city at Thurleigh is generally poorer agriculturally than the subregion. Being a self-contained subregion with considerable potential for future urban growth the loss of agricultural output could be more readily borne. The land is mostly of average Grade 3 quality and is partly fragmented by the existing settlements of Wellingborough, Irthlingborough, Rushden and Higham Ferrers, between which the airport city has been located.

Land costs

46 Table 6.13 shows the estimated costs of all land required for the airport cities and associated minor developments in £ million based on current use for the increments of growth.

Table 6.13 : Cost of land required for urbanisation in £ million.

	Foulness	Nuthampstead	Cublington	Thurleigh
Increment 1	1.330	1.090	1.000	0.750
2	1.310	1.190	1.000	0.750
3	1.320	1.040	1.000	0.750
4	0.950	1.040	1.000	0.750
5	1.100	0.980	1.000	1.060
6	1.350	1.000	1.000	0.750
7	-	-	-	0.750
Total Plan 2 minus Plan 1	7.360	6.340	6.000	5.560
7	1.220	0.930	1.200	-
8	1.260	1.220	1.200	0.900
9	1.170	1.040	1.200	0.840
10	1.170	1.000	1.170	0.870
Total Plan 3 minus Plan 2	4.820	4.190	4.770	2.610
Total Plan 3 minus Plan 1	12.180	10.530	10.770	8.170

47 Table 6.14 shows the areas of land used for calculating the cost of non-agricultural land required for the airport cities plus all land required for minor

Printed image digitised by the University of Southampton Library Digitisation Unit

developments. This figure has been obtained by taking the difference, or residue of land, between the area covered by the estimate of agricultural loss, which has been calculated for the airport cities, and the estimate of all land required for the airport cities and minor developments. The residual area of land obtained from this calculation has been costed on the basis of current use.

Table 6.14 : Areas used for calculating the cost of land required for the airport cities and minor developments

	Foulness		Nuthampstead		Cublington		Thurleigh	
Plan 2 minus Plan 1	ha	acres	ha	acres	ha	acres	ha	acres
Total area	5,870	14,501	5,869	14,499	5,870	14,502	5,870	14,500
Area of agricultural land	4,110	10,150	4,060	10,025	4,815	11,890	5,032	12,425
Area of residue of land	1,760	4,351	1,809	4,474	1,055	2,612	838	2,075
Plan 3 minus Plan 2								
Total area	4,352	10,750	3,879	9,583	4,688	11,581	2,901	7,167
Area of agricultural land	3,240	8,000	2,511	6,200	4,025	9,940	1,680	4,150
Area of residue of land	1,112	2,750	1,368	3,383	663	1,641	1,220	3,017
Plan 3 minus Plan 1								
Total area	10,222	25,251	9,748	24,082	10,558	26,083	8,770	21,667
Area of agricultural land	7,350	18,150	6,571	16,225	8,840	21,830	6,712	16,575
Area of residue of land	2,872	7,101	3,177	7,857	1,718	4,253	2,062	5,092

48 Table 6.15 shows the estimated cost of the residue of non-agricultural land required for the airport cities and all land for minor developments in £million to the nearest £5,000.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 6.15 : Cost of residue of land required for urbanisation in £ million

	Foulness	Nuthampstead	Cublington	Thurleigh
Plan 2 minus Plan 1	2.175	1.900	1.045	0.725
Plan 3 minus Plan 2	1.375	1.440	0.655	1.055
Plan 3 minus Plan 1	3.550	3.340	1.700	1.780

Landscape loss

49 Table 6.16 shows the areas of non-urban land that would be required for the airport city divided into the four grades used for evaluating the quality of the landscape, namely, areas of exceptional quality, high quality, average quality (including areas of panoramic value) and inferior quality.

50 About three quarters of the area required for the city at Foulness would be of average quality, including an area of panoramic value along the south bank of the river Crouch, as seen from the north bank. In order to preserve the quality of this panoramic area if an airport city is developed, several conditions have been suggested in Part II of this report to control the form of development. The remainder of the area required for the city, which is located between Rayleigh and Rochford, is of inferior quality, being already partly urbanised.

51 At Nuthampstead, Cublington and Thurleigh the majority of the area required for the airport cities is of average landscape quality. Each site, however, has a distinctive character. Nuthampstead is the most completely rural, Cublington has the Grand Union Canal at Milton Keynes and the views of the Brickhill woods, in spite of a small area of inferior quality landscape around the Bletchley brickworks, and Thurleigh has the valley of the river Nene.

52 In general, there are no significant differences between any of the sites to be derived from the table of landscape loss. However, if consideration is given to the existing rural character of the countryside and compared with the degree of urbanisation already present at each of the airport sites, positive conclusions can be made. The airport city at Nuthampstead would involve the greatest encroachment of any of the airport urbanisations into an area which is predominantly rural. An airport city at Cublington, though not in itself a significant loss to the rural scene, would establish pressures for village development in the surrounding countryside and this might have a harmful effect on the areas of outstanding natural beauty in the Chilterns.

Environmental improvement

53 The loss to the rural scene at Foulness would be negligible, because this area has already undergone urbanisation, much of it being of a sporadic

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 6.16 : Area of land required for the airport cities graded by landscape quality.

	Foulness		Nuthampstead		Cublington		Thurleigh	
Plan 2 minus Plan 1	ha	acres	ha	acres	ha	acres	ha	acres
Exceptional quality	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
High quality	Nil	Nil	100	250	Nil	Nil	Nil	Nil
Average quality (including panoramic areas in brackets)	3,400 (Nil)	8,400 (Nil)	4,000 (Nil)	9,900 (Nil)	5,260 (140)	13,000 (350)	5,260 (120)	13,000 (300)
Inferior quality	1,000	2,450	200	500	Nil	Nil	Nil	Nil
Total area	4,400	10,850	4,300	10,650	5,260	13,000	5,260	13,000
Plan 3 minus Plan 2								
Exceptional quality	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
High quality	Nil	Nil	Nil	Nil	Nil	Nil	30	80
Average quality (including panoramic areas in brackets)	2,500 (800)	6,200 (1,980)	2,600 (Nil)	6,400 (Nil)	4,160 (Nil)	10,300 (Nil)	1,950 (Nil)	4,820 (Nil)
Inferior quality	700	1,750	Nil	Nil	Nil	Nil	Nil	Nil
Total area	3,200	7,950	2,600	6,400	4,160	10,300	1,980	4,900
Plan 3 minus Plan 1								
Exceptional quality	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
High quality	Nil	Nil	100	250	Nil	Nil	30	80
Average quality (including panoramic areas in brackets)	5,900 (800)	14,600 (1,980)	6,600 (Nil)	16,300 (Nil)	9,420 (140)	23,300 (350)	7,210 (120)	17,820 (300)
Inferior quality	1700	4,200	200	500	Nil	Nil	Nil	Nil
Total area	7,600	18,800	6,900	17,050	9,420	23,300	7,240	17,900

Printed image digitised by the University of Southampton Library Digitisation Unit

nature. Further development in the form of a new airport city would help to consolidate the urbanisation and improve the environment of this area.

Recreational opportunities

54 Foulness offers the inhabitants of an airport city a wide range of existing water based recreational activities, using both seaside and river facilities. There is in addition a considerable potential for enlarging the recreational opportunities offered by the river estuaries by the construction of a barrage across either or both the rivers Crouch and Roach, which would provide a number of benefits including tide free recreational water areas, the possibility of utilising the river banks, and lower construction costs of roads across the marshes to the airport. The provision of a barrage has not been investigated in detail or included in the estimates of cost.

55 The airport city at Nuthampstead is set in attractive countryside and is relatively near to Cambridge, 32 km (20 miles) but otherwise has no special recreational opportunities. At Cublington there is the fine countryside of the Chiltern Hills and the Woburn ridge in addition to the Grand Union Canal. Oxford is about 40 km (25 miles) away from the airport city. At Thurleigh there are recreational facilities along the river Nene and the area of high landscape value around Oundle. Future gravel extraction along both the rivers Ouse and Nene could provide additional recreational opportunities for Cublington and Thurleigh.

56 Many of the recreational facilities located near the sites for the airport cities are however affected by the noise corridor. At Foulness the area affected by noise is located almost entirely in the Thames estuary and whilst this could affect offshore sailing, it should not affect sailing in the rivers Crouch or Roach or in the river Thames off Southend. At Nuthampstead the noise corridor includes the park and country house of Audley End while at Cublington it includes Woburn Abbey and Zoo and the Woburn ridge.

Benefits : rents for retail and service floorspace

57 Estimates have been made for new floorspace in existing centres generated by the siting of the airport, but the difficulty of including rents for this item lies in the impracticability of attributing realistic land costs to the floorspace required. For example, at Southend, land costs in the centre may vary from £20,000 - £2,000,000 per acre depending entirely on the detailed location of the development. An assumption has therefore been made that the total costs for the development of new floorspace in existing centres will equal the income received from them, whereas in a new centre built on a 'greenfield' site, the income could reasonably be expected to outweight the development costs. For this reason, only the rents for floorspace in new centres has been estimated.

58 Table 6.17 shows the annual rents for retail and service floor space in £ for new centres. The total rents for Plan 3 minus Plan 1 are greatest at

Printed image digitised by the University of Southampton Library Digitisation Unit

Nuthampstead, followed by Cublington and Thurleigh and are smallest at Foulness.

Table 6.17 : Annual rent in £ for retail and service floor space in new centres

	Foulness	Nuthampstead	Cublington	Thurleigh
Increment 1	117,000	155,000	126,000	123,000
2	118,000	173,000	132,000	128,000
3	118,000	157,000	138,000	134,000
4	112,000	162,000	144,000	140,000
5	131,000	159,000	150,000	140,000
6	138,000	167,000	156,000	152,000
7	-	-	-	158,000
Total: Plan 2 minus Plan 1*	814,000	1,055,000	937,000	1,096,000
Increment 7	157,000	151,000	185,000	-
8	153,000	204,000	190,000	185,000
9	161,000	179,000	196,000	184,000
10	166,000	178,000	197,000	197,000
Total: Plan 3 minus Plan 2*	667,000	745,000	806,000	582,000
Total: Plan 3 minus Plan 1*	1,603,000	1,932,000	1,882,000	1,794,000

Note: * The totals of these rents are not the sum of the preceeding increments, because it has been assumed that the rent in each increment will have increased by the time of completion of Plan 2 or Plan 3, due to the accumulation of spending power as each increment is developed.

59 Foulness lies adjacent to Southend and therefore about 40 per cent of new floorspace will be provided for in the existing centres of Southend and Rayleigh. This will give a low level of rents for the new city compared with the others, but it is partly offset by the congestion likely to occur in Southend which will help to raise the level of rents in new centres and partly by the size of the catchment area population which although similar to Thurleigh is larger than Nuthampstead.

60 Nuthampstead has the highest level of rents mainly because the majority of new floorspace is situated in new centres and because the city is not associated with a large existing centre.

Printed image digitised by the University of Southampton Library Digitisation Unit

61 Cublington has the largest catchment area population which accounts for the high level of rents. However, as about 27 per cent of the new floorspace is assumed to be in existing centres, and this has not been costed. the level of rents is below that of Nuthampstead.

62 Thurleigh also has a large catchment area population but below that of Cublington owing to the much smaller population in the airport city. As Thurleigh lies adjacent to Wellingborough about 19 per cent of new floorspace will be located in existing centres. On the other hand, some congestion is likely to arise in Wellingborough and thus raise the level of rents in new centres. Taking all these factors into account, the level of rents is slightly lower than for Cublington.

Benefits : rents for industrial and office floorspace

63 There is no evidence to suggest that rental levels for new office floorspace in the four airport cities would vary. An assumption has therefore been made that the annual total rents for new office floorspace in each of the ten growth increments at each of the airport cities would amount to £180,000. For Plan 3 minus Plan 1, which includes all ten increments, the total level of rents would therefore amount to £1,800,000.

64 The level of rents for new industrial floorspace would vary at each airport site depending on the size of the economically active population in the internal zone area. At Cublington and Thurleigh the economically active population is higher than at Nuthampstead and Foulness and it is therefore likely that industrialists would be prepared to pay more rent for floorspace because the volume and range of labour would be greater. At Foulness and Nuthampstead the annual total rents for new industrial floorspace in each of the ten growth increments would amount to £75,000, which would give a total level of rent for Plan 3 minus Plan 1 of £750,000. At Cublington and Thurleigh the annual total rents for each increment would amount to £93,750 which would give a total level of rent for Plan 3 minus Plan 1 of £937,500.

65 The estimated annual rent in £million for industry in the internal zone area exclusive of the airport related industry mentioned above, would be as follows:

Foulness	17.9
Nuthampstead	8.7
Cublington	31.5
Thurleigh	30.8

Benefits : rents for residential areas

66 Table 6.18 shows the annual total level of rent for new residential development in £million based on an assumption of £500 per annum per house at an occupancy rate of 3.11 persons per house.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 6.18 : Annual rents for residential areas in £million

	Foulness	Nuthampstead	Cublington	Thurleigh
Increment 1	4.984	4.823	4.662	4.019
2	4.823	5.225	4.662	4.019
3	4.582	4.582	4.662	4.019
4	4.180	4.582	4.662	4.019
5	4.662	4.341	4.662	3.858
6	4.743	4.421	4.662	4.019
7	-	-	-	4.019
Total: Plan 2 minus Plan 1	27.974	27.974	27.974	27.974
7	5.386	4.100	5.627	-
8	5.064	5.386	5.627	4.662
9	5.145	4.582	5.627	4.502
10	5.145	4.421	5.466	4.662
Total: Plan 3 minus Plan 2	20.740	18.489	22.347	13.826
Total: Plan 3 minus Plan 1	48.713	46.463	50.321	41.800

Accessibility to airport city

67 In the following section, which is illustrated by the frontispiece, comparisons are made between the levels of accessibility of each of the airport cities to other parts of the country. This assumes that any of the routes mentioned below will not be congested with airport traffic.

68 The ability to travel from the airport city to other parts of the country is lowest at Foulness not only because of its isolated location on the coast but also because the city is flanked on either side by river estuaries. To improve accessibility, new or improved roads would be required to the north-west via Chelmsford to link on to the Ministry of Transport's improved A.120 strategic east-west route near Bishop's Stortford and to the south-west to link with the crossing of the river Thames on the alignment of Ringway 3. These two routes would be in addition to a new link to London which the city could initially share with the airport until traffic to the airport necessitated sole use of the

Printed image digitised by the University of Southampton Library Digitisation Unit

link, when an additional road to London might be needed. Rail connection to the airport city from London would be provided by the main line from Liverpool Street via Brentwood to Southend.

69 The airport city at Nuthampstead is well located at the intersection of the proposed alignments of the M.11 motorway and the Ministry of Transport's improved A.120 strategic east-west route which links with the M.1 at Luton, the A.1 at Stevenage and the A.12 at Colchester. Nevertheless, although the new city is almost due north of London and the closest airport city to London, it is about 45 km (28 miles) east of the M.1, well to one side of the main spine of communications between London and the North West. Rail connections to the airport city from London would be provided by the main line from Liverpool Street to Cambridge.

70 Of all the airport cities, Cublington provides the highest level of accessibility to other parts of the country as it is located adjacent to the main spine of communications between London, the Midlands and the North West, comprising the M.1 motorway, the A.5 and A.41 and the main electrified rail line from Euston to Birmingham, Manchester and Liverpool.

71 The airport city at Thurleigh is much the furthest of any of the airport cities from London, but to compensate for this is correspondingly closer to the Midlands and the North, although it does not have the advantage, like Cublington, of being located on the main electrified line to the North. It is between the main spine of communications between London and the North being about 24 km (15 miles) from both the M.1 motorway and the A.1 and immediately adjacent to the Ministry of Transport's improved A.45 strategic east-west route connecting the M.1 at Northampton with Cambridge and Ipswich. Rail connection to the airport city from London would be provided by the main line from St Pancras via Luton and Bedford.

72 At each of the inland sites, access to the airport city over an arc of roughly 180 degrees will involve passing through or by the 8 km (5 mile) long barrier of the airport site and passing across the noise corridor. Both these elements could affect access to the airport cities at Nuthampstead, Cublington and Thurleigh.

Airport links to London

73 Proposed alignments for the road link between the airport site and London are shown in the frontispiece. Alignments for the road and rail links are not within our terms of reference; they have been studied by the Ministry of Transport and British Rail.

74 At Foulness, completely new road and rail links would be required from the airport site to London and these, unlike at any of the other airport sites, would pass through the centre of the airport city along parallel alignments located between the new parts of the city and Southend. Because of the continuous noise levels and the density of traffic on this link, which may

Printed image digitised by the University of Southampton Library Digitisation Unit

eventually necessitate its duplication, an insulating corridor of open land has been provided along both sides of the link where it passes through the airport city. This land, which cannot be used as permanent open space for the city, might become a divisive element between the existing and the new parts of the airport city. To minimise this effect, bridging connections at about 1 km ($\frac{2}{3}$ mile) intervals would be required across the link to London to bring together the two parts of the airport city. The cost of bridging this corridor is being estimated by the Ministry of Transport as part of their study.

Potential for further growth

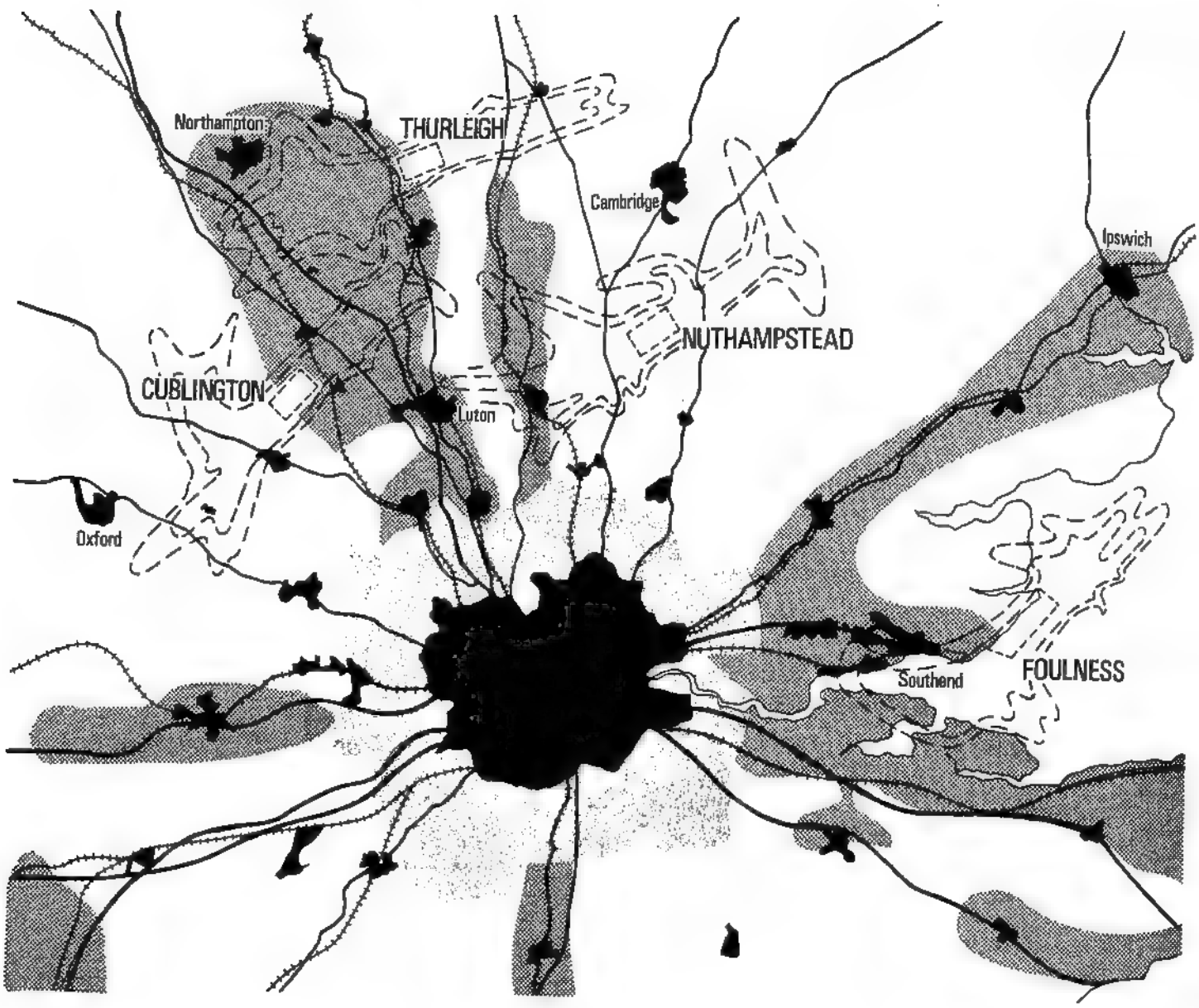
75 The following section examines the potential of each of the airport cities to continue to grow beyond the size allowed for in the plan. It does not constitute a comment on the need or value of further growth as this is an extremely difficult issue to discuss when the need and timing of any growth is so far ahead and as yet unknown.

76 In making the plans for the new airport city, it will be necessary to allow for the possibility of the city growing beyond the time period of the plan, in order to ensure that the considerable investments made in the construction of the airport, its associated urbanisation and its links to London, are capable of being fully utilised without some long term constraint being applied. It is therefore essential to examine the opportunity for further growth to the airport cities in our studies of urbanisation at each of the airport sites. However, the question of further growth beyond the boundaries of the plan, raises the political and economic question of whether to encourage the development of the airport subregion as a major growth point for population and employment in the South East, or whether to restrain growth in the vicinity of the airport to that directly associated with the needs of the airport. This is a question for the government of the day to decide.

77 However, some of the airport cities by reason of their location, have greater growth potential than others in regional planning terms and some of the airport cities because of local constraints, have greater potential for further growth than others in purely physical terms.

78 The south Essex subregion has a high growth potential and forms one of the corridors proposed for future growth by the South East Economic Planning Council in their report 'A Strategy for the South East' (figure 6.2). In addition, the possibility of developing a new port at Foulness for deep sea ships adjacent to the airport site would have the effect of increasing the size of urbanisation required and considerably increasing the potential of the subregion for further growth. In part II of this report in which Foulness is discussed, it has been suggested that the addition of a seaport to the airport would necessitate a pattern of urbanisation along both banks of the river Crouch, whereas the urbanisation required for an airport alone could be accommodated entirely south of the river Crouch. In this respect the advantage that Foulness has over the other three sites in regional growth potential, whether generated solely by an airport or a combination of airport and seaport, would be tempered by the peculiar physical

Printed image digitised by the University of Southampton Library Digitisation Unit



Strategic Motorways and Trunk Routes

Strategic Railways

Existing Urban Areas

Approved Metropolitan Green Belt

Sectors for future growth

Airport Sites (proposed)

Noise Corridor 35 and 40 NNI

miles 0 25

kilometres 0 25

Figure 6.2

EXTRACT FROM SOUTH EAST STRATEGY

Printed image digitised by the University of Southampton Library Digitisation Unit

constraints of the area which tends to restrict urban growth within certain economic thresholds. Whilst it is conceivable that the airport city could eventually extend eastwards across the marshlands of Foulness Island to within 3 km (2 miles) of the airport, it would be difficult and very costly, and whilst the city could extend westward towards Basildon and Wickford, it would be at least 24 km (15 miles) from the airport site. The most likely area for expansion would be to the north of the river Crouch about 11 km (7 miles) from the centre of the airport site.

79 Nuthampstead is located in one of the main country zones proposed by the South East Economic Planning Council and has little, if any, existing regional growth potential beyond the development of the airport itself. Improvements to the north-south and east-west communications and the selection of this site for the airport would radically change the present situation, and reverse the natural pattern of growth in the South East. At Nuthampstead there would be no particular physical difficulty in expanding the new city further to the south across the A. 120 about 11 km (7 miles) from the airport site, or of further development in the Royston area, other than the agricultural constraints which applied to the location of the airport and the new city in the first instance.

80 The Milton Keynes - Northampton - Wellingborough - Bedford subregion, which contains the two airport sites of Cublington and Thurleigh, forms part of one of the growth corridors proposed by the South East Economic Planning Council. The subregion includes three rapidly developing towns and the decision to build an airport at either of these two sites could materially affect the programmed growth of at least two of these towns, but it is difficult to say whether their growth would be stimulated or restricted as this question is closely related to a feasible building rate, Board of Trade policies on employment distribution, industrial investment within an airport catchment area, priorities for the airport city, etc.

81 Landscape, noise and drainage constraints at Cublington would prevent further major growth in any but a northerly and easterly direction from Milton Keynes, at a distance of about 14 to 16 km (9 to 10 miles) from the centre of the airport site. The easterly growth would entail extra costs in bridging across the M. 1 motorway while the northerly growth would entail extra costs in bridging across the lakes and gravel pits along the valley of the river Ouse. Further growth of the new airport city at Thurleigh would best be located to the north in the area around Kettering which like the urbanisation at Cublington, would be an addition to the edge of the new city furthest from the airport site, about 18 km (11 miles) away.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDICES

Economic Associates Ltd.
Peat, Marwick, Kates and Co.
Binnie and Partners
Ove Arup and Partners

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDICES

APPENDIX A : TERMS OF REFERENCE

APPENDIX B : EMPLOYMENT AND POPULATION

APPENDIX C : TRANSPORTATION

APPENDIX D : SEWAGE DISPOSAL

APPENDIX E : GEOTECHNICS AT FOULNESS

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX A: TERMS OF REFERENCE

Printed image digitised by the University of Southampton Library Digitisation Unit

		Page
1	Summary of Plans 2 and 3	5
2	Subregional setting	
	Internal zone area	9
	Geology and relief	9
	Drainage	11
	Agriculture	11
	Communications	13
	Settlement pattern	13
	Landscape	15
	Engineering services	19
	Mineral workings	19
	Other constraints	19
	Conclusion	19
3	Plan 1 - proposals up to 1981	21
	Population and employment	21
	Urban growth	21
	Roads	25
	New centres and planned extensions	25
4	Proposals affected by 40 NNI contour	27
5	Alternative strategies	31
6	Selection of preferred strategy	39
	First stage of selection	40
	Second stage of selection	42
7	Plan 3 - development of preferred strategy	45
	Population and employment	45
	Concept for Plan 3	48
	Boundaries of urban area	51
	Roads	51
	Railways	53
	Sewerage and sewage disposal	53
	Drainage and surface water disposal	55
	Sequence of growth	57
	Further growth	58
8	Plan 2	61
	Population and employment	61
	Area of development	61
	Roads	61

Printed image digitised by the University of Southampton Library Digitisation Unit

		Page
9	Costs and benefits	63
	Construction costs	63
	User costs	68
	Agricultural loss	68
	Land costs	69
	Landscape loss	69
	Benefits	70

Printed image digitised by the University of Southampton Library Digitisation Unit

Figure		Page
5.1	Subregional setting	4
5.2	Internal zone area	8
5.3	Land drainage	10
5.4	Agriculture	12
5.5	Existing communications	14
5.6	Current landscape policies	16
5.7	Landscape appraisal	17
5.8	Other constraints	18
5.9	Plan 1 - proposals to 1981	20
5.10	Plan 1 - effect of airport	26
5.11	Plan 1 - highway requirements	24
5.12	Theoretical urban forms	28
5.13	Local constraints	29
5.14	Alternative strategies	30
5.15	Strategy A	32
5.16	Strategy B	33
5.17	Strategy C	34
5.18	Strategy D	35
5.19	Strategy E	36
5.20	Strategy F	37
5.21	Strategy G	38
5.22	Plan 3 - airport city	47
5.23	Links to airport	50
5.24	Internal zone area - employment and population	46
5.25	Factors influencing urban envelope	49
5.26	Plan 3 - highway requirements	52
5.27	Drainage areas and outfall points	54
5.28	Airport city - sequence of growth	56
5.29	Plan 2 - airport city	60
5.30	Plan 2 - highway requirements	62

Printed image digitised by the University of Southampton Library Digitisation Unit

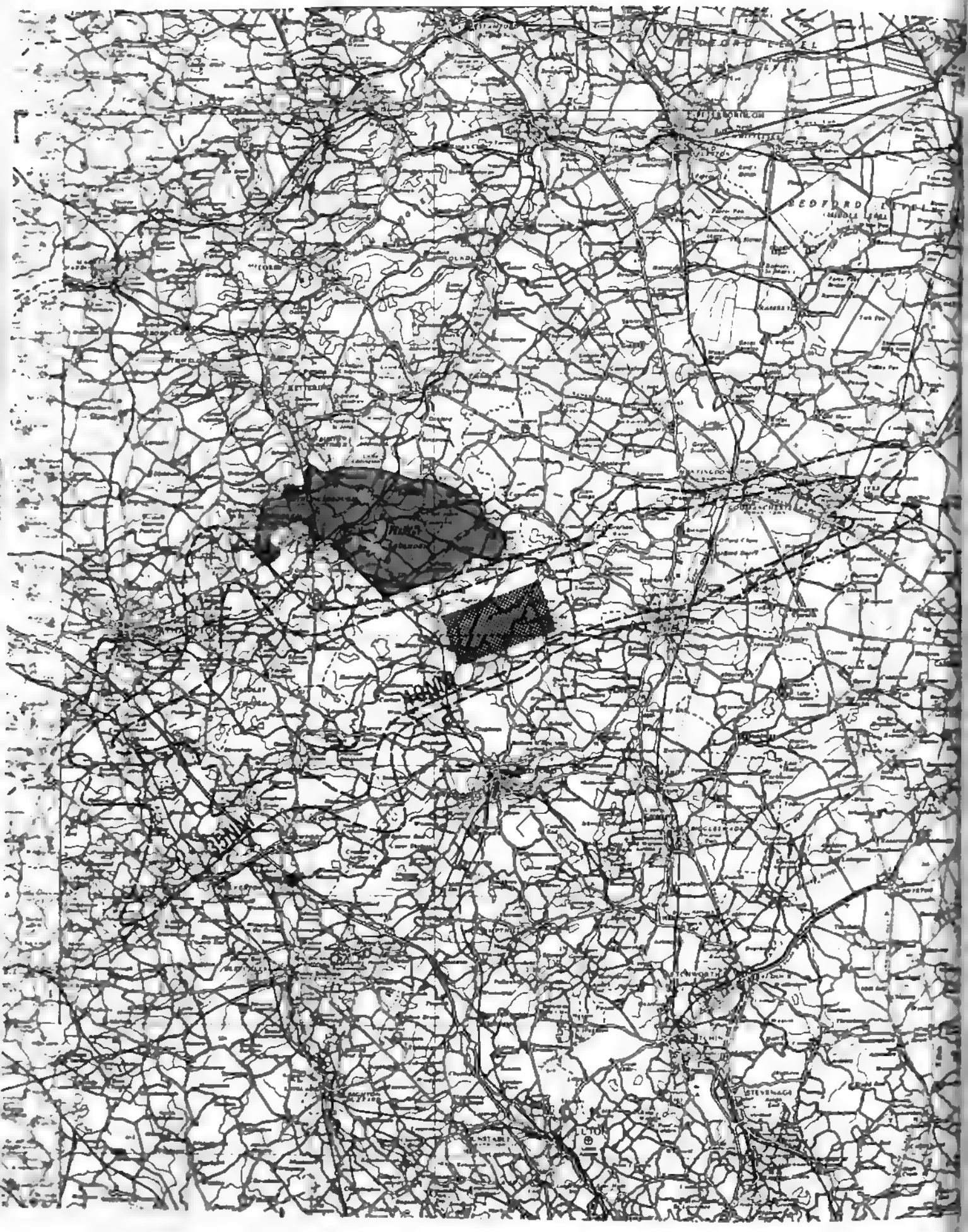


Figure 5.1 THURLEIGH SUBREGIONAL SETTING

Printed image digitised by the University of Southampton Library Digitisation Unit

1 The preferred urban strategy for an airport at Thurleigh is to concentrate the bulk of the additional people in a new city north of the site, which will have an estimated population of 358,000 people in the year 2000. Airport city would occupy the area between the existing towns of Wellingborough, Rushden, Higham Ferrers, Irthlingborough, Finedon, Irchester and Raunds, together with a large extension south-east of Rushden. For Plan 1 (figure 5.9) the total urban area by 1981 without the airport will be 3850 hectares (9,500 acres). The area required by 2000 for Plan 3 (figure 5.22) over and above Plan 1 could be 7,200 hectares (17,900 acres).

2 Airport city would occupy the slopes on either side of the Nene valley in which most of the major urban open space would be located. Industrial areas are located on the edges of the city near Irchester and Raunds.

3 The greatest problem is the location of the principal new centre. There are no suitable sites near the geographical centre of the new city, which is mainly occupied by the Nene flood plain and scattered urban areas. North of the Nene, Wellingborough is likely to be an important district centre. The city centre has therefore been put on the rising ground east of Higham Ferrers near the largest area of continuous new development.

4 In addition to Wellingborough town centre, there would be two district centres - the existing one at Rushden and a new one between Irthlingborough and Finedon.

5 The illustrative road system has a basic NW-SW/NE-SE orientation, but is bent to give more direct access from urban areas to the airport and between different parts of the town. There could be two major routes from the city to the airport, entering the site at the north side and the west end, and a minor route entering at the east end.

6 Urbanisation for airport requirements would start in the area nearest to the airport and adjacent to the A6, moving north-east towards the new city centre. Development would then shift north of Rushden, so as to postpone crossing the drainage threshold on the east of the city, and to link Rushden and Wellingborough. This area, though further from the airport, could have good access by way of an improved A6.

7 Plan 2 (figure 5.29) excludes the eastern part of the city which would require a separate sewerage system and an additional treatment works. It forms a continuous urban area north and south of Rushden, and includes the two major access roads to the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

8 The following table shows the expected growth of population and employment in the whole of the internal zone area, and that part of it which would be in airport city.

		Internal Zone Area		Airport City	
THURLEIGH		Population	Employment	Population	Employment
	1966	484,900	235,500	90,500	44,900
Plan 1	1981	707,700	313,800	143,300	61,700
Plan 2		881,700	390,800	299,300	138,700
Plan 3	2000	1,080,000	454,000	358,000	161,400

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

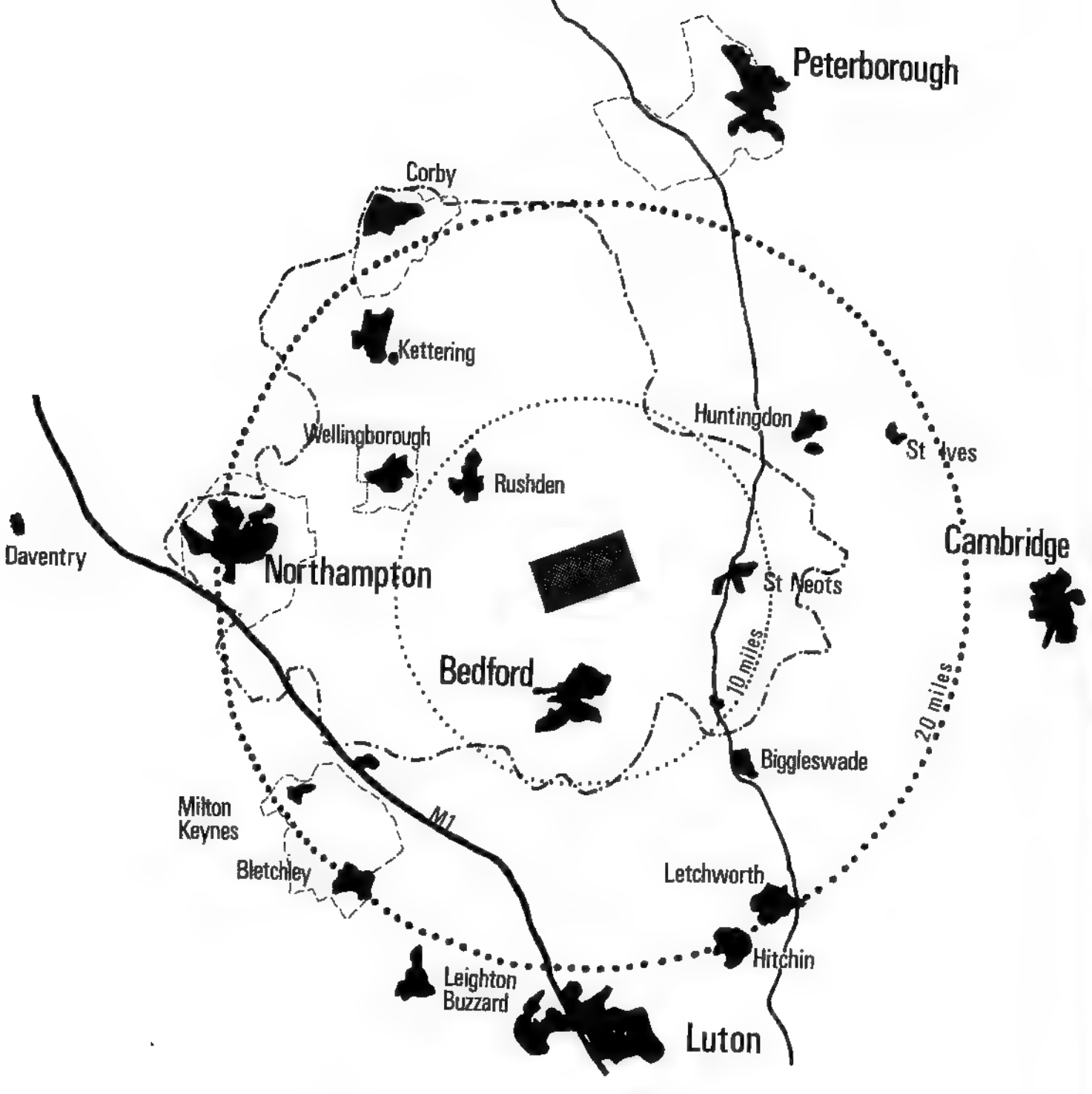


Figure 5.2

THURLEIGH
INTERNAL ZONE AREA

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 2: SUBREGIONAL SETTING

Internal zone area

9 There is one large town within 10 miles of Thurleigh - Bedford - and a number of others about 20 to 25 miles away - Northampton, Corby, Kettering, Peterborough, Cambridge and Luton, as well as the designated area of MiltonKeynes (figure 5.1). These were included in the preliminary area of search. In the light of probable future accessibility to the airport and of competing attractions, the internal zone area (figure 5.2) excludes Peterborough, Cambridge, Luton and Milton Keynes, but includes Northampton, Kettering and Corby. It covers the local authority areas listed in table 5.2 (chapter 3).

10 The description of existing conditions in this chapter refers mainly to the internal zone area. It considers the constraints on and opportunities for large-scale urban development outside the airport's noise corridor.

Geology and relief

11 Several bands of solid deposits cross the area from north-west to north-east. To the extreme north-west is a low ridge denoting the presence of the large band of oolitic limestones and clays with an extension in a narrow strip down the Ouse valley to Bedford. The main area contains some deposits of ironstone which give rise to the important workings in the vicinity of Northampton.

12 Next to the oolite is a narrow strip of limestone and clays known as the Cornbrash. To the south of it is the low-lying and rather monotonous country produced by the underlying deposits of Oxford clay, which are extensively worked for brick manufacture between Bedford and Ampthill. This area is relieved along its north-eastern boundary by views of the escarpment of the lower greensand ridge.

13 A great part of this solid geology has been concealed by comparatively recent drift deposits. The most extensive of these, covering most of the area, is boulder clay. It frequently extends to depths of up to 170 feet and overlays deposits of glacial sands and gravels. There are also extensive deposits of valley gravels underlying the flood plains of the rivers, but these are frequently overlaid by one or two feet of alluvium.

14 Although it is necessary for urban areas to avoid the flood plains of the Ouse and Nene valleys, the ironstone workings near Northampton and the brick workings between Ampthill and Bedford, it appears unlikely that geological conditions would give rise to exceptionally high building costs.

Printed image digitised by the University of Southampton Library Digitisation Unit

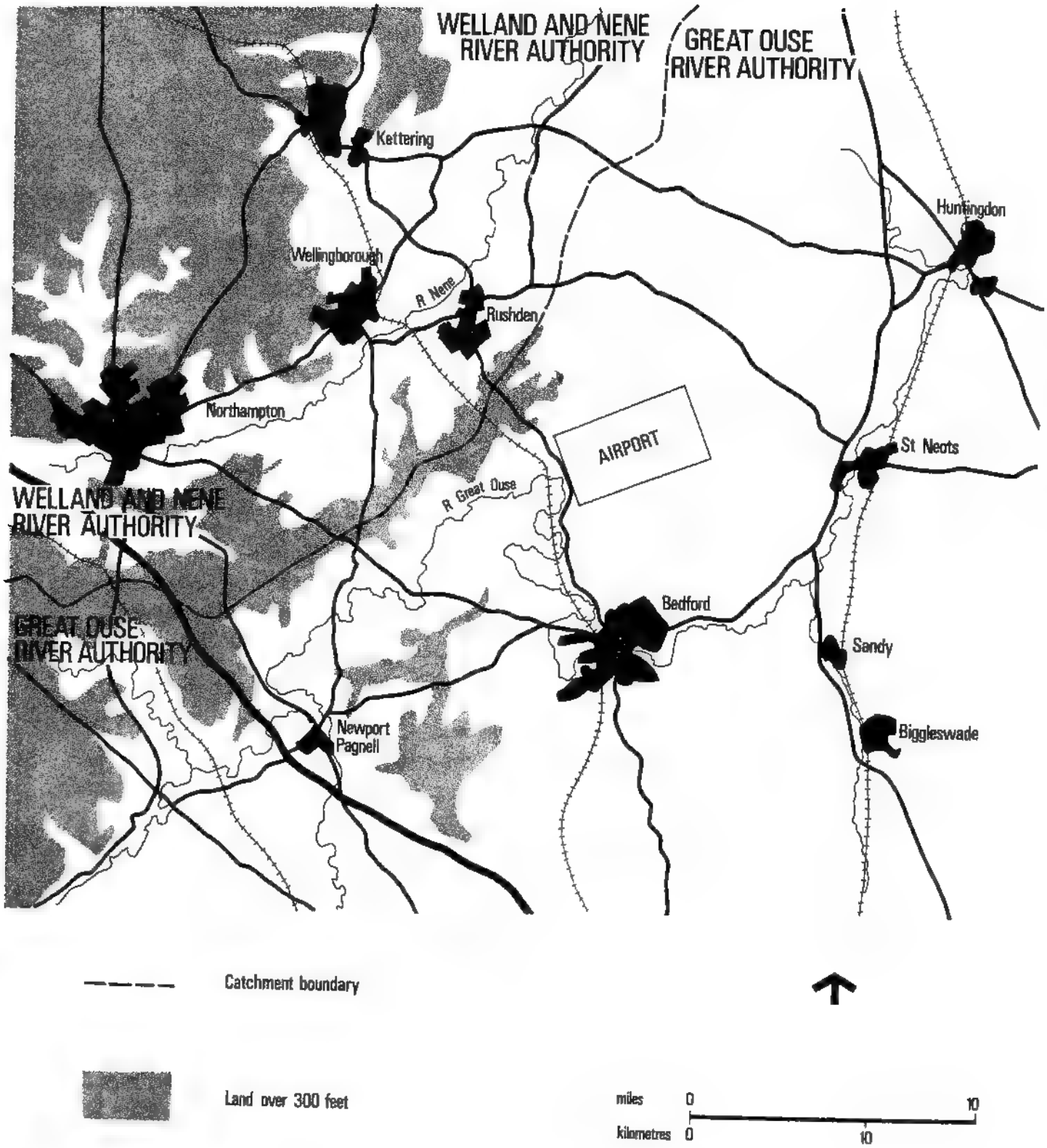


Figure 5.3

THURLEIGH
LAND DRAINAGE

Printed image digitised by the University of Southampton Library Digitisation Unit

Drainage

15 The area is divided between the catchments of the Great Ouse and the Nene (figure 5.3). The cost of development would probably not be significantly affected by the varying proportions of sewage effluent and surface water run-off discharging into the two rivers. However, any major growth anywhere in the area would result in high costs to achieve the required standard of sewage purification.

16 Extensive stretches of land alongside the rivers Nene and Great Ouse and their tributaries are liable to flooding.

Agriculture

17 The assessment of agriculture is considerably hampered by the lack of an up-to-date land classification map for the area. In these circumstances, it is only possible to give the results of a general appraisal using other evidence.

18 The area is characterised by sharp differences in agricultural practice. On the east is the Biggleswade - Huntingdon horticultural land which is an immensely productive area, with heavy investment in glass-houses, growing crops on a field scale for the London market. Anything up to three crops may be grown on the same land each year with resultant high levels of gross output. This strip is one of the most highly productive agricultural areas in South East England.

19 Travelling west from the A1 the horticultural belt extends down from Biggleswade, through Ampthill to Leighton Linslade, while another finger stretches out from Sandy and St. Neots towards Bedford, and yet another from St. Neots to Kimbolton.

20 The central and western parts of the area are much more varied but the emphasis changes from horticultural crops to general arable crops with some horticulture in the central parts, and again livestock farming with some cash crops in the west. The south and west of the region are characterised by mixed farming with a considerable pig and poultry content.

21 Urban and industrial encroachment has affected the value of some areas. The brickfields to the south-west of Bedford are one such area, and the urban complex of Wellingborough, Kettering, Rushden and Thrapston is another. The latter is further hampered by a more severe topography than the rest of the area which makes agriculture more difficult.

Printed image digitised by the University of Southampton Library Digitisation Unit

AGRICULTURAL LAND

Grade 1

Grade 2

Grade 3

Grade 4

Grade 5

NON AGRICULTURAL LAND

Land in urban use

Other land

Proposed airport

miles 0 10

kilometres 0 10

Figure 5.4

THURLEIGH
AGRICULTURE

Printed image digitised by the University of Southampton Library Digitisation Unit

22 Generally the region is of high agricultural value with good fixed equipment and farm structure. The Ministry of Agriculture classify the area surrounding Bedford to the west, north and east, the airport site and the Ampthill - Biggleswade - Huntingdon regions as either Grade 1 or 2; the remaining parts of the area that have been classified fall into Grade 3 (figure 5.4).

Communications

23 The area is well served by major roads in all directions (figure 5.5). A1(M) and M1 run north-south on either edge of the area and carry most of the national traffic passing through it.

24 A6 and A509 (both single carriageway two or three lane roads) run through the middle of the area carrying the regional north-south traffic. Neither of these are high capacity roads, and have little or no spare capacity, although improvements are planned to A6.

25 A45 is the main east-west route through the area, due for large-scale improvement between Northampton and Wellingborough in connection with the expansion of the two towns, but otherwise with low capacity. The route gives access to M1 and A1(M) and serves as a trunk route between the Midlands and Ipswich, Felixstowe and Harwich.

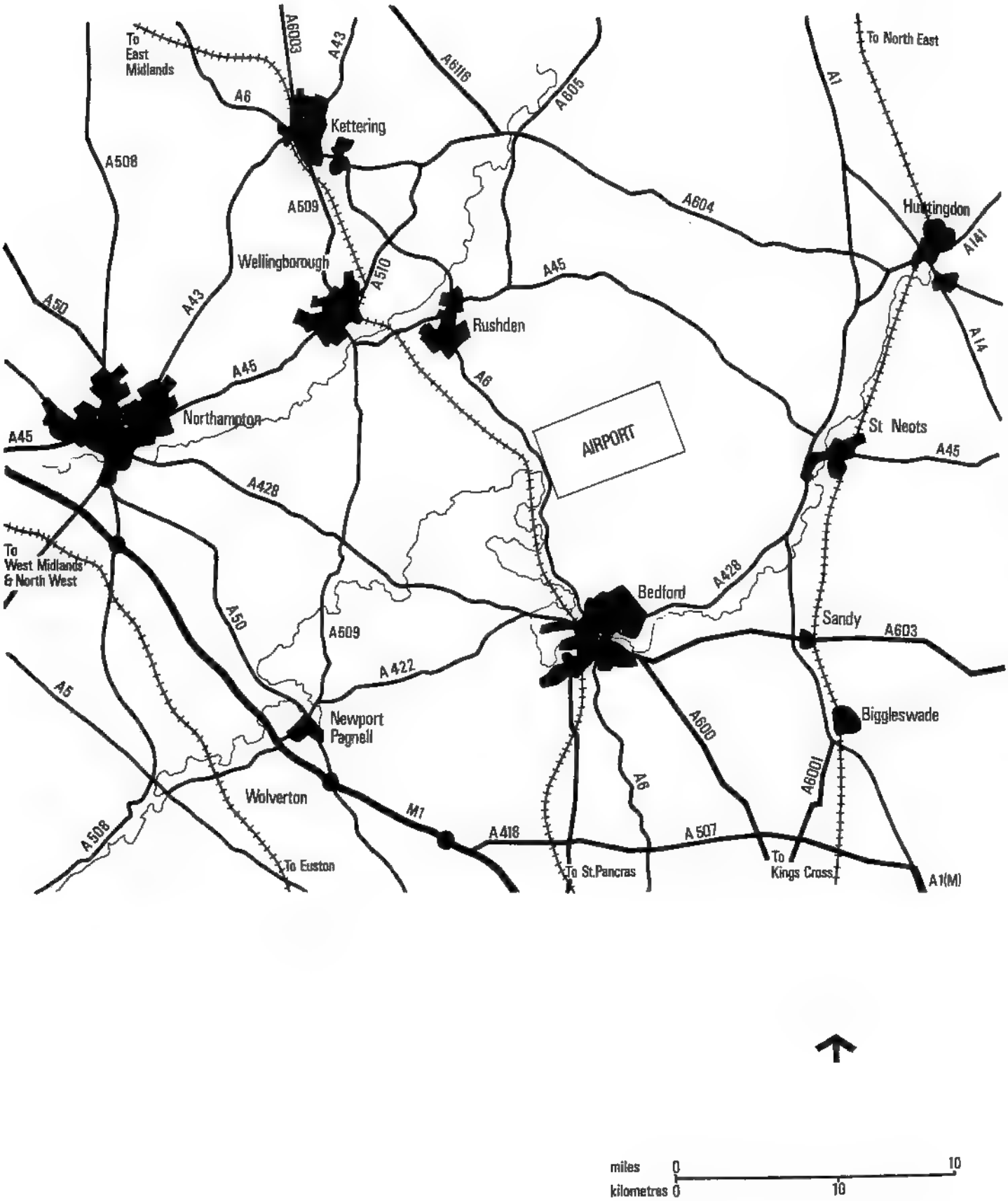
26 A604 and A428 are important east-west routes although both are of low capacity.

27 There are three north-south rail routes - the electrified line from Euston to the West Midlands and the North West, the line from King's Cross to the North East, and the line from St. Pancras to the East Midlands. The last passes through the middle of the area very near to the airport site.

Settlement pattern

28 The eastern and western halves of the area have quite different settlement patterns reflecting their greatly differing economies. To the east the rich agricultural tradition has left a series of small market towns which have retained their rural character. These include Huntingdon and Godmanchester, Biggleswade, Baldock, St. Neots and St. Ives. None exceeds 15,000 people. Despite small overspill agreements, this area is relatively static and quiet.

Printed image digitised by the University of Southampton Library Digitisation Unit



miles 0 10

kilometres 0 10

THURLEIGH

Figure 5.5 EXISTING COMMUNICATIONS

Printed image digitised by the University of Southampton Library Digitisation Unit

29 The western half of the area is more industrial and its settlements are larger. They are growing and contain areas requiring renewal or improvement. The largest town is Northampton which is planned to grow from 124, 000 to 310, 000. Wellingborough is due to expand from 32, 000 to 85, 000. Kettering (40, 000), Rushden (18, 000), Higham Ferrers and Irthlingborough form a cluster of industrial towns to the north-west of the airport site, strung along A6. Further north, Corby New Town, with its main industry of steelmaking, continues this industrial pattern. Also in the western half, but south of the site, lies Bedford (67, 000) with its centre only 8 miles from the airport.

30 The nearest subregional (third order) centre to the airport is Bedford (3B); Northampton (3A) and Kettering (3C) are more distant. District (fourth order) centres are Wellingborough (4A), Rushden (4B) Corby (4B) and St. Neots (4B).

31 Shopping centres with wide catchment areas, well above the average for the area, include Cambridge, Bedford and Hitchin, and also to a lesser extent Northampton, Peterborough, Kettering, Biggleswade, Royston and Leighton Buzzard.

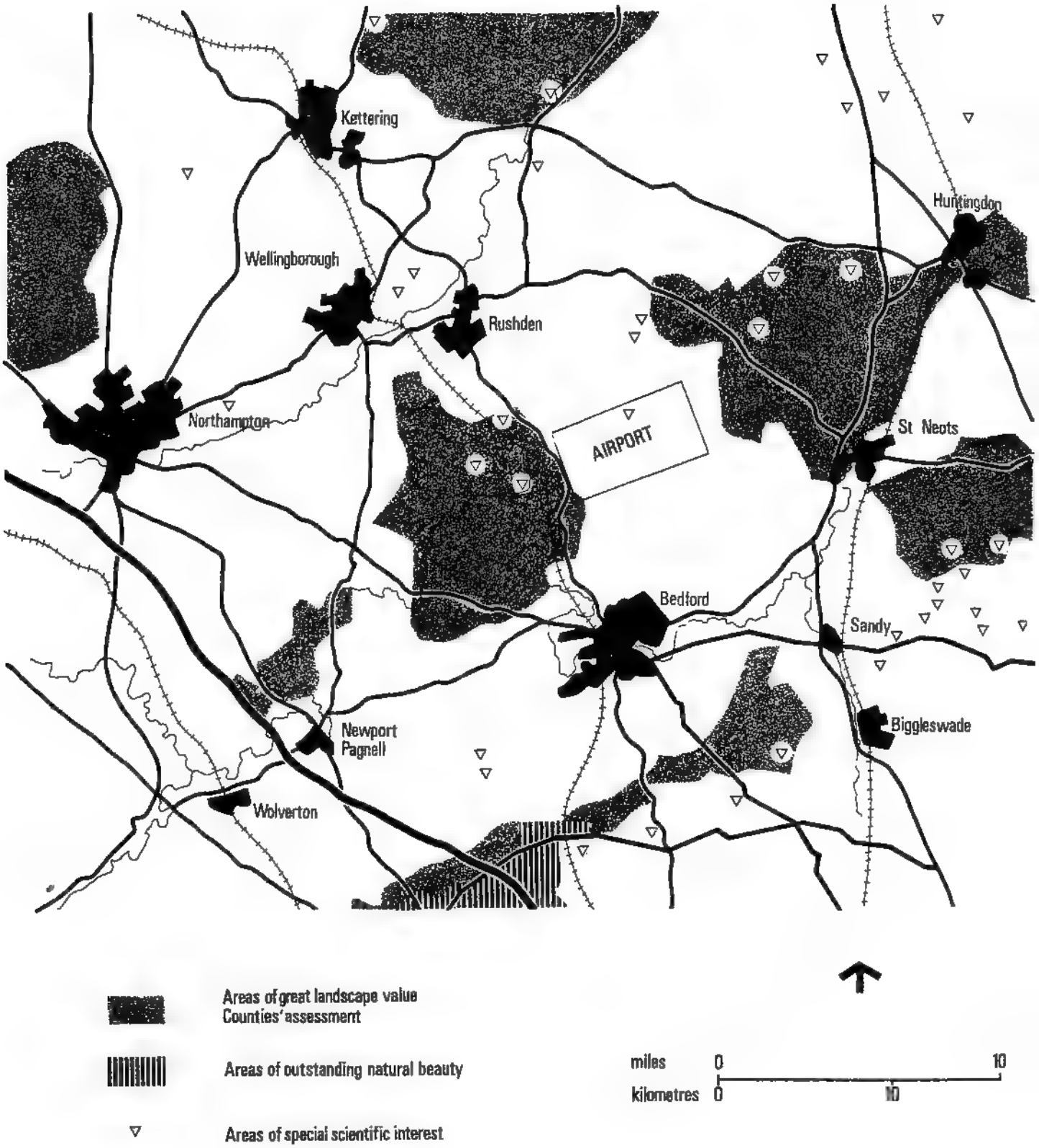
32 The expansion of Wellingborough may elevate the present strong fourth order centre into another subregional centre. There may thus be four subregional (third order) centres in the area even without the airport. The expected very large increase in population may eventually result in the establishment of second order shopping and services now available to the area only in London or Birmingham. These higher order functions might be dispersed among the subregional centres, creating a polycentric metropolitan area, or might be concentrated in a single new provincial centre. There would be considerable difficulties in upgrading Bedford, or indeed in greatly increasing its capacity as a third order centre.

Landscape

33 South of the airport is a wide area of panoramic value covering the flat plain of the Ouse between Bedford and St. Neots. There is a long band of average quality landscape north and south-west of Bedford, broken only by small areas of high quality along the Ouse valley, and on a conspicuous wooded spur of high ground above the northern outskirts of the town.

34 North of the airport is an area of high quality around Kimbolton and westwards along the valley of the Til. There are areas of panoramic value along the valley of the Nene north of Wellingborough and north of Raunds.

Printed image digitised by the University of Southampton Library Digitisation Unit



THURLEIGH

Figure 5.6

CURRENT LANDSCAPE POLICIES

Printed image digitised by the University of Southampton Library Digitisation Unit

Landscape Quality

- High
- Panoramic
- Average
- Inferior
- Not appraised

Miles 0 10

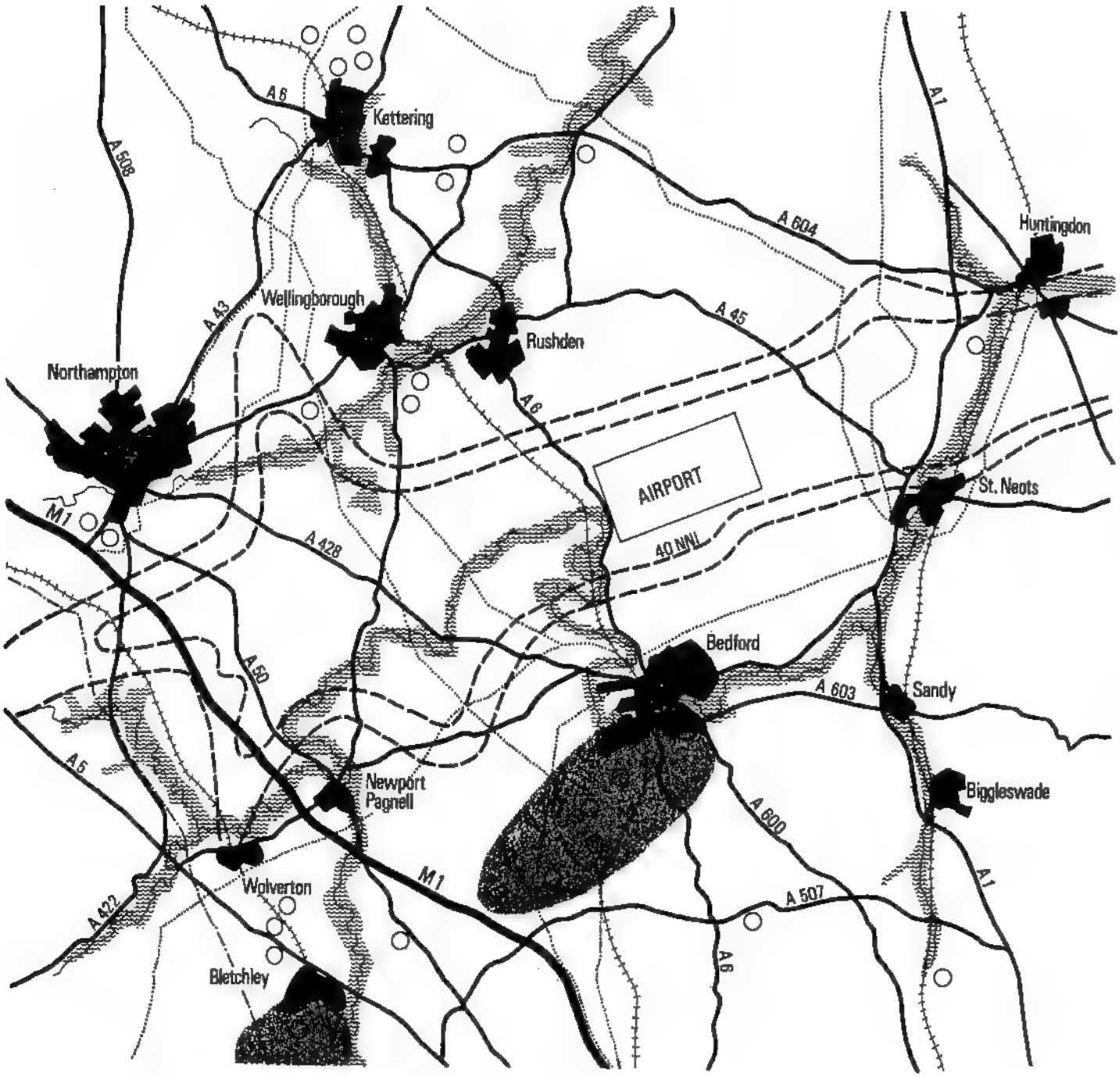
Kilometres 0 10

THURLEIGH

LANDSCAPE APPRAISAL

Figure 5.7

Printed image digitised by the University of Southampton Library Digitisation Unit



Mineral workings

Land liable to flooding

Industrial nuisance from cement and brickworks

40 NNI and outer boundary of buffer zone

Overhead transmission lines

Pipe lines

miles 0 10

kilometres 0 10

THURLEIGH

OTHER CONSTRAINTS

Figure 5.8

Printed image digitised by the University of Southampton Library Digitisation Unit

The rest of the area is of average quality (figure 5.6 and 5.7). There are 27 sites of special scientific interest shown on County Development Plans in the internal zone areas.

Engineering services (figure 5.8)

35 Several overhead transmission lines and a major gas pipe line pass through the area but do not inhibit urban development.

Mineral workings (figure 5.8)

36 There are areas of sand and gravel extraction associated with the river Great Ouse, but all of them are located on land liable to flooding.

37 The principal areas of clay extraction are south-west of Bedford. The brickworks emit compounds of sulphur and flourine which smell extremely unpleasant and are poisonous to some species of trees and plants. They affect an ellipse about 8 miles long in a north-east/south-west direction. Urban areas should if possible avoid this nuisance.

38 There are ironstone workings in a diagonal belt through Northamptonshire, but in recent years there have been closures except in the area around Corby.

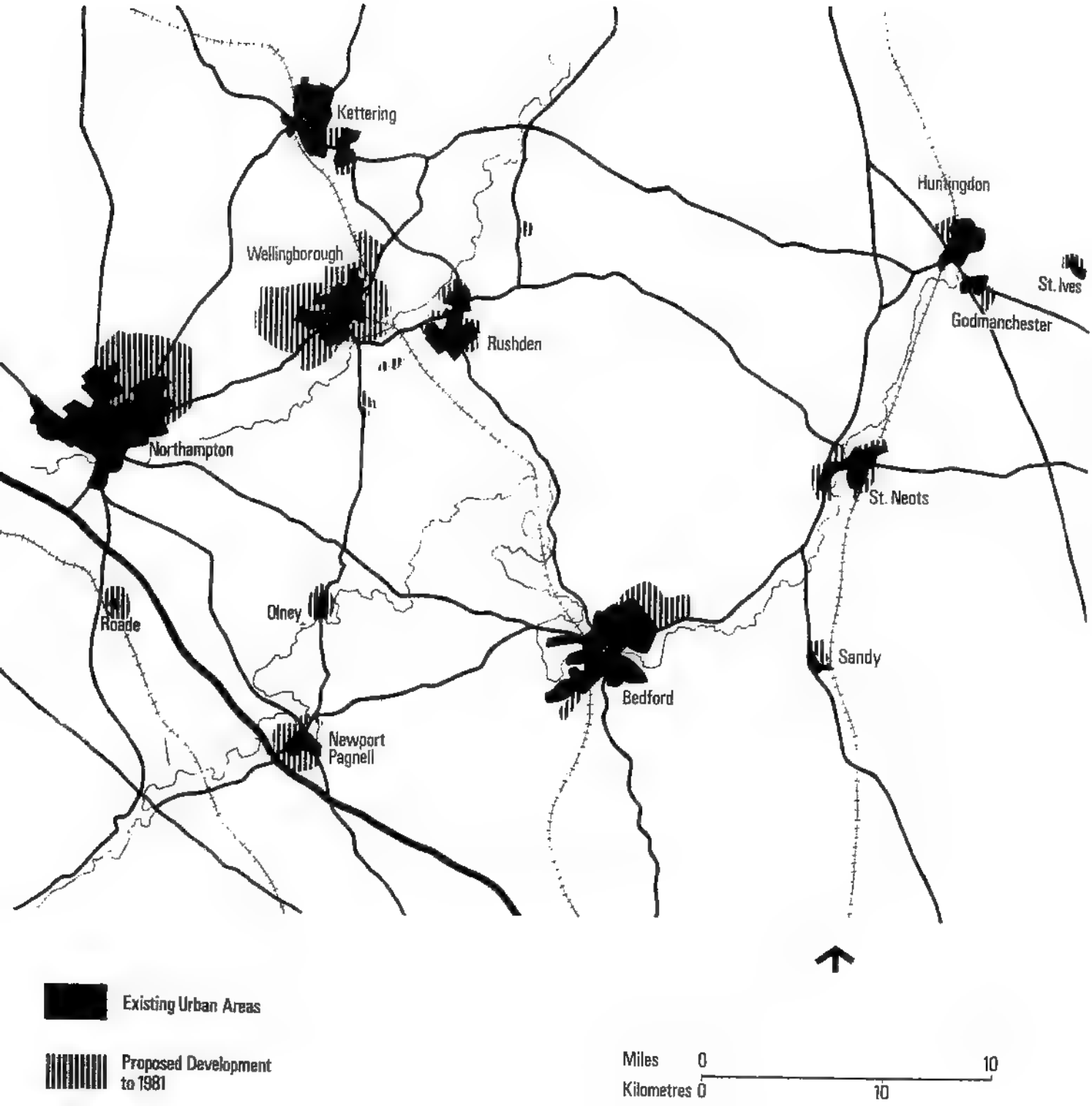
Other constraints

39 Figure 5.8 also shows land liable to flood, and physical barriers (rivers, railways and major roads) that might impose high bridging costs if new urban areas were divided by them.

Conclusion

40 The report later shows that a number of different urban patterns could be located so as to avoid the main constraints described in this chapter.

Printed image digitised by the University of Southampton Library Digitisation Unit



THURLEIGH

Figure 5.9

PLAN 1–PROPOSALS TO 1981

Printed image digitised by the University of Southampton Library Digitisation Unit

Population and employment

41 Table 5.1 gives the existing (1966) and proposed (1981) population and employment in the internal zone area without an airport. Table 5.2 shows their distribution by local authority areas. (Figure 5.9)

Urban growth

42 Northampton is the largest single planned expansion in the internal zone area with an expected increase of over 70,000 by 1981. Growth is located mainly on the airport side of the town. Wellingborough's planned expansion is substantial but on the opposite side from the airport. Corby new town is also expected to grow considerably up to 1981. Bedford and its surrounding villages will expand to a lesser extent.

Table 5.1 Thurleigh: Expected growth of population and employment in internal zone area without an airport

	1966	1981 (Plan 1)	Annual growth rate %
Population	484,900	707,700	2.5
Employment	235,500	313,800	2.0
Export surplus employment	97,700	130,200	2.0
Active population	228,600	319,600	2.2
Net commuting	+6,900	-5,800	
Participation rate	47.1	45.2	

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.2 Thurleigh: Expected population growth to 1981 by local authority area

	Population		
	1966	Increase 1966-1981	1981
I Internal zone area			
Bedfordshire			
Bedford M.B.	67,400	21,600	89,000
Kempston U.D.	11,200	5,800	17,000
Sandy U.D.	5,100	2,900	8,000
Bedford R.D.	34,300	10,200	44,500
Biggleswade R.D.(part)	1,600	400	2,000
Buckinghamshire			
Newport Pagnell R.D.(part)	6,800	1,500	8,300
Huntingdonshire & Peterborough			
St. Neots U.D.	10,100	16,000	26,000
Huntingdon R.D.(part)	900	3,900	1,200
St. Neots R.D.(part)	7,400	4,600	12,000
Northamptonshire			
Northampton C.B.	124,000	74,000	198,000
Burton Latimer U.D.	4,300	2,200	6,500
Corby U.D.	43,700	23,900	67,600
Desborough U.D.	4,300	1,000	5,300
Higham Ferrers M.B.	4,100	1,800	5,900
Irthlingborough U.D.	5,300	400	5,700
Kettering M.B.	40,600	1,500	42,100
Oundle M.B.	2,500	2,000	4,500
Raunds U.D.	4,800	1,600	6,400
Rothwell U.D.	4,800	- 200	4,600
Rushden U.D.	17,800	1,000	18,800
Brixworth R.D. (part)	4,000	500	4,500
Kettering R.D.(part)	8,600	1,100	9,700
Northampton R.D. (part)	13,500	3,300	16,800
Oundle & Thrapston R.D.(part)	10,900	700	11,600
Wellingborough R.D.	15,000	2,700	17,700
Wellingborough U.D.	31,900	42,100	74,000
TOTAL	484,900	222,800	707,700

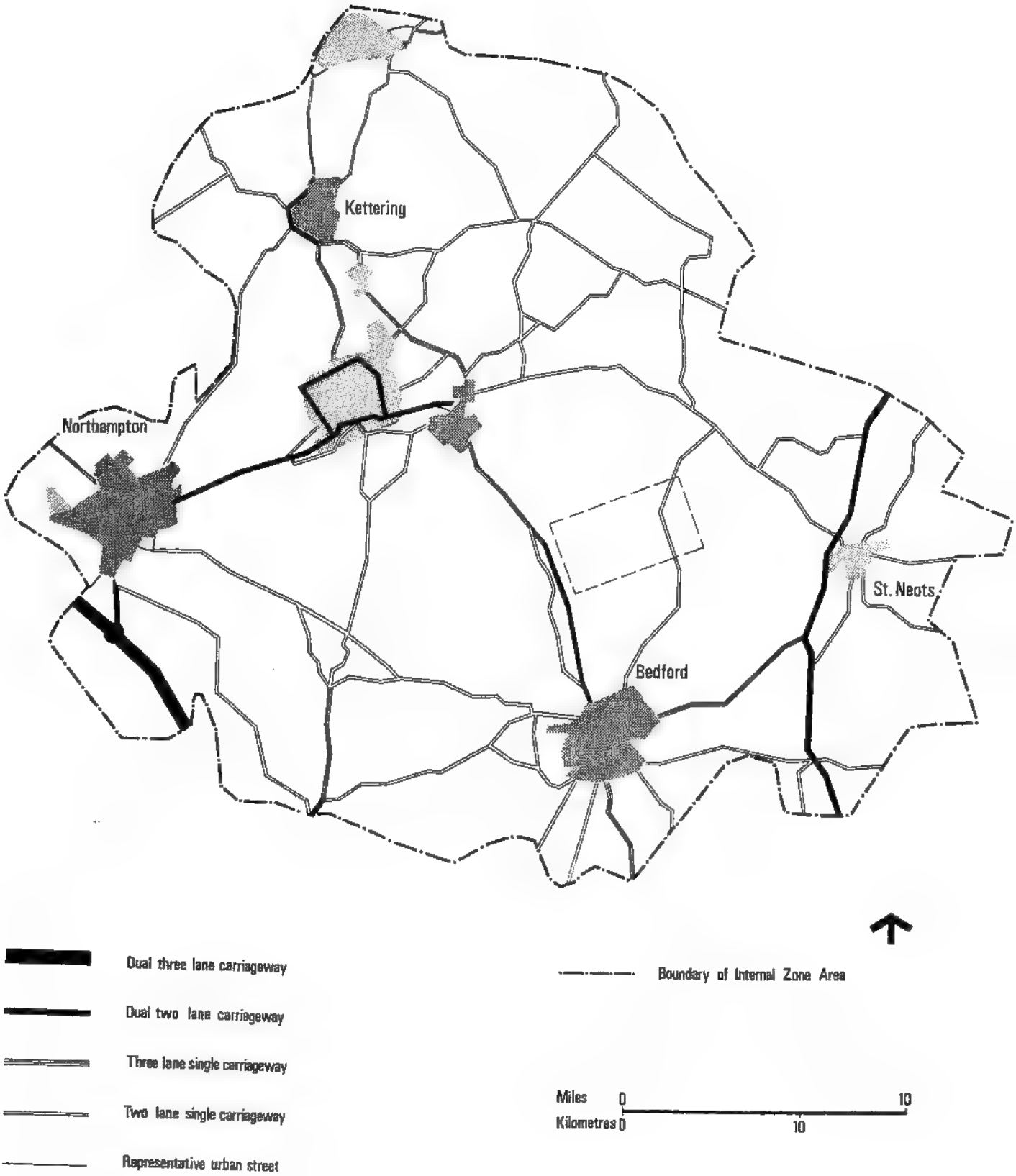
Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.2 Cont.

II Airport City area

Bedfordshire	5,500	1,600	7,100
Bedford R.D. (part)	5,500	1,600	7,100
Huntingdon & Peterborough			
Huntingdon R.D. (part)	200	none	200
St. Neots R.D. (part)	300	100	400
Northamptonshire			
Burton Latimer U.D.	4,300	2,200	6,500
Higham Ferrers M.B.	4,100	1,800	5,900
Irthlingborough U.D.	5,300	400	5,700
Raunds U.D.	4,800	1,600	6,400
Rushden U.D.	17,800	1,000	18,800
Wellingborough U.D.	31,900	42,100	74,000
Kettering R.D. (part)	2,400	200	2,600
Oundle & Thrapston R.D. (part)	5,500	300	5,800
Wellingborough R.D. (part)	8,400	1,500	9,900
TOTAL	90,500	52,800	143,300

Printed image digitised by the University of Southampton Library Digitisation Unit



THURLEIGH

Figure 5.11

PLAN 1 HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

Roads

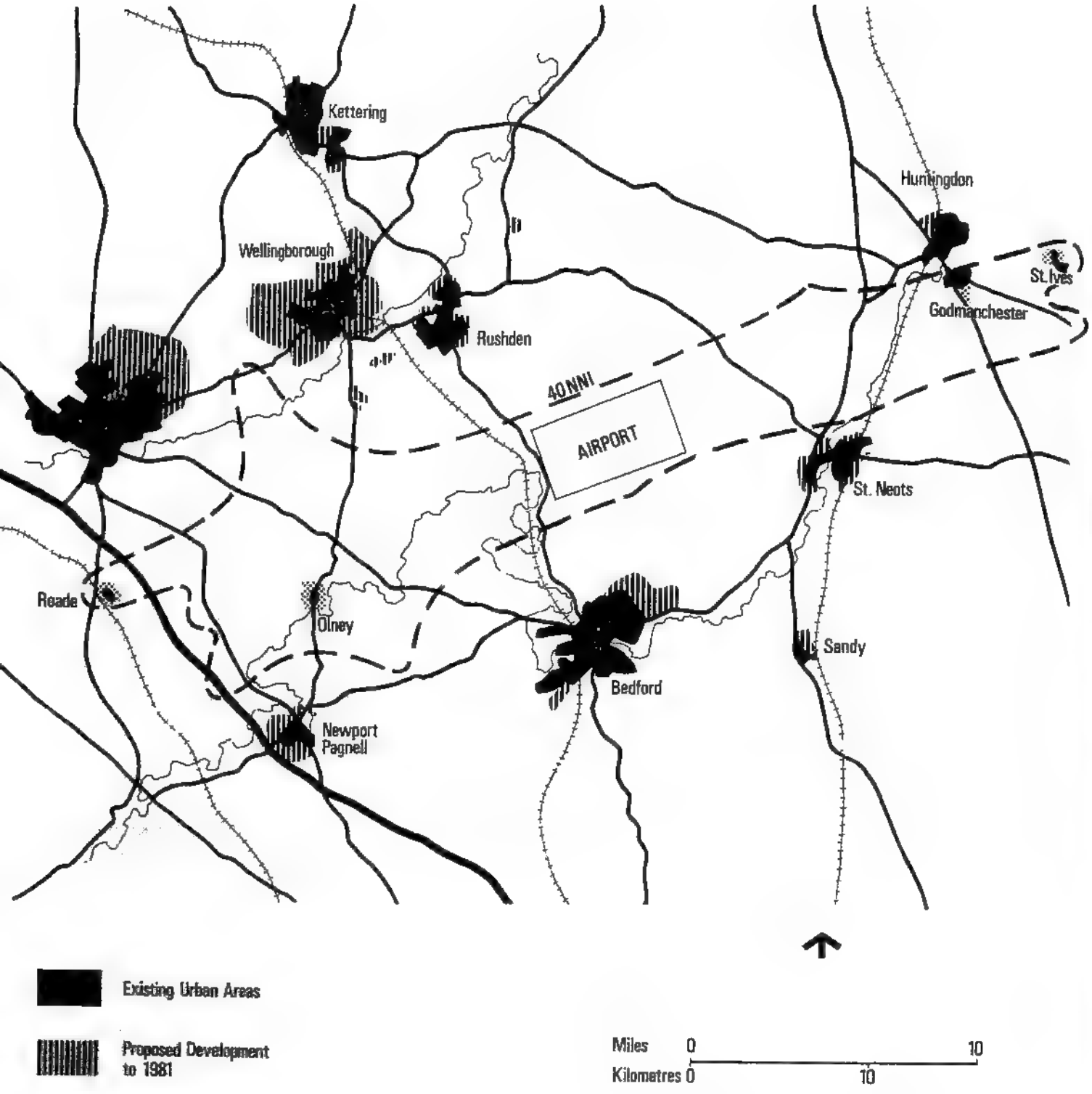
43 Estimates of the facilities which might be needed to handle the growth in traffic up to 1981 were no airport to be developed are shown in figure 5.11. In examining the limitations of the existing and committed transportation system to accommodate this traffic growth we have taken account of the various local authority proposals for highway improvement. Where these schemes are found to be justified on the basis of forecast traffic volumes they have been included in our assessment of base needs.

44 The A6 is the main traffic artery through the Thurleigh area. Forecast increases in the volume of traffic which might use this road suggest that in addition to the proposed improvements through and to the north of Bedford, further increases in capacity could be required by 1981. These could be realised by providing an additional lane as far north as Kettering. Further improvements in this north-south corridor might also be required to handle the increased interaction between Kettering and Wellingborough on the A509. Planned expansion at Northampton is also likely to give rise to a need for improving the A45 to Wellingborough. An increase in the capacity of the A428 could provide a better link between the A1 and A6 at Bedford.

New centres and planned extensions

45 There are plans for extending the centres of Northampton, Wellingborough and Peterborough as the towns grow, and additions are proposed to the centre of Bedford.

Printed image digitised by the University of Southampton Library Digitisation Unit



THURLEIGH

Figure 5.10 PLAN 1–EFFECT OF AIRPORT

Printed image digitised by the University of Southampton Library Digitisation Unit

46 The 40 Noise and Number Index (NNI) contours published by the Commission as part of the site information for the Stage II local hearings and shown on their drawings CTLA 4/2 and CTLA 4/3 extend for about 65km (40 miles) from St. Ives in the east across the A1(M) to the M1 in the west. The contours are slightly different for a two runway and a four runway airport.

47 Approximately 25 villages and small towns are affected by aircraft noise of 40 NNI and above, and especially the following:

Roade (south of Northampton)
Olney (north of Newport Pagnell)
Godmanchester (south of Huntingdon)
St. Ives (east of Huntingdon)

48 The proposed developments shown on Plan 1 that would have to be relocated if the airport were built at Thurleigh are the expansions at Roade, Olney, Godmanchester andSt. Ives. We have assumed that suitable areas outside the 40 NNI contour could be found to replace these affected areas, and that construction costs would not be significantly greater. We have not attempted to indicate suitable areas. (Figure 5.10)

Printed image digitised by the University of Southampton Library Digitisation Unit

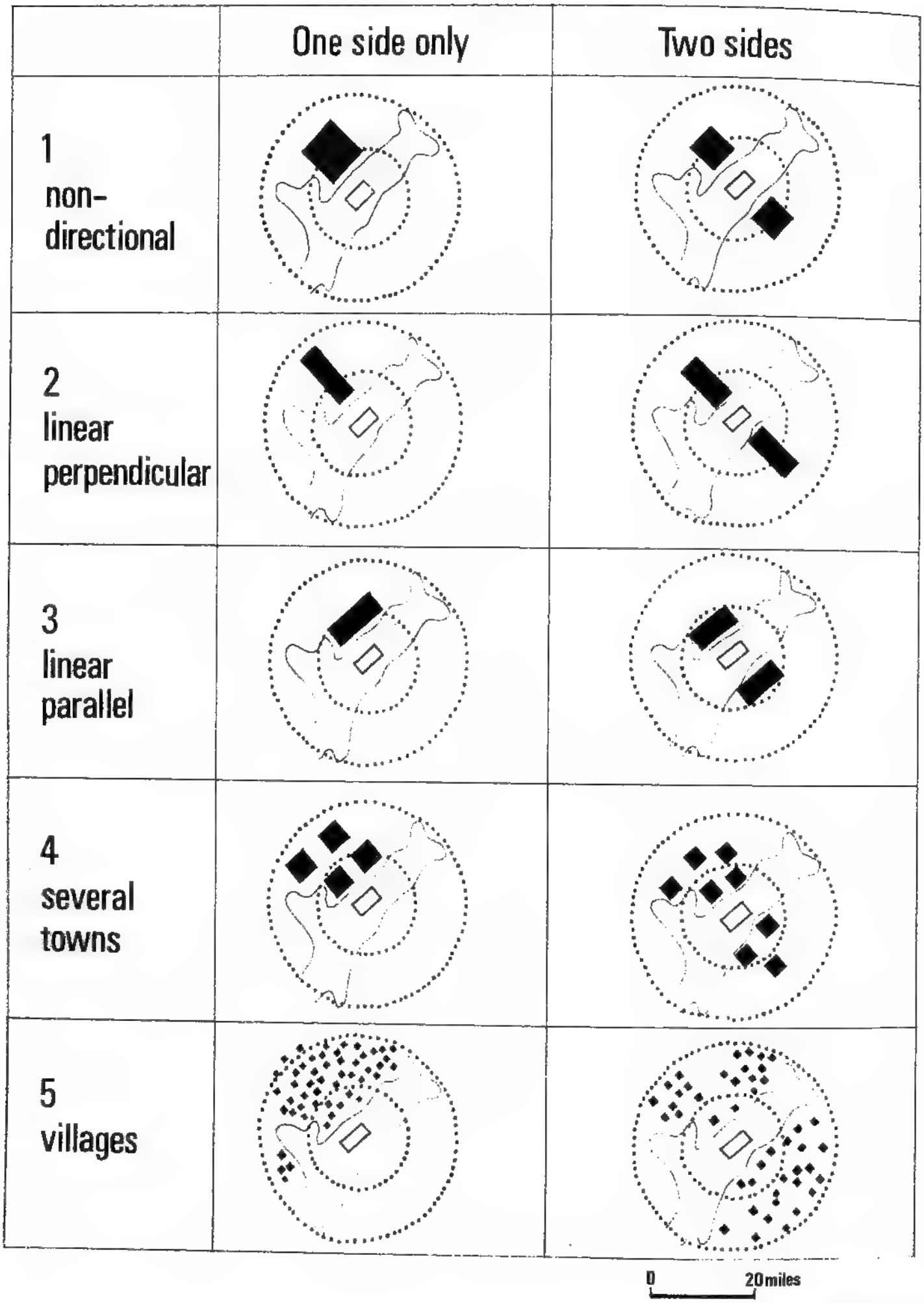
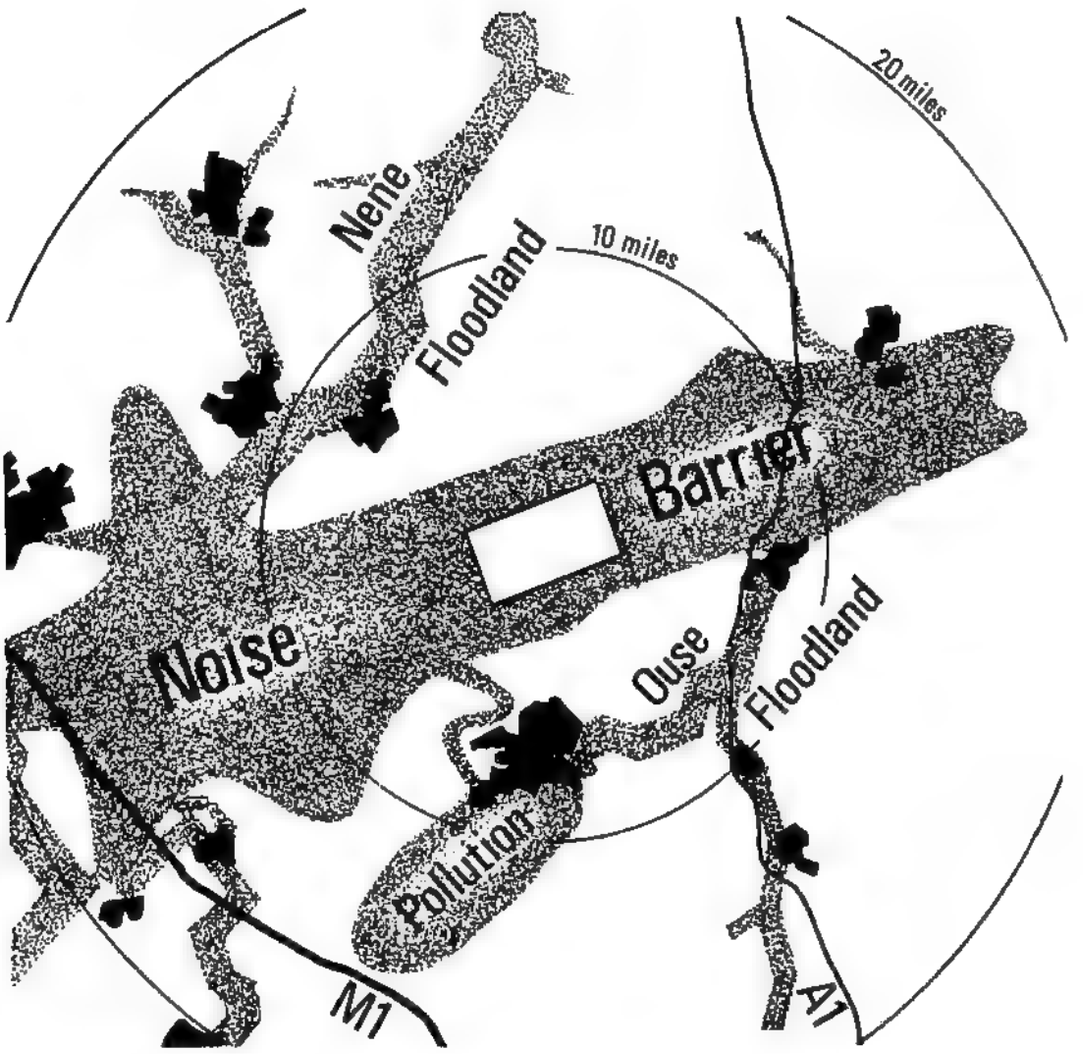


Figure 5.12 THEORETICAL URBAN FORMS

Printed image digitised by the University of Southampton Library Digitisation Unit



SHOWS CONSTRAINTS THAT DETERMINE WHICH THEORETICAL URBAN FORMS CAN BE APPLIED

miles 0 10
kilometres 0 10

THURLEIGH

Figure 5.13

LOCAL CONSTRAINTS

Printed image digitised by the University of Southampton Library Digitisation Unit

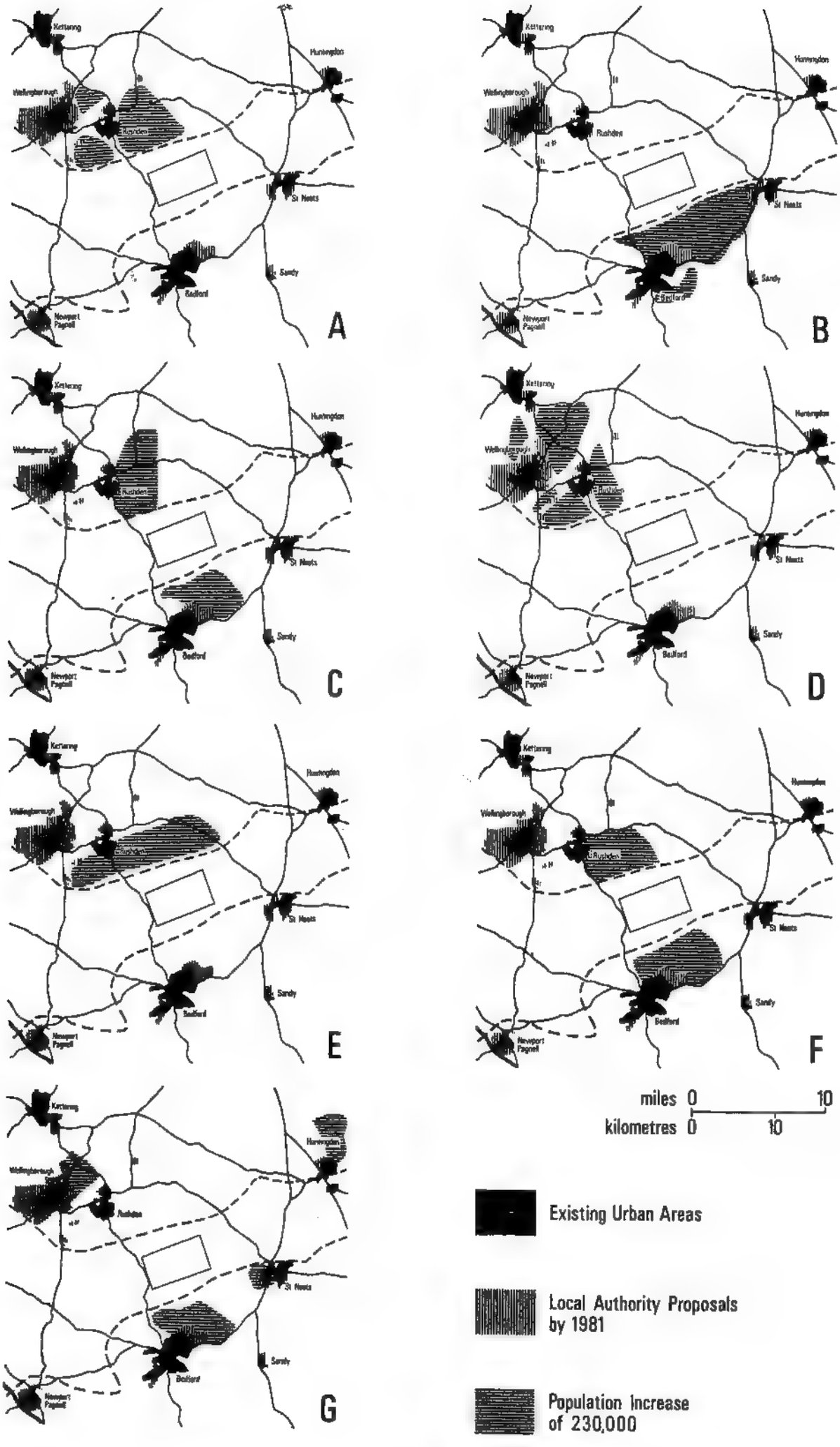


Figure 5.14

THURLEIGH
ALTERNATIVE STRATEGIES

Printed image digitised by the University of Southampton Library Digitisation Unit

49 The method of generating alternative strategies for Thurleigh was the same as that for Cublington described in part IV (chapter 5). In preparing the alternative strategies based on the theoretical forms (figure 5.12) we used an airport generated population increase of 230,000. This was the best estimate available at that stage.

50 The four acceptable theoretical forms could have three variants - north of the airport, south of the airport, or on both sides of it - making twelve possibilities in all. Only seven could be fitted into the Thurleigh area without incurring exceptional cost penalties.

51 A non-directional single town is represented by strategies A and B, and the split version by strategy C. A perpendicular linear town to the north is represented by strategy D which consolidates the group of industrial towns along A6. This would have river bridging costs, but these may be outweighed by the unusual benefits of this proposal. These include the use of poor agricultural land and the improvement of the area around Wellingborough. A perpendicular linear town to the south was rejected along with its divided variant because, owing to physical constraints (roads, railways and agriculture), they would not differ significantly from strategies B and C respectively.

52 Linear towns parallel to the airport on the north and on both sides are represented by strategies E and F respectively. One entirely to the south was rejected because of the extent of floodland and the need for several crossings of the meandering Ouse, with no obvious benefits over its counterpart to the north.

53 Finally, a dispersed pattern is represented by strategy G, which shows expansion of Bedford along with expansions of several towns to the north of the noise corridor.

54 The seven strategies are shown side by side on figure 5.14 and separately on figures 5.15 to 5.21.

Printed image digitised by the University of Southampton Library Digitisation Unit

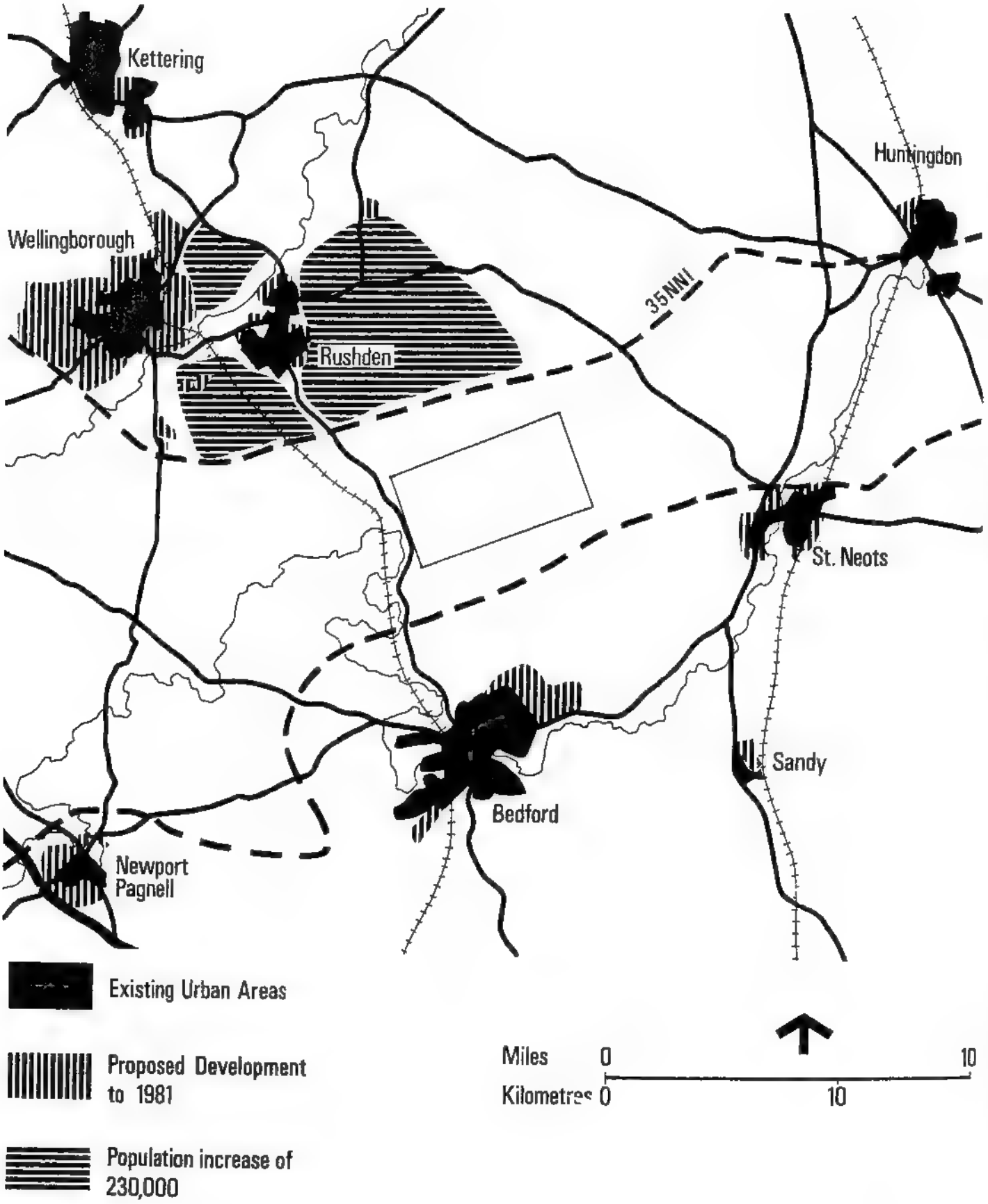


Figure 5.15

THURLEIGH STRATEGY A

Strategy A Rushden new city

55 This locates the whole of the additional population north of the site between Wellingborough and Rushden and between the latter and the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

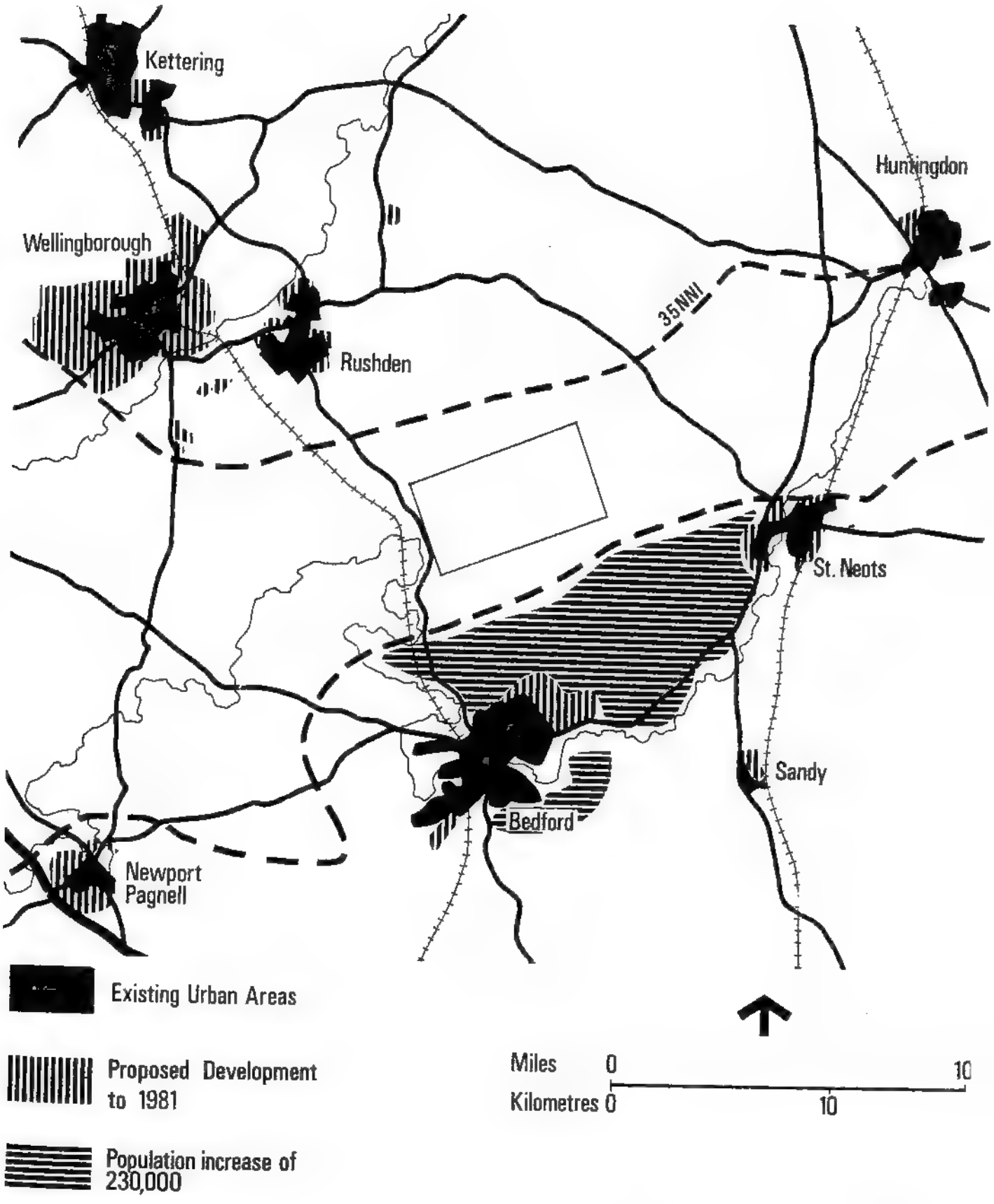


Figure 5.16

THURLEIGH STRATEGY B

Strategy B Bedford new city

56 Bedford would form the nucleus of a city stretching from A6 to A1, with expansion mainly east of the town and north of the Ouse.

Printed image digitised by the University of Southampton Library Digitisation Unit

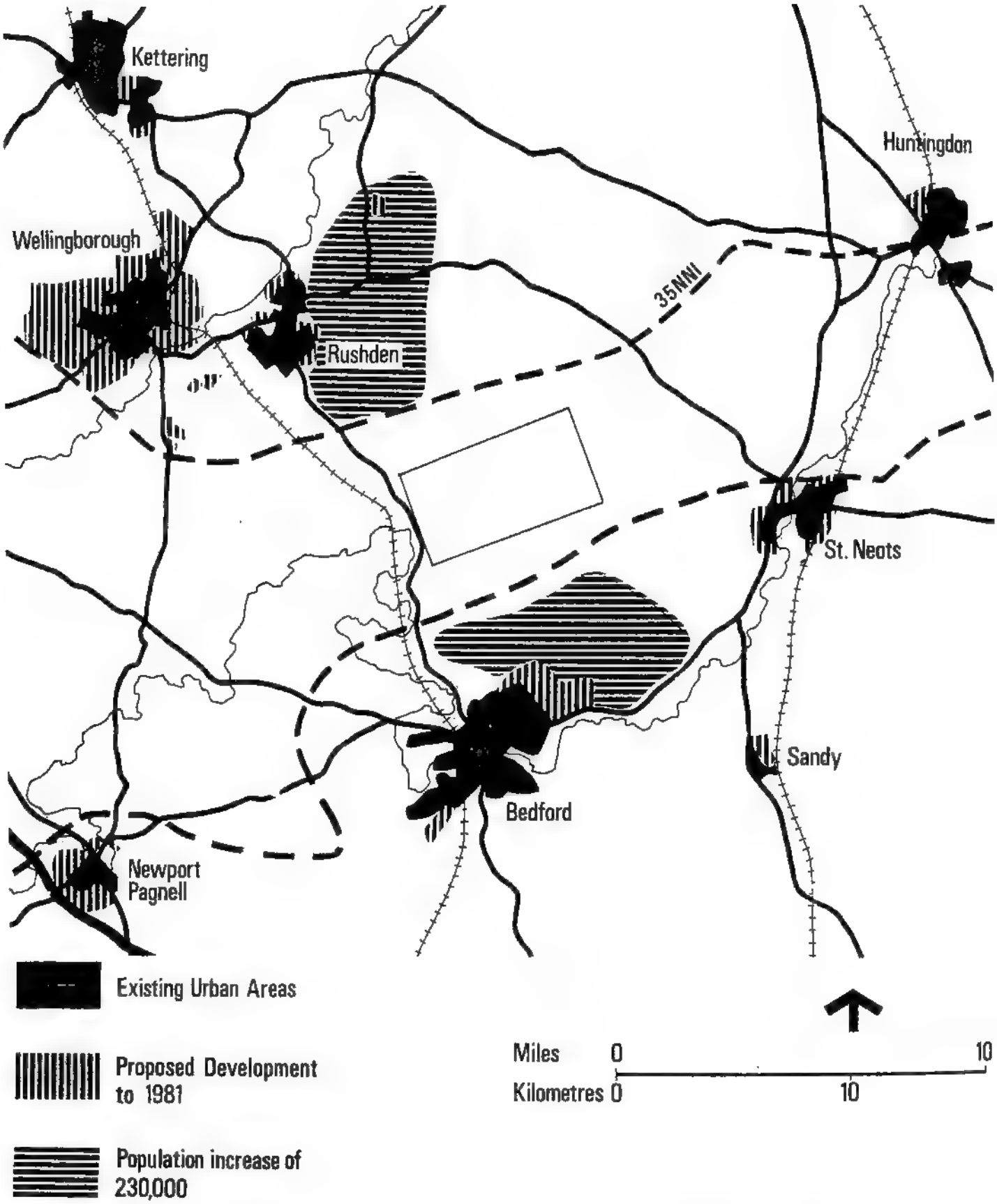


Figure 5.17 THURLEIGH STRATEGY C

Strategy C Rushden and Bedford new towns

57 The new, non-directional areas would be divided between the north and south sides of the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

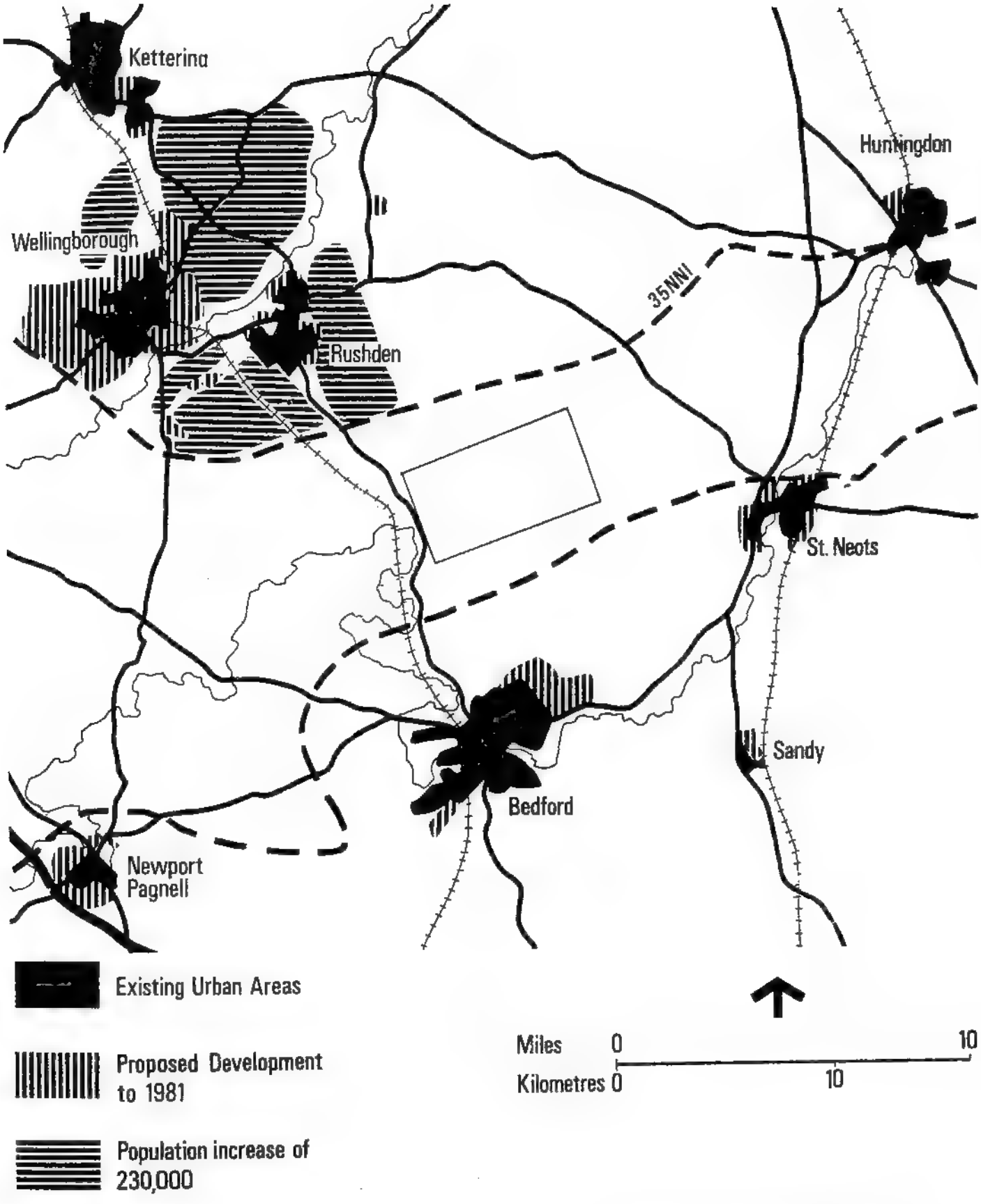


Figure 5.18

THURLEIGH STRATEGY D

Strategy D Wellingborough new city

58 This would consolidate the towns of Wellingborough and Rushden and the nearby industrial villages.

Printed image digitised by the University of Southampton Library Digitisation Unit

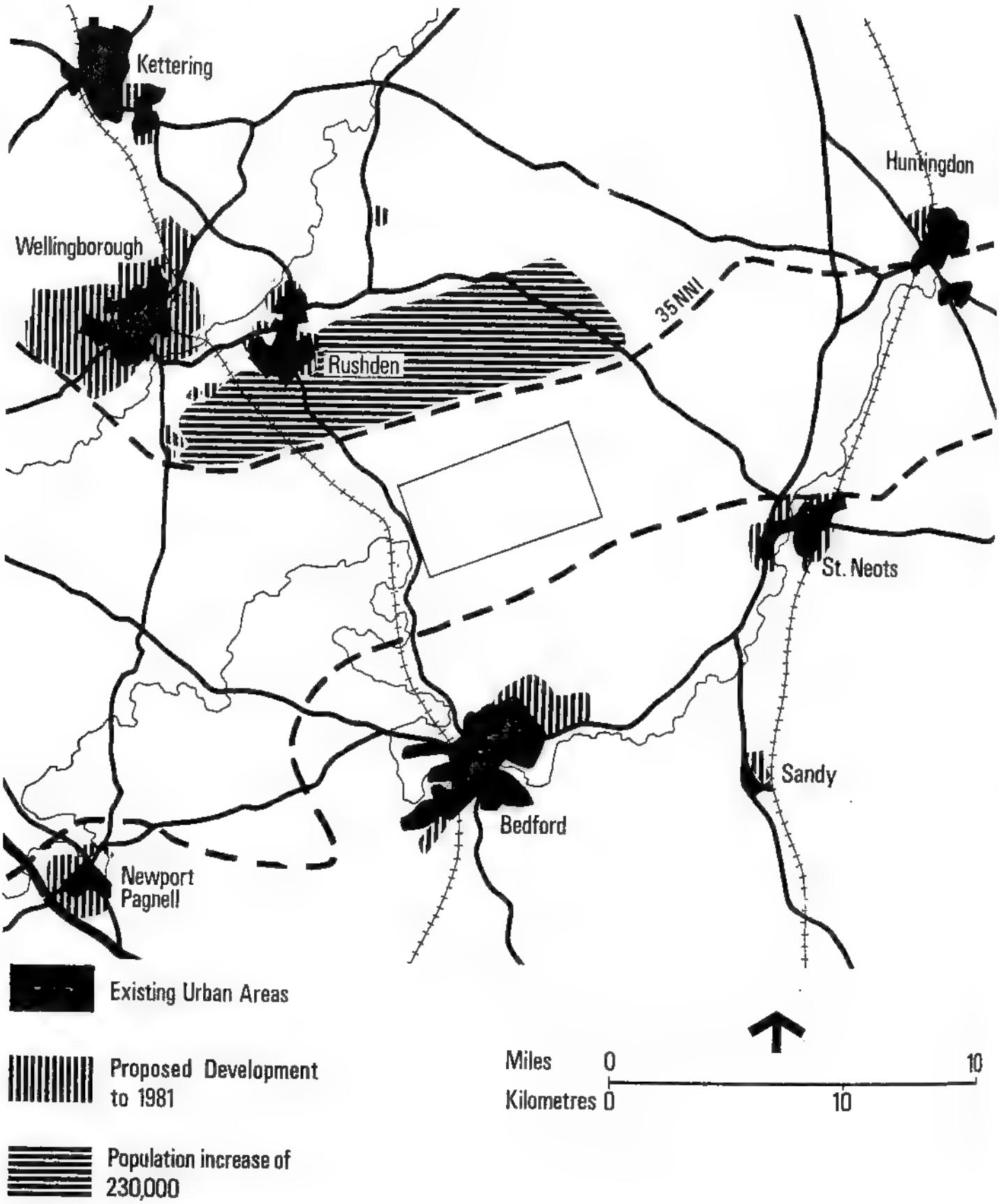


Figure 5.19

THURLEIGH STRATEGY E

Strategy E Kimbolton-Rushden linear city

59 Land in a strip from Rushden to Grafham water would be taken.

Printed image digitised by the University of Southampton Library Digitisation Unit

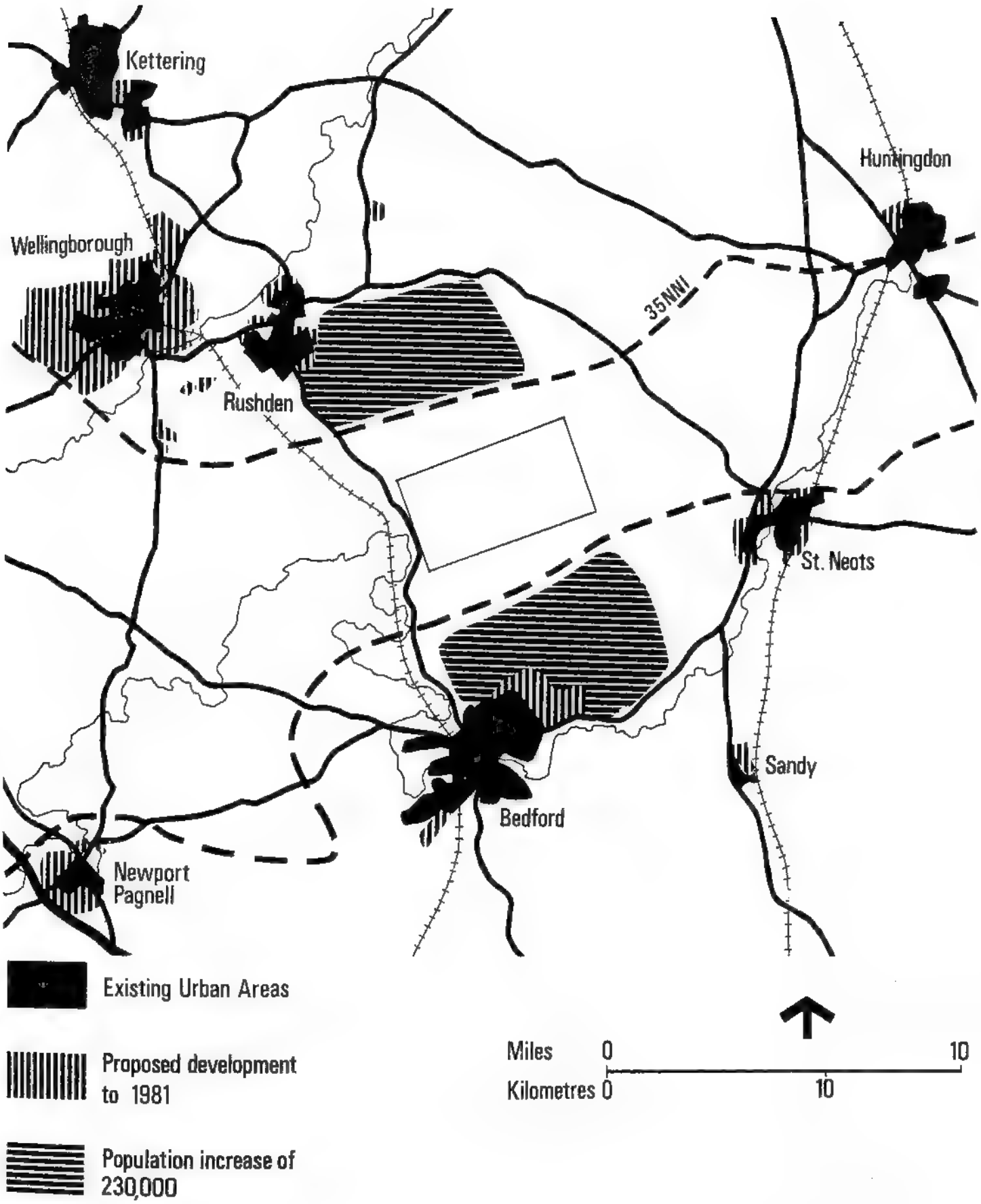


Figure 5.20 THURLEIGH STRATEGY F

Strategy F Rushden and Bedford linear expansions

60 These would be eastward expansions of the two towns on a smaller scale than in strategies B and E.

Printed image digitised by the University of Southampton Library Digitisation Unit

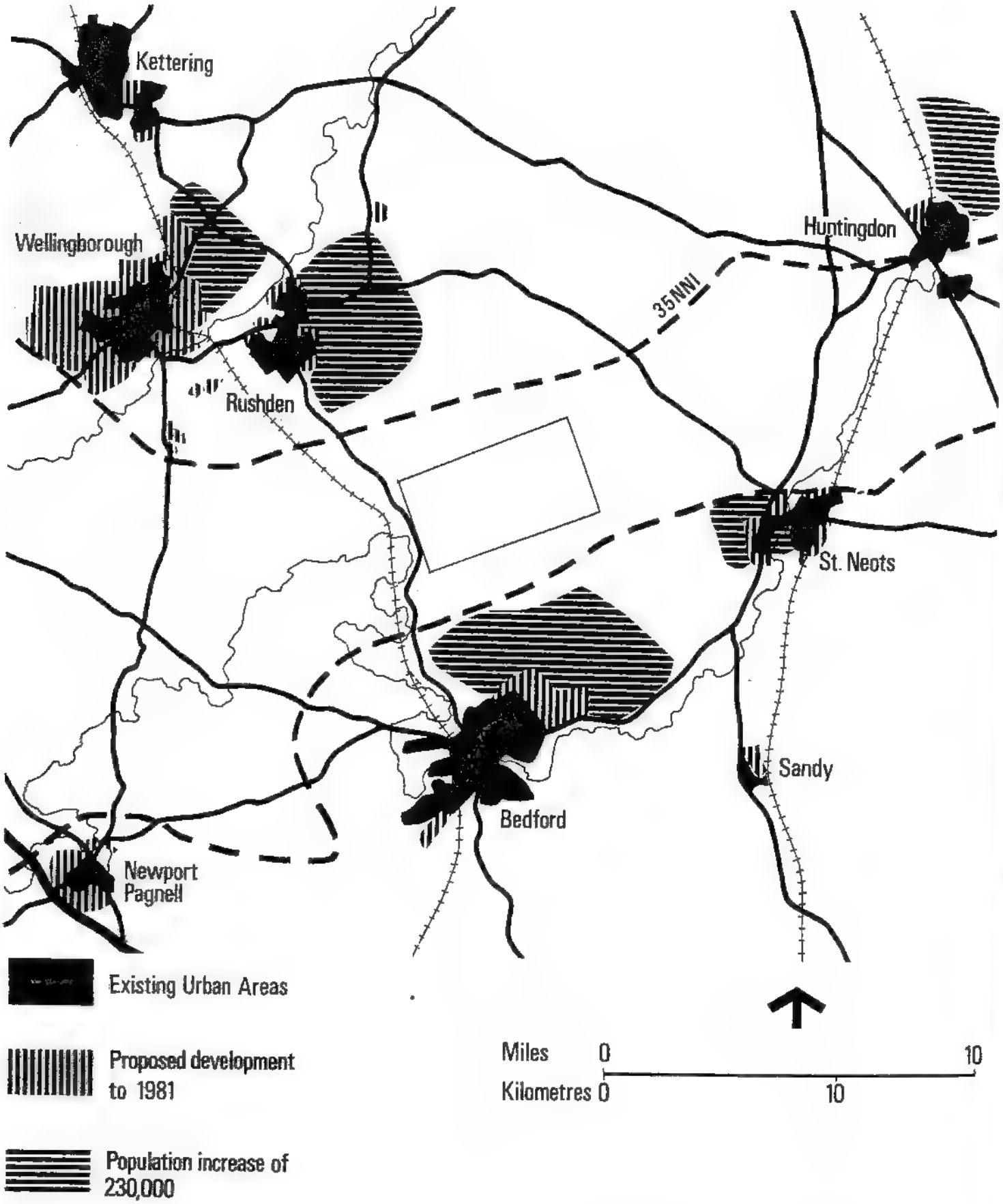


Figure 5.21 THURLEIGH STRATEGY G

Strategy G Dispersed expansions

61 Bedford, Huntingdon, Rushden, Wellingborough and St. Neots would be expanded in addition to Northampton which is already planned to grow.

Printed image digitised by the University of Southampton Library Digitisation Unit

First stage of selection

62 The ranking of the seven alternatives described in the previous chapter on each of the criteria described in part I is shown in table 5.3. No ranking is shown for the criteria concerned with the effect of existing conditions on the new urban areas except for the first - proximity to fixed installations - the other four showed no significant differences between the seven strategies. None of the strategies entailed building in places where exceptional costs would be incurred to create an acceptable local environment. The strategies appeared to tie in respect of producing future pressures on the areas.

63 It proved impossible to eliminate any of the seven alternatives on the basis of the qualitative rankings alone. Every strategy had striking advantages and disadvantages, and no pair could be found in which one clearly dominated the other. All seven were therefore costed for the second stage of the selection process.

64 We examined the implications of the Commission's alternative site for an airport at Thurleigh and concluded that it would have no major effect on the relative merits of the alternative strategies.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.3 Stage 1 assessment of alternative strategies: Thurleigh

CATEGORY	CRITERION	STRATEGY A	B	C	D	E	F	G
CAPITAL COSTS	**Construction**							
	Site development							
	Land liable to flood	0	-	0	0	0	0	-
	Abnormal ground conditions	0	-	0	-	0	0	-
	Preparation of an acceptable urban environment			equal				
	Engineering							
	Sewerage and sewage disposal	0	0	0	+	0	-	0
	Drainage and surface water disposal	0	-	+	-	0	0	+
	Undergrounding or diverting overhead transmission lines	+	--	-	0	+	-	--
	Transportation							
	Roads from urban areas airport	0	+	+	-	-	+	-
	Other roads	-	0	+	-	-	0	+
	Other							
	Provision of major service and shopping centres	+	--	0	-	++	0	-
	Land							
	Land acquisition	-	0	-	-	+	-	-
	Agriculture							
	Losses in production	0	--	--	+	-	-	0
USER COSTS	**Transportation**							
	From urban areas to airport	0	++	+	--	-	++	-
	Elsewhere in the area	0	+	-	+	-	0	0
UNMEASURED ADVANTAGES AND DISADVANTAGES	**Effect of urbanisation on existing environment**							
	Preservation of landscape	+	--	-	++	-	-	-
	Effect on environment in existing urban areas	++	0	0	++	-	0	0
	Effect of existing environment on new urban areas							
	Proximity to fixed installations	-	0	0	-	0	0	0
	Suitability for housing			equal				

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.3 Cont.

CATEGORY	CRITERION	STRATEGY A	B	C	D	E	F	G
UNMEASURED ADVANTAGES AND DISADVANTAGES	Access to existing recreational areas			equal				
	Potential for recreational development			equal				
	Contribution to new urbanisation by existing urban areas			equal				
	Other factors							
	Proximity to noise corridor	-	-	-	+	--	--	+
	Potential for long-term growth	+	--	-	+	0	-	0
	Barrier effect of airport on social patterns	0	0	--	0	0	--	-
	Population pressure			equal				
	Potential for creating second order shopping and service centre	+	-	0	+	+	0	-

KEY: ++ Considerable advantages 0 Neutral -- Considerable disadvantages
+ Some advantages - Some disadvantages

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.4 Stage 2 assessment of alternative strategies: Thurleigh

CATEGORY	CRITERION	STRATEGY A	B	C	D	E	F	G
CAPITAL COSTS	**Construction**							
	Site development							
	Land liable to flood				equal			
	Abnormal ground conditions				equal			
	Preparation of an acceptable urban environment				equal			
	Engineering							
	Sewerage and sewage disposal	0.3	1.2	2.4	0.1	2.5	6.3	ø
	Drainage and surface water disposal	0.4	0.2	0.2	0.3	0.4	0.1	ø
	Undergrounding or diverting overhead transmission lines	0.2	1.8	0.6	0.5	ø	0.7	1.0
	Transportation							
	Road links from urban areas to airport	1.8	0.4	0.9	4.1	3.1	ø	2.6
	Other road costs	7.0	3.7	0.2	6.5	10.3	3.4	ø
USER COSTS	**Transportation**							
	From urban areas to airport(capitalised)	7.7	0.7	4.6	17.8	16.7	ø	11.5
	TOTAL	17.4	8.0	8.9	29.3	33.0	10.5	15.1
UNMEASURED ADVANTAGES AND DISADVANTAGES	**Effect of urbanisation on existing environment**							
	Preservation of landscape	+	--	-	++	-	-	-
	Effect on environment in existing urban areas	++	0	0	++	-	0	0
	Effect of existing environment on new urban areas							
	Proximity to fixed installations	-	0	0	--	0	0	0
	Suitability for housing				equal			
	Access to existing recreational areas				equal			
	Potential for recreational development				equal			

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.4 Cont.

CATEGORY	CRITERION	STRATEGY A	B	C	D	E	F	G
UNMEASURED ADVANTAGES AND DISADVANTAGES	Contribution to new urbanisation by existing urban areas				equal			
	Other factors							
	Proximity to noise corridor	-	-	-	+	--	--	+
	Potential for long-term growth	+	--	-	+	0	-	0
	Barrier effect of air-port on social patterns	0	0	--	0	0	--	-
	Population pressure				equal			
	Potential for creating second order service and shopping centre	+	-	0	+	+	0	-
	Provision of major service and shopping centres	+	--	0	-	++	0	-
	Land acquisition	-	0	-	-	+	-	-
	Losses in agricultural production	0	--	--	+	-	-	0
	Transportation user costs elsewhere in the area	0	+	-	+	-	0	0

NOTE: ∅ denotes alternative with lowest cost for each component.
Figures show excess cost of other alternatives in £m.

KEY: ++ Considerable advantages
+ Some advantages
0 Neutral
- Some disadvantages
-- Considerable disadvantages

Printed image digitised by the University of Southampton Library Digitisation Unit

Second stage of selection

65 Strategies B, C and F show the lowest costs (table 5.4). All three alternatives include extensive growth to the east of Bedford. This means they use some of the best agricultural land in the area. Any further expansion to the east would encroach on some of the best agricultural land in Britain. Strategy B, and to a lesser extent C and F, also suffer from the disadvantage that it would be difficult to provide adequate third order services, either by increasing the capacity of the central area of Bedford, or by establishing a new major centre in competition with Bedford. For these reasons, strategies B, C and F were eliminated.

66 Strategy G (dispersed expansion) had the next lowest cost, but not much lower than strategy A. A difference of £2 million in a total for the costed components of some £100 million is within the likely margin of error. A comparison of the uncosted criteria was strongly in favour of A, which is superior in all respects except proximity to fixed installations, proximity to the noise corridor and transportation user costs other than those to the airport. The first factor could be largely overcome in the refinement of the plan, the second was considered of minor importance, while the differences in the third were thought to fall within the likely margin of error. Strategy G was therefore eliminated.

67 A was next compared with E. A is not only considerably cheaper but is also better than E in respect of six uncosted items. It is worse only in respect of proximity to fixed installations and provision of a major centre. In our view, these disadvantages do not outweigh the difference of £16 million in the costed components.

68 Finally, A was compared with D. A has a considerable cost advantage and is equal or superior to D in respect of all the uncosted criteria except preservation of landscape, proximity to the noise corridor, and transportation user costs other than to the airport. Again, it was concluded that these disadvantages did not outweigh the large difference in costs. Strategy A was therefore selected as the preferred strategy.

Printed image digitised by the University of Southampton Library Digitisation Unit

Population and employment

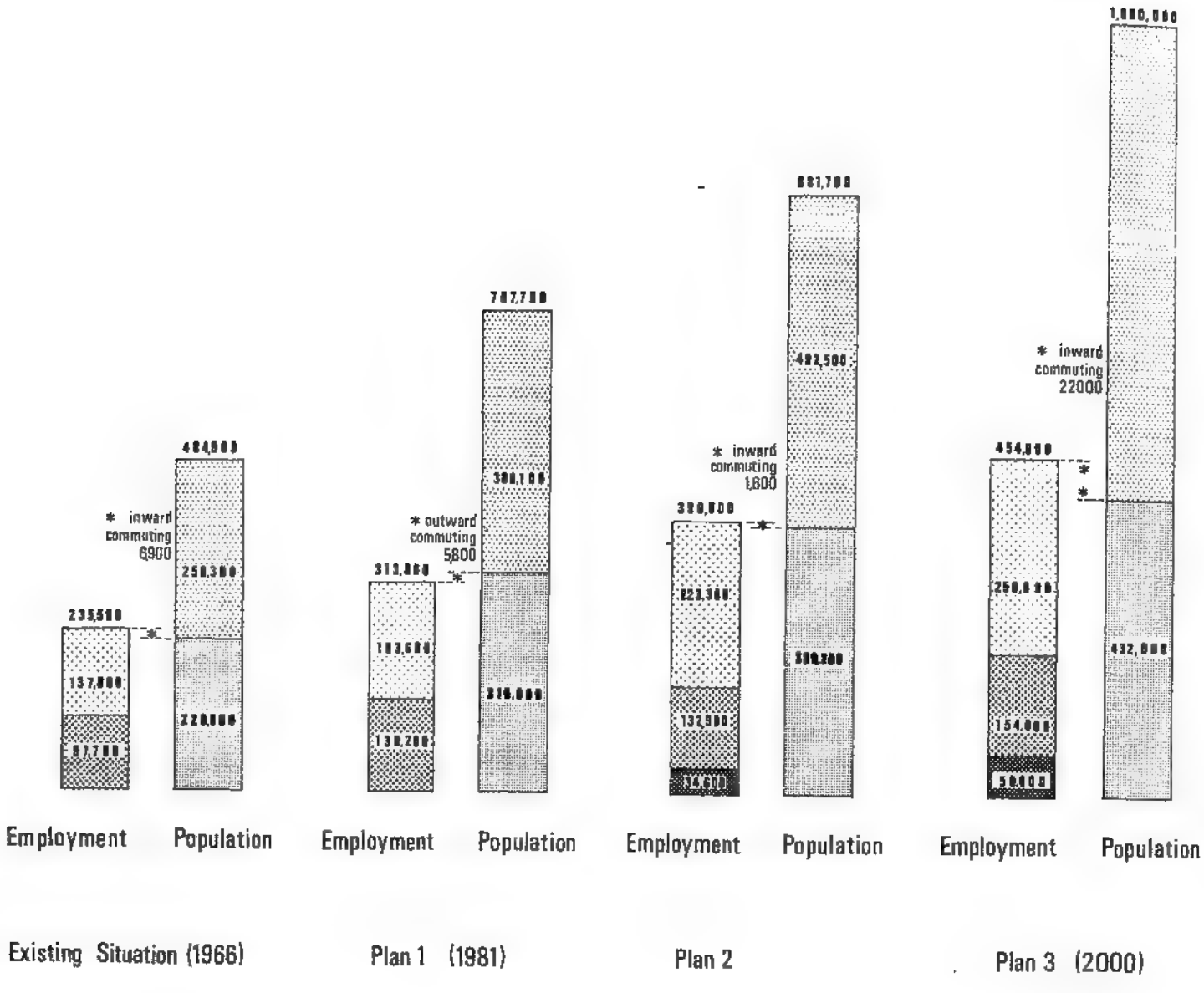
69 In the year 2000 the 65,000 airport workers, together with the changes in employment forecast for other industries established by 1981, are expected to support a population in the internal zone area of some 1,080,000 (table 5.5 and figure 5.24). Under the three basic assumptions concerning post-1981 growth rates of export surplus employment, a range of population figures was calculated. The highest estimate was 1,093,000 and the lowest was 836,000. The recommended estimate is towards the higher part of the range to allow for several important planned expansion schemes.

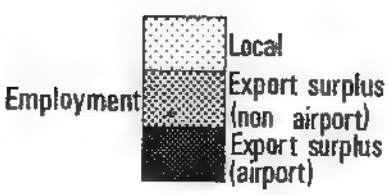
70 The total export surplus employment in the internal zone area in 2000 is estimated to be about 204,000. This includes 50,000 export surplus workers at the airport itself. This basic employment is expected to generate a further 250,000 jobs, giving the area a total employment of 454,000.

71 In 1981 the area is expected to have net outward commuting of some 5,800. Following the establishment of a new large urban area, net commuting is expected to be inward. On the basis of forecast 1981 commuting levels, the possible towns from which airport and airport-generated workers could be drawn, and experience of commuting to other airports, net inward commuting of 5 per cent of total employment has been assumed for 2000. This means that net inward commuting will be 22,000. The total economically active population will thus be 432,000.

72 In table 5.5, the first two alternative growth rates up to 2000 for industries established by 1981 are 50 per cent and 25 per cent of the 1966-81 rates used for Plan 1; the third alternative assumes no net growth of established industries after 1981.

Printed image digitised by the University of Southampton Library Digitisation Unit



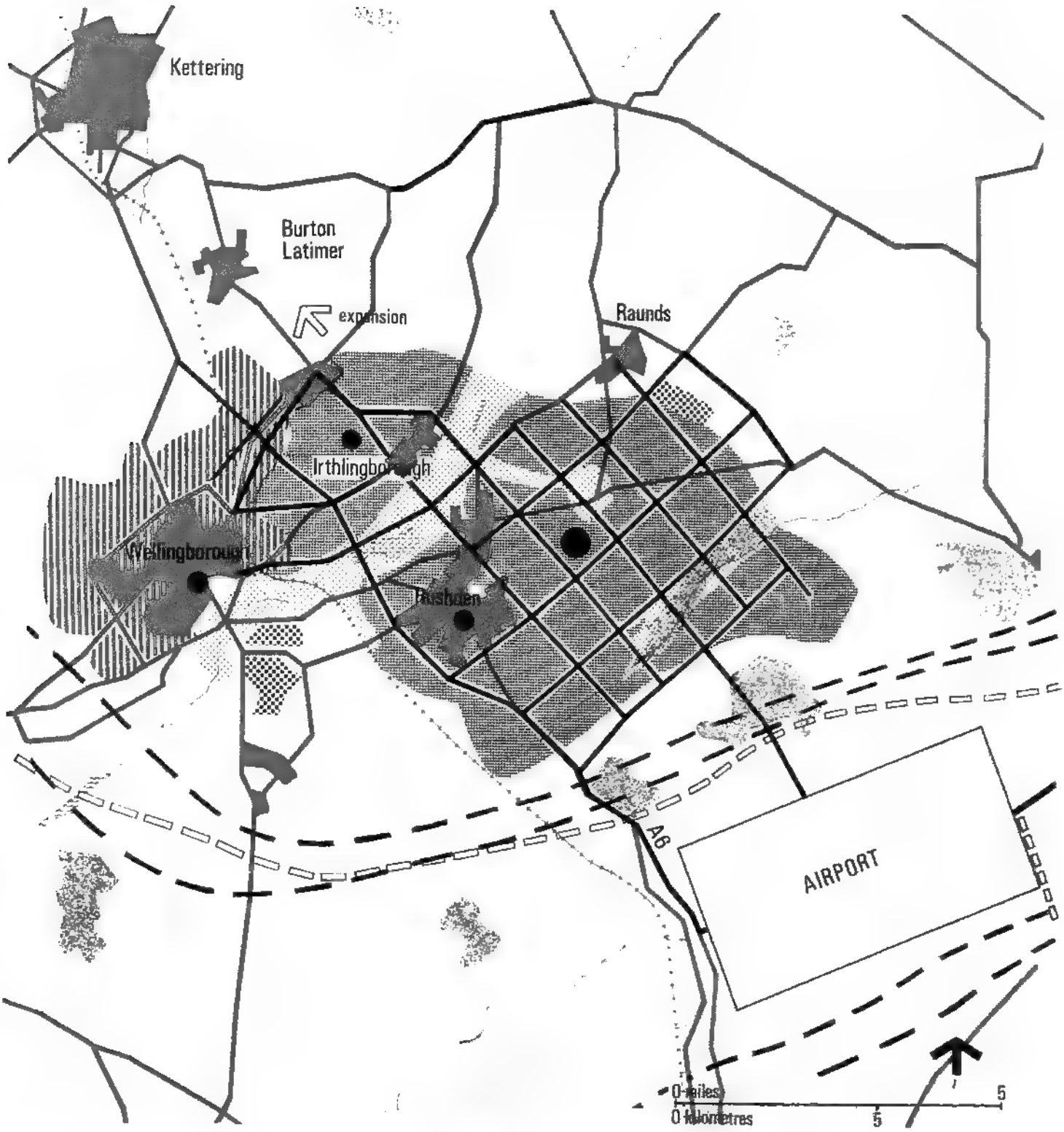


THURLEIGH

INTERNAL ZONE AREA
EMPLOYMENT AND POPULATION

Figure 5.24

Printed image digitised by the University of Southampton Library Digitisation Unit



Existing urban areas

Proposed development to 1981

Main woodland and parks

Proposed road network at 1981

Residential areas including other local uses

Major open space including other extensive uses

Major industrial areas

Town centre

Possible road link to London

District centre

Noise corridor 35 and 40 NNI

Possible line for MOT Strategy Route

Plan 3 road network

THURLEIGH

PLAN 3 – AIRPORT CITY

Figure 5.22

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.5a Thurleigh: Alternative estimates of population and employment in internal zone area for Plan 3

Growth rate per year of non-airport export surplus employment from 1981 to 2000	1.0%		0.5%		nil	
Export surplus employment -						
Non-airport	157,300		143,200		130,200	
Airport	50,000		50,000		50,000	
Total	207,300		193,200		180,200	
Total employment	460,200		428,900		400,000	
Net commuting	+23,000		+21,400		+20,000	
Economically active population	437,200		407,500		380,000	
Participation rate (%)	45.4	40.0	45.4	40.0	45.4	40.0
Population	961,800	1,093,000	896,500	1,018,800	836,000	950,000

Table 5.5b Recommended estimates

Population	1,080,000
Employment	454,000
Net commuting	+22,000
Economically active population	432,000

Concept for Plan 3

73 The increase in the population of the internal zone area between 1981 and 2000 is forecast to be 372,000. We have assumed that 112,000 of this growth would occur in Northampton which is already being expanded under the New Towns Act; it is likely to remain somewhat independent of the airport and its city, and its expansion has not been costed.

74 A population of 215,000 has been allocated to airport city, and the remaining 45,000 to minor expansions, which could include some growth in Bedford, Corby and St. Neots. Urbanisation for these 260,000 people has been costed.

Printed image digitised by the University of Southampton Library Digitisation Unit

75 The plan for airport city is based on the following aims -

i The new growth should produce short journeys to the airport

ii The existing communities and their central facilities should have their place in the new city

iii The high quality landscape towards Kimbolton should be preserved

iv The new city centre should be close enough to the airport for its facilities to be used by passengers

v The city and its centre should both be capable of further growth

vi New development should help to pull together the present scattered patterns of urban areas

vii The river Nene and its flood meadows should be used as a structuring element in the city

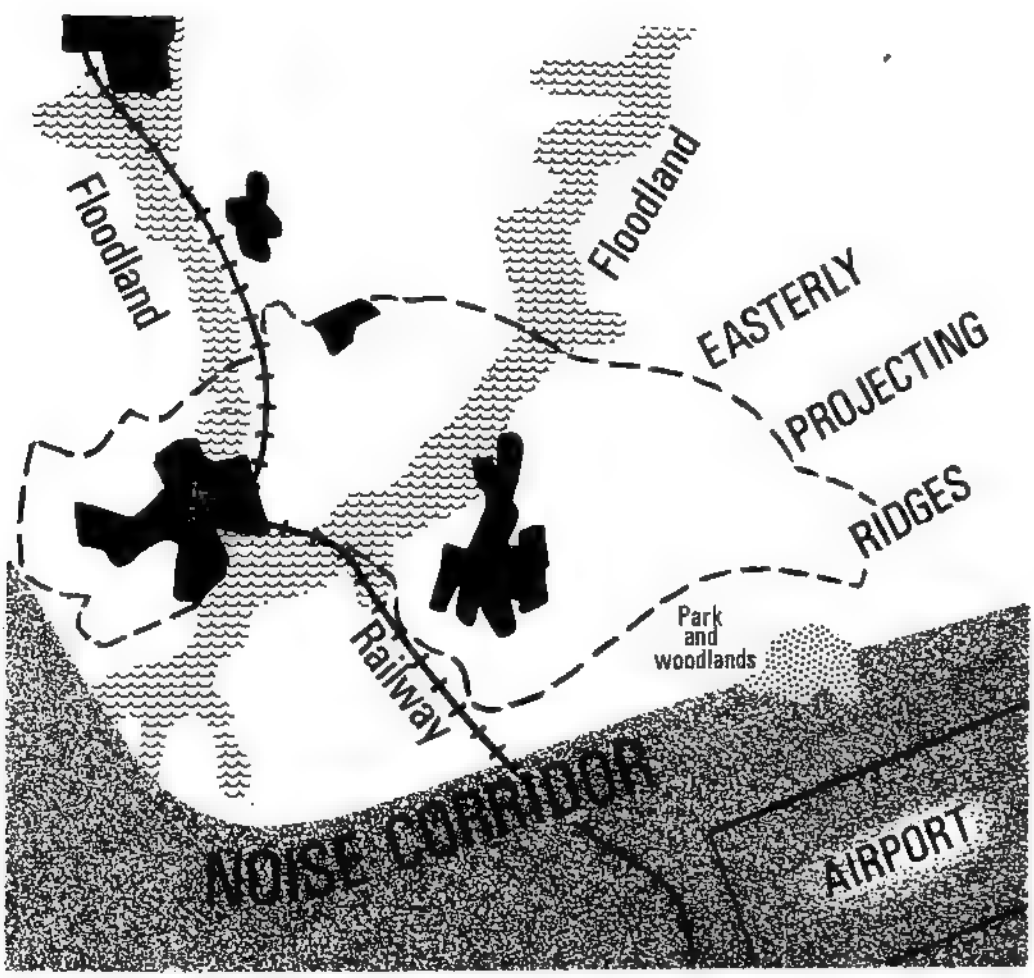
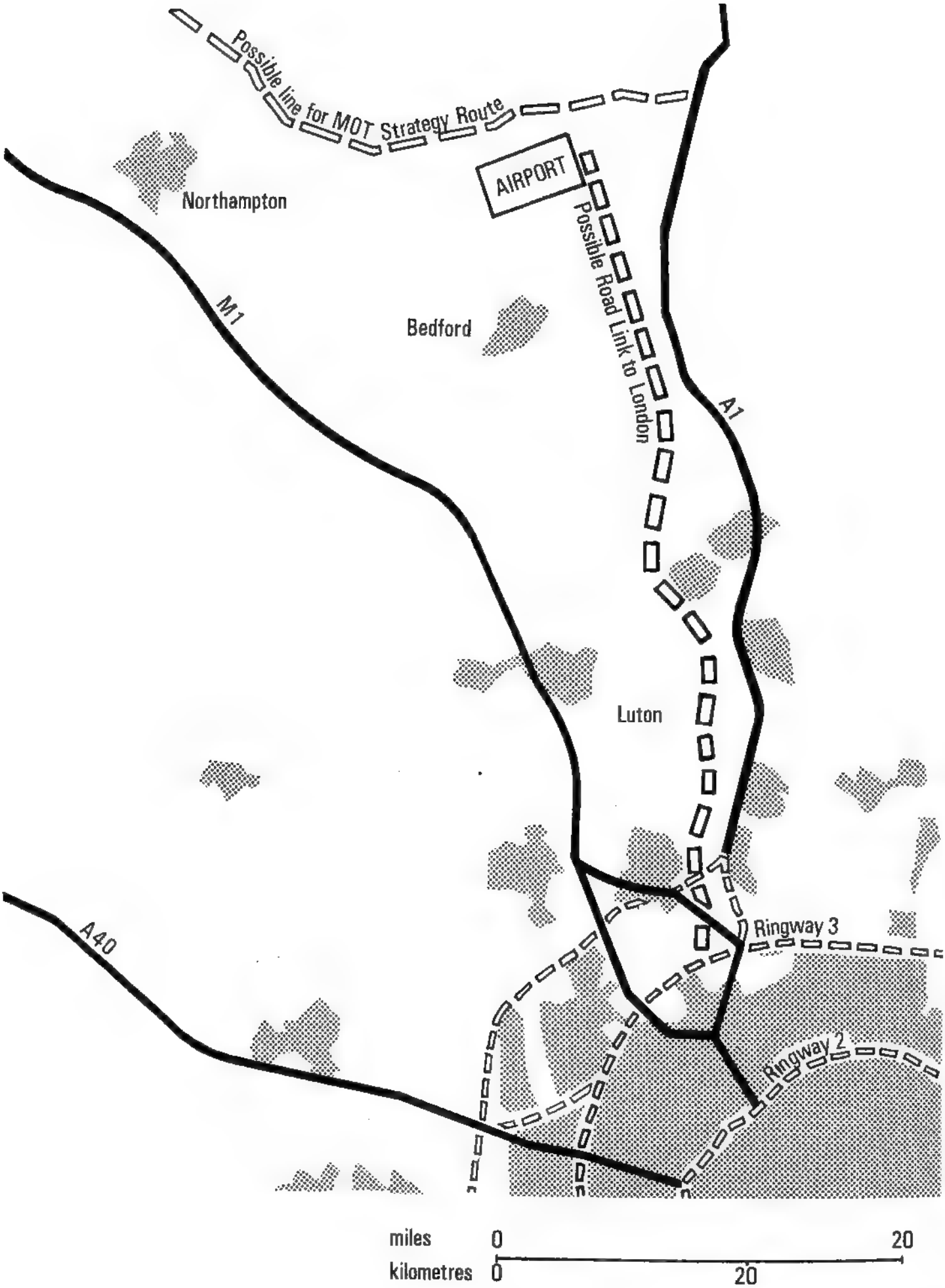


Figure 5.25 FACTORS INFLUENCING URBAN ENVELOPE

Printed image digitised by the University of Southampton Library Digitisation Unit



THURLEIGH

LINKS TO AIRPORT

Figure 5.23

Printed image digitised by the University of Southampton Library Digitisation Unit

Boundaries of urban area

76 The south-eastern edge follows the northern limit of the noise corridor and runs north of a group of existing woodlands around Melchbourne Park.

77 The north-eastern edge follows a line from Swineshead village to Raunds to Finedon over the easterly projecting ridges.

78 The western edge follows the eastern limit of the proposed Wellingborough expansion.

79 The south-western edge skirts Irchester and the quarries nearby and then abuts the main railway line from Bedford to Wellingborough.

Roads

80 Preliminary studies by Messrs. Howard Humphreys and Sons, suggest that the principal road access to the airport for passengers and visitors would approach from the direction of A1(M) and enter the site at the east end. It would thus avoid the two main access routes from the city to the airport. Since the city is north of the site, urbanisation is not affected by the requirements of access to the airport from London.

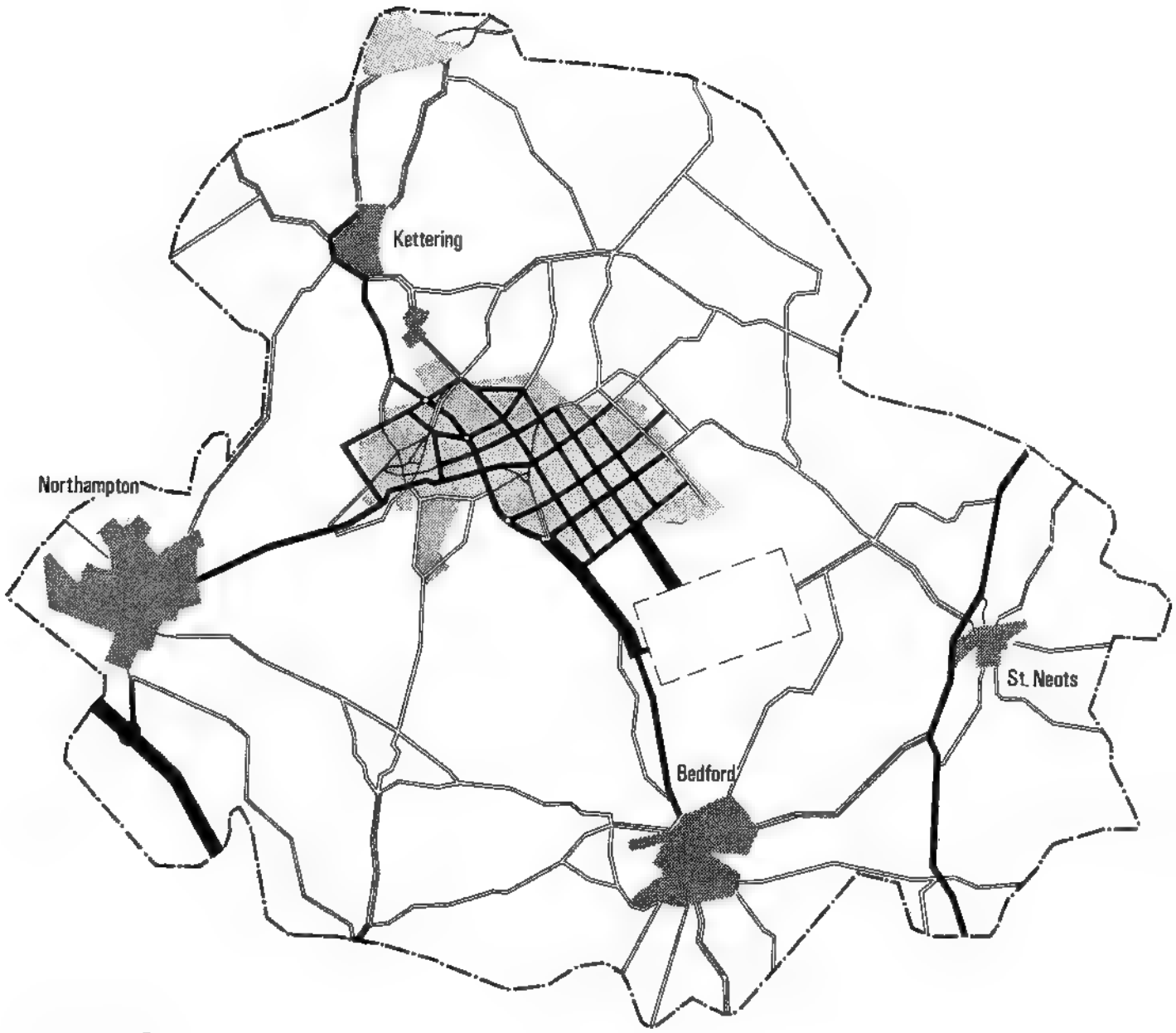
81 A major east-west route replacing the present A45 could be located in the noise corridor between the urban areas and the airport where it could be conveniently linked with both. (Figure 5.23)

82 Two dual three lane carriageways are suggested from the new urban area to the airport, one along the line of the A6, the other puncturing the north-western airport perimeter and extending back as a dual two lane carriageway facility past the new city centre.

83 St. Neots, Kimbolton and the A1 could be served by a new three lane single carriageway from the junction of the A45 and B661 into the eastern end of the airport site. Traffic from the Bedford direction could be carried by the dualled A6.

84 The proposed new development at Thurleigh straddles two main north-south routes, the A6 and the A509, and a new facility through the area in this corridor is likely to be required to cope with the through traffic for Plan 3. This limited access facility would also serve to carry the airport traffic from the Wellingborough area.

Printed image digitised by the University of Southampton Library Digitisation Unit



THURLEIGH

Figure 5.26 PLAN 3 HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

85 Within the rest of the urban development peak hour traffic needs could be served by a grid of dual carriageways with a spacing of three-quarters to one mile. Ring roads of Wellingborough and Rushden could readily be integrated into this system and the proposal could also cater for the possible level of interaction which might occur between the Wellingborough area and the new centre.

86 These road proposals together with others which might be needed elsewhere in the Thurleigh study area are shown in figure 5.2 and listed in appendix C.

Railways

87 Rail access to the airport could be from either the London Midland line from St. Pancras to Wellingborough or from the Eastern Region main line from King's Cross to the north. Airport city could be served by Wellingborough station or a new one at Wymington. We have been advised by Messrs. Livesey and Henderson that new rail links for air passengers would enter from the south and so would not conflict with proposals in this report (figure 5.23).

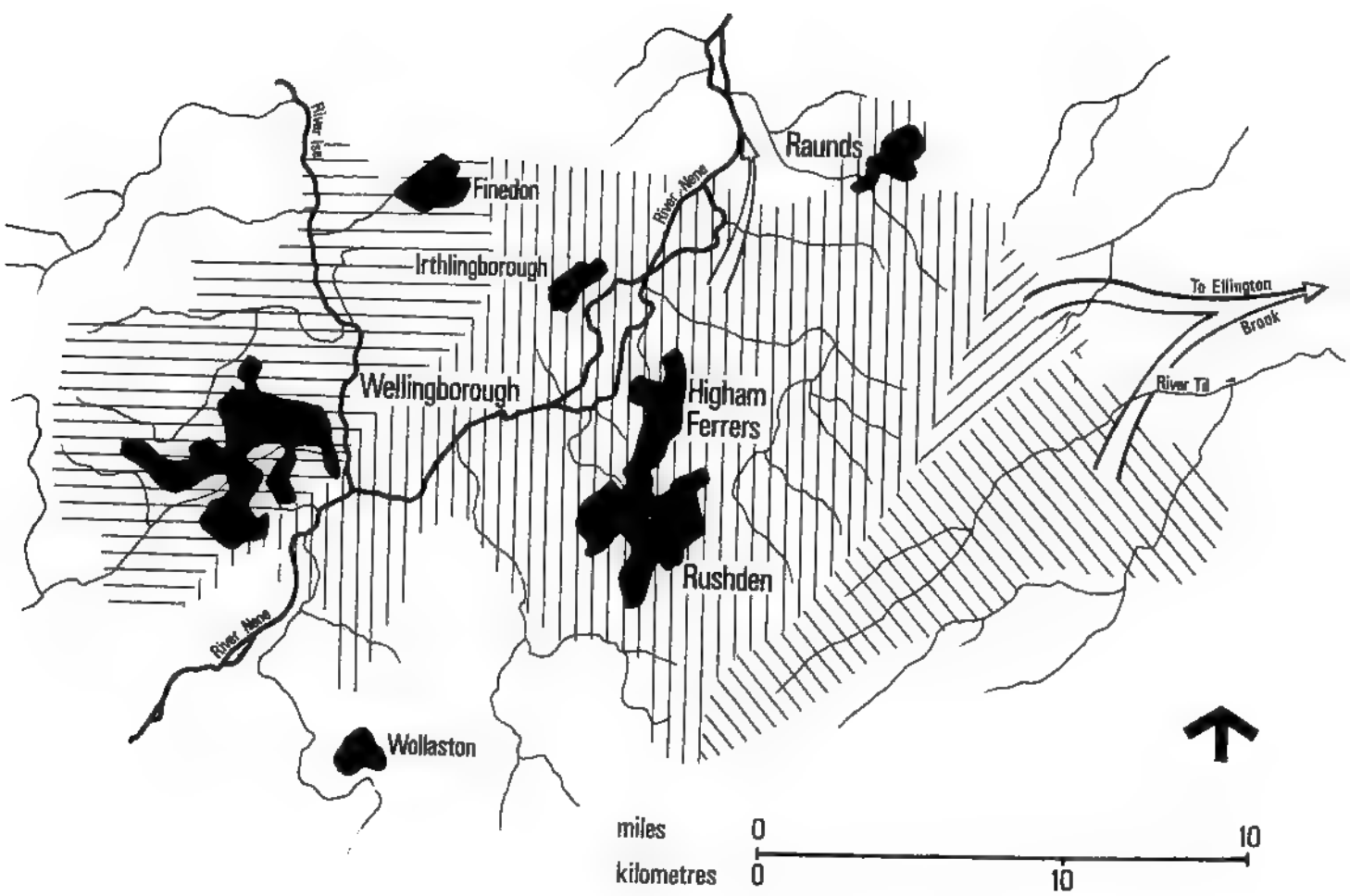
Sewerage and sewage disposal

88 The new city would be provided with separate sewerage and drainage systems. The following paragraphs describe the broad outlines which these systems would probably take. Technical matters concerned with the disposal of sewage are discussed in appendix

89 The greater part of the proposed city lies within the catchment of the river Nene, but the eastern extremity lies on the headwaters of two small tributaries of the river Great Ouse. The area is divided into three natural subcatchments as shown in figure 5.27. The westernmost part (horizontal shading) drains to the river Ise which runs southward and joins the Nene just downstream of Wellingborough. The central part (vertical shading) drains to the Nene, either directly or through small unnamed tributaries. The easternmost part (diagonal shading) drains to the river Til and an unnamed tributary of the Great Ouse.

90 There are already sewerage systems in the main centres of population in the area - Wellingborough, Irthlingborough, Higham Ferrers,

Printed image digitised by the University of Southampton Library Digitisation Unit



THURLEIGH

Figure 5.27

DRAINAGE AREAS & OUTFALL POINTS

Printed image digitised by the University of Southampton Library Digitisation Unit

Raunds and Rushden - and also in some of the villages, which drain to existing sewage treatment works. These sewerage systems would, in general, be incapable of expansion to serve a much larger population and it would probably be desirable, from the viewpoints of amenity and economy, to phase out the existing sewage treatment works. We have therefore assumed for the purpose of this study that the existing local and branch sewers would continue to serve the needs of the areas already developed, but that provision would have to be made in the new trunk sewers and sewage treatment works for the eventual acceptance of flows originating from these areas.

91 The sewers catering for the western part of the city would gravitate eastwards and the flow would be conveyed into the trunk sewers catering for the central part. These trunk sewers would gravitate north-westwards along the valley of the Nene to a point near Stanwick. Almost the whole of these two subcatchments could be served by gravity sewers but it would probably be necessary to pump the sewage from a few small lowlying areas.

92 The trunk sewers in the eastern part of the city would follow a number of small parallel valleys running generally in a north-easterly direction. It would not be desirable to establish more than one sewage treatment works in the area and the flows would be brought together by means of contour sewers and pumping to a point in the vicinity of Lower Dene.

Drainage and surface water disposal

93 The area proposed for urbanisation is drained by the network of natural watercourses shown in outline on figure 5.27. Apart from the towns along the Nene valley the three subcatchments are mainly agricultural in character. The minor watercourses are generally adequate to take the peak run-offs experienced at present without serious flooding but at a few places such as Rushden, the capacity of streams through built-up areas is restricted. The main river has a well-defined flood plain which is inundated at intervals.

94 Storm water run-off from roofs, roads and other paved surfaces in the urban areas would be conveyed by a new surface water drainage system into the local watercourses.

95 The effect of constructing impermeable surfaces over a substantial proportion of this largely agricultural area would be to greatly increase

Printed image digitised by the University of Southampton Library Digitisation Unit

THURLEIGH

Figure 5.28 AIRPORT CITY – SEQUENCE OF GROWTH

Printed image digitised by the University of Southampton Library Digitisation Unit

the rate of surface water run-off, particularly during intense thunderstorms. If the flow from the surface water drainage system was permitted to discharge into the existing watercourses without any measures to cater for these much higher peak flows there would be a sharp increase in the frequency and extent of flooding both within the new city and downstream of it. This would clearly be unacceptable and in order to prevent it happening it would be necessary to provide balancing capacity and to improve some of the channels.

96 Balancing capacity would consist of flood meadows or retention reservoirs in which peak flows would be temporarily stored, the water being released to the watercourse at a reduced rate over a period after the storm. The outline plan permits the use of the valleys for this purpose. The carrying capacity of some of the watercourses would also have to be increased, depending on the volume of balancing which could be provided economically. The overall cost of watercourse improvement would depend to a considerable extent on the amount of engineering work required in built-up areas and at culverts and bridges under roads and railways. In preparing estimates we have allowed for the cost of surface water disposal in some parts of the urbanisation, particularly at Rushden but also near Wellingborough and Raunds, being higher than elsewhere.

97 The foregoing paragraphs have dealt only with the new city and do not refer to the smaller scattered developments. These developments would not give rise to any serious sewerage or drainage problems and we have generally allowed in our estimates for them being catered for individually.

Sequence of growth

98 The proposed expansion of Wellingborough would be substantially completed by 1981. Further development to serve the airport would follow the sequence shown on figure 5.28. The distribution of the population increase in each increment is given in table 5.6.

99 Initial growth would take place south of Rushden, 10km nearer the airport than Wellingborough's expansion. This would be followed by growth to the east and then to the north of Rushden, enabling the new city centre to be established. The area between Rushden and Wellingborough would then be developed, welding them into a single city separated visually by the park alongside the Nene. This would complete Plan 2.

100 The final stages of growth would be the easternmost part of the city between Raunds and Dean which is delayed because -

Printed image digitised by the University of Southampton Library Digitisation Unit

i it would require a greater portion of a second sewage treatment works

ii it would lead to a discontinuous city if developed earlier.

The phasing means that some of the areas most conveniently located for airport workers would be developed last, but it strikes the best balance between the criteria listed in chapter 7 of part I.

Further growth

101 If more land than we have indicated should eventually be required several small areas near Raunds could be used as extensions to the new airport city. If larger areas were required, there would be two alternatives. Land near Bedford would give benefits by way of short journeys to the airport, but development there would add considerably to the congestion in Bedford which is already serious. Even if finance were available to overcome this, it might still be undesirable because it could lead to a complete change in the character of Bedford.

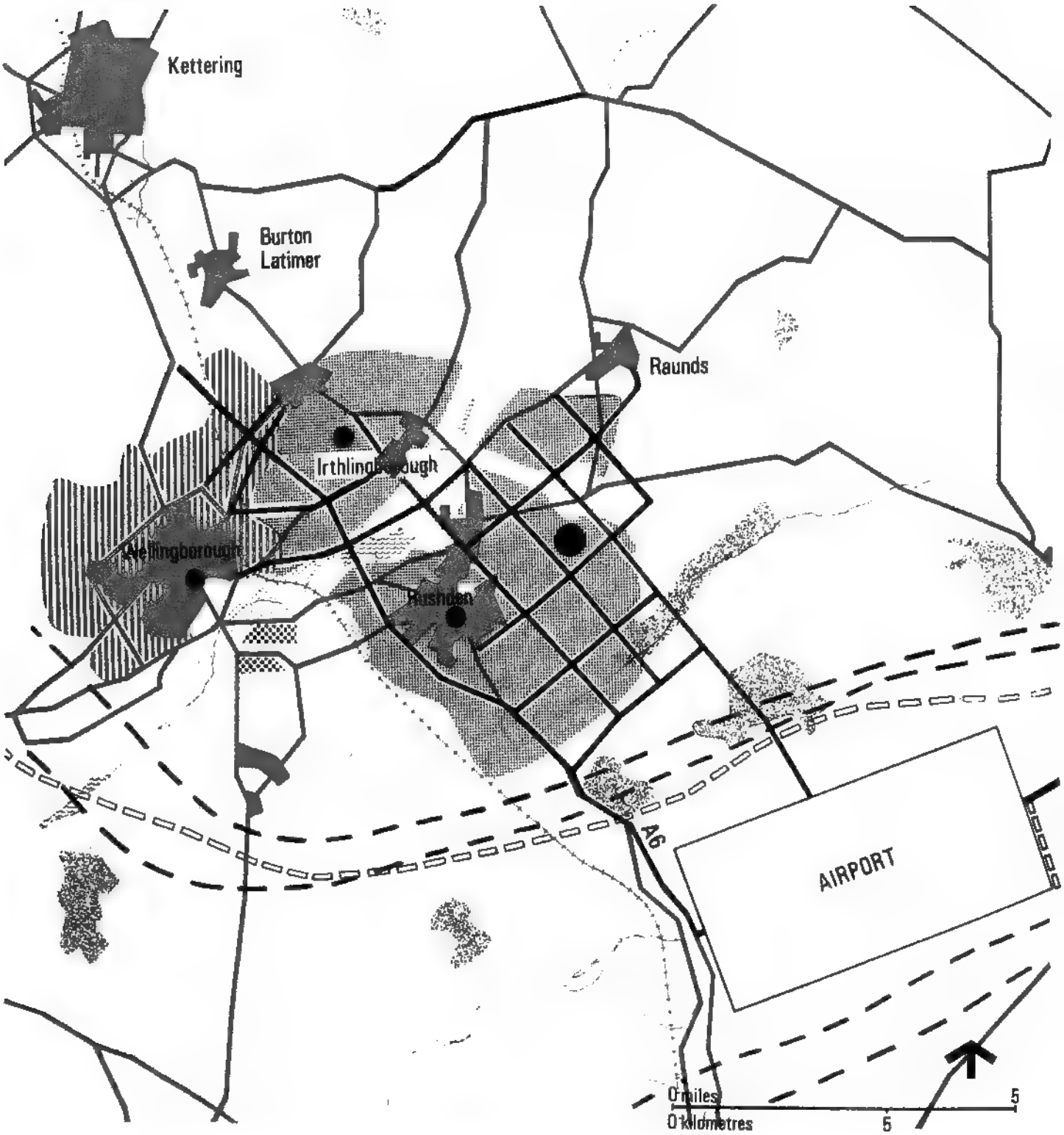
102 The alternative is to extend airport city northwards to embrace Kettering. Although this is 20km from the airport, there could be considerable benefits in improving the area around Burton Latimer and in creating a single large city which could offer an exceptionally wide range of services.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.6 Incremental growth of population assumed for costing purposes

		Airport City	Rest of internal zone area	Total
Plan 1 (1981)		143,300	564,400	707,700
1966		90,500	394,400	484,900
Thus new population up to 1981		52,800	170,000	222,800
Plan 2		299,300	582,400	881,700
Plan 1 (1981)		143,300	564,400	707,700
Thus new population in Plan 2 over Plan 1		156,000	18,000	174,000
divided into seven increments	1	22,000	3,000	25,000
	2	22,000	3,000	25,000
	3	22,000	3,000	25,000
	4	22,000	3,000	25,000
	5	22,000	3,000	24,000
	6	23,000	2,000	25,000
	7	23,000	2,000	25,000
Plan 3 (2000)		358,000	722,000	1,080,000
Plan 2		299,300	582,400	881,700
Thus new population in Plan 3 over Plan 2		58,700	139,600	198,300
Major expansion outside airport city (uncosted)		-	112,000	112,000
Remainder		59,000	27,000	86,000
divided into three increments	8	20,000	9,000	29,000
	9	20,000	8,000	28,000
	10	19,000	10,000	29,000

Printed image digitised by the University of Southampton Library Digitisation Unit



Existing urban areas

Proposed development to 1981

Main woodland and parks

Proposed road network at 1981

Residential areas including other local uses

Major open space including other extensive uses

Major industrial areas

Town centre

Possible road link to London

District centre

Noise corridor 35 and 40 NNI

Possible line for MOT Strategy Route

Plan 3 road network

THURLEIGH

Figure 5.29

PLAN 2 – AIRPORT CITY

Printed image digitised by the University of Southampton Library Digitisation Unit

Population

103 Of the 174,000 increase in population over Plan 1, we have located 156,000 in airport city and the remaining 18,000 in Bedford and in minor expansions of small towns and villages.

Area of development

104 Plan 2 (figure 5.29) comprises the first seven increments on figure 5.28. Only the extreme eastern end of airport city is excluded.

Roads

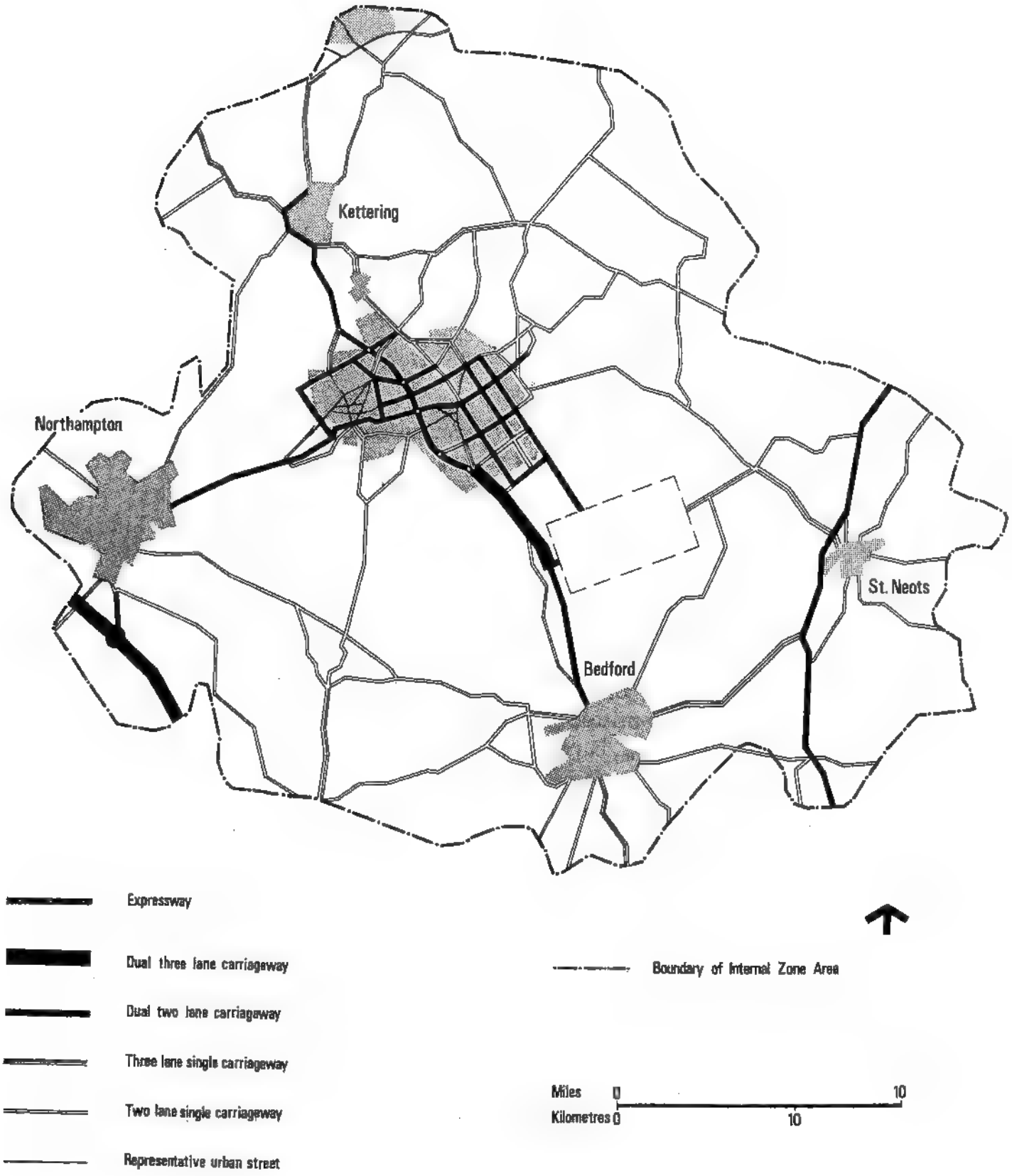
105 We do not know what parts of the links to London would be required when Plan 2 was achieved.

106 The roads within airport city represent a cutback from the Plan 3 network. Whole links are omitted where development occurs between Plans 2 and 3. No reduction of road capacity is allowed for within the Plan 2 area.

107 The main features are again the high-grade, restricted access dual carriageway along the north-south axis, and the dual carriageway for the large movements between the Wellingborough half of the city and the new centre, and in a north-south direction past the new centre to the airport.

108 To meet the peak hour traffic needs of the partially developed airport, it is likely that the improvements previously suggested for the A6 and the dual carriageway link from the new urban area would also be required at this intermediate stage. Airport work trips from other areas could be served by the A6 north from Bedford and a new link on to the A45. The principal road system which could be required to cater for the volumes of movement when the airport is operating with 45,000 employees is shown in figure 5.30 and listed in appendix C.

Printed image digitised by the University of Southampton Library Digitisation Unit



THURLEIGH

Figure 5.30 PLAN 2 HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

Construction costs

The estimated capital costs for Plan 2 minus Plan 1 are given in table 5.7, for Plan 3 minus Plan 2 in table 5.8, and for Plan 3 minus Plan 1 in table 5.9. The estimated capital cost of each increment of growth is shown in table 5.10.

The following comments on some of the components (numbered in the same way as in the tables) draw attention to factors that may cause differences in costs between urbanisation at Thurleigh and at the other three sites.

4.0 Shops, parking, site development
The estimates represent about 80 per cent of the new floor space required; the remainder would be in the existing centre of Wellingborough and has not been costed.

5.1 Roads within airport city
The relatively high cost is due in part to the need to cater for movement between the existing towns forming part of the new city. In addition, a new limited access route across the city has been included; the incidence of its high cost in the early phases is reflected in Plan 2 (table 5.7)

5.2 Roads between urban areas and airport
The estimate reflects the fact that some of the early development is further away from the airport than later development.

5.3 Roads elsewhere in internal zone area
The low estimated cost reflects the concentration of internal zone area population and employment in airport city.

6.1 Sewerage and drainage
The estimate reflects the cost of closing an existing sewage works and piping the sewage to a new works. The early phases include some spare capacity in sewage works and trunk sewers and this is reflected in Plan 2 (table 5.7).

6.2 Water
Estimate based on the construction of a pumped storage reservoir. The whole of the cost of the source works and trunk mains occurs in the first two increments and this is reflected in Plan 2 (table 5.7).

6.5 Altering overhead grid lines
No 275 kv or 400 kv lines are affected. The estimates provide for undergrounding existing 132 kv grid lines within the city area.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.7 Plan 2 minus Plan 1: estimated capital cost of construction

	Component	a Total cost	b Cost per head $\frac{a}{174,000}$
		£m	£
1.0	Residential, education, etc.	281.880	1620
2.0	Abnormal site conditions	Nil	Nil
3.0	Airport-related industry	13.385	77
4.0	Shops, parking, site development	8.945	51
5.0	Roads		
	5.1 Within airport city	14.376	83
	5.2 Between urban areas and airport	5.790	33
	5.3 Elsewhere in internal zone area	3.633*	-
6.0	Engineering services		
	6.1 Sewerage and drainage	16.067	92
	6.2 Water	19.577	113
	6.3 Gas	3.306	19
	6.4 Electricity	8.925	51
	6.5 Altering overhead grid lines	0.245	1
	6.6 Telecommunications	16.165	93
	TOTAL	388.661	£2234

* Excluded from Total and from Cost per head

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.9 Plan 3 minus Plan 1: estimated capital cost of construction

	Component	a Cost attributable to airport-generated population (260,000) **	b Cost per head $\frac{a}{260,000}$
		£m	£
1.0	Residential, education, etc	421.200	1620
2.0	Abnormal site conditions	Nil	Nil
3.0	Airport-related industry	20.000	77
4.0	Shops, parking, site development	13.250	51
5.0	Roads		
	5.1 Within airport city	18.578	71
	5.2 Between urban areas and airport	7.917	30
	5.3 Elsewhere in internal zone area	*	-
6.0	Engineering services		
	6.1 Sewerage and drainage	21.224	82
	6.2 Water	21.869	84
	6.3 Gas	5.111	20
	6.4 Electricity	12.265	47
	6.5 Altering overhead grid lines	0.245	1
	6.6 Telecommunications	26.715	103
	TOTAL	568.375*	£2186*

* Not applicable

** The sum of column c in table 5.8 and column a in table 5.7

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.8 Plan 3 minus Plan 2: estimated capital cost of construction

	Component	a Total cost	b Population associated with column a	c Cost attributable to airport population $\frac{a \times 86.000}{b}$	d Cost per head $\frac{c}{86.000}$
		£m		£m	£
1.0	Residential, education, etc	139.320	86,000	139.320	1620
2.0	Abnormal site conditions	Nil	86,000	Nil	Nil
3.0	Airport-related industry	6.615	86,000	6.615	77
4.0	Shops, parking and site development	4.305	86,000	4.305	50
5.0	Roads				
	5.1 Within the airport city	4.202	86,000	4.202	49
	5.2 Between urban areas and airport	2.127	86,000	2.127	25
	5.3 Elsewhere in internal zone area	0.498*	-	-	-
6.0	Engineering services				
	6.1 Sewerage and drainage	5.157	86,000	5.157	60
	6.2 Water	2.292	86,000	2.292	27
	6.3 Gas	1.805	86,000	1.805	21
	6.4 Electricity	3.340	86,000	3,340	39
	6.5 Altering overhead grid lines	Nil	86,000	Nil	Nil
	6.6 Telecommunications	10.550	86,000	10.550	123
			TOTAL	179.714	2090

* Excluded from Total and from Cost per head

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.10 Estimated capital cost of each increment of growth

Phase	Population				Capital cost attributable to airport-generated population			Capital cost of roads outside airport city
	Total costed		Airport-generated					
	Increment	Cumulative total	Increment	Cumulative total	Increment	Cumulative total	Cost per head	
a	b	c	d	e	f	g	e	
					£m	£m		£m
Initial	-	-	-	-	18.548	18.548	-	Nil
1	25,000	25,000	25,000	25,000	54.155	72.703	2908	1.251
2	25,000	50,000	25,000	50,000	51.388	124.091	2482	0.673
3	25,000	75,000	25,000	75,000	54.447	178.538	2381	0.540
4	25,000	100,000	25,000	100,000	51.651	230.189	2302	0.219
5	24,000	124,000	24,000	124,000	52.375	282 564	2279	0.512
6	25,000	149,000	25,000	149,000	52.173	334.737	2247	0.219
7	25,000	174,000	25,000	174,000	53.924	388.661	2234	0.219
Plan 2 minus Plan 1	174,000	-	174,000	-	388 661	-	-	3.633
8	29,000	29,000	29,000	29,000	60.641	60.641	2091	Nil
9	28,000	57,000	28,000	57,000	59.011	119.652	2099	0.498
10	29,000	86,000	29,000	86,000	60,062	179.714	2090	Nil
Plan 3 minus Plan 2	86,000	-	86,000	-	179.714	-	-	0.498
Plan 3 minus Plan 1	260,000	-	260,000	-	568.375	-	-	4.131

Printed image digitised by the University of Southampton Library Digitisation Unit

User costs

The annual costs of travel to the airport at 1968 values are -

	Plan 2	Plan 3
Journeys to work (minimum travel basis)	1.8	2.3
Commercial vehicles	2.1	2.7
Service journeys	2.6	3.5
Total	6.5	8.5

Agricultural loss

The proposed airport city at Thurleigh would occupy the following amounts of agricultural land of each grade -

		2	3	4
Plan 2 minus Plan 1	hectares	955	3,820	255
	acres	2,360	9,440	625
	per cent	19	76	5
Plan 3 minus Plan 2	hectares	840	840	-
	acres	2,075	2,075	-
	per cent	50	50	-
Total (Plan 3 minus Plan 1)	hectares	1,795	4,660	255
	acres	4,435	11,515	625
	per cent	26	70	4

The annual losses estimated by the method described in Part 1 are -

	Gross output	Net product	Value added	Gross rent
Plan 2 minus Plan 1	£757,925	£360,325	£88,218	£69,580
Plan 3 minus Plan 2	£265,600	£128,650	£40,255	£23,240
Total (Plan 3 minus Plan 1)	£1,023,525	£488,975	£128,473	£92,820

"Value Added" would probably grow at about 4 per cent compound per year at current prices.

Printed image digitised by the University of Southampton Library Digitisation Unit

Land costs

The costs of the residual land not included in the estimates of agricultural loss, estimated on the current use basis, are -

Plan 2 minus Plan 1	£725,000
Plan 3 minus Plan 2	£835,000
Total (Plan 3 minus Plan 1)	£1,560,000

The costs of all the land required for each increment of growth, on the same basis, are -

Increment	£
1	750,000
2	750,000
3	750,000
4	750,000
5	1,060,000
6	750,000
7	750,000
Plan 2 minus Plan 1	5,560,000
8	900,000
9	840,000
10	870,000
Plan 3 minus Plan 2	2,610,000
Total (Plan 3 minus Plan 1)	8,170,000

Landscape loss

The new city would occupy landscape of mainly average quality. The worst of this is near the towns and small villages on the west and the best is on the east near Dean. No landscape of exceptional quality and only a small area of high quality are needed. The areas occupied by the increments are in acres with equivalent number of hectares in brackets.

Printed image digitised by the University of Southampton Library Digitisation Unit

Landscape Categories:	High	Average	Panoramic (part of average)	Total
Increment				
1		1,800 (730)		1,800 (730)
2		1,850 (750)		1,850 (750)
3		1,850 (750)		1,850 (750)
4		1,900 (770)		1,900 (770)
5		1,900 (770)		1,900 (770)
6		1,900 (770)		1,900 (770)
7		1,800 (730)	300 (120)	1,800 (730)
Total Plan 2 minus Plan 1		13,000 (5,260)	300 (120)	13,000 (5,260)
8		1,600 (650)		1,600 (650)
9	80 (30)	1,620 (650)		1,700 (680)
10		1,600 (650)		1,600 (650)
Total Plan 3 minus Plan 2	80 (30)	4,820 (1,950)	0	4,900 (1,980)
Total Plan 3 minus Plan 1	80 (30)	17,820 (7,210)	300 (120)	17,900 (7,240)

Benefits

The estimated annual rents of offices and industry in the year 2000 (at 1969 values) for the airport-generated population are £2.7 million, and those of industry for the remainder of the population in the internal zone area are £30.8 million.

The estimated annual rents of retail floor space in new centres are £1.1 million at the completion of Plan 2 and £1.8 million at the completion of Plan 3.

Printed image digitised by the University of Southampton Library Digitisation Unit

PART VI: COMPARISON OF AIRPORT URBANISATION PLANS

Llewelyn-Davies, Weeks, Forestier-Walker and Bor.

Shankland, Cox and Associates

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

PART VI - COMPARISON OF AIRPORT URBANISATION PLANS

Introduction	page 1
Population, employment and commuting	1
Form of airport cities	4
Subregional location of airport cities	7
Capital costs	
Overall comparison	7
Incremental capital costs	12
Sewerage and sewage disposal	13
Drainage and surface water disposal	14
Roads	14
User costs	
Transportation	16
Effect of discounting costs	17
Agricultural loss	17
Land costs	20
Landscape loss	22
Environmental improvement	22
Recreational opportunities	23
Benefits	
Rents for retail and service floorspace	24
Rents for industrial and office floorspace	26
Rents for residential areas	26
Accessibility to airport city	27
Airport links to London	28
Potential for further growth	29

Printed image digitised by the University of Southampton Library Digitisation Unit

FIGURES

6.1	Subregions of airport cities	page 6
6.2	Extract from South East Strategy	30

TABLES

6.1	Population forecasts for the internal zone areas	page 2
6.2	Population forecasts for the airport cities	
6.3	Employment forecasts for the internal zone areas	4
6.4	Capital costs per head for Plan 2 minus Plan 1	8
6.5	Capital costs per head for Plan 3 minus Plan 2	9
6.6	Capital costs per head for Plan 3 minus Plan 1	10
6.7	Summary of capital costs per head	11
6.8	Principal differences in capital cost per head	11
6.9	Incremental capital costs	12
6.10	Annual user costs of travel to airport	16
6.11	Area of agricultural land required for airport cities	18
6.12	Annual financial agricultural loss	19
6.13	Cost of land required for urbanisation	20
6.14	Areas used for calculating the cost of land	21
6.15	Cost of residue of land required for urbanisation	22
6.16	Area of land required graded by landscape quality	23
6.17	Annual rent for retail and service floorspace	25
6.18	Annual rent for residential areas	27

Printed image digitised by the University of Southampton Library Digitisation Unit

1	Summary of Plans 2 and 3	page	5
2	Subregional setting		9
	Internal zone area		9
	Geology relief		9
	Drainage		9
	Agriculture		11
	Communications		11
	Settlement pattern		13
	Landscape		15
	Engineering services		19
	Mineral workings		19
	Other constraints		19
	Conclusion		19
3	Plan 1 - proposals up to 1981		21
	Population and employment		21
	Urban growth		21
	Roads		25
	New centres and planned extensions		25
4	Proposals affected by 40 NNI contour		29
5	Alternative strategies		31
	Theoretical urban forms		31
	Application to site		34
6	Selection of preferred strategy		41
	First stage of selection		41
	Second stage of selection		44
7	Plan 3 - development of preferred strategy		49
	Population and employment		49
	Concept for Plan 3		49
	Boundaries of urban area		53
	Growth outside airport city		53
	Roads		55
	Railways		59
	Sewerage and sewage disposal		59
	Drainage and surface water disposal		59
	Sequence of growth		61
	Further growth		62
8	Plan 2		65
	Population and employment		65
	Area of development		65
	Roads		65

Printed image digitised by the University of Southampton Library Digitisation Unit

Costs and benefits page 67

Construction costs 67
User costs 72
Agricultural loss 72
Land costs 17
Landscape loss
Benefits

Printed image digitised by the University of Southampton Library Digitisation Unit

ILLUSTRATIONS

Figure

4.1	Subregional setting	page	5
4.2	Internal zone area		8
4.3	Land drainage		10
4.4	Agriculture		12
4.5	Existing communications		14
4.6	Current landscape policies		16
4.7	Landscape appraisal		17
4.8	Other constraints		18
4.9	Plan 1 - proposals to 1981		20
4.10	Plan 1 - effect of airport		21
4.11	Plan 1 - highway requirements		24
4.12	Theoretical urban forms		30
4.13	Local constraints		32
4.14	Alternative strategies		33
4.15	Strategy A		35
4.16	Strategy B		36
4.17	Strategy C		37
4.18	Strategy D		38
4.19	Strategy E		39
4.20	Strategy F		40
4.21	Plan 3 - airport city		51
4.22	Links to airport		54
4.23	Internal zone area - employment and population		48
4.24	Factors influencing urban envelope		52
4.25	Plan 3 - highway requirements		56
4.26	Drainage areas and outfall points		58
4.27	Airport city - sequence of growth		60
4.28	Plan 2 - airport city		64
4.29	Plan 2 - highway requirements		66

Printed image digitised by the University of Southampton Library Digitisation Unit

Figure 4.1 CUBLINGTON SUBREGIONAL SETTING

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 1: SUMMARY OF PLANS 2 AND 3

1 The preferred urban strategy for an airport at Cublington is to concentrate the bulk of new growth in an enlarged Milton Keynes, bringing its total population to 410,000 in the year 2000, as opposed to the quarter million at present proposed. The current designated area covers 8,900 hectares (21,900) acres and we have assumed that for Plan 1 (figure 4.9) some 3,850 hectares (9,500 acres) of Milton Keynes including Bletchley, would be developed by 1981. The extension for airport city, which would take the form of a narrow limb on the airport side of Milton Keynes, would bring the total land developed for Plan 3 to 13,280 hectares (32,800 acres) by the year 2000, which is an addition of 9,430 hectares (23,300 acres) to Plan 1.

2 The rather odd shape of the enlarged city is due to the following factors -

i A north-south segment of Milton Keynes linking Bletchley and Stony Stratford will already be committed to development by the time a decision on airport urbanisation can be taken.

ii The floodlands of Claydon brook and the flight path curving towards Buckingham prevent a continuous linear expansion along the northern edge of the noise corridor.

iii The very pleasant area of landscape and high ground west of Milton Keynes between the river Ouse and Whaddon Chase should be preserved as open land for agriculture and amenity.

3 The shape of the urban area enables the principal city centre to be located in a pivotal position adjoining two edges of the built-up area and overlooking the wedge of open land that penetrates the city. There would be three district centres - the existing centre of Bletchley; the presently proposed town centre of Milton Keynes; and another new centre north of Winslow.

4 Most of the industrial areas are those proposed in the interim plan for Milton Keynes; they would nearly all have been opened up by the time the new city was designated. An additional industrial area is shown on the western edge of the city.

5 Likewise, the major open spaces are those proposed for Milton Keynes in the valleys of the Ouzel and Loughton brook, supplemented by a large town park adjoining the main centre and forming a buffer between the built-up area and the wedge of farmlands.

6 It is assumed that a large part of the one kilometre road grid proposed at Milton Keynes would have been constructed by the time the new city has been designated. It would be married to the somewhat coarser grid required in the

Printed image digitised by the University of Southampton Library Digitisation Unit

rest of the urban area, and would connect with two main access roads to the airport, entering at the north-east end and the north-west side, and a minor access road entering at the south-west end.

7 Urbanisation for airport requirements would start by linking the previously developed part of Milton Keynes with the new city centre and continue south-west from the centre in the area closest to the airport.

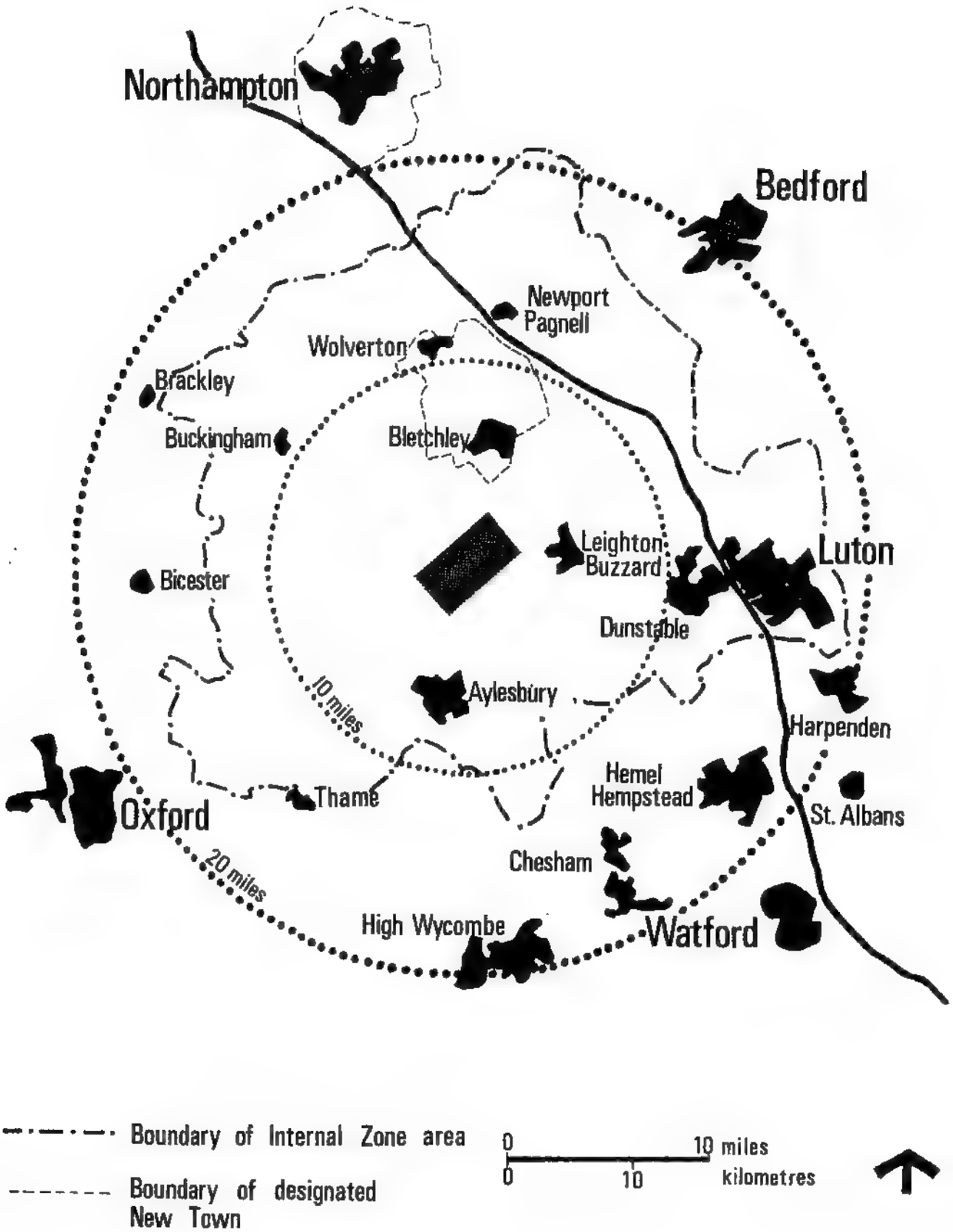
8 Plan 2 (figure 4.28) excludes the south-western part of the city.

9 The following table shows the expected growth of population and employment in the whole of the internal zone area, and that part of it which would be in airport city.

		Internal zone area		Airport city	
Cublington		Population	Employment (incl. airport)	Population	Employment (incl. airport)
	1966	416,800	201,400	58,500	26,800
Plan 1	1981	589,000	268,600	130,500	48,000
Plan 2		763,000	345,600	286,500	124,000
Plan 3	2000	1,100,000	440,000	410,000	182,000

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



CUBLINGTON

Figure 4.2

INTERNAL ZONE AREA

Printed image digitised by the University of Southampton Library Digitisation Unit

Internal zone area

10 Cublington lies in the thinly populated agricultural area between the Chilterns and the Cotswolds, near the upper reaches of east-flowing rivers, but close to the principal national trunk route from London to the Midlands and the North (M1 and electrified railway) (figure 4.1). Towns within 10 miles of the site are small to medium sized, but there is a ring of large and important centres about 20 miles away - Northampton, Bedford, Luton, Watford and Oxford. These were included in the preliminary area of search, but the internal zone area (figure 4.2) excludes all except Luton. It covers the local authority areas listed in table 4.2 (chapter 3).

11 The description of existing conditions in this chapter refers mainly to the internal zone area. It considers the constraints on and opportunities for large-scale urban development outside the airport's noise corridor.

Geology and relief

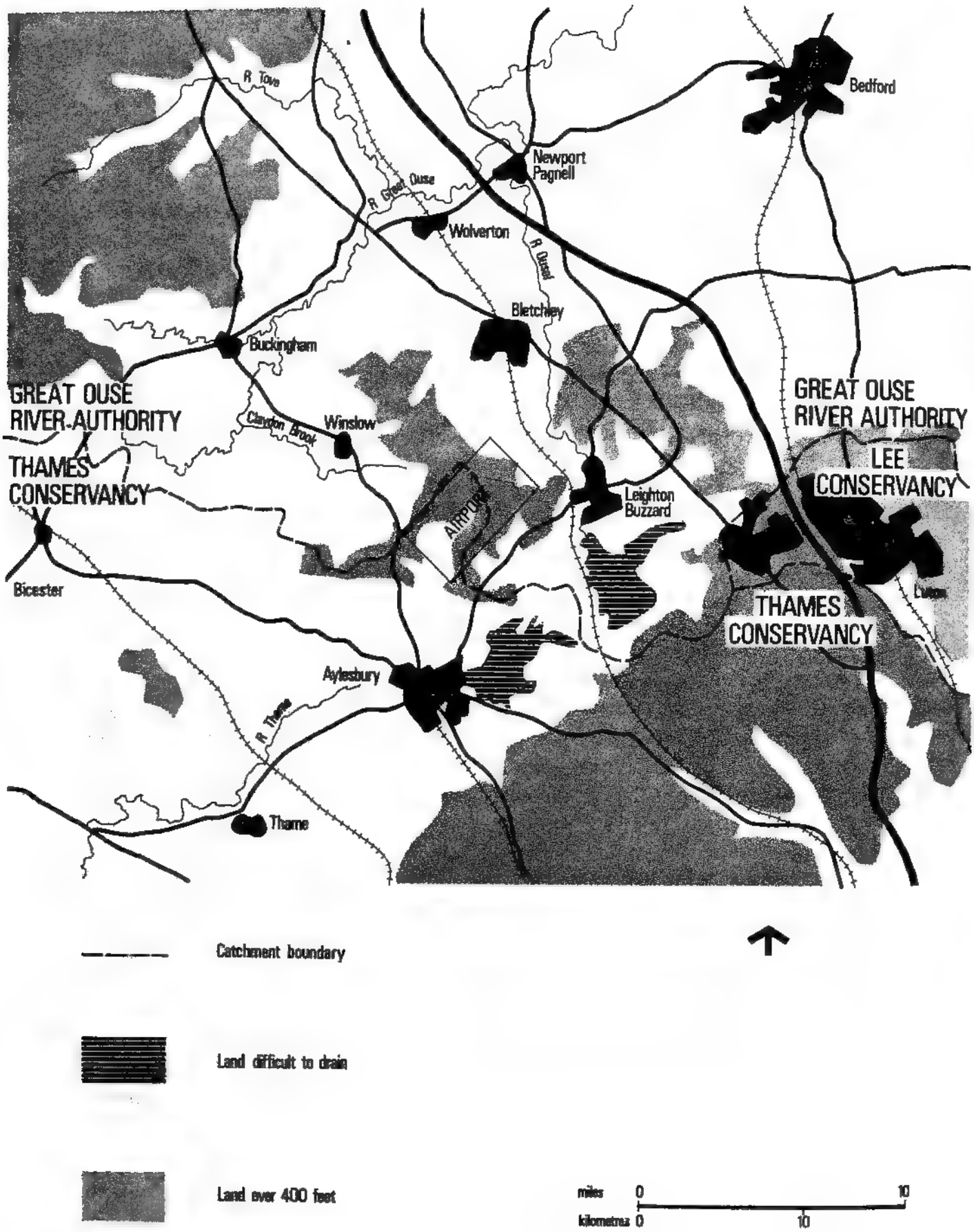
12 Several bands of solid deposits run across the area from south-west to north-east. The most northerly is the oolitic limestone which appears as a low ridge continuing the line of the Cotswolds north of the Ouse valley. Then there are bands of Oxford clay (middle oolite) and Kimmeridge clay (upper oolite) underlying the Vale of Aylesbury, and a band of greensand that gives rise to the sandstone ridge around Woburn. The southern part of the area is underlain by the chalk of the Chiltern hills with their prominent north facing scarp. Ivinghoe Beacon, one of the best Chiltern viewpoints, directly faces the airport site.

13 The most important elements of the drift geology are extensive deposits of boulder clay, overlying glacial sands and gravels, producing the small hills that rise above the general level of the vale near Cublington, Wing, Stukeley, Aylesbury and Leighton Buzzard. There are also large deposits of boulder clay in the Milton Keynes area. There are minor deposits of sands and gravels along the Ouse and Ouzel valleys and glacial gravels capping large areas of the chalk hills. It appears that geological conditions would not give rise to exceptionally high building costs.

Drainage

14 The area is divided between the catchments of the Ouse, the Thames and the Lea (figure 4.3). Large scale growth anywhere in the area would result in high costs to achieve the required standard of sewage purification.

Printed image digitised by the University of Southampton Library Digitisation Unit



CUBLINGTON LAND DRAINAGE

Figure 4.3

Printed image digitised by the University of Southampton Library Digitisation Unit

15 Low-lying areas in the valleys of the Ouse, the Ouzel and their tributaries are liable to flooding, and there are patches of poorly drained land between Aylsbury and Leighton Buzzard. Urban growth in these areas would incur high sewerage and drainage costs.

Agriculture

16 The area is characterised by mixed farming, the nature of which changes constantly within short distances (figure 4.4). Around Aylesbury is a substantial dairy and livestock belt, although cereals, some roots and a few horticultural crops are also grown. Further to the north the emphasis on dairying falls off and a large livestock and arable area is the main feature of the central part of the area. To the east this merges with an horticultural belt which runs to the north-east from Luton and Leighton-Linslade through Ampthill to Biggleswade, surrounded on the north and south by more dominantly arable areas. Dairy and livestock again feature strongly to the north of Buckingham. Throughout the area there is a liberal scattering of pig farms and poultry farms, some of which are very large and well-equipped. More notable concentrations occur around Wing, Buckingham, Bletchley and Dunstable.

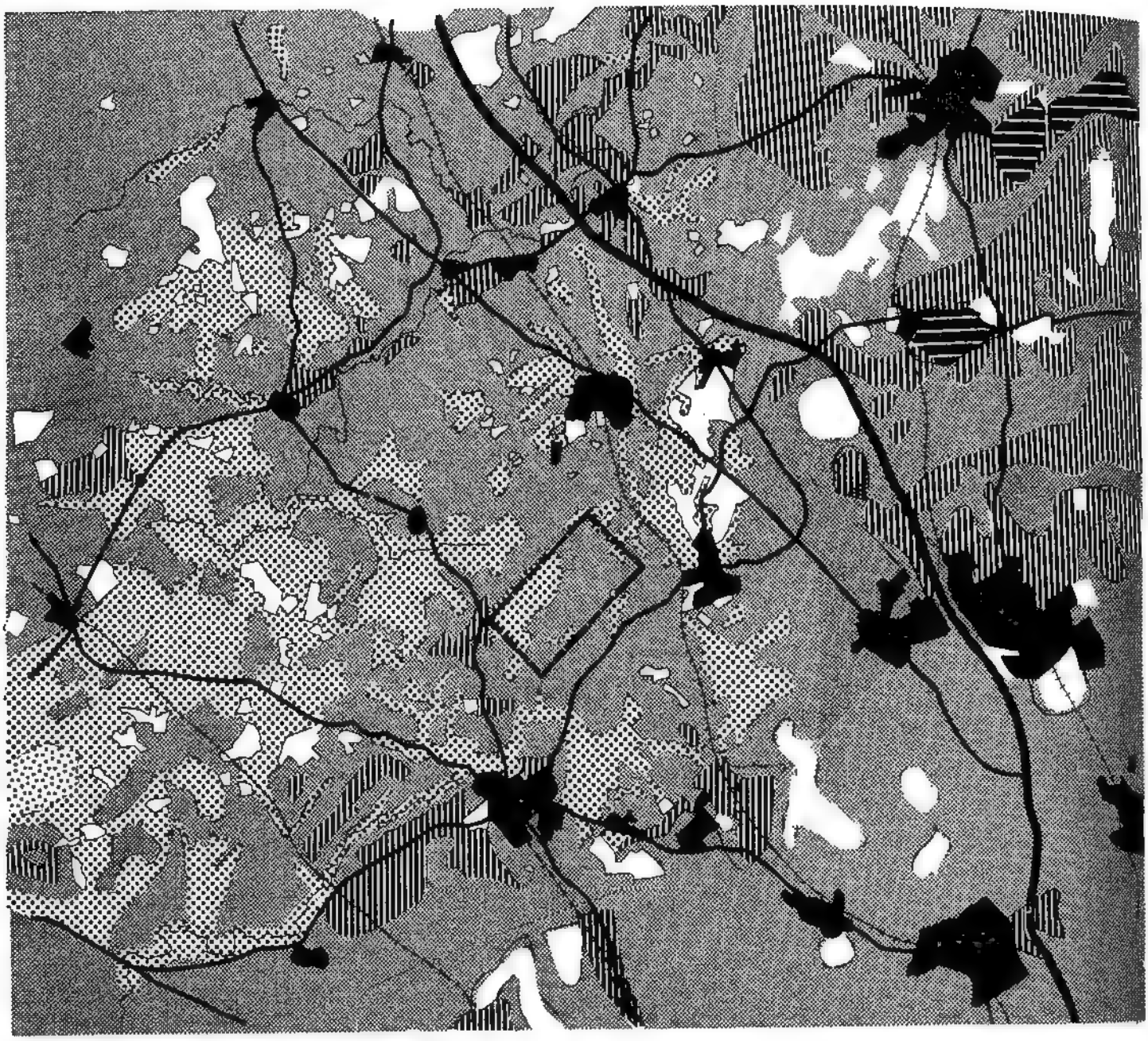
17 The picture is thus one of a very varied agriculture with a large number of different enterprises. This is to be expected of a rather traditional farming area such asthis part of the Midlands, where the soil and farm economy are not of a nature to encourage large-scale modern farming. The Ministry of Agriculture classify some small areas as grade 2 land and these are located mostly in the Vale of Aylesbury and along a broad line from Buckingham through Stony Stratford to Emberton and Lavington. Rather more substantial areas occur north of Luton and around Ampthill. Apart from this the majority of the region is classified as grade 3.

18 As the nature of farming practice varies, so also does the level of investment and the farm structure and layout. Generally the fixed equipment is good and in some areas, especially where the land is of better quality, the level of investment is quite high. Farm structure is mostly good with large, well laid-out fields. The situation of farmsteads in the villages, as is the general rule in these parts, offsets some of the advantages of well structured fields.

Communications

19 The Tring gap through the Chilterns is followed by the A41 trunk

Printed image digitised by the University of Southampton Library Digitisation Unit



AGRICULTURAL LAND

Grade 1

Grade 2

Grade 3

Grade 4

Grade 5

NON AGRICULTURAL LAND

Land in urban use

Other land

Proposed airport

miles 0 10

kilometres 0 10

CUBLINGTON AGRICULTURE

Figure 4.4

Printed image digitised by the University of Southampton Library Digitisation Unit

road, the electrified railway from Euston to the West Midlands and the North West, and the Grand Union Canal. Roman Watling Street (now the A5 trunk road), the M1, and the railway from St. Pancras to the East Midlands cross the Chilterns near Luton. All these routes run from south-east to north-west, giving the area excellent communications in these directions. Communications in the transverse direction are poor by contrast (figure 4.5).

20 M1 carries the bulk of national north-south traffic, and is at present running near its design capacity.

21 A5 is a good, three lane carriageway, except in towns, and like A41 carries mainly regional traffic. Both roads could be improved to act as relief roads for M1, carrying traffic between London and the Midlands, although there is little in the way of space capacity at present on A5 or on A41 south of Aylesbury.

22 A422 and A418 are the only Class 1 roads which pass east-west across the area. Both are low capacity single carriageways over most of their length.

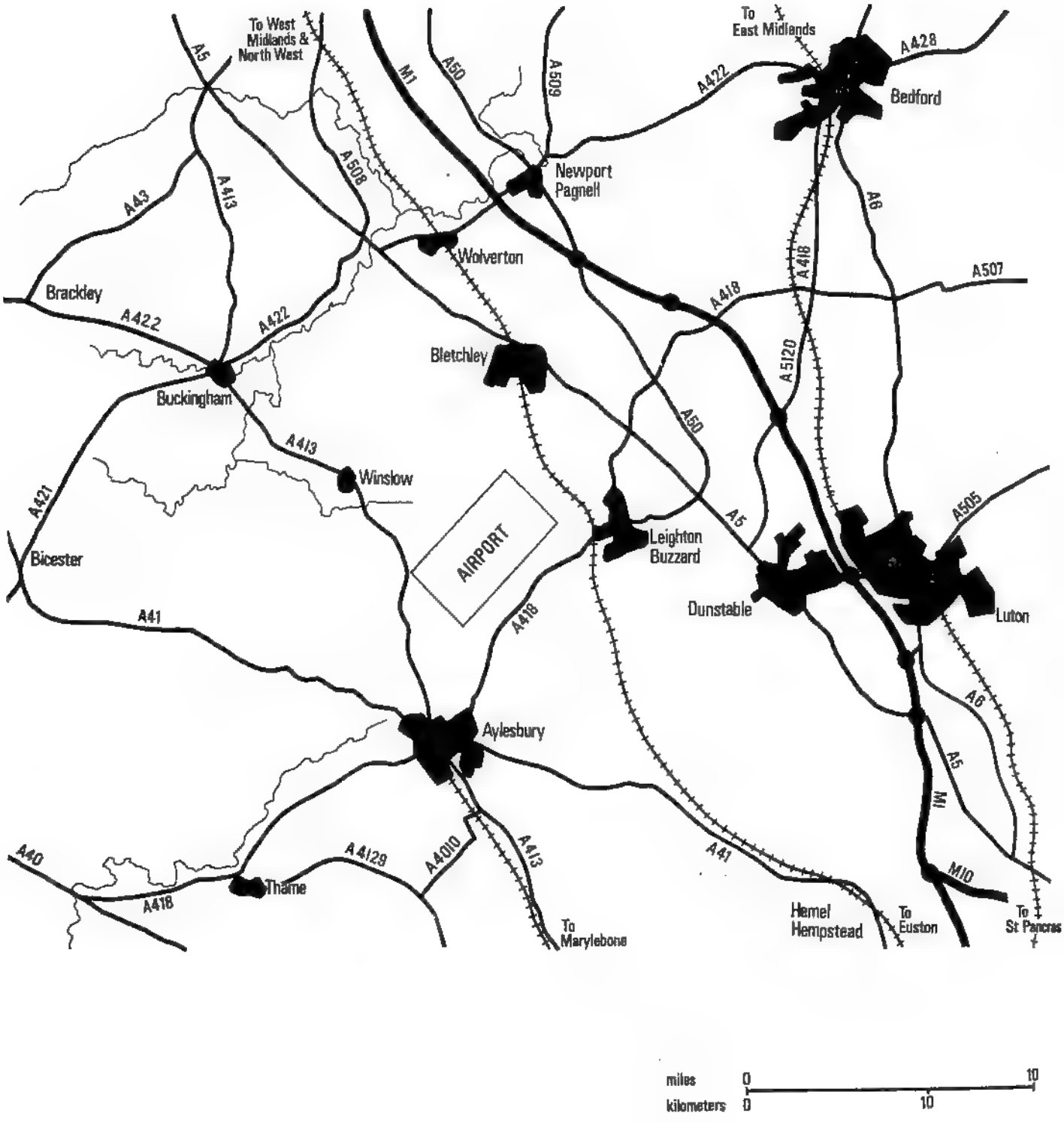
23 Dunstable and Luton are linked by the three lane A505 which carries heavy traffic at the present day. This road connects the area with Cambridge and East Anglia.

Settlement pattern

24 The area is characterised by compact small and medium sized towns, well spaced along the main lines of communication. Luton-Dunstable (185, 000), the largest urban concentration, lies in the folds of the Chilterns and is now pierced by M1. The other main towns are in the clay vale - Aylesbury (36, 000) on A41, Leighton-Linslade (19, 000) and Bletchley (26, 000) on the main line of the railway, all close to the airport site. They are important manufacturing centres with prospects of considerable growth. In the Ouse valley are the small country towns of Buckingham (5, 000), Stony Stratford (4, 000) and Newport Pagnell (6, 000) and the railway town of Wolverton (7, 000). Stony Stratford, Wolverton, and Bletchley are included in the designated area of Milton Keynes.

25 The area is served by third order (subregional) centres at Luton (3B), Northampton (3A), Bedford (3B), and Aylesbury (3C), and fourth order (district) centres at Bletchley (4B), Leighton Buzzard (4B), Dunstable (4B), Stony Stratford (4C), Wolverton (4C), Newport Pagnell (4C), and Buckingham (4B). It is intended that Milton Keynes should become a third order centre.

Printed image digitised by the University of Southampton Library Digitisation Unit



CUBLINGTON

Figure 4.5 EXISTING COMMUNICATIONS

Printed image digitised by the University of Southampton Library Digitisation Unit

26 Watford is one of the best shopping centres around London and exerts a considerable draw on the southern part of the area. Oxford, St. Albans, Bedford, Bicester, High Wycombe, Aylesbury and Northampton are well-established centres with wide catchment areas.

27 Luton, despite its large shopping centre, does not have a large regional draw in relation to the size of it population. This is due to its recent rapid growth and poor parking facilities.

28 Buckingham and Leighton Buzzard are important centres even though they have small populations.

Landscape

29 South of the noise corridor is a band of average quality landscape, rather narrow between Aylesbury and Leighton Buzzard, but widening out considerably further east. Beyond this is a large panoramic area overlooked from the Chiltern scarp, and the scarp itself of exceptional quality. The Chiltern hills are designated as an Area of Outstanding Natural Beauty and we regard them as an absolute constraint on urban development. At the foot of the scarp are two small areas rated inferior- the cement works at Pitstone and, less markedly, the wireless station east of Ivinghoe Beacon.

30 North of the noise corridor is a large area of average quality, including the site of Milton Keynes. Beyond this are a panoramic area embracing the Ouse valley between Buckingham and Stony Stratford; an area of high value along the Tove valley and the Ouse valley further east; Stowe Park is the only arearated as exceptional, and there is an area of inferior value associated with the brickworks and clay pits south-west of Bletchley (figures 4.6 and 4.7).

31 There are 27 sites of special scientific interest shown on County Development Plans in the internal zone area. They are shown on figure 4.8.

Engineering services

32 Several trunk pipelines and overhead transmission lines pass through the area (figure 4.8) but do not inhibit urban development except at Chalton north of Luton. We understand from the Gas and Electricity Boards that

Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

Figure 4.6

CURRENT LANDSCAPE POLICIES

Printed image digitised by the University of Southampton Library Digitisation Unit

Landscape Quality

- Exceptional
- High
- Panoramic
- Average
- Inferior
- Not appraised

Miles 0 10

Kilometres 0 10

CUBLINGTON

LANDSCAPE APPRAISAL

Figure 4.7

Printed image digitised by the University of Southampton Library Digitisation Unit

Mineral workings

Land liable to flooding

Industrial nuisance from cement and brickworks

40 NNI and outer boundary of buffer zone

Overhead transmission lines

Pipe lines

miles 0 10

kilometres 0 10

CUBLINGTON

OTHER CONSTRAINTS

Figure 4_8

Printed image digitised by the University of Southampton Library Digitisation Unit

they could supply any part of the area at normal costs.

Mineral workings

33 The principal areas of clay extraction lie well to the east near Bedford, but clay is worked on a smaller scale near Bletchley. The brickworks emit compounds of sulphur and flourine which smell extremely unpleasant and are noxious to some species of trees and plants. They affect an ellipse about 8 miles long in a north-east/south-west direction.

34 There are cement works at Chinnor, Pitstone, and Houghton Regis which deposit dust within a radius of $1\frac{1}{2}$ to 2 miles.

35 New urban areas should if possible avoid those nuisances which are shown on figure 4.8.

Other constraints

36 Figure 4.8 also shows land liable to flood, and physical barriers (rivers, railways and major roads) that might impose high bridging costs if new urban areas were divided by them.

Conclusion

37 The report later shows that a number of different urban patterns could be located so as to avoid the main constraints described in this chapter.

Printed image digitised by the University of Southampton Library Digitisation Unit

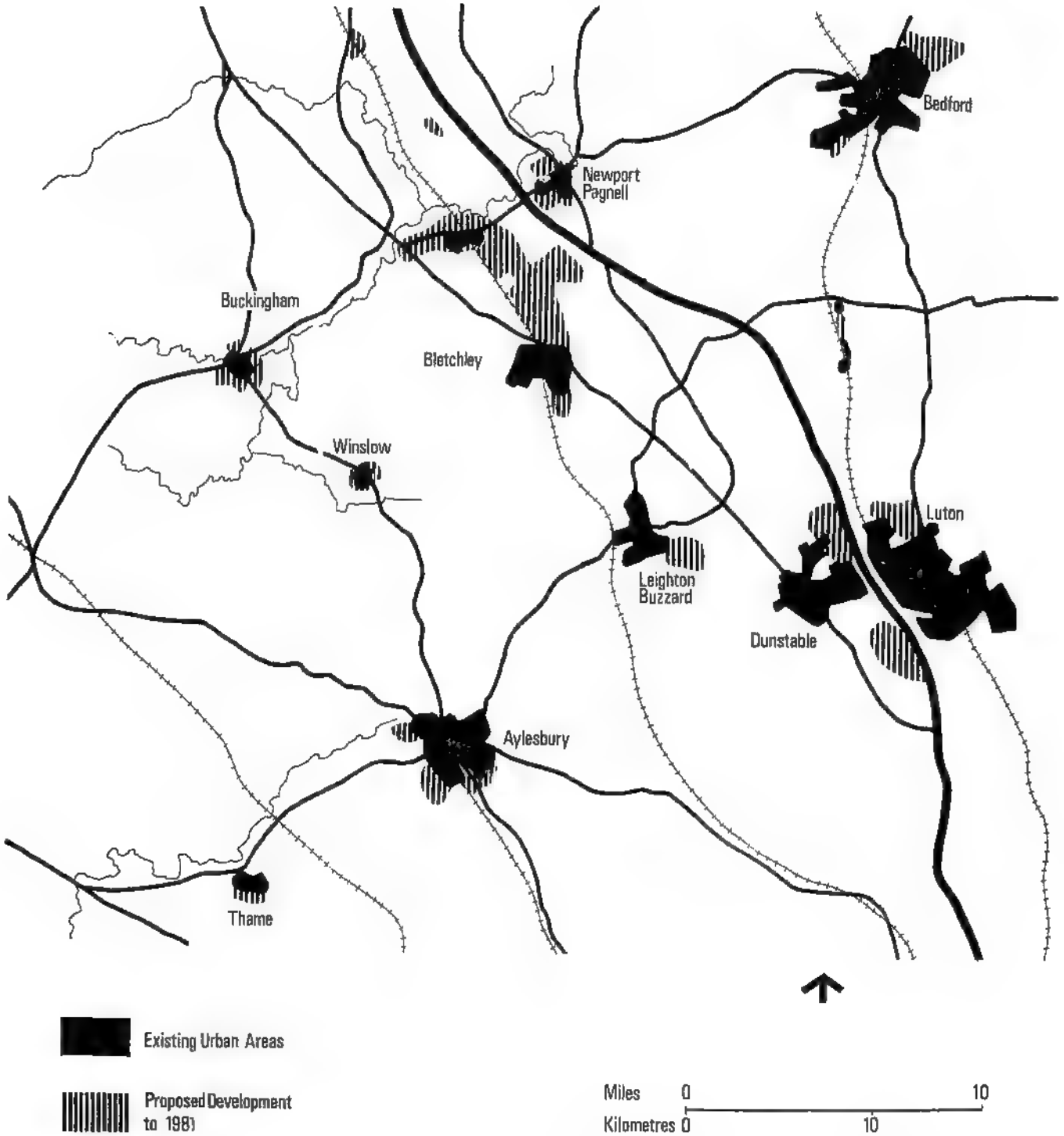


Figure 4.9

CUBLINGTON
PLAN 1–PROPOSALS TO 1981

Printed image digitised by the University of Southampton Library Digitisation Unit

Population and employment

38 Table 4.1 gives the existing (1966) and proposed (1981) population and employment in the internal zone area without an airport. Table 4.2 shows the likely distribution of population by local authority areas in the airport city area and the rest of the internal zone area.

Urban growth

39 The biggest population increase is planned for Milton Keynes (some 64,000) but the combined growth of Luton (CB and RD), Dunstable and Leighton-Linslade is likely to be about the same. There are also some smaller expansions and pressure for development is consistently high.

Table 4.1 Cublington: Expected growth of population and employment in internal zone area without an airport

	1966	1981 (Plan 1)	Annual growth rate %
Population	416,800	589,000	2.3
Employment	201,400	268,600	2.0
Export surplus employment	97,600	130,200	2.0
Active population	200,900	270,900	2.0
Net commuting	+ 500	-2,300	
Participation rate	48.2	45.9	

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.2 Cublington : Expected population growth to 1981 by local authority area

	Population		
	1966	Increase 1966-81	1981
I Internal zone area			
Bedfordshire			
Luton C.B	152,900	30,500	183,400
Dunstable M.B	29,200	2,300	31,500
Leighton--Linslade U.D	17,600	15,900	33,500
Ampthill R.D (part)	16,900	2,100	19,000
Luton R.D	35,300	16,300	51,600
Buckinghamshire			
Milton Keynes area	39,000	63,500	102,500
Bletchley U.D 23,100		32,700	
Wolverton U.D 13,700		14,300	
Newport Pagnell R.D (part) 2,100		55,500	
Winslow R.D (part) 100			
Aylesbury M.B	34,600	11,600	46,200
Buckingham M.B	4,500	2,000	6,500
Newport Pagnell U.D	5,100	3,300	8,400
Aylesbury R.D	34,900	5,200	40,100
Buckingham R.D	8,800	2,700	11,500
Newport Pagnell R.D (part)	12,100	3,900	16,000
Wing R.D	9,400	3,600	13,000
Winslow R.D (part)	9,000	3,400	12,400
Hertfordshire			
Berkhamstead R.D (part)	900	300	1,200
Northamptonshire			
Towcester R.D (part)	6,600	1,100	7,700
TOTAL	416,800	172,200	589,000

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.2 Cont. Cublington : Expected population growth to 1981 by local authority area

	Population		
	1966	Increase 1966-81	1981
II Airport city area			
Buckinghamshire			
Milton Keynes, as above	39, 000	63, 500	102, 500
Newport Pagnell U. D	5, 100	3, 300	8, 400
Buckingham R.D	2, 700	900	3, 600
Newport Pagnell R. D (part)	2, 700	900	3, 600
Winslow R. D (part)	9, 000	3, 400	12, 400
TOTAL	58, 500	72, 000	130, 500

Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

Figure 4.11

PLAN1–HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

Roads

40 The results of the 1981 traffic assignments show that the following improvements would be required to the existing network.

Highway	Description
A41	South from Aylesbury, single three lane/two lane to dual two lane.
	New Aylesbury ring road, dual two lane.
A5	New Dunstable by-pass to A50, single three lane to dual two lane.
	New Fenny Stratford - Stony Stratford by-pass, dual two lane.
A505	New Luton to Dunstable link, dual three lane.
A6	New Luton by-pass, dual two lane.
A508	North from Stony Stratford to M1, single two lane to dual two lane.
A50	Newport Pagnell to M1, two lane to three lane.
A422	Stony Stratford to Newport Pagnell (A509 junction), single three lane/two lane to dual two lane.
A413	South of Aylesbury, two lane to three lane.
A418	Aylesbury through Leighton Buzzard to Hockliffe (A5), two lane to three lane. Aylesbury to Thame, two lane to three lane.

Improvements to roads within existing or planned urban areas are not included in this list, e.g.in Aylesbury, Luton, Dunstable, Milton Keynes. The principal road system required to meet the forecast 1981 traffic volumes is shown in figure 4.11.

New centres and planned extensions

41 A scheme providing for considerable expansion of retail facilities in Luton has been approved. In Aylesbury some development of retail facilities is in progress and further development has been proposed which will satisfy the currently foreseen demand. Further major expansions would be costly

Printed image digitised by the University of Southampton Library Digitisation Unit

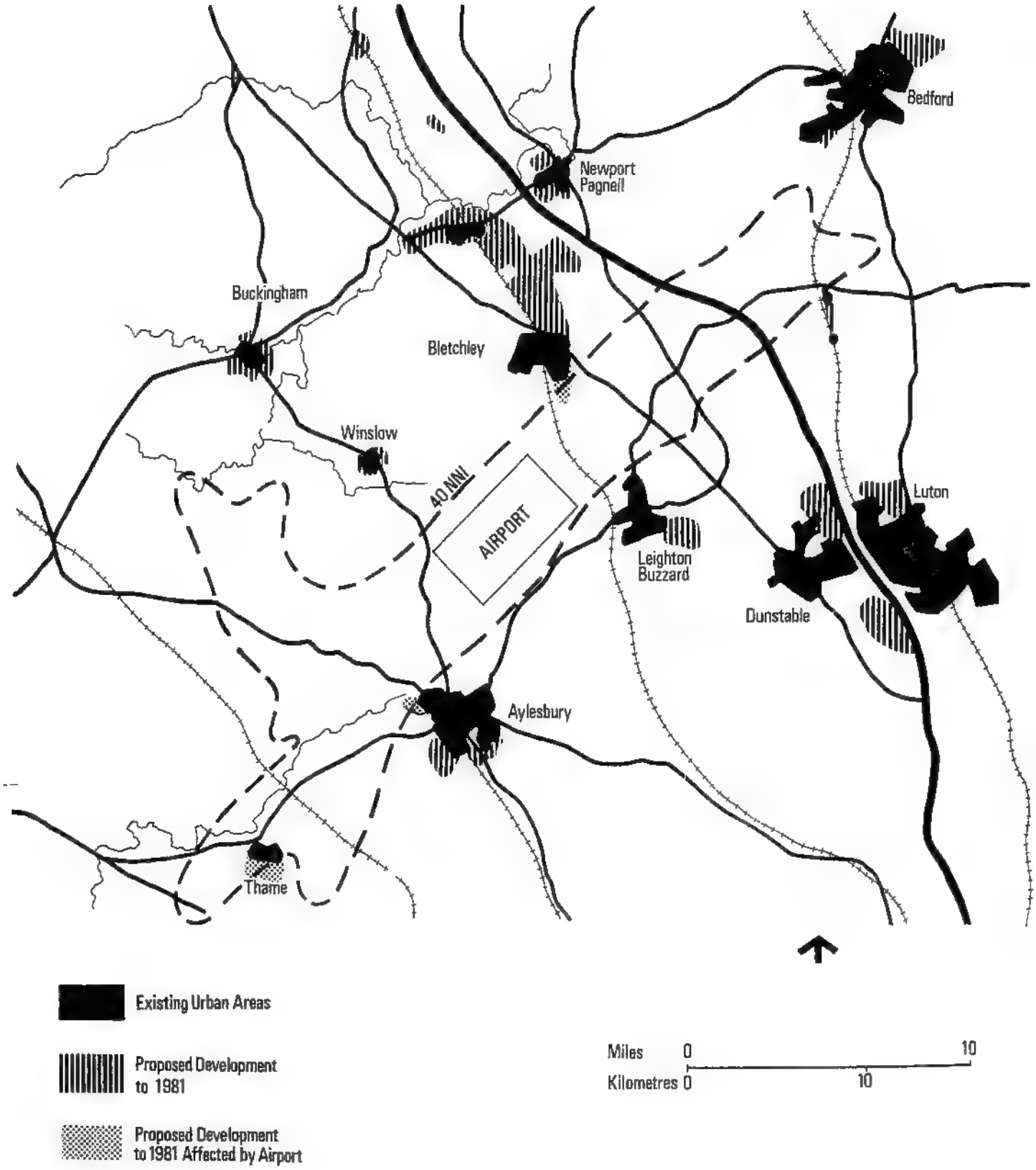
and detrimental to the central area.

42 Leighton Buzzard has a town centre redevelopment scheme providing lock-up shops and supermarkets with pedestrian malls and adjacent car parks; it has been approved in outline.

43 The main new centre in the area is the proposed third order centre at Milton Keynes.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



CUBLINGTON

Figure 4.10

PLAN 1–EFFECT OF AIRPORT

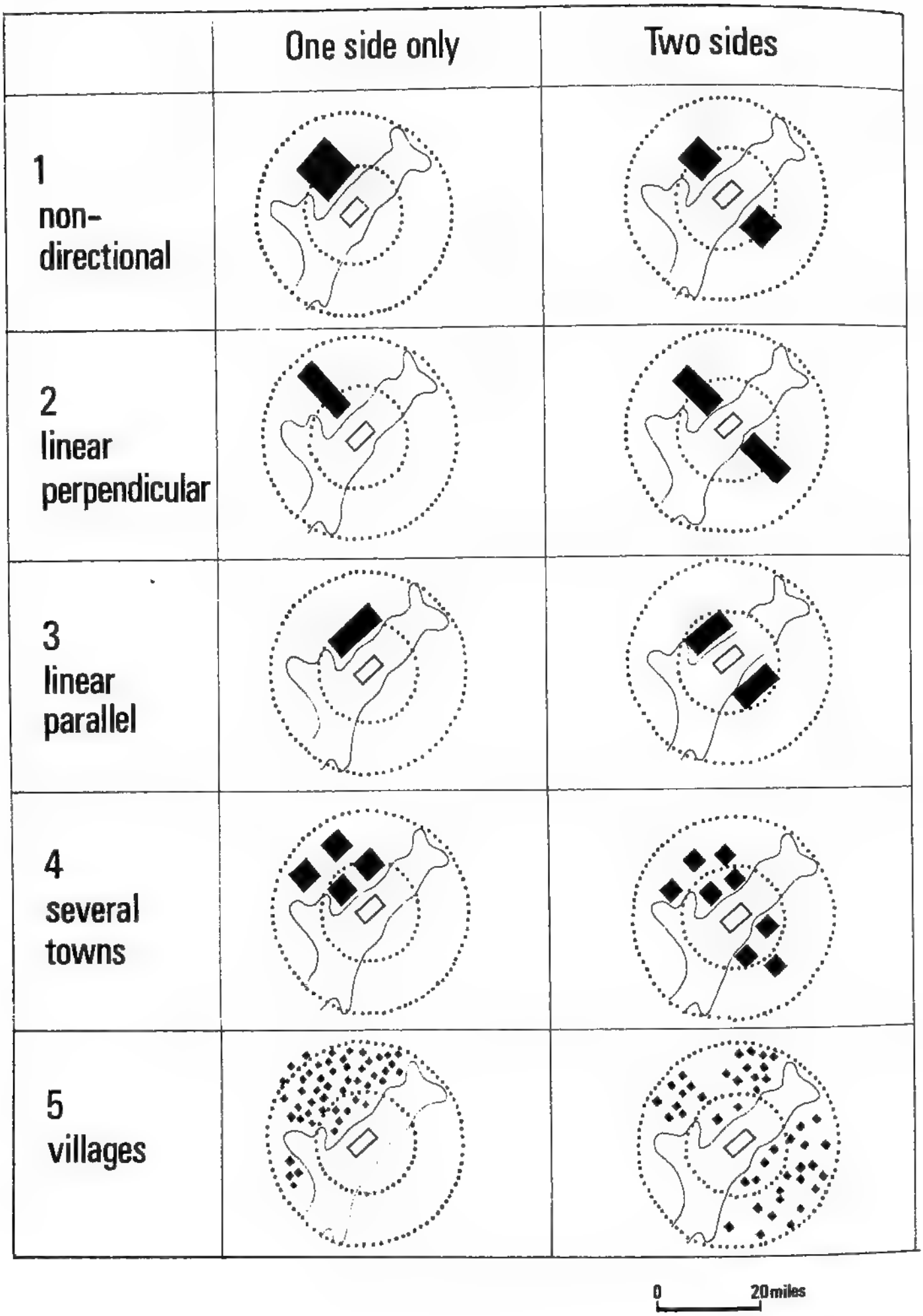
Printed image digitised by the University of Southampton Library Digitisation Unit

44 The 40 Noise and Number Index (NNI) contours published by the Commission as part of the site information for the Stage II local hearings and shown on their drawings CTLA 3/2 extend for about 59 km (37 miles) from south of Bedford in the east across the M1 to Thame in the west. The contours are slightly different for a two runway and a four runway airport. Approximately 30 villages are affected by aircraft noise of 40 NNI and above, as well as small parts of Aylesbury and Bletchley and the whole of Thame.

45 The only proposed developments shown on Plan 1 that would have to be relocated if the airport were built at Cublington are small portions of the planned expansions of Aylesbury and Bletchley and the whole of the planned expansion of Thame.

46 We have assumed that suitable areas outside the 40 NNI contour could be found to replace these affected areas, and that construction costs would be no greater. We have not attempted to indicate suitable areas.

Printed image digitised by the University of Southampton Library Digitisation Unit



CUBLINGTON

Figure 4.12 THEORETICAL URBAN FORMS

Printed image digitised by the University of Southampton Library Digitisation Unit

47 The method of generating alternative urban strategies for Cublington and Thurleigh was: first, to draw up a series of theoretical urban forms that appeared to satisfy the major requirements of an airport city; and secondly, to determine which of the theoretical alternatives could be located near each site without incurring exceptional costs.

Theoretical urban forms

48 In drawing up the theoretical diagrams we used a population of half-a-million, since at that stage we did not know what non-airport population the urban areas might include, and in any case it seemed prudent to allow for possible future growth,.

49 Figure 4.12 shows a variety of ways of accommodating half-a-million people at an overall density of 30 persons per hectare (12 persons to the acre), close to any airport with a noise corridor similar to those of Cublington and Thurleigh, but assuming no special physical limitations or opportunities in the area. There are five basic forms -

i a single non-directional city

ii a linear form perpendicular to the noise corridor

iii a linear form parallel to the noise corridor

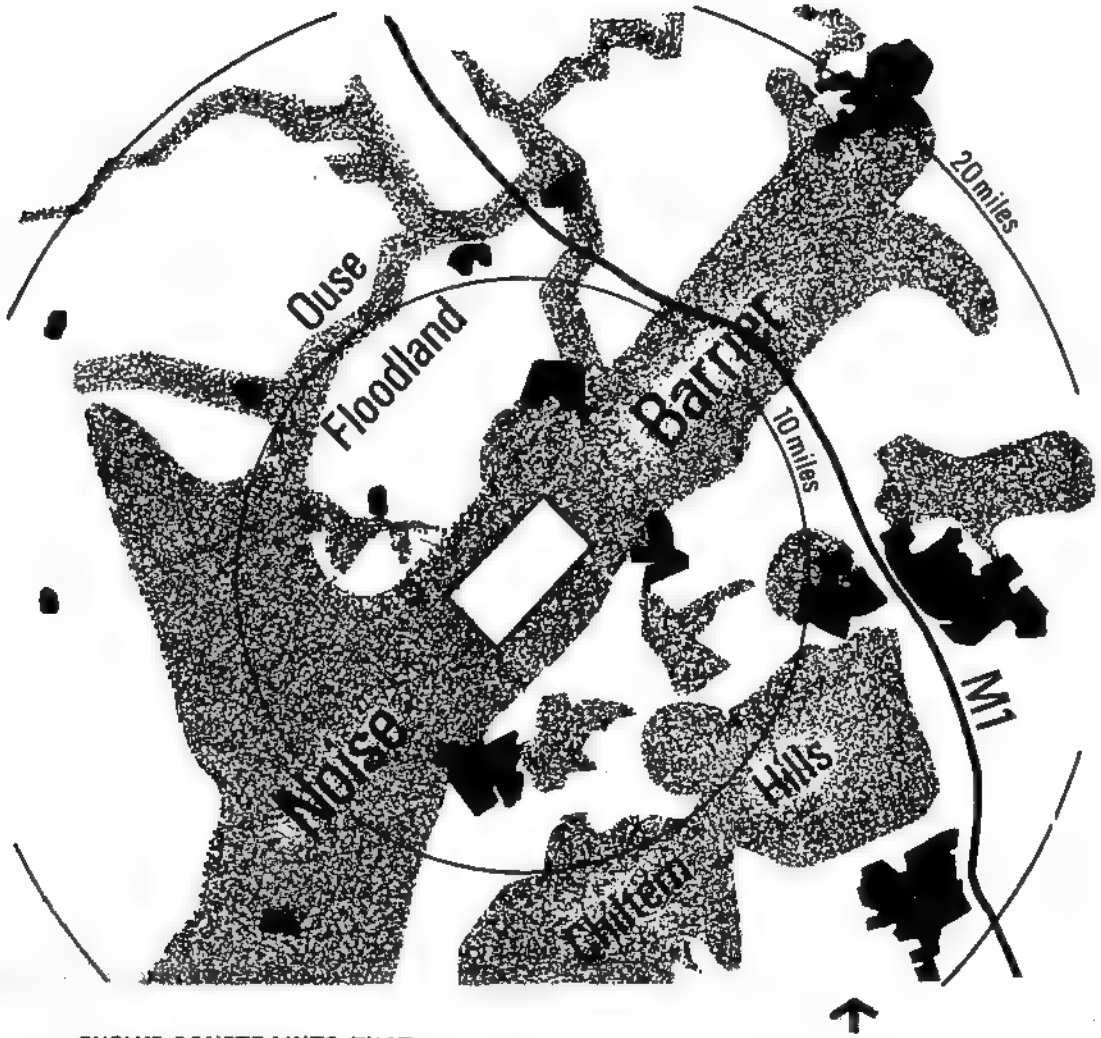
iv a small number of dispersed medium sized towns

v a large number of scattered small towns and villages.

Each of these urban patterns could be located on one or other side of the noise corridor or could be split between both sides.

50 The theoretical alternatives were considered in the light of objectives and criteria that are largely unaffected by the physical features of the area, principally transportation costs, but also aspects of engineering services and shopping and service centres. The last alternative - scattered small towns and villages - was rejected because costs of transportation, engineering services, and social services would be much higher than in any of the others. The balance of advantage between the other four appeared to be so small that it could well be tipped by the need to bend the theoretical form to a particular site and by the effects of interactions with existing urban areas. These four were therefore carried forward to the next stage, that of checking which theoretical forms fitted within the physical constraints of the area.

Printed image digitised by the University of Southampton Library Digitisation Unit



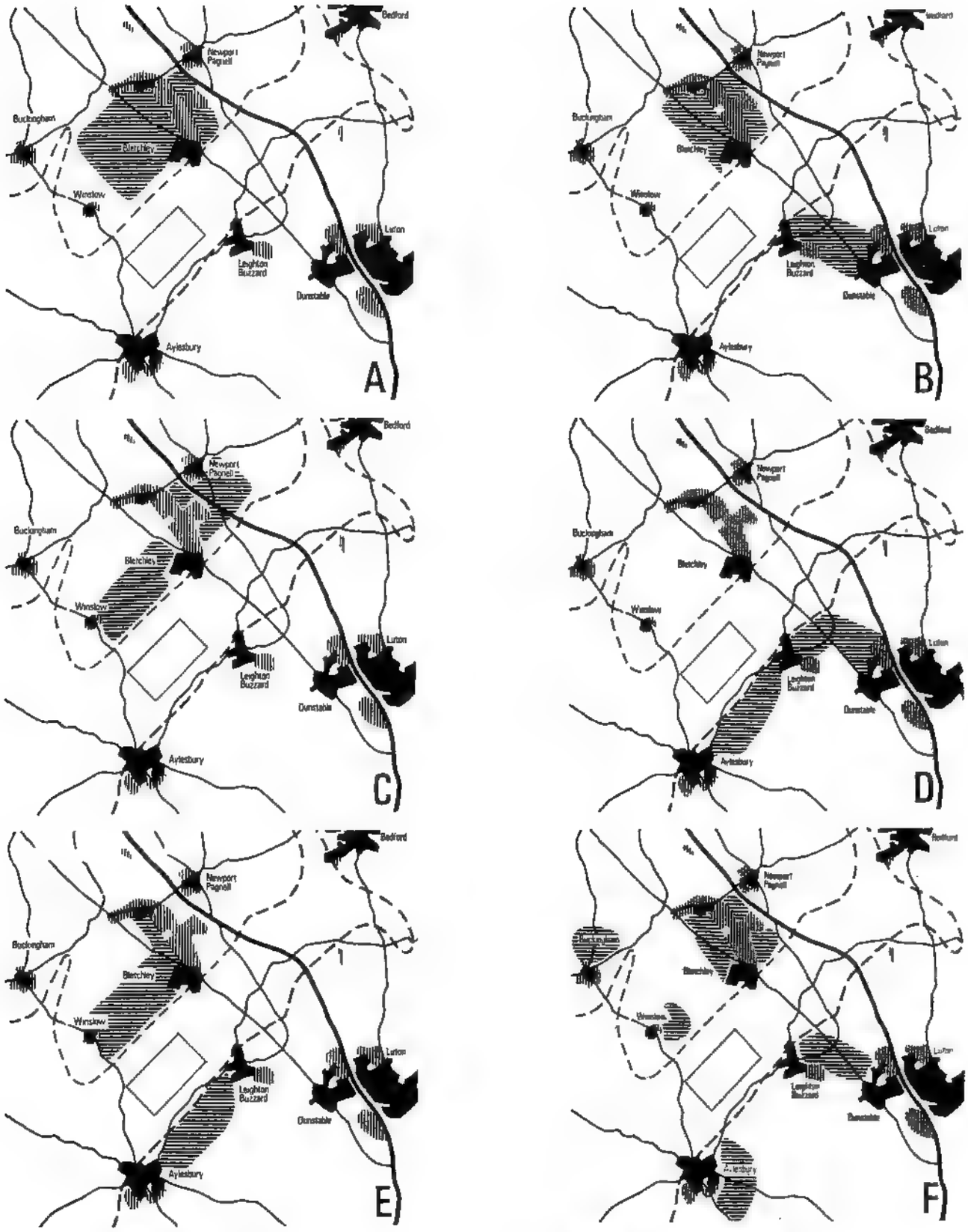
SHOWS CONSTRAINTS THAT DETERMINE WHICH THEORETICAL URBAN FORMS CAN BE APPLIED

miles 0 10
kilometres 0 10

CUBLINGTON
LOCAL CONSTRAINTS

Figure 4.13

Printed image digitised by the University of Southampton Library Digitisation Unit



CUBLINGTON
ALTERNATIVE STRATEGIES

Figure 4.14

Printed image digitised by the University of Southampton Library Digitisation Unit

51 The theoretical studies did, however, reveal a number of problems that had to be considered in selecting an urban strategy. For instance, a strategy with urbanisation divided about equally between both sides of the noise corridor would result in the shortest average journey to the airport, but might increase the average length of other journeys, might make it difficult to establish a new subregional shopping and service centre, might require two separate sewerage systems, and might carry the risk of invidious social distinctions between the two sides of the airport.

Application to site

52 In preparing the alternative strategies based on the theoretical forms, we used an airport generated population increase of 280,000. This was the best estimate available at that stage.

53 The four acceptable theoretical forms could each have three variants - north of the airport, south of the airport, or on both sides of it - making twelve possibilities in all. Only six could be fitted into the Cublington area without incurring exceptional cost penalties.

54 Linear towns perpendicular to the noise corridor would encroach on the Chilterns to the south and the Ouse floodlands to the north. Though favourable for public transport, they would produce a longer average work journey than linear towns parallel to the airport. Besides incurring high costs they would destroy the main natural assets of the area for no corresponding benefit. These three alternatives were therefore rejected.

55 It was found that a pattern of dispersed small towns would be feasible only in the variant on both sides of the airport. This is because of the number of existing settlements suitable for expansion and the limited number of sites for new ones. Thus two more alternatives disappeared.

56 Finally, a single non-directional city south of the airport is not feasible because of limitations imposed by the Chilterns and the size of the existing Dunstable-Luton urban area. Luton may consume large areas here for its own growth even without the airport.

57 This leaves linear towns parallel to the noise corridor on the north, the south, and both sides; a single non-directional city on the north; and a group of dispersed settlements on both sides. The six strategies are shown side by side on figure 4.14 and separately on figures 4.15 to 4.20.

Printed image digitised by the University of Southampton Library Digitisation Unit

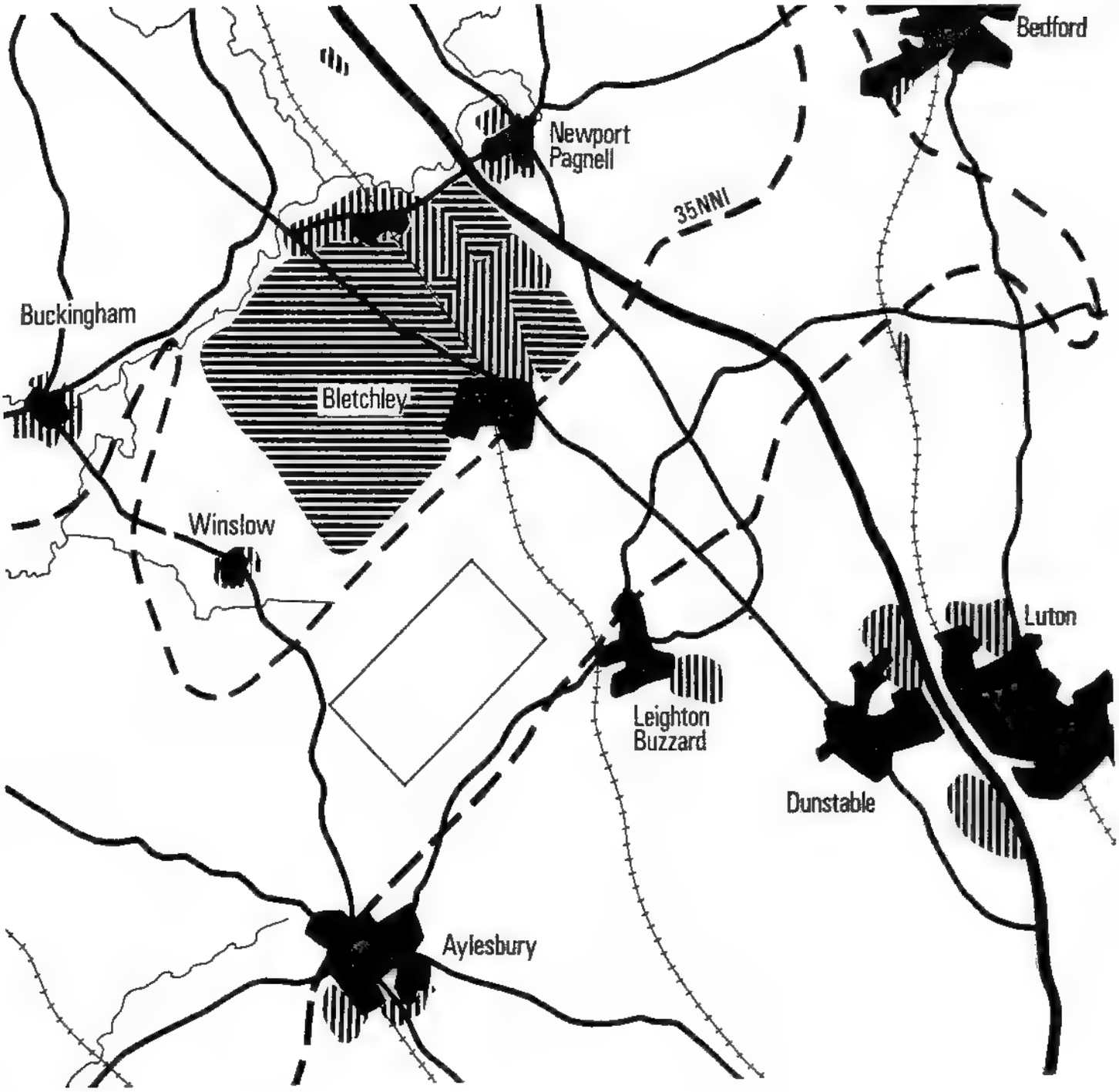


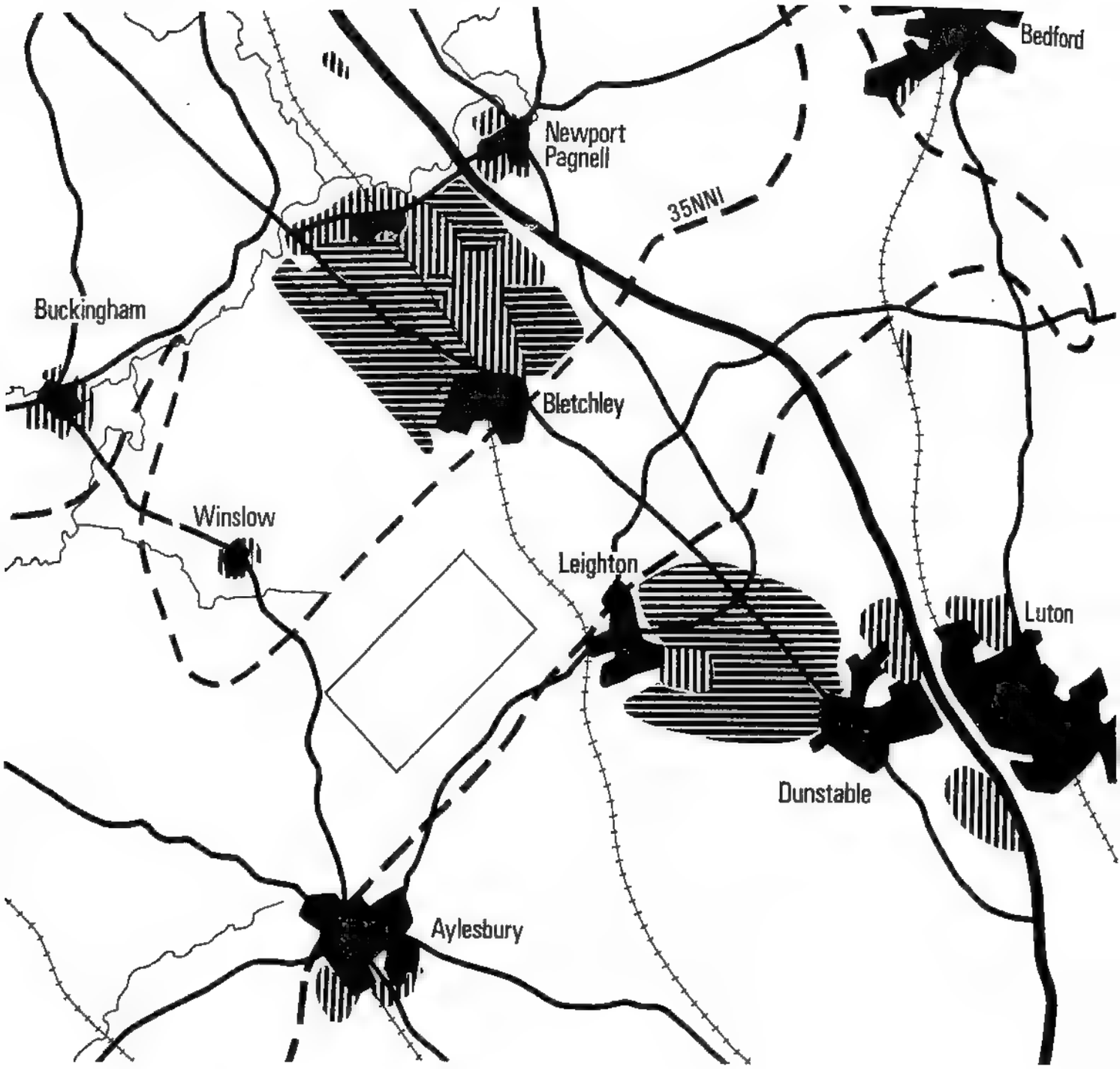
Figure 4·15

CUBLINGTON STRATEGY A

Strategy A Expansion of Milton Keynes

This locates the whole of the additional population north of the airport, together with the minimum 100,000 at Milton Keynes shown on Plan 1. It uses the whole of the present designated area of the new city, with an extension to the south-west, bringing the centroid closer to the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit



Existing Urban Areas

Proposed Development to 1981

Population increase of 280,000

Miles 0 10

Kilometres 0 10

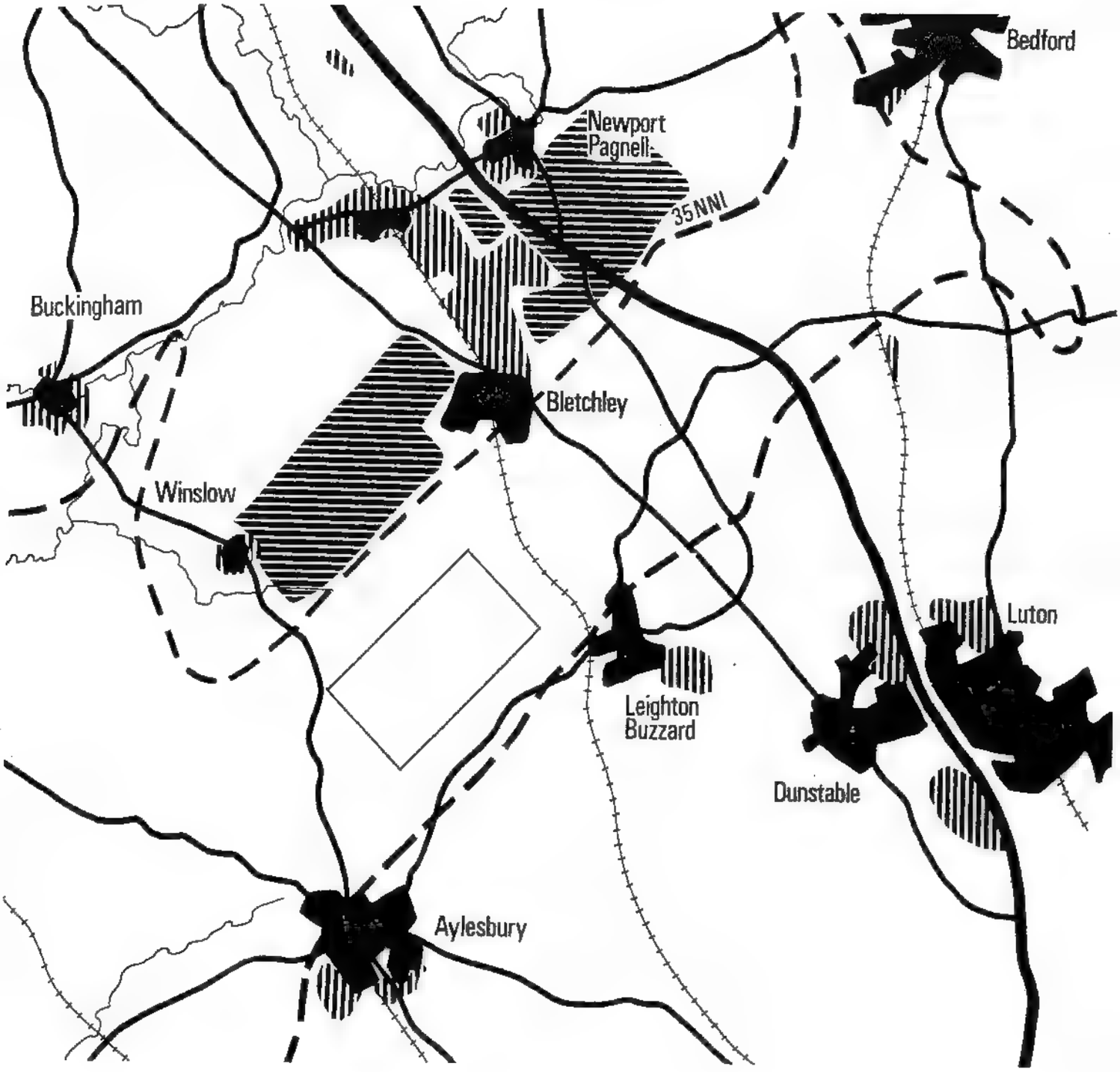
Figure 4.16

CUBLINGTON STRATEGY B

Strategy B Milton Keynes and Leighton-Luton new cities

This spreads the population north and south of the airport, with Milton Keynes slightly extended to the south-west, and Leighton-Linslade, Dunstable and Luton merged in a new city.

Printed image digitised by the University of Southampton Library Digitisation Unit



Existing Urban Areas

Proposed Development to 1981

Population increase of 280,000

Miles 0 10

Kilometres 0 10

Figure 4.17 CUBLINGTON STRATEGY C

Strategy C Winslow-Newport Pagnell linear city

This would use only the southern part of the designated area of Milton Keynes, extending it both to the south-west and the north-east.

Printed image digitised by the University of Southampton Library Digitisation Unit

Figure 4.18 CUBLINGTON STRATEGY D

Strategy D Aylesbury-Luton linear city

All the towns immediately south of the airport would be merged into a single large city.

Printed image digitised by the University of Southampton Library Digitisation Unit

Existing Urban Areas

Proposed Development to 1981

Population increase of 280,000

Miles 0 1

Kilometres 0 10

Figure 4.19 CUBLINGTON STRATEGY E

Strategy E Milton Keynes and Aylesbury-Leighton linear towns

By spreading the population north and south of the airport this alternative avoids crossing the M1 and encroaching on Luton and Dunstable.

Printed image digitised by the University of Southampton Library Digitisation Unit

Figure 4.20

CUBLINGTON STRATEGY F

Strategy F Dispersed expansions

This alternative uses the present designated area of Milton Keynes together with expansions of Buckingham, Winslow, Aylesbury, Leighton Buzzard, and Dunstable. The last two are shown joined together, but there is more scope for local variations in the population distribution in this alternative than in any of the others.

Printed image digitised by the University of Southampton Library Digitisation Unit

First stage of selection

58 The ranking of the six alternatives described in the previous chapter on each of the criteria described in part I is shown in table 4.3. No ranking is shown for the five criteria concerned with the effect of existing conditions on the new urban areas, because there appeared to be no significant difference between the six strategies. None of the strategies entailed building on land liable to flood or in places where exceptional costs would be incurred to create an acceptable local environment.

59 The process of elimination was started by comparing strategies C and D (the two linear cities parallel to the noise corridor). D was inferior to C in respect of -

- abnormal ground conditions (poorly drained land between Aylesbury and Leighton Buzzard)
- sewerage and sewage disposal
- drainage and surface water disposal
- undergrounding of existing high tension cables (more on south of site)
- cost of roads from urban areas to airport
- major service centres (new centre must compete with Aylesbury or latter must be extensively redeveloped)
- land acquisition (more on fringes of existing towns)
- losses of agricultural output (more intensive production south of airport)
- user costs of transport from town to airport
- preservation of landscape (view from Chilterns)
- effect on existing urban areas (greater disruption of pleasant towns)
- potential for long term growth (proximity of Luton and Chilterns)
- population pressure (greater nearer Luton)

On other criteria D and C were equal; on none was D superior to C. Clearly C was the better so D was eliminated.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.3 Stage 1 assessment of alternative strategies: Cublington

CATEGORY	CRITERION	STRATEGY A	B	C	D	E	F
CAPITAL COSTS	**Construction**						
	Site development						
	Land liable to flood			equal			
	Abnormal ground conditions	0	0	0	-	-	0
	Preparation of an acceptable urban environment			equal			
	Engineering						
	Sewerage and sewage disposal	0	-	+	-	-	-
	Drainage and surface water disposal	+	+	+	-	0	0
	Undergrounding or diverting overhead transmission lines	+	0	+	-	0	0
	Transportation						
	Roads from urban areas to airport	-	0	+	0	+	-
	Other roads	-	0	-	-	-	0
	Other						
	Provision of major service and shopping centres	+	0	+	0	-	-
	Land						
	Land acquisition	++	0	+	-	0	--
USER COSTS	**Agriculture**						
	Losses of output	+	0	+	-	-	0
	Transportation						
	From urban areas to airport	0	-	+	0	+	-
	Elsewhere in the area	-	0	0	0	+	-
UNMEASURED ADVANTAGES AND DISADVANTAGES	**Effect of urbanisation on existing environment**						
	Preservation of landscape	-	+	+	-	-	+
	Effect on environment in existing urban areas	+	+	+	0	0	0
	Effect of existing environment on new urban areas						
	Proximity to fixed installations			equal			
	Suitability for housing			equal			
	Access to existing recreational areas			equal			

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.3 Cont.

CATEGORY	CRITERION	STRATEGY A	B	C	D	E	F
UNMEASURED ADVANTAGES AND DISADVANTAGES	Potential for recreational development			equal			
	Contribution to new urban areas by existing urban areas			equal			
	Other factors						
	Proximity to noise corridor	+	+	-	-	--	+
	Potential for long term growth	0	0	0	-	-	0
	Barrier effect of airport on social pattern	0	0	0	0	--	0
	Population pressure	+	0	+	-	0	0

KEY ++ Considerable advantages + Some advantages 0 Neutral -- Considerable disadvantages - Some disadvantages

Printed image digitised by the University of Southampton Library Digitisation Unit

60 Next strategies B and F were compared since both included Milton Keynes and major expansion between Leighton Buzzard and Dunstable. F was inferior to B in respect of -

- sewerage and sewage disposal
- roads from urban areas to airport
- major service centres
- land acquisition
- transportation user costs other than to airport
- effect on existing urban areas

These differences stemmed largely from the greater dispersal of development in strategy F. On other criteria B and F were equal; on none was F superior to B. Clearly B was the better so F was rejected.

61 No other strategies could be eliminated by comparisons of the preliminary rankings; strategies A, B, C and E were therefore costed for more careful comparison in the second stage of the selection process.

Second stage of selection

62 The costs of those components for which estimates were made are shown in table 4.4, together with the rankings for other criteria from table 4.3. The figures are the excess over the cost of the strategy having the lowest cost for each component. Annual costs are capitalised.

63 The estimated cost of strategy C was significantly lower than any of the others. It had the lowest cost for abnormal ground conditions; for sewerage and surface water drainage, and for drainage and surface water disposal; and for capital and user costs of transportation from urban areas to the airport. The excess costs of other components were relatively small.

64 In respect of uncosted criteria strategy C was superior or equal to the others except for proximity to the noise corridor; this criterion was not considered of sufficient importance to outweigh the cost advantages. Strategy C had the additional disadvantage that the new city would straddle M1. While this made no significant difference to the cost, it had environmental disadvantages and would complicate construction. It was therefore decided that strategy C was preferred, but that in refining the plans,

Printed image digitised by the University of Southampton Library Digitisation Unit

the section to the east of M1 should be eliminated by, in effect, combining elements of strategies C and A.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.4 Stage 2 assessment of alternative strategies: Cublington

CATEGORY	CRITERION	STRATEGY A	B	C	E
CAPITAL COSTS	**Construction**				
	Site development				
	Land liable to flood		equal		
	Abnormal ground conditions	Ø	Ø	Ø	1.1
	Preparation of an acceptable urban environment		equal		
	Engineering				
	Sewerage and sewage disposal	0.7	1.2	Ø	1.2
	Drainage and surface water disposal	0.1	0.2	Ø	0.6
	Undergrounding or diverting overhead transmission lines	Ø	1.2	0.3	0.9
	Transportation				
	Roads from urban areas to airport	3.5	2.4	Ø	1.1
	Other roads	3.6	Ø	1.4	4.8
USER COSTS	**Transportation**				
	From urban areas to airport (capitalised)	1.8	4.0	Ø	0.4
	TOTAL	12.8	9.0	1.9	15.7
UNCOSTED ADVANTAGES AND DISADVANTAGES	**Effect of urbanisation on existing environment**				
	Preservation of landscape	-	+	+	-
	Effect on environment in existing urban areas	+	+	+	0
	Effect of existing environment on new urban areas				
	Proximity to fixed installations		equal		
	Suitability for housing		equal		
	Access to existing recreational areas		equal		
	Potential for recreational development		equal		
	Contribution to new urban areas by existing urban areas		equal		
	Other factors				
	Proximity to noise corridor	+	+	-	--
	Potential for long-term growth	0	0	0	-

Printed image digitised by the University of Southampton Library Digitisation Unit

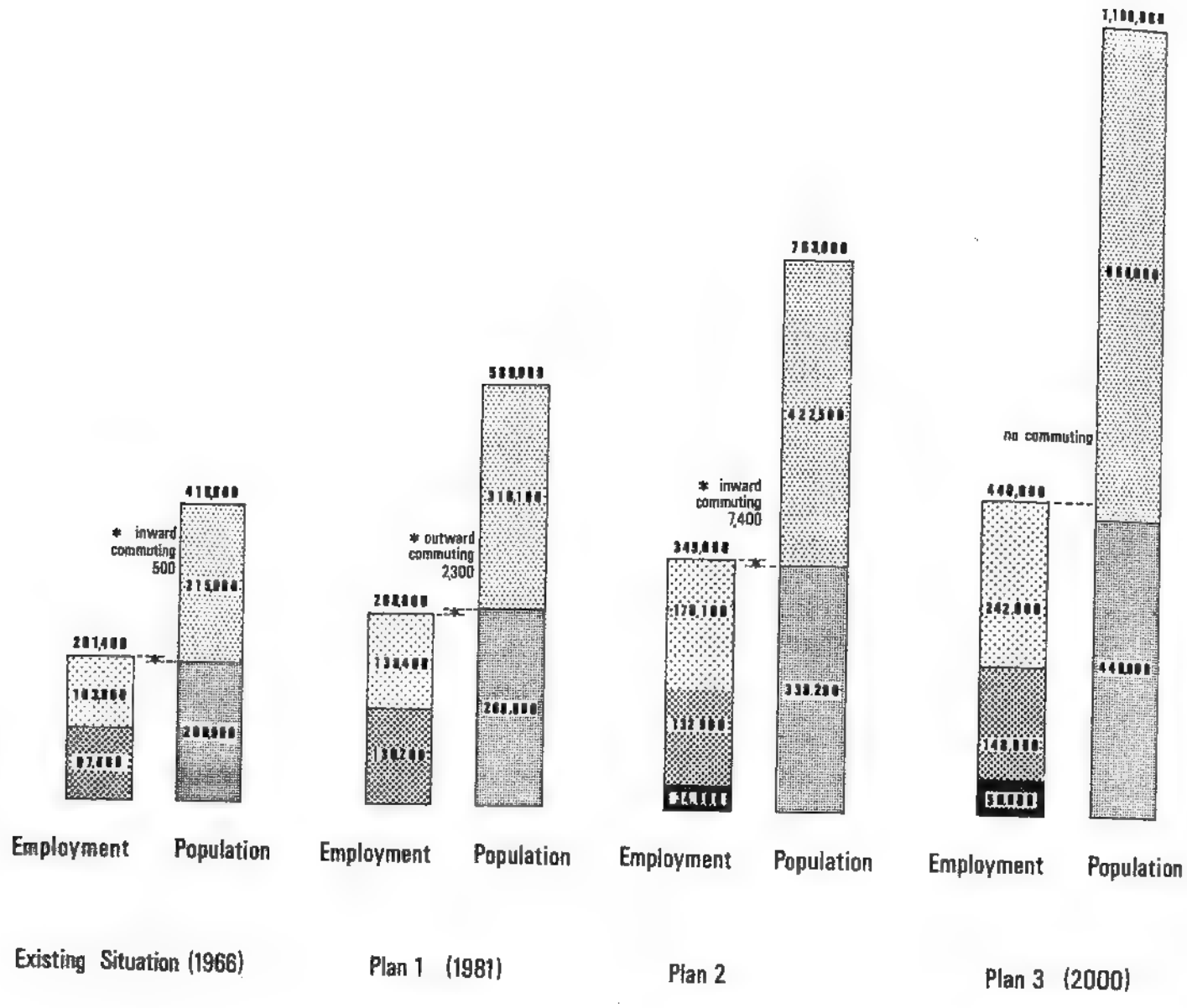
Table 4.4 Cont.

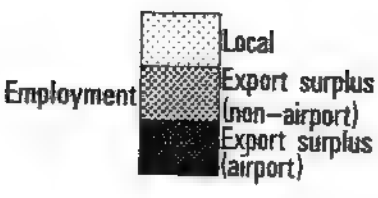
CATEGORY	CRITERION	STRATEGY A	B	C	E
UNCOSTED ADVANTAGES AND DISADVANTAGES	Barrier effect of airport on social patterns	0	0	0	--
	Population pressure	+	0	+	0
	Provision of major service and shopping centres	+	0	+	-
	Land acquisition	++	0	+	0
	Losses in agricultural production	+	0	+	-
	Transportation user costs elsewhere in the area	-	0	0	+

NOTE: ø denotes alternative with lowest cost for each component
Figures show excess cost of other alternatives in £m

KEY: ++ Considerable advantages + Some advantages 0 Neutral - Some advantages --Considerable disadvantages

Printed image digitised by the University of Southampton Library Digitisation Unit





CUBLINGTON
INTERNAL ZONE AREA EMPLOYMENT AND POPULATION

Figure 4.23

Printed image digitised by the University of Southampton Library Digitisation Unit

Population and employment

65 In the year 2000 the 65,000 airport workers, together with the growth of other industries established by 1981, are expected to support a population of some 1,100,000 in the internal zone area (table 4.5 and figure 4.23). This is near the high end of the range of estimates, which extends from 880,000 up to 1,150,000. A high estimate has been recommended as the area is expected to be in a growth corridor in regional strategies for the South East.

66 The internal zone area includes the rapidly growing vehicles industry in Luton and Dunstable, and is likely to attract other growth industries along the national communication axis of M1; a high growth rate has therefore been assumed for export industries after 1981. With the airport, 'export surplus' employment of 198,000 is forecast for plan 3. When local employment is added, this gives total employment of 440,000.

67 We have assumed that there would be no net commuting over the boundary of the internal zone area. The assumption is made on the basis of present commuting patterns and the belief that workers at the airport would live mainly in the internal zone area.

68 In table 4.5 the first two alternative growth rates up to 2000 for industries established by 1981 are 50 per cent and 25 per cent of the 1966-81 growth rates implied by Plan 1; the third alternative assumes no net growth of established industries after 1981.

Concept for Plan 3

69 The increase in the population of the internal zone area between 1981 and 2000 is forecast to be 511,000. We have assumed that 198,000 of this growth would occur in Luton, Dunstable, Leighton/Linsdale and Buckingham; they are likely to remain somewhat independent of the airport and its city, and their expansion has not been costed. A population of 280,000 has been allocated to airport city, and the remaining 33,000 to unlocated minor expansions of small towns and villages. Urbanisation for these 313,000 people has been costed.

70 The plan for airport city is based on the following aims -

i The new development should blend harmoniously with that part of Milton Keynes already committed by 1981.

ii The new growth should produce short work journeys to the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.5a Cublington: Alternative estimates of population and employment in internal zone area for Plan 3

Annual growth rate of non-airport export surplus employment from 1981	1.0%		0.5%		nil	
Export surplus employment -						
Non-airport	157,300		143,200		130,200	
Airport	50,000		50,000		50,000	
Total	207,300		193,200		180,200	
Total employment	460,200		428,900		400,000	
Net commuting	ZERO		ZERO		ZERO	
Economically active population	460,200		428,900		400,000	
Participation	40.0	45.4	40.0	45.4	40.0	45.4
Population	1,150,500	1,012,400	1,072,200	943,600	1,000,000	880,000

Table 4.5b Recommended estimates

Population	1,100,000
Employment	440,000
Net commuting	NIL
Economically active population	440,000

Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

PLAN 3–AIRPORT CITY

Figure 4.21

Printed image digitised by the University of Southampton Library Digitisation Unit

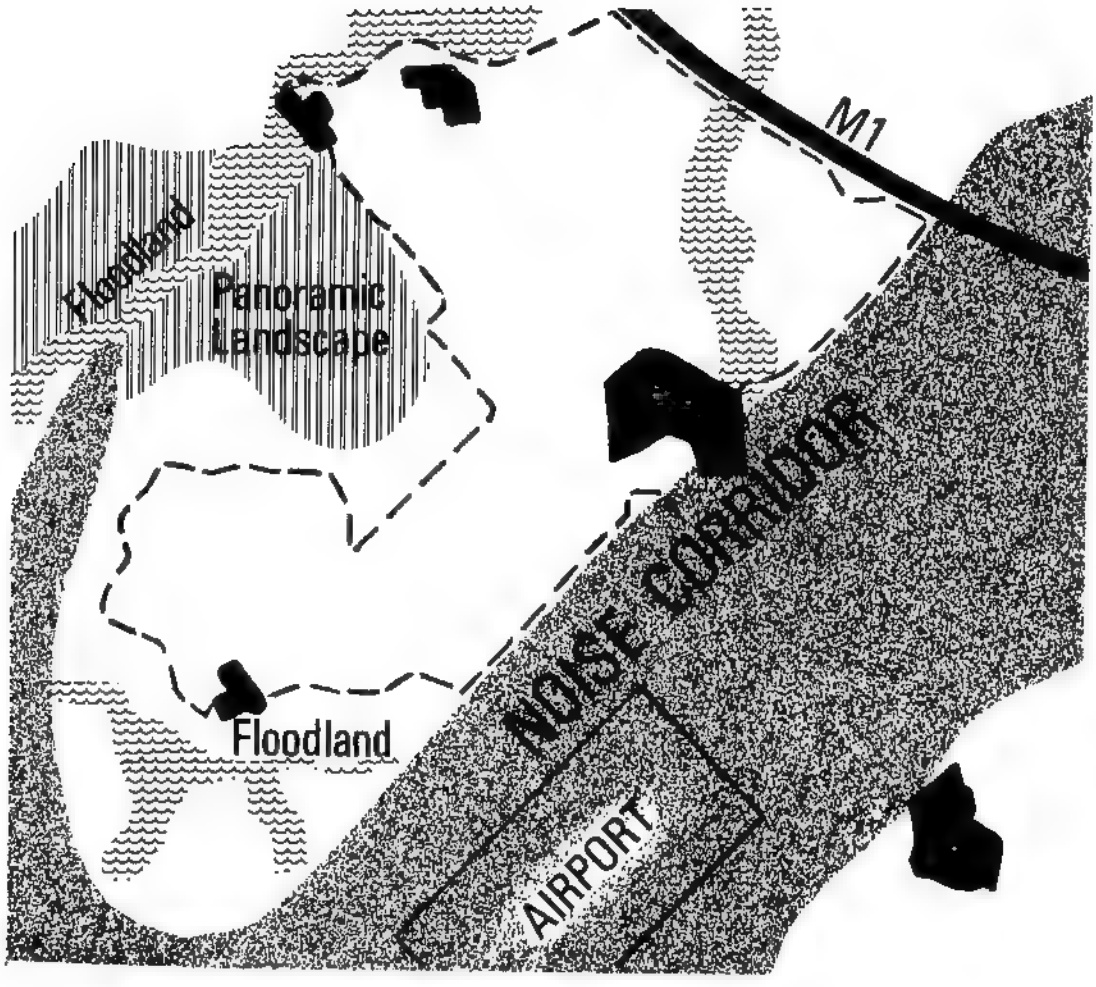


Figure 4.24 FACTORS INFLUENCING URBAN ENVELOPE

Printed image digitised by the University of Southampton Library Digitisation Unit

iii Severance of the city by building across M1 should be avoided.

iv The existing communities and their central facilities should have their place in the new city.

v The panoramic landscape north of Whaddon should remain undeveloped if adequate land is available elsewhere sufficiently close to the airport.

vi The new city centre should be close enough to the airport for its facilities to be used by passengers.

vii The city and its centre should each be capable of further growth.

71 The concept that emerged from these aims was the consolidation of Milton Keynes with an extension north of the noise corridor but not encroaching on the area of panoramic quality landscape. The main open spaces in the town, which would be one of the most important structuring elements, would be on the rim of the panoramic area just described and in the valleys already planned as open space in the interim master plan for Milton Keynes. The centre would be located at the most accessible point and would overlook the central open space.

Boundaries of urban area

72 The southern edge follows the northern limit of the noise corridor. The eastern edge abuts the M1 motorway.

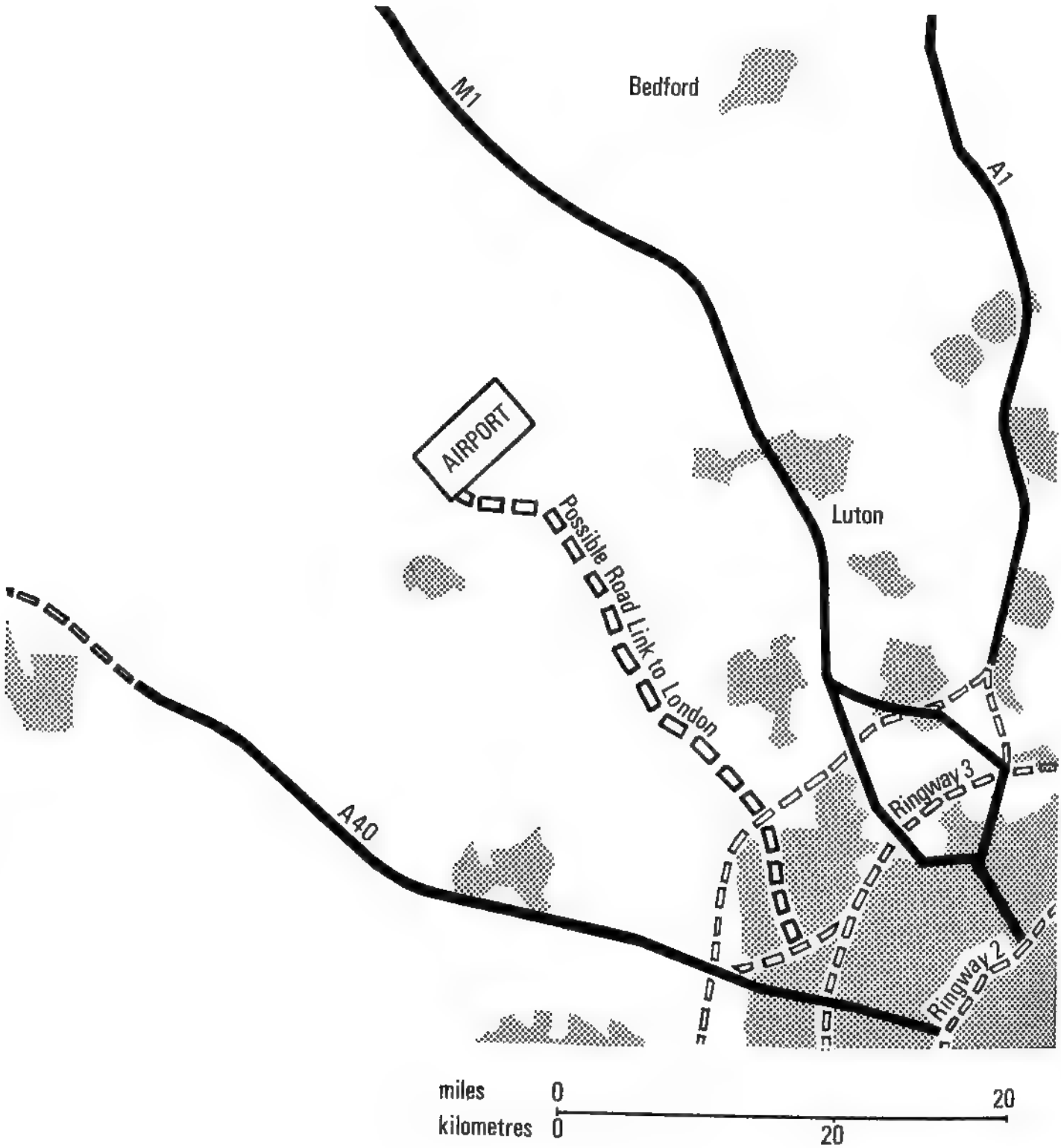
73 The northern edge follows the floodplain of the Great Ouse from the Newport Pagnell service station on the M1 to the A5. It then turns south to skirt the area of panoramic value and to exclude the picturesque villages of Whaddon and Nash, and follows the high ground that separates Bletchley from Buckingham.

74 The western edge follows the northern limit of the floodland of Claydon brook and enmeshes with the linear pattern of the villages of Addington, Winslow, and Swanbourne and their associated parkland.

Growth outside airport city

75 Outside airport city most growth would take place at Luton or Dunstable because of the motor industry. These towns are short of land for expansion and a special study of their requirements has been

Printed image digitised by the University of Southampton Library Digitisation Unit



CUBLINGTON
LINKS TO AIRPORT

Figure 4.22

Printed image digitised by the University of Southampton Library Digitisation Unit

undertaken by BedfordshireCounty Council, Luton County Borough Council and the Ministry of Housing and Local Government. The results have not been published. We have assumed a growth of 33, 000 up to 1981 and a further 60, 000 by 2000 in Luton and its immediate environs. ,If Cublington were selected for the third London airport, then Luton airport would become redundant and might be used to provide land for some of this growth.

76 We have also assumed that Aylesbury will grow from 35, 000 in 1966 to 48, 000 in 1981 and some 68, 000 by 2000, and Buckingham from 4, 500 in 1966 to 7, 500 in 1981 and 9, 500 in 2000.

Roads

77 Preliminary studies by Messrs. Howard Humphreys and Sons suggested that the principal road access to the airport for passengers and visitors would approach from the direction of A41 and enter the site at the south-west end. (figure 4.22). It would thus avoid the two main access routes from the city to the airport. Since the city is north of the site, urbanisation is not affected by the requirements of access to the airport from London. Access from M1 for passengers and visitors from the Midlands and the North would be by a road skirting the eastern side of the new city, but it would use one of the main entrances to the airport from the city.

78 The new roads needed by the year 2000 in the internal zone area because of urban growth are shown on figure 4.25. These form a grid within airport city, the dimension of which varies considerably from area to area. In the first section of Milton Keynes the 1km grid would be constructed according to existing plans based on a number of dispersed industrial estates. The later stages of the plan would not have dispersed estates because new basic employment would be concentrated at the airport. This leads to fewer major roads in the later additions. The shape of the plan also leads to lower traffic densities and hence fewer main roads in the western limb as opposed to the consolidated urban area within the present designated area. The grid therefore varies from 1km x 1km to 3km x 4km according to the predicted traffic loading.

79 The links from the city to the airport would consist of two new high-grade dual carriageways, one from the Milton Keynes area and one from the western half of the city, which would enter the airport on the north-east and north-west side respectively.

80 Leighton Buzzard and its hinterland would be served by up-grading the B4032 to a three lane single carriageway, and movements from the

Printed image digitised by the University of Southampton Library Digitisation Unit

Expressway

Dual three lane carriageway

Dual two lane carriageway

Three lane single carriageway

Two lane single carriageway

Representative urban street

Boundary of Internal Zone Area

Miles 0 10

Kilometres 0 10

CUBLINGTON

Figure 4.25 PLAN 3–HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

Aylesbury direction would be on the up-graded A413 with a dual two lane carriageway. This would have a short spur into the south-west end of the airport.

Railways

81 Bletchley station on the electrified line between London and the North West would serve the new city. We are advised by Messrs. Livesey and Henderson that new rail links to the airport for air passengers would enter from the south and so would not conflict with the proposals in this report (figure 4.22).

Sewerage and sewage disposal

82 The new city would be provided with separate sewerage and drainage systems. The following paragraphs describe the broad outlines which these systems would probably take. Technical matters concerned with the disposal of sewage are discussed in appendix D.

83 The whole of the proposed city lies within the catchment of the river Great Ouse. It is divided into three natural subcatchments which are shown on figure 4.26. The eastermost part (horizontal shading) drains to the river Ouzel which runs northward past Bletchley to join the river Great Ouse just downstream of Newport Pagnell. The central part (vertical shading) drains to a small tributary of the river Great Ouse which flows northward to join the main river near Wolverton. The westernmost part (diagonal shading) drains towards Claydon brook which runs in an arc, first westward and then northward, to join the river Great Ouse 2 miles downstream of Buckingham.

84 There are already sewerage systems in the main settlements in the area - Bletchley, Stony Stratford and Wolverton - and also in some of the villages, which drain to existing sewage treatment works. These systems would in general, be incapable of expansion to serve a much larger population and it would probably be desirable, from the viewpoints of amenity and economy, to phase out the existing treatment works. We have therefore assumed for the purpose of this study that the existing local and

Printed image digitised by the University of Southampton Library Digitisation Unit

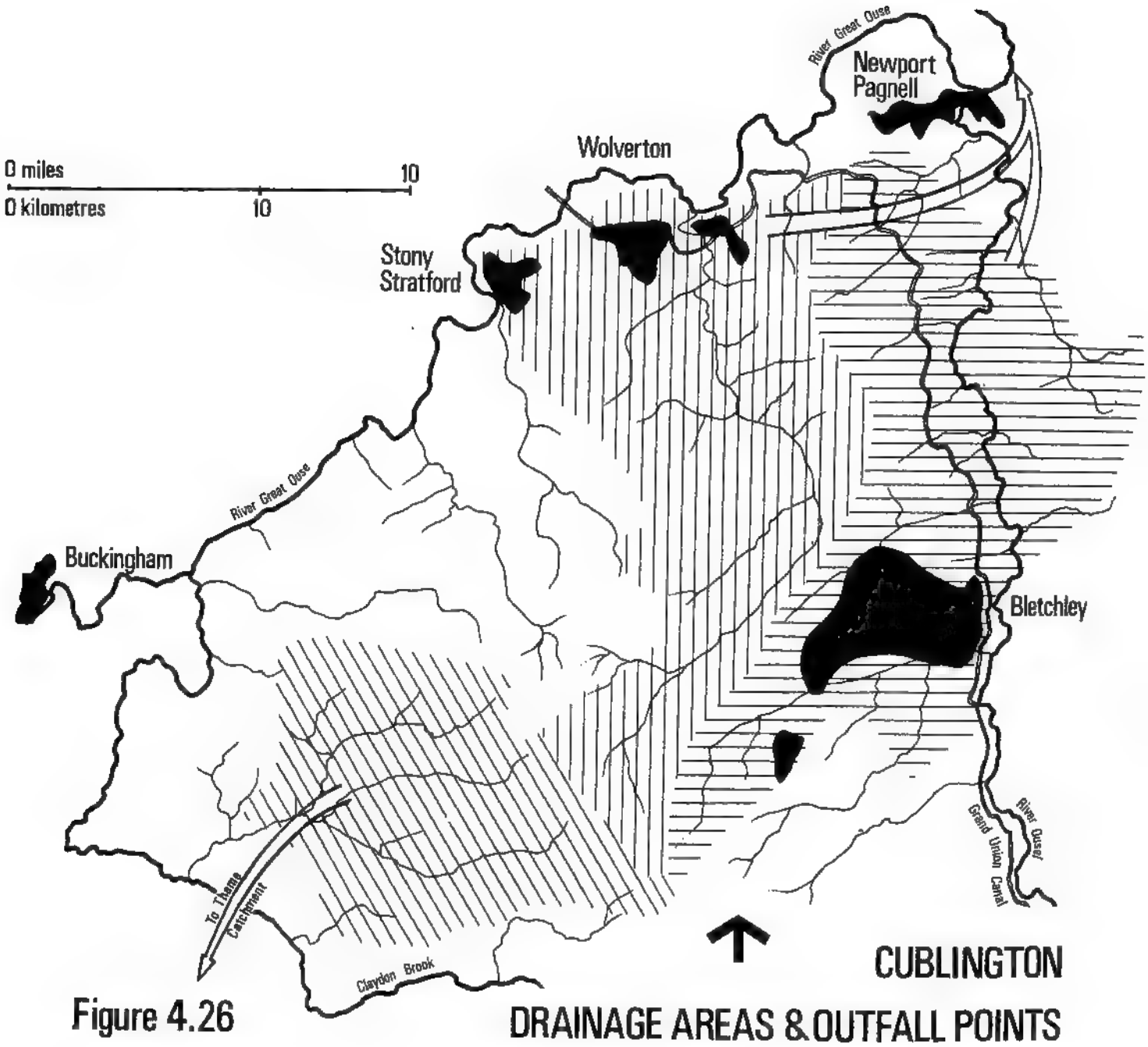


Figure 4.26 DRAINAGE AREAS & OUTFALL POINTS

Printed image digitised by the University of Southampton Library Digitisation Unit

branch sewers would continue to serve the needs of the areas already developed, but that provision would have to be made in the new trunk sewers and sewage treatment works for the eventual acceptance of flows originating from these areas.

85 Proposals have already been formulated for the sewerage of Milton Keynes and we have assumed that the sewage originating in the eastern and central parts of airport city would be conveyed to the site near Newport Pagnell already selected for the sewage treatment works.

86 The trunk sewers in the western part of the city would run generally in a westerly direction towards Claydon brook to a point near Adstock. Almost the whole of the area in this subcatchment could be served by gravity sewers, but it would be necessary to pump sewage from a few small areas adjacent to the flood plain of Claydon brook.

Drainage and surface water disposal

87 The area proposed for urbanisation is drained by the network of natural watercourses shown in outline on figure 4.26. Storm water run-off from roofs, roads, and other paved surfaces in the urban areas would be conveyed by a new surface water drainage system into the local watercourses.

88 The effect of constructing impermeable surfaces over a substantial proportion of this mainly agricultural area would be to greatly increase the rate of surface water run-off, particularly during intense thunderstorms. If the flow from the surface water drainage system was permitted to discharge into the existing watercourses without any measures to cater for these much higher peak flows there would be a sharp increase in the frequency and extent of flooding both within the new city and downstream of it. In order to avoid this it would be necessary to provide balancing capacity and to improve some of the channels.

89 Balancing capacity would consist of flood meadows or retention reservoirs in which peak flows would be temporarily stored, the water being released to the watercourse at a reduced rate over a period after the storm. The plan permits the use of the valleys for this purpose. The carrying capacity of some of the watercourses would also have to be increased, depending on the volume of balancing which could be provided economically.

90 The foregoing paragraphs have dealt with the new city only and do not refer to smaller scattered developments. These developments would

Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

Figure 4.27 AIRPORT CITY–SEQUENCE OF GROWTH

Printed image digitised by the University of Southampton Library Digitisation Unit

not give rise to any serious sewerage or drainage problems and we have generally allowed in our estimates for them to be catered for individually.

Sequence of growth

91 The new city is already beginning with the construction of Milton Keynes and would follow its proposed pattern of initial growth between Bletchley and Wolverton. This is shown on Plan 1 (figure 4.9).

92 Development would then follow the sequence shown on figure 4.27. The distribution of the population increase in each increment is given in table 4.6. Development would start at Shenley and Loughton. Following that, Bletchley would be extended westwards towards Newton Longville and Mursley. Thus part of the extension to Milton Keynes would take place before the present designated area is completely developed. The reasons for this are-

i by developing nearer the airport, work journeys would be substantially shorter in the early years

ii by leaving parts of Milton Keynes until later, the benefits of higher standards, more up-to-date designs and different dwelling size distributions can be enjoyed in all parts of airport city.

93 The next period would see consolidation within Milton Keynes, south of Wolverton, and an extension of the southern limb to Little Horwood. These would complete that part of the city included in Plan 2 (figure 4.28).

94 Subsequent growth would be to the limb at Great Horwood and then the eastern part of Milton Keynes at Walton and Wavendon. The last part to be developed would be the extreme western end which would complete Plan 3 (figure 4.21).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.6 Incremental growth of population assumed for costing purposes

		Airport City	Rest of internal zone area	Total
Plan 1 (1981)		130, 500	458, 500	589, 000
1966		58,000	357, 500	416, 800
Thus new population up to 1981		72, 000	101, 000	173, 000
Plan 2		286, 500	476, 500	763, 000
Plan 1 (1981)		130, 500	458, 500	589, 000
Thus new population in Plan 2 over Plan 1		156, 000	18, 000	174, 000
Divided into six increments	1	26, 000	3, 000	29, 000
	2	26, 000	3, 000	29, 000
	3	26, 000	3, 000	29, 000
	4	26, 000	3, 000	29, 000
	5	26, 000	3, 000	29, 000
	6	26, 000	3, 000	29, 000
Plan 3 (2000)		410, 000	690, 000	1, 100, 000
Plan 2		286, 500	476, 500	763, 000
Thus new population in Plan 3 over Plan 2		123, 500 say 124, 000	213, 500 say 213, 000	337, 000
Major expansions outside airport city (uncosted)		-	198, 000	198, 000
Remainder		124, 000	15, 000	139, 000
divided into four increments	7	31, 000	4, 000	35, 000
	8	31, 000	4, 000	35, 000
	9	31, 000	4, 000	35, 000
	10	31, 000	4, 000	35, 000

Further growth

95 If more land than we have indicated should eventually be required, several small areas near Granborough and Buckingham could be used as extensions to the proposed new city. Any major growth on the other hand should be north of Milton Keynes. The reasons for this are that landscape and drainage considerations are against developing near the Chilterns and the noise corridor prevents expansion westwards. There could be some growth

Printed image digitised by the University of Southampton Library Digitisation Unit

north of the south-westerly limb but this would require very careful planning to preserve villages such as Thornborough, Nash and Whaddon, and the area of panoramic landscape quality.

96 Growth further from the airport in the internal zone area is probably best located to the north of Milton Keynes so that the maximum benefit can be obtained from investment in new roads and the electrified railway.

Printed image digitised by the University of Southampton Library Digitisation Unit

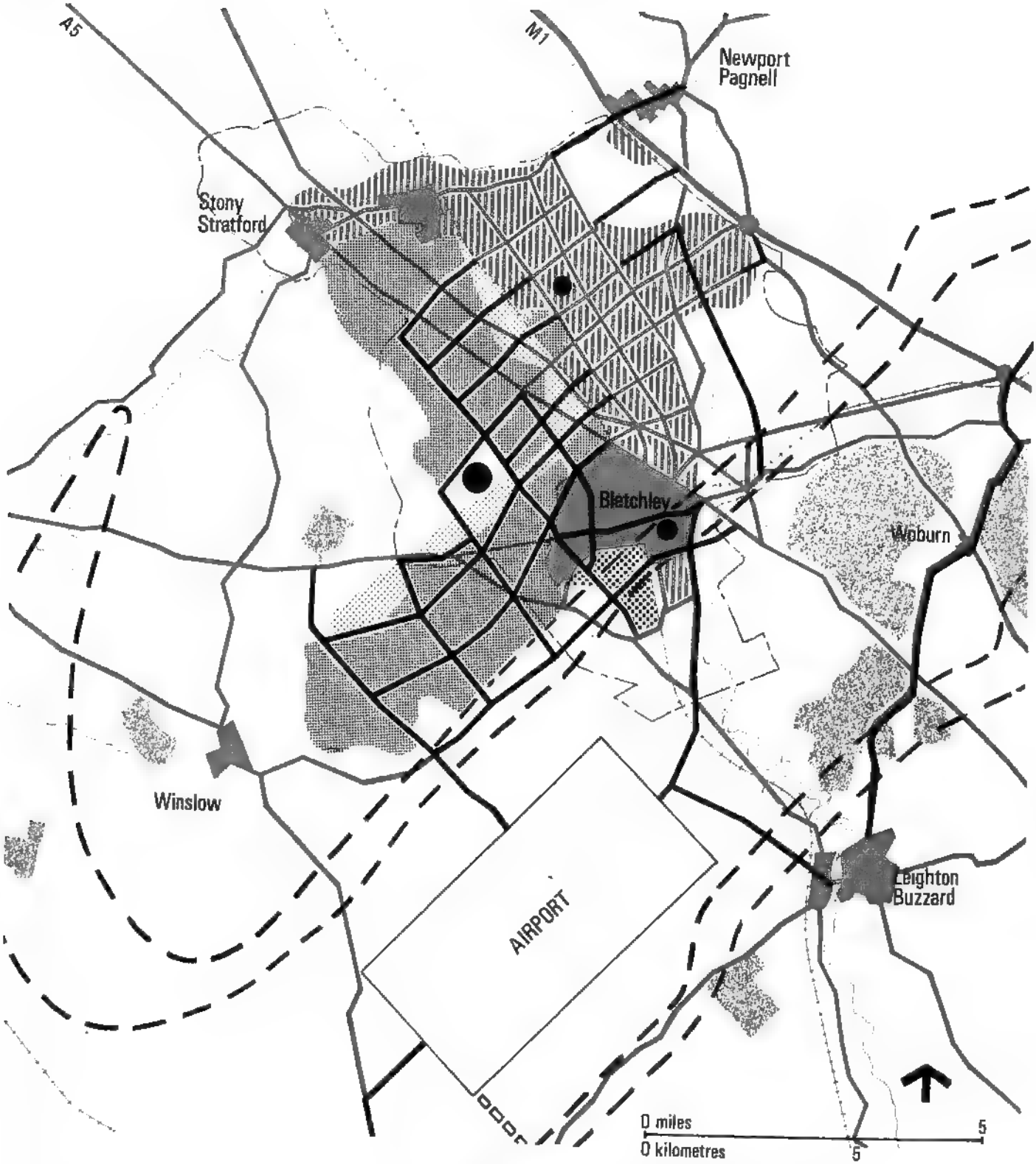


Figure 4.28

CUBLINGTON

PLAN 2 – AIRPORT CITY

Printed image digitised by the University of Southampton Library Digitisation Unit

Population

97 Of the 174,000 increase in population over Plan 1, we have located 156,000 in airport city and the remaining 18,000 in minor expansions of small towns and villages. These have not been identified but their cost has been estimated.

Area of development

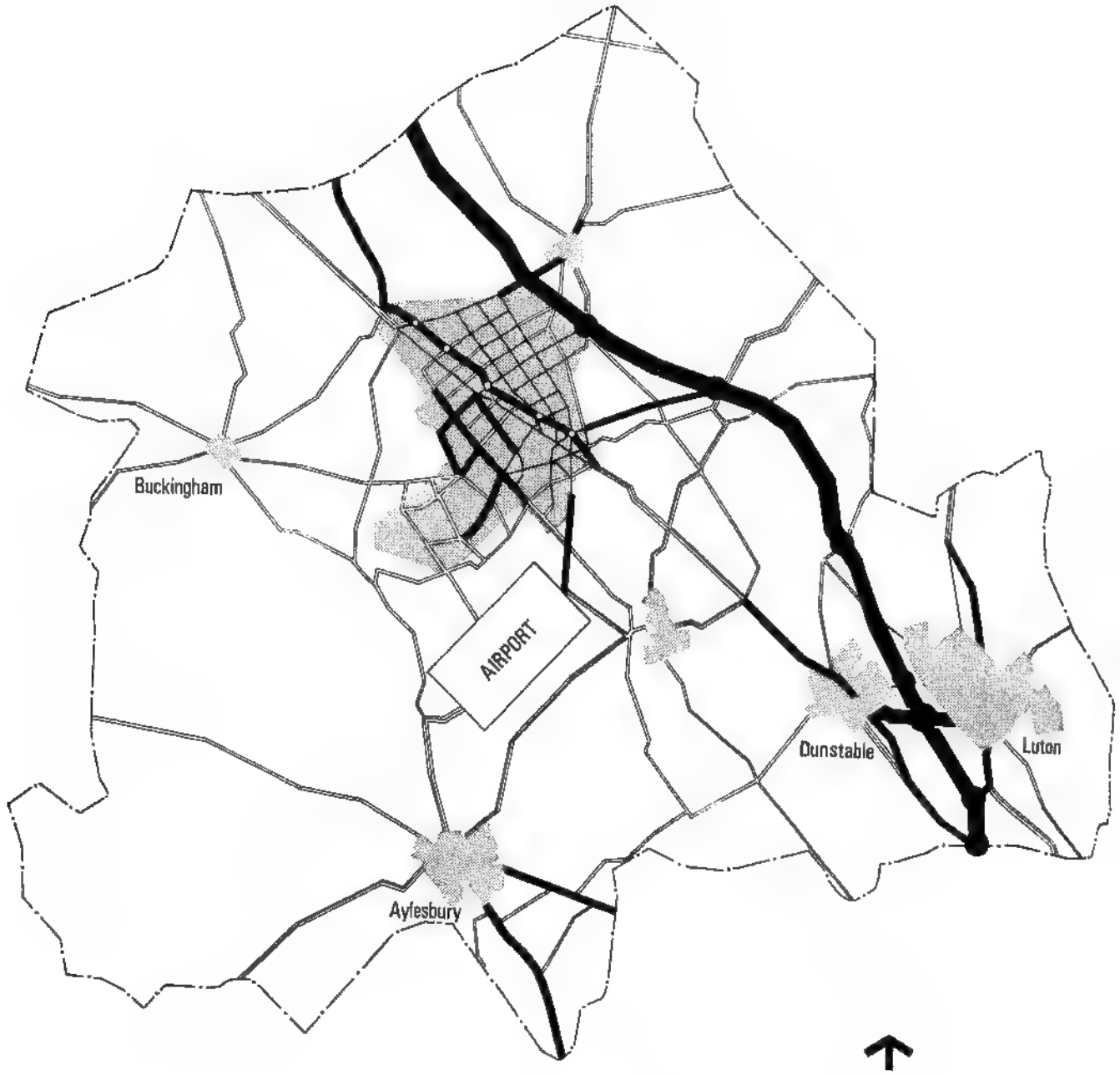
98 Plan 2 (figure 4.28) comprises the first six increments shown on figure 4.27. Only the extreme western and eastern ends of airport city are excluded.

Roads

99 The roads within airport city for Plan 2 simply represent a cut-back from the Plan 3 network. Whole limbs are omitted where development occurs between Plans 2 and 3. No reduction of road capacity is allowed for within the Plan 2 area.

100 The airport links proposed for Plan 2 are substantially those required for Plan 3 although the road to the north-west end would require only a two lane single carriageway, and the A413 from Aylesbury a three lane single carriageway.

Printed image digitised by the University of Southampton Library Digitisation Unit



CUBLINGTON

Figure 4.29 PLAN 2–HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

Construction costs

101 The estimated capital costs for Plan 2 minus Plan 1 are given in table 4.7, for Plan 3 minus Plan 2 in table 4.8, and for Plan 3 minus Plan 1 in table 4.9. The estimated capital cost of each increment of growth is shown in table 4.10.

102 The following comments on some of the components (numbered in the same way as in the tables) draw attention to factors that may cause differences in costs between urbanisation at Cublington and at the other three sites.

4.0 Shops, parking, site development
The estimates represent about 75 per cent of the new floor space required; the remainder would be in the "existing" centres, including for this purpose the proposed new centre at Milton Keynes, which would become a district centre in airport city.

5.1 Roads within airport city
Although it is possible to make use of the roads planned for Milton Keynes in 1981 and there are no exceptional ground conditions, these advantages would seem to be counterbalanced by the rather elongated shape of the city.

5.2 Roads between urban areas and airport
Two short links to the airport are required; otherwise improvements to existing roads will be sufficient. The second new link is required in the later phases. This is reflected in the cost of Plan 3 minus Plan 2 (table 4.8).

5.3 Roads elsewhere in internal zone area
The cost of improving the M1 motorway is not included although this falls within the internal zone area.

6.1 Sewerage and drainage
The high cost of Plan 2 (table 4.7) is because there has to be much spare capacity in sewage works and trunk mains in the early phases.

6.2 Water
The estimate is based on the construction of a pumped storage reservoir. The whole of the cost of the source works and 80 per cent of the cost of the trunk mains is incurred in the early phases and this is reflected in Plan 2 (table 4.7).

6.3 Gas
The costs are based on an estimate for the whole of airport city from which the cost attributable to the growth of Milton Keynes up

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.7 Plan 2 minus Plan 1: estimated capital cost of construction

	Component	a Cost attributable to airport-generated population (174,000)	b Cost per head $\frac{a}{174,000}$
		£m	£
1.0	Residential, education, etc.	281.880	1620
2.0	Abnormal site conditions	Nil	Nil
3.0	Airport-related industry	13.385	77
4.0	Shops, parking, site development	7.925	46
5.0	Roads		
	5.1 Within airport city	10.745	62
	5.2 Between urban areas and airport	3.872	22
	5.3 Elsewhere in internal zone area	2.566*	-
6.0	Engineering services		
	6.1 Sewerage and drainage	16.621	96
	6.2 Water	18.710	108
	6.3 Gas	6.496	37
	6.4 Electricity	7.974	46
	6.5 Altering overhead grid lines	1.330	8
	6.6 Telecommunications	15.526	89
	TOTAL	384.464	£2210

* Excluded from Total and from Cost per head

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.9 Plan 3 minus Plan 1: estimated capital cost of construction

Component		a Total cost	b Cost per head $\frac{a}{260,000}$
		£m	£
1.0	Residential, education, etc.	421.200	1620
2.0	Abnormal site conditions	Nil	Nil
3.0	Airport-related industry	20.000	77
4.0	Shops, parking, site development	11.610	45
5.0	Roads		
	5.1 Within airport city	16.075	62
	5.2 Between urban areas and airport	5.828	22
	5.3 Elsewhere in internal zone area	6.356*	-
6.0	Engineering services		
	6.1 Sewerage and drainage	20.249	78
	6.2 Water	21.450	83
	6.3 Gas	9.538	37
	6.4 Electricity	11.892	46
	6.5 Altering overhead grid lines	1.497	6
	6.6 Telecommunications	26.311	101
	TOTAL	565.650	£2176

* Excluded from Total and from Cost per head

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.8 Plan 3 minus Plan 2: estimated capital cost of construction

	Component	a Total cost	b Population associated with column a	c Cost attributable to airport population a x 86,000 / b	d Cost per head c / 86,000
		£m		£m	£
1.0	Residential, education, etc.	225.180	139,000	139.320	1620
2.0	Abnormal site conditions	Nil	139,000	Nil	Nil
3.0	Airport-related industry	6.615	86,000	6.615	77
4.0	Shops, parking and site development	5.955	139,000	3.685	43
5.0	Roads				
	5.1 Within airport city	8.615	139,000	5.330	62
	5.2 Between urban areas and airport	1.956	86,000	1.956	23
	5.3 Elsewhere in internal zone area	3.790*	-	-	-
6.0	Engineering services				
	6.1 Sewerage and drainage	5.864	139,000	3.628	42
	6.2 Water	4.428	139,000	2.740	32
	6.3 Gas	4.917	139,000	3.042	35
	6.4 Electricity	6.333	139,000	3.918	46
	6.5 Altering overhead grid lines	0.270	139,000	0.167	2
	6.6 Telecommunications	17.432	139,000	10.785	125
			TOTAL	181.186	2107

* Excluded from Total and from Cost per head

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.10 Estimated capital cost of each increment of growth

Phase	Population				Capital cost attributable to airport-generated population			Capital cost of roads outside airport city
	Total costed		Airport-generated					
	Increment	Cumulative total	Increment	Cumulative total	Increment	Cumulative total	Cost per head g	
a	b	c	d	e	f	g	e	
					£m	£m		£m
Initial	-	-	-	-	20.426	20.426	-	Nil
1	29,000	29,000	29,000	29,000	59.775	80.201	2766	0.709
2	29,000	58,000	29,000	58,000	58.885	139.086	2398	0.069
3	29,000	87,000	29,000	87,000	59.073	198.159	2278	1.077
4	29,000	116,000	29,000	116,000	60.891	259.050	2233	0.583
5	29,000	145,000	29,000	145,000	61.598	320.648	2211	0.128
6	29,000	174,000	29,000	174,000	63.816	384.464	2210	Nil
Plan 2 minus Plan 1	174,000	-	174,000	-	384.464	-	-	2.566
7	35,000	35,000	21,655	21,655	45.206	45.206	2088	1.486
8	35,000	70,000	21,655	43,310	46.304	91.510	2113	0.218
9	35,000	105,000	21.655	64,965	44.942	136.452	2100	1.195
10	34,000	139,000	21,035	86,000	44.734	181.186	2107	0.891
Plan 3 minus Plan 2	139,000	-	86,000	-	181.186	-	-	3.790
Plan 3 minus Plan 1	313,000	-	260,000	-	565.650	-	-	6.356

Printed image digitised by the University of Southampton Library Digitisation Unit

to 1981 was deducted. The site requires a new connection to the national gas grid at Newton Longville, trunk mains and distribution network, and completely new storage facilities.

6.5 Altering overhead grid lines
No 275 kv or 400 kv lines are affected. The estimates provide for undergrounding existing and proposed 132 kv grid lines within the city area.

User costs

103 The annual costs of travel to the airport at 1968 values are -

	£m	
	Plan 2	Plan 3
Journeys to work (minimum travel basis)	1.7	2.5
Commercial vehicles	2.2	2.9
Service journeys	2.7	3.7
Total	6.6	9.1

Agricultural loss

104 The proposed airport city at Cublington would occupy the following amounts of agricultural land of each grade -

		2	3	4
Plan 2 minus Plan 1	hectares	190	3,710	915
	acres	475	9,155	2,260
	per cent	4	77	19
Plan 3 minus Plan 2	hectares	80	3,500	440
	acres	200	8,650	1,090
	per cent	2	81	11
Total (Plan 3 minus Plan 1)	hectares	275	7,210	1,355
	acres	675	17,805	3,350
	per cent	3	82	15

105 The annual losses estimated by the method described in Part 1 are -

	Gross output	Net product	Value added	Gross rent
Plan 2 minus Plan 1	£594,500	£285,360	£64,206	£61,828
Plan 3 minus Plan 2	£675,920	£308,140	£79,520	£53,676
Total (Plan 3 minus Plan 1)	£1,270,420	£593,500	£143,726	£115,504

"Value Added" would probably grow at about 4 per cent compound per year at current prices.

Printed image digitised by the University of Southampton Library Digitisation Unit

Land costs

106 The costs of the residual land not included in the estimates of agricultural loss, estimated on the current use basis, are -

Plan 2 minus Plan 1	£1,045,000
Plan 3 minus Plan 2	£655,000
Total (Plan 3 minus Plan 1)	£1,700,000

107 The costs of all the land required for each increment of growth, on the same basis, are -

Increment	£
1	1,000,000
2	1,000,000
3	1,000,000
4	1,000,000
5	1,000,000
6	1,000,000
Plan 2 minus Plan 1	6,000,000
7	1,200,000
8	1,200,000
9	1,200,000
10	1,170,000
Plan 3 minus Plan 2	4,770,000
Total (Plan 3 minus Plan 1)	10,770,000

Landscape loss

108 The new city would occupy landscape of mainly average quality. No areas of exceptional or high quality landscape are needed. The areas occupied by the increments are in acres with equivalent number of hectares in brackets.

Printed image digitised by the University of Southampton Library Digitisation Unit

Increment	Average	Panoramic
1	2,170 (880)	
2	2,170 (880)	200 (80)
3	2,170 (880)	
4	2,170 (880)	
5	2,150 (860)	150 (60)
6	2,170 (880)	
Total Plan 2 minus Plan 1	13,000 (5,260)	350 (140)
7	2,580 (1,040)	
8	2,580 (1,040)	
9	2,570 (1,040)	
10	2,570 (1,040)	
Total Plan 3 minus Plan 1	10,300 (4,160)	0
Total Plan 3 minus Plan 1	23,300 (9,420)	350 (140)

Benefits

109 The estimated annual rents of offices and industry in the year 2000 (at 1969 values) for the airport-generated population are £2.7 million, and those of industry for the remainder of the population in the internal zone area are £31.5 million.

110 The estimated annual rents of retail floor space in new centres are £0.9 million at the completion of Plan 2 and £1.9 million at the completion of Plan 3.

Printed image digitised by the University of Southampton Library Digitisation Unit

PART V: THURLEIGH

Shankland, Cox and Associates

Printed image digitised by the University of Southampton Library Digitisation Unit

PART III NUTHAMPSTEAD

CHAPTER 1	SUMMARY OF PLANS 2 and 3	page 5
CHAPTER 2	SUBREGIONAL SETTING	7
	Internal zone area	7
	Geology	7
	Drainage and relief	7
	Agriculture	9
	Communications	11
	Settlement pattern	11
	Landscape	13
	Current policies	15
	Landscape appraisal	15
	Mineral workings	17
	Engineering services	17
	Opportunities for urban development	17
	Planning problems of the area	20
CHAPTER 3	PLAN 1 - PROPOSALS TO 1981	21
	Employment and population	21
	Urban growth	21
	Roads	23
	New centres and planned expansions	25
	New engineering services	25
	Other proposals	26
CHAPTER 4	PROPOSALS AFFECTED BY 40 NNI CONTOUR	27
CHAPTER 5	ALTERNATIVE STRATEGIES	30
	Population forecast	30
	Development of alternative strategies	30
CHAPTER 6	SELECTION OF PREFERRED STRATEGY	41
	First stage of selection	41
	Second stage of selection	45
CHAPTER 7	PLAN 3 DEVELOPMENT OF PREFERRED STRATEGY	47
	Employment and population	47
	Concept for Plan 3	52
	Distribution of population	52
	Boundaries of the urban area	52
	Service centres	53
	Growth outside airport city	55
	Transportation	55
	Links to London and the region	55

Printed image digitised by the University of Southampton Library Digitisation Unit

	Access to the airport	page 55
	Roads within airport city	57
	Railways	57
	Engineering services	57
	Gas	57
	Water	58
	Electricity	58
	Sewerage and sewage disposal	59
	Drainage and surface water disposal	59
	Sequence of growth	60
	Further growth	62
CHAPTER 8	PLAN 2	63
	Population	63
	Area of development	63
	Roads	63
CHAPTER 9	COSTS AND BENEFITS	67
	Capital cost of construction	67
	Incremental capital costs	72
	User costs	72
	Agricultural loss	74
	Land costs	75
	Landscape loss	77
	Benefits	78
	Rents for retail and service floorspace	78
	Rents for industrial and office floorspace	78
	Rents for residential development.	79

Printed image digitised by the University of Southampton Library Digitisation Unit

FIGURES

3.1	Subregional setting	page 4
3.2	Internal zone area	6
3.3	Land drainage	8
3.4	Agriculture	10
3.5	Communications	12
3.6	Current landscape policies	14
3.7	Landscape appraisal	16
3.8	Other constraints	18
3.9	Opportunities for urban development	19
3.10	Plan 1 - Proposals to 1981	22
3.11	Plan 1 - Highway requirements	24
3.12	Plan 1 - Effect of airport	28
3.13	Alternative strategies	31
3.14	Strategy A	33
3.15	Strategy B	34
3.16	Strategy C	35
3.17	Strategy D	36
3.18	Strategy E	37
3.19	Strategy F	38
3.20	Strategy G	39
3.21	Strategy H	40
3.22	Plan 3 - Airport city	48
3.23	Employment and population	50
3.24	Factors influencing urban envelope	53
3.25	Links to airport	54
3.26	Plan 3 - Highway requirements	56
3.27	Drainage areas and outfall points	58
3.28	Plan 2 - Airport city	64
3.29	Airport city - sequence of growth	65
3.30	Plan 2 - Highway requirements	66

Printed image digitised by the University of Southampton Library Digitisation Unit

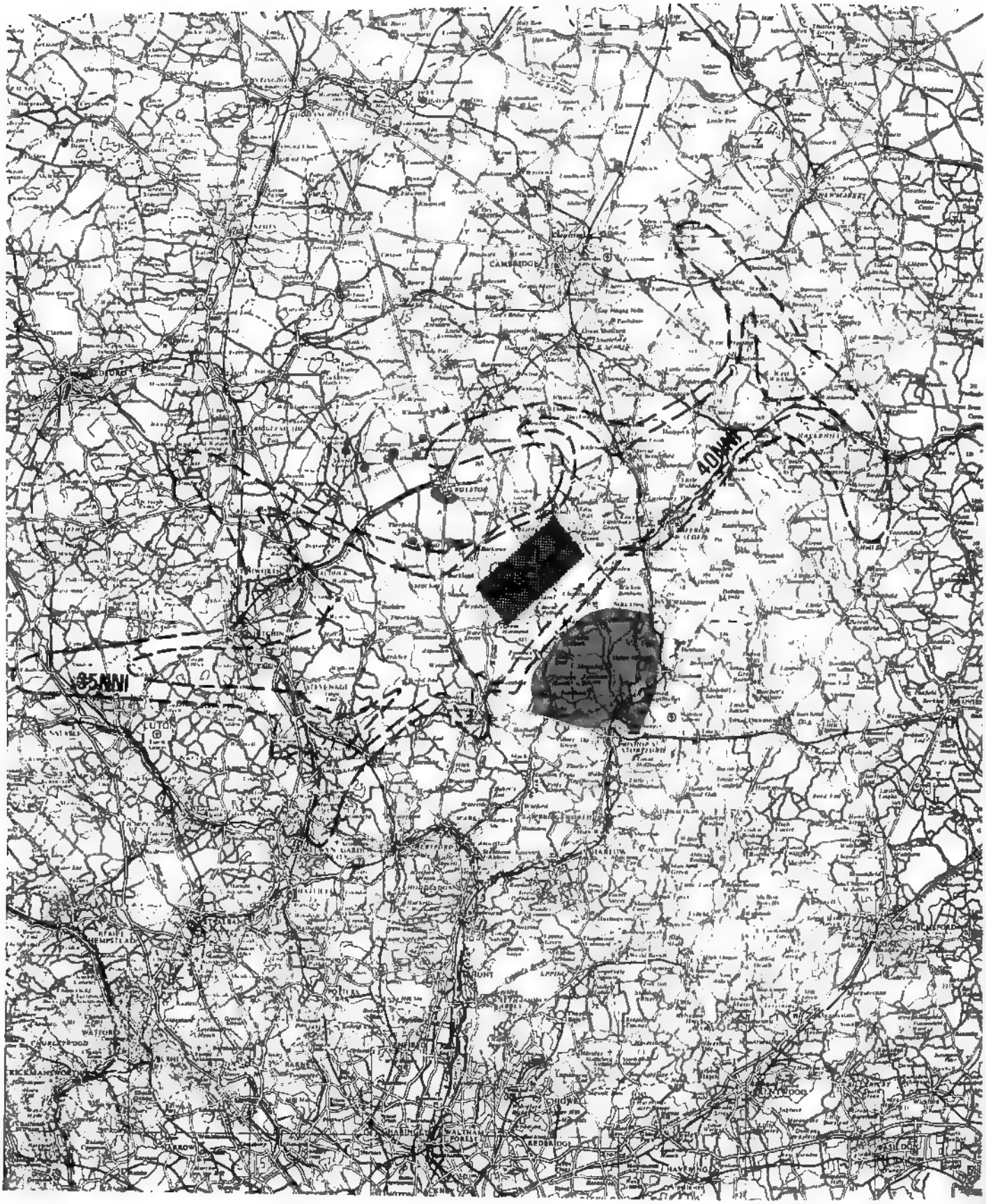


Figure 3.1 NUTHAMPSTEAD SUBREGIONAL SETTING

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 1: SUMMARY OF PLANS 2 AND 3

1 It has been forecast that new urbanisation in the vicinity of the Nuthampstead airport site will be required to accommodate a population growth of about 289,000 by the end of the century, in addition to known development proposed up to 1981. The plan selected as the preferred strategy proposes concentrating about 72% of this additional population in a new city located between Bishop's Stortford and the airport (figure 3.1). The remaining population is distributed in three ways: 10% in a cluster of expanded villages around Royston, about 7% as an addition to Harlow New Town and 11% as peripheral growth around the remaining towns and villages throughout the internal zone area

2 The new city (figure 3.22) covers a compact area about 10 km x 8 km (6 miles x 5 miles) in size, occupying about 7,000 hectares of land (17,250 acres) calculated on an overall town density of 30 persons per hectare (12 persons per acre). The greater part of the city encompasses two valleys running north-south, comprising the drainage catchment areas of the rivers Ash and Stort. These valleys and the two road links to the airport set the orientation of the grid structure of the city. On the east, the boundary of the new city is formed by the M.11 motorway, on the north-west by the noise corridor of the airport and on the south by the Ministry of Transport's proposal for an improved east-west route on the line of the A.120 and the proposed by-pass to Bishop's Stortford, which passes between the town and the new city, and is incorporated into a green belt between the two urban areas.

3 A major new shopping centre located near the middle of the new city and the two flanking district centres together with the existing centres of Stansted and Bishop's Stortford will provide the servicing functions of the city. Four employment areas are located near the periphery of the city. The valleys of the rivers Ash and Stort provide the major open space system of the new city.

4 Plan 2 (figure 3.28) represents the urbanisation required for an airport employing 45,000 people and will require new urban development to accommodate a forecasted population of about 174,000. The distribution of this population is in about the same proportion as that in Plan 3 described above.

5 The first area for development in the new city would be in the northern half of the urban area in the part closest to the airport and furthest from Bishop's Stortford. Development would start in the valley of the river Stort and would include the first instalment of the new main centre, the district centre to the east, and both links to the airport. When a substantial area of the Stort valley had been built-up, further development would extend into the valley of the river Ash necessitating a second sewage disposal works, and the second district centre would be built.

Printed image digitised by the University of Southampton Library Digitisation Unit

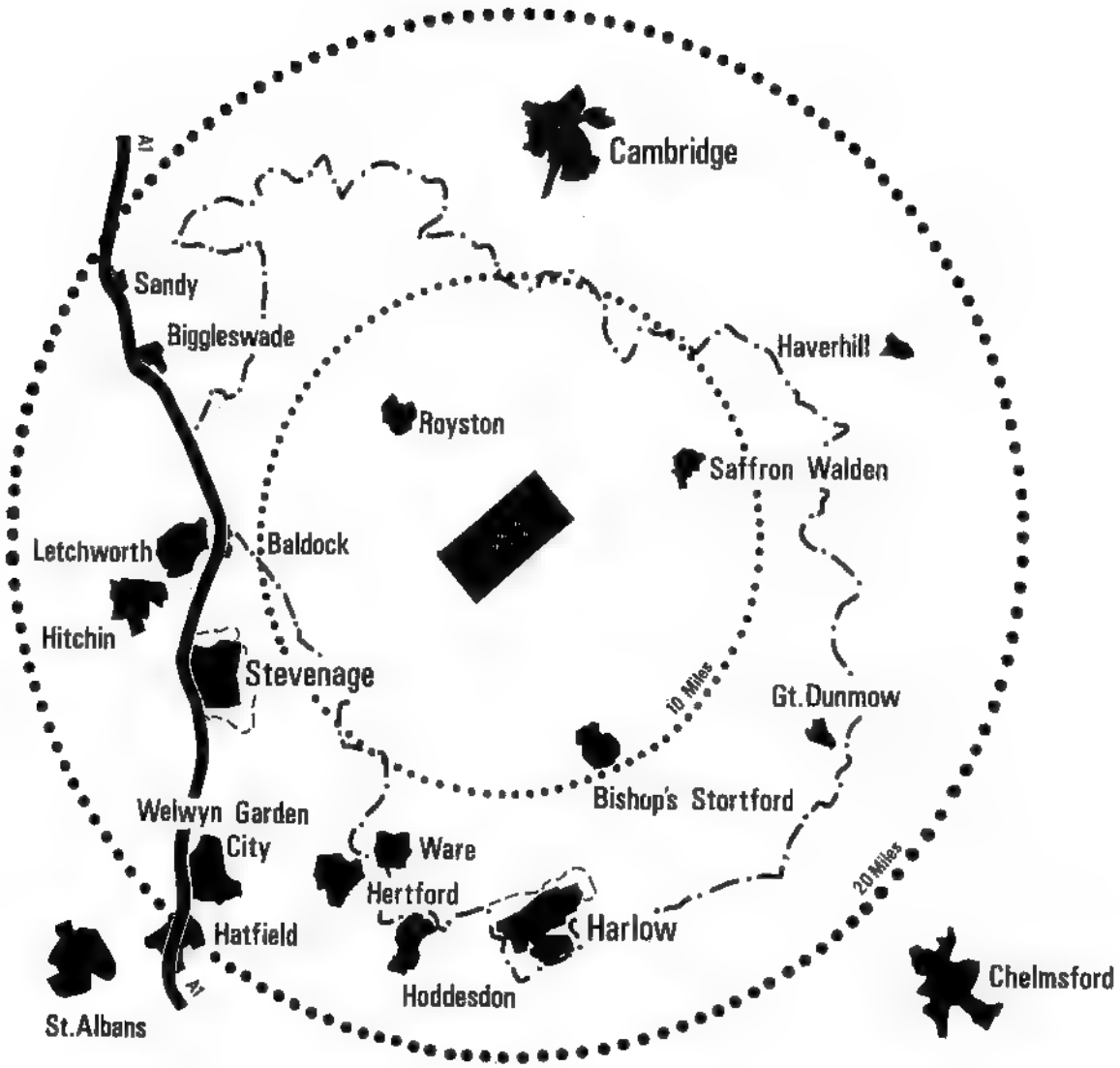


Figure 3.2

NUTHAMPSTEAD
INTERNAL ZONE AREA

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 2: SUBREGIONAL SETTING

Internal zone area

6 The Nuthampstead internal zone area extends from the A1 in the west to beyond the A11 in the east (figure 3.2). To the north west of the airport site is a sparsely populated agricultural area in the centre of which is the town of Royston. The area to the south-east of the site is more urbanised, and includes the towns of Harlow, Sawbridgeworth and Saffron Walden, associated with the A11 and the main railway line from London to Cambridge. A complete list of the local authorities and the new town development corporation included in the internal zone area can be found in table 3.2 (chapter 3).

7 In the remainder of this chapter, the description of existing conditions refers, in the most part, to the internal zone area. This forms the basis for consideration of constraints on, and opportunities for, large scale urban development outside the noise corridor.

Geology

8 The area is crossed from north-east to south-west by an escarpment composed of Middle and Upper Chalk. The back-slope is covered by deposits of Boulder Clay to the east of Saffron Walden and overlain by Tertiaries (Reading Beds and London Clay) on the south-east edge of the area.

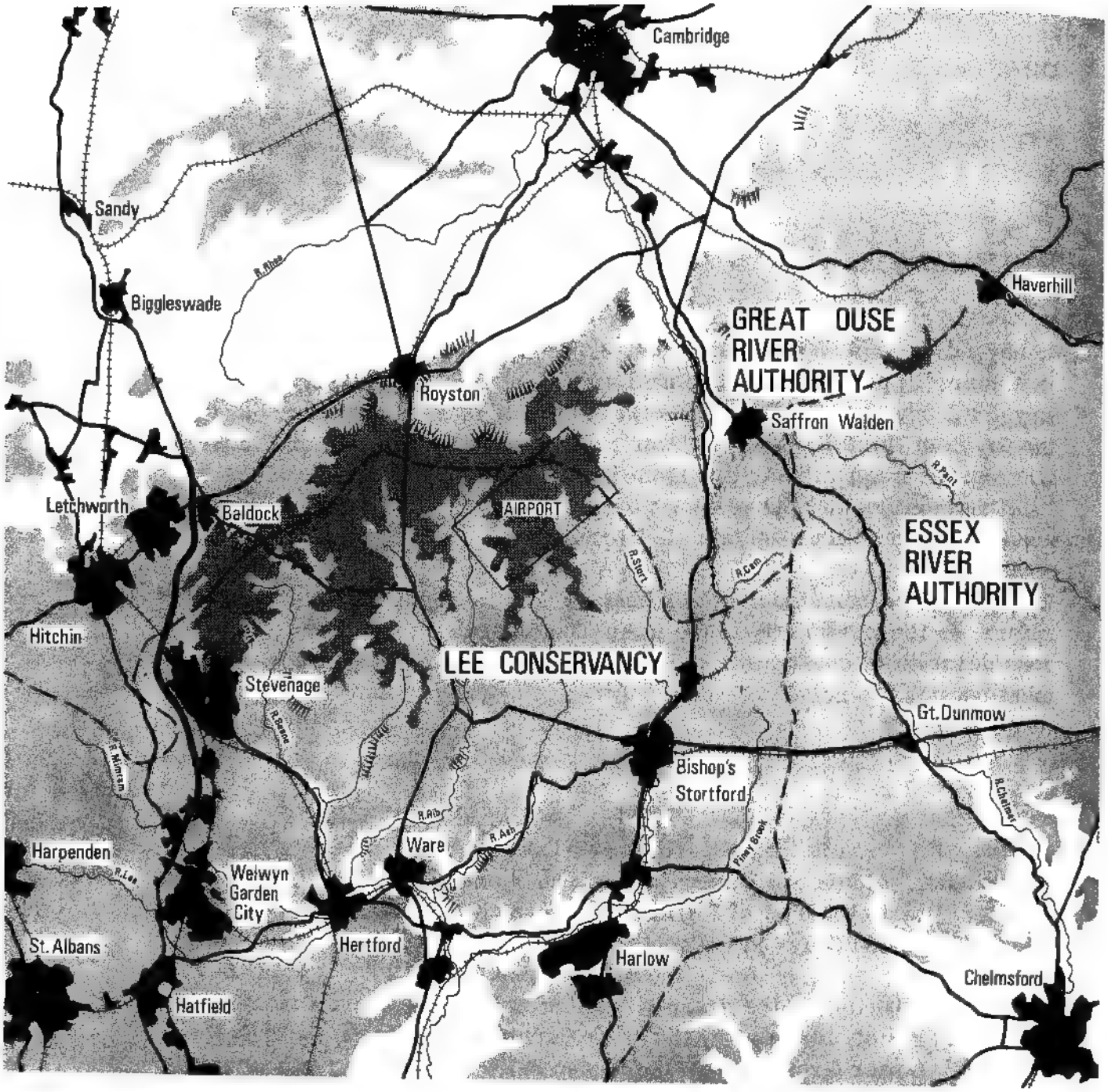
9 At the foot of the scarp slope, the Lower Chalk forms an apron of undulating relief, bisected by the river Cam or Rhee, where Gault Clay is exposed. Lower Greensand Beds outcrop in the north-west. Deposits of Boulder Clay overlay the Lower Greensand and Lower Chalk in places.

10 Both the Lower Greensand and Gault Clay can give rise to difficult building conditions when comprising steep slopes, but this does not occur in this area. The only factor liable to produce high building costs are the steeper chalk slopes.

Drainage and Relief

11 The area is bisected diagonally from west to east by a line of hills which reach a height of about 550 feet and form a watershed between the northern and southern halves of the area passing approximately through the airport site (figure 3.3). These hills take the form of broad rolling slopes with extensive views to the north over the wide flat valley of the river Rhee. This valley, which joins the river Cam and drains in a north-easterly direction to the Fens, is about eight kilometres (5 miles) wide, liable to some flooding and in parts has a relatively high water table.

Printed image digitised by the University of Southampton Library Digitisation Unit



NUTHAMPSTEAD LAND DRAINAGE

Figure 3.3

Printed image digitised by the University of Southampton Library Digitisation Unit

12 To the south of the watershed, the area is structured into three valleys running in a north-south direction, comprising the rivers Rib, Ash and Stort, which converge and flow into the river Lee. All the rivers, both north and south of the watershed, are relatively small and the main rivers to which they drain are used in their lower reaches as important sources of water supply. A high standard of purification would therefore be required for all sewage effluent discharged in the area.

13 With minor exceptions it is likely that urban development located to one side of the airport could probably be contained within one main drainage catchment area, whereas development on both sides of the airport site would involve two catchment areas. Urban development in the area to the north of the watershed may prove more costly to drain, either because of the need to pipe sewage effluent in order to avoid pollution of existing water supply boreholes in exposed chalk, or because of the flatness and high water tables of the Rhee valley.

Agriculture

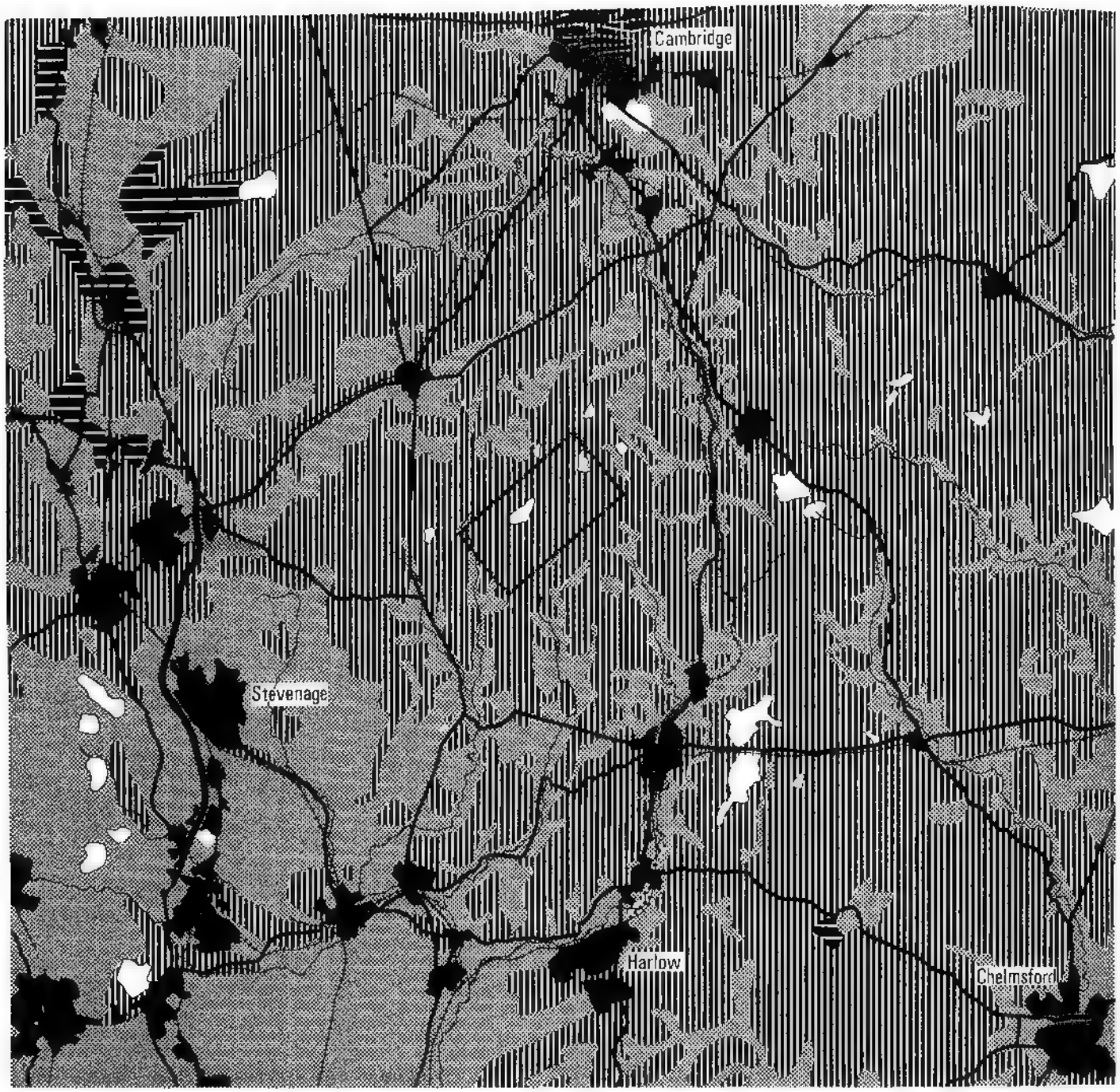
14 Advice on agricultural matters has been given by Professor Wibberley, agricultural consultant to the Commission.

15 The subregion around Nuthampstead consists almost entirely of an open undisturbed agricultural area on the fringe of the fenlands. It forms the southern extremity of the broad eastern agricultural plain of England which is so important in the national food production programme. To the north are the productive fenlands of East Anglia and to the west the horticultural areas of Sandy and St. Neots.

16 The majority of the farming land in the internal zone area has been classified by the Ministry of Agriculture as Grade 2, or land of above average agricultural value (figure 3.4). Smaller pockets of Grade 3, or land of average agricultural value occur on the northern 'scarp' face of the hills south-west of Royston in the valley of the river Rhee and along the valleys of the Rib, Ash, Cam and Stort to the south and east of the airport site. Generally, however, all land in the area can be described as highly productive agricultural land and amongst the best in the country. Although pockets of Grade 3 land occur on both sides of the airport site, they are all comparatively small in size and no one area presents an opportunity for major new development. Where large areas of land are of good productive potential, say Grade 2, and are well farmed, the difference between such areas and small pockets of poorer land, say Grade 3, within them, tends to be obscured, since there is a very high degree of 'overspill' of level of farming from the better to the poorer areas.

17 At its southern urban/rural boundary the area has a very diversified agricultural industry with dairying, horticulture, livestock enterprises and general arable farming all intermixed. This pattern follows the valley of the Stort and the line of the A1 but gives way more and more to strongly arable areas, growing mostly cereals and some roots to the north. To the west the mixed agriculture of the Stevenage - Baldock region gives way to the rich and productive horticultural areas of Biggleswade, Sandy and St. Neots further along the A.1. The agricultural

Printed image digitised by the University of Southampton Library Digitisation Unit



Agricultural Land

Grade 1

Grade 2

Grade 3

Grade 4

Non-Agricultural Land

Land in urban use

Other land

Proposed airport

Miles 0 10

Kilometres 0 10

NUTHAMPSTEAD AGRICULTURE

Figure 3.4

Printed image digitised by the University of Southampton Library Digitisation Unit

picture, away from the domesticated countryside and urban areas of the southern boundary, is one of a strong farming region in the best tradition of the agriculture of this country. Farms are very well structured with good square fields ideally suited to the type of production for which they are used.

18 The area where new urban development could be located near the airport site with the least disturbance to agricultural productivity would be along the valley of the river Stort, parallel to the railway and the A11 and the proposed M11. Although the general agricultural land classification in this area is primarily Grade 2 with some pockets of Grade 3 in the bottom of the Stort valley, the productivity of the area is likely to be well below that of the Grade 3 land on the 'scarp' face of the chalk hills, where the field size, farming layout, equipment and management would achieve greater productivity.

19 But even in the valley of the river Stort the disturbance to high grade agricultural land would be considerable as the total area required for new urban development might be of the order of about 7, 000 hectares (17, 250 acres).

Communications

20 The area is well served by major roads (figure 3. 5). The A1(T) skirting the western edge of the area carries the main north-south national traffic through the region. In the area itself the A. 10 is a major trunk route from London. The existing A. 11 is a low capacity highway carrying heavy volumes of traffic at the present day. In an east-west direction there are three important routes, the A505, A120 and the A414.

21 The A. 505 is an important east-west link into East Anglia, connecting the M. 1 and A. 6 at Luton, the A. 1 (M) at Baldock, the A. 10 at Royston and the A. 11 south-east of Cambridge. This route is heavily used by regional traffic at present. The A. 120 runs east to Colchester, and to the west joins the A. 507 which runs on to the A. 1 (M). This is part of the alignment of one of the strategy routes outlined in the Ministry of Transport's Green Paper 'Roads for the Future'. The A. 414 extends between Hertford and Harlow and across to Chelmsford. This is already a major traffic corridor and will eventually include the South Hertfordshire motorway.

22 North-south railway connections are good in this area. The main east coast railway line from King's Cross through Peterborough to the north of England and Scotland, skirts the western edge of the area, and the main railway line from Liverpool Street to Cambridge runs along the A. 11 corridor.

Settlement pattern

23 The internal zone area is affected by three main north-south arteries radiating from London along which all the major towns in the subregion are located (figure 3. 5). Skirting the western edge of the area is the A1 (T) and the

Printed image digitised by the University of Southampton Library Digitisation Unit

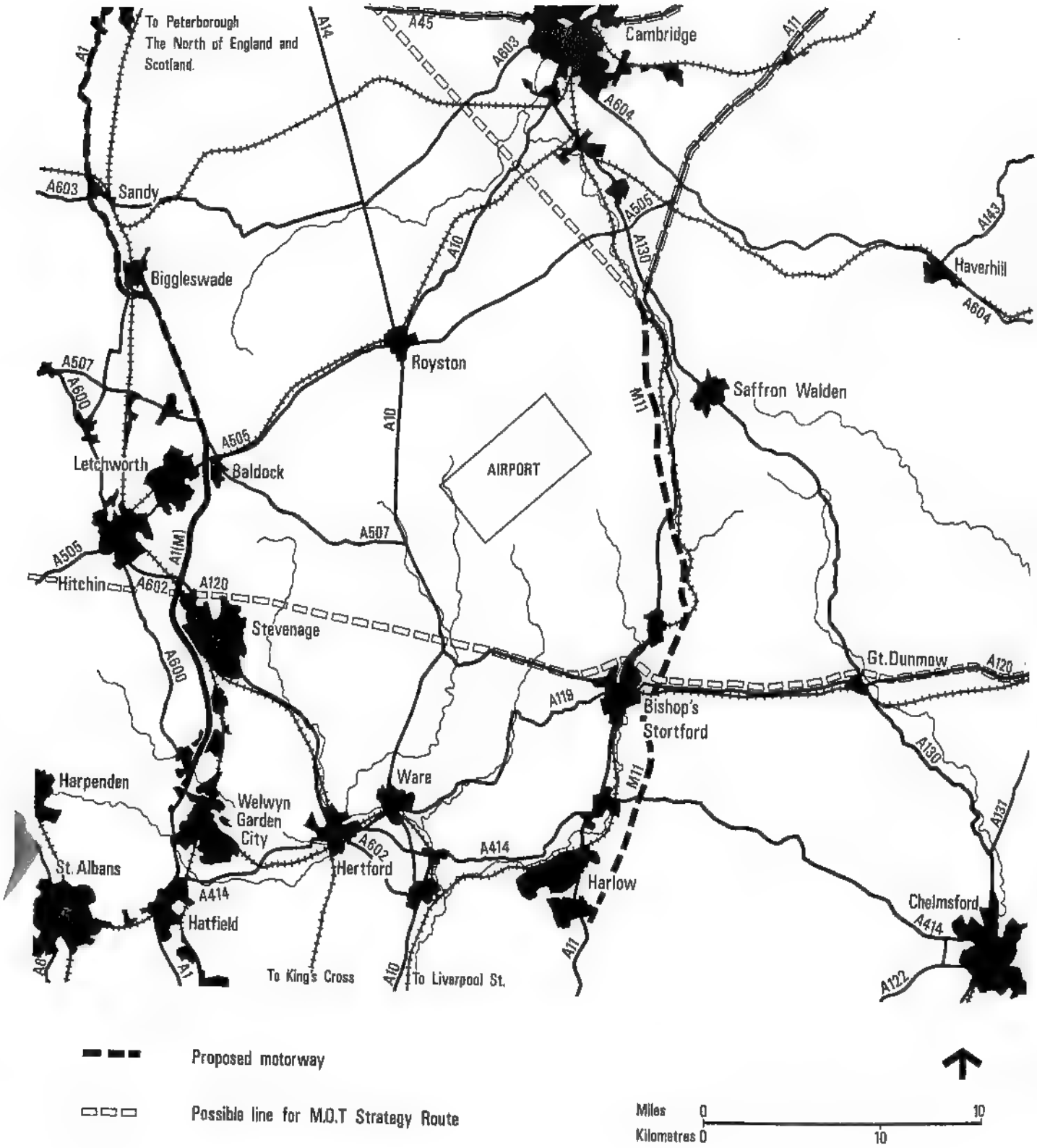


Figure 3.5

NUTHAMPSTEAD
COMMUNICATIONS

Printed image digitised by the University of Southampton Library Digitisation Unit

main fast east coast railway line mentioned above. Along this corridor are located Welwyn (39, 000), Stevenage (56, 000), Hitchin (26, 000) and Letchworth (27, 000).

24 Through the centre of the zone passes the A. 10 (T) from London to Cambridge along which is located Hoddesdon (20, 000), Ware (14, 000) and Royston (6, 000). Hertford (18, 000) is about two miles west of Ware. On the eastern side of the zone is the A. 11 (T) from London to Norwich and the main railway line to Cambridge, forming a second major north-south corridor along which are located Harlow (68, 000), Sawbridgeworth (5, 000), Bishop's Stortford (21, 000) and Saffron Walden (9, 000).

25 Cambridge (3A)* is the only third order centre in the subregion. The internal zone area is served by fourth order (district) centres at Bishop's Stortford (4A), Harlow (4A), Saffron Walden (4B), Royston (4B), Dunmow (4C), and Ware (4C). Other fourth order centres in the subregion are Hitchin (4A), Hertford (4A), Welwyn (4A), Stevenage (4A), Letchworth (4B), Hoddesdon (4B), and Baldock (4C).

26 Cambridge has a wide catchment area and to a lesser extent, so do Bishop's Stortford, Saffron Walden, Hitchin, Hertford and Royston. Their importance is due mainly to historic reasons, for they are old market towns which over the years have developed into established centres for the surrounding rural population.

27 In addition to these older towns, a number of new towns have been built in the area, namely Letchworth and Welwyn garden cities and Stevenage and Harlow new towns. They have been implanted into the shopping hierarchy and although they are considerably larger in population than the towns in the preceding group they have much lower indices of retail catchment area draw, being only just above the regional average. These indices, however, relate to 1961 and the position has changed since then due to a rapid growth of population which is still continuing at Harlow and Stevenage. In 1961 their centres were barely established and since then the rate of car ownership has doubled, increasing the attractiveness of Harlow and Stevenage to shoppers and traders, due to their good road systems, regional accessibility, numerous convenient car parks and pedestrianised shopping malls.

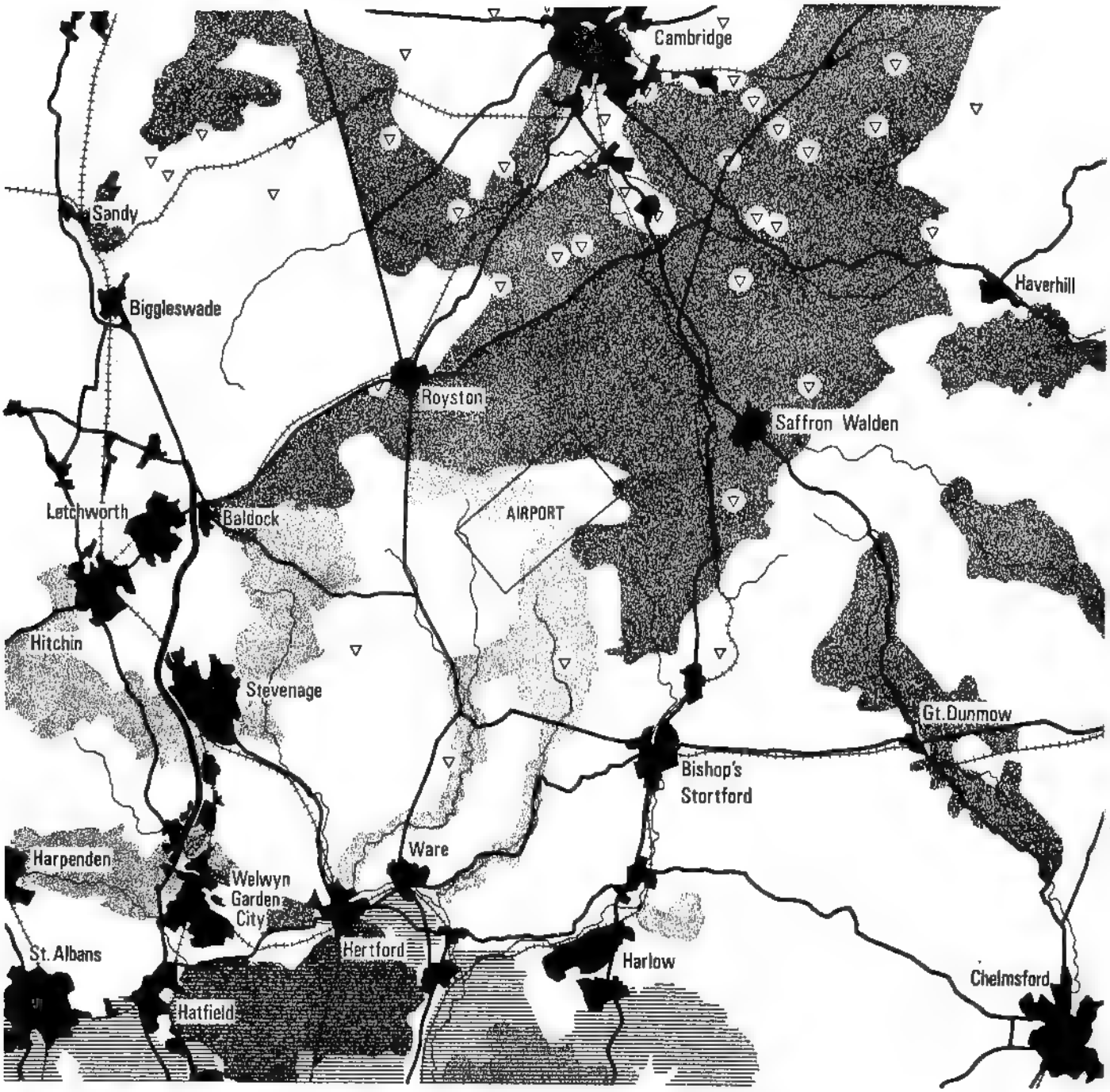
Landscape

28 The internal zone area generally presents an appearance of pleasant open countryside interspersed with a pattern of smaller towns and villages. However, within this general context, the area south of the airport site is more urbanised and affected by London overspill that the area to the north of the airport site, the northern area still has more of the feel of the rural 'heartland' of England, and on landscape

---

* A definition of service centre classifications is given in Part 1.

Printed image digitised by the University of Southampton Library Digitisation Unit



NUTHAMPSTEAD

Figure 3.6 CURRENT LANDSCAPE POLICIES

Printed image digitised by the University of Southampton Library Digitisation Unit

grounds has a higher priority for conservation free of major new development than the area to the south of the airport.

Current landscape policies

29 Figure 3.6 shows the existing and proposed landscape policies applying to the subregion. Within the internal zone area the development plans of Hertfordshire, Cambridgeshire and Essex show areas of great landscape value extending along the crest of the chalk hills, the valleys of the river Cam, part of the river Rhee north-east of Royston, and the upper reaches of the river Stort. In addition, the Development Plan Review of Hertfordshire proposes the extension of areas of landscape value further southwards along the valleys of the rivers Ash and Rib. It should be noted that varying criteria may have been used by the county councils responsible for defining the areas of great landscape value.

30 The metropolitan green belt touches the southern edge of the internal zone area, extending north as far as Hertford, Ware and Harlow.

31 Interpreting the county councils' assessment of areas of great landscape value and the metropolitan green belt as areas to be avoided by future urban development, and allowing for the noise corridor, the areas of land closest to the airport site available for future urbanisation are in the valley of the river Rhee north-west of Royston, on the two narrow ridges between the valleys of the rivers Rib, Ash and Stort, in an area to the north-east of Stansted and in a small pocket of land to the south-west of Royston.

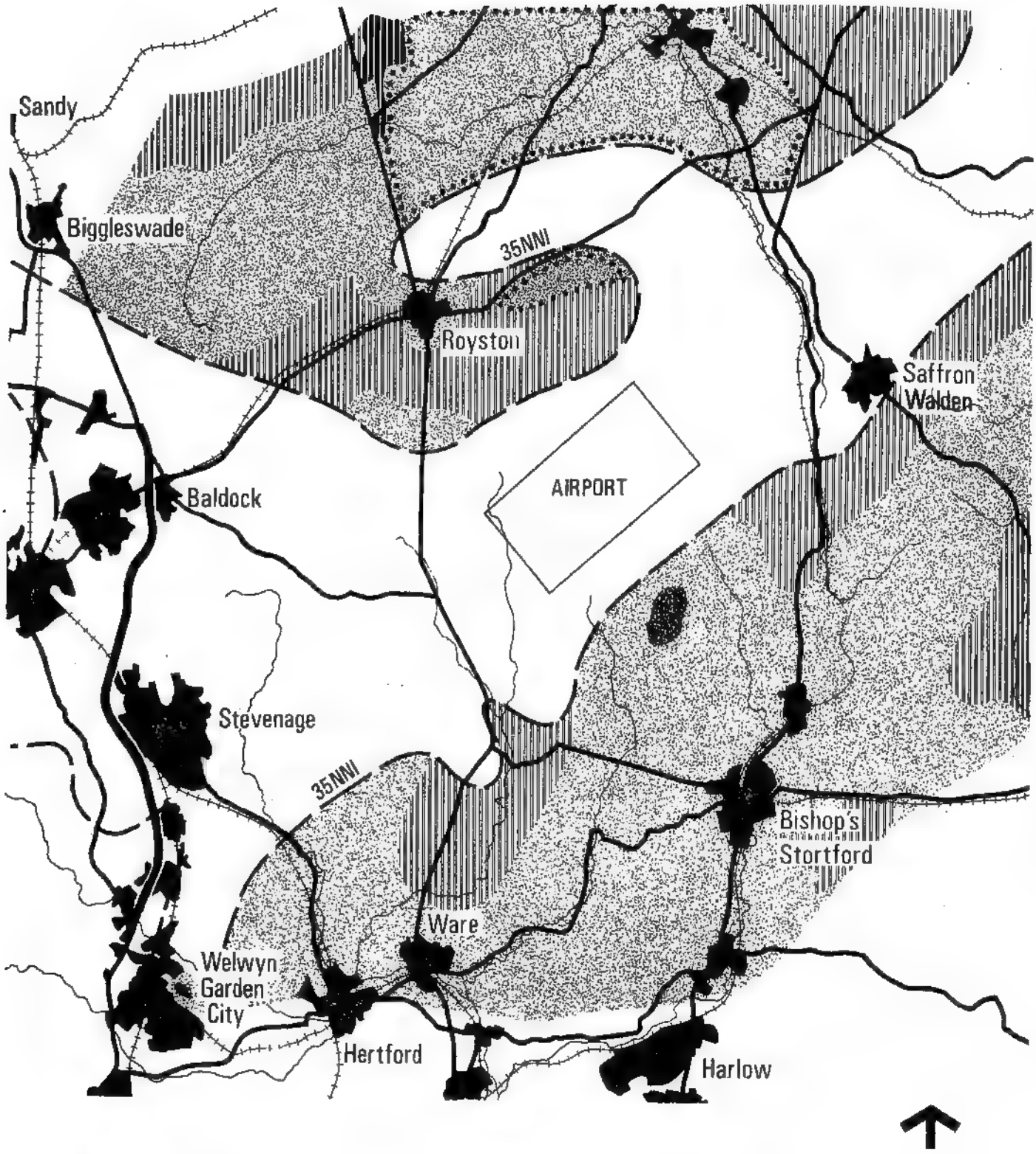
32 Dispersed throughout the zone are numerous areas of special scientific interest. These are generally small quarries or woodlands and are unlikely to be an obstacle to urban development. Their nature and size are such that they could be incorporated into the new urbanisation without difficulty.

Landscape appraisal

33 Figure 3.7 records an appraisal made of the landscape in the vicinity of the airport site. The quality of landscape has been classified into four grades of descending priority, plus an additional category of panoramic value. The only area of exceptional quality landscape is the eighteenth century park and avenue of Wimpole Hall on the A.14, north of Royston.

34 The areas of second priority are those of high quality landscape. This includes both the crest of the hills between Royston and Saffron Walden and the slopes down to the flatter land to the north, which are important in providing an open foreground for long distance views. The finest section of this is east and south of Royston where from the high ground, there are expansive views reaching on a clear day, as far as Ely. Less important than these areas, but still of high quality landscape, is the valley of the river Rib; the area including the southern edge of the chalk landscape east of the airport and extending between Saffron Walden and Cambridge; the ridge of low hills to the west of Wimpole Hall; the wide valley south of and including Thaxted; and to the east of Bishop's Stortford, Hatfield Forest and adjoining Hallingbury Park.

Printed image digitised by the University of Southampton Library Digitisation Unit



NUTHAMPSTEAD LANDSCAPE APPRAISAL

Figure 3.7

Printed image digitised by the University of Southampton Library Digitisation Unit

35 The third category covers a large uninterrupted area of average quality landscape north-west and south of Bishop's Stortford, an area north-west of Royston, and a small pocket of land to the south of Royston. There is a small area of inferior landscape quality around the switching station at Stocking Pelham, though the station itself is fairly unobtrusive.

36 An area of low undulating hills and small villages between Royston and Cambridge is assessed as an area of panoramic importance when viewed from the high ground to the east and south of Royston. It is considered that this area should be conserved in its present state free of new urbanisation.

37 Interpreting the appraisal of areas of exceptional and high quality landscape value as areas to be avoided by future urban development, and allowing for the noise corridor, the areas of land closest to the airport site available for future urbanisation are to the north-west of Royston, between the valley of the river Ash and Stansted and in a small pocket of land to the south of Royston.

38 Taking account of the statement in paragraph 28 that land north of the airport site is still primarily rural and should be conserved as such, whereas land south of the airport is already partly affected by urban growth from London overspill, the first choice of an area for future urbanisation on landscape grounds appears to be south of the airport site and north of Bishop's Stortford.

Mineral workings

39 Figure 3.8 shows mineral workings in the subregion. Within the internal zone area there are deposits of sand and gravel in the valley of the river Stort and along the river Cam, south and north of Cambridge, but these are not an obstacle to urban development near the airport site.

Engineering services

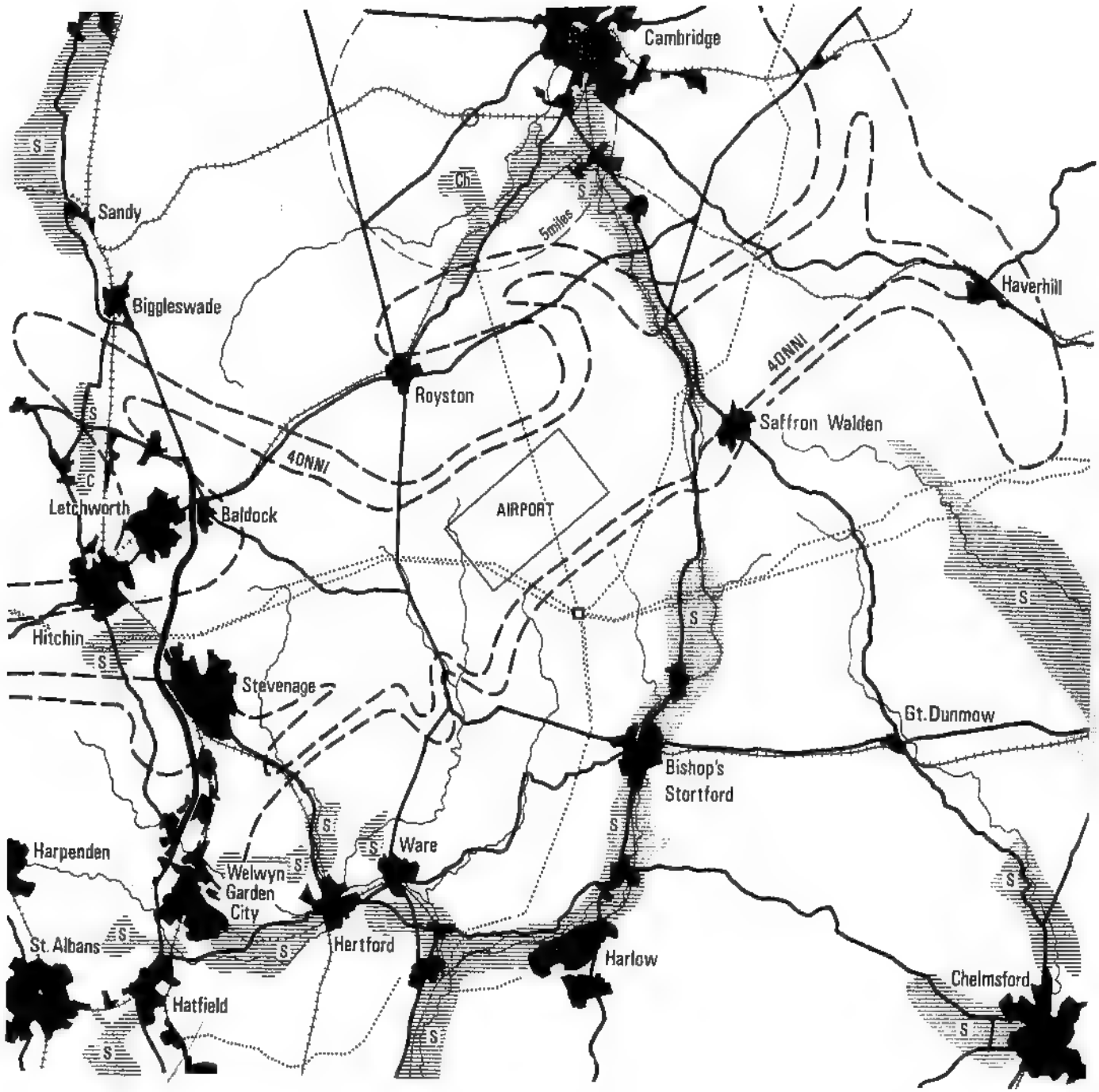
40 Figure 3.8 shows known engineering services within the internal zone area. The only statutory utility in the area likely to affect future urban development is the new switching station recently constructed just to the south of the airport site at Stocking Pelham where about seven overhead lines converge.

41 Cambridge University operate a radio telescope at Lords Bridge five miles south-west of Cambridge.

Opportunities for urban development

42 Figure 3.9 shows the effect of the major physical constraints on the internal zone area likely to affect the location of new urbanisation, with the exception of agricultural land classification, which throughout the area is consistently above the national average and would be seriously disturbed wherever urban development was located. From figure 3.9 and from paragraphs 28, 31, 37 and 38 it appears

Printed image digitised by the University of Southampton Library Digitisation Unit

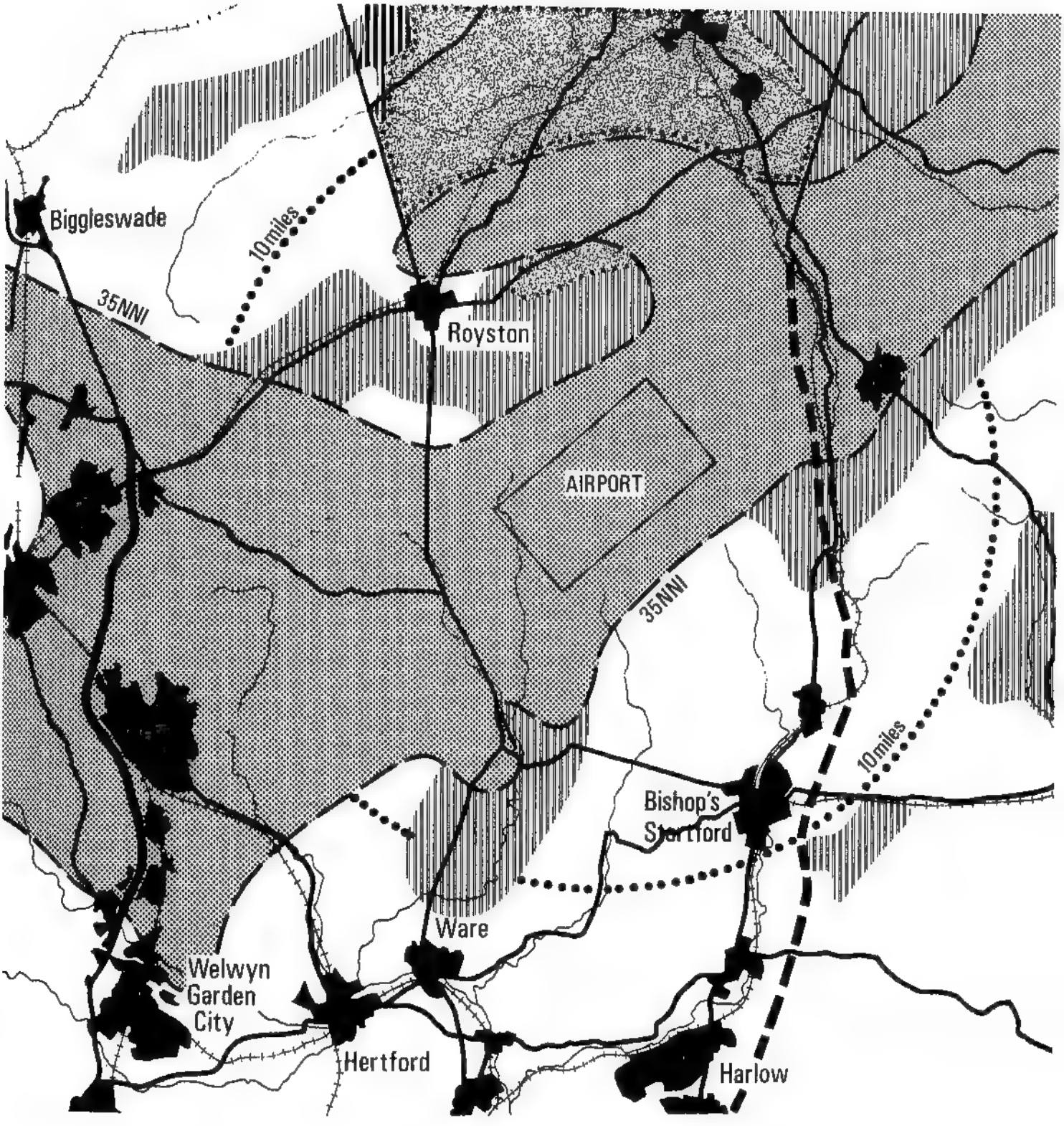


NUTHAMPSTEAD

OTHER CONSTRAINTS

Figure 3.8

Printed image digitised by the University of Southampton Library Digitisation Unit



Exceptional landscape quality

High landscape quality

Average (Panoramic) landscape quality

Noise Corridor

Proposed M11

Miles 0 10

Kilometres 0 10

NUTHAMPSTEAD

Figure 3.9 OPPORTUNITIES FOR URBAN DEVELOPMENT

Printed image digitised by the University of Southampton Library Digitisation Unit

that the area most suitable for future urban development lies between Bishop's Stortford and the airport site with an area of second priority located to the north-west of Royston. If the area to the north-west of Royston, which is much further from the airport site, was the only area selected for major new development, it would be necessary to balance the increased user costs involved in the lengthy journeys to work by a saving obtained from retaining land of high landscape value and agricultural value in their present use.

Planning problems of the area

43 The Nuthampstead area, unlike some of the alternative sites under consideration, does not have any marked imbalance of employment or dereliction of the countryside caused by mineral workings, suburban sprawl, engineering services etc., which a major area of new urban development could improve.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 3: PLAN 1 - PROPOSALS TO 1981

Employment and population

44 The 1966 population of the internal zone area was 208, 900 (table 3.1). This is expected to have increased to 261, 000 by 1981. Of this total 119, 800 are anticipated to be in employment, giving a participation rate of 45.9%. The growth of the economically active population exceeds that of employment, giving an increase of net outward commuting from 12.5% to 16.0% of the economically active population.

45 Export surplus employment represents 47.5% of total employment. The dominant export industries are engineering and electrical goods (17.6% of all employment) and professional and scientific services (15.1%). There is also a significant agricultural element in the export sector.

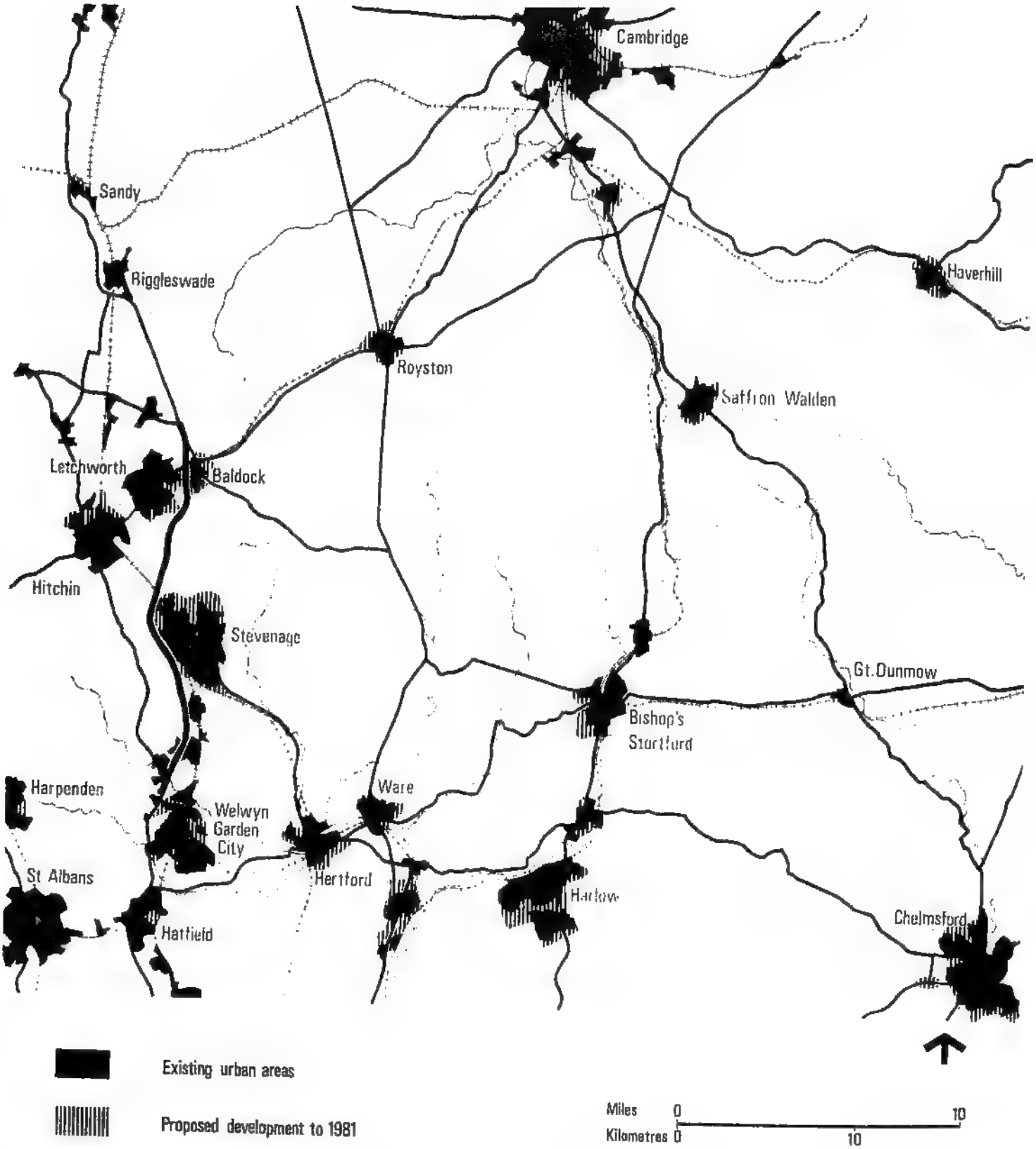
Table 3.1: Existing and Plan 1 employment and population in the internal zone area

	1966	1981 (Plan 1)	Annual Growth rate %
Population	193, 300	261, 000	1.5
Employment	78, 100	100, 600	1.7
Export surplus employment	37, 100	47, 800	1.7
Total economically active population	89, 300	119, 800	2.0
Net outward commuting	11, 200	19, 200	
Participation rate %	46.2	45.9	

Urban growth

46 All the settlements within the internal zone area will grow to some extent in the period between 1966-1981, but growth of any significance will be entirely concentrated in Harlow and Bishop's Stortford and to a lesser extent Royston and Saffron Walden (figure 3.10). The table below gives the distribution of population growth by local authority areas within the internal zone area up to 1981.

Printed image digitised by the University of Southampton Library Digitisation Unit



NUTHAMPSTEAD

Figure 3.10

PLAN 1 - PROPOSALS TO 1981

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.2: Plan 1 - Distribution of population

	Population 1966	Population Increase 1966-81	Total Population 1981
Cambridgeshire			
South Cambridge RD (part)	15,200	7,800	23,000
Essex			
Saffron Walden MB	9,500	3,500	13,000
Dunmow RD (part)	9,200	3,800	13,000
Epping and Ongar RD (part)	2,100	900	3,000
Saffron Walden RD (part)	16,500	4,500	21,000
Harlow New Town	67,900	12,100	80,000
Hertfordshire			
Bishop's Stortford UD	20,800	10,200	31,000
Royston UD	6,500	8,500	15,000
Sawbridgeworth UD	5,500	2,500	8,000
Ware UD	13,700	3,300	17,000
Braughing RD	9,800	5,200	15,000
Hitchin RD (part)	5,000	2,000	7,000
Ware RD	11,600	3,400	15,000
Total	193,300	67,700	261,000

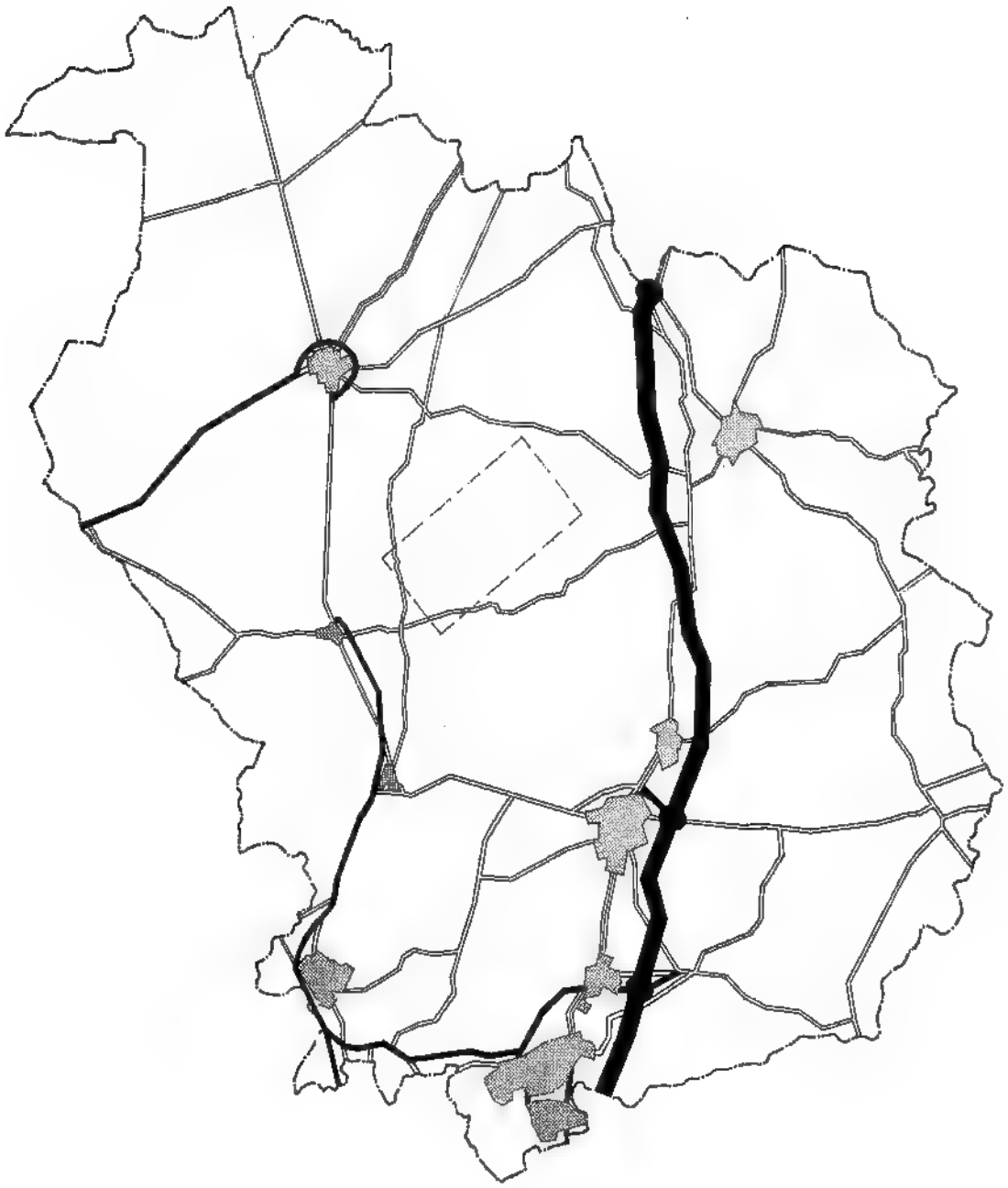
Roads

47 Estimates of the facilities which might be needed to handle the growth in traffic up to 1981 if no airport is developed are shown in figure 3.11. In examining the limitations of the existing and committed transportation system to accommodate this traffic growth account has been taken of the various local authority proposals for highway improvement. Where these schemes are found to be justified on the basis of forecast traffic volumes they have been included in our assessment of highway requirements.

48 The main highway improvements between the present day and 1981 are as follows:

49 Congestion in the A.11 corridor will be relieved by the construction of the programmed London to Cambridge M.11 motorway. This dual three lane motorway is designed to carry national and regional traffic for about 20 miles through the area. Forecast traffic volumes also indicated a need for increasing the capacity in the A.10 corridor as far north as Buntingford. This could be accomplished by a dualling on the existing alignment and might also include proposed by-passes at Ware and Puckeridge.

Printed image digitised by the University of Southampton Library Digitisation Unit



Dual three lane carriageway

Dual two lane carriageway

Three lane single carriageway

Two lane single carriageway

Boundary of Internal Zone Area

Miles 0 10

Kilometres 0 10

Figure 3.11

NUTHAMPSTEAD

PLAN 1 – HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

50 In the north of the area improvements to the A. 505 and A. 10 could cater for regional traffic in the Luton-Letchworth-Cambridge corridor.

51 Increased traffic demand in an east-west direction through the southern part of the area could be handled by improving the existing A. 414 to dual two lane standard. This proposal would be in line with the local authority plans such as the new road from Hatfield Heath to south of Sawbridgeworth.

52 The facility requirements outlined above should not be interpreted as actual transportation systems recommended for construction, but as notional estimates of requirements prepared at all four airport sites in order to carry out an evaluation of investment levels needed to achieve desirable transportation objectives.

53 The Ministry of Transport's Green Book publication, 'Roads for the Future' proposes two new east-west routes in the area. The first of these routes links the M. 1 at Luton to the A. 1 at Stevenage and the A. 11 and M. 11 at the Bishop's Stortford by-pass, continuing eastwards as an improved A. 120 to Braintree, Colchester and Ipswich. The second of these strategy routes links Birmingham, Coventry and Northampton to Wellingborough, Cambridge and Harwich as an improvement to the A. 45 (T) (figure 3. 5).

New centres and planned expansions

54 At Bishop's Stortford, redevelopment and re-structuring of the town centre is programmed to meet the increasing pressures on the centre resulting from the recent growth of the town. A new east-west by-pass is being planned to remove through traffic from the town centre.

55 At Harlow, further expansion of the new town and the town centre is planned by the Development Corporation.

56 There are at present no definite plans regarding Cambridge. Two studies are in the course of preparation; one with respect to land use and transportation, and the other regarding possibly future size and growth. They are expected to be published later this year and until they have been published, it cannot be said whether Cambridge will be expanded, and if so by how much. As has already been noted in this report, it is very likely that any further substantial pressure upon the central area service facilities in Cambridge could give rise to considerable social and environmental costs.

57 Royston has proposals for small scale central area redevelopment.

New engineering services

58 The Central Electricity Generating Board have proposals to construct additional overhead transmission lines from the new switching station at Stocking Pelham.

Printed image digitised by the University of Southampton Library Digitisation Unit

Other proposals

59 Cambridge University are planning to construct a more powerful radio telescope at Lords Bridge, five miles south-west of Cambridge in addition to the existing one.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 4: PROPOSALS AFFECTED BY 40 NNI CONTOUR

60 The South East Economic Planning Council's report 'A Strategy for the South East' proposed the A. 1 (T) route as one of the strategic 'corridors' or sectors within which to concentrate future economic and physical growth. Neither the A. 10 (T) nor the A. 11 (T) were given this status. This proposal for growth corridors is not official Government policy but might become so as a result of further studies now being undertaken by the South East Joint Planning Team. However, in the event of the Nuthampstead site being selected for the third London airport and the new urban development for the airport being located in the vicinity of Bishop's Stortford, it will be necessary to review the proposals for growth areas in the South East region.

61 The 40 Noise and Number Index (NNI) contours published by the Commission as part of the Site information for the Stage II Local Hearings and shown on their drawing CTLA 2/2 and CTLA 2/3 extend for about 65 kilometres (40 miles) from Haverhill in the east across Saffron Walden to Stevenage and Luton in the west. The contours are slightly different for a two runway and a four runway airport. The principal towns affected by aircraft noise of 40 NNI and above are as follows:

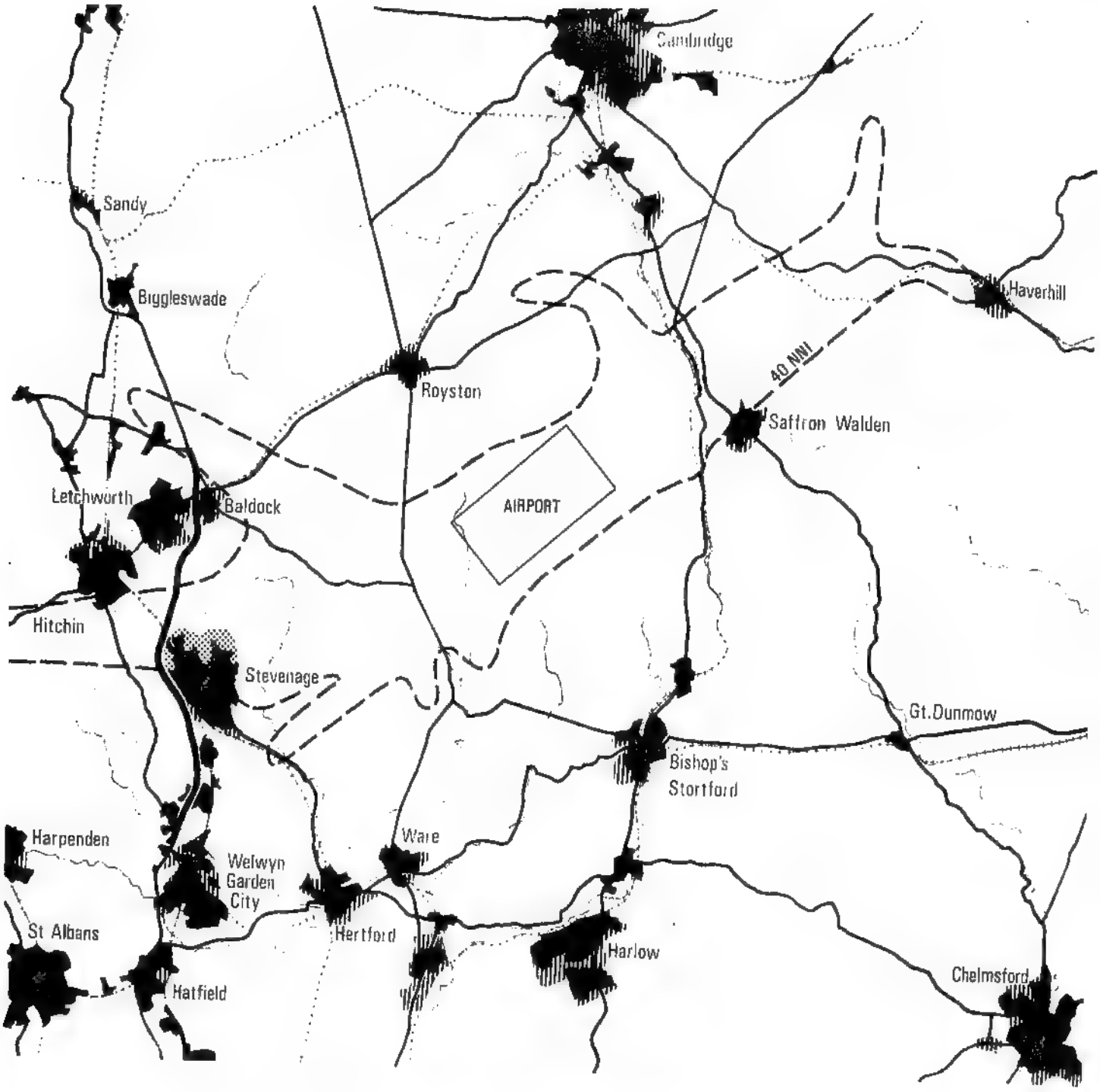
Two runway airport
Welwyn (not Welwyn Garden City)
Knebworth (near Welwyn)
Linton (near Saffron Walden)

Four runway airport
(not including towns mentioned in connection with a two runway airport as the location of the noise contours changes with a four runway airport)
Stortford (near Letchworth)
Stevenage (northern half only)
Saffron Walden (northern half only)
Haverhill, a GLC town development scheme (northern half only)

62 Of the towns mentioned above only Saffron Walden is in the internal zone area in which detailed survey and analysis in connection with new urbanisation has been undertaken (figure 3. 12). An assumption has been made that in the towns listed above, any urban development proposed for the period up to 1981 and not yet started, could be relocated to another edge of the town concerned. Of the above towns, the most seriously affected is the northern half of Stevenage, where at the present time considerable areas of new housing are under construction as part of the programmed development of the new town.

63 The two overhead transmission lines which radiate in a westerly direction from the new switching station at Stocking Pelham, together with the proposed line to the north, run across the site proposed for the airport and will need to be relocated or undergrounded if the Nuthampstead site is selected for the third London airport.

Printed image digitised by the University of Southampton Library Digitisation Unit



NUTHAMPSTEAD

Figure 3.12

PLAN 1 - EFFECT OF AIRPORT

Printed image digitised by the University of Southampton Library Digitisation Unit

64 The proposals by Cambridge University to construct a more powerful radio telescope at Lords Bridge will have to be abandoned in the event of the airport locating at Nuthampstead. In addition the radio telescope and its equipment already in existence at Lords Bridge will have to be relocated further away from the airport.

65 Within the internal zone area there are no adjustments that have to be made to plans for proposed urban development as yet not implemented, because of the airport or its noise corridor, except possibly for some minor areas suitable for development on the northern side of Saffron Walden. We have assumed that a suitable area outside the 40NNI contour could be found to replace this affected area and that it would not involve exceptional costs.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 5: ALTERNATIVE STRATEGIES

66 In this part of the work, alternative strategies for new urbanisation to serve the airport at Nuthampstead have been investigated and compared, and in Chapter 6 the preferred alternative has been selected for development into a plan for an airport city.

Population forecast

67 In the development of alternative strategies of urbanisation, attention has been focussed primarily on comparing and analysing the end state plans of each alternative pattern. The strategies accommodate the population growth up to the year 2000, generated by a four runway airport operating at capacity and employing about 65, 000 workers.

68 From paragraph 100 the total population up to the year 2000 has been forecast as 289, 000, of which 260, 000 could be considered as airport related growth, although this sector has not been locationally identified. At the time the studies into alternative strategies of urbanisation were undertaken, the best estimates of population growth available for deployment near the airport amounted to 300, 000. The following studies therefore are based upon this figure and while it is acknowledged that the present population forecasts are lower, the reduction in population has not been sufficient to alter the general conclusions obtained from the comparison of these alternative planning strategies.

69 From the population growth of 300, 000 attributable to the airport and available for deployment in various patterns of urbanisation and using the overall town density standard of 30 persons per hectare (12 persons per acre), studies have been made of alternative strategies for new urban development at Nuthampstead. At this agreed density, about 10, 000 hectares (25, 000 acres) of land would be required to accommodate the population growth of 300, 000.

Development of alternative strategies

70 The approach to development of alternative strategies was based upon consideration of various constraints, which were finally reduced to three basic variables. The different combinations of these variables determined the number of possible alternatives available for the location of new urbanisation.

71 These variables, which when combined resulted in eight possible strategies, were as follows:

Printed image digitised by the University of Southampton Library Digitisation Unit

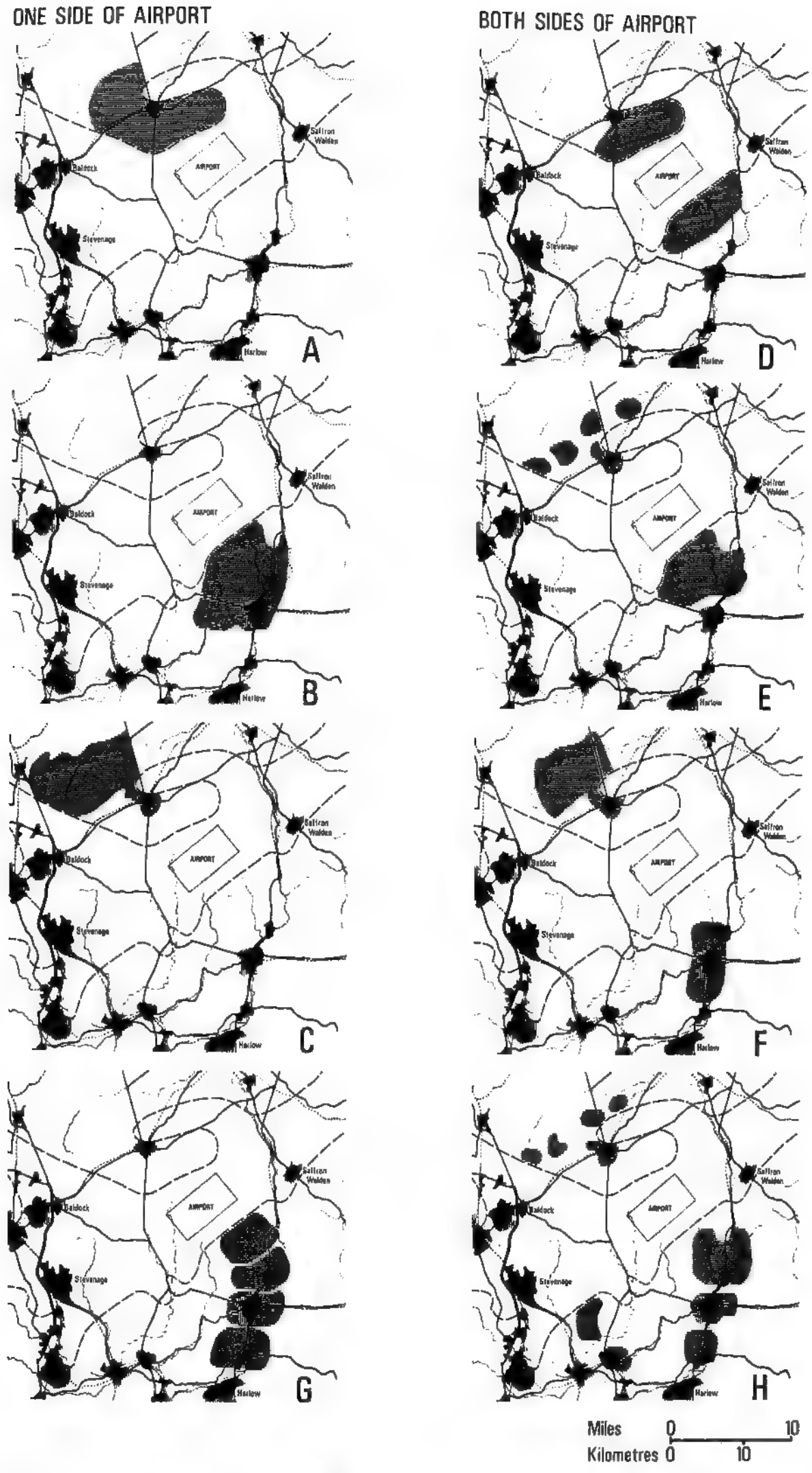


Figure 3.13 NUTHAMPSTEAD ALTERNATIVE STRATEGIES

Printed image digitised by the University of Southampton Library Digitisation Unit

1	a	Development on one side of the airport
	b	Development on both sides of the airport
2	a	Development close to the airport
	b	Development away from the airport
3	a	Development accepting landscape appraisal constraint
	b	Development ignoring landscape appraisal constraint

72 Two of the eight possible strategies (1a + 2b + 3b and 1b + 2b + 3b) can be regarded as unworthy of further consideration as it would not be reasonable to develop away from the airport site if landscape constraints are ignored. The remaining six possible strategies are as follows:

Development one side of the airport site (1a)

i Near the airport, ignoring landscape constraints (1a + 2a + 3b) - Strategy A

ii Near the airport, accepting landscape constraints (1a + 2a + 3a) - Strategy B

iii Away from the airport, accepting landscape constraints (1a + 2b + 3a) - Strategy C

Development both sides of the airport site (1b)

iv Near the airport, ignoring landscape constraints (1b + 2a + 3b) - Strategy D

v Near the airport, accepting landscape constraints (1b + 2a + 3a) - Strategy E

vi Away from the airport, accepting landscape constraints (1b + 2b + 3a) - Strategy F

73 Two local variations were developed for alternative ii (Strategy G) and vi (Strategy H), giving a total of eight alternative strategies for testing and assessment (figure 3.13).

74 The eight resultant alternative strategies, with a brief description of each, are shown on figures 3.14 to 3.21. On these figures, proposed urban development to 1981 are shown by vertical stripes and the alternative strategies by horizontal stripes.

Printed image digitised by the University of Southampton Library Digitisation Unit

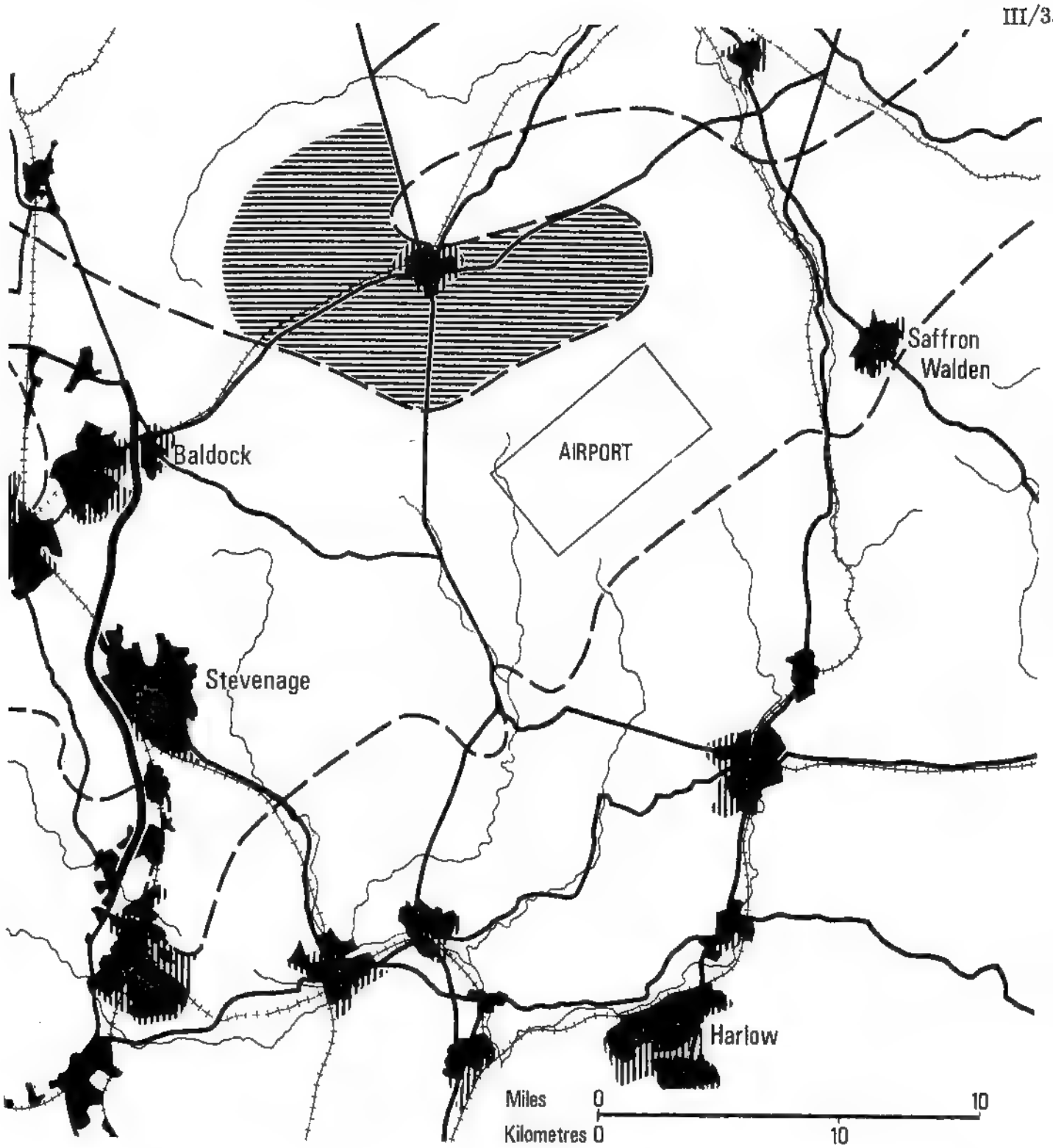


Figure 3.14 NUTHAMPSTEAD STRATEGY A

Strategy A

This strategy proposes a single new city north of, and as near as possible to, the airport site, which necessarily involves ignoring landscape constraints. It locates the whole of the 300,000 population attributable to the airport in the pocket outside the noise corridor formed by adjacent flight paths. The area covered by the new urban development extends between 5 to 16 km (3 to 10 miles) from the centre of the airport site, and encompasses Royston on its northern edge. The majority of the development covers the hills and slopes to the south of Royston, while the northernmost portion extends into the Rhee valley. The form of this urbanisation is irregular, due to the influencing shape of the noise corridor, but is basically non-directional.

Printed image digitised by the University of Southampton Library Digitisation Unit

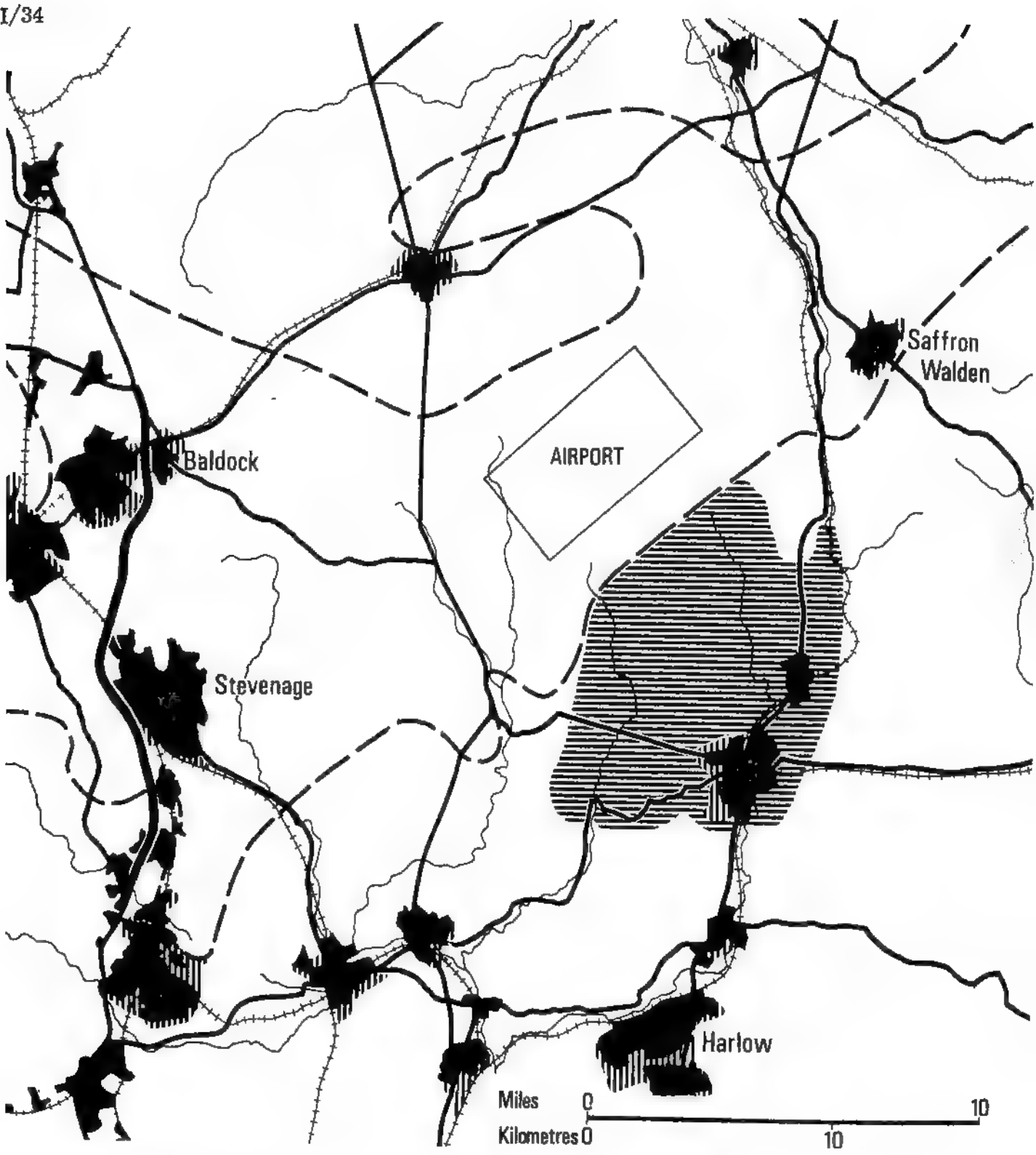


Figure 3.15 NUTHAMPSTEAD STRATEGY B

Strategy B

This alternative locates a single new city south of, and as near as possible to, the airport site, while accepting landscape constraints. The whole of the 300,000 population attributable to the airport is located on undulating land between the noise corridor and Bishop's Stortford. The area covered by the new urban development extends between 5 to 13 km (3 to 8 miles) from the centre of the airport site, and encompasses Stansted Mountfichet on its eastern edge. The form of the urbanisation is generally compact and non-directional.

Printed image digitised by the University of Southampton Library Digitisation Unit

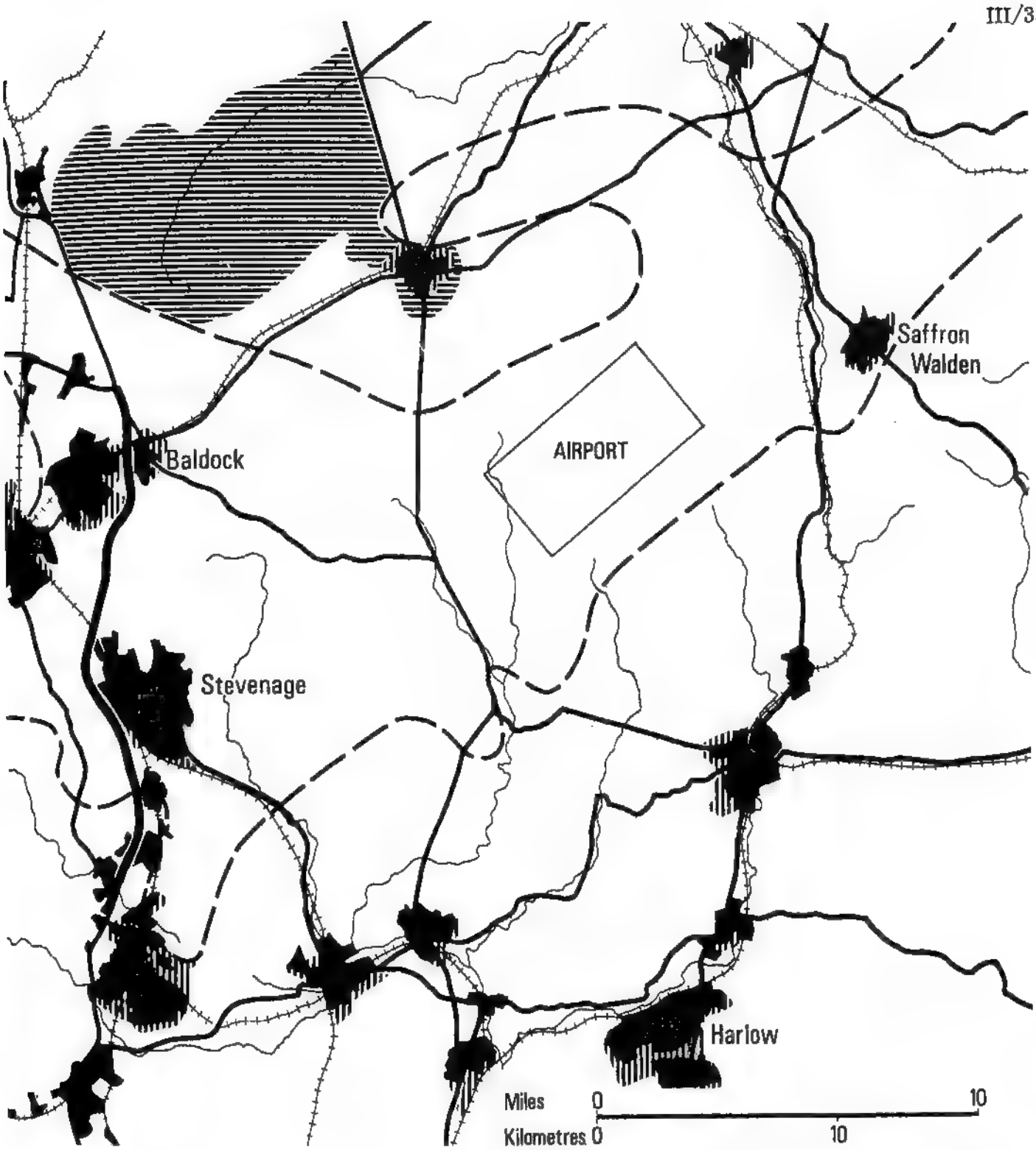


Figure 3.16 NUTHAMPSTEAD STRATEGY C

Strategy C

This strategy locates a single new city north of, and as near as possible to, the airport site within the limits of the landscape constraints. The city is situated in the wide, flat valley of the river Rhee, north-west of Royston and west of the A.14. It is a compact non-directional development, its boundaries being strongly determined by areas of high landscape quality to the north and south-east, and by the noise corridor to the east and south-west. The area covered by urban development extends between 13 to 26 km (8 to 16 miles) from the centre of the airport site. The location of the proposed city accords approximately with the 'corridor' strategy of the South East Economic Planning Council.

Printed image digitised by the University of Southampton Library Digitisation Unit

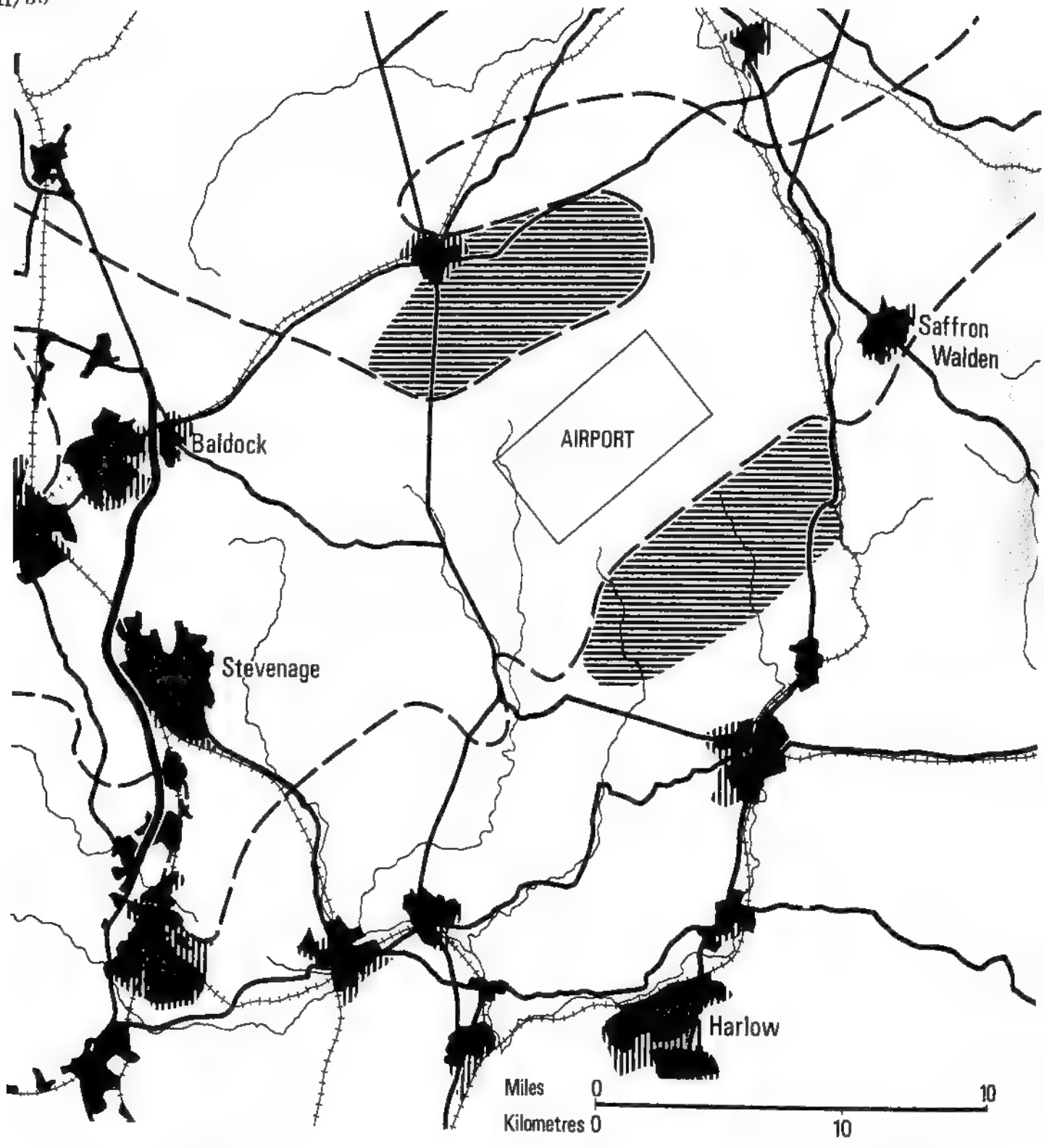


Figure 3.17 NUTHAMPSTEAD STRATEGY D

Strategy D

This strategy consists of development both sides of, and as near as possible to, the airport, ignoring landscape constraints. It thus locates a greater number of people nearer the airport than any other alternative. Development is in the form of compact 'twin' towns, each of about 150, 000 population. The northern town covers the hills and slopes south east of Royston, and the southern town is on the undulating land between the airport and Bishop's Stortford. The area covered by urban development extends between 5 km to 10 km (3 miles to 6 miles) from the centre of the airport site.

Printed image digitised by the University of Southampton Library Digitisation Unit

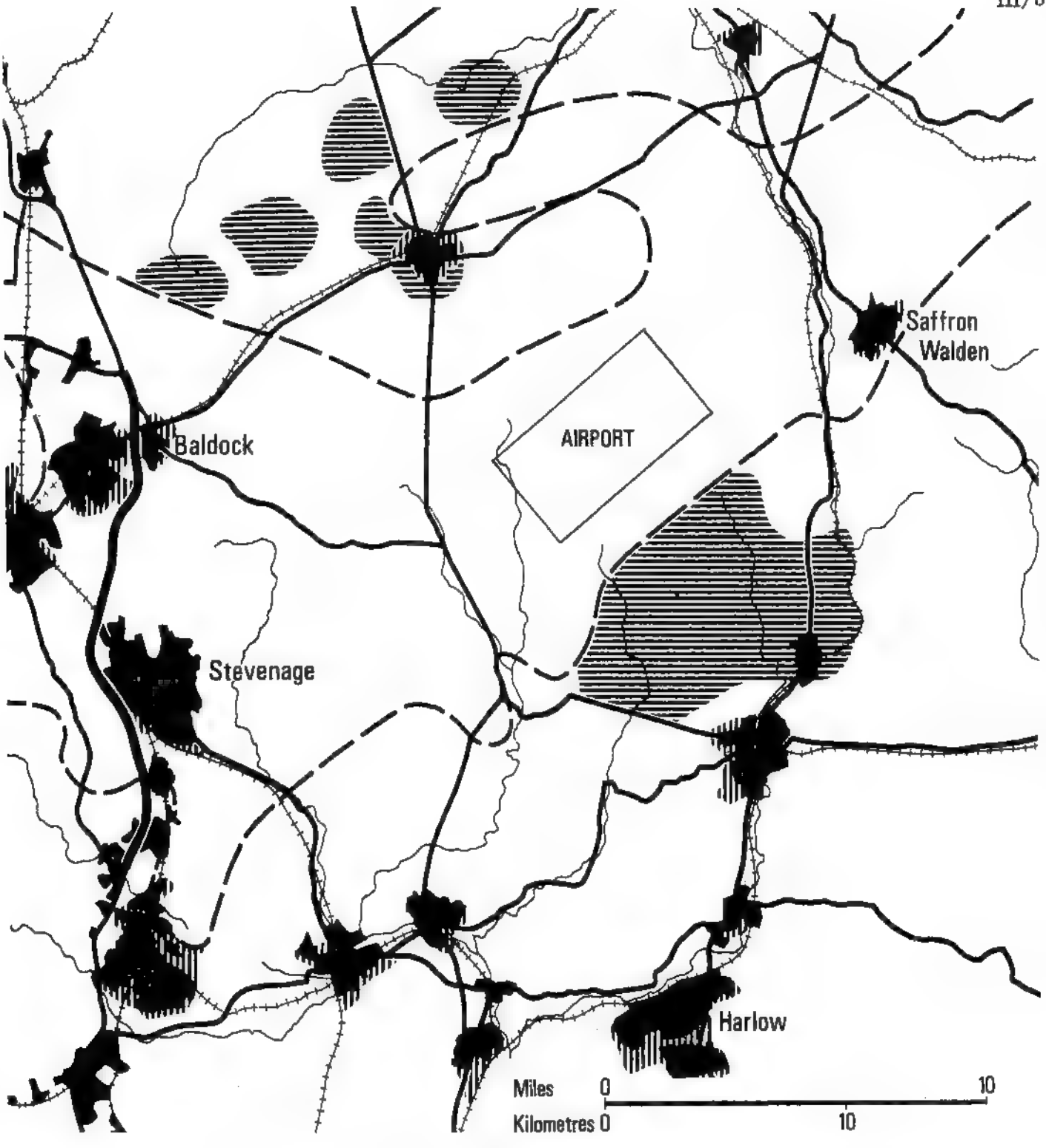


Figure 3.18 NUTHAMPSTEAD STRATEGY E

Strategy E

This strategy consists of development both sides of, and as near as possible to, the airport, within the limits of the landscape constraints. It consists of a large new town of about 220, 000 population located to the south on undulating land between the airport and Bishop's Stortford and a series of small towns with a total population of about 80, 000 located around and to the north of Royston in the valley of the river Rhee. The areas covered by urban development extend between 5 km to 18 km (3 miles to 11 miles) from the centre of the airport site.

Printed image digitised by the University of Southampton Library Digitisation Unit

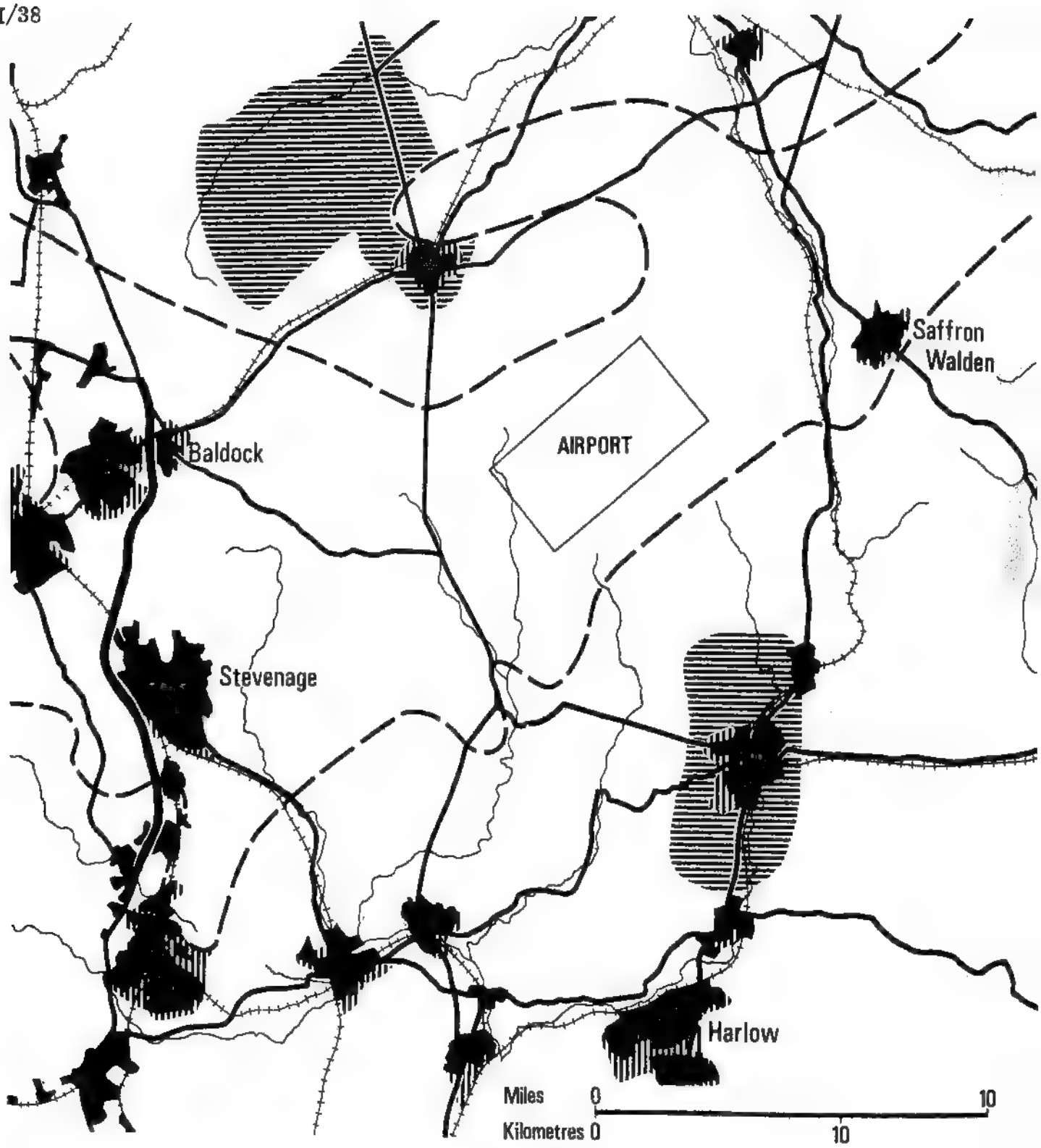


Figure 3.19 NUTHAMPSTEAD STRATEGY F

Strategy F

This strategy develops both sides of, and away from the airport site, accepting the landscape constraints. It consists of compact 'twin' towns of unequal size located between 8 km to 21 km (5 miles to 13 miles) from the centre of the airport site. The larger of the two towns, accommodating 200, 000 population, is located in the valley of the river Rhee, north west of Royston. The smaller town of 100, 000 population is based in the valley of the river Stort and the A. 11, encompassing Bishop's Stortford. This proposal is substantially similar to the proposals which were submitted by Hertfordshire, Cambridgeshire and Essex as evidence of an acceptable pattern of urbanisation to the Stage II Public Hearing.

Printed image digitised by the University of Southampton Library Digitisation Unit

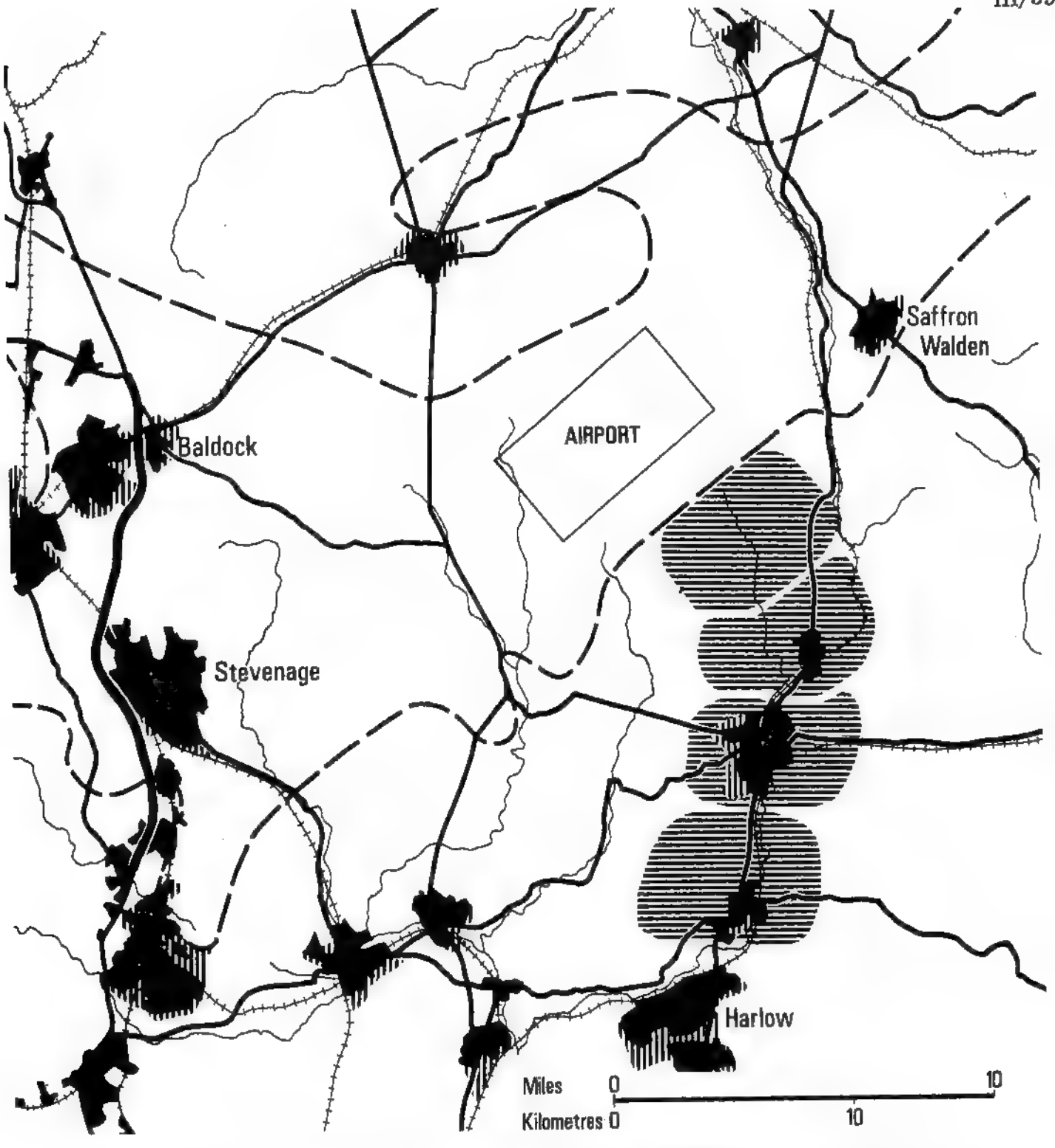


Figure 3.20 NUTHAMPSTEAD STRATEGY G

Strategy G

This is basically a variation of strategy B, and proposes a linear town of about 300, 000 population, to be located along the valley of the river Stort, parallel to the A. 11, M. 11 and the Cambridge railway line. It inter-links, possibly in the form of a series of new settlements, the existing towns of Sawbridgeworth, Bishop's Stortford, and Stansted Mountfichet. The area covered by new urban development extends between 5 km to 22 km (3 miles to 14 miles) from the centre of the airport site.

Printed image digitised by the University of Southampton Library Digitisation Unit

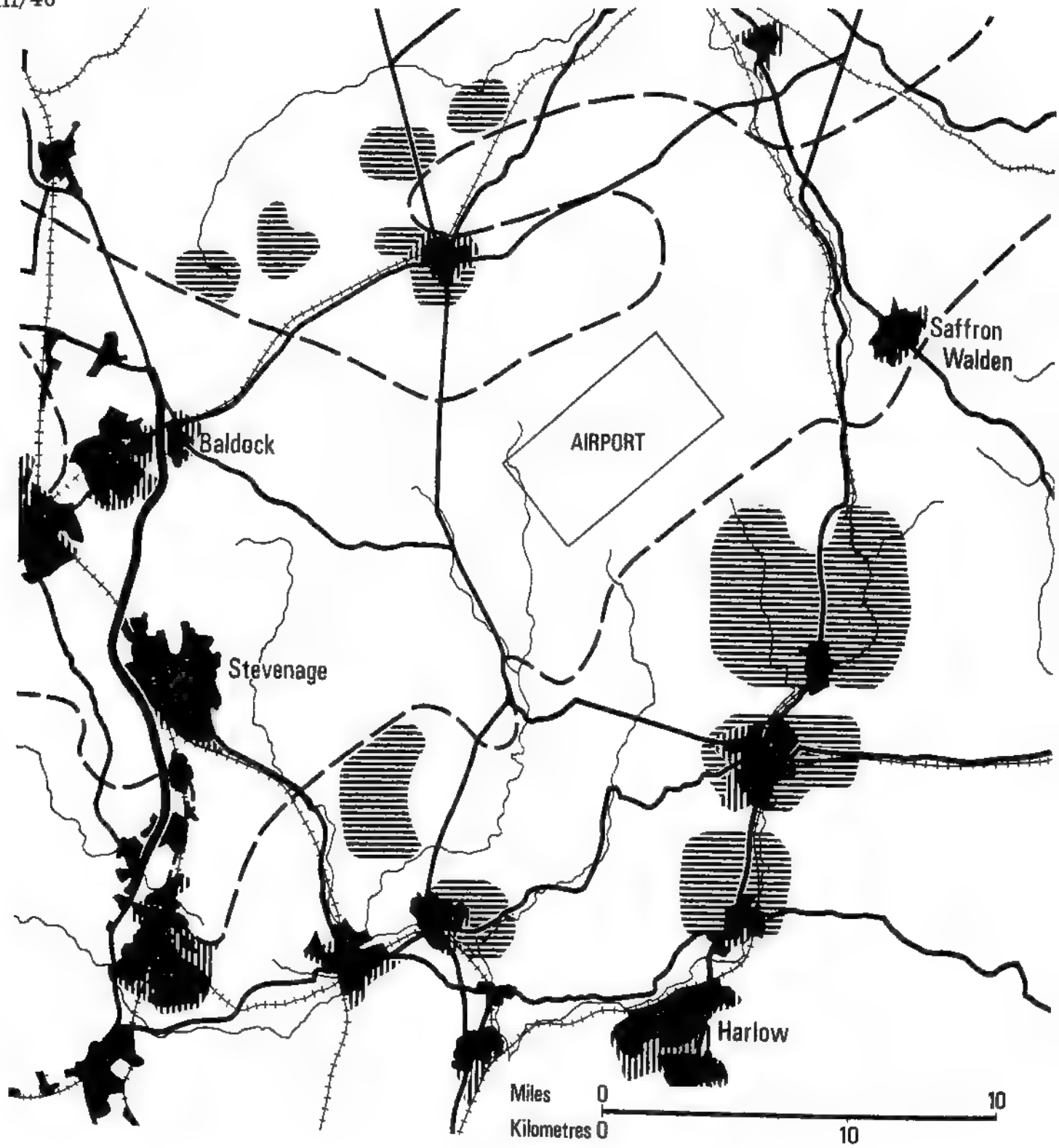


Figure 3.21 NUTHAMPSTEAD STRATEGY H

Strategy H

This is a variation of strategy F, consisting of a pattern of dispersed settlements within a 21 km (13 mile) radius of the centre of the airport site. The majority of the new development is located south of the airport site in five settlements of varying size. These are grouped along existing communication routes, and most are based on existing towns. A lesser proportion of new development is located to the north of the airport site in a series of small towns to the north and west of Royston.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 6: SELECTION OF PREFERRED STRATEGY

75 The purpose of this chapter is to select, from the eight alternative strategies of urbanisation developed in the preceding chapter, a preferred strategy of urbanisation for an airport at Nuthampstead.

76 In part I of this report, the method of applying comparative criteria in the evaluation of the alternative strategies leading to the selection of a preferred strategy or a combination of strategies at each of the airport sites has been described, and the stage 1 and stage 2 selection procedure has been outlined. Following this selection, the preferred strategy or combination of strategies chosen were tested and further developed prior to costing.

First stage of selection

77 This stage involved the comparative assessment of the alternative strategies of urbanisation ranked against the stated planning criteria. The results of this evaluation have been set out in table 3.3. Each of the obviously weaker strategies has then been paired criterion by criterion with one of the stronger strategies with the intention of eliminating the weaker strategy, until two or three of the better strategies remained to be carried forward into stage 2 selection for comparative costing. As a result of the stage 1 assessment, three of the better planning strategies together with the best strategy on user costs have been selected for comparative costing in stage 2.

78 Before pairing alternative strategies, a number of important factors relating to the Nuthampstead site should be stated. These factors all point to the location of the major part of any new urbanisation south of the airport as being more desirable than development to the north of the airport. They are as follows:

i A strong distinction between the more urbanised areas to the south and the basically rural areas to the north of the airport site.

ii The predominance of areas of high landscape value in the northern part of the site as opposed to the southern part of the site.

iii The detrimental effect which any major development to the north of the airport site could have upon Cambridge.

iv The urbanisation for a third London airport would probably be more related to London activities rather than to any other part of the home counties.

v Major development to the north of the airport site would create the need for longer physical links through or past the airport towards London.

With these general factors in mind, the pairing procedure was started.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.3 : Stage 1 - Assessment of alternative strategies at Nuthampstead

Criteria	Strategies A	B	C	D	E	F	G	H
Capital construction costs								
Site development								
Land liable to flood	+	+	-	+	+	-	+	+
Abnormal ground conditions	-	+	-	-	-	-	+	-
Preparation of an acceptable urban environment	+	o	o	+	o	o	o	o
Engineering								
Sewerage and sewage disposal	-	+	-	-	-	-	+	-
Drainage and surface water disposal	-	+	-	-	o	-	+	-
Undergrounding or diverting overhead transmission lines	+	-	+	-	-	+	o	+
Transportation								
Roads from urban areas to the airport	+	+	-	++	+	-	+	--
Other roads	-	-	+	o	+	-	-	-
User costs								
Transportation								
From urban areas to the airport	o	+	-	++	+	--	o	-
Elsewhere in the area	+	+	o	+	+	-	+	-
Unmeasured advantages and disadvantages								
Effect of urbanisation on existing environment								
Preservation of landscape	--	+	o	--	+	o	++	+
Effect on environment of existing urban areas	o	+	-	-	o	o	+	+
Effect of existing environment on new urban areas								
Proximity to fixed installations	+	-	+	-	-	+	o	+
Suitability for housing	+	+	-	+	+	o	+	+
Access to existing recreational areas	equal							
Potential for recreational development	equal							
Contribution to new urban areas by existing urban areas	o	o	-	-	o	o	+	+
Other factors								
Proximity to noise corridor	--	o	-	--	o	+	+	+
Potential for long term growth	o	+	--	+	+	o	o	+
Barrier effect of airport on social patterns	+	+	+	--	o	o	+	o
Provision of major service centres	-	+	o	-	+	-	-	-
Losses in agricultural production	--	-	--	--	-	-	+	-

Key: ++ Considerable advantages
+ Some advantages
o Neutral
- Some disadvantages
-- Considerable disadvantages

Printed image digitised by the University of Southampton Library Digitisation Unit

Strategy A compared to strategy B

79 Strategy A required less in the preparation of an acceptable urban environment, but this was a minor factor in this generally attractive site and was more than counter-balanced by the disadvantage of strategy A in the very important criterion of the preservation of areas of landscape value.

80 Strategy A had an advantage over strategy B in that it would not involve any undergrounding or diverting of overhead transmission lines, but the cost involved would be a very small proportion of the total urbanisation cost.

81 Strategy A had an advantage over strategy B in connection with the proximity of fixed installations, but as this related only to a switching station it was considered to be a less important criterion.

82 Strategy A had no advantages over strategy B in any other criteria while strategy B had advantages over A in many more important criteria. Strategy A was therefore eliminated.

Strategy D compared to strategy B

83 Strategy D was better than strategy B in the preparation of an acceptable urban environment, but had severe disadvantages in the preservation of areas of landscape value.

84 Strategy D was better than all other strategies on transportation user costs, and was therefore carried forward to stage 2 for testing, as the best strategy on user costs.

Strategy C compared to strategy B

85 Strategy C had obvious disadvantages over strategy B in transportation, long term growth and development on floodland and had no advantage over strategy B in any major criteria. Strategy C was therefore eliminated.

Strategy F compared to strategy G

86 Strategy F was better than G only on a few very minor criteria. In addition, strategy F had considerable disadvantages in transportation costs. Strategy F was therefore eliminated.

Strategy H compared to strategy G

87 Strategy H was better than G only on a few minor criteria. It was better on potential for long term growth, but this was considered relatively unimportant

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.4 : Stage 2 - Assessment of alternative strategies at Nuthampstead

Criteria	Strategies B	D	E	G
	£ million			
Capital construction costs				
Site development				
Land liable to flood	ø	ø	0.1	ø
Abnormal ground conditions	ø	2.25	3.8	ø
Preparation of an acceptable urban environment		equal		
Engineering				
Sewerage and sewage disposal	ø	1.6	1.8	0.5
Drainage and surface water disposal	0.1	0.8	0.4	ø
Undergrounding or diverting overhead transmission lines	1.25	0.5	1.05	ø
Transportation				
Raods from urban areas to the airport	3.2	ø	2.2	4.6
User costs				
Transportation				
From urban areas to the airport (capitalised)	8.75	ø	7.5	12.5
Total	13.3	5.15	16.85	17.6
Unmeasured advantages and disadvantages				
Effect of urbanisation on existing environment				
Preservation of landscape	+	--	+	++
Effect on environment of existing urban area	+	-	o	+
Effect of existing environment on new urban areas				
Proximity of fixed installations	-	-	-	o
Suitability for housing		equal		
Access to existing recreational areas		equal		
Potential for recreational development		equal		
Contribution to new urban areas by existing urban areas	o	-	o	+
Other factors				
Proximity to noise corridor	o	--	o	+
Potential for long term growth	+	+	+	o
Barrier effect of airport on social patterns	+	--	o	+
Provision for major service centres	+	-	+	-
Losses in agricultural production	-	--	-	+

Key:
++ Considerable advantages
+ Some advantages
o Neutral
- Some disadvantages
-- Considerable disadvantages

Note: ø denotes alternative with lowest cost for each criteria. Figures show excess cost of other alternatives in £million.

Printed image digitised by the University of Southampton Library Digitisation Unit

as in theory strategy G could grow to become similar to strategy H. Strategy H had major disadvantages in transportation costs. Strategy H was therefore eliminated.

88 Strategies B, D, E and G were carried through to the stage 2 comparative costing selection process, strategy D being the best strategy on user costs.

Second stage of selection

89 In this stage all strategies under consideration were costed for comparison purposes and these costings were coupled to the rankings already made in stage 1 of the selection procedure for the criteria grouped under unmeasured advantages and disadvantages. It should be noted that the costs at this stage were representative of a fairly wide range of possible assumptions and small differences were therefore likely to be insignificant. The purpose of this stage was to eliminate the less satisfactory strategies and select a preferred strategy or combination of strategies. The results of this combined costing and evaluation selection are set out in table 3.4.

Capital and user costs

90 The variation between strategies in terms of capital and user costs, made strategy D the most economical and strategy G the most costly. Strategies B and E were less costly than strategy G but more costly than strategy D. The estimate for strategy D would be higher if the cost of linking the two new urban areas by highways under the central spine or around the airport site were taken into consideration.

Unmeasured criteria

91 Because the difference between strategies on the basis of costed criteria was not particularly marked, the unmeasured criteria assumed considerable importance in the selection procedure.

i Preservation of areas of landscape value - Strategy G had only marginal advantages over strategy B and strategy E. Strategy D had major disadvantages.

ii Effect of new urbanisation on existing environment - Strategies B and G had advantages over the other strategies in this criterion, while strategy D had some disadvantages.

iii Proximity to fixed installations - Strategy G was marginally better than strategies B, D and E.

iv Suitability of existing environment for residential development - There was no difference between the strategies in this factor.

v Contribution made by existing urban areas to the new urbanisation - Strategy G had slight advantages over the others, especially in the initial

Printed image digitised by the University of Southampton Library Digitisation Unit

stages of development.

vi Proximity to the noise corridor - Strategies B, G and E were much the same, while strategy D had major disadvantages.

vii Potential for long term growth - The linear form of strategy G may have some disadvantages in comparison to the others which were all equally good.

viii Barrier effect of airport on social structure of new urban areas - Strategy D had severe disadvantages in this respect.

ix Provision for major centres - Strategies B and E had greater possibilities for establishing a major new shopping centre by comparison with strategy D, where the divided form of the town would make it very difficulty and strategy G where it would be necessary to expand the existing centre at Bishop's Stortford, or develop one or two new centres nearby.

x Losses in agricultural production - Strategy D would incur the greatest loss to agricultural production primarily from the area south-east of Royston. Strategies B and E would also involve some loss and strategy G whilst still incurring a loss to agriculture would be the least costly of any of the strategies in terms of agricultural production.

92 In summary, although strategy D had the lowest costs, it was eliminated by its strong disadvantages on important unmeasured criteria. Strategy G rated well on unmeasured criteria but involved the highest costs. Also the disturbance to existing towns, social upheaval, and a more costly infrastructure, gave strategy G considerable disadvantages.

93 Strategies B and E, which were somewhat similar, had distinct advantages over the others in that they rated well both on costs and unmeasured criteria. In addition, strategy E had some important social advantages over strategy B in giving a wider range of living environments from which to choose and could be revised to reduce the higher capital costs which could have been incurred in the northern portion. With this proviso a combination of strategies B and E was selected as the preferred strategy for urbanisation at Nuthampstead.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 7: PLAN 3 DEVELOPMENT OF PREFERRED STRATEGY

94 Figure 3.22 illustrates the proposals for Plan 3 which represents the urbanisation required to support an airport in which four runways could be operating to capacity, employing about 65,000 people at about the year 2000. The urbanisation plans have been developed from the preliminary studies carried out for the alternative strategies B and E, a combination of which has been selected as the preferred strategy for urbanisation at Nuthampstead.

95 The proposals for new urbanisation in Plan 3 cover all new urban development within the internal zone area up to the year 2000, additional to the existing urban areas and proposed urban growth up to 1981 contained in Plan 1. In developing the urbanisation plan, no new urban development has been located within the noise corridor.

Employment and population

96 A total population of around 550,000 is expected for the Nuthampstead internal zone area by the year 2000, based on the employment at the airport and the growth of existing industries. (table 3.5 and figure 3.23). This is at the high end of the range of population estimates for the zone, which extends from 453,600 to 559,300. This estimate has been recommended as Nuthampstead is the nearest airport site to London and can be expected to recieve industries decentralising from the north east sector of the metropolis, although on regional planning considerations a lower estimate might be more desirable.

97 For the reasons noted above, a high growth rate of employment has been selected for 'export' industries beyond 1981. A total surplus employment of 104,500 is expected with the airport. This gives a total employment of 232,000 within the internal zone area when local employment is added.

98 An assumption of a net inward commuting of 5% of the total employment in the zone has been made to arrive at the economically active population resident in the internal zone area. This is a reversal of a pattern of net outward commuting anticipated from the internal zone area up to 1981; it is expected to be the result of a decline of employment opportunities in inner London and the transfer of London commuters to airport or airport based employment. These factors together are likely to reduce gross outward commuting and increase gross inward commuting flows. Using these assumptions, the total economically active population in the zone is of the order of 220,000. The application of a participation rate to the high end of the possible range gives the population resident in the internal zone area.

99 In table 3.5 the alternative growth rates of employment used for non-airport export surplus employment are 50% and 25% of the 1966-81 rates applied to Plan 1; the third column assumes no non-airport growth of surplus employment.

Printed image digitised by the University of Southampton Library Digitisation Unit

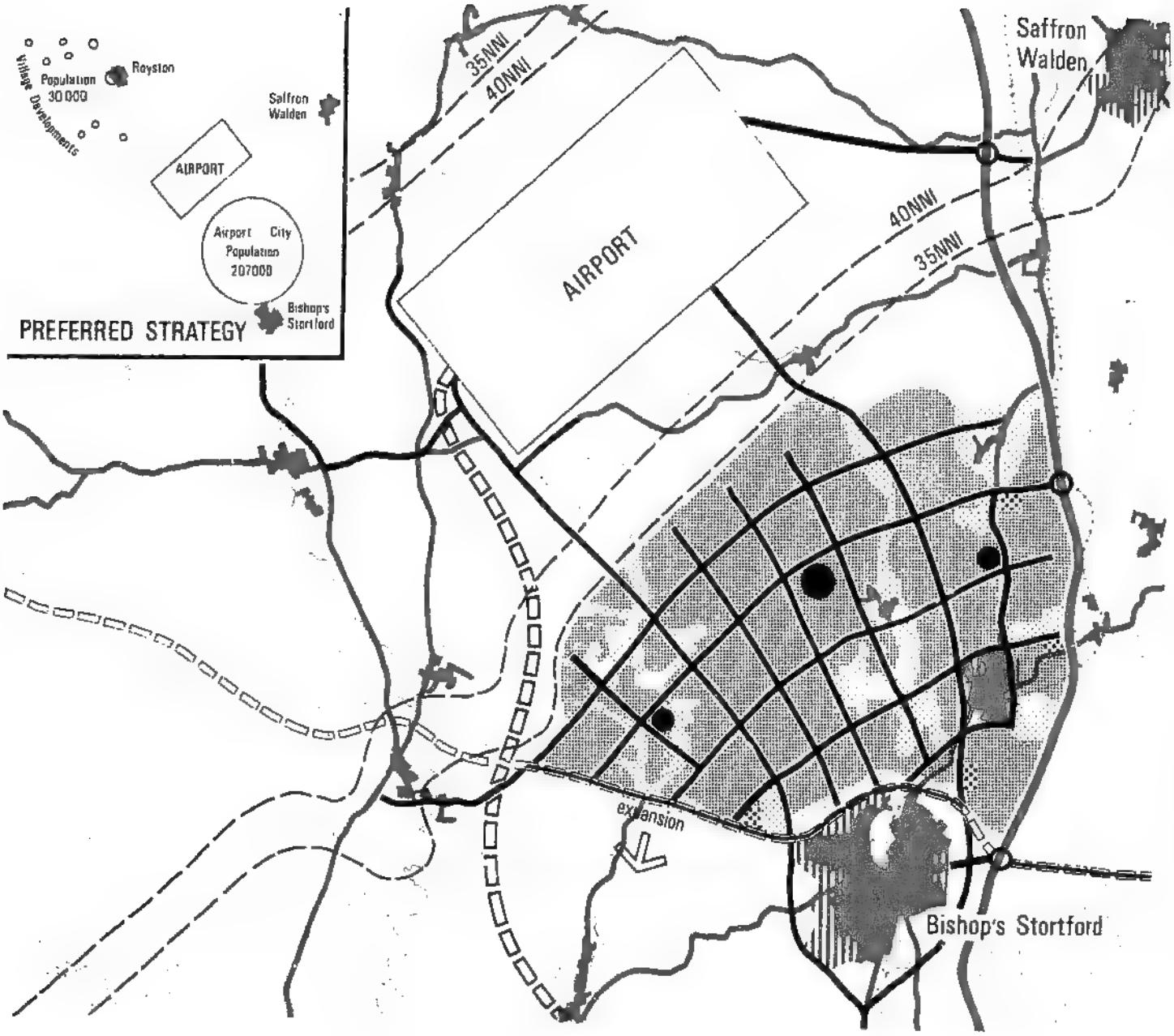


Figure 3.22

NUTHAMPSTEAD
PLAN 3 – AIRPORT CITY

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.5: Nuthampstead Plan 3 employment and population within the internal zone area

Annual growth rate for non-airport export surplus employment from 1981 %	0.85		0.4		Nil	
Export surplus employment						
Non-airport	185,500		176,000		167,100	
Airport	50,000		50,000		50,000	
Total employment	235,500		226,000		217,100	
Net inward commuting	11,800		11,300		10,900	
Economically active population	223,700		214,700		206,200	
Participation rate %	40.0	45.4	40.0	45.4	40.0	45.4
Population	559,300	492,100	536,800	472,300	515,500	453,600

Recommended estimates

	male	female	total
Population	225,00	225,000	550,000
Employment	-	-	232,000
Net inward commuting	-	-	12,000
Economically active	145,200	74,800	220,000

100 The Plan 1 population forecast for the internal zone area was 261,000 (paragraph 44). Therefore the growth to be accommodated in Plan 3, to reach a total population of 550,000 in the year 2000, is 289,000.

101 This population growth includes two population components as follows:

i The population attributable to an airport employing 65,000 people. This has been estimated as 275,000, but because of the commuting assumption outlined in paragraph 98 (5% residing outside the internal zone area) only 260,000 are located in the internal zone area.

ii The growth of existing settlements up to the year 2000, generated by a limited growth in existing employment. A similar commuting assumption

Printed image digitised by the University of Southampton Library Digitisation Unit

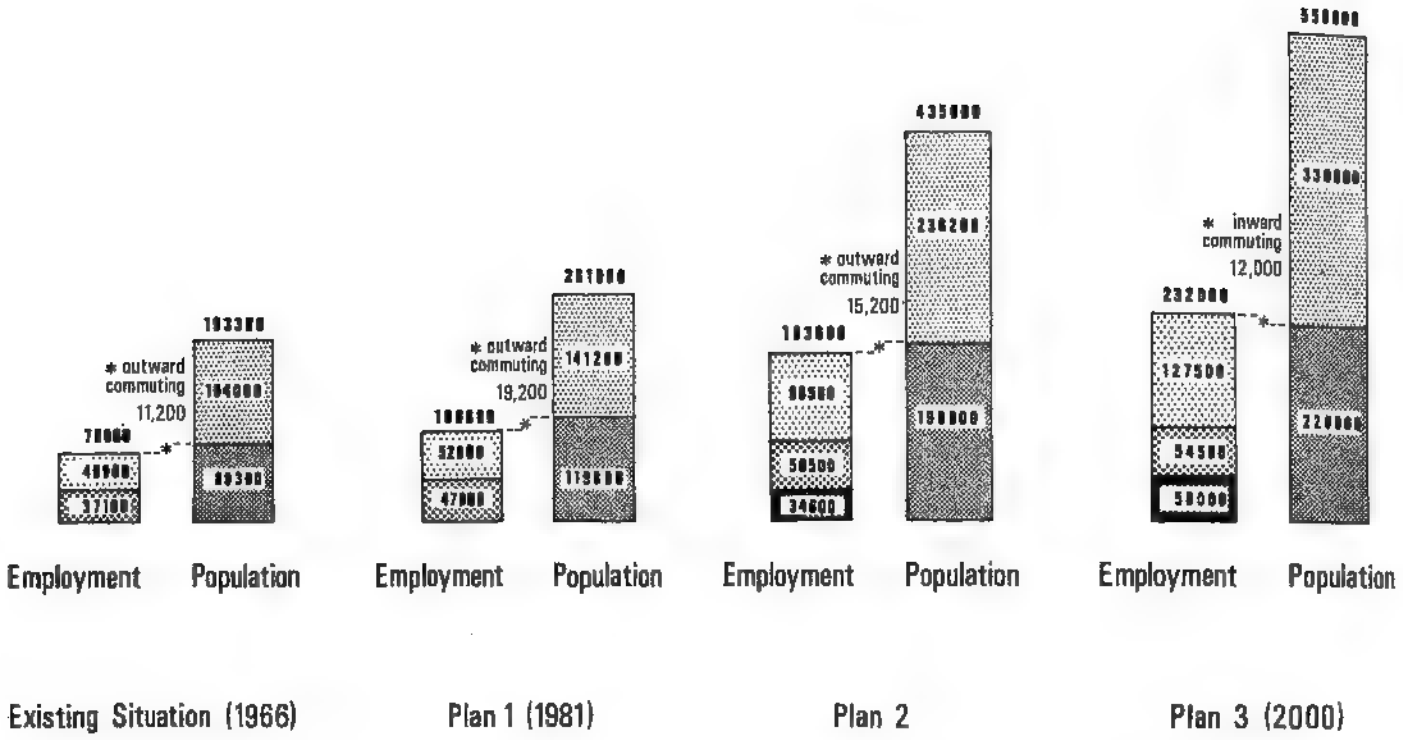


Figure 3.23

NUTHAMPSTEAD INTERNAL ZONE AREA EMPLOYMENT AND POPULATION

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.6: Nuthampstead internal zone area - population growth and distribution

		Airport City*	Royston and associated villages*	Harlow New Town	Remainder of internal zone area*	Total
A:	Existing population 1966	10,000	15,500	67,900	99,900	193,300
B:	Population growth 1966-81	1,000	11,500	12,100	43,100	67,700
C:(A+B)	Plan 1:Total Population 1981	11,000	27,000	80,000	143,000	261,000
D:	Plan 2 minus Plan 1. Population growth for airport employment of 45,000	128,000	11,500	12,000	22,500	174,000
E:(C+D)	Plan 2:Plan 1 population and population for airport employment of 45,000	139,000	38,500	92,000	165,500	435,000
F:	Plan 3 minus Plan 2. Population growth for extra airport employment of 20,000 and for non-airport employment growth 1981-2000	79,000	18,000	8,000	10,000	115,000
G:(D+F)	Plan 3 minus Plan 1. Population growth for airport employment of 65,000 and for non-airport employment growth 1981 - 2000	207,000 (72%)	29,500 (10%)	20,000 (7%)	32,500 (11%)	289,000 (100%)
H:(C+G)	Plan 3:Plan 1 population and population for airport employment of 65,000 and for non-airport employment growth 1981 - 2000	218,000	56,500	100,000	175,500	550,000

* Definition of these areas appears in table 3.7

Printed image digitised by the University of Southampton Library Digitisation Unit

applies to this employment (i.e. a net inward commuting pattern). This represents a reversal of the Plan 1 flows and therefore a proportionately smaller population increase is generated, namely 29,000.

102 The various elements of new urbanisation required to accommodate this total population growth of 289,000 e.g. village growth, town growth or new airport city, as shown in table 3.6 cannot be locationally distinguished as accommodating either non-airport growth or airport generated population as to some extent population growth will be intermixed and new urban development may accommodate people from each component.

Concept for Plan 3

Distribution of population

103 The distribution of the population growth of 289,000 forecast for the internal zone area up to the year 2000 has been divided into the following components:-

i A new city located between Bishop's Stortford and the airport site accommodating 207,000 people (72%) primarily attributable to the airport.

ii A cluster of expanded villages around Royston for 29,500 (10%) primarily composed of population attributable to the airport.

iii Continued growth of Harlow New Town for 20,000 people (7%).

iv Peripheral expansion of the remaining towns and villages throughout the internal zone area amounting to 32,500 people (11%) comprising non-airport growth and some growth attributable to the airport.

Components (i) and (ii) constitute the preferred strategy of urbanisation selected for the Nuthampstead site.

104 The new city is conceived as a compact area structured with a grid of roads orientated to the two linkages between the city and the airport site and to the two north south valleys of the rivers Ash and Stort. These two valleys could provide a major recreational open space system of the new city.

Boundaries of the urban area

105 Figure 3.24 shows the boundaries of the new city which are for the most part well defined. On the east, the alignment proposed for the M.11 motorway has been taken. On the south, the Ministry of Transport's proposal for a new east west strategic route, contained in their Green Book "Roads for the Future" on the line of the present A.120 and the alignment of the proposed by-pass

Printed image digitised by the University of Southampton Library Digitisation Unit

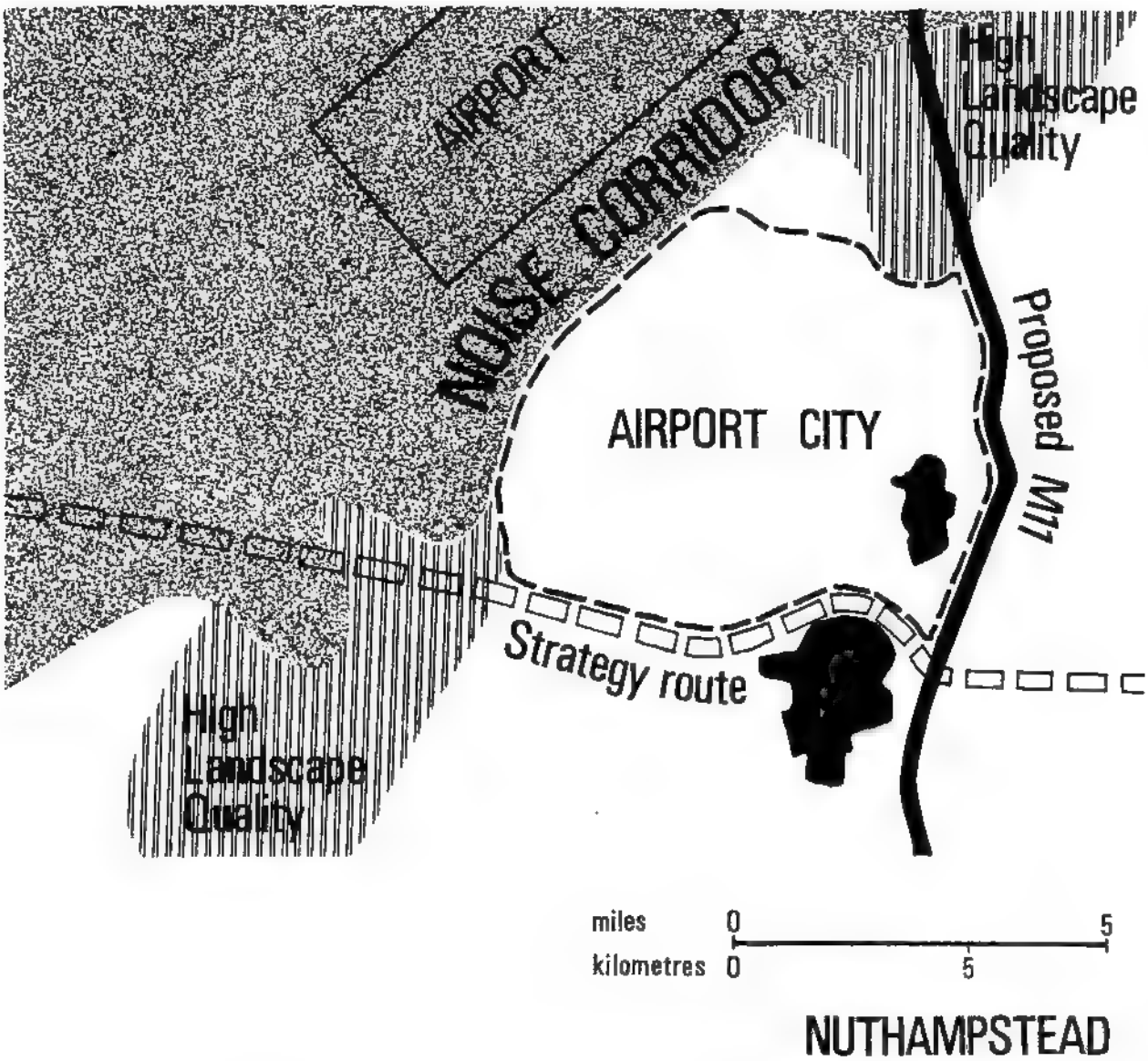


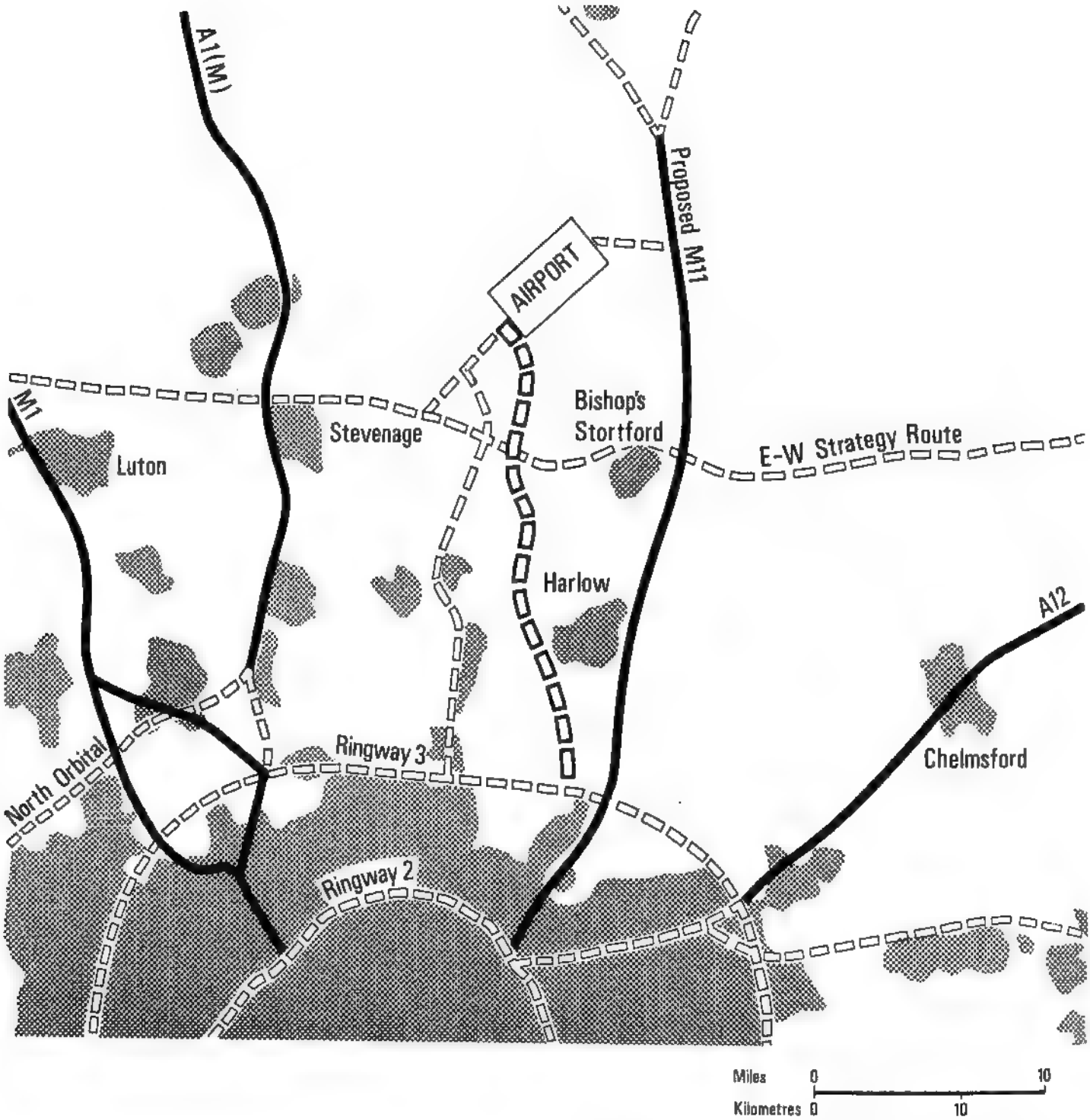
Figure 3.24 FACTORS INFLUENCING URBAN ENVELOPE

around the northern side of Bishop's Stortford has been taken. This by-pass should incorporate a 'green belt' between the new city and Bishop's Stortford. On the north-west the boundary of the new city has been taken along the line of the noise corridor. This edge is less clearly defined in physical terms than the other two boundaries. At the present time it is intended that the land between the airport periphery and the new city should remain in agricultural use as an undeveloped buffer area and as an airport noise insulator.

Service centres

106 The distribution of servicing functions, such as shopping, further education, social, health, welfare and recreational facilities, would primarily be grouped into the three new centres in the new city, and to a lesser extent into the existing centre of Bishop's Stortford. The latter centre would however be primarily orientated to serving the needs of its dependent population, although the southern edge of the new city might look towards Bishop's Stortford for certain facilities. Within the airport city the three new centres have been distributed to

Printed image digitised by the University of Southampton Library Digitisation Unit



NUTHAMPSTEAD
LINKS TO AIRPORT

Figure 3.25

meet district centre needs. The district centre nearest the middle of the city, located between Stocking Pelham and Manuden, would be the first to start building and it is intended that it would continue to grow to become the new city centre. Lower order centres in the shopping hierarchy, catering for more local day to day needs, would be provided and wherever feasible these would be centred on existing settlements such as Stansted.

Printed image digitised by the University of Southampton Library Digitisation Unit

Growth outside the airport city

107 It is proposed that in addition to the new city, alternative locations and ways of living should be offered to people coming to live in the area and work at the airport. To meet these needs, which will arise naturally in any case at all four airport sites, it is proposed to allocate 10% (29,500) of the new population growth that is forecast up to the year 2000, to a planned cluster of villages grouped around Royston. This amount is in addition to the allowance that has been made for the further growth of Harlow New Town (20,000) to its planned size and for some growth of other existing towns and villages in the internal zone area (32,500) sufficient to provide for the non-airport growth between 1981-2000.

108 Royston would be expanded by a small amount to the west and south of the present town and would provide service facilities for the surrounding new developments. These might constitute new villages or expansions of existing villages and would be located in the vicinity or adjacent to Kelshall, Therfield and Reed in Hertfordshire, south of Royston, and Guilden Morden, Steeple Morden, Litlington, Abington Pigotts, Bassingbourn and Whaddon in Cambridgeshire, north west of Royston.

Transportation

Links to London and the region

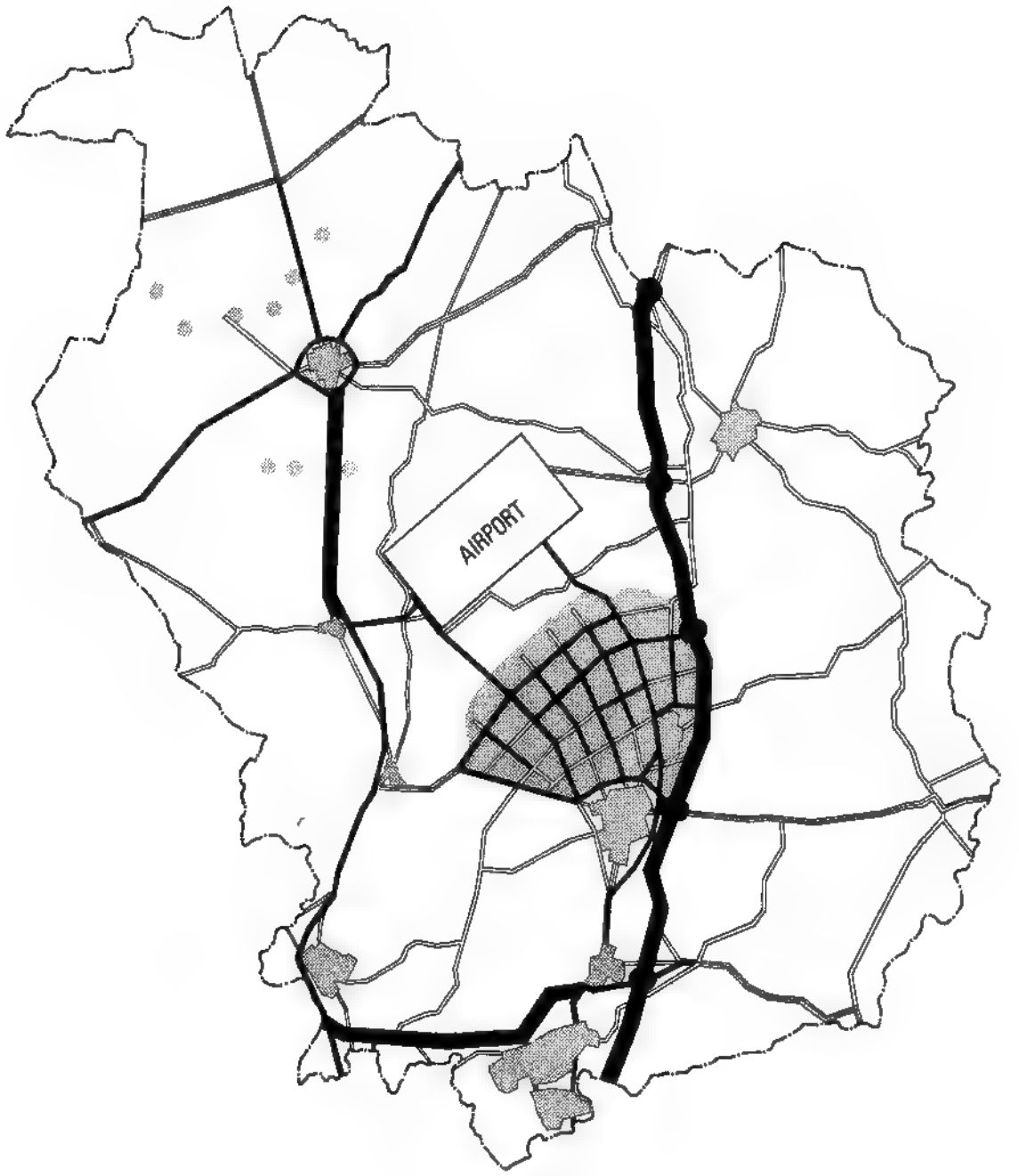
109 Figure 3.25 shows possible road links to the airport. Preliminary studies at present in progress by the Ministry of Transport's consultants, Messrs Howard Humphreys and Sons indicate that a road link to London from the airport could either be provided by upgrading the existing plans for the M.11 motorway and the A.10 trunk road improvements or by constructing a new route located approximately midway between, and parallel to the existing alignments of the M.11 and A.10. Cross-country links westwards to the M.1 could either be provided by upgrading the existing plans for the east-west strategy route between Luton, Stevenage, Colchester and Harwich proposed by the Ministry of Transport in the Green Book "Roads for the Future" or by constructing a new route located approximately parallel but further to the north.

Access to the airport

110 The principal road system which might be required for the new urbanisation to meet forecast traffic volumes of Plan 3 is shown in figure 3.26. On the basis of the Plan 3 traffic test it is estimated that the following facilities and improvements over and above the 1981 estimated requirements will be needed to cater satisfactorily for forecast traffic needs.

111 Access to the airport from Royston and the cluster of villages around Royston could be provided by upgrading the A.10 to a dual three lane carriageway with a dual two lane carriageway spur from the junction with the A.507 to the south-western edge of the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit



Dual three lane carriageway

Dual two lane carriageway

Three lane single carriageway

Two lane single carriageway

Boundary of Internal Zone Area

Miles 0 10

Kilometres 0 10

NUTHAMPSTEAD

Figure 3.26

PLAN 3 – HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

112 The western part of the new city, Bishop's Stortford and Harlow could be served by a dual two lane carriageway to the south western edge of the airport from the A. 120 continuing as a two lane single carriageway west of Bishop's Stortford onto the dualled A. 11.

113 A second similar dual two lane carriageway link from the new city could branch from the A. 11, by-passing Bishop's Stortford to the east to reach the airport perimeter on its south eastern edge. Access to the airport from the north, using the A. 11/M. 11 corridor and from Saffron Walden could be provided by a three lane single carriageway linked to the M. 11 due east from the airport.

Roads within airport city

114 Airport city could be served by a grid of roads between 1 - 1. 6 km ($\frac{2}{3}$ - 1 mile) apart. These roads would vary in width according to predicted traffic volumes but the majority of roads would be dual two lane highways with all junctions at grade. There are three main features of this road system:

i East-west dual carriageways would be aligned to serve the new city centre and the smaller industrial estates.

ii Two of the north-south dual carriageways would serve movements from the urban area to the airport while another would carry traffic in the corridor between Bishop's Stortford and the city centre.

iii Access to the national motorway network would be gained by two proposed junctions with the M. 11 motorway; one located at the Bishop's Stortford by-pass and the other near the village of Ugley.

Other roads which would be required to the 1981 highway network are indicated in figure 3. 26.

Railways

115 Messrs. Livesey and Henderson, consultants to British Rail have proposed that one of the possible alignments for the rail link to London from the airport, could run parallel to the new road link proposed by Howard Humphreys and Sons, involving a spur from the main Cambridge line, located west of Harlow, following the valleys of the rivers Ash, Rib and Quin to the airport site.

116 The existing main railway line to Cambridge has stations at Bishop's Stortford, Stansted and Elsenham and one of the latter two stations could provide the main station for the new city.

Engineering services

Gas

117 The area of airport city is well served by an existing distribution system from the national grid.

Printed image digitised by the University of Southampton Library Digitisation Unit

Water

118 A new pumped storage reservoir will be required to serve the new city.

Electricity

119 One new substation and extensions to two existing substations will be required.

120 The location of the new city encompasses the Central Electricity Generating Board's switching station that has recently been constructed at Stocking Pelham. Although the station is fairly well hidden from view on most sides, as an installation it is fairly obtrusive, especially from the north-east, and will require additional landscaping. Some of the overhead transmission lines that converge on the station are affected by the residential areas of the new city and will have to be placed underground or diverted before each affected phase of the development proceeds.

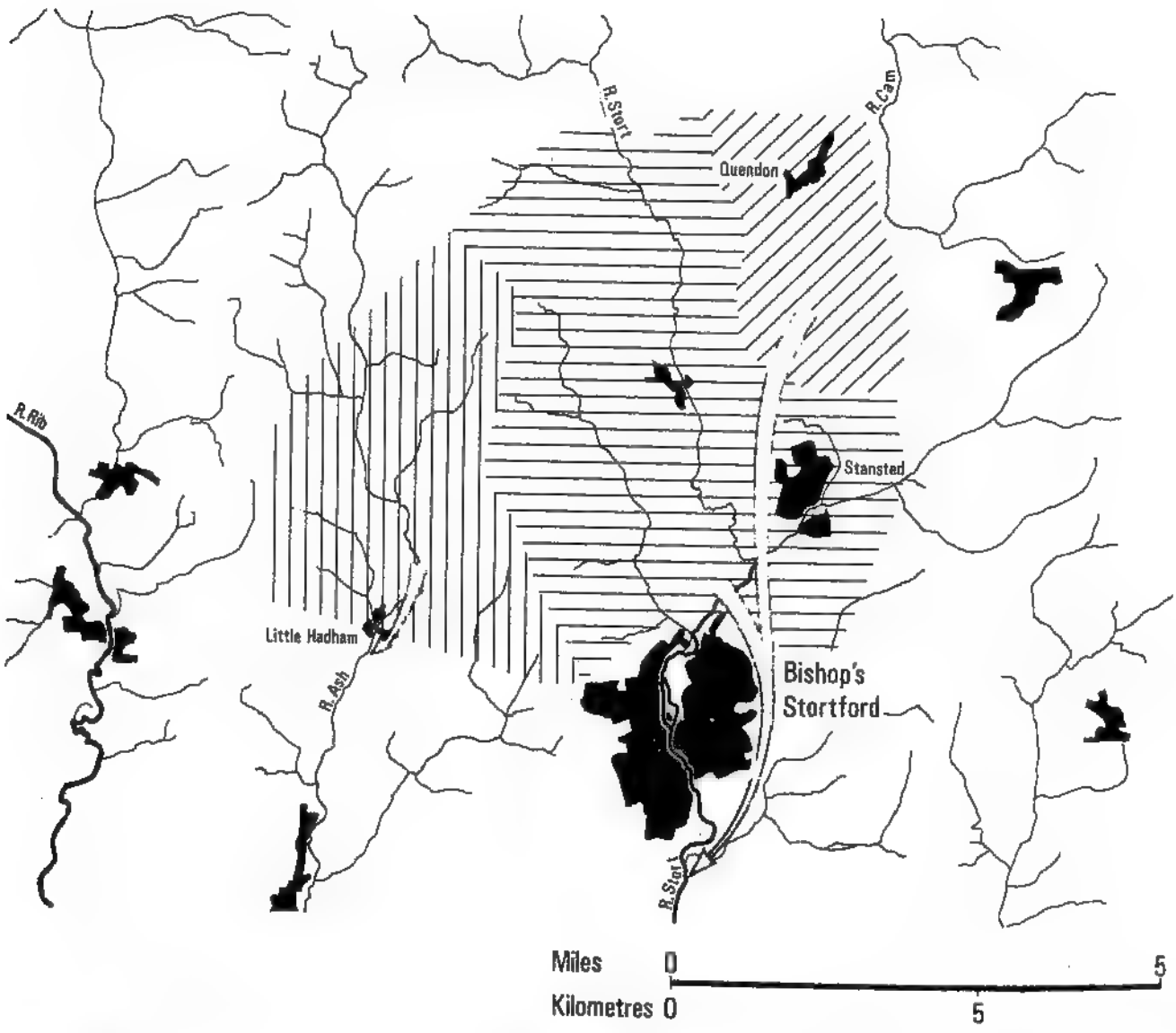


Figure 3.27 DRAINAGE AREAS & OUTFALL POINTS

Printed image digitised by the University of Southampton Library Digitisation Unit

Sewerage and sewage disposal

121 The new urbanisation would be provided with separate sewerage and drainage systems. The following paragraphs describe the broad outlines which these systems would probably take. Technical matters concerned with the disposal of sewage are discussed in Appendix D.

122 The greater part of the area proposed for the new urbanisation lies within the catchment of the river Lee, but the north-eastern extremity lies in the headwaters of the river Cam, a tributary of the river Great Ouse. The area is divided into three natural sub-catchments as shown in figure 3.27. The westernmost part drains to the river Ash which runs southwards to join the river Lee just downstream of Ware. The majority of the easternmost part drains to the river Stort which joins the river Lee 5 km (3 miles) downstream of Ware. The north-eastern part drains to the river Cam.

123 There are already sewerage systems in the main centres of population in the area, Bishop's Stortford and Stansted, and also in some of the villages, which drain to existing sewage treatment works. These sewerage systems would, in general, be incapable of expansion to serve the much larger developments which would take place in their vicinity and it would probably be desirable, from the viewpoints of amenity and economy, to phase out the existing sewage treatment works. We have therefore assumed for the purposes of this study that the existing local and branch sewers would continue to serve the needs of the areas already developed, but that provision would have to be made in the new trunk sewers and sewage treatment works for the eventual acceptance of flows originating from these areas.

124 The trunk sewers catering for the western part of the urbanisation would gravitate southwards along the valley of the river Ash to a new sewage treatment works near Little Hadham. The trunk sewers in the majority of the eastern part of the urbanisation would gravitate southwards along the valleys of the river Stort and its tributaries to a new sewage treatment works downstream of Bishop's Stortford. Almost the whole of these two sub-catchments could be served by gravity sewers, but it would be necessary to raise sewage from a few small areas into the main sewerage system by pumping.

125 The trunk sewers in the north-eastern part of the urbanisation would run generally in a northerly direction and the sewage flows from the two main branches would be brought together near Quendon. It would probably not be economic to provide a separate sewage treatment works to treat this flow in the vicinity of Quendon and we have therefore allowed in our estimates for pumping this crude sewage flow westward into the sub-catchment of the river Stort and for increasing the size of the proposed trunk sewer down the Stort valley to take the additional flow.

Drainage and surface water disposal

126 The area proposed for new urbanisation is drained by the network of natural watercourses shown in outline on figure 3.27. The catchment is largely agricultural in character and the watercourses frequently dry up in their upper reaches, which lie on the chalk, during the summer months.

Printed image digitised by the University of Southampton Library Digitisation Unit

127 Storm water run-off from roofs, roads and other paved surfaces in the new urbanisation would be conveyed by a new surface water drainage system into the local watercourses. The effect of constructing impermeable surfaces over a substantial proportion of the area would be to greatly increase the rate of surface water run-off, particularly during intense thunderstorms. If the flow from the surface water drainage system was permitted to discharge into the existing watercourses without any measures being taken to cater for these much higher peak flows there would therefore be a sharp increase in the frequency and the extent of flooding both within the area of urbanisation and downstream of it. In order to avoid this it would be necessary to provide balancing capacity and to improve some of the stream channels.

128 Balancing capacity would consist of flood meadows or retention reservoirs in which peak flows would be temporarily stored, the water being released to the watercourses at a reduced rate over a period after the storm. The plan for the new city permits the use of the river and stream valleys for this purpose as necessary. The carrying capacity of some of the watercourses would also have to be increased, depending on the volume of balancing which could be provided economically.

129 The foregoing paragraphs have dealt only with the large concentration of urbanisation proposed south of the airport and they do not refer to the smaller scattered developments to the north. These are mainly located in the subcatchment draining to the river Rhee although there are also three on the headwaters of the rivers Rib and Quin. These developments would not give rise to any serious sewerage of drainage problems and we have generally allowed in our estimates for them being catered for individually.

Sequence of growth

130 The first two phases of development in airport city are located within the catchment of the river Stort, between Berdon and Manuden. This development will entail the building of a new sewage disposal works south of Bishop's Stortford and the trunk sewer along the Stort valley. A 400 KV transmission line will require diversion around the city and 132 KV lines will need to be placed underground. A start will be made on the main shopping centre. The first of the two road links will be required between the new city and the airport. Simultaneously with the beginning of the city, new development to the south and west of Royston will be built (table 3.7).

131 The next two phases of growth will be the development around the village of Ugley, the start of a new district centre on the A.11 (T) and development between Manuden and Farnham in the valley of the river Stort. The three village expansions to the south of Royston will be built. Growth in the following two phases will cross the watershed and start development in the valley of the river Ash between Stocking Pelham and Albury. Further expansion of the new town centre will be undertaken, a new district centre will be started at Albury, trunk sewers and a new sewage disposal works will be needed south of Little Hadham, overhead transmission lines will have to be diverted and placed underground and the second of the two road links will be required between the new city and the airport. This stage of growth constitutes Plan 2.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.7: Nuthampstead internal zone area - sequence of population growth to 2000

Order of increment	Airport City[1]	Royston and associated villages[2]	Harlow New Town	Remainder of internal zone area[3]	Total increment
1	21,000	3,000	2,000	4,000	30,000
2	24,000	2,500	2,000	4,000	32,500
3	19,000	4,000	2,000	3,500	28,500
4	21,000	2,000	2,000	3,500	28,500
5	21,500	-	2,000	3,500	27,000
6	21,500	-	2,000	4,000	27,500
Total 1-6 (Plan 2 minus Plan 1)	128,000	11,500	12,000	22,500	174,000
7	17,000	4,000	2,000	2,500	25,000
8	25,000	4,000	2,000	2,500	33,500
9	20,000	4,000	2,000	2,500	28,500
10	17,000	6,000	2,000	2,500	27,500
Total 7-10 (Plan 3 minus Plan 2)	79,000	18,000	8,000	10,000	115,000
Total 1-10 (Plan 3 minus Plan 1)	207,000 (72%)	29,500 (10%)	20,000 (7%)	32,500 (11%)	289,000 (100%)

1 Part of Saffron Walden RD, part of Braughing RD

2 Royston UD, part of Hitchin RD, part of South Cambridge RD.

3 Bishop's Stortford UD, Saffron Walden MB, Sawbridgeworth UD, Ware UD, part of Braughing RD, part of Dunmow RD, part of Epping and Ongar RD, part of Hitchin RD, part of Saffron Walden RD, Ware RD.

132 Following the establishment of the northern half of airport city in Plan 2 growth would initially continue south-westwards along the valley of the river Ash to reach the A.120 and next would complete the city by developing in the valley of the river Stort in the vicinity of Stansted, as far south as the proposed by-pass to Bishop's Stortford, and as far east as the proposed alignment of the M.11 motorway.

133 During the later phases of the development of airport city, the six villages to the north-west of Royston would be developed and the road linking the Royston area with the airport and the new city would be improved.

Printed image digitised by the University of Southampton Library Digitisation Unit

Further growth

134 If additional areas of land were required to provide urbanisation to meet the continued growth of population beyond the figures forecast in this report, this could be done in one of several ways. The new city could develop further to the north-east to fill the area between the noise corridor and the M.11 motorway. However, this direction does not provide for much growth unless the motorway is crossed along the whole of the eastern side of the city. Any expansion in an easterly or north-easterly direction will incur the loss of Grade 2 agricultural land and land of great landscape value, except in the area immediately to the east of Stansted.

135 The edge of airport city which could most easily expand with the least loss to agriculture and landscape is the south-western edge, along the line of the Ministry of Transport's proposed east-west strategic route on the A.120. Future growth could cross the A.120 and continue along the drainage catchment of the valley of the river Ash, but in order to safeguard this opportunity, it may be necessary to site the proposed sewage treatment works required for the new city even further south than the south side of Little Hadham where it would otherwise be located. This has not, however, been allowed for in the cost estimates.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 8: PLAN 2

136 Plan 2 represents that part of the urbanisation proposed for Plan 3, which is required for an airport in which 45,000 people are employed when two runways may be operating to capacity (figure 3.28). It can be compared with the 'no airport' proposals for the area contained in Plan 1 for 1981, to which it would be added.

137 The noise corridor for a two runway airport is substantially the same as that for a four runway airport where the NNI contours occur near to the areas of new urbanisation. As with Plan 3, no new urban development has been located within the noise corridor.

Population

138 The population for Plan 2 at all of the four airport sites remains constant, in the interests of comparability, at the figure of 174,000 within the internal zone area allowing for 5% of the total population residing outside the zone boundary.

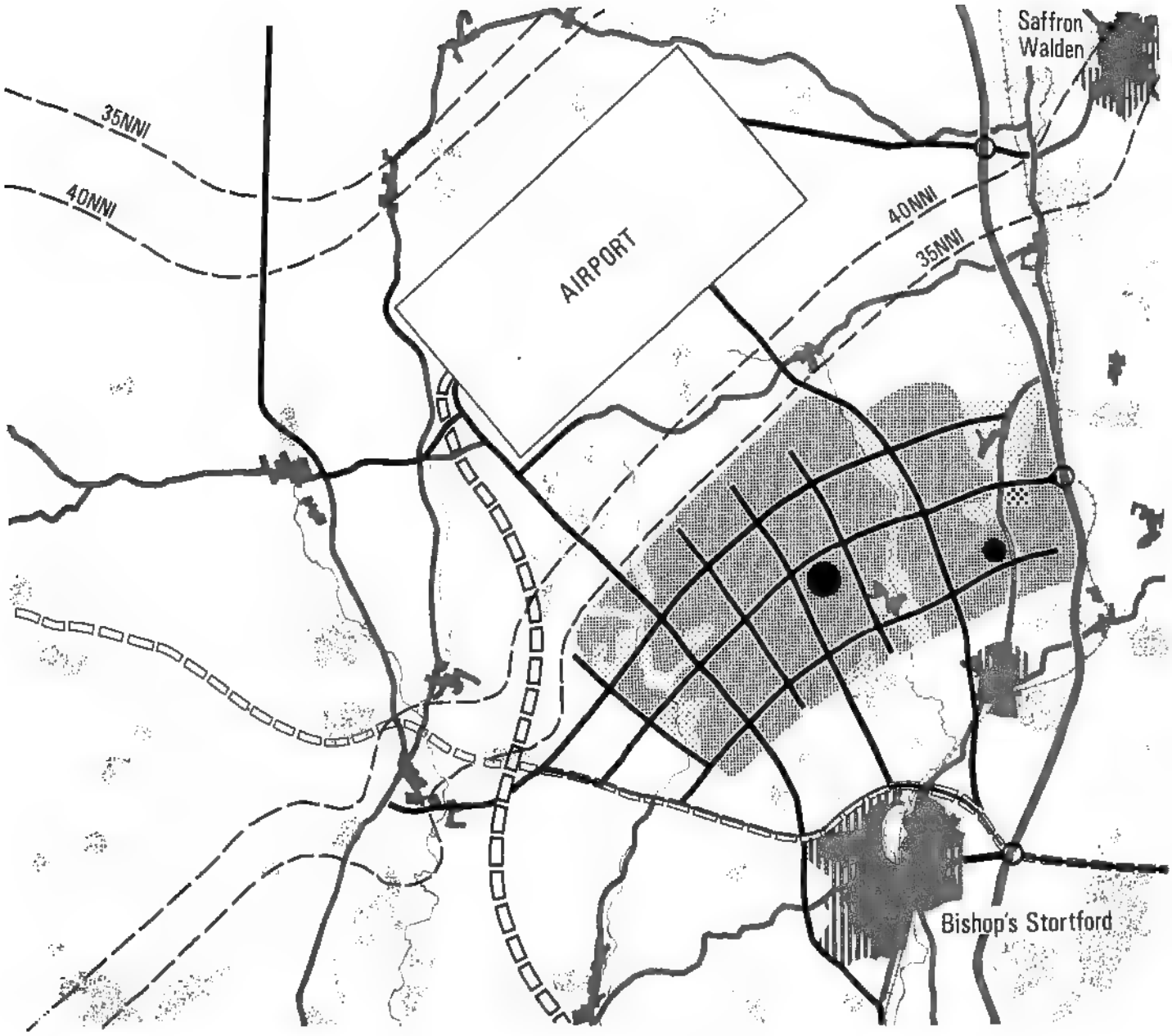
Area of development

139 The area of new urbanisation comprising Plan 3 has been divided into about ten consecutive increments of roughly equal size corresponding to the likely pattern of growth envisaged (table 3.7). Plan 2 represents the completion of the first six increments (figure 3.29). The prime purpose for this programme of growth is to provide for the estimation of costs, benefits and the main thresholds of expenditure over the time period of the plan.

Roads

140 The roads needed to serve Plan 2 are shown in figure 3.30. At this stage traffic to the airport from the north-west of the area could be brought to the airport along a dualled A.10 and gain access to it by means of a single carriageway three lane spur. The facility to the south-east boundary of the airport might be needed only as far as the new urban development; there is little evidence that a continuation south and east of Bishop's Stortford would be required.

Printed image digitised by the University of Southampton Library Digitisation Unit



Miles 0 5
Kilometres 0 5

Existing urban areas

Proposed development to 1981

Main woodland and parks

Proposed road network at 1981

Residential areas including other local uses

Major open space including other extensive uses

Major industrial areas

Town centre

District centre

Noise corridor

Possible line for MOT Strategy Route

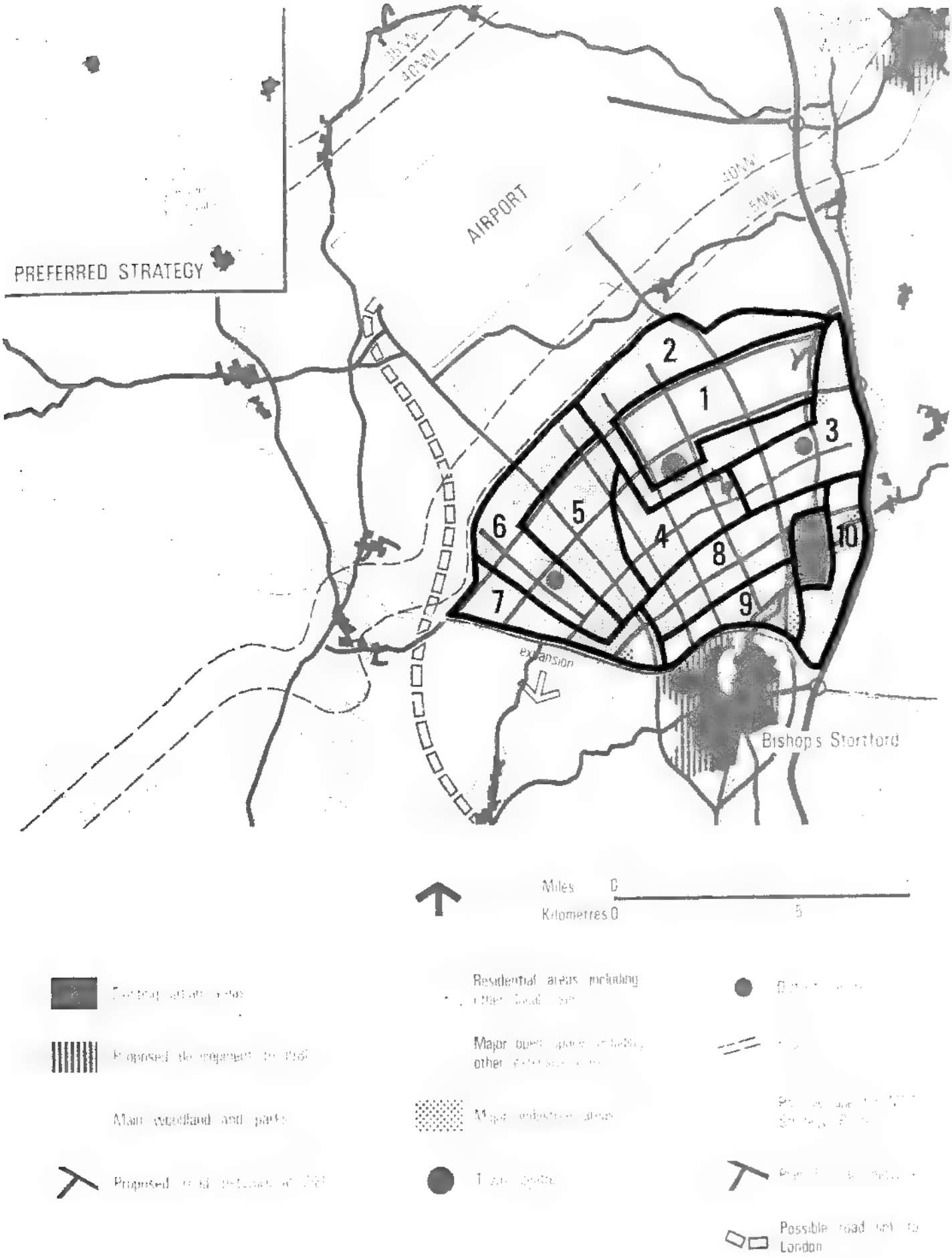
Plan 2 road network

Possible road link to London

NUTHAMPSTEAD
PLAN 2 – AIRPORT CITY

Figure 3.28

Printed image digitised by the University of Southampton Library Digitisation Unit

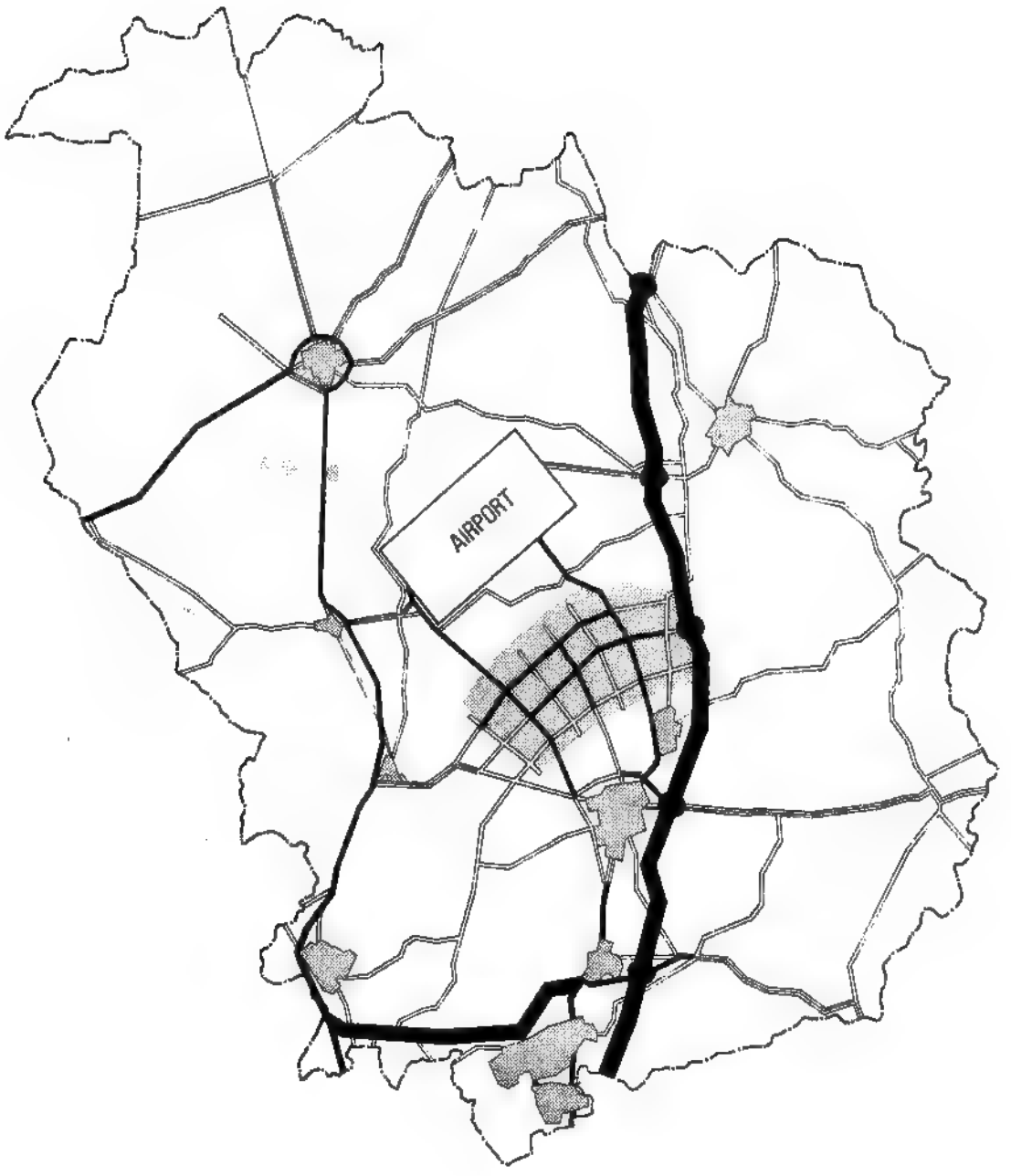


NUTHAMPSTEAD

AIRPORT CITY – SEQUENCE OF GROWTH

Figure 3.29

Printed image digitised by the University of Southampton Library Digitisation Unit



Dual three lane carriageway

Dual two lane carriageway

Three lane single carriageway

Two lane single carriageway

Boundary of Internal Zone Area

Miles 0 10

Kilometres 0 10

Figure 3.30

NUTHAMPSTEAD

PLAN 2 – HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 9: COSTS AND BENEFITS

141 A detailed explanation of the costing procedure and basis of estimates is set out in part I, chapter 8.

Capital cost of construction

142 The capital costs of construction are set out in the following tables:

Table 3.8 Plan 2 minus Plan 1

Table 3.9 Plan 3 minus Plan 2

Table 3.10 Plan 3 minus Plan 1 (total of the above two tables)

The commentary which follows is intended to give an indication of the main reasons influencing the cost of each component listed in the tables to assist comparisons being made with other sites. Those components which are more complex e.g. roads, sewerage and drainage, are compared in part VI and described in greater detail in chapter 7 of this part.

Residential, education etc.

143 The estimate of £1,620 per head is a constant figure applied to the costing of all four airport sites. The components which make up this figure are described in part I, chapter 8.

Abnormal site conditions

144 No extensive areas with abnormal site conditions are anticipated.

Airport related industry

145 The estimate of £77 per head of airport related industry is a constant figure applied to the costing of all four airport sites.

Shops, parking and site development

146 About 85 per cent of the new shopping development generated by the new city will form part of the new centres constructed on 'greenfield' sites in

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.8 : Capital cost of construction for Plan 2 minus Plan 1

Component	'a' Cost attributable to airport population (174,000)	'b' Cost per head $\frac{a}{174,000}$
	£ million	£
Residential, education etc.	281.880	1,620
Abnormal site conditions	Nil	Nil
Airport related industry	13.385	77
Shops, parking, site development	9.550	55
Roads		
Within urban structure	9.858	57
Links to airport	5.251	30
Engineering services		
Sewage and drainage	14.977	86
Water	18.792	108
Gas	4.270	25
Electricity	7.410	43
Altering overhead grid lines	1.940	11
Telecommunication services	14.954	86
Total	382.267*	2,197*

* The above estimate excludes the cost of roads outside urban areas totalling £6,932 millions which the Commission will apportion to the airport and other populations.

Cost per head figures may not add due to rounding off.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.9 : Capital cost of construction for Plan 3 minus Plan 2

Component	a Estimate	b Population associated with column 'a'	c Proportion attributable to airport population 'a' x $\frac{86,000}{\text{'b'}}$	d Cost per head $\frac{\text{'c'}}{86,000}$
	£ million		£ million	£
Residential, education etc	186.300	115,000	139.320	1,620
Abnormal site conditions	Nil	115,000	Nil	Nil
Airport related industry	6.615	86,000	6.615	77
Shops, parking and site development	5.985	115,000	4.476	52
Roads				
Within the urban structure	6.218	115,000	4.650	54
Links to the airport	1.680	86,000	1.680	20
Engineering services				
Sewerage and drainage	6.419	115,000	4.800	56
Water	3.815	115,000	2.853	33
Gas	2.750	115,000	2.057	24
Electricity	5.215	115,000	3.900	45
Altering overhead grid lines	Nil	115,000	Nil	
Telecommunication services	15.411	115,000	11.525	134
Total			181.876*	2,115*

* The above estimates exclude the cost of roads outside urban areas totalling £3.286 millions which the Commission will apportion between the airport and other populations.

Cost per head figures may not add due to rounding off.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.10 : Capital cost of construction for Plan 3 minus Plan 1

Component	'a' Cost attributable to airport population (260, 000)**	'b' Cost per head $\frac{a}{260,000}$
	£ million	£
Residential, education etc.	421.200	1,620
Abnormal site conditions	Nil	Nil
Airport related industry	20.000	77
Shops, parking, site development	14.026	54
Roads		
Within urban structure	14.508	56
Links to airport	6.931	27
Engineering services		
Sewage and drainage	19.777	76
Water	21.645	83
Gas	6.327	24
Electricity	11.310	44
Altering overhead grid lines	1.940	7
Telecommunication services	26.479	102
Total	564.143*	2,170*

* This table is the total of tables 3.8 and 3.9. The above estimate excludes the cost of roads outside the urban areas totalling £10.218 millions which the Commission will apportion to the airport and other populations.

** Derived by adding column 'c' table 3.9 to column 'a' table 3.8.

Cost per head figures may not add due to rounding off.

Printed image digitised by the University of Southampton Library Digitisation Unit

the new city. The remaining new shopping floorspace is located in existing centres and for the reasons given in the section on benefits in part VI, this new shopping has not been costed.

Roads within urban areas

147 The comparatively low estimate for roads within urban areas is the result of a compact plan for airport city and because a proportion of the airport population is located in the village development around Royston.

Road links to the airport

148 Two new links to the airport are included and both these occur in the early phases. This is reflected in the cost for Plan 2 (table 3.8). In the later phases only improvements to existing roads are required.

Roads outside urban areas

149 The dispersal of population in areas outside the new city and the impact of the city in a comparatively undeveloped area is reflected in the comparatively high costs especially during the early phases which comprise Plan 2 (table 3.8).

Sewerage and drainage

150 The high cost of sewerage and drainage in Plan 2 (table 3.8) is because it is necessary to construct considerable spare capacity in the sewage works and trunk sewers in the early phases.

Water

151 The estimate is based on the need for a pumped storage reservoir. The whole of the cost of the source work and 90% of the cost of the trunk mains will be incurred in the early phases and this is reflected in the costs for Plan 2 (table 3.8).

Gas

152 No exceptional costs are expected. The area is well served by an existing distribution system from the national grid.

Printed image digitised by the University of Southampton Library Digitisation Unit

Electricity

153 No exceptional costs are expected. One new substation and extensions to two existing substations will be required.

Altering overhead grid lines

154 The estimates include for diverting the 400 KV Pelham-Waltham and Pelham-Thaxted lines around the new city and undergrounding the 132 KV lines.

Telecommunication services

155 The difference in costs between Plan 2 (table 3.8) and Plan 3 minus Plan 2 (table 3.8) reflects the continuous increase in telecommunication services expected in the years up to the end of the century.

Incremental capital costs

156 An explanation and comparison of the incremental capital costs of urbanisation at each of the airport sites is given in part VI.

157 Table 3.11 shows the incremental capital construction cost for urbanisation at Nuthampstead in ten phases. The proposals for the new city incur the lowest expenditure, by comparison with the other sites, during the initial phase of development, before any significant population intake can occur.

158 The increase in the cost per head between increments 8 and 9 is mainly due to expenditure on roads within urban areas.

User costs

159 The estimated annual user costs of travel to the airport in £ million at 1968 values are shown in table 3.12.

Table 3.12

Component	Plan 2	Plan 3
Journey to work costs*	1.5	2.5
Commercial vehicle travel costs	1.9	3.1
Service journey costs	2.7	3.9
Total user costs	7.4	9.5

* calculated as minimum travel costs

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.11: Incremental capital construction costs

		Population				Capital cost attributable to airport related population			Capital cost of roads outside urban areas	
		Total population costed		Airport related population						
		a	b	c	d	e	f	g	h	j
		Population increment	Aggregate	Population increment	Aggregate	Incremental cost in £ million	Aggregated cost in £ million	Cost per head in £ $\frac{f}{d}$	Related population	Cost in £ million
Initial		-	-	-	-	15.676	15.676	-		Nil
Increment	1	30,000	30,000	30,000	30,000	64.222	79.898	2663	30,000	1.181
	2	32,500	62,500	32,500	62,500	67.520	147.418	2359	32,500	0.940
	3	28,500	91,000	28,500	91,000	58.839	206.257	2267	28,500	1.922
	4	28,500	119,500	28,500	119,500	60.085	266.342	2229	28,500	0.603
	5	27,000	146,500	27,000	146,500	59.964	326.306	2227	27,000	1.769
	6	27,500	174,000	27,500	174,000	55.961	382.267	2197	27,500	0.517
Total Plan 2 minus Plan 1		174,000	-	174,000		382.267	-		174,000	6.932
Increment	7	25,500	25,500	19,070	19,070	40.481	40.481	2123	*	0.388
	8	33,500	59,000	25,052	44,122	52.163	92.644	2100	*	1.082
	9	28,500	87,500	21,313	65,435	44.516	137.160	2096	*	0.576
	10	27,500	115,000	20,565	86,000	44.716	181,876	2115	*	1.240
Total Plan 3 minus Plan 2		115,000	-	86,000	-	181.876	-	-		3.286
Total Plan 3 minus Plan 1		289,000	-	260,000	-	564.143	-	-		10.218

* To be apportioned by the Commission

Agricultural loss

160 Table 3.13 shows the area of agricultural land required for new urban development graded in accordance with the Ministry of Agriculture's system of land classification. No land of grade 1 quality is required, but more than half the land needed for urbanisation is of grade 2 quality, although this has been kept as low as possible by using land near existing settlements and communications and in the river valleys.

Table 3.13 : Area of agricultural land required for urbanisation graded in accordance with the Ministry of Agriculture's system of land classification.

	Plan 2 minus Plan 1		Plan 3 minus Plan 2		Plan 3 minus Plan 1	
	ha	acres	ha	acres	ha	acres
Grade 1	Nil	Nil	Nil	Nil	Nil	Nil
2	2,835	7,000	903	2,230	3,738	9,230
3	1,225	3,025	1,608	3,970	2,833	6,995
4	Nil	Nil	Nil	Nil	Nil	Nil
Total	4,060	10,025	2,511	6,200	6,571	16,225

Note: The information in the above table has been supplied by Professor Wibberley

161 Table 3.14 shows the annual financial implications of this agricultural loss in £, the significant figure being the net agricultural loss expressed by the term 'value added'. Whilst the value added lost to agriculture at Nuthampstead is not higher than the loss at Foulness, the land at Nuthampstead presents greater agricultural problems, since it is an area of fine farms and good husbandry and if allowed to remain in agriculture, offers great potential for future production.

162 South of the airport site, the area required for the new city between Bishop's Stortford and Quendon, along the A.11 and up the main Cambridge railway line is a mixed arable and livestock area with some dairying. The topography and infringement of existing urban areas makes good agricultural husbandry more difficult and the average size of holding is rather smaller than those further west. To the west of the A.11 there is a tendency towards specialist cereal farms over rolling countryside, reminiscent of south country downlands. Farms are large, well equipped and well structured for this type of production.

163 The quality of land affected by the village developments around Royston ranges between grades 2 and 3 comprising an arable area with some dairy and horticultural practice. The village developments should have little effect upon agriculture if they are planned as compact infilling developments.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.14 : Annual financial agricultural loss

	Plan 2 minus Plan 1	Plan 3 minus Plan 2	Plan 3 minus Plan 1
Area in hectares	4,060	2,511	6,571
Area in acres	10,025	6,200	16,225
Gross output in £	621,550	545,600	1,167,150
£ per hectare	153	217	178
£ per acre	62	88	72
Net product in £	320,800	279,000	599,800
£ per hectare	79	111	91
£ per acre	32	45	37
Value added in £*	104,260	84,320	188,580
£ per hectare	25.6	33.6	28.6
£ per acre	10.4	13.6	11.6
Gross rent in £	56,140	37,820	93,960
£ per hectare	13.8	15.1	14.3
£ per acre	5.6	6.1	5.8

* The annual growth rate of 'value added' at current prices is likely to be 7 per cent

Note: The information is the above table has been supplied by Professor Wibberley

Land cost

164 Table 3.15 shows the estimated cost of all land required for new urban development in £ million, based on current use.

165 Table 3.16 shows the total area of land required for new urban development, the area covered by the estimates of agricultural losses and the difference between them, or residue of non-agricultural land required for urbanisation that has been costed on the basis of current use.

166 The estimated cost of the residue of non-agricultural land required for the new urban development in £ million to the nearest £5,000 is as follows:

Plan 2 minus Plan 1: 1.900

Plan 3 minus Plan 2: 1.440

Plan 3 minus Plan 1: 3.340

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.15 : Cost of all land required for urban development in £ million

Increment	1	1.090
	2	1.190
	3	1.040
	4	1.040
	5	0.980
	6	1.000
Total Plan 2 minus Plan 1		6.340
Increment	7	0.930
	8	1.220
	9	1.040
	10	1.000
Total Plan 3 minus Plan 2		4.190
Total Plan 3 minus Plan 1		10.530

Table 3.16 : Area of land required for urban development

	Plan 2 minus Plan 1		Plan 3 minus Plan 2		Plan 3 minus Plan 1	
	ha	acres	ha	acres	ha	acres
Total area	5,869	14,499	3,879	9,583	9,748	24,082
Area of agricultural land	4,060	10,025	2,511	6,200	6,571	16,225
Area of residue of land	1,809	4,474	1,368	3,383	3,177	7,857

Printed image digitised by the University of Southampton Library Digitisation Unit

Landscape loss

167 Table 3.17 shows the areas of land required for new urban development graded by landscape quality. The quality of landscape that would be lost to urbanisation is mainly of average grade.

Table 3.17 : Areas of land required for development graded by landscape quality

	Plan 2 minus Plan 1		Plan 3 minus Plan 2		Plan 3 minus Plan 1	
	ha	acres	ha	acres	ha	acres
Exceptional quality	Nil	Nil	Nil	Nil	Nil	Nil
High quality	100	250	Nil	Nil	100	250
Average quality (including areas of panoramic value shown in brackets)	4,000 (Nil)	9,900 (Nil)	2,600 (Nil)	6,400 (Nil)	6,600 (Nil)	16,300 (Nil)
Inferior quality	200	500	Nil	Nil	200	500
Total area	4,300	10,650	2,600	6,400	6,900	17,050

168 The major part of the development comprising the new city is located to the south of the airport site in the comparatively more urbanised half of the internal zone area. The countryside in this part consists of gently undulating hills and valleys, fairly well covered with mature trees and hedgerows, and with about eight small villages, of which Manuden is the most attractive.

169 From the survey made of the quality of landscape within the internal zone area, the sites proposed for the new city and the cluster of village developments around Royston are not classified as areas of exceptional or high landscape quality and consequently their development for urban uses would not involve a major loss to landscape. Some of the villages proposed for development north of the airport are within the area of panoramic value, but the developments are of a limited size and should have no injurious effect.

170 The approved Development Plan for Essex shows the eastern part of the site for the new city, along the valley of the river Stort as far south as Manuden, as an area of great landscape value. The Development Plan Review for Hertfordshire, which is not yet approved, proposes an extension of the areas they have already designated as of great landscape value, covering the western part of the site for the new city, along the valley of the river Ash, and the village of Reed, one of the villages proposed for development. The plan for the new city preserves the Stort and Ash valleys as the major open spaces of

Printed image digitised by the University of Southampton Library Digitisation Unit

the city; and with careful planning, development in the vicinity of the village of Reed could be located unobtrusively on ground that falls away from the hill crest. The area to the south of Royston, a small part of which may be required for new development, is already included in the approved Hertfordshire Development Plan as an area of great landscape value.

Benefits: rents for retail and service floorspace

171 Table 3.18 shows the annual rents in £ for retail and service floorspace located in new shopping centres. Rents for new floorspace needed in existing centres has not been costed for the reasons given in the benefits section of part VI.

Table 3.18: Annual rent in £ for retail and service floorspace in new centres

Increment	1	155,000
	2	173,000
	3	157,000
	4	162,000
	5	159,000
	6	167,000
Total: Plan 2 minus Plan 1		1,055,000*
Increment	7	151,000
	8	204,000
	9	179,000
	10	178,000
Total: Plan 3 minus Plan 2		745,000*
Total: Plan 3 minus Plan 1		1,932,000*

* Note: These figures are not the sum of the preceeding increments for the reasons given in the benefits section of part VI.

Benefits: rents for industrial and office floorspace

172 For each of the ten increments of the development of airport city it is estimated that the total annual rent for industrial and office floorspace would remain constant. Annual office rents are estimated to amount to £180,000 for each increment, giving a total for all ten increments of £1,800,000. Annual industrial rents are estimated to amount to £75,000 for each increment giving a total for all ten increments of £750,000.

Printed image digitised by the University of Southampton Library Digitisation Unit

173 In addition, the estimated annual rent for industry in the internal zone area exclusive of the airport related industry mentioned above would amount to £8.7 million.

Benefits: rents for residential development

174 Table 3.19 shows the annual rents in £ million for new residential development based on an assumption of £500 per house at an occupancy rate of 3.11 persons per house.

Table 3.19 : Annual rents in £ million for new residential development

		Population	Rent in £ million
Increment	1	30,000	4.823
	2	32,500	5.225
	3	28,500	4.582
	4	28,500	4.582
	5	27,000	4.341
	6	27,500	4.421
Total: Plan 2 minus Plan 1		174,000	27.974
Increment	7	25,500	4.100
	8	33,500	5.386
	9	28,500	4.582
	10	27,500	4.421
Total: Plan 3 minus Plan 2		115,000	18.489
Total: Plan 3 minus Plan 1		289,000	46.463

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

PART IV: CUBLINGTON

Shankland, Cox
and Associates.

Printed image digitised by the University of Southampton Library Digitisation Unit

PART II: FOULNESS

CHAPTER 1	SUMMARY OF PLANS 2 AND 3	page 5
CHAPTER 2	SUBREGIONAL SETTING	7
	Internal zone area	7
	Geology, ground conditions and sea defences	7
	Geology	7
	Ground conditions	11
	Sea walls and river barrages	11
	Relief and drainage	13
	Agriculture	13
	Communications	15
	Settlement pattern	17
	Landscape	17
	Current policies	17
	Landscape appraisal	19
	Mineral workings	19
	Engineering services	19
	Opportunities for urban development	21
	Planning problems of the area	23
CHAPTER 3	PLAN 1 - PROPOSALS TO 1981	25
	Employment and population	25
	Urban growth	25
	Roads	27
	New centres and planned expansions	28
	New engineering services	28
CHAPTER 4	PROPOSALS AFFECTED BY THE 40 NNI CONTOUR	29
CHAPTER 5	ALTERNATIVE STRATEGIES	31
	Population forecast	31
	Development of alternative strategies	31
CHAPTER 6	SELECTION OF PREFERRED STRATEGY	40
	First stage of selection	40
	Second stage of selection	42
CHAPTER 7	PLAN 3 DEVELOPMENT OF PREFERRED STRATEGY	46
	Employment and population	46
	Concept for Plan 3	51
	Distribution of population	51
	Boundaries of the urban area	52
	Service centres	53
	Growth outside airport city	53

Printed image digitised by the University of Southampton Library Digitisation Unit

		page
	Transportation	53
	Links to London and the region	53
	Access to the airport	55
	Roads within airport city	57
	Other roads	57
	Railways	57
	Engineering services	58
	Gas	58
	Water	58
	Electricity	58
	Sewerage and sewage disposal	58
	Drainage and surface water disposal	60
	Sequence of growth	60
	Further growth	62
	Barrages	63
CHAPTER 8	PLAN 2	64
	Population	64
	Area of development	64
	Roads	64
CHAPTER 9	COSTS AND BENEFITS	68
	Capital cost of construction	68
	Incremental capital costs	74
	User costs	74
	Agricultural loss	75
	Land costs	76
	Landscape loss	78
	Benefits	79
	Rents for retail and service floorspace	79
	Rents for industrial and office floorspace	79
	Rents for residential development.	80

Printed image digitised by the University of Southampton Library Digitisation Unit

FIGURES

2.1	Subregional setting	page 4
2.2	Internal zone area	6
2.3	Geology	8
2.4	Foundation costs	9
2.5	Land drainage	10
2.6	Agriculture	12
2.7	Communications	14
2.8	Current landscape policies	16
2.9	Landscape appraisal	18
2.10	Other constraints	20
2.11	Opportunities for urban development	22
2.12	Plan 1 - Proposals to 1981	24
2.13	Plan 1 - Highway requirements	26
2.14	Plan 1 - Effect of airport	
2.15	Alternative strategies	32
2.16	Strategy A	35
2.17	Strategy B	36
2.18	Strategy C	37
2.19	Strategy D	38
2.20	Strategy E	39
2.21	Plan 3 - Airport city	47
2.22	Population and employment	48
2.23	Factors affecting urban envelope	52
2.24	Links to airport	54
2.25	Plan 3 - Highway requirements	56
2.26	Drainage areas and outfall points	59
2.27	Plan 2 - Airport city	65
2.28	Airport city - sequence of growth	66
2.29	Plan 2 - Highway requirements	67

Printed image digitised by the University of Southampton Library Digitisation Unit

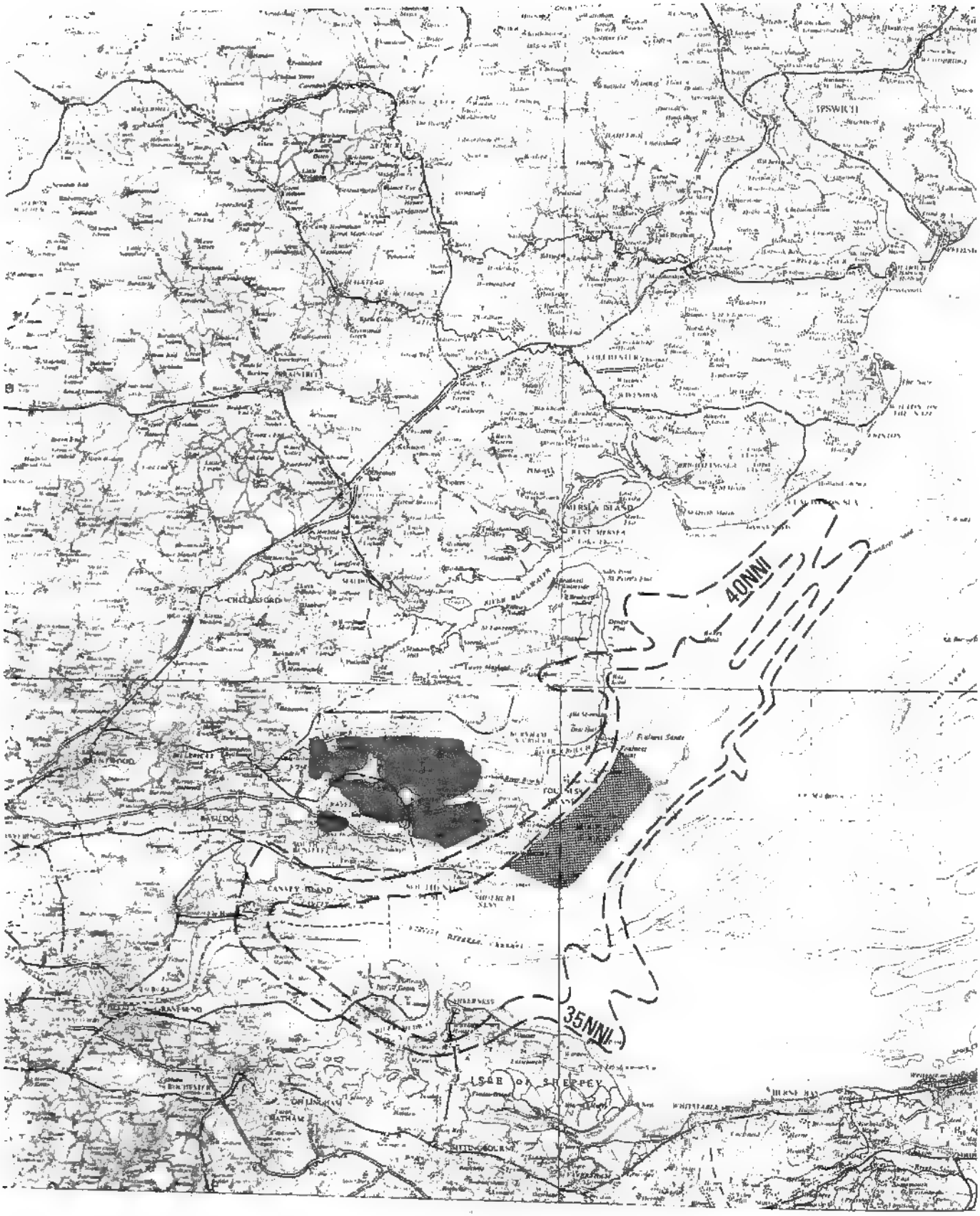


Figure 2.1

FOULNESS SUBREGIONAL SETTING

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 1: SUMMARY OF PLANS 2 AND 3

1 It has been forecast that new urbanisation in the vicinity of the Foulness airport site will be required to accommodate a population growth of about 303,000 by the end of the century, in addition to known development proposed up to 1981. The plan selected as the preferred strategy proposes concentrating about 75% of this additional population in a new city located between Southend and the river Crouch (figure 2.1). The remaining population growth has been located in Basildon New Town (10%), Billericay and Wickford (10%) and in some of the villages north of the river Crouch (5%).

2 The new city (figure 2.21) covers a compact area about 15km x 6km (9 miles x 4 miles) in size and will accommodate about 229,000 people by the year 2000, which when calculated at the overall town density standard of 30 persons per hectare (12 persons per acre), will require about 7,600 hectares (19,000 acres) of land. The boundaries of the new city are well defined in physical terms. On the north, the boundary is formed by the river Crouch, on the east by flat, bleak marshlands and a maze of tributary streams and creeks of the river Roach, on the south by the existing urban areas of Shoeburyness, Southend and Rayleigh and on the west by the A130.

3 The alignment proposed for the road and rail links between London and the airport at Foulness is located just to the north of Southend and Rayleigh. The grid structure of the new city is orientated to this linkage and connects across to meet the road network of Southend extended northwards.

4 A major new shopping centre located near the middle of the new city and the two flanking district centres, together with the existing pattern of centres in Southend and Rayleigh will provide the servicing functions of the new city. Five new employment centres are located near the periphery of the new city area. The major open space is in the form of a linear park extending from the river Roach in the east to Hockley wood in the west.

5 Plan 2 (figure 2.27) represents the urbanisation required for an airport employing 45,000 people and will require new urban development for an estimated total population of 174,000. The distribution of this population is in the same proportion to that in Plan 3 described above.

6 The first areas for the development of Plan 2 in the new city would be east of the north-south axis of existing urban areas stretching from Southend town centre through Rochford to Ashingdon and Canewdon. This would be followed by further growth first to the east of this north-south axis, then to the west. Construction of part of the new city centre and the district centre nearest the airport would take place. Finally, in Plan 3, the growth of urban development would cross the watershed between the drainage catchment area of the river Roach into the catchment area of the river Crouch, necessitating a second sewage disposal works and continue in the area to the north of Rayleigh. The construction of the new city centre and the district centre at Hullbridge would be completed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Figure 2.2

FOULNESS
INTERNAL ZONE AREA

Printed image digitised by the University of Southampton Library Digitisation Unit

Internal zone area

7 The major part of the south Essex subregion consists of two peninsulas formed by the rivers Thames, Crouch and Blackwater and the North Sea. The proposed Foulness airport site lies at the eastern extremity of the southern - most peninsula (figure 2.1). The southern portion of the subregion, with principal road and rail links to London, is highly urbanised and includes Southend, Basildon, and numerous small towns and villages, with the intervening areas being partly urbanised. The extreme eastern end of this peninsula and the whole of the Dengie peninsula to the north, are thinly populated agricultural areas. The internal zone area incorporates both peninsulas, and includes the towns of Southend-on-Sea, Canvey Island, South Benfleet, Rayleigh, Wickford, Basildon, and Billericay (figure 2.2). A complete list of the local authorities and the new town development corporation included in this area can be found in table 2.2 (chapter 3).

8 In the remainder of this chapter, the description of existing conditions refers in the most part, to the internal zone area. This forms the basis for consideration of constraints on, and opportunities for, large scale urban development outside the noise corridor.

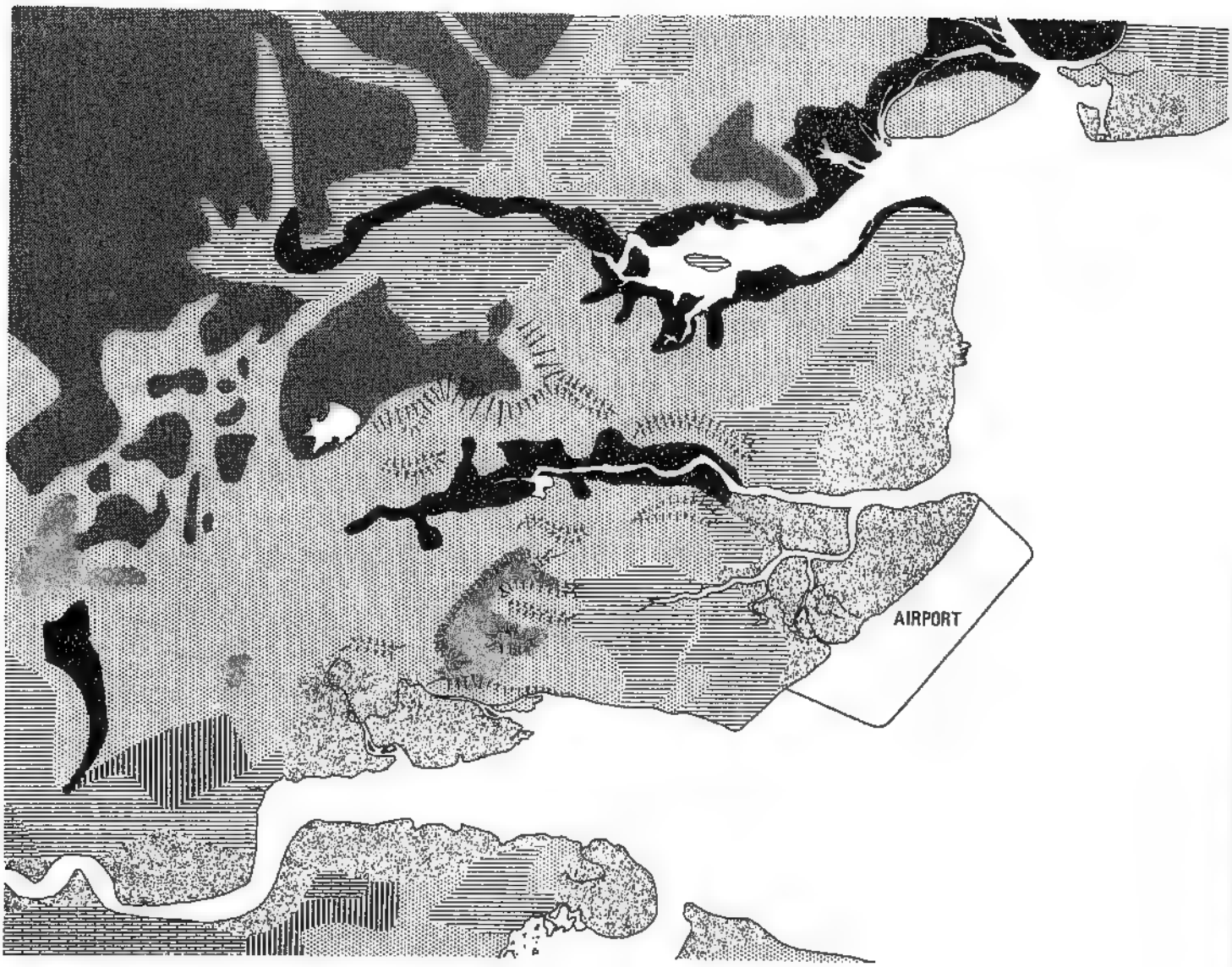
Geology, ground conditions and sea defences

9 Many parts of the area of land available for urbanisation near the Foulness airport site present difficult building conditions involving above average constructional costs. The flat marshlands, the proximity of the sea and a number of tidal rivers, the liability of flooding from the sea, and a known area of potentially unstable hill slopes, together create a problem that is not present in the other three airport sites. For this reason, at Foulness only, we have retained the services of Messrs. Ove Arup & Partners who have reported to us on geological and soil conditions, foundation costs, and sea walls and river barrages. The results of their work (given in greater detail in Appendix E) have been used for estimating the extra costs of roads to the airport across the marshes and for extra foundation costs up to 20% above normal.

Geology

10 The distribution of the different geological strata is shown in figure 2.3. The eastern part of the area is composed of Recent and Pleistocene sediments overlying the London Clay. Westwards the London Clay outcrops but is overlain in numerous locations by younger formations such as brickearth, terrace gravels, Boulder Clay, Bagshot Beds and the Claygate Beds. The more resistant Bagshot Beds and the Claygate Beds overlying the London Clay give rise to the tracts of

Printed image digitised by the University of Southampton Library Digitisation Unit



Estuarine Alluvium

Alluvium

Head, Brickearth, Terrace Gravels

Boulder Clay

Bagshot and Claygate Beds

London Clay

Woolwich and Reading Beds

Chalk

Unstable or potentially unstable ground. (Within Internal Zone Area)

Miles 0 10

Kilometres 0 10

FOULNESS GEOLOGY

Figure 2.3

Printed image digitised by the University of Southampton Library Digitisation Unit

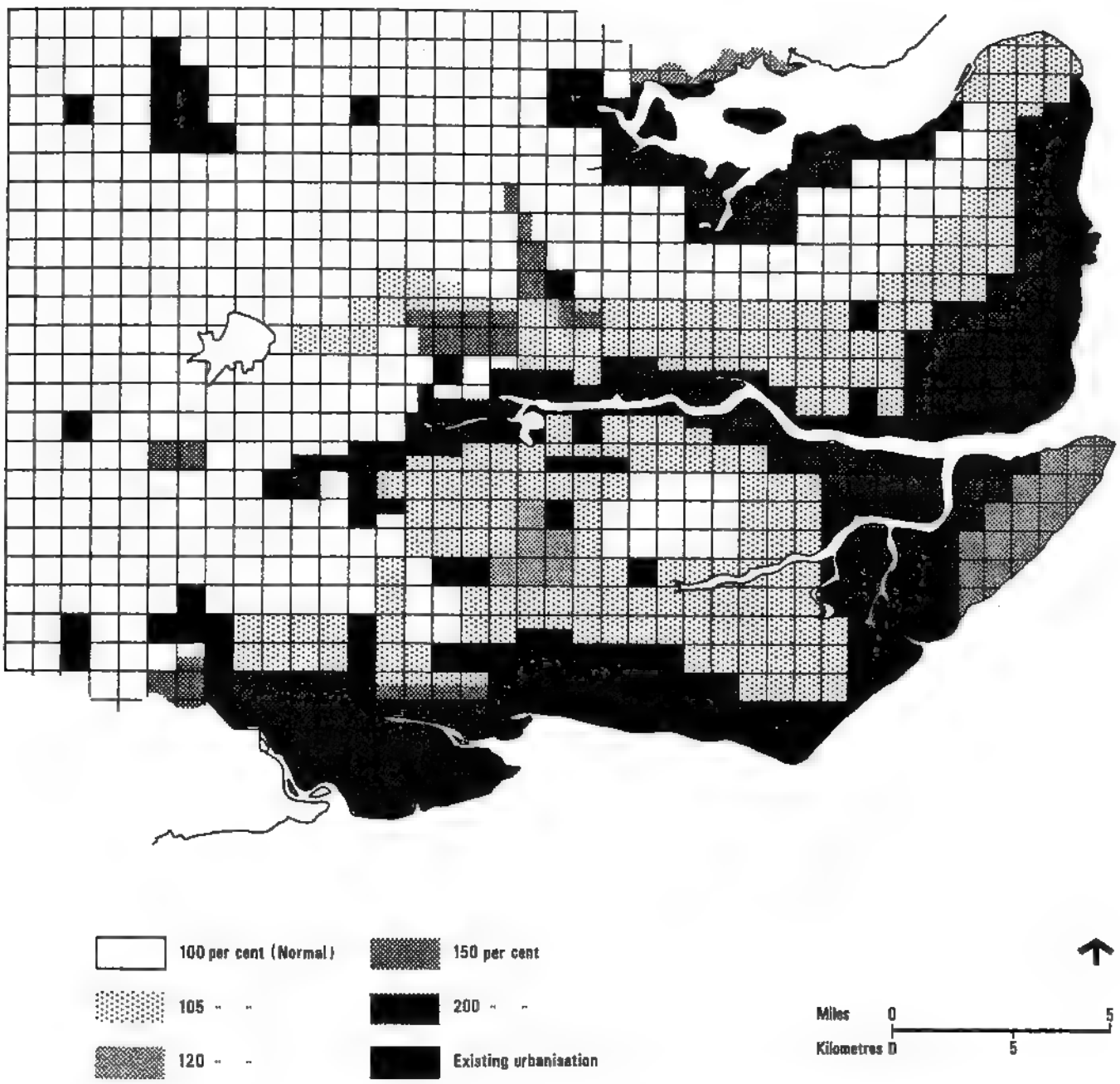


Figure 2.4 FOULNESS FOUNDATION COSTS

Printed image digitised by the University of Southampton Library Digitisation Unit

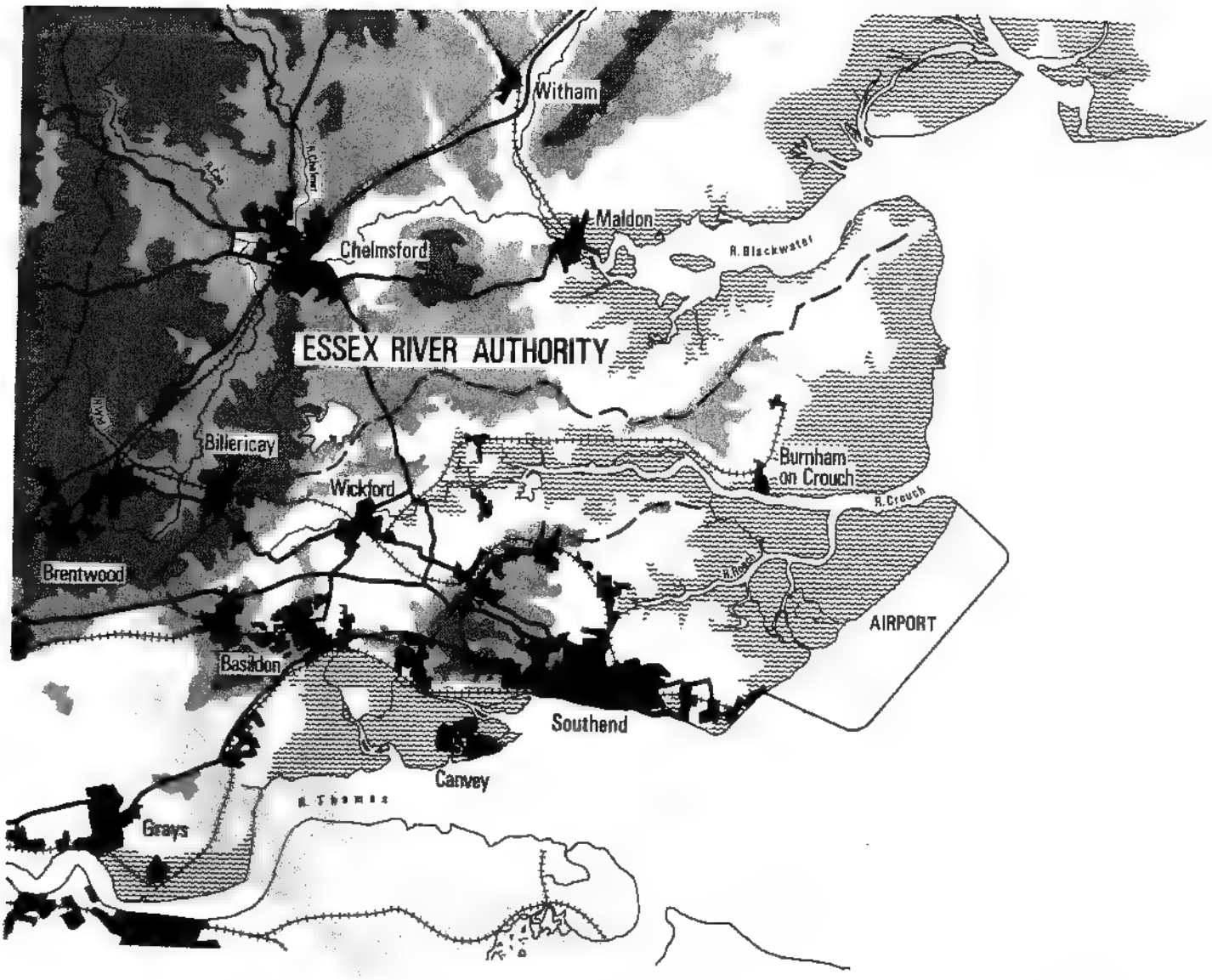


Figure 2.5

FOULNESS
LAND DRAINAGE

Printed image digitised by the University of Southampton Library Digitisation Unit

high ground in the west of the area. These beds are also capped by terrace gravels in some places.

Ground conditions

11 The costs of constructing foundations in the various ground conditions found within the area have been assessed. In certain parts of the area these conditions vary within short distances from the beds of dense well-drained gravel to deep deposits of soft silty clay, and foundations will correspondingly vary from conventional pads and strips to piles, rafts, or buoyant foundations which may be constructed as caissons. Alternatively, the poorest ground could be improved by compaction or the addition of suitable fill. Thus locally the cost of foundations may well be several times that of constructing normal foundations. Within each kilometre square the average cost has been judged, the difference from normal being the average excess cost, (figure 2.4.).

12 Where the London Clay outcrops it is associated with seasonal vertical movement due to moisture content changes. This movement should be allowed for in design, but the cost of suitable precautions does not significantly affect foundation costs.

13 London Clay occurs at steeper slopes than those to which it would naturally degrade where it is overlain by more resistant deposits. Where the capping deposits have been removed in relatively recent times, the London Clay slopes are still undergoing degradation to flatter slopes. This gives rise to the areas of unstable ground between Maldon and Cold Norton to the north of Woodham Ferrers and also to the south of Hockley and near Ashingdon. Foundation costs for new development in these areas would be on average about 20–50% above normal.

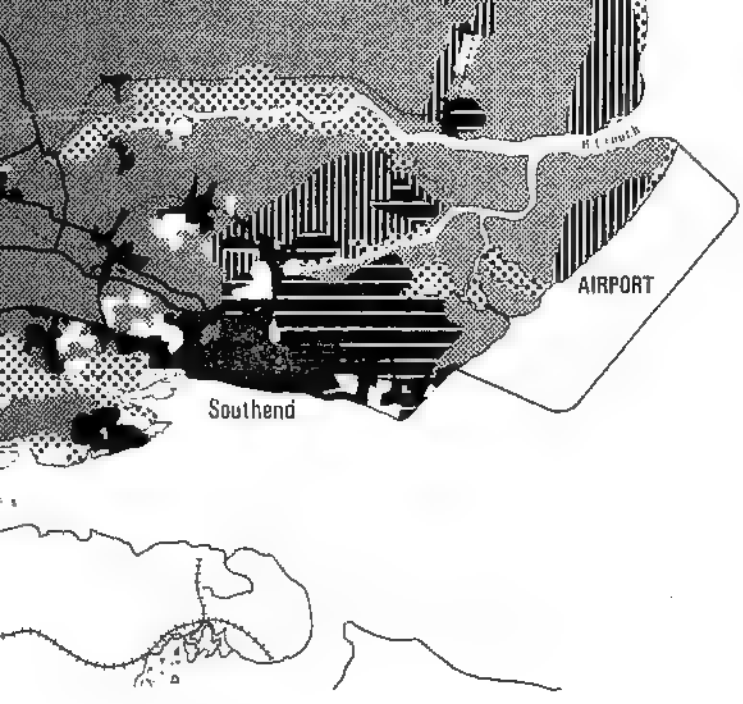
14 The extensive areas of marshy floodplains covering the eastern part of the area, the borders of the rivers, and the area around Canvey Island, comprising soft and unconsolidated silts and clays, grading with depth to loose sands and gravels overlying London Clay are very poor load bearing soils. Foundation costs for new development in these areas would be on average about twice normal (or 100% above normal).

Sea walls and river barrages

15 The sea walls in the Foulness area have generally been improved since the extensive sea flooding caused by the 1953 tidal surge and most of the area is now protected from a surge tide of similar height. However, short lengths of sea wall along the banks of the rivers Blackwater, Crouch and Roach are still below this level and land adjacent to these points would still be liable to flooding from the sea in similar circumstances.

16 In order to virtually eliminate the possibility of flooding from the sea being caused by an overtopping of the sea walls, the statistically probable

Printed image digitised by the University of Southampton Library Digitisation Unit



Non-Agricultural Land

Land in urban use

Other land

Miles 0 10

Kilometres 0 10

FOULNESS AGRICULTURE

18 The internal zon
by the river Crouch, int
eastern part of the area,
and very bleak coastal f
is generally about 1.5 -
shows areas vulnerable
above 1953 surge level.

19 The western par
by a crescent shaped ri
The hills start in the so
where they reach a max
Hockley and terminating

20 To the north of t
from 30 - 60 metres (10
of the river. Further t
rises to a height of 105

21 The whole area
Roach and the Thames a
streams and creeks, su
England creek and Pagl

Agriculture

22 The area is one
highly intensive and pro
Burnham - Southminste

23 Rich lands south
early potatoes, Brussel
picture is mirrored to

Printed image

maximum height of wave which could occur within any 1,000 year period has been considered. There is a 1 in 10 chance of a wave of this height occurring within any period of 100 years. The sea walls will thus have to be raised to at least 5ft above the 1953 flood tide surge level, around any new urbanisation on the flood plains, plus a further 1 foot for each century of the expected life of the urbanisation to account for the continuing subsidence of this part of England.

17 If new urbanisation is developed around the river Roach it would be desirable to close the mouth of the existing river by means of a barrage and create a tide-free waterway system along the existing rivers and creeks. This could then provide the added benefit of a major recreational centre.

Relief and drainage

18 The internal zone area is divided in an east-west direction in two parts by the river Crouch, into the southern side of which flows the river Roach. The eastern part of the area, both north and south of the river Crouch is a low lying and very bleak coastal flood plain. It includes large areas of marshy ground and is generally about 1.5 - 3 metres (5 - 10 feet) above Ordnance Datum. Figure 2.5 shows areas vulnerable to tidal flooding, i.e. not more than 0.92 metres (3 feet) above 1953 surge level.

19 The western part of the area, south of the river Crouch, is distinguished by a crescent shaped ridge of hills encompassing the headwaters of the river Roach. The hills start in the south at Hadleigh Castle and run north through Rayleigh where they reach a maximum height of 80 metres (260 feet), continuing through Hockley and terminating at Canewdon Beacon.

20 To the north of the river Crouch, a low ridge of hills, varying in height from 30 - 60 metres (100 - 200 feet), runs east-west roughly paralleling the course of the river. Further to the north-west Danbury Hill between Maldon and Chelmsford rises to a height of 105 metres (350 feet).

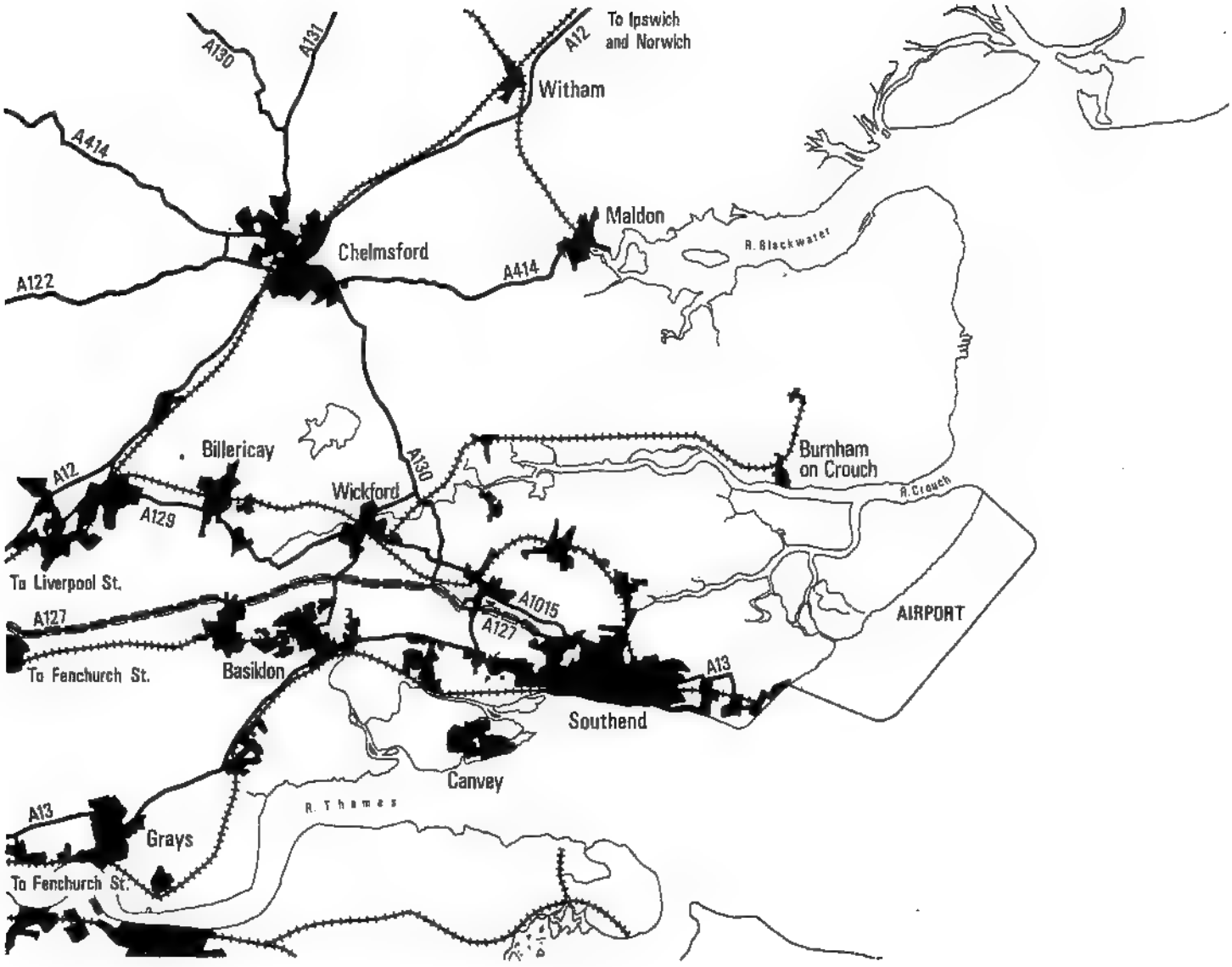
21 The whole area is drained eastwards by the rivers Blackwater, Crouch Roach and the Thames and in the coastal flood plain by a number of meandering streams and creeks, such as the Middleway, Potton creek, Shelford creek, New England creek and Paglesham pool.

Agriculture

22 The area is one with wide agricultural differences ranging from the highly intensive and productive horticultural areas of Rochford - Wakering and Burnham - Southminster to the agriculturally poor plotland area north of Basildon.

23 Rich lands south of the river Roach produce high value crops such as early potatoes, Brussel sprouts, lettuce and other horticultural crops. This picture is mirrored to a lesser extent north of the Roach, in the Stambridge

Printed image digitised by the University of Southampton Library Digitisation Unit



FOULNESS
COMMUNICATIONS

Figure 2.7

Printed image digitised by the University of Southampton Library Digitisation Unit

area stretching up to Canewdon, and again north of the river Crouch along the Burnham - Bradwell axis where horticultural crops are grown in some abundance, but there is a higher proportion of lower value crops such as cereals.

24 Moving in a westerly direction the value of agricultural produce slowly declines as does the general level of agricultural and horticultural practice. The picture is somewhat distorted between the Southend complex and the river Crouch where dairying, poultry and horticultural enterprises have grown up in response to the stimulus of a strong local market giving an area of fairly high value output. But this is generally an area where urban fringe enterprises have grown up; small, untidy farms broken up by the infiltration of scattered urban development. Agriculture is further hampered by a topography which is mostly unsuited to better types of production. Further to the west are the unproductive plotlands north of Basildon.

25 North of the Crouch the situation is rather different with a considerable emphasis on dairying and livestock farms and a greater size of holding. Most farms here have some form of arable production and this is generally some cereal crops with potatoes grown as a high value crop.

26 Fixed farm equipment tends to be very good in the horticultural and arable areas as is farm structure and layout. These characteristics deteriorate towards the west of the area.

27 In terms of land classification the horticultural area in the vicinity of Rochford and Great Wakering has been classified as Grade 1 by the Ministry of Agriculture whilst the Stambridge - Canewdon region is classified as Grade 2. (figure 2.6). North of the Crouch, there is a pocket of Grade 1 to the east of Burnham and another south of Bradwell with a band of Grade 2 land running between the two towns. South of Basildon and Benfleet much of the land is classified Grade 4, and another band of Grade 4 runs along the north and south shores of the Crouch estuary. Apart from this the majority of the area is classified as Grade 3.

Communications

28 The Foulness area is served by only three major roads, the A.127, the A.13 and the A.130 (figure 2.7). All three routes are at present carrying heavy traffic volumes, and considerable improvements in capacity are planned.

29 The A.127 is dual carriageway throughout the area and carries the main trunk traffic between Southend and London, as well as being heavily used by recreational traffic. The A.13 also connects the area to London through Grays Thurrock and is heavily used by commuters and commercial traffic. The A.130 is the only road north from the Southend area, crossing the river Crouch and continuing northwards through Chelmsford into East Anglia. Within the area available to locate the bulk of new urban development there is a generally dispersed network of low-grade minor roads.

Printed image digitised by the University of Southampton Library Digitisation Unit

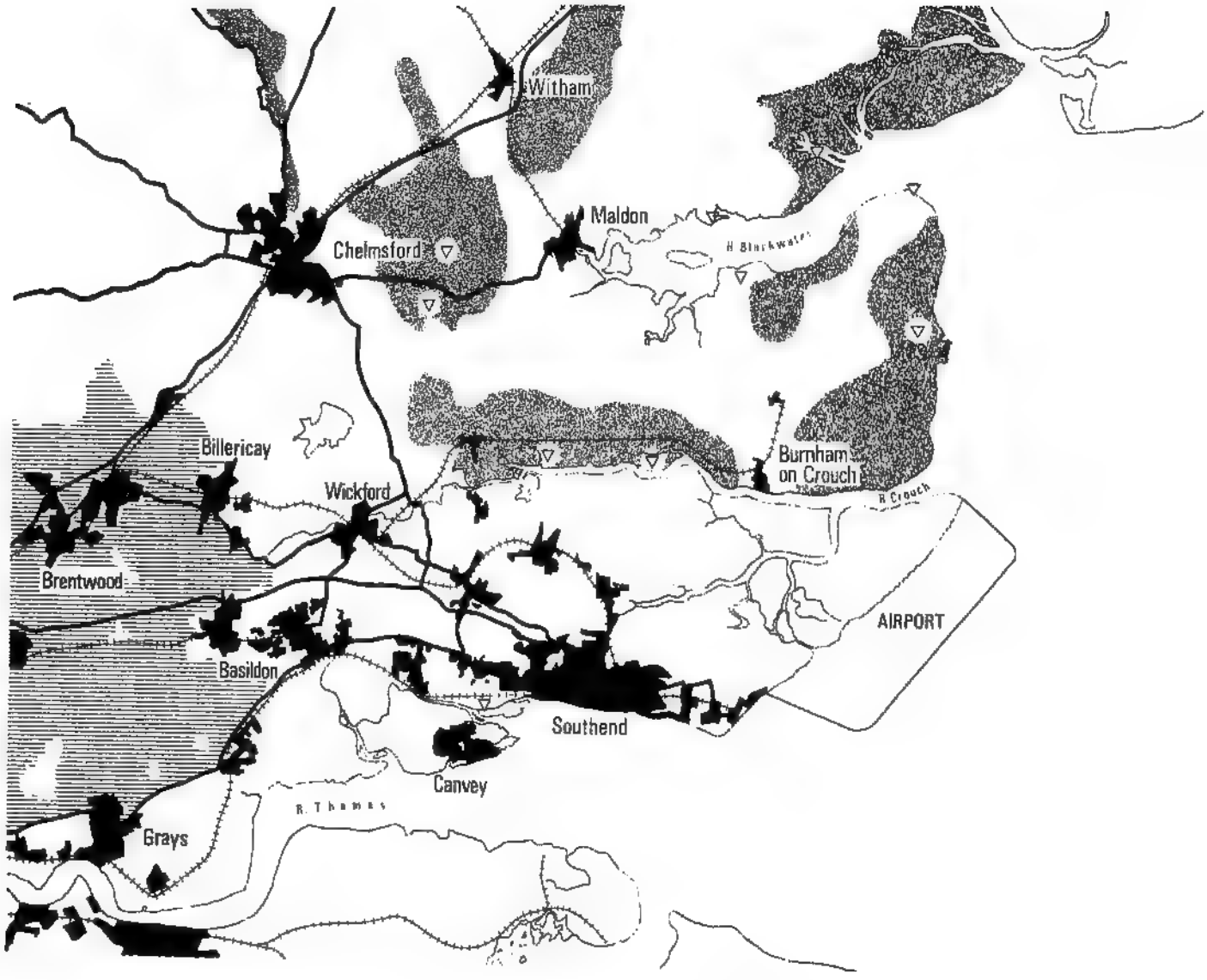


Figure 2.8

FOULNESS
CURRENT LANDSCAPE POLICIES

Printed image digitised by the University of Southampton Library Digitisation Unit

30 There are two main railway lines in the area and two branch lines. Both of the main lines provide direct connections to London and are heavily used by commuters. Both lines are running near to full capacity in the peak hours. Of the two minor lines one branches north from Wickford to villages along the north bank of the river Crouch as far as Burnham-on Crouch and Southminster and the other loops south from Basildon to serve Tilbury, Grays and Dagenham before rejoining the main Fenchurch Street Line.

Settlement pattern

31 The south Essex subregion constitutes one of the important 'commuting corridors' to London, and is already subject to rapid population growth and extensive urbanisation. The major settlements in the area are consequently those located along the two commuter railway lines to London. On the Fenchurch Street Line are Basildon, South Benfleet and Southend, while on the Liverpool Street line are Billericay, Wickford, Rayleigh, Hockley and Rochford.

32 All these settlements are fairly closely related to one another and in many cases already form continuous urban areas. This is not only due to the large numbers of people commuting to work in London, and the rapid population growth, but also to the peculiarity of scattered pockets of urbanisation due to 'plot development', a form of low-cost multiple property ownerships resulting from the East End 'champagne auctions' of past years. One of the objectives of the proposal for a new town at Basildon was to help clear away what had become a rural slum by redeveloping it as a new town.

33 The subregion is served by third order (subregional) centres at Southend (3A) and Chelmsford (3B). Fourth order (district) centres in the area are at Basildon (4B), Rayleigh (4B), Canvey Island (4C), Billericay (4C), Wickford (4C), Leigh-on-Sea (4C) and Burnham-on-Crouch (4C).

34 Within the subregion, Chelmsford has the highest index of catchment area draw, indicating that it has a wide retail and service trades catchment area. Southend also has a large centre, well represented by multiples and department stores, and has a wide catchment area.

35 Basildon, Canvey Island, and Rayleigh all lie within the triangle formed by London, Chelmsford, and Southend, and have low indices of catchment area draw.

Landscape.

Current policies

36 The County Council Development Plan shows areas of great landscape value on the south facing hillslopes to the north of the river Crouch between Woodham Ferrers and Burnham-on-Crouch, on part of the south bank of the river Blackwater just west of Bradwell-on-Sea, on the wide, bleak, treeless

Printed image digitised by the University of Southampton Library Digitisation Unit

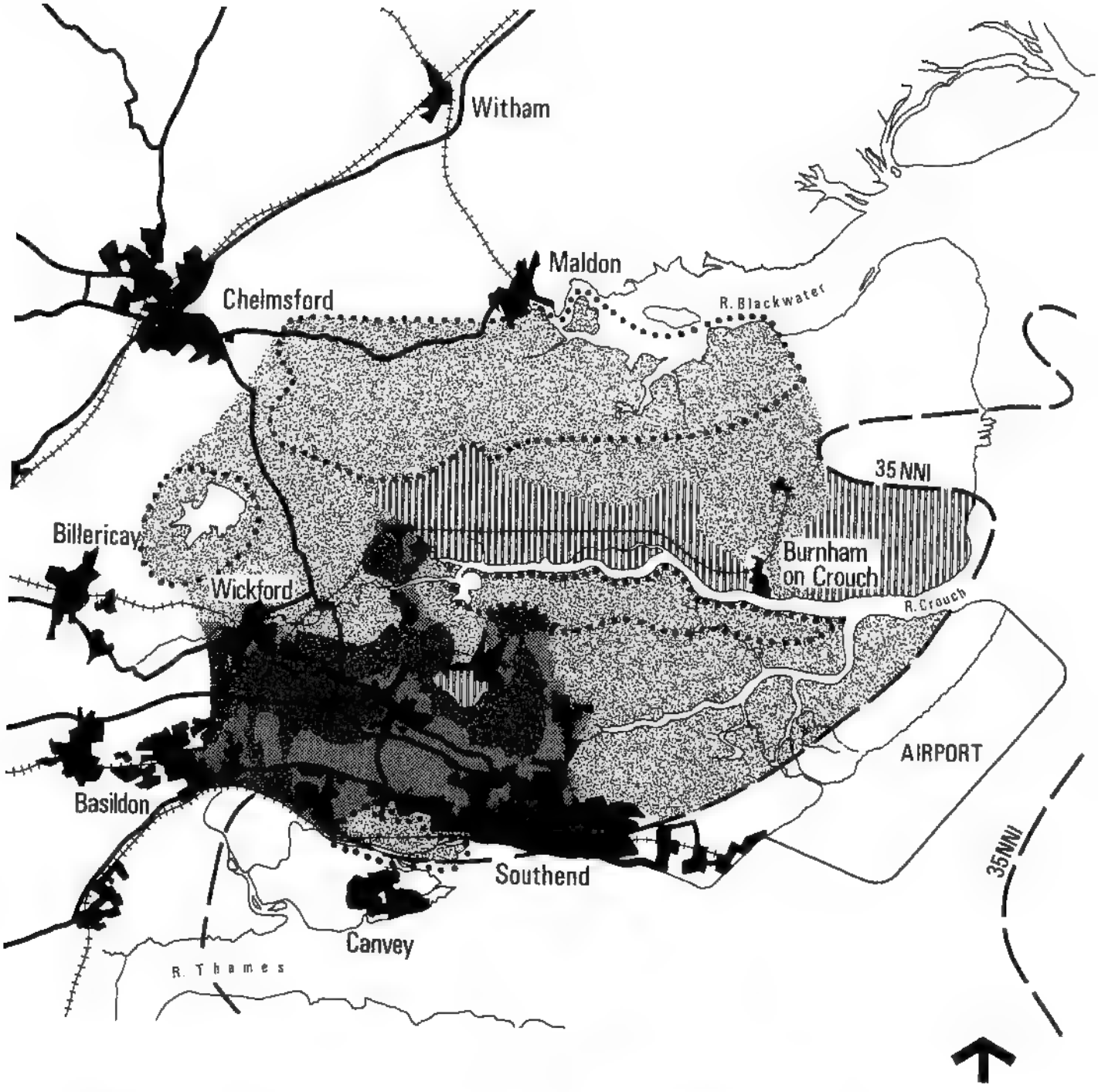


Figure 2.9

FOULNESS
LANDSCAPE APPRAISAL

Printed image digitised by the University of Southampton Library Digitisation Unit

expanses of the Dengie and Tillingham Marshes and around Danbury Hill. (figure 2.8). There are eight sites of Special Scientific Interest as listed below:

i Benfleet and Hadleigh Marshes
ii Bridgemarsh Island in the river Crouch
iii North Fambridge Marshes in the river Crouch
iv Tillingham Marshes
v Foulness Point
vi Bradwell Cockle Spit
vii Ramsey Island in the river Blackwater
viii Danbury Common

Landscape appraisal

37 North of the river Crouch is a large area of panoramic value embracing views of and from Danbury Hill and the long sweep of the Blackwater estuary. (figure 2.9). There are two areas of high quality landscape; one associated with the undulating high ground that rises sharply from the flood plain of the river Crouch and the other the flat marshlands of the eastern part of the Dengie peninsula. The rest of the area north of the river is of average quality. Westwards is a small area of panoramic value taking in the skyline round Hanningfield reservoir, surrounded by average quality landscape.

38 South of the river Crouch, downstream from Hullbridge, there is an area of panoramic value embracing the flood plain and the rising ground above it, the slopes below Canewdon Beacon being particularly prominent. There is one small area of high quality comprising the woods at Hockley, which is a public open space. East of Rochford and in two small areas east and west of Hullbridge the landscape is of average quality. The rest of the area south of the river is largely of inferior landscape quality which is either associated with the switching station and clutter of power lines west of Rayleigh, or within the ambience of the existing built up areas, or spoilt by the sporadic spatter of shacks and bungalows of the 'plot development'.

Mineral workings

39 There are deposits of brickearth near Shoeburyness and a number of sand and gravel deposits to the west of Maldon around Danbury Hill (figure 2.10) The latter would not be an obstacle to new urban development near the airport site, but the brickearth deposits could be an obstacle.

Engineering services

40 There is a large new switching station between Rayleigh and Wickford just west of the junction of the A.130 and the A.127 (T), completed two years ago, from which about ten overhead transmission lines radiate across the surrounding countryside making the area in the vicinity of the switching station

Printed image digitised by the University of Southampton Library Digitisation Unit

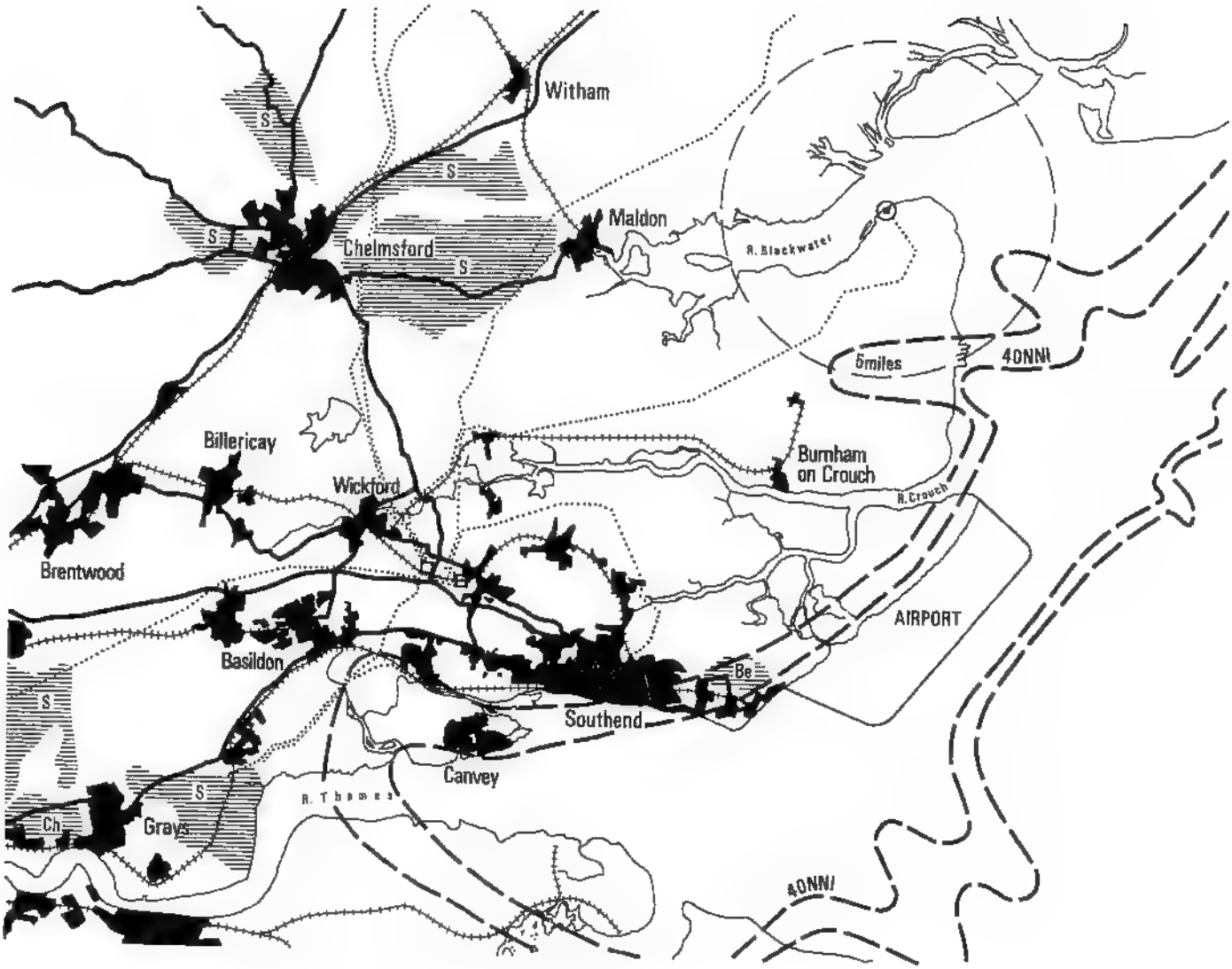


Figure 2.10

FOULNESS
OTHER CONSTRAINTS

Printed image digitised by the University of Southampton Library Digitisation Unit

extremely unattractive and difficult to develop for new urbanisation (figure 2.10).

41 There is a nuclear power station located to the north of Bradwell-on-Sea on the banks of the river Blackwater (figure 2.10). Development within five miles of the power station is limited according to the numbers of people generated by the development and the distance of the development from the power station. Development control is adminstered by the County Council under the directive of the Ministry of Housing and Local Government who are advised by the Inspectorate of Nuclear Installations, a department within the Ministry of Power.

Opportunities for urban development

42 The combined effect of all the major physical constraints likely to affect the location of new urbanisation within the internal zone area is shown on figure 2.11. Areas of Grades 1 and 2 agricultural land classification and mineral workings have not been included on this map, for the reason that they coincide with one of the few good building locations near to the airport site, namely the area to the north and east of Southend.

43 Figure 2.11 shows those areas where new urban development could incur exceptionally high costs. Land in this category can be grouped under two headings:

i Areas which are physically less suitable for development

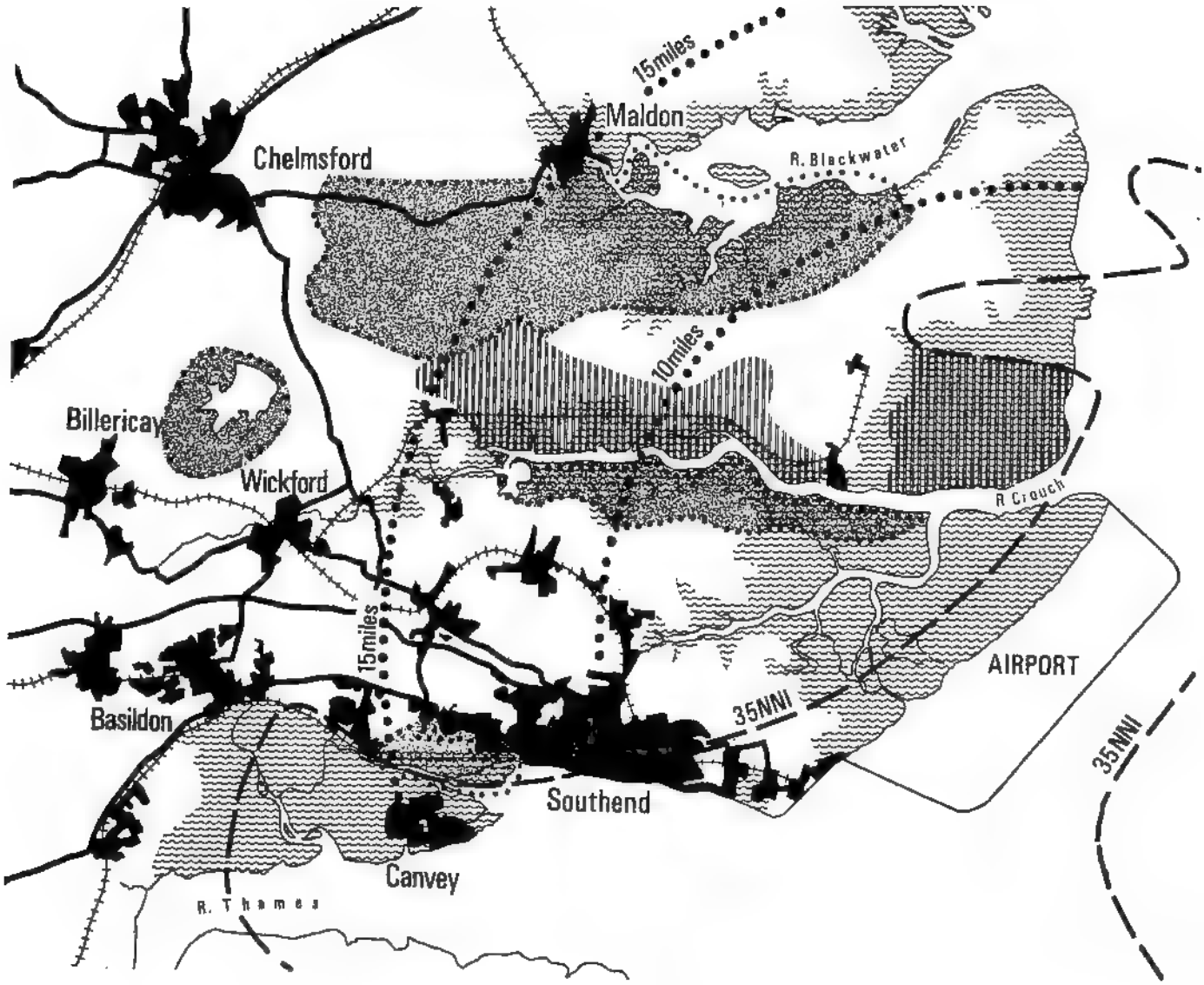
ii Areas which should be conserved in their present state free of large scale new urban development.

44 In the former category are the treeless, flat and windswept marshlands liable to flood, where it would be costly to create an acceptable living environment. Also in this category are those areas where expensive foundations would be necessary, areas close to the noise corridor, and areas close to fixed installations such as the nuclear power station, and the unattractive wirescapes in the vicinity of the switching station at Rayleigh.

45 In the latter category is the area of high quality landscape along the south facing hillslopes on the northern bank of the river Crouch. This area provides a well defined and comprehensible landscape and riverscape as yet relatively unspoiled, which would be worthy of conservation.

46 Conversely, figure 2.11 also shows, in white, those areas within 24 km (15 miles) of the centre of the airport site, where new major urban development could be located at least cost. These areas occur primarily between Southend and the river Crouch and north of Burnham-on-Crouch. An area where new development on a smaller scale could take place occurs south of Maldon.

Printed image digitised by the University of Southampton Library Digitisation Unit



High landscape quality

Average (Panoramic) landscape quality

Areas liable to flood

Miles 0 10

Kilometres 0 10

FOULNESS

Figure 2.11 OPPORTUNITIES FOR URBAN DEVELOPMENT

Printed image digitised by the University of Southampton Library Digitisation Unit

Planning problems of the area

47 The south Essex subregion is peculiar in that it is in many respects a subregional cul-de-sac. There are large commuting flows out of the area towards London and consequently a large dormitory population. The situation is aggravated to some extent by the lack of any real hinterland area, with the barrier of the sea on one side and the unbridged river Crouch on the other. Much of the countryside in the area is already semi-urbanised through the 'plot development' procedure of the past years and the rapid population growth in the post-war years.

48 A third London airport located at Foulness providing a major source of new employment would help to balance tidal flows of journeys to work and would realise some of the investments already made in transportation and other facilities. Large scale urbanisation could develop in an organised and functional way an area which is already semi-urbanised in a most uneconomic way and a net improvement would result.

Printed image digitised by the University of Southampton Library Digitisation Unit

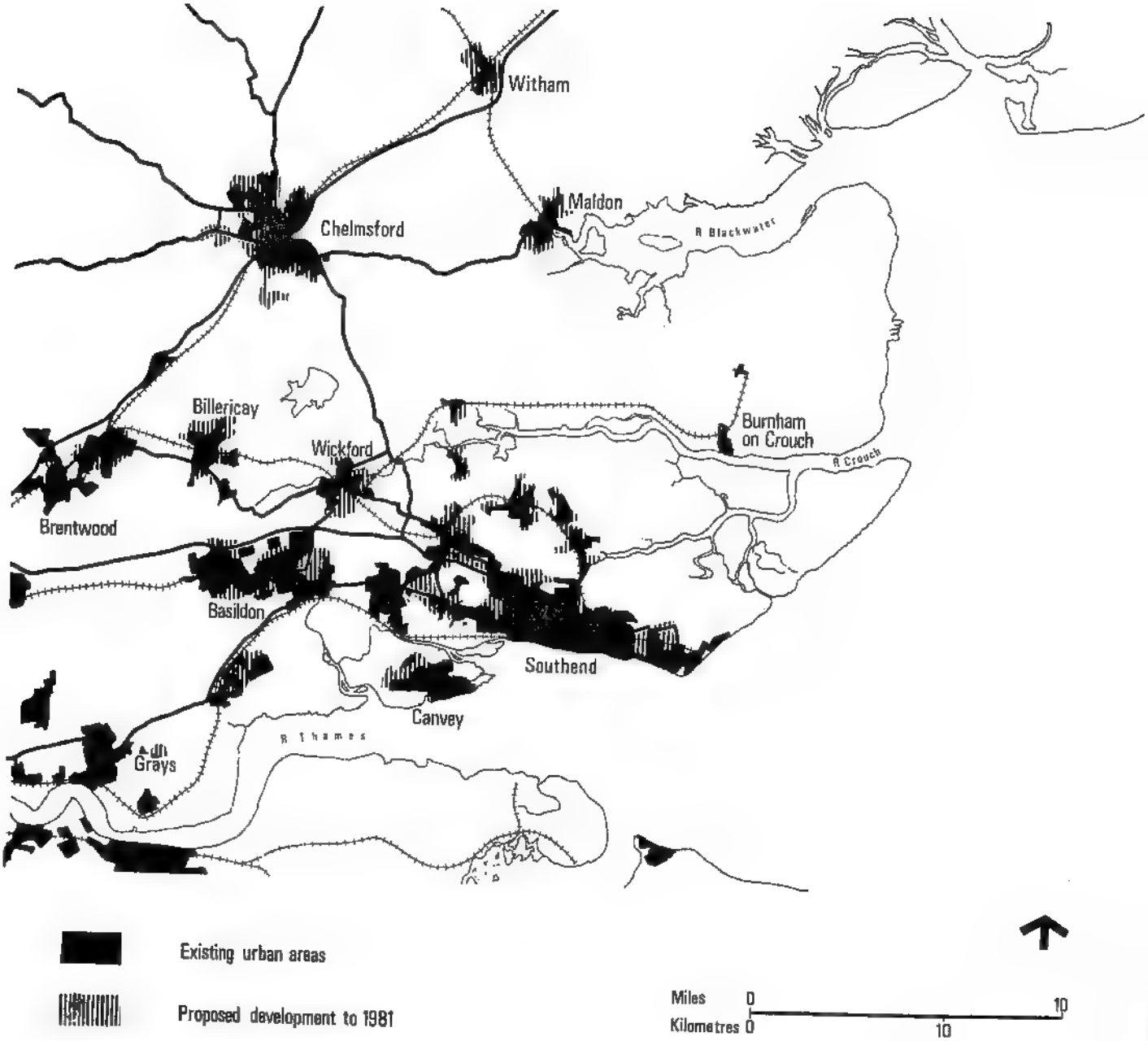


Figure 2.12

FOULNESS
PLAN 1 – PROPOSALS TO 1981

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 3: PLAN 1 - PROPOSALS TO 1981

Employment and population

49 The 1966 population of the internal zone area was 427, 700 (table 2. 1). This is expected to have increased to 552, 000 by 1981. Of this total, 249, 700 are anticipated to be in employment giving a participation rate of 45. 2%. While the economically active population is expected to rise by 29. 0% between 1966 and 1981, employment in the area is planned to increase by only 23. 5%, therefore giving rise to a marked increase in an already high rate of net outward commuting, from 27. 3% to 32. 4% of the economically active population.

50 Surplus employment represents 45. 5% of all employment. The dominant export industries are engineering and electrical goods (15. 2% of all employment) and vehicles (6. 9%).

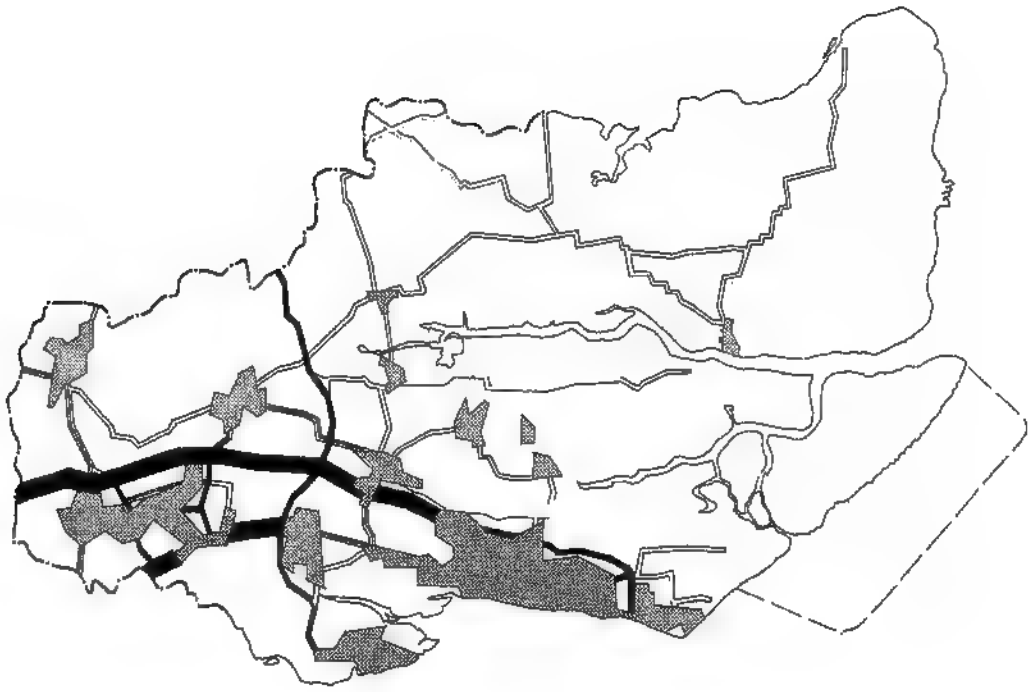
Table 2. 1: Existing and Plan 1 employment and population in the internal zone area

	1966	1981 (Plan 1)	Annual Growth rate %
Population	427, 700	552, 000	1. 7
Employment	140, 800	173, 900	1. 4
Export surplus employment	65, 500	80, 900	1. 4
Total economically active population	193, 600	249, 700	1. 7
Net outward commuting	52, 800	75, 800	
Participation rate %	45. 2	45. 2	

Urban growth

51 All the settlements in the area will grow to some extent in the period 1966-1981, but the most significant population growths will be concentrated in the major settlements in the area, namely Southend, Basildon, Benfleet and Rayleigh, (figure 2. 12). Table 2. 2 gives the distribution of population by local authority areas within the internal zone area up to 1981.

Printed image digitised by the University of Southampton Library Digitisation Unit



Dual three lane carriageway

Dual two lane carriageway

Three lane single carriageway

Two lane single carriageway

Boundary of Internal Zone Area

Miles 0 10

Kilometres 0 10

FOULNESS

Figure 2.13 PLAN 1 – HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.2: Plan 1 - Distribution of population

	Population 1966	Population increase 1966-1981	Total Population 1981 (Plan 1)
Essex			
Southend-on-Sea CB	166,700	26,300	193,000
Basildon UD (excluding new town)	43,400	17,600	61,000
Benfleet UD	44,300	12,700	57,000
Burnham-on-Crouch UD	4,400	600	5,000
Canvey Island UD	20,800	9,200	30,000
Rayleigh UD	22,700	4,300	27,000
Chelmsford RD (part only)	10,900	3,100	14,000
Maldon RD (part only)	10,400	1,000	12,000
Rochford RD	37,500	4,500	42,000
Basildon New Town Development Corporation	66,600	44,400	111,000
Total	427,700	124,300	552,000

Roads

52 Estimates of the facilities which might be needed to handle the growth in traffic up to 1981 if no airport is developed are shown in Figure 2.13. In examining the limitations of the existing and committed transportation system to accommodate this traffic growth account has been taken of the various local authority proposals for highway improvement. Where these schemes are found to be justified on the basis of forecast traffic volumes they have been included in our assessment of highway requirements.

53 The main highway improvements between the present day and 1981 are as follows:

54 The three arterial routes, at present serving the area, are all planned for some improvement. The A.127 has been designated by the Ministry of Transport as a strategy route and will be improved to dual three lane standards with a number of grade-separated junctions. The need for this improvement was more than substantiated by the predicted traffic volumes; the extent of overloading indicated a further need for increased capacity in this corridor and this could be achieved by a dualling of the A.13 westwards from Basildon.

55 Sections of the A.130 to Chelmsford are already planned for improvement to dual carriageway standards; results of the 1981 traffic assignment indicated a need for dualling over all of its present length with an additional single carriageway three lane extension southwards into Canvey Island.

Printed image digitised by the University of Southampton Library Digitisation Unit

56 The facility requirements outlined above should not be interpreted as an actual transportation system recommended for construction, but as notional estimates of requirements prepared at all four airport sites in order to carry out an evaluation of investment levels needed to achieve desirable transportation objectives.

New Centres and planned expansions

57 At present the centres of Chelmsford and Southend are being expanded to accommodate substantial population growth. The Southend expansion includes a parallel re-structuring of town centre roads and parking, and part of the main shopping street is already pedestrianised. Southend is a major centre for offices relocating from London, and this trend might be expected to continue during the period up to 1981.

58 There are proposals for the shopping centre at Basildon to continue to expand to meet the needs of the population in the new town. The ultimate size of the town centre is however fixed, since the surrounding land uses are for the most part already in existence.

New engineering services

59 There are no proposals for new engineering services in the area that would have any major significance to the location of the new urbanisation.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 4: PROPOSALS AFFECTED BY THE 40 NNI CONTOUR

60 The South East Economic Planning Council's report, "A Strategy for the South East", proposed the A.127(T) route and the south Essex subregion through which it passes as one of the 'strategic corridors' or sectors within which to concentrate future economic and physical growth. This proposal for growth corridors is not official Government policy but might become so as a result of further studies now being undertaken by the South East Joint Planning Team.

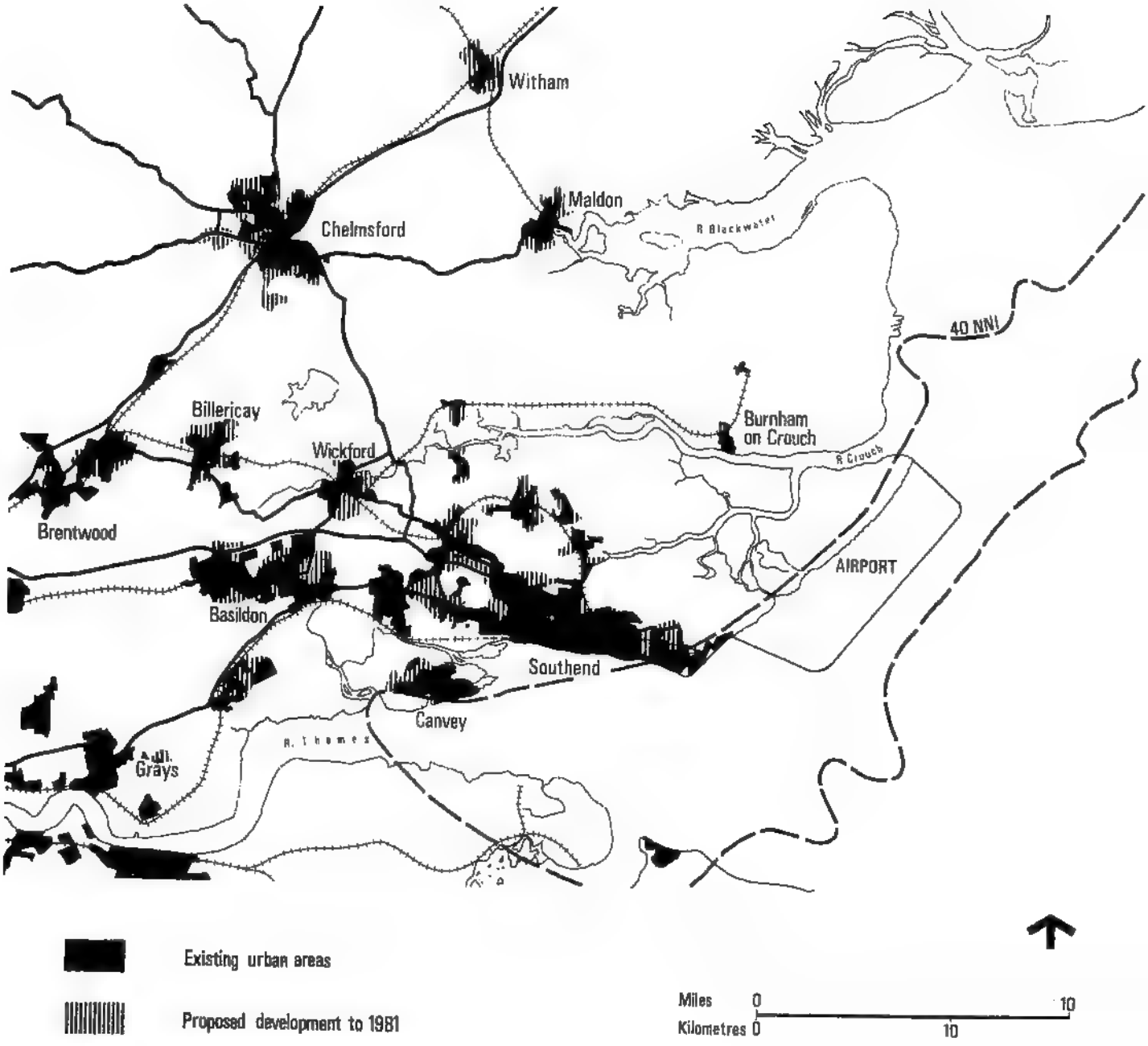
61 If the proposals for a third London airport at Foulness received Government approval, the extent of growth in the South Essex corridor generated by the presence of the airport would probably reach the forecast of growth allowed for this corridor without any additional stimulus from other sources. It would then be necessary to decide whether to re-deploy part or all the original growth allowed for in the South Essex subregion to another corridor and keep the original forecast of growth comparatively consistent, or whether to increase the amount of growth allowed for this corridor because of the introduction of an airport.

62 The proposed airport site is located on the Maplin Sands, immediately adjacent and parallel to the existing coastline and therefore will not in itself affect any existing urban areas. In connection with the noise corridor, we were advised by the Commission that for the purposes of investigating alternative strategies of urbanisation, we should assume that the north west flight path over Shoeburyness, Great Wakering and Canewdon, originally published as part of the Site Information for the Stage II Local Hearings, should be deleted. This would have the effect of making available for new urban development a large acreage of good building land near to the airport site. Consequently, our initial studies of urbanisation which had taken account of this flight path were superceded and the problem of locating the new urbanisation was considerably simplified.

63 The revised 40 Noise and Number Index (NNI) contours omitting the flight path over Canewdon extend for the most part over the sea, as did the original noise corridor. This is probably the most significant difference between the Foulness airport site and the other three airport sites, where in each case the noise corridor affects a number of existing settlements. The revised position of the 40 NNI contour of a 4 runway airport at Foulness affects part of Shoeburyness in Essex and Sheerness and Grain in Kent. (figure 2.14).

64 The only proposed development that is shown on Plan 1 that would have to be relocated if the airport was built at Foulness is a small area at Shoeburyness. We have assumed that a suitable area outside the 40 NNI contour could be found to replace this affected area and that it would not involve exceptional costs.

Printed image digitised by the University of Southampton Library Digitisation Unit



FOULNESS

Figure 2.14

PLAN 1-EFFECT OF AIRPORT

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 5: ALTERNATIVE STRATEGIES

65 In this part of the report, alternative strategies for new urbanisation to serve the airport have been investigated and analysed comparatively, and in Chapter 6, the preferred alternative has been selected from these studies for further development into a plan for airport city.

Population forecast

66 In the development of alternative strategies of urbanisation, attention has been focused primarily on comparing and analysing the end state plans of each alternative strategy. The strategies accommodate the population growth generated by a four runway airport operating at capacity and employing 65, 000 workers in the year 2000 added to proposals for development up to 1981.

67 From paragraph 109, the population growth up to the year 2000 has been forecast as about 303, 000, of which 260, 000 could be regarded as airport related growth, although this sector is not locationally identified. At the time the studies into alternative strategies of urbanisation were undertaken the best estimates of population growth available for deployment in alternative urbanisations near the airport amounted to 360, 000. The following studies therefore are based upon this latter figure and while the present population forecasts are lower, the reduction in population has not been sufficient to alter the general conditions obtained from the comparison of these alternative strategies.

68 From the population growth of 360, 000 available for deployment in various patterns of urbanisation, and using the overall town density of 30 persons per hectare (12 persons per acre), studies have been made to determine alternative strategies for the location of new urban development at Foulness. At this agreed density about 12, 000 hectares (30, 000 acres) of land will be required to accommodate the population growth of 360, 000.

Development of alternative strategies

69 The approach to the development of alternative strategies was based upon consideration of various constraints which were finally reduced to a few main variables affecting areas potentially available for new urban development. The different combinations of these variables resulted in a number of possible strategies.

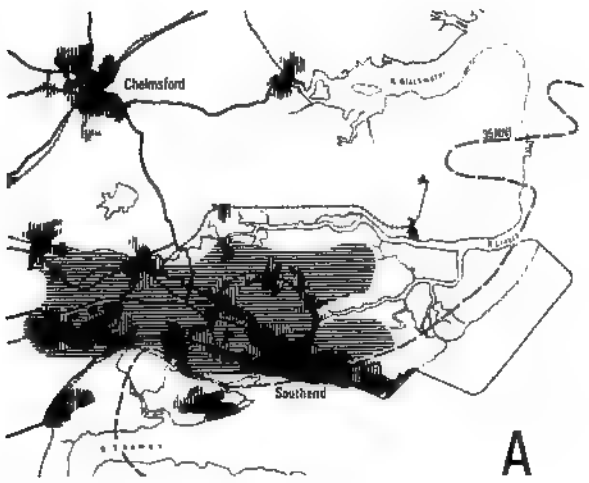
70 In developing these studies the following constraints have been taken into account where practicable:

i Crossing the river Crouch
ii Land liable to flooding
iii Noise corridor

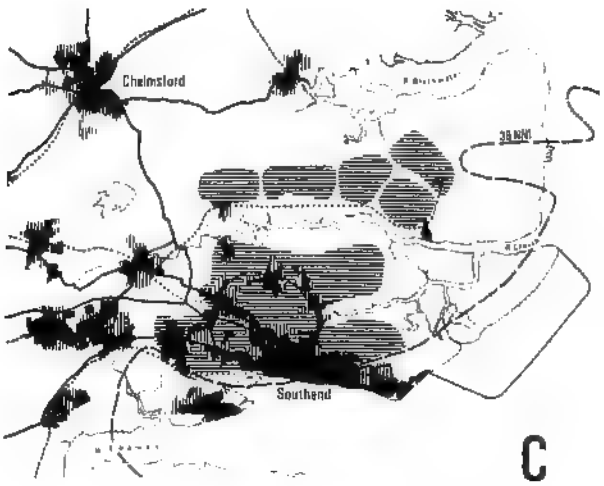
Printed image digitised by the University of Southampton Library Digitisation Unit

SOUTH OF RIVER CROUCH

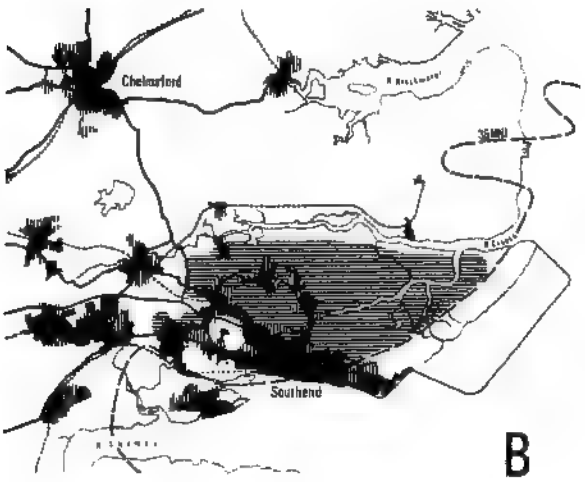
BOTH SIDES OF RIVER CROUCH



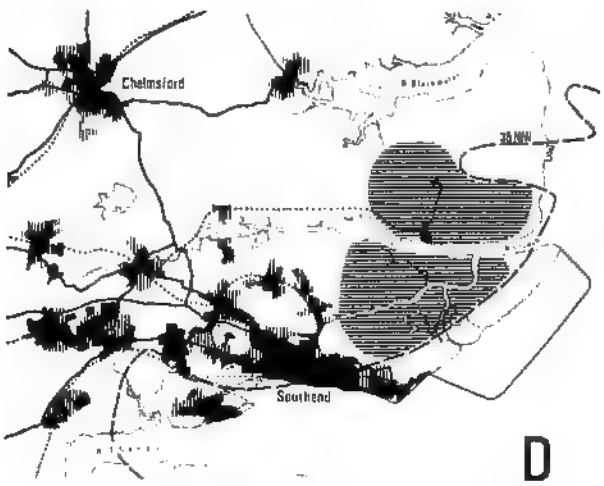
A



C



B

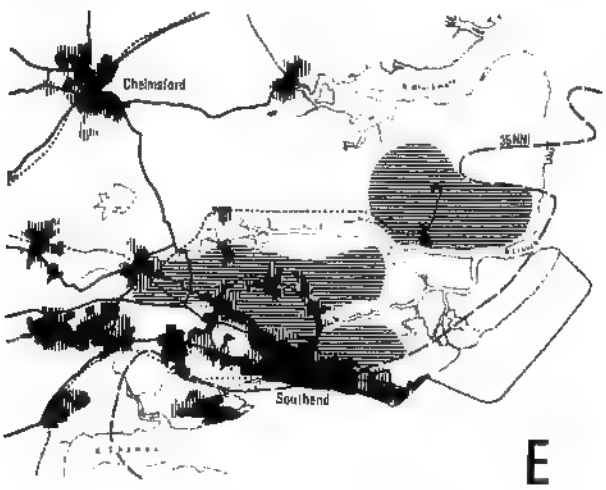


D

Existing urbanisation

Proposed development to 1981

Airport urbanisation



E

Miles 0 10

Kilometres 0 10

Figure 2.15 FOULNESS ALTERNATIVE STRATEGIES

Printed image digitised by the University of Southampton Library Digitisation Unit

iv Areas of great landscape value and sites of special scientific interest

v Areas of exceptional foundation costs, i.e. 100% above normal costs (the majority of these fall within ii above)

vi Proximity to fixed installations, e.g. Rayleigh switching station and Bradwell nuclear power station.

71 As mentioned in paragraph 42, agricultural land classification Grades 1 and 2 and mineral workings have not been included in the list of constraints during the development of the strategies for the reason that they coincide with one of the few good building locations near to the airport site which will be needed for new development whichever alternative strategy is selected. However, the loss of agricultural productivity is taken into consideration during the evaluation between alternative strategies.

72 Using the constraints listed in paragraph 70, the approach to the development of alternative strategies of urbanisation made use of three main variables, as described in the next three paragraphs.

73 The first variable concerns the decision to cross or not to cross the river Crouch with new urban development. This appears to be a major organisational, political and financial threshold and all the studies on alternative forms of urbanisation have therefore been carried out in parallel under two headings:

i New development located entirely south of the river Crouch

ii New development located on both sides of the river Crouch

74 The second variable concerns the other major financial consideration in the location of new urban development; whether to:

i ignore floodland constraints and develop close to the airport site on treeless windswept marshland involving abnormal costs of land reclamation, sewerage, sea defences and foundations and some investment in the provision of an acceptable living environment, or,

ii accept floodland constraints and develop further from the airport site on land involving normal building costs but higher transport user costs, as urban infilling to the north and west of Southend on already semi-urbanised land.

75 The third main variable which was originally applied during the development of the alternative strategies of urbanisation concerned the noise corridor as published by the Commission as part of the Site Information for the Stage II Local Hearings. The noise corridor at that time included the north west flight path over Great Wakering and Canewdon. This flight path made a large incursion into the land available for new urban development, and the amount of land available was strictly limited by the proximity of the sea and rivers around the airport. As there is some degree of flexibility in the positioning of the flight paths, it was decided that all the studies into alternative forms of urbanisation should be carried out in parallel under two headings:

Printed image digitised by the University of Southampton Library Digitisation Unit

i New development located to accept the north west flight path

ii New development located ignoring the north west flight path.

76 Applying the above main variables, ten alternative strategies for urbanisation were developed, of which five strategies accepted the north west flight path, and five strategies ignored it. As described in paragraph 62, we were subsequently advised by the Commission that for the purposes of investigating alternative strategies of urbanisation, we should assume the north west flight path to be deleted.

77 The remaining five strategies (figure 2.15), which do not take account of the north west flight path, are based on the two main variables:

1 (a New development south of the river Crouch
(b New development both sides of the river Crouch

2 (a New development close to the airport ignoring floodland constraints
(b New development further from the airport accepting floodland constraints

and are grouped as follows:

Development south of the river Crouch (1a)

i Further from the airport accepting floodland constraints (1a + 2b) - Strategy A

ii Close to the airport ignoring floodland constraints (1a + 2a) - Strategy B

Development both sides of the river Crouch (1b)

iii Further from the airport accepting floodland constraints (1 + 2b) - Strategy C

iv Close to the airport ignoring floodland constraints (1b + 2a) - Strategy D

78 In addition one local variation was developed in which the new urbanisation avoided the costs of developing across the rivers, creeks and islands close to the airport on the south side of the river Crouch, but on the north side of the river where there is no similar fragmentation of land, new urbanisation was located as close as possible to the airport (1a + 2b) + (1b + 2a) - Strategy E.

79 The five resultant alternative strategies, with a brief description of each are shown on figures 2.16 to 2.20.

Printed image digitised by the University of Southampton Library Digitisation Unit

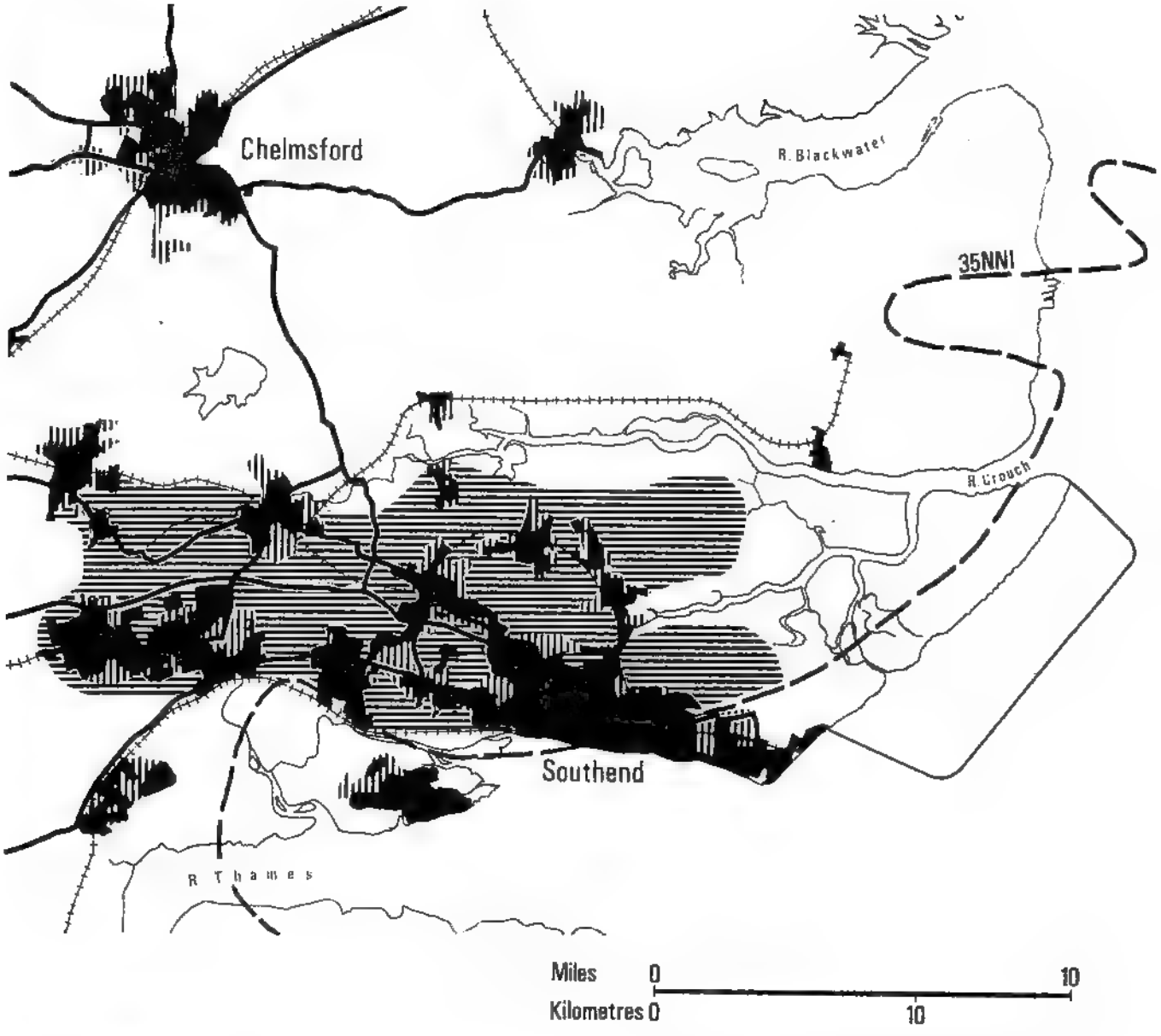


Figure 2.16 FOULNESS STRATEGY A

Strategy A

This strategy proposes a single new city, accommodating about 360,000 population, entirely south of the river Crouch, and avoids the cost of building on floodland. The new city is in a linear form and encompasses a number of existing settlements, including Southend, Rayleigh, Benfleet, Basildon, Wickford and Billericay, and would involve infilling the intervening partly urbanised areas. The area covered by new urban development extends between 3 to 25 km (2 to 5 miles) from the centre of the airport site.

Printed image digitised by the University of Southampton Library Digitisation Unit

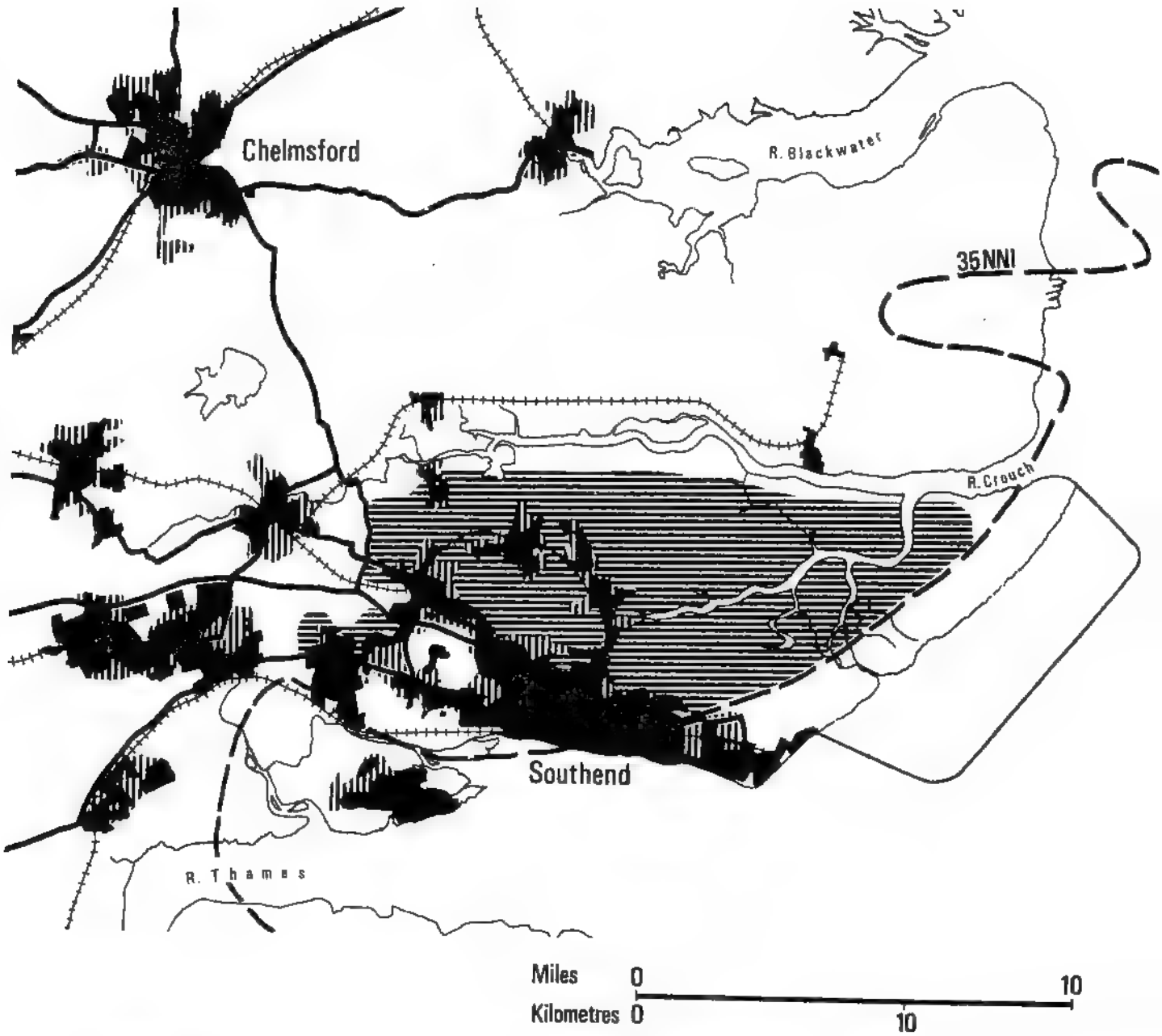


Figure 2.17 FOULNESS STRATEGY B

Strategy B

This strategy consists of a compact linear development, accommodating about 360, 000 population, contained entirely south of the river Crouch and ignoring the floodland constraint. Development is adjacent to the noise corridor to the east, and reaches as far as Rayleigh and Benfleet to the west. About half of the new city would be located on the very flat sparsely developed land directly west of the airport site, and the remaining half would involve infilling partly urbanised areas to the north of Southend. It encompasses several existing settlements including Southend, Rayleigh, Benfleet, Rochford, Hockley, Hawkwell and Hullbridge. The area covered by the new urban development extends between 3 to 25 km (2 to 15 miles) from the centre of the airport site.

Printed image digitised by the University of Southampton Library Digitisation Unit

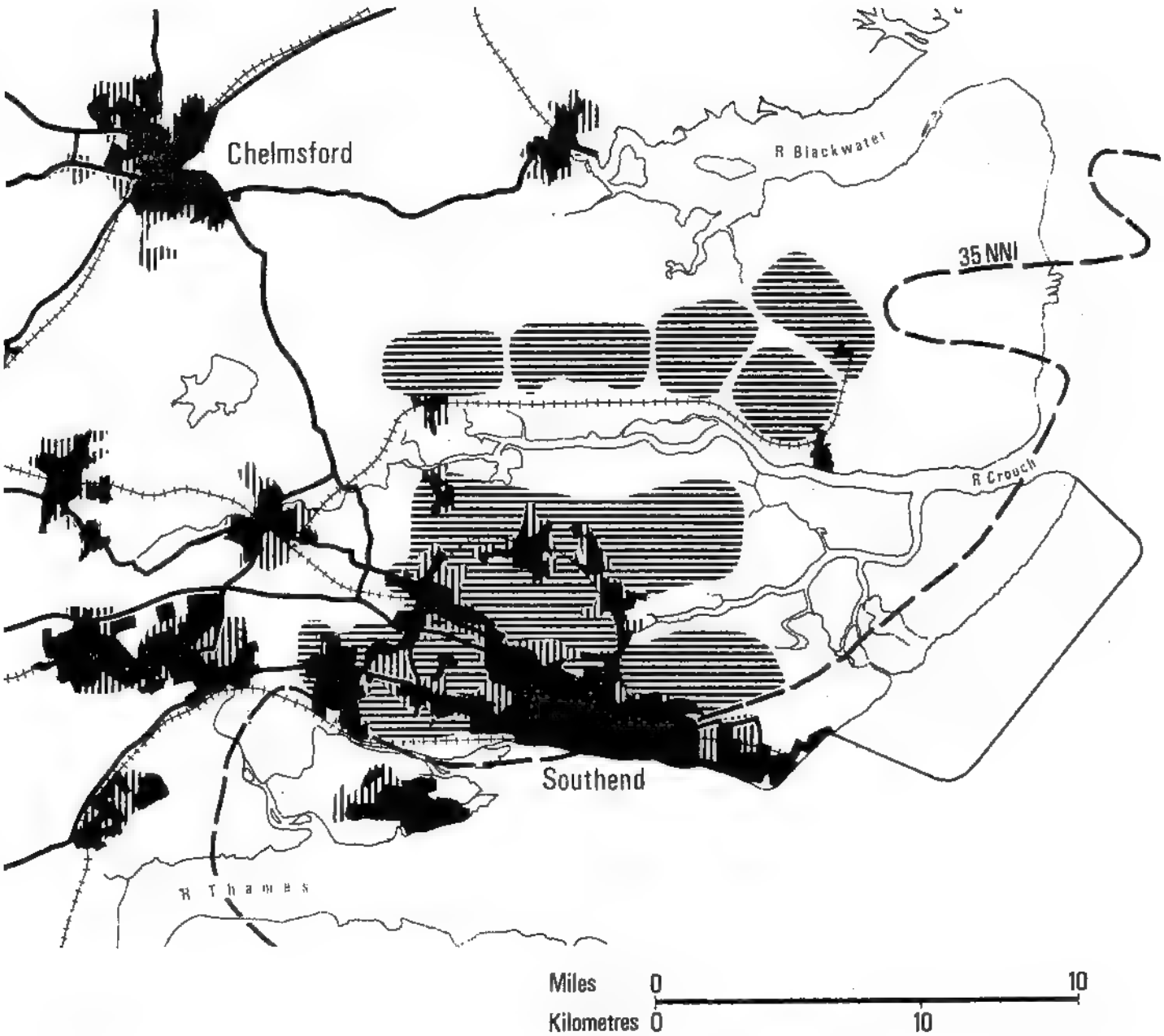


Figure 2.18 FOULNESS STRATEGY C

Strategy C

This strategy proposes development both sides of the river Crouch, accepting the floodland constraint. Initial development would locate about 160, 000 population north of Southend, followed by development of a new city of about 200, 000 population, north of the river Crouch. The initial development encompasses the existing settlements of Rayleigh, Benfleet, Rochford, Hockley, Hawkwell and Hullbridge, and is contiguous with Southend. The new city to the north would comprise a number of interlinked settlements focussed along the attractive valley of the river Crouch. The area covered by new development extends between 8 to 26 km (5 to 16 miles) from the centre of the airport site.

Printed image digitised by the University of Southampton Library Digitisation Unit

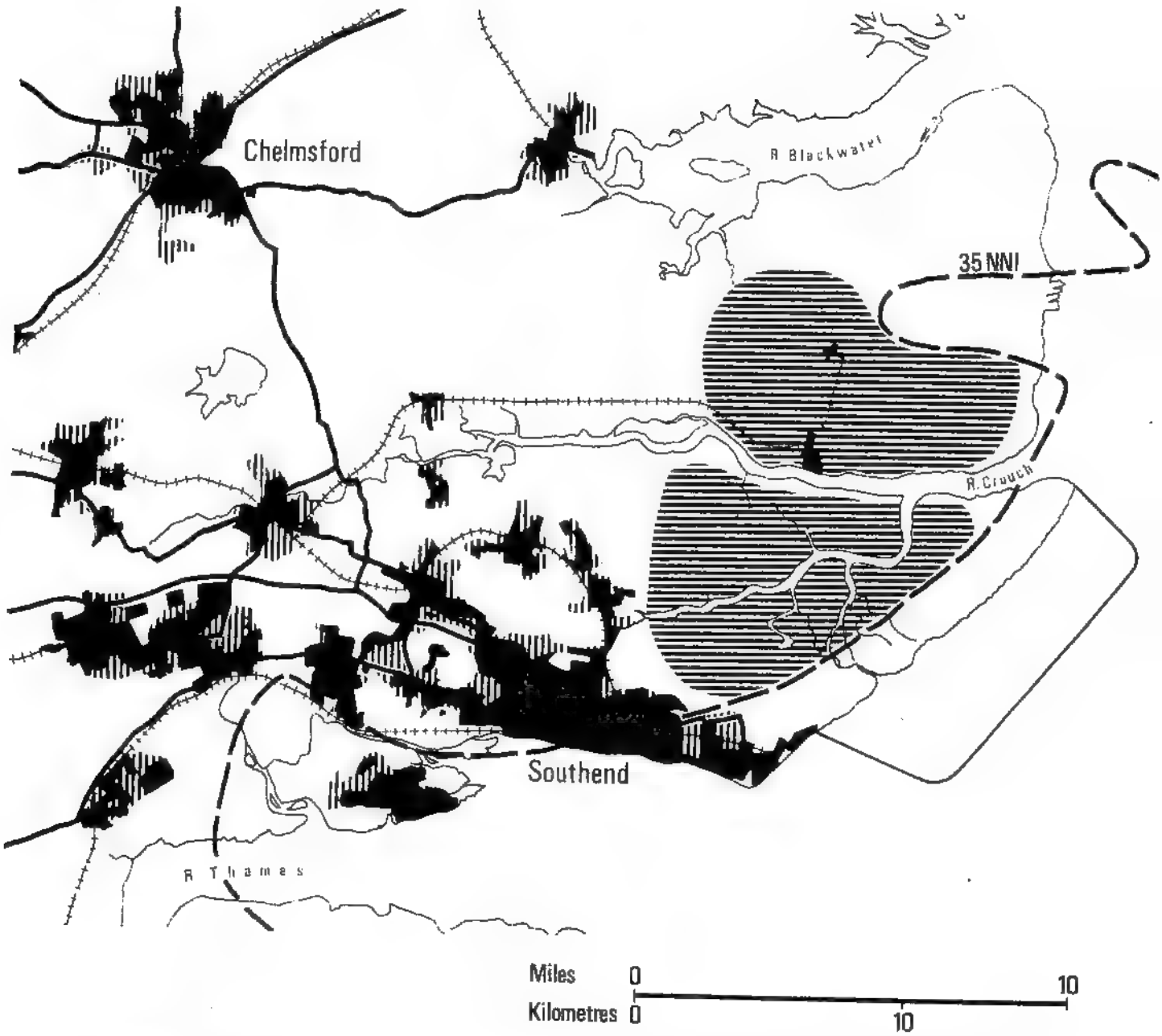


Figure 2.19 FOULNESS STRATEGY D

Strategy D

This strategy proposes twin cities on either side of the lower Crouch Estuary, on floodland close to the airport. Initial development would consist of about 200, 000 population located on the islands between the rivers and creeks east of Southend. This would be followed by a new city of about 160, 000 population located north of the lower Crouch Estuary on the Dengie Marshes, and north of Burnham-on-Crouch. The area covered by new urban development extends between 3 to 16 km (2 to 10 miles) from the centre of the airport site.

Printed image digitised by the University of Southampton Library Digitisation Unit

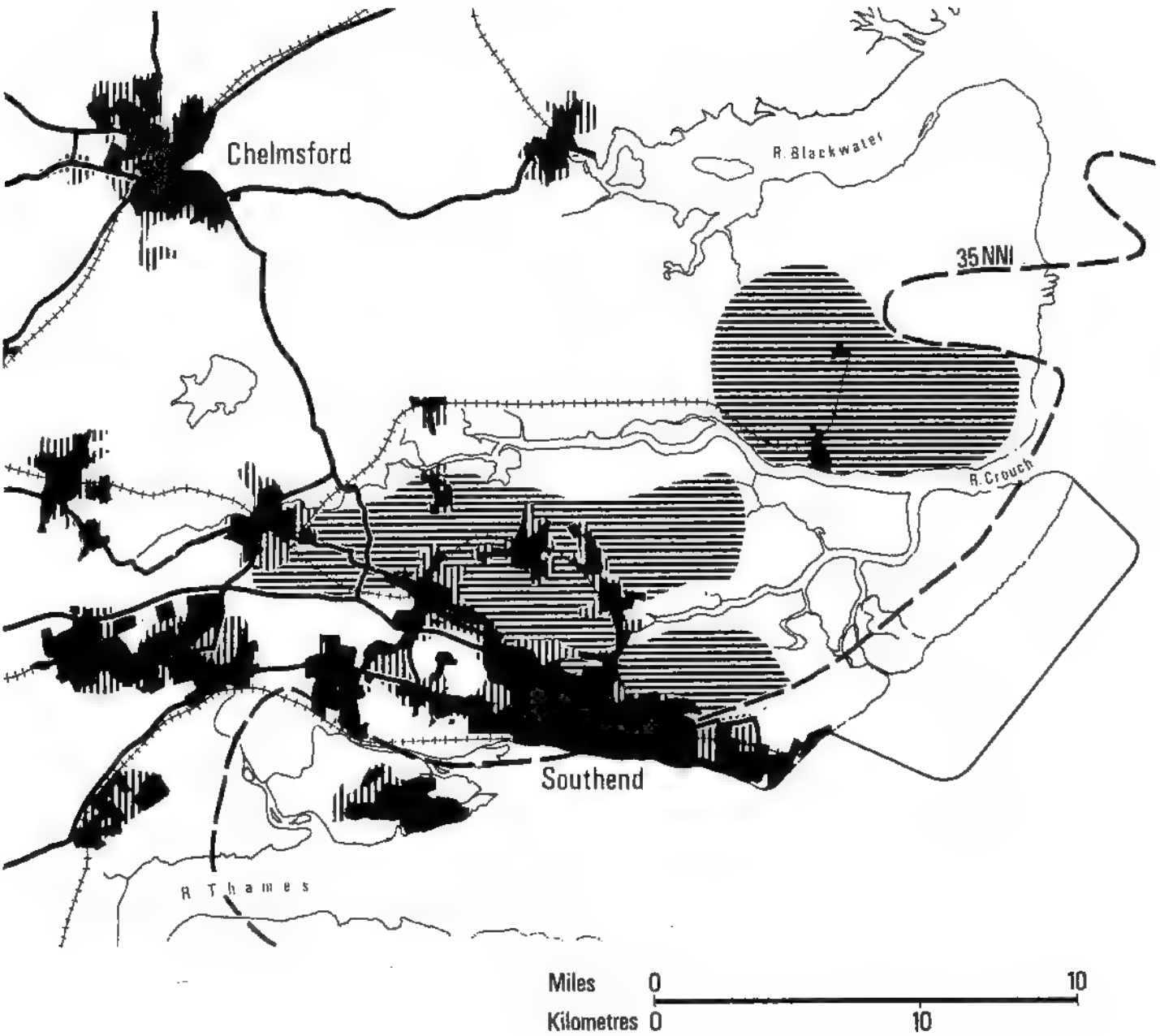


Figure 2.20 FOULNESS STRATEGY E

Strategy E

This strategy is a variation combining elements of both strategies C and D. It proposes development on both sides of the river Crouch, accepting the floodland constraint south of the river, but not accepting it north of the river. Similarly to Strategy C, initial development for about 160, 000 population would be located contiguous with the northern edge of Southend. This would be followed by a new city of about 200, 000 population, located north of the lower Crouch Estuary on the Dengie Marshes and north of Burnham-on-Crouch. The new urban development would be within 7 to 25 km (4 to 15 miles) of the centre of the airport site.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 6: SELECTION OF PREFERRED STRATEGY

80 The purpose of this chapter is to discuss the evaluation of the five alternative strategies of urbanisation developed in the preceeding chapter and the selection of a preferred strategy of urbanisation for an airport at Foulness.

81 In part I of this report, the method of evaluating the performance of alternative strategies under a set of comparative criteria leading to the selection of a preferred strategy at each of the airport sites was described, and the stage 1 and stage 2 selection procedure was outlined. Following this selection, the strategy or combination of strategies chosen will be developed as the preferred urban structure plan and then costed in detail.

First stage of selection

82 This stage involved the comparative assessment of the alternative strategies of urbanisation. The results of this evaluation are set out in table 2.3. The obviously weaker strategies have then been paired criterion by criterion with the stronger strategies so as to eliminate the weaker strategies, leaving the remainder and the best strategy on user costs to be carried forward into the stage 2 selection procedure when comparative costing techniques have been applied. The stage 1 selection procedure was as follows:

Strategy E

83 From an examination of table 2.3 it was obvious that this strategy had no advantages over the others in any major criterion and rated so badly in comparison to all four of the others that it could be eliminated immediately.

Strategy D compared to strategy B

84 Although these two strategies were not comparable on assessment, they were both very similar on transportation user costs. It was therefore decided that rather than eliminate strategy D in stage 1, it should be carried forward into stage 2, together with strategy B, on the basis that they both represented the best strategy on transportation user costs.

Strategy A compared to strategy C

85 A comparison between strategies A and C indicated that neither one of these strategies dominated the other in this first general assessment.

86 Strategies A, B, C and D were carried through to the stage 2 selection process, strategies B and D being equally the best strategies on transportation user costs.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.3 : Stage 1 - Assessment of alternative strategies at Foulness

Criteria	Strategies A	B	C	D	E
Capital construction costs					
Site development					
Land liable to flood/sea and river defences	++	-	++	--	o
Abnormal ground conditions	++	--	++	--	-
Preparation of an acceptable urban environment	o	--	+	--	-
Engineering					
Sewerage and sewage disposal	-	--	o	--	--
Drainage and surface water disposal	-	--	+	--	--
Undergrounding or diverting overhead transmission lines	--	-	o	+	o
Transportation					
Roads from urban areas to the airport	o	++	-	o	+
Other roads i bridges	+	-	--	--	--
ii access to existing centres	--	-	o	+	-
User costs					
Transportation					
From urban areas to the airport	-	+	-	+	o
Elsewhere in the area	-	+	-	+	o
Unmeasured advantages and disadvantages					
Effect of urbanisation on existing environment					
Preservation of landscape	++	+	-	o	o
Effect on environment of existing urban areas	+	o	o	-	-
Effect of existing environment on new urban areas					
Proximity to fixed installations	-	o	o	+	o
Suitability for housing	-	--	++	--	-
Access to existing recreational areas	+	+	+	-	o
Potential for recreational development	o	o	+	+	+
Contribution to new urban areas by existing urban areas	++	o	+	-	o
Other factors					
Proximity to noise corridor	+	o	+	-	o
Potential for long-term growth	-	o	+	+	+
Provision of major service centres	o	-	+	+	o
Losses in agricultural production	+	-	o	--	-

Key: ++ Considerable advantages
+ Some advantages
o Neutral
- Some disadvantages
-- Considerable disadvantages

Printed image digitised by the University of Southampton Library Digitisation Unit

Second stage of selection

87 In this stage all strategies under consideration were costed for comparison purposes and these costings were coupled to the comparative assessments made in stage 1 of the unmeasured advantages and disadvantages. (table 2.4). It should be emphasised that the costs cannot be regarded as absolute values; they were intended only as a guide to final plan selection by indicating broad order of magnitude cost differences between strategies, and small differences are therefore likely to be insignificant. The purpose of this stage was to eliminate the less satisfactory strategies and select a preferred strategy.

Strategy D compared to strategy B

88 Although both these strategies were very similar on transportation user costs, strategy D was about £25 million more costly in terms of capital construction costs. The only advantages in which stragegy D ranked better than strategy B were in not having to underground overhead transmission lines, provision of service centres, proximity to fixed installations and potential for recreational development and long term growth, each of which were considered to be relatively less important criteria. Strategy B had advantages over D in development on land liable to flood, provision of bridges, loss to agriculture and landscape, relation to existing settlements, recreational opportunities, and proximity to the noise corridor, and therefore dominated strategy D in the more important criteria. Strategy D could thus be eliminated.

Strategy B compared to strategies A and C

89 Costed criteria: Although strategy B was between £20-30 million more expensive than strategies A or C in terms of capital costs, its advantages in terms of transportation user costs, when capitalised,outweighed this difference by between £7-10 million. The costs to agriculture were not included in the totals, as they were based on annual gross output. The Commission's agricultural consultants consider that although strategy B had the lowest loss in terms of gross annual output, this should not be considered as the basis on which to assess its agricultural implications. Strategy B was located on a very good horticultural and arable area, and was one of the most costly strategies in agricultural terms.

90 It should also be noted that strategy B would require longer regional links than strategies A or C, a criterion which has not been considered in the costing exercise.

91 Unmeasured criteria: From an examination of the unmeasured criteria it was seen that strategy B had no major advantages over either of the other strategies in any one criterion. The strongest argument against it, however, was its major disadvantage over the others in terms of the suitability of the existing environment for housing. Even with preparation of the existing environment with extensive landscaping, strategy B could never approach the potential quality of environment available in strategies A or C. It would be developed in flat, bleak and marshy areas, the character of which could never

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.4 : Stage 2 - Assessment of alternative strategies at Foulnes

Criteria	Strategies A	B	C	D
	£ million			
Capital construction costs				
Site development				
Land liable to flood/sea and river defences	ø	3.8	ø	4.7
Abnormal ground conditions	0.1	28.1	ø	35.8
Preparation of an acceptable urban environment	ø	3.3	0.1	3.4
Engineering				
Sewerage and sewage disposal) Drainage and surface water disposal)	1.1	1.0	ø	1.3
Undergrounding or diverting overhead transmission lines	5.5	1.8	1.0	ø
Transportation				
Roads from urban areas to the airport	8.7	ø	11.2	11.2*
Other roads	ø	5.5	10.8	10.8*
User costs				
Transportation				
From urban areas to the airport (capitalised)	35.0	ø	30.0	ø**
TOTAL	50.4	43.5	53.1	67.2
Unmeasured advantages and disadvantages				
Effect of urbanisation on existing environment				
Preservation of landscape	++	+	-	o
Effect on environment in existing urban areas	+	o	o	-
Effect of existing environment on new urban areas				
Proximity to fixed installations	-	o	o	+
Suitability for housing	-	--	++	--
Access to existing recreational areas	+	+	+	-
Potential for recreational development	o	o	+	+
Contribution to new urban areas by existing urban areas	++	o	+	-
Other factors				
Proximity to noise corridor	+	o	+	-
Potential for long term growth	-	o	+	+
Provision of major service centres	o	-	+	+
Losses in agricultural production	+	-	o	--

Key: ++ Considerable advantages + Some advantages o Neutral - Some disadvantages -- Considerable disadvantages

* Strategy D assumed to be similar to Strategy C

** Strategy D assumed to be similar to Straegy B

Note: ø denotes alternative with lowest cost for each criterion. Figures show excess cost of other alternatives in £million.

Printed image digitised by the University of Southampton Library Digitisation Unit

be ameliorated simply by landscaping.

92 In addition to the physical qualities of the environment, environmental factors such as micro-climate and noise should be considered. Here too, strategy B had disadvantages, firstly because of its flatness and geographical location, it would be more exposed to all extreme weather conditions than are strategies A or C. Secondly, its proximity to the noise corridor could mean that it might be detrimentally affected by noise if there were changes in wind direction or in noise intensity.

93 In summary, the severe environmental (and therefore social) disadvantages of strategy B, far outweighed its marginal advantages when transportation user costs were taken into account, and for this reason, strategy B was eliminated.

Strategies A and C

94 Costed criteria: Because of the minor difference of £2.7 million between the summation of the capital and user costs of strategies A and C, it was considered that a selection between these strategies must be based on a comparison of the unmeasured criteria.

95 Unmeasured criteria: In comparing strategies A and C, as with strategy B, the most significant criterion appeared to be the suitability of the existing environment for new urbanisation. The two strategies were therefore compared as follows:

i Preservation of Landscape - Although the area north of the river Crouch was considered to be of high landscape value, it should be emphasised that this was only significant in local terms. It was not of national or regional importance, and was not an area which would attract people from a long distance. In the case of the Foulness site, the areas of good landscape could be more effectively utilised as an environment for living and recreation, rather than one which justified preservation as open countryside. Therefore the higher rating of strategy A for the preservation of landscape was not considered to be in the best interests of the population that may live in the area.

ii Effect of new urbanisation on the environment of existing urban areas and the contribution to the new urbanisation made by existing urban areas - The rating of these criteria was based on the number of existing settlements within or adjacent to the new urbanisation. For example, the greater the number of existing settlements the more they could contribute to the new urbanisation in social, living and working conditions and conversely, the more the new urbanisation could assist and improve conditions in a greater number of existing settlements. Strategy A had advantages over C in both these criteria, as it was associated with more existing settlements to the west of Southend. However, strategy C rated equally with A in the initial stages of development, as in both cases the strategies would develop in the same area north of Southend.

Printed image digitised by the University of Southampton Library Digitisation Unit

iii Suitability of the existing environment for housing - strategy C had very significant advantages for the incoming population over A as it developed on land having a pleasant existing landscape therefore giving the residents of the new urbanisation the advantage of living in a better environment than could be achieved in any other strategy. Much of the development in strategy A covered an area which was already partially developed in a haphazard way and could almost be considered a 'rural slum'. It is suggested that whichever strategy is selected, a programme of rural renewal should be proposed for this area involving limited amounts of new developments eliminating the worst examples of decaying plot development.

iv Potential for recreational development - strategy C had advantages over A in that if focussed new urbanisation along both banks of the river Crouch where parks and major water-based recreational activities could be developed, especially if the river were made tide-free at this point. The urbanisation in strategy C was also closer to the recreational potentialities of the river Blackwater, the coastline of the Dengie peninsula and the surrounding countryside.

96 In summary it is considered that by reason of the quality of the existing environment strategy C offered greater significant advantages than strategy A for the creation of a major new city, attractive to the incoming population, with a strong inherent individuality and a potential for developing recreational activit as an integral part of the town. This conclusion is based on taking a long term view of the quality required of a new city at the end of the century.

97 However, the arguments between strategies A and C were closely balanced and there were many good reasons, as mentioned in paragraph 95 why strategy A, or at least the initial part of it which is common to both strategies A and C, should be preferred in the shorter term and certainly could be preferred by other authorities.

98 On this basis therefore and with the guidance of the Commission, the distribution of urbanisation proposed in strategy A has been selected as the preferred strategy for development and detailed costing for comparison with the urbanisations proposed at the other three airport sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

99 Figure 2.21 illustrates the proposals for Plan 3 which represents the urbanisation required for an airport in which four runways could be operating to capacity, employing about 65,000 people at about the year 2000. From the preliminary studies carried out into alternative strategies of urbanisation, described in chapter 5, strategy A was selected as the preferred strategy for urbanisation at Foulness and the proposals for Plan 3 have been developed from this strategy.

100 The proposals for new urbanisation in Plan 3 cover all new urban development within the internal zone area up to the year 2000, additional to the existing urban areas and forecasts for their growth up to 1981, contained in Plan 1. In developing the urbanisation plan, no new urban development has been located within the noise corridor.

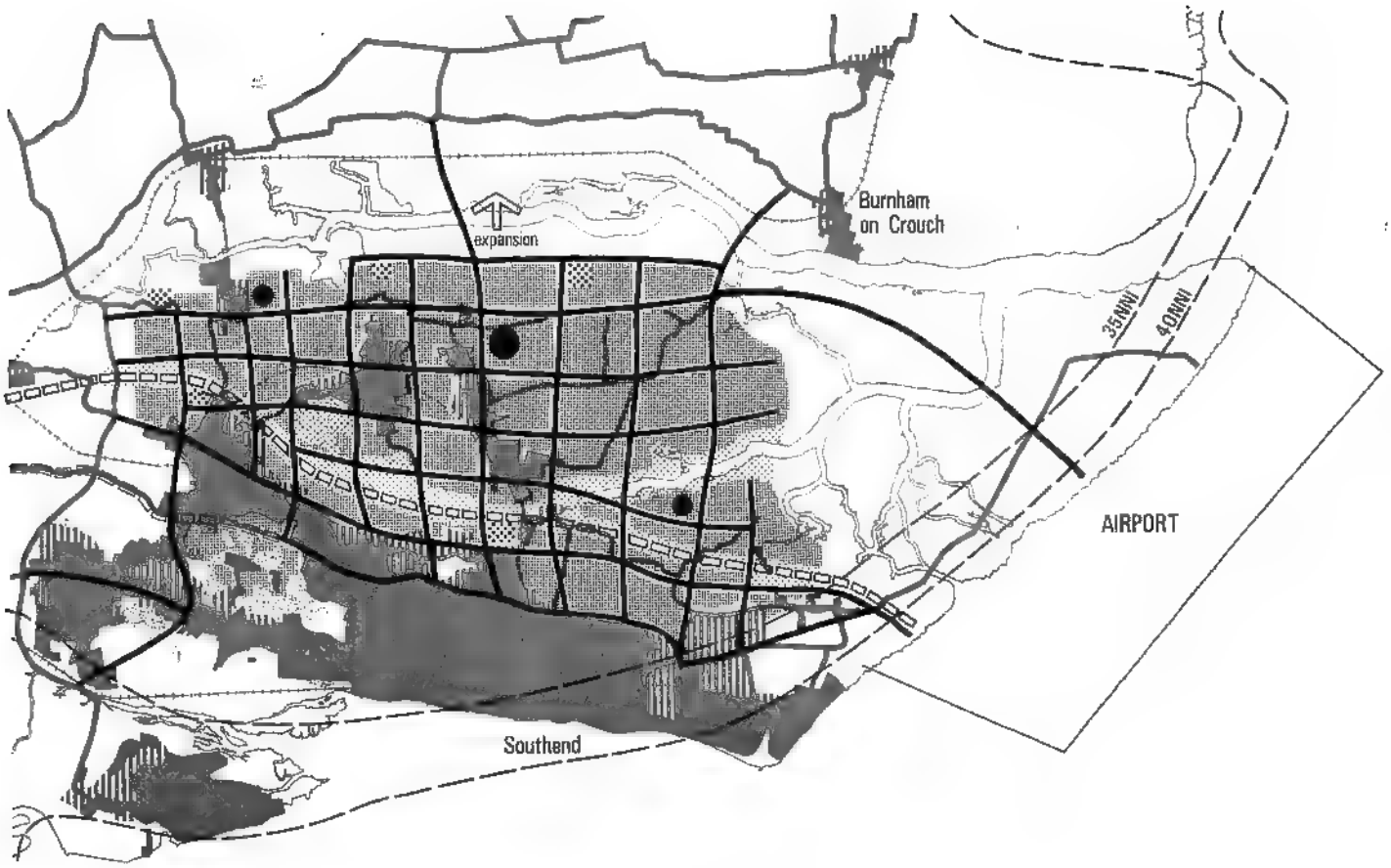
Employment and population

101 By the year 2000 the total population of the Foulness internal zone area is estimated to be some 855,000 people. (table 2.5 and figure 2.22). This part of south-eastern Essex is a major growth zone in the various economic planning strategies for south-east England. As a result of this the total population estimate tends towards the high end of the range of estimates (718,000 to 867,000).

102 Using the export surplus model the calculated surplus employment for this area at the year 2000 is about 140,000 of which 50,000 are directly associated with the airport. The total employment generated by the export surplus employment, using the 2.22 surplus multiplier, will be 310,000 within the internal zone area.

103 The prediction of future commuting patterns is extremely difficult for this site, but because of its magnitude, both relative and absolute, it is very important. At the present time there is a large net outward movement of commuters and by 1981 this is expected to have increased by almost 50%. Because of the ultimate capacity of road and rail to carry commuters, the expected reduction of employment opportunities in central London, and governmental and regional planning policies, the growth of gross outward commuting is forecast not to continue at the 1966-1981 rates. An estimated growth rate of 50% of that of the period 1966-1981 has been used to calculate gross outward commuting between 1981-2000. A simple projection of gross inward commuting under similar assumptions is not a satisfactory means of estimating net commuting. This is because the employment situation within the area will have changed markedly. There will inevitably be a considerable growth of gross inward commuting to the airport and airport generated employment as personal mobility increases. There should also be a substantial reversal of outward commuting when the wide range of employment opportunities generated by the airport become available. It is assumed therefore that gross inward commuting

Printed image digitised by the University of Southampton Library Digitisation Unit



Miles 0 5
Kilometres 0 5

Existing urban areas

Proposed development to 1981

Main woodland and parks

Proposed road network at 1981

Residential areas including other local uses

Major open space including other extensive uses

Major industrial areas

Town centre

District centre

Noise corridor

Possible line for MOT Strategy Route

Plan 3 road network

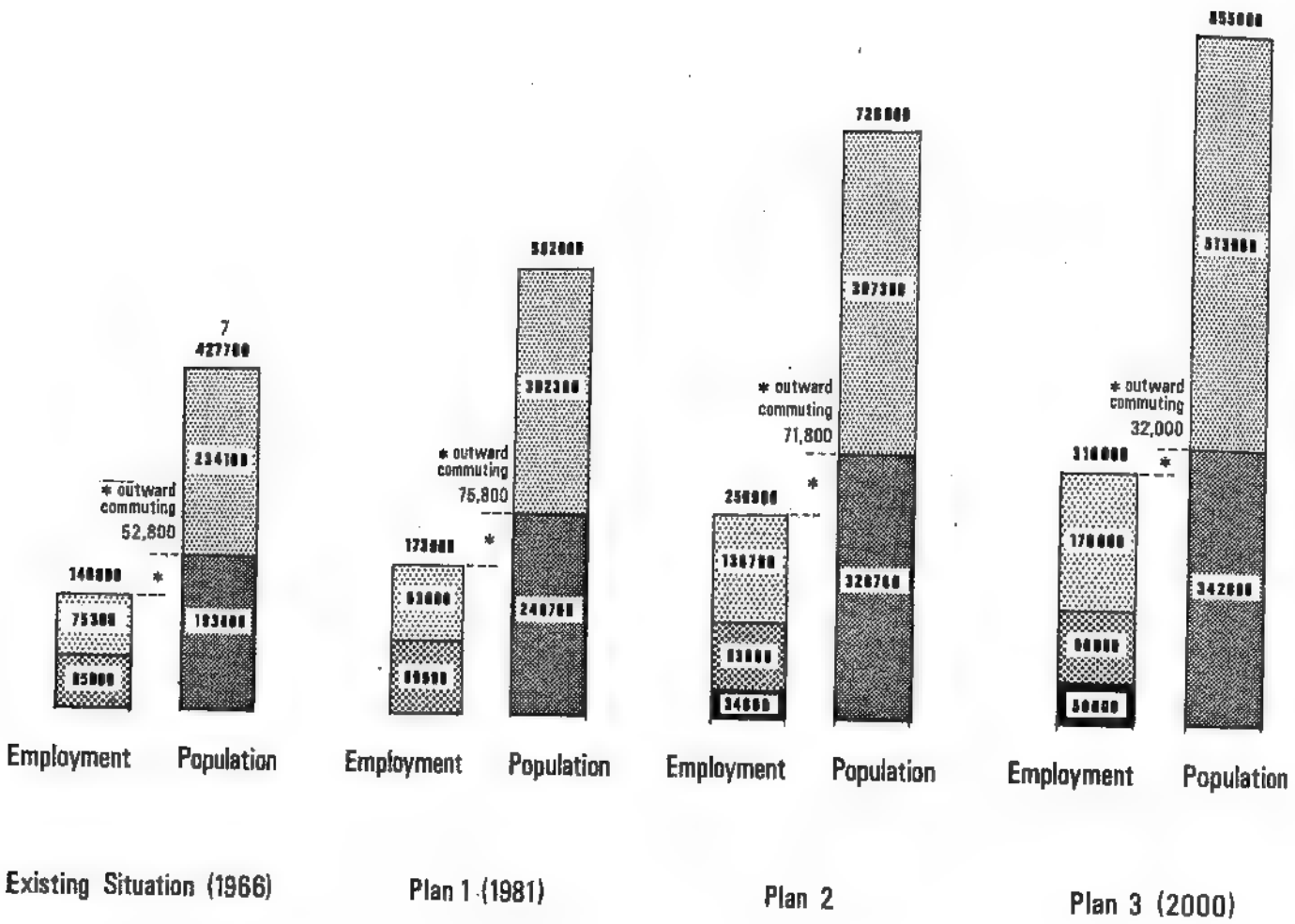
Possible road link to London

FOULNESS

PLAN 3 – AIRPORT CITY

Figure 2.21

Printed image digitised by the University of Southampton Library Digitisation Unit



Local

Export surplus

Non Airport

Airport

Population

Dependent

Economically active

FOULNESS
INTERNAL ZONE AREA
EMPLOYMENT AND POPULATION

Jre 2.22

Printed image digitised by the University of Southampton Library Digitisation Unit

for the year 2000 will be of the order of 20% of the total employment of the area. With these estimates of both the gross outward and the gross inward commuting a figure for net commuting can be derived; this amounts to a net outward movement of some 32,000 people. As a result of this large net outward movement the economically active workforce will be larger than the employment and should be of the order of 342,000 within the internal zone area. The total population estimate is based on this figure.

Table 2.5 : Foulness Plan 3 employment and population within the internal zone area

Annual growth rate for non-airport export surplus employment from 1981 %	0.7		0.35		Nil	
Export surplus employment						
Non-airport	92,300		86,400		80,900	
Airport	50,000		50,000		50,000	
Total employment	315,900		302,800		290,600	
Net outward commuting	30,900		33,500		36,600	
Economically active population	346,800		336,300		326,600	
Participation rate %	40.0	45.4	40.0	45.4	40.0	45.4
Population	867,000	703,000	840,000	739,900	816,000	718,500

Recommended estimates

	male	female	total
Population	427,500	427,500	855,000
Employment	-	-	310,000
Net outward commuting	-	-	32,000
Economically active	225,400	116,600	342,000

104 In table 2.5, the alternative growth rates of employment used for non-airport export surplus employment are 50% and 25% of the 1966-1981 rates applied for Plan 1; the third column assumes no growth of non-airport surplus employment.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.6: Foulness internal zone area - population growth and distribution

		Airport City*	Basildon New Town	North of river Crouch*	Remainder of internal zone area*	Total
A:	Existing population 1966	271,000	66,600	14,800	75,300	427,700
B:	Population growth 1966-81	48,000	44,400	2,200	29,700	124,300
C:(A+B)	Plan 1: Total Population 1981	319,000	111,000	17,000	105,000	552,000
D:	Plan 2 minus Plan 1. Population growth for airport employment of 45,000	131,000	17,000	9,000	17,000	174,000
E:(C+D)	Plan 2: Plan 1 population and population for airport employment of 45,000	450,000	128,000	26,000	122,000	726,000
F:	Plan 3 minus Plan 2. Population growth for extra airport employment of 20,000 and for non-airport employment growth 1981-2000	98,000	12,000	7,000	12,000	129,000
G:(D+F)	Plan 3 minus Plan 1. Population growth for airport employment of 65,000 and for non-airport employment growth 1981 - 2000	229,000 (75%)	29,000 (10%)	16,000 (5%)	29,000 (10%)	303,000 (100%)
H:(C+G)	Plan 3: Plan 1 population and population for airport employment of 65,000 and for non-airport employmwnt growth 1981 - 2000	548,000	140,000	33,000	134,000	855,000

* Definition of these areas appears in table 2.7

Printed image digitised by the University of Southampton Library Digitisation Unit

105 The population forecast for the internal zone area at 1981 (Plan 1) amounts to 552,000 (paragraph 49). Therefore the net population growth to be accommodated within the area by the new urbanisation of Plan 3 to reach the total population of 855,000 in the year 2000 is 303,000.

106 The population growth of 303,000 includes two population components as follows:

i The population attributable to an airport employing 65,000 people has been estimated as 275,000 but because of the assumption common to all airport sites in which 5% of this population is assumed to reside outside the internal zone area, only 260,000 of the population attributable to the airport are located in the area.

ii The growth of existing settlements between 1981-2000 generated by a limited growth of existing employment. Owing to the commuting assumptions described in paragraph 103, which envisages a reduction in net outward commuting between 1981 and 2000, only a proportion of the population associated with this employment growth is located within the internal zone area, namely 43,000

107 The various elements of the new urbanisation required to accommodate the total population growth of 303,000 up to the end of the century, e.g. village growth, town growth or a new airport city, cannot be assigned to accommodating either the non-airport growth of the existing population or the growth of incoming population attributable to the airport as to some extent, population growth will be intermixed and any new urban development whether on greenfield sites or attached to existing settlements may accommodate people from each component (table 2.6).

Concept for Plan 3

Distribution of population

108 The distribution of the population growth of 303,000 forecast for the internal zone area up to the year 2000 has been divided into the following four components:

i A new city located between Southend and the river Crouch, accommodating 229,000 (75%) primarily attributable to the airport.

ii Continued growth of Basildon new town for 29,000 people (10%).

iii Peripheral expansions and continued growth of the villages north of the river Crouch including Burnham-on-Crouch and the villages in Maldon Rural District for 16,000 people (5%).

iv Continued growth of the remainder of the internal zone area, including Billericay, Wickford and the surrounding villages of Chelmsford Rural District for 29,000 people (10%).

Printed image digitised by the University of Southampton Library Digitisation Unit

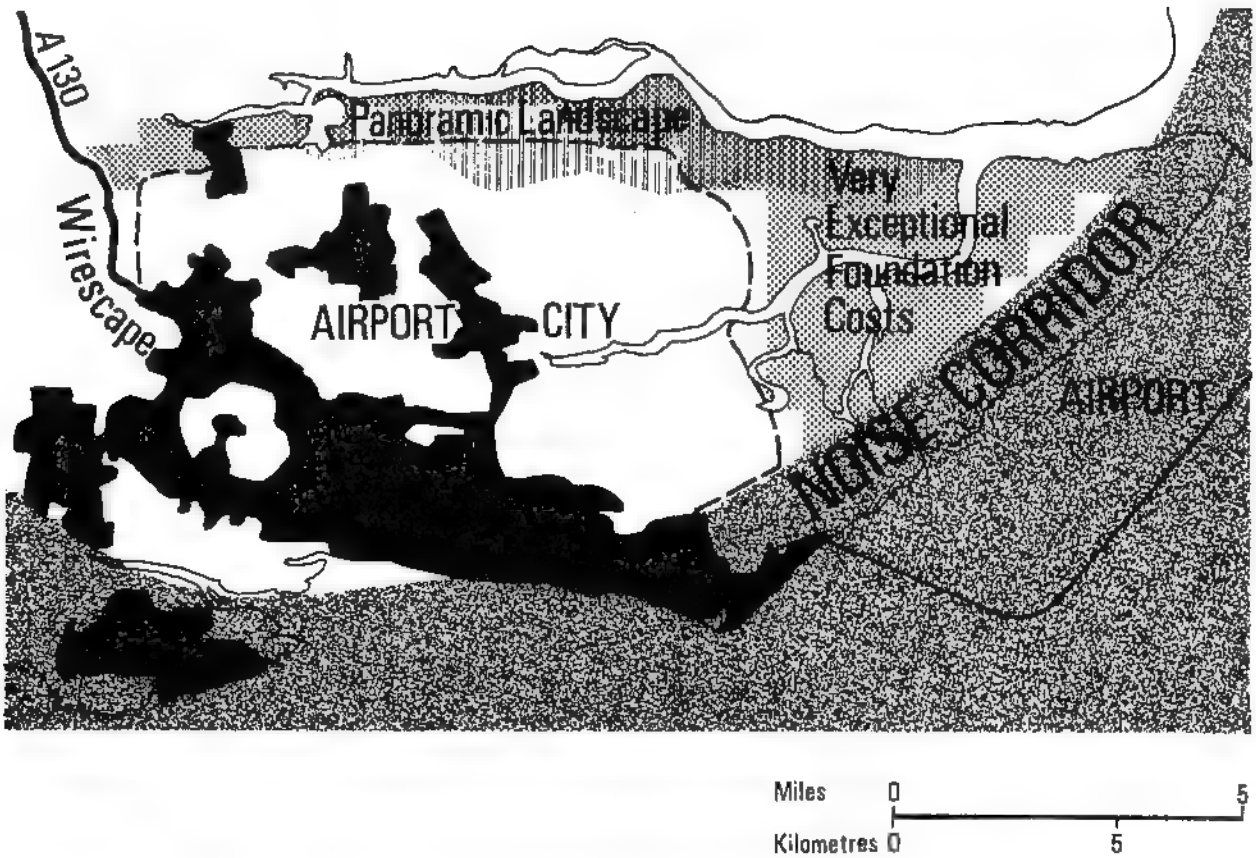


Figure 2.23 FACTORS INFLUENCING URBAN ENVELOPE

109 The new city is conceived as a compact urban area structured with a linear directional grid of roads orientated to the two links between the city and the airport, and the road and rail links between the airport and London. The alignment of the link to London is located between the existing urban area of Southend and the new city.

Boundaries of the urban area

110 The main factors defining the boundaries of airport city are shown in figure 2.23. To the north, the urban area stops short of the river Crouch in order to avoid land involving very exceptional foundation costs and to limit the intrusion into landscape of panoramic importance. Development to the east, the area closest to the airport, is limited by the very exceptional foundation costs incurred on the land bordering Paglesham pool and Potton creek. On the south, the edge of the existing built-up area of Southend and Rayleigh has been used and to the west, the line of the A.130 road, in order to avoid development in the 'wirescape' area associated with Rayleigh switching station. Except for the extreme south-east corner of the new city near the village of Great Wakering, the built-up area would not be close to the noise corridor.

Printed image digitised by the University of Southampton Library Digitisation Unit

Service centres

111 The distribution of servicing functions, such as shopping, further education, social, health, welfare and indoor recreational facilities would primarily be grouped into the three new centres in the city and into the existing centres of Rayleigh, Southend and the smaller district centres in Southend. The existing centres would however be primarily orientated towards serving the needs of their dependent populations, although the new city might look towards Southend for certain facilities. With the new city, the three new centres have been distributed to meet district centre needs. The district centre nearest the middle of the city, located to the east of Ashingdon, would be the first to start building and it is intended that it would continue to grow to become the new city centre. Local centres catering for more day to day needs will be provided, centred wherever feasible on existing villages within the new city boundary.

Growth outside airport city

112 The strategy of urbanisation selected at Foulness does not propose any deliberate policy of village expansions or new villages as has been proposed at Nuthampstead. Allowance has however been made for the further growth of Basildon New Town (29,000) to its planned size and for the limited growth of settlements north of the river Crouch (16,000) such as Burnham-on-Crouch, Southminster and Woodham Ferrers. A further population of 29,000 has been allocated to the remaining towns of the internal zone area to allow for non-airport growth after 1981.

Transportation

Links to London and the region

113 Preliminary studies at present in progress by the Ministry of Transport's consultants, Messrs Howard Humphreys and Sons, indicate that a road link to London from the airport would be needed at an early date in the development of the airport. They propose that the most satisfactory location for the link would be roughly parallel with the existing A.127(T) from Ringway 3 as far east as Wickford, then passing over the ridge of hills just to the north of Rayleigh, before swinging south to skirt closely along the northern edge of Southend, entering the airport site near Great Wakering (figure 2.24).

114 A cross country link towards the M.1 motorway and the Midlands could be provided by a spur road north-westwards from Rayleigh to Chelmsford and Bishop's Stortford where it could connect with the existing plans for the east-west strategic route between Luton, Stevenage, Colchester and Harwich proposed by the Ministry of Transport in the Green Book 'Roads for the Future'.

115 Messrs Liversey and Henderson, consultants to British Rail, have proposed that one of the possible alignments for the rail link to London from the airport could run parallel to the new road link proposed by Howard Humphreys and Sons.

Printed image digitised by the University of Southampton Library Digitisation Unit

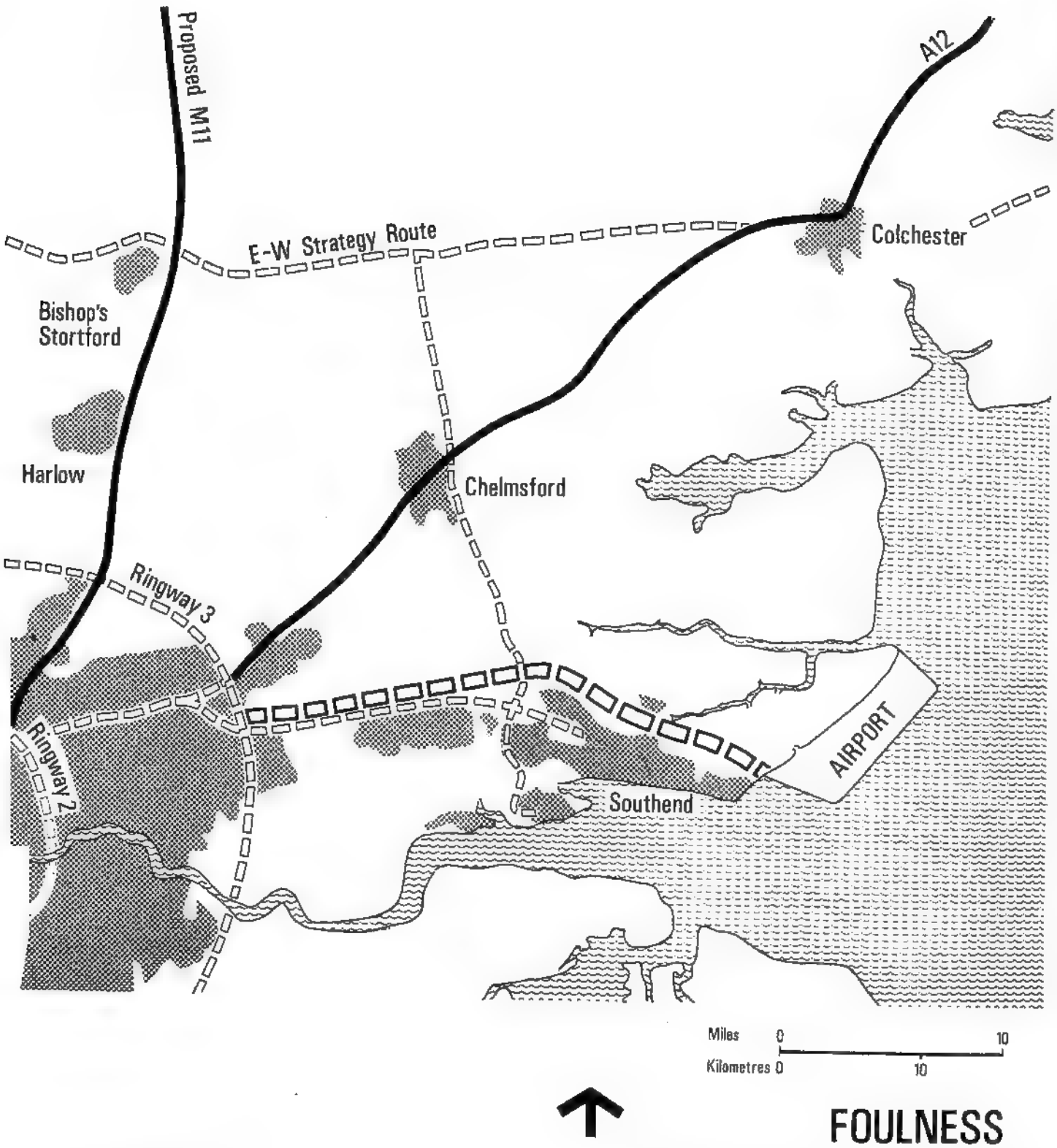


Figure 2.24

FOULNESS LINKS TO AIRPORT

116 The proposed alingment of the road and rail links passes roughly through the centre of the future total urban area which after development will stretch from the river Thames to the river Crouch. This alignment will divide the existing urbanised area of Southend from the urbanised area of the new city. To overcome the physical separation of the two urban areas and the social problems that it might create, frequent bridges will be required between Southend and the new city, crossing over the road and rail links to London. These bridges will be estimated as part of the costs of the links to London and are consequently not included in our estimates.

Printed image digitised by the University of Southampton Library Digitisation Unit

117 An additional problem concerning the links to London is that they will eventually be used very heavily throughout a 24 hour day and will create some noise and disturbance to the areas through which they pass. After a period of time it may also become necessary to improve or duplicate the facilities provided. Both of these factors indicate that it might be desirable to provide a band of open land parallel and on both sides of the links, which it will not be possible to calculate in perpetuity as part of the open space system of the city.

118 The need for a wide band of open land parallel with the links to London when taken in the context of the relatively restricted acreage of land available for new urban development between the northern edge of Southend and the river Crouch and the disruptive and costly effect of the links on the total urban area, make it desirable that both the road and rail links are located closely in parallel along one combined alignment. In our urbanisation studies we have assumed that this is an essential requirement that will be achieved and have consequently only made provision for one alignment through the new urbanised area.

Access to the airport

119 The principal road system which might be required to cater for traffic volumes at Plan 3 is shown in figure 2.25. On the basis of the Plan 3 traffic test it is estimated that the following facilities and improvements over and above 1981 requirements will be needed.

120 The airport could be linked to the urban development by two dual three lane roads. One of these links could serve the northern part of the urban development and enter the airport site at a mid-point along the north-western edge between the ends of the runways. This link could be extended westwards through the urban development to carry traffic to the new centre and then continue on to Wickford. The other link from the southern edge of the site might divide into two dual two lane carriageway roads and serve to bring traffic from the Southend area. In the illustration, one of the south links connects with a Southend ring road while the other extends back to join the A.1015 at Rayleigh.

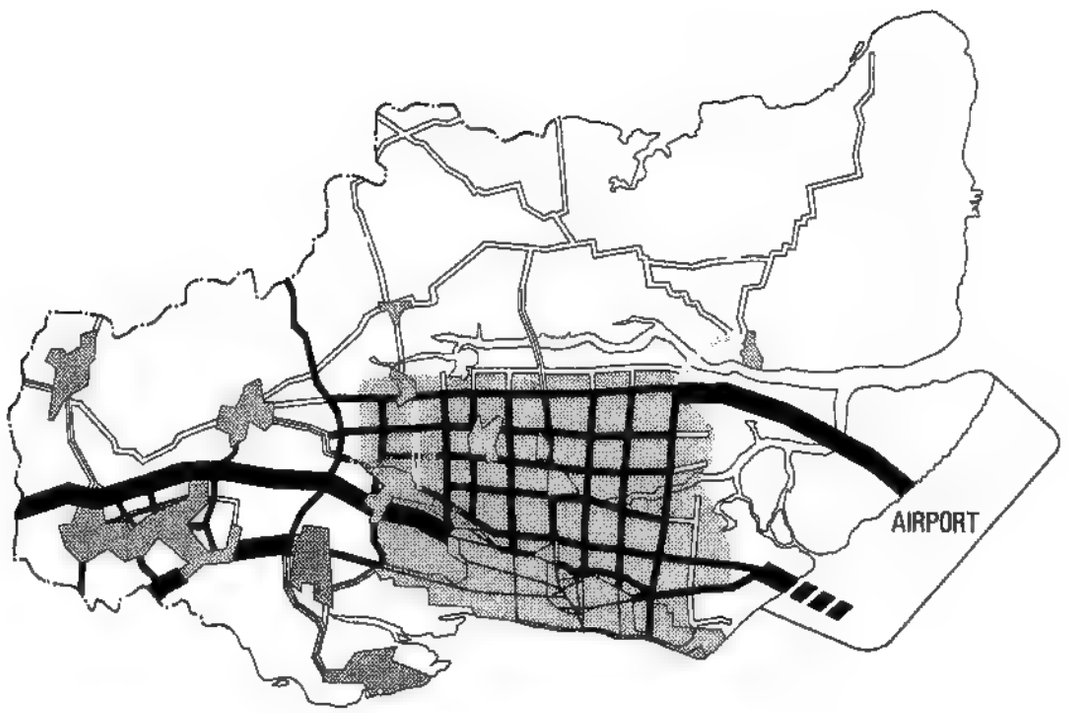
121 It should be noted that the Foulness site requires a considerably greater amount of new highway construction to serve the airport than at the three inland sites. There are three main reasons:

i urban development is at a greater distance from the airport site thus requiring a longer length of highway;

ii the linear form of urban development leads to a corridor concentration of movement which extends further into the area than at other sites. There are therefore proportionally greater shares of the costs of urban streets which are directly attributable to the airport.

iii There are no existing roads in this area which could be used by airport traffic.

Printed image digitised by the University of Southampton Library Digitisation Unit



Dual three lane carriageway

Dual two lane carriageway

Three lane single carriageway

Two lane single carriageway

Boundary of Internal Zone Area

Miles 0 10

Kilometres 0 10

FOULNESS

Figure 2.25

PLAN 3 – HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

Roads within airport city

122 Within the urban development peak hour traffic needs could be served by a grid of dual carriageways running in a general north-south and east-west direction with a spacing of 1-1.6 km ($\frac{2}{3}$ to 1 mile). The airport associated urbanisation could be linked through this network with existing streets in Southend.

123 The general alignment to the east-west strands are designed to best accommodate the proposed motorway link to London. It is not intended to have connections into airport city to meet commuting demands to the airport although it may be possible to have one connection at the western end of the new city near Rawreth to cater for journeys to London.

124 Two links are proposed to the north across the river Crouch to serve the growth of villages in this area and to provide access to Maldon and to the recreational facilities along the banks of the river Crouch and the river Blackwater.

Other roads

125 Elsewhere in the internal zone area very few road improvements to the 1981 requirements are likely to be needed. For example, traffic volumes along the three main highways which serve the area, the A.127, A.13 and A.130 are only marginally greater than those anticipated in 1981. This is because the subregion as a whole, becomes more balanced in terms of labour force and jobs with the development of the airport and growth of its associated urbanisation; this will tend to reduce commuting movement out of the area.

Railways

126 There are two existing rail lines within the built-up area comprising Southend and the new city. The southernmost of the two lines, from Fenchurch Street station through Basildon to Southend could be extended in the short term to provide a rail link to the airport, but does not in any of its length serve the areas of the new city. The northernmost of the two lines, from Liverpool Street station through Brentwood and Rayleigh to Southend, passes close by the site proposed for the main shopping centre of the new city. Whilst this line is unlikely to be used for shopping trips to the new centre, it could provide an important link from London and the region to the new city and might encourage the growth of a business centre. The single track spur rail line from Rayleigh to Burnham-on-Crouch and Southminster could help to serve the growth expected in the existing settlements north of the river Crouch.

127 For the purpose of this study it has been assumed that the proposed rail link from the airport site to London would not serve any part of the new city, but if this later proved to be possible a new station could be provided south of Rochford in the centre of the new city, with interchange facilities onto the Liverpool Street line.

Printed image digitised by the University of Southampton Library Digitisation Unit

Engineering services

Gas

128 The area of the airport city is well served by an existing distribution system from the national grid. No additional storage capacity is required.

Water

129 A new pumped storage reservoir will be required to serve the new city.

Electricity

130 Two new substations and extensions to one existing substation will be required.

131 The large new switching station at Rayleigh lies just outside the area required for the new city, as does the 'grid-way' of three parallel overhead lines which are located just to the west of Rayleigh. However, one 132 KV line running eastwards from Rayleigh towards Rochford, which passes through the area of new urbanisation, will require to be placed underground.

Sewerage and sewage disposal

132 The new urbanisation would be provided with separate sewerage and drainage systems. The following paragraphs describe the broad outlines which these systems would probably take. Technical matters concerned with the disposal of sewage are described in appendix D.

133 The area proposed for development is divided into three catchments, as shown in figure 2.26. The northern and western parts of the area (vertical shading) drain to the estuary of the river Crouch which runs eastwards for a distance of some 30 km from near Battlesbridge to Foulness Point where it joins the sea. The southern and eastern parts of the area (horizontal shading) drain to the river Roach which runs eastward as a fresh water stream from near Rayleigh to Rochford and then continues as a tidal estuary, to join the estuary of the river Crouch a few miles upsteam of its seaward end. The south-eastern part of the area (diagonal shading) drains to the Thames estuary.

134 There are already sewerage systems in the towns within the area - Rochford, Hockley, Hawkwell and Hullbridge - and also in some of the villages, which drain to existing sewage treatment works. These sewerage systems would, in general, be incapable of expansion to serve the much larger developments which would take place in their vicinity and it would probable be desirable from the viewpoints of amenity and economy, to phase out the existing sewage treatment works. We have therefore assumed for the purposes of this study that the existing local and branch sewers would continue to serve the needs of the areas already developed, but that provision would have to be made in the new trunk sewers and sewage treatment works for the eventual acceptance of flows

Printed image digitised by the University of Southampton Library Digitisation Unit

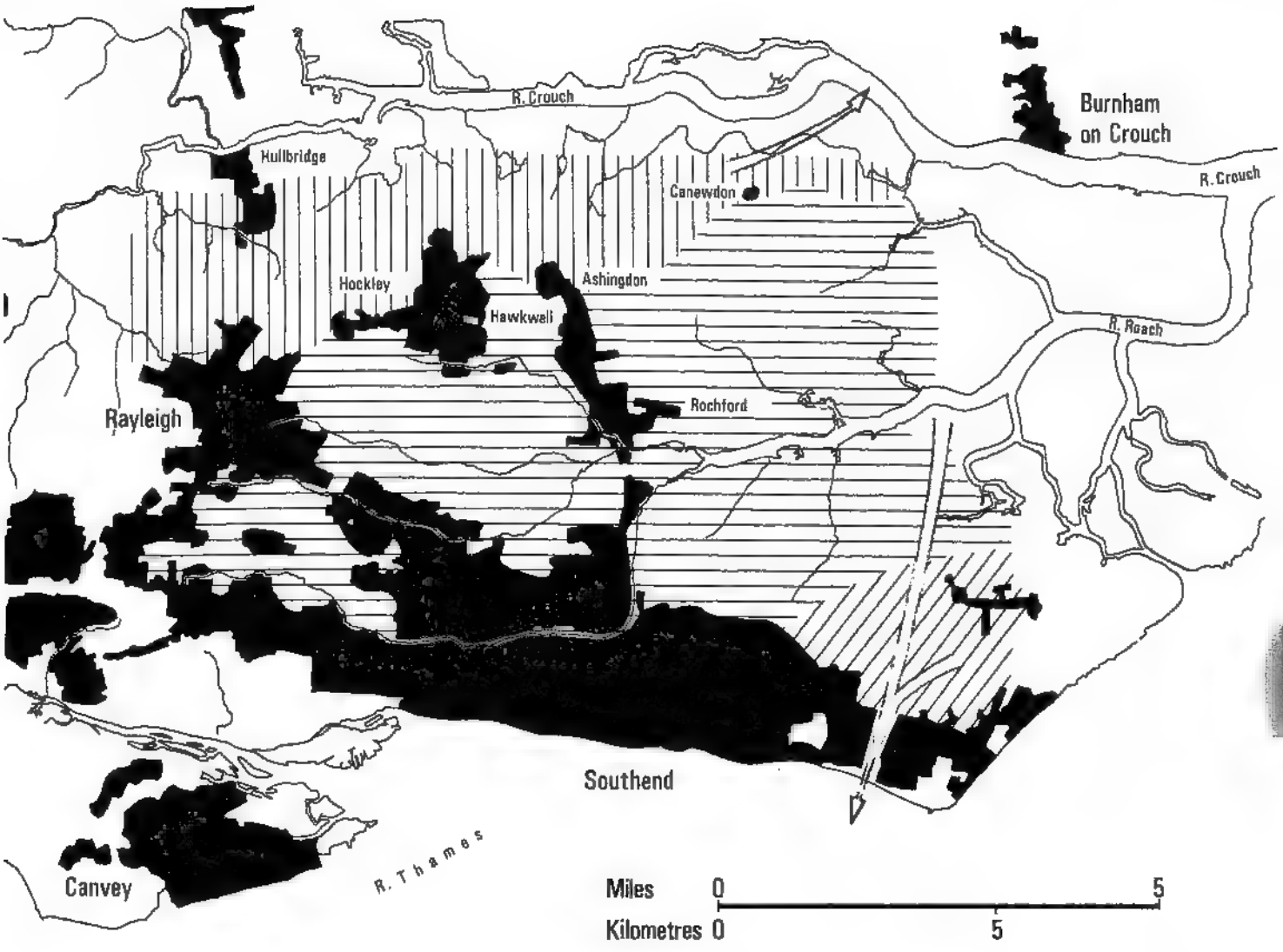


Figure 2.26 DRAINAGE AREAS & OUTFALL POINTS

originating from these areas. In Southend, which lies along the southern boundary of the area proposed for new urbanisation, sewage is at present conveyed to a partial treatment works at Prittlewell from which it is discharged into the Thames estuary and we have assumed that it would continue in operation.

135 The trunk sewer draining the northern and western parts of the urbanisation would gravitate eastwards to a new sewage treatment works near Canewdon. The trunk sewers catering for the southern and eastern parts of the urbanisation would gravitate to a new sewage treatment works east of Rochford. The greater part of the catchments could be served by gravity sewers, but the flow from some of the low-lying areas adjacent to the estuaries would have to be raised into the main sewerage system by pumping. The estuary of the river Roach is relatively shallow at its upstream end and it is doubtful whether it could satisfactorily be used for the discharge of substantial volumes of sewage effluent. All the flow would therefore be discharged to the estuaries of the river Crouch and the river Thames.

Printed image digitised by the University of Southampton Library Digitisation Unit

Drainage and surface water disposal

136 The area proposed for new urbanisation is drained by the small watercourses shown in outline on figure 2.26, which discharge to the main estuaries through tidal gates. Difficulties are experienced after heavy rainfall in parts of the area which have recently been developed and flooding has occurred at Hullbridge, Ashingdon and in the Rochford area. The Essex River Authority have schemes in hand for watercourse improvements in these localities. Some of the land adjacent to the estuaries is below high tide level and much of this was flooded at the time of the 1953 tidal surge. Since that date the Essex River Authority have, however, carried out extensive improvements to the sea wall and most of the walls in this area have been raised to a height of two or three feet above the 1953 surge level.

137 Storm water run-off from roofs, roads and other paved surfaces in the new urbanisation would be conveyed by a new surface water drainage system into the local watercourses. The effect of constructing impermable surfaces over a substantial proportion of this largely agricultural area would be to further increase the rate of surface water run-off, particularly during intense thunder-storms. If the flow from the new surface water drainage system was permitted to discharge into the existing watercourses without any measures being taken to cater for these much higher peak flows there would therefore be a marked increase in the frequency and the extent of flooding. This would clearly be unacceptable and further measures would have to be taken to provide balancing capacity and to improve the watercourses.

138 Balancing capacity would consist of flood meadows or retention reservoirs in which peak flows would be temporarily stored, the water being released to the watercourse at a reduced rate over a period after the storm. The structure plan permits the use of the river and stream valleys for this prupose as necessary. The carrying capacity of some of the watercourses would also have to be increased, depending on the volume of balancing which could be provided economically.

139 The foregoing paragraphs have dealt only with the large concentration of urbanisation proposed north of Southend and they do not refer to the smaller scattered developments north of the river Crouch or to the expansion to Basildon, Wickford and Billericay. These developments would not give rise to any serious sewerage or drainage problems and we have generally allowed in our estimates for them being catered for individually or as extensions to the major towns.

Sequence of growth

140 The first two phases of development in the new city are located within the catchment area of the river Roach to either side of the north south axis of existing settlements comprising Rochford and Ashingdon. (figure 2.28, table 2.7). The development will entail the building of a new sewage treatment works just to the east of Rochford, placing underground an existing overhead transmission line and the construction of the first district shopping centre, later to become the main city

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.7: Foulness internal zone area - sequence of population growth to 2000

Order of increment	Airport city	Basildon New Town	North of river Crouch[2]	Remainder of internal zone area[3]	Total increment
1	26,000	2,500	-	2,500	31,000
2	25,000	2,500	-	2,500	30,000
3	22,500	3,000	-	3,000	28,500
4	20,000	3,000	-	3,000	26,000
5	19,000	3,000	4,000	3,000	29,000
6	18,500	3,000	5,000	3,000	29,500
Total 1-6 (Plan 2 minus Plan 1)	131,000	17,000	9,000	17,000	174,000
7	26,500	3,000	1,000	3,000	33,500
8	25,500	3,000	-	3,000	31,500
9	23,000	3,000	3,000	3,000	32,000
10	23,000	3,000	3,000	3,000	32,000
Total 7-10 (Plan 3 minus Plan 2)	98,000	12,000	7,000	12,000	129,000
Total 1-10 (Plan 3 minus Plan 1)	229,000 (75%)	29,000 (10%)	16,000 (5%)	29,000 (10%)	303,000 (100%)

1 Southend CB, Rayleigh UD, Benfleet UD, Rochford RD

2 Burnham UD, part of Maldon RD

3 Basildon UD (excluding new town), Canvey Island UD, part of Chelmsford RD

Printed image digitised by the University of Southampton Library Digitisation Unit

centre. The first of the two road links will be required between the new city and the airport. Simultaneously with every phase of the development of the new city, an increment of population growth would also be added to Basildon New Town and to other towns in the remainder of the internal zone area.

141 The next two phases of growth in the new city will be development south of the river Roach in the vicinity of Little Wakering, including the start of construction of the district centre nearest the airport, and an area of urban infilling development between Southend, Rochford and Hockley.

142 Growth in the following two phases will entail further new development to the east of Rochford on both banks of the river Roach, the completion of the district centre at Little Wakering, and an area of urban infilling development between Southend and Rayleigh. By this stage, the second of the two road links from airport city to the airport across Wallasea and Foulness Island would be required. The first of the two bridges crossing the river Crouch would be built to the west of Burnham-on-Crouch giving access to the towns, villages and recreational areas north of the river. Simultaneously with this development some growth of Burnham-on Crouch and the existing villages north of the river would be programmed. This stage of growth constitutes Plan 2.

143 Following the establishment of the southern half of the new city in Plan 2 as far north as the watershed between the rivers Roach and Crouch, growth would initially continue over this watershed in the vicinity of Canewdon to reach the floodplains along the banks of the river Crouch. At this stage the second sewage treatment works would be required located on the river Crouch, and further development of the new city centre at Ashingdon.

144 Simultaneously with the completion of the eastern end of the new city around the village of Hesham, development would continue westwards along the valley of the river Crouch. A new bridge across the river would be required north of the city centre. With the completion of the western end of the new city around Hullbridge, the last of the three new centres would be built.

Further growth

145 If additional areas of land are required to provide further urbanisation to meet the coninued growth of population beyond the figures forecast in this report, either after the year 2000, or because of regional growth policies or the development of a deep water port at Foulness, this land could be provided in one of several ways. The new city could conceivably develop further to the east, at considerable cost, across the marshy islands around the river Roach, or more likely, develop further to the west, between Rayleigh, Wickford and Basildon, in the area of 'wirescape' around the switching station. However, neither of these solutions would provide an attractive, economic or convenient area for expansion.

Printed image digitised by the University of Southampton Library Digitisation Unit

146 The only realistic solution at that time would be to initiate major new development in the areas to the north of the river Crouch and to make the expansion a physical extension of the city on the south bank of the river. With this eventuality as a possible long term fact, at least after the turn of the century, it would be prudent to organise the new city in such a way that the emphasis of the plan is always placed on the river Crouch. This could be achieved by locating many of the principal facilities of the town along the river valley and by developing the valley as a major recreational centre and the river as a tide-free water area. In this way, whether the city remained entirely on the south side of the river or expanded onto the north bank, the river would not be a physical and tidal barrier of doubtful value but would instead become a focus for many urban activities and would help to unite the north bank with the south, if the city should eventually need to expand.

Barrages

147 In any event, if the Foulness site is selected as the third London airport consideration should be given to the desirability of closing the mouths of either or both the rivers Crouch and Roach.

148 The tides of the east coast give rise to a strong ebb and flow, the tidal range at spring tides, which occur once every two weeks, being 4.6m (15½ ft) at Foulness point. Water suitable for sailing and other sports is thus limited to about 4 hours around high tide near the mouth of the river Crouch and 2 to 3 hours near Hullbridge.

149 If a barrage was constructed at the mouth of the river Crouch, the area of water thus freed for amenity and pleasure uses would be very valuable and would provide the basis for an maginative city design of considerable character and individuality. The full implications of this suggestion including its effect upon the coastal regime, and the disposal of sewage effluent will require an extensive study, but the cost of constructing the barrage with its associated sluices and locks may be of the order of £4 million. Since it is not absolutely necessary, this item has not been included in the cost estimates.

150 Even if a barrage across the river Crouch is not feasible, it may well be possible to construct one across the river Roach and thereby create a major recreational waterway system in the heart of the new city along existing rivers and creeks.

151 The volume of the river Roach waterways would enable them to be used as a balancing reservoir to receive and store both normal river discharge and storm water run-off between ebb tides. A barrage would require multiple sluices which would be operated each tide cycle and locks to enable small pleasure craft to move in and out. The cost of this barrage and associated works would be about £1 million. If the barrage is constructed the tidal walls and embankments of the river Roach and its tributaries would be redundant and could be removed thus allowing the provision of waterside parks and boulevards. As this item is not absolutely necessary, it has not been included in the cost estimates.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 8: PLAN 2

152 Plan 2 represents that part of the urbanisation proposed for Plan 3, which is required for an airport in which 45,000 people are employed when two runways may be operating to capacity (figure 2.27). It can be compared with the 'no airport' proposals for the area contained in Plan 1 for 1981, to which it would be added.

153 The noise corridor for a 2 runway airport is substantially the same as that for a 4 runway airport where the NNI contours occur near to the areas of new urbanisation. As with Plan 3, no new urban development has been located within the noise corridor.

Population

154 The population for Plan 2 at all of the four airport sites remains constant in the interests of comparability, at the figure of 174,000 within the internal zone area, allowing for population residing outside the zone boundary and commuting into the area.

Area of development

155 The area of new urbanisation comprising Plan 3, has been divided into ten consecutive phases of roughly equal size corresponding to the likely pattern of growth envisaged (table 2.7). Plan 2 represents the completion of the first six phases (figure 2.28). The prime purpose for this programme of growth is to provide for the estimation of capital costs, user costs and benefits and the main thresholds of expenditure over the time period of the plan.

Roads

156 The principal road system to cater for traffic volumes at plan 2 is shown in figure 2.29. At this intermediate stage of urban development it is expected that both roads serving the airport would be required although the northern facility in this case is needed only as a dual two lane carriageway. Of the two connections across the river Crouch, the one to Burnham-on-Crouch is proposed for Plan 2. This would serve the expanding villages in the area and provide access to the recreational facilities from airport city.

Printed image digitised by the University of Southampton Library Digitisation Unit

Miles 0 5
Kilometres 0 5

Existing urban areas

Proposed development to 1981

Main woodland and parks

Proposed road network at 1981

Residential areas including other local uses

Major open space including other extensive uses

Major industrial areas

Town centre

District centre

Noise corridor

Possible line for MOT Strategy Route

Plan 2 road network

Possible road link to London

FOULNESS
PLAN 2 – AIRPORT CITY

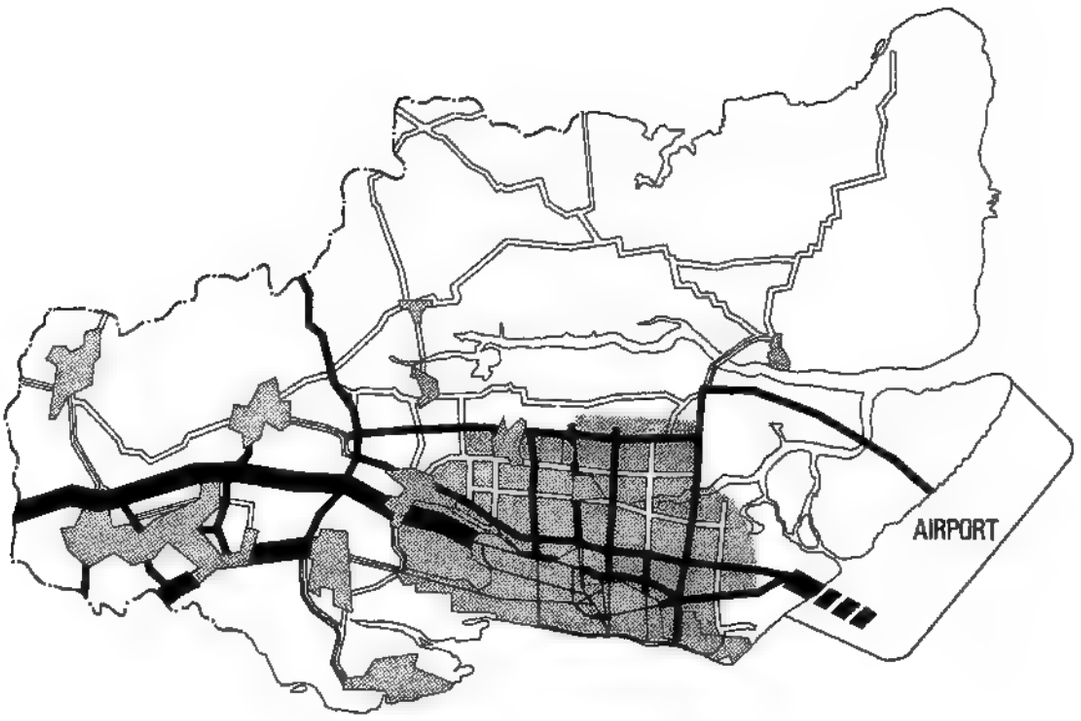
Figure 2.27

Printed image digitised by the University of Southampton Library Digitisation Unit

FOULNESS

Figure 2.28 AIRPORT CITY – SEQUENCE OF GROWTH

Printed image digitised by the University of Southampton Library Digitisation Unit



Dual three lane carriageway

Dual two lane carriageway

Three lane single carriageway

Two lane single carriageway

Boundary of Internal Zone Area

Miles 0 10

Kilometres 0 10

FOULNESS

Figure 2.29 PLAN 2 – HIGHWAY REQUIREMENTS

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 9: COSTS AND BENEFITS

157 A detailed explanation of the costing procedure and basis of estimates is set out in part I, chapter 8.

Capital cost of construction

158 The capital costs of construction are set out in the following tables:

Table 2.8 Plan 2 minus Plan 1

Table 2.9 Plan 3 minus Plan 2

Table 2.10 Plan 3 minus Plan 1 (total of the above two plans)

The commentary which follows is intended to give an indication of the main reasons influencing the cost of each component listed in the tables to assist comparisons being made with other sites. Those components which are more complex e.g. roads, sewerage and drainage, are compared in part VI and described in greater detail in chapter 7 of this part.

Residential, education etc.

159 The estimate of £1,620 per head is a constant figure applied to the costing of all four airport sites. The components which make up this figure are described in part I, chapter 8.

Abnormal site conditions

160 The estimates include an allowance for building on extensive areas of land within the airport city where foundation costs are likely to be 5% to 20% above normal. It has been assumed that any significant amount of building can be avoided on the comparatively few areas of land where foundation costs are expected to be 50% to 100% above normal. An additional allowance has been made for landscaping bleak and unattractive areas in order to provide an acceptable living environment. This is equivalent to about £2 per head of the total population.

Airport related industry

161 The estimate of £77 per head of airport related industry is a constant figure applied to the costing of all four airport sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

Shops, parking and site development

162 Due to the proximity of the airport city to Southend and Rayleigh, some of the new shopping development generated by the new city will be constructed in these existing centres, but for the reasons given in the section on benefits in part VI, these areas of new shopping have not been costed. Consequently the estimates included in the tables of capital constructions costs represent only about 60 per cent of the total new shopping floorspace required.

Roads within urban areas

163 The estimate includes for the construction of bridges across the rivers Crouch and Roach and an allowance for poor ground conditions in certain parts of the area. The estimate also reflects the linear form of the city around Southend.

Road links to the airport

164 The siting of the new city necessitates long links to the airport and this together with the additional cost of building on poor soil conditions is included in the estimate. Two separate links are included in the early phases and these both occur in Plan 2 (table 2.8).

Roads outside urban areas

165 The estimates reflect the greater use which can be made of existing roads that are at present only taking one way peak hour flows by the changes in trip orientation caused by the airport.

Sewerage and drainage

166 The estimate includes for abnormal costs due to development on extensive areas of flat land. The relaxed standard of sewage effluent required is balanced in cost by the necessity of piping effluent to the river Thames.

Water

167 The estimate is based on the need for a pumped storage reservoir. Most of the total cost of source works and trunk mains will be incurred in the early phases and this is reflected in the costs for Plan 2 (table 2.8).

Gas

168 The area is well served by an existing distribution system from the

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.8 : Capital cost of construction for Plan 2 minus Plan 1

Component	'a' Cost attributable to airport population (174,000)	'b' Cost per head $\frac{a}{174,000}$
	£ million	£
Residential, education etc.	281.880	1620
Abnormal site conditions	0.835	5
Airport related industry	13.385	77
Shops, parking, site development	6.885	40
Roads		
Within urban structure	17.644	101
Links to airport	11.071	64
Engineering services		
Sewerage and drainage	15.009	86
Water	17.155	99
Gas	2.942	17
Electricity	7.782	45
Altering overhead grid lines	0.820	5
Telecommunication services	14.718	85
Total	390.126*	2242*

* The above estimate excludes the cost of roads outside urban areas totalling £2.900 millions which the Commission will apportion to the airport and other populations.

Cost per head figures may not add due to rounding off.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.9 : Capital cost of construction for Plan 3 minus Plan 2

Component	a Estimate	b Population associated with column 'a'	c Proportion attributable to airport population 'a' x $\frac{86,000}{\text{'b'}}$	d Cost per head $\frac{\text{'c'}}{86,000}$
	£ million		£ million	£
Residential, education etc.	208.980	129,000	139.320	1,620
Abnormal site conditions	0.590	129,000	0.393	5
Airport related industry	6.615	86,000	6.615	77
Shops, parking and site development	4.925	129,000	3.283	38
Roads				
Within the urban structure	13.556	129,000	9.037	105
Links to the airport	4.215	86,000	4.215	49
Engineering services				
Sewerage and drainage	9.469	129,000	6.312	73
Water	5.824	129,000	3.883	45
Gas	2.184	129,000	1.460	17
Electricity	5.765	129,000	3.842	45
Altering overhead grid lines	Nil	129,000	Nil	Nil
Telecommunication services	16.022	129,000	10.680	124
Total			189.040*	2,198*

* The above estimate excludes the cost of roads outside urban areas totalling £2.662 millions which the Commission will apportion to the airport and other populations.

Cost per head figures may not add due to rounding off.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.10 : Capital cost of construction for Plan 3 minus Plan 1

Component	'a' Cost attributable to airport population (260, 000)**	'b' Cost per head $\frac{\text{'a'}}{260,000}$
	£ million	£
Residential, education etc.	421.200	1,620
Abnormal site conditions	1.228	5
Airport related industry	20.000	77
Shops, parking, site development	10.168	39
Roads		
Within urban structure	26.681	103
Links to airport	15.286	59
Engineering services		
Sewerage and drainage	21.321	82
Water	21.038	81
Gas	4.402	17
Electricity	11.624	45
Altering overhead grid lines	0.820	3
Telecommunication services	25.398	98
Total	579.166*	2,228*

* This table is the total of tables 2.8 and 2.9 . The above estimate excludes the cost of roads outside urban areas totalling £5.562 millions which the Commission will apportion to airport and other populations.

** Derived by adding column 'c' table 2.9 to column 'a' table 2.8.

Cost per head figures may not add due to rounding off.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.11: Incremental capital construction costs

	Population				Capital cost attributable to airport related population			Capital cost of roads outside urban areas	
	Total population costed		Airport related population						
	a	b	c	d	e	f	g	h	j
	Population increment	Aggregate	Population increment	Aggregate	Incremental cost in £ million	Aggregated cost in £ million	Cost per head in £ $\frac{f}{d}$	Related population	Cost in £ million
Initial phase	–	–	–	–	16.613	16.613	–		0.650
Increment 1	31,000	31,000	31,000	31,000	64.425	81.038	2614	31,000	1.211
2	30,000	61,000	30,000	61,000	63,441	144.479	2369	30,000	0.340
3	28,500	89,500	28,500	89,500	58.711	203.190	2270	28,500	1.059
4	26,000	115,500	26,000	115,500	61.747	264.937	2294	26,000	0.225
5	29,000	144,500	29,000	144,500	63.901	320.838	2276	29,000	Nil
6	29,500	174,000	29,500	174,000	61.288	390.126	2242	29,500	Nil
Total Plan 2 minus Plan 1	174,000	–	174,000	–	390.126	–	–	174,000	2.900
7	33,500	33,500	22,334	22,334	49.366	49.366	2210	*	0.925
8	31,500	65,000	21,000	43,334	45.528	94.894	2190	*	1.357
9	32,000	97,000	21,333	64,667	48,787	143.681	2222	*	0.380
10	32,000	129,000	21,333	86,000	45,359	189.040	2198	*	Nil
Total Plan 3 minus Plan 2	129,000	–	86,000	–	189,040	–	–		2.662
Total Plan 3 minus Plan 1	303,000	–	260,000	–	579.165	–	–		5.562

* To be apportioned by the Commission

national grid. No additional storage capacity is required.

Electricity

169 No exceptional costs are expected. Two new substations and extensions to one existing substation will be required.

Altering overhead grid lines

170 No 275 KV or 400 KV lines are affected. Undergrounding of the 132 KV line between Rayleigh and Fleethall is included in the costs for Plan 2 (table 2.8).

Telecommunication services

171 The difference in costs between Plan 2 (table 2.8) and Plan 3 minus Plan 2 (table 2.9) reflects the continuous increase in telecommunication services expected over the years up to the end of the century.

Sea and river defences

172 Additional sea defences, river defences and river barrages are not required for the urbanisation.

Incremental capital costs

173 An explanation and comparison of the incremental capital costs of urbanisation at each of the airport sites is given in part VI.

174 Table 2.11 shows the incremental capital construction cost for urbanisation at Foulness in ten phases. The proposals for the new city incur a fairly low expenditure by comparison with the other sites, during the initial phase of development, before any significant population intake can occur.

175 The increase in the cost per head between increments 3 and 4 is mainly due to expenditure on road links to the airport and the provision of a water storage reservoir and trunk water mains. The increase between increments 8 and 9 is mainly due to expenditure on road links to the airport and roads within urban areas.

User costs

176 The estimated annual user costs of travel to the airport in £ million at 1968 values are shown in table 2.12.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.12 : Annual user costs of travel to the airport in £ million

Component	Plan 2	Plan 3
Journey to work costs*	2.5	3.6
Commercial vehicles travel costs	2.2	3.4
Service journey costs	2.7	4.3
Total user costs	7.4	11.3

* Calculated as minimum travel costs

Agricultural loss

177 Table 2.13 shows the area of agricultural land required for new urban development graded in accordance with the Ministry of Agriculture's system of land classification. Nearly half the land required for urbanisation is of grade 1 quality and of grade 2 quality, but it has been impossible to avoid using this area for new development because of the extreme shortage of stable, well drained building land near to the airport site.

Table 2.13 : Area of agricultural land required for urbanisation graded by the Ministry of Agriculture's system of land classification.

		Plan 2 minus Plan 1		Plan 3 minus Plan 2		Plan 3 minus Plan 1	
		ha	acres	ha	acres	ha	acres
Grade	1	1,810	4,470	146	360	1,956	4,830
	2	1,231	3,040	551	1,360	1,782	4,400
	3	822	2,030	2,430	6,000	3,252	8,030
	4	247	610	113	280	360	890
Total		4,110	10,150	3,240	8,000	7,350	18,150

Note: The information in the above table has been supplied by Professor Wibberley

178 Table 2.14 shows the annual financial implications of this agricultural loss in £, the significant figures being the net agricultural loss expressed by the term 'value added', which at Foulness represents the highest financial loss to agriculture of any of the four airport cities.

179 The land required for new urban development is the best horticultural and agricultural land in the subregion. The eastern part of the proposed new urban area is composed almost entirely of Grade 1 and 2 horticultural and arable land comprising well structured farms with good soils and large fields producing high value, market-garden crops.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.14 : Annual financial agricultural loss

	Plan 2 minus Plan 1	Plan 3 minus Plan 2	Plan 3 minus Plan 1
Area in hectares	4,110	3,240	7,350
Area in acres	10,150	8,000	18,150
Gross output in £	2,230,260	610,800	2,861,060
£ per hectare	543	188	388
£ per acre	220	76	157
Net product in £	1,213,230	318,480	1,531,710
£ per hectare	296	99	207
£ per acre	120	40	84
Value added in £*	376,192	91,765	467,957
£ per hectare	91.6	28.4	63.7
£ per acre	37.1	11.5	25.8
Gross rent in £	87,190	56,320	143,510
£ per hectare	21.2	17.3	19.5
£ per acre	8.6	7.0	7.9

* The annual growth rate of 'value added' at current prices is likely to be 8 per cent in the area of Plan 2, 4 per cent in the area of Plan 3 and 6 per cent overall.

Note: The information in the above table has been supplied by Professor Wibberley.

180 West of Rochford and from Canewdon through Ashingdon to Hullbridge the land is of much poorer quality and agriculture has been eroded by sporadic urban development and fringe recreation activities. The topography here is of a more difficult nature for good and efficient agricultural practice and is mostly dairying with some horticultural production.

181 The small pockets of development to the north and the south of the river Crouch will not interfere unduly with agriculture provided they are planned to take maximum advantage of opportunities for infilling and the creation of compact villages and towns.

Land costs

182 Table 2.15 shows the estimated cost of all land required for new urban development in £ million, based on current use.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.15 : Cost of all land required for urban development in £ million.

Increment	1	1.330
	2	1.310
	3	1.320
	4	0.950
	5	1.100
	6	1.350
Total Plan 2 minus Plan 1		7.360
Increment	7	1.220
	8	1.260
	9	1.170
	10	1.170
Total Plan 3 minus Plan 2		4.820
Total Plan 3 minus Plan 1		12.180

183 Table 2.16 shows the total area of land required for new urban development, the area covered by the estimates of agricultural losses and the difference between them, or residue of non-agricultural land required for urbanisation that has been costed on the current use basis.

Table 2.16 : Area of land required for urban development.

	Plan 2 minus Plan 1		Plan 3 minus Plan 2		Plan 3 minus Plan 1	
	ha	acres	ha	acres	ha	acres
Total area	5,870	14,501	4,352	10,750	10,222	25,251
Area of agricultural land	4,110	10,150	3,240	8,000	7,350	18,150
Area of residue of land	1,760	4,351	1,112	2,750	2,872	7,101

Printed image digitised by the University of Southampton Library Digitisation Unit

184 The estimated cost of the residue of non agricultural land required for the new urban development in £ million to the nearest £5,000 is as follows:

Plan 2 minus Plan 1: 2.175

Plan 3 minus Plan 2: 1.375

Plan 3 minus Plan 1: 3.550

Landscape loss

185 Table 2.17 shows the areas of land required for new urban development graded by landscape quality. The quality of landscape that would be lost to urbanisation is mainly of average grade.

Table 2.17 : Areas of land required for development graded by landscape quality.

	Plan 2 minus Plan 1		Plan 3 minus Plan 2		Plan 3 minus Plan 1	
	ha	acres	ha	acres	ha	acres
Exceptional quality	Nil	Nil	Nil	Nil	Nil	Nil
High quality	Nil	Nil	Nil	Nil	Nil	Nil
Average quality (including areas of panoramic value shown in brackets)	3,400	8,400	2,500	6,200	5,900	14,600
	(Nil)	(Nil)	(800)	(1,980)	(800)	(1,980)
Inferior quality	1,000	2,450	700	1,750	1,700	4,200
Total area	4,400	10,850	3,200	7,950	7,600	18,000

186 The new city is located to the south of the river Crouch where the landscape is generally less attractive than in the areas to the north of the river. The area required for the new city is fairly flat in the eastern part and along the banks of the rivers Crouch and Roach, but in the western part there is a crescent shaped ridge of hills extending between Rayleigh and Hockley.

187 The area needed for the new city incorporates about one third of the land classified as of panoramic value along the south side of the river Crouch and most of the landscape classified as inferior to the west of Rochford. There are also small areas of village development located in zones of panoramic importance to the north of the river Crouch around South Hanningfield and Ramsden Heath but by careful siting of buildings development could be prevented from obtruding into the views from the reservoir.

Printed image digitised by the University of Southampton Library Digitisation Unit

188 Any loss of landscape quality that might arise from the city extending into part of the panoramic zone along the south bank of the river Crouch would be avoided during the building of the city by:

i Retaining an open area about $\frac{1}{2}$ to 1 km ($\frac{1}{4}$ to $\frac{1}{2}$ mile) wide along the banks of the river with generous tree planting along its southern edge.

ii Ensuring that new buildings on the flat low lying land near the river are not more than 10 metres (30 feet) high.

iii Giving particular care to the landscaping of development on the slopes and skyline of the ridge above the river floodplain. West of Ashingdon the woods should be preserved and undeveloped land reserved for local open spaces and on the fine hillslopes below Canewdon should be located a facility that could exploit the dramatic situation and enhance the scene, e.g. hospital, technical college, or sports and recreation centre.

189 Providing the above safeguards were adequately applied and high standards of design were maintained, new development in the area of panoramic landscape value south of the river Crouch would not incur a cost to landscape. Compared with the sites for the other three airport urbanisations, the area between Southend and the river Crouch has an advantage in terms of landscape conservation, in that it utilises a considerable area of landscape classified as inferior because of its present semi-urbanised character.

Benefits: rents for retail and service floorspace

190 Table 2.18 shows the annual rents in £ for retail and service floorspace located in new shopping centres. Rents for new floorspace needed in the existing centres at Southend and Rayleigh have not been estimated for the reasons given in the benefits section of part VI.

Benefits: rents for industrial and office floorspace

191 For each of the ten increments of the development of the airport city it is estimated that the total annual rent for industrial and office floorspace would remain constant. Annual office rents are estimated to amount to £180,000 for each increment, giving a total for all ten increments of £1,800,000. Annual industrial rents are estimated to amount to £75,000 for each increment giving a total for all ten increments of £750,000.

192 In addition, the estimated annual rent for industry in the internal zone area exclusive of the airport related industry mentioned above would amount to £17.9 million.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.18 : Annual rent in £ for retail and service floorspace in new centres

Increment	1	117,000
	2	118,000
	3	118,000
	4	112,000
	5	131,000
	6	138,000
Total: Plan 2 minus Plan 1		814,000*
Increment	7	157,000
	8	153,000
	9	161,000
	10	166,000
Total: Plan 3 minus Plan 2		667,000*
Total: Plan 3 minus Plan 1		1,603,000*

* Note: These figures are not the sum of the preceeding increments for the reasons given in the benefits section of part VI

Benefits: rents for residential development

193 Table 2.19 shows the annual rents in £ million for new residential development based on an assumption of £500 per annum per house at an occupancy rate of 3.11 persons per house.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 2.19 : Annual rents in £ million for new residential development.

		Population	Rent in £ million
Increment	1	31,000	4.984
	2	30,000	4.823
	3	28,500	4.582
	4	26,000	4.180
	5	29,000	4.662
	6	29,500	4.743
Total: Plan 2 minus Plan 1		174,000	27.974
Increment	7	33,500	5.386
	8	31,500	5.064
	9	32,000	5.145
	10	32,000	5.145
Total: Plan 3 minus Plan 2		129,000	20.740
Total: Plan 3 minus Plan 1		303,000	48.713

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

PART III: NUTHAMPSTEAD

**Llewelyn-Davies, Weeks,
Forestier-Walker and Bor.**

Printed image digitised by the University of Southampton Library Digitisation Unit

I PURPOSE AND METHOD

1	Introduction	page	3
	Organisation		3
	Consultations		3
	Building rate		4
	Regional background		
2	The planning process		5
	Stages of work		5
	Definition of areas		5
	Plans 1, 2 and 3		7
3	Airport factors		9
	Employment		9
	Noise barrier		9
	Safety		9
4	Population and employment		11
	The problem		11
	The export surplus model		11
	Plan 1: 1981		11
	Plan 3: 2000		12
	Plan 2		12
	Overlap		13
5	Principles for urban strategies		15
	Density		15
	Travel time		15
	Other standards		16
	Relationship to surrounding area		16
6	Generation and comparison of alternative strategies		17
7	Development of preferred strategy		21
	Land use budget		21
	Urban envelope		21
	Plan 3 : road network		22
	Sequence of growth		22
	Plan 2: road network		22
	Floor space for retail trade		23
8	Costs and benefits		25
	Construction costs		25
	Land costs		31
	User costs		32
	Agricultural losses		32
	Other costs and benefits		33
	Landscape evaluation		34

Printed image digitised by the University of Southampton Library Digitisation Unit

ILLUSTRATIONS

Figure		
1.1	Definition of areas	page 6
1.2	Percentage of people giving particular reasons for wanting to move	10
1.3	Heathrow graph of home/work distance/frequency	14

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 1: INTRODUCTION

1 The purpose of this report is twofold. First, it gives an indication of the likely scale of urban growth required near each airport and where the growth might be located. It then goes on to identify the costs and benefits and to measure some of them. The report concludes that urban growth on the scale required is feasible near all four airports; the costs and benefits of urbanisation differ from site to site, and should therefore be considered, along with the costs and benefits of other components, in selecting the best airport site. The full terms of reference are printed in appendix A.

Organisation

2 The terms of reference drew attention to the need for consistency between the four airport studies. We have attempted to achieve this, within the constraints of a very tight timetable (February - October 1969), by maintaining close contact between the two consultants, by discussing methods and procedures jointly with the Commission's research team, and by employing the same eight specialist advisers. An unusually large proportion of the professional effort was thus spent in the necessary work of liaison. Discussions on methodology with the Commission's officers continued throughout the contract.

3 Some of the information for the four sites was made available over a period of three months but the studies of all four sites had to be completed by the end of October. We have tried to organise our work so that each site received equal consideration.

4 Despite these and other problems inherent in a task of this complexity, we are satisfied that the plans are sufficiently consistent for reasonable comparisons to be made.

5 We have met the Commission several times to receive comments on work in progress.

Consultations

6 Consultations have been confined to technical aspects of the studies. We have consulted experts who are advising the Commission on matters other than urbanisation. These were the South East Joint Planning Team on regional and subregional implications; Messrs Howard Humphreys and Sons, consultants to the Ministry of Transport on road access to the airport; Messrs Livesey and Henderson, consultants to British Rail on rail access; and Professor Wibberley on agricultural implications.

7 River authorities, statutory undertakers and others who would provide basic services in the new urban areas have also been consulted. Many bodies

Printed image digitised by the University of Southampton Library Digitisation Unit

who would normally be consulted in a planning task of this magnitude have not been approached by us for two reasons. First, the time available for the study has precluded discussions with the many interests who might be affected. Secondly, the Commission informed us of its intention to publish the urbanisation studies before the Stage V inquiry, thus providing the opportunity for public discussion of our conclusions.

Building rate

8 By the year 2000 the airport may support 275,000 people, who would require some 100,000 homes, equivalent to a city of the size of Leicester. If construction started in 1975, an average output of 4,000 homes a year would be needed for 25 years. This represents a small proportion of the total building effort in the South East but is an unusually large number of dwellings to build in one place, especially at those sites close to new and expanding towns. Earlier new towns have averaged about a thousand dwellings a year, with 2,000 or more in a few peak years.

9 We have been unable to judge whether a sustained high building rate would entail higher costs of design, administration and building, or whether it would enable substantial economies of scale to be realised. In either case the effect on costs is unlikely to vary substantially between sites. We consider that this question should be studied by the building industry and the appropriate government departments.

10 If the provision of housing failed to match the growth of employment at the airport, there would be substantial additional costs, mainly for journeys to work. These could vary substantially between the four sites.

Regional background

11 We were asked not to consider the broad implications for South East England of urbanisation near each airport site. But we had to make forecasts of the total growth of population and employment in a fairly extensive sub-region around each site. This required some assumptions about the effect of possible regional policies.

12 Our studies also led us to consider how the quality of life in a new urban area would be influenced by its place in the region.

13 The selection of the airport site could be a major factor in shaping a regional strategy. The establishment of a new city with exceptionally good links to central London and the national road network may well strengthen one of the existing major bands of communications in the South East or create an entirely new one. This could lead to the generation of further population and employment growth. We have indicated how the new urban areas could expand to accommodate additional economic activity attracted to the vicinity of the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Stages of work

14 The studies have been carried out in five main stages -

i Setting up liaison machinery, gathering basic information, establishing common design methods and work programme. These were described to the Commission in a project report.

ii Site visits, collection of data for area around each airport, estimates of population and employment.

iii Preparation of alternative urban strategies. These were described to the Commission in four interim reports.

iv Selection of preferred strategy. Each was agreed with the Commission.

v Working up of selected strategy in the form of a plan suitable for cost benefit analysis, and finally, estimation of costs and benefits.

Definition of areas

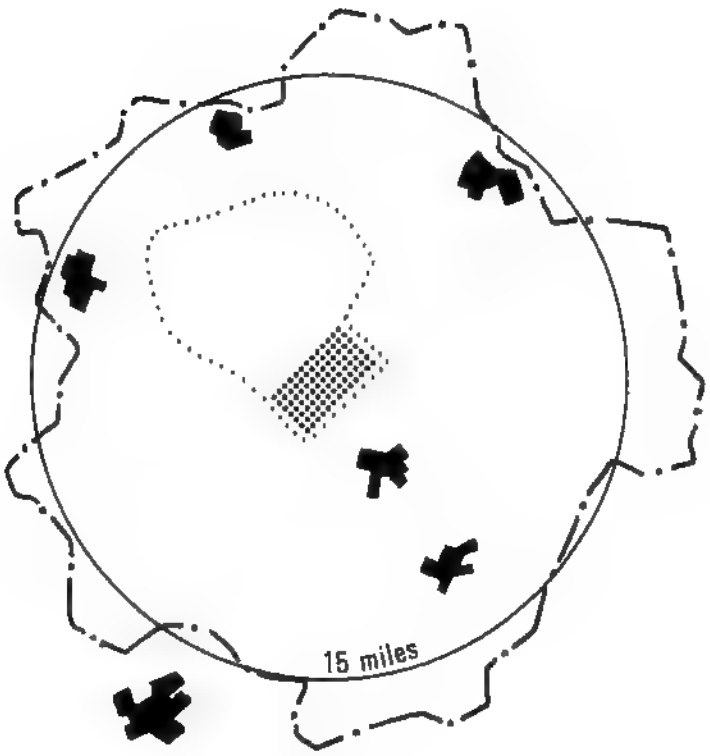
15 At an early stage in the studies we established an area of search roughly 32 km (20 miles) around each airport site but including any large towns just outside this distance. This was the area for which we made preliminary estimates of population and employment growth and a first appraisal of the impact of the airport.

16 We later reached the conclusion from studies of other airports, that 95 per cent of airport workers would seek to live within 24 km (15 miles) of the airport. We therefore defined an internal zone area (figure 1.1) for each site - so called because it takes in the internal zones of the traffic model. Final population and employment forecasts were made for these areas and they were subjected to a more detailed physical appraisal.

17 The ranking of service centres was taken from the work of R.D.P. Smith, reported in "Regional Studies", September 1968, supplemented by more detailed work on shopping catchments.

18 When the preferred urban strategy had been selected we defined an airport city area (figure 1.1) comprising the airport itself and the continuous urban area associated with it.

Printed image digitised by the University of Southampton Library Digitisation Unit



Existing Urban areas

Airport

Boundary of Internal Zone area

Airport City

Figure 1.1 DEFINITION OF AREAS

Printed image digitised by the University of Southampton Library Digitisation Unit

Plans 1, 2, and 3

19 So that the urbanisation studies could contribute to the final cost benefit analysis of the four airport sites, the plans are in the form set out by the Commission in its paper: 'Proposed Research Methodology', Papers and proceedings, Volume VII, part 1. This explained the need for three urban plans. First, a plan showing current proposals up to 1981 is needed to form an impression of what would happen in each area without the airport. It is a combination of local authority development plans, new town development corporation proposals, and road proposals. It is known as Plan 1 and is not costed.

20 Plan 2 is for an airport with 45,000 workers, the Commission's assumed level of employment when two runways are at full capacity. It consists of Plan 1, with the addition of those urban areas required for the population generated by the airport (airport workers and their dependents, and service and other associated workers and their dependents), the omission of any development in Plan 1 that would be inhibited by the airport's noise envelope, and any changes in Plan 1 (e.g. road alignments or capacities) necessitated by the addition of major urban development to the current proposals for 1981. The airport-generated development has been costed, and the net additional cost of changes to Plan 1 has been estimated.

21 For Plan 3 we estimated the population generated by an airport with 65,000 workers. We also estimated the population generated by the forecast expansion up to the year 2000 of other industries established in the internal zone area by 1981. This non-airport population was divided between new urban areas directly associated with the airport and other major expansions already contemplated in the area. We considered costing the urbanisation required for the whole of the additional population in the internal zone area at each site. However, at Cublington and Thurleigh a large part of the increase is in major expansions at some distance from the airport and likely to be largely independent of it. Any decision as to where to draw the line around each airport for costing purposes is bound to be to some extent arbitrary. We came to the conclusion that the most consistent procedure would be to cost expansion in the whole of the internal zone areas at Foulness and Nuthampstead, but only in the airport cities and associated minor expansions at Cublington and Thurleigh. This is likely to give the most realistic per capita costs for the airport-generated populations.

22 The three plans for each airport site are not conventional development plans or structure plans, but rather studies from which comparative data on costs and benefits can be extracted. They do not reflect the present policies of the local planning authorities, and at some sites conflict with them.

23 Because the plans are required primarily for cost benefit analysis they are more precise in some respects than would normally be considered prudent in looking so many years ahead. The population generated by each airport and by other economic activities in its area cannot be forecast with any precision, but firm assumptions have to be made in order to provide a common basis for comparing the advantages and disadvantages of the four sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

In looking at the plans it should be remembered that the eventual urban area might be bigger or smaller than that shown. The differences could be considerable since every increment of employment at the airport represents more than four times as much total population. Plan 3 shows the directions in which the urban areas could expand beyond the assumed boundary in the year 2000; these expansion areas have not been costed.

24 There is an important difference between Plans 2 and 3. Plan 2 is a notional plan which could correspond to reality only if airport employment reached 45,000 in 1981, but of course this may not happen. This limitation was necessary in order to prepare a precise plan for comparing the no-airport and airport situations in the absence of a forecast of the growth of employment beyond 1981 at the airport and of local authority plans. The additional population in Plan 2 over Plan 1 is the same for all four airports because no "overlap" is assumed. This is explained in the next chapter.

25 Plan 3, on the other hand, is assumed to relate to 2000, and includes provision for the estimated growth of industry and population unrelated to the airport between 1981 and the end of the century. Though these estimates may well prove wide of the mark, Plan 3 is more realistic than Plan 2 in the sense that it attempts to cater for the whole of the population assumed to be in the area at the terminal date.

Printed image digitised by the University of Southampton Library Digitisation Unit

Employment

26 On the instructions of the Commission, the figures of 65,000 airport employees at the year 2000 (Plan 3) and 45,000 at an intermediate stage (Plan 2) have been used as the basis of employment and population estimates for all four sites. Since these are notional figures, they cannot be subdivided by sex, age, occupation, or socio-economic group, nor has it been possible to allocate them to particular parts of the airport area.

27 Revised forecasts of airport traffic (from which the employment forecasts are partly derived) will be available shortly after the completion of this report, and it is understood that new employment estimates may also be available. If these are significantly different from the figures on which we have worked, the population estimates used for the four sites will require revision, and this may affect our conclusions.

Noise barrier

28 The 40 NNI (Noise and Number Index) contour was published by the Commission for the Stage II hearings. A study described in the Wilson report (Cmd 2056, 1963) showed that the proportion of people wanting to move from the vicinity of Heathrow to get away from aircraft noise began to increase rapidly when the level was below 40 NNI (figure 1.2). The Commission gave us the boundaries of an additional buffer zone based on the 35 NNI contour. Throughout the report the term "noise corridor" refers to the total area within this outer boundary.

29 We have kept all the proposed new urban areas outside the noise corridor; its shape, with a long narrow waist containing the runways, enables a considerable population to live fairly close to the sides of the airport.

30 We have assumed that any proposals for development within the 40 NNI contour published when our studies commenced will be relocated if they have not been started when a decision on the airport is reached. However, we understand that the Commission's flight path optimisation programme may alter the published noise contours affecting existing towns and their expansion.

Safety

31 Most accidents to aircraft occur immediately before landing or just after take-off. They are often due to falling short of or over-running runways. The statutory 'Public Safety Area' is 1,370 metres (4,500 feet) from the end of each runway. It is also desirable to avoid building under flight paths for 16 km

Printed image digitised by the University of Southampton Library Digitisation Unit

(10 miles) from the end of each runway. Both the Public Safety Area and the approach area fall within the noise corridor and therefore impose no additional constraints on urbanisation.

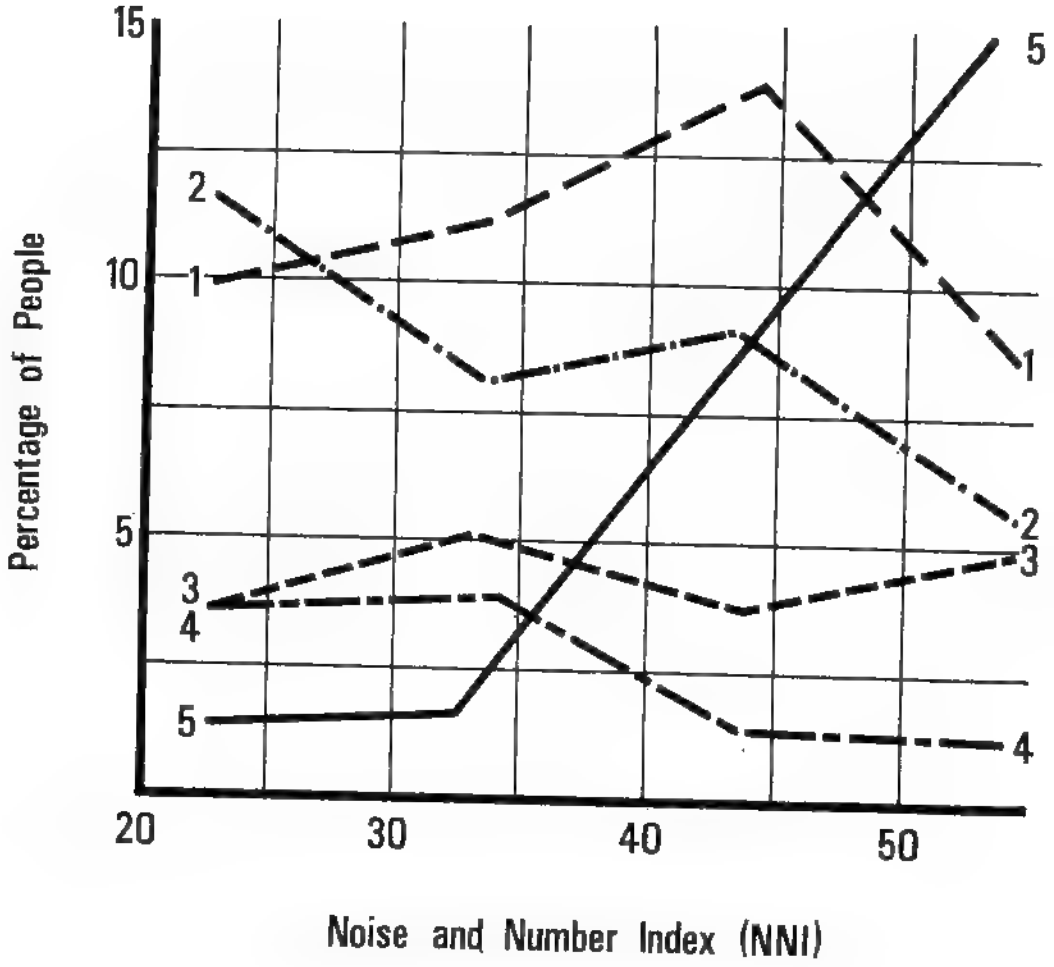


Figure 1.2 PERCENTAGE OF PEOPLE GIVING PARTICULAR REASONS FOR WANTING TO MOVE

Printed image digitised by the University of Southampton Library Digitisation Unit

The problem

32 When starting from a given population figure such as the 250,000 people to be accommodated at Milton Keynes by the 1990s, previous experience may be taken as a guide to the number of active workers and their distribution among different types of jobs. The various ratios are fairly uniform, and the principal changes can be anticipated sufficiently accurately for the appropriate provisions to be made. The problem is reversed, however, when the starting point is not a total population but a large number of people employed in a single industry. This requires what is commonly known as an 'impact' study which examines not only the growth directly attributable to the airport but also its effect on existing communities. A detailed explanation of the methods used in making the population and employment forecasts is contained in appendix B; the results are summarised here. Our forecasts do not differ significantly from those made by more conventional methods but in our view they are more soundly based.

The export surplus model

33 Population forecasts beyond 1981 have all been based on employment forecasts using an export surplus model. This assumes a fairly constant relationship between that part of employment in an area which provides goods and services for the economy as a whole (export surplus employment) and total employment in the area. This ratio is the 'export surplus multiplier'. A value of 2.22 has been derived from an examination of a number of towns in England and Wales. The multiplier has been assumed to remain constant in the future.

34 Population figures have been derived from total employment by first making assumptions about net commuting; this gives the number of economically active residents in the area. To this figure a population multiplier can then be applied. For various reasons the proportion of the total population who work (the participation rate) is likely to decrease through time.

Plan 1: 1981

35 Plan 1 has been used as a basis for forecasting Plan 2 and Plan 3 populations. The 1981 population and employment figures for each internal zone area are based on local authority projections and other broad indications. The export surplus element in employment in 1966 was identified by examination of data for local employment office areas. The same proportion was assumed to apply in 1981.

Printed image digitised by the University of Southampton Library Digitisation Unit

Plan 3: 2000

36 The figure of 65,000 workers at the airport includes some providing local services; it has been assumed on the basis of experience at Heathrow that 50,000 can be regarded as export surplus workers. To this has been added the estimated non-airport export surplus employment in each internal zone area at 2000. It is not possible to predict with confidence what effect the airport and its generated activities will have on the growth of non-airport activities. The airport might stimulate the growth of those manufacturing and office activities that benefit from easy access to an international airport, but this effect might be outweighed by competition for labour. Three alternative forecasts have been made, one assuming growth between 1981 and 2000 at 50 per cent of the 1966-1981 growth rate, one assuming 25 per cent, and one assuming no growth.

37 Total employment has been derived by applying the export surplus multiplier of 2.22 to the sum of the two export surplus elements (airport and non-airport) in each alternative forecast. The assumptions about net commuting made for each area are explained in parts II to V.

38 As it is uncertain to what degree the participation rate will decline in the future, alternative population mutlipliers of 2.2 and 2.5 have been applied to the three employment forecasts. Thus there are six alternative population forecasts for each area. A preferred forecast has been selected for each site in the light of subregional conditions.

39 However, for comparative costing purposes it was necessary to assume that each airport would generate the same airport-dependent population. By applying the employment and population multipliers to export surplus employment at the airport alone, a theoretical population of 275,000 was derived. Subtracting five per cent for those assumed to live outside the internal zone area gives an airport-generated population of 260,000 for Plan 3.

Plan 2

40 The export surplus element in the 45,000 employed at the airport has been taken as 34,600 giving a total generated employment of 77,000. The 1981 participation rate has been adopted, giving a population multiplier of 2.2 which produces an airport dependent population of 170,000.

41 As Plan 2 is an intermediate situation in the growth of the airport and its associated urban areas, a further population of 13,000 has been added to account for the large construction force likely to be living in the area. The method by which this was calculated is described in appendix B . Thus the total additional population in Plan 2 is 183,000, of whom five per cent are assumed to live outside the internal zone area, giving an airport-generated population of 174,000 for Plan 2.

Printed image digitised by the University of Southampton Library Digitisation Unit

Overlap

42 We have given considerable thought to the question of "overlap", i.e. the extent to which existing and currently planned urban areas can contribute to the housing of the airport-generated population. Such a contribution might be made in three main ways -

i Job turnover: Workers living near the airport and commuting to jobs in other areas might change to airport-generated jobs.

ii Home turnover: The homes of commuters and retired people who move away might be re-occupied by airport-generated workers. The rate of housing turnover might be increased by the airport-generated demand.

iii Restraint of other growth: Competition from the airport for labour and other resources might restrain the growth of other industries, thus enabling houses that would have been occupied by other workers to be occupied by airport-generated workers (either through home turnover or job turnover).

43 In our view, it is not possible to estimate with any confidence the extent of overlap, but its benefits are likely to be marginal to the total cost of urbanisation.

44 It is important to note that any houses built independently of the airport but occupied by airport-generated population would have to be replaced by an equal number of houses built elsewhere. For example, if a worker living at Bletchley changes from a job in Watford to a job at the airport, a house will be needed somewhere for the person who takes his old job; if a pensioner at Southend sells his home to an airport worker, he must find another home elsewhere; if the growth of industries in an area is restrained by competition from the airport, it will probably take place somewhere else. In short, it is assumed that the establishment of the airport will neither increase nor decrease the total housing requirements of the country.

45 Hence a financial benefit in respect of overlap can be credited to any of the airport sites only if the cost of a house (and its urban infrastructure) near that site is different from the national (or regional) average, and only to the extent of the difference in costs. This will be a small proportion of the total cost.

46 The amount of overlap will depend upon the competing opportunities for employment and housing during the development of the airport and on people's response to them. In the absence of a dated profile for the build-up of employment at the airport, of a distribution of airport jobs by sex, skill and rates of pay, and of similar information for competing opportunities, and with a similar lack of data for the housing situation, any estimate of overlap would be highly speculative and might be grossly misleading. We have not therefore attempted to make one.

Printed image digitised by the University of Southampton Library Digitisation Unit

47 For Plan 2, the intermediate situation with 45,000 airport workers, we have added the same population at each site to the estimated 1981 population on present plans. In other words, we have assumed that overlap up to 1981 will be nil. This provides a common base for all four sites.

48 For Plan 3, the estimates of the growth from 1981 to 2000 of industries established by 1981 (described above) allow for the presence of the airport as a factor in the local labour market. They therefore include an element of overlap between the airport and other industries. But we have not attempted to measure its magnitude because estimates of industrial growth up to the end of the century without an airport would be subject to a margin of error almost certainly greater than the extent of overlap.

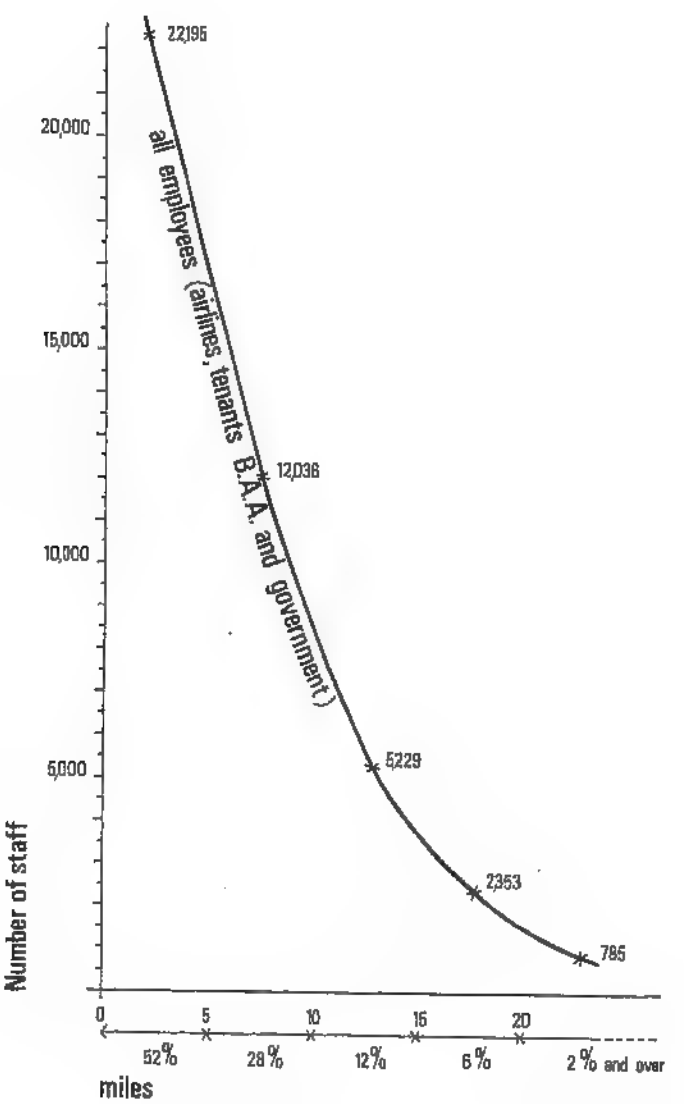


Figure 1.3 Heathrow graph of home/work distance/frequency

Printed image digitised by the University of Southampton Library Digitisation Unit

49 After estimating the population to be accommodated in new urban areas, the next step was to establish the amount of land required and the principles governing its location. The amount of land depends upon the adoption of a standard for density.

Density

50 We decided to work to an overall urban density of 30 persons to the hectare (12 to the acre). This is slightly greater than the density adopted for Milton Keynes - the most recent new town plan to be published - because so much of the employment is concentrated at the airport that the new urban areas will require relatively little industrial land.

51 The assumed overall density would permit a low average net residential density of some eight dwellings to the acre. We have not carried out any research to establish whether this is a likely or desirable level of density during the period when airport city will be built. In studies of this character it is important to establish the maximum amount of land that could be urbanised, and we can be confident that the overall density is unlikely to be lower than 30 persons to the hectare.

52 This density will allow some flexibility in working up the plans, e.g. avoiding small patches of badly drained land or preserving existing woods. It will permit a variety of environment in different parts of the urban areas to help them attract a full range of social groups.

Travel time

53 It is inevitable that the average journey time from urban areas to the airport will be longer than the average time for all work journeys in a normal new town, because of the large number of workers at one location and the distance between homes and airport imposed by the noise corridor. We have adopted the principle that the new urban areas should be as close to the airport as local conditions will permit.

54 Only two percent of the workers at Heathrow (figure 1.3) live more than 32 km (20 miles) from the airport, and only 8 per cent more than 24 km (15 miles). More than half live within 8 km (5 miles). This guided us in taking a radius of roughly 32 km (20 miles) for the preliminary area of search.

55 We later adopted the assumption that 5 per cent of the airport-generated population will live outside the internal zone area; of the homes required for the remaining 95 per cent, a varying percentage (from 5 to 20) are located within

Printed image digitised by the University of Southampton Library Digitisation Unit

the internal zone area but outside airport city, e.g. in selected village expansions; and the remainder in the city.

56 We have assumed that the homes actually occupied by airport workers can be determined by a residential distribution model which allows for the fact that some people will have longer journeys than the theoretical minimum because they exercise choice of residential environment.

Other standards

57 Standards generally in the new urban areas should be no less than those planned for new towns. They should allow for more varied leisure pursuits, increasing car ownership and use, and rising incomes.

We have assumed that the new urban areas must have -

i A normal level of engineering services.

ii A system of communications that provides for the free movement of the expected volume of travel by public and private transport - within the urban areas, between the urban areas and the airport, and between the urban areas and the regional and national networks. The system must allow for an acceptable standard of environment within the urban areas, and must not impede the free flow of passengers and freight to and from the airport. We have assumed that funds will be available to build such a system.

iii Reasonable accessibility to a major subregional shopping and service centre (third order), either a new one in the urban area or an existing one nearby.

iv Freedom from such nuisances as noxious fumes, unpleasant smell, cement dust, visual intrusion, etc. arising from industry already in the area.

Relationship to surrounding area

58 It is clearly desirable that a new city associated with the airport should be located so as to minimise any unfavourable impact on the surrounding area and should if possible bring a net benefit to the subregion. This aim cannot be expressed in performance standards such as density and accessibility; we have attempted to include it in the criteria for selecting a preferred strategy described in the next chapter.

Printed image digitised by the University of Southampton Library Digitisation Unit

59 Using the common principles described above as a starting point, the two planning consultants adopted slightly different approaches to the generation of alternative strategies for urbanisation. The methods are therefore described in parts II to V.

60 The process of comparison and selection was agreed with the Commission and was basically the same for all four sites. The full list of criteria is as follows -

CAPITAL COSTS

Construction

Site development

Land liable to flood
Abnormal ground conditions, e.g. marshland at Foulness
Preparation of an acceptable urban environment, e.g. tree planting on the bare, windswept parts of south Essex.

Engineering

Sewerage and sewage disposal
Drainage and surface water disposal
Undergrounding or diverting overhead transmission lines

Transportation

Roads from urban areas to airport
Other roads

Other

Provision of major service and shopping centres

Land

Land acquisition

Agriculture

Losses in output

USER COSTS

Transportation

From urban areas to airport
Elsewhere in the area

Printed image digitised by the University of Southampton Library Digitisation Unit

UNCOSTED ADVANTAGES AND DISADVANTAGES

Effect of urbanisation on existing environment

Preservation of landscape
Effect on environment in existing urban areas

Effect of existing environment on new urban areas

Proximity to fixed installations causing dust, smoke, smell or visual intrusion, e.g. brickworks, cement works, large switching stations.
Suitability for housing, e.g. aspect of slopes, density of mature trees.
Access to existing recreational areas, e.g. water, country parks.
Potential for recreational development, resulting from inherent qualities of area.
Contribution to new urban areas by existing urban areas, e.g. spare capacity of services, choice of residential environment.

Other factors

Proximity to noise corridor; although all the alternative urban areas were entirely outside the buffer zone, those with considerable portions close to the noise corridor would be at greater risk if the NNI contours should change unfavourably as a result of future operational developments.
Potential for long-term growth, so as to provide for other economic activities that may wish to locate near the airport.
Barrier effect of airport (and its noise corridor) on social patterns; this could result in social divisions where urban areas were located on both sides of the airport.
Population pressure, e.g. competition of the airport with other expanding activities, such as the Luton motor industry.
Potential for creating second order shopping and service centre; this might be possible if there were a very large population increase in the area around the airport.

Some of the criteria were found to be inapplicable to particular sites.

61 The criteria were applied to the alternative strategies in two stages. At the first stage the strategies were roughly ranked on a five-point scale in respect of each criterion without costing. Pairs of strategies were then compared and where one dominated the other (i.e. had a higher ranking for at least one criterion and no lower rankings) the dominated strategy was rejected. The number of alternatives rejected at this first stage varied from site to site.

62 At the second stage estimates were made of some of the capital and user costs. Criteria in those categories that could not be costed at that stage were transferred "below the line". The alternative with the lowest total cost was provisionally selected. The uncosted criteria were then examined to establish whether there were any factors that might outweigh least cost. This was the final judgment leading to the selection of a preferred strategy.

Printed image digitised by the University of Southampton Library Digitisation Unit

63 The assumptions and methods used for estimating the costs of alternative strategies, and also for ranking such uncosted criteria as landscape, were broadly the same as those used in evaluating the final plans; they are described in chapter 8 of this part. At the selection stage, cost estimates were of course relatively crude.

64 In comparing the advantages and disadvantages for transportation, the following aspects of each alternative were considered -

i total travel effort (time) required for peak hour journeys to work throughout the area

ii potential for an efficient and attractive public transport system

iii effects on traffic in existing and currently planned communities

iv incidence of exceptionally high capital costs

v relationship to regional and national communications

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Land use budget

65 Plans 2 and 3 are in the form of draft structure plans. They show the urban envelope divided between groups of land uses -

i Residential areas, including local industry, open space, schools and centres; and other minor land uses.

ii Major open spaces, including hospitals, secondary schools, woodlands, and other extensive land uses.

iii Town and district shopping and service centres.

iv Major industrial areas

v Roads and railways.

The plans illustrate a primary road network within the urban area and its links with the airport and with regional and national roads.

66 The total area of the urban envelope was derived from the overall density of 30 persons to the hectare (12 persons to the acre). Its distribution between uses follows the proposals in the interim report for Milton Keynes, modified to allow for the smaller amount of industry in an airport city. The proportions are -

	Per cent of total	Area per 1,000 people	
		Hectares	Acres
Residential, etc.	59	19.8	49.5
Major open spaces, etc.	22	7.2	18.0
Service centres	2	0.8	2.0
Major industrial areas	2	0.6	1.5
Roads and railways	15	4.8	12.0
	100	33.2	83.0

67 Airport city will of course differ from normal new towns in other respects than the distribution of employment. For instance, on the one hand, some air passengers in transit may choose to stay at hotels in the town, and to use some of its shops and entertainments; on the other hand, the airport itself may meet part of the town's recreational and other service requirements. We have had such needs in mind in preparing the plans, but they are unlikely to affect the broad distribution of land uses or to make a significant difference to the costs.

Printed image digitised by the University of Southampton Library Digitisation Unit

Urban envelope

68 The boundary of the urban envelope so far as possible follows prominent physical features such as rivers, railways, woodlands, and important contours, in order to give a clear and attractive edge to the town. This does not always apply to the boundary closest to the noise corridor. We have assumed that the area between the city and the airport will remain in agricultural use, though other uses might be found more appropriate. Wherever possible, attractive villages and areas of high landscape quality have been left out of the urban envelope.

Plan 3 : road network

69 A draft of Plan 3 was prepared first on the basis of the selected strategy. A preliminary road network was based on forecast volumes of movement in broad corridors. Notional road links were associated with speeds of 40 kph (25 mph) in the new urban areas and of 65 kph (40 mph) on new roads across open country to the airport. An assignment of peak hour traffic volumes to this test network revealed the need for two types of modifications - some designed to provide additional capacity in corridors with high travel demand, and some to ensure the compatibility of the road network with planning and environmental considerations.

Sequence of growth

70 The next step was to show a possible sequence of growth for the urban area by dividing Plan 3 into ten stages, each containing roughly the same population increase. We attempted to strike a balance between the following criteria -

i Starting development as close as possible to the airport and progressively moving further away from it.

ii Starting development as close as possible to urban areas forming an integral part of airport city and already developed by 1981.

iii Avoiding crossing financial thresholds (e.g. opening up a second sewage catchment area) until earlier investments have been fully exploited.

iv Developing residential areas near the proposed centre as early as possible so as to get the centre started.

Plan 2: road network

71 Plan 2 consists of those parts of Plan 3 required to accommodate the population generated by an airport employing 45, 000. A preliminary road network was obtained by excluding from the Plan 3 network those sections not likely to be required for the intermediate stage of development. A functional analysis of the traffic assigned to this network led to the elaboration of a highway system that would adequately serve Plan 2 while being consistent with the ultimate network required for Plan 3.

Printed image digitised by the University of Southampton Library Digitisation Unit

Floor space for retail trade

72 Estimates of floor space for retail trade were derived in the following way -

i Expenditure per head figures from the 1961 Census of Distribution were projected forward to 1981 and 2000.

ii The estimated amount of floor space is that which would match the demand generated by the additional population in the airport city area and the minor expansions associated with it, i.e. for Plan 2 minus Plan 1 and for Plan 3 minus Plan 1.

iii Expenditure generated by this population has been apportioned to city, district and local centres, both new and existing, within each airport city area.

iv Owing to the absence of proposals for the exact location of village and small town expansions in each internal zone area, it has been assumed that the expenditure generated by this population will be distributed between new and existing centres in the same proportions as those assumed for airport city.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Construction Costs

73 Three sets of estimates are given in parts II to VI. They relate to -

i Plan 2 minus Plan 1 : the cost of urbanisation for the population generated by an airport with 45, 000 workers.

ii Plan 3 minus Plan 2 : the cost of urbanisation for the population generated by an additional 20, 000 airport workers.

iii Plan 3 minus Plan 1 : the combined cost of the two stages of development.

74 Estimates were made of the cost of Plan 3 minus Plan 1, i.e. of urbanisation for the population generated by 65, 000 airport workers, together with that part of the additional population in the internal zone area (generated by the 1981 - 2000 growth of other industries in the area) that has been located in airport city or in close association with it.

75 The estimates were divided into eleven increments corresponding to the ten roughly equal increments of population growth plus an initial phase of development before the first population intake.

76 Estimates for Plan 2 minus Plan 1 include the initial phase plus the first six or seven population increments (depending on the site). These increments accommodate only the population generated by an airport with 45, 000 workers. However, the Plan 2 estimates include part of the cost of subsequent expansion to Plan 3, e.g. sewers that will have spare capacity at the Plan 2 stage.

77 Estimates for Plan 3 minus Plan 2 include the remaining increments; these accommodate population generated by the growth of other industries as well as that generated by an additional 20, 000 airport workers. The costs attributable to the airport-generated population in Plan 3 minus Plan 2 have been derived by assuming that the costs per head are the same for the airport and non-airport segments of the costed population, except for certain components - e.g. roads between urban areas and airport - that have been separately estimated.

78 For the purpose of estimating construction costs the components of urbanisation have been divided into two main groups. The first group includes those components for which costs can be regarded as directly proportional to the size of the additional population, irrespective of its location. The second group are those components for which the cost per head may vary significantly according to the location of the new urban areas.

Printed image digitised by the University of Southampton Library Digitisation Unit

79 Costs in the first group have been estimated on the basis of estimates produced for a number of new and expanding towns. Some components, such as education and health services, may normally be expected to vary between sites according to existing provision in the area. But in a development as big as airport city any variations are likely to be insignificant.

80 The constant costs for airport city are -

	per head £
Residential	1, 335
Education	104
Health and welfare buildings, libraries, and other public and non-commercial buildings	44
Specialised commercial buildings such as garages, cinemas	34
Hospitals, old people's homes and similar buildings	74
Open space, playing fields and sports buildings	29
	£1, 620

Costs associated with the above items but varying because of abnormal ground conditions are considered separately.

81 Costs that vary with the location of the new urban areas are -

i Abnormal site conditions

Variations in costs may be due either to soil conditions or to the existing environment.

a Soil conditions have been considered as exceptional and consequently giving rise to abnormal foundation costs only if they are outside the normal range of conditions and cover an extensive area upon which it is necessary to build.

Printed image digitised by the University of Southampton Library Digitisation Unit

Allowance has been made for additional expenditure on landscaping where extensive areas are flat and treeless or otherwise in need of improvement to produce a satisfactory environment.

ii Shops, car parking and site development

Estimates are based on shopping space and parking requirements in new centres only. The cost of site development has been related proportionately to the cost of shopping space. Although it was possible to provide estimates of the floor space required in existing centres it was not possible to assess the effect of this development on the existing infrastructure. Costs of shops and car parks in existing centres are therefore excluded.

iii Roads in airport city

The estimated cost is for the primary network, excluding that proportion attributable to airport workers.

iv Roads in the remainder of the internal zone area

These roads have been costed but are not included in the estimates of total cost. The estimates exclude the proportion of the cost attributable to airport workers.

v Roads from urban areas to airport.

An estimate is made of the proportion of the cost of all roads attributable to airport workers only.

vi Sewerage and drainage

vii Water

Estimates provided by the local water boards have been co-ordinated by the Water Resources Board.

Printed image digitised by the University of Southampton Library Digitisation Unit

viii Gas

Estimates have been provided by the Eastern Gas Board, Southern Gas Board, North Thames Gas Board and East Midlands Gas Board.

ix Electricity

Estimates have been provided by the Eastern Electricity Board and the East Midlands Electricity Board.

x Altering overhead grid lines

Estimates for undergrounding or diverting existing overhead grid lines are based on information provided by the Central Electricity Generating Board and area electricity boards.

xi Telecommunication services

Estimates have been provided by the G.P.O.

82 Estimates have also been made of the cost of factory and office accommodation outside the perimeter of the airport for workers forming part of the airport-generated population, i.e. those in economic activities directly serving the airport-generated population. This is the same at all four sites. There would of course be other offices and factories in airport city for workers not forming part of the airport-generated population. However, it would be unrealistic to estimate the cost of such accommodation and include it in the total cost of urbanisation for Plan 3, because a high proportion of total employment for airport city is at the airport itself. The cost of this is not included in our estimates, so to include offices and factories unrelated to the airport (which differ in quantity between the four sites) would invalidate comparisons of cost per head.

83 Minor expansions

So far as possible these have been costed on the same basis as airport city. A constant allowance was made for residential accommodation since the average density is assumed to be the same. Costs for education, health, welfare and administration are proportional to the total population, irrespective of whether the provision is made in airport city itself or in small towns and villages being expanded. Roads serving minor expansions are among those outside airport city that have been costed but not included in the estimates of total cost per head.

Printed image digitised by the University of Southampton Library Digitisation Unit

84 To cost engineering services it was necessary to assume locations for the minor expansions. For services such as gas and electricity a random distribution of small expansions, each of the order of 4, 000 persons, was assumed. For sewerage and drainage, where topography is an important factor, an estimate was made on the basis of an expansion at one location and the per capita costs were applied to the whole unlocated population. This process produced small differences in per capita costs for engineering services between airport city and the minor expansions.

85 Incremental costs. We were asked not to discount capital costs; in order that the Commission can eventually do this, costs have wherever possible been divided into ten increments, corresponding to the ten population increments shown on the phasing plans. Where necessary, costs have also been estimated for an initial phase covering the time required, after the decision to build airport city, to set up the necessary organisation, and to design and build the essential infrastructure such as sewage works, water service reserviours and roads to the airport. This period may vary slightly between sites but until it is complete no significant population intake is possible.

86 A simple division of the total time available for population intake (about 20 years) by the number of increments would allow only two years for the construction of each increment. Since each includes about 30, 000 people (i.e. some 10, 000 houses) and associated roads and other works, it is necessary, when discounting, to allow some overlap between the costs of different phases in order to provide enough time for the construction of each increment. We have given the Commission information to enable them to do this.

87 A time scale for the build-up of the urban areas was not available when this report was prepared. For certain estimates, e.g. water, it is necessary to assume a starting date in order to fit into the regional framework. It has been assumed that airport city would be designated in the mid-1970 s and the initial infrastructure would be complete about 1980.

88 The estimated cost of each increment is related to the suggested sequence of growth. Revisions to the sequence would require revised cost estimates.

89 Assumptions and qualifications. The estimates are an attempt to cost at each site a city with the same level of facilities and opportunities. The uses shown on the plans have been treated as indicating the general location only. It is assumed that the precise location of buildings and the exact alignment of roads would be settled only after detailed physical and economic appraisal.

Printed image digitised by the University of Southampton Library Digitisation Unit

90 Whenever a possible difference in cost between the sites has been observed an attempt has been made to measure it. There are cases, however, where there is no practical basis for making a realistic assessment of either the magnitude or the direction of the differences, e.g. the effect of airport city on an adjacent existing centre. In cases such as this no attempt has been made to ascribe monetary values to the differences.

91 There might be other cost differences unrelated to the location of the new urban areas. For instance, the local authority in one city might spend more on landscaping roads and residential areas than the norms assumed in our estimates. Such differences are irrelevant to the purpose of the present study and are ignored.

92 All estimates are based on 1968 prices. No allowance has been made for increases in prices during the period of construction.

93 No allowance has been made for difference in prices at different locations. Expansion on this scale at any of the sites is likely to obliterate or reduce to insignificance any existing local differences in particular elements of cost. It is assumed of course that the designs for each site would take account of any local advantages in using particular materials or other items.

94 The following costs are not included in the estimates –

i Bridging finance and letting fees.

ii Furnishing, shop fitting, equipment, and machinery.

iii Administrative costs (e.g. Development Corporation).

The estimates include design costs and expenses.

95 The precision of the estimates needs some explanation. The estimated cost of each component depends on a number of assumptions (varying in number with the component) giving rise to a similar range of equally probable costs. The greater the depth of information available the smaller the range of possible assumptions and hence the greater the precision of the estimate. These estimates are based on a common depth of knowledge for each site and so form a good basis of comparison. It follows however that small differences in cost between sites may not be significant. Whether they are or not will depend on the main reasons for the differences. No figure should be read to a greater accuracy than £100,000, although for arithmetical reasons some figures are stated with greater apparent accuracy.

Printed image digitised by the University of Southampton Library Digitisation Unit

Land costs

96 Two methods have been used to estimate the cost to the community of land required for urbanisation. The first method (current use basis) is based on market value. It has been used both to estimate the total land cost and to complement the second method which applies to only part of the land. The second method arises out of the estimates of agricultural losses mentioned in a later section. These estimates take account of the value of the land, but they have been made only for agricultural land in each airport city. The residue of the land required (i.e. non-agricultural land in airport city and all land for the minor expansions) has therefore been costed by the market value method.

97 The first method provides a close approximation to the true resource cost. It is based on the estimated cost of buying the land in the open market, reflecting its value for agricultural use, an allowance for disturbance, and any significant mineral deposits. It does not reflect any development potential. Development value can be regarded as a transfer payment that should not figure in an estimate of resource costs.

98 The following assumptions were made in estimating land costs on the current use basis –

i All assessments were made at the prices prevailing in 1968.

ii No account was taken of minor urban settlements or uses within the airport city area as it was assumed that the taking of such land would be avoided.

iii No account was taken of the land required for changes in existing settlements consequent upon the establishment of the airport. In the absence of detailed plans showing the location of such changes it was considered impossible to provide any realistic figures of cost even on an "of the order" basis.

iv As the plans for the airport cities are diagrammatic and minor expansions of towns and villages outside the airport city area are not located, the areas required were derived from the population estimates by dividing by the overall density. The resulting acreages for each increment of growth were then assumed to be located in the general area suggested by the plans.

v To allow for the costs involved in the land changing hands, 3 per cent was added to all estimates, which were then rounded to the nearest £10, 000.

vi At the request of the Commission none of the figures attributable to the different increments have been discounted to the present day.

Printed image digitised by the University of Southampton Library Digitisation Unit

99 It should be emphasised that none of the estimates is very precise. This is due as much to the diagrammatic nature of the plans as to the time and resources available. The figures, do, however, indicate the order of magnitude.

User costs

100 The only user costs that have been estimated are for transportation; these are the only ones likely to vary significantly with the location of the new urban areas.

101 The annual costs given in parts II to VI are for journeys to the airport only. Estimates are made for work journeys, for commercial vehicle journeys, and for service (business) journeys. At the Commission's request, work journey costs have been estimated on the assumption that airport workers occupy homes as close as possible to the airport; this is of course not what would happen in practice, but it provides a simple way of taking into account the benefits that would accrue if airport workers exercised choice in the location of their homes; the minimum user costs can be regarded as net costs.

102 Values for travel time and for costs of vehicle operation are those used by the Ministry of Transport. For both Plan 2 and Plan 3 they relate to 1968.

Agricultural losses

103 The method of estimating the loss to agriculture from urbanisation is that used for estimating the loss to agriculture from the airport itself. It is described in the Papers and Proceedings of the Commission, volume VIII, part 2.

104 For the preparation and comparison of alternative urban strategies, a professional appraisal was made of the area around each of the four airport sites. This was supplemented by an examination of land classification maps produced by the Ministry of Agriculture (where available) and by assessments of the existing physical and financial productivity of land under cultivation. Land classification maps take account of climate, relief, and soil characteristics such as depth, drainage, texture and water capacity. A guiding aim was the desirability of retaining for existing and future agricultural and horticultural use, areas which have the best quality soil, highest productivity, the best field and farm layout, and efficient farm size structure and a flexibility in use for the likely food needs of the next thirty years. Preference for retention was also given to rural areas without existing urbanisation or urban containment.

105 For the selection process the alternative strategies were ranked by the following method -

i The total urban area was measured from the sketch plans

ii The non-agricultural area was subtracted from it (built-up areas, woodlands, roads, etc.)

Printed image digitised by the University of Southampton Library Digitisation Unit

iii Each urban area was broken down according to existing farming type which was ascertained from various university and ministry studies and other sources.

iv Average gross output figures were obtained for each farming type, chiefly from 'Farm Incomes in England and Wales 1967' (H. M. S. O.)

v Gross output figures were adjusted upwards or downwards according to the other criteria listed above.

vi The gross output of the land required for each strategy was estimated according to the proportion of the total acreage in each farming type.

Other costs and benefits

106 It has been assumed that the basic rent level for income-producing accommodation in all four cities would be the same. This assumption has been made because the rapid growth and large scale of the cities would create a market for accommodation bearing no discernible relationship to the existing market in each of the four areas. There is no evidence to suggest that market conditions would vary significantly between the four sites.

107 However, one factor which could well affect the levels of rents and prices was outside our terms of reference. This is the regional aspect; some sites are closer to London and there is evidence to suggest that the demand for residential accommodation for commuters at Foulness may differ from that at, for example, Thurleigh.

108 Some benefits could vary from city to city and could therefore lead to price variations in certain sectors of the market. We have reflected the following variations by estimating notional rents -

i Variations in the level of services

For the most part we have assumed that the four cities would have the same level of urban services and this assumption has been reflected in the estimated costs. However, since the populations in the four internal zone areas differ considerably, there are likely to be variations in the level of some services, especially shopping. We have reflected this in different levels of rents for retail floor space in new centres.

ii Variations in the level of congestion in surrounding areas

No factual evidence was obtained from the transportation model, but it is clear that some existing centres and urban areas could be subject to considerable congestion. Broad assessments of the level of congestion have been made, and their likely effect has been taken into account in estimating rents for retail floor space.

Printed image digitised by the University of Southampton Library Digitisation Unit

iii Variations in choice of occupation

The larger the hinterland, the less would the airport tend to dominate as the single major source of employment. Little evidence is available about the types of employment that may be found in each of the subregions after 1981, and it is therefore difficult to quantify the range of job opportunities, but some credit should be given to those sites with significantly larger populations than others. The differences are reflected in a limited way in estimated industrial rent levels for each internal zone area.

109 No enumeration of costs and benefits can be exhaustive. We have attempted to identify others that we have not been able to measure in monetary terms, and wherever possible, to provide comparable descriptions of the variations between cities. The following aspects have been considered -

i Loss of landscape

Land proposed for urbanisation has been graded according to its landscape value, and the acreage of each grade has been measured.

ii Loss of recreational areas

We originally considered listing all recreational areas affected by urbanisation and describing the possible effect on them. However, when the preferred strategies were developed for Plans 2 and 3 it was found that most of the recreational facilities in the airport city areas could be retained for the use of the future population.

iii Variations in environment

It is likely that there would be variations in the quality of the environment in parts of the new cities owing to factors such as levels, views, micro-climate, etc. In the absence of detailed designs we have not been able to find a satisfactory basis for comparing the four cities in meaningful terms.

Landscape evaluation

110 Four grades have been distinguished - exceptional, high, average and low. In addition, an assessment has been made of areas which, though of only average quality in themselves, are of high panoramic value when seen from prominent viewpoints (e.g. the Vale of Aylesbury seen from Ivinghoe Beacon).

111 The ranking has reference only to South East England. Thus the Chiltern scarp is rated as exceptional though in a ranking covering the whole country it might not rate so high. The two higher grades correspond very closely to the areas of landscape value defined in the county development plans. Areas ranked inferior

Printed image digitised by the University of Southampton Library Digitisation Unit

are those marred by industrial uses such as brickworks and cement works with their clay pits and quarries; or by intense concentration of pylons and power lines; or by such a proliferation of scattered buildings that the land is truly neither urban nor rural.

112 In preparing and comparing the alternative strategies one objective was to avoid so far as possible any urbanisation on land of exceptional or high landscape value.

113 No attempt has been made to determine whether landscape quality would be affected by views of the proposed cities, and whether this might affect cost benefit comparisons between them.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

PART II: FOULNESS

**Llewelyn-Davies, Weeks,
Forestier-Walker and Bor.**

Printed image digitised by the University of Southampton Library Digitisation Unit

SUMMARY AND COMMENT

1 - This report presents the results of urbanisation studies of the four short-listed sites for the third London airport. Part I outlines the common approach to the four sites, parts II to V describe the proposals for each site, and part VI compares them.

2 . These are broad planning studies carried out in a very short time; their main object is to prepare for each site a preferred urban plan based on stated planning criteria and suitable for the purposes of the Commission's overall cost benefit analysis. This analysis will take account of construction air traffic control, noise, ground access and other aspects of the airport, as well as its associated urbanisation.

3 The report presents estimates of some of the more readily measurable costs and benefits of urbanisation. Other costs and benefits are identified but we have not attempted to measure them in financial terms. The use to be made of the figures and other information is a matter for the Commission's judgment.

4 We were instructed by the Commission to consider the urban requirements of airports with 45,000 and 65,000 workers , and to assume that the higher level would be reached by the year 2000. At none of the airport sites would the establishment of new urban areas present insoluble problems.

The three plans

5 We have prepared three outline plans for each site. Plan 1 is based as far as possible on current proposals of local planning authorities and development corporations for urban growth up to 1981 with no airport in the area.

6 Plan 2 adds to Plan 1 the urban areas required for an airport with 45,000 workers, and, where necessary, relocates pre-1981 proposals affected by the airport noise corridor. It assumes no growth over Plan 1 of local employment unrelated to the airport and thus has the same additional population at each site. Plan 2 therefore enables the costs and benefits of airport urbanisation to be isolated from other proposed development.

7 Plan 3 adds to Plan 2 and shows the urban areas required for the population generated by an additional 20,000 airport workers, and also for the estimated growth between 1981 and 2000 of other industries established near each airport by 1981. As the additional population therefore differs between sites, comparisons of costs are made by expressing them as costs per head.

Printed image digitised by the University of Southampton Library Digitisation Unit

Population estimates

8 We estimate that the total populations generated by the airport will be 183,000 when there are 45,000 workers at the airport (Plan 2), and 275,000 when there are 65,000 workers (Plan 3). It has been assumed that 95 per cent of these populations, i.e. 174,000 and 260,000 respectively, would live within the airport subregion, described as the 'internal zone area'. We suggest that homes should be provided partly in a new city close to each airport and partly in small expansions of nearby towns and villages. At different sites the population is divided in different proportions between the two. The minor expansions are not shown on the plans. The populations of the four airport cities, including people living in the existing towns to which the cities are attached, are:

	Foulness	Nuthampstead	Cublington	Thurleigh
Plan 1 (1981)	319,000	11,000	131,000	143,000
Addition to Plan 1	131,000	128,000	156,000	156,000
Plan 2: Total	450,000	139,000	287,000	299,000
Addition to Plan 2	98,000	79,000	123,000	59,000
Plan 3: Total (2000)	548,000	218,000	410,000	358,000

Overlap

9 We have given considerable thought to the question of 'overlap', i.e. the extent to which existing and currently planned urban areas can contribute to the housing of the airport-generated population through turnover of jobs or homes. In our view, it is not possible to estimate with any confidence the extent of overlap, but its benefits are likely to be marginal to the total cost of urbanisation.

10 Any houses built independently of the airport but occupied by airport-generated population would have to be replaced by an equal number of houses built elsewhere. Hence a financial benefit in respect of overlap can be credited to any of the airport sites only if the cost of a house (and its associated urban infrastructure) near that site is different from the national (or regional) average, and only to the extent of the difference in costs.

11 For Plan 2, we have assumed that overlap up to 1981 will be nil. This provides a common base for all four sites; their relative costs can be adjusted if desired to allow for different assumptions about overlap.

Printed image digitised by the University of Southampton Library Digitisation Unit

12 For Plan 3, the estimates of the growth of other industries allow for the presence of the airport as a factor in the labour market. They therefore include an element of overlap. But we have not attempted to measure its magnitude because estimates of growth up to the end of the century without an airport would be subject to a margin of error almost certainly greater than the extent of overlap.

The airport cities

13 We studied the constraints on and opportunities for urban development outside the zone of intrusive noise around each airport site. This led to the preparation of several alternative urban strategies, including both concentrated and dispersed patterns of development. A preferred strategy was selected by comparing the costs and benefits, giving due weight to unmeasured factors. At each site this process led to a proposal for the bulk of the new population to live in a single major city as close to the airport as the noise corridor and local conditions would permit. In our judgment, a single major city would result in large savings in transport costs, provide a more satisfactory range of services, and make a smaller impact on the surrounding area than a pattern of dispersed growth.

14 At Foulness the airport city takes a linear form north of the built-up area of Southend; at Nuthampstead a new city has been located between Bishop's Stortford and the airport; at Cublington the city uses the designated area of Milton Keynes with a linear extension to the south west; at Thurleigh the city consolidates the scattered urban settlements around Wellingborough with an extension to the east of Rushden.

15 At the inland sites the new city could theoretically be either on the London side of the airport or on the opposite side. Neither alternative appears to have any strategic planning advantages, so our choice has been determined by local tactical factors. At Nuthampstead, the city is on the London side to avoid an area of high landscape value north of the airport and to reduce the impact on Cambridge; at the other inland sites the cities are on the side furthest from London, because at Cublington a city on the south would have impinged on the Chilterns and competed with the growth of Luton, while at Thurleigh there are difficulties in expanding Bedford along the Ouse valley and advantages in further expanding Wellingborough and consolidating the nearby towns.

16 We have not been able to make a realistic estimate of the extent to which the new cities would attract other economic activities wishing to locate near the airport, since this is partly dependent on government policy. The pressure is likely to be great so the ability of the cities to grow beyond the sizes we have indicated should not be limited by their location or their form. All the cities have room for expansion, but this could be more costly at Foulness (because of the need to bridge the Crouch) and at Cublington (because of the need to bridge the Great Ouse) than at Thurleigh and Nuthampstead.

17 A disadvantage of the city at Nuthampstead is that it would be largely

Printed image digitised by the University of Southampton Library Digitisation Unit

dependent on the airport since there are no nearby major urban areas offering a choice of jobs. The other three cities are attached to expanding towns and would have a more diversified economic base.

Measured costs

18 The estimated capital costs of construction per head of population in £ are:

	Foulness	Nuthampstead	Cublington	Thurleigh
Plan 2 minus Plan 1	2, 242	2, 197	2, 210	2, 234
Plan 3 minus Plan 2	2, 198	2, 115	2, 107	2, 090
Plan 3 minus Plan 1	2, 228	2, 170	2, 176	2, 186

Undiscounted capital construction costs show a maximum difference for any of the stages of only 5 per cent between the four cities; this is within the limits of accuracy to be expected in costing broad planning proposals. The addition of the estimated costs of non-agricultural land would not produce a significant difference. The effect on agriculture is discussed in the Commission's Papers and Proceedings Volume VIII chapter 22.

19 We were asked not to attempt to discount the total capital cost to the starting date of the development; this will be done by the Commission. Discounting is necessary to obtain a true comparison of costs, because investment will be spread over a long period and expenditure at an early stage represents a greater real burden than expenditure at a later period. Discounted costs might show significant differences between some of the sites.

20 The most variable operating costs are for transport and these are the only ones that have been measured. The estimated annual user costs in £ million at 1968 values of travel between the cities and the airports (including journeys to work, commercial vehicle journeys and service journeys) are:

	Foulness	Nuthampstead	Cublington	Thurleigh
Plan 2	7.4	5.8	6.6	6.5
Plan 3	11.3	9.5	9.1	8.5

Work journey costs are based on the assumption that airport workers occupy homes as close as possible to the airport.

21 The net agricultural loss, expressed in 'value added' in £ per annum, on land occupied by the four cities would be:

Printed image digitised by the University of Southampton Library Digitisation Unit

	Foulness	Nuthampstead	Cublington	Thurleigh
Plan 2 minus Plan 1	376,000	104,000	64,000	88,000
Plan 3 minus Plan 2	92,000	84,000	80,000	40,000
Plan 3 minus Plan 1	468,000	188,000	144,000	128,000

Though the greatest loss would be at Foulness, where the city takes a large area of Grade 1 and 2 land used for horticulture, the greatest potential loss to agriculture would be at Nuthampstead where the city would occupy a large area of Grade 2 land with flexibility for increasing output.

Impact on affected areas

22 Compared with areas of high landscape value, the land to be occupied by the four new cities is of average scenic quality and the loss would be more or less equal at all four sites. Taking a wider view of their place in the English scene, and considering also the pressure of the airport cities on surrounding villages, our judgment is that the greatest loss would be at Nuthampstead and the least at Foulness.

23 Foulness is the only site to gain significantly from the effect of planned new urban development in improving the environment of an area now subject to sporadic urbanisation. Thurleigh and Cublington would have some gain but Nuthampstead would have none.

Environment of the new cities

24 Only Foulness offers homes near the seaside and the recreational potential of the river estuaries, but Cublington is close to the Chilterns, the Woburn ridge and the Grand Union Canal. Thurleigh has the river Nene, while Nuthampstead is set in attractive countryside and is near to Cambridge.

25 Though the new urban areas have been located outside the airports' noise corridors, residents at the inland sites would be affected by aircraft noise when seeking recreation in the area. At Foulness most of the noise would occur over the Thames estuary. While this might affect offshore sailing, it would have little effect on river sailing. We did not consider the effect of noise on existing urban areas since this was outside our terms of reference; it is being studied by the Commission.

26 People living at Cublington and Thurleigh would enjoy the greatest accessibility to most other parts of the country.

27 Road and rail links between the airports and London have been studied by other consultants. At the three inland sites there is no conflict between

Printed image digitised by the University of Southampton Library Digitisation Unit

the proposed routes (as at present known to us) and the airport cities, but at Foulness the new motorway and railway from London would cut a broad corridor through the whole length of the new city.

Some regional considerations

28 Our terms of reference excluded the regional impact of the airport and its associated urban areas; but our studies have naturally led us to consider how the quality of life in the new cities might be affected by their relationship to the future patterns of development in the South East and the country generally. A wider choice of jobs and services would be available to residents in an airport city located where it could have the maximum interaction with other growth areas. This might also result in the maximum return on the large investment in a new city.

29 Cublington, Thurleigh and Foulness lie in corridors of growth proposed by the Economic Planning Council in the South East Strategy. Cublington and Thurleigh are also close to the major spine of settlement and communications linking London with the Midlands and the North West; this national backbone is likely to have the most rapid growth of population and employment. Nuthampstead on the other hand is well outside both the suggested corridors of regional growth and the national backbone.

30 It can be argued that the greatest return on the investment in airport city would be obtained if it were located in the backbone where it could have the maximum interaction with other growth points. Such a location would also provide the best guarantee of alternative employment opportunities in the event of future reductions in the number of jobs at the airport. On the other hand, it can be argued that airport city is such a large and self-sufficient development that it can stand on its own feet and should not pre-empt any of the expansion potential of the backbone.

31 Airport cities at Cublington, Thurleigh and Foulness would fit in with the policy of the Standing Conference on London and South East Regional Planning that development north and east of London should be concentrated in South Essex and in the Milton Keynes and Northampton areas.

32 The greatest pressure for urban growth in the region is now tending to shift outwards from the area containing the first generation of new towns to a ring some 40 to 50 miles from central London. An airport city built up in the late seventies and eighties could helpt to articulate growth in this outer ring. Cities at Cublington and Nuthampstead would be best placed to do this; a city north of Thurleigh might be too far from London, while the role of Southend would be limited by its situation at the tip of a peninsula.

33 We understand that the Commission is studying the regional and national implications of locating the airport at each of the sites. They will no doubt have in mind that the airport's 65,000 workers are likely to be the largest single concentration of new employment in the South East, and that its location could

Printed image digitised by the University of Southampton Library Digitisation Unit

therefore assist the process of planned decentralisation from London, which is said to be retarded at present by the shortage of sufficiently mobile industry.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

PART I: PURPOSE AND METHOD

Llewelyn-Davies, Weeks, Forestier-Walker and Bor.

Shankland, Cox and Associates

Printed image digitised by the University of Southampton Library Digitisation Unit

OP. 1100. 120. 143

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings volume VIII part 1

Stage III: Research and Investigation

Specially commissioned studies

LONDON
HER MAJESTY'S STATIONERY OFFICE
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed in England for Her Majesty's Stationery Office by
Galbraith King & Co., Ltd., London.

Dd. 501453 12/69

SBN 11 510164 0

Printed image digitised by the University of Southampton Library Digitisation Unit

Foreword by the Chairman

The Hon. Mr. Justice Roskill

Stage III of the Commission's work has consisted of investigation and research into the timing of the need for a third London airport and into matters relevant to the choice to be made between the short-listed sites. The work has been carried out by the Commission's Research Team with the help of consultants, government departments and others.

Written studies received from consultants, government departments and others form volume VIII of the Commission's *Papers and Proceedings.* This Part of volume VIII contains the study by Messrs. Llewelyn-Davies, Weeks,Forestier-Walker & Bor,and Messrs. Shankland,Cox & Associates.

The Commission is not required to recommend the precise location of the urban development but it has to take account of the urban implications in its choice of site. This study of a possible scheme for accommodating the airport-dependent population was commissioned so that the urban development associated with the airport could be included in the cost/ benefit comparison of the four airport sites. The Commission recognises that the plans suggested by its consultants do not provide the only possible solution.

The advice given by the consultants has been reflected in the work of the Research Team which forms volume VII of the Commission's *Papers and Proceedings.* Nevertheless, this in no way implies that the Commission has accepted that advice, since it will enter upon the Stage V hearings with an open mind about the conclusions to be drawn from the work carried out during Stage III. Similarly, the Commission wishes it to be understood that in publishing the consultants' study it is expressing no view on the merits of the advice which it contains; this is for examination during Stage V.

EUSTACE ROSKILL

Templar House,
81-87 High Holborn,
LONDON, W.C.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

AIRPORT CITY

Urbanisation Studies for the Third London Airport

Llewelyn-Davies, Weeks, Forestier-Walker and Bor.

Shankland, Cox and Associates

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

AIRPORT CITY

Urbanisation studies for the third London Airport

Llewelyn-Davies, Weeks, Forestier-Walker & Bor
141 Euston Road
London, N.W.1.

Shankland, Cox & Associates
16 Bedford Square
London, W.C.1.

November 1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

To: The Commission on the Third London Airport

You appointed us in February 1969 to assess the feasibility and examine the implications of the urban growth that would be required by an airport at each of the four short-listed sites. Foulness and Nuthampstead were allocated to Llewelyn-Davies, Weeks, Forestier-Walker and Bor; and Cublington and Thurleigh to Shankland/Cox and Associates. Our two firms are jointly responsible for parts one and six of this report which concern all four sites. We have relied heavily on the contributions of our specialised sub consultants whose names are listed at the end of the report.

Throughout this study we have had regular meetings with the Commission and have worked very closely with your research team both on methodology and conclusions. We have also received considerable help from local authorities and other bodies, most of whom oppose the siting of the airport at those inland sites that would affect them. We are grateful for this help, given, in many cases, in difficulty circumstances.

Because of the need to complete the studies in nine months, we have been unable to work as closely as we would have wished with the local planning authorities. We had to submit our findings to you as soon as we had determined an appropriate urban pattern. Our studies on urbanisation were well advanced before the evidence submitted to the Commission's Stage II Local Inquiries began to become available, but, wherever possible, we have taken it into consideration.

The draft plans in this report do not take account of regional implications as these were excluded from our terms of reference. We have no doubt that these plans could be improved after further study of local conditions and aspirations and full consultations with local interests, as well as deeper knowledge of the requirements of an airport city. When a site has been selected for the airport, a detailed design for the city will be required as well as for the airport. This should be an imaginative concept for the biggest new city yet built in Britain. Together, the airport and its city are likely to be the largest single investment of the next few decades. Airport city will provide a wide spectrum of opportunities for jobs and housing, education and leisure. It should therefore be a bold response to this unique opportunity to build for a socially balanced rapidly growing community. To our knowledge this is the first time a major airport and its city could be conceived together. They should both use the most advanced techniques. The city should also reflect the special qualities of the selected site. Whilst we hope that one of the four plans presented here will provide the basis for such a design, we appreciate that the planning of a new city in conjunction with the selected airport site will have to be undertaken in close collaboration with local authorities concerned.

The purpose of our report, however, is more limited. It is to provide some of the data for the Commission's overall cost benefit analysis of the

Printed image digitised by the University of Southampton Library Digitisation Unit

four sites. The costs and benefits of urbanisation at each of the four sites will be considered together with the costs and benefits of other factors - principally ground access, air traffic control, construction, and noise - in helping to choose the best site. In preparing and costing our proposals we have made every effort to maintain consistency in planning standards. This comparison of like with like enables us to give some indication of the order of cost of urbanisation as between the four sites. But the four cities would not in practice have the same environment nor the same opportunities for future growth and change, whatever the quality of their detailed design. The cheapest is not necessarily the best from the point of view of those who live and work there or in the surrounding area.

Though we have estimated all those costs and benefits we think can be measured, we believe that there are aspects of urbanisation needing evaluation which do not lend themselves to cost benefit analysis. Attention must also be paid to social and other factors not readily measurable in economic terms. In discussing urbanisation at the four sites, we have therefore given considerable attention to some of the more important intangible factors.

Llewelyn-Davies

Richard Llewelyn-Davies

Walter Bor

Walter Bor

Graeme Shankland

Graeme Shankland

David Grove

David Grove

November 1969

Printed image digitised by the University of Southampton Library Digitisation Unit

LETTER TO THE COMMISSION

CONTENTS LIST

SUMMARY AND COMMENT

			Page
I	PURPOSE AND METHOD		
	1	Introduction	I/3
	2	The planning process	I/5
	3	Airport factors	I/9
	4	Population and employment	I/11
	5	Principles for urban strategies	I/15
	6	Generation and comparison of alternative strategies	I/17
	7	Development of preferred strategy	I/21
	8	Costs and benefits	I/25
II	FOULNESS		
	1	Summary of Plans 2 and 3	II/5
	2	Subregional setting	II/7
	3	Plan 1 - proposals to 1981	II/25
	4	Proposals affected by 40 NNI contour	II/29
	5	Alternative strategies	II/31
	6	Selection of preferred strategy	II/40
	7	Plan 3 - development of preferred strategy	II/46
	8	Plan 2	II/64
	9	Costs and benefits	II/68
III	NUTHAMPSTEAD		
	1	Summary of Plans 2 and 3	III/5
	2	Subregional setting	III/7
	3	Plan 1 - proposals to 1981	III/21
	4	Proposals affected by 40 NNI contour	III/27
	5	Alternative strategies	III/30
	6	Selection of preferred strategy	III/41
	7	Plan 3 - development of preferred strategy	III/47
	8	Plan 2	III/63
	9	Costs and benefits	III/67
IV	CUBLINGTON		
	1	Summary of Plans 2 and 3	IV/5
	2	Subregional setting	IV/19
	3	Plan 1 - proposals to 1981	IV/21
	4	Proposals affected by 40 NNI contour	IV/29
	5	Alternative strategies	IV/31

Printed image digitised by the University of Southampton Library Digitisation Unit

6	Selection of preferred strategy	IV/41
7	Plan 3 - development of preferred strategy	IV/49
8	Plan 2	IV/65
9	Costs and benefits	IV/67

V THURLEIGH

1	Summary of Plans 2 and 3	V/5
2	Subregional setting	V/9
3	Plan 1 - proposals to 1981	V/21
4	Proposals affected by 40 NNI contour	V/27
5	Alternative strategies	V/31
6	Selection of preferred strategy	V/39
7	Plan 3 - development of preferred strategy	V/45
8	Plan 2	V/61
9	Costs and benefits	V/63

VI COMPARISON OF AIRPORT URBANISATION PLANS VI/1

APPENDICES

A Terms of reference
B Employment and population
C Transportation
D Sewage disposal
E Geotechnics at Foulness

PLANNING TEAMS AND SUB CONSULTANTS

A more detailed contents list appears at the beginning of each of parts I to VI and the appendices

Printed image digitised by the University of Southampton Library Digitisation Unit

SUMMARY AND COMMENT

Llewelyn-Davies, Weeks, Forestier-Walker and Bor.

Shankland, Cox and Associates

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

SUMMARY AND COMMENT

The three Plans	page	1
Population estimates		2
Overlap		2
The airport cities		3
Measured costs		4
Impact on affected areas		5
Environment of the new cities		5
Some regional considerations		6

Printed image digitised by the University of Southampton Library Digitisation Unit

CITIES FOR THE ALTERNATIVE AIRPORT SITES

Printed image digitised by the University of Southampton Library Digitisation Unit

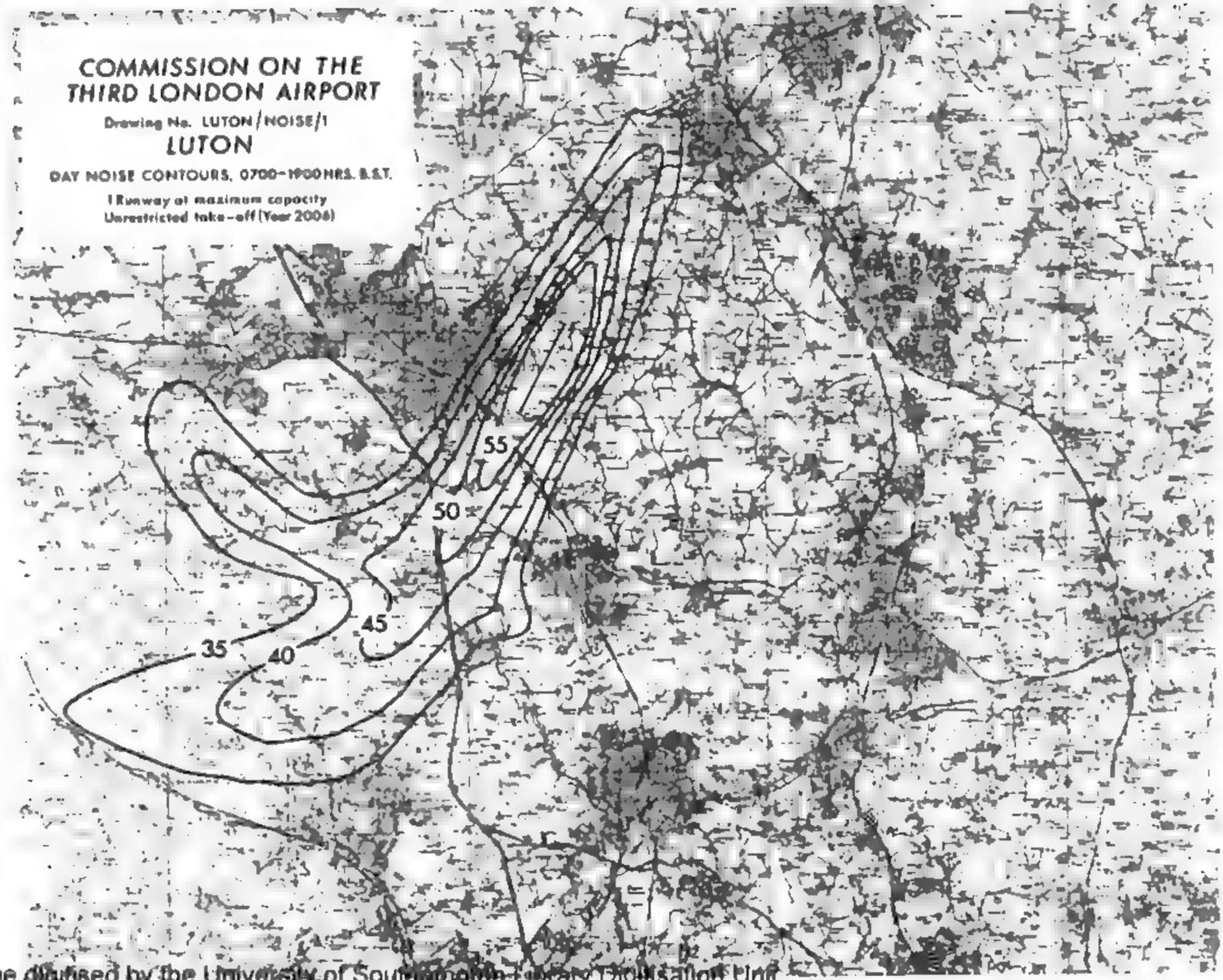
COMMISSION ON THE THIRD LONDON AIRPORT

Drawing No. LUTON/NOISE/1

LUTON

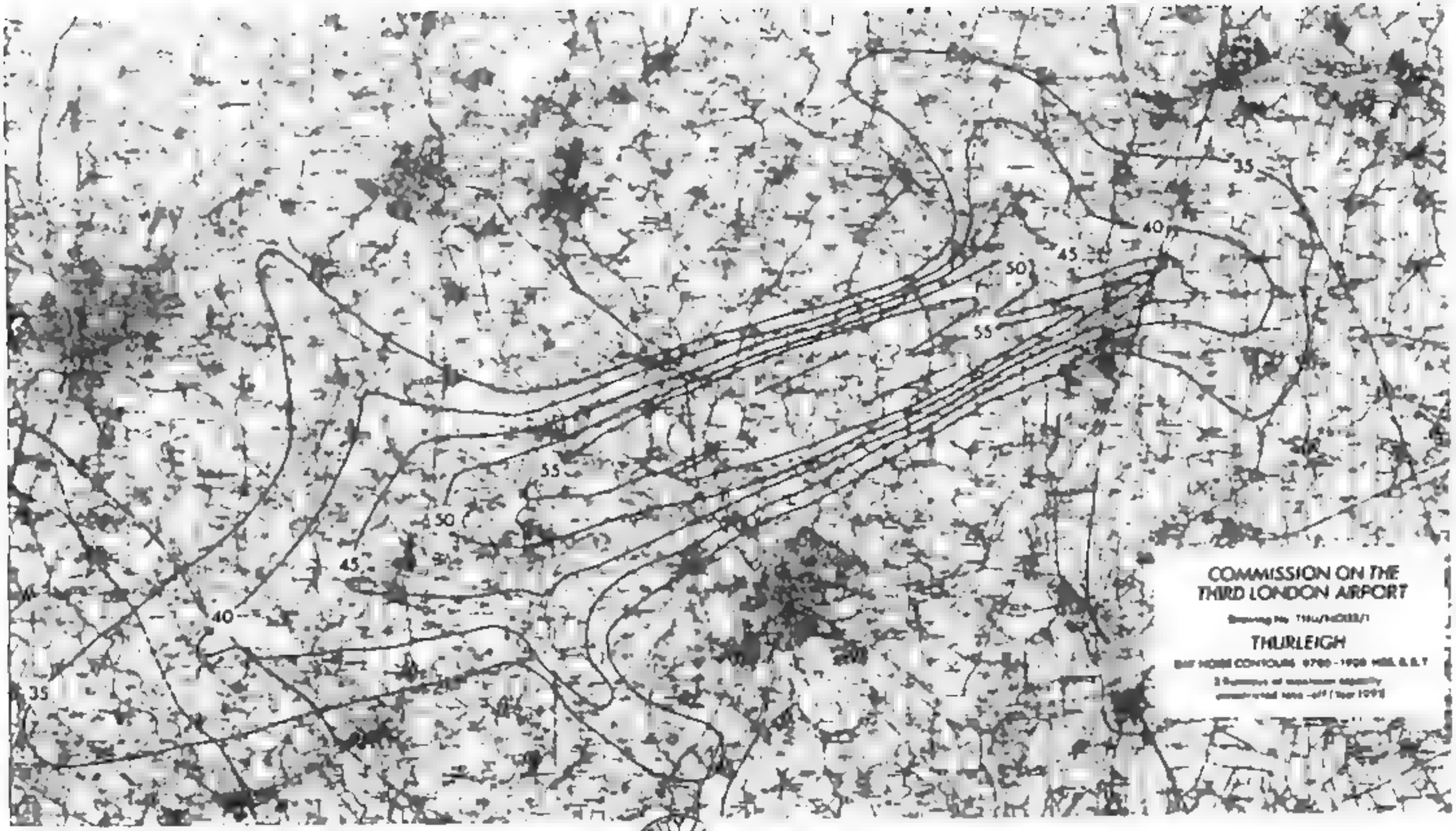
DAY NOISE CONTOURS, 0700–1900 HRS. B.S.T.

1 Runway at maximum capacity
Unrestricted take-off (Year 2006)



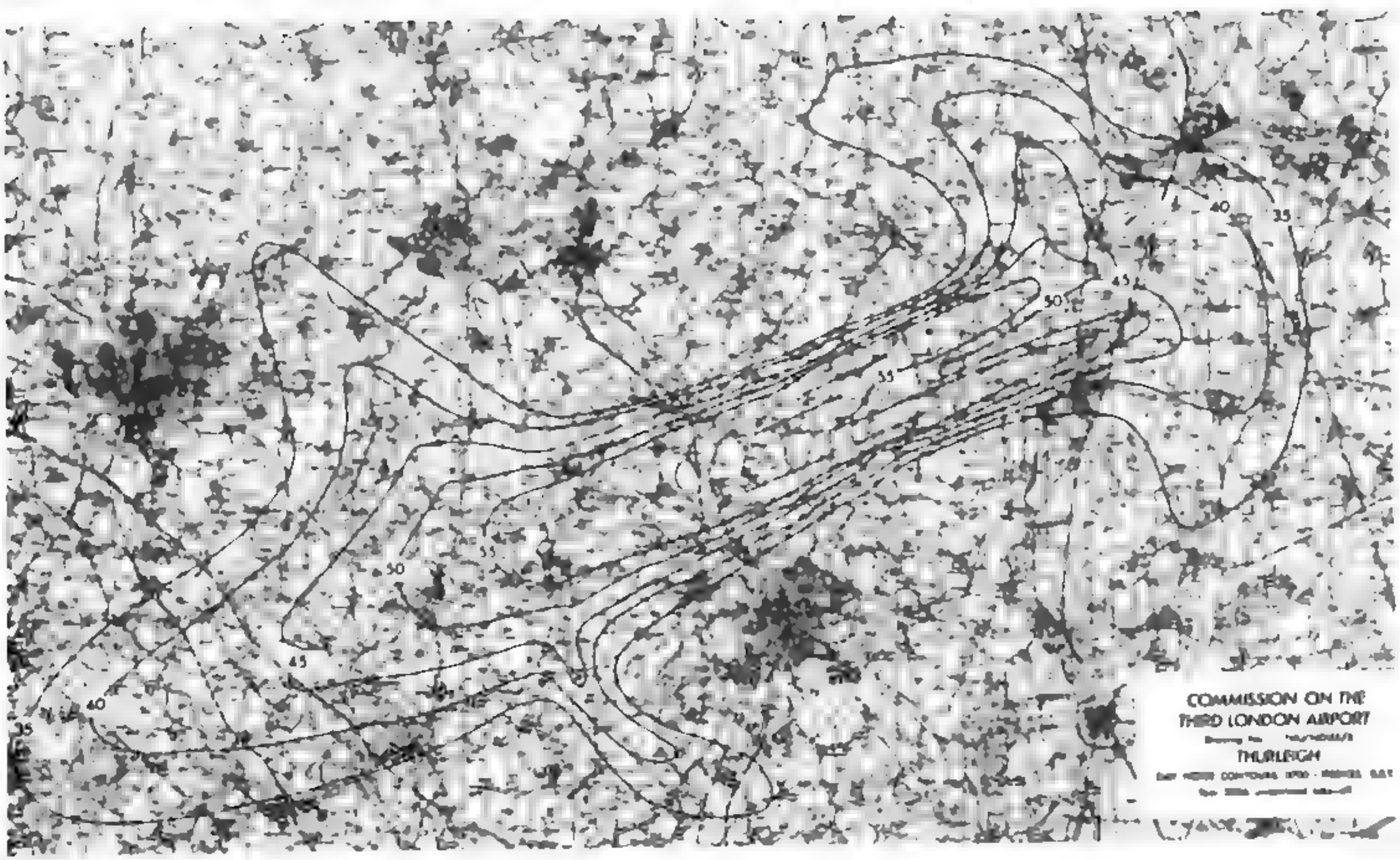
UNIVERSITY OF CAMBRIDGE
7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



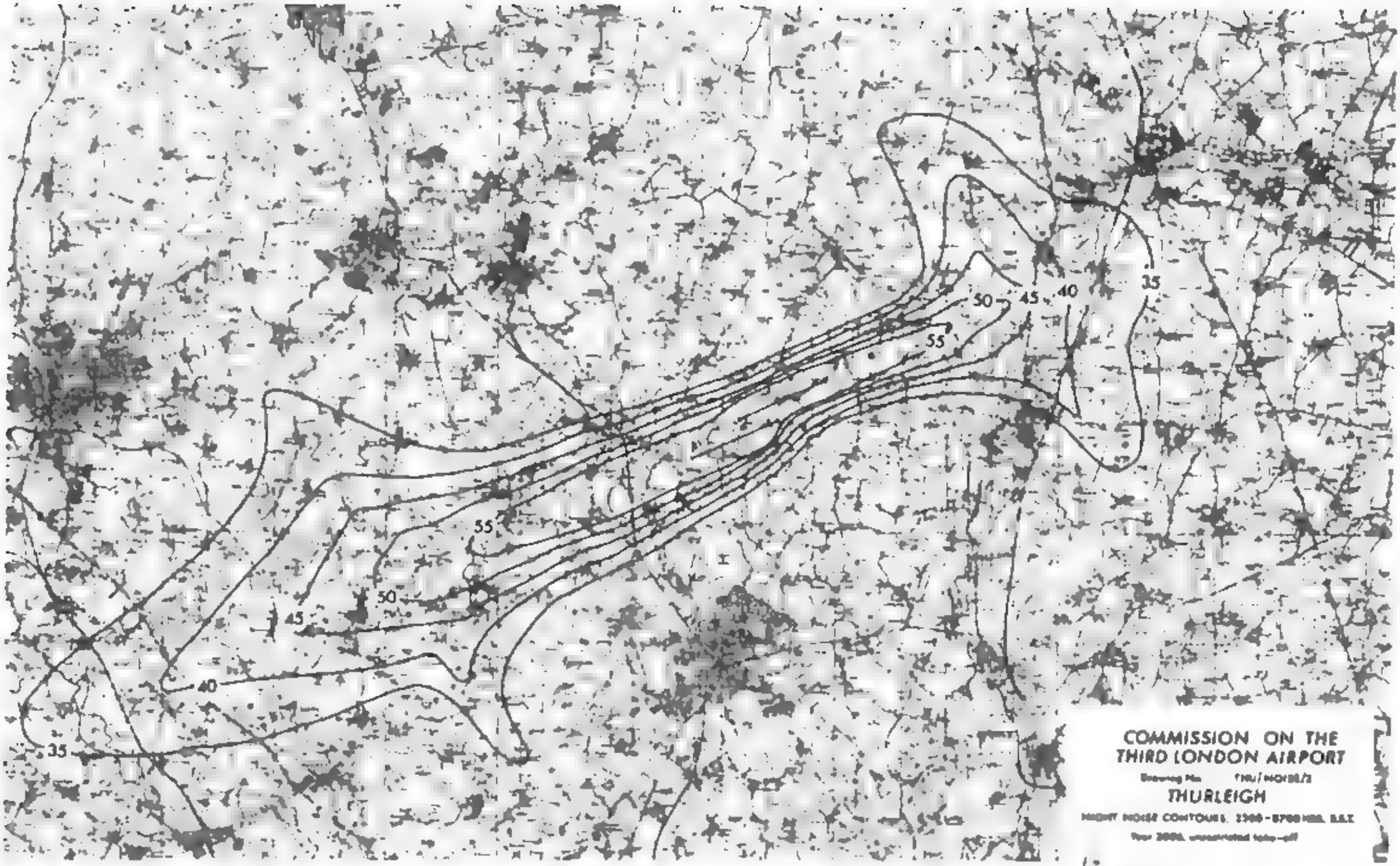
UNIVERSITY OF SOUTHAMPTON
7 MAR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit



7 MR
'970

Printed image digitised by the University of Southampton Library Digitisation Unit



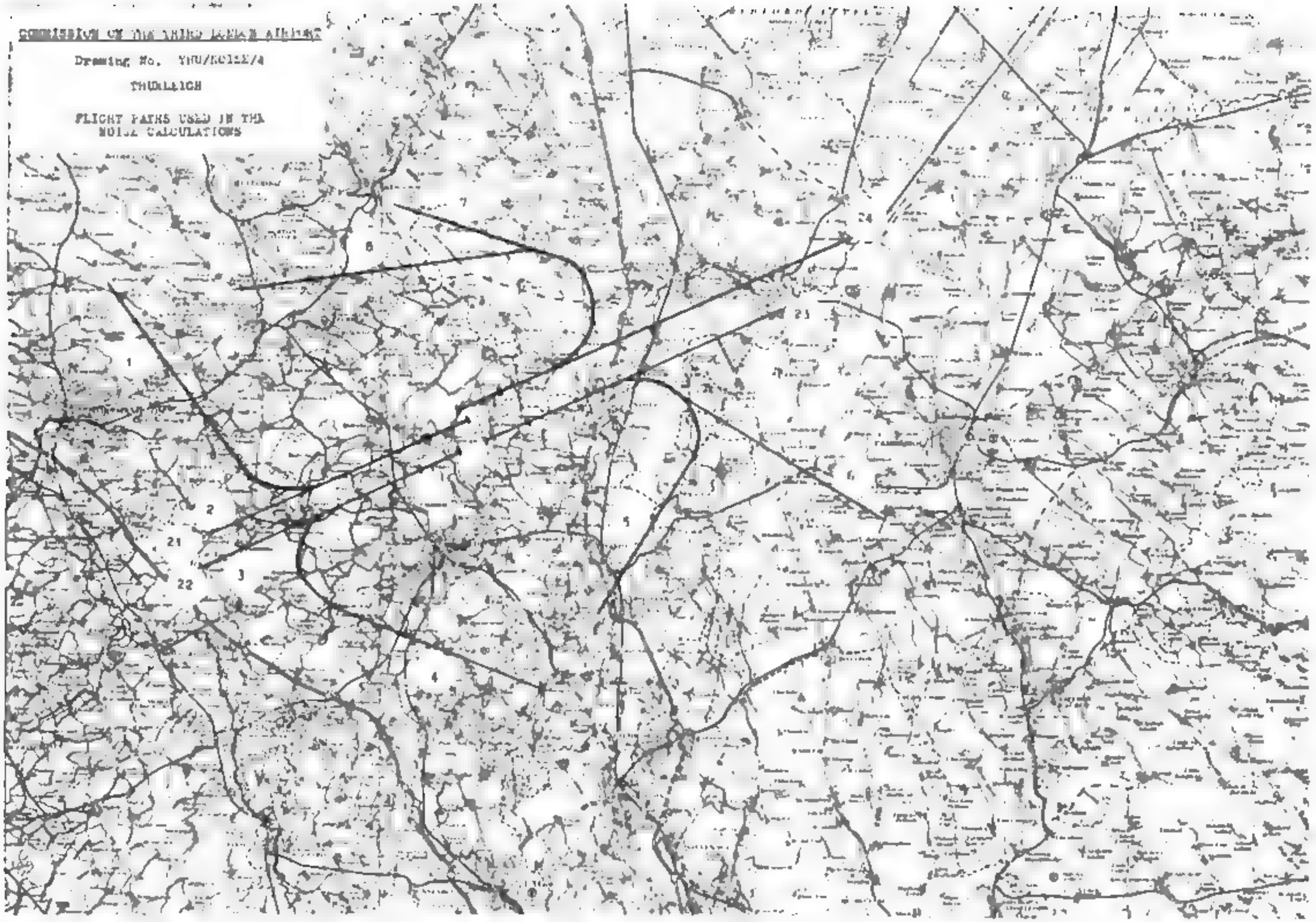
Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION OF THE CIVIL AVIATION AUTHORITY

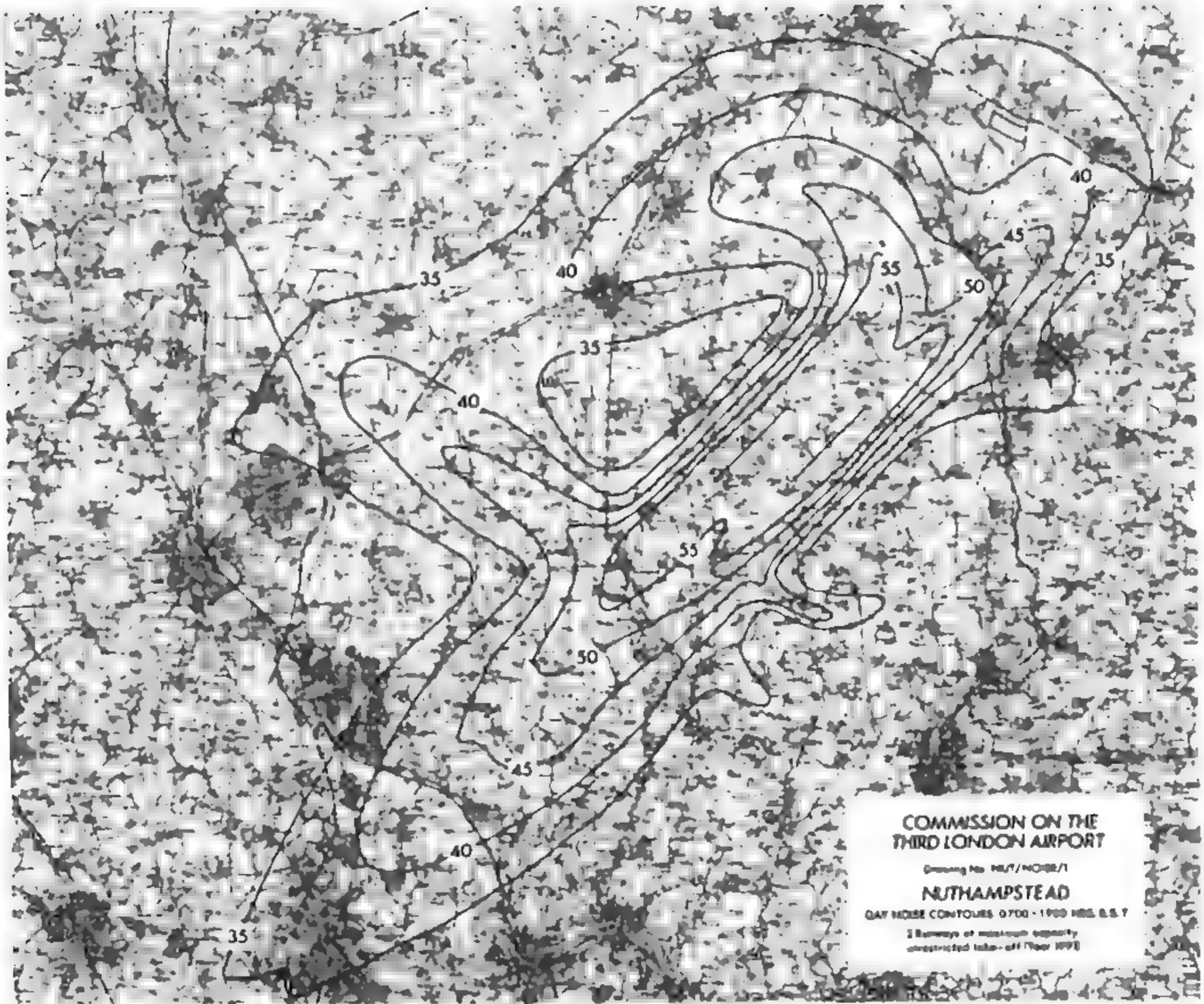
Drawing No. CAA/NOISE/4

THURLEIGH

FLIGHT PATHS USED IN THE NOISE CALCULATIONS

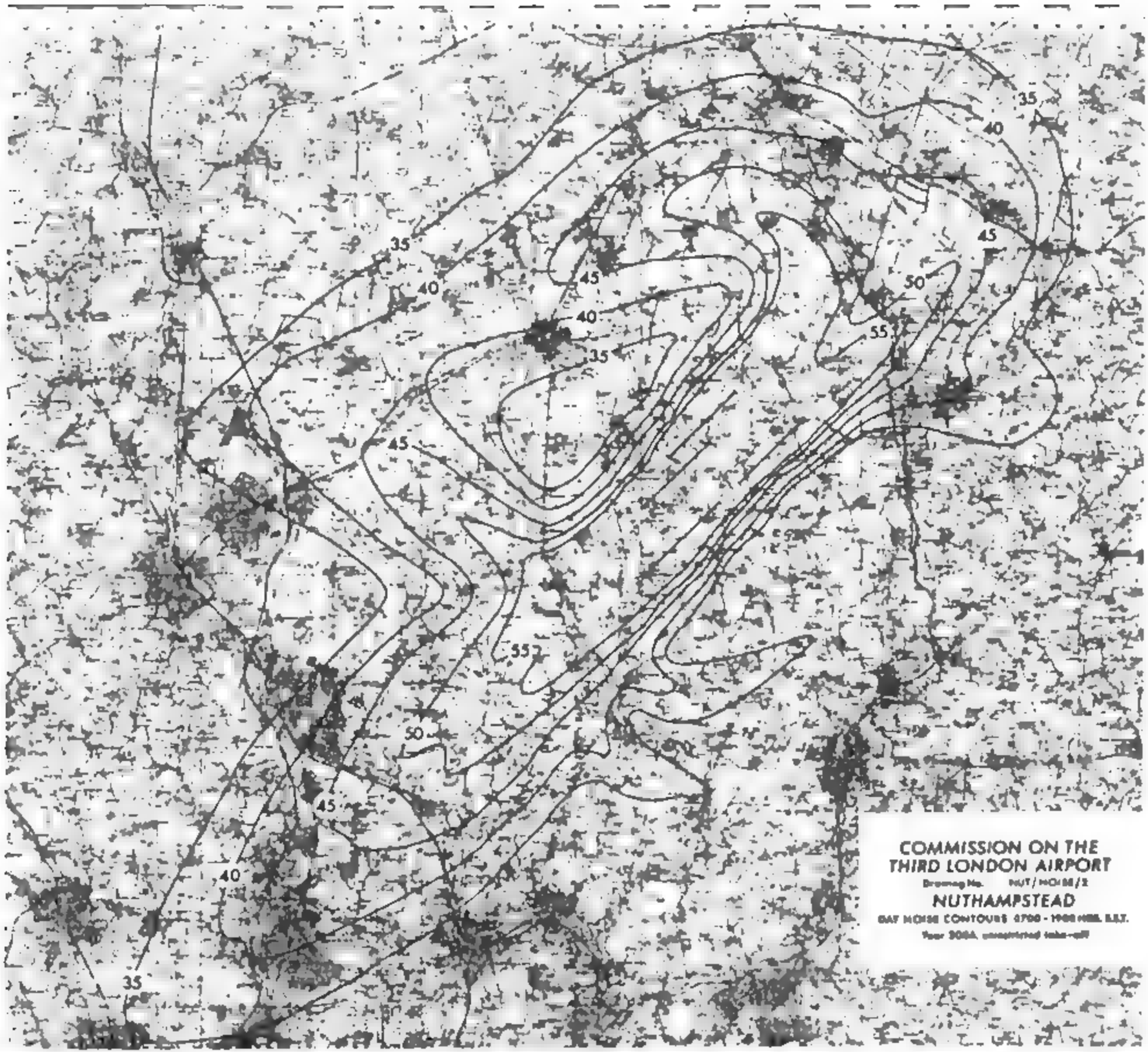


Printed image digitised by the University of Southampton Library Digitisation Unit

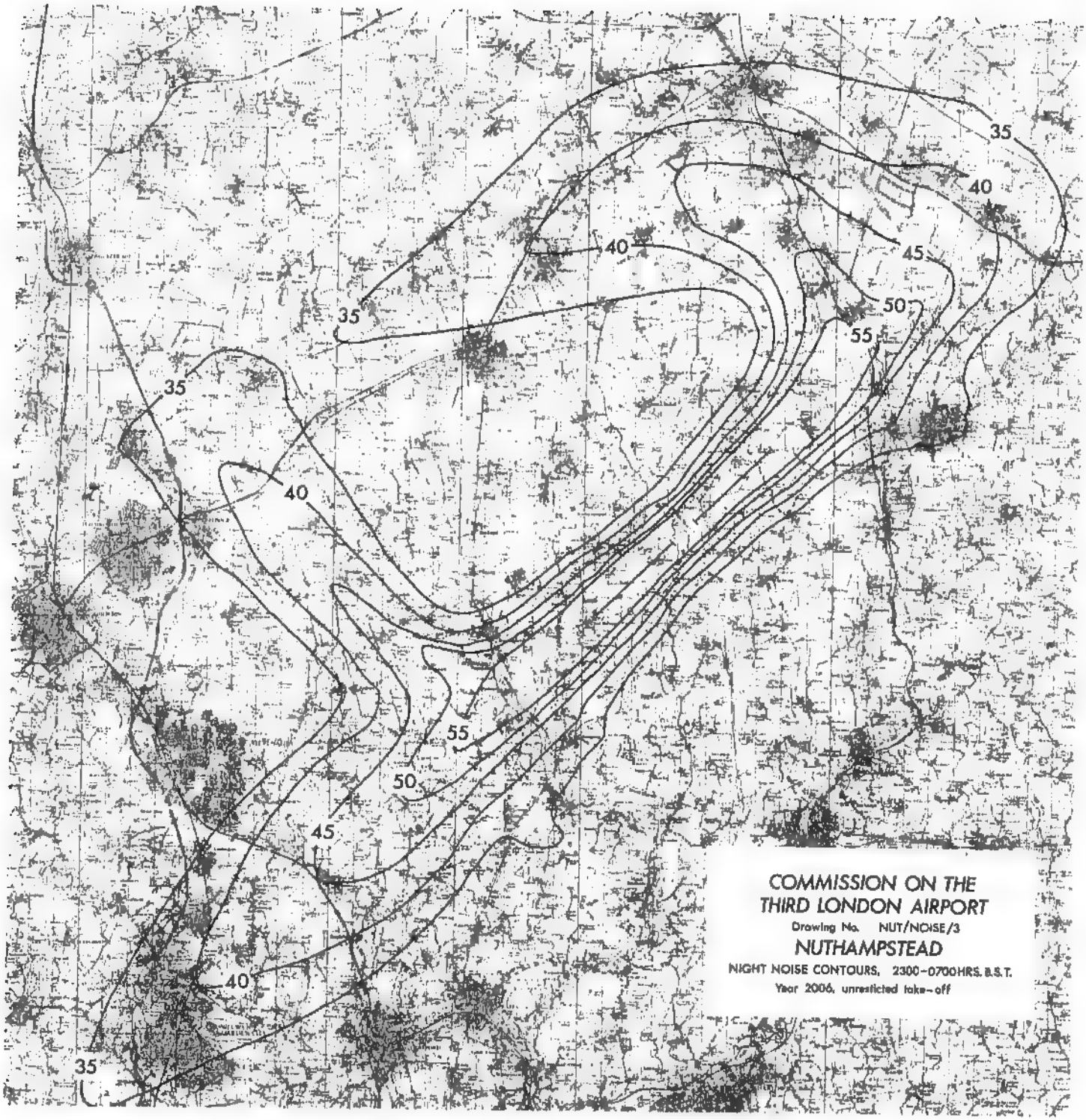


7 MR 1970
CAMBRIDGE

Printed image digitised by the University of Southampton Library Digitisation Unit



7 W-
1970
CAMBRIDGE
Printed image digitised by the University of Southampton Library Digitisation Unit



COMMISSION ON THE
THIRD LONDON AIRPORT

Drawing No. NUT/NOISE/3

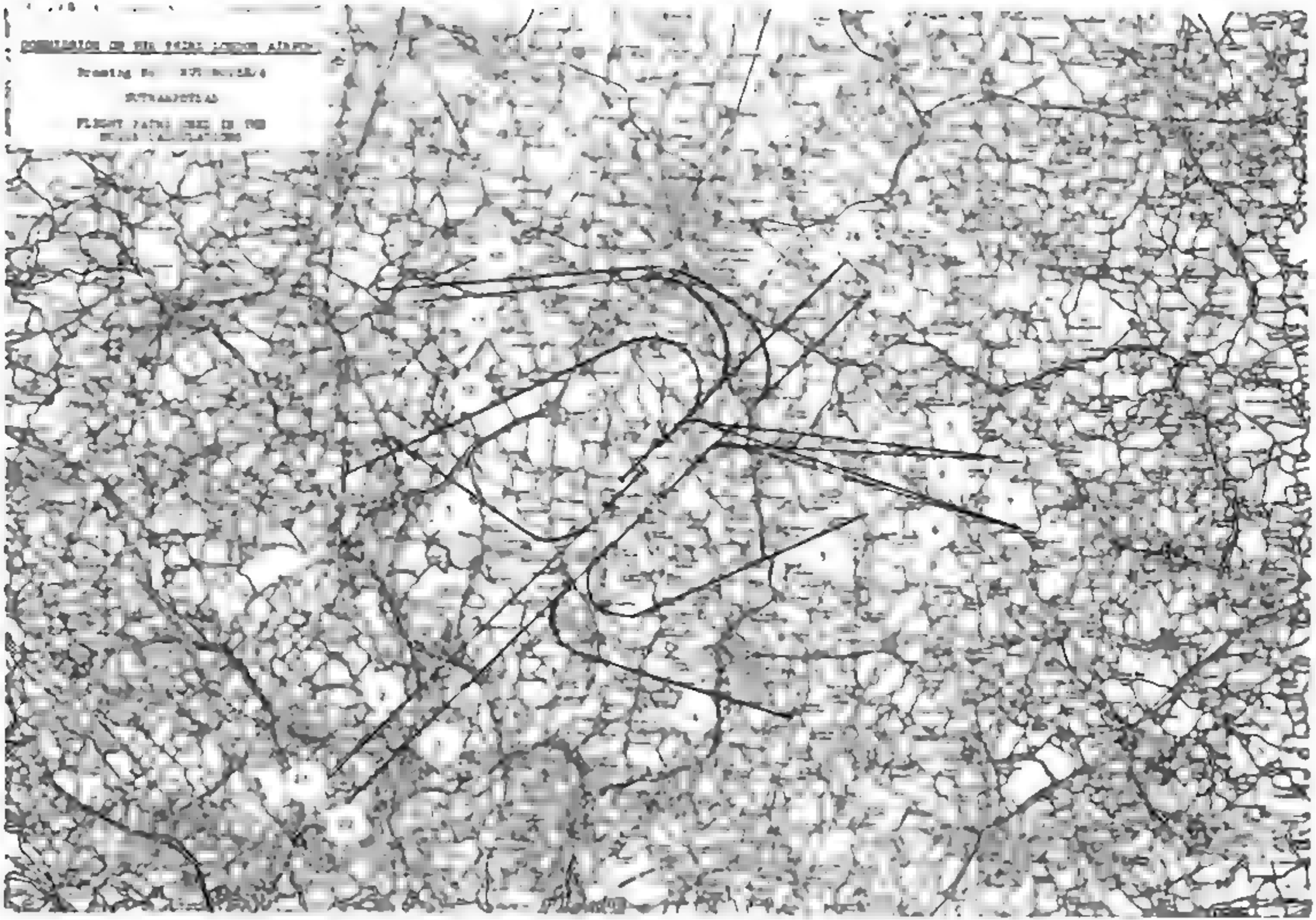
NUTHAMPSTEAD

NIGHT NOISE CONTOURS, 2300–0700HRS. B.S.T.

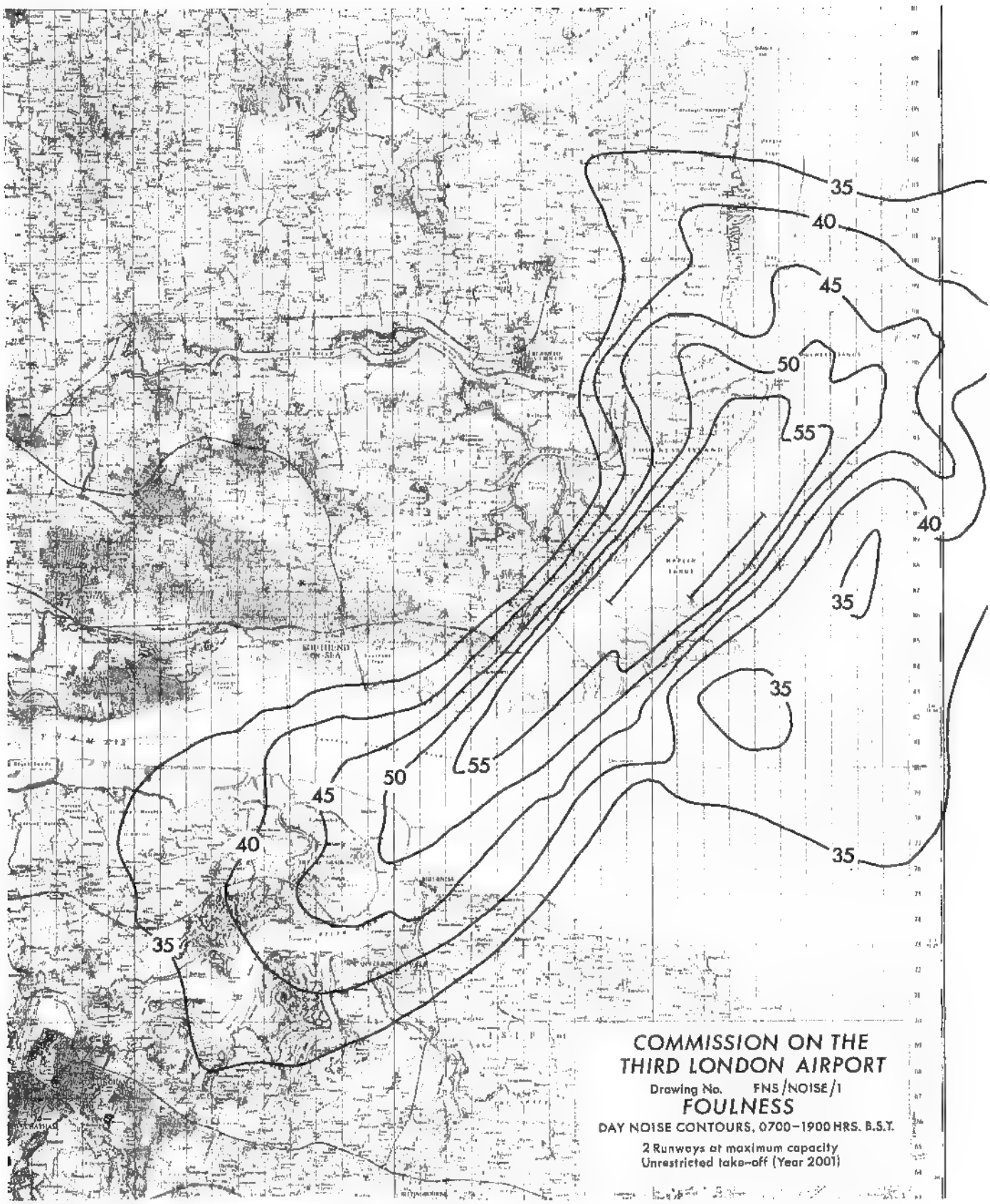
Year 2006, unrestricted take-off

UNIVERSITY LIBRARY
OP
7 MR
1970
CAMBRIDGE

Printed image digitised by the University of Southampton Library Digitisation Unit

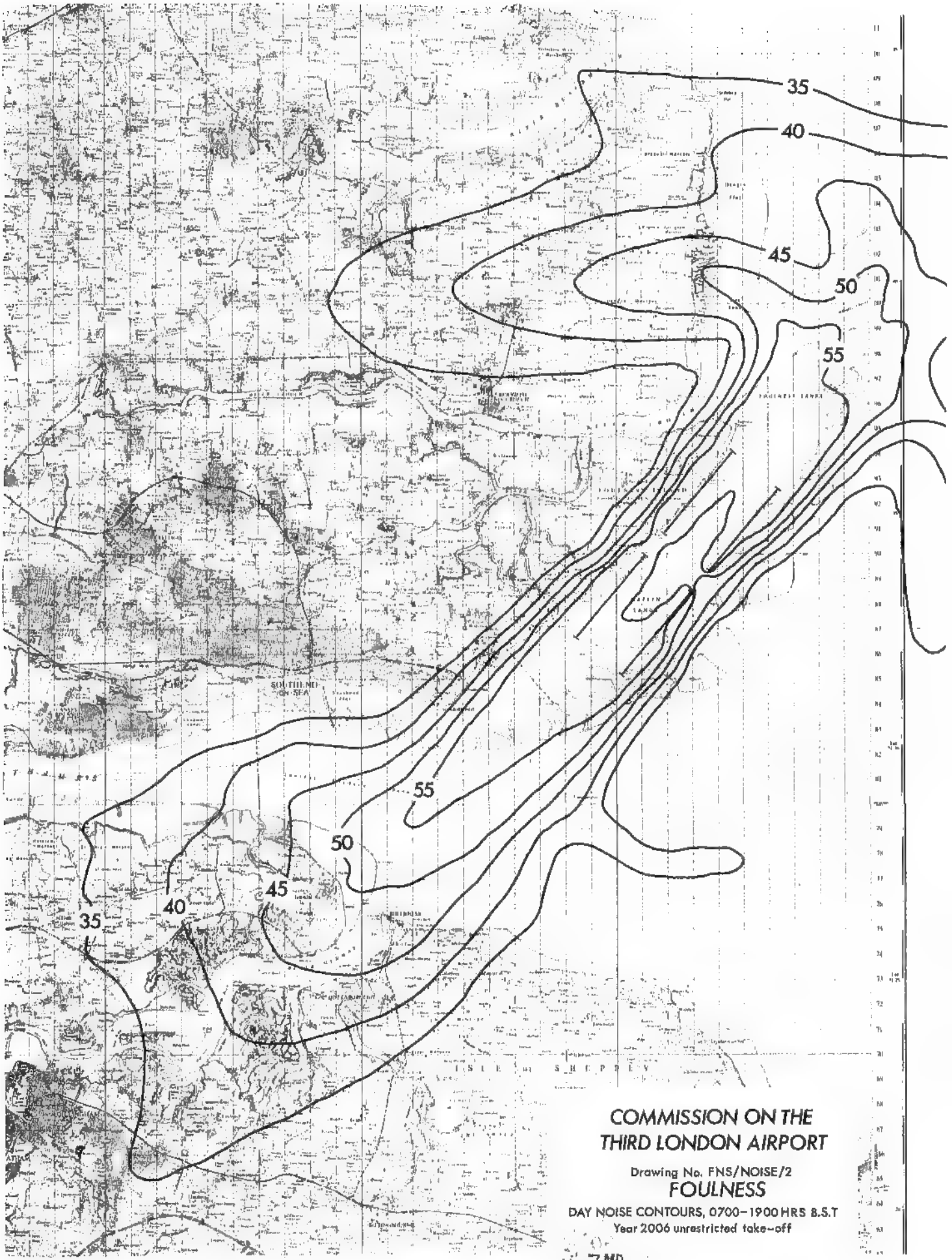


Printed image digitised by the University of Southampton Library Digitisation Unit



LIBRARY
OP
7 MR
1970
CAMBRIDGE

Printed image digitised by the University of Southampton Library Digitisation Unit



COMMISSION ON THE THIRD LONDON AIRPORT

Drawing No. FNS/NOISE/2

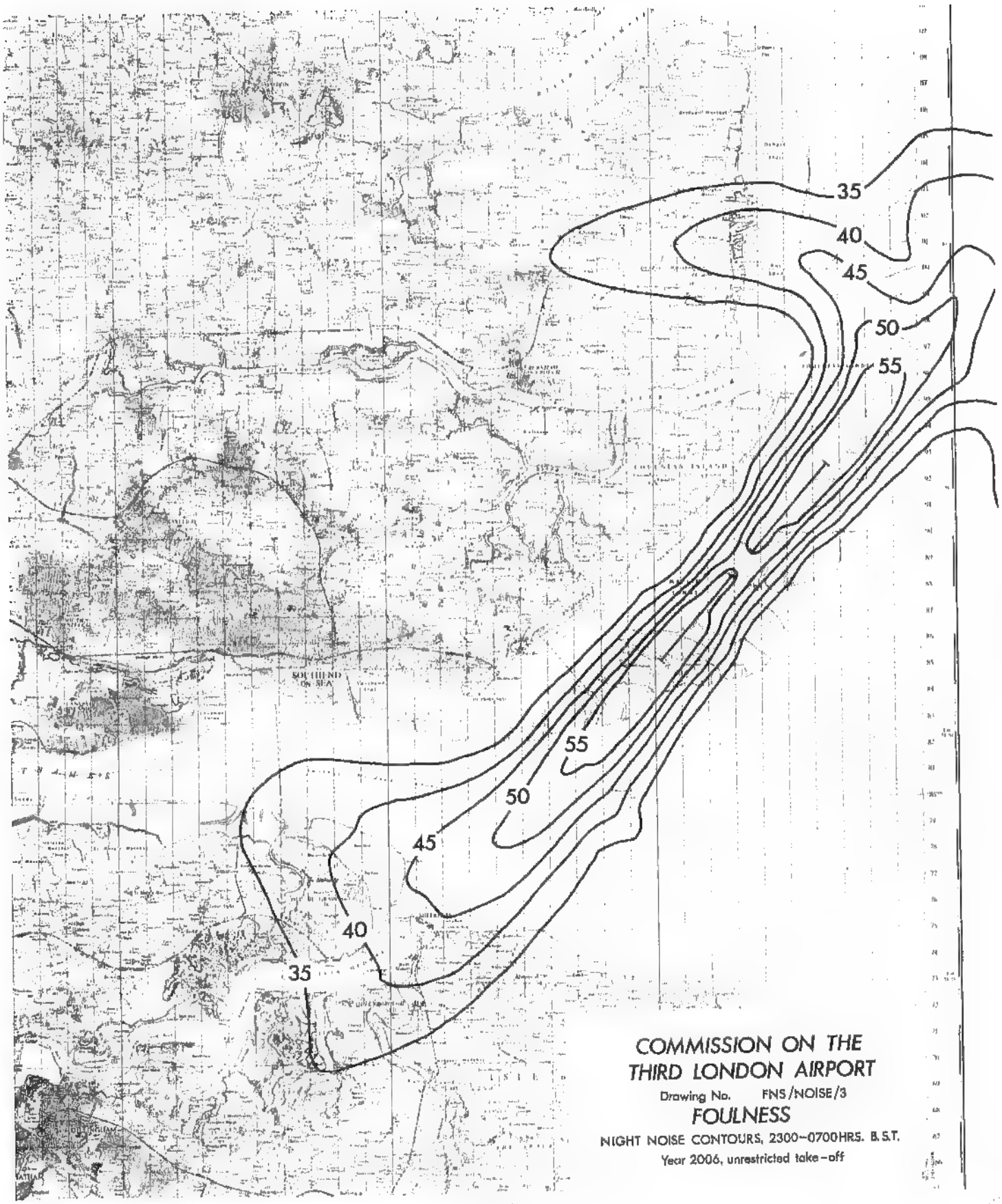
FOULNESS

DAY NOISE CONTOURS, 0700–1900 HRS B.S.T

Year 2006 unrestricted take-off

7 MR 1970
CAMBR

Printed image digitised by the University of Southampton Library Digitisation Unit



COMMISSION ON THE
THIRD LONDON AIRPORT

Drawing No. FNS/NOISE/3

FOULNESS

NIGHT NOISE CONTOURS, 2300–0700HRS. B.S.T.

Year 2006, unrestricted take-off

7 MR 1970
CAMB

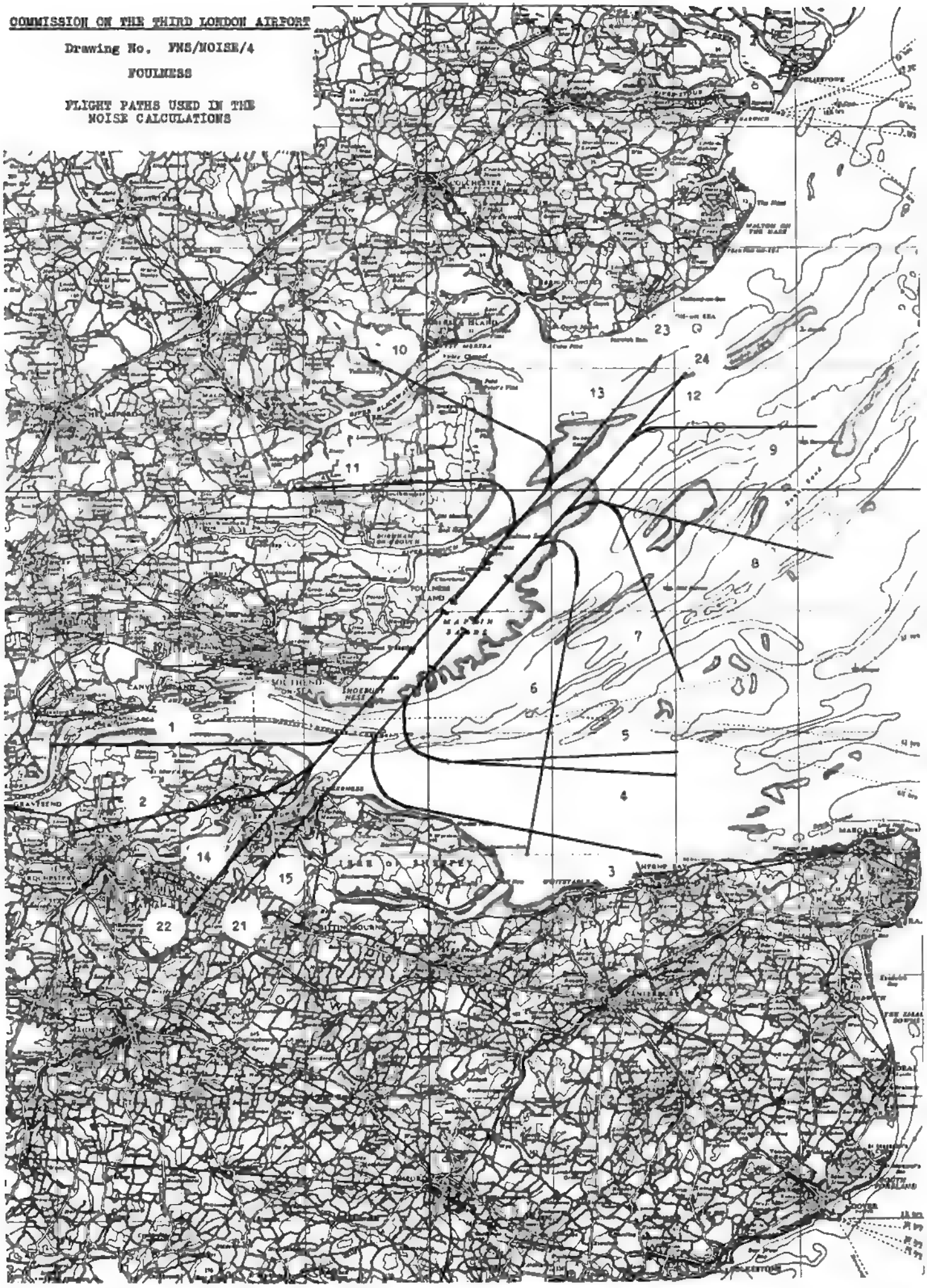
Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

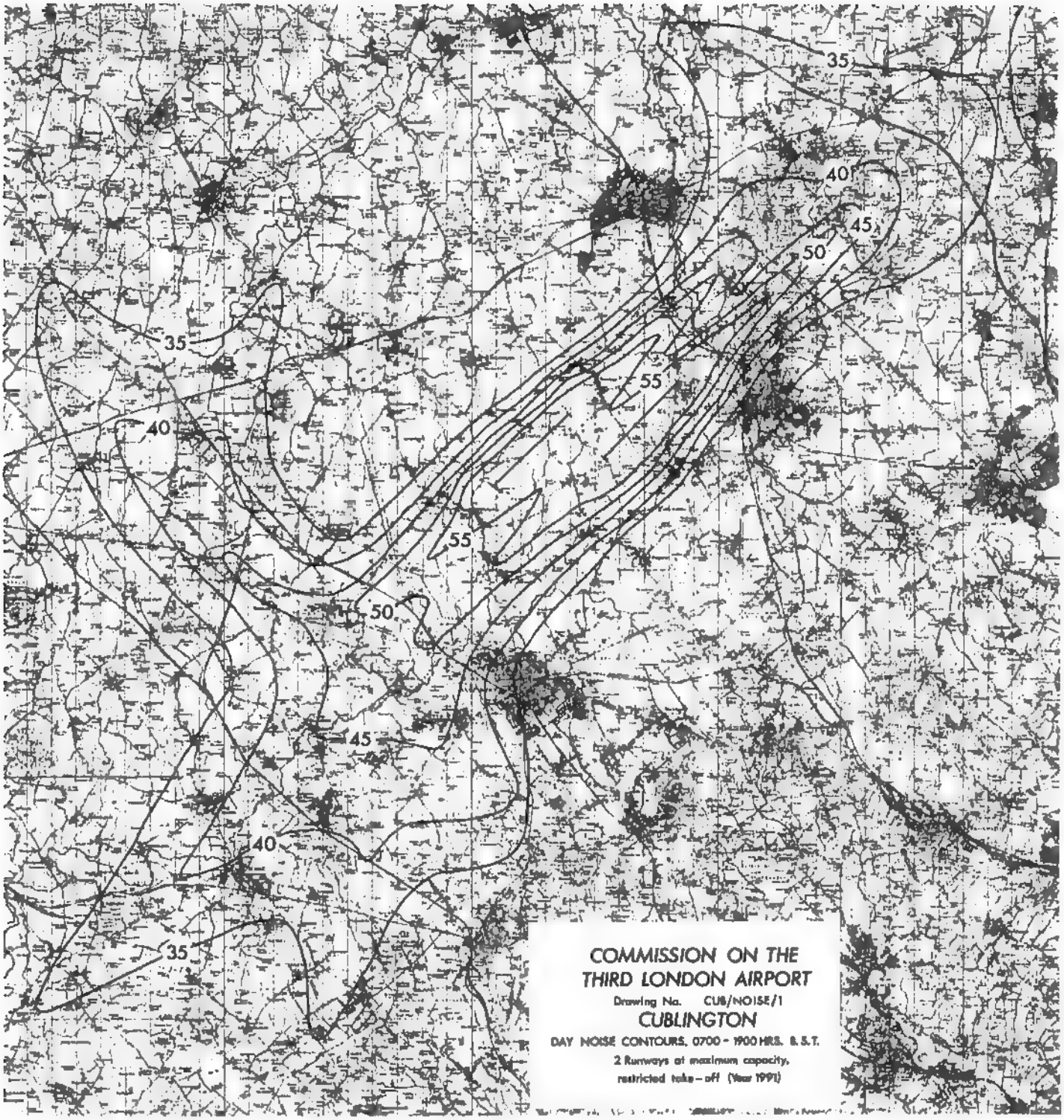
Drawing No. FMS/NOISE/4

FOULNESS

FLIGHT PATHS USED IN THE NOISE CALCULATIONS



Printed image digitised by the University of Southampton Library Digitisation Unit



COMMISSION ON THE
THIRD LONDON AIRPORT

Drawing No. CUB/NOISE/1

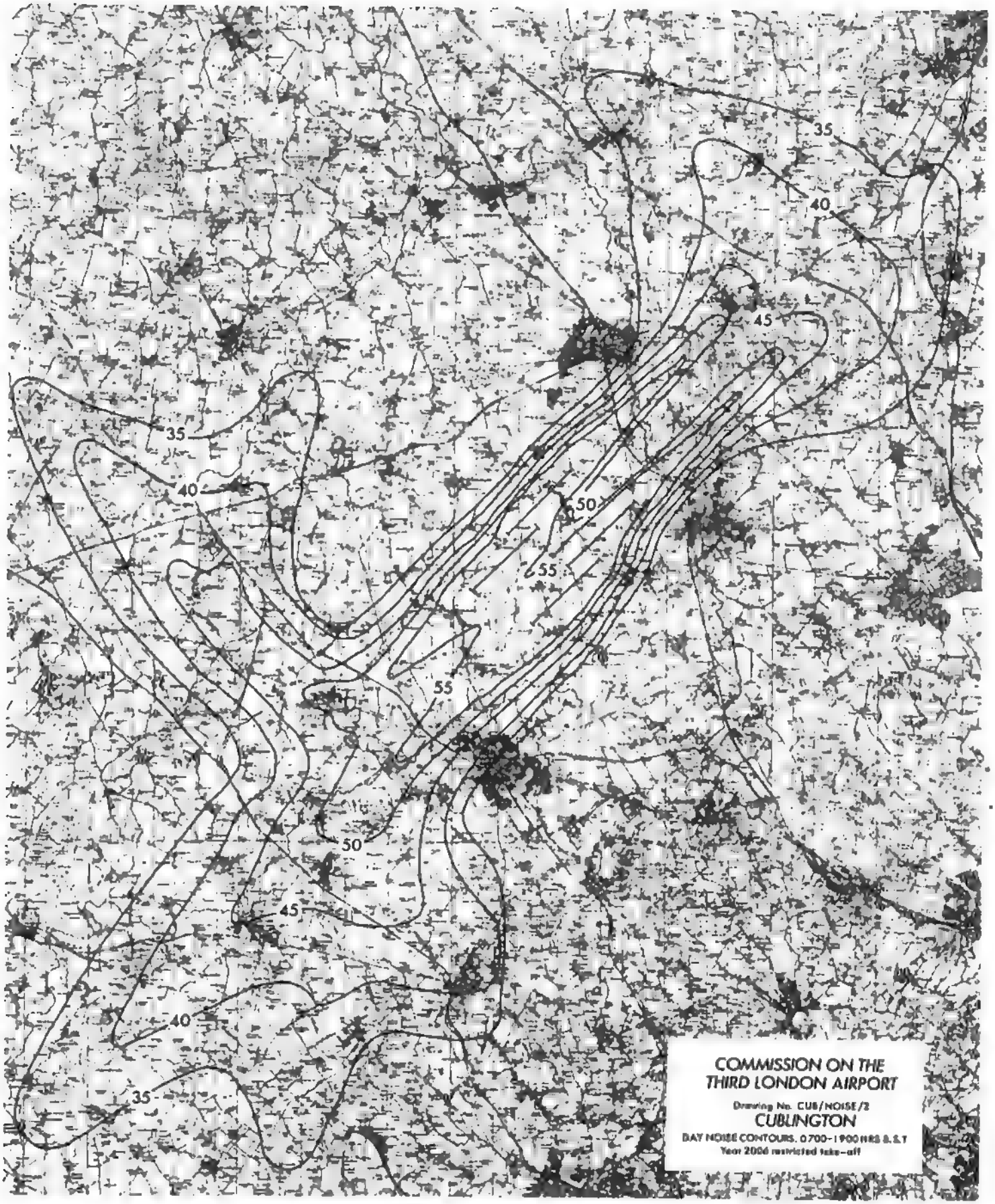
CUBLINGTON

DAY NOISE CONTOURS, 0700 - 1900 HRS. B.S.T.

2 Runways at maximum capacity,
restricted take-off (Year 1991)

UNIVERSITY LIBRARY
OP
7 MAR
1970
CAMBRIDGE

Printed image digitised by the University of Southampton Library Digitisation Unit



COMMISSION ON THE THIRD LONDON AIRPORT

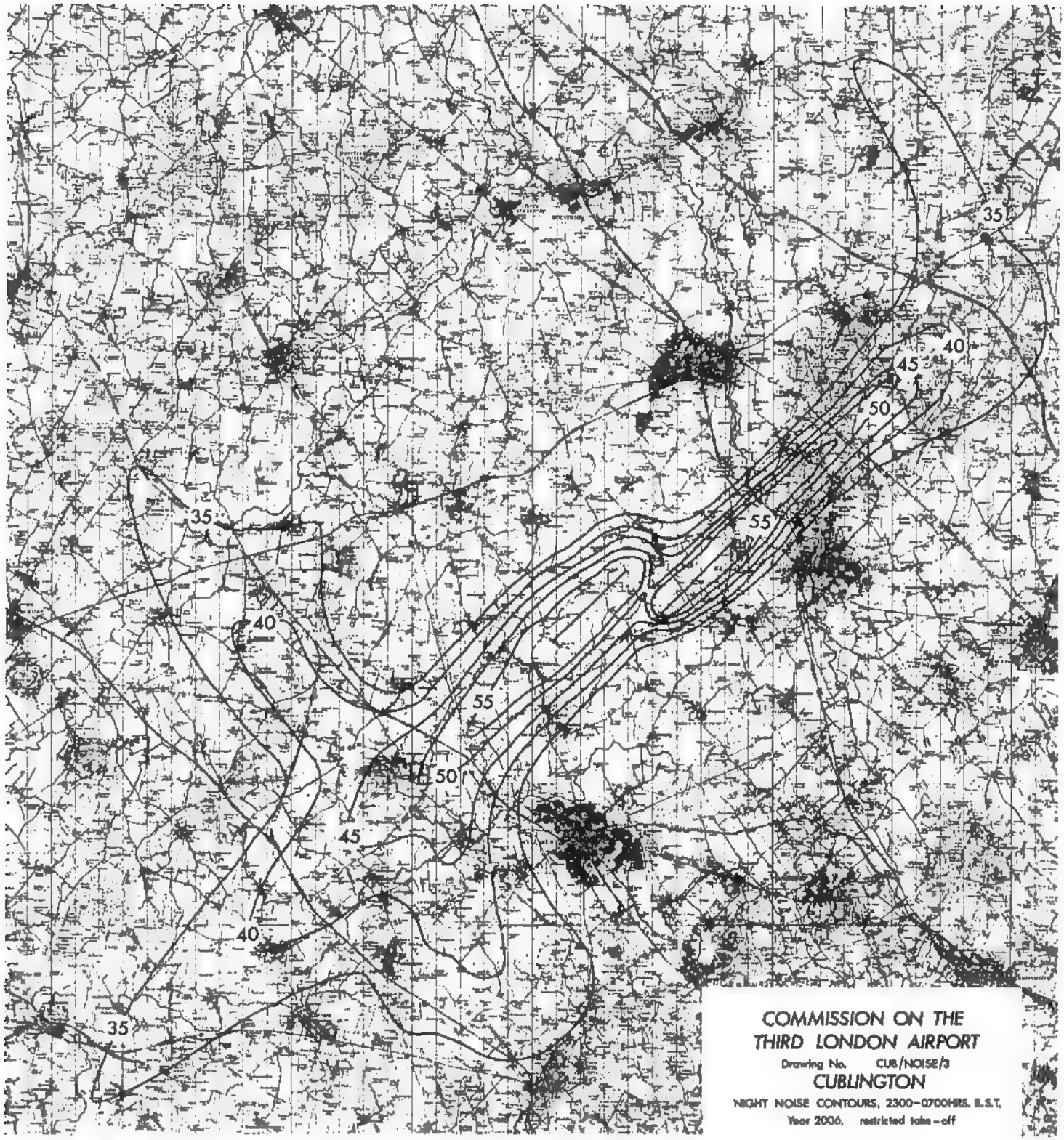
Drawing No. CUB/NOISE/2

CUBLINGTON

DAY NOISE CONTOURS. 0700–1900 HRS B.S.T.

Year 2006 restricted take-off

Printed image digitised by the University of Southampton Library Digitisation Unit



COMMISSION ON THE
THIRD LONDON AIRPORT

Drawing No. CUB/NOISE/3

CUBLINGTON

NIGHT NOISE CONTOURS, 2300–0700HRS. B.S.T.
Year 2006, restricted take-off

UNIV. OF CAMBRIDGE
OP
7 MR
1970

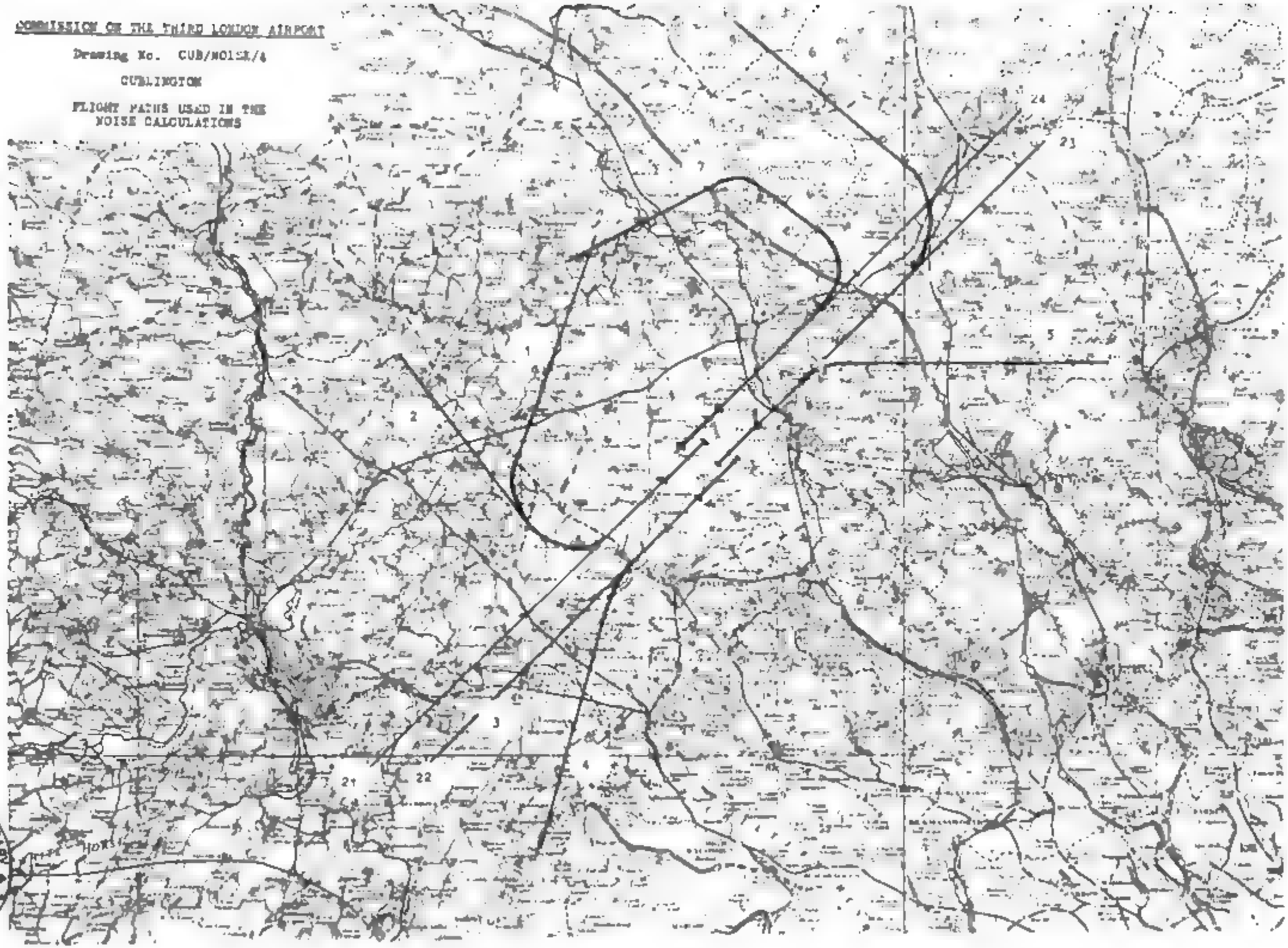
Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Drawing No. CUB/NOISE/4

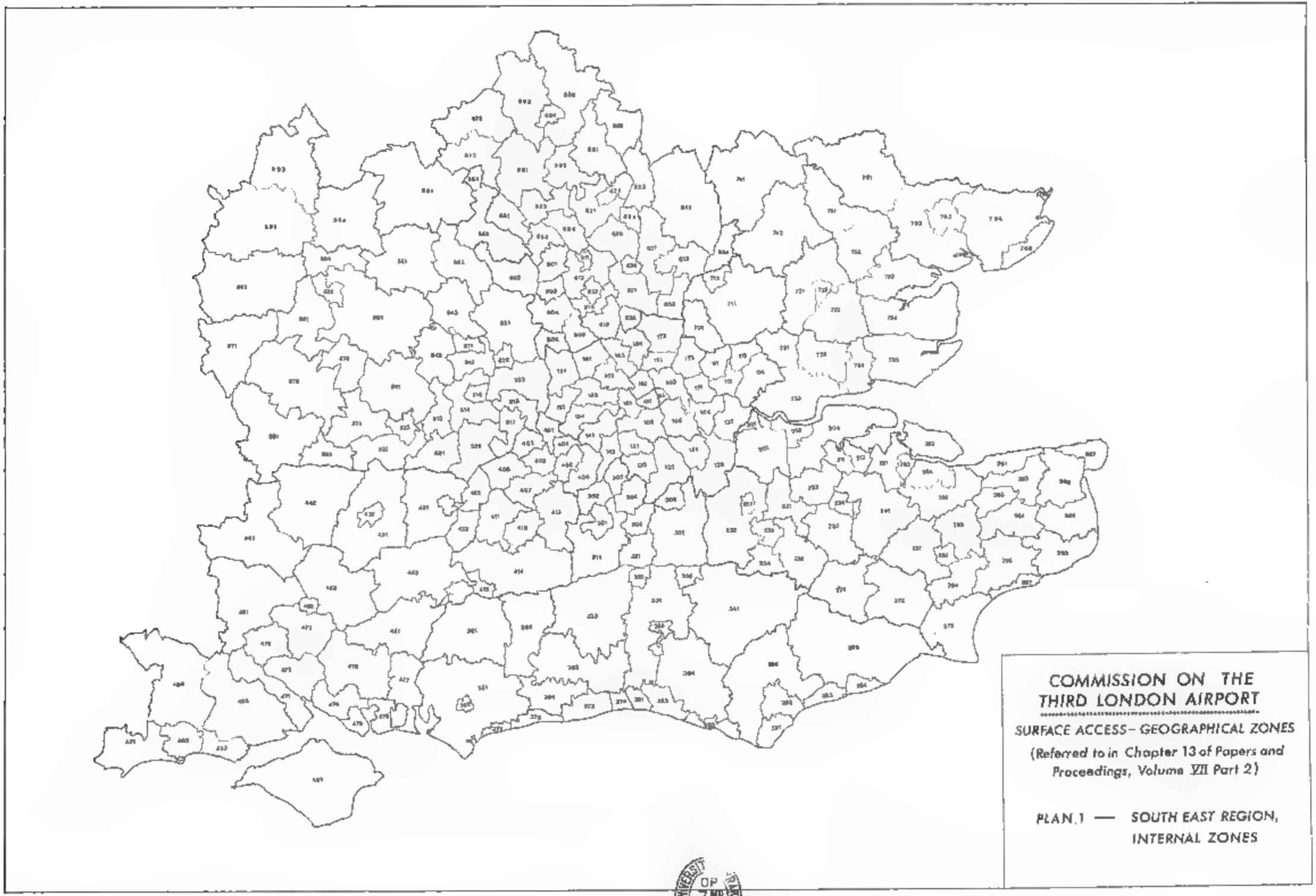
CUBLINGTON

FLIGHT PATHS USED IN THE NOISE CALCULATIONS



UNIVERSITY LIBRARY CAMBRIDGE OP 7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



COMMISSION ON THE THIRD LONDON AIRPORT

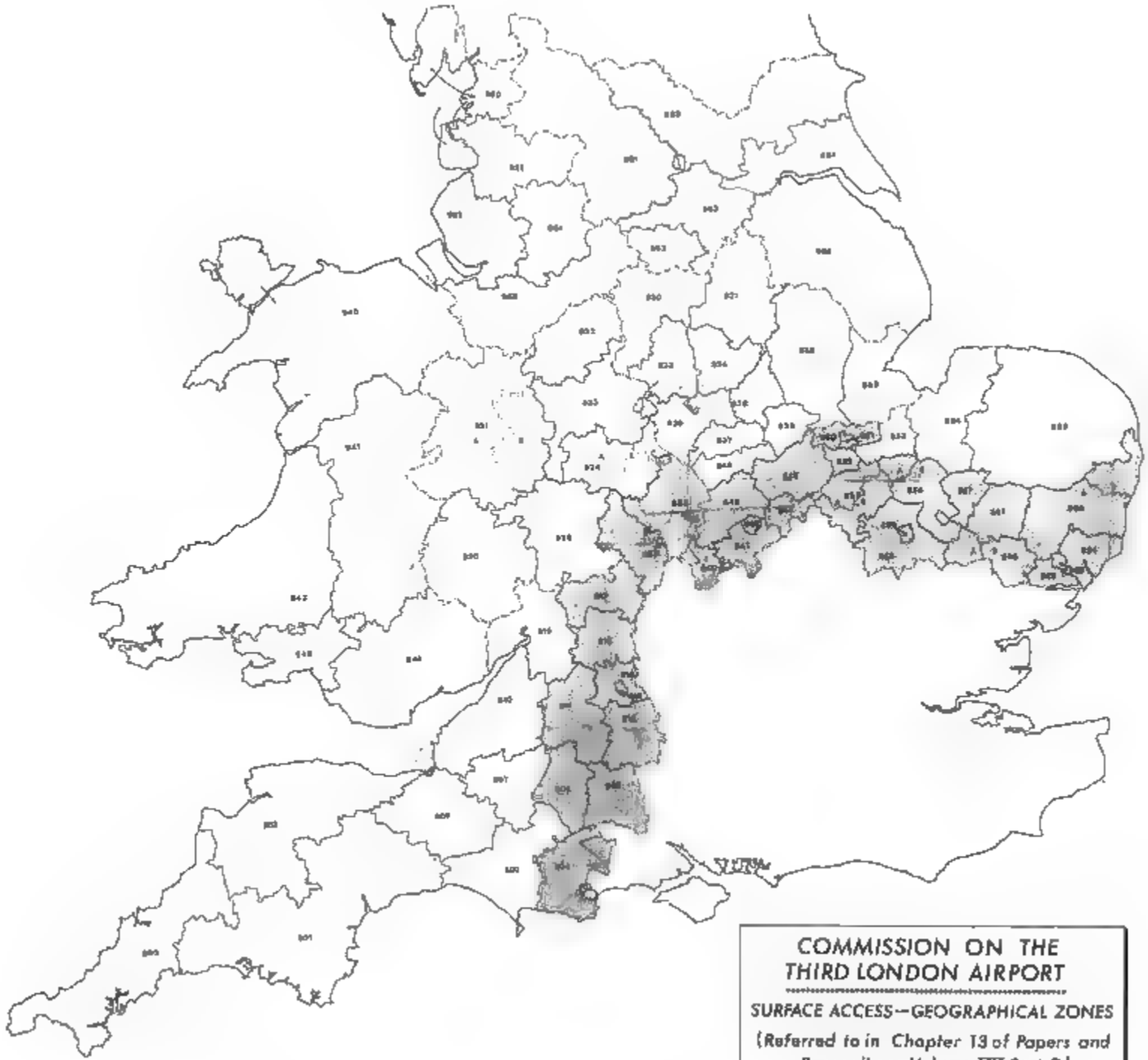
SURFACE ACCESS – GEOGRAPHICAL ZONES

(Referred to in Chapter 13 of Papers and Proceedings, Volume VII Part 2)

PLAN 1 — SOUTH EAST REGION, INTERNAL ZONES

UNIVERSITY OF SOUTHAMPTON 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



COMMISSION ON THE THIRD LONDON AIRPORT

SURFACE ACCESS—GEOGRAPHICAL ZONES

(Referred to in Chapter 13 of Papers and Proceedings Volume VII Part 2)

PLAN 2 — EXTERNAL ZONES

UNIVERSITY OF CAMBRIDGE 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

THURLEIGH

LOCATION & KEY PLAN

THU/1

UNIVERSITY OF SOUTHAMPTON 7 MR 1970 LIBRARY

Printed image digitised by the University of Southampton Library Digitisation Unit

BOREHOLE SECTIONS

DEPTH IN METRES

KEY

TOPSOIL

MADE GROUND

CLAY [brown or grey with stones, building rubble fragments] [London clay]

BOREHOLES SHOWN THUS ⊕ ON PLAN ARE LOCATED ON DRAWING NO THU/1

LEGEND

EXISTING CONTOURS

REGRADED CONTOURS

SPOT LEVELS ABOVE FINISHED SURFACE [all levels shown in this manner]

SURFACE WATER DRAINS [open ditch shown in red] [the arrows at chainage 00 and 400 are direction only]

SURFACE WATER DITCHES

BUILDING UTILISATION KEY

A PASSENGER TERMINALS
B AIRLINES
C AIRPORT MANAGEMENT
D AIRCRAFT MAINTENANCE
E REPAIRS STATIONS
F PRECIPITATION BUILDINGS
G CAR PARKS
H AREA FOR ANCILLARY DEVELOPMENT

MINISTRY OF PUBLIC BUILDING AND WORKS

THURLEIGH

AIRPORT LAYOUT

COMMISSION ON THE THIRD LONDON AIRPORT
EDMUND HOUSE
WAT TYLER ROAD
LONDON W.C.1

SCALE AS DRAWN 1/1000

DRAWING NO. THU/2

OP 7 MR 1970 UNIVERSITY OF SOUTHAMPTON

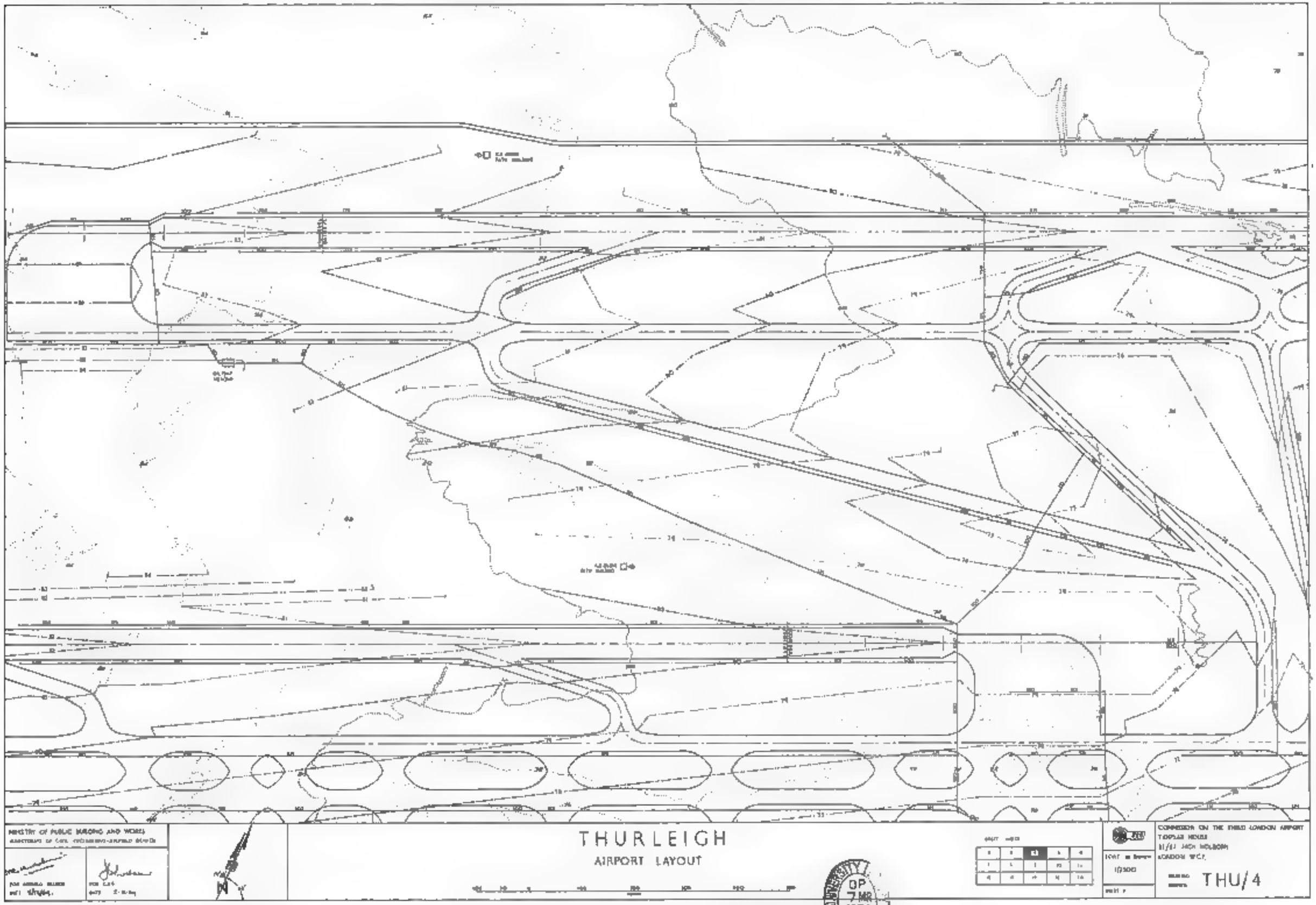
Printed image digitised by the University of Southampton Library Digitisation Unit

THURLEIGH

AIRPORT LAYOUT

THU/3

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

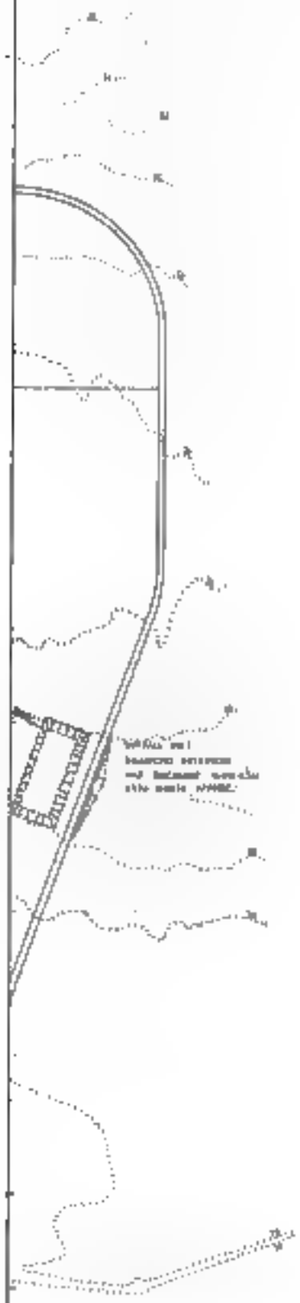
THURLEIGH

AIRPORT LAYOUT

THU/5

UNIVERSITY OF CAMBRIDGE 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



MINISTRY OF PUBLIC BUILDING AND WORKS

THURLEIGH

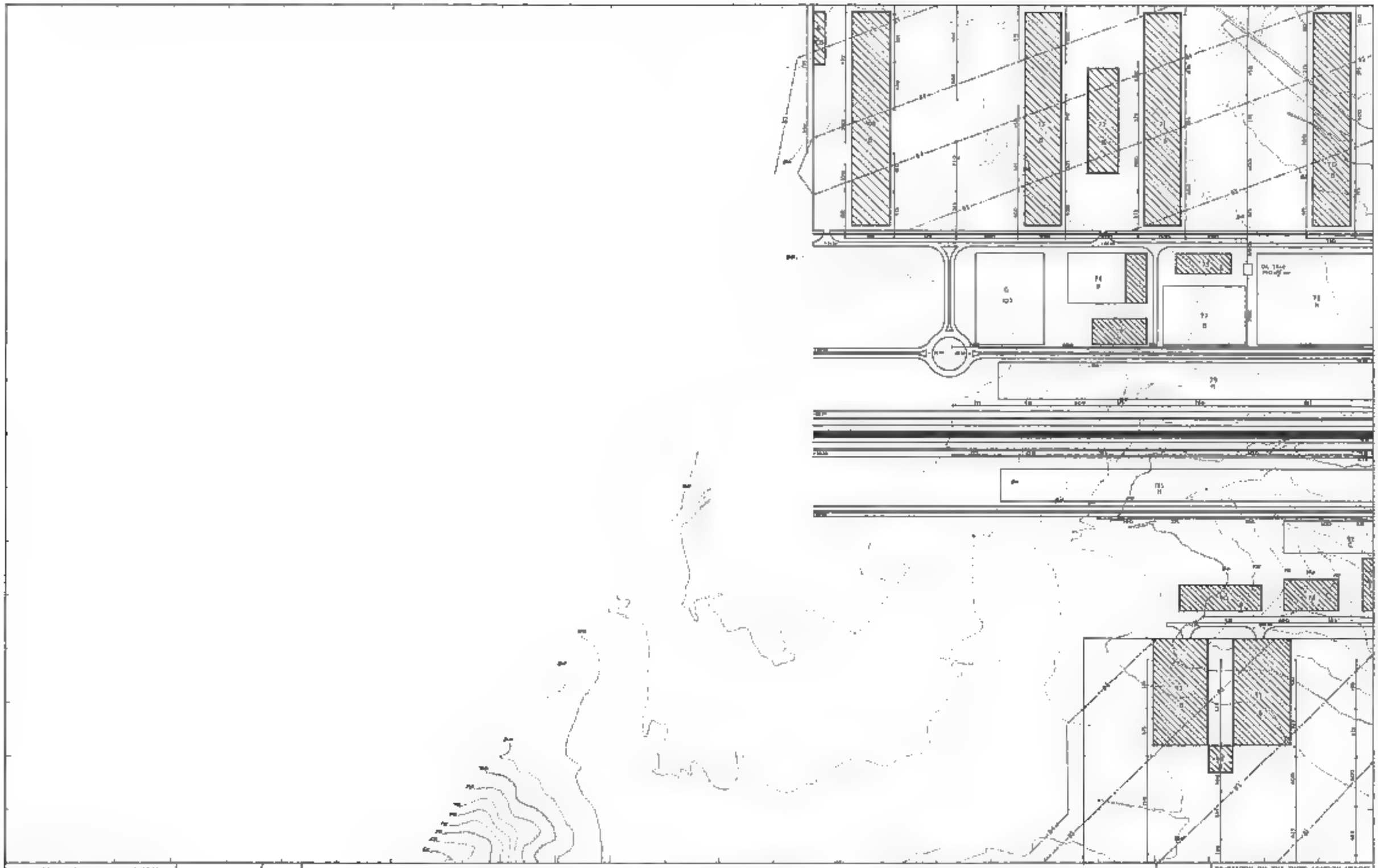
AIRPORT LAYOUT

COMMISSION ON THE THIRD LONDON AIRPORT

THU/6

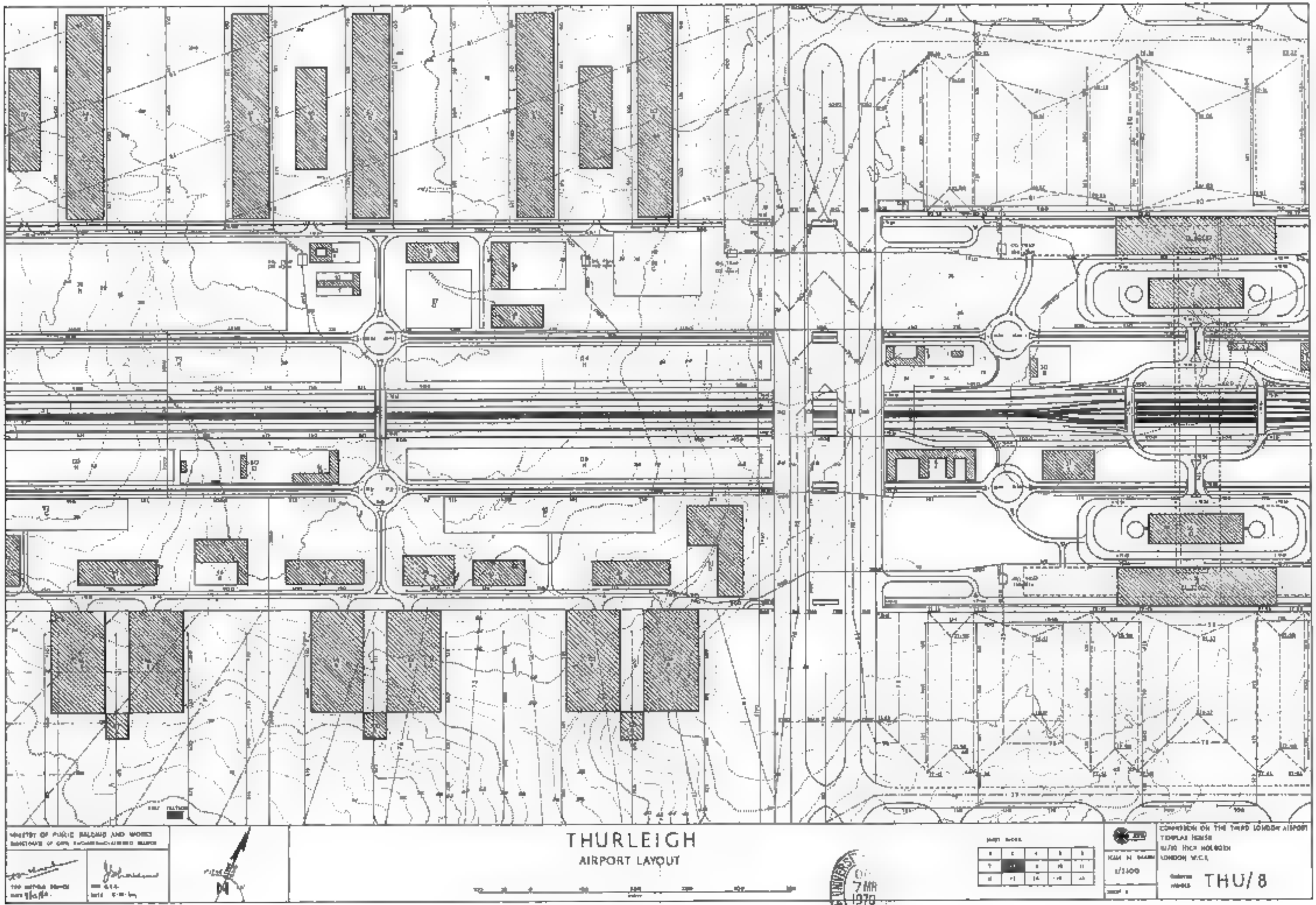
UNIVERSITY LIBRARY CAMBRIDGE 7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

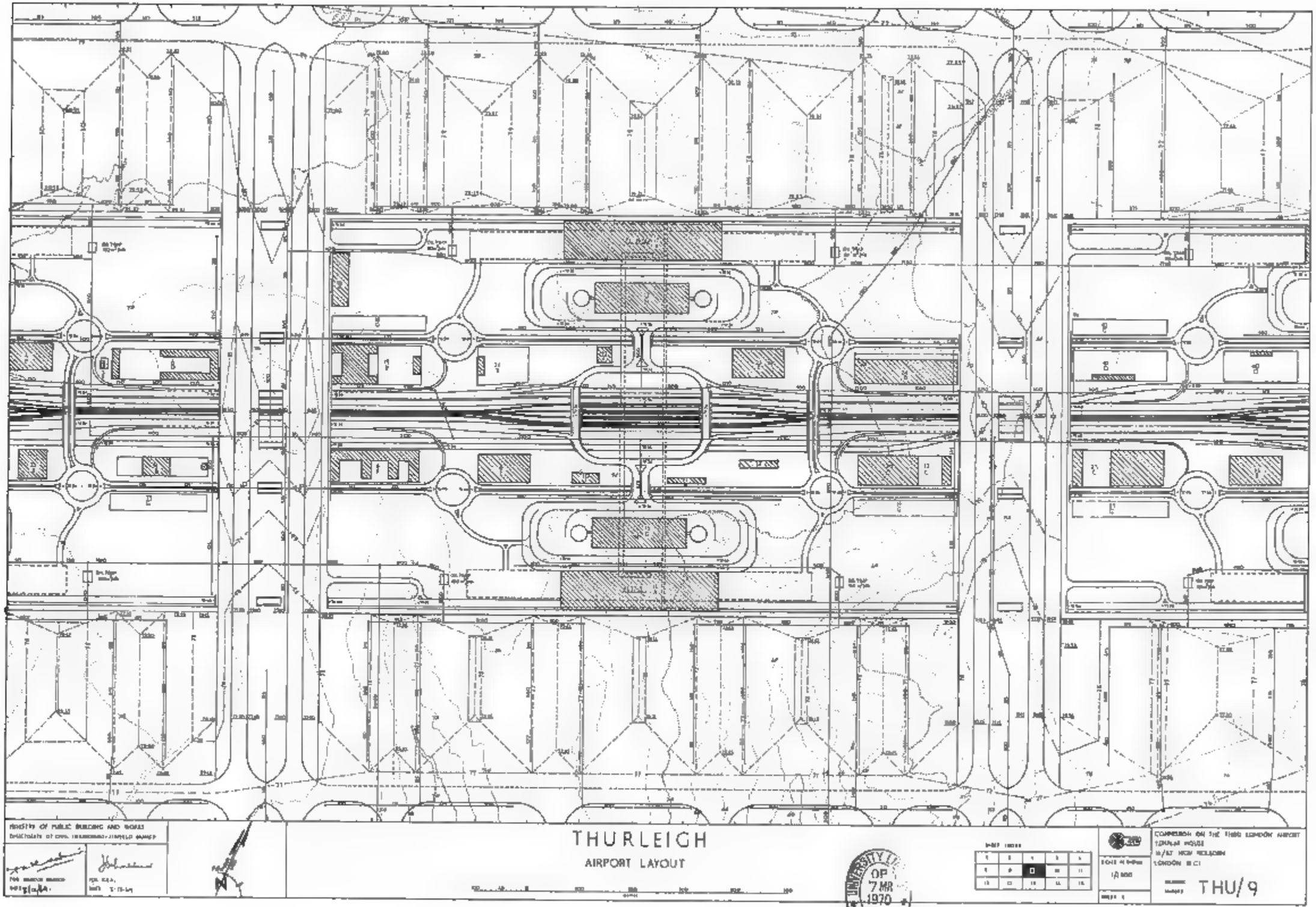


UNIVERSITY OF CAMBRIDGE
OP
7 MR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

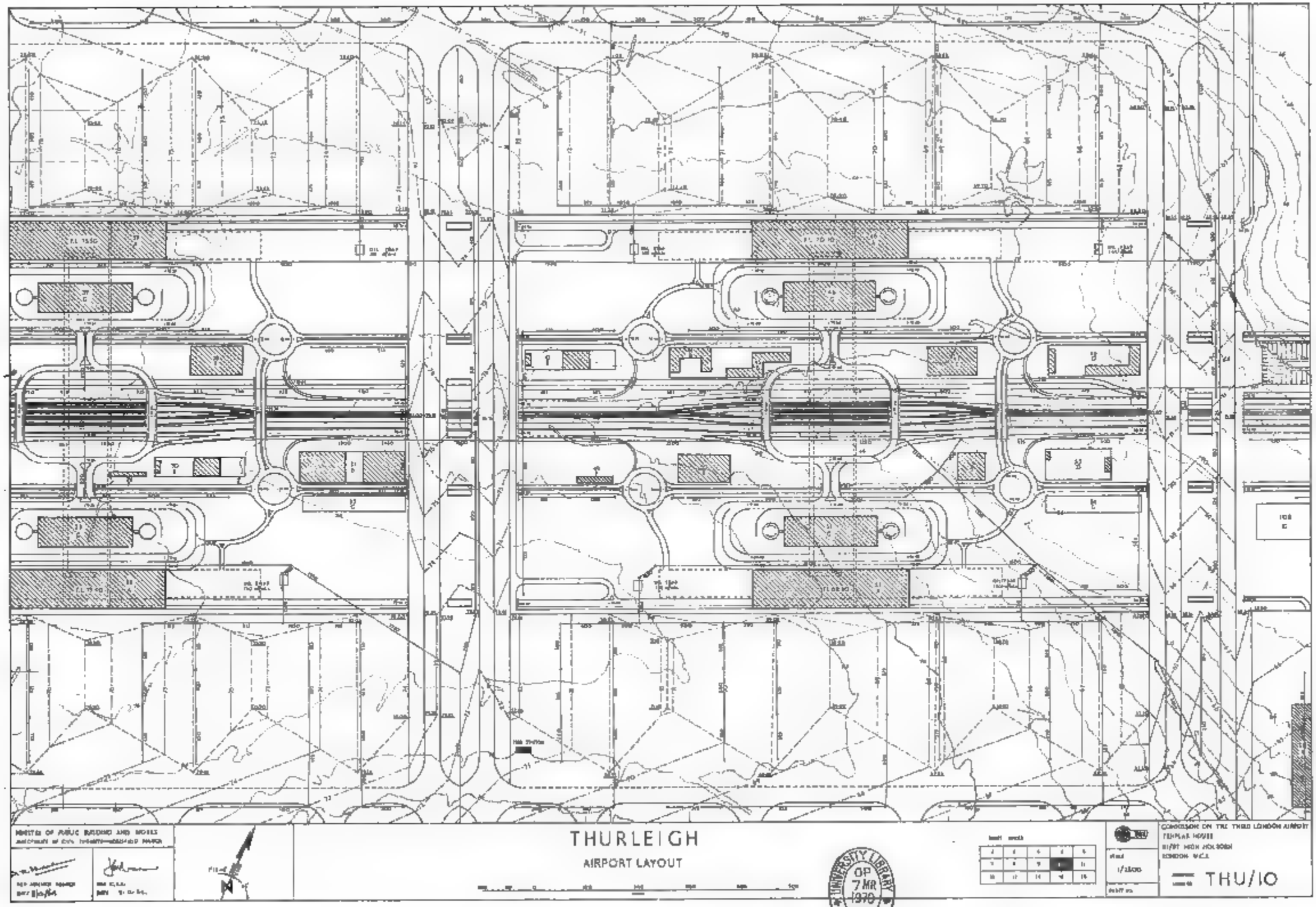


Printed image digitised by the University of Southampton Library Digitisation Unit



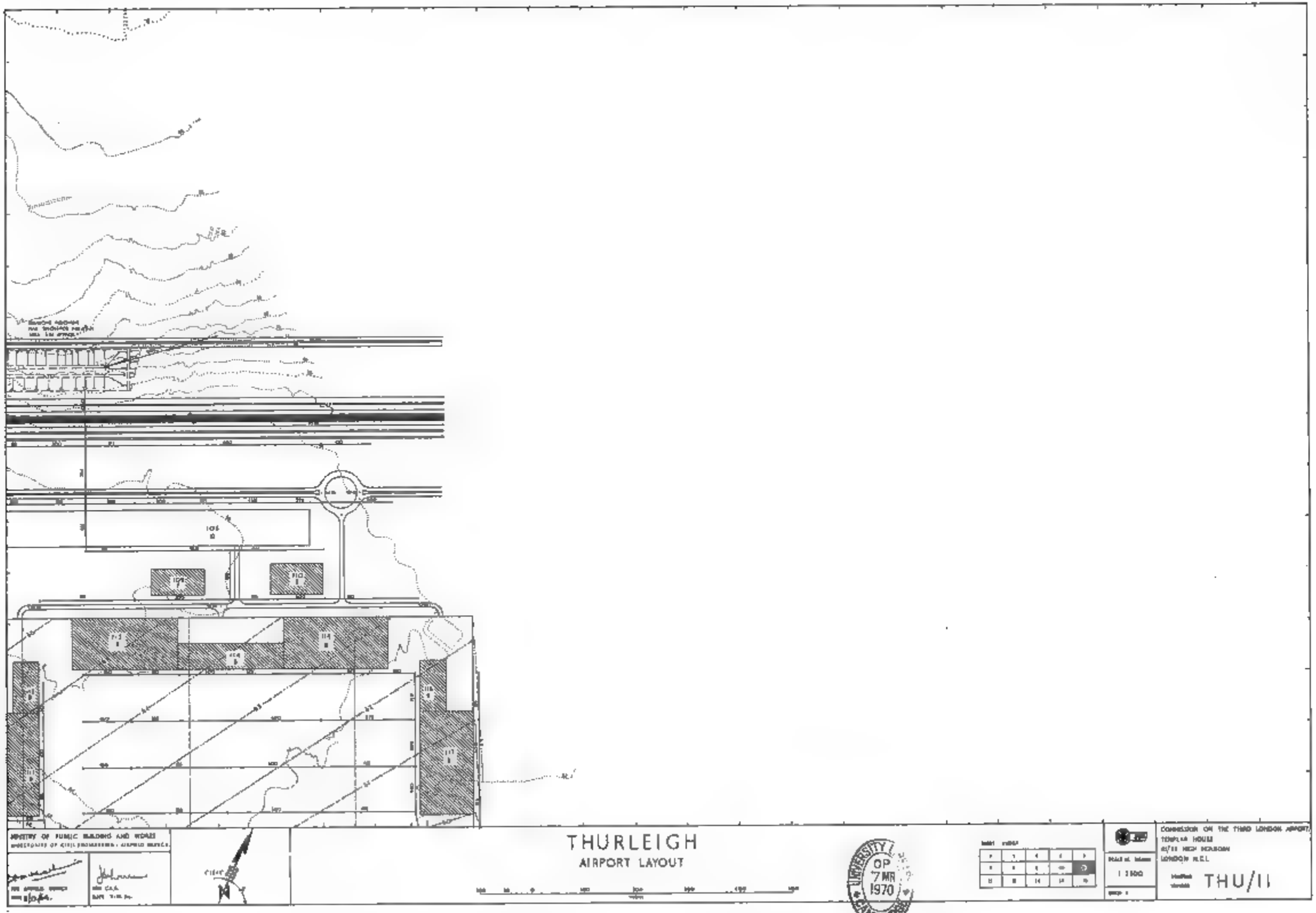
UNIVERSITY OF CAMBRIDGE
OP
7 MAR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

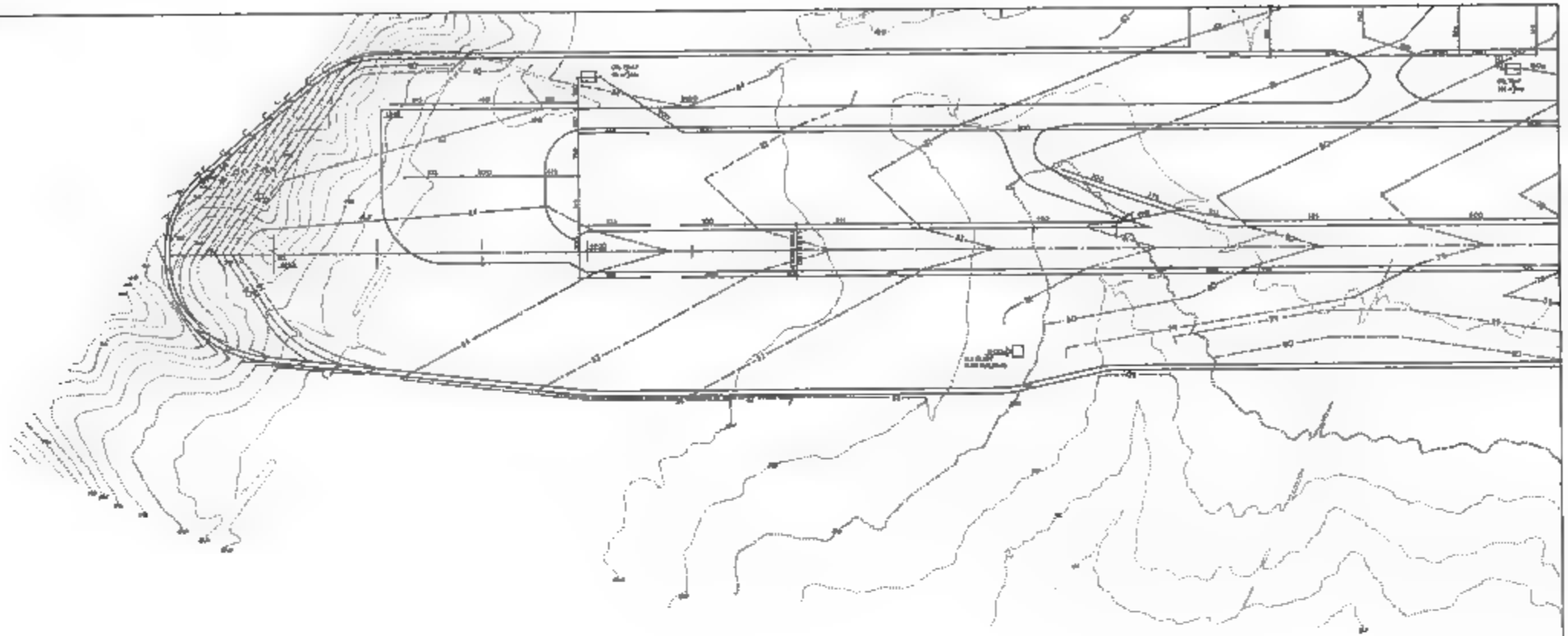


UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



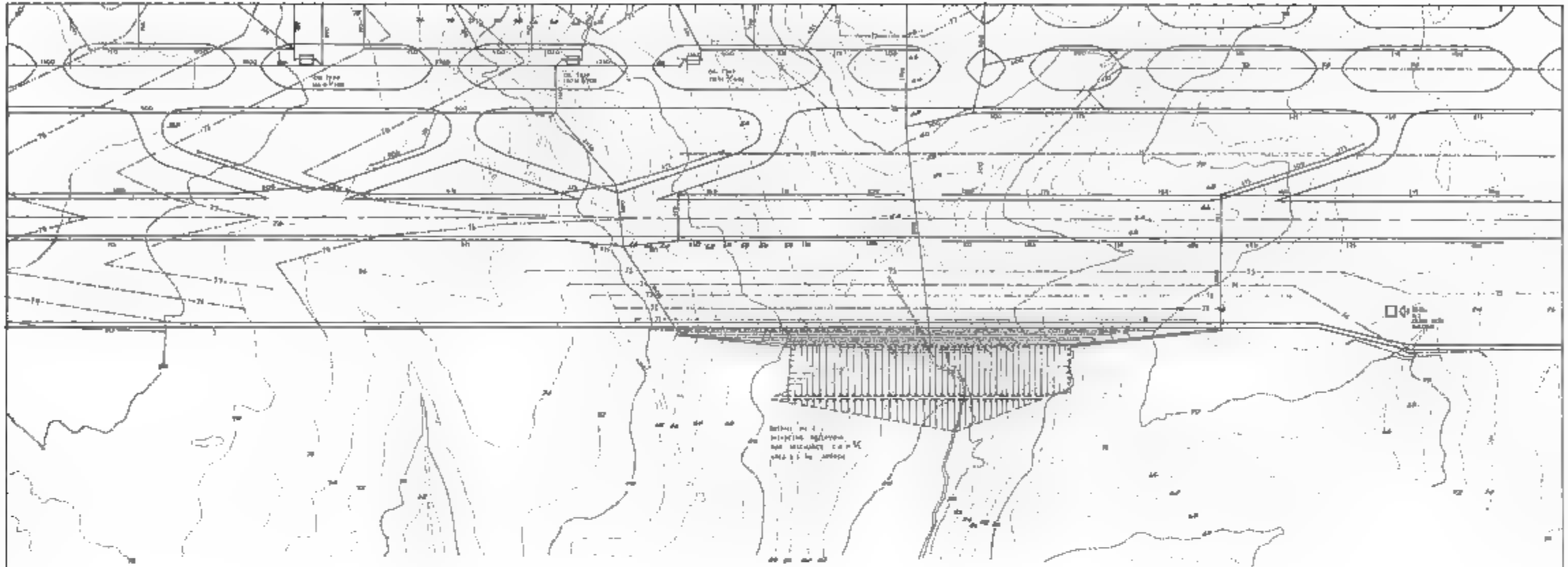
THURLEIGH

AIRPORT LAYOUT

THU/12

UNIVERSITY OF CAMBRIDGE
OP
7 MR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit



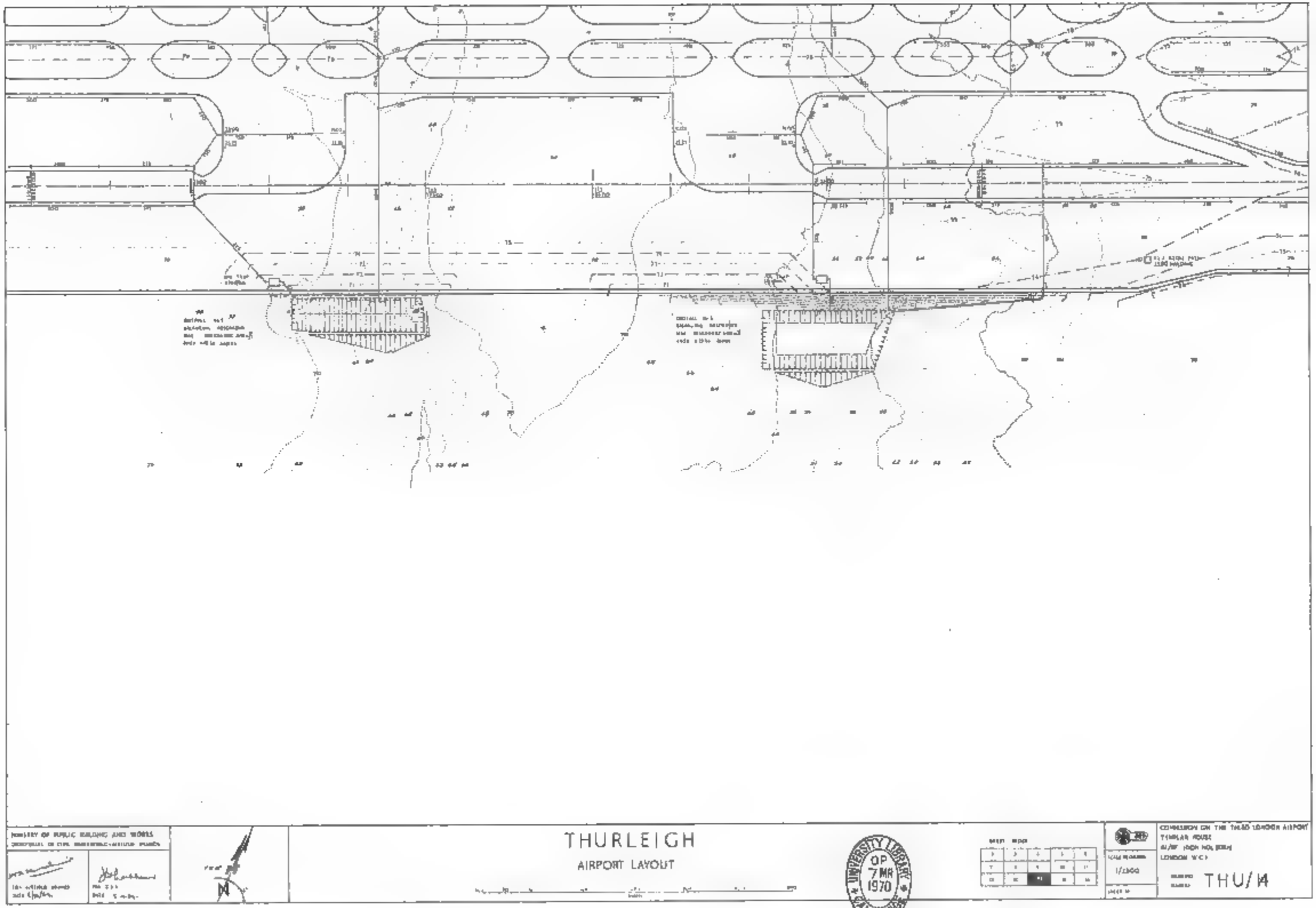
THURLEIGH

AIRPORT LAYOUT

THU/13

UNIVERSITY LIBRARY CAMBRIDGE
OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



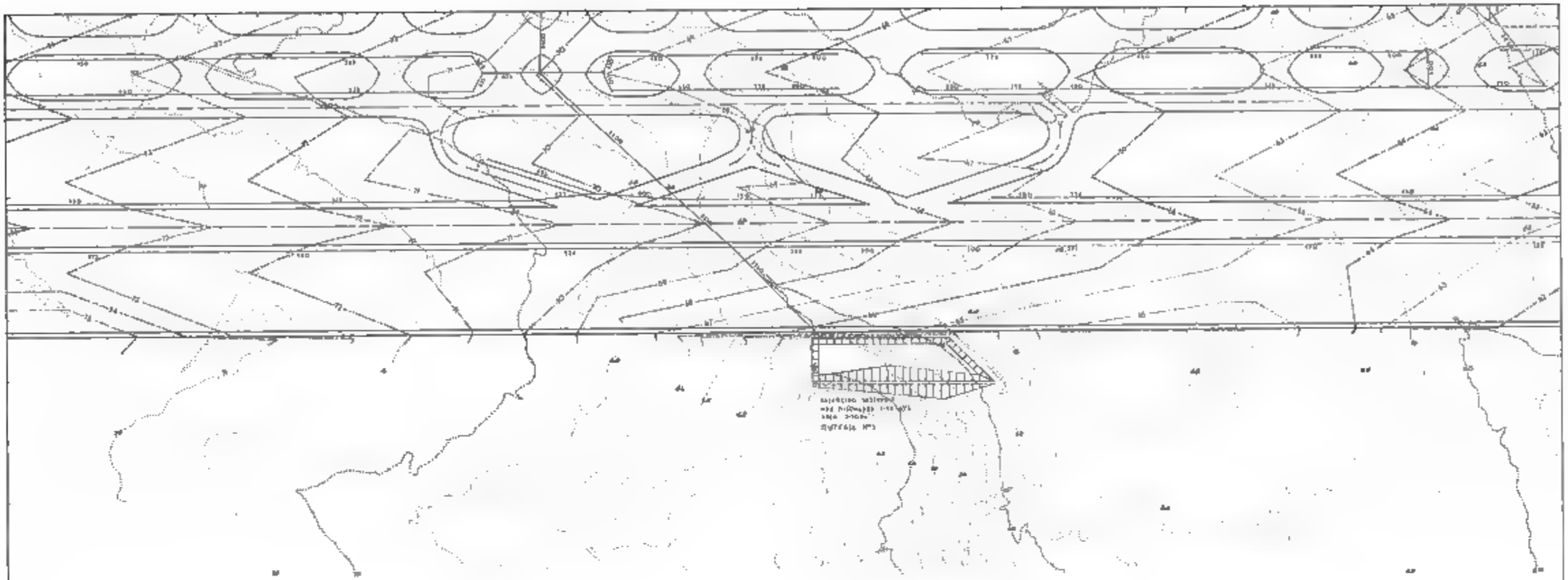
THURLEIGH

AIRPORT LAYOUT

UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

THU/M

Printed image digitised by the University of Southampton Library Digitisation Unit



MINISTRY OF PUBLIC BUILDING AND WORKS

THURLEIGH

AIRPORT LAYOUT

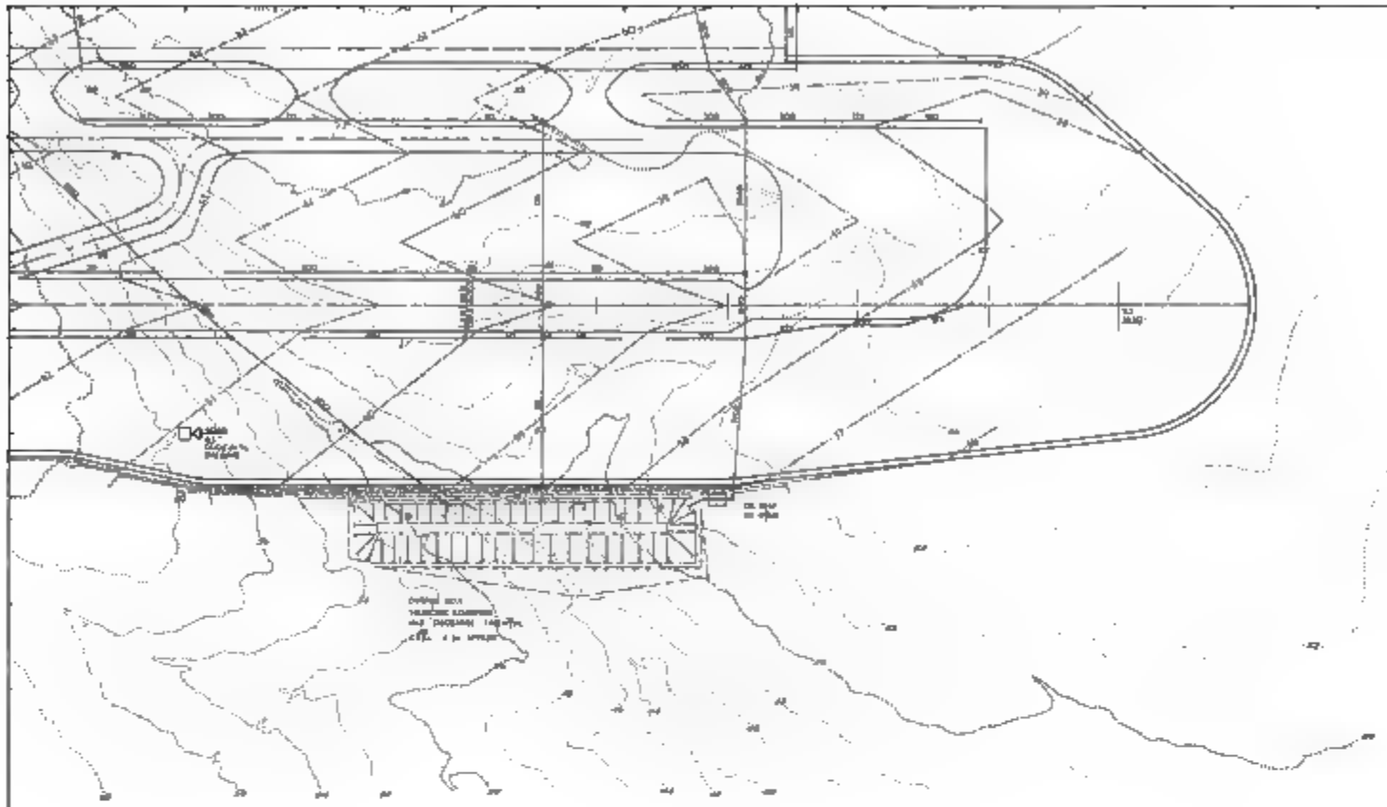
1/2500

COMMISSION ON THE THIRD LONDON AIRPORT
TEMPLAR HOUSE
81/87 HIGH HOLBORN
LONDON W.C.1

THU/15

UNIVERSITY OF SOUTHAMPTON LIBRARY
OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



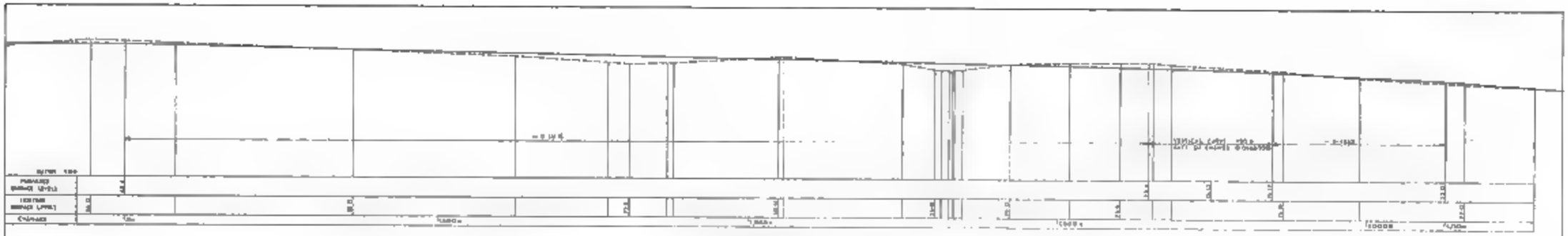
THURLEIGH

AIRPORT LAYOUT

THU/16

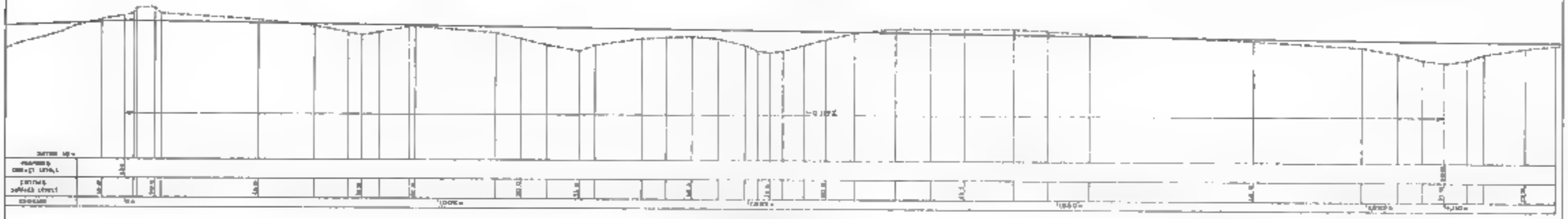
UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



RUNWAY A

SCALE: HORIZONTAL 1/5000
VERTICAL 1/500

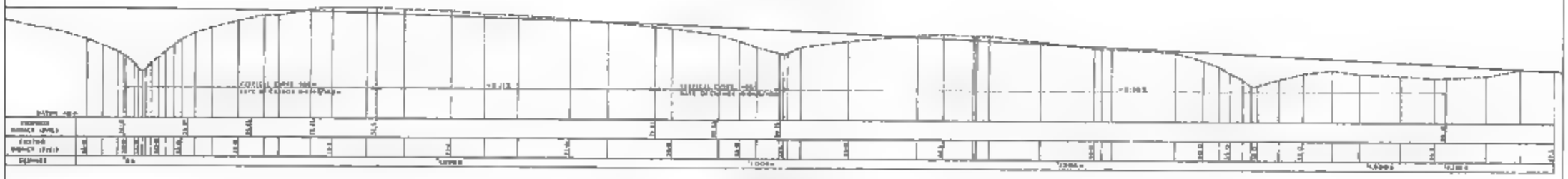


RUNWAY B

SCALE: HORIZONTAL 1/5000
VERTICAL 1/500

RUNWAY C

SCALE: HORIZONTAL 1/5000
VERTICAL 1/500



RUNWAY D

SCALE: HORIZONTAL 1/5000
VERTICAL 1/500

MINISTRY OF PUBLIC BUILDING AND WORKS

THURLEIGH

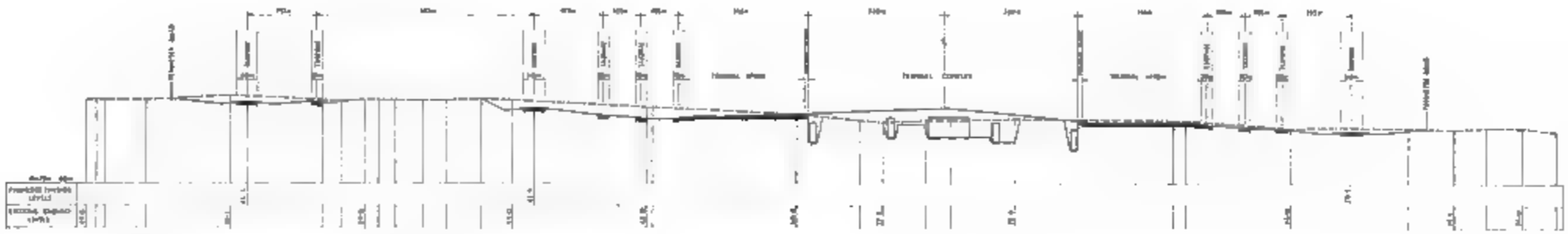
RUNWAY PROFILES

UNIVERSITY LIBRARY CAMBRIDGE
OP 7 MR 1970

COMMISSION ON THE THIRD LONDON AIRPORT
TEMPLAR HOUSE
81/87 HIGH HOLBORN
LONDON WC1

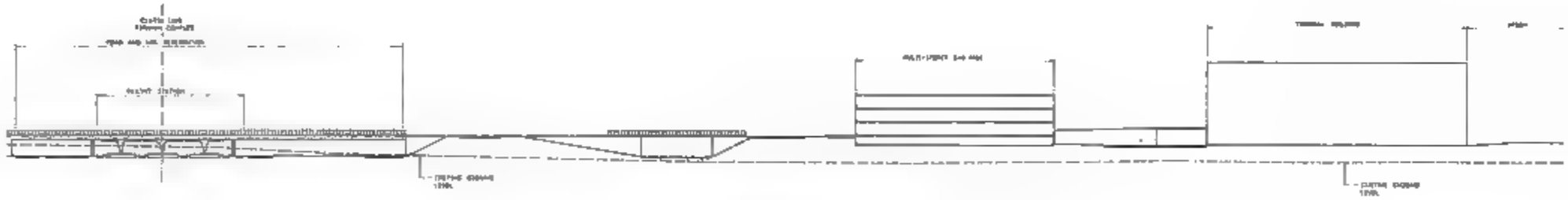
THU/17

Printed image digitised by the University of Southampton Library Digitisation Unit



CROSS SECTION THROUGH SITE

SCALE HORIZONTAL 1/1000
VERTICAL 1/100



CROSS SECTION THROUGH TERMINAL COMPLEX

SCALE HORIZONTAL 1/500
VERTICAL 1/500

MINISTRY OF PUBLIC BUILDING AND WORKS
DIRECTORATE OF CIVIL ENGINEERS - AIRFIELD Branch

THURLEIGH

TYPICAL CROSS SECTIONS

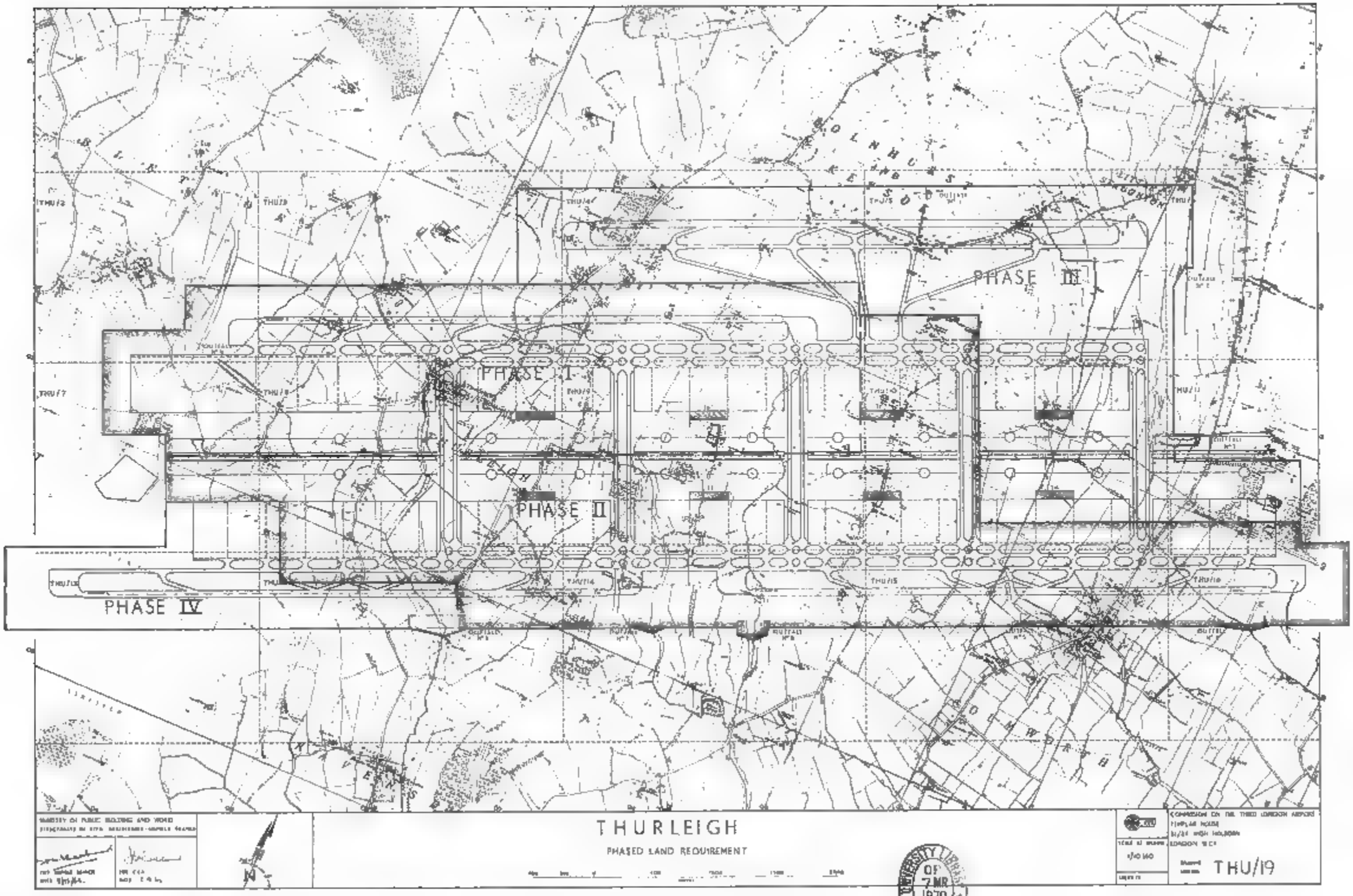
UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

COMMISSION ON THE THIRD LONDON AIRPORT
TEMPLAR HOUSE
61/63 HIGH HOLBORN
LONDON W.C.1

SCALE
AS DRAWN
AS SHOWN

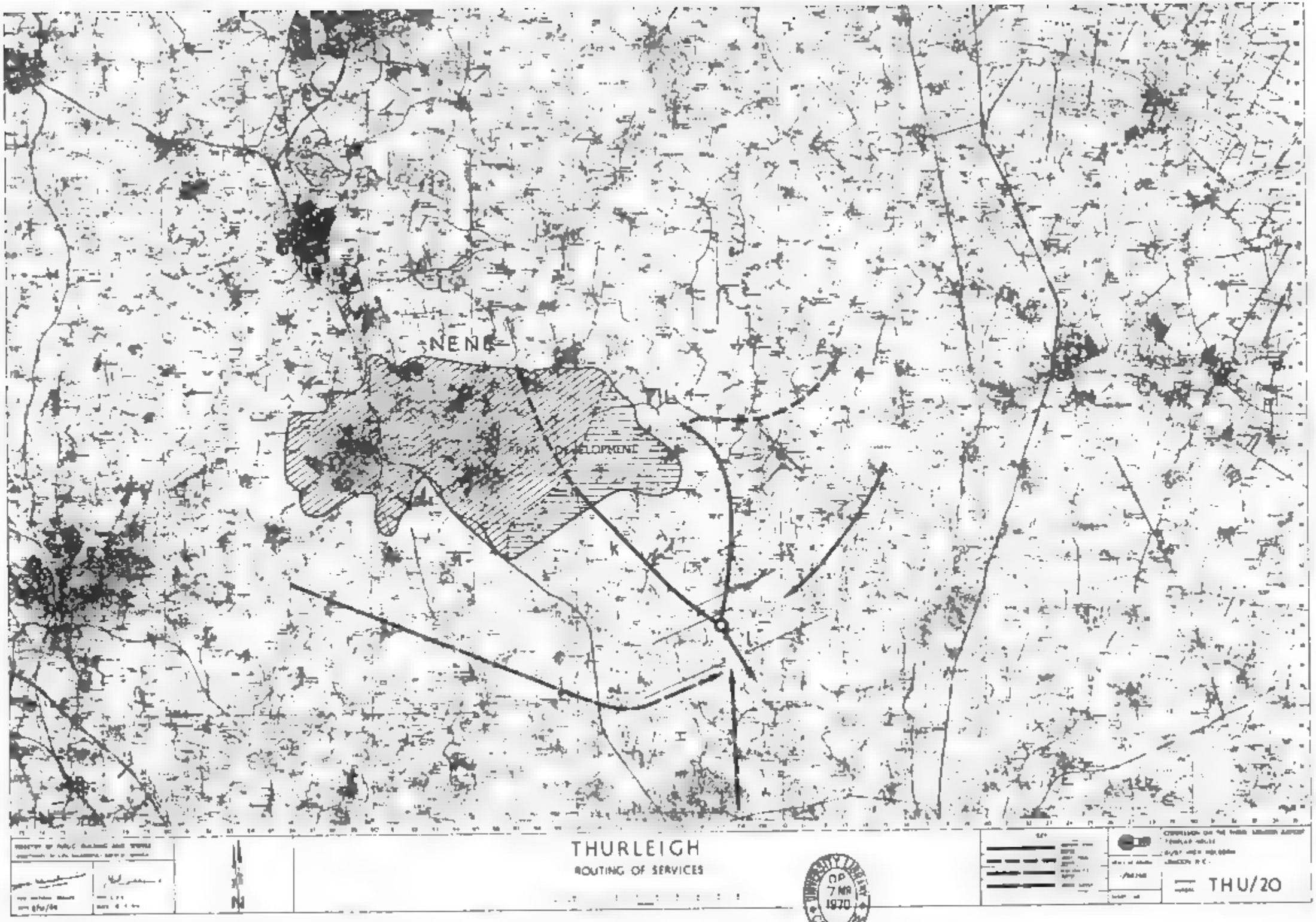
DRAWING No. THU/18

Printed image digitised by the University of Southampton Library Digitisation Unit

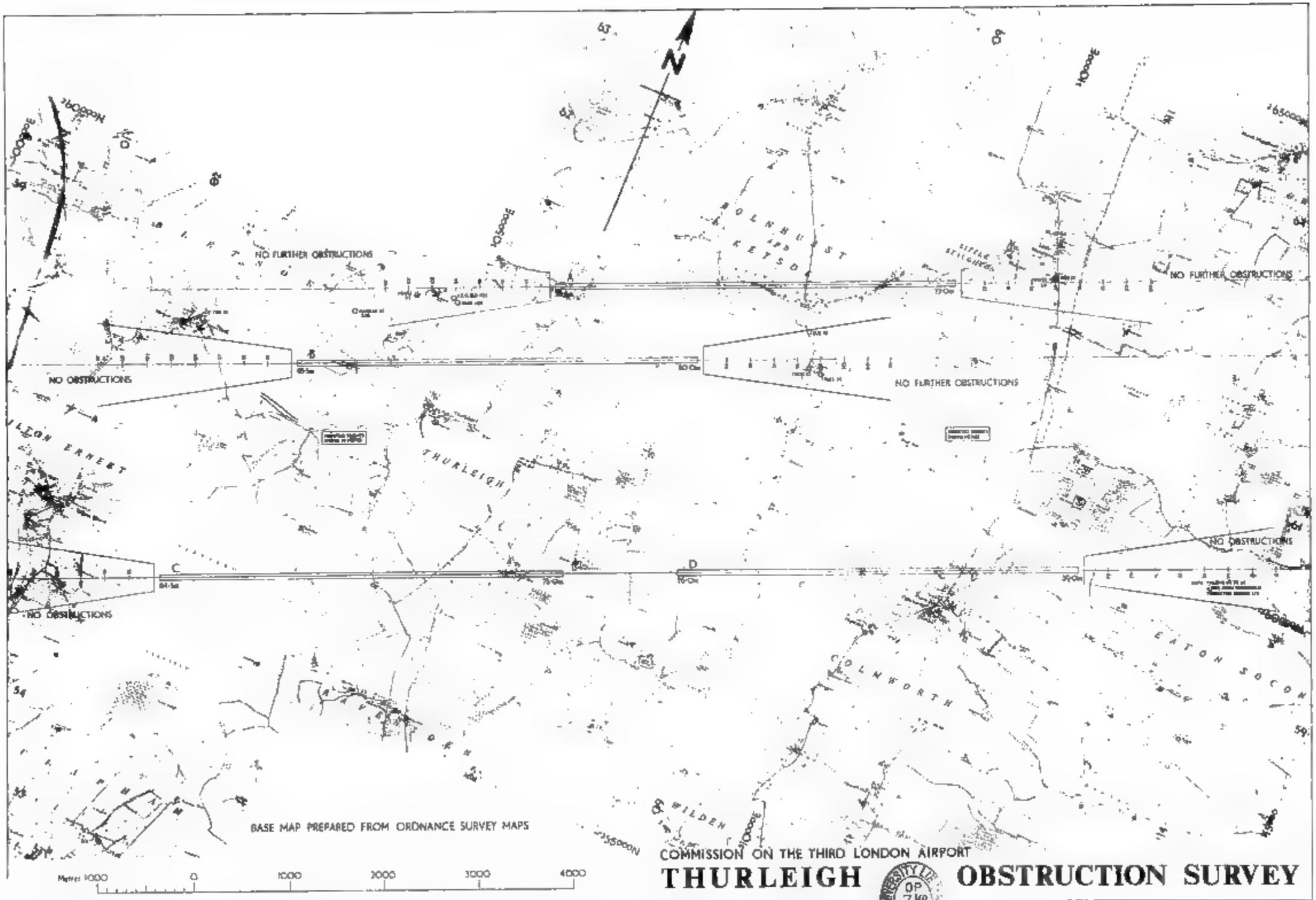


UNIVERSITY OF SOUTHAMPTON LIBRARY
7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

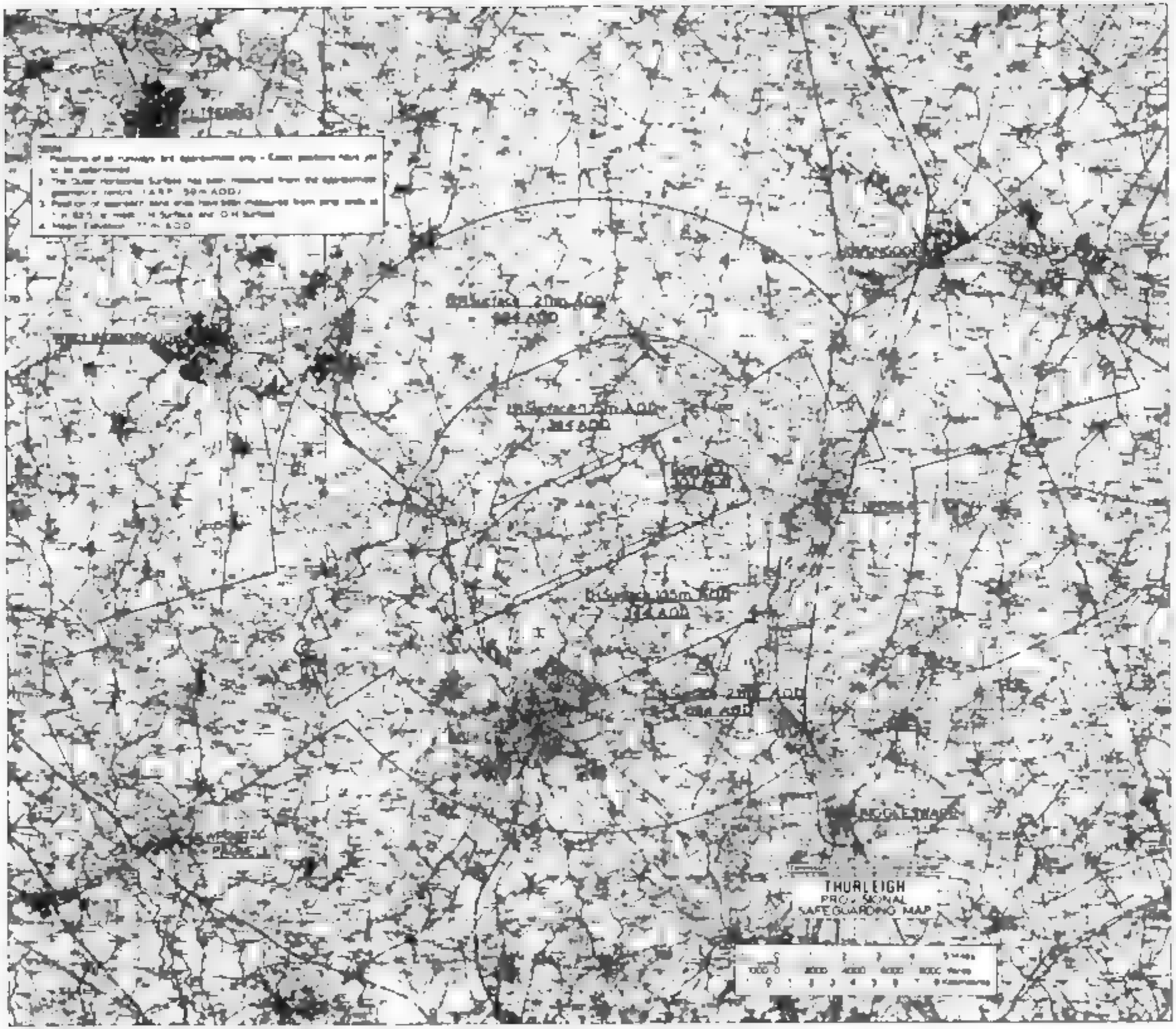


Printed image digitised by the University of Southampton Library Digitisation Unit

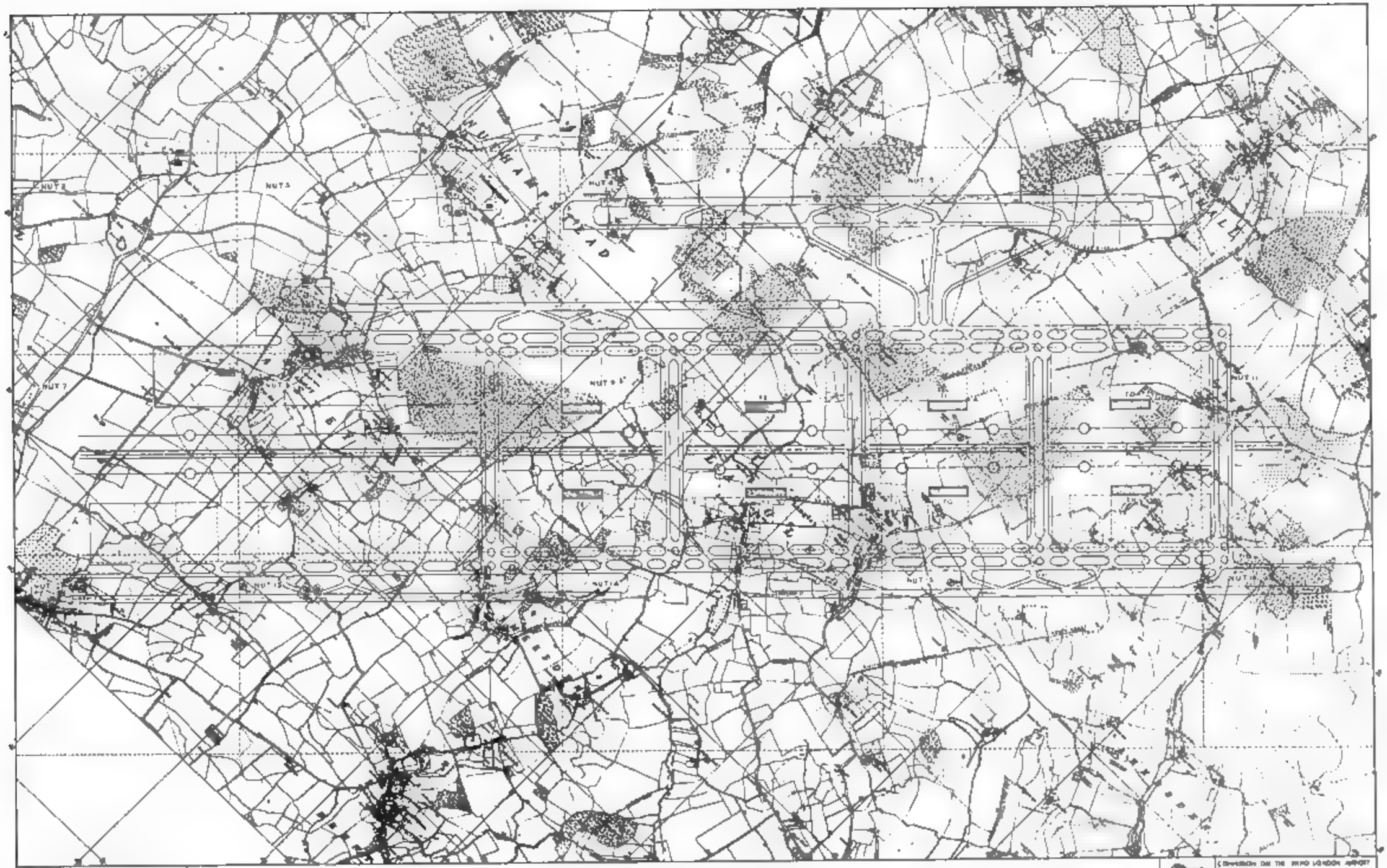


UNIVERSITY OF CAMBRIDGE
OP
7 MR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



NUTHAMPSTEAD

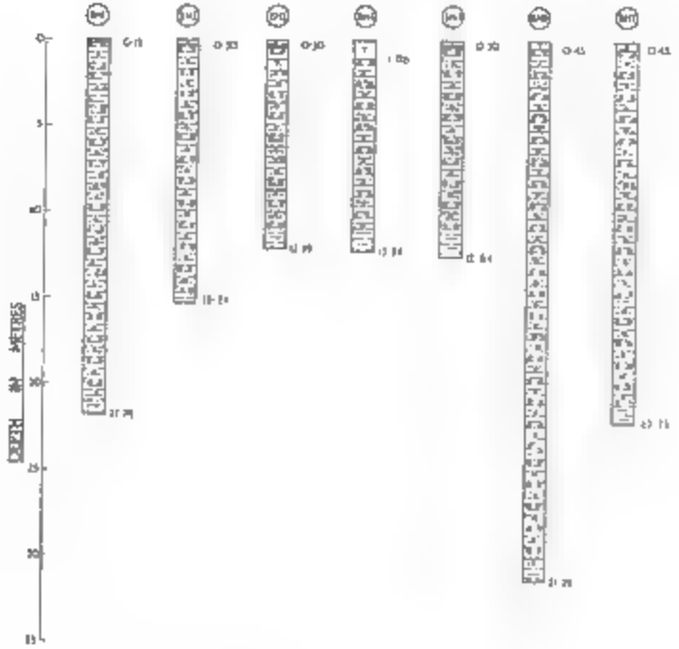
LOCATION & KEY PLAN

NUT/1

UNIVERSITY OF CAMBRIDGE
OP
7 MR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

BOREHOLE SECTIONS



KEY

TOPSOIL

BOREHOLES SHOWN THUS ⊕ ON PLAN ARE LOCATED FOR DRAWING NO. NUT/1

LEGEND

EXISTING CONTOURS

RECLAIMED CONTOURS

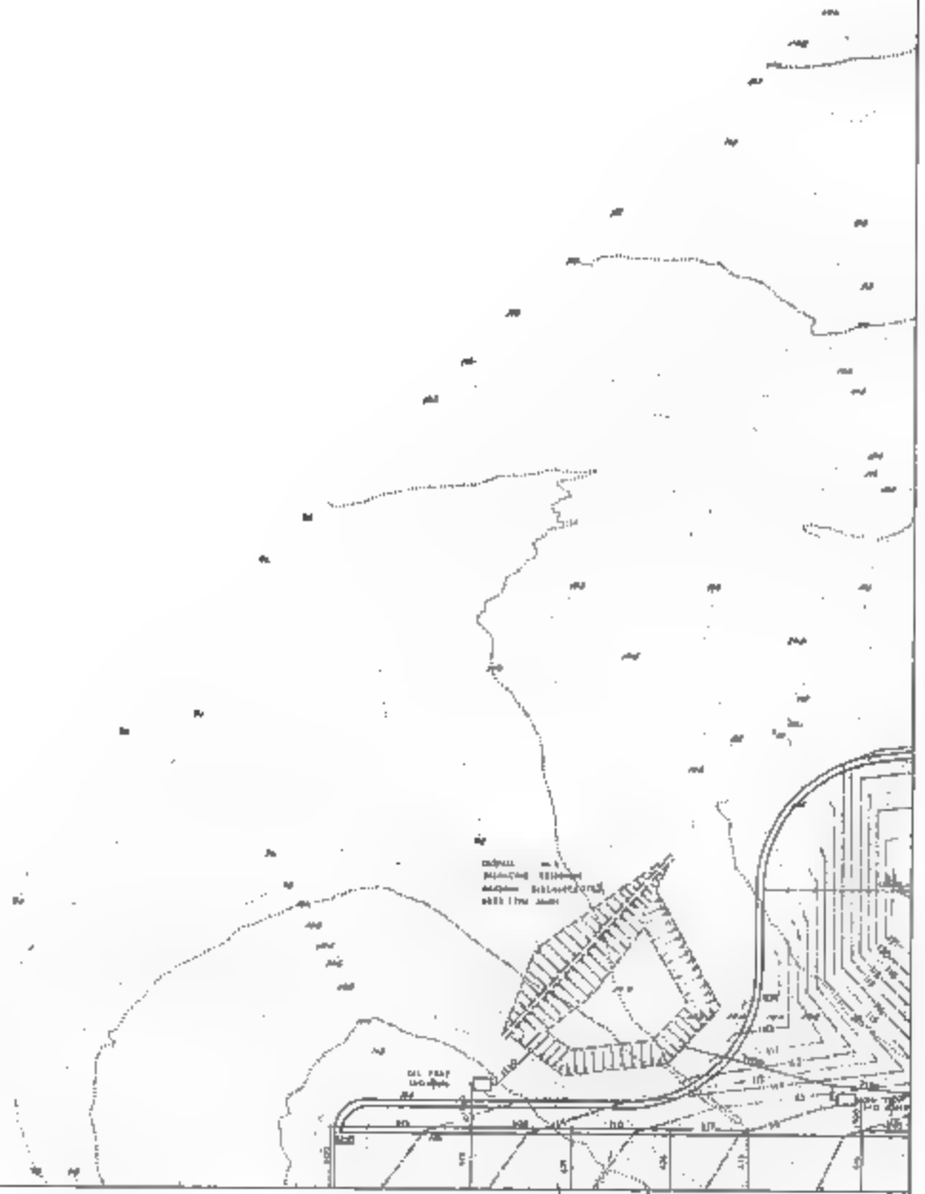
SPOT LEVELS NEW FINISHED SURFACE

SURFACE WATER DRAINS

SURFACE WATER DITCHES

BUILDING UTILISATION KEY

A PASSENGER TERMINALS
B AIRLINES
C AIRPORT ADMINISTRATION
D AIRPORT MAINTENANCE
E HEATING STATIONS
F MISCELLANEOUS BUILDINGS
G CAR PARKS
H AREA FOR ANCILLARY DEVELOPMENT



MINISTRY OF PUBLIC BUILDING AND WORKS

NUTHAMPSTEAD
AIRPORT LAYOUT

1/1500

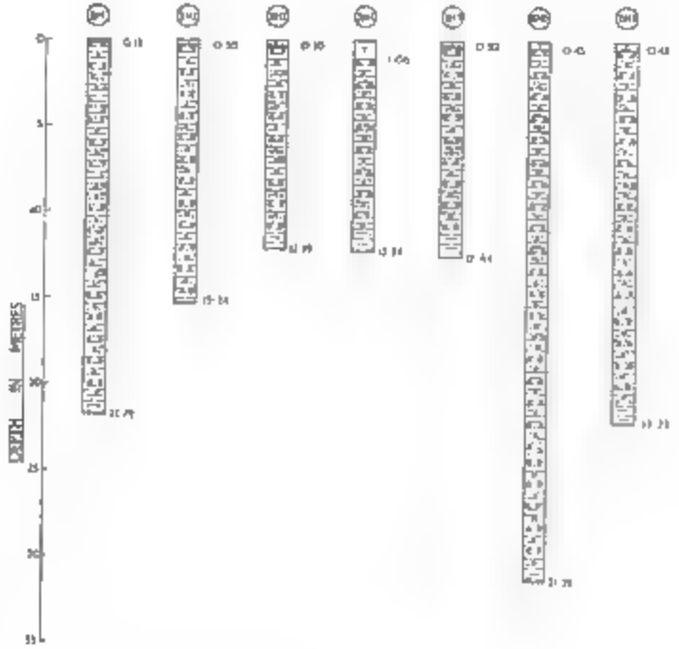
COMMISSION ON THE THIRD LONDON AIRPORT
TECKLAN HOUSE
88/93 HIGH HOLBORN
LONDON WC1

NUT/2

UNIVERSITY OF SOUTHAMPTON
07 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

BOREHOLE SECTIONS



KEY

TOPSOL

CLAY

BOREHOLES SHOWN THUS ⊕ ON PLAN ARE LOCATED ON DRAWING NO NUT/1

LEGEND

EXISTING CONTOURS

RECREATED CONTOURS

SPOT LEVELS NEW FINISHED SURFACE

SURFACE WATER DRAINS

SURFACE WATER DITCHES

BUILDING UTILISATION KEY

A PASSENGER TERMINALS
B AIRLINES
C AIRPORT ADMINISTRATION
D AIRPORT MAINTENANCE
E HEATING STATIONS
F MISCELLANEOUS BUILDINGS
G CAR PARKS
H AREA FOR ANCILLARY DEVELOPMENT

MINISTRY OF PUBLIC BUILDINGS AND WORKS

NUTHAMPSTEAD
AIRPORT LAYOUT

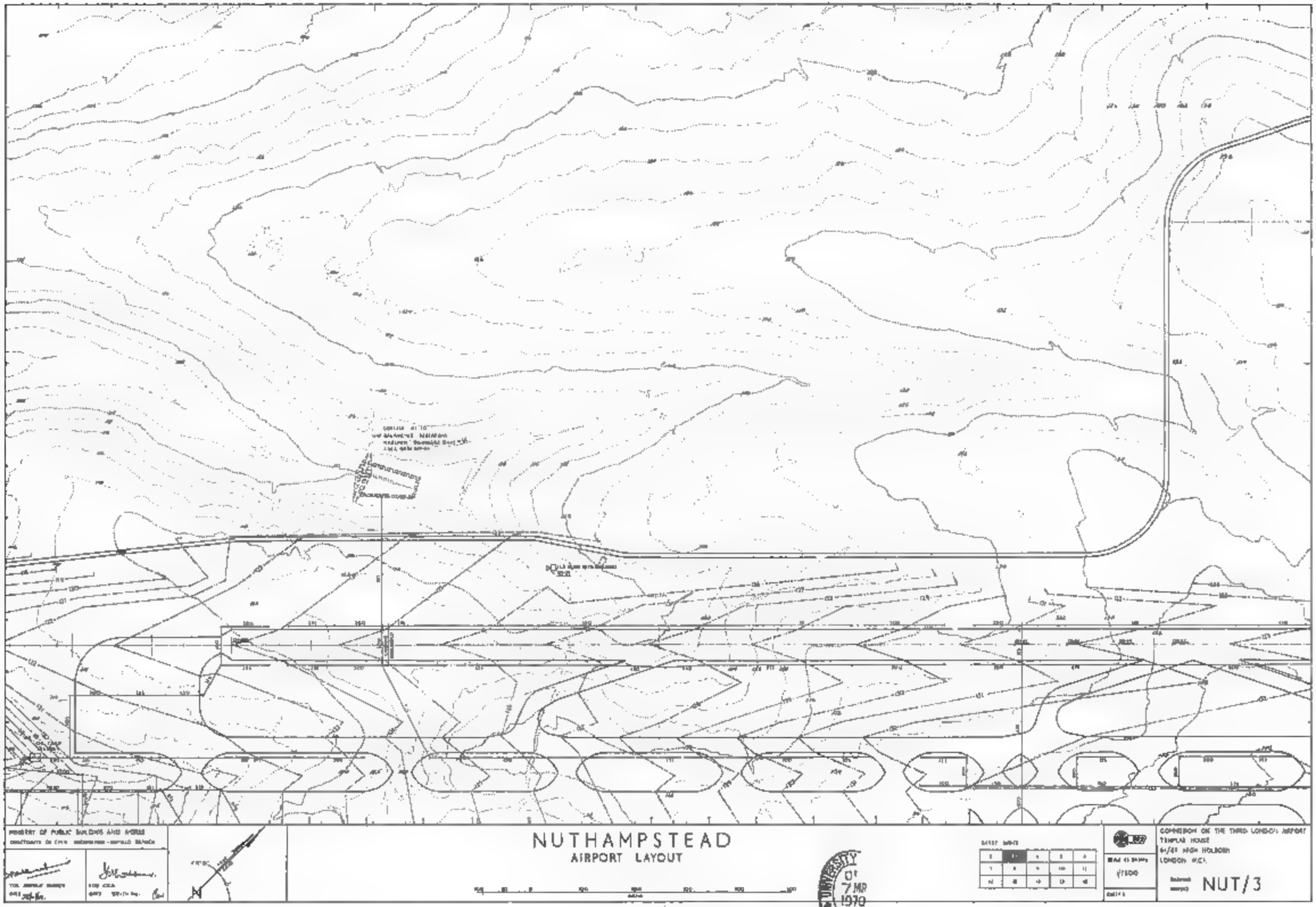
1/1500

COMMISSION ON THE THIRD LONDON AIRPORT
TEMPLAR HOUSE
81/87 HIGH HOLBORN
LONDON WC1

NUT/2

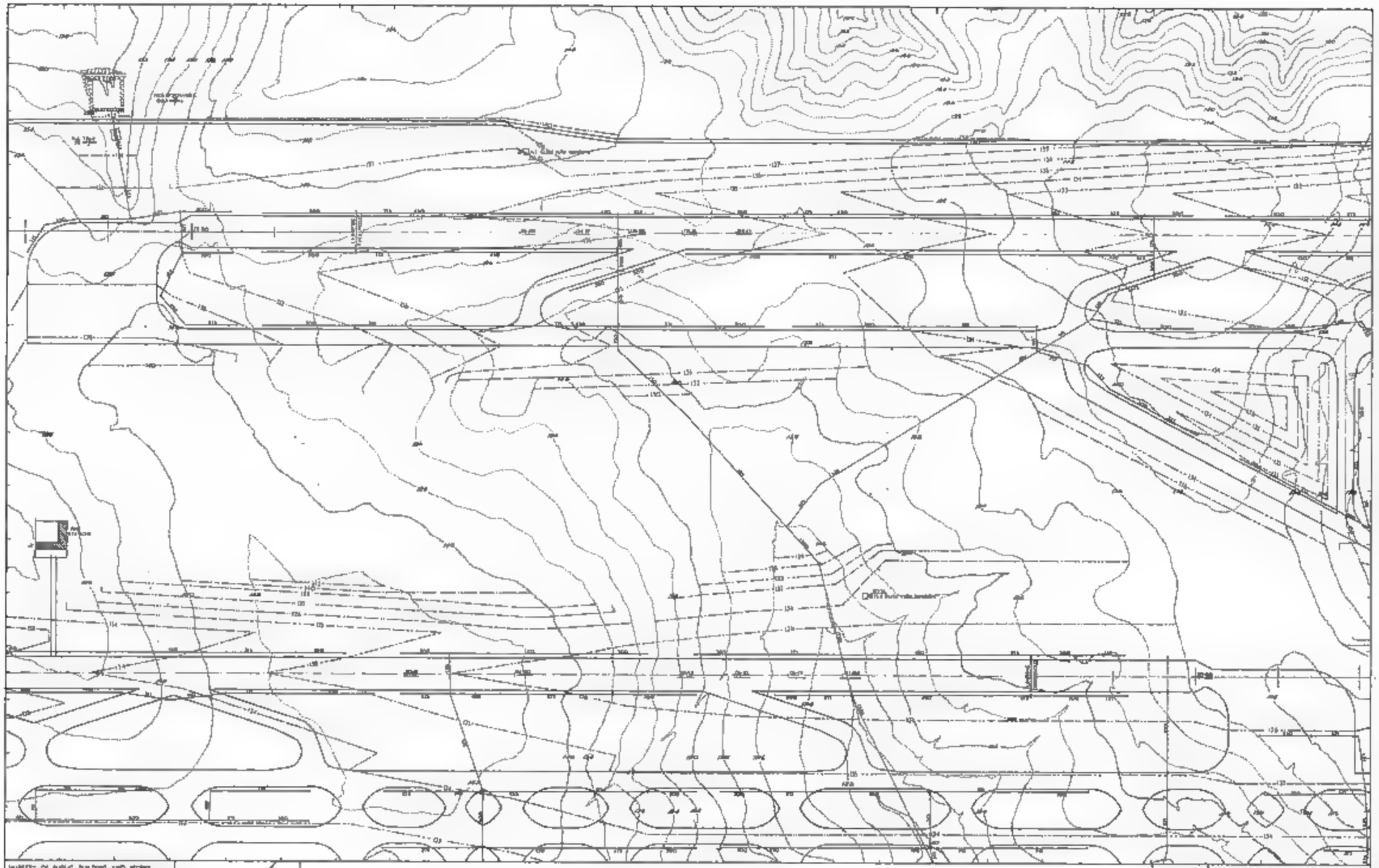
07 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

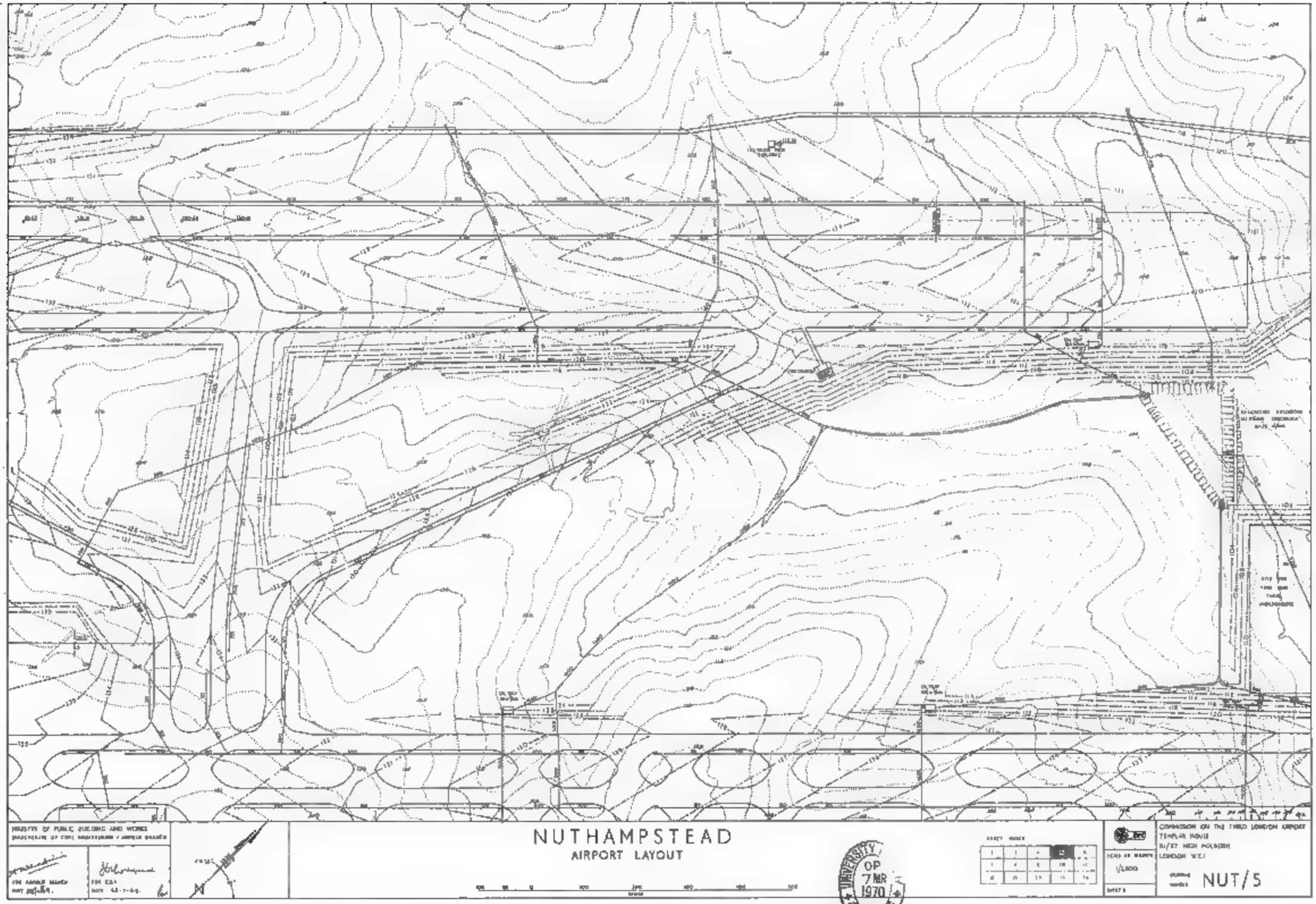


UNIVERSITY OF SOUTHAMPTON 7 MAR 1979

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



UNIVERSITY OF SOUTHAMPTON
OP
7 MR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

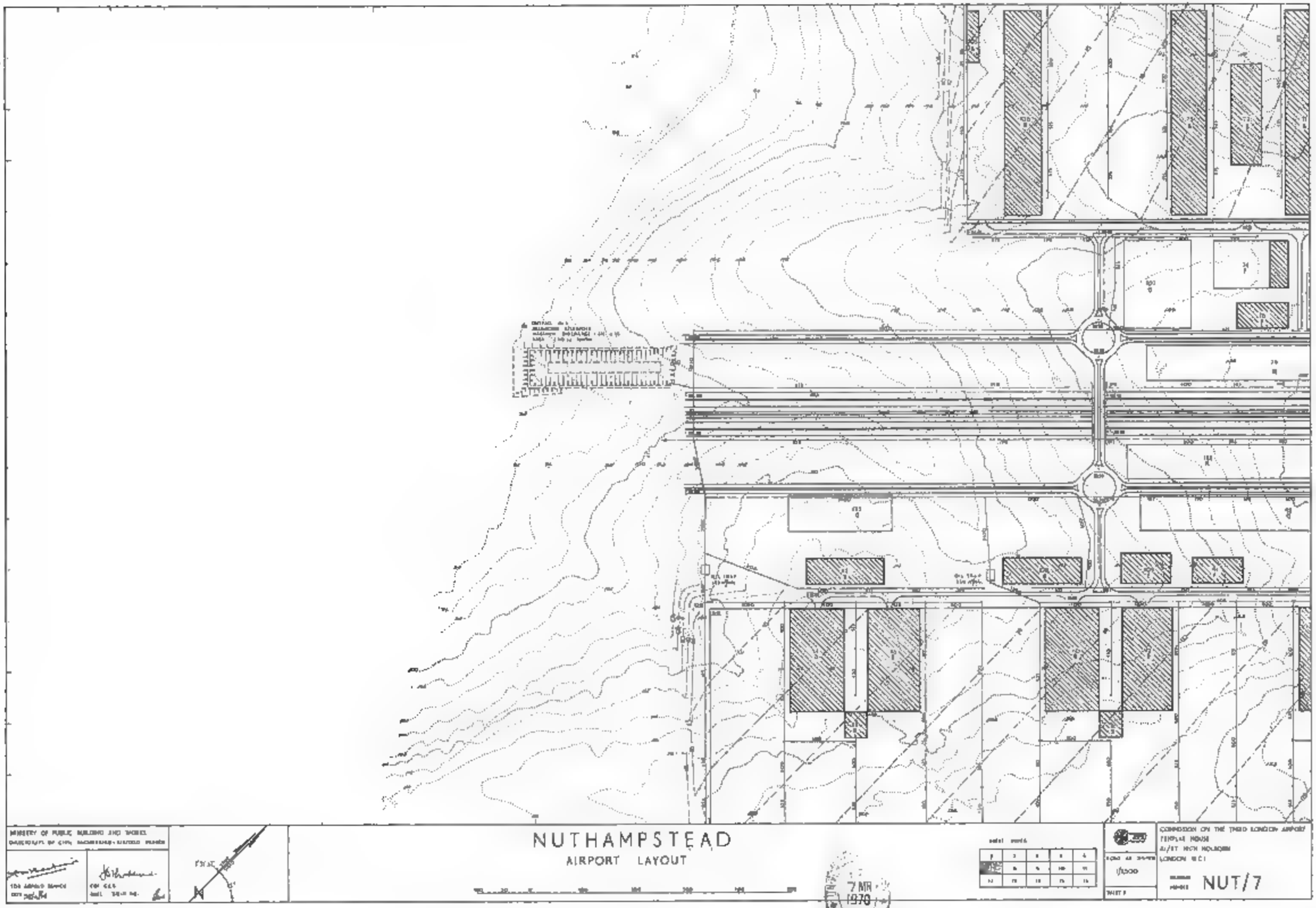
MINISTRY OF PUBLIC BUILDING AND WORKS
ELECTRICAL & CIVIL ENGINEERING - AIRFIELD BRANCH

NUTHAMPSTEAD
AIRPORT LAYOUT

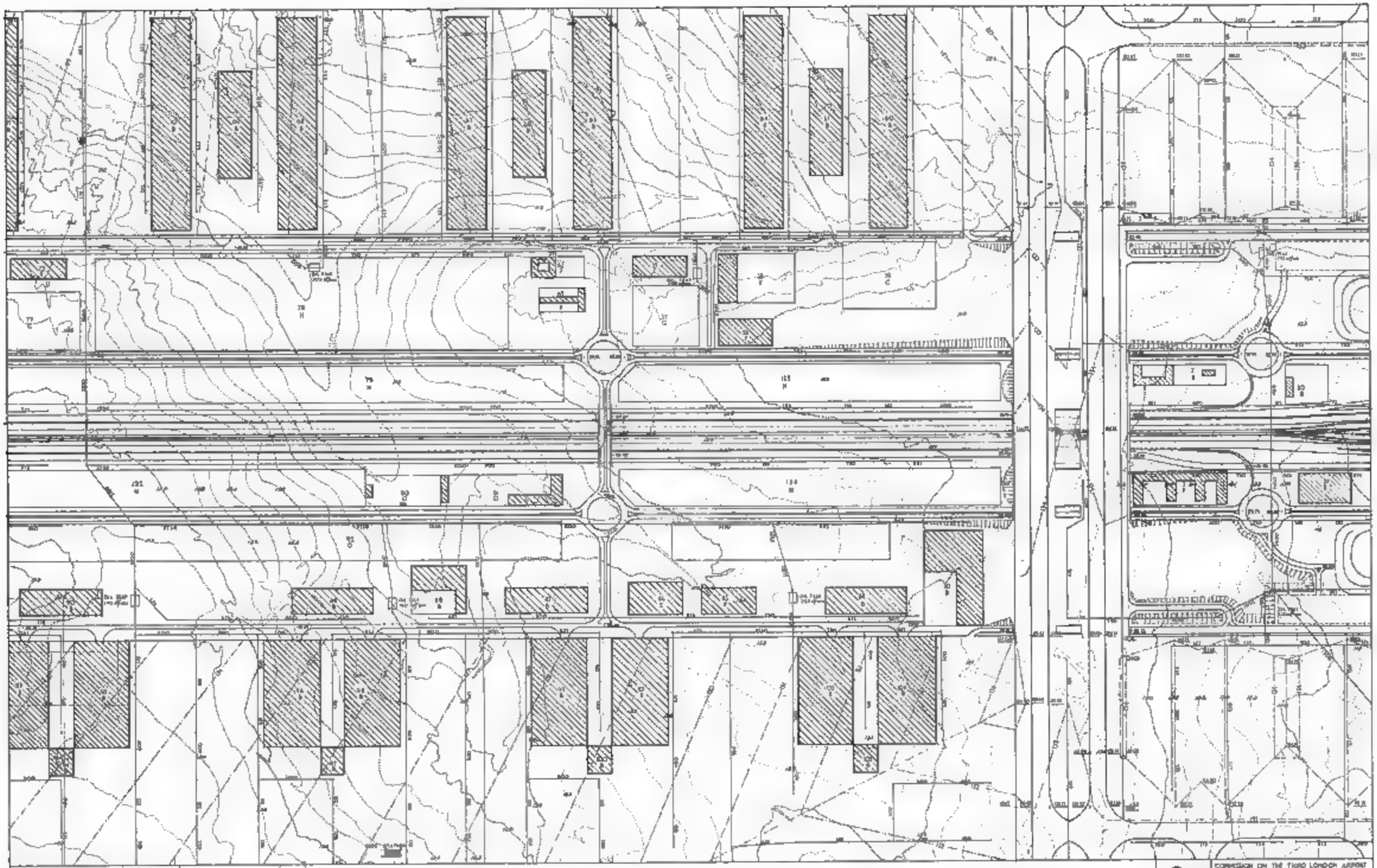
7 MR 1970

COMMISSION ON THE THIRD LONDON AIRPORT
TEMPLAR HOUSE
81/83 HIGH HOLBORN
LONDON W.C.1

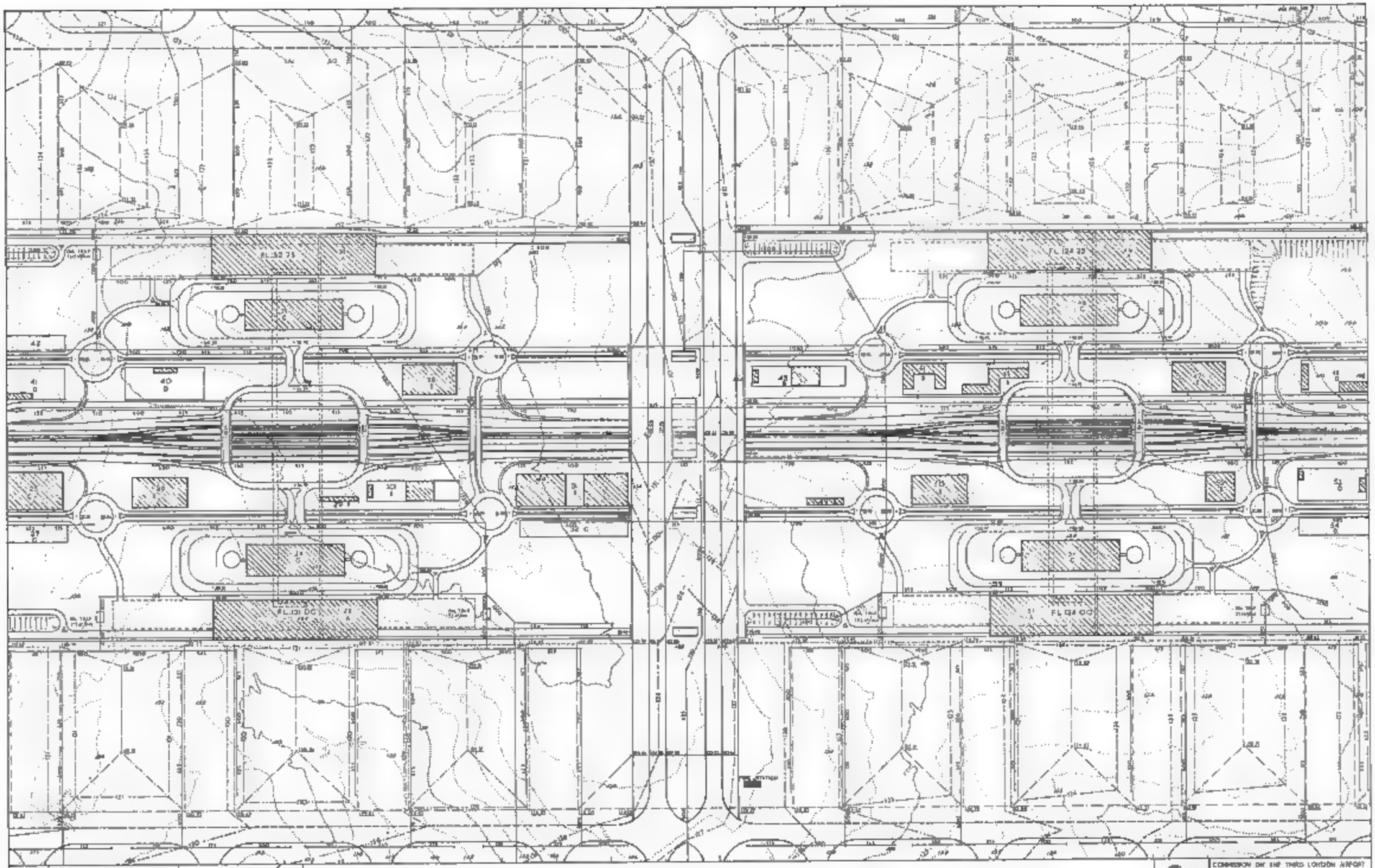
NUT/6



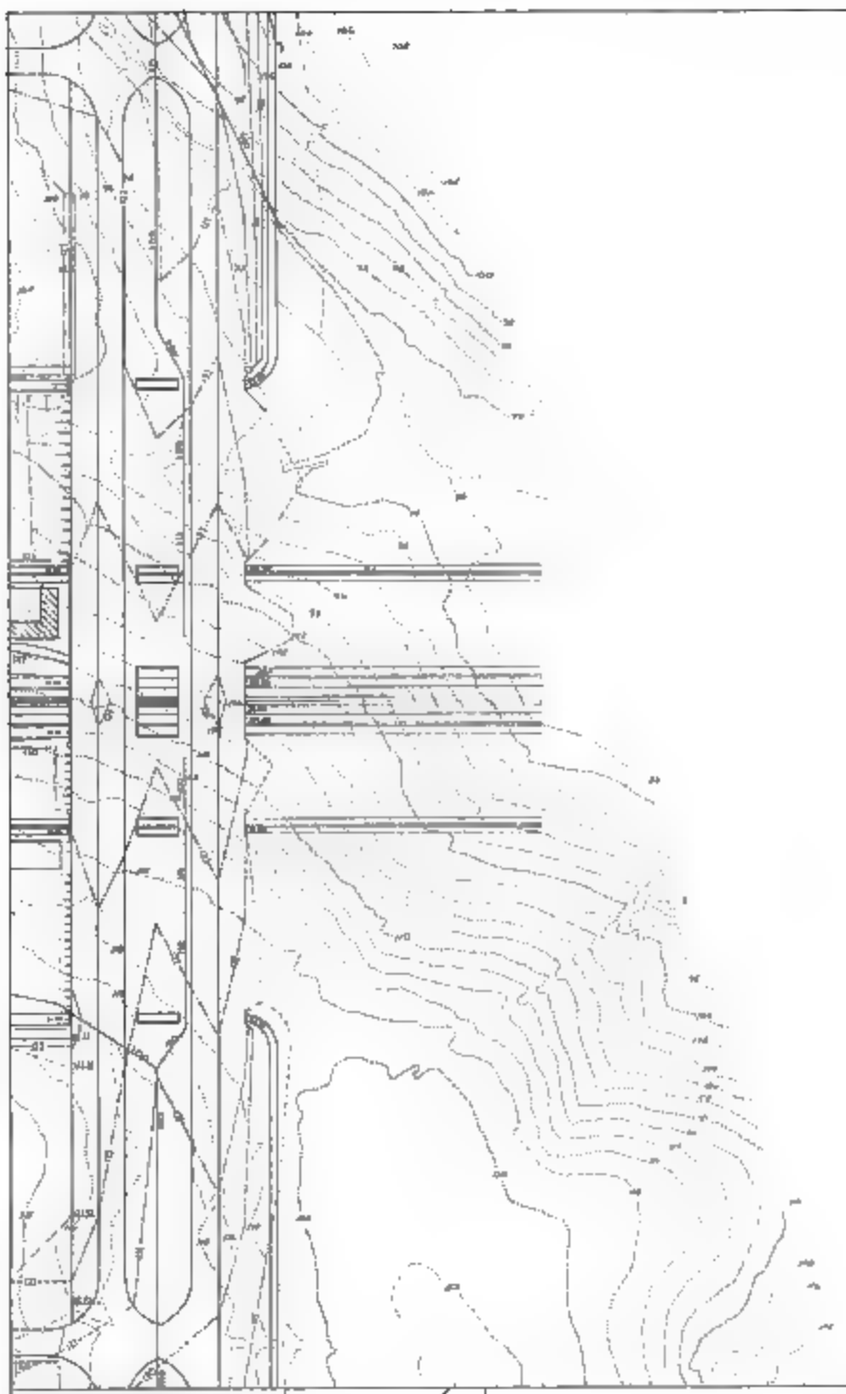
Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



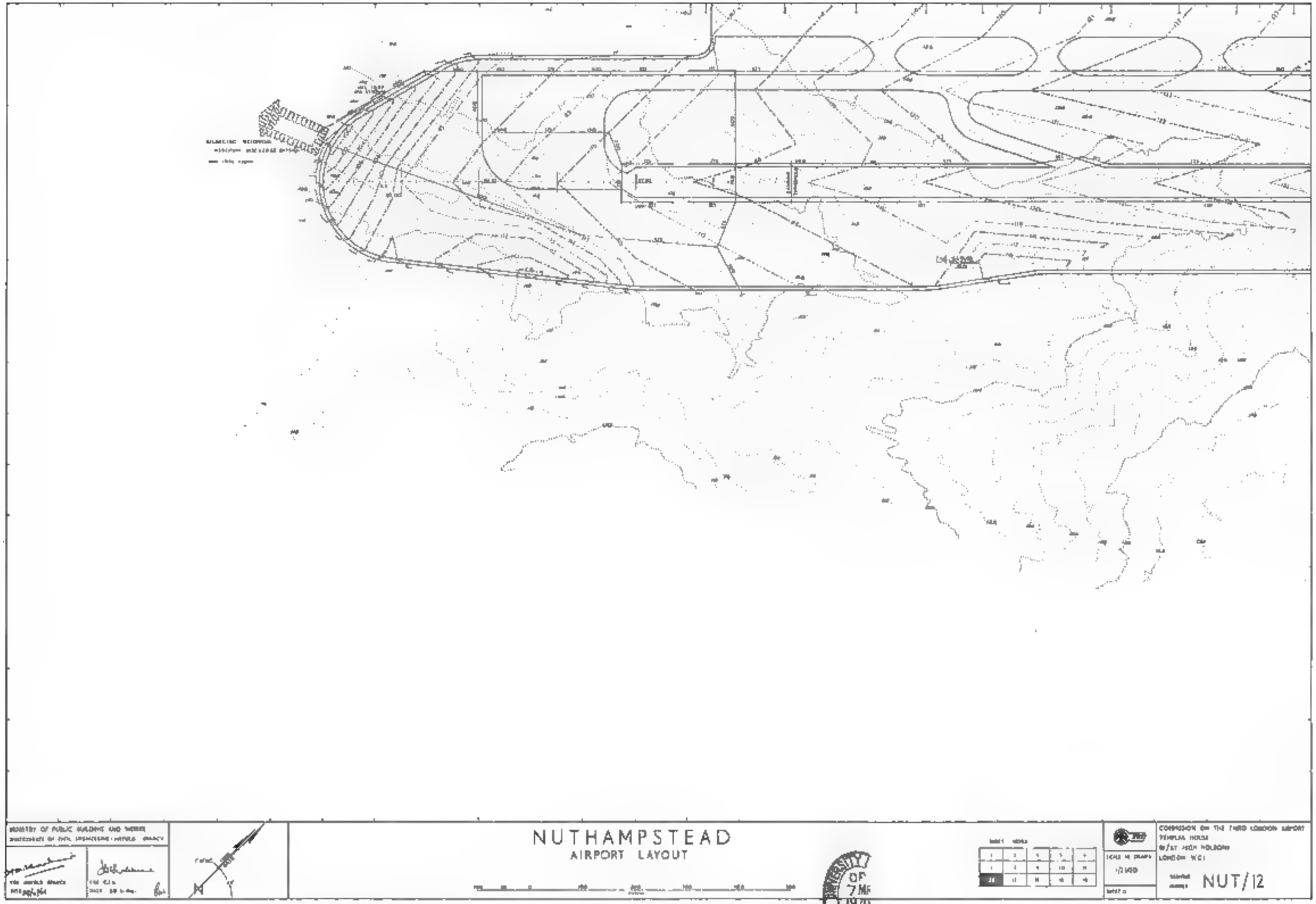
NUTHAMPSTEAD

AIRPORT LAYOUT

UNIVERSITY OF CAMBRIDGE
OP
7 MR
1970

NUT/11

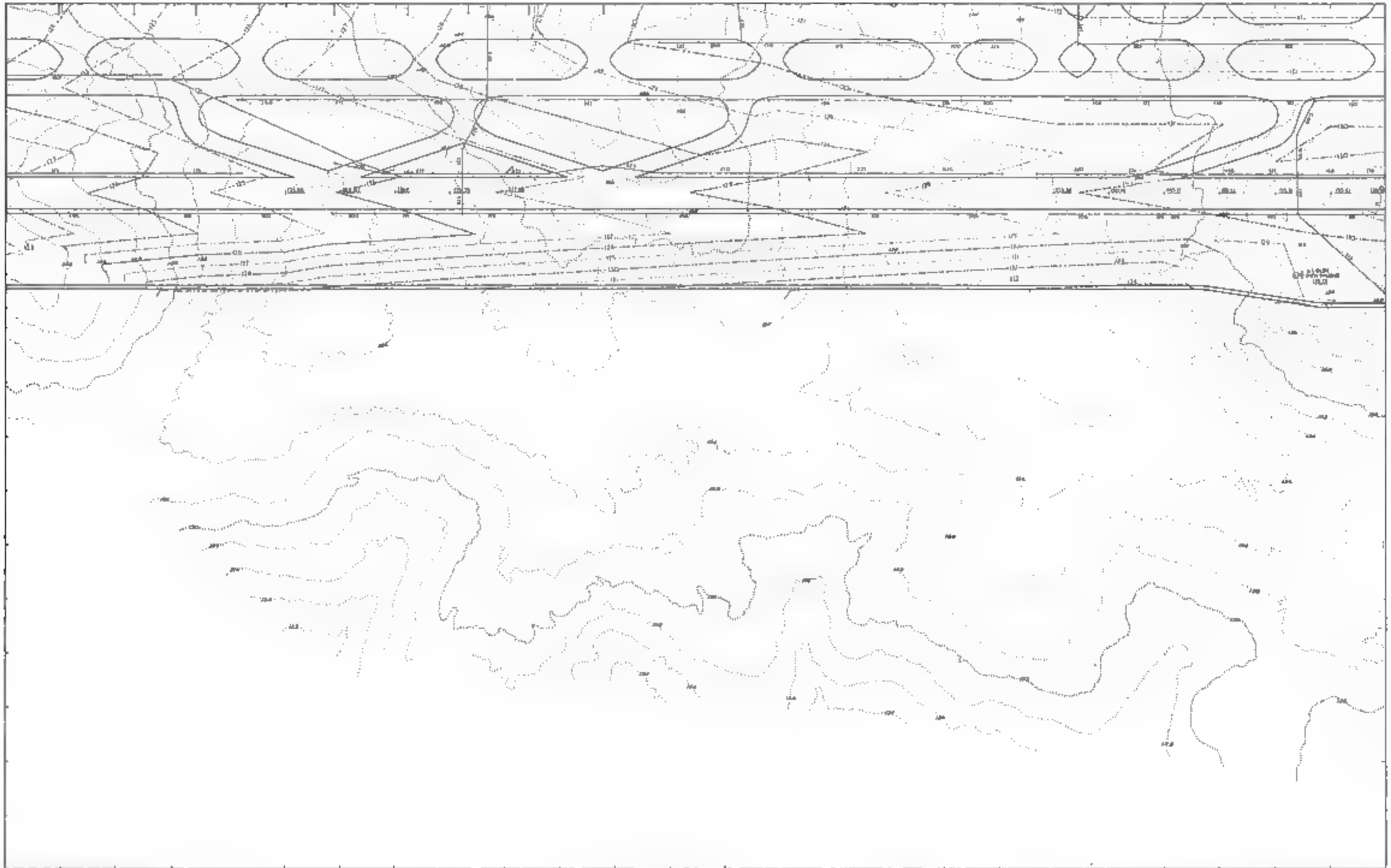
Printed image digitised by the University of Southampton Library Digitisation Unit



NUTHAMPSTEAD
AIRPORT LAYOUT

NUT/12

Printed image digitised by the University of Southampton Library Digitisation Unit



NUTHAMPSTEAD

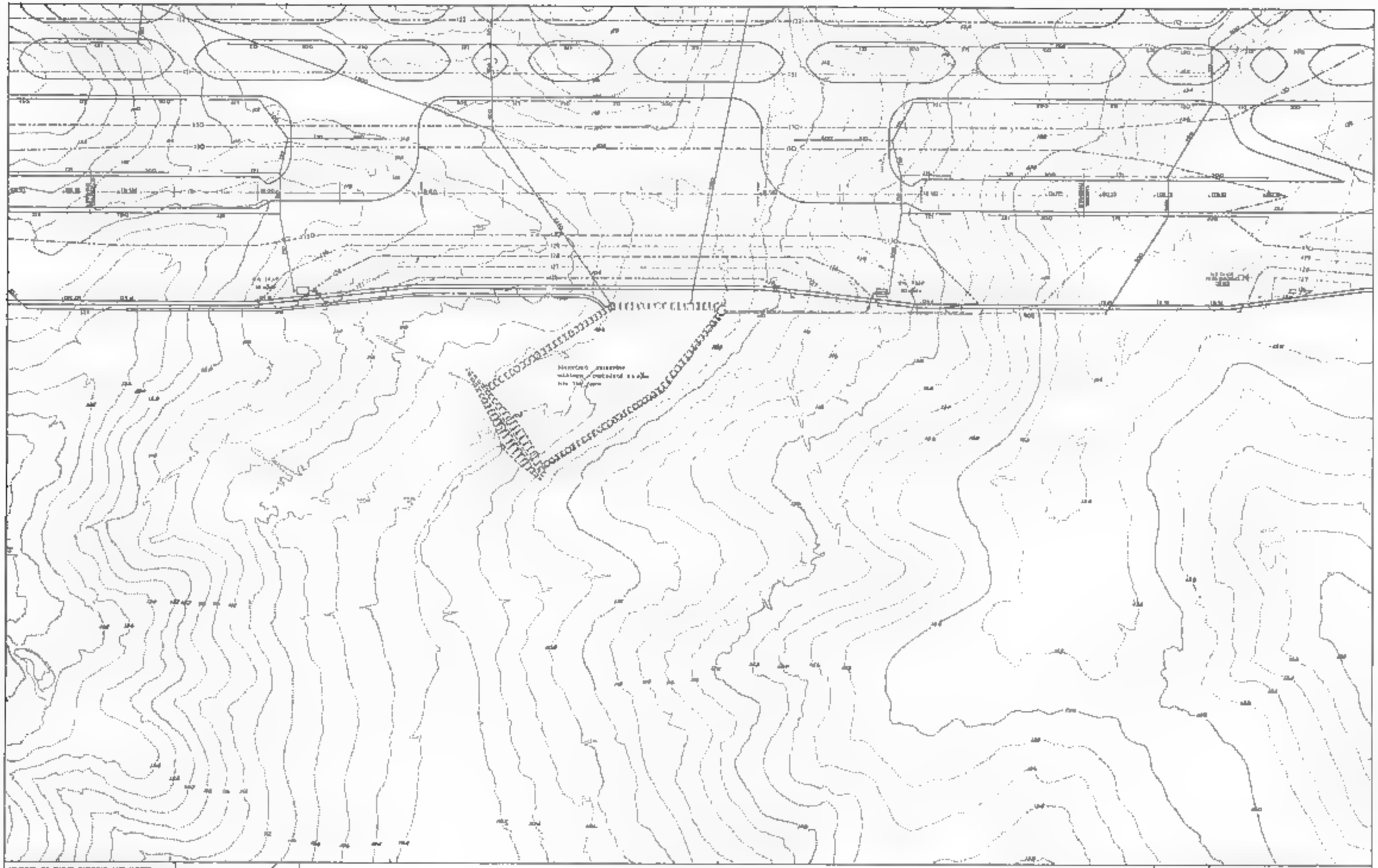
AIRPORT LAYOUT

UNIVERSITY LIBRARY CAMBRIDGE
OP
7 MR
1970

COMMISSION ON THE THIRD LONDON AIRPORT

NUT/13

Printed image digitised by the University of Southampton Library Digitisation Unit



NUTHAMPSTEAD

AIRPORT LAYOUT

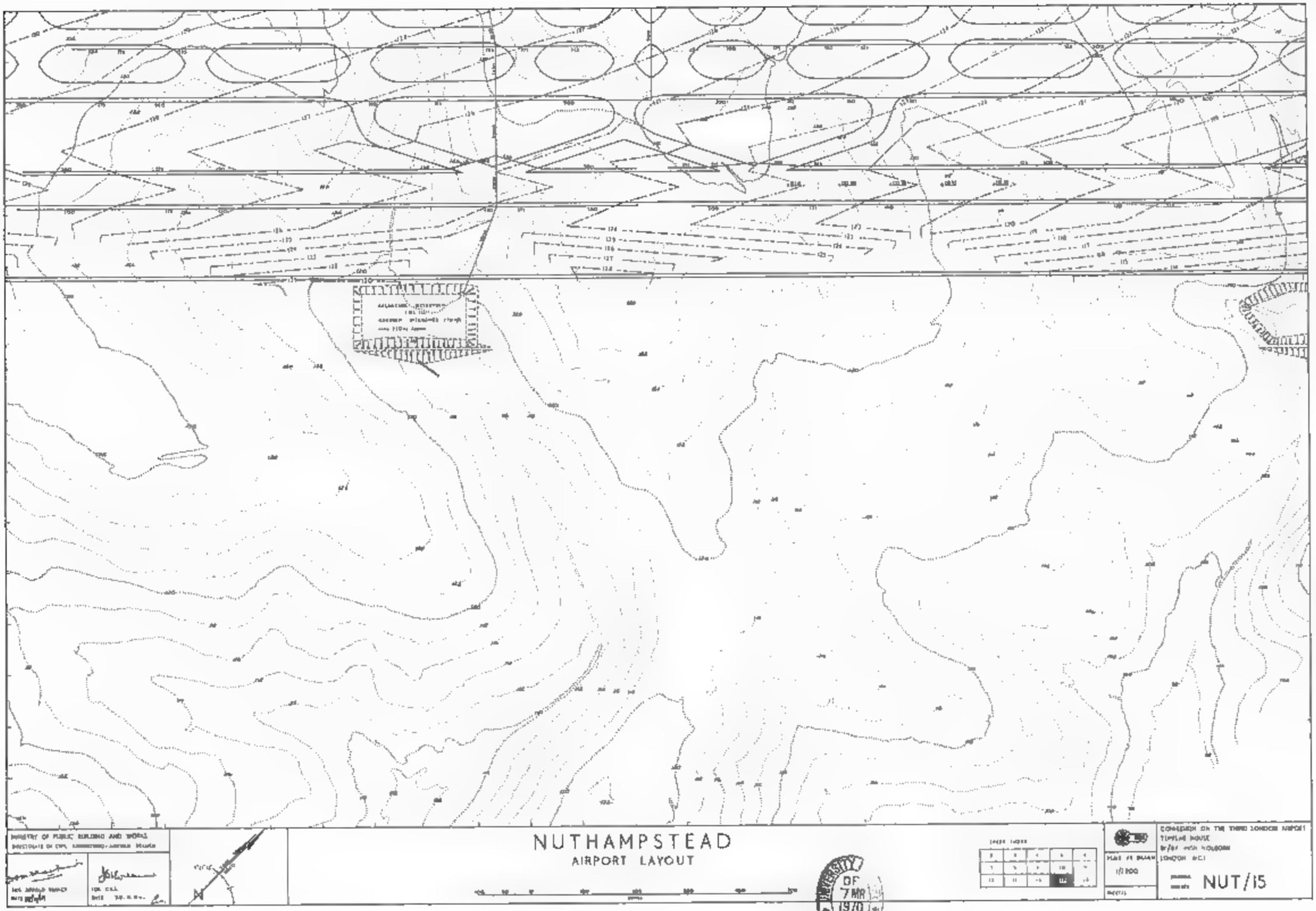
UNIVERSITY OF CAMBRIDGE
OP
7 MR
1970

COMMISSION ON THE THIRD LONDON AIRPORT
SEMPLE HOUSE
81/83 KING WILLIAM
LONDON W.C.2

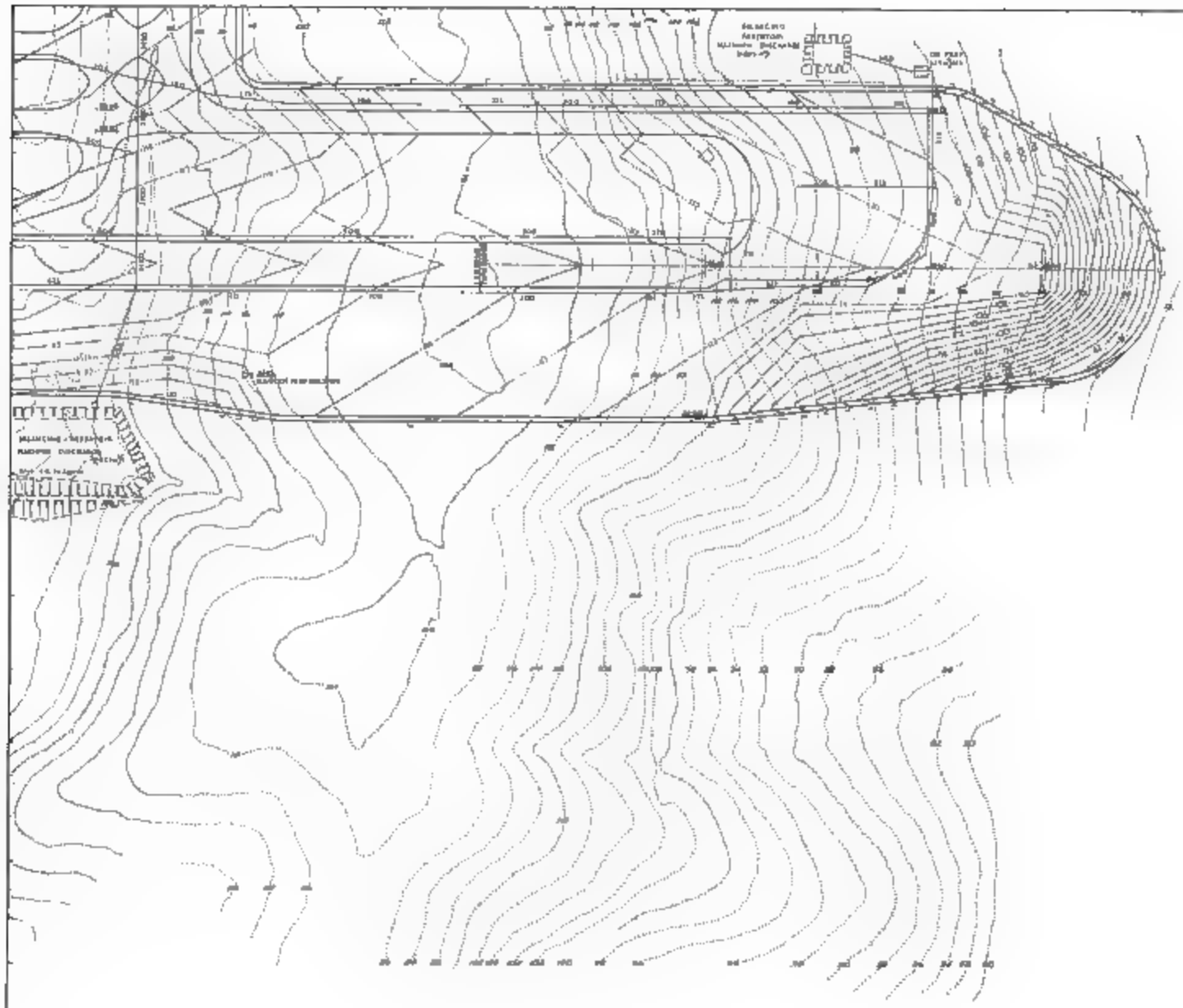
1/2 500

NUT/14

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



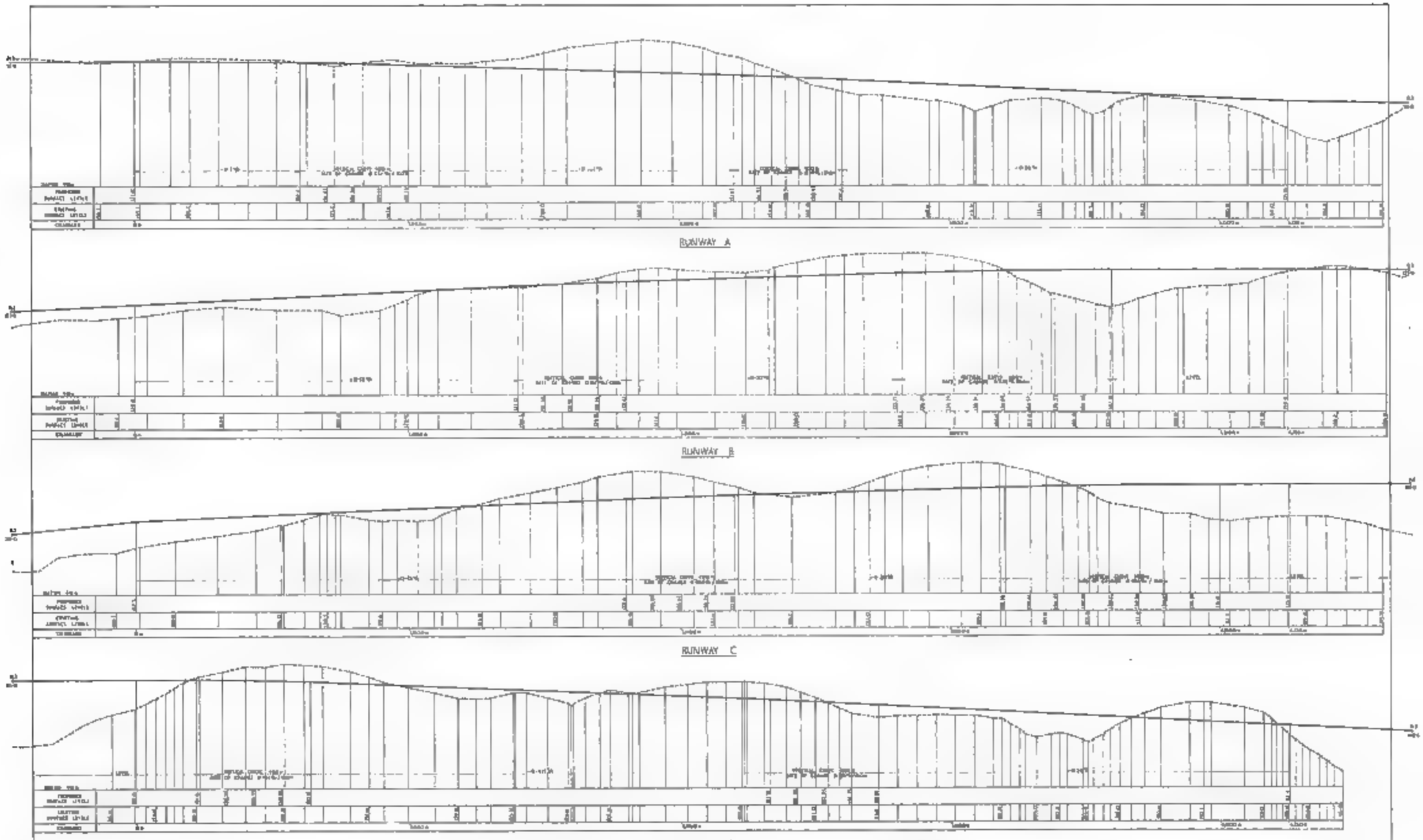
NUTHAMPSTEAD
AIRPORT LAYOUT

MINISTRY OF PUBLIC BUILDING AND WORKS

COMMISSION ON THE THIRD LONDON AIRPORT

NUT/16

Printed image digitised by the University of Southampton Library Digitisation Unit



MINISTRY OF PUBLIC BUILDING AND WORKS

NUTHAMPSTEAD

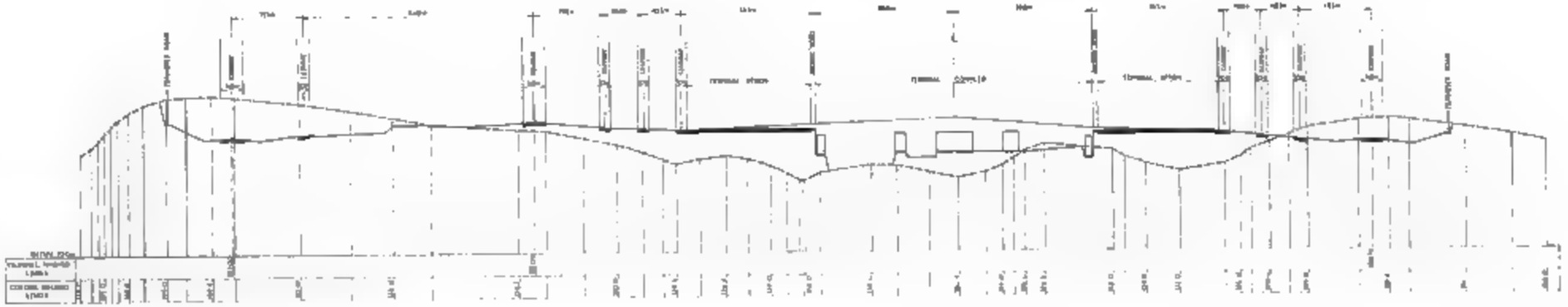
RUNWAY PROFILES

COMMISSION ON THE THIRD LONDON AIRPORT
TEMPLAR HOUSE
81/87 HIGH HOLBORN
LONDON W.C.1

NUT/17

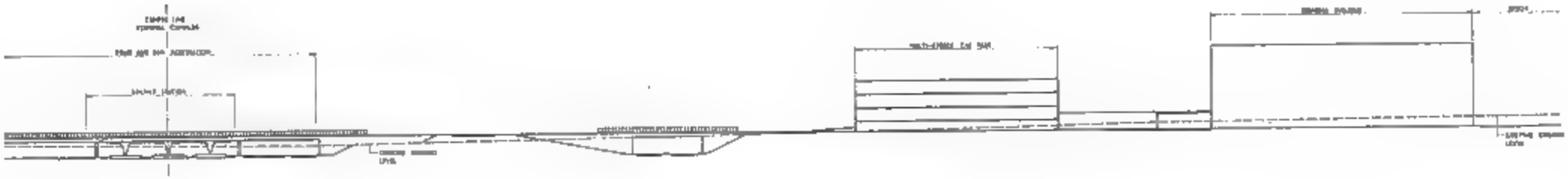
UNIVERSITY OF SOUTHAMPTON 7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



CROSS SECTION THROUGH SITE

SCALE HORIZONTAL 1/1000
VERTICAL 1/500



CROSS SECTION THROUGH TERMINAL COMPLEX

SCALE HORIZONTAL 1/100
VERTICAL 1/500

MINISTRY OF PUBLIC BUILDING AND WORKS

NUTHAMPSTEAD

TYPICAL CROSS SECTIONS

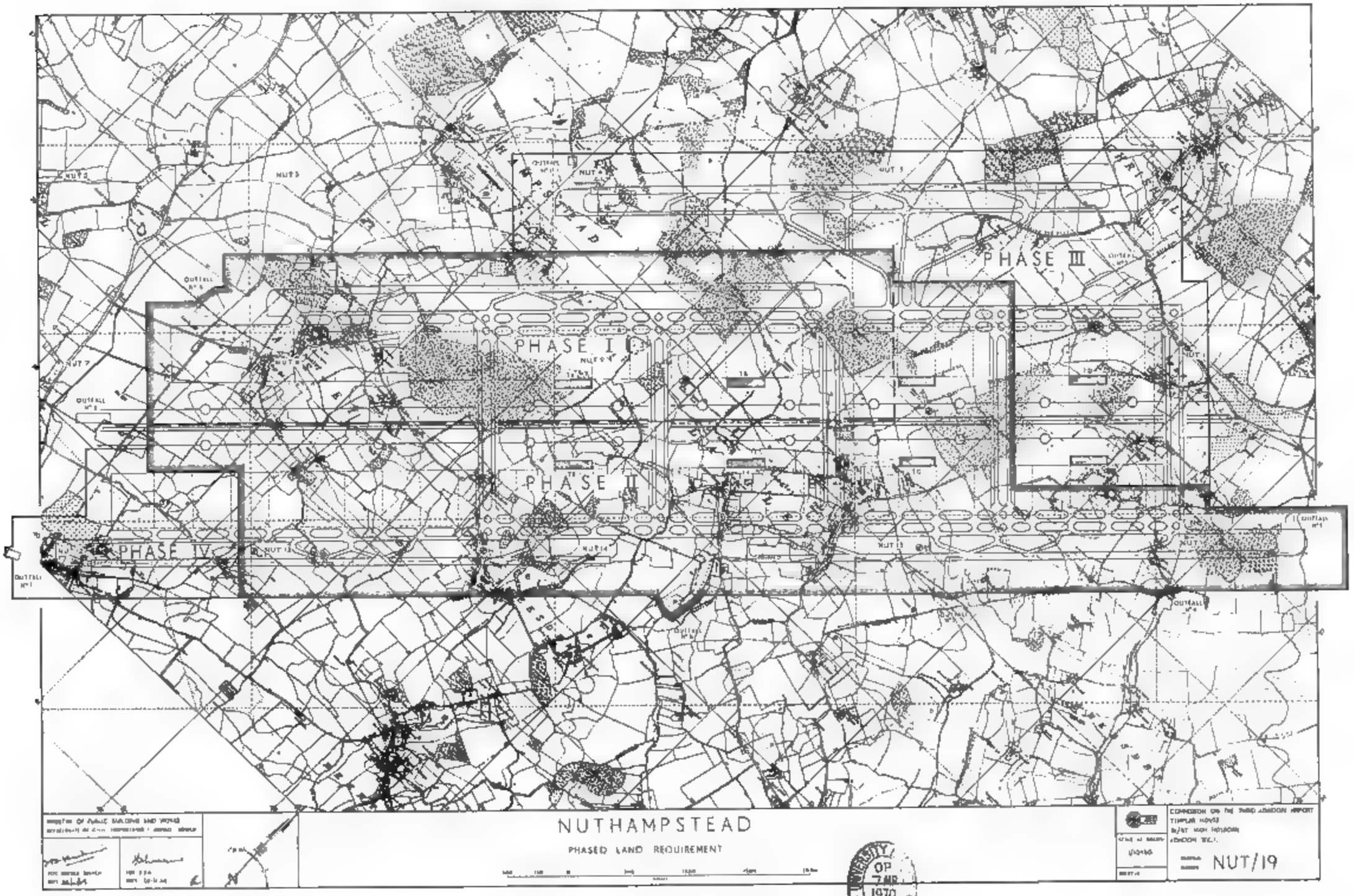
UNIVERSITY OF CAMBRIDGE
OP
7 MR
1970

COMMISSION ON THE THIRD LONDON AIRPORT
TEMPLAR HOUSE
81/87 HIGH HOLBORN
LONDON W.C.1

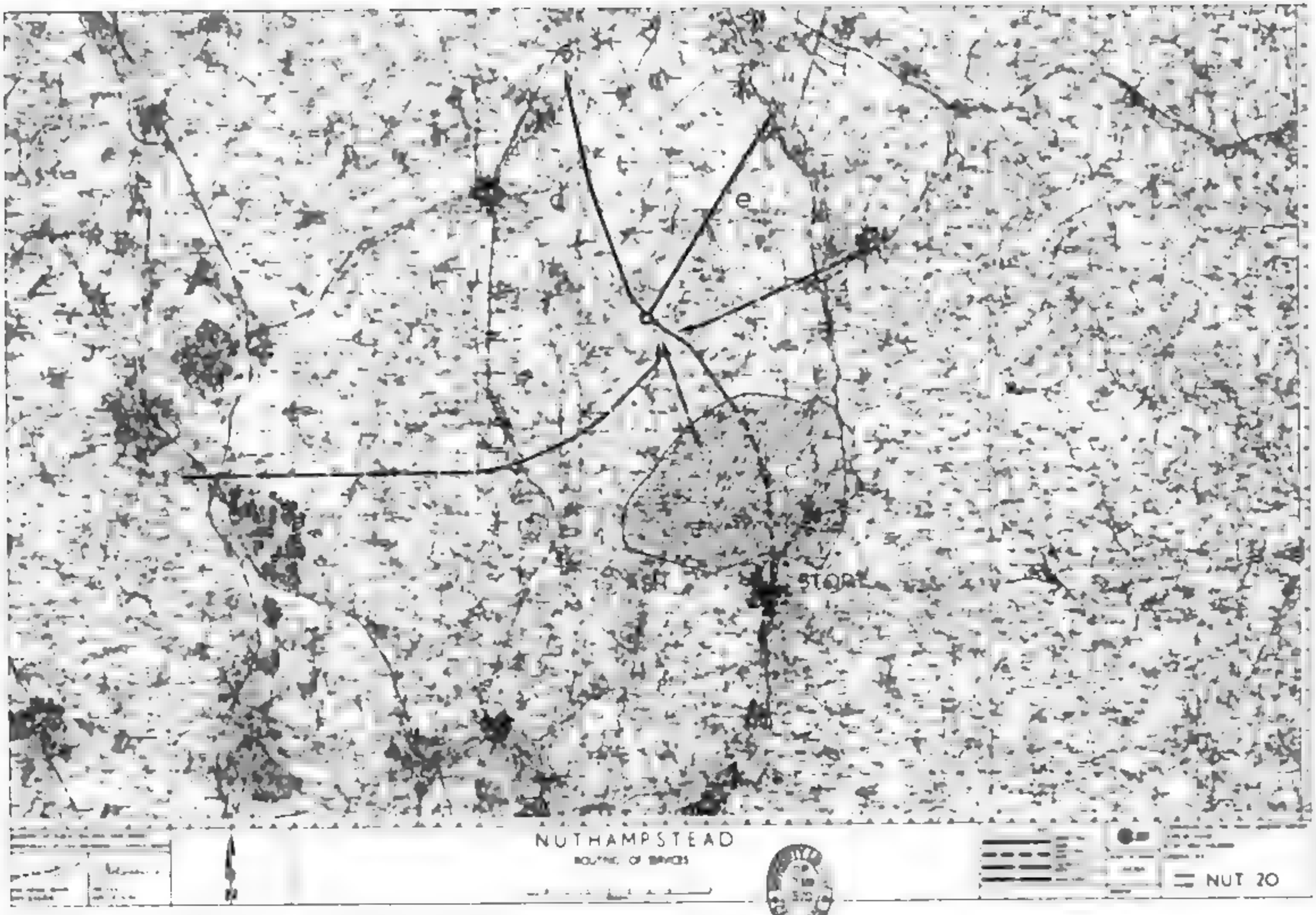
SCALE
AS DRAWN
AS SHOWN

DRAWING NUMBER NUT/18

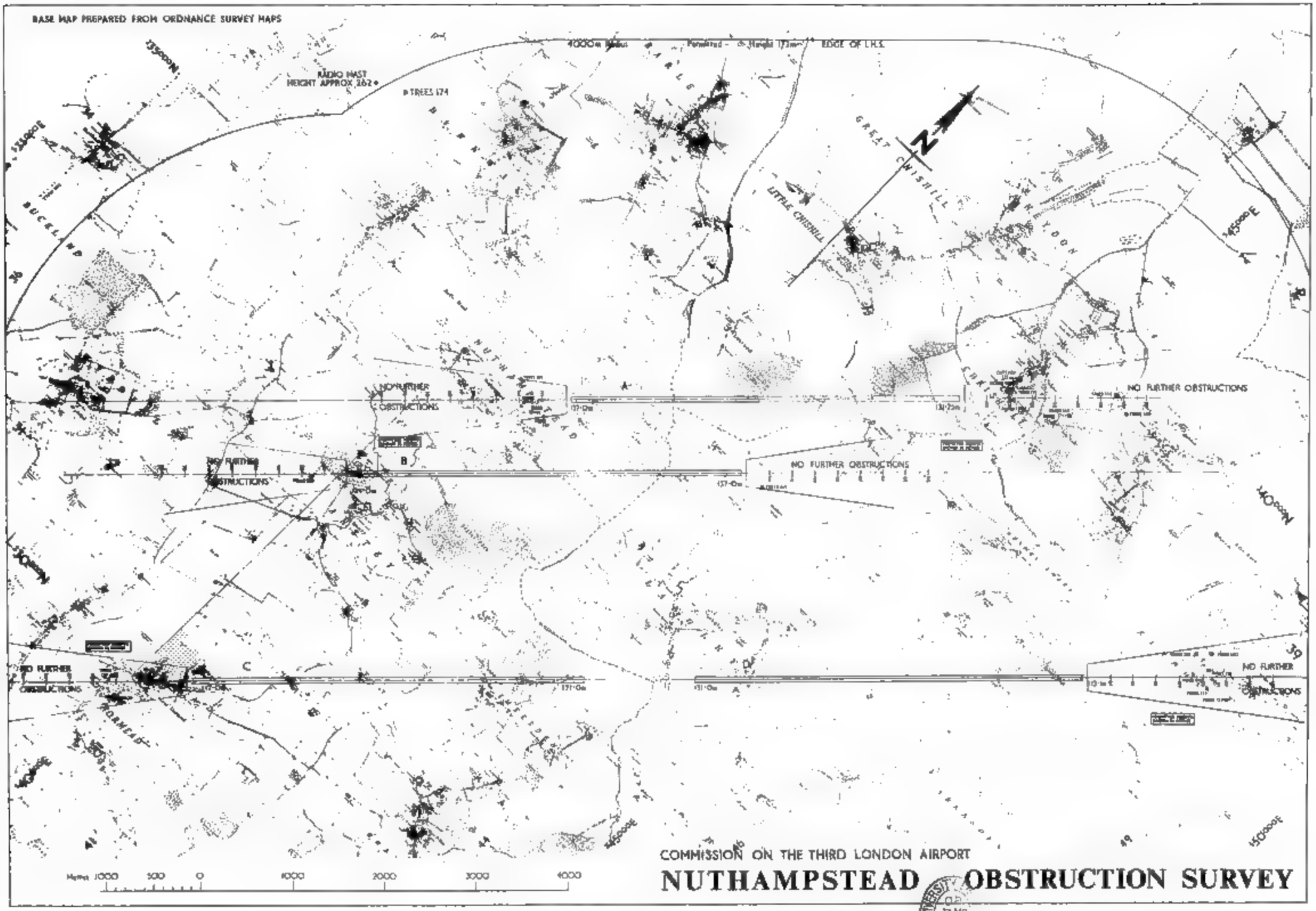
Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

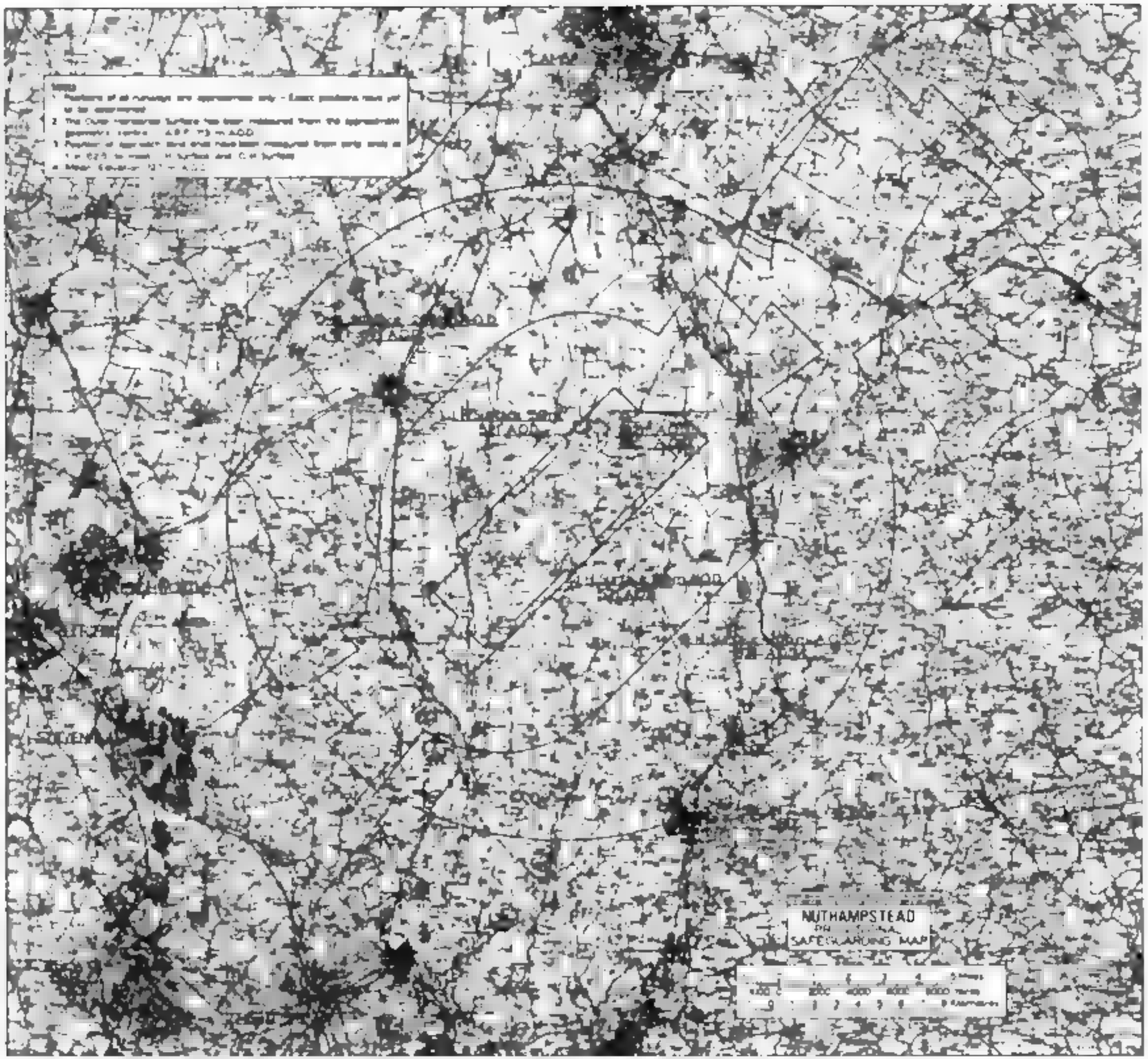


Printed image digitised by the University of Southampton Library Digitisation Unit

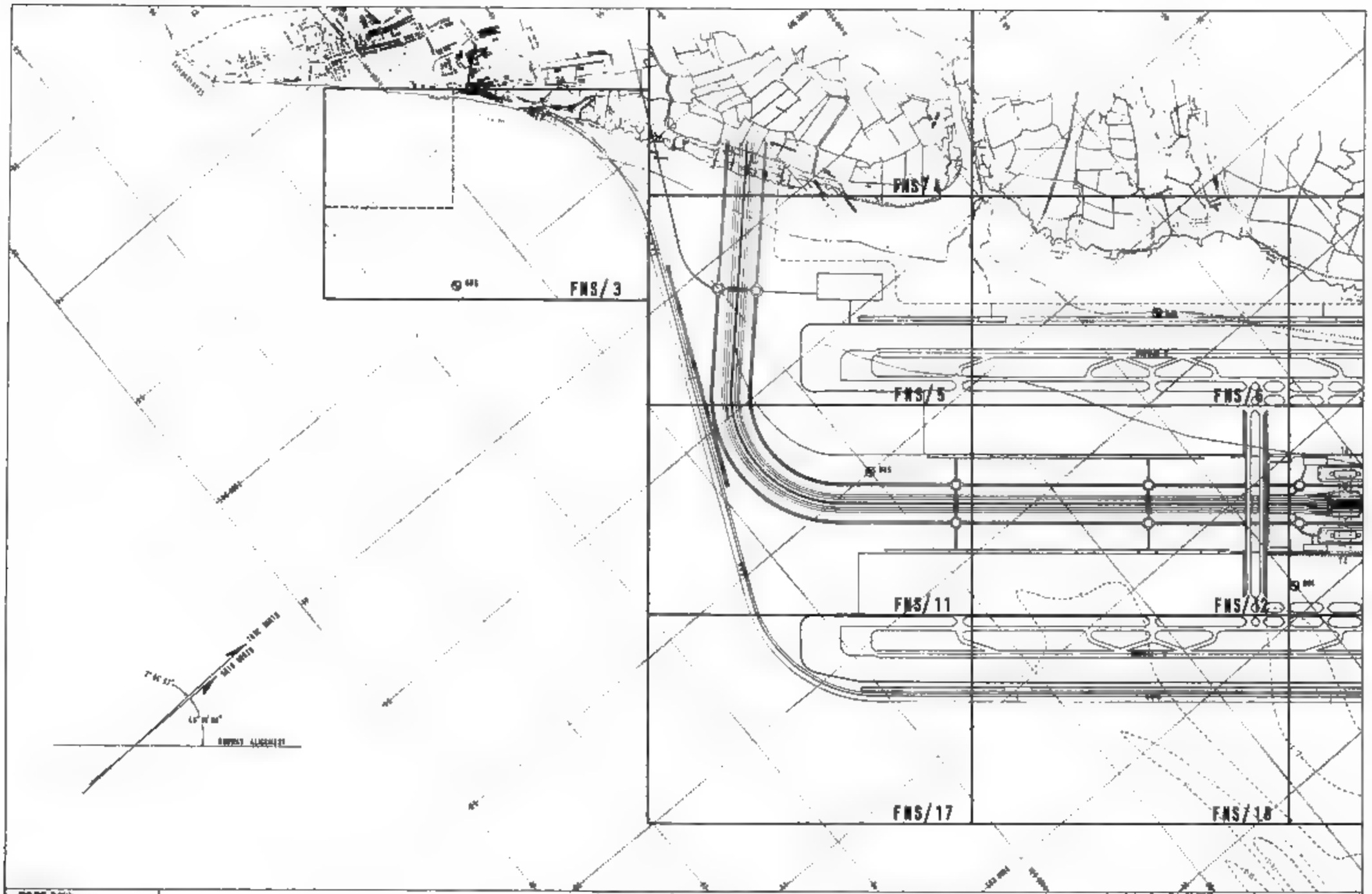


UNIVERSITY OF CAMBRIDGE
7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



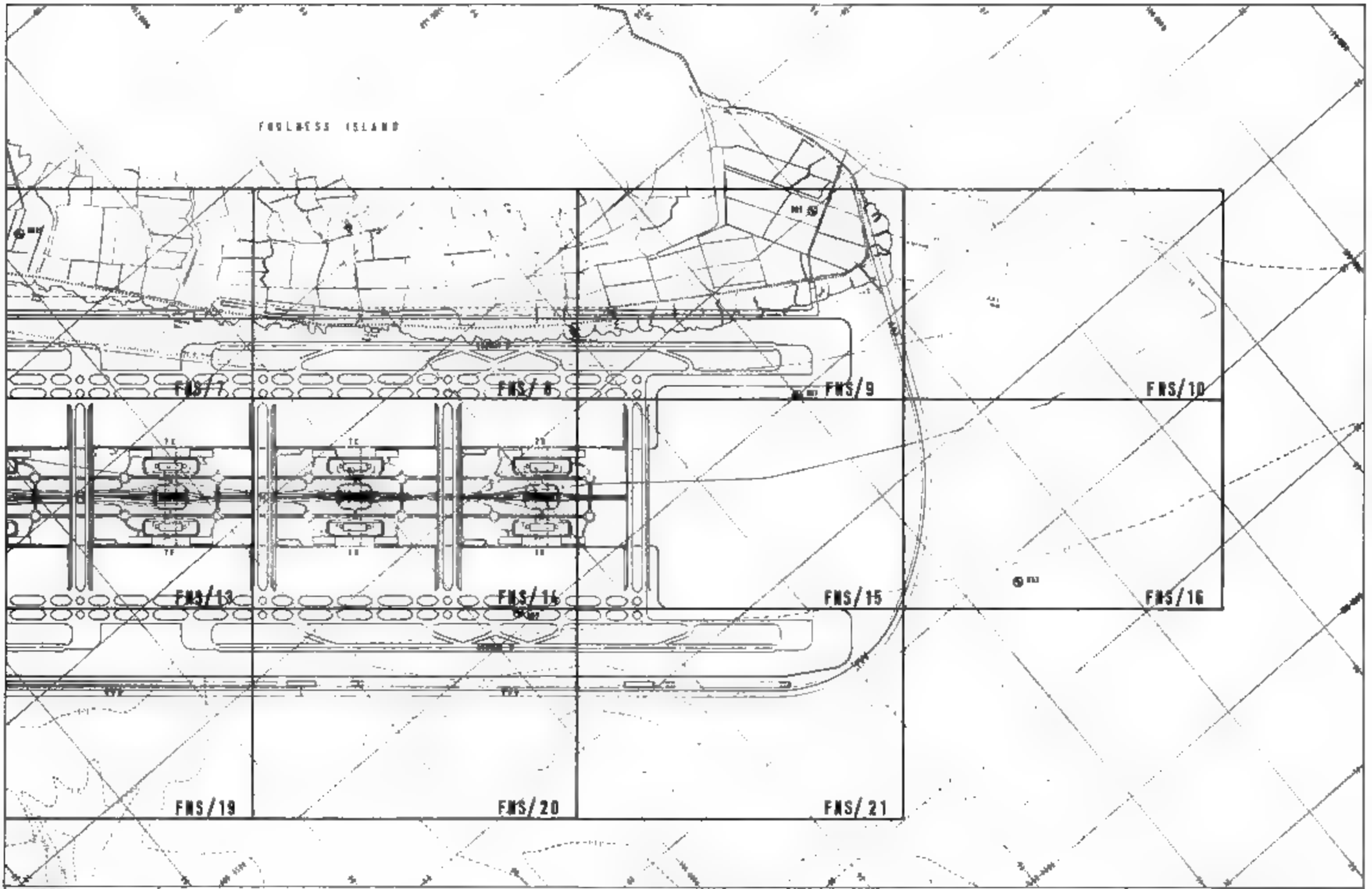
FOULNESS

LOCATION & KEY PLAN

FNS/1

UNIVERSITY OF CAMBRIDGE 7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



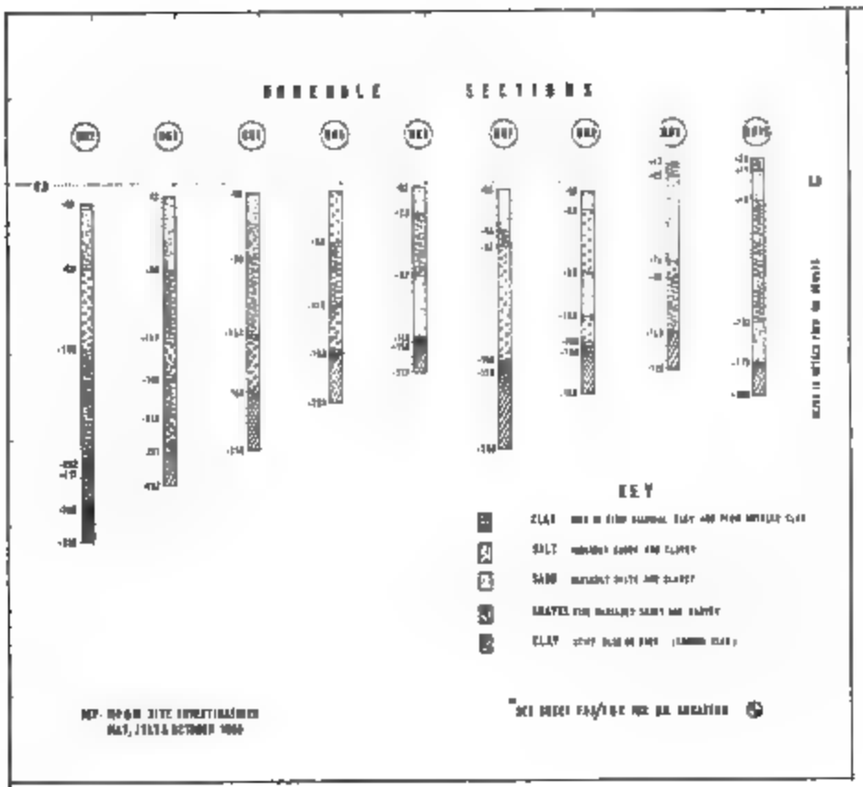
FOULNESS

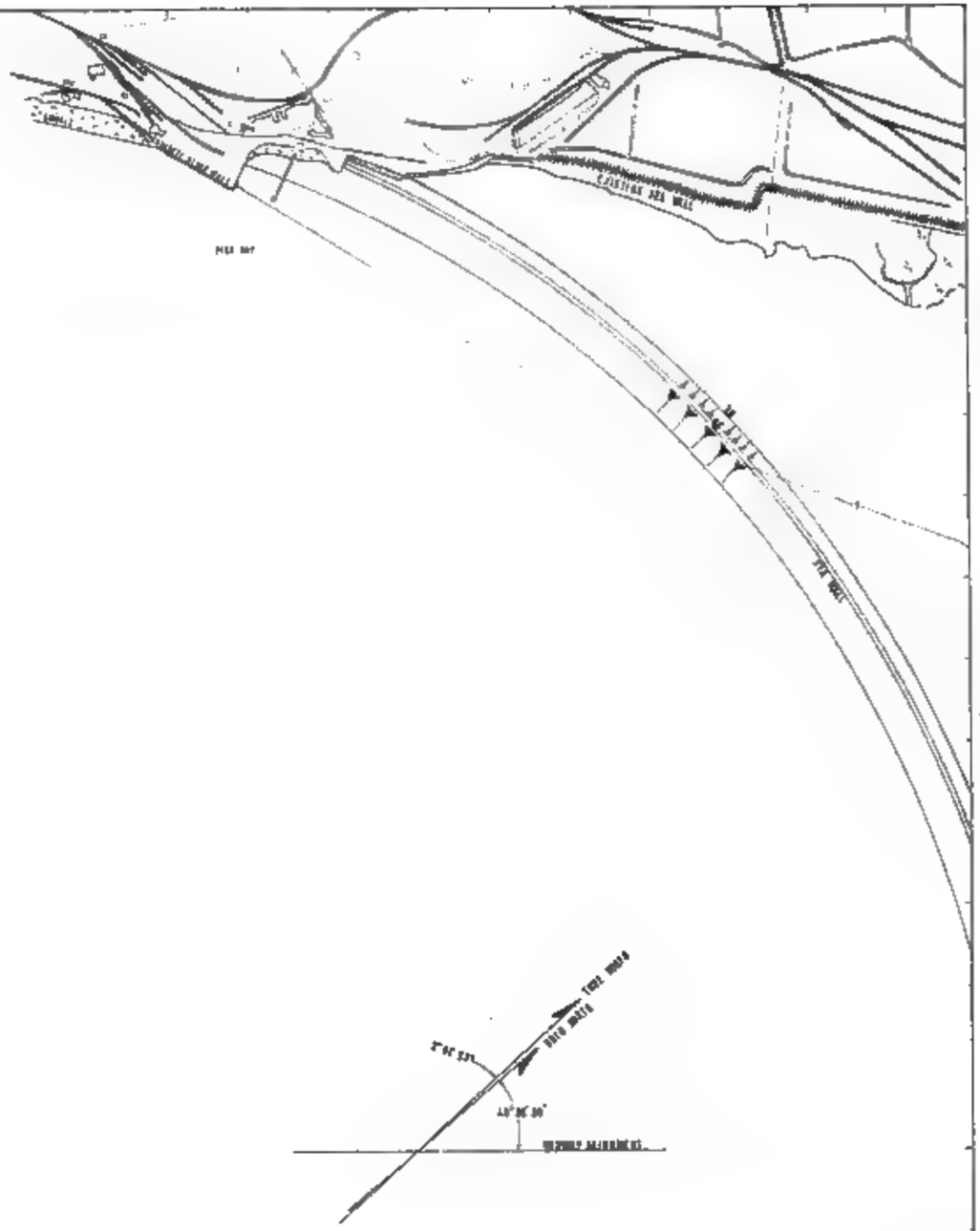
LOCATION & KEY PLAN

FNS/2

UNIVERSITY OF SOUTHAMPTON LIBRARY 7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit





LEGEND

BUILDING UTILISATION KEY

A	PASSENGER TERMINALS
B	AIRLINES
C	AIRPORT MANAGEMENT
D	AIRPORT MAINTENANCE
E	HEATING STATIONS
F	STORE BUILDINGS
G	CAR PARKS
H	AREAS FOR ANCILLARY DEVELOPMENTS

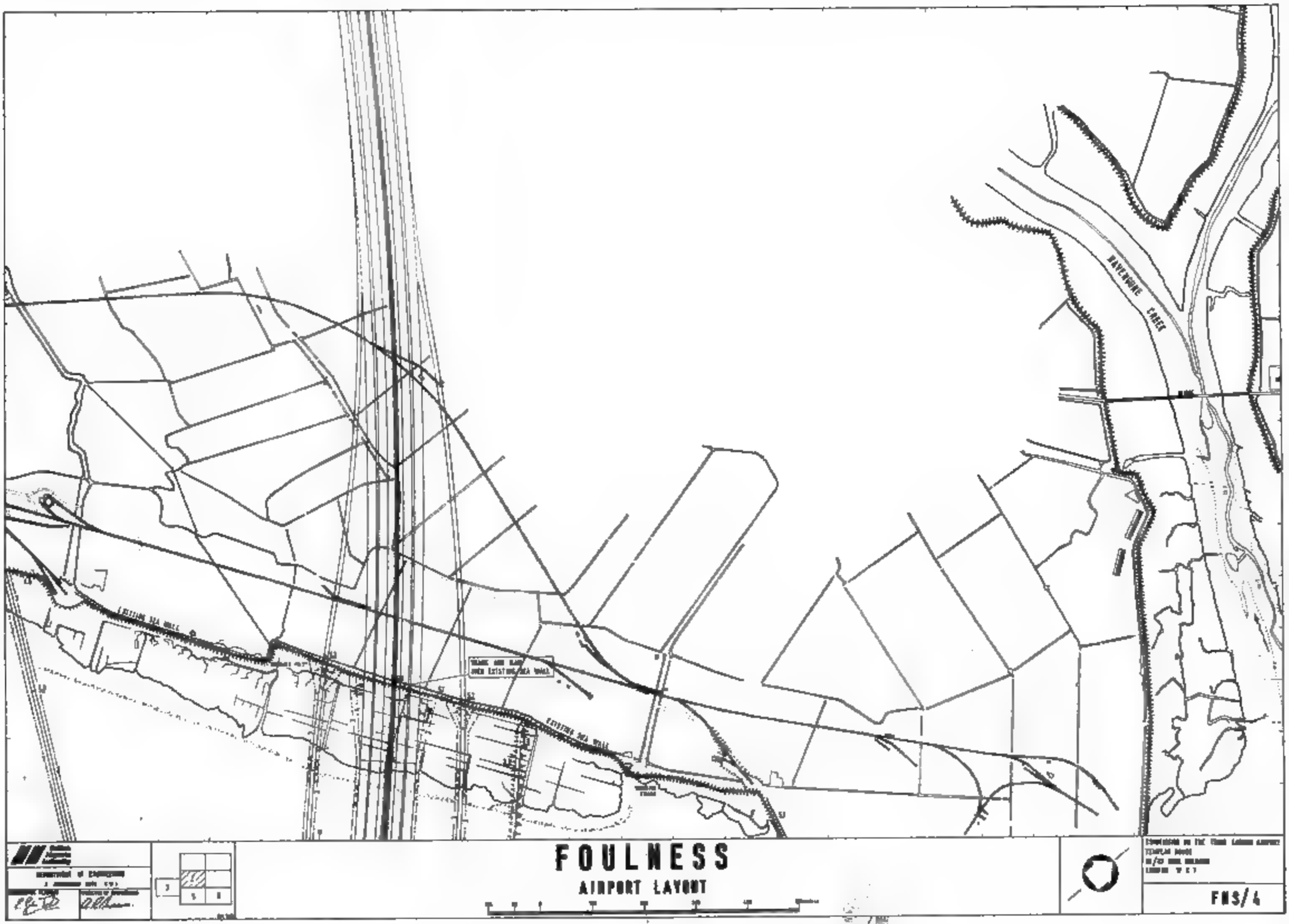
FOULNESS

AIRPORT LAYOUT

FNS/ 3

7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



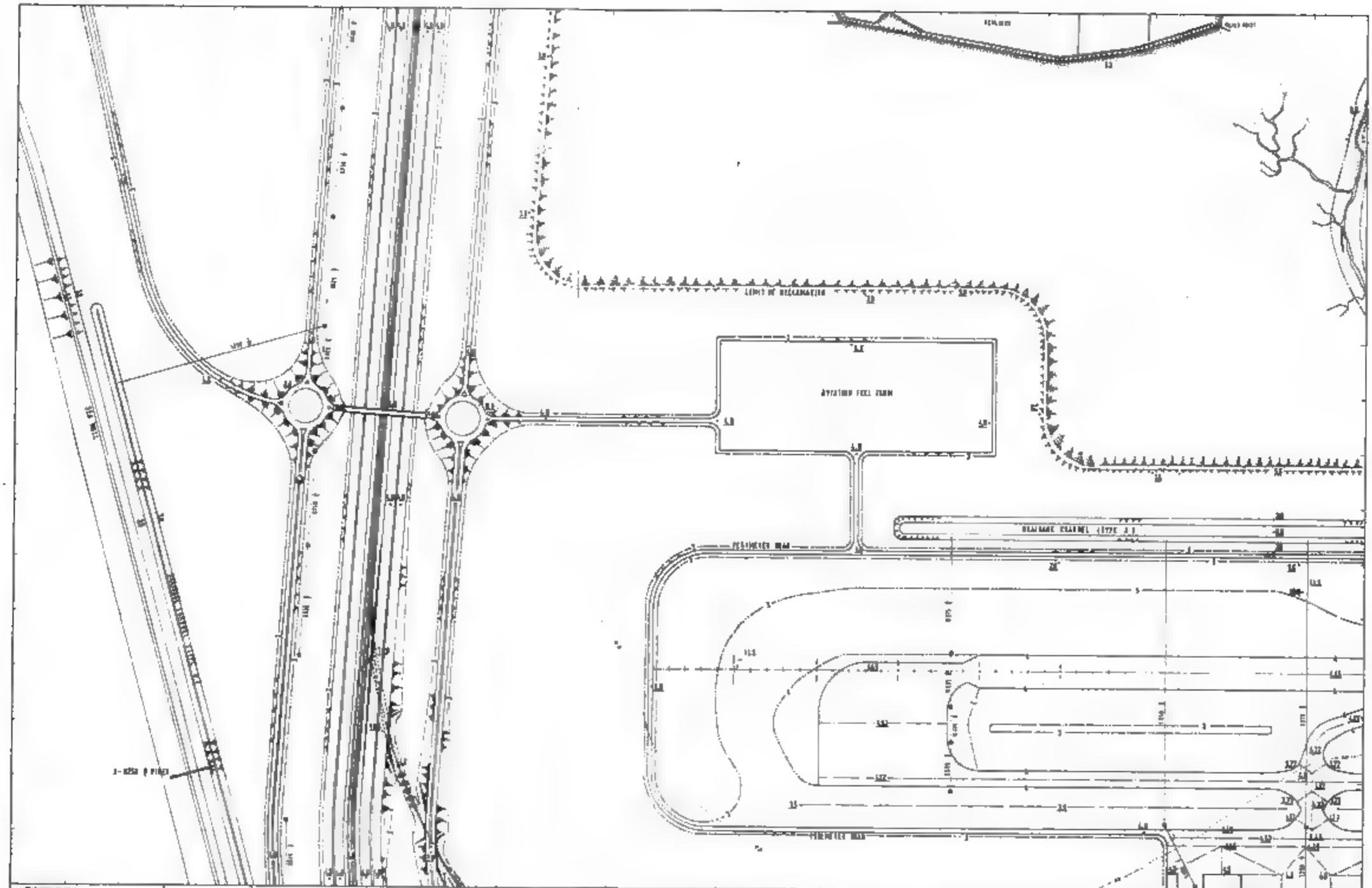
FOULNESS

AIRPORT LAYOUT

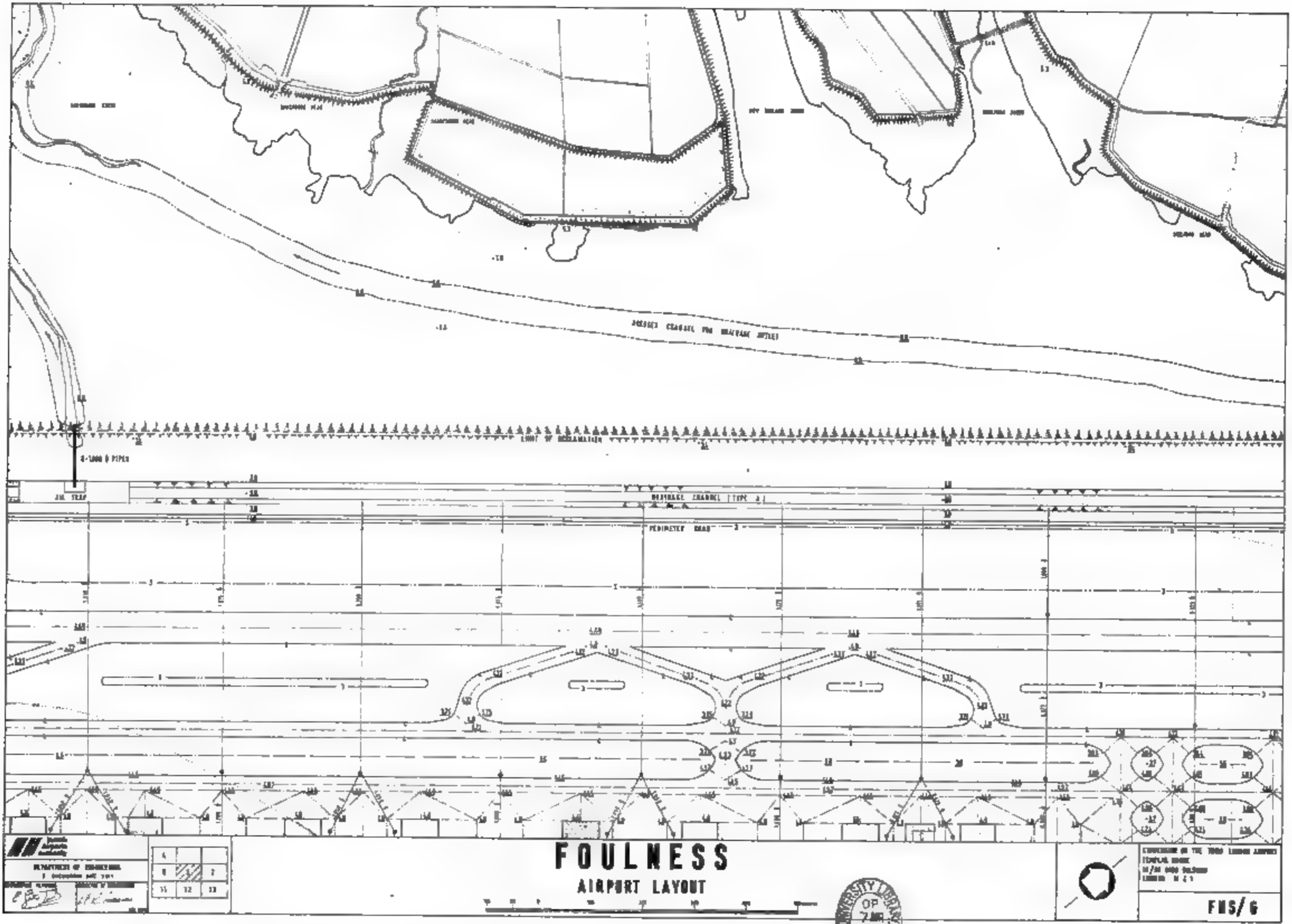
FNS/4

7 DEC 1970

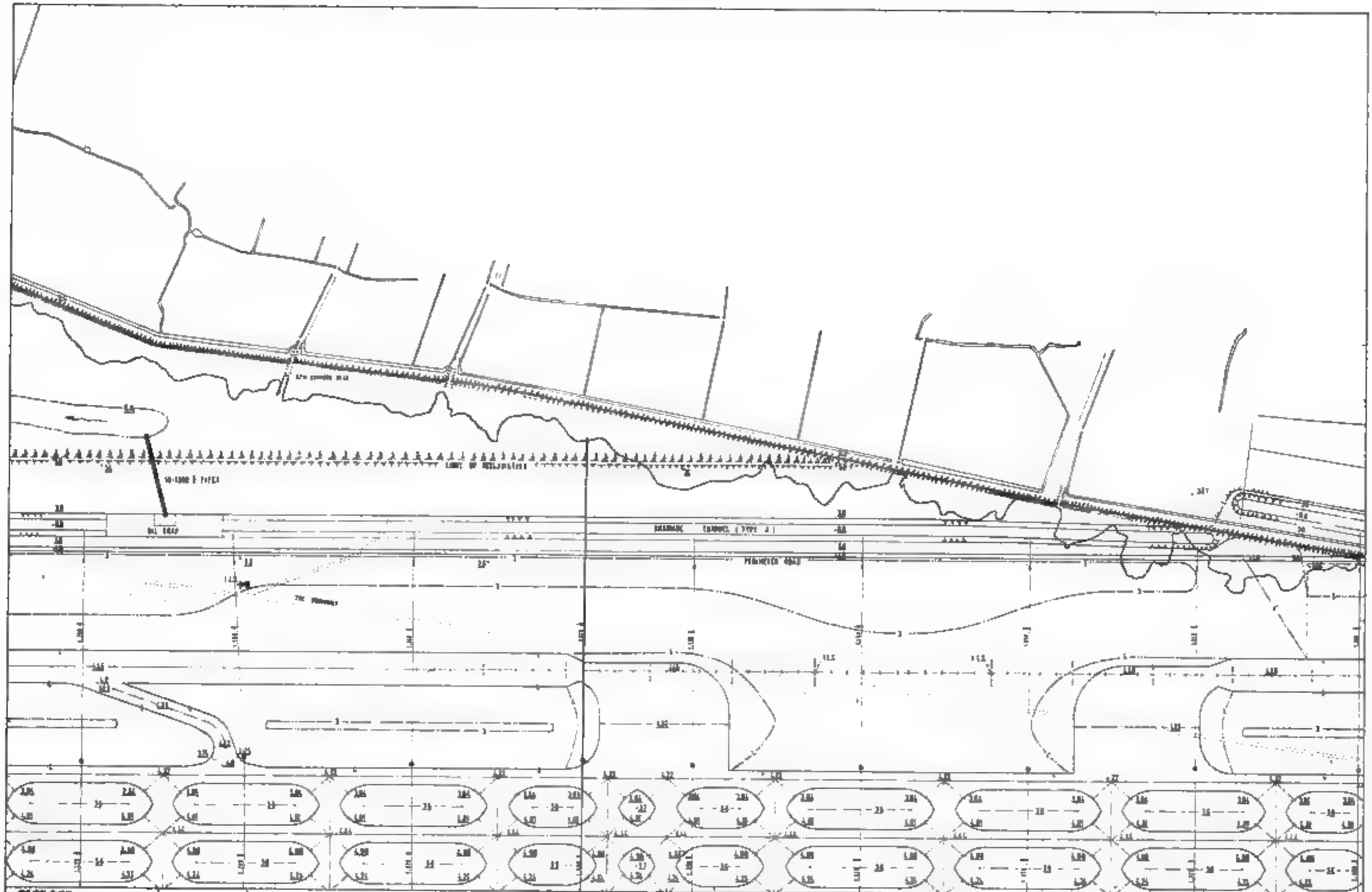
Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

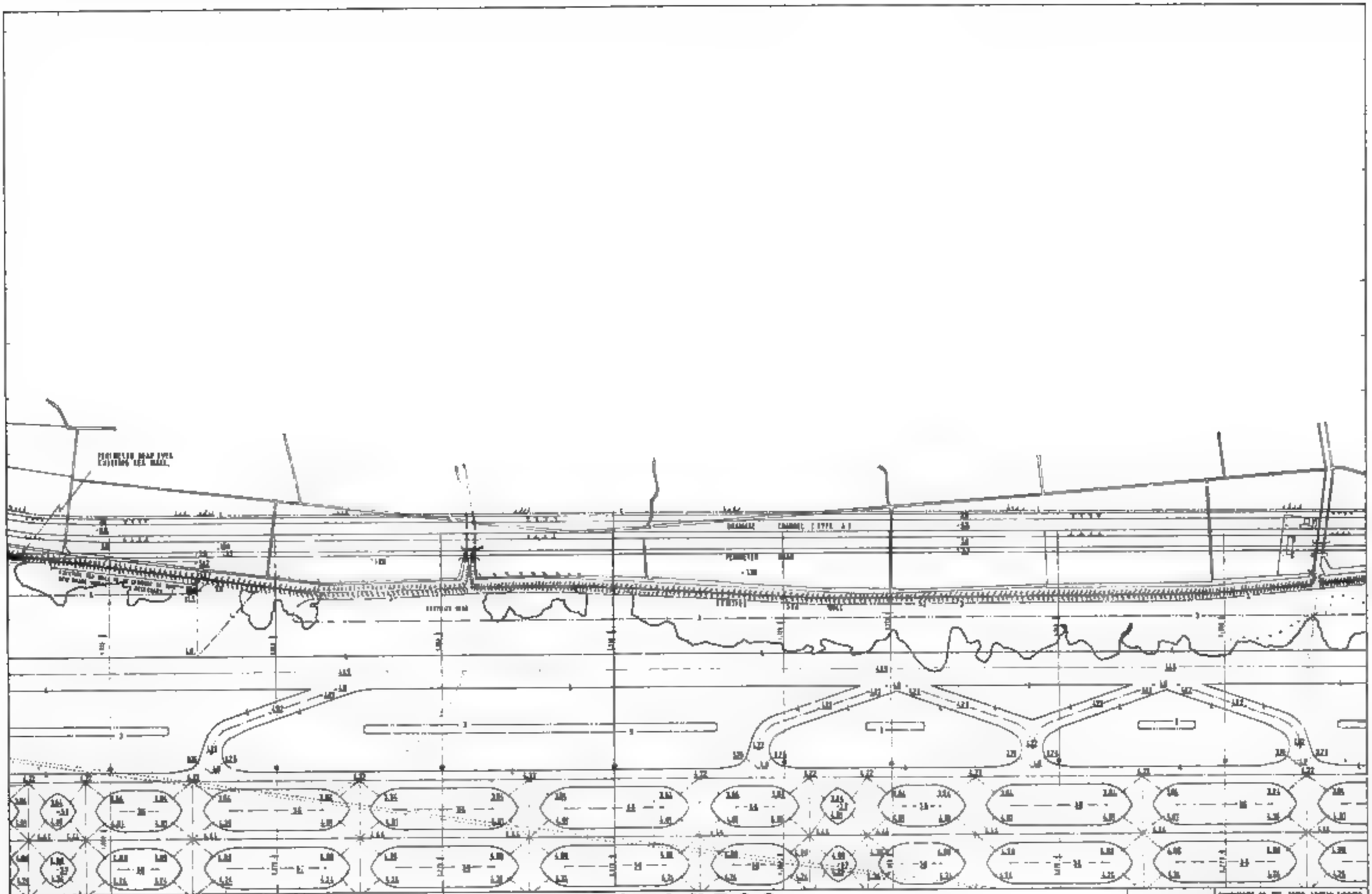


FOULNESS

AIRPORT LAYOUT

FNS/7

Printed image digitised by the University of Southampton Library Digitisation Unit



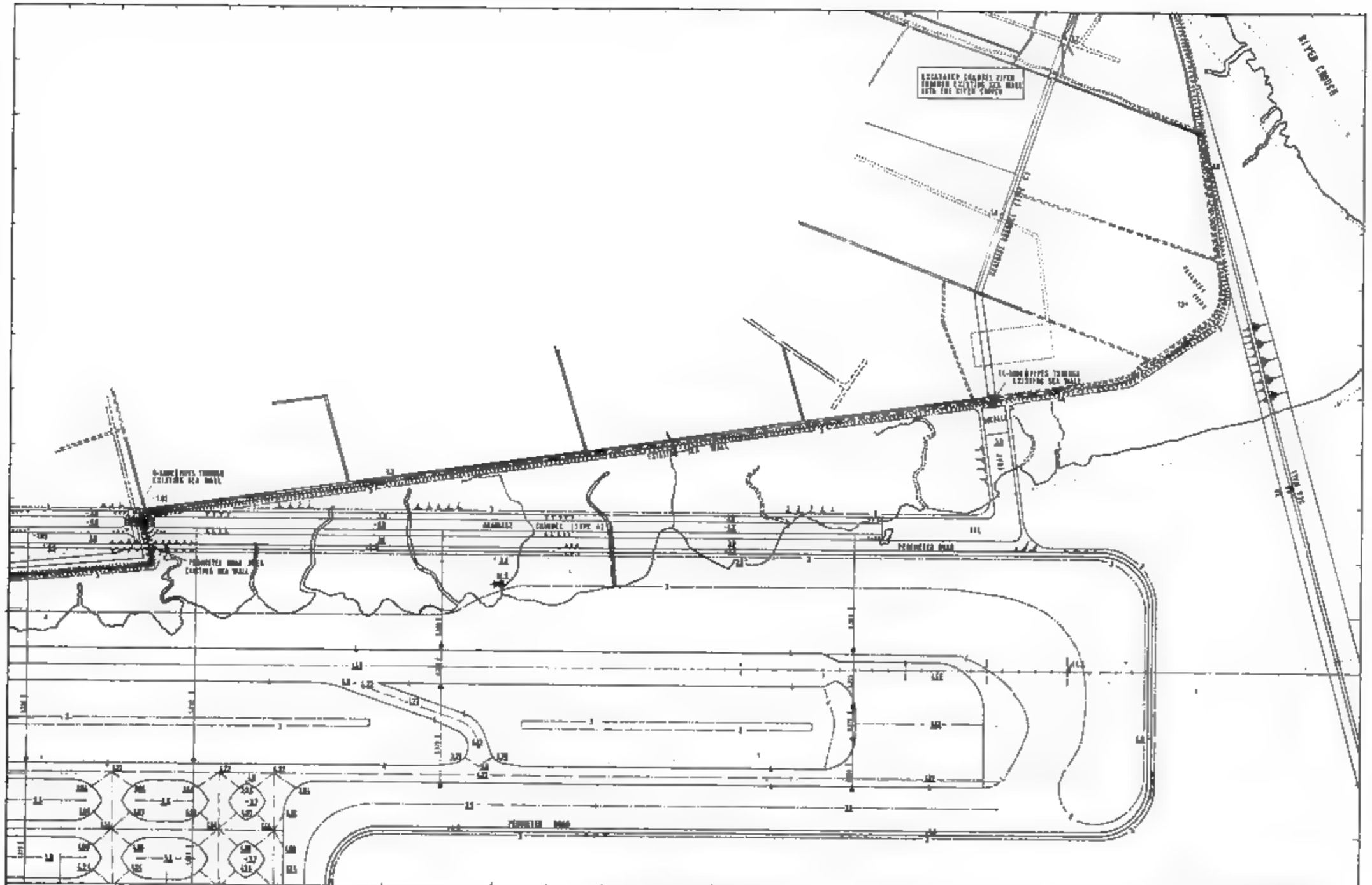
FOULNESS

AIRPORT LAYOUT

FNS/0

OP 7 NOV 1970
UNIVERSITY OF CAMBRIDGE

Printed image digitised by the University of Southampton Library Digitisation Unit

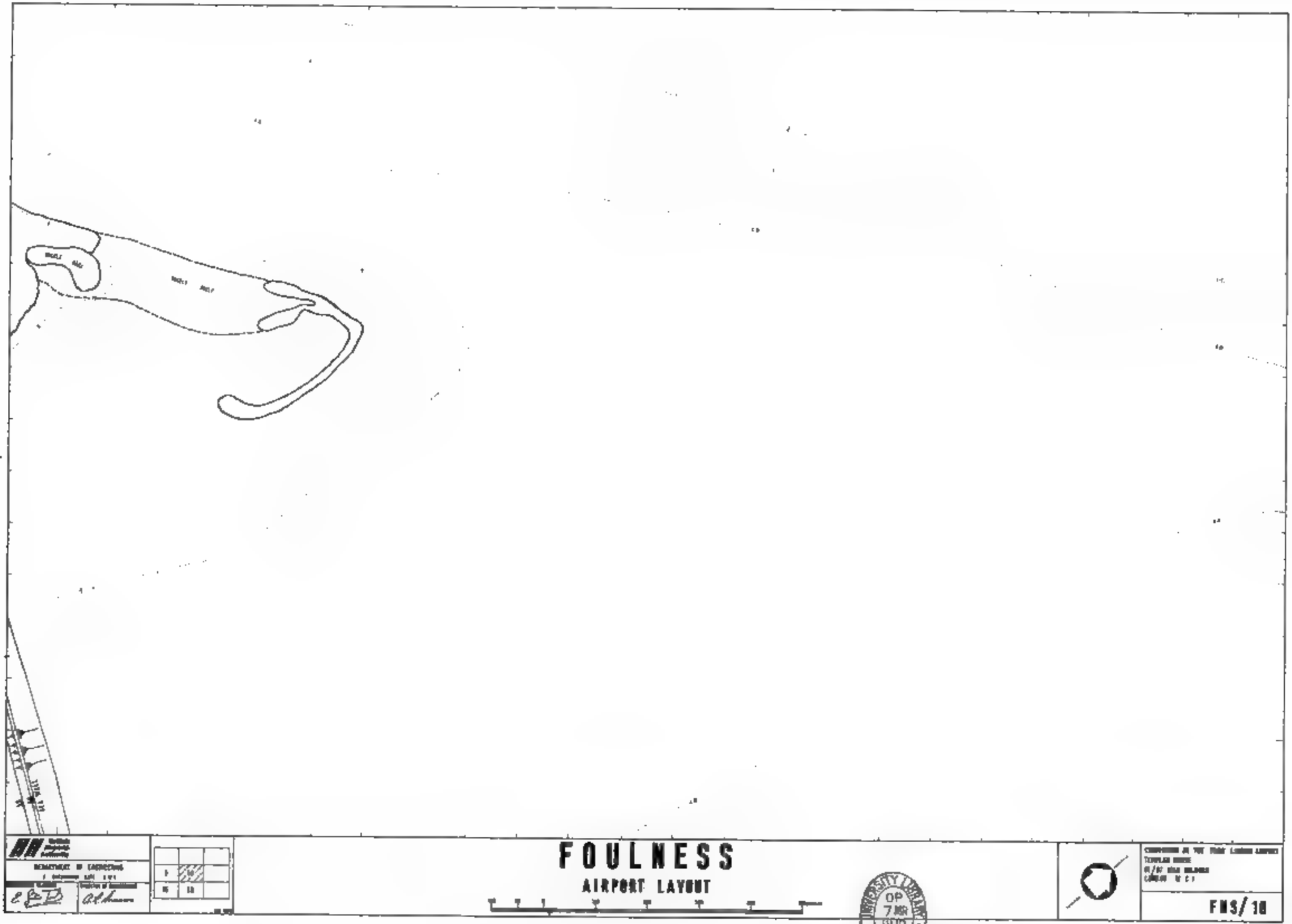


FOULNESS

AIRPORT LAYOUT

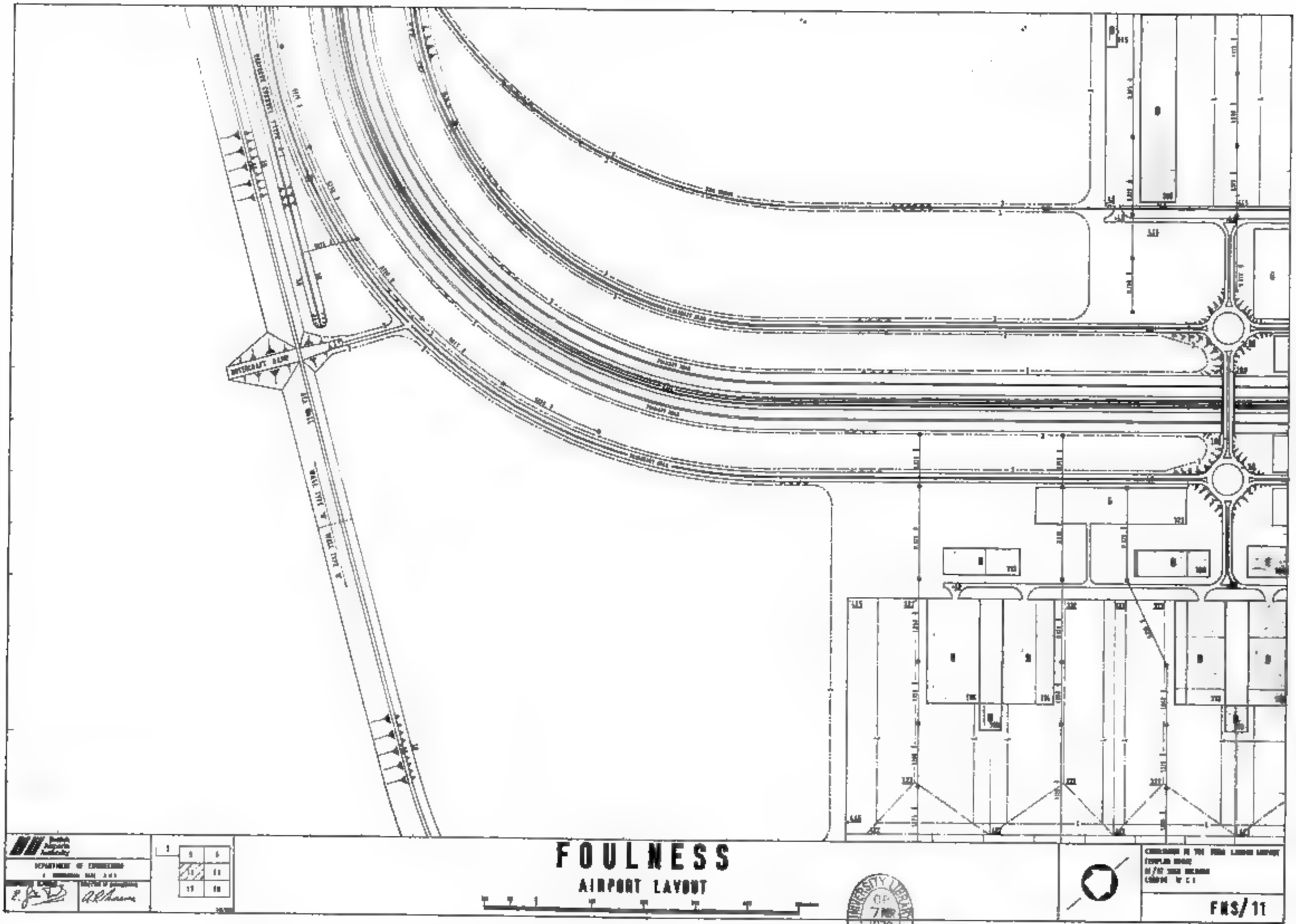
FNS/ 9

Printed image digitised by the University of Southampton Library Digitisation Unit



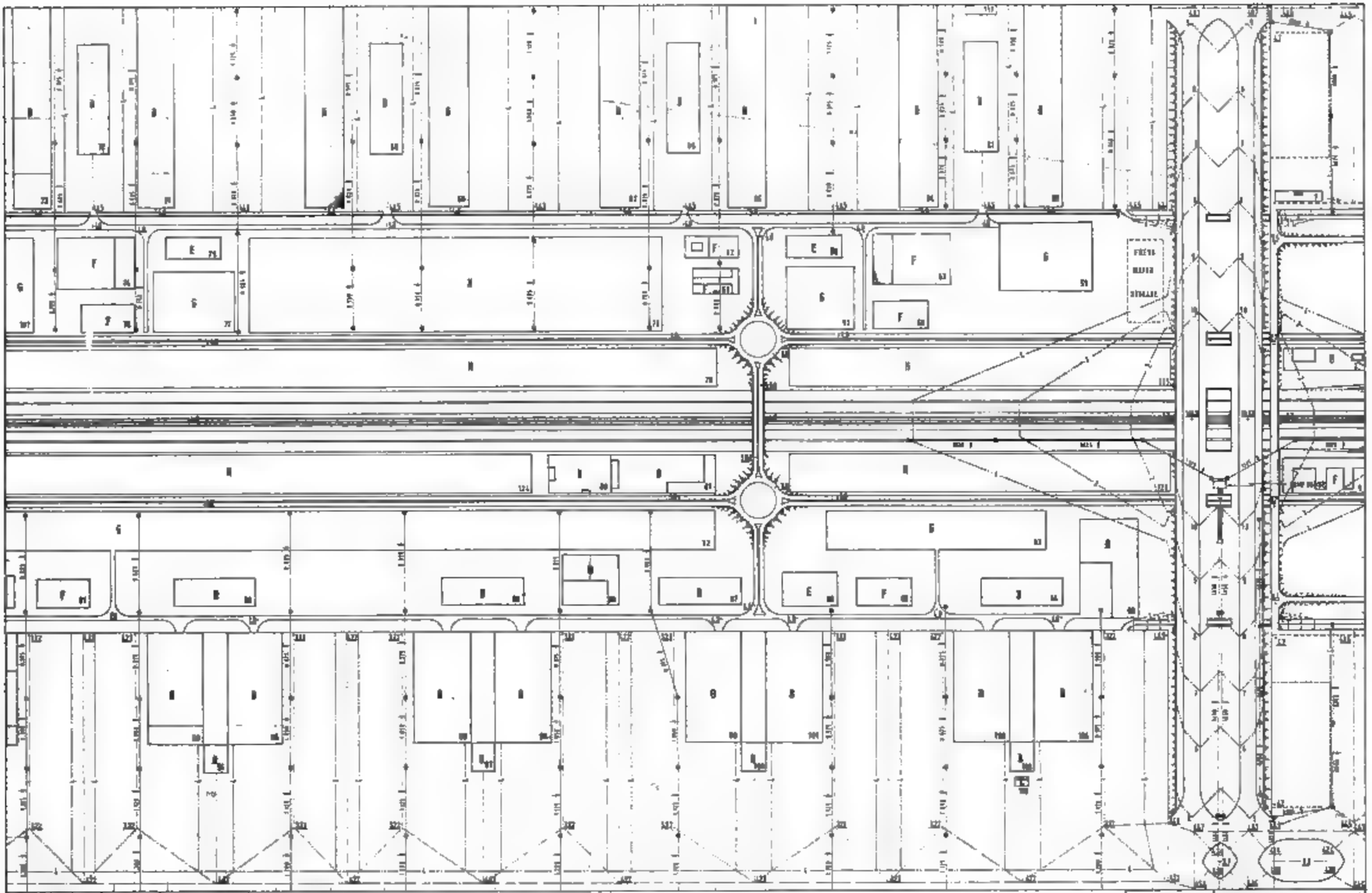
UNIVERSITY LIBRARY CAMBRIDGE
OP 7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



UNIVERSITY LIBRARY
CAMBRIDGE
7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

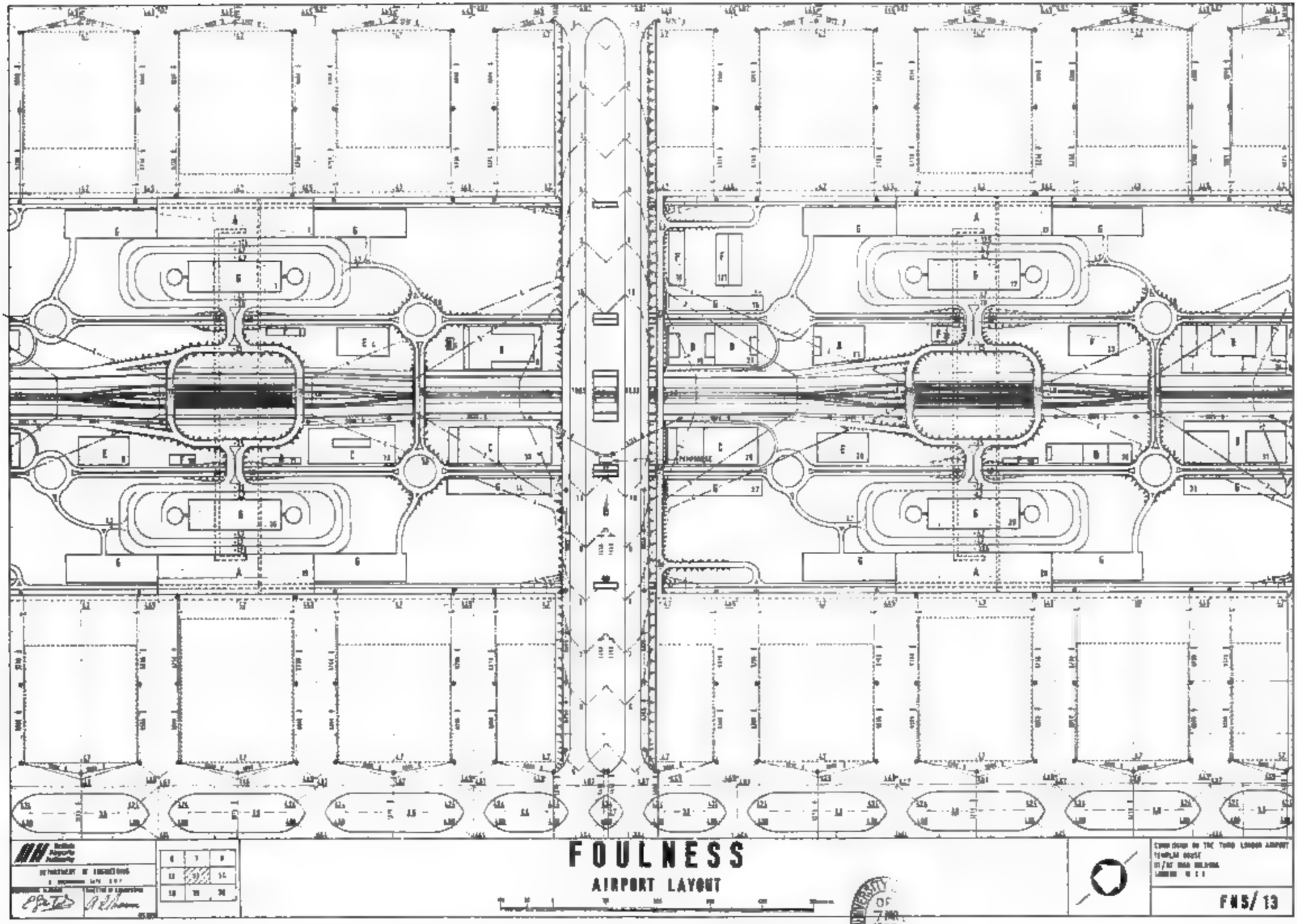


FOULNESS

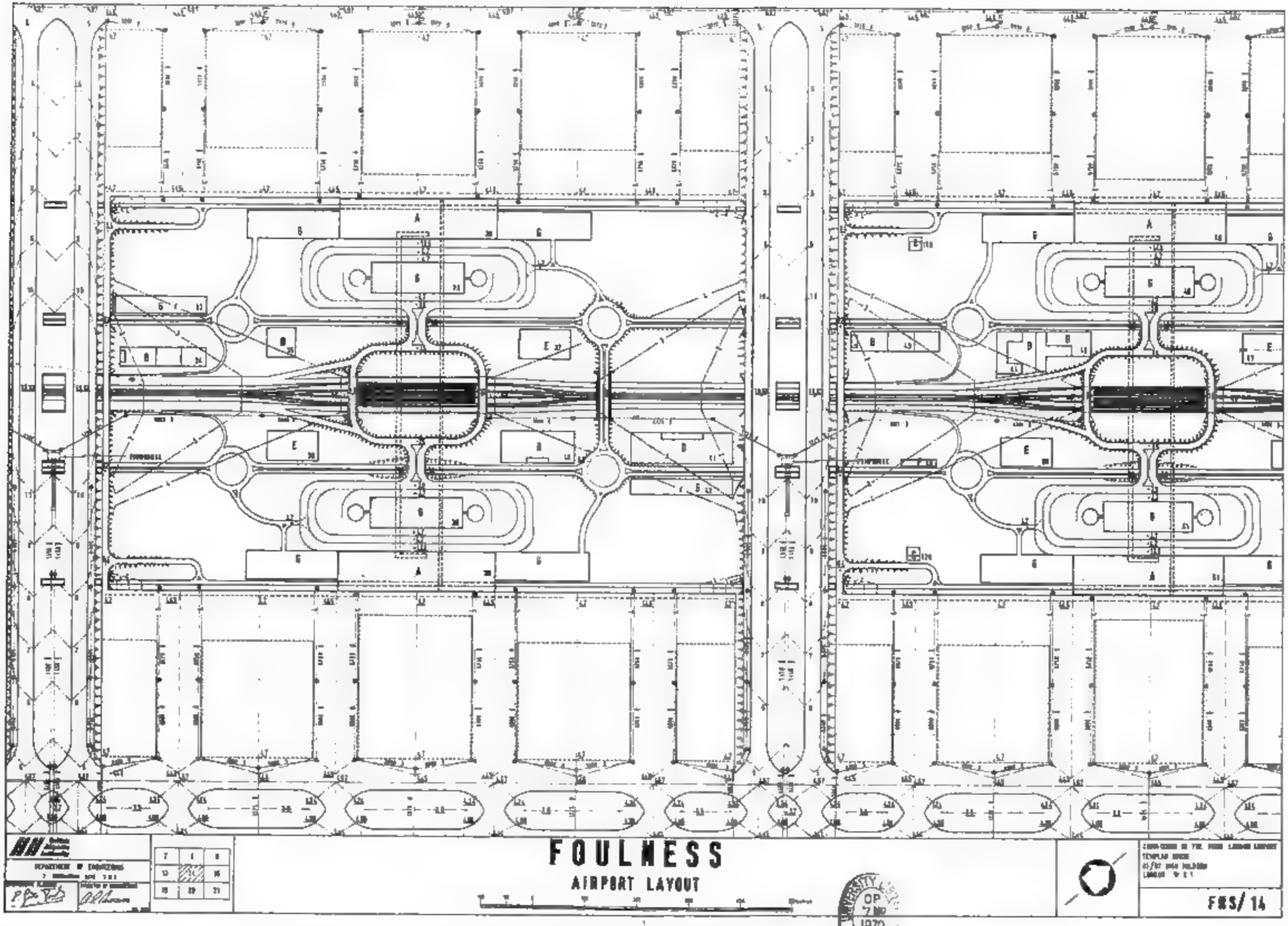
AIRPORT LAYOUT

FNS/12

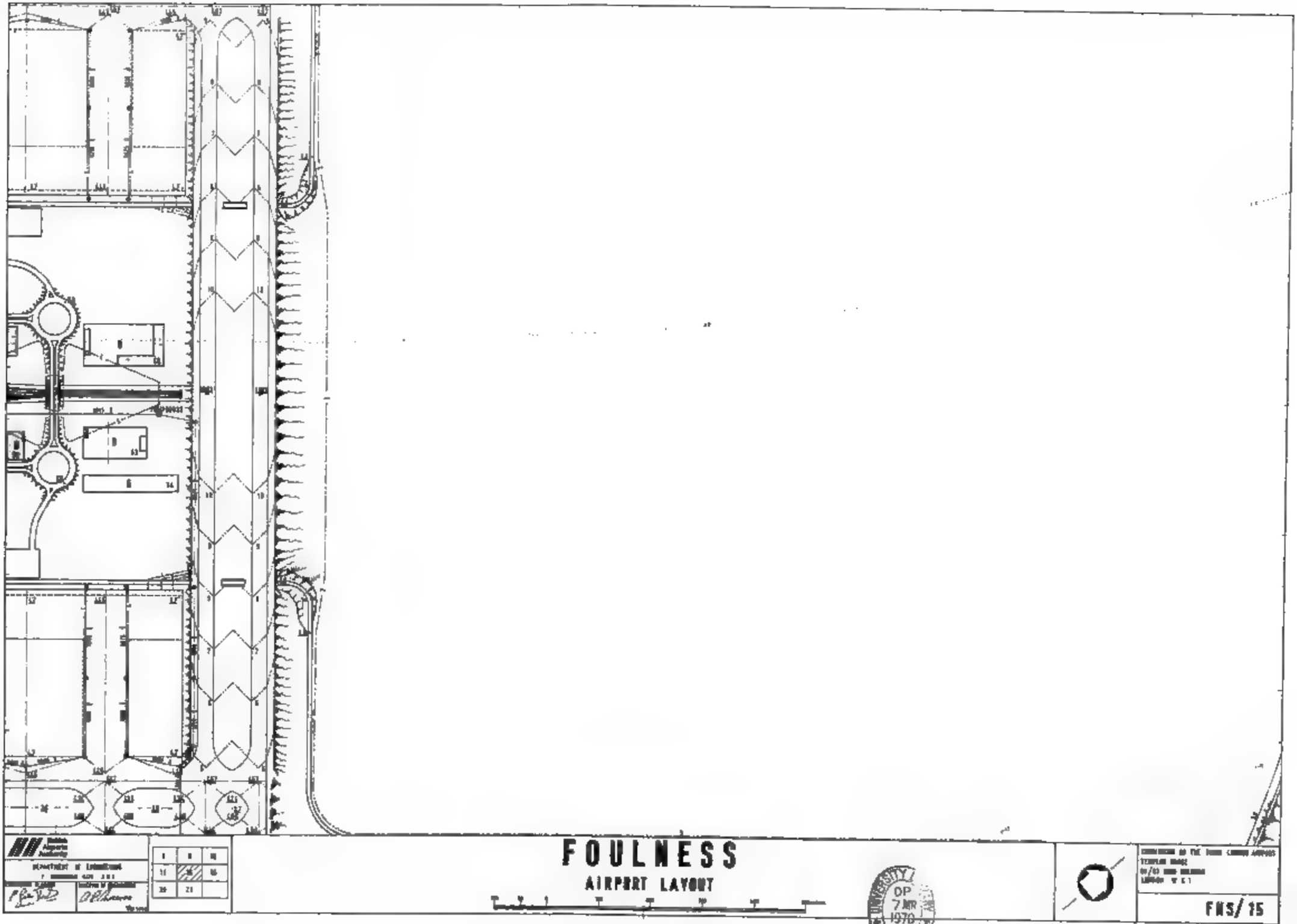
Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

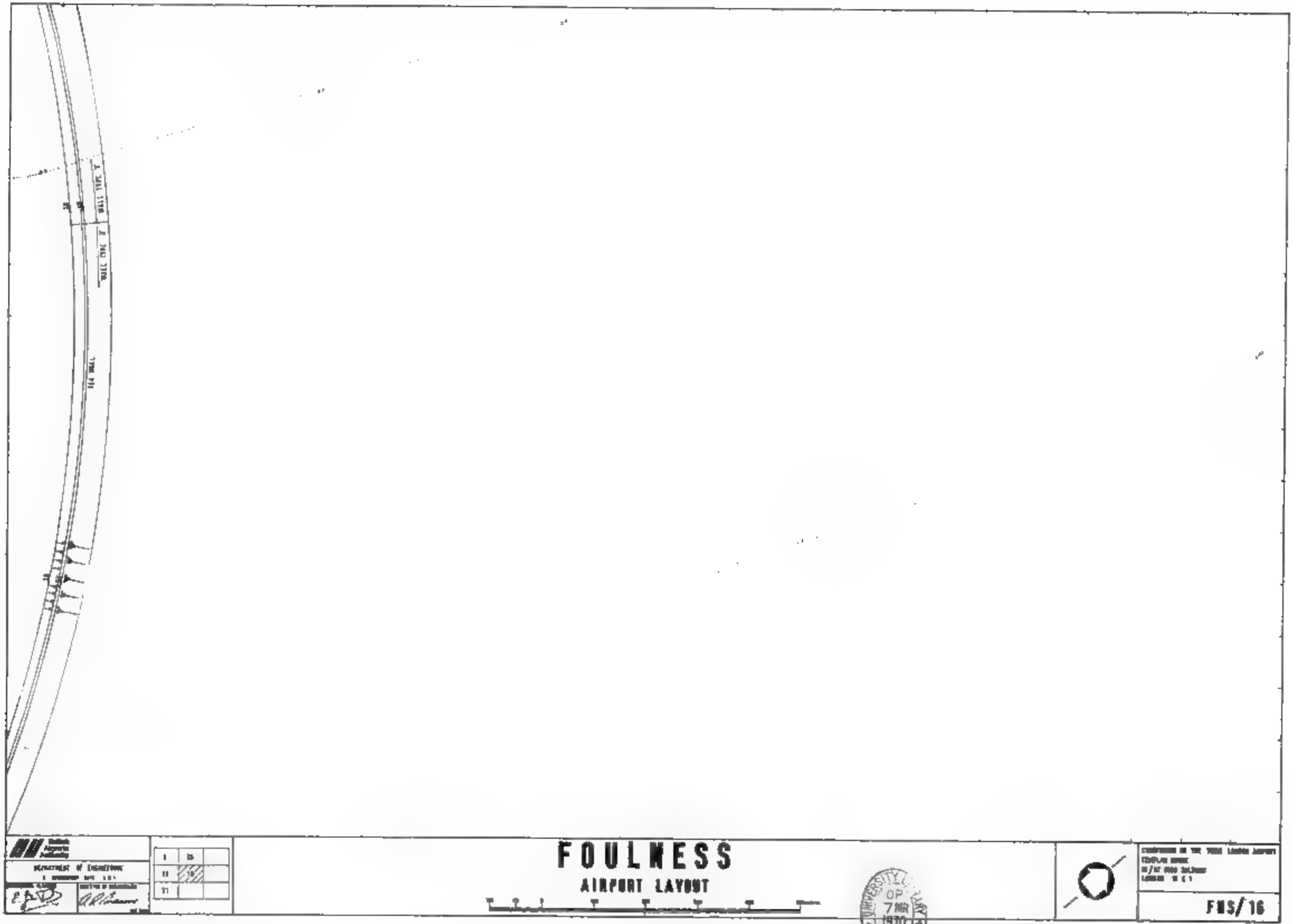


Printed image digitised by the University of Southampton Library Digitisation Unit

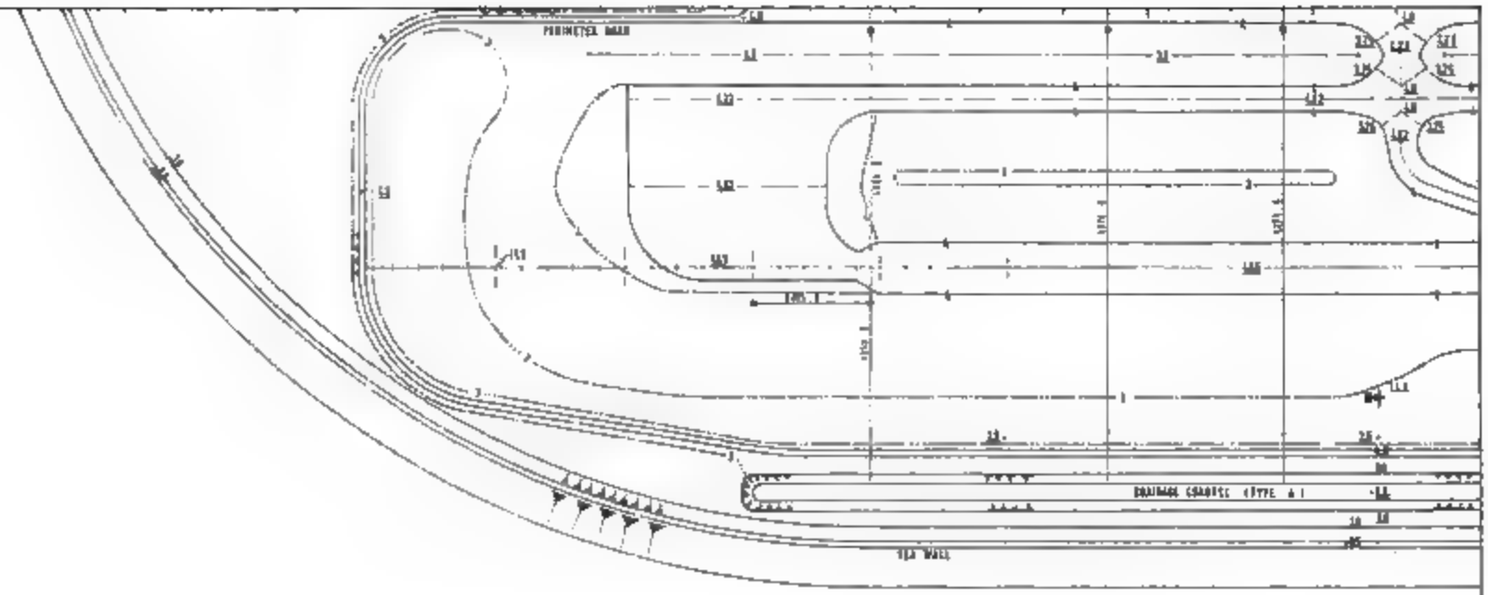


UNIVERSITY OF CAMBRIDGE
DP
7 MAR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



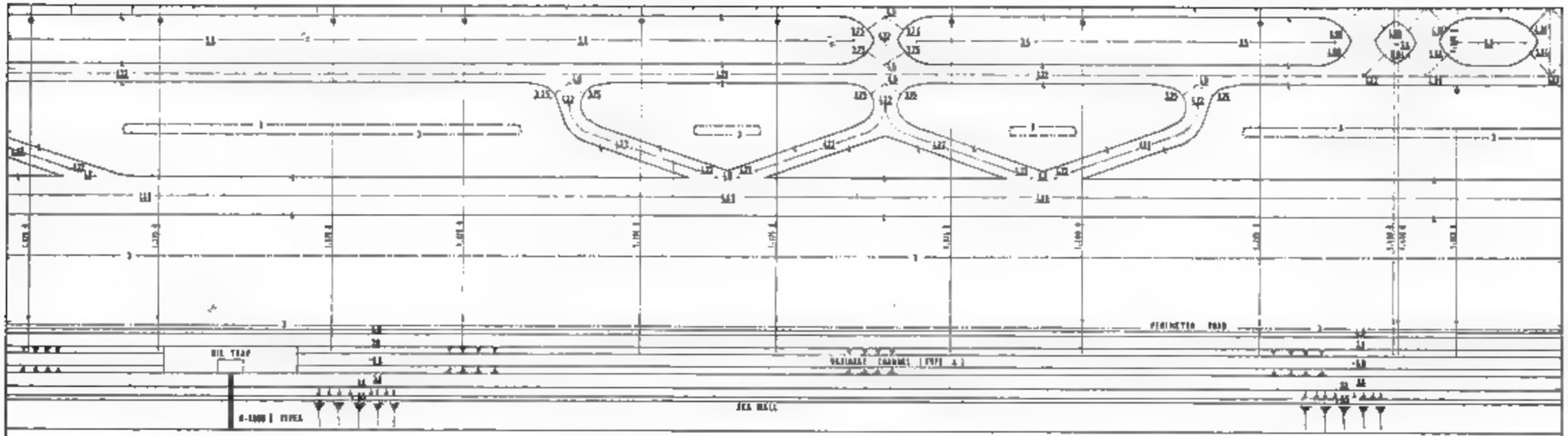
FOULNESS

AIRPORT LAYOUT

FNS/17

UNIVERSITY LIBRARY SOUTHAMPTON OP 7.MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



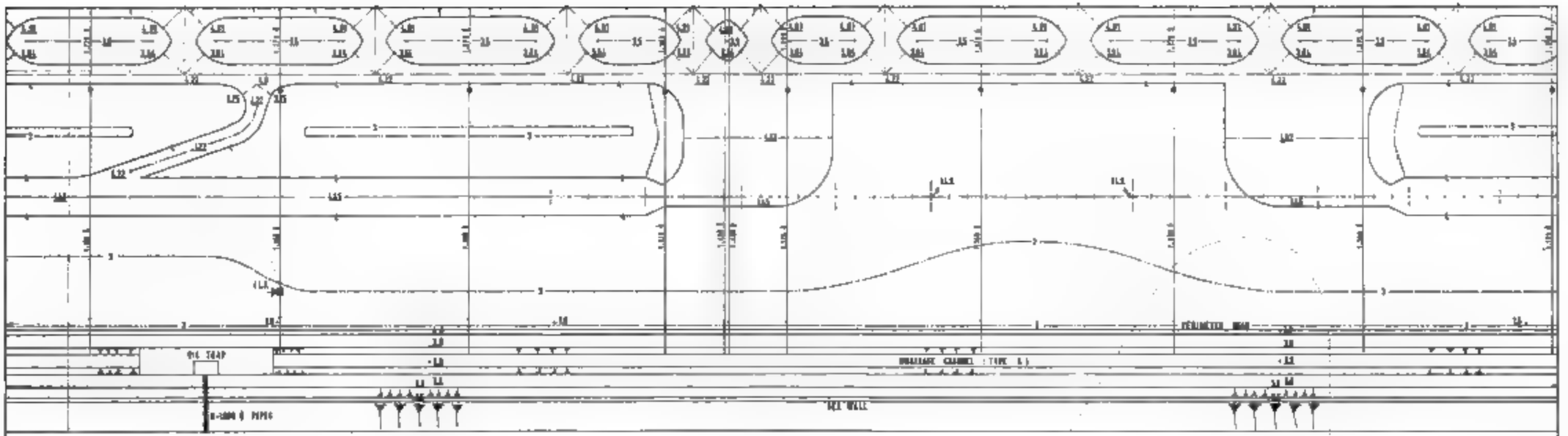
FOULNESS

AIRPORT LAYOUT

FMS/10

UNIVERSITY LIBRARY CAMBRIDGE 7 NOV 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



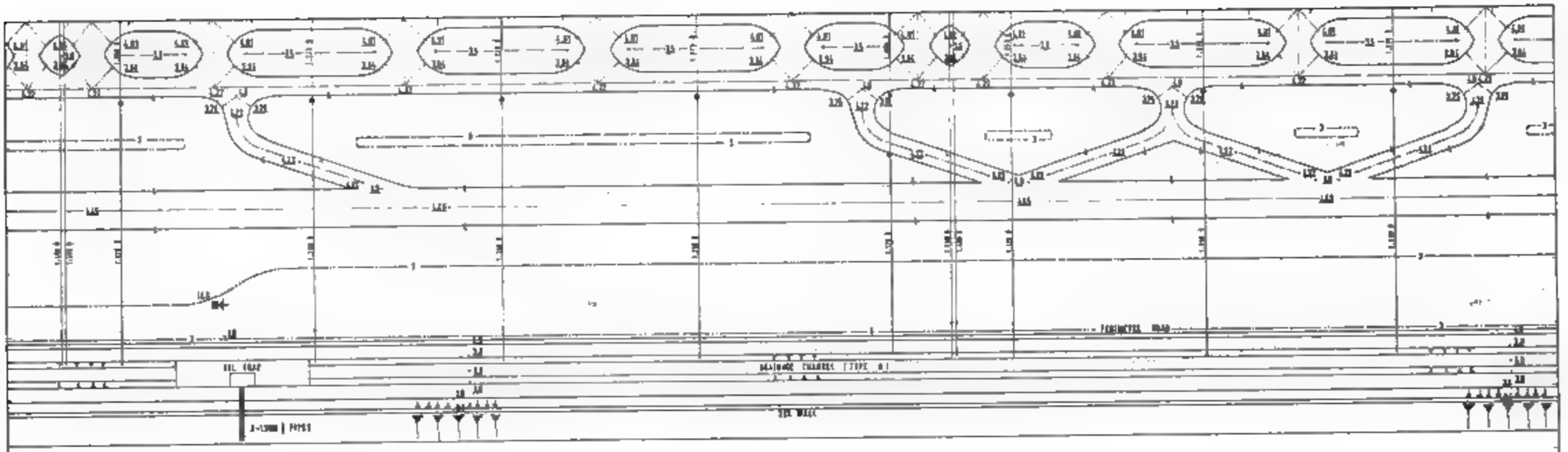
FOULNESS

AIRPORT LAYOUT

FNS/19

UNIVERSITY OF SOUTHAMPTON 7 NOV 1970 LIBRARY

Printed image digitised by the University of Southampton Library Digitisation Unit

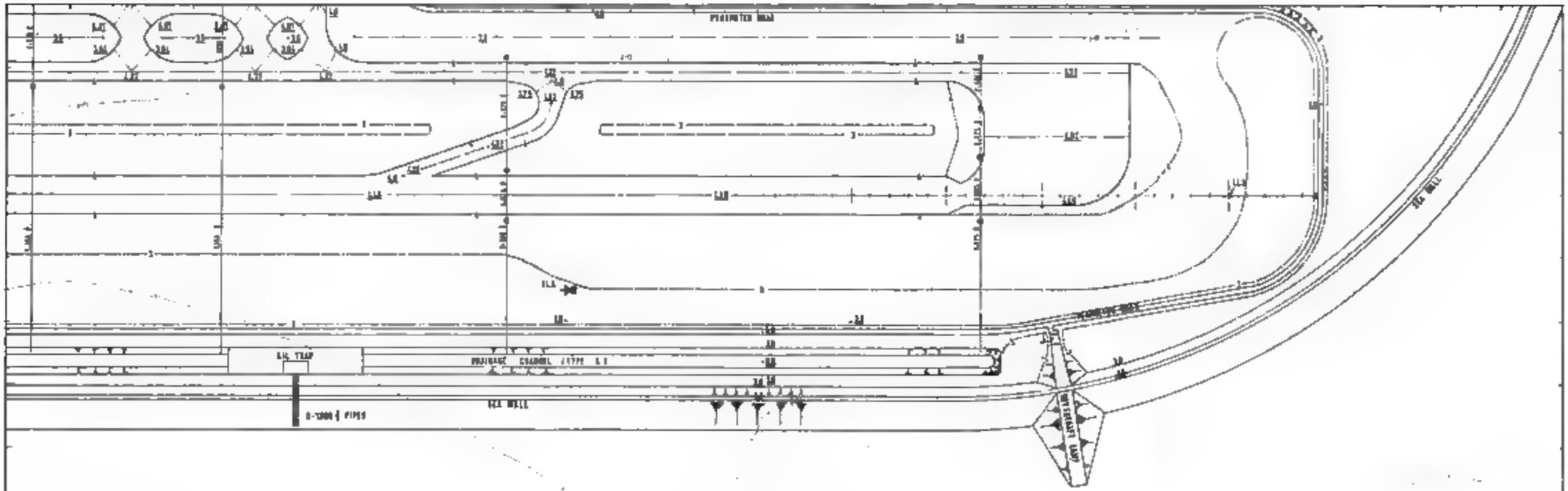


FOULNESS

AIRPORT LAYOUT

FWS/20

Printed image digitised by the University of Southampton Library Digitisation Unit



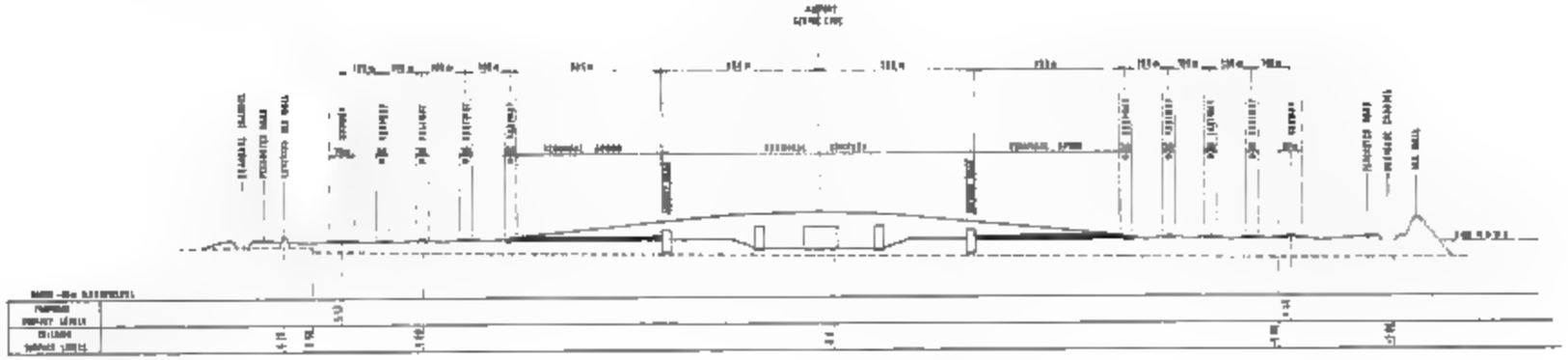
FOULNESS

AIRPORT LAYOUT

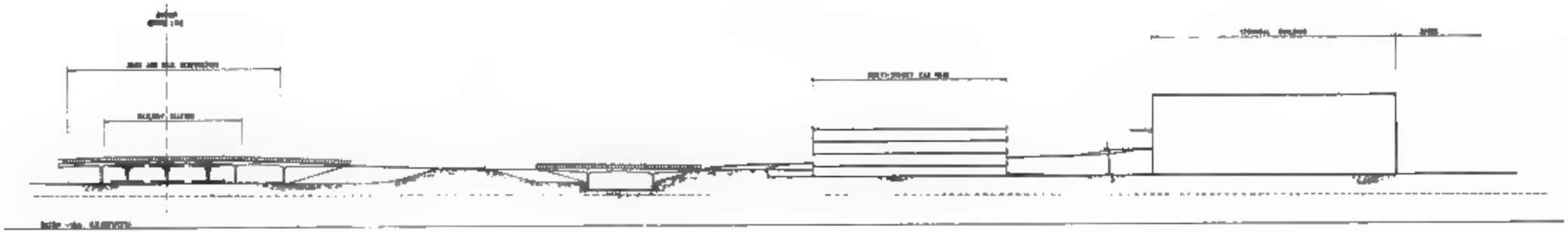
FOS/21

OP 7 MAR 1970 UNIVERSITY LIBRARY SOUTHAMPTON

Printed image digitised by the University of Southampton Library Digitisation Unit



CROSS SECTION THROUGH SITE



CROSS SECTION THROUGH TERMINAL COMPLEX

DEPARTMENT OF ECONOMIC AFFAIRS

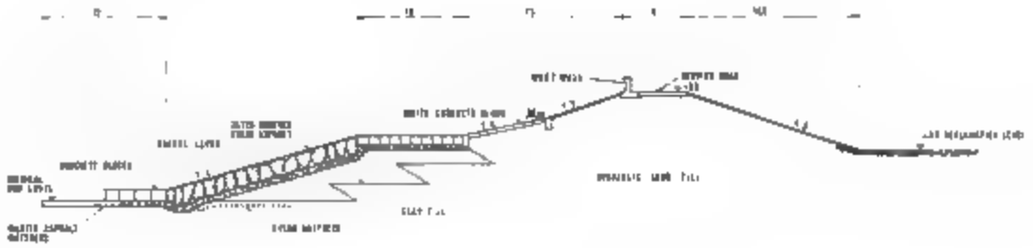
FOULNESS

TYPICAL SECTIONS

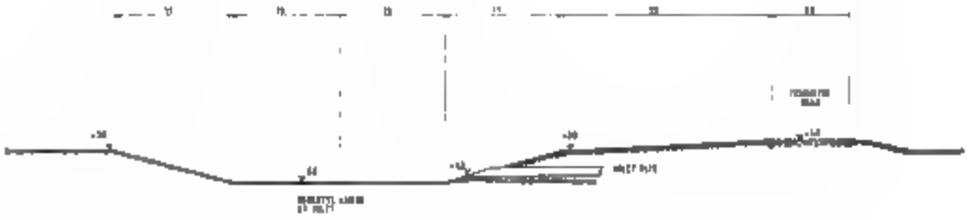
FNS/22

UNIVERSITY LIBRARY CAMBRIDGE OP 7 NOV 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

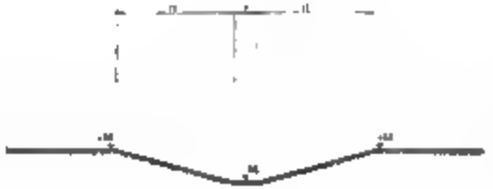


SEA WALL TYPE 'A'

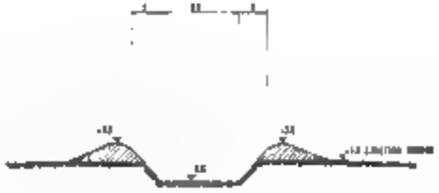


DRAINAGE CHANNEL TYPE 'A'

SEA WALL TYPE 'B'



DRAINAGE CHANNEL TYPE 'B'



DRAINAGE CHANNEL TYPE 'C'

MEAN HIGH WATER SPRING TIDES	+3.0
MEAN HIGH WATER NEAP TIDES	+2.1
MEAN LOW WATER NEAP TIDES	+1.1
MEAN LOW WATER SPRING TIDES	+0.0

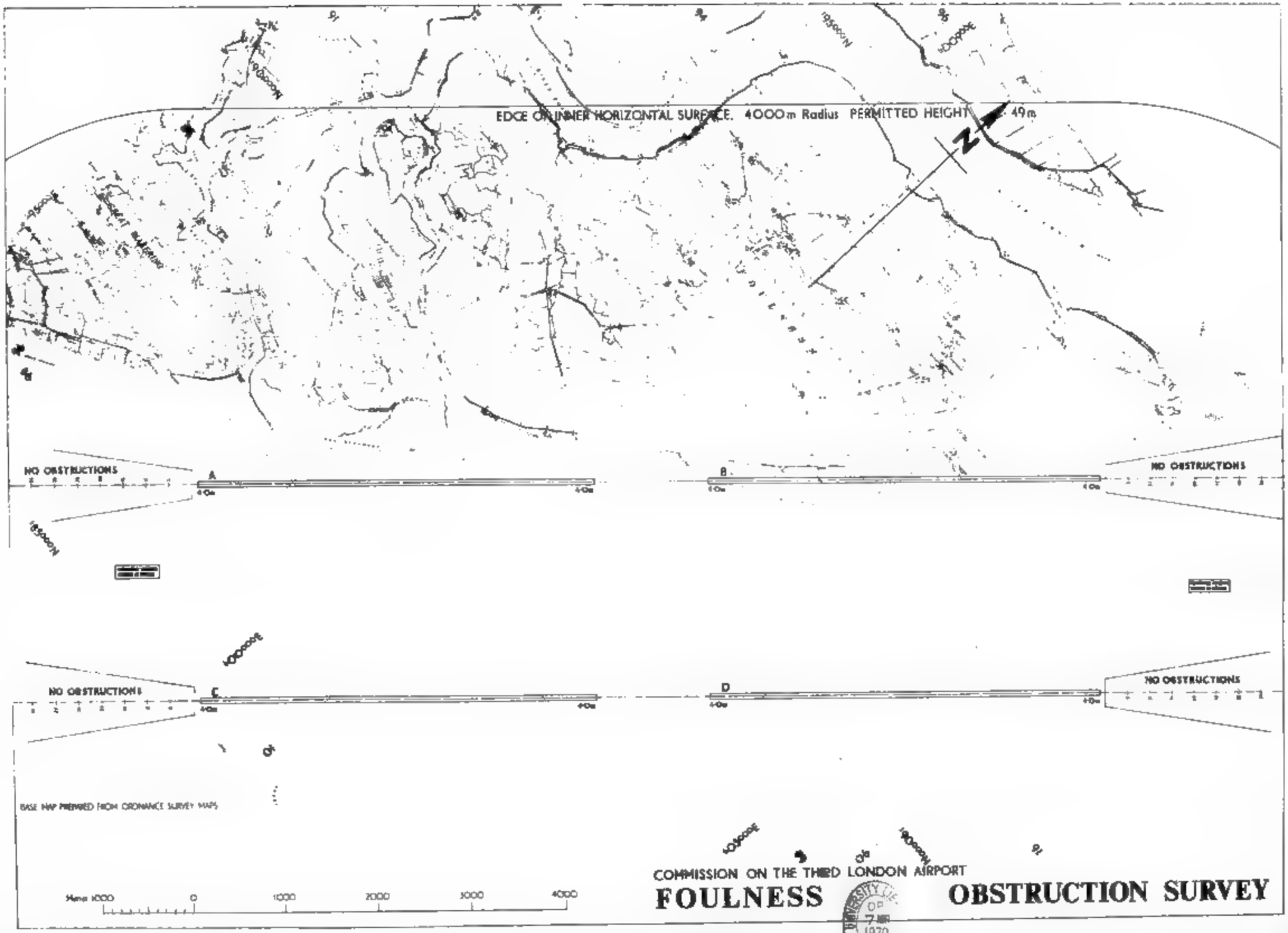
FOULNESS

TYPICAL SECTIONS

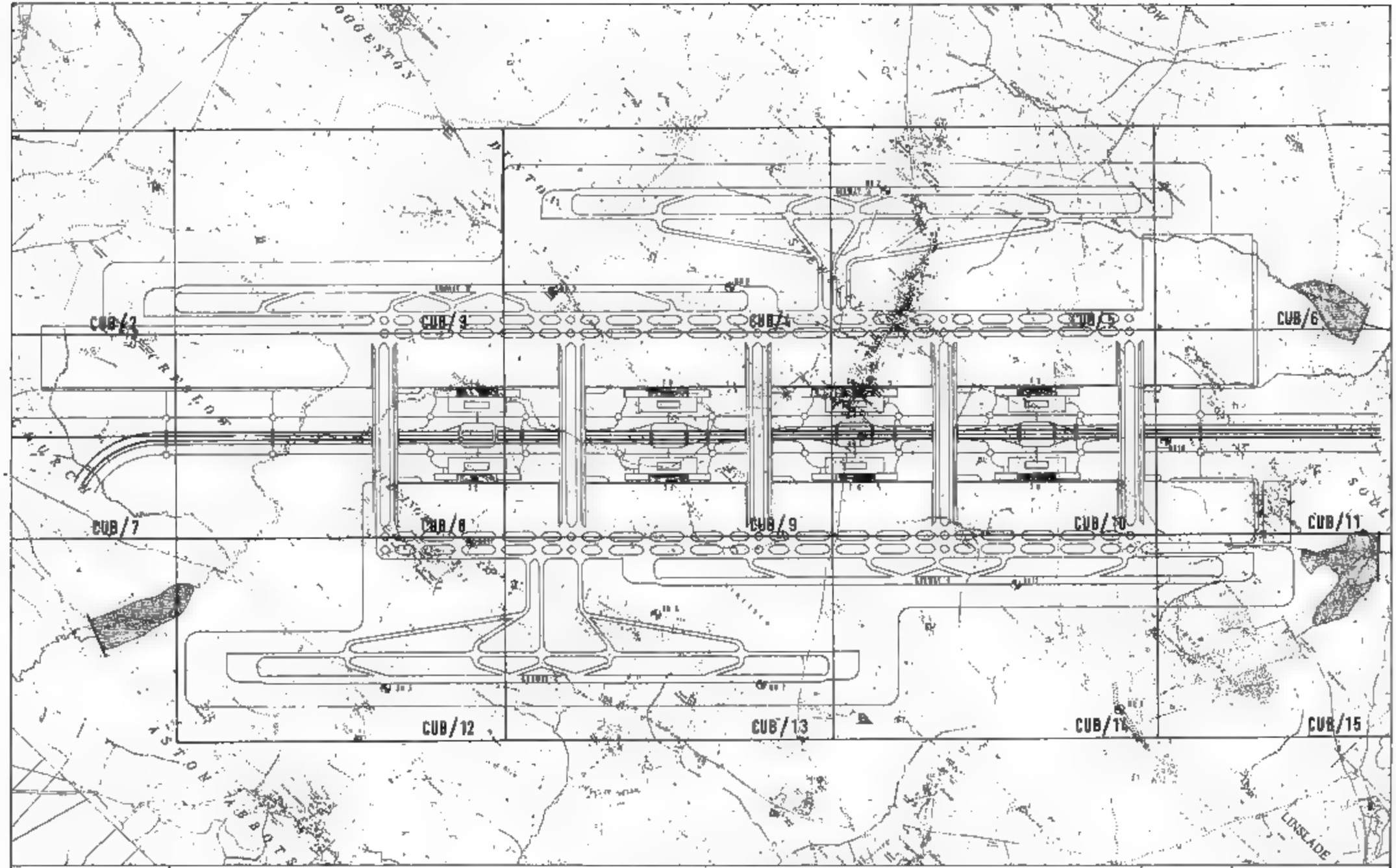
FNS/23

UNIVERSITY OF SOUTHAMPTON 7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



CUBLINGTON

LOCATION & KEY PLAN

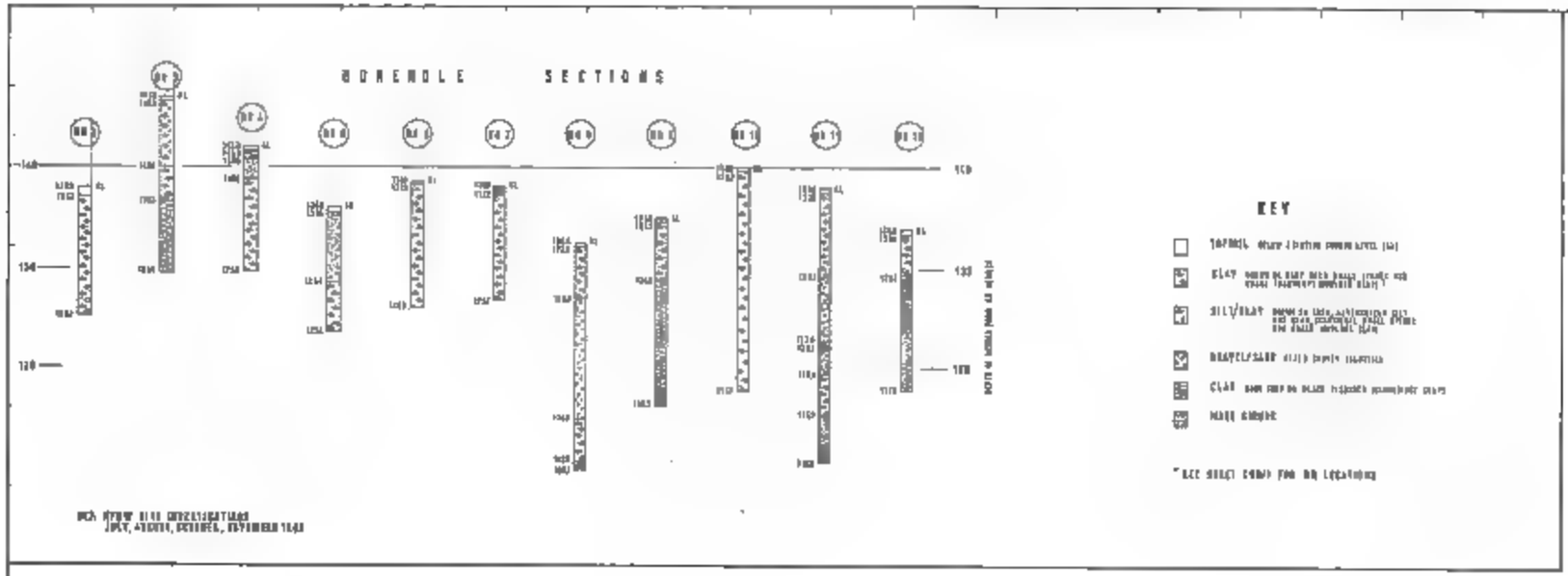
British Airports Authority

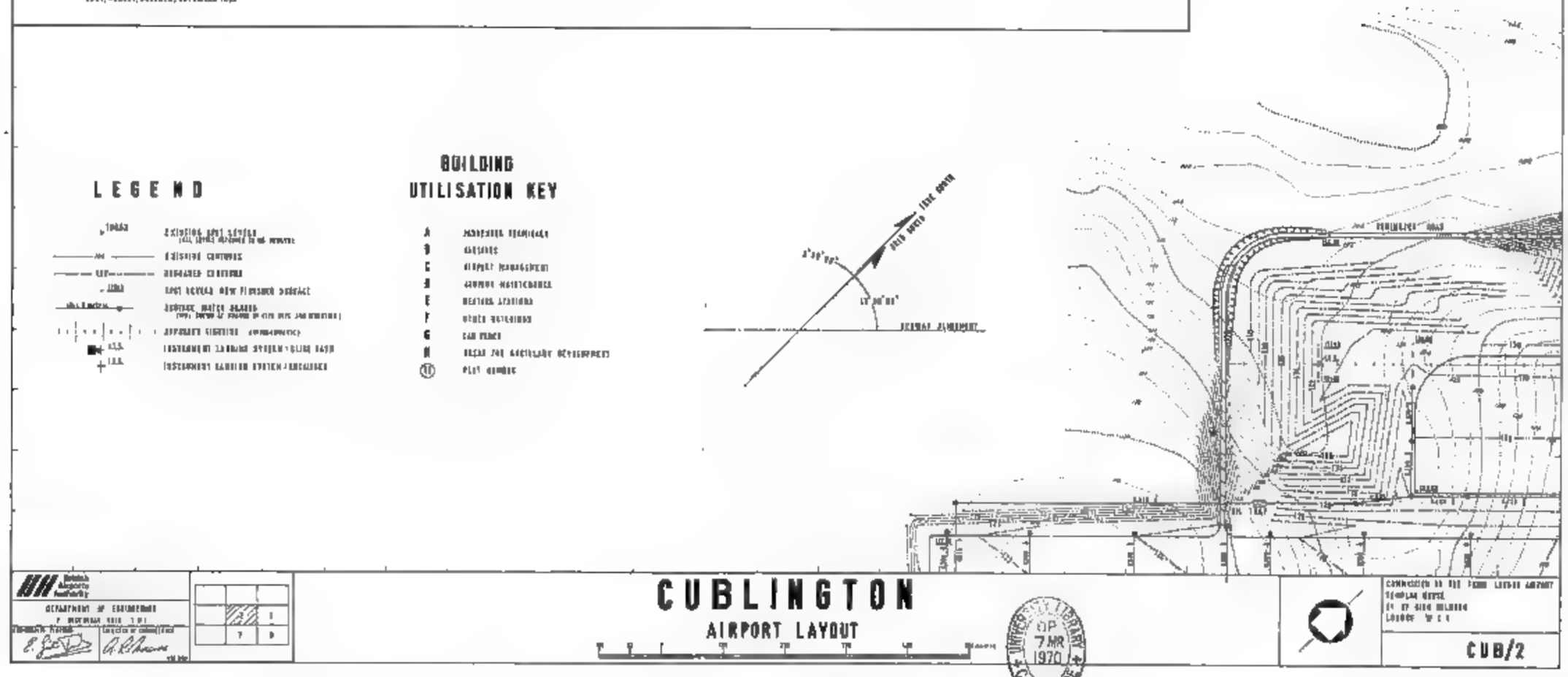
DEPARTMENT OF ENGINEERING

CUB/1

UNIVERSITY OF CAMBRIDGE
7 MAR 1970

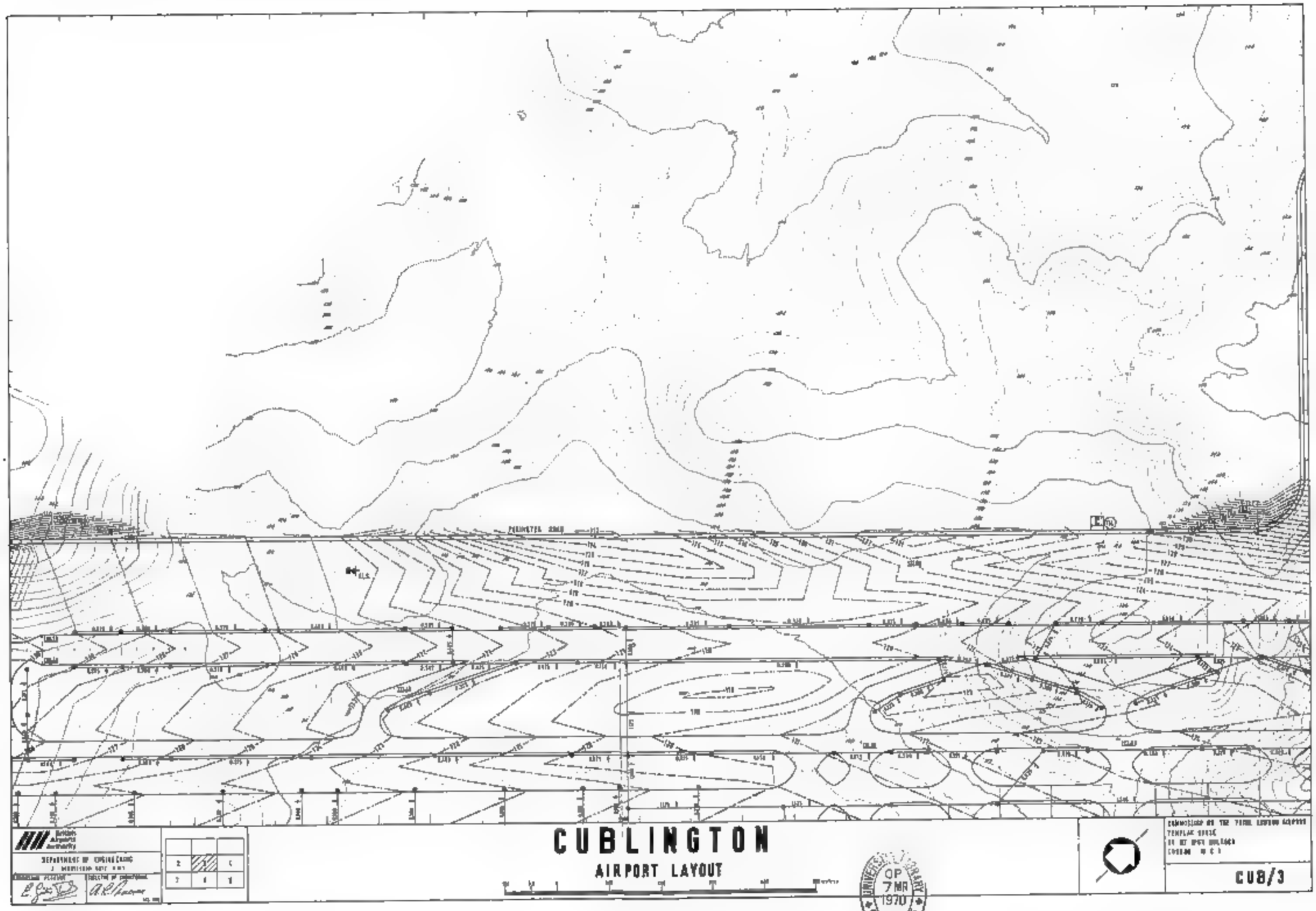
Printed image digitised by the University of Southampton Library Digitisation Unit





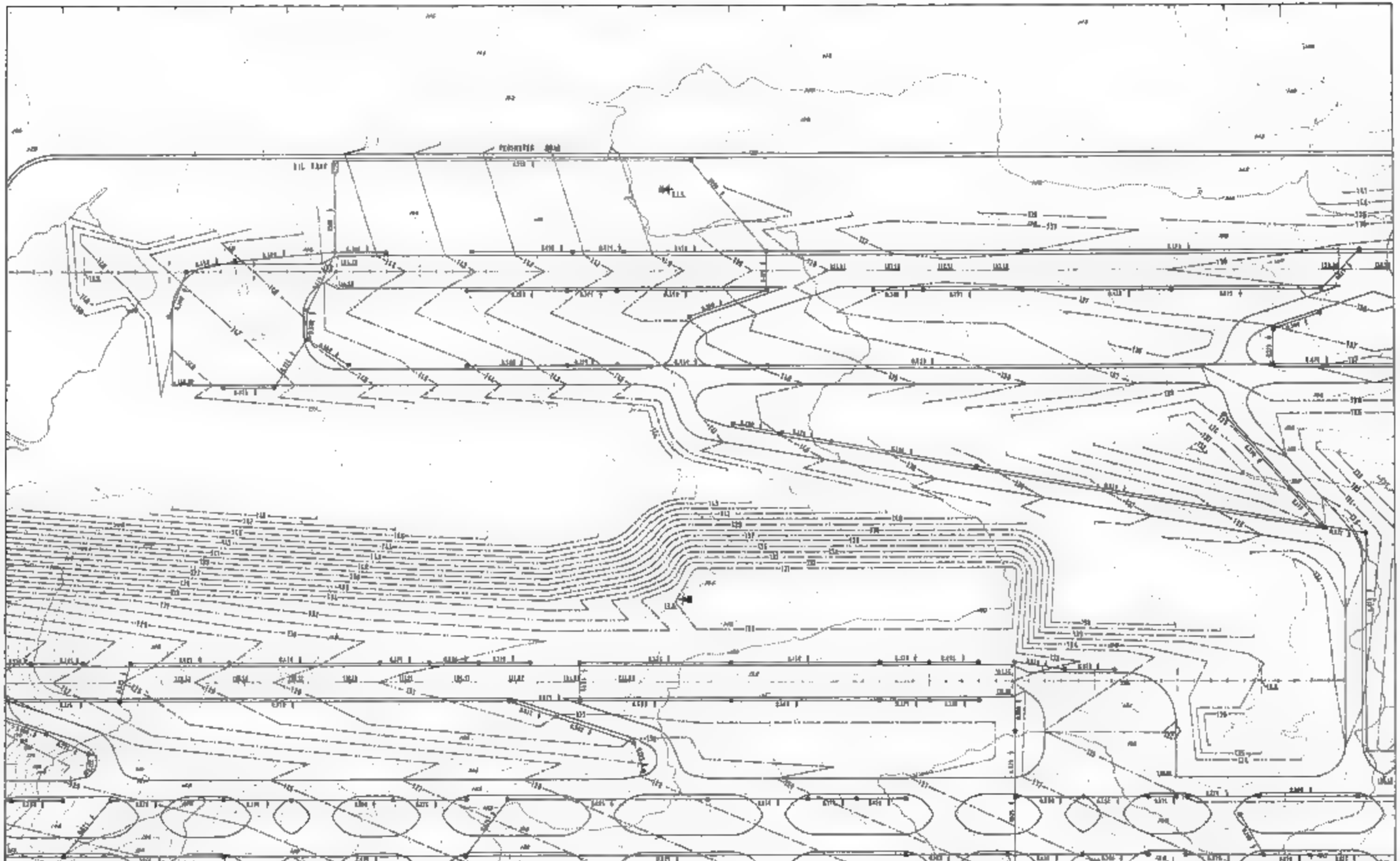
UNIVERSITY LIBRARY CAMBRIDGE 7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



OP 7 MR 1970 UNIVERSITY LIBRARY CAMBRIDGE

Printed image digitised by the University of Southampton Library Digitisation Unit



UNIVERSITY OF CAMBRIDGE
GP
7 MAY
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

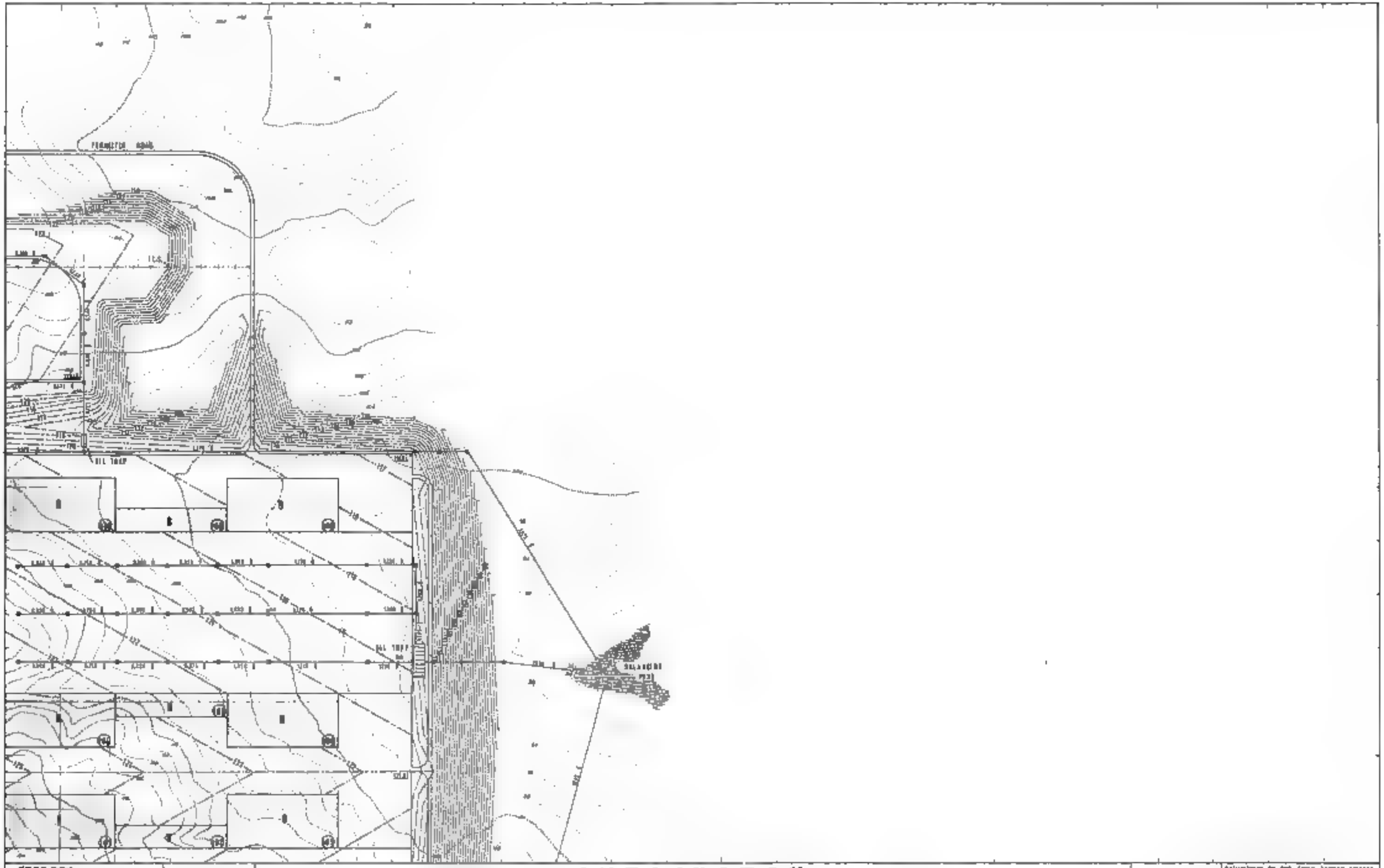
CUBLINGTON

AIRPORT LAYOUT

CUB/5

UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



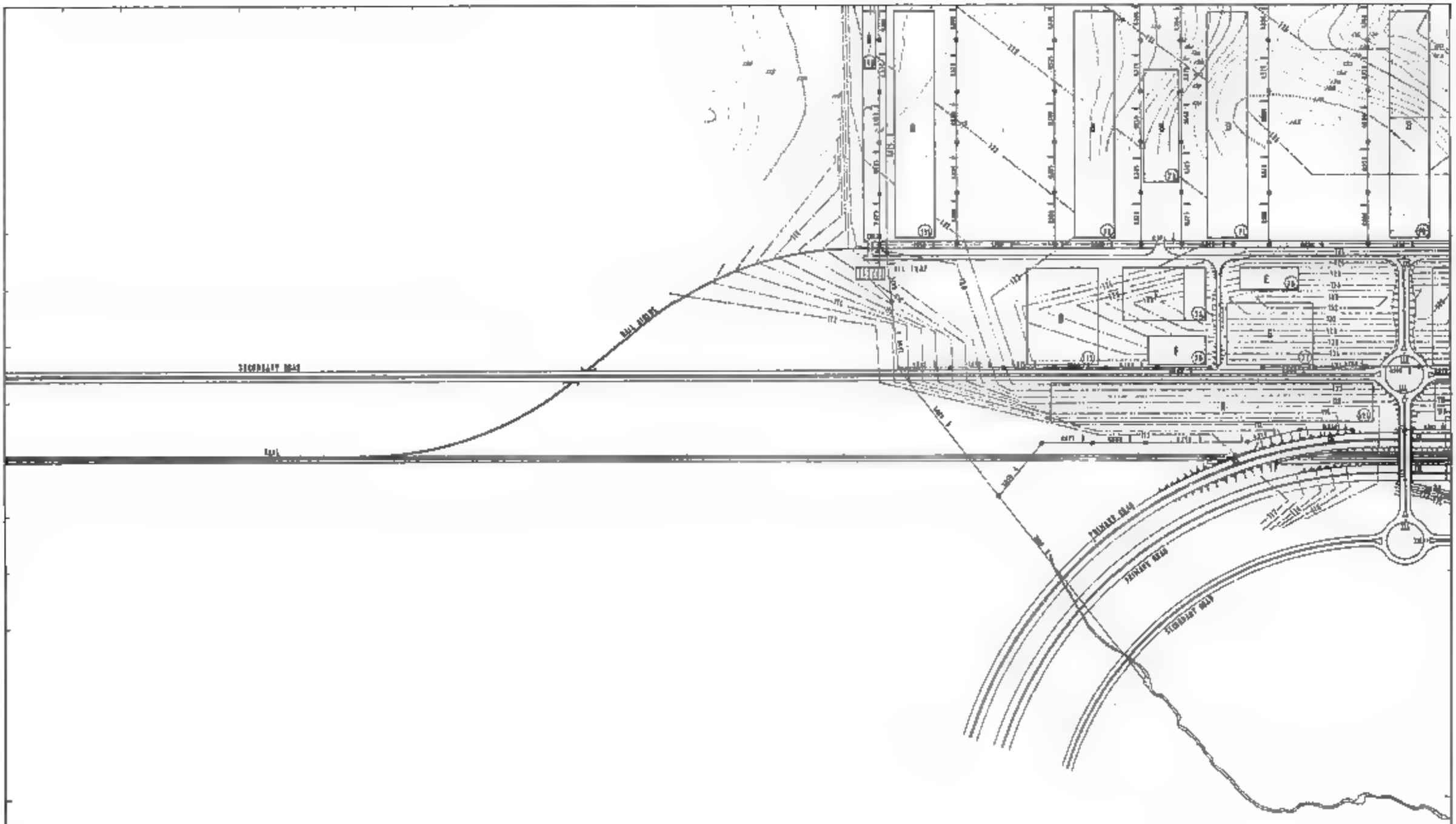
CUBLINGTON

AIRPORT LAYOUT

CUB/6

UNIVERSITY OF SOUTHAMPTON
DP
7 MAR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit



CUBLINGTON

AIRPORT LAYOUT

CUB/7

UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

AIRPORT LAYOUT

CUB/6

UNIVERSITY LIBRARY CAMBRIDGE 9 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

AIRPORT LAYOUT

CUB/9

UNIVERSITY LIBRARY SOUTHAMPTON 7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

AIRPORT LAYOUT

CUB/10

UNIVERSITY LIBRARY CAMBRIDGE OP 7 MAR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

AIRPORT LAYOUT

CUB/11

Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

AIRPORT LAYOUT

CUB/12

Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

AIRPORT LAYOUT

CUB/13

UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON

AIRPORT LAYOUT

CUB/14

UNIVERSITY LIBRARY CAMBRIDGE 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

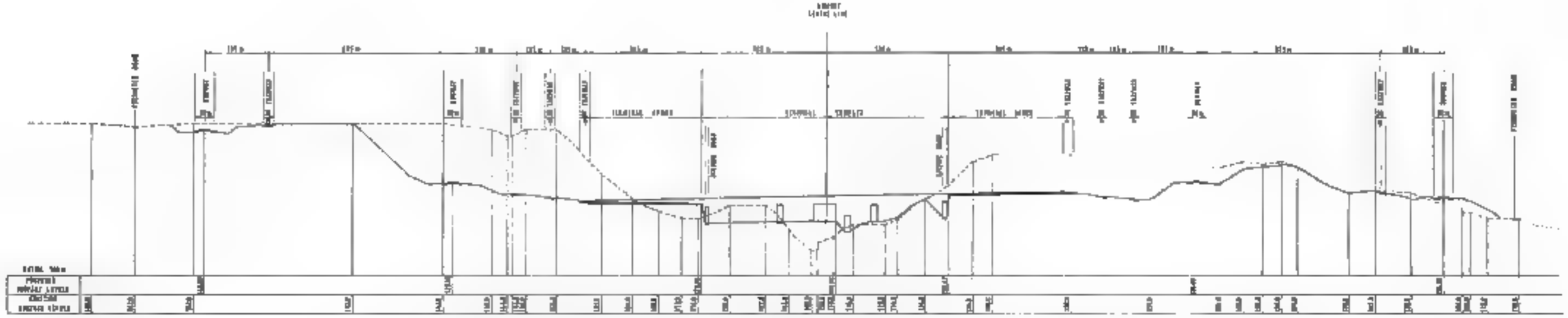
CUBLINGTON

AIRPORT LAYOUT

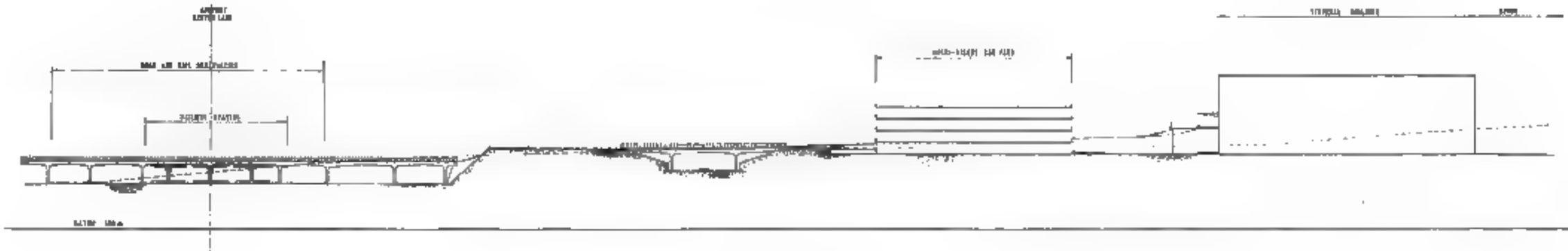
CUB/15

UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



CROSS SECTION THROUGH SITE



CROSS SECTION THROUGH TERMINAL COMPLEX

British Airports Authority

DEPARTMENT OF CONSTRUCTION

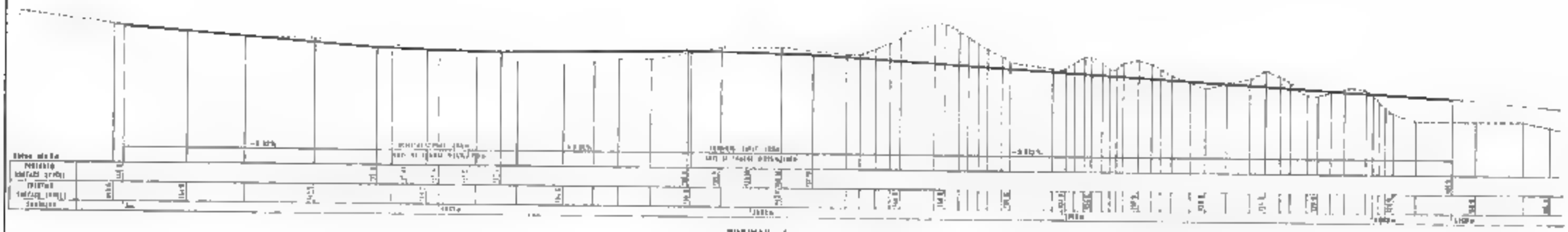
CUBLINGTON

TYPICAL SECTIONS

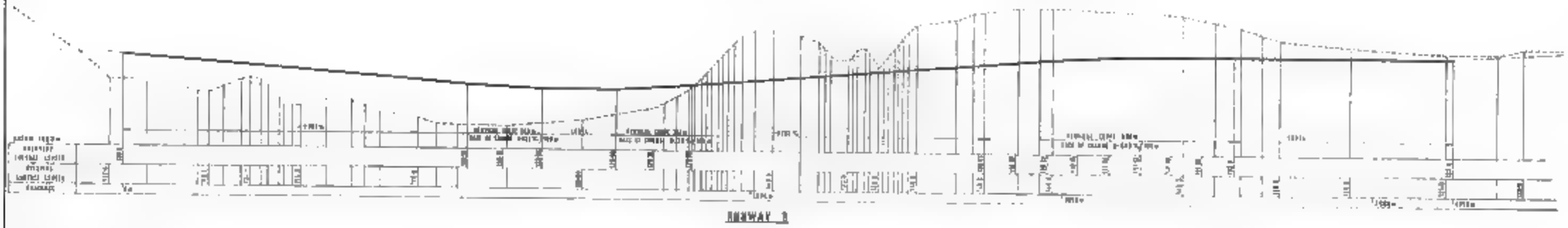
CUB/16

UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

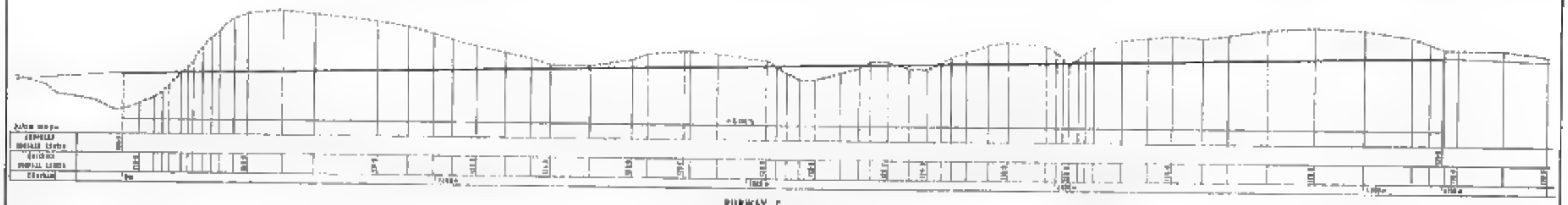


RUNWAY A



RUNWAY B

RUNWAY 9



RUNWAY C

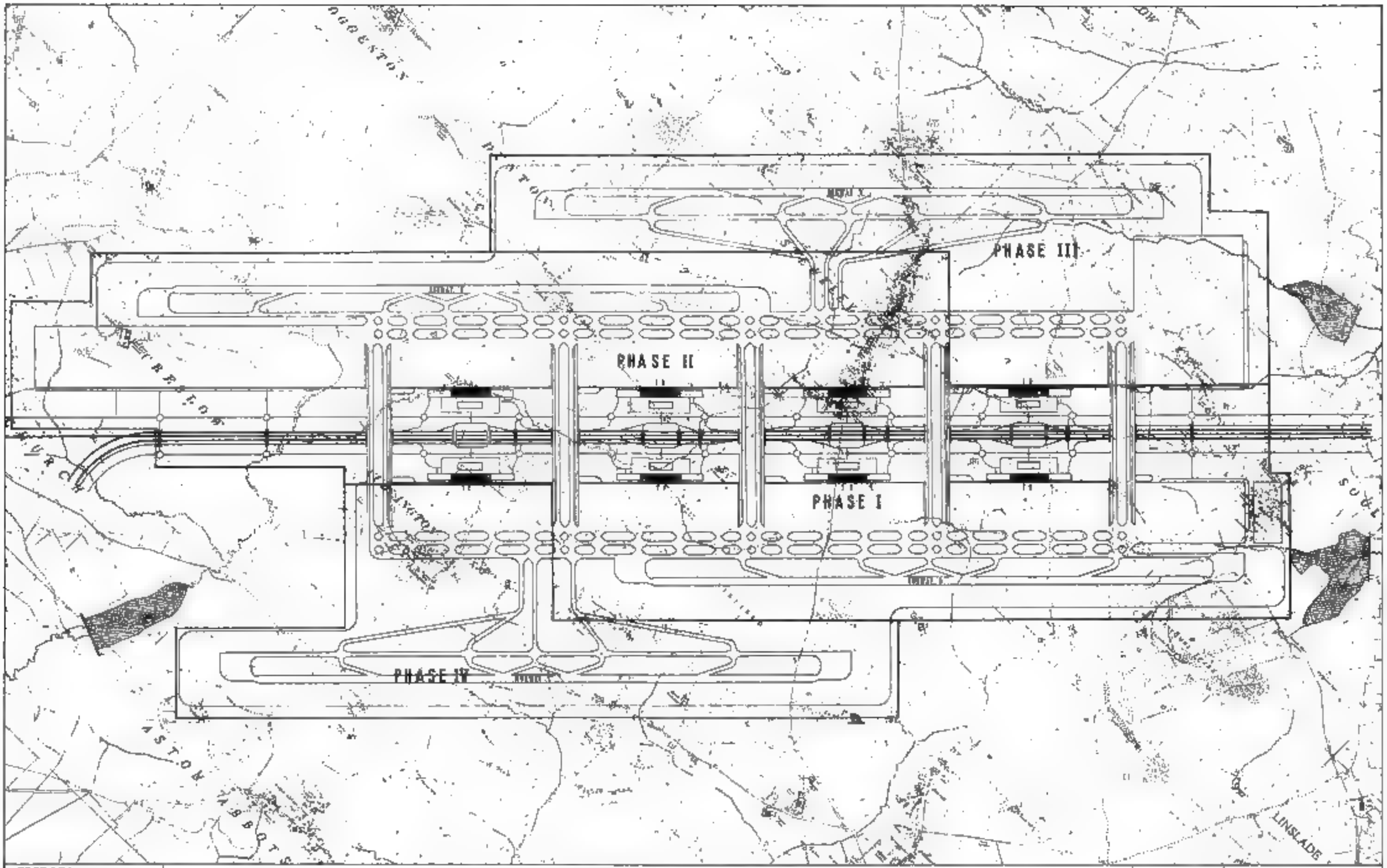
CUBLINGTON

RUNWAY PROFILES

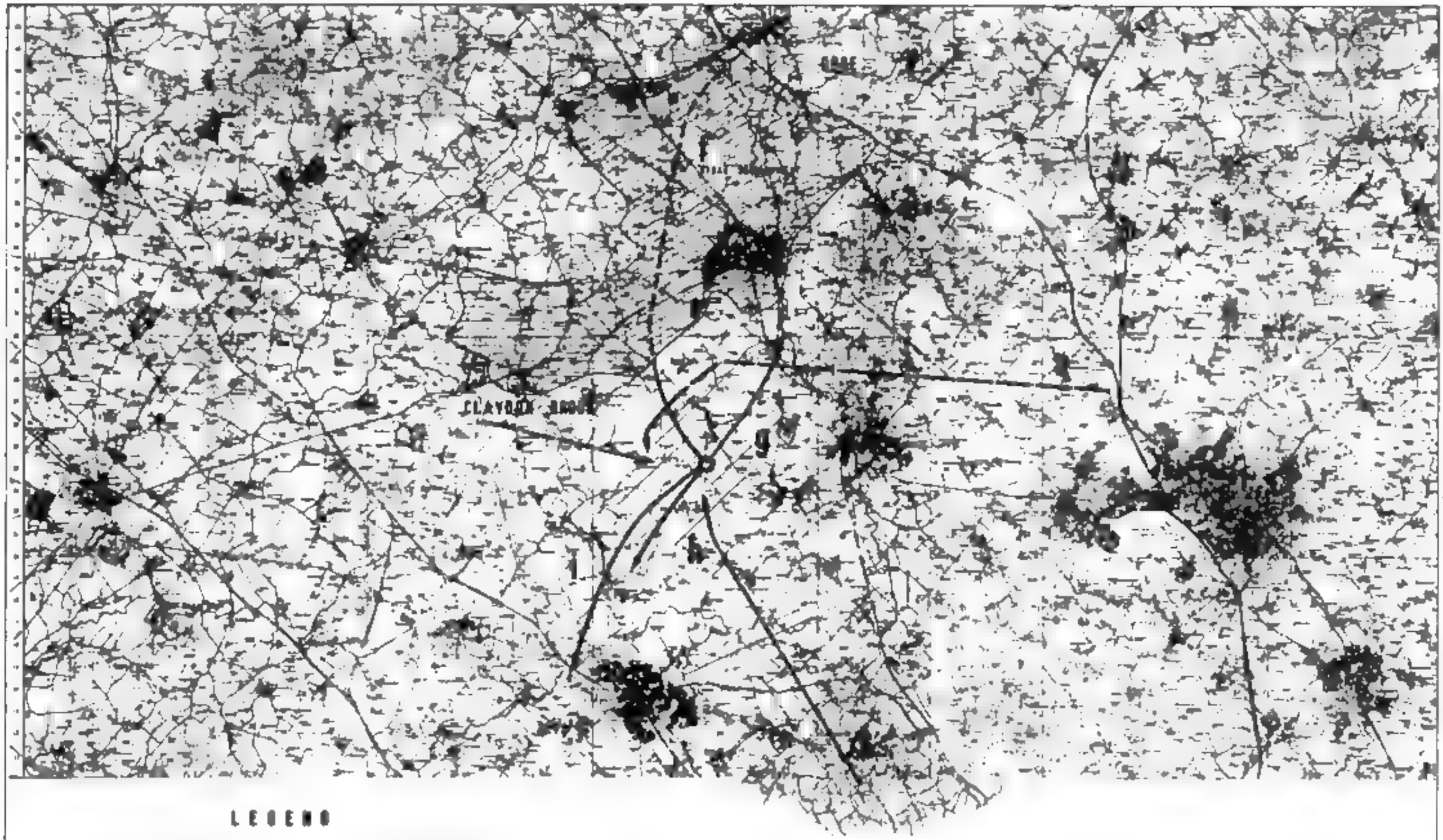
CUB/17

UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



CUBLINGTON

ROUTING OF SERVICES

CUB/ 19

Printed image digitised by the University of Southampton Library Digitisation Unit

EDGE OF L.H.S. PERMITTED HEIGHT 173'H.

EDGE OF L.H.S. PERMITTED HEIGHT 173'H.

NO FURTHER OBSTRUCTIONS

NO FURTHER OBSTRUCTIONS

NO FURTHER OBSTRUCTIONS

NO FURTHER OBSTRUCTIONS

NO FURTHER OBSTRUCTIONS

Wireless Station Highest Aerial 150 m.

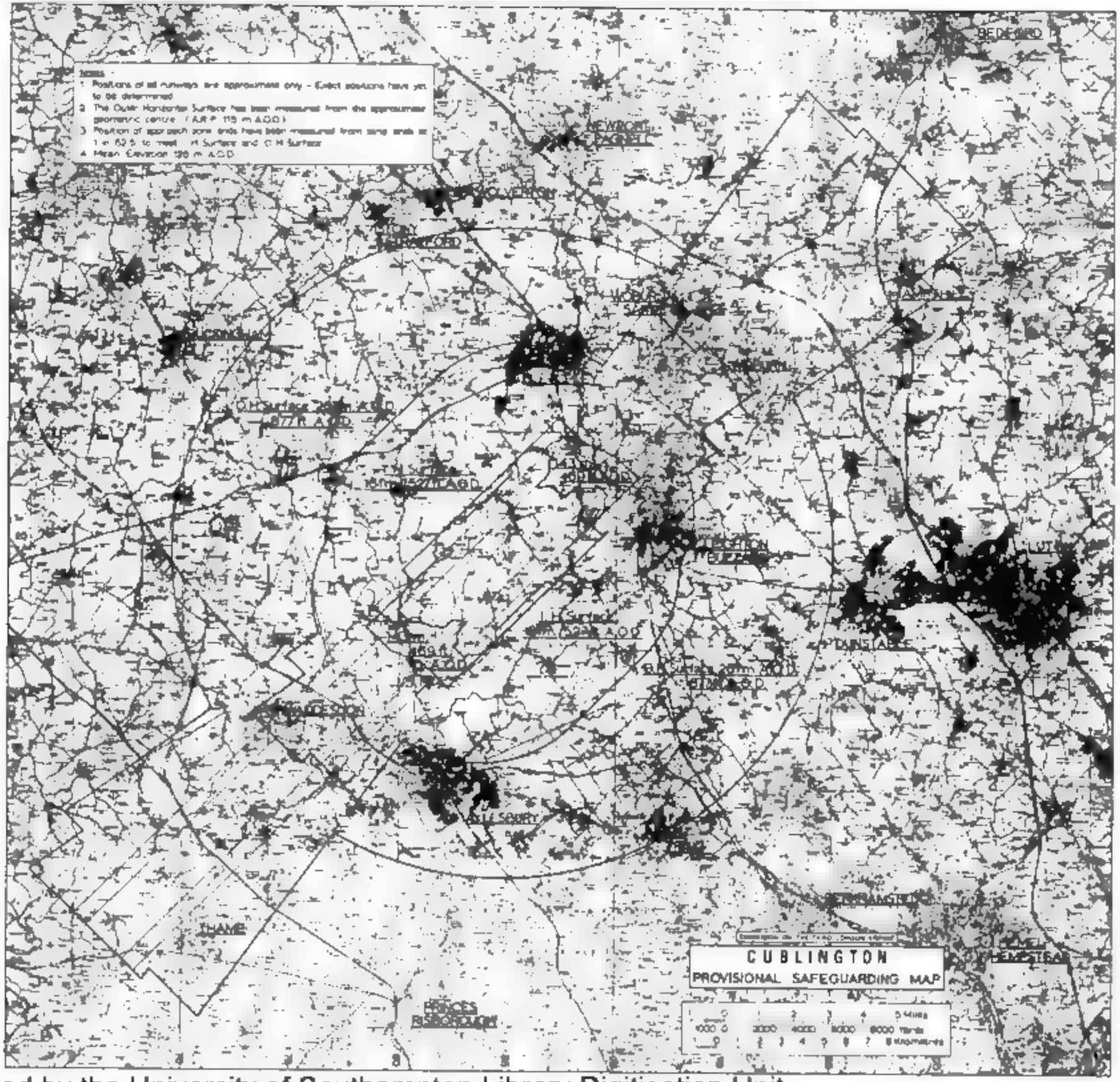
BASE MAP PREPARED FROM ORDINANCE SURVEY MAPS

COMMISSION ON THE THIRD LONDON AIRPORT

CUBLINGTON OBSTRUCTION SURVEY

UNIVERSITY LIBRARY CAMBRIDGE OP 7 MR 1970

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

CUBLINGTON PHASE 4

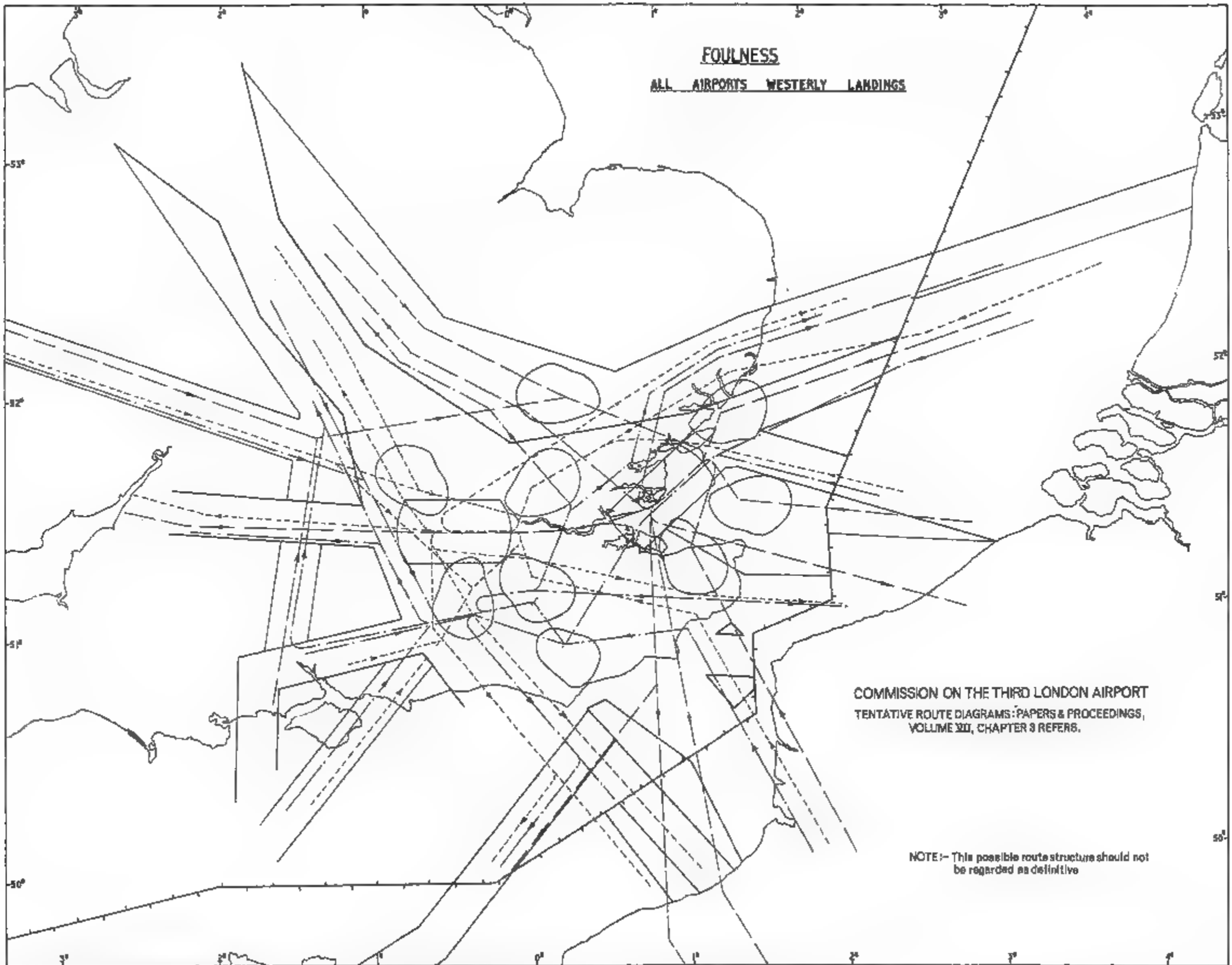
WESTERLY LANDINGS

COMMISSION ON THE THIRD LONDON AIRPORT

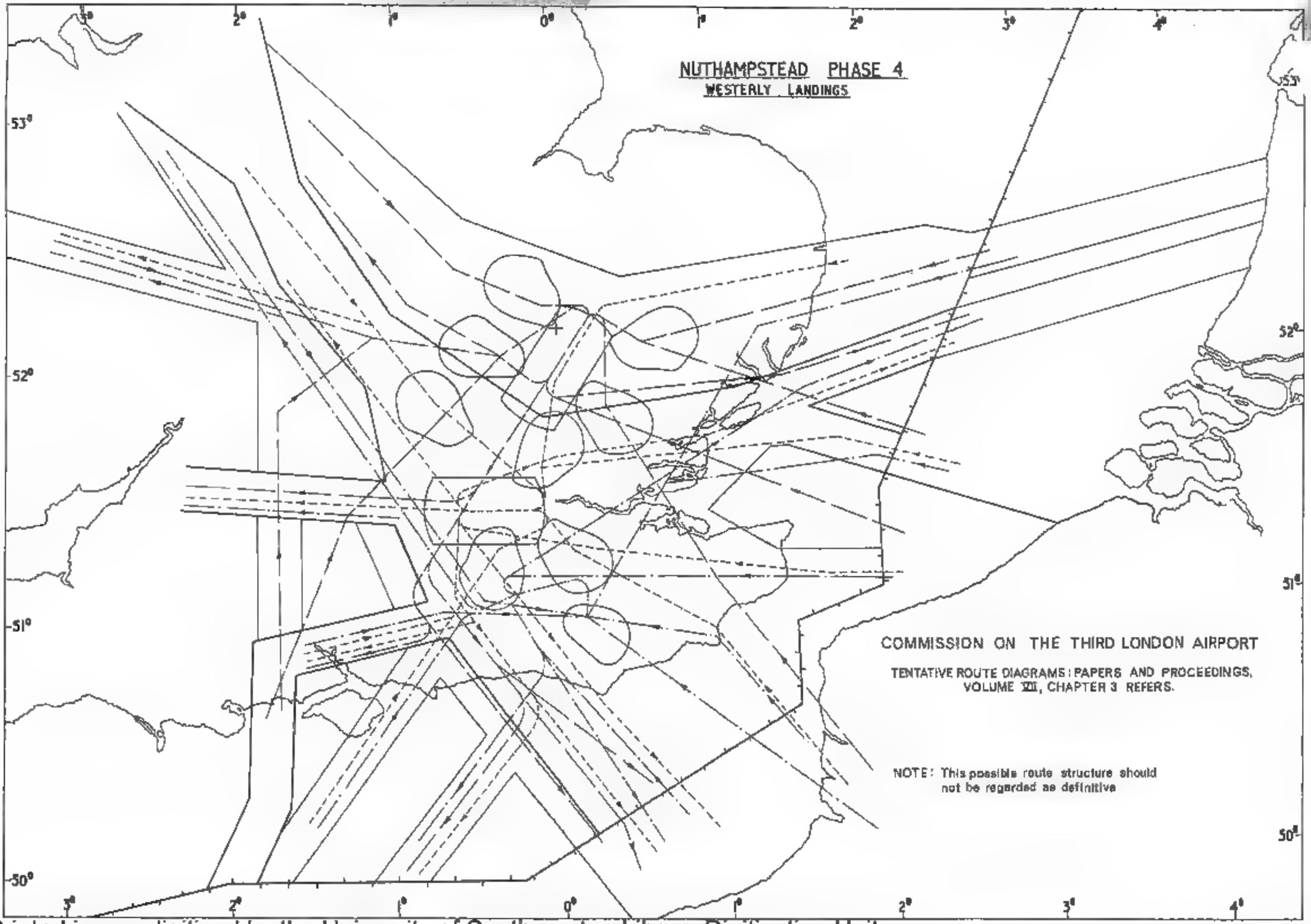
TENTATIVE ROUTE DIAGRAMS : PAPERS AND PROCEEDINGS, VOLUME VII, CHAPTER 9 REFERS.

NOTE : This possible route structure should not be regarded as definitive

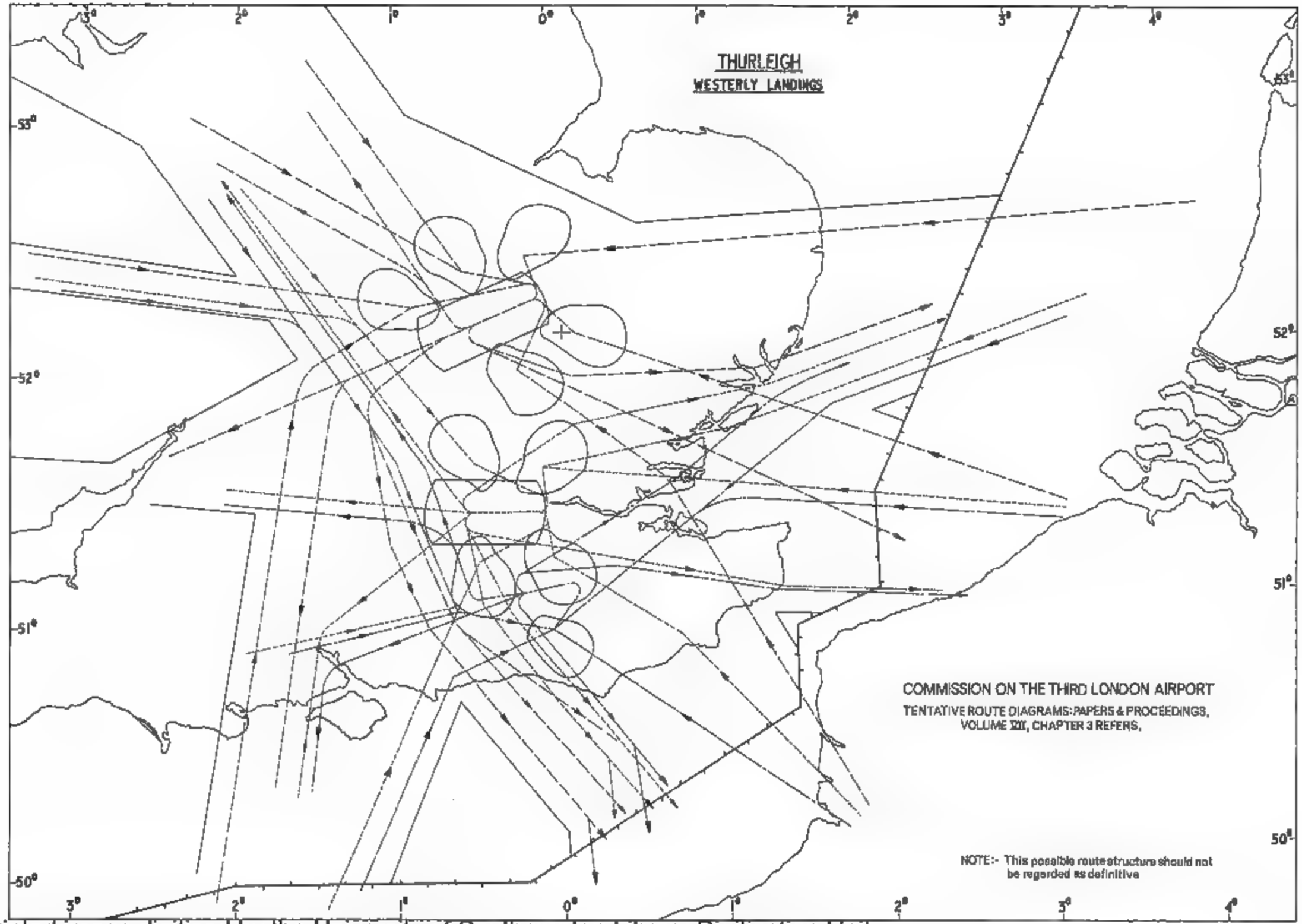
Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings volume VII part 3

Stage III: Research and Investigation

Maps, diagrams and design study drawings

LONDON
HER MAJESTY'S STATIONERY OFFICE
1970

UNIVERSITY LIBRARY CAMBRIDGE
OP
7 MR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

© *Crown copyright 1970*

Published by
HER MAJESTY'S STATIONERY OFFICE

To be purchased from
49 High Holborn, London WC1
13a Castle Street, Edinburgh EH2 3AR
109 St. Mary Street, Cardiff CF1 1JW
Brazennose Street, Manchester M60 8AS
50 Fairfax Street, Bristol BS1 3DE
258 Broad Street, Birmingham 1
7 Linenhall Street, Belfast BT2 8AY
or through any bookseller

Printed in England for Her Majesty's Stationery Office
by
The Solicitors' Law Stationery Society Ltd., Oyez House, Breams Buildings, Fetter Lane, E.C.4
Dd. 501462 K16 1/70
SBN 11 510168 3

Printed image digitised by the University of Southampton Library Digitisation Unit

Commission on the Third London Airport
Papers and Proceedings
volume VII, part 3
Maps, diagrams and design study drawings

CONTENTS

Air traffic control route structure diagrams:

Tentative route diagrams:	Cublington
Tentative route diagrams:	Foulness
Tentative route diagrams:	Nuthampstead
Tentative route diagrams:	Thurleigh

Airport design study drawings:

Cublington
List of drawings

CUB/1	Location and key plan
CUB/2	Airport layout
CUB/3	Airport layout
CUB/4	Airport layout
CUB/5	Airport layout
CUB/6	Airport layout
CUB/7	Airport layout
CUB/8	Airport layout
CUB/9	Airport layout
CUB/10	Airport layout
CUB/11	Airport layout
CUB/12	Airport layout
CUB/13	Airport layout
CUB/14	Airport layout
CUB/15	Airport layout
CUB/16	Typical cross-sections
CUB/17	Runway profiles
CUB/18	Phased land requirement
CUB/19	Routing of services
-	Obstruction survey
-	Provisional safeguarding map

Foulness
List of drawings

FNS/1	Location and key plan
FNS/2	Location and key plan
FNS/3	Airport layout
FNS/4	Airport layout

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness (Contd.)

FNS/5	Airport layout
FNS/6	Airport layout
FNS/7	Airport layout
FNS/8	Airport layout
FNS/9	Airport layout
FNS/10	Airport layout
FNS/11	Airport layout
FNS/12	Airport layout
FNS/13	Airport layout
FNS/14	Airport layout
FNS/15	Airport layout
FNS/16	Airport layout
FNS/17	Airport layout
FNS/18	Airport layout
FNS/19	Airport layout
FNS/20	Airport layout
FNS/21	Airport layout
FNS/22	Typical cross sections
FNS/23	Typical cross sections
FNS/24	Routing of services
FNS/25	Sea wall location
-	Obstruction survey
-	Provisional safeguarding map

Nuthampstead

List of drawings

NUT/1	Location and key plan
NUT/2	Airport layout
NUT/3	Airport layout
NUT/4	Airport layout
NUT/5	Airport layout
NUT/6	Airport layout
NUT/7	Airport layout
NUT/8	Airport layout
NUT/9	Airport layout
NUT/10	Airport layout
NUT/11	Airport layout
NUT/12	Airport layout
NUT/13	Airport layout
NUT/14	Airport layout
NUT/15	Airport layout
NUT/16	Airport layout
NUT/17	Runway profiles
NUT/18	Typical cross sections
NUT/19	Phased land requirement
NUT/20	Routing of services
-	Obstruction survey
-	Provisional safeguarding map

Thurleigh

List of drawings

THU/1	Location and key plan
THU/2	Airport layout
THU/3	Airport layout

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Thurleigh (Contd.)

THU/4	Airport layout
THU/5	Airport layout
THU/6	Airport layout
THU/7	Airport layout
THU/8	Airport layout
THU/9	Airport layout
THU/10	Airport layout
THU/11	Airport layout
THU/12	Airport layout
THU/13	Airport layout
THU/14	Airport layout
THU/15	Airport layout
THU/16	Airport layout
THU/17	Runway profiles
THU/18	Typical cross sections
THU/19	Phased land requirement
THU/20	Routing of services
-	Obstruction survey
-	Provisional safeguarding maps

Surface access maps:

Surface access: geographical zones: SE regional internal zones

Surface access: geographical zones: external zones

Noise: noise contours and flight path maps

Cublington

CUB/Noise/1	(day noise contours, 2 runways)
CUB/Noise/2	(" " " , year 2006)
CUB/Noise/3	(night noise, contours, year 2006)
CUB/Noise/4	(flight paths used in noise calculations)

Foulness:

FNS/Noise/1	(day noise contours, 2 runways)
FNS/Noise/2	(" " " , year 2006)
FNS/Noise/3	(night noise contours, year 2006)
FNS/Noise/4	(flight paths used in noise calculations)

Nuthampstead

NUT/Noise/1	(day noise contours, 2 runways)
NUT/Noise/2	(" " " , year 2006)
NUT/Noise/3	(night noise contours, year 2006)
NUT/Noise/4	(flight paths used in noise calculations)

Thurleigh

THU/Noise/1	(day noise contours, 2 runways)
THU/Noise/2	(" " " , year 2006)
THU/Noise/3	(night noise contours, year 2006)
THU/Noise/4	(flight paths used in noise calculations)

Luton

LUTON/Noise/1 (day noise contours, year 2006)

Printed image digitised by the University of Southampton Library Digitisation Unit

Part 1
Proposed Research Methodology

Printed image digitised by the University of Southampton Library Digitisation Unit

For the convenience of readers the *Proposed Research Methodology* (previously published separately) has been incorporated in this volume.

Printed image digitised by the University of Southampton Library Digitisation Unit

Foreword

By the Chairman

The Hon. Mr. Justice Roskill

Stage III of the Commission's work consists of investigation and research into matters relevant to the choice to be made between the short list sites. When the Government appointed the Commission in 1968 it drew attention to those matters which were thought particularly relevant. Included among these was the need for a cost/benefit analysis.

2. Since the publication in March of the names of the four short listed sites*, the Commission's Research Team, under the Commission's direction, has devoted much time and labour to the development of its "methodology" in order to describe in detail the manner in which it proposes to carry out the investigation and research as well as the cost/benefit analysis. One of the advantages of the cost/benefit approach to the site assessment is that all the important factors are thoroughly considered and the significant assumptions which have to be made are brought to light. The matters to be included in the analysis are therefore those to which the Commission's attention was drawn.

3. Many of the problems involved in the analysis are novel and inevitably controversial. Agreement on the best method of resolving them is unlikely in advance of Stage V and the Commission appreciates that there will be much debate on them during Stage V. The Commission has therefore decided to publish at this early stage the methodology upon the basis of which it has authorised the Research Team to proceed. In doing so, the Commission emphasises the following points:

(a) It is not suggesting that the plan of work proposed is the only method which could be adopted or indeed is the best method to adopt.

(b) It is not suggesting that others engaged in similar studies should adopt this method in their own work, although they may find it useful to have available the Research Team's plan of work against which to test the results of their own studies.

(c) In publishing the methodology now, the Commission is in effect advancing the beginning of Stage IV so that the Research Team may have the benefit of constructive criticism from outside as soon as possible with a view to eliminating those differences of opinion which will inevitably arise and which can be resolved. If such an elimination of differences of view is not possible, at least it will serve to focus attention at an early stage upon the major points of difference. In any event the Commission must therefore remain free to revise the techniques now suggested as the work progresses and as may be found necessary.

(d) The Commission will embark upon the public hearing at Stage V with no preconceived ideas whether the plan of work now published or its results are to be preferred to those of comparable work which is being done by others and of which the Commission hopes to receive the benefit in due course. On the contrary, the totality of the evidence will have to be examined during Stage V to ensure that, before the final conclusion is reached after the completion of the Stage V hearings, everything relevant will have been taken into account. The cost/benefit analysis produced by the Research Team during Stage III will not be the only factor determining the final conclusion but, subject to its testing at Stage V, it is likely to be a valuable guide to the judgment which has finally to be made.

EUSTACE ROSKILL
Templar House
London WC1

23rd June 1969

---

*Short list of sites, and Site information for stage II local hearings. 1. Foulness (off-shore) (H.M.S.O; 6s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 1

General Principles

Introduction

1. The Stage III research programme has two main objectives: (*a*) to make as comprehensive as possible a comparison of the costs and benefits relevant to each of the four sites on the short list, (*b*) to assess when the Third London Airport should come into service. The cost/benefit analysis will be based on plans devised for the airport and a possible scheme for the associated urbanisation. These plans will be in sufficient detail to enable all those likely to be affected by any of the sites to assess for the purposes of Stage V the general impact of what is proposed. The programme for the cost/benefit analysis comprises three main stages: identification of the relevant factors, quantitative measurement of their significance; the expression in value terms of these quantitities, in order to permit aggregation of the costs and benefits due to the different factors. Valuation means measurement in money terms since the medium of money is clearly the most convenient, the most readily acceptable, and the most easily understood general standard of comparison.

2. Few problems are likely to arise with the costs and benefits of material factors such as the capital costs of the site itself, and of the associated surface transport developments. Things cost what one has to pay for them, and benefits may be assumed to be worth at least what one is prepared to pay for them. For many things, no market exists by which costs and benefits can be matched in this way, but the same principles hold good. The cost attaching to some non-material factor, such as the imposition of noise on a previously quiet area, may be assumed to be equivalent to the sum of money which might be subscribed to preserve the initial state of affairs. In other words, things are worth at least what people are prepared to pay for their retention.

3. For some factors it is not easy to obtain evidence from which to measure people's valuation. The existence of unquantifiable factors presents difficulties. An obvious procedure would be to evaluate in money terms those costs and benefits which presented no problems, and derive net money costs for each site. The 4 sites would then be ranked, in terms of the other unquantified factors, and a subjective assessment made whether the second class of factors was sufficiently important to disturb the ranking of sites in money terms. This method, which is by no means unreasonable, has two major defects. It would become very difficult, if not impossible, to include more than one, or at the most two, factors in the non-costed group. It would be difficult enough to assess whether the difference between Site A and Site B in respect of some non-costed factor is sufficient to offset a, say, £50m. differential in favour of one or other of them; if the £50m. differential has to be compared with the net advantages and disadvantages of several non-costed factors, the result would hardly be convincing (in terms of objectivity) to those carrying it out, let alone to the general public. Secondly, and more fundamentally, this method of approach merely substitutes implicit for explicit valuation.

Printed image digitised by the University of Southampton Library Digitisation Unit

4. It is assumed by some that subjective judgment properly exercised, is a substitute for quantitative analysis and assessment. On this hypothesis, judgment takes over when quantitative analysis begins to weaken, and it is unwise to attempt to push quantitative analysis into the area more appropriate to pure judgment. However, it is preferable to consider judgment as something which both informs and is applied to quantitative analysis. It informs such analysis in the sense of defining objectives, and determining the most effective ways of throwing light on the points at issue. It is an obvious prerequisite in the interpretation of the results of analysis, and in drawing up conclusions and recommendations for action. Judgment cannot, therefore, act in vacuo, unless it is to be debased into at best mere intuition or at worst mere prejudice.

5. The idea of assessing in money terms the value of non-material things such as visual amenity may sound strange, but it is something people are all doing from time to time. A preference to spend a holiday in Majorca, at a cost of £70, rather than go to the Costa Brava at a cost of £60, implies that some monetary value is being attached to the relative attractiveness of the two places (it may be deduced that the attractions of Majorca must be worth to the chooser at least £10 more than those of the Costa Brava). Similarly, if a person chooses to live in a house possessing a pleasant rural aspect, far from the noises and disturbances of towns and cities, not to mention jet aircraft, then any premium he may have to pay for these advantages, in comparison with a house of similar physical characteristics in a less desirable environment is a perfectly valid indication of the value he places on differences in environment. This premium may be in the form of higher price or rent or increased travel time and costs. The absence of market prices does not prevent an assessment of monetary values. If a person is prepared to travel 100 miles in order to visit some feature of archaeological interest, then the value placed on his visit cannot be less than the expenses he is prepared to incur. The attempt to value non-material benefits in monetary terms in no way implies a materialistic view of life. A judge has as a matter of course to make such valuations when assessing damages and this is a socially accepted way of acting. People may assign very high values to cultural or natural phenomena; to observe and record what these values are is not to be confused with pure materialism.

6. It is important to define who is receiving benefit and who is paying cost. Many costs and benefits relate to particular groups of people of different means and not to the community as a whole. The principal groups concerned will be the air travellers themselves, United Kingdom and foreign, the costs and benefits accruing to the airline companies (which may ultimately be passed on to the air travellers), the residents in the neighbourhood of the airport, and visitors to the neighbourhood, the British Airports Authority (as operator of the future Third London Airport), the public sector, comprising central government and local authorities and lastly the general public. In assessing the costs likely to be imposed on these groups, the question therefore arises whether these costs should be "weighted". This is a question which will have to be considered by the Commission in reaching its final judgment. The figures produced in the cost-benefit analysis for Stage V will not have been so "weighted" before being aggregated to show the total net cost for each site, but the material produced for Stage V may include data about relative income levels

Printed image digitised by the University of Southampton Library Digitisation Unit

Valuation of Costs and Benefits through Time

7. Costs and benefits have to be attributed to the particular year in which they occur if they are to be expressed in capital terms. A decision to spend £1m in 10 years' time involves lower costs than if the sum were to be spent this year, because that sum of capital invested elsewhere between now and then would earn a return, and provide a stream of investment or consumption goods. Likewise a benefit arising in 10 years' time will be worth less than a benefit received now because it would have been directly investable across the intervening years, or it might have been substituted for some other element of consumption, the cost of which would then have been available for investment. All costs and benefits are therefore discounted, to use the technical term, at the same rate of interest. The result is to produce a single figure representing the capitalised streams of costs or benefits through time.

8. Two questions now arise; the rate of discount to be used, and the base year to which all costs and benefits are to be discounted and aggregated. The Government at present applies a rate of 8 per cent in assessing investment projects in the public sector. (This is a "real" rate, assuming constant prices). The main ground for this is that funds should not be invested in the public sector if they would earn a higher rate of return in private industry and commerce. A rate of 8 per cent on relative risk-free projects, is thought to approximate to the average rate of pre-tax return on such investment in private industry. The bulk of the investment in the Third London Airport will take place from the mid-1970s to the mid-1990s. The rate of discount used in the study should therefore be the rate expected to apply during this period. For the present the 8 per cent rate will be used.

9. After the discounting process has been applied to the costs and benefits accruing in each year of the airport's life, these costs and benefits are aggregated to the base year used for discounting purposes, i.e. the date at which the discounting factor is unity. It is proposed that this year be 1975. The choice of base year is purely a matter of convenience, and cannot affect the choice between sites.

10. It might be argued that an international airport has a very long life (upwards of 50 years or so) and that costs and benefits should be assessed across this sort of period. The dominant factor determining the length of life to be assumed is the speed of technological change. It is conceivable that by the year 2000, long-runway airports might cater for predominantly long-haul traffic. This might make at least some of the conventional airport capacity obsolescent by that year, and would make it inappropriate to extend the stream of costs and benefits far into the next century. This is probably an extreme assumption, and it seems more reasonable to assume for the present purposes a life for the Third London Airport of 30 years from its coming into service. In practice, this assumption is not critical for the analysis as a whole; by the end of 20 years, costs and benefits have already been heavily discounted.

Price Assumptions

11. The analysis will be conducted in terms of 1968 prices. It will not be assumed, however, that all prices remain constant. Account will be taken of likely future changes in particular items of cost or benefit, where these are likely to diverge from the general level of prices. Estimates will be made of such future price trends. The value attached to environmental factors will have to be studied with some care; at least some elements of environment are becoming relatively more precious as time passes.

Printed image digitised by the University of Southampton Library Digitisation Unit

Treatment of Foreign Air Travellers in Cost Benefit Analysis

12. Foreign air travellers are included in the analysis in exactly the same way as are United Kingdom residents. This accords with general practice in cost benefit work. For example, in assessing road schemes or the Channel Tunnel, the Ministry of Transport does not distinguish between foreigners and United Kingdom residents. It is proposed to follow this example. The corollary is that the convenience of foreign travellers is a factor to be taken into account in siting the Third Airport. This does not denote a high degree of altruism. There are good grounds for thinking that at least some of the benefits accruing to foreign air travellers from the choice of one Third Airport site rather than another will tend, by diverse means, to find its way into United Kingdom pockets. Foreign visitors may come in greater numbers, or may spend more time and more money here in the United Kingdom.

Treatment of Foreign Exchange Earnings

13. It has already been pointed out that costs and benefits will be analysed in terms of the people, company, or authority concerned. Costs and benefits will also be broken down into claims on United Kingdom resources, and earnings or expenditure of foreign exchange. It is not the present intention to apply any premium to foreign exchange, as opposed to expenditure on United Kingdom resources. This may strike many people as odd, in view of the emphasis placed now and in the past on the importance of foreign exchange earnings and of import substitution. The assumption to be made is that the current exchange rates appropriately reflect relative prices at the present time, and that, since all calculations are in terms of constant prices, the future course of exchange rates and relative prices will not affect the valuation of foreign costs and earnings.

Valuation at "Resource Cost"

14. Costs and benefits are to be valued on the basis of their resource costs, and not at their market prices which include taxes, subsidies and other transfers. Resource costs represent the real cost to the community of the goods and services consumed, and exclude taxes and subsidies which are of the nature of transfer payments to or from the public sector.

15. Resource costs, however, are not the only costs employed in the analysis. Resource costs alone cannot be used to predict the way people will choose to travel to or from the airport, or the airport to which they will travel. More people may normally be expected to choose to travel by private car than might be thought likely from a comparison of prices and costs facing the traveller (which include taxes and subsidies). There are two reasons for this. First, travellers may not correctly perceive the real cost of travelling by private car, which may generally exceed that of travelling by public transport. Secondly, convenience may exert a strong influence on the choice. Specific allowance must therefore be made by using cost figures which are known to explain adequately the behaviour (in choice) of travellers, i.e. "behavioural costs".

Printed image digitised by the University of Southampton Library Digitisation Unit

A Special Problem in the Analysis: the Foulness Seaport

16. The Commission's task is to find the right site for an airport. However, proposals have been made for a seaport development in the Foulness area. If Foulness, assessed purely as an airport and assuming no adjacent seaport proved to be the preferred airport site in comparison with the other three, the possibility of a joint airport/seaport project would not present any problem and the proposed seaport would not need to be considered by the Commission. It would rest with other authorities to consider whether a joint airport/seaport project should take the place of the independent airport considered by the Commission. If Foulness assessed purely as an airport proved not to be the preferred site, the extent to which an associated seaport development could have the effect of narrowing the gap between Foulness and the other three sites would have to be considered. Because the Commission will not decide until after Stage V which is the preferred airport site, an assessment of the possible effect of the seaport on the airport is needed prior to Stage V. This does not, however, mean that the viability of a Foulness seaport or the advantages of a Foulness seaport in comparison with other seaport developments around the United Kingdom will be examined in detail.

17. Three important quantities have to be defined and subsequently measured. First: joint costs. These are costs which if incurred for one project, wholly or in part serve the needs of the other, e.g. the use of sand for reclamation dredged from the channels required for the seaport, the use of common surface transport facilities and the cost of relocating the Shoeburyness Firing Range. Secondly: joint benefits. These are benefits accruing from a joint project such as the benefits to traffic able to transfer between sea and air which would otherwise have to use a less attractive mode of transport. These joint benefits are not likely to prove very significant, but they require investigation. Thirdly: additional costs. These are costs imposed on the airport on the assumption that the optimal position for the airport would not be completely compatible with the best arrangements for a joint airport/seaport project.

18. These three quantities (joint costs, joint benefits less any additional costs) represent the maximum credit which could be applied to the costs of the Foulness airport as initially assessed. If the credit is sufficient to put Foulness airport into first place, the question arises whether the economics of the seaport are such that it can carry the joint costs originally debited to the airport as well as the airport's additional costs. The deciding factor would, therefore, be whether the seaport was sufficiently attractive economically to remain not only viable but also the preferred seaport development in competition with other similar projects after being charged with that proportion of joint costs and additional airport costs which would be required to tilt the balance of the airport comparison in favour of Foulness. It will be for the advocates of a joint project to present firm evidence about the ability of the seaport to alter the balance in this way.

CHAPTER 2

The Value of Travellers' Time

Introduction

19. The cost of travelling time represents a considerable proportion of the total costs assumed to be incurred by air travellers in getting to and from the airport, just as savings in travelling time represent a major proportion of the rate of return as assessed for motorways, other trunk roads and improvements to urban road networks.

Printed image digitised by the University of Southampton Library Digitisation Unit

Valuation of Working Time

20. Working time spent travelling to and from an airport (or in the air itself) clearly represents a resource cost, in terms of the work which would otherwise be done. It might be suggested that this loss of working time is less than complete, in so far as some kinds of work are not incompatible with travelling either on the surface or in the air. Such useful activities become more difficult if travel is by public transport, or with friends and relatives; they become virtually impossible if one is driving oneself to an airport. From common observation, it seems safe to conclude that only a small proportion of business travellers do serious work while actually travelling to and from an airport. This may not be completely true on the outward journey, but in total it seems an acceptable assumption. It might be more convincingly argued that travelling time on business should be viewed as a rather restricted form of leisure. There are certain leisure activities, such as reading newspapers or magazines, which are fully compatible with travelling. The same is true of travel in the company of friends, relatives or colleagues. This might suggest that the curtailment of purely economic activities by travelling might be offset by increased leisure of a somewhat constrained variety. However, such constrained activity is hardly compatible with any benefits of this kind. In total, therefore, the argument of this paragraph points to the conclusion that there are no significant offsets, either in useful activities or in leisure, to be set against the normal working time lost.

21. It is proposed that the distinction between working time and leisure time is equivalent to that between business travel and tourist or private travel. This might appear too simplified, in view of those travellers (albeit a small proportion) for whom the distinction between work and leisure is not well defined. But the significant quantity relevant here is the use which would be made of marginal changes in travelling time. If, for example, somebody could leave his office for the airport half an hour later and then clip a quarter of an hour off the flight time to Paris, then it seems reasonable that this would free three-quarters of an hour for working purposes. In any individual case, of course, the time-saving might be appropriated by the traveller as increased leisure, i.e. he might simply leave home for the airport that much later. In an equal number of cases, speedier transport to the airport might make it possible for him to catch an earlier flight and it is therefore reasonable to assume that benefits of time-saving accrue to the employer rather than to the employee.

22. The value of working time will be determined by the gross income of the persons concerned. Business air travellers probably have incomes well above the national average, and confirmatory evidence of this is now being sought. One additional factor calls for comment. The Ministry of Transport recommend that gross incomes should be increased by 10 per cent for the following reasons: the value of an employee's activity is represented not merely by his salary but by the overhead costs which his employment entails, such as accommodation, equipment used in course of duties, and other overhead items (both fixed and time dependent). No allowance should be made for secretarial or clerical assistance, it being assumed (possibly optimistically) that such staff will be able to do useful work in their principals' absence. It has been suggested that the figure of 10 per cent recommended by the Ministry of Transport may be too low for business air travellers and this seems likely. Further investigation is in progress.

The Value of Leisure Time

23. The majority of air travellers are not however on business but on tourist or private trips. The question therefore arises how their time should be valued. Leisure time might not normally be viewed as an economic resource; it is not, for example, an element in the Gross National Product. But, it cannot be denied that leisure is a "good" in the eyes of the consumer. It is, in fact, a pre-requisite for the enjoyment of very many kinds of goods and services. The gradual reduction in working hours, and the even more rapid lengthening of annual and other holidays, bear witness to a very general willingness to prefer additional leisure time to the additional goods which could be acquired with the money earned during longer working hours.

Printed image digitised by the University of Southampton Library Digitisation Unit

24. If a value is to be placed on leisure time it must be done by inference. What people do when they are faced with an opportunity of trading-off time and money can be observed. Willingness to choose time-saving rather than the minimisation of money cost provides the basis for the comparison. There are several situations where such a choice is made. Possibly the best known is the choice between crossing an estuary or river by toll bridge or tolled ferry, or driving one's car up river to the first "free" bridge. A wide range of journeys between different points on each side of the estuary is possible. For many of these journeys, principally journeys between points near the toll bridge, use of the toll bridge will save both time and money, and very few people would be expected to go the long way round. Conversely, there will be a large number of journeys between points far from the toll bridge, where it will be both cheaper and quicker to avoid the toll bridge altogether. But, having ruled out journeys in these two categories, there will be a third category, lying intermediately between the first two, where it will be quicker to use the toll bridge, but cheaper to avoid it. (The amount of time-saving in any individual case depends on the number of people using the vehicle; for the purposes of this example, it will be simplest to assume equal numbers in all vehicles). It is possible, by recording the origins, destinations, and routes followed by journeys in this intermediate category, and by estimating the additional costs of going the long way round rather than using the toll bridge, to estimate the implied values which travellers put on their leisure time. If, for example, all travellers put an identical value on their time, it would be possible to predict, after balancing up leisure values against monetary costs, exactly how any individual journey would be routed. In practice, of course, the travelling public put very differing values on their time, and the prediction of individual routings cannot be precise. Despite individual differences, there is, nevertheless, a clear indication of an average value imputed to time. In fact, as might be expected, these values are closely related to income levels. In other words, the members of the travelling public with higher incomes are more willing to buy additional leisure time. It follows that, instead of expressing the implied value of leisure time as an average for the travelling public, it is more accurate to express it as a percentage of the incomes of the persons concerned.

25. There are other instances, which need only be referred to here, where the traveller is faced with a choice between time and money. Public transport is usually cheaper, and more time-consuming, than using one's own car. Similarly, differing modes of public transport, such as rail and bus services, may present this choice between time and money. When different modes of travel are involved, as in these cases, the analysis is less simple, because the traveller may, and often will, have preferences for a particular mode of transport (such as his own car) which are quite unconnected with his trade-off between money and time. To conclude, there have been many studies involving route choice, and modal choice, as a result of which there is evidence that the travelling public as a whole appears to impute a value to leisure time of approximately 25 per cent of average gross income. This is the value used by the Ministry of Transport in their assessment of highway schemes. The Commission has not yet reached any firm conclusion about the value to be attributed to leisure time. For the present, however, it is proposed that the Ministry of Transport value be used.

The Value of Small Time Savings

26. Given the possibility of valuing time, it may be asked whether it is appropriate to treat small time-savings (e.g. 5-10 minutes) in the same way as larger savings (e.g. 1 hour or more) or to regard 12 savings of 5 minutes each as equivalent to one saving of an hour. The obvious objection to this treatment is that there are very many things which can be done within an hour; on the other hand, a mere 5 minutes is often of little use for anything.

Printed image digitised by the University of Southampton Library Digitisation Unit

27. If we compare the pattern of surface journeys to airport site A with those to airport site B, the fact that average journey time may differ by only, say 10 minutes, is only of statistical relevance. These are *averages* across all the travelling public concerned. But the differences in travelling time for particular individuals (whether on business or on pleasure journeys) will generally be much larger than this. As origin and destination studies make clear, the catchment area of airports in south-east England is very extensive. For some people, airport A may well be as much as 1 hour closer than airport B. For another group of people, the reverse relationship will be found. For yet another, much smaller group, the airports will be roughly equidistant. But in general, the average difference in travelling time will not of itself give any indication of the amount of time gained or lost by particular travellers.

28. The usefulness of small time-savings depends not on the actual number of minutes saved, but on the opportunity thus provided of doing things which might take considerably longer than the original time-saving. For example, 10 minutes saved on the journey to work may make it just possible to take young children to school, something which in itself might take, say, 20 minutes. If it were true that small time-savings were of little value, it might be asked for what purpose the Southern Region of British Rail introduced new timetables some time ago. It should be noted that this consideration applies much more obviously to savings in journeys to work, than to holiday journeys. In the first case, most people have fairly regular patterns of activity into which small time-savings can be fitted. This is much less true of holiday journeys. If small time-savings were to be ignored, it would be impossible to take account of a gradual speed-up of travelling times occurring across a period of time. To sum up, therefore, there seem to be good reasons for making no general distinction between small and large time-savings when valuing time.

CHAPTER 3

Airport Policy Issues

Introduction

29. This chapter deals with two matters of airport policy on which clearly defined assumptions are required as a basis for the research programme. The first of these is omnidirectionality. The second is regional airports policy.

Omnidirectionality

30. Omnidirectionality can mean the ability of a number of airports to have unimpeded access to all airlanes at all times for all volumes of traffic within their respective capacities. It is apparent that complete omnidirectionality of this kind has little practical significance, because no airline, nor the airlines in total, would ever want to operate as full and unrestricted a range of services from all the airports as this definition implies. The volume of traffic on some routes may not, within the foreseeable future, justify services from the airports. Some specialisation is bound to occur, at least until the airports are handling a considerable volume of traffic. Furthermore, complete omnidirectionality at Heathrow and the Third Airport would almost certainly imply more serious losses of runway capacity at other airports, such as Luton or Southend, than would otherwise be necessary. It would also imply longer flight paths between the airports and the airlanes, and lower (more expensive) flying as certain flight paths are routed below others. The alternative to measures of this kind is to ensure that all major airports are some 50-60 miles apart, but this solution entails its own particular costs and inconveniences.

Printed image digitised by the University of Southampton Library Digitisation Unit

31. The converse of omnidirectionality may be described as sectorisation. This means limiting the range of routes which an airport serves. As an extreme example, one airport might serve only routes to and from the west and south, while another airport might serve only routes to the east and north. This would be similar to the traditional situation at London railway termini; there are no south coast train services from King's Cross. Sectorisation also imposes costs and inconvenience. Passengers can no longer travel to the most convenient airport, but have to use that which provides their particular service. Certain air travellers will have to proceed via surface transport from one airport to another to connect with a particular service. Interline traffic of this kind may be lost, and divert to airports not sectorised in this way. The airlines themselves will be quick to respond to any loss of traffic from this source.

32. In the presence of these two conflicting considerations, it is clear that the ideal solution for a group of airports in the same region will consist of a precise balancing of the advantages and drawbacks of full omnidirectionality. In principle, it would be possible to discover this desirable degree of omnidirectionality; but in practice, this seems an ideal which would not merit the research resources required.

33. It is therefore preferable to define omnidirectionality more broadly, in such terms as "access to all airlanes from Heathrow and the Third Airport for future traffic flows likely to be experienced, at approximately minimum cost". This definition abandons unrestricted access to airlanes, and the provision of complete patterns of services from both airports.

34. It might be found however that the requirement to attain this degree of omnidirectionality might unduly penalise one or more of the sites on the short list. This is to say, some site might be able to provide this broad degree of omnidirectionality only at an exorbitant cost. In fact, however, a sectorised solution would be more likely were this site to become the Third Airport. Unless a site of this kind were to be excessively penalised, there must be the option of investigating one, or possibly two, sectorised solutions possessing obvious benefits. This therefore appears to be the most realistic approach to adopt. In so far as the degree of omnidirectionality assumed is less at some sites, they will attract the relevant additional costs of extra flying time and extra surface transport, in comparison to sites which are less restricted.

Regional Airports Policy

35. The absence of a national airport plan does not simplify the research task but the Research Team will not attempt to devise such a plan. Forecasts are needed of the total volume of air traffic and its likely distribution between airports in the London region and elsewhere. The future of Birmingham Airport (Elmdon) is critical. If Elmdon were to be developed as a major international airport, this would substantially divert potential air traffic from Cublington and Thurleigh. It is being assumed that Elmdon is unlikely to be developed to this extent, at least for many years, and that Manchester (Ringway) will be the only other major international airport suitable for Midlands traffic.

36. The treatment of Elmdon in this fashion does not solve the forecasting problem. If Foulness were chosen as the site of the Third Airport, traffic from Birmingham and the Midlands would probably choose Manchester (Ringway) or London (Heathrow) in preference to the long haul to Foulness, if comparable services were available. It would however be unrealistic to assume that Midlands traffic would have any preferential access to Heathrow. In other words, the watershed separating the catchment areas of Ringway and the London Airports would move south, certainly south of Birmingham, for those overseas destinations for which Ringway offered an acceptable frequency of service.

37. If, at the other extreme, Cublington were the chosen site, the watershed would move north of Birmingham, and the London Airports as a whole would attract rather more traffic than they would have done had Foulness been the chosen site.

Printed image digitised by the University of Southampton Library Digitisation Unit

38. Although the primary concern of the research programme is with air traffic in the south-east of England, Manchester (Ringway) has to be included within the system analysed so that a realistic assignment of traffic to the different sites can be made. Foulness might otherwise be charged with the substantial surface transport costs of Midlands traffic, which would not in fact arise if such traffic passed through Manchester (Ringway) within whose catchment area it would tend to fall. Because the amount of air traffic generated depends,

CHAPTER 4

Air Traffic Forecasting

Introduction

39. Air traffic forecasting is central to the timing of the need for the Third Airport. It is also relevant to the ultimate choice of site, as it determines the weight to be attached to the surface transport costs of getting to and from the airport. Passenger traffic has to be broken down by business/tourist, by overseas destination or airlane (for Air Traffic Control purposes), and by origin or destination in the United Kingdom, to determine the allocation of traffic between Heathrow, Gatwick and the Third Airport, as an input for the surface access studies. In addition, for airport capacity analyses, the hourly distribution of traffic is required for representative days at different times of the year. Finally, freight forecasts are required in terms of tonnages, volumes and origins and destinations.

40. The Commission's major source of this information is a special Working Party set up by the Board of Trade and including representatives from British airlines and the British Airports Authority. The Commission's Research Team is also assisting. Detailed forecasts are being prepared up to the year 1975, and extended in a more approximate fashion up to the year 1985. The Research Team will need to put forward some tentative figures up to the year 2000.

Forecasting Method employed by the Working Party on Traffic and Capacity

41. The WPTC is concentrating on the "airside" part of the problem, and is not concerning itself with the spatial patterns of passengers' origins and destinations in the United Kingdom. The forecasting work carried out by the Working Party is of two broad, but distinct, kinds: first, projections made by fitting algebraic formulae to statistics of the past and using these formulae to predict the future; and, secondly, projections formed by modifying or continuing past trends in accordance with judgments on how these trends can be expected to be moulded by the economic and other forces which bear on them. Both these methods have their advantages and disadvantages. The use of formulae based on data from the past may enable future air traffic to be derived from forecasts of other economic quantities which are more easily predicted than air traffic itself; and it ensures that tendencies which have been present will continue to be reflected in the forecast, even though the causes are unknown. It is, however, possible that some part of a formula, relatively unimportant over the period to which the formula is fitted but serving to improve the approximation to the facts which the formula represents, may take on a more dominant role in the forecast period. The other method, which rests more on economic argument, is probably less precise, relies more on the quality of the forecasters' judgment, and renders more difficult a quantitative assessment of the confidence that can be placed in the range of the forecast. The choice of method in such cases will probably rest heavily not only on whether it yields a forecast which has credibility and inspires confidence, but also on whether it affords explanations, in terms of the factors known to be operating, of the form it takes.

Printed image digitised by the University of Southampton Library Digitisation Unit

42. Forecasting is not exact: inexactitudes arise from the variability of the relevant factors, from uncertainties and errors in the statistics used and in estimates derived from them, and from possible misjudgments. Accordingly, the Working Party will produce, not a single projection, but a range of possibilities which widens over the timespan of the forecast. The range selected will be one in which there can be reasonable confidence that the outcome will be covered by the span of the forecast, though it is unlikely to be possible to measure this degree of confidence precisely. It might be objected that forecasts with this degree of uncertainty will not be of very much help in the analysis of the timing of the need for the Third Airport, and will be of even less use for analyses stretching towards the end of the century. It would, however, be wiser to accept the inability to foresee the future in this particular field more than some 10 or so years ahead, and to accept the consequences of ignorance. The whole research strategy will therefore take account of this either by performing parallel analyses on high and low traffic assumptions to see how far these affect the ultimate answer, or by assuming fairly high traffic levels, on the principle of preparing for the worst. The uncertainty of the forecasts emphasises the value of sequential planning and decision making, and of flexibility in design at the early stages of construction.

Additional Research into Traffic Forecasting

43. The WPTC approach will not produce the required forecasts of the spatial distribution of origins and destinations of traffic within the United Kingdom. The Research Team has therefore embarked on what is normally termed a "category analysis" to throw light on this problem. It may in addition provide useful information on the total future volumes of passenger travel.

44. The distinguishing feature of this approach is that it analyses the propensity to travel by air of individual groups of people. This approach identifies factors, at the individual level, which are likely to be important in determining propensity to travel by air, such as income levels or social class, number of young children in the family and accessibility to airports. It classifies the population according to these factors and then measures the present propensity to travel by air of each "class" by reference to a special survey of air passengers. The next stage is to forecast the total numbers in each " class" across the period of the study. Lastly, to these forecast numbers are applied the propensities to travel previously estimated.

45. The initial assumption of this method of forecasting is that the propensities of particular groups of people, as classified in the analysis, remain constant, and that the forecasting problem reduces to one of predicting the number of people within each "class". But it is still likely that the propensity to travel by air will increase within each of the "classes" as defined. It would therefore be wrong to assume that this category analysis could entirely replace the forecasting methods being used by the Working Party.

46. It is not proposed to apply the category analysis method either to business travel nor to foreign tourist travellers. The growth in business travel is significantly smaller than that in tourist travel, and will be estimated from forecasts of industrial activity. For foreign tourist travel, it will be assumed that the choice of Third Airport site will not affect the total volume of foreign tourist air traffic, and secondly it will be assumed that the spatial pattern of foreign tourist origins and destinations within the United Kingdom will remain as described in the 1968 traffic survey. Both these assumptions are open to challenge, but they are unlikely either to be seriously in error, or to bias in any significant way the comparison between sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

Freight Forecasting

47. At the moment, freight is not a major factor in determining airport traffic, and the proportion of "all-cargo" flights remains small. The proportion of air freight carried in passenger aircraft may well increase with the increase in aircraft size. The Research Team will call on the advice of the British Airports Authority, the airline operators, and possibly outside consultants to assist in this field. Information already exists on the surface origins and destinations of freight traffic using Heathrow and there have been some studies made of the likely impact on freight traffic of the reduced charges made possible by the introduction of larger jet aircraft. The Research Team will take this material into account.

Chapter 5

Timing of the Need for the Third Airport

Introduction

48. It might reasonably be thought that the problem of the timing of the need should present few difficulties, and the Third Airport will simply be required when existing airports in the south-east are full to capacity. Furthermore, once the decision on the location has been taken, the only problem will be to get the first runway of the new airport operational in time. Things are, however, not so simple.

The Definition of Airport Capacity

49. The capacity of an airport, like that of any transport system, is to some degree flexible. There is no point in time at which full capacity can be said to have been precisely reached. Delays to passengers occur at levels far below full capacity. It merely requires the arrival of a number of aircraft during a relatively short period of time for a queue (stack) to develop, and at some level of operation delays become excessive. Full capacity might therefore be defined as the point at which delays become unacceptable to the vast majority of passengers. The rule-of-thumb now current in the aviation world is that the average delay to passengers should only exceed 4 minutes during the 30 busiest hours of the year. Clearly, this "acceptable" delay of 4 minutes on average implies that some passengers will experience much longer delays, while the bulk of passengers will experience almost negligible delay. On this principle, the Third Airport would be held to be required as soon as average delays of 4 minutes were being experienced during more than 30 hours per year. However, when traffic at peak times of the day builds up, delays rapidly escalate. If, for example, it is possible to receive 32 aircraft per hour per runway over a continuous period of say 12 hours, it would be possible theoretically to accept 32 arrivals per hour without any delays being experienced, provided aircraft were to arrive precisely at constant 2 minute intervals. Once the arrival rate exceeds this level, delays are clearly unavoidable, and if, for example, 40 aircraft per hour were to arrive over, say, a 2 hour period, delays would escalate dramatically. This would suggest that there will be a reasonably clear indication of when full capacity at Heathrow has been reached.

50. It would be unusual for an airport in the United Kingdom to be operating at full capacity for more than some 15 hours of the day, even during the summer period. Spare capacity will always exist at other times of the day. So one solution to the problem of delay would be to spread the peak into less congested hours. Existing administrative arrangements between airport authorities and airlines already do this to some extent. If these arrangements could be strengthened or supplemented by other inducements such as differential landing fees, airport capacity could be increased but there will ultimately be limits to the number of passengers and airlines who are prepared to respond to the lower prices and to fly at less convenient hours.

Printed image digitised by the University of Southampton Library Digitisation Unit

Proposed Treatment of the Timing Question

51. For simplicity it is proposed to concentrate in the analysis on Heathrow and Gatwick and to exclude other airports in the South East from detailed consideration. An appropriate deduction will therefore be made from the forecast of total air passenger demand in the South East to take account of the likely throughput of traffic at other airports. In considering Heathrow, it will be assumed that two full-length runways will be operational but that there will be no further expansion of the airport's runway capacity. In considering Gatwick it will be necessary to consider both the existing single runway situation and a possible future two runway situation.

52. Two different traffic profiles will be assumed. The first will be based on a continuation of the present administrative arrangements referred to in paragraph 50 above and will reflect the existing shape of the daily peak. The second will be based on more severe, but feasible, degree of peak smoothing. The purpose of this double assessment is to estimate the potential benefits, in terms of smaller delays to total air passenger traffic, of some drastic attack on the peak problem.

53. In place of the conventional measure of capacity referred to in paragraph 49, it is proposed to develop a more readily justifiable criterion expressed in terms of the optimal number of annual air transport movements for any given average number of terminal passengers per aircraft. This will involve an assessment of the benefits from postponing the construction of the Third Airport.

54. As was pointed out in Chapter 1, it is always preferable to postpone expenditures, for the simple reason that a rate of return can be earned on the capital in the intervening years. In addition, as productivity in real terms is increasing year by year, a postponement of construction work might have the effect of producing a commensurate reduction in costs. In the case of the Third Airport, the total of expenditures so deferred is very substantial. First: the construction costs of the first runway and the associated terminal buildings and other installations are likely to be some £60/70m. A delay of one year would be worth at least £5m. Secondly: all four airport sites would enforce the closure of Ministry of Defence establishments and some civil airfields, whose activities would have to be transferred elsewhere. These costs differ from site to site and are likely to be commensurate with the construction costs referred to above. Thirdly: very considerable surface transport investment is envisaged at all four sites. Fourthly: the effect on the local environment, in terms of the urbanisation required for the airport population, the loss of agricultural land, and the damage to environment and local amenities, represent a very considerable imposition of costs. The cost which would be affected by postponement of the Third Airport might well be of the order of £150m. Postponement by one year would therefore be worth at least £12m.

55. To be set against the benefits of postponing expenditures of various kinds, there are the costs imposed by such a postponement. The most important of these costs are those imposed by delays at peak periods. First: there are delay costs to passengers. Second: there are delay costs to airlines. Short delays merely increase the number of flying hours, or delays on the ground, but do not disrupt schedules. For more serious delays, disruption of aircraft movement patterns occurs, and may have to be built into planning schedules. This will then reflect itself in larger airline fleets.

56. The forecasts of demand at Heathrow and Gatwick will be plotted against the capacity available at the two airports. As explained in Chapter 4, the forecasts will be in the form of a range. It is, therefore, proposed to consider separately for each year the upper and lower limits of the range and the most likely figure within the range. This will produce a series of dates when the Third Airport would be needed. The next step is to determine when the Third Airport could be ready.

Printed image digitised by the University of Southampton Library Digitisation Unit

57. The data produced by this analysis should enable the Commission to reach a judgment about the date when the Third Airport's first runway is required and to assess what cost penalty should be carried by any site where the airport could not be ready by the required date.

The Value to the Nation of the Third London Airport

58. One aspect of the problem of need is whether the total benefits to the nation of having a Third Airport are worth the total costs which it will impose. There are two approaches to this question. First, a valid solution to the timing problem might be thought to imply an equally valid solution to the question of overall need. If the benefits of proceeding with the airport in a given year can be shown to exceed the cost savings due to postponement, it would seem illogical to suggest that the airport as a whole was uneconomic. This line of argument would be valid provided that all relevant costs have been included in the timing analysis, that a continuous growth in traffic can be foreseen for a considerable period, that there is no good alternative means of transport, that, in the absence of a new airport, delays to traffic using existing airports rapidly escalate when full capacity is reached, and, finally, that the indirect effects of the airport on activities other than air travel itself, are not unfavourable.

59. The alternative approach starts with the fact that payments made by air travellers themselves are unlikely to cover all the costs imposed on society. The construction and operational costs of the airport itself will presumably be recovered from air travellers indirectly through the payment of landing fees to the British Airports Authority. Road and rail infra-structure costs will also be covered, either by direct payments to British Rail, or through fuel duty. But there is a number of other costs arising from the construction and operation of the airport, such as those imposed on defence airfields, the imposition of noise on existing communities, damage to amenity and outdoor activities and interference with other civil airports and other civil flying activities. These may be considerable and will not necessarily be recovered through landing fees or otherwise from air travellers.

60. In considering whether the imposition of these "unrecovered" costs is justified, there are two possible courses. The level of landing fees which would be required to cover total costs could be estimated to see whether this would inhibit air travel. At first sight, this appears unlikely. Alternatively, the external benefits stemming from the Third Airport could be assessed to see whether they would in themselves be sufficient to make good any costs not covered by the air travellers themselves. The first of these external benefits might be support for the balance of payments but for the reasons set out in Chapter 1 it would not be appropriate to take any special credit for this unless failure to build the airport had more than a marginal effect on the balance of payments position. The second of these external benefits might be that an efficient airport system provides a good background for the development and prosperity of three industries with considerable growth potential, namely British airlines, the aircraft construction industry, and inward tourist traffic. The third of these external benefits might be the benefits to industry generally from the existence of an efficient airline and airport system. Economic growth is becoming increasingly dependent on the activities of large international firms, whose need for efficient world-wide transport becomes increasingly powerful. The indirect benefits of an international airport are difficult to quantify, but it seems likely that they would more than offset any costs not covered by air travellers themselves.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 6

Air Traffic Control

61. This is one of the most important parts of the total analysis, and can adequately be handled only with a considerable research effort. The basic problem is that while the subject can be intelligently discussed in general principles, it is impossible to arrive at sufficiently precise answers without an analysis of movements of individual aircraft.

62. The main questions to be answered in this field are the location of flight paths by which airports in the London area are connected to the airlanes, the location of holding areas for these airports, the best way of coping with mutual interference between airports where restriction of airspace does not permit completely independent operation, and the allocation of traffic between airports in the south-east, depending on any sectorisation which may be found necessary. Other factors relevant to the analysis include the impact of noise on existing residential areas and on outdoor activities, the effect on future urbanisation required by the airport population and other forms of growth, and the implications for defence airfields and for technical and other activities to which airspace is important. These are, of course, additional to the costs to airline operators and air passengers, and of the ATC system itself.

63. The complexity of the problem is such that computer models are needed which will simulate the relevant characteristics of the system. Physical simulation models such as wind-tunnels are used for the testing of the aero-dynamics of new aircraft, and wave-tanks are used for the testing of new hulls. In a computer simulation model, the operational characteristics of the system are reconstructed in such a way as to permit investigation of the outcomes of different strategies.

64. It is proposed to use three existing models. The Board of Trade have a computer model of runway operation which can simulate the landing and take-off activity at an airport, for any predetermined pattern of traffic landing and take-off, and for the ATC system in use. For example, the runway activity during a representative busy summer 24 hours could be simulated, the input being the arrival and departure pattern of the aircraft, and the output from the model being the actual times at which landings and take-offs would occur, and the pattern of delays experienced by aircraft at both landing and take-off.

65. The second model is being provided by General Precision Systems Ltd. This simulates the movement of aircraft in the London Terminal Area, excluding the runway activities covered by the previous model. This model will also handle any predetermined pattern of traffic flows across the whole terminal area, and it will identify the number of "ATC conflicts" occurring in the system as specified. Conflicts represent occasions where intervention by ATC ground staff would be required. Obviously, such conflicts ought to be minimised as far as possible, but the easiest way to accomplish this will normally be by lengthening flight paths, with consequent additions to aircraft flying time and loss of passengers' time. Where air-lanes themselves have to be relocated or extended, this will have implications on the other factors mentioned above.

66. The Board of Trade also have a computer model which estimates the level of noise, on a number of different definitions, appertaining to any particular volume and pattern of aircraft movements. This model will be used to estimate the NNI contours at each of the Third London Airport sites. It also produces other measures of noise, such as PNdB and the number of overflying aircraft.

Printed image digitised by the University of Southampton Library Digitisation Unit

67. Although use will be made of the Board of Trade noise model, the Research Team is making an extensive survey of other measures of noise nuisance developed both in the United Kingdom and abroad. The Research Team will be glad to receive any technical material which bears on the problem of measuring noise nuisance caused by aircraft. It is also hoped to take account of the results of the latest Board of Trade social survey within the Heathrow area. The Research Team will be examining the special problem of dissemination of noise over water, particularly in conditions of temperature inversion.

68. The availability of these 3 computer simulation models, which will be used simultaneously in order to discover the best way of operating each of the Third Airport sites, will enable these problems to be tackled with a degree of sophistication exceeding anything previously possible. The models are complex pieces of computing, but their use raises no major problems of principle. The most critical factors are the ATC assumptions underlying aircraft movements, e.g., the required spacing of aircraft in the air-lanes, and particularly at landing and take-off, the way in which aircraft of different speeds are handled within the system, etc. To an important extent, these questions depend on the ATC equipment in use on the ground and in the air. It is here that considerable attention will have to be given to the level of technology to be expected when the Third Airport gets into operation.

Chapter 7

Surface Transport

69. As with the ATC research, the analysis of surface transport employs computer models of very considerable complexity. This is due to the need to define the transport network very precisely, in terms of actual roads and railways on the ground, together with specifications of their place in the network, and their traffic capacities. It is necessary, for example, for the computer to store in numerical fashion the spatial characteristics of the road and rail networks, in order that, when particular volumes of traffic are fed into the system, with specified origins and destinations, the traffic can find its way across the network in a realistic fashion. Furthermore, although the model does not, like the ATC model, handle the movement of individual vehicles, it is necessary to get a precise definition of the traffic flowing on each link of the network, in order that speeds and journey times and costs may be estimated. The whole procedure has to be carried out for certain key years during the life of this airport.

70. The surface transport model will indicate the way in which traffic is likely to allocate itself among different airports in the London area, the total costs of this transport movement, including capital costs, operating costs, and loss of passenger time, and lastly the costs or benefits imposed on users of the road and rail networks. Clearly, this modelling and costing operation involves a most forbidding amount of numerical detail. The Services in Informatics & Analyses model will be used.

Printed image digitised by the University of Southampton Library Digitisation Unit

71. No computer model can be better than the assumptions embodied in the input data, and it is to these that most critical attention should be applied. First, there are the user costs incurred by the travellers themselves. These include both operating costs, and time costs. The latter were discussed in some detail in Chapter 2. Secondly, there are the technological assumptions about the rail link. The "steel wheel on steel rail" may well continue to be the preferred system across the life of the Third Airport, principally because of its passenger handling capacity and the expected introduction of the Advanced Passenger Train. The main competitors to the Advanced Passenger Train are some form of tracked hovercraft or of monorail. The potentialities of such novel forms of transport will also be investigated. It may then be possible to compare the operating and cost characteristics of these possible forms of transport.

72. The capacity of the road and rail network at present envisaged during the life of the Third Airport will be examined. If additional links are required, suitable alignments for these will be considered and the phasing and costs of construction estimated. An important factor to be investigated is a suitable site for the Central London terminal of a public transport link. For these questions the Research Team will be obtaining the advice of the appropriate authorities concerned.

CHAPTER 8

Regional and Local Planning and Environmental Effects

Regional Planning

73. The regional planning aspects of the Third Airport present exceptional difficulties. The regional planning problems of south-east England are now being examined by the South East Joint Planning Team, under the leadership of Dr. Burns. The report of the SEJPT will not have been considered by the Government, nor will it have been published in time to be taken into account in assessing the four airport sites. Although close contact is being maintained between the Commission's Research Team and the SEJPT it will not be possible to set each of the four sites into the context of the regional planning strategy eventually established for the last quarter of this century, or to assess the extent of any incompatibility. Merely to assess the airport sites in terms of existing regional planning criteria would not be an acceptable solution, given that the strategy which will apply during the life of the airport will probably be on a different basis.

74. In the absence of an approved regional plan, the Research Teams' approach to the problem will of necessity be a compromise. Without attempting to anticipate the final recommendations of the SEJPT or the extent to which these may be accepted by the Government, it may still be possible to base an assessment of the regional planning implications of the sites on those factors which have appeared as constant elements in the various planning strategies adopted since the war, and which appear likely to underly, or at least be consistent with, the strategy which will result from the work of the SEJPT.

75. Such an approach implies a co-operative effort with the SEJPT and also with officials in the Ministry of Housing and Local Government. It may not be possible to do more than assess the four sites in general terms against the "planning constants" which it is hoped to derive. This might lead to a ranking of sites from the regional planning point of viewand further quantification would not be possible.

Printed image digitised by the University of Southampton Library Digitisation Unit

Local Planning

76. Two firms of planning consultants have been appointed to assess the general feasibility of urbanisation on the scale required in the four site areas and to assess also the potential for further industrial expansion not directly dependent on the airport. The first task of the consultants will be to assess whether there are any insuperable obstacles to the urban development required to cater for the population directly dependent on the airport. They will then proceed to consider alternative patterns of urban development, leading to the selection of that pattern which appears preferable in planning terms. This urbanisation plan will then be further developed and costed for incorporation in the final cost benefit analysis.

77. It is unlikely that the establishment of the Third Airport will alter the nation's total housing requirements by affecting such things as the natural increase in population or net migration. It is conceivable that the employment and urbanisation needs of the Third Airport could be fully met from one or more of the following sources:

(i) the existing surrounding population, from normal movement of population and turnover of houses,

(ii) the natural growth of the existing population,

(iii) new urbanisation, such as infilling, major expansion of existing towns, or the establishment of new towns.

Therefore, it is assumed that the existence of the Third Airport will not increase the total urbanisation requirements of the country as a whole. The consequences of this basic assumption can be illustrated by considering two extreme cases. In the first extreme case, a substantial part of the local population would find themselves working at the airport or in jobs connected with it rather than for a wider range of other employers. It could be argued, and with some justification, that in this situation the urbanisation costs of the airport, defined as the difference between urbanisation requirements in the area with and without the airport were zero. (This is, of course, an over simplification, but the general principle remains valid.)

78. In the other extreme case the Third Airport would be situated many miles from any existing or future population centre and the whole of its employment needs would have to be met by new development. In this case, the difference between the no-airport situation and the airport situation itself is very substantial, amounting to the total costs of the development. To be offset against this, would be the savings elsewhere in the south-east and in the rest of the country in the housing of an equivalent size of population. In this second case, the Third Airport makes a very powerful contribution to the country's housing needs, and credit must be allowed for this, whereas in the first case the airport makes no such contribution and therefore claims no such credit.

79. In at least two of the site areas very considerable development is expected over the next 30 years. Much of the population so housed would be expected to meet airport needs. Where such "overlap" between the airport urbanisation and development which would have taken place in any case is extensive the costs which are properly attributed to the airport are hard to identify. The no-airport and the airport situation would need to be compared across the relevant period of years but the planning work which this would involve is out of proportion to the end result. Furthermore, reasonably precise predictions of the no-airport situation would be needed up to the end of the century—a date far beyond the limits of accurate prediction. Some short cut, but robust, alternative is necessary.

80. A sensible strategy is to devise a no-airport plan of urbanisation based, so far as possible, on existing development plans. This will be known as Plan 1. This plan will not be costed.

81. The next step will be to devise a plan to cope with the urbanisation requirements of a "primary employment" of 45,000 at the airport (i.e. those

Printed image digitised by the University of Southampton Library Digitisation Unit

directly engaged on the airport). It is assumed that this will be the level of employment when two runways are at full capacity. The existing development plans may cater for a portion of the consequences of this airport employment but the bulk of the new population will require new urbanisation. The plan for the new urbanisation will be called Plan 2. It will include the re-location of any development envisaged in Plan 1 which will be inhibited or displaced by the airport itself or by its noise envelope. This plan will be costed.

82. The next step is to devise a plan to cope with the urbanisation requirements of a primary employment of 65,000 at the airport. It is assumed that this will be the level of employment when four runways are at full capacity. This will be called Plan 3. Plan 3 will include the consequences of the 20,000 growth of airport primary employment. It will also include the natural increase in all the elements of population and employment assumed in Plans 1 and 2 to the extent that this increase has not already served to meet the requirements of the airport. This plan will be costed.

83. This strategy has the advantage of taking into account existing development plans as far as they are reasonably precise. It assumes thereafter that it is the airport which becomes the predominant element in local development. This enables the costs attributable to the airport to be isolated without too much difficulty. There is ample scope for modifications and improvements.

84. The total costs of the housing requirements of the airport will not be the same for all sites. In so far as additional housing and other services are required, their costs must be offset by the equivalent savings elsewhere, these being assessed on a standard basis for all sites. It is proposed that this standard should be the cost of urbanisation at a major new development in the south-east, this being the nearest one can get to the marginal housing development. The advantages and disadvantages of different sites from the urbanisation point of view will therefore depend solely on the relative costs of urbanisation and not on the extent to which employment and housing needs can be met from existing sources.

85. If urbanisation costs at some Third Airport site are above the standard, the excess would normally be debited against the site in question, unless there were some particular advantage justifying the relatively high cost. Where, on the other hand, development costs are below the standard, it does not follow that sites where this is true would get the corresponding credit, because the costs might be abnormally low through the omission of certain hidden elements. If, for example, the urbanisation consists largely of in-filling, which is normally low-cost, the town centre or centres involved might not be able to bear the increased population without serious congestion. Similarly, development costs might be low if account were not taken of loss of amenity, e.g. development of the existing Green Belt. In general the presence of planning restrictions on industrial or residential development will be assumed to indicate a loss of amenity or other benefits which would completely offset below-average development costs. A credit will only therefore be given to areas where there are no such restrictions but care must be taken to avoid any double-counting concerned with loss of amenity.

Environmental Damage—Some General Considerations

86. The urbanisation described earlier in this chapter will have a more powerful effect on the lives of a large population; but many of these effects will be beneficial. People in existing communities affected by the airport will also experience substantial benefits particularly in a much wider range of job opportunities and higher incomes. Some deleterious effect on the environment will, however, occur.

87. The principle underlying the methodology proposed is to assess what sum of money would be sufficient to leave the sufferer in no worse a situation than he was before. The term sufferer must include not merely those now affected, but members of future generations who would suffer similar loss.

Printed image digitised by the University of Southampton Library Digitisation Unit

88. Residents are the group most directly affected. But loss extends to visitors also, who now come to the area to enjoy outdoor and other activities. Here again, both present and future generations must be borne in mind.

89. The losses are of two principal kinds. The financial losses will tend to fall predominantly on the owners of land and property which is relatively immobile. For example, a family renting a house in a noisy area have the possibility of moving elsewhere. The owner has no such option; he cannot rebuild the house in a quiet neighbourhood but may suffer an unavoidable capital loss if he sells, or a loss of amenity if he continues in residence. The second major element of cost is that of disturbance. The tenant, in the above instance, has to move house; outdoor activities sensitive to noise have to move to quieter neighbourhoods; children whose schools become unusable have to travel longer distances to schools outside the noise contours; in all cases, quite apart from the capital loss, there will be the cost and inconvenience of accommodating to the new situation.

90. The same general approach to activities on the airport site itself will also be applied to those in the wider noise-affected area. The data required for analysis is very similar in each case and as it is impossible at this stage to draw the boundaries of the airport site precisely, there is no alternative to a research method which retains flexiblity in this respect.

Strategy for Analysing Environmental Damage

91. Damage will be of two main kinds. Within the boundary of the airport, most existing features will be erased for the constructional work. Outside the airport, there will be the adverse effects of aircraft and traffic noise, change of setting or "atmosphere", severance and disruption, and pollution. There are four main stages in this analysis:

(*a*) *Enumeration of interests likely to be affected*

The main interests likely to be affected may be grouped as follows: (i) agriculture and forestry, (ii) mineral resources, (iii) local drainage streams, etc., (iv) life in and around buildings, especially dwellings, schools, hospitals, shops, offices, clubs and institutes and industrial and commercial premises, (v) local communications, (vi) outdoor activities, (vii) buildings and features of historic or architectural interest, (viii) areas of natural beauty, and (ix) flora and fauna. Considerable information has already been and will continue to be made available at the local hearings. As both the precise position of the airport site and the position of the noise contours has yet to be determined, this information has to be assembled in map reference form, i.e. either in terms of kilometre grid squares or exact points on the ground. In order to achieve comparability between the four sites, information has to be assembled in a standard and comprehensive fashion.

Printed image digitised by the University of Southampton Library Digitisation Unit

(*b*) *Estimation of the net replacement cost of "capital" at risk*

Capital is here used in a broad sense, rather than purely financial. For domestic property, the total capital at risk would be freehold values, which it is proposed to estimate from rateable values. For schools and hospitals and other public buildings, the total capital cost of replacement would be relevant. For industry and commerce, the relevant figure would be the value of the land, buildings and other non-transferable assets. Outdoor recreations and other activities present particularly difficult problems which will be discussed later in the chapter. For agricultural land two approaches will be used. An estimate of the discounted value of future net out-put will be made, and data on the market price of land will be collected. The total aggregate capital value at risk for each site will be large. It represents the maximum loss which would occur if the existence of the Third Airport were to produce a complete write-off of all the interests affected. It therefore puts an upper limit to losses under this heading, and leaves to be determined the appropriate degree of damage in each case.

(*c*) *Estimation of the degree of damage*

At this final stage is measured the proportion of "capital" value likely to be lost by the arrival of the airport. For example, for schools and hospitals, critical noise levels will be established for determining whether the buildings concerned will be uninhabitable, or whether they can be effectively insulated. Appropriate standard costs will then be applied and account will be taken of any betterment. For commercial activities, in which group retail shops are likely to predominate, it is proposed to apply the same factors as those derived for residential property, on the ground that these will be an acceptable indicator of the likely future prosperity of the district. For industrial firms, the options are broadly similar, ranging from complete removal to another site, through noise insulation costs, where these are economic, down to nothing at all, in respect of the numerous industrial activities which themselves generate more noise than is ever likely to be imposed on them by overflying aircraft.

92. Full details of the data required for this analysis is being supplied to Local Authorities and to other participating bodies, and there will subsequently be approaches to particular firms and other organisations for more detailed information.

Effect of Noise on Local Residents

93. There has been considerable public discussion of this subject. The treatment proposed for the present analysis is to estimate this loss under three headings;

(a) Fall in freehold property values.

(b) Additional disturbance costs, i.e. removal and other expenses incurred by those moving to quieter areas.

(c) Loss of "consumer surplus" enjoyed by residents, both those remaining and those moving away.

94. The market value of house property represents not only the physical characteristics of the house itself, but all the environmental advantages and disadvantages attaching to it. Market value therefore very precisely reflects the value placed on the house as a totality.

Printed image digitised by the University of Southampton Library Digitisation Unit

95. When aircraft noise is inflicted on a previously quiet locality local residents highly sensitive to noise will tend to put their houses on the market. There will be a prompt fall in market prices. The extent of this decline depends principally on two factors. First, as emerged very strikingly from the survey conducted for the Wilson Committee on the Problem of Noise a surprising proportion of people, over 30 per cent in fact, were found to be not seriously annoyed by quite high levels of aircraft noise. It therefore needs only a small decline in values to induce the more "imperturbable" looking for property in the general area or even people already resident within the area, to make offers for houses which have now become attractively priced, at least in their eyes. In addition, the more imperturbable members of the existing population will become slightly less willing than formerly to change house. The market price of their property will tend to fall more than their own subjective valuation and this widening of the gap between subjective and market values will tie them more strongly to their existing property and provide a support to the market. *A priori* therefore, only a modest fall in house prices would be expected and this is supported by practical experience.

96. The price differential between noisy and quiet property has to be large enough to induce a sufficient proportion of those seeking houses in the area to put up with the nuisance of aircraft noise. That is to say, for those choosing noisier areas, the differential in house prices is an indication of what they expect to be "paid" for living in a noisy environment. For those choosing quieter areas, the differential represents the premium which has to be paid to escape from noise.

97. Turning now to the question of the costs of moving house, it would be expected that the imposition of noise on a previously quiet area would lead to some initial movement out of the area, with consequent costs of finding a new house, and moving goods and chattels. Such costs may well amount to 10 per cent of the value of the property sold. There is no easy way of estimating the outward movement in the circumstances, as the phenomenon is a rare one.

98. There are grounds for suspecting that the percentage change in the market value of house property will tend to under-estimate the true loss suffered by householders. This is often expressed by reference to families with strong personal ties to a house, locality, or circle of friends and who, though highly sensitive to noise, would not be prepared to move house as a way of escape. It is claimed that this element of nuisance is not adequately measured by the market mechanism. In more formal terms, these families are said to have a very high subjective valuation of their property. Even after deducting a relatively heavy loss on noise grounds the subjective valuation still lies so far above the market price that the family is prepared to stay put. There are commonsense limits to how far this argument can be taken. It might well be claimed by the owner of a house worth £5,000 that he would not be prepared to accept an offer of less than £10,000. He might, however, take a different view if he received a firm cash offer of £9,500. In addition, there will be some people whose subjective valuation of their property falls below the market price. It is only the costs of removal which have prevented them from moving already. It is dangerous to generalise about the average tenure of houses, particularly in rural areas, where one might expect much greater willingness to stay put.

99. Two exercises are now being carried out to assess the effect of noise on domestic property in areas affected by Heathrow and Gatwick. Material from District Valuers is being used and also a survey of house agents and valuers in the areas concerned. These surveys will not be restricted to heavily built-up residential areas.

Printed image digitised by the University of Southampton Library Digitisation Unit

Valuation of Outdoor Activities

100. These probably present the most serious problems of evaluation. The activities may be divided into three categories. The first category assumes that the activity is transferable elsewhere. The second two categories assume that the activity cannot be transferred elsewhere.

101. First: there are outdoor activities which can be and are carried out in a wide variety of places and which, if disrupted by the Third Airport, could without difficulty and at measurable cost be transferred elsewhere. Walking, sight-seeing, driving by car, camping and seaside activities as well as sporting activities fall into this category.. The costs incurred by disruption to these activities are the replacement costs of fixed facilities, if any, and some additional travelling expense and time incurred by the participants.

102. Secondly: there are outdoor activities and pursuits which are not transferable in this way and which are specific to some particular site. Many cultural and professional activities such as natural and local history, archaeology, etc. occur quite widely, but there would be a permanent loss of particular objects of interest.

103. Thirdly: there are activities which, though not restricted to particular locations and occurring in other parts of the country, are ultimately limited in availability. This group would include things like gliding, angling, sea-fishing or watching sea-birds.

104. The general strategy for assessing the value of these non-transferable activities is to assess the benefits derived by participants, present and future, and to express this future stream of benefits as a capitalised sum in the base year of the study. Putting it rather simply, just as farmland produces a future stream of agricultural out-put, so Woburn Abbey may be deemed to produce a stream of future benefits to visitors (other than its purely residential value to the Duke of Bedford) which can be treated in much the same way. The total future stream of benefits can usefully be divided into two elements: first: the total costs imposed on those taking part and secondly: the consumers' surplus they enjoy. (The consumers' surplus is merely the technical term for the difference between what one has to pay for something and what one would be prepared to pay if pushed to the limit. It is the same distinction as that made earlier in this chapter between the subjective value of a house to its occupier, and its market value.) The costs imposed on beneficiaries are such things as admission fees, cost of necessary equipment and necessary travelling expenses.

105. The measurement of the cost element in the equation is not difficult in principle. It involves finding out the number of present participants, the likely future trend in the number of participants and the average costs they have to incur. It is in the measurement of consumers' surplus that the difficulties lie. The basic principle is to examine the *range* of costs imposed on those taking part. A fair proportion of participants may be expected to come from fairly close at hand, with modest travelling costs. A smaller proportion will have come longer distances and one or two probably from a very considerable distance, at quite considerable expense. The principle underlying the analysis is to estimate the consumers' surplus enjoyed by those incurring more modest expenditure from the much heavier expenditure incurred by other participants. If for example 10 per cent of the participants were prepared to spend £100 per annum on enjoying some activity and these represented, say, 5 per 1,000 of the population in the more distant areas, then it would be reasonable to assume that 5 members per 1,000 of the populations more favourably placed would, if necessary, be prepared to spend the same sum. The same process is then applied to those travelling intermediate distances, at lower cost. These will probably represent a higher proportion of the population lying within their distance zone, say 15 per 1,000 of total population and it would therefore be reasonable to assume that the same proportion of those living near at hand would be prepared to pay the expenses incurred by this intermediate group. The same process continues until one reaches the group with minimum total expenses.

Printed image digitised by the University of Southampton Library Digitisation Unit

106. Two assumptions are necessary for this analysis to be valid. First: travel itself is not viewed as a benefit, and this assumption is confirmed in real life by the fact that many more participants tend to come from close at hand rather than far away. Secondly: it is assumed that people have not chosen where to live with a particular view to enjoying the activity concerned. If, for example, all golfers chose to live within a quarter of a mile of the club house, then the estimate of consumers' surplus resulting from the above method would be seriously deficient, there being, apparently, no one prepared to travel any long distance. But in general the individual activities likely to appear in this category will not exert this dominating influence on where people decide to live.

107. This procedure is demanding in terms of data, requiring information on the differential expenses incurred by participants, and in particular the distances participants are prepared to travel. A number of short-cuts appears possible, and an entirely acceptable estimate might well be made merely from the total number of participants, the average expenditure other than travelling and, in respect of travelling, the proportion of participants travelling less than say 5 miles, together with the distance travelled by the most remote one or two participants. It therefore does not appear that this procedure would be seriously impracticable. Furthermore it is unlikely that most activities will fall into the "non-transferable" category to which this procedure of estimating total benefit has to be applied.

CHAPTER 9

Airport Layout and Site Preparation

Introduction

108. In comparison with other areas of the study, the costing of work at the site itself presents few conceptual problems. It is in the sheer scale of the planning and costing operation that the most daunting problems lie. There is no experience within the United Kingdom of building an airport of this size. There is no airport now operating anywhere in the world with four parallel runways. It is expected that the airport will ultimately have to handle upwards of 100m. passengers per annum, or well over 20,000 passengers per hour at peak periods. Traffic of this order presents completely new problems, for the design of terminal buildings, the dimensions of the aircraft stands, and the capacity of the internal transport system. As an example, the transfer of air passengers from car parks to planes is no simple problem, given an airport some 5 miles long.

109. These planning questions would be quite insuperable without very full co-operation between the British Airports Authority, the National Air Traffic Control Service, the Board of Trade, and the Commission's own Engineering Group.

Principal Aspects of Airport Design and Site Preparation

110. Considerable attention is being given to the optimal runway layout for each site. The design published for the local hearings provides a good starting point, and may turn out to be the most suitable final design for some sites. However, there may be some advantages in eliminating the overlap between the pairs of runways in each doublet (the two runways at each side of the central terminal axis), and producing a slightly longer and narrower airport plan. The main factors here are ease of access between the runways and the terminal buildings, the air safety implications, particularly as regards aircraft over-shooting, and the local topography, where there is a limitation on site width.

Printed image digitised by the University of Southampton Library Digitisation Unit

111. The problems of the design of terminal buildings and the internal transport system have already been mentioned. It is assumed that there will be a fixed high-capacity transport link, either by rail or by more advanced technology, but the internal arrangements by which passengers move between the road and rail terminals and the aircraft aprons require further study. At the moment, it appears reasonable to plan capacity on the assumption of 100m. passengers per annum.

112. The Third Airport will generate heavy requirements for water, gas, electricity, sewerage and drainage, telecommunications, and fuel supply. The likely needs of the airport for such services right up to full capacity operation have to be determined. Then discussions can be started with the various public and private authorities supplying these services, to discover whether there are any abnormal problems, either in absolute terms, or in excessive costs.

113. Once an acceptable airport plan has been evolved, it is possible to estimate the site preparation costs. A major element in these costs is the amount of cut and fill which will be required. A computer will be used so that a sufficient number of alternative plans may be considered. At Foulness, there will be heavy costs of reclamation, and a substantial amount of piling for the terminal buildings. It is hoped that, once these site preparation costs have been assessed, it may be unnecessary to cost in detail the terminal complex itself, as this will be broadly common to all four sites.

Hydrological Problems

114. The reclamation of land required for the Foulness site raises special problems of flood risk and alteration to the estuarial regime. These problems will be studied by the Port of London Authority, with the assistance of the Hydraulics Research Station and the Liverpool Tidal Institute. Desk studies and mathematical and physical models will be used to establish whether the reclamation for the airport is likely to increase the risks of flooding in the Thames and other rivers and whether it is likely to alter the regime of the Thames estuary significantly, e.g. creating the need for additional dredging of shipping channels. It should then be possible to take account of any special costs which could be involved.

Chapter 10

Implications for Defence, Ministry of Technology and Private Airfields

Introduction

115. This chapter is concerned with the airspace repercussions of the Third Airport on other flying activities. Most of the work will be handled by the government department or other organisation concerned, and the main function of the Research Team will be in problem definition and the incorporation of the results in the final cost benefit analysis. Many of the same elements will apply to all cases; for purposes of exposition, examples will be drawn mainly from defence.

Problem Definition and Cost Benefit Treatment

116. The implications of different Third Airport sites on other flying activities will be to displace them either in total or in part. For those only partially affected, some additional costs of inconvenience may be involved. But the main costs will be those of re-location. The principal points to be borne in mind in the cost assessment of such re-location are as follows:

Printed image digitised by the University of Southampton Library Digitisation Unit

(*a*) The new defence disposition should represent a true minimisation of total costs. For example, the need for new airfield construction should be minimised, since this is more costly than the transfer of activities to other Defence airfields. Obviously a wide range of alternative dispositions of air force activities will have to be considered in this optimisation process.

(*b*) A particular problem arises with activities planned to be phased out shortly after the Third Airport comes into operation. If an airfield were to be abandoned 1 or 2 years after the inception of flights at the Third Airport, then the first solution might be to find a new home for this operation for a couple of years. In cost-effectiveness terms such a solution could hardly be judged desirable; the effective military capacity of some alternative capability might be able to be increased to bridge the 2 year gap.

(*c*) It is a costing of the new facility, and not a re-pricing of the original installation which is required. There may well have been technical developments leading to considerable cost savings since the original installation was set up. In other circumstances, some allowance should be made for improvements in technical standards.

(*d*) The equipment and building on the existing site may be obsolescent, possibly due for replacement within a few years. The new installation will therefore inevitably contain a substantial amount of betterment, which must be fully allowed for.

(*e*) Full account must be taken of assets remaining on the vacated site, such as land that can be returned to agriculture or has industrial use, and the use of married quarters for ordinary civilian accommodation. The use of other buildings for agricultural purposes will also be possible.

(*f*) The exact timing of new expenditures has to be determined, to enable suitable discounting. Normally these expenditures would be required well before the Third Airport comes into operation, namely at the date at which activities on the displaced site would have to cease.

117. The impact of the Third Airport on airports used for scheduled and charter passenger services will have been taken into account in the air traffic control costings (see Chapter 6). This still leaves to be considered the effect on other civil airfields, such as those belonging to aircraft manufacturers and those where private flying takes place. The first step is to discover exactly what the airspace repercussions of the Third Airport would be, and when these would occur. The second step is to determine the best arrangements which would minimise disturbance to the firm or people concerned. There are no serious conceptual problems here, but it may well be difficult to determine exactly what the optimal alternative arrangements might be. These will be discussed with those concerned including specific firms, the Society of British Aerospace Companies, and the Ministry of Technology.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHAPTER 11

Air Safety

Introduction

118. The analysis of air safety can conveniently be divided into two parts. First, there is the problem of accident rate, expressed per million aircraft movements. Secondly, there is the question of accident severity, which can be defined as the loss of life and damage to property resulting from the accidents themselves. The problem of bird-strike is an element in this problem. In addition, bird-strike leads to other costs not properly defined as accidents, but which it is convenient to handle under this same heading.

Accident Rate per Million Aircraft Movements

119. Ideally, past accident records, should be analysed in order to identify the factors contributing to air accidents. The characteristics of the four airport sites could then be assessed in terms of the factors found to be critical in determining the accident rate. Aircraft accidents, however, occur too rarely to make this approach possible as a means of distinguishing the safety characteristics of the three inland sites *inter se*.

120. Although, it is impossible to conduct a causal analysis of past accident data, it is still possible to carry out the simpler operation of comparing safety at inland and coastal airports generally. It is important that the airports of which the past accident rates in terms of total aircraft movements are examined should be as similar as possible to the inland and coastal Third Airport sites under consideration. An airport at any of the sites would be equipped with the latest aids and would have unimpeded landing and take-off paths. The analysis will therefore be restricted to the 50 largest airports in the world. In addition, airports will be classed as coastal only if the last 5 miles of the landing approach path and/or the take-off path are over open sea or an inland lake. This will eliminate cases where accidents have in fact occurred over water but in situations which have very little in common with conditions at Foulness.

121. The number of coastal sites included in the sample of 50 may therefore be small, and few accidents may have occurred at them. If so, it will be difficult to prove conclusively whether or not there is any difference between the expected accident rates at inland and coastal airports. However, it is more important to make a comparison which is valid for present purposes than to inflate the sample with coastal airports which are unrepresentative of Foulness.

122. The conclusion of the analysis may be that there is no detectable difference in accident rates between inland and coastal sites. There would be no reason to challenge that conclusion on the grounds that the characteristics of a coastal site would prevent ATC equipment and navigational aids being provided to the same standards as at an inland site. However, the costs incurred might well be higher.

Accident Severity

123. The statistics of accident severity (the expected number of fatalities and accident damage per accident occurring) are much more complete than those on rates of accident. On first examination, these records suggest a significantly greater level of severity for accidents occurring on water. These records are now being examined in order to determine their relevance to a comparison of Foulness with the three inland Third Airport sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

124. The severity of an accident over water is very dependent on the state of air-sea rescue. Poor air-sea rescue facilities may explain the high severity figures of past accidents over water. By improving these rescue facilities it might be possible to equate land and water accident severity, or even to reverse the relative safety levels. However, the cost of such air-sea rescue facilities might be extremely high, implying a value, per life saved, and per £ of material damage, out of line with present practice in other fields.

125. Safety precautions on the aircraft themselves are also relevant, and raising the standard of airborne safety equipment might be an alternative way of reducing accident severity over water. The same arguments apply to fire services. It appears likely that duplication of such services at a coastal site would be required, unless amphibious equipment is a serious alternative.

The risks for People on the Ground

126. Full account will be taken of the advantages of a coastal site in mitigating the danger from aircraft accidents to people on the ground.

Bird-Strike

127. On a world-wide basis, the rate of serious accidents caused by bird-strike has been about 100 accidents, or an expected rate of 0.003 per million aircraft movements. There are also the recurring minor incidents of damage to aircraft, in particular damage to jet engines through the ingestion of birds. It will be necessary to establish whether the risk of bird-strike at Foulness is greater than at the inland sites and, if so, to assess the total expected costs per accident and of minor incidents. This would be our first estimate of the cost differential between the different sites. As for other accidents, the problem of accident prevention will also have to be considered, i.e. whether a "bird-clean" airport could be achieved. The Infestation Control Laboratory is studying this problem, but may not be able to report within our time-scale. If not, the best estimates in the present state of knowledge will have to be made.

Printed image digitised by the University of Southampton Library Digitisation Unit

Part 2
Results of Research Team's Assessment

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Foreword by the Chairman

The Hon. Mr. Justice Roskill

In a foreword to the *Proposed Research Methodology* (published as part 1 of volume VII of the Commission's *Papers and Proceedings*) I pointed out that the Commission would embark upon the public hearing at Stage V with no preconceived ideas about the results of the detailed investigations carried out by the Research Team during Stage III or about the results of studies made by others.

2. Now that the Commission is publishing the results of the Stage III investigations, it wishes to emphasise once more that it remains uncommitted to any particular point of view and that it attaches great importance to having these results thoroughly tested at Stage V so that its final judgment about the choice of site and about the timing of the need can be as soundly based as possible.

3. The work of which the results are contained in this volume has been undertaken under the general guidance and supervision of the Commission but, with one exception, the chapters do not claim to present the Commission's views about the assumptions, the methods or the conclusions. The exception is chapter 26 - Regional Planning, where the Commission has felt it necessary to make known in advance the tentative conclusions which it has reached. This need arises from the importance generally attached to this subject and from the fact that regional planning is itself "in commission" at the same time.

4. The Research Team's work has been helped by the valuable evidence submitted at the Stage II local hearings and during the course of Stage III. The chapters in this volume take up, either explicitly or implicitly, a large number of the points which were made in this evidence. However, no attempt has been made to deal exhaustively with every single issue raised. There will therefore be some points which are not reflected in the Stage III analysis for example the special social survey which the Commission had carried out in each of the site areas during the summer. This does not imply that the Commission has rejected the validity of such points. As indicated in the terms of reference, the Commission's final judgment after the completion of Stage V, will be based on the totality of the evidence, including that produced at the local hearings.

5. The Commission's final decision must cover two points: the name of the site and the date when it is needed. Both depend on common material but it has been convenient to analyse each separately. The bulk of this volume is concerned with the analysis for the choice of site. A separate chapter (chapter 28) is devoted to the analysis of the timing. It will be noticed that in the cost/benefit analysis undertaken for the site comparison, a specific date has necessarily been assumed as the date when

Printed image digitised by the University of Southampton Library Digitisation Unit

significant volumes of traffic begin to flow to the new airport whereas in the timing chapter no date is indicated. For the site comparison it is necessary for methodological reasons to assume a starting date for the airport in order that full assessments and predictions of consequent effects can be made. The date of 1982 has been derived from the traffic forecasts in chapter 4, the airport capacity estimates in chapter 3 and the traffic distribution predictions in chapter 13. The chosen date, like much else in this study, is an assumption which itself depends on a number of other assumptions which may or may not prove well founded. It is this Commission's earnest wish that this and all other relevant assumptions shall be rigorously tested at Stage V. In chapter 28, on the other hand, a method for analysing the various factors affecting the timing decision - including the uncertainty factor - is set out and the conclusion shows a range of possible answers.

6. As announced in August last year the Stage V public hearings will begin on 6th April, 1970. This date is consistent with the programme which the Commission set at the outset to reflect the Government's expectation that the enquiry should take about two years. Information about the procedure for Stage V and the arrangements for seeking leave to appear or to be represented may be obtained on request from the Secretary

EUSTACE ROSKILL

Templar House,
LONDON, W.C.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

Objectives

1.1 As stated in the Proposed Research Methodology, the Stage III research programme has had two main objectives:

(a) to make as comprehensive as possible a comparison of the costs and benefits relevant to each of the four sites on the short list,

(b) to assess when the third London airport should come into service.

1.2 The cost/benefit analysis has been based on plans devised for the airport, outline proposals for new surface transport links, and a possible scheme for the associated urban development. The plans for the airport and the outline proposals for new surface transport links should provide the basis for the subsequent construction and operation at the chosen site, subject to any comments or alternative proposals put forward at Stage V. The urbanisation scheme prepared by the Commission's consultants does not have the same status. It will ultimately be the responsibility of the planning authorities concerned at the chosen site to decide what form the associated urban development will take.

1.3 The Commission's terms of reference require it to carry out a cost/benefit analysis. This means that the various factors affecting the choice of site must be measured in money terms. Few problems arise with the costs of material factors for which there is a firm market price, but, for many things, no market mechanism exists to provide an easy means of valuation. Much evidence to the Commission has argued that a cash value should not be put on those non-material things for which there is no market valuation, and that it is impossible to do so for priceless parts of Britain's historical or natural heritage. Nevertheless, many people assign very high values to cultural or natural phenomena. The cost/benefit analysis has been based on observations and deductions of these values.

1.4 It has been suggested that the right procedure would be to evaluate in money terms those costs and benefits which presented no problems of valuation, and derive net money costs for each site. The four sites would then be ranked, in terms of the unquantified factors, and a subjective assessment made whether the second class of factors was sufficiently important to disturb the ranking of sites in money terms. This method has two major defects. It is impossible to handle satisfactorily more than one or two unquantified factors. For example, if there is a £50 million difference between Site A and Site B in respect of the costed factors and that £50 million differential has to be compared with the advantages and

Printed image digitised by the University of Southampton Library Digitisation Unit

disadvantages of several non-costed factors, it will be impossible to demonstrate the validity of the result to those directly affected or to the general public. The second and more fundamental defect of this method is that it merely substitutes implicit for explicit valuation, and postpones the time when some attempt, however rudimentary, has to be made at valuing the residual non-costed elements in the analysis. The cost/benefit analysis has been conducted on the assumption that it is preferable to try to extend valuation as far as is possible and convincing and obtain factual data which can provide the basis for an explicit and sensible final judgment.

Cost/benefit analysis compared with cost minimisation

1.5 If the comparison between sites could be conducted solely in terms of a comparison of aggregate costs (i.e. assuming equal benefits for each site), few analytical problems would arise. But it would be an essential requirement of a cost-minimisation approach that the same volume of passenger and freight traffic should flow through the airport system, irrespective of which site is being considered. However, if traffic levels at the airport were to differ according to the choice of site, the site which was likely to generate most traffic would accumulate the highest costs of surface access and air movement. It would be paradoxical that the most accessible site should have to carry such a debit. It follows that the more accessible sites have to be credited with the benefits of the additional traffic generated as well as debited with the costs.

1.6 A second requirement of a cost-minimisation approach is that all the local effects of each site are made good by the expenditure of money. Some of the local effects of the airport can be fully made good by incurring costs (e.g. the displacement of Ministry of Defence airfields to other sites) but there are many effects which cannot be made good in this way or which would be so expensive to make good that it would be necessary to accept their permanent loss, albeit costed. Losses imposed by the curtailment of valued activities may be defined as "dis-benefits", while the definition of "costs" can conveniently be restricted to the incurring of expenditure on goods and services available on the open market. Benefits and dis-benefits as well as costs must be estimated for each site.

Resource costs

1.7 Goods and services are valued at their "resource costs". These are what economists often term "factor costs", and most clearly represent the real cost to the community of the goods and services consumed, in terms of the resources embodied in their production. Indirect taxes and subsidies, which are of the nature of transfer payments to or from the public sector, are excluded. It is normal in cost/benefit work to adjust market prices only for major excise or other duties and this procedure has been adopted in the present analysis. In addition, the present analysis does not attempt to eliminate transfer payments taking the form of what economists call "producers' surplus" i.e. any transitory abnormal profit element in the costs of goods and services used. To ignore the presence of producers' surplus is tantamount to assuming no more than reasonably competitive conditions in the supplying industries, which is probably not far from the truth.

Printed image digitised by the University of Southampton Library Digitisation Unit

1.8 Under the heading of resource costs must be included working time spent travelling to and from an airport, and in the air itself because the loss of work which would otherwise be done constitutes a real cost in terms of resources. The value of working time is the value placed by an employer on his employee's services. This is indicated by the gross income of the employee concerned and by the overhead costs entailed by his employment, such as accommodation, equipment used in course of duties, and other overhead items which remain unused in his absence. This subject is discussed in detail in chapter 11.

Dis-benefits

1.9 Dis-benefits have already been defined as the losses imposed by the curtailment of valued activities. Some sites will necessitate longer surface journeys to and from the airport. Where this makes greater in-roads into air passengers' leisure time, the dis-benefit of this additional leisure time lost has to be valued. Some sites will displace more local residents than others. The dis-benefits from such enforced removal of people from their homes and local communities has to be valued. Some sites will require the demolition of historic buildings. The dis-benefits incurred by these losses have to be valued.

1.10 In the case of the value of leisure time, it might be maintained that this was a hypothetical loss, which would become increasingly unimportant as leisure time increased over the years. In the case of the displacement of local residents from their homes, it has been submitted that an extremely high dis-benefit should be recorded because it is wrong to uproot people unnecessarily from their existing communities. A similar point has been made in respect of historic buildings. In the cost/benefit analysis such subjective value judgments have been avoided. Instead, the analysis has been guided by the principle of accepting the scale of values apparently held by the people concerned, as revealed by their choices and behaviour. For *potential* possessions or activities, things are valued at what people would be prepared to pay to acquire them. For *existing* possessions and activities, things are valued at the minimum which people would be prepared to accept as just compensation for their loss. A clear distinction is therefore drawn between the value people attach to something, in terms of the maximum which they would be prepared to pay to acquire it, i.e. its cost. This difference is normally termed "consumer surplus". Clearly, for potential acquisitions the subjective value attached by the individual cannot fall below the cost price or the thing concerned would not be acquired. Consumer surplus approaches zero only for the marginal user, i.e. the one who cannot easily decide whether the purchase is worth while or not. Similarly for existing possessions, these will only be retained by the owner so long as the subjective value which he places on them exceeds their disposal price. The "economic man" in every individual tries to maximise the total consumer surplus derived from the spending of his income or the disposition of his assets.

1.11 A distinction should be drawn between two kinds of market value. First, there are the goods and services which are assumed to be freely available, and for which the resource cost used for valuation amounts to a cost of production or supply. Secondly, there is a whole category of goods and services of which valuation by society is not directly related to the cost

Printed image digitised by the University of Southampton Library Digitisation Unit

of supply. The best example is probably domestic house property, the market value of which reflects society's recognition of advantages of location and environment, over and above the land and the original construction costs. A more extreme instance is the value attached to works of art, where the cost of labour and materials is quite trivial compared with the present price they command. For objects of limited supply, market values contain a strong element of society's generalised subjective valuation. This element must not be confused with an individual's "consumer surplus".

1.12 Air travellers clearly desire to minimise the time spent getting from their origin to their ultimate destination; if this were not so, they would be unlikely to be air travellers at all. Time spent travelling to and from the airport and time spent in the air itself is clearly a dis-benefit, in terms of loss of alternative leisure activities. Except for the unemployed, leisure time has a value fully commensutable with the value of goods and services, and it is in fact, a prerequisite for the enjoyment of many kinds of goods and services. The lengthening of annual holidays bears witness to a general willingness to prefer additional leisure to the additional goods which would be acquired with the money earned during longer working hours. As there is no market for leisure time which would serve as a valuation mechanism, the value of leisure time has to be estimated by a process of inference, by observing what people do when placed with an opportunity of "selling", or, to use the technical term, "trading-off" time for money. Willingness to choose time-saving rather than minimisation of cash expenditure provides the basis for the evaluation. Different people place differing values on leisure time; this method of valuation takes account in the aggregate of such individual preferences.

1.13 The estimation of consumers' surplus is important in the evaluation of the impact of the airport on the lives and on the environment of local residents. There is a clear distinction between what things cost, or what they could be sold for, and their subjective value to the person concerned. An inhabitant of a house on the site of the airport will receive financial compensation for the freehold of his property in accordance with statutory practice. This sum may be sufficient for him to buy a comparable property elsewhere. But over the years, he and his family may have invested much time and effort in adapting the house to their particular requirements. They may also have built up a circle of friends and local activities, which they might find it difficult or impossible to build up again in some other locality. These factors are not necessarily reflected in either market prices or compensation values; to the extent that they are not, they may be defined as consumer surplus. It is possible to imagine someone saying that, although his house might fetch £5,000 in the open market, he would, if this meant having to leave the area, be quite unwilling to accept an offer of less than, say, £10,000. The £5,000 might replace the bricks and mortar in a comparable environment; but he might well feel adequately compensated for the loss of the various imponderables referred to above by a further £5,000. In this sense, it has to be admitted that every man has his price; any one doubting this should try to imagine his own reaction if he received an unsolicited offer for his own house, at treble its market price. By definition, the consumer surplus people enjoy in occupying their existing properties must normally be positive. If their subjective valuation had fallen below the market price, by a sufficient

Printed image digitised by the University of Southampton Library Digitisation Unit

amount to cover removal costs, then they might reasonably be expected to have already moved house. To sum up, for properties on the airport site themselves, the valuation recorded is market price, which represents society's valuation of the "objective" elements, plus consumer surplus, which represents the additional subjective loss to the occupier. The same degree of attachment to his house is assumed for the tenant, who, because of the imperfections of the market for rented property, is often firmly tied to his present house.

1.14 The procedure of deducing consumer surplus by observation of peoples' actions is rendered impossible in the case of house property by the fact that the existence of consumer surplus cannot be measured in the absence of an independent and external change in price. The adopted solution to this particular problem is set out in chapter 20.

1.15 A slightly different procedure is adopted for recreational and other activities which would be affected by the airport. There is no conceptual problem over things which can be replaced at other sites; for them the appropriate valuation is the resources involved in the replacement, less any element of betterment embodied in the new facilities, plus, where significant, any additional travelling costs imposed on participants by the new situation. But there may be cases where replacement is not possible, because the activity requires particular physical conditions not generally available. Examples are yachting, both coastal and inland, gliding, fishing, or fox hunting. In these cases what is lost is the subjective value placed by participants on their enjoyment of a particular activity. This is estimated from the sum (at market prices) of what participants have to pay for the activity, plus the addition of any consumer surplus they enjoy. This again poses problems of estimation, the adopted solution to which is set out in chapter 24. These recreational and other activities differ in one important respect from the destruction of house property analysed above. If the activity has to be terminated, there will generally be a cash saving to the participants of their travelling and other expenditures, which will now be available for other expenditure on other things. These are assumed to be so diverse as not to justify further consideration. The total valuation is therefore the subjective value attached to the activity by participants, estimated from their actual expenditures at market prices, plus the consumer surplus enjoyed, less the resource costs saved.

1.16 It has been suggested to the Commission in evidence that the impact of the airport on the recreational facilities in a particular area is felt not only by the existing participants but also by possible future participants and even by those who will never participate. There may be comparatively few visitors to the bird life at Foulness or even to Anstey church, but there are many people who would feel a dis-benefit if either were destroyed. The problem of non-participants' benefits and dis-benefits is explored in chapter 24.

Benefits

1.17 The strategy proposed by many who have contributed evidence to the Commission, is that valuation should be essentially based on the Commission's own judgment. In the case of additional air journeys, it

Printed image digitised by the University of Southampton Library Digitisation Unit

could be argued that these were of no benefit to anyone but the travellers concerned, and that if more journeys were made from an airport at one site rather than at another, the benefits to those concerned might be ignored. Logically, the costs of those additional journeys would also have to be ignored and, in effect, a judgment on these lines would imply holding total traffic levels constant for all four sites.

1.18 As benefits derive from people's subjective valuations of objects and activities, there can be no market indicators of price or cost to which to refer. Such values can be derived only by an inferential procedure. People's values have been deduced from the choices they can be expected to make. This procedure can be illustrated by the example of the differences in the traffic expected at the different airport sites. As is more fully set out in chapter 13, these differences are due in part to differences of accessibility, (i.e. to the cost and time spent getting to the airport). It is, therefore, relatively simple to estimate the value of the additional journeys. If, for example, the third London airport at site A attracted one thousand more passengers from a particular zone than if it were sited at B, and the difference in total travel cost and value of time was £5 per passenger, then the maximum consumer surplus received by any one of these passengers cannot exceed £5, or he would have travelled from the less accessible site. At the other extreme, the minimum value of consumer surplus is by definition zero. It therefore follows that all the thousand passengers must receive values of consumer surplus of between £5 and zero. On the reasonable assumption of an even distribution within this range, the average value is £2 10s., and the total for all the passengers concerned is £2,500. For generated air traffic, the general principle of valuation has been to credit sites with the travellers' subjective value of the additional journeys. This is measured by the consumer surplus plus cash expenditures at market prices on surface access to the airport, less the additional surface access resource costs involved. Since resource costs are defined as market prices less taxes and other transfers it follows that the net credit given to the airport with better accessibility must be equal to the consumer surplus plus any taxes or other transfers on the goods and services involved in the additional journeys.

1.19 A second example of a benefit without market price occurs in journeys to and from the airport. In choosing his mode of transport to and from the airport, the traveller would be influenced by the relative cash expenditures involved, and the comparative journey time by different modes of transport. An individual placing a high value on his leisure time would tend to choose a quicker, but more expensive mode of transport than someone who is more concerned about the cash expenditure involved and less about his time. But, observation of travellers' choice of mode of transport shows that they are not all minimising the sum of cash costs and loss of leisure time. At least some of them are attaching considerable value to the convenience (including comfort) of using their own car; i.e. far more people use their own cars than would be expected purely on the basis of cash costs and leisure time. To ignore this convenience factor would be to allow a relatively distant site, to which a high proportion of air travellers would travel by a rail link, to have lower total resource costs and time costs than a more accessible site to which a higher proportion of air travellers went by car. On questioning, a proportion of the rail travellers to the more distant site while admitting the monetary and time advantages,

Printed image digitised by the University of Southampton Library Digitisation Unit

would be expected to complain about the inconvenience of having to use public transport. This convenience factor, which is substantiated by many traffic studies, is therefore something which has to be credited, for a proportion of air travellers, to the less distant site. The measure of this benefit is found deductively by observing what the travelling public is prepared to pay, in time and money, for the convenience, at least in their own eyes, if not in those of other people, of using their own car.

The measurement of costs, dis-benefits and benefits

1.20 The *costs of the goods and services* included in the analysis have been measured at resource cost. The total costs incurred at each site have been estimated, and not just the differences between sites. The total *dis-benefits* produced by the prospective airport at each site have been measured by reference to the subjective values of the people concerned (i.e. the compensation which just makes good the losses incurred. The *benefits* have been valued in a similar manner (i.e. the maximum sum which the people concerned would be prepared to offer). Estimates have been prepared for the differences arising at different sites, not for the total benefits.

The incidence of costs and benefits

1.21 Paragraph 6 of the Proposed Research Methodology referred to the need to define who is receiving benefit and who is paying cost (or suffering dis-benefit). It listed the principal groups concerned. The first three groups listed (i.e. air travellers, the airlines and the British Airports Authority) are all directly concerned with air transport itself. It is possible to determine the allocation of costs and benefits between these three groups, but this is an artificial procedure, which ignores the high probability of costs being passed on from one group to the next. For example, if one airport site were more expensive to construct than another, this cost would initially fall on the British Airports Authority. But in accordance with its statutory duty, the Authority would attempt to recover these costs from airline operators, and, given the expected volume of air traffic, this might not be difficult. But the airline operators, having borne slightly heavier aircraft landing fees, would then seek to recover them from the air travelling public. Bearing in mind the very modest share that these fees bear to the price of the majority of airline tickets, the increase could easily be passed on. In so far as the different sites impose different costs either on the Authority or on the airlines, the air traveller is likely ultimately to have to pay.

1.22 It is usual in cost/benefit work to seek to maximise net benefits, or minimise net costs. No account is taken of the relative financial means of those on whom costs or benefits fall. This treatment is appropriate where the bulk of the benefits are paid for in cash by the beneficiaries, and where machinery exists for the compensation of any substantial losers. It is also appropriate where any benefits and costs to which the above does not apply are spread reasonably thinly over a large number of people. The incidence of costs and benefits may therefore be ignored for projects which do not materially affect the distribution of income. In the case of the third London airport, however, neither of these requirements appears to be met. Choice of a site more convenient to air travellers will confer

Printed image digitised by the University of Southampton Library Digitisation Unit

benefits on this group (and indeed on society in general), for which they will not have to pay, for as long as the airport functions. Conversely, in the areas affected by noise, there will be many suffering dis-benefits without full compensation in the present state of the law. Furthermore, these dis-benefits could well amount to a sizeable fraction of the total capital assets of the persons concerned, where these are defined to include consumer surplus. The question therefore arises whether some "weighting" of costs should be considered. The figures produced in the cost/benefit analysis have not been "weighted" before being aggregated to show the total net cost for each site.

Valuation of costs and benefits through time

1.23 There are two points to add to what was set out in paragraphs 7-10 of the Proposed Research Methodology. First, the Government now applies a rate of 10 per cent in assessing investment projects in the public sector. This rate has therefore been applied in the cost/benefit analysis. Secondly, the time-span of 30 years assumed for the airport has been determined by expectations of technological change, but the relevant time-span for other elements in the analysis will not necessarily be 30 years. For agriculture, for example, the Commission's consultant has recommended the use of a 50-year time period. With the increase in agricultural productivity, and the distinct possibility, by the end of the century, of methods of food production less dependent on extensive land husbandry, it would be unrealistic to assume that the damage caused to agricultural output is continued in perpetuity. More difficult problems arise in determining the time-span of damage to recreational activities and rural environment. During the last 30 years, there have been far-reaching changes in public leisure pursuits. Before the war, for example, the present holiday efflux to the continent of Europe was virtually unknown. Wider car ownership has meant that enjoyment of the countryside is becoming much more restricted to those parts accessible by car. It would be wrong to assume that the irreversible changes which the airport will produce in the local environment will necessarily lead to losses in perpetuity. The appropriate time-span for these activities is discussed in detail in chapter 19.

Price assumptions

1.24 The assumptions are those stated in paragraph 11 of the Proposed Research Methodology i.e. the analysis has been conducted in terms of constant 1968 prices, with appropriate adjustment to take account of future price trends.

Treatment of foreign air travellers in cost/benefit analysis

1.25 The treatment has been as set out in paragraph 12 of the Proposed Research Methodology i.e. foreign air travellers have been included in the analysis in exactly the same way as UK residents.

Treatment of foreign exchange earnings

1.26 The treatment has been as set out in paragraph 13 of the Proposed Research Methodology i.e. no premium has been applied to foreign exchange, as opposed to expenditure on UK resources.

Printed image digitised by the University of Southampton Library Digitisation Unit

1.27 Some of the sites for the third London airport will generate more passenger and freight traffic than others by virtue of greater accessibility to centres of population. The method for assessing the benefits accruing to a site from this generated traffic is explained in paragraph 1.18. The treatment of the associated additional costs needs also to be explained.

1.28 The additional costs may be divided into three categories:

(a) costs associated with the additional air traffic and which are paid for directly or indirectly by the air passengers or the shippers of freight: these include the costs of the additional aircraft movements, the extra costs of running the airport and the extra costs associated with the earlier construction of the airport,

(b) costs indirectly associated with the additional air traffic and which are not paid for by the air passengers or shippers of freight - the technical term for such costs is "externalities": these include the effects of the additional noise on the residents, schools, hospitals etc. in the vicinity of the airport and the costs of earlier redeployments of military tasks,

(c) costs directly associated with the surface access part of the additional air journeys.

1.29 As the costs in category (a) are largely paid for by the air passengers and shippers of air freight, their readiness to pay them can be taken as evidence of the benefits which they receive. It therefore follows that all costs in this category can be assumed to be offset by benefits received and can be "netted" out of the evaluation process. This is equivalent to assuming for the calculation of these costs at each site equal levels of traffic.

1.30 As the costs in category (b) are not charged to the users of air transport, there are no grounds for assuming any offset in the form of benefits to air passengers or shippers of air freight. For the calculation of these costs therefore the forecast levels of traffic at each site have been assumed, including any generated traffic.

1.31 The costs in category (c) are taken into account in the method of evaluation of net benefits described in paragraph 1.18.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Introduction

2.1 In order to analyse the timing of the need, likely trends in demand for air travel have to be examined and compared with available capacity at airports in, and, to some extent, outisde the London area. Demand forecasts are discussed in chapter 3. This chapter is concerned with airport policy and the allocation of future traffic to airports.

2.2 Available capacity at other airports is also relevant to the comparison of sites. Cublington and Thurleigh are likely to cater for demand in the Midlands to a much greater extent than Foulness. Whether or not this is an argument in favour of or against Foulness, depends to some extent on airport development in the Midlands. Moreover, the continued operation of certain airports in the region such as Luton would be jeopardised by the inland sites.

2.3 The Commission is neither invited to develop a national airports plan nor will it attempt to do so. Assumptions have therefore had to be made about possible future developments at other airports in the South-East and elsewhere.

Regional airports policy

2.4 The analysis of timing of the need is essentially a matter of comparing the benefits of postponing construction of a third London airport with the costs of operating at or over capacity within the London region. These costs can arise from:

(a) increasing delays to aircraft, and cancelled services;

or (b) suppressed demand,

or (c) passengers having to travel from less preferred airports, and incurring higher ground travel costs,

or (d) a mixture of all three.

2.5 In the comparison of airport sites, surface access costs have had to be estimated. Air travellers have therefore had to be allocated to airports according to their zone of origin or destination in the UK (see chapter 13). In carrying out this allocation both the relative costs (including time costs) of travel to each airport and also the likely available pattern of services at each airport have had to be considered.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.6 For neither problem was it sufficient to consider Heathrow, Gatwick and the third London airport alone. This would have been justified if these would be the only international airports in the country, or if people within the South-East region would be compelled to travel from a South-East airport while all others would be compelled to use airports outside the South-East. The more realistic assumption which is adopted is that passengers choose the airport which suits their convenience best.

Airports outside the South-East

2.7 The Board of Trade paper on the Future Pattern of International Airports, published in part II of Volume VIII*, acknowledges the absence of a detailed and approved plan. The paper suggests that whatever site is chosen for the third London airport, it is unlikely that the North will be denied the airport facilities for all kinds of air services any more than it or Scotland has been denied them in the past (paragraph 15). The paper also suggests that outside the South-East Manchester (Ringway) is likely to continue to be the focal point of international services in the North for the next decade: if planning permission for a second runway at Manchester is rejected, another Commission is likely to face the task of locating a new intercontinental airport on one side or the other of the Pennines (paragraph 16).

2.8 Other airports in the Midlands and North are mentioned in the Board of Trade paper as being capable of catering for services to Europe to a much greater degree than they do today without the need for significant new development. The two which are most relevant to the third London airport are Birmingham (Elmdon) and East Midlands (Castle Donington). There is little chance of either of these developing to intercontinental standards before the third London airport is operational.

2.9 At present a good deal of international traffic originating in or destined for the North and Midlands travels through Heathrow. An important reason for this is the restricted range of services available locally. As services at Manchester or its replacement grow, some of this traffic many be drawn away from London. If this factor were disregarded, some of the North and Midlands traffic, which would use an airport at Cublington or Thurleigh could be lost altogether from the analysis because it would not want to use an airport at Foulness. The cost/benefit analysis has taken account of this situation by allowing Manchester to attract traffic in the gravity model used for allocating passengers between airports (see chapter 13).

2.10 The case for including Birmingham and East Midlands airports on a similar basis is less strong. It might be that one, or even both, of these airports, could expand their range of services sufficiently to draw back some of the traffic currently flying from a London airport. But this would mainly be at at the expense of Manchester for the North Midlands, or Luton for the South Midlands. If the third London airport is at any of the inland sites, neither Birmingham nor East Midlands airport would be in a strong position: if it were at Foulness, these airports would compete with Luton. Neither of these two Midlands airports has therefore been included in the analysis.

* *CTLA Papers and Proceedings,* volume VIII (HMSO) part 2

Printed image digitised by the University of Southampton Library Digitisation Unit

Airports within the South-East

2.11 Heathrow and Gatwick are the most significant of existing airports within the South-East. Both are more accessible to London than any of the third London airport sites, both carry a wide range of international services and both have modern facilities. For most passengers, Heathrow will continue to be the first choice, and for many Gatwick will be the second. Heathrow will however soon be overloaded, and Gatwick's capacity, unless a second runway is constructed, is limited. Even with a second runway (for which planning approval would be required) and assuming maximum diversion of Heathrow's traffic to Gatwick, the two airports would not be able to accommodate the traffic expected in the 1980's.

2.12 The possibility of a second runway at Gatwick is discussed in chapter 28 in connection with the timing of the need. It is sufficient to note here that geographical constraints would limit the length of the runway, and also the increase of capacity which could be achieved.

2.13 Other airports in the South-East have also had to be considered. Luton, Stansted, Southend, Lydd, Ashford (Lympne) and Southampton (Eastleigh) airports all handle some international traffic. Of these, Luton is the best placed to handle overspill from Heathrow and Gatwick. Lydd, Ashford and Southampton carry mainly cross-channel services, and while these could well increase, the airports are too far from London to attract an appreciable proportion of Heathrow/Gatwick overspill. A possible exception might be Southampton, where a substantial local population plus good communications to London could provide a basis for long distance charter flights. For these, a new runway would be required. In any event contribution to overspill could only be small.

2.14 Southend has been one of the busiest UK airports in recent years but its activities are now on the decline and its capacity, unless it obtains a new runway, will be restricted by inadequate runway length for most jets (the longest runway is 5,265 ft). Like the South Coast airports, Southend is mainly suited to short cross-channel flights.

2.15 Stansted airport has a 10,000 ft runway - long enough for most aircraft. If Luton were closed, Stansted, with additional investment on access and terminal facilities, could make a significant contribution to Heathrow-Gatwick overspill. Pending the final decision on the choice of site for the third London airport, it is unlikely that the Government would permit expenditure for any major expansion of traffic at Stansted. From a surface access point of view, Luton has advantages over Stansted. Moreover Luton traffic is growing rapidly and its capacity could be increased to around 30 movements per hour. Luton and Stansted are not likely both to expand because they are too close together. It has therefore seemed more realistic to assume that only Luton will do so.

2.16 Maximum capacity on its existing runway has therefore been assumed at Luton. Having allowed for growth of Luton's existing traffic, some capacity may be available for overspill from Heathrow and Gatwick until the third London airport is built. Luton is unlikely to continue if any of the inland sites is chosen. Nuthampstead and Cublington are too close to avoid serious air traffic control interference and, although Luton could conceivably continue to operate with a third London airport at

Printed image digitised by the University of Southampton Library Digitisation Unit

Thurleigh, it is unlikely that, when the more extensive facilities required by the new airport are installed, Luton could compete successfully for any substantial proportion of the traffic. It is, however, reasonable to assume Luton's continuation if Foulness were to be the chosen site.

2.17 The above assumptions are thought to be sufficiently realistic to ensure a reasonable comparison between the short listed sites, and as a basis for estimating when a third London airport will be required. If, for example, Birmingham were to grow more rapidly than has been assumed, it is reasonable to suppose that Manchester and Luton would grow more slowly, and the net effect on the analysis would be small.

Traffic distribution between airports

Omnidirectionality

2.18 When there is more than one airport within a region, each airport can serve all destinations or each airport can concentrate on its own sector of the market. The first of these alternatives is called omnidirectionality; the second alternative is called sectorization. Each has its own advantages and disadvantages.

2.19 The advantages of omnidirectionality are that the airport can be used as an interchange point - for instance domestic passengers can transfer to a European service, or passengers from Europe transfer to a transatlantic flight. Surface access costs can be minimised, since passengers can use the most convenient airport, instead of travelling to the only airport which caters for their particular destination.

2.20 The advantages of sectorization are that each airport can provide a greater range and frequency of services to a particular destination, and that fewer air routes need to be used from the airports to the airlanes, this reducing both the need for controlled airspace and the amount of possible conflicts between routes in the London Terminal Area.

2.21 There will always be some destinations which attract relatively little traffic. Complete omnidirectionality of air services as defined above is therefore unlikely to occur in practice at all three of London's airports. The main advantages of omnidirectionality can however be achieved if each airport has access to each of the airlanes and can serve all major destinations. Alternatively an airport system can be designed to give partial sectorization so that some airlanes are served by more than one airport but all airlanes are not served from each airport.

2.22 As traffic grows at the London airports, it would be feasible for each of the three main airports (Heathrow, Gatwick and the third London airport) to sustain a satisfactory frequency of service to all major destinations. For example, Gatwick's terminal passenger capacity in the 1980s could be approaching 10 million passengers a year, which was the figure of actual traffic attained by Heathrow in 1965 and which is more than the existing traffic at any other airport in Europe. The first of the arguments for sectorization in paragraph 20 is not therefore likely to be very important.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.23 There are difficulties in designing an adequate system of routes from each airport to each airlane, even when advances in air traffic control technology are fully taken into account but this has nevertheless been attempted in order that sectorization can be either eliminated or kept to a minimum. The results, derived from the use of a computer model simulating the movement of aircraft in the London Terminal Area are set out in part II of Volume VII of the Commission's *Papers and Proceedings.**

Distribution

2.24 Given a largely omnidirectional system, the principle of traffic allocation has been a gravity model in which airports are assumed to attract passengers in proportion to their assumed loadings in any particular year. It has been assumed that, other things being equal, passengers are more likely to choose an airport with a greater range and frequency of services. In addition, distribution is affected by the cost and effort required to reach a particular airport from an origin zone in the UK. This is reflected in the gravity model by a "deterrence function" based on the traveller's expenditure and his time valuation.

2.25 The model includes Manchester, Luton, Heathrow, Gatwick and the Third airport. For Manchester, allowance for the difference in air fares and times to various destinations has had to be made. Because it is not possible to identify a particular passenger with a particular destination, an average of likely fare and time differences to all destinations has been taken, weighted by the proportion of traffic on each route.

* *CTLA Papers and Proceedings,* volume VIII (HMSO) part 2

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

I INTRODUCTION

3.1 This chapter explains how airport capacity has been estimated for Heathrow, Gatwick, Luton and the third London airport. Because it has been assumed that Manchester (Ringway) will be replaced by a larger international airport in the same area if and when it reaches capacity (see chapter 2), no estimate of Ringway's capacity is needed for this study.

3.2 The capacity of an airport is affected by its nearness to other airports, the number, length and disposition of its runways, its taxi-ing system, its terminals and the ability of the surface transport system to convey passengers to and from the airport. All these constraints can be in part or in whole removed at the cost of further investment in the airport itself, or, in the case of interference between airports, by more circuitous routeings between airports and airlanes which impose costs on airlines and dis-benefits to air passengers.

3.3 For the purposes of this study it has been assumed that the capacity of the airports can be defined in terms of runway capacity subject to any limitations caused by airspace interference. However, ground-side limitations may be experienced in later years at Heathrow and at the third London airport as aircraft capacity increases; these are discussed in paragraphs 3.65 *et seq.*

II AIRSPACE INTERFERENCE

3.4 When two or more airports are situated close together, it becomes difficult to arrange a system of routes from each airport to each airlane which do not cross one-another when aircraft are at similar heights. These crossing points are potential conflict points; i.e. places where two aircraft may fly dangerously close to one another unless prevented from so doing by air traffic control. The extent to which controllers on the ground can intervene without causing excess delays is limited. The excess route mileage which airlines will willingly accept in order to avoid potential conflict points is also limited. Thus if too many airports are using the same airspace with high density traffic, the overall capacity of the airport system may be less than the sum total of the capacities of each airport.

3.5 In order to discover whether the capacity of the London Terminal Area (the controlled airspace surrounding London) used by the traffic terminating at the London airports will be limited in this way, a computer model has been used, which simulates the operating characteristics of the

Printed image digitised by the University of Southampton Library Digitisation Unit

airport systems comprising Heathrow, Gatwick and each of the four short-listed third London airports. For the reasons stated in chapter 2 Luton has been included in the study of the Foulness site. The results of this simulation work are reported in part 2 of volume VIII of the Commission's Papers and Proceedings. The likely conflicts in terms of predicted proximity of aircraft have been analysed for each of the four sites. The study has produced information on route mileage and delays for the cost-benefit study.

3.6 At low traffic densities each aircraft flying in the London Terminal Area can be given an entry time and flight level such that it is sufficiently spaced from other aircraft for there to be no serious risk of collision. In these cases navigation control from the flight deck is adequate for safety. However, as traffic densities increase, smaller separations between aircraft are needed to avoid delays on the ground. At these smaller separations navigation errors could lead to near misses or even collisions. It is then necessary for ground control to monitor the relative positions of aircraft by radar and temporarily to assume control of navigation when two or more aircraft appear likely to become dangerously close to one another. Wherever traffic densities are high (i.e. in all busy terminal areas), reliance is placed on ground radar control.

3.7 A potential conflict is said to exist when two aircraft appear likely to come dangerously close to one another. The action taken by a radar controller to prevent a possible collision or to reduce its probability to an acceptable level is called conflict resolution. The three main methods are:

(a) height separation - this can be achieved by requiring one or other pilot to change the altitude at which he is cruising, or by telling him to interrupt his climb or descent and fly level until further instructed, or by telling him to restrict his altitude to a given figure at or by a certain geographical position;

(b) horizontal separation - this can be achieved by "vectoring", (i.e. issuing a series of headings to be flown) or by indicating a suitable new track for an aircraft to take up;

(c) horizontal "along track" separation can be achieved by control of forward speed. This method is not extensively used at present in the London Terminal Area but it may be in future.

3.8 Conflict resolutions involve little cost. Time is lost on some occasions, but on other occasions time is gained by cutting corners or by speedier flight at lower than intended levels. Some extra fuel may be burned. The cost in terms of ground controllers' time is also small in the context of the total system. It can therefore be assumed that conflict resolution carries no cost.

3.9 There are limits to what can be achieved in this "cost-less" way. For control purposes the airspace must be divided up into control areas, each the purview of one controller. As traffic densities increase the airspace has to be divided into smaller and smaller control areas so that each controller has a manageable number of aircraft with which to deal. As the areas become smaller, the communication workload begins to impose a limit because of the increased need for liaison between the controllers. Improved equipment should help to reduce the future

*_CTLA Papers and Proceedings_, volume III, part 2, section 2 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

workload on controllers. For instance SSR (secondary surveillance radar) will enable echoes to be labelled with aircraft identity and flight level (provided the traffic density is not great) so that these data will not have to be transmitted by voice. The basic problem of possible controller saturation will nevertheless remain as long as the present system of control remains in operation.

3.10 When the traffic situation is such that radar controllers become overloaded, some or all of the following measures have to be taken:

(a) controllers may have to impose delays to departing aircraft to prevent overtaking in restricted airspace;

(b) flight level restrictions - certain flight levels are allocated to certain traffic flows. For example aircraft departing from a particular airport are allocated levels 4,000 ft or below out to a certain distance from the airport while all other aircraft in the area are allocated levels 5,000 ft or above. Such restrictions impose a cost to airlines in terms of extra fuel. They may also cause extra noise nuisance;

(c) special tracks within airways - aircraft using a given airway can be asked to fly to one side or the other of the centre line. Opposing direction traffic can thus be separated into two streams. Although still under radar control, the number of interventions needed to resolve conflicts is reduced. This strategy imposes extra mileage costs on airlines;

(d) if the above methods are insufficient, controllers can resort to holding aircraft either on the ground prior to take-off, or in the air either by requiring them to circle in a stacking area or through carefully planning "path stretching" (i.e. by making the aircraft take longer routes to delay their entry to the final approach path). The main use of stacks is to control flows inbound to a runway, but stacking can also be used to control flows in the airspace away from the airfield. All types of holding involve loss of time to airline operators and to passengers. They may thus create considerable costs;

(e) speed control - this reduces overtaking in the airlanes, but only at the expense of time penalties to faster aircraft;

(f) if delays due to actions of type (d) and (e) become common it is likely that more fundamental solutions will be sought in terms of more airspace and more permanent airways within it. For example the Amber One airway to Paris has been divided into two airways, one for southbound aircraft and one for northbound;

(g) if no solution can be obtained from (f) planned flow restrictions (i.e. limiting the hourly number of aircraft permitted to use a given route) and/or restrictions on the destinations served by given airports have to be imposed.

3.11 From the foregoing it will be seen that airspace problems are complex and difficult to analyse. The method adopted was to construct a complete set of flight paths for each airport in the terminal area to be studied and to use a computer to simulate the aircraft flows along each path. The computer calculated and recorded the occasions when two or more aircraft were predicted to fly dangerously close to one another and indicated how often controller action would be needed to resolve any potential conflicts. Tests for aircraft proximity were undertaken

Printed image digitised by the University of Southampton Library Digitisation Unit

using as criteria values of sufficient magnitude to allow a controller time to monitor aircraft progress and intervene as required to prevent predicted conflicts occurring. The results were studied to see whether or not they implied an acceptable workload for controllers. If not, some of the constraints described in paragraph 3.10 could be progressively simulated, until the conflicts were reduced to an acceptable level. If this could not be done without imposing planned flow restrictions in the computer model, it had to be concluded that in practice interactions between airports would be likely to reduce the amount of capacity which would otherwise have been available from the runways.

3.12 This method of analysis involves a number of stages. First, the traffic flows to and from each airport have to be forecast. Secondly, the airlanes needed to carry these flows have to be designed and plotted on maps. Thirdly, the traffic flows and the airlanes have to be simulated and the results analysed.

3.13 This method has been used to study:

(a) the interaction between Gatwick, Luton and Heathrow in the years before the third London airport becomes operational,

(b) interactions between these airports and a third London airport with 4-runways at each of the four short-listed sites, (including Luton only in the case of Foulness). A complete account of the results is given in part 2 of volume VIII of the Commission's Papers and Proceedings.

3.14 Not only the average flow rates along the routes had to be predicted but also the way in which these flows would be likely to fluctuate from hour to hour, because the worst problems arise for the controllers when peak flows coincide on conflicting routes. Hour to hour fluctuations depend to a large extent on the origins and destinations of the flights. For instance, flights from North America tend to arrive in the London area in the early morning so that there is an arrival peak on westerly routes between the hours of 6 am and 10 am and little inbound traffic on these routes during the rest of the day. For the simulation study origins and destinations of flights had to be considered. For this purpose it was sufficient to group flights together into fairly broad classes, or "markets", as follows:

(a) "domestic" - including Northern Ireland and the Channel Islands,

(b) "European" - North and South Europe, Mediterranean, Middle East,

(c) "North Atlantic" - North America, Caribbean,

(d) Irish Republic,

(e) other long-haul - South Africa, South America, Far East.

With the exception of (a) and (d) each of these markets was further subdivided into a "scheduled" market and a "charter" market. For aircraft overflying the London area, the following markets were used:

(f) Europe to and from North America,

(g) Europe to and from UK airports outside London.

3.15 For a given market it was assumed that no radical change would occur in the future in the pattern of flows across a 24 hour period. Therefore for each market the flow of aircraft in any hour of a peak day in the

Printed image digitised by the University of Southampton Library Digitisation Unit

future could be predicted from the current diurnal pattern and a forecast of the total number of movements in that peak day. Making a further assumption about the airlanes used by each market, it was then possible to construct a complete 24 hour traffic sample by airlane by hour of day.

3.16 The next step was to allocate the traffic to the several airports of the London area. There is no very exact way of doing this. An estimate was made of the proportion of each market handled at each airport. Luton and Gatwick were assumed to continue handling a large proportion of charter traffic. The movements in each hour were then allocated among the airports according to the specified proportions. If this method resulted in more movements in any hour at an airport than the sustainable runway capacity (as defined later in this chapter) then a reallocation of movements was made either to an adjacent hour at that airport or to another airport. This method, although approximate, was found in practice to give realistic traffic samples at each airport.

3.17 To complete the process of specifying traffic samples the performance characteristics of the aircraft which would be in service at the relevant time had to be considered (i.e. forward speed, rate of climb and rate of descent). Analysis of current aircraft performance suggested that the following groups were sufficiently different to justify separate performance figures:

(a) subsonic aircraft on domestic and Irish routes (domestic subsonic),

(b) subsonic aircraft on European routes (European subsonic),

(c) subsonic aircraft on North Atlantic and other long-haul routes (long-haul subsonic),

(d) supersonic aircraft (supersonic),

(e) propeller aircraft (low performance).

Appropriate percentages of each type were allocated to each market, so that the correct proportions were produced in each airline.

3.18 The Commission's consultants on air traffic control prepared a map of the airspace and route structure for the study of existing airports.* The National Air Traffic Control Services prepared maps for the study of the four third London airport sites.** Each map shows the tracks along which aircraft would be required to fly. The design of these tracks was based on the following principles:

(a) except at crossing points, tracks should be spaced sufficiently far apart to permit aircraft on different tracks to navigate without super-vision from the ground.The controllers would then need only to monitor the progress of such aircraft;

(b) opposite direction traffic should use different tracks wherever possible to eliminate any risk of head-on conflicts;

* *CTLA Papers and Proceedings,* volume VIII part 2, section 2 (HMSO)
***CTLA Papers and Proceedings,* volume VII part 3 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

(c) the tracks south and east of London should be capable of joining up with the continental air route system;

(d) there should be sufficient outbound tracks from each airport to accommodate the forecast traffic without undue delay in peak hours;

(e) noise sensitive areas should be avoided wherever possible;

(f) inbound tracks should terminate at suitable reporting points near the airports concerned. These points should be such that aircraft could be held over them if bad weather or incidents on the runway slowed the acceptance rate of the airport below the arrival rate of aircraft requiring to land. There should also be sufficient room for aircraft to manoeuvre so that, whichever runway or runway direction was in use at the time, controllers would be able to sequence the aircraft efficiently onto the final approach path;

(g) as far as possible outbound tracks should not cross the inbound holding areas nor the approach sequencing area (the region between the inbound reporting point and the point at which aircraft join the final approach path), so that outbound aircraft would not interfere with the manoeuvres of inbound aircraft in their last stages of approach to the airports;

(h) routes should not be too circuitous, so that flying time would not be excessive.

3.19 Route structures were designed for each third London airport site for each of the following cases:

(a) all airports with westerly operations;

(b) all airports with easterly operations;

(c) third London airport with westerly operations and all others with easterly operations;

(d) third London airport with easterly operations and all others with westerly operations.

For the airport system without a third London airport a route structure for the first case only was designed.

3.20 The design of these route structures showed that in all cases it was possible to fit in the number of outbound and inbound tracks considered necessary to handle the flows predicted. The simulation study was then undertaken to see if a detailed analysis of conflict areas in the airspace would substantiate the expectation that all the route structures would be capable of handling all the traffic.

3.21 The simulation model and the computer runs which were made are fully described in the report by General Precision Systems Ltd., included in volume VIII part 2*.On the basis of these model runs it was assumed that airspace constraints would not be a significant factor in the site comparison.

*_CTLA Papers and Proceedings_, volume VIII, part 2, section 2 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

III RUNWAY CAPACITY

3.22 Runway capacity has been assumed to be the main factor limiting the peak number of aircraft movements which could be handled at each airport. The main factors influencing runway capacity are aircraft spacing, runway layout the random nature of demand, controller workload and weather.

Aircraft spacing

3.23 Aircraft have to be spaced in order to minimise the risk of collision and of flying accidents caused by mutual interference between aircraft (i.e. as a result of aircraft induced disturbed air conditions - turbulent wake). These spacings, or service intervals as they are usually called, are enforced by air traffic control who are responsible for the safety of all aircraft movements at airports. It is convenient to consider service intervals under the following three headings:

(a) take-off following a take-off

In this case the gap between the two departing aircraft widens because the first aircraft is accelerating away from the second. There is thus little risk of collision between the two aircraft in the near vicinity of the airfield. However some time has to be allowed for the turbulent wake of the first aircraft to subside before the second aircraft can take-off. Although the take-off run of a commercial aircraft normally takes only 30 to 35 seconds, a minimum separation gap of 50 to 60 seconds is generally imposed between two take-offs on the same runway. This separation is hereafter called airfield separation. When two aircraft are following a common route after take-off, a larger separation is used to give at least 3 miles along-route separation up to the end of the common route. The separation in this case, hereafter called outbound radar separation, depends on relative aircraft speeds and on the length of common path and is normally about 90 seconds. The 3 miles separation standard is not an absolute constraint, but is related to the ability of radar equipment to distinguish between two aircraft close to one another (i.e. the resolution of radar equipment).

(b) landing following a landing

The approach path to the runway is normally some 8 to 12 miles long. Pilots of large transport aircraft need this distance to pick up the ILS (Instrument Landing System) beam and stabilise their aircraft on to the glide path leading down to the runway threshold. Aircraft approaching a runway are thus "in trial" for a considerable distance and must be safely separated. The service interval in this case is determined by:

(i) the resolution or radar,

(ii) the turbulent wake,

(iii) the fact that pilots need time to react to instructions from the ground in the event of failure of safe separation from aircraft ahead,

(iv) the fact that different aircraft have different approach speeds,

(v) the fact that controllers do not always achieve the desired spacings.

Printed image digitised by the University of Southampton Library Digitisation Unit

As a result the service interval achieved in practice is about 90 seconds between aircraft of similar approach speeds. This is equivalent to 3¼ nautical miles at 130 knots (the mean speed over the threshold of aircraft currently using Heathrow). With a slow aircraft following a faster one the spacing widens as the aircraft proceed down the glide path, so that there is inevitably a larger spacing at the threshold. For instance, if there is a 10 knot speed difference, a 90 second separation at the beginning of the approach path will become a 120 second separation at the threshold during a 6 minute approach (assuming the mean speed of the two aircraft is 130 knots). The service interval for a turboprop aircraft following a jet aircraft can therefore be taken to be 120 seconds. The time taken for an aircraft to touch down, decelerate and be clear of the runway is only some 50 to 60 seconds from crossing the runway threshold even in wet conditions when the runway is slippery. In the "landing following landing" case the limiting factor is not so much runway occupancy but the capacity of the approach path to handle the landing stream at safe separations.

(c) mixed mode operations

In this case where landings and take-off are performed on the same runway, the basic rule is that the runway must not be occupied by more than one aircraft at a time. Before a departing aircraft is allowed to taxi on to the runway and line-up for take-off, any previous arriving aircraft must have turned off the runway. Before an arriving aircraft can be committed to a landing (i.e. there is no further opportunity for the pilot to abandon the landing), any previous departing aircraft must have become airborne. The take-off run of a departing aircraft normally requires about 30 to 35 seconds. A landing aircraft normally has to commit to landing about 10 seconds before crossing the threshold of the runway (this commitment time is considerably less for light aircraft which can "go round again" almost at the point of touch down). The air traffic controller therefore needs a time interval of at least about 40 to 45 seconds, if he is to have a reasonable chance of dispatching a departing aircraft from the runway before the approaching aircraft reaches its commitment point for landing. If the interval is less, he will choose to hold the departing aircraft on the ground rather than risk having to refuse the landing aircraft. The service interval for a landing following a take-off is therefore about 45 seconds. The service interval for a take-off following a landing is simply the runway occupancy time of the landing (i.e. 55 seconds), because the take-off can start as soon as the landing aircraft has turned off the runway.

Runway layout

3.24 At airports with several runways the degree of interference between the runway has to be considered. This is determined by the relative alignments and the distance between runways. Where runways intersect there is clearly a high degree of interdependence. Where runways are parallel and well spaced apart there is virtually no interdependence and the airport capacity is the sum of the individual runway capacities. The following three runway configurations are relevant to this study:

(a) close parallels

Provided the runway separation exceeds about 3,500 feet, or the runway thresholds are sufficiently staggered, as shown in figure 3.1, it is possible to have arrivals on one runway and independent departures on the other. The runway separation and/or stagger needed to permit this type of

Printed image digitised by the University of Southampton Library Digitisation Unit

operation is determined by the requirement for safe handling of an aircraft which abandons its landing at the last moment (i.e. an aircraft which has to overshoot). If the runways are staggered, the overshooting aircraft has more room to turn away from the aircraft taking off on the other runway. An extreme case is when the two runways are in line but well separated, as in figure 3.1 (iv). For any of the arrangements shown in figure 3.1 any overshoot situation which may arise can be safely handled. Take-offs and landings may thus take place independently.

Figure 3.1 Close parallels : Possible configurations (not to scale)

(i) No stagger

(ii) Some stagger

(iii) Extreme stagger

(iv) In line arrangement

(b) independent parallels

If parallel runways are sufficiently spaced apart independent operations may be carried out. At Heathrow the separation is 4,800 feet and procedures have been devised to make independent operations acceptable. Each runway can carry its own independent stream of landing aircraft and its own independent stream of departing aircraft, provided these diverge immediately after take-off. To minimise possible conflict situations in the airspace it is usual to arrange for each runway to serve traffic on its own side of the airport. For example in the case of Heathrow, the northern runway serves traffic arriving from and departing to the north, while the southern runway serves traffic from and to the south. This means that one runway becomes overloaded while the other is under-utilised when there is an imbalance in the traffic offering. It is still possible to operate

Printed image digitised by the University of Southampton Library Digitisation Unit

with arrivals on one runway and departures on the other (the so-called segregated mode); this is usually done in conditions of low traffic in order to simplify the task of the air traffic controllers.

(c) two pairs of close parallels
The third London airport is being planned with two pairs of close parallel runways. Provided the separation of the pairs exceeds 6,000 feet, independent landing and take-off streams may be permitted on each pair. At times of day when there is an imbalance between traffic offering on the two sides of the airport there is likely to be (as with independent parallel runways) some under-utilisation of the runways.

Random nature of demand

3.25 If the times of departures and arrivals could be accurately foreseen, a schedule of movements could be planned in advance which would utilise the runways to the maximum permitted by the aircraft spacings. However numerous unforeseen factors prevent accurate time-keeping by aircraft. The demands on the runways therefore occur at random. In this situation it is impossible to make full use of the runway time available without having a queue of aircraft from which to draw at all times. But this would involve long waits for the aircraft with consequent costs and irritation to airline operators and passengers. A balance has to be struck between full utilisation of runways and no queueing of aircraft.

3.26 A common yardstick is that delays should not exceed 4 minutes on average in more than 30 hours of the year. It is convenient therefore to treat traffic levels giving rise to 4 minutes average delay or less differently from those giving rise to greater levels of delay. The hours in which the latter occur are usually referred to as overloaded hours. In these hours heavy delays are likely to occur depending on the length of time for which the overload condition persists. For instance, if the overload is 20 per cent for several hours, many aircraft will wait more than an hour. With an overload of 10 per cent large delays are also likely.

3.27 The hourly traffic rate corresponding to a 4 minute average delay is said to represent the sustainable capacity of the runway system. Experience shows that sustainable capacity is between 60 and 80 per cent of what could theoretically be achieved if no unforeseen factors were present. In other words 20 to 40 per cent of the theoretical runway capacity is lost because demand cannot be perfectly predicted and controlled.

Controller workload

3.28 At a busy airport the strain on air traffic controllers can be considerable. There is a constant stream of rapid decisions to be made. A mistake could lead to serious accidents on the runways or in the air. If the workload on controllers becomes too great, they (or the control administration) may react by slowing up the flow of traffic in order to reduce the frequency of decisions and to safeguard any errors which might be made through too hasty decision. This situation is unlikely to occur if the average delay does not exceed 4 minutes.

Printed image digitised by the University of Southampton Library Digitisation Unit

Weather

3.29 In good weather conditions the pilot can assist the air traffic controller by adjusting the speed of his aircraft in relation to other traffic visible to him. Better service intervals are then achievable.

Capacity of a single runway airport

3.30 The principles and methods described above (including the 4 minute delay criterion) have been used to derive the practical hourly capacity for a single runway airport under various assumptions concerning arrival/departure mix with particular reference to Gatwick and Luton for the period 1970-1980.

3.31 The theoretical maximum hourly capacity is calculated by considering the aircraft spacing rules described in paragraph 3.23 as follows:

(a) departure/departure interval:
aircraft on same route = 90 seconds (outbound radar separation)

aircraft on different route = 50 seconds (airfield separation)

If 80 per cent of traffic is routed to the south, 10 per cent is routed to the west and 10 per cent is routed to the north, on 64 per cent of occasions two southbound aircraft will follow one another, on 1 per cent of occasions two westbound aircraft will follow one another and on a further 1 per cent of occasions two northbound aircraft will follow one another. Therefore 66 per cent of the aircraft will need outbound radar separation because the aircraft ahead is on the same route. The remaining 34 per cent will have airfield separation. The mean departure/departure interval

= 90 x 0.66 + 50 x 0.34
= 59.4 + 17
= 76.4 (say 76 seconds).

(b) arrival/arrival interval:
aircraft of same type = 90 seconds
slow aircraft behind fast = 120 seconds

If 80 per cent are jets of similar approach speed and 20 per cent are turboprops 10 knots slower, on 16 per cent of occasions a slow aircraft will be following a fast. The mean arrival/arrival interval

= 120 x 0.16 + 90 x 0.84
= 19.2 + 75.6
= 94.8 (say 95 seconds).

(c) mixed operations
arrival/departure interval = 55 seconds
departure/arrival interval = 45 seconds.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.32 If arrivals and departures on the single runway can be scheduled with perfect control, the following movement rates are possible without delay on the basis of the above intervals:

Table 3.1

Theoretical hourly rates : influence of arrival/departure ratio

Arrival/departure ratio	*Mean interval (seconds)*	*Hourly rate (aircraft movements)*
0.8	55.2	65.2
0.9	52.6	68.4
1.0	50.0	72.0
1.1	54.5	66.0
1.2	59.0	61.0

Table 3.1 shows that the theoretical rate drops as the arrival/departure ratio departs from unity. When arrivals and departures are out of balance, some arrival/arrival or departure/departure intervals become necessary and this raises the mean interval between movements.

3.33 Because of the unpredictable way in which aircraft offer themselves for service the practical hourly rates are considerably less than those shown in Table 3.1. A standard mathematical approach (Theory of Queues) can be used to calculate the mean delay in minutes for a given rate of arrivals*. The results are shown in Table 3.2.

Table 3.2

Arrival delays versus arrival rate

Arrivals per hour	*Utilisation (per cent of theoretical rate)*	*Mean delay (minutes)*
15	39.5	0.5
20	52.5	0.9
25	66.0	1.5
30	79.0	3.0
31.5	83.0	4.0
35	92.0	9.2
38	100.0	

(service time = 95 seconds)

*See, for instance, *Operational Research, Methods and Problems* Sasieni, Yaspan and Friedman, p 146 (Wiley, 1959).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.2 shows that the mean delay is quite low when the arrival rate is below about 30 per hour. When the arrival rate exceeds 30 per hour, delays rapidly escalate, until at a rate of 38 (the theoretical capacity achievable in a perfect world with no randomness) delay becomes infinite.

3.34 In considering the situation for departing aircraft in mixed mode operations, it has been assumed that landing aircraft will always be given priority. This reflects present practice when landing rates are no greater than about 30 per hour. A standard mathematical approach (Theory of Queues) can be used to calculate the mean delay for departures, given any arrival and departure rate.* The results are shown in Table 3.3.†

Table 3.3

Mean departure delay, mixed operations on single runway (seconds)

Aircraft movements per hour	*Arrival/departure ratio*			
	0.8	1.0	1.2	1.4
40	191.0	192.3	194.2	196.3
42	244.2	247.3	251.5	256.0

Table 3.3 shows that the rate giving 4 minutes mean departure delay is between 41 and 42 aircraft movements per hour. The exact figure depends on the ratio of arrivals to departures. Comparison with Table 3.1 shows the loss of utilisation due to randomness and unforeseen effects on aircraft time-keeping.

*See "Development and Application of Mathematical Models for Determining Airport Capacity". In *The Development of Analytical Models for Estimating Airport Capacity*, M.A. Warskowet (University of California, 1962.)

†These results were calculated using the formulae given on p 112 and 113 of *Airport Runway and Taxiway Design*, Airborne Instrument Laboratory Report 7601-1 (E.N. Hooton, et al), July, 1960, with the following parameter values:

r_1	(mean runway time of landings)	= 55 secs
c_1	(mean spacing factor for landings from wave-off to runway threshold)	= 10 secs
s_{11}	(mean service time for take-off when next user is landing)	= 45 secs
s_2	(mean service time for take-off when next user is taking-off)	= 76 secs

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.4

Utilisation achievable, mixed mode operations

Arrival/departure ratio	*Theoretical rate (aircraft movements per hour)*	*Practical rate (aircraft movements per hour)*	*Utilisation (per cent)*
0.8	65	42	65
1.0	72	42	58
1.2	61	41	67

3.35 Table 3.4 illustrates the fact that in the mixed mode of operation a large penalty is paid for not being able to plan and control the times at which aircraft offer themselves for service. If arrivals and departures could be predicted and arranged so that they were evenly matched, the best use of runway capacity could be achieved.

3.36 For this study a single figure for practical hourly capacity is needed. As most hours have some imbalance between arrivals and departures the lower of the two figures shown in Table 3.4 has been taken as the practical rate. Therefore 41 aircraft movements has been taken as the sustainable hourly capacity of Gatwick with a single runway.

3.37 Because of lack of taxi-ways departing aircraft at Luton have to taxi about half a mile back along the active runway before turning and taking-off. This means that departing aircraft occupy the runway longer than at Gatwick. 60 seconds for the taxi-ing (half a mile at 30 mph) and another 70 seconds for turning, lining up and commencing take-off run have been assumed. Using the same method* mentioned in paragraph 3.34 above the mean departure delay for Luton can be calculated. The results are shown in Table 3.5.

Table 3.5

Mean departure delay, Luton (seconds)

Aircraft movements per hour	*Arrival/departure ratio* 0.8	1.0	1.2	1.4
14	245.2	255.3	264.4	272.7
16	367.2	392.9	317.2	440.4

*Values assumed in this calculation

r_1 = 55 secs s_{11} = 175 secs

c_1 = 10 secs s_2 = 206 secs

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.5 shows that the sustainable hourly capacity at Luton with the present taxi-ing arrangements is about 14 aircraft movements per hour for arrival/departure ratios of 0.8 and 1.0, and less for ratios of 1.2 and 1.4. The average value of 13 aircraft movements has been taken as the sustainable hourly capacity for Luton in its present configuration.

Capacity of a dual-runway airport

3.38 It is convenient to assume that any second runway which might be built at Gatwick could be so cited that both runways could be operated as a pair of close parallels (i.e. take-offs could be handled on one runway independent of landings on the other). In fact it is unlikely that the second runway could be sited far enough away from the first for this to occur in practice. The allowance necessary for mutual interference between the runways is explained in paragraph 3.41 below.

3.39 The service times are the same as those set out in paragraph 3.31 above. The theoretical maximum rate of landings (no randomness) is determined solely by the 95 seconds interval between arrivals. This gives an hourly rate of 38 landings. In considering the landing runway the same calculations as applied at Table 3.2 are relevant. This shows that the landing rate corresponding to an average delay of 4 minutes is 31.5 per hour.

3.40 For the take-off runway the theoretical maximum rate of take-offs (no randomness) is determined solely by the 76 seconds interval between departures. This gives an hourly rate of 46 departures per hour. With 4 minutes average delay as the criterion, it can be calculated that 85 per cent of this figure is achievable i.e. 40 departures per hour. For calculating practical hourly capacity, it has been assumed that neither departure nor arrival delay must exceed 4 minutes. Table 3.6 gives the resulting capacity estimates.

Table 3.6

Capacity of two runways at Gatwick (assuming no interference between runways)

Arrival/departure ratio	*Limit imposed by*	*Practical hourly capacity (aircraft movements)*
0.6	take-offs	64
0.8	take-offs	72
1.0	landings	63
1.2	landings	58
1.4	landings	54

Table 3.6 shows that considerably higher total movement rates could be achieved without exceeding the 4 minute delay criterion in hours when take-offs outnumber landings. It is therefore difficult to determine a single capacity figure. Sixty-three movements an hour (corresponding to a ratio of 1.0) is a reasonable estimate of sustainable hourly capacity, recognising that mean delay will exceed 4 minutes in some hours when

Printed image digitised by the University of Southampton Library Digitisation Unit

arrivals predominate and that mean delay will not reach 4 minutes in other hours when departures predominate.

3.41 As mentioned in paragraph 3.38 above there would be some interference between the two runways. It is likely that departing aircraft will be held for a short time when an arrival is about to land so that the controller can be certain that the pilot of the arriving aircraft will not abandon the landing (i.e. he will not overshoot). The extent of such delays to departing aircraft can be calculated in the same way as for mixed mode operations on a single runway (see paragraph 3.34 above), but assuming that the departing aircraft on one runway is held for 15 seconds when an aircraft is arriving on the other runway.* The result gives a capacity varying between 54 movements per hour for an arrival/departure ratio of 1.6, to 65 for a ratio of 0.6. The average of 59 aircraft movements is assumed to be the sustained hourly capacity of Gatwick if it were equipped with 2 runways.

3.42 Heathrow can operate either in the segregated mode or with landings and take-offs mixed on each runway. In the segregated mode all service times are the same as those set out in paragraph 3.31 above with the exception of departure/departure intervals. These are on average shorter due to the wider range of departure routes used by aircraft from Heathrow. Assuming that 50 per cent of traffic is routed to the south, 10 per cent to the west, 20 per cent to the north and 20 per cent to the east, then only 34 per cent of aircraft need outbound radar separation of 90 seconds. The remainder can have airfield separation of 50 seconds. The mean interval between departures is therefore 36.3 + 30.6 i.e. 66.9 or 67 seconds (approx). This contrasts with 76 seconds assumed for Gatwick. Table 3.7 gives the revised results:

Table 3.7

Capacity of Heathrow, segregated operations

Arrival/departure ratio	*Limit imposed by*	*Practical hourly capacity (aircraft movements)*
0.6	take-offs	76
0.8	landings	70
1.0	landings	63
1.2	landings	58
1.4	landings	54

Table 3.7 shows that the runway system is limited by its capacity to handle landings over the range of values of this ratio which are of interest. For reasons similar to those stated in paragraph 3.40 above 63 aircraft movements has been taken as the sustainable hourly capacity of Heathrow in the segregated mode.

*values assumed in this calculation:

as in paragraph 3.34 above except that $r_1 = 15$ seconds

Printed image digitised by the University of Southampton Library Digitisation Unit

3.43 In the mixed mode it has been assumed that the southern runway takes aircraft routed to and from the south and that the northern runway takes all other aircraft. The interval between departures for the southern runway is 90 seconds (all aircraft follow the same route after take-off and therefore require outbound radar separation) whereas this interval is 64 seconds for the northern runway because a proportion of the aircraft can have airfield separation. Considered in isolation the southern runway has a practical hourly capacity of about 39 aircraft movements, whereas the northern runway has a capacity of about 44 aircraft movements. In any hour there is unlikely to be a perfect balance between the demands on the two runways. Table 3.8 shows the results.

Table 3.8

Capacity of Heathrow, mixed mode operations

North/south traffic ratio	*Limiting runway*	*Practical hourly capacity (aircraft movements)*
0.7	south	66
0.8	south	70
0.9	south	74
1.0	south	78
1.1	south	82
1.2	north	81
1.3	north	78

The average capacity over the range 0.7 to 1.3 is 75 aircraft movements, which has been taken as the sustainable hourly capacity of Heathrow in mixed mode operations.

3.44 Table 3.8 shows how the constraint is exercised by one runway or the other according to traffic mix. In theory it should be possible to plan a larger throughput by allocating a proportion of the traffic from the overloaded runway to the other runway and thereby to reduce the total delay. This would require an accurate prediction of the respective loadings of the two runways for 15 to 30 minutes ahead and exceptionally good co-operation between controllers, unless computers could be used.

The capacity of a four-runway airport

3.45 The capacity of the third London airport is calculated on the assumption that it will have four runways laid out as two independent pairs of close parallels. Assuming a ratio of departures to arrivals of 1.0 and using the service rates set out in paragraph 3.34 above, each pair will have a capacity of 63 aircraft movements per hour. Assuming each pair serves only its side of the airport, as in the case of mixed operations at Heathrow, results set ou in Table 3.9 are obtained.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.9

Capacity of third London airport

Traffic ratio (as between runway basis)	*Practical hourly capacity (aircraft movements)*
0.7	107
0.8	114
0.9	120
1.0	126
1.1	120
1.2	116
1.3	111

The average capacity over the range 0.7 to 1.3 is 117 which has been taken as the estimate of sustainable hourly capacity.

Runway capacities after 1980

3.46 The advent of jumbo-jets and airbuses is likely to increase the problem of turbulent wake. No improvement has therefore been assumed in the 50 seconds service interval for the "departure following a departure" case.

3.47 As propeller driven aircraft are phased out of airline fleets the service interval between all pairs of aircraft in the "landing following landing" case will tend towards 90 seconds. The introduction of Computer Assisted Approach Sequencing (CAAS) is likely to produce 10 per cent additional reduction in this service interval. A total reduction from 95 seconds to 80 seconds has the effect of increasing the capacity of a landing-only runway (as measured by the 4 minute average delay) from 31.5 movements per hour to 38.5. The capacity of an airport with a close pair of parallel runways could therefore increase from 63 to about 77 aircraft movements per hour (the limiting factor would still be the airport's ability to handle landings).

3.48 The introduction of computers (in particular CAAS) could help controllers plan the optimum mix of aircraft movements on the runways. Paragraph 3.35 showed that in mixed mode the runway utilisation achievable is quite low (60 to 80 per cent). This is due to the irregularity of arrivals and because priority is given to arrivals. Departures therefore can suffer large delays even when the runway is not heavily loaded. If departures had equal priority for use of the runway, fewer delays would occur in total, or in other words a higher movement rate would be possible at a given delay rate. With precise information in the computer on position and times of all aircraft it should be easier to plan gaps in the arrival stream to accommodate departures as and when necessary. It might also be easier to plan the allocation of traffic to the landing runways in order to eliminate the loss of capacity caused by uneven loading (see paragraph 3.44 above). It has been assumed that the equipment will not be installed at Gatwick or Luton.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.49 Design of runway turn-offs may enable landing aircraft to clear the runway more quickly. On the other hand the larger aircraft of the future are likely to be more difficult to turn at high speed. No significant improvement in runway occupancy times has therefore been assumed.

3.50 These improvements give the levels of capacity shown in Table 3.10.

Table 3.10

Future runway capacities (aircraft movements per hour)

Airport	*Operation of runways*	*1970-80*	*After 1980*
Heathrow	mixed on both runways	75	82
Gatwick			
1 runway	mixed	41	41
2 runways	segregated (assuming some interference between runways)	59	59
Luton	mixed with improved taxiway system	30	30
third London airport:			
1 runway	mixed	41	45
2 runways	mixed on both runways	75	82
3 runways	2 segregated 1 mixed	104	122
4 runways	2 pairs of parallels	117	143

Available runway capacity for air transport movements

3.51 For this study capacity has to be stated in terms of the number of air transport movements (i.e. landings or take-offs of an aircraft operating a scheduled or non-scheduled service). The capacity taken up by non-air transport movements (e.g. positioning flights, general aviation) must therefore be deducted from the calculated runway capacities in Table 3.10. The following table shows the number and proportion of non-air transport movements in 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.11

Aircraft movements 1968 (Source: Board of Trade)

	Heathrow	*Gatwick*	*Luton*
Private (company or privately owned aircraft)	10,044 (4 per cent)	17,974 (25 per cent)	6,354 (13 per cent)
Testing and training	2,713 (1 per cent)	10,260 (14 per cent)	10,721 (22 per cent)
Government and military	852	1,608	77
Other commercial: pleasure, empty positioning	1,950 (1 per cent)	5,272 (7 per cent)	2,539 (5 per cent)
Other flights by air transport operators	3,137	194	756
Aeroclub	109	-	18,174 (38 per cent)
Air transport movements	228,729 (92 per cent)	37,737 (54 per cent)	9,410 (22 per cent)
Total all movements	247,534	73,045	48,031

3.52 There is no reason to assume that the current proportion of non-air transport movements at Heathrow will change much in the future. Private aircraft movements are increasing faster than the total at present. This growth is unlikely to continue if facilities become congested. At present in the peak hours there are on average four non-air transport movements. It has been assumed for this study that this number of non-air transport movements will continue in the future to require service in peak hours. 4 has therefore to be subtracted from the aircraft movement figures in Table 3.10.

3.53 Currently the proportions of non-air transport movements are much higher at Gatwick and Luton than at Heathrow. It has been assumed that, if demand for air transport movements grows, most of the non-air transport movements will move out to other airports. There will always be some movements by company aircraft and some testing and positioning flights by airlines. It has been assumed that these movements will be on roughly the same scale as currently at Heathrow. 4 has therefore to be subtracted from the aircraft movement figures in Table 3.10.

3.54 For a two-runway third London airport the same deduction of 4 non-air transport movements has to be made. For a four-runway third London airport, it has been assumed that the number of non-air transport movements will have increased to 8; a deduction of 8 has therefore to be made to the aircraft movement figures in Table 3.10.

Practical annual capacity

3.55 Because of the fluctuations in demand over the day and over the year, the annual capacity of an airport cannot be simply obtained by multiplying the movement rates given in Table 3.10 by the number of hours

Printed image digitised by the University of Southampton Library Digitisation Unit

in a year. The appropriate multiplying factor depends on the distribution of traffic during the day and during the year, and can vary between airports and from year to year.

3.56 In chapter 4 a faster growth of leisure traffic than of business traffic is forecast. Since leisure traffic at present tends to be seasonal, the distribution of total demand over the year might become more uneven in the future. On the other hand the increased popularity of winter holidays by air may off-set this trend.

3.57 All airports have by definition spare capacity in off-peak periods. Off-peak traffic will generally tend to be attracted to the most accessible airport. Consequently the more accessible airports will tend to have a more even spread of traffic throughout the year.

3.58 Restrictions on the number of night time movements apply at Heathrow. It has been assumed that these will continue. No such restrictions have been assumed for the third London airport.

3.59 The present trend towards a more even spread of traffic over the year at Heathrow is likely to continue until the opening of the third London airport. Thereafter there is likely to be some further "trough-filling" in the winter for the reasons given in paragraph 3.56 above. There is little scope for further peak spreading during the 24 hour period because of the need to schedule at commercially attractive times of day and because of the restrictions on night movements. The following values have therefore been estimated for the ratio of the practical hourly capacity for air transport movements at Heathrow to annual air transport movements.

Table 3.12

Heathrow: assumed ratio of hourly to annual capacity

Year	*Hourly capacity/ annual capacity*
1968	.000259*
1970	.000255
1975	.000244
1980	.000238
1990 and thereafter	.000216

*Actual

3.60 Gatwick also shows a trend towards a more even spread of traffic over the year. This trend is likely to continue at a faster rate than at Heathrow, but the seasonal pattern is not expected to become as flat as at Heathrow, since the proportion of business to holiday traffic is likely to be lower at Gatwick than at Heathrow. When the third London airport becomes operational some winter "trough-filling" at Gatwick can be expected. The pattern of air transport movements during the 24-hour period is at present slightly more uneven than at Heathrow and this is expected to continue.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.13

Gatwick: assumed ratio of hourly to annual capacity

Year	*Hourly capacity/ annual capacity*
1968	.00048
1970	.00047
1975	.00044
1980	.00040
1985 and thereafter	.00037

3.61 Holiday traffic currently predominates at Luton and the present seasonal pattern is more uneven than at Gatwick. As traffic volume increases the unevenness may be expected to decrease. By 1975 the seasonal pattern may approximate to that of Gatwick in 1968. No further decrease in the practical hourly capacity to annual ratio has been assumed after 1975.

Table 3.14

Luton: assumed ratio of hourly to annual capacity

Year	*Hourly capacity/ annual capacity*
1968	.00055*
1970	.00053
1975 and thereafter	.00048

*Actual

3.62 In the early years of the third London airport (assuming that no special measures are taken to build up traffic levels) air transport movements are likely to be more seasonal at the third London airport than at Heathrow. There are two reasons for this. First, the seasonal pattern at the third London airport is expected to be influenced chiefly by its relative lack of accessibility compared with other airports in the London area. Secondly, the business/non-business ratio at the third London airport will be less than at Heathrow but similar to Gatwick. As the annual number of air transport movements grow, it is likely that the initial unevenness will decline. It has therefore been assumed that the seasonal pattern will be the same as that forecast for Gatwick in 1975 when one runway at the new airport is at full capacity. When two runways are at full capacity, the seasonal pattern will be as for Heathrow in 1968. When three runways are at full capacity, the seasonal pattern will be as forecast for Heathrow in 1975. When four runways are at full capacity the seasonal pattern will be the same as that forecast for Heathrow in 1980.

3.63 The ratio of the practical hourly capacity for air transport movements at the third London airport to annual capacity has been assumed to be lower than at Heathrow since no restrictions on night flying have been assumed. An estimate of the demand for night air transport movements

Printed image digitised by the University of Southampton Library Digitisation Unit

has been made by comparison of Gatwick (unrestricted) and Heathrow (unrestricted) in 1968. It has therefore been assumed that unrestricted night movements would add 10 per cent to the annual number of air transport movements at the third London airport.

Table 3.15

Third London airport :assumed ratio of hourly to annual capacity

Hourly capacity/annual capacity			
1 runway at full capacity	*2 runways at full capacity*	*3 runways at full capacity*	*4 runways at full capacity*
.004	.000235	.000224	.000214

3.64 Annual capacity for air transport movements is finally derived by deducting the non-air transport movements (see paragraph 3.52 to 3.54 above) from the hourly capacities given in table 3.10, and dividing by the ratios given in tables 3.12 - 3.15. Tables 3.16 and 3.17 show the results which have been used in the cost/benefit analysis and in the analysis of the timing of the need for the new airport.

Table 3.16

Annual capacity: air transport movements (000's) by year at Heathrow, Gatwick and Luton

	Year							
Airport	*1970*	*1975*	*1980*	*1985*	*1990*	*1995*	*2000*	*2005*
Heathrow	278	290	328	328	361	361	361	361
Gatwick 1	77	84	93	100	100	100	100	100
Gatwick 2		125	138	148	148	148	148	148
Luton	50	54	54	54	54	54	54	54

Table 3.17

Annual capacity: air transport movements (000's) by runway at the third London airport

One runway	*Two runways*	*Three runways*	*Four runways*
102	332	527	631

IV GROUND-SIDE LIMITATIONS

3.65 The objective of airport design should be to keep in balance the various elements of airport capacity, notably terminal and runway capacity. However the growth of the passenger-carrying capacity of aircraft will continue to pose increasing problems at existing airports to an extent in the future where it will become increasingly difficult to provide passenger terminal capacity to match the runway capacity. The position will vary from airport to airport but may prove particularly difficult in the very long term at Heathrow. Nevertheless in trying to look so far ahead it must not be assumed that these limitations are necessarily inevitable.

Printed image digitised by the University of Southampton Library Digitisation Unit

Heathrow

3.66 The advice of the British Airports Authority has been sought on Heathrow's likely maximum capacity for dealing with terminal passengers on the assumption that any necessary additional land could be acquired and that necessary finance would also be forthcoming. Assuming that the relationship between the various main categories of air traffic remains the same, they have estimated that the one-way sustainable hourly rate passenger terminal capacity at Heathrow could be of the order of 6,000 passengers an hour in 1975, rising to 8,000 in 1980 and 9,500 in 1985. Further growth in that capacity could be assumed thereafter, but possibly at a slower rate. It must also be assumed that in both the short and long term, surface access to Heathrow will be improved to match this growth in capacity (by providing good rail access and improved road access). The Research Team has therefore assumed that surface access will not be a limitation and has taken the figures in table 3.18 for ground-side capacity over the period of the study.

Table 3.18

Ground-side limitations:

Heathrow maximum one-way terminal passenger traffic

	1975	*1980*	*1985*	*1995*	*2005*
Passengers per hour	6,000	8,000	9,500	11,000	12,000

3.67 To convert these hourly passenger figures into air transport movements it is necessary to allow for imbalance between arrivals and departures (called the tidal factor) and for higher load factors expected in the busy hours before dividing by the average number of passengers per plane.

3.68 The tidal factor is defined as the ratio of the maximum of arrivals and departures in any hour to the total flow. Values of this factor for Heathrow in 1968 were obtained for twelve busy August hours. The tidal factor varied between 0.50 and 0.61. For forecasting purposes a value of 0.6 has been taken.

3.69 The average aircraft load factor has been estimated (see chapter 4) as 0.68. A reasonable estimate for load factor in the busy hours is 0.85, which is the average load factor assumed for charter traffic. The ratio of these two load factor values is 0.8.

3.70 The maximum runway capacity corresponding to the limitations shown in table 3.18 can therefore be obtained by dividing the figures given there by 0.6, to give maximum two-way flow, multiplying by 0.8 to correct for busy hour load factors, and finally dividing by the average number of terminal passengers per air transport movement given in chapter 4 (using terminal passengers per air transport movement rather than passengers per passenger aircraft assumes a small proportion of all-cargo aircraft movements in the busy hours). The results of this calculation are given in table 3.19.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 3.19

Runway capacity corresponding to ground-side limitations

Year	*1975*	*1980*	*1985*	*1995*	*2005*
Passengers per hour	6,000	8,000	9,500	11,000	12,000
Passengers per hour modified as in paragraph 3.70	8,000	10,667	12,667	14,667	16,000
Terminal passengers per aircraft	92	122	157	215	280
Air transport movements per hour	87	87	81	68	57

3.71 If these figures are now compared with those shown in table 3.10 (from the figure of 82 in the second column of table 3.10 must be deducted 4 non-air transport movements) it can be seen that ground-side limitations impose no constraints on runway capacity until after 1985.

3.72 The annual capacity of Heathrow given in table 3.16 must therefore be reduced to allow for this effect. For 1995 the appropriate capacity becomes 361,000 x 68/78, or 315,000, and for 2005 it is 361,000 x 57/78 or 264,000.

Third London airport

3.73 At the third London airport both terminal buildings and access could become constraints in the long term. The one-way design capacity of both road and rail access assumed for the design study is about 10,000 passengers per hour, and the eight terminal buildings are broadly capable of handling about 5,000 passengers per hour. It is reasonable to assume in the long term some improvements and the following are suggested as a possible ultimate system capacity:

airport road system = 10,000 x 1.3 = 13,000 passengers per hour

airport rail system = 10,000 x 1.7 = 17,000 passengers per hour

terminals = 40,000 x 1.5 = 60,000 passengers per hour

3.74 On the basis of the tidal factor given in paragraph 3.68 (0.6), therefore, the access system might deal with 30,000/0.6 = 50,000 passengers per hour (arrivals and departures) and the terminals 60,000 passengers per hour.

3.75 The maximum runway capacity for a four-runway airport is 143 movements per hour (table 3.10) or 135 allowing for 8 non-air transport movements. If this is multiplied by 280 passengers per aircraft corresponding to the year 2005 and by 1.25 to allow for a higher load factor in the peak, a figure of 47,250 passengers per hour is obtained. Since this is less than the figures given in paragraph 3.74, no additional constraints on third London airport capacity need be assumed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Introduction

4.1 The following main forecasts were required for the timing of the need and the cost/benefit studies:

(a) total passenger and freight demand at the London area airports up to the year 2006,

(b) the number of air transport movements,

(c) the geographical origins or destinations of passengers using the London area airports and the effect which the different sites for the third London airport would have on demand.

The following subsidiary forecasts were also needed:

(d) aircraft passenger load factors and aircraft capacity,

(e) the amount of traffic on each airlane,

(f) the incomes of British air passengers flying for business or for other reasons.

4.2 In February 1968 the Board of Trade set up a working party (the Working Party on Traffic and Capacity) to consider traffic and capacity at Heathrow and methods of relieving congestion there. The Working Party, composed of representatives of the Board of Trade, the National Air Traffic Control Services, the British Airports Authority and airlines provided forecasts of air passenger demand and of demand for aircraft movements at Heathrow and Gatwick up to 1985. The methods used and the results of the Working Party's studies are given in part 2 of volume VIII of the Commission's *Papers and Proceedings.**

4.3 The Working Party forecast virtually equal percentage increases in terminal passengers from year to year and not a straight line increase. (Terminal passengers are defined as passengers who join or leave an aircraft at the airport.) This results for example in a numerical increase of 3.5 million between 1975 and 1976. The average annual numerical increase from 1962 to 1967 was 1.2 million passengers.

4.4 In addition to using the forecasts produced by the Working Party, the Commission arranged a special survey of air passengers at Heathrow and Gatwick airports in 1969 (appendix 1). This was designed to provide data following purposes:

(a) to investigate what influences decisions to travel by air and thus to check the assumptions on which the Working Party forecasts were based,

**CTLA Papers and Proceedings*, volume VIII, part 2, section 1 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) to decide the best estimate of the trend in traffic up to 1985 within the range of the forecasts supplied by the Working Party,

(c) to extend the forecasts to the year 2006,

(d) to enable certain detailed analyses of passenger traffic to be made for use in other parts of the work (e.g. surface access, air traffic control).

4.5 The methods used for the survey are explained in appendix 1 to this chapter and the results used for the traffic forecasts and for other purposes are set out in this chapter.

4.6 In addition to the survey, the British Travel Association were asked to provide forecasts of foreign air passengers. These are shown in appendix 2 to this chapter.

British non-business passengers

4.7 This group includes all passengers resident in Great Britain (i.e. excluding Northern Ireland) whose air journeys are not solely for business or professional purposes. The annual British National Travel Surveys carried out by the British Travel Association give some information suggesting that future growth of this traffic would be affected by expected increases in income and by the proportion of certain groups in the population (e.g. young people and those without children).

4.8 The Commission's 1969 Air Passenger Survey obtained detailed information from air passengers about their income, age and whether they had children so that the structure under these headings could be set against that of the whole population to derive a "propensity to fly" for each subgroup. In the interests of high response and speed all heads of household were asked to state their total gross income, those who were not heads of households were asked to state the income of the head of household, or if they themselves were in paid employment, to state their own income.

4.9 The information on air passengers' income had to be compared with information on income for the whole population. As the definition of income in the 1969 Air Passenger Survey differed from that used in most surveys, the only comparison possible was that with special analyses of the *Family Expenditure Surveys** prepared and published by the Department of Employment and Productivity. An analysis of the 1968 *Family Expenditure Survey* could not be completed in time for the forecasting work. Therefore estimates have had to be made on the basis of the published results from earlier *Family Expenditure Surveys.* It is possible that these estimates are incorrect but it is unlikely that they are so incorrect as significantly to alter the general conclusions which can be drawn from the analysis described below.

4.10 The columns headed 1969 in table 4.1 give estimates by income group of the total population of Great Britain as derived from the *Family Expenditure Surveys* and of the air passengers in each group as derived from the 1969 Air Passenger Survey at Heathrow and Gatwick. The propensity to fly of each group is given by the ratio of air passengers to total population. The table suggests that propensities do not rise much until a steep rise occurs in groups with annual incomes of £2,500 and above.

* HMSO

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.1

Estimates by income group of journeys by British non-business air passengers at Heathrow and Gatwick; total population of Great Britain and proportions flying

	1969			1962	
Yearly income (£)	Great Britain (millions)	Air passengers journeys (millions)	Proportion flying (air passengers/ Great Britain population)	Great Britain population (millions)	Air passengers journeys* (millions)
Up to 500	7.7	0.312	0.04	10.9	0.436
500-750	7.4	0.421	0.06	10.1	0.606
750-1000	8.9	0.749	0.08	9.5	0.760
1000-1500	15.1	1.201	0.08	13.6	1.088
1500-2000	8.3	0.868	0.10	5.7	0.570
2000-2500	3.5	0.473	0.14	1.8	0.252
2500-3000	1.5	0.343	0.25	0.6	0.150
3000-4000	0.9	0.354	0.39	0.7	0.273
4000-5000	0.5	0.213	0.43	0.3	0.129
5000 and above	0.5	0.265	0.53	0.2	0.106
Total	54.3	5.2	0.10	53.4	4.4

* Calculated on the basis of the 1969 proportion flying.

4.11 The columns headed 1962 in table 4.1 give an estimate of the total population of Great Britain by income group for 1962 at 1969 prices. This was calculated from the 1969 distribution by income groups on the assumption that the distribution by income groups was increased by the same percentage as the increase in the mean. The last column of table 4.1 shows that on 1969 propensities to fly the number of journeys by non-business air passengers would have been 4.4 million. The actual figure for 1962 was probably about 2.3 million, therefore the increase in air passenger journeys between 1962 and 1969 is 2.9 million. According to table 4.1 increases in income account for only 0.8 million extra air journeys (i.e. 5.2 million minus 4.4 million) which is 30 per cent of the total. It can therefore be concluded that the remaining increase was due to an increase in propensity to fly within income groups.

4.12 Estimates of distribution of the total population by income group up to the year 2006 have been made on the same basis as was used for the 1962 estimate and assuming a 3 per cent increase per annum in income in real terms. If the 1969 propensities to fly are applied to the future estimated population figures a fairly rapid increase in air passengers is indicated, but it does not match the increase experienced between 1962 and 1969 in the early years and does not reach that level until the 1980s.

Printed image digitised by the University of Southampton Library Digitisation Unit

4.13 A forecast which assumed no further increase in people's propensity to fly would clearly be an underestimate. The factors which had produced the increased propensity to fly during the 1960s were therefore examined to see if and how they would be likely to continue to operate in the future.

4.14 The fall in the real cost of air travel, the increase in charter flights, the greater speeds made possible by jet aircraft, the publicity given to holidays by air and the wider and more frequent pattern of services made possible by increasing demand - these were probably the major factors in the 1960s and are likely to continue to obtain in the future. Some will lead to less than equal proportional increases annually in the propensity to fly and others to greater. The rate of increase from 1962 to 1969 was 10 per cent per year and there was no evidence in the British National Travel Surveys to show that propensities had increased at different rates in different income groups. Equal proportional increases of 10 per cent each year have therefore been assumed.

4.15 In the later part of the period covered by the forecasts the market for air journeys will probably approach an upper limit or ceiling. There is, however, no evidence from which such a limit can be derived. None of the income groups shown in table 4.1 has yet approached the ceiling but certain categories (e.g., those with young children and the elderly) in each group may possibly continue to have a low propensity to fly and so hold back the average for the group as a whole. Table 4.2 shows estimates for these two categories derived from the 1969 Air Passenger Survey by broad income group in comparison with the average for the 1969 survey as a whole.

Table 4.2

British non-business passengers 1969; propensity to fly of specific categories of people

Annual income (£)	*Overall average propensity to fly*	*Propensity to fly of families with dependent children under 15*	*Propensity to fly of peoples aged 65 and over*
Up to 3000	0.08	0.04	0.03
3000 and over	0.44	0.43	0.20

4.16 Families with dependent children clearly have a lower propensity to fly at annual incomes below £3,000. This is probably because they have less money to spare for air journeys rather than just because of reluctance to take children by air. At annual incomes above £3,000 there is no evidence that these people will hold back the overall propensity to fly. On the other hand, older people appear at present to have a lower propensity even in the higher income groups. While this will increase in absolute terms in the future, it will remain low in relation to other age groups.

Printed image digitised by the University of Southampton Library Digitisation Unit

4.17 Heathrow and Gatwick now handle about two-thirds of all the air journeys by British non-business passengers. As the much greater numbers of passengers forecast for the 1980s and 1990s encourage the development of more direct flights to holiday destinations from airports nearer to the passengers' homes, it is likely that the proportion of such journeys at the three London airports will fall to one half. It has been assumed therefore that the ceiling level for journeys by British non-business passengers at the three London airports will be two per person per year, which implies an average of four air journeys for all British airports. Once this level has been reached, in each income group as a result of the 10 per cent growth mentioned in paragraph 4.14 above, no further increase in propensity to fly has been assumed for that group. The forecasts which result from these calculations are shown in table 4.5.

British business passengers

4.18 In the 1969 Air Passengers Survey, British residents (i.e. excluding Northern Ireland residents) who were flying for business reasons were asked to state their occupation. An analysis of replies is given in table 4.3. This shows the extent to which flying is confined to the higher administrative, technical and professional occupations. These occupations form some 15 per cent of the total working population but provide over 90 per cent of the air passengers.

Table 4.3

Occupations of British-resident passengers flying for business reasons

	%
Directors	25
Professional/scientific workers	19
Engineers/technologists	18
Managers	17
Executives	8
Artistic/literary/recreational workers	5
Clerical workers	3
Manual workers	3
Armed forces	1
Technicians	1
Total	100

4.19 Table 4.4 shows the estimated proportion of the total business population (as defined below) who made air journeys in 1969. The table also shows that at the 1969 proportions the number of business air passengers in 1962 would have been 2.9 million. As the actual figure in 1962 was probably about 1.7 million, it can be concluded that the increase in the total number of people in the defined occupations

Printed image digitised by the University of Southampton Library Digitisation Unit

between 1962 and 1969 accounted for some 30 per cent of the recorded increase in air passengers and that the remaining increase was due to an increase in the propensity to fly.

Table 4.4

Estimate of journeys by British business air passengers at Heathrow and Gatwick: total business population* and proportion flying

1969			1962	
Total business population *(millions)*	Journeys by business air passengers *(millions)*	Proportion flying (air passengers/ total business population	Total business population *(millions)*	Journeys by business air passengers** *(millions)*
3.531	3.4	0.9629	3.031	2.9

Notes *As defined by the Department of Employment and Productivity this group consists of:

(a) administrators and general managers,

(b) professional and executive occupations (administrative services),

(c) social science, welfare and spiritual guidance occupations,

(d) literary, artistic and entertainments occupations,

(e) teaching occupations (except medical),

(f) health diagnosing, treating and related occupations,

(g) technical and scientific research, planning and related occupations,

(h) managerial occupations, production process and constructional operations.

**Calculated on the basis of the 1969 proportion flying.

4.20 For the forecasts of traffic at the three London airports, the number of people in the defined occupations has been increased by over 70,000 each year (i.e. the increase which obtained between 1962 and 1969) giving a total of 6.2 million in 2006. The average increase in the propensity to fly for this group for the period 1962 to 1969 was 8 per cent per annum, and it has been assumed that the increase will continue at that rate. It has also been assumed that the ceiling level will be six air journeys per person per year. While some business travellers will make very many more air journeys, this appears to be a realistic average having regard to the expectation that a higher proportion of flights in the future will be from airports other than Heathrow, Gatwick and the third London airport.

4.21 The resulting forecasts for British business air passengers are shown in table 4.5.

Printed image digitised by the University of Southampton Library Digitisation Unit

Passengers resident outside Great Britain

4.22 For the purpose of these forecasts, Northern Ireland residents have been considered separately from residents in Great Britain.

4.23 The British Travel Association was asked to make available its forecasts of the foreign residents expected to visit Great Britain through certain major airports up to the year 2006. These forecasts are given in appendix 2 to this chapter. They had to be adjusted as follows:

(a) to include air journeys by Northern Ireland residents (the 1969 Air Passenger Survey showed these to be 2.5 per cent of total air journeys by non-British residents but this proportion is likely to decrease),

(b) to include air journeys within the United Kingdom by non-British residents (the 1969 Air Passenger Survey showed these to be 12 per cent of total air journeys by non-British residents),

(c) to include non-British residents who change aircraft at Heathrow or Gatwick (transfer passengers) but who are not counted as visitors because they do not spend a night in this country (the 1969 Survey showed these to be 7 per cent of total air journeys by non-British residents but this proportion is likely to decrease as more direct air journeys become possible),

(d) as the forecasts relate to all airports in south-east England and to Manchester (Ringway), traffic which passed through airports other than the three London airports had to be excluded. At present this traffic is relatively small but it is likely to increase in the future as more direct flights become available to airports close to passengers' destinations.

4.24 Taking all these factors together it has been assumed that the net result requires an upward adjustment to the British Travel Association's forecasts for air journeys by non-British passengers of 7.5 per cent in 1957 and of 5 per cent in subsequent years. The resulting figures are shown in table 4.5.

Forecasts of passenger traffic demand at Heathrow, Gatwick, Luton and the third London airport

4.25 The assumptions and calculations so far described lead to the forecasts of terminal passenger traffic demand shown in table 4.5. These may be compared with the forecasts up to 1985 received from the Board of Trade's Working Party on Traffic and Capacity at Heathrow and Gatwick which are shown in part 2 of volume VIII of the Commission's *Papers and Proceedings.*

**CTLA Papers and Proceedings,* volume VIII, part 2, section 2 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.5

Terminal passenger demand at Heathrow, Gatwick and third London airport
(millions of air journeys)

Year	British residents		Non-British residents	Total	Working Party forecasts		
	Non-business	Business			Lower	Most likely	Upper
(estimated) 1969	5.2	3.4	8.5	17.1	16.5	17.1	17.6
forecast							
1975	11.1	6.1	15.0	32.2	29.2	33.2	36.9
1981	24.8	10.6	22.7	58.1	48.6	60.1	70.3
1991	74.4	26.7	36.8	137.9	-	-	-
2006	138.0	37.0	58.0	233.0	-	-	-

4.26 Because the effects of closing or retaining Luton airport have to be considered in the study, a forecast of terminal passenger demand for Luton has to be added to the forecasts shown in table 4.5. The forecast represents the growth of demand currently being satisfied at Luton. In addition, a forecast of transit passengers (note: a transit passenger is defined as a passenger who arrives at and departs from the airport on the same aircraft which is in transit through the airport) is needed in order to make estimates of air transport movements. Table 4.6 shows the results of these two adjustments.

Table 4.6

Total passenger demand (i.e. terminal and transit) at Heathrow, Gatwick, Luton and the third London airport

(millions of air journeys)

Year	British residents				Non-British residents		Total - all four airports	
	Non-business		Business					
	Luton	Total	Luton	Total	Luton	Total	Luton	Total
1969 (estimated)	0.7	6.0	0.1	3.5	0	8.6	0.8	18.1
1975	1.4	12.6	0.1	6.3	0	15.1	1.5	34.0
1981	3.2	28.3	0.2	10.9	0	22.9	3.4	62.1
1991	9.7	84.9	0.4	27.4	0	37.2	10.1	149.5
2006	17.9	157.4	0.6	38.0	0	58.6	18.5	254.0

4.27 The above forecasts do not take account of the effect of the possible introduction of short or vertical take-off and landing aircraft (STOL or VTOL) on airports catering for conventional aircraft. It has been assumed that the demand for conventional air travel is unlikely to be significantly affected by these developments until the middle 1980s. After that date the rate of erosion of the market for journeys by

Printed image digitised by the University of Southampton Library Digitisation Unit

conventional aircraft is highly uncertain, therefore greater uncertainty attaches to the forecasts for the later years.

Forecast of air freight traffic demand

4.28 Air freight has been defined as the imports and exports of commercial cargo and mail; it excludes car ferry traffic, excess baggage and airline stores.

4.29 Various methods of forecasting freight were reviewed; first, a forecast related to some economic activity for which a forecast already exists. Analysis showed significant statistical relationships between air freight and gross national product and between air freight and the index of industrial production. However, because air freight in the United Kingdom is still in its infancy these correlations were not considered to be a sound enough basis for forecasting. Secondly, the relationship between freight traffic and passenger traffic was examined. This, however, takes no account of the possibility that the trend of freight traffic may be markedly different from that of passengers in future. It was therefore, discarded. Thirdly, an analysis of commodities was considered whereby commodity groups would be forecast independently and the proportion of each commodity carried by air forecast on the trend over the last few years within ceilings set by consignment sizes and aircraft loading capacities. This method, while appearing the most promising involves the collection and handling of a great deal of information and was beyond the resources of the Research Team.

4.30 The Research Team has therefore relied mainly on the findings of the Edwards Committee on Civil Air Transport* and on forecasts of future air freight traffic supplied by BEA and BOAC. There is no reason to believe foreign airlines' freight traffic growth would be substantially different. The Edwards Committee forecast growth factors for British airline freight traffic are shown in table 4.7.

Table 4.7

Estimate of growth factors of future freight traffic

1966	1970	1975	1980
100	200	450	850

These growth factors envisage as fast a growth rate of air freight up to 1980 as in the decade 1958-1968, and are used as a basis for the forecast up to 1980. Thereafter the forecasts are based on advice received from the airlines. These point to a growth rate of 15 per cent per year up to 1985, of 10 per cent per year between 1985 and 1990 and 5 per cent per year between 1995 and 2006. The growth rates thus derived have been applied to current levels of freight at Heathrow, Gatwick and Luton. The results are shown in table 4.8.

**British air transport in the Seventies.* (Cmnd. 4018) (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.8

Freight traffic forecasts (import and export)
(Heathrow, Gatwick, Luton and third London airport)
(000 metric tons)

Year	1969	1975	1981	1991	2006
Metric tons	424	982	2,707	8,411	21,057

4.31 At present approximately 60 per cent of air freight is transported in the holds of passenger aircraft. The new and larger aircraft which will come into operation in the next decade will provide a substantial increase in freight capacity and it seems unlikely therefore that shortages of capacity will restrict the future growth of air freight.

Air transport movements

4.32 In order to translate the passenger traffic forecasts shown in table 4.6 into air transport movements, an estimate has to be made of the future number of passengers per aircraft. The Working Party on Traffic and Capacity made a forecast of total air transport movements on the basis of average terminal passengers per air transport movement (including movements of all cargo aircraft). This forecast has been used to derive forecasts of the total number of passengers (including transit passengers) per passenger aircraft movement. Both these sets of forecasts are shown in table 4.9.

Table 4.9

Forecasts of terminal passengers per air transport movement and of total passengers per passenger aircraft movement
(number of passengers)

	1970	1975	1980	1985	1990	1995	2000	2005
Terminal passengers per air transport movement	70	92	122	157	185*	215*	250*	280*
Total passengers per passenger aircraft movement	74	98	129	166	196	228	265	296

* extrapolated by the Research Team

4.33 The application of the forecasts of total passengers per passenger aircraft movement to the forecasts of air passenger journeys in table 4.6 gives the movements set out in table 4.11 below.

4.34 Freight will be carried either in the holds of passenger aircraft or in all-cargo aircraft. The proportion of freight carried on the latter was about 40 per cent in 1966. BOAC and BEA advice suggests that this proportion will gradually increase to 60 per cent by 1995 and be constant thereafter. Payloads are now about nine metric tons per all-cargo aircraft but are expected to increase by 15 per cent per annum up to 1985 (i.e. at the rate

Printed image digitised by the University of Southampton Library Digitisation Unit

estimated in the report of the Edwards Committee on Air Transport) and at 10 per cent p.a. thereafter. The results are shown in table 4.10.

Table 4.10

Forecasts of all cargo air transport movements at London airports

Year	Forecasts of freight tonnage *(000 metric tons)*	Percent carried on all-cargo aircraft *(%)*	Tonnage carried on all-cargo aircraft *(000 metric tons)*	Assumed payload *(metric tons)*	Forecasts of all-cargo air transport movements
1969	424	40	170	9	19,500
1975	982	40	393	20	19,600
1981	2,707	45	1,218	38	32,000
1991	8,411	55	4,626	122	38,000
2006	21,057	60	12,635	250	50,000

4.35 The forecast of total air transport movements for Heathrow, Gatwick, Luton and third London airport is shown in table 4.11.

Table 4.11

Forecast of total air transport movements - London area airports
(000's)

	Passenger aircraft	All-cargo aircraft	Total
1969	258	19.5	277.5
1975	347	19.6	366.6
1981	460	32.1	492.1
1991	740	38.0	778.0
2006	845	50.0	895.0

These forecasts of annual air transport movements need to be related to the forecasts of annual capacity at the London area airports given in paragraph 3.64 of chapter 3.

Load factors and aircraft capacity

4.36 For the estimates of future noise levels forecasts of growth in aircraft size were needed. These were derived from the estimates of passengers per passenger aircraft divided by the expected load factor. It has been assumed that load factors would be 60 per cent for scheduled operations and 85 per cent for charter operations as indicated in the report of the Edwards Committee on Air Transport. Taking into account the division of future traffic between scheduled and charter operations shown in table 4.17 below, this results in a constant load factor of 68 per cent. This figure has been applied to all passenger flights at all the airports to under consideration. The application of this load factor to the forecast of passengers per passenger aircraft gives the estimate of average passenger aircraft size shown in table 4.12.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.12

Average aircraft passenger capacity

Year	Passengers
1970	109
1975	145
1980	190
1985	244
1990	288
1995	335
2000	390
2005	435

Traffic generation and surface origin of passengers and freight

4.37 The forecasts in table 4.5 do not show the effect of the siting of the third London airport on the total number of passengers who will wish to fly from the three airports considered. Each of the four sites will change considerably the overall aceessibility to centres of population of the airport system in the south-east.

4.38 It has been assumed that the siting of the third London airport will have no affect on the total number of non-British or of British business passengers using the three London airports. According to the British Travel Association it is the tour operators' methods of handling visitors rather than the choice of one of the four possible sites which will affect the future expansion of tourist traffic. It has been assumed that these methods will be similar for each site so that the choice is unlikely to affect the total number of visitors. As explained in chapter 13, it has been assumed that passengers with high valuations of time (i.e. business passengers) will tend to use the airport offering the largest time savings, i.e., Heathrow.

4.39 The origins and destinations of non-British passengers and of British business passengers have been assumed to be those shown by a survey carried out at Heathrow and other airports in the south-east in August to November, 1968 by the Government Social Survey at the request of the Board of Trade.

4.40 It would be unreasonable to assume that the number of British non-business passengers would be unaffected by the siting of the third London airport and that their surface origins would remain constant. The results of the 1968 Survey showed the area to which passengers were travelling on leaving the airport or the area from which they had come on arriving at the airport. To make certain that this method of questioning did not obscure a proportion who came from outside the south-east and merely passed through London, British non-business passengers were asked in the 1969 Air Passenger Survey to state in what area they lived. Table 4.13 is constructed from their replies and includes estimates for passengers who arrived at Heathrow and Gatwick by air to make an onward air connection.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.13

Region of residence of British non-business passengers at Gatwick and Heathrow

Region[1] of residence	*% of air journeys*		*% of population*
Inner London[2]		16.9	5.7
Outer London[3]		13.8	8.8
Rest of south-east		30.6	17.2
Total south-east	61.3		31.7
South West	3.4		6.9
Wales	1.2		5.1
West Midlands	4.7		9.5
East Midlands	3.6		6.2
East Anglia	1.5		3.1
North-west	7.1		12.6
Yorkshire & Humberside	5.4		9.0
North	2.6		6.2
Scotland	9.2		9.7
Total	100.0		100.0

1 Registrar General's Regions

2 London Boroughs of Hammersmith, Kensington and Chelsea, Camden, Islington, Hackney, Tower Hamlets, Greenwich, Southwark, Lewisham, Wandsworth, Lambeth, Westminster and City of London.

3 Remainder of Greater London Council area.

4.41 Replies to the question on area of residence permitted a more detailed investigation of the effect of accessibility to airports on the number of people who will travel by air. The calculations are shown in table 4.14. The zones used in the surface access work were aggregated into 26 larger districts on the basis of accessibility to Gatwick and Heathrow. The actual proportions of the population making air journeys in 1969 were calculated for each of these districts from the 1969 Air Passenger Survey. The survey had shown that the propensity to fly was dependent on income. An expected proportion flying was therefore calculated for each district by estimating the distribution of population by income group from the district average income by the method described earlier and applying to each income group the national propensity to fly. The index of accessibility used is described in paragraphs 13.22 to 13.24 of chapter.13.

4.42 A fairly close relationship was found between accessibility and actual and expected proportions flying despite the fact that the factors considered did not include all those likely to affect the proportions flying. Age and family responsibilities of the district populations were not considered nor were possible variations from the normal income distribution and no account was taken of the attraction of airports other than Heathrow and Gatwick.

Printed image digitised by the University of Southampton Library Digitisation Unit

4.43 The relationship found was used in the forecasts. An expected proportion flying was estimated for each of the 320 surface access zones from forecasts of the average income and the national propensities to fly of each income group for each of the forecast years. The accessibility of each zone to the airports in the system was then calculated. These two series were combined to give forecasts of the proportions flying from each zone and for each of the four sites for the third London airport. These zones are explained in paragraph 13.3 of chapter 13. Since these figures were for use in the surface access work, they exclude transfer passengers but include an estimate for passengers travelling through Luton airport. Average incomes for each zone were taken.

Table 4.14

British non-business passengers at Heathrow and Gatwick

District[1]	*Proportion flying*		*Accessibility index*[2]
	Actual	*Expected*	
South-east			
10	0.306	0.094	369.4
11,12,13) 16,17)	0.133	0.100	230.6
14,15	0.248	0.100	504.9
20-29	0.182	0.094	56.1
30-34	0.268	0.109	256.1
35-39	0.163	0.099	58.7
40,41	0.232	0.098	262.9
42-49	0.218	0.096	44.0
50-52	0.281	0.102	222.0
53-59	0.143	0.095	67.1
60,61	0.156	0.102	165.9
62-69	0.136	0.099	75.5
70-73	0.157	0.099	84.4
74-76	0.081	0.095	33.8
Non-south east			
80	0.041	0.099	5.5
81	0.063	0.100	13.1
82	0.041	0.098	7.4
83	0.056	0.094	7.1
84	0.061	0.099	21.6
85	0.049	0.096	17.0
86	0.049	0.097	10.2
94	0.026	0.095	1.4
95	0.032	0.095	1.5
96	0.041	0.095	1.3
97	0.015	0.091	0.8
98	0.044	0.091	0.0

1 See maps 13.1 and 13.2

2 See paragraphs 13.22 to 13.24 of chapter 13 for description of accessibility index

3 Source: 1969 Air Passenger Survey.

Printed image digitised by the University of Southampton Library Digitisation Unit

4.44 The origins and destinations of air freight in the United Kingdom are difficult to identify. The data obtained from the airlines are somewhat incomplete as forwarding agents, for understandable commercial reasons, are reluctant to disclose customers' addresses. However, it has proved possible by sample checks to obtain that distribution shown in table 4.15.

Table 4.15

United Kingdom freight distribution, 1966

Region	*Percentage*
London western postal district	44.0
London NW, N & E postal districts	10.0
London SW and SE postal districts	6.5
Outside London postal districts	2.0
Total south-east	62.5
South-west	3.3
East Midlands	4.5
West Midlands	9.9
Wales	1.4
Yorkshire and Humberside	4.7
North West	3.4
North East	2.2
Northern Ireland	1.5
Scotland	6.6

The geographical dominance of London and the south-east can easily be seen and it has been assumed that this will not change.

4.45 Lack of data has made it impossible to determine the modal split between road and rail for air freight movements by surface to and from the airport. Discussions with the airlines suggest that the road/rail division for the third London airport may be constant at 75 per cent/25 per cent in the foreseeable future.

Passenger traffic by airlane

4.46 The distribution of future passenger traffic by airlane and by chartered/scheduled flight was needed for the air traffic control studies on the assumption that this distinction would remain.

4.47 In the 1969 Air Passenger Survey respondents were asked to state the airport at which their journey would finally end or had originally started. Replies of British non-business passengers, together with the type of flight, are given in table 4.8. Transfer passengers have been excluded.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.16

Air destinations/origins and type of flight of British non-business passengers at Heathrow and Gatwick
(% of air journeys)

	Annual income			
Destination/origin	*Up to £1,000* %	*£1,000-£2,000* %	*£2,000-£3,000* %	*£3,000 and above* %
Domestic & Ireland	18	18	15	15
Western Europe	66	65	65	63
North America	9	8	7	9
Rest of world	7	9	13	13
TOTAL	100	100	100	100
Type of flight				
Chartered	66	64	60	52
Scheduled	34	36	40	48
TOTAL	100	100	100	100

4.48 The distribution of destinations seems to be much the same at each income level, except that flights to the rest of the world are greater at higher income levels. Although Western Europe is likely to remain the most important holiday area, the forecasts have assumed that some increase in the proportion of flights to more distant places is likely to occur with faster air journeys and increasing incomes. The forecasts have also assumed a decrease in domestic flights as more services are provided direct from origin to destination.

4.49 The 1969 Air Passenger Survey shows a trend from chartered to scheduled flight with higher income. When the trend is applied to the expected future income distribution of passengers, it gives rise to a small increase in the forecast proportion of scheduled flights.

4.50 It has been assumed that the destinations of British business passengers would remain as given in the 1969 Air Passenger Survey. Although these may change, there did not appear to be any factor likely to influence them which could be used in the forecasts. The destinations of non-British passengers were derived from the British Travel Association forecasts and from the 1969 Air Passenger Survey. The forecasts finally adopted are shown in table 4.17. The major airports included in each airlane are given in appendix 2 of this chapter.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 4.17

Percentages of total terminal passengers by chartered/scheduled flight within airlane

	British non-business		*British business*		*Non-British*	
1981	*Chartered* %	*Scheduled* %	*Chartered* %	*Scheduled* %	*Chartered* %	*Scheduled* %
Domestic trunks	-	6	-	36	-	2
" non-trunks	-	10	-	16	-	1
Irish Republic	-	3	-	6	-	3
Europe, north	1	1	-	7	2	8
Europe, middle	3	1	-	6	2	7
Europe, south	40	12	-	16	5	15
Europe, south-west	6	4	-	1	-	1
North Atlantic	5	4	-	8	13	32
Other long-haul	2	2	-	4	2	7
Total	100		100		100	
1991						
Domestic trunks	-	5	-	36	-	2
" non-trunks	-	10	-	16	-	1
Irish Republic	-	3	-	6	-	2
Europe, north	1	1	-	7	2	7
Europe, middle	3	1	-	6	2	7
Europe, south	39	12	-	16	5	14
Europe, south-west	6	4	-	1	-	1
North Atlantic	4	5	-	8	14	34
Other long-haul	2	4	-	4	2	7
Total	100		100		100	
2000						
Domestic trunks	-	5	-	36	-	2
" non-trunks	-	9	-	16	-	1
Irish Republic	-	3	-	6	-	2
Europe, north	1	1	-	7	2	6
Europe, middle	3	1	-	6	2	7
Europe, south	37	13	-	16	5	13
Europe, south-west	5	5	-	1	-	1
North Atlantic	4	6	-	8	15	35
Other long-haul	2	5	-	4	3	6
Total	100		100		100	

Note: - indicates less than 0.5 per cent.

Printed image digitised by the University of Southampton Library Digitisation Unit

Incomes of British air passengers

4.51 Forecasts of the average incomes of British resident passengers in paid employment were required for the work on surface access. These were derived from the 1969 Air Passenger Survey and the passenger forecasts. A relationship was calculated between average incomes of adult British non-business passengers and the national estimates. The air passengers income was 40 per cent higher in 1969 and 1981, reducing to 20 per cent higher in 1991 and to the same figure in the year 2000. These relationships were then applied to Ministry of Transport forecasts of average income of those in paid employment in each forecast year. In the survey the average income of British business passengers was found to be some 70 per cent higher than that of non-business passengers and this relationship was maintained for the forecasts. The resulting estimates are shown in table 4.18.

Table 4.18

Estimated average annual incomes of British resident air passengers
(£)

	1969	1981	1991	2000
Non-business air passengers	1820	2673	3079	3348
Business air passengers	3100	4552	5244	5702

Printed image digitised by the University of Southampton Library Digitisation Unit

This appendix describes the methods used in the survey and reproduces the questionnaire.

Fieldwork was carried out between 22 May and 31 July 1969. The Commission's timetable precluded a survey covering a whole year. Although the main element of seasonal variation is accounted for by treating British business and non-business and non-British passengers separately the survey analysis of these groups may not be representative of the whole year.

Interviewing was carried out by a commercial firm with the advice of the Government Social Survey and using the sampling method adopted for the International Passenger Survey. International and domestic passengers were sampled at Heathrow and Gatwick airports.

The response rate was as follows:

	Number	*%*
Total contacted	**24,317**	**100.0**
Not English-speaking	925	3.8
Under 15 years	2,187	9.0
Other	986	4.1
Total non-effective contacts	4,098	16.9
Total effective contacts	**20,219**	**100.0**
No interviewer available	60	0.3
Passenger late for flight	766	3.8
Passenger refused	832	4.1
Other	473	2.3
Total interviews not obtained	2,630	13.0
Total passengers interviewed	17,589	

The most difficult individual question as regards response was that on income. Of those who were asked this question classifiable answers were received from 84 per cent of British non-business passengers and 91 per cent of British business passengers.

Printed image digitised by the University of Southampton Library Digitisation Unit

The number of respondents by group which give the bases for the tables quoted in the text are:

	Total	*Arrived/left by surface transport*
British non-business	6764	6284
British business	2635	2362
Non-British	8814	7594

Note: 312 passengers were classified as both business and non-business and analysed under both headings.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 2 Airlane definitions
(see paragraph 4.50)

Domestic -	(a) Trunk	-	Manchester, Glasgow, Edinburgh, Belfast
	(b) Non-trunk	-	remainder
North Atlantic -	Canada USA Iceland Bermuda Bahamas		
Irish Republic			
Europe -	(a) north	-	Amsterdam Berlin Copenhagen Helsinki Malmo Moscow Oslo Rotterdam Stockholm
	(b) middle	-	Brussels Budapest Cologne Dusseldorf Frankfurt Munich Prague Vienna Zagreb
	(c) south	-	Alicante Alghero Athens Barcelona Basle/Mulhouse Beirut Cairo Geneva Gerona Ibiza Karachi Kuwait Lagos Malta Milan Naples Nice Paris Palma Pisa Rome Rimini Tel Aviv Teheran Zurich
	(d) south-west	-	Canaries Lisbon Madrid Seville
Other Long Haul -	Remainder		

Printed image digitised by the University of Southampton Library Digitisation Unit

British Travel Association forecast of tourist traffic by air through airports in the south-east and Manchester (Ringway)

(000s)

Year	*Canada & USA*	*France*	*Germany*	*Irish Republic*	*Italy*	*Switzerland*	*Scandinavia, Benelux, Spain, Portugal*	*Rest of Western Europe*	*Poland*	*Russia*	*Rest of Eastern Europe*	*Rest of world*
1970	1,500	320	300	234	150	120	600	100	18	5	40	700
1975	2,800	440	500	260	300	180	1,000	180	30	10	65	1,200
1985	6,200	670	900	300	600	270	1,450	350	55	20	125	2,400
1995	10,000	870	1,400	350	900	350	2,000	530	85	32	200	3,600
2006	14,000	1,100	2,000	400	1,200	420	2,500	750	120	45	300	4,800

Notes
1. It has been assumed that facilities for tourists will be available in the United Kingdom.
2. Estimates based on expectations of increased disposable consumer expenditure and other factors determining the degree of tourist movement.
3. For calculating the numbers for intervening years after 1975, the arithmetical average increase between any two years shown should be used.
4. Each tourist will make two air journeys. Therefore the figures have to be doubled for the purposes of air journey forecasts.

Printed image digitised by the University of Southampton Library Digitisation Unit

QUESTIONNAIRE

J.N. 2648
SURVEY OF AIR PASSENGERS
OUTWARD

CLICKER NO.	CARD	SERIAL NUMBER			
	C.1	C.2	C.3	C.4	C.5
	2				

SECTION A - THIS SECTION TO BE ASKED FOR ALL RESPONDENTS

1(a) What is the main means of transport you have used in getting to this airport from your starting point? (IF OTHER WRITE IN AND CODE WHETHER PRIVATE OR PUBLIC)

	C.6	ROUTE
PRIVATE CAR	V	1(b)
PRIVATE BUS/COACH	X	
TAXI	O	
MOTOR BICYCLE/ SCOOTER	1	
OTHER 'PRIVATE'	2	
TRAIN	3	2(a)
SCHEDULED BUS/ COACH SERVICE	4	
AIRLINE BUS/COACH SERVICE	5	
AIR (i.e. In Transit)	6	
OTHER PUBLIC	7	
OTHER (Write In) ---------- ←		

1(b) IF 'PRIVATE' METHOD OF TRANSPORT (V-2 in 1(a)): How many air passengers including yourself, were there in this vehicle?

	C.7	
1 - 5	V	2(a)
6 - 10	X	
11 - 20	O	
21 - 30	1	
31 - 40	2	
41 - 50	3	
50+	4	

2(a) ALL RESPONDENTS: Which airport are you finally travelling to on this journey? ---------- c8-11 → 2(b)

2(b) And which flight are you travelling on now? (W.I.) Flight No. ---------- Airline ---------- ROUTE 3

3. Which is the last country you have lived in for 12 months or more? W.I.

	c12-14	
GREAT BRITAIN (exc. N. Ireland)	O O 1	4
OTHER (Specify below) ----------		

4(a) What is the chief reason for your journey?

	C15	
HOLIDAY	V	4(b)
STUDIES (FULL TIME)	X	
VISIT REL/FRIENDS	O	
Other 'non business'	1	
BUSINESS/OFFICIAL	2	
MILITARY (ON DUTY)	3	
AIRLINE (ON DUTY)	4	
MERCHANT NAVY (ON DUTY)		
Other 'business'	6	
TRANSIT	7	Section F

4(b) INTERVIEWER: SUMMARY CODE REASONS FOR JOURNEY

	C16	
BUSINESS ONLY	V	Section C or E
NON-BUSINESS ONLY	X	B or D
BOTH BUSINESS & NON-BUSINESS	O	C & E or B & D

SECTION B THIS SECTION TO BE ASKED OF ALL FOREIGN RESIDENT, NON-BUSINESS PASSENGERS (FROM Q.3. AND X/O in Q.4(b))

5. Now a few questions about yourself. What is your marital status?

	C.17	ROUTE
SINGLE	V	6
MARRIED	X	
WIDOWED/DIVORCED /SEPARATED	O	

6. How many people are there, including yourself, in your household? Write in number, coding coding all over 9 as 9 → C.18 → 7(a)

7(a) IF MARRIED/ WIDOWED ETC: Do you have any dependent children aged 0 - 5?

	C.19	
YES	V	7(b)
NO	X	

7(b) And do you have any dependent children aged between 6-14?

YES	O	8
NO	1	

8. ALL RESPONDENTS: What is your exact age? (.....) EXACT AGE

	C.20	
15 - 24	V	9
25 - 34	X	
35 - 44	O	
45 - 54	1	
55 - 64	2	
65+	3	

9. What is the occupation of the head of your household? (W.I.)

	C.21	
Position A	V	10 or Section F
B	X	
---------- C1	O	
Industry C2	1	
D	2	
---------- E	3	

SECTION C - THIS SECTION TO BE ASKED FOR ALL FORFIGN RESIDENT, BUSINESS PASSENGERS (FROM Q.3 AND V/O in Q.4(b))

10. What is the main business of the firm or organisation for whom you work? (W.I.) ---------- ---------- c22-24 → 11

11. What is your own occupation? Position: ---------- Industry: ---------- c25-27 → 12

12. And would you please tell me the exact nature of your business on this trip? CP EP C.28 → C.29 → C.30 → Section F

Printed image digitised by the University of Southampton Library Digitisation Unit

SECTION D - THIS SECTION TO BE ASKED OF ALL BRITISH RESIDENT, NON-BUSINESS PASSENGERS (CODED 001 in Q.3 and X/O in Q.4(a))

13. During 1968, how many one-way journeys by commercial aircraft did you make for private and non-business purposes?	Write in number, coding all over 9 as 9 →		C.31	ROUTE 14
14. How many children, under the age of 15, are accompanying you on this journey?	Write in as 2 digit number (i.e. 05) →		c32-33	15
15. What is your marital status?	SINGLE	V	C.34	17
	MARRIED	X		
	WIDOWED/DIVORCED/SEPARATED	O		16(a)
16(a) IF MARRIED/WIDOWED ETC. Do you have any dependent children aged between 0-5?	YES	V	C.35	16(b)
	NO	X		
16(b) And do you have any dependent children aged between 6-14?	YES	O		17
	NO	1		
17. What is your exact age? (.....) EXACT AGE	15 - 24	V	C.36	18
	25 - 34	X		
	35 - 44	O		
	45 - 54	1		
	55 - 64	2		
	65+	3		
18. In what town or city do you live? (STATE VILLAGE OR POSTAL DISTRICT WHERE APPLICABLE AND COUNTY) _____			c37-39	19(a)
19(a) Are you the head of your household?	YES	V	C.40	19(b)
	NO	X		20(a)
19(b) IF HEAD OF HOUSEHOLD (19a) What is your occupation? (W.I.) _____	Position: A	V	C.41	
	B	X		
	C1	O		
Industry: _____	C2	1		19(c)
	D	2		
	E	3		
19(c) In strict confidence would you please tell me into which of these income groups (SHOW CARD) you fall, before deduction of tax? This is completely anonymous as we are not asking your name or address (CODE FROM CARD)			C.42	Section E or F
20(a) IF NOT HEAD OF HOUSEHOLD (19a) What is the occupation of the head of your household? _____	Position: A	V	C.43	
	B	X		
	C1	O		20(b)
Industry: _____	C2	1		
	D	2		
	E	3		
20(b) Have you any paid occupation yourself?	YES	V	C.44	20(c)
	NO	X		20(d)
20(c) IF ANY PAID OCCUPATION (20b) In strict confidence, would you please tell me into which of these income groups (SHOW CARD) you fall, before deduction of tax? This is completely anonymous as we are not asking your name or address (CODE FROM CARD)			C.45	Section E or F
20(d) IF NO PAID OCCUPATION (20b) In strict confidence, would you please tell me into which of these income groups (SHOW CARD) the head of your household falls, before deduction of tax? This is completely anonymous as we are not asking your name or address. (CODE FROM CARD)			C.46	Section E or F

SECTION E - THIS SECTION TO BE ASKED OF ALL BRITISH RESIDENT, BUSINESS PASSENGERS (CODED 001 in Q.3 AND X/O in Q.4a)

21. In the past 4 weeks how many one-way journeys by commercial aircraft, have you made for business or official purposes?	Write in number, coding all over 9 as 9 →		C.47	ROUTE 22a)
22a) In getting to the airport today, did you come directly from home, from your place of work, or elsewhere? (WHERE PLACE OF WORK IS SAME AS HOME OR ELSEWHERE USE CODES 1 or 2)	HOME	V	C.48	22b)
	PLACE OF WORK	X		
	ELSEWHERE	O		
	HOME = PLACE OF WORK	1		
	PLACE OF WORK = ELSEWHERE	2		
22b) Where is your place of work? (SPECIFY CITY AND POSTAL DISTRICT) _____			c49-51	23
23. What is the main business of the firm or organisation for whom you work? _____			c52-54	24
24. And would you please tell me the exact nature of your business on this trip? CP EP			C.55	25
			C.56	
			C.57	
25. What is your own occupation? Position: _____ Industry: _____			c58-60	26
26. In strict confidence, would you please tell me into which of these income groups (SHOW CARD) you fall, before deduction of tax? This is completely anonymous as we are not asking your name or address. (CODE FROM CARD)			C.61	Section F

SECTION F - THIS SECTION TO BE COMPLETED FOR ALL RESPONDENTS

27. Code whether flight is chartered or scheduled	CHARTERED	V	C.62	
	SCHEDULED	X		
28. Code airport where interview conducted	LAP 1 International	O		
	LAP 2 International	1		
	LAP 3 International	2		
	LAP 1 Domestic	3		
	GATWICK International	4		
	GATWICK Domestic	5		
29. Code day of week	Monday	V	C.63	
	Tuesday	X		
	Wednesday	O		
	Thursday	1		
	Friday	2		
	Saturday	3		
	Sunday	4		
30. Code shift: 102	LAP		C.64	GATWICK C.65
	M1 0700-1100	V		0800-1130 V
	M2 1100-1500	X		1130-1500 X
	A1 1500-1900	O		1500-1900 O
	A2 1900-2300	1		1900-2300 1
	N 2300-0700	2		2300-0800 2

31. Code date and month of interview	DATE		MONTH	
	C66	C.67	C.68	C.69
32. Code result of contact				C.70
	COMPLETED INTERVIEW			V
	Could not identify nth person			X
	No interviewer available			O
	Respondent did not understand English			1
	Respondent late for flight			2
	Person under 15			3
	Refusal			4
	Ineligible			5
	--- Other reason (specify)			
33. Sampling Interval Write in 2 digit figure ----------				c71-72
34. Interviewer Name and No.: _____ (Name) (No.)				

Printed image digitised by the University of Southampton Library Digitisation Unit

5.1 The third London airport has been considered from many differing points of view. Residents on the prospective sites see it as a threat to much which they hold precious; local farmers and businessmen see it as a threat, if not to their livelihood, at least to their accustomed way of life; the country-lover sees it as yet one more way in which the natural heritage may be further eroded; to town and regional planner, the airport assumes the aspect of a huge industrial complex, generating major problems in the fields of housing, tranport, and the provision of services. The third London airport is all of these things, but fundamentally it is a piece of transport investment, one of the biggest single pieces of transport investment this country may ever see. The most important problem in determining the infrastructure of a transport system is to get it in the right place; the transport planner's nightmare is to place the infrastructure where no one wants to use it. This does not mean that the infrastructure must be located in the spot which is precisely optimal from a transport viewpoint; this would give to transport considerations an over-riding importance which they could never claim. But considerable weight has nevertheless to be given to the relative effectiveness with which the four sites meet the needs and convenience of air travellers, and of the carriage of air freight. The value of the nation of this third London airport rests on its efficiency assessed as a piece of transport investment.

5.2 The analysis of the merits of the four sites is mainly relative in character, comprising a comparison of the resource costs incurred by each site, together with changes in benefits. No attempt is made, or could be made, to quantify the total benefits accruing to the travelling public and to the country as a whole from the operation of each individual site. To set against the net costs for each site (assessed in the cost/benefit analysis) there is what might be termed a "base-load" of benefits not measured, but for the existence of which it would be wrong to proceed with a third London airport at all. This "base-load" of benefits is approximately the same for all four sites.

5.3 As was indicated above, the ultimate justification for the airport, like that for any other piece of transport infrastructure, is the extent of its use by passengers and freight. It is from the value of additional journeys made possible by the airport, and from the greater convenience and lower cost of existing journeys, that all benefits ultimately stem, both direct benefits to passengers and shippers of freight, and indirect benefits to society at large. But it is not enough to state that an investment can be justified purely by the public demand for the services it provides. It must also be demonstrated that the demand is sufficiently strong to outweigh all costs and disbenefits which are incurred, particularly if some of those are not directly met by air traffic revenue.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.4 Many of the costs of the airport are fully covered by air traffic revenue. The direct costs of airport construction and operation are the principal element of this kind, but the same applies to the cost of surface access to the airport, both capital and user, and any abnormal costs involved in the housing of airport workers and their families. All these costs are covered directly or indirectly by revenues raised from air traffic. It might be argued that air traffic does not pay directly for the new road investments required by the airport; but this simply reflects the present practice in the provision of roads, and the collection of tax indirectly by road licence and fuel duties. The cost of the proposed rail link should be directly recovered through rail fares.

5.5 Many important costs and disbenefits brought about by the airport are not borne by air traffic. These include the cost of re-locating defence airfields and other public establishments, and the impact of noise and other aircraft nuisance on householders, schools, hospitals and other services, and on recreations within the noise affected area. Whether or not these dis-benefits involve direct financial outlays by central or local government, or a lowering of the quality of living in the areas surrounding the airport, they may quite properly be viewed as a charge on air traffic. It can therefore be argued that demand for air travel is to this extent artificially stimulated by a concealed subsidy.

5.6 In judging whether the benefits accruing to air traffic are sufficiently great to justify the non-recoverable costs and disbenefits listed above, it is convenient to consider the consequences of a hypothetical increase in the payments levied on air traffic by, for example, airports. There are two critical elements in this problem. The first is the sensitivity of air traffic to the level of air fares. On the basis of a number of studies, mainly in the USA, it has been estimated that a 1 per cent increase in the level of air fares will lead to a fall in the volume of air traffic of between 0.8 per cent and 1.6 per cent. These studies mainly refer to air traffic in the United States, and it is arguable how far they provide a safe basis for generalisation in the present context. It therefore seems advisable to take a fairly conservative view and assume that a 1 per cent increase in air fares would lead to a fall of 1½ per cent in the volume of passenger traffic. The second element in this calculation is the relationship between landing fees or airport dues and the total air fare paid by passenger or freight. The smaller the proportion of landing fee to total fare, then the larger could be the relative increase in landing fee for any given percentage increase in total fare without detriment to the level of traffic. In fact, the landing fees normally form a very small fraction of the total passenger fare; at Heathrow for example, the average landing fee per passenger is currently about sixteen shillings, only 4 per cent of the average fare. Given the high proportion of long-haul international traffic using Heathrow, it might be wiser to use a slightly higher figure, say 6 per cent as a representative value.

5.7 It is thus possible to estimate the effect of an increase in landing fees on the volume of passenger travel, and on the total landing fees which would be collected. Clearly the correct assumption is that this hypothetical increase in landing fees applies to all airports in the United Kingdom and Western Europe. The question asked is how air travellers as a whole would react to increased landing fees, not how far traffic might be expected to redistribute itself between airports were one individual

Printed image digitised by the University of Southampton Library Digitisation Unit

airport to raise its charges. On this and the other assumptions set out above, a doubling of landing fees would increase the average air fare by 6 per cent which would in turn lead to a fall in the volume of passenger traffic by some 9 per cent. On this reduced traffic volume total landing fee revenue would rise by just over 80 per cent. Such an assumed increase in landing fees would be sufficient to pay for the non-recoverable costs. The associated fall in volume of traffic is less than one year's growth at current rates, which can hardly be considered significant. Even if therefore the subsidy element in present air travel were eliminated, the bulk of the benefits of air travel would remain. It must be stressed that the above exercise attempts to demonstrate the kind of revenue which might result from a general increase in landing fees. It is not suggested that it would be at all easy or indeed practicable to reach international agreement on the principle that air travellers should cover all the costs which their travel imposes on the communities affected nor that landing fees should in fact be raised in this way.

5.8 Air travel today is in roughly the same position as was travel by motor car some forty years ago. By the end of the century, it is unlikely that air travel will be as important to the average British citizen as is car travel nowadays. But undoubtedly, air travel will rapidly become less restricted to the wealthier sections of the community; indeed the package tour has already made available the advantages of air travel to those who would never have thought of flying ten years ago. Air travel is becoming increasingly popular among the middle-aged, who have more freedom for holidays abroad and for visiting distant relatives, once their own families have grown up. It would therefore be wrong to assume that future air travel will be the privilege of some narrowly defined "jet set".

5.9 It has been argued above, first that the demand for air travel, by both passengers and shippers of freight, is so strong that it more than covers all the costs imposed, and, secondly, that with the passage of time, an increasingly wide section of the population will come to enjoy the benefits of air travel both as passengers and as consumers of goods moved by air. Over and above the direct benefits to air traffic there are secondary benefits. No attempt is made to quantify these; it can only be said that many people accept them as self-evident, and attach considerable importance to them. The first secondary benefit stems from business air travel. Business travel by air is now an essential pre-requisite of all major flows of international trade in goods and services. The total size of the market for a product is often dependent on the ease and rapidity with which the company's marketing executives are able to develop overseas demand. From the consumer's point of view, it is the efforts of foreign firms which are relevant. There has over recent years been a considerable increase in the volume of imported manufactured and other goods from the Continent of Europe. Though this development may well cause concern on balance of payment grounds, it cannot be denied that the free movement of goods and services in international trade is essential to raising the living standards of developed countries. The importance of business air travel in this respect cannot be seriously questioned.

5.10 In addition to acting as a lubricant to international trade, business air travel plays an equally important role in the spread of scientific and technological advances throughout the world. While new technology is, to some extent, propagated by means of the written word, there is still

Printed image digitised by the University of Southampton Library Digitisation Unit

no substitute for the personal visit of the scientist, technologist, or businessman. Any firm considering setting up a subsidiary in an overseas country, or making a bid for a foreign firm, must look closely at the standards of travel and communications between the two countries. Over recent years, for example, the United Kingdom has benefited substantially from the import of American management methods and technology. It is unlikely that this development would have occurred in the absence of good international air services between America and both England and Scotland.

5.11 The second of these secondary benefits arises from the role of the airport as a generator of higher incomes and living standards in the surrounding region. In the USA many new airports are being planned. As soon as the exact site has been agreed there is an immediate appreciation of local land values in the neighbourhood as land is bought for both industrial and residential development. In the USA the new airport site tends to become the focal point of industrial development within its region and the role of airports as generators of economic prosperity is universally accepted.

5.12 The advantages stemming from a major airport may not be as immediately obvious as the disturbance, noise, and other drawbacks to which public attention has been given, but these advantages are no less real on that account. In the long term they become increasingly important.

5.13 The paragraphs below show the effects of the notional doubling of the landing fee, discussed in paragraphs 5.4 - 5.9 above, and relate the British Airports Authority's total net revenue to construction and non-recoverable costs. It was stated in paragraph 5.2 that the "base load" of benefits is approximately the same for all four sites. Thus the figures for the third London airport given in table 5.1 below are averages of the costs and revenues at all four sites.

5.14 The forecasts of the British Airports Authority's net revenue return in Table 15.1 were based on the following assumptions:

(a) the landing fee is £0.8 per passenger (the basic rate in 1968-69) ;

(b) revenue from trading concessions, rents and services would be £0.5 per passenger. This was calculated on the current ratio of ancillary revenue to landing fee revenue. No allowance was made for ancillary revenue to rise with an increase in the landing fee,

(c) average operating costs, including maintenance and repairs would be £0.5 per passenger. The average operating costs at Heathrow between 1966 and 1969 varied from £0.5 - 0.6 per passenger. Although increased productivity at the new airports would be partly offset by increased real wages, economies of scale and technological advances should reduce real operating costs at the third London airport, so that £0.5 per passenger may be a pessimistic forecast;

(d) net revenue per passenger was therefore £0.85 at current landing fees.

5.15 Total discounted net revenue was the product of the number of passengers, (based on interpolations of the forecasts in chapters 4 and 13), the net revenue per passenger and the relevant discount rate at 10 per cent pa. The airport was assumed to have a 30 year life.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 5.1

Construction and non-recoverable costs and revenues from landing fees at current and increased levels at third London airport

	£M (discounted to 1975)
Construction costs	175
Non-recoverable costs	115
Total of above	290
Revenue over 30 years at current levels of landing fees	145
Revenue over 30 years at twice current levels of landing fees (allowing for lost traffic)	260
Revenue over 30 years at 2.25 times current levels	290

Source of cost figures: chapter 29

5.16 It may be seen that the increase in net revenue of £115 m from an assumed doubling of landing fees, is identical to the non-recoverable costs, but it is also apparent that a further increase in landing fees to make a total increase of 125 per cent is needed to produce a total net revenue sufficient to cover fully the total costs of construction. It is perhaps not surprising that the present level of landing fees, which in many cases reflects modest capital charges on land and airfields valued at historical costs does not at first sight appear sufficient fully to cover the costs of an airport built *de novo* at present price levels. The above analysis, however, suggests that the demand for air travel is sufficiently buoyant to support the very small increase in the cost of total air journeys which would be brought about by the requisite increase in landing fees.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

6.1 The Commission's task is to find the right site for an airport. Evidence has, however, been put to the Commission that its assessment of the Foulness site must also take account of a possible seaport development. If Foulness, assessed purely as an airport proved to be the preferred airport site in comparison with the other three, the possibility of a joint airport-seaport project can be ignored. Other authorities will have the responsibility of deciding whether a joint airport-seaport should take the place of the airport project recommended by the Commission.

6.2 However, if Foulness assessed purely as an airport proves not to be the preferred site, the Commission will need to consider the effect of an associated seaport. The question must therefore be considered how the impact of a joint project should be taken into account in the analysis. It is first of all necessary to stand back from this immediate problem, and consider in principle a wider range of possible alternatives. There are five projects which are relevant in principle. These are listed below, suitable labels being attached for ease of future reference:

(a) independent airport at Foulness A_F

(b) best inland airport A_I

(c) independent seaport at Foulness S_F

(d) best seaport site (other than at Foulness) S_X

(e) joint airport-seaport at Foulness J_F

6.3 It is assumed initially that the independent seaports, S_F and S_X are both economically viable, and produce acceptable rates of return on the capital invested. The problem is therefore that of deciding the best airport and seaport out of the following options:

(a) $A_F + S_F$

(b) $A_F + S_X$

(c) $A_I + S_F$

(d) $A_I + S_X$

(e) J_F

Printed image digitised by the University of Southampton Library Digitisation Unit

6.4 The problem is clarified by considering the inherent advantages of the joint project (J_F) over the independent Foulness airport (A_F) and the independent Foulness seaport (S_F). The advantages stemming from a joint development are of two main kinds. First, there are resource costs which, if incurred for one project, wholly or in part serve the needs of the other. Some of the joint cost items remain unaltered when the joint project replaces either of the other two independent projects, e.g. the cost of re-locating the Ministry of Defence firing range at Shoeburyness. Other joint cost items may be heavier for the joint project than for either of the independent projects, but significantly smaller than the sum of such costs for the two independent projects. For example, the cost of fill required for reclaiming land for the airport element in the joint project may well exceed the cost of fill for either of the independent projects. Yet again, the surface access requirements of the joint project may be no bigger than those of the independent airport, but considerably larger than those required for the seaport alone. It is possible that certain cost items would be larger for the joint project than for the sum of the two independent projects, e.g. if both the latter would ideally occupy precisely the same site. However, this is not in practice a major problem, and any increased costs of this kind are certain to be more than offset by the sharing of joint costs.

6.5 Secondly, in addition to the sharing of joint costs, the joint project may lead to the generation of joint benefits, i.e. activities which would occur if only the joint project went ahead. The best example is traffic which takes advantage of the ease of transfer between sea and air instead of using some other less attractive mode of transport.

6.6 The cost of the joint project (J_F) can conveniently be expressed as the sum of the costs of the independent projects (A_F and S_F) less any Net Shared Costs (NSC). Net Shared Costs are defined as the difference between the sum of the costs of any joint items for A_F and S_F and the sum of the costs of the same items for J_F, plus any joint benefits.

6.7 An additional complication arises from the difference in the timing of the need for the airport and the seaport facilities. It has been assumed in the calculations that the appropriate time to incur the shared costs is when the airport timetable requires it. This may be earlier than the best timing for the seaport, and should therefore be reflected in the cost of J_F and indirectly in a lower value of NSC than would be expected from the undiscounted comparison of the independent and joint costs.

6.8 The cost of option (e) in paragraph 3 above may therefore be summarised as:

$$\text{Cost of } A_F + \text{Cost of } S_F - \text{NSC}$$

The existence of a positive value for NSC makes option (e) preferable to option (a) which can be eliminated from further discussion.

6.9 If A_F is preferred to A_I, there is no further problem. The appropriate authority for deciding on the location of a seaport will have the task of comparing options (b) and (e).

6.10 If, however, A_I is preferred to A_F, and the difference between them outweighs the NSC from the joint Foulness project (J_F) then again no problem arises, and the appropriate authority for deciding the location

Printed image digitised by the University of Southampton Library Digitisation Unit

of the seaport will have the task of comparing options (c) and (d).

6.11 If A_I is preferred to A_F but the difference between them is smaller than the NSC of the joint Foulness project (J_F), options (b), (c) and (e) have to be compared. It is clear that the joint Foulness project option (e) must be preferable to option (c). Furthermore, there is no purpose in comparing the joint Foulness project with option (b), since the latter also includes an airport at Foulness.

6.12 The final comparison between options (d) and (e) involves a comparison of, on the one hand, the merits of A_F and, on the other, A_I together with a similar comparison of S_F and S_X with account being taken of any credit to J_F represented by the Net Shared Costs. If J_F is to be preferred, the NSC must be sufficiently large to offset both the assumed inferiority of A_F as compared to A_I, plus any similar inferiority between S_F and S_X. If S_F and S_X are equally attractive, all the NSC can be credited to the Foulness airport, and this will make A_F preferable to A_I. If, on the other hand S_F compares unfavourably with S_X, a portion of the NSC must first be reserved to eliminate the deficiencies and only the remainder is available for crediting to A_F. Only in a situation where net shared costs outweigh the difference between an airport at Foulness and an airport at the best inland site is it necessary for the economic viability of an independent seaport at Foulness to be assessed against a required rate of return, and compared with some suitable alternative seaport site.

6.13 The foregoing discussion has no direct relevance to the manner in which a joint project might ultimately be financed. What has been analysed is the total minimum resource costs involved in alternative projects and combinations of projects, and how these can be minimised in the choice of alternatives. The financial arrangements applicable to a joint project, if such were ultimately to proceed, do not affect the analysis.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Background

7.1 During Stage I of the Commission's work the British Airport Authority provided information on six possible airport layouts for four-runway airports. They commended one of these as likely to offer the highest capacity. This arrangement was also relatively compact and seemed generally satisfactory. It was used as a basis of a number of calculations during the site search. The layout was published as drawing CTLA/1 with the *Site Information for Stage II Local Hearings* for all the short-listed sites. At the same time it was emphasized that it was not the only possible configuration and that the possibility of a larger land-take being required could not be excluded.

7.2 The research work at Stage III was directed at considering all the requirements for a four-runway airport to establish the optimum shape, size and dimensions at each short-listed site.

7.3 With this end in view a series of meetings was arranged with the British Airports Authority, the Board of Trade's Directorate of Aerodromes (Technical) and National Air Traffic Control Service and the Ministry of Public Building & Works' Airfield Branch, to discuss all the problems involved. The advice of these organisations was sought because, with the exception of the last named, they would all eventually be concerned with the design, construction and operation of the airport at the site finally selected.

Work programme

7.4 The work programme drawn up was as follows:

a) investigate meteorological factors affecting design,

b) agree physical criteria,

c) enumerate buildings and facilities,

d) consider alternative layouts,

e) consider airport services,

f) arrange topographical survey of sites,

g) arrange hydrological studies Foulness,

h) arrange for physical models of terrain to be constructed,

i) arrange soil and geological survey work,

j) carry out design studies of each short-listed site,

k) establish cost of construction at each site.

Printed image digitised by the University of Southampton Library Digitisation Unit

7.5 This work was co-ordinated with the studies on forecasting, the urbanization problem and surface access and account was taken of the submissions made at the Stage II public inquiries and during Stage III.

Investigation of meteorological factors affecting design

7.6 If the influence of temperature on required runway lengths and of rainfall on the drainage system is disregarded, the only meteorological factor having a strong bearing on design at a given site is the wind. The prevailing wind directly influences the orientation of the runways.

7.7 Other meteorological conditions such as visibility and snow at each site affect the capacity of an airport but not its layout and design. These are dealt with in chapter 10.

7.8 An aircraft cannot use the runway when the cross wind "component" exceeds the quantity which it can tolerate safely. This quantity varies for different aircraft but is between 20 and 30 knots for modern type aircraft. A calculation based on a 20 knot cross wind component is frequently used to compare airport "usability". The Meteorological Office was asked to assess the "usability" based on 20 knot, 25 knot, and 30 knot cross wind components for the four sites. This was used (together with the estimates of the cost of loss of airport capacity) in the calculations for the optimization of layout, location and alignment.

Physical criteria

7.9 CAP 168 *(Licensing of Aerodromes),* is a publication prepared by the Board of Trade, describing the technical requirements of land aerodromes. At the time the research work started it was out of print and under review. The Board of Trade supplied copies of the latest draft for Research Team use and their sixth draft of this document was that actually used.

7.10 The internationally agreed aerodrome specifications are to be found in Annex 14 to the Convention on International Civil Aviation. CAP 168 conforms with these specifications except for certain modifications appropriate to aerodromes in the United Kingdom.

7.11 It was thought that for a major new international airport rather more stringent criteria should be employed than laid down in CAP 168, particularly in regard to permissible scopes on runways and taxiways. The British Airports Authority were therefore asked to consider the problem in consultation with the National Air Traffic Control Services and to make recommendations covering those items where criteria should differ from those given in CAP 168.

Buildings and facilities

7.12 In order to produce a meaningful design study it was necessary to estimate the buildings and facilities which would need to be accommodated on the airport. The British Airports Authority accordingly considered all existing facilities at Heathrow and obtained an estimate of the approximate requirements at a third London airport by simple scaling factors.

Printed image digitised by the University of Southampton Library Digitisation Unit

7.13 The appropriate authorities who might be expected to operate the various service installations on the airport were also consulted.

Alternative layouts

7.14 The possible arrangements of the runways, taxiways, stands and terminal buildings for a four-runway airport were considered to establish the degree of flexibility permissible to allow the airport to conform to the terrain. The road and rail access to and from the terminal buildings was also investigated to decide the space requirement and the most suitable access points at each site.

7.15 The phase development of the airport was also examined to see that it was satisfactory at each stage.

Airport services

7.16 The services examined were water supply, sewerage, stormwater drainage, electricity supply, domestic fuel, telecommunications and navigational aids. The same standard of service was assumed at each site and those factors giving rise to cost differences identified and examined.

7.17 The cost differences for some services were relatively small. The investigation of each was taken to the point where either:

a) the factor giving rise to the difference was costed, or

b) it was established that the cost difference between the most expensive and the cheapest site was less than £500,000 (for each service).

The cost estimate included provision, operation and maintenance, discounted in accordance with the principles set out in chapter 1.

Topographical surveys

7.18 The major difference in construction costs at each site arises from the terrain. It was decided that 1/2500 scale plans showing contours at 2 metre vertical intervals above ordnance datum would be used for the design study. Good survey information was already available for the Maplin Sands and it was decided that this would be brought up to date and verified by a ground survey party. Ministry of Public Building and Works surveyors carried out the necessary work.

7.19 It was decided that aerial survey was needed for the Nuthampstead, Cublington and Thurleigh sites. The Ministry of Public Building and Works arranged contracts on behalf of the Commission with:

Fairey Surveys Ltd.	Cublington
Hunting Surveys Ltd.	Thurleigh
Meridian Surveys Ltd.	Nuthampstead

to revise the existing ordnance survey 1/2500 plans and to add the ground contours at 2 metre vertical intervals.

Printed image digitised by the University of Southampton Library Digitisation Unit

7.20 In addition air photography, to provide "semi-controlled mosaics" at a scale of 1/10000 of those areas most affected by noise, was also carried out. This was done for all sites including Foulness.

Hydrological studies Foulness

7.21 The advice of the Port of London Authority, the statutory body responsible for the Thames Estuary, was sought on two points:

a) whether the regime of the estuary was likely to be affected by land reclamation on Maplin Sands,

b) the most appropriate sources of dredged material for the land reclamation work.

Their advice was also requested on the latest dredging techniques and the estimation of costs of winning, transporting and placing dredged material on Maplin Sands.

7.22 The Port of London Authority carried out investigations in two stages as follows:

a) to provide early advice necessary for the optimization of layout, location and alignment they made field surveys and desk studies to test that the reclamation required for the airport could be done without deleterious effects on the estuary,

b) to confirm or modify the earlier findings they arranged hydraulic model investigations (carried out by the Hydraulic Research Station) and a mathematical analysis to give further information on:

i) shape of reclamation,

ii) sources of reclamation material,

iii) cost of winning, transporting and depositing reclamation material,

iv) the risk of flooding.

Physical models of terrain

7.23 To assist in the study of terrain, physical models were constructed at a scale of 1/25000. These were of two kinds:

a) "stepped contour" models of the immediate site area of Cublington, Nuthampstead, and Thurleigh,

b) larger "smoothed contour" models of the site, and the surrounding area most affected by noise .

Soil and geological surveys

7.24 A search was made by the Ministry of Public Building and Works of all previous surveys and published information for all sites. The Commission had arranged for a site investigation on Maplin Sands, prior to the announcement of the short list, to determine whether any special geological features existed which would make airport construction there

Printed image digitised by the University of Southampton Library Digitisation Unit

difficult or impossible. To obtain more detailed information about the Maplin Sands additional boreholes were driven during Stage III including some directly under the first runway position assumed for the design study.

7.25 The Ministry of Public Building and Works were also asked to sink boreholes at the three inland sites with two objectives:

a) to assess the nature and character of the material for the assessment of earth moving costs,

b) to assess the probable sub-grade characteristics for pavement design purposes.

Design studies

7.26 Design studies on each of the short-listed sites were arranged for the following reasons:

a) to assist in assessing the overall cost of constructing a four-runway airport at each site,

b) to establish when construction costs would be likely to occur to meet the need,

c) to investigate in appropriate depth those matters giving rise to cost differences between short-listed sites,

d) to identify the possible site boundaries, demolition work required, the services needing diversion and the position and probable location of any structures, buildings and facilities needed, not in the actual site,

e) to provide drawings of the nature and extent of the physical work envisaged for use at the public inquiries.

7.27 Metric dimensions were used in the design studies.

7.28 The responsibility for the work was divided between the British Airports Authority and the Ministry of Public Building and Works. The former did the design for Foulness and Cublington. The latter for Nuthampstead and Thurleigh. This arrangement had the double advantage of spreading the load and of bringing two separate sources of knowledge to bear on the work. The British Airports Authority were responsible for matters common to all sites and for the road access layout on the airport. The Research Team was responsible for compatibility of the treatment and the assumptions used.

Costing of construction work

7.29 The approximate overall cost of a complete four-runway airport (at constant 1968 prices) was estimated for each site. This was sub-divided into appropriate headings and further broken down to give the cost for each phase of construction.

Printed image digitised by the University of Southampton Library Digitisation Unit

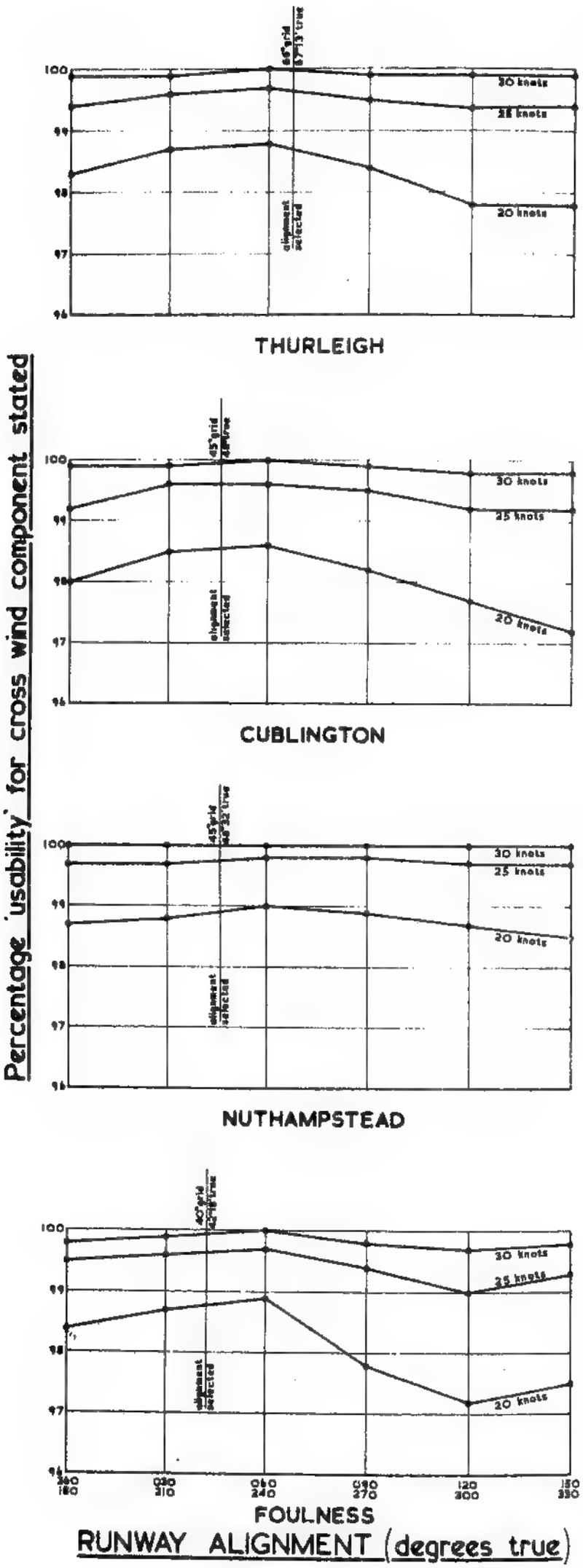


Figure 7.1

Printed image digitised by the University of Southampton Library Digitisation Unit

Meteorological factors affecting design

7.30 Chapter 10 gives details of all the meteorological information relating to the four sites. Figure 7.1 has been drawn from table 10.1 to show the variation in "usability" with runway orientation at each site. This figure was used as described in chapter 9 to assist in the optimization of layout, location and alignment. It was also used to assess the cost of loss of capacity due to wind described in chapter 10.

Physical criteria

7.31 The criteria given below were used for the design studies.

(a) Runways: the length of the runways required was 3,650 metres, with the possibility of extension to 4,250 metres; a length of 4250 metres would be shown on the drawings,
the runway width would be 60 metres,
the longitudinal gradient was not to exceed 0.5 per cent overall,
the local gradients on the runway were not to exceed 1 per cent,
slope changes between consecutive slopes on the runway were not to exceed 1 per cent,
the transition from one slope to another was to be accomplished by a curved surface with a rate of change not exceeding 0.1 per cent per 30 metres,
the slope in the first and last quarters of the runway was not to exceed 0.8 per cent,
the transverse slopes on both runways and taxiways was to be sufficient to give efficient surface drainage but was not to exceed 1.5 per cent,
there was to be a line of sight between any point 3.048 metres (10 feet) above the runway to all other points 3.048 metres above the runways within a distance of half the length of the runways or 1200 metres, whichever was the less,
the landing threshold was to be 300 metres upwind from the end of the paved runway, and the Instrument Landing System (ILS) requirements shown at figure 7.2 were to be met.

(b) Taxiways: longitudinal slopes on taxiways were not to exceed 1 per cent,
where slope changes on taxiways could not be avoided the transition was to be accomplished by a curved surface with a rate of change not exceeding 1 per cent per 30 metres; and all taxiways were to be 30 metres wide.

(c) Aprons: slopes on aprons were not to exceed 0.5 per cent in the transverse direction and 1 per cent in the longitudinal direction (considered in relation to the aircraft position); and
all gradients on aprons were to be favourable to the "push-back" operations where appropriate.

(d) Aircraft weights: an aircraft of all up weight 680 tonnes (with an LCN of 150) was to be assumed.

7.32 All matters not covered by the above were to be in accordance with the 6th draft of the Board of Trade licensing of aerodromes document CAP 168.

Printed image digitised by the University of Southampton Library Digitisation Unit

FIGURE 7·2

Printed image digitised by the University of Southampton Library Digitisation Unit

Buildings and other facilities

7.33 The schedules at appendix 1 to this chapter give details of the buildings and other facilities considered in the design study for each of the short-listed sites. The purpose of the building, the type of construction and foundation and the development phase in which each would be built have been identified. It should be emphasised that this degree of detail was only achieved within the very limited time scale by making a number of very broad assumptions. The purpose was to enable reasonable estimates of the cost of construction at each site to be calculated. The design, size and shape of the buildings and their positional relationship at each site have not been fully investigated.

Consideration of runway requirements and alternative layouts

7.34 Before the detailed consideration of sites at Stage III could begin consideration was given to the points referred to in paragraph 7.14.

7.35 Present day long-haul aircraft need runways of about 3650 metres for take-off and 2750 metres for landing; currently projected aircraft have similar needs. Future aircraft may require 4250 metres for take-off and 3350 metres for landing. For independent operation of parallel runways, in mixed mode, the minimum separation required is about 1525 metres. A pair of runways of this type are referred to as "open parallel runways". Runways which are to operate as a pair in segregated mode may be much closer together (the exact distance depends upon the amount of overlap and is defined later). A pair of runways of this type are referred to as "close parallel runways". The minimum lateral separation of the inner runways of a four-runway airport, of the type envisaged, is not, however, controlled by aircraft separation requirements but by the buildings, terminal aprons and road and rail access systems. The lateral separation suggested by the British Airports Authority originally was 2286 metres (7500 feet) with the proviso that a greater distance might be found necessary. The later work assumed a minimum lateral separation of 2300 metres between inner pairs.

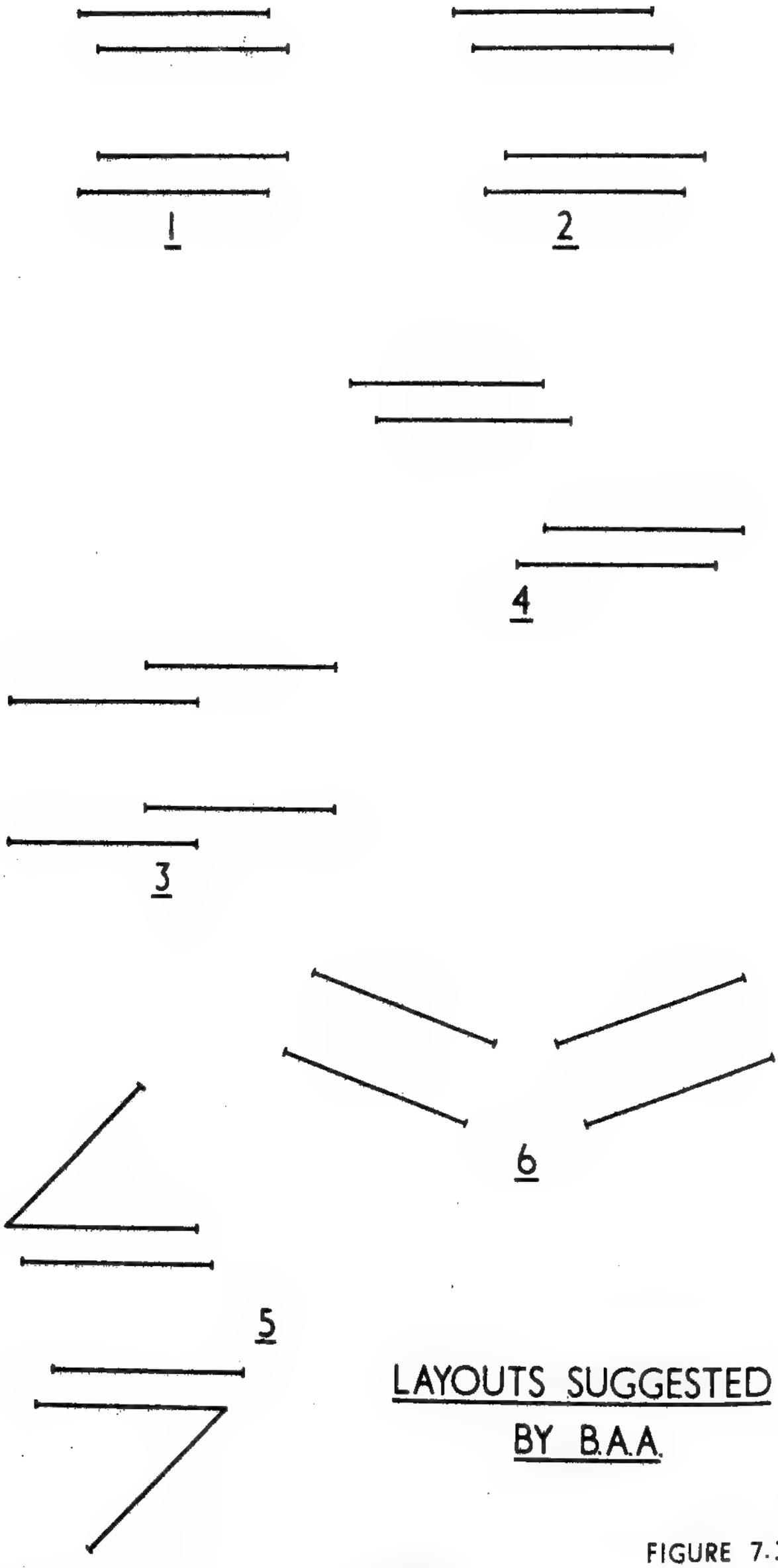
7.36 The first step was to consider the four-runway airport in its ultimate form with parallel runways which could be used simultaneously.

7.37 Figure 7.3 shows the layouts submitted to the Commission by the British Airports Authority, figure 7.4 shows those suggested by the National Air Traffic Control Service.

7.38 Considering these layouts it was clear that BAA 1 and 2 and NATCS layout C were substantially the same in pattern; BAA layout 3 was identical with the NATCS layout A; and BAA 6 was similar in principle to NATCS layout D. Preliminary calculations indicated that constructing runways on other than one parallel alignment gave rise to considerable extra construction costs and extension of the area of noise nuisance with very small benefits accruing because of the increased "usability" of the airport; consequently only layouts with parallel runways were considered. This ruled out BAA layout 5. NATCS layout E showed a wide separation between all runways enabling each to be operated completely independently. This gives a higher total air traffic capacity, but requires a great deal of land and generates a considerable amount of extra taxying. Because of these disadvantages it was not considered further.

7.39 This left the four basic patterns (1) to (4) shown in figure 7.5. Work on fitting these layouts to the terrain suggested that combinations of these

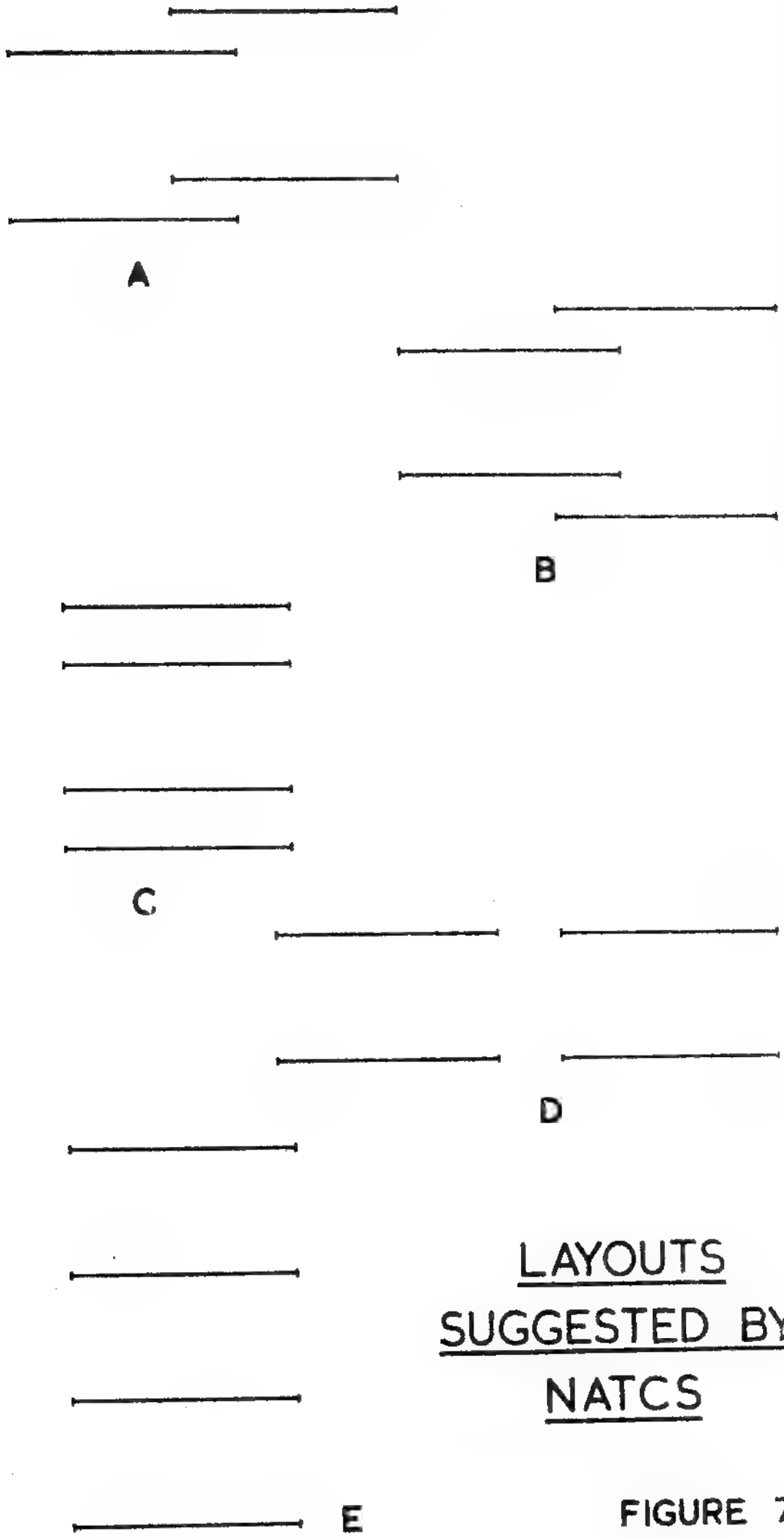
Printed image digitised by the University of Southampton Library Digitisation Unit



LAYOUTS SUGGESTED BY B.A.A.

FIGURE 7.3

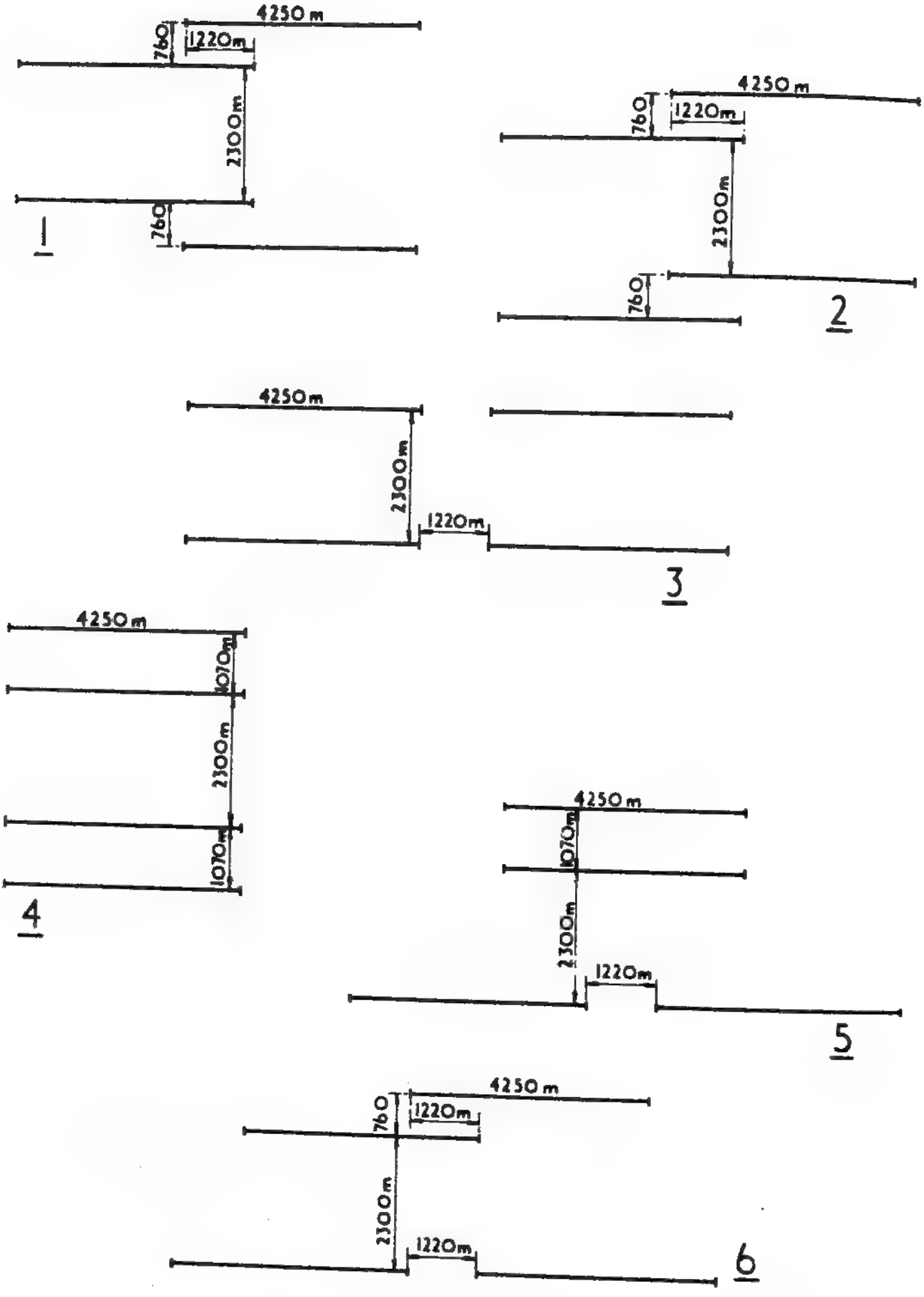
Printed image digitised by the University of Southampton Library Digitisation Unit



LAYOUTS SUGGESTED BY NATCS

FIGURE 7.4

Printed image digitised by the University of Southampton Library Digitisation Unit



LAYOUTS CONSIDERED FOR SHORT LISTED SITES

FIGURE 7.5

Printed image digitised by the University of Southampton Library Digitisation Unit

patterns were possible and desirable on certain sites, and the three additional "hybrid" types were added shown as layout (5), (6) and (7) at figure 7.5. The possibility of displacing the northern pair in relation to the southern pair was also borne in mind. Suitable dimensions to meet the air traffic requirements were given by NATCS.

7.40 Four runways operating at capacity generate a demand for about 200 stand positions. This figure was not precisely calculable and depended on a number of factors which could not be evaluated accurately during this study. It was therefore based on the judgment and experience of the operating authority, the British Airports Authority. This requirement, together with the need for taxiways linking the northern and southern pairs, gave rise to a total stand length on each side of the road and rail central distributor of 5550 metres with a depth of 380 metres (including the apron edge taxiway).

7.41 In considering the required number of terminal buildings the distance which passengers have to travel between aircraft and terminal had to be kept to a minimum. A four-runway airport might have a capacity of 40,000 passengers per hour yet buildings dealing with 3,000 passengers per hour are considered large by today's standards. The phased development of the airport was also borne in mind. Since there are four runways it was reasonable to think of four stages of development and therefore that the number of terminal buildings might be a multiple of four. Eight terminal buildings have therefore been postulated as a reasonable assumption for the design studies.

7.42 It was proposed by the British Airports Authority that the area allocated for the maintenance and cargo areas at the four runway stage should be 140 hectares (350 acres) for the maintenance area and 120 hectares (300 acres) for the cargo area.

7.43 The configuration envisaged for all layouts is a central, sunken, linear distributor linked to the external road and rail systems at one or both ends. A sunken distributor is needed to allow aircraft to pass over it from one side of the airport to the other using crossover taxiway bridges.

7.44 The runways, stand areas and maintenance and cargo areas must be served by an adequate taxiway system. Taxiways must have an overhead clearance of 80 ft. It is considered desirable to provide a taxiway parallel to the runway for its full length, although the occasions on which such a taxiway would be used would be rare. The terminal area will be served by a three lane taxiway system, one of the three being on the apron edge in order to separate landing, take-off and inter apron flows.

7.45 A holding bay is required at the end of each runway of the dimensions shown in figure 7.6. A 5.5 metres high aerial mast for the instrument landing system has to be sited on each runway centre line. To avoid damage by jet blast from aircraft taking-off or taxying each mast has to be sited about 150 metres to the rear of any possible aircraft position. This means that the nearest taxiway crossing the extended centre line of the runway must be at least 600 metres from the end of the runway. It should be noted that this requirement is due to current instrument landing systems which will probably change during the period of time being considered and that there may be some relaxation of this standard.

Printed image digitised by the University of Southampton Library Digitisation Unit

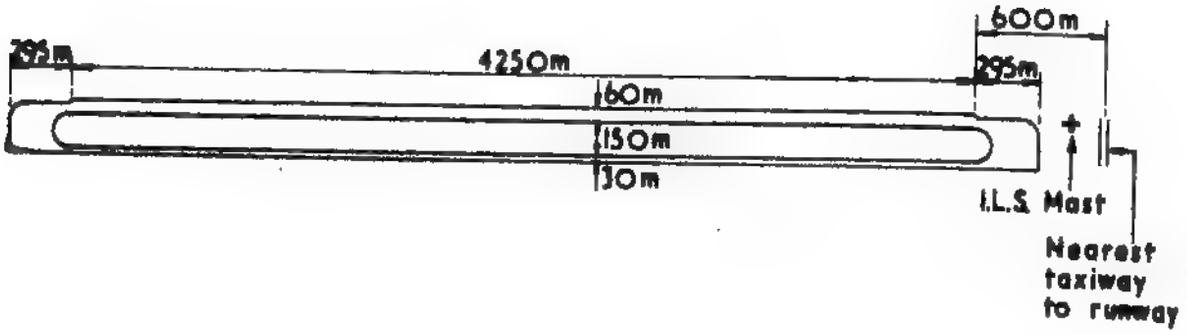


FIGURE 7.6

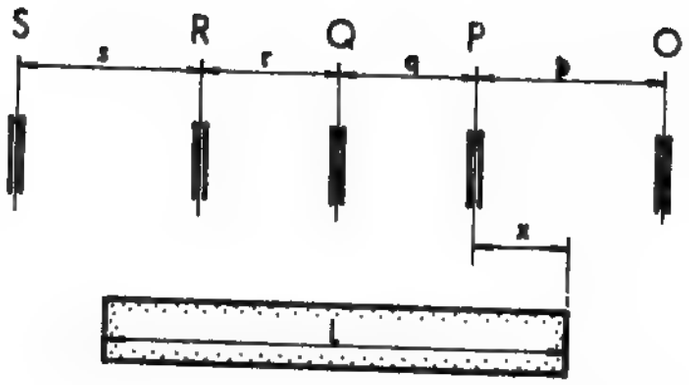


FIGURE 7.7

Printed image digitised by the University of Southampton Library Digitisation Unit

Ideal airport layouts

7.46 The best layout is one which minimises construction costs, noise nuisance, interference with other airfields, effects on the environment, road and rail access costs and aircraft ground movement costs, without reducing airport capacity. Most of these elements differ at each site.

7.47 It is useful, however, to establish what the ideal configuration for an airport would be in the absence of constraints associated with individual sites.

7.48 Having eliminated the layout with four completely independent runways (NATCS layout E) there remained only arrangements of two pairs of close parallel runways each of which would finally operate in segregated mode and be separated by a sufficient distance (taken as 2300 metres between centre lines of inner runways) to accommodate the terminal buildings and surface access infrastructure. The air traffic capacity of all the arrangements examined would be approximately the same. There are two criteria, which are not dependent upon the site under consideration, on which this examination can be based,

(a) taxying distances,

(b) land requirement,

the minimisation of both of these elements tends also to minimise construction costs. All other matters are either the same for all arrangements or are specific to the site.

7.49 An ideal layout based on these criteria is a fragile concept. On any real site, particularly one in undulating inhabited countryside, the local factors give rise to other dominating and over-ruling considerations. The provision of maintenance and cargo areas of appropriate size and the many other facilities needed on an airport also influence the final plan. It nevertheless remains a valuable exercise to visualise the runway and terminal aircraft stand configuration which would be logical in the absence of individual site and other influences, and to assess the effect of departing from the ideal.

7.50 The airport will be built in stages (over a period which might be as long as 20 years) to match the rising demand and it is important that the layout should be satisfactory at all stages.

7.51 The general theory set out below applies to all stages of development. In figure 7.7 the distance x between the east end of the range of stands and the point of entry or exit (P) to the stands defines the best position. The distances p,q,r, and s are the distances between the points of entry or exit (O,P,Q,R and S). The object is to find the best position for a range of aircraft stands of length "l" in relation to points o, p, q, r and s. The numbers of movements to and from these points being N_O, N_P, N_Q, N_R, and N_S, taking as a criterion the minimisation of total taxying distances measured longitudinally, parallel to "l", a journey in either direction being given the same weight, then if T = total longitudinal distance taxied

$$T = N_O \left(p-x+\frac{l}{2}\right) + N_P \left(\frac{x^2}{l} + \frac{l}{2} - x\right) + N_Q \left(\frac{(x+q)^2}{l} + \frac{l}{2} - (x+q)\right)$$

$$+ N_R \left(\frac{(x+q+r)^2}{l} + \frac{l}{2} - (x+q+r)\right)$$

$$+ N_S \left(x+q+r+s-\frac{l}{2}\right) \quad \ldots\ldots \quad (1)$$

Printed image digitised by the University of Southampton Library Digitisation Unit

differentiating this expression and equating to zero gives the value of x for a minimum value of T.

$$x = \frac{l(N_O - N_S + N_P + N_Q + N_R) - 2N_Q q - 2N_Q r - 2N_R r}{2(N_P + N_Q + N_R)} \quad \ldots\ldots (2)$$

x can be calculated from (2).

This result can be extended for any number of points of entry and exit to the stand area. It is necessary to identify whether the entry or exit position falls inside or outside the stand length "l". Trial and error may be necessary in some cases where this is not self evident.

7.52 For the second, third and fourth runway stage the sunken distributor has to be crossed at fixed points by taxiway bridges. Strictly speaking, a secondary correction to the optimum stand block position in relation to entry and exit points is necessary. The correction required is however small and has little practical significance.

7.53 It is usually possible to determine the best single stand position by inspection of the diagrams, given information on the point at which the aircraft turns off the runway and the proportion of westerly and easterly movements. The situation frequently arises where there is a direct linear increase on each journey of taxying on westerly operation at the expense of a direct linear decrease in taxying length on easterly operation if the stand position is moved. In this event, the arithmetic minimum total taxying length will be that which reduces the dominant (westerly) taxying to the minimum possible. A proportional split is incorrect.

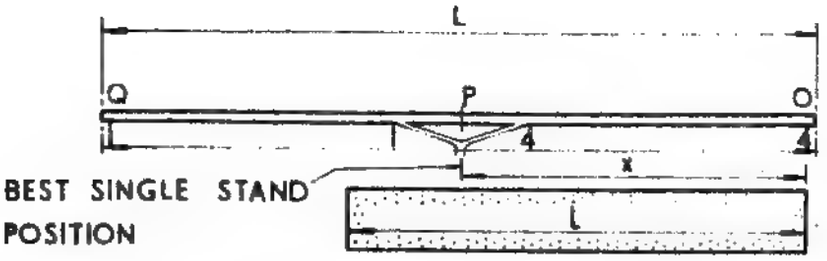
7.54 There is sometimes a range of positions which a single stand might occupy generating equal taxying lengths. These can be readily identified by inspection and are indicated in figures 7.8 to 7.12.

7.55 To apply the theory it is necessary to know the turn off positions, the proportion of aircraft using each and the split between westerly and easterly operations. It was difficult to decide with any precision what the optimum turn-off positions and numbers of turn-off points should be, but it was clear that it was geometrically convenient to provide one turn off in the runway centres, 2125 metres from each runway end, which could serve either direction, and that two other turn offs positioned respectively about 500 metres and 1,000 metres beyond the first would not be unreasonable. It was considered that the first turn off position, at the runway centre, would be the most heavily used at all stages of development and in the discussion on ideal layouts which follows the simplifying assumption is made that all aircraft use this. The effect of changing this assumption can be calculated, from equations 1 and 2 in paragraph 7.51 or appraised with the aid of the graphs at figure 7.14, 7.15 and 7.16. A westerly: easterly operational split of 4:1 has also been asumed for this purpose.

One-runway stage

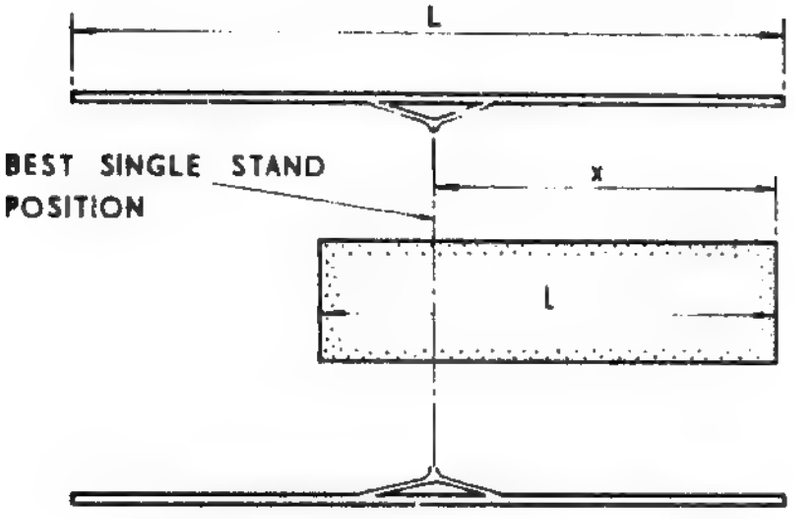
7.56 Figure 7.8 shows the best position, for a stand area of length "l", in relation to a single runway if all aircraft use the centre turn off. It should be noted that the best single stand position would be central, opposite point P, and that it does not coincide with the best position for the centroid of the stand area.

Printed image digitised by the University of Southampton Library Digitisation Unit



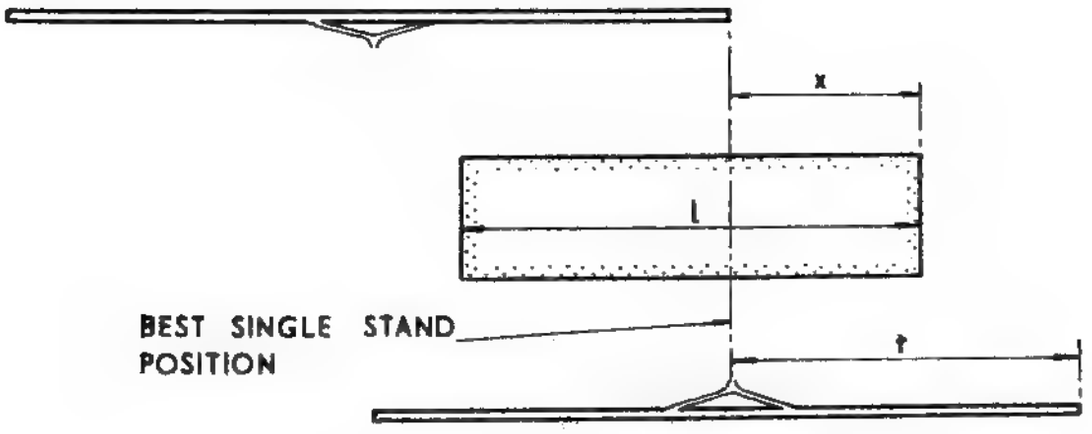
OPTIMUM STAND POSITION
SINGLE RUNWAY

FIGURE 7.8



OPTIMUM CONFIGURATION
TWO RUNWAYS, MIXED MODE

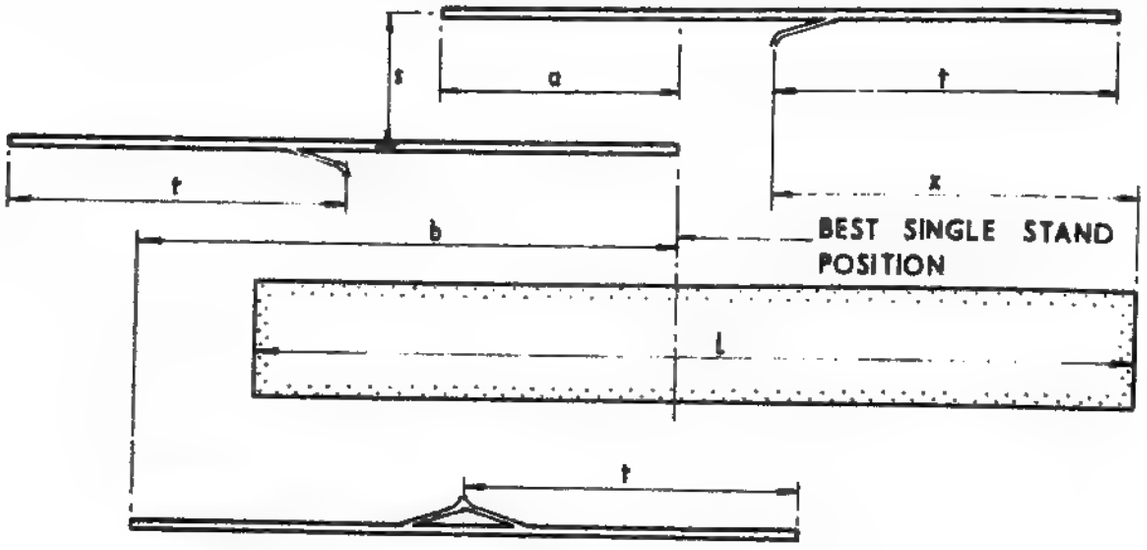
FIGURE 7.9



OPTIMUM CONFIGURATION
TWO RUNWAYS, SEGREGATED MODE

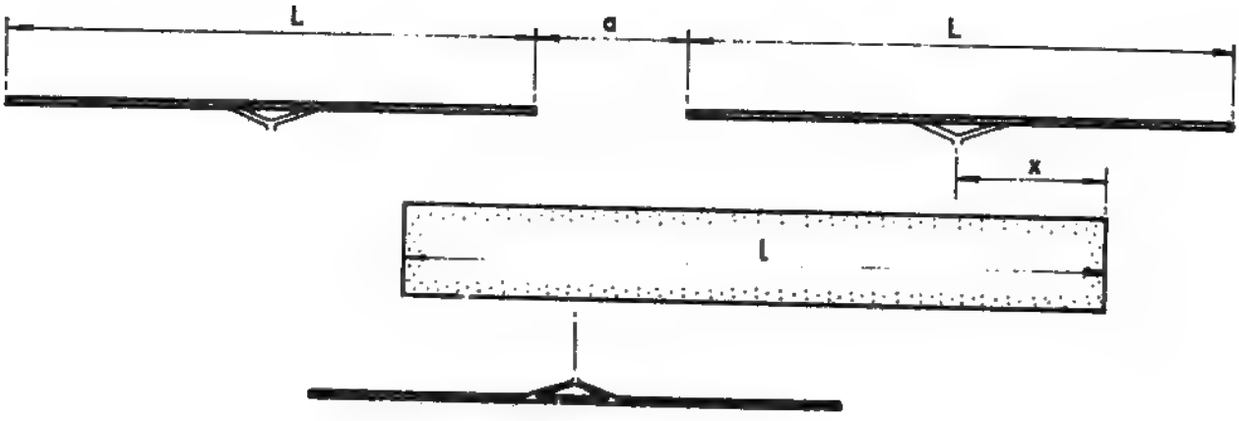
FIGURE 7.10

Printed image digitised by the University of Southampton Library Digitisation Unit



OPTIMUM CONFIGURATION
THREE RUNWAYS

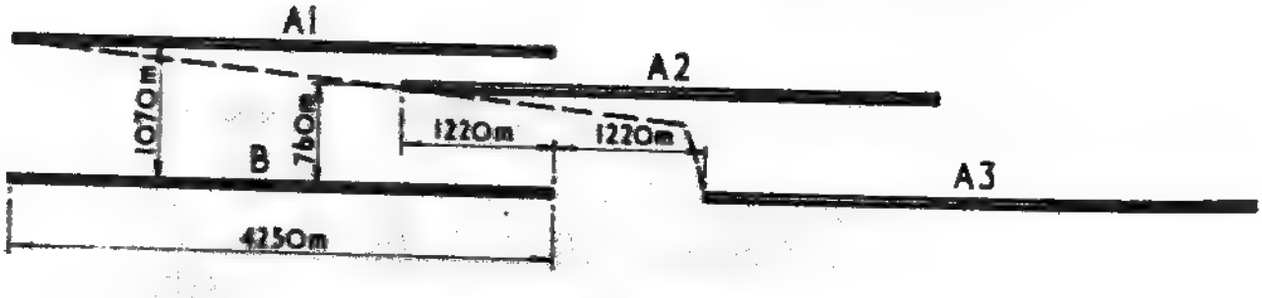
FIGURE 7.11



OPTIMUM CONFIGURATION
THREE RUNWAYS
ALTERNATIVE

FIGURE 7.11a

DOTTED LINE SHOWS INTERMEDIATE POSITIONS OF WEST END OF RUNWAY 'A' WHICH HAVE BEEN ASSUMED FOR GRAPHS OF TAXI-ING DISTANCES



THREE POSITIONS
FOR CLOSE PARALLEL PAIRS,
RUNWAY 'A' IN RELATION TO
RUNWAY 'B'

FIGURE 7·12

Printed image digitised by the University of Southampton Library Digitisation Unit

Two-runway stage

7.57 The second runway would be built separated laterally from the first by a distance of 2300 metres. This provides the opportunity for operating either in mixed mode or segregated mode. Mixed mode gives the higher air traffic capacity, segregated mode the most straightforward operating procedure and lowest taxying cost. For mixed mode the ideal runway position is that with the ends of the second runway aligned with the ends of the first (see figure 7.9). Calculations are the same as those for the one runway stage. For segregated mode operation the ideal position for the second runway is with the end of the preferred turn off of the second runway directly opposite the take off position of the first for westerly operations. The best stand position for 4:1 westerly to easterly movements, central turn offs and equal stand usage is given in figure 7.10.

Three-runway stage

7.58 The third runway would be built to the north of the first in the ideal airport situation and the two northerly runways would then be operated as a "close parallel pair", one for take-off, one for landing. The remaining runway would operate in mixed mode. It is now necessary to consider in detail the operation of a close parallel pair of runways operating in segregated mode.

7.59 In the consideration of four runway layouts three positions have been defined which close parallel pairs might take up in respect to each other. Specific dimensions acceptable for air traffic control have been agreed by National Air Traffic Control Service and the British Airports Authority:

(a) if the runways have their ends aligned, the required lateral separation is 1070 metres,

(b) if the runways overlap by 1220 metres, then the required lateral separation is 760 metres,

(c) if the runways are in line ahead, (the "stretched" pair) then the longitudinal separation needed is 1220 metres. Figure 7.12 illustrates this.

Examination of the geometry shows that the taxying distance depends upon the runway overlap and the turn off positions. It is a relatively simple matter to establish the correct best position or range of positions (longitudinally in respect to the runways) for a single stand for any given set of assumptions relating to turn offs and directional split. The best position for a single stand is not necessarily the best position for the centroid of a range of aircraft stands, although it is usually a good first approximation.

7.60 In the three cases shown at figure 7.13, the following notation applies to all:

L = runway length,

t = turn off length,

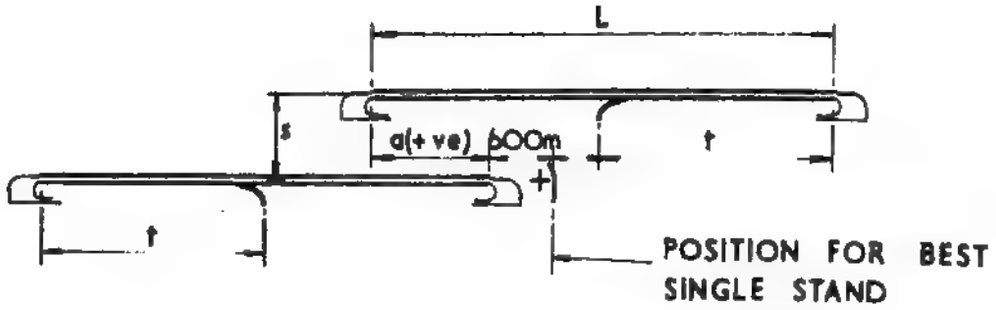
a = overlap,

Tw = taxying distance from turn off through best single stand position to take off point on westerlies,

Te = taxying distance from turn off through best single stand position to take off point on easterlies.

s = lateral separation derived from figure 7.12.

Printed image digitised by the University of Southampton Library Digitisation Unit

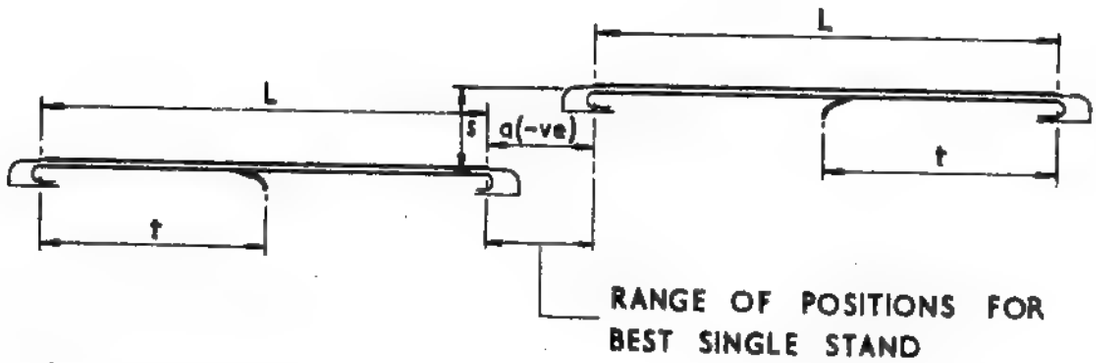


$Tw = s + L - t - a + \text{constant}$

$Te = s + L - t + 1200 + a + \text{constant}$

CASE 1

(from $a = -600$ to $a = L - t - 600$)

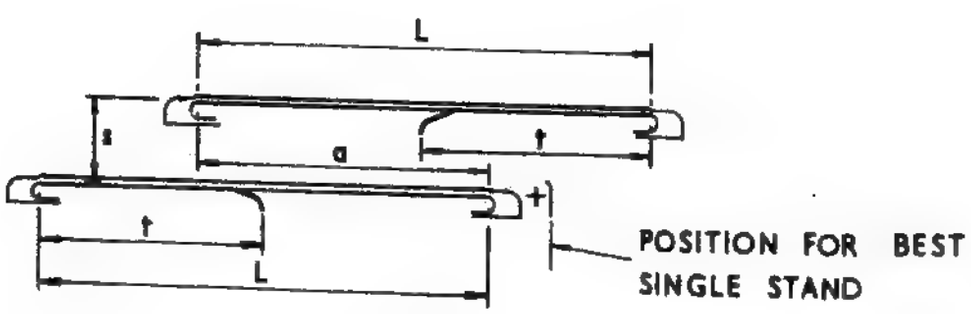


$Tw = s + L - t + a + \text{constant}$

$Te = s + L - t + a + \text{constant}$

CASE 2

(from $a = -600$ to $a = -\infty$)



$Tw = s + a - L + t + 1200 + \text{constant}$

$Te = s + L - t + 1200 + a + \text{constant}$

CASE 3

(from $a = L - t - 600$ to $a = L$)

FIGURE 7.13

Printed image digitised by the University of Southampton Library Digitisation Unit

7.61 It is possible to draw a number of graphs relating to the close parallel pair of runways. Figure 7.14 shows Tw and Te for a range of turn off positions and overlaps. Figure 7.15 shows $\frac{4Tw + Te}{5}$ plotted against overlap for a range of turn off positions. Figure 7.16 illustrates the average longitudinal taxying length when aircraft are distributed not to a single best position, but along a stand length of 5550 metres; the graph is derived from equations 1 and 2 of paragraph 7.51. Figure 7.17 plots the land required against overlap for a pair of runways, and its associated stands, buildings, and cargo and maintenance areas.

7.62 An examination of figures 7.14 to 7.17 leads to the following conclusions:

(a) the optimum overlap for taxying to the best single stand is directly related to the turn off position on westerly operations and is sharply defined, taxying increasing on each side of optimum.

(b) optimum overlap on easterly operations is not related to turn off position and is at - 600 metres,

(c) the effect of combining westerly and easterly operations in the proportion of four to one, and assuming that aircraft are equally distributed over a stand length is to produce little significant change in taxying from the westerly optimum overlap position to the fully stretched position.

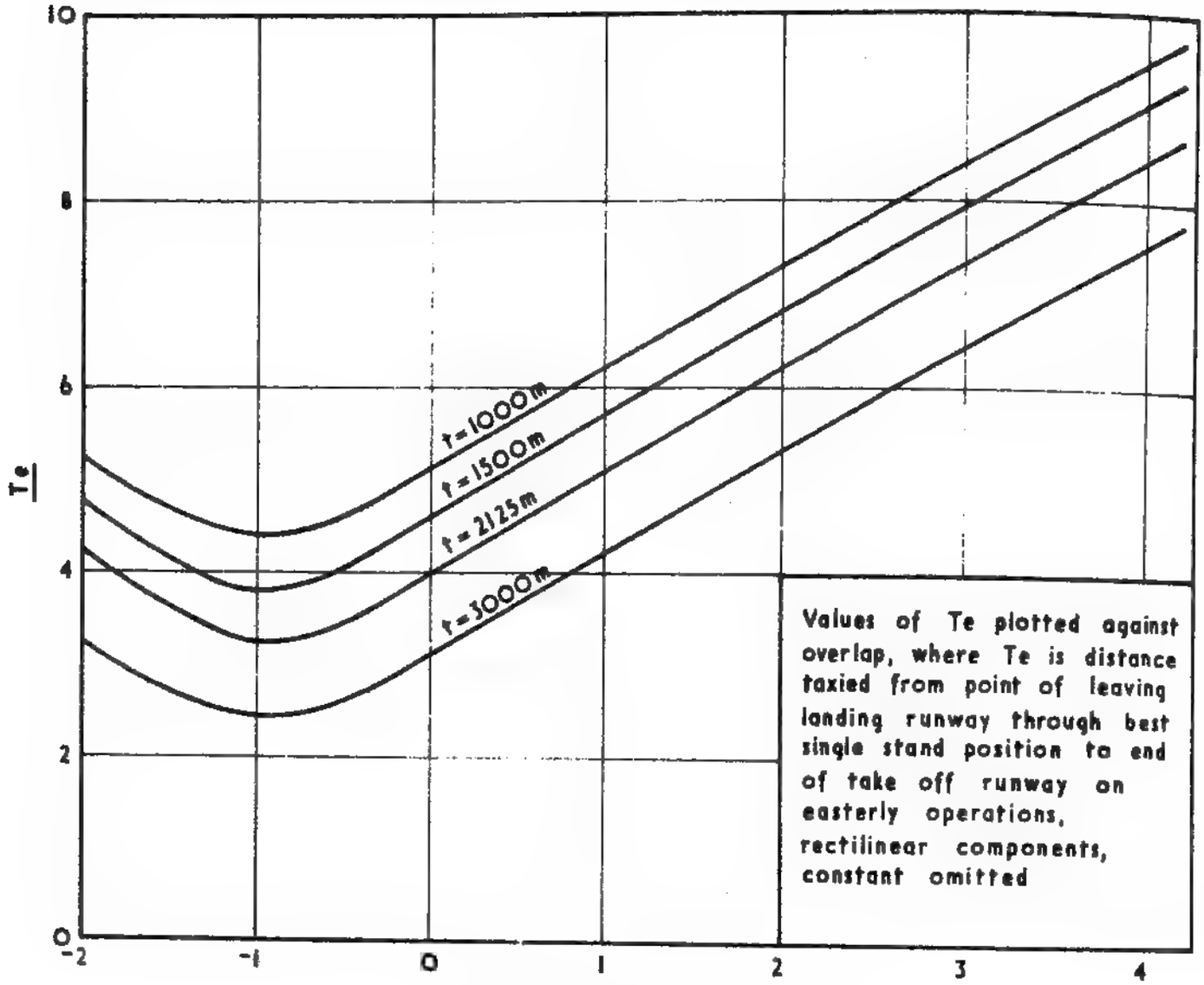
(d) the area of land required decreases steadily from maximum overlap (positive overlap of +4250 metres) to the fully stretched position (negative overlap of -1220 metres) but the decrease is not large. The best arrangement for a close parallel pair lies therefore between the optimum overlap on westerly operation and the fully stretched position. The optimum overlap depends upon turn off distance which cannot be identified exactly; it is therefore desirable to err on the side of low and negative overlaps. The fully stretched position is the optimum where turn off positions are 2125 metres and over. The best position for the southern runway in relation to the stand is the same as that of a single runway. The optimum three runway layout therefore ranges from that shown at figure 7.11 to that at figure 7.11a.

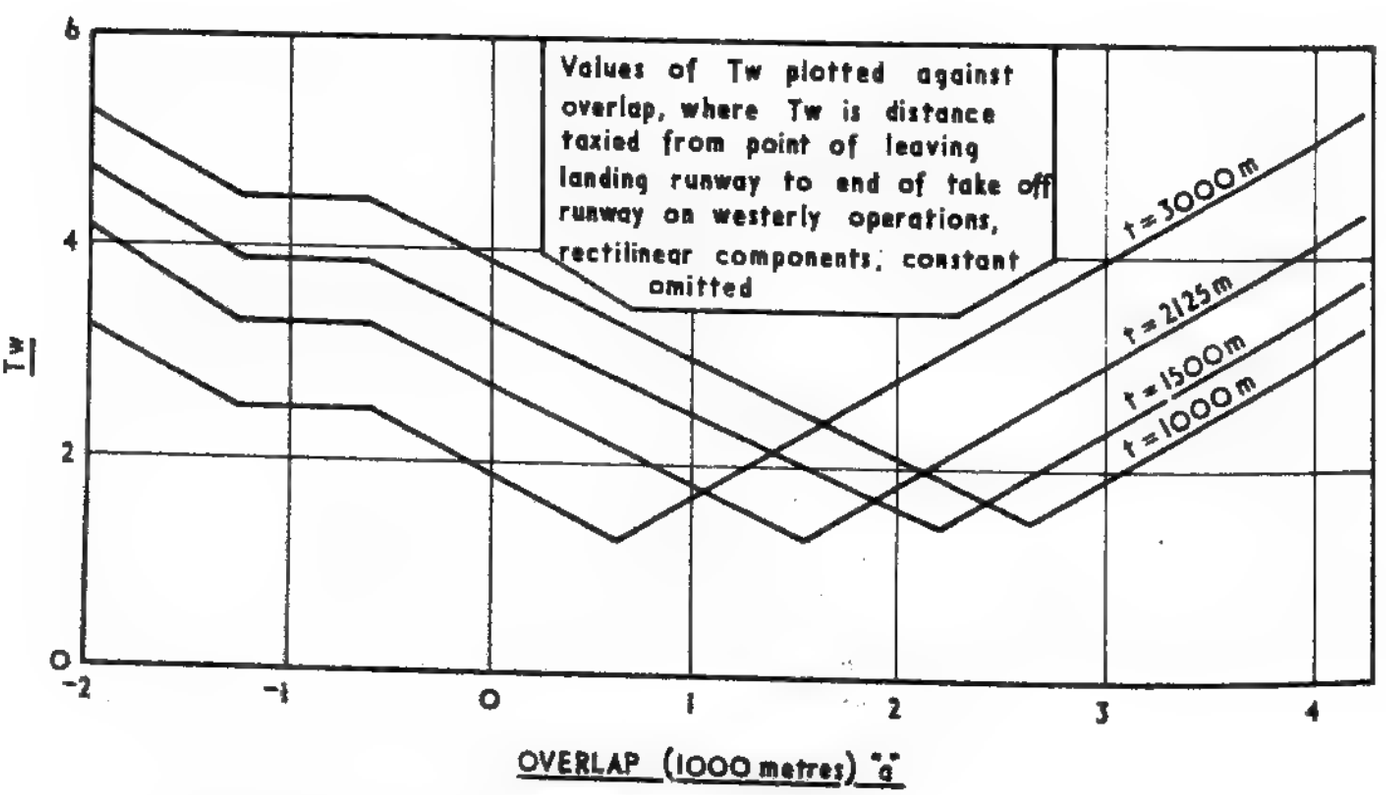
Four-runway stage

7.63 With four runways the airport would operate at capacity as two pairs of close parallels in segregated mode. Since westerly operations predominate, the ideal arrangement would be with both pairs symmetrically arranged and would lie between that shown in figures 7.18 and 7.18a.

7.64 There is not full compatability between the ideal positions at each stage; it is also difficult to resolve what proportion of movements at the two runway stage would take place in mixed mode and what proportion in segregated mode. Furthermore taxying length and land take are relatively weak criteria when set against the weight of some site specific factors (e.g. earth moving, surface access and noise). Nevertheless this theoretical work had its value as an aid to judgement in selecting the alternative layouts for the optimization of layout, location and alignment and the design studies which followed. The variation in land requirement is relatively small. The stretched pair has the minimum land requirement and the parallel pair with ends aligned has the maximum.

Printed image digitised by the University of Southampton Library Digitisation Unit





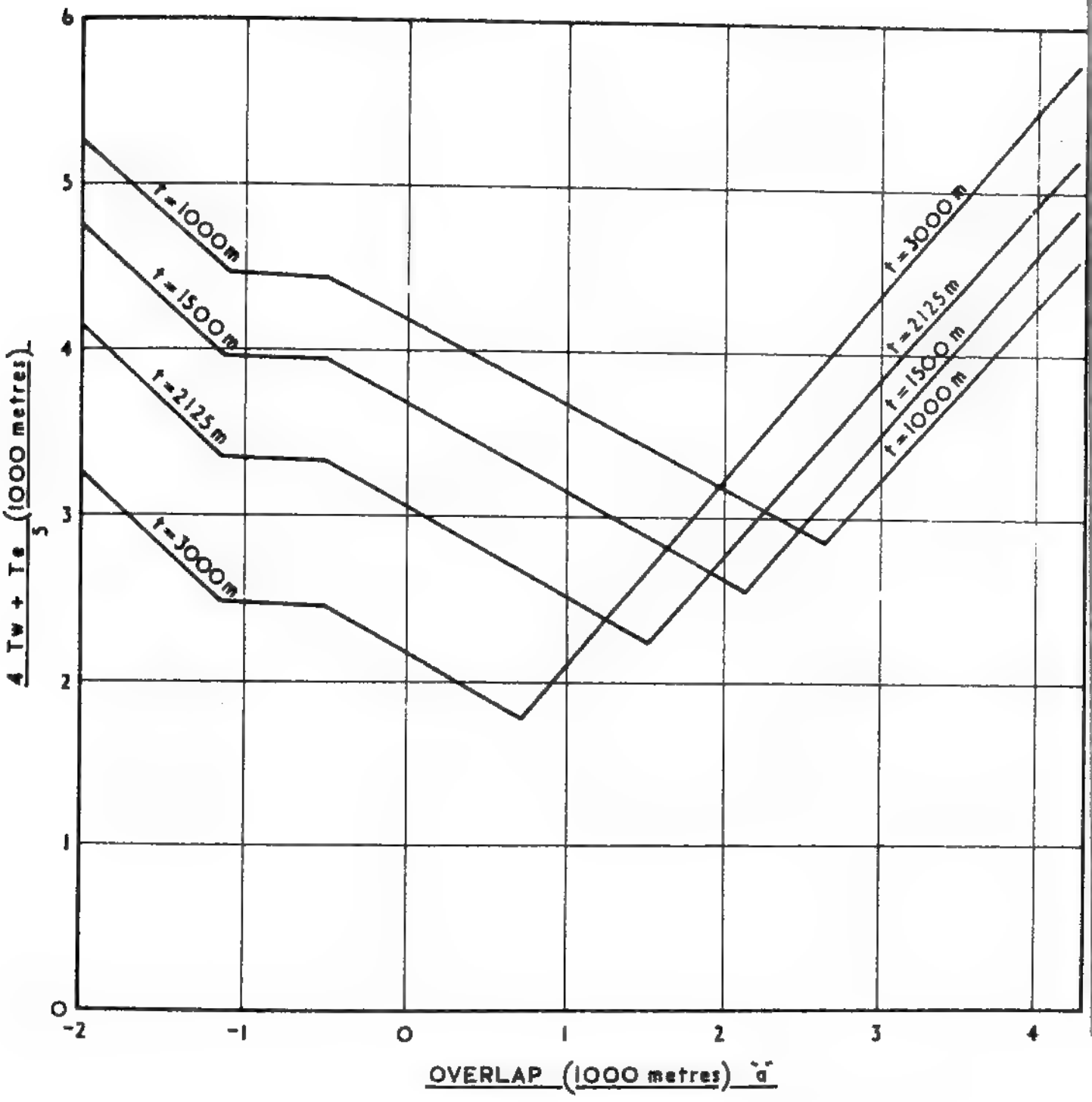
CLOSE PARALLEL PAIR OF RUNWAYS

SEGREGATED MODE

FIGURE 7·14

Printed image digitised by the University of Southampton Library Digitisation Unit

Values of $\frac{4Tw + Te}{5}$ plotted against overlap giving average distance taxied from leaving landing runway through best single stand position to end of take off runway, rectilinear components, constant omitted when operating 80% westerlies, 20% easterlies.



CLOSE PARALLEL PAIR OF RUNWAYS IN SEGREGATED MODE

FIGURE 7-15

Printed image digitised by the University of Southampton Library Digitisation Unit

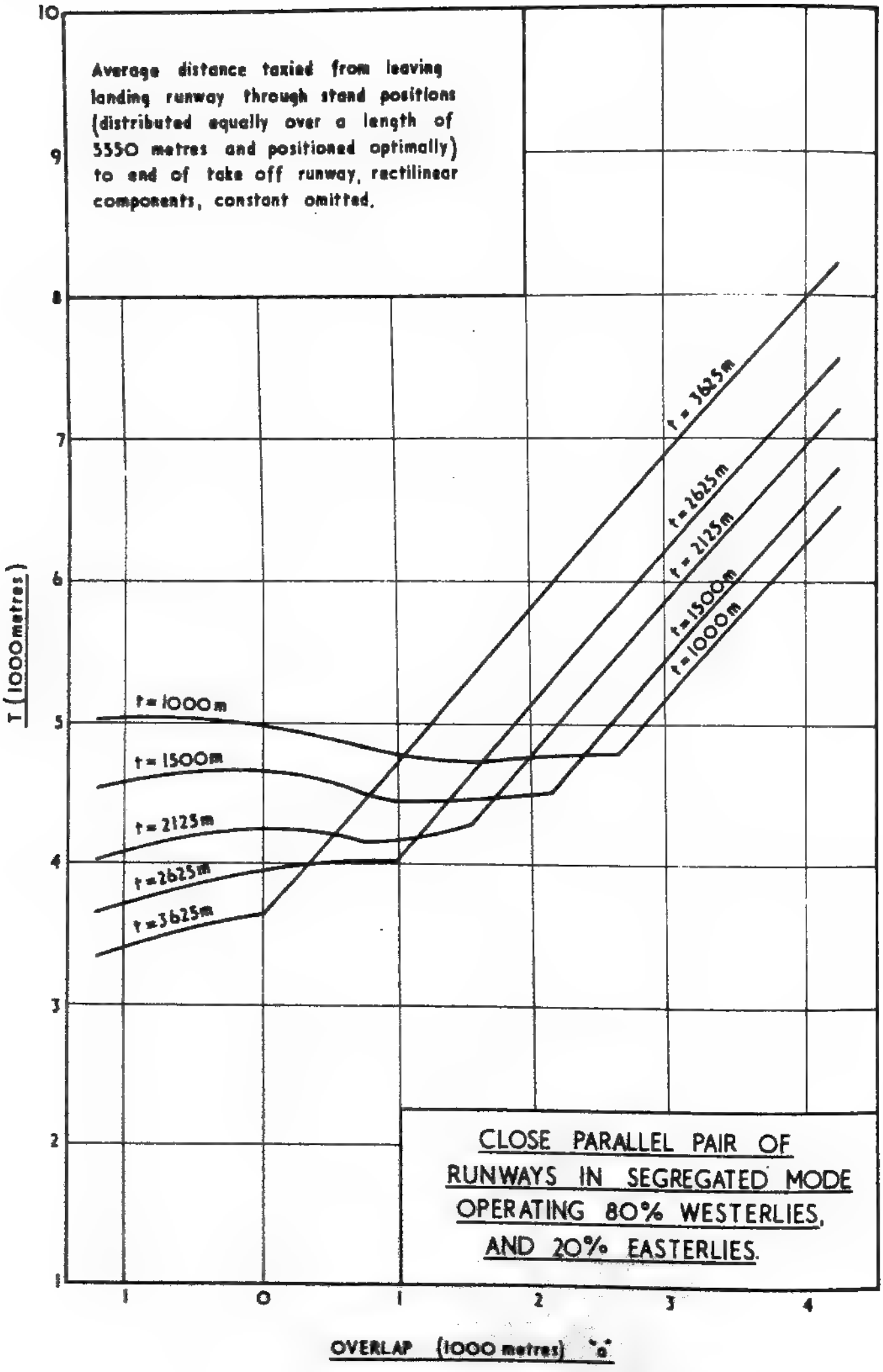
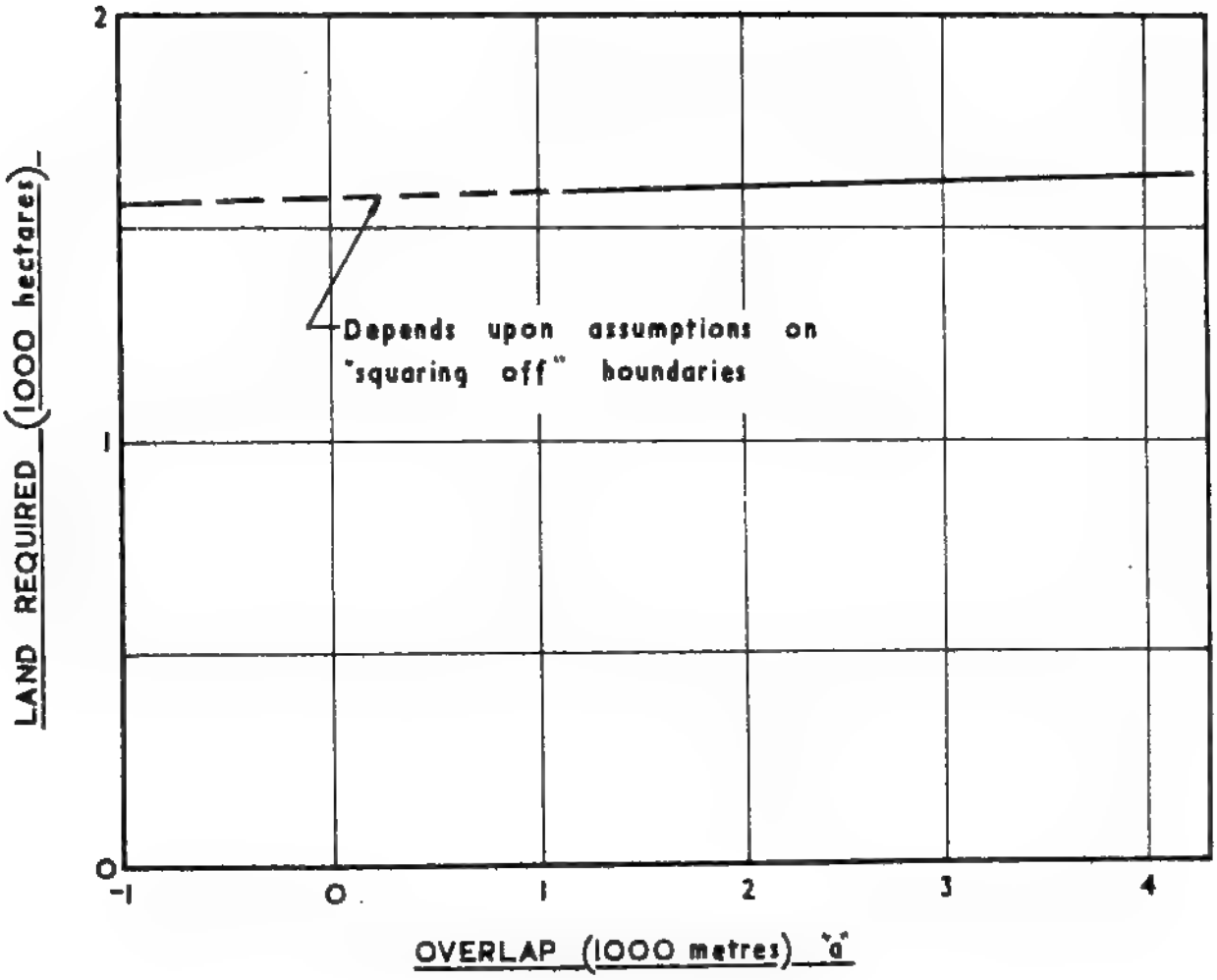


FIGURE 7.16

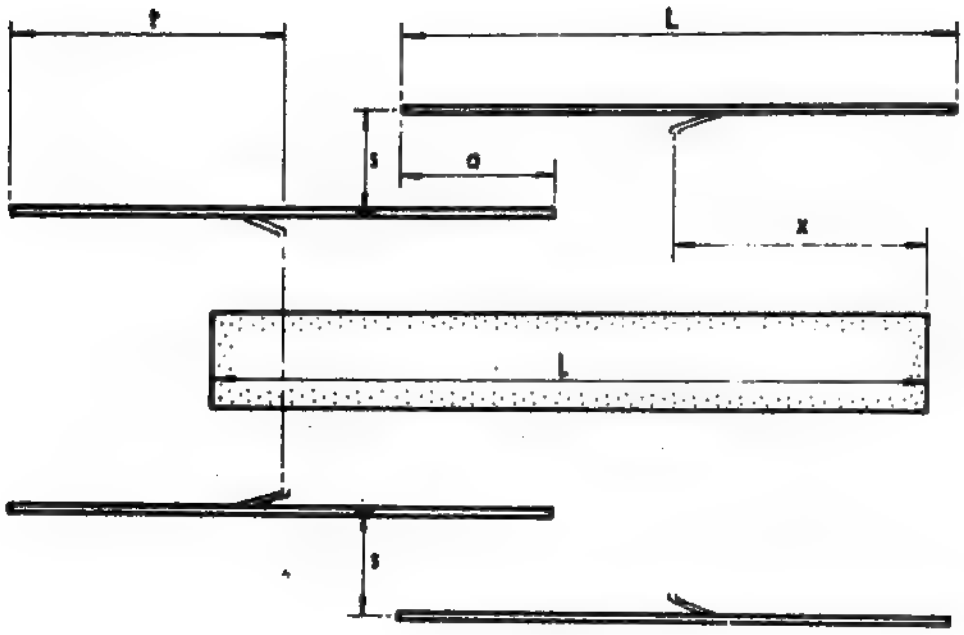
Printed image digitised by the University of Southampton Library Digitisation Unit



RUNWAY OVERLAP AGAINST LAND REQUIREMENT

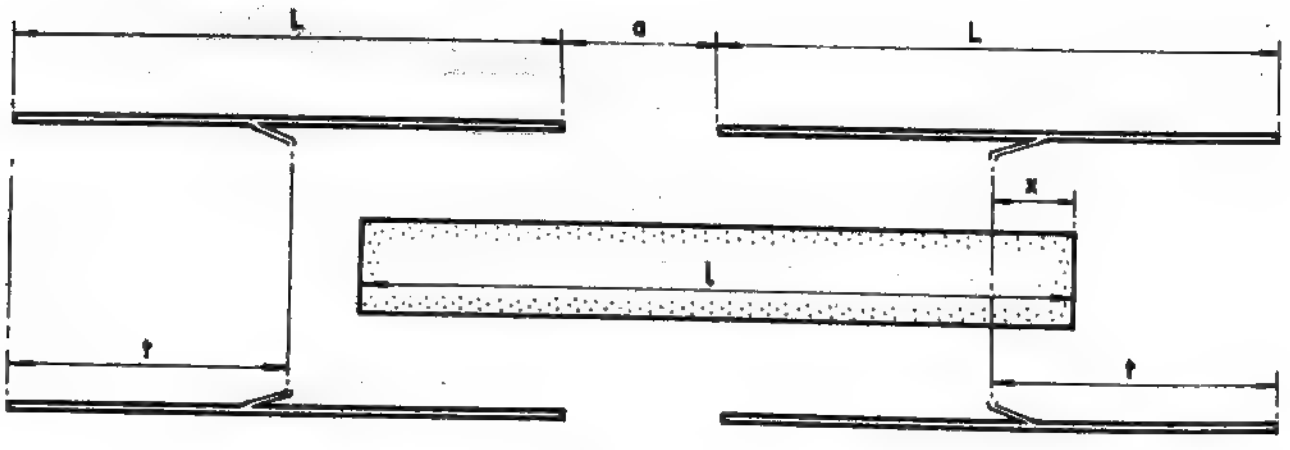
FIGURE 7.17

Printed image digitised by the University of Southampton Library Digitisation Unit



OPTIMUM CONFIGURATION
FOUR RUNWAYS

FIGURE 7.18



OPTIMUM CONFIGURATION
FOUR RUNWAYS
(ALTERNATIVE)

FIGURE 7.18a

Printed image digitised by the University of Southampton Library Digitisation Unit

7.65 The layouts considered for the optimization of layout, location and alignment described in chapter 9 were those shown in figure 7.5 (modified appropriately to conform to the terrain), the effects of the modification on ground movement capacity and land take being assessed in accordance with the principles given.

Taxying costs

7.66 The optimization work, described in chapter 9, selected the most suitable layout for each site from those shown at figure 7.5 (modified appropriately to suit the terrain). The precise location of the stand areas was influenced by factors other than minimisation of taxying distances. The layouts used for the design studies differed therefore at each site. To take account of these differences, an assessment was made of the differences in costs of taxying at each site. The following assumptions were made:

(a) the number of aircraft movements per annum was the same at all sites and equal to Foulness (constant),

(b) the proportion of movements in the westerly direction and the proportion in an easterly direction was:

	Westerly	*Easterly*
Cublington	85	15
Foulness	80	20
Nuthampstead	80	20
Thurleigh	85	15

(Note: these proportions differ from those used in chapters 12 and 18).

(c) the proportion of aircraft using each turn off position was:

1st	2nd	3rd	turn off position
95%	3%	2%	

(d) the mode of operation (using the terms defined in chapter 3) was:

one runway stage - mixed

two runway stage - segregated

three runway stage - northern pair segregated, southern mixed.

four runway stage - segregated,

(e) equal usage of runways and terminals compatible with the construction programme at each stage,

(f) the weighted average costs of taxying per hour including passengers' time were:

Year	*Costs per hour (£ 1968 prices)*
1980	567
1990	833
2000	1167
2005	1310

(g) because the main differences between the layouts at each site arise from the long straight stretches of taxiway a high taxying speed of 40 mph was assumed,

Printed image digitised by the University of Southampton Library Digitisation Unit

(h) for Foulness, Nuthampstead and Thurleigh the position of the second runway was virtually the ideal for segregated mode operations (see paragraph 7.59).

The costs were assessed by direct measurement of the taxi routes (from the runway ends and turn off points to each of thirty two stand positions) from the design study drawings on the assumptions given. Table 7.1 gives the discounted costs derived.

Table 7.1

Taxying costs

	£M (discounted)
Cublington	54.7
Foulness	49.8
Nuthampstead	51.7
Thurleigh	50.1

Airport services

7.67 The final forecasting work by the Research Team was not available when the studies of the water, sewerage, electricity, gas and fuel services were carried out. As referred to in paragraph 7.16, it was assumed that there would be the same demand at each site for each service, which was calculated broadly on the preliminary forecasts of 45 million passengers per year at the two runway capacity stage, and 100 million (plus) passengers per year at the four runway stage. Compatible assumptions as necessary were made for each particular service; these are given in the appropriate paragraphs.

7.68 Before the study was concluded the forecasting work had shown that the traffic predicted at the inland sites would be generally similar but that at Foulness there would be a slower rate of build up. This was because of the greater use which would be made of existing inland airports (particularly Luton which would close if the third London airport were sited at any of the short-listed inland sites) and because some of the demand for air travel would be suppressed by the additional cost of the longer journeys to Foulness.

7.69 To take account of the "best estimate" forecasts and, at the same time, to preserve a fair basis of comparison between sites the following adjustments were made:

(a) for water, gas, electricity and sewerage capital costs calculated on the original assumptions were used, but they were discounted to allow for their provision at the times indicated by the revised forecasts,

(b) for aviation and domestic fuel the capital and user costs were re-calculated on the basis of the revised forecasts and discounted to allow for their provision at the revised times.

7.70 Average inland site forecast figures were employed for the three inland sites. For Foulness two figures were calculated for all services:

(a) based upon the forecast figures predicted by the "best estimates": these are given under the heading of Foulness (actual),

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) based upon deducting Luton traffic from the average inland site traffic, these are given under the heading Foulness (constant traffic).

The figures at (b) are necessary to enable the principle set out in paragraph 1.27 to 1.31 of chapter 1 to be reflected in the cost-benefit analysis.

7.71 Table 7.2 gives the timing of the stages in terms of the runway capacity. The need for the various services and buildings does not match these stages precisely and they have been separately calculated where necessary.

Table 7.2

Runway capacity dates (predicted figures based on forecast best estimates)

	Start date	*Runway capacity reached at date given*			
		1-Runway	*2-Runway*	*3-Runway*	*4-Runway*
Inland sites	1982	1982	1991	2000	2010
Foulness (actual traffic)	1982	1985	1999	beyond appraisal period	
Foulness (constant traffic)	1982	1984	1994	2006	beyond appraisal period

Water supply

7.72 Estimates of the airport water requirements were prepared by the British Airports Authority after consideration of data from Heathrow and Gatwick.

Table 7.3

Assumptions for costing water supply

Stage	*Primary employment at the airport*	*Passengers per annum preliminary forecasts (millions)*	*Annual total fresh-water demand (millions)*	
			cubic metres per annum	*gallons per annum*
One runway	25,000	17	1.36	300
Two runway	45,000	45	2.73	600
Three runway	57,000	72	3.86	850
Four runway	65,000	100+	4.77	1050

The above figures include cooling water losses which for the four stages above are likely to amount to 13, 20, 25 and 30 million gallons per annum (mga) respectively.

7.73 Estimates of cost for providing water supplies to each of the four sites and to their accompanying urban developments were prepared by the Water Resources Board in consultation with the water undertakings and river authorities concerned.

Printed image digitised by the University of Southampton Library Digitisation Unit

7.74 The costs relating to the urban development are discussed in chapter 25. The following table gives the approximate capital costs of water supply to the airport (including local storage requirements but excluding costs of site distribution) for the four runway stage of development at 1968 prices, not discounted.

Table 7.4

Capital costs (undiscounted) water supply - four-runway situation (£M)

Airport site	*Source works*	*Trunk mains*	*Local storage*	*Total*
Cublington	1.131	0.445	0.145	1.721
Foulness	1.421	0.261	0.201	1.883
Nuthampstead	1.642	0.155	0.170	1.967
Thurleigh	1.437	0.086	0.138	1.661

7.75 No allowance has been made for the payment of interest on capital loans during construction or for running expenses as differences between sites are unlikely to be significant.

7.76 A special feature of the Cublington site is that the suggested airport would overlap a potential reservoir site at Whitchurch. The Water Resources Board was asked to attach a monetary value to the loss of the site for water storage. Because large reservoir sites are difficult to find in south-east England it was not sufficient to take the extra cost of construction at an alternative site. After discussions with the Engineer to the Thames Conservancy the Water Resources Board concluded that as a common intake would serve both the Waddesdon and Whitchurch sites an allowance should be made for the loss of these joint facilities. On that basis a sum of £3m. has been suggested for the loss of the Whitchurch site.

7.77 The following table compares total discounted costs to 1975 of water supply to the four sites.

Table 7.5

Water supply - discounted costs

Airport site	*Total discounted costs (£M)*
Cublington	0.9842
Cublington - loss of reservior site	0.8380
Foulness	1.0646
Nuthampstead	1.1324
Thurleigh	0.9480

Sewage disposal

7.78 Sewage flows likely to arise at the airport were estimated by the British Airports Authority after consideration of data from both Heathrow and Gatwick Airports. The figures are approximate.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 7.6

Assumptions for costing sewerage

Primary employment at the airport	*Passengers per annum- preliminary forecasts (millions)*	*Dry weather flow*	
		cubic metres per day	*million gallons per day*
25,000	17	3,750	0.8
45,000	45	7,500	1.6
57,000	72	11,000	2.3
65,000	100+	13,000	3.0

7.79 The ultimate airport flow is about 10-12 per cent of the urbanisation quantity and the first approach was to consider the possibilities of combined disposal systems. Having investigated and obtained costs for disposal of airport sewage jointly with sewage from the associated urbanisation, alternative independent disposal arrangements were investigated and costed. When considering joint disposal arrangements due regard was paid to the proposed phased development of the urbanisation. During the investigations the drainage authorities concerned were consulted to determine the feasibility of proposed schemes and the standards of treatment considered necessary as a basis for estimating.

7.80 The following table compares the estimates of cost of the cheapest strategies considered; it will be noted that differences are not significant.

Table 7.7

Capital and operating sewage disposal costs: four-runway situation (£M)

Airport site	*Capital cost*	*Annual operating costs*	*Total annual costs*
Cublington	1.59	0.068	0.235
Foulness	1.75	0.061	0.245
Nuthampstead	1.88	0.033	0.230
Thurleigh	1.29	0.066	0.201

(Loan repayments taken as £105 per annum per £1,000 of capital cost)

7.81 Details of the disposal methods considered at each site are given in the following paragraphs. Other solutions which at first sight appeared worthy of consideration had to be rejected because of incompatability between airport and urbanisation phased development. Drawings FNS/24, NUT/20, CUB/19 and THU/20 illustrating the schemes considered and costed are included in volume VII part 3.

Sewage disposal : Cublington

7.82 The schemes costed were:

(f) a joint scheme with the urbanisation discharging into the River Ouse below Newport Pagnell,

(g) an independent scheme discharging to the Ouzel below Linslade,

Printed image digitised by the University of Southampton Library Digitisation Unit

(h) an independent scheme discharging to the Hardwick Brook,

(i) a joint disposal scheme with the existing works west of Aylesbury on the Thame.

7.83 A joint scheme with the urbanisation in the Claydon Brook catchment was not investigated because this development will not start until a late stage.

7.84 The two independent schemes are less expensive than the joint schemes whether costed on a proportional flow basis or in terms of total additional cost. Of the two independent schemes (h) is the less expensive and in general terms it would be preferable to discharge into the Thames catchment rather than the Great Ouse catchment.

7.85 Standards of treatment used in the estimates were 5:5 (5 milligramme per litre of suspended solids and 5 milligrammes per litre of biochemical oxygen demand) for scheme (f) and 10:10 for the other three schemes costed.

Sewage disposal : Foulness

7.86 The alternative schemes costed were:

(a) a joint scheme with the urbanisation disposal system discharging to the Thames near Shoeburyness,

(b) an independent system discharging to the River Crouch near Foulness Point. The possibility of a sea outfall was considered but in the absence of comprehensive hydrological survey it was not possible to determine how far such an outfall would have to extend to ensure adequate dispersion of flow. Furthermore, it was understood that partial treatment by sedimentation would be requested by the Port of London Authority because of the adverse effect sewage solids can have on the stability of dredged channels. It was therefore considered that the proposal to discharge to the Crouch would not necessarily be more expensive than a sea outfall.

7.87 In preparing estimates of cost for the necessary sewage treatment works, standards of 30:20 have been assumed for discharge to the River Crouch. For discharges to the Thames standards of 100:100 were taken.

Sewage disposal : Nuthampstead

7.88 The schemes costed were:

(c) a joint scheme with the urbanisation disposal system discharging to the River Stort below Bishop's Stortford,

(d) a separate scheme discharging to the Rhee near Fowlmere,

(e) a separate scheme discharging to the Cam below Little Chesterford.

7.89 Separate schemes for disposing of sewage to the south were not investigated because there is already a limit of 0.5 million gallons per day (mgd) on the sewage effluent flow to be discharged to the River Stort upstream of Bishop's Stortford and such schemes would involve discharge from sewage treatment works immediately above substantial urbanisation.

7.90 The rivers further to the west, the Rib and the Quin, join the River Lee above the water abstraction point at New Gauge. The Lee Conservancy Catchment Board indicated that they would not consent to sewage effluent discharges into these rivers.

Printed image digitised by the University of Southampton Library Digitisation Unit

7.91 There are several existing water supply boreholes to the north of the airport site and the schemes costed allow for discharging effluent downstream of the spring line to avoid pollution of the boreholes.

7.92 Standards of 10:10 have been assumed in estimating the costs of the independent schemes. The joint scheme assumed stringent standards of 5:5 and took account of effects on amenity, recreational use and fishing and the fact that the River Lee is a major source of water supply for London.

Sewage disposal : Thurleigh

7.93 The schemes costed were:

(j) a joint scheme with the urbanisation discharging to the Ellington Brook near Spaldwick,

(k) a joint scheme discharging to the Nene near Standwick,

(l) an independent scheme discharging to the South Brook near Wilden.

7.94 Disposal of sewage effluent from the airport into the Great Ouse to the east or west of the site was not investigated because of the water abstraction points at Clapham, and Offord Cluny.

7.95 Although the independent scheme, 7.93 (l), discharging to South Brook is upstream of Offord Cluny it is thought sufficiently far away for the process of self-purification to occur during the time of travel of the effluent. This was accepted by the Pollution Prevention Officer of the Great Ouse River Authority.

7.96 The estimates for 7.93 (k), discharge to the River Nene, were based on standards of treatment of 5:5 to take account of its future use as a major source of water supply. For the other two schemes costed standards of 10:10 were assumed.

7.97 The following table compares total discounted annual costs of sewage disposal assuming loan repayments of £105 per annum per £1,000 of capital cost and including annual operating costs.

Table 7.8

Discounted costs of sewerage (£M)

Airport site	*Total discounted costs*
Cublington	0.9600
Foulness – (actual traffic)	0.9946
Foulness – (constant traffic)	1.0242
Nuthampstead	1.1161
Thurleigh	0.8436

Surface water drainage

7.98 The construction of large impermeable areas of runways, taxiways and standings together with the associated airport development will result in greatly increased peak rates of discharge of surface water. The inland sites are in general sited on high ground at the head of catchment areas and water courses on the airport sites are small with little capacity. Foulness is

Printed image digitised by the University of Southampton Library Digitisation Unit

different in that surface water collected on the airport would, prior to reclamation, have fallen on the sands.

7.99 Because of the drainage problems created at the inland sites the river and drainage authorities concerned were asked to:

(a) determine any preference as to which sub-catchment area should receive surface water drainage from the airport,

(b) agree the frequency of storm to be assumed in calculating the rate of discharge of surface water,

(c) consider any effects of the urbanisation associated with the airport.

7.100 The three authorities concerned - Great Ouse River Authority (Thurleigh, part Nuthampstead, part Cublington), Lee Conservancy Catchment Board (part Nuthampstead) and the Conservators of the River Thames (part Cublington) agreed that a design storm of 1 in 20 years be used for the purpose of calculating discharge to the water courses.

7.101 A skeleton surface water drainage scheme was prepared for each site based on the Road Research Laboratory hydrograph method of design, and pipe sizes and discharges were obtained using the Laboratory's computer programme. For runways and taxiways a 1 in 2 years design storm was assumed. All other areas have been based on the 1 in 20 years storm.

7.102 Shortage of time precluded co-ordination of the surface water drainage with other elements of the infra-structure and it is accepted that a more detailed study of the problems would be necessary once a site is finally chosen. The methods adopted, however, form a sensible basis for the cost comparison calculations to be used in the final analysis.

7.103 The possibility of discharging surface water to the chalk aquifer had been considered at Nuthampstead, but because a detailed soil survey would have been necessary to establish its feasibility a conventional drainage scheme was adopted.

7.104 Balancing reservoirs have been provided on all outfalls to restrict the rates of discharge to those specified by the authorities. In determining the acceptable rates of discharge the drainage authorities allowed for some improvements to the existing water courses and these costs have been included in the estimates.

7.105 Allowance has been made for all surface water run-off from pavements subject to fuel spillage (runway ends, aircraft standings, maintenance and cargo areas) to be passed through oil traps. Secondary interception would be possible at the balancing reservoirs.

7.106 Run-off from aircraft wash-down areas and trade wastes likely to cause pollution to raw water sources for public supply would be passed to foul sewers. Fears have been expressed of possible pollution from the use of de-icing fluids on airfield pavements, but there are no known pollution difficulties arising from the use of such fluids at Heathrow or Gatwick. The indications are that if run-off is subjected to storage in balancing reservoirs no contamination would be likely to arise. Trials of de-icing fluids arranged by the Ministry of Public Building and Works are to be carried out this winter at R.A.F. airfields to allow an analysis to be made of the melt water samples.

Printed image digitised by the University of Southampton Library Digitisation Unit

7.107 The design study drawings in volume VII part 3 show the skeleton layouts used for the computer programme and give an indication of the areas likely to be needed for balancing reservoirs.

7.108 With the exception of a relatively small area discharging to the River Crouch surface water run-off at Foulness has been planned to discharge through tidal flaps to the sea. The proposal to discharge surface water to the Crouch was agreed by the Essex River Authority.

7.109 The airport surface water drainage costs are included in the airport construction cost table (table 7.20).

Electricity

7.110 Two separate electricity supplies from independent sources, each capable of carrying the total load, at all stages of development, would be required. The intake was assumed to be at 33 KV which would be the voltage for the distribution around the airport.

7.111 The initial installation was planned to cater for a maximum demand of 40 MW with increasing transformer capacity to cater for the following estimated load growth:

Table 7.9

Assumptions for costing electricity

Annual passengers (millions)	*18*	*45*	*100*
Maximum demand (MVA)	40	65	100

7.112 The electricity demand of the airport and its associated urbanisation is not likely to require the construction of a power station in the immediate locality but it would affect the timing of generation development in the region. This would not create an additional cost because the airport would be attracting existing population to a specific area and not creating new population. The cost therefore of accelerating generation development would be offset by equivalent saving in reduced generation development at some other region in the United Kingdom. There is no significant difference in capital costs between power station sites likely to be developed for any of the regions which embrace the four short-listed airport sites.

7.113 The factors giving rise to difference in costs between sites fall into two categories:

(a) providing an electricity supply to each airport site,

(b) diverting and/or putting underground existing electricity lines which would be a flying obstruction as defined in annex 14 to the *Convention on International Civil Aviation Safeguarded Surfaces - Cat A Runway.*

7.114 Assumptions were made for costing purposes, as regards the routes to be adopted and the proportion of each route going underground. Any additional underground lines required by planning authorities would increase costs.

7.115 The provision of electricity supply and transformer installations has been planned for two stages; the first with the capability to deal with the two

Printed image digitised by the University of Southampton Library Digitisation Unit

runway situation and the second with approximately ultimate capacity.

7.116 Table 7.10 gives a summary of the total costs at each airport site calculated as detailed below:

Cublington

Source: main - East Claydon sub-station
alternative - Sundon sub-station

Stage 1: provide 132 KV circuits from East Claydon and Sundon to Cublington airport site. Install 132 KV switchgear and establish 132/33 KV sub-station to ceter for load of 40 MVA: *£0.87 million*

Stage 2: install additional transformer capacity to cater for load up to 100 MVA: *£0.15 million*

Putting underground of existing East Midlands Electricity Board's installations: *£0.09 million*

Diverting CEGB's installations:

East Claydon - Sundon DC 400 KV line, overhead 10 miles: *£0.715 million*

ditto 2¾ miles U/G: *£3.3 million*

Reactive compensation equipment: *£0.47 million.*

Total: £5.595 million

Foulness

Source: main - Bradwell Generating Station
alternative - Fleethall sub-station

Stage 1: provide 132 KV circuits from Bradwell and Fleethall to Foulness airport site. Install 132 KV switchgear and establish 132/33 KV sub-station to cater for load of 40 MVA: *£1.43 million*

Stage 2: install additional 132/33 transformer capacity to cater for load up to 100 MVA: *£0.15 million*

Total: £1.58 million

Nuthampstead

Source: main - Pelham sub-station
alternative - ditto with standby from Wymondley sub-station

Stage 1: provide two separate 132 KV circuits from Pelham to Nuthampstead airport site. Install 132 KV switchgear and establish 132/33 KV sub-station to cater for load of 40 MVA: *£0.61 million*

Stage 2: install additional transformer capacity and lay additional 132 KV cable from Pelham to airport to cater for load up to 100 MVA: *£0.4 million*

Putting underground of existing 132, 33 and 11 KV Eastern Electricity Board's installations: *£0.41 million*

Diverting CEBG's installations:

Overhead work:

Wymondley - Pelham DC 400 KV Line - 4 miles: *£0.286 million*

Burwell - Pelham DC 400 KV Line - 2 miles: *£0.143 million*

Underground work Wymondley - Pelham DC 400 KV route) 3½ *£5.289*
" " 132 KV route) miles *million*

Printed image digitised by the University of Southampton Library Digitisation Unit

Reactive compensation equipment: *£0.65 million*

Total £7.788 million.

Thurleigh

Source: main - Goldington power station
alternative - ditto with standby from Grendon sub-station.

Stage 1: provide 132 KV circuits from Goldington power station and Thurleigh airport site. Install 132 KV switchgear and establish sub-station at Thurleigh airport site to cater for load of 40 MVA: *£1.48 million*

Stage 2: install additional transformer capacity to cater for load up to 100 MVA: *£0.15 million*

Total: £1.63 million.

Table 7.10

Electricity - discounted costs (£M)

Site and item	*1968 Cost*	*Year in which cost is incurred*	*Discounted cost*
Cublington			
Elec supply	0.87	1981	0.490
Extension	0.15	1984	0.063
Circuit deviation	4.57	1981	2.580
Total cost	5.59		3.133
Foulness (constant traffic)			
Elec supply	1.43	1981	0.81
Extension	0.15	1985	0.058
Total cost	1.58		0.868
Foulness (actual traffic)			
Elec supply	1.43	1981	0.810
Extension	0.15	1988	0.044
Total cost	1.58		0.854
Nuthampstead			
Elec supply	0.61	1981	0.344
Extension	0.40	1984	0.169
Circuit deviation	6.78	1981	3.830
Total cost	7.79		4.343
Thurleigh			
Elec supply	1.48	1981	0.840
Extension	0.15	1984	0.063
Total cost	1.63		0.903

Aviation fuel

7.117 At Heathrow the consumption of aviation fuel at present averages approximately 1000 gallons per aircraft movement and is likely to double

Printed image digitised by the University of Southampton Library Digitisation Unit

during the next 10 years owing to increases in aircraft size.

7.118 At the third London airport the average consumption per movement in the long term future will depend upon the nature of the traffic, the size of aircraft and the proportion of long haul and short haul services. The commercial practice of airlines may also affect the position since to some extent they can take advantage of price differential and restrict their purchases in expensive areas.

7.119 It is likely that the fuel consumption will rise from the present figure of 1,000 gallons per aircraft movement to about 3,000 gallons at the end of the appraisal period.

7.120 The Ministry of Power provided valuable information on the cost of moving oil and on the disposition of existing pipelines, their sizes, present loading and possible future capacities. It was apparent that at certain sites it would be possible at a reasonable cost to obtain a fuel supply from an existing pipeline to supply the airport for a short time. It was also apparent that all sites would ultimately require their own pipeline and there was no certainty that the spare capacity in existing lines would still be available when the third London airport is opened. The cost of providing a pipeline to each site was therefore estimated on the following assumptions:

(a) oil will come from Thames Haven which is the nearest refinery to all four sites,

(b) the distances by the most probable pipeline route to each site were approximately:

Cublington	–	76 miles,
Foulness	–	18 miles,
Nuthampstead	–	50 miles,
Thurleigh	–	76 miles,

(c) the pipeline capital costs for a 14 inch diameter pipeline would be £28,000 per mile for pumping stations, £200 per horse power of installed capacity complete,

(d) pipeline operating costs would be 15 per cent of capital cost per annum including depreciation and interest,

(e) cost of power would be £1 for each 150 horse power hour (about 2¼d per unit).

7.121 Before pipeline routes were postulated the positions of all existing and any probable future refineries were studied. That with the shortest pumping route to each of the sites was at Thames Haven. It was considered that the cost of transporting the fuel from this location to each site was therefore a valid method of assessing the relative costs since it represents a real physical situation which a sophisticated industry is likely to exploit to proper advantage. This should not be taken to mean that the products of any particular commercial group are likely to be favoured.

7.122 Table 7.11 compares the capital cost of installing a 14-inch diameter pipeline into each site large enough to cater for the estimated demand of the airport throughout the appraisal period. An increase in pumping capacity in 1994 would be required for Cublington and Thurleigh but not for Nuthampstead or Foulness.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 7.11

Pipeline capital costs (discounted) (£M)

Site	*Capital cost (1968 prices)*			*Year in which cost is incurred*	*Discounted cost*
	Initial	*Increased capacity*	*Total*		
Cublington	3.0			1981	1.69
		1.3		1994	0.212
			4.3		1.902
Foulness (constant traffic)	1.0	–	1.0	1981	0.565
Foulness (actual traffic) (12" pipeline)	0.852	–	0.852	1981	0.482
Nuthampstead	1.9	–	1.9	1981	1.07
Thurleigh	3.0			1981	1.69
		1.3		1994	0.212
			4.3		1.902

7.123 To compare the cost of delivering aviation fuel the number of aircraft movements used were,

(a) for the three inland sites, the average inland site forecast movements,

(b) for Foulness (constant traffic), the average inland site forecast movements minus the Luton forecast movements,

(c) for Foulness (actual traffic), the number of movements forecast for Foulness.

Table 7.12 gives the aviation fuel delivery costs discounted to a base year of 1975. Luton is assumed to be closed for all inland sites but to remain in use if Foulness is chosen. To compare these situations the cost of supplying fuel to Luton has been added to the Foulness costs.

Table 7.12

Aviation fuel delivery cost (£M)

Site	*Discounted cost*
Cublington	5.192
Foulness (constant traffic) plus Luton	2.997
Foulness (actual) plus Luton	2.499
Nuthampstead	4.343
Thurleigh	5.192

Telecommunications

7.124 The initial building and equipment required by the GPO for the airport telecommunications system would be the same at all sites. Connections to

Printed image digitised by the University of Southampton Library Digitisation Unit

the national network would vary. The estimated capital costs are given in table 7.13 for the original expenditure required at each site and the subsequent increases at each stage. Table 7.14 gives the discounted costs.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 7.13

Telecommunications capital costs

Item	*Description*	*Cublington £M*	*Foulness £M*	*Nuthampstead £M*	*Thurleigh £M*
1	Building and equipment and connections for 30,000 direct airport employment and 18M passengers	5.52	5.48	5.52	5.57
2	Increase for 45,000 direct airport employment and 45M passengers	3.41	3.35	3.41	3.46
3	Increase for 65,000 direct airport employment and 100M passengers	8.54	8.38	8.54	8.68
	Total	17.47	17.21	17.47	17.71

Table 7.14

Telecommunications discounted capital costs (£M)

Item	*Foulness (actual traffic)*		*Foulness (constant traffic)*	
	Year in which cost is incurred	*Discounted cost*	*Year in which cost is incurred*	*Discounted cost*
1	1981	3.1	1981	3.1
2	1987	1.07	1986	1.18
3	1992	1.65	1990	2.0
Total		5.82		6.28
	Nuthampstead & Cublington		*Thurleigh*	
1	1981	3.12	1981	3.16
2	1984	1.45	1984	1.47
3	1989	2.14	1989	2.27
Total		6.71		6.90

Printed image digitised by the University of Southampton Library Digitisation Unit

Navigational aids

7.125 Using current techniques four navigational beacons would be required, two at each side of the airport at a distance up to 30 miles away from it. The siting position is not critical. These beacons serve the purpose of directing aircraft on to and off the airlanes; present day equipment requires aircraft to fly over the beacons. This would create problems at Foulness. Development of area navigational aids now being undertaken indicates however that by the time the third London airport is built it will no longer be necessary for aircraft to pass directly over the beacons. This would give greater flexibility and permit the beacons at all sites to be placed on land. A circular area about 100 yards diameter would be required for each beacon.

7.126 One short range radar sited on the airport comprising a 40 ft. tower and a building of approximately 20 ft. square would be required. A long range radar sited off the airport might be required but in the absence of firm information no land was allowed for this possibility.

7.127 The current Instrument Landing System uses four beacons at each end of each runway. These are as follows:

(a) the localiser, comprising an aerial on the extended runway centre line 335m (1100ft) from the runway end and a transmitter housed in a small building offset 91m (300ft) from the centre line,

(b) the glide-path indicator, consisting of a mast mounted on a small building housing the transmitter sited 122m (400 ft) offset from the runway centre line and 305m (1000 ft) upwind of the landing threshold,

(c) the middle marker, consisting of a mast about 6m high mounted on a small building housing the transmitter sited on the extended runway centre line about 1207m (0.75 mile) from the runway end,

(d) the outer marker, consisting of a mast about 6m high mounted on a small building housing the transmitter sited on the extended centre line about 6035m (3.75 miles) from the runway end.

At all sites the localiser and glidepath indicator would be sited on the airport. At the three inland sites the middle and outer markers would each require a small area of land about 15m diameter. At Foulness the middle and outer markers would be sited on the tidal flats or in relatively shallow water. This would give rise to some additional costs but in view of the probability that more advanced systems with different and less exacting requirements will come into use before the third London airport is operative, no cost differences have been calculated.

7.128 For voice transmission to aircraft two 30m towers two miles apart, one for transmission and one for receiving, would be required. Both would be sited on the airport with equal costs at all four sites.

7.129 In general the cost of the electronic equipment for the navigation aids on the airport would be the same at all four sites: *£M4 (excluding building costs).*

Domestic fuel

7.130 Based on Heathrow experience the consumption of domestic fuel at

Printed image digitised by the University of Southampton Library Digitisation Unit

the third London airport was estimated to be in the order of the figures in table 7.15

Table 7.15

Assumptions for costing domestic fuel

Annual passengers (millions)	*18*	*45*	*72*	*100*
Oil (million gallons) or	7	11	13	16
Gas (million cu ft)	1200	1800	2200	2600

7.131 It was ascertained that a gas main of suitable size could be brought to each airport site terminating in a pressure regulating station for the costs given in table 7.16.

Table 7.16

Capital and discounted costs domestic fuel (gas) (£M)

Site	*Capital cost*	*Year in which cost is incurred*	*Discounted cost*
Cublington	0.320	1981	0.180
Foulness (constant traffic)	0.507	1981	0.286
Foulness (actual traffic)	0.507	1981	0.286
Nuthampstead	0.540	1981	0.306
Thurleigh	0.760	1981	0.430

It was not possible to obtain a firm price for the supply of gas but it was ascertained that the difference in price likely to be charged at any site was insignificant so gas consumption was not costed over the appraisal period.

7.132 If oil were to be preferred to gas on the grounds of economics then the capital cost of the gas pipeline would not be incurred. It was assumed that the only difference in the cost of oil between sites would be that incurred by transport. Based on road transport at 4d per ton per mile plus loading and unloading at 2/6d per ton, it was estimated that the delivery cost of oil to each site would be as in table 7.17.

Table 7.17

Domestic fuel delivery costs (oil)

Foulness	–	£0.428 per ton
Nuthampstead	–	£0.860 per ton
Luton, Cublington and Thurleigh	–	£1.4 per ton.

7.133 The discounted costs for delivering domestic fuel oil to all four sites and to Luton were calculated for the appraisal period in a similar way to that described for aviation fuel. As there was less than £¼M difference between sites these costs were ignored.

Printed image digitised by the University of Southampton Library Digitisation Unit

Hydrological studies – Foulness

7.134 Paragraph 7.22 contains the questions which were put to the Port of London Authority about matters affecting the Thames Estuary. The answers were based on work done under the aegis of the Thames Estuary Development Company Limited (of which the Port of London Authority is a member), working closely with the Hydraulics Research Station. The first stage, based on a hydraulic survey, field investigations and desk studies revealed no evidence of any deleterious effects in the estuaries of the Crouch and the Thames.

7.135 It was also shown that the "stretched layout" for the runway lends itself to a favourable reclamation shape, relatively long and narrow, parallel to the shore line.

7.136 From the results of the work at the second stage, it can be said that:

(a) the reclamation shape used for the design studies is practicable,

(b) there is no evidence of any deleterious effects in the estuaries of the Crouch and Thames using this shape,

and

(c) suitable material for the reclamation is available close at hand and its use would not appear to have any adverse hydrological effects.

Soil survey: Cublington

7.137 The data available at the start of the enquiry was that on the one inch to one mile New Series Geological Map sheet 220 together with information from the Well Catalogue Series and other sources. This indicated that boulder clay overlies the greater part of the site, with glacial gravels and alluvium in the valleys; below the drift the bedrock over much of the area is Kimmeridge clay. In the eastern section outcrops of Gault clay and Greensand occur. These are "solid" deposits higher in the geological series than the Kimmeridge. In the west Portland/Purbeck beds of sand and rubbly limestone outcrop.

7.138 Eleven boreholes were driven to a depth of 40 to 50 feet in area where excavation would be needed. Only boulder clay interspersed with glacial sands and gravels was encountered. Two boreholes were driven down to the Kimmeridge Clay underneath. The boulder clay was of an intermediate to high plasticity in a "stiff" condition. A full range of classification and strength tests was carried out on all samples from the boreholes. It was concluded that:-

(a) all the material likely to be excavated would be a stiff boulder clay of intermediate to high plasticity,

(b) the excavated material could be used as fill under pavements,

(c) for airfield pavement design purposes a modulus of sub grade reaction "k" of 1000 pounds per square inch per inch (psipi) could be assumed at the top of working courses founded upon all soils likely to be encountered.

Soil survey: Foulness

7.139 In the area of the proposed site for the airport it was found in general that sands, soft clays, silts, and sands and gravels overlay London clay. There was

Printed image digitised by the University of Southampton Library Digitisation Unit

considerable variation from one borehole to another but generally it can be said that the soil conditions were as follows:

(a) a top layer of loose to medium dense grey sand, varying in thickness from about 10 feet to 20 feet and thinning out to the south west and north west,

(b) followed by a grey silty clay and clayey silt varying in thickness from 15 feet to 60 feet,

(c) followed by sands and gravels, and in some boreholes a layer of firm to stiff laminated mottled grey and brown silty clay,

all overlying stiff to very stiff London clay. Consolidation of layer (b), the grey silty clay and clayey silt, will be the main cause of settlement.

7.140 A very full range of tests was carried out on all samples and the probable time and settlement relationships were established. In addition to the boreholes, an underwater seismic profiling investigation was carried out under the direction of Dr J.E.Prentice of King's College, University of London, which was successful in identifying the surface of the London clay over much of the area.

7.141 Nothing has emerged from the soil surveys which would prevent an airport being constructed on Maplin Sands in the manner proposed. The construction programme postulated has been formulated to minimise settlement of the airfield pavements after construction taking into account the consolidation characteristics of the soils revealed by the tests.

Soil survey: Nuthampstead

7.142 The information available at the start of the enquiry was the one inch to one mile New Series Geological Maps, sheets 221, 222 and 205, together with information extracted from the Well Catalogue Series and other sources. This showed that the site was predominantly a chalky boulder clay (a typical and widespread soil of the south Midlands and East Anglia) overlying chalk. In the valleys, the streams have cut through the boulder clay to the chalk and small deposits of glacial gravel and valley gravel occur. The thickness of the drift deposit of boulder clay is variable, not surprisingly perhaps because the pre-glacial land surface of chalk has been intensely eroded. The incidence in the clay of boulders, as such, is small, most stones being of pebble size. Chalk in the form of pebbles, fragments and powder is an essential ingredient. Generally the top 10 feet to 20 feet is brown in colour, due to oxidation but at depth the boulder clay is typically bluish-grey.

7.143 The seven bore holes driven were sited in areas where excavation would be needed and a full range of identification and strength tests was carried out. The clay was classified as a "very stiff" clay of intermediate to low plasticity. The bores were taken to depths varying between 40 feet and 100 feet. The chalk bed rock was not encountered in any bore hole.

7.144 Considering all the information available it was concluded that all excavation work at Nuthampstead would be in very stiff boulder clay, that the excavated material could be used as fill under pavements and that for airfield pavement design purposes a modulus of sub-grade reaction ("k") of 1000 psipi could be assumed at the top of working courses founded on this soil.

7.145 A considerable amount of information was available from geological maps, the Well Catalogue Series and earlier investigations in the area. The site is of

Printed image digitised by the University of Southampton Library Digitisation Unit

boulder clay over practically the whole area. In the valley of the Ouse to west of the site near Sharnbrook and to the north east around Keysoe the boulder clay has been eroded to reveal the Oxford clay.

7.146 Eight boreholes were driven to a depth of 30 ft to 40 ft in areas where excavation would be anticipated. A range of classification and strength tests were made on samples from these boreholes. The only soil encountered was the typical glacial soil of the district, a chalky boulder clay. It was found in a "stiff" condition with many chalk pebbles; boulders, as such, were infrequent; finely divided chalk occurred as a constituent in the clay matrix.

7.147 It was concluded that:

(a) all the material likely to be excavated would be a stiff boulder clay of intermediate to low plasticity,

(b) the excavated material could be used as fill under pavements,

(c) for airfield pavement design purposes, a modulus of subgrade reaction "k" of 1000 psipi could be assumed at the top of working courses founded upon soils likely to be encountered.

Design studies

7.148 The design study work was done on the basis of the preliminary estimates of traffic and some adjustments were made when the "best estimate" forecasts became available. The figures used initially are given in table 7.19

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 7.19

Initial assumptions for design studies

	Total aircraft movements per year	*Passengers (millions per year)*	*Cargo (1000 tonnes per year)*	*Direct airport employment*	*Road transport passenger car units per hour peak flow*
1st Runway capacity	150,000	17	300	25,000	4,000
2nd Runway capacity	300,000	45	650	45,000	9,500
3rd Runway capacity	450,000	72	1,200	57,000	15,000
4th Runway capacity	600,000	100+	3,500+	65,000	20,000

Printed image digitised by the University of Southampton Library Digitisation Unit

7.149 No airport of this magnitude is operating anywhere in the world today; nor are there any other proposals known to the Research Team for an airport with a capacity as high. The essential task was to arrive at a fair and reasonable comparison of the costs at each site and an assessment of its impact on the local environment. With no background of general experience on which to base broad conclusions the concept of the airport had to be built up in considerable detail, first, to establish the feasibility of providing the necessary infrastructure within the area and secondly to arrive at fair comparative costs (for example to calculate the additional foundation costs for buildings at Foulness it was necessary to establish approximately the number, type and size of the buildings).

7.150 In general the detail assumed has been shown on the drawings published in volume VII part 3. These drawings do not purport to depict in detail the airport exactly as it would be built. The airport finally built on the chosen site is likely to differ in many particulars from that illustrated and would emerge from further more exhaustive studies. There are obviously considerable problems associated with predicting fully the requirements of a rapidly developing technology such as aviation.

7.151 What the studies do demonstrate however is the comparative difficulty, feasibility and cost of constructing the airport at each of the sites. For example, the size of the road and rail access and of the terminal building arrangements shown is appropriate to handle the traffic postulated and represents a possible solution though it is not claimed that this configuration is ideal or should necessarily be adopted. On the contrary it became apparent that there is a number of attractive alternatives which should be fully investigated before final decision on the design of the chosen site are reached. The quantities of road, bridge structure, embankment, building and drainage work in relation to the particular terrain are considered to be of the right order and to form a fair basis for cost comparison between the four sites.

7.152 The British Airports Authority consider that it might be desirable to increase the separation of the inner runways from 2300 metres to 2500 metres. They wish to preserve the necessary flexibility to permit this should later more exhaustive design work indicate that it should be done. The boundaries on the phased land requirement drawings have been drawn a sufficient distance (300 metres from the runway centre line) to allow this extension without additional land being needed. It is considered that the land indicated as being required at each stage of construction is the maximum that should be required.

7.153 The method adopted for deciding the alignment and the precise location of the airport at each site have been described in chapter 9. Following this work it was necessary to locate the road and rail access, the terminal buildings, the maintenance and cargo area, the aircraft stands, the taxiway bridges and the various other buildings. This work was done for each site by the British Airports Authority in consultation with the Research Team, taking into account such factors as the local terrain, the need for a progressive phased development and the minimisation of taxying routes.

Notes on design drawings given in volume VII part 3

7.154 For each site the following drawings have been produced (all reduced to A3 size for publication):

Printed image digitised by the University of Southampton Library Digitisation Unit

(a) a 6 inch to one mile (1/10560) key plan indicating the sheet numbers of the larger scale 1/2500 drawings and showing the airfield pavements, the road and rail system within the airport, the position of the terminal complexes and the location of the soil survey boreholes,

(b) drawings at a scale of 1/2500 showing existing and regraded contours at 2 metre intervals, the airfield pavements, an outline drainage system, including oil traps and balancing reservoirs, the buildings enumerated in appendix 1 the road and rail system within the airport and the borehole logs,

(c) longitudinal profiles of the runway,

(d) a cross section through the site and a section through a typical terminal complex,

(e) a 6 inch to one mile (1/10560) phased land requirement drawing showing the boundaries of the land required for each phase of construction,

(f) provisional safeguarding maps (prepared in the form in which they are normally issued by the Ministry of Housing and Local Government to local planning authorities) showing the areas in which structures of more than a specified height would be controlled,

(g) provisional obstruction maps, showing the position of existing objects encroaching upon the safeguarded approach planes and horizontal surfaces, which would require removal or lighting (these maps have been prepared from the aerial survey directly without the customary ground check),

(h) a one inch to one mile drawing of each site, showing the points of connection for the water, electricity and sewage services, the source of electricity and water assumed and the alternative sewage disposal scheme costed,

(i) for Foulness only a 1/25000 drawing showing the alignment of the sea wall as modified after testing in the hydrological model. This differs from that shown on the 1/2500 drawings in some respects because these were completed before the results of the hydrological work was available; the cost estimates have been adjusted to take account of the modifications.

7.155 The pavement design assumed was the same at all sites and for all the airfield pavements including runways, taxiways, stands, cargo area and maintenance area. It consists of a 450mm (17.7 inches) thick slab of plain concrete laid on a 150mm (5.9 inches) thick slab of lean mix concrete. At the inland sites in the areas of fill it was assumed that the concrete would overlie an average of 450mm of imported granular fill; in areas of cut it is assumed the concrete would overlie an average of 150mm of imported granular fill. At Foulness it was assumed that there would be no imported granular fill and that the lean mix concrete would be laid directly upon the hydraulic sand fill used for reclamation.

7.156 The following additional assumptions were made on points of detail to assist in arriving at the cost estimates:

(a) bay sizes of the top concrete slab would be 6m x 6m, with transverse dummy joints and longitudinal construction joints, a minimum number of expansion joints would be used,

(b) no reinforcement or dowels would be employed,

(c) lean mix and imported granular fill (at inland sites) would project 300mm beyond the edge of the upper slabs,

Printed image digitised by the University of Southampton Library Digitisation Unit

(d) runways and taxiways would be drained by slot drains, having a 40mm slot and a 200mm bore,

(e) aprons would have standard cast iron grid drains,

(f) runways would be peaked falling outwards 1.5 per cent,

(g) taxiways would have a crossfall of 1.5 per cent.

For the design of the taxi overbridges an all-up aircraft weight of 680 tonnes applied as a line load, 12 metres long applied transversely across the bridge was assumed.

Costs of construction

7.157 The costs of construction at each site for each of the four stages are shown in table 7.20 at the end of the chapter. These figures are based on measured quantities taken from the design study drawings at 1968 prices and upon rates actually paid for similar works put out to competitive tender by British Airports Authority and Ministry of Public Building and Works, adjusted to take account of known differences in requirement. They represent therefore the total sum that would be paid by the client authority to the contractor. The airport works costed include the facilities usually financed by the airport authorities and many which would normally be provided by the air lines or others. The figures given for the airfield pavements include the cost of the taxiwaybridges. The strength of the pavement assumed and hence the cost of the pavement work is high. Nevertheless this is compatible with the assumptions that runways and taxiways will be provided only when needed, that they will be very heavily used, and opportunities to gain access for maintenance and remedial work will be very limited.

7.158 The cost of the reclamation work at Foulness cannot be estimated with any precision. The figure used in table 7.20 is based on a unit rate (recommended by British Airports Authority) of 7/- per cubic metre for the pumped sand hydraulic fill.

7.159 The earthworks costs at the inland sites include the costs of transporting, laying and compacting the fill appropriate to the site. The finished levels shown on the design study drawings did not produce an exact balance of cut and fill quantities. The assumption has been made that substantial balance would be achieved in the final design by adjustment of level which should not exceed, at any point, one contour interval (2 metres). Costs have have been estimated on this basis.

7.160 The foundation costs at each site have been assessed taking into account the piled foundation necessary at Foulness and the more expensive foundations for the buildings sited in areas of heavy fill at the inland sites.

7.161 The terminal buildings have been costed on the basis of present day standards with an additional allowance for moving pedestrian walkways and baggage handling systems necessitated by the scale of the proposals.

7.162 The basis of the costing is necessarily approximate and the results are a better indication of the differences between sites than of the full nature and extent of the capital costs. Many items are excluded, for example the hotels in or around the airport and the cost of car parks not on the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

The costs are however considered to be sufficiently high to give a realistic picture of the order of the actual expenditures likely to arise; it is hoped that under-estimation of costs, a persistent feature of many public projects, has been avoided.

7.163 There is scope for considerable design refinement and possible economies in the following:

(a) length of runways actually provided,

(b) necessity for taxiways parallel to runways for full length,

(c) aircraft stand and distributing taxiway systems, number of taxiway bridges,

(d) better integrated design of terminal buildings, car park, road and rail and inter terminal transit systems.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 7.20

Costs of construction and services

Construction Costs £(million)

		Phase I	Phase II	Phase III	Phase IV	Total 4-R'way	Dis-counted
Cubbington	Earthworks					42	25
	Pavements					100	32
	Terminals					241	75
	Road, rail, car parks					21	8
	Other buildings					98	26
	Miscellaneous					41	18
	Total	133	206	138	66	543	184
Foulness (actual)	Reclamation					80	45
	Pavements					85	21
	Terminals					244	58
	Road, rail, car parks					22	6
	Other buildings					104	20
	Miscellaneous					44	16
	Total	130	210	103	80	579	166
Foulness (constant)	Reclamation					80	46
	Pavements					85	24
	Terminals					244	64
	Road, rail, car parks					22	7
	Other buildings					104	21
	Miscellaneous					44	17
	Total	135	220	107	82	579	179
Nuthampstead	Earthworks					31	19
	Pavements					101	32
	Terminals					240	75
	Road, rail, car parks					21	8
	Other buildings					96	25
	Miscellaneous					43	19
	Total	130	200	136	66	532	178
Thurleigh	Earthworks					14	8
	Pavements					100	32
	Terminals					238	74
	Road, rail, car parks					21	8
	Other buildings					95	25
	Miscellaneous					42	19
	Total	125	190	130	65	510	166

Service Costs £(million)

	Capital Costs	Capital Dis-counted	Operating Dis-counted	Total Dis-counted
Taxi-ing	-	-	54.70	54.70
Water supply (includes reservoir)	4.72	1.82	-	1.82
Sewage disposal	1.59	0.58	0.38	0.96
Electricity supply	5.59	3.13	-	3.13
Aviation fuel supply	4.30	1.90	5.19	7.09
Telecommunications	17.47	6.71	-	6.71
Domestic fuel (gas)	0.32	0.18	-	0.18
Total	33.99	14.32	60.27	74.59
Taxi-ing	-	-	49.80	49.80
Water supply	1.88	1.06	-	1.06
Sewage disposal	1.75	0.68	0.31	0.99
Electricity supply	1.58	0.85	-	0.85
Aviation fuel supply	0.85	0.48	2.50	2.98
Telecommunications	17.21	5.82	-	5.82
Domestic fuel (gas)	0.51	0.29	-	0.29
Total	23.78	9.18	52.61	61.89
Taxi-ing	-	-	49.80	49.80
Water supply	1.88	1.08	-	1.08
Sewage disposal	1.75	0.74	0.28	1.02
Electricity supply	1.58	0.87	-	0.87
Aviation fuel supply	1.00	0.57	3.00	3.57
Telecommunications	17.21	6.28	-	6.28
Domestic fuel (gas)	0.51	0.29	-	0.29
Total	23.93	9.83	53.08	62.91
Taxi-ing	-	-	51.70	51.70
Water supply	1.97	1.13	-	1.13
Sewage disposal	1.88	0.91	0.21	1.12
Electricity supply	7.79	4.34	-	4.34
Aviation fuel supply	1.90	1.07	4.34	5.41
Telecommunications	17.47	6.71	-	6.71
Domestic fuel (gas)	0.54	0.31	-	0.31
Total	31.55	14.47	56.25	70.72
Taxi-ing	-	-	50.10	50.10
Water supply	1.66	0.95	-	0.95
Sewage disposal	1.29	0.57	0.27	0.34
Electricity supply	1.63	0.90	-	0.90
Aviation fuel supply	4.30	1.90	5.19	7.09
Telecommunications	17.71	6.90	-	6.90
Domestic fuel (gas)	0.76	0.43	-	0.43
Total	27.35	11.65	55.56	67.21

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of Buildings as shown on the drawings

Key of building utilisation classification

CODE LETTER	BUILDING UTILISATION
A	Passenger Terminals
B	Airlines
C	Airport Management
D	Airport Maintenance
E	Heating Stations
F	Other buildings as shown
G	Car Parks
H	Areas for Ancillary Development

Key of building construction classification

CODE NUMERAL	CONSTRUCTION TYPE
1	Steel frame and curtain walling
2	RC frame and curtain walling
3	Steel truss, asbestos/cement roof, and brick walls
4	"Factory-made" units
5	Brick
6	Concrete structure(with load-bearing walls where appropriate)
7	Hangar construction (possibly long-span steel frame wit light cladding)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Cublington

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
42	Car Park	G	175	30	.5250							II	
41	Airport Maintenance	D	165	80	1.320	80	12	960	Strip	5	1	II	
40	Airport Maintenance	D	140	60	.8400	37	10	370	Strip	5	1	II	
39	Terminal	A	300	75	2.250	300	75	22500	Piled	1	3/4	II	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.080	180	60	10800	Piled	6	5	II	
38	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	II	
48	Airport Maintenance	D	175	60	1.050	50	12	600	Piled	1 or 2	3	IV	
						150	19	2850	Piers	1, 2 or 3	1	IV	
47	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	IV	
46	Terminal	A	300	75	2.250	300	75	22500	Piled	1	3/4	IV	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.080	180	60	10800	Piled	6	5	IV	
45	Airlines	B	70	60	.4200	155	20	3100	Piers	1 or 2	1	IV	
			55	30	.1650							IV	
44	Airlines	B	110	60	.6600	140	20	2800	Piers	1 or 2	1	IV	
43	Airlines	B	170	37	.6240	23	10	230	Piled	1 or 2	4	IV	
						50	37	1850	Strip	3	1	IV	
32	Car Park	G	180	30	.5400							II	
31	Airlines	B	180	70	1.260	77	70	5390	Piers	3	1	II	
						69	70	4830	Piers	3	1	II	
30	Airlines	B	170	37	.6290	23	10	230	Piled	1 or 2	4	II	
						50	37	1850	Piers	3	1	II	
29	Govt. Agency Bldg.	F	70	12	.0840	70	12	840	Piled	1 or 2	4	II	
28	Terminal	A	300	75	2.250	300	75	22500	Piled	1	3/4	II	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.080	180	60	10800	Piled	6	5	II	
27	Car Park	G	190	30	.5700							II	
26	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	II	
25	Airport Management	C	190	65	1.235	107	65	6955	Piers	1 or 2	1	II	
						65	21	1365	Piled	3	4	II	
24	Airline	B	180	60	1.080	220	40	8800	Piers	3	1	I	
23	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	I	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Cublington

Sheet Two of Six

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
22	G.P.O.	F	30	30	.0900	30	30	900	Piers	1 or 2	2	I	
21	Airline	B	120	60	.7200	35	14	490	Strip	5	1	I	
19	Airline	B	180	40	.7200	180	14	2520	Piled	1 or 2	6	I	
						90	26	2340	Strip	3	1	I	
18	Car Park	G	190	30	.5700							I	
17	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	I	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	I	
16	Control Building	F	102	30	.3060	100	30	3000	Piled	1 or 2 Tower 6	8	I	
15	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	II	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	II	
14	Car Park	G	180	30	.5400							II	
13	Airport Management	C	180	60	1.0800	117	60	7020	Spread	1 or 2	1	II	
						60	19	1140	Piled	1 or 3	4	II	
12	Airport Management	C	180	60	1.0800	74	15	1110	Piled	1 or 2	4	II	
11	Airline	B	75	12	.0900	75	12	900	Piled	1 or 2	4	II	
10	Chapel	F	50	19	.0950	50	19	950	Strip	6	1	II	
9	Heating Stations	E	100	55	.5500	100	55	5500	Spread	2	1	II	
8	Data Processing	F	180	60	1.0800	348	20	6960	Spread	1 or 2	2	II	
7	V.I.P. Building	F	90	21	.1890	12	6	72	on Apron	5	1	I	
6	Airport Maintenance	D	150	85	1.2750	80	10	800	Piled	1, 2 or 3	3	I	
						250	15	3750	Strip	5	1	I	
5	Met. Office	F	20	14	.0280	16	9	144	Strip	5	1	I	
4	Heating Stations	E	100	55	.5500	100	55	5500	Spread	2	1	I	
3	Hostel	F	75	12	.0900	75	12	900	Piled	1, 2 or 4	4	I	
20	Airline	B	80	75	.6000	35	14	490	Strip	2 or 5	1	I	
2	Airline	B	170	37	.6290	23	10	230	Piled	1 or 2	4	I	
						50	37	1850	Piers	3	1	I	
1	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	I	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	I	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Cublington

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
54	Car Park	G	180	30	.5400							III	
53	Aiport Maintenance	D	125	60	.7500	10	9	90	Strip	2 or 5	1	III	
						28	10	280	Strip	2 or 5	1	III	
52	Airline	B	53	54	.2862	53	54	2862	Spread	3	1	III	
51	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	III	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	III	
50	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	III	
49	Govt. Agency Bldg.	F	70	12	.0840	70	12	840	Piled	1 or 2	4	III	
37	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	III	
36	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	III	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	III	
35	Airline	B	53	54	.2862	53	54	2862	Piers	3	1	III	
34	Airline	B	170	37	.6290	23	10	230	Piled	1 or 2	4	III	
						50	37	1850	Piers	3	1	III	
33	Car Park	G	180	30	.540							III	
55	Heating Stations	E	100	40	.4000	100	40	4000	Piers	2	1	II	
56	Customs House	F	140	90	1.2600	90	35	3150	Piled	1 or 2	4	II	
57	Car Park	G	120	110	1.3200							II	
58	Amenity Block	F	100	50	.5000	100	50	5000	Piers	1 or 2	1	II	
59	Lorry Park	G	170	125	2.1250							II	
60	Airlines	B	400	70	2.8000	400	70	28000	Piers	3	1	II	
61	Airlines	B	200	52	1.0400	200	52	10400	Strip	1, 2 or 5	1	II	
62	Police Station	F	90	37	.3330	45	37	1665	Piled	1 or 2	4	II	
63	Animal Reception Cen.	F	85	45	.3825	118	12	1416	Piers	1 or 2	2	II	
64	Airlines	B	400	70	2.8000	400	70	28000	Strip	3	1	II	
65	Airlines	B	400	70	2.8000	400	70	28000	Strip	3	1	IV	
66	Airlines	B	200	52	1.0400	200	52	10400	Strip	1, 2 or 5	1	IV	
67	Airlines	B	400	70	2.8000	400	70	28000	Piers	3	1	IV	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Gublington

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
68	Airlines	B	400	70	2.8000	400	70	28000	Piers	3	1	IV	
69	Airlines	B	200	52	1.0400	200	52	10400	Piled	1, 2 or 5	1	IV	
70	Airlines	B	400	70	2.8000	400	70	28000	Piers	3	1	IV	
71	Airlines	B	400	70	2.8000	400	70	28000	Piers	3	1	IV	
72	Airlines	B	200	52	1.0400	200	52	10400	Piled	1, 2 or 3	1	IV	
73	Airlines	B	400	70	2.8000	400	70	28000	Piers	3	1	IV	
74	Customs House	F	140	90	1.2600	90	35	3150	Piled	1 or 2	4	IV	
75	Heating Stations	E	100	40	.4000	100	40	4000	Piers	2	1	IV	
76	Amenity Block	F	100	50	.5000	100	50	5000	Spread	1 or 2	2	IV	
77	Lorry Park	G	150	110	1.6500							IV	
78	(Area for Ancillary	H	375	170	9.7750							IV	
79	(Cargo Development)	H	670	70	4.6900							IV	
80	Airport Maintenance	D	110	70	.7700	23	12	276	Strip	2 or 5	1	IV	
80	Airport Maintenance	D				15	6	90	Strip	2 or 5	1	IV	
81	Airport Maintenance	D	190	70	1.3300	(60	10	600	Piled	1 or 2	3	IV	
						(140	20	2800	Piers	1 or 3	1	IV	
82	Car Park	G	625	70	4.375							II	
83	Airlines	B	170	110	1.87	(110	75	8250	Piers	3	1	II	
						(95	50	4750	Piers	3	1	II	
84	Heating Stations	E	100	60	0.60	100	60	6000	Piers	1	1	II	
85	Amenity Block	F	100	50	0.50	100	50	5000	Piers	1 or 2	2	II	
86	Airlines	B	150	50	0.75	150	50	7500	Strip	1, 2 or 5	1	II	
87	Airlines	B5	50	50	0.25	50	50	2500	Strip	1, 2 or 5	1	II	
88	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	II	
89	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	II	
90	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	II	
91	Airlines	B	100	50	0.50	100	50	5000	Strip	1, 2 or 5		II	
92	Airlines	B	200	100	2.00	200	50	10000	Piled	7	1	II	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Cublington

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
93	Airlines	B	100	50	0.50	100	50	5000	Strip	1, 2 or 5	1	II	
94	Car Park	G	625	70	4.375							III	
95	Airlines	B	100	90	0.90	100	45	4500	Piers	3	1	III	
						20	45	900	Piers	3	1	III	
96	Heating Stations	E	100	60	0.60	100	60	6000	Piers	2	1	III	
97	Amenity Building	F	100	50	0.50	100	50	5000	Piers	1 or 2	2	III	
98	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	III	
99	Airlines	B	200	50	1.00	200	50	10000	Strip	1, 2 or 5	1	III	
100	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	III	
101	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	III	
102	Airlines	B	200	50	1.00	200	100	10000	Strip	1, 2 or 5	1	III	
103	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	III	
104	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	IV	
105	Airlines	B	200	50	1.00	200	50	10000	Strip	1, 2 or 5	1	IV	
106	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	IV	
107	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	IV	
108	Airlines	B	200	50	1.00	200	50	10000	Strip	1, 2 or 5	1	IV	
109	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	IV	
110	Airlines	B	100	22	0.22	100	22	2200	Piled	1, 2 or 5	1	IV	
111	Airlines	B	400	70	2.80	400	70	28000	Piers	3	1	IV	
112	Car Parks	G	170	120	2.04							IV	
113	Airport Management	C	575	52	0.36	37	15	555	Strip	5	1	I	
						42.5	125	530	Piers	3	1	I	
114	Airport Management	C	25	25	0.0625	9.5	17	161.5	Strip	5	1	II	
						15.5	17	263.5	Piers	3	1	II	
115	Airport Management	C	25	25	0.0625	9.5	17	161.5	Strip	5	1	III	
						15.5	17	263.5	Piers	3	1	III	
116	Airport Management	C	25	25	0.0625	9.5	17	161.5	Strip	5	1	IV	
						15.5	17	263.3	Piers	3	1	IV	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Cublington

Sheet Six of Six

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
117	GPO	F	100	50	0.50	100	25	2500	Piled	1 or 2	4	I	
118	Area for Ancillary Cargo Development	H	575	70	4.025							II	
119	Car Park	G	350	60	2.10							II	
120	Area for Ancillary Maintenance Devel.	H	625	80	5.00							II	
121	Car Park	G	350	70	2.45							IV	
122	Area for Ancillary Maintenance Devel.	H	350	80	2.10							III	
123	Area for Ancillary Maintenance Devel.	H	625	80	5.00							IV II	
124	Area for Ancillary Cargo Development	H	560	70	3.92							II	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Foulness

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
1	Terminal	A	300	75	2.25	300	75	22500	Piled	1	3/4	I	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.08	180	60	10800	Piled	6	5	I	
2	Airlines	B	170	37	0.629	23	10	230	Piled	1 or 2	4	I	
						50	37	1850	Piled	3	1	I	
3	Hostel	F	75	12	0.09	75	12	900	Piled	1, 2 or 4	4	I	
4	Heating Stations	E	100	55	0.55	100	55	5500	Piled	2	1	I	
5	Met Office	F	20	14	0.028	16	9	144	Raft	5	1	I	
6	Airport Maintenance	D	150	80	1.20	80	10	800	Piled	1 or 2	3	I	
						246	15	3590	Raft	1, 2 or 3	1	I	
7	VIP building	F	90	21	0.189	12	6	72	on apron	5	1	I	
8	Data processing	F	180	60	1.08	348	20	6960	Piled	1 or 2	2	II	
9	Heating Stations	E	100	55	0.55	100	55	5500	Piled	2	1	II	
10	Chapel	F	50	19	0.095	50	19	950	Raft	6	1	II	
11	Airline	B	75	12	0.09	75	12	900	Piled	1 or 2	4	II	
12	Airport management	C	170	72	1.224	74	15	1110	Piled	1 or 2	4	II	
13	Airport management	C	200	60	1.20	60	19	1140	Piled	1 or 3	4	II	
						117	60	7020	Piled	1 or 2	1	II	
14	Car Park	G	200	30	0.60							II	
15	Terminal	A	300	75	2.25	300	75	22500	Piled	1	3/4	II	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.08	180	60	10800	Piled	6	5	II	
16	Control Building	F	102	30	0.306	100	30	3000	Piled	1 or 2 Tower 6	8	I	
17	Terminal	A	300	75	2.25	300	75	22500	Piled	1	3/4	I	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.08	180	60	10800	Piled	6	5	I	
18	Car Park	G	180	30	0.54							I	
19	Airlines	B	90	75	0.675	180	14	2520	Piled	1 or 2	6	I	
						49	47	2303	Piled	3	1	I	
20	Airlines	B	80	75	0.60	35	14	490	Raft	2 or 5	1	I	
21	Airlines	B	100	70	0.70	35	14	490	Raft	5	1	I	
22	G.P.O.	F	30	30	0.09	30	30	900	Piled	1 or 2	2	I	
23	Heating Stations	E	100	55	0.55	100	55	5500	Piled	2	1	I	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Foulness

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
24	Airlines	B	210	92	1.932	334	30	10020	Piled	3	1	I	
25	Airport Management	C	175	70	1.225	70	20	1400	Piled	1 or 2	4	II	
						100	70	7000	Piled	3	1	II	
26	Heating Stations	E	100	55	0.55	100	55	5500	Piled	2	1	II	
27	Car Park	G	180	30	0.54							II	Floor area 83 600 m^2
28	Terminal	A	300	75	2.25	300	75	22500	Piled	1	3/4	II	
	Multi-Storey Car Park	G	180	60	1.08	180	60	10800	Piled	6	5	II	
29	Govt. Agency Bldg	F	70	12	0.084	70	12	840	Piled	1 or 2	4	II	
30	Airlines	B	170	37	0.624	23	10	230	Piled	1 or 2	4	II	
						50	37	1850	Piled	3	1	II	
31	Airlines	B	205	60	1.23	90	60	5400	Piled	3	1	II	
						80	60	4800	Piled	3	1	II	
32	Car Park	G	200	30	0.60							II	
33	Car Park	G	180	30	0.54							III	
34	Airlines	B	170	37	0.624	23	10	230	Piled	1 or 2	4	III	
						50	37	1850	Piled	3	1	III	
35	Airline	B	53	54	.2862	53	54	2862	Piled	3	1	III	
36	Terminal	A	300	75	2.25	300	75	22500	Piled	1	3/4	III	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.08	180	60	10800	Piled	6	5	III	
37	Heating Stations	E	100	55	0.55	100	55	5500	Piled	2	1	III	
38	Heating Stations	E	100	55	0.55	100	55	5500	Piled	2	1	II	
39	Terminal	A	300	75	2.25	300	75	22500	Piled	1	3/4	II	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.08	180	60	10800	Piled	6	5	II	
40	Airport Maintenance	D	140	60	0.84	37	10	370	Raft	5	1	II	
41	Airport Maintenance	D	200	60	1.20	80	12	960	Raft	5	1	II	
42	Car Park	G	200	30	0.60							II	
43	Airlines	B	170	37	0.624	23	10	230	Piled	1 or 2	4	III	
						50	37	1850	Piled	3	1	III	
44	Airlines	B	100	84	0.84	147	20	2940	Piled	1 or 2	1	III	
45	Airlines	B	90	45	0.405	126	20	2520	Piled	1 or 2	1	III	
46	Terminal	A	300	75	2.25	300	75	22500	Piled	1	3/4	III	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.08	180	60	10800	Piled	6	5	III	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Foulness

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
47	Heating Stations	E	100	55	0.55	100	55	5500	Piled	2	1	III	
48	Airport Maintenance	D	160	80	1.28	50	12	600	Piled	1 or 2	3	III	
						150	19	2850	Piled	1, 2 or 3	1	III	
49	Govy. Agency Bldg	F	70	12	0.084	70	12	840	Piled	1 or 2	4	IV	
50	Heating Stations	E	100	55	0 55	100	55	5500	Piled	2	1	IV	
51	Terminal	A	300	75	2.25	300	75	22500	Piled	1	3/4	IV	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.08	180	60	10800	Piled	6	5	IV	
52	Airlines	B	53	54	0.2862	53	54	2862	Piled	3	1	IV	
53	Airport Maintenance	D	125	60	0.75	10	9	90	Raft	2 or 5	1	IV	
						28	10	280	Raft	2 or 5	1	IV	
54	Car Park	G	180	30	0.54							IV	
55	Heating Stations	E	100	40	0.4	100	40	4000	Piled	2	1	I	
56	Customs House	F	140	90	1.26	90	35	3150	Piled	1 or 2	4	I	
57	Car Park	G	120	110	1.32							I	
58	Amenity Block	F	100	50	0.50	100	50	5000	Piled	1 or 2	1	I	
59	Lorry Park	G	170	125	2.125							I	
60	Airlines	B	400	70	2.80	400	70	2800	Piled	3	1	I	
61	Airlines	B	200	52	1.04	200	52	10400	Raft	1, 2 or 5	1	I	
62	Police Stn & pound	F	90	37	0.333	45	37	1665	Piled	1 or 2	4	I	
63	Animal reception centre	F	85	45	0.3825	118	12	1416	Piled	1 or 2	2	I	
64	Airlines	B	400	70	2.80	400	70	28000	Piled	3	1	I	
65	Airlines	B	400	70	2.80	400	70	28000	Piled	3	1	IV	
66	Airlines	B	200	52	1.04	200	52	10400	Raft	1, 2 or 5	1	IV	
67	Airlines	B	400	70	2.80	400	70	28000	Piled	3	1	IV	
68	Airlines	B	400	70	2.80	400	70	28000	Piled	3	1	IV	
69	Airlines	B	200	52	1.04	200	52	10400	Piled	1, 2 or 5	1	IV	
70	Airlines	B	400	70	2.80	400	70	28000	Piled	3	1	IV	
71	Airlines	B	400	70	2.80	400	70	28000	Piled	3	1	IV	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Foulness

Sheet Four of Six

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
72	Airlines	B	200	52	1.04	200	52	10400	Piled	1, 2 or 5	1	IV	
73	Airlines	B	400	70	2.80	400	70	28000	Piled	3	1	IV	
74	Customs House	F	140	90	1.26	90	35	3150	Piled	1 or 2	4	IV	
75	Heating Stations	E	100	40	0.40	100	40	4000	Piled	2	1	IV	
76	Amenity Block	F	100	50	0.50	100	50	5000	Piled	1 or 2	2	IV	
77	Lorry Park	G	150	110	1.65							IV	
78	Area for Ancillary Cargo Development	H	750	170	12.75							IV	
79	Area for Ancillary Cargo Development		1335	70	9.345							IV	
		D	110	70	0.77	23	12	276	Raft	2 or 5	1	IV	
80	Airport Maintenance	D	110	70	0.77	15	6	90	Raft	2 or 5	1	IV	
81	Airport Maintenance	D	190	70	1.33	60	10	600	Piled	1 or 2	3	IV	
						140	20	2800	Piled	1 or 3	1	IV	
82	Car Park	G	400	70	2.800							II	
83	Airlines	B	170	110	1.87	110	75	8250	Piled	3	1	II	
						95	50	4750	Piled	3	1	II	
84	Airlines	B	150	50	0.75	150	50	7500	Raft	1, 2 or 5	1	II	
85	Amenity Block	F	100	50	0.50	100	50	5000	Piled	1 or 2	2	II	
86	Heating Stations	E	100	60	0.60	100	60	6000	Piled	2	1	II	
87	Airlines	B	150	50	0.75	150	50	7500	Raft	1, 2 or 5	1	II	
88	Airlines	B	100	90	0.90	100	45	4500	Piled	3	1	II	
						20	45	900	Piled	3	1	II	
89	Airlines	B	150	50	0.75	150	50	7500	Raft	1, 2 or 5	1	III	
90	Airlines	B	150	50	0.75	150	50	7500	Raft	1, 2 or 5	1	III	
91	Amenity Block	F	100	50	0.50	100	50	5000	Piled	1 or 2	2	III	
92	Car Park	G	1330	70	9.31							III	
93	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	III	
94	Airlines	B	50	50	0.25	50	50	2500	Raft	1, 2 or 5	1	III	
95	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	III	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Foulness

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
96	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	III	
97	Airlines	B	50	50	0.25	50	50	2500	Raft	1, 2 or 5	1	III	
98	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	III	
99	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	II	
100	Airlines	B	50	50	0.25	50	50	2500	Raft	1, 2 or 5	1	II	
101	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	II	
102	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	II	
103	Airlines	B	50	50	0.25	50	50	2500	Raft	1, 2 or 5	1	II	
104	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	II	
105	Airlines	B	100	22	0.22	100	22	2200	Piled	1, 2 or 5	1	IV	
106	Airlines	B	400	70	2.80	400	70	28000	Piled	3	1	IV	
107	Car Park	G	120	170	2.04							IV	
108	Airlines	B	150	50	0.75	150	50	7500	Raft	1, 2 or 5	1	IV	
109	Heating Stations	E	100	60	0.60	100	60	6000	Piled	2	1	IV	
110	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	IV	
111	Airlines	B	50	50	0.25	50	50	2500	Raft	1, 2 or 5	1	IV	
112	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	IV	
113	Airlines	B	150	50	0.75	150	50	7500	Raft	1, 2 or 5	1	IV	
114	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	IV	
115	Airlines	B	50	50	0.25	50	50	2500	Raft	1, 2 or 5	1	IV	
116	Airlines	B	200	100	2.00	200	100	20000	Piled	7	1	IV	
117	Airport Management	C	57.5	52	0.36	37	15	555	Raft	5	1	I	
						42.5	12.5	530	Piled	3	1	I	
118	Airport Management	C	25	25	0.0625	9.5	17	161.5	Raft	5	1	II	
						15.5	17	263.5	Piled	3	1	II	
119	Airport Management	C	25	25	0.0625	9.5	17	161.5	Raft	5	1	III	
						15.5	17	263.5	Piled	3	1	III	
120	Airport Management	C	25	25	0.0625	9.5	17	161.5	Raft	5	1	IV	
						15.5	17	263.5	Piled	3	1	IV	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Foulness

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
121	GPO	F	100	50	0.50	100	25	2500	Piled	1 or 2	4	I	
122	Car Park	G	200	70	1.4							IV	
123	Area for Ancillary Cargo Development	H	700	70	4.9							I	
124	Area for Ancillary Maintenance Development	H	1000	70	7.0							IV	
125	Area for Ancillary Maintenance Development	H	700	70	4.9							II	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of Buildings as shown on the drawings

Airport: Nuthampstead

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
42	Car Park	G	175	30	.5250							II	
41	Airport Maintenance	D	165	80	1.320	80	12	960	Strip	5	1	II	
40	Airport Maintenance	D	140	60	.8400	37	10	370	Strip	5	1	II	
39	Terminal	A	300	75	2.250	300	75	22500	Piers	1	3/4	II	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.080	180	60	10800	Spread	6	5	II	
38	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	II	
48	Airport Maintenance	D	175	60	1.050	50	12	600	Piled	1 or 2	3	III	
						150	19	2850	Piled	1, 2 or 3	1	III	
47	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	III	
46	Terminal	A	300	75	2.250	300	75	22500	Piled	1	3/4	III	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.080	180	60	10800	Piled	6	5	III	
45	Airlines	B	70	60	.4200	155	20	3100	Spread	1 or 2	1	III	
			55	30	.1650							III	
44	Airlines	B	110	60	.6600	140	20	2800	Spread	1 or 2	1	III	
43	Airlines	B	170	37	.6240	23	10	230	Piers	1 or 2	4	III	
						50	37	1850	Strip	3	1	III	
32	Car Park	G	180	30	.5400							II	
31	Airlines	B	180	70	1.260	77	70	5390	Strip	3	1	II	
						69	70	4830	Strip	3	1	II	
30	Airlines	B	170	37	.6290	23	10	230	Pier	1 or 2	4	II	
						50	37	1850	Strip	3	1	II	
29	Govt. Agency Bldg	F	70	12	.0840	70	12	840	Piers	1 or 2	4	II	
28	Terminal	A	300	75	2.250	300	75	22500	Piers	1	3/4	II	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.080	180	60	10800	Spread	6	5	II	
27	Car Park	G	190	30	.3700							II	
26	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	II	
25	Airport Management	C	190	65	1.235	107	65	6955	Spread	1 or 2	1	II	
						65	21	1365	Piers	3	4	II	
24	Airline	B	180	60	1.080	220	40	8800	Piled	3	1	I	
23	Heating Stations	E	100	55	.5500	100	55	5500	Piled	2	1	I	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Nuthampstead

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
22	G.P.O.	F	30	30	.0900	30	30	900	Piled	1 or 2	2	I	
21	Airline	B	120	60	.7200	35	14	490	Piled	5	1	I	
19	Airline	B	180	40	.7200	180	14	2520	Piers	1 or 2	6	I	
						90	26	2340	Strip	3	1	I	
18	Car Park	G	190	30	.5700	190	30	5700				I	
17	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	I	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	I	
16	Control Building	F	102	30	.3060	100	30	3000	Piers	1 or 2 Tower 6	8	I	
15	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	II	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	II	
14	Car Park	G	180	30	.5400							II	
13	Airport Management	C	180	60	1.0800	117	60	7020	Piled	1 or 2	1	II	
						60	19	1140	Piers	1 or 3	4	II	
12	Airport Management	C	180	60	1.0800	74	15	1110	Piled	1 or 2	4	II	
11	Airline	B	75	12	.0900	75	12	900	Piled	1 or 2	4	II	
10	Chapel	F	50	19	.0950	50	19	950	Piled	6	1	II	
9	Heating Stations	E	100	55	.5500	100	55	5500	Piled	2	1	II	
8	Data Processing	F	180	60	1.0800	348	20	6960	Spread	1 or 2	2	II	
7	V.I.P. Building	F	90	21	.1890	12	6	72	Strip	5	1	I	
6	Airport Maintenance	D	150	85	1.2750	80	10	800	Pier	1, 2 or 3	3	I	
						250	15	3750	Strip	5	1	I	
5	Met Office	F	20	14	.0280	16	9	144	Strip	5	1	I	
4	Heating Stations	E	100	55	.5500	100	55	5500	Spread	2	1	I	
3	Hostel	F	75	12	.0900	75	12	900	Pier	1, 2 or 4	4	I	
20	Airline	B	80	75	.6000	35	14	490	Spread	2 or 5	1	I	
2	Airline	B	170	37	.6290	23	10	230	Piers	1 or 2	4	I	
						50	37	1850	Strip	3	1	I	
1	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	I	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	I	
54	Car Park	G	180	30	.5400							IV	

8/1/t/

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Nuthampstead

Sheet Three of Six

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
53	Airport Maintenance	D	125	60	.7500	10	9	90	Strip	2 or 5	1	IV	
						28	10	280	Strip	2 or 5	1	IV	
52	Airline	B	53	54	.2862	53	54	2862	Strip	3	1	IV	
51	Terminal	A	300	75	2.2500	300	75	22500	Piers	1	3/4	IV	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Spread	6	5	IV	
50	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	IV	
49	Govt. Agency Bldg	F	70	12	.0840	70	12	840	Piers	1 or 2	4	IV	
37	Heating Stations	E	100	55	.5500	100	55	5500	Piled	2	1	III	
36	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	III	Floor area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	III	
35	Airline	B	53	54	.2862	53	54	2862	Strip	3	1	III	
34	Airline	B	170	37	.6290	23	10	230	Piers	1 or 2	4	III	
						50	37	1850	Strip	3	1	III	
33	Car Park	G	180	30	.540							III	
55	Heating Stations	E	100	40	.4000	100	40	4000	Spread	2	1	I	
56	Customs House	F	140	90	1.2600	90	35	3150	Piers	1 or 2	4	I	
57	Car Park	G	120	110	1.3200							I	
58	Amenity Block	F	100	50	.5000	100	50	5000	Spread	1 or 2	1	I	
59	Lorry Park	G	170	125	2.1250							I	
60	Airlines	B	400	70	2.8000	400	70	28000	Strip	3	1	I	
61	Airlines	B	200	52	1.0400	200	52	10400	Strip	1, 2 or 5	1	I	
62	Police Station	F	90	37	.3330	45	37	1665	Piers	1 or 2	4	I	
63	Animal Reception Centre	F	85	45	.3825	118	12	1416	Spread	1 or 2	2	I	
64	Airlines	B	400	70	2.800	400	70	28000	Piled	3	1	I	
65	Airlines	B	400	70	2.800	400	70	28000	Piled	3	1	IV	
66	Airlines	B	200	52	1.040	200	52	10400	Piled	1, 2 or 5	1	IV	
67	Airlines	B	400	70	2.800	400	70	28000	Piled	3	1	IV	
68	Airlines	B	400	70	2.800	400	70	28000	Piled	3	1	IV	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Nuthampstead

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
69	Airlines	B	200	52	1.040	200	52	10400	Piled	1, 2 or 5	1	IV	
70	Airlines	B	400	70	2.800	400	70	28000	Piled	3	1	IV	
71	Airlines	B	400	70	2.800	400	70	28000	Piled	3	1	IV	
72	Airlines	B	200	52	1.040	200	52	10400	Piled	1, 2 or 5	1	IV	
73	Airlines	B	400	70	2.800	400	70	28000	Piled	3	1	IV	
74	Customs House	F	140	90	1.2600	90	35	3150	Piers	1 or 2	4	IV	
75	Heating Stations	E	100	40	.4000	100	40	4000	Spread	2	1	IV	
76	Amenity Block	F	100	50	.5000	100	50	5000	Spread	1 or 2	2	IV	
77	Lorry Park	G	150	110	1.6500							IV	
78	Area for Ancillary Cargo Development	H	750	170	12.7500							IV	
79	Area for Ancillary Cargo Development	H	1335	70	9.3450							IV	
80	Airport Maintenance	D	110	70	.7700	23	12	276	Strip	2 or 5	1	IV	
80	Airport Maintenance	D				15	6	90	Strip	2 or 5	1	IV	
81	Airport Maintenance	D	190	70	1.3300	60	10	600	Piers	1 or 2	3	IV	
						140	20	2800	Spread	1 or 3	1	IV	
82	Car Park	G	400	70	2.800							II	
83	Airlines	B	170	110	1.8700	110	75	2850	Strip	3	1	II	
						95	50	4750	Strip	3	1	II	
84	Airlines	B	150	50	.7500	150	50	7500	Strip	1, 2 or 5	1	II	
85	Amenity Block	F	100	50	.5000	100	50	5000	Piled	1 or 2	2	II	
86	Heating Stations	E	100	60	.6000	100	60	6000	Piled	2	1	II	
87	Airlines	B	150	50	.7500	150	50	7500	Piled	1, 2 or 5	1	II	
88	Airlines	B	100	90	.9000	100	45	4500	Piled	3	1	II	
						20	45	900	Strip	3	1	II	
89	Airlines	B	150	50	.7500	150	50	7500	Piled	1, 2 or 5	1	III	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Nuthampstead

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Plot Dimensions Breadth (m)	Plot Dimensions Area (ha)	Building Dimensions Length (m)	Building Dimensions Breadth (m)	Building Dimensions Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
90	Airlines	B	150	50	.7500	150	50	7500	Strip	1, 2 or 5	1	III	
91	Amenity Block	F	100	50	.5000	100	50	5000	Spread	1 or 2	2	III	
92	Car Park	G	1330	70	9.3100							III	
93	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	III	
94	Airlines	B	50	50	.2500	50	50	2500	Strip	1, 2 or 5	1	III	
95	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	III	
96	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	III	
97	Airlines	B	50	50	.2500	50	50	2500	Strip	1, 2 or 5	1	III	
98	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	III	
99	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	II	
100	Airlines	B	50	50	.2500	50	50	2500	Piled	1, 2 or 5	1	II	
101	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	II	
102	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	II	
103	Airlines	B	50	50	.2500	50	50	2500	Piled	1, 2 or 5	1	II	
104	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	II	
105	Airlines	B	100	22	.2200	100	22	2200	Piled	1, 2 or 5	1	IV	
106	Airlines	B	400	70	2.8000	400	70	2800	Strip	3	1	IV	
107	Car Park	G	120	170	2.0400							IV	
108	Airline	B	150	50	.7500	150	50	7500	Piled	1, 2 or 5	1	IV	
109	Heating Stations	E	100	60	.6000	100	60	6000	Piled	2	1	IV	
110	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	IV	
111	Airlines	B	50	50	.2500	50	50	2500	Strip	1, 2 or 5	1	IV	
112	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	IV	
113	Airlines	B	150	50	.7500	150	50	7500	Strip	1, 2 or 5	1	IV	
114	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	IV	
115	Airlines	B	50	50	.2500	50	50	2500	Strip	1, 2 or 5	1	IV	
116	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	IV	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Nuthampstead

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
117	Airport Management	C	575	52	0.36	37	15	555	Strip	5	1	I	
						42.5	12.5	530	Strip	3	1	I	
118	Airport Management	C	25	25	0.0625	9.5	17	161.5	Strip	5	1	II	
						15.5	17	263.5	Strip				
119	Airport Management	C	25	25	0.0625	9.5	17	161.5	Strip	5	1	III	
						15.9	17	263.5	Strip	3	1	III	
120	Airport Management	C	25	25	0.0625	9.5	17	161.5	Strip	5	1	IV	
						15.5	17	263.5	Strip	3	1	IV	
121	QPO	F	100	50	0.50	100	25	2500	Piers	1 & 2	4	I	
												IV	
122	Area for Ancillary Maintenance Development	H	1000	70	7.00							I	
123	Area for Ancillary Cargo Development	H	700	70	4.90							II	
124	Area for Ancillary Maintenance Development	H	700	70	4.90							IV	
125	Car Park	G	200	70	1.40								

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Thurleigh

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
42	Car Park	G	175	30	.5250							II	
41	Airport Maintenance	D	165	80	1.320	80	12	960	Strip	5	1	II	
40	Airport Maintenance	D	140	60	.8400	37	10	370	Strip	5	1	II	
39	Terminal	A	300	75	2.250	300	75	22500	Piers	1	3/4	II	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.080	180	60	10800	Spread	6	5	II	
38	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	II	
48	Airport Maintenance	D	175	60	1.050	50	12	600	Piers	1 or 2	3	III	
						150	19	2850	Strip	1, 2 or 3	1	III	
47	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	III	
46	Terminal	A	300	75	2.250	300	75	22500	Piers	1	3/4	III	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.080	180	60	10800	Spread	6	5	III	
45	Airlines	B	70	60	.4200	155	20	3100	Spread	1 or 2	1	III	
			55	30	.1650							III	
44	Airlines	B	110	60	.6600	140	20	2800	Spread	1 or 2	1	III	
43	Airlines	B	170	37	.6240	23	10	230	Piers	1 or 2	4	III	
						50	37	1850	Strip	3	1	III	
32	Car Park	G	180	30	.5400							II	
31	Airlines	B	180	70	1.260	77	70	5390	Strip	3	1	II	
						69	70	4830	Strip	3	1	II	
30	Airlines	B	170	37	.6290	23	10	230	Piers	1 or 2	4	II	
						50	37	1850	Strip	3	1	II	
29	Govt. Agency Bldg	F	70	12	.0840	70	12	840	Piers	1 or 2	4	II	
28	Terminal	A	300	75	2.250	300	75	22500	Piers	1	3/4	II	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.080	180	60	10800	Spread	6	5	II	
27	Car Park	G	190	30	.5700							II	
26	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	II	
25	Airport Management	C	190	65	1.235	107	65	6955	Spread	1 or 2	1	II	
						65	21	1365	Piers	3	4	II	
24	Airline	B	180	80	1.080	220	40	8800	Piled	3	1	I	
23	Heating Station	E	100	55	.5500	100	55	5500	Piers	2	1	I	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Thurleigh

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
22	G.P.O.	F	30	30	.0900	30	30	900	Piers	1 or 2	2	I	
21	Airline	B	120	60	.7200	35	14	490	Strip	5	1	I	
19	Airline	B	180	40	.7200	180	14	2520	Piers	1 or 2	6	I	
						90	26	2340	Strip	3	1	I	
18	Car Park	G	190	30	.5700	190	30	5700				I	
17	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	I	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	I	
16	Control Building	F	102	30	.3060	100	30	3000	Piers	1 or 2 Tower 6	8	I	
15	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	II	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	II	
14	Car Park	G	180	30	.5400							II	
13	Airport Management	C	180	60	1.0800	117	60	7020	Piled	1 or 2	1	II	
						60	19	1140	Piled	1 or 3	4	II	
12	Airport Management	C	180	60	1.0800	74	15	1110	Piers	1 or 2	4	II	
11	Airline	B	75	12	.0900	75	12	900	Piers	1 or 2	4	II	
10	Chapel	F	50	19	.0950	50	19	950	Strip	6	1	II	
9	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	II	
8	Data Processing	F	180	60	1.0800	348	20	6960	Spread	1 or 2	2	II	
7	V.I.P. Building	F	90	21	.1890	12	6	72	Strip	5	1	I	
6	Airport Management	D	150	85	1.2750	80	10	800	Piers	1, 2 or 3	3	I	
						250	15	3750	Strip	5	1	I	
5	Met Office	F	20	14	.0280	16	9	144	Strip	5	1	I	
4	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	I	
3	Hostel	F	75	12	.0900	75	12	900	Piers	1, 2 or 4	4	I	
20	Airline	B	80	75	.6000	35	14	490	Spread	2 or 5	1	I	
2	Airline	B	170	37	.6290	23	10	230	Piled	1 or 2	4	I	
						50	37	1850	Piled	3	1	I	
1	Terminal	A	300	75	2.2500	300	75	22500	Piers	1	3/4	I	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Spread	6	5	I	
54	Car Park	G	180	30	.5400							IV	

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Thurleigh

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Plot Dimensions Breadth (m)	Plot Dimensions Area (ha)	Building Dimensions Length (m)	Building Dimensions Breadth (m)	Building Dimensions Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
53	Airport Maintenance	D	125	60	.7500	10	9	90	Strip	2 or 5	1	IV	
						28	10	280	Strip	2 or 5	1	IV	
52	Airline	B	53	54	.2862	53	54	2862	Strip	3	1	IV	
51	Terminal	A	300	75	2.2500	300	75	22500	Piled	1	3/4	IV	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Piled	6	5	IV	
50	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	IV	
49	Govt. Agency Bldg.	F	70	12	.0840	70	12	840	Piers	1 or 2	4	IV	
37	Heating Stations	E	100	55	.5500	100	55	5500	Piers	2	1	III	
36	Terminal	A	300	75	2.2500	300	75	22500	Piers	1	3/4	III	Floor Area 83 600 m^2
	Multi-Storey Car Park	G	180	60	1.0800	180	60	10800	Spread	6	5	III	
35	Airlins	B	53	54	.2862	53	54	2862	Strip	3	1	III	
34	Airline	B	170	37	.6290	23	10	230	Piers	1 or 2	4	III	
						50	37	1850	Strip	3	1	III	
33	Car Park	G	180	30	.540							III	
55	Heating Stations	E	100	40	.4000	100	40	4000	Piers	2	1	I	
56	Customs House	F	140	90	1.2600	90	35	3150	Piers	1 or 2	4	I	
57	Car Park	G	120	110	1.3200							I	
58	Amenity Block	F	100	50	.5000	100	50	5000	Spread	1 or 2	1	I	
59	Lorry Park	G	170	125	2.1250							I	
60	Airlines	B	400	70	2.8000	400	70	28000	Piled	3	1	I	
61	Airlines	B	200	52	1.0400	200	52	10400	Piled	1, 2 or 5	1	I	
62	Police Station	F	90	37	.3300	45	37	1665	Piers	1 or 2	4	I	
63	Animal Reception Centre	F	85	45	.3825	118	12	1416	Spread	1 or 2	2	I	
64	Airlines	B	400	70	2.800	400	70	28000	Piled	3	1	I	
65	Airlines	B	400	70	2.800	400	70	28000	Strip	3	1	IV	
66	Airlines	B	200	52	1.040	200	52	10400	Strip	1, 2 or 5	1	IV	
67	Airlines	B	400	70	2.800	400	70	28000	Strip	3	1	IV	
68	Airlines	B	400	70	2.800	400	70	28000	Strip	3	1	IV	

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Thurleigh

Sheet Four of Six

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Plot Dimensions Breadth (m)	Plot Dimensions Area (ha)	Building Dimensions Length (m)	Building Dimensions Breadth (m)	Building Dimensions Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
69	Airlines	B	200	52	1.040	200	52	10400	Strip	1, 2 or 5	1	IV	
70	Airlines	B	400	70	2.800	400	70	28000	Strip	3	1	IV	
71	Airlines	B	400	70	2.800	400	70	28000	Strip	3	1	IV	
72	Airlines	B	200	52	1.040	200	52	10400	Strip	1, 2 or 5	1	IV	
73	Airlines	B	400	70	2.800	400	70	28000	Strip	3	1	IV	
74	Customs House	F	140	90	1.2600	90	35	3150	Piers	1 or 2	4	IV	
75	Heating Stations	E	100	40	.4000	100	40	4000	Piers	2	1	IV	
76	Amenity Block	F	100	50	.5000	100	50	5000	Spread	1 or 2	2	IV	
77	Lorry Park	G	150	110	1.6500							IV	
78	Area for Ancillary	H	750	170	12.7500							IV	
79	Cargo Development	H	1,335	70	9.3450							IV	
80	Airport Maintenance	D	110	70	.7700	23	12	276	Strip	2 or 5	1	IV	
80	Airport Maintenance	D				15	6	90	Strip	2 or 5	1	IV	
81	Airport Maintenance	D	190	70	1.3300	60	10	600	Piers	1 or 2	3	IV	
						140	20	2800	Strip	1 or 3	1	IV	
82	Car Park	G	400	70	2.8000							II	
83	Airlines	B	170	110	1.8700	110	75	8250	Piled	3	1	II	
						95	50	4750	Piled	3	1	II	
84	Airlines	B	150	50	.7500	150	50	7500	Piled	1, 2 or 5	1	II	
85	Amenity Block	F	100	50	.5000	100	50	5000	Piled	1 or 2	2	II	
86	Heating Stations	E	100	60	.6000	100	60	6000	Piled	2	1	II	
87	Airlines	B	150	50	.7500	150	50	7500	Piled	1, 2 or 5	1	II	
88	Airlines	B	100	90	.9000	100	45	4500	Piled	3	1	II	
						20	45	900	Piled	3	1	II	
89	Airlines	B	150	50	.7500	150	50	7500	Piled	1, 2 or 5	1	III	
90	Airlines	B	150	50	.7500	150	50	7500	Piled	1, 2 or 5	1	III	
91	Amenity Block	F	100	50	.5000	100	50	5000	Piled	1 or 2	2	III	
92	Car Park	G	1100	60	6.6000							III	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Thurleigh

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Breadth (m)	Area (ha)	Building Dimensions Length (m)	Breadth (m)	Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
93	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	III	
94	Airlines	B	50	50	.2500	50	50	2500	Strip	1, 2 or 5	1	III	
95	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	III	
96	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	III	
97	Airlines	B	50	50	.2500	50	50	2500	Piled	1, 2 or 5	1	III	
98	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	III	
99	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	III	
100	Airlines	B	50	50	.2500	50	50	2500	Piled	1, 2 or 5	1	II	
101	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	II	
102	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	II	
103	Airlines	B	50	50	.2500	50	50	2500	Piled	1, 2 or 5	1	II	
104	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	II	
105	Airlines	B	100	22	.22	100	22	2200	Strip	1, 2 or 5	1	IV	
106	Airlines	B	400	70	2.80	400	70	28000	Strip	3	1	IV	
107	Car Park	G	170	120	2.04							IV	
108	Car Park	G	550	70	3.8500							IV	
109	Amenity Block	F	100	50	.5000	100	50	5000	Spread	1 or 2	2	IV	
110	Heating Station	E	100	60	.6000	100	60	6000	Piled	2	1	IV	
111	Airlines	B	200	100	2.0000	200	100	20000	Piled	7	1	IV	
112	Airlines	B	100	50	.5000	100	50	5000	Piled	1, 2 or 5	1	IV	
113	Airlines	B	100	100	2.0000	200	100	20000	Spread	7	1	IV	
114	Airlines	B	200	50	1.0000	200	50	10000	Piled	7	1	IV	
115	Airlines	B	200	100	2.0000	200	100	20000	Spread	7	1	IV	
116	Airlines	B	100	50	.5000	100	50	5000	Strip	1, 2 or 5	1	IV	
117	Airlines	B	200	100	2.0000	200	100	20000	Spread	7	1	IV	
118	Heating Station	E	100	60	.600	100	60	6000	Spread	2	1	III	
119	Airport Management	C	57.5	52	0.36	37	15	555	Strip	5	1	I	
						45.2	12.5	530	Strip	3	1	I	

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

Schedule of buildings as shown on the drawings

Airport: Thurleigh

Plot No.	Facility	Code Letter	Plot Dimensions Length (m)	Plot Dimensions Breadth (m)	Plot Dimensions Area (ha)	Building Dimensions Length (m)	Building Dimensions Breadth (m)	Building Dimensions Area (m^2)	Foundation Type	Construction Type	No. of Storeys	Construc. Phase	Remarks
120	Airport Management	C	25	25	0.0625	9.5	17	161.5	Strip	5	1	II	
						15.5	17	263.5	Strip	3	1	II	
121	Airport Management	C	25	25	0.0625	9.5	17	161.5	Strip	5	1	III	
						15.5	17	263.5	Strip	3	1	III	
122	Airport Management	C	25	25	0.0625	9.5	17	161.5	Strip	5	1	IV	
						15.5	17	263.5	Strip	3	1	IV	
123	GPO	F	100	25	0.50	100	25	2500	Piers	1 or 2	4	I	
124	Area for Ancillary Cargo Development	H	700	70	4.90							I	
125	Area for Ancillary Maintenance Development	H	1000	60	6.00							IV	
126	Area for Ancillary Maintenance Development	H	700	60	4.20							II	

Printed image digitised by the University of Southampton Library Digitisation Unit

Timing

8.1 The costs of construction and the development phases through which the airport might reasonably be assumed to go were dealt with in the previous chapter on Airport Design. In order to assess the impact on the construction industries it was necessary to establish the timing of the need for each phase of the work. This was done by relating the runway and terminal capacities at each phase to the forecast demand, on the assumption that the demand would be met.

Assessment of demands on resources

8.2 The quantities of basic materials required and the amount of earthworks were measured from the design study drawings. A construction time-table was then drawn up for each site from which it was possible to calculate the land needed and the appropriate labour and materials requirement year by year.

Specific construction problems at each site

8.3 The major problems at Foulness are:

(a) order of construction of sea wall and reclamation to suit airport requirements ,

(b) rate of depositing reclaimed material and methods employed,

(c) time required for settlement,

(d) flood protection works in the River Crouch.

All these matters were investigated.

8.4 At Cublington the most severe problem is the very large quantity of earthworks required and the fact that (using the layout selected for the design study) the runway most suitable to be the first for operational reasons is the most expensive in constructional terms.

8.5 At Nuthampstead, although the earthworks required are still very considerable, the problem is less formidable than at Cublington. The design study layout also lends itself more readily to a rational development programme in which the first runway is operationally suitable and one of the least expensive to construct.

8.6 There are no specific construction problems at Thurleigh not shared by the other inland sites and the earthworks required are less.

Printed image digitised by the University of Southampton Library Digitisation Unit

Phasing

8.7 The timing of the provision of the various facilities required on the airport is governed by a number of factors. The need for some facilities is influenced primarily by the peak hour traffic; for others, by the traffic anticipated over a longer period. In the second, third and fourth runway phases it is anticipated that the ratio of peak to annual traffic will be relatively stable. In the first stage, however, peaking is expected to be significantly higher. Table 8.1 gives the expected ratios of peak hour to annual total passengers (terminal and transit) calculated from data given in chapter 3, paragraph 3.64 and table 3.15.

Table 8.1

Ratio of one way peak hour to annual total passengers

Runways at third London airport	*Ratio of one way peak hour to annual total passengers*
1	0.00030
2	0.00018
3	0.00017
4	0.00016

8.8 The best estimates of total passengers and of total aircraft movements at Foulness and an average of the figures for the inland sites based on the final results of the surface access gravity model are summarized below at table 8.2 together with estimates of airport capacity.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 8.2

Estimates of demand and capacity at the third London airport

	Demand						*Capacity (after 1980) Number of runways*			
	Foulness (actual)			*Inland sites*						
	1982	*1991*	*2000*	*1982*	*1991*	*2000*	*One*	*Two*	*Three*	*Four*
Passengers requiring surface access (millions per annum)	5	36	87	12	60	122	–	–	–	–
Total Passengers, terminal plus transit (millions per annum)	5	39	94	13	65	132	–	–	–	–
Passenger aircraft movements (thousands per annum)	36	193	355	92	322	498	–	–	–	–
Total aircraft movements, passenger plus freight plus other (thousands per annum)	48	213	379	119	360	540	–	–	–	–
Total passengers, peak hour one way, terminal plus transit (per hour)	1500	7000	16000	3900	11700	22400	–	–	–	–
Total aircraft movements in peak hour, passenger plus freight plus other	22	52	85	49	86	119	45	82	122	143

Printed image digitised by the University of Southampton Library Digitisation Unit

8.9 From this information the following broad construction time table can be drawn up (table 8.3)

Table 8.3

Construction time table

	Start work on site	*Completion date*			
		1st runway	*2nd runway*	*3rd runway*	*4th runway*
		(all plus associated facilities)			
Cublington	1974	1980	1982	1991	2000
Foulness (actual)	1975	1982	1985	1999	**
Foulness (constant traffic) *	1975	1982	1984	1994	2006
Nuthampstead	1975	1980	1982	1991	2000
Thurleigh	1975	1980	1982	1991	2000

* for explanation of Foulness constant traffic concept see chapter 7 paragraph 7.70 and 7.71.

**not required within appraisal period.

Order of runway construction

8.10 The phased land requirements drawings in volume VII, part III show the land required at each site. At Foulness, Nuthampstead and Thurleigh, the southern pair of runways are aligned in the "fully stretched" position. It has been shown in chapter 7 that the ideal position for the southern runway of a two-and three-runway airport does not necessarily coincide with one of the best positions for the ultimate four-runway airport. The possibility of building the second runway in other than its final position exists where the southern pair is in the fully stretched position; this would involve additional cost due to the extra pavement needed when the airport is ultimately extended to a four-runway airport and the delay and interference to the operation of the airport which might result when this was done. There would, however, be corresponding benefits in the phase II and phase III stages due to reduced land take, more compact terminal development, and reduced taxi-ing.

8.11 All the foregoing information was taken into account in drawing up appendix 1 to this chapter which shows the quantities of earthworks, imported granular fill, aggregates for concrete and bituminous carpets, total airport site construction labour and the total construction expenditure apportioned on an annual basis over the appraisal period for each of the short-listed sites.

8.12 As a guide to the relative weight of the airport construction requirement, table 8.5 gives the national and regional annual figures of value of output and labour employed by the construction industries. The annual aggregate and cement production figures are also given.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 8.4

Phasing of construction of runways and terminal complexes

	Runway				*Terminal complex*			
	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
Phase I	D	B	B	B	TG TF	TA TB	TA TB	TA TB
Phase II	B	part D part C	part D part C	part D part C	TB TC TA	TF TE TG	TG TF TC	TG TF TC
Phase III	A	A	A	A	TD TH	TC TD	TD TE	TD TE
Phase IV	C	complete D and C	complete D and C	complete D and C	TE	TH	TH	TH

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 8.5

Construction statistics: 1968

	£M
Total value of output by contractors (approximate)	*4,000*
Value of output of contractors by regions	
East Midlands	200
East Anglia	110
London	105
Southern counties	220
South-eastern counties	215
Eastern counties	180
Total number of operatives	*1 million*
Total aggregate production	*95 million cubic yards (72.5 million cubic metres)*
Cement production	*Million tonnes*
Total	18
South-east	
GLC area	1.8
Eastern counties	1.2
Southern counties	1.2
South-eastern counties	1.0

The final decision on this is likely to be rather delicately balanced. The boundaries shown on the drawings for phase II embrace sufficient land to permit all the possibilities. Taking into account the fact that at Foulness the fourth runway is not required within the appraisal period and that at the inland sites not until the year 2000 (and therefore additional costs are heavily discounted) the Research Team has assumed, for the purpose of costing, an optimum position for the second runway. The order of runway and terminal building construction assumed at each site, using the notation shown on drawings CUB/1, FNS/1, FNS/2, NUT/1 and THU/1, in volume VII, part III is given in table 8.4.

Construction: Foulness

8.13 More than one method has been suggested for reclamation and sea wall construction. The differences lie in the number and siting of the construction harbours required to shelter the ships or barges bringing in reclamation and construction materials and in whether these harbours are a temporary or semi-permanent feature. The siting of construction harbours affects the cost of pumping hydraulic fills considerably. The line of the sea wall shown on drawings FNS1 and FNS2 (volume VII part 3) was the minimum outline which would encompass the proposed airport layout. This outline was tested on a hydrological model to decide what modifications were needed to minimise scour and other deleterious effects. The results did not become available until after the drawings were completed and they suggested that a more streamlined shape for the sea wall would be more satisfactory. Drawing FNS/25 shows the original minimum line of the sea wall proposed

Printed image digitised by the University of Southampton Library Digitisation Unit

and the modified line which the model tests showed to be desirable. The modified line gives a larger and more streamlined shape. It would not be necessary to reclaim the areas between the minimum outline and the modified line at the ends of the airport; they could be left as areas of sand flats covered by the sea at high tide and sheltered by the outer sea wall. It would be desirable to leave an entrance from the sea to these areas. The costs of construction given in paragraph 7.160 of chapter 7 allow for the construction of the outer sea wall in the modified position.

8.14 The order of construction proposed is broadly as follows:

(a) construction harbours would be established and sea walls started as a first step,

(b) reclamation by pumping hydraulic fill dredged from the estuary would start probably at the south west corner of the site, working outwards to establish the land for the site of runway B and the road and rail access,

(c) with the sea wall growing from the south west to give cover the reclamation would continue in order to establish the land on which the second runway would be built, this runway would probably be sited in an intermediate position between runways C and D of the ultimate four-runway layout,

(d) reclamation would continue as a continuous operation until all the land for the third runway A and the associated facilities needed had been created,

(e) the sea wall would be carried right round to Foulness Point, either on the line shown for the four-runway airport, or on a smoother shorter line covering three runways only (the traffic forecasts for Foulness show a need for only three runways within the appraisal period).

Aggregates

8.15 Gravel is virtually the only indigenous hard aggregate in the South East and available resources are already under pressure. It has been estimated that by late 1970's the annual demand in the south east will rise to about 60 million cubic metres, of which a third London airport would require about 1.2 million cubic metres.

8.16 One inevitable outcome of this rise in demand and the exhaustion of some local sources will be that aggregate will increasingly be transported greater distances and that more use will be made of crushed rock and other substitutes. The tendency to transport aggregate over longer distances is already developing strongly; in the past it was seldom transported more than 20 miles but today hauls of 50 miles are not uncommon. The extra cost of transport is offset to some extent by the use of larger vehicles and motorways.

8.17 In general there is little to choose between the three inland sites. Foulness enjoys an advantage because aggregates from marine sources can be utilized and the over-all supply position in this part of Essex is not so severe. Present dredging areas in the southern North sea and Thames Estuary are 5 to 30 miles offshore and lie between Orford Ness in the north and the Crouch estuary in the south. Permitted removals in 1968 amounted to 5.6 million

Printed image digitised by the University of Southampton Library Digitisation Unit

cubic metres, although not all of this was taken out. A high proportion of the output was exported.

8.18 Aggregates could be supplied to any of the three inland sites but the distance they would have to be carried would mean higher costs. The amount of the higher cost would depend largely on the policy adopted for the exploitation of existing reserves in the 1970's, particularly in regard to the licensing for aggregate production in areas of high amenity and agricultural value. The problem of aggregate supply is one which the south east has to face whether or not a third London airport is constructed inland, and the additional requirement due to the airport is not within the margin of accuracy of the estimates of total demand.

8.19 Bearing in mind these problems the broad estimate has been made that aggregates for all the inland sites will cost 50 per cent more than that at Foulness. This is reflected in the construction costs considered in chapter 7.

Cement supplies

8.20 No problems are anticipated in obtaining sufficient supplies of cement.

Labour

8.21 The mobilisation and housing of a peak labour force of about 2,500 would present similar but not insoluble problems at each of the sites. A large proportion would be labour of a specialist type brought in for particular parts of the work. Use would be made of specially erected hostels as is customary in the construction industry.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix

Approximate demands on key resources for construction of airport

	Year	1972	3	4	5	6	7	8	9	1980	1	2	3	4	5	6	7	8	9	1990	1	2	3	4	5	6	7	8	9	2000	1	2	3	4	5	6	Total Quantity	Units
Cublington	Earthworks				5	10	10	10	10	10	10	5					6	7	8	7								3	4	5	5							115	millions m^3
	Fill					22	2	4	4	4	5	1						3	4	5									3	4	5							46	million m^3
	Aggregates						5	6	7	8	9	10	2	1	1	1	2	5	6	6	2	1	1	1	1	1	1	2	6	6	6	2	1				100	100,000 m^3
	Labour				2	6	11	12	17	20	25	17	11	10	10	10	11	12	16	16	4	3	7	10	11	10	11	6	6	6	6	10	7	1	1		-	100 men
	Expenditure				2	8	15	17	25	30	36	25	19	18	19	19	21	23	31	31	7	6	14	20	22	21	23	13	12	12	13	21	15	2	2	1	543	£M
Foulness (actual)	Hydraulic fill				5	15	15	15	15	15	10	5								5	10	15	15	5													164	millions m^3
	Aggregates							5	6	7	7	7	6	5	2	1	1	1	1	1	1	2	5	6	7	2	1	1	1	1	2	1	1	1	1		100	100,000 m^3
	Labour			1	5	10	13	13	18	13	12	12	12	14	5	3	4	7	8	9	11	12	11	11	3	5	5	10	10	10	10	9	9	8	10	1	-	100 men
	Expenditure			1	7	14	18	20	29	21	20	21	24	9	6	8	14	15	19	21	23	23	21	6	10	11	20	20	21	21	19	19	19	20	3	579	£M
																																					4-runways not required within appraisal period	
Nuthampstead	Earthworks					5	10	10	10	10	7						4	5	6	3								1	3	5	4							83	millions m^3
	Fill					2	2	4	4	4	5	1						3	4	5									3	4	5							46	millions m^3
	Aggregates						5	6	7	8	9	10	2	1	1	1	2	5	6	6	2	1	1	1	1	1	1	2	6	6	6	2	1				100	100,000 m^3
	Labour				6	10	12	17	19	25	15	10	10	10	9	11	12	15	15	4	2	7	10	11	11	11	6	6	6	6	10	7	1	1		-	100 men
	Expenditure				8	14	17	25	30	36	24	18	17	18	18	20	23	31	31	7	4	14	20	22	22	22	13	12	12	13	21	15	2	2	1	532	£M
Thurleigh	Earthworks				2	5	5	5	5	2						2	3	4										2	3	3						41	millions m^3
	Fill				2	2	4	4	4	5	1						3	4	5									3	4	5						46	millions m^3
	Aggregates					5	6	7	8	9	10	2	1	1	1	2	5	6	6	2	1	1	1	1	1	1	2	6	6	6	2	1				100	100,000 m^3
	Labour				6	9	11	16	19	24	14	9	9	10	10	10	11	15	15	4	2	6	9	10	10	10	5	7	6	6	10	7	1	1		-	100 men
	Expenditure				8	13	16	24	29	35	23	16	16	17	17	19	22	30	30	7	4	13	19	21	21	21	10	14	12	13	20	15	2	2	1	510	£M

Printed image digitised by the University of Southampton Library Digitisation Unit

Introduction

9.1 The choice of the precise layout, location and alignment of the airport and its runways at any of the four sites is influenced by the following factors:

(a) construction costs,

(b) noise nuisance,

(c) the land required,

(d) the extent of demolition work,

(e) the impact of the airport on the local environment,

(f) the ground movement of aircraft at the airport,

(g) the usability of the runways, allowing for wind conditions,

(h) surface access,

(i) the capability of civil and military airfields in the vicinity,

(j) the siting of the urbanisation for the airport,

(k) the capacity of the airport.

9.2 The amount of earth-moving work required to prepare a site is the largest single item giving rise to differences in construction cost between the sites. Small changes to the layout and location can have a considerable effect on the amount of earth-moving work. In some cases it was found, for example, that savings in construction costs of the order of £20 million were possible by choosing the layout most suited to the terrain and adapting it appropriately.

9.3 The runway alignment has much less effect on construction costs. In general, costs were found not to be highly sensitive to changes of up to plus or minus five degrees in the alignment. However, the choice of alignment influences the noise nuisance, the capability of other airfields and the use which can be made of the runways, given the prevailing wind conditions at the site.

9.4 The Stage II Site Information for the four sites explained that there was no single airport layout which would be the best possible for all sites. The studies have shown that all "ideal layouts" postulated are very sensitive to the assumptions on which they are based. It was also evident that any one layout did not offer overriding advantages over the others.

Printed image digitised by the University of Southampton Library Digitisation Unit

9.5 For the design study work in respect of each of the sites it was necessary to establish the best runway configuration and alignment, and to locate the runways and the buildings in the best position. This was done in the following manner. First, the airport design and all matters affecting it were studied, as described in chapter 7. Using physical contour models and transparent overlays depicting the various possible layouts, several different solutions were identified and selected. This selection process made use of all the information available at the time, including the alignment studies carried out for the Stage II information, aerial photographs and topographical models. The British Airports Authority, the Ministry of Public Building and Works and the National Air Traffic Control Services participated in this operation. Finally, all the factors listed in paragraph 9.1 above (together with any site-specific factors) were approximately evaluated to enable the best solution to be chosen for more detailed analysis. The principles of evaluation adopted were those employed for the cost/benefit analysis.

Evaluation of the possible solutions

9.6 For the inland sites the earth-moving quantities required for each of the layouts were calculated using a computer programme specially written by the research team.

9.7 Differences in the length of the road and rail access resulting from the various layouts were measured and approximate capital and user costs were estimated for the whole 30 year appraisal period.

9.8 Approximate noise contours down to the 40 Noise and Number Index level were plotted for the two-runway and the four-runway cases. A comparative assessment of the probable noise dis-benefits was made on the basis of the number of people and dwellings in the band between each contour. A detailed account of the principles underlying the evaluation of noise nuisance is given in chapter 20.

9.9 The area of land likely to be needed for each of the possible solutions was measured and an approximate assessment was made of the relative amount of demolition work required, of the disruption of local communications and of the destruction of property and other facilities.

9.10 Measurements were made of the average distance from assumed points of turning off the runways to the centres of each of the eight terminal areas. On this basis an approximate cost was derived for the relative amounts of taxying which would occur in each of the possible layouts.

9.11 For all the alignments considered at each of the sites the percentage of occasions when the runways could not be used was calculated. A cross-wind component of 20 knots was taken as the criterion. The cost of any loss of capacity was estimated.

9.12 The effect on possible urbanisation proposals of the various solutions was examined, with particular regard to the noise contours and the access of employees to the airport.

9.13 At this stage all the possible solutions were assumed to permit the same aircraft movement capacity under instrument flight rules.

Printed image digitised by the University of Southampton Library Digitisation Unit

The four sites

9.14 *Foulness:* fourteen different arrangements were examined using four basic layouts and four possible alignments. For each arrangement the differential construction costs were calculated on the basis of the approximate volume of pumped hydraulic fill required to reclaim the area, the length of sea wall necessary and the cost of treating the unpaved surface to enable grass to be grown on it.

9.15 *Nuthampstead:* three different arrangements were examined of which one was on an alignment of 50 degrees east of north (grid) and the other two were on alignment of 45 degrees east of north (grid).

9.16 *Cublington:* four different arrangements were examined. They were all on the same alignment of 45 degrees east of north (grid) which had been identified as the best prior to Stage II.

9.17 *Thurleigh:* it became apparent that considerable advantages in construction costs could be obtained by moving the original location of the site towards the south-east. This led to the publication of the additional Stage II information for Thurleigh. The selection of the best solution was complicated by the special problem of the Royal Aircraft Establishment wind tunnel complex. Four different arrangements were examined and the effects of these on the wind tunnels were included in the study, using data supplied by the Ministry of Technology.

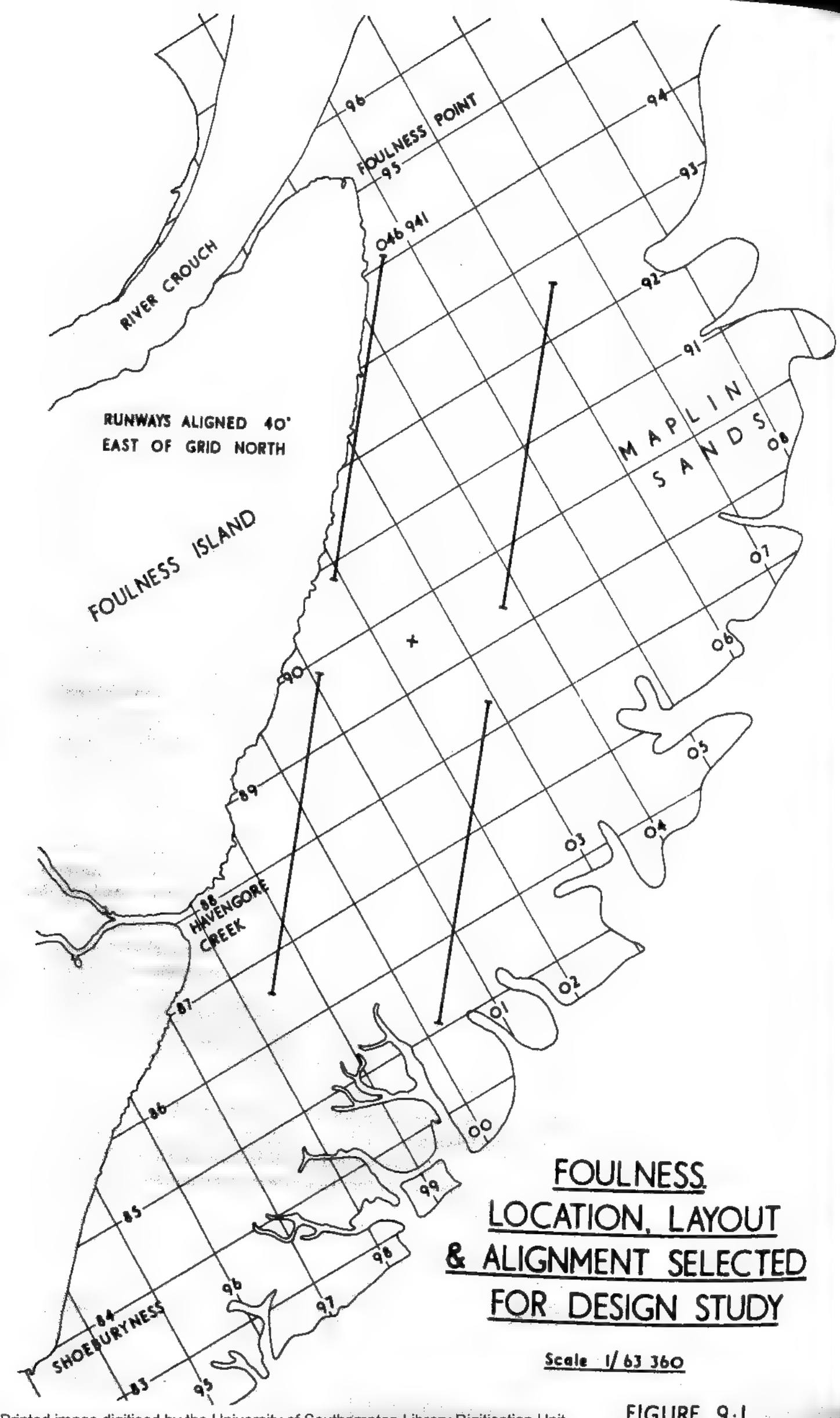
Results

9.18 The layouts, locations and alignments chosen for the design studies at each site are thought to be optimal, or very close to optimal. The costs and benefits as calculated should therefore lead to an unbiased assessment of the merits and demerits of each site. It is not suggested that the runways would be built precisely in the positions assumed in the design study. Aviation remains a rapidly developing technology and it is never possible fully to foresee the future. The advent of VTOL and STOL could, to mention an obvious example, modify the runway requirement within the appraisal period. Secondly it is considered that further very thorough and detailed analysis of the design study problems of the site finally chosen should be carried out by the British Airports Authority; it would therefore be superfluous to attempt a study on this scale at this point of time.

9.19 Figure 9.1 shows the layout, location and alignment selected for further study at Foulness. The "stretched" type layout parallel to the shore gave the lowest construction costs without worsening the position with regard to any of the other factors to a significant degree. A similar layout in a more northerly position, which decreased the noise costs at the expense of increasing the surface access and journey to work costs was considered but not chosen for the design study work.

9.20 Figure 9.2 shows the arrangement selected for Nuthampstead. The site preparation costs were the lowest of the three plans considered, the land requirement was the lowest and the environmental impact the least. The differences between all other factors were not significant.

Printed image digitised by the University of Southampton Library Digitisation Unit



FOULNESS LOCATION, LAYOUT & ALIGNMENT SELECTED FOR DESIGN STUDY

Scale 1/63 360

FIGURE 9·1

Printed image digitised by the University of Southampton Library Digitisation Unit

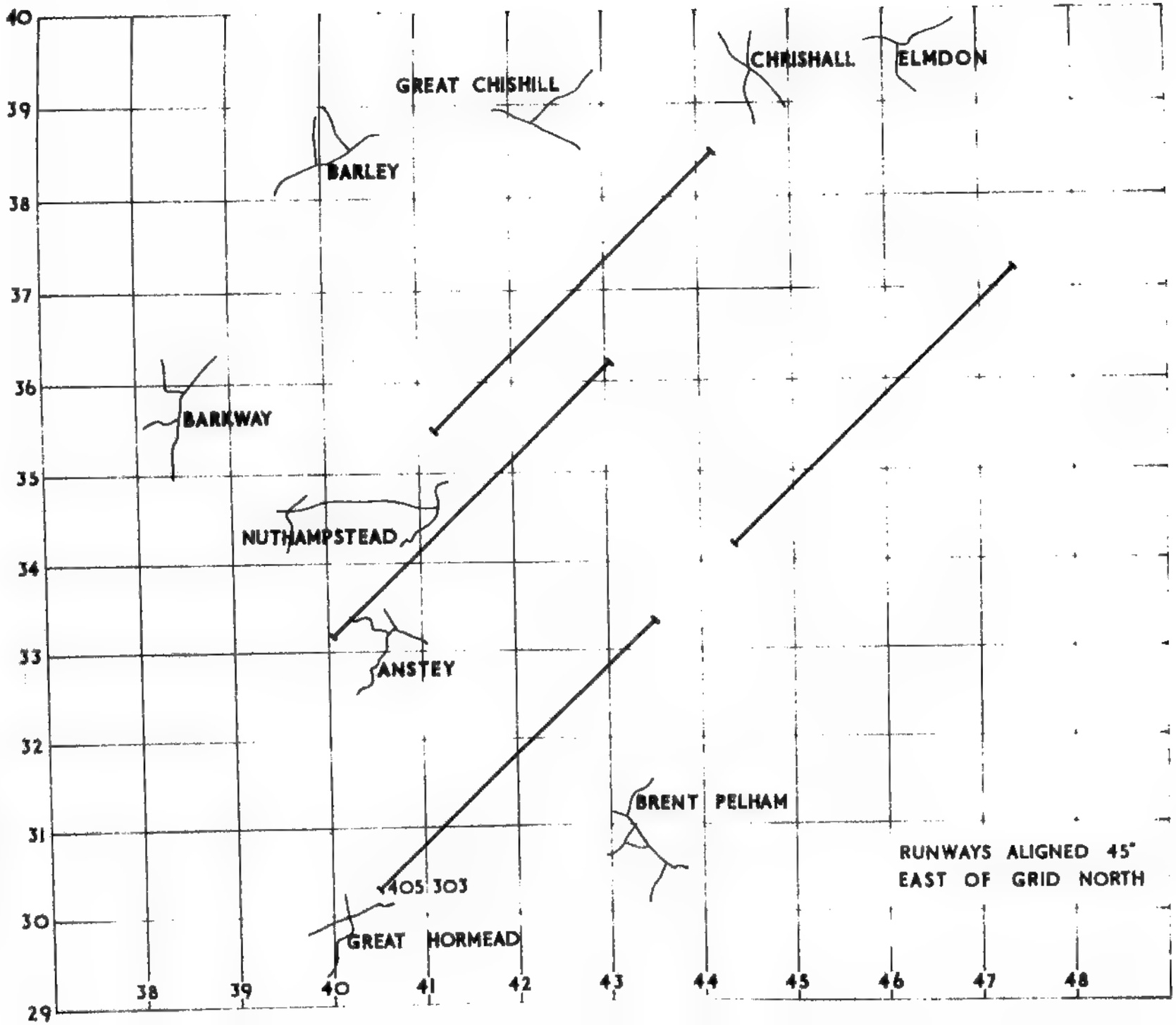


FIGURE 9·2

NUTHAMPSTEAD. LOCATION, LAYOUT & ALIGNMENT SELECTED FOR DESIGN STUDY

Scale. 1/63 360

FIGURE 9·2

Digitised by the University of Southampton Library Digitisation Unit

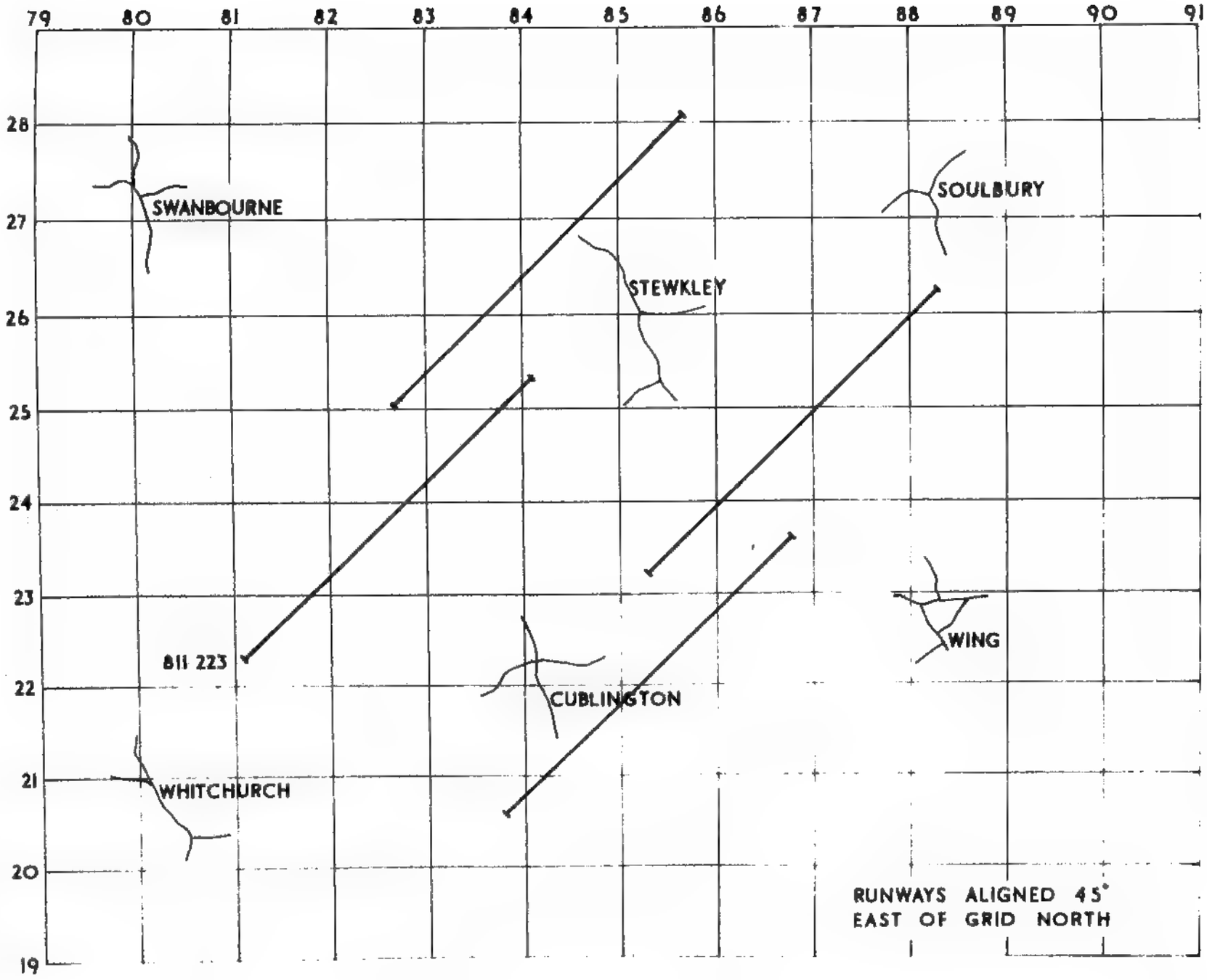
9.21 Figure 9.3 shows Cublington. This position and layout is very close to that shown in the Stage II publication*. It was the most favourable of the four considered taking into account all fully costed factors in total, and environmental impact was at least as favourable as that of the others considered.

9.22 Figure 9.4 shows Thurleigh. The position and layout was the most favourable taking into account the total of all the factors; environmental impact was at least as favourable as the other three plans considered. The plan chosen had the lowest land requirements; site preparation costs were not the lowest of the three, this element being outweighed in the total assessment by the costs of re-locating the Royal Aircraft Establishment Bedford wind tunnel site.

**CTLA Papers and Proceedings*, volume V (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

209
Scanned image digitised by the University of Southampton Library Digitisation Unit

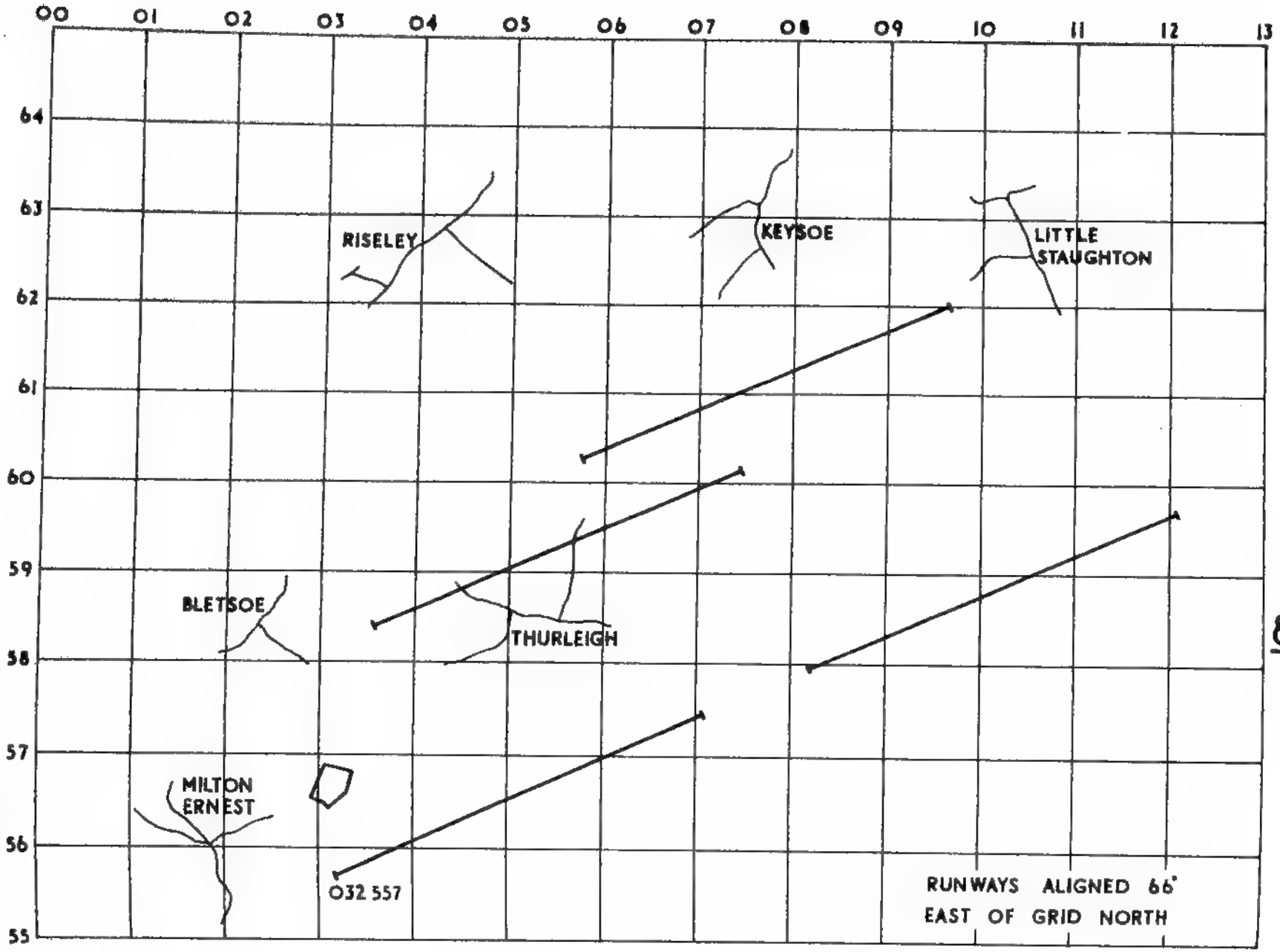


CUBLINGTON.
LOCATION, LAYOUT & ALIGNMENT SELECTED FOR DESIGN STUDY

Scale. 1/63 360

FIGURE 9·3

FIGURE 9·3



THURLEIGH.

LOCATION, LAYOUT & ALIGNMENT SELECTED FOR DESIGN STUDY

Scale 1/63 360

FIGURE 9·4

FIGURE 9.4

Printed image digitised by the University of Southampton Library Digitisation Unit

General

10.1 Wind, visibility, snow, rain and temperature all have an effect upon the operation of an airport. The Meteorological Office was requested to assess the position under each of these headings for the four short-listed sites and to give a summary of the probably weather conditions in the followings form:

(a) the estimated percentage of occasions when the runway "crosswind component" would exceed 20, 25 and 30 knots for six angular alignments,

(b) the estimated incidence of conditions of poor visibility (defined in accordance with Standard International Civil Aviation Organisation criteria - see table 10.2),

(c) the estimated snowfall, number of days on which snow fell and number of days with snow lying at 09.00 hours,

(d) estimated monthly rainfall,

(e) the estimated mean, maximum and minimum temperatures.

10.2 The Meteorological Office submitted the information given at tables 10.1, 10.2, 10.3, 10.4 and 10.5 pointing out at the same time that the standard of data available for the four sites varied considerably, some estimates being less reliable than others. For Foulness it was possible to use data recorded at Shoeburyness and the estimates are considered reliable. For Thurleigh some 10 years of observations were available but limited mainly to normal flying hours and excluding week-ends so that for snow and rainfall estimates reference was made to nearby sites at Raunds and Cardington. For Cublington, three years' records for the wartime airfield at Wing were analysed. After checking against similar data for Cranfield nearby, the Meteorological Office consider that the estimates of wind, low cloud and visibility are reasonably reliable despite the limited period. The Cublington figures for snow, rainfall and temperature had to be based on data for neighbouring long-period stations. At Nuthampstead no direct information was available. The estimates have therefore been based mainly on records for Stansted, making suitable allowance for the height difference of the two sites. As regards snowfall the very large local variations which occur due to aspect, drifting and topography must be brone in mind and it is considered that table 10.3 does no more than indicate the broad differences between the sites - i.e. that Foulness experience is likely to be about the same as Heathrow whereas the other three sites are all likely to be appreciably worse than Heathrow.

Printed image digitised by the University of Southampton Library Digitisation Unit

10.3 The visibility data shown in table 10.2 include a column giving the annual weighted average. This gives a better indication of the relative disadvantages of the four sites than the "year" figures, because it makes allowance for the seasonal pattern of air traffic. Poor visibility in peak periods obviously causes greater disruption to traffic than in less busy periods.

10.4 For the purpose of comparison between the four sites and Heathrow and Gatwick, data on visibility at these two airports have been included in table 10.2.

Table 10.1

Estimated Percentage usabilities for cross-wind components of 20, 25 and 30 knots at the four sites

(a) 20 kt limit (i.e. cross-wind components 0 to 19.9 kt)

	Runway alignment					
	360-180°	030-210°	060-240°	090-270°	120-300°	150-330°
Foulness	98.4	98.7	98.9	97.8	97.2	97.5
Nuthampstead	(98.7)	(98.8)	(99.0)	(98.9)	(98.7)	(98.5)
Cublington	98.0	98.5	98.6	98.2	97.7	97.2
Thurleigh	98.3	98.7	98.8	98.4	97.8	97.8

(b) 25 kt limit (i.e. cross-wind components 0 to 24.9 kt)

Foulness	99.5	99.6	99.7	99.4	99.0	99.3
Nuthampstead	(99.7)	(99.7)	(99.8)	(99.8)	(99.7)	(99.7)
Cublington	99.2	99.6	99.6	99.5	99.2	99.2
Thurleigh	99.4	99.6	99.7	99.5	99.4	99.4

(c) 30 kt limit (i.e. cross-wind components 0 to 29.9 kt)

Foulness	99.8	99.9	100-	99.8	99.7	99.8
Nuthampstead	(100-)	(100-)	(100-)	(100-)	(100-)	(100-)
Cublington	99.9	99.9	100-	99.9	99.8	99.8
Thurleigh	99.9	99.9	100-	99.9	99.9	99.9

Notes:

(1) Foulness based on Shoeburyness records 1959-68.

(2) Nuthampstead based on Stansted values for 1959-68 but modified to allow for greater height of Nuthampstead. Brackets indicate that the estimates are indirectly obtained,

(3) Cublington based on Wing values for 1942-45 but checked against Cranfield values for 1942-45 and 1942-51,

(4) Thurleigh records for 1959-68 used but period limited to 0600-1600 hours.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 10.2

Estimated incidence of low cloud and/or poor visibility at the four sites and at Heathrow and Gatwick airports

(a) Visibility below 500 yards and/or ⅝ or more of cloud with base below 200 ft (corresponds approximately to ICAO category I)

Percentage frequencies shown

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Average over the year*	*Weighted average*
Foulness	3.9	3.6	1.5	1.4	0.4	0.1	0+	0.4	1.8	2.8	2.5	4.1	1.9	1.4
Nuthampstead	(12.4)	(9.4)	(4.2)	(4.8)	(1.9)	(2.0)	(1.3)	(4.1)	(4.9)	(8.6)	(9.7)	(11.8)	(6.3)	(4.8)
Cublington	10.6	3.8	4.0	1.9	0.6	0.3	1.5	2.6	3.1	11.2	10.0	17.9	5.6	4.4
Thurleigh	8.4	7.4	2.1	2.6	0.7	0.9	0.4	1.6	3.2	7.7	7.6	6.7	4.1	3.2
Heathrow	5.2	5.9	1.2	0.6	0.3	0.3	0+	0.4	1.8	3.8	4.5	5.8	2.5	
Gatwick	5.8	5.3	2.5	2.9	2.0	2.3	1.9	3.1	7.4	9.2	6.5	6.3	4.6	

(b) Visibility below 250 yards and/or ⅝ or more of cloud with base below 100 ft (corresponds approximately to ICAO category II)

Percentage frequencies shown

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Average over the year*	*Weighted average*
Foulness	2.7	2.3	0.8	0.9	0.3	0.1	0+	0.2	1.2	2.0	1.6	3.4	1.3	1.0
Nuthampstead	(9.1)	(6.2)	(2.2)	(2.8)	(1.2)	(1.1)	(0.5)	(2.2)	(3.2)	(5.8)	(6.4)	(8.1)	(4.1)	(2.8)
Cublington	8.9	3.4	3.7	1.6	0.4	0.2	1.0	2.2	2.8	9.8	8.1	15.9	4.8	3.7
Thurleigh	6.5	4.6	1.3	1.4	0.3	0.3	0.2	1.1	1.9	5.7	5.2	4.4	2.7	2.3
Heathrow	3.4	2.1	0.9	0.3	0.2	0.2	0.0	0.3	1.3	3.0	3.4	4.5	1.6	
Gatwick	3.9	3.1	1.6	1.9	1.1	1.5	1.0	2.0	5.2	6.9	5.0	4.6	3.1	

Table 10.2 (continued)

(c) Visibility below 120 yards (corresponds approximately to ICAO category IIIa)

Percentage frequencies shown

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Average over the year*	*Weighted average*
Foulness	1.7	1.2	0.3	0.4	0+	0+	0	0+	0.6	1.4	0.8	2.3	0.7	0.5
Nuthampstead	(3.5)	(1.8)	(0.6)	(0.5)	(0.4)	(0.1)	(0.1)	(0.4)	(1.2)	(2.7)	(2.4)	(2.8)	(1.4)	(1.2)
Cublington	4.0	1.0	1.5	0.7	0+	0	0.3	0.9	1.2	5.2	5.4	9.1	2.4	1.8
Thurleigh	2.5	1.2	0.5	0.4	0+	0.1	0+	0.2	0.5	2.5	1.5	1.6	0.9	0.7
Heathrow	1.9	1.0	0.5	0.1	0.1	0.1	0	0+	0.6	1.7	2.2	2.9	0.9	
Gatwick	1.7	1.2	0.9	0.7	0.4	0.7	0.3	0.7	2.4	3.5	2.6	2.7	1.5	

(b) Visibility below 25 yards (corresponds approximately to ICAO category IIIb)

Percentage frequencies shown

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Average over the year*
Foulness	0.1	0.1	0	0	0	0	0	0	0	0.1	0+	0.2	0+
Nuthampstead	(0.1)	(0+)	0	0	0	0	0	0	0	(0+)	(0+)	(0.1)	(0+)
Cublington	0+	0	0	0	0	0	0	0	0	0.6	0+	0.2	0.1
Thurleigh	0	0	0	0	0	0	0	0	0	0	0	0	0
Heathrow	0.1	0.1	0+	0	0	0	0	0	0	0	0.1	0.4	0.1
Gatwick	0.2	0	0	0	0	0	0	0	0+	0.1	0.1	0.2	0.1

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 10.2 (continued)

(e) Visibility below 10 yards (corresponds approximately to ICAO category IIIc)

Foulness	-	one observation in 10 years
Nuthampstead	-	nil
Cublington	-	(probably 1 or 2 occurrences in 10 years)
Thurleigh	-	nil
Heathrow	-	nil
Gatwick	-	nil

Notes:
(1) 0+ indicates percentages less than 0.05,
(2) Foulness based on Shoeburyness values for 1959-68 0600-2100 only,
(3) Brackets indicate that the Nuthampstead estimates are based on Stansted values for 1959-68 but modified to allow for 120 ft height difference,
(4) Cublington based on Wing records for 1942/45. Not possible to extract "below 10 yards" occurrences with confidence,
(5) Thurleigh based on 1959/68 0600-1600 observations,
(6) Weighted average column assumes that the monthly traffic distribution at the third London airport will be similar to the 1968 traffic distribution at Gatwick (calculated by the research team).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 10.3

Estimated incidence of snow for the four sites plus Heathrow for comparison

(a) Average number of days per year with snow lying (i.e. more than half-cover) at 0900 hours

Foulness	8
Nuthamsptead	(15)
Cublington	(15)
Thurleigh	(14)
Heathrow	7.3

(b) Average number of days per year with snow or sleet

Foulness	17
Nuthampstead	(26)
Cublington	(20)
Thurleigh	(23)
Heathrow	19.5

Notes:

(1) Foulness based on Shoeburyness values for 1953-67.

(2) Brackets indicate that the estimates for Nuthampstead, Cublington and Thurleigh are obtained indirectly, Nuthampstead being based on Stansted for 1953-67, Cublington on Dunstable 1953-67 and Thurleigh on Cardington/Raunds 1953-67.

Table 10.4

Estimated average rainfall for the four sites

Rainfall (mm)

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Year*
Foulness	46.5	33.3	32.0	40.4	38.9	29.5	50.3	47.8	41.1	53.3	57.1	45.2	515.4
Nuthampstead	63.3	45.0	40.6	52.1	49.3	39.6	61.2	54.4	52.3	62.7	71.1	57.4	649.0
Cublington	61.7	45.2	41.4	50.8	51.3	40.6	67.1	58.4	55.4	64.8	69.6	57.1	663.4
Thurleigh	49.5	37.0	36.5	43.4	50.4	39.2	57.6	53.2	52.0	53.7	58.4	46.8	577.7

Notes:

(1) Foulness based on Shoeburyness values	1916-1950
(2) Nuthampstead based on Codicote Lodge values	1916-1950
(3) Cublington based on Aylesbury/Luton values	1916-1950
(4) Thurleigh based on Raunds/Cardington values	1916-1950

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 10.5

Estimated mean maximum and minimum temperatures for the four sites

(a) Average daily maximum temperature (^{o}C)

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Year*
Foulness	6.2	7.0	9.5	12.8	15.9	19.7	21.6	21.5	19.0	14.6	10.1	7.3	13.8
Nuthampstead	(5.1)	(5.9)	(9.4)	(12.4)	(15.7)	(18.9)	(20.7)	(20.5)	(17.5)	(13.3)	(9.0)	(6.4)	(12.9)
Cublington	(6.0)	(6.5)	(9.8)	(13.1)	(16.1)	(19.4)	(21.0)	(20.9)	(18.1)	(13.7)	(9.4)	(7.0)	(13.4)
Thurleigh	5.1	6.6	10.3	13.3	16.3	20.2	20.8	20.8	18.9	15.0	9.4	6.6	13.6

(b) Average daily minimum temperature (^{o}C)

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Year*
Foulness	1.8	1.7	2.7	4.8	7.6	10.9	13.2	13.1	11.4	8.0	5.2	3.2	7.0
Nuthampstead	(0.4)	(0.3)	(1.4)	(3.5)	(6.4)	(9.3)	(11.3)	(11.3)	(9.7)	(6.9)	(3.5)	(1.7)	(5.5)
Cublington	(0.1)	(0.2)	(1.2)	(3.4)	(6.2)	(9.5)	(11.6)	(11.6)	(9.5)	(6.1)	(3.2)	(1.5)	(5.3)
Thurleigh	-0.8	0.4	1.4	3.7	6.0	9.1	10.5	10.4	8.8	6.6	2.8	0.3	4.9

(c) Average monthly maximum temperature (^{o}C)

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Year*
Foulness	11.6	12.2	15.0	18.4	23.0	25.0	26.6	26.6	24.4	19.5	14.5	12.2	-
Nuthampstead	(11.1)	(11.7)	(15.0)	(18.9)	(23.9)	(26.1)	(26.7)	(26.6)	(23.9)	(18.3)	(13.9)	(11.6)	-
Cublington	(11.5)	(12.1)	(16.5)	(19.8)	(23.8)	(26.5)	(27.6)	(26.5)	(24.3)	(18.8)	(14.3)	(11.5)	-
Thurleigh	10.9	12.0	17.0	19.0	23.7	24.9	26.2	26.0	23.8	20.3	14.7	12.3	-

(d) Average monthly minimum temperature (^{o}C)

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Year*
Foulness	-5.0	-3.9	-2.8	-1.1	1.6	5.0	7.8	7.8	3.9	0	-2.2	-3.9	-
Nuthampstead	(-6.1)	(-5.6)	(-4.5)	(-2.8)	(0)	(3.3)	(6.1)	(5.6)	(1.7)	(-2.2)	(-3.9)	(-5.5)	-
Cublington	(-6.2)	(-5.7)	(-5.0)	(-2.3)	(0)	(4.3)	(7.1)	(6.5)	(2.6)	(-1.8)	(-3.5)	(-5.2)	-
Thurleigh	-8.5	-5.0	-4.5	-1.5	1.0	4.1	6.1	6.2	3.9	0.9	-3.7	-6.3	-

Notes:

(1) Foulness based on Shoeburyness values 1931-60,

(2) Nuthampstead based on Stansted - Cambridge values,

(3) Cublington related to Aylesbury - Oxford values,

(4) Thurleigh 1959-68 values used.

Evaluation

10.5 For evaluation of the different meteorological conditions at the four sites the following assumptions have been made:

(a) the airport will be out of operation with crosswind components of more than 20 knots up to 1985 and 25 knots thereafter,

(b) the airport will be closed when visibility is less than 120 yards up to 1985 but that thereafter improvement in landing aids and techniques will permit the use of the airport under any conditions,

(c) snow will not close the airport but different amounts of snowfall will give rise to different costs for clearing,

(d) rainfall and temperature will not give rise to any significant cost differences between sites.

10.6 Adverse weather conditions may cause aircraft movements to be delayed, diverted or cancelled. The major components of the costs resulting from the disruption of a flight by adverse weather conditions are airlines' costs and passengers' costs. Each of these can be sub-divided into inbound and outbound movements. The costs to both airlines and passengers have been separately estimated for delays, diversions and cancellations. From data supplied by BEA an estimate has been made of the proportion of occasions on which the disruption would be a delay, a diversion or a cancellation. Using these proportions the average costs to airlines and passengers of a disruption by adverse weather of one flight have been estimated. As the difference between the costs per movement at each site is only about 1 per cent the costs have been assumed to be the same at all four sites.

10.7 The costs which have been estimated for 1981 are explained in paragraphs 10.8 to 10.11 below. Since aircraft operating costs, the number of passengers per transport movement and the value of a passenger's time are all expected to increase in the future, costs have been estimated for five points in time. The costs in later years which appear in table 10.9 have been estimated by increasing the 1981 costs pro rata for the increase in aircraft size given in chapter 4 and by adjusting the value of passengers' time for the growth in value which is forecast in chapter 11.

Airline costs

10.8 It has been estimated from BEA data that the average delay due to weather is one hour. £300 represents the direct cost in 1981 of one hour's additional flying. The cost of diversion from the third London airport site is a weighted average cost of diversion to Heathrow, Gatwick, Birmingham, Manchester and Prestwick, and return to the third London

Printed image digitised by the University of Southampton Library Digitisation Unit

airport. The cancellation cost represents only a partial saving in the costs of flying a route which is of average length, because a proportion of aircraft will have to fly without payload to the third London airport once the weather conditions have improved.

10.9 Passenger fares, meals and accommodation have been treated as airline costs on the assumption that airlines will bear them. Passenger fares are based on the estimated number of passengers per aircraft. If passengers are diverted, they will be reimbursed for additional fares needed to reach their destinations. An allowance has been made for a proportion of the passengers transferring to other modes of travel for short journeys. The meal and accommodation costs have been based on estimates obtained from BEA. Table 10.6 shows the airline costs for inbound flights affected by weather. The average cost of disruption to airlines of an inbound flight is £371.

Table 10.6

Airline costs per aircraft affected by weather - inbound flights (1981) *(£)*

Cost element	*Delay*	*Diversion*	*Cancellation*
Direct costs of flying	300	300	-150
Passenger fares	0	244	240
Meals/accommodation	80	80	0
Total	380	624	90
Proportions of disruptions due to weather	60 per cent	20 per cent	20 per cent

10.10 It has been assumed that the average delay will be one hour and that 75 per cent of direct operating costs will be saved as a result. Cancellation has been assumed to result in an even larger saving of direct operating costs, since a large proportion of aircraft will be based at the third London airport. The average cost for meals and accommodation has been assumed to be lower for cancellations than diversions. Table 10.7 shows these airline costs for outbound flights affected by weather. The average cost of disruption to airlines of an outbound flight is £71.

Table 10.7

Airline costs per aircraft affected by weather - outbound flights (1981) *(£)*

Cost element	*Delay*	*Cancellation*
Direct cost of flying	75	- 300
Meals/accommodation	40	+240
Total	115	- 60
Proportion of disruptions due to weather	75 per cent	25 per cent

Printed image digitised by the University of Southampton Library Digitisation Unit

10.11 The average airline costs taking inbound and outbound flights together are £221.

Passenger costs

10.12 Faced with adverse weather air passengers who do not change to another mode are likely to choose to suffer a delay, to be flown elsewhere, or to fly from another airport. The average delay for passengers has been taken as one hour. A diversion has been assumed to cause six hours delay. Table 10.8 shows the passenger costs. The average cost of disruption to passengers is £232. This figure has been doubled in order to take into account the inconvenience to passengers from unexpected delays and the possibility of delay to subsequent or connecting flights. The resulting adjusted average cost of disruption per air transport movement to passengers is thus £464.

Table 10.8

Passenger costs per aircraft affected by weather - inbound and outbound (1981) *(£)*

	Delay	*Diversion*
Inbound	103	618
Outbound	103	618
Proportions of disruptions due to weather	75 per cent	25 per cent

Future average costs of disruption due to weather

10.13 The estimated average costs incurred in years beyond 1981 by airlines and passengers when one air transport movement is disrupted by weather are set out in table 10.9.

Table 10.9

Costs (undiscounted) per air transport movement which is affected by weather *(£)*

Year	*Cost to airlines*	*Cost to passengers*	*Total cost*
1981	221	464	685
1985	265	608	873
1991	335	813	1,148
2000	453	1,141	1,594
2005	507	1,280	1,787

Wind costs

10.14 Using the costs given in table 10.10 and the criterion of usability in paragraph 10.5(a), the costs at each site due to wind up to 1985 (discounted at 10 per cent to base year 1975) have been estimated as

Printed image digitised by the University of Southampton Library Digitisation Unit

some £3¼M to £3¾M. Since the differences between sites are less than £500,000 they are too small to take into account in the cost/benefit comparison between sites and have been dis-regarded. Similarly the loss of usability due to wind after 1985 does not differ significantly between sites and the comparisons have been ignored.

Visibility

10.15 Using the costs given in table 10.9 and the assumption in paragraph 10.5 (b), the figures given in table 10.10 were derived. Although visibility at Foulness is only slightly better than at Thurleigh (see table 10.2) the cost of movements affected by visibility would be considerably less since Foulness is expected to take less traffic in the period up to 1985. However, a considerable amount of the difference in traffic is expected to be accommodated at Luton and the Foulness visibility cost in table 10.11 allows for this traffic as well as that at Foulness itself.

Table 10.10

Cost of movements affected by visibility up to 1985 (discounted to 1975) *(£M)*

Foulness	*Nuthampstead*	*Cublington*	*Thurleigh*
1.6	3.0	5.0	2.0

Snow

10.16 Airport authorities aim to clear snow from the airfield pavements so that no movements are cancelled, delayed or diverted as a result of snow. In the past complete success has not been achieved in the UK, but given adequate equipment, manpower and organisation there is no reason to doubt that it is an objective which should be substantially achieved. The cost of snow is therefore the cost of the snow clearance measures.

10.17 Table 10.3 above shows the average number of days per year with snow lying at 09.00 hours and the average number of days per year with snow or sleet. At Heathrow the standing costs of the snow clearance measures are £30,000 per year. The additional costs caused by the actual amount of snow which falls and has to be cleared varies up to about £5,000 per year.

10.18 The problem is to evaluate the differences in costs between the sites on the basis of this evidence. Heathrow and Foulness have essentially similar conditions but Cublington and Nuthampstead are expected to have considerably more days of snow. The approximate estimates in table 10.11 have been made on these assumptions.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 10.11

Cost of movements affected by snow

Site	*Days per year*		*Estimated costs (£1000)*	
	Snow lying at 09.00 hrs.	*Sleet or snow*	*Two-runway per year*	*Four-runway per year*
Heathrow	7.3	19.5	35	-
Foulness	8	17	50	62
*Nuthampstead	(15)	(26)	65	97
*Cublington	(15)	(20)	60	90
*Thurleigh	(14)	(23)	62	93

*see note 2 to table 10.3 above.

10.19 The cost differences between sites discounted to the base year 1975 are less than £100,000 and are too small to take into account in the cost benefit comparison between sites and have been disregarded.

Printed image digitised by the University of Southampton Library Digitisation Unit

I. SURFACE TRANSPORT COST PARAMETERS

11.1 Section I of this chapter sets out the basic data and assumptions which have been applied in the analysis of the surface travel costs, benefits and dis-benefits generated by the four airport sites. These travel costs, sometimes referred to as user costs, do not include capital costs arising out of the provision of new infrastructure. The cost of travelling time represents a considerable proportion of the total cost incurred by air travellers in getting to and from the airport, just as savings in travel time represent a large proportion of the rate of return as assessed for motorways, other trunk roads and improvements to urban road networks. The valuation of travel time is dealt with in paragraphs 11.2 to 11.15. Paragraphs 11.16 to 11.20 deal with surface vehicle operating costs and paragraphs 11.21 to 11.24 deal with numerical relationships between air passengers and persons accompanying air passengers.

Valuation of working time

11.2 As explained in paragraph 1.8 of chapter 1, working time spent travelling to and from an airport involves a loss of work which would otherwise have been done in that time. The value of working time is the value placed by an employer on his employee's services. This is indicated by the gross earned income of the employee concerned and by the costs of the overheads which his employment entails (both fixed and time dependent). Further data show that business air travellers have incomes well above the national average. The appropriate overhead factor for such travellers will be higher than the 10 per cent addition used by the Ministry of Transport for the appraisal of road projects. An estimate of the appropriate figure has therefore been made.

11.3 As explained in paragraphs 20-23 of chapter 2 of the Proposed Research Methodology, no significant offsets in useful activities or in leisure are assumed to be set against the working time lost.

Valuation of leisure time

11.4 The arguments relating to the valuation of leisure time are set out in paragraphs 23-25 of the Proposed Research Methodology and also in paragraph 1.12 of chapter 1. Despite differences in the values which individuals put on time, there is a clear indication that average values are closely related to income levels. Instead of expressing the implied value of leisure time as an average for the travelling public, it is therefore better to express it as a percentage of the incomes of the persons

Printed image digitised by the University of Southampton Library Digitisation Unit

concerned. Published studies suggest that the travelling public as a whole appears to impute a value to leisure time of approximately 25 per cent of average gross personal income as reported in the answers to the Commission's 1969 Air Passenger Survey. This is the percentage which has been applied to the gross income of leisure air passengers in the present analysis.

11.5 Whilst the empirical studies have been almost entirely concerned with the trips by employed persons, the results have to be extended to cover non-employed persons. Housewives, (the major non-earning category) and other non-employed adults are assumed to have the same income as the head of household and their leisure time has been valued accordingly. In the case of children it has been assumed that time should be valued at one third of the national average adult rate.

The value of small time-savings

11.6 Paragraphs 26-28 of the Proposed Research Methodology set out the arguments which lead to the conclusion that there are good reasons for making no general distinction between small and large time-savings when valuing time. No such distinction has consequently been made.

Value of time for air passengers

11.7 Data produced by surveys of air passengers prior to 1969 are given in table 11.1.

Table 11.1

Pre-1969 surveys of air passengers' incomes (£ per annum - gross)

	Business	*Leisure*	*Based on*
BOAC 1966-1967	4,245	3,855	Family income
Birmingham University (sample survey at Birmingham airport, 1966-1967)	2,556	1,582	Personal income
British Travel Association, 1968	-	1,876	Family income
Approx. weighted average of surveys at 1968 prices	2,900	1,900	Personal income

The weighted averages given in table 11.1 are close to the figures produced by the Air Passenger Survey, 1969, carried out at Heathrow and Gatwick on behalf of the Commission. The results of this survey are described in chapter 4 (Air Traffic Forecasting). The figures the survey produced are, at 1968 levels, £3,100 per annum for business passengers and £1,820 for leisure passengers, and these are the figures adopted.

Printed image digitised by the University of Southampton Library Digitisation Unit

Business air passengers

11.8 The value of business air passengers' time has been calculated as follows:

	£ per annum
Average income of business air passengers	3,100
Selective Employment Tax	19
Employers' National Insurance contribution	33
Superannuation - 10 per cent	310
Accommodation, heating, lighting and furniture	864
Travel and subsistence allowance	300
Total	4,626

11.9 The data relating to accommodation costs and travel allowances have been derived from information on costs in the Civil Service and in one large public company. For the number of working hours per year the Ministry of Transport's figure of 2,000 has been applied to produce a travel time value of 555d per hour in 1968. It is recognised that the actual number of hours worked per year is on average less than 2,000 but this is unlikely to be a significant source of bias.

Leisure air passengers

11.10 At 25 per cent of average hourly gross salary (taking the same figure of 2,000 working hours per year) and on the basis of the survey figure of average gross salary of £1,820 per annum, the value of leisure air travellers' time is 55d per hour. It has been assumed that 18 per cent of leisure air passengers are children, for whom the Ministry of Transport's rate of 13d per hour has been used.

Accompanying persons

11.11 A large number of people who are not air passengers travel to and from airports accompanying air passengers. The travel cost of these people has to be included in the surface access costs. It has been included both in the behavioural costs and in the resource costs.

11.12 For the value of time for accompanying persons (adults and children) the Ministry of Transport's national average value of leisure time for these two classes has been adopted, i.e. 39d and 13d per hour respectively.

Paid drivers

11.13 The value of time for paid drivers has been derived from the wage rate for Civil Service car drivers plus the appropriate overhead costs. This has produced a figure of 128d per hour, which compares with rates quoted by the Ministry of Transport for bus drivers and goods vehicle drivers of 120d and 114d per hour respectively.

Printed image digitised by the University of Southampton Library Digitisation Unit

Ministry of Transport standard values

11.14 Other standard values of time which have been used are given in table 11.2.

Table 11.2

Ministry of Transport standard values of travel time

	pence per hour
Persons travelling by car on employer's business	259
Goods vehicle drivers	114
Adults on non-work trips	39
Children	13

Increase in the value of time over time

11.15 As the values of time are related to productivity and income, they will increase in the future in real terms. Relative to most other values in the cost/benefit analysis, which have been assumed as constant, the value of time will increase. The Ministry of Transport estimate that national average working time-values will increase at 3.25 per cent per annum, since in real terms productivity is likely to increase at this rate. They also advise that real incomes are likely to rise slightly less rapidly than productivity because of reductions in the working week and they estimate the future increase in incomes and consequently in the national average value of leisure time at 3 per cent per annum. These values are used where applicable; adjustments have had to be made for air passengers to allow for the likelihood that the average incomes of air passengers will approach the national average as more of the lower income groups become air passengers. In chapter 4, estimates have been made of the future mean incomes of business and leisure air passengers. These incomes have been used directly for the calculation of future time-values for leisure air passengers, but for business air passengers the value of time is increased by a further 0.25 per cent per annum to allow for the difference between the 3.25 per cent productivity increase and the 3 per cent increase in income. Table 11.3 gives the future values of time used for air passengers and accompanying persons.

Table 11.3

Values of time (pence per hour, 1968 price level)

	Business air passengers	*Adult leisure air passengers*	*Children*	*Adult accompanying persons*	*Paid drivers*
1968	555	55	13	39	128
1981	747	80	19	57	194
1991	849	92	26	77	267
2000	867	100	33	100	356

Printed image digitised by the University of Southampton Library Digitisation Unit

Vehicle operating costs

11.16 The Road Research Laboratory of the Ministry of Transport has done extensive work on the operating costs of various types of road vehicles. Their formulae have been used. The costs include fuel, oil, tyres, maintenance and depreciation (all net of tax). For assessing extra distances travelled to the four short-listed airport sites it was inappropriate to include the depreciation element. Some of the items produce a cost which varies with distance and others produce one which varies with speed. The formula which the Road Research Laboratory have found to fit the data best is of the form:

$$\text{cost per mile in pence} = A + B/V + CV^2$$

where V is the speed in miles per hour, A represents the costs which vary with distance and B and C represent the costs which vary with speed.

11.17 The values for A, B and C for three different types of vehicle, excluding the depreciation costs and including an average accident cost are given in table 11.4. Road accident costs have also to be taken into account. The longer the journey to the site, the greater is the risk of accidents. It has been assumed that this additional mileage to the more distant sites will be travelled on high-speed dual carriageway roads with an average accident rate of 1.0 per million vehicle miles, and the Ministry of Transport figure of a cost per accident of £1,300 resulting in 0.31d per vehicle mile.

Table 11.4

Vehicle operating cost parameters (pence per mile)

	A	*B*	*C*
Cars	1.97	21.23	0.000188
Light goods	2.75	34.65	0.000238
Other goods vehicles	6.80	53.55	0.000053

11.18 It is convenient for the purpose of computation to regard the third term in the formula (CV^2) as a constant. This is justifiable when considering the variation in distances of the four airport sites from their traffic origin points, over which distances speeds will be above 40 miles per hour. An average of 50 miles per hour has been taken for this. The resulting constant has been added as an increment above the figures shown for parameter A in table 11.4 above. The resulting operating cost for cars varies from 2.8d per mile at 40 mph to 3.0d per mile at 60 mph.

Public transport operating costs

11.19 The detailed analysis of operating costs for the link between London and the airport is dealt with in the reports on rail infrastructure and links by British Rail and the Commission's consultants published in *Papers and Proceedings*, volume VIII*. The number of passengers using the links will vary according to which site is chosen for the airport. For inter-urban links the actual number of passengers and the nature of the route will affect the cost per passenger mile. In the case of many of these links, the order of magnitude of increase in passenger miles

**CTLA Papers and Proceedings*, volume VIII, part 2, section 2 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

resulting from one of the four airport sites compared with another is such as to result in no increase in the operating costs. However on some routes the numbers of additional passengers could possibly result in capacity problems and therefore in relatively large effective operating costs per passenger. Nevertheless, on average, the likely order of magnitude is such as to have very little effect on the comparative user costs of the four sites.

11.20 The following is a typical build-up of the marginal operating costs per passenger mile on a rail link:

Repayment and interest cost per train	= £24,000 pa
Passengers per train	= 290
Average miles per train per year	= 150,000
Running costs for track, power and signalling	= 108d per train mile

This results in a marginal cost of 0.50d per passenger mile which has been applied in assessing the inter-urban public transport links.

Vehicle occupancy and accompanying persons

11.21 Unless otherwise stated the parameters for vehicle occupancy and for accompanying persons are based on surveys of traffic carried out at Heathrow and Gatwick airports in 1966.*

(a) *Car occupancy of air passengers*
The Commission's 1969 survey of air passengers provided data on the numbers of air-passengers travelling in the same car. Table 11.5 shows the results for Heathrow.

Table 11.5

Number of air passengers per car (excluding cars with no air passengers)

Purpose	*Resident*	*Non-resident*	*Mean*
Business	1.44	1.62	1.53
Leisure	2.19	2.26	2.22

Source: 1969 survey of air passengers.

From the 1966 Heathrow road-side interviews it has been calculated that 84 per cent - 87 per cent of all cars carrying air passengers made a return journey with no air passengers, the remainder being cars which either picked up different air passengers for the return journey or which were left parked until the passengers returned from their air trip. The ratio of 85 per cent has been applied to the 1969 data giving the ratios of air passengers to cars (including cars making the return journey with no air passengers) shown in table 11.6.

**London Airports Traffic Study Heathrow Airport*, part I: 1966 Traffic Characteristics. Carried out by Freeman, Fox, Wilbur Smith and Associates for the British Airports Authority, the Greater London Council and the Ministry of Transport, June 1967.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 11.6

Air passengers per car for all cars for which the primary purpose was the transport of air passengers

Purpose	*Air passengers per car*
Business	0.83
Leisure	1.20

The ratios in table 11.6 are based on Heathrow data. Similar figures are produced in the 1969 Gatwick data. There is no significant difference between these and ratios produced earlier from the 1966 surveys on a cruder basis. Future changes in these parameters might be affected by a number of factors including increased car-ownership, more dispersed origins of trips and more families taking trips together. As there are no strong reasons for assuming that the ratios will move in any particular direction, it has been assumed that they will remain constant.

(b) *Accompanying persons*
In the case of accompanying persons it has not been possible to differentiate between business and leisure air passengers. The figures are shown in table 11.7.

Table 11.7

Accompanying persons per car

		Heathrow	*Gatwick*
Paid drivers	peak	0.1	0.1
	off-peak	0.1	0.03
Other accompanying persons			
	peak	1.4	1.3
	off-peak	1.4	1.1

On the basis of these figures the assumptions adopted have been 0.1 for paid drivers per car and 1.2 for other accompanying persons per car.

Accompanying persons on public transport

11.22 The survey data concerning accompanying persons using public transport is given in table 11.8..

Table 11.8

Accompanying persons using public transport as a percentage of air-passengers using public transport

	Heathrow	*Gatwick*
Peak season weekday	12.8	10.5
Off-peak season weekday	15.3	9.2

It has been assumed that on public transport accompanying persons will be 10 per cent of air passengers.

Printed image digitised by the University of Southampton Library Digitisation Unit

Coach occupancy

11.23 The survey data on coach occupancy is given in table 11.9.

Table 11.9

Coach occupancy - persons per coach

	Charter coaches		*Air terminal coaches*
	Heathrow	*Gatwick*	*Heathrow*
Peak season week-day	23	29	25
Off-peak	22	22	21

The figure adopted for coach occupancy has been 23 persons per coach.

Occupancy of servicing vehicles

11.24 For vehicles involved in servicing, the Ministry of Transport's standard data given in table 11.10 have been applied.

Table 11.10

Occupancy of servicing vehicles - persons per vehicle

Business cars	1.4
Light goods vehicle	1.6
Other goods vehicle	1.2

Composite evaluation costs (surface access)

11.25 In the air passenger user-cost calculation it was convenient to use basic cost parameters representing the composite costs per air passenger allowing for the appropriate car occupancies and accompanying persons. These were calculated for business and leisure passengers , using road and rail, in terms of a cost per mile and a cost per minute. The total cost of a journey was therefore the cost per mile multiplied by the journey mileage, plus the cost per minute multiplied by the journey time. These parameters for various years are given in table 11.11.

Composite behavioural costs (surface access)

11.26 The figures mentioned in paragraph 11.25 are the parameters used in calculating resource costs. In the traffic model used for estimating the allocation of future traffic between airports, described in chapter 13, it is necessary to use "behavioural costs". These are the costs which on analysis are implied by people's travel behaviour. The time values referred to in paragraph 11.25 were also applied in the behavioural cost calculations. The behaviour of air passengers was modelled on the assumption that they would be aware of the time-values of the people accompanying them when making their travel decisions.

11.27 In the case of private transport users, the car operating costs as perceived by the users were determined in various transport studies carried out in the UK. A cost of 3d per mile for cars has been considered appropriate

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 11.11

Composite resource costs (pence, 1968 price level)

Year	Road				Rail			
	Business		*Leisure*		*Business*		*Leisure*	
	per mile	*per minute*	*per mile*	*per minute*	*per mile*	*per minute*	*per mile*	*per minute*
1968	2.94	10.87	2.03	1.84	0.55	9.32	0.55	0.84
1981	2.94	14.64	2.03	2.57	0.55	12.54	0.55	1.24
1991	2.94	16.96	2.03	3.15	0.55	14.27	0.55	1.41
2000	2.94	18.02	2.03	3.75	0.55	14.62	0.55	1.63
2006	2.94	18.02	2.03	3.75	0.55	14.62	0.55	1.63

Table 11.12

Composite behavioural costs (pence, 1968 price level)

	Road				Rail					
	Business		*Leisure*		*Business*			*Leisure*		
	per mile	*per minute*	*per mile*	*per minute*	*per mile*		*per minute*	*per mile*		*per minute*
					Old link	*New link*		*Old link*	*New link*	
1968	3.62	10.45	2.5	1.54	4.9	6.6	9.32	4.9	6.6	0.84
1981	3.62	14.22	2.5	2.27	4.9	6.6	12.54	4.9	6.6	1.24
1991	3.62	16.53	2.5	2.85	4.9	6.6	14.27	4.9	6.6	1.41
2000	3.62	17.59	2.5	3.46	4.9	6.6	14.62	4.9	6.6	1.63
2006	3.62	17.59	2.5	3.46	4.9	6.6	14.62	4.9	6.6	1.63

Printed image digitised by the University of Southampton Library Digitisation Unit

for the behavioural operating costs. For rail users the rail fare was appropriate. A fare of 4.5d per mile on the existing network and 6d per mile on the new airport links has been assumed.

11.28 The resulting composite behavioural costs per air passenger were calculated as in the case of resource costs. Table 11.12 indicates the cost parameters for various years.

II AIR MOVEMENT COST PARAMETERS

11.29 The parameters dealt with in this section relate to the costs of air journeys. Chapter 12 describes how these parameters have been used to calculate differences between the costs of air journeys for each of the proposed airport sites. These parameters are also used in the evaluation of delay costs for the timing of the need analysis (chapter 28).

Passengers' time

11.30 Time spent on the air leg of the journey is valued at the same rate as time spent on the surface leg of the journey. The air leg comprises:

(a) taxying

(b) waiting to take-off

(c) take-off

(d) flight

(e) waiting to land

(f) landing

(c) and (f) do not differ between sites and can therefore be ignored. For valuation purposes it is convenient to work with *cost per aircraft.* The per-person values have, therefore, been multiplied by the average numb of passengers per aircraft given in chapter 4.

Crew costs

11.31 Crew time has been valued on the same basis as business travel time (see paragraph 11.8 above). Estimates of crew costs were obtained from BEA and BOAC. These are shown in table 11.13. The figures include both flight deck and cabin crew. The costs are based on a standard number of flying hours by a crew per year for each aircraft type.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 11.13

Hourly crew costs (1968)

Aircraft type	*Crew cost per flying hour*
	£
Trident 1	58
Trident 2	58
BAC 1-11	45
Boeing 707	84
VC 10	80
Super VC 10	84
Boeing 747	125
Douglas DC 10	107
Lockheed 1011	111
Concorde	83

Fuel costs

11.32 Estimates of fuel costs have been based on an average market price of fuel less tax. The rate of consumption varies with phase of flight. Fuel costs per hour in normal cruising conditions for different aircraft types were obtained from BEA, BOAC and the British Aircraft Corporation. The fuel costs per hour are based on a standard number of flying hours in a year for each aircraft type.

Table 11.14

Fuel costs per hour (normal cruising conditions 1968 prices)

Aircraft type	*Cost per flying hour*
	£
Comet 4B	78
Trident 1	58
Trident 2	61
BAC 1-11	48
Boeing 707	106
VC 10	104
Super VC 10	108
Boeing 747	178
Douglas DC 10	150
Lockheed 1011	150
Concorde	254

The following rates apply to other phases of aircraft operation expressed as a percentage of normal cruising conditions:

Static idling - 40 per cent
Taxying - 40 per cent
Holding - 175 per cent
(at low level)

Printed image digitised by the University of Southampton Library Digitisation Unit

Engineering costs

11.33 Engineering costs can be divided into :

(a) costs related to flying hours,

(b) costs related to landings,

(c) costs related to elapsed time (checks due on calendar dates),

(d) overheads.

The following figures for total engineering costs have been supplied by BEA, BOAC and the British Aircraft Corporation and are based on a standard number of flying hours for each aircraft type, assuming that it is in the middle of its operating life.

Table 11.15

Total engineering costs (1968 prices)

Aircraft type	*£ per flying hour*
BAC 1-11	78
Trident 1	84
Trident 2	96
Boeing 707	120
VC 10	126
Super VC 10	132
Boeing 747	282
Concorde	310

Aircraft standing costs

11.34 These costs include interest, depreciation and insurance in respect of aircraft. The following figures were obtained from BEA and BOAC and British Aircraft Corporation.

Table 11.16

Standing costs per year (1968 prices)

Aircraft type	*Cost/year (£M)*
BAC 1-11	0.26
Trident 1	0.24
Trident 2	0.34
Boeing 707	0.20
Super VC 10	0.33
Boeing 747	1.08
Douglas DC 10	0.87
Lockheed 1011	0.93
Concorde	1.0

11.35 These costs have been projected into the future pro rata to the growth in average passengers per plane (as forecast in chapter 4) for each of the three categories of aircraft. Tables 11.17 - 11.19 give the resulting forecasts.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 11.17

Estimated future costs for aircraft on UK domestic and European routes

Year	*Crew cost (£/hour)*	*Fuel costs (£/hour)*	*Engineering costs (£/hour)*	*Standing charges (£M/year)*
1975	60	70	95	0.30
1980	80	92	125	0.40
1985	100	120	162	0.50
1990	120	140	190	0.60
1995	140	165	222	0.70
2000	160	190	258	0.80
2005	180	213	290	0.90

Table 11.18

Estimated future costs for aircraft on North Atlantic routes

Year	*Crew cost (£/hour)*	*Fuel costs (£/hour)*	*Engineering costs (£/hour)*	*Standing charges (£M/year)*
1975	100	133	165	0.96
1980	132	175	218	1.27
1985	171	226	282	1.64
1990	200	266	330	1.92
1995	234	311	386	2.25
2000	272	362	450	2.61
2005	304	404	500	2.91

Table 11.19

Estimated future costs for supersonics

Year	*Crew cost (£/hour)*	*Fuel costs (£/hour)*	*Engineering costs (£/hour)*	*Standing charges (£M/year)*
1975	83	254	310	1.00
1980	110	335	410	1.32
1985	140	434	530	1.71
1990	166	508	620	2.00
1995	195	595	725	2.34
2000	225	690	843	2.72
2005	250	772	940	3.04

Fare differences between airports

11.36 In modelling the preference of passengers for airports in the surface access model, it is necessary to take into account any differences there may be in fares at each airport. The view of the airlines is that no differences will apply to international scheduled air fares from airports in the London area; viz Heathrow, Gatwick, Southend, Luton and the third London airport. It has therefore been assumed that there will be no difference in fares for journeys to and from these airports. For Manchester (Ringway), a fare differential has been assumed equal to the weighted average of hypothetical fare differentials from Manchester (Ringway) to the various destinations, which are in turn assumed pro rata to differences in flight distances.

Printed image digitised by the University of Southampton Library Digitisation Unit

12.1 Airspace movement may give rise to cost differences between the four proposed third London airport sites because of:

(a) different air journey lengths,

(b) different degrees of complexity of the air traffic control system required,

(c) interference with or closure of other airfields,

(d) differences in capacity of the total airport system in the south-east affecting the speed of development of the third London airport.

Flying time costs

12.2 Flying time costs are divided into costs affecting airlines and costs and disbenefits affecting passengers. The costs affecting airlines include both direct operating costs and an allowance for aircraft standing charges, since in the long run shorter flying times should promote higher aircraft utilisation, and hence a smaller overall fleet for the same number of flights. The costs and disbenefits affecting passengers are those of travel time.

12.3 It has been assumed that differences in route lengths will affect flying time at cruise only and not climbing or descent. The simulation study by General Precision Systems Ltd.* supported this assumption since it indicated that no serious restrictions on aircraft climbs and descents woul be required at any site.

12.4 Aircraft route mileages have been calculated on the basis of:

(a) the distribution of forecast terminating passengers between the airports considered (see chapter 13),

(b) the addition of transfer and transit passengers (see chapter 4),

(c) the conversion of this total into an estimated number of aircraft (see chapter 4),

(d) route structures, traffic samples and cruising speeds as given in the General Precision Systems Ltd report.

12.5 It has been assumed that movements of all cargo aircraft will be a small proportion of total aircraft movements, and will not give rise to any significant cost differences between the four sites.

* *CTLA Papers and Proceedings*, volume VIII part 2, section 2 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

12.6 Direct operating costs were then calculated using the cost parameters of chapter 11, taking fuel and crew costs in total and 1/3 of the engineering costs to represent that proportion directly attributable to flying hours at cruise speed.

12.7 The allowance for aircraft standing charges is also based on the cost parameters in chapter 11, having regard to the expected annual utilisation of different aircraft types. Aircraft flying domestic and European routes (as defined in chapter 3) were assumed to have an average annual utilisation of 2200 hours, while aircraft, including supersonics, flying on North Atlantic routes (as defined in chapter 3) were assumed to have an average annual utilisation of 3600 hours. These figures show no significant change from existing utilisations.

12.8 Passenger time in the air has been valued in the same way as on the ground (see chapter 11).

12.9 In chapter 1 it has been stated that the extra air traffic generated by the airport at Site A rather than at Site B provides a net benefit to passengers and that this must be measured. The method used for estimating this benefit is explained in chapter 13. The calculation does not take into account any additional resource costs involved in the air part of those extra journeys. There are assumed to be covered by the air fares which the passengers pay for those journeys. Any consumer surplus to passengers from the air journey is already included in the net benefit calculation. Therefore no additional costs or benefits for air movement are attributed to generated journeys.

Air traffic control requirements

12.10 The General Precision Systems Ltd report indicated that there would be no significant differences between one site and another in the complexity of routings measured by inter-aircraft conflicts (see chapter 3). There is therefore no need to allow for differences in cost of the air traffic control system and staff required.

Interference with other airfields

12.11 Flying interference between the various sites for the third London airport and existing airfields is considered in this chapter only with reference to airports with a significant air transport role. Government airfields are considered in chapters 15 and 16. Private airfields are considered in chapter 17.

12.12 In chapter 2 it has been stated that neither Southend nor Stanstead has been assumed to continue as a major air transport airport after the introduction of the third London airport. It has been assumed that any air transport movements which may subsequently take place at these two airports will not affect the cost/benefit comparison of the four sites and that other airports in the south-east mentioned in paragraph 2.13 of chapter 2 would not be affected. Luton is therefore the only existing airport in the south-east which is considered in this chapter.

Printed image digitised by the University of Southampton Library Digitisation Unit

Total airport system capacity

12.13 The report by General Precision Systems Ltd indicated that airspace constraints would not be a significant factor in the site comparison. The ultimate capacity of the London airport system to handle air transport movements is set by the capacities of the runways available. Chapter 3 shows that the capacities of Heathrow, Gatwick and the third London airport will be the same whichever site is chosen. However, if Foulness were the chosen site, it has been assumed that Luton airport would remain open and provide runway capacity. It has been assumed that the Luton runway capacity would not be available if an inland site were chosen. Therefore the need for the later runways at the third London airport could be postponed to the extent that Luton could contribute towards meeting the demand for air transport. Furthermore, less additional journeys would be generated at the third London airport if it were at Foulness than if it were at any of the other sites (see chapter 13). Some credit might be considered to be attributable to a site which can be developed more slowly, but the extent of any credit will be limited by the success of vertical or short take-off and landing operations and other technological advances in reducing future pressure for additional conventional airport capacity. In view of the considerable potential for developments in these fields over the next thirty years, it would be unwise to attach any significant credit to a site with a slower rate of development beyond that already given through the mechanism of the discounting of the appropriate costs and dis-benefits (see paragraphs 1.27 to 1.31 in chapter 1).

Results of evaluation of flying time costs

12.14 The flying time costs have been calculated for four key years 1982, 1991, 2000 and 2006.

12.15 The movement costs per flying hour for these four years (calculated on the basis set out in paragraphs 12.2-12.8) are shown in table 12.1 below.

Table 12.1

Movement costs per flying hour (£ at 1968 prices)

Year	*Airline costs*	*Passenger costs*	*Total per passenger aircraft*	*Total per freight aircraft*
1982	630	145	775	630
1991	900	249	1,149	900
2000	1,190	354	1,544	1,190
2006	1,385	404	1,789	1,385

12.16 Forecasts of passenger aircraft air transport movements by third London airport site in the four key years have been obtained on the basis described in paragraph 12.4 (a)(b) and (c). As tables 13.12 and 13.13 in chapter 13 give forecasts of terminating passengers by site only for the years 1991 and 2000, separate estimates had to be made for the years 1982 and 2006. The resulting forecasts by site are shown in table 12.2 below. In this and the following table the forecast level of traffic at inland sites has been decreased so as to make the total traffic equal for all sites (see paragraph 1.29 in chapter 1).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 12.2

Forecasts of passenger air transport movements by third London airport site

(thousands of movements)

Site	*Year*	*Third London airport*	*Heathrow*	*Gatwick*	*Luton*	*Total*
Foulness	1982	36	313	90	47	486
	1991	196	331	94	49	670
	2000	356	260	95	48	759
	2006	326	268	100	54	748
Inland sites	1982	83	313	90	-	486
	1991	245	331	94	-	670
	2000	404	260	95	-	759
	2006	380	268	100	-	748

12.17 Although all-cargo aircraft movements are not expected to make significant differences between the sites, the number of such aircraft using the airports in the key years has been estimated by interpolation from table 4.11 of chapter 4. Table 12.3 below shows the results.

Table 12.3

Forecasts of all-cargo aircraft movements by third London airport site

(thousands of movements)

Site	*Year*	*Third London airport*	*Heathrow*	*Gatwick*	*Luton*	*Total*
Foulness	1982	10	15	5	2	32
	1991	10	17	5	3	35
	2000	9	20	8	4	41
	2006	9	20	9	6	44
Inland sites	1982	20	8	4		32
	1991	19	12	4		35
	2000	15	19	7		41
	2006	18	19	7		44

12.18 As explained in paragraph 12.4 (d) the average miles flown by aircraft have been derived from the route miles used in the study by General Precision Systems Ltd. The distribution of aircraft to airlanes implied by table 4.17 in chapter 4 has been used.

12.19 It has been assumed that subsonic aircraft cruise at 480 knots and supersonic aircraft will cruise at 1,500 knots, and that supersonic aircraft will represent 4 per cent of the aircraft movements over the time period 1981-2006; for which the average cruise speed will be 530 knots.

12.20 The resulting flying time costs when landings and take-offs are to the east and when they are to the west are shown in table 12.4 below.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 12.4

Flying time costs (£ million at 1968 prices)

Site	*Year*	*Third London airport*		*Heathrow*		*Gatwick*		*Luton*		*Total*	
		Westerly	*Easterly*	*Westerly*	*Easterly*	*Westerly*	*Easterly*	*Westerly*	*Easterly*	*Westerly*	*Easterly*
Cublington	1982	18.1	18.6	56.1	56.4	17.6	17.9	-	-	91.8	92.9
	1991	70.5	72.3	88.9	89.2	27.0	27.4	-	-	186.4	188.9
	2000	154.0	157.7	96.2	96.4	36.7	37.2	-	-	286.9	291.3
	2006	169.1	173.1	114.8	115.1	44.6	45.2	-	-	328.5	333.4
Foulness	1982	8.3	8.5	56.8	59.5	18.4	19.6	9.6	9.6	93.1	97.2
	1991	56.7	58.2	89.4	93.5	28.1	30.1	15.2	15.2	189.4	197.0
	2000	134.5	138.2	95.7	100.5	38.4	41.0	20.5	20.5	289.1	300.2
	2006	142.9	147.0	114.1	120.0	47.1	50.3	27.3	27.4	331.4	344.7
Nuthampstead	1982	19.3	20.5	56.3	57.4	17.4	18.8	-	-	93.0	96.7
	1991	74.9	79.6	89.1	90.6	26.7	28.9	-	-	190.7	199.1
	2000	163.1	173.3	96.1	98.2	36.5	39.3	-	-	295.7	310.8
	2006	179.2	190.3	114.7	117.1	44.3	47.9	-	-	338.2	355.3
Thurleigh	1982	19.2	19.7	55.8	58.2	17.7	17.9	-	-	92.7	95.8
	1991	75.0	76.5	88.1	91.8	27.1	27.4	-	-	190.2	195.7
	2000	164.9	168.3	95.2	99.1	36.9	37.4	-	-	297.0	304.8
	2006	181.1	184.8	113.5	118.2	44.9	45.5	-	-	339.5	348.5

12.21 The costs in intermediate years have been interpolated and the costs in all years discounted to 1975 and summed for each third London airport site. Additional costs have also been calculated to reflect alterations in the route structures (given in the General Precision Systems report) close to the airport sites designed to reduce the impact of noise and, in the case of Cublington, to reflect the re-routing of part of the southbound traffic designed to avoid re-deployment of military establishments which would have involved heavy costs. The results are given in table 12.5 below. They have been calculated with the following assumed mode utilisation factors:

	%	
	Westerly	*Easterly*
Cublington	87	13
Foulness	50	50
Nuthampstead	50	50
Thurleigh	85	15

(It has been assumed that Heathrow and Gatwick always use the same mode as the third London airport).

Table 12.5

Discounted total flying time costs for each site (£ million at 1968 prices)

Third London airport	*Routes as in GPS report*	*Addition for noise routing*	*Addition for defence*	*Total*
Cublington	942	12	6	960
Foulness	972	1	-	973
Nuthampstead	985	2	-	987
Thurleigh	966	6	-	972

Costs and benefits of closing Luton airport

12.22 As explained in paragraphs 15 and 16 of chapter 2, Luton airport has been assumed to continue to operate as a major airport if Foulness is chosen, but to close if an inland site is chosen. In the latter case both costs and benefits will arise. The costs would be chiefly those of having to construct the third London airport sooner than would otherwise be necessary in order to accommodate Luton's traffic. These costs are incorporated in the construction costs given in chapter 8. The benefits can be considered under the following headings:

(a) savings in construction costs at Luton,

(b) value of land, buildings and other fixed assets which would be released,

(c) noise relief (see chapter 20).

Printed image digitised by the University of Southampton Library Digitisation Unit

12.23 If the third London airport were to be at Foulness, Luton airport would probably be developed. It has been assumed that £10 million would be spent on new construction work, including a realigned and longer replacement runway, and that this cost would be incurred in the mid-1970's. £10 million has therefore been taken as the cost to be discounted to 1975.

12.24 The probable use of airport land and existing facilities has been assessed as follows:

(a) 100 acres for industry using existing hangar areas, runways and taxiways,

(b) 100 acres for industry on new land contiguous to this,

(c) 240 acres for development, probably residential,

(d) 160 acres left as open land mainly in the vicinity of the present refuse tip and the steeply contoured land falling away towards the Hertfordshire green belt.

12.25 On the above basis, the residual value of the airport has been estimated at £2½ million. Assuming that the third London airport commences operation in 1982, the discounted value for inclusion in the cost/benefit analysis is £1.3 million.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Introduction

13.1 This chapter explains the methods used to predict the future surface traffic movements between points in the UK and the various airports included in the analysis (i.e. Heathrow, Gatwick, Luton, Manchester (Ringway) and each of the four sites for the third London airport) and to evaluate the relative costs including dis-benefits and benefits arising from the traffic movements for each of the four third London airport sites.

13.2 The calculations for the traffic prediction have been undertaken with the help of a computer program developed by Services in Informatics and Analysis Limited on the CDC 6600 machine. This programme simulates the movements of surface traffic along the expected road and public transport networks and enables predictions to be made of the likely allocation of traffic to the airports in the analysis.

Road and rail networks

13.3 For the purposes of the simulation the UK was divided into geographical zones based on existing local authority boundaries. The number of zones within the south-east region was about 290 and outside the region it was about 30. It was assumed that the population making journeys between each zone and the airports was located at the central point (centroid) of each zone. Plans showing these zones are included in part 3 of volume VII of the Commission's Papers and Proceedings.*

13.4 For the representation of the road and public transport networks in the simulation the research team was able to make use of some data already held by the Ministry of Transport and has had consultations with the South-East Joint Planning Team. Two types of network were used: one representing generally inter-urban public transport facilities and one representing generally inter-urban facilities for private transport.

13.5 The networks were drawn for three situations - the present day, 1981 and 1991 and beyond. In each of the 1981 and 1991 networks new road and rail links were included (see the Ministry of Transport and British Rail reports in part 2 of volume VIII of the Commission's Papers and Proceedings). ** In addition, it was assumed that all the road proposals for the south-east region included in the Ministry of Transport's *Roads for the Future** were implemented. Certain improvements to the Greater London

*HMSO

***CTLA Papers and Proceedings*, volume VIII part 2, section 3 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

road system were also included. The main differences between the 1981 and the 1991 networks were further improvements to the Greater London road system and some improvements to the rail system.

13.6 The public transport networks included bus or coach links serving zones without a direct rail service. In the 1981 and 1991 networks it was assumed that there would be a rail link connecting Heathrow and Gatwick and coach links serving Luton and Manchester (Ringway) from the rail system.

13.7 The private transport network contained some 1200 links inside the south-east region and some 250 links outside the region.

13.8 The networks for central London had to take account of the choices (tube, bus or taxi) available to passengers using the central London public transport system. Distances were assumed to be 20 per cent shorter, and speeds 20 per cent higher, than if travel by underground only were used.

13.9 For passengers using the rail link between London and the third London airport average interchange and waiting times at London termini were assumed to be five minutes, except at the London terminal of the rail link, where an average service interval of 15 minutes, an interchange time of 10 minutes and 30 per cent overlap of interchange and waiting time resulted in a combined time of 11.7 minutes. The time taken for checking-in and baggage handling at the London terminal was not included because a similar amount of time would be required at the airport for those who did not use the rail link.

13.10 Passengers using Manchester (Ringway) rather than the other airports in the analysis would generally have to incur extra flying time and a higher air fare. An additional flying time of 9 minutes and an additional air fare of 26 shillings were therefore taken into account in both the behavioural costs (i.e. the costs which on analysis are implied by people's travel behaviour) and the resource costs for the 1981 and 1991 situations.

Allocation of passenger trips between airports

13.11 The forecasts of the future total number of air passengers travelling by surface means from and to each of the geographical zones are described in chapter 4. The capacity of each of the airports was forecast in terms of the annual number of air passengers. The method of determining airport capacity is described in chapter 3. These two items, trips generated and airport capacity, are inputs to the model which remain unaltered in the operation of the model. It is customary to refer to trips being "generated" by the zone concerned and "attracted" to the airport concerned.

13.12 The computer program predicts which airports will be used by air passenger trips generated in any zone by simulating the choices made by people. It is known as a "gravity model". Many studies have been made of the behaviour of people when choosing between journeys to alternative places. It has been established empirically that this choice is affected by the cost of travel to each of the alternatives and the relative "attraction" of the alternatives. The behavioural costs of travel are determined from the basic parameters dealt with in chapter 11 together with the road and rail network data described above; they include the value of travellers'

Printed image digitised by the University of Southampton Library Digitisation Unit

time. The route giving the lowest travel costs for each of the modes of travel simulated is calculated. The "attraction" of the airport is a measure of the level of service offered. It is necessarily a measure perceived by people generally and is unlikely to be what is perceived by a particular individual at a point in time. The same individual might even view it differently at different times according to his detailed requirements. For example, there might be two airports with exactly the same frequency of services to all destinations but in one case a particular flight departure may be at 9 am while at the other it might be at 11 am. Some people might find the 11 am flight more convenient and others might find the 9 am flight more convenient. The gravity model would, however, treat both airports as having the same level of service or attraction.

13.13 For potential air passengers in a particular zone two airports might involve a trip giving the same level of average travel costs. All these passengers are unlikely to choose the same airport. The travel costs have to be calculated on the average for them all. Chapter 11 points out that the value of time is related to income; it is probable that the potential passengers in the zone will span a range of incomes and therefore span a range of travel time values. Even persons with the same income are likely to have individually different values of time. Although the total travel costs to each airport are the same, they will include differing proportions of operating costs and time values. Therefore those people with greater than average time values will tend to choose one airport and those with less will choose the other. The model, accordingly, allocates 50 per cent of the passengers in the zone to each airport. These passengers are clearly better served than those in a zone which had only one airport within reasonable travelling range. This benefit is taken into account in the evaluation procedure.

13.14 If the two airports involve trips giving different levels of average travel costs, each individual passenger will tend to consider the attraction of each airport balancing the airports' benefits against the travel costs which include his own value of time. Even if each individual made a perfect estimate of his costs and benefits it is highly unlikely that every individual in a large group of people would travel to the airport which was nearest for the average person. Unless the net benefits from the nearest airport were on average very large, it is likely that a significant proportion would choose the airport which was more distant in terms of average travel costs. Such behaviour is found in travel generally and is simulated by the gravity model both for the choice of airport and for the choice of mode of travel.

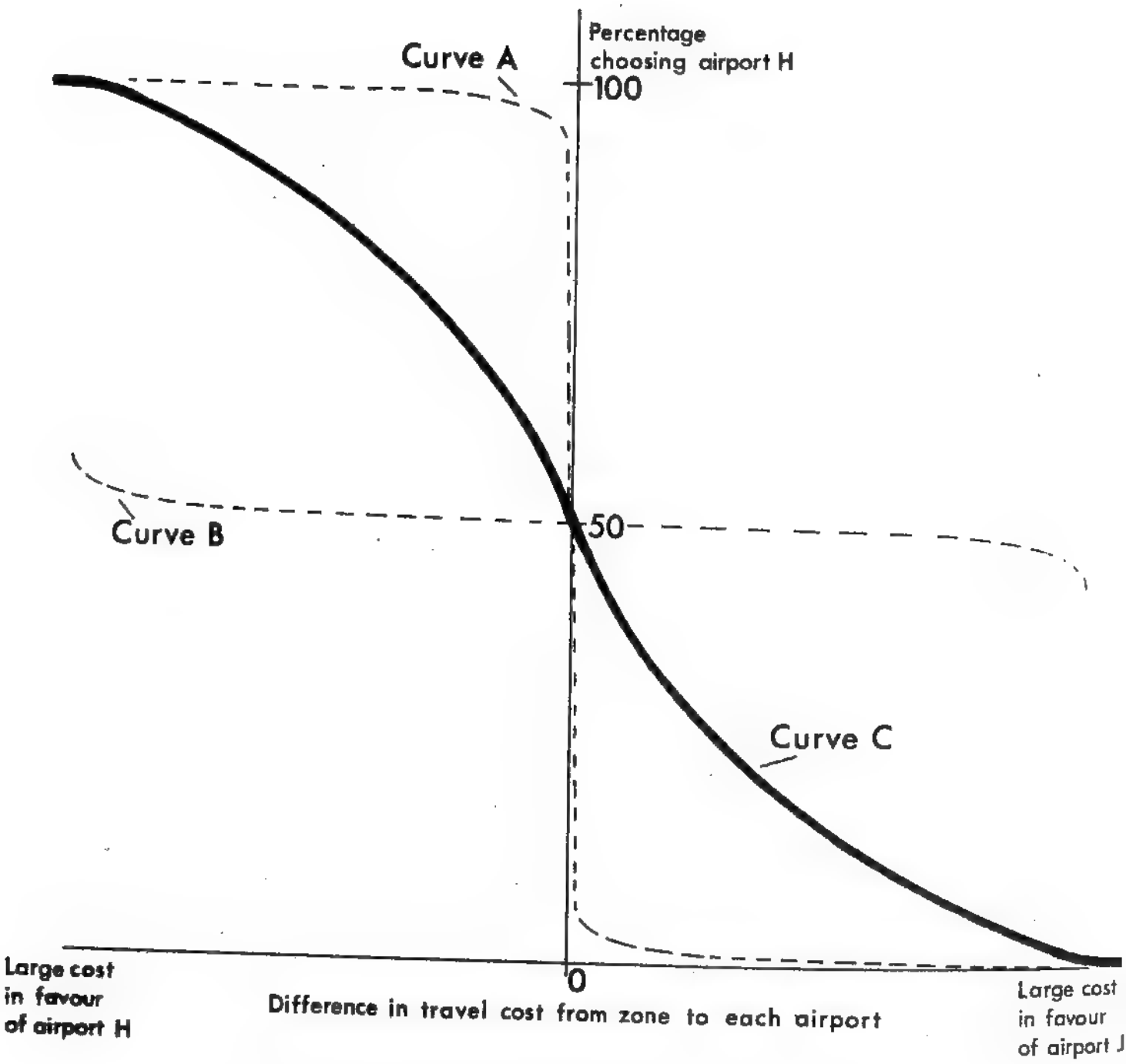
13.15 Figure 13A illustrates different possible behaviours which might be simulated. Curve A shows the case of all people in a geographical zone aiming to choose the airport which was nearest in terms of average travel costs. Curve B shows the case where all people in a geographical zone have no preference for either airport except when very large differences in travel costs arise. Curve C shows the behaviour which is normally observed. The precise shape of the curve is determined by a "calibration" process described later.

13.16 This two-airport example has been used for illustration only. In fact the gravity model included all the airports in the analysis. The travel costs and attractions of each airport have to be expressed relative to all the alternatives. The algorithmic description of the model is given in appendix 1.

Printed image digitised by the University of Southampton Library Digitisation Unit

FIGURE 13 A

ALLOCATION OF AIR-PASSENGERS FROM A ZONE TO TWO AIRPORTS



Printed image digitised by the University of Southampton Library Digitisation Unit

13.17 The model is concerned only with the level of service of one airport relative to the other airports. The units used for the measurement of the attraction factor are unimportant provided that identical units are applied in each case. An airport is attractive to passengers if it offers a good level of service. The level of service in its turn depends on the number of passengers using the airport. The measure of attraction adopted in the model for each airport has therefore been the annual number of passengers using that airport. The attraction factor has been correctly measured when it corresponds to the number of passengers predicted for the airport concerned. Two practical problems arise. First, the model may initially predict that an airport which is highly accessible will attract more passengers than can be handled because of capacity limitations. The result of such a situation in real life would be inability to book a seat on the preferred flight or delays in the air or congestion in the terminal or an increased airport charge. The potential traveller therefore experiences a dis-benefit which is simulated in the model. The magnitude of the dis-benefit is determined by a procedure which revises the allocation of passengers so that no more are allocated to the airport then it can in fact handle. The second problem concerns the case of an airport which is not so accessible and fails to receive an allocation of passengers sufficient to fill its available capacity. In this case the model adopts an iterative procedure which terminates when the attraction factor and the number of passengers are in conformity.

13.18 The model in effect assumes that no airport will exceed its defined capacity and, taking all airports and generating zones together, it attempts to find the total number of passengers attracted to each airport which conforms to the attraction factor of that airport. If an airport is predicted to attract passengers in excess of its capacity, cost penalties are applied to ensure that the number of passengers attracted is equal to the capacity of the airport.

13.19 It has already been explained that the model contains one public transport and one private transport network. These networks allow travel costs to be estimated separately for each mode of transport for the trip between each zone and each airport. The travel costs used take account of the user costs by both modes because choice of mode will enter into a passengers' choice of airport. Some passengers' choice will ignore public transport; some will ignore private transport and some will consider both modes. An airport well served by both public transport and by roads would tend to attract more passengers from a zone than one which was well served by only one or the other. From the total airport to zone journeys the proportion of passengers using each mode is determined by a relationship dependent upon the behavioural costs of each mode.

13.20 Chapter 11 shows that the values of time for business and for leisure air passengers are very different while the operating costs which are dependent on distance are more alike. Business passengers might be expected therefore to concentrate on saving time and leisure passengers might generally be expected to be more concerned with saving those costs which are dependent on distance. These two types of passenger are treated separately by the model. The airport attractions, capacities and penalties for exceeding capacity are however applied to or calculated from the totals of both types.This means that business passengers form

Printed image digitised by the University of Southampton Library Digitisation Unit

a higher proportion of total passengers at the airports which run at full capacity by reason of their greater accessibility.

Assignment of passenger trips to individual routes

13.21 In order to plan new road and rail infrastructure requirements the trips between airports and zones have to be assigned to traffic routes for each mode. For this purpose the gravity model assumes that all trips between an airport and a zone would use the route involving the lowest travel costs for the particular mode. This is unlikely to correspond with the real life situation but the results were not used in the evaluation although they were a valuable guide for those planning the road and rail infrastructure.

Accessibility of zones to different airports (passenger traffic)

13.22 Chapter 4 referred to the use of an accessibility index to explain part of the variation in propensities to fly for British leisure passengers. The underlying hypothesis is that trip generation in any zone is affected by the extent to which airports are accessible to that zone. For this purpose it was considered appropriate to include only Heathrow, Gatwick and the four sites for the third London airport. If the hypothesis were correct a person might live slightly nearer to Gatwick than to Heathrow and yet Heathrow, because of its much higher level of service would have the greater effect on his propensity to fly.

13.23 The measure of accessibility from a zone to a particular airport was the function of travel cost which is used in the traffic model (i.e. the distance as measured in terms of the travel cost). Thus the accessibility of each zone "i" can be described as:

$$\frac{\sum_j (D_j \; F_{ij})}{\sum_j D_j}$$

where D_j is the number of passengers using airport j and F_{ij} is the function of travel cost between airport j and zone i.

13.24 The accessibility index for each zone is a weighted average of the accessibility to each of the airports considered. The weighting used was the attraction factor of each airport (i.e. the number of passengers using it). For the present day situation, this was the observed totals for Heathrow and Gatwick. For future years, the number of passengers used were the capacities in the case of Heathrow and Gatwick and a best estimate of the numbers using the third London airport.

Calibration of the passenger model and future changes in the passenger model parameters

13.25 Data from various surveys were used in the traffic model to find those estimates of the parameters which produced the best estimates of the current distribution of passenger traffic to the airport and between the two modes of transport.

13.26 These parameters reflect the way in which people trade-off travel costs against the airport's level of services and other factors and the extent to which incomes of the individuals might differ from the average income

Printed image digitised by the University of Southampton Library Digitisation Unit

of groups of people in terms of which the analysis has to be conducted. Such parameters in the model might change in the future. Travel costs include two elements - time values and operating costs. The time values are related to incomes and therefore have been assumed to increase in real terms through time. The operating costs have been assumed to stay constant in real terms. The airport levels of service and other factors which are traded off against travel costs have not been specified but it seems likely that they are related to real income and the estimates of the model parameters have therefore to be adjusted for future years.

13.27 The equivalent effect has been achieved by adjusting future values of the travel costs when used for prediction. They have been reduced by the ratio of the composite value of time used for calibration to the composite value in the particular future year for which the forecast is required. The effect of this is slightly to increase the tendency for people to choose an airport which is not the nearest i.e. travel costs become relatively less important. This effect is more marked for leisure passengers than for business passengers.

Evaluation of passenger travel costs and benefits

13.28 The basis of the calculation of the costs, benefits and dis-benefits incurred by air passengers is a comparative one between sites. The largest element to be considered is the straightforward dis-benefit of travelling. The basic parameters have already been indicated in chapter 11 and are measured in resource terms. As was indicated in chapter 1, however, a simple comparison of travel costs is inappropriate where the sites generate different levels of traffic. If only the dis-benefits of travelling were included in the evaluation, it would imply that some people chose to suffer dis-benefits rather than decide not to make the journey at all. It must be assumed that they gain some net benefit from making the journey.

13.29 Figure 13.2 illustrates the principle involved. Of the 20 extra trips ($T_2 - T_1$ where T represents the total number of trips between the zone and each site) made between site 2 as compared with site 1, it may be said that at one extreme there will be the person who finds it only just worthwhile to make the trip to site 2 and whose net benefit is therefore virtually zero while at the other extreme, there is the person who almost found it worthwhile to go to site 1 and whose net benefit at site 2 is therefore virtually 100d ($C_1 - C_2$ where C represents the behavioural costs of each trip). The evaluation procedure assumes a linear distribution of net benefits between the two extremes. Therefore the average net benefit is:

$\frac{1}{2}(C_1 - C_2)$.

The total net benefit accruing to the air passengers for that zone is therefore:

$\frac{1}{2}(T_2 - T_1)(C_1 - C_2)$.

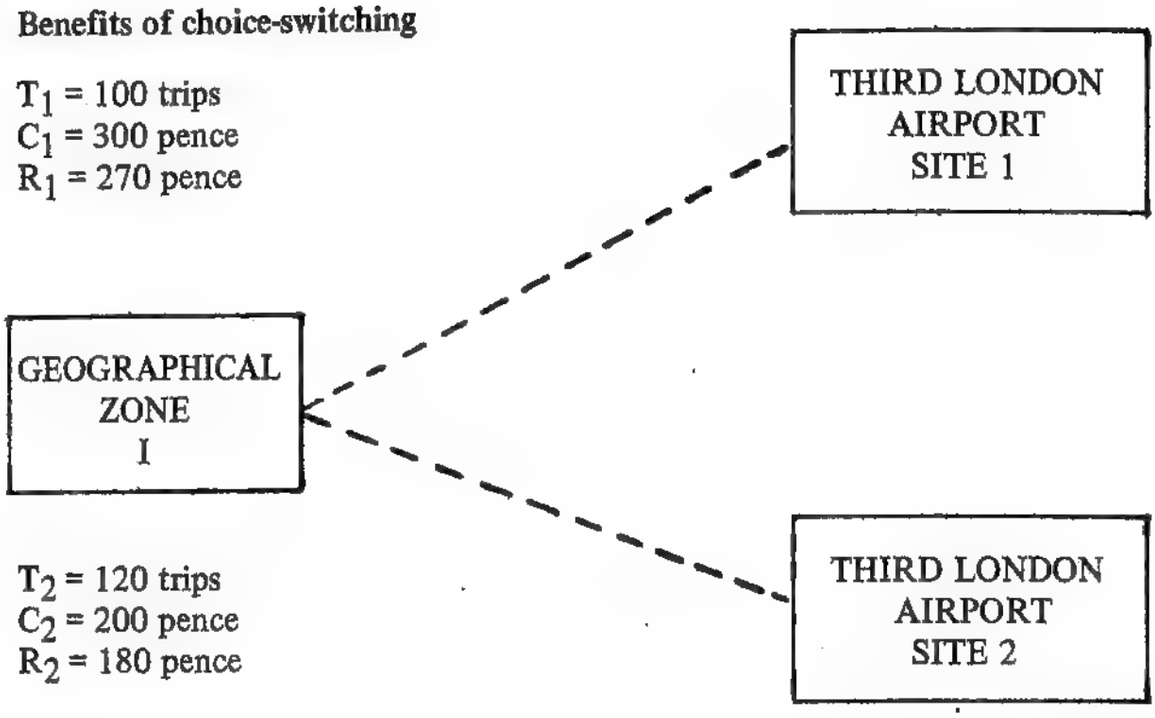
13.30 In addition to the net benefit to the air passenger which takes into account the total behavioural costs (including any tax or transport operators' surplus) there is a gain arising out of the difference between the behavioural cost C_2 and the equivalent resource cost R_2. This benefit

Printed image digitised by the University of Southampton Library Digitisation Unit

Figure 13.B

Benefits of choice-switching

T_1 = 100 trips
C_1 = 300 pence
R_1 = 270 pence



T_2 = 120 trips
C_2 = 200 pence
R_2 = 180 pence

Key: T = the number of trips between the geographical zone and the site,

C = the behavioural costs of each trip,

R = the resource costs of each trip.

The benefits of generated traffic = $\frac{1}{2}(T_2-T_1)(C_1-C_2)+(T_2-T_1)(C_2-R_2)$

$= \frac{1}{2}(120-100)(300-200)+(120-100)(200-180)$

= 1,400 pence

The resource cost savings on traffic which uses either airport = $T_1(R_1-R_2)$

= 100(270-180)

= 9,000 pence

Total net benefits and cost savings = 10,400 pence

Printed image digitised by the University of Southampton Library Digitisation Unit

accrues as profit to the transport operator and/or as tax revenue to the Government. Finally, there are the savings in resource costs incurred by that traffic which continues to use the third London airport at either site 1 or site 2. The total net benefit arising from the substitution of site 2 for site 1 is therefore:

(a) benefits of generated traffic

(i) consumer surplus: $\frac{1}{2}(T_2 - T_1)(C_1 - C_2)$

(ii) operators' surplus: $(T_2 - T_1)(C_2 - R_2)$

(b) resource cost savings on the traffic using either site 1 or site 2: $T_1(R_1 - R_2)$

13.31 The same principles of evaluation are applied to the situation where traffic switches between airports e.g. a passenger who would choose to use Heathrow when the alternative is Foulness, but who would switch to Cublington if that airport were the alternative. A third type of situation where traffic switches its surface mode of transport; e.g. a passenger who would choose to travel by rail to Foulness but who would choose to travel by road to Cublington. Separate evaluations were therefore required not merely for linking each zone to each airport in the system for each journey purpose, but with a further subdivision by mode of transport.

13.32 It is useful to be able to identify that part of the total net costs of each of the four sites represented by the "base load" of traffic which is common to all four sites and the net benefits accruing from generated traffic to each site. These benefits cannot be identified in the model output data, so the model has to be re-run with a constant number of total trips.

13.33 The evaluation has been calculated for three key years, 1981, 1991 and 2000, the other years being estimated by interpolation.

Prediction and evaluation of air freight surface movements

13.34 A simplified method has been used to predict and evaluate air-freight flows. The freight forecast in chapter 4 has been allocated to mode of transport and traffic zones as shown in tables 13.1 and 13.2. The basic cost parameters for road transport have been taken from chapter 11, averaged between light goods and other commercial vehicles. An average speed of 50 miles per hour has been assumed in estimating the short run marginal costs for differentiating between sites. This produces a figure of 9.36 pence per mile at 1968 prices and it has been assumed that there will be one ton per vehicle.

13.35 For the short run marginal cost for rail a figure of 2.5d per ton-mile has been adopted. It has been assumed that these costs will remain constant in real terms in future years.

13.36 The transport costs have then been calculated assuming that freight is sent to the airport nearest to the zone of origin.

13.37 Unlike the case for passengers the above assumptions imply that there are no choices available to the freight shippers and therefore no benefits, other than the straightforward travel benefits, arise between sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.1

Forecasts of freight by road/rail (000 metric tons)

	Road	*Rail*
1966	209	70
1981	2030	677
1991	6308	2103
2000	11795	3932

Table 13.2

Zonal forecasts of freight by rail/road (000 metric tons)

	Road				*Rail*			
	1966	*1981*	*1991*	*2000*	*1966*	*1981*	*1991*	*2000*
London Western postal districts	92	892	2776	5188	32	298	924	1732
London NW and N and E postal districts	22.5	203	630	1180	7.5	67	210	395
London SW and SE postal districts	12	128	404	756	4	44	136	252
Outside London postal districts	4.5	43	133	244	1.5	14	44	82
Total South-East	131	1266	3943	7368	45	423	1314	2461
South-West	7	67	209	389	2	22	70	130
E Midlands	10	92	284	531	3	31	95	177
W Midlands	20	201	605	1168	7	67	208	389
Wales	3	29	89	165	1	10	30	55
Yorkshire and Humberside	10	95	187	554	3	32	99	185
North-West	7	69	214	401	2	23	72	134
North-East	5	45	139	259	2	15	46	87
Northern Ireland	3	31	94	177	1	10	32	59
Scotland	14	134	416	778	5	45	139	260

The figures are rounded to the nearest thousand.

Printed image digitised by the University of Southampton Library Digitisation Unit

Results of research

13.38 The surface access infrastructure requirements outside the site of the airport itself have been dealt with in four parts:

(a) air passenger and air freight road requirements in the sub-region. (see volume VIII, part 2, section 1,* for the Ministry of Transport's report on this work).

(b) rail requirements for air passengers between the airport and London (see volume VIII, part 2, section 1 for the report by British Railways Board on this work),

(c) the siting of the London rail terminal (see appendix 2 to this chapter for a report on this work) which was carried out by the Research Team in consultation with officers of the Greater London Council, British Railways Board and London Transport),

(d) diversion of local roads which for part of their length cross the airport site. The estimated costs are included in this chapter.

The purpose of these studies was not to produce definitive designs for infrastructure, but to estimate the likely differences in cost of these four items between sites.

13.39 A problem in transport planning exists because the transport demands depend on the transport infrastructure and the transport infrastructure depends on the demand. Additionally, in this project, the transport demands depended on input data which were themselves the subject of other research proceeding concurrently with the surface access work.

13.40 To enable the infrastructure planning to proceed in time to meet the Commission's timetable, it was necessary to produce preliminary estimates of traffic at a time when work was only just beginning on many of the factors affecting the surface movement predictions. Best assumptions were made and a crude version of the traffic model run to produce preliminary estimates. Because of the uncertainty of these estimates, the road and rail planners were asked to study two situations for each mode of transport. For one the modal split was 75 per cent rail and 25 per cent road and for the other it was 35 per cent rail and 65 per cent road. Because of the problem of long-term forecasting of general regional traffic, population and future non-airport improvements the year 1990 was adopted as the planning horizon for surface access infrastructure costs. This is not to suggest that no further cost would be incurred beyond that date but any estimates of these would not be sufficiently reliable to warrant differentiating between sites.

13.41 Preliminary surface access air passengers' estimates were produced for 1981 and 1990. It was also clear that there would be a considerable further increase after 1990. (Surface access air passengers are defined as those terminal air passengers who make journeys to or from the airport by surface transport – it has been estimated that in 1981 such passengers will be 7 per cent less than total terminal air passengers and that in 1991 and in the year 2000 they will be 8 per cent and 7 per cent less respectively.) The preliminary estimate of total traffic at each of the third London aiport sites in 1981 was 9 million surface access air passengers and in 1990, 40 million surface access air passengers. The total surface access air passenger traffic now predicted as the best estimate for each of the third London airport sites is shown in table 13.3.

**CTLA Papers and Proceedings, volume VIII,* part 2, section 1 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.3

Total surface access air passengers at third London airport – best estimates (millions)

	1982	*1990*	*2000*
Cublington	12	54	122
Foulness	5	32	87.5
Nuthampstead	12	52	118
Thurleigh	12	54	122

13.42 The August daily flows for 1990 used in the preliminary estimates and in the current best estimates are given in table 13.4

Table 13.4

Estimates of modal splits in 1990: August daily flows

	Preliminary estimates					
	High modal split (i.e. 25% road and 75% rail)		*Low modal split* (i.e. 65% road and 35% rail)		*Best estimates*	
	*Road pcus**	*Rail air passen-gers*	*Road pcus**	*Rail air passen-gers*	*Road pcus**	*Rail air passen-gers*
Cublington	77,000	89,000	30,500	42,000	114,000	90,000
Foulness	78,000	90,000	30,000	39,000	88,000	83,000
Nuthampstead	78,000	90,000	29,600	42,000	94,000	100,000
Thurleigh	78,000	90,000	29,500	41,000	95,000	108,000

Note: *Road traffic is generally expressed in terms of "passenger car units" (pcus) Lorries, buses and coaches are counted as equivalent in rural areas to 3 pcus each. See Ministry of Transport's written evidence at Stage I: *Papers & Proceedings*, volume I, pages 288 and 290.

In the case of the best estimates the number of surface access air passengers moving in both directions on a busy August day at each site in 1990 was estimated by multiplying the annual number of surface access air passengers at each site by a factor of 0.0042 for inland sites and 0.0058 for Foulness.

The factors were derived in two steps:

(a) the ratio of total air transport movements in a peak hour of the peak season to total annual air transport movements was converted into a one-way passenger ratio using the assumption that 60% of all passengers in the busiest direction in the peak hour would be travelling in one direction (see chapter 3, paragraph 3.67). It was also assumed that the aircraft passenger load factor in the peak-hour would be 125 per cent of the average load-factor (see chapter 3, paragraph 3.69). The one-way peak to annual ratio for passengers was therefore estimated by multiplying the peak hour to annual ratio for air-transport movements by 0.6 x 1.25 = 0.75.

The peak hour to annual ratio for air transport movements are given in table 3.15 in chapter 3. These ratios have been interpolated since two-runway capacity at inland sites is estimated to be reached in 1991 and in 1998 at Foulness (see chapter 8).

Table 13.5 shows the ratios.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.5

Peak hour to annual ratios

	Air transport movements in 1990	*Passengers in one direction in 1990*
Inland sites	.00025	.00019
Foulness	.00035	.00026

(b) the peak hour to annual ratio for passengers in one direction was converted into a day to annual ratio for passengers in one direction assuming that 9 per cent of daily passengers travel in the peak hour. The two way daily flow has been assumed to be twice the one-way daily flow.

A road surface access air passenger to passenger car unit ratio of 0.9 has been derived from the basic parameters given in chapter 11. The predicted hourly variation of passengers within the August day has been assumed to remain the same as present day variations and is given in table 13.6

Table 13.6

Predicted hourly variation of surface access air passengers within an August day

Hours GMT	*% of daily arrivals at airport*	*% of daily departures from airport*
0000 – 0100	0.5	1.65
0100 – 0200	0.5	0.59
0200 – 0300	0.46	
0300 – 0400	0.79	
0400 – 0500	0.56	0.33
0500 – 0600	4.77	0.23
0600 – 0700	7.10	2.87
0700 – 0800	5.67	3.49
0800 – 0900	5.85	5.99
0900 – 1000	8.51	7.09
1000 – 1100	6.99	9.17
1100 – 1200	3.27	8.06
1200 – 1300	4.16	8.55
1300 – 1400	4.69	6.18
1400 – 1500	6.29	5.41
1500 – 1600	4.63	4.98
1600 – 1700	5.95	6.12
1700 – 1800	7.09	4.55
1800 – 1900	4.37	5.38
1900 – 2000	5.23	5.87
2000 – 2100	2.95	2.76
2100 – 2200	4.38	4.75
2200 – 2300	2.75	3.70
2300 – 2400	2.48	2.23
Average daily flow	100%	100%

Printed image digitised by the University of Southampton Library Digitisation Unit

13.43 In the case of the inland sites the best estimates are higher than the preliminary estimates and suggest that the road and rail infrastructure capacity planned to carry traffic up to 1990 may be reached earlier. They provide, however, a suitable basis for evaluating site differences.

Results of the passenger traffic model calibration

13.44 Three separate sets of air passenger survey data have been used to investigate the calibration of the traffic model. These are the 1966 survey for the overall modal split at Heathrow and Gatwick (see chapter 11, paragraph 11.21) the 1968 survey for the United Kingdom origins and destinations of air passengers (see chapter 11) and the Commission's 1969 Air Passenger Survey (see chapter 4, appendix 1) for the modal split by United Kingdom zone of origins/destinations and by airport. The modal split by airports is given in tables 13.7 and 13.8.

Table 13.7

Modal split by airport trip purpose:
Proportion using private transport, British and non-British (%)

		1966 survey			*1969*
Purpose	*Airport*	*Peak Weekday*	*Off-peak Weekday*	*Mean*	*Survey*
Business	Heathrow	56	64	60	58
	Gatwick	37	19	28	48
Non-business	Heathrow	44	42	43	50
	Gatwick	26	25	26	42

Private includes car and taxi modes.
Public includes all other modes.

Table 13.8

Proportion using private transport by country of residence (from 1969 survey) (%)

Purpose	*Airport*	*British*	*Non-British*
Business	Heathrow	63	53
	Gatwick	61	35
Non-business	Heathrow	57	43
	Gatwick	52	32

13.45 In the 1969 survey the proportion of air passengers using private transport was was generally higher than in the 1966 survey. In the case of Gatwick this difference, which was quite pronounced, can be attributed to the use of different definitions in the two surveys. In the 1966 survey a trip was classed as public if any part of the journey used public transport whereas the 1969 survey asked the mode for the main part of the journey. It will be seen that a smaller percentage use private transport for Gatwick and this difference is considerable in the case of non-British air passengers. This reflects the fact that non-British air passengers are not as likely to have private cars available and that the expense of a taxi is more of a deterrent for a journey to Gatwick than for a journey to Heathrow.

Printed image digitised by the University of Southampton Library Digitisation Unit

13.46 The method adopted for calibrating the model was to use a trial and error process to produce the observed modal splits at Heathrow and Gatwick.

13.47 It will be appreciated that there is no unique solution to this method of calibration but experience suggests certain constraints. Observed values of the power n (using the notation for parameters given in appendix I) for trips of inter-urban distance are usually between 1 and 3 and this constraint was applied. It was also assumed that the ratio of λ_1/λ_2 should be similar for non-business and business trips. (The subscripts 1 and 2 for λ refer to private and public mode respectively). An attempt was made to reproduce the means of the proportions produced in the 1969 and 1966 surveys. The best fit that could be achieved in the time available is shown in table 13.9.

Table 13.9

Calibration results

	Value of λ_1	*Value of* λ_2	*Value of* n	*Resulting % private* Heathrow	Gatwick
Non-business	0.05	0.02	1.0	49	32.5
Business	0.01	0.004	2.0	58.5	33.5

The resulting allocation of trips from zones to airports was examined and found satisfactory but the limited choice of airports (only Heathrow and Gatwick, with the former dominant) meant that the allocation of trips by the model was not very sensitive to the estimates of the model parameters.

13.48 The 1969 data on modal split by zones was analysed by multiple regression analysis. Using the equation in paragraph 2 of appendix 1 and the subscripts 1 and 2 to denote mode 1 (private) and mode 2 (public), then for the trips from any zone:

$$\frac{T_1}{T_2} = \frac{e^{-\lambda_1 c_1} . c_1^{-n_1}}{e^{-\lambda_2 c_2} . c_2^{-n_2}}$$

and

$$\log \left(\frac{T_1}{T_2}\right) = -\lambda_1 c_1 - n_1 \log c_1 + \lambda_2 c_2 + n_2 \log c_2$$

If the dependent variable is taken as the expression on the left the parameters will appear as the regression co-efficients of the variables c_1, c_2, $\log c_1$ and $\log c_2$.

13.49 To determine whether the model could be simplified the two special cases λ_1 and $\lambda_2 = 0$ and n_1 and $n_2 = 0$ were used. The comparison with the general model was statistically inconclusive.

The multiple correlation coefficients obtained varied from 0.49 to 0.61 but because of the high cross-correlation between the explanatory variables these coefficients were of doubtful significance.

Accessibility and total annual surface access air passengers

13.50 The index of accessibility and total annual surface access air passengers generated by zones with a particular system of airport, for the years

Printed image digitised by the University of Southampton Library Digitisation Unit

1981, 1991, 2000 are given in table 13.10. It should be noted that the accessibility index is simply a measure of the geographical location of the populations in the zones in relation to all the airports in the system analysed. It has no regard to the size of populations in the zones in so far as this leads to traffic congestion. It does not in itself indicate the propensity of a site to cause trips to be generated.

Table 13.10

Accessibility index and annual surface access air passengers

1. Total accessibility index for the airport system	*Cublington*	*Foulness*	*Nut-hampstead*	*Thurleigh*
1981	43613	42051	42903	42646
1991	44298	34767	40423	38697
2000	40710	31737	36899	35163
2. Total British non-business passengers (millions)				
1981	27.9	27.6	27.8	27.8
1991	82.0	75.6	79.3	81.8
2000	132.7	121.8	127.8	131.5
3. Total British business passengers (millions)				
1981	9.5	9.5	9.5	9.5
1991	24.0	24.0	24.0	24.0
2000	31.1	31.1	31.1	31.1
4. Total non-British non-business passengers (millions)				
1981	15.8	15.8	15.8	15.8
1991	28.2	28.2	28.2	28.2
2000	39.5	39.5	39.5	39.5
5. Total non-British business passengers (millions)				
1981	5.0	5.0	5.0	5.0
1991	7.1	7.1	7.1	7.1
2000	8.0	8.0	8.0	8.0
6. Total passengers (millions)				
1981	58.2	57.9	58.1	58.1
1991	141.3	134.9	138.6	141.1
2000	211.3	200.4	206.4	210.1

13.51 There are three factors affecting the accessibility index in future years. First, improvements in the surface transport networks will tend to increase the accessibility index. Secondly, the reduction in importance of the non-time component of travel costs will tend to increase the accessibility index.

Printed image digitised by the University of Southampton Library Digitisation Unit

Thirdly, as capacity is reached at Heathrow and Gatwick and as the number of passengers using the third London airport increases and a larger proportion of the total air services are located there, the greater distance from London compared with the existing south east airports will tend, ceteris paribus, to reduce the accessibility index (i.e. people will be unable to use the more accessible airport).

13.52 If the accessibility index is disregarded the number of British non-business surface access air passengers forecast for all sites in 1981 is 26.3 million; in 1991 the figure is 78.9 million and in the year 2000 it is 129.2 million. The overall effect of these combined time trends is therefore quite small. For 1981 the effect of the accessibility index is to increase slightly the trips generated as a result of all sites. For 1991 the effect is to increase slightly the number of trips generated as a result of each of the inland sites. For 2000 it leads to a slight increase in trips generated as a result of the Cublington and Thurleigh sites. In the last two key years the Foulness site causes a significantly lower number of trips to be generated.

Allocation of trips between airports

13.53 An examination of the traffic forecasts for 1981 given in table 13.10 and comparison with the capacities of Heathrow, Gatwick and Luton airports indicated that it would serve no useful purpose to carry out the traffic model procedures for this year because there was virtually no surplus traffic to allocate. The figures are given in table 13.11 below.

Table 13.11

1981 traffic and capacity forecasts (surface access air passengers only) (million)

Capacities		*Total passenger demand*
Heathrow	39.3	
Gatwick	11.9	= 57
Luton	6.4	
TOTAL	57.6	

13.54 The allocations of the total number of surface access air passengers between the airports in the system for 1991 and 2000 resulting from the gravity model are given by third London airport site in tables 13.12 and 13.13 with the corresponding modal split and purpose split.

Table 13.12

Annual surface access air passengers (millions) at each airport, by third London airport site in 1991

	Cublington	*Foulness*	*Nut-hampstead*	*Thurleigh*
Total surface access air passengers (all airports in the system)	141.3	134.9	138.6	141.1
Heathrow				
Business	17.6	18.1	17.6	18.2
Non-business	44.1	43.6	44.1	43.5
Total	61.7	61.7	61.7	61.7

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.12 (contd)

		Cublington	*Foulness*	*Nut-hampstead*	*Thurleigh*
Gatwick					
Business		3.4	3.5	3.5	3.7
Non-business		15.3	15.2	15.2	15.0
Total		18.7	18.7	18.7	18.7
Luton					
Business			1.9		
Non-business		Nil	7.7	Nil	Nil
Total			9.6		
Manchester					
Business		0.1	1.1	0.1	0.1
Non-business		0.8	7.8	0.8	0.5
Total		0.9	8.9	0.9	0.6
Third London airport					
Business	road	5.4	2.8	4.9	4.1
	rail	4.4	3.7	5.0	5.1
Non-business	road	29.0	16.0	23.4	24.4
	rail	21.2	13.5	24.0	26.5
Total		60.0	36.0	57.3	60.1
Modal split at third London airport (% by rail)		43%	47%	51%	53%
Purpose split at third London airport (% business)		16.3%	18.0%	17.3%	15.3%

Table 13.13

Annual surface access air passengers (millions) at each airport by third London airport site in 2000

	Cublington	*Foulness*	*Nut-hampstead*	*Thurleigh*
Total surface access air passengers (all airports in the system)	211.3	200.4	206.4	210.1
Heathrow				
Business	17.6	18.1	17.1	18.2
Non-business	45.6	45.1	46.1	45.0
Total	63.2	63.2	63.2	63.2
Gatwick				
Business	4.3	4.3	4.1	4.4
Non-business	20.2	20.2	20.4	20.1
Total	24.5	24.5	24.5	24.5

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.13 (Contd)

		Cublington	*Foulness*	*Nut-hampstead*	*Thurleigh*
Luton					
Business		Nil	2.3	Nil	Nil
Non-business			10.2		
Total			12.5		
Manchester					
Business		0.2	1.2	0.1	0.1
Non-business		1.4	11.5	0.6	0.4
Total		1.6	12.7	0.7	0.5
Third London airport					
Business	road	9.3	5.6	8.6	7.6
	rail	8.0	7.7	9.1	8.8
Non-business	road	58.5	37.7	48.6	50.6
	rail	46.6	36.5	51.5	54.9
Total		122.2	87.5	118.0	121.9
Modal split at third London airport (% by rail)		45%	50%	52%	52%
Purpose split at third London airport (% business)		13.9%	15.2%	15.0%	13.5%

Evaluation of surface access air-passenger user benefits

13.55 A summary of the surface access air passenger user benefits for inland sites with Foulness taken as the base site is given in table 13.14 below. As there was no surplus traffic to allocate to any of the sites in 1981, the value of the benefits for that year is zero. Values for other years have been interpolated at a linear rate of increase. Tables 13.15 and 13.20 (located at the other end of the chapter) give the details for the years 1991 and 2000 for each of the inland sites compared with Foulness. In each table the benefits and dis-benefits are broken down by journey purpose and by airport. In addition three component elements of the net benefit are given. These are:

(a) $\Sigma T_1 R_1$. . . the sum of the travel resource dis-benefits arising with the Foulness site (denoted by the subscript$_1$) where T is the number of trips and R is the resource costs.

(b) $\Sigma T_2 R_2$. . . the sum of the travel resource dis-benefits for the appropriate inland site (denoted by the subscript$_2$) where T is the number of trips and R is the resource costs.

(c) $\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$ . . . the remaining element in the total net benefit, where T is the number of trips and C are the behavioural costs.

The net benefit is (a) + (c) – (b).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.14

Summary of surface access net benefits and total present value of surface access net benefits for inland sites (Foulness as base site)

£m

	Cublington			Nuthampstead			Thurleigh		
	Business	Non-business	Total	Business	Non-business	Total	Business	Non-business	Total
Undiscounted									
1981	0	0	0	0	0	0	0	0	0
1991	9.2	27.6	36.8	11.7	30.1	41.8	7.9	30.9	38.8
2000	15.9	49.0	65.0	19.6	52.8	72.0	10.1	49.7	59.8
Discounted									
1981	0	0	0	0	0	0	0	0	0
1991	2.0	6.0	8.0	2.5	6.6	9.1	1.7	6.7	8.5
2000	1.5	4.5	6.0	1.8	4.9	6.7	0.9	4.6	5.5
Total present value of net benefits	38.0	115.6	154	47.7	125.4	173	28.6	123.5	152

13.56 When considering the differences between $T_1 R_1$ and $T_2 R_2$ in tables 13.15 to 13.20, it should be noted that the $T_2 R_2$ component reflects the cost of more trips than $T_1 R_1$ and, in the case of Cublington, more trips by road (which is the more expensive mode in resource terms). In the case of Thurleigh, $T_2 R_2$ included extra total trips and more trips by rail than $T_1 R_1$.

13.57 In order to assess the effect of excluding those additional British non-business trips generated as a result of any site an additional evaluation was carried out (using the Thurleigh site as the example) on the basis using the number of trips which the Foulness site causes to be generated in the year 2000. The effect was to reduce the net benefits to Thurleigh from £68 million to £49 million, a reduction of 28 per cent in net benefits.

13.58 In order to show the extent to which the inland sites cater for traffic inside and outside the south east region by comparison with Foulness the total net benefits accruing in 1991 were estimated.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.15

Year 1991 – surface access user benefits – Cublington £m

Part I – by airport

	Heath-row	Gatwick	Man-chester	Third London airport	Luton*	Total
$\Sigma T_1 R_1$	86.0	31.4	30.5	91.4	18.0	257
$\Sigma T_2 R_2$	87.0	32.4	2.8	115.1	22.1	259
$\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$	3.1	2.0	35.7	63.6	5.8	39
Net benefits to Cublington	2.3	0.9	7.8	39.7	1.7	37

Part II – by journey purpose

	Non-business	Business	Total
$\Sigma T_1 R_1$	123.8	133.6	257
$\Sigma T_2 R_2$	128.4	131.1	259
$\frac{1}{2}\Sigma (C_1 + C_2)(T_2 - T_1)$	32.1	6.7	39
Net benefits to Cublington	27.6	9.2	37

* Services at Luton are assumed to have transferred to Cublington.

Table 13.16

1991 – surface access user benefits – Nuthampstead £m

Part I – by airport

	Heath-row	Gatwick	Man-chester	Third London airport	Luton*	Total
$\Sigma T_1 R_1$	86.0	31.4	30.5	91.4	18.0	257.3
$\Sigma T_2 R_2$	89.2	32.9	2.7	103.6	20.7	249.1
$\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$	6.7	3.6	–35.9	54.1	5.6	34.1
Net benefits to Nuthampstead	3.7	1.5	– 8.1	41.8	2.9	41.8

Part II – by journey purpose

	Non-business	Business	Total
$\Sigma T_1 R_1$	123.8	133.6	257.3
$\Sigma T_2 R_2$	121.5	127.9	249.4
$\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$	27.5	6.0	33.5
Net benefits to Nuthampstead	30.1	11.7	41.8

* Services at Luton are assumed to have transferred to Nuthampstead.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.17

1991 – surface access user benefits – Thurleigh £m

Part I – by airport

	Heath-row	Gatwick	Man-chester	Third London airport	Luton*	Total
$\Sigma T_1 R_1$	86.0	31.4	30.5	91.4	18.0	257.3
$\Sigma T_2 R_2$	82.8	30.9	1.8	116.2	22.3	254.0
$\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$	−5.3	−1.0	−37.2	71.6	7.2	35.3
Net benefits to Thurleigh	−1.9	−0.6	− 8.3	46.8	3.0	38.9

Part II – by journey purpose

	Non-business	Business	Total
$\Sigma T_1 R_1$	123.8	133.6	257.3
$\Sigma T_2 R_2$	124.8	129.1	253.9
$\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$	31.9	3.5	35.4
Net benefits to Thurleigh	30.9	7.9	38.8

* Services at Luton are assumed to have transferred to Thurleigh

Table 13.18

Year 2000 – surface access user benefits – Cublington £m

Part I – by airport

	Heath-row	Gatwick	Man-chester	Third London airport	Luton*	Total
$\Sigma T_1 R_1$	87.8	42.0	44.2	225.9	24.4	425
$\Sigma T_2 R_2$	90.3	41.8	4.3	252.1	28.8	417
$\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$	4.8	−0.4	−51.4	99.2	5.4	58
Net benefits to Cublington	2.6	0.1	−11.4	73.1	1.1	65

Part II – by journey purpose

	Non-business	Business	Total
$\Sigma T_1 R_1$	234.1	190.7	425
$\Sigma T_2 R_2$	236.0	181.4	417
$\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$	51.0	6.6	58
Net benefits to Cublington	49.0	15.9	65

* Services at Luton are assumed to have transferred to Cublington.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.19

Year 2000 – surface access user benefits – Nuthampstead (£m)

Part I – by airport

	Heath-row	Gatwick	Man-chester	Third London airport	Luton*	Total
$\Sigma T_1 R_1$	87.8	42.0	44.2	225.9	24.4	425
$\Sigma T_2 R_2$	92.5	43.4	2.3	235.4	28.0	402
$\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$	8.9	2.8	54.1	86.4	5.7	50
Net benefits	4.3	1.4	–12.2	77.0	1.4	72

Part II – by journey purpose

	Non-business	Business	Total
$\Sigma T_1 R_1$	234.0	190.7	425
$\Sigma T_2 R_2$	224.1	177.5	402
$\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$	43.0	6.5	49
Net benefits	52.8	19.6	72

* Services at Luton are assumed to have transferred to Nuthampstead.

Table 13.20

Year 2000 – surface access user benefits – Thurleigh (£m)

Part I – by airport

	Heath-row	Gatwick	Man-chester	Third London airport	Luton*	Total
$\Sigma T_1 R_1$	87.8	42.0	44.2	225.9	24.4	425
$\Sigma T_2 R_2$	86.2	40.5	1.6	261.6	29.9	420
$\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$	4.8	–0.4	–51.4	99.2	5.4	55
Net benefits	–2.1	–1.9	–12.4	74.6	1.4	60

Part II – by journey purpose

	Non-business	Business	Total
$\Sigma T_1 R_1$	234.1	190.7	425
$\Sigma T_2 R_2$	236.4	183.3	420
$\frac{1}{2}\Sigma(C_1 + C_2)(T_2 - T_1)$	52.1	2.7	5
Net benefits	49.7	10.1	60

* Services at Luton are assumed to have transferred to Thurleigh

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.21 shows the result.

Table 13.21

Total discounted present value of net benefits by region £m

	Net benefits from zones within SE region	Net benefits from zones outside SE region	Total net benefits
Cublington	42	112	154
Nuthampstead	63	110	173
Thurleigh	−2	154	152

Road infrastructure costs

13.59 The Ministry of Transport study (volume VIII, part 2) gives infrastructure costs based on an airport coming into use in 1975. The figures have been adjusted as shown in table 13.22 below to take account of the forecast that no significant flows of traffic will occur before 1982.

Table 13.22

Road infrastructure costs – discounted to 1975 (£m)

	Ministry of Transport case II high modal split	Adjusted estimates
Cublington	9.4	7.4
Foulness	14.7	7.4
Nuthampstead	9.7	7.5
Thurleigh	9.1	2.7

Local road diversion capital costs

13.60 The Ministry of Transport have advised that the diversion of local roads affected by the airport site would not create any significant capital costs at the inland sites. The costs have therefore been disregarded.

Rail infrastructure costs

13.61 To allow for the forecast of 1982 for significant traffic flows the infrastructure costs quoted in the study by British Rail have had to be adjusted. The adjustment has been made by assuming that the costs quoted should be discounted at 10 per cent for a period of 7 years (1975-1982). This results in the rail infrastructure costs given in table 13.23.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.23

Rail infrastructure costs – discounted (£m)

Site	Route	British Rail estimate	Adjusted estimate discounted
Cublington	Kings Cross/St Pancras Luton – Cublington (route 3)*	8.58	4.4
Foulness	Kings Cross/St Pancras Haringey – South Tottenham – Foulness (route 8)	31.18	16.0
Nuthampstead	Kings Cross/St Pancras Haringey – South Tottenham – Broxbourne – Nuthampsteac (route 7)	15.61	8.0
Thurleigh	Kings Cross/St Pancras Bedford – Thurleigh (route 4)	7.4	3.8
	Kings Cross/St Pancras – Welwyn – Thurleigh (route 5)		

Note * Although volume VIII part 2 section 1 stated that a modified version of route 2 (Kings Cross/St Pancras – Leighton Buzzard – Cublington) had been used in the study, subsequent investigation showed that the one minute time saving which this offered over route 3 was not worth the additional costs of providing the spur into Kings Cross from the Euston main line. If new exclusive rail links to the three inland sites were provided for an airport opening in 1982 similar capital costs for all sites would be incurred but the consequent improvement in journey times for the inland sites would maintain a differential not markedly different from the costs given in table 13.23.

Air freight user costs

13.62 Air freight costs have been estimated on the basis explained in paragraph 13.26. The results shown in table 13.24 below contain no generated traffic and it has been assumed that, if the third London airport were to be sited at Foulness, air freight with a midlands origin/destination would use Luton airport. The resulting user costs of Luton have, however, been shown against Foulness.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 13.24

Air freight user costs (£ million at 1968 prices)

Site	1991	2000
Cublington	3.1	5.9
Foulness	5.4	10.1
Nuthampstead	3.9	7.5
Thurleigh	3.2	6.1

13.63 To produce total freight user costs for the four third London airport sites for the period of evaluation, linear interpolations were made between 1982 and 1991 and 2000 and a linear extrapolation beyond 2000 to 2006. The costs in all years were discounted to 1975 and summed for each third London airport site. The result is given in table 13.25.

Table 13.25

Air freight user costs – discounted (£m)

Site	Costs
Cublington	13.4
Foulness	23.1
Nuthampstead	17.0
Thurleigh	13.9

13.64 In order to identify the size of the surface access net benefits accruing to non-British non-business passengers a separate analysis of the evaluation for the year 2000 was made. The result is given in table 13.26. The figures show the comparison with the "base-site" Foulness.

Table 13.26

Non-British non-business passengers net benefits for the year 2000 (£m)

Site	Net benefits
Cublington	5.8
Nuthampstead	7.6
Thurleigh	3.0

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix 1: traffic model

1 For forecasting trips between zones and airports by mode of travel

Let T_{ij} = the trips between zone i and airport j,

O_i = the total number of trips generated in zone i,

D_j = the total number of trips attracted to airport j,

C_{ijp} = the behavioural cost of travel between zone i and airport j using public transport,

C_{ijr} = the behavioural cost of travel between zone i and airport j using private transport,

$n_p\ n_r\ \lambda_p\ \lambda_r$ = parameters obtained by calibration:

Y_j = capacity of airport j,

and let

$$F_{ij} = \exp(-\lambda_p C_{ijp}).\ C_{ijp}^{-n_p} + \exp(-\lambda_r C_{ijr}).\ C_{ijr}^{-n_r}$$

then

$$T_{ij} = \frac{O_i D_j F_{ij}}{\Sigma\ (D_j F_{ij})} \qquad (1)$$

subject to the following constraints:

generally $\sum_i T_{ij} = D_j$ (2)

except that where, in any iteration $\sum_i T_{ij} \geqslant Y_j$

then $D_j = Y_j$; and

$$\begin{pmatrix} C_{ijp} + h_j \\ C_{ijr} + h_j \end{pmatrix} \text{ is substituted for } \begin{pmatrix} C_{ijp} \\ C_{ijr} \end{pmatrix}$$

where h_j has a value determined iteratively, which ensures that

$$\sum_i T_{ij} = Y_j \qquad (3)$$

The formula (1) above is applied separately to business and leisure trips when:

T_{ij} = trips for business or leisure respectively

O_i = trips generated for business or leisure

D_j = total attraction for both purposes.

C_{ijr}, C_{ijp} are the costs appropriate for business or leisure.

The constraints (2) and (3) are applied to business and leisure trips combined.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. The modal split is given by

$$T_{ijm} = \frac{T_{ij} \cdot \exp(-\lambda_m C_{ijm}) \cdot C_{ijm}^{-n_m}}{F_{ij}}$$

where the subscript m refers to the mode.

3. In the calibration of the model using the observed distribution and modal split to obtain values of λp, λr, n_p, n_r the equation (1) is applied to each purpose separately using constraint (3) where Y_j represents the observed attractions at airport j for the particular trip purpose.

4. The values of the travel cost matrices for each mode and purpose for a particular year are scaled as follows:

$$C_y = C_a \times \frac{tp}{ta}$$

where t_p = the composite value of time used in calibration for the particular trip purpose and mode of travel,

t_a = the corresponding value in the forecasting year,

C_y = the behavioural travel cost used for prediction,

C_a = the behavioural travel cost in the year concerned.

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix 2 In-town Terminal

1 This report details the work that has been carried out in assessing the possible sites for the in-town terminal in central London.

2 *Number of passengers*

Forty million passengers a year are expected to use the third London airport in 1990. Assuming two possible modal splits of 75 per cent and 35 per cent of passengers using the rail link the average August daily flow of people using the in-town terminal will be between 48,000 and 108,000 a day whichever of the four short-listed sites is chosen. During the morning peak hour the terminal flow will be between 4,500 and 10,000 people (annex A).

3 *Site area required*

The figures developed for the Victoria Transportation Centre Study were used as a guide. The requirement is for a 6½ acre site measuring about 550 ft by 500 ft. A further acre will be needed for a ramp access from the general road system - the terminal layout being three floors plus the rail platform level (annex B).

4 *Development beyond 1990*

By the year 2000 the predicted flow through the terminal increases by a factor of 3.6 on 1990. However, unknown factors, such as the results of the study by the South-East Joint Planning Team and the technological advance of vertical take-off (VTOL) aircraft make detailed costing beyond a twenty-year horizon meaningless. Calculations of user costs have therefore been limited to include 1990 but not beyond.

5 A study of the rail links to each of the airport sites suggested that for all four sites the most convenient location for the terminal would be King's Cross/St Pancras. In the case of Cublington a less desirable route for the rail link would run to Marylebone.

6 It seemed possible, however, that an alternative location for the terminal would have sufficient advantages over King's Cross/St Pancras to outweigh the disadvantages of diverting the rail link. Therefore, a qualitative assessment was made of some 25 locations (see annex C). This did not show any site with greater merit than King's Cross/St Pancras. Paddington and Euston appeared as possibly better than Marylebone but because of the considerable extra costs of the rail link it was decided not to examine these in further detail.

7 However, it was decided to examine two alternatives to King's Cross/St Pancras in more detail:

Marylebone - because the relative disadvantages for the rail link were less,

Liverpool Street/Fenchurch Street - because there seemed a possibility that for a link to Foulness a terminal more directly in line with the airport might show significant time savings for passengers.

Printed image digitised by the University of Southampton Library Digitisation Unit

Comparison with Marylebone (for a more detailed comparison see annex D)

8 *Rail link*

King's Cross/St Pancras is the first choice for all four airport sites. Marylebone is the terminal for the third most suitable rail route from Cublington, King's Cross being the terminal for the first and second choices.

King's Cross/St Pancras preferred.

9 *Site availability and cost*

It is difficult to assess the cost of the Marylebone and King's Cross sites reliably but under the most favourable conditions for development, Marylebone could be valued at about £23m and King's Cross at £20m [4]. King's Cross/St Pancras is railway land and easily available. At Marylebone approximately half the site is non-railway and would not be so easily available.

King's Cross/St Pancras preferred.

10 *Underground access*

King's Cross/St Pancras is served by five underground lines which can accommodate the highest flows up to 1990 with minor improvements to the service. Marylebone is served by one branch of one underground line. This would be improved with the construction of the Fleet line. The flows could then be accommodated but distribution facilities would remain poor compared with King's Cross.

King's Cross/St Pancras preferred.

11 *Road access*

The general location of King's Cross/St Pancras is preferable to Marylebone. The user costs, congestion costs, and costs of improving local capacity are closely balanced. However, the user and congestion costs are likely to be over-estimated for King's Cross.

King's Cross/St. Pancras marginally preferred

Planning considerations

12 King's Cross/St Pancras is better in terms of land supply, surrounding development and likely general changes in the area. Marylebone is surrounded by newly, or about to be, developed land, a large part by housing. The area to the south and east is designated in the Greater London Development Plan as an area of special character. The environmental effects of building the terminal at Marylebone would, therefore, be likely to present serious difficulties.

King's Cross/St Pancras preferred.

13 *Conclusion*

The overall balance, therefore, is strongly in favour of King's Cross/St Pancras.

Printed image digitised by the University of Southampton Library Digitisation Unit

Comparison with Fenchurch Street and Liverpool Street

14 The advantage of these sites is the saving in passenger time. This would, however, be outweighed by the extra cost of the rail link. In addition land cost, secondary road access costs, road congestion costs and underground user costs are all less satisfactory than for King's Cross/St Pancras. Thus for Foulness, King's Cross is a more suitable location than either of the city terminals (annex E).

Suburban stop

15 Consideration was given to the desirability of a suburban stop on the link. The study concluded that it was unlikely that there would be a large enough demand to warrant a suburban stop before 1990. Nor would its effect on the total costs of the link and terminal be significant enough to affect the choice of site (annex F).

Conclusion

16 Whichever of the four short-listed sites is chosen for the airport, King's Cross/St Pancras is the most suitable site for the in-town air terminal.

Annex A: demand for rail transport - 1990 (August daily flows)

Site	*% of total passengers travelling by rail*	
	35%	*75%*
Nuthampstead	42,000	90,000
Foulness	41,000	90,000
Cublington	39,000	89,000
Thurleigh	42,000	90,000
Average flow used	40,000	90,000

20 per cent should be added to these figures - 10 per cent for accompanying passengers on the rail link and 10 per cent for accompanying passengers at the terminals.

The two modal splits for the in-town terminal are:

	1	2
Cars	10%	10%
Taxis	50%	30%
Underground	30%	50%
Bus	5%	5%
British Rail	3%	3%
Walk	2%	2%

Printed image digitised by the University of Southampton Library Digitisation Unit

Examples of two-way flow from in-town terminals:

Hour	*% of daily flow*	*Two-way flow**	
		Low estimate	*High estimate*
0800-0900	5.5	2,675	5,880
0900-1000	9.2	4,590	10,070
1700-1800	6.8	3,325	7,270

*flows derived by adding 20 per cent to expected passenger flows on rail link.

Annex B: site area required for air terminal

In this study the assumption is made that check in facilities for baggage are required at the air terminal. The broad figures developed in the Victoria transportation centre study[1] are used as a guide. The design of that particular centre was obviously somewhat constrained by the site layout and the need to accommodate a Channel tunnel terminal. However, with some adjustment to the overall figures it is possible to get some indication of air terminal size - assuming it to be linked to the general concourse for Underground and bus access.

The Victoria project was designed for two stage construction of the following sizes:

(i) Passenger flow 5,000 an hour, non-directional. Area 550 ft by 310 ft on three floors in addition to rail platform level, the longer dimension being along the track. The size includes short-term car and taxi parking,

(ii) Passenger flow 10,000 an hour, non-directional. Area 550 ft by 500 ft on three floors in addition to rail platform level. The size includes short-term car and taxi parking.

In addition it is probably necessary to allow up to 100 ft along one side for ramp access from the general road system.

It would probably be better to work on the basis of the second stage provision since the first stage was constrained by the need for compatibility with the later extension. The area of land required is approximately 6½ acres. Some variation in the shape is acceptable but could only be more drastically varied if the track layout was dispersed laterally or trains of exceptional length were involved.

The height of the building was 85 ft above rail.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Annex C: twenty-five possible sites

Location	*Underground services (3)*		*Bus service 1969*	*Access to main line railway stations*	*Road access to central London*	*Motorway box access standard*	*Site availability 1975*	*Summary suitability of site 1975*	*British Rail access for link*
	Service	*Capacity*							
Baker Street station	G	F	FG	F	G	G	F	F	P
Cannon Street station	G	G	F	FG	F	G	F	F	B
Charing Cross	E	G	G	G	G	P	G	G	B
Clapham Junction	B	B	F	FG	P	P	G	B	B
Edgware Road station (Met)	P	P	F	F	F	G	G	P	B
Euston	E	G	G	G	G	G	FG	G	B
Fenchurch Street	FG	FG	P	P	P	P	G	P	B
Gloucester Road station	F	F	P	FG	G	F	G	F	B
Hammersmith Broadway	G	FG	G	P	FG	G	G	F	E
Hyde Park	F	F	G	P	G	F	B	P	F
King's Cross	E	G	G	G	G	G	E	E	E
Liverpool Street station	F	P	G	FG	G	P	G	P	B
London Bridge station	P	P	G	FG	P	P	E	P	P
Ludgate Circus	G	G	F	F	FG	G	P	F	B
Marylebone	F	F	F	P	G	F	E	F	E
Moorgate	F	F	G	F	F	P	E	F	P
Nine Elms	P	FG	F	F	G	P	E	B	B
Notting Hill Gate	F	F	F	F	F	G	G	F	B
Oxford Circus	E	F	G	E	G	P	P	P	B
Paddington	FG	FG	F	F	F	G(2)	E	F	F
St Katharine's Dock	B	B	P	B	F	P	E	P	B
Shepherd's Bush	FG(1)	F	G	P	G	G	E	F	B
South Kensington	F	F	F	F	G	F	P	F	B
Victoria main line station	G	G	G	G	G	F	E	G	B
Waterloo	G	F	G	FG	G	P	E	F	B

(a) E = excellent
G = good
FG = fairly good
F = fair
P = poor
B = bad

(b) figures in brackets assume:
(1) extension of District services from Olympia to Uxbridge Road
(2) Western Avenue extension
(3) Fleet line construction

Annex D: detailed comparison of sites at King's Cross and Marylebone

1 The alternative sites were considered in terms of:

(i) site availability and cost,

(ii) Underground access,

(iii) road access,

and these items were set against a general planning background. Estimated modal splits for rail link and then for central area dispersion are shown in annex A.

Site availability and cost

2 The need is to provide for an area of 6.5 acres, that is a rectangle of approximately 500 ft x 550 ft, if no ancillary and associated uses, e.g. hotel, offices or ancillary uses, are to be incorporated in the development. This maximum size also assumes no provision is made for future expansion beyond 1990 if the volume of passenger throughput increases. Costs are difficult to estimate. Those given below assume the most favourable development conditions.

King's Cross/St Pancras

3 It would be technically feasible to build an air terminal at King's Cross. A decision will be necessary on proposals concerning Great Northern electrification. If this scheme is approved all inner suburban services now terminating at King's Cross would be diverted at Finsbury Park to run via the 'Northern City lines' to terminate at the present London Transport station at Moorgate. The withdrawal of these trains from King's Cross could possibly release a considerable amount of land on the existing suburban station which could be used for air link services. However, it must be emphasised that the whole of St Pancras station, and the facade and York Way side of King's Cross station are listed buildings. This could create problems in the siting of the terminal, especially if St Pancras were to be preferred. The cost of the site is valued at £20m. [4]

Marylebone

4 Although the route to this site is the third choice of British Rail (routes 1 and 2 run to King's Cross), it is felt that the probability of choosing this location is sufficient to report the findings of the in-town research carried out so far.

5 It would be possible to deck over the station to provide terminal facilities for the air link services. Marylebone serves suburban routes only and would need considerable renovation. Platform accommodation could readily be made available, assuming the existing High Wycombe service is diverted to Paddington. Figure no 6 shows the area required. The cost is estimated at £23m of which about £10m would be British Rail owned land.[4]

Underground access

6 Details of the volumes and capacities for the Underground are in annex G. The main points for the two stations are as follows.

Printed image digitised by the University of Southampton Library Digitisation Unit

SITE PLAN AT MARYLEBONE

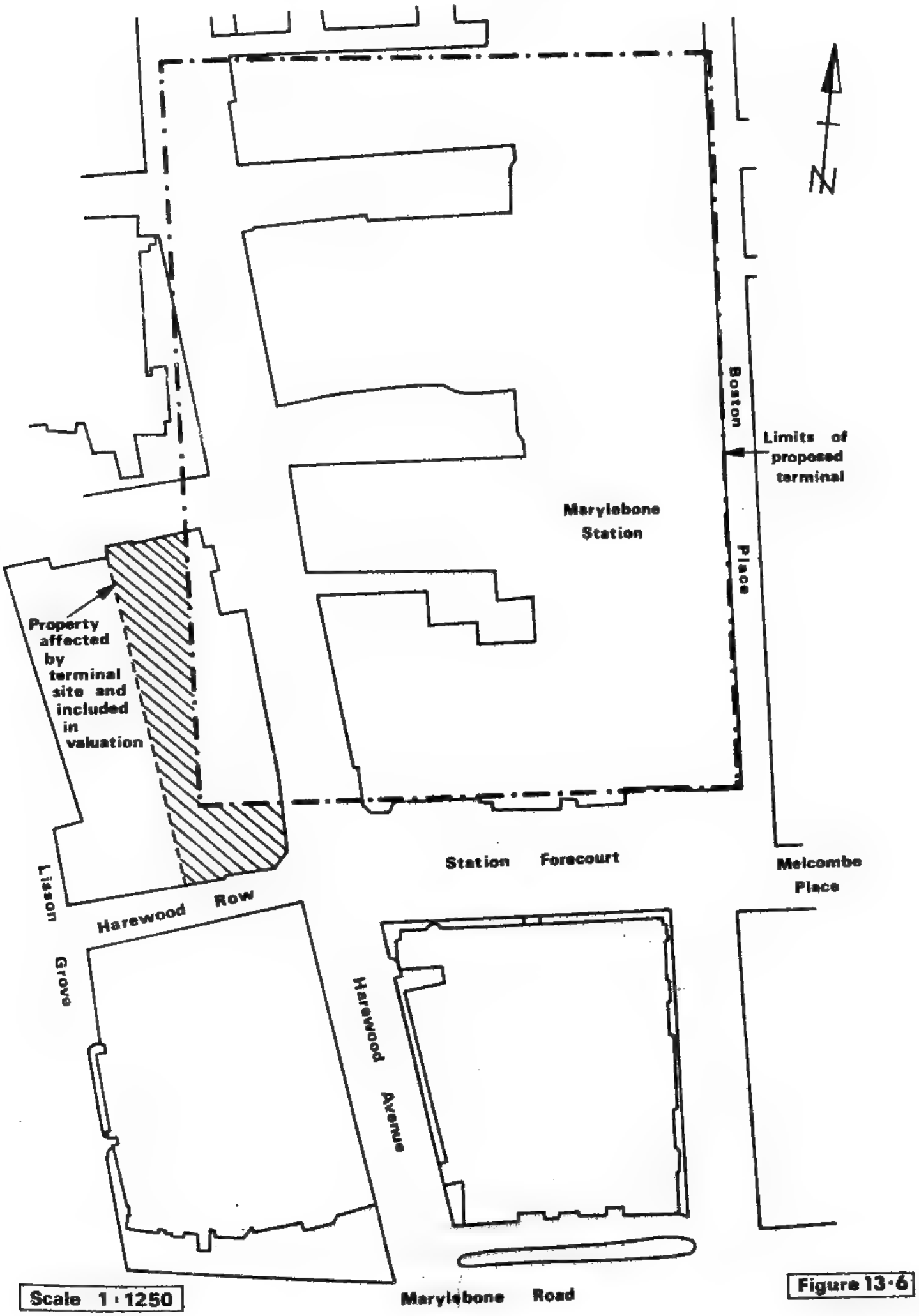


Figure 13·6

Printed image digitised by the University of Southampton Library Digitisation Unit

King's Cross/St Pancras

7 This station is served by the Metropolitan and Circle, Northern, Piccadilly and Victoria lines. These afford direct access, without interchange, to most of the important central London traffic objectives, including the City, the West End, the main hotel areas and most of the major main-line railway terminals (Cannon Street, Euston, Liverpool Street, Fenchurch Street (Tower Hill), Paddington and Victoria). Trafalgar Square (for Charing Cross) and Waterloo can be reached by cross-platform interchange at Oxford Circus. Most suburban areas can be reached with not more than one change.

8 Comparison of spare capacity with the estimated levels of demand from air terminal passengers indicates that at existing levels of service there is ample capacity on all lines except the Piccadilly line to absorb even the 1990 high modal split figures. The Piccadilly line services could if necessary be increased by up to four trains an hour, providing accommodation for more than 2,000 additional passengers, thus giving a reasonable capacity margin if, as is likely, the Piccadilly line has to carry a large share of the air terminal traffic using the Underground.

Marylebone

9 Marylebone is on the Queen's Park branch of the Bakerloo line which affords direct access to only a limited number of objectives including Oxford Circus, Piccadilly Circus and the main-line terminals at Charing Cross, Paddington and Waterloo. Subject to detailed engineering studies, it seems feasible to link Marylebone by moving pavement to Baker Street station which is served by the Metropolitan line and Bakerloo line, Stanmore branch.

10 The notional cost of construction of the moving pavement would be £2m.6. However, the time penalty attached to its use would suggest most people would prefer to use the less frequent Queen's Park branch of the Bakerloo line.

11 Because Marylebone lies on this branch line, it can only receive half of the trunk Bakerloo service which is insufficient to cater satisfactorily even for the current demand.

12 The physical separation of the Stanmore branch of the Bakerloo line under London Transport's proposals for its incorporation into the new Fleet line would permit doubling of the service through Marylebone, thus creating more than sufficient capacity to absorb additional air terminal traffic, although not improving in any way the distribution facilities at Marylebone itself. User costs for travel time to existing hotel areas in the central area by Underground and by road are shown in annex H.

Road access

13 There are two ways to compare the benefits of sites in terms of their access by road into the central area. One is to calculate the cost of increasing the network capacity between the terminal and the trip ends and adding to it the user costs of trips made within the central area. The second is to estimate construction cost of providing access on to the major network, assume the capacity of the network is not increased,

Printed image digitised by the University of Southampton Library Digitisation Unit

and calculate user costs for two groups of travellers - existing vehicle passengers on the network and the new air terminal passengers. As the cost of increasing the road capacity in the central areas is very high, the second of the two approaches outlined above seems most reasonable and is the one adopted. Details of the results are shown in annex H.

14 *Destination zones* - In any form of assessment of effects of new air terminal traffic on the road system an estimate is needed of the trip end distribution through the Greater London area. The best estimate of distribution of trips inside London is shown in figure 1. It can be seen that the area with the greatest intensity of trips is the statistical central area, approximately defined as the area bound by the cordons joining the main British Rail London terminals.

15 As the central area generates more than 70 per cent of all London trips, for all four airport sites, the estimates of user costs, congestion costs and minimum capacity improvement to the main access routes, are calculated only in this area.

16 At this time there are no hard figures to define the trip distribution within the central area, other than those based on the trips made from Heathrow and the west London air terminal.[7]

17 It is reasonable to assume that most central area trips are from hotels. The figures from the report of the Transport Co-ordinating Council for London reflect this assumption by showing the major intensity of trips developing in the West End hotel areas. See figure no 2.

18 It must be kept in mind, however, that redevelopment in the vicinity of the air terminal to meet the demand of ancillary facilities, and the changes in land use likely to be engendered, depend to an extent on the availability of the adjacent land for redevelopment. If the terminal is placed where the adjacent area is ripe for development then the probability is that generation of hotels will occur and the user and congestion costs, calculated as for existing hotel area attractions, will reduce.

19 In order to produce an answer for congestion and user costs in monetary terms it was assumed, as a first step, that the TCCL (Transport Co-ordinating Council for London) report trip distribution inside the central area was valid for the third London airport. Figures 3 and 4 show the new volumes from zones in the central area, assuming the high modal split, for 1990.

20 The results of the studies, including the value judgments made of access generally to the central area are:

King's Cross/St Pancras

General Location - This site is very close to an important intersection of major routes. The potential for dispersion into the central area generally is good.

Improvement of capacity of network - A number of schemes to improve capacity and routing into and out of the central area are already in the preparation list and others are possible candidates.

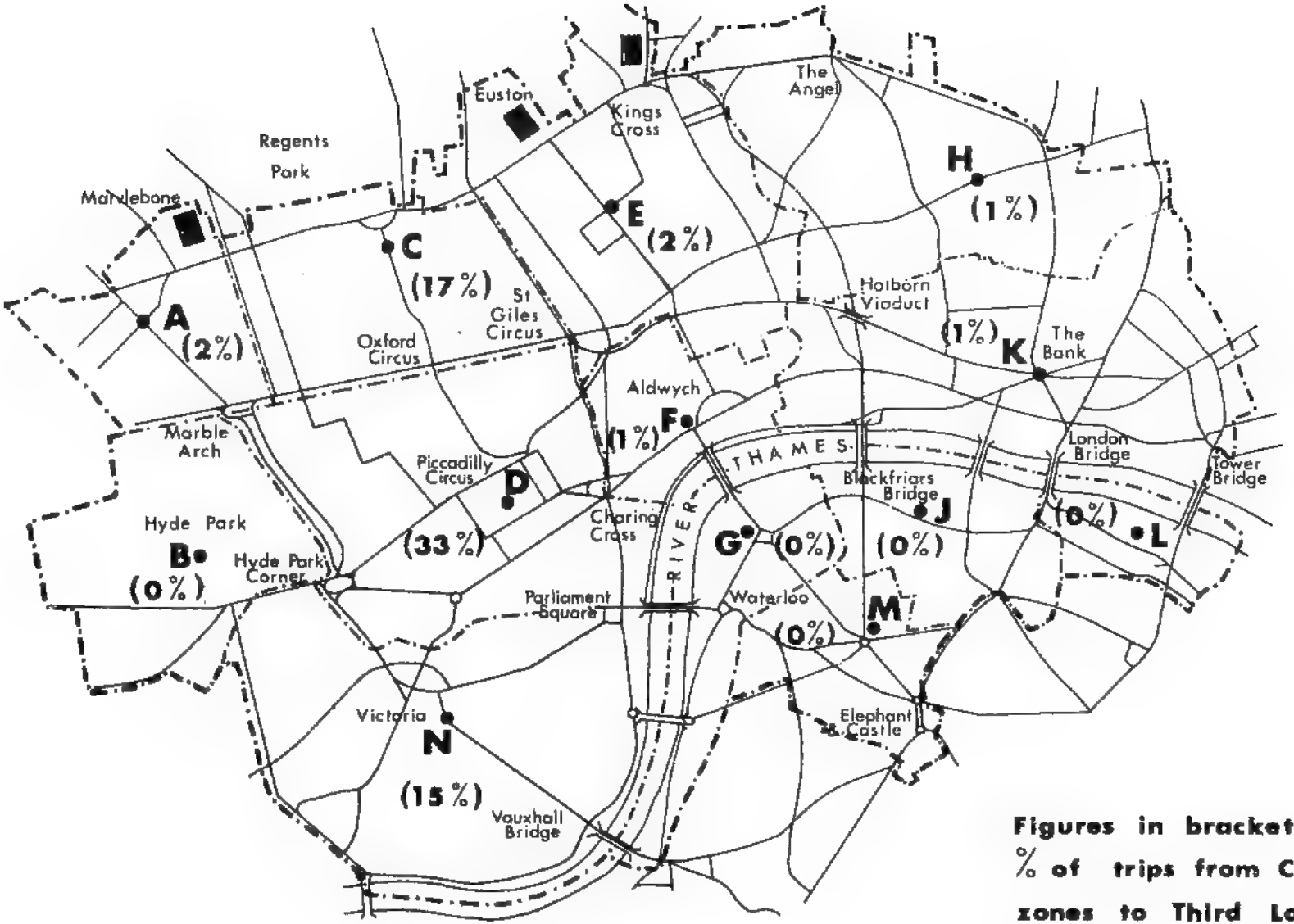
Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

DESIGN FOR 1990

Trips from zones in G.L.C. area to Third London Airport by Public Transport

Figure 13·1

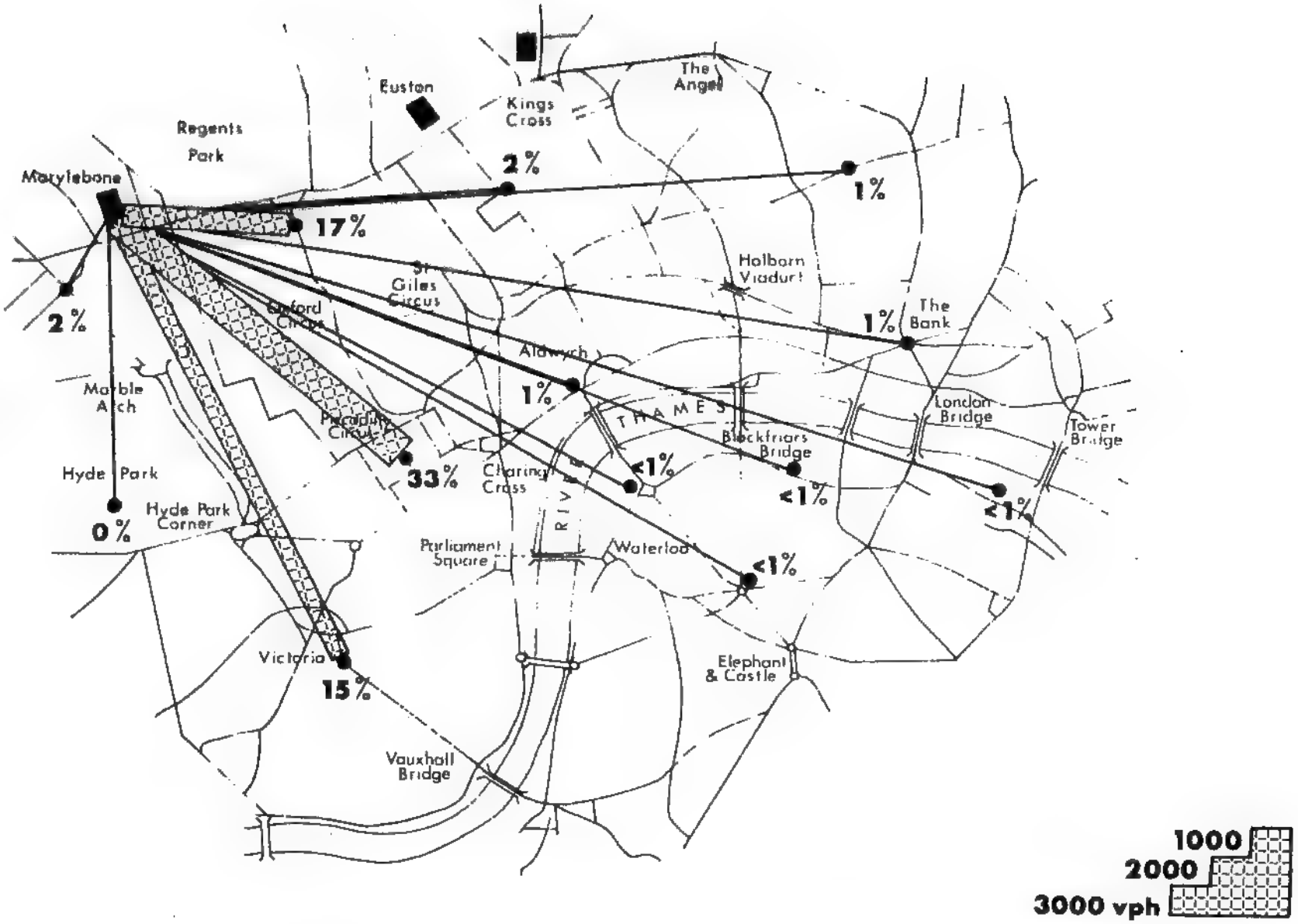


Figures in brackets denote % of trips from Central Area zones to Third London Airport by public transport.

TRAFFIC ZONES — CENTRAL AREA

Figure 13·2

Printed image digitised by the University of Southampton Library Digitisation Unit

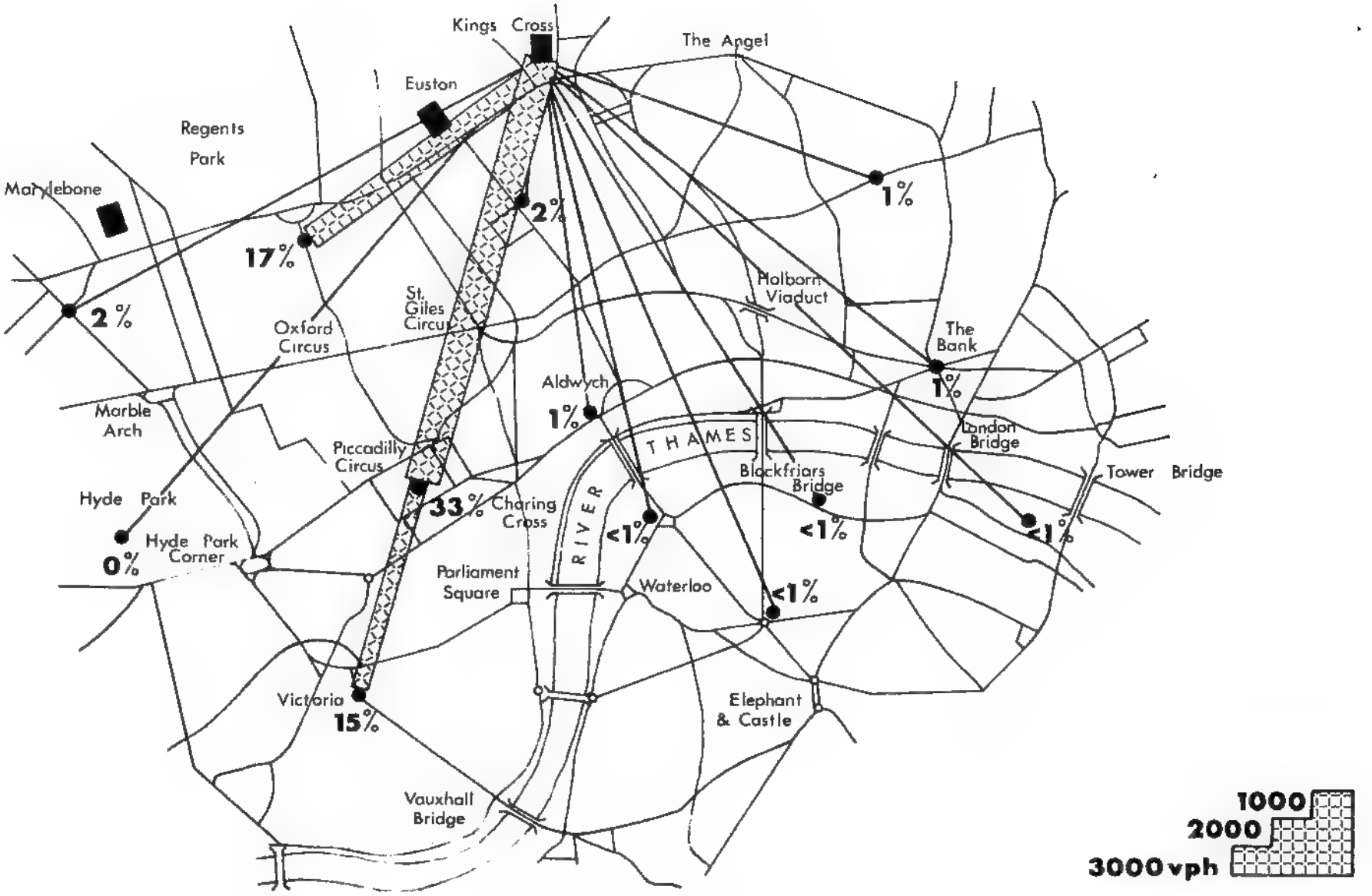


MARYLEBONE — PEAK HOUR — 1990'

DESIRE LINE DIAGRAM OF HIGH ESTIMATE OF TRAFFIC VOLUMES FROM & TO TERMINAL

Figure 13·3

Printed image digitised by the University of Southampton Library Digitisation Unit



KINGS CROSS — PEAK HOUR — 1990

DESIRE LINE DIAGRAM OF HIGH ESTIMATE OF TRAFFIC VOLUMES FROM & TO TERMINAL

Figure 13·4

Printed image digitised by the University of Southampton Library Digitisation Unit

The main intersection just south of the site, at Euston Road, York Way, Pentonville Road is in the preparation list, and the extra cost of providing access to the major network should be in the region of £4m.[8]

User costs and congestion costs - These results are taken from annex H. Four combinations of the two modal splits could be assumed. For these results the two combinations that produce the highest and lowest figures are used:

	£m
Congestion cost to existing traffic	11 (3.5)
User costs to airport terminal traffic	9 (3)
Total	20 (6.5)

These figures in all probability are over-estimates as the King's Cross area is ripe for development and the arguments made earlier, suggesting hotel accommodation opportunities, apply.

Marylebone

General location - The site is located rather away from the major traffic routes. Marylebone Road, crossing south of the station, is the obvious initial objective of traffic leaving the air terminal. Edgware Road/Western Avenue intersection is about a half mile to the West and the Baker Street/ Gloucester Place one-way system is a similar distance to the east. Dispersion potential is less than King's Cross.

Improvement of capacity of network - The loading on Marylebone Road is approaching capacity. It is difficult to see how the road system in the immediate area can be improved to deal with the forecast air terminal traffic within a reasonable capital expenditure. Access roads would be needed between the terminal and Marylebone Road. There are a number of listed buildings to the south and east of the station, much of the land around the station is newly, or about to be, developed and the existing main land use in the area is residential. The cost of a major intersection on Marylebone Road, south of the terminal could be £5m or £6m[8] including land take and civil engineering works.

User costs and congestion[8] - As for King's Cross the highest and lowest costs are produced. These are:

	£m
Congestion cost to existing traffic	9 (3)
User costs to airport terminal traffic	6 (2)
Total	15 (5)

Unlike the King's Cross situation the adjacent area is unlikely to react strongly to the presence of the terminal, and the costs estimated are unlikely to reduce to a similar extent.

Printed image digitised by the University of Southampton Library Digitisation Unit

Annex E: comparison of eastern central London terminals with King's Cross

1 In considering the sites, each possible site is compared in terms of:

rail link (a) line capacity

(b) user costs

site availability and cost

Underground access and road access between central London and the terminal, including user costs.

Rail Link

(a) Line capacity

2 The terminal chosen must have a capacity on its approach lines of four or more fast airport trains per hour. Neither Fenchurch Street nor Liverpool Street have this capacity. As the existing rail link to King's Cross has adequate capacity provided certain improvements are made, one has to compare the costs and benefits of improving the existing rail link to King's Cross, with the costs and benefits of building a new line to Liverpool Street or Fenchurch Street from the point on the existing rail network where the rail capacity is insufficient, i.e. between Barking and Bow Junction.

3 A conservative estimate of the extra cost of the link to Fenchurch Street over improvement to King's Cross is £14m[5]. The provision of line capacity to Liverpool Street is more difficult. The final stretch of a new line would need to approach the terminal at high level or in deep tunnel. Either way the extra civil engineering cost would be prohibitive, i.e. at least £5m more than the extra cost for Fenchurch Street.

(b) User cost

4 The rail link passengers would need to travel an extra distance to King's Cross compared with a straight line route from Barking to Fenchurch Street/Liverpool Street. Using a probable in-town average speed of 60 mph and estimating this extra distance as 6 miles the cost of the extra journey to King's Cross for passengers up to 1990 is between £3m and £6m depending on modal choice.

5 If Fenchurch Street /Liverpool Street is to be selected one needs to show extra net benefits over King's Cross of the order of £8m to £11m to balance the extra cost of the rail link.

6 Site availability and cost, Underground access and road access are broadly compared below to see if the extra benefit to either of the two eastern terminals exists.

Site availability and cost

7 The land surrounding King's Cross station is ripe for development and there should be no difficulty in finding a suitable area for the terminal. Under the most favourable development conditions the site (owned by BR) could be valued at £20m[4].

Printed image digitised by the University of Southampton Library Digitisation Unit

8 Fenchurch Street is located close to new developments mainly offices. The site area needed for the new terminal would include some of these buildings (drawing no 5). Of the 6.5 acres[3], the five acres of non British Rail land is valued at £30m[3].

9 Liverpool Street may have an adequate area for the in-town terminal, provided Broad Street station is included in the development. The choice of this site for the terminal would require reconstruction of both Liverpool Street and Broad Street stations. The value of the site is estimated at £25m[4].

10 There now seems little doubt that due to the extra costs of providing rail capacity to either of the Eastern terminals, particularly Liverpool Street, and the extra cost of acquiring the site at Fenchurch Street, the preferred site would be King's Cross for the in-town terminal. For completeness the Underground and road access items are considered broadly.

Underground and road access

11 The following items are taken from annex C:

	Underground[(1)] *service*	*Underground*[(1)] *capacity*	*Bus service 1969*	*Road access to central area*
Fenchurch Street	FG	FG	P	P
King's Cross	E	G	G	G
Liverpool Street	F	P	G	G

Note: (1) in 1975, assuming construction of Fleet line

P = poor
F = fair
FG = fairly good
G = good
E = excellent

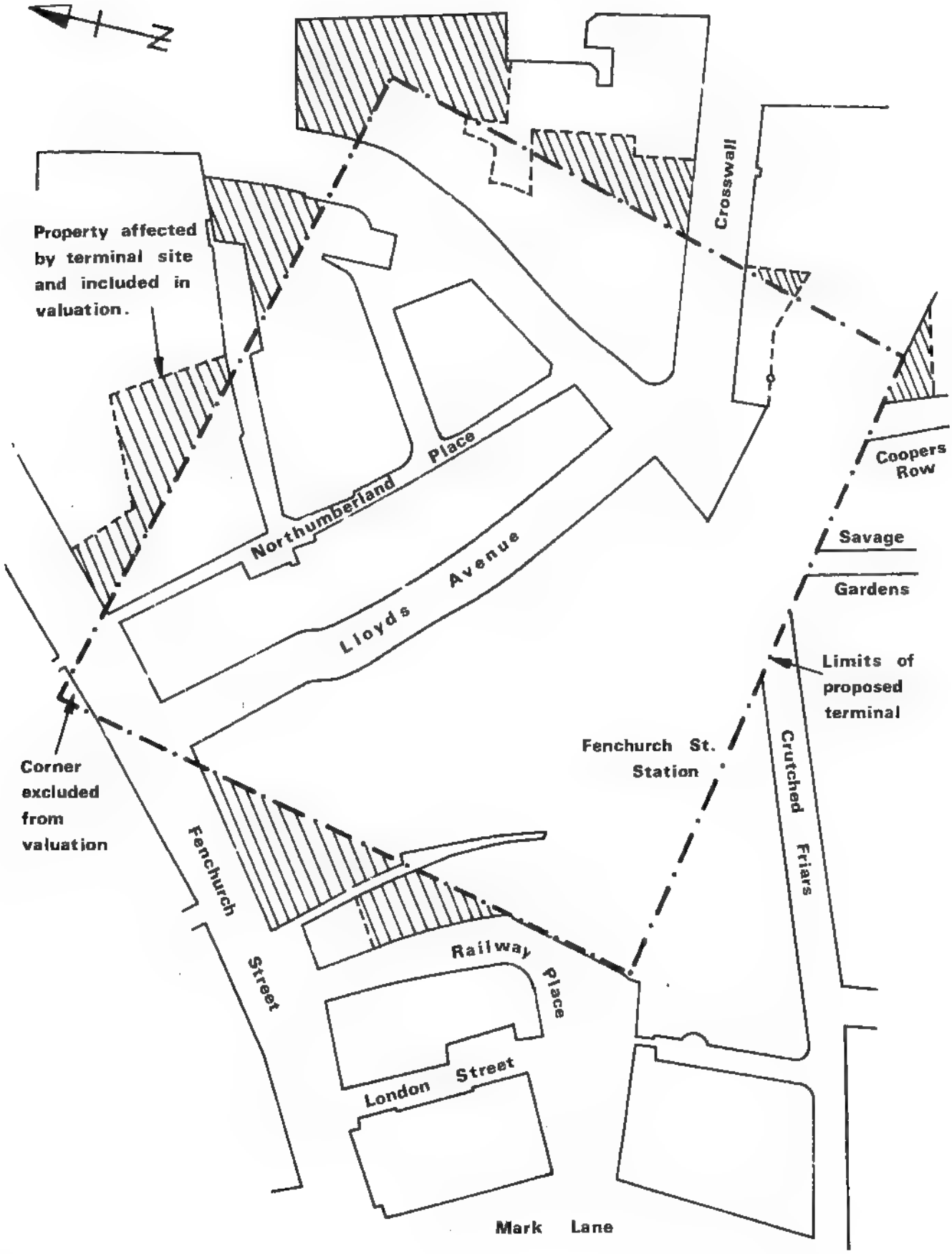
12 It is expected that more than 70 per cent of all passengers using the in-town terminal will start or end their journey in the central area of London. It seems likely that most of these trips will be to or from the central area hotels which have developed through the West End. Road and rail access to this area is generally much better from King's Cross than from the eastern terminals. There is no likelihood therefore that user costs from the eastern terminals will be less than those for King's Cross.

13 The extra cost of rail capacity provision and the extra cost of site acquisition for both eastern terminals is not reduced by any other item comparing these sites with King's Cross.

14 Without doubt King's Cross is a more suitable site for the in-town terminal than either Fenchurch Street or Liverpool Street.

Printed image digitised by the University of Southampton Library Digitisation Unit

SITE PLAN AT FENCHURCH STREET



Scale 1 : 1250

Figure 13·5

Printed image digitised by the University of Southampton Library Digitisation Unit

Annex F: consideration of a suburban stop

The possibility of a suburban stop has been raised as an option to be considered. There could be two types of rail service to the suburban stop:

(a) a short stop for some or all of the in-town terminal-airport trains,

(b) a special shuttle service between the suburban stop and the airport.

For case (a) two problems would occur:

(i) the baggage handling problem - assuming in-town terminal checking in facilities - would become considerably more severe,

(ii) passengers travelling the full route between airport and central London would be delayed for the duration of the suburban stop.

This suggests that option (a) would be undesirable.

For case (b) the shuttle service would depend for its frequency on the number of passengers who would use the suburban stop. As more than 70 per cent of the passengers are expected to initiate or complete their journeys within the central area, and the remainder of passengers are distributed as shown on fig no 1 the likelihood is that as little as one-tenth of the total passengers from London would use the stop. By 1990 the suburban stop passengers an hour, using the high modal split, would be about 500 in each direction, i.e. equivalent to one train an hour each way. It is suggested that 1990 would be the first year that a reasonable flow of traffic to the suburban stop would be available.

As the cost of a suburban stop is likely to be small compared to the total costs of the terminal and as the stop does not appear to be needed before 1990, there seems no need to include costs of a suburban stop in the total argument for the in-town terminal.

Annex G: volumes and spare capacity on Underground[6]

All references in this note to capacity or to spare capacity relate to the 60 minutes of maximum passenger demand in each rail commuter peak-period. It should be noted that capacity is defined as the number of people a train service can handle within reasonable comfort limits over a 60 minute period, after allowing for uneven distribution of demand within the hour, within individual trains and within individual cars. The capacity varies between 480-680 people a train, depending on the numbers of cars a train and the type of stock used. It represents a desirable planning standard rather than the maximum number of passengers that can be carried by a service. Outside these peaks considerable spare capacity is available on all lines.

The estimated number of air-terminal passengers to be dealt with by the Underground during the morning and evening rail peak 60 minutes is as follows:

Printed image digitised by the University of Southampton Library Digitisation Unit

	Estimated "low" demand		*Estimated "high" demand*	
	30% Underground modal split	*50% Underground modal split*	*30% Underground modal split*	*50% Underground modal split*
AM peak 60 mins				
to terminal	440	730	970	1,610
from terminal	380	630	830	1,380
PM peak 60 mins				
to terminal	460	770	1,010	1,690
from terminal	550	920	1,210	2,020

Spare capacity

King's Cross

Line	*Peak 60 minutes*	*Direction*	*Spare capacity (thousands)*
Metropolitan and Circle	am	Westbound	More than 3
		Eastbound	2-2½
	pm	Westbound	More than 3
		Eastbound	do
Northern	am	Northbound	More than 3
		Southbound	do
	pm	Northbound	More than 3
		Southbound	do
Piccadilly	am	Northbound	More than 3
		Southbound	Traffic equals capacity
	pm	Northbound	0-1
		Southbound	More than 3
Victoria	am	Northbound	More than 3
		Southbound	do
	pm	Northbound	More than 3
		Southbound	do

Printed image digitised by the University of Southampton Library Digitisation Unit

Marylebone

Line	*Peak 60 minutes*	*Direction*	*Spare capacity (thousands)*
Bakerloo			
1. Section			
Regents Park - Baker Street (Queen's Park trains only)	am	Northbound	More than 3
		Southbound	*overload* more than 3*
	pm	Northbound	*overload* more than 3*
		Southbound	More than 3
2. Section			
Baker Street - Marylebone	am	Northbound	More than 3
		Southbound	*overload* ½ - 1*
	pm	Northbound	*overload* 1 - 2*
		Southbound	More than 3

**overload* refers to excess volumes above the reasonable comfort limits.

Annex H: user and congestion costs in the central area[8]

Roads

There are two costs of interest - delay to existing traffic and the comparative costs of the alternative distribution trips to airport passengers (referred to in the text as airport passenger user costs).

Assuming a high proportion of passengers (75 per cent) using the rail link, 20 per cent accompanying passengers, and a high modal split to cars (10 per cent) and taxis (50 per cent) the additional traffic per peak hour and per off-peak hour has been calculated that would be generated by the in-town terminal to each of the three major central area destination zones from the two alternative terminal locations Marylebone and King's Cross.

From 1968 traffic survey data[9] the existing speeds and flows on the routes that will be used, have been estimated and the change in journey times that will result[10]. With values of time increasing[11] at 2.13 per cent pa these delays are computed in monetary terms for existing traffic. These are then discounted at 10 per cent to 1975 for the period 1980-90.

For airport traffic a different time valuation has been used, and the time cost of the distribution trip calculated in the same way as above. In addition the marginal mileage costs[12] of making the trip by car are estimated to give a total user cost. These are similarly discounted.

Printed image digitised by the University of Southampton Library Digitisation Unit

For the combination of high modal splits the results are as follows:

(£m)	*Marylebone*	*King's Cross*
Congestion cost to existing traffic	9(3)	11(3.5)
User cost to airport terminal traffic	6(2)	9(3)
	15(5)	20(6.5)

The comparable results for the low proportion of traffic using the rail link (35 per cent) and a low modal split to cars (10 per cent), taxis (30 per cent), are shown in brackets.

Underground

The average journey times for passengers using the air-terminal and travelling into the central area have been calculated. These are times on the underground, including interchange times at the start and finish of each journey, and making allowance for interchange during the journey, i.e. from one underground line to another.

These journey times are:

	Marylebone	*King's Cross*
peak	16½ mins	17 mins
off-peak	14 mins	13½ mins
	(ref no 6)	

There is no significant difference between the times from Marylebone or King's Cross to the three major central area stations which were examined (Oxford Circus, Piccadilly Circus and Victoria). However, because there is a more intensive coverage of central area stations by direct services from King's Cross than from Marylebone, door-to-door journey times favour King's Cross.

Note

The superiority of King's Cross over Marylebone in terms of underground access should lead to a higher proportion of journeys to the in-town terminal being made by underground rather than road. This would lessen the road congestion and user costs for King's Cross.

Annex I: references

1 Information taken from a Victoria transportation centre study, 1968, carried out by Messrs Freeman, Fox and Partners for British Rail, Greater London Council, London Transport Board, City of Westminster and British Airports Authority. The information in question is available from the GLC Planning and Transportation Department on request.

2 Advice to the Commission by British Rail on rail infrastructure (Papers and Proceedings vol VIII parts 2 section 1).

3 GLC Department of Valuation and Estates.

4 British Rail - Estates Department.

5 British Rail.

6 London Transport Board.

Printed image digitised by the University of Southampton Library Digitisation Unit

7 Information taken from a report on links to Heathrow airport, July 1967, for the Transport Co-ordinating Council for London. The information in question is available as for reference 1 above.

8 GLC Department of Planning and Transportation.

9 Information taken from the preliminary results of the December 1968, London Central Area Traffic Survey. The information in question is available as for reference 1 above.

10 Thomson, "Traffic engineering and control" April 1967.

11 Road Research Laboratory Technical Paper 75, 1968.

12 Automobile Association Tech 9 series (annual sheet available on request): estimated running costs of new cars.

Printed image digitised by the University of Southampton Library Digitisation Unit

Introduction

14.1 For current aircraft types operating with modern navigation aids within sophisticated air traffic control systems the hazard to life and limb and to property is extremely small. Worldwide for the period 1959-1968 the serious accident rate for passenger jet aircraft being used for public transport operations was about 1.2 per million take-offs and landings. The fatality rate for the same period was about one passenger fatality per million passengers. The rate of fatalities among persons on the ground resulting from air accidents was about one fatality per million take-offs and landings.

14.2 The object of the research work reported in this chapter has been to assess for the purpose of the cost-benefit analysis any differences between the airport sites which might give rise to additional expenditure for the purpose of reducing hazards and to assess any additional disbenefits which would result at any of the sites from hazards remaining after all practicable measures have been taken.

14.3 The three inland sites are surrounded by broadly similar terrain and there is no reason to suppose that safety risks would vary between one and another. However Foulness as a coastal site does have significantly different characteristics. The factors to be considered are as follows:

(a) possible variations in accident rate between inland and coastal sites;

(b) possible variations in the relative severity of collisions with land and with water;

(c) differences in risk to people on the ground (third parties);

(d) differences in the probability of damage to aircraft from collisions with birds (birdstrike).

Accident data

14.4 The source of accident data has been the International Civil Aviation Organisation, supplemented by records held by the Directorate of Flight Safety, Board of Trade. The term "serious accident" is used below to describe an accident which, in the judgment of the Board of Trade, was *potentially* fatal whether or not a fatality actually occurred. The effect of this definition has been to exclude minor incidents, such as equipment failure. The only type of "incident", as opposed to "serious accident", considered in this chapter is that due to birdstrike damage. No serious accident as a result of birdstrike is known to have involved passenger jet

Printed image digitised by the University of Southampton Library Digitisation Unit

aircraft used for public transport operations, though a few non-jet and one small private jet aircraft have been involved in serious birdstrike accidents.

14.5 It is not sufficient merely to examine accident data, since the amount of exposure to risk depends on the number of aircraft operating and the flights made. The overall measure of exposure to risk has to be measured according to the number of aircraft movements, counting one take-off and one landing as two movements. This is a realistic measure in the light of the increased reliability of large modern aircraft (both jet and non-jet) during flight. Serious accidents more than ten miles from an airport are extremely rare events. They result mainly from mid-air collision and violent storms. About 98 per cent of serious jet accidents occur within 10 miles of the terminal runway.

14.6 Analysis of accident frequencies requires a classification of airports according to the type of terrain over which the take-offs and landings occur. A threefold classification was used: airports with land approaches, airports with extensive water approaches and airports with mixed approaches where the water approaches were not extensive. An airport with extensive water approaches was defined as an airport where at least 80 per cent of the first five miles of the flight paths from one or more principal runways was over water.

14.7 In assessing the possibility of fatality amongst passengers on aircraft, two sets of data were used: data for airports, and data for individual accidents. The data available about airports allowed only limited conclusions to be drawn since they only permitted the classification of accidents by airport location and by consequences without indicating the proportion of fatalities in accidents among those on board. More detailed information was available about individual accidents. The location of the accident with respect to the runway is particularly important. Since some aircraft near to a runway will collide with the airfield or adjacent land even at coastal sites with all-water approaches, the pattern of accidents around airports had to be examined. It was also necessary to examine both water accidents and land accidents to determine whether the fatal consequences might be expected to be different.

14.8 Accidents involving third parties were too rare to analyse on an airport basis. The risk of third party casualties was assessed by examining all accidents involving jet aircraft. Accidents involving non-jet aircraft were disregarded on the ground that these aircraft will be declining in number.

Accident rates

14.9 Accident data were available for the period 1959-1968 for all countries outside the Sino-Soviet bloc. However, the data about aircraft movements were not complete. To make the task of data collection feasible and to exclude smaller airports which might be below the best international standards, the study of airports was restricted to the fifty airports in the world having most total movements.

14.10 The list of the 50 leading airports in total movements 1959-68, together with their accident records, is given in table 14.1. Thirty-eight are US airports and eight are European. In ranking these airports both jet and non-jet aircraft were included since no separate data about jet movements was

Printed image digitised by the University of Southampton Library Digitisation Unit

available for US airports. Separate jet and non-jet movements were available for most of the period for the eight European airports.

Table 14.1 Accident rates: 50 leading airports (listed in rank order)

Airport	*Rank*	*Total movements (000s) p.a. 1959-1968*	*Fatal accidents*	*Total accidents*	*Class*
Chicago	1	368	3	4	L
New York (J.F. Kennedy)	2	317	2	3	L*
Los Angeles	3	295	0	0	W
Washington (National)	4	223	0	0	L*
Atlanta	5	202	0	0	L
San Francisco	6	195	1	2	W
Miami	7	180	1	1	L
London (Heathrow)	8	173	1	2	L
Newark	9	168	0	1	L
Dallas	10	166	0	0	L
New York (La Guardia)	11	160	1	2	L*
Boston	12	149	2	2	W
Philadelphia	13	130	0	0	L
Cleveland	14	123	0	0	L
Pittsburg	15	119	0	0	L
Frankfurt	16	115	1	1	L
St. Louis	17	111	0	1	L
Denver	18	105	1	1	L
Detroit	19	99	1	3	L
Paris (Orly)	20	92	1	1	L
Kansas City	21	91	1	3	L
Minneapolis	22	91	0	0	L
Copenhagen	23	89	0	0	W
Rome	24	89	1	1	L*
Tokyo	25	84	2	2	W
Honolulu	26	83	1	1	L*
New Orleans	27	81	1	1	L
Cincinnati	28	81	2	2	L
Houston	29	80	0	0	L
Montreal	30	72	0	0	L*
Tampa	31	71	0	0	L*
Baltimore	32	70	0	0	L
Toronto	33	69	0	4	L
Portland	34	66	0	0	L*
Indianapolis	35	66	0	0	L
Seattle	36	65	0	0	L
Louisville	37	64	1	1	L
San Juan	38	64	0	0	W
Buffalo	39	63	0	0	L
Sydney	40	63	1	1	L*
Milwaukee	41	63	0	0	L
Memphis	42	62	0	0	L
Zurich	43	62	2	2	L
Amsterdam	44	61	0	0	L
Columbus	45	60	0	0	L
Phoenix	46	57	0	0	L
Dusseldorf	47	51	0	2	L
Rochester	48	51	1	1	L
Charlotte	49	51	0	0	L
Oakland	50	51	0	0	W
			28	45	

Notes: (1) L indicates land approaches

(2) L* indicates a site near water with some of the approaches over water.

(3) W indicates at least one approach over water.

Source: (1) *Aircraft Accident Digest*, International Civil Aviation Organisation.

(2) *World Airline Accident Summary*, Air Registration Board.

(3) Ad hoc Survey, Directorate of Flight Safety, Board of Trade.

(4) *Digest of Statistics - Airport Traffic*, International Civil Aviation Organisation 1959-1967.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 14.3
Accidents frequencies and movements for the leading fifty world airports 1959-1968

Size of airport (millions of movements 1959-1968)	*Land approaches*		*Mainly land approaches but some water approaches*		*At least one principal water approach*	
	FATAL	TOTAL	FATAL	TOTAL	FATAL	TOTAL
Group 1 2-4 millions (5 airports)	3 (5.7m)	4 (5.7m)	2 (5.4m)	3 (5.4m)	0 (2.95m)	0 (2.95m)
Group 2 1-2 millions (13 airports)	4 (13.9m)	7 (13.9m)	1 (1.6m)	2 (1.6m)	3 (3.4m)	4 (3.4m)
Group 3 Fewer than 1 million (32 airports)	10 (16.3m)	20 (16.3m)	3 (3.4m)	3 (3.4m)	2 (2.9m)	2 (2.9m)

Notes: (1) Accidents and movements are for jet and non-jet aircraft.

(2) Figures in parentheses represent millions of movements.

Source: Table 14.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

14.11 In the absence of data on jet movements alone for the majority of airports, it was necessary to investigate whether accident rates varied significantly for jet and non-jet aircraft. The following table sets out a comparison of jet and non-jet accidents for the eight European airports.

Table 14.2
Jet and non-jet accidents for eight European airports

Movements 1959-1969	*Fatal accidents*	*Total accidents*
Jet (3.31 millions)	3	4
Non-jet (4.0 million)	3	5
All (7.31 millions)	6	9

Source: table 14.1

14.12 The appropriate statistical test was applied to the data in table 14.2 and indicated no significant difference between the frequencies of jet and non-jet accidents, either for fatal accidents or in total at the eight European airports. It was therefore reasonable to assume that the same would be true for all fifty airports and to use the data shown in table 14.1 to draw inferences about jet accident rates.

14.13 Table 14.3 gives a summary of the data from table 14.1 classified by airport size (total movements 1959-68) and by type of approach. The limited amount of data presented in table 14.3 might be biased if accident frequencies vary with the size of airport. For this reason the fifty airports were grouped into three size categories, as shown in table 14.4.

Table 14.4
Accidents by airport size

Size	*Fatal*	*Total*
Group 1	5	7
Group 2	8	13
Group 3	15	25

14.14 Statistical tests were applied to these data. They led to the conclusion that for the leading fifty airports there was no demonstrable difference between airports of different size either in the total number of serious accidents or in those which were fatal.

14.15 Table 14.5 was consolidated to show accident frequencies by type of approach.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 14.5
Fatal and total accidents land and water approaches

Type of approach	*Fatal*	*Total*
Land approaches	17	31
Mostly land approaches but some water approaches	6	8
At least one principal water approach	5	6

14.16 The statistical test applied to table 14.5 led to the conclusion that no demonstrable difference in accident frequencies existed between airports with land and water approaches either in total serious accidents or those which were fatal.

14.17 The mean accident rate for the fifty airports studied was 1.2 serious accidents per million movements.

14.18 There is weak evidence to support the belief that there is a time trend showing a decline in the accident rate per million movements. But in the absence of detailed movement data for all airports in the sample this time trend should continue to be regarded as a belief rather than as a quantifiable fact useful for decision making. An accident rate of 1.2 serious accidents per million movements would theoretically give about 11 serious accidents in a 30 year period at the third London airport if the world-wide experience of the last ten years can be considered a useful basis for prediction.

Severity of accidents

14.19 Tables 14.6 and 14.7 list the land and water accidents for jet aircraft for all airports (excluding Sino-Soviet bloc) between 1959 and early 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 14.6
Accidents on land (listed in date order)

Airport	*Date*	*Number on board*	*Fatalities*	*Per cent fatal*
Asuncion	27.8.59	50	2	4
Ankara	19.1.60	42	42	100
Madrid	14.3.60	32	0	0
Nairobi	29.10.60	91	0	0
Benina	24.12.60	57	0	0
New York (J.F. Kennedy)	19.1.61	106	4	4
Brussels	15.2.61	72	72	100
St. Louis	26.3.61	125	0	0
Detroit	16.4.61	107	0	0
Rabat	12.9.61	77	77	100
Sao Paulo	23.11.61	52	52	100
Paris (Orly)	3.6.62	132	130	98
Gordoba	3.7.63	70	0	0
Heathrow	6.11.63	97	0	0
Vienna	12.11.63	62	0	0
Nairobi	2.2.64	69	0	0
Rome	23.11.64	73	50	68
Cairo	20.5.65	125	119	95
Kansas City	1.7.65	66	0	0
Cincinnati	8.11.65	62	58	94
New Delhi	15.2.66	81	0	0
Tokyo	4.3.66	72	64	89
Kuwait	30.6.66	83	0	0
Karachi	21.7.66	Unknown	0	0
Mexico City	24.12.66	109	0	0
Monrovia	5.3.67	90	51	57
Cincinnati	20.11.67	82	65	79
Taipei	16.2.68	63	19	30
Windhoek	20.4.68	128	123	96
New York (La Guardia)	3.6.68	102	0	0
Calcutta	13.6.68	63	6	10
Lagos	13.7.68	7	7	100
Milan	2.8.68	95	13	14
Sioux City	27.12.68	66	0	0
Gatwick	5.1.69	63	49	78
Milan	14.1.69	33	0	0
Maracaibo	16.3.69	84	84	100

Source: (1) *Aircraft Accident Digest*, International Civil Aviation Organisation.

(2) *World Airline Accident Summary*, Air Registration Board.

(3) Directorate of Flight Safety records.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 14.7
Accidents on water (listed in date order)

Airport	*Date*	*Number on board*	*Fatalities*	*Per cent*
New York (J.F. Kennedy)	1.3.62	95	95	100
Rio de Janeiro	20.8.62	105	15	14
Bombay	27.7.63	63	63	100
New York (J.F. Kennedy)	7.4.64	145	0	0
Dhahran	17.4.64	49	49	100
Tokyo	4.2.66	133	133	100
Hong Kong	30.6.67	80	24	30
Hong Kong	5.11.67	127	1	0.7
San Francisco	2.11.69	107	0	0
Caracas	13.12.68	51	51	100
Los Angeles	13.1.69	45	15	33

Source: (1) *Aircraft Accident Digest*, International Civil Aviation Organisation.

(2) *World Airline Accident Summary*, Air Registration Board.

(3) Directorate of Flight Safety records.

14.20 The following table (14.8) presents a summary by terrain type:

Table 14.8
Consequences of accidents: number of accidents with fatalities

	Accidents on land	*Accidents in water*
Fatal	18	9
Non fatal	19	2

Note: Only accidents from 500 feet to ten miles from a runway are included. Accidents to the side of a runway are excluded since the distance from the runway is not known; all of these were land accidents.

The statistical test applied to this table did not show a significant difference in the frequencies of fatal accidents and non-fatal accidents for accidents on water compared with those on land.

14.21 Table 14.9 summarises data from tables 14.6 and 14.7:

Table 14.9
Fatalities in accidents on land and in water

	*Land**	*Water*
Fatalities	1,087	446
Survivors	1,701	554
Accidents	36	11

*Three accidents with crew only on board not considered as public transport accidents.

Printed image digitised by the University of Southampton Library Digitisation Unit

14.22 In many of the accidents either all passengers were killed or none was killed (see table 14.10). This suggests that the risk of fatality for passengers in the aircraft depends on some overall factors in the accident to which all passengers are equally exposed. The accidents themselves and not the individual fatalities have to be subjected to statistical tests. These data had therefore to be analysed to determine whether there was any demonstrable difference between the fatalities to be expected from an accident on land and the fatalities to be expected from an accident in water.

Table 14.10
Number of accidents by terrain and consequences

Terrain	*No fatality*	*Some but not all fatalities*	*All fatalities*	*Total accidents*
Land	19	14	4	37*
Water	2	4	5	11

*One land accident with no fatalities (number on board unknown) is included in this table but not in table 14.9.

14.23 For each water and land accident the percentage of the persons on board who were killed was computed (see tables 14.6 and 14.7). The following table classifies these accidents according to the percentage killed:

Table 14.11
Number of accidents by percentage on board killed

Terrain	*0-10 per cent fatalities*	*.11-89 per cent fatalities*	*90-100 per cent fatalities*	*Total accidents*
Land	19	8	10	37
Water	3	3	5	11

14.24 Although the proportion of fatalities in water accidents has been greater than in land accidents, the statistical test applied showed that the evidence was insufficiently strong to justify rejecting the hypothesis that in the long run fatality rates in land and water accidents would be the same.

14.25 Table 14.12 shows the percentage of persons on board killed in land and water accidents:

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 14.12
Fatalities in accidents as a percentage of persons on board

Terrain (column 1)	*Persons* (column 2)*	*Accidents** (column 3)*
Land	38	38
Water	45	53
Both	40	42

*Percentages computed from the sum of fatalities and the sum of persons on board, i.e. weighted mean.

**Average of the percentages computed for each accident.

14.26 Column three represents the average probability of a fatality in an accident. The conclusion drawn in paragraph 14.24 was that there was no significant difference in the consequences of an accident for the terrain types, but it could be asked whether there was a significant difference in the mean probability of a fatality for the two terrain types. The statistical test applied showed that there was not.

14.27 Since paragraph 14.20 concluded that there was no demonstrable difference between the frequency of fatal and non-fatal accidents for the two terrain types, non-fatal accidents might be excluded from the samples before computing the mean fatality rates. The mean probability of a fatality computed in this way would be 71 per cent for land accidents and 64 per cent for water accidents. This small difference in the means would strengthen the conclusion that there is no demonstrable difference in fatality rates for the two terrain types.

14.28 The apparent differences between the percentages of fatalities shown in table 14.12 (column 2 compared with column 3) results from the fact that the average number of persons on board differed for water accidents (78) and land accidents (100). This did not appear to result from a difference in the average size of aircraft involved in the accidents, but from chance.

14.29 Even if it were accepted that in the past there has been no difference between the fatality rates for land and water accidents, it would not necessarily follow that in future a difference would not exist between particular land and water sites. The fatality rate in a water accident depends upon survival facilities on board the aircraft and also upon airport search and rescue facilities.

Search and rescue

14.30 A detailed study of water accidents indicated that action during the first few minutes after the accident was critical in determining the number of survivors. Panic, confusion and shock reduced the ability of those on board to save themselves. Aircrew may be killed or injured on impact even though many passengers survive the initial collision. In practice survivors are not able to make full use of the life-rafts provided after collision. In high latitudes, few of those using only life jackets can survive long in the sea because of the physiological effect of cold water. Immediate assistance to an aircraft which has collided with water is essential to the survival of those on board.

Printed image digitised by the University of Southampton Library Digitisation Unit

14.31 Conventional craft are suitable for rescue operations only where they are permanently moored in deep water or when they can be quickly launched at high tide. At Troon (Prestwick airport) the lifeboat is moored in deep water; at Liverpool airport the Zodiac dinghy can be launched in 2 minutes at high tide but requires up to 7 minutes at low tide. For about 18 hours a day some additional delay in launching is experienced because of tidal conditions at Liverpool.

14.32 At an airport at Foulness it is unlikely that conventional craft could be launched without delay except at high tide. The initial launching would not necessarily be the sole obstacle to operation of Zodiac dinghies. Exposed and unexposed sand bars could require the navigator to search for a clear route to an aircraft which had come down in the water.

14.33 It could be assumed that there would be a higher fatality rate from water accidents at the Foulness site if search and rescue facilities were not made as effective as those at coastal airports where accidents have occurred in the past. Because conditions at Foulness would hamper the operation of conventional craft for search and rescue, it has been assumed that a hovercraft service would be provided, as had been done at Vancouver and Auckland airports. On most occasions hovercraft could cover several miles in the time it would take to launch Zodiac dinghies at Foulness. Two SRN6 crash/rescue craft could carry 100 survivors on board and another 100 in towable liferafts which could be carried and inflated at the site of an accident.

14.34 The cost of a search and rescue facility at the Foulness site would be as follows assuming two SRN6 Hovercraft at £175,000 each:

Operating staff:	10 crews (1 commander & 1 navigator in each crew)	£50,000 pa
Maintenance staff:	(1 senior & 1 junior engineer)	£ 4,000 pa
Repairs and replacements:		£19,000 pa
Fuel for 10 hours training and exercises pw		£ 4,000 pa
	Total costs: Capital	£350,000
	Operation	£ 77,000 pa

Third party hazards

14.35 Third party costs are those sustained by persons involved in an air accident but not as passengers or crew.

14.36 For all sites there would be hazards to third parties close to the airport and outside the public safety zone, but third party risks would be negligible for the portion of the flight paths of aircraft over water and over sparsely inhabited terrain. It was not possible to compute for each third London airport site the proportion of flight paths which should be excluded on this basis because no data are available for establishing a relationship between third party casualties in air accidents and the distribution of population around airports. The airports shown in table 14.13, where third party casualties have been sustained in the

Printed image digitised by the University of Southampton Library Digitisation Unit

past, may on average be located in areas of higher population density than would be the third London airport . Inferences based on past experience of third party casualties may therefore overestimate the hazard for the third London airport . In the absence of definite information about the effects of population distribution it is reasonable to assume that flight paths leading to and from a coastal site present no hazard to third parties beyond the immediate environs of the runways and that the hazard at inland sites would be similar to the hazard which has existed at other airports in the past.

Table 14.13
Jet accidents: third party casualties

Date	*Aircraft*	*Airport*	*Fatalities*	*Injuries*
16.2.61	B 707	Brussels	1	1
5.3.67	DC 8	Monrovia	5	0
30.3.67	DC 8	New Orleans	13	0
16.2.68	B 727	Taipei	1	0
5.1.69	B 727	Gatwick	2	1
11.7.61	Commander	Burbank	1	1
16.12.60	DC 8	New York	6	0
*16.3.69	DC 9	Maracaibo	70	90
26.5.68	CV-90	Bombay	1	28

Notes: Source: this tabulation was compiled from *The Aircraft Accident Digest*, International Civil Aviation Organisation, accident records held by the Directorate of Flight Safety, and from the *World Airline Accident Summary* published by the Air Registration Board. Accidents within 500 ft from a runway were excluded.

* This accident occurred 3,000 ft from a 6,000 ft runway. The aircraft collided with a new housing estate. The circumstances surrounding the accident were so unusual that it has been excluded from the assessment of the hazard to be expected at a third London airport; it is unlikely that a housing estate would be built so close to a runway at the new airport.

14.37 On the basis of past experience the extent of the area of risk to third parties is effectively 20 miles from a runway. No accidents involving third party fatalities were reported between 1959 and 1968 for public transport aircraft beyond 20 miles from a runway.

14.38 In all the accidents shown in table 14.13 third party casualties totalled 100 killed and 121 injured. If the accident at Maracaibo is excluded, the numbers to be considered are 30 killed and 31 injured in 8 accidents. The rates are 3.8 killed and 3.8 injured per accident.

14.39 In paragraph 14.17 it has been suggested that, at 1.2 serious accidents per million movements within 20 miles of a runway and beyond 500 ft from a runway, the number of accidents at the third London airport may be assumed to be 11 in 30 years.

14.40 There were about 70 serious accidents involving jet public transport aircraft beyond 500 ft from a runway (1959-68) where there appeared to be at least a potential hazard to third parties dependent upon site

Printed image digitised by the University of Southampton Library Digitisation Unit

location. Eight of these (11 per cent) resulted in third party casualties shown in table 14.13. Of the 11 serious accidents assumed at a third London airport perhaps one might be likely to cause third party casualties outside the airport environs.

14.41 The rate of third party property damage per casualty is low because not all third party casualties are associated with property loss. Since the third party hazard is much less over sparsely inhabited terrain and over water, these casualties and property loss would not be expected at a coastal site.

Bird-strike hazard

14.42 The evidence available indicates that bird-strikes will not be a serious hazard to life and limb since aircraft at present and in the future are able to withstand bird impact safely. The major effect of the hazard will be damage to aircraft.

14.43 Existing coastal and inland airports have bird control programmes including bird-scaring devices and environmental management. There is little existing research to show what relationship, if any, exists between the frequency of bird strike incidents and bird control programmes. Even if the present cost of bird control were matched by savings in the cost of repairs and replacements resulting from effective reduction in bird-strikes, it does not necessarily follow that a further increase in expenditure will produce a further reduction in costs.

14.44 The Infestation Control Laboratory, Ministry of Agriculture, Fisheries and Food, has conducted a study to estimate what measures would be appropriate for bird control at Foulness.

14.45 In the absence of definite information about the relationship between bird control costs and savings in repairs and replacements, an assumption has to be made. If it is assumed that the bird control programmes at present being designed for coastal and inland sites are at least implicitly based on an assessment of their cost effectiveness and that the existing relationship between strike frequencies at coastal and inland sites is taken into account in this assessment, then the costs resulting from any bird-strikes which nevertheless occur and the costs of the bird control programme are additive.

14.46 The cost of bird-strikes and bird-strike prevention is made up of recurring property loss to airline operators and the cost of bird control programmes operated by the airport authority.

14.47 Bird-strike incident costs were computed by examining repair costs for four airlines. The average cost per movement in recent years has been:

Airlines	*Cost/movement*	*Movements (000s)*
Air Canada	£0.17	(296)
BEA	£0.08	(172)
BOAC	£0.24	(111)
KLM Royal Dutch	£0.40	(117)
Weighted average cost	£0.20	

Printed image digitised by the University of Southampton Library Digitisation Unit

These figures should not be taken to represent real differences between the airlines concerned since major bird-strike damage to an aircraft is so rare that a single serious event could alter airline costs considerably.

14.48 The cost of repairing and replacing engines is increasing. At the same time new engines are being designed to make them more resistant to damage. While these two factors are working in opposite directions, it is not possible accurately to predict the amount of change in costs which should be attributed to each. To take into account the net increase in repair costs expected the average cost per bird-strike should be increased. A reasonable figure would be £0.25 per movement on average over 30 years.

14.49 The Civil Aviation Department, Board of Trade, have provided an analysis of the UK bird-strike incidents for 1968. This indicated that bird-strike incidents were three times as frequent at coastal sites as at inland sites. The Foulness site may well be more prone to bird-strikes than other existing coastal airports in the UK, since Foulness is especially attractive to large numbers of birds. Construction of an airport at Foulness could, however, cause radical changes in the environment. The Infestation Control Laboratory has investigated what the effects might be on bird numbers and bird behaviour, including the benefits which might result from the establishment of a bird sanctuary in the region. However, even with an elaborate bird management and control programme Foulness could remain more prone to bird-strikes than other existing coastal airports and there could be therefore at least three times as many bird-strikes as at an inland site. At an inland site for 9 million aircraft movements the cost of bird incidents would be about £2.3 million and at the Foulness site at least £6.9 millions. The additional cost for the Foulness site would therefore be at least £4.6 million over 30 years.

Bird control

14.50 Bird control programmes rely upon management of environmental conditions in the vicinity of an airport and upon bird scaring devices. Methods of environmental management include reduction of the food supply and roosting areas by elimination of rubbish tips and the planting of vegetation to discourage roosting. At Auckland International Airport a bird refuge has been set up as a counter-attraction to deter birds, especially waders, from using the airport environs. Refuges such as these can help in reducing the bird-strike hazard and in conserving vulnerable species of birds but they are not expected to reduce the bird-strike hazard at Foulness to the level of an inland site. The conservation aspects are discussed in chapter 24.

14.51 The major cost factor for bird control will be for bird scaring. The Infestation Control Laboratory has advised that an inland site will require facilities similar to those used at Heathrow. The Sappho system, currently used, broadcasts from a vehicle sounds which discourage birds from roosting on the airport site. The personnel who operate the vehicle also explode shellcrackers for the same purpose. The costs of one system are as follows:

(a) one Sappho Bird Scaring System (life 10 years) capital cost for initial system and each of 2 replacements £800

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) maintenance £100 per annum for 30 years

(c) one vehicle (life 6 years) capital cost for initial provision and for each replacement £1,000

(d) vehicle costs and maintenance per annum for 30 years £1,000

(e) shellcrackers, 4,000 rounds £230 per annum

(f) manpower: 2 men, 12 hours per day, 7 days per week - £6,500 per annum.

14.52 Because of the higher number of birds at Foulness, the Infestation Control Laboratory has advised that four systems would be required, phased so that one would be provided for the first runway and one for each additional runway.

Summary of costs

14.53 The discounted (at 10 per cent per annum) costs for an inland site and for Foulness estimated for each of the cost categories described in this chapter are as follows:

(a) *Search and rescue costs* (discounted)

Foulness:	Operating costs	£650,000
	Capital costs	£350,000
		£1 million
Inland sites:	Nil.	

(b) *Third party costs*

The costs to be attributed to third party fatalities and injuries are the same as those assumed by the Ministry of Transport in its studies for casualties in road vehicles, i.e. £9,300 for each fatality and £625 for each injury, assuming an equal number of serious and slight injuries.

Inland sites: one accident over thirty years would account for about 4 fatalities and 4 injuries. The combined cost would be about £40,000. In discounting this amount it is necessary to take into account that the risk of occurrence of an accident is related to the total number of aircraft movements in a given year. The discounted cost, weighted according to risk, would be about £8,000.

Foulness: negligible.

(c) *Birdstrike costs*

Inland sites: £2.3 millions over 30 years, discounted according to the risk of incident as in (B) above. Total discounted £0.46 million.

Foulness: £6.9 millions discounted to £1.38 millions.

Printed image digitised by the University of Southampton Library Digitisation Unit

(d) *Bird control*

Inland sites:

(i) annual costs	£7,830
(ii) Sappho system costs discounted according to year of provision	£1,000
(iii) vehicle costs discounted according to year of provision	£1,800

Foulness: the timing of the runways will affect both the length of time during which costs would be incurred and also the date at which each additional system would begin to operate:

(i) system 1 - discounted cost	£70,000
(ii) system 2 - discounted cost	£38,000
(iii) system 3 - discounted cost	£19,000
(iv) system 4 - discounted cost	£9,000
Total discounted cost	£136,000

(e) *Summary* - the total cost for inland sites relative to Foulness is shown in table 14.14 below.

Table 14.14

Summary of safety costs (£000)

	Inland sites	*Foulness*
Search and rescue	NIL	1,000
Third party hazard	8	Negligible
Bird-strike damage	460	1,380
Bird control	70	136
Total	£538	£2,516

The net discounted cost penalty to Foulness is therefore about £2 million.

14.54 The only safety cost item directly giving rise to human suffering as opposed to accident prevention or mitigation and to property damage is included in the item on third party hazard which favours Foulness. The cost assigned to a fatality as given in paragraph 14.53 may be thought inadequate. It should however be pointed out that considerably more fatalities would have to be assumed at the Foulness site, if the difference in fatality rates between land and water - shown in table 14.11 but not taken into account because the appropriate statistical test showed that the evidence was insufficiently strong - were in fact a real difference.

Printed image digitised by the University of Southampton Library Digitisation Unit

15.1 The third London airport will have repercussions on defence establishments including RAF and United States Air Force airfields and Ministry of Defence firing ranges and weapon testing centres. The airspace requirements of a third London airport at any of the four short-listed airport sites will impinge on military flying and weapon firing, the degree of impingement being different in the case of each airport site. The land requirements of an airport at the Foulness site would physically impinge on the defence establishments located at Shoeburyness.

15.2 It has been assumed that all military activities which have to be displaced will be redeployed to another location. It has been left to the Ministry of Defence to state what alternative dispositions would be made and to estimate the net costs involved.

15.3 The Ministry of Defence installations at or near Foulness comprise the Shoeburyness Proof and Experimental Establishment with its firing range, the Environmental Test Centre and an outstation of the Royal Armament Research and Development Establishment. There is also an Atomic Weapons Research Establishment belonging to the United Kingdom Atomic Energy Authority. All would need to be relocated if the Foulness site were selected, and relocation would have to start at least five years before the third London airport comes into operation. However, the general increase of air traffic in the south east, irrespective of which site is chosen, will prevent the indefinite continuation of the firing ranges, though not of the other activities. In the case of the ranges, therefore, the cost to be debited to Foulness arises from an earlier move than would otherwise have been required.

Printed image digitised by the University of Southampton Library Digitisation Unit

15.4 The Ministry of Defence have said that all of the redeployments which would be caused by any of the four sites could in principle be carried out subject only to considerations of cost.

15.5 The figures included in the cost/benefit analysis have been based on the cost estimates provided by the Ministry of Defence (with the assistance of the Ministry of Public Building and Works). Both Ministries have pointed out that their experience of such initial estimates shows that some of them may prove to have been seriously under-stated. No specific allowance has been made for this. Receipts from the disposal of airfields, buildings and married quarters have also been estimated.

15.6 For the purposes of their assessments of redeployments, the Ministry of Defence were asked to consider the expected route structures at three different phases in the build up of traffic at each third London airport site. Phase 1 was taken as the point when movements were expected to reach the peak hourly rate of 5 and phases 2 and 3 assumed peak hourly rates of 22 and 56 movements respectively. Construction work would in many cases have to start well in advance of the date estimated for a particular redeployment. The discounting of the Ministry of Defence cost estimates of 10 per cent per annum to the base year of 1975 has taken into account the expected dates for such expenditure.

15.7 The controlled airspace requirements of the Cublington site would interfere with flying and other operations at 29 military establishments. Some or all of the tasks at the following locations would have to be moved at some stage: the Army's Proof and Experimental Establishment at Shoeburyness and RAF stations Abingdon, Benson, Bicester, Brize Norton, Cardington, Little Rissington, Thorney Island, Upper Heyford, Weston-on-the-Green and White Waltham. The resulting costs which have been included in the cost/benefit analysis are shown in table 15.1 below.

Table 15.1

Defence costs - Cublington (£M)

Phase/year	*Redeployments*	*Relocation costs (1968 prices)*	*Discounted costs*
I/1982	Cardington	0.1	Negligible
	Upper Heyford	33.0	29.0
	(less residual assets)	(- 0.9)	(- 0.5)
II/1982	nil	nil	nil
III/1984	Shoeburyness	23.0	16.0
	Abingdon)		
	Benson)		
	Bicester)	2.0	1.0
	Thorney Island)		
	Weston-on-the-Green)		
	Brize Norton	35.0	25.0
	Little Rissington)		
	White Waltham)	2.0	1.0
	(less residual assets)	(-13.0)	(-5.5)
	Total net discounted costs		66

Printed image digitised by the University of Southampton Library Digitisation Unit

15.8 The controlled airspace requirements of the Foulness site would interfere with flying and other operations at 20 military establishments. Some or all of the tasks at the Army's Proof and Experimental Establishment and at other installations at Shoeburyness and the RAF station at Cardington would have to be moved. The resulting costs which have been included in the cost/benefit analysis are shown in table 15.2 below.

Table 15.2

Defence costs - Foulness

Phase/year	*Redeployments*	*Relocation cost (1968 prices)*	*Discounted costs*
I/1982	Shoeburyness	23	19
	Cardington	0.1	Negligible
	Other Shoeburyness installations	4.5	3
	(less residual assets)	(4)	(-2)
II/1983	nil	nil	nil
III/1990	nil	nil	nil
	Total net discounted costs		20

15.9 The controlled airspace requirements at Nuthampstead would interfere with flying and other operations at 37 military establishments. Some or all of the tasks at the following locations would have to be moved at some stage: the Army's Proof and Experimental Establishment at Shoeburyness and RAF stations Cardington, Little Rissington, Oakington, Upper Heyford, Wattisham, West Raynham and Wethersfield. The resulting costs which have been included in the cost/benefit analysis are shown in table 15.3 below.

Table 15.3

Defence costs - Nuthampstead (£M)

Phase/year	*Redeployments*	*Relocation costs (1968 prices)*	*Discounted costs*
I/1982	Oakington	2.0	1.0
	(less residual assets)	(-0.7)	(-0.35)

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 15.3 (Contd.)

Phase/year	*Redeployments*	*Relocation costs (1968 prices)*	*Discounted costs*
II/1982	Cardington	.1	)
	Wattisham	2.5	) 3.0
	West Raynham	1.7	)
	(less residual assets)	(0.7)	(0.35)
III/1984	Shoeburyness	23.0	16.0
	Little Rissington	1.9	1.0
	Upper Heyford	34.0	24.0
	Wethersfield	16.0	9.0
	(less residual assets)	(-4.0)	(-1.7)
	Total net discounted costs		52

15.10 The controlled airspace requirements at Thurliegh would interfere with flying and other operations at 41 military establishments. Some or all of the tasks at the following locations would have to be moved at some stage: the Army's Proof and Experimental Establishment at Shoeburyness and RAF stations Alconbury, Cardington, Little Rissington, Oakington, Upper Heyford, Wattisham, West Raynham, Wethersfield, White Waltham and Wyton. The resulting costs which have been included in the cost/benefit analysis are shown in table 15.4 below.

Table 15.4

Defence costs - Thurleigh (£M)

Phase/year	*Redeployments*	*Relocation costs (1968 prices)*	*Discounted costs*
I/1982	Alconbury	23.0	17.0
	Oakington	2.0	1.0
	Cardington	0.1)	1.0
	Wyton	1.9)	
	(less residual assets)	(-2.0)	(-1.0)
II/1982	Little Rissington	1.9	1.0
	Upper Heyford	32.0	27.5
	Wattisham	2.5	1.5
	West Raynham	1.9	1.0
	Wethersfield	16.0	11.0
	(less residual assets)	(-1.7)	(-0.9)
III/1984	Shoeburyness	23.0	16.0
	White Waltham	0.1	Negligible
	(less residual assets)	(-4.0)	(-1.7)
	Total net discounted costs		73

Printed image digitised by the University of Southampton Library Digitisation Unit

16.1 This chapter deals with the public scientific establishments affected by the four airport sites. Private scientific establishments are dealt with in chapter 23 with other industrial concerns. The establishments would be affected by the airspace requirements of the airport, by the noise of the airport, by radio transmissions from aircraft and airport, or by a combination of these factors.

16.2 The following establishments would be affected by some or all of the sites:

(a) **Ministry of Technology establishments**

(i) Royal Aircraft Establishment, Bedford. If the airport were to be located at Thurleigh or Nuthampstead the airfield activities of the Royal Aircraft Establishment (consisting mainly of advanced flight research and blind landing work) would have to be transferred elsewhere. If the airport were to be located at Cublington or Foulness, flying could continue at Bedford but additional costs would be incurred because of the increase in airspace requirements in the area assumed to be needed by each of these two sites. On the basis of advice from the Ministry of Technology it has been assumed that the large wind tunnel complex at the establishment would be affected by the proximity and noise of aircraft operations from an airport sited at Thurleigh and would have to be relocated elsewhere by 1995,

(ii) Research and Development Establishment, Cardington. The balloon flying operations at Cardington for test and meteorological purposes would not be possible and another site would have to be equipped,

(iii) Royal Aircraft Establishment, Farnborough. Flying operations at Farnborough would be affected by the increase in airspace requirements in the area assumed to be needed by each of the four sites. It has been assumed that some flying would continue at Farnborough at additional cost, and that the remainder would have to be transferred to another airfield. In the case of Cublington or Foulness, this would be RAE Bedford, and in the case of Nuthampstead or Thurleigh it would be elsewhere.

(b) **Establishment under the auspices of the Science Research Council**

(i) The Mullard Radio Astronomy Observatory at Lord's Bridge. This is part of the Cavendish Laboratory at Cambridge, which has made important contributions both to basic astronomical research and to the training of research scientists for science-based industries in the United Kingdom. The radio telescopes of this observatory would be affected by radio transmissions from the airport. Immediately a third London airport sited at Thurleigh or at Nuthampstead came into operation the research programmes of the observatory would have to cease. If Foulness were chosen the research programmes could continue for about eight years. The observatory would not be affected if the third London airport were to be sited at Cublington.

Printed image digitised by the University of Southampton Library Digitisation Unit

16.3 Costs for Ministry of Technology establishments

Table 16.1 shows the costs for the Ministry of Technology establishments. The year shown is the year by which relocation must be completed. The relocation cost figures take into account the timing of costs before relocation occurs. The costs are at 1968 prices and have been discounted at 10 per cent to the base year of 1975. Residual assets are those remaining at a site after relocation.

Table 16.1

Ministry of Technology establishments (£M)

Site	*Establishment*	*Year*	*Costs*	*Discounted costs*
Cublington	RAE Bedford-additional flying cost, including flying transferred from RAE Farnborough	1983-2006	0.04 p.a.	0.2
	RAE Cardington	1982	0.7	0.4
	RAE Farnborough-partial relocation of flying to RAE Bedford	1983	2	1
	RAE Farnborough-additional flying costs	1983-2006	0.08 p.a.	0.4
		Total discounted costs		2
Foulness	RAE Bedford-additional flying cost, including flying transferred from RAE Farnborough	1983-2006	0.036 p.a.	0.2
	RAE Cardington	1982	0.7	0.4
	RAE Farnborough-partial relocation of flying to RAE Bedford	1987	2	0.6
	RAE Farnborough-additional flying costs	1983-2006	0.036 p.a.	0.2
		Total discounted costs		1.4
Nuthampstead	RAE Bedford-relocation of all flying to another site and RAE Farnborough-partial relocation of flying to the same site	1983	9.0	5.8

Printed image digitised by the University of Southampton Library Digitisation Unit

Site	*Establishment*	*Year*	*Costs*	*Discounted costs*
Nuthampstead (cont.)	*(less* residual assets)		(-0.5)	(-0.3)
	RAE Cardington	1982	0.7	0.4
	RAE Farnborough-additional flying costs	1983-2006	0.067 p.a.	0.3
		Total net discounted costs		6.2
Thurleigh	RAE Bedford-relocation of all flying to another site-and RAE Farnborough-partial relocation of flying to the same site	1982	9	6.3
	(less residual assets)		(-1.5)	(-0.8)
	RAE Bedford-relocation of wind tunnels	1995	21	5.4
	(less residual assets)		(-0.5)	(-0.1)
	RAE Cardington	1982	0.7	0.4
	RAE Farnborough-additional flying costs	1983-2006	0.08 p.a.	0.4
		Total net discounted costs		11.6

Mullard Radio Observatory costs

16.4 The Science Research Council have advised the Commission that they would support relocation of the observatory at an estimated cost of around £6 million, if an alternative site could be found. So far however it has not proved possible to find a site which satisfies the essential criteria of geological conditions, freedom from radio interference and proximity to Cambridge. While possible sites could be found some distance away, there is no certainty that the present activity would continue unimpaired in a different part of the country because of the close ties to Cambridge. Because of the risk of failing to find a suitable site and the acknowledged importance of this research, the appropriate cost for the cost/benefit study has been taken as £10 million,

16.5 The discounted cost of loss of assets attributable to each airport site is shown in table 16.2.

Table 16.2

Mullard Radio Observatory costs (£M)

Site	*Year of relocation*	*Cost*	*Discounted cost*
Cublington	none	nil	nil
Foulness	1990	10	2
Nuthampstead	1982	10	5
Thurleigh	1982	10	5

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

17.1 This chapter discusses the effects of the proposed sites for the third London airport on private airfields and gliding sites in the London area, and the costs which have been estimated to account for these effects. Flying activities at these airfields can be divided into five categories:

(a) gliding,

(b) private and club flying,

(c) executive (company) flying,

(d) test flying,

(e) miscellaneous.

17.2 The enlarged volumes of controlled airspace needed for the third London airport may restrict the scope of these flying activities or prohibit them altogether, and the following types of cost may occur:

(a) more expensive or time-consuming flying - aircraft may have to fly further to find uncontrolled airspace,

(b) relocation costs - clubs or companies may have to relocate their aircraft at another airfield. The costs of such moves are partly the cost of replacing facilities which cannot be transferred and partly costs of extra surface journeys to the new site,

(c) loss of benefits to those flying - if an activity cannot be transferred there will be a loss of benefit to fliers, measured by the value of non-transferable assets used in flying with an allowance for consumer surplus.

17.3 The costs in 17.2 (b) and 17.2(c) will be offset in part by the residual value of land and permanent buildings at the airfields or sites in question.

17.4 The effects of the third London airport sites on the categories of flying activity in paragraph 17.1 (a), (d) and (e) - gliding, test flying and miscellaneous activities - have been assessed at two points in time, the time when the third London airport is forecast to be operating with one runway and a fairly wide range of services (giving rise to about 22 air transport movements per peak hour on the 15th busiest day of the year) and the time when the airport is forecast to be operating with reasonably heavy traffic on two runways (56 movements per peak hour on the 15th busiest day). These times, referred to as "stage 1" and "stage 2" in the following paragraphs, have been taken to be 1983 and 1990 in the case of Foulness and 1982 and 1984 in the case of all three inland sites. The approximate costs given in the following paragraphs, which are expressed at 1968 prices, have been based on discussions with or information from

Printed image digitised by the University of Southampton Library Digitisation Unit

the British Gliding Association, the British Light Aircraft Centre and the relevant authorities concerned with the airfields mentioned.

Gliding

17.5 The evaluation has been carried out on the principles in paragraphs 1.15 and 1.16 of chapter 1, which were discussed in paragraphs 104-107 of the Commission's Proposed Research Methodology *CTLA Papers and Proceedings*, volume VII, part 1. Foulness has very little effect and no cost has been assigned. It is not possible to distinguish between the effects of inland sites. For each of them gliding would become increasingly restricted from stage 1 onwards. It has been assumed, and it is probably an extreme assumption, that most gliding activity in the south east would cease after stage 2.

17.6 The cost of these effects has been calculated by reference to the fact that gliding club members who would be willing to travel further to their gliding site than they at present have to travel enjoy a net benefit equalling the cost of travelling the extra distance. The loss of this net benefit is taken as the cost of the effect of the third London airport sites. The loss per member is multiplied by the number of members which, on present trends, gliding clubs in the south east region are likely to have at stage 2 and thereafter through to year 2006. The stream of lost net benefits is discounted at 10 per cent to the base year of 1975 to obtain a capitalised sum.

17.7 The British Gliding Association at present has 4,740 members in the south east region, and membership is growing at present at 7-8 per cent annually. On this basis there would be about 16,000 in 1984. The average distance members travel is about 20 miles and few at present travel more than 50 miles. Those who would not be willing to travel any further than they at present do to enjoy their sport have no net benefit for the purpose of this calculation (i.e. they would be just as content in their next preferred recreation). The remainder can be divided for the purposes of the assessment into those who travel 15 miles, those who travel 30 miles and those who travel 50 miles. Taking the first of these divisions to illustrate the method, some of those who travel 15 miles would be prepared to travel 30 miles (an extra 15), some would be prepared to travel 50 (an extra 35) and some might be prepared to travel even 100 miles (an extra 85). The cost of this extra travel would be the cost of the car journey (to be valued at 2.6d a mile according to table 11.4 in chapter 11, assuming an average speed of 30 mph), plus the cost of the leisure time lost (to be valued at 39d an hour according to table 11.3 of chapter 11). For the single journey the cost of an extra 15 miles at 2.6d (39d) plus half an hour at 39d (20d), makes a total of 59d.

17.8 It has been assumed that most members travel to their club and back on average once a fortnight, so that over the year for each member this would happen 50 times. The annual cost of the third London airport's effects per member who travels 15 miles but would be prepared to travel 30 is therefore about £12. For those who travel 15 miles but would be willing to travel 50, the annual cost is about £28 and for those who travel 15 but would be willing to travel 100 miles it is about £70. Assuming that each of these cases involves one-third of the club members at

Printed image digitised by the University of Southampton Library Digitisation Unit

present travelling 15 miles, the average net benefit received by each member who at present travels that distance is about £28 per year.

17.9 By similar reasoning, and assuming that one-third of gliding club members at present travel 15 miles, one-third 30 miles and one-third 50 miles, it is estimated that to those who now travel 30 miles the average annual net benefit and therefore the cost is £25 and to those who now travel 50 miles it is £18. The average annual net benefit and cost per gliding club member, over all present members, amounts to £23.

17.10 The discounted stream of benefits which would be lost from 1984 onwards if an inland site were chosen is £3 million based on the values given above and the number of members forecast in paragraph 17.8 and a continuing growth rate of 8 per cent per annum. This figure has been included in the assessment of outdoor recreational activities in chapter 24.

Private and club flying

17.11 The airfields discussed in this section are those which cater principally for private and club flying, namely Leavesden, Silverstone, White Waltham, Wycombe Air Park, Sywell, Clacton and Elstree. The air transport airports of Luton, Southend and Stansted have also been included in order to take into account the costs and benefits to private and company flying at these airports. Similarly Cambridge airport is included in respect of private and club activities there although test flying at Cambridge is discussed in paragraph 17.20 below. Other airfields handling club and private flying are not thought likely to be adversely affected by any of the third London airport sites.

17.12 The effects on private and club flying can be divided into the effects on training and the effects on cross-country flying. The main effect on training is that with the inland third London airport sites training aircraft would have to fly further to find free airspace in which to practise certain mandatory exercises such as spinning, which cannot be started below 5,000 ft. Airfield circuit training is unlikely to be affected. The extra distance flown each way to and from free airspace by each pupil has to be costed. A figure of £8 per flying hour has been used. The average cruising speed has been assumed to be 100 mph, and the extra distance to be flown each way by a pupil has been estimated as 30 miles on average in the case of Cublington, 20 miles in the case of Nuthampstead and Thurleigh, and nil in the case of Foulness.

17.13 The annual number of pupils flying the extra distance has been calculated as follows: the current growth rate of private flying licences suggests that there will be a demand for about 20,000 new licences per year in the 1980s. Assuming that about half of this demand occurs in the London area and that for every demand for a new licence the pilot will need a conversion course on to a new aircraft type (which may be an extreme assumption), there would be about 20,000 pupils on flying courses in the 1980s. During each course each pupil would fly the extra distance to and from the free airspace at least twice. The estimated cost is given in table 17.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 17.1

Effect on flying training

Third London airport site	*Annual cost £*	*Discounted cost (£.M)*
Cublington	192,000	1.00
Foulness	nil	nil
Nuthampstead	128,000	0.67
Thurleigh	128,000	0.67

17.14 Cross-country flying by private and club aircraft normally uses uncontrolled airspace. It has been estimated that to avoid the third London airport's control zone, the aircraft would have to fly 5 miles further than at present in the case of Foulness, 20 miles further in the case of Cublington and 10 miles further in the cases of Nuthampstead and Thurleigh. Assuming 100,000 cross-country flights per year in the 1980s across the London area and that the cost per mile is about 24d (equivalent to £10 per flying hour), the costs which would be incurred are those shown in table 17.2.

Table 17.2

Effect on cross-country flying

Third London airport site	*Annual cost £*	*Discounted cost (£.M)*
Cublington	187,000	1.00
Foulness	47,000	0.25
Nuthampstead	94,000	0.50
Thurleigh	94,000	0.50

17.15 The total costs for private and club flying are shown in table 17.3 below.

Table 17.3

Effect on private and club flying

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Training	1.00		0.67	0.67
Cross-country	1.00	0.25	0.50	0.50
Total	2.00	0.25	1.17	1.17

Business and executive aircraft

17.16 The following assumptions have been made about this type of flying:

(a) the majority of these aircraft will be capable of using controlled airspace and the airways system,

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) major general aviation airfields in the south east will be provided with a radar service, under the extended NATCS system due to be introduced in 1970s,

(c) clearances to enter controlled airspace will be obtainable on request without delay on most occasions.

17.17 On these assumptions, no significant costs are likely to be imposed on business and executive flying by any of the third London airport sites. With any of the inland sites there would be some increased workload on the National Air Traffic Control Services arising from the need to control business and executive aircraft in extended controlled airspace. The cost involved should not be significant for the inter-site comparison. No figure has therefore been included for this factor.

Test flying

17.18 The airfields in this section are mainly those concerned with test and production flying by aircraft and engine manufacturers. They are Hatfield (Hawker Siddeley), Radlett (Handley Page), Bitteswell (Hawker Siddeley), Wisley (British Aircraft Corporation), Dunsfold (Hawker Siddeley), Hucknall (Rolls Royce), Shoreham and Rearsby (Beagle) and Bembridge (Britten-Norman). Cambridge Airfield is also included.

17.19 The effects and costs on activities at Hatfield and Radlett are summarised in table 17.4 below. The following assumptions have been made:

(a) for Hatfield about 2,000 flights per year are likely to be affected by extended controlled airspace, the average duration of flight is 2 hours, and the average cost per flying hour for aircraft at Hatfield is £350,

(b) For Radlett, each civil flight will take 10 per cent longer at a cost of about £75,000, with roughly equal cost for military flying, and the total extra cost for all flights will be £140,000 annually,

(c) With the third London airport at Nuthampstead or Thurleigh, manufacture would continue at Hatfield and Radlett but aircraft would be flown out to be tested at another airfield. The facilities needed at the new location would be hangars, office accommodation, computer rooms, engineering workshops and aprons. The airfields at Hatfield and Radlett would remain in use for communication flights. The land would not therefore be available for other uses.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 17.4

Effect on flying at Hatfield and Radlett

Third London airport site	*Stage 1*	*Stage 2*	*Total discounted cost*
Cublington	All test flights take 5 per cent longer. Cost - £140,000 annually.	As for Foulness stage 1.	£1.32 million
Foulness	All test flights take 10 per cent longer. Cost - £280,000 annually.	All test flights take 15 per cent longer. Cost - £420,000 annually.	£1.62 million
Nuthampstead	Test flying at Hatfield removed to another air-field. Cost of new facilities £5 million. Same effect at Radlett, cost £5 million.	As in stage 1	£5.10 million
Thurleigh	As for Nuthampstead	As for Nuthampstead	£5.10 million

17.20 The effects and costs on activities at the other manufacturers' airfields are summarised in table 17.5 below. The following assumptions have been made:

(a) For Bitteswell, Wisley and Cambridge, flying costs are the same as at Hatfield and Radlett,

(b) For Dunsfold, flying costs are half as much as at Hatfield and Radlett because the level of flying activity at Dunsfold is less,

(c) For Hucknall, 3 communication flights a day would be affected at a cost of £35 per flight,

(d) For Shoreham, Rearsby and Bembridge, 10 test flights per day would be affected.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 17.5

Effect on test flying at other manufacturers' airfields (£000 unless otherwise stated)

Third London airport site	Manufacturers' airfield: *Bitteswell*	*Wisley*	*Cambridge*	*Dunsfold*	*Hucknall*	*Shoreham and Rearsby*	*Bembridge*
Cublington							
Stage 1	EF 140 p a	EF 210 p a	nil	EF 70 p a	EF 25 p a	EF 5 p a	EF 5 p a
Stage 2	*EF 140* p a	*RL 5,000* p a	nil	*RL 2,500* p a	*EF 25* p a	*RL 500* p a	*RL 500* p a
Total discounted cost (£M)	0.66	2.37	nil	1.77	0.13	0.21	0.21
Foulness							
Stage 1	EF 140 p a	nil	nil	nil	nil	nil	nil
Stage 2	*EF 140* p a	*EF 210* p a	nil	*EF 70* p a	nil	nil	nil
Total discounted cost (£M)	0.66	0.45	nil	0.15	nil	nil	nil
Nuthampstead							
Stage 1	nil	nil	EF 280 p a	nil	EF 25 p a	nil	nil
Stage 2	*EF 280* p a	*EF 210* p a	*EF 420* p a	*EF 70* p a	*EF 25* p a	*EF 5* p a	*EF 5* p a
Total discounted cost (£M)	1.08	0.45	1.62	0.15	0.13	0.03	0.03
Thurleigh							
Stage 1	EF 350 p a	EF 70 p a	nil	EF 35 p a	EF 25 p a	nil	nil
Stage 2	*EF 420* p a	*RL 5,000* p a	nil	*RL 2,500* p a	*EF 25* p a	*EF 5* p a	*EF 5* p a
Total discounted cost (£M)	2.11	2.18	nil	1.42	0.13	0.03	0.03

Note: EF = extra flying
RL = relocation

17.21 The total costs of the effects on test flying are shown in table 17.6 below.

Table 17.6

Effect on test flying (discounted costs) (£ M)

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Hatfield and Radlett	1.32	1.62	5.10	5.10
Other manufacturers' airfields	5.35	1.26	3.49	5.90
Total	6.67	2.88	8.59	11.00

Cranfield Institute of Technology and miscellaneous

17.22 The effects and costs on activities at Cranfield are summarised in table 17.7 below. The following assumptions have been made:

(a) contractual research test flying on behalf of the Ministry of Technology and the aircraft industry could be carried out elsewhere without significant extra cost,

(b) Rogers Aviation would have to be re-located at a cost of £125,000 for hangars, buildings and other facilities at the new location, net of the value of any residual assets left behind at Cranfield, but would not suffer any significant loss of business on re-location,

(c) The Royal Aircraft Establishment, Bedford would remain in operation if the third London airport were sited at Cublington, Foulness or Nuthampstead and the radar facilities would continue to be available to aircraft from Cranfield.

Table 17.7

Effects on Cranfield

Third London airport	*Stage 1*	*Stage 2*	*Discounted cost (£ M)*
Cublington	As for Nuthampstead	As for Nuthampstead	0.55
Foulness	No effect	Duration of Institute flights increased Cost - £14,000 p a	0.03
Nuthampstead	Duration of Institute flights increased. Cost - £14,000 p a	New aircraft required. Capital costs £860,000. Additional operating costs £30,000 p a Rogers Aviation has to move. Cost - £125,000.	0.55
Thurleigh	Duration of Institute flights increased. Cost - £14,000 p a Rogers Aviation has to move.	Institute flying impossible. Institute likely to relocate. Relocation cost £10 million. Value of site and buildings £1 million.	3.97

Printed image digitised by the University of Southampton Library Digitisation Unit

17.23 The costs attributable to Cranfield as an educational establishment have also been included in the assessment of such establishments in chapter 21 (i.e. £0.05 million in the case of Cublington and Nuthampstead, £3.91 million in the case of Thurleigh and nil in the case of Foulness).

17.24 Although some of the third London airport sites would impose restrictions on demonstration flying at Old Warden Aerodrome, Biggleswade, which is used for flying displays in connection with the Shuttlesworth collection of historic aircraft, the collection and associated flying would not have to relocate. No costs have therefore been included for this airfield.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

18.1 The noise nuisance produced by an airport is a function of the duration, loudness and tone of the noise emitted by aircraft using the airport, and of the number of occasions on which noise is experienced.

18.2 The unit of loudness of noise most commonly used for measuring aircraft is the Perceived Noise Decibel (PNdB). This is a measure of noisiness obtained by weighting the sound levels of different frequencies so as to give most weight to those frequencies to which the human ear is most sensitive. This unit has been used throughout the study to measure the level of noise produced by an aircraft. A precise definition is given by K.D. Kryter.*

18.3 The index used to measure the combined effect of the noise nuisance from individual aircraft and the number of occasions on which noise is experienced is called the Noise and Number Index (NNI). This index was developed by the Committee on the Problem of Noise,** and has since been widely used within the United Kingdom. However, its validity has been questioned in evidence to the Commission.

18.4 The NNI is defined as:

$$\overline{\text{PNdB}} + 15 \log N - 80,$$

where N is the number of aircraft heard on an average summer day between 0700 and 1900 hours (BST) and $\overline{\text{PNdB}}$ is the average peak noise of these aircraft in PNdB, that is:

$$\overline{\text{PNdB}} + 10 \log_{10} (1/N) \sum_{i=1}^{N} 10^{L_i/10},$$

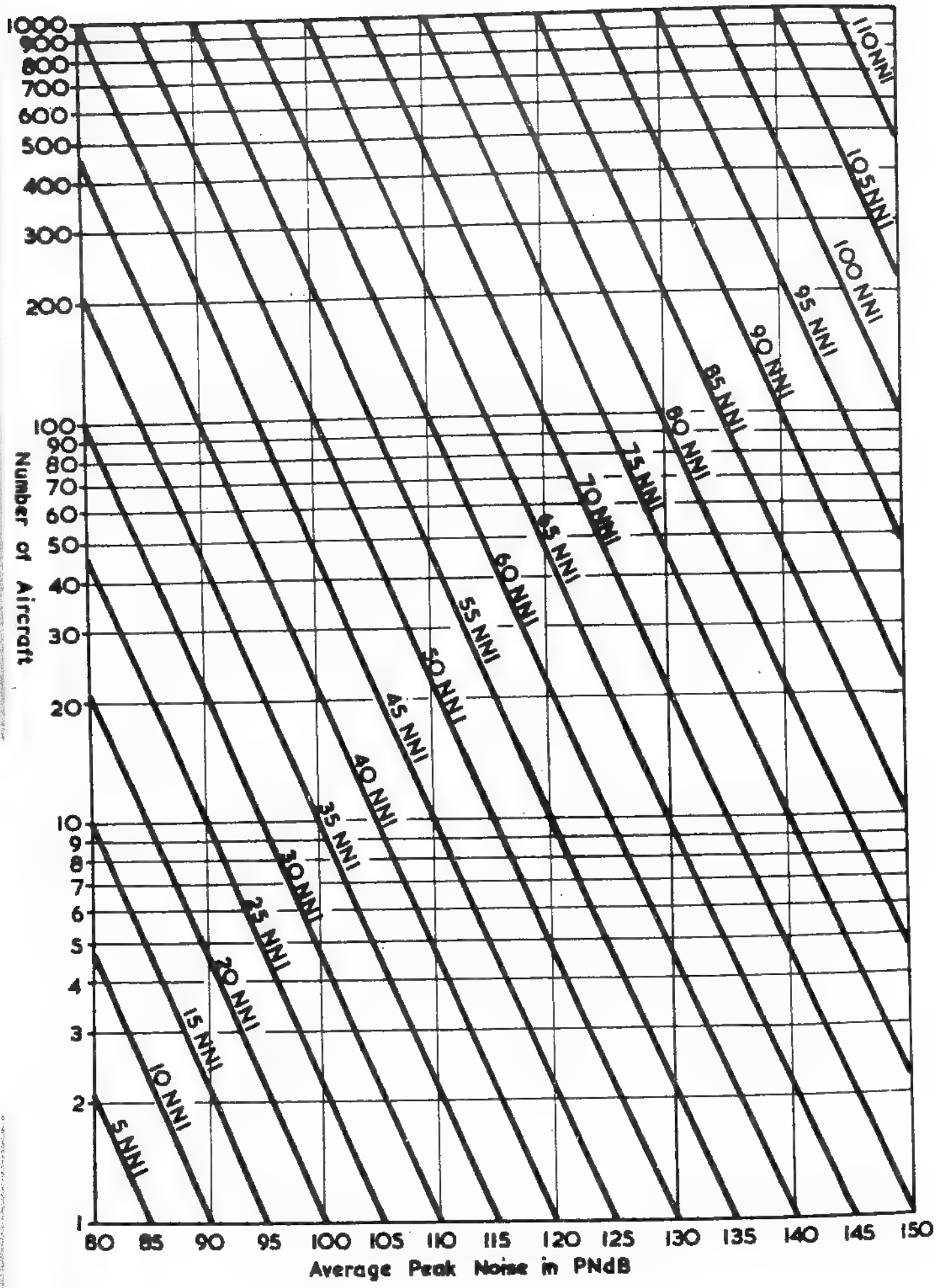
where L_i is the peak noise level in PNdB occurring during the passage of the i^{th} aircraft. This formula for average peak PNdB is derived from the average of the energy intensities producing the individual peaks. This leads to an average peak PNdB which lies above the conventional arithmatic average. Figure 18.1 shows graphically the relationship between NNI, the average peak noise, and the number of aircraft.

18.5 The NNI was derived from a social survey carried out by McKennell in the area around London (Heathrow) Airport in 1961 on behalf of the Committee on the Problem of Noise. The loudness and duration of noise and the number of aircraft affecting a representative sample of the population were measured, and correlated with the subjective reactions of those same people. The NNI was found to give the best fit to the 58 socio-psychological variables obtained from the survey.

* *Journal of the Acoustical Society of America, 31,* 1415 (1959).
** *Noise - Final Report* Cmnd. 2056 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

FIG. 18.1.



Printed image digitised by the University of Southampton Library Digitisation Unit

18.6 The Surrey County Council have imposed planning restrictions on new development around Gatwick Airport based on NNI value. Table 18.1 shows how NNI are related to the average reactions of people in the social survey and to the Surrey planning restrictions.

Comparison with other indices

18.7 Because other countries use slightly different indices and because the validity of the NNI has been questioned, three indices of noise nuisance used in other countries have been examined to see whether they offer any advantages over the NNI.

They are the composite noise rating (CNR), used in the USA, the Indice Isopsophique (France) and the Stoorindex (Federal Republic of Germany). Two further indices developed in this country, the index of community nuisance (ICN)* and the noise pollution level (NPL)†, were also examined. The ICN is complex and has not been shown to correlate with annoyance caused by aircraft noise. The second, a general index for all types of noise, corresponds closely with NNI when the traffic level exceeds 10 aircraft movements per day.

18.8 The CNR is obtained by adding to the average peak noise level in PNdB a correction which allows for night or day operations and the number of aircraft movements. Slight corrections are made for the duration of the noise. By day, the CNR is equivalent to:

$$\overline{\text{PNdB}} + 10 \log N - 12$$

where N is average the number of daytime operations. This index was based on a study of complaints around United States Air Force bases and civil airports

18.9 The Indice Isopsophique, denoted by R, is defined as:

$$R = \overline{\text{PNdB}} + 10 \log N - 34$$

where PNdB is the average peak loudness of aircraft in PNdB and N is the average number of aircraft making the peaks of noise during the time 0700-2100 hours (BST). This index was confirmed by a statistical analysis of a social survey carried out by the Centre Scientifique et Technique du Bâtiment, in conjunction with the Centre d'Etudes Biochimiques de Strasbourg and the Association d'Anthropologie Appliquée ‡

* *Noise. Final Report*, Cmnd 2056 (HMSO)

** *E.J. Richards, Aircraft Engineering, February, 1967.*

† National Physical Laboratory Aero Report AC38 March, 1969.

‡ *La gêne causée par le bruit autour des aeroports.*
Centre Scientifique et Technique du Bâtiment. March, 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 18.1

NNI (refer to daytime 0600-1800 hrs. except where stated).	Social survey around Heathrow (for Wilson Committee* 1963)	Surrey CC Planning Restrictions
8	Average reaction "not at all annoyed by aircraft noise"	
32	Average reaction "a little annoyed by aircraft noise"	
35 (night)		As for 50 NNI by day
40		Above this level refuse major housing developments; allow infilling.
42	Average reaction "moderately annoyed by aircraft noise".	
45 (night)		As for 60 NNI by day
50		Above this level no infilling except with insulation
60	Average reaction "very much annoyed by aircraft noise".	

Sources: Cmnd 2056
Journal of the Town Planning Institute page 149, April 1969.

**Noise - Final Report*, Cmnd, 2056 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Questionnaires were answered by 2,000 people on annoyance caused to them by aircraft noise and a points score given to the responses in a way similar to that adopted by McKennell in his 1961 Heathrow survey. The derived index R gave a correlation coefficient of 0.94 with the annoyance ratings. The French also compared the NNI measure with their social survey results and obtained a correlation coefficient of 0.93.

18.10 The Storindex ($\bar{Q}$) is defined as:

$$\bar{Q} = 13.3 \log_{10} \left(\frac{1}{T} \int_0^T 10^{L_{PN}(t)/13.3} \, dt \right)$$

where T is defined time over which the noise is being averaged and $L_{PN}(t)$ is the noise level in PNdB at time t. This index is an average of the weighted values of the energy producing the noise measured continuously over the time period.

18.11 The British, American, French and German indices are compared in fig. 18.2, and critical values used for planning purposes are compared in table 18.2. The indices themselves and their interpretations are sufficiently similar to justify with confidence the conclusion that the NNI is an appropriate measure of aircraft noise nuisance. The NNI has therefore been used in the analysis.

Calculation of NNI values

18.12 NNI value have been plotted in the form of contours, at intervals of 5 down to 35. There are three reasons for not calculating values of NNI lower than this. First, some of the most significant indicators of aircraft noise nuisance (especially percentage of people waiting to move "to get away from aircraft noise") show a very strong increase at about 35 NNI. Secondly, the prediction of NNI values becomes less accurate as the distance from the airport or the flight paths increases and values below 35 would be unreliable. Thirdly, while it is not claimed that no noise nuisance is suffered by anyone outside the 35 NNI contour, it has been impossible to detect any affect of noise on property values outside the 35 NNI contour, and hence to infer any quantitative measure of dis-benefit.

18.13 NNI contours are calculated for an average summer day between 0700-1900 hours BST; this is the busiest time of year and the busiest part of the day. They are based on the flight paths used in the analysis of capacity and airspace costs (chapters 3 and 12). The procedure for forecasting aircraft movements and assigning them to airlanes is described in chapter 4. The NNI contours represent a weighted average of easterly and westerly operations as estimated for each site on the basis of expected wind conditions.

18.14 Estimates and projections of the PNdB values produced at varying distances from the flight paths were made for each of three classes of aircraft: supersonics, heavy jets (e.g. DC8, Boeing 707, VC10) and medium jets (e.g. Trident, Caravelle, Boeing 727, BAC 1-11).

18.15 Estimates were made for two types of take-off:

(a) assuming noise abatement procedures in force as used at Heathrow,

Printed image digitised by the University of Southampton Library Digitisation Unit

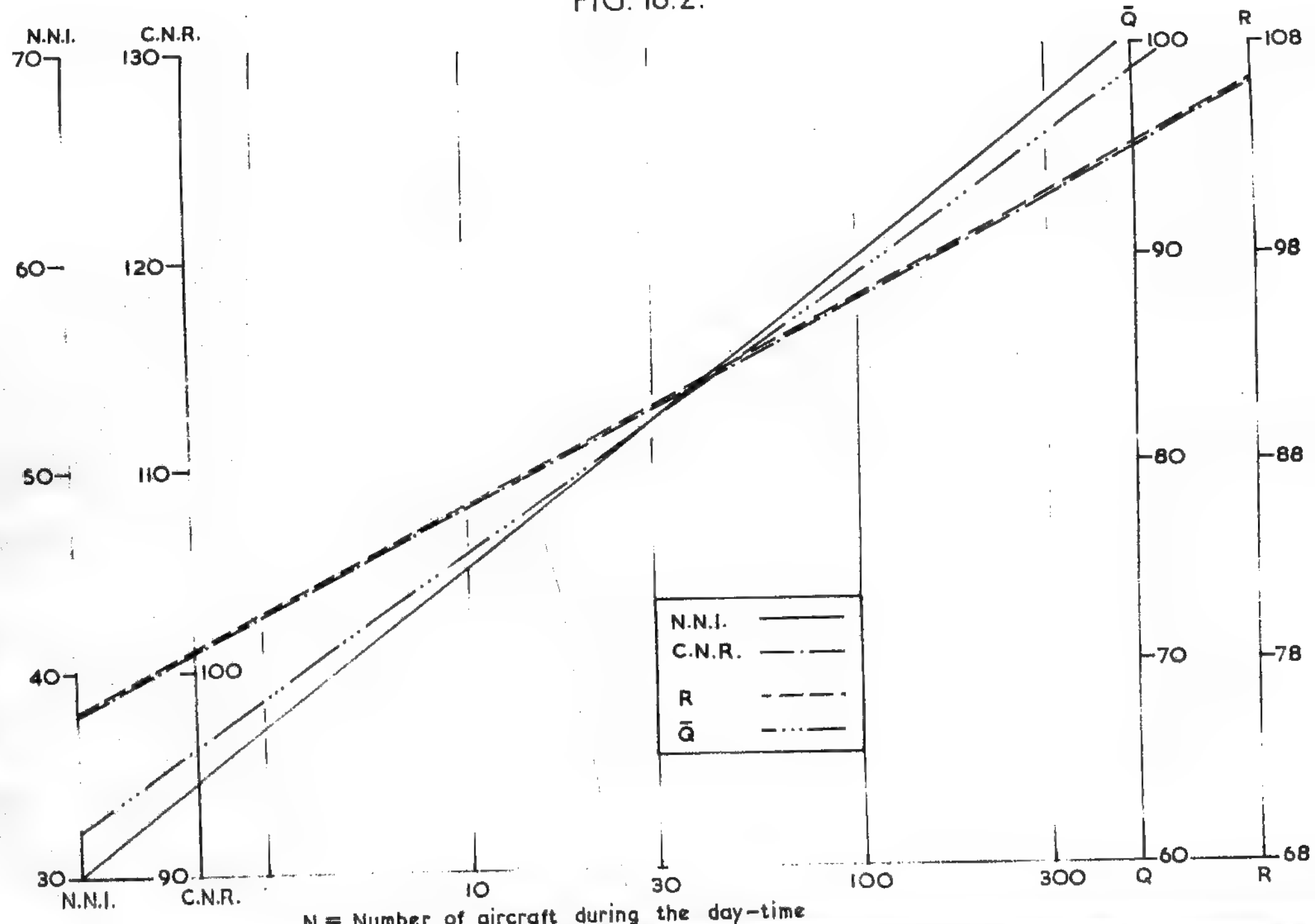
Table 18.2 Comparison between noise zones in different countries

Equivalent NNI Value	*Great Britain* NNI	*USA* CNR	*France* R	*Germany* Q
60	Average reaction ——— "very much annoyed by aircraft noise".	Zone 3: Concerted group action might be expected.	Zone A: No new apartments or offices allowed.	Zone 1: No residential buildings.
50		Zone 2: Individuals may complain, perhaps vigorously.	Zone B: Infilling only.	Zone 2: Urgent cases only.
40	Average reaction ——— "moderately annoyed by aircraft noise".		Zone C: Allow development planned prior to noise problem.	Zone 3: Allow with strong suppression measures.
30	Average reaction ——— "a little annoyed by aircraft noise".	Zone 1: Essentially no complaints would be expected.		No restrictions but no new hospitals near boundary of Zone 3.
20				
10	Average reaction ——— "not at all annoyed by aircraft noise".			

Source: *International Conference on the Reduction of Noise and Disturbance caused by Civil Aircraft* (Galloway and Von Geerke) and other references already cited.

Printed image digitised by the University of Southampton Library Digitisation Unit

FIG. 18.2.



Printed image digitised by the University of Southampton Library Digitisation Unit

(b) assuming no noise abatement procedures.

The estimates for landing noise and for take-offs of type (a) were obtained from ground measurements of noise carried out in the summer of 1967 by the Board of Trade at Heathrow and other airports. These were analysed to produce separately the noise corresponding to heavy jets and to medium jets. Corresponding figures for unrestricted take-offs (type (b)) were obtained from data supplied by airlines showing the difference in noise produced between restricted and unrestricted take-offs. Estimates of the noise effects of supersonic transport were derived from technical inform-- ation supplied by BAC - Sud relating to the Concorde.

18.16 In estimating future noise levels allowance has to be made for changes in the mix of aircraft operating, especially for the increasing numbers of larger and heavier aircraft expected. Allowance must also be made for developing aero-engine technology and the possibility this offers for noise reduction.

18.17 The allowance for increased weight is based upon the projections for aircraft sixe given in Chapter 4. The Board of Trade have advised that the effect of doubling the weight of an aircraft is to add 3 PNdB to the noise perceived, assuming no change in technology.

18.18 Current developments in the design of jet engines, such as the use of high by-pass ratios, make it possible for future aircraft engines to be designed so that they produce the same thrust with considerably less noise than those of to-day. These engines will bemore expensive than current engines. Some form of international agreement on noise standards would be required to ensure that all new aircraft coming into service will incorpor- ate these quieter engines. However, it has not been assumed that existing aircraft will be re-quipped with these new technology engines, but it has been assumed that such aircraft will cease to operate at the third London airport after 1992.

18.19 The Board of Trade have advised the Commission that an international noise certification plan is likely to be introduced which will make it obligatory for all new types of aircraft after a certain date to carry a noise certificate certifying that the aircraft can meet certain noise standards. The Board of Trade expect that the plan will affect new types of aircraft coming into service from 1972 onwards, and that the noise standards imposed on these aircraft will bring an effective reduction of 10 PNdB as compared with present-day aircraft of the same weight. The Board of Trade have advised that it is not yet possible to say what stand- ards will apply to supersonic aircraft. It has therefore been assumed that there will be no future reduction in engine noise for such aircraft.

18.20 Noise and Number Indices were calculated by computer for the basic information described in paragraphs 18.13-19 above. The computer programme calculates for a series of points on a rectangular grid the PNdB produced by each aircraft, and aggregates them over an average day to produce the NNI. In this aggregation, peak noise values of less than 80 PNdB were excluded. The use of actual data from Heathrow in estimat- ing PNdB ensures that any deviations of aircraft from the established flight path are implicitly allowed for in the calculation.

Printed image digitised by the University of Southampton Library Digitisation Unit

18.21 The programme also produces average peak PNdB as a separate figure for each grid point. The data used to establish the noise for the different aircraft types showed that the spread of peak PNdB caused by aircraft about the average peak PNdB would be contained in a range of approximately plus or minus 7 PNdB of the average. The peak PNdB therefore at any point was estimated by adding 7 PNdB to the average peak PNdB and this value was used for evaluating the effects of noise on hospitals and schools (See Chapter 21).

Differences between the propagation of sound over water and over land

18.22 It has been suggested that the different propagation characteristics of land and water might have significant effects on the NNI and that this effect could be enhanced by meteorological conditions of temperature inversion or wind gradient. This has been investigated by Professor J. B. Large of the University of Southampton whose report is published in *Papers and Proceedings,* volume VIII, part 2, section 3.

18.23 In Professor Large's opinion, based on his fifteen years experience of work in the field of aircraft noise, the problems of noise propogation due to temperature inversion would be no worse at a coastal site than at an inland site. The noise contours at Foulness have therefore not been adjusted to allow for special meteorological conditions.

Information used in computing the NNI contours

18.24 The noise levels in PNdB produced directly under the flight paths by present day aircraft at different distances from take-off are shown in figure 18.3. Figure 18.3 refers to take-offs with noise abatement procedures in force as used at Heathrow and figure 18.4 to take-offs without noise abatement procedures.

18.25 The PNdB adjustments to allow for increases in aircraft weight and the introduction of quieter engines (see paragraphs 18.17 – 18.19 above) are given in table 18.3 and are shown graphically in figure 18.5. It has been assumed that a linear relationship exists between capacity and all-up weight, based on analysis of past and present data for the BEA and BOAC fleets. The estimates of the proportion of aircraft with quieter engines in service at the given date shown in column six of table 18.3 assume a constant rate of introduction of the aircraft with quieter engines (i.e. if the proportion of aircraft which are 10 PNdB quieter is p, the average noise level is reduced by $10 \log_{10} \frac{1}{1-0.9p}$ PNdB)

Table 18.3

PNdB adjustments

Year	(1) *Aircraft capacity (passengers)*	(2) *All-up weight ('000lbs)*	(3) *Weight index (1967-100)*	(4) *PNdB addition*	(5) *p*	(6) *PNdB reduction*	(7) *PNdB net change*
1967	91	147	100	0.0	0	0.0	0.0
1970	109	182	124	0.9	0	0.0	+0.9
1975	145	251	171	2.3	.15	0.6	+1.7
1980	190	339	231	3.6	.40	1.9	+1.7
1985	244	444	302	4.8	.65	3.8	+1.0
1990	288	529	360	5.6	.90	7.2	−1.6
1995	335	619	421	6.3	1.00	10.0	−3.7
2000	390	726	494	6.9	1.00	10.0	−3.1
2005	435	814	554	7.4	1.00	10.0	−2.6

Digitised by the University of Southampton Digitisation Unit

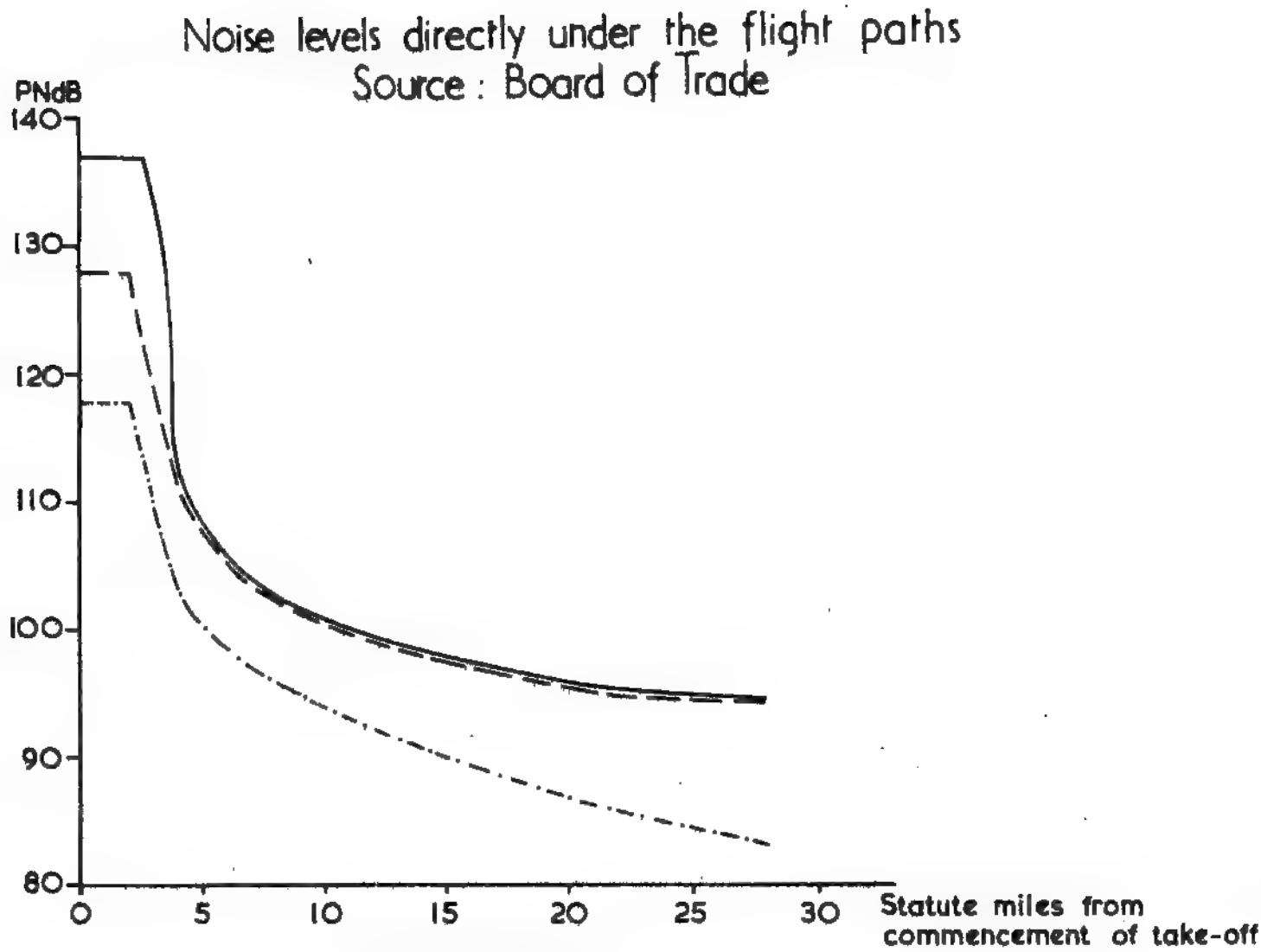


FIG. 18.3 Restricted take-off

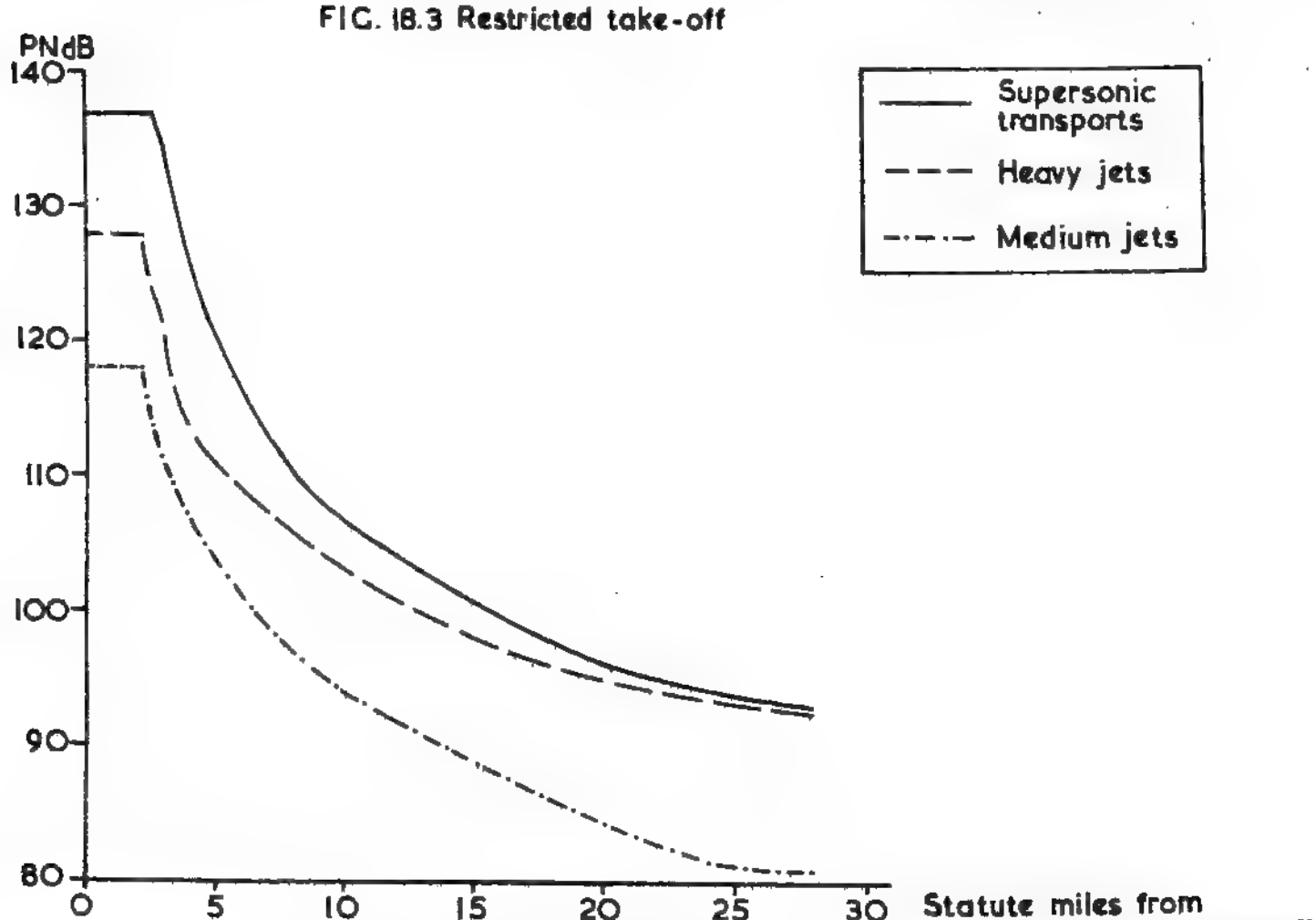


FIG. 18.4 Unrestricted take-off

Printed image digitised by the University of Southampton Library Digitisation Unit

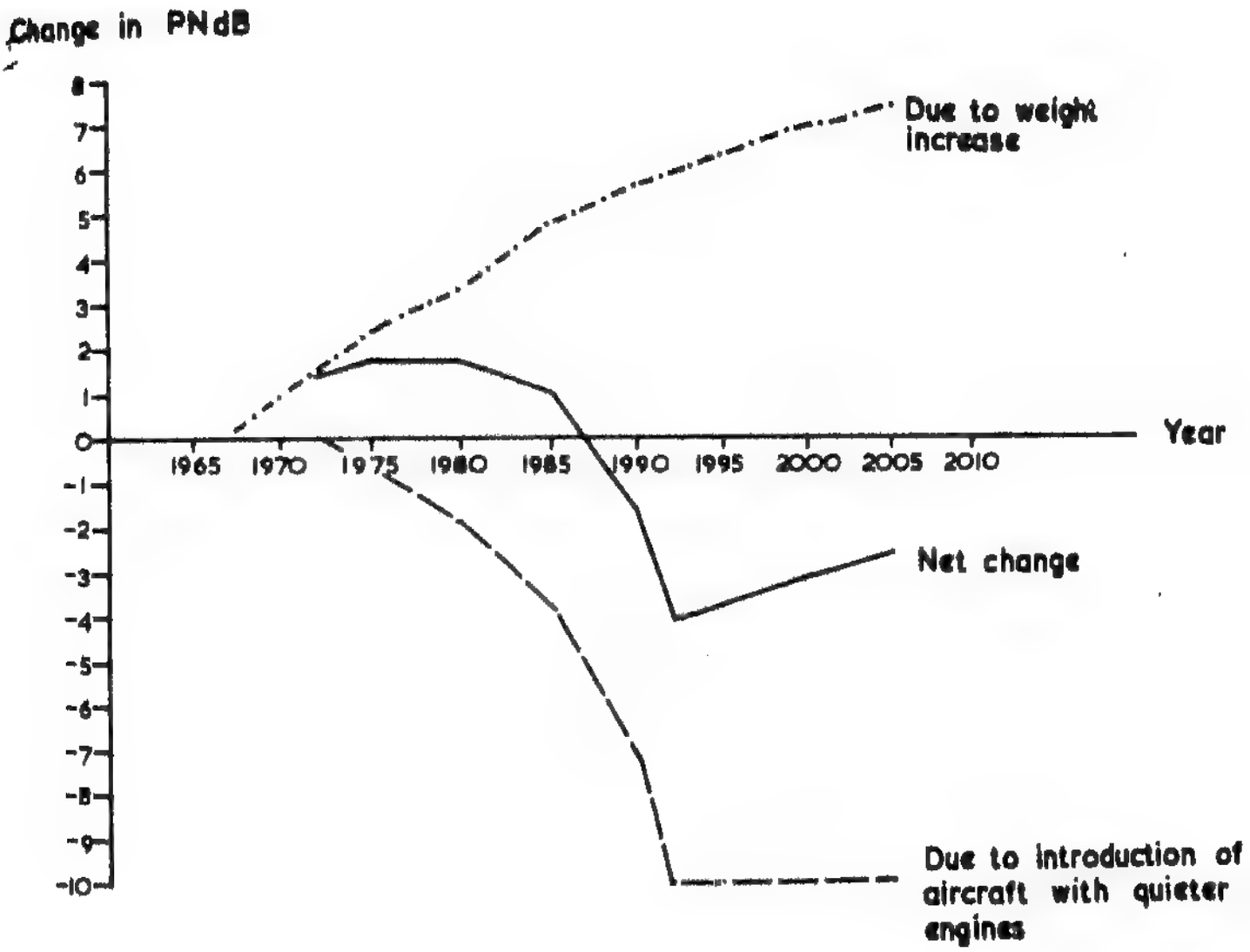


FIG. 18.5

Printed image digitised by the University of Southampton Library Digitisation Unit

18.26 Table 18.4 shows the number of aircraft assumed in the construction of the noise contours to be using each of the flight paths leading to the airlane system. The numbers are based on the forecasts of traffic by destination given in table 4.17 of chapter 4. The assumed flight paths for each airport site are shown in part 3 of *Papers and Proceedings* volume VII*, together with the resulting NNI contours for each site at the full capacity of two runways and at the levels of traffic estimated for the year 2006 (the last year covered by the study – see paragraph 1.23 of chapter 1). NNI contours for Luton for the year 2006 are also shown to illustrate the consequences of traffic there in the event of Foulness being the chosen site. However, no account has been taken of the noise consequences of the additional traffic using Manchester (Ringway) in the same eventuality.

Night noise

18.27 NNI contours have also been drawn for night (2300-0700 hours BST) noise for the year 2006 case only. The number of aircraft used in the calculations of the night contours is the number of aircraft expected to use the airport during the 8 hour night period multiplied by 12/8. This has been done to make it easier to compare the night contours with those for the day period which covers 12 hours. In the computation of the night contours it has been assumed that there will be no limitation on the total number of night movements and that there will be no special noise abatement procedures.

Stacking areas

18.28 It has been assumed that aircraft will be directed on to the glide path by computer by the time that the full capacity of two runways has been reached. Stacking areas are therefore likely to be used only for a small proportion of total movements. Aircraft joining the glide path will be able to take a much wider spread of paths than is possible when all aircraft have to leave a stack and pass over a single reporting point. This has the effect of reducing the concentration of noise in the area between a stack and the glidepath.

1967 Board of Trade aircraft noise survey

18.29 In 1967 an aircraft noise survey was carried out by the Board of Trade in the area around Heathrow. The only information which has so far been received from this has been a statistical analysis of some of the data collected. This analysis did not suggest that any other index would prove a significantly better measure of the total noise exposure than the Noise and Number Index derived by the Wilson Committee in 1961.

*CTLA *Papers and Proceedings*, volume VII, part 3 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 18.4/1

Numbers of aircraft by flight path, Cublington

Flight path number	*Inbound or outbound*	*Airlanes served*	*Numbers of aircraft on flight path***								
			Day (average summer day 0700-1900 BST) 2 runways at full capacity Year: 1991			*Day (average summer day 0700-1900 BST) Year: 2006*			*Night (average summer night 2300-0700 BST) Year: 2006*		
			Super-sonic transports	*Large jets*	*Medium jets*	*Super-sonic transports*	*Large jets*	*Medium jets*	*Super-sonic transports*	*Large jets*	*Medium jets*
1	Outbound	Red 1 East, Green 1 East	0	6	24	0	9	38	0	4	16
2	"	Amber 1 North	12	19	73	18	30	116	8	12	49
3	"	Green 1 West, Red 1 West	19	37	24	32	58	38	14	26	16
4	"	Amber 1 South	4	33	104	6	54	165	3	23	71
5	"	Red 1 East, Green 1 East	0	1	4	0	1	6	0	1	3
6	"	Amber 1 North	2	3	11	3	4	17	1	2	8
7	"	Amber 1 South, Red 1 West, Green 1 West	3	11	19	6	17	30	3	8	14
21*	Inbound	Amber 1 North, Green 1 West, Red 1 West	4	7	13	7	12	21	4	10	25
22	"	Red 1 East, Green 1 East, Amber 2 South	1	7	20	2	11	32	–	–	–
23*	"	Red 1 East, Green 1 East, Amber 2 South	6	46	135	10	73	214	25	65	154
24	"	Amber 1 North, Green 1 West, Red 1 West	29	49	89	45	78	142	–	–	–

Notes: *At night flight path 21 also serves airlanes Red 1 East, Green 1 East and Amber 2 South and flight path 23 also serves airlanes Amber 1 North, Green 1 West and Red 1 West.

**The night numbers have been grossed up to a 12 hour period.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 18.4/2

Numbers of aircraft by flight path, Foulness

Flight path number	*Inbound or outbound*	*Airlanes served*	*Numbers of aircraft on flight path***								
			Day (average summer day 0700-1900 BST) 2 runways at full capacity Year: 2001			*Day (average summer day 0700-1900 BST) Year: 2006*			*Night (average summer night 2300-0700 BST) Year: 2006*		
			Super-sonic transports	*Large jets*	*Medium jets*	*Super-sonic transports*	*Large jets*	*Medium jets*	*Super-sonic transports*	*Large jets*	*Medium jets*
1	Outbound	Red 1 East, Amber 1 North	7	12	47	8	14	55	3	5	22
2	"	Green 1 West	10	18	2	14	20	2	6	10	1
3	"	Green 1 West	0	1	4	0	1	4	0	1	1
4	"	Green 1 East	0	1	3	0	1	5	0	0	2
5	"	Red 1 East	0	1	4	0	1	5	0	1	4
6	"	Amber 1 South, Red 1 West	1	8	26	1	10	32	1	5	13
7	"	Amber 1 South	1	7	21	1	8	24	0	4	10
8	"	Green 1 East	0	1	3	0	1	4	0	1	2
9	"	Green 1 East	0	1	4	0	1	5	0	1	2
10	"	Amber 1 North	7	11	43	8	13	51	3	6	21
11	"	Green 1 West, Amber 1 South Red 1 West	12	26	31	15	31	34	7	14	15
12	"	Red 1 East	0	1	3	0	1	4	0	1	4
13	"	Red 1 East	0	1	4	0	1	5	–	–	–
14	"	Amber 1 South, Red 1 West	2	14	43	2	17	51	–	–	–
15	"	Amber 1 South	1	10	31	1	12	37	2	12	38
21*	Inbound	Amber 2 South, Red 1 West, Blue 29 In	5	31	82	6	36	98	11	29	68
22	"	Green 1 West, Amber 1 North, Red 1 East	16	25	50	19	31	60	–	–	–
23	"	Green 1 West, Amber 1 North, Red 1 East	16	26	50	19	31	60	–	–	–
24*	"	Amber 2 South, Red 1 West, Blue 29 In	6	30	82	6	31	99	11	29	68

Notes: *At night flight paths 21 and 24 also serve airlanes Green 1 West, Amber 1 North and Red 1 East.

**The night numbers have been grossed up to a 12 hour period.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 18.4/3

Numbers of aircraft by flight path, Nuthampstead

Flight path number	*Inbound or outbound*	*Airlanes served*	*Numbers of aircraft on flight path***								
			Day (average summer day 0700-1900 BST) 2 runways at full capacity Year: 1991			*Day (average summer day 0700-1900 BST) Year: 2006*			*Night (average summer night 2300-0700 BST) Year: 2006*		
			Super-sonic transports	*Large jets*	*Medium jets*	*Super-sonic transports*	*Large jets*	*Medium jets*	*Super-sonic transports*	*Large jets*	*Medium jets*
1	Outbound	Amber 1 North	7	11	42	11	17	67	5	7	28
2	"	Green 1 West, Red 1 West	11	21	14	18	34	22	–	–	–
3*	"	Amber 1 South	2	19	60	4	30	95	10	28	50
4	"	Green 1 East	0	2	7	0	3	11	0	1	5
5	"	Red 1 East	0	2	7	0	3	11	0	1	5
6	"	Green 1 East	0	1	3	0	1	5	0	1	2
7	"	Green 1 East	0	1	4	0	2	5	0	0	3
8	"	Red 1 East	0	1	3	0	1	5	0	1	2
9	"	Red 1 East	0	1	4	0	1	5	0	1	3
10	"	Amber 1 North	4	5	21	5	8	33	2	4	14
11	"	Amber 1 North	3	5	21	5	9	33	3	3	14
12	"	Amber 1 South, Green 1 West, Red 1 West	14	41	74	22	65	117	10	28	50
21	Inbound	Green 1 West, Amber 1 North, Red 1 West	17	28	51	27	45	82	–	–	–
22*	"	Amber 1 South, Red 1 East, Green 1 East	4	27	78	6	42	123	15	37	89
23*	"	Amber 1 South, Red 1 East, Green 1 East	4	27	78	6	42	123	15	37	89
24	"	Green 1 West, Amber 1 North, Red 1 West	17	28	51	27	45	82	–	–	–

Notes: *At night flight path 3 also serves airlanes Green 1 West, and Red 1 West and flight paths 22 and 23 also serve Green 1 West, Amber 1 North and Red 1 West.

**The night numbers have been grossed up to a 12 hour period.

Table 18.4/4

Numbers of aircraft by flight path, Thurleigh

Flight path number	*Inbound or outbound*	*Airlanes served*	*Numbers of aircraft on flight path***								
			Day (average summer day 0700-1900 BST) 2 runways at full capacity Year: 1991			*Day (average summer day 0700-1900 BST) Year: 2006*			*Night (average summer night 2300-0700 BST) Year: 2006*		
			Super-sonic transports	*Large jets*	*Medium jets*	*Super-sonic transports*	*Large jets*	*Medium jets*	*Super-sonic transports*	*Large jets*	*Medium jets*
1	Outbound	Amber 1 North	12	19	72	18	29	113	8	12	48
2*	"	Green 1 West, Red 1 West	19	37	23	30	58	37	16	48	85
3	"	Amber 1 South	4	33	102	6	52	163	–	–	–
4	"	Red 1 East, Green 1 East	0	6	23	0	9	37	0	4	16
5	"	Amber 1 South	1	6	18	1	9	29	1	4	12
6	"	Red 1 East, Green 1 East	0	1	4	0	2	7	0	1	3
7	"	Amber 1 North	2	3	13	3	5	20	1	2	8
8	"	Green 1 West, Red 1 West	3	6	4	5	12	7	2	5	3
21*	Inbound	Amber 1 North, Red 1 West, Green 1 West	5	9	15	8	13	25	4	11	27
22	"	Amber 1 South, Red 1 East, Blue 29 In	1	8	23	2	13	37	–	–	–
23	"	Amber 1 South, Red 1 East, Blue 29 In	6	45	132	11	71	209	–	–	–
24*	"	Amber 1 North, Red 1 West, Green 1 West	29	48	87	45	76	139	24	63	151

Notes: *At night flight path 2 also serves airlane Amber 1 South and flight paths 21 and 24 also serve airlanes Amber 1 South, Red 1 East and Blue 29 In.
**The night flight numbers have been grossed up to a 12 hour period.

Printed image digitised by the University of Southampton Library Digitisation Unit

19.1 As have been emphasised at the local hearings at each site, people are seriously concerned about the harmful effects of the new airport upon the present environment of the area in which it may be sited. These effects include the displacement of people from the site itself, the introduction of jet aircraft noise nuisance with an attendant fear of air pollution and aircraft accidents, the urbanisation of a previously rural area, the influx of increased road traffic, and a qualitative change in the way of life of the area. There is intense resistance to the airport in the areas around the three inland sites. Even at Foulness there are many people opposed to the coming of the airport.

19.2 One reason for this serious concern is almost paradoxical. Because modern airports are very noisy, sites should be sought in areas where the surrounding population is sparse. In the heavily populated South East of England it is difficult to find such sites and at the same time to avoid countryside of high scenic or recreational value. As a result the sites selected for detailed study all involve areas where people currently enjoy peace and quiet. Many of the present residents have moved to the areas for precisely that purpose.

19.3 It has also been argued that an airport will bring in its train benefits to the site areas in the shape of higher wages and a greater range of job opportunities and activities, especially for the young. Furthermore an airport provides an important leisure attraction; large numbers of spectators visit Heathrow and Gatwick to see the aircraft and to listen to the conversations between control tower and pilot.

19.4 Chapter 1 explains that the cost/benefit analysis is primarily concerned with assessing the total costs (including disbenefits) and benefits, regardless initially of who is to gain and who is to lose. The same chapter also states that the principle governing the valuation of disbenefits in the analysis is to value the loss of existing possessions and activities at the minimum which people would be prepared to accept as just compensation for their loss.

19.5 The environmental disbenefits will be felt differently by visitors, by residents who decide to stay in the area and by residents who choose to move away from it. They may also be felt by those who neither live nor visit the area. The loss of environmental benefits to existing residents, who decide to move, is subsumed in their loss of property value and consumer surplus (i.e. any subjective loss to the house owner arising in addition to any loss in market value - see paragraph 1.13 of chapter 1). Existing residents who remain will suffer from the effect of noise on their houses and on their environment. These disbenefits are estimated in Chapter 20.

Printed image digitised by the University of Southampton Library Digitisation Unit

The residents who remain and the visitors will experience similar interference with their present activities. An inventory has therefore been made of the activities which currently take place in the affected areas and an estimate has been made of the loss resulting from the disappearance of, or damage to each activity.

19.6 Paragraph 1.15 of Chapter 1 explains that replacement elsewhere is impossible for some activities displaced from a particular area. The disbenefits which have to be calculated are those of lost consumer surplus. The technique which has been applied is described in Chapter 17. For activities which can be replaced elsewhere there is no need to evaluate. consumer surplus. The costs of replacement and travel represent the total to be debited to the site for the loss of such activities.

19.7 The procedure for evaluating the interference with activities has two difficulties. First, only the more important activities can be identified. The loss of many minor activities cannot be identified and estimated. These may not involve great disbenefits individually but their aggregate effects could be significant. Secondly, the disbenefit resulting from the loss of a number of activities may not equal the sum of disbenefits from each activity treated individually. There are recreational activities which are complementary, but more often they are competitive, especially for the individual's time. Thus, if a person's recreations are golf and fishing, the loss of one of these activities might merely give him more time for the other and might not be a great loss. The simultaneous loss of both could be a very large disbenefit since it would leave him with neither of his preferred recreations.

19.8 Neither of these two difficulties can altogether be disregarded at the four sites but there is no specific evidence to suggest that a relatively crude treatment would give distorted answers. Therefore the cost/benefit analysis has added a grossing-up factor to the sum of disbenefits obtained from the analysis of activities.

Survey

19.9 The local authorities in each of the areas affected by the sites were asked to carry out a survey of the locality under selected hearings. These headings are shown in the survey instructions reproduced as on Appendix to this chapter. The survey served three purposes. First, it established the value of properties likely to be demolished on the airport site or made uninhabitable by aircraft noise. Secondly, it established the basis for estimating the noise insulation costs for buildings requiring such treatment. Thirdly, the description of properties identified the activities currently carried out so that the effect of the airport on those activities could be assessed. Because of the magnitude of the task, a precise valuation of all properties could not be made. Details of the rateable values of all affected properties were collected and freehold values were estimated from the rateable values. The relationship between rateable values and freehold values is not precise but this is unlikely to distort the comparison between sites. In dealing with such a large number of properties, the inaccuracies which would be expected to occur in small samples largely cancel each other out.

Printed image digitised by the University of Southampton Library Digitisation Unit

19.10 Information was collected under the following headings: housing, commercial and industrial concerns, schools and other educational institutions, local authority and central government establishments, churches, chapels and other religious buildings, hospitals and other health institutions, and areas and sites of recreational or historic or scientific interest. Ten questionnaires were ultimately used. The Survey questionnaires are reproduced in the Appendix to this Chapter.

19.11 The main survey was preceded by a pilot survey of the area in the immediate vicinity of each airport site in order to:

(a) test the survey method,

(b) collect information about the properties and activities on and near the airport site for use in determining the optimum location and alignment of the runways.

19.12 The main survey covered establishments in the whole area lying within the 35 NNI contour. However for commercial, industrial, central government buildings and research establishments the area was limited to the 50 NNI contour. For local authority buildings, churches and sites of recreational, historic or scientific interest the area was limited to the 40 NNI contour. Supplementary questionnaires were sent as necessary to the owners of particular properties or managers of particular activities. Specimens of the supplementary survey forms are reproduced later in the Appendix to this Chapter.

19.13 The survey data was collected by one-kilometre grid squares (National Grid derived from the 1" series Ordnance Survey maps). This made it possible to use the data as inputs to a series of computer programs which could marry the information to the NNI contours. The programs calculated where appropriate either property depreciation values as described in Chapter 20 or the cost of sound insulation required.

19.14 The results of the Survey are incorporated in chapter 20 (for houses), chapter 21 (for schools, hospitals, and other public buildings), chapter 23 (for commercial and industrial establishments) and chapter 24 (for outdoor recreations, churches, historic buildings and sites of scientific interest).

Printed image digitised by the University of Southampton Library Digitisation Unit

Guidance for Completion on Questionnaires

Every item of each questionnaire has a box or series of boxes to the right of the question. Into these boxes should go the answers to the questions. The information given will be used for analysis on a computer and it would be helpful if the following rules were observed:

(1) Write only one number in each box; i.e. | | | 1 | 2 |

(2) Where the answer is a number (for example, a rateable value) and the number contains less digits than there are boxes, always write the number on the right, so that any blank boxes come in front of the number

(3) Sometimes the answer is a code (for example, 1 for yes, 0 for no). In these cases write the code number which is given for the question

(4) Where the answer is not numerical (e.g. a name, address or description of an activity) a large box is provided for the answer

(5) Where letters appear in a box, these are always written as capitals, one to each box

(6) If the answer to a question is not known, leave the boxes blank and give a brief explanation next to the question

(7) The four grid numbers to be given in the questionnaires must refer to the SW corner of the grid square

(8) Answers written in pencil are preferred.

Survey Instructions

General note

Not all land uses are affected by aircraft noise and some land uses are more affected by aircraft noise than others. For this reason information will not be collected on a uniform basis throughout the survey area. Instead land uses most affected by aircraft noise i.e. Housing will be collected throughout the whole of the survey areas, but uses affected to a lesser degree i.e. Industry will only be collected within the 50 NNI Contours.

Printed image digitised by the University of Southampton Library Digitisation Unit

Rateable Value Range (£)	No. of dwellings in R. V. range (10–13)	Aggregate R. V. for the range (£) (14–19)
0-49		
50-74		
75-99		
100-124		
125-149		
150 and over		

Card Type (80) [1]

Commercial concerns with Inland Revenue Code B4

One of these forms to be completed for each *grid-square*

1. Grid-square (1–4)
2. Total number of B4 concerns within the grid-square (5–8)
3. Aggregate rateable value for these properties (£). Include both shops and dwellings (9–14)

Card Type (80) [2]

Printed image digitised by the University of Southampton Library Digitisation Unit

Specific note

Card type no.

(1) *Housing.* Supply information for each grid square within the 'Boundary of survey' (where the boundary cuts through a grid square, supply information relating to the whole of that grid square).

(2) *Commercial concerns with Inland Revenue Code B4 hereditaments.* Supply information in respect of all concerns located within the 50 NNI contour.

(3) *Commercial and industrial concerns excluding the Inland Revenue B4 hereditaments.* Supply information in respect of all concerns located within the 50 NNI contours.

(4) *Schools and other educational institutions.* Supply information in respect of all Schools etc. located within the contour marked 'Boundary of Survey'. (Similarly for Public Libraries)

(5) *Local authority buildings, other than schools, hospitals and houses.* Supply information in respect of all buildings located within the 40 NNI contours.

(6) *Central government offices and research establishments.* Central government offices (such as Labour Exchanges, Board of Trade regional offices etc.). All such offices or centres located within the 50 NNI contours. But research establishments whether operated by Government, or educational institution, located within the contour marked 'Boundary of survey'.

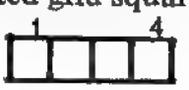
(7) *Churches and chapels.* Where located within the 40 NNI contours.

(8) *Hospitals and other health institutions.* Located within the contour marked 'Boundary of survey'.

(9) *Outdoor recreation etc.* Situated within the contour marked 40 NNI.

Housing

One form to be completed for each inhabited grid-square

1. Grid-square (4 figure only) 

2. Estimated population in mid - 1968

3. *Housing and residential property*

(a) Include both private and local authority houses and farm houses (excluding the rateable value of the farm land)

(b) Exclude dwellings where part is in commercial use (see separate form for Inland Revenue Code B4 properties)

(c) Exclude houses condemned as unfit for human habitation. (Section 4 Housing Act 1957)

Printed image digitised by the University of Southampton Library Digitisation Unit

Commercial and industrial concerns (excluding the Inland Revenue B4 hereditament)

One form to be completed for each concern

1. Grid-square 1 4

2. Name and address of concern 5 24
   25 44

3. Nature of principal activity 45 64

4. Inland Revenue hereditament coding (e.g. B11 or C16) 65 67

   N.B. Where there is only 1 digit, e.g. B5 write B05.

5. Rateable value of the property in £ 65 67 [3]

Card Type 80 [3]

Schools and other educational institutions

One of these forms to be completed for each school/educational institution

1. Grid-square 4

2. Name of school/institution 5 24

3. Type of school/institution 25

   Code 1 = Primary, Code 2 = Secondary,
   Code 3 = Technical College
   Code 4 = Other (give detail).

4. If school/institution is state or local authority, code 1. 26
   If private, code 2

5. Number of full-time day pupils/students 27 31

6. Number of part-time pupils/students 32 36

7. Number of boarders 37 41

8. Will the school/institution have ceased to exist at this site by 1980? Code 1 for Yes, Code 0 for No. 42

Card Type 80 [4]

Printed image digitised by the University of Southampton Library Digitisation Unit

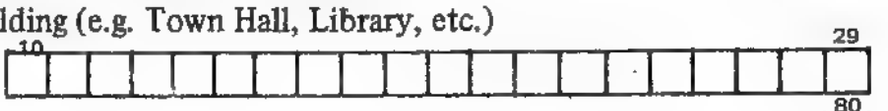
Local Authority buildings, other than schools, hospitals, and houses

One form to be completed for each such building

1. Grid-square

2. Rateable value

3. Nature of principal activities carried on in building (e.g. Town Hall, Library, etc.)

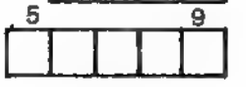


Central Government Establishments (e.g. research establishments, local offices of central departments)

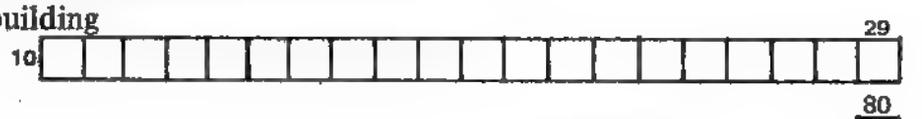
One form to be completed for each such establishment

1. Grid-square

2. Rateable value (£)



3. Nature of principal activities carried on in building



Printed image digitised by the University of Southampton Library Digitisation Unit

Churches, chapels and other religious buildings

One form to be completed for each such building

1. Grid-square (1–4)

2. Name (7–24)

Card type (80) 7

Hospitals and other health institutions

One form to be completed for each such institution

1. Grid-square (1–4)

2. Name of Hospital/Institution (5–24)

3. Type of hospital (25–44)

4. Number of beds (45–48)

5. Number of staff (49–52)

6. Number of residential staff (53–55)

7. Will the hospital/institution have ceased to exist at this site by 1980? Code 1 for Yes, Code 0 for No. (56)

Card type (80) 8

Printed image digitised by the University of Southampton Library Digitisation Unit

Areas and sites for outdoor recreational or scientific interests (including prominent landscapes, sports grounds; historic houses, gardens and monuments; nature reserves, and other amenities but excluding private or public research establishments already included in cards 3 to 6)

One form to be completed for each grid-square

If a site covers more than one grid-square, complete one form for each grid-square involved

1. Grid-square (1–4)

2. Name of area site (5–24)

3. Name of management(s) (25–44)

4. If public code 1, private code 2 (45)

5. Types of principal activities taking place at the area/site. See list of activities attached and put activity number in each separate box. e.g. Archery [2][4], Archeology [5][2] (46–65)

If the activity is not allocated a number (or allocated 20, 27, 39, 47) in the attached list, please write under the box the nature of the activity.

For Commission use only (77–79)

Card type (80) [9]

Caravans

One form to be completed for each grid-square

1. Grid-square (4 figure only) (1–4)

2. Estimate population in mid-1968, (if not already included in Card Type 1) (5–9)

3. Residential caravans on registered licenced sites

No. of caravans in residential use	Aggregate R.V. for licenced caravan sites
10–13	14–19

Card type (80) [0]

N.B. If you have already entered the caravans at the foot of card type 1 there is no need to complete this form.

Printed image digitised by the University of Southampton Library Digitisation Unit

Classes of Outdoor Recreation Activities

(1) Environmental beauty and informal activities	(2) Traditional rural sports	(3) Inland-sports, (mainly professional sports).	(4) Aquatic sports	(5) Professional land use reqs. (by profs. students, and amateurs.)
10. Driving for pleasure.	21. Grouse shooting.	31. Golf - inclu. golf driving schools.	41. Swimming, diving.	51. Natural history activities, eg. bird watching, butterfly collecting, botany, entomology, ornithology etc.
11. Walking, viewing and sight-seeing (inland)	22. Fox hunting.	32. Skiing incl. other winter sports.	42. Water skiing.	52. Archaeology.
12. Walking, viewing and site sight seeing (by sea)	23. Horse riding including hunting, show jumping (but not pony trekking).	33. Skating - ice or roller	43. Fishing, angling.	53. Architecture - buildings, churches etc. of purely architectural interest.
13. Camping.	24. Archery.	34. Motor or motor cycle racing, rallies and scrambles.	44. Sea sailing, boating, rowing etc.	54. Geology.
14. Hiking - 5 miles or more.	25. Gliding.	35. Tennis.	45. Underwater swimming, skin diving.	55. History - local and national history as evidenced in buildings, memorials, monuments, battle sites, canals and railways.
15. Pony trekking.	26. Bowls (outdoors) excluding 10 pin bowling.	36. Team games, e.g. cricket, football (soccer and rugby), hockey, lacrosse.	46. Inland water sailing, boating, rowing, etc.	
16. Hill and fell walking.	27. Other traditional rural sports.	37. Athletics	47. Other aquatic sports.	
17. Rock climbing.		38. Go-karting.		
18. Mountaineering.		39. Other sports		
19. Pot-holing.				
20. Other outdoor informal activities.				

Printed image digitised by the University of Southampton Library Digitisation Unit

Environmental Survey

A small number of points of differing importance have been raised during the pilot survey and a number of queries have been received in respect of the main survey. These points are dealt with below.

General It has been suggested by one authority that the 1Km Grid is too coarse to reflect sensitive changes in siting of the airport or noise contours. The Commission's research team will deal with this by partitioning grids where this is found to be necessary. The alternative of 'fine zone grids' would create a more onerous task for local authorities and has been ruled out.

Card type 1. The following points have been raised

a) *Garage* Garages are sometimes rated as part of a house and garage. In many other cases private garages are separately rated. In many modern developments garages are grouped in lock-up form.

Where houses and garages are on the same site, but separately rated, it would be ideal to aggregate the rateable values.

The number of hereditaments must exclude separate and lock-up garages.

Sample checks will be made on Survey returns to estimate the error in the capital value at risk and where necessary adjustments made. It would however be helpful if in returning the Survey forms, a note could be attached stating how your Authority has tackled this problem.

b) *Crown dwelling houses* Include these with ordinary residential development.

c) *Caravan sites* A separate form will be issued for use but in the mean-time single caravans or caravan sites may be entered in the blank space at the bottom of the housing card for the Grid Square to which they relate.

d) *Should the housing record be mid-1968 as per population?* This is preferable though not essential. Where substantial new development has taken place, the most reasonable up-to-date figures should be used.

Card type 2.

B.4 Properties These contain a mixture of commercial and residential value. Within the 50 NNI contour the total rateable value should be recorded. Between the boundary of survey and the 50 NNI Contour only the residential rateable value should be recorded. The quoted rateable value for the hereditament should be split 50 per cent Residential/50 per cent Commercial.

Card type 3.

Commercial and industrial concerns Some Local Authorities have records of, and can conveniently supply, the SIC number for industries, where this is readily available it would be useful to supply this in the space underneath boxes 45-64.

Printed image digitised by the University of Southampton Library Digitisation Unit

Box 71 has a figure 3 in it which should be ignored (it is an error)

If the rateable value exceeds four figures, write it in full going if necessary outside the box. This point will be taken care of when cards are punched.

Some induatrial concerns contain research establishments which may be affected by aircraft noise. Where industrial research establishments within the boundary of survey are likely to be seriously affected by aircraft noise, Card 3 should be completed but endorsed *Industrial research establishment* in the right-hand corner. Places of Public Assembly other than those run by religious organisations, central or local government bodies, should be entered on this form.

Card type 4.

Approved schools, spastic training schools, etc. These should be included within this class.

Card type 5.

While local authority buildings are collected within 40 NNI contour, individual buildings will be treated similarly to buildings of similar use entered on other cards, i.e. local authority offices will be treated similar to central government offices (50 NNI) to avoid inconsistency.

Card type 8.

Hospitals and other health institutions Information in respect of those administered by the Regional Hospital Boards has been obtained direct from the Ministry of Health and Social Security. This form should be completed only for private hospitals, nursing homes and other health institutions (including welfare and old persons homes).

Card type 9.

There is wide scope for variety of practice in completing this questionnaire. In general, so far as fixed facilities are involved, recreational facilities should be listed down to local level. Activities not requiring fixed facilities i.e. walking, driving for pleasure, should only be included if they are a known regional or sub-regional activity (i.e. Ivinghoe Beacon, overlooking the Cublington site) (Southend Promenade - Class 12)

Further amplification will be given if necessary as and when important points are raised.

Printed image digitised by the University of Southampton Library Digitisation Unit

As explained in paragraph 19.12 supplementary data were requested from various sources including the owners or managements of the interests likely to be affected. This was done by means of letters and supplementary questionnaires.

Housing: District Valuers and estate agents survey

(a) *District Valuers survey:*

The District Valuers' Office of the Inland Revenue was requested to supply the team valuations of typical houses in a list of grid references supplied by the Research Team.

(1) . . . . *(site)*

Grid ref	*General locality*	*Address*	*Vacant possession value*	*Rateable value*	*Any remarks*

(2) *Percentage to be added in respect of disturbance* . . . . %

(b) *Estate agents' survey:* A sample of 80 estate agents dealing with the areas covered by the four proposed airport sites were requested to supply the following information:

Name of location (see attached list) . . . .

County (" " ") . . . . .

Data on houses (not more than 20) sold since January, 1967

Name of house	*Year sold*	*Rateable value*	*Asking price*	*Actual purchase price*
1				
2				
3				
4				
5				
etc				

Printed image digitised by the University of Southampton Library Digitisation Unit

Proposed airport site at ....*(site)* (To fill the attached questionnaire, please choose location from the following list)

Location	*County*
1	
2	
3	
4	
5	

etc

Commerce & industry, local & public authority establishments
The owners or managements of private or public establishments located within the airport site were requested to supply the following information.

1 Name of establishment/business

2 Address:

3 Proposed airport site

(The following information refers to the above address only)

4 Current value of your land £....

5 Current value of your buildings £....

6 Current value of your non-moveable equipment/assets £....

7 Grand total of 4, 5 and 6 £....

8 Total area of your land .... sq ft/acres

9 Square footage of all your buildings .... sq ft

10 Number of your employees ....

Schools and other educational establishments
The managements of schools affected by the proposed airport sites returned the following questionnaire.

Supplementary questionnaire for schools

1 Name of school

2 Address:

3 Proposed airport site

(The following information refers to the above address only)

4 Total area of your land .... sq ft/acres

5 Square footage of all your buildings .... sq ft

Printed image digitised by the University of Southampton Library Digitisation Unit

6 Number of your employees ....

7 Year of construction of buildings ....

8 Structure, (post-1945, system construction, etc) ....

9 Does the school have separate kitchen

Yes .... No ....

10 Average age of pupils/students ....

In the areas affected by aircraft noise data requested from local authorities and private schools were supplied in the following form:

.... *(site)*

Grid square	*Name of school/ institution*	*Teaching area (sq ft)*	*Year (or age) of construction*
1			
2			
3			
etc			

Questionnaire to private schools

1 Grid reference ....

2 Name of school ....

3 Teaching area .... (sq ft) ....

4 Year (or age) of construction ....

Questions on churches

The Ecclesiastical Insurance Office Limited supplied data, in respect of churches located within the four proposed airport sites, in the following form:

Site	*Name & address of church*	*Amount of fire insurance*
1		
2		
3		
etc		

For the rest of the churches affected by aircraft noise, the Inter-Diocesan Working Party on the third London airport was requested to list these churches as follows:

Printed image digitised by the University of Southampton Library Digitisation Unit

Site	*Name & address of church*	*Seating capacity*
1		
2		
3		
etc		

Survey of recreational sites & facilities

(for office use only)

Grid reference . . . .
Proposed airport site . . . .
Nature of services . . . .

1 Name of site, with type of recreational facility . . . .

2 Address . . . .

3 If the third airport were to be located at the above site, and it became impossible for your activities to continue,

(a) would the bulk of your members, or visitors, be able to obtain similar services as you currently offer at an alternative site(s) or grounds?

Yes . . . . No . . . .

(b) If "yes", indicate where this/these place(s) is/are:

Place(s) . . . .

Distance from your site/grounds . . . .

(c) Average annual revenue over previous 5 years (after costs) earned by you from your services at the above address:

£ . . . .

Please give the following information about your site, club, or recreational facility, the members and/or other people using it:

4 Club membership fee per year or per season (if applicable)

£ . . . .

5 Number of members (if applicable) . . . .

6 Fees or other charges made to non-members (per visit) . . . .

7 Approximate number of annual visits by non-members . . . .

8 Current market value of your land at the above address (if applicable)

£ . . . .

Printed image digitised by the University of Southampton Library Digitisation Unit

9 Disposal value of any fixed assets (if applicable) £ . . . .

10 The approximate number of your members and visitors who have to travel different distances (as the crow flies) from their homes to reach your site.

Distances travelled (as the crow flies)	*Members (where applicable)*		*Visitors*
	No of members	*Average no of visits per member per year*	*No of visits per year*
Under 3 miles			
3 - 5 miles			
5 - 10 miles			
10-25 miles			
Over 25 miles			

11 Please, also, state the distance travelled by your most distant visitor or member . . . . miles.

Survey of recreational sites & facilities: Ancient monuments under Ministry of Public Buildings and Works guardianship likely to be affected by the third London airport

This questionnaire is to be filled for each such property. Please complete and if necessary amend any entries already completed on the basis of Ministry of Public Buildings and Works letters.

1 (a) Name of property . . . .

(b) Address . . . .

(c) National Grid reference . . . .

2 (a) Which of the proposed airport sites will affect (1)

Nuthampstead . . . . Cublington . . . .

Foulness . . . . Thurleigh . . . .

(b) What do you estimate such effect to be?

(i) Complete destruction . . . .

(ii) Aircraft noise disturbance will reduce the number of visitors . . . .

Yes . . . . No . . . .

(iii) If yes to (ii) estimate proportion of reduction . . . . % visits per year.

Printed image digitised by the University of Southampton Library Digitisation Unit

3 Please list (in a separate sheet if necessary) the major interest pursued at (1). Indicate, for example, if the major interests are architecture, house contents, historical associations, adjacent landscape, outbuildings, or others.

(i) . . . . (v) . . . .

(ii) . . . . (vi) . . . .

(iii) . . . . (vii) . . . .

(iv) . . . . (viii) . . . .

4 (i) Average number of visits made at (1) per year (in past 5 years)

. . . .

(ii) Average admission fee per visit . . . .

(iii) Other charges . . . . (please specify type of charge).

(iv) Estimated gross revenue per year earned at (1).

Survey of recreational sites & facilities: National Trust properties likely to be affected by the third London airport

(This questionnaire is to be filled for each such property)

1 (a) Name of property . . . .

(b) Address . . . .

(c) National Grid reference . . . .

2 (a) Which of the proposed airport sites will affect (1)

Nuthampstead . . . . Cublington . . . .

Foulness . . . . Thurleigh . . . .

(b) What do you estimate such effect to be?

(i) Complete destruction . . . .

(ii) Aircraft noise disturbance will reduce the number of visitors

Yes . . . . No . . . .

(iii) If "yes" to (ii) estimate proportion of reduction . . . . % visits per year.

3 Please list (in a separate sheet if necessary) the major interests pursued at (1).

(i) . . . . (v) . . . .

(ii) . . . . (vi) . . . .

(iii) . . . . (vii) . . . .

(iv) . . . . (viii) . . . .

Printed image digitised by the University of Southampton Library Digitisation Unit

4 (i) Average number of visits made at (1) per year (in past 5 yrs.) . . . .

(ii) Average admission fee per visit . . . .

(iii) Other charges . . . . (please specify type of charge)

(iv) Estimated gross revenue per year earned at (1) £ . . . .

If your property at (1) will be completely destroyed by the airport land-take, please answer the following questions 5 and 6.

5 (i) Total acreage of your land (grounds) at (1) . . . . acres

(ii) Estimated market value of your land £ . . . .

(iii) Estimated market value of your buildings only (other than purely residential buildings) £ . . . .

(iv) Estimated total market value of all other assets at (1) which cannot possibly be removed from (1) £ . . . .

(v) Square footage of your buildings (if known) . . . . sq ft

6 Would the bulk of your visitors be able to obtain services and pursuits similar to those currently available at (1) in alternative sites.

Yes . . . . No . . . .

If "no" please fill in the following table (if you can).

Distance from (1) travelled (as the crow flies)	*Estimated average number of visits per year*
Under 5 miles	. . . .
5 - 10 "	. . . .
10 - 20 "	. . . .
20 - 30 "	. . . .
above 30 "	. . . .
foreign tourists	. . . .

Printed image digitised by the University of Southampton Library Digitisation Unit

1. Introduction

20.1 The effect of the third London airport on the life of local residents is one aspect of this study which presents formidable problems of evaluation. The repercussions of the airport will be different for residents on the airport site and for those living in the noise-affected areas around the airport. Residents on the site itself would lose their present homes. If freeholders, they would receive financial compensation based on market prices, plus the cost of moving to the new accommodation. Tenants would be re-housed elsewhere. In either case there would be a charge to public funds. However the residents would also lose the consumer surplus they now enjoy in their homes and local communities. This was discussed in chapter 1. This additional loss represents the value placed by residents beyond the compensation value (i.e. market price + removal costs) of their properties or the value of the re-housing accommodation, on all the advantages attaching to their existing homes, community life, friendships, and other local associations, which would be disrupted by an enforced removal. An example may help to explain the point. A resident may own and occupy a property which has a market price of £5,000. The cost of moving from it may be some £500. The compensation he will receive will therefore be £5,500. If he were to move voluntarily he would have to pay his own removal costs. It must therefore be assumed that he values his house at more than £5,000. If, for example, he values it at £5,100 he will be over-compensated by £400. Another resident in a similar position might value his property at £7,500. He would lose £2,000 as a result of his enforced removal. For these two properties, the total resource cost is £10,000, and the total disbenefit is £12,600. Of this total, £11,000 falls on public funds (compensation on two houses at £5,500 each) and the remaining £1,600 disbenefit falls on the householders themselves (i.e. £2,000 less £400). This example illustrates that expropriation may be a benefit for those near the margin of moving since such residents will be compensated for their movement costs. The detailed method used for estimating the consumer surplus both for residents on the airport site itself and for people in the noise-affected areas is explained below.

20.2 As regards residents in the noise-affected areas, there will be very wide differences between the reactions of individuals to the noise and their reactions to other forms of nuisance. In the quietest areas covered by the social survey carried out on behalf of the Committee on the Problem of Noise some 10 per cent of the population were classified as being seriously annoyed. In the noisiest localities covered, some 10 per cent of

Printed image digitised by the University of Southampton Library Digitisation Unit

those interviewed denied that aircraft noise was any nuisance at all and a similar proportion claimed a minimal degree of annoyance. This wide variation in individual response should be allowed for in any evaluation process.

20.3 When noise is imposed on a previously quiet area, the residents are faced with a choice. Either they stay where they are and put up with the noise, or they move away to a quieter neighbourhood (perhaps at substantial cost) and are replaced by families less sensitive to noise. The most likely to move are those most sensitive to noise and those whose consumer surplus in their existing house is small. The terms entering into this choice can be defined as follows:

(a) N- the noise nuisance suffered by the householder expressed as the sum of money which would just compensate him for the nuisance suffered and make him as well off as he was before;

(b) S- the difference between the householder's subjective value of his house and the market value. This corresponds to consumer surplus as defined in chapter 1. The subjective value in this case is the sum which the householder would consider just sufficient to compensate him for loss of the property, assuming he had to leave the noisy area altogether;

(c) R- the costs and inconvenience of removal. (It is convenient to measure S and R together. The price at which a person would freely sell his house includes provision for removal costs as well as the cost of an alternative house);

(d) D- the percentage depreciation or lower rate of increase in market value of houses in a stated price bracket in a given noise zone.

20.4 The choice facing the householder is between staying put and accepting N (the subjective nuisance suffered from noise) or moving to another property. In the latter case he must abandon the consumer surplus now enjoyed in his existing house, S, plus the costs of removal, R, plus the depreciation of his existing property, D. The householder would logically select the better of these two alternatives. As N and S are not fixed values but vary considerably between individual householders, the evaluation calculations must reflect individual choice.

The effect of environmental damage on house property values

20.5 The significance of changes in house property values as a measure of changes in the standard of local environment requires explanation. The market value of a house represents far more than the size of the plot it occupies and the bricks and mortar with which it is constructed. It reflects a whole range of considerations such as ease of access to wide opportunities for employment, shops, schools, station, neighbouring town or city and to the open countryside. It also reflects the social standing and the environmental desirability of the neighbourhood. All factors which enter into the attractiveness of inhabiting a particular house must be reflected in the price which that house will fetch on the market. Individuals differ in the importance they attach to the different elements making up the value so that a price which is attractive to some will be unattractive to others. However, there will be a good deal of common ground about the desirable elements and a consensus of opinion will exist about what is a fair market price for any particular

Printed image digitised by the University of Southampton Library Digitisation Unit

house. In the case of a new airport in an existing rural environment, the opportunities for employment will be vastly expanded. Depending on planning permission a general appreciation of property and sites in the broad neighbourhood of the airport may be expected. The majority of property would appreciate in value even relative to similar property elsewhere but houses which were much affected by the noise and other nuisance of the airport's general development would be likely to appreciate relatively less than those with equally good access but which were outside the noise and nuisance zones.

20.6 As house prices fully reflect all the environmental advantages and disadvantages of the property, any deterioration in the environment when an area is subjected to over-flying aircraft will be reflected in a relative fall in the market price of the property affected. This change is brought about as follows. In the pre-airport situation some local residents will be enjoying a large consumer surplus in their existing houses. Some however will have a much smaller consumer surplus and even before the airport arrived would be considering a move. Both groups will include those highly sensitive to noise and those less sensitive. After the airport has opened and the area has become subjected to aircraft noise, vibration, possible air pollution and any other deleterious effects, the "imperturbable" residents would probably suffer little or no loss of consumer surplus and would have no incentive to move house. Highly sensitive residents who had been enjoying large consumer surplus might not wish to move. Their attachment to their existing houses and localities might be sufficiently strong to outweigh the aircraft nuisance. But the effect of aircraft nuisance on sensitive people already near the point of moving would be to stimulate them into a search for quieter property. As their houses were put on the market, the market price of property subjected to aircraft noise and other nuisance would decline in relation to the price in quiet neighbourhoods. The additional demand for peace and quiet would raise the market price of houses in those areas.

20.7 The depreciation in the value of property subjected to aircraft nuisance reflects all the deleterious effects of overflying aircraft and not the noise alone. There is no need therefore to take account separately of air pollution, for example, unless there is reason to think air pollution may become worse in future at any given NNI level. However at any level of aero-engine technology the degree of air pollution can be expected to correlate reasonably well with the NNI level. Less material things such as fear of aircraft accidents in the vicinity of the airport will also be reflected in the attractiveness of areas near the airport as places to live and will also be an element in the market price of the property.

20.8 The relative depreciation of the value of house property in areas affected by aircraft noise also reflects the impact of the sum total nuisance. It therefore allows for the effect on residents' activities carried on within the affected area. These include activities within people's homes and gardens and within the locality, such as shopping, visits to friends, outings and walks. Some of these activities can probably be transferred to other, quieter neighbourhoods and to this extent the depreciation of property values will be less.

20.9 Loss of benefit to residents is in principle taken into account in the change of house values. Losses to non-residents require separate treatment as mentioned in chapter 19, but the treatment of outdoor

Printed image digitised by the University of Southampton Library Digitisation Unit

recreation presents a problem. All participants have been treated similarly in the survey of outdoor recreation, as if all were non-residents. It would have been impracticable to distinguish between residents and non-residents. This does involve an element of double counting but is probably not very important. Most of the recreations covered by the survey are of a formal or organised nature, where the "catchment area" of participants would extend fairly widely. Most participants would probably be non-residents. Furthermore, some double-counting of residents' organised recreations is offset by the enforced omission from the analysis of non-residents' more informal leisure pursuits within the noise zones, such as walking, cycling and motoring. These activities will often be transferred to quieter areas with little or no inconvenience to those concerned. Therefore no great disbenefit would arise on this score.

20.10 In view of the wide variability between individuals in their sensitiveness to aircraft nuisance the significance of any particular value of depreciation as measured in the market place may seem to need explanation. The depreciation observed in the market must be sufficient to equate the supply and demand for noisy property. The market price of any house is the price which makes it as attractive to potential buyers as other houses they might be interested in. In the same way the price at which noisy property is placed on the market must also be such as to make it as attractive for the average buyer as property in a quieter neighbourhood. The depreciation will correspond to the median valuation placed on noise nuisance, i.e., as many people (the less sensitive) will consider the noisy property good value at the price offered as will consider it poor value (the more sensitive). This assumption that the market depreciation represents the median point of the distribution of subjective valuation of noise nuisance reappears later in this chapter.

20.11 The term D in paragraph 20.3 above represents the predicted fall in the market value of house property in the noise-affected areas around the four sites. The value of D has therefore to be inferred from similar situations of aircraft noise, i.e., from situations of equivalent NNI value. At any given noise level, the value taken by D is determined by the sensitivity of the local environment to aircraft nuisance. Where the level of background noise is high, for example in areas threaded by main roads or railways, D is likely to be lower than in quieter residential areas where the local population have paid a considerable premium for an attractive environment in buying their property. As explained later in this chapter there is no need for specific account to be taken of the factor of background noise so long as the existing areas now subject to noise, in which D is measured, are broadly similar in environmental characteristics to the noise affected areas round each of the four airport sites. As explained later in the chapter, values of D measured in the area around Gatwick appear to be acceptable for the present purpose.

20.12. The market price for property reflects not only current circumstances but also buyers' and sellers' expectations about the future. People buying a house affected by aircraft noise would be very naive if they did not expect an increase in the noise at least for the next ten years or so. Alternatively they may expect that political pressure could be brought to bear to limit the number of flights. This expectation should be fully reflected in the market prices and hence in D. To link values of D as

Printed image digitised by the University of Southampton Library Digitisation Unit

found in existing communities with current values of NNI would be to over-estimate the noise effect, possibly to a substantial extent.

The capital value of house property affected by the airport

20.13 The present capital value of domestic property lying within the noise-affected zones for each of the four sites had to be estimated. These data were assembled for each kilometre grid-square lying within the noise-affected area and were stored in the central computer.

20.14 Three methods of estimating domestic property values were considered. The first was to make full use of the property transactions recorded in the files of the local District Valuers and to use these as a sample of the total stock of houses. This would have imposed a very severe workload on the District Valuers and has the additional disadvantages of producing a very small sample of current house transactions and a sample biased with properties with relatively high turnover.

20.15 The second method considered was to use the prices asked by local estate agents for all properties put on the market during the previous six months. Allowance must then be made for the difference between prices asked and prices realised. This method suffers from the major disadvantages of the first method and was therefore not used. The sample of houses within many kilometre grid-squares would have been non-existent or too small to be used with confidence.

20.16 The third approach considered was to estimate the average house value for the south-east region as a whole and to apply this uniformly to all houses in the noise-affected area. An estimate of the number of houses within each grid square could be derived from the population and the average number of persons per dwelling. This is a simple method which would have relieved the local authorities of much work in collecting data but which would hardly have been convincing to those directly concerned. It would not have taken account of the fact that the depreciation of value due to noise is greater for higher priced than for lower priced property.

20.17 The weakness of the sampling approaches mentioned above suggested the need for a complete census of houses within the noise-affected areas. The only existing record was the Rating and Valuation List. This shows the property by type and by rateable value. This is an annual value considerably lower than the market annual rent. Since the capital value was required, some means had to be devised to relate the rateable values and the market capital value of the property. An adjustment was made with the help of the District Valuers and local estate agents, who selected a sample of houses spread fairly widely across the noise-affected areas. These houses were valued at current market price levels and the prices compared with their rateable values. The ratios of rateable value to market value were then used to estimate the market value of houses within each grid-square. This method of approach has certain defects. The ratio of rateable values to market varies considerably between individual properties. The method takes full account of the differences in the ratios of rateable to market value between property in different price brackets, property in different types of area (for example town and country) and between property in different parts of the country.

Printed image digitised by the University of Southampton Library Digitisation Unit

Loss of house property value caused by the airport

20.18 The prediction of the relative depreciation of house prices in the noisy areas around the four sites could be made only by inference from areas already affected by aircraft noise. These latter areas should resemble those around the four prospective sites in the sensitivity of the environment to noise and other nuisance. The environs of Heathrow are densely populated, with scattered industrial development and threaded by main roads and railways. The environs of Gatwick, on the other hand, are much less heavily developed and have many of the features of a desirable residential and commuter neighbourhood. As explained later in this chapter the extent of house price depreciation is much greater around Gatwick than around Heathrow and the former was therefore judged more suitable as a basis for prediction.

20.19 Environmental differences of the kind mentioned in the preceding paragraph might normally be associated (albeit indirectly) with differences in levels of background noise. It was possible with the help of studies of background noise carried out in the areas round Heathrow and Stansted to estimate the level of background noise to be expected in four types of area:

(a) open spaces, hamlets and scattered houses on village outskirts,

(b) village centres, outskirts of small towns,

(c) suburbs of large towns or cities,

(d) on or near main roads in large towns or cities.

The population within each noise affected area were classified into these four categories. This made it possible to assess an average level of background noise at each third London airport site, weighted according to the distribution of population. It was now possible to compare background noise levels at the four airport sites with those at Heathrow and Gatwick. The Gatwick area was found to be more comparable with the areas of the four sites than is the Heathrow area.

20.20 In estimating the property depreciation due to noise there were two alternatives. One was to use individual house prices. The second (the principal method adopted) was to ask estate agents and professional valuers to estimate price differentials (for stated types of property) for houses in defined geographical areas. Within the first approach, two alternatives were investigated: to use changes in values of the same properties through time as noise levels changed (time-series analysis), or to use differences between houses exposed to different noise levels at a given point in time (cross-section analysis).

20.21 There are major drawbacks in any time-series analysis. It may be necessary to assume that factors other than noise remain constant through time and that all changes in value can therefore be attributed to changes in noise. An approximate adjustment for the general inflation of house property values could be made but other factors could not easily be identified and quantified. To be strictly appropriate as a measure of the noise effect a date in the past must be found when people bought and sold houses in the area without any expectation of noise aircraft there. This is difficult to justify. A small scale exercise of this kind was however carried out in the Heathrow area, but the results were inconclusive.

Printed image digitised by the University of Southampton Library Digitisation Unit

20.22 In the cross-section type of statistical analysis, there were three main options. The main difficulty in all such analyses is to take proper account of the very numerous factors other than noise which go to determine the market price of any individual house. Several of these factors are mentioned in paragraph 20.5 above. In principle, it is possible by use of statistical techniques to estimate the contribution made by all these different factors to the price of the property. The practical problem remains of classifying a large sample of properties in all these different respects. It was impossible to undertake a research project of this scale.

20.23 The second form of cross-section analysis attempts to cut through the complexities described in the previous paragraph by selecting individual houses or groups of houses which are believed to be comparable in all respects other than aircraft noise. This is usually referred to as the "matched sample" technique, and is generally avoided by statisticians on the ground that the assumption of comparability in all other respects than that under study can never be convincingly established. However, two such studies were undertaken on house property values round Heathrow. Houses were selected within a fairly restricted area at known distances from the airport itself and classified by house size. A second study was undertaken on two housing estates in the immediate neighbourhood of the airport, but at very different noise levels. The house values used in both exercises were provided by the local District Valuers.

20.24 The first of these studies indicated a depreciation in property values of about 6 per cent at NNI levels of 50 and over, but the sample was too small to establish this figure with any certainty. In the second study there was no detectable noise effect. However, the environmental standards of the two estates were found on examination to be significantly different, the estate with the more severe noise possessing a balance of attractive features not found in the quieter locality.

20.25 The final form of cross-section analysis considered was that of a very large sample scattered widely over the noise-affected area. The size and random nature of the selection of houses would overcome the difficulties inherent in the first two methods. This strategy might have produced results but only at very considerable cost in terms of data and with considerable margins of error in the end-result. This method was also not pursued.

20.26 The method adopted was to consult a sample of estate agents and valuers who would themselves assess the price differentials caused by aircraft noise. The professional valuer is constantly in touch with the prices at which houses change hands and with valuations made for other purposes (e.g. estate duty). His professional skill lies largely in making suitable allowance for the multitude of factors entering into the valuation of any particular house, i.e. that part of the problem which causes difficulty for the statistician. (This method was used by Mr. B. Anstey in his survey of the Heathrow area.*) A sample of estate agents was asked to compare house price levels within different areas indicated on large scale maps. The results of this survey are set out later in this chapter.

**CTLA Papers and Proceedings*, volume I, part 1, (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Consumer surplus enjoyed by residents in their own properties (the term S in paragraph 20.3 above)

20.27 The basic concept of consumer surplus has been explained in chapter 1. Consumer surplus (the term S) must fall to zero and become negative when residents decide to move house. The act of moving shows that some other house is considered more desirable than the resident's present one, and sufficiently more attractive to offset the costs and inconvenience of removal. At the other extreme the value of S for new residents is unlikely to be much above zero (it cannot be negative). If it were strongly positive, it would imply that for the resident in question the next most attractive house into which he could have moved was considerably less desirable than his first choice. For some residents there might be only one house within their area of search which matches their requirements, but this would not be true in most cases and might be due to a restricted search. The value of S will tend to rise as the resident develops contacts with the local community but may fall if the contacts are with a distant urban community. If the resident's family increases in size and the house becomes too small, the value of S would fall. It would also fall if the resident acquired the means to enable him to move to a more expensive neighbourhood or if he found that familiarity did not increase his satisfaction. On the other hand the value of S might increase continuously over the years for a middle-aged couple as the prospect of moving to a completely new area becomes less inviting. Relatively high values of S are therefore likely to be found among the middle-aged and retired and lower values among the young and more mobile.

20.28 The value of S for the population resident around the four sites might have been estimated by a deductive process similar to that used for estimating the value of other disbenefits. In principle situations could be examined where nuisance had been imposed and the movement rate observed but in practice it is difficult to find comparable situations. Therefore, the consumer surplus could be valued only on the basis of people's own estimates derived by social survey methods. In the survey which was undertaken people were asked what sum of money would be just high enough to persuade them to part with their existing house, on the assumption that they had to make a move of at least ten miles. This price was defined to include all costs of removal both financial and psychic, so a separate estimate of the value of R was not required.

20.29 A detailed account of the consumer surplus survey, including the exact wording of the questions asked, is given in appendix 1 to this chapter.

20.30 Of the 621 interviews completed, 553 answered the basic question on consumer surplus. It was impossible to distinguish any differences in the amount of surplus due to factors such as present market value of property, length of residence, etc. For respondents completing the basic questions the percentage increase required on market price before householders would voluntarily sell and move to another area was as shown in table 20.1 below.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 20.1

Distribution of consumer surplus values

Consumer surplus (% excess of market price)	*% of sample*
0	11
1-15	15
16-25	19
26-35	12
36-45	9
46-55	11
Over 55	15
Would not sell	8
Total	100

The overall average access over market price for the sample as a whole is 39 per cent.

Results of investigation into background noise

20.31 Table 20.2 presents the results of the investigation into background noise described in paragraph 20.19 above. In order to estimate the numbers of people in each of the four types of area set out in paragraph 20.19 above, the total population living within the appropriate NNI contour had first to be divided into six categories according to size of village, town or city; the first category comprised communities of less than 500 people and the last included cities of over 50,000 population. The population placed into the first category was divided in the ratio 3 to 1 between types of area (a) and (b). The population placed in the last category was equally divided between type of areas (c) and (d). No absolute precision can be claimed for the assignments to types of area and the assumptions on which they were based but, given consistency of treatment between sites, the procedure adopted provides a reasonably sound measure of differences between sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 20.2

Estimates of background noise in the environs of Heathrow, Gatwick and third London airport sites

Type of area	*Expected average background noise (PNdB)*	*Percentage of population living in areas of stated characteristics*					
		Heathrow	*Gatwick*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
Open spaces, hamlets, village outskirts	53	neg	40	45	20	20	45
Village centres, outskirts of small towns	57	15	30	25	40	20	35
Small town centres, suburbs of large towns	59	30	30	25	40	60	20
On or near main roads in large towns/cities	65	55	-	5	neg	neg	-
Total (%)		100	100	100	100	100	100
Average background noise level (PNdB)		62	56	56	57	57½	55½

Note: for Heathrow, the area included lay approximately within the 50 NNI contour, but a wider area would have shown comparable characteristics. For Gatwick the area included lay within the 40 NNI contour. For the third London airport sites, the area included lay within the 35 NNI contour at the year 2006.

Printed image digitised by the University of Southampton Library Digitisation Unit

20.32 Table 20.3 below sets out the results of the studies described in paragraph 20.26 above.

Table 20.3

Percentage depreciation of house property values compared with houses outside the 35 NNI contour

(a) Heathrow area (%)

Class of property	*35-45 NNI*	*45-55 NNI*	*Over 55 NNI*
Low priced	0	2.9	5.0
Medium priced	2.6	6.3	10.5
High priced	3.3	13.3	22.5

(b) Gatwick (%)

Class of property	*35-45 NNI*	*Over 45 NNI*
Low priced	4.5	10.3
Medium priced	9.4	16.5
High priced	16.4	29.0

20.33 As would be expected, high priced property depreciates much further tha low priced, and for any given level of noise and class of property the depreciation is much greater around Gatwick than around Heathrow. There are four probable explanations for this difference. The first explanation is the difference in background noise levels set out in table 20.2 above, amounting to 6 PNdB. But this difference in background noise does not fully account for the difference in the rates of depreciation. If, for example, property depreciations within the 45-55 NNI zone at Heathrow are compared with those within the 35-45 NNI zone at Gatwick (i.e. a difference of 10 NNI), greater depreciation is still found at Gatwick despite a difference in background noise of only 6 PNdB. Even in the unlikely event of a difference in background noise having the same effect as an equivalent difference in average PNdB levels per aircraft, the greater depreciation in the Gatwick area as compared to Heathrow would still not be fully explained. The second explanation is the difference in the character of the neighbourhood. This is perhaps best instanced in the case of high priced property. Such property in the Gatwick area would command its value very largely from the pleasant rural environment in which it is situated. But the same does not apply to a high priced property within the central London area, where traffic and other noise, though a nuisance, does not detract from the character of the property. The third explanation stems from the fact that the NNI values used in the house property exercise are calculated from day-time aircraft movements only. Night movements at Heathrow are very severely restricted. At Gatwick, however, no restrictions have yet been judged necessary, and the proportion of flights taking place in the 8 hours between 23.00 and 07.00 BST is approximately double that at Heathrow. The fourth explanation is that the degree of property depreciation will be determined not only by current noise levels but by those anticipated for the future. The scope for future growth in the number of aircraft movements is clearly much greater at Gatwick than it is at Heathrow. In respect of the

Printed image digitised by the University of Southampton Library Digitisation Unit

first three explanations, the third London airport sites have much more in common with Gatwick than they have with Heathrow. Comparisons of background noise have been shown in table 20.2 The general character of the area around the four sites is predominantly rural as is that around Gatwick. The proportion of night flights predicted for the third London airport is very close to the proportion of jet aircraft movements by night at Gatwick. It is therefore reasonable to use the Gatwick house price survey data and to disregard the Heathrow data. In respect of the fourth and last explanation, it would be logical to remove this effect from the data, as the costing method assesses noise nuisance year by year, and estimates depreciation values in a similar way. To this extent the use of the Gatwick data may therefore slightly exaggerate the noise losses suffered.

The model used for evaluating the effect of noise on house property

20.34 The basis principles of the model have been set out in paragraphs 20.3 and 20.4. Because the evaluation must reflect individual choice, predictions have had to be made of the number of households remaining in the affected areas around the airport, the number of households moving out of the areas because of the disturbance caused by the airport, and the number of households moving out for other reasons.

Table 20.4 below shows the methods used for making these predictions and the nature of the costs and dis-benefits assumed to be borne by each group.

Table 20.4

Households affected by the airport

Type	*Method of prediction*	*Nature of costs and dis-benefits*
(a) Moving out because of the airport	Compare dis-benefit from noise with loss of consumer surplus, removal costs and depreciation experienced on moving	Consumer surplus (S), the costs and inconvenience of removal (R) and the individually assessed value of depreciation (D)
(b) Moving out for other reasons	Projection of existing turnover rates in areas corresponding approximately to the noise contours, after allowing for net population increase and a proportion of people who move within the noise contours	Average value of depreciation (D)
(c) Remaining in the affected areas	Residual from (a) & (b)	Individually assessed value of depreciation (N)

Printed image digitised by the University of Southampton Library Digitisation Unit

Type	*Method of prediction*	*Nature of costs of dis-benefits*
(d) Moving into the affected areas	Not measured	Nil because the disturbance caused to them by the air-port should be balanced by reduction in house purchase price due to depreciation

20.35 The market values of these houses were estimated by the method explained in paragraph 20.17. The equation giving the best fit and used for the calculation was as follows:

$$P = 729 + 49.8V$$

where P = price in £ and V = rateable value in £.
The houses were then divided into the following three categories:

(a) low priced with average value of £3,000,

(b) medium priced with average value of £6,000,

(c) high priced with average value of £10,000.

The date at which the average property would first be affected by noise and the rate of increase of the noise disturbance were estimated.

20.36 Depreciation values (D) have been estimated for each zone and price category from the rate of increase of noise nuisance and the Gatwick area house depreciation data given in table 20.3. It has been assumed that depreciation will rise at 3 per cent per annum in real terms to correspond to the growth in real income; as real incomes rise, people may be expected to require increased payment to compensate for noise annoyance.

20.37 Noise annoyance (N) has been estimated as a distribution, so that differences in noise sensivity between individuals can be taken into account. It has been assumed that the market depreciation value for a given noise level is the median point of the distribution. The shape of the distribution has been derived from data given in the report of the Committee on the Problem of Noise (p 207 table II) showing the number of people with a given noise annoyance score at particular noise levels and numbers of aircraft. Gatwick house depreciation data were then used to derive the average disbenefit of noise annoyance to individuals with each annoyance score. Individuals with an annoyance score of zero were assigned a zero disbenefit. Noise annoyance disbenefits were assumed to grow at 3 per cent per annum in the same way as depreciation.

20.38 The consumer surplus survey results were adjusted to give a distribution of consumer surplus over all households from £0 to £5,000 (the term S was not separately identified from the term R). Although some survey respondents stated that no price would be sufficient to persuafe them to move and a few other replies implied consumer surplus values of over £5,000, the distribution was curtailed at £5,000 to allow for bias in response, and to prevent any one individual having a dis-proportionate effect on the analysis. Consumer surplus was also assumed to increase at 3 per cent per annum.

Printed image digitised by the University of Southampton Library Digitisation Unit

20.39 The data described above were processed in a computer program which calculates total costs and dis-benefits due to noise for each site. The input data and mathematical equations on which the program was based are given in appendix 2 to this chapter.

20.40 Table 20.5 shows households on the site and in the areas lying within the noise contours for the year 2006 shown in part 3 of *Papers and Proceedings* volume VII. Paragraph 2 of appendix 2 to this chapter gives the sources used.

20.41 Table 20.6 shows the costs and dis-benefits obtained from the noise cost model for households affected by noise and the costs and dis-benefits for residents affected on site estimated at market price plus 39 per cent. The figure of 39 per cent represents the estimated average consumer surplus. The normal disturbance has been assumed to be 15 per cent of market price, and in chapter 29 the market price plus 15 per cent has been taken as a resource cost and the additional 24 per cent of market price assumed to be a dis-benefit.

20.42 In order to compare noise costs at the four sites, it is necessary to add to the Foulness noise cost the costs and dis-benefits of noise generated by Luton airport after 1982 (see chapter 12 paragraph 12.22). These costs have been assessed on the population lying within the noise contours for Luton airport shown in part 3 of *Papers and Proceedings* volume VII, which are based on a realigned runway and dated at 2006. In applying the noise cost model it has been assumed that the change in noise pattern through time is similar to that of the inland sites.

20.43 The number of households lying within the noise contours of Luton airport, and the corresponding noise costs were as follows:

NNI	*Households*	*Cost and dis-benefits (£000)*
35-40	10,281	2,339
40-45	3,074	1,059
45-50	574	263
50-55	292	160
55+	36	25
	14,255	3,846

The total of £3.8 million was increased by a factor of 1.75 to make a rough allowance for costs to schools, hospitals and other public buildings; for the costs to commerce and industry; and for the dis-benefits to visitors to Luton Hoo. This adjustment was based on the relative proportions of these costs to the cost of noise on domestic households found in the three inland sites. This adjustment resulted in the total sum of £6.7 million shown in table 29.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 20.5

Households on site and in areas affected by noise

Location	*On site and within safety zone*	*Over 55 NNI*	*50-55 NNI*	*45-50 NNI*	*40-45 NNI*	*35-40 NNI*	*Total affected by noise*	*Total on site and affected by noise*
Site: house price range								
Cublington:								
Low	636	188	656	2,663	6,562	6,247	16,316	
Medium	302	103	340	2,400	5,650	4,232	12,725	
High	44	17	108	119	487	308	1,039	
Total	982	308	1,104	5,182	12,699	10,787	30,080	31,062
Foulness:								
Low	0	35	745	2,436	2,169	4,598	9,983	
Medium	0	2	409	2,192	1.614	3,591	7,808	
High	0	0	32	172	96	596	896	
Total	0	37	1,186	4,800	3,879	8,785	18,687	18,687
Nuthampstead:								
Low	413	1,180	743	2,872	8,261	12,010	25,066	
Medium	183	851	425	2,228	13,802	14,115	31,421	
High	23	68	47	310	1,133	925	2,483	
Total	619	2,099	1,215	5,410	23,196	27,050	58,970	59,589
Thurleigh:								
Low	479	1,983	1,222	1,609	2,267	7,964	15,045	
Medium	121	822	391	659	812	4,167	6,851	
High	12	60	16	41	52	250	419	
Total	612	2,865	1,629	2,309	3,131	12,381	22,315	22,927

Table 20.6

Costs and dis-benefits to residents on site and in areas affected by noise (£000s, 1969 prices, discounted to 1975)

Location	*On site and within safety zone*	*Over 55 NNI*	*50-55 NNI*	*45-50 NNI*	*40-45 NNI*	*35-40 NNI*	*Total affected by noise*	*Total on site and affected by noise*
Site: house price range								
Cublington:								
Non-movers	-	33	116	368	806	546	1,869	
Movers for noise reasons	-	6	15	201	349	119	690	
Movers for other reasons	-	143	477	1,550	2,881	1,341	6,392	
Total	4,783	182	608	2,119	4,036	2,006	8,951	13,734
Foulness:								
Non-movers	-	2	80	311	199	108	700	
Movers for noise reasons	-	0	37	146	61	34	278	
Movers for other reasons	-	8	328	1,128	512	604	2,580	
Total	0	10	445	1,585	772	746	3,558	3,558
Nuthampstead:								
Non-movers	-	231	112	410	1,729	1,582	4,064	
Movers for noise reasons	-	38	14	210	812	470	1,544	
Movers for other reasons	-	958	440	1,751	6,269	4,005	13,423	
Total	2,968	1,227	566	2,371	5,810	6,057	19,031	21,999
Thurleigh:								
Non-movers	-	260	116	135	152	575	1,238	
Movers for noise reasons	-	45	15	60	52	144	316	
Movers for other reasons	-	1,107	459	558	518	1,371	4,013	
Total	2,441	1,412	590	753	722	2,090	5,567	8,008

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix 1

Consumer Surplus Survey

1 The results of the Consumer Surplus Survey used in this chapter were derive derived from comparison of replies to the two questions reproduced below:

(a) If you *were* to sell your house/flat, what sort of price would you expect to get for it?

Write in £ .....

If informant unable to give an exact price, probe for price range.

If informant unable to estimate price at all, please try and estimate yourself the market value of the house/flat indicating on the questionnaire that this is your estimate.

Please ensure that the price you have been given is the full market value excluding any taxes or levies that may be applicable.

(b) Suppose that your house was wanted to form part of a large development scheme and the developer offered to buy it from you, what price would be just high enough to compensate you for leaving this house (flat) and moving to another area?

Write in £ .....

Allow informant plenty of time to think about this.

If informant asks reason for question, explain along the following lines: "We are trying to find out from people all over the country, what their property is worth to them over and above the actual market value of the house. In other words what sort of money incentive people would need to move somewhere else. We have talked of a development scheme purely as an example of a situation where people might need some sort of offer of extra money in order to feel fairly happy about moving.

(Please Stress) We do not know of any development scheme in this area."

Please ensure that the price you have been given excludes any taxes or levies that may be applicable and also excludes the legal/transportation costs of moving.

2 Five interviewing areas were selected from Rural Districts in the south-east of England which were:

(a) similar in terms of population density to the areas within the 55 NNI contour around the proposed third London airport,

(b) sufficiently far from the proposed sites to be unaffected,

(c) as far as could be ascertained, unaffected by any other major development proposal.

A random method was used to select 350 householders in each Rural District from electoral rolls.

3 Interviewing was carried out between the 24th and 30th October, 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

4 Of the 1,750 addresses issued interviews were not achieved at 1,129 for the following reasons:

	Number	*% of addresses issued*
Occupier not owner/mortgager	742	42
Demolished/empty	46	3
Refused	102	6
Too ill	39	2
Away during survey	51	3
Not available after 4+ recalls	118	7
Other reasons	31	2
Total	1,129	65

5 The interviews achieved were divided between Rural Districts as follows:

	Number	*% interviews achieved*
Battle R D, Sussex	157	25
Chailey R D, Sussex	116	19
Hollingbourne R D, Kent	108	17
Basingstoke R D, Hants	105	17
Tendring R D, Essex	129	21
Total	621	100

Printed image digitised by the University of Southampton Library Digitisation Unit

Notation

1 The following symbols are used in this appendix:

H_{ijk} = number of households for i^{th} site, in j^{th} noise zone at 2006, in k^{th} price bracket,

e_i = natural movement rate out of noise zone for i^{th} site,

$t_{ijj'}$ = year in which average house at i^{th} site, in j^{th} noise zone at 2006, is expected to enter the j^{th} noise zone,

P_k = average current price of house in k^{th} price bracket,

D_{ijkt} = average proportional depreciation of price of house at site i in j^{th} noise zone at 2006, in k^{th} price bracket, in year t, unadjusted for 3 per cent per annum increase in depreciation values,

D_{Gjk} = average depreciation of price of house in j^{th} noise zone, in k^{th} price bracket, as obtained from Gatwick survey,

N_l = average noise disbenefit in l^{th} annoyance grade,

n_{jkl} = proportion of households in j^{th} noise zone, in k^{th} price bracket, in l^{th} annoyance grade,

S_m = average consumer surplus (including removal costs) of households in m^{th} consumer surplus category,

s_{km} = proportion of households in k^{th} price bracket, in m^{th} consumer surplus category.

Sources and derivation of data

2 The following are the sources and derivation of the data:

H_{ijk} : derived from environment survey (see chapter 19) using the relationship between price and rateable value derived in paragraph 20.35, and supplemented by proxy data as in appendix 3 to chapter 20. The numbers are given in table 20.5,

e_i : the figures have been taken from the Stage III evidence* submitted by Cambridgeshire and the Isle of Ely, Essex and Hertfordshire County Councils, technical appendix no 6, page 12. The figures are taken net of natural increase of population - see page 9 of this technical appendix,

Printed image digitised by the University of Southampton Library Digitisation Unit

es),

med the basis.
one has been
one in the year
level has been
timated as
following assump-

$^{92-t}$, $D_{Gk(j-l)}$

$_{Gk(j-l)} / (1.1)^{1982-t}$

nd is always
tour, when

', the noise
nnoyance score
erage depreciation
lating from the
preciation levels

ciation (%)

edium price	*High price*
4	6
9	15
15	26
20	35
22	38

naximum annoy-
ades have been
n in table 20.8

55+

Medium 35-40
40-45
45-50
50-55
55+

High 35-40
40-45
45-50
50-55
55+

S_m, S_m : using the
distributio

Table 20.9

Percentage distribution

House price range	*0*
Low	11
Medium	11
High	11

Cost/benefit model

3 Inland sites
of the differing rat

(a) *Inland sites*
annoyance dis-bene
noise reasons and
noise.

(i) *Costs up to*

$$C_O = \sum_{t=1971}^{1981} e_j (1-$$

(the last two terms
to noise or to anti

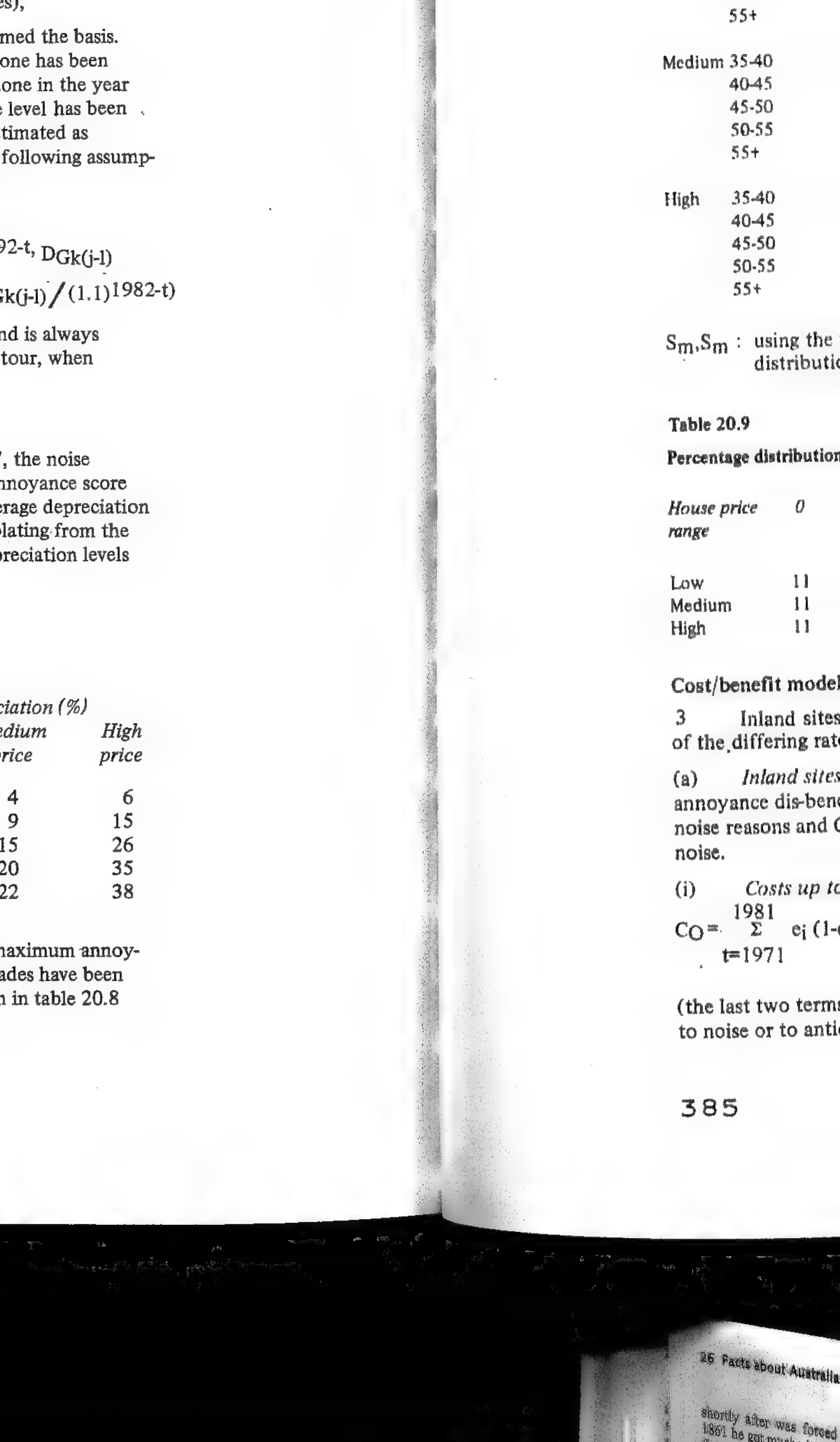


Table 20.8

Percentage of population in each noise dis-benefit grade for a given house price NNI category

House price range: NNI		*Noise dis-benefit* 0	£200	£500	£1000	£2000	£4000	*Total*
Low	35-40	39	33	28				100
	40-45	29	35	36				100
	45-50	21	32	47				100
	50-55	14	26	60				100
	55+	11	15	74				100
Medium	35-40	22	17	17	30	14		100
	40-45	15	14	17	33	21		100
	45-50	11	10	17	30	32		100
	50-55	8	6	14	26	46		100
	55+	8	3	8	19	62		100
High	35-40	22		17		33	28	100
	40-45	15		14		35	36	100
	45-50	11		10		32	47	100
	50-55	8		6		26	60	100
	55+	8		3		15	74	100

S_m,S_m : using the method described in paragraph 20.38, the following distribution was derived:

Table 20.9

Percentage distribution of consumer surplus for each price range

House price range	0	£1000	£2000	£3000	£4000	£5000	*Total*
Low	11	55	11	10	5	8	100
Medium	11	34	21	11	5	18	100
High	11	15	19	12	9	34	100

Cost/benefit model

3 Inland sites and Foulness have been treated separately because of the differing rates of noise build-up.

(a) *Inland sites:* total cost = $C_N + C_M + C_O$ where C_N = the noise annoyance dis-benefits, C_M the costs and dis-benefits to those moving for noise reasons and C_O the costs to those moving for reasons other than noise.

(i) *Costs up to 1982:* $C_N = C_M = 0$

$$C_O = \sum_{t=1971}^{1981} e_i (1-e_i)^{t-1971} \cdot \sum_j \sum_k H_{ijk} P_k D_{ijkt} (1.03)^{t-1969} (1.1)^{1975-t}$$

(the last two terms represent respectively (i) growth in depreciation due to noise or to anticipated noise at 3 per cent per annum from 1969, and

Printed image digitised by the University of Southampton Library Digitisation Unit

(ii) discounting at 10 per cent to the base year 1975. The series starts at 1971 on the assumption that the chosen site will be announced in this year.)

(ii) *Costs at 1982*

$$C_M = \sum_j \sum_k \sum_l \sum_m H_{ijk}(1-e_i)^{11} n_{ijkl}\, s_{km}\, (1.03)^{13}\, (1.1)^{-7}$$

$$\begin{cases} 0 & \text{if } N_1 < S_m + P_k D_{ijkl1982} \\ \times & \\ (S_m + P_k D_{ijkl1982}) & \text{if } N_1 \geq S_m + P_k D_{ijkl1982} \end{cases}$$

(iii) *Costs from 1982 onwards:*

$$C_O = \sum_{t=1982}^{2006} \sum_j \sum_k \sum_l \sum_m H_{ijk}\, n_{jkl} s_{km}\, e_i\, (1-e_i)^{t-1971} (1.03)^{t-1969} (1.1)^{1975-t}$$

$$\begin{cases} 0 & \text{if } N_1 \geq S_m + P_k D_{ijkl1982} \\ \times & \\ (P_k D_{ijkt}) & \text{otherwise} \end{cases}$$

$$C_N = \sum_{t=1982}^{2006} \sum_j \sum_k \sum_l \sum_m H_{ijk}\, n_{jkl} s_{km}\, (1-e_i)^{t-1971} (1.03)^{t-1969} (1.1)^{1975-t}$$

$$\begin{cases} 0 & \text{if } N_1 \geq S_m + P_k D_{ijkl1982} \\ \times & \\ \left(\frac{7}{110} N_1\right) & \text{otherwise,} \end{cases}$$

(C_N includes noise nuisance disbenefits to those moving subsequently for other reasons: $\frac{7}{110} N_1$ represents the proportion of noise nuisance accruing in any year: it is the equivalent disbenefit in year 1 of a series growing at 3 per cent per annum and discounted at 10 per cent per annum which has a capitalised value of N_1).

(b) *Foulness site*

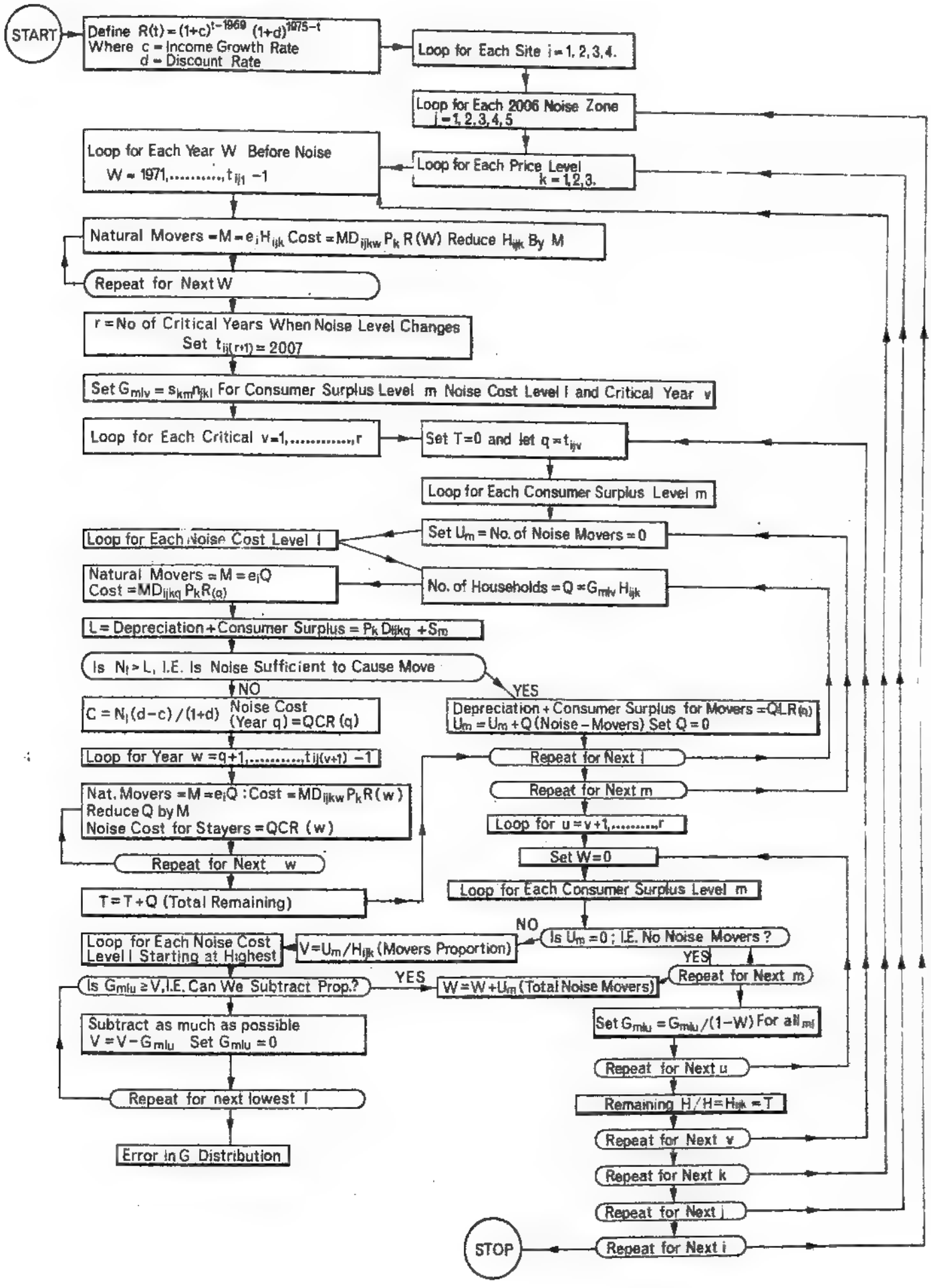
The calculations for the Foulness site are a little more complex. For the population in the lowest noise zones (35-40 NNI) the calculations are carried out as for inland sites, with the break year at 1992 instead of 1982. For the remaining zones costs up to 1982 are unaffected. At 1982, the costs are as for inland sites, except that the noise level in 1982 is assumed to be one zone lower than its ultimate level (reached in 1992). Thereafter, in each consumer surplus noise level and house price category, the upper tail of the noise annoyance distribution is removed, to correspond with the proportion of population assumed to move at 1982 because of noise (for some categories this may be zero, for others 100 per cent). For the remaining population costs are accumulated as before, with a further decision point at 1992.

Flow diagram

4 A flow diagram of the noise cost model is given below.

Printed image digitised by the University of Southampton Library Digitisation Unit

FIGURE 20·1 NOISE COST MODEL – FLOW DIAGRAM



Printed image digitised by the University of Southampton Library Digitisation Unit

As the work on optimisation of noise contours proceeded it became necessary to use information concerning residential properties for which no survey data was available. As the carrying out of supplementary surveys would have caused excessive delay to the research programme, a solution was found by the use of proxy data in the following way:

(a) the population required for each new grid square was estimated from special tabulations of the 1966 sample census of population and was adjusted to 1968,

(b) a relationship was established between the number of dwellings and population from a random sample of the survey data on residential properties supplied by the local authorities. The equation D = .3136P was used where D = no. of dwellings and P = population,

(c) the proportion of dwellings in each rateable value category was also estimated from data supplied by local authorities. The proportions of dwellings in each rateable value category used are shown in table 20.10 below.

Table 20.10

Proportion of dwellings in each rateable value category

Rateable value (£)	*Proportion of dwellings*
0 - 49	0.19
50 - 74	0.28
75 - 99	0.32
100 - 124	0.13
125 - 149	0.04
150 - and over	0.04

Printed image digitised by the University of Southampton Library Digitisation Unit

Schools

21.1 A survey of all schools likely to be significantly affected by a third London airport was carried out. The 35 NNI contour was chosen as the boundary of the survey after considering advice from the Department of Education and Science, the researches on buildings carried out for the Wilson Committee on Noise by the Building Research Station* and the evidence submitted at the Stage II hearings by Mr. N. Fleming** stating his preference for adoption of the 35 NNI contour. Outside the 35 NNI contour, no cost was attributed to aircraft noise.

21.2 The survey located schools by grid reference. The following information was obtained: details of type of school, (primary, secondary, special, etc.) the number of pupils or students (full-time, part-time, boarders and non-boarders), whether the school was a local authority or private school, and whether it was scheduled to close before 1980 irrespective of the arrival of the third London airport. This enabled the schools to be divided into categories for costing purposes.

Nature and degree of damage to schools

21.3 Schools within the airport site and safety zones will need to be replaced off site. The rest of the schools within the survey area will be affected by noise. In assessing the effect of the airport on the latter schools existing information on the effect of aircraft noise was used, including the papers contributed to the International Conference on the Reduction of Noise and Disturbance caused by Civil Aircraft†, the information in the Wilson Committee's Report, relevant studies already made by the Building Research Station and evidence submitted to the Commission during Stages I and II of its work.

*_Noise, Final Report_, Cmnd 2056 (HMSO), chapter V, paragraphs 147 and 148, chapter VIII and appendix XIII'

**_CTLA Papers and Proceedings_, volume III (HMSO), paragraph 6, evidence of Mr. N. Fleming.

†_Aircraft noise: report of an international conference_ (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

21.4 The nature and degree of damage was assessed by estimating the maximum acceptable noise level within the school and calculating the cost of the insulation work required to achieve this, given the level of noise outside the school as shown by the NNI contour. There is evidence from the following sources on the maximum acceptable internal noise level. The Wilson Report (paragraph 119) recommended 55dBA (approximately 70 PNdb) as the figure which should not be exceeded in educational institutions if interference with speech is to be avoided. An independent study in 1963 by the Building Research Station in relation to Heathrow Airport concluded that the noise level inside the classrooms should not exceed 60 dBA (which equals 75 PNdb). In studies which the Department of Education and Science and the Building Research Station carried out in 1968 into the cost of insulating schools they considered it appropriate to take the range 55 - 60 dBA as the noise level at which insulation begins to be needed. The BRS recommendation that 45 dBA (60 PNdB) should not be exceeded for more than 10 per cent of the time has been used in this study. For the purposes of comparison the NNI contour figure and the figures of dBA mentioned above were converted into PNdB.

Costing of damage to schools

21.5 It was assumed that not only schools within the airport site (including the safety zone but also any other schools for which insulation is likely to be uneconomic would have to be replaced elsewhere). The replacement cost of schools was estimated by the Department of Education and Science on the basis of nationally defined "cost limits" for building new schools and the cost of any additions required. These nationally defined "cost limits" are based on unit costs per school place which must normally not be exceeded when new schools are constructed. No cost was allowed for schools which are due to close down in any case by 1980.

21.6 The standard cost of building a new school depends upon the following factors:

(a) the type of school,

(b) the size of school as indicated by the number of places,

(c) in the case of middle* and secondary schools, the age distribution of pupils within the school.

The Department provided a ready-reckoner table from which the cost of replacing each individual school could be derived according to the number of places (at different rates for primary, secondary and middle* schools). The cost was weighted to take account of the size and, in the case of middle and secondary schools, the age distribution within the school.

*The normal system of primary (5-11 years) and secondary (11-18 years) schools is being replaced in some areas by a system of first school (5-8/9 years), middle school (8/9-12/13 years) and secondary school (12/13-18 years).

Printed image digitised by the University of Southampton Library Digitisation Unit

21.7 Other types of educational establishments were costed on a square footage basis using the following approximate unit costs at 1968 prices supplied by the Department (the cost of replacing schools for handicapped children was assessed individually):

(a) boarding accommodation - £1,000 per place in addition to the cost of the school itself,

(b) technical colleges and other colleges of higher education - £910 per student or full-time equivalent. In further education establishments four part-timers, were taken as equivalent to one full-time student.

21.8 The following additional costs were allowed for:

(a) professional fees at 10 per cent of building costs,

(b) the cost of land, varying according to the location,

(c) other fixed assets, i.e. those that could only be removed at exorbitant costs,

(d) removal costs. For all removable furniture and equipment standard costs supplied by the Department of Education and Science were used as follows:

Table 21.1

Nature of establishment	*Estimated cost of removable equipment (per cent of building costs)*	*Actual removal refixing costs (per cent of building costs)*
Schools	12	6
Technical Colleges	55	25
Colleges of Education	15	7

21.9 In calculating the replacement cost of schools for which the cost of noise-insulation is likely to be uneconomic allowance was made for the fact that the abandoned old school buildings and school land could be sold, and assumptions were made about the permitted future use. The value of the land was allowed for at the estimated market price and buildings were valued at 5 per cent of the estimated cost of building them anew. When a school is replaced it is unlikely, however, that it will be replaced by an identical building. Some element of betterment was therefore allowed for. The adjustments for betterment were based on data about the age and nature of construction of the school obtained by means of questionnaires addressed to the authorities of each school.

21.10 The cost of noise as it would affect schools located within the survey area, apart from schools costed on the replacement cost method, was assumed to be the cost of insulating those schools against aircraft noise so as to maintain a maximum internal noise level of 45 dBA (60 PNdB). The degree of protection provided by various methods of insulation is summarised in tables 21.2 and 21.3 below, which are abridged statements of evidence submitted by Mr. J. Springett on behalf of the Essex County Council at the Stage II Hearing in respect of the Foulness proposals*.

**CTLA Papers and Proceedings*, volume III (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 21.2

x: work which is required for degree of sound insulation indicated.

(x): work which may be required for degree of sound insulation indicated.

	Degree of sound insulation		
	40dB	*25dB*	*20dB*
System built schools			
Protection of outer shell			
Changing opening windows to fixed glazing			x
Heavy glass and fixed glazing		x	
Double glazing walkway and duct	x		
Fixing inner glazing for double glazing	x		
Treatment of non glazed wall area and facias	x	x	(x)
Closing of roof light and compensation by artificial light	x	x	(x)
Heating and ventilation			
Powered ventilation (fans ducts and controls)	x	x	x
External motorised louvre blinds	x	x	x
Internal modifications			
Sound absorbing ceilings	x	x	(x)
Door treatment	x	x	(x)
Pre 1914 heavy construction			
Protection of outer shell			
Changing to fixed glazing with medium glass			x
Changing to fixed glazing with heavy glass		x	
Double windows	x		
External doors	x	x	x
Floor insulation	x		
Ceilings	x	x	x
Heating and ventilation			
Heating and air equipment	x	x	x
External motorised louvre blinds	x	x	x
Internal works			
Sound absorbents	x	x	x
Doors	x	x	x

Table 21.3

Estimated costs in shillings of work set out above, per square foot of floor area

Post 1945 system building	89-90	50-52	39
Pre 1914 heavy construction	93	70	66
Consultants' interpolated cost for post 1914 Traditional type of building	90	55	40

Printed image digitised by the University of Southampton Library Digitisation Unit

The foregoing figures do not include professional fees but do include an element of 18 per cent for:

(a) alteration to drainage, paths, gardening and other incidentals consequential on the works indicated,

(b) the probable unpopularity of this form of work, especially under the employment conditions likely in the vicinity of the airport, and the restrictions on access to school buildings in term time,

(c) capitalisation of additional running and maintenance costs.

21.11 Three degrees of protection against noise were considered in these tables; noise reductions of 20dBA, 25dBA and 40dBA. Three elements involved in the insulation of buildings were considered; the insulation already provided by the outer shell of the school building; further insulation which would be provided by double glazing and the need to carry out other structural alterations; and the provision of the ventilation and/or air conditioning required as the result of insulation. The Department of Education and Science provided information on actual expenditure incurred on sound insulation of schools near Heathrow. The joint studies by the Department of Education and Science and the Building Research Station undertaken in 1968 indicated that the treatment of existing schools could average out to £175 per primary place and £230 per secondary school place (at 1968 prices). They also indicated that in a new building, where some saving can be made on normal fittings, the cost of sound insulation represents an addition of about 60 per cent to the net cost of the school. The evidence provided at the Foulness Stage II hearing by Mr. N. Fleming suggests that the cost of insulating ranges between 35 per cent and 85 per cent of net cost of the building.

21.12 The resulting cost estimates at 1968 prices, discounted at 10 per cent to the base year of 1975, of replacing schools and educational institutions currently located in the areas to be taken by the airport sites are shown in table 21.4 below.

Table 21.4

Schools and educational establishments affected by proposed airport sites (£000)

Site	*Year in which cost incurred*	*Replacement cost*	*Discounted cost*
Cublington	1975	22	22
Foulness	–	nil	nil
Nuthampstead	1975	131	131
Thurleigh	1975	75	75

21.13 In estimating the costs for schools and educational establishments affected by aircraft noise, it was assumed that the insulation provided by the outer shell of the school building would amount to 10 dBA. No

Printed image digitised by the University of Southampton Library Digitisation Unit

insulation would therefore be required for schools where the maximum outside noise level would not exceed 55 dBA (70 PNdB). For schools where the maximum outside noise level would exceed 110 PNdB or more, full replacement has been assumed if this appeared cheaper than the required amount of insulation. A few schools lying outside the 35 NNI contours nevertheless may experience on occasions outside noise levels in excess of 80 PNdB but these have been disregarded.

21.14 Because of the combined effect of increase in weight and the introduction of quieter engined aircraft the PNdB values are more or less constant through time (see table 18.3 in chapter 18). For this reason all the affected schools would require noise insulation immediately the airport opened. It has, therefore, been assumed that all insulation work is completed before the opening of the airport, and that the work has been spread over four years preceding the opening.

21.15 The resulting discounted cost estimated at 1968 prices are shown in table 21.5 below. The figures include professional fees at 10 per cent of the estimated costs of replacement or 12 per cent of the estimated costs of insulation.

Table 21.5

Schools and educational establishments affected by aircraft noise (£000)

Site	*Year in which cost incurred*	*Insulation or replacement cost*	*Discounted cost*
Cublington	1982	1,658	829
Foulness	1982	1,630	815
Nuthampstead	1982	6,679	3,428
Thurleigh	1982	1,671	835

21.16 The total discounted costs arising from each of the four short listed sites are set out in table 21.6 below.

Table 21.6

Schools and educational establishments (£M)

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Schools etc. on site	0.02	nil	0.13	0.08
Schools etc. affected by noise	0.83	0.82	3.43	0.84
Total	0.89	0.82	3.56	0.91

21.17 The College of Aeronautics at Cranfield is affected by the proposed airports at three sites - see chapter 17. The cost to the College is not

Printed image digitised by the University of Southampton Library Digitisation Unit

identical for the four sites, as set out in table 21.7 below.

Table 21.7

Cost of closure or reduction in activities at the College of Aeronautics, Cranfield (£M) discounted

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Total	0.50	nil	0.50	3.91

Hospitals and other health institutions

21.18 Each Regional Hospital Board was asked to supply the following information in respect of any of its hospitals within the survey area: the location, name and address of the hospital, the type and number of beds, the total number of staff and residential staff, and whether the hospital was due to close in any case by 1980. The local authorities were asked to provide similar information in respect of other health institutions such as private hospitals, nursing homes, welfare homes, mental health hostels, training centres for mentally sub-normal people, child health clinics and similar institutions. Data on such institutions was also collected at the Stage II local hearings. All institutions within the 35 NNI contour for the year 2006 were included and consideration was given to hospitals or other institutions outside this boundary to which the Commission's attention had been drawn by the evidence received during Stages II and III*. There are no hospitals within the areas to be taken by the airport sites.

21.19 The evidence submitted at the Stage II local hearings suggested that quietness may be vital for patients, particularly if they are seriously ill, and that there are certain conditions in which sudden exposure to loud noise can be dangerous e.g. tetanus, eclampsia, recent myocardial infection, the cerebral irritation phase after head injury, and acute anxiety states. Many patients in hospital have a special need for adequate and uninterrupted sleep. The effect of noise on hospital activities also includes interference with communication, which is important in the case of psychiatric patients, doctors listening to heart beats and indeed doctors and nurses concentrating on their tasks.

21.20 The Department of Health and Social Security had not completed its own research into acceptable internal noise levels of hospitals and therefore could not provide standards which could readily be applied to each hospital within the area of study. For the purposes of the airport site comparison work the Department adopted the criterion of 45 NNI as the basis for assessing the extent of any sound insulation which would be necessary for individual hospitals. The Department does not claim that the NNI measure of the 45 NNI level necessarily constitute an appropriate basis for setting standards for hospitals but does not con-

**CTLA Papers and Proceedings* volumes III-VI and IX (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

sider that there is any acceptable alternative in the present state of its knowledge. The Department has also estimated approximate costs for sound insulation relative to criteria of 35 NNI and 40 NNI.

21.21 For the cost estimation the Department made the following assumptions:

(a) full sound insulation would be needed throughout each hospital (i.e. double glazing and the provision of a ventilation system),

(b) buildings due for closure before 1980 should be excluded,

(c) an average cost of insulation per hospital bed would be applied to each hospital regardless of the type of its construction or its function (except for hutted buildings for which insulation would be impracticable).

21.22 The hospitals were divided into five groups based upon the 2006 noise contours ranging from 35 NNI to 55+ NNI. A time profile of the growth of NNI values was used to identify the point in time when sound insulation of each group was required for each of the three NNI criteria considered.

21.23 The resulting discounted cost estimates for the 45 NNI criterion are shown in table 21.8 below.

Table 21.8

Hospitals for the 45 NNI contour criterion (£000)

Site	*Year in which cost incurred*	*Insulation cost*	*Discounted cost*
Cublington			
55 + NNI			
50 - 55 NNI	1982	1,382	709
45 - 50 NNI	1982	126	65
sub-total			774
Foulness	nil	nil	nil
Nuthampstead	nil	nil	nil
Thurleigh	nil	nil	nil

21.24 A summary of the total costs for all three criteria considered is shown in table 21.9 below.

Table 21.9

Comparative table of hospital costs (discounted) for 35, 40 and 45 NNI criteria (£000)

NNI criterion	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
35	791	nil	1,748	714
40	791	nil	173	nil
45	774	nil	nil	nil

Printed image digitised by the University of Southampton Library Digitisation Unit

21.25 No "other health institutions" are located within the areas to be taken by the airport sites. The estimated cost of insulating residential institutions of this kind located in the areas affected by aircraft noise is given in table 21.10 below. These estimates have been based on 25 per cent of the cost per bed for the insulation of hospitals and the 45 NNI standard has been used as for state hospitals.

Table 21.10

Other health institutions for the 45 NNI contour criterion (£000)

	Year in which cost incurred	*Insulation cost*	*Discounted cost*
Cublington			
55 + NNI			
50 - 55 NNI	1982	24	12
45 - 50 NNI	1982	17	9
sub-total			21
Foulness	nil	nil	nil
Nuthampstead			
55 + NNI			
50 - 55 NNI			
45 - 50 NNI	1982	17	9
sub-total			9
Thurleigh			
55 + NNI			
50 - 55 NNI			
45 - 50 NNI	1982	15	8
sub-total			8

21.26 Because these institutions are generally on the small side it is possible that the boundary for costing has been drawn too tight and the cost is likely to be low. For this reason a comparative table, table 21.11 for the 35 and 40 NNI criteria, has been prepared as for hospitals.

Table 21.11

Comparative table of other health institution costs (discounted) for 35, 40 and 45 NNI criteria. (£000)

NNI criterion	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
35	129	290	310	38
40	35	29	31	13
45	21	nil	9	8

21.27 The non-residential institutions and clinics varied in character and type of buildings used. Some appeared to be part-time use of buildings. For this reason no costs have been calculated but table 21.12 below sets o the number of units in this class.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 21.12

Non-residential health institutions (number of units)

NNI criterion	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
35	12	nil	17	16
40	7	nil	13	7
45	4	nil	5	4

21.28 The total costs arising for each of the four short-listed sites in respect of hospitals and other health institutions which have been included in the cost-benefit analysis are set out in table 21.13 below; these are the costs for the 45 NNI criterion.

Table 21.13

Hospitals and other health institutions for the 45 NNI contour criterion (£000)

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Hospitals	774	nil	nil	nil
Other health institutions (residential)	21	nil	9	8
Total	795	nil	9	8

Other public authority buildings

21.29 The following paragraphs concern the effect of the airport proposals on buildings owned or under the care of public authorities such as employment exchanges, police stations, local libraries and museums, art galleries, town halls, sewage disposal works, swimming baths, telephone exchanges, post offices, gas, electricity and water board offices and showrooms and village halls. Defence and Ministry of Technology establishments are discussed in chapters 15 and 16 and chapter 24 deals with outdoor recreations, churches, historic buildings and sites of scientific interest. The survey referred to in chapter 19 provided data on all public buildings within the 40 NNI contour at each of the four sites.

21.30 For public authority buildings located in or near the areas to be taken by the airport sites, the replacement costs (discounted) shown in table 21.14 below have been taken from survey data described in chapter 19.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 21.14

Public authority buildings affected by the proposed airport or airport sites (£000)

Site	*Year in which cost incurred*	*Replacement cost*	*Discounted cost*
Cublington	1975	77	77
	1982	450	225*
Foulness	1975	nil	nil
Nuthampstead	1975	11	11.0
Thurleigh	1975	100	100

*Establishment off site affected.

21.31 The buildings affected by noise were evaluated on the basis of their rateable values, taking account of their functions or uses and the existing noise level inside the buildings. Installations such as sewage disposal works and storage depots which are not affected by aircraft noise were deemed to have zero costs. For the remaining large numbers of establishments it was not possible to devise a satisfactory method for evaluating the effect of noise. It was therefore necessary to apply the "annual rates" principle of evaluation as has been used in paragraphs 23.8 of chapter 23. The inadequacies of this procedure are recognised and the Research Team is open to suggestions about more reliable estimates.

21.32 The discounted cost estimates are shown in table 21.15 below.

Table 21.15

Public authority buildings affected by aircraft noise (£000)

Site	*Year in which cost incurred*	*Total noise cost*	*Discounted cost*
Cublington	1982	34.4	17.7
Foulness	1982	3.0	1.53
Nuthampstead	1982	7.4	3.8
Thurleigh	1982	6.6	3.4

21.33 The total discounted costs arising for each of the four short-listed sites in respect of public authority buildings are set out in table 21.16 below.

Table 21.16

Public authority buildings (£000)

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Buildings on site	302	nil	11	100
Buildings affected by noise	18	2	4	4
Total	320	2	15	104

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

22.1 The third London airport will take up agricultural land for three purposes: for the airport site itself, for the associated urbanisation, and for the new road and rail links. For the new road and rail links it was impracticable to carry out a similar agricultural study to that made of the airport sites and urbanisation areas. These land requirements were therefore costed on approximate compensation values.

22.2 A distinction must be drawn between the cost-benefit treatment of the land requirements of the airport itself and of the land requirements of the urbanisation. The airport land requirements represent a loss to agriculture which would not otherwise occur. The land requirements for urban development are needed only by reason of a re-location of urbanisation which would have occurred in any case to house the growth of population, irrespective of the new airport. The appropriate cost is therefore the difference between the agricultural value of the land required for the airport urbanisation for each site, and the corresponding value of the average farmland taken for urban development in the south-east. This principle is similar to that which should be applied for the costing of the airport urbanisation itself. There are obvious difficulties in estimating the agricultural value of farmland that will be taken for urban development in the south-east during the 20 years from about 1980, and it therefore seems preferable to take as this benchmark the lowest land value found in any of the four sites, as this is unlikely to be very different from the average value sought. In arriving at the cost of replacing the lost output of agricultural produce, it would have been proper to estimate the minimum cost of achieving this, allowing for an appropriate combination of increasing the intensity of cultivation of existing farmland in this country (which has been proved to be more economic than extending the margin of cultivation into land not at present farmed) and of purchasing additional food on the world market. As is made clear in the study by Professor G.P. Wibberley and Mr. M. Boddington, volume VIII, part 2*, it would be unrealistic to assume that any substantial import substitution would occur, there being a persistent trend towards greater agricultural self-sufficiency in the UK.

**CTLA Papers and Proceedings*, volume VIII, part 2, section 3 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

22.3 From this minimum replacement cost, it would then have been necessary to deduct the value of agricultural inputs which can be transferred from the land lost to other uses. This study would have been highly complex, and has not been attempted in full by Professor Wibberley and Mr. Boddington. Instead, the valuation of agricultural output lost has been taken to be the market price of the produce itself, including state subsidies, rather than the cost of replacing this output. After deduction of the value of transferable factors, such as farm labour, fuel, feed, fertilizers, and farm vehicles, the factors remaining to be measured are the natural and indestructible properties of the soil itself, the farm buildings, the capital embodied in the land (such as drainage, roads and bridges, fixed equipment) farm structure including field size and lay-out, and any locational advantages with respect to markets or sources of supply. The "value added" as estimated by Professor Wibberley and Mr. Boddington therefore includes more than the value of the land in its natural state.

22.4 As is explained in Professor Wibberley's and Mr. Boddington's report, there are strong grounds for believing that the replacement cost of the food lost exceeds the valuation at market prices gross of subsidies which has been used in the exercise. An upward adjustment of the "value added" estimates has therefore been made, increasing them, on average, by a factor of about 2.

22.5 The evaluation has to allow for likely future changes in farm prices relative to prices generally, after allowing for any changes in the prices of inputs. It must also take account of future changes in agricultural productivity, which has required a careful assessment of the standard of husbandry of the farms in the vicinity of the airport site and the urbanisation areas.

22.6 Comparison of the capitalised "value added" estimates from Professor Wibberley's and Mr. Boddington's exercise and the current market prices of farmland in the same area reveals that, in general, farmland has a value to the purchaser or occupier which exceeds its value assessed in purely agricultural terms. It is common knowledge that much agricultural land is bought for reasons other than farming as such. An estimate of the magnitude of these benefits can be derived by comparing the current market price of land with the purely agricultural value of the land concerned, estimated by capitalising the "value added" figures, as originally calculated from current farm prices, gross of subsidies. (It is these prices, rather than the higher prices implied by the food replacement criterion, which are relevant to the private individual). The difference between current market prices and "value added" assessed in this way provides a measure of the residential and other social benefits which will be lost.

22.7 Tables 22.1-22.3 below distinguish the purely agricultural losses from the residential and social losses. Table 22.1 shows the calculations relating to land for the airport sites. Table 22.2 shows the calculations relating to land for the urbanisation. Table 22.3 shows the total cost of agricultural land lost on both counts and indicates in row 25 the costs taken for the purpose of the cost-benefit analysis. As explained in paragraph 23 of chapter 1, Professor Wibberley and Mr. Beddington have recommended the use of a 50-year time period. The tables have been prepared on this basis. In discounting the costs, a 10 per cent rate has been used.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 22.1 **Value of agricultural land**

Agricultural value

(All figures in £ per acre unless stated)	*Row no.*	*Airport sites*			*Land for urbanisation*			
		Nuthamp-stead	*Cublington*	*Thurleigh*	*Foulness*	*Nuthamp-stead*	*Cublington*	*Thurleigh*
Adjusted "value added" per acre, 1969	1	7.5	1.5	11.3	15.1	8.2	2.9	3.4
Row 1 adjusted to take account of food replacement costs	2	14.5	7.5	21.3	29.1	15.2	7.9	8.4
Forecast growth rate in "value added" (per annum at constant prices)	3	4%	1%	4%	3%	4%	1%	1%
Row 2 increased by 10 years' growth at rates shown in row 3	4	21.4	8.3	31.5	39.1	22.5	8.7	9.3
Capitalisation factor	5	18.3	12.2	18.3	15.7	18.3	12.2	12.2
Capitalised adjusted value (row 4 x row 5)	6	390	100	575	615	410	105	115
Area of land (000 acres)	7A	8.0	8.2	7.9	18.0	18.0	18.0	18.0
(000 hectares)	7B	3.2	3.3	3.2	7.2	7.2	7.2	7.2
Total agricultural value lost (row 6 x row 7)	8	£3.1	£0.8	£4.5	£11.1	£7.4	£1.9	£2.1
Row 8 discounted to 1975[1]	9	£2.3	£0.6	£3.3	£4.9	£3.5	£0.7	£0.1
Differences from lowest cost site (£m)	10	Not applicable			£4.2	£2.8	-	£0.1

[1] Airport site assumed to be acquired during years 1975 - 82, leading to an overall discount factor of 0.74. Land for urbanisation assumed to be acquired during years 1978 - 2000, leading to overall discount factors, taking account of different rates of productivity,growth, of 0.44, 0.47, 0.39 and 0.39 respectively.

Table 22.2

Residential and social value

(All figures in £ per acre unless stated)	*Row no.*	*Airport sites*				*Land for urbanisation*		
		Nuthamp-stead	*Cublington*	*Thurleigh*	*Foulness*	*Nuthamp-stead*	*Cublington*	*Thurleigh*
Adjusted "value added" 1969	11	7.5	1.5	11.3	15.1	8.2	2.9	3.4
Capitalisation factor	12	18.3	12.2	18.3	15.7	18.3	12.2	12.2
Capitalised adjusted "value added" (row 11 x row 12)	13	£137	£18	£206	£237	£150	£35	£42
Approximate market values, 1969	14	£375	£275	£350	£450	£375	£275	£250
Residential and social benefits of land ownership (row 14 - row 13)	15	£238	£257	£144	£213	£225	£240	£208
Row 15 increased by 10 years growth, at 3% per annum	16	£320	£345	£195	£285	£300	£320	£280
Area of land (000 acres)	17A	8.0	8.2	7.9	18.0	18.0	18.0	18.0
Area of land (000 hectares)	17B	3.2	3.3	3.2	7.2	7.2	7.2	7.2
Total residential and social benefits lost (£m) (row 16 x row 17)	18	£2.6	£2.8	£1.5	£5.1	£5.4	£5.8	£5.0
Row 18 discounted to 1975 (£m)[1]	19	£1.9	£2.1	£1.2	£2.2	£2.4	£2.6	£2.2
Differences from lowest cost site (£m)	20	Not applicable			-	£0.2	£0.4	-

[1]Discount factor for airport site, 0.74, and for land for urbanisation, 0.44

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 22.3

Summary table of agricultural land lost (£m discounted to 1975)

	Row no	*Foulness*	*Nuthampstead*	*Cublington*	*Thurleigh*
Total agricultural value (row 9 for site and row 10 for urbanisation)	21	£4.2	£5.1	£0.6	£3.4
Total residential and social value (row 19 for site and row 20 for urbanisation)	22	-	£2.1	£2.5	£1.2
Total loss (row 21 and 22)	23	£4.2	£7.2	£3.1	£4.6

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

23.1 This chapter is concerned with the treatment of commercial and industrial activities which would be affected by one or another of the proposed sites for the third London airport. Included with these, for convenience, are a number of indoor entertainment and recreation facilities. The definition of establishments considered has been taken from the Inland Revenue Hereditament Coding system, and covers Codes B and C, together with parts of Codes D and E not dealt with in other chapters. Table 23.1 lists the types of establishment considered.

23.2 In general, commercial and industrial activities are less sensitive to noise than the activities dealt with in other chapters, such as homes, schools, hospitals and outdoor recreation. There are some important exceptions, such as research establishments and musical occupations (e.g. organ tuning). Establishments were surveyed within the 50 NNI contour, but some establishments outside this contour were also considered in the light of evidence supplied to the Commission in Stages II and III of its work.*

23.3 Establishments located on the proposed airport site, or within the public safety zone, were costed at the current market value of non-transferable assets (buildings, land, etc.) together with the cost of removing and refixing any transferable asset and on allowance for loss of business during the period of transfer.

23.4 In principle an appropriate course would have been to estimate the cost of sound insulation required to eliminate the nuisance caused by aircraft noise less any additional commercial benefit arising as a result of the airport. In practice, because industrial and commercial activities,and building construction vary so widely, each case would have to be considered individually; this could not be done within the time available.

23.5 An alternative method has therefore been chosen for establishments located within the 50 NNI contour for the year 2006 but off the proposed airport site. The noise penalty has been estimated from the rateable values of the affected buildings taking into account the type of business by broad classes and the internal noise levels (see table 23.2). The inadequacies of this procedure are recognised as stated in chapter 21.

* *CTLA Papers and Proceedings*, volumes III-VI and volume IX (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 23.1

Classification of establishments (public and private) enumerated from the IR Valuation List, 1st April 1967 - (Form CV/R/ 140)

(Codes B, C, D and E only)

Class	Code
Commercial	B
Shops assessed with private dwelling accommodation	4
Shops (including banks in shopping areas) and cafes	5
Offices (including banks in office areas)	6
Public houses including beerhouses	7
Hotels and boarding houses	8
Restaurants	9
Holiday camps and caravan fields	10
Warehouses, stores and workshops	11
Garages (commercial), petrol filling stations and car parks	12
Lockup garages (separately assessed)	13
Advertising stations and signs	14
Markets	15

Class	Code
Industrial undertakings	C
Factories, mills and other premises of a similar character	16
Mineral-providing hereditaments (other than National Coal Board hereditaments) assessed under 53 of R and V Act 1961	17
Other undertakings	D
Gas	18
Electricity	19
National Coal Board	20
Water	21
etc. etc.	
Entertainment and recreation	E
Cinemas	24
Theatres	25
Sports and recreation grounds, golf courses and race courses	26
Social clubs, community centres and public halls	27
Other places of entertainment and recreation	29

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 23.2

Effect of noise on commerce and industry

Broad group of activities	*Location*	*Internal noise level acceptable by day (dBA)*	*Difference between external noise level and acceptable internal noise level*	*Interruption factor*	*Noise penalty factor*
Factories	In urban areas	70	(as calculated for each building)	1	(as calculated for each building)
	In rural areas	55	(")	2	(")
Offices, shops, public houses, cafes; restaurants, places of indoor entertainments e.g. club houses	In urban areas	60	(")	2	(")
	In rural areas	45	(")	3	(")
Stores, workshops, garages, etc.	In urban areas: attached to an office	65	(")	1	(")
	In rural areas: attached to an office	50	(")	2	(")
	No office attached	-	(")	0	(")
Hotel etc with residential apartments	In urban areas	50	(")	3	(")
	In rural areas	45	(")	4	(")

Note: In chapter 21 public authority buildings affected by noise were classified in follows: local authority offices, halls and police stations were treated as offices above; libraries as per hotels; local authority depots, garages as factories. Sewage disposal systems, telephone exchanges, etc, were disregarded.

23.6 The internal noise levels in column 3 of table 23.2 have been derived as follows:

(a) the Wilson Report appendix IV suggests that values of 70 and 80 dBA might be the maximum acceptable noise levels which would not give rise to complaint for factories located in urban areas beside streets with heavy traffic. The lower figure was selected for this class. 55 dBA was selected for a similar factory in a rural area with light traffic,

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) the values for offices given in the Wilson Report appendix XV paragraph 17 have been taken and have also been used for shops. Offices attached to workshops or garages were assumed to tolerate an additional 5 dBA because of resulting extra noise,

(c) public houses and places of indoor entertainment etc. have been treated in the same way as offices,

(d) because of their residential character hotels etc. with residential accommodation were assumed to tolerate 10 dBA less than offices in urban areas, and 5 dBA in rural areas.

23.7 The interruption factor in column 5 of table 23.2 represents the relative seriousness of interruptions to concentration due to aircraft noise. For example, the rate for factories in urban areas was set at 1 per cent per dBA difference between internal noise level and the external noise level (10 dBA reduction was allowed for the sound insulation property of the structure) and 2 per cent per dBA for factories in rural areas.

23.8 The rateable values of the affected buildings (as collected in the survey described in chapter 19) were converted into annual rates paid. The noise cost was assumed to be a given proportion of these annual rates, depending on the year in which the building first falls within the 50 NNI contour. The noise cost so derived was then assumed to continue at that level into the future.

23.9 This treatment could not be applied to small retail shops (coded B4 - see table 23.1) which often occupy the ground floor of residential accommodation. The principal non-transferable asset in such cases is the residential building itself. Data on both the shop and residential parts of the property were collected together. These properties have been included in the assessment in chapter 20; the value of the shop part of the premises has been reflected in the higher rateable value used in that assessment.

23.10 The results (other than for shops with dwellings) are set out in tables 23.3 and 23.4. The sources of data for these tables were the surveys described in chapter 19.

Table 23.3

Commercial and industrial establishments (other than shops with dwellings) affected by the proposed airport sites (£000s)

	Year in which cost incurred	*Replacement cost*	*Discounted cost*
Cublington	1975	582	582
Foulness	1975	50*	50*
Nuthampstead	1975	228	228
Thurleigh	1975	132	132

* Loss to fishing industry

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 23.4

Commercial and industrial establishments (other than shops and dwellings) affected by aircraft noise (£000s)

Site	*Total noise cost*	*Discounted noise cost*
Cublington	9	5
Foulness	nil	nil
Nuthampstead	340	175
Thurleigh	141	72

23.11 The attention of the Commission was drawn at Stage II to various private research establishments which were said to be sensitive to aircraft noise and vibration at levels lower than 50 NNI. The costs of each of these where appropriate have been estimated after investigation and using the information obtained from the Stage II local hearings. Table 23.5 below gives the costs for these establishments which have been included in the cost/benefit analysis.

Table 23.5

Private research establishments affected by aircraft noise (£M)

Site	*Year in which cost incurred*	*Total noise (or replacement) cost*	*Discounted cost*
Cublington	nil	nil	nil
Foulness	nil	nil	nil
Nuthampstead	1982	1.5	0.8
Thurleigh	1982	3.4	1.75

23.12 The total costs in respect of all the items considered in this chapter are shown in table 23.6 below.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 23.6

Total cost - commerce and industry (£M)

Site	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
Commercial and industrial establishments on sites	0.6	0.05	0.20	0.10
Commercial and industrial establishments affected by noise	0.005	nil	0.17	0.07
Private research establishments affected by noise	nil	nil	0.8	1.75
Total	0.6	0.05	1.17	1.92

Printed image digitised by the University of Southampton Library Digitisation Unit

The survey

24.1 The survey described in paragraph 19.9 of chapter 19 sought data on outdoor recreations and activities, each identified by the physical property associated with it. The objective was to identify:

(a) recreational activities related to particular areas e.g. local beauty spots, camping sites,

(b) sports grounds used for organised team games,

(c) places used for traditional rural sports e.g. hunting, fishing, shooting,

(d) inland and coastal stretches of water used for various forms of aquatic sports,

(e) sites of historic and scientific interest e.g. listed historic houses, ancient monuments, gardens, nature reserves.

The questionnaires in the appendix to chapter 19 show the precise form of the data collected. As explained in chapter 19, it was not possible to bring specifically into the evaluation recreational activities such as walking and motoring.

24.2 The data derived from the survey were supplemented by written and oral evidence submitted to the Commission especially at the Stage II hearings and by information from the (then) Ministry of Housing and Local Government giving details of all listed buildings within the boundary of the survey, a description of their special features, a statement of the method of classification and complete records of grants made by the Ministry and by other organisations towards preservation and maintenance. For buildings under the care of the Ministry of Public Buildings and Works similar information was obtained from the Chief Inspector of Ancient Monuments and Historic Buildings. The National Trust and the National Environment Research Council also supplied information.

24.3 Detailed information on churches was obtained from the survey and from evidence submitted during Stage III by the Inter-Diocesan Working Party * set up by the dioceses of Chelmsford, Ely, Oxford, Peterborough and St. Albans.

* *CTLA Papers and Proceedings*, volume IX (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Classification of persons affected

24.4 Three main groups of people may suffer loss of benefit:

(a) the participants in the activities concerned, including both residents in the site areas and non-residents, and including future as well as present generations,

(b) the owners of any activities which are run commercially,

(c) non-participants (see paragraph 24.5 below).

24.5 For certain objects of special interest, such as historic churches, some loss may be experienced by people who never have and never will visit the object in question but who nevertheless at present derive some benefit from the knowledge of their existence. The willingness of people to subscribe funds for the preservation of objects, which they will never visit or of activities in which they will never participate is material evidence of the existence of this group. Although the reality of these non-participants' disbenefits is not denied, they have not been generally measured for two reasons. First, they are difficult to quantify, except in a few specific cases. Secondly, the results would be one-sided in that they would fail to take account of the new non-participants' benefits which would accrue following construction of the airport. An airport which is conveniently situated will generate greater non-participants' benefits than one which is less conveniently situated.

Classification of activities and features

24.6 For the evaluation of loss of benefit of all kinds all activities and features were first classified into three groups according to their location:

(a) within the airport site,

(b) within the noise affected areas, according to whether they were:

(i) highly noise sensitive,

(ii) moderately noise sensitive,

(iii) not noise sensitive,

(c) within the proposed urbanisation area, including:

(i) activities and features unlikely to be replaced within the new urbanisation, e.g. purely rural items,

(ii) activities and features which would be replaced or incorporated within the new urbanisation, e.g. sports facilities, recreation grounds.

24.7 Each of these groups was then further sub-divided as follows:

(a) easily transferable,

(b) difficult to transfer, e.g. owing to shortage of suitable sites,

(c) not transferable.

Printed image digitised by the University of Southampton Library Digitisation Unit

Valuation of easily transferable activities and features

24.8 This group consists mainly of sporting activities such as team games and other games for which the facilities are relatively easy to replace elsewhere. On the airport sites no continuance is possible. The costs are mainly those of buying suitable land elsewhere and of erecting the necessary buildings. Any element of betterment must be deducted. In the noise-affected areas where continuance has been assumed, loss of benefit to local residents has been taken into account in the change of house property values (see chapter 20). Non-resident participation in these activities has been assumed to be small enough to be disregarded.

Valuation of activities and features difficult to transfer

24.9 This group consists of objects and activities of more limited supply which require sites with particular characteristics, e.g. yachting, riding, fishing. It has been assumed that all those currently participating will continue to do so at the nearest available alternative site. Any losses of non-transferable capital assets will be borne either by commercial management (if any) or, more usually, by club members. The evaluation problem is the same in both cases. Two alternative methods are available. The first is to obtain the current market value of non-transferable assets or rights. The second is to estimate total charges paid by participants (e.g. membership fees, licences, charges to visitors) and to capitalise these at the normal discount rate, after eliminating any significant element representing payment for transferable services. Owing to the many difficulties involved in arriving at acceptable capital evaluations, the second method has had generally to be used. Increased travelling costs to the new site will normally be involved. As these will continue into the future, future estimates were required which have been summed and discounted back to the base year.

24.10 The majority of activities in this group is only partially affected by noise. It is therefore difficult to estimate how many participants will continue at the present site and how many will move. The basic principle of valuation has been to take a proportion of the value which would have applied had the facility been completely lost.

Valuation of non-transferable activities and features

24.11 These activities or objects fall into four categories:

(a) houses and historic buildings and monuments open to the public,

(b) houses and historic buildings and monuments not open to the public,

(c) churches,

(d) objects and sites of scientific interest.

24.12 Few historic or scientific features are located on the airport sites. The problem for categories (c) and (d) in paragraph 24.11 above is therefore to estimate the degree of damage. For items in category (a), for which records are available, the likely effect on the number of visitors and on loss of revenue have to be estimated. Some additional loss of enjoyment to the continuing visitors and some loss of consumer surplus to those no longer visiting have also to be assessed.

Printed image digitised by the University of Southampton Library Digitisation Unit

24.13 Houses and historic buildings which are not open to the public present a different problem. In general the value possessed by buildings of this kind will be revealed in their capital value. In addition the value will often be reflected in the market value of residential property in the immediate neighbourhood because of the effect such buildings can have on the distinction or attractiveness of the immediate locality. As some benefit to non-residents can reasonably be claimed, a suitably classified list of such buildings has been drawn up indicating which are open to the public. In addition, evidence has been collected of the expenditure of local authorities on listed buildings generally, to give some indication of the value placed on their preservation. Grade I includes buildings of outstanding interest (nationally 4 per cent of listed buildings fall in this grade). Grade II contains buildings of special interest, to the preservation of which considerable importance is attached. Buildings in Grade III do not normally qualify for the statutory lists, but are important enough to be drawn to the attention of local authorities and other so that the case for their preservation can be fully considered. It should be noted that the grading system does not apply with complete uniformity in different parts of the country.

24.14 There is rarely adequate data to indicate the level of public interest in or attachment to historic churches. The assistance of the Inter-Diocesan Working Party was therefore sought in drawing up a list of churches of historic interest for which a valuation was thought to be justified.

24.15 At the suggestion of the Inter-Diocesan Working Party fire insurance valuation from the Ecclesiastical Insurance Office Limited were used as a measure of value of churches on the four sites or within areas of high noise (70 NNI and above) which are likely to fall into decay. The payment of insurance premia is a strong indication of the value placed on the churches concerned and the insured value was used for churches which are likely to survive. This treatment implies no clear distinction between churches of historic interest and other country churches.

24.16 In the noise affected area, the cost of sound insulation has been estimated on a standard basis depending on size of church and type of structure. The advice of the Building Research Station was sought for this purpose. The Inter-Diocesan Working Party provided data on seating capacity of affected churches. This was used as an indication of the size of churches.

24.17 All churches within the 70 NNI contour were valued as if they were rendered unusable. Churches within the 50 NNI – 70 NNI range were valued for sound insulation on the following basis: the fabric of the church with the exception of the windows was assumed to provide adequate attenuation and all windows were fixed (unopenable). From a sample of churches the relationship between seating capacity and window sizes was established.

$w = 2.4S$

where S is the number of seats and w is the window area in sq ft. This multiplier takes account of variations in window area due to architectural style. A price for double glazing of £4 per sq ft was established after making allowance for the mix of different sized windows using 6 mm and 10 mm float glass. Where data was not available the "mean" of the available seating capacities was used for Anglican churches, 400 seats for each Roman Catholic church, 250 seats for each non-conformist church and 50 seats for miscellaneous religious organisations.

Printed image digitised by the University of Southampton Library Digitisation Unit

24.18 It could be claimed that the valuation does not fully reflect the value of churches as monuments to visitors and non-participants. The willingness of local church communities to insure their churches at considerable cost, at least on a "per capita" basis, is almost certainly due in part to the value of the churches as historical monuments. While accepting that this method of valuation does not fully take into account the latter benefits, it could be argued that such benefits are unlikely to be much greater than the insurance values.

24.19 No account was taken of the affect of vibration from aircraft upon churches, but this effect, if it were serious, would probably occur only within the 70 NNI contour.

24.20 For objects of scientific importance similar problems of evaluation arise as in the case of listed buildings. A classification has been made on the basis of the system of grading provided by the National Environment Research Council. Grade I relates to sites of international or national importance. Grade II includes sites of slightly lower status. Grade III includes sites of high regional importance, but of less status than those in Grade II. No comprehensive attempt at valuation has been possible for these objects but data on numbers visiting and charges, membership fees and other financial data have been assembled wherever possible.

Results of assessments: items within the site and within the noise affected areas

24.21 The results of the survey described in chapter 19 were grouped according to the classification given in paragraph 24.6 and 24.7. Within the airport sites there were no activities or features judged to be incapable of being replaced outside the boundary of the airport, in an area unaffected by aircraft noise. The cost of replacing these activities is given in table 24.1. This table includes gliding costs as assessed in paragraphs 17.5 to 17.10 of chapter 17 and the cost of wild life bird refuges as assessed by the Nature Conservancy (see volume IX of the Commission's *Papers and Proceedings).*

Table 24.1

Items affected by the proposed airport and airport sites (£M)

Site	*Year in which cost incurred*	*Replacement cost*	*Discounted cost*
Cublington	1975	0.05	0.05
	1982+	nil	3.0
Foulness	1975	0.3	0.3
Nuthampstead	1975	0.07	0.07
	1982+	nil	3.0
Thurleigh	1975	0.02	0.02
	1982+	nil	3.0

Printed image digitised by the University of Southampton Library Digitisation Unit

24.22 The estimated value of churches affected by the sites or rendered unusable by high aircraft noise (70+ NNI) is shown in table 24.2 below.

Table 24.2

Churches affected by the airport site or rendered unusable by high aircraft noise (70+ NNI) (£000)

Site	*Year in which church is affected*	*Total amount insured*	*Discounted value*
Cublington	1982	277	142
Foulness	nil	nil	nil
Nuthampstead	1982	134	69
Thurleigh	1982	300	154

24.23 The principle used in deriving these losses of benefit is similar to that used for gliding (see paragraphs 17.5 to 17.10 in chapter 17 and also paragraphs 1.15 and 1.16 in chapter 1). The best study of this kind carried out in the United Kingdom is that by Smith and Kavanagh, on Grafham Water, published by the University of Birmingham. Grafham Water is in fact one of the recreational areas affected by the Thurleigh site. The average distance travelled to Grafham Water by anglers was found to be 45 miles. As this seemed a reasonable average distance for people to travel to the activities included in the present study (many visitors can be expected to come from the London area), use was made of the Grafham Water study estimate of total consumer and producer surplus per visitor, which was estimated at 35 shillings, of which 20 shillings was admission fee. The net benefits were assumed to grow at 3 per cent per annum, corresponding with the expected growth of real income. It was also assumed that producer surplus was identical with admission charges for all activities affected by noise, since the additional costs of upkeep for extra visitors may be assumed to be fairly small.

24.24 Most of the recreational activities affected by aircraft voise, of which visiting historic houses, hunting, golf and fresh water fishing predominate, are located within moderate noise levels. It was therefore assumed that visits would, on average, be reduced by 10 per cent, and that this would be directly reflected in lower admission revenues. It can be deduced from conventional demand analysis that this reduction in participation could correspond to a reduction of about 20 per cent in the consumer surplus enjoyed by those continuing to visit. Table 24.3 shows the sum of these two losses: to proprietors and to participants.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 24.3

Noise sensitive items affected by aircraft noise: discounted costs (£m)

Site	*Historic buildings open to the public*	*Fresh-water fishing*	*Hunting*	*Golf*	*Total by site*
Cublington	2.0 Ascott House (Wing) Claydon House Waddesdon Manor Woburn Abbey	1.4	0.02	0.01	3.43
Foulness	nil	nil	0.012	nil	0.012
Nuthampstead	0.3 Audley End	0.06	0.03	nil	0.39
Thurleigh	nil	0.5	0.02	nil	0.52
Total for each item	2.3	2.0	0.09	0.01	4.4

24.25 The costs for churches within the noise affected areas are shown in table 24.4 below.

Table 24.4

Churches affected by aircraft noise: seating capacity and estimated cost of insulation

Site	*Total seating capacity of churches (000's persons)*	*Estimated cost of insulation (£000)*	*Year in which cost is incurred*	*Discounted cost (£000)*
Cublington (NNI)				
40 – 50	14.6	140	1982	72
50 – 60	5.0	48	1982	25
60 – 70	0.2	2	1982	1
Sub-total		190		98
Foulness				
40 – 50	2.8	26	1982	19
50 – 60	0.5	5	1982	2
60 – 70	nil	nil	1982	nil
Sub-total		31		21
Nuthampstead				
40 – 50	9.9	95	1982	49
50 – 60	2.7	26	1982	13
60 – 70	0.05	negligible	1982	negligible
Sub-total		121		62
Thurleigh				
40 – 50	5.5	53	1982	27
50 – 60	4.7	45	1982	23
60 – 70	1.5	15	1982	7
Sub-total		113		57

Printed image digitised by the University of Southampton Library Digitisation Unit

24.26 Although information was collected from the Ministry of Housing and Local Government and from some local authorities about expenditure on "listed buildings" generally, this was not sufficiently comprehensive for inclusion in the cost/benefit analysis.

24.27 Tables 24.5 – 24.11 list the number of ancient monuments, National Trust properties, sites of scientific interest and listed buildings affected by the airport sites or by aircraft noise.

Table 24.5

Scheduled ancient monuments on airport sites

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Publicly maintained	nil	nil	nil	nil
Not publicly maintained	nil	nil	2	2

Note: "Publicly maintained" means in the permanent guardianship of the Ministry of Public Building and Works.

Table 24.6

Scheduled ancient monuments affected by aircraft noise

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Publicly maintained	2 Houghton House Rycote Chapel	nil	1** Audley End	nil
Not publicly maintained	30	5	51	52

Table 24.7

National Trust properties affected by aircraft noise*

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
No of properties affected by aircraft noise	5 Ascott House (Wing) Kings Head (Aylesbury) Waddesdon Manor** Princes Risborough Manor House Long Crendon Courthouse	nil	4 Corner block, Sun Inn (Saffron Walden) Berg Cottage (Barkway) Shaw's Corner (Ayot St. Lawrence)	nil

*No National Trust properties are located on the proposed airport sites
**Included in table 24.3

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 24.8

Sites of scientific interest, by airport sites (numbers)

Grade	*Inland sites*	*Foulness*
I	nil	Maplin Sands and Foulness marshes
II	nil	nil
III	nil	nil
Others	nil	nil

Note: Grades are basically those defined by the Nature Conservancy in their evidence submitted in April, 1969, thus:
Grade I: sites of international or Great Britain importance, including national nature reserves,
Grade II: sites of equivalent or slightly less status, including some national nature reserves,
Grade III: sites of high regional importance including sites of special scientific interest,
Others: proposed sites of special scientific interest and others of importance detailed in information from the Nature Conservancy.

Table 24.9

Sites of scientific interest affected by aircraft noise (numbers)
(for grade definitions see note under table 24.8)

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Grade I				
35 – 40 NNI			Hales Wood Therfield Heath	
40 – 45 NNI		Maplin Sands and Foulness marshes		
50+NNI		Maplin Sands and Foulness marshes		
Grade II				
35 – 40	Aston Rowant	High Halstow (Northwood Hill, Kent)		
40 – 50 NNI			Barrington pit Fowlmere watercress beds Patmore Heath Plashes Wood Thriplow marshes	
50+ NNI				
Grade III				
35 – 40 NNI	Coopers Hill (Beds) Marston Thrift (Beds)	Dengie flats and marshes Chetney marshes (Kent) Yantlet/Stoke saltings (Kent) High Halstow marshes (Kent)	Barkway chalk pit Haslingfield pit Royston Erratic	Keysoe Park Wood Perry Woods (Portholme) Oakley railway junction pit Odell Great Wood Grafham Water
40 – 50 NNI	Bakers Wood and Rushmere Heath Wavendon Heath ponds and meadows	Dengie flats and marshes Tillingham marshes Chetney marshes (Kent)	Ashwell Springs Dernford Fen Sawston Hall Hildersham Wood Maggots' Hill Morden Grange Plantation	Brampton Wood (Hunts) Calpher Wood (Hunts) Eaton Socon meadows Odell Great Wood Grafham Water St. Neots Common

Printed image digitised by the

Table 24.9 (contd)

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Grade III				
50+ NNI			Thriplow peat holes Water Place Green	Grafham Water
Others				
35 – 40 NNI	Kingston Woods (Oxon)		Knebworth Woods	Easton meadows (Hunts) East and West Ashalls Copses (Northants) Salcey Forest (Northants) Perry Woods (Hunts)
40 – 50 NNI	Bugle Quarry (Stone, Beds)		Benington High Wood Green End, (Sandon) Tewinbury, (Herts)	Salcey Forest Falmersham meadows and gravel pits
50+ NNI				Stevington marsh (Beds)

Table 24.10

Listed buildings affected by airport sites (estimated number by grade)

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Grade I	nil	nil	nil	nil
Grade II	7	nil	30	1
Grade III	16	nil	80	70
Total all grades	23	nil	110	71

Table 24.11

Listed buildings affected by aircraft noise (estimated number by grade)

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Grade I				
35 - 40 NNI	7	1	5	8
40 - 50 NNI	9	nil	9	15
50 + NNI	9	nil	3	nil
Grade II				
35 - 40 NNI	210	15	230	180
40 - 50 NNI	420	50	570	110
50 + NNI	110	nil	130	70
Grade III				
35 - 40 NNI	430	50	420	240
40 - 50 NNI	390	80	590	260
50 + NNI	100	nil	160	210
Total				
All grades	1685	196	2117	1093
35 - 40 NNI	647	66	655	428
40 - 50 NNI	819	130	1169	385
50 + NNI	219	nil	293	280

Printed image digitised by the University of Southampton Library Digitisation Unit

Results of assessment: items within the proposed urbanisation areas

24.28 The urbanisation consultants were asked to list all the activities and features affected by the proposed urbanisation schemes*. The consultants found that most of the recreational facilities at present located in the areas covered by their plans could be retained. No attempt has therefore been made to quantify these further.

Summary

24.29 Table 24.12 below contains a summary of the costs which have been described in the preceding paragraphs and which have been included in the cost/benefit analysis.

Table 24.12

Total costs of activities and features: discounted (£m)

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Activities and features affected by the airport (table 24.1)	3.05	0.03	3.07	3.02
Churches rendered unusable (table 24.2)	0.14	nil	0.07	0.20
Activities and features in the noise affected areas (table 24.3)	3.43	0.01	0.39	0.52
Churches in the noise affected areas (table 24.4)	0.10	0.02	0.06	0.06
Total	6.72	0.33	3.59	3.80

* *CTLA Papers and Proceedings*, volume VIII, part 1. (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Introduction

25.1 At an early stage, the Commission recognised the need to investigate not only the ability of the short-listed sites to receive the airport itself, but also whether it would be feasible for them to receive the urban development directly associated with the airport. The Commission received oral and written evidence on this issue during Stage I of its work* and has received much valuable evidence from the local authorities and others at the Stage II local hearings and in evidence during Stage III of its work**. The Commission also recognised the need to attempt to bring within the cost - benefit analysis an assessment of the differences in the costs and benefits of the urban development at each of the four short-listed sites. If it were to function efficiently an airport of the size under consideration would be required to house in its vicinity a large proportion of its employees. It was recognised that this could involve a substantial increase in the population of the sub-region surrounding the airport sites, and that urban facilities would have to be provided to accommodate such an increase in the resident population.

25.2 The location of a major new urban area in the south-east of England should ideally be considered from the wide viewpoints of regional, inter-regional and indeed national economic and physical planning. It is not the Commission's task to make a study of the south-east region as it might develop in the presence of the airport but in chapter 26 an attempt is made to assess the extent to which the urban development entailed by the airport conforms with the existing and desirable location of population and employment in the south-east.

25.3 As regards local planning, the feasibility of accommodating the airport's employees in the vicinity of the airport and the cost implications of doing so have been examined. Two firms of planning consultants were commissioned to carry out studies on the sub-regions surrounding the four short-listed airport sites and to report on these matters with particular reference to:

(a) the proportion of the airport's work force which could be housed in existing urban areas,

(b) the most appropriate way in which in their view the balance could be housed, having regard to the impact of the new urban areas on the surrounding districts,

(c) the costs and benefits of the development and when these might be incurred or realised, and,

* *CTLA Papers and Proceedings*, volumes I and II (HMSO)
** *CTLA Papers and Proceedings*, volumes III-VI and volume IX (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

(d) the physical scope for further urban growth over and above the minimum required to support the airport itself.

The consultant's reports are published separately.*

The status of the urban strategies proposed

25.4 As explained in paragraph 1.2 of chapter 1, the urbanisation strategies considered by the Commission's consultants are not put forward as strategies which will necessarily be adopted by the local and national authorities who will be concerned with planning of urban development after the airport location decision has been made. Clearly, there will be more than one possible solution to the local physical planning problems which the airport raises. The actual extent of the urbanisation and indeed its pattern would in any case be greatly influenced by future Government policies on the distribution of employment.

25.5 The Commission does not have to decide the eventual size and pattern of urbanisation at the chosen site but it has to take account of the urban implications in its choice of site. To help overcome this apparent dilemma, the consultants were instructed to adopt the principle of minimum diversification and to assume that the airport would be the main source of additional primary employment. Having assessed the extent of growth on this principle the consultants were instructed to select what they considered to be the best pattern (hereafter called the preferred pattern) of urban settlement using the same criteria and the same selection procedure for all four sites. These preferred patterns were then developed to the same standard and costed in the manner described later in this chapter. The costs and benefits of these plans were taken as a valid measure of the capacity of each airport sub-region to absorb the urban development directly dependent upon the airport. If a totally different urban scheme were adopted for any site, the comparison between the sites could only be affected if that scheme's costs (net of benefits) assessed on the same basis differed markedly from the costs (net of benefits) of the scheme proposed and costed by the consultants.' The net costs of any such different scheme could be less than those of the consultants' scheme only if the consultants have proposed a less than optimal solution. There are, of course, no economic grounds for allowing the airport site choice to be influenced by urban schemes which have higher net costs than those proposed by the consultants.

The cost-benefit analysis of urban development

25.6 The cost-benefit analysis of urban development raises a number of conceptual problems. The costs of any proposal can be weighed against the benefits it produces, or the net costs of one proposal against another, only if the relevant costs and benefits can be identified as the differential ones arising out of that proposal. Over the next thirty years considerable urban development is expected to take place in each of the four sub-regions as a result of factors quite independent of the location of the airport. In three of these sub-regions, this independent growth is likely to be substantial. The extent of this growth, the pattern of urban provision for it and the cost of such provision are relevant to the airport

* *CTLA Papers and Proceedings*, volume VIII, part I (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

site comparison only so far as the growth contributes to the airport's requirements. The existence, however, of extensive non-airport growth makes the identification of the costs and benefits of urbanisation which are directly attributable to the airport extremely difficult.

25.7 One approach would have been to abandon any attempt at such identification and instead to apportion to the airport a share based on the average cost of the total urban growth. This would have involved forecasting the total growth of the population (including non-airport growth) in each of the four airport sub-regions, producing plans to accommodate this growth and costing these plans. From these costs a per capita cost could have been derived, which would have given an apparent measure of the airport urbanisation cost when applied to the forecast airport population. However, an average per capita cost measure could have contained significant inter-site differences arising not because of the airport-dependent population but as a reflection of differential costs, even without an airport, in accommodating non-airport population in each of the areas. There were no grounds for assuming that the average costs of accommodating varying amounts of non-airport growth at each of the four sites would be the same. Unless such an assumption were made, use of an average total cost measure would debit or credit some sites with net costs for which the airport bore no responsibility. A straightforward average costing approach was consequently rejected.

25.8 As the four airport sub-regions covered a range of situations capable of affecting urban development costs, the marginal cost of airport-dependent urbanisation could well differ from site to site. Any such differences have been taken as relevant to the airport site comparison. The assessment of the true marginal costs of airport-dependent urbanisation requires the estimation of the difference between two cost streams for each sub-region, one without an airport and the other with an airport. Ideally these cost streams would have to be estimated for the entire period of the airport's assumed life. Although the airport employment and its dependent population could be forecast reasonably well, the forecasting of no-airport sub-regional situations for some thirty years ahead would have been extremely speculative. Not much reliance could be placed on such figures.

25.9 An alternative method was sought which would dispense with the need to forecast the no-airport situation too far ahead into the future. The method adopted provides a conceptually sound measure of the marginal cost of the airport's urban requirement. Basically, this method divided the marginal cost assessment into two parts, each requiring a different approach.

25.10 For the first part of the marginal cost assessment the consultants were instructed to produce a sub-regional plan for each of the airport sites for the year 1981, assuming no airport. 1981 was the latest date for which a reliable picture of the development of the four sub-regions without an airport could be readily derived. This plan (called Plan 1) provided a common basis for both cost and benefit evaluation. Against these bases, an airport/no-airport comparison was carried out for each site. For the purposes of this comparison, the consultants then prepared a plan for the airport situation (Plan 2). This plan assumed an airport operating at the full capacity of two runways and generating a total direct

Printed image digitised by the University of Southampton Library Digitisation Unit

employment of 45,000. Because the work of forecasting the timing of the development of the airport had to proceed in parallel with the work of the consultants, it was not possible to state the date by which this level of operations would be attained. However, even if it had been possible for forecast the appropriate date, the consultants would have been unable to devise a credible estimate of the likely non-airport development at that date. The solution adopted for Plan 2 was, therefore, to add the urbanisation needs of an airport employment of 45,000 on the 1981 non-airport plans. This course carried one of two obviously unrealistic implications. Either it implied that the 45,000 level of airport employment would be generated by 1981 or that, by the time it was subsequently generated, no further growth of the non-airport 1981 population and employment would have taken place. The disadvantages of the first of these unrealistic implications can be overcome by subsequently allocating the direct marginal costs of locating the population dependent upon 45,000 airport employees to the realistic timescale of the airport development. The disadvantages of the second of these unrealistic implications can be overcome by the costing of Plan 3, described in paragraph 12 below, because Plan 3 allows for some growth of non-airport employment and population in the period after 1981.

25.11 The elements of the difference in costs between Plan 2 and Plan 1 were identified of each site. First, the airport, because of its site requirements and for other reasons such as noise, might inhibit or displace some of the development envisaged in Plan 1. The consultants were asked to relocate any development so affected and to estimate the costs of such relocation. Secondly, the consultants were asked to consider any possible contribution that the development in Plan 1 could make to the airports requirements, and in the light of this to make new urban provision in Plan 2 for the airport employees and their dependent population. This provision was costed.

25.12 For the second part of the marginal cost assessment the consultants were instructed to produce sub-regional plans for each site allowing for an airport directly employing 65,000 people in the year 2000 (called Plan 3). On the assumption of minimum diversification referred to in paragraph 25.5 above, the airport would be the dominant primary employer in each sub-region in the period beyond 1981. As the major proportion of growth in this period is airport derived, the marginal cost of airport urban development is not likely to differ significantly from the average total cost of urban development. The average total cost of urban development of Plan 3 over Plan 2 could therefore be taken as a reliable measure of the marginal costs of airport urbanisation for this period.

25.13 The two measures of cost thus obtained could then be combined to provide estimates of the gross marginal costs of the airport urbanisation.

25.14 Within the framework of the three-plan approach described above the consultants were asked to identify three groups of costs and benefits: capital development costs, user costs and a residual hybrid group. As a complete description of the estimation and treatment of these groups of costs and benefits is contained in the reports from the consultants*, it is only necessary here to refer to a few broad issues of principle which arose in considering these costs and benefits from the point of view of a cost-benefit analysis.

* *CTLA Papers and Proceedings*, volume VIII, part 1 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Capital development costs

25.15 The total development costs of Plan 2 over Plan 1 and of Plan 3 over Plan 2 were estimated. Development cost was estimated for all the principal land uses, including the capital costs of transport and of public utilities. Land acquisition costs were assessed and the loss of agricultural output was estimated by the Commission's consultant on agriculture*. A summary of the approach and the detailed costs in respect of the urbanisation are published in the report of the urbanisation consultants.

25.16 The total absolute capital costs of urban development at each site cannot be debited as such against each site. This follows from an important general assumption, made throughout the analysis, that the overall aggregate demand for housing in the UK, will not be affected by the existence of the third London airport, or by the location at which it is sited. What has been assumed is that the airport's existence and location will not affect the principal demographic determinants of housing demand such as the natural increase in population or net migration into the UK. In other words, the existence and location of the airport merely affects the location in which a portion of the UK population is housed, but it does not affect the total numbers to be housed. If, therefore, any one airport site requires a larger proportion of its dependent population to be housed in new accommodation, it would be improper to debit that site with the total absolute costs of the new urban provision without off-setting against these costs the savings which would be made, principally in the south-east but to some extent in the rest of the country in not having to accommodate an equivalent number of people elsewhere. This incidentally, makes changes in the housing supply situation irrelevant to the assessments made in this analysis.

25.17 The advantages or disadvantages of the four sites from the point of view of the capital costs of urban development should depend, therefore, solely on the costs of each site relative to an appropriate measure of the average capital costs of urban development in the south-east, and not on the extent to which urban requirements can be met from existing sources. The extent to which existing and planned development can contribute to the airport's requirement may, however, influence the size of the new urbanisation which is required, and in so far as changes in size affect the relative costs, the contribution of existing and planned development may be significant.

25.18 In principle all transport user costs in the sub-regions concerned are likely to be affected by the urbanisation and its location. But a combination of technical and conceptual difficulties ruled out the possibility of under-taking a quantative assessment of the entire communication network in each of the four sub-regions. Therefore the analysis was confined to journeys to work only. The consultants were able to provide two measures of work journeys, one for journeys to work at the airport and the other for all work journeys in the sub-region. These measures were derived from a gravity model described in the consultants' report. They provided a satisfactory basis on which to assess the capital costs of roads. However, the user costs of non-airport work journeys could not be incorporated in the cost-benefit analysis, as the location of non-airport employment

* *CTLA Papers and Proceedings*, volume VIII, part 2, section 3 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

opportunities was largely speculative. Therefore it was decided to restrict the analysis of transport user costs to journeys to work at the airport.

25.19 The intersite comparison of airport journeys to work could not be made in a straightforward manner using the output of the gravity model because of two possible sources of bias. First, the model would produce higher costs for sites located in sub-regions already containing a great deal of development, because the airport employees would have a greater ability to choose to live further away from their place of work in order to enjoy the benefits of an environment or a house which suits their particular predilections. Secondly, it was not possible to obtain any reliable data to measure the benefits derived from this greater freedom of locational choice. Therefore it was necessary to devise some other measure of airport work journeys which at least indirectly would reduce these sources of bias.

25.20 The method adopted was to take the minimum possible user costs, on the grounds that these would be a fairly close approximation to the net user costs if locational benefits could be taken into account. The consultants were therefore instructed to produce for each zone of the new urbanisation the average user cost of travel to the airport and the working population of each zone. From these the minimum possible user cost of airport work journeys was calculated for various stages of the development. This was done by starting with the zones with the least user cost and continuing to the next smallest user cost zone, and so on until the total employment levels at the airport were reached. For the purpose of this calculation it was assumed that the working population residing in the low user-cost zones was all directly dependent on the airport.

25.21 This approach does not give an unrealistic result. If airport workers choose to live further from the airport than some non-airport workers, this must be either because they derive a benefit equal to or greater than the extra journey to work costs which they incur or because they have been ousted from their preferred location by a non-airport employee in turn exercising his locational choice. For the purposes of illustration the total benefits arising out of exercising locational choices may be denoted by B and four possible user cost measures can be considered as follows:

(a) C_1 - the average journey to work cost as shown by the gravity model

(b) C_2 - the average journey to work cost which would be obtained from a linear programming model which assumed that employees collectively minimised the sum of their journey to work costs. This must be less than C_1, because C_1 is not a cost minimising method

(c) C_3 - the average minimum journey to work cost estimated as described in paragraph 20 above

(d) C_4 - this is equal to C_1 - B and is the ideal measure which is sought but which cannot be directly estimated as B cannot be measured.

The benefits derived from the exercise of locational choice (B) will on average be greater than or equal to the additional journey to work costs involved. B is therefore greater than or equal to $C_1 - C_2$; this can be written as:

$$B + \delta_1 = C_1 - C_2$$

where δ_1 is a non-negative number, small compared to C_1 or C_2.

Printed image digitised by the University of Southampton Library Digitisation Unit

C_3 must be less than or equal to C_2, since in the linear programming model airport employees compete with all other employees for housing. Consequently:

$$C_3 + \delta_2 = C_2$$

where δ_2 is also small and non-negative. From these two equations C_2 can be eliminated, to give:

$$C_1 - B = C_3 + \delta_2 - \delta_1.$$

The left hand side of this equation is C_4, the correct measure of net journey to work costs. The right hand side differs from C_3 by the difference of two small numbers. C_3 is therefore a reasonable approximate measure of net journey to work costs for airport employees.

Residual costs and benefits

25.22 The consultants were asked to assess two major factors within this group, the quality of the new urbanisation, and the environmental change which the urbanisation itself would bring about.

25.23 Although the urban schemes for each site were designed to the same standards, there was a number of factors, some arising out of the geography and topography of the area to be developed and other arising out of the structure, shape and composition of the proposed development, which could substantially affect the quality of the new urbanisation. As these qualitative factors could differ from site to site, any such differences should be assessed quantitatively. Moreover, as some improvements in the quality of the urbanisation might have been achieved at the expense of some other quantified costs (e.g. journey to work costs) the environmental benefits achieved would have had to have been assessed. The only feasible way in which such intersite qualitative differences could be assessed was by estimating notional rents for the development proposed at each site. These rents were assessed on a common base for all sites in order to avoid reflecting any deviation arising out of temporarily existing differences in demand pressures. To ensure comparability the consultants were asked to consider a common list of factors determining notional rents for each site. These were:

(a) the environmental quality of the proposed area for residential development (i.e. those environmental features which although they have no effect on building costs nevertheless make for a better or worse urban setting such as proximity to either attractive countryside or to industrial blight);

(b) the quality of the open space provided within the new urban development;

(c) variations in the pattern of the new urban development. One pattern may allow residents a choice of urban form (e.g. city, small town or village life). In other patterns this choice may be non-existent or very restricted;

(d) variations in the level and quality of services of all kinds;

(e) variations in the availability of further education and regional hospital facilities;

Printed image digitised by the University of Southampton Library Digitisation Unit

(f) variations in the availability of amenities in the macro-environment surrounding the new urbanisation, and variations in the accessibility to them;

(g) variations in the general composition and in the job opportunities available to residents of the new urbanisation;

25.24 The urban development in the sub-regions of the four airport sites would substantially affect the environment of these sub-regions. It was assumed that if any urban land uses were displaced by the new urbanisation, these would be replaced within the new proposals. Attention was therefore confined to non-urban land uses. In any event the bulk of the land proposed for urbanisation at all four sites is at present in some form of non-urban use. The urbanisation of this land would displace some non-urban amenities which existing residents and visitors were previously able to enjoy. On the other hand the urbanisation might eradicate some existing eyesores. Since agricultural losses have been assessed separately the principal elements which required assessment were landscape and recreation. The consultants were asked to supply detailed information on the acreage of land taken for urbanisation from graded landscape-value areas and also from recreational and other similar land uses, so that these elements might be evaluated using the principles described in chapters 19 and 24.

Allocation of costs to time

25.25 The urban development proposed by the consultants was divided into ten phases on each site. The consultants were asked to estimate the net costs of each of these phases as far as possible. Because of indivisibilities involved in such items as the capital costs of roads or of service centres, some of the cost elements for each phase had to be estimated on a prorata basis. The division of the urban development into phases was carried out so that any significant differential costs and benefits that emerged could be allocated to time in accordance with a growth of employment profile obtained from the air traffic forecasts for each site.

Printed image digitised by the University of Southampton Library Digitisation Unit

Estimates of costs and benefits

25.26 The preceding paragraphs describe the intended overall approach to the consideration of local planning issues. The remainder of this chapter is concerned with the planning consultants' estimates of costs and benefits and the way in which they have been taken into account in the cost-benefit analysis.

Capital cost estimates

25.27 The consultants' estimates of the total capital costs of urban development, excluding land costs, are given in table 25.1 below. The consultants have stated that the inclusion of the cost of non-agricultural land required would make no significant difference to these estimates. The costs of agricultural land required are treated separately in chapter 22.

Table 25.1

Estimated capital costs of urbanisation attributable to the airport (£ per capita, 1968 prices)

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Plan 2 minus Plan 1	2,210	2,242	2,197	2,234
Plan 3 minus Plan 2	2,170	2,198	2,115	2,090
Plan 3 minus Plan 1	2,176	2,228	2,170	2,186

25.28 The consultants' report indicates that in their view the inter-site differences in the total capital costs at each of the levels set out in table 25.1 are well within the margins of error to be expected in costing broad planning proposals. The method of estimating used by the consultants assumes that a substantial proportion of these costs are constant and insensitive to changes in location or to changes in the size and pattern of the development. The report also recognises some arbitrariness in defining the proportion of the forecast population that was taken into account in producing these estimates.* Nevertheless, the consultants recommend that the undiscounted capital costs at the Plan 2 and Plan 3 stages should be taken as equal for each of the four sites.

25.29 These capital costs, though equal, would if discounted to 1975 show inter-site differences. This is mainly because the rate of growth of air traffic at the four sites is not the same and, therefore, the urban requirement is different. The treatment of different rates of traffic growth at different sites is set out in paragraphs 27–31 of Chapter 1, where it is pointed out that additional traffic at a particular site, so far as it leads to additional costs paid for directly or indirectly by the users of air services, is accompanied by offsetting benefits for the users as least as large as the cost and can therefore be netted out of the evaluation process. At least some of the capital costs of the airport-associated urbanisation would be paid for indirectly by the users of the airport and, in so far as these arise out of any additional traffic, they should be excluded in comparison with sites attracting less traffic. Before the capital costs could be discounted, it would therefore be necessary to divide those costs arising out of the

**CTLA Papers and Proceedings,* volume VIII, part 2, page 1/7, paragraph (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

additional traffic at any site into "externalities" and the costs which would be paid for indirectly by airport users. Such a division would be, by its very nature, extremely speculative.

25.30 The need, however, for such a division does not arise. The four urbanisation schemes selected by the consultants are situated in very different parts of the south-east and encompass a wide range of locational factors, yet their capital costs have been assessed by the consultants to be equal. This suggests that the estimated costs must represent fairly well the average costs of urban development in the south-east at the levels of aggregation costed (i.e. Plan 2 minus Plan 1 and Plan 3 minus Plan 1). It was established in paragraphs 25.16 and 25.17 that the only capital costs of urbanisation relevant to the comparison between sites are variations, if any, from the average cost of urban development in the south-east. In the absence of any such variation, as long as the forecast requirements at each site are approximately equal to either of the levels of aggregation costed, no significant differences arise in the discounting process. As this is the case, the capital costs of urbanisation have not been included in the cost-benefit analysis.

25.31 That the consultants' estimated costs do approximate to the average costs of urban development in the south-east is substantiated by the financial analysis contained in a recently published study of English new towns*. This study presents some useful estimates of the costs of four new towns in the south-east. The estimates of the capital costs of urban development per head of population are of particular relevance. These are based on expenditures at the new towns considered up to 1961 and on forecasts of costs, at 1961 prices, of the growth of these towns to their then assumed target sizes. As these new towns had reached different stages in their development by 1961, the estimates of their total capital costs contain different proportions of historical and projected costs. This and other factors make the estimates of the costs of these towns not strictly comparable with each other, but they do provide a reasonable measure of the average cost of new towns in the south-east. Table 25.2 presents these estimates at 1961 prices, as well as their adjusted values at 1968 prices.

Table 25.2

South-east new town costs (estimated in 1961)

	(1)	(2)	(3)	(4)
New town	*Target population assumed in 1961*	*% completed in 1961*	*Estimated total cost per head 1961 Prices*	*(3) at 1968 prices*
Basildon	80,000	31%	£2,262	£2,827
Stevenage	60,000	N/A	£1,736	£2,170
Hemel Hempstead	57,000	76%	£2,073	£2,591
Crawley	55,000	71%	£1,562	£1,952

*Six English New Towns: a Financial Analysis, Professor N. Lichfield and Professor P.F. Wendt, *Town Planning Review*, volume 40, October, 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

The average per capita cost, at 1968 prices, of the four new towns listed above is £2,385. This estimate, however, assumes an expenditure on industrial provision which is significantly greater as a percentage of the total cost than that allowed for in the airport schemes, where the major industry, the airport itself, has been costed separately. A reduction in the average new town cost to reflect a percentage expenditure on industrial provision similar to that included in the airport schemes would bring this average cost down to a level comparable, within the margins of error recognised by the consultants, to the estimates for the Plan 2 stage.

User Cost Estimates

25.32 The only user costs estimated by the planning consultants were transport user costs. Airport journeys to work were assessed using the principles outlined in paragraphs 25.18–25.21 above. Total airport work journeys (including service and commercial vehicle journeys) showed significant inter-site differences at both the Plan 2 and Plan 3 stages. These costs, for each of the ten phases of development, are presented in table 25.3 below. The consultants' report suggests that the estimates of service and commercial vehicle journeys may be subject to wider margins of error than the estimates of airport employee journeys to work. *The latter have therefore been isolated and are presented separately in table 25.5

* *CTLA Papers and Proceedings,* volume VIII, part 2, section 1, paragraph 93 (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 25.3

Annual user costs of airport work journeys (£M at 1968 prices)

	Cublington		*Foulness*		*Nuthampstead*		*Thurleigh*	
	A	B	A	B	A	B	A	B
At Phase 1	1.181	.367	1.690	.610	1.059	.245	.930	.245
At Phase 2	2.386	.758	3.190	1.086	2.115	.534	1.877	.507
At Phase 3	3.432	.990	4.409	1.499	3.202	.864	2.753	.698
At Phase 4	4.405	1.149	5.668	2.004	4.158	1.138	3.709	.969
At Phase 5	5.586	1.516	6.561	2.251	5.208	1.421	4.700	1.275
At Phase 6	6.586	1.702	7.334	2.486	5.856	1.538	5.714	1.604
At Phase 7	7.102	1.808	8.345	2.719	6.670	1.774	6.560	1.820
At Phase 8	7.798	2.032	9.390	2.896	7.866	2.084	7.133	1.870
At Phase 9	8.430	2.255	10.277	3.237	8.843	2.329	7.915	2.167
At Phase 10	9.014	2.466	11.250	3.574	9.466	2.485	8.522	2.289

The underlined figures are costs at the Plan 2 stage

A. Total annual user costs of all airport work journeys, comprising airport employee journeys-to-work, service and commercial vehicle journeys.

B. Airport employee journeys to work only.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 25.5

Discounted work journey costs (£M discounted to 1975)

		Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
A. Total work journey costs (including service and commercial vehicle journeys.)	Based on forecast traffic levels.	26.242	19.029	24.436	25.393
	Adjusted.		26.490		
B. Airport employee journeys to work only.	Based on forecast traffic levels.	10.073	8.444	9.297	9.641
	Adjusted.		11.291		

Printed image digitised by the University of Southampton Library Digitisation Unit

25.33 Inter-site differences in these costs are relevant to the choice of site and so these costs had to be allocated to time. For time-streaming purposes a growth-of-employment profile was derived from the final air traffic forecast for each site. Table 25.4 summarises the employment growth at the four sites.

Table 25.4

Airport employment

	Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
1982	18,700	8,100	18,700	18,700
1991	48,300	27,900	46,500	48,300
2000	66,500	44,300	64,600	66,500

25.34 As the urban development growth is phased by population increments rather than employment growth, a population growth profile was derived from the employment forecasts using, to be consistent, the same methods and assumptions as those used by the consultants in their population forecasting. For the task of evaluating work journeys it is only the airport-dependent population which is relevant. The growth of the non-airport population which differs from site to site can therefore be ignored. The increments in the airport-dependent population involved in succeeding development phases were of the order of some 20,000 to 30,000, and varied from phase to phase and from site to site. The phased user-costs set out in table 25.3 were therefore interpolated so as to provide estimates of the costs directly related to the forecast airport-dependent population in each of the years from the assumed opening of the airport to the year 2000. These series of annual costs for each site do not, however, provide a valid basis for an inter-site comparison. They are the costs of work journeys at airports employing some 65,000 workers at the inland sites, but of an airport employing only some 45,000 workers in the case of Foulness (see table 25.4). The advantages of the lower user costs related to lower employment could only be credited to Foulness if the lower employment at Foulness dealt with the same air traffic as dealt with by the employment at the inland sites. This is not so; the lower employment at Foulness arises specifically because of the lower traffic which it would handle. With an airport at Foulness, some of the traffic which would otherwise have gone to an inland third London airport would go to other airports, principally Luton and Manchester (see chapter 13, tables 13.12 and 13.13). Moreover the inland sites would, because of their location, generate some traffic which Foulness would not. The diverted traffic would involve employment and work journey costs at other airports, and these costs should clearly be debited to Foulness in the inter-site comparison. Work journey costs arising out of such diverted traffic could not be directly estimated without an unjustified extension of the field of study. Clearly it would be improper to debit Foulness with work journey costs for this diverted traffic based on the estimates of work journeys at Foulness, which are exceptionally high for geographical reasons. However it can reasonably be assumed that the work journey costs of the diverted traffic, however it might be catered for, would not be less than the average of the estimated work journey costs for the three inland sites, since these estimates are based on urban development plans specifically designed to obtain the advantages of shorter journeys to work. A proportion of the average discounted work

Printed image digitised by the University of Southampton Library Digitisation Unit

Estimates of notional rents

25.35 The consultants' estimates of notional rents of residential development do not reflect any differences arising out of the determinants listed in paragraph 25.23 above, nor differences in journey to work costs, but assume a constant rent per house at each of the four sites. The proportion of these rents attributable to the constant airport-dependent population at each site is therefore identical. The notional rents of office accommodation were assumed by the consultants to be identical for all sites and for each phase of development. Inter-site differences in the estimates of rents for airport-related industrial floorspace amount to less than £20,000 per annum and are insignificant. Estimates of the notional rents for retail and service floorspace were made only for new provision in new centres. Differences in the rents assessed therefore reflect principally the proportions of new floor space allocated to new and existing centres. These differences, however, are not significant. All the estimates of notional rents were therefore omitted from the cost-benefit analysis.

Effects of urbanisation on the environment

25.36 The consultants state that "compared with areas of high landscape value the land to be occupied by the few new cities is of average scenic quality and the loss would be more or less equal at all four sites". No attempt has been made to evaluate the landscape loss. The consultants also state that there are no significant losses of recreational facilities arising out of their urbanisation schemes.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Introduction

26.1 When the Commission announced the short list of sites to be carried on to detailed investigation, it was made plain that within the time available it had not been possible to give detailed consideration to "town and country planning at all levels." The Commission was satisfied there was no risk of planning being neglected by this procedure, because the spread of the short-listed sites within the SE Region was broad enough to ensure that a sufficient variety of combinations of sites and planning policies would exist for consideration at the next stage.

The two levels of planning

26.2 There are two main levels of planning to be considered: the local or sub-regional and the regional. At the local level the concern is with the effects of the airport on the surrounding area, including such matters as noise, local communications, effects on the countryside and local amenities, the accommodation of the airport employees and their dependents, influence on local employment patterns and so on. At the regional level the concern is with the relationship of the airport in all its aspects to the planning strategy for the distribution of population and employment and the conservation of resources for the Region as a whole. Obviously the distinction between these levels of planning cannot be precisely drawn; there is some overlap.

Present planning policies in the region

26.3 Naturally the Commission's first concern has been to understand the planning policies at present in operation. The Commission finds that planning in the south-east has a long and complicated history during the course of which many expectations have been established. Since some of these are bound to be affected by the airport it seems desirable to describe the Commission's understanding of the manner in which they have arisen.

26.4 The story may be said to have started before the last war with the inauguration of the London green belt which has the double purpose of conserving "London's countryside" and curtailing the outward spread and sprawl of London. Soon after the end of the war Abercrombie's two reports (County of London Plan and Greater London Plan), as influenced by the Scott and Barlow Reports and as modified and finally adopted by the government of the day, propounded a fairly concise planning policy for London and a large surrounding area. The essence of the policy was to "overspill" a million people and their jobs from the overcrowded inner

Printed image digitised by the University of Southampton Library Digitisation Unit

ring of London to new towns and expanded towns in the "outer country ring" and beyond, to stabilise the population of the "suburban ring", and to preserve a "green belt ring" about ten miles wide between the suburban and outer country rings and not to allow more than minor population increase within the ring. The grand objectives were to relieve overcrowding and congestion in the centre of London, and to prevent London sprawling out into an evermore gigantic growth drawing in population and industry to the impoverishment of the rest of the country, and ruining the countryside of the home counties into the bargain. Enabling legislation soon followed in the form of the Distribution of Industry Act 1945, the New Towns Act 1946, the Town and Country Planning Act 1947 and the Town Development Act 1952.

26.5 As soon as the policies based on the Abercrombie reports had been adumbrated by the government, the planning authorities, pursuing the duties imposed upon them by the 1947 Town and Country Planning Act, commenced to build these policies into their separate statutory development plans. In the course of a few years development plans were prepared for the whole of the south-east (indeed for the whole country), and all were approved with or without modification by the Minister of Housing and Local Government after exhaustive public inquiries. In many cases later revisions of the plans have been prepared and approved in the same way. It is reasonable to suppose that the Minister when approving the plans endeavoured to ensure that they were consistent with each other and represented the Government policies for Greater London. To this extent, this pattern of county and county borough development plans might be said to form a basis for a regional plan for the south-east.

26.6 At the other extreme the development plans also form the basis for the control of development right down to the smallest application at the most local level. To assist in this direction many more detailed plans have been prepared and approved especially for urban areas.

26.7 The Commission's understanding is that no matter what discussions may be proceeding at the moment for a revision of the regional strategy, the statutory planning position is as described above. There does exist a comprehensive planning framework, from the regional to the local level, based essentially on the 25-year old concepts derived from the Abercrombie reports. Any application for planning consent for any kind of development is dealt with by the planning authority concerned by reference to the provisions of its own approved development plan, being part of the total jigsaw. The authority is indeed bound by the Act to deal with applications in this way. In the case of an application requiring additional consent under the Distribution of Industry Act, the Ministry of Technology (formerly the Board of Trade) would itself consider the case in the spirit of the overall regional policy, namely to ensure that industrial developments do not take place in the south-east if there is any reasonable possibility of steering them to Development Areas.

26.8 This is the present planning position. The Commission can readily see that during the last twenty years or so hundreds of thousands of planning applications for a great variety of projects have been dealt with by reference at the appropriate level to these statutory plans, and that on the basis of the resulting decisions a vast web of values, understandings and expectations has been established. But the fact has to be faced that

Printed image digitised by the University of Southampton Library Digitisation Unit

throughout the process virtually no consideration was given to airport needs of the scale and magnitude now revealed, with the inevitable result that the present huge project for a third London airport and its urbanisation consequences cannot do other than breach the plans more or less seriously at some point, at both local and regional levels. No matter where the airport is sited it is bound to come, as far as planning is concerned, as a completely unexpected and possibly unwelcome surprise. Short of abandoning the whole idea of a new airport in the south-east there is no way of avoiding this difficulty.

26.9 In submissions already made to the Commission there have been suggestions to the effect that the airport if sited in this or that locality, would flout the "principles of sound regional planning". The Commission thinks, however, that the concern expressed does not so much refer to the infringement of some absolute code of regional planning (which is a difficult proposition in itself) as to the fact that the airport would drastically affect plans and policies which have been operated in the area over a period of years. This is a legitimate anxiety which the Commission fully recognises.

Planning at the local level

26.10 Accepting the fact that the construction of the airport at any of the short-listed sites would seriously affect local planning policies, the Commission nevertheless has had to find a method of comparing the local impact of the airport at each site. Ideally it would have been desirable to prepare fresh comprehensive sub-regional plans but for obvious reasons of time and resources this has not been possible. Instead the Commission has concentrated attention on certain aspects which are likely to be crucial to the comparison. These include the effect on agriculture, noise disturbance, the urbanisation associated with the airport, and the local environmental effects. The studies which have been made are described in other chapters, all that need be said at this point is that many items have been quantified and the results taken into the main cost-benefit analysis,

Planning at the regional level

26.11 It is here that the Commission finds itself in considerable difficulties. A description has already been given of the way the county development plans interlock to form a regional plan. This is the only regional plan in existence and it forms the present basis of all development control. If the Commission's only task were to evaluate the short-listed sites in terms of their effects on this existing plan, the position would still be difficult, but at least it would be understandable. Unfortunately the whole regional planning situation is in a state of flux and it appears that forces are at work which could result in the present policies being changed in the not-too-distant future.

26.12 This story commences, for practical purposes, with the publication by the government of *South East Study* in 1963. This took a fresh look at regional policies in the light of an expected massive increase of population in the south-east, mainly as a result of the natural increase of the existing population. The basic question was to decide the best strategy for the physical distribution of the population and associated employment, and

Printed image digitised by the University of Southampton Library Digitisation Unit

it was questioned whether existing policies were adequate. The strategy suggested was for the development of large cities - the "counter-magnets" - at a considerable distance from London on the periphery of the region. In this context the Government has proceeded with plans for extending the New Towns programme by authorising the building of a city at Milton Keynes in North Buckinghamshire designed for an ultimate population of 250,000, itself a drastic reversal of previous policies, and with plans to expand considerably Peterborough and Northampton. They have however rejected proposals for a similar expansion at Ipswich, Ashford and Newbury. Meanwhile further ideas on strategy had emerged in *A Strategy for the South East* published by the South East Economic Planning Council in 1967. This was based on the concept of fostering development along corridors of growth radiating on London and based on existing lines of communications. In parallel the Standing Conference on London and South East Regional Planning - an association of local planning authorities - had been developing their ideas for a regional strategy based on the approach that further urbanisation should occur compactly either in new settlements or by growth of existing towns rather than in a dispersed form.

26.13 Consequently in May 1968 a planning study of south-east England was commissioned by the Government, the South East Economic Planning Council and the Standing Conference to consider and report on the patterns of development for the south-east with the object of providing a regional framework for local planning authorities to prepare their structure plans and for Government decisions on investment and economic and social policies relating to the region's future development. The work of the South East Joint Planning Team falls into two main stages: first to identify the main regional functions, and secondly to "test" alternative strategies for the development of population and employment within the region. The Team is expected to report to the commissioning body by April 1970.

The Commission's problem

26.14 This leads to the great difficulty in which the Commission finds itself. namely that its Stage III investigations, which according to the terms of reference must include regional planning, have to be completed before the date on which the body charged with the formulation of a new regional strategy is able to submit its own final report to its commissioning body. Moreover, the Commission is likely to recommend the airport site before the regional strategy resulting from the work of the South East Joint Planning Team has been assessed by its commissioning body and accepted by the Government.

.15 The Commission has however been helped by the answer given by the Secertary of State for Local Government and Regional Planning to a question in the House of Commons following the publication in December, 1969 of the Planning Team's Progress Report. This answer said that on the basis of the work done so far there appeared to be no fatal flaw from a broad regional planning point of view to any of the short-listed sites. Subject to anything which may be said at the Stage V public hearings, the Commission at present considers that none of the sites is unacceptable from the regional planning point of view. Moreover, the airport is of such importance that it will itself be a major shaper

Printed image digitised by the University of Southampton Library Digitisation Unit

of regional policy so that, whichever site is finally recommended for the airport, regional policy will to some extent and in any case have to follow the airport and adapt itself to it.

Broad features of past and present policies

26.16 The Commission has examined the ideas which have been canvassed for regional planning in the south-east, including the policies now in force and has identified the following broad features:

(a) Despite a fall in the population of Greater London, the population of the south-east will continue to grow. The Commission notes that for the purpose of their study the South East Joint Planning Team (see the *"Progress Report"*) have assumed that the growth will be from about 17 million in 1966 to 18.6 million in 1981, 20 million in 1991 and 21.5 million by the end of the century.

(b) Continued restraints on immigration of population and enterprises into the region from other parts, and continued encouragement to expanding industries to shift to Development Areas.

(c) Containment of the resident population of Greater London between 7 million and 8 million.

(d) Accommodation within the Region of its own natural increase together with further over-spill from the still overcrowded parts of London.

(e) Continuation of the "no sprawl" policy. Population growth and overspill to be accommodated in major developments well away from London.

(f) The green belt to be maintained and extended.

(g) Agricultural land to be protected, and the region's countryside and its contents to be conserved.

26.17 The Commission does not regard this list as comprehensive, nor is it taking a stand on these or any other matters at the present time. It is merely seeking to inform itself of factors which may be of importance later on. It is, however, impossible to state whether these broad features will be perpetuated.

Conclusion

26.18 It is paradoxical that regional planning, which has perhaps been of greater concern than any aspect of the airport other than noise, should prove to be the one item on which the least tangible statements have been received. The subject is beset with difficulties but the Commission earnestly hopes that evidence at Stage V will not be concerned (to put it figuratively) with trying to shift an unwelcome guest into someone else's house,and will instead be directed in a constructive way to suggesting to the Commission what objective factors must be taken into account, how they can be quantified and how they affect the comparison between the airport sites.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

27.1 This chapter includes the following items:

(a) employment benefits,

(b) incidence of costs and benefits,

(c) air pollution,

(d) construction resources.

Employment benefits

27.2 Two types of benefits stem from differences in the rates of employment in the areas adjacent to the four sites. First, the airport could generate additional income by providing employment for those at present unemployed in the area. Secondly, the additional income generated would serve to increase the prosperity of local service trades. Savings in unemployment payments are not classed as a benefit as they are transfer payments.

27.3 Although in principle there is a case for including these types of employment benefit, it has been decided to exclude them from the present analysis for the following reasons. First, the areas around all four sites are, in general, prosperous and differences in registered unemployment rates in activity rates are relatively small (activity rates measure the percentage of the population aged 15 and over in employment). Secondly, a proportion of those registered as unemployed are suitable for only a very small range of jobs. It therefore cannot be assumed that all or even a major proportion of those now registered as unemployed would be suitable for airport employment. The same applies to unemployed persons not so registered at employment exchanges. Thirdly, as it has been assumed in the present analysis that the third London airport will begin operations only in the early 1980s, rates of employment in the no-airport situation at that period and subsequently would have to be predicted. Such significant differences as now exist in local employment rates are unlikely to continue so far ahead. Finally, a proportion of the airport labour force would be drawn from the ranks of the unemployed, irrespective of the source of that labour force, local or not.

27.4 Any estimate of comparative employment benefits at the four sites must be extremely uncertain and on any reasonable assessment is unlikely to be of major importance. These benefits have therefore been disregarded.

Printed image digitised by the University of Southampton Library Digitisation Unit

Incidence of costs and benefits on different groups of the population

27.5 As was pointed out in paragraph 1.22 of chapter 1, it is necessary to consider the differing income levels of the various groups of people affected by the siting of the airport.

27.6 The incidence of costs and benefits is divided between four main groups of people:

(a) the leisure air travellers and persons accompanying them to the airport,

(b) the employers of business air travellers and shippers of air freight; these benefits are likely to be passed to the population at large,

(c) the population living on the prospective sites or within the noise-affected areas,

(d) the population of the country as a whole, on whom would ultimately fall the central government costs such as defence costs.

For the fourth category a point of principle arises. If it were certain that the central government costs would be covered by additional taxation, it would be reasonable to conclude that the appropriate national average income should be the income of the "average taxpayer". It would then be necessary to estimate whether the additional taxation would be direct or indirect, as there is a substantial difference between the average incomes of families on which these two categories of taxation are levied. But it would be equally plausible to argue that additional central government costs would be met by savings in other expenditure, either current or capital, rather than by additional taxation. In this case, the appropriate average national income to take would be that of the average household which benefits from marginal changes in central government expenditure. Given the redistributive effect of the bulk of government expenditure, this particular national average income would be appreciably lower than that of the national average taxpayer. In view of the impossibility of making realistic assumptions on this point, it seems preferable to adopt the compromise solution of taking a straight national average income.

27.7 The relevant data are given in table 27.1 below. Income is defined in the following way: for adults who are heads of household or who are not in paid employment (e.g. housewives) the income of the head of the household is taken: for other adults (e.g. young people living with their parents) the wages or salary of the person concerned are taken.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 27.1
Average incomes of persons affected by the siting of the third London airport (£ per annum, 1968 prices)

	1981	*1991*
Leisure air passengers (adults)[1]	2673	3079
Persons accompanying above to airport[2]	1890	2550
Population within noise-affected area[3]		
1. Foulness	1922	2502
2. Nuthampstead	1916	2560
3. Cublington	1832	2439
4. Thurleigh	1912	2695
National average	1890	2550

1. See table 4.18 in chapter [4]
2. Assumed equal to national average
3. Approximately 40 NNI or above in 2006

Air pollution

27.8 Advice on this subject has been received from the Ministry of Technology (see volume VIII, part 2*). This suggests that air pollution from jet engines will become sufficiently dispersed by the time it reaches the airport boundaries as to occasion no detectable risk to health. This view has subsequently been confirmed by the Chief Alkali Inspector of the Ministry of Housing and Local Government. Given the total length of runways assumed for the airport (14,000 ft), aircraft taking off will generally have reached a sufficient height by the time they cross the airport perimeter to ensure considerable dispersion of unburnt hydro-carbons and other gases.

27.9 While no hazard to health is likely to be involved as a result of air pollution at the third London airport, unpleasant fumes may not be completely undetectable by those living close to the airport. As has been pointed out in paragraph 20.7 of chapter 20, if this kind of nuisance is significant at existing international airports, it will be an element in the property depreciation estimates employed in the analysis of residential conditions.

**CTLA Papers and Proceedings*, volume VIII, part 2, section 1 (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

Pressure on construction resources

27.10 It was necessary to consider separately the likely demands of the airport and those of its associated urban development upon the capacity of the construction industry. As the location of the airport itself had been established and the airport designed in detail, the resource requirements for its construction could reasonably be identified. A detailed estimate of these is provided in appendix 1 of chapter 8. However, the specific location, size and pattern of the associated urban development will only be determined by those responsible for it after the airport site decision has been taken. Moreover, the urban schemes selected by the consultants to the Commission are not detailed structure plans, but rather broad planning proposals. It is, therefore, not possible to identify and assess the specific categories of construction resources which they would require.

27.11 As the urban requirement postulated by the consultants implied a house building rate substantially above that achieved in the past in building new towns, it was nevertheless necessary to assess, albeit very broadly, the resources which these schemes would demand in order to establish whether or not they were feasible. The National Building Agency were therefore commissioned to investigate this issue. Their report, published in volume VIII, part 2, section 3 of the Commission's *Papers and Proceedings*, expresses the view that a programme of housing such as that which the airport would require would not raise any particular difficulties on the building materials side. Attention was therefore focussed on the availability of labour at normal price levels.

27.12 The National Building Agency study shows that, given certain changes in the organisation and management of building work, and an extension in the use of industrialised building systems, the manpower requirements of the incremental urbanisation postulated by the consultants over and above known local requirements could be met with a labour force of 1,500 drawn from the available resources in areas within one hour's travelling time of all the four urban locations, and that this could be done without any serious cost implications. Even if a lower estimate of labour availability is taken, it is only in the earlier stages at the inland sites that a small shortfall of labour may occur. The National Building Agency report suggests, however, that the importation of a small proportion of the labour requirement from further afield could be achieved without cost increases. The urbanisation consultants' schemes make a permanent provision for housing an additional building labour force of 2,725 workers over and above normal requirements, which is more than adequate for the likely demands of the "local" mobile labour force and of any 'imported' labour which may be required. The urban development associated with the airport will itself reduce housing requirements and, therefore, the load on the construction industry elsewhere in the south east. The importation of building labour from outside the airport sub-regions will not, therefore, create shortages of labour elsewhere. Hence, the view taken here is that the urban development proposed by the consultants at each of the four sites can be met without abnormal pressure on the capacity of the construction industry.

27.13 It has been estimated in chapter 8 that an average of some 1,000 workers, rising in peak years to 2,500, would be required for the construction of

Scanned image digitised by the University of Southampton Library Digitisation Unit

the airport itself. However a large proportion of this force would be labour of a specialist type brought in from outside the immediate locality for particular phases of the work, and would require only temporary accommodation. It is of course possible for peaks in the airport building programme to coincide with peaks in the urban development programme. Should this occur, there may be temporary shortages of craftsmen in a few skilled trades which are common to both programmes. However, it is not envisaged that there would be inter-site differences in the cost effects, if any, of such temporary shortfalls.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Introduction

28.1 The high capital costs of the third London airport mean that expenditure one year earlier than necessary involves a cost to the nation of about £22m (at a 10 per cent discount rate) as explained in paragraph 54 of the *Proposed Research Methodology*. In considering whether the benefits to the nation justified this cost it is not sufficient to say that there would otherwise be delays at Heathrow or that potential air travellers would be deterred from flying; a quantified comparison needs to be made between the costs of constructing the airport at a particular date and the costs of congestions.

28.2 An attempt has been made in this chapter to construct a decision model which includes and quantifies all the factors relevant to the decision on the timing of the airport. The capacity of the airports in the south east and assumptions on possible strategies for deferring the need for the new airport were defined. The relevant capital and social costs of opening the airport early were calculated and possible benefits, apart from the relief of congestion, such as better surface access or more convenient schedules for some air travellers were analysed. The capital costs were found to be the most important factor. The costs of congestion were calculated on the basis both of a neutral traffic policy which accommodates air traffic demand and of a policy of traffic management which discourages demand at the peak.

28.3 The optimum date for the third London airport was defined as the date when the congestion costs without it would exceed the costs of advancing its opening. However, the costs of congestion rise sharply and account has therefore to be taken of the possibility of underestimating or of overestimating the levels of air traffic in the critical years. As the main analysis has been based on the "best estimate" forecasts, the concluding analysis in paragraphs 28.77 to 28.85 has incorporated the effect of uncertainty into the decision on the opening date and has considered the effects of altering some of the basic assumptions.

The capacity of existing airport facilities, apart from Heathrow

28.4 The annual capacity of one runway at Gatwick has been estimated in chapter 3 as 84,000 movements in 1975 rising steadily to 100,000 movements in 1985. No attempt has been made to assess the effects of traffic management at Gatwick but it has been assumed that the new airport should not be built before the capacity of the present single runway at Gatwick is fully utilised. This implies that Heathrow traffic

Printed image digitised by the University of Southampton Library Digitisation Unit

will transfer to Gatwick as readily as it would transfer to a third London airport. Already there are 3 million passengers a year at Gatwick, which is more than at Brussels and not many fewer than at Amsterdam; even though the scheduled services at Gatwick do not cover such a wide range of destinations as at these other two airports, they constitute nearly half of the total air transport movements.

28.5. The assumed effects of the third London airport on Luton airport are discussed in chapter 2, paragraphs 2.13 to 2.17. Although the three inland sites would probably cause its closure, it has been assumed that improvements to the taxiway system will be made and that the capacity of 54,000 movements forecast in chapter 3, table 3.10 would be utilised before heavy new investments were made in airport facilities elsewhere.

28.6 If Foulness were the chosen site it would be possible for a new replacement runway to be developed at Luton. While this would permit Luton airport to cater for larger aircraft, it is doubtful whether for social reasons the resulting increase in available capacity would be fully utilised. The same capacity figure for Luton was used in the timing analysis for all four sites.

28.7 The forecast for air traffic in the south east in chapter 4 excludes the traffic which is expected to use minor airports. The general assumption in chapter 2 paragraphs 2.13 to 2.15 is that minor airports will continue to exist but that traffic will not transfer from them to the major airports nor to them from the major airports.

Possible strategies for deferring the need for the third London airport

28.8 The possibility that a second runway may be built at Gatwick in the 1970s is relevant to the analysis of the need for a third London airport. In chapter 3 it was shown that two runways at Gatwick would have an hourly capacity of 59 movements compared with the one runway capacity of 41 movements. The provision of 18 extra movements at peak hours would raise the combined peak capacity of Heathrow, Gatwick and Luton airports by some 12 per cent and could result in the deferment of the third London airport by about 3 years. As no decision has yet been taken on a second runway at Gatwick, the analysis of the timing of the need for the third London airport has been made on the assumption that the second runway is not built.

Greater investment in the air traffic control system at Heathrow or Gatwick or at any of the airports in the south-east could defer the date when a third London airport would be needed. For example, it might be possible to bring forward the adoption of computer assisted approach sequencing at Heathrow or to introduce it at Gatwick. Given the high costs of new airport facilities, the rate of return to investments in air traffic control could be high. However, the data which would enable this type of analysis to be undertaken are not presently available. Moreover, air traffic control improvements are generally time dependent rather than dependent on availability of money. Air traffic control has therefore been taken as a fixed exogenous factor in the analysis.

28.10 A policy which sought to increase the average size of aircraft using Heathrow or other airports in the south-east by encouraging airlines to buy larger aircraft than they would otherwise choose would reduce the number

Printed image digitised by the University of Southampton Library Digitisation Unit

of aircraft movements and therefore reduce delays. The reduced congestion costs plus the incremental costs of larger aircraft could then be compared with the cost of advancing the date of opening the third London airport.

28.11 The economics of this strategy involve a complicated analysis of the capital costs and operating characteristics of large and small aircraft and an analysis of the optimum frequencies at which they would fly. Larger aircraft might also add to the problems of ground-side handling at Heathrow. Therefore, although a large aircraft strategy is a theoretical possibility, it is not incorporated as a variable strategy in the analysis.

Costs and benefits of opening the third London airport earlier rather than later

28.12 The opening of the third London airport involves capital costs which total about £220m. This capital has an "opportunity cost" measured by the discount rate of 10 per cent per annum. One year's deferment of the opening of the third London airport therefore represents a saving to the nation of £22m.

28.13 The costs relevant to choosing the opening date for the third London airport are those incurred in opening the first runway and associated facilities and not the subsequent costs of developing the airport. A deferment of the first runway by one year does not necessarily mean the deferment of all subsequent development. Once the airport is open, the distribution of traffic between the airports in the decades ahead will be independent of the opening date and will depend on the preference of traffic for the different airports available.

28.14 In the cost-benefit analysis capital figures have been discounted back to a single base year of 1975. For this timing of the need analysis it is more convenient to discount them to the year of opening the airport so that they can be more readily compared with the costs of not having an airport, which are computed for each year. No further discounting is necessary as like can be compared with like and one figure can always be used for calculating the costs of an earlier date for the opening. It has been assumed that the airport construction will be spread over six years and the costs are all discounted forward to the date when construction is completed.

28.15 The costs in table 28.1 below include all costs additional to the air transport system but exclude those which can be regarded as transfers. Thus the construction costs of the third London airport will be additional costs but the operating costs will be offset by a fall in the operating costs at Heathrow and at other airports. Similarly, urbanisation costs connected with the third London airport are excluded because these costs will arise elsewhere to house the population concerned. The provision of surface access infrastructure at the third London airport is also a substitute for infrastructure at other airports and the costs of it are covered by the behavioural costs which determine passenger behaviour in the choice of airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 28.1

Capital costs of opening the third London airport (£M)

	Construction - site and services	*Purchase of land and house compensation on site*	*Relocation of establishments*		*Total*
			Military	*Civil*	
Cublington	172	8	35	10	225
Foulness	172	nil	26	5	203
Nuthampstead	168	9	1	24	202
Thurleigh	161	8	27	39	235

Printed image digitised by the University of Southampton Library Digitisation Unit

28.16 The variation in the capital costs of opening an airport at the four short listed sites is small and so are the differences in the cost of bringing forward the opening by a year. They make less than one year's difference in the congestion costs in the critical years. A central figure of £22m savings in capital costs has therefore been used in the analysis.

28.17 Opening the airport earlier will produce additional noise costs and dis-benefits to people in the area. These costs and dis-benefits must however be weighed against the benefits to people elsewhere in the south-east who will experience fewer aircraft flying overhead than they otherwise would; if the third London airport were not available, most of the aircraft would still fly to some other airport in the south-east. The change in total noise costs and dis-benefits in an earlier opening date would be small and has therefore been disregarded.

28.18 Although the costs of the land and compensation for houses are included in table 28.1 the consumer surplus in house ownership is not. There is clearly a dis-benefit in destroying consumer surplus. Calculations, based on the figures used in chapter 20, show that this might amount to about £75,000 a year (i.e. 10 per cent on 750 houses at about £1,000 a house). These figures are not sufficient to influence the analysis when compared with the magnitude of the capital figures and have therefore been disregarded.

Other possible benefits and dis-benefits

28.19 The opening of the new airport may provide benefits to passengers and to airlines additional to the relief of congestion at existing airports. But there may also be dis-benefits as a result of using the new airport. These benefits and dis-benefits are summarised in table 28.2 below.

Table 28.2

Potential third London airport benefits and dis-benefits

Passengers	*Airlines*
(i) changes in flying time	(i) changes in flying time
(ii) changes in surface access costs	(ii) movement costs
(iii) convenience of plane schedules	(iii) savings in congestion costs
(iv) savings in congestion costs	

28.20 Different passengers will experience a different mix of benefits and dis-benefits. Some may be close to the new airport but would not suffer any delay if they chose to use Heathrow while others might suffer from delay at Heathrow but would find the new airport inconvenient. A study of the benefits and dis-benefits shows that the reduction in congestion costs is the major benefit for both passengers and airlines.

28.21 The General Precision Systems Limited study shows that there is little difference between the average flying times in the London terminal area before and after the third London airport comes into operation (see table 28.3 below).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 28.3

Average flying time within the London terminal area (minutes)

	Without third London airport	*With third London airport*			
		Cublington	*Foulness*	*Nuthampstead*	*Thurleigh*
Average flying time within London terminal area	23.6	23.5	22.8	23.5	23.7

Printed image digitised by the University of Southampton Library Digitisation Unit

28.22 Although three of the sites give rise to a lower average flying time in the system, the saving is insignificant compared with changes in congestion and surface access costs.

28.23 The relative attraction of the third London airport in terms of surface access and frequency of schedules can be gauged from the results of the surface access gravity model (described in chapter 13). A result of the model test on Cublington is shown below in table 28.4 as an example for the inland sites. As explained in chapter 13 the attraction factor in the gravity model is generally equal to the number of passengers who will use an airport. In this run of the model, Cublington and Manchester were given higher attraction factors than usual in order to allow for a greater proportion of their services being offered in peak hours.

Table 28.4

Surface access attraction of third London airport

	Cublington	*Heathrow*	*Gatwick*	*Manchester*	*Total*
Attraction factor	15.0	37.0	12.0	6.0	–
total passengers (million)	7.8	39.1	9.7	1.6	58.2

28.24 With a generous attraction power Cublington attracted 7.8 million passengers. This must be compared with Luton's capacity to take 6.5 million passengers by 1981. Since many of the passengers who would switch airports after Luton is closed are not likely to benefit, a new inland airport would offer a better service in terms of frequency and surface access to only a small proportion of the 58 million passengers. Similar conclusions for Foulness can be drawn from a run of the gravity model including Foulness and Luton. In this case Foulness attracted just over 1 million passengers whereas Luton was full to its capacity of 6.5 million passengers. The benefits to passengers attracted to the third London airport are offset by the additional surface access costs of those passengers who switch to it to avoid congestion at Heathrow.

28.25 The reduction in congestion costs, which is taken as the major passenger benefit of the third London airport, is analysed later in the chapter. The major benefit to airlines is also a reduction in congestion costs. This will be offset partly by the costs of setting up operations at the new airport but the difference in costs between moving in one year as opposed to another is unlikely to be significant and therefore this offset has been disregarded.

Costs of congestion without a third London airport

28.26 The costs of congestion have been calculated on the basis of the "best estimates" forecasts of passengers and freight aircraft air transport movements given in chapter 3. An allowance has been made for non air transport movements in relating movement rates to delays. The figures of total air transport movements in table 28.5 are interpolations based on the figures given in chapter 4. The capacity figures for Gatwick and Luton, which imply no congestion costs, are taken from chapter 3.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 28.5

Air transport movements ('000's)

	Total	*Gatwick*	*Luton*	*Residual*
1975	367	84	54	229
1976	385	85	54	244
1977	405	87	54	264
1978	425	89	54	282
1979	446	91	54	301
1980	468	93	54	321
1981	492	94	54	344
1982	516	95	54	367
1983	543	96	54	393

28.27 The calculations of congestion costs were based on Heathrow's capacity to receive the levels of traffic in the "residual" column. This was a device to simplify the exposition rather than a forecast of the traffic's behaviour. In the mid 1970's it is likely that more will go to Heathrow and less to Gatwick and Luton; while in the 1980's, more traffic might go to Gatwick and Luton or even to other airports. If more sophisticated cost studies of the capacity of Gatwick and Luton were possible, the logic of the analysis would not change. This method of calculation did however give a *maximum* cost of congestion. In so far as traffic would overflow voluntarily to Gatwick and Luton above the capacity figures given, it is reasonable to suppose that it would be choosing a lower cost alternative to the use of Heathrow.

The pattern of traffic movements over the year

28.28 A comprehensive measurement of the capacity of the air transport system requires data on the pattern of traffic movements throughout the year. It is essential to measure the frequency as well as the extent to which the capacity of the system is stretched. The histogram in figure 28.1 shows that the monthly air transport movements in 1968 varied from 15,000 to 25,000 and that most delays will occur in the summer months from July to September.

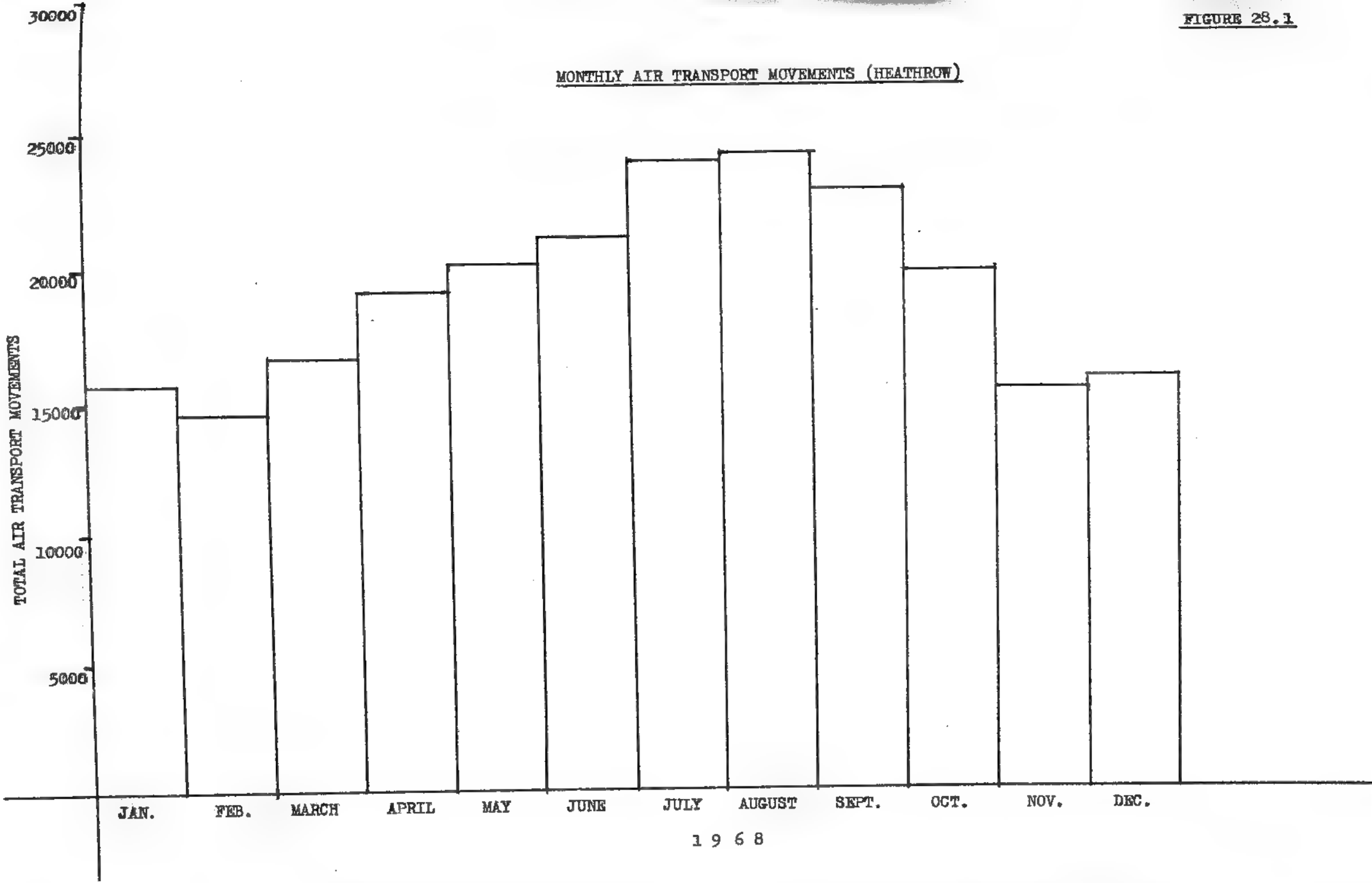
28.29 The prediction of delays has been based on the number of movements in the eight hours 0700–1500 BST. Although it would be preferable to use the daily number of movements, the capacity of the air traffic control system has been measured on the relationship between 8 hour movement rates and delays over the 0700–1500 hour period.

28.30 Figure 28.2 shows the pattern of 8 hour movement rates in 1968, relating the number of movements in the period between 0700–1500 hours to the number of days in 1968 when these numbers of movements occurred. These figures have been factored up from the base of 229,000 (the number of air transport movements at Heathrow in 1968), to give traffic patterns for annual movement rates in the 1970's and 80's. The figures for 340,000 movements a year are given in table 28.6 to illustrate the method.

Printed image digitised by the University of Southampton Library Digitisation Unit

FIGURE 28.1

MONTHLY AIR TRANSPORT MOVEMENTS (HEATHROW)



Digitised by the University of Southampton Library
Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

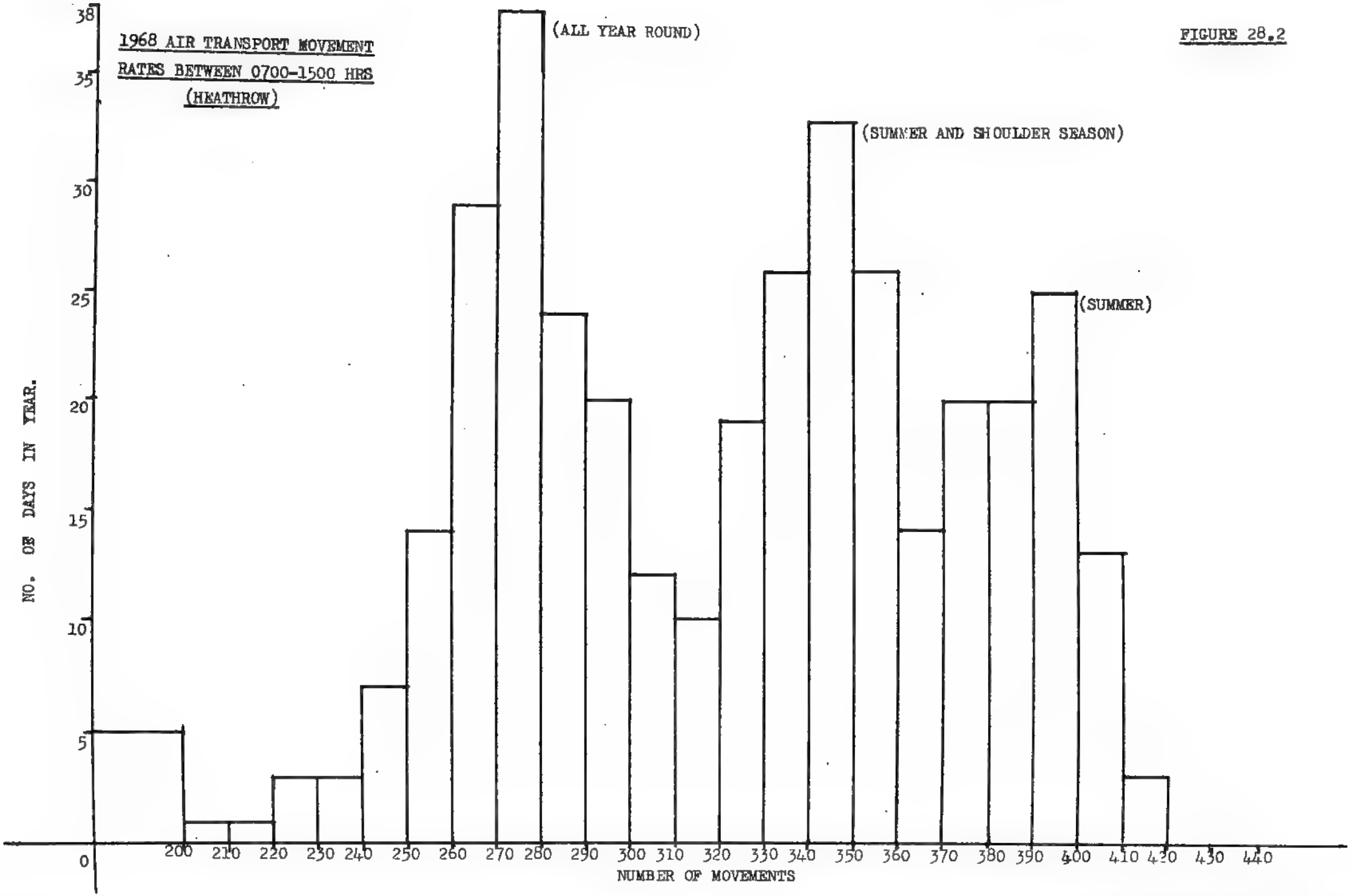


FIGURE 28.2

Table 28.6

Movement rates in 8 hours 0700-1500 annual air transport movements

No. of days in year	*229,000 factor 1.0*	*340,000 1.48*
5	less than 200	less than 296
1	200 – 210	297 – 310
1	211 – 220	311 – 325
3	221 – 230	326 – 340
3	231 – 240	341 – 355
7	241 – 250	356 – 370
14	251 – 260	371 – 384
29	261 – 270	385 – 399
38	271 – 280	400 – 414
24	281 – 290	415 – 429
20	291 – 300	430 – 444
12	301 – 310	445 – 458
10	311 – 320	459 – 473
19	321 – 330	474 – 488
26	331 – 340	489 – 503
33	341 – 350	504 – 518
26	351 – 360	519 – 532
14	361 – 370	533 – 547
20	371 – 380	548 – 562
20	381 – 390	563 – 577
25	391 – 400	578 – 592
13	401 – 410	593 – 606
3	411 – 420	607 – 621

28.31 The movement rates are multiplied by the number of days in the year when they occur and the respective movement rate delay parameters (see table 28.8) to give the total delays in the year. It should be noted that this method of extrapolation of the 1968 data implies no peak spreading over the day or over the year as a whole.

Relation between traffic movements and delays with a neutral traffic policy

28.32 The mathematical models used in chapter 3 can be applied over any length of time provided the level of delay does not exceed 4 minutes. At this level of traffic there is very little interaction between delays in one hour and delays in adjacent hours. With higher traffic levels, however, this is no longer true. The mathematical models, because they do not represent the effect of one hour on the next, cannot then be used. It is then necessary to use another approach. One method is to simulate the aircraft movements individually at the airport. Any desired pattern of traffic can then be "run" and the consequential delays computed. Paragraph 64 of the *Proposed Research Methodology* refers to the Board of Trade computer model of runway performance. The model used the basic assumptions about the working of the air traffic control system and values for aircraft separation standards given in chapter 3. At low levels of traffic, up to the 4 minute delay level, the simulation model gives delay results very close to those given by the mathematical models of chapter 3. At higher levels of traffic the delays produced are less than those of mathematical models

Printed image digitised by the University of Southampton Library Digitisation Unit

when the traffic demand curve is rising, and more when the curve is falling. A number of simulations was done on the Board of Trade model, including runs of the segregated and of the mixed mode of operation, both on the basis of existing and an improved air traffic control system. Table 28.7 summarises the relationship between movement rates over the 8 hour period 0700–1500 hours and the average delays over the same period.

Table 28.7

Heathrow 2 runways, mixed mode operations (8 hour period 0700–1500 hours)

Number of movements existing ATC	*Mean delay per plane (minutes)*	*Number of movements improved ATC mid 70's*
445	4.9	498
460	5.9	515
475	7.6	532
486	8.7	544
504	11.0	564
546	17.5	612

28.33 The assumptions made about likely improvements to the air traffic control system up to the mid 1970's were based on advice by the National Air Traffic Control Services and do not involve additional capital investment. These improvements were tested for the peak 3 hours for segregated operations and showed improvements of 15 per cent for arrivals and 10 per cent for departures. It was assumed that a 12 per cent improvement could be achieved on the mixed mode of operation.

28.34 In chapter 3 it was assumed that computer assisted approach sequencing would be adopted at Heathrow by 1980 and that the peak capacity of Heathrow would be raised from 75 to 82 movements an hour. The improvement is likely to take place gradually as operators become used to handling computers in air traffic control. It was therefore assumed in this analysis that there would be a 5 per cent improvement in capacity in 1979 and a 10 per cent improvement in 1980.

28.35 Since air transport movements and not all traffic movements were being analysed "other movements" had to be subtracted from the totals given in table 28.7. In chapter 3 it was estimated that four movements out of 75 would be non-air transport movements, i.e. about 5 per cent in the peak hour. Although "other traffic" is generally 8 per cent of the total traffic, the estimate of 5 per cent in peak hours reflects current practice rather than special traffic management of non-air transport movements.

28.36 It was also necessary to evaluate the excess delay in the system. In a perfect world it might be expected that there would be no delays at the new airport, but because of the randomness of arrivals and departures, some delay of 2-3 minutes is quite likely to occur. Therefore the base figure for excess delay, that is, the delay that would be avoided by having a new airport, is the delay in excess of 3 minutes. This compares with the

Printed image digitised by the University of Southampton Library Digitisation Unit

usual 4 minute criterion which has a somewhat different purpose and is used as a guide to what is tolerable rather than what is costless.

28.37 The results of these calculations are given in table 28.8. They are also illustrated in figure 28.3. The figures for the 1970's were rounded to the nearest 10 movements. The figures for 1979 and 1980 onwards were obtained by multiplying by 1.05 and 1.10 respectively.

Table 28.8

Air transport movements

Average excess delay per plane	*Up to 1978*	*1979*	*1980 onwards*
0.0	440	462	484
0.5	450	472	495
1.0	460	483	506
1.5	470	493	517
2.0	480	504	528
3.0	490	514	539
4.0	500	525	550
5.0	510	535	561
6.0	520	546	572
7.0	530	556	583
8.5	540	567	594
10.0	550	577	605
11.5	560	588	616
13.0	570	598	627
14.5	580	609	638
16.0	590	619	649
18.0	600	630	660
20.0	610	640	671
22.0	620	651	682
25.0	630	661	693
28.0	640	672	704
31.0	650	682	715

28.38 All the simulation runs of the Board of Trade computer model referred to above are based on an extrapolation of the current shape of demand with the high peaks between 0900–1200 hours and the relative lower levels of traffic before 0900 hours and after 1200 hours. The relationships between movement rates and delays in table 28.8 do not therefore imply any form of peak spreading either as an expression of changing market conditions or as a deliberate airport policy.

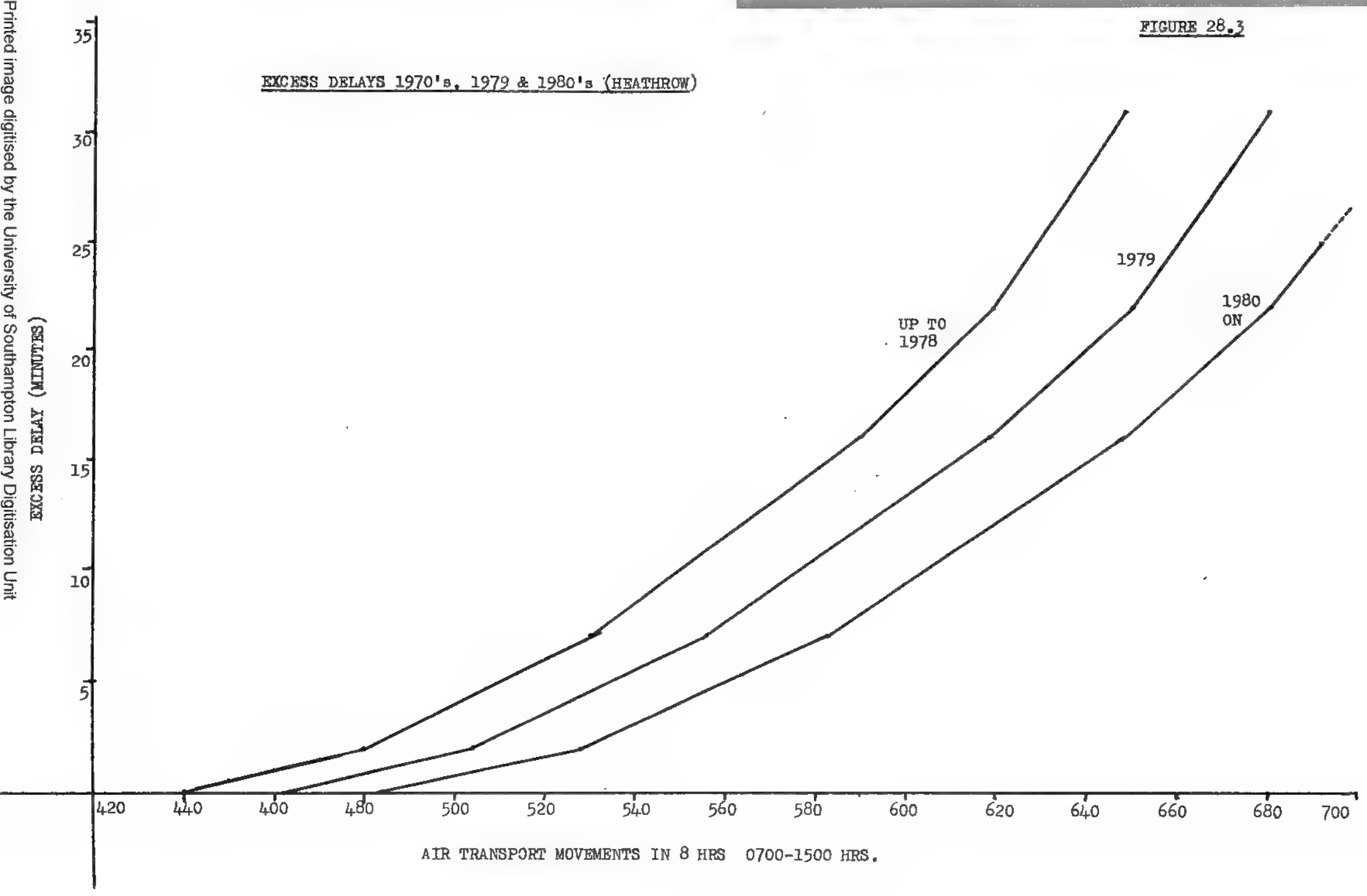
Relation between traffic movements and delays with traffic management

28.39 Air traffic has markedly peaked characteristics over the seasons, (see figure 28.1,) over the week and over the day. Although the arguments in favour of traffic management apply to all possible divisions of time, the emphasis in this analysis is on management of the daily traffic pattern.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

FIGURE 28.3



This is therefore a conservative estimate of the possible gains of a traffic management policy.

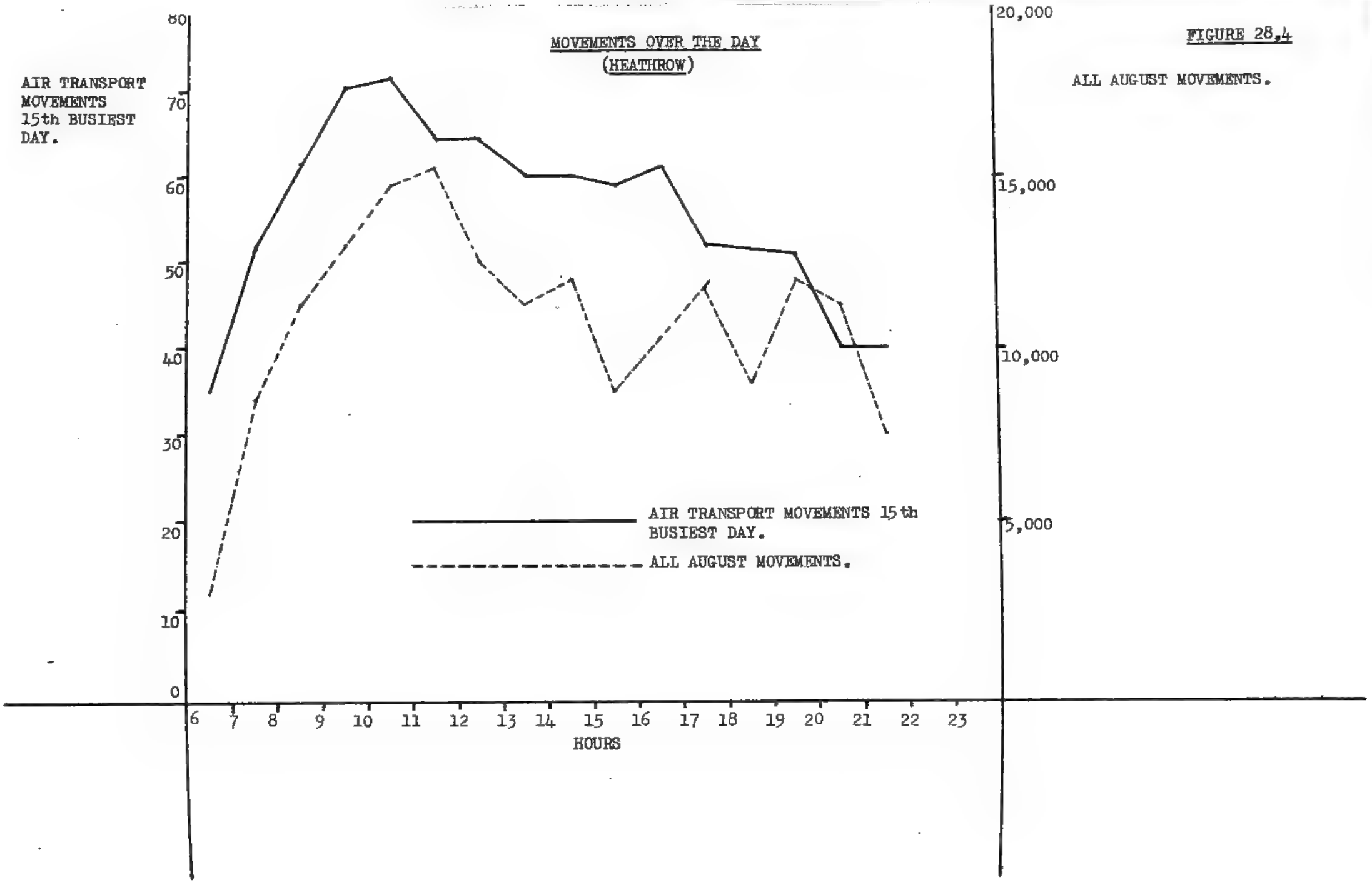
28.40 Air traffic over the day varies widely, with 50 per cent more aircraft in some hours than in others. The pattern for the fifteenth busiest day and for the average of all August days in 1968 is shown in figure 28.4. Experiments with the Board of Trade simulation model showed that the average delay over the eight hour period can be substantially reduced by the movement of only a few aircraft from the peak to the off-peak hours. Table 28.9 below summarises the results of two runs. The more relevant experiment was that with the air traffic control system for the 1970's which was conducted under a segregated mode of operation with the arrivals limited to 38 an hour and the departures to 40 an hour. The results for both runways are summed together in figure 28.5.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

FIGURE 28.4

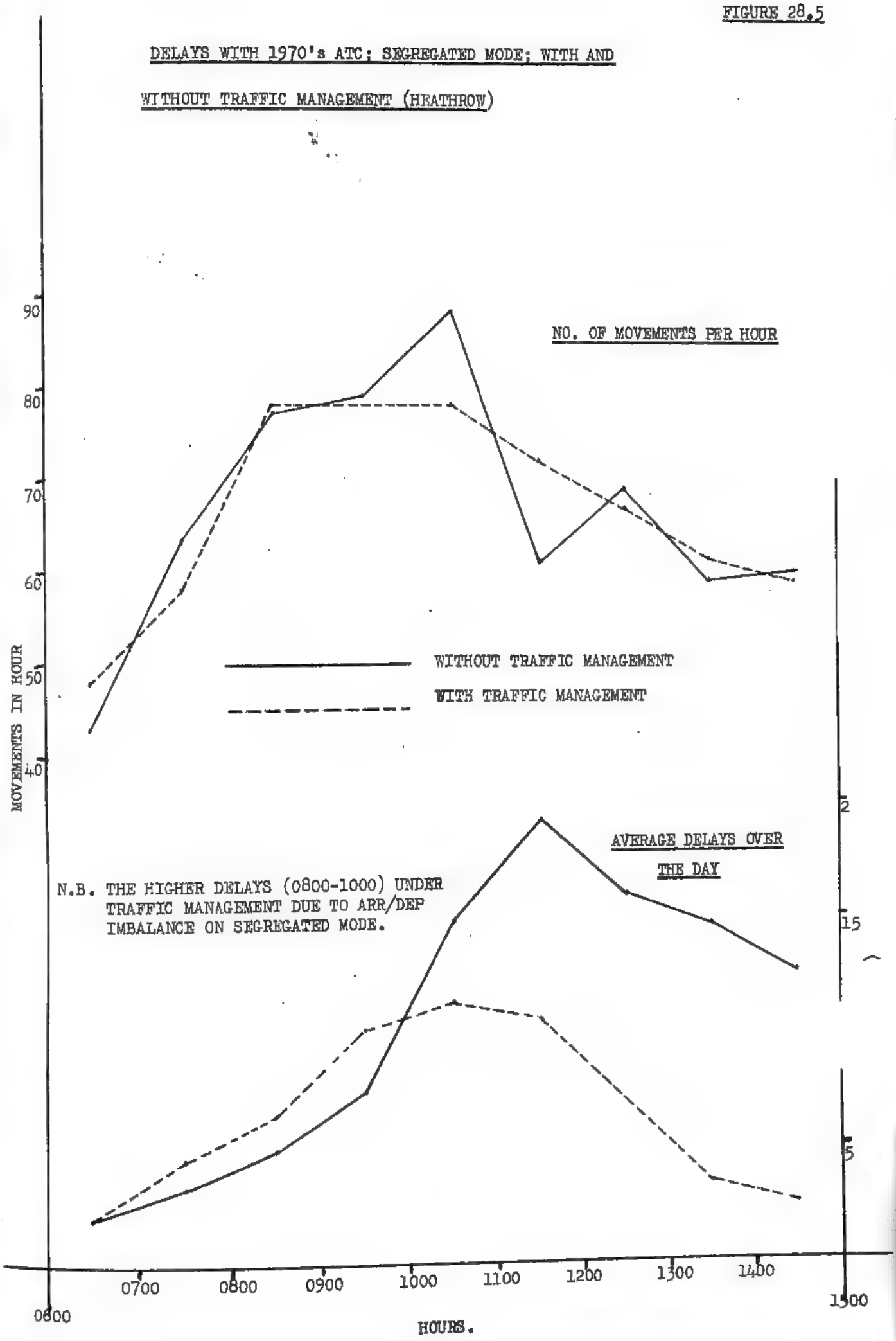
MOVEMENTS OVER THE DAY
(HEATHROW)



ALL AUGUST MOVEMENTS.

FIGURE 28.5

DELAYS WITH 1970's ATC; SEGREGATED MODE; WITH AND WITHOUT TRAFFIC MANAGEMENT (HEATHROW)



Printed image digitised by the University of Southampton Library Digitisation Unit

Table 28.9

Delays with traffic management

Air traffic control system	*Movements 0700–1500 hrs*	*Average delay mins peaked demand*	*Average delay mins managed demand*	*% Improvement*	*Aircraft moved*	*Average time moved (hours)*
1970's air traffic control, segregated mode	546	11.75	7.0	41	15	2½
Current air traffic control, segregated mode	546	32	25	22	20	1½

Printed image digitised by the University of Southampton Library Digitisation Unit

28.41 It is evident that cutting some 15–20 aircraft out of the 150–160 aircraft in the two peak hours can significantly reduce average delays over the eight hour period 0700–1500. These aircraft were moved by anything from a few minutes up to 5 hours. An alternative interpretation would be that 15 aircraft were moved into an adjacent hour, that other aircraft were moved out of the adjacent hours into the next hours and so on. But the result would be the same in either case in terms of the number of aircraft hours moved. It has been assumed in the analysis that 15 aircraft are moved out of the peak hours by an average of 2½ hours each, a total move of 37½ aircraft hours.

28.42 It has been assumed that a move of 37½ aircraft hours in the eight hours, 0700–1500, would reduce delays by 33 per cent whenever there are more than 500 movements in the eight hours. The data did not permit a more sophisticated assumption with different aircraft hour movements and delay improvement relationships at different traffic levels. This assumption may be checked against the results of the improvement in the air traffic control system between 1978 and 1979, shown in table 26.8. These show that delays are reduced by 30 to 50 per cent when there is a 5 per cent improvement in the air traffic control system.

28.43 The relationship between traffic management and delay improvements was not used when the average excess delay was less than 3 minutes over the 8 hours because it was uncertain what the relationship would be at the lower end of the delay scale, and because, on the basis of the costs of traffic management developed in paragraphs 28.71 – 28.76, peak spreading when excess delay costs were relatively low would not produce a least cost solution.

28.44 In summary, for estimating the costs of the system with traffic management, the delay costs were taken when the average excess delay was less than 3 minutes in the 8 hours. To these were added 66 per cent of the delay costs plus the costs of traffic management at the rate of 37½ plane hours moved a day when the average excess delay exceeded 3 minutes in the 8 hours.

Total delays with and without traffic management

28.45 The total delays for different levels of traffic movements in the year are the product of the number of movements in the eight hour period, (0700 – 1500 hours), the number of days when these movement rates occur (see table 28.6), and the average excess delay for the respective eight hour movement rate (see table 28.8).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 28.10

Aircraft hours delayed, no traffic management

Annual air transport movements	*Mid 70's*	*1979*	*1980 onwards*
280,000	1,300	300	100
300,000	3,600	**2,100**	800
320,000	9,000	5,600	3,000
340,000	15,600	10,800	6,400
360,000	27,700	18,600	12,500
380,000	44,300	30,400	21,600
400,000	68,900	48,900	34,700

28.46 As there can be significant traffic between 1600 and 1800 hours, the question arises whether it is necessary to make an allowance for delays outside the 8 hours under consideration. The traffic in those two hours in 1968 was approximately a quarter of the traffic in the 8 hours under more detailed consideration. It is at a lower level than in the peak morning hours, but at a slightly higher level than in the slacker morning hours. It is unlikely that delays between 1600 – 1800 hours will have any overflow effect on the adjacent hours as the morning peaks have. An addition of 10 per cent to the delay hours of the 8 hour periods would be reasonable.

28.47 Another factor to be taken into account is the future shape of the traffic. The calculation of delays has been made on the assumption of no peak spreading either over the day or over the year from the 1968 base. This was contrary to the experience of the 1950s and 1960s when there was consistent peak spreading. In chapter 3, paragraph 3.59 it was argued that there was likely to be further voluntary peak spreading over the year, although not over the day. The effect of this would be a 10 per cent improvement in the hourly to annual ratio of traffic capacity at Heathrow between 1968 and 1980, (see table 3.12). For the purpose of this chapter, it was assumed that this peak spreading over the year will broadly cancel out the delays over the day that were not included in the 8 hour period but were estimated at 10 per cent in the paragraph above.

28.48 Table 28.11 summarises the aircraft hour delays and aircraft hours moved under a traffic management policy. The result is the compromise between delay and peak spreading described in paragraphs 28.44 and 28.45. It represents a feasible rather than an optimal solution of all the traffic management options and is therefore an underestimate of the possible benefits of traffic managment.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 28.11

Congestion with traffic management (aircraft hours)

Annual Air Transport Movements	*Mid 70's*		*1979*		*1980 onwards*	
	Delayed	*Moved*	*Delayed*	*Moved*	*Delayed*	*Moved*
280,000	1,200	100	300	–	100	–
300,000	2,600	2,300	1,500	2,300	800	–
320,000	6,300	4,500	4,000	3,600	2,200	2,300
340,000	10,400	6,800	7,300	5,800	4,500	3,600
360,000	18,600	7,500	12,400	7,500	8,500	5,800
380,000	29,800	8,300	20,200	7,900	14,400	7,500
400,000	46,800	9,900	32,900	9,000	23,400	8,300

28.49 These results are also shown in figure 28.6. The figures in the table and in the graph show discontinuities in the number of aircraft hours moved due to the simple formula adopted, but this should not bias the result. The aircraft hour delays and aircraft hour movements for annual air transport movements between the annual numbers given in table 28.11 can be read off figure 28.6.

Delay costs to passengers and to airlines

28.50 There are three categories of delay costs: to passengers, to airlines and to the economy from the fall in air traffic. The costs to passengers are mainly the loss of time with some additional cost for the dislocation of schedules. The costs to the airlines are mainly extra operating costs and the fall in utilisation of aircraft. Airlines will also suffer occasional dislocation of their schedules, but the airlines, like the passengers, generally foresee the delays and "pay" in loss of aircraft utilisation. The losses to the economy are analysed in paragraph 28.66 – 28.68.

28.51 The costs of delay are summarised in table 28.12 below. These costs increase over time as the average size of aircraft and the value of time both increase. In the calculations of costs, different cost figures for each year were used with a linear interpolation of the figures in table 28.12.

Table 28.12

Costs of delay – Summary (£ per hour of aircraft delay)

Year	*Extra operating cost to airlines*	*Lost time to passengers*	*Total operating losses*	*Cost of lost aircraft utilisation*
1975	174	78	252	162
1980	231	118	349	217
1985	295	163	458	278

Printed image digitised by the University of Southampton Library Digitisation Unit

Costs to passengers

28.52 Most delays will occur in the summer season. At this time of year the number of terminal passengers per aircraft is about 125 per cent of the annual average number of terminal passengers per aircraft (see chapter 4). The ratio of business to non-business passengers in the peak season is taken from the 1968 Air Passenger Survey (15 per cent business, 85 per cent non-business). The weighted passenger time costs are given below:

Table 28.13

Terminal passengers per air transport movement in peak season		*Number of passengers with schedules upset*	*Weighted cost per passenger (£ per hour)*	*Passenger cost per air transport movement (£)*
1975	115	12	0.62	78
1980	153	15	0.69	118
1985	195	20	0.76	163

The values of time used in deriving these costs have been taken from chapter 11, table 11.3.

28.53 There will be some dislocation costs for passengers in addition to the loss of time, as some travellers will suffer consequential delays as a result of the original delay. In the runs of the Board of Trade simulation model, it was observed that 10 per cent of the aircraft in each hour were delayed by twice the average delay rate in the hour. An allowance of 10 per cent has therefore been added to the passenger delay costs to allow a double time cost for travellers whose schedules are upset.

Costs to airlines – operating costs relevant to aircraft delay

28.54 The additional operating costs in delay conditions include fuel and oil, crew and extra maintenance costs. These costs are discussed below in terms of percentages of the standard operating costs set out in chapter 11.

28.55 The average rate of fuel consumption for delayed inbound traffic was estimated at 125 per cent of the standard rate. The rate of fuel consumption when aircraft are stacked at a high level will be 125 per cent of the standard rate and at a low level up to 175 per cent of the standard rate. But this may be offset sometimes by lengthening flight paths in the terminal area, when the rate of fuel consumption is 90 per cent of the standard rate. In addition, an allowance was made for the cost of the fuel needed to carry the extra fuel. It was estimated that in the late 1970's it would cost £15 on average to carry the 45 minutes reserve fuel which aircraft usually carry. This figure has been pro rated so that aircraft will require extra fuel to carry the fuel for the delays at a rate of £¼ for a minute of delay, or £20 an hour.

28.56 The average fuel costs for outbound aircraft is estimated at 30 per cent of the standard cruising rate. It is assumed that engines will be running for 75 per cent of the time, either taxying or at the stands, at a rate of fuel consumption that is 40 per cent of the standard rate. There will be zero fuel costs for the other 25 per cent of the time.

Printed image digitised by the University of Southampton Library Digitisation Unit

28.57 Engineering and maintenance costs are estimated at $\frac{1}{3}$ of the average hourly rates. This is partly because the average rates generally include heavy overhead charges. Furthermore, the marginal wear on the aircraft of the extra running will not be proportional to the flying times because there are no extra landings. The extra crew and cabin costs have been assessed at the average hourly rates given in chapter 11.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 28.14

Operating costs of delay to airlines (£ at 1968 prices)

		Inbound aircraft cost hour				*Outbound aircraft cost hour*				
Year	*Market*	*Fuel*	*Crew*	*Engine-ering maint-enance*	*Total in-bounds*	*Fuel*	*Crew*	*Engine-ering maint-enance*	*Total out-bounds*	*Average operating costs of delay per hour*
1975	Domestic/ European	107	60	33	200	21	60	24	105	153
	North America/ long-haul	186	100	55	341	40	100	41	181	261
	SST	328	83	103	421	77	83	77	237	329
1980	Domestic/ European	135	79	42	256	28	79	31	138	197
	North America/ long-haul	239	132	73	444	52	132	55	239	342
	SST	439	110	137	686	100	110	103	313	500
1985	Domestic/ European	170	100	54	324	36	100	41	177	251
	North America/ long-haul	303	171	94	568	68	171	70	309	439
	SST	563	140	177	880	131	140	133	404	642

Printed image digitised by the University of Southampton Library Digitisation Unit

Costs to airlines – loss of utilisation

28.58 The loss of utilisation is due to the fall in number of trips made by aircraft as delays increase. It would, however, not be satisfactory to calculate this simply in terms of lost revenue as in practice there will not be a large fall in traffic. It was more realistic to assume a given revenue level, subject to the costs of the fall in traffic which were analysed separately in paragraphs 28.62 – 28.68, and to estimate the incremental costs to the airlines of maintaining their service levels.

28.59 The costs of lost utilisation were estimated on the basis that the airlines would buy more aircraft to make good the loss of utilisation of existing fleets. It could be argued that the utilisation of existing aircraft would be improved. This is possible for some routes. On the other hand, evaluating lost utilisation in terms of extra stock is not entirely realistic as airlines clearly cannot buy quarter or half aircraft, although they can buy smaller aircraft. The method is a compromise between these two views. The airlines were expected to buy a new aircraft for every 2,500 hours of delay in the system, which was the weighted average of the annual long and short haul revenue flying hours given in chapter 12. The standing charges of the new aircraft were based on the figures given in chapter 11. Allowing for market weighting, the charges rise from £405,000pa in 1975 to £695,000pa in 1985.

28.60 It is not realistic to relate the loss of utilisation directly to the total aircraft delays in the year. Airline schedules and airport time tables are not sufficiently flexible to permit a daily adjustment to delays. Furthermore, airlines will wish to make some allowance for the risks of dislocated timetables. This should not be great as the expected variance of the total flying time is only slightly greater when delays occur, and the mean delay can be foreseen, than when there are no delays. The total delay hours in a year were therefore multiplied by 1.25 to allow for inflexibilities in planning and insurance against dislocation in the estimates of the loss of aircraft utilisation. It was not of course necessary to use a similar multiplicative factor in estimates of extra operating costs, so operating costs and losses of utilisation are shown separately in summary tables.

Summary of airline costs

28.61 Airline costs are summarised in table 28.15

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 28.15

Costs of delay per hour weighted by market (£ per hour)

	Market	*Weight %*	*Operating costs*	*Standing charges*
1975	Domestic/European	81		
	N America long-haul	18	174	162
	SST	2		
1980	Domestic/European	80		
	N America long-haul	17	231	217
	SST	3		
1985	Domestic/European	80		
	N America long-haul	17	295	278
	SST	3		

Predictions of traffic suppressed during conditions of congestion

Predictions of lost traffic

28.62 It has been pointed out in chapter 13 that one of the determinants of travel is the accessibility of an airport. Similarly, people will be influenced in some degree in their decision to travel by the amount of delay which they have to suffer or by the alternative dis-benefit of travelling at off-peak times.

28.63 Studies have been made which show that elasticities of demand with respect to time vary from −0.4 to −1.5. At the IATA meeting, Munich 1968, a director of Air France quoted the GETA study which showed elasticities in Europe of −0.4 for leisure travellers and −1.2 for business travellers. *(Symposium on the Future of World Air Transport,* IATA 1968). Brown and Watkin have calculated elasticities for air travellers in the United States of between −0.8 and −1.5. *(Proceedings of the Business and Economic Statistics Section of the American Statistical Association,* 1965 and Highway Research Record No 213, 1968). In both cases there was more domestic flying and more business flying than in the United Kingdom, and greater competition from other travel modes. All of these factors would create higher elasticities of demand with respect to time than one would expect in the United Kingdom. The lower European value of −0.4 was taken as the most representative for the United Kingdom.

28.64 This value of −0.4 was taken in the context of the total travel time for the journey. A study of all air journeys from Heathrow showed an average flying time of between 2–3 hours and this was doubled to allow for time spent in terminal facilities and in surface access at both ends of the journey. For instance, for a journey time of 5 hours, an average delay time of 15 minutes would represent an increase of 5 per cent on the total travel time. An elasticity of −0.4 would therefore imply a fall in demand for air travel of 2 per cent for an increase in the average flying time of 15 minutes.

28.65 The relationship between the amount of traffic lost and the increasing delays at Heathrow was expressed in the formula:

Printed image digitised by the University of Southampton Library Digitisation Unit

$$\frac{d\,D}{D} = e\,\frac{d\,T}{T}$$

or

$$d\,D = e\,d\,\frac{T\,D}{T}$$

Where d D is the change in demand for air travel,
D is the number of air travellers,
d T is the change in flying time, i.e. the delay,
T is the total travel time,
e is −0.4.

which can be translated to:

$$\text{Loss of passengers} = \frac{0.4 \times \text{delay hours} \times \text{no of aircraft} \times \text{passengers per aircraft}}{\text{no of aircraft} \times \text{average travel time}}$$

$$= \frac{0.4 \times \text{delay hours} \times \text{passengers per aircraft}}{5}$$

$$= .08 \times \text{delay hours} \times \text{passengers per aircraft}$$

Evaluating suppressed traffic

28.66 It is useful to make two assumptions. First, the majority of people deterred from flying would also be British residents. Secondly, that the average level of expenditure by British residents temporarily abroad would be similar to that of non-British residents in the United Kingdom. Since the fall in air traffic would therefore not cause a fall in expenditure in the United Kingdom, there should be no adverse effect either on the balance of payments or on the growth of the economy.

28.67 One exception however may be argued; that is, that the loss of traffic in the short run is both a cost to the airlines and to the economy. This is a short term argument based on the existence of capital formation in the airlines industry and is quite separate from the longer term argument on the merits or demerits of investment in the airlines, rather than in other industries. However, in the short run there is a strong case for utilising transport capacity, where the resource costs of providing a marginal seat are close to zero. Since the proper marginal costs of air flying are close to zero, the gross loss of welfare when would-be passengers are deterred from flying is represented approximately by the airlines' loss of the air fares. This loss must be netted out against the expenditure by the air passenger of his money elsewhere, where it is also the case in general that marginal resource costs will not equal the price of the product he is buying. It was assumed that marginal resource costs are on average only half the price of the product, where the other half includes overheads and profits. Therefore, the loss of welfare due to the fall in air traffic was taken as half the average air fare which is lost. In 1968 – 1969 the weighted average of BOAC and BEA air fares per passenger was £22. With constant prices, the

Printed image digitised by the University of Southampton Library Digitisation Unit

short run welfare lost due to the fall in air traffic would be £11 per air passenger.

28.68 The loss of passengers' consumer surplus was subsumed under the cost of time lost in paragraph 28.54. This slightly overstates the loss of surplus of suppressed traffic, which in transport studies is usually taken at half the increase in the costs experienced. The difference is insignificant.

The cost of traffic management

28.69 Traffic management implies that some people will travel at a relatively inconvenient time. In the model of traffic management, in paragraph 28.43, 15 aircraft out of the 500 or more in the eight hour period are moved by an average of 2½ hours. This number would affect only 2 per cent of the passengers over the day.

28.70 This loss of passenger welfare was taken to be equal to the cost of time lost in travelling. This would overstate the loss for many people who will not lose the 1, 2 or 3 hours which represents the change in time of their travel, but will suffer minor inconvenience. On the other hand, there will be a minority of people, for example those who have arrangements at the far end with friends or relatives or with other businessmen, for whom the change of time would be awkward. This minority suffer a higher cost than the average time cost.

28.71 Similar arguments apply to travellers who decide not to travel. Normally, it would be assumed that people who are deterred from travelling have lost a consumer surplus of less than the cost of lost time or they would continue to travel. While generally this would be true, in some cases the alternative time would simply not be relevant to meeting the travellers' requirements and the loss of consumer surplus might be quite high.

28.72 As only 2 per cent of the day's traffic would be affected, travellers with urgent business should still be able to travel at the peak. Under a price mechanism which charged more at the peak those with the least desire to travel at the peak would move to off-peak times. However, even if this cannot be achieved, some tendency towards such a mechanism can be expected whereby those who most wish to travel at peak will still do so and those who least require to travel at peak tend to move.

28.73 It is sometimes argued that the airlines will suffer a loss of aircraft utilisation as they cannot achieve their optimum schedules. This argument is not strong when so few of the day's movements are rescheduled. In any case moving some aircraft out of the peak hour could improve their utilisation rather than worsen it. The chief loss to the airlines would rather be any possible loss of demand, which was estimated separately in paragraph 28.67.

28.74 Since the total costs of peak spreading are so low for airlines compared to the total costs of delays, it may be asked why the airlines do not voluntarily plan more peak spreading. The answer to this is that the marginal aircraft using the peak period pay the average rather than the marginal costs. Whereas the average costs are sufficiently low, so that they do not justify the possible loss of traffic of moving off-peak, the marginal costs are extremely high because 10 per cent more aircraft at the margin cause delays

Printed image digitised by the University of Southampton Library Digitisation Unit

which are felt by all the other 90 per cent of the aircraft using the peak. The benefit of peak spreading is felt by all the aircraft using the peak, whereas the costs are felt only by the aircraft which move from the peak.

Summary of costs with most likely forecasts

28.75 The cost functions can be summarised:

(a) delay costs = aircraft hours delay x (airline operating costs + passenger time costs per hour)

(b) lost utilisation = 1.25 aircraft hours delay x standing charges.

(c) traffic management costs = aircraft hours moved x passenger time costs per hour.

(d) lost traffic = $\frac{\text{aircraft hours delay}}{\text{total travel times}}$ x 0.4 x no. of passengers x 11.

28.76. Lost traffic costs were taken to be the same with and without a traffic management policy. The total costs of congestion with the "best estimate" forecasts are given in table 28.16.

Table 28.16

(i) Costs of congestion without traffic management (£M)

	Air transport movements	*Delay hours*	*Operating losses*	*Lost utilisation*	*Lost traffic*	*Total costs*
1978	282,000	1,300	0.4	0.3	0.1	0.8
1979	301,000	2,100	0.7	0.5	0.2	1.4
1980	321,000	3,000	1.0	0.8	0.3	2.1
1981	344,000	7,500	2.3	2.1	0.9	5.3
1982	367,000	15,500	6.1	4.7	2.0	12.8
1983	391,000	28,500	11.8	9.0	3.8	24.6

(ii) Costs of congestion with traffic management (£M)

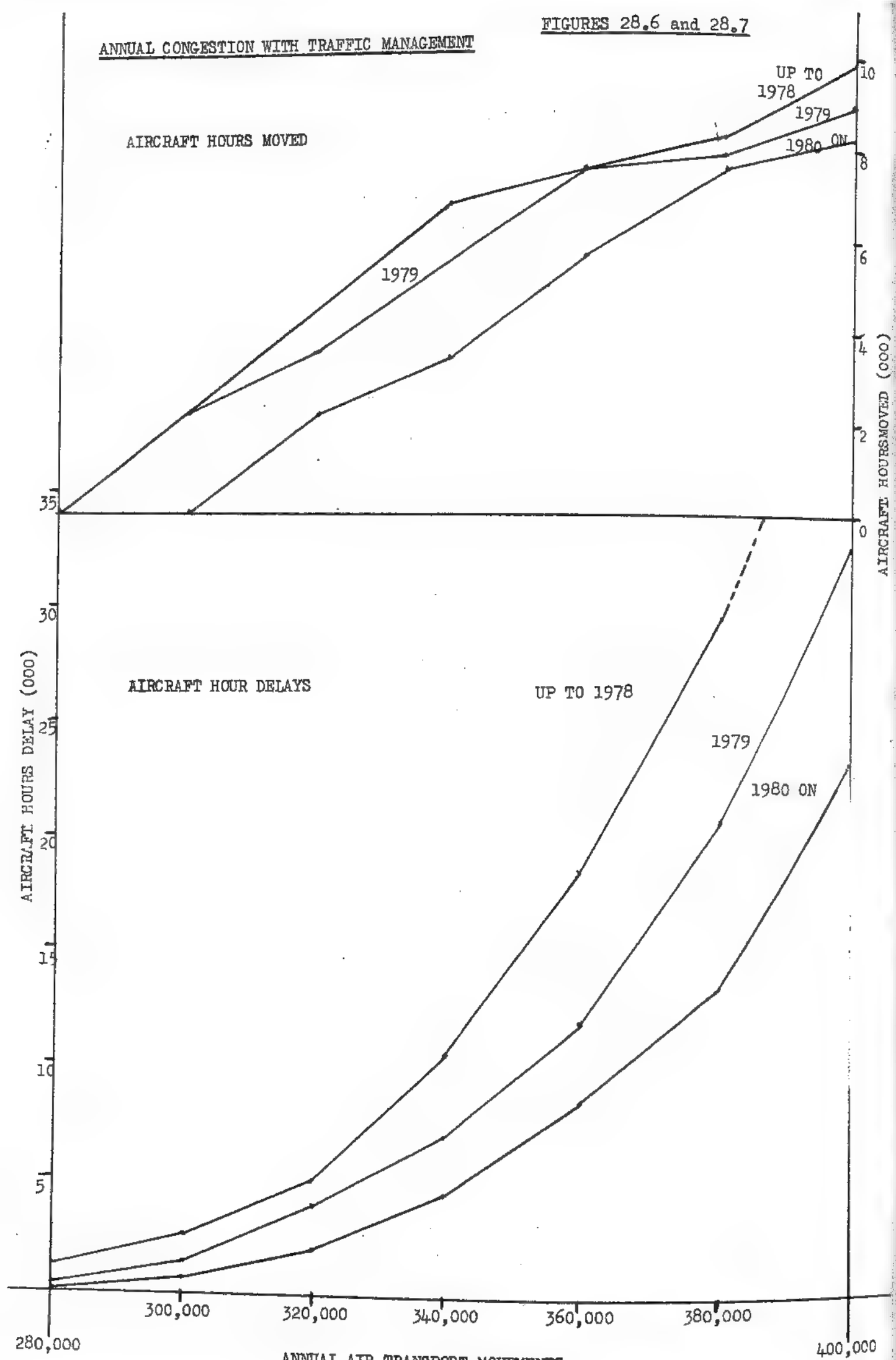
	Air transport movements	*Delay hours*	*Aircraft hours moved*	*Operating losses*	*Lost utilisation*	*Lost traffic*	*Traffic management costs*	*Total costs*
1978	282,000	1,200	100	0.4	0.3	0.1	—	0.8
1979	301,000	1,500	2,200	0.5	0.4	0.2	0.2	1.3
1980	321,000	2,200	2,300	0.8	0.6	0.3	0.3	2.0
1981	344,000	5,500	3,800	1.9	1.5	0.9	0.5	4.8
1982	367,000	10,500	6,200	3.9	3.2	2.0	0.8	9.9
1983	391,000	19,200	7,800	7.5	6.1	3.8	1.1	18.5

The timing of the third London airport in an uncertain future

28.77 The Board of Trade Working Party on Traffic and Capacity forecast not only

Printed image digitised by the University of Southampton Library Digitisation Unit

FIGURES 28.6 and 28.7



Printed image digitised by the University of Southampton Library Digitisation Unit

the most likely levels of future traffic, but also low and high levels of future traffic.

Table 28.17

Working Party on Traffic and Capacity forecasts

	Passengers (million)			*Air transport movements (000)*		
	Low	*Likely*	*High*	*Low*	*Likely*	*High*
1975	29.2	33.2	36.9	318	360	400
1981	48.6	60.1	70.3	369	450	523

(see volume VIII part 2, section 1)

28.78 There was a difference between the most likely forecasts and the low and high figures in the ranges for passengers and for aircraft of about 12 per cent in 1975, rising to 18 per cent in 1981. As there is generally a correlation between the rate of passenger growth and increases in aircraft size, there is a greater probability that the number of air transport movements will tend to the most likely point and a smaller probability that they will fall outside the range.

28.79 The Working Party attached a probability of 80 per cent to the likelihood of the actual passengers falling within the forecast range. In this analysis a probability of 90 per cent was attached to the same range for forecasts of air transport movements, the most likely plus or minus 12 per cent in 1975 to plus or minus 18 per cent in 1981. The probability is increased from that of the Working Party because the independent research on forecasts in chapter 4 closely supported the central forecasts of the Working Party's work and because of the greater confidence which can be attached to the range for forecasts of air transport movements.

Table 28.18

Forecasts of air transport movements (H
90 per cent probability

	Low	*Total Most likely*	*High*
1975	323	367	411
1976	335	385	435
1977	348	405	462
1978	361	425	489
1979	375	446	517
1980	388	468	548
1981	403	492	581
1982	418	516	614
1983	441	541	641

The cost estimates in table 28.19
the most likely forecast, giver

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 28.19

Expected congestion costs (£M)

1978

Forecast air transport movements	182-202	202-222	222-242	242-262	262-282	282-302	302-322	322-342	342-362	362-382	Total expected cost
Probability	.02	.04	.09	.15	.20	.20	.15	.09	.04	.02	
Cost	–	–	–	–	0.4	1.5	3.7	6.8	11.6	18.9	
Expected cost	–	–	–	–	0.1	0.3	0.6	0.6	0.5	0.4	2.5

1979

Forecast air transport movements	201-221	221-241	241-261	261-281	281-301	301-321	321-341	341-361	361-381	381-401	Total expected cost
Probability	.03	.05	.10	.14	.18	.18	.14	.10	.05	.03	
Cost	–	–	–	–	0.9	2.4	4.8	7.9	13.2	21.0	
Expected cost	–	–	–	–	0.2	0.4	0.7	0.8	0.7	0.6	3.4

1980

Forecast air transport movements	201-221	221-241	241-261	261-281	281-301	301-321	321-341	341-361	361-381	381-401	401-421	421-441	Total expected cost
Probability	.02	.03	.06	.10	.13	.16	.16	.13	.10	.06	.03	.02	
Cost	–	–	–	–	0.4	1.5	3.3	6.6	11.3	17.7	29.4	48.8	
Expected cost					0.1	0.2	0.5	0.9	1.1	1.1	0.9	1.0	5.8

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 28.19 (cont)

1981

Forecast air transport movements	224-244	244-264	264-284	284-304	304-324	324-344	344-364	364-384	384-404	404-424	424-444	444-464	Total expected cost
Probability	.04	.04	.06	.10	.12	.14	.14	.12	.10	.06	.04	.04	
Cost	–	–	–	0.5	1.9	3.9	7.6	12.9	20.5	34.1	56.6	94.0	
Expected cost	–	–	–	0.1	0.2	0.5	1.0	1.5	2.1	2.0	2.3	3.8	13.5

1982

Forecast air transport movements	247-267	267-287	287-307	307-327	327-347	347-367	367-387	387-407	407-427	427-447	447-467	467-487	Total expected cost
Probability	.04	.05	.07	.10	.11	.13	.13	.11	.10	.07	.05	.04	
Cost	–	–	0.5	1.9	3.9	7.6	12.9	20.5	34.0	56.4	93.6	155.4	
Expected cost	–	–	–	0.2	0.4	1.0	1.7	2.3	3.4	3.9	4.7	6.2	23.8

1983

Forecast air transport movements	271-291	291-311	311-331	331-351	351-371	371-391	391-411	411-431	431-451	451-471	471-491	491-511	Total expected cost
Probability	.03	.05	.07	.10	.12	.13	.13	.12	.10	.07	.05	.03	
Cost	–	0.7	2.4	4.7	8.9	14.9	23.0	38.2	63.4	105.2	174.6	289.8	
Expected cost	–	–	0.2	0.5	1.1	1.9	3.0	4.6	6.3	7.4	8.7	8.7	42.4

28.80 The probabilities of the "residual" traffic are calculated for each range of 20,000 air transport movements a year between 1978 – 83. The costs of congestion were estimated for the mid point of these ranges on the basis of a traffic management policy. The total "expected costs" for any year were the sum of the products of the probabilities of the forecasts and the respective congestion costs.

Conclusion

28.81 One possible strategy for dealing with uncertainty would be to adopt a flexible building programme. If, during the construction period, the opening date appeared to be premature, the building programme would be stretched out and expenditure deferred. If the number of movements were rising faster than had been forecast, a crash building programme would be initiated.

28.82 It was difficult to estimate the savings from a flexible construction policy. First, the amount of capital expenditure which could be deferred would depend on when the decision to stretch the programme was taken. Secondly, a stretched programme is inefficient. Building early as an insurance policy involves a loss of planning time and denial of a year's learning about contemporary airport construction. A stretched building programme will also involve employing some labour on the airport longer than necessary. On the other hand, the savings of a stretched programme must be compared with the benefits of a crash programme. While the possibility of adopting a flexible building strategy means that the real costs of being late or early may be lower than has been suggested in this chapter, the costs and benefits of adopting it are so balanced that they are unlikely to alter the conclusions of the analysis.

28.83 The costs of congestion are summarised in table 28.20

Table 28.20

Costs of congestion without a third London airport (£M)

	Costs under most likely forecasts		*Expected congestion costs*
	Neutral traffic policy	*Traffic management policy*	*Traffic management policy*
1978	0.8	0.8	2.5
1979	1.4	1.3	3.4
1980	2.1	2.0	5.8
1981	5.3	4.8	13.5
1982	12.8	9.9	23.8
1983	24.6	18.5	42.4

28.84 The expected congestion costs in table 28.20 are the most relevant figures as they reflect the full spectrum of possibilities in an uncertain future. The expected costs can be compared with the costs of £22m of bringing the airport forward a year. Since the first runway at all the sites can be in operation at least 5 years earlier, this would be a perfectly feasible opening date.

Printed image digitised by the University of Southampton Library Digitisation Unit

28.85 Table 28.21 below shows the relationship between various assumptions and the dates when the costs of congestion would exceed the costs of bringing forward the airport a year as estimated in this chapter. The assumptions are:

a) the Research Team's forecasts with a probability range as in this chapter and the upper forecasts of the British Airports Authority (see volume IX of the Commission's Papers and Proceedings) which are assumed to be 100 per cent certain,

b) the full use of one runway at Gatwick and of Luton as defined in this chapter and the restricted use of either or both, where restricted is taken to be 30,000 movements per annum below the capacity of the respective airport,

c) a neutral traffic policy and a traffic management policy.

These assumptions are not the only ones which might vary, but they indicate the sensitivity of the opening date to the assumptions which are made.

Table 28.21

Dates for the third London airport under different assumptions

Date	*Forecasts*	*Use of Gatwick*	*Use of Luton*	*Traffic policy*
1976	BAA upper	Restricted	Restricted	Neutral
1977	BAA upper	Full	Restricted	Neutral
1978	BAA upper	Full	Full	Neutral
1979	BAA upper	Full	Full	Managed
1980	Research Team	Full	Restricted	Neutral
1981	Research Team	Full	Full	Neutral
1982	Research Team	Full	Full	Managed
1983	Working Party (on Traffic and Capacity)	Full	Full	Managed
1985	Working Party (on Traffic and Capacity)	Restricted	Restricted	Neutral

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Introduction

29.1 This chapter summarises and aggregates the costings and evaluations set out in the preceding chapters. Table 29.1 below brings together the costs and benefits as assessed in the earlier chapters. The discounted costs include both capital costs and recurrent costs, such as surface access user costs which are incurred throughout the life of the airport. The capital costs themselves are not all incurred at the date of opening the airport, some falling before this date and some after. In order to compare these costs, a common way has to be found which takes account of the date of their incidence. This is achieved by the discounting process, which expresses all costs and benefits as though they were incurred in a common base year. For example, if a bill of £100 has to be paid in 7 years time, the sum of money to be set aside, which will earn compound interest at, say, 10 per cent per annum, is only around £50.

29.2 The choice of base year for the purpose of discounting is immaterial to the ranking of the sites and does not affect the proportional differences between them; it does however affect the absolute differences. Since the airport has been assumed to open in 1982, the choice of 1975 as base year has the effect of making total costs and inter-site differences about half as great as might be expected. If 1970 had been used as base year, the effect would have been to make the costs appear only about one third as great. The final two rows of table 29.1 therefore shows the total net costs for each site with the base year 1982, the year when the bulk of the recurrent costs commences. These "1982" figures give a more meaningful measure of the actual costs and benefits involved.

29.3 The costs shown in row 2 of table 29.1 assume that Luton airport would close if any of the inland sites were chosen. The credit (shown as £1.3 million) represents the residual value of the present site – see paragraph 12.25 of chapter 12. It was thought likely that if Foulness were chosen Luton airport would continue in operation and be extended at an estimated cost of £10 million (see paragraph 12.23 of chapter 12). In addition the noise costs from the use of Luton have been estimated at £6.7 million as shown in row 16 (see paragraph 20.43). The alternative assumption that Luton would be closed was thought to be sub-optimal as the extra cost of construction at Foulness and the extra surface access costs of travelling there would probably outweigh the savings in construction and noise costs at Luton.

29.4 The costs shown in row 5 are the costs of flying and passenger time within an enlarged London terminal area. They are roughly proportional

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 29.1

Summary of best estimates of cost and benefits (£M 1968 prices, discounted to 1975, final row discounted to 1982)

Row	*Tables*	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
1	7.20	Third London airport construction	184.0	179.0	178.0	166.0
2	para 12, 23 & 25	Extension/closure of Luton airport	– 1.3	10.0	– 1.3	– 1.3
3	7.20	Airport services	74.6	62.9	70.7	67.2
4	10.10	Meteorology	5.0	1.6	3.0	2.0
5	12.5	Airspace movement	960.0	973.0	987.0	972.0
6	13.14	Passenger user costs	887.0	1,041.0	868.0	889.0
7	13.25	Freight user costs	13.4	23.1	17.0	13.9
8	13.22	Road capital	7.4	7.4	7.5	2.7
9	13.23	Rail capital	4.4	16.0	8.0	3.8
10	14.14	Air safety	0.5	2.5	0.5	0.5
11	15.14	Defence	66.0	20.0	52.0	73.0
12	16.1-2	Public scientific establishments	2.0	3.4	11.2	16.6
13	17.3,6 & 7	Private airfields	8.7	3.1	9.8	12.2
14	20.6	Residential conditions (noise, off site)	9.0	3.6	19.0	5.6
15	20.6	Residential conditions (on site)	4.8	–	3.0	2.4
16	para 20. 43	Luton noise costs	–	6.7	–	–
17	21.6, 7, 13 & 16	Schools, hospitals and public authority buildings (including noise)	2.5	0.8	4.1	4.9
18	22.3	Agriculture	3.1	4.2	7.2	4.6
19	23.6	Commerce and industry (including noise)	0.6	0.1	1.2	2.0
20	24.12	Recreation (including noise)	6.7	0.3	3.6	3.8
21	25.5	Work and service journeys to airport	26.2	26.5	24.4	25.4

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 29.1 (continued)

Row	*Tables*	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
22		*Total net costs (discounted to 1975)*	2,264.6	2,385.2	2,273.9	2,266.3
23		*Total net costs (discounted to 1975) expressed as differences from lowest cost site*	0	120.6	9.3	1.7
24		**Total net costs (discounted to 1982)**	**4,416**	**4,651**	**4,434**	**4,419**
25		**Total net costs (discounted to 1982) expressed as differences from lowest cost site**	**0**	**235**	**18**	**3**

Note: for the convenience of the reader the costs directly attributable to noise discounted to 1975 have been extracted from rows 12, 14, 16, 17, 19 and 20, and amount to:

£14.3 million for Cublington, £11.1 million for Foulness, £23.9 million for Nuthampstead, £14.4 million for Thurleigh.

Discounted to 1982 they are:

£28 million for Cublington, £22 million for Foulness, £47 million for Nuthampstead, £28 million for Thurleigh.

Printed image digitised by the University of Southampton Library Digitisation Unit

to crow-flight distances between sites and destinations, weighted by the relative number of flights to each destination and taking account of the need for any circuitous routings, which applies particularly to Nuthampstead.

29.5 Row 6 shows for Foulness the resource and travellers' time costs, this being the site which generates least total traffic; for the other sites the figure shown represents (a) the total resource and travellers' time costs, less (b) the benefits to additional traffic generated by those sites, and (c) any other benefits from trip redistribution. An indication of the magnitude of the benefits (b) and (c) has been obtained from a computer run of the traffic model, which compared the Foulness and Thurleigh sites on the basis of constant trips (see paragraph 13.57 of chapter 13). This produced an average figure of about £2 per passenger. On this basis, the benefits accruing to additional traffic generated at Cublington, Nuthampstead and Thurleigh were £44 million, £27 million and £42 million respectively.

29.6 The differences between the figures in row 6 correspond to the net benefits shown in the bottom row of table 13.14.

29.7 The figures in row 14 represent the total costs and dis-benefits caused by aircraft noise to residents; the costs accruing, broadly, to those leaving the area for noise and other reasons, the dis-benefits being suffered by those remaining. The total costs and dis-benefits average about £125 per person affected, discounted to 1975.

Analysis of the best estimate of costs and benefits

29.8 There follow breakdowns of the costs and benefits in two different ways under three heads.

Analysis by incidence

29.9 (a) *Costs falling on non-business air travellers (table 29.2).* The principle followed in table 29.2 below is to sum the costs of airport construction and services, airspace movements, meteorology, air safety and surface transport infrastructure and to add to these the costs of site acquisition. These total costs are then divided between business and non-business passengers proportionately to their numbers. To the 75 per cent of airport site costs allocated to non-business passengers are added the surface access resource costs and travellers' time, and the generated traffic benefits applicable to this group.

(b) *Local interests, public and private (table 29.3).* This group of costs represents the local impact of the airport other than the acquisition of the airport land itself.

(c) *Central government and the general public (table 29.4).* These are defence and public scientific establishment costs, plus the costs falling on business air travellers and air freight, made up of the 25 per cent of airport costs allocated to this group, plus the relevant user costs and generated traffic benefits.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 29.2

Costs falling on non-business air travellers (£M 1968 prices discounted to 1975, final row discounted to 1982)

Row of table 29.1	*Tables*		*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
1	7.20	Third London airport construction	184.0	179.0	178.0	166.0
2	Paras 12.23 & 25	Extension/closure of Luton airport	– 1.3	10.0	– 1.3	– 1.3
3	7.20	Airport services	74.6	62.9	70.7	67.2
4	10.10	Meteorology	5.0	1.6	3.0	2.0
5	12.5	Airspace movement	960.0	973.0	987.0	972.0
8	13.22	Road capital	7.4	7.4	7.5	2.7
9	13.23	Rail capital	4.4	16.0	8.0	3.8
10	14.14	Air safety	0.5	2.5	0.5	0.5
		All on-site costs for:				
15	20.6	Residential conditions (see table 29.3)[1]	3.5	–	2.1	1.6
17	21.6 & 16	Schools, hospitals and other public authority buildings	0.3	–	0.1	0.2
18	22.3	Agriculture	2.7	–	4.2	4.5
19	23.6	Commerce and industry	0.6	0.1	0.2	0.1
20	24.12	Recreation	–	0.3	–	–
		Total of above	1,241.7	1,249.8	1,260.0	1,219.3
		Proportion (75%) of airport site costs	931.3	937.4	945.0	914.5
6	13.14	Passenger user costs (net of benefits)[2]	419.0	535.0	410.0	412.0
		Total net costs (discounted to 1975)	1,350.3	1,472.4	1,355.0	1,326.5
		Total net costs (discounted to 1982)	**2,633.1**	**2,871.2**	**2,642.2**	**2,586.7**

1. This cost is the estimated market value of property on the site plus 16 per cent for disturbance. The remainder of the housing cost (that is, loss of consumer surplus to residents) is included in table 29.3.
2. Non-business travel only.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 29.3

Costs falling on local interests, public and private (£M 1968 prices discounted to 1975, final row discounted to 1982)

Row of table 29.1	*Tables*	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
14,15	20.6	Residential conditions[1]	13.8	10.3	22.0	8.0
17	21.6, 7, 13, 16	Schools, hospitals and public authority buildings[1]	2.5	0.8	4.1	4.9
18	22.3	Agriculture[1]	3.1	4.2	7.2	4.6
19	23.6	Commerce and industry[1]	0.6	0.1	1.2	2.0
20	24.12	Recreation [1]	6.7	0.3	3.6	3.8
21	25.5	Work and service journeys to airport	26.2	26.5	24.4	25.4
13	17.3, 6 & 7	Private airfields	8.7	3.1	9.8	12.2
		Less				
		All on-site costs included in table 29.2	– 7.1	– 0.4	– 6.6	– 6.4
		Total net costs (discounted to 1975)	54.5	44.9	65.7	54.5
		Total net costs (discounted to 1982)	**106**	**88**	**128**	**106**

1. The costs in these rows are the total costs shown in the corresponding rows in table 29.1. That part of these costs which has already been included in table 29.2 is deducted in the last row above the totals.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 29.4

Costs falling on central government and general public (£M 1968 prices discounted to 1975, final row discounted to 1982)

Row of table 29.1	*Tables*	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
11	15.1-4	Defence	66.0	20.0	52.0	73.0
12	16.1-2	Public scientific establishments	2.0	3.4	11.2	16.6
		Proportion (25%) of airport and on-site costs (see table 29.2).	59.2	59.5	60.3	52.6
6	13.14	Passenger user costs (net of benefits) [1]	468.0	506.0	458.0	477.0
7	13.25	Freight user costs	13.4	23.1	17.0	13.9
		Total net costs (discounted to 1975)	608.6	612.0	598.5	633.1
		Total net costs (discounted to 1982)	**1,187**	**1,193**	**1,167**	**1,234**

1. Business travel only

Analysis by type of cost and benefit

29.10 In this analysis the best estimates of costs and benefits have been broken down into three broad categories:

(a) capital resource costs (table 29.5),

(b) current or operating resource costs (table 29.6),

(c) changes in, or differences in, benefits (table 29.7).

Table 29.5

Summary of capital costs (£M 1968 prices, discounted to 1975, final row discounted to 1982)

Row of table 29.1	*Table*	*Element of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
1	7.20	Third London airport construction	184.0	179.0	178.0	166.0
2	para 12 23	Extension/closure of Luton airport	– 1.3	10.0	– 1.3	– 1.3
3	7.20	Airport services (capital)	14.3	9.8	14.5	11.6
8	13.22	Road capital	7.4	7.4	7.5	2.7
9	13.23	Rail capital	4.4	16.0	8.0	3.8
10	14.14	Air safety	–	0.4	–	–
11	15.1-4	Defence	66.0	20.0	52.0	73.0
12	16.1-2	Public scientific establishments	1.4	1.0	5.9	11.2
13	17.3, 6 & 7	Private airfields	2.9	–	5.5	8.2
15	20.6	Residential conditions (on site)	3.5	–	2.1	1.6
16	para 20.43	Luton noise costs	–	4.0	–	–
17	21.6, 7, 13 & 16	Schools, hospitals and public authority buildings (including noise)	2.5	0.8	4.1	4.9
18	22.3	Agriculture	3.1	4.2	7.2	4.6
19	23.6	Commerce and industry (including noise)	0.6	0.1	1.2	2.0
		Total net costs (discounted to 1975)	288.8	252.7	284.7	288.3
		Total net costs (discounted to 1982)	**563**	**493**	**555**	**562**

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 29.6

Summary of current and operating costs (£M 1968 prices, discounted to 1975, final row discounted to 1982)

Row of table 29.1	*Table*	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
3	7.20	Airport services (operating)	60.3	53.1	56.2	55.6
4	10.10	Meteorology	5.0	1.6	3.0	2.0
5	12.5	Airspace movement	960.0	973.0	987.0	972.0
6	13.14	Passenger user costs (net of benefits)[1]	660.0	672.0	640.0	656.0
7	13.25	Freight user costs	13.4	23.1	17.0	13.9
10	14.14	Air safety	0.5	2.1	0.5	0.5
12	16.1-2	Public scientific establishments	0.6	0.4	0.3	0.4
13	17.3, 6 & 7	Private airfields	5.8	3.1	4.3	4.0
15	20.6	Residential conditions (on site)	0.5	–	0.4	0.3
21	25.5	Work and service journeys to airport	26.2	26.5	24.4	25.4
		Total net costs (discounted to 1975)	1,732.3	1,754.9	1,733.1	1,730.1
		Total net costs (discounted to 1982)	**3,378**	**3,422**	**3,380**	**3,374**

1. Excluding non-business travellers' time.

Table 29.7

Summary of changes of differences in benefits (£M 1968 prices, discounted to 1975, final row discounted to 1982)

Row of table 29.1	*Table*	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
6	13.14	Passenger user costs (non-business travellers' time)	377.0	369.0	358.0	373.0
		Passenger user net benefits adjusted for site specific resource cost differences	−150.0	–	−130.0	−140.0
12	16.1-2	Public scientific establishments	–	2.0	5.0	5.0
14	20.6	Residential conditions (noise, off site)	9.0	3.6	19.0	5.6
15	20.6	Residential conditions (on site)	0.8	–	0.5	0.5
16	20.43	Luton noise costs	–	2.7	–	–
20	24.12	Recreation (including noise)	6.7	0.3	3.6	3.8
		Total net costs (discounted to 1975)	243.5	377.6	256.1	247.9
		Total net costs (discounted to 1982)	**475**	**736**	**499**	**483**

Printed image digitised by the University of Southampton Library Digitisation Unit

Sensitivity analysis

29.11 Tables 29.8 to 29.28 show the results which would have been obtained if, instead of the basis of evaluation used in table 29.1, the assumptions included in table 29.30 were made. Tables 29.8 to 29.14 are shown below. Tables 29.15 to 29.28 are not shown below but are available from the Commission Secretary, if required. The figures shown in brackets in the table represent the total costs expressed as differences from the lowest cost site.

Table 29.8

Excluding costs of foreign non-business passengers (£M)

Row of table 29.1	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
5	Airspace movements	947	961	975	958
6	Passenger user costs (relative costs only)	15	155	0	11
	Total net costs (discounted to 1975) expressed as differences from lowest cost site.	6	113	20	0
	Total net costs (discounted to 1982) expressed as differences from lowest cost site.	12	220	39	0

Table 29.9

Value of leisure time zero (£M)

Row of table 29.1	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
5	Airspace movement costs	916	929	943	929
		616	693	606	617
6	Passenger user costs	1,849	1,893	1,868	1,851
	Total net costs (discounted to 1975)	(0)	(44)	(19)	(2)
	Total net costs (discounted to 1982)	3,606	3,691	3,643	3,609
		(0)	(85)	(37)	(3)

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 29.10

Value of leisure time doubled (£M)

Row of table 29.1	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
5	Airspace movement costs	1,004	1,017	1,031	1,015
6	Passenger user costs	1,158	1,389	1,130	1,161
	Total net costs (discounted to 1975)	2,580	2,777	2,580	2,581
		(0)	(197)	(0)	(1)
	Total net costs (discounted to 1982)	**5,031**	**5,416**	**5,031**	**5,033**
		(0)	**(385)**	**(0)**	**(2)**

Table 29.11

Value of business time reduced by 25 per cent (£M)

Row of table 29.1	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
5	Airspace movement	929	940	954	939
6	Passenger user costs (net of benefits)	801	946	783	803
	Total net costs (discounted to 1975)	2,148	2,257	2,156	2,147
		(1)	(110)	(9)	(0)
	Total net costs (discounted to 1982)	**4,189**	**4,401**	**4,204**	**4,187**
		(2)	**(214)**	**(17)**	**(0)**

Table 29.12

Value of business time increased by 25 per cent (£M)

Row of table 29.1	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
5	Airspace movement	991	1,006	1,020	1,005
6	Passenger user costs (net of benefits)	973	1,136	953	975
	Total net costs (discounted to 1975)	2,382	2,513	2,392	2,385
		(0)	(131)	(10)	(3)
	Total net cost (discounted to 1982)	**4,645**	**4,900**	**4,664**	**4,651**
		(0)	**(255)**	**(19)**	**(6)**

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 29.13

NNI values increased by 5 (£M)

Row of table 29.1	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
14	Residential conditions (noise, off site)	17	7	35	12
16	Luton noise	–	8	–	–
	Total net costs (discounted to 1975)	2,273	2,393	2,290	2,273
		(0)	(+120)	(+17)	(0)
	Total net costs (discounted to 1982)	**4,432**	**4,667**	**4,465**	**4,433**
		(0)	**(+235)**	**(+33)**	**(1)**

Table 29.14

Excluding generated trips (£M)

Row of table 29.1	*Elements of cost or benefit*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
6	Passenger user costs (net of benefits)	931	1,041	895	931
	Total net costs (discounted to 1975)	2,309	2,385	2,301	2,308
		(8)	(84)	(0)	(7)
	Total net costs (discounted to 1982)	**4,503**	**4,651**	**4,487**	**4,501**
		(16)	**(164)**	**(0)**	**(14)**

29.12 Tables 29.29 to 29.31 summarize the results of the sensitivity costs. Table 29.29 shows for each site the sensitivity tables which show this site as being the minimum cost site.

Table 29.29

Site	*Tables*
Cublington	29.1, 29.9, 29.10 (=), 29.12, 29.13 (=), 29.17, 29.18, 29.21, 29.23.
Foulness	nil
Nuthampstead	29.10 (=), 29.14, 29.24, 29.25.
Thurleigh	29.8, 29.11, 29.13 (=), 29.15, 29.16, 29.19, 29.20, 29.22, 29.26, 29.27, 29.28.

29.13 Tables 29.30 and 29.31 show the inter-site differences for the cost-benefit results and all the sensitivity tables. Table 29.30 shows differences in costs and benefits discounted to 1975 and table 29.31 shows them discounted to 1982.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 29.30

Inter-site differences (£M, discounted to 1975)

Table number	*Basis*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
29.1	Cost-benefit study	0	121	9	2
29.8	Excluding foreign leisure	6	113	20	0
29.9	Leisure time zero	0	44	19	2
29.10	Leisure time doubled	0	197	0	1
29.11	Business time - 25%	1	110	9	0
29.12	Business time + 25%	0	131	10	3
29.13	NNI + 5	0	120	17	0
29.14	No generated trips	8	84	0	7
29.15	No foreign leisure NNI + 5	7	112	29	0
29.16	Business time - 25%) Leisure time zero)	10	42	28	0
29.17	Business + 25%) Leisure time zero)	0	54	19	3
29.18	Business + 25%) Leisure time doubled)	0	208	1	3
29.19	Business time - 25%) Leisure time doubled)	9	195	8	0
29.20	Business time - 25%) Leisure time zero) NNI + 5)	11	43	37	0
29.21	Business + 25%) Leisure time zero) NNI + 5)	0	54	27	2
29.22	Business time - 25%) Leisure time doubled) NNI + 5)	10	196	17	0

Table 29.30 (continued)

Table number	*Basis*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
29.23	Business time + 25%)				
	Leisure time doubled)	0	208	9	2
	NNI + 5)				
29.24	No generated trips)				
	Business time - 25%)	7	74	0	6
29.25	No generated trips)				
	Business time + 25%)	7	94	0	8
29.26	No generated trips)				
	Business time - 25%)	5	67	4	0
	NNI + 5)				
29.27	No generated trips)				
	Business time + 25%)	1	85	2	0
	NNI + 5)				
29.28	No generated trips)				
	NNI + 5)	5	76	3	0

Printed Image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 29.31

Inter-site differences (£M. discounted to 1982)

Table number	*Basis*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
29.1	Cost-benefit study	0	235	18	3
29.8	Excluding foreign leisure	12	220	39	0
29.9	Leisure time zero	0	85	37	3
29.10	Leisure time doubled	0	385	0	2
29.11	Business time - 25%	2	214	17	0
29.12	Business time + 25%	0	255	19	6
29.23	NNI + 5	0	235	33	1
29.14	No generated trips	16	164	0	14
29.15	No foreign leisure) NNI + 5)	14	218	57	0
29.16	Business time - 25%) Leisure time zero)	20	82	55	0
29.17	Business time + 25%) Leisure time zero)	0	105	37	5
29.18	Business time + 25%) Leisure time doubled)	0	406	2	6
29.19	Business time - 25%) Leisure time doubled)	17	380	15	0
29.20	Business time - 25%) Leisure time zero) NNI + 5)	22	84	72	0
29.21	Business time + 25%) Leisure time zero) NNI + 5)	0	105	52	3

Table 29.31 (continued)

Table number	*Basis*	*Cublington*	*Foulness*	*Nuthampstead*	*Thurleigh*
29.22	Business time - 25%) Leisure time doubled) NNI + 5)	19	382	32	0
29.23	Business time + 25%) Leisure time doubled) NNI + 5)	0	406	17	4
29.24	No generated trips) Business time - 25%)	13	144	0	11
29.25	No generated trips) Business time + 25%)	14	184	0	15
29.26	No generated trips) Business time - 25%) NNI + 5)	10	131	8	0
29.27	No generated trips) Business time + 25%) NNI + 5)	2	166	4	0
29.28	No generated trips) NNI + 5)	6	153	6	0

Printed image digitised by the University of Southampton Library Digitisation Unit

Glossary of terms

Accessibility index: a measure of an airport's attraction to surface access passengers based upon the geographical locations of zones in relation to all the airports analysed in the gravity model system.

Aircraft movement: a landing or a take-off of an aircraft.

Airlane: a route commonly used by aircraft flying between two airports.

Air freight: imports and exports of commercial cargo and mail; excludes car ferry traffic, excess baggage and airline stores.

Air-side limitations: limitations on airport capacity caused by airspace interference by other airports.

Air transport movement: a landing or take-off of an aircraft operating a scheduled or non-scheduled service.

Attracted traffic: trips by air passengers using a particular airport in the gravity model (cf. **Generated traffic**).

Behavioural costs: the costs which on analysis are implied by people's travel behaviour.

Biochemical oxygen demand: a measure of the demand for oxygen in water: the amount of oxygen consumed at 20^{o} centigrade in five days in the biochemical oxidation of organic matter in a water.

Close parallel runways: a runway configuration in which two runways have sufficient separation or stagger to permit arrivals on one runway and independent departures on the other (cf. **Indepedent parallels**).

Consumer surplus: the value attached by an individual to land, goods or services over and above their market price.

Controlled airpsace: the volume of airspace in which all aircraft are under the supervision and control of the Air Traffic Control authorities.

Course: prepared material placed to form a continuous layer of the pavement.

Cross wind component: the speed of a wind blowing in any direction expressed in terms of an equivalent speed at right angles to the runway.

Design storm: the intensity and duration of rainfall assumed for designing the surface water system expressed as the storm expected to re-occur within a given number of years (i.e. 1 in 20 years storm).

Direct employment: see **Primary employment**

Factor cost: see **Resource cost**

Printed image digitised by the University of Southampton Library Digitisation Unit

General aviation movements: movements by private business executive and flying club aircraft or aircraft engaged on local pleasure flights, crop spraying or air photography.

Generated traffic: trips by air passengers originating from or destined for UK zones in the gravity model (cf. **Attracted traffic**)

Glide path: the final approach by an aircraft before it reaches the runway threshold.

Gravity model: a model (q.v.) which forecasts the number of trips from each generating zone to each attracting zone, given the totals of generated and attracted trips at each zone, using a formula analagous to Newton's Law of Gravity.

Ground-side limitations: limitations on airport capacity of installations on the ground, such as terminal buildings and access facilities. (cf. **Air side limitations**)

Independent parallel runways: a runway configuration in which runways are spaced sufficiently apart to permit each one to carry its own independent stream of landing aircraft and its own independent stream of departing aircraft (cf. **Close parallels**).

Landing threshold: the beginning of that portion of the runway usable for landing.

Leisure passengers: see **Non-business passengers.**

Load factor: the ratio of the number of passengers carried to the number of seats available in an aircraft.

London terminal area: the controlled airspace surrounding London.

Mixed mode operations: the use of a runway for both landings and take-offs (cf. **Segregated mode**).

Modal split: the division of total surface access traffic into two modes of travel, road and rail.

Model: a set of mathematical relationships or formulae which represents some elements of a real life situation or real life behaviour (see **Gravity model**).

Modulus of subgrade reaction: a measure of the strength of the subgrade: the slope of the straight line extending from the origin to a point corresponding to a given deformation on a stress/deformation curve obtained from field bearing tests.

Negative shoulder: a shoulder which slopes downwards from the edge of the pavement.

Noise abatement procedures: methods of reducing the effect of noise over built-up areas by cutting back on engine power at specified points, increasing planes' gain in height on take-off, and limitations on aircraft movements at night. At Heathrow at present aircraft must not make noise of more than 110 PNdB by day or 102 PNdB by night at the monitoring points (between 4½-5 miles from commencement of take-off).

Non-business passengers, also called Leisure passengers: passengers whose air journeys are not solely for business or professional purposes.

Printed image digitised by the University of Southampton Library Digitisation Unit

Non-scheduled services: flights by airlines, other than scheduled services, carrying passengers or cargo from one airport to another.

Omni-directionality: the ability of an airport to serve all destinations. (cf. **Sectorization**).

Other movements: non-commercial flights by air transport operators such as positioning flights; flights carrying their own personnel or stores; air transport flights forced to return to base because of bad weather, engine failure or other causes; and miscellaneous non-transport flights such as those for commercial delivery of aircraft etc.

Path stretching: a method of conflict resolution by making aircraft take longer routes to delay their entry to the final approach path to runways.

Plan 1: plans of the four airport sub-regions in 1981 based on current plans of local authorities, development corporations etc. assuming no airport in the area.

Plan 2: plans assuming airport with 45,000 direct employees. For each site it consists of Plan 1 with the addition of the urban requirements of the population generated by the airport, the re-location of any development in Plan 1 that would be inhibited by the airport or its noise envelope, and any changes in Plan 1 necessitated by the addition of the above mentioned urban development to Plan 1.

Plan 3: Plan 2 with an addition of 20,000 direct airport employees and their dependent population, and provision for the estimated growth between 1981 and 2000 of the industries contained in Plan 1.

Planning: **local** - planning and controlling development in a limited area, in this case the area immediately surrounding the airport; **regional** - planning and controlling development over a wider area, in this case, the south east region and the adjacent regions.

Primary employment: those directly engaged on the airport.

Producers' surplus: any transitory abnormal profit element in the costs of land, goods and services used.

"Push-back" operations: the operation of pushing back the aircraft from its stand position with a tractor.

Resource costs (also known as **Factor cost**): the real cost to the community of goods and services consumed, in terms of the value of resources in the next most valuable use.

Scheduled services: services publicly advertised by an airline through its issued time-tables and notices, including relief services to a scheduled service.

Secondary employment: those engaged in manufacturing industry and commercial projects attracted specifically by the location of the airport.

Sectorization: ability of an airport to serve only a particular group of destinations (cf. **Omni-directionality**).

Segregated mode: the operation of a two-runway airport with one runway for landings only and the other for take-offs only (cf. **Mixed mode**).

Service interval: the gap between two aircraft to minimise the effect of turbulence of the first on the following aircraft.

Printed image digitised by the University of Southampton Library Digitisation Unit

Short take-off and landing (STOL) aircraft: aircraft able to take-off and land in distances of 3,000 - 4,000 ft.

Shoulder: an area adjacent to the edge of a paved surface so prepared as to provide a transition between the pavement and the adjacent surface for aircraft running off the pavement.

Stand position: the position in which the aircraft stands to embark and disembark passengers and freight.

Subgrade: the natural foundation or the fill which directly received the loads from the pavement.

Subgrade characteristics: the physical characteristics of the subgrade.

Surface access air passengers: terminal air passengers who make journeys to or from the airport by surface transport.

Sustainable runway capacity: the number of movements per hour which gives rise to a mean delay of four minutes for either arrivals or departures.

Terminal passenger: a passenger who joins or leaves an aircraft at the airport.

Test and training movements: movements for the purpose of testing aircraft or aerodromes, for training flying crew or ground personnel, or for demonstration of aircraft or equipment. Flying club training flights are not included.

Tidal factor: the imbalance between arrivals and departures of passengers.

Transfer passenger: an incoming passenger who catches an outgoing flight within 24 hours.

Transit passenger: a passenger who arrives at and departs from the airport on the same aircraft, which is in transit through the airport. Such a passenger is counted only once, on arrival.

Vertical take-off and landing (VTOL) aircraft: aircraft with zero take-off and landing run.

Working course: a course intended primarily to serve as a working surface.

UNIVERSITY OF CAMBRIDGE
7 MR 1970

Printed in England for Her Majesty's Stationery Office
by North London Offset Services Limited.

Dd. 501463 K16 1/70

Printed image digitised by the University of Southampton Library Digitisation Unit

INCORPORATE AFTER TP

Commission on the Third London Airport

Papers and Proceedings
Volume VII, Parts 1 and 2

Amendments

List of members

Professor David Keith-Lucas:	Delete "the College of Aeronautics, Cranfield", insert "Institute of Technology, Cranfield"
Mr Arthur Knight:	Delete "Finance Director", insert "Deputy Chairman"

Part 1. Proposed Research Methodology

Page 14, complete paragraph 38 by the addition of:

"at least in part, on accessibility to airports, it is obvious that less traffic would be generated by the London Airports if Foulness were the chosen site, rather than Cublington or Bedford. This "suppression" of traffic would count against Foulness in comparison with the other sites. There would be a strong probability that some of this "suppressed" traffic would in fact be attracted to Manchester, so part at least of the penalty would not be merited."

Part 2. Results of Research Team's Assessment

Chapter 1

Page 39, paragraph 1.10, line 17
After "acquire it", insert "and what they have in fact to pay to acquire it"

Page 40, paragraph 1.12, line 6
Delete "commensutable", insert "commensurable"

Page 44, paragraph 1.23
Delete the last sentence.

Page 45, paragraph 1.27
Before this paragraph, insert the following side heading:
"Treatment of costs associated with air travel in respect of generated traffic"

Chapter 2

Page 47, paragraph 2.1, line 3
Delete "outisde", insert "outside"

Page 48, paragraph 2.7, line 2
Delete "II", insert "2"

Page 48, paragraph 2.9, line 4
Delete "many", insert "may"

Page 51, paragraph 2.23, line 7
Delete "II", insert "2"
Delete "VII", insert "VIII"

Page 51, paragraph 2.25, line 2
Delete "Third airport", insert "third London airport"

UNIVERSITY LIBRARY A 16 JY 1970 CAMBRIDGE

Printed image digitised by the University of Southampton Library Digitisation Unit

Chapter 3

Page 59, paragraph 3.23(b)(i)
Delete "or", insert "of"

Page 65, first footnote
Delete "M.A.Warskowet", insert "M.A. Warskow"

Page 67, paragraph 3.38, line 2
Delete "cited", insert "sited"

Page 69, paragraph 3.45, line 7
Delete "on", insert "out"

Page 70, paragraph 3.48
Insert before the last sentence the following: "It is assumed that the foregoing advantages will enable capacity in the mixed mode to be increased by 10% when CAAS is introduced."

Page 73, paragraph 3.59, line 4
Delete "3.56", insert "3.57"

Page 74, Table 3.13
Insert an asterisk after ".00048"
Insert below the table "*Actual"

Chapter 4

Page 79, paragraph 4.3, line 6
Delete "1.2", insert "1.3"

Page 81, Table 4.1, column 2
Insert "population" between "Great Britain" and "(millions)"

Page 81, Table 4.1, columns 5 and 6

Yearly income £	*Great Britain population (millions)*		*Air passenger journeys* (millions)*	
	Delete	Insert	Delete	Insert
Up to 500	10.9	10.6	0.436	0.424
500-749	10.1	9.8	0.606	0.588
750-999	9.5	9.2	0.760	0.736
1000-1499	13.6	13.2	1.088	1.056
1500-1999	5.7	5.6	0.570	0.560
Total	53.4	52.0	4.4	4.3

Page 81, paragraph 4.11, line 7
Delete "4.4", insert "4.3"

Page 81, paragraph 4.11, line 10
Delete "0.8", insert "0.9"

Page 81, paragraph 4.11, line 11
Delete "4.4", insert "4.3"
Before "30 per cent", insert "some"

Printed image digitised by the University of Southampton Library Digitisation Unit

Pages 88 and 89, paragraph 4.34, lines 6-8
Delete "(i.e. at the rate estimated in the report of the Edwards Committee on Air Transport) and at 10 per cent p.a. thereafter", insert "(i.e. at a rate estimated from information given in the report of the Edwards Committee on Air Transport) and at a reducing rate thereafter"

Page 89, Table 4.10, heading
Delete "London airports", insert "Heathrow, Gatwick, Luton and third London airport"

Page 89, Table 4.11 heading
Delete "London area airports", insert "Heathrow, Gatwick, Luton and third London airport"

Chapter 5
Page 103, paragraph 5.1, last sentence
Delete the first "of", insert "to"

Page 104, paragraph 5.6, line 13
Delete "1½", insert "1"

Page 104, paragraph 5.6, line 21
Delete "4", insert "8"

Page 104, paragraph 5.6, line 23
Delete "6", insert "10"

Page 104, paragraph 5.7
Delete the first sentence, insert "it is thus possible, by making plausible assumptions, to estimate a notional increase in landing fees sufficient to pay for the non-recoverable costs of the airport."

Page 105, paragraph 5.7, line 10
Delete "6", insert "10"

Page 106, paragraph 5.15, line 3
Delete "pa", insert "p.a."

Chapter 7
Page 114, paragraph 7.11, line 3
Delete "scopes", insert "slopes"

Page 115, paragraph 7.16, line 2
After "electricity supply" insert "aviation fuel"

Page 139, paragraph 7.66(g), line 2
After "40 mph", insert "(64 Km/h/)"

Page 142, paragraph 7.74, line 1
Delete "chapter 25", insert "Vol.VIII Part 1"

Page 148, paragraph 7.116, line 8
Delete "ceter", insert "cater"

Page 153, Table 7.13, items 1, 2 and 3
Delete "employment", insert "employees"

Page 157, paragraph 7.138, line 1
Delete "area", insert "areas"

Page 158, paragraph 7.144
Before this paragraph insert the subheading "Soil Survey: Thurleigh"

Printed image digitised by the University of Southampton Library Digitisation Unit

Page 158, paragraph 7.144, line 4
Delete ("K"), insert "K"

Page 162, paragraph 7.154(h), line 3
Delete "scheme", insert "schemes"

Chapter 8
Page 198.
The unnumbered paragraph immediately below Table 8.5 should be the latter part of paragraph 8.10 on page 196.

Page 200, paragraph 8.19, line 2
Delete "that"

Page 201, Appendix. 1976 column under Cublington fill
Delete "22", insert "2"

Page 201, Appendix. Units column under fill for Cublington, Nuthampstead and Thurleigh
Delete "million m^3", insert "100,000 m^3"

Chapter 10
Page 211, paragraph 10.1, line 4
Delete "probably", insert "probable"

Page 211, paragraph 10.2, line 8
Delete "brone", insert "borne"

Chapter 11
Page 231, Table 11.11, last column
Delete "1.41", insert "1.47"

Page 232, Table 11.12, last column
Delete "1.41", insert "1.47"

Page 235, paragraph 11.34, lines 2 and 3
Delete "BEA and BOAC and British Aircraft Corporation", insert "BEA, BOAC, British Aircraft Corporation, and other sources"

Page 236, Table 11.18, heading
Delete the heading "Estimated future costs for aircraft on North Atlantic routes", insert "Estimated future costs for subsonic aircraft on North Atlantic and other long-haul routes"

Chapter 12
Page 238, paragraph 12.6
Delete the whole paragraph, insert "Direct operating costs were then calculated on the basis of the cost parameters given in chapter 11, taking fuel, crew and engineering costs in total to represent costs directly attributable to flying hours at cruise speed."

Page 239, Table 12.1

	Passenger costs		*Total per passenger aircraft*	
	Delete	Insert	Delete	Insert
1982	145	149	775	779
1991	249	219	1,149	1,119
2000	354	278	1,544	1,468
2006	404	302	1,789	1,687

Printed image digitised by the University of Southampton Library Digitisation Unit

Page 240, paragraph 12.19, line 4
Delete "for which the average speed will be 530 knots", insert "so that the average cruise speed of all aircraft will be 530 knots"

Chapter 13

Page 245, paragraph 13.3, line 3
Delete "290", insert "240"

Page 245, paragraph 13.3, line 4
Delete "30", insert "80"

Page 254, Table 13.2
Road 1966, column 2, row 2. Delete "22.5", insert "21"
row 3. Delete '12", insert "14"
Road 1991, column 4, row 3. Delete "404", insert "410"
row 4. Delete "133", insert "126"
row 8. Delete "605", insert "624"
row 10. Delete "187", insert "296"
Road 2000, column 5, row 3. Delete "756", insert "767"
row 4. Delete "244", insert "236"
row 5. Delete "7368", insert "7372"

Page 256, Table 13.4, columns 6 and 7

*Road pcus**		*Rail air passengers*	
Delete	Insert	Delete	Insert
114,000	116,000	90,000	97,000
88,000	88,000	83,000	90,000
94,000	96,000	100,000	110,000
95,000	97,000	108,000	119,000

Page 257, Table 13.6, column 3
Row 3. Insert "0.03"
Row 4. Insert "0.02"

Page 259, paragraph 13.48
The right hand part of the first equation should read:

$$\frac{e^{-\lambda_1 c_1} \cdot c_1^{-n_1}}{e^{-\lambda_2 c_2} \cdot c_2^{-n_2}}$$

Page 259, paragraph 13.50, line 2
Delete "airport", insert "airports"

Page 263, Table 13.13, Cublington column
Manchester Non-Business row. Delete "1.4", insert "1.2"
Manchester Total row. Delete "1.6", insert "1.4"

Third London airport Non-business road row. Delete "58.5", insert "58.4"
Third London airport Non-business rail row. Delete "46.6", insert "46.5"

Page 264, Table 13.14, heading
Delete "present", insert "discounted"

Page 264, Table 13.14
Column 1, last row. Delete "present", insert "discounted"
Column 7, row 3. Delete "72.0", insert "72.4"

Page 264, paragraph 13.57
Penultimate line. Delete "68", insert "60"
Last line. Delete "49", insert "43"

Printed image digitised by the University of Southampton Library Digitisation Unit

Page 264,
Insert paragraph 13.58 at top of page 268

Page 265, Table 13.15
Column 4, row 3. Insert minus sign in front of "35 7"
Column 4, row 4. Insert minus sign in front of "7.8"

Page 267, Table 13.19
Column 4, row 3. Insert minus sign in front of "54.1"

Page 267, Table 13.20, Part II - by journey purpose
Column 4, row 3. Delete "5", insert "55"

Page 268, Table 13.21, heading
Delete "present"

Page 271, Appendix 1, Equation 1
Add subscript "j" below "Σ" as follows "Σ_j"

Chapter 17

Page 323, paragraph 17.19(b)
Delete the whole sub-paragraph. Insert "For Radlett, flying costs are similar to those at Hatfield,"

Page 325, Table 17.5
Delete "pa" after all entries marked "RL"

Page 327, paragraph 17.23, line 2
Delete "also"

Chapter 18

Page 329, paragraph 18.2, line 1
After "aircraft", insert "noise"

Page 329, paragraph 18.4, line 6
Delete "+", insert "="
Delete λ

Page 329, paragraph 18.4, lines 10 and 11
Delete "arithmatic", insert "arithmetic"

Page 331, paragraph 18.6, line 2
Delete "value", insert "values"

Page 331, paragraph 18.7, line 6
Delete "Stoorindex", insert "Storindex"

Page 331, paragraph 18.7, line 8
Delete "(ICN)*", insert "(ICN)**"

Page 331, paragraph 18.8, line 6
Delete "average the", insert "the average"

Page 332, Table 18.1
Surrey CC Planning Restrictions column, row 60 NNI, insert "Refuse all dwelling permissions"

Page 333, paragraph 18.10, line 2

Delete $\overline{(Q} = 13.3 \log_{10} \frac{(1}{(T} \int_0^T 10^{L_{PN}(t)/13.3} dt)$

Insert $\overline{Q} = 13.3 \log_{10} \left(\frac{1}{T} \int_0^T 10^{L_{PN}(t)/13.3} dt\right)$

Printed image digitised by the University of Southampton Library Digitisation Unit

Page 333, paragraph 18.12, line 1
Delete "value", insert "values"
After "plotted", insert "on a map."

Page 336, paragraph 18.17, line 2
Delete "Sixe", insert "size"

Page 337, Table 18.3, column 3
Delete "1967-100", insert "1967=100"

Chapter 19
Page 345.
Insert heading "CHAPTER 19 Impact of airport on activities and environment"

Page 346, paragraph 19.9
Line 2. Delete "hearings", insert "headings"
Line 3. Delete "on", insert "an"
Line 12. Between "freehold values" and "were estimated", insert "of residential properties"

Page 347, paragraph 19.10, line 5
After "recreational" delete "or" and insert a comma

Page 349
This should be numbered page 350

Page 350
This should be numbered page 349

Page 357, line 4
Delete "induatrial", insert "industrial"

Chapter 20
Page 372, paragraph 20.30, line 1
Delete "621", insert "615".
Delete "553", insert "570"

Page 373, Table 20.1

	% of sample	
	Delete	Insert
	11	11
	15	16
	19	19
	12	11
	9	9
	11	9
	15	17
	8	8
Total	100	100

Page 373, paragraph 20.30, lines 8 and 9
Delete "The overall average access over market price for the sample as a whole is 39 per cent", insert "The average excess over market price for those respondents quoting a figure is 39%."

Printed image digitised by the University of Southampton Library Digitisation Unit

Page 382, Appendix 1, paragraph 4, line 1
Between "issued" and "interviews", insert "full"
Delete "1129", insert "1180"

Page 382, Appendix 1, paragraph 4
Column 2. Delete "102", insert "153"
Column 2. Delete "1129", insert "1180"
Column 3. Delete "6", insert "9"
Column 3. Delete "65", insert "68"

Page 382, Appendix 1, paragraph 5

	Number		*% interviews achieved*	
	Delete	Insert	Delete	Insert
Battle R D, Sussex	157	138	25	24
Chailey R D, Sussex	116	116	19	20
Hollingbourne R D, Kent	108	95	17	17
Basingstoke, Kingsclose and Whitchurch RDs, Hants	105	101	17	18
Tendring R D, Essex	129	120	21	21
Total	621	570	100	100

Chapter 21
Page 390, paragraph 21.4, line 4
Delete "as shown by the NNI contour"

Page 390, paragraph 21.4, lines 17 and 18
Delete "the NNI contour figure and"

Page 390, paragraph 21.5
Line 2. After "zone",insert a bracket
Line 3. After "elsewhere", delete the bracket

Page 394, paragraph 21.17
Line 1. Delete "College of Aeronautics", insert "Institute of Technology"
Line 2. Delete "College", insert "Institute"

Page 395, Table 21.7, heading
Delete"College of Aeronautics", insert "Institute of Technology"

Page 395, paragraph 21.19
Line 5. Delete "infection", insert "infraction"
Line 9. Delete "beats", insert "sounds"

Page 397, paragraph 21.26, line 1
Delete "on the small side", insert "residential in character"

Chapter 22
Page 402, paragraph 22.7, line 7
Delete "Mr Beddington", insert "Mr Boddington"

Chapter 23
Page 409, Table 23.2, footnote line 1
After "classified" delete "in", insert "as"

Printed image digitised by the University of Southampton Library Digitisation Unit

Chapter 24

Page 413, paragraph 24.2, line 3
Delete "(then)"

Page 416, paragraph 24.15, line 7
Delete "likely", insert "unlikely"

Page 418, paragraph 24.23, line 1
Delete "these"
After "benefit", insert "to noise sensitive activities"

Page 418, paragraph 24.24, line 2
Delete "voise", insert "noise"

Page 419, Table 24.3
Hunting column, Cublington row. Delete "0.02", insert "0.08"
Golf column, Cublington row. Delete "0.01", insert "0.1"
Hunting column, Thurleigh row. Delete "0.02", insert "0.09"
Hunting column, Total for each item row. Delete "0.09", insert "0.21"

Page 419, Table 24.4

	Discounted cost (£000)	
	Delete	Insert
Foulness		
40-50	19	13
50-60	2	3
60-70		
Sub-total	21	16

Chapter 25

Page 428, paragraph 25.11, line 2
Delete "identified of each site", insert "identified for each site"

Page 429, paragraph 25.18
Above this paragraph insert heading "User costs"

Page 431, paragraph 25.23, line 3
Delete "other", insert "others"

Page 432, paragraph 25.25, line 5
Delete "prorata", insert "pro-rata"

Page 433, Table 25.1, Cublington column, Plan 3 minus Plan 2 row
Delete "2170", insert "2107"

Page 433, footnote
Delete "part 2", insert "part 1"

Page 434, Table 25.2
Column 3, row 3. Delete "76%", insert "71%"
Column 3, row 4. Delete "71%", insert "76%"

Page 435, paragraph 25.32, line 10
Delete "table 25.5", insert "table 25.3"

Page 435, footnote
Delete "volume VIII, part 2, section 1, paragraph 93", insert "volume VIII, part 1, appendix C, paragraph 93"

UNIVERSITY LIBRARY CAMBRIDGE A 16 JY 1970

Printed image digitised by the University of Southampton Library Digitisation Unit

Page 436, Table 25.3, columns 8 and 9
Delete underlining of row 6 and underline row 7

Page 438, paragraph 25.34
Complete this paragraph at the bottom of page 438 by the addition of:

"journey costs at the inland sites, representing the divided traffic, has therefore been added to the estimated and discounted work journey costs for Foulness based on its lower employment level. For the reasons stated in chapter 1 (paragraphs 28(a) and 29), a similar adjustment was carried out for the "suppressed" traffic at Foulness so as to eliminate any imbalance arising out of different traffic levels. These adjustments provide a fair basis for comparing the real differences in work journey costs at the four sites. Table 25.5 presents the discounted work journey costs based on the forecast air traffic levels, and the costs of Foulness after the adjustments described above were carried out. The figures at A in the table have been included in the cost-benefit analysis."

Chapter 26
Page 443, paragraph 26.10, line 12
Delete comma, insert a full stop

Page 444, paragraph 26.14, line 1
Delete full stop, insert a comma

Chapter 27
Page 447, paragraph 27.3, line 5
Delete "rates in activity rates", insert "rates and in activity rates"

Page 449, Table 27.1
Above "1.See table 4.18", insert heading 'Notes'

Page 449, Table 27.1, Note 1
Delete "chapter [4]", insert "chapter 4"

Chapter 28
Page 453, paragraph 28.1
Line 3. Delete "as", insert "obtained by the method"
Line 5. Delete "justified", insert "justify"
Last line.. Delete "congestions", insert "congestion"

Page 453, paragraph 28.2
Line 5. Delete "were", insert "have been"
Line 6. Delete "were", insert "have been"
Line 8. Delete "were analysed", insert "have been analysed"

Page 454, paragraph 28.5, line 5
Delete "Table 3.10", insert "Table 3.16"

Page 455, paragraph 28.14, line 2
Delete "single"

Page 459, paragraph 28.26, line 3
Delete "chapter 3", insert "chapter 4"

Page 463, paragraph 28.32, line 13
After "standards", insert "similar to those"

Page 471, paragraph 28.42, line 7
Delete "Table 26.8", insert "Table 28.8"

Printed image digitised by the University of Southampton Library Digitisation Unit

Page 473, paragraph 28.49, lines 1 and 6
Delete "figure 28.6", insert "figures 28.6 and 28.7"

Page 479, paragraph 28.65, equations

$$\frac{dD}{D} = e \frac{dT}{T}$$

or

$$dD = e \frac{dT}{T} D$$

and below

Loss of passengers = 0.4 x delay hours x no. of aircraft x passengers per aircraft
no. of aircraft x average travel time

= 0.4 x delay hours x passengers per aircraft
5

= 0.08 x delay hours x passengers per aircraft

Page 487, Table 28.21
Column 2, row 8. After "Capacity", insert "most likely"
Column 2, row 9. After "Capacity", insert "low"

Chapter 29
Page 493, Table 29.2, Foulness column
Row 14. Delete "1,249.8", insert "1,252.8"
Row 15. Delete "937.4", insert "939.6"
Row 17. Delete "1,472.4", insert "1,474.6"
Row 18. Delete "2,871.2", insert "2,875.5"

Page 495, Table 29.4

	Cublington		*Foulness*		*Nuthampstead*		*Thurleigh*	
	Delete	Insert	Delete	Insert	Delete	Insert	Delete	Insert
Row 3	59.2	310.4	59.5	313.2	60.3	315.0	52.6	304.8
Row 6	608.6	859.8	612.0	865.7	598.5	853.2	633.1	885.3
Row 7	1,187	1,677	1,193	1,688	1,167	1,664	1,234	1,726

Page 501, Table 29.13

Foulness	
Delete	Insert
2,393	2,390
(+120)	(+117)
4,667	4,661
(+235)	(+229)

Page 502, paragraph 29.12, line 1
Delete "costs", insert "tests"

Page 503, Table 29.30, Foulness column, row 7
Delete "120", insert "117"

Printed image digitised by the University of Southampton Library Digitisation Unit

Page 504, Table 29.30, Cublington column, row 6
Delete "5", insert "3"

Page 505, Table 29.31
Row 7. Table number should be 29.13
Row 7, Foulness column. Delete "235", insert "229"

Printed image digitised by the University of Southampton Library Digitisation Unit

Contents

		page
Part 1: Proposed research methodology		
Chapter		
	Foreword by the Chairman	3
1	General principles	5
2	The value of travellers' time	9
3	Airport policy issues	12
4	Air traffic forecasting	14
5	Timing of the need for the third airport	16
	Element of cost and benefit	
6	Air traffic control	19
7	Surface transport	20
8	Regional and local planning and environmental effects	21
9	Airport layout and site preparation	28
10	Implication for defence, Ministry of Technology and private airfields	29
11	Air safety	31
Part 2: Results of Research Team's assessment		
	Foreword by the Chairman	35
1	General principles	37
2	Airport policy issues	47
3	Airport capacity	53
4	Forecasts	79
5	The value to the nation of a third London airport	103
6	Implications of a joint airport-seaport at Foulness	109
7	Airport design	113
8	Construction	193
9	Layout, location and alignment	203
10	Meteorological conditions	211
11	Surface transport and air movement cost parameters	223
12	Airspace movements and air traffic control costs	237
13	Surface movements costs and benefits	245
14	Air safety	295
15	Defence establishments	311
16	Public scientific establishments	315
17	Private airfields and gliding sites	319
18	Noise generation and measurement	329
19	Impact of the airport on activities and environment	345
20	Effect on residential conditions	365
21	Public services: schools, hospitals and other public buildings	389

Printed image digitised by the University of Southampton Library Digitisation Unit

Chapter		*page*
22	Agricultural land	400
23	Commerce and industry	407
24	Outdoor recreations, churches, historic buildings and sites of scientific interest	413
25	Local planning	425
26	Regional planning	441
27	Miscellaneous items	447
28	Timing of the need	453
29	Cost-benefit analysis	489
	Glossary of terms	507

Figures

3.1	Close parallels: possible configurations	61
7.1	Variation in 'usability' with runway orientation at each site	118
7.2	Instrument landing system requirements	120
7.3	Layouts suggested by BAA	122
7.4	Layouts suggested by NATCS	123
7.5	Layouts considered for short-listed sites	124
7.6	Holding bay dimensions	126
7.7	Best position for a range of aircraft stands	126
7.8	Optimum stand position: single runway	129
7.9	Optimum configuration: two runways, mixed mode	129
7.10	Optimum configuration: two runways, segregated mode	129
7.11	Optimum configuration: three runways	130
7.11a	Optimum configuration: three runways alternative	130
7.12	Three positions for close parallel pairs, runway 'A' in relation to runway 'B'	130
7.13	Best position for a single stand: three cases	132
7.14	Close parallel pair of runways: segregated mode	134
7.15	Close parallel pair of runways in segregated mode	135
7.16	Close parallel pair of runways in segregated mode operating 80 per cent westerlies and 20 per cent easterlies	136
7.17	Runway overlay against land requirement	137
7.18	Optimum configuration: four runways	138
7.18a	Optimum configuration: four runways (alternative)	138

Printed image digitised by the University of Southampton Library Digitisation Unit

Figures

		page
9.1	Foulness: Location, layout and alignment selected for design study	206
9.2	Nuthampstead: Location, layout and alignment selected for design study	207
9.3	Cublington: Location, layout and alignment selected for design study	209
9.4	Thurleigh: Location, layout and alignment selected for design study	210
13A	Allocation of air/passengers from a zone to two airports	248
13B	Benefits of choice-switching	252
13.1	Design for 1990	282
13.2	Traffic zones - central area	283
13.3	Marylebone - peak hour - 1990	284
13.4	King's Cross - peak hour - 1990	285
13.5	Site plan at Fenchurch Street	289
13.6	Site plan at Marylebone	279
18.1	Relationship between NNI, average peak noise, and number of aircraft	330
18.2	British/American/French/German noise indices compared	335
18.3	Noise levels directly under the flight paths: restricted take-off	338
18.4	Noise levels directly under the flight paths: unrestricted take-off	338
18.5	Estimate of future noise levels	339
20.1	Noise cost model - flow diagram	387
28.1	Monthly air transport movements (Heathrow)	461
28.2	1968 air transport movement rates between 0700 - 1500 hrs (Heathrow)	462
28.3	Excess delays: 1970s, 1979 and 1980s (Heathrow)	466
28.4	Movements over the day (Heathrow)	468
28.5	Delays with 1970s ATC: segregated mode: with and without traffic management (Heathrow)	469
28.6-7	Arrival congestion with traffic management	482

Printed image digitised by the University of Southampton Library Digitisation Unit

OP.1100.120.142

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings
volume VII

Part 1: Proposed research methodology

Part 2: Results of Research Team's assessment

Stage III: Research and Investigation
Assessment of short-listed sites

LONDON

HER MAJESTY'S STATIONERY OFFICE

1970

Printed image digitised by the University of Southampton Library Digitisation Unit

Commission on the Third London Airport

Members of the Commission

The Hon. Mr. Justice Roskill	(*Chairman*)
Professor Colin Buchanan	Professor of Transport Imperial College of Science and Technology
Mr. A. Goldstein	Partner in R. Travers Morgan and Partners, Consulting Engineers
Mr. A. J. Hunt	Principal Planning Inspector Ministry of Housing and Local Government
Professor David Keith-Lucas	Professor of Aircraft Design, the College of Aeronautics, Cranfield
Mr. Arthur Knight	Finance Director, Courtaulds Ltd.
Professor A. A. Walters	Cassel Professor of Economics in the University of London

Mr. J. Caines	(*Secretary*)
Mr. F. P. Thompson	(*Director of Research*)

The Commission on the Third London Airport
Templar House
81-87 High Holborn
London WC1

Tel: 01-242 0161

SBN 11 510170 6*

Printed image digitised by the University of Southampton Library Digitisation Unit

Site Information for Stage II Local Hearings

4. Thurleigh (Bedford)

1. **Introduction**

The information set out below is intended to give a broad indication of what would be involved if the third London airport were to be located at Thurleigh. At this early stage of the Commission's work it is not possible to give final detailed plans for an airport at this site or for the surface access arrangements which would be required. The material under the various headings should, however, enable local implications of an airport at Thurleigh to be assessed and should provide a suitable basis for objections, comments and representations at the Stage II local hearing.*

2. As the Commission's work progresses and in the light of the evidence of the Stage II hearings, it will be possible to prepare more detailed plans. These will be available for the Stage V hearings.

3. The base maps used to illustrate this material are the latest published by the Ordnance Survey. They do not show the most recent development.

2. **Airport Layout**

4. The Commission recognises that there is no single airport layout which is the best possible for all the sites. Each site has to be carefully studied to establish factors, such as terrain and local geological conditions, so that the best layout at that particular site can be obtained. Detailed studies have not yet been carried out at Thurleigh, or any of the other short listed sites. Nevertheless, the Commission recognises the need for providing the public with some indication of the likely size and shape of a four-runway airport.

5. The layout shown at plan CTLA/1 illustrates an arrangement which would be acceptable both to the National Air Traffic Control Services and to the British Airports Authority. An airport of this design could be constructed at Thurleigh. It is emphasised that it is not the only possible configuration, but the basic runway separation distances which control the amount of land required are unlikely to be much less than is shown. The total land-take of an airport at Thurleigh with this layout would be approximately 7,500 acres (including the areas shown as "optional") but the possibility of a larger land-take being required cannot be excluded.

3. **Runway Alignment**

6. The runway alignment is 72 degrees east of north (grid). This is shown on the NNI (Noise and Number Index) contour plans CTLA/4/2 and CTLA/4/3. The alignment differs slightly from that indicated by the shaded rectangle on plan CTLA/5 (Short List Sites). This new alignment provides a better balance of the following important factors: noise disturbance, existing facilities and amenities, air traffic to other civil airports, air traffic patterns, military aviation, meteorological conditions and terrain. The Commission recognises that further changes to this alignment may subsequently be justified.

4. **Airport Site**

7. The area proposed includes the airfield at Thurleigh. The site is bounded by the River Ouse to the south west and the valleys of the tributaries of the River Kym to the north east.

8. Part of the site is now in use as an airfield. The additional land required is used, primarily, for agriculture.

9. Geologically the area is a boulder clay of glacial origin presenting no abnormal construction problems.

5. **Noise and Disturbance**

10. It is estimated that about 2,000 people currently reside in the area likely to be covered by the site.

11. Estimates have been made of the probable NNI† contours for the airport at the full capacity of two runways and again at the full capacity of four runways.

12. Contours down to the 40 NNI level are shown on plans CTLA/4/2 and CTLA/4/3. Attention is drawn to the fact that these contours are of necessity approximate, and that they can give only a general indication of the areas likely to be affected. It is especially difficult to estimate the number of aircraft likely to be using particular flight paths in the four-runway case (some thirty years in the future) and the best way in which these flight paths can be routed to minimise the impact of noise on urban areas.

13. The reliability of the Noise and Number Index has been questioned. This is a matter which can be further investigated in due course. Separate night time NNI contours have not been prepared but, as the NNI is related to the number of aircraft movements and these are likely to be less at night than by day, it is a reasonable assumption at this stage that the night NNI contours will be less extensive than the day contours depicted. The contours relate to an average summer day—normally the busiest time of the year—with no special noise abatement procedures. It has been assumed in the NNI contours that noise certification regulations will be introduced and will lead to a reduction in the noise effect of aircraft by 10 NNI over the next 20 years, but that half this reduction will be offset by growth in aircraft weight.

* See Appendix A for procedure and programme [p. 1803].

† See *Noise: Final Report of the Committee on the Problem of Noise* (Cmnd. 2056; HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

14. The present population (based on the 1966 Census) affected by the different NNI contours are estimated to be:

Noise level	*NNI*	*2-runway*	*4-runway*
Intrusive	40–45	11,200	24,800
Intrusive/annoying ..	45–50	5,200	6,400
Annoying	50+	4,100	6,200

The Report of the Committee on the Problem of Noise reached the tentative conclusion that the critical range of disturbance was 50–60 NNI by day and 30–45 NNI by night.

15. The Commission is not publishing at this stage maps showing flight paths and stacking areas. Flight path maps will not give information about the levels of disturbance caused by aircraft in the vicinity of the airport. Such information is given by the NNI contour maps. It is not possible at this stage to indicate precisely where stacking areas might be located. However, they do not extend below 5,000 ft and the disturbance caused by aircraft held in stacks is most unlikely to reach the 40 NNI level.

6. **Airport Employment**

16. The introduction of a large international airport into an area is bound to create an inward movement of population. There will be those directly engaged on the airport ("primary employment"). There will be those engaged in manufacturing industry and commercial projects attached specifically by the location of the airport ("secondary employment"). There will be those engaged in providing for the needs of the primary and secondary workers and their dependants ("service employment").

17. At this stage, the Commission's best estimate of the primary employment which the airport will generate at the full capacity of 2 runways is 45,000 and at the full capacity of 4 runways is 65,000. These figures depend on many factors, including the extent to which airlines will set up engineering facilities at the new airport. These levels of primary employment are unlikely to be reached before the mid-1980s and mid-1990s respectively. The accuracy of this forecast must depend on the date of inauguration of the airport and the subsequent build-up of traffic. The estimates are based on an analysis of employment and air traffic at Heathrow.

18. The Commission expects to receive valuable evidence on the issue of resulting urbanisation at the local hearing.

6. **Surface Access**

19. The total annual number of passengers using the airport when 2 runways are running at full capacity is likely to be about 45 million. When 4 runways are running at full capacity it could be over 100 million. The forecasts are tentative and are put forward to give some indication of the scale of the surface access problem.

20. The Ministry of Transport and British Rail are not yet in a position to provide definite plans for this level of traffic but it is thought desirable to provide some indication of the possibilities for use at the local hearing. It is envisaged that new roads connecting the proposed site to M1 and A1 in an east-west direction would be required initially. Further road capacity in the M1/A1 corridor towards the Midlands and London is likely to be required later. Rail facilities to a London terminal combining existing lines and new links will be needed from an early date.

Additional Site Information for Stage II Local Hearings

Thurleigh (Bedford)

In its letter of 24th February to the President of the Board of Trade announcing the names of the short listed sites, the Commission pointed out that the precise location of the sites had not been determined. The Thurleigh *Site Information* booklet explained that detailed studies were needed to establish the best locality for each site.

2. Work in connection with the Thurleigh site carried out by the Commission's research team since the Thurleigh booklet was published suggests that the runways might be shifted some 2,500 yards to the south-east. For an airport in this position the appropriate runway alignment would probably be 70° east of north (grid) as opposed to the alignment of 72° east of north (grid) shown in the *Site Information* booklet. The NNI contours shown on plans CTLA/4/2* and CTLA/4/3* would be shifted and rotated accordingly but not otherwise altered.

3. The Commission has reached no final conclusion regarding the merits of the alternatives, but rather than delay the inquiry already arranged, and since the alteration is not fundamental in character, it has decided to proceed on the basis that both possibilities will be open to discussion at the Stage II local hearing.

4. The Commission has decided that it should make this development known as soon as possible because of its implications for the hearing. It has decided to postpone from 13th June to 18th July the date by which applications for leave to appear or be represented at the Thurleigh local hearing must be made, so that those who might additionally be affected have time to consider the implications. The date set for the meeting at Templar House to discuss procedure at the hearing is accordingly postponed from 7th July to Thursday 31st July at 10.00 a.m. All other dates in the timetable remain unaltered.

5. The effect of this possible shift is shown on drawings nos. CTLA/4/4* and CTLA/4/5* which are enclosed with this announcement. The Commission will be placing with local authorities in the area copies of this announcement and of the drawings maps to enable those who might additionally be affected to appreciate the implications and to decide whether or not they wish to apply for leave to appear at the hearing. This material will be available at offices of the County, Borough, Urban and Rural District Councils in the area from 30th June.

*See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Arrangements for Stage II Hearing on Thurleigh (Bedford)

Scope of the Stage II Hearings

The main purpose of the Stage II hearings is to provide an opportunity for the Commission to be informed as early as possible of all the local implications which it should take into account in its further work on the short list sites. At the hearings the Commission will not be advancing proposals for an airport at the particular site in question but, on the assumption that an airport might be located there, will be asking for objections, comments and representations on the local consequences. The Stage II hearings are not intended to afford an opportunity for making comparisons between the site in question and other sites. Objections, comments and representations must, therefore, be confined to the site proposal in question. The opportunity for comparisons between the short listed sites will arise at the public hearings in Stage V.

2. The Stage II hearings are not ordinary planning inquiries. There will be nobody in the position of applicant for planning consent. Mr. A. J. Hunt, who is a Principal Planning Inspector and a Member of the Commission, will preside. He will already be familiar with the main issues involved and will not be required to decide between any conflicting views put forward. It will be for the Commission as a whole to evaluate the evidence given after the Inspector has reported to it.

Procedure of the Stage II Hearings

3. The site information published by the Commission should be sufficient to enable those concerned to appreciate the local implications of what is proposed.

4. Interested parties must apply to the Commission in writing for leave to be heard or represented at the Stage II local hearings. All applications must be accompanied by a brief statement of the nature of the evidence which it is desired to give. These applications will so far as possible be dealt with by post but if the Commission requires any applicant to present his application orally he will be asked to attend a special meeting for the purpose. Those given leave to be heard or represented will be invited to attend a private meeting to discuss what will be the main issues to be covered at the Stage II local hearings, and how the proceedings should best be conducted.

5. The Commission intend to ensure that the best use is made of the time available for the local hearings. Those given leave to appear or be represented must produce their statements, proofs and all other relevant documents well in advance of the hearing so that they can be made available to other interested parties before the hearing begins. This will largely avoid the need for examination in chief. The Commission asks that representative organisations or groups will, so far as possible, put forward a common view so that repetition of similar views and unnecessary cross-examination can be avoided.

6. In general the Inspector will have complete discretion and control over the proceedings. He will be entitled to withhold permission to call any witness whose evidence appears likely to be irrelevant or repetitive. There will be no appearance at the hearings on behalf of the Commission but any party given leave to appear or be represented may at the Inspector's discretion be allowed to cross-examine any witness called to the extent that such cross-examination is relevant to the issues before him.

7. The Inspector will before the hearing circulate to all concerned a programme of appearances and so far as possible agree this with them.

8. The hearing will be in public. A complete shorthand note will be taken. Copies of the transcript will be available for purchase from the shorthand writers, Messrs. Cherer & Co., 34 Essex Street, Strand, London, W.C.2.

9. The Inspector will also have regard to any relevant written objections, comments and representations on the local consequences submitted by those not seeking leave to appear or be represented at the hearing. Such written submissions should reach the Secretary not later than Friday, 22nd August, 1969.

Time Table for the Stage II Hearing on Thurleigh (Bedford)

10. The following time table shows the proposed timing of the various phases of the procedure for the local hearing on Thurleigh (Bedford).

(*a*)	Commission material published ...	28 May
(*b*)	Applications for leave to appear or be represented by	13 June
(*c*)	Date of hearing of applications (unlikely to be required)	4 July
(*d*)	Meeting to discuss procedure ...	7 July
(*e*)	Statements, proofs and other documents (including written submissions) to be received not later than	22 Aug.
(*f*)	Start of hearing	8 Sept.

Applications

11. The Commission is now ready to receive applications for leave to appear or be represented at the hearing on Thurleigh (Bedford). These should reach the Secretary at Templar House, 81–87 High Holborn, London W.C.1 not later than Friday, 13th June 1969. The hearing will start at 10 a.m on Monday, 8th September 1969 at the Corn Exchange, Bedford.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 1

Mr. G. W. Cowley
Bedfordshire County Council

Mr. L. G. Robinson
Dr. R. C. Hoather
Dr. B. A. Southgate
Huntingdon and Peterborough County Councils

Mr. D. M. Woodhall
Northamptonshire County Council

Mr. F. A. Sharman
Mr. G. I. W. Dunford
Mr. N. Fleming
Bedfordshire, Buckinghamshire, Huntingdon and Peterborough and Northamptonshire County Councils

Mr. H. P. Shallard
Bedfordshire, Buckinghamshire, Cambridgeshire and Isle of Ely, Huntingdon and Peterborough and Northamptonshire County Councils

Mr. M. C. MacLeod
Bedfordshire, Buckinghamshire, Cambridgeshire, Huntingdon and Peterborough and Northamptonshire County Councils

Mr. F. B. Pooley
Buckinghamshire County Council
Mr. B. H. Mellor
Cambridgeshire and Isle of Ely County Council

Mr. L. Timms
Bedford Rural District Council in association with the County Councils of Bedfordshire, Buckinghamshire, Huntingdon and Peterborough and Northamptonshire

Bedford Corporation
Mrs. V. F. Alsford
Mrs. C. Measures
Mrs. M. Steen
Mrs. N. Mitchelhill
Vauxhall Motors Recreation Club
Bletsoe Women's Institute
Bletsoe Parish Council

Milton Keynes Development Corporation
Newport Pagnell Rural District Council
Gayhurst Parish Council
Lavendon Parish Council

Olney Parish Council
City of Cambridge
Chesterton Rural District Council

Oral evidence was taken from these witnesses on
Day One, Monday 8 September 1969
see pages 2173–2199

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire County Council

SUBMITTED BY MR. G. W. COWLEY*

I am the County Planner for Bedfordshire. I am a Member of Council of the Town Planning Institute and a Fellow of the Institution of Municipal Engineers. My association with the area extends over a period of 21 years and I can therefore claim a wide knowledge and appreciation of its highly complex planning problems.

1. Introduction

1.1. The purpose of this evidence is to assess the local implications of a Third London Airport at Thurleigh on the basis of information published by the Commission, and to provide the material required for a subsequent comparison of Thurleigh with the other three short-listed sites.

1.2. It is necessary to consider both the original airport proposal as published by the Commission on the 28th May, 1969, and the alternative proposal, announced on the 24th June, which suggested that the runways might be shifted some 2,500 yds. to the south east, bringing them nearer to Bedford. The appropriate runway alignment for the alternative site would probably be 70° east of north as opposed to an alignment of 72° east of north—a shift of 2° from the original orientation. The system of NNI contours published originally by the Commission applies equally to the alternative site, with the contours moved to fit the new alignment. It is noted that the Commission has reached no final conclusion regarding the merits of the alternative site, but state that the alteration is not fundamental in character. For clarity I shall refer in my evidence to the original site as "Site A", and to the alternative site as "Site B". The term "Airport" will be used generally where specific reference to either Site A or Site B is not necessary.

1.3. In the context of the broad planning arguments to be dealt with in this evidence, the effect of both alternative proposals on people, property and local environment would be catastrophic. The merits of the alternative site B over the original site A appear to be solely in the construction and drainage of the airport itself, as site B involves less variation in existing ground levels and less site work. A total of roughly 76,000 people live within the 35 NNI contour identified by Mr. Fleming for site A, and roughly 86,000, that is 10,000 more, within the same contour for the alternative site B. The number of people living within the 55 NNI (including the airport site) whose homes will either have to be acquired, or who will be faced with living conditions which are totally unacceptable, is estimated at 3,459 for site A, compared with 3,157 for site B. It is estimated that 773 people actually reside within site A, and 1,014 within site B. Both sites involve the loss of over 6,000 acres of good agricultural land, i.e. 80 per cent of the total area of 7,500 acres required for the airport.

1.4. The adverse consequences of the proposal are widespread, and affect the adjoining counties of Northamptonshire, Buckinghamshire, Huntingdon and Peterborough, and to a small extent Cambridgeshire and Hertfordshire. This evidence has been prepared with the full co-operation of their officers and will be supplemented by appropriate evidence on behalf of the associated counties where necessary.

1.5. The County Councils concerned ensured that all County District and Parish Councils and the public, were advised of the information published by the Commission. The Bedfordshire County Council has itself examined the effect on the Administrative County of an airport at Thurleigh, and is strongly opposed to this proposal. Similar action has also been taken spontaneously by the County District Councils principally affected. I understand that all Parish Councils in this area and a great many voluntary associations support this view. The large number of private individuals who have approached Parish and District Councils and members and officers of the County Council, have been encouraged to act through the Bedfordshire Airport Resistance Association in order to avoid the presentation of repetitive evidence. No representations whatsoever in favour of an airport at Thurleigh have been made to the County Council, nor so far as I know, to any of the County District or Parish Councils.

1.6. Both sites interfere with the Royal Aircraft Establishment. Site A includes the whole of the airfield at Thurleigh and site B includes roughly half each of this airfield and of the Wind Tunnel site at Milton Ernest. Both are on the plateau of heavy boulder clay which rises from the Ouse Valley and extends across the north west sector of the County towards Northamptonshire. The sites are bounded by the valleys of the Ouse to the west, south and east, and its tributary the Kym to the north. This area has a distinctive character with an atmosphere of remoteness from the bustle of urban life. Thurleigh is 52 miles north of Charing Cross and the mean distance between sites A and B and the centre of Bedford is 6½ miles. The other principal towns encircling Thurleigh within a 20 mile radius are Northampton, Wellingborough, Kettering, Corby, Huntingdon, St. Neots and the proposed new city of Milton Keynes. Cambridge, Peterborough and Luton are within a 25 mile radius of Thurleigh. The Commission

* See also p. 2180.

Printed image digitised by the University of Southampton Library Digitisation Unit

estimate that by the mid 1980s the airport would give direct employment to 45,000 people and by the mid 1990s to 65,000. I contend that because of the establishment of the airport, urban development would be required for roughly 105,000 persons by 1981 rising to 390,000 by the mid 1990s.

1.7. The implications arising from the proposal to site an international airport at Thurleigh are as follows:

(i) The large-scale residential, industrial and commercial growth resulting, could be accommodated only at the expense of current regional and County planning policies. In addition to the direct effect upon the economy of the area created by the airport itself, there would be an intensification of the scale of industrial, service and office activities on which present plans for the area are based.

(ii) The airport would be an employment generator of regional significance in its own right and a serious competitor for labour in an area of labour shortage.

(iii) A very large number of people, including the occupants of schools and institutions, would either be totally displaced or seriously affected by noise and nuisance.

(iv) There would be profound and adverse effects upon an area of national agricultural importance.

(v) The proposal would result in a complete and dramatic change of the character of this predominantly rural area, and would have a deleterious effect on local environment, outdoor recreation, buildings of architectural or historic interest, and on local sand and gravel resources.

2. Regional planning considerations

2.1. Bedfordshire is on the northern fringe of the South East Economic Planning Region, and contiguous to both the East Anglian and East Midlands Economic Planning Regions. The County Council is a member of the Standing Conference on London and South East Regional Planning, as is Buckinghamshire. Northamptonshire lies within the East Midlands Economic Planning Region and Huntingdon and Peterborough within the East Anglian Economic Planning Region. Neither of the latter two Counties is a member of the Standing Conference on London and South East Regional Planning. There have been several reports setting out policies for the development of the South East over the past few years. These are described below; firstly those reports dealing with the South East Region specifically, secondly those dealing with sub-regional matters, and thirdly reports dealing with matters in adjacent Regions.

Regional studies

2.2. (i) *"The South East Study."** This was published by the Government in 1964, outlining the problems which were expected to arise over the period until 1981 as a result of the large-scale growth and population movements likely to take place in the South East. The report suggested that there should be large new and expanded towns or cities in locations favourable to growth to accommodate London overspill. It suggested sites where these should be located; the sites relevant to this Hearing are Milton Keynes, Northampton and Peterborough for large-scale expansion, and Bedford for a possible expansion of about 30,000. Over Bedfordshire as a whole, past growth rates were expected to slow down.

2.3. This Study was reviewed by the Government in Circular 5/66† dated January 1966. The main effect of this review for Bedfordshire was to reduce the role that the County was expected to play in meeting the needs of the South East. After talks with the Minister of Housing and Local Government, a growth figure of about 100,000 people was agreed as the probable increase in population in the Administrative County by 1981. This figure did not include any growth caused by the planned expansion schemes at Houghton Regis and Sandy or the suggested scheme at Bedford. Growth of this order is now the basis of County Council policy. The way in which it is to be distributed in the County is set out in Chapter 3.

2.4. (ii) *"A Strategy for the South East."*‡ This report was produced by the South East Economic Planning Council in 1967 and suggested a planning strategy for the South East Region until the end of the century, but dealt more specifically with the more immediate problems arising in the years until 1981. Its most important feature was the idea of "Sectors for future growth" in which major developments would be concentrated. Milton Keynes, Northampton, Bedford and Luton were placed within a growth sector, based upon Motorway M.1. This strategy has not been accepted by the associated County Councils, who suggested that it should be referred for testing and evaluation to the joint team set up by the Government to produce a regional plan for the South East. This has now been done.

2.5. The report puts forward the idea of major expansion schemes at some distance from London, capable of being built up to serve as a focus of counter attraction to London, and suggests that these schemes are fundamental to the success of London's overspill plans. Three such areas were named in order of priority; first, Southampton/Portsmouth; second, Milton Keynes/Northampton/Wellingborough and possibly Bedford; third, Ipswich/Colchester. The reasoning behind the choice of the Milton Keynes/Northampton/Wellingborough/Bedford area is set out in Para. 34 of the Economic Planning Council's report and is quoted below:

> The main focus for new development in the major sectors will be the very large planned expansion schemes located towards the edges of the region. Our efforts must be as far as possible concentrated on these city regions in the

* HMSO; 15s.

† HMSO; 6d.

‡ HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

early part of the period before 1981, so that they can develop as effective counter-magnets to London, and there will be continued growth thereafter. This will mean that each sector will eventually possess two major poles of attraction. Nevertheless, we recognise that the nation's total resources for developments of this nature will continue to be limited, and that for a wide variety of reasons these schemes cannot and do not grow simultaneously at a uniform rate. The problems involved in the large-scale transfer of population and industry are formidable and the needs of the region's population must be balanced with those of other parts of the country. We have therefore selected our priorities among these major schemes, and these represent the areas in which we think rapid growth will be most practical and feasible and also which have the greatest potential for the longer term. We favour, as our first priority, the development of the South Hampshire city region; and as second and third priorities the major expansions in the Milton Keynes and Ipswich city regions.

2.6. Two other locations for smaller scale growth involving Bedfordshire are put forward by the Economic Planning Council. These are the Luton and Dunstable area and the Hitchin/south east Bedfordshire area. *A Strategy for the South East* identifies Luton and Dunstable as the area within the North West and North Sector "which most urgently needs study" and the Hitchin/south east Bedfordshire area as one which "should be studied as a possible growth area".

2.7. (iii) *The Standing Conference on London and South East Regional Planning.* The Ministry of Housing and Local Government together with the South East Economic Planning Council and the Standing Conference have formed a joint team to produce a regional plan for the South East. The Standing Conference has not, therefore, committed itself to any specific plan, although it has set out objectives for a plan in *The South East—A Framework for Regional Planning* (LRP 1180).* The Standing Conference advances the view that the areas for urbanisation in the region should be relatively few, large and comparatively distant from London; they suggest the North Buckinghamshire area as one that can develop within this thinking. Paragraph 36 of the Report by the Administrative and Technical Panels (LRP 1275)* entitled *Third London Airport,* which the Conference adopted on 25th June 1969, stated:

> Thurleigh, 52 miles from Charing Cross, has also been regarded as lying within a belt of high value agricultural land which should remain largely unaffected by urban growth. Relatively nearby, growth is envisaged in expansions proposed for Northampton, Wellingborough, Bedford and in North Buckinghamshire. But such growth, although on a significant scale, is mainly well to the west in Northampton and North Buckinghamshire rather than in Bedford or Wellingborough and would not jeopardise the preponderantly open character of the area as a whole and certainly not that part within which Thurleigh lies. The scale of growth associated with the airport however must be thought likely to bring about a major change in character of the area well beyond what is at present envisaged, particularly in its eastern part.

Sub-regions

2.8. (i) *"The Northampton, Bedford & North Bucks. Study."*† This report was prepared by consultants commissioned by the Ministry of Housing and Local Government, once the possible growth points of Northampton, Milton Keynes and Bedford had been identified. It was meant to show how interrelated growth could take place between the three towns to create one large complex of development that could support a very wide range of facilities far exceeding what could be provided individually by any of these towns. The study reached the conclusion that all three towns would benefit by planned expansion and suggested that:

Bedford could grow by	70,000
Northampton could grow by ...	100,000
Milton Keynes could grow by ...	200,000
TOTAL ...	370,000

Taking into account existing populations this would give rise to a total population large enough to support a broad range of facilities and create a counter-magnet to London.

2.9. The consultants' report is currently being followed up by a detailed study carried out by the Ministry of Housing and Local Government. The study area has been extended however to include Wellingborough, since a decision has now been taken to expand the town by 35,000 people by planned expansion. This later study is intended to give some guidance as to the form that development should take. Preliminary ideas suggest that the expansion areas should be designed along the routes of motorways connecting the towns, enabling fast travel from one centre to another. These motorways would enclose an agricultural area of high quality landscape with great recreational potential provided by the River Ouse. People living in the four towns would lean heavily on this area for recreation and relaxation.

2.10. (ii) *The South Bedfordshire Sub-Region.* As a result of work I have carried out with the officers of the Ministry of Housing and Local Government and with officers of the District Councils and neighbouring authorities, I have reached the preliminary conclusion that population increase in South Bedfordshire over the period 1966 to 2001 could be of the order of 74 per cent—from 230,000 to 400,000, representing broadly the continuation of present rates of growth only, which will be essential to meet the needs from the growth of existing industries. There

*Available from the SCLSERP, 26 Old Queen St., London S.W.1.

†HMSO; 25s.

Printed image digitised by the University of Southampton Library Digitisation Unit

is every indication that the future demand for labour in the area will in any case continue to exceed supply, and it is unlikely therefore that any significant contribution could be made towards meeting the employment needs of a new airport. The rate of industrial growth in recent years has only been maintained by resorting to town expansion procedures to meet employment demands. The land already allocated for housing in the area is adequate to meet the needs there up to 1981, representing an increase in population of about 70,000 by that date. In considering accommodation of the additional 100,000 people likely to be required by the end of the century, a number of alternative locations of future growth are at present being investigated, but no firm conclusions have yet been reached.

Other relevant studies

2.11. (i) *"The East Midlands Study."** Bedfordshire adjoins the East Midlands Region for which, in 1966, the East Midlands Economic Planning Council prepared *The East Midlands Study*. This Economic Planning Region extends almost as far as Sheffield in the north, and four sub-regions were identified by the Council. Only development in the most southerly of these sub-regions (Northamptonshire) would have any effect on, or by affected by development in Bedfordshire.

2.12. The Economic Planning Council points out that the East Midlands is distinguished by lack of major internal overspill problems and can be expected to contribute to solving the problems of other regions—of Sheffield and Birmingham and, of course, of Greater London. The Economic Planning Council felt that the greatest obstacle to the expansion of industry in the Region was the shortage of labour "likely to persist for many years to come". In consequence, and particularly in Northamptonshire, expansion schemes have been agreed with both Birmingham and the Greater London Council and a very considerable increase of population is planned. Of relevance to this Hearing are expansions at Northampton, Wellingborough, Daventry and Corby.

2.13. (ii) *"East Anglia—A Study."*† The East Anglian Economic Planning Council published in 1968 its report entitled *East Anglia—A Study*. Of some significance to Bedfordshire is a planned expansion at Peterborough and comparatively small expansions at St. Neots and Huntingdon. Otherwise, it contains few repercussions for Bedfordshire being based on a strategy of growth around the four cities of Peterborough, Cambridge, Norwich and Ipswich.

Implications of these reports

2.14. Present commitments for planned expansion in the area around Thurleigh are in aggregate very large. It is difficult to arrive at a precise figure since some decisions have not been made about such matters as rates of growth and the role of private housing. Furthermore, end dates for different schemes differ, and it is difficult to reach a firm conclusion about the number of people intended to be accommodated by a certain date.

*HMSO; 30s.

†HMSO; 40s.

2.15. Nevertheless, it seems clear that within a radius of 20 miles of Thurleigh, current agreements for planned expansion already total about 209,000 people by 1981 and about 304,000 people by 2001. Associated development in the towns which will receive overspill will result in a total growth there, made up as follows:

	1968–81	1981–2001	Distance from airport (*miles*)
Milton Keynes ...	90,000	120,000	20
Northampton ...	100,000	66,000	18
Wellingborough	56,000	18,000	15
Corby	18,000	40,000	20
St. Neots	14,000	3,000	8
Huntingdon ...	8,000	16,000	13
Sandy	3,000	2,000	10
Total	289,000	265,000	

These figures take no account of the normal house building that will take place throughout the area. Within 20 miles of Thurleigh the total population increase is expected to be about 392,000 between 1968 and 1981, and some 404,000 between 1981 and 2001.

2.16. Doubts have already been expressed about the feasibility of achieving these figures. The East Midlands Economic Planning Council in *The East Midlands Study* (para. 419, Chapter 10) say:

> "The growth of the towns which have been identified for planned expansion will be accompanied by a growth in the other communities, due both to natural increase and to the private migration which the major developments attract on a more dispersed basis. This expansion seems likely to be as much as any area could absorb within a limited time; the demands it will make on the natural and social resources of the sub-region will be very considerable."

Furthermore, I understand that the team carrying out the Sub-Regional exercise on the Northampton, Milton Keynes, Wellingborough and Bedford area, have grave doubts about the suggested growth rates for the area being achievable even taking into account a growth in the construction industry and the use of industrialised building techniques.

2.17. It will be seen from the table above that very little of the planned expansion within the 20 mile radius of Thurleigh falls within reasonable daily travelling distance of the proposed site of the airport. The bulk of the population needed to man the airport will have to be provided in additional areas within about a 12 mile radius* of the site. This could mean an additional 320,000 people to be housed, which, together with the 554,000 (i.e. 289,000 plus 265,000) would make a total within the 20 mile radius of the airport of some 874,000 people to be accommodated in addition to other local housing needs during the next 30 years. Whether this is economically viable or is within the capacity of the construction industry must be seriously doubted, quite apart from the repercussions elsewhere of this concentration of activity.

*The relevance of the 12 mile radius and this distribution of population are discussed in Chapter 7.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.18. The decision whether or not to site the airport at Thurleigh seems to me to depend to a large degree on the answers to the following three questions:

(i) Can the population to man the airport be provided for in addition to the huge growth already proposed in the area?

(ii) If not, should some of the proposed expansion schemes be abandoned or cut back to make capacity available for the airport labour force, or

(iii) Can the already proposed expansion schemes be regarded as suitable living areas for people working at the airport?

I shall try to answer these three questions separately.

2.19. (i) *That growth for the airport can be achieved simultaneously with planned expansion.* Carrying out planned expansion schemes and their associated development, in addition to providing for the specific needs of the airport would require accommodation for a population of 874,000 (i.e. 554,000+320,000) within a 30 year period. This excludes other fairly close expansions of such places as Peterborough and Luton and Dunstable and excludes the normal growth of the area within the 20 mile radius not defined above.

2.20. Such a scale of growth or anything approaching it has never been undertaken in this country before. Even much more limited growth of the order of 250,000 has been questioned. Certainly, the more limited growth associated with the planned expansion schemes alone has caused concern to the East Midlands Economic Planning Council and to the Ministry of Housing and Local Government, as mentioned in para. 2.16. Add to these planned expansions an additional load stemming from an airport at Thurleigh, and the burden upon the construction industry reaches hitherto unknown proportions, in an area noted for its shortage of labour.

More detailed comments on the difficulties for the construction industry will be given in Chapter 5.

2.21. I am forced to the view that there must be very real doubt whether it is possible for the construction industry to undertake the work load associated with both the airport and the planned expansions, and whether it would be desirable or even feasible to concentrate so much capital investment in one relatively small area, over the next 30 years. (This is further examined in Chapter 5, paras. 5.31–5.37).

2.22. (ii) *That some planned expansion schemes should be abandoned.* If the demands exerted on the construction industry by the achievement of both the planned expansions and the airport cannot be met, I am compelled to examine other possibilities if the airport is to be constructed at Thurleigh. The first of these is that some of the planned expansions should be abandoned or cut back to permit the urbanisation immediately associated with the airport.

2.23. The obvious choices for re-appraisal, if thinking of this kind were to prevail, would be Milton Keynes and/or Northampton. These are the only expansions whose abandonment would play any significant part in reducing the load to be placed on the construction industry. Furthermore, the other smaller expansions, such as at St. Neots, are already under way. The case against a policy reversal of this kind is formidable.

2.24. It is most significant that all of the regional reports—*The South East Study, A Strategy for the South East* and *The South East: A Framework for Regional Planning*—identify the North Buckinghamshire, Bedfordshire and Northamptonshire area as one particularly suited and vital for large-scale growth to meet the needs of London. It is a streak of agreement common to all reports. The Government itself is apparently convinced about the virtues of the proposals and has committed itself to the extent of having already appointed Development Corporations for both Milton Keynes and Northampton.

2.25. The idea of large-scale growth at Milton Keynes and Northampton, germinated from ideas first promoted by Buckinghamshire County Council and repeated and reinforced by "The South East Study" and "A Strategy for the South East". At the time of "The South East Study" a search was being made for sites for major expansions that would help solve London's problems and could develop into countermagnets to London by being large enough and far enough away from the Metropolis to function comparatively independently. Milton Keynes (and, later, the towns of Northampton, Bedford and Wellingborough) was identified because of:

(i) Its position on main roads and main railway lines between the West Midlands and London;

(ii) its outstanding attractiveness to industrialists;

(iii) the scope for large-scale development;

(iv) its distance from London;

(v) the avoidance of the use of first class agricultural land.

2.26. Areas capable of taking growth on this scale and fulfilling the necessarily stringent siting requirements are few and far between. The development already planned and proceeding in this part of the region is a major element in the planning policy for the South East, and it assumes even greater importance now that the proopsals for Ipswich have been abandoned, and whilst those for South Hampshire have not been adopted. The implementation of the proposals for Milton Keynes and Northampton must continue if the population and housing problems of the South East, and in particular London, are to be solved. I must reject, therefore, this second possibility that planned expansion schemes in this area could be abandoned or cut back to permit the establishment of an airport at Thurleigh and its associated urban development.

2.27. (iii) *That use could be made of Milton Keynes and Northampton to accommodate airport employees.*

The basis of the planning policy for the South East Region is not just to rehouse or divert population to new settlements, however. Unless jobs are

Printed image digitised by the University of Southampton Library Digitisation Unit

moved away from the Metropolitan Area at the same time, those jobs will continue to attract migrants from other parts of the country and abroad, merely to replace the population decanted by the "overspill" schemes; the existing and projected labour shortage throughout the Metropolitan Area and the South East will ensure that this would occur. The use of these major town expansion schemes to accommodate airport employees means effectively that a major part of the planning policy for the South East will have been abandoned.

As suggested in Chapter 7 the distances between the proposed site at Thurleigh and Milton Keynes (20 miles) and Northampton (18 miles) are too great to allow any expectation that these towns can significantly contribute to the needs of airport employees. If, despite this evidence, it was decided that it would be feasible to use growth of these towns as the main contributors to housing the airport population, there would be great disadvantages in so doing. Travelling distance in terms of cost and time would obviously be great. The airport would have to compete for manpower with the highly paid job opportunities in other towns that will be more conveniently placed for commuting. The social philosophy of the development of Milton Keynes as a balanced community set out by the Development Corporation in their Interim Report would be completely upset.

2.28. In the face of these factors, I do not believe that it is desirable or practical to work on the assumption that any significant number of employees from the airport can be expected to find their homes in Milton Keynes or Northampton.

I must conclude therefore that the implications of building the airport at Thurleigh would seem to raise insuperable difficulties from the regional planning point of view. I can suggest no way in which the population could be accommodated that is either realistic in terms of achievement or desirable in terms of regional planning objectives.

3. **County policy**

3.1. This Chapter deals with the planning policy for Bedfordshire. The broad policies for the adjoining counties who are associated with this evidence are stated in their supporting evidence.

3.2. The present population of the Administrative County of Bedfordshire is 283,800, (mid 1968 estimate), of which half is in urban areas. The principal towns in the County are Bedford and Kempston, Dunstable, and Leighton Buzzard and Linslade. Bedford and Kempston, which have a combined population of 80,100, comprise by far the largest centre, and being closest to Thurleigh are the most immediately affected by the airport proposal. Luton County Borough, which is not in the Administrative County of Bedfordshire, has a population of 155,400.

3.3. Reference has been made in Chapter 2 to the South East Study Review (Circular 5/66) and to the growth figure of 100,000 people by 1981 in the Administrative County, which was recommended by the Bedfordshire County Council to the Minister of Housing and Local Government, and which excluded any planned expansion schemes. This population is to be distributed in the following manner:

Villages	30,000
Urban Districts of Ampthill Biggleswade and Sandy... ...	5,000
Bedford/Kempston Area	32,000
Leighton Buzzard and Linslade ...	16,000
Dunstable	8,000
Flitwick	9,000
TOTAL ...	100,000

The Minister was further advised that in view of these substantial increases in population, and other increases in adjoining Counties, the proposed South Bedfordshire Green Belt should be extended and the need for a Green Belt around the proposed new city of Milton Keynes should be investigated. To hold the population increase of the County to even the high figure of 100,000 has required far more restrictive policies than previously applied. Of the 30,000 population allocated to the Bedfordshire villages, almost the whole is already committed on land which has received planning permission. Any further growth has, therefore, to be severely limited, notwithstanding that geographically all the villages in the County are vulnerable to development, being ideally located for commuting to a number of major employment centres.

3.4. The Bedfordshire County Development Plan was approved by the Minister of Housing and Local Government in 1955. It is now being reviewed, but in the meantime still provides the basis of County policy. This policy is:

(i) The restriction of spontaneous growth, in conformity with Government policy for the South East Region.

(ii) The concentration of the bulk of new population in towns where all the expected facilities and amenities of urban life either exist or can be provided in the most economic form.

(iii) The steering of the remainder of development, for the most part, into selected villages, on a scale which is commensurate with the needs of the rural area, having full regard to the particular characteristics of each settlement.

(iv) The protection and enhancement of agriculture and the countryside generally by the prevention of sporadic growth.

(v) The maintenance of a reasonable balance between employment and housing, and the location of industry in accordance with Government policy, as applied by the Board of Trade.

(vi) The relieving of the population pressures on the South East Region only at an absorption rate compatible with the financial resources of the County and the retention of its characteristic natural environment, which is principally agricultural.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.5. The policy described above has been applied to the rural areas, and since its inception in 1961 a substantial measure of protection against spoilation of the countryside and the villages has generally been achieved. As a result of the currently increasing pressures for development, this policy is now being re-inforced by planning studies of villages in groups where they share common problems and characteristics. One such group is the Ouse Valley Cluster, for which a recently published report of the County Council confirmed a protective policy of limiting development in the highly attractive stone villages north west of Bedford. Arising from the Civic Amenities Act 1967, Conservation Areas are proposed to be designated at a number of villages and town centres. Felmersham, Harrold and Sharnbrook in the Ouse Valley are included in these proposals.

3.6. The County Map identifies areas of High Landscape Value which qualify for special protection and enhancement, and they include the Chilterns in the south of the County and the Greensand Ridge which extends from the south west corner at Leighton Buzzard right across to Sandy on the north east boundary. The Woburn area of the Greensand has been recommended to the Countryside Commission as an Area of Outstanding Natural Beauty. The Ouse Valley north of Bedford is proposed as an Area of High Landscape Value.

The County Council's policy on gravel workings is dealt with in detail in Chapter 10.

4. Agriculture

4.1. Reference has already been made in Chapter 2 to the recognition by the Standing Conference on London and South East Regional Planning that Thurleigh lies within a belt of high value agricultural land which should remain unaffected and unjeopardised by urban growth (LRP. 1275). Bedfordshire is the only county in the South East Region, apart from Greater London, where horticulture is the dominant agricultural activity. The Ministry of Agriculture, Fisheries & Food has classified most of the land in the County to the north of Luton & Dunstable in the top three grades: the predominance of Grades 1 and 2 is shown on the Constraints Map (Map T.2) at the end of this evidence. There can be little question in the light of these circumstances but that the area should be seen as a priority agricultural reserve of national importance, and both the County Council and the Ministry of Agriculture have based their policies on this supposition.

4.2. In preparing the urbanisation plans for the airport, I have taken account of this agricultural background and tried to suggest sites that would minimally affect this important agricultural reserve. Notwithstanding this attempt, however, the enormous total land-take from agriculture arising from the demand of the airport and its associated development would cause a serious loss of productivity in an industry which requires to be highly competitive with the European Common Market. This would not be the only effect on the agricultural industry. The introduction of such large towns into the heart of this agricultural reserve would cause great nuisance to farmers seeking to develop its potential to the full.

4.3. The National Farmers' Union is dealing with the agricultural aspect in great detail and I support the evidence submitted.

5. Employment and population

Introduction

5.1. The scale of growth associated directly and indirectly with the Third London Airport in terms of both population and employment is agreed to be considerable. Because the growth in the area surrounding Thurleigh is already planned to be very great, it will be useful to describe, firstly, the existing population and employment situation of the area; secondly, the situation as at 1981 and beyond, on the basis of present planning policies; thirdly, to discuss the situation as it would be on the assumption that the airport is located at Thurleigh.

5.2. It has already been suggested at an earlier Hearing that areas within distances of 12 miles and 20 miles are relevant to the location of the two principal categories of urban development associated with the airport. I will return to this point later and, for the moment, will describe the population and employment situation in relation to Thurleigh using these two catchment areas.

Existing employment characteristics

5.3. Within 12 miles of the Thurleigh sites lie four Employment Exchange Areas: Bedford, St. Neots, Rushden and Wellingborough. Here, the main sources of employment for men are in the manufacture of Engineering and Electrical Goods, Clothing and Bricks, and in Construction, Professional and Scientific Services, and Distribution (Table I Appendix 1). For women, the main sources of employment are in Professional and Scientific Services, Clothing manufacture and the Distributive Trades.

5.4. Looking at the wider area with a radius of approximately 20 miles and including the Employment Exchange Areas of Biggleswade, Huntingdon, Northampton, Kettering, Wolverton and Corby, the employment pattern is broadly similar (Table II Appendix 1). The employment structure shares a number of characteristics with the East Midlands Region but shares with the South East Region some concentration of jobs in Professional Services and Distribution.

5.5. This employment pattern, including a high proportion of jobs in stable or expanding industries, suggests that there will not be, in the future, a surplus of labour in the area of any significance. The number of unemployed men and women in the wider area is at present in balance with the number of vacancies reported (Table III Appendix 1).

5.6. In 1966, the net excess of journeys-to-work outwards from the area within 20 miles of Thurleigh over those inwards into that area was about 14,000. Almost all of this outgoing commuting was to the main towns just beyond the wider area, such as Peterborough, Luton and Letchworth. These towns themselves are growth points. About 2,000 people

Printed image digitised by the University of Southampton Library Digitisation Unit

commuted from this wider area to London, the majority from Bedfordshire.

5.7. The effect of the planned expansion schemes throughout the area is itself likely to cause a steady increase in demand for labour as service employment is generated in addition to the manufacturing employment provided.

Existing population characteristics

5.8. Within a 12 mile radius of Thurleigh there were, in mid-1968, 252,000 people and within 20 miles 724,000 people (Table IV Appendix 1). The six largest towns (Northampton, Bedford, Corby, Kettering, Wellingborough and Bletchley) accommodate almost half of the population of the wider area.

5.9. Within the main urban areas the population structure is younger than the national and Regional averages, with a higher birthrate and consequently a high level of demand for social services—such as schools and clinics. In the more rural parts of the area also there is a fairly high rate of population growth, particularly within Bedfordshire.

5.10. The population growth over the period 1951–68 for the 20 mile radius area was 40 per cent compared with 11 per cent for England and Wales and 13 per cent for the South East Region as a whole.

Planned growth to 1981 and beyond

5.11. It has already been noted that the Thurleigh sites lie on the extreme northern edge of the South East Region and adjoin the East Midlands and East Anglian Regions. New and expanded town schemes to meet overspill needs of the West Midlands and of Greater London, begin to overlap one another around the fringe of the regions here.

5.12. *The South East Study* included proposals, now being implemented, for Milton Keynes New City and for major expansion at Northampton and Peterborough. Town expansion schemes have already begun at Wellingborough, Huntingdon, St. Neots and Sandy, all in conjunction with the Greater London Council; at Daventry, a town expansion scheme is being undertaken in conjunction with Birmingham. Development of Corby New Town is proceeding in conjunction with the Greater London Council among others, whilst to the east the growth generated by Cambridge is being partially diverted towards the surrounding small towns and selected villages.

5.13. The strategy outlined in the report prepared by the East Anglia Economic Planning Council proposes that future growth and investment in East Anglia should be concentrated around the Region's four main centres, which include Peterborough and Cambridge, no more than 25 miles from Thurleigh. One of the basic reasons put forward for this recommendation is that this concentration of activity would emphasise the attraction of these four centres, so as to strengthen the economy of the Region.

5.14. *The East Midlands Study* noted the continuing severe overall shortage of labour in that Region and concluded that this would continue. It suggested examination of the north part of the East Midlands to see what contribution planned migration could make there to the Region's future labour shortage, after noting the contribution that similar schemes in the Northamptonshire sub-region would make.

5.15. The total effect of the growth proposed by planned expansion and all other development proposals will in any case be to increase the population of the area within a 20 mile radius of Thurleigh by 392,000 people from 724,000 to a total of about 1,116,000 between 1968 and 1981; this represents a growth of 54 per cent (compared with 40 per cent during 1951–68), and assumes that the major planned expansion schemes will not begin to have an impact upon the area until 1971. Present proposals, for continued planned expansion at Northampton and Milton Keynes up to their target figures and for continued growth by natural increase throughout the rest of the area beyond 1981, will bring the population of the area by 2001 to 1½ million to (Table IV Appendix 1).

5.16. Just beyond the 20 mile radius lie the South Bedfordshire area (with an expected growth of 170,000 over the period 1966–2001), the North Hertfordshire towns of Letchworth, Hitchin, Baldock and Stevenage—already receiving overspill—Cambridge and Peterborough. The population at Peterborough is expected to reach 190,000 by the year 2001.

5.17. The economic base for these planned expansions is, partially, expanding local employment, and the strength of that base has already been referred to, but rests substantially upon national policies concerned with the distribution of employment. The evidence already submitted at the Cublington Hearing regarding Milton Keynes New City, and that now to be submitted to this Hearing by Mr. Woodhall of Northamptonshire County Council suggest that doubts as to the economic viability of those major projects have no basis in fact. National policy has been concerned to ensure that town expansion schemes, representing a significant aspect of national planning policy and of capital investment in the public sector, are made viable.

5.18. In the context of the labour supply position in the South East, however, the evidence points towards a significant and serious labour shortage in the Region by 1981. (See Table 1 *The South East—A Framework for Regional Planning*, and fig. 16 in the Economic Planning Council's—*A Strategy for the South East*.) This already foreseen labour shortage, and the fierce competition for labour that will follow, is likely to underline the attractions to employers of the larger planned expansion schemes with their accessible labour pool.

Employment generated by the airport

5.19. Having regard to the very broad nature of the information supplied by the Commission and of the assumptions made by my colleagues in their evidence at the earlier Stage II Hearings, and despite the comments I make below, I see no purpose at this stage in setting up a different series of hypotheses to be applied to Thurleigh so far as employment generated by the airport is concerned.

5.20. I accept the following definitions of "primary", "secondary" and "service employment".

Printed image digitised by the University of Southampton Library Digitisation Unit

"Primary employment" means employment directly connected with the airport; "secondary employment" means those engaged either in manufacturing industry or commercial projects attracted specifically by the location of the airport; "service employment" means those engaged in providing for the needs of primary and secondary workers and their dependants.

5.21. *Primary employment.* The Commission have given, as their "best estimate", a figure of 65,000 employees for primary employment at the four runway airport, and this figure is used in subsequent calculations in this part of the evidence.

5.22. *Secondary employment.* This is made up of two elements:

(a) those ancillary uses which form an integral part of the airport services but which may occur outside, but closely adjacent to the perimeter of the airport, and

(b) those industries and offices attracted, either directly by the services offered at the airport or by reason of the labour pool created by the new large urban complex.

For the first element, I have taken a figure of 6,500 workers and for the second a figure of 15,000.

5.23. In saying this I am accepting the broad view. It does, however, seem likely that the amount of secondary employment generated by Thurleigh, on the adjacent fringes of the South East, East Midlands and East Anglian Regions would not necessarily follow the pattern found at Heathrow in 1966 as closely as might be the case at the other sites short-listed by the Commission.

The Thurleigh area is, for instance, further from London, and significantly less well endowed with hotels and similar social facilities.

5.24. The other way in which there may also be a difference stems also from the location of Thurleigh at the edges of the three Regions. The rate of growth likely to occur in the area, as a function of the concentration of investment and population into the planned expansion schemes and the airport's associated urban development will generate a vast and expanding local market which would certainly be attractive to employers in foot-loose manufacturing industry and to service industry. The airport itself would also prove an attraction to firms from the three Regions, rather than one.

5.25. The regional planning implications of a decision to site the Third London Airport at Thurleigh, and the attempt to provide the supporting urban structure, would represent a major departure from current regional thinking, going well beyond the "interrelated growth points" of two or three large towns as discussed in "The South East Study" and in later documents. Such a decision would, in my view, wholly dictate the regional planning proposals for major parts of the three Regions.

5.26. *Basic employment.* My acceptance of the figures that have already been used in earlier submissions stems from the recognition that they cannot be other than a "best guess" at this stage; this acceptance provides the following employment demand:

Primary Airport Employment (Commission figure)	65,000	workers
Secondary Airport Employment (General assumption) ...	6,500	„
Secondary Employment in attracted industry (General assumption)	15,000	„
	86,500	

5.27. *Service employment.* To this figure must be added an amount representing the employees who will service the needs of the new population, but recognising that an element of this servicing has been included above under secondary employment. I do not regard the current level of economic activity in the area as necessarily being an accurate guide to the calculation of this figure, and I have taken a multiplier of 2·5 as a general figure for the South East.*

5.28. *Total employment.* My own reasoning leads me to accept the assumptions put forward by Mr. Jennings Smith in his evidence at the Foulness Hearing:

Total employment at mid-1990s

		Females	Males	Males	Total
		%	%		
	Primary	20	80	52,000	65,000
	Secondary	50	50	10,750	21,500
				62,750	86,500
Multiplier 2·5 × 86,500	= 216,250				
less	86,500				
Service workers	129,750				
less 20% regionally located†	26,000				
Service workers within 20 mile radius	103,750		50	52,000	103,750
Male employment				114,750	
Total employment within 20 mile radius wholly generated by the airport					190,250

5.29. *Labour supply.* I have already described the employment situation as it exists and as it is likely to develop in the area immediately around Thurleigh, and well beyond. Having regard to the massive development programme that is proceeding in the area, I do not think that any contribution is likely to be made to the airport's labour needs by the existing unemployed labour force; nor do I expect there

* The multiplier of 2·5 is applied to the basic employment generated by the airport in order to calculate the total employment, which comprises both the basic and the additional service employment. In broad terms, there are an extra 1½ jobs in all kinds of service employment for every job in basic employment as set out in para. 5.26.

† Not all service jobs generated by the airport will be located within 20 miles of the airport itself.

Printed image digitised by the University of Southampton Library Digitisation Unit

and distribution of the resultant urban development.

7.5. With this qualification, I suggest the following provisional distribution of the population:

(i) Raunds area (north of airport) ...	120,000
(ii) Area north of Sandy (south east of airport)	80,000
(iii) Stagsden area (south west of airport)	120,000
(iv) Existing towns within a 20 mile radius	70,000
TOTAL ...	390,000

For the suggested areas of new development an overall town density of 13 persons per acre is regarded as appropriate, being a similar density to that adopted for Milton Keynes and Northampton. Land requirements for new urban areas to accommodate 320,000 of the airport-dependent population are therefore approximately 25,000 acres.

Main features of suggested urban pattern

7.6. The three broad areas of concentration of development chosen are conveniently located as near to the airport site as possible but outside the limits of noise disturbance. The areas north and south west of the airport stand out as the most logical choice, each with an allocation of 120,000 people, being about the maximum which could be envisaged there.

7.7. (i) *Raunds area.* The Raunds area north of the airport has been chosen because of accessibility to the airport, scope to separate local traffic from airport traffic (which is predominantly London orientated), and its association with existing and planned large urban developments to the west and north and with the tentative east-west national motorway proposed in the Ministry of Transport's recent Green Paper.* Notwithstanding these considerations, the location of 120,000 people in the general area of Raunds, where there is much high quality agricultural land, would be directly contrary to the regional and local planning policies referred to in the evidence of Mr. D. Woodhall, Deputy County Planning Officer of Northamptonshire.

7.8. (ii) *Stagsden area.* The Stagsden area immediately south west of Bedford includes a large proportion of Grade II agricultural land. "The South East Study" suggested this area as a possible location for a planned expansion scheme for 30,000 London overspill but the idea has not been taken further. The Ministry of Agriculture, Fisheries and Food has, in the past, stated that in such extenuating circumstances no objections would be raised to the development of the area to about this scale, but nothing like a figure of 120,000 people has ever been considered before, and the loss of such a vast area is hard to contemplate. Only with extreme difficulty could this scale of development be physically sandwiched between the 35 NNI contour and the air pollution zone of the Brickfields, and if site B were chosen some intrusion into the 35 NNI would probably be unavoidable. Whilst the close proximity of the area to Bedford and Milton Keynes would enable the new development to be associated with the two towns' service, social, cultural and economic facilities, nevertheless the already overloaded existing road system would need to be greatly improved, including major new links to the airport, and to the towns themselves.

7.9. (iii) *Sandy area.* The area north of Sandy as a location for 80,000 people avoids the top quality agricultural land, and includes the site of the wartime airfield at Tempsford now partly restored to agriculture. The area is conveniently placed in relation to the airport, and would be served by the A.1 and the main King's Cross railway. A principal disadvantage however, is that the area is somewhat isolated from main urban growth areas, and is separated from Bedford by the A.1. An alternative location was investigated in the area north east of Bedford but was rejected for the reasons that the area is too small to accommodate 80,000 people without taking large areas of high quality agricultural land, and that communications are not so good as at Sandy.

The alternative addition of 80,000 to the suggested population of 120,000 in the Stagsden area would add some 200,000 people to the Bedford/Kempston urban area—far more than could reasonably be absorbed by the end of the century.

8. Communications

Capacity of existing roads

8.1. The most important roads in Bedfordshire are either at or near their theoretical capacity; these are:

(i) *M.1 motorway.* In 1968 the theoretical capacity of 50,000 p.c.u.'s† was exceeded. In the period 1963–68 the rate of increase of traffic was 13·7 per cent per annum.

(ii) *Trunk road A.1.* In 1968 the approximate flow was 16,000 p.c.u.'s per day. The theoretical capacity of the route is 33,000 p.c.u.'s per day. During the period 1963–68 the rate of growth was similar to the national average at 5 per cent per annum. Using this figure, capacity will be reached in 1983. This route, although a dual carriageway, is not constructed to motorway standards. There are four junctions with major routes and numerous junctions with minor roads. There are 2 miles of built-up area and 1 mile restricted in different parts to 40 and 50 m.p.h. Only the Biggleswade bypass and the northern part of the Baldock bypass can be considered as anywhere near to motorway standard.

(iii) *Trunk road A.5.* The traffic has reached the theoretical capacity on the whole length apart from the northern section. This route is a single 30 ft. carriageway.

(iv) *Trunk road A.6.* Some sections of this nominal 24 ft. carriageway route have already reached the theoretical capacity and the remainder will be to full capacity between 1971 and 1986.

* *Roads for the future.* (HMSO; 10s.)

† Passenger car units.

Printed image digitised by the University of Southampton Library Digitisation Unit

(v) *Trunk road A.428.* This route is up to its theoretical capacity apart from the section from Turvey to Bromham. It is a nominal 24 ft. single carriageway throughout its length.

New roads required without the airport

8.2. In my previous paragraph I drew attention to the fact that all the major routes have reached, or will shortly reach, full capacity. Extensive road improvements will therefore be required, whatever happens, to give further capacity. It is envisaged that these improvements will be as follows:

(i) *M.1 motorway.* Provision of alternative routes in the National network of motorways e.g. M.40.

(ii) *Trunk road A.1.* Additional capacity can be obtained by improvements at major junctions. It is not impossible to visualise that the route could be brought to near motorway standard by by-passing built-up areas on the present route.

(iii) *Trunk roads A.5, A.6 and A.428.* On these routes the capacity can be increased by the provision of a second carriageway and by-passing villages on the route.

8.3. In the Ministry of Transport Green Paper two new motorway routes affecting Bedfordshire have been shown, which would be additional to improvements I have just mentioned:

(i) An east-west route linking the M.1 in the region of Northampton with the east coast at Ipswich.

(ii) A second east-west route linking the M.1 at Toddington with the east coast at Harwich.

In addition to the above routes, in the Bedford, Milton Keynes, Northampton and Wellingborough Sub-Regional Study a "C" shaped primary distributor is put forward linking the above areas; this is suggested as a dual 2 or 3 lane motorway. There are numerous small by-passes and urban schemes on County roads which are considered essential to cope with the predicted increases in traffic.

New roads required with the airport

8.4. The siting of an airport at Thurleigh will have an overwhelming impact on the road system as described above. Additional trips will be generated by employment opportunities at the airport, passengers and carriage of freight, the associated urban development, and airport visitors.

8.5. It appears that the following additional works as shown diagrammatically on Map T.4, will be required:

(i) *London link with airport.* There will be a considerable flow of passengers and freight to the Greater London area. Depending upon the modal split between road and rail systems, some additional capacity will be required in the road system, although some form of rapid-transit rail link will be desirable. There is no spare capacity on the M.1 and only a limited amount on the A.1.

It is therefore considered essential to provide a new link, of motorway standard, to the London area. The precise siting of this requires more detailed study, but it seems that it should be situated between M.1 and A.1. For the first few years it would only be necessary to construct the first section from Thurleigh to Trunk Road A.428, with a temporary junction near Gt. Barford, to the A.1; the A.428 would need to be dualled to the A.1 junction at the Black Cat roundabout south of Wyboston. This use of the A.1 will necessitate the construction of the proposed Gt. Barford by-pass and a grade-separated junction at the A.1/A.428. This is only a temporary expedient, and once the A.1 becomes overloaded the remainder of the new motorway link will have to be constructed.

(ii) *Midlands link with airport.* Although the major traffic movement of freight and passengers will be to the Greater London area, it is expected that there will be a considerable flow to the Midlands. The proposed Green Paper strategy route from M.1 (Northampton) to Ipswich passes along the northern boundary of the County, and it seems feasible that this could be brought further south to pass close to the north east corner of the airport. This could then serve as the main link to the Midlands. There would be a junction with the London link motorway east of the airport, and from this point access would be taken to the east entrance of the airport.

(iii) *Inter-urban link.* Mention was made above of the "C" shaped primary distributor proposed to link the urban areas of Wellingborough, Northampton, Milton Keynes and Bedford. By joining the eastern ends of the "C" along the approximate line of the Trunk Road A.6, ready access would be available between these urban areas and the Stagsden area west of Bedford. The urban development proposed north east of Rushden (Raunds) would be linked to the primary distributor ring. For the Sandy development, the alternative routes to the airport are either via Trunk Road A.428 and primary distributor ring or via Trunk Road A.1 and east-west motorway.

(iv) *Bedford–Milton Keynes link.* The purpose of the "C" shaped primary distributor was to link the urban areas of Wellingborough, Northampton, Milton Keynes and Bedford. However, with the associated urban development at Stagsden and the traffic generated by the airport on the complete ring, it is envisaged that additional capacity will be required between Milton Keynes and Bedford. This additional capacity could be provided by improving routes A.422 and B.557, or by constructing a completely new link as an all-purpose primary distributor.

(v) Roads in the vicinity of the airport, such as the B.660 will require partial re-routing.

Printed image digitised by the University of Southampton Library Digitisation Unit

(vi) There will need to be considerable improvement of those routes which will be used during construction work; many of the roads in the area of the proposed airport are nothing more than country lanes.

8.6. The County has three main railway lines:

(i) Sheffield–St. Pancras, passing through Bedford.

(ii) Edinburgh–King's Cross, passing through Biggleswade on the eastern side of the county.

(iii) Manchester–Euston, passing through Leighton Buzzard and Linslade on the western side.

There is an east-west connection between Bedford and Bletchley.

8.7. Mr. Sharman deals in detail with surface transport requirements needed to link the airport with London.

9. Amenity and aircraft noise

The landscape setting

9.1. A 20-mile radius from Thurleigh encompasses the major part of Bedfordshire, and parts of Buckinghamshire, Northamptonshire, Huntingdon and Peterborough, Cambridgeshire and Hertfordshire. Although there is substantial industrial development in the towns and mineral extraction in some parts of the countryside, this is typical agricultural England where the traditional pattern of agricultural villages, market towns and county towns is still the predominant feature.

9.2. In the southern part of this larger area is the fringe of the Chilterns, to the north of which is the wooded ridge of the Greensand extending from Woburn in the south west through Sandy towards Cambridge. North of this is the broad deposit of Oxford Clay on which are located Fenny Stratford, Bedford, St. Neots and Huntingdon. This is an area of broad valleys where the overlying Boulder Clay has been eroded to expose the Oxford Clay, and rolling uplands where the Boulder Clay remains, as at Thurleigh itself.

9.3. North again is the Great Oolite Limestone and associated series which form the undulating uplands extending from Stony Stratford through Olney and Higham Ferrers to Oundle, an area noted for its honey coloured limestone villages and splendid parish churches. To the north of the Olney/Oundle ridge the River Nene flows in a north easterly direction, whilst to the south, the central feature of the area is the valley of the Great Ouse. West of Bedford the river meanders through rolling uplands, and east of Bedford it flows more broadly in its shallow valley.

9.4. Although crossed by many national road and rail routes radiating outwards from London, the area remains comparatively undisturbed, characterised by broad vales, slow-flowing rivers and quiet peaceful countryside. It is an area that will be subjected to a considerable degree of change brought about by substantial development at Northampton, Wellingborough, Milton Keynes, Bedford, Huntingdon, St. Neots and St. Ives, and further afield at Luton/Dunstable and Peterborough. Here, nevertheless, Planning policies however, have been, and will continue to be directed towards the safeguarding of substantial areas of valuable open countryside: to allow prosperous agriculture to continue, to contain the new developments, and to provide ample opportunities for relaxation and recreation.

9.5. The area within the 20 mile radius of the airport is far from the sea but its river valleys, the Nene as well as the Ouse, have great potential for recreational development, and even now satisfy the leisure needs of large numbers of people including anglers from as far afield as London and Coventry. Within the area, the following extensive tracts of countryside have been identified as being worthy of special care (see Map T.2).

(i) Areas of Great Landscape Value:
Existing: Woburn/Greensand Ridge, Kimbolton, Glatton, Olney/Tyringham, Abbotsley, the Hemingfords, Thrapston/Oundle, (Nene Valley and adjoining uplands).
Proposed: Grafham Water/Huntingdonshire Ouse, Beds/Bucks Limestone Belt and Upper Ouse.

(ii) Areas of Outstanding Natural Beauty:
Existing: Chilterns.
Proposed: Woburn.

(iii) Green Belts:
Existing: Nil.
Proposed: South Bedfordshire, Northampton, and Peterborough.

All of these classifications are designed either to protect particularly attractive areas of countryside or to prevent the indiscriminate spread of urban areas. Eleven towns in this area are included in the list of historic towns published by the Council for British Archaeology in 1965, towns whose historic quality requires careful treatment in any planning or redevelopment proposals; these are Ampthill, Woburn, Godmanchester, Huntingdon, St. Ives, St. Neots, Kimbolton, Baldock, Oundle, Thrapston and Northampton.

9.6. The valley of the Great Ouse is recognised by the three County planning authorities concerned as one of the major recreational resources of the area, and detailed and precise policies have been adopted in order to control carefully the amount of new development in the area, to protect the landscape and to promote the development of recreational facilities. These policies are set down in reports entitled *North Bucks Countryside,** *Bedfordshire River Valleys,*† *Ouse Valley Village Cluster,*‡ and *A Policy for Recreation in the Valley of the Great Ouse in Huntingdonshire.*§ Similarly, policies for the control of sand and gravel working in the Ouse valley adopted by the respective Counties are closely attuned to the landscape value of the area. This is dealt with fully in Chapter 10.

---

*County Planning Dept., County Offices, Walton Street, Aylesbury. 5s.

†County Planning Dept., Bedford. 2s. 6d.

‡County Planning Dept., Bedford. 5s.

§County Planning Dept., Walden House, Huntingdon. 10s.

Printed image digitised by the University of Southampton Library Digitisation Unit

The airport itself

9.7. Both alternative sites are on the plateau of high ground north of Bedford, which is a prominent feature in the countryside. The existing Royal Aircraft Establishment buildings are visible on the skyline for many miles and give some idea of the extent to which the much more massive development of a Third London Airport would dominate the landscape over a wide area, obtruding in particular upon the Ouse Valley and smaller valleys to the north and east. The area from within which the airport would be readily visible is indicated on Map T.2.

9.8. *Site A*. The villages of Keysoe Brook End, Keysoe Row and Bletsoe would have to be completely demolished. These still retain a predominantly rural appearance, and although not particularly distinguished, do embody many attractive features associated with the steady growth of agricultural communities over a long period of time. Buildings are sited informally, and more recent development is intermixed with a pleasing variety of brick, stone, colourwashed and thatched buildings of varying ages. The southern end of the large village of Riseley comes within the site and the rest of the village is very close to it. This is a village which serves as something of a focal point for this part of Bedfordshire, and has a secondary school with a wide catchment area, and a considerable amount of recent housing development. It too displays many typically attractive features particularly along its long main street. Within the site area there is one Ancient Monument, namely Bletsoe Castle, and a total of 82 Listed Buildings (8 in the statutory list and 74 in the supplementary list). The total population within the site area (1968) is 773.

9.9. *Site B*. The villages principally affected are Keysoe Row, Bolnhurst, Thurleigh itself and, on the very edge of the site, Bletsoe. Keysoe Row and Bletsoe have already been described, and the other two are similar in character and typical of the area. Thurleigh is the largest, and has experienced an appreciable amount of recent development, but its High Street has the close-knit and interesting character deriving from a variety of buildings of different periods and styles, including the traditional colourwashed and thatched cottages. Within the site area there are three Ancient Monuments—Bletsoe Castle, and Bury Hill Camp and Church Yard Cross at Thurleigh. There are also 53 Listed Buildings (3 statutory and 50 supplementary). The total population within the site area (1968) is 1,014.

Effects of aircraft noise

9.10. The technical evidence on aircraft noise will be given by Mr. Fleming on a similar basis to the evidence produced for the other airport sites. The Chief Education Officer for Bedfordshire and the County Medical Officer of Health will be dealing with the damaging effects of noise on the operation of schools, hospitals, nursing homes and welfare institutions, and on general health, and the costs of insulating such establishments against noise.

9.11. It has been generally agreed that the Noise and Number Index (NNI) devised by the Wilson Committee as a method of quantifying the effects of long term exposure to aircraft noise does not truly reflect the degree of annoyance which the individual may well suffer, but in the absence of any better method this must be accepted as a common basis for all the short-listed sites. What is particularly disturbing is that if the position of the airport at Thurleigh or more significantly its orientation is varied yet again, as well it might be, the area affected by noise could be altered very substantially. For the moment, however, it is only possible to talk in terms of the noise and number index contours based on the two known alternative sites A and B.

9.12. The area to be considered is that within the 35 NNI contour which has been plotted by Mr. Fleming. The physical differences between the alternative sites are not sufficient to warrant their being described separately, but Table I Appendix 2 shows that there are significant differences in the numbers of people living in the respective areas who would be subjected to the nuisance of aircraft noise.

9.13. There is very little difference between sites A and B in terms of numbers of people actually resident within the respective site areas (Table I Appendix 2). For a four-runway airport the same is true of the numbers living within the 55 NNI contour and between the 45 and 55 NNI contours. Between 40 and 45 NNI contours however, there are twice as many affected by site A as by site B, but between the 35 and 40 NNI contours the reverse is the case. In total, taking the whole area within the 35 NNI contours, including the sites themselves, there are fewer people affected by site A (75,879 as opposed to 86,020 for site B). If special features within the same areas are considered there is little to choose between the two alternatives. The use of site A would affect fewer Ancient Monuments than site B, slightly fewer Conservation Areas, rather more Listed Buildings and the same number of Nature Reserves and Sites of Special Scientific interest. The numbers of these features affected are shown in more detail in Table II Appendix 2.

9.14. Within the area affected by noise, the nuisance would range from a level which would make life intolerable (above 55 NNI) down to an annoying level. Within the 55 NNI contour (and outside the actual airport site), whilst it would not be necessary to destroy existing buildings and features to make way for the airport itself, living conditions would be made unbearable by excessive noise and the area would become uninhabitable. Many of the people who would be forced to move have their roots in this locality extending back several generations, and others undisturbed by the present modest activities of the Royal Aircraft Establishment, have chosen to settle in the area because of its innate attractiveness and its accessibility to surrounding urban centres. To all intents and purposes everything within the 55 NNI contour would have to be written off, and the following settlements would be affected:

For site A, Great Staughton, Thurleigh, Felmersham, Radwell, Sharnbrook and Riseley.

For site B, Hail Weston, Great Staughton, Little

Printed image digitised by the University of Southampton Library Digitisation Unit

(vi) There will need to be considerable improvement of those routes which will be used during construction work; many of the roads in the area of the proposed airport are nothing more than country lanes.

8.6. The County has three main railway lines:

(i) Sheffield–St. Pancras, passing through Bedford.

(ii) Edinburgh–King's Cross, passing through Biggleswade on the eastern side of the county.

(iii) Manchester–Euston, passing through Leighton Buzzard and Linslade on the western side.

There is an east-west connection between Bedford and Bletchley.

8.7. Mr. Sharman deals in detail with surface transport requirements needed to link the airport with London.

9. Amenity and aircraft noise

The landscape setting

9.1. A 20-mile radius from Thurleigh encompasses the major part of Bedfordshire, and parts of Buckinghamshire, Northamptonshire, Huntingdon and Peterborough, Cambridgeshire and Hertfordshire. Although there is substantial industrial development in the towns and mineral extraction in some parts of the countryside, this is typical agricultural England where the traditional pattern of agricultural villages, market towns and county towns is still the predominant feature.

9.2. In the southern part of this larger area is the fringe of the Chilterns, to the north of which is the wooded ridge of the Greensand extending from Woburn in the south west through Sandy towards Cambridge. North of this is the broad deposit of Oxford Clay on which are located Fenny Stratford, Bedford, St. Neots and Huntingdon. This is an area of broad valleys where the overlying Boulder Clay has been eroded to expose the Oxford Clay, and rolling uplands where the Boulder Clay remains, as at Thurleigh itself.

9.3. North again is the Great Oolite Limestone and associated series which form the undulating uplands extending from Stony Stratford through Olney and Higham Ferrers to Oundle, an area noted for its honey coloured limestone villages and splendid parish churches. To the north of the Olney/Oundle ridge the River Nene flows in a north easterly direction, whilst to the south, the central feature of the area is the valley of the Great Ouse. West of Bedford the river meanders through rolling uplands, and east of Bedford it flows more broadly in its shallow valley.

9.4. Although crossed by many national road and rail routes radiating outwards from London, the area remains comparatively undisturbed, characterised by broad vales, slow-flowing rivers and quiet peaceful countryside. It is an area that will be subjected to a considerable degree of change brought about by substantial development at Northampton, Wellingborough, Milton Keynes, Bedford, Huntingdon, St. Neots and St. Ives, and further afield at Luton/Dunstable and Peterborough. Here, nevertheless, Planning policies however, have been, and will continue to be directed towards the safeguarding of substantial areas of valuable open countryside: to allow prosperous agriculture to continue, to contain the new developments, and to provide ample opportunities for relaxation and recreation.

9.5. The area within the 20 mile radius of the airport is far from the sea but its river valleys, the Nene as well as the Ouse, have great potential for recreational development, and even now satisfy the leisure needs of large numbers of people including anglers from as far afield as London and Coventry. Within the area, the following extensive tracts of countryside have been identified as being worthy of special care (see Map T.2).

(i) Areas of Great Landscape Value:
Existing: Woburn/Greensand Ridge, Kimbolton, Glatton, Olney/Tyringham, Abbotsley, the Hemingfords, Thrapston/Oundle, (Nene Valley and adjoining uplands).
Proposed: Grafham Water/Huntingdonshire Ouse, Beds/Bucks Limestone Belt and Upper Ouse.

(ii) Areas of Outstanding Natural Beauty:
Existing: Chilterns.
Proposed: Woburn.

(iii) Green Belts:
Existing: Nil.
Proposed: South Bedfordshire, Northampton, and Peterborough.

All of these classifications are designed either to protect particularly attractive areas of countryside or to prevent the indiscriminate spread of urban areas. Eleven towns in this area are included in the list of historic towns published by the Council for British Archaeology in 1965, towns whose historic quality requires careful treatment in any planning or redevelopment proposals; these are Ampthill, Woburn, Godmanchester, Huntingdon, St. Ives, St. Neots, Kimbolton, Baldock, Oundle, Thrapston and Northampton.

9.6. The valley of the Great Ouse is recognised by the three County planning authorities concerned as one of the major recreational resources of the area, and detailed and precise policies have been adopted in order to control carefully the amount of new development in the area, to protect the landscape and to promote the development of recreational facilities. These policies are set down in reports entitled *North Bucks Countryside,** *Bedfordshire River Valleys,*† *Ouse Valley Village Cluster,*‡ and *A Policy for Recreation in the Valley of the Great Ouse in Huntingdonshire.*§ Similarly, policies for the control of sand and gravel working in the Ouse valley adopted by the respective Counties are closely attuned to the landscape value of the area. This is dealt with fully in Chapter 10.

*County Planning Dept., County Offices, Walton Street, Aylesbury. 5s.

†County Planning Dept., Bedford. 2s. 6d.

‡County Planning Dept., Bedford. 5s.

§County Planning Dept., Walden House, Huntingdon. 10s.

Printed image digitised by the University of Southampton Library Digitisation Unit

The airport itself

9.7. Both alternative sites are on the plateau of high ground north of Bedford, which is a prominent feature in the countryside. The existing Royal Aircraft Establishment buildings are visible on the skyline for many miles and give some idea of the extent to which the much more massive development of a Third London Airport would dominate the landscape over a wide area, obtruding in particular upon the Ouse Valley and smaller valleys to the north and east. The area from within which the airport would be readily visible is indicated on Map T.2.

9.8. *Site A.* The villages of Keysoe Brook End, Keysoe Row and Bletsoe would have to be completely demolished. These still retain a predominantly rural appearance, and although not particularly distinguished, do embody many attractive features associated with the steady growth of agricultural communities over a long period of time. Buildings are sited informally, and more recent development is intermixed with a pleasing variety of brick, stone, colourwashed and thatched buildings of varying ages. The southern end of the large village of Riseley comes within the site and the rest of the village is very close to it. This is a village which serves as something of a focal point for this part of Bedfordshire, and has a secondary school with a wide catchment area, and a considerable amount of recent housing development. It too displays many typically attractive features particularly along its long main street. Within the site area there is one Ancient Monument, namely Bletsoe Castle, and a total of 82 Listed Buildings (8 in the statutory list and 74 in the supplementary list). The total population within the site area (1968) is 773.

9.9. *Site B.* The villages principally affected are Keysoe Row, Bolnhurst, Thurleigh itself and, on the very edge of the site, Bletsoe. Keysoe Row and Bletsoe have already been described, and the other two are similar in character and typical of the area. Thurleigh is the largest, and has experienced an appreciable amount of recent development, but its High Street has the close-knit and interesting character deriving from a variety of buildings of different periods and styles, including the traditional colourwashed and thatched cottages. Within the site area there are three Ancient Monuments—Bletsoe Castle, and Bury Hill Camp and Church Yard Cross at Thurleigh. There are also 53 Listed Buildings (3 statutory and 50 supplementary). The total population within the site area (1968) is 1,014.

Effects of aircraft noise

9.10. The technical evidence on aircraft noise will be given by Mr. Fleming on a similar basis to the evidence produced for the other airport sites. The Chief Education Officer for Bedfordshire and the County Medical Officer of Health will be dealing with the damaging effects of noise on the operation of schools, hospitals, nursing homes and welfare institutions, and on general health, and the costs of insulating such establishments against noise.

9.11. It has been generally agreed that the Noise and Number Index (NNI) devised by the Wilson Committee as a method of quantifying the effects of long term exposure to aircraft noise does not truly reflect the degree of annoyance which the individual may well suffer, but in the absence of any better method this must be accepted as a common basis for all the short-listed sites. What is particularly disturbing is that if the position of the airport at Thurleigh or more significantly its orientation is varied yet again, as well it might be, the area affected by noise could be altered very substantially. For the moment, however, it is only possible to talk in terms of the noise and number index contours based on the two known alternative sites A and B.

9.12. The area to be considered is that within the 35 NNI contour which has been plotted by Mr. Fleming. The physical differences between the alternative sites are not sufficient to warrant their being described separately, but Table I Appendix 2 shows that there are significant differences in the numbers of people living in the respective areas who would be subjected to the nuisance of aircraft noise.

9.13. There is very little difference between sites A and B in terms of numbers of people actually resident within the respective site areas (Table I Appendix 2). For a four-runway airport the same is true of the numbers living within the 55 NNI contour and between the 45 and 55 NNI contours. Between 40 and 45 NNI contours however, there are twice as many affected by site A as by site B, but between the 35 and 40 NNI contours the reverse is the case. In total, taking the whole area within the 35 NNI contours, including the sites themselves, there are fewer people affected by site A (75,879 as opposed to 86,020 for site B). If special features within the same areas are considered there is little to choose between the two alternatives. The use of site A would affect fewer Ancient Monuments than site B, slightly fewer Conservation Areas, rather more Listed Buildings and the same number of Nature Reserves and Sites of Special Scientific interest. The numbers of these features affected are shown in more detail in Table II Appendix 2.

9.14. Within the area affected by noise, the nuisance would range from a level which would make life intolerable (above 55 NNI) down to an annoying level. Within the 55 NNI contour (and outside the actual airport site), whilst it would not be necessary to destroy existing buildings and features to make way for the airport itself, living conditions would be made unbearable by excessive noise and the area would become uninhabitable. Many of the people who would be forced to move have their roots in this locality extending back several generations, and others undisturbed by the present modest activities of the Royal Aircraft Establishment, have chosen to settle in the area because of its innate attractiveness and its accessibility to surrounding urban centres. To all intents and purposes everything within the 55 NNI contour would have to be written off, and the following settlements would be affected:

For site A, Great Staughton, Thurleigh, Felmersham, Radwell, Sharnbrook and Riseley.

For site B, Hail Weston, Great Staughton, Little

Printed image digitised by the University of Southampton Library Digitisation Unit

Staughton, Felmersham, Harrold and Milton Ernest.

9.15. Hail Weston, Little Staughton and Great Staughton again display many of the pleasing features of the agricultural villages of this area, with a variety of buildings of different ages and styles and a variety of building materials including limestone, red and grey brick, colourwashed rendering and thatch. Hail Weston is notable for its parish church which has a locally unique timber framed tower. At Little Staughton, the church is finely sited in a commanding position, a little way from the village itself. Great Staughton comprises three almost separate parts—Staughton Green, Staughton Highway which contains most of the village facilities, and the old and very attractive nucleus of Great Staughton itself with the Church, Place House and a group of 18th century cottages.

9.16. The other villages, Radwell, Felmersham, Sharnbrook, Harrold and Milton Ernest are characteristic of the limestone country through which the Ouse flows north and west of Bedford. Limestone is the predominant traditional building material and thatched roofs are common but red brick, red tiles and colourwashing are also used to great effect. The parish churches built in limestone are very fine, particularly that of Felmersham which is described by Pevsner as the noblest medieval church in the County, built during the noblest age of medieval churches.

9.17. Among many interesting features, Harrold has its distinctive village green, and near Sharnbrook is the early Georgian Colworth House now occupied by the Unilever Research Laboratory. All these villages contain some recent development, particularly Sharnbrook which has some large modern estates, but they are among the most attractive villages in the County. Conservation Areas are proposed at Felmersham, Harrold and Sharnbrook. The bridging points at Harrold, Felmersham and Radwell attract considerable numbers of evening and weekend visitors, and Harrold which has a secondary school, and Sharnbrook, are traditional centres in this area with a good range of village facilities.

9.18. Outside the 55 NNI contour but within the 35 NNI contour, the various settlements and features, except for the many and widespread displacements occasioned by new communications to the airport, yet to be determined in detail, would not be physically affected but the quality of life in and around them, and the atmosphere associated with them would be seriously undermined. The character of a large part of rural England with its heritage of architecture, history and landscape, its tradition of slow and gentle change and an atmosphere that has taken centuries to mature, would be shattered almost overnight.

9.19. Looking at this wider area a little more closely, the 35 NNI contour embraces an area of country some 45 miles long and varying from 5 to 14 miles across; in all, some 309 square miles (78 sq. miles in Bedfordshire, 56 in Bucks., 11 in Cambs., 85 in Northants. and 79 in Hunts.).

9.20. Reference has already been made to the major development commitments within 20 miles of the Thurleigh site, including Milton Keynes, Northampton, Wellingborough, Huntingdon and St. Neots. These large areas of development surround an elongated area of countryside, the central feature of which is the valley of the Great Ouse which crosses and recrosses this central tract several times. The area which would be affected by noise above 35 NNI almost completely swamps this central tract which has always been looked upon as an area to be enjoyed for its beauty, peace and quiet.

9.21. The 35 NNI contour covers the Ouse Valley from Stony Stratford in the west to Earith in the east. It directly affects 22 miles of navigable river between Earith and St. Neots, isolates the partly (and potentially completely) navigable stretch from St. Neots to Bedford (26 miles) and again directly affects the 39 miles of unnavigable river above Bedford and up to Stony Stratford. It again directly affects existing riverside recreation centres at Cosgrove, Emberton Park, St. Neots, Offord, Huntingdon, The Hemingfords, St. Ives and Earith and proposed recreational centres at Little Linford, Odell, Radwell, Wyboston, St. Neots, Little Paxton, Huntingdon and St. Ives. Some of these are developments on a large scale, taking the form of water-based country parks which could occupy, for example, 300 acres at Wyboston and 700 acres at Little Paxton.

9.22. The noise nuisance also extends into the "buffer zone" between Northampton and Wellingborough and affects a large area of the Nene Valley, where recreational facilities exist at Billing Aquadrome and Overstone Solarium, and where there are proposals to create further recreational facilities in relation to the river and disused gravel workings. It extends too over Grafham Water, by far the largest water recreation centre in the area with its 1,600 acres of water, sailing and fishing, nature reserves and educational centre, and public access facilities. The recreation area of Salcey Forest which is owned by the Forestry Commission also lies well within the 35 NNI contour.

9.23. None of these would be destroyed physically, but the peace and quiet of their surroundings, which is one of their most essential features, would be shattered and their value as areas of refuge would be significantly diminished—a serious loss particularly in view of the large increase in population which will occur in the surrounding urban areas, and the general rise in per capita demands for leisure facilities.

The associated urban development

9.24. The accommodation of 320,000 people in three new growth areas would involve the loss of some 25,000 acres of agricultural land to urban development, over and above present commitments and would add more large knots along the string of urban areas ringing round the central tract of countryside already described. Each urban centre would have less open countryside around it and the potential demand upon the recreation facilities of the central tract, by then already seriously prejudiced by aircraft noise, would be greatly increased. Furthermore, the Ouse Valley would certainly be ravaged in the process of exploiting every workable deposit of sand and gravel to meet the needs of the airport and

Printed image digitised by the University of Southampton Library Digitisation Unit

associated urban development, and its landscape as known today would cease to exist. This rape of the countryside having been perpetrated, it is difficult to see what incentive there could be to reclaim the derelict pits in the face of continuing and increasing aircraft noise overhead.

9.25. Finally, it should not be forgotten that there is at present a substantial intervening area between London and the industrial Midlands, an area of traditional and prosperous agricultural countryside. If the airport were to come to Thurleigh, and its associated urban development to Bedfordshire and the adjoining counties, all this would be transformed. Almost as soon as he emerged from the congestion of the London metropolitan area, the traveller heading northwards would find himself plunged into another great conurbation lying beneath an umbrella of aircraft noise, and on emerging from that would very soon encounter the urban areas of the industrial Midlands. The opportunities to enjoy the attraction of the open countryside would be very few indeed.

10. Sand and Gravel

Introduction

10.1. The purpose of this chapter is to examine the effects of the large-scale demands for sand and gravel arising from the construction of the airport and its associated roads and urban development, both on the existing mineral resources of the area and on existing planning policies, related to amenity, agriculture and highways. (Map T.5.).

Existing resources

10.2. The airport site lies in the heart of the Middle Anglia Gravel Region, which in turn is subdivided into a number of Service Areas. The Middle Anglia Gravel Region comprises the whole of Bedfordshire, Huntingdon and Peterborough and the Isle of Ely, also the fringes of Cambridgeshire, Northamptonshire, Buckinghamshire, South Lincolnshire, Hertfordshire and Essex. The Bedford Service Area covers the whole of Bedfordshire, North East Buckinghamshire and small parts of Northamptonshire and Hertfordshire. Sand and gravel deposits in the Region are contained mainly in the river terraces throughout the Valleys of the Great Ouse, Ivel, Nene and Cam. It is from these deposits principally that demands have been met and where future demands are likely to be made. Additional to these resources, there is a considerable quantity of sand suitable for building purposes in the outcrop of the Lower Greensand in South Bedfordshire.

County policy

10.3. In Bedfordshire, deposits of sand and gravel occur in river and river terrace deposits, and there are also deposits of glacial gravels. The latter category has never been worked to any great extent because it is extremely erratic in nature, quantity and quality, and frequently coincides with land of the highest agricultural quality. In the main, therefore, the river gravels have been used to satisfy development demands. The working of deposits also leads to a conflict of interests, and a balance has to be struck between the needs of agriculture as a basic national industry, the need to keep the best of the rural landscape relatively unspoilt and the demands of the building industry. Much of the Great Ouse River Valley upstream of Bedford, in particular, contains areas of considerable natural beauty and attractiveness.

10.4. The demand for sand and gravel in the County has increased steadily since 1952, when allocations for future excavations were made in the County Development Plan. The County Council's minerals policy is:

(i) to resist as far as possible new workings in the Upper Ouse Valley upstream from Bedford, which contains areas of considerable natural beauty and attractiveness,

(ii) to encourage the necessary workings in the Lower Ouse Valley and Ivel Valley on sites where there is no direct conflict with agricultural interests, and

(iii) to ensure that the full potential of excavated areas suitable for future water sports recreation is exploited, supported by imaginative landscape schemes.

10.5. New allocations made in recent years have been strictly in accordance with this policy, with the exception of an undertaking of 291 acres at Radwell, lying between the villages of Felmersham and Milton Ernest, which was granted by the Minister of Housing and Local Government following a Public Inquiry in 1966. In arriving at this decision, the Minister noted the shortage of gravel reserves in the Bedford Service Area, but was satisfied that the damage to amenity and agriculture would be reduced to an acceptable level with the implementation of suitable planning conditions controlling the method of working and restoration.

10.6. The working of sand from the outcrop of the Lower Greensand in South Bedfordshire is restricted to land where there is no overriding amenity or agricultural objection.

Rate of working

10.7. Production in recent years has increased steadily, reaching a total in 1967 of approximately 4,400,000 cubic yards in the Region, and nearly 1,000,000 cubic yards in the Bedford Service Area. The average consumption of land within the Service Area has remained fairly constant over the past five years, at a level of roughly 100 acres per year. The Table below gives the production figures for both the Region and the Service Area for the period 1963 to 1967. The annual average for this period in the Middle Anglia Region is 3,890,200 cubic yards, and for the Bedford Service Area 915,400 cubic yards.

	Middle Anglia Region	*Bedford Service Area*
1963	3,364,000 cu. yards	847,000 cu. yards
1964	4,102,000 cu. yards	847,000 cu. yards
1965	3,720,000 cu. yards	889,000 cu. yards
1966	3,868,000 cu. yards	1,000,000 cu. yards
1967	4,397,000 cu. yards	994,000 cu. yards

Demand in South East England

10.8. There is a general shortage of sand and gravel in the South East. The extensive development

Printed image digitised by the University of Southampton Library Digitisation Unit

over the past twenty-five years has led to unprecedented demands which still continue to rise dramatically. The immediate effect of the using up of the reserves in the Greater London area is that supplies will be sought in the next nearest area of supply, which will result in a chain reaction being started, one area drawing from its neighbour next farthest away from London. A reaction such as this must swallow up the reserves in the Bedford Service Area and the Middle Anglia Gravel Region as a whole, and the working life of the known reserves will be greatly reduced. If over and above these demands account is taken of the large planned urban expansions at Milton Keynes, Wellingborough, Northampton, Corby and Peterborough, together with the airport and its associated development, all local resources will be completely exhausted. Substitutes, in the form of crushed rock aggregates or marine gravels, would have to take their place. This could well imply a steep rise in the engineering and building costs.

Future demand without airport

10.9. The demand for sand and gravel in the Middle Anglia Gravel Region will continue to rise, and even without the airport will assume a much accelerated rate as a result of the large-scale demands up to the end of the century from new urban growths including the surrounding large planned expansions. The scale of this demand will fully strain local resources and run counter to current policies which are designed to meet the calculated needs of the sand and gravel industry with the minimum conflict with amenity and agricultural interests.

Airport demand

10.10. *Site construction.* The construction of the airport would require in the region of 4 million cubic yards of aggregates between 1973 and 1990, involving about 400 acres of land. This would impose on the industry an additional annual requirement of roughly 20 per cent of the total estimated production of the Service Area. A breakdown of requirements is given by Mr. Sharman in his evidence.

10.11. *Associated urban development.* A figure of 3,333 acres of gravel-bearing land required for urbanisation is referred to in paragraph 4.8 of Mr. F. B. Pooley's evidence for Cublington. This is accepted as a very broad indication of the scale of demand, which, translated into volume at a local average yield of 10,000 cubic yards per acre, suggests that some 33 million cubic yards could be required.

10.12. *Major traffic routes.* I estimate that a total of roughly 2 million cubic yards of gravel aggregate will be required for the construction of the direct motorway link to London, the inter-urban primary distributor road connecting the urban areas of Wellingborough, Northampton, Milton Keynes and Bedford, and for associated bridges. These figures do not allow for any bulk filling which it is assumed will be won from cuttings. The amount of material calculated for the construction of the primary distributor road does not include those sections of the road which will be required in any case without the airport.

10.13. The following table gives a very rough estimate of the total demand for sand and gravel for the airport project in its entirety:

Airport Construction ...	3·8 million cu. yards
Associated Urban Development ...	33·0 million cu. yards
Major Traffic Routes ...	2·0 million cu. yards
TOTAL ...	38·8 million cu. yards

N.B.—This figure equals the annual average yield from the whole of the Middle Anglia Region (1963–67) for a period of 10 years.

Over and above this, enoromous quantities of aggregate will also be required for the normal planned growth of the region up to the end of the century.

10.14. *Local impact.* Sand and gravel reserves now being worked in Bedfordshire total 455 acres and are likely to yield 4½ million cubic yards; on the assumption that consumption rates of recent years will continue these reserves will be exhausted by 1986. Remaining deposits in the County which can be worked in accordance with County policies are extremely limited. It is therefore inevitable that the requirements for an airport at Thurleigh will demand the full exploitation of all of the reserves in the Ouse Valley, which are in close proximity to the site, irrespective of their location within an agricultural area of considerable natural beauty, with a valuable potential for outdoor recreation. With the physical and visual dominance of the airport and the high degree of disturbance from noise and general activities arising from it, there would be little incentive to restore excavated areas for water sports and to enhance their physical appearance for the benefit of the public generally.

10.15. *Road traffic.* The supplies of gravel or aggregrates to the airport would mean a continual flow of vehicles over extended working hours and would create many traffic hazards and problems on roads neither designed nor intended for this type of traffic and which would be incapable of any substantial improvement in the critical early airport construction period. Although the requirements would vary from phase to phase, frequency of gravel lorry movements is estimated as follows:

Phase I (1973–76)	1 gravel lorry every 2 minutes
Phase II (1978–81)	1 gravel lorry every 5 minutes
Phase III (1982–86)	1 gravel lorry every 1½ minutes
Phase IV (1986–90)	1 gravel lorry every 10 minutes

Conclusions

10.16. The heavy demand on sand and gravel resources in the Middle Anglia Region and the Bedford Service Area, arising from the airport, its associated urban development and new major traffic routes will accelerate greatly the current rate of production of the industry, which is geared to supply local needs. In my opinion the limited reserves in the Region should be retained for the future large-scale growth which is expected.

Printed image digitised by the University of Southampton Library Digitisation Unit

10.17. The inevitable wholesale demand for sand and gravel within easy hauling distance of the airport site and the areas of associated urban development will result in the complete abandonment of existing policies, which are carefully designed to meet the current needs of the sand and gravel industry with minimum harm to amenity and agricultural interests. The effect visually on the area of high amenity in the Ouse Valley, upstream from Bedford, which lies immediately to the west of the airport, will be disastrous, and good agricultural land will be taken.

10.18. The existing local road system will be unable to cope with the continual and concentrated flow of the heavy gravel lorries in the rural area during the critical construction period, and the noise, vibration and danger to local residents and highway users will be intolerable.

11. **Service Utilities**

11.1. Detailed evidence will be given by Mr. Sharman, who will be dealing in particular with the very serious problems of surface-water run-off and increased sewage effluent discharges resulting from the airport and its associated development.

11.2. I understand that the run-off from the airport itself would cause considerable local flooding of the Ouse, into which it would drain directly or through the tributaries of the River Kym, and to counteract this, balancing reservoirs will need to be constructed, probably involving large areas of agricultural land. Evidence on these matters will also be given by the Great Ouse River Authority and the Great Ouse Water Authority.

11.3. Both the Ouse and the Nene are already badly polluted from the discharge of sewage effluent, particularly during periods of dry-weather flow. For many years Bedfordshire County Council has been aware of this problem in the Ouse and, in order to avoid its aggravation, further development has been severely limited on the self-cleansing stretch upstream from the water intake on the north side of Bedford, on the advice of the Ministry of Housing and Local Government. The Ouse provides Bedford with its sole source of supply of drinking water.

11.4. Large demands for water would be created—so far not allowed for—but I understand that provided the necessary water resources were made available, major distribution problems are unlikely. The additional water supplies would probably have to be met from a new source in the Ouse basin.

11.5. I have no information from the Central Electricity Generating Board and Electricity Boards, on the question of electricity supplies. However, servicing the airport alone will inevitably involve the intrusion of overhead power lines in the rural landscape and the installation of a super-grid station in close proximity, to secure supplies to the airport; the total demand likely to be made on the grid by the whole of the urban development which would arise will require substantial reinforcement of existing supplies.

Appendix 1

Employment and population tables

Table I **Employment structure 1967**

Bedford, St. Neots, Rushden and Wellingborough Employment Exchange Areas.

Industrial order		*Persons employed*					
		Males		*Females*		*Total*	
		No.	%	*No.*	%	*No.*	%
	PRIMARY	3,100	5	400	1	3,500	4
VI	Engineering & Electrical		11		7		10
XII	Clothing		10		20		14
XIII	Bricks etc.		9		1		6
	Other manufacturing		21		15		18
	MANUFACTURING	30,800	51	15,000	43	45,800	48
XVII	Building & Construction		10		1		6
XX	Distributive Trades		7		14		9
XXII	Professional Services		7		20		12
	Other Services		20		21		21
	SERVICES	27,000	44	19,500	56	46,500	48
	GRAND TOTAL	60,900	100	34,900	100	95,800	100

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE II **Employment structure 1967**

Bedford, St. Neots, Rushden, Wellingborough, Biggleswade, Huntingdon, Northampton, Kettering, Wolverton and Corby Employment Exchange Areas.

Industrial order		*Persons employed*					
		Males		*Females*		*Total*	
		No.	*%*	*No.*	*%*	*No.*	*%*
	PRIMARY	8,700	5	1,200	1	9,900	4
VI	Engineering & Electrical		10		6		9
XII	Clothing		9		19		13
XIII	Bricks etc.		4		1		3
	Other manufacturing		29		18		24
	MANUFACTURING	83,000	52	40,700	44	123,700	49
XVII	Building & Construction		10		1		7
XX	Distributive Trades		7		13		9
XXII	Professional Services		6		18		10
	Other Services		20		23		21
	SERVICES	68,700	43	50,600	55	119,300	47
	GRAND TOTAL	160,400	100	92,500	100	252,900	100

TABLE III **Recorded vacancies and numbers unemployed**

Employment Exchange Area	*June* 1965		*June* 1966		*June* 1967		*June* 1968		*June* 1969	
	Un-empl.	*Vac.*	*Un-empl.*	*Vac.*	*Un-empl.*	*Vac.*	*Un-empl.*	*Vac.*	*Un-empl.*	*Vac.*
Bedford	267	860	272	896	730	449	777	564	680	829
St. Neots	28	102	28	171	76	59	60	69	58	82
Rushden	58	154	72	159	190	111	106	121	113	115
Wellingborough	158	260	165	358	356	188	231	295	223	230
Biggleswade	16	238	17	290	66	93	63	205	39	162
Huntingdon	84	163	75	239	249	153	216	202	188	211
Northampton	316	879	255	931	661	501	677	501	599	571
Kettering	166	286	165	223	413	59	325	72	363	59
Wolverton	59	118	47	122	118	70	111	150	120	99
Corby	211	303	194	496	425	200	557	311	517	434

TABLE IV **Estimated population within 0-12 and 12-20 miles of Thurleigh**

County	1961		1968		1981		2001	
	0–12m	*12–20m*	*0–12m*	*12–20m*	*0–12m*	*12–20m*	*0–12m*	*12–20m*
Bedfordshire	121,500	61,400	135,800	73,150	168,600	80,400	210,000	130,000
Buckinghamshire	4,550	44,950	5,100	56,500	9,600	153,200	13,000	277,000
Cambridgeshire	—	9,910	—	11,000	—	13,760	—	15,280
Hertfordshire	—	2,700	—	3,200	—	3,900	—	5,000
Huntingdon	16,850	30,600	27,600	42,300	45,100	60,600	54,000	87,000
Northamptonshire	78,400	235,400	83,750	268,650	148,100	404,600	179,000	534,000
TOTAL	221,300	384,960	252,250	454,800	371,400	716,460	456,000	1,048,280

NOTE: These figures represent committed growth; they do not include airport population.

APPENDIX 2

Population villages and special features within noise contours

TABLE I **Population affected by noise: 1968**

Site A

1. Commission's NNI classification

N.N.I. range	*2-runway*	*4-runway*
Airport site	773	773
50+	4,448	7,074
45–50	5,602	7,074
40–45	12,009	29,377
35–40	32,000	31,581
Total	54,832	75,879

2. Norman Fleming's NNI classification

Airport site	773	773
55+	1,616	2,686
45–55	8,434	11,462
35–45	44,009	60,958
Total	54,832	75,879

Site B

1. Commission's NNI classification

N.N.I. range	*2-runway*	*4-runway*
Airport site	1,014	1,014
50+	5,952	7,256
45–50	2,649	8,489
40–45	14,264	13,901
35–40	30,358	55,360
Total	54,237	86,020

2. Norman Fleming's NNI classification

Airport site	1,014	1,014
55+	2,587	2,143
45–55	6,014	13,602
35–45	44,622	69,261
Total	54,237	86,020

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE II **Special features within the 35 N.N.I. contour**

(i) Ancient monuments and conservation areas

	Site A		*Site B*	
	A.M.	*C.A.*	*A.M.*	*C.A.*
Airport site	1	–	3	–
Above 55 N.N.I.				
Beds.	4	2	4	2
Hunts.	1	–	2	–
35–55 N.N.I.				
Beds.	4	5	7	5
Bucks.	4	7	7	11
Cambs.	2	3	2	3
Hunts.	17	5	15	4
Northants.	5	3	6	3
Total	38	25	46	28

(ii) Listed buildings (statutory and supplementary) and churches

	Site A			*Site B*		
	Stat.	*Suppl.*	*Ch.*	*Stat.*	*Supple*	*Ch.*
Airport site	8	74	2	3	50	3
Above 55 N.N.I.						
Beds.	37	84	3	27	75	5
Hunts.	1	—	—	4	5	1
35–55 N.N.I.						
Beds.	103	347	16	100	283	15
Bucks.	184	238	18	157	272	20
Cambs.	22	38	2	22	38	4
Hunts.	192	188	25	180	216	22
Northants.	135	120	30	102	87	22
Total	682	1,089	96	595	1,026	92

(iii) Naturalists Trust Nature Reserves and Sites of Special Scientific Interest

	Site A		*Site B*	
	N.T.N.R.	*S.S.S.I.*	*N.T.N.R.*	*S.S.S.I.*
Airport site	–	–	–	–
Above 55 N.N.I.				
Beds.	1	1	1	1
Hunts.	–	1	–	–
35–55 N.N.I.				
Beds.	–	1	–	2
Bucks.	–	–	–	–
Cambs.	–	–	–	2
Hunts.	1	4	1	4
Northants.	–	4	–	2
Total	2	11	2	11

TABLE III **Settlements and conservation areas within 35 N.N.I. contour**

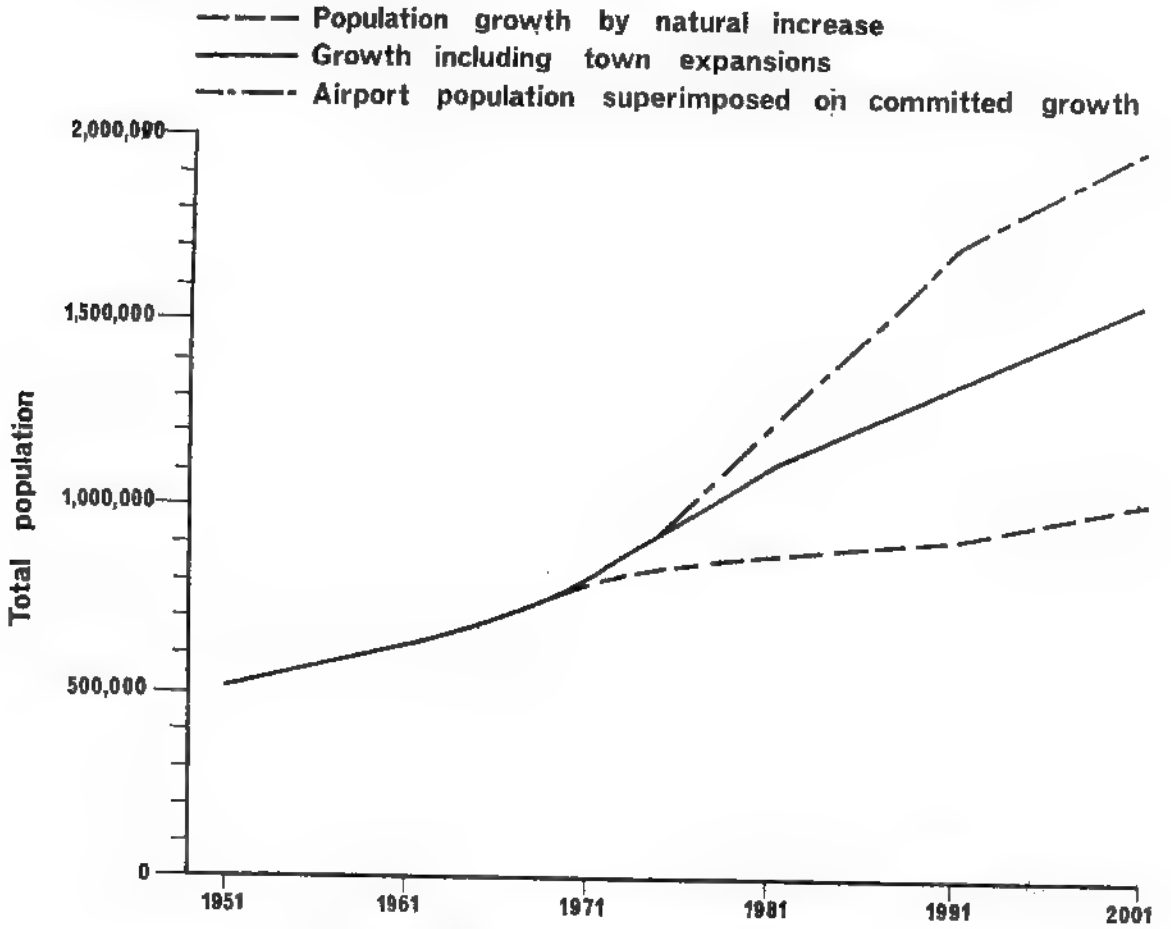
(Conservation areas, existing or proposed are indicated*)

	Site A	**Site B**
(i)	WITHIN AIRPORT SITE	
	Bedfordshire	
	Bletsoe: Keysoe Brook End: Keysoe Row.	Bletsoe: Bolnhurst: Keysoe Row: Thurleigh.
(ii)	ABOVE 55 N.N.I.	
	Bedfordshire	
	Felmersham*: Sharnbrook*: Radwell: Riseley: Thurleigh.	Felmersham*: Harrold*: Milton Ernest: Little Staughton.
	Huntingdon	
	Great Staughton.	Hail Weston: Staughton Highway.
(iii)	35–55 N.N.I.	
	Bedfordshire	
	Bolnhurst: Carlton and Chellington: Cranfield: Harrold*: Hinwick: Knotting: Little Staughton: Milton Ernest: Odell*: Pavenham*: Pertenhall: Souldrop: Stevington*: Turvey*.	Carlton and Chellington: Colmworth: Harrold*: Keysoe Brook End: Keysoe Row: Oakley: Odell*: Pavenham*: Radwell: Riseley: Sharnbrook*: Staploe: Stevington*: Turvey*.
	Buckinghamshire	
	Astwood: Castlethorpe*: Clifton Reynes: Cold Brayfield: Cosgrove: Emberton*: Filgrave: Gayhurst: Hanslope: Hardmead: Haversham: Lavendon: Little Linford: Long Street: Newton Blossomville*: Olney*: Ravenstone*: Stoke Goldington*: Stony Stratford*: Tathall End: Tyringham: Warrington: Weston Underwood*: Wolverton.	Astwood: Bradwell*: Castlethorpe*: Chichley: Clifton Reynes: Cold Brayfield: Emberton*: Filgrave: Gayhurst: Great Linford*: Hanslope: Hardmead: Haversham: Lathbury: Lavendon: New Bradwell: Newport Pagnell*: Newton Blossomville*: North Crawley*: Olney*: Ravenstone*: Sherington: Statonbury: Stoke Goldington*: Tyringham: Warrington: Weston Underwood*: Wolverton.
	Cambridgeshire	
	Conington: Fen Drayton*: Graveley: Over*: Papworth: St. Agnes: Swavesey*:	Conington: Fen Drayton*: Graveley: Over*: Papworth St. Agnes: Swavesey*:
	Huntingdon	
	Brampton: Buckden: Diddington: East Perry: Ellington: Fenstanton: Godmanchester*: Grafham: Great Paxton: Hail Weston: Hemingford Abbotts: Hemingford Grey: Hilton: Holywell: Houghton: Huntingdon*: Kimbolton*: Little Paxton: Needingworth: Offord Cluny: Offord D'Arcy: Southoe: Staughton Highway: St. Ives*: St. Neots*: Stoneley: West Perry.	Bluntisham: Brampton: Buckden: Diddington: Earith: Ellington: Fenstanton: Godmanchester*: Grafham: Great Paxton: Great Staughton: Hemingford Abbotts: Hemingford Grey: Hilton: Houghton: Holywell: Huntingdon*: Little Paxton: Needingworth: Offord Cluny: Offord D'Arcy: Southoe: St. Ives*: St. Neots*: Toseland: West Perry.
	Northamptonshire	
	Ashton: Blisworth: Bozeat: Brafield: Caldecote: Castle Ashby: Cogenhoe: Cosgrove: Courteenhall: Denton: Duncote: Earls Barton: Easton Maudit: Easton Neston: Ecton*: Great Billing: Greens Norton: Grendon: Hackleton: Hartwell: Horton: Mears Ashby: Overstone: Piddington: Preston Deanery: Quinton: Roade: Shutlanger: Stoke Bruerne: Sywell: Tiffield: Towcester*: Whiston: Yardley Hastings*.	Alderton: Ashton: Bozeat: Castle Ashby: Cogenhoe: Denton: Easton Maudit: Earls Barton: Ecton*: Grafton Regis: Great Billing: Grendon: Hartwell: Horton: Mears Ashby: Overstone: Paulerspury: Shutlanger: Stoke Bruerne: Sywell: Towcester*: Whiston: Yardley Hastings*.

Printed image digitised by the University of Southampton Library Digitisation Unit

Fig 1

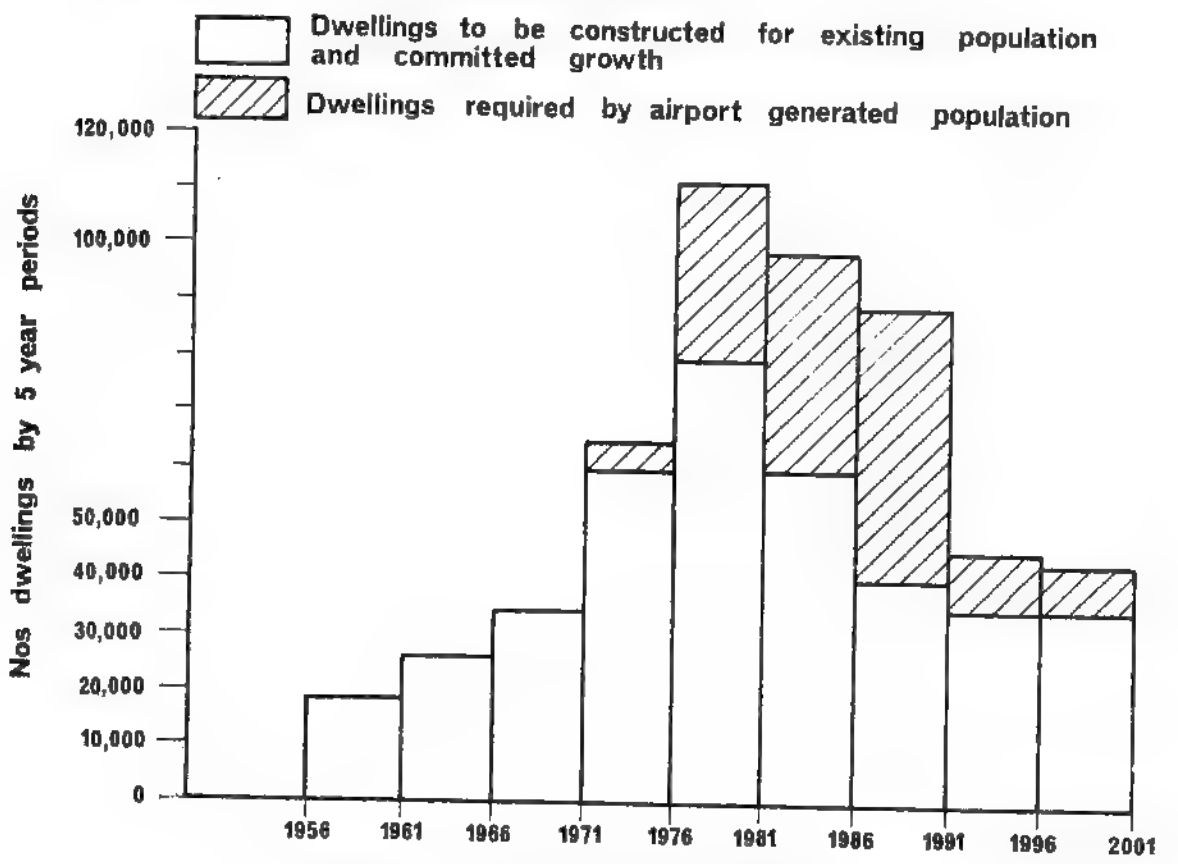
Population growth within 20 mile radius of Thurleigh



(Mr. G. W. Cowley, Beds. County Council.)

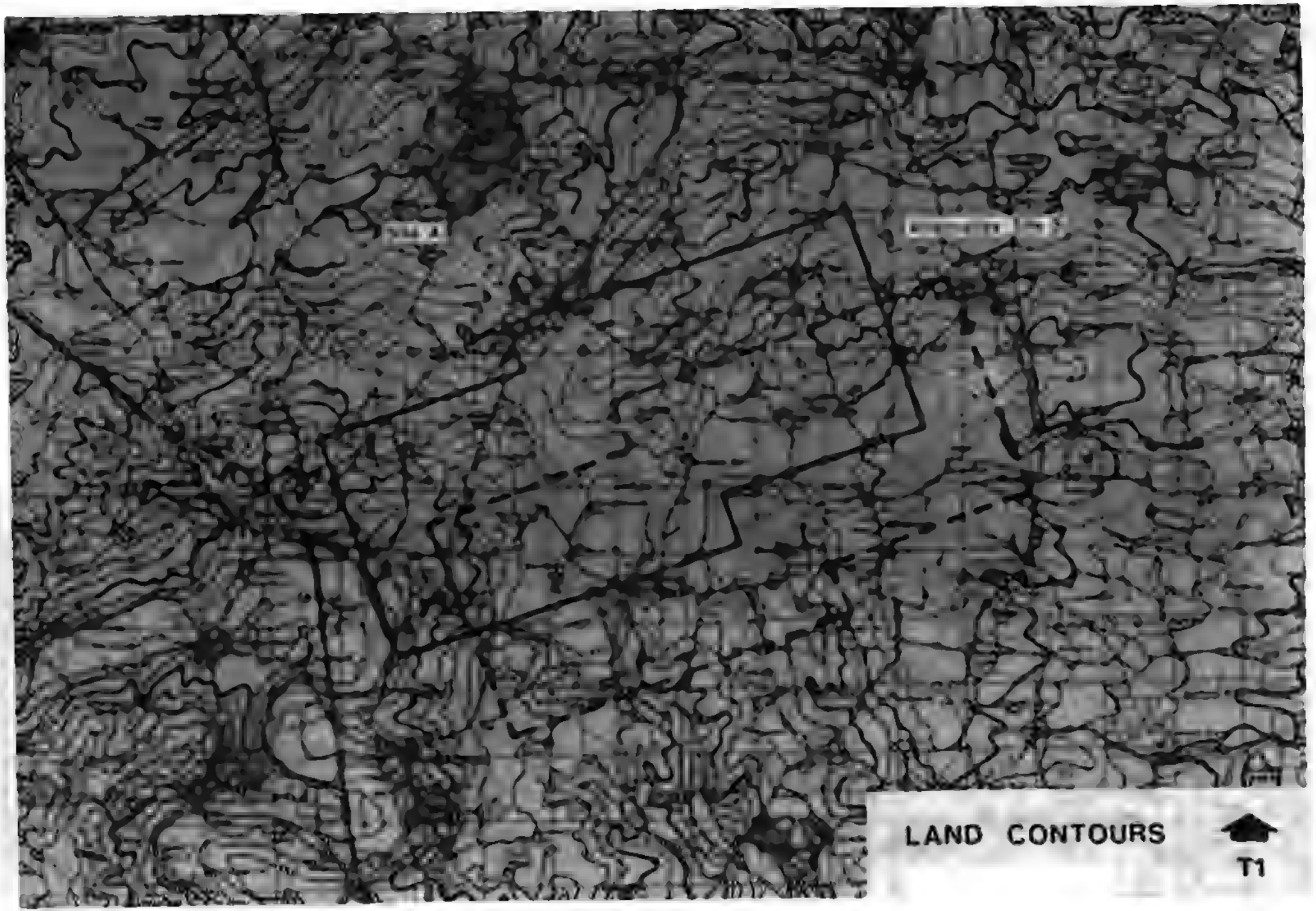
Fig 2

Demands on the construction industry



(Mr. G. W. Cowley, Beds. County Council.)

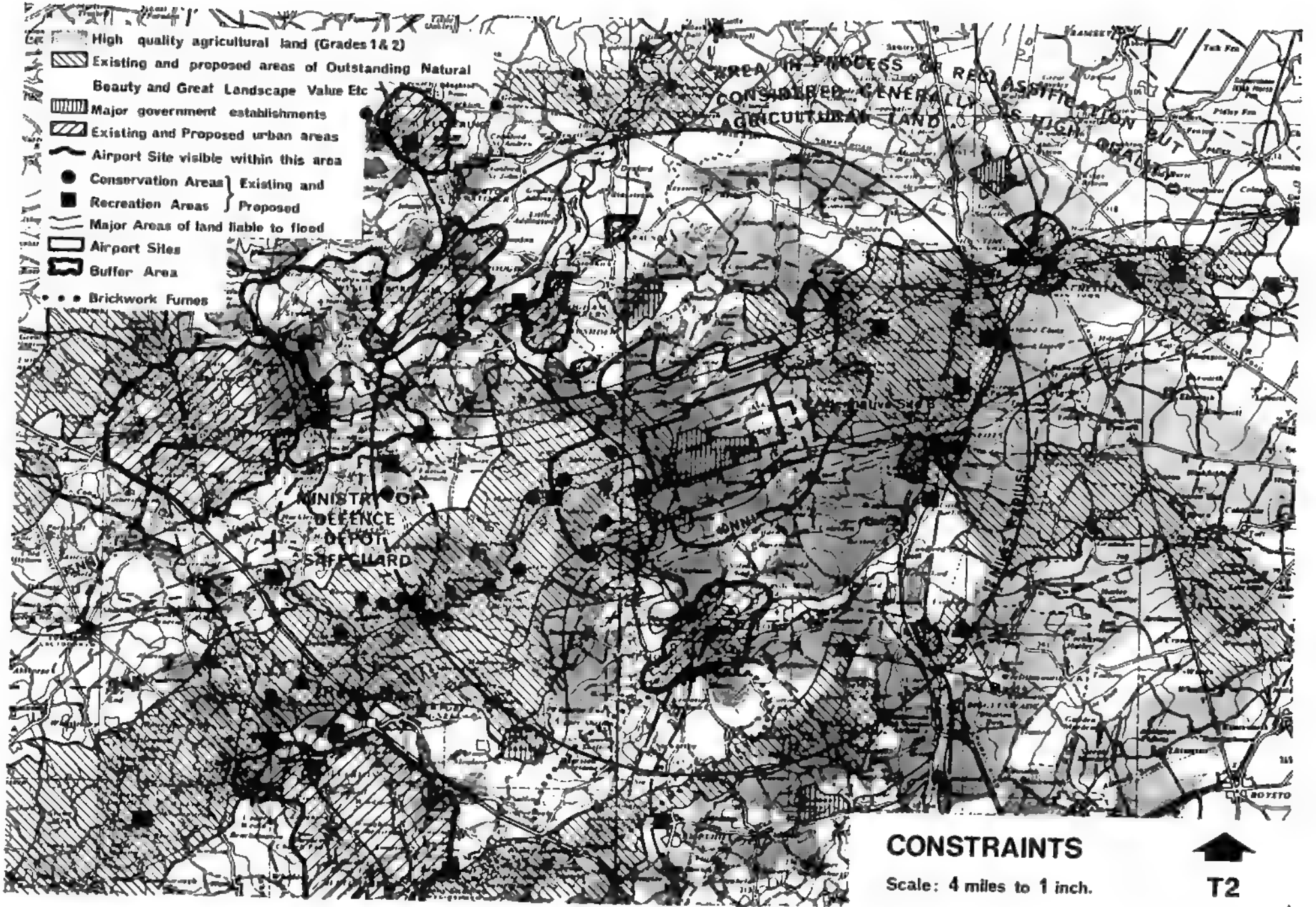
Printed image digitised by the University of Southampton Library Digitisation Unit



(Mr. G. W. Cowley, Beds. County Council.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



(Mr. G. W. Cowley, Beds. County Council.)

Evidence of Huntingdon and Peterborough County Council

SUBMITTED BY MR. L. G. ROBINSON*

I am a Member of the Town Planning Institute, and a Fellow of the Royal Institution of Chartered Surveyors. I am the County Planning Officer for the County of Huntingdon and Peterborough and was the County Planning Officer for the former County of Huntingdonshire from 1956. I am Chairman of the Planning Panel of the East Anglia Regional Consultative Committee.

1.1. The principal planning evidence on behalf of the County Councils of Bedfordshire, Buckinghamshire, Huntingdon and Peterborough and Northamptonshire is contained in the submission presented by Mr. Cowley and for the Huntingdon and Peterborough County Council I support the views and conclusions set out in that document.

1.2. The Councils of the Borough of Huntingdon and Godmanchester, the Borough of St. Ives, the St. Neots Urban District, the Ramsey Urban District, the St. Neots Rural District, the St. Ives Rural District and the Huntingdon Rural District oppose the siting of the Third London Airport at Thurleigh, and on their behalf I have to register objection to the proposal.

1.3. In addition, it is necessary to draw attention to specific effects which a Third London Airport at Thurleigh and its Associated Urban Development would have on this County and in particular the Ouse valley towns of St. Neots, Huntingdon and St. Ives and the surrounding countryside, within a radius of 20 miles of the suggested Airport sites. The following comment refers to both Thurleigh A and B sites except where otherwise stated.

County planning policy

2.1. The County is on the western side of the East Anglia Region and shares a boundary with the East Midlands Region and the South-East Region. The three regions meet at the Three Shire Stone near Covington.

2.2. As the result of a policy of population growth, the County has one of the highest rates of population increase in the country with two active Town Expansion Schemes in the south, at Huntingdon and St. Neots, and is further committed to the major stimulated expansion of Peterborough about 30 miles to the north of the Airport Site by road.

2.3. An attempt has been made, with some success, to play as full a part as possible in relieving the population pressures on the South-East without destroying the attractive natural environment of a highly agriculturally productive sub-region. The County is developing and will develop at the maximum acceptable rate compatible with the satisfactory integration of the incoming population and the financial resources available to provide the infrastructure.

2.4. Any further massive stimulus such as an international Airport at Thurleigh would be entirely contrary to the present policy of rapid but balanced growth and would be wholly misplaced.

2.5. The present population of the County is approximately 200,000 and the major expansion of Peterborough, with its induced and natural increase of population, will substantially increase the present momentum of development. It is estimated that the population of Greater Peterborough will have reached 184,000 within the next fifteen years.

2.6. The financial commitment of the County Council to this Peterborough scheme in relation to its financial resources is such that the Ministry of Housing and Local Government agreed in 1967 to make special financial contributions to the County Council in recognition of the exceptionally high and rapid rate of increase in the civil population of the County foreseen as the result of the development of Peterborough New Town compared with the County's limited resources, in order to ensure that no undue burden should fall on the County rate as a result of the expansion scheme.

2.7. An airport at Thurleigh would have the effect of imposing considerable additional financial liabilities on the County such as the upgrading of roads and other infrastructure expenditure, the sound proofing of schools etc. with no economic advantage, since although any increased population would generate increased financial resources, these would not match up to the increased expenditure on needs attributable to the enhanced population. In addition, further economic disadvantages are likely to be experienced if the airport and new urban magnets were located in the sub-region such as the movement of labour from agriculture and local industry, and the decline of existing town centres.

2.8. Looking further ahead to the end of the planned expansion programme in the mid 1980's the Planning Authority already has in mind that Huntingdon may be the most suitable place to absorb a substantial proportion of the considerable natural growth arising from the previous immigration with some at St. Ives and possibly at St. Neots. It is however these three towns with their associated inner ring of villages which would be most severely affected by noise from the flight paths to Thurleigh, to such an extent that not only would their future role be pre-

* See also p. 2183.

Printed image digitised by the University of Southampton Library Digitisation Unit

judiced but their intrinsic quality and the more recent investment in infrastructure would be virtually wasted. (See Appendix A—tables 1 and 2—Population and Dwellings affected by Thurleigh A and B sites.)

The Thurleigh sub-regional context

3.1. Turning to the airport as a massive generator of employment, a major factor in choosing its location should be, either the proximity of a large community with an employment deficiency and a potential for growth, or a committed expansion which could with advantage absorb the new population. In the case of Thurleigh neither of these considerations apply. Bedford has full employment with built-in constraints on extensive rapid growth and the major growth points of Milton Keynes and Northampton are to distant to make some more than a minor contribution to the immediate airport needs. Peterborough, in this County, is in a similar position being 30 miles by road from the airport site and the remaining South Huntingdonshire towns, would be blighted by the noise constraint even if they were not already committed, as mentioned previously.

3.2. The Milton Keynes, Northampton, Peterborough area is already likely to be so extended in terms of population growth, that the ad hoc introduction of any large unassociated generator, such as an international airport, must either lead to overall congestion in the sub-region or detract from the rate of build-up of the presently accepted expansion schemes.

3.3. It should be clearly understood that the three areas of search, which have been put forward for the siting of the new Associated Urban Development within 12 miles of the airport sites, have been located by a simple "sieve" technique based on broad available information as being least detrimental in a physical sense. The area, which might accommodate 120,000 people between Bedford and Milton Keynes, is within Bedfordshire and Buckinghamshire and it would be inappropriate for me to comment thereon, but the area for 120,000 people in the vicinity of Raunds would directly involve the County as would the area for 80,000 people immediately south of St. Neots. The introduction of new towns in either of these locations would not only be completely contrary to established County Council policy but would severely prejudice present commitments and would therefore be quite unacceptable.

3.4. The general level of congestion in the area will be reflected in terms of the intensity of traffic movement in the Sector extending from London between the national radial routes M1. and A1. It is accepted that both these routes will shortly reach a state of over-load and that both will need to be duplicated to meet the traffic flows arising from committed population growth in this Sector. As an example, the forecast accepted by the East Anglia Consultative Committee for the A1, in this County between Peterborough and Huntingdon is the equivalent of 10 lanes by 1981, and 12 lanes by 2001. To the south of Huntingdon 8 lanes are anticipated. The physical location of new routes within this restricted corridor to meet foreseen demand is so extremely critical that a further radial motorway of perhaps 6 lane capacity to serve the individual needs of an airport at Thurleigh seems out of the question.

3.5. If this is correct the rapidly expanding County of Huntingdon and Peterborough which depends on its accessibility cannot accept the degree of congestion which the airport would entail. Similar arguments would apply to east-west communications between East Anglia and the Midlands at a later date, to which would be added the more local traffic activity generated by the airport itself.

Conservation and environment

4.1. The conservation of landscape and rural environment becomes increasingly important in an area of rapid population growth and County policy is directed to this end. South Huntingdonshire which would be directly affected by the Thurleigh proposal, contains five settlements listed by the Council for British Archaeology as being of national and architectural significance: Huntingdon, Godmanchester, St. Neots, St. Ives and Kimbolton within all of which it is proposed to designate Conservation Areas under the Civic Amenities Act 1967. These settlements, together with many other attractive villages, are set in a countryside of the best scenic quality in the County, including the Ouse Valley and Grafham Water, both of which are providing outlets for water recreation of a high order.

4.2. It is intended to extend the areas of landscape value defined in the County Development Plan to include the whole of the Ouse Valley and Grafham Water in the next review of the Plan.

4.3. In our County within a radius of 20 miles of the airport site originally suggested, there are 858 buildings of Architectural and/or Historic Interest which are listed or on the Supplementary List, 4 nature reserves of national importance, 10 sites of Special Scientific Interest, 11,000 acres of areas of Scientific or Landscape Value and 25 settlements for which it is intended to produce Conservation Area plans under the Civic Amenities Act 1967 (See Appendix B).

Recreation

5.1. Grafham Water, which can be regarded as a 2,000 acre Country Park, is recognised as an outstanding example of a new generation of bulk supply reservoirs which combine facilities for 1,600 acres of sailing to Olympic Standards, trout fishing, public access with car parks serving picnic places at the water's edge and a 370-acre wild fowl nature reserve.

5.2. The valley of the Great Ouse in South Huntingdonshire is an equally important natural outlet for water recreation in an area of population growth over 70 miles from the sea and is intensively used for cruising, sailing, angling and similar noise sensitive holiday activities outlined in policy statements issued by the Planning Authority dealing with recreation and gravel working. The preplanned afteruse of wet gravel pits for boat moorings with cuts to the river is providing attractive accommodation for cruisers and several further schemes are in preparation including one of 700 acres. It is estimated that 1,200 motor boats use this stretch of the Ouse.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.3. The County Council is also concerned that the quality of the water in the Rivers Ouse and Nene should be maintained at an acceptable standard to meet the needs of extraction for domestic supply and for water recreation activities. The Commission will hear evidence from the Great Ouse River Authority that additional major discharges of sewage effluent, which would arise from the Associated Urban Development, would be undesirable.

5.4. Of the 25 miles of the river valley within the County, 22 miles, together with Grafham Water, would be subjected to disturbance by noise within the 35 NNI contour, and some of the most important features would be affected by much higher noise levels including 55 NNI at Grafham Water. This area is of the highest scenic quality in the County.

Sand and gravel

6.1. As the gravel reserves are worked out in and around Greater London increasing pressures are experienced in the Huntingdon Service Area which are intensified by the high local demand. The present output, largely from the Ouse Valley, is about 1 million cubic yards per annum and the 38·8 million cubic yards estimated requirement for the construction of the airport, urbanisation and roads, would therefore have a disastrous effect on an area of great landscape and recreational significance both in terms of land use and visual amenity and the intensive movement of gravel traffic over an extensive period of construction.

Agricultural land loss

7.1. The loss to agriculture of Grade II land, which would be required for an airport at Thurleigh for urbanisation and surface communications, has been referred to in Mr. Cowley's evidence and will be dealt with in depth by the National Farmers' Union. In the national interest, the County Council has accepted the land loss involved in the 1,800 acres Grafham Water Reservoir Scheme and the 7,500 acres for the expansion of Peterborough, but it is firmly opposed to the proposals for further reservoirs at Abbotsley (3,500 acres) and Lutton (1,500 acres), which are likely to be brought forward if Thurleigh were selected.

Conclusions

8.1. In conclusion I would make the following observations on the impact of a Third London Airport if sited at Thurleigh.

8.1.1. The progressive and rapid population growth to which the County is committed would be seriously unbalanced by any further massive stimulus.

8.1.2. The three South Huntingdonshire towns, which are intended to accommodate post-expansion natural population growth, would be so seriously affected by noise that their future and the investment in their infrastructure would be wasted.

8.1.3. Either intolerable congestion would be caused in the sub-region or the rate of build-up of committed expansion would be materially reduced.

8.1.4. It may well be physically difficult to provide for the ultimate volume of radial traffic in the London M1., A1. Sector of the region. (See paragraph 3.4.)

8.1.5. Not only would the future of the South Huntingdonshire towns and the surrounding villages be seriously prejudiced by disturbance from noise, but a large proportion of an area of the highest landscape quality, which makes a major contribution to national and regional outdoor recration and water sport, would be materially affected.

8.2. In my opinion any peripheral economic advantages derived from a Third London Airport, if sited at Thurleigh, would be completely submerged by the disruption of the present character of the south of the County and the logical and well-balanced forward planning policies which have been accepted for its future development. For the reasons I have mentioned the role suggested for Thurleigh is a tragic misfit both in the local, sub-regional and regional context.

Appendix A

Table 1

Population and dwellings affected: Thurleigh A (4 runways)

Roskill Commission basis

	1968		*Future**	
NNI contour range	*Population*	*Dwellings (approx.)*	*Population (approx.)*	*Dwellings (approx.)*
50+	2,780	849	4,013	1,260
45–50	430	136	1,378	452
40–45	15,640	5,140	22,814	7,520
‡35–40	7,620	2,470	10,107	3,299
Total	26,470	8,595	38,312	12,531

‡The 35 NNI suggested by Mr. Fleming used for comparison purposes.

Norman Fleming basis

	1968		*Future**	
NNI contour range	*Population*	*Dwellings (approx.)*	*Population (approx.)*	*Dwellings (approx.)*
55+	545	110	548	111
45–55	2,665	875	4,843	1,601
35–45	23,260	7,610	32,921	10,819
Total	26,470	8,595	38,312	12,531

*1968 Population and outstanding planning consents for residential development and residential allocations in village plans and draft Town Maps (154 dwellings only), as yet without planning permission.

Table 2

Population and dwellings affected: Thurleigh B (4 runways)

Roskill Commission basis

	1968		*Future**	
NNI contour range	*Population*	*Dwellings (approx.)*	*Population (approx.)*	*Dwellings (approx.)*
50+	2,295	705	3,732	1,184
45–50	2,725	845	3,994	1,268
40–45	7,790	2,542	11,324	3,720
‡35–40	14,860	4,931	25,451	8,358
Total	27,670	9,023	44,501	14,530

‡The 35 NNI suggested by Mr. Fleming used for comparison purposes.

Printed image digitised by the University of Southampton Library Digitisation Unit

NORMAN FLEMING BASIS

NNI contour range	1968 Population	1968 Dwellings (approx.)	Future* Population (approx.)	Future* Dwellings (approx.)
50+	590	190	836	272
45–55	4,430	1,360	6,890	2,180
35–45	22,650	7,473	36,775	12,078
Total	27,670	9,023	44,501	14,530

*1968 Population and outstanding planning consents for residential development and residential allocations in village plans and draft Town Maps (approx. 979 dwellings of which 825 are in St. Neots), as yet without planning permission.

APPENDIX B

The following features are located in the County within 20 miles of the original Airport Site.

1. Buildings of architectural and/or historic interest

Radius (miles)	Statutory List	Supplementary list	Total
0–10	119	176	295
10–20	260	303	563
Total	379	479	858

2. Nature conservancy

Radius (miles)	Nature Reserves	Sites of Special Scientific Interest
0–10	Grafham Water Holme Fen	Brampton Wood Calpher Wood Perry Woods
10–20	Monk's Wood West Wood Woodwalton Fen	Portholme Aversley Wood Leycourt Upton Wood Waresley Wood Weaveley and Sand Woods Wennington Wood

3. Areas of scientific or landscape value (approved)

Radius (miles)	Area	Acreage
0–10	Kimbolton	3,000
	Ouse Valley (St. Neots)	500
10–20	Glatton	500
	Ouse Valley (Huntingdon-St. Ives)	3,000
	Abbotsley/Waresley	4,000
		11,000

4. Conservation areas

Radius (miles)	Priority	Intermediate	Ultimate
0–10	St. Neots Kimbolton	Great Staughton Buckden	Hail Weston Catworth
10–20	Huntingdon Godmanchester St. Ives	Stilton Alconbury Weston Alconbury Abbots Ripton Broughton Houghton and Wyton Hemingford Abbots Hemingford Grey Holywell Fenstanton	Glatton Hilton Yelling Great Gransden Abbotsley Waresley
Total	5	12	8

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Huntingdon and Peterborough County Councils

SUBMITTED BY DR. R. C. HOATHER AND
DR. B. A. SOUTHGATE

ROY COLIN HOATHER is a Bachelor of Science and Doctor of Philosophy of the University of London, a Fellow of the Royal Institute of Chemistry, Professional Associate of the Institution of Water Engineers and Fellow of the Royal Society for Health. He has been engaged continuously for the last 26 years in the chemical and bacteriological examination and treatment of public water supplies and the quality of waters in general. He is the senior partner in the practice known as The Counties Public Health Laboratories (Thresh, Beale & Suckling), London. He advises many water supply undertakings and some public health authorities and river authorities on the quality of water supplies. He has advised consulting engineers on public water supplies from the Great River Ouse at intervals during the last 15 years.

BERNARD ALFRED SOUTHGATE is a Bachelor of Arts (Cantab), a Doctor of Philosophy and a Doctor of Science (Aberdeen), a Past President of the Institute of Water Pollution Control and of the Society for Water Treatment and Examination, a Professional Associate of the Institution of Water Engineers, an Honorary Fellow of the Institution of Public Health Engineers, an Honorary Member of the Water Pollution Control Federation of America and of the International Water Pollution Research Association, a Fellow of the Royal Institute of Chemistry. His professional career has been wholly concerned with research on the abatement of pollution and on its chemical and biological effects on natural waters; and from 1943 until his retirement from that position in 1966 he was Director of the Water Pollution Research Laboratory of the Ministry of Technology.

1. The situation of the proposed airport on or close to, the River Great Ouse and its tributaries needs very close consideration with reference to important existing public water supplies.

2. In considering the relative positions of the proposed airport site and the suggested areas for further urban development locations resulting from the airport we have referred to the map T4 appended to the evidence of Geoffrey Cowley.

3. This indicates a population of 120,000 to the west and slightly south from Bedford, another population of 120,000 to the east and slightly northwards from Higham Ferrers and situated on the river Pil which flows into the river Kym, a tributory of the Great Ouse, and a third of 80,000 very close to the confluence of the river Ivel and the Great Ouse about 12 miles upstream of the intake at Offord to Diddington Reservoir.

4. The site of the airport itself is largely surrounded at a distance of some miles by the river Ouse itself and the river Kym.

5. Close to the airport is situated the intake at Clapham for the water supply to the town of Bedford. The water from this intake is treated directly, without storage; therefore bacterial quality is of primary importance and it is essential that there should be no discharges even of treated sewage effluent at any point just above this intake. Moreover if it were proposed to discharge any surface water drainage from the proposed airport into any stream or through any pipe situated above this intake, this would be a matter requiring the most detailed and thorough consideration. With regard to the urban development location on the Western side of Bedford, it would however appear practicable for the sewage to be discharged downstream from the intake at Clapham.

6. Situated at Offord some 20 miles downstream of Bedford is the intake from which water is pumped to the Diddington Reservoir, now also known as Grafham Water, and after storage is treated by the Great Ouse Water Authority. Stage 1 of the water treatment works which is now in operation has a peak output of 25 million gallons per day and it is likely that the Stage 2 works will be designed for a peak output of 75 million gallons per day.

7. This water is being or will be supplied partly as a supplementary supply and partly as the main or sole supply of water to a very large area within the counties of Bedfordshire, Hertfordshire, Northamptonshire and the county of Huntingdon and Peterborough. It is therefore clear that this source of water supply is among the largest and most important in the country. A direct intake nearby at Brompton provides a much smaller supply for the Nene and Ouse Water Board.

8. In order to provide for increasing output from this source, another intake further downstream at Brownshill is planned.

9. The present and future populations within the catchment area of the River Ouse as far downstream as Offord were given in a report by Messrs. Binnie & Partners, Consulting Engineers published by the Ministry of Housing and Local Government in 1965 as:

1964	177,000
1981	324,000
2000	445,000

Printed image digitised by the University of Southampton Library Digitisation Unit

These populations are distributed over a total area of 1,000 square miles, draining to the tributaries of the Great Ouse or to the Great Ouse itself.

10. Sewage effluents from these populations are, or will be, discharged to the Ouse or its tributaries at different points, but on the whole they flow, mixed with river water, for long distances before reaching the intake at Offord. Thus the distance by river of some of the larger places from Offord is over 50 miles. The nearest large town to Offord is Bedford (population about 68,000) and this is 20 miles from it.

11. There is thus good opportunity for the process of "self-purification" to occur between the positions of discharge of effluents and the points at which water is abstracted from the river, considerable oxidation of organic matter and diminution in bacterial content occurring during the time of travel.

12. The proposals regarding the Airport would introduce an estimated further population totalling at least 320,000, approximately equal to the presently planned population of the whole catchment area in 1981, as already quoted. This new population would be located above the water intake at Offord and relatively near it.

13. If sewage effluent from the proposed urban development locations were discharged at these sites, we would expect a severe deterioration in the quality of the water at the intake and therefore a deterioration in some respects in the present satisfactory quality of the treated water.

14. Under present conditions a large amount of water is abstracted when the flow at Offord is within the range 30 to 100 m.g.d., which flow includes of course the sewage effluents at present discharged in the catchment area.

15. It was estimated in 1965 that the average proportion at Offord was then 8 per cent, the proportion in the storage reservoir at Diddington being from 9 to 19 (average 13) per cent; with the then expected rate of increase in population the proportion in the reservoir in 1981 was expected to be from 20 to 41 (average 28) per cent.* From the now proposed further increase in population of 320,000, the volume of sewage effluent would probably be at least 13 m.g.d., thus again increasing substantially the proportion of effluent in the river water.

*Hoather R. C. Chemical Characteristics of River Waters. *Proceedings of the Society for Water Treatment and Examination*, 1966, Vol. 15, p. 44 (Law K.K., in discussion).

16. Before effluents from the proposed airport and the new urban areas serving it are discharged into the Great Ouse above water intakes, the following, we consider, are among the matters which should be quantitatively considered:

(a) The effect on the level of dissolved oxygen in the river, especially at times of low river flow. It might be necessary to require exceptionally high standards of treatment of sewage to prevent the concentration of oxygen from falling to an unacceptably low value.

(b) The concentration in the river water of organic compounds not removeable from sewage by the biological methods of treatment at present used.

(c) The concentration in the river water of inorganic salts, especially chlorides; this concentration normally increases as the proportion of sewage effluent in the water is increased.

(d) Discharge of additional sewage effluent will lead to an increase in the concentration of nitrogenous compounds, especially nitrate, and of phosphate, in the river water. The concentration of nitrate (partly contributed by farm drainage) is already sometimes high; any substantial increase is undersirable in water to be taken for a domestic supply. In addition, nitrate and phosphate are plant nutrients and an increase in their concentration may be expected to lead to an increased, and potentially troublesome, growth of algae in stored river water.

17. If the concentration of either phosphates or compounds of nitrogen had to be reduced in sewage effluents by treatment at the sewage works, it would be necessary, we consider, to carry out extensive trials with pilot plant, since no large-scale plants of the type which would be necessary have so far been built in Great Britain.

18. The proposals we have seen for the establishment of the Airport are not at this stage sufficiently precise for their effects on the water supply from the Great Ouse to be assessed accurately. It is clear however that if the proposals, with their associated increases in population, are implemented, the disposal of sewage and other drainage and its effects on the very large water supply schemes further downstream would be a major matter requiring much detailed, and inevitably lengthy, investigation, probably entailing field work and perhaps development of novel and so far untried processes of sewage treatment.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Northamptonshire County Council

SUBMITTED BY MR. D. M. WOODHALL*

1. My name is David M. Woodhall. I hold a Diploma in Town Planning of the Leeds School of Architecture and Town Planning. I am a Chartered Town Planner and hold the position of Deputy County Planning Officer to the Northamptonshire County Council.

2. Mr. Cowley has presented the principal planning evidence on behalf of the County Councils of:

Bedfordshire
Buckinghamshire
Huntingdon & Peterborough, and
Northamptonshire.

I support the views and conclusions presented by Mr. Cowley, but would refer in greater detail to the effect that the siting of the Third London Airport at Thurleigh and its associated Urban Development would have on Northamptonshire.

The following District Councils wish to be associated with this evidence:

Brackley B.C.	Brackley R.D.C.
Higham Ferrers B.C.	Brixworth R.D.C.
Burton Latimer U.D.C.	Daventry R.D.C.
Irthlingborough U.D.C.	Kettering R.D.C.
Oundle U.D.C.	Northampton R.D.C.
Raunds U.D.C.	Towcester R.D.C.
Rothwell U.D.C.	Wellingborough R.D.C.
Wellingborough U.D.C.	Oundle & Thrapston R.D.C.

The Northampton Development Corporation has requested me to draw the attention of the Commission to the effect of the 35 NNI on the Designation Area for the New Town Expansion.

3. Present planning policies

3.1. Northamptonshire is located in the very centre of England. It forms the most southerly subregion of the East Midlands Region and is bounded to the west and south by the West Midlands Region and South-East Regions respectively, and to the east by the East Anglia Region.

3.2. In the past, Northamptonshire has fully recognised its responsibility to assist in relieving population pressure elsewhere in the country, particularly in the South-East and West Midlands, and within the County at the present time there are two New Towns—one at Corby and the other at Northampton—and two Expanded Towns at Daventry and Wellingborough.

3.3. In addition to the population related to the New and Expanded Town Schemes, net migration into the County has increased in recent years, from an average level of 0·6 per cent per annum in 1961 to 1·2 per cent per annum at the present time, and so far as can be seen, this trend is likely to continue, owing to the proximity of two major conurbations (London and Birmingham).

3.4. The estimated growth in population in the County is sumarised in Table 1 below.

It will be seen that between 1968 and the year 2001 the population in the County and the County Borough will almost double and consequently its character will undergo a profound physical, economic and social change from that of a County which is basically agricultural, with an industrial structure allied to the boot/shoe and engineering industries, to one of continuing agricultural importance, but containing a substantially increased proportion of urban development.

3.5. This considerable urban expansion will generate many pressures and problems, and to provide for properly balanced growth, physically and socially, the County Council has established broad land use strategies and policies for the control of development throughout the County.

3.5.1. In accordance with the Approved County Map, Statutory Maps have been prepared and approved by the Minister in respect of the towns of Brackley, Daventry, Kettering, Rushden and Higham Ferrers, and Wellingborough, and arising out of expansion proposals the approved plans for Daventry and Wellingborough have been revised and sub-

* See also p. 2183.

TABLE NO. 1:

Population

	RGs Est. 1951	*RGs Est. 1961*	*RGs Est. 1968*	*Est. 1981*	*Est. 1991*	*Est. 2001*
Corby U.D.	16,690	36,890	48,150	65,000	83,000	105,000
Daventry M.B.	4,050	5,820	8,500	36,000	42,500	48,500
Northampton C.B.	103,700	104,320	123,690	230,000	260,000	296,000
Wellingborough U.D. (incl. Finedon)	28,380	30,670	34,450	91,000	99,000	109,000
Remainder of County	207,060	222,470	230,020	254,500	281,000	310,500
Total Population in Northamptonshire	359,880	400,170	444,810	676,500	765,500	689,000

Printed image digitised by the University of Southampton Library Digitisation Unit

mitted to the Ministry of Housing and Local Government. In respect of the line of settlements that extend along the trunk road A.6 in Northamptonshire, from Desborough and Rothwell in the north to Higham Ferrers and Rushden in the south, a study is proceeding at the present time with the object of providing a strategy for the co-ordinated development of this urban belt as a whole in association with the New Town of Corby, the expanded town of Wellingborough and the town of Kettering mid-way between the two.

The Master Plan for the expansion of Corby under the New Towns Act, is approved, and consultants are preparing the Master Plan for the Designated Area of Northampton.

3.5.2. In the rural areas the County Council has adopted a policy limiting development to certain large villages and key centres, thereby conserving the countryside for the benefit of agriculture.

Areas of landscape value have been assessed and green belts defined around Northampton and to the North of Milton Keynes New Town.

The policies also seek to maintain open countryside for recreational purposes. There are already many recreational facilities available in the County, but these will need to be greatly enlarged.

Studies are proceeding in accordance with the opportunities offered by the Countryside Act, 1968, with regard to the conservation and increased recreational use of the countryside to meet the demands arising from the increased leisure time and mobility of the large urban population seeking a change of environment within easy reach of their homes.

In particular, investigations are being made into additional recreational facilities in the Nene Valley necessary to provide for the major increase in urban populations at Wellingborough and Northampton.

3.5.3. In Northamptonshire is to be found one of the main ironstone fields in the British Isles, covering about one-third of the County. The principal area at present being worked, however, lies in the broad area bounded by Corby, Oundle and Wellingborough, and the remainder of the field, though mainly unworked, extends South-West beyond Northampton.

It is the County policy to ensure the efficient working and supply of ironstone with the minimum of disturbance and loss of land to agriculture.

Sand and gravel needs have also been assessed in the past and certain areas selected for working. A re-appraisal of the sand and gravel requirements is, however, necessary, to take account of the approved town expansion proposals.

3.5.4. The large urban centres in Northamptonshire are the principal generators of employment. A recent study of employment has shown that there is adequate potential development in the main employment areas to provide for the normal requirements of the County.

In respect of the New and Expanding Towns, however, additional employment opportunities are being provided to ensure the creation of balanced communities related to the programmed influx of overspill population from the "exporting" regions.

In the case of *Wellingborough* it is the policy of the authorities concerned that the construction of overspill housing should be allied to the provision of employment. This is being very successfully pursued and since the first Town Development houses were occupied in 1964, approximately 1,400 families have been housed. In the same period, factories have been constructed for London firms providing employment for approximately 3,000 persons, and at the present time negotiations are proceeding with 17 other industries which could provide employment for a further 2,200 to 2,300 persons.

The New Towns of Corby and Northampton and the Expanded Town of Daventry are, in general, subject to similar policy provisions.

4. The effect of the Thurleigh location on Northamptonshire

4.1. The Roskill Commission have proposed at Thurleigh within Bedfordshire, two alternative sites for the Third London Airport; Site "A" is approximately 4 miles and site "B" approximately 5 miles from the Northamptonshire border.

4.2. The construction of the Third London Airport at Thurleigh will affect Northamptonshire in three major respects, namely:

Noise and disturbance
Associated urban development
Traffic

Mr. Cowley,* Mr. Fleming† and Mr. Sharman‡ have dealt in their evidence with the overall effects on the area that will be affected by the construction of a Third London Airport at Thurleigh. This evidence, therefore, will deal with the local implications only in so far as Northamptonshire is concerned.

4.3. *The Effect of Noise and Disturbance*

The NNI contours published by the Commission§ and suplemented to the newer 35 NNI contour prepared by Mr. Fleming,§ show that Thurleigh "A" would cause nuisance from noise ranging from "unreasonable" down to "a little annoying", over slightly more of Northamptonshire than would be the case for Thurleigh "B".

4.3.1. The following tables show the *1968* population in Northamptonshire, which would be affected by the various noise levels from both sites in respect of a 4-runway airport:

Thurleigh "A"

NNI contour range	*People affected*
50–55	150
45–50	2,415
40–45	9,340
35–40	11,182

*p. 1807.
†p. 1854.
‡p. 1845.
§See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Thurleigh "B"

NNI contour range	*People affected*
45–50	750
40–45	1,344
35–40	16,583

4.3.2. The settlements affected in Northamptonshire vary in character and those which will be affected by the Thurleigh proposal are summarised as follows:

Thurleigh "A"

WITHIN 50 NNI
Yardley Hastings

WITHIN 45–50 NNI
Bozeat
Castle Ashby
Easton Maudit
Horton

WITHIN 40–45 NNI
Cogenhoe
Courteenhall
Denton
Earls Barton
Ecton
Grendon
Hackleton
Piddington
Roade
Whiston

WITHIN 35–40 NNI
Ashton
Blisworth
Brafield
Caldecote
Cosgrove
Duncote
Gt. Billing
Greens Norton
Hartwell
Hulcote
Mears Ashby
Overstone
Preston Deanery
Quinton
Shutlanger
Stoke Bruerne
Strixton
Sywell
Tiffield
Towcester

Thurleigh "B"

WITHIN 45–50 NNI
Yardley Hastings

WITHIN 40–45 NNI
Castle Ashby
Easton Maudit
Hartwell
Whiston
Ashton

WITHIN 35–40 NNI
Alderton
Bozeat
Cogenhoe
Denton
Earls Barton
Ecton
Grafton Regis
Gt. Billing
Heathencote
Horton
Mears Ashby
Overstone
Grendon
Roade
Shutlanger
Stoke Bruerne
Sywell
Towcester
Wood Burcote
Paulerspury
Pury End

4.3.3. Conservation areas have been defined or are proposed for certain settlements within the area which will be affected by noise. These conservation areas have great charm, are built in the native limestone and ironstone, and are listed as follows:

Proposed—Ecton.

Under consideration—Towcester (High Street)
Yardley Hastings.

4.3.4. Ancient monuments and buildings of architectural and historic interest abound within the 35 NNI, and although none will be removed as a result of the airport construction at Thurleigh, the peace and quiet of their rural setting will be dramatically affected.

The following table lists the number of buildings involved within the NNI contours:

Thurleigh "A"

Ancient monuments

WITHIN 50–55 NNI	
Easton Maudit	North of Easton Lodge
WITHIN 45–50 NNI	
Yardley Hastings	Manor House
WITHIN 40–45 NNI	
Earls Barton	Earls Barton Castle
WITHIN 35–40 NNI	
Cosgrove	Roman Villa
Towcester	Bank of Roman Town

Buildings of architectural and historic interest

Village	*Statutory list*	*Supplementary list*
WITHIN 45–50 NNI		
Bozeat	1	—
Castle Ashby	6	—
Easton Maudit	1	—
Horton	6	1
Yardley Hastings	4	15
	18	16
WITHIN 40–45 NNI		
Cogenhoe	2	5
Courteenhall	5	2
Denton	2	4
Earls Barton	1	—
Ecton	12	—
Grendon	5	—
Hackleton	2	4
Piddington	2	5
Roade	5	17
Whiston	2	2
	38	39
WITHIN 35–40 NNI		
Ashton	3	4
Blisworth	10	9
Brafield	4	13
Cosgrove	5	5
Easton Neston	4	—
Gt. Billing	3	7
Greens Norton	5	—
Hartwell	2	7
Mears Ashby	5	—
Overstone	1	2
Preston Deanery	1	2
Quinton	1	2
Shutlanger	2	—
Stoke Bruerne	5	3
Strixton	2	—
Sywell	2	—
Tiffield	2	—
Towcester	22	11
	79	65

Printed image digitised by the University of Southampton Library Digitisation Unit

Thurleigh "B"

Ancient monuments

WITHIN 45–50 NNI	
Yardley Hastings	Manor House
WITHIN 40–45 NNI	
Easton Maudit	North of Easton Lodge
WITHIN 35–40 NNI	
Earls Barton	Earls Barton Castle
Towcester	Bank of Roman Town
Grafton Regis	Alderton Castle Mount
Grafton Regis	Alderton Motte

Buildings of architectural and historical interest

Village	*Statutory list*	*Supplementary list*
WITHIN 45–50 NNI		
Yardley Hastings	4	15
WITHIN 40–45 NNI		
Castle Ashby	6	—
Easton Maudit	1	—
Hartwell	2	7
Whiston	2	2
Ashton	3	4
	14	13

Village	*Statutory list*	*Supplementary list*
WITHIN 35–40 NNI		
Alderton	4	1
Paulerspury	3	1
Bozeat	1	—
Cogenhoe	2	5
Denton	2	4
Earls Barton	1	—
Ecton	12	—
Grafton Regis	3	7
Gt. Billing	3	7
Horton	6	1
Mears Ashby	5	—
Overstone	1	2
Grendon	5	—
Roade	5	17
Shutlanger	2	—
Stoke Bruerne	5	3
Sywell	2	—
Towcester	22	11
	84	59

4.3.5. Within the area of Northamptonshire affected by noise, lies the valley of the River Nene, together with the rolling countryside to the north and south. This is the principal area to which the expanded town of Wellingborough and Northampton look for recreation and a change of environment, and the area which the local authorities concerned are hoping to use more intensively in the future. The existing recreational facilities within the 35 NNI can be tabulated as follows:

Recreational centres intensively used

WITHIN THE 45–50 NNI	
Castle Ashby	Stately Home, parkland, lakes, swimming.
Grendon Hall	Youth centre.
WITHIN THE 35–40 NNI	
Overstone Solarium	Parkland and lakes, caravanning, swimming pool, fishing, dining accommodation.
Billing Aquadrome	Parkland and lakes, caravanning, swimming pool, fishing, children's amusements, restaurant.
Stoke Bruerne	Waterways, museum and boating centre for Grand Union Canal.
Cosgrove Lodge Park	Parking and lakes, caravanning, swimming pool, fishing, sailing, water skiing, hotel, dining accommodation.
The Grand Union Canal	Boating.
Billing/Cogenhoe	Water skiing club.

Areas for Quiet Forms of Recreation:

WITHIN 50–55 NNI	
Long Furlong Woods	Natural history study.
WITHIN 45–50 NNI	
Denton Woods	Natural history, rambling.
Yardley Chase	Natural history, rambling.
WITHIN 40–45 NNI	
Salcey Forest	Natural history, rambling, picnicking.
Little Horton Wood	Natural history, rambling.
WITHIN 35–40 NNI	
Sywell Reservoir	Natural history, fishing.
Sywell Wood	Natural history, rambling.
River Nene (Middle reaches, Northampton/ Cogenhoe)	Boating, fishing, rambling.

These recreational facilities, located in peaceful Northamptonshire countryside, will be seriously affected if the airport is constructed at Thurleigh, and it is doubtful if any purpose would be served in providing further much needed facilities in the Nene Valley in relation to further committed urbanisation, if people are unable to enjoy the peace and quiet of a truly rural environment.

4.3.6. Two airfields and a Ministry of Defence depot are located within the 35 NNI. The local planning authority is required to consult various Government Departments when planning applications are received in the vicinity of both these airfields and the depot.

Sywell Aerodrome (private)
Chelveston Aerodrome (military)
Yardley Chase Depot (Ministry of Defence).

4.4. *The effect of the associated urban development and airport construction*

4.4.1. It has been stated in other evidence placed before the Commission, that airport workers and their famiiles should be located, ideally, within 10 to

Printed image digitised by the University of Southampton Library Digitisation Unit

12 miles of the airport. However, workers, and their families, engaged in the industrial and office development drawn to the general area by the presence of the airport, but not directly dependent on it, could, it is generally agreed, be dispersed up to 20 miles from the airport.

4.4.2. Whilst Mr. Cowley has set out the broad principles underlying the suggested associated urban development pattern, nevertheless, I would draw the Commission's attention to the possibility that, if the Airport is located at Thurleigh, it may appear logical, although in my view undesirable, to assume that the County of Northamptonshire and the New and Expanded Towns, could be required to make some contribution to the urban development associated therewith. Furthermore, it can be accepted that it is physically possible to accommodate approximately 120,000 persons in the vicinity of Raunds and related settlements, together with some proportion of a further 70,000 persons in associated with the committed Town Expansion Schemes, subject to other considerations being satisfactorily dealt with and the assumption that present planning policies would no longer be valid.

4.4.3. However, such assumptions and their implications would be entirely contrary to the established County Council Policy, formulated in the light of circumstances in which the area has already accepted considerable expansion to relieve the problems of both the Midlands and London conurbations. Indeed, it is worthwhile to note the reference in *The East Midlands Study*,* chapter 10, paragraph 419:

> The growth of the towns which have been identified for planned expansion will be accompanied by growth in the other communities, due both to natural increase and to the private migration which the major developments attract on a more dispersed basis. This expansion seems likely to be as much as any area could absorb within a limited time; the demands it will make on the natural and social resources of the sub-region will be very considerable.

The established policies and associated land use strategies arise from the committed programmes of expansion and the purposes which they are intended to fulfil in relieving housing problems in the South-East and Midlands by the creation of balanced communities from an employment and housing viewpoint. As has been stated previously, the County Council have accepted their responsibilities in these matters, but to say that, in effect, the existence of these urban growth settlements justifies the establishment of a Third London Airport in their vicinity, is entirely contrary to the principles of their conception, acceptance and furtherance as balanced communities by the Authorities concerned. The close association of the Third London Airport with the urban growth areas could result in there developing an undesirable predominance of service industry relying, to a marked extent, upon the Airport as a main employment generator.

4.4.4. The road pattern required to meet the needs of travel between the associated urban development and the airport, together with the improvements required to carry constructional traffic, must not be overlooked. There can be no doubt that the existing road system of this part of the County, and indeed, within the 20 mile radius, is totally inadequate to accommodate either the constructional traffic, the airport generated traffic, or the traffic generated by the associated urban development, without the expenditure of very considerable funds thereon. Furthermore, the complexity of urban development which would be created by the association of the airport with the urban growth centres, would result in the need to provide for a completely new pattern of sub-regional, regional and national links, not only to the south, but towards the Midlands and the North, the routes for which, having regard to the existing communications pattern and related settlements, would become more difficult and costly to provide.

4.4.5. Approximately 368 square miles of Northamptonshire lie within 20 miles of the proposed site "A" at Thurleigh. Within this area, *in accordance with approved schemes*, the population is expected to increase by some 202,000 persons between 1968 and 1981, and a further 160,000 persons by the year 2001.

The estimated population growth within 20 miles of site "A" is tabulated in table 2.

4.4.6. Approximately 330 square miles of Northamptonshire lie within 20 miles of the proposed airport site "B" at Thurleigh.

*HMSO; 30s.

TABLE NO. 2:

Population

Town map area	*Miles from Thurleigh*	*1961†*	*1968†*	*1981*	*2001*
Wellingborough (incl. Finedon)	11	30,670	34,450	91,000	109,000
Northampton	18	104,320	123,690	230,000	296,000
Kettering	16	38,570	39,730	41,900	50,000
Rushden and Higham Ferrers	7	21,130	22,240	24,300	29,700
Corby	20	36,890	48,150	65,000	105,000
REMAINING AREAS					
Burton Latimer U.D.	13	4,400	5,270	6.300	7,700
Rothwell U.D.	20	4,800	4,710	4,500	5,500
Oundle U.D.	17	3,300	3,650	4,400	5,300
Irthlingborough U.D.	9	5,170	5,310	5,500	6,800
Raunds	8	4,570	5,190	6,100	7,500
Remainder of County		*65,140	58,300	73,700	90,000
Total within 20 mile radius		318,960	350,690	552,700	712,500

*Includes Duston, Weston Favell and parts of Moulton and Boughton which were transferred to the Northampton County Borough in 1965.

†Registrar General's Mid-Year Estimates.

Printed image digitised by the University of Southampton Library Digitisation Unit

Within this area, in accordance with approved schemes, the population is expected to increase by 185,000 persons between 1961 and 1981, and by a further 118,000 persons by the year 2001. The estimated population growth within 20 miles of site "B" is tabulated in table 3.

TABLE NO. 3: **Population**

Town Map Area	*Miles from Thurleigh*	*1961†*	*1968†*	*1981*	*2001*
Wellingborough (Incl. Finedon)	12	30,670	34,450	91,000	109,000
Northampton	20	104,320	123,690	230,000	296,000
Kettering	17	38,570	39,730	41,900	50,000
Rushden and Higham Ferrers	9	21,130	22,240	24,300	29,700
Remaining Area					
Burton Latimer U.D.	14	4,400	5,270	6,300	7,700
Oundle U.D.	18	3,300	3,650	4,400	5,300
Irthlingborough U.D.	10	5,170	5,310	5,500	6,800
Raunds U.D.	10	4,570	5,190	6,100	7,500
Remainder of County		*61,300	54,450	69,600	85,000
Total within 20 Mile Radius		273,430	293,980	479,100	597,000

*Includes Duston, Weston Favell and parts of Moulton and Boughton which were transferred to the Northampton County Borough in 1965.
†Registrar General's Mid-Year Estimates.

4.4.7. The amenities and recreational facilities located within 20 miles of the Airport site and additional to those within the 35 NNI and mentioned in paragraph 4.3.5 above, can be tabulated as follows:

Green belts and areas of landscape value

1. Oundle/Thrapston (lower reaches of the River Nene and adjoining uplands).
2. The Northampton Green Belt.
*3. The Mid-Northants Uplands (Brixworth Area).

Sites of Special Scientific Interest

1. Westfield Lodge Quarry.
2. White Lodge Quarry.
3. Aldwincle Marsh.
4. Birch Spinney & Mawsley Marsh.
5. Geddington Chase.
6. Thrapston M.A. Station Quarry.
7. Wadenhoe Marsh.
*8. Weldon Stone Quarry.
9. Badsaddle Wood (proposed).
10. Titchmarsh Decoy (proposed).
11. Oundle Wood (proposed).
12. Oundle Gravel Pit (proposed).
13. Grafton Park Wood (proposed).
14. Pitsford Reservoir (part) (proposed).
15. Salcey Forest (part) (proposed).
16. Cogenhoe Quarry (proposed).

* Not within 20 miles of site "B".

Recreational facilities

1. Wicksteed Park	Parkland and lake, children's amusements, restaurant.
2. Pitsford Reservoir	Sailing, trout fishing, picnics, nature reserve.
3. Thrapston Gravel Pit	Sailing, fishing, nature study.
4. Oundle Marina	Boating centre.
5. Rushden/Higham Gravel Pits	Water skiing.

Areas for quiet forms of recreation*

1. Thorpe Malsor Reservoir	Natural history, fishing.
2. Cransley Reservoir	Natural history, fishing.
3. Mawsley Wood	Natural history.
4. Hardwick Wood	Natural history and rambling.
5. Ashton Wold Wood	Natural history.
6. Oundle Wood	Natural history.
7. Glapthorn Cow Pasture	Natural history.
8. Souther Wood Complex	Natural history and rambling.
9. Harry's Park Wood Complex	Natural history and rambling.
10. Geddington Chase	Natural history and rambling.
11. Grafton Park Wood	Natural history.
12. Weekly Hall Wood	Natural history.
13. Newton/Geddington Area Ise Valley	Natural history and rambling.
14. Old Head Wood	Natural history.

4.4.8. Within 20 miles of the airport site "A" there are in Northamptonshire twenty-one Conservation Areas, either already designated, or under consideration under the provisions of the Civic Amenities Act 1968.

Within 20 miles of site "B" there are twenty proposed Conservation Areas.

In both cases these are small villages of great character and charm, representative of the local tradition of building in limestone and ironstone, which are listed as follows:

Approved	Great Oakley (not within 20 miles of site "B").	
Draft Proposals Approved by Committee	Barnwell	Lowick
	Brigstock	Polebrook
	Cotterstock	Sudborough
	*Ecton	Grafton Underwood
Under consideration	Ashton (Nr. Oundle)	Upper Benefield
	Lower Benefield	Little Oakley
	Oundle	Stanion
	Thorpe Malsor	Thorpe Waterville
	†Yardley Hastings	Wadenhoe
	Warkton	Weekley

There are also within 20 miles of site "A", a total of 734 buildings included in the Minister of Housing

* Not within 20 miles of site "B".
† Within 35 NNI—see paragraph 4.3.3. above.

Printed image digitised by the University of Southampton Library Digitisation Unit

and Local Government's Statutory List, and 411 buildings on the Supplementary List.

Within 20 miles of site "B" there are 702 buildings on the Statutory List and 384 buildings on the Supplementary List (including those buildings listed in paragraph 4.3.4 above).

4.4.9. Within 20 miles of both airport sites are considerable areas of agricultural land classified by the Ministry of Agriculture as Grade II (land with only minor limitations).

The rest of the area is classified by the Ministry as Grade III (land with moderate limitations due to soil, relief or climate, or some combination of these factors, which restrict the crops, timing of cultivation or level of yield).

4.4.10. Large tracts of land are subject to planning consents granted by the Ministry of Housing and Local Government to work ironstone, and within this 20 mile radius in Northamptonshire lies the larger part of the workable deposits.

5. Summary

5.1. *The implications of aircraft noise on Northamptonshire*

Not only will large numbers of people in Northamptonshire be affected by aircraft noise, but the recreational value of the Nene Valley and the countryside to the East and South of Northampton would be destroyed if the airport came to Thurleigh. Facilities for recreation in relation to committed expansion proposals will need to be provided beyond the noise nuisance area and must lead in the long term to over-use of the very limited inland recreational facilities, either actual or potential, to be found in this County, which, it must be emphasised, is situated at the maximum distance away from any sea coast which it is possible to reach in England, and which is entirely devoid of heaths, moorlands or open hill ranges.

5.2. *The implications of the associated urban development and airport construction on Northamptonshire*

5.2.1. Existing plans and the committed land use strategies provide for an increase in population in the area within 20 miles of the proposed Airport site "A", from approximately 351,000 persons in 1968 to a population of approximately 713,000 persons by the year 2001. (The equivalent figures for site "B" are 294,000 persons in 1968 to 597,000 persons by 2001.)

A further 120,000 persons in the Raunds Area, together with some proportion of a further 70,000 persons in association with committed Town Expansion Schemes in relation to the Thurleigh project, would result in a growth of over half a million persons in this area by the turn of the century, and would be an unreasonable additional physical and social burden on the County.

Such a proposal would also destroy the equilibrium of the Expanding Towns (whose growth results from the acceptance of overspill from the South-East) which are being planned as balanced communities.

5.2.2. Existing plans to increase the population in the area within 20 miles of the proposed airport at Thurleigh will be possible only if additional water supplies and sewage disposal facilities can be made available. Present proposals do not indicate that there will be any spare capacity for still further substantial urban development. The grave possibility of pollution of the Nene and its tributaries due to be developed as a regional recreational complex cannot be ignored.

5.2.3. The proposal to accommodate a further ±190,000 persons in this area would make serious incursions into valuable agricultural land, some of which would, of necessity, be of Grade II agricultural classification.

5.2.4. The associated urban development in this area will in part be constructed on the ironstone field probably on land which is the subject of current applications and possibly in respect of which consent has been granted for the working of ironstone.

5.2.5. The existing road system is totally inadequate to accommodate either the constructional traffic, the airport generated traffic or the traffic generated by the associated urban development and road proposals to accommodate the requirements of the airport would completely disrupt the present pattern of rural life and destroy the existing rural environment.

6. Conclusion

6.1. The policies of the Northamptonshire County Council as the local planning authority are based on controlled urban growth to relieve population pressures elsewhere in the country, the protection of the countryside in this part of the County, and its preservation for agriculture and the increased demands to be made upon it for recreation.

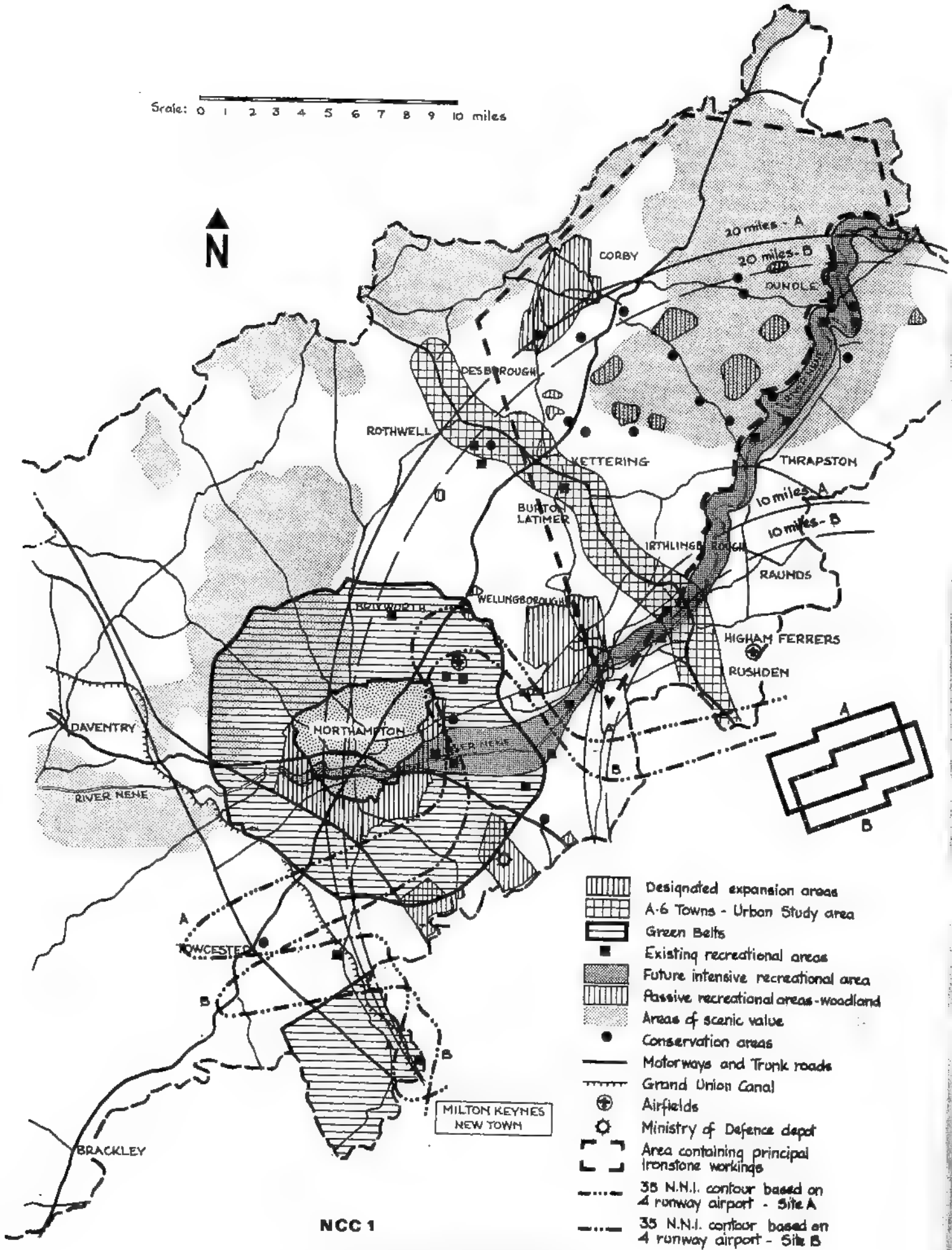
6.2. The proposal to construct an airport at Thurleigh would create a considerable demand for development within a radius of 20 miles of the Airport site, and such a proposal would not be consistent with the County Council's present planning policies which seek to establish a well-founded relationship between population, employment, recreation and the conservation of mineral and agricultural land use.

6.3. The imposition in this area, and at Thurleigh in particular, of the third London airport and its Associated Urban Development on the scale envisaged in relation to the airport, would be contrary to the proposals outlined in the *East Midlands Study*,* contrary to the recommendations contained in the *South East Study*,† contrary to the well-being of a large number of persons living in Northamptonshire and contrary to the proper planning of the area and of the region.

---

* HMSO; 30s.
† HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit



NCC1 Map of affected area.
(Mr. D. M. Woodhall, Northants. County Council.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire, Buckinghamshire, Huntingdon and Peterborough, and Northamptonshire County Councils

SUBMITTED BY MR. F. A. SHARMAN*

1.1. I am a Chartered Engineer, a Bachelor of Science in the University of London, a Fellow of the Institution of Civil Engineers and a Member of the Institution of Highway Engineers, and I have practised as a civil engineer since 1940.

1.2. I am a Partner of Sir William Halcrow and Partners, a firm of Consulting Engineers founded in 1868 and now employing some 350 qualified engineers. The firm has planned, designed and supervised the construction of major projects in all parts of the world, and has made comprehensive transportation surveys and feasibility studies for airport, highway and railway schemes for international organisations and Commonwealth and foreign governments as well as for public authorities in the United Kingdom.

1.3. I was active in the setting up in 1965 of the Regional Studies Association, an organisation much concerned with the co-ordination of physical and economic planning on a regional scale, and have held office in that Association since its foundation. I have prepared a number of reports for Sir William Halcrow and Partners on the question of the location of the Third London Airport for the Essex County Council and other authorities, and have given evidence at the Public Inquiries on airport proposals for Stansted, Southend, Rhoose and Brough. I have also prepared, with my colleagues, evidence for the Commission on the Third London Airport at Stages I and III of their work, and for the Stage II local hearing at Foulness, Nuthampstead and Cublington.

1.4. The object of this evidence is to present a general picture of the development of the Third London Airport and all its local effects, if Thurleigh were to be chosen as the location. Many aspects are covered in greater detail in other evidence being submitted to this local hearing, whilst the planning considerations, on national, regional and local scales, are discussed in the submission by Mr. Cowley. My firm, with the assistance of Mr. Dunford, of International Aeradio Ltd., on air traffic, and of Mr. Fleming on noise (each of whom is submitting evidence to this hearing) has studied the Thurleigh proposals and has sought to identify the most important technical and economic consequences and implications. The attempt here is to state these objectively and to put them into the perspective of the Commission's task.

2. Regional planning

2.1. It is a matter for policy decision, rather than for "expert" assumption, whether the planning aim should be for a more or for a less ruthless pursuit of efficiency of movement and productivity at the expense of gentleness and ease. The policy decisions —inevitably a compromise—cannot be made rationally unless the experts indicate what price in disturbance must be paid for what gain in wealth. The attempt to express this equation clearly and objectively has to be made, not only to assist in the final choice of site, but also in many of the technical assumptions involved in the prediction of the consequences of Thurleigh.

2.2. The Third Airport must be seen as a major direct and indirect employer of labour, with a consequent concentration of about 335,000 people within a 12-mile radius. To go much further afield than this involves a serious penalty, in cost and time of the journey to work of airport employees, for the whole life of the airport—of the order of £1 million per mile of extra distance per year at full development. Mr. Cowley has suggested how this concentration could be achieved with minimum damage to accepted planning criteria, but his conclusion is that the adoption of this hypothetical distribution pattern would be impracticable as an addition to the present growth plans of the sub-region, and unacceptable as a substitution for them. This judgment involves policy considerations beyond a consultant's brief, but it is reasonable to expect that a Thurleigh Third Airport would lead to severe competition for local labour and materials between industry hoping to start up or expand in the area, and the airport-based development activity. This consideration would apply not only to Mr. Cowley's proposed distribution, but also to any practicable variation of it.

2.3. The new motorways, roads, and railways focusing on the Third Airport will form a significant proportion of the region's transport investment: for Thurleigh, they must redouble the already high capacity of the links between London and the Midlands. There are advantages and disadvantages in this concentration on one radial direction from London in the early years, but at later stages the increasing imbalance between the different radials is likely to multiply the problems of adapting urban and suburban areas of London to cope with the traffic flows.

2.4. A complicating factor is that although, by definition, the intention is to develop a Third London Airport, the Thurleigh site would inevitably draw additional traffic from the Midland towns and cities, which might otherwise look towards more northerly airports. The authorities which will have the responsi-

* See also p. 2183.

Printed image digitised by the University of Southampton Library Digitisation Unit

bility for the profitability and efficiency of the three-airport London complex may welcome this, as offering quicker growth towards high turnovers, but regionally and nationally the object must be to optimise efficiency for the whole country's airport system. There is no proof that, in the end, the national air travel demand could be better handled because the Third London Airport encroached into more populous catchments. The assumptions on which our surface travel estimates are based, allow for the effect of Thurleigh's nearness to the Midland towns in that the distribution of air passengers between the three airports at each stage of development, and the choice between road and rail, is worked out by assuming a choice of minimum journey times from all parts of the British Isles. The predictions however assume that the total air traffic to be handled by the three London airports will develop between the upper and lower limits estimated in our second Submission to the Commission (October 1968) wherever the Third Airport is located. Having regard to the fact that airports in adjacent regions can and should handle an appropriate share of international as well as domestic traffic, it is believed that the predicted upper and lower limits for expected growth at Thurleigh are realistic.

2.5. It will be shown in the section of this evidence dealing with surface communications, that the scale of movements by road and rail generated by the airport will require the construction of a complete system of motorways and roads, and a special rail track to London, superimposed on all existing and planned networks. If such works are delayed, the effect will be to impose overloading with consequent loss of efficiency and convenience, on many parts of the region, as well as on the immediate area of the airport and its associated development. When constructed, the additional arteries will cause a greater intrusion in the areas traversed than would have been necessary for the inter-zone and inter-city needs of the region itself.

3. The Timing of decisions, construction and development

3.1. It has been argued already, in other evidence submitted to the Commission, that the need for the first runway of the Third Airport to be operational, will arise between 1976 and 1981. The further stages of development, corresponding to maximum use of the first, second and third runways respectively (and consequent need for the second, third and fourth runways to be complete) would be reached in 1980, 1985 and 1991 on the upper limit of growth, and by 1987, 1994 and 2001 on the lower limit assumption. Passenger facilities of every kind, maintenance activity, employment and services would grow roughly in proportion to air passengers handled, i.e. they would correspond at the upper limit growth rate to 13 million passengers per annum in 1980 and over 70 million by 1990, or to 2·5 million in 1980, 16 million by 1990 and 52 million in 2000 at the lower limit.

3.2. Although the volume of earthworks required to level the site ready for the runways, terminal buildings, and other facilities is as small at either Thurleigh site as one could expect to find anywhere in the Bedford area, the task is still on a very large scale. Twenty million cubic yards of material would have to be moved for the first runway and necessary ancillaries. If this, together with the construction of the corresponding pavings, buildings, roads and railways, is to be achieved by 1976, a very rapid programme of acquisition, resettlement and compensation will need to be followed where people and properties are displaced. There is no precedent in peace-time in this country for the rate at which drastic changes will have to be brought about to meet the physical requirements of construction.

3.3. The timing of the different stages of site occupation, road and rail development, noise imposition and associated urban growth is a matter which greatly affects local people and interests. There is an inherent difficulty in forecasting the programme, as this will have to be adjusted with each revision of air traffic growth estimates. In the interests of all affected, the detailed engineering and environmental plans to full development should be worked out and made known at the earliest moment, and the expected lines of implementation should be constantly revised and published.

3.4. If Thurleigh is chosen, all development planning with a radius of 12 to 15 miles will be dominated by airport considerations and effects will be felt far beyond this. Large-scale construction effort will be virtually continuous if the upper limit of growth is realised; even at the lower limit, there would be little pause between the major phases, and associated development would be a continuous process.

4. Airport construction and layout

4.1. For both the Thurleigh sites (A, the original described in the Commission's document—*Site Information for Stage II Local Hearing—4. Thurleigh (Bedford)*,* and B, the revised site described in the Press Notice issued on the 27th June, 1969,† we have for present purposes assumed the Commission's standard four-runway layout. No doubt this can and will be considerably amended to suit the topography and directions of road and rail approach, and by later thoughts on operational methods. However, it is likely that the end product will bear sufficient resemblance to the present assumption for the principal conclusions to be valid.

4.2. Widely varying estimates of the earthworks needed for site preparation have been given. The reason is that one can assume that a completely flat site (apart from the slopes needed for surface drainage) should be achieved, or that excavation everywhere will be kept to the minimum consistent with paved area slopes not exceeding the maximum required by international standards, or some intermediate assumption can be made. We have worked on the minimum-earthwork basis, as for the previous sites examined. The total, at full development, for site A is estimated to be *74 million cubic yards*, and

* HMSO; 6s.

† Reproduced at p. 1802.

Printed image digitised by the University of Southampton Library Digitisation Unit

for B, *73 million cubic yards*. There would be some disadvantage from an operational point of view in the slopes adopted, compared with a flatter arrangement, and a compromise might be adopted on final design, resulting in figures which might be 10 to 15 per cent higher. In any case, the rate of working might well have to be about 7 million cubic yards per year, which is on any standards a great deployment of activity. Drainage, road diversions and access improvements would spread disturbance well outside the site perimeter, and a labour and supervisory force of several thousand men would have to be quartered in the vicinity.

Gravel—breakdown of requirements

	Runways taxiways and aprons	*Buildings airport roads and tunnels etc.*	*Approach roads and feeder roads*	*Total*
Phase I (one runway) 1973–1976	622,000	406,500	235,000	1,263,500
Phase II (2nd runway) 1978–1981	494,000	284,500	—	778,500
Phase III 3rd & 4th runway 1982–1986	1,116,000	406,500	—	1,522,500
Phase V (final buildings) 1986–1990	—	284,500	—	284,500
	2,232,000	1,382,000	235,000	3,849,000

4.3. In addition to the earthmoving effort, the construction of runway pavings, terminal buildings and the other facilities within the site boundary will call for a flow of materials from all directions. The principal bulk item will be sand and gravel. It is estimated that, for the first, one runway, stage (possibly to be complete by 1976) some 1¼ million cubic yards of aggregates will be needed for the concrete and asphalt. For full development, some 3·8 million cubic yards will be used. A detailed examination of the effects of this demand, taken together with a need for a very large quantity for the associated urban development, and an additional 2 million cubic yards for motorways, is given in Mr. Cowley's evidence. It is sufficient here to assert that for Thurleigh, as for the other two inland sites, the aggregate demand consequent on the airport, taken along with the London area demand's expected excess over resources, would significantly increase the average hauls for gravel in south-east England in comparison with a no-airport or a coast-airport situation, and hence impose a real and inescapable economic penalty on development.

4.4. It must also be recognised that the total construction road traffic for the airport development would be extremely heavy, and much of it would have to be carried, at least in the early stages, on an existing network which is already heavily loaded.

4.5. The general layout of the proposed airport, and the surface links described later in this evidence, and the associated urban development envisaged in Mr. Cowley's evidence,* all imply the establishment of a rapidly developing focus of activity centred upon an area previously expected to remain rural in character. Continuous and intensive building and civil engineering activity, and the progressive increase of primary and service employment at the airport itself, will compete for goods and services with the development of industry and accommodation otherwise intended for the area, or will displace them to less suitable locations. The question of whether these factors will make the airport itself and its associated facilities more expensive than if some other site were used is not for this Inquiry, but the effects of competing demand on all other local activities should be seen as part of the local consequences of the selection.

5. Services and utilities

5.1. *General*

5.1.1. The provision of water, electric power, drainage, communications and fuel for the airport itself, for the associated development, and for the communities serving them, requires careful planning. The cost of ensuring that such provision is adequate, and does not interfere with the rights of any existing community must be taken into account, but at this stage it must be assumed that if a decision to use Thurleigh is reached, all necessary allowance will have been made for these requirements.

5.1.2. There is bound to be anxiety among local residents and authorities, lest the sudden additional demands caused by the airport simply cannot be met without prejudicing the security of other users in the area. The authorities responsible may not all be able to reveal detailed plans at present for coping with the hypothetical requirements, but it must be said that it cannot be beyond the technical resources of the country to solve all the problems concerned. It becomes simply a matter of cost, and cost is not a matter for this hearing.

5.1.3. Even if it is admitted that services costs must be fully provided for in the airport budget, and that physical schemes for adequate services can be drawn up, there may still be some scepticism about the way these things will work out in practice. It will be no easy matter to allocate fairly the investment costs in services which are primarily installed for the new demand, but also benefit existing communities: this is similar to the "new towns" situation, but here the dilemmas may be more acute and the time available for their solution may be shorter. It would be reassuring if undertakings could be given that in the relevant planning process at all stages, adequate participation by local authorities of all levels would be arranged.

---

* p. 1807.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.2. *Water*

5.2.1. The airport demand requirement is expected initially to be between 0·7 and 1·5 million gallons per day (m.g.d.) and rise to an estimated 6 million gallons per day at full development perhaps in the year 1990.

5.2.2. Apart from the airport itself, additional demand will arise to the extent that the area population will exceed the population assumed in present water supply planning, if the Thurleigh site is used.

5.2.3. Thurleigh lies within the water supply zone of south-east England, Grafham Water being only eight miles from the centre of the airport. To cope with the water demand of the airport and its associated urban development it might be necessary to bring forward some of the schemes at present under consideration. The schemes most suited to accept the influx of population into the Thurleigh area, at least in the initial years of the airport development, might be based on the extension of Grafham Water and the construction of new reservoirs. A particular scheme, which is at present in the committee stage in Parliament, includes the construction of a reservoir at Empingham in Rutland into which water from the Nene and Welland rivers will be pumped. This will relieve the pressure of demand on Grafham Water, and, together possibly with the construction of additional new reservoir capacity (which might include a proposal for Abbotsley in Huntingdonshire) will ensure that a supply is available for the airport and the associated urban development.

5.2.4. The feasibility and cost of other schemes has still to be fully investigated but it is not unreasonable to assume that the water supply needs of the airport and its associated urban development can be met by existing plans in the the initial years of the airport's development, and by the bringing forward, if necessary, of proposals at present under investigation to meet demands at full development. It must at the same time be recognised that the priorities which will have to be given to the solution of the water supply problems will imply interference with present long-term objectives and the acceptance of some schemes which arouse local objection.

5.3. *Sewage and waste disposal, and surface water drainage*

5.3.1. There are already serious drainage problems in the Ouse valley. The river carries a high proportion of effluent in dry weather, and is subject to flooding at other times. To prevent any worsening of the quality of the river water or any extension of the flood hazards, compared with the present position and the improvements now planned, the same principles will have to be adopted as are proposed for the Milton Keynes development. These are, that there is a need for a comprehensive drainage scheme which will virtually eliminate flooding other than in areas where this would be acceptable infrequently, and that foul sewage is dealt with separately from storm run-off. Treatment plants for foul sewage must be of the highest standard, to meet the exacting demands which the Great Ouse River Authority are bound to insist on.

5.3.2. Water is extracted for supply purposes at Clapham, Offord and Brampton. Any additional effluent discharged with the Ouse drainage area upstream of these points must, as in the case of the outflow from the proposed Newport Pagnell discharge point from Milton Keynes, be of such quality as to permit the continued use of these sources. This means that to cater for the airport and the new communities associated with it, each of the new and expanded living and working areas will have to be provided with or connected to treatment plants giving high quality effluent. The cost of this provision will clearly be greater than the equivalent expense for locations where a lower degree of treatment can be accepted, and the programme of construction must be so arranged that adequate capacity is ready for each stage of construction.

5.3.3. In the matter of surface water run-off, both the airport area and the associated urban developments will render effectively impermeable significant areas of ground which are at present able to absorb some of the rain falling on them. Consequently, unless greater and more rapid flows are to be imposed on the watercourses of the Ouse catchment (including several which are already the subject of complaint about flooding, such as the River Kym), it will be essential to interpose balancing reservoirs with controlled outlets, so that the peak discharges may be retained until it is safe to add them to the river system. It is not possible to indicate the areas which such reservoirs will occupy until the whole system has been designed hydraulically, but the order of magnitude is in hundreds of acres. The provision for flood run-off should include precautions against the washing down into watercourses of loose material during construction, and of contaminating substances at all times. Spilt oil and lubricants from the airport area will need particular attention.

5.3.4. It is particularly to be noted that while it is normal to design for the maximum storm run-off expected with a frequency of two years, careful consideration should be given to the consequences of the more severe storms that may be expected once in 30 and once in 100 years. Some degree of inconvenience and damage can be accepted when such extremes occur, but where flood risk is being increased high up in a populous and developed cacthment such as the River Ouse, the extent and nature of the risk needs more study than elsewhere, and additional precautions may be indicated.

5.3.5. The Commission will have the advantage of studying the submissions of the water supply and of the drainage authorities, and of seeing the reports of the consultants to the Milton Keynes Development Corporation. Our concern, on behalf of the County Councils affected, is to emphasise the serious nature of the water and waste problems, and the need to assure their adequate solution from the earliest stage of any plan to develop an airport at the Thurleigh site.

5.4. *Fuel*

5.4.1. Aircraft fuel could be pumped from Shell-

Printed image digitised by the University of Southampton Library Digitisation Unit

haven to Thurleigh—a distance of 68 miles—if the necessary new pipe capacity and pumping stations were constructed. The following requirements have been estimated at different stages of development:

	Fuel required in millions of tons	
Year	*Upper Limit*	*Lower Limit*
1976	0·21	
1980		0·04
1981	1·54	
1985		0·78
1986	3·35	
1990		1·79
1991	5·73	
1995		3·17
2000		5·52
2001		5·73

5.4.2. It will be seen from these quantities that if the pipe-line were not built, or were too small, the quantities to be carried by road or rail tankers would be large.

5.5. *Electric power*

5.5.1. The statutory authority which would have the responsibility of providing the airport and its associated urban development with the necessary power can foresee no major difficulty in meeting this increased demand.

5.5.2. The airport needs would be catered for in the early stages by the construction of a 33/11 kV substation close to the airport. This substation would be supplied by overhead duplicate 33 kV lines or, if wayleaves for overhead lines were unobtainable, the duplicate system could be placed underground at an increased cost of £30,000 per mile.

5.5.3. To meet the demand at the later stages of development of the airport 132 and 33 kV supplies would be provided, possibly by duplicate 132 kV overhead line from Grendon 12 miles to the west of the airport. If any length of this route had to be underground the increase in cost could amount to £65,000 per mile.

5.5.4. No difficulty is anticipated in meeting the power demand of the associated urban development. Existing overhead circuits would need to be replaced. The average cost of meeting the urbanisation requirement would be of the order of £120 per house.

6. **Surface transport**

6.1. *General*

6.1.1. Proposed road and rail connections between the Thurleigh site and London are described below, and improvements for traffic connections in other directions are considered. Adequate road and rail provisions must be made for the opening of the airport, and then must be developed in line with air traffic growth and the choice made by passengers between road and rail travel.

6.1.2. This choice, on which the "model split" between road and rail movement depends, is fundamental in any attempt to visualise how the surface travel of air passengers will affect the airport area. A number of mathematical models of the future passenger movement situation have been tried out. From these, provisional expectations of the road and rail journey requirements have been deduced, on the basis that passengers will use Heathrow or Gatwick if the journey there is quickest, up to the maximum capacity of those airports: others will use Thurleigh, choosing to go by road or by rail according to which method occupies least travel time. The origin and destination data used in this study was obtained from a survey at Heathrow in 1966, but a later and more detailed survey has confirmed the general validity of the movement pattern revealed, and the forecasts are considered to be a reasonably reliable guide to future developments.

6.1.3. On the assumptions explained under the descriptions of the road and rail links in paragraphs 6.2 and 6.3 below, the one-runway stage would result in a 44:56 rail to road journey ratio; whereas by 1987 this ratio would change to 53:47, and by 1991 it would become 54:46.

6.2. *Roads*

6.2.1. The proposed airport is situated between the A.1 and M.1 routes and is some 12 miles and 28 miles from them respectively. The M.1, because of its rapidly decreasing spare capacity at peak periods and its remoteness from the airport, has not been considered able to contribute to the solution of the traffic problem that will be created by the airport. The A.1 on the other hand has spare capacity at peak periods and can play a useful role in the provision of road space.

6.2.2. The A.1 is planned to be upgraded to a dual three-lane highway, and up to motorway standard in places, between Ringway 3 at South Mimms and Baldock. North of Baldock it is a dual two-lane highway with the provision made for widening to dual three-lane in the future: however, in conversion to dual three-lane capacity it would be necessary to extend and modify all the existing structures on this part of the route.

6.2.3. From traffic count figures made at points along the A.1, it appears that the A.1 should be capable of handling both the predicted normal traffic at peak hours together with the present forecast of surface traffic due to the establishment of the airport at Thurleigh until the year 1980.

6.2.4. Acess is envisaged between the airport and the A.1 by a dual three-lane motorway six miles long from the airport to Willington and then by a dual two-lane motorway for 2½ miles to join the A.1 just south of Sandy. The alignment of this link, as indicated on drawings FAS.1* attached, is tentative only, and serves for the calculations of distances and times. A number of possible alternative lines would have to be investigated in detail before any decision could be made.

6.2.5. From 1981 a new dual three-lane motorway would be required to cope with the growth of traffic generated between London and the airport. According to the preliminary and tentative alignment indicated on drawings FAS.1 and FAS.2, this would branch off the airport–A.1 link at Willington,

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

passing to the east of Luton and St. Albans to intersect with Ringway 3 west of Potters Bar. The line shown on drawing FAS.2* for this route is one possibility: a different version for the northerly part is indicated by Mr. Cowley, and a variation to the east in Hertfordshire is likely to be preferred by the Hertfordshire County Council as it would probably be less damaging to landscape values. Further surveys and investigations would be needed to fix the line, but our time, distance and cost calculations would not be upset by the possible variations. Between Ringway 3 and Ringway 1 the route might pass to the west of Barnet and join the M.1 extension at the Hendon interchange to run along with the M.1 to Ringway 1 at Hampstead. This would provide a direct link between the airport and London, bringing the airport by road to within 52 miles of London and providing sufficient capacity to handle the growth of traffic due to the airport up to 1989.

6.2.6. As from 1989 an additional lane would be required on this motorway between the airport and Ringway 3 to cope with traffic growth. To avoid further congestion on this route and other London routes, an extra lane of motorway would become necessary at the upper limit growth rate in the year 1998. This lane might be constructed on the A.1 between Willington and Ringway 3, upgrading the A.1 to dual three-lane between Sandy and Baldock and dual four-lane south of Baldock to Ringway 3.

6.2.7. Extensive road building will be required in the vicinity of the airport to cater for the airport employees' needs. If growth is assumed to develop simultaneously at the three proposed areas of urbanisation at Raunds, Sandy and Stagsden, it will be necessary to construct dual two-lane motorways between all these areas and the airport and to have these facilities in use as soon as permanent employment at the airport reaches a significant level. The planned layouts of roads in the vicinity are shown on drawings FAS.1 and FAS.2.

6.3. *Rail*

6.3.1. Although there are no conspicuously successful rail or monorail city-to-airport links operating at present in the world, all air traffic predictions for London lead to a surface travel requirement which can only be practically and economically met by the eventual establishment of a high-intensity rapid transit system. One such system which is sufficiently advanced to be relied on in planning is the Advanced Passenger Train or A.P.T. This is under development by British Rail at their Engineering Research Centre at Derby. It consists of special vehicles which can run on existing conventional rail track at speeds of up to 150 m.p.h. with rapid acceleration and deceleration: the suspension system allows for a speed of 125 m.p.h. on track designed for normal operation at 90 m.p.h.

6.3.2. It is envisaged that rail passenger needs to and from London from the beginning to the full development of an airport at Thurleigh would be catered for by A.P.T. vehicles having the exclusive use of track, mainly following but not displacing existing rail routes, between a London terminal to be established at King's Cross, and the airport terminal building. The frequency of service could reach one train every two minutes at peak times, and the travel time would be about 37 minutes.

6.3.3. The route selected, after a study of a number of alternatives, would follow the existing King's Cross to Huntingdon line (which forms part of the main London–Peterborough–York–Edinburgh route) to three miles north of Sandy and thence on a new spur to the airport building complex. The alternative route would follow the existing St. Pancras to Wellingborough line (which continues to Leicester and Manchester) to six miles north of Bedford and thence on a new spur to the airport building complex. The scheme proposed would allow the continuance and improvement of the existing rail services, where these follow the projected route.

6.3.4. Since this system, or something equivalent to it, would be required eventually, an attempt was made to find the time when its establishment would give an optimum economic return. An intermediate stage, called the "semi-fast" system, using conventional rolling stock and sharing track with existing services, was considered, but on the traffic assumptions made the best result was obtained by bringing in the full A.P.T. system from the outset. This situaton was therefore assumed in calculating the modal split and hence the road traffic requirements. If anything less attractive than the A.P.T. is adopted, or if a fixed-link provision is delayed, the road traffic movement generated by the airport would be increased compared with the volumes allowed for in section 6.2. Road traffic approaching and leaving the airport has a greater environmental effect than the passage of trains, so that the impact of the project on its vicinity as pictured in this submission would be understated if rail provision is inadequate.

6.3.5. If the easterly route is chosen for the London link, it would be possible also to connect the airport terminal westwards to the Wellingborough–Manchester line, thus giving rail access to the Midlands and north with the possibiilty of a convenient rail layout within the airport perimeter, and avoiding interference between such a service and the frequent airport to London trains.

6.3.6. The balance of costs and other advantages between the east and west routes to London is a narrow one, and both possibilities deserve fuller investigation in the light of all planned rail developments along the routes.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire, Buckinghamshire, Huntingdon and Peterborough, and Northamptonshire County Councils

SUBMITTED BY MR. G. I. W. DUNFORD*

I am the Air Traffic Services Superintendent of International Aeradio Limited and have held this post since 1965. I have been in Air Traffic Control for the last seventeen years, initially in the Royal Air Force, before joining I.A.L. in 1955. My service with the Company up to my present post has been as an Air Traffic Control Officer at airports and Air Traffic Control Centres, as an A.T.C. Instructor in the I.A.L. School and as the Assistant Air Traffic Services Manager. In addition to being responsible for the A.T.C. operations of the Company, I am also engaged on Air Traffic and Operational consultancy tasks and have recently completed two such tasks in connection with a 20-year development plan for two major international airports overseas, Nairobi and Singapore, both of which had problems in relation to nearby airports.

1. Wind data for the existing aerodrome at Thurleigh is limited to the present operational hours of 0600–1600. However it is believed to be sufficiently accurate at this stage, to provide an indication of the possible runway alignments. There already exists at Thurleigh runways aligned 060/240° magnetic and 090/270° magnetic. The Commission's alignment, corrected for magnetic and grid factors is 081/261° magnetic. A study of the wind data shows that all of these alignments will enable the International Civil Aviation Organisation (I.C.A.O.) usability figure of 95% with a 20 Knot crosswind component to be achieved comfortably. The alignment finally decided upon will not therefore be critical from a runway usability aspect provided it is within the angles bounded by 040 (220°) and 120 (300°) magnetic.

2. From the statistics available the incidence of low cloud coupled with poor visibility is comparatively low. It must be stressed, however, that as for the wind statistics, those for the weather relate only to the period 0600–1600 and therefore it could be expected that a higher incidence exists. However, since the landing runways would be equipped with an Instrument Landing System (I.L.S.) presumably to at least Category II standards these meteorological conditions would not cause any appreciable interference to the landing rate. Similarly, the take-off minima in use when the airport becomes operational will be such that the take-off would not be inhibited.

3. The Commission has stated in paragraph 15† that it is not publishing details of the possible Holding Areas that would be required to serve the airport at Thurleigh. However, by virtue of the statement in paragraph 6 on runway alignment, some consideration must have been given to this matter. I have therefore made similar considerations in order to assess the likely position of the requisite Holding Areas and the subsequent effect of these areas on the intermediate approach paths and the departure routes from the airport to join the National Airways system. In order to simplify recognition of the various runways for take-off, I have numbered the runways shown on the Commission's drawing (No. CTLA 1) Number 1 for the runway shown at the top of the drawing, Number 2 for the next lower runway, Number 3 for the runway shown below the central passenger and cargo area and Number 4 for the runway shown at the bottom of the drawing. Using the Commission's runway alignment, I estimate that approximately 65 per cent of all landings would be made towards the West on Runways 1 and 3. With this preponderance of landings towards the West, it would be desirable to position the Holding Areas to favour this landing direction. Using the standard criteria for calculating Holding Areas and bearing the preferred landing direction in mind, I have reached the following conclusions:

3.1. The Holding Area for Runways 1 and 2 could be sited to the North of the Airport with the facility located approximately 3 miles to the North of Molesworth. The minimum holding level could be 8,000 feet for approaches to either runway. The normal routing for aircraft landing on Runway 2 from such a Holding Area would take them over parts of Kettering in a Westerly direction to the Southern outskirts of Northampton at which point they would turn to intercept the final approach path at between 10 to 15 miles from the end of the runway. For aircraft landing on Runway 1, the initial flight path would be in an Easterly direction and it would be between Huntingdon and St. Ives as they approached the final approach path interception point.

3.2. The Holding Area for Runways 3 and 4 could be sited to the South of the Airport with the facility located 4 miles North of Royston. The minimum holding level could be 6,000 feet for approaches to Runway 3 and 9,000 feet for approaches to Runway 4, due to the longer intermediate approach path. The normal routing for aircraft landing on Runway 4 from such a Holding Area would take them initially in a Westerly direction over parts of

* See also p. 2185.

† *Site information for Stage II Local Hearings. 4. Thurleigh (Bedford)* (HMSO; 6s.). Reproduced at p. 1801.

Printed image digitised by the University of Southampton Library Digitisation Unit

Biggleswade then South of Bedford before turning to intercept the final approach path. Aircraft landing on Runway 3 would fly in an Easterly direction before turning to the final approach path intercept point. This turn would take them over parts of the City of Cambridge.

3.3. Both of these Holding Areas would be separated from the existing airways system but they would require their own Controlled Airspace as would the routes from the Holding Areas to the Airport and the probable departure routes from the Airport.

I believe that this additional Controlled Airspace would have the following effects on the aerodromes listed below:

4. **Luton**

4.1. It would be impossible to locate a separate holding area for Luton and therefore a sustained Instrument Flight Rules (I.F.R.) rate could not be achieved. The growth of Luton to cater for scheduled airline traffic would be severely curtailed and the operations into and out of the Airport subject to some operational penalties.

4.2. The General Aviation and club flying which presently takes place at Luton would be unaffected.

5. **Stansted**

5.1. A separate Holding Area could be provided for Stansted but due to the departure routes from Thurleigh for traffic joining Airway RED Eastbound and to the inbound routes to the Thurleigh (Royston) Holding Area from the South, the number of aircraft which could be accommodated would be restricted. Therefore the ability of Stansted to achieve its full capacity would be curtailed.

5.2. Stansted could continue as a training and general aviation centre with some restrictions to altitudes.

6. **Other aerodromes**

6.1. The increase in Controlled Airspace, required by an airport at Thurleigh would necessitate restrictions of varying degrees being placed on the following civil aerodromes: Sywell (Northampton), Cranfield, Cambridge, Bedford (Castle Mill), Biggleswade.

6.2. The military operations at Oakington, Wyton, Alconbury and Wittering would be affected to varying degrees but I believe that some of these aerodromes would either have to close or change their type of operation. Bassingbourn has not been included, as this is due to close before the opening of an airport at Thurleigh.

6.3. Special mention should be made of the Research and Development flying in the area. At present, the majority emanates from Thurleigh and this would have to be re-allocated to another aerodrome in South East England. The remainder of this type of flying is carried out by the College of Aeronautics at Cranfield and this could not be permitted to continue.

6.4. The balloon danger areas at Cardington, D206 and D206A, would have to close.

7. **Air traffic control**

7.1. Although Thurleigh is outside the Controlled Airspace forming Airway Amber 2, in order for traffic to enter and leave the airways system, a substantial amount of additional controlled airspace would I believe need to be established. Principally this would take the form of an extension of Amber 2 to the East and creation of a new airway from Daventry to Brecon. This latter airway would be required to avoid the necessity for aircraft flying from Thurleigh to North America via Airway Green One, routing from Thurleigh to the South initially through the London Terminal Control Area (T.M.A.) before joining the existing Green One West of the T.M.A. The A.T.C. problems created by this routing through the Western side of the T.M.A. would be substantial particularly as the aircraft would be climbing and would also have to be interspersed with the traffic climbing out of London (Heathrow). Of course the same routing would be used for arriving traffic and therefore a bottleneck would be created which could affect the capacity of both Thurleigh and Heathrow. It may be that the Board of Trade also has considered the establishment of this new airway across the country since the NNI contours on the Commission's Drawing No. CTLA 4/3* show a climb out path in the general direction proposed. The establishment of this airway would however create problems to the military operations in the Oxfordshire and Gloucestershire areas. Some of the military airfields, notably Benson, Abingdon, Brize Norton and Fairford are presently used for military air transport operations whilst others such as Little Rissington have high speed training operations. In effect therefore, this new airway would surround these military airfields with Controlled Airspace and thus cause considerable restrictions to be imposed.

7.2. The establishment of the airway proposed in paragraph 7.1 above would only be part of the changes which I believe would be necessary if both London (Heathrow) and the airport at Thurleigh were to be able to achieve their planned capacity. A considerable percentage of the traffic using the airport at Thurleigh would be flying to or from the South and East. With the existing airways system, this would mean that all of this traffic would have to traverse the London T.M.A. in either the climb or descent phase. They would, during this time, also be interspersed with the London (Heathrow) and London (Gatwick) traffic and the result would be intense congestion in the T.M.A., such that it would produce severe A.T.C. problems. To reduce this congestion, a unidirectional flow around the T.M.A. could be introduced, but this could only be achieved by a significant increase in the size of the T.M.A. Such an increase would reduce the amount of uncontrolled airspace in the South East of the country to the detriment of other users of the airspace notably

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

the military and general aviation traffic. Progressive reduction in the existing separations used would bring some easement to the congestion but to counter this would be the increase in the amount of traffic using the airways system.

7.3. From the Commission's Drawing No. CTLA 4/3 which shows the NNI contours for the four runway airport, it would appear that aircraft departing from Runway No. 2 towards the West and routing to the North would be required to climb straight ahead for some seven miles before turning on course. Similarly, aircraft departing from Runway No. 4 initially towards the West and routing to the East would be required to climb straight ahead for some five and a half miles whilst aircraft departing from the same runway and routing to the South would not turn on course until approximately ten miles after take-off. These delayed turns appear to be necessary in order to reduce the noise nuisance to the surrounding urban areas. The use of these procedures would however introduce Air Traffic Control penalties which in turn would effectively reduce the runway usability.

8. Conclusion

The proposal to establish the Third London Airport at Thurleigh would involve the creation of extensive additional controlled airspace which could create serious restrictions to military and general aviation operations. Unless this additional airspace is established and control procedures introduced to make maximum use of it, serious congestion could occur in the London T.M.A. with detrimental effects to London (Heathrow) and London (Gatwick) airports. Since the requirement for a Third London Airport is based upon the premise that both of the existing airports can achieve their planned capacity, it follows that any restrictions to them must affect the Third London Airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire, Buckinghamshire, Huntingdon and Peterborough, and Northamptonshire County Councils

SUBMITTED BY MR. N. FLEMING*

I am a Master of Arts of the University of Cambridge, Acoustical Consultant to the Greater London Council, a Director of the Acoustical Investigation and Research Organisation Ltd., and a member of the Sub-Committee on Aircraft Noise of the British Standards Institution. I was formerly Head of the Acoustics Section of the National Physical Laboratory.

1. I have been asked to examine the noise situation which would arise if the Third London Airport were to be located on the Thurleigh site short-listed by the Commission.

2. I have considered the probable distribution of noise around the airport from two aspects, (a) the long-term exposure to noise, which is expressed as the Noise and Number Index (NNI), and (b) the noisiness of individual movements, which is expressed as the Perceived Noise Level in decibels (PNdB), together with the frequency of occurrence of such movements. The former is used for assessing the average annoyance which is caused to people living in the area; the latter quantities are more relevant when considering the degree of interference which may occur with the intelligibility of speech, and in particular with oral teaching in schools in the vicinity, and with communications between doctors and patients in hospitals.

3. The Noise and Number Index, as a method of quantifying the long-term exposure to aircraft noise, was devised by the Wilson Committee on the Problem of Noise as the best means of correlating the annoyance experienced by people living around London (Heathrow) Airport (determined by means of a social survey carried out by the Central Office of Information†) with the physical characteristics of the noise to which they were exposed. It is a composite figure which takes account of the noisiness of individual flights which exceed a certain noise level, and the average daily number of such flights.

4. On the scale which was devised, the values of the Noise and Number Index corresponding to different degrees of annoyance, as determined by the average answers to the question "Does aircraft noise bother you very much, moderately, a little, or not at all" are:—"very much"—60, "moderately"—43, "a little"—31, "not at all"—7 (Wilson Report,‡ figure 2, page 208). The Committee concluded, not solely from the answers to this question, that "exposure to aircraft noise reaches an unreasonable level in the range 50 to 60 NNI" (page 211), or that "the maximum acceptable level lies in the region between 50 and 60 NNI" (page 75). These criteria refer to disturbance during the day time. For the night time the Committee reached the very tentative conclusion that for a corresponding degree of annoyance NNI figures would be 15 to 20 lower.

5. The *Site Information** given by the Commission for Thurleigh includes two maps, numbered 4/2† and 4/3,† showing the NNI contours at intervals of 5 from 60 down to 40 NNI, for the airport with two runways and with four runways respectively. More recently additional maps 4/4 and 4/5 have been issued under the title Thurleigh (b), showing a slightly different position and alignment of the runways with the same contours. I accept these contours as applicable to the particular types and numbers of aircraft, and the flight paths which have been assumed.

6. Maps NF1,† (a) and (b), and NF2,† (a) and (b), show the Commission's contours at 55 and 45 NNI, and my extension down to 35 NNI, for the two runway and four runway airports at the Commission's locations (a) and (b) respectively. I prefer to use these contours in considering noise nuisance, rather than those adopted by the Commission in paragraph 14 of the *Site Information*, for several reasons. Firstly, I believe that a lower limit of 35 NNI rather than 40 NNI should be considered. This is the level at which, according to figures 3 to 8 of the Wilson Report, the presence of the airport begins to be felt. I introduce it not primarily because it is a level which need cause serious concern during the day time, but rather because it is relevant to conditions by night. Little is known about the relation between annoyance and NNI for night-time operations, though, as stated earlier, the Wilson Committee, arguing from somewhat indirect evidence, reached the "very tentative" conclusion that a reduction of 15 to 20 NNI was necessary to avoid increase of annoyance. In paragraph 13 of the *Site Information* it is remarked that, because aircraft movements are likely to be less by night than by day, the night contours will be less extensive than the day contours. It is unlikely, however, that the reduction in the number of movements would be so great as to completely off-set the increase of annoyance. It would, indeed, need a reduction to one tenth to one twentieth of the day-time movements

* See also p. 2185.

† *Aircraft Noise Annoyance Around London (Heathrow) Airport* (SS 337.).

‡ Cmnd. 2056 (HMSO).

* *Site information for Stage II Local Hearing. 4. Thurleigh (Bedford)* (HMSO; 6s.). Reproduced at p. 1801.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

to reduce the NNI values by 15 to 20. I believe, therefore, that it is desirable to take account of contours some 10 NNI lower when considering nighttime annoyance. Secondly, I prefer to use 55 NNI as an upper limit, since this is about the value above which the Wilson Committee considered that noise exposure becomes "unreasonable" or "unacceptable". If the Commission's upper figure of 50 NNI is adopted, the region within it includes both areas where the noise exposure is "unacceptable", and also areas where the exposure, though high, may not be regarded as "unacceptable". Thirdly, in view of the variability of the reaction of different people to noise, I believe that it is sufficient to consider areas between contours spaced 10 NNI apart, rather than to attempt a finer division of the degrees of annoyance. For the contours adopted in Maps NF1, (a) and (b), and NF2, (a) and (b), the corresponding degrees of annoyance in the terms of the Wilson Report are:

Within the 55 NNI contour—"unreasonable" or "unacceptable".

Between the 55 NNI and 45 NNI contours—from "unreasonable" down to "moderately annoying".

Between the 45 NNI and 35 NNI contours—from "moderately annoying" down to "a little annoying".

An estimate of the population in each of these areas has been made by Mr. Cowley and is included in his evidence.*

7. I now turn to the question of interference by noise with the intelligibility of speech. This is of particular importance in schools where interruption of oral teaching may occur, and may be particularly serious when radio or television lessons are used, and a pause or repetition is not possible. Interruption of speech communication is best assessed from the noisiness of individual aircraft movements. This is expressed by the Peak Perceived Noise Level in decibels (abbreviated PNdB), that is, the maximum level to which the noise rises as the aircraft approaches and recedes.

8. Perceived Noise Level is a magnitude based on subjective judgments of the comparative noisiness of noises of different character. An increase of 10 PNdB corresponds approximately to doubling the noisiness, and conversely a decrease of 10 PNdB corresponds approximately to halving the noisiness. An appreciation of the magnitude of the sensation corresponding to any value of Perceived Noise Level can only be gained by experience. Table NF3, which gives the Perceived Noise Level for individual motor vehicles and continuous traffic, may serve as a guide.

9. In data on the interference of noise with speech communication, the noise level is usually quoted in terms of another quantity termed Sound Level A (abbreviated dBA). There is no unique relation between dBA and PNdB, but for the noise of jet aircraft the latter is roughly about 15 dB higher than the former. The Wilson Report recommends that a noise level of 55 dBA should not be exceeded in educational institutions if interference with speech is to be avoided (paragraph 119). This corresponds to aproximately 70 PNdB, so that at a Peak Perceived Noise Level of 75 PNdB, and above, when the level may rise about 70 PNdB for 15 seconds or more, interruption will begin to be serious.

10. The figure of 75 PNdB refers to the noise inside the classroom. With open windows this is normally about 10 PNdB lower than the noise outside; with closed windows and ordinary single glazing the level inside is usually about 20 PNdB less than that outside; with permanently closed windows and heavy single glazing 25 PNdB may be achieved; and with good, permanently closed double windows the difference between outside and inside may be about 40 PNdB. Consequently the Peak Perceived Noise Levels outside a school, which should not be exceeded if interruption of oral teaching is to be avoided, are approximately:

85 PNdB with open windows,

95 PNdB with cloeed windows and single glazing,

100 PNdB with permanently closed windows and heavy single glazing,

115 PNdB with good, permanently closed, double windows.

In the last three cases some form of air conditioning would be necessary.

11. I have made calculations of the average number per day of noise incidents to be expected at schools in the vicinity of the airport. In tables NF4, (a) and (b), I indicate when the number of incidents may be expected to exceed 30 per day (about 4 in a peak hour) in each of the ranges 85 to 94, 95 to 99, 100 to 114 and 115 PNdB and above. The first three ranges correspond to those where successively (1) closed windows with ordinary single glazing, (2) closed windows with heavy single glazing, (3) permanently closed good double windows will be needed. If the number exceeds 30 above 115 PNdB no normal form of construction is likely to be adequate. Days of movements to the south-west and to the north-east are considered separately. This table will be considered by Mr. Shallard* in his evidence.

12. In the case of hospitals no criteria have been laid down for maximum permissible noise, but it is obvious that they need special consideration. Something better than can be tolerated by the well individual is desirable for the hospital patient, and the speech interference criterion must also be met, so that interruption should not occur in a doctor's examination of patients. I have made the same calculations, therefore, for hospitals and other medical and welfare institutions as for schools, but in tables NF5, (a) and (b), I give the approximate number of incidents to be expected in the different ranges, and I include also the noise and number index at each site. All institutions at which I estimate the noise and number index to be 30 or more and the number of noise incidents exceeding 85 PNdB by ten or more are included.

13. For the four runway airport at Thurleigh (a), of the hospitals and diagnostic clinics in the region, three hospitals in Huntingdon and the Diagnostic

* p. 1807.

* p. 1863.

Printed image digitised by the University of Southampton Library Digitisation Unit

Clinic at Wolverton (Buckinghamshire) come within the category so defined. In all 48 health and welfare institutions are included. The worst affected, with large numbers of noise incidents exceeding 100 PNdB, are health clinics at Sharnbrook and Riseley, a W.R.V.S. Residential Club at Sharnbrook, and a nursing home at Stayesmore Manor, Carlton. For the four runway airport at Thurleigh (b), the situation is not quite so bad. The list includes two hospitals in Bedfordshire and the Diagnostic Clinic at Wolverton, and in all 49 health and welfare institutions, but none here are expected to come into the range above 100 PNdB.

TABLE NF3 **Examples of Perceived Noise level values**

	PNdB
Heavy commercial vehicles, 30 mph at 25 ft	90 to 100
Private cars „ „ „	83 to 90
Mean level beside trunk road with heavy traffic	90
Mean level in side road 20 to 50 yd from trunk road	80

TABLE NF4A **Noise incidents at schools: Thurleigh (a)**

×*Signifies more than 30 on day of movements to south-west (about 13 days in 20)*
+*Signifies more than 30 on day of movements to north-east (about 7 days in 20)*

School	No. on roll	2-runway airport (before noise certification of aircraft)			4-runway airport (after noise certification of aircraft)		
		Incidents in range of peak PNdB			*Incidents in range of peak PNdB*		
		85–94	*95–99*	*100–114*	*85–94*	*95–99*	*100–114*
BEDFORDSHIRE	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Thurleigh C. P.	76	+	+			×	×
Sharnbrook C.P.	196	+	× +	×	×	× +	× +
Carlton V.C.P.	86	×			× +	× +	+
Felmersham C.P.	34	×			×	× +	+
Riseley, Margaret Beaufort C.S.	175	×			× +	+	
Riseley V.A.P.	143	×	×		×	+	+
Harrold Priory C.S.	137	× +	×		× +		
Harrold C.P.	149	× +	×		× +		
Keysoe C.P.	55	Within airport boundary					
Milton Ernest V.C.P.	48				×		
Odell V.C.P.	26	× +	×	×	× +		
Pavenham C.P.	38				× +		
Turvey C.P.I.	45		×		×		
Little Staughton C.P.	31	× +	+		× +		
Cranfield V.P.	287				×		
Stagsden V.A.P.	15	+					
Colmworth V.C.P.	37	+					
Podington V.C.P.	49	×					
HUNTINGDONSHIRE							
Grafham Residential	58		+		× +	× +	
Great Staughton C.P.	129	+			× +	×	
Buckden C.P. controlled	226	+			× +		
Fenstanton C.P.	139	× +	+		× +		
Godmanchester	329				× +		
Great Paxton C.P.	43	× +	× +	+	× +		
Hemingford Abbots C.E. controlled	49	+			× +		
Hemingford Grey C.P.	245	× +			× +		
Little Paxton C.P.	200	× +	+		× +		
Offord C.P.	104	× +			× +		
St. Ives C.I.	291	+			+		
Holywell C.E. controlled	108	+			+		
Houghton C.P.	358				+		
St. Ives, Houghton Road, C.J. and C.I.	560				× +		
St. Ives Secondary	652				× +		
St. Neots C.J.	387	+			+		
St. Neots C.I.	313	+			+		
St. Neots, Technical Wing	140	+			+		
St. Neots, Longsands Comprehensive	1,208	+			+		
Brampton C.I. and C.J.	565				× +		
Hartford C.I. and C.J.	423				+		
Huntingdon Grammar	541				+		
Huntingdon Hinchingbrook Comprehensive	570				+		
Spaldwick C.P.	70	+			+		
Wyton C.I.	200				×		
Bluntisham C.P.	195	+					
Brington C.E. controlled		+					
St. Ives C.J.	448	+			+		

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE NF4A—*continued*

× *Signifies more than 30 on day of movements to south-west (about 13 days in 20)*
\+ *Signifies more than 30 on day of movements to north-east (about 7 days in 20)*

School	No. on roll	2-runway airport (before noise certification of aircraft)			4-runway airport (after noise certification of aircraft)		
		Incidents in range of peak PNdB			*Incidents in range of peak PNdB*		
		85–94	*95–99*	*100–114*	*85–94*	*95–99*	*100–114*
BUCKINGHAMSHIRE	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Lavendon C.P.	53	×			× +		
Newton Blossomville C.E.P.	24	×			×		
Olney C.P.	284	×			× +		
Onley C. Secondary	126	×			× +		
Stoke Goldington C.E.P.	31	×			×		
Castlethorpe C.P.	43	×			×		
Hanslope C.P.	114	×			× +		
Haversham C.P.	84				×		
Stony Stratford C.P.	433				×		
Emberton C.P.	43				×		
Wolverton C. Secondary	1,257				×		
Wolverton C.J.	350				×		
Wolverton C.I.	295				×		
North Crawley C.E.P.	35				×		
Wolverton College of Further Education	2,000				×		
NORTHAMPTONSHIRE							
Yardley Hastings C.J. and C.I.	85	× +	×		× +	×	
Roade C.J. and C.I.	273	×			×		
Roade Secondary	456	×			×		
Hackleton C.J. and C.I.	127	× +			× +		
Denton C.J. and C.I.	41	× +			× +		
Bozeat C.J. and C.I.	131	× +	×	×	× +		
Earls Barton C.J. and C.I.	372	×			×		
Cosgrove C.J. and C.I.	45				×		
Hartwell C.E.J. and C.E.I.	88	×			×		
Stoke Bruerne C.E.J. and C.E.I.	37	×			×		
Towcester Sponne C. Secondary	735	×			×		
Towcester C.I.	183	×			×		
Towcester C.E.J.	233	×			×		
Greens Norton C.E.J. and C.E.I.	130	×			×		
Tiffield Aided J and I	11	×			×		
Brafield-on-the-Green C.E.J. and C.E.I.	79	×			×		
Cogenhoe C.J. and C.I.	142				×		
Ecton C.J. and C.I.	37	×			×		
Overstone C.J. and C.I.	79	×			×		
Sywell C.E.J. and C.E.I.	44	×			×		
Mears Ashby Endowed J and I	44	×			×		
Overstone (independent)	134	×			×		
Great Billing C.E.J. and C.E.I.	106	×			×		
Blisworth C.J. and C.I.	235	×			×		
Moulton C.J. and C.I.	312	×					
Moulton Secondary	437	×					
Milton C.E.J. and C.E.I.	93	×					
Collingtree C.E.J. and C.E.I.	43	×					
Great Doddington C.J. and C.I.	95	×					
CAMBRIDGESHIRE							
Fen Drayton C.P.	63		+			+	
Swavesey C.P.	129		+			+	
Swavesy Village College	274		+			+	
Over C.P.	103		+			+	
Longstanton C.P.	270		+				
Willingham C.P.	148		+				
Croxton C.P.	37		+				

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE NF4B **Noise incidents at schools: Thurleigh (b)**

+*Signifies more than 30 on day of movements to south-west (about 13 days in 20)*
×*Signifies more than 30 on day of movements to north-east (about 7 days in 20)*

School	No. on Roll	2-runway airport (before noise certification of aircraft)			4-runway airport (after noise certification of aircraft)		
		Incidents in range of peak PNdB			*Incidents in range of peak PBdB*		
		85–94	*95–99*	*100–114*	*85–94*	*95–99*	*100–114*
BEDFORDSHIRE	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Felmersham C.P.	34	+	× +	× +	× +	× +	× +
Milton Ernest V.C.P.	48	×				× +	× +
Turvey C.P.I.	45	×	×		× +	+	
Thurleigh C.P.	76	Within the airport boundary					
Little Staughton C.P.	31	+			+	× +	× +
Carlton V.C.P.	86	× +	×	×	× +		
Harrold Priory C.S.	137	× +	× +	×	× +	× +	
Harrold C.P.	142	× +	× +	×	× +	× +	
Odell V.C.P.	26	× +	× +	× +	× +	× +	+
Stevington C.P.	57	×			× +		
Sharnbrook C.P.	196	× +	×	×	× +	×	
Keysoe C.P.	55	Within the airport boundary					
Colmworth V.C.P.	39	+	+		+		
Riseley, Margaret Beaufort C.S.	175	×			+		
Riseley V.A.P.	143	×					
Stagsden V.A.P.	15	×			×		
Oakley, Lincroft C.S.	241				×		
Oakley	90				×		
Pavenham C.P.	38	×			× +	× +	+
Marston Moretaine, Church End C.P.	181				×		
Marston Moretaine, Shelton C.P.	77				×		
Wootton C.P.	338	×					
HUNTINGDONSHIRE							
Grafham Residential	58	+			+		
Great Staughton C.P.	129				× +	× +	+
Great Paxton C.P.	43	×	× +	+	× +	×	
Little Paxton C.P.	200	× +	× +	+	× +	×	
Buckden C.P.	226	+			× +	×	
Fenstanton C.P.	139	× +			× +		
Hemingford Abbotts C.E. controlled	49				× +		
Hemingford Grey C.P.	245	× +			× +		
Offord C.P.	104	× +			× +		
St. Ives C.J. and C.I.	739	×			+		
St. Ives, Houghton Road C.J. and C.I.	560	×			+		
St. Ives, Secondary	652	×			+		
Godmanchester C.P.	329				+		
Holywell C.E. controlled	108	+			× +		
Houghton C.P.	358				+		
St. Neots C.J.	387	+			× +		
St. Neots Technical Wing	140	+			+		
St. Neots C.I.	313	+			+		
St. Neots, Longsands Comprehensive	1,208	+			+		
Bluntisham C.P.	195	+			+		
Wyton C.I.	200	×			×		
BUCKINGHAMSHIRE							
Emberton C.P.	43	×					
Lavendon C.P.	53	× +	× +		× +		
Onley County Secondary	126	×			× +	+	
Newton Blossomville	24	×			× +		
Stoke Goldington C.E.P.	31	×			×		
Filgrave C.E.P.	32	×			× +		
Onley C.P.	284	×			× +		
Hanslope C.P.	114	×			× +		
Haversham C.P.	84	×			+		
Wolverton Coll. of Further Education	2,000	×			×		
Wolverton County Secondary	1,257	×			×		
Wolverton C.I. and C.J.	645	×			×		
New Bradwell C.I. and C.J.	365	×			×		
Newport Pagnell C.I. and C.J.	720				×		
Newport Pagnell Ousedale County Secondary	490				×		
Sherington C.E.P.	57				×		
Castlethorpe C.P.	43	×			+		
NORTHAMPTONSHIRE							
Yardley Hastings C.J. and C.I.	85	×			×		
Ashton C.E.J. and C.E.I.	33	×			×		
Hartwell C.E.J. and C.E.I.	88	×			×		
Bozeat C.J. and C.I.	131	×			×		
Earls Barton C.J. and C.I.	372	×			×		
Ecton C.J. and C.I.	37	×			×		
Sywell C.E.I. and C.E.J.	44	×			×		

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE NF4B—*continued*

× *Signifies more than 30 on day of movements to south-west (about 13 days in 20)*
\+ *Signifies more than 30 on day of movements to north-east (about 7 days in 20)*

School	No. on Roll	2-runway airport (before noise certification of aircraft) *Incidents in range of peak PNdB*			4-runway airport (after noise certification of aircraft) *Incidents in range of peak PBdB*		
		85–94	*95–99*	*100–114*	*85–94*	*95–99*	*100–114*
NORTHAMPTONSHIRE—*continued*	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Overstone School (Independent)	134	×			×		
Great Billing C.E.J. and C.E.I.	106	×			×		
Cogenhoe C.J. and C.I.	142	×			×		
Denton C.J. and C.I.	41	×			×		
Stoke Bruerne C.E.J. and C.E.I.	37	×			×		
Grendon C.E.J. and C.E.I.	48	×			×		
Paulerspury C.E.J. and C.E.I.	120	×			×		
Towcester C.I.	183				×		
Towcester C.E.J.	233				×		
Towcester Sponne County Secondary	735				×		
Roade C.I. and C.J.	273	×			×		
Roade Secondary	456	×			×		
Hackleton C.I. and C.J.	127	×			×		
Brafield-on-the-Green C.E.I. and C.E.J.	79	×			×		
Overstone C.J. and C.I.	79	×			×		
Mears Ashby Endowed J and I	44				×		
CAMBRIDGESHIRE							
Over C.P.	63		+			+	
Swavesey C.P.	129		+			+	
Swavesey Vill. College	274		+			+	
Fen Drayton C.P.	63		+			+	
Croxton C.P.	51		+			+	
Willingham C.P.	148		+				
Long Stanton C.P.	270		+				

TABLE NF5A **Noise at hospitals, and other health and welfare institutions: Thurleigh (a)**

(*a*) *On day of movements to south-west (about 13 days in 20)*
(*b*) *on day of movements to north-east (about 7 days in 20)*

Site	2-runway airport *No. of incidents in range of peak PNdB*						4-runway airport *No. of incidents in range of peak PNdB*					
	NNI	*85–94*		*95–99*		*100–114*		*NNI*	*85–94*		*95–99*		*100–114*	
		a	b	a	b	a	b		a	b	a	b	a	b
BEDFORDSHIRE	(1)	(2)		(3)		(4)		(5)	(6)		(7)		(8)	
Hospitals – Nil														
Registered nursing Homes														
Stayesmore Manor, Carlton	41	90						53	180	100	60	80	10	60
Health clinics														
Keysoe								Within the airport boundary						
Sharnbrook	60		90	40	130	210	20	58	30	90	100	200	120	40
Riseley	55	170		80		10		57	240					240
Harrold	50	150	30	70		20		49	330	200	10			
Cranfield Village	—							35	60					
Cranfield College	—							33	50					
Private Houses registered under National Assistance Act														
W.R.V.S. Residential Club, Sharnbrook	60		90	40	130	210	20	58	30	10	100	200	120	40
Southwood House, Hinwick Hall, Podington	37	30						32						
HUNTINGDONSHIRE														
Hospitals														
County Hospital, Huntingdon	—							34	20	40				
Primrose Lane Hospital, Huntingdon	—							34	10	30				
Petersfield Hospital, Huntingdon	—							32		20				

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE NF5A—*continued*

(*a*) *On day of movements to south-west* (*about 13 days in 20*)
(*b*) *On day of movements to north-east* (*about 7 days in 20*)

Site	2-runway airport						4-runway airport					
	NNI	*No. of incidents in range of peak PNdB*					*NNI*	*No of incidents in range of peak PNdB*				
		85–94		*95–99*		*100–114*		*85–94*		*95–99*		*100–114*
		a	b	a	b	a b		a	b	a	b	a b
HUNTINGDONSHIRE—*continued*	(1)	(2)		(3)		(4)	(5)	(6)		(7)		(8)
Welfare homes for the Elderly												
"The Chestnuts", Godmanchester	31		20				43	120	100			
"Rheola", St. Ives	34	30	20				41	20	120			
"Shortsands", St. Neots	30		50				33		40			
"Huntersdown", Huntingdon	—						34	10	30			
Registered nursing Home												
"Weald House", Croxton	31		30				—					
Homes registered under National Assistance Acts												
Houghton Manor, Houghton	30	20					38	30	70			
Hartford Cottage, Huntingdon	—						34	20	20			
The Woodlands, Earith	34		60				34		60			
Mental health hostels												
St. Edwards, Huntingdon	—						34	10	30			
Mayfield Road, Huntingdon (under construction)	—						34	10	30			
Junior and adult training centres												
St. Edward's School, Huntingdon	—						34	10	30			
St. Michael's Work Centre, Huntingdon	—						32		20			
Child health clinics – County Council Premises												
Ramsay Road, St. Ives	34	20	50				41		120			
Nursery Road, Huntingdon	—						33	10	30			
Almond Road, St. Neots	32		20				32		20			
Child health clinics – Rented premises												
Methodist School Room, Buckdon	37		100				49	220	170			
Village Hall, Gt. Staughton	40		200		10		50	200	260	30	20	
Church Hall, Fenstanton	44	120	150		30		41	50	60			
Youth Centre, Brampton	—						40	80	90			
R.A.F. Station, Wyton	—						32	80	20			
BUCKINGHAMSHIRE												
Hospitals and clinics												
Wolverton Diagnostic Clinic	—						36	70				
Registered nursing homes												
Emberton	33	10					40	60	40			
Tyringham	30	10					30	70				
Registered old persons' homes												
Gresham House, Olney	37	60					43	90	120			
Westlands, Olney	37	60					43	90	120			
Calverton Lodge, Stony Stratford	—						35	40				
Child welfare centres												
Olney	37	60					43	90	120			
Hanslope	37	80					37	80				
Stony Stratford	—						35	40				
Wolverton	—						35	40				
NORTHAMPTONSHIRE												
Child welfare clinics												
Towcester	35	40					33	30				
Wollaston	33	20					—					
Great Doddington	31	20					32	10				
Moulton	36	40					32	20				
Wooton	33	40					33	20				
Old Stratford	—						35	40				
Welfare home												
Ridgeway House, Towcester	33	40					35	30				
CAMBRIDGESHIRE												
Child welfare clinics												
Swavesey Village College	39		130		10		34		30			
Willingham	33		60				33		20			
Registered home under National Assistance Act												
Willingham Old Persons' Home	33		60				33		20			

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE NF5B **Noise at hospitals, and other health and welfare institutions: Thurleigh (b)**

(a) On day of movements to south-west (about 13 days in 20)
(b) On day of movements to north-east (about 7 days in 20)

Site	2-runway airport							4-runway airport						
	NNI	*No. of incidents in range of peak PNdB*						*NNI*	*No. of incidents in range of peak PNdB*					
		85–94		*95–99*		*100–114*			*85–94*		*95–99*		*100–114*	
		a	b	a	b	a	b		a	b	a	b	a	b
BEDFORDSHIRE	(1)	(2)		(3)		(4)		(5)	(6)		(7)		(8)	
Hospitals														
Broham Hospital	32	30						37	30					
Clapham Hospital	—							35	10					
Registered nursing homes														
Stayesmore Manor, Carlton	54	100	200	90	20	50		50	330	180	20	20		
Health clinics														
Keysoe	41	170						50	240	120		120		
Sharnbrook	55	30	180	140		80		47	190	120	40			
Riseley	42	150		10				33		30				
Harrold	57	50	130	110	100	80		52	170	130	60	80		
Stevington	32	30						47	220	120	20			
Cranfield Village	—							32	10					
Cranfield College	—							30	10					
Private homes registered under National Assistance Act														
W.R.V.S. Residential Club, Sharnbrook	55	30	180	140		80		47	190	120	40			
HUNTINGDONSHIRE														
Hospitals — Nil														
Welfare homes for the elderly														
"The Chestnuts", Godmanchester	30		40					40	70	70				
"Rheola", St. Ives	35	20	60					41	50	160				
"Shortsands", St. Neots	32		50					34		30				
Registered nursing homes														
"Weald House", Croxton	36		10		20			31		40				
Homes registered under the National Assistance Act														
Houghton Manor, Houghton	30							38	40	50				
Hartford Cottage, Huntingdon	—							30		10				
The Woodlands, Earith	36		70					35		70				
Child health clinics — County Council premises														
Ramsey Road, St. Ives	35	20	60					41	50	160				
Almond Road, St. Neots	34		80					35		90				
Child health clinics — rented premises														
Methodist Schoolroom, Buckden	37		10		10		10	48	150	170	30	10		
Village Hall, Gt. Staughton	34		20					48	230	180		50		
Church Hall, Fenstanton	45	50	150		20			42	100	120				
Youth Centre, Brampton	—							35	10	20				
W.I. Hall, Eaton Socon	32		30					30		10				
R.A.F. Station, Wyton	—	30						30	60					
BUCKINGHAMSHIRE														
Hospitals and clinics														
Wolverton Diagnostic Clinic	35	60						32	30					
Registered nursing homes														
Emberton	38	80						45	140	160				
Tyringham	37	70						42	120	40				
Registered old persons' homes														
Gresham House, Olney	44	90	20					43	110	110				
Westlands, Olney	44	90	20					43	110	110				
Calverton Lodge, Stony Stratford	33	50						30	10					
Child welfare centres														
Olney	44	90	20					43	110	110				
Hanslope	34	40	20					36	10	50				
Stony Stratford	33	50						30	10					
Wolverton	33	40						36	30					

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE NF5B—*continued*

(*a*) *On day of movements to south-west* (*about 13 days in 20*)
(*b*) *On day of movements to north-east* (*about 7 days in 20*)

Site	2-runway airport						4-runway airport					
	NNI	*No. of incidents in range of peak PNdB*					*NNI*	*No. of incidents in range of peak PNdB*				
		85–94		*95–99*		*100–114*		*85–94*		*95–99*		*100–114*
		a	b	a	b	a b		a	b	a	b	a b
NORTHAMPTONSHIRE	(1)	(2)		(3)		(4)	(5)	(6)		(7)		(8)
Child welfare clinics												
Towcester	32	20					34	30				
Moulton	34	50					32	10				
Old Stratford	32	10					—					
Welfare home												
Ridgeway House, Towcester	32	20					34	30				
CAMBRIDGESHIRE												
Swavesey Village College	39	10	60		10		34	20	10			
Willingham	35		80				33		20			
Registered home under the National Assistance Act												
Willingham Old Persons' Home	35		80				33		20			

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire, Buckinghamshire, Cambridge and Isle of Ely, Huntingdon and Peterborough and Northamptonshire County Councils

SUBMITTED BY MR. H. P. SHALLARD*

I am a Master of Arts in the University of Cambridge and also hold the Certificate in Education of that University. Since October 1968 I have been Chief Education Officer for Bedfordshire and prior to that had 22 years' experience of educational administration and some teaching experience before the war.

1. From the areas which I represent there is plenty of first hand evidence of the effects resulting from aircraft noise and it is obvious that the location of the Third Airport at Thurleigh will intensify and aggravate the situation which can only be to the serious disadvantage of those, both children and adults using the education service.

1.1. At Thurleigh itself the Royal Aircraft Establishment offers practical experience of the effect of noise as the following examples show:

(a) "At a meeting of the Committee of the Parent-Teacher Association of this (the Harrold Secondary) school, on 2nd May 1969, deep concern was expressed about the effect a Third London Airport at Thurleigh would have on the quality of the teaching it is possible to give.

As I am sure you already know, Harrold lies some six miles from Thurleigh in the line of the flight path. It is an established fact already that when large jets from Thurleigh pass over the school at low level all teaching has to cease for a brief time. With very much larger jets passing over at very frequent intervals a quite impossible teaching situation could develop.

My committee will be grateful if you will pass our concern on to the Bedford Airport Resistance Association and take whatever other action you consider appropriate."

(b) When the secondary school at Riseley (about 2 miles from Thurleigh flight path) was built in 1962, special precautions were taken at a cost of about £4,500 which was the maximum which the Department of Education and Science would allow. This enabled double glazing of the main teaching areas to be carried out and the school is ventilated mechanically. The ventilating equipment has proved inadequate and there is considerable transference of noise within the school by way of the ventilating ducts.

1.2. The Buckinghamshire County Council, also vitally concerned if the Third Airport comes to Thurleigh, have already testified at the Cublington Hearing as to their experience of the effect of noise.

1.3. The Huntingdon and Peterborough County Council are currently concerned at the noise occasioned by aircraft operating from Alconbury. The building of the Houghton Road St. Ives primary school at a cost of £78,000 also involves the spending of at least a further £15,000 for wall and roof strengthening, insulation and ventilation. This is because of the noise caused by the landing of aircraft. The use of this particular aerodrome is spasmodic and the squadrons are not always based at Alconbury. Nevertheless these steps have to be taken to enable education within the school to be carried on satisfactorily.

2. The pattern of teaching in the schools has changed considerably over the years. Group work, combined with oral methods, plays a significant part in a wide variety of subjects. Examples which may be cited include in English—informal drama, speech training, reading aloud of prose and poetry. In the early stages of teaching a foreign language, often begun in the third or fourth year of a primary school, emphasis is placed on oral methods combined with audio-visual aids. Music is another example where instrumental and choral work are developing on a considerable scale in primary and secondary schools.

3. Modern methods too use the local environment as much as possible—both within the school campus and the neighbourhood. This is particularly important when it is remembered that many of the schools involved are rural village schools. An example of this is the fact that almost all Bedfordshire primary schools have a teaching swimming pool in the school grounds.

4. Visual aids such as the school broadcast service and T.V. programmes all play their part in modern education, and obviously interruptions cannot in many cases be made good on other occasions and the whole purpose of a lesson may well be lost.

5. Regular and constant interruptions in these and other subjects affect continuity and concentration, which are detrimental to progress.

6. Children at the secondary stage of education, 11–18 years, are for the most part concerned with homework—particularly where external examinations are involved: they will be affected in the home situation in addition to the school situation. On a modest computation the equivalent of half a year's school

* See also p. 2186.

Printed image digitised by the University of Southampton Library Digitisation Unit

life is spent (in the secondary stage) in undertaking homework.

7. The same arguments as have been used in paragraphs 2–5 in respect of schools also apply in the field of Further Education. Many schools are used for this purpose during the evening. In addition classes are held in village halls, institutes and other local buildings. Such classes, owing to the expense of sound-proofing, will have to be discontinued and transferred to the nearest school which is sound-proofed.

8. If the Third Airport is sited at Thurleigh it will obviously be necessary to carry out sound insulation work at schools which are going to be most seriously affected by noise.

9. The magnitude of this task can be gauged by the fact that 84 schools and colleges will be affected —varying in size from 11 to 2,000 pupils and with a total population of 19,038. These figures include only the children currently in schools and colleges and schools and colleges which are already programmed by the Department of Education and Science. The areas concerned, however, are fast growing and in consequence each year additional schools will be needed. Since these schools must largely meet local needs they will be subject to the same noise pattern as for existing schools.

10. Another consideration is that many of the village schools are old—some over 100 years—and in the course of time authorities would wish to replace them, or at least substantially remodel them. Money spent on sound-proofing to meet immediate needs will inevitably put back the possibility of of replacement or the sums quoted will be substantially increased for new replacement schools as an alternative to sound-proofing the existing ones.

11. The method which has been used to assess the extent of noise interference at schools and to estimate the cost of the remedial work required is exactly the same as that given in the evidence of Mr. J. A. Springett, Deputy Chief Education Officer for Essex County Council, at the Foulness Stage II Hearing* and by Dr. E. E. L. Owens, Deputy Chief Education Officer of Hertfordshire at the Nuthampstead Stage II Hearing† and by Mr. D. P. Davison, Deputy Chief Education Officer for Buckinghamshire at the Cublington (Wing) Stage II Hearing.‡ It is briefly summarised as follows:

11.1. Mr. Fleming (in his evidence) has provided information about the frequency and intensity of noise interruptions at each school site within the vicinity of the airport.

11.2. At those schools where the outside noise intensity reaches or exceeds 85 PNdB and the number of such noise incidents reaches 30 in a 12 hour period, i.e. 4 per peak hour, it has been assumed that remedial work must be undertaken.

11.3. I am advised that there are broadly three alternative specifications which would be applied to increase the sound insulation properties of school buildings, giving respectively a sound reduction of 20 dBA, 25 dBA and 40 dBA. Appendix E1 summarises the work involved in each specification and gives details of the estimated cost in terms of square feet of area of accommodation. To these figures 12 per cent must be added to cover architects' and other professional fees.

11.4. In order to estimate the cost of achieving a satisfactory reduction in noise levels at those schools where the number of speech interruptions reaches 30 in a 12 hour period, the following criteria have been applied:

Outside noise intensity	*Reduction treatment*
85– 94 PNdB	20 dBA
95– 99 PNdB	25 dBA
100–115 PNdB	40 dBA

The cost of treating affected schools has then been calculated by use of the specifications referred to in paragraph 11.3 above, and described in Appendix E1.

12. A list of the schools where a four runway airport would cause the outside noise intensity to reach or exceed 85 PNdB for a minimum of 30 interruptions in a 12 hour period is attached at Appendix E2. A similar list of schools affected by a two runway airport is attached at Appendix E3.

13. Sound-proofing is no complete solution. I can do no better than quote the evidence given at the Cublington Hearing which is equally applicable at Thurleigh.

> "Sound-proofing brings accompanying disadvantages with it. Because all windows have to be kept permanently shut, sound-proofed schools have to rely entirely on a powered ventilation system. Once this breaks down work inside the classrooms can be brought to a standstill. I have visited schools in the vicinity of Heathrow which have had sound-proofing treatment. One of these was built as a sound-proofed and air-conditioned school at a cost approximately 50 per cent above normal cost limits. The hall has massive beams and air ducts across the width of its ceiling, and has only high level windows. The scarcity of windows at eye level results in poor natural lighting in the classrooms, and undue reliance on artificial light. Because doors let in sound, no direct access from classrooms to outdoor teaching areas have been provided. There is an accentuation of all internal noises because of sound-proofing. The combined effect of these shortcomings has produced a school environment which, in spite of the extra money spent upon it, is less than fully satisfactory."

14. It is appreciated that in an enquiry of this nature there must be definitive lines and boundaries within which to operate and produce statistics. Within these limits for a four runway airport 19,038 children are directly affected and such remedies as can be made—by no means one hundred per cent—will cost

---

* *Papers and Proceedings* Vol. III.
† *Papers and Proceedings* Vol. IV.
‡ *Papers and Proceedings* Vol. V.

Printed image digitised by the University of Southampton Library Digitisation Unit

£2,417,588. The cost for a two runway airport will be £1,615,169 and 12,042 children will be affected. The breakdown of these costs between the various authorities is set out in Appendix E4. It must be realised, however, that areas immediately outside these will also be affected: if one takes a further fringe area extending in the main to one mile outside the 35 NNI contour line a further 43 schools with 10,307 children are included, and while on present standards these would not qualify for remedial treatment, it is difficult not to believe that the work of the schools would suffer.

14.1. Moreover, this fringe area comes very close to the Borough of Bedford. Here in addition to a further child population of 11,697 in the Authority's schools and some 6,000 students at three colleges, there are over 4,000 children in the four Harpur Trust schools and the Independent Convent School. At least one of the four Harpur Trust schools, at which there are some 1,000 pupils, will be affected when it moves to its scheduled new site on Manton Heights. Many of the children attending these schools live in areas outside Bedford and will be affected by the homework problem referred to in paragraph 6.

14.2. The Huntingdon and Peterborough Authority point out that the following schools and establishments will be affected:

(a) Kimbolton Direct Grant school with its 300 boarders and nearly 200 day boys.

(b) The Whispers private school at Stonely, Kimbolton, with 75 day pupils.

(c) Grafham Water Residential Centre (which is within the 35 NNI contour) with its 60 boarders and an annual attendance of some 7,000 day students—see also evidence of Mr. G. Cowley (chapter 9.22).

15. The evidence given in the preceding paragraphs is in respect of the first site suggested by the Roskill Commission (Thurleigh A). Similar information has been prepared in respect of the alternative siting (Thurleigh B) and is set out in the following Appendices:

Appendix E5	Schools affected by noise to an extent which requires protective work to be undertaken—four runway operation.
Appendix E6	As above, but for two runway operation.
Appendix E7	Breakdown of sound-proofing costs for existing and programmed schools.

16. It will be seen that some 18,309 children are directly affected by four runway operation at the alternative site. The cost of sound-proofing would be £2,283,576 for a four runway airport and £1,955,688 for two runway operation.

In addition 63 schools in the fringe area, with 14,869 children, whilst not qualifying for remedial treatment under the present standards, would undoubtedly suffer disturbance to their work.

Appendix E1

Sound Insulation work at schools: abridged statement of work required

× indicates work is required for degree of sound insulation indicated.

(×) indicates work may be required for degree of sound insulation indicated.

	Degree of sound insulation		
	40 dB	*25 dB*	*20 dB*
System Built Schools			
Protection of outer shell			
Changing opening windows to fixed glazing			×
Heavy glass and fixed glazing		×	
Double glazing walkway and duct	×		
Fixing inner glazing for double glazing	×		
Treatment of non-glazed wall area and fascias	×	×	(×)
Closing of roof light and compensation by artificial light	×	×	(×)
Heating and ventilation			
Powered ventilation (fans, ducts and controls)	×	×	×
External motorised louvre blinds	×	×	×
Internal modification			
Sound absorbent ceilings	×	×	(×)
Door treatment	×	×	(×)
Pre-1914 Heavy Construction			
Protection of outer shell			
Changing to fixed glazing with medium glass			×
Changing to fixed glazing with heavy glass		×	
Double windows			
External doors	×	×	×
Floor insulation	×		
Ceilings	×	×	×
Heating and ventilation			
Heating and air equipment	×	×	×
External motorised louvre blinds	×	×	×
Internal work			
Sound absorbents	×	×	×
Doors	×	×	×

Costs, in shillings, of work set out above per square foot of floor area in examples worked

	40 dB	*25 dB*	*20 dB*
Post-1945 system building	89–90	50–52	39
Pre-1914 heavy construction	93	70	66
Consultants' interpolated cost for post-1914 traditional type of building	90	55	40
New schools to be built	60	43/6	35

The foregoing figures do not include professional fees but do include (for all) except new schools not yet built an element of 18 per cent for:

(a) Alterations to drainage, paths, gardening and other incidentals consequential on the works indicated.

(b) Probable unpopularity of this form of work, especially under likely employment conditions in vicinity of airport and restriction on access to school buildings in term time.

(c) Capitalisation of additional running and maintenance costs.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX E2

Thurleigh (A)

Schools affected by noise to an extent which requires protective work to be undertaken —4-runway operation

	Number of schools	*Number on roll or maximum capacity*
Bedfordshire	15	1,526
Buckinghamshire	15	5,172
Cambridgeshire and Isle of Ely	4	569
Huntingdon and Peterborough	27	8,058
Northamptonshire	23	3,713

APPENDIX E3

Thurleigh (A)

Schools affected by noise to an extent which requires protective work to be undertaken —2-runway operation

	Number of schools	*Number on roll or maximum capacity*
Bedfordshire (including Keysoe C.P. with 55 pupils within the airport boundary).	15	1,256
Buckinghamshire	7	675
Cambridgeshire and Isle of Ely	7	1,038
Huntingdon and Peterborough	18	4,425
Northamptonshire	27	4,648

Full lists of schools submitted by Mr. Shallard are available for inspection by arrangement at the offices of the commission.

APPENDIX E5

Thurleigh (B)

Schools affected by noise to an extent which requires protective work to be undertaken —4-runway operation

	Number of schools	*Number on roll or maximum capacity*
Bedfordshire (including Keysoe and Thurleigh C.P. Schools with 131 pupils both within the airport boundary).	21	1,939
Buckinghamshire	20	6,368
Cambridgeshire and Isle of Ely	5	620
Huntingdon and Peterborough	20	5,889
Northamptonshire	22	3,493

APPENDIX E6

Thurleigh (B)

Schools affected by noise to an extent which requires protective work to be undertaken —2-runway operation

	Number of schools	*Number on roll or maximum capacity*
Bedfordshire (including Keysoe and Thurleigh C.P. Schools with 131 pupils both within the airport boundary).	18	1,688
Buckinghamshire	16	5,101
Cambridgeshire and Isle of Ely	7	1,038
Huntingdon and Peterborough	17	5,219
Northamptonshire	18	2,298

Full lists of schools submitted by Mr. Shallard are available for inspection by arrangement at the offices of the commission.

APPENDIX E7

Thurleigh (B)

Breakdown of sound-proofing costs for existing and programmed schools

	2-runway proposal £	*4-runway proposal* £
Bedfordshire	312,990	312,635
Buckinghamshire	580,877	693,557
Cambridgeshire and Isle of Ely	133,434	106,919
Huntingdon and Peterborough	656,490	749,307
Northamptonshire	271,897	421,158
	£1,955,688	£2,283,576

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire, Buckinghamshire, Cambridgeshire, Huntingdon and Peterborough, and Northamptonshire County Councils

SUBMITTED BY MR. M. C. MACLEOD*

1. I am a Doctor of Medicine, a Bachelor of Surgery and the holder of the Diploma in Public Health of the University of Glasgow.

I have worked in the field of public health for the past seventeen years and have been County Medical Officer of Health and Principal School Medical Officer of Health for the Administrative County of Bedford since 1965. I was previously the Deputy County Medical Officer of Health and Deputy Principal School Medical Officer of Health for the Administrative County of Worcester and my earlier experience included other public health posts as well as a variety of hospital appointments.

2. **Acknowledgement**

Acknowledgement is made to Dr. J. J. A. Reid, County Medical Officer of Health for Buckinghamshire, for extensive use of agreed evidence prepared by him on behalf of Buckinghamshire, Bedfordshire, Northamptonshire and Oxfordshire County Councils. I am in complete agreement with the principals on which his evidence was based; these principles also apply to my evidence.

3. **Introduction**

The definition of health adopted by the World Health Organisation, which is a specialised agency of the United Nations, is as follows.

> "A state of complete physical, mental and social well-being, and not merely an absence of disease and infirmity."

4. The establishment of a new civil airport in a part of the country which has hitherto been quiet and peaceful, is bound to interfere with the mental and social well-being of a substantial proportion of the population living in that area and will thus have a deleterious effect on health as defined by the World Health Organisation. It is, therefore, clearly desirable to site any new airport in an area where this interference with health would be minimal.

5. In order to analyse the position in relation to the proposal that the airport should be sited at Thurleigh, comments will be made on the effects on health of the population in general and on the effects on particular groups. Thereafter, the effects on certain health services will be mentioned; and certain general conclusions will be drawn.

6. **The population in general**

There are three factors involved here, all of which are potentially detrimental to health, namely noise, atmospheric pollution and the possibility of physical injury.

(a) *Noise*

This is a major consideration, from the health point of view, in the siting of any new airport and the likely effects of noise in such a situation must be looked upon differently from those in the case of an existing civil airport. As far as the latter is concerned, there will have been a gradual build-up of noise over many years and a degree of acclimatisation will have taken place amongst the population whereas, in the case of Thurleigh, those living in the wide area likely to be adversely affected by noise have not been exposed to this gradual build-up and will thus find the noise more obtrusive. In addition, much of the area affected by the noise of aircraft in existing airports is also subject to substantial urban traffic and other noises. In the case of Thurleigh, while in an area which includes the flying fields associated with the research station of the Royal Aircraft Establishment, there has not been any exposure to noise comparable to that of a large civilian airport. Furthermore such limited flying activity which does take place is largely confined to office hours during week days only. It may, therefore, be concluded that the degree of nuisance caused by aircraft noise would be higher at Thurleigh than in the case of such airports as Heathrow.

These facts must be borne in mind when consideration is given to the results of the study of public reaction to noise arising from Heathrow Airport (Committee on the Problem of Noise, 1963*). In connection with this survey it would also be reasonable to suggest that, over a period of years before the study commenced, a process of selection had taken place amongst a proportion of the population concerned, so that those remaining in the area contained a higher average number of people who were less disturbed by aircraft noise or who were more tolerant of it, possibly because they or members of their families were employed at the airport.

In considering the effects of noise on health, it must be remembered that individual human-beings vary widely in their susceptibility to potentially harmful agents. Thus identical doses of a chemical poison may result in serious illness in one person yet no more than transient discomfort in another; exposure to similar concentrations of micro-organisms can

* See also p. 2187.

* Cmnd. 2056 (HMSO; 19s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

cause profound infection in some and have no effect on others; and an apparently similar degree of stress may precipitate mental breakdown in someone yet leave somebody else unaffected.

This variation in individual human response is certainly to be found in relation to noise. A level which is acceptable to one person is intolerable or extremely disturbing and annoying to another. Thus the Committee on the Problem of Noise found that, at a level of 35 NNI no less than 30 per cent of people had their rest or relaxation disturbed by aircraft.

Damage: The ear varies widely in its susceptibility to noise damage. Thus while one person may be exposed to loud industrial noise for many years without any effect on his hearing, another may suffer permanent hearing loss following exposure to a lesser degree of factory noise. Discomfort or pain in the ear is valueless as a warning against noise-induced hearing loss, because the pain threshold is much higher than the hearing damage threshold. Whilst there is no definite evidence at present that intermittent exposure to aircraft noise causes demonstrable hearing loss, this is not proof that such loss does not take place.

Sleep: One of the most serious effects of aircraft noise is interference with sleep. Adequate sleep is a physiological necessity and health is likely to be damaged by a lack of sleep. Disturbance caused by the same level of noise tends to be greater at night than in the daytime, and in the home rather than elsewhere, and the intermittent nature of aircraft sound tends to increase its undesirable effect on a person who is trying to sleep. At the 35 NNI level the Committee on the Problem of Noise found that almost half the affected population were wakened from their sleep and more than a quarter were kept from going to sleep.

Annoyance: is a subjective effect of noise and very difficult to measure. Noise is irritating to the community at large but whether any particular noise is a nuisance depends upon a variety of psychological and social factors.

A survey of the reactions of people to noise (McKennel, A. C. and Hunt, E. R. *Noise annoyance in central London*; Government Social Survey; 1966) showed that the greatest disturbance was experienced by people when in their own homes. External sounds, particularly traffic and aircraft noise, were regarded as most important.

Working efficiency: Apart from its possible effects on the ear, intense noise can cause general fatigue and impair working efficiency. It is particularly distracting in tasks calling for mental concentration. A considerable amount of work has been undertaken in the field by psychologists (e.g. Broadbent, D. E. (1958) "The effects of noise on an intellectual task," *J. Acoust. Soc. Am*, 30, 824 and Carpenter, A. (1962) *Effects of noise on performance and productivity*, National Physical Laboratory Symposium No. 12; London, HMSO). These investigations have shown that, depending on the type of work being done, noise increases the tendency to make mistakes although the rate of working may not apparently be changed.

Mental health: Assessing the effect of any single factor on mental health is difficult, as mental illness is usually caused by the action on an individual of a multiplicity of factors. Thus a man who has an unhappy marriage, financial problems, an uncongenial job, few friends and a chronic physical disability is more likely to suffer a breakdown in his mental health than one who has none of these misfortunes, yet it is usually impossible to say that his breakdown was due to any one of his problems in isolation. In other words, it is rarely possible to demonstrate a clear cause and effect relationship between a single source of stress and the onset of a mental illness, but that does not mean that the source of stress did not play its part in the production of the illness.

It is for this reason that it would be extremely difficult to demonstrate beyond all possible doubt that loud aircraft noise is a direct cause of mental illness. Such noise, however, is undoubtedly stressful to a far from negligible proportion of people, even at the 35 NNI level, and it is impossible to claim with any degree of certainty that it is not a factor in the production of certain forms of mental illness.

In this connection, reference must be made to paragraph 44 and 46 of the Report on the Committee on the Problem of Noise, which can only be described as extremely weak. Paragraph 44 refers to members of the committee having talked to medical practitioners with practices in the vicinity of a major airport and mentions statements made by these practitioners regarding the incidence of mental illness and the consumption of sedatives and hypnotics. Statements of this kind are devoid of scientific validity and the history of medicine is littered with inaccurate conclusions drawn from such evidence.

Paragraphs 45 and 46 point to the absence of reliable studies on the effects of noise on mental health. These paragraphs include reference to studies carried out on crews of United States aircraft carriers and point out that such crews "do not provide a typical cross section of the population". This is a classic understatement, as aircraft carrier crews are a highly selected group compared with civilian men and women, young and old, living near a major civilian airport.

In paragraph 291, the Committee on the Problem of Noise refers to an approach which was made to the Medical Research Council with a view to considering the practicability of investigating the effects of noise on the health of people living near an airport. The conclusion was reached that such a study would be most unlikely to produce meaningful results.

The difficulties inherent in trying to settle the question of the inter-relationship between noise and mental illness on a scientific basis are enormous but, in other fields of medicine, it is now accepted that, where there is a uspicion that any factor may be a hazard to health, it should be treated as such until it is clearly demonstrated to be harmless.

Accepting the World Health Organisation's definition, it is clear that the noise of an airport at Thurleigh would have an effect on the health of many

Printed image digitised by the University of Southampton Library Digitisation Unit

people. Such matters as loss of sleep can be proven to be harmful; but it is more difficult to prove or to disprove the possible results of other hazards, notably psychological stress resulting from noise. It can be categorically stated that it is impossible, in the light of present knowledge, to prove that noise has no effect on mental health and it must therefore be concluded that a risk exists. Under these circumstances the onus should rest on those who claim that noise has no effect on health to prove their case. Unless or until this can be done, it is important from the health point of view to site a new major airport in an area where the least effect will be produced on the population.

(b) *Atmospheric pollution*

There are many forms of atmospheric pollution, some of which are known to be highly injurious to physical health whilst others are still the subject of scientific study. As in the case of mental health, the investigation of respiratory disease is complicated by the multiplicity of factors involved. For example, people living near Heathrow airport will be affected by pollution from house fires, industrial chimneys, aircraft, motor vehicles and by their personal smoking habits; whilst the weather conditions will also be of relevance. Separating out the roles played by each of these different components in the production of respiratory disease is not easy, and trying to identify the contribution made by pollution from aircraft engines would be extremely difficult.

Once again, in the absence of proof that atmospheric pollution by aircraft engines is harmless in the neighbourhood of major airports and in the absence of proof that future engines will be harmless, it is desirable to ensure that a site is chosen where the minimum population is exposed to fall-out.

(c) *Physical injury*

Some aircraft will inevitably crash, and the chances of this happening are known to be greatest around the time of take-off and landing. The conclusion to be drawn here is that the smaller the population living in the area concerned, the less is the likelihood of a major disaster involving residents as well as aircraft passengers. It is probable that landing and taking off over the sea would be safest of all from this point of view, and might have the additional merit of raising the chances of survival of the passengers.

7. Particular groups of the population

(i) *Patients in hospital*

The effects of noise on patients in hospital must be looked upon in a different light from its effects on the population in general, as the former are more sensitive to noise and, in addition, have special requirements. Hospitals make great efforts to secure quietness for patients, particularly if they are seriously ill and there are certain conditions in which exposure to sudden or loud noise can be dangerous, e.g. tetanus, eclampsia, recent myocardial infarction, the cerebral irritation phase after head injury, and acute anxiety states. Many patients in hospital have a special need for adequate and uninterrupted sleep both at night and, in some cases, at other times. Sleep can, indeed, be a vital component of the treatment of some serious conditions such as toxaemia of pregnancy.

There is also need for quietness if patients and their medical, nursing and other attendants are to be enabled to communicate adequately with each other. This is particularly important in the case of psychiatric patients where much of the treatment depends on conversation between patient and doctor, but it also applies to all others and the frequent intrusion of loud aircraft noise is highly disruptive of this process. Cases of unnecessary exposure to radiation could occur owing to X-ray examinations having to be repeated as a result of movement or misunderstanding of instructions. Loud noise can also make such elementary matters as the effective use of a stethoscope more difficult and can have an effect on the concentration of the surgeon as he carries out an operation, or the physician as he seeks to interpret a group of symptoms. Some of the difficulties, from a consultant physician's point of view are given by Dr. N. Cogill (*New Scientist*, 29th June 1967, pages 768–70) in the light of his experience at a hospital five miles from Heathrow airport.

Thus aircraft noise of a degree which might be acceptable to healthy people would be unacceptable for patients in a hospital and this must be borne in mind in the interpretation of maps where such hospitals lie a short distance outside the 35 NNI contour line. The need for quietness in the environment of hospitals is universally recognised and the siting of the airport at Thurleigh would have a serious effect as is shown in Appendix "A", which gives the bed distribution, in respect of the original (a) and the revised (b) sites for both the two and four runway airports. It should be noted that in the case of the original (a) two and four runway systems premises have been included which lie four miles beyond the 35 NNI. In the case of the revised layout (b) premises have been included a short distance beyond the 35 NNI but in no case exceeding six miles. The following table shows the hospital bed distribution likely to be affected.

	(a) four	*(a) two*	*(b) four*	*(b) two*
35–40 NNI	—	—	552	—
4 miles outside 35 NNI in respect of (a) only	4,809	4,809		
A short distance outside 35 NNI in respect of (b) only—not exceeding 6 miles			4,357	4,809

It should be noted that this bed distribution does not include Dr. J. J. A. Reid's (County Medical Officer of Health for Buckinghamshire County Council) estimate of 700 beds for the new Milton Keynes General Hospital. In the case of the revised four runway airport Milton Keynes would lie only some 2½ miles distant from the 35 NNI contour.

Thus the siting of an airport at Thurleigh would have a considerable and harmful effect on hospital facilities. In particular Bromham Mental Hospital, Westbury Maternity Home, Wolverton Diagnostic Clinic and Renny Lodge General Hospital all lie within the 35–40 NNI contour of the revised four

Printed image digitised by the University of Southampton Library Digitisation Unit

runway and their work would be severely disrupted by noise. Similarly Bedford General Hospitals, North and South Wings and Clapham Geriatric Hospital all lie in close proximity to the 35 NNI contour of both the original and revised sites in respect of the two and four runway systems, and it is to be expected that their work would also be seriously affected to a degree which would make life difficult for both patients and staff.

8. **Residents in nursing homes, welfare homes and mental health hostels**

Many of these should be regarded in the same light as hospital patients and details of the premises affected are given in Appendix "B".

9. **Dispossession and removal**

It is evident that considerable numbers of people would lose their homes as a result of site demolition. The following table shows the numbers involved in respect of the original and revised two and four runway systems. Furthermore the table shows an even greater number of persons living within the 55+ NNI contour where noise would be intolerable and in which it is anticipated that dispossession would be bound to have a deleterious effect on the social and mental health of some. The same might be true, although to a lesser degree in the case of those who would be forced to move because of noise although they might live outside the 55+ NNI contour.

Additional stress would also apply in the case of those who might wish to move from the area but could not do so because of difficulty in selling their property. This would undoubtedly add to their state of mental stress.

	(a) *four*	(a) *two*	(b) *four*	(b) *two*
Site	773	773	1,014	1,014
55+	2,686	1,616	2,143	2,587
	3,459	2,389	3,157	3,601

10. **Effects on other health services**

The preceding sections dealt with hospitals and with nursing and other homes. The effect of noise on other health services should now be mentioned.

(a) *Community health services*

A substantial number of general practitioners work within the area which would be adversely affected by noise. They, and their supporting staffs of health visitors, nurses, midwives and others, will experience noise nuisance just as will other members of the community but, as the health service workers depend on effective communication with their patients if they are to be able to function effectively, their need for as quiet an environment as possible is understandable.

It should also be noted that, with modern therapy, more patients are nowadays nursed through serious illness at home, without having to be admitted to hospital. They, like hospital patients, often require quietness and sleep to help in their recovery and this again points to the desirability of siting the new London Airport where its undesirable noise effects would be disseminated as far as possible over the sea rather than over inland area such as north Bedfordshire.

(b) *Training centres for the mentally sub-normal*

These, although at present the responsibility of local health authorities, are in many ways analogous to schools; and they have particular need of an environment which facilitates communication between the teacher or instructor and the mentally handicapped child or adult. The following table shows the premises likely to be affected and which lie a short distance outside the 35 NNI contour.

Name	*No. of places*
Wellingborough Junior	60
Bedford Adult Workshop	90
Kempston Junior Training Centre	48
St. Edwards Junior, Huntingdonshire	40
St. Michael's Adult, Huntingdonshire	36

(c) *Child health clinics*

The need for reasonably quiet working conditions at child health clinics is obvious if adequate physical and psychological assessment of children is to be carried out. Such testing includes the routine investigation of hearing. Numerous clinics, of variable size, are held, mostly in ad hoc premises, within the area which would be affected by noise if an airport were to be constructed at Thurleigh, the situation being summarised as follows:

	(a) *four*	(a) *two*	(b) *four*	(b) *two*
60+ NNI contour	1	–	–	–
55–60 NNI contour	3	2	1	2
50–55 NNI contour	1	3	2	–
45–50 NNI contour	4	1	3	1
40–45 NNI contour	9	9	7	6
35–40 NNI contour	7	7	13	8
4 miles outside 35 NNI (in respect of (a))	44	47	–	–
A short distance outside 35 NNI in respect of (b) and not exceeding 6 miles	–	–	43	52
	69	69	69	69

(d) *Health centres*

The health centre concept originally envisaged in the National Health Service Act of 1948 has only within recent years gained in increasing momentum. Two such Centres already exist a short distance outside the 35 NNI contour of both airport systems:

Wellingborough, Queensway
Bedford, Queens Park.

The same considerations apply here as they do to the community health services and child health clinics and it is considered that considerable disruption to routine would arise as a result of the siting of an Airport at Thurleigh.

11. **School health services**

These are provided at all local authority schools and, once again, a relatively quiet environment is desirable both for consultation and for such special purposes as the testing of hearing, speech therapy, and psychological investigations.

Mr. H. P. Shallard, Chief Education Officer, has indicated that considerable interruption would be experienced during the normal school curriculum, the extent of this is made clear in the following table

Printed image digitised by the University of Southampton Library Digitisation Unit

where the outside noise intensity would reach or exceed 85 PNdB for a minimum of 30 interruptions in a 12 hour period.

	(a) four	(a) two	(b) four	(b) two
No. of schools	84	74	88	76
No. of pupils	19,034	12,042	18,409	15,337

12. **Conclusion**

I have tried to describe the effects on health and on health services which would arise from the siting of the third London airport at Thurleigh. As far as health is concerned, and accepting the definition of the World Health Organisation, aircraft noise is a major factor and the airport would have an effect on a large number of people. In this connection, the Commission's NNI contour maps in relation to Thurleigh should be interpreted with care for, whilst it shows that such centres of population as Bedford, Wolverton, Northampton, Stony Stratford, Wellingborough, Rushden, Huntingdon, St. Neots—and in the case of the original and revised two-runway systems—the City of Cambridge, would lie outside the 40 NNI line, that does not mean that they would escape from the unpleasant effects of aircraft noise. This statement would apply with particular force to patients in the substantial number of hospitals in or near these towns.

Such noise would vary with weather conditions, and no guarantee can be given about the amount of nuisance likely to be caused by future types of aircraft, nor can their future number be predicted with certainty. It is anticipated that in any major undertaking such as a new airport at Thurleigh only its fullest use throughout a 24 hour period would justify the considerable capital investment involved. It would, therefore, be reasonable to conclude that the level of night flying activity would approach nearer to that experienced through daylight hours and this, from a health point of view, could have a deleterious effect on those in the vicinity. From the particular standpoint of health, it should be remembered that people vary widely in their sensitivity to noise, and a neat line on a map does not mean that substantial numbers of people on what appears to be the right side of it will not suffer as a result of aircraft noise. The Report of the Committee on the Problem of Noise showed that a very substantial minority of people in the general area of Heathrow airport were disturbed, in varying degree, below the 40 NNI level. It must be strongly emphasised that this minority was made up of thousands of individual human-beings and that the same would apply in the case of an airport at Thurleigh.

In relation to such noise (and to atmospheric pollution arising from aircraft) it cannot be proved that there is no deleterious effect on health, and medical history offers all too many examples of hazards to health which were not recognised as such until many years after their introduction. Thus it was about 350 years after the introduction of tobacco to England before its harmful effects on the lungs and other organs of the body were demonstrated; a certain form of asbestos had been widely used in industry and in the home before it was found to cause a malignant disease; and mercurial teething powders were long regarded as beneficial to babies before their potentially poisonous effect was realised. Similarly, almost a century and a half elapsed between the Industrial Revolution and the realisation that the resulting atmospheric pollution was a serious threat to health.

These and many other events have led to a gradual shifting of the burden of proof in matters of health. In the past, the burden was on health workers to prove that some new substance, process or activity was detrimental to health, whereas nowadays the onus increasingly lies on the person who wishes to introduce any potential hazard to prove that it will not be detrimental to health. It is my contention that a major airport at Thurleigh would constitute such a hazard to health, as defined by the World Health Organisation, and that it should therefore rest upon its proponents to prove the contrary.

The Industrial Revolution was necessary for the economic development of the country, as is the third London airport. In the case of the Industrial Revolution, however, it was not possible at the time in question to foresee the undesirable secondary effects which it was to produce on the health of the populace, and some of these effects are, indeed still exacting their toll today. From the experience of history it is essential to ensure that the siting of the airport accords as far as possible with the requirements of the public health, and this points away from an area such as Thurleigh.

Appendix A

Hospitals affected by noise in respect of the original (a) and the revised (b) sites for both the two-and four-runway airports

Authority	*Name*	*Type*	*No. of beds*
Buckinghamshire	Westbury, Newport Pagnell	Maternity	16
Buckinghamshire	Wolverton	Diagnostic clinic	—
Buckinghamshire	Renny Lodge, Newport Pagnell	General	112
Northamptonshire	Pitsford House	Geriatric	67
Northamptonshire	Middlesex House	Geriatric	56
Northamptonshire	Wellingborough Park,	Geriatric and maternity	206
Northamptonshire	Highfield, Wellingborough	Paediatric and medical	35
Northamptonshire	Wellingborough Cottage	Gynaecological	34
Northamptonshire	Rushden	Chest and mentally sub-normal children	79
Northamptonshire	St. Crispins, Duston	Mental	850
Northamptonshire	Princess Marina	Mentally sub-normal	220
Northampton C.B.	Harborough Road	Infectious diseases, medical and paediatric	112
Northampton C.B.	Northampton General	General	582
Northampton C.B.	Manfield	Orthopaedic	220
Northampton C.B.	St. Edmunds	Geriatric and maternity	261
Northampton C.B.	Welford Road	Chronic sick	32

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX A—*continued*

Authority	*Name*	*Type*	*No. of beds*
Northampton C.B.	Margaret Spencer	Convalescent	45
Northampton C.B.	John Greenwood	Physically handicapped children	18
Northampton C.B.	St. Andrews	Private mental	500
Bedfordshire	Clapham	Geriatric	88
Bedfordshire	Bromham	Mental	424
Bedfordshire	Bedford General Hospital (North Wing)	General	239
Bedfordshire	Bedford General Hospital (South Wing)	General	201
Huntingdon and Peterborough	County	General	61
Huntingdon and Peterborough	Primrose Lane	Maternity	24
Huntingdon and Peterborough	Primrose Lane	Geriatric	20
Huntingdon and Peterborough	Petersfield	Geriatric	86
Cambridgeshire	Papworth	Chest and heart hospital and T.B. settlement	341

APPENDIX B

Nursing homes, welfare homes, (including those registered under the National Assistance Act) and mental health hostels affected by noise in respect of the original (a) and the revised (b) sites for both the two- and four-runway airports

Authority	*Name*	*Type*	*No. of beds*
Buckinghamshire	The Green	Welfare	42
Buckinghamshire	Tyringham	Nursing home	59
Buckinghamshire	Calverton Lodge	Old people	7
Buckinghamshire	Tickford Abbey	Old people	46
Northamptonshire	Risdene, Rushden	Welfare	27
Northamptonshire	Westlands, Wellingborough	Welfare	31
Northamptonshire	Westfield, Wellingborough	Welfare	27
Northamptonshire	The Lindens, Wellingborough	Welfare	27
Northamptonshire	The Quarries, Silverstone	Old people	9
Northamptonshire	Fairlawn, Wellingborough	Mental health hostel	12
Northampton C.B.	Lakeview	Old people	—
Bedfordshire	Dial House, Bedford	Nursing home	25
Bedfordshire	Cheltondale, Bedford	Nursing home	10
Bedfordshire	Manor House, Biddenham	Nursing home	17
Bedfordshire	Highfield, Bedford	Welfare	40
Bedfordshire	Waverley, Bedford	Welfare	18
Bedfordshire	Russell, Bedford	Welfare	19
Bedfordshire	Parkside, Kempston	Welfare	40
Bedfordshire	Rothsay, Bedford	Old people	15
Bedfordshire	61 De Parys Avenue, Bedford	Old people	17
Bedfordshire	42 De Parys Avenue, Bedford	Old people	17
Bedfordshire	35 Castle Road, Bedford	Old people	14
Bedfordshire	9 Oaklands Road, Bedford	Old people	8
Bedfordshire	15 Rothsay Place, Bedford	Old people	10
Bedfordshire	32 Park Avenue, Bedford	Old people	14
Cambridgeshire	Over	Old people	4
Huntingdon and Peterborough	Rheola, St. Ives	Welfare	39
Huntingdon and Peterborough	Weald House, Croxton	Nursing home	25
Huntingdon and Peterborough	Houghton Manor	Old people	16
Northamptonshire	Ridgeway House, Towcester	Welfare home	34
Huntingdon and Peterborough	The Chestnuts, Godmanchester	Welfare home	27
Bedfordshire	Stayesmore Manor, Carlton	Nursing home	12
Huntingdon and Peterborough	Shortsands, St. Neots	Welfare home	36
Huntingdon and Peterborough	Hunters Down, Huntingdon	Welfare home	62
Huntingdon and Peterborough	Hartford Cottage	Old people	7
Huntingdon and Peterborough	The Woodlands, Earith	Old people	19
Buckinghamshire	Emberton	Nursing home	2
Buckinghamshire	Gresham House, Olney	Old people	14
Buckinghamshire	Westlands, Olney	Old people	20
Cambridgeshire	Willingham	Old people	31
Bedfordshire	Southwood House, Podington	Old people	21
Bedfordshire	W.R.V.S. Club, Sharnbrook	Old people	24
Huntingdon and Peterborough	St. Edwards	M.H. hostel (child)	15
Huntingdon and Peterborough	Mayfield	M.H. hostel (adult)	18
Bedfordshire	Rivermead, Kempston	E.M.I. home	35
Bedfordshire	Kempston	M.H. hostel (adult)	25
Bedfordshire	Bedford	G.H. for M.I.	8

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Buckinghamshire County Council

SUBMITTED BY MR. F. B. POOLEY*

I am a Fellow and Member of the Council of the Royal Institute of British Architects, Fellow and Member of the Council of the Royal Institution of Chartered Surveyors, Associate Member of the Town Planning Institute and a Member of the Institution of Structural Engineers. I am the County Architect and Planning Officer of Buckinghamshire; a Special Adviser to the Milton Keynes Development Corporation and Chairman of the Southern Sports Council Technical Panel. I have had some 20 years experience in the practice of Town and Country Planning.

The scope and purpose of this evidence

The Roskill Commission have proposed at Thurleigh within Bedfordshire two alternative sites for the Third London Airport. Both sites are within 6 miles from the Bucks border.

For well over a year now Bucks has faced the threat of the Third London Airport, originating with speculation about Silverstone, and the horror of developing an inland site has been emphasised yet again to the County Council in the recent presentation of Stage II evidence against Cublington. All this accumulated experience confirms my Council's belief that the prospect of siting the Third London Airport at Thurleigh would have disastrous local implications over a very wide area which includes a large part of Bucks.

The Bucks County Council have resolved to support Bedfordshire in their objections to Thurleigh and my proof is intended to emphasise, with local detail and knowledge, that development of either the Thurleigh alternative sites would result in disaster for North Bucks. The area would be affected by aircraft noise and development pressures and the local implications for North Bucks would comprise:

(i) The effects on people and their ways of life;

(ii) The effects on many attractive settlements;

(iii) The effects on an area of beautiful countryside;

(iv) The effects on certain land uses;

(v) The effects on proved planning policies for the area.

I propose to divide my evidence into three parts; firstly to state the proposals as I understand them; secondly to describe that part of Bucks which would be most badly affected by the proposals and to show what the local effects would be; thirdly to give my view on the way the proposals would at the least distort and probably make abortive the planning policies for North Bucks.

The purpose of my evidence is to warmly support and to lend weight to the overall planning case presented by Mr. Cowley.

PART ONE

1.1. **The proposals**

The proposals are to establish in the ultimate a four-runway airport at Thurleigh. The site first proposed, now known as Thurleigh "A", is 5¼ miles from the Bucks boundary, while the more recently proposed site "B", which is 1¼ miles to the south-east of site "A", lies just under 6 miles from Bucks.

1.2. In this evidence the effect upon Bucks of both sites are assessed against the four-runway situation in each case.

1.3. The NNI contours published by the Commission† and supplemented by the lower 35 NNI contour prepared by Mr. Fleming, show that Thurleigh "B" would inflict levels of noise nuisance ranging from "annoying" to "unacceptable" over a slightly larger area of North Bucks than would be the case from Thurleigh "A". However, although the detailed implications of both sites vary, the part of Bucks which will be most badly affected by either proposal is broadly north of a line between North Crawley and the Stony Stratford/Loughton area. The general area so defined lies within a 20 mile radius of the airport sites.

PART TWO

The proposals and their local implications

2.1. **On the area generally**

That part of North Bucks affected by the airport proposals is, by and large, beautiful undulating agricultural countryside. It is well wooded and hedgerow trees abound, while the River Ouse meandering through pleasant water meadows provides a contrast.

2.2. Outside the main towns of Wolverton, Stony Stratford and Newport Pagnell, the countryside is studded with largely stone built villages which are amongst the most attractive in the County.

2.3. Most of the area is defined as a high amenity area and is now known as "The Limestone Country Belt", providing a setting for peace and quiet which would be destroyed with the advent of either of the airport proposals.

* See also p. 2189.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.4. **People**

The following tables show the 1968 population in Bucks affected by the various noise levels from both sites:

THURLEIGH "A"

(i) Roskill Commission basis

NNI contour Range	*People affected*
Greater than 50	10
45—50	1,310
40—45	3,610
35—40	7,860

(ii) Fleming basis

45—55	1,320
35—45	11,470

THURLEIGH "B"

(i) Roskill Commission basis

Greater than 50	60
45—50	1,670
40—45	4,090
35—40	18,250

(ii) Fleming basis

45—55	1,730
35—45	22,340

2.5. **Settlements affected**

Although the actual area affected by noise differs slightly between the two sites, more than twice as many people are affected by noise from Thurleigh "B" than from Thurleigh "A" because it includes the towns of Wolverton and Newport Pagnell.

2.6. The settlements affected vary in character and purpose and several have an important role to play in the development strategy for North Bucks. Most of the settlements affected by aircraft noise are villages which, because of their naturally lower levels of "background noise" will find the aircraft noise nuisance all the more intrusive.

2.7. The following tables give details on the way the settlements in North Bucks would be affected by the Thurleigh proposals:

THURLEIGH "A"

Life intolerable (within 50 NNI)

NIL

Life difficult (within 40–50 NNI)

Lavendon	Cold Brayfield
Stoke Goldington	Warrington
Tathall End	Olney
Weston Underwood	Newton Blossomville
Ravenstone	Clifton Reynes

Life altered (within 35–40 NNI)

Astwood	Hardmead
Emberton	Filgrave
Tyringham	Gayhurst
Little Linford	Haversham
Hanslope	Stony Stratford
Castlethorpe	Long Street
Pindon End	

THURLEIGH "B"

Life intolerable (within 50 NNI)

Warrington

Life difficult (within 40–50 NNI)

Lavendon	Cold Brayfield
Newton Blossomville	Clifton Reynes
Emberton	Olney
Weston Underwood	Ravenstone
Stoke Goldington	Tyringham
Filgrave	Gayhurst
Little Linford	Hardmead
Astwood	

Life altered (within 35–40 NNI)

Long Street	Pindon End
Hanslope	Tathall End
Haversham	Wolverton
New Bradwell	Bradwell
Loughton	Great Linford
Newport Pagnell	Lathbury
Sherington	Chicheley
North Crawley (small part)	

2.8. Conservation Areas have been defined and are proposed for a number of the settlements, currently as follows:

Approved:	Olney	
	Newport Pagnell	
	Weston Underwood	
	North Crawley	
Proposed:	Ravenstone	
	Newton Blossomville	
	Great Linford	suggested in Milton Keynes Interim Report
	Bradwell	
	Stony Stratford	
Possible:	Stoke Goldington	
	Castlethorpe	
	Emberton	

2.9. **Buildings of architectural and historic interest**

The area enclosed by the 35 NNI contour is rich in buildings of architectural and historic interest, and whilst none will be physically affected by the airport sites, it is not clear how many may be threatened by the associated development pressures. Indeed, noise nuisance may make many of the buildings untenable and so put their continued renovation and existence in jeopardy.

The following table lists the number of buildings involved within the NNI contours:

THURLEIGH "A"

Buildings within the 40–50 NNI contour

Parish or town	*Statutory list*	*Supplementary list*
Warrington	0	1
Cold Brayfield	2	1
Lavendon	2	15
Newton Blossomville	2	11
Olney	69	35
Ravenstone	4	23
Weston Underwood	17	18
Stoke Goldington	2	22
Clifton Reynes	3	5
Emberton	1	1
Hanslope	1	0
Gayhurst	1	0

Printed image digitised by the University of Southampton Library Digitisation Unit

Buildings within the 35–40 NNI contour

Parish or town	*Statutory list*	*Supplementary list*
Astwood	3	12
Hardmead	1	3
North Crawley	1	6
Emberton	4	15
Tyringham with Filgrave	4	6
Gayhurst	9	6
Haversham	3	1
Castlethorpe	5	12
Hanslope	7	29
Stony Stratford	61	36

THURLEIGH "B"

Buildings within the 50–55 NNI contour

Parish or town	*Statutory list*	*Supplementary list*
Lavendon	0	1
Warrington	0	1

Buildings within the 40–50 NNI contour

Parish or town	*Statutory list*	*Supplementary list*
Lavendon	2	14
Cold Brayfield	2	1
Newton Blossomville	2	11
Clifton Reynes	3	5
Olney	69	35
Emberton	5	16
Weston Underwood	17	18
Ravenstone	4	23
Stoke Goldington	2	22
Astwood	3	8
Hardmead	1	3
Tyringham with Filgrave	4	6
Gayhurst	10	6
Haversham	0	1
Lathbury	0	1

Buildings within the 35–40 NNI contour

Parish or town	*Statutory list*	*Supplementary list*
Chicheley	3	2
North Crawley	2	6
Sherington	9	13
Hanslope	8	28
Haversham	6	1
Great Linford	7	7
Wolverton	6	0
Newport Pagnell	12	39
Lathbury	0	3
Astwood	0	1

2.10. The lists of buildings of architectural or historic interest, in conjunction with the conservation areas, give testimony to the character and charming quality of many of the settlements in North Bucks; the following photographs,* which are but a sample, provide pictorial proof of this and demonstrate what is at risk.

* Photographs (not reproduced) of Emberton, Sherington, Ravenstone, Clifton Reynes, Newton Blossomville and Stoke Goldington.

2.11. **Recreation**

Facilities exist in North Bucks for water and other country recreation. As examples, the Grand Union Canal is used for cruising, the rivers Ouse and Ouzel are fished, and a lagoon formed by gravel workings at Emberton in the Ouse Valley has been converted to a pleasant water park.

2.12. Emberton Park also has camping facilities and the whole is overlooked by a magnificent viewpoint to the south-west of Olney; the Park is within the 40–45 NNI contour from from Thurleigh "A" and within the 45–50 NNI contour from Thurleigh "B", as well as being under one of the flight paths.

2.13. Salcey Forest on the Bucks-Northants border is Forestry Commission land which has official picnic areas, but the value of this relaxing setting would be sadly diminished if either of the sites at Thurleigh was developed.

2.14. **Special services**

The Diplomatic Service wireless station at Hanslope Park lies within the 35–40 NNI contour range of both sites. The East Midlands Gas Board currently operate a radio mast south of Sherington. Part of North Bucks falls within the safeguarding area of the Ministry of Defence Explosives Area (O.E.S.D. Yardley Chase).

PART THREE

The proposals and their implications on Bucks planning policies

3.1. **County policy for North Bucks**

Fundamental to Bucks overall county planning strategy and to central government strategy, is the development of Milton Keynes as a new city of a quarter of a million people. Outside Bucks, major expansions are proposed at Northampton, Wellingborough and, tentatively, at Bedford and experience has shown that major expansions do not proceed without affecting their surrounding areas. For this reason, the strategic plan for North Bucks outside Milton Keynes provides for the controlled associated expansion of selected settlements, the safeguarding of the character and identity of the villages, and the preservation of the countryside.

3.2. In that part of North Bucks likely to be worst affected by the airport, major expansions will take place at:

(a) Newport Pagnell, which is expected in the long term to grow to a town of about 13,000 people;

(b) Olney, which is seen as a "satellite" for the new city and other expansions for those who work in these nearby towns but who want to live in a smaller community. Such development will help to offset the unusually high proportion of people aged over 65 in Olney;

(c) Hanslope, which is expected to more than double its size to 2,200 persons under a carefully prepared scheme of development.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.3. Plans and studies of other villages have been prepared or will be undertaken as part of the Strategic Policy.

3.4. The countryside of most of North Bucks has been defined as a high amenity area and known as "The Limestone Country Belt", incorporating an area of Great Landscape Value in the Ouse Valley between Olney and Tyringham. As the major expansions get under way, the North Bucks countryside must help maintain the amenities and quality of life of the people living in the locality by providing an expanding range of recreational opportunities. At the same time, the countryside must remain a suitable environment in which agriculture and wild life can flourish.

3.5. For amenity reasons, there is an established policy of restriction on gravel working in the Ouse Valley in Bucks.

3.6. **Implications of aircraft noise on Bucks policy**

The town expansions in North Bucks will be adversely affected by aircraft noise in varying degrees, with Thurleigh "B" producing the worst consequences, especially in its effect upon a bigger part of Milton Keynes.

3.7. If the airport came to Thurleigh, there would have to be a lot of re-thinking about current expansion plans and allocations, possibly requiring a change of design and emphasis for Milton Keynes. The Milton Keynes Development Corporation will of course be submitting evidence on their own behalf.

3.8. Some of the expansion plans could be so prejudiced by aircraft noise that they might be best abandoned rather than sentence even more people to a noisy environment. The consequence would be the loss of a great deal of work and investment. With North Bucks denied to such development, the villages of Central Bucks might probably and undesirably come under increasing pressure, so extending still further the impact of the airport to the south and into the Chilterns.

3.9. The recreational value of North Bucks will be irrevocably debased if a blanket of aircraft noise spreads over it, and existing facilities outside the noise areas would begin to suffer from over-use.

3.10. For all these reasons I believe that the effects of noise from the airport would be disastrous on North Bucks planning policy. A very large part of the area would end up blighted and rejected, left with part-fulfilled development strategies, satisfying to no-one.

3.11. **Implications of the airport development pressures on Bucks policy**

The airport will require a vast scale of associated development. The sites put forward to meet this problem are within a locality which is on the verge of undergoing a massive expansion. The consequence will be a severe conflict for materials and labour which could seriously hinder the pace of development of Milton Keynes and the other expanded towns, and since Milton Keynes is an essential part of the County Council's strategy they would be extremely concerned to see its construction hampered in any such way.

3.12. Other smaller expansions in North Bucks, essential to County Strategy, must also suffer in the inevitable conflict between local and national priorities, and some schemes might have to be abandoned through lack of resources quite apart from the effects of noise on them.

3.13. The urbanisation proposals suggested by Mr. Cowley* are tentative, requiring more research. It is not clear how far the proposed development at Stagsden will physically trespass upon Bucks, but such a large development must undesirably reduce the open area to the east of Milton Keynes, possibly leading ultimately to a conurbation situation which could hamper the development and existence of the new city.

3.14. The airport development pressures, and the priorities which will inevitably be attached to them, will lead to irresistible demands for sand and gravel working in the locality. The all too convenient resources in the Ouse Valley will face utter exploitation, and all the County Council's efforts in North Bucks to safeguard the amenity of the Valley will be wasted. Villages on the edge of the Valley, such as Lavendon, Clifton Reynes, Newton Blossomville and Cold Brayfield, would suffer for many years from the effects of construction traffic passing through them.

Conclusion

The airport proposals at Thurleigh will completely change North Bucks. A very large area of countryside will be badly affected by aircraft noise and recreational facilities will lose their value. Village life will alter and some settlements may become untenable and decline, while the County Strategy for North Bucks, so carefully evolved over the years, will suffer irreparable damage with repercussions felt throughout other parts of the County.

---

* p. 1807.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Cambridgeshire and Isle of Ely County Council

SUBMITTED BY MR. B. H. MELLOR*

I am the County Planning Officer of Cambridgeshire and Isle of Ely. I hold the Diploma in Town Planning of the London Polytechnic and I am an Associate Member of the Town Planning Institute.

1.01. The purpose of my appearance at this local hearing is to inform the Commission of the effect which the siting of a third London airport, at Thurleigh, might be expected to have on the County of Cambridgeshire and Isle of Ely. Also, I would record that I have read and accept the evidence prepared by the Consultants to the joint County Councils (Bedfordshire, Northamptonshire, Huntingdon and Peterborough), who are:

Mr. F. A. Sharman† of Sir William Halcrow & Partners, Mr. G. I. W. Dunford‡ of International Aeradio Ltd., and Mr. N. Fleming,§ Acoustical Consultant.

1.02. Further, I have to draw the attention of the Commission to those Parish Councils in the County of Cambridgeshire and Isle of Ely who have informed the County Council that they object to the siting of a third London Airport at Thurleigh—see Appendix A.

2.01. Factual data on populations, schools, hospitals and settlements affected by noise, from both the airport sites at Thurleigh have been supplied to the County Planner of Bedfordshire, and have been included in evidence on the total noise effects of the proposals, by him,‖ by the Chief Education Officer of Bedfordshire¶ and the Medical Officer of Health for Bedfordshire.** The alternative site, B, brings more noise nuisance into Cambridgeshire than site A, and in particular brings the noise contours closer to the regional chest hospital at Papworth Everard. The optimum approach to Runway 3 from the stacking area north of Royston, calculated by Mr. Dunford,†† may have harmful effects on the Cambridge shire environment. The University of Cambridge‡‡ is particularly concerned that this may have ill-effects on its teaching and research activities.

3.01. Development Plan policy in Cambridgeshire has the following basic aims:

(i) to provide for the distribution of population and employment to achieve a balanced and viable economy throughout the County;

(ii) to conserve and enhance the character of historic towns and villages;

(iii) to provide for the development of an adequate communications system throughout the County;

(iv) to protect the interests of agriculture and to safeguard high quality land so far as is consistent with other major objectives.

3.02. In pursuance of the above aims, and relevant to the western part of Cambridgeshire, which may experience extra development pressures due to the siting of a major airport at Thurleigh; the runaway growth of Cambridge has been successfully restricted by control of employment, and population, and employment encouraged in selected villages in the County. Over and Papworth Everard are settlements where limited growth is permitted (both are very close to the NNI contours for Thurleigh) and Gamlingay is a settlement where limited growth is encouraged.

3.03. Between Cambridge and the western fringe of the County lies the Mullard Radio Observatory at Lord's Bridge, and within the area of about 5 miles radius from the Observatory the County Planning Department has arrangements for consultation with the University on power lines down to 33 kV and all appreciable growth in housing. Within a ten mile radius of the Observatory, consultation takes place on all applications for radio masts and on industrial or other uses which might employ radio frequency heaters. Further, more detailed consultations take place on all applications within a small, inner zone surrounding the telescope. Thus, there is relatively little scope for major developments in the central-western section of Cambridgeshire. The University will be presenting evidence on the importance and ensitivity of the telescope,§§ to this local hearing.

3.04. If a third London airport were to be sited at Thurleigh, it is likely that some development pressures would be felt in Cambridgeshire, particularly those parts within 20 miles of Thurleigh, although some of this area would be affected by noise from the airport. Evidence has been given by the County Planner of Bedfordshire that the area between Sandy and St. Neots (that is adjacent to the western boundary of Cambridgeshire) is thought by him to be a possible site for urbanisation associated with the airport. This in itself will produce development pressures on villages in Cambridgeshire, and as a result probably increase the use made of Cambridge as a regional service and shopping centre, creating further congestion and development pressures in the historic centre of that city.

---

* See also p. 2191.
† p. 1845.
‡ p. 1851.
§ p. 1854.
¶ p. 1863.
‖ p. 1807.
** p. 1867.
†† p. 1851.
‡‡ p. 2111.

§§ p. 2111.

Printed image digitised by the University of Southampton Library Digitisation Unit

4.01. The beneficial side effects of a major growth point such as a third London airport would be apparent in an area, or close to an area, where there is a chronic shortage of employment and a declining population. The northern half of Cambridgeshire and Isle of Ely is such an area. In contrast to southern Cambridgeshire whose population growth from 1951–1966 was 19 per cent, the former Isle of Ely's population only increased by 3 per cent and employment fell by 1 per cent against an increase of 20 per cent in the same period in the south of the County. Thurleigh is not much over 20 miles from the western limits of north Cambridgeshire and, under certain circumstances, might possibly become a generator of secondary growth in the area. However, because of the very large scale development commitments in new and expanded towns on and to the west of the A.1, and the poor road and rail communications between north Cambridgeshire and the Thurleigh area, the siting of a third London Airport at Thurleigh is unlikely to bring economic benefits to north Cambridgeshire.

4.02. Indeed, the pressure for local road improvements to cope with airport orientated development in south Cambridgeshire is, if anything, likely to set back local road improvements in other parts of the County.

Conclusion

5.01. The siting of a third London airport at Thurleigh (Bedfordshire) is unlikely to bring any advantages to the County of Cambridgeshire and Isle of Ely, but is certain to pose problems of noise, interference with University activities, and development pressure contrary to Development Plan policies.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedford Rural District Council, in association with the County Councils of Bedfordshire, Buckinghamshire, Huntingdon and Peterborough, and Northamptonshire

SUBMITTED BY MR. L. TIMMS*

1. I am a Solicitor and Clerk to Bedford Rural District Council, whose area embraces the whole of Bedfordshire to the north of Bedford, and the area immediately surrounding Bedford contained within the following 43 parishes:

Barford Gt.	Felmersham	Roxton
Barford Lt.	Harrold	Sharnbrook
Biddenham	Kempston Rural	Stagsden
Bletsoe	Knotting & Souldrop	Staploe
Bolnhurst & Keysoe	Melchbourne & Yielden	Staughton Lt.
Bromham	Milton Ernest	Stevington
Cardington	Oakley	Stewartby
Carlton & Chellington	Odell	Swineshead
Clapham	Pavenham	Thurleigh
Colmworth	Pertenhall	Turvey
Cople	Podington	Wilden
Dean & Shelton	Ravensden	Willington
Eastcotts	Renhold	Wilshamstead
Elstow	Riseley	Wootton
		Wymington

These parishes return a total of 50 members to the Council, representing a total population of 35,580 (Registrar General, June 1968) and an area of 110,281 acres. In the context of this Hearing, many of the parishes are now familiar names, in that they include not only Thurleigh but many of the parishes so badly affected by the noise and other problems associated with the airport proposal. As a Local Authority area, Bedford Rural District is clearly the recipient of the direct impact of this proposal and it is for this reason that I am required by the Council to make their own position clear.

2. It is a measure of the Council's awareness of the implications of this proposal that, as early as its monthly meeting on the 22nd February 1969, the following Motion was considered by the Council pursuant to formal notice:

> That this Council notes with alarm the Report that the Roskill Committee considers that Thurleigh would be a suitable site for the construction of a major airport and that this Council is determined to take every possible step to prevent this from happening.

Following the automatic reference of this motion to two major Committees of the Council and, in the interim, the consideration of the First Report of the Roskill Commission† published on the 4th March 1969, the Motion was formally and unanimously adopted by the Council at its meeting on the 22nd March 1969 at which 45 members were present. Subsequently, at its meeting on the 26th April 1969, the District Council passed a series of resolutions providing, *inter alia*, for:

(a) The presentation of its views in opposition to the proposal in close association with the Bedfordshire County Council and the Parish Councils within the area, such opposition embracing all three inland sites.

(b) Representation by Counsel in association with the County Council.

(c) Co-operation with the Bedfordshire Airport Resistance Association in the examination of evidence produced in support of the County Council case and by the Association and arrangements whereby the Association would, through Counsel and Consultants, supplement any such evidence on agreed lines.

(d) Financial contribution to the cost of the County Council case and to the research costs of B.A.R.A. to a total maximum of £3,000.

(e) The formation of an ad hoc Committee to examine, collate and prepare evidence in consultation with B.A.R.A.

3. Following the adoption of the above resolutions, the Council through the medium of its own Airport Committee and of other major Committees has been actively engaged in assisting in the preparation and perusal of evidence, working in close co-operation with the County Council and the Resistance Association. At the outset, it was recognised that all the pertinent evidence would be better dealt with by these two latter bodies if duplication was to be avoided and for that reason the Council does not seek to present any technical evidence on its own account. The Council also recognises that the problems associated with the Airport proposal pay no regard to Local Authority boundaries and that there is no merit in an examination of the proposal on a narrow front. It cannot too strongly emphasise, however, that it has examined in detail the evidence to be submitted by the combined County Councils and by the Resistance Association and has supplemented the Association's evidence where it felt it to be necessary. The Council is in full accord with the conclusions reached by both the County Council and B.A.R.A.

---

* See also p. 2194.

† *Short list of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.).

Printed image digitised by the University of Southampton Library Digitisation Unit

4. In the light of the Royal Commission proposals on Local Government Reform,* the Council recognises that the impact of the proposal upon its role as public health and housing authority and upon its limited role as delegate planning authority may not be relevant in the long-term, although clearly the problems in these fields are serious and far reaching, as will be brought out in the technical evidence to be produced at the Hearing. The Council is, however, concerned as to the inevitable effect the solution of these problems will have in terms of the changed circumstances of its residents and the loss of a genuine country environment that has given pleasure and relaxation to countrymen and townsmen alike, whether at work or recreation. In this context, the Council's views are necessarily parochial but they reflect the considered opinion of its members and underline their real regard for the small communities they serve and the "grass roots" society they represent.

* Cmnd. 4040 (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedford Corporation*

1. The Borough of Bedford has an area of 6,012 acres, with a population of just under 70,000. The distance from the centre of the Town to the centre of Thurleigh Site No. 1 is approximately 6¾ miles, but only 3½ miles boundary to boundary; the corresponding distances for Site No. 2 are 5¼ miles and 2 miles. Apart from an area in the north of the Borough recently added by boundary extension where major residential and school building and some commercial development is now proceeding, it is to all intents and purposes built up, with just under 22,000 domestic properties. As Bedford is an important sub-regional centre, there are a large number of commercial enterprises and a wide variety of industrial establishments. In addition to the usual local authority schools, there are two Training Colleges, three major (one for boys and two for girls), and a number of smaller, independent schools and two direct grant schools (one for boys and one for girls). Both Colleges and four of the non-maintained schools have boarders as well as day pupils. The Borough is therefore an education centre of some importance. The hospital, which is being enlarged, serves a considerable area around the town and is situated at two sites, one just to the north and the other just to the south of the town centre.

2. Over the past fifteen years the Council have been very active in promoting an orderly expansion of the Town and, in this connection, have acquired substantial areas of land in the northern part of the Borough. After planning of the overall layout and the execution of civil engineering works (roads and main drainage), these areas have been developed by the Council in conjunction, where appropriate, with the County Council and with private enterprise, with a variety of dwellings, both for letting and sale, groups of local retail shops, primary and secondary schools, health clinics, churches, and other facilities. Particular attention has been given to high standards of amenity, including new public open spaces and walk-ways, while special facilities include a new public park at Mowsbury, 87·5 acres. Preliminary work is in hand for a new 18 hole municipal golf course immediately north of Mowsbury Park.

3. The greatest contribution to the house building programme has been made by private enterprise and altogether some 3,848 houses and flats have been built in the northern part of the Town over the past fifteen years. The Council still hold a limited amount of land in this area zoned for residential development. Building during the next five years will be confined almost entirely to the northern perimeter of the Town. The capital investment, both by private enterprise and public authorities in this area, runs into many millions of pounds and the proximity of the two Thurleigh sites and the adverse affect of a major airport so close to these important areas is of particular concern to the Borough Council.

4. When the Commission announced that Thurleigh had been placed, with three other sites, on the "short list", the Council decided, on 16th April 1969, that their detailed consideration of the matter in order to arrive at a reasoned judgment, must await publication of the Site Information which the Commission made available on 28th May 1969.† At the same time, however, the Council outlined its general approach to any proposal to site the third London airport at Thurleigh as follows:

It would require to be satisfied—

(i) That such an airport would not cause intrusive noise over the area of the Borough.

(ii) That any increase in population and industry, and any alterations to road and rail access, should be properly planned and executed as required without detrimental social consequences or interference with amenities.

(iii) That adequate provision would be made to finance any additional expenditure resulting from such development from sources other than local rates.

When the *Site Information* was received, the Council considered the matter again in the light of the principles set out in the preceding paragraph and came to the conclusion that the criteria outlined in their decision of the 16th April had not been met and that representations must be made to the Commission at Stage II.

APPENDIX A

List of parishes in Cambridgeshire and Isle of Ely who have informed the County Council that they object to the siting of a third London airport at Thurleigh

Barton	Great Shelford
Bourn	Great Wilbraham
Caxton	Harlton
Childerley	
Coton	Impington
Cottenham	
Croxton	Landbeach
	Linton
Duxford	Little Shelford
Eltisley	Newton
Fen Ditton	Papworth Everard
Foxton	Papworth St.Agnes
Fulbourn	
	Swavesey
Gamlingay	
Girton	Toft

* See also p. 2194.

† *Site Information for Stage II Local Hearings. 4. Thurleigh* (HMSO 6s.). Reproduced at p. 1801.

Printed image digitised by the University of Southampton Library Digitisation Unit

5. The Council has examined the probable NNI contours which have been published by the Commission in respect of both Sites 1 and 2, and consider that, although these contours do not in fact traverse the Borough, they come so close to it that there is a virtual certainty of intrusive noise affecting the Borough if the Airport were established, particularly on Site No. 2. The Council is particularly concerned at the effect of noise at night; they understand from paragraph 304 of the Final Report of the Committee on the Problem of Noise* that the Committee tentatively concluded that the same degree of annoyance is produced at night at an NNI which is about 15–20 units less than the corresponding NNI during the day. If this conclusion is correct, then it seems clear that noise shown in the noise contour diagram at 40 NNI will adversely affect many people outside that contour during the night. They are also concerned because it is clearly necessary to operate aircraft during the night in order that the maximum use may be made of them, and that, having regard to restrictions on night flying in operation at Heathrow and Gatwick, there might be an undue use of Thurleigh for night flying. The Commission will be aware of the survey, which was carried out within a radius of ten miles of Heathrow (at the request of the Committee on the Problem of Noise) and which showed that, at 30 NNI, 22 per cent of the population were prevented from sleeping and 40 per cent were wakened; at 25 NNI, 20 per cent were prevented from sleeping and 35 per cent wakened, and still at 25 NNI, 25 per cent of those questioned complained of interference with conversation and 35 per cent that their houses vibrated. If, for any reason, it became necessary or desirable to alter flight paths when fixed, or runway alignment shown on the *Site Information*, the noise nuisance could, of course, be accentuated. It is realised that such changes cannot be forecast and the Council, therefore, consider that any site where the problem of noise is so critical as is the case at Thurleigh and where alterations of flight paths could have such serious effects, must be regarded as prima facie unsuitable.

6. Bedford has been expanding steadily since the end of the War and on the average has grown by about 1,000 persons per annum. The Council have welcomed steady growth of this kind, which has been due to a number of factors, not the least of which is the variety of employment opportunities available in the area. There is competition for labour, with a particular shortage of women. Thus there is no pool of labour which could be drawn upon to service a new Airport and, while the bulk of the labour required would have to be brought into the area, the opening of an Airport at Thurleigh would undoubtedly have an immediate adverse effect on the existing industrial, commercial and other establishments in the town by attracting labour from them. If this reached the stage where existing establishments, which otherwise would expand in the area, had to reconsider their position and possibly even move away, the balance of employment, to which the Council have attached the greatest importance, would be disturbed and the town would depend very largely upon the Airport for employment opportunities. The closing, for instance, of the Royal Aircraft Establishment at Twinwood or Unilever Ltd. at Sharnbrook, would have a most serious effect upon the balance of employment opportunities in the Borough.

7. While the Council is prepared for and would welcome a steady expansion of population at the rate hitherto attained, i.e. about 1,000 persons per annum, it is clear that an Airport would accelerate this rate of growth to a degree unacceptable to the Council, although, at the same time, it might drive many established residents from the town in search of more peaceful living conditions. Accelerated growth would involve the very greatest pressure upon the Council, which feels that the ceiling population of Bedford and the surrounding urbanised area should not in the foreseeable future, exceed 120,000, and would place a severe strain upon the local resources in the provision of public services of every kind.

8. The *Site Information* suggests that the increase in the number of jobs directly arising from the Airport (primary employment) might eventually reach 65,000. The Council do not wish to speculate about the total number of persons, with their dependants, who might be attracted to primary, secondary and service employment in the area, but consider that it would be essential for any consequent increase in population to be housed in those areas which have already been selected as new or expanded towns, before any suggestion is made of substantial new development closer to the Airport. Residents in the Borough appreciate the amenities provided by the rural and underdeveloped areas round the Town and the Corporation support the County Council's policy of limiting growth of villages in the face of substantial pressures for development. The Council therefore consider that the bulk of any new population should be housed in areas already designated for town expansion or in the area set aside for the new city and do not accept that the journey to work from these places would be too long. They would, of course, regard it as essential that road communications were improved from such areas of expansion to the airport, so that the journey to work could be effected without (a) coming through Bedford, and (b) using the present road network which would be unsatisfactory for the new traffic demands.

9. The Corporation believe that special attention would have to be paid to the problem of drainage, both of surface and foul water from the airport. The River Great Ouse traverses the town from west to east and this river has been and is one of the principal amenities and attractions of the Borough. For many years the Corporation has spent large sums in acquiring riverside land and laying it out as attractive formal and informal walks and pleasure grounds. This attractive feature would be very seriously affected if the river were to suffer pollution greater than exists today and the Council is already concerned at the amount of sewage effluent

* Cmnd. 2056 (HMSO; 19s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

which will be discharged to the river when the new city of Milton Keynes is developed. In the Corporation's view, it would be essential for any foul water from the airport to be treated at disposal works discharging their effluent downstream of the town. It is clear that, so far as surface water is concerned, the large areas of hard surfaces at the airport would cause a rapid run-off. For many years the Borough was seriously affected by flooding caused by the River Great Ouse and this has now been satisfactorily dealt with by extensive works carried out by the Great Ouse River Authority downstream of the town. It would be vital that any surface water from the airport discharged to the Great Ouse should be discharged in such a way that it would not cause additional risk of flooding. It is understood that both the Great Ouse River Authority and the Bedfordshire Water Board will deal with discharges to the river in detail and the Corporation wish to support the evidence which they will submit. The Council's interest in and concern for the condition of the river is evidenced by the fact that they have agreed that their Director of Technical Services, Mr. F. W. Dawkes, should serve on the Committee set up by the Minister of Housing and Local Government to consider the problem of pollution of the River Great Ouse.

10. Bedford has very considerable traffic difficulties, not only in a north/south direction due to the lack of adequate bridges over the River Great Ouse, but, of recent years, has experienced a visible growth of heavy commercial traffic in an east/west direction, in part due to the attraction to shippers of the East Anglian ports. It is evident that the siting of an Airport at Thurleigh would cause a major increase in road traffic from all directions and it would be essential that improved road facilities, by-passing the Borough, were provided not only before the airport became operational, but also during its construction, as existing roads through the Borough have reached saturation point at certain times during the day.

11. The Council do not wish to burden the Commission with unnecessary technical details which are being supplied by other bodies and which the Commission is also obtaining from its own sources and has therefore kept these representations short and in general terms. For the reasons outlined above the Bedford Corporation object to the proposal to site the third London airport on either Site at Thurleigh.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bletsoe Parish Council*

1. Introduction

I am John Dunkley of the Grange, Bletsoe and I am by occupation a Master Builder. I am a member of the Bletsoe Parish Council and I am speaking on behalf of the Council.

At a Parish Meeting held soon after the short list of sites was published it was unanimously decided by those present to oppose the Thurleigh site. It was realised however that the Parish Meeting was not 100 per cent representative so the Parish Councillors made a house to house survey asking all residents aged over 18 to complete a form, an example of which I have submitted at Appendix A. The response was almost 100 per cent: only 5 forms were completed in favour of the Thurleigh site and there was 13 expressing no views for or against. The overwhelming majority were opposed to the Thurleigh site.

I would ask you to bear with me if my presentation of the Council's case is somewhat amateurish. I and the others who have helped to prepare it will receive no fee and have no financial inducement. Indeed I realise that as a builder the airport at Thurleigh could well mean more business, but to me the relative peace and quiet of our charming country village is of greater importance. The Parish Council seriously considered enlisting professional assistance but hoped the Commission would understand that what we may lack in polished presentation is more than made up for in our sincerity and conviction that it would be wrong to put an airport here.

2. Relationship with others making representations

We strongly support and agree with all the representations being made by the Bedfordshire Airport Resistance Association, the County Council, National Farmers Union and those others opposed to the Thurleigh site and we will try and avoid going over ground being covered by them. We must stress however that from the points of view of noise, safety and best use of agricultural land it is abundantly clear to us that the Airfield should occupy a coastal site. There may be, we believe, some pressure from midland industrialists to put the Airport midway between them and London. We notice the Chairman of the Commission, in his letter of the 24th February, para 9† refers to the preparation of a short list on the assumption that a third international airport *to serve the London area* will be required. If an airport which will serve the Midlands as well is required we suggest the present short list is irrelevant.

3. Bletsoe

(a) The parish is about 6 miles north of Bedford. It contains 2,247 acres and there is virtually no waste land. The soil is clay, the subsoil gravel, clay and limestone. The slope of the ground is irregular but chiefly from East to West. The River Ouse is on the South Western edge of the Parish.

(b) Statistical details have been collected by Mrs. Alsford, a housewife in the village and are given in full at Appendix B.

4. Village businesses and industry

(a) *Agriculture*

The main industry in the village is farming and as we see it the whole of the agricultural land in the parish would be lost to agriculture by reason of the airport, its ancillary services, roads, railways etc.

There are at present some 12 holdings, three of them are over 350 acres in size, three are about 150 acres and the others are small holdings.

One of the largest farms is owned by Bovril Ltd. from whom you will be hearing separately. They have a flourishing arable and beef enterprise, also a sizeable beef cowherd including prizewinning Aberdeen Angus used to breed beef bulls, some of which are exported.

The other farms are used for cereals, potatoes, peas, brussels sprouts, vegetables, soft fruits, pigs and poultry. The soil is very productive and adaptable for almost any agricultural enterprise.

A letter from Mr. C. Measures at Appendix C supports this claim.

(b) *Other industries*

These comprise my own building firm, an agricultural contractor, a village shop and a well known village inn, the character of which would be destroyed by an airport nearby.

(c) *Employment*

Employment is easy to find. Not only is there a good bus service to Bedford (6 miles) where there is a shortage of all types of workers, but local people are collected and taken to the Unilever Research Laboratories at Colworth House, Sharnbrook (1½ miles). Others are employed at the Royal Aircraft Establishment (1 mile); some commute to London and Luton, and there are teachers, civil servants, salesmen and of course agricultural workers resident in the village.

5. Amenities

The principal amenity is the delightful and unspoilt character of one of the best kept and most attractive villages in the East Midlands or East Anglia. Indeed in 1968 and again in 1969 it has been adjudged the best kept small village in Bedfordshire. There are no empty houses and some townspeople have purchased property in the village to enjoy the peace and charm. They give witness to this in their letters at Appendix D.

Originally the parish was the ancestral home of the Lords St. John who lived at Bletsoe Castle. The St. John family continued to own most of the village

* See also p. 2195.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.).

Printed image digitised by the University of Southampton Library Digitisation Unit

until 1951 when the estate was sold. Until then no development took place and since then it has been carefuly controlled. In the past 17 years 21 houses have been built including 4 for farm staff and 2 by the R.D.C. Because of the restriction on development, Bletsoe is still a village in the old-fashioned meaning of the word.

The A6 road skirts the village to the West and has been a thoroughfare since Roman times. There is, in fact, the site of a Roman encampment in the parish and this has proved of considerable interest to the North Bedford Archaeological Society. During the era of the stage coach, horses were changed at the Falcon Inn when travelling North and at the site of the present Bletsoe Cottage when travelling South.

The site of Bletsoe Castle is about ¼ mile east of the A6. Until the early part of the 19th Century the Castle gates were at the turn from the A6. The front drive to the Castle led from the A6 as far as the War Memorial then turned right making a circle round the cottages and Church, to join the back drive which is now the village High Street.

Another amenity is the unspoilt stretch of the River Ouse which forms the south western boundary of the parish. This is used in the main by visiting anglers and Vauxhall Motors Angling Club have the fishing rights along one length, (see letter at Appendix E.) Day tickets for fishing another length are available from the Falcon Inn and are in steady demand.

The Inn is an amenity in itself. Extremely well run and well maintained it is patronised by people from a very wide area mainly because of its well-known Restaurant. I suggest, with respect, Sir, that you might do worse than take some of your meals there during your sojourn in Bedford.

6. **Social life**

The present population is a happy mixture of those who have spent their whole lives in the village, such as the proprietor of the Village Stores and the Post-mistress whose office incidentally is part of the front room of her cottage, and the new-comers. The latter have moved into the new houses, a family at a time, and have found their niche in the strata of village life.

There is a fairly high proportion of old age pen-sioners, due perhaps to the fact that the quiet, undisturbed nature of the village makes for long life.

There is only one Church; even in these times it continues to play a major part in village life. In recent years thousands of pounds have been raised to repair and maintain it. The highlight of village social activities is the Church Fete, supported by everyone. Its Sunday School brings together the youngsters of the village and the Church itself has been used for public meetings.

A Committee is at the stage of inviting tenders for the construction of a Village Hall and the Parish Council is active and meets regularly.

The Women's Institute whose views are given at Appendix F is extremely well supported and so is an old persons club which is run in conjunction with a neighbouring village. Similarly, the village joins with Sharnbrook to train and enter a choir for local competitions.

7. **Historical aspects and sites of special interest**

There is evidence that Bletsoe Manor existed in 1086.

Osbert de Broilg held Bletsoe Manor of Hugh de Beauchamp in 1086 and his descendants held it for 100 years until it passed to Simon de Patishull. The latter's family held it until 1359 when it passed by the female line to Roger de Beauchamp. Eventually it went to his descendant Margaret Beauchamp then aged 11. She married as her first husband Sir Oliver St. John and secondly John Beaufort Duke of Somer-set by whom she became mother (at Bletsoe) of Lady Margaret Beaufort and who was mother of Henry VII. When she died in 1482–3, Bletsoe passed to her son John St. John and has remained in that family until the early 1950s. Some distinguished members of this family lie buried in the family vault in Bletsoe Church.

Bletsoe Castle

In 1327 John de Patishull received licence to crenellate his dwelling house in Bletsoe. The house now on the site is part of a late 16th Century stone mansion with modern additions. It occupies a good position on high, well wooded ground. Though now only two stories in height, it was originally three stories. Lysons, writing of Bletsoe Castle at the begin-ning of the 19th Century, says, "What remains . . . appears to have formed one side of a large quad-rangular building, of the style of architecture . . . of the 17th Century. Vestiges of the ancient castel-lated mansion are plainly discernible near the house". The remains of a moat can be traced for quite a long distance round the Castle. It is scheduled as an ancient monument by the Ministry of Public Building and Works. As well as the Royal connections already mentioned, Queen Elizabeth I and James I visited the Castle, the latter at least six times.

Bletsoe Church is of a curiously irregular plan and though showing no details older than the 14th Century is probably of considerably earlier origin.

In the north and south walls of the Chancel are wide arched recesses and the south wall has a plain chamfered piscina and sedilia, having its label stopped on heads. Probably the oldest surviving part of the original building is the inner doorway of the south porch which has a thirteenth Century moulding and a label with stop heads.

There is a large north transept with the original gable cross. This is the Mortuary Chapel of the noble family of St. John and was erected about 1258 over the vault. In the south wall is a double 14th Century trefoiled piscina restored, having shafts with bases but no capitals. In this wall is a fine alabaster monu-ment with Knight (Sir John St. John, father of Oliver, 1st Baron St. John) and Lady facing each other kneeling in prayer with 9 children behind them, set on a tall base on which stand Corinthian columns carrying an entablature. Above this is a great shield of the house of twelve quarterings and there are in the Chapel other similar shields.

In the east wall is a monument in memory of Frances, daughter of the Duke of Newcastle and wife of the fifth Lord St. John: she died in 1678.

Printed image digitised by the University of Southampton Library Digitisation Unit

The 14th Century central tower has been restored but retains in each face two trefoiled lights side by side and old gargoyles at each angle.

The font is good 15th Century work and the bells date from 1786.

The registers are from 1582.

Charities. The Town Close consists of 5 a. 2 r. of arable land the rent of which is distributed by the Parish Council among the older residents. It is registered with the Charity Commissioners.

8. The effect on residents

Some distress has already been caused by the uncertainty which faces residents. Is it worth extending one's business, modernising one's home, or building new houses or a village hall with this threat over us?

Elderly people have moved into the village from the cities and towns to find peace in their declining years. Other residents are prepared to face a daily journey to and from London, Luton and other towns so that they can have the benefits of the countryside in the evenings and at week-ends. They are now faced with the prospect of being blasted out of bed with all the windows rattling, the younger children crying and throwing themselves on the ground every few minutes when a plane goes over, if the variant announced on 27th June is adopted.

Another cause of mental distress is the concern about the remains of relatives and friends which lie in the Churchyard. If the Airport comes one thing is certain, villages will not be able to walk across the road to Church or spend a few minutes beside the resting place of those they have loved.

9. Conclusion

We realise that if local interests were considered paramount it is conceivable no new airport would ever be built. If there was a clear cut National need as there was when the present local airfield was made during the last war, Bletsoe would willingly make sacrifices as it did then. But we and the Commission know that there is a site nearer to London at Maplin Sands where the Essex County Council and many of the local population would welcome the airport.

We object to having our houses bulldozed, our village with its historical associations, amenities and way of life destroyed, our farms turned into concrete runways and roadways never to be restored while all the time there is a site near the coast, which in association with a new port development could make a major contribution to the nation's essential trade expansion.

Maybe we have not the financial resources to send men to the moon but we are convinced this country has the ability to overcome the technical problems of an airport on the sand. We ask the Commission to make clear in their final recommendation that social problems mean more to the nation than money. How can the mental and physical distress of human beings be evaluated in a cost/benefit analysis?

May we conclude our objections by adopting something written by John Steinbeck—"In the eyes of those whose homes are threatened there is a growing wrath. In the souls of the people the grapes of wrath are filling and growing heavy, growing heavy for the vintage."

APPENDIX A

To the
BLETSOE PARISH COUNCIL

** I am in favour of the Third London airport being at Thurleigh.

** I am opposed to the Third London airport being at Thurleigh, and I appeal to my M.P., the County Council, the Rural District Council, the Parish Council and all other persons of influence to use their best endeavours to get it sited elsewhere.

** I have no view for or against the siting of the airfield at Thurleigh.

Signed .....

Address .....

.....

Date .....

** Delete as appropriate.

This form will be collected
during the next two or three days.

APPENDIX B

SUBMITTED BY MRS. V. F. ALSFORD

I, being a housewife resident in the parish of Bletsoe, was instructed by the Bletsoe Parish Council to conduct a social survey on the residents of the parish and to tabulate the information. Each household has been given a number and the order is purely arbitrary so that the privacy of the residents is respected.

From these tables it can be seen that *the population* of Bletsoe Parish in 1969 comprises

over 65 years	=	29
18–64 years	=	165
children	=	52
total		246

There are 88 occupied houses and one caravan in the village. Of these 88 houses

38 are owner occupied
20 are local Authority houses
15 are rented
15 are tied houses.

It can also be seen that 7 houses are owned and occupied by retired couples who would suffer con-

Printed image digitised by the University of Southampton Library Digitisation Unit

siderable hardship should they be compelled to sell the home into which they have put their life's savings and to move into a strange district.

The houses have been divided by date of construction:

pre 1900	=	45 of which 15 are still thatched
1900–1945	=	5
1945–	=	38

The village gives an immediate impression of being well-maintained and the standard of gardening is high. This is borne out by the fact that Bletsoe has won the award for the Best Kept Village for the last two years.

An occupational breakdown reveals the following:

Professional 2
Trade and commerce 10
Retail and distribution 6
Industry (a) research and manufacture 9
(b) skilled manual workers 16
Manual workers 12
Agricultural workers 23
Building trades 3
Clerical staff 8
Government employees (a) professional 7
(b) manual 13
R.A.E. (a) professional 6
(b) manual 5
Students 6
Retired 18

Bletsoe is shown as a lively cross-section of society, almost equally divided between practical workers and highly qualified research and administrative personnel. It is true to say that if one wants anything doing, there is usually someone available locally with the necessary skill.

There are 97 adults whose reason for living in Bletsoe is that they have lived here for more than 20 years—sometimes as long as 80 years—in the parish or in the neighbouring parishes. These are described as "local people". Some travel as far as Cambridge, Luton and Stevenage every day rather than leave their native village.

Thirty-two people employed in the Bedford area, or at Colworth or at R.A.E. when looking for a pleasant place to live, chose the parish of Bletsoe. If the R.A.E. had to move 11 people would lose their jobs; 6 of these would follow the Establishment and so lose money on the sale of their houses as well.

Twelve people came to live in the parish because the job that they had accepted was in the parish. These are usually agricultural workers in tied houses who would lose their livelihood and therefore their accommodation. Two village houses were bought for people wishing to retire in a quiet rural setting, and two were acquired as holiday retreats from London.

Bletsoe emerges as a living community which works: a village that has developed naturally through hundreds of years so that the old can assimilate the new, and it should be allowed to continue to have its place in rural England.

Appendix B (i)

Household	*Population*	*Over 65*	*House*	*Ownership*	*Occupations*	*Why they live in Bletsoe*
1	3		1945–	O/occ.	R.A.E. Student	Chosen: job in area
2	2+2c		1945–	O/occ.	Refrigeration engineer	Chosen: job in area
3	2		1945–	O/occ.	Electrician Shop assistant	Local people
4	2+2c		1945–	O/occ.	Insurance Shop	Local people
5	2+2c		1945–	L.A.	Police	Posted
6	2		1945–	O/occ.	Teacher Student	Chosen: job in area
7	3		1945–	O/occ.	Insurance Teacher Student	Chosen: job in area
8	2		1945–	O/occ.	Farmer	Local people
9	2+2c		C'van	O/occ.	Farmer	Local people
10	3+1c		1900–	Tied	Farm manager Farm worker	Job in parish
11	4		1945–	L.A.	Leather factory worker Texas Instr. clerk Apprentice Accountant	Local people
12	2	2	1945–	L.A.	Retired	Local people
13	2+2c		1900–	O/occ.	Building contractor	Chosen: job in area
14	2+3c		1945–	O/occ.	Agricultural contr. and smallholder	Chosen: job in parish
15	5+1c		1900–	Tied	2 agricultural workers Refuse collector Typist	Job in parish Job in area Job in area
16	4	2	1945–	L.A.	Retired Refuse collector Heavy plant driver	Local people

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX B (i)—*continued*

Household	*Population*	*Over 65*	*House*	*Ownership*	*Occupations*	*Why they live in Bletsoe*
17	2		1945–	L.A.	Refuse collector Shop assistant	Local people
18	1	1	1945–	L.A.	Retired	Local person
19	2		1945–	O/occ.	Millworker	Local people
20	2+2c		1945–	L.A.	Office worker	Local people
21	2+1c		1900–	O/occ.	Tradesman	Chosen: job in area
22	2		Old	O/occ.	Smallholder	Job in parish
23	2		1945–	L.A.	Garage mechanic	Local people
24	3		1945–	L.A.	Milk roundsman Garage mechanic	Local people
25	4+2c		1945–	L.A.	Lorry driver 2 agricultural workers	Local people
26	2		1945–	L.A.	Leather factory worker Hotel general worker	Local people
27	4+2c		1945–	L.A.	R.A.E. Agricultural worker Student	Local people
28	1		1945–	O/occ.	Shop assistant	Local person
29	2		1945–	L.A.	Builder	Local people
30	3		Old	Rented	Advertising executive	Chosen: job in area
31	3		Old	O/occ.	Farmer Teacher	Job in parish
32	3+1c	1	Old thatched	O/occ.	Retired Housekeeper Nurse	Local person Job in parish Job in parish
33	2		Old thatched	Tied	Agricultural worker	Local people
34	2		Old thatched	Tied	Agricultural worker	Local people
35	2+1c		1945–	O/occ.	R.A.E.	Chosen: job in area
36	1	1	Old thatched	Rented	Post office worker	Local person
37	1	1	1945–	L.A.	Retired	Local person
38	2+3c		Old thatched	Rented	Builder	Local people
39	2	2	Old thatched	Rented	Retired	Local people
40	2+3c		1945–	Tied	Agricultural worker	Job in parish
41	2		Old thatched	Tied	Scientists	Job in area
42	2	2	Old	O/occ.	Retired	Local people
43	2		Old	Rented	R.A.E.	Local people
44	2		Old	Rented	Roadman Shop assistant	Local people
45	2		Old thatched	Tied	Scientist	Job in area
46	2+2c		1945–	O/occ.	Draughtsman	Chosen: job in area
47	2+1c		Old	O/occ.	Architect	Chosen: job in area
48	2		Old thatched	Rented	R.A.E.	Local people
49	1	1	Old thatched	O/occ.	Retired	Chosen for retirement
50	1	1	1945–	L.A.	Retired	Local person
51	2	2	Old thatched	Rented	Retired	Local people
52	2+4c		1945–	Tied	Agricultural worker	Job in parish

Printed image digitised by the University of Southampton Library Digitisation Unit

Household	*Population*	*Over 65*	*House*	*Ownership*	*Occupations*	*Why they live in Bletsoe*
53	2+1c		Old thatch	Rented	Scientist	Chosen: job in parish
54	3		Old	Rented	Mechanics Caterer	Local people
55	2		Old thatch	O/occ.	Engineer Clerk	Chosen: job in area
56	1		Old thatch	Rented	Caterer	Chosen: job in area
57	3		Old	Tied	Agricultural worker R.A.E. (2)	Local people
58	2		1945–	O/occ.	Scientist	Chosen: job in area
59	2+2c		1945–	Tied	Agricultural worker	Job in parish
60	3+2c		Old	O/occ.	Motor mechanic Carpenter Post office worker	Local people
61	2		Old	Rented	Skilled worker	Local people
62	2		Old	L.A.	Waterworks	Local people
63	1	1	Old	L.A.	Retired	Local person
64	2	2	Old	L.A.	Retired	Local people
65	2		Old	O/occ.	Business director	Chosen: job in area
66	2		Old	Tied	Gardener Housekeeper	Job in parish
67	1	1	Old	O/occ.	Teacher	Chosen for retirement
68	2+3c		Old	L.A.	Driving instructor Student Agricultural worker	Local people
69	2		Old	O/occ.	R.A.E. office worker	Chosen: job in area
70	1	1	1945–	O/occ.	Retired	Chosen: previous job in area
71	2		1945–	L.A.	Police	Posted
72	2		1945–	O/occ.	Engineer R.A.E. Teacher	Chosen: jobs in area
73	2		1945–	O/occ.	Panel Attendant R.A.E. Office Staff	Chosen: job in area
74	1		Old thatch	O/occ.	Smallholder	Local person
75	2		Old	O/occ.	Bowling alley mechanic Teacher	Chosen for holiday cottage
76	2	2	Old	Rented	Retired	Local people
77	2		Old	O/occ.	Boiler Assembler Shoemaker factory	Local people
78	1		Old	Rented	Semi-skilled R.A.E.	Local person
79	2+1c		Old	O/occ.	Income Tax Accountant	Chosen for holiday cottage
80	2	2	Old	Rented	Retired	Local people
81	2	2	Old	O/occ.	Post Office workers	Local people
82	4		Old	Tied	2 Licensees Barmaid General help	Job in parish
83	1		1945–	O/occ.	Poultry farmer	Local person
84	3	2	Old	O/occ.	Smallholders	Local people
85	4		1900–	O/occ.	Civil Servant Agricultural Worker 2 Clerical Staff	Chosen: job in area
86	2+3c		1945–	Tied	Farm manager	Job in parish
87	4		1945–	Tied	Agricultural Worker Typist Student	Job in parish
88	2+1c		Old	Tied	Housekeeper Retired invalid	Job in parish
89	3+2c		Old	O/occ.	Director Leather Factory Children's nanny	Chosen: job in area Job in parish

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. C. Measures

I wish to support the objection being made by Bletsoe Parish Council to the siting of the airport at Thurleigh.

I am a practising farmer in partnership with my son and I claim unrivalled experience of farming in this area, particularly in Bletsoe.

I farmed over 900 acres around Bletsoe Castle where I lived from 1918 to 1936 and when I first went to Bletsoe I employed about 30 local men. There were of course no tractors, but I had 30 to 40 horses.

Although I now live in Thurleigh parish I still farm land in Bletsoe and in the years since I first went to Bletsoe I have used the land for practically all types of farming.

I have had a pure bred Jersey dairy herd of 60 cows; at another time I had an extensive rearing and breeding flock of poultry on free range and at one time I had 400 breeding ewes and other sheep. I have bred and reared beef cattle and the crops grown successfully by me include barley, wheat, oats, peas, beans, clover, potatoes, brussels sprouts, onions, kale, carrots, mangolds and hay. I have kept up to date with mechanisation and my present farm of 300 acres is managed by my son and 2 men.

I have seen great changes in farming practice and a marked improvement in the utilisation of the basic raw material, the land.

I know this heavy clay land. It is difficult to work but properly used it will continue to produce first class crops, long after present higher yielding lands such as the fens are worn out.

I contend it is in the national interest to retain this good land for producing the food of generations yet unborn. It would be quite wrong to bury it under runways, buildings and roads.

As I have said I have spent all my life on this land. I am now over 80 years of age and it would distress and worry me if I have to leave my lovely old home at this time of my life. I have looked forward to my son farming on in the tradition I have established and I appeal to you to allow him to continue to do so.

Why I came to live in Bletsoe

SUBMITTED BY MRS. M. STEEN

My first introduction to the village of Bletsoe was through an Arts Class: the students paid many visits to paint because of its beauty and simplicity.

When my husband retired from business life 6 years ago we had to look for other accommodation. Our thoughts immediately turned to Bletsoe and we were very fortunate in being able to acquire a delightful cottage in which we have been extremely happy. In comparison to people who have lived in the village all their lives we are regarded I suppose as "new folks" but in the short time we have lived in Bletsoe, everyone has been most kind and helpful and we now feel "part and parcel" of the village community.

After the busy hurly-burly of everyday life these days, it is with a feeling of pleasure that one can return to the peace and quiet of Bletsoe. It will be a very sad day for us all if this charming and picturesque village is obliterated.

Why I chose Bletsoe

SUBMITTED BY MISS N. MITCHELHILL

Why I chose Bletsoe as the place to live on my retirement was through a series of chances only of personal interest.

Why I have stayed for almost nine years now is a better subject and gladly I give my reasons.

Bletsoe is not a "beauty spot" but all around is a countryside of modest quiet loveliness and life here is genuine and satisfying. The story of this village has been going on for so many hundreds of years and we are but living a chapter of this continuous story. It is our trust to carry it on into the future.

I stay in Bletsoe because I belong. We all belong, we are a community. The friendliness here is a valued part of our life. There is no division between the "old inhabitants" and the newcomers. "Aren't we lucky in our new neighbours?" was said to me by one who has lived here all her life, and it is in that spirit that we are all welcomed. It is natural, therefore, that we want to contribute to the common good of the village and that we enjoy doing it.

It is difficult not to sound sentimental or exaggerated about this—obviously one doesn't talk about it—but it is true. What we have here I'm sure is something genuine and essential to a happy way of life.

It is remarked on by many of our visitors. From the other side of the world a friend wrote to me—"Bletsoe stands to me for all that is best in English rural life."

Not sentimentally, but sincerely, I say that to us who live here it is our heritage, our home and our trust. Part of the very heart of England and to destroy it would be an evil.

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix E

Evidence of Vauxhall Motors Recreation Club

Vauxhall Recreation Club,
Luton, Beds.

Mrs. F. V. F. Alsford,
Castle Farm,
Bletsoe,
Bedford.

Many thanks for your letter of 1st May drawing our attention to the effect that siting of the 3rd London Airport at Thurleigh would have on the fishing rights we enjoy at Milton Ernest, Radwell and Bletsoe.

We certainly oppose this proposal as it would undoubtedly be to the serious detriment of our fishing.

The stretch at Bletsoe adjacent to the A6 is fished by varying numbers of anglers on practically every week-end of the fishing season (June-March) and we estimate that at least 500 anglers use the water during the season.

Yours sincerely,

(*signed*) J. R. BIRD,
Chairman—Angling Section,
Vauxhall Motors Recreation Club.

Appendix F

Evidence of Bletsoe Women's Institute

At a recent meeting of Bletsoe Women's Institute a resolution opposing the choice of any inland site for the Third London Airport was unanimously passed.

The idea that here or at some other inland site whole villages would be obliterated and irreplaceable farmland swallowed up is quite intolerable. We are certain that *people*—their homes, families, work and community life must be the most important consideration in this siting. We urge most strongly that this Airport should be placed where it will, now, *and in the future,* cause as little distress and disruption of life as is possible.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Milton Keynes Development Corporation*

Milton Keynes New Town was designated under the New Towns Act 1965 and the Designation Order was made by the Minister of Housing and Local Government on the 23rd January 1967. The Milton Keynes Development Corporation, set up as a result of this decision, has taken as its terms of reference a series of documents incorporating clear statements of policy made by the Minister at the period of designation. These documents are:

(*a*) Statement by the Minister of Housing and Local Government dated 14th April 1966.

(*b*) Explanatory memorandum accompanying the Draft Designation Order dated April 1966.

(*c*) Statement made on behalf of the Minister at the Public Local Enquiry.

(*d*) Letter conveying the Minister's decision to designate the new town dated 11th January 1967.

(Copies of these documents may be obtained on request from the Milton Keynes Development Corporation.)

Statements in these documents indicate that the new City was designated to provide homes for 150,000 Londoners—and people from South Buckinghamshire—over twenty years, of which accommodation for 70,000 would be provided by 1981. "The aim would be to create a balanced community with industry, shopping, public services, recreation and other amenities to the high standard to be looked for in a town of the importance envisaged." In replying to criticism that the city would lead to a continuous conurbation from London to the Midlands, the Minister stated: "The main problem would be to co-ordinate proposals for a new town in North Buckinghamshire with the newer towns, particularly Northampton and Bedford, whose total population will have needs that should be viewed as a whole. The growth of these towns and its effect on the adjacent country will require special co-ordination."

In the period since designation the Corporation has been preparing the Plan for Development of Milton Keynes and building up resources to enable substantial development to proceed. The Interim Report on the Plan was published in February 1969. The final Plan will be published early in 1970.

By the time a decision is made regarding the siting of the airport the Corporation will be committed to a substantial proportion of its first five-year programme. In particular, negotiations with industrialists will have been completed which will commit the programme of development for some years ahead.

Milton Keynes in relation to the Thurleigh sites

1. All advice that the Corporation has received indicates that Milton Keynes is too far from Thurleigh to accommodate any significant number of people working there. Northampton appears to be in a similar situation. Presumably, then, there would have to be considerable further urbanisation in the sub-region to accommodate airport workers.

2. We are aware that others are including in their submissions mention of the formidable practical problems which would arise (if Thurleigh were designated as the site for the Third London Airport) in providing this additional urbanisation, as well as the airport itself.

3. The Corporation will not, therefore, repeat these arguments, but restrict itself in this submission to recognising and emphasising those problems which would be likely to have a profound and damaging effect upon the development of Milton Keynes.

These are:

(i) the inadequacy of labour resources to meet the demand for construction in the sub-region, beyond that already planned and agreed;

(ii) the shortage of local resources of sand and gravel which would result if development in the sub-region exceeded that already planned;

(iii) the inadequacy of the sub-region road network to deal with the construction traffic;

(iv) the inadequacy of the River Ouse to carry flood water away, and the limitation of effluent content which must be imposed to ensure satisfactory drinking water supplies elsewhere; and

(v) water supplies.

4. In building Milton Keynes, infrastructure, services and amenities have to be planned and introduced on a scale appropriate to the ultimate size of the city. Economic viability would be seriously prejudiced by any delay in the planned programme of growth of the population, and by the resulting underutilisation of the capital invested.

5. The Corporation's brief is to develop a city—half of it by private enterprise—which by the quality of its employment, social services and amenities will create an environment that will attract to the city the people and the investment that will make it a social success. This social goal will also be seriously prejudiced if there is any delay in the rate of growth of services and amenities.

6. The Plan for Milton Keynes is now at an advanced stage, and a great deal of time, effort and money has been spent on its preparation, not only by the Corporation and its Consultants, but by Central and Local Government Departments, Statutory Authorities, Voluntary Associations and others. Location of a Third London Airport at Thurleigh would necessitate a complete review of the Plan from both physical and social standpoints. Major changes would be inevitable if Thurleigh (*b*) were designated,

* See also p. 2195.

Printed image digitised by the University of Southampton Library Digitisation Unit

because the 35 NNI contour would certainly invade a considerable part of the designated area. Indeed, in order to fulfil the Government's express objectives for Milton Keynes it would be necessary to change the boundaries of the designated area: to make good those housing areas lost through Thurleigh (b). From the point of view of noise it is not possible to be as specific at this stage about the consequences on the Plan of designating Thurleigh (a); but all other considerations in the submission apply equally to Thurleigh (a) and (b) and it seems inconceivable that the Plan for Milton Keynes which is now being prepared without consideration of an airport, could possibly survive intact in its present form.

7. The loss of amenity in the countryside around Milton Keynes would adversely affect the whole character of the city.

8. It is necessary, in order to avoid great delays before work is actually started on the building of new towns, for initial development work to be planned and begun before the final Plan is approved by the Minister. The Corporation has, therefore, entered into commitments with industrial and commercial undertakings, institutions and others already. Some of these, and there will be many more to come before a decision is made on the siting of the Third London Airport, are very long term in their implications, because establishment at Milton Keynes is but a first step, for many of them, in extensive development which will carry through to the next century.

9. In conclusion, the Corporation wishes to make it clear that nothing which has been said in this document should be interpreted or construed as indicating that the Thurleigh sites would be less or more damaging to the development of Milton Keynes than the site proposed at Wing. Many reasons are common to both sites, and some apply in one case and not in the other. What must be stated quite emphatically is that the consequence of designating either Thurleigh or Wing would, in the opinion of the Corporation, necessitate a complete review of the physical and social plans for Milton Keynes. Almost certainly, the effective boundaries of the designated area would have to be changed and this would vitiate the understanding gained by the public from the Minister, at the time of designation, and from the Corporation since designation, that the area of the new city would not be increased.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Newport Pagnell Rural District Council*

1. The Newport Pagnell Rural District Council are absolutely opposed to any inland site for the Third London Airport, and the possible site at Thurleigh in particular.

2. The Parish Councils and Parish Meetings in the area are opposed.

3. The Rural District Council fully supported the County Council's opposition to the use of any inland site and have by agreement left the expert evidence to be submitted by the County Councils and B.A.R.A.

This statement is concerned with particular local aspects.

Summary of reasons for opposition

(a) **Noise**
Generally
District
Amenity and Leisure

(b) **Increased urbanisation**

More than half the Milton Keynes New City is to be built within the Rural District, and this itself will have a very considerable impact on this country area. An airport at Thurleigh would increase the extent of urbanisation very considerably.

(c) **Drainage**

There are problems in dealing with foul drainage from the Milton Keynes development, there are very serious problems in dealing with the increased rate of discharge of surface water from the Milton Keynes development. Any further increase in the drainage requirements from extensive urban development in the North Crawley/Newport Pagnell etc. area will have to drain to the River Ouse.

(d) **D.W.S.**

The effects of considerable air traffic on the Diplomatic Wireless Station at Hanslope.

Supporting Statements are set out on the sheets attached.

The parishes

The views of parishes within this Rural District are set out on attached Statements.

Noise—Generally

Expert evidence will be given by others of the effects of noise generally, the Council accept the information as given on the Commission's map† as being the best facts available at this time, but question the reliability of the information.

The contours can be varied by a slight re-alignment, changes in the aircraft design, i.e. V.T.O.L., changes in type of aircraft being used, or perhaps moderated by silencing the aircraft.

Noise there will be, people living in the area are appalled by the thought of it. Some people lived in towns and have retired here; some work in towns and cities but live with their families here. The coming of an airport defeats this purpose.

People will be affected by noise to a lesser or greater degree, at their work, in their leisure, in the time they hope to be refreshed by sleep.

Children's progress in school will be affected adversely and certainly the efforts of teachers frustrated —the attention of a class at a lesson is diverted by noise—teachers work under a strain.

The Council of Europe's Committee on Health and Social Questions in its recent study of aircraft noise states that "noise is an injurious product of economic activity, which must be controlled if man is to get the full benefits from his own achievements". The Report states that 15 out of 34 children attending a school near Orly Airport suffered from injury to the inner ear, and that noise endangers health from interruption of sleep.

The effect of noise on children's education has been confirmed by independent H.M. Inspectors of Schools when they have visited schools near an airport (para. 259 of the Final Report on Noise)†.

Noise—Remainder of District

The Council urge the Commission to take careful note of the findings in the Final Report on Noise (para. 304) that if the critical range of annoyance in daytime is 50–60 NNI, at night the critical range is 30–45 NNI. The Commission's contour maps only show down to the 40 NNI. There must therefore be a far greater area subject to the critical range of annoyance at night. See page 215 of the Report on comparison of daytime and night time annoyance.

Noise—Amenity and Leisure

The Ouse Valley over which much of the flight path and noise contour stretches in Bucks, is an area of high landscape value. It contains many buildings of architectural or historic interest, details of these buildings being submitted by others but are set out in the Minister's Statutory List.

Olney is a pleasant country market town, population at present almost 3,000, with approved planning proposals to increase in size during the next 10–15 years up to a total population of 10,400. A good deal of the development is already under way.

There are many very pleasant villages in the area, the way of life of which will all be changed considerably by reason of the constant noise from aircraft flying overhead.

The County Council have under the powers of the Civic Amenities Act, 1967, designated parts of the villages of Olney and Weston Underwood as "Conservation Areas" and similar proposals are now being considered for similar areas, the villages of Newton Blossomville and Ravenstone. Such Con-

* See also p. 2196.
† See attached wallet of maps and diagrams.

† Cmnd. 2056 (HMSO; 19s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

servation Areas are only designated where the area is regarded as possessing high quality buildings and streets which it is proposed should be conserved, the objective of a Conservation Area being to avoid the destruction of the character and wholeness of the area and from despoliation due to redevelopment and other unsympathetic expedients.

At Emberton Park, Olney, is a Country Park covering 175 acres. At week-ends in particular, many people visit this Park for peace and quiet which will be destroyed by constant sound of aircraft and its value as a means of refreshment and leisure will be destroyed.

Peace and quiet will become increasingly scarce, increasingly threatened, increasingly valued, but no expenditure by future generations will be able to recover this asset if we today have not invested heavily enough in its preservation.

Urbanisation

Newport Pagnell Rural District is a very pleasant rural area providing homes for about 15,000 people. The Government have decided to build the New City of Milton Keynes in the area and more than half the designated area of Milton Keynes New City lies within the Newport Pagnell Rural District. The great majority of people living in the Rural District did not want the New City of Milton Keynes, they opposed the proposals but were over-ruled by the Minister.

Our people realise that development of the New City will inevitably lead to congestion of our roads, to a very considerable change in the way of life of people now resident here but having seen the Interim Report of the Development Corporation they are coming to terms with the idea of a new City and in the main are impressed with the plans, hopes and visions shown in the Interim Report.

There will be considerable upheaval caused by this New City development—to add to this the additional upheaval caused by the construction of a major airport—the temporary housing of construction workers, the noise of traffic and construction, with eventually another quarter of a million people to be housed in the locality, is asking too much.

Local people do not see how the Milton Keynes development proposals can be implemented if the airport is sited so near to the City of Milton Keynes. Indeed the Development Corporation through its Chairman Lord Campbell, have stated that if an airport comes there must be some re-thinking of their plans for Milton Keynes. It seems such a pity that these plans prepared with such care and presented in the Interim Report for the people of the area in such a way as to command respect and general approval should be jeopardised at this stage.

It is understood that the County Planning Officers are to indicate in their evidence possible locations for housing of the additional population to be housed, if the Airport is located at Thurleigh. One of the possible sites for a very large number of people is in Stagsden, North Crawley, Newport Pagnell Area.

The Rural District Council submit that if this site is approved, it will be an extension of the Milton Keynes New City and for the reasons set out above must not be permitted.

Of the people who DID support the New City, most did so because they preferred it to sporadic development throughout the Rural District. Indeed, Sir Keith Joseph, as Minister of Housing when the New City was planned, made it plain that this was his intention also. If the Airport comes, we shall have BOTH—the new City and the sporadic urban development.

The development of Northampton, Wellingborough, Bedford and Milton Keynes, PLUS an airport, would destroy all our rural area.

Drainage—foul

All foul drainage in the Rural District eventually is discharged into the River Ouse—a slow flowing sluggish river—or its tributaries.

The Milton Keynes Development Corporation have received a report from their Consultants, Messrs. J. D. & D. M. Watson, which includes a biological survey of the Great Ouse and Ouzel Rivers. From these reports, it appears that it is just possible to deal with the foul drainage from Milton Keynes and discharge an effluent into the river which may, but only may, be acceptable. Is it possible for the River Ouse to take any additional foul discharge from a greater population? The inference is NO!

The evidence submitted by Dr. Clay, the Prevention Pollution Officer of the River Board, in respect of the Stage 11 Hearing for the Cublington Site, is relevant, at least in part, in respect of the development which may take place in the Stagsden, North Crawley, Newport Pagnell area. Dr. Clay stated that "estimated increases in the proportion of sewage effluent in the river which takes into account Milton Keynes New City development, and the natural growth of population in the Catchment Area *may change the chemical and biological characteristics of the River water to such an extent as to present formidable problems of treatment* to the Undertakings who are abstracting water from the river for domestic supply".

At Newport Pagnell and below, the Ouse and Ouzel flood considerable areas of land (including dwellinghouses)—with the increased rate of run-off from Milton Keynes, these flooding problems will increase unless major works are carried out.

The Milton Keynes Development Corporation are considering a report on surface water drainage, from their Consultants, Messrs. J. D. & D. M. Watson, and the Commission should make use of the information so recently obtained.

Even in connection with the Milton Keynes development, the construction of balancing reservoirs if accepted, may result in some increase in the frequency of floods at and below Newport Pagnell. The River Authority will have to enlarge and improve the river channel downstream of Newport Pagnell so as to accommodate the increased rate of flow.

An airport at Thurleigh with associated urbanisation, draining to the Ouse may create problems which will necessitate very major widening and dredging of

Printed image digitised by the University of Southampton Library Digitisation Unit

the River Ouse for many miles down river, and the cost of so doing should be ascertained. It may also be necessary to take more agricultural land for the formation of balancing reservoirs. How much more land?

This is a very serious matter to people living in the Rural District who already suffer from flooding damage, the prospect of greater and more frequent floods, is alarming.

D.W.S.

At Hanslope, grid reference 820450, is situated the Diplomatic Wireless Service Station. This is in the direct line of the flight path. This Station mainly receives wireless transmissions from Diplomatic sources abroad. We know the effects of aircraft circling overhead, on Television, is there a similar effect upon radio reception? The Commission should obtain evidence on this if it has not already been submitted, by the appropriate Government Department.

Statements or views submitted on behalf of parishes within the Newport Pagnell Rural District

Generally

The Newport Pagnell Association of Parish Councils passed a Resolution at a meeting held on 29th April, 1969 held in the Council Chamber at 7 Station Road, Newport Pagnell:

"the following resolutions were carried unanimously and without anybody speaking in opposition and without any abstentions.

1. That this meeting is most strongly opposed to the siting of the Third London Airport at Wing or Thurleigh because such a development would cause severe disruption and disturbance in the lives and livelihoods of thousands of people living within the rural district and would destroy the rural character of the neighbourhood.

2. That this meeting is also opposed in principle to the siting of the Third London Airport on any inland site, and supports its siting on the Maplin Sands or in some other coastal region where no agricultural land would be taken and the least disturbance and disruption would be caused.

3. That the cost of building the airport should not be of prime consideration in the choice of site.

There were present at this meeting, representatives of the Parish Councils of the following towns and villages only:

Little Brickhill
Woburn Sands
Lavendon
Wavendon
Stoke Goldington
Weston Underwood
Emberton
Olney
Gayhurst
Lathbury
Haversham
Gt. Linford
Loughton
Moulsoe
Newton Blossomville
Newport Pagnell
North Crawley
Shenley
Sherington
Stanbridge
Woughton
Calverton
Woolstone-cum-Willen"

Parishes within the 40 NNI contour for either Site A or Site B

Parish Councils

LAVENDON

Object, are submitting their Statement separately.

OLNEY

Object, are submitting their Statement separately.

EMBERTON

Object, and comment "We the residents of the parish of Emberton, while recognising the need for a Third International Airport, share with others the task of preserving the countryside for future generations, and consider that, if a third major airport was built on any site other than that which will cause the least harm to the fewest people, we would be failing in our duty. We further believe, in the light of information presented to us, that this site will not be found inland".

RAVENSTONE

No comment.

STOKE GOLDINGTON

Parish Council oppose the siting of the Third London Airport at Thurleigh.

WESTON UNDERWOOD

Parish Council object. "At well attended Parish meeting, the following resolutions were unanimously adopted:

(1) That the Parish Meeting of Weston Underwood strongly opposes the selection of the Thurleigh site for the 3rd London Airport and is resolved to support those who undertake the task of presenting the case against Thurleigh at the following enquiries,

(2) That the Parish Meeting of Weston Underwood strongly opposes the selection of Thurleigh or any other inland site, for the 3rd London Airport and is resolved to support those who undertake the task of presenting the case against them at the forthcoming enquiries."

and in addition, state:

"Weston Underwood is an exceptionally attractive village of about 290 inhabitants. It contains no less than 18 items in the Lists of Buildings of Special Architectural Interest. It was the first village to be designated by Buckinghamshire County Council as a Conservation Area. The village and its surroundings have hitherto enjoyed peace and quiet and comparatively light traffic. The village lies under 11 miles west by south of the proposed Thurleigh Airport in a straight line drawn as a continuation of the southern runway.

The Weston Underwood Parish Council has formally opposed the Thurleigh proposal. An exceptionally well attended village meeting unanimously passed a resolution strongly opposing the proposal.

The grounds of opposition are the usual ones: Noise, the creation of a huge centre of population in addition to Milton Keynes and the increase in traffic. Moreover, the value of house property (which owing to the attractiveness and peace of the village is exceptionally high) would inevitably be prejudiced.

Printed image digitised by the University of Southampton Library Digitisation Unit

There is no sort of doubt that opposition of the inhabitants is unanimous, or virtually unanimous. It it generally felt that, if this proposal were adopted, the way of life of this village would be destroyed and that such a decision would be intolerable. Feeling runs high".

SHERINGTON

Object.

TYRINGHAM & FILGRAVE

Do not desire to submit any comments.

Parish Meetings

CLIFTON REYNES

Object most strongly.

COLD BRAYFIELD

Object.

GAYHURST

Object, are submitting their statement separately.

NEWTON BLOSSOMVILLE

Object.

WARRINGTON

Object.

ASTWOOD & HARDMEAD

No comment.

LATHBURY

Object.

Parishes outside the 40 NNI Contour site for either Site A or Site B but which are within fifteen mile radius of the proposed airport Site

Parish Councils

CASTLETHORPE

Object, and state "On behalf of the village of Castlethorpe, the Parish Council wish to lodge their protest against the proposed Third London Airport being sited at Thurleigh. Noise would be the major factor, and with the problems the New City will bring to the neighbouring villages, the parishioners feel they are fully justified in strongly protesting, and ask to be represented at the hearing".

HANSLOPE

Object.

GREAT LINFORD

Object.

HAVERSHAM

Object.

NORTH CRAWLEY

Object, and state "At a Public Meeting of the Parish Council and the Parishioners of North Crawley, Bucks held in the Village Hall on Friday, 13th June, 1969, after hearing a statement of the facts regarding the siting of the Third London Airport, a Resolution was proposed by the Rector the Revd. H. B. Morgan and seconded by Mr. C. Huffer, "That this meeting pledges its support to the Local Authorities concerned, in making every effort possible to resist and oppose the Government's proposition to site the Third London Airport at Thurleigh, Beds. or at Wing, Bucks. It was the considered opinion of the meeting that no inland site should be sought until the urgent matter of fall-out had been submitted to the fullest examination and research by a group of qualified persons, and the result of such research be made known to the public". The Resolution was carried unanimously."

Parish Meeting

CHICHELEY

No comment.

There are other parishes in the Rural District outside the fifteen mile radius.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Gayhurst Parish Council*

1. Gayhurst parish is situated in the Ouse Valley between the designated area of Milton Keynes and the west side of the Thurleigh airport site.

2. The parish forms part of the Limestone Country Belt, scheduled in the Report on the North Bucks Countryside (issued by the Buckinghamshire Departments of Architecture and Planning, June 1968) as an "area of great landscape value" that has been designated on the County Map (para. 3.2.). The policy proposed for this area aims to maintain its atmosphere of peace and tranquillity. It will also play an important part in maintaining the amenities and quality of life of the persons living in the new urban settlements (para. 4.3.).

3. Gayhurst is at the centre of what is described by the Bucks County Council in the report on a New Bucks. City (para. 3.2. p. 38) as "the Impact Area" of new development which will arise out of the growth of Bletchley, Northampton and Bedford. The total ultimate population of this surrounding area is given as "in the region of 400,000 (para. 3.2. p. 40).

4. The Limestone Country Belt (including the parish of Gayhurst) is mentioned in the Interim Report of the planners to the Milton Keynes Development Corporation (chap. VII Leisure, para. 19, fig. 32, pp. 86, 87) as a potential area of great interest and attraction to the new city of Milton Keynes for leisure and recreation.

5. The amenities of the parish consist at present of a large acreage of beautiful woodland, peaceful Ouse water meadows, several lakes and ponds, first-class farmland and an Elizabethan mansion of historical repute given by Queen Elizabeth to Sir Francis Drake.

6. The mansion, Gayhurst House, has been used as a boarding school for many years and is in the process of changing hands. There is every reason to assume that it will continue as a school, college, or training establishment unless its use is discouraged by the advent of an airport. It houses over 100 pupils and is the largest employer of labour in the area.

7. Agriculture is the main occupation of the inhabitants, and we understand that the point of view of the farming community is being put collectively by the National Farmers' Union.

8. Important recreational amenities are to be found in the woodlands, where game is reared and public footpaths provide recreation for local urban visitors for walking, riding, picnicking etc., and in the rivers and lakes which are patronised by angling clubs with members from as far afield as Luton, Dunstable, Leighton and Bletchley.

9. The proposal for a major London airport at Thurleigh would in the view of our parish council affect our area in the following ways:

(a) It would result in the *increased and over-use of a peaceful amenity area* (already surrounded by a potential future population of 400,000) by an additional 250,000 people at Thurleigh, which would destroy completely its amenity value by swamping it and prevent its preservation as desired by all three county councils in the area.

(b) It would mean that the *increased road traffic from and to the airport* would result in road widening schemes and new roads which could only be at the expense of valuable agricultural land and of further sacrifice of local amenities.

(c) *The noise level of aircraft from Thurleigh* at Gayhurst at 45–40 NNI would in the opinion of the whole community be an intolerable intrusion on the peace of the area.

(d) The general disturbance to an area whose main asset is its beautiful landscape and peaceful surroundings would be, in the view of the Council, *most detrimental to property values.*

10. **Over-use of amenities**

The increase in population at Thurleigh would not only prejudice the amenities of Gayhurst parish, but the whole scheduled recreational area of the Limestone Belt on the Bedford and Northampton side of the motorway, at present enjoyed by residents of Gayhurst as well as town dwellers from Northampton, Bedford and (eventually) Milton Keynes.

11. **Increased road traffic**

Increased urbanisation beyond that already planned at Milton Keynes and at Northampton, such as a new airport city, would mean increased traffic on the A50 —the major road through the parish. Any widening of this road would mean the complete destruction of either Gayhurst village or else important landscape amenities. Any new road through the parish could only be at the expense of the latter.

12. **Noise level**

The anticipated noise level of 45–40 NNI would not only detract seriously from the amenity of the parish as a residental, agricultural, sporting and recreational area, but inevitably would also prevent the continuance of the use of historic Gayhurst House as an educational establishment.

13. The parish meeting of Gayhurst Parish Council held at Gayhurst Park Farm on Wednesday, 13th August, 1969, voted unanimously to oppose the suggestion of the siting of the third London airport at Thurleigh and asked me as their representative to convey this and their supporting views to the Commission.

* See also p. 2197.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Gayhurst Parish Meeting

Gayhurst is a small village lying in a well wooded area in the valley of the Ouse, in an area known by the Buckinghamshire County Council as the Limestone Country Belt.

It is recognised as a beauty spot and an area of high landscape and amenity value. As a result of this it is considered very valuable by the Buckinghamshire County Council as a recreational area (walking, picnicking, riding etc.) for the populace of the New City at Milton Keynes. The effect of noise from the planes would, to our mind, prejudice it from this use.

At the moment it is an agricultural and residential community to whom the noise of low flying jets trapped in by surrounding trees would be deafening and appalling. (The agricultural case is being dealt with by the N.F.U.)

The village contains a large country house which, until recently, was a school, and there is every reason to assume that it will continue to be either a school, college or personnel training establishment, in the future.

Other important pursuits carried out within the boundaries of the village are shooting, which is undertaken on a business like basis with an expansionist policy involving the rearing of new stock, and also fishing undertaken by an Angling Club looking for sport and solitude free from noise and interference. We consider that the disturbance caused by continuous heavy jet aircraft traffic will have a very detrimental effect on the area.

The members of the village also consider that the building of another large town to house those that service the airport will entirely overpopulate the area and thereby nullify the facilities that this area can offer to the already planned expansion. They are also very concerned that the roads and other services required for the airport and town will further destroy the amenities.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Lavendon Parish Council*

At a meeting of the Lavendon Parish Council held on 14th July, 1969, I was appointed as its representative for this hearing. I have lived in Lavendon for two years, and this is my first year as a Parish Councillor. I worked in Bedford as a school-teacher, and find that the enjoyment of village life, particularly here, more than compensates for the daily travelling I undertake to work.

Lavendon village is situated in the north eastern tip of Buckinghamshire (approximately 10 miles north west of Bedford), and the parish boundaries border Bedfordshire and Northamptonshire. Most of the older parts of the village lie alongside the main road from Bedford to Northampton, as does the Church parts of which date from before the Norman Conquest, and which makes an impressive centre to the village. The present population is approximately 750, but the village is undergoing steady development in a generally well planned manner. The main local industry is Agriculture but there is a shoe closing shop providing employment for female labour. The village as a whole enjoys an active social life, with activities and societies for the young and older people alike. It is a closely knit community.

At a very well attended annual general meeting of the Parish, considerable opinion against the proposed Third London Airport being at Thurleigh, was expressed. A resolution was formed that a protest should be made and this was carried by a large majority.

Worries have been expressed to Parish Councillors concerning the likely effects of the proposed Thurleigh airport site on (1) local services and roads, (2) safety, (3) pollution and (4) noise and vibration.

1. **Roads** As stated before, the village is cut by the A.428 road from Bedford to Northampton. This has been modernised over quite a large proportion of this distance, but not the part through the village, although a by-pass has been planned for some time. The proposed airport and its ancillary services are bound, if not directly, to considerably increase the amount of traffic on this road. Should the by-pass not be completed then the extra vehicles, on an already fairly busy road, would have the effect of virtually cutting the village in two. The Parish Council has already made representations to higher authorities about the safety of this main road. Assuming the by-pass was complete then fears on safety will be lessened, although the effect from noise and vibration will still affect the village.

2. **Safety** Whilst most people agree that air travel is inherently safe, we all know that occasional accidents do occur. It is generally accepted that take-off and landing are the most hazardous parts of any flight. This being so, Lavendon has legitimate cause for concern, being situated in a direct line along the axis of runways shown on the drawing No. CTLA 4/3.† Villagers would be forced to live with the strain of this worry. As the crow flies we would be only 7 miles from the end of the runway, in terms of time this means within two minutes of landing or take-off.

3. **Pollution** Most aircraft landing or taking off will pass straight over the village, or in its vicinity. Any pollution caused by unburnt fuel, exhaust fumes, and oil etc. are most likely to build up nearby. Concern has been expressed on this, particularly bearing in mind the large number of aircraft likely to be using the airport.

4. **Noise and vibration** This has been the chief cause of worry expressed to and by the Parish Council. We know that the proposed airport is likely in the end to be bigger than London Heathrow. This basically two-runway airport handles on average one take-off or landing every two minutes during summer days and every twelve minutes during summer nights. The effect of this number of large aeroplanes passing nearby at heights of only about 3,000 ft. could only be described as catastrophic to the whole village.

Most villagers are here because they prefer the quiet and peace of the countryside to the noise and bustle of a town. The village now finds itself on the 50 NNI contour, a noise level described as varying between "unreasonable" and "moderately annoying". The effect that this level of noise, continuous into the foreseeable future, is going to have on home life, or on the school life of the village children, or on the activities of the societies here, is to introduce a stress which few people want.

The foregoing paragraphs contain the views expressed to and by my Council. We feel that Lavendon can accept steady development and change in the normal course of events. We also feel however that the comparatively sudden changes and disruption caused by such a large airport being constructed and operating nearby, must profoundly and adversely affect the quality of life in our village.

* See also p. 2198.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Olney Parish Council*

Location of Olney

Olney is a small market town situated in north Buckinghamshire on the River Ouse approximately 10 miles west of Bedford, 10 miles south east of Northampton, 10 miles south of Wellingborough and 5 miles north of Newport Pagnell, and lies on the A.509.

Description of Olney

It is a town of ancient origin notable for its beautiful wide High Street, the stone construction of its attractive older houses, many of which are preserved under the Town and Country Planning Acts, and for its beautiful church with its magnificent spire 185 feet high constructed in the 14th century. The roof elevations along the High Street and in the Market Place assist in presenting a unified appearance.

As Olney stands today it has none of the atmosphere of decay which it is possible to observe in some towns of this size in other rural areas.

Olney is situated amid splendid countryside of outstanding agricultural value with neighbouring villages of beauty including Emberton, Weston Underwood, and Clifton Reynes.

Olney is well served by its sports clubs and has a worthy tradition especially in Rugby Football.

Plan for developing Olney

The population of Olney is slightly in excess of 2,500. A plan to develop Olney has been prepared by the Bucks. County Council and is gradually being implemented. The plan provides for the ultimate growth of the town to a population of 10,400 and since the inception of the plan over 100 new houses have been built.

An industrial site is in course of development by the Rural District Council on land recently acquired by them from the Parish Council. With the completion of this industrial site together with the existing business and industry in the Town, employment for the immediate future should be adequately catered for. Unemployment in Olney is extremely low, if it exists at all.

Development of neighbouring large towns

Thus Olney is already provided with a healthy state of gradual growth in its population.

At the same time the surounding large towns, Bedford, Wellingborough and Northampton are all embarking on massive expansion plans.

Olney lies at the centre of an arc with these three large growing towns around it, and can therefore expect to experience considerable disturbance and increase in traffic and general activity, for this reason alone, apart from the increased tempo of life resulting from its own planned expansion already notably under way.

Development of Milton Keynes

Nevertheless, this is not all that Olney will have to accept. Just to the south the New City of Milton Keynes is being planned and construction may start in 1970.

As this development comes about Olney and its neighbouring villages will find themselves an oasis surrounded on all sides by three very large towns and one city.

Traffic, noise, fumes, disturbance of the countryside, and numbers of persons in transit will all increase greatly. Services, shopping facilities and recreation facilities may just cope, but at the same time retain much of their present good characteristics making the town and area an agreeable one in which to live and work.

View of Parish Council

It is the opinion of Olney Parish Council that in the expansion of Olney to four times its original population, and in making the necessary adjustments to cater for the increased business and recreational activity following the expansion of Bedford, Wellingborough, Northampton and the establishment nearby of Milton Keynes. Olney will have co-operated to the full in serving the national need to cope with increasing population and improving housing standards. The Olney Council consider that this is as much as should be imposed on their town and the neighbouring countryside.

The Parish Council's position

The proposition which Olney Parish Council oppose is the establishment of a third London airport at Thurleigh. Thurleigh is about 8 miles north east of Olney.

Activity resulting from a third London airport at Thurleigh

If the third London airport is established at Thurleigh it has been estimated that planes may take off at an average of one every two minutes, many during the night. Vast quantities of building materials would be moved to the site to construct the airport. On full development of the airport an additional new population of about 400,000 people will be imposed on the surrounding area.

Growth of local population in the area

It has been suggested that the population increases resulting from the establishment and full development of the airport would be distributed in three areas. Broadly speaking, in the view of the Bedfordshire County Planner, the areas concerned would be the Rushden area, the St. Neots area, and the area nearest to Olney, namely the area from Stagsden towards Cranfield and Newport Pagnell. If each of the three

* See also p. 2198.

Printed image digitised by the University of Southampton Library Digitisation Unit

areas received equal numbers of people then more than 100,000 extra persons would have to be housed in the last named area. Further thousands of people have to be distributed over all the existing towns and villages round the airport.

The oppposition of the people of Olney to the siting of the third London airport at Thurleigh has been clearly shown. At a well attended Parish Meeting in March 1969 a unanimous vote was made that all practical steps be taken to oppose the siting of the third London airport at Thurleigh.

At subsequent meetings of the Parish Council all discussion of the subject has resulted in the decision of the Council to oppose the Thurleigh site.

Olney Parish Council prefer the siting of the Airport at Foulness.

Objections of Olney Parish Council

Olney Parish Council oppose the siting of the third London airport at Thurleigh for the following reasons:

(i) The disturbance to ordinary life, work, and leisure which will be caused by noise. Olney lies well inside the 40 NNI contour which is described as "moderately annoying". The noise will occur by night as well as by day.

(ii) The probable destruction of the present attributes of an expanding community in a pleasant rural environment, and, at worst the substitution of a vast urban sprawl.

(iii) The unsuitability of the area to receive the vast increase in local and national road traffic in and around Olney resulting initially from the vehicles employed to construct the Airport, and subsequently in servicing the Airport and its attendant associated new population.

(iv) The pollution of the air and countryside by discharges of gases and unburnt fuel from the planes, contaminating agricultural land, domestic gardens, laundry, and areas used for recreation.

(v) The deterioration in character of the present rural environment, and the destruction of an area of notable beauty it will cause.

(vi) Interference with reception of TV and radio signals.

Summary of objections

Olney does not want the permanent continuous disturbance of the earthly and heavenly environment that must for ever be the lot of the Olney residents if the third London airport comes to Thurleigh.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the City of Cambridge*

This letter is in amplification of the Town Clerk's letter of 4th June 1969 in which the City Council registered their opposition to the siting of a Third London Airport at Thurleigh on the grounds that it would be likely to prejudice living and working conditions in Cambridge.

The City Council have been advised as to the levels of noise which may be expected in the area around Thurleigh based on the present assumed flight paths and have noted that the 40 NNI contour would pass at a distance of about 8 miles from the City of Cambridge.

This leads the Council to believe that the City would be affected by *some* disturbance from flying aircraft even on the present assumptions and that a minor deviation from the present assumed flight paths or in other factors on which present assessments are based could inflict upon Cambridge a level of noise which would seriously impair living and working conditions in the City. The special character of Cambridge and of the activities carried on there, both in University establishments and others, need no emphasis. They are undoubtedly more susceptible to the ill-effects of flying aircraft than would be the case in the average town. The adverse effects would be felt:

(a) in the terms of the day-to-day living and working conditions of its inhabitants, including the large University population resident in the City;

(b) in the hindrance of scientific and industrial research carried on in the City;

(c) in the discouragement of the growth of new science-based industry which ought to be a vital feature of the future development of Cambridge; and

(d) in the interference with the special environment associated with the historic buildings of the City and in possible future damage to their fabric.

On the above grounds, the City Council wish to object to the siting of a third London airport at Thurleigh because of their real apprehension that the unique character of Cambridge would be endangered by the possibility of flying aircraft in substantial numbers.

* See also p. 2198.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Chesterton Rural District Council*

Whilst Chesterton Rural District Council fully support the evidence submitted by the Cambridgeshire and Isle of Ely County Council, the other local authorities and the specialist witnesses, they wish to draw attention to the deleterious effect which the siting of the Third London Airport at Thurleigh would have on their district, especially its western area, which is likely to be affected particularly badly.

The Rural District of Chesterton surrounds the City of Cambridge, covers nearly 175 square miles and is watered by the Cam and its tributaries. The scenery varies from undulating chalk hills to river meadows and fens and includes a considerable fruit growing area where the blossoms in springtime provide an attractive display.

The District has many prehistoric and Roman remains and notable historic and literary associations. Its villages, with their pleasant cottages and farm buildings, dignified manor houses and ancient churches, remain largely unspoiled.

The Council are very perturbed by the effect on all this of a Third London Airport at Thurleigh and are extremely concerned to note, from examinations of the NNI contour maps produced by the Commission and others, that a two or four runway airport, on either alignment, would have noise effects upon a substantial number of the District's western parishes. Some would be affected more than others and some to a degree which country dwellers—and, no doubt, many city dwellers—would find quite unacceptable.

For example, it would appear from the Commission's own maps† that the operation of a two-runway airport on the revised alignment would place the parishes of Over, Swavesey, Longstanton, Conington, Papworth St. Agnes and Graveley within the 35–40 NNI contours and Fen Drayton within the 40–45 NNI contours.

In addition, part of Papworth St. Agnes would be within the 45–50 NNI contours and part of Swavesey within the 40–45 NNI contours.

The present population of these parishes is of the order of 2,500; of course, many other people in adjacent parishes would also be affected by noise, usually at sub – 35 NNI levels, but sometimes much higher.

Three of the parishes mentioned by name—Fen Drayton, Over and Swavesey—are being considered as conservation areas and these three parishes and the others worst affected contain, between them, in the order of 100 buildings appearing on the Ministry list of buildings of architectural and/or historic importance.

In addition to the unpleasant effect of aircraft noise on the population at large, noise intrusion would present particular problems to a number of organisations especially vulnerable in this respect. For example, the medical staff of the Regional Chest Hospital at Papworth Everard, which is situated only some two miles outside the 35 NNI contour, would no doubt have to give careful thought to the effect of noise on their patients, such effects being described in the evidence of Dr. M. C. McLeod, the County Medical Officer of Health for Bedfordshire.

The child welfare clinic at Swavesey provides a further example: Mr. Norman Fleming, in his specialist evidence on the noise problem,‡ indicates that this would be subject on some days to 60 or more incidents involving peak PNdB of between 85 and 94. This assumes a four runway airport on the revised alignment suggested by the Commission.

In his evidence, Mr. Fleming also shows that if a two runway airport is built on the revised alignment, the following educational establishments will, on some days, be subject to at least 30 incidents per day involving peak PNdB of between 85 and 94—

Over County Primary School
Swavesey County Primary School
Fen Drayton County Primary School
Croxton County Primary School
Willingham County Primary School
Longstanton County Primary School
Swavesey Village College.

Mr. H. P. Shallard, the Chief Education Officer for Bedfordshire, gives details in his evidence§ of the teaching difficulties caused by noise and of the expense of sound-proofing (something which, in any event, is not always entirely satisfactory, as he shows).

It has been remarked earlier that the villages of the District have, in the main, retained their rural character. This is due in part to the desire of the inhabitants and in part to the care taken by the Cambridgeshire and Isle of Ely County Council as local planning authority and, indeed by Chesterton Rural District Council, to ensure only development which is attractive in appearance and reasonable in extent.

The possibility of such a policy continuing to achieve success if the third London airport is built at Thurleigh is extremely debatable. Population growth figures are difficult to estimate, but it would seem that as a result of natural, committed, and "airport" growth, the population of the area within a twenty mile radius of Thurleigh will, by 1985, at least double its present level of 724,000.

That such an increase would place pressure for expansion on the western villages of the district cannot be doubted, particularly if a large centre of urban development is sited between Sandy and St. Neots, as put forward by Mr. Cowley, County Planning

* See also p. 2199.

† See attached wallet of maps and diagrams.

‡ p. 1854.

§ p. 1863.

Printed image digitised by the University of Southampton Library Digitisation Unit

Officer for Bedfordshire.* In some cases, limited growth may be welcomed. But the important question is—could such a huge population increase come about without many villages having to take development which, in relation to their size, would render largely defunct their existing character and that of the surrounding countryside? The Council consider that the likely answer to this question is "no".

There are, of course, many other factors which a full examination of the effects of a third London airport at Thurleigh would reveal; however, these are well covered by much of the other evidence submitted to the Commission and it is no part of the Council's wishes to go fully over such ground.

It is, however, the Council's intention to draw to the notice of the Commission some of the general effects which such an airport would have on a substantial part of their District. It is realised that the picture painted is by no means the worst the Commission will be presented with. However, in relation to the existing high quality of the District, the Council consider the effects of an airport would be extremely unpleasant.

Thus, the Chesterton Rural District Council wish to lodge the strongest possible objection to the siting of the third London airport at Thurleigh.

* p. 1807.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 2

Mr. H. van Oosterom
Mr. H. Clay
Mr. G. Brewis
Great Ouse River Authority

Survey of affected farmers
Mr. J. E. Y. Hawkes
Mr. A. C. Giles
Mr. J. H. D. Lee
Mr. H. C. Balfour
Mr. M. W. Ward
Mr. R. B. Paynter
Mr. R. W. Osborn
Mr. W. J. Bates
Mr. G. E. Richards
National Farmers' Union

Nature Conservancy
Mr. P. W. Macfarlane
Mr. A. N. Polhill
Mr. R. A. Fell
Mrs. P. S. Rixon
Mrs. A. Du Sautoy Berens
Mr. D. Green
Council for the Preservation of Rural England

Major P. D. P. Duncombe
Country Landowner's Association

Mr. F. G. R. Soper
North Bedfordshire Preservation Society

Mr. D. A. Boswell
Woburn Sands and District Society

Mr. D. Hall
North Bedfordshire Archaeological Society

Oral evidence was taken from these witnesses on Day Two:
Tuesday 9 September 1969.

See pages 2203–2225

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Great Ouse River Authority*

SUBMITTED BY THE DEPUTY ENGINEER
(MR. H. VAN OSTEROM)

NOTE: In reading this statement reference should be made to plan GORA 3,† on which have been shown the catchment boundaries, rivers, geological formations and licensed sources referred to in this text.

Hydrology and geology

1. The two sites indicated in the Commission's published material are located within the Great Ouse River Authority's area. Minor parts of each site are drained direct to the River Ouse above Bedford (sub-catchment no. 11). The remainder are drained to the River Ouse below Bedford, via the small tributaries in sub-catchment nos. 12 and 20, and via the River Kym (sub-catchment no. 21).

2. The surface of the relevant parts of these four sub-catchments consist of boulder clay and Oxford clay, but these are overlain by permeable river gravels in the valley of the River Ouse itself.

3. The average annual rainfall of sub-catchment no. 21 is 23·4 inches (594 mm), and the average run-off as estimated from the Authority's records of river flows, is 4·5 inches (114 mm). It may be assumed that the rainfall and run-off of the other three sub-catchments are of the same order.

Land drainage

4. The rivers Ouse and Kym are statutory main river and are maintainable by the Authority. Parts of the watercourse draining the area in which the sites are located are within the drainage district of the Bedfordshire First Internal Drainage Board. The boundaries of this District, and the extent of the watercourses maintained by this Board have been shown on plan GORA 3. The remaining lengths of these watercourses are maintainable by the riparian owners and/or occupiers.

5. It is understood from the information supplied by the Commission's officers that the site surface water drainage system is to be designed for a storm having a frequency of occurrence of once in two years, and that the maximum rate of run-off under design conditions from either site will be of the order of 2,000 cusecs (57 m^3/sec.).

6. The aggregate bankfull capacities at the site boundaries of the existing drainage channels are of the order of:

original site: 1430 cusecs (40·9 m^3/sec.)
alternative site: 1030 cusecs (29·4 m^3/sec.)

These bankfull capacities are probably sufficient to accommodate without flooding the run-off resulting from storms of lesser frequency than that of the design storm referred to under paragraph 5. It therefore follows that the effect of the site run-offs, in terms of increased flooding, is likely to be more serious than is immediately apparent from the excess of the design run-off over the existing channel capacities.

7. In order to protect land and built-up areas downstream of the site from this risk, it will be necessary to provide means for controlling the discharge to these streams to a maximum rate acceptable to the Authority. Additionally, it may be necessary to carry out agreed improvements to these watercourses for some distance downstream of the respective outlets.

8. In addition to stating this general requirement attention must be drawn to the existence in the valley of the River Ouse of towns such as Bedford, St. Neots, Huntingdon and Godmanchester, and St. Ives, as well as of villages such as Houghton and Wyton, Hemingford Grey and Hemingford Abbots. Extensive inundations occurred at each of these places during the floods of March 1947, and as a consequence of development that has taken place since that date, the value and extent of property at risk has now greatly increased. It will therefore be necessary, in determining the extent to which the run-off from the site would have to be controlled, and the existing river channels improved, to pay particular attention to the protection of these river-side built-up areas.

9. Attention will also have to be given to the need for conveying the run-off from the site past these risk areas before the arrival of the run-off generated by the same storm in the catchment upstream of Bedford, which would include, inter alia, the discharge from the new city of Milton Keynes.

10. Similar problems may arise from the disposal of surface water from the "urbanisation" likely to be associated with the airport development, but in the absence of information about the areas in which this will be located, no detailed comment can be given at this stage.

11. It is anticipated that in no case there will be insuperable difficulties in devising an acceptable solution to the surface water drainage problem. It is essential, however, that there should be early consultations between the Commission's staff and the engineer of the Authority, or between the respective county planning officers and the Authority's engineer, as appropriate, to ensure that the basic design criteria as well as the drainage works shall be mutually agreed in detail in advance of construction.

* See also p. 2204.
† p. 1911.

Printed image digitised by the University of Southampton Library Digitisation Unit

Water resources

12. The major river and underground sources in the area over and through which the site drainage water would have to pass are shown on plan GORA 3. The licensed daily and annual abstraction rates are listed in Appendix A.

13. The site is situated within the Bedfordshire Water Board's supply area. The urbanisation areas may be located partly within that Board's area but also in those of the adjoining water undertakings.

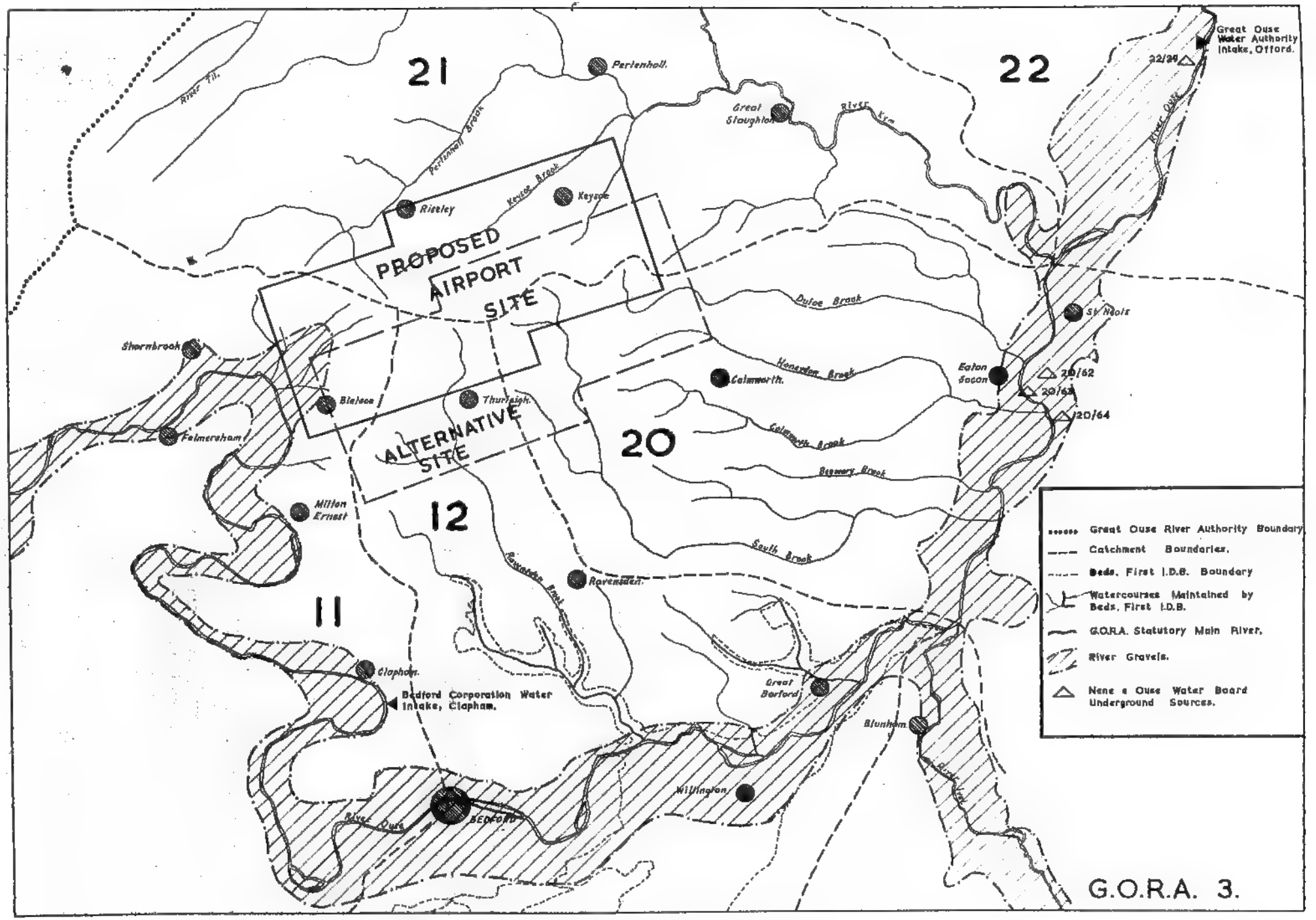
14. The Water Resources Board and the respective river authorities are currently planning the development of the additional water resources needed in South-East England up to the end of the present century. Subject to the Authority's Pollution Prevention Officer's remarks concerning the river water quality, no serious problem is foreseen in making available to the respective water undertakings the additional sources they would need for meeting the airport demand and the needs of the additional population referred to in the Commission's published material.

Appendix A

Licence No.	*Name*	*Source*	*GPD*	*(l/sec)*	*MGA*	*($m^3 \times 10^6$)*
20/62	Nene and Ouse Water Board	St. Neots	75,000	3·9	32	0·15
20/63	Nene and Ouse Water Board	Eaton Socon	100,000	5·3	42	1·19
20/64	Nene and Ouse Water Board	St. Neots	150,000	7·9	42	0·19
22/29	Nene and Ouse Water Board	Diddington	200,000	10·5	70	0·32
22/8	Great Ouse Water Authority	Offord	100,000,000	5262	16,425	74·67
SW11/23	North Bedford Water Board	Clapham	12,000,000	631	2,196	9·98

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



GORA 3 (Great Ouse River Authority.)

Evidence of the Great Ouse River Authority

SUBMITTED BY THE POLLUTION PREVENTION OFFICER
(MR. H. CLAY)

1. The Bedford Ouse is a source of raw water for three public water supply undertakings—the Bedford Water Board, the Great Ouse Water Authority and the Nene and Ouse Water Board. The position of the existing river intakes at Clapham, Offord and Brampton Mill and of the proposed second intake of the Great Ouse Water Authority at Brownshill Staunch are shown on the attached map.*

2. The river is not badly polluted at present. The dissolved oxygen levels are high enough to sustain a healthy and abundant indigenous coarse fish population. The river is in no way offensive to sight or smell and the chemical characteristics and the microbiology of the river indicate that the use of the river in its present state presents no significant health hazard. Certain characteristics of the river water, however, have posed treatment problems to the Bedfordshire Water Board and the Great Ouse Water Authority.

3. One problem which has arisen relates to chlorides. About ten years ago a sudden rise in the concentration of chlorides in the river at the abstraction point at Clapham and the consequent reduction of the ratio of the carbonate hardness to chlorides in the treated water caused "meringue" corrosion of duplex brass hotwater fittings in Bedford. Many fittings had to be replaced, and lime softening at the Clapham treatment plant of the Water Board was to be discontinued.

The increase in the chlorides in the river, which reached maximum approaching 100 mg/1 as Cl, was due to the abnormally high chlorides in the effluent from Dunstable Sewage Works, which in turn was caused by the discharge to the sewer of a concentrated brine effluent from the Vauxhall works at Dunstable. This latter discharge ceased in 1963. Laboratory tests carried out in the Spring of 1968 by the Great Ouse Water Authority indicated that samples of water from Grafham reservoir were on the verge of causing dezincification of brass. Experimental work on dezincification is still in progress.

4. An additional problem is the increasing degree of eutrophication, or the enrichment of the water with nutrients, particularly nitrates and phosphates, which tend to promote a luxuriant growth of planktonic vegetation (the development of algal blooms) in the river itself or in the river water on impoundment in storage reservoirs.

5. In April and May 1968 operating difficulties were experienced by the Great Ouse Water Authority at their treatment plant at West Perry, when owing to blockage of the sand filters with algae, their effective capacity was temporarily reduced from 40 to 8 gallons a day, when a throughput of 9 million gallons of treated water was required for supply to the Authority's constituent Water Undertakings. At the time these difficulties were being experienced numerous complaints were received by the Water Authority of the undesirable taste or odour of the treated water.

6. A serious situation would arise in the future if as a result of decomposition of heavy algal blooms in Grafham reservoir the water became deoxygenated. This would have most serious repercussions, and could endanger the use of Grafham Water for domestic and industrial water supply and for recreational facilities (fishing, yachting, nature study and general amenities).

7. Sewage effluents contain both nitrates and phosphates, which appear to be the most important nutrients responsible for eutrophication. Owens and Wood of the Water Pollution Research Laboratory constructed a nutrient balance for a stretch of the Bedford Ouse, on the basis of analytical data collected in a period of about two years (*Water Research* vol. 2, 2, Feb. 1968). The results indicated that sewage effluents contributed less than 10 per cent of the total flow of the nitrogen and only a small proportion of the silicon and sulphate. On the other hand, 70 per cent of the phosphorus was accountable for in terms of that dicharged in effluents. Most of the inorganic nitrogen in the river was contributed by run-off from agricultural land. It was noted that amounts of nitrogenous fertilizers applied to agricultural land had doubled in the previous ten years, and the opinion given that if the usage continued to increase at the expected rate the problems arising from eutrophication of rivers and lakes could be seriously aggravated. It was observed that 50 per cent of the phosphorus in the sewage effluents discharged to the Bedford Ouse evidently originated from detergents.

In September 1968 a technical report on eutrophication of inland waters with particular reference to nitrogen and phosphorus as factors was submitted by Dr. Richard A. Vollenweider to the OECD Committee for Research Co-operation for use in drawing up its programme of work on water management. The report lists many cases of eutrophication more or less serious, which have been observed in lakes, flowing waters and reservoirs in almost all the more highly developed countries.

* p. 1911.

Printed image digitised by the University of Southampton Library Digitisation Unit

The need for studies to explore ways of combating the process of eutrophication in the Bedford Ouse is fully recognised, and this will no doubt be one of the matters which will be considered by the Great Ouse Water Quality Committee which is now being established by the Ministry of Housing and Local Government. There is no doubt that the Ministry were influenced largely in their decision to make the Great Ouse Committee the first local committee to be associated with a National Committee on Water Quality by their concern at the possible future effects of urbanisation, in terms of increased discharges of sewage and industrial effluents, on the quality of water abstracted from the Bedford Ouse for public supply.

8. The organic matter in sewage effluents exerts an oxygen demand on the receiving waters, but, as has already been stated, the sewage effluents discharged to the Bedford Ouse at present do not reduce the dissolved oxygen in the river to a serious extent. To ensure that adequate dissolved oxygen levels are maintained in the Bedford Ouse in the future, it will no doubt be necessary for the 5-day biochemical oxygen demand of all the major effluents entering the river to be lower than the 20 mg/l which represents the norm. On the instructions of the consulting engineers to Milton Keynes Development Corporation the Water Pollution Research Laboratory made predictions of the dissolved oxygen concentrations in the river for 1 per cent and 10 per cent flows, assuming an ultimate daily discharge of 24 million gallons of effluent to the river from a sewage treatment plant downstream of Newport Pagnell. The consulting engineers recommended that an effluent with a 5-day biochemical oxygen demand of less than 10 mg/l should be aimed at and that the amount of suspended solids in the effluent should be as low as practicable on account of the importance of the mud respiration rate, coupled with the sluggish nature of the river.

9. Nitrates are dangerous in drinking waters as they are a known cause of cyanosis (Methaemoglobinaemia) in young infants. The standards of drinking water quality of the World Health Organization include a maximum of 20 mg/l for nitrate nitrogen. The results of analysis of water samples taken at Brownshill Staunch covering a wide variety of river flows showed a maximum nitrate nitrogen of 10 with an average of 5·88. From the public health point of view the present levels of concentrations of nitrate nitrogen in the water appear to give no cause for alarm. Nitrate is one of the five parameters which will be continuously measured and recorded at the River Authority's new water quality monitoring stations now being installed at Clapham and Offord. The other four are dissolved oxygen, chloride, conductivity and temperature.

10. Although the quality of water in the Bedford Ouse is mainly assessed by the River Authority on the results of tests for the 5-day biochemical oxygen demand and dissolved oxygen, working standards for the free and saline ammonia are also used. These are as follows:

ammonia nitrogen (mg/l)	*classification*
Not more than 0·2	very clean
Between 0·2 and 0·5	clean
„ 0·5 and 0·75	fairly clean
„ 0·75 and 1·5	doubtful
„ 1·5 and 3·0	unsatisfactory
More than 3·0	bad

Although the present ammonia levels are reasonably satisfactory, a substantial increase in the concentration due to the future increase in sewage effluent in the river could result in treatment problems to the Water authorities, especially, the Bedfordshire Water Board and the Nene and Ouse Water Board, who abstract water from the river for treatment without the benefit of reservoir storage, insofar as the increase in ammonia in the river water could lead to sterilisation by chloramines, which would be less effective than free chlorine for the destruction of viruses. The problem of viruses in water was the subject of a recent paper by Dr. S. F. B. Poynter of the Metropolitan Water Board (*Water Treatment and Examination*, 1968, 17, part 3, 187). It has been established that the virus of infectious hepatitis is present in sewage effluents in the river and the future increase in the volume of sewage effluent discharged to the Bedford Ouse is likely to increase the quantity of virus in the raw water abstracted for treatment for domestic supply.

11. The future increased level of concentration of detergent residues in the Bedford Ouse, especially at low river flows when the proportion of sewage effluent in the river at water intakes is at a maximum, may constitute a problem, especially to the water undertakings treating water abstracted from the river without the benefit of storage.

12. Whether in the future, as the result of the increase in the proportion of the sewage effluent in the flow, the Bedford Ouse is likely to contain other organic substances, trace elements, etc., which will pose problems of treatment of the raw water or which may be harmful in the treated water, is a matter for speculation. Urbanisation in the catchment area of the Bedford Ouse on the scale which is already anticipated must of necessity involve new industry, and the production of waste waters in manufacturing processes. It is expected that in the majority of cases the waste waters will ultimately be dealt with at local authority sewage treatment works, subject to such pre-treatment as may be required by the local authority before discharge to the sewers. It is evident, however, that not only will careful control of trade wastes need to be exercised to safeguard the interests of water authorities, whether the effluents are discharged to the river directly, after treatment at the factory, or indirectly via sewage treatment works. Steps will probably have to be taken to discourage the establishment of certain industries on account of the intractable waste waters which could produce formidable water treatment problems, which would arise if the effluents were discharged to the river.

Printed image digitised by the University of Southampton Library Digitisation Unit

13. The grounds for concern about the effect of the quality of water in the Bedford Ouse, of the future increase in the amount of sewage effluent to the river, have been outlined in the foregoing paragraphs. Disregarding entirely the effects of the urbanisation which would accompany the establishment of a third London airport at Thurleigh, the cumulative discharge of sewage effluent to the Bedford Ouse upstream of Brownshill Staunch may by the end of the century quadruple the present estimated daily discharge of 25 million gallons.

There is no doubt that the resulting change in the chemical characteristics of the water will pose treatment problems, of which eutrophication will probably be the most difficult, and in my opinion any substantial developments in the Bedford Ouse Catchment in addition to those envisaged in the *South East Study*, published by the Ministry of Housing and Local Government in February 1964,* would be likely to aggravate these problems and could perhaps even produce a situation whereby the viability of the river as a continued source of water supply was threatened, unless effective preventive measures had been previously taken. If the whole of the urbanisation associated with the third London airport at Thurleigh took place within the Bedford Ouse catchment, the ultimate resulting effluent discharge to the river would be commensurate for quality with the discharge of 25 million gallons of sewage effluent from the new city of Milton Keynes.

14. According to the *Site Information for the Stage II* Inquiry for Thurleigh† the primary employment population at the airport might reach 45,000 for two runways and 65,000 for the full capacity of four runways. It could therefore be anticipated that sewage works on the airport site would be designed to treat a Stage I daily dry weather flow of about 3½ million gallons and a Stage II flow of about 5 millions. The siting of the works, the location of the effluent outfall, and the nature and disposal of any trade wastes waters and the design of the works to meet the high standard of effluent quality required by the River Authority, would all need to be carefully considered.

15. In addition, account must be taken of the river pollution aspect of the surface water run-off of the streams draining the Thurleigh site. It will be seen from the accompanying map that on the north the site drains to the Pertenhall and Keysoe brooks, tributaries of the River Kym, and on the west to the Bletsoe brooks, which enter the Bedford Ouse, along the impounded stretch of river between Sharnbrook Mill, where the river level is controlled by the Bedfordshire Water Board through the operation of sluices, to facilitate abstraction from the Clapham Intakes. Along this stretch of river the County Planning Authority exercise strict control of new development, in the Water Board's interests. On the south side the site drains to the Ravensden brook, which enters the main river below Castle Mill, downstream of Bedford, and on the east side to the Duloe brook.

16. It would be necessary for the airport authority to take adequate precautions to prevent the pollution of all surface watercourses draining the site. These would include the binding of oil storage tanks and the ducting of oil distribution pipelines to prevent accidental spillages to surface water drains, and the provision of adequate arrangements for the interception of oil from the run-off to surface water drains from runways and hard-standings. The water pollution aspect of the use of chemicals for the de-icing of aircraft and airport runways and cleaning of aircraft would need to be carefully considered.

17. I have considered the question of the possibility of pollution of surface waters by the discharge of unburnt fuel from aircraft, but little information is available on the subject. I understand that the Metropolitan Water Board, who have a reservoir situated within a quarter of a mile of the end of one of the runways at Heathrow airport, have had no reason to complain of oil pollution. It is possible, however, that the danger of pollution of watercourses or inland waters near Thurleigh by venting of fuel from aircraft might become more serious with the advent of supersonic aircraft which land under power.

18. Pollution emissions from the jet engines of aircraft operating at the commercial airports in the New York metropolitan area have been estimated by Hochheiser and Luzano (paper no. 680339; US Society of Automated Engineers, Air Transportation Meeting, New York April 29–May 2 1968) and the effect on the air pollution of the region was assessed. Fontaine, in paper no. 680338, presented to the same Meeting, gave an account of experiments carried out on the reduction and elimination of visible smoke from jet engines, but there seems no evidence at present that the emission of combustion products from the exhausts of jet engines would cause significant pollution of any inland waters surrounding the Thurleigh site.

* HMSO; 15s.

† Reproduced at p. 1801.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Great Ouse Water Authority

SUBMITTED BY MR. G. BREWIS

I am instructed by the Great Ouse Water Authority to draw the Commission's attention to the injurious effect which the establishment of an international airport at Thurleigh would have upon the amenities of their reservoir at Grafham Water. They do not desire to give evidence at the Stage II Hearing but will be represented by Counsel appearing for the County Councils who will be able to arrange for the Authority to give any assistance or further information which the Inspector may require.

Before explaining the Authority's objection in relation to Grafham Water there are two general points to which I should refer.

The first relates to the availability of a public water supply to any of the three short-listed inland sites, two of which (Nuthampstead and Thurleigh) lie within the areas of supply of constituent authorities of this Authority and the third (Cublington) within the area of a Water Board to which this Authority make bulk supplies. The responsibility for providing water supplies to an airport and its associated urban development lies with the statutory water undertakers and this Authority do not consider it proper to offer advice as to the problems which such undertakers might meet in discharging their obligations. The Authority do, however, think it right to inform the Commission that all their own resources, including those proposed under an Order now before the Minister of Housing and Local Government, are required to meet the normal future expected demands of their own constituent authorities. If it should be proposed that one or more of these constituent authorities should transfer an entitlement to water from this Authority to an undertaker responsible for supplying water to an airport, this Authority would expect the transferring constituent authorities to be compensated both in respect of payments they have already made on works from which they will not benefit and also in respect of any increased expenditure they may incur in obtaining equivalent supplies from other sources. The Authority draw the Commission's attention to the fact that, until some decision is made as to the manner in which the selected site and its associated urban development is to be supplied with water, statutory water undertakers possibly at considerable distances from the selected site may be involved in serious financial consequences.

The second preliminary point concerns the purity of water in the river Great Ouse from which the Authority obtain their supplies. Since this subject lies within the statutory responsibilities of the Great Ouse River Authority this Authority have not considered it proper to investigate at this stage the possible effects of a large airport on river water purity. They desire, however, that the Commission should know that the subject is of considerable importance to this Authority.

The Authority's objection to the establishment of an international airport at Thurleigh is that it would largely destroy the amenities they have created for the public at Grafham Water.

The Joint Committee of Water Boards, Water Companies and County Councils, to which I was Clerk and which was responsible for the promotion of the Bill for the Great Ouse Water Act 1961, decided that to the fullest extent compatible with a water supply the public should benefit from the construction of a huge reservoir (2½ miles long and a mile in width at its widest point) in a natural rural setting. This policy was adopted by the Authority, to which I have been Clerk since its inception, and has been implemented with such success that Grafham Water is frequently instanced in Parliament and elsewhere as the standard at which all enlightened authorities should aim in providing new reservoirs of this type.

The Authority when planning the environs and secondary uses of the reservoir so as to offer the public as many advantages as possible, were faced with the choice between quiet and noisy activities. Many suggestions as to the latter were received including motor boating, water skiing, an amusement park, a zoo, a motor cycle circuit and large caravan parks. The proximity of the Great North Road only 2 miles away and London within 60 miles would, the proposers of these ideas argued, assure the Authority of public support and substantial profits.

The Authority, had, however, no hesitation in rejecting all such proposals. They decided that they would create what would appear to be a natural lake in a beautiful parkland open to the public, that the water should be stocked with trout for public fishing, that sailing should be restricted only by the limitations of safety and that in addition to a 90 acre afforestation scheme an area of 370 acres should be allocated as a nature reserve.

All this has been achieved and with such success that the three free car parks accommodating 1,400 cars are frequently full at fine weekends, the sailing club with 1700 members. The largest inland club in the country, has a long waiting list and over 21,000 daily fishing permits are issued each year. The number of boats has been increased to 26 and these are usually fully booked.

The potentialities of the lake are still in the course of development and this year the County Council have opened a training centre on land adjacent to the lake which has been leased to them by the Authority. This provides residential accommodation

Printed image digitised by the University of Southampton Library Digitisation Unit

for 58 students and many on a daily basis and courses are provided in sailing, nature study and other subjects.

The greatest care has been exercised in the design and landscaping of buildings and a controversial piece of sculpture has been added to the attractions. The full beauty of the Authorities' scheme will not, however, be appreciated until some of the 5,000 trees (excluding the afforestation scheme) which have been planted around the lake approach maturity.

The Authority do not claim that people will cease to visit the car parks if they become vantage points for observing an endless stream of large aeroplanes screaming overhead in their approach to Thurleigh, that sailing will stop, that no-one will fish for trout if the Authority continue their annual restocking programme or that wild life will cease to use the nature reserve if there is a large airport nearby.

What the Authority do say, and say most emphatically to the Commission, is that Grafham Water cannot hope to continue as the place of utter tranquillity and peace which they have created if there is an airport at Thurleigh. People come to Grafham Water to sail boats, to catch fish, to watch birds, or just to sit on the grass beside the water in order to escape from the noise and bustle of modern life. The success of Grafham Water proves that there is an enormous demand for these facilities which is likely to increase as nearby urban centres expand.

A settled population in a village can be counted, included in statistics, and their views expressed to the Commission by a local authority. The people on whose behalf the Authority are concerned in this objection are scattered over a wide area and their precise number is unknown. Their interests nevertheless merit the concern and, so far as is possible, the protection of the Commission.

In conclusion I should explain that I was instructed to make the foregoing objections before the Commission announced the alternative Thurleigh site. Although this would also be open to the foregoing objections it would clearly be less objectionable than the original Thurleigh site.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

Survey of Affected Farmers

1. **Scope of survey**

Questionnaires were sent to 863 N.F.U. members by the Bedfordshire and Huntingdonshire County Branch, 85 by the Buckinghamshire County Branch, 98 by the Cambridgeshire County Branch and 397 by the Northamptonshire County Branch.

This distribution embraced farmers and growers in an area of 16 miles radius from the centre of the proposed first site ("A") at Thurleigh. The survey was not extended by way of the 16 mile radius for the second site ("B") by reason of the timing of the Commission's announcement. This distribution was deemed to be necessary due to the lack of precise information and in order to ascertain the view of not only those farmers and growers in the immediate areas of the sites but from those likely to be affected by the noise nuisance, housing, roads, ancillary development and urban run-off.

The questionnaires were sent to full farming members and the results have been analysed.

2. **Replies to questionnaires**

Bedfordshire and Huntingdonshire received 352 completed forms in the 16 mile radius, of which 112 related to farms within a 5 mile radius—Buckinghamshire received 44 completed forms which also related to the Cublington site—Cambridgeshire received 25 forms and Northampton 71 completed forms.

This represents a farming and horticultural acreage of 137,190 acres of which 83,656 acres are farmed by owner-occupiers and 53,534 acres farmed by tenants.

Of the 492 farmers and growers who replied, 483 were opposed to the siting of the airport at Thurleigh and 431 expressed the wish to be represented by the National Farmers' Union at the Inquiry. 365 members felt so strongly that they are contributing to a fund to defray the cost of the N.F.U. presenting the agricultural and horticultural case at the Inquiry.

3. **Description of farming**

The Airport Sites

General: In view of the impossibility of interviewing every farmer, there may be some variation as to the replies given. This is therefore a general assessment rather than a 100 per cent accurate report.

Site "A"

In an airport site based on the original site plan ("A") there are 46 farmers who would lose all or part of their land. Their total acreage both inside and outside the site "A" area is 8,109 acres. 6,509 acres are farmed by owner-occupiers—of whom 9 also farm 1,600 acres of tenanted land in the vicinity.

Tenant farmers affected by site "A" number 9 and farm 778 acres. The average size farm in the area is 253 acres.

(*a*) In the potential site area "A" there are:
23 farmers who would lose all of their land;
14 farmers who would lose over half of their land;
12 farmers who would lose varying proportions of their land.

(*b*) The area is a mixed farming area with emphasis on cereals and brassica crops. Wheat and barley yield up to 42 cwts. to the acre, with an average of 38 cwts. to the acre. Potatoes yield up to 15 tons per acre with an average of 12 tons per acre. Sugar beet at 13 tons to the acre and hay 2½ tons per acre. In addition brussels sprouts on average 7 tons per acre.

(*c*) The following livestock is kept:
15 farmers keep 963 beef cattle;
2 farmers keep 125 cows;
7 farmers keep 830 pigs;
1 farmer keeps 500 sheep;
3 farmers keep 25,500 head of poultry.

(*d*) 20 farmers employ 72 full-time workers and have 46 tied cottages.

(*e*) The 21 who were willing to reply state in the past ten years that there has been an aggregate capital investment amounting to £1,027,000.

(*f*) 18 members state they have sons or relatives whom they hope will follow them in their farms.

Site "B"

In an airport based on site plan "B" there are 50 farmers who would lose all or part of their land. Due to the time factor returns are limited, but a sample shows that 19 members record their total acreage both inside and outside the Site "B" area as 4,651 acres. 3,847 acres are farmed by owner-occupiers of whom 10 also farm 804 acres of tenanted land in the vicinity.

Tenant farmers affected by site "B" number 8 and farm 743 acres. The average size of farm in the area is 233 acres.

(*a*) In the potential site "B" there are:
22 farmers who would lose all of their land;
14 farmers who would lose over half of their land;
14 farmers who would lose varying proportions of their land.

(*b*) The farming and yields in the area are similar to site "A".

(*c*) The following livestock is kept:
9 farmers keep 675 beef cattle;
1 farmer keeps 50 cows;
5 farmers keep 850 pigs;
1 farmer keeps 500 sheep;
4 farmers keep 3,150 head of poultry.

Printed image digitised by the University of Southampton Library Digitisation Unit

(*d*) 13 farmers employ 40 full-time workers and have 25 tied cottages.

(*e*) The 17 who were willing to reply state in the past ten years that there has been an aggregate capital investment amounting to £532,500.

(*f*) 17 members state they have sons and relatives whom they hope will follow them in their farms.

The 16-mile radius

From a sixteen-mile radius from the centre of Thurleigh site "A" and excluding the figures for the airport sites as given in 3*a* and 3*b* above the following sample figures are:

(*a*) 470 farmers record an acreage of 127,887 acres.
These range from over 2,000 acres down to single figures but the average acreage is 271 acres.
285 owner-occupiers farm 76,309 acres and 121 tenants farm 51,578 acres but this includes 127 owner-occupiers who are also tenants of some 21,577 acres of this rented land.

(*b*) Corn yields, on average are 36 cwt. to the acre. Potatoes yield 11 tons to the acre. Sugar beet 15 tons per acre and hay 2½ tons per acre, brassicas 7 tons per acre.

(*c*) 177 farmers keep 14,747 beef cattle;
81 farmers keep 3,942 milking cows and followers;
116 farmers keep 31,508 pigs;
90 farmers keep 27,639 sheep;
110 farmers keep 251,950 poultry.

(*d*) 1,615 workers are employed and there are 850 tied cottages. 245 farmers replied to the question stating they have spent an aggregate of £6,587,654 on capital investment in the past ten years and 166 farmers state they have sons or relatives whom they hope will follow them in the farms.

4. **Reasons for objections**

In our questionnaire we invited farmers and growers to express their views on the proposal to site the airport at Thurleigh. Their reasons for objection are summarised below and have also been substantiated at meetings in the area.

Farmers and growers strongly deplore the taking of good agricultural and horticultural land for development. They appreciate better than most the paramount need to preserve the most valuable of our natural resources—productive land.

We in this area have first-hand experience of the loss of such land and the severance of farms, for example, the Bedfordshire Brickfields, the flooding of Diddington Valley to form the Grafham Water Reservoir and severance by the M.1 in particular.

The vast majority, in replying to our questionnaire, felt that the siting of the airport at Thurleigh would be sacrilege—the alternative of an off-shore site being strongly favoured.

The effect of the taking of some 23,000 acres of land for the new city of Milton Keynes, as has been stated at the Cublington Inquiry, will result in over 100 farmers in that area searching for alternative farms. Due to the proximity of Milton Keynes to Thurleigh a similar effect to that envisaged at Cublington could equally apply. In addition, there are proposals for further surface water reservoirs at Abbotsley and Luton, which could lead to still further losses of productive land.

Apart from the 7,500 acres required for the airport itself, part of which is at present used by the Royal Aircraft Establishment, it is very apparent that the widespread demand on land for ancillary development in the area could equal one third of the farm land in Bedfordshire. It is envisaged that this development would affect members within a 20 mile radius of Thurleigh.

The related problems of farming hand in hand with urbanisation are already experienced in this area, such as trespass, vandalism, rubbish dumping, sheep worrying by dogs, and even isolated instances of sheep stabbing.

Some 414 members expressed their concern over the problem of the noise nuisance, not only in relation to living and working with the effects, but also on the possible consequence on livestock. Members close to the site area feel very strongly that considerable risk would be incurred when using machinery when the operator would at times be unable to hear the machine or a co-operator. Similarly, those engaged in horticulture in particular are very concerned over the problem of fall-out and its possible effect on crops, livestock and water.

Many of our members are seriously concerned by the problems of land drainage and flooding. The Great Ouse river is in certain areas extremely prone to flash flooding, and in fact many members lost crops during 1968 as a result of this. Members in the area in fact feel so strongly on this issue that the following resolution of the Beds. and Hunts. County Branch was presented and adopted at the N.F.U. Annual General Meeting in 1969:

"In view of the growing incidence of flooding this Annual General Meeting urges:

(1) that the Government instigate immediate investigations into the capability of water courses to carry run-off from present and future developments;

(2) that existing planning regulations be strengthened to ensure that the satisfactory disposal of run-off is thoroughly investigated by the responsible authorities before planning permission is given;

(3) that necessary legislation is introduced to ensure that where works are required on water courses which are not the responsibility of the main river authority, the developers are responsible for any additional works required on such schemes to take the additional flow".

The problems we envisage arising would not only affect those who farm in the immediate vicinity of Thurleigh, but also those who farm alongside the river to its mouth. Similarly, the development of the new city of Milton Keynes is likely to aggravate the position nearer to the source of the river and throughout its length to its mouth.

In general, the area which would be seriously

Printed image digitised by the University of Southampton Library Digitisation Unit

affected is predominantly rural and has been defined as an area of outstanding natural beauty and great landscape value which we consider should be preserved.

These points will be dealt with in more depth in other parts of our evidence, but we specify them here as they are the views expressed by farmers in the area.

5. **Compensation**

The level of compensation for loss of land or disturbance is extremely relevant, especially as only three members expressed themselves as willing to accept compensation for their land.

Many stress the view that if forcibly displaced, compensation would have to be well above the current standards to enable them to find farms in other areas of equal size and viability.

There is also the need to take into account the obvious losses incurred on a change of farm as it will be appreciated that one has to learn by experience the peculiarities and inherent economics of nature on each individual farm. Therefore, an element to compensate for this transitional period is considered essential.

An added complication is that those who are unable to re-instate themselves or feel that they are too old to do so but would otherwise continue in farming for a number of years, could find considerable depletion of their compensation as a result of Capital Gains Tax.

Tenant farmers, whose compensation is hopelessly inadequate, would be virtually placed with no hope of re-instating themselves as a tenant farmer.

6. **Conclusion**

The area affected by the proposed airport site has in the past been described as "heavy difficult land", but in recent years, with modern equipment it has become extremely productive and will, we feel, become even more so because the land has not been overworked. It could well be termed as an agricultural-cum-horticultural cropping, by virtue of the inclusion in the rotation of vegetable crops on a field scale. The land is extremely well farmed with a very high standard of productivity and a large aggregate capital investment.

The Ministry of Agriculture Land Service Survey has not been completed for the area but it is considered that it will in the main be graded Class I and II—high quality agricultural and horticultural land. The remainder of the area likely to be affected by the proposal is similar to the north and west, and in the east and south there is considerable intensive horticulture practised.

The site at present forms part of a rural band breaking urbanisation at Bedford from that of Northampton/Rushden, Wellingborough/Higham Ferrers complex.

Fears have been expressed that the area would be completely surrounded by urbanisation and the amenity in the centre of this ring being despoiled by the airport and the consequent noise.

Those who farm in the area are progressive "muddy boot farmers", the majority not only being actively engaged in the management of their holdings but also forming an integral part of the farm labour force.

The area is of high value to the industry in the production of food for the Nation. We ask that the authorities should seek to use non-productive non-agricultural land for this airport, and almost with one accord, our members both within and outside the survey area consider that an off-shore site should be selected for the third London airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

Planning evidence

SUBMITTED BY MR. J. E. Y. HAWKES*

I am a partner in the firm of Hancock, Hawkes, Architects/Planners of Hampstead, London. I have been asked by the National Farmers' Union to examine the effect that the siting of the third London airport at either of the proposed Thurleigh sites (a) or (b) would have on future urbanisation and land requirements in the area.

Existing settlement characteristics

1. I have adopted a 20 mile radius to define the airport sub-region because:

(i) a distance of 20 miles is probably the limit from which the majority of people would be prepared to commute to the airport by car.

(ii) it is the area within which urbanisation and industrial development associated with the airport is most likely to occur.

2. The existing settlement pattern immediately surrounding Thurleigh is rural in character, but there are four towns within 15 miles of the proposed airport sites (Huntingdon, St. Neots, Bedford and Wellingborough) of which the largest, Bedford, is but six-seven miles from the centres of the proposed airport sites. Northampton, the largest town in the sub-region, is about 20 miles west of the airport sites.

3. An analysis of the 1966 Sample Census shows that the population then living in the sub-region was about 683,000. (Details of the sub-region's population and workplace locations are set out in Appendix A and plan NFU/JH 1).† The only settlements with over 50,000 population in 1966 were Northampton (124,010) and Bedford (67,390). In addition to these two centres there were two settlements with a population between 30,000 and 50,000, Wellingborough (31,860) and Kettering (40,610).

4. The airport is at the point of conjunction of the three economic planning regions and the sub-region is thus effectively divided into three roughly equal sectors:

The North-Western sector (E. Midlands Region) population was 321,000 in 1966.
The North-Eastern sector (East Anglia Region) population was 129,000 in 1966.
The Southern sector (South East Region) population was 233,000 in 1966.

5. The area closest to London lying in the South East Region is less densely populated and has a lower urban population than the north-western sector, and the north-eastern area, which is almost wholly rural, has the smallest urban population of the three sectors. The combined population of the north-eastern and southern sectors was about 362,000, only 41,000 more than the population of the north-western sectors.

6. Three of the four largest towns, Northampton, Wellingborough and Kettering are located in the north-western sector of the sub-region, which constitutes the major focus of employment; and Bedford is located in the southern sector.

7. These four centres were all net importers of labour in 1966, though Wellingborough was closest to an import/export balance. All the towns had a minimum of 75 per cent of their workforce living within their administrative areas, though in the case of Northampton 91 per cent of the workforce resided in the County Borough.

8. The magnet influence of London, determined by an analysis of 1966 Census usual residence and workplace statistics (refer to Appendix A, column 5 and plan NFU/JH2)*, shows that the highest incidence of commuting to London occurs in the extreme south-east fringe of the sub-region and amounts to only 6–10 per cent of the total workforce. Throughout the remainder of the sub-region commuting to London is insignificant, being nowhere more than 3 per cent of the total workforce.

It follows from this that the sub-region functions largely independently of London's sphere of influence.

9. In general, the sub-region appears to show a localised and intricate pattern of rural commuting based on a net of interdependent, small market towns. While there are numerous examples of cross-commuting between these towns, the majority of journeys to work appear to be short.

Between 1969 and 2000 major growth is expected to occur in the southern and north-western sectors of the sub-region. Although the number of proposed new town and town expansion schemes within these two sectors indicates a pressure on the area to absorb overspill population from London, the direct influence of London on the sub-regional journey-to-work pattern is unlikely to change significantly.

10. The journey-to-work pattern will probably localise even further as the expansion of Milton Keynes, Northampton and Wellingborough and the growth of Bedford creates a marked growth node in the sub-region. Further, it is possible that these towns

* See also p. 2212.
† p. 1930.
* p. 1931.

Printed image digitised by the University of Southampton Library Digitisation Unit

will assume a closer and interdependent identity towards the end of the century as the total population of the four towns advances towards and perhaps beyond the 700,000 mark.

Regional influence on local urbanisation

11. The development of the airport and its associated uses is likely to be the largest single growth catalyst in the South East in the next 25 years and the opportunity offered by it should be taken to restructure the settlement pattern at regional scale. The development associated with the airport ought to be considered not solely within the confined terms of a locally feasible urban form, but rather within the planning framework of the region.

12. I suggest later in my evidence that "airport generated" growth might reach a total of 750,000 persons. This figure emphasises the scale of urbanisation that may be induced by the new airport and, in consequence, the importance of its correct regional location. I have therefore examined future proposals in the three economic planning regions which are likely to have a fundamental bearing on the suitability of siting the airport at Thurleigh.

Regional proposals

13. The South East Economic Planning Council's *A Strategy for the South East** 1967, concluded that the region's long term strategy should be based on the concentration of the population increase in a series of growth corridors radiating from London and separated by distinct country zones.

14. The Strategy proposed major growth corridors to the north-west of London along the M1 (London/Northampton) axis and to the north along the A1 (London/Peterborough) axis separated by a green sector to be preserved as open countryside. The strategy includes the development of Milton Keynes as a new city of 250,000 people, and the modest expansion of Bedford by 30,000 people.

15. These proposals were closely tied to the East Midlands Economic Planning Council's proposals† (published in 1965) for major growth in the Northampton sub-region (Northampton by 100,000 people, Wellingborough by 50,000 people, and other smaller expansions).

16. The East Anglian Economic Planning Council's *East Anglia—A Study*‡ (1968); para. 19; considered the South East Economic Planning Council's proposals for growth sectors insofar as they affect East Anglia and concluded that the growth sector along the A1 to Peterborough should be encouraged.

The M1 counter-magnet

17. The *South East Study*,§ 1964 pin-pointed Northants, Beds, and North Bucks as a suitable location for major urban growth, and a study undertaken by Messrs. Wilson and Womersley corroborated the feasibility of expanding Northampton, and the creation of a new city in North Bucks.

18. The growth of this area is now almost irrevocable and three major growth proposals are in the early stages of implementation. These proposals are outlined in summary form to indicate their nature and their likely impact on the sub-region:

(i) *Northampton*, the largest town in the sub-region, had a 1966 population of 124,000 (workforce 67,000). It has been designated as a new town and expansion proposals suggest that the town's population could increase to 230,000 by 1981, and might, in consequence, well exceed 300,000 by 2001.

(ii) *Wellingborough*, 10 miles east of Northampton, is scheduled for planned expansion under an "overspill" agreement made between the Wellingborough U.D.C. and the G.L.C. in October, 1966. The current proposals allow for an intake of about 35,000 persons and, excluding natural increase of the existing population, anticipate an increase of about 54,000 persons by 1981 to give a total population in excess of 86,000.

(iii) *Milton Keynes*, a new city to be sited at the limit of the 20 mile radius from Thurleigh, has a designated area at present containing a population of 44,300. Consultant's proposals anticipate that a population of 250,000 will be achieved between 1990–2000.

(iv) *Bedford* was examined as a town suitable for expansion by a further 30,000 persons in the *Northampton, Bedford and North Bucks Study*,* 1965. The Study concluded that such an expansion is feasible. This has since been tacitly accepted by the Planning Councils of the East Midlands and South East Regions, although no firm decision has been made.

19. The need to consider the growth of these towns as a single unit acting as a counter-magnet to London has been constantly stressed. *A Strategy for the South East*, in considering the proposed M1 growth sector, states (para 41, p. 11):

> "The first priority will be to build up a large planned conurbation as a counter-magnet at the end of the sector. Already plans for the new city of Milton Keynes are well advanced, and proposals for a major expansion of Northampton in the East Midlands Region are being examined, an expansion scheme for London overspill is going ahead at Wellingborough, and the possibility for a modest expansion at Bedford is being considered.
>
> These four towns, none of which is more than 20 miles from any of the others, are sufficiently close to form an extended city region of the Southampton/Portsmouth type; and their situation halfway between London and Birmingham could create a counter-magnet to both conurbations—these four towns must not coalesce into a single built-up area, but they will need to be functionally independent."

(Para 233, p. 60) continues:

---

* HMSO; 15s.

† *East Midlands Study* (HMSO; 30s.).

‡ HMSO; 40s.

§ HMSO; 15s.

* HMSO; 25s.

Printed image digitised by the University of Southampton Library Digitisation Unit

"It is essential that a comprehensive plan is prepared for this area on a city region basis."

20. The Maud Commission Report on Local Government in England* accepts that a relationship is developing between the proposed Northamptonshire unit and the Bedford and North Bucks unit. The Commission's recommendations include the Northampton and Wellingborough area as part of an enlarged South East Province.

21. The Commission, in deciding how to anticipate the effect of a town not yet built at Milton Keynes, have suggested a local government area with its focus on Bedford, the present main centre, but embracing the new town's designated area, i.e. the Bedford and North Bucks Unit. Para 305, p. 79 of the Commission's Report raises doubts about the unit's long-term suitability, and states that:

"the question whether this area will remain appropriate in the long run must in our view be left for decision at a later date."

the Report continues, on page 283:

"the provincial Council's Strategy (i.e. South East Region) will take account of . . . planned expansions (in Northants) in relation to the new town of Milton Keynes in North Buckinghamshire and to the rapid growth expected in Bedfordshire."

22. In effect, the Commission sees the bulk of the sub-region forming two separate local government units in the short term, the interaction of the units during that time being co-ordinated by the policies of the South East Region's Economic Planning Council; a situation which will prevail until another local government unit becomes more appropriate on account of the growth of population in the area.

23. Whilst concerned with the M1 counter-magnet area it is important to consider the nature of the landscape at the heart of the counter-magnet, particularly as this area will be almost wholly affected by the 40 NNI noise zones of the airport sites.

24. There are two areas of landscape value in the counter-magnet area. One north and north-east of Newport Pagnell and the other (which imposes on the western extremity of the airport site) centring on Felmersham. This latter area is the subject of a special report by the Bedfordshire County Planning Department entitled *Village cluster—Ouse Valley*. Apart from the two areas of landscape value and the Ouse Valley, most of the remaining countryside in the counter-magnet area comprises a characterful, though unspectacular landscape.

25. The report *Expansion of Northampton; Consultant's proposals for designation*, 1966, examined the landscape south-east of Northampton, and remarked that: "The intensive use of most of the land in the area for crops and dairying gives a well-kempt landscape pattern" but s. 63, p. 12, continues: "there are (numerous) areas of woodland, ranging in size from Salcey Wood and Yardley Chase (each of 1,500 acres) to isolated copses. Salcey Forest is the most interesting and attractive woodland—partly because of its access arrangements."

* Cmnd. 4040 (HMSO).

A1 axis and green sector

26. *A Strategy for the South East*, fig. 5, p. 16, indicates three other towns in the vicinity of the airport sites for which expansion agreements under the Town Development Act had been concluded with the G.L.C. The towns, Huntingdon, St. Neots and Sandy, are predominantly historic market towns, the scale of growth in them will be modest and is nowhere likely to equal that at Wellingborough or Northampton.

27. These three towns are at present separate from the counter-magnet towns, both geographically and from a communications point of view. They are part of a linear growth pattern running north-south along the A1 and London–Edinburgh railway and are not, as such, an integral component of the cluster of towns to the west.

28. The two growth areas are separated by a rural strip in part of which the proposed airport site lies. This rural belt is included in the South East Strategy as a green sector dividing the two growth zones. The green sector is intended to serve as a buffer zone between two future urban areas, and as it is one of the narrowest proposed, it assumes greater importance in consequence.

29. Grafham Water, west of Huntingdon, has recently been developed as a centre for yachting and fishing, creating a major new recreational focus in the green sector, and there is a proposal to develop a new inland holiday village adjacent to it at West Perry.

30. The East Anglian Consultative Committee in their Report* published in February this year laid great emphasis on increasing recreational facilities in the area and outline further proposals (s. 6.79):

"Marinas have been built in various locations . . . and more recently gravel extraction followed by planned after-use for water recreation has been . . . negotiated at Little Paxton—a very comprehensive proposal covering 700 acres. Opportunities to extend this type of use will be sought wherever appropriate so as to develop the potentialities of the Great Ouse . . . to the full."

31. In assessing the suitability of Thurleigh as the airport site the effect of the airport on the sub-region's landscape, rural character and recreational potential becomes an important consideration. The airport and its ancillary urbanisation will be voracious consumers of land and an even greater area will be affected by noise; at the same time the already vast population increase expected in the area will be considerably enlarged by the airport development.

32. The principle of urbanisation in the M1–A1 corridor generally conforms with regional growth proposals. The main considerations are, therefore, the scale and type of growth best suited to the sector and the detailed location of urbanisation, and its phasing, bearing in mind the potential congestion and coalescence that might occur and the strain on available resources.

* *A Regional Appraisal* (available from the East Anglian Consultative Committee, Shire Hall, Bury St. Edmunds; 10s.).

Printed image digitised by the University of Southampton Library Digitisation Unit

33. Later on I shall consider the detailed implications of the urbanisation of the sub-region if the airport is sited at Thurleigh, but first it is important to establish as far as possible the scale of population and urbanisation that might be generated by the airport. It is essential to do this as different scales of urbanisation could have different locational requirements.

My belief is that the best location is the one that would allow full advantage to be taken of any economic benefits accruing from the establishment of the airport. To locate development where a restrictive policy is necessary cannot be the best solution. To use the airport as a positive growth catalyst must be preferable so that the full potential of the airport as a growth generator can be exploited and combined with a dynamic, flexible and progressive planning policy.

Employment demand and resultant population

34. In projecting employment generation due to the establishment of the airport I have adopted a method of high and low estimates providing a possible range of total employment and population. I consider this more realistic than attempting to predict a single fairly specific total. The advantages of considering a range are firstly, that it draws attention to the scale of demand that might arise without imposed restrictions, and secondly, it allows areas suitable for urbanisation to be selected, so enabling maximum economic utilisation of the airport to occur.

35. I have examined the likely employment demand and the resultant support population, and have the following observations to make:

Employment

36. *Primary employment:* (directly connected with the airport):

The Commision has given as their "best estimate" a figure of 65,000 for 4-runways. I consider this to be a reasonable assumption, but the Heathrow employment is estimated to rise to 62,000 by 1981 for a two-runway airport and should some activities be transferred from Heathrow to Thurleigh at a later date, total employment could rise to the upper estimates of 85,000.

Range—65,000 to 85,000.

37. *Secondary employment:* (engaged in manufacturing industry or commercial projects attracted specifically by the airport):

(i) *Those forming an integral part of airport services:*

The estimate of 6,500 based on Heathrow experience appears reasonable.

Range—6,500

(However, since the figure of 6,500 is derived as 10 per cent of Primary Employment, it might be more realistic to base this on the volume of passengers served since associated secondary employment is related directly to the number of passengers and their expenditure. It has been estimated that, between 3,500 and 5,000 people were employed at Heathrow to service some 10 million passengers. It could thus be expected that between 35,000 and 50,000 people would be needed to service 100 million passengers, assuming no increase in *per capita* expenditure or higher productivity per person.)

(ii) *Attracted industry and offices:*

This is by far the biggest variable in the employment projection not only in itself but because of its accumulative effect on service employment. American experience indicates a range from 10,000 to 70,000 jobs. I believe that the demand is likely to vary considerably according to the relationship of a particular airport site to regional/national communications and employment centres; although demand can be channelled by central government, regional and local planning policies and the design of transport interchange facilities giving access to the airport. I have set out below a number of points which lead me to the conclusion that it would be wise to allow for a high level of attracted employment:

(a) *International airport:* the airport is to be an international airport and will be in competition with other European airports such as Paris and the Scandinavian Airport at Saltholm opening in the early 1970s. I believe that in the interests of obtaining international economic benefits, certain national or regional policies may have to be modified. There would be enormous disadvantages in restricting international development pressures.

(b) This view is reinforced by the Government's reply to the first report of the S.E.E.P.C. *A Strategy for the South East* in which two significant points are made in relation to the government's control of development—

i/para 19 ii—"The Board of Trade, in administering the I.D.C. controls already regard an applicant's contribution to exports as a major factor to be taken into account".

ii/para 23 iii—"The importance of retaining London's role as an international business centre would be taken into account in considering proposals from overseas organisations seeking to establish headquarters or branches in London".

It is possible, therefore, that international economic considerations would have priority over regional planning considerations in decisions affecting international trading.

(c) *Air freight:* International air freight services, facilities and exports from the United Kingdom have increased rapidly during the past decade. Export shipments by air increased in value from £219 million in 1961 (6 per cent total exports) to £483 million in 1966 (9·6 per cent total exports). In 1963 some 136,000 tons of freight were handled at Heathrow and facilities are planned for one million tons by 1980. It is well known that in terms of values of exports Heathrow is

Printed image digitised by the University of Southampton Library Digitisation Unit

already the third biggest "port" in the country. There is no evidence that this trend will not continue or that it will not influence future industrial and commercial location as sea, rail and road facilities have in the past.

(d) *Proximity of industry:* Studies on the relation of industry in North West London to Heathrow suggest that there is some interlinkage between the airport and industrial location in the area. However, Heathrow is not a good example since there have been restrictive industrial policies in the area since it was established as London's airport —and in some ways it could be taken as an example of what might result from a policy of restricting associated industrial growth. In the United States the development of airport industrial parks has increased rapidly in the last decade and a report published by the Federal Aviation Agency in 1965 reports that there were currently some 200 industrial sites in various stages of development. The report specifically draws attention to the advantages of direct access to the airport, and the ability to provide rapid delivery. The proposed Saltholm international airport has an industrial area within the island site.

(e) Apart from freight considerations there are advantages in industrial location for salesmen and visiting foreign businessmen connected with the industry, particularly in the case of an international organisation. Similarly businesses such as exporting agencies, headquarters of international or export orientated companies, and prestige offices could be attracted by an airport location.

The Commission states that the number of passengers using the airport at full capacity could be over 100 million. No estimate is given of the percentage that might be on business but this will be considerable. It would be reasonable to assume that any commercial/office concern with international interests and without ties elsewhere would be attracted by the vicinity of an airport provided labour resources were available locally. The high male employment in the airport could result in a pool of female employees suitable for supporting major office employment in the vicinity of the airport.

(f) Although no research has been done to enable specific figures to be established, reports referring to the Third London Airport consistently emphasise the advantages of industrial location near the airport and the need to maximise the economic potential of the airport.

(g) *Social balance:* A completely different but possibly equally important reason for allowing and encouraging associated industrial growth is the need to achieve a reasonably balanced social community. A new town developed solely for airport workers would be a "one industry" town, such as the mining and railway towns of the last century. It might suffer from lack of diversification due to the absence of a wide choice of jobs for the workers (or their children in the future) narrow educational and technical training facilities, dangers of redundancy of particular skills at any time and possible major redundancy in the long term. The new development should be based on an employment base that is broad enough to provide a reasonable choice of work and on one that offers scope for further diversification in the future.

The possible range for secondary employment therefore could be between 16,500 and 76,500 employees.

38. The range for primary and secondary employment is therefore:

Primary (airport)	65,000 to 85,000
Secondary (airport) / Secondary (associated)	16,500 to 76,500
Range	*81,500 to 161,500**

* This range appears low by American experience. C-E-I-R Inc., Arlington, Virginia, in a report to the Port of New York Authority, 1961, *Importance of Aviation to the Economy of the Region* (Metropolitan New Jersey-New York) state:

"The primary air transportation industry of the Region provides direct employment in flight, maintenance, clerical, administrative, sales and service activities for nearly 51,000 men and women . . . In addition to the employees in the air transportation group, another 70,000 people throughout the Region—taxi drivers, hotel and restaurant workers, sales clerks and others—are employed because of air passenger and cargo activities . . . Goods and services sold by the Region to customers as a result of air transportation probably created enough employment through the year to keep another 1½ million people busy earning close to $7 billion in wages and salaries." (Estimated passengers in 1959—16 million.)

39. *Service employment:*

The possible range for service employment using a multiplier of 2·5 and allowing for 20 per cent in regional locations is therefore:

(65,000 + 16,500 = 81,500) = 97,000 employees to (85,000 + 76,500 = 161,500) = 193,000 employees.

40. *Total employment range:*

This gives a total local employment range of:

(65,000 + 6,500 + 10,000 + 97,000) = 179,000 to (85,000 + 6,500 + 70,000 + 193,000) = 354,000 employees.

Population and housing requirements

41. Using a multiplier of 3·42 on the employed male population, the total population to be accommodated would be between 373,000 and 742,000.

Printed image digitised by the University of Southampton Library Digitisation Unit

Land requirements

42. Excluding the airport site itself and regional communications, I consider that a town density of 17 persons per acre could be achieved by careful planning. This would require development of between 22,000 and 44,000 acres to house the attracted population (although this might be partially met within existing planned overspill schemes). However, the density of development will depend to some extent on the location of urbanisation and the current policies on density in the surrounding region. For instance, the draft proposals for Milton Keynes propose 8 dwellings/acre. Such policies would tend to reduce the overall town density of any further development for the airport. (Should the overall density be decreased to 12 persons per acre, the upper land requirement would rise to 62,000 acres.)

43. Further land would also be needed to improve major regional routes additional to the M1 and A1 for improved rail communications and ancillary uses such as water storage.

Local urbanisation

44. The sub-region's population can be expected to increase from some 700,000 to approaching 1,500,000 by the end of the century due to natural increase and existing planned overspill schemes. If the possible airport generated growth was assumed to be additional it could result in a population of over 2 million by 2000—a trebling of the present population in 30 years.

45. The scale of urbanisation likely to occur in a short period if an airport is sited in the sub-region will be vast. Such growth will have two major effects:

(i) On the size and form of the M1 counter-magnet with its attendant implications for regional strategy and for industrial location policy, and

(ii) In the problems it will create in the sub-region and further afield, particularly for resources, recreation and communications.

46. An understanding of the problems inherent in realising the scale of development envisaged in the expansion of towns in the Northampton, Peterborough and Milton Keynes area is prerequisite to the assessment of the additional impact which the airport could have on the sub-region and will put the implications of siting the airport at Thurleigh in perspective. Resources provide an elementary control over the rate at which urbanisation can occur.

Resources

47. The East Midlands Economic Planning Council looked at the implications of growth in Northamptonshire in the *East Midlands Study** (1966) and remarked in s. 419, p. 89:

"The growth of the towns which have been identified for planned expansion will be accompanied by growth in the other communities, due both to natural increase and to the private migration which the major developments attract on a more dispersed basis. This expansion seems likely to be as much as any area could absorb within a limited time; the demand it will make on the natural and social resources of the sub-region will be very considerable."

48. The conclusions reached by the Council have a wider impact and relevance when considered together with growth proposals for the Counties outside Northamptonshire and, more pertinently, with the growth that would follow from an airport located in the sub-region.

49. To the east of the airport site the East Anglian Region is expecting to grow faster proportionately than any other region by 1981, the increase will be "large in absolute terms and is proportionately by far the largest to be absorbed by any region" (s. 18 of *East Anglia—A Study*, 1968). The section continues "This very large increase in population is to be imposed on a region which is, in a number of respects, not well prepared to receive it".

50. The East Midlands Study s. 414 in referring to the overspill schemes in Northants points out that:

"In these operations it is important to keep housing development in step with the demand for labour arising from new and existing industry. It is important that the influx of new industry does not get too far ahead of the population movement, because all these reception places are in areas of labour shortage and there is always a danger of creating a local labour situation of serious difficulty."

51. As both the Midlands and South East are areas of labour shortage an airport in the sub-region could be expected to increase the short-term employment problems of the Northampton, Beds and North Bucks area. Additional labour problems might arise with the concurrent introduction of new employment at the airport and in the overspill expansion schemes and furthermore, the airport, by attracting labour from other regions, could make it difficult to fulfil the primary purpose of the overspill schemes of relieving housing problems in the London area.

52. The suggested site for the airport makes it impossible to exclude most of the new town and town expansion schemes from consideration as an integral part of the overall airport generated growth by contributing to some accommodation and employment needs arising from the airport.

53. Under existing conditions Milton Keynes and Northampton are probably too remote from the airport to make a substantial contribution to the "airport employed" population, though they could well provide some associated industrial employment. Other towns about 20 miles from the airport (Corby, Peterborough, the Letchworth-Hitchin area, and possibly Cambridge) might be expected to provide additional industrial employment geared to the airport's requirements. However, higher standards of living leading to greater personal mobility, combined with the enormous modification that will occur in the structure of communications in the sub-region with the introduction of the airport could radically alter established commuting patterns and so make these

* HMSO; 30s.

Printed image digitised by the University of Southampton Library Digitisation Unit

"remote" towns more attractive to the airport orientated population.

54. The nearness of Cambridge to an area of potentially rapid growth is problematical, for the City and County Councils have been struggling for some 20 years to contain and curb the growth of the City. Because much of Cambridge's manufacturing industry is based on electronics and instruments, the city's proximity to Thurleigh could initiate renewed industrial growth pressure, a situation which is undesirable, and incompatible with established planning policies.

55. Any use of existing expansion proposals for airport associated urbanisation, without enlargement to allow for airport workers, would adversely affect the planned overspill programme in a number of ways:

(i) It should not be assumed that the planned overspill population would be innately suited to the new airport's requirements, i.e. the skills of the migrants will not necessarily conform to the specific labour requirements arising from the airport.

(ii) The airport will have a great natural attraction and much of the migration to the sub-region will be voluntary. Such voluntary migration would not be confined to the London area but could extend all over England, especially as wages in the vicinity of the airport can be expected to be relatively high.

(iii) If widespread voluntary migration ever asserted a priority over controlled overspill the intake population and industry of the expanding towns could not be selected to relieve London's housing problems to the same extent as is intended by present policies.

(iv) The growth rate of overspill expansion schemes in the sub-region might have to be reduced. Firstly, because of the need to divert the region's scarce resources to the airport and to its associated development from the expansion schemes, thus jeopardising their completion. And secondly, because of the need to reserve space for industry attracted to the airport at a later date, both close to the airport and in the nearby towns.

(v) The G.L.C.'s overspill programme of expanded towns (Town Development Act 1952) in the sub-region amounts to some 19,000 dwellings (see Appendix B). If it became impossible to proceed with the schemes agreed at Huntingdon, St. Neots, Sandy, Wellingborough, Bletchley and Letchworth because of resource demands arising from the airport the number of overspill houses planned in the South East (under T.D.A. agreements) would be reduced by over 25 per cent.

(vi) The abandonment of new town proposals in recent years has meant that the only new towns designated in the South East following the publication of the *South East Study* in 1964, Milton Keynes, Northampton and Peterborough all lie within about 25 miles of the airport sites. At least 70,000 dwellings for overspill population are allowed for in these towns. The curtailment of any or all of these proposals, coupled with the G.L.C.'s overspill proposals, would present a very serious threat to redevelopment and housing programmes in London.

56. It appears that the sub-region will be severely taxed to meet its present expansion commitments and, unless there is some (even widespread) deferment of the planned overspill schemes, it is likely that the airport growth in the sub-region would be slowed down considerably. If the deadlines set by the British Airports Authority are to be met this clearly cannot be contemplated and would be quite intolerable. Retarded urban growth near the airport would damage the airport's catalytic attraction to foreign operators and to British industrialists and it would generate employment, labour, housing, social and communication problems in the sub-region.

Scale of urbanisation

57. A major dilemma arises in the selection of a suitable inland site for an airport because ideally the airport (and its associated noise zone) should be in a sparsely populated area whereas its associated urbanisation should be located in a growth area.

58. As yet industrial and residential growth has not been divorced successfully from proximity to airports, and in spite of prevailing planning controls it seems likely that overriding economic considerations will ultimately ensure that greater growth will occur near to the new airport than is presently contemplated.

59. Considerable growth can be expected to take place in the rural areas around the counter-magnet without the added stimulus of the airport. If the sub-region's growth is further accelerated by the airport catalyst a large conurbation may eventually encircle the airport site. Plan NFU/JH3* shows how this conurbation could emerge if the distribution of "close support" population suggested by the Bedfordshire County Council is added to the planned expansion schemes and if some increase is allowed for in other major towns.

60. The counter-magnet cluster with overspill and airport induced migration would probably extend for the length of the noise zone and to the north and south of the airport sites. This trend would serve to emphasise both the counter-magnet and the A1 axis from Baldock to Peterborough. Other towns with affinity to the area are Kettering, Corby and Cambridge. The nature of the Fenland east of Huntingdon might preclude much development towards Cambridge, but Kettering and Corby are likely to become increasingly related to the counter-magnet.

61. All the towns in the sub-region can be presumed to assume greater attraction to migrants as

* p. 1932.

Printed image digitised by the University of Southampton Library Digitisation Unit

they enlarge and prosper, so that from 2000 onwards population inflow into the sub-region could be expected to cause the developed area to extend even more rapidly.

62. It is suggested then that with the airport catalyst in the sub-region it might not be so many years after the turn of the century before most of the dark shaded area on plan JH3 became urbanised or suburbanised.

63. Until the desirability and need for such a conurbation has been clearly argued and proved it might be more appropriate in this context to consider means of relieving pressure for continued growth in the sub-region instead of seeking to justify a way of providing a stimulus to its growth. Location of the airport away from the sub-region would help to divert excessive pressure from the London-North and North-Western Sectors allowing them to develop at a more tolerable rate than is likely with the airport constantly attracting population and employment to the sub-region. Precipitate development is more likely to jeopardise planning aims and policies than it is to safeguard them. For this reason alone the airport could be more damaging than beneficial if it is sited in the sub-region.

64. The possibility of establishing a major conurbation in the sub-region must be examined because a new conurbation would greatly modify the future regional and national population balance. A number of factors point to the unsuitability of developing a major conurbation in this part of England:

65. (i) It is improbable that the vast and rapid development that might be generated by the overspill schemes and airport would be appropriate or desirable in the South Midlands. Government industrial policy is geared to the attraction of industry to Development Areas, but a new Midland growth point sustaining a buoyant economy would be bound to undermine Development Area incentives. The advantages of an airport-orientated location would, for many industrialists, far outweigh subsidies and incentives to locate elsewhere.

66. (ii) The most important motorway and trunk roads traversing the sub-region run north-south and converge steadily southwards towards London. At this stage it is very difficult to anticipate what modal split will occur at an airport so far from London, but proximity to motorways and the airport sites' South Midland location makes private transport an increasingly likely choice.

67. Not only will the airport and its associated urban developments increase the traffic flows on the north-south routes but all urban areas will be increasing their traffic generation and attraction at the same time. This is going to throw more and more traffic on to the A5, M1 and A1 roads and it is inevitable that these routes will become congested and require further duplication. Routing new roads in this sector will be difficult and south of Stevenage the problems are likely to be enormous. The area is at present poorly served by main roads eastwards and westwards, but new Strategy proposals exist for two cross-country roads to connect the Midlands to Harwich and Felixstowe.

68. (iii) Increased affluence, leisure time and steady population growth have led to an unprecedented and unforeseen pressure on the countryside for recreation. Most of the existing conurbations have a wide range of recreation areas within a short distance of their centres, including national parks and areas of accessible countryside. A conurbation in the sub-region would not enjoy these advantages because the countryside is, for the most part, gently undulating good agricultural land with only limited scope for exploitation for recreational purposes.

69. The nearest accessible stretches of coastline are the Wash, over 50 miles from Bedfordshire and the Essex and Suffolk coasts, over 60 miles away.

70. Accessibility to The Wash, the North Norfolk coast and the Essex and Suffolk coasts is poor at present, though Strategy routes would ultimately improve this. This stretch of coastline, embracing the sector from north to south-east of the airport sites, is the only area available to the "conurbation". In view of the area's popularity and present usage, coupled with the rural and underdeveloped network of roads through East Anglia, access to the coast is likely to be limited to a very small proportion of potential users. If a major conurbation was encouraged to develop in the Northants., Beds., and North Bucks. area in the next 30 years an enormous strain would be placed on the East Anglian road network, which would have to be improved. Improvement on the scale needed could seriously undermine the planning and financial priorities of the Norfolk, Suffolk and Essex County Councils.

71. (iv) It would cause considerable loss and severance to agricultural land in an area of intensively farmed, high quality land.

Location of airport urbanisation

72. Assuming that the planned overspill schemes are reserved for overspill and associated airport industry (which may in itself be inadequate) there may be a need to house some 300,000 to 400,000 "close support" population within about 15 miles of the airport in the early stages of the airport build-up. This population must inevitably be sited north and south of the airport, owing to the noise contours. In principle, therefore, I agree with the general lines suggested by the County Council for distributing this population (and have relied on the Council's tentative proposals in preparing plan NFU/JH3), but I consider that it should be concentrated towards the A1 as much as possible to divert growth pressure away from the M1.

73. The "close support" population would almost certainly initiate a continuous linear development between the M1 and the A1 straddling the noise zone and would thereby considerably extend the circumference of the counter-magnet.

74. Thus, an airport developed at either of the suggested sites would:

(i) lead to the destruction of the green sector dividing the two growth axes.

Printed image digitised by the University of Southampton Library Digitisation Unit

(ii) by reason of its noise zone, destroy any possibility of using a large area of countryside as a focus for a city region,

(iii) effectively bisect the counter-magnet, and largely precondition the evolution of the urban form of the counter-magnet and A1 growth axis.

75. Bisection of the counter-magnet might result, for example, in the evolution of two independent urban areas physically divorced from each other and conceivably orientated socially and commercially in opposite directions, the northern part to the Midlands and the Southern part towards London. Such a development would create two urban nodes and thereby reduce the effective operation of the sub-region as a counter-magnet to the London and Midland conurbations. Alternatively, if the urbanisation consolidated around the airport, it would lead towards the re-creation of the situation now prevailing at Heathrow.

76. These hypotheses highlight the major problem of siting the airport in this major growth area, i.e. can what happens when the sub-region becomes increasingly attractive be restrained within manageable proportions and channelled in the required directions?

77. The present "open" urban form of the sub-regional settlement pattern offers many possibilities for future development, possibilities that would normally be regulated and manipulated by planning controls. An airport at the heart of the sub-region would largely nullify this inherent flexibility and introduce a host of unknown quantities into the "growth equation". The M1 counter-magnet (if indeed it is ultimately to serve that function) is one area in which the smallest number of unknown quantities should be allowed to influence development, for the counter-magnet could prove of crucial strategic value to Birmingham, the East Midlands and London, and its growth, therefore, must needs be controlled at all times.

78. The siting of the airport in a fast developing conglomeration would make it difficult, if not impossible, to assert the vital control over growth which is warranted and to predict with any confidence the effect the airport will have on the long-term growth requirements of the sub-region.

79. In my opinion this serious doubt necessitates a great deal more consideration being given to the national and regional planning implications of the airport at Thurleigh. The implications, which I have broadly indicated in this evidence, are of sufficient magnitude to warrant careful examination of the long-term effects that an airport in the sub-region will have on the planning of the Midlands and South East Regions.

Conclusions

80. The establishment of the airport in the centre of an area of existing and expanding towns could eventually lead to the growth of a major conurbation in this part of England, which might have serious disadvantages for long-term national planning objectives.

81. In the short-term the need to give priority to airport development would almost inevitably lead to the diversion of resources from the planned overspill schemes in the area and consequently to a cut-back in the overspill programme. On the other hand, if the resources were found for both airport and overspill programmes it is probable that the accumulation of migrant population and employment over such a short time period would create a growth cycle of such widespread and unpredictable influence that the controlled expansion of the counter-magnet as a growth node might prove to be impossible either to restrain or to contain within a planned framework.

82. The bisection of the counter-magnet and airport urbanisation by the noise zone would reduce flexibility in the future development of the area and could prejudice the evolution of a satisfactory environment. The airport and associated development would spoliate miles of good agricultural land and, in so doing, would devastate an invaluable natural environment. Furthermore, it is very doubtful whether demands arising for recreation both in the sub-region and on the coast could ever be met adequately.

83. For these reasons, I have serious reservations as to the suitability of Thurleigh as the site for the establishment of the third London airport.

APPENDIX A

Thurleigh: workplace analysis

Local authority area	(1) *No.*	(2) *No.*	(3) %	(4) %	(5) %	(6) *No.*
NORTHANTS						
1 Northampton RD	20,270	8,860	71·0	40	–	6,450
2 Northampton CB	124,010	60,460	111·8	91	*	67,180
3 Brixworth RD	16,110	7,260	59·3	46	–	4,520
4 Wellingborough RD	15,040	7,180	77·4	54	–	5,620
5 Wellingborough UD	31,860	15,480	96·7	75	*	15,000
6 Rushden UD	17,820	8,880	105·3	73	–	9,330
7 Higham Ferrers MB	4,080	2,090	99·5	42	–	2,080
8 Irthlingborough UD	5,270	2,730	94·7	60	–	2,590
9 Burton Latimer UD	4,330	2,190	139·5	64	–	3,000
10 Kettering RD	11,870	5,690	55·3	35	–	3,280
11 Kettering MB	40,610	19,370	100·0	77	*	19,370
12 Rothwell UD	4,820	2,210	60·8	48	–	1,390
13 Raunds UD	4,830	2,530	83·6	68	–	2,130
14 Oundle & Thrapston RD	17,340	7,980	64·9	53	–	5.300
15 Oundle UD	2,450	1,250	105·1	71	–	1,310

[*continued on next page*

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX A—*continued*

	Local authority area	(1) *No.*	(2) *No.*	(3) %	(4) %	(5) %	(6) *No.*
	HUNTS						
16	Norman Cross RD	9,640	4,370	54·3	39	–	2,470
17	Ramsey UD	5,290	2,380	86·4	69	–	2,080
18	Huntingdon RD	13,420	6,170	119·3	76	–	7,300
19	St. Ives RD	15,350	6,790	78·1	58	1	5,370
20	St. Ives MB	4,980	2,400	111·8	53	–	2,660
21	Huntingdon & Godmanchester MB	14,330	6,180	115·8	77	–	7,120
22	St. Neots RD	7,610	3,460	76·8	56	–	2,700
23	St. Neots UD	10,110	4,820	88·5	69	–	4,330
	CAMBS.						
24	Chesterton RD	48,750	21,630	65·8	50	–	14,630
	BEDS.						
25	Biggleswade RD	30,440	14,150	70·6	47	1	10,140
26	Biggleswade UD	8,740	4,080	121·6	71	–	4,920
27	Sandy UD	4,840	2,190	88·9	62	–	1,960
28	Bedford RD	34,250	15,590	88·6	45	1	13,910
29	Bedford MB	67,390	32,090	117·4	76	1	37,400
30	Kempston UD	11,190	5,580	53·4	25	–	3,150
31	Ampthill RD	29,310	13,670	60·3	45	2	8,530
32	Ampthill UD	4,540	2,010	133·2	42	3	2,640
	BUCKS.						
33	Newport Pagnell RD	14,170	6,480	66·3	45	1	4,420
34	Newport Pagnell UD	5,120	2,680	120·7	66	–	3,210
35	Bletchley UD	23,110	10,500	108·4	77	2	11,350

Note:
* =Less than 0·5 per cent
(1)=Population Sample Census 1966.
(2)=Number of residents in employment.
(3)=Employment in L.A. area as per cent of residents of area in employment.
(4)=Per cent of residents in employment working within local authority area.
(5)=Per cent of residents in employment working within G.L.C. area.
(6)=Total employment in local authority area (workforce).

APPENDIX B

G.L.C. Overspill commitment

G.L.C. overspill agreements for expanding towns in the South-East under the Town Development Act 1952. Statistics provided by the G.L.C. (New and Expanding Towns Committee) on 30 July 1969.

Towns in sub-region

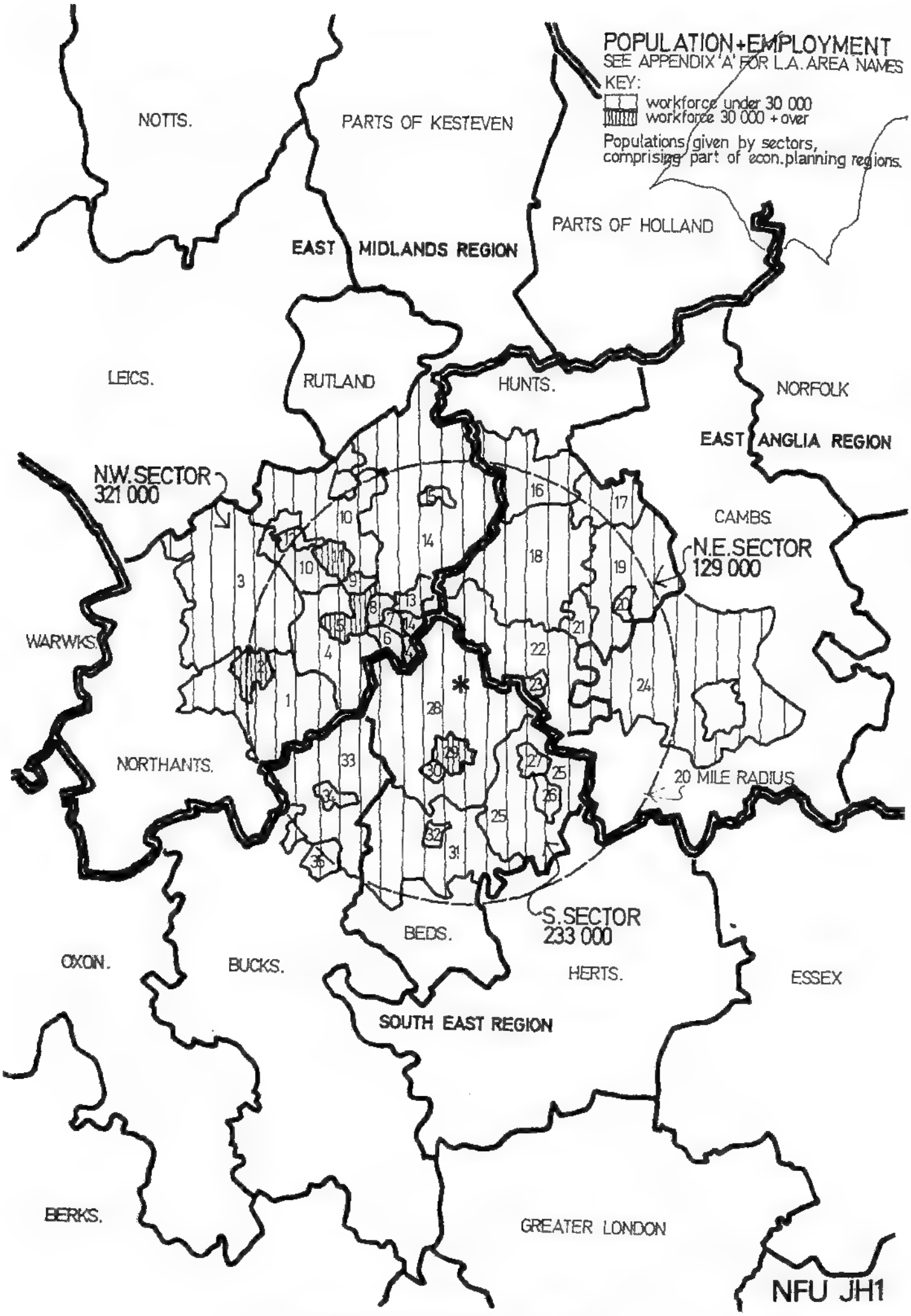
County	*Town*	*No. of dwellings to be built*	*Total of dwellings*
Bedfordshire	Sandy	700	
Buckinghamshire	Bletchley	2,000	
Hertfordshire	Letchworth	1,750	
Huntingdonshire	Huntingdon	2,600	
Huntingdonshire	St. Neots	2,000	
Northamptonshire	Wellingborough	10,000	19,050

Other towns in the South-East

Bedfordshire	Luton RD	2,500	
Buckinghamshire	Aylesbury	3,000	
Essex	Braintree	1,200	
Essex	Witham	3,000	
Hampshire	Andover	6,000	
Hampshire	Basingstoke	11,500	
Kent	Ashford	4,250	
Norfolk	King's Lynn	3,500	
Norfolk	Thetford	3,000	
Oxfordshire	Banbury	2,000	
Suffolk	Bury St. Edmunds	3,000	
Suffolk	Haverhill	4,500	
Suffolk	Mildenhall	2,000	
Suffolk	Sudbury	2,250	
Sussex	Hastings	3,500	55,200
	Total of dwellings		74,250

Number of dwellings proposed in expanding towns in the sub-region as a proportion of the total number of overspill dwellings in all expanding towns in the South East=25·66 per cent.

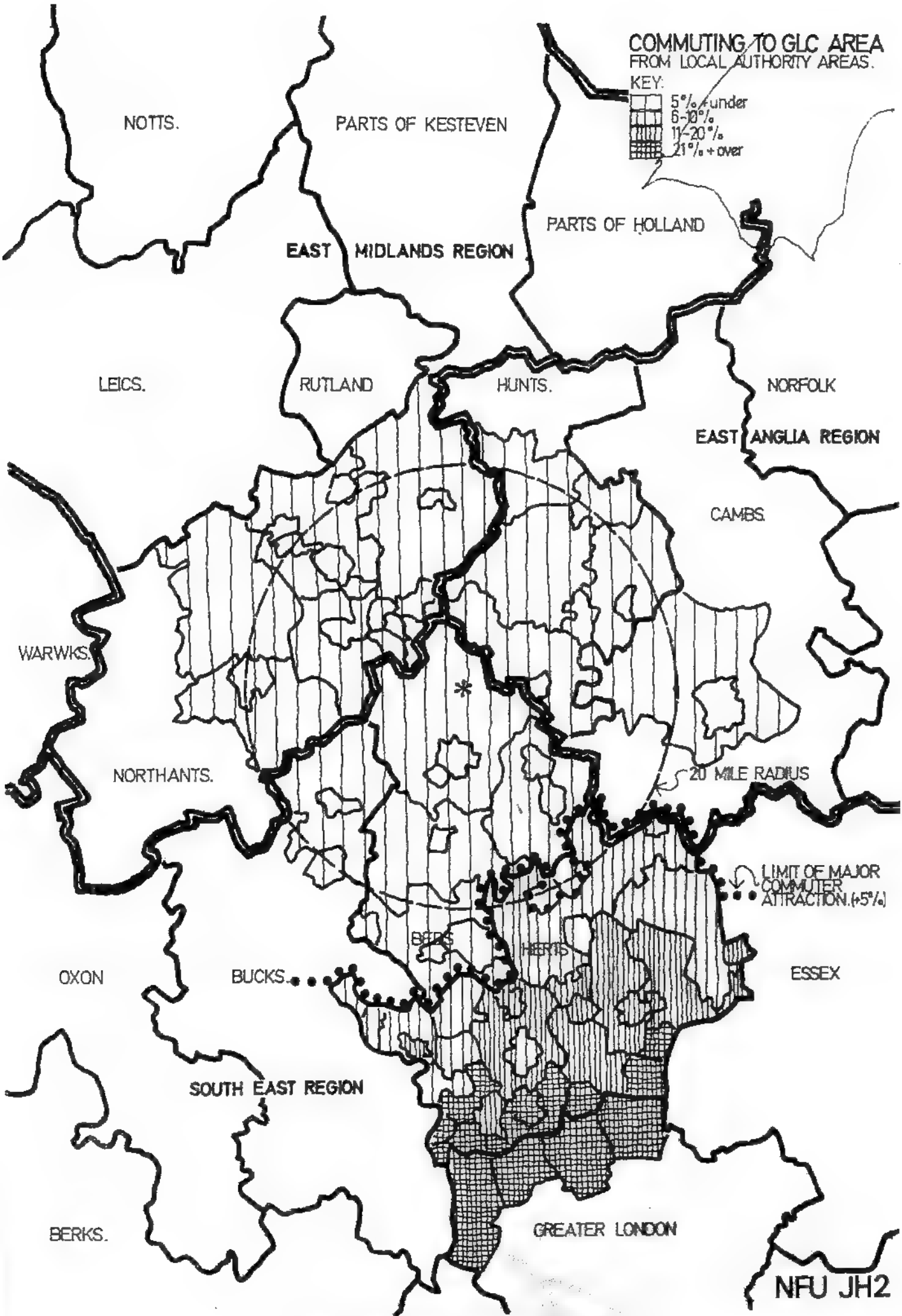
Printed image digitised by the University of Southampton Library Digitisation Unit



NFU JH1 Population and employment.
(Mr. J. E. Y. Hawkes, National Farmers' Union.)

1930

Printed image digitised by the University of Southampton Library Digitisation Unit

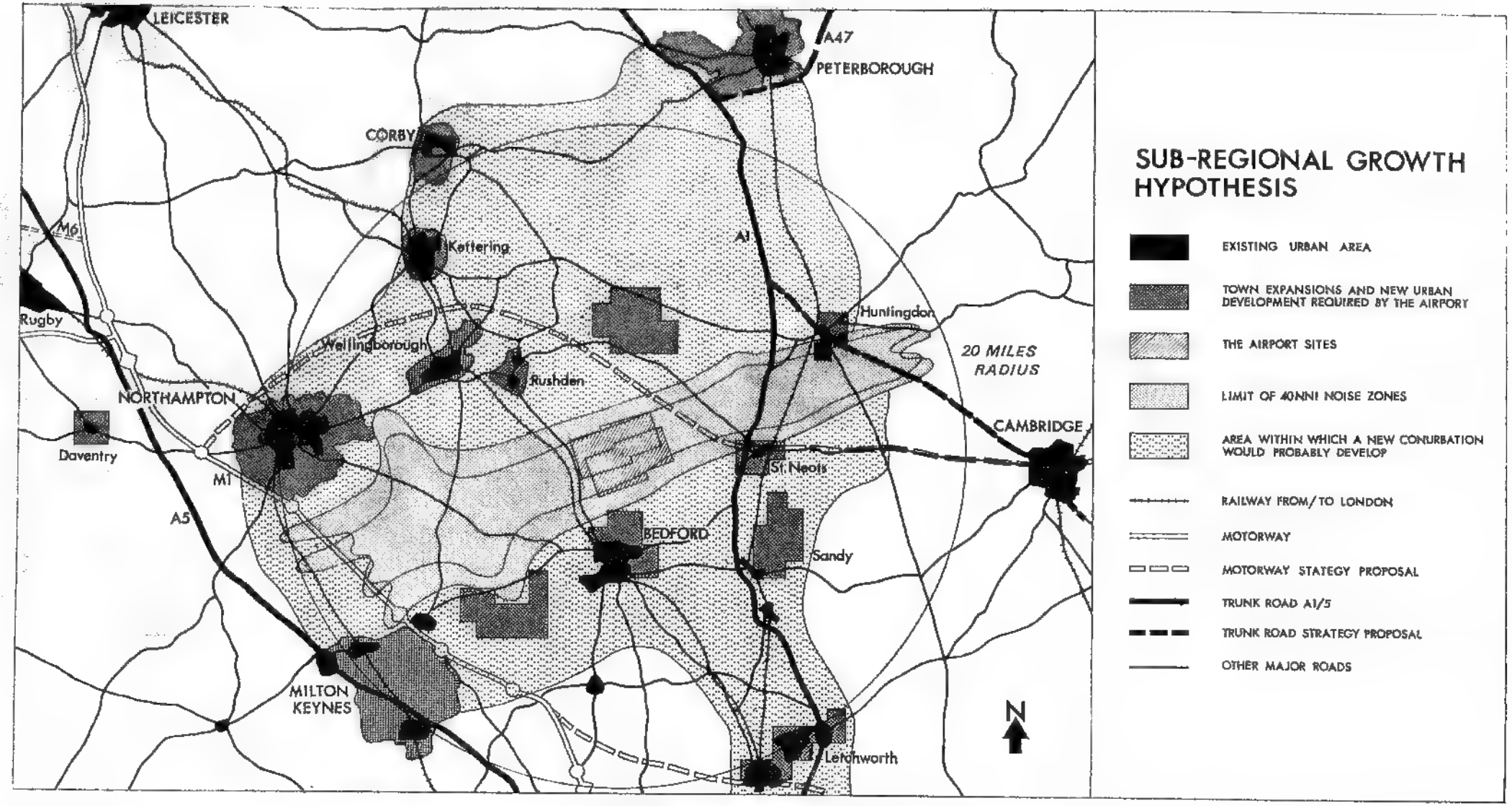


NFU JH2 Commuting to the GLC area.
(Mr. J. E. Y. Hawkes, National Farmers' Union.)

1931

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



NFU JH3 Sub-regional growth hypothesis.
(Mr. J. E. Y. Hawkes, National Farmers' Union.)

Evidence of the National Farmers' Union

Agricultural evidence

SUBMITTED BY MR. A. C. GILES

Qualifications

1. I graduated from The Queen's University of Belfast in 1953, with the degree of B.Sc.(Econ.), in the upper division of second class honours. After six years in the Department of Agricultural Economics at the University of Bristol as an Assistant Agricultural Economist, and subsequently as an Agricultural Economist, I was appointed as lecturer in agricultural economics at the University of Reading, and was promoted in 1968 to senior lecturer. Whilst at Reading I have had (and still have) special responsibility as "Farm Management Liaison Officer" to the National Agricultural Advisory Service, S.E. Region and have been responsible for the preparation of an annual handbook of local "Farm Business Data"* for use by advisers. For four years I have been in charge of all official departmental extra-mural work, including financial farm surveys undertaken, by contract, for the M.A.F.F.

2. My personal research has been in the general field of "farm business management," and, more recently, "the interaction of urban development and agriculture". I am the author of 40 separate publications including, recently, a major report on the agriculture of the area designated for the new city of Milton Keynes.† I am currently external examiner in farm business management at three Universities and two Agricultural Colleges. I am a member of the Agricultural Economics Society, the International Association of Agricultural Economists and Farm Management Association.

3. In April 1969, I was invited by the National Farmers' Union to prepare, in respect to the Site A at Thurleigh (Beds.), shortlisted by the Roskill Commission as a possible site for a third London Airport, "a considered report on the merits of the land required for the airport itself, and to comment on the effect were the ancillary development to take place to the degree suggested by planners". This I agreed to do on condition that I could prepare and submit my evidence on an entirely independent basis. Subsequently I was asked to consider also the agricultural merits of Thurleigh Site B.

Submission

4. My submission is presented in three main sections:

Part 1. A detailed description and assessment of the actual proposed sites.

Part 2. Some assessment of the agricultural implications of possible ancillary development.

Part 3. Summary and conclusions.

This submission is based, in particular on:

(a) A specially undertaken three-day programme of field-work involving visits to virtually all of the farms with land in Site A, carried out with the assistance of a colleague (Mr. D. J. Ansell, B.Sc. Agr. Econ.).

(b) A subsequent visit to the area to appraise the agricultural implications of a move from Site A to Site B.

(c) A series of conversations with agriculturists (other than farmers) working professionally in the area, e.g. representatives of the National Agricultural Advisory Service, the Agricultural Land Service, the Country Landowners' Association, the National Farmers' Union.

(d) A study of published and unpublished data, e.g. land classification, parish statistics, Farm Management Survey results (Cambridge, Nottingham and Reading Universities).

(e) Experience gained in the course of previous farm survey and advisory work, especially as co-ordinator of my Department's recent work at nearby Milton Keynes.

Part 1—The Actual Sites

Physical description

Site A

5. The Roskill Commission's map of shortlisted sites (CTAL 5)* suggests a rectangular site of some 7,500 acres ("but the possibility of a larger land take . . . cannot be excluded"), with a WSW/ENE alignment, with its most southern point some five miles north of the centre of Bedford. At the western end, this site is bordered by the River Ouse, the Bedford-Wellingborough rail link and the A6 road which it, in fact, crosses. To the east of the site lies the A45 road linking St. Neots (and Cambridge) with Wellingborough (and the Midlands). This site embraces parts of the parishes of Thurleigh, Bletsoe, Bolnhurst and Keysoe, Riseley, and Sharnbrook. Fairly large segments of this site are contained by the 250 ft. contour, with a noticeable falling away in the north-eastern and south-western corners, where tributaries of the Kym and the Ouse emerge. Approximately in the centre of the site, exists the Royal Aircraft Establishment, Bedford, occupying (approximately) 2,500 acres.

Site B

6. According to Press Notice (Ref. 3A) issued on

* e.g. *Farm Business Data* 1969.

† *Milton Keynes 1967: An Agricultural Inventory.* Both published by the University of Reading. (Dept. of Agr. Econ.).

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

behalf of the Commission on the Third London Airport, Site B would involve a shifting of the runways some 2,500 yards to the south east of Site A.

In the words of the Commission "the alteration is not fundamental in character", and agriculturally speaking I am personally satisfied that this is the case. Except for the fact that farms tend to be slightly smaller in size towards the south of the two sites than they are towards the north—and therefore a few more individual farmers would be affected by the choice of Site B as opposed to Site A—the two sites (with a large area of overlap) are virtually identical in terms of the characteristics of the land and its present agricultural use. Even the inclusion, in Site B, of some part of the Tunnel Section of the R.A.E. would be compensated for by the release of a roughly comparable part of the R.A.E. contained in Site A.*

For these reasons the remainder of this evidence relates to the agriculture and the farming community likely to be affected by an airport site of the stipulated size located somewhere in this particular vicinity. Indeed, the uncertainty of the precise location of any site at this stage would, in any case, call for this type of treatment. This point has been emphasised in para. 12 of this proof (as it was in para. 12 of my proof of evidence for the Cublington enquiry).

7. The whole area is dominantly one of Boulder clays—especially on the higher ground, with outcrops of Oxford clays in the intruding valleys. In the valleys on the eastern edge of the sites, directly associated with the River Ouse, there are also smaller pockets of gravels, sands and some limestone. Sixty-three per cent of the farmers interviewed in this area described their farms as being composed of heavy or fairly heavy clays, and a further 26 per cent described them as heavy or medium loams. Annual rainfall is the 22″–23″ range and if the land is naturally heavy, the combination of extensive artificial drainage and the accumulated "know-how" of the local farmers, especially in their use of machinery, make this an intensively cultivated arable area. In particular there is a strongly established tradition of brussels sprouts and potato growing.

8. At the time of submitting this evidence, the Provisional Land Classification map, in the new series being prepared by the Agricultural Land Service, has not been published. The field work for the Thurleigh sites had, however, been completed and consultation with those responsible for this work disclosed that most of the area will be classified as Grade II on the Ministry's five point scale. In general, this grade is identifiable with the central area of boulder clays whilst the relatively small pockets of Grade III land occur in the valleys fringing the sites.

Grading of land, in this context, reflects the agricultural potential and flexibility of the land. It takes into account questions of climate, relief and soil characteristics.

Grade II land has "some minor limitations" which exclude it from Grade I land which has "very minor or no physical limitation" and which, it is estimated, occupies a mere 5 per cent of the country's farmable land. Grade II land, therefore, accounting for an estimated 25 per cent of the country's total, comprises the major part of all land, which, on this purely physical classification, is judged superior to the very large and variable band of Grade III land, and, of course, to the two grades below that. The lower three grades together account for 70 per cent of all farm land.

Grade II land is in fact described as having "some minor limitations . . . (which) . . . may hinder cultivations or harvesting of crops (and) lead to lower yields or make the land less flexible than that in Grade I. However, a wide range of agricultural and horticultural crops can usually be grown, though there may be restrictions in the range of horticultural crops and arable root crops on some types of land in this grade".*

9. Inevitably, in any system of land classification there can be no very clear-cut distinctions between one grade and the next at the margin, at which point there must be some more or less arbitrary judgment made. It is necessary to note, therefore, that professional opinion responsible for grading in this area places its Grade II land "in the middle of that grade rather than towards its lowest limits". At the same time the Grade III land which exists, does so in the "top half" of that particular grade.

Certainly the farmers' own assessment of their land reflected a high degree of uniformity, and, judged by the variety of crops grown, a high degree of flexibility. Advisory officers, with an intimate knowledge of the locality assess average wheat yields (depending on the season) at between 33 and 38 cwts. per acre, average barley yields at between 30 and 34 cwts. per acre and average potato yields at about 11 tons per acre. Precise statements on such matters are notoriously difficult to make, but these suggested levels were, in the main, confirmed by discussion with farmers. Local opinion estimates the value of agricultural land at "at least" £300 per acre. The simple average of rents on tenanted and part-tenanted farms visited by Mr. Ansell and me was £5 8s. per acre.

Farming structure and pattern

10. Paragraphs 5–9 (of Part I) have been concerned with a physical description of the area embracing Sites A and B. As in the ALS system of Land Classification, no account has been taken in this description of such human elements as the imposed farming structure, the actual composition of the farm systems and the ability and attitudes of the farmers involved. It is upon these matters, as well as upon the characteristics of the land itself, that the agricultural potential of any area depends, and it is to these matters that this and the next two sections turn.

11. Evidence produced here is based on a com-

* The precise acreages likely to be involved at each of the RAE sites have for security reasons, not been available to me.

* Explanatory Note to Agricultural Land Classification Map of England and Wales. MAFF (ALS) February 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

prehensive programme of farm visiting carried out in Site A area during June 1969, and a subsequent visit to Site B in July. In the event, numerous farms that would be partly affected by Site A would be completely (or more completely) affected by Site B. Of an original list of 37 holdings likely to suffer some degree of land loss to Site A, five were not visited on account of the very small size of their holdings; one farmer refused to discuss the matter; and four could not be contacted. Questionnaires dealing with the physical details of the farms, with investment and employment levels, with the degree of farmers' dependence on farming and with their future intentions and present attitudes, were, therefore, completed on 27 farms. These 27 had an aggregate of 6,465½ acres, of which the farmers believed some 4,800 (74 per cent) would be directly required by the Site A.

12. *Thus, the relevance of the following data lies in the fact that it relates to an area of 6,465 acres located (together with the R.A.E. acreage) almost precisely where the two airport sites are proposed.*

Converted to an acreage basis, therefore, financial data resulting from this survey can confidently be related to an actual area in this vicinity (i.e. Site A, Site B or any other site) which in the event might be lost to farming.

Farm size

13. Of the 27 farms visited, between ¼ and ⅓ were under 100 acres; nearly another quarter were between 100 and 200 acres, with nearly a half (48·1 per cent) over 200 acres. The average size of farms visited was 238. (The average size of the few farms where the farmer could not or would not be contacted was 200 acres.) The smaller farms do tend to be closer to the villages and to this extent, as already stated, Site B would include a few more farmers than would Site A. The actual size distribution of farms visited was as follow:

Acres	*No.*	%
0—9	—	—
10—49	1	3·7
50—99	7	26·0
100—199	6	22·2
200—299	4	14·8
300—399	2	7·4
400—499	4	14·8
500—599	2	7·4
600—699	—	—
700+	1*	3·7
TOTAL ...	27	100·0

Pattern of tenure

14. A total of 70·4 per cent of all farmers interviewed own all or some portion of their land: 40·8 per cent owning all of their land, and 29·6 per cent part owning and part renting. Twenty-nine per cent (eight farmers) rent their land entirely, with five of them below 200 acres. Like all tenant farmers in circumstances which threaten their immediate livelihood, they are especially concerned about rent-based compensation related to an arbitrary and, in their view, inadequate span of years.

The pattern of farming

15. The Thurleigh locality is dominantly an arable one. Grass, in one form or another accounts for only 15 per cent of the farmable area. On the 27 farms visited, only two dairy herds were found and only one sheep enterprise. Beef, in one form or another—usually on a small scale—occurred on half of the farms and it is no doubt a pre-occupation with arable farming that helps to explain a slightly low stocking density in the area.

Seventy-two per cent of the arable acreage is devoted to cereal growing with the barley acreage almost twice that of wheat. Both of these enterprises —and the major grazing enterprise in the area—feature in the Government's latest programme for selective expansion.*

After the cereals, potatoes (502 acres), sprouts (340), beans (339), and peas (249) are the main cash crops followed by a wide variety of small acreages of vegetables including broad and dwarf beans, onions, marrows, swedes, lettuce and cabbages. A detailed statement of the cropping on the surveyed 6,465 acres is shown on page 7.

Apart from one very large sow unit, with 620 sows, "factory" livestock are not important in the area. A further 122 sows are spread over six farms and three fairly small rearing units were recorded. By present-day commercial standards there is little or no poultry in the area.

Employment and cottages

16. Manual work is provided by a mixture of hired farm workers (including a high quota of farmers' sons), by the manual labour of farmers themselves (some 90 per cent are full-time farmers) and by a traditional supply of local casual workers to assist with vegetable production. Farmers who could be left operating on the outskirts of an airport site fear that, in this event, this essential supply of casual labour would dry up. At present, one regular worker is hired for each 127 acres, and without casual labour this ratio could certainly not be maintained with the established system of farming.

Thirty-four workers' cottages are distributed between 15 farms.

Pattern and rate of investment

17. By the application of standard capital values to the cropping and stocking in the area, and the use of written-down machinery valuations obtained during farm visiting,† it is estimated that the level of tenants' capital in the area, i.e. live and dead stock and machinery amounts to 48·4 per acre. It is, of course, characteristic of predominantly arable farms

* This is in fact three separate parcels of land, farmed as one business unit. Further parcels of land, associated with it but outside the site area have been excluded from this survey.

* *Annual Review and Determination of Guarantees* 1969 (HMSO), p. 5, para. 3.

†Total machinery valuation for 27 farms=£201,646.

Printed image digitised by the University of Southampton Library Digitisation Unit

that the average level of tenant's capital is lower than on mainly livestock and mixed farms. The figure calculated for the Thurleigh site (48·4) corresponds to the most recent figure calculated by Reading University for predominantly arable farms (without significant factory enterprises) of 46·1 per acre.

The gross value of fresh investment in fixed equipment on the 27 farms over the last ten years has amounted to some £264,000. This includes buildings, road and drainage work whether undertaken by landlord or tenant. Only two of the 27 farms have not invested in this way during this period and the total figure is spread remarkably evenly over the remaining 25 farms. It represents an average rate of gross investment of nearly £1,000 per farm per year.

The pattern of investment in fixed equipment in terms of its timing and type is shown in the tables below and in particular reflects the high proportion of farms investing between 1965 and 1968:

Farms in survey investing in fixed equipment

Year	*No.*	*% of 27*
1960	5	18·5
1961	4	14·8
1962	4	14·8
1963	10	37·0
1964	8	29·6
1965	12	44·5
1966	18	66·8
1967	11	40·7
1968	16	59·3
1969*	9	33·3

Type of investment in last 10 years	*Incidence as % of total investments*
Drainage	16·4
Improvement to existing buildings	14·8
Grain stores	13·1
Dutch barns	13·1
Drying installation	8·2
Roads	8·2
Cottages, etc.	6·6
Erecting yards	4·9
Dairy buildings	4·9
Pig buildings	3·3
Implement sheds	3·3
Electrical installations	1·6
Deep litter houses	1·6
	100·0

Economic potential

18. By the application of standard output figures based on local and national yield data, and expected prices, the potential gross agricultural output from the 6,465½ acres surveyed has been estimated by me at £488,524 or £75·6 per acre. This is particularly high for a cereal growing area with relatively little reliance on livestock, and clearly reflects the high yields associated with this area and the introduction of high output vegetable-type crops into the rotations. Net output at standard levels amounts to £393,260 or £60·8 per acre, again significantly above the levels for more conventional cereal growing areas.

In making these calculations I have been especially aware of the great variability of output from vegetable crops, both between farms and between seasons on any one farm. Reliance has therefore been made on data published by Cambridge University* in order to provide a "normalised" picture. Full details of the calculations are shown below, from where it will be seen that the acreages of some of the more variable output crops are, anyhow, quite small.

19. It must be stressed that these calculations have been confined to the strictly quantifiable aspects of agriculture and that it is beyond the scope of this witness to take account of the less tangible questions, such as the value of rural amenities. These questions, however, cannot be ignored in a comprehensive cost of benefit analysis, however subjectively they are treated. In this case it could presumably be argued that the amenity value of an area containing two units of the Royal Aircraft Establishment and ringed by a region of expanding and new urban areas cannot be rated particularly high. Alternatively it could be argued that the area is part of a countryside, the importance of which is being increased by a surrounding urban development that it will increasingly serve.

20. Finally, in this section, reference must be made to the agricultural resources that will be released should land in this area be lost to farming. Because of questions of immobility, it is less easy to be certain about this than in the case of output which is automatically "lost" the moment the land from which it comes is removed from agricultural use.

Details of standard input/output calculations

Cropping	*Acres*	*Standard gross output per acre* £	*Total standard gross output* £
Wheat	1,370·5	52	72,166
Barley	2,394·5	41	98,174
Oats	170·5	46	7,843
Beans	339	40	13,560
Potatoes	502	165	82,830
Peas	249	100	24,900
Brussels sprouts	340	200	68,000
Dwarf Beans	64	80	5,120
Onions (2)	20	200	4,000
Broad Beans	21	90	1,890
Cabbage	·8·5	150	1,275
Other miscellaneous vegetable crops	2·5	200	5,000
Mangolds & swedes	14·5	—	—
Clover	20	25	500
Temporary grass	520·5	—	—
Permanent grass	377·5	—	—
Rough grass	50·5	—	—
Sub-total	6,465·5		379,858

* Includes work carried over from 1968, and in progress.

* *Farm Planning Data* by J. W. Davidson, Farm Economics Branch, University of Cambridge.

Printed image digitised by the University of Southampton Library Digitisation Unit

Livestock	*Av. No.*	*Standard gross output per head*	
		£	
Dairy cows	826	135	11,070
Dairy followers	82	30	2,460
Beef cows	81	—	—
Fat cattle (3)	293	80	23,440
Store cattle (3)	58	40	2,320
Store sheep	175	5	875
Sows	732	75	54,900
Other pigs (3)	1,220	10	12,200
Hens	801	1·75	1,401
Sub-total			108,666
Total standard gross output=		£488,524 (75·6 p.a.)	
less standard seed cost and standard feed cost	35060 / 60204	95,264	
=standard *net output*	=	393,260 (60·8 p.a.)	

This is especially true at Thurleigh in respect to labour, where an important element of the wage bill is accounted for by casual labour, which, depending on its origins may or may not take up alternative employment. The current annual cost incurred in the survey area has been estimated by me as follows:

	Total on 6,465½ acres £	*£ per acre*
Seed*	35,060	5·4
Feed	60,204	9·3
Fertiliser	30,286	4·7
Labour (paid and unpaid)	117,978	18·3
Power and machinery	78,652	12·2
Sundries (including sprays)	39,326	6·1

Allowing for the actual average rent in the area of £5·4 per acre, average profit in the form of "Management and Investment Income" can therefore be placed at approximately £14 per acre. This is well above the average level of profitability of farming in this country and represents a high rate of return on the tenants' capital assessment in paragraph 17.

The farmers

21. Just over half (51·8 per cent) of the farmers in this area are under the age of 50, with another third between 50 and 59. Nearly a third, also, have sons (and in one case a daughter) working with them in the farming business. The detailed age distribution is as follows:

Age	*No.*	%
Under 30	1	3·7
30—39	6	22·2
40—49	7	25·9
50—59	9	33·4
60—69	3	11·1
70—79	1	3·7
	27	100·0

22. It is the view of official advisers, familiar with the area, that this locality, like much of the countryside adjoining it, is well endowed with capable farmers. This view is endorsed by the witness and his colleague who were impressed by the "business-like" nature of many of the farmers—old and young—with whom they spoke. These are characteristics that are often associated with predominantly arable areas where the seasonal requirements for the most important farming resources (e.g. labour, machinery, working capital) present intricate planning and financial problems.

23. A very high proportion of the farmers in the area are full-time working farmers, with only 3 out of the 27 being part-timers. Only 3 also have "some other income" which is greater than their income from farming. Not unusually for such bona fide farming areas "other income" is, generally speaking, negligible.

24. Eighty-five per cent of the farmers interviewed would hope to remain in farming, even if their present farms are taken from them. A further 7·4 per cent have yet to make up their minds. This proportion, apparently wedded to farming, is higher than has previously been found in surveys of this general kind.

More detailed research work supervised by the witness at Milton Keynes* in 1967 suggests that in many cases the anxiety to remain in farming is matched by an awareness of the problems of finding alternative farms, preferably, for most people, close to the areas in which they have lived and to which, therefore, they tend to be attached. Questioned, on the matter of compensation, a strong feeling was expressed by the farmers in this area (whether for owner occupiers or tenants) that the only fair basis for compensation must be for the individual to be reinstated, at no cost to himself, in an acceptable alternative.

25. On the general question of their attitude to a possible airport at Thurleigh, it must be reported that whilst the local farming community is aware of the kind of strategies and considerations that are likely to be important to planners, it nevertheless feels a genuine resentment over the possible loss of Grade II agricultural land—notable, in particular, for its importance in one sector of the vegetable industry.

Part II—The implications of ancillary development

26. It has only been possible for the witness to conduct a detailed examination of the type described in Part I of this evidence, in respect to the proposed airport sites themselves. Agriculturally speaking this area has been shown to be typified by heavy boulder clays with the accent on cereal growing supplemented by brussels sprouts, potatoes and other vegetables. It is an area which, for no special reason, is not particularly well represented in the samples which contribute to published financial results. In similar work undertaken by the author, however, the methods used here to evaluate the economic potential of an area, have been found to correspond very closely indeed with relevant published information where it exists. To the extent that the characteristics of the Thurleigh

* Already taken into account in net output calculation.

* *Milton Keynes: 1967. An Agricultural Inventory.* Sept. 1968. (University of Reading, Department of Agricultural Economics.)

Printed image digitised by the University of Southampton Library Digitisation Unit

site itself are not untypical of the farming pattern in the whole of north Bedfordshire (i.e. north of an east-west line drawn through Bedford), it is the opinion of the witness that the data quoted in this evidence can confidently be applied to this wider area. This particular segment of Bedfordshire, however, is encased by four other counties—Bucks, Northants, Herts and Cambs. with the Oxford clays of central Beds. to its immediate south. Fairly quickly, therefore, the farming pattern changes. For example the emphasis is on somewhat more conventional cereal growing in central and southern Bedfordshire; there is substantially more emphasis on grassland farming and dairying in north east Bucks, and on heavy-land livestock grazing across the Northamptonshire borders. To the east, in Huntingdonshire and Cambridgeshire, there is a further strong concentration on cereal growing with market gardening, proper, beginning east of the A.1 road in the Sandy district. Agriculturally speaking, the important questions therefore are: "On what scale and where in this farming region would ancillary development take place?"

27. In its *Site Information* for Local Hearings* the Roskill Commission has suggested that "primary employment" generated by an airport at the full capacity of four runways will eventually involve 65,000 persons. Multiplying this number by an assumed 3·5 (to allow for average family size) would imply a total "primary" population of 227,500. Assuming a population density of 15 persons per acre (as mid-way between the variously quoted yardsticks of between 10 and 20 persons per acre), a primary population of the size suggested could, therefore, demand land in the order of 15,000 acres. In most rural circumstances, however, it is reasonable to assume, that only some 90 per cent of the land surface is currently in agricultural use, so that a demand for 15,000 acres might imply a loss of something like 13,500 farmed acres. To this "primary" demand, however, must be added an equivalent demand for as yet unspecified numbers (and their families) in "secondary" and in "service" employment, plus any additional demand for whatever new motorways (at say, 15 acres per mile) are necessary.

28. Depending, therefore, on the actual population density and the actual "multiplier" effect of secondary and service populations, it is clear that the eventual land requirement for an incoming airport population would be a multiple of any estimate for the primary population. This confirms the belief that the principle agricultural effect of *any* inland airport will come not from the 7,500–8,000 acres required for the site itself, but from the eventual surrounding ancillary development.

29. Precisely where ancillary development could or would take place in respect to a Thurleigh site is not for this witness to anticipate.

It can be pointed out, however, that if a "tight" urban strategy is evolved contained say, within the "diamond" cornered by Rushden, Bedford, St. Neots and Spaldwick, then it will take place on predominantly Grade II agricultural land, of the sort previously described and, to which the data provided in this evidence can be reasonably applied.

On the other hand, a "looser" urban strategy approaching possibly, Ampthill, Milton Keynes, Wellingborough, Huntingdon and Sandy could touch on each of the farming types mentioned in paragraph 26. Agriculturally speaking some of the affected land would then be better and some of it worse than the site land itself. Along the Bucks/Northampton borders, Grade II land gives way to Grade III. To the east, around Sandy, market gardening is located on a large triangle of Grade I land, while much of the intervening land, in Bedfordshire, continues in Grade II.

Economic performance in these various areas ranges from Gross Outputs and Management and Investment Incomes of some £55 and £5·5 per acre respectively (in Northamptonshire)* to £360 and £22·2 per acre on vegetable holdings around Sandy.†

Between these two extremes of intensity, occur the variety of farming types outlined in paragraph 26. The margins between them are often blurred and *in the event of a fairly widespread urban strategy being adopted, there would be no single set of figures which could be used to assess the agricultural potential of the land to be lost.* Farm Management Survey data (from the Universities of Reading, Nottingham and Cambridge) or standard input/output figures would need to be applied to the actual areas of land which, in the event, are to be affected.

30. Finally in this section it is important in the opinion of the witness to stress a general point, which, because it applies to *any* proposed inland site, should not, for that reason, be overlooked in respect to Thurleigh. It concerns the fact that the effect of urban, industrial and motorway development on agriculture can depend on precisely *how* that development takes place as well as on *how much* of it there is. Thus it may be less disruptive to the efficiency of agriculture, as such, simply to replace a certain well defined sector of it with carefully planned urban development, rather than to allow urban development to take place on a piecemeal basis, with existing towns and villages gradually encroaching on and disturbing the management and profitability of viable farm units. Where large scale and planned "replacement" is envisaged with natural boundaries minimising the dissecting of farm units (e.g. at Milton Keynes) the effect upon agriculture is essentially one of reducing, all round, the level of resources employed in that industry. Where, on the other hand piecemeal development takes place over a long period of time (and this seems very probable in respect to the ancillary development associated with a major airport site) the effect on farming efficiency itself can be extremely

* Reproduced at p. 1801.

* Average of latest three years results from *Farm Planning Handbook*, University of Nottingham (by H. W. T. Kerr).

† Three year average from unpublished data supplied by Farm Economics Branch, School of Agriculture, Cambridge.

Printed image digitised by the University of Southampton Library Digitisation Unit

disruptive. This is so for two main reasons. Firstly because the loss of any part of a farm implies, at once, a loss of output, which because of the relatively fixed nature of many farm inputs (e.g. labour, machinery, general overheads) is not accompanied by a corresponding reduction in costs. Inevitably, therefore, resource-use is affected adversely and profits fall. Secondly, uncertainty about the future in an area threatened by urban development has an immediate effect on the willingness of farmers to invest, with a consequent running down of the economic potential of an area. This effect of uncertainty has been witnessed and documented in detail in the Milton Keynes area. There is no reason at all to assume that this damaging effect of uncertainty will not be felt, in a similar way, in the urban "catchment area" associated with *any* airport site that is chosen.

Part III—Summary and conclusions

31. The vast majority of the land constituting the two Thurleigh sites will be graded in the forthcoming Provisional Land Classification map, as Grade II land, i.e. with "minor limitations only which exclude it from Grade I". Grade I and Grade II land, together, are estimated to account for a little under a third of the total national farm land. This grading of the Thurleigh area is substantiated by evidence of high average cereal yields and by the existence of a wide complexity of brassicas, legumes and salad crops grown in order to provide rotational breaks, to supplement output, and to utilise more fully seasonally required resources. The area has a special reputation for the cultivation of brussels sprouts. The standard of husbandry and business acumen observed in the area is impressively high. The average size of farm in the area is 238 acres and one quarter of the farms are over 400 acres. Gross investment in fixed equipment has been proceeding during the last decade at an average annual rate of nearly £1,000 per farm. The area is well above average levels of profitability, and the average return on tenant capital is high.

32. Reference by the farmers in the area to their "very good" farm land is, therefore to be supported by its grading and performance, and, apart from the fact that about a quarter of each site is already in aeronautical rather than agricultural use, it would be impossible to argue in selecting a site, that agriculturally speaking the area is inferior in any way. All of the evidence is to the contrary.

33. In wider economic terms it must be stressed that in so far as any individual entrepreneur attempts, over a period of time, to assemble that particular collection of resources that are ideally suited to his production programme then any enforced transfer of those resources to other situations and activities would suggest a less than optimum use of those resources, at least for some time. This may be especially and more permanently true of farmers themselves, who, if unable to find alternative farms—and many of them feel, that present methods of compensation will mean that—are relatively speaking unequipped for alternative employment.

34. Finally, it should be noted that, if as an agricultural witness, I have stressed the more measurable and strictly farming characteristics, the agricultural community at Thurleigh is mindful also of the non-farming members of the local rural population and of the threat to their community life. In the words of one interviewed farmer "One inland site has already been rejected and most of the social arguments used there could apply to any other inland site".

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

SUBMITTED BY MR. J. H. D. LEE

I am a Fellow of the Royal Institution of Chartered Surveyors, a Fellow of the Chartered Auctioneers and Estate Agents Institute, a Member of the Central Association of Agricultural Valuers and the President of the Hertfordshire, Bedfordshire and Buckinghamshire Agricultural Valuers' Association.

I have been resident in Bedfordshire for the whole of my life. I am a partner of the firm of Robinson and Hall, Chartered Surveyors and Land Agents of Bedford with which firm I have been associated since 1946 and for two years prior to the war. I have been engaged in the work of an agricultural surveyor in Bedfordshire and the surrounding area for the whole of this period and I am familiar with the north Bedfordshire and Huntingdonshire districts. My firm are Valuers to the Agricultural Mortgage Corporation for Bedfordshire and parts of five adjoining Counties.

1. Instructions

I have been instructed by the Bedfordshire and Huntingdonshire County Branch National Farmers' Union to prepare evidence on the agricultural implications and on the probable consequences upon owners and occupiers of agricultural holdings in this area, should the Third London Airport be sited at Thurleigh.

2. Introduction

Whilst only very broad implications of this vast project have so far been appreciated by private individuals, business concerns, social organisations, Local Authorities and Statutory Undertakers alike, it is patent that almost the entire burden of land requirement, in addition to the network of easements which will be required for service pipelines and varied installations, will fall upon the agricultural resources of this highly productive region. Not only will large numbers of occupiers of agricultural holdings suffer all the intolerances, as private individuals, but very many indeed will lose their livelihood.

I suggest a farmer's livelihood depends upon his ability to increase, economically, agricultural production on his particular holding of land.

The occupiers of the great majority of farms in the districts around Thurleigh are fortunate in the knowledge that they have the *long term* essential, which is the high intrinsic quality of this local land lying under just the right climatic and other conditions of environment.

The rapid technological advances in agriculture now offer the opportunity to realise the true value of this local raw material.

In the *short term*, the year by year benefit derived both by the farmer who happens to be in occupation and by the population of the time, now depends largely upon the acumen and degree of skill of the farmer, given reasonable economic conditions.

The national interest is surely in the long term, and equally surely, I believe the siting of this Airport will be decided ultimately upon such consideration.

If a Thurleigh site should be chosen, I estimate 47,500 acres will be required within a 12 mile radius of the site, and as the area is almost entirely devoted to agricultural production of great versatility and of the highest standard, the effect upon the industry and the national interest, both in the short term and in the long term, will be immense. Within this small compass area of North Bedford, the acquisition would approach the annual acreage of land taken for development over the whole of the United Kingdom, which is already a matter for grave concern. Due to the pressures upon agricultural land of existing urbanisation proposals, within 20 miles of this neighbourhood, and I am thinking particularly of Milton Keynes, Northampton, and Peterborough, just outside the immediate area, for farmers who are likely to be dispossessed, the chances to acquire another holding within a wide area and within a reasonable period of time, seem remote.

3. The proposed airport site

3.1. *Location and description*

From the Short List Sites plan* issued by the Roskill Commission and from information subsequently issued of the alternative adjoining site under consideration, I have prepared a large scale plan (RH 1)† showing the outline of the approximate position of Site "A" and the second site which I refer to as Site "B" together with the boundaries of all but the smallest agricultural holdings enclosing the sites.

The Provisional Airport Plan, Drawing No. CTLA 1* shows a total length requirement of 27,000 feet and a total width of 13,700 feet with rectangular areas excluded in the North West and South East corners. These areas are immediately beyond the ends of the two outer runways and immediately adjacent to the two inner runways. They would be subject to maximum interference and the property would be virtually sterilised. I have assumed of necessity they would be acquired and the total area indicated for each of the alternative sites is about 8,500 acres.

Thurleigh Site "A" extends from the River Great

* See attached wallet of maps and diagrams.

† Not reproduced. Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Ouse, over the A6 trunk road in the west, to the eastern borders of the parish of Molnhurst and Keysoe and from Riseley village on the northern edge, to Thurleigh village on the south boundary.

The site includes the Royal Aircraft Establishment airfield extending to about 1,150 acres, the villages of Bletsoe and Keysoe and parts of the villages of Riseley, Thurleigh and Bolnhurst.

Apart from minor spinneys and two small woodland areas of 33 acres and 24 acres respectively, the area contains very little uncultivated land.

The site is gently undulating varying from about 125 feet above sea level to 300 feet, the variation of the greater part of the central area being from 200 feet to 275 feet.

Thurleigh Site "B" is superimposed over about two thirds of the area of Site "A". Its centre lies just over one mile to the South East of the centre of Site "A".

The greater part of the R.A.E. airfield is within the area and the R.A.E. research and wind tunnel site is affected. The village of Riseley is outside the area as also are parts of Bletsoe and Keyoe, but the whole of Thurleigh and Bolnhurst villages are included.

These areas apart, the site is practically entirely under cultivation.

Also gently undulating, the heights above sea level of this site vary between 200 feet and 275 feet.

3.2. *Soil*

The soil of both sites is mainly a clay loam over boulder clay, generally of very good depth. The character varies from fairly easy working to medium heavy and heavy. The loam contains some chalk and parts show a gravelly nature.

3.3. *Drainage*

Both sites are drained ultimately into the River Ouse, via two principal brooks to the south, via tributaries of the River Kym to the east and north and directly to the Ouse on the west side. The gentle slopes of the area greatly assist natural drainage and there are no signs of waterlogging.

It is important to maintain the ditches and watercourses over the area to enable the extensive patterns of tile drainage schemes developed with the aid of government grants to function effectively.

This type of land is particularly well suited and responsive to mole draining and sub-soiling is a regular cultivation.

3.4. *Versatility of Cropping*

I am able to recall that prior to the 1939–45 war large proportions of many farms in North Bedfordshire and adjoining parts of Huntingdonshire were under permanent grass and many outlying fields were rough grazing ridden with bushes; some farms were difficult to let at 5/- per acre. Apart from economic circumstances, the machinery had not yet been evolved to tackle the problems of drainage, cultivation and harvesting, and release the potential of this land of inherent quality, and high versatility. The picture has changed dramatically, and in my opinion will continue to change. The technological advances in the agricultural industry, both in the mechanisation of farming, the control of plant pests and diseases, together with the encouragement by way of grant aid for the improvement of drainage and the provision of up-to-date fixed equipment, has enabled the land in this neighbourhood to benefit, in my view, to a greater extent than any other class of land. Whereas the inherent soil qualities, under conditions of relatively level profile and under the favourable climatic environment of this part of England were formerly impractical to release, the area is now largely under very productive arable cultivation, in many cases coupled with some livestock enterprise, which in turn are becoming intensified. In more recent years considerable acreages of potatoes, brussels sprouts and other brassicas have been included in the rotation. The area is of course, renowned for its quality production of sprouts and King Edward potatoes in particular.

The cropping returns to the Ministry of Agriculture (Census June 1968) prove the versatility of the land of the four parishes of Bletsoe, Bolnhurst and Keysoe, Riseley and Thurleigh, which are primarily affected by the site. Many of these holdings also include one or more livestock enterprises.

TABLE 1—**Principal crops grown in site area**

(Parishes of Bletsoe, Bolnhurst and Keysoe, Riseley and Thurleigh).

Crop	*Acreage*	
Wheat	4,047	9,510
Barley	5,050	
Oats	413	
Beans	723	3,066
Potatoes	840	
Vegetables	1,503	
Perm. Pasture	1,209	1,908
Leys	699	

Approximate percentages	
Cereals	65%
Potatoes, beans and vegetables	20%
Grasses	15%

3.5. *Agricultural holdings directly affected by site*

My plan (RH 1) shows all but the smallest holdings which would be directly affected. The plan is numbered and coloured for ease of identification only and table 2 gives details of the occupiers, acreages and approximate extent to which each will lose land, should either site "A" or site "B" be taken.

The sizes of holdings vary from under 50 acres to over 1,000 acres. Where a farmer occupies separated areas of land affected, the parcels in one occupation are given the same number. The following is a summary of the table.

Printed image digitised by the University of Southampton Library Digitisation Unit

	Site "A"	*Site "B"*
Farmers losing all their land	23	22
Farmers losing over half their land	14	14
Farmers losing a proportion of their land ...	12	14
	—	—
Numbers of Holdings (except smallest) affected	49	50

I understand the number of owner/occupiers affected are 40 (site "A") and 42 (site "B") the remainder being tenants.

I have also taken figures from the agricultural returns of June 1968 to show the total number and cropping acreage of holdings in the principal parishes affected, namely Bletsoe, Bolnhurst and Keysoe, Riseley and Thurleigh (table 3).

TABLE 3—**Numbers and size range of agricultural holdings around airport site**
Parishes of Bletsoe, Keysoe and Bolnhurst, Riseley and Thurleigh.

		Numbers of holdings				
Parish	*Total crop Acreage*	*Under 50 acres*	*50–150 acres*	*150–300 acres*	*300–500 acres*	*Over 500 acres*	*Totals*
Bletsoe	1,135	4	1	1	2	—	8
Keysoe and Bolnhurst	8,862	20	8	8	2	2	40
Riseley	2,460	11	2	1	2	2	18
Thurleigh	2,195	9	4	2	3	—	18
TOTALS	14,652	44	15	12	9	4	84

The total number of holdings in these four parishes is 84 with an acreage of 14,652. It should be understood that over half these holdings (44) vary from only ¼ acre to 50 acres and in fact occupy only 788 acres. The average size of the remaining 40 farms is 346 acres of cropped land.

The continuing trend is to enlarge farms when the opportunity occurs, resulting in improved productivity.

Fragmentation and severance of these larger farms will inevitably very seriously affect the economy of those able to survive.

With regard to the small holdings which represent half the number, they are mainly intensive balanced one man units and there would seem little opportunity for such men to remain independently in agriculture if their holdings are interfered with.

3.6. *Capital investment*

Whilst I am not in a position to produce figures at this stage, I am generally familiar with the continuing development of these holdings. Capital expenditure on hedge removal to improve the shape of fields, on tile drainage improvements, particularly encouraged by government grant has been and continues to be an expensive item, but a permanent investment. Investment is high in fixed equipment and plant for grain drying and storage, machinery of a calibre to crop this heavier type of land and investment in improved harvesting machinery has proved essential for economic increased production of the variety of crops. In addition there is expenditure on accommodation where livestock are involved. With few exceptions, mains electricity and water are connected and the standard of agricultural workers' dwellings is now good. The limiting factor in many cases has become the acreage of land available.

3.7. *Standard of management*

I would say without hesitation that in general, the standard of management in this area is of the highest order.

3.8. *Crop yields*

The following figures are derived from the completed NFU questionnaires obtained from members.

	Thurleigh farms average per acre	*National average per acre*
Wheat	38 cwts.	31·1 cwts.
Barley	38 cwts.	27·8 cwts.
Potatoes	12 tons	8·5 tons
Sugar beet	13 tons	13·7 tons
Brussels sprouts	7 tons	4·4 tons
Hay	50 cwts.	

I would accept these averages and am aware of yields of wheat in excess of 50 cwts., of barley over 45 cwts. and of potatoes 15 tons. Limited acreages of sugar beet are in fact grown, although the land is quite capable of giving well in excess of the national average.

3.9. *The Zone immediately adjoining the site*

Until constructional details are made available, it is difficult to assess the extent of interference immediately around the site, but it is apparent that from the time of initial surveys and during the long period of construction, including the road and rail links, the laying of pipelines, cables, drainage works, etc. together with the presence of vast amounts of contractors' traffic upon unsuitable roads over a wide area, farming will become a most frustrating business and the time spent by farmers endeavouring to preserve their rapidly receding interests will reflect upon production.

Printed image digitised by the University of Southampton Library Digitisation Unit

Undoubtedly there will be restrictions upon heights of buildings and other structures in the vicinity and the use of aerial spraying and dusting techniques which are increasing rapidly in this area, will be banned and where permitted will seemingly become hazardous.

The large number of holdings within the 55 NNI contour, will surely become intolerable places on which to work and impossible in which to live, and I would agree with the County Planning Officer's view that to all intents and purposes, everything within the 55 NNI contour would have to be "written off".

4. **Agricultural land classification**

Whilst the Ministry of Agriculture's Agricultural Land Classification map for the North Bedfordshire area has to date not been published, from my inspection of the draft over 70 per cent of Site "A" and about 83 per cent of Site "B" is classified as Grade II land with very minor or no physical limitations to agricultural use.

From the information obtainable, the two site areas may be divided as follows:

	Site "A"	*Site "B"*
Grade II land	6,000	7,050
Grade II land	1,350	1,100
Non-agricultural land	1,150	350
	8,500 acres	8,500 acres

I wish to emphasise as strongly as possible the importance of recognising the value of this new approach to the grading of agricultural land in this country, which has been devised after several years of investigation by a committee of the Agricultural Land Service and other experts, and for which the survey is currently in progress.

As stated in the Technical report no. 11 *"The Ministry's policy is to steer urban development away from the areas likely to be of the greatest agricultural value in the long term. This places the main emphasis on retaining in farming the land with the greatest inherent value for crop production."*

Less permanent factors, such as the standard of management, adequacy of fixed equipment and farm structure are less important, because they are more susceptible to change.

However, it is impossible to change the main physical factors which provide the basis for the new classification.

These factors comprise, climate (particularly rainfall, transpiration, temperature and exposure) and relief (particularly slope) and soil (particularly wetness, depth, texture, structure, stoniness and available water capacity).

Grade I land has very minor or no physical limitations and is our best market garden land.

Grade II land has some minor limitations which exclude it from Grade I and I would describe such classification as first class agricultural land. The range is narrowest in Grades I and II and widest in Grade III where the land may vary by degrees from good land of above average quality to below average.

The surrounding districts within a 12-mile radius contain a very large proportion of Grade II land which widens from the airport site in a south easterly direction into market garden land Grade I within the Zone.

Whilst it is unrealistic to hope that development of farm land will not continue, we have surely reached the stage when it is vital to preserve land of the greatest inherent value.

5. **The surrounding zone—at the 12-miles radius**

5.1. *General comment*

I have considered the effect of siting an airport at Thurleigh upon the surrounding area which encompasses 109 parishes at the 12-mile radius from the site.

The interference to agriculture would exceed beyond this distance but the disastrous effect of this possible siting upon these 109 parishes is such that it must be considered in some detail.

Over 233,000 acres of cultivated land are contained within this zone and the further one investigates the possible outcome, the more sharply is brought into focus the effect of the proposal, upon an area of such high agricultural importance to this country, quite apart from the most serious implications for the farming fraternity.

I am indebted to the Bedfordshire County Planning Officer and the Ministry of Agriculture for the factual information.

5.2. *Anticipated land losses*

I have produced what I believe to be a conservative assessment of anticipated land losses, within the 12-mile area (table no. 4), based upon information revealed by the Bedfordshire County Planning Officer's evidence and from a study of the urban pattern plans (with and without the Airport). Plan RH 2 identifies the area and indicates anticipated developments.

5.2. (a) *The land requirement for the estimated population increases* (without airport) is only taken up to 1981 and I have used a divider of 13 persons per acre, similar to that for the specifically planned urban developments for the Airport. It seems probable to me that committed growth to 1981 may in fact be more extravagant of land than the figures used, being more widely spread over the area.

5.2. (b) *The associated urban developments* (suggested sites Raunds area, Stagsden area and Sandy area). The County Planning Officer states that the urban developments associated with the airport which alone require 25,000 acres need to be not more than 12 miles from the site.

The areas east and west are within the limits of noise disturbance and it leaves available, the areas to the north and south, already partially blocked by the urban areas of Wellingborough and Bedford. The County Planning Officer states that he has endeavoured to avoid the highest grades of agricultural land in choosing possible sites but he has found it to be an impossible task. All three areas contain Grade II land, Stagsden a large proportion of about 40 per cent and the Sandy area contains Grade I highly intensive market garden horticultural land including

Printed image digitised by the University of Southampton Library Digitisation Unit

glass. The Raunds area straddles the three Counties boundaries of Northampton, Huntingdon and Bedford. It appears to contain about one-third of Grade II land.

5.2. (c) *The roads and rail* figures may be underestimated as no account is taken of service areas, associated roadside developments, and approach road improvements etc.

5.2. (d) *The reservoir at Abbotsley.* This strongly opposed scheme has been under consideration for some years and as it would appear inevitable that another large reservoir will be urgently required to serve the needs of the population explosion resulting from an airport, it seems reasonable to anticipate this controversial project would be regarded as the easiest way out of the water supply problem, regardless of any agricultural objection.

5.2. (e) *Sand and gravel.* The estimated requirements of 38·8 million cubic yards of sand and gravel for the Airport and its associated development, is in addition to the large quanties of aggregate for normal planned growth in the region. The 12-mile radius contains the bulk of the resources of the Ouse Valley terraces in addition to glacial deposits.

In view of the considerable development already planned including the Northampton and Milton Keynes projects, apart from the continuing demands of the Greater London Area, the statement by the County Planning Authority, "It is therefore inevitable that the requirements for an Airport at Thurleigh will demand the full exploitation of all of the resources in the Ouse Valley, which are in close proximity to the site within an agricultural area of considerable natural beauty with a valuable potential for outdoor recreation", must be accepted as a realistic assessment of the position, but one which would very seriously affect agricultural production. The likelihood of restoration to agriculture of such an extensive area seems remote. As the extent of the local resources is probably unknown, I have taken the modest assumption for this purpose that only half the Airport requirements would be taken from the 12-mile radius.

5.2. (f) *Service installations and easements.* Quite apart from the land required for developments already referred to, the area will of necessity be interlaced with a complexity of service and other installations, which will include:

TABLE 4—**Anticipated direct land losses—within 12 miles of Thurleigh**

			Acreage Required
1. Losses without airport			
(a) *Estimated population increases to 1981*			
Bedfordshire	32,800		
Buckinghamshire	400		
Huntingdonshire	17,500		
Northamptonshire ...	64,350		
		115,050 @ 13 persons per acre	8,850
(b) *Proposed roads*	*Miles*	*Acres Per Mile*	
Motorway towards east coast ports	24 @	12·7 = 304	
Primary distributor motorway (Wellingborough—Northampton—Milton Keynes—Bedford)	12 @	8·0 = 96	
			400
2. Additonal losses with airport			
(a) *Airport site*		8,500	
		Less: existing establishment ... 1,150 acres	7,350
(b) *Associated urban developments*			
Raunds area	120,000		
Stagsden area	120,000		
Sandy area	80,000		
		320,000 @ 13 persons per acre	25,000
(c) *Road-rail links to airport*	*Miles*	*Acres Per Mile*	
Direct motorway towards London	13 @	12·7 = 165	
Primary distributor motorway extension	12 @	8·0 = 96	
All-purpose primary distributors	22 @	6·0 = 132	
Rail link to Sandy area	9 @	6·0 = 54	
			447
(d) *Reservoir at Abbotsley, Hunts*			
Assuming 125 ft. top water level is chosen and including site works			3,500
(e) *Sand and gravel*			
Estimated airport and associated development requirement 38·8 million cu. yards. Anticipate 50 per cent i.e. 19 million cu. yards from area at local average of 10,000 cu. yards per acre			1,900
			47,447
(f) *Balancing reservoirs*			
To control run-off from airport (unknown requirement—assume within gross airport area).			

Printed image digitised by the University of Southampton Library Digitisation Unit

Water supply pipelines from reservoirs or grid system to airport, urban areas etc.
Electricity power lines, additional power stations, super-grid substations for new developments and reinforcement of existing supplies.
Gas distribution mains.
Post Office telecommunication services, lines and installations.
Sewage disposal pipelines and treatment plants.
Refuse disposal plants.
Aircraft fuel pipeline (suggested from Shellhaven to airport to provide requirement of 5¾ million tons per annum).

Many farmers in this area have personal experience of the severity of pipeline damage suffered in particular to tiled drainage systems and the long-term damaging effects over the surrounding land.

I am of opinion it is reasonable to suppose that once the airport begins to operate there would be continuing demands for additional developments consuming agricultural land, which is the only source of land in this area. It should be appreciated the area is very largely devoid of waste land, scrubland, steeply sloping areas or other land of marginal agricultural value. It is perhaps significant that less than one acre in 200 acres is described as rough grazing, in the agricultural returns of the zone.

My calculations produces the truly startling revelation that the vast area of nearly 47,500 acres will be required for development if Thurleigh is chosen.

5.3. *The agricultural holdings within the zone*

I have extracted from the Ministry of Agriculture Census Returns (June 1968) the acreage of productive agricultural land and the numbers of holdings in size categories within the 12 mile radius (table No. 5).

In the 109 parishes there are 1,499 agricultural holdings covering a productive area of 233,219 acres.

TABLE 5—**Crop acreage, numbers and size range of agricultural holdings in 109 parishes in 12 miles of Thurleigh airport site**

			Number of holdings					
County	*No. of parishes*	*Total crop acreage*	*Under 50 acres*	*50–150 acres*	*150–300 acres*	*300–500 acres*	*Over 500 acres*	*Totals*
Bedfordshire	52	116,934	511	190	120	70	46	937
Huntingdonshire	30	63,575	99	42	50	43	38	272
Northamptonshire	19	40,726	85	38	43	36	19	221
Buckinghamshire	8	11,984	15	23	18	11	2	69
TOTALS	109	233,219*	710	293	231	160	105	1,499

* In addition there are 965 acres of rough grazing.

Of this number of holdings nearly one half (710) are under 50 acres and occupy less than 5 per cent of the total acreage. However, many of these are intensive growers of vegetables and horticultural produce, particularly towards the South East of the area.

The remaining 95 per cent of the acreage is occupied by 789 holdings which would average in size about 270 acres, of these farms 265 are over 300 acres of which 42 are larger than 700 acres.

The N.F.U. members from a rather wider area have given details of livestock numbers and crop yields.

The 12-mile zone contains a high proportion of Grade II and Grade I land and perhaps this explains the wide variety of types of holding over the area. However the emphasis lies in the predominately arable and market garden holdings. Apart from cereals, the arable land includes large acreages of green vegetable crops and potatoes, beans and peas and these, together with sugar beet towards the North and East of the sector provide the increasingly productive break crops of the modern rotations. On many holdings, cereals provide the break for the brassicas, potatoes etc.

For many years now the cereal farms have been benefiting from technical advances, but more recently with the advent of improved machinery and better organised marketing, the farms with land and physical conditions suitable for vegetable crop production are able to improve output and produce the standard of crops required for processing, freezing and the fresh markets of London and the Midlands.

Should this threat be confirmed, I feel the incentive for these farmers to press forward with any scheme for improving production will disappear, certainly until the individual is quite satisfied he is not to be seriously affected.

5.4. *The agricultural holdings affected by the land loss*

The Land Requirement in the zone appears to me to be equivalent to a total loss of over 300 holdings of average size. Without a great deal more information as to the proposals it is impossible to estimate the pattern of the loss.

A smaller number of holdings may be totally lost but many more will suffer to varying degrees and as referred to later most of the efficiently run farms are geared to their particular acreage and the loss of a comparatively small part may render them uneconomic.

6. Flooding

The River Great Ouse meanders through the south eastern half of the 12 mile zone and extends about 50 miles in length within the zone from Olney in the west to Brampton in the north east. Practically the entire area drains into the Ouse. Farmers have been recently expressing concern as to the increasing

Printed image digitised by the University of Southampton Library Digitisation Unit

vulnerability to flash flooding of land near to the river and its trubutaries, due to increased run off.

The development of an airport with its satellites in addition to Milton Keynes, must present major problems to the River Authority if agricultural land is to be safeguarded.

7. Labour

There is a shortage of labour in the district and developing competition from other local industries increases the need for farmers to reduce their labour requirements by increased mechanisation. Nevertheless, labour of a more skilled calibre cannot be dispensed with. There will be great attraction for a large proportion of the younger men to be drawn to the highly paid machine operators' jobs with contractors during the long periods of construction.

8. Noise and fall-out

Many others will be referring to the effects of noise but large numbers of members of the NFU have drawn attention to the fact that with few exceptions, farmers together with their workers and respective families, both work and reside on the farm and those with holdings in the maximum NNI zones will be in intolerable positions without respite from continuous noise both day and night. It is difficult to envisage what incentives will be required to induce stockmen and other farm workers with their families to live and work within the large areas of these contours.

Many of the Ouse Valley farmers rear livestock and those who would be in close proximity to the run-ways are also concerned with the problem of fall-out and its possible affect on stock, crops and water.

9. Fragmentation and severence

Wherever the inland site is located over a complex of farms of varied size, such as Thurleigh, fragmentation is inevitable owing to the rigid rectangular shape of the site.

My Plan RH 1 gives an indication of the manner in which the actual holdings at Thurleigh would be fragmented and it will be appreciated that the problem is serious in varying degrees to those who suffer the fall of the axe.

Most efficiently managed farms whether they be stock, mixed or arable holdings are geared to their particular acreage.

Due to increasing mechanisation and the high cost of tackle suitable for these Thurleigh arable farms, such equipment must be fully employed. The smaller and medium size of farm has become "land hungry" and competes for any additional acreage which may become available in the vicinity. Rarely can a farmer afford to lose any land.

It is true that spare land arising from the process of fragmentation will be taken up by neighbours but only at the cost of liquidating the original farmer.

It is hoped that this planning of the urbanised areas will be phased to alleviate, wherever possible, this particular problem which cannot be avoided at the Airport site.

Fragmentation and severence caused by road and rail links over a wide area must inevitably damage very large numbers of holdings.

10. Compensation and rehabilitation

The Compensation Code applying, in particular, to agricultural land remains a constant source of complaint.

Whilst the measure of compensation obtainable for the owner and a tenant may be reasonable for minor incursions into larger holdings, the inflexibility of the Compensation Law produces entirely unrealistic calculations when applied to the unprecedented numbers of owners, owner-occupiers and tenants who will suffer if this project settles upon Thurleigh or indeed upon either of the other short listed inland sites. The whole pattern of farming in this large and important locality will be completely disrupted.

Compensation for acquisition must still be fixed on the basis of a sale by willing seller at agricultural value.

I understand only three of the 492 farmers who replied to the NFU questionnaire expressed themselves as willing sellers.

Should Thurleigh become the site, the position of the farmers dispossessed will be especially difficult. Milton Keynes is too far from the site to be utilised for housing and the whole of the urbanisation will fall on fresh land. Nevertheless, when the hundreds of occupiers find themselves seeking farms they will be in competition not only amongst themselves, but with many of the 100 farmers from Milton Keynes.

What chances have the majority of immediately settling into another farm? Those who are fortunate will likely have to adapt to quite different systems of farming on holdings of different calibre to their own.

The measure of compensation would take no account of such matters as:

(a) Present high interest rates for mortgages on new holdings (Agricultural Mortgage Corporation 10¼ per cent) compared with much lower rates probably being paid on existing loans which may be coupled with endowment policies.

(b) Probable losses on the sale of machinery and equipment unsuited to a new holding, owing to the quantity of such equipment coming onto the market in a short period of time, from other dispossessed farmers.

(c) True cost of many items of rehabilitation under the heading "removal expenses".

(d) The loss of co-operative and marketing connections, such as the growers' associations, which operate successfully in this district.

(e) The impact of Capital Gains Tax upon the farmer who within the year is unable or does not wish to continue farming elsewhere.

These are but a few. When a farmer willingly moves he weighs all the disadvantages, in making his decision. The compensation enactments which remain basically as set out half a century ago, were never intended to be applied to the kind of circumstances, which will arise over this airport. The farmer who does not actually lose land will receive no compensation at all. There is no question in my mind that if the government and the country allows the airport

Printed image digitised by the University of Southampton Library Digitisation Unit

to ruin so much high grade land and deprive so many of their livelihood and homes, it should not shrink from properly compensating those who suffer, both directly and indirectly.

I have set out some prices realised at auction for farms and land in the area.

There has been some hesitation during the past few months in the continuing upward trend of prices which show increases of probably 150 per cent in the last 10 years. The reason seems to be a combination of the present high cost of financing purchases and the exceptionally difficult 1968 season.

It should be appreciated that the farms in this area are truly commercial holdings and to date prices realised, generally only reflect the competition amongst the farming community—this is limited by the ability of the farmer to show an economic return upon his investment. The circle around London is increasing within which the City business man competes for the residential and other attractions of an agricultural property, but I think the circle has yet to reach this area.

Farms and agricultural land reported sold by auction

Date	*County*	*Parish*	*Holding*	*Acreage*	*Price per acre*
1965 June	Bedfordshire	Bletsoe	Castle Farm	464	£293
1967 June	Bedfordshire	Turvey	Grove Farm	313	£278
July	Bedfordshire	Sandy	Land	20	£525
September	Bedfordshire	Roxton	Land	32	£325
1968 March	Bedfordshire	Northill	Manor Farm, Lower Caldecote	83	£494
May	Buckinghamshire	Hardmead	Manor Farm	159	£286
June	Bedfordshire	Pavenham	Memorial Farm	156	£282
July	Bedfordshire	Gt. Barford	Greenfield Farm	26	£355
August	Bedfordshire	Northill	Grove Farm, Budna	98	£336
August	Huntingdonshire	Molesworth	Manor Farm	325	£280
August	Bedfordshire	Keysoe	Grange Farm	432	£259
September	Northamptonshire	Hargrave	Hillstone Farm	579	£250

An increasing proportion of the prices paid for a farm in the more fashionable zones nearer London reflects this residential demand, regardless of the agricultural value. Price comparison is not a basis for comparing the inherent agricultural value of the land.

The position of the tenant farmer affected by the projected developments will be even more serious than that of the owner-occupier. If he is dispossessed or if his holding is no longer viable, it is hardly necessary for me to say that his chances of being able to rent another, even without the competition of others, in a similar position, must be minute.

The disturbance compensation only amounts to a maximum of five years' rent, not loss of profit.

The tenant's landlord is unlikely to be able, even if he is willing, to buy another holding for him and should he do so, the potential profitability is unlikely to be sufficient to service an economic return on the money invested.

Conclusion

The Commission has asked for information on the local implications which it should take into account in its further work on this short listed site at Thurleigh.

The agricultural implications upon any inland site which meets the specification of the British Airports Authority are likely to be serious.

I believe that in the long-term national interest, great care must be taken to preserve the most versatile and productive land and that which is likely to respond most effectively to advances in agricultural techniques.

I believe the Ministry of Agriculture has succeeded in devising a suitable method of classification, for the primary purpose of guiding development away from such land.

I have seen the effect of technical advances over many years, in the zone around the Thurleigh site and I am convinced that this land possesses the very qualities which should be safeguarded.

I am therefore confident the Commission will pay particular attention to the agricultural implications of Thurleigh and upon its further investigation will confirm the view that this land should be preserved.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 2—**Principal agricultural holdings directly affected**

Holding No. on Plan	*Occupier*	*Holding*	*Acreage (approx only)*	*Wholly in Airport site* A	B	*Over 50% in* A	B	*Under 50% in* A	B	*Notes*
1	Exors. A. R. Panter decd.	Knotting Green Farm, Knotting	800					×		
2	Parrish & White Ltd.	Strawberry Hill Farm, Knotting	365					×		
3	Bedfordia Farms Ltd.	Arnoe Farm, Sharnbrook	260			×				Also occupy considerable acreages outside site area
		Land Thurleigh Road, Milton Ernest	60				×			
4	J. E. Hughes	Vicarage Farm, Sharnbrook	150			×				
5	D. T. Tompkins	Land Riseley Road, Sharnbrook	30	×						Also occupies other land on contract basis
6	T. A. Saul Ltd.	Bourne End Farm, Bletsoe	277	×					×	Also occupy considerable acreage outside site area
		Buryfields Farm, Keysoe	280	×			×			
		Greensbury and adjoining Farms, Bolnhurst	734		×	×				
		Coldham Lodge Farm, Riseley	195					×		
7	J. Ingle	Park Farm, Bletsoe	160	×			×			
8	J. Harris	North End Farm, Bletsoe	400	×			×			Also occupies other land outside site area
9	J. Hurley	Land, The Roses, Bletsoe	12	×						Also occupies Hill Farm, Sharnbrook outside site area
10	J. Abraham	Crossway Farm, Bletsoe	114			×				
11	M. W. Ward	Land, Falcon, Bletsoe	420			×				
		Brook End Farm, Keysoe				×				
		Elm Farm, Keysoe		×	×					
12	Bovril Ltd.	Castle Farm, Bletsoe	460			×	×			
15	F. Clifton & Son	Harings Farm, Riseley	487					×		
16	Wallis Bros.	The Lodge Farm, Riseley	445					×		
		Row Farm, Keysoe	75	×	×					
17	Eastwood Riseley Farms Ltd.	Town Farm, Riseley	567	×					×	
		Land, Mallowry, Riseley		×						
18	L. E. Dewsbury	Land, Keysoe Road, Riseley	48	×						
19	C. D. Clayton	Dorville House, Riseley	26			×				
		Glebe Land, Thurleigh	48	×	×					
20	H. W. Felce	Riseley Lodge Farm, Riseley	240			×				
21	F. K. Hartop	Keysoe Park Farm, Keysoe	900	×					×	
		Rutters Farm, Thurleigh							×	
22	J. & R. Bates	College Farm, Keysoe	421	×	×					
		Land at Keysoe		×						
23	Mr. Maddison	Land at Keysoe	60	×						
24	T. A. V. Lawrence & Son	Brook Farm, Keysoe	172			×				
25	T. J. Bates & Son Ltd.	Manor Farm, Pertenhall & Part of Grange Farm, Keysoe	870					×		
26	Brightman & Sons	Part Grange Farm, Keysoe Land at Colmworth & elsewhere						×	×	Occupies other land outside area (inside and outside 740 acres)
27	S. Minney	Vicarage Farm, Keysoe	65	×			×			
28	Various	Glebe at Keysoe		×			×			
29	W. W. Felts	Wychtree Farm, Keysoe	204	×			×			
30	C. E. James	Ashfield Farm, Keysoe	160		×	×				
31	M. J. Whitlock	Lodge Farm, Little Staughton	184						×	Also occupies Part Little Staughton Airfield outside site area
32	E. L. Hopperton & Sons	Manor Farm, Little Staughton	245						×	
33	G. M. Banks & Son	Hill Farm, Little Staughton	420				×			
34	J. H. J. Saunderson	Wickey Farm, Little Staughton	360		×			×		
35	H. D. Wagstaff	Wood End Farm, Bolnhurst	85		×			×		
36	M. F. Bates	Elm Farm, Bolnhurst	71		×			×		
37	J. Sharman	Land at Bushmead					×			
38	Mr. Crick	Land at Bolnhurst	11	×	×					
39	Mr. Barker	Turnpike Farm, Bolnhurst	110		×	×				
40	R. D. Hartop	Little Farm, Bolnhurst			×					
41	Miss A. Church	Manor Farm, Colmworth	227						×	
42	Seabrook & Gale	Rectory Farm, Colmworth	146				×			
43	A. W. Huckle & Son	Cherry Orchard Farm, Bolnhurst	139				×			

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 2—*continued*

Holding No. plan	*Occupier*	*Holding*	*Acreage (approx. only)*	*Wholly in airport site*		*Over 50% in*		*Under 50% in*		*Notes*
				A	*B*	*A*	*B*	*A*	*B*	
44	J. E. Stone	Hinton St. Mary Farm, Bolnhurst	50				×			
45	R. W. Osborn	Manor Farm, Bolnhurst	100	×	×					Also occupies Top Farm, Colmworth (200 acres) outside area
46	W. R. Radnor	Church Farm, Bolnhurst	220		×					
47	G. Pell & Son	Land at Bolnhurst	250						×	
48	Smith Bros.	Brook Farm, Bolnhurst	200						×	
49	F. W. Holley	Crowhill Farm, Bolnhurst	210				×			
50	Mr. Wagstaff	Land, Thurleigh Road, Bolnhurst			×					
51	King & Pell	Mavourne Farm, Bolnhurst	200						×	
52	T. G. Elliott	College Farm, Thurleigh	137	×	×					
53	Various	Glebe Land, Thurleigh		×	×					
54	Ellis & Sword	Land at Thurleigh	81		×			×		
55	M. Garatt	Bury Farm, Thurleigh with Green Park Farm	450		×			×		
56	W. Hope	Manor Farm, Romp Hall & Glebe, Thurleigh	442		×	×				
57	H. Holley	Park End Farm, Thurleigh	150						×	
58	H. Stanton	Willow Farm, Ravensden	200						×	
59	C. V. Towler	Scald Farm, Thurleigh	200		×					
60	G. Measures & Son	Blackburn Hall Farm, Thurleigh	300		×	×				
61	R. C. Smith	Coplar Farm, Thurleigh	50	×	×					
62	Mr. Briars	Smallholding at Thurleigh							×	
63	F. W. Infield	Kennel Farm, Colmworth								
64	G. H. Darlow	Berrywoods Farm, Bushmead	97						×	Occupies some other land

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

Drainage evidence

SUBMITTED BY MR. H. C. BALFOUR

1. I am a Member of the Institution of Civil Engineers, a Member of the Royal Society of Health, a Member of the Institution of Public Health Engineers, and Associate Member of the Institution of Water Pollution Control. I am a Member of Council of the Institution of Civil Engineers and also a member of their Hydraulics and Public Health Board.

2. I am a Partner in the firm of D. Balfour & Sons who over the past 80 years have been engaged in schemes of water supply, surface water drainage, sewerage and sewage disposal.

3. The National Farmers' Unions are concerned that the proposals could have a detrimental effect on the interest of their members by reason of the large additional volume of rain water which will have to be discharged to the water-courses from the runways and Airport buildings. They are also concerned at the possibility of pollution of the water-courses from oils and chemicals discharged with the surface water and the discharge of sewage effluents resulting from the large number of staff employed and by passengers in transit.

4. The area selected lies in the catchment of the Great Ouse River Authority. The northern portion of the area is drained to three streams which flow eastwards to the River Kym. This river flows generally in an easterly direction to its confluence with the Great Ouse just to the north of St. Neots. The central and southern part of the area is drained by two streams which rise on or near the existing airfield. These streams flow southwards to join the Great Ouse east of Bedford. The remaining northern and western part of the designated area is drained by two streams which flow westwards to discharge into the Great Ouse near Sharnbrook and Bletsoe. At the present time some flooding takes place on all these streams but particularly those on the eastern and western parts of the designated area. The Great Ouse is liable to flood adjacent land on a number of occasions annually and serious flooding has occurred on at least two occasions since the last war.

5. The proposed site is largely boulder clay with areas of alluvium in the valley of the Great Ouse. I anticipate that the clayey nature of the area will cause a relatively high rate of storm water to run off from those areas which are not used for runways, buildings, etc.

6. I have estimated the surface water run-off from the site as it exists at the maximum rate of about 1,500 cubic feet per second (cu/secs) and a maximum of about 200 million gallons per day (mgd) based on a storm likely to occur once in 20 years. The maximum rate of run off to be expected from the airport site will be about 3,500 cu/secs and a maximum daily flow of about 350 mgd based on similar intensities.

7. The existing system of streams and rivers is quite unable to accept such high rates of flow and I consider that provision must be made to restrict the flow to the existing water-courses to rates not in excess of those normally experienced at present. This could be ensured by the provision of storage lagoons to provide retention for flows over and above those occurring at present.

8. The proposed new town of Milton Keynes is to be constructed about 15 miles south west of the designated area. Recently the Milton Keynes Development Corporation has received reports on Surface Water Drainage and sewerage and Sewage Disposal for the designated new town area. The surface water sewerage arrangements are to be designed so that normal storms will not increase the river level more than a nominal amount.

The increase in the development area will, however, inevitably increase the volume of run-off and storm water storage lagoons are to be constructed to control the rate of discharges to the river. If the scheme for the airport at Thurleigh is to proceed the proposals for the discharge of storm water must be designed to allow for the increased volume of flow which will arise from Milton Keynes.

9. From the figures given in the Commission's booklet* I estimate that a volume of about 4 million gallons per day of domestic sewage will have to be treated. This would represent a proportion of about 1 part sewage to 1 part river water at periods of minimum flow and only 1 part sewage to 45 parts river flow at periods of average flow. But if the proposed flow of 24 million gallons per day from Milton Keynes is also included the proportions are 7:1 at minimum flows and 1:6½ at average flows. These figures are based on recorded daily mean and minimum flows at Bedford which include sewage flows from the existing development upstream.

10. I consider that the siting of an airport at Thurleigh will increase the risk of pollution of the streams and ditches and the National Farmers' Union will wish to be assured that all precautions are taken to prevent oil and special chemicals, such as those used for fire-fiighting, de-icing runways, cleaning down aircraft, from being accidentally discharged into surrounding rivers.

---

* *Site Information for Stage II Local Hearings. 4. Thurleigh (Bedford).* (HMSO; 6s.) Reproduced at p. 1801.

Printed image digitised by the University of Southampton Library Digitisation Unit

11. I am anxious to direct the Commission's attention to the serious problems which will arise with disposal of foul sewage and storm water from the proposed airport. The proportional volumes of sewage and natural river water is such as to make a very high degree of purification essential and careful research into the effect and desirability of such discharges should be considered. The disposal of the storm water will have to be carefully considered in conjunction with the Milton Keynes proposals and with any associated satellite developments in the area.

12. In view of the difficulty now experienced with the Great Ouse in the area the question of the disposal of storm water and treated sewage effluent is likely to be unusually expensive. I am unable to estimate the order of expenditure at this stage until the proposals for the whole area including the airport and other major developments are more clearly defined.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

Evidence of representative farmers

I. Submitted by Mr. M. W. Ward

1. My name is Mark William Ward, aged 30 years and I live at Brook End Farm, Keysoe. I also farm as tenant Elm Farm, Keysoe Row, and Falcon Farm, Bletsoe, total 418 acres, all of which is tenanted land. I am a member of N.F.U. (Number K 37187) and I am a committee member of the Kimbolton & District Agricultural Discussion Group. I am at present Vice-Chairman of the Bedfordshire Airport Resistance Association. I was Joint-Master of the North Bucks Beagles (1958–1961) and Secretary to the North Beds Young Farmers (1961). I was educated at Wellingborough School, and left in July 1955, at the age of 16 years, having passed four G.C.E. Certificates.

2. I started working for my father on his 260 acre farm at Melchbourne. A serious illness of my father soon after I left school prevented me from going to Agricultural College, since he had only one man and myself working the farm. I did, however, complete a correspondence course and attend evening classes at Mander College, Bedford, during the winters of 1959–60 and 1960–61. During this time I kept pigs on my own account, to gain knowledge and supplement my wages.

3. In 1959 I rented 9·6 acres at Melchbourne, being Glebe land, on which I grew cereals and grass seeds.

4. In 1960 I started looking for a farm to rent on my own account; I was short-listed twice, limiting my search for a farm to within 40 miles.

5. In 1962 I was fortunate to rent 140 acres at Falcon Farm, Bletsoe, from Newham Holdings Limited. Also I was able to rent an adjoining 5·4 acres which belongs to the Parish of Bletsoe; this land had excessive hedgerows and was in need of drainage. I ploughed this land for the first time in living memory, much to the apprehension of the locals, but it has since grown good cereals and potato crops.

6. In 1965 I rented a further 4·5 acres from Mr. Bates, Ronda Farm, Bletsoe, adjoining the existing Falcon Farm. This land had been neglected for several years, and again I had to cut back large hedgerows and drain, and generally clear the land of grass weeds; it now grows substantial arable crops.

7. In 1968 I was also to rent two more farms, 202 acres at Brook End, Keysoe and Elm Farm—56·6 acres—at Keysoe Row.

8. The land at Bletsoe is of two types, 65 acres of loam overlying gravel adjoining the River Ouse, the remainder a heavier loam overlying clay, which is all tile drained and requires mole-draining and pan busting when conditions are suitable.

The land of Keysoe is of a heavier nature and is more typical of the district as a whole. Approximately 40 acres adjoining the brook on the North West of the farm is of a sandier nature, the remainder being the clay loam.

9. The cropping at Bletsoe has been up to 24 acres of potatoes, 26 acres of canning peas, 50 acres winter wheat, and 50 acres spring barley, the balance being grass. The grass average will be increased by nine acres next year, as this is meadow-land which I ploughed in 1965 but owing to the increased flooding hazard the risk of growing a high-cost arable crop has become too great, although this land would be very suitable for early potatoes.

10. Since I am now farming all the land as one unit the cropping for 1969 is 35 acres potatoes, 65 acres dwarf beans under contract for processing, 15 acres peas for canning, 179 acres spring barley, 42 acres spring wheat, and 56 acres winter wheat, the remaining acreage being taken up with grass paddocks and roadways.

11. The number of employees is one full-time tractor driver and one part-time pensioner; also I contract drill, combine and spray a further 150 acres for my father. Whilst I was at Bletsoe only I had no regular workers and used only piece-workers for potato picking.

12. Improvements carried out at Bletsoe are in drainage, removal of hedges, ditches and re-claiming waste land, and also, with regard to the buildings, I have installed a grain-drying unit, repaired and renovated all the buildings including fitting new doors and concreting yards and barn floors, plus making access roadway to the buildings; in 1966 I erected a new building 45′ × 25′. This has involved me in a total capital expenditure of £22 per acre.

13. Since taking the farms at Keysoe I have carried out improvements to grain-stores, and made a new roadway into the main block to remove vegetable crops this year, and also a certain amount of drainage work has been carried out. Taking into consideration the ingoing in September 1968 the total sum of investment so far is approximately £30 per acre.

14. My plans for the immediate future are to improve the drainage so that I can increase the productivity of the Keysoe farms in particular, and grow a higher proportion of vegetable crops. Also, with the ever-increasing demands on the industry as a whole I shall try to increase my acreage to approximately double the present acreage so that I may use the larger machines and be able to pay higher wages to my employees, as well as creating a better job for them.

Printed image digitised by the University of Southampton Library Digitisation Unit

15. I am married, and have two daughters, aged 5 and 3 years and we all enjoy following countryside activities.

16. Should Thurleigh (A) be chosen as the Third London Airport, I would be left with no house or farm buildings and approximately 30 acres on the N.E. corner and approximately 10 acres on the S.W. Severance of the local roads could mean at least a 12-mile instead of a 6-mile journey from one part of my land to the other. For the acreage involved this would mean the unit becoming completely uneconomic, as to entertain an acreage of market-gardening in this immediate locality is not feasible, owing to the height and general lateness of the district as compared with the Biggleswade area. Also, the growing shortage of skilled market-garden workers would be greatly aggravated as many would be drawn to the airport for varying reasons.

17. Since I am a tenant farmer I feel I would have to try and find another farm, but as I have had such great difficulty in finding my present acreage I feel my chances of moving into a completely new area as a tenant are very slim indeed. If I was fortunate enough to find another farm it would mean adapting myself to completely new techniques in soil management and a host of other technicalities which are at present second-nature to me, as I have lived in this district all my life. I feel, too, that competition would be much keener if an inland site is chosen, as many people are going to be in a similar position to myself, which is very disturbing at my age.

18. My employee would not like to have to move as he and his family have lived in this area for many generations.

Should Thurleigh (B) be chosen I would lose approximately 60 acres, but it would leave my house and my workers' homes in the 55 NNI level and I am not prepared—and neither are my employees—to live with a continuous noise of that intensity. We occasionally experience night-flying from the present airfield, which stops my children from sleeping and makes the telephone useless, as we can neither hear nor be heard. It would mean that I would have to find homes for myself and my employees within a reasonable distance to work the farms; this in turn would mean serious administrative problems and increased travelling expenses, for which I would receive nothing from the Airport Authorities or anyone else. It would undoubtedly mean my re-planning the cropping rotation as I think any large-scale, high-cost, crop would be very unlikely in the area, since on a national basis the unemployment is low, and to introduce such a large labour magnet of 45–60,000 people on the doorstep would create a serious problem.

19. Another problem which would be created for me, as I have land at each end of the proposed site, would be the difficulty of moving machinery, since certain roads would cease to exist. This would considerably increase the mileage between farms, and the fact that the roads in the area as a whole would be far more congested would mean added difficulties, as even today two large vehicles cannot pass on many of the roads.

20. The land lost may seem relatively small, but it would mean less efficient use of capital spent on machinery and a definite loss of income not only to myself but also to my employees, which could be a bitter pill, as one can anticipate a rise in the cost of living in the area as a whole.

21. Other aspects that I feel would affect me in varying degrees if I should be left to farm in the close proximity of an airport of this size are:

(*a*) Should I try to continue growing potatoes, I would wish to continue to use helicopters to spray for blight control, as they have proved to be extremely efficient, but I doubt whether they could then operate in this area.

(*b*) Sudden noise caused by aircraft flying low over one when one is operating large and expensive machinery is extremely annoying, and can be dangerous, as we know because we experience this at present to a small degree; also one has fears as to what effect it would have on livestock.

(*c*) Drainage seems likely to be a problem to myself, as a certain amount of run-off, if not all from the airport, would be channelled into my ditches, and judging from the experience of my neighbours and myself relating to the present airfield, it has serious eroding effects to ditch banks whenever there is an excessive rainfall. Also, it would appear from the Authorities concerned that the River Ouse valley will suffer far greater flooding hazards than even in 1968–69, and even these have caused hardship and bankruptcy to many farmers.

(*d*) The aspects of safety and fall-out on the Falcon Farm, Bletsoe, arise, since this land will be right at the end of a runway. I feel these two items give me some concern as although fall-out at present is not perhaps a significant factor, one cannot help feeling it might easily become a factor with an airport of the size envisaged as the Third London Airport.

(*e*) The education of my children also gives me some concern. One at present goes to a village school which falls in the 55 NNI, and I cannot believe they could enjoy and learn as well as they do at present.

The well-being of many older people in my village is also something I feel should be considered. Many of them have devoted their lives to the area in agricultural and local crafts, and have bought cottages with hard-earned money for which they would not receive adequate compensation to reinstate them in a similar environment. This would mean they would have to live in a block of flats in an urban area, which would remove all incentive from them to live.

22. For the district as a whole, and in particular the future of Beds. Growers, of which I am a shareholder, and am under contract to market two-thirds of my potato crop through the organisation, I feel it would prove to be disastrous, as the future of Beds.

Printed image digitised by the University of Southampton Library Digitisation Unit

Growers depends upon the increasing growth of marketing vegetables, and this would be severely curtailed, not only with the airport site but in particular with the suggested new developments in the Sandy area and also the projected motorway which would be carved through the salad bowl area south-east of the airport. I feel this to be a very relevant point to this area as one-third of the total acreage of brussels sprouts are grown in Bedfordshire.

23. This whole process of selecting the Third London Airport appears to me monstrous and sickening to the thousands who are having to live with a death-sentence hanging over them, through no fault of their own. As far as the layman can foresee there is a creative alternative, which other countries are adopting under similar circumstances, i.e. building the airport on land which is non-productive and causes the minimum of hardship.

24. One readily accepts that the nation *may* need an airport of this size but the implications of bringing a development of such magnitude into an area like N. Bedfordshire, destroying a natural asset, seem completely inconceivable. This is particularly the case when one considers the question as to how long even this airport, at its projected size, would continue to be adequate for the aircraft development of the future.

M. W. WARD.

Printed image digitised by the University of Southampton Library Digitisation Unit

II. Submitted by Mr. R. B. Paynter

1. My name is Richard Bernard Paynter. I manage 464 acres of Rifle Range Farm, Yelden, Bedford. The farm lies approximately 3½ miles N.W. of Thurleigh R.A.E. and approximately 1 mile E.S.E. of Chelveston aerodrome.

2. The Ministry of Agriculture holding No. is 1/106/37. The landlords are my father's executors and the tenant of the farm is Harold B. Paynter Ltd. for whom I manage the farm. I am a shareholder of the above company.

3. I am at the moment a member of the Bedford Branch of N.F.U. Committee, Chairman of Kimbolton Agricultural Discussion Group, a member of Huntingdonshire Association of Discussion Groups, Vice-Chairman of the Harrold Group of ACT and also serve as a Committee member of the North Bedfordshire Productivity Association representing agricultural interests.

4. I was brought up in farming and started work in 1947 with H. B. Paynter Ltd. at Manor Farm, Knotting, Beds., this farm being 762 acres in extent with a pedigree herd of Redpoll cattle and two pedigree flocks of Suffolks and Southdowns, with wheat, oats, and barley being grown.

5. In late 1947 the neighbouring farm called Rifle Range Farm, Yelden was rented from Pyford Court Estates (later Gilston Estates). This farm extended to 464 acres, and was devoted to a cereal and roots rotation with the sheep.

6. I continued my association with the Company, a managerial capacity, until 1962, when I left the company's employ and took a Manager's job in Hampshire to widen my experience. I continued in this position for nearly two years and was involved in pedigree grass seed production and cereal growing.

7. I then moved to a 1,700 acre estate at Oundle as an under Manager, involving use in sugar beet, dairying and cereals. I was there for 8 months when my father died in March 1964. I returned at the request of my father's executors, to Rifle Range Farm, Yelden, as manager for the Company of H. B. Paynter Ltd., the farm at Knotting having been sold and Yelden bought.

8. Since returning to Yelden I have been running the farm as an intensive cereal unit with a break crop of beans, this proving to be a profitable enterprise on the heavy boulder clay land.

9. A programme of improvement has been maintained over the years that the family has been associated with the farm; some 8½ miles of drainage pipes laid in the 2 years following 1947 and a considerable amount of ditching done in 1960; a grain drier was built at Yelden with a capacity of 500 tons; during the current year a further grain storage building and workshop has been erected, with concrete service roads and apron around it; and a new farmhouse is in the final stages of completion.

10. The net investment figure at 31st May, 1968 for implements, buildings and grain driers, tractors and harvesters was £23,947. Since this date a further £12,000 has been spent in the new building, roads and farmhouse.

11. The main development to come is the reclamation of the Yelden Rifle Range which was approximately 92 acres in extent. This was relinquished by the Ministry of Defence when the lease ran out two years ago. Thirty acres has already been reclaimed and drained. The drainage costs come to £1,979 before grant and the clearing and cultivations approximately £600. A further 12 acres has been cleared and moledrained in the current year. Dilapidation, paid by the Ministry of Defence amounted to £5,575, this figure being some £3,000 below the figure calculated to reclaim the whole area and remove various installations, owing to a limiting clause in the lease.

12. During the current year some £275 has been spent on ditching with a further programme to ensue.

13. If the airport comes to Thurleigh I shall not lose any land in the first instance as the farm is situated about 2½ miles from the proposed perimeter fence. The first effects would almost certainly be the difficulty in getting labour, and later the noise problems when the airport was in operation. Just how much this would affect the living conditions of myself and family is very hard to assess, but judging by other people's experience it would seem to be quite drastic.

14. I understand from information that has been circulated that a large centre of population of approximately 120,000 people would be very close to the farm, bringing with it the attendant problems of trespass, stray dogs and dumping of rubbish and litter. These problems are well known and do not need to be elaborated on here. Their effect on livestock farming can be drastic. They will continue until the bulk of the population is educated to treat with consideration the countryside and to understand the pressures it exerts on the farming community and its ability to make a living in agriculture.

15. Looking to the future I would expect that the farm would be required either for roads or for industrial development within the next 10–15 years, if not a great deal sooner.

With the shortage of farms that is likely to occur when so many acres are being taken from agriculture I foresee that it will be well nigh impossible to obtain a farm within the twelve months required for the re-investment of capital to avoid capital gains tax, even if a farm is obtained the going prices for such land is sure to be above the level of compensation paid under existing law, thus leaving the farmer

Printed image digitised by the University of Southampton Library Digitisation Unit

with the option of either buying a smaller unit or else launching into borrowing money at extremely high interest rates. This, coupled with the fact that it takes at least two to five years to get back to the same level of management and income achieved on your last holding, all presents a very depressing outlook to an owner-occupier and disastrous for a tenant farmer.

16. My family has lived in Bedfordshire since 1939 and our friends and relations are in the area and the thought of having to move from the area, especially the farm, is not a happy prospect. My wife and I have two sons, one aged 9 and the other nearly a year old. The effect on the elder boy might be quite considerable at this stage of education.

17. Farming requires an ability to pass on an economic and viable unit. The relationship a farmer has with his farm is akin to that of a gardener. He knows and understands the land he is cultivating and the best ways to obtain a good result for now and the future. Land is not a dead thing like a lump of iron; the motto of an Australian agricultural organisation is "Nurture the soil for by it alone man liveth". There is a deal to commend it.

18. Mankind at the moment seems to be hell-bent on destroying the amenity values and environment he lives in and to submerge under concrete such a colossal area of land in the name of progress. This seems to me to be totally out of keeping with man's future psychosocial needs; there is little satisfaction indeed in contemplating concrete and noise; among many thinking people there is a growing realisation that a purely materialistic outlook cannot provide an adequate basis for man's continued existence. I sincerely hope these ideas are penetrating the bastions of power in this country.

19. Apart from the emotional ties and reasons I am against this development, I do not consider an island such as this can possibly afford to sanction land-take on such a colossal scale as is envisaged.

20. I think we should take a leaf out of the Dutch book and reclaim land from the seas for such purposes as airports and deep water ports and agriculture.

The safety factors of sea approaches and take-offs have much to commend them into the bargain.

Printed image digitised by the University of Southampton Library Digitisation Unit

III. Submitted by Mr. R. W. Osborn

1. Roger William Osborn.

My father was a farmer and I come of farming stock on both sides of the family, although I had to go into industry in order to acquire sufficient capital to farm myself.

So far as local activities are concerned I have been a Parish Councillor in this area for ten years, although not at present serving. I was formerly chairman and chief organiser of Cople Playing Field Association which raised over £5,000 by voluntary efforts to set-up and establish a playing field in that parish.

I am a founder-director of Bedfordshire Growers Ltd., a farmer owned co-operative engaged in the packing, marketing and distribution of fresh vegetables in this county, and having a turnover in excess of £600,000. (This company will also be severely affected by the proposed airport.)

2. **Particulars of holdings**

I own and farm 200 acres in the parish of COLMWORTH and 100 acres in the parish of BOLNHURST.

The soil is best quality boulder-clay, level, well-drained, and in a high state of fertility. It is capable of growing very heavy crops of cereals and vegetables, including particularly brussels sprouts and King Edward potatoes. The farm buildings and cottages are suitable for the type of farming practised, and are in a good state of maintenance.

In the past ten years nearly £10,000 has been spent on maintaining hedges, ditches, buildings, and housing.

Over £5,000 has been spent in 10 years on improvements—grain storage, concrete cattle yards, field water supplies, cottages, drainage etc.

3. **Special characteristic of this area**

In order to understand the type of high-farming carried out by the best farmers in this area it is essential to appreciate that it is the centre of the best sprout growing land in the U.K., and very possibly in the world. (Over one-third of the total sprout production of the U.K. is grown in Bedfordshire.)

Hand-picked sprouts, properly grown, should yield over 6 tons per acre, and up to 8 tons, and the value of the gross output should be around £300 per acre. Apart from their high value they are the best "break" crop in existence, leaving the land clean and rested for cereals or whatever.

High farming in this area therefore revolves around the sprouts, and the fact that they have been grown for many years around here has given rise to a highly-skilled and very well-paid labour force; sprout-picking is not only demanding work but also calls for considerable know-how; gross weekly wages run from £25 to £30 per week during the season, and in order to hold the men out of the sprout season one has to grow potatoes; this land is particularly suited to King Edward potatoes, which are superior in quality to any other variety and command a premium in the market.

4. **Capital investment—improvements, etc.**

		present value
Top & Low Farms, Colmworth 200 acres at cost 1958	£18,044	
Manor Farm, Bolnhurst 100 acres at cost 1965	£20,760	
	£38,804	£90,000
Improvements less depreciation & grants to 5.4.69	£5,062	£5,062
Plant, Machinery, & Stock & crops at 5.4.69	£14,244	£14,244
Total investment	£58,110	£109,306

Note: in addition to the above about £10,000 of working capital is involved.

5. **Effect of airport on farming operations and propects**

We do not yet know exactly what parcels of land will be taken or when, or where roads etc., will run and at this stage therefore one cannot be precise about the effects. Perhaps most important we do not know whether we should lose all or only part of our holdings.

However, in general, it would seem that farming as at present carried out in this locality would cease. It seems unlikely that agriculture could compete in the labour market with the kind of wages being paid to totally unskilled labour like baggage porters at Heathrow, and therefore the growing of sprouts and potatoes would cease; neither of these operations can or ever will be mechanised to produce the high standards we can obtain by hand-labour. Moreover this land will not carry machinery during wet spells. This would have a profound effect on output which would fall by at least half and remove the essential "break crop" element referred to above. Without good break crops the output of cereals would fall, eventually below economic levels, as in so many other parts of the country already.

Moreover, we could not fall back upon intensive livestock or dairying without heavy capital expenditure on fencing, water, and buildings, and for reasons outlined below it will be apparent that we could not in fact raise this capital in any case. In any event, the effect of noise, disturbance, and trespass probably rules out livestock farming in the area of an airport.

I am experienced in intensive arable farming, and at my age (59) it seems unlikely that I could pick-up the necessary expertise in some totally different system of farming, even if I could raise the capital, with a falling return because of the changes in output indicated above.

Whether one loses all or part of one's holding it would seem that one would have to sell-up and move with small chance of re-instating oneself on similar land elsewhere. And if one did sell-up what would

Printed image digitised by the University of Southampton Library Digitisation Unit

one get for machinery sold at auction in an area where many others are doing the same and in any case changes in farming methods would require different machinery? I have £7,000 of machinery here at written-down values! I doubt if it would make £1,500, whereas in ordinary times it would make in excess of book values.

We understand that we should be compensated at "existing-user" values. If we lose a substantial part of our holding (in my case, say, the one third at Bolnhurst) we are left with an unviable rump; what would the value of this rump be? As farm-land less than half? And no compensation, I suppose? And any odd parcels sold for other purposes subject to planning permission, capital gains tax, and betterment levy?

Compensation for compulsory acquisition would be subject to capital gains tax if not spent within twelve months on another farm. Suppose I lose the 100 acres at Bolnhurst; it cost £200 per acre; present value, say, £300 capital gain £3,000, gains tax at 30% nearly £1,000, and very little possibility of finding similar land within reach of here, and values inflated because everyone else is having to do the same; probable cost of similar land within ten miles £400 per acre.

Now I come to what appears to be the greatest difficulty of all. I have an Agricultural Mortgage Corporation loan of £25,000—interest £1,546 p.a.—and a private loan of £5,000—interest £262—total interest £1,800 or about 6%. Neither of these loans is transferable and new money would cost at least 10% or £3,000 p.a. I understand there is no compensation for this factor.

It should be understood that farmers are in a special situation; we stand to lose not only our amenity and social background—all that is summed up in the phrase "way of life", but the financial means to continue that "way of life" elsewhere.

What is needed is not just *compensation* for immediate loss, but the means to *reinstate* oneself elsewhere.

6. **My general view of inland airports**

The siting of the Third London Airport is the biggest planning problem this or any other country has ever faced. We are one of the most densely populated countries in the world and already very highly developed; our agricultural land is in fact the only inexhaustible natural asset which we possess. It is in any case diminishing at the rate of 40/50,000 acres per annum for housing, roads, factories etc., and unhappily in most cases, and certainly in the case of THURLEIGH it is some of the very best land in the country which may be involved.

I believe that it would be a crime to sterilise thousands of acres of this precious possession, which really belongs to posterity for whom we are trustees. I should feel the same if I lived in the middle of London, and were not directly involved.

There is a strip of country west of the North Road, never much more than 10 miles wide, and running from west of Biggleswade right up to Stamford, which to the seeing eye is more or less undeveloped agricultural land, undulating, wooded and altogether delightful, and within 50 to 90 miles of London. This is the stretch which we are considering spoiling for all time.

We should be very sure of what we are doing. I question whether such an airport will be needed at all! A great deal of flying is purely for pleasure—holidays and so on. Those who make use of this facility have no moral right to do so at the cost of posterity and certainly not at the cost of those of us who would be displaced. Heathrow could be restricted to essential flying only, and the third airport sited where it would do the least damage to agriculture and amenity.

Furthermore technical developments—vertical take-off, for example—could render the whole project redundant within the next decade.

Printed image digitised by the University of Southampton Library Digitisation Unit

IV. Submitted by Mr. W. J. Bates

1. I am a director of the above Company (Manor Farm, Pertenhall), Justice of the Peace, Chairman of Pertenhall Parish Meeting, Chairman of St. Neots Branch National Farmers' Union, Director of Syndicate Credits (Beds. & Hunts.) Ltd., Member of the North Bedfordshire District Committee Agriculture Executive Committee, Member of the Bedfordshire & Huntingdonshire Area Advisory Committee Agricultural Training Board.

2. We trade as P. J. Bates & Son, we farm 900 acres, 886 of which are owned and 14 tenanted as Nos. TL 06 NE BEDS & TL 06 SE HUNTS. 675 acres have been farmed since 1937 by my family and 661 acres owned since 1936. A further 225 acres were purchased in 1968 and have been farmed since October last. A mortgage is held with the A.M.C. on 661 acres. I have been actively engaged with the farm since leaving school in 1947 and have two sons whom I hope will follow me in the enterprise.

3. The farm is mainly arable with some livestock and the current year's cropping is as follows:

barley	310 acres	hay	30 acres
clover	30 acres	peas	35 acres
oats	33 acres	seeds	30 acres
permanent grass	84 acres	beans	65 acres
sugar-beet	30 acres	wheat	260 acres

The remainder of the land being roads, buildings, woodlands etc. We also run between 100 and 150 beef cattle and 100 and 150 fattening pigs.

4. About 12 acres of the land are adjacent to two brooks which run through the farm and are frequently subjected to flash flooding.

Recent capital improvements have been 350 acres tile drained and four miles of drag line main ditches. Three miles of mains water have been laid to service 400 acres. Three miles of hard roads have been put down. 15,000 sq. ft. of umbrella-type buildings have been erected and a bulk grain storage unit for 1,200 tons with dressing and drying facilities installed.

5. Future plans (in the event of the area not being taken for the third London Airport) are to continue as and when possible with further drainage works,—in fact 60 acres have at present been surveyed and given the Ministry approval. At the present time we are not proceeding with the matter because of the sterilising effect on the area by the proposal. We intend to install a larger output grain dryer. Two miles of road are required also. A number of hedges and trees need removing; and a new bungalow is planned to replace an old cottage for a worker.

6. In the event of the third London Airport being sited at Thurleigh we would lose at least 150 acres of our land to the airport site, and would envisage considerable further losses to roads and other pressures on the surrounding area. We consider that we would be seriously affected by a flash flooding over a much larger acreage of our farming enterprise and on a more frequent basis especially as a number of our existing drainage outfalls come within the airport boundary.

7. Labour to run our enterprise would become extremely difficult and the problem of trespass would be increased considerably.

8. I have four children, aged 11, 9, 7 and 4 and I am seriously concerned, not only with the effect upon them of living in such close proximity to an airport, but with the effect on their education due to the noise factor. Difficulties would also be encountered in travel to school as it would appear that our main route to the south from Pertenhall would be severed by the airport site itself.

9. In general, the potential of my land is extremely high and I cannot understand why productive land is envisaged for a development of this kind when there are numerous other areas of derelict land and the possibilities of reclamation which will not only give us the benefits of an airport, but will relieve us of all the problems which would arise from an inland site. The nation already has a vast explosion of population which is extremely likely to increase, and I feel that whilst we can at present import subsidised foods from other countries, if the land loss continues at its present rate, we shall soon be faced with a position where we have no home competition and therefore we will not be able to keep food prices on a reasonable level.

Printed image digitised by the University of Southampton Library Digitisation Unit

V. Submitted by Mr. G. E. Richards

1. My name is Gwlym Elfryn Richards and I live at the "Sycamores", Church Street, Langford, Biggleswade, Bedfordshire.

2. I am the Managing Director and Secretary of the above Society [Bedfordshire Growers Ltd.] since its inception in 1964.

3. I have had considerable experience in practical farming having been born on a farm, attended the Royal Agricultural College at Cirencester, managed a farm and since 1958 have held three positions concerned with marketing horticultural crops including potatoes:

(1) Packhouse Manager, Land Settlement Association Ltd., Chawston, Beds.

(2) General Manager, Humber Growers Ltd., Welton, East Yorks.

(3) My present position.

The last two have both been produce marketing businesses which have been started from scratch.

4. Bedfordshire Growers Ltd., has nearly 100 members in the County of Bedford, all of whom are farmers and market-gardeners varying in size from 1,500 acres to 20 acres. The Society was formed to provide the area with a modern marketing organisation for horticultural and potato crops. The total acreage of crops marketed in 1964 was 1,750 acres, this year the acreage is now nearly 2,500 acres.

5. Produce from 800 acres of this land comes to a depot for cleaning, grading and pre-packaging. We are anticipating a 10% increase per annum in our total contracted acreage for at least the next ten years and a 20% per annum increase in quantities coming to the depot for processing and pre-packaging during that period.

6. By the end of August, 1969 the total capital outlay on buildings and machinery will reach approximately £45,000. The Ministry of Agriculture or its agents have contributed one-third of this sum in various forms of grant aid. We expect to invest a further £10,000 per annum during the next 10 years of which, under existing schemes, the Ministry of Agriculture will contribute one-third.

7. The services expected from a modern horticultural and potato marketing organisation are both complex and highly sophisticated. In order to avoid waste and retain flavour and good food value our produce, in the main, needs to be in our customers' kitchens within 48 hours of harvesting. The housewife and catering establishments are insisting on having clean, high quality produce with the minimum amount of waste and presented in a form that is easy to prepare for the table. A growing number of retail outlets require produce to be pre-packaged. The organisation requires a highly skilled production staff to co-ordinate the flow of produce and provide technical advice on production and presentation. The existing transport services need to be co-ordinated and new services provided. A nation-wide marketing intelligence is required together with experienced officers and salesmen to place the produce. A large depot with cold store facilities run on factory lines is needed for the cleaning, grading, and pre-packaging operations. Our organisation is already able to provide most of these facilities and a young, skilled staff have been recruited but we must continue to expand in order to provide all the up to date requirements.

8. At the present time, Bedfordshire is one of the very few areas in the country which can support such an organisation and provide the necessary growth. It has the highly fertile land required together with the right climatic conditions to provide vegetables all the year round. It is strategically placed between London and the Midlands centres of population with the A1 and the M1 readily available for access to the northern markets if shortages occur in these areas. There is a wealth of experience on the production side which has been passed down from generation to generation. Bedfordshire is renowned throughout Europe as a producer of high-quality brussels sprouts, which is in fact the main crop handled by our Society and as we develop, the prospects of exporting this product should be very good indeed.

9. If the proposed airport is built, of our existing 2,500 acres contracted nearly 700 acres will be seriously affected and to a lesser extent a further 300 acres. No decision has yet been made by my Board but I know my directors feel that if the airport should be here there is no future for our organisation and the capital investment will cease. They have based their thinking on experience of other areas where this type of development has taken place. Because of the loss of land, the fragmentation of holdings and the excessive competition for labour intensive production, such as market gardening comes to an end and what land remained would go down to corn or grass.

10. I find it difficult to believe that it is in the nation's interest for this to happen to such a highly organised and fertile farming county such as Bedfordshire. For my part, together with most members of my staff, our careers would take a sudden jolt. We would be left with the impression that no part of this country is safe to practice our chosen occupations and must seek other parts of the world where food production is considered of national importance.

11. The fact that many farmers and their workers may have to move out of the area, breaking long-term relationships and even the break-up of their family ties is also an important factor. Many people, particularly the older generation would find it most difficult to adapt to change at their ages, and when one considers the younger generation, possible changes in educational establishments would be to their long-term detriment.

Printed image digitised by the University of Southampton Library Digitisation Unit

12. Farmers in the immediate area would lose all or part of their land coupled with the fact that the following points would be considerably detrimental:

(a) The effect of noise in an area relatively full at present.

(b) The effect of unburnt kerosene on the surrounding countryside.

(c) Large tracts of land would be acquired for roadways linking such a development area with existing routes.

(d) The Ouse Catchment area is considered to have one of the biggest drainage problems in the country; an airport, with its acres of concrete would only add to the existing difficulties.

(e) Sightseers could also seriously affect land in the area by trespassing, particularly so in market garden and vegetable growing areas.

Surely there must be sites in the country where good land is not taken, where the local population is less in number, and where the land is of no agricultural value, which could be used.

13. May I, representing my Board of Directors and the total membership and staff, ask that every point is considered in great detail before a decision of such magnitude and importance is made.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Nature Conservancy*

1. Introduction

The Nature Conservancy was established by Royal Charter in 1949 to provide scientific advice on the conservation of the natural flora and fauna of Great Britain; to establish, maintain and manage Nature Reserves in Great Britain, including the maintenance of physical features of scientific interest, and to organise and develop the research and scientific services related thereto. Further powers have been conferred upon the Conservancy in various statutes, notably Part III of the National Parks and Access to the Countryside Act, 1949.

Following the establishment of the Natural Environment Research Council on 1st June, 1965, and by virtue of Section 3(3) of the Science and Technology Act, 1965, these functions have been formally transferred to the Council. As a Charter Constituent body of the Council, the Conservancy continues to exercise these functions on behalf of the Council.

The attached report has been prepared by the Conservancy to provide information on the scientific interest of the Thurleigh area and the implications for nature conservation of the proposed development of the area for use as an airport.

2. Review of areas of scientific importance

As new knowledge becomes available, the relative scientific importance of particular sites has been kept under review and a major comparative survey of important sites is at present being carried out by the Conservancy on a Great Britain basis. Sites within the area under consideration have provisionally been classified as follows:

GRADE I	Sites of international or Great Britain importance;
GRADE II	Sites which are either of equivalent status or only slightly less important;
GRADE III	Sites of high regional importance, rated as high quality Sites of Special Scientific Interest, but not of comparable quality to those in Grade II or I;
GRADE IV	Sites of scientific interest of local importance notified under Section 23 of the National Parks and Access to the Countryside Act, 1949.

Sites within a 10-mile radius of the site of the proposed airport, which would qualify for inclusion in any of the above Grades are referred to in 4 below, with relevant Grading.

3. General description of Thurleigh area

The proposed airport site lies in an area of relatively soft rocks with a superficial cover of boulder clay overlying Oxford clay. Where valleys deeply dissect the landscape, as in the Pertenhall and Tilbrook valleys, the Oxford clay outcrops in the valley sides. This type of terrain dominates the whole of the eastern half of the 10-mile radius around the proposed site.

In the western districts the Jurassic strata beneath the Oxford clay reaches the surface as a result of a low south-east dip in the rocks. These rocks only outcrop in the sides of the valleys in a landscape which is broadly dissected. The remnants of high ground are capped by boulder clay which includes patches of glacial sands and gravels. In the Ouse valley, west of Bedford, within a mile and a half of the airport centre, the Kellaways beds, Cornbrash and Great Oolitic series outcrop whilst the Nene and Ise valleys to the west of Rushden cut through the interior oolite and upper lias clays. These Jurassic strata consist mainly of limestone clays, with some sand, silt and ironstone. All the valleys are floored by alluvium and contain up to three levels of terraced gravels.

The immediate surrounding area is, for the most part, intensively cultivated, although there are a number of woodlands and smaller areas of permanent pasture grassland. Along the River Great Ouse valley there are a number of important flood meadows and marshes.

Oxford and Boulder Clay area

A fine, but broken, belt of deciduous woodland stretches across the ridge of the boulder clay and is largely composed of oak (*quercus robur*) and ash (*fraxinus excelsior*) standards with hazel (*corylus avellana*) copice. Brampton Wood, Odell Great Wood, Perry Woods and Swineshead/Spanoak Woods are examples of this type of habitat and contain a range of stocking densities and age structures of the major tree species, varying stages in the coppice cycle and differences in the development of the ground flora. The variations brought about by these conditions have given rise to woodlands which are of considerable botanical and faunistic interest.

The permanent pasture grasslands tend to be small and scattered and it is this fact which enhances their biological importance as representatives of a habitat type lying in a predominantly arable landscape.

The roadside verges in the area are particularly noted for the occurrence of Bath asparagus (*ornithogalum pyrenaicum*), which has a very limited distribution in Britain.

Grafham Water forms one of the largest stretches of inland water in England extending to some 1,570 acres. It attracts considerable numbers of wildfowl and its primary biological importance is in providing a roosting area for over-wintering ducks and other wildfowl. Since the lake started to form in December 1964, large numbers of wildfowl have been recorded, up to 10,000, during the winter months.

* See also p. 2219.

Printed image digitised by the University of Southampton Library Digitisation Unit

Oolitic limestone areas

Where the oolite comes to the surface the overlying grasslands are base-rich and contain plant and animal communities of considerable interest. Sharnbrook Summit forms the only location in Britain for one species of plant whilst the tunnel baulk itself contains a number of locally uncommon species such as zig-zag clover (*trifolium medium*).

Upper Ouse valley

Uptream from Bedford the marshy shore of the river often merge into the adjoining meadows which contain rich plant and animal associations. The disused gravel pits near the river have their own distinctive vegetation and fauna, depending very much on the extent to which they have been flooded. Felmersham water meadow and gravel pits are representative of this type of habitat.

The marshes, such as Stevington marsh, where springs arise out of the areas where the oolitic limestone is exposed on the banks of the river are small but biologically important.

Lower Ouse valley

Of particular interest are the grasslands in the St. Neots area, Eaton Socon meadow and St. Neots common, which have developed on river gravels and silt deposits and are regularly inundated with base-rich flood water from the River Great Ouse. The area is of considerable local importance as a vegetation type and as the locality for a number of uncommon plant and animal species.

Geological sites

Oakley railway junction pit, Westfield Lodge quarry and White Lodge quarry are three important geological sites exhibiting features associated with the Jurassic strata of the area.

4. Sites of special scientific interest

Acting under powers conferred by Section 23 of the National Parks and Access to the Countryside Act, 1949, the Nature Conservancy has notified the local planning authorities concerned of the following Sites of Special Scientific Interest within a 10-mile radius of the site of the proposed airport:

		Grade
1.	Brampton Wood (S.S.S.I.)	III
2.	Calpher Wood (S.S.S.I.)	IV
3.	Easton Meadows (P.S.S.S.I.)	IV
4.	Eaton Socon Meadows (S.S.S.I.)	III
5.	Felmersham Meadows and Gravel Pits (P.S.S.S.I.)	IV
6.	Grafham Water (P.S.S.S.I.)	III
7.	Great Hayes Wood (S.S.S.I.)	IV
8.	Keysoe Park Wood (S.S.S.I.)	*
9.	Mossbury Manor Pond (P.S.S.S.I.) ...	IV
10.	Oakley Railway Junction Pit (S.S.S.I.) ...	III
11.	Odell Great Woods (P.S.S.S.I.)	IV
12.	Perry Woods (S.S.S.I.)	IV
13.	St. Neots Common (P.S.S.S.I.)	III
14.	Sharnbrook Summit (P.S.S.S.I.)	IV
15.	Stevington Marsh (S.S.S.I.)	IV
16.	Swineshead/Spanoak Woods (P.S.S.S.I.)	IV
17.	Westfield Lodge Quarry (S.S.S.I.) ...	III
18.	White Lodge Quarry (S.S.S.I.)	III

The map attached to this Report indicates the location of the above sites in relation to the proposed airport site.

Several sites proposed for notification under Section 23 of the above named 1949 Act are also shown.

5. Conclusions

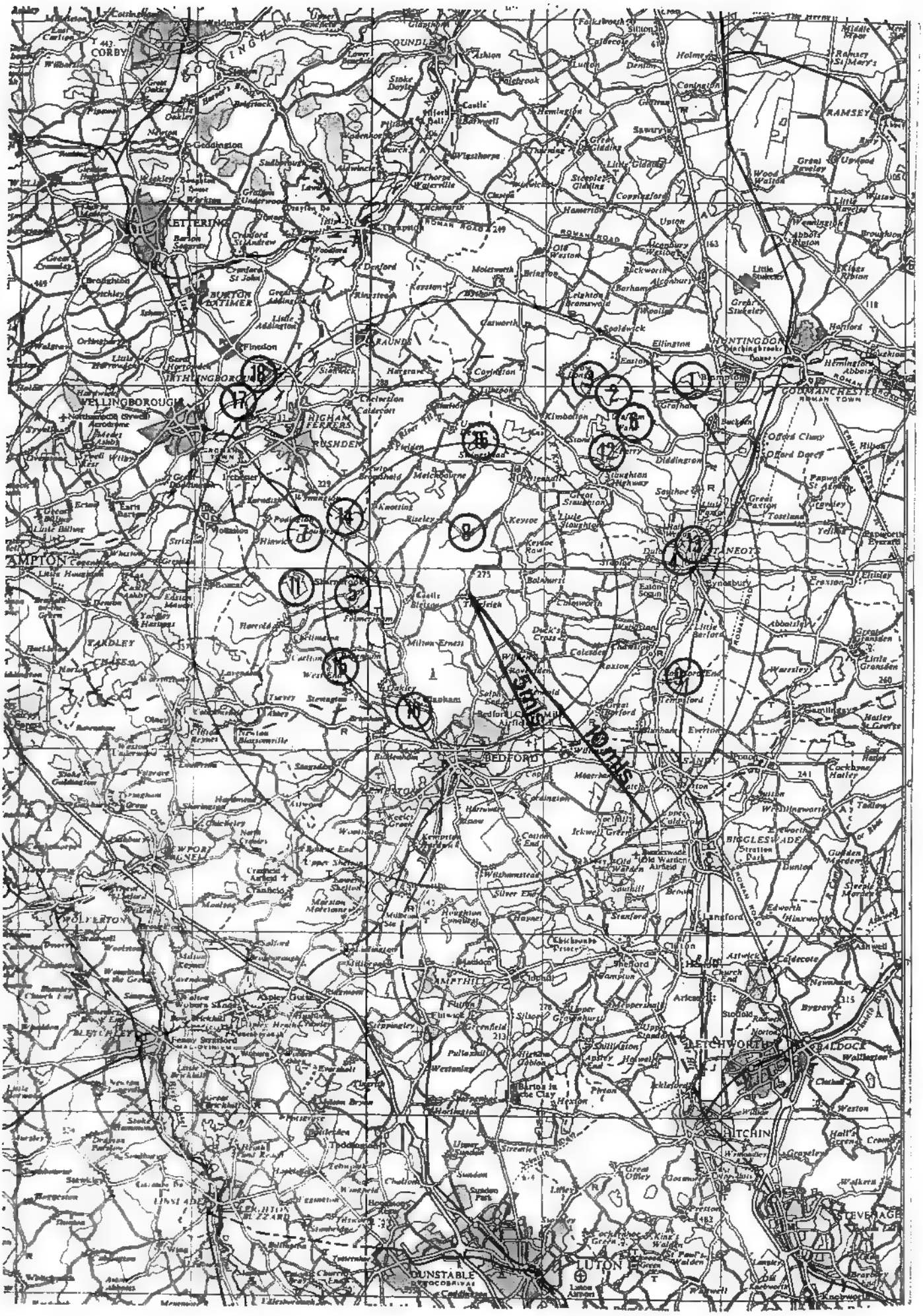
The direct effect of a major airport on the conservation interest of the area would appear to be minimal. Ancillary development such as road and rail access, housing accommodation and recreational facilities and increased public pressure generally would in all probability lead to the loss or reduce the scientific merit of some of the sites listed above.

In the event of a decision being taken to construct on this site and when the pattern of ancillary development is available, detailed consideration should be given to possible means of safeguarding the more important of these sites.

---

* This site of special scientific interest will probably be deleted from the County Schedule of Scientific Sites.

Printed image digitised by the University of Southampton Library Digitisation Unit



Sites of special scientific interest.

(Nature Conservancy.)

1964

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Council for the Preservation of Rural England*

SUBMITTED BY MR. P. W. MACFARLANE

1. I am a member of the Town Planning Institute, a Fellow of the Royal Institution of Chartered Surveyors and a holder of the Institution's Special Diploma in Town Planning.

2. My firm is Minoprio, Spencely & Macfarlane, Town Planning Consultants, of 83 Pall Mall, London, S.W.1. I have specialised in town planning for over 30 years, both in this country and abroad.

3. I have inspected the Thurleigh site and the immediately surrounding area. In my opinion its development as the Third London Airport would seriously prejudice rural amenity and living conditions in a large number of villages and small country towns and constitute an undesirable intrusion into an area of unspoilt and relatively remote countryside.

4. The site is located about 50 miles almost due north of London. It comprises an upland plateau with an average elevation of about 200 ft. On the south-west it is bounded by the valley of the River Ouse and on the north-east by a number of small valley tributaries of the River Kym which joins the River Ouse at St. Neots. The expanding county town of Bedford is situated about 5 miles to the south of the proposed airport site. Northampton and Wellingborough are about 20 miles and 11 miles away respectively to the north-west. Skirting the proposed airport site on the south-west is trunk road A.6 and a little to the west of it and following roughly the same route is the main Midland line of British Rail. Road B.660 from Bedford to Kimbolton crosses the eastern end of the site. Trunk Road A.1 is about 7 miles away to the east and the existing M.1 motorway about 16 miles to the south-west.

5. In the South-East Economic Planning Council's Report *A Strategy for the South East*,† Thurleigh is indicated as lying within a Green sector, where the emphasis, as in the main country zones, is on preservation. The Green Sector in question is, in my opinion, a most important one for preservation. It will be seen from a study of the strategy map accompanying the Report that this Green Sector, which is a corridor running north-south and is about 7 miles wide, separates the major Growth Sector based on Luton—Milton Keynes—Northampton from the Growth Sector proposed along the north–south axis of trunk road A.1 running from Stevenage to Peterborough. The proposed airport site at Thurleigh would lie athwart this green corridor virtually severing it into two and greatly impairing its function as an anti-fusion barrier between the two growth sectors just referred to.

6. Thurleigh lies within an extensive segment of countryside which retains a very high degree of rural remoteness, peace and quietness, in spite of the use of a small part of the site as an R.A.F. establishment. This, I think, arises from the fact that both the industrial revolution and its modern counterpart, the era of light industry, have passed the area by. Very few overhead pylons have trespassed into it. None of the nearby villages has become industrialised; no mineral excavations and associated plant scar the countryside and the only main routes of communication are on lower ground to the west of Thurleigh and do not in any way intrude upon the rural scene.

7. This is an area which, on visiting it, one senses is crying out for preservation, and this is in my opinion as it should be. It is a fundamental element of regional planning that such a rural sector of corridor, as this is, should be retained—accepting, as I do, that by contrast there are areas where the claims of urban development would take precedence over the claim of countryside preservation.

8. On its agricultural merits the area has much to commend it. It is fertile and well drained. Farms are quite large. The area given over to woodland is small. Much of the land is arable and there is a good deal of intensive cropping for peas, beans, etc.

9. A number of agricultural villages on the site of the airport, whatever its exact location, would disappear altogether, such as Bletsoe, Thurleigh, Bolnhurst, Keysoe Row, Keysoe and Riseley. Others, surrounding the site, such as Sharnbrook, Souldrop, Milton Ernest, Colmworth and Little Staughton would be so seriously affected by noise that continued residence in them might well be found to be beyond reasonable human endurance. It must be remembered that these villages are buried deep in the countryside and their residents are not at present affected by any disturbances; thus the noise, movement and restlessness generated by a great modern airport would make an impact which would be all the more devastating on this account.

10. Besides noise from aircraft many of the villages referred to above, and other, would be affected by increased traffic. An immense volume of road traffic would be generated. Even accepting that much of this would be canalised into new roads or greatly improved existing roads, many vehicles would find their way through existing villages, much to their detriment and to the danger of their residents. And the impact on them would be at a maximum because most villages in this locality are ancient ribbons of detached buildings along country lanes, rather than groups of houses in depth. Villages themselves are

* See also p. 2220.

† HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

mostly stone and thatch, and brick, often colour washed, with pantiles. New development, where any has taken place, has for the most part been happily blended in with the old. Much of the latter in the villages east of road A.6 comprises remarkably small well-kept cottages and gives a sense of contentment and close association with the land.

11. Apart from prejudice to rural amenity by noise and traffic, and the construction of new main roads, the layout of the airport itself will have a shattering effect on the countryside. On this upland plateau round Thurleigh there will arise a series of huge airport buildings whose scale will be completely unrelated to that of the countryside in which located. Their hard, mechanical lines would be a ruthless imposition on the countryside, and at night there would be a blaze of light which would be seen from miles away.

12. So far I have referred only to the impact of the airport on its immediate surroundings. But the impact would be widespread. The noise contour plan for a 4-runway airport shows that villages in Buckinghamshire as far west as and even beyond the M.1 and northwards to the eastern fringe of Northampton would lie within the 40 noise contour. This could not fail to disturb seriously their present peace and quietness. This impact would have particularly unfortunate consequences for the Ouse valley in that westwards from road A.6 along the River Ouse there is a whole series of very ancient, compact and rather remote villages such as Felmersham, Pavenham, Chellington, Odell, Harrold and Olney.

13. A further threat to the Ouse valley villages and to the scenic attraction of the area generally would arise from the airport's requirements for improved communications. A road connection westwards from Thurleigh to the M.1 motorway would be essential and the natural route for this would be along the Ouse valley. The imposition of such a major road on this lush and peaceful landscape would have devastating consequences.

14. To the east of Thurleigh interference from noise would extend as far east as the delightful small towns of Godmanchester and St. Ives. Huntingdon and St. Neots would be just outside the 40 noise contour but they could not fail to be adversely affected.

15. To the east of Thurleigh an important development of recent years has been the creation and expansion of leisure water facilities. A large reservoir at Grafham Water was opened three years ago by the Great Ouse Water Authority and is being developed as a nature reserve by the Bedfordshire and Huntingdonshire Naturalists' Trust Ltd. with facilities for the public to study wildfowl from a special hide. As a place to visit for quiet enjoyment Grafham Water is becoming increasingly popular. It has a car park for about 400 cars.

16. To the east of Grafham Water at Huntingdon the River Ouse alters course to follow an easterly route as far as St. Ives on the edge of the Fens. This length of the river and also the length southwards from Huntingdon through St. Neots to Bedford are much used for boating. The stretch of river broadly between St. Neots and St. Ives would be within the 40 noise contour and parts within the 45 contour, and the airport noise would be a most unwelcome and undesirable intruder into this peaceful scene.

17. Ultimate primary employment at the airport for about 65,000 persons would be anticipated, equivalent to an additional population of about 250,000. In addition, the airport would undoubtedly attract a wide range of manufacturing and commercial projects, giving rise to much secondary and service employment and an ultimate extra population of between ¼ million and ½ million would probably be involved. Whilst most of this would, no doubt, be steered into major new settlements or expansions of appropriate existing towns, some would undoubtedly seek to settle in existing villages, most of which are not appropriate for more than very limited expansion without damage to their village character.

18. In my opinion the consequences, agriculturally, scenically, socially and recreationally, of siting the Third London Airport at Thurleigh would be so adverse that a site elsewhere should be chosen.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Council for the Preservation of Rural England*

SUBMITTED BY MR. A. N. POLHILL

I live at Howbury Hall, Renhold, which is 3½ miles E-NE of Bedford and about six miles south-east of the proposed Thurleigh site. My family have owned Howbury Hall since 1781, and I have lived there since 1960.

Howbury Hall is outside the NNI contours shown on the Commission's plan† and it appears that neither my home nor any land that I own would be directly affected by the airport proposals as such. My estate, however, might well be affected by road developments consequent upon the building of an airport at Thurleigh and by probable urbanisation of the district. Despite my being to this extent a potentially interested party, I have in preparing this Proof of Evidence approached the problem objectively, as befits a witness for the C.P.R.E., which is a disinterested national body concerned with the protection and enhancement of rural amenity in the general public interest.

I am a Fellow of the Institute of Chartered Accountants in England and Wales and am in sole practice as a Chartered Accountant.

I farm 370 acres, 200 acres of pasture and 170 acres of arable land, which carries 350 ewes and a herd of pedigree Welsh Black cattle—the only herd of this breed in Bedfordshire.

I am Vice-Chairman of the Bedford Rural District Council and Chairman of Renhold Parish Council. I am also a member of the St. Albans Diocesan Board of Finance and its General Purposes Committee and of the Bedford North Agricultural Executive Committee. In addition to the C.P.R.E., I subscribe to the following organisations:

Game Research Association
National Association of Almshouses
National Council of Social Service
Royal Society for the Protection of Birds
Wildfowl Trust
Bedfordshire Playing Fields Association
Bedfordshire Rural Community Council
Beds. and Hunts. Naturalists' Trust.

I am a Headquarters member of the C.P.R.E. In Bedfordshire there is at present no County Branch of the C.P.R.E., but four local organisations are included among the Council's Affiliated Bodies:

Bedfordshire Association of Parish Councils
Bedfordshire Preservation Society
North Bedfordshire Preservation Society
South Bedfordshire Preservation Society.

The C.P.R.E. as a national body, having considered the merits of the four airport sites shortlisted by the Roskill Commission, has concluded that on amenity and social grounds there are overwhelming advantages in choosing an offshore site. Not only does this mean that by the construction of an airport land is not lost but gained, but the land area affected by noise can be at least halved through the use of flight paths over the sea, and other attendant disadvantages are also greatly reduced.

In the Commission's short list, the only offshore site is that at Foulness, and the C.P.R.E. has accordingly decided to support the choice of Foulness and to express outright objection to the three inland sites.

My evidence is concerned with the affected part of Bedfordshire within a 12-mile radius of Thurleigh, and in particular with the historic and attractive features of the villages in that area.

In the introduction to his book on Bedfordshire, published in 1968, Nikolaus Pevsner writes, "Bedfordshire is a county of pleasant, not of exciting landscapes", and with this description I think most people would agree. North Bedfordshire in particular depends for its attractiveness on the fact that it is still a comparatively unspoilt rural area consisting of wide skies, villages separated by undulating, prosperous farmland, and a fair amount of woodland—despite modern farming practices which have in recent years brought about the disappearance of many of the hedgerows. Church spires and towers are the landmarks in a region which has little of the spectacular in the way of either buildings or natural features. It is the whole, very homogeneous tapestry that matters and gives pleasure; indeed, just because there is nothing grand or very exciting, a massive intrusion of man-made structures would destroy it completely. It is quiet, very English scenery and needs to be experienced under a quiet sky; and in a county which, further south, has suffered so much from industrial practices, this unspoilt region is particularly precious.

The area also includes some of the most attractive parts of the Ouse valley which, in the words of the County Planning Officer in his Bedfordshire River Valleys Report, "offers attractive landscape sometimes sufficiently beautiful to be a resource in itself". In fact the upper part of the valley, with its woodlands, its placid meanderings through meadow pastures and its happy combination of the man-made and the natural, is to be classified as an Area of High Landscape Value when the County Development Plan is reviewed. All this would be changed if the third London airport were constructed at Thurleigh. Already North Bedfordshire is ringed by large and growing towns, for which it is increasingly a vital oasis of "green and pleasant land". An international airport with all its ancillary development and the

* See also p. 2221.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

urbanisation that must follow would affect the whole region adversely and obliterate much of it forever.

Fifty-nine Bedfordshire villages lie within a 12-mile radius of Thurleigh. These are listed in Appendix A to this proof of evidence.

Under the two plans produced for Thurleigh, eight villages are threatened with complete or nearly complete destruction, five are within the 50, 55 or 60 NNI contours and eight are within the 40–45 NNI contours. It is with the 21 villages in these three categories that I first deal.

I. Villages threatened with total or nearly total destruction under Thurleigh (a) or (b) or both (The order is alphabetical)

Bletsoe. The most interesting building in this village is Bletsoe Castle, which dates back to the 14th century, when John de Patishull was given a royal licence to crenellate his dwelling house in 1327. Today all that remains is a two-storied Elizabethan front, one side of what was originally a quadrangle. Nevertheless this house has an important link with our history, for Margaret Beaufort, the mother of Henry VII, was born here. Not only was she the mother of the Tudor dynasty but also a patron of learning at Oxford and Cambridge.

The Falcon Inn, which stands on the other side of the A6 road from the village, has some literary associations. Edward Fitzgerald spent many summers there, sometimes in company with William Thackeray.

Bletsoe has twice won the Best Kept Village Competition—in 1968 and 1969.

(Villages within a 12 mile radius of Thurleigh which have won the Bedfordshire Best Kept Village Competition are listed, with an explanatory note, in Appendix B to this Proof of Evidence.)

Bolnhurst. As in Keysoe (below), the church is isolated from the present village. The remains of a sanctuary knocker are still visible on the door and there is a large and good painting of St. Christopher on the north wall.

Bolnhurst is one of the many villages in the county which suffered severely at the time of the Black Death. At least 900 people died and yet, even after that epidemic, the population was still about ten times its size today.

Colmworth. The spire of Colmworth Church is visible for miles around. The church is a good example of the perpendicular period of architecture and has a beautifully airy interior. From the tower you can look over the whole county, southwards to the Dunstable Downs.

There is one good monument in the church, in alabaster and black marble, to Sir William Dyer. He died at the age of 36 and I think the verses inscribed on his tomb by his wife have real poetic quality. The verse ends

"Draw, draw the closed curtains and make room
My dear, my dearest dust, I come, I come."

Keysoe. The church, a striking landmark with a massive tower and spire, stands isolated, with its vicarage, on a ridge between Keysoe Row and Keysoe Brook End. Pevsner suggests that the font, which has an inscription in French on the base, might be early 13th-century work.

The church is not the only interesting building in the village. The Baptist Chapel dates back to 1652 and is one of the earliest nonconformist communities in the country, having close ties with John Bunyan, who used to preach in the village woods.

Milton Ernest. The view across Milton Ernest from Clapham Hill is very attractive. Milton Ernest has fine clumps of trees including the avenue to Milton Ernest Hall, which is interesting as being one of the only two houses designed by Butterfield (1856). The benches in the church are also by Butterfield. In the west end of the nave is a bread cupboard (1729), which was used to distribute "12 twopenny loaves weekly to the poor of the said parish for ever".

Riseley. The long village street with its great variety of small-scale buildings is very pleasant—warm in colour and lively. It exemplifies in architecture what I said earlier about the landscape; it is the whole that has value. The church dates from the 13th century.

Little Staughton has links with the Knights Templars. The manor was in their possession until the early part of the 14th century.

Thurleigh. At Bury Hill there are quite considerable remains of a motte-and-bailey castle. The part of the village clustered round the church still presents a pleasant and typically English picture. The church itself is in process of restoration, being interesting enough to have warranted a nation-wide appeal for financial help. The crossing tower is Anglo-Danish, the rest of the building being Norman or Perpendicular.

II. Villages within the 50, 55 and 60 NNI contours Carlton and Chellington

Carlton is a "river meadow" village close to the Buckinghamshire border. A large number of new houses have been built at Carlton during the last decade.

The church stands on its own, surrounded, rather oddly in this part of the country, by pine trees. It was lengthened in the early 14th century. On the north side of the chancel there is an example of herringbone masonry.

Chellington, which is now part of the parish of Carlton, must once have been a village in its own right. The modern buildings stand right away from the church, which can only be reached across the fields and stands alone, looking across the river to the pastures below. The fine west tower was built about 1350. In the churchyard is a monument to Sir Robert Darling, who once kept cows on Chellington Hill and became Sheriff of London in 1767—a local Dick Whittington.

The motto on the 17th century sundial reads "Ut hora fugit vita". It is probable that life fled from this village as a result of the plague.

Carlton and Chellington lie in the 50 NNI contour.

Felmersham. To quote Pevsner again. "Felmersham has the noblest parish church in this county—a church in spiritual scale, even if not in size, vying

Printed image digitised by the University of Southampton Library Digitisation Unit

with an abbey or priory church . . . there is nothing to disturb the quiet admiration". "Quiet admiration" will not long be possible at Felmersham if the airport is sited at Thurleigh. The village is within the 55 NNI contour. At present one can stand on the steps leading to the west doorway and look out over the quiet Ouse and peaceful meadows.

Close to the church there stands a good example of a late medieval tithe barn.

Odell. The village stands on rising ground above the river meadows. The church, which is practically all Perpendicular, is large, with a great feeling of spaciousness in its interior. It stands in a commanding position on a little knoll of ground.

The village itself is a pleasant mixture of stone and thatch, far less straggling than most Bedfordshire villages, which so often consist of a number of "Ends".

There was a manor at Odell at the time of the Domesday survey and the village was granted a "market charter" in 1222.

Odell Castle is a modern house, built on the site of the original motte-and-bailey castle. The view across the river from the mound on which the house stands is very pleasing.

Odell is in the 55 NNI contour.

Pavenham was once the centre of rush-mat making, started by one named Hipwell whose firm at one time supplied rush matting to the House of Commons.

The church of St. Peter contains a remarkable collection of carved 17th-century woodwork, which was given to it in 1848. It has another unusual feature—a room over the entrance porch which was used by visiting priests.

The village, like others in the area, has associations with John Bunyan, who used to preach in the Moor farmhouse.

Pavenham is in the 50 NNI contour.

It has won the Best Kept Village Competition three times— in 1962, 1966 and 1967.

Sharnbrook. This is a large, active village where the old and the new have blended together. The High Street contains a considerable number of buildings which appear on the Statutory or Supplementary List of Buildings of Architectural or Historic Interest.

The parish church is splendidly sited. The approach to it was redesigned a few years ago by the Bedford Rural District Council for old people's bungalows and won a Civic Trust First Prize. Colmworth House, owned by Unilever, is early Georgian and was built by Mark Antonie. Tofte Manor, a little to the north-west of the High Street, although considerably modernised is much earlier and was once a manor house belonging to Newnham Priory in Bedford.

The water meadows to the south of the village are now a Nature Reserve of the Beds. and Hunts. Naturalists' Trust.

Sharnbrook lies inside the 60 NNI contour.

This village won the Best Kept Village Competition in 1962 and 1965.

III. Villages in the 40–45 NNI contour

Harrold is due north of Carlton and is reached by a bridge and causeway, 250 yards long and consisting of eleven arches. Harrold Bridge was standing in the latter part of the 13th century, for the Hundred Rolls (1279) mention a fishery "from Harrold Bridge to Odell Ford".

The Augustinian Priory which was surrendered to Henry VIII's Commissioners has vanished completely, but on the village green—probably the most attractive one in the county—there still stands the old stone lock-up and an octagonal, wooden market cross.

The church has a tall spire; the tower pinnacles are connected to it by slim flying buttresses. It probably has the most handsome exterior of any village church in the county.

Harrold is in the 45 NNI contour.

Knotting is still a small hamlet. The church nave is Norman but the unbuttressed west tower is 17th century. One interesting feature in the church is the gates to the chancel, erected in 1637 after the disgraceful events of Shrove Tuesday when cock-fighting took place there, watched by the Rector and churchwardens.

Knotting is in the 40/45 NNI contour.

Oakley is a pleasant village on the Ouse. There has been a considerable amount of new building during recent years, but the village still retains its character. The old Stafford Bridge, the river and the church make a very attractive group. The bridge despite the fact that it has been much repaired, still bears traces of its medieval origin; it has in fact been spanning the river at this point for over 500 years.

Oakley House, which at one time belonged to the Duke of Bedford, was remodelled by Henry Holland. It has verandas on three sides and is unlike any house of the same size in the county.

Pertenhall lies on the main but winding road from Bedford to Kimbolton. Like so many of the churches north of the river, St. Peter's has a spire, a broached one in this case. The church is old (12th century), but a lot of reconstruction took place in the 15th century. The Old Rectory is a 16th-century house of mellowed brick. In the Manor House, also near the church, there is some good Elizabethan panelling. At Wood End there is a one-time Moravian chapel. The Moravians became established in Bedford in the early part of the last century.

Pertenhall is in the 40/45 NNI contour.

Souldrop. An old country rhyme runs

"Souldrop air and Sharnbrook water
Make a man live for ever and oughter".

There is nothing—except perhaps the air—remarkable in Souldrop, which is mostly stone and thatch. Part of the old drovers' road, the Forty Foot Lane, runs through the parish. This was the way the cattle from Wales were brought across to the eastern counties.

The 13th-century spire of the church is the oldest spire in the county.

Souldrop is in the 45/50 NNI contour.

Printed image digitised by the University of Southampton Library Digitisation Unit

Staploe and Duloe. These are hamlets very near the Huntingdonshire boundary. Basmead Manor at Staploe is now a farmhouse, but it has a long history. In Duloe there are several solid farmhouses.

Staploe and Duloe are in the 40 NNI contour.

Staploe won the Best Kept Village Competition in 1963.

Stevington. In medieval times people came on pilgrimage to Stevington to visit the holy well on the site where the church now stands. The carvings on the pew ends are interesting, showing men drinking, reclining and writing.

At the cross roads in the village there is an old stone cross.

The road which leads to the church ends there (only meadows lie beyond) and there is a pleasant, peaceful air about the houses and cottages on either side.

Stevington is in the 40 NNI contour.

This village won the Best Kept Village Competition in 1965 and 1969.

Turvey lies just on the Bedfordshire side of the long and ancient bridge and causeway that links it with Buckinghamshire.

In the mill stream there is a piece of stone sculpture known locally as Jonah. He was joined in his watery watch in 1953 by the figure of a man in a three-cornered hat.

Turvey Abbey is Jacobean—a most attractive house with a medieval dovecot and a Gothic summer house in the gardens.

Turvey House is dated 1794. Pevsner writes, "It has an extremely swagger façade, decidedly Empire in flavour and hardly possible at so early a date". In the centre of the house is a staircase-hall with a dome and lantern. The church is partly Anglo-Danish. In a recess of the south aisle there is a rather beautiful early 14th-century wall-painting of the Crucifixion in a very good state of preservation. There are a number of monuments to the Mordaunt family, including a particularly fine early Elizabethan one to the first Lord Mordaunt.

Turvey is one of the most satisfying of Bedfordshire villages; the long street is all of a piece, the houses being built of local stone.

Turvey is in the 45 NNI contour.

Of the remaining 38 villages—i.e. those within 12 miles of Thurleigh but outside the NNI contours shown on the Commission's plan—I turn next to those in or adjoining areas likely to be developed as "new towns" for the vast new population which the airport would attract. The Bedfordshire County Council are placing before the Commission a plan* showing in circular outline three substantial areas in which they suggest that this population might be mainly concentrated, and we accept that, if such provision has to be made, these may well be the most suitable locations. It seems clear, however, that the existing villages in these areas would in most cases vanish almost as completely as those buried under the concrete runways of the airport itself. The following fifteen villages would or might fall into this category:

IV. Villages in or adjoining areas suggested by the County Council for major housing development

Blunham. The church has an ironstone tower with unusual motifs. There are traces in the church of architectural styles from the 12th century onwards.

The poet John Donne held the living here towards the end of his life and presented a silver chalice to the church.

Cranfield. An airfield and an aeronautical college have already changed Cranfield enormously. In the 17th century it was a centre of lacemaking, owing to the number of Huguenot refugees who settled there. The name is derived from the fact that cranes once bred there.

Dean. There are two Deans, Upper and Lower, and with Shelton (see below) they lie in the most northern part of the county, which is still very real country. Dean is a long village. The church is impressive, particularly the roof of the nave, which has figures of angels carrying the instruments of the Passion and musical instruments. The screens too are unusual with quite elaborate detail in the carving.

Everton has an early 18th century manor house of red brick with a stone balustrade. The church has an ironstone tower but the rest is brown cobbles.

Kempston. This hamlet illustrates one of the attractive features of Bedfordshire. Although most of Kempston is now only a suburb of Bedford, quite suddenly the fields take over and one could be miles away from a town.

All Saints' Church stands in a little village backwater opposite the village school and close to the Ouse. It is a mixture of the Norman and Perpendicular periods.

It was at Kempston in 1863 that an Anglo-Saxon cemetery was discovered; many of the finds are in the British Museum.

Marston Moretaine lies in the brickfield country; the landscape is dominated by chimneys and vast claypits.

There are still one or two good buildings in the parish—in particular Moat Farm, a half-timbered building with a good Elizabethan west front.

The church, like Elstow Abbey (see below), has a detached tower. There are several monuments, including an alabaster memorial to Thomas Snagge and his wife and family, erected at the end of the 16th century.

Melchbourne and Yelden. Melchbourne was once quite an important place, and the Preceptory of the Knights of Jerusalem once stood here.

Melchbourne Park (1610) was built for Lord St. John and remodelled in 1741. It is built of brick.

The Street is the name of a long row of thatched 18th-century estate cottages leading to the church at the entrance to Melchbourne Park. The church is mainly Georgian, having been almost completely rebuilt in 1779. This of course makes it something of a rarity amongst village churches.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Yelden has one of the most interesting earthworks in the country, on the south bank of the river Til. It was here, according to some authorities, that the Romans fought the Iceni. A castle stood here from the time of Domesday for 300 years.

Potton is an ancient market town. It has a particularly attractive square, with a wooden clock tower; the whole has good proportions, surrounded by red brick 18th-century houses. There was a serious fire in Potton in 1783 which unfortunately destroyed more than 50 houses.

Roxton lies east of Bedford, off the main Bedford to Cambridge road (A.428). It has a very informal village street, not very different now from what it must have been like a century ago. Farms and houses and cottages are intermingled and during the summer you can see a very English sight—cricket being played on a pitch in the grounds of Roxton Park, the manor house. The Congregational chapel is a charming thatched building converted from an old barn in 1808. The church has brown cobbled walls; some of the building dates from the very early 14th century.

Sandy. There was certainly a Romano-British settlement here, for the Roman road ran through Sandy to Godmanchester. As its name suggests, this little town lies in the greensand belt, surrounded by market gardening.

Sandy Place, south of the church, is 18th century.

Sandy Lodge, just outside the town, is late Victorian and is now the headquarters of the Royal Society for the Protection of Birds. There are very fine trees on the estate and of course it is a great centre for the study and preservation of our native wild birds.

Shelton is little more than one grass-lined street with pleasant cottages and houses on one side and a farm and the solid little church on the other. Everything is beautifully kept and, because the road does not lead anywhere, very peaceful. The church is in scale with the village—unpretentious and unrestored.

Shelton won the Best Kept Village Competition in 1964 and 1965.

Stagsden stands on the main road between Bedford and Newport Pagnell. Thatched cottages still remain, there is an active smithy which produces all kinds of wrought iron work and the church is very pleasingly sited on a gentle rise of ground. There are more modern houses on the Bedford side of the village but it still feels all of a piece.

In Stagsden are the Bird Gardens, which contain an outstanding collection and are a growing attraction to thousands of visitors to Bedfordshire.

Swineshead. The village street, like those of Shelton and Turvey (see above), has proportions very pleasing to the eye. There are thatched cottages, mellow brick walls and an impressive 14th-century church with a spire, and the road itself is wide and runs below the level of many cottage gardens. The Three Horseshoes inn goes back to the 17th century. This is a scene which has been frequently painted by the Bedfordshire artist, Mr. Stanley Orchart. Like so many places in this remote part of the county, it retains an air of peace combined with active life.

Tempsford. This is where the River Ivel runs into the Ouse and it is the gravel and sand deposits in this river which have made this part of Bedfordshire into such a rich market-gardening district.

There are Danish earthworks, known today as Gannocks Castle, and palaeolithic implements have also been found here.

Gannock House is a good timber-framed house. In the church the pulpit is 15th century and has eight very good traceried panels.

Wootton is a very straggling village with much recent development. Wootton House is late 17th century and in the church, which is mainly Decorated, there are two good monuments to members of the Monoux family who bought the manor in 1514.

Finally I list (with a few exceptions lacking noteworthy features) the remaining villages within 12 miles of Thurleigh. Some of these would be affected by the suggested new roads shown on the County Council's plan and many would be gravely affected by other major development which would necessarily follow the adoption of Thurleigh as an airport site.

V. Other villages within 12 miles of Thurleigh

Great Barford lies to the east of Bedford on the Ouse. The view from the south bank across the river towards All Saints' Church, Bridge Farm, the Anchor Inn and the 15th-century bridge itself, of 17 irregular arches, is most picturesque and the subject of many paintings. There is Anglo-Danish work in the church, which is built of brown cobbles with a limestone tower, There is very good fishing in this stretch of the Ouse, and Barford is often full of coaches which have brought members of the London Angling Association down there for a day's sport.

Biddenham lies in a loop off the main A.428 road. Because it has been preserved from the impact of through traffic, it still, despite new building (mostly good) both in recent years and earlier in the century, retains the atmosphere of a very real village. Thatched cottages, timber-frame houses, an old inn on one side of the village green, a glimpse of the church in the distance, can easily make one forget that one is standing within a mile of the boundary of the Borough of Bedford.

The church is Norman, with an Early English tower and later work inside.

Biddenham has thrice won the Best Kept Village Competition—in 1959, 1961 and 1968.

Bromham is a village that has grown very rapidly since the war; but, like so many of our thriving Bedfordshire villages, it has managed to fuse the old with the new in such a way that it still has a village entity.

The church stands in the grounds of the Hall. The earliest part is about 1300. There are three good brasses of the Wideville family.

Bromham Bridge has 26 arches, of which the oldest goes back to the 13th century; the bridge is a pleasure to the eye and a hazard to lorry drivers. Bromham Mill, which stands near, is perfectly in keeping with the old bridge.

Bromham won the Best Kept Village Competition in 1967.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cardington. This village was the home of Sir John Howard, the prison reformer whose statue stands in Bedford market place. His house, built in the 18th century, is still there, and there are a number of other good houses and pleasant cottages along the attractive green.

The church was drastically restored in 1900, but it does contain two very fine monuments—tomb-chests with brasses of Sir William Gascoigne and his two wives and of Sir Jarrate Harvye and his wife.

In the churchyard is the memorial, designed by Sir Albert Richardson in 1930, to those who died in the R.101 disaster.

Clapham. A straggling village on the fringe of Bedford. The tower of the church is striking. It is Saxon, over 80 feet high and built, according to tradition, as a place of refuge.

Cople is a plain little village with little of note about it, though the church is a good, mainly Perpendicular building of buff and brown stone.

Elstow is firmly linked with John Bunyan, who was baptised in the Abbey. His cottage has been demolished, but other attractive timber-frame cottages, with overhanging upper floors, still remain, bordering the busy road to Luton. The Abbey was once a Benedictine nunnery founded in the latter part of the 11th century. It has a broad, solid, detached tower (15th century). In the field near the church is the Moot Hall, which was built about 1500 of timber with brick infilling. It is now a museum and houses a great many Bunyan relics.

Haynes is really made up of several hamlets. There are some picturesque bits and pleasant country between, but the church is dull, having been largely rebuilt in 1850.

Hawnes is a large mansion started about 1720 and surrounded by a fine park. It is now a girls' school.

Hinwick is an unspoilt stone village on the Northamptonshire boundary.

Hinwick House, belonging to the Orlebar family, was built in 1709. The interior was recently redecorated with a grant from the Ministry of Works and the house is now open to the public once a week.

Hinwick Hall is Elizabethan. It was provided with a new east front in the 18th century. It is now a residential school for physically handicapped boys.

Ickwell and Northill. Ickwell has a very big village green for Bedfordshire, surrounded by a nice variety of low houses and cottages, some thatched, several painted the attractive warm honey colour also found at Old Warden (see below). On the green stands the tall maypole still used on May Day, when crowds of people come to see the dancing.

Ickwell won the Best Kept Village Competition in 1961.

At Northill the church is of ironstone and was heavily restored in the 1860s. Thomas Tompion was baptised here; he became Master of the Clockmakers' Company in 1704.

Old Warden is a picture village which was largely rebuilt in mid-Victorian days. The houses are painted a deep honey colour and near the church many are thatched. All is order and decorum.

The church has a great deal of Belgian woodcarving; some of it is said to have come from Anne of Cleeve's private chapel at Bruges. Old Warden Park, built in 1872, is now an Agricultural College and not far from it is the famous Shuttleworth Collection of aircraft, cars, etc.

Old Warden has won the Best Kept Village Competition four times—in 1957, 1958, 1960 and 1963.

Ravensden lies on quite high ground for this part of the county. The church is basically 12th century with a number of recent additions. From the road below, the church, the old Horse and Jockey inn and the many trees which surround them make a very pleasant group.

Renhold. The parish stretches down to the water meadows and the Ouse, but the village lies to the north of the main A.428 road behind Howbury Hall. This house, although rebuilt in the 1840s after a fire, is still quite pre-Victorian in style. On a small knoll above the river there are the remains of a Danish encampment. The battle of Bloody Battle Bridge took place here and the remains of a Danish longboat now form the main beam in one of the cottages. The church is mainly Perpendicular and built of brown cobbles, but the font belongs to the 12th century. There are a number of monuments in the church, including that of Sir William Becher, who committed John Bunyan to prison. At the far end of the village there are two very striking timber-frame houses and some attractive thatched charity cottages.

Renhold won the Best Kept Village Competition in 1964 and 1969.

Southill. The church was much restored early in the last century. There are a number of pleasant thatched estate cottages scattered about the village.

Southill Park was remodelled by Henry Holland between 1796 and 1801 for Samuel Whitbread and the Whitbread family still own it. Pevsner writes of it as "one of the most exquisite English understatements".

Willington. Manor Farm stands on the site of the Manor House, where Sir John Gostwick once entertained Henry VIII. Sir John was Master of Horse to Cardinal Wolsey. His dovecot has survived and is now National Trust property. It is a tall stone building with about 1,500 nesting places—a palace of a dovecot. Also belonging to Sir John's day is another building, made of stone and brick, used now as farm buildings, but still known as King Henry's stables. The church is interesting because it is all Perpendicular in style and therefore something of a rarity. Besides his tomb, the helmet worn by Sir John Gostwick at the Field of the Cloth of Gold can also be seen in the church.

Wymington, on the northern boundary of the county, has some quite well preserved wall paintings in the church. There are two good brasses in the south chapel to Sir Thomas Brunflet and his wife. The former was Cross Bearer to Henry V at Agincourt.

Printed image digitised by the University of Southampton Library Digitisation Unit

Conclusion

All these villages, so varied in character and in the materials of which they are constructed, make up the fabric of this part of the County of Bedfordshire. I am convinced that this fabric would be completely destroyed if Thurleigh were selected as the site for London' s largest airport.

Appendix A

Bedfordshire villages within a 12-mile radius of Thurleigh

* denotes that the village is proposed as a Conservation Area under the Civic Amenities Act.

Great Barford
Little Barford
Biddenham
Bletsoe
Blunham
Bolnhurst
Bromham
Cardington
Carlton & Chellington
Clapham
Colmworth
Cople
Cranfield
Dean
Eastcotts
Elstow
Everton
*Felmersham
Keysoe
Harrold
Haynes
Hinwick
Ickwell & Northill
Kempston Rural
Knotting
Marston Mortaine
Melchbourne & Yelden
Milton Ernest
Moggerhanger
Oakley
*Odell
Old Warden
*Pavenham
Pertenhall
*Poddington
Potton
Ravensden
Renhold
Riseley
Roxton
Sandy
*Sharnbrook
Shelton
Southill
Stagsden
Staploe & Duloe
Little Staughton
Souldrop
*Stevington
Stewartby
Swineshead
Tempsford
Thurleigh
*Turvey
Wilden
Willington
Wilstead
Wootton
Wymington

Appendix B

The Bedfordshire Best Kept Village Competition

The following villages within a 12-mile radius of Thurleigh have been placed first in the Bedfordshire Best Kept Village Competition. Awards are made in three categories—large, medium and small—according to population. It will be noted that in some years all three awards have been made to villages within the area likely to be most affected by an airport at Thurleigh.

As the title of the competition implies, awards are based on the state in which the village is kept rather than on its architectural or other attributes. The results are significant as reflecting the residents' pride in their surroundings and the social esprit de corps existing in the villages concerned.

1957	Old Warden
1958	Old Warden
1959	Biddenham
1960	Old Warden
1961	Biddenham
	Ickwell
1962	Sharnbrook
	Pavenham
1963	Old Warden
	Staploe
1964	Renhold
	Shelton
1965	Sharnbrook
	Stevington
	Shelton
1966	Pavenham
1967	Bromham
	Pavenham
1968	Biddenham
	Bletsoe
1969	Stevington
	Renhold
	Bletsoe

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Council for the Preservation of Rural England

SUBMITTED BY MRS. A. DU BERENS

I live at Great Barford House, near Bedford.

I am a member of the Council for the Preservation of Rural England, the Botanical Society of the British Isles, the Wild Flower Society, the Bedfordshire and Huntingdonshire Naturalists' Trust and the Cambridgeshire and Isle of Ely Naturalists' Trust.

I have been an amateur field botanist for nearly forty years and I am particularly interested in the wild plants which grow in North Bedfordshire. During the past ten years I have been able to add to its flora over sixty plants that had not been previously recorded in the 10 km. square in which my home is situated, as well as five plants that were completely new to the county of Bedfordshire as a whole.

In this way I have acquired a good knowledge of the flora and its habitats which are to be found in the area covered by the proposed airport and in the surrounding countryside which would be affected by the associated developments.

Although there is bound to be a loss of many of the commoner wild plants and trees with the destruction of their habitats should the Thurleigh area be chosen for the Third London Airport, it is with the effect on and possible elimination of the county's rarer plants within a 15-mile radius, inside the Bedfordshire boundary, that my evidence is mainly concerned.

It may not be generally recognised that many of the rarer wild plants are rare because of their fastidious selection of habitat. Since in many cases the reason for this selection is unknown, it is neither practicable nor scientifically desirable to transfer these plants from their natural surroundings to one of man's choosing, which may prove incompatible.

General character of the area

North Bedfordshire contains one of the most varied and numerous flora in the British Isles. This is because there are great differences in the land formation. In the north we have the undulating uplands of agricultural land and woods on boulder clay with pockets of Oxford clay. This is the area in which the proposed airport would be sited. Here the more calcareous nature of the boulder clay together with the Oolite limestone, a belt of which occurs in the north-west of the area, produces the more chalk-loving plants, as distinct from those that prefer the more acid Oxford clay.

The River Great Ouse, together with its tributary the Ivel, gives rise to some 60 miles of fertile valley land. Here, framed by the willows and alders along the river banks, are the lush meadows, the marshes, the older gravel pits, the riverside and the rivers themselves, each in its turn adding numerous wild plants from a different habitat. To the south of the main river is the flatter land, intensively cultivated (except in the Oxford clay brickworks area), especially in the rich alluvial district around the river Ivel and in the Greensand region to the south. This latter region adds yet another type of plants to the county flora as well as a long list of alien plants.

This whole area of North Bedfordshire would be affected, in a variety of ways which cannot at present be fully determined, either by the proposed airport itself, or by the new towns, the commercial and industrial development and the new motorways and roads associated with it, or by the vast resultant increase in population.

The rarer plants in or near the airport site

The airport area itself contains a varied flora, including the rare slender centaury (*centaurium pulchellum*), recently found on the edge of Galsey wood within the perimeter of the present airfield. More than fifty plants listed here in a small area included the bee, butterfly, marsh and spotted orchids. All these would undoubtedly be destroyed.

Keysoe Park Wood, within the airport area, has been declared a Site of Special Scientific Interest (S.S.S.I.) as one of the very few breeding places in the East Midlands of the extremely rare black hair streak butterfly, possibly found elsewhere only in the Monks Wood nature reserve. This species is a national rarity and the destruction of its habitat would be a calamity.

A small number of sika deer are also known to be present in and around the area and are resident in Galsey wood. *Other woods in the vicinity* are also the sites of some more uncommon plants—dyer's greenweed, wild licorice, spurge laurel, great campanula, herb paris; yellow birdsnest and white helleborine in their only North Bedfordshire station; broad-leaved helleborine, wild daffodil, bee and pyramid orchids; and hybrid avens (*geum rivale x urbicum*), saw-wort and elecampane. The last three plants do not grow anywhere else in Bedfordshire.

Felmersham gravel pits nature reserve is situated less than two miles from the airport area and would be in the 50–60 NNI contours and in the direct line of a runway should the Thurleigh (b) site be preferred. In either case the noise level would in my opinion make the continuation of a Nature Reserve here impracticable, while the kerosene fall-out would probably in time destroy its vegetation. A good deal of conservation and survey work has been carried out here by Trust members, a recent one being on organisms related to the natural food for fish. The botanical list is a very full one, as this Reserve

Printed image digitised by the University of Southampton Library Digitisation Unit

carries a typical marsh/river flora, including several species of Orchis and of Willow, and is the only site in the county for Great Bladderwort. There are adequate entomological and ornithological records.

Stevington marshes, nearby, is a S.S.S.I. of great importance, as it is one of the few surviving marshes on the oolite limestone.

Rare plants threatened by development associated with the airport

The County Council have produced plans for the new towns, motorways and roads needed to serve an airport at Thurleigh. They suggest three new towns and I list here the rarer plants now found within their approximate perimeters; obviously, however, the influx of their inhabitants into the surrounding countryside will have a serious effect on the flora in general.

The Dean and Shelton area (New Town for 120,000). This is to the north of the airport site and could destroy the habitat of the marsh sowthistle (*sonchus palustris*), which was first found near Dean in 1968. This is a plant of the Norfolk Broads and of the River Medway in Kent, so it is a surprising addition to the flora of Bedfordshire. Martigan lily, stinking hellebore and hairy buttercup (only recently re-found here for the county list) all grow nearby. Swineshead Wood, a proposed S.S.S.I. with a typical boulder clay flora, would also be endangered.

The Stagsden/Wootton area (New Town for 120,000). This site, to the south-east of Bedford, could destroy the habitat at Stagsden of the purple cow-wheat, a very rare plant not found elsewhere in Bedfordshire or in more than about half-a-dozen other places in the whole of the British Isles. Danewort is also found at Stagsden and nowhere else in the north of the county. In the woods in the vicinity are birdsnest orchid, fly orchid and stinking hellebore.

The Tempsford/Roxton area (New Town for 80,000). This development in the east of the county could destroy five plants which grow around Tempsford and nowhere else in Bedfordshire—large bittercress, water honewort (*apium inundatum*), water-dropwort and fine-leaved water-dropwort and water plantain. Wild lilies-of-the-valley grow in a nearby wood.

None of these plants would be likely to survive if these areas were built over.

The new roads. The projected Motorway and Feeder Road as shown on the County Council's plan, constitute a grave threat to the rare plants of North Bedfordshire. The line of the six/eight-lane Thurleigh-London direct motorway is shown as going through:

Honeydon nature reserve. This is a roadside verge which has lately been designated a nature reserve, as it is the only place in Britain where three rare plants—sulphur clover, crested cow-wheat and spiked star of Bethlehem—can be seen growing together. The whole roadside area Colmworth–Duloe–Honeydon is included, as the spiked star of Bethlehem is a feature of its verges. This reserve is clearly in danger of obliteration through motorway construction.

Colesden, the only place in the county for the small-flowered buttercup.

Great Barford. This will be affected by the junction of the Motorway with the feeder road from the west to the A.1 in the east. Two plants were recorded here in 1964 for the first time in Bedfordshire—cut-leaved self-heal and its hybrid with the common self-heal. Other rare plants include twayblade orchid, sulphur clover, hybrid oxlip (*primula veris x vulgaris*) and greater dodder.

Haynes West End, which has well-known sites for sulphur clover and small teazle.

Clophill/Moulden market garden district. This is an extremely interesting and well-known area botanically, as wool shoddy manure is used and the seeds introduced with it have produced to date some 310 alien plants—Australian, New Zealand, South African etc. It is an area of scientific importance since shoddy can be used to advantage only on a very limited type of soil (here the light Lower Greensand). Any reduction of this area as the result of the airport would proportionally reduce the potential for the increase of this type of botanical knowledge.

The feeder road as planned at present also constitutes a threat to several special plants.

Sharnbrook Summit. The feeder road crosses the main London-Manchester railway line near here at the place where *cerastium brachypetalum* (a mouse-eared chickweed) was found in 1947. This is the only place where it has been found in the British Isles. *If this habitat is destroyed the plant will be lost to the British flora.* On the same stretch of the embankment are two rare hawkweeds, *heracium pellucidum* and *h. lepidulum*, and other interesting plants. The whole site is a prospective S.S.S.I.

Podington. Near here grow moschatel, which is rare in this part of England, and rough bedstraw, which is extremely scarce everywhere. The lace-makers in this district used the fruits of the latter to cover the heads of pins to protect their fingers.

Great Hayes Wood, the only place in North Bedfordshire where the golden male fern grows. The broad-leaved helleborine is also to be found here.

Odell Great Wood, which is a proposed S.S.S.I. as it is considered the best boulder clay wood in North Bedfordshire.

Stagsden. The southern most part of the feeder road is planned to pass through the village outskirts—an additional threat to the plants listed above in connexion with the Stagsden/Wootton new town.

The increase in population

Finally I would draw attention to the dangers to plant life arising from the enormous increase in population which the airport would entail. Although not coming within the range of specific sites, the whole of the unspoilt Ouse and Ivel valleys might clearly be affected. These river valleys have recently been the subject of a County Council survey to determine their potential as a recreational area for the

Printed image digitised by the University of Southampton Library Digitisation Unit

present population. If these three New Towns come into being, the recreational pressures upon the remaining valley land will be vastly increased. An extra 300,000 people wishing to make use of its amenities will require more and more car parks and picnic places, and therefore more and more of its flowery meadows will be converted to these uses until large tracts are denuded of vegetation. I therefore include the following plants which, being already scarce or very scarce, might disappear entirely from our riversides or from the rivers themselves should increased population occur:

Water rue, orange balsam, water parsnip, narrow-leaved water parsnip, *polygonum mite* (a knot-grass), greater dodder, nodding bur-marigold, marsh arrow-grass, sweet sedge, *scirpus lacustris* (the true bulrush which is used for rush-work, a local craft), and five species of pondweed.

Conclusion

This survey can only be a bare outline of the plants and their habitats which are likely to be destroyed or to be seriously disturbed. Nor can one mention all the common flowers of which the countryside is composed—the buttercups and daisies in the meadows; the wild roses in the lanes; the primroses in the woods. True, these flowers will continue to bloom in other parts of England, but if the third London airport is sited at Thurleigh, we shall see them only in the few, perhaps even in the very few, meadows, lanes and woods left to us amid the devastation of our countryside.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Council for the Preservation of Rural England

SUBMITTED BY MR. D. GREEN

I live at Red Cow Farm Cottage, Bidwell, Dunstable.

I am Secretary of the Bedfordshire Natural History Society and my evidence is compiled from data in the Society's possession, with the assistance of my colleagues Mr. A. J. Livett, Bird Recorder for Bedfordshire, and Mr. B. R. Squires, to whom I am indebted for the report on Gull Movements.

My evidence is given on behalf and with the authority of both the Natural History Society and the Council for the Preservation of Rural England.

Summary of breeding species

The breeding summary which follows has been compiled from information presented by members of the Bedfordshire Natural History Society in conjunction with the British Trust for Ornithology atlas project. It is based on the Ordnance Survey 10 km. squares TL05, TL06, TL15 and TL16. Additional data have been extracted from the Bird Reports in *The Bedfordshire Naturalist*, 1965–68, Volumes 20–23.

Breeding confirmed:

Little grebe
Heron
Mallard
Shoveller
Tufted duck
Sparrow-hawk
Kestrel
Red-legged partridge
Partridge
Pheasant
Moorhen
Coot
Lttle ringed plover
Lapwing
Redshank
Woodcock
Wood pigeon
Turtle dove
Cuckoo
Barn owl
Little owl
Tawny owl
Swift
Skylark
Sand Martin
Swallow
House Martin
Yellow wagtail
Pied wagtail
Kingfisher
Wren
Dunnock
Sedge warbler
Wood warbler
Reed warbler
Blackcap
Whitethroat
Lesser whitethroat
Willow warbler
Chiff-chaff
Spotted flycatcher
Robin
Blackbird
Song thrush
Missel thrush
Long-tailed tit
Marsh tit
Coal tit
Blue tit
Great tit
Nuthatch
Yellowhammer
Reed bunting
Chaffinch
Greenfinch
Linnet
Bullfinch
House sparrow
Tree sparrow
Starling
Jay
Magpie
Jackdaw
Rook
Carrion crow
Black-headed gull
Common tern

Breeding suspected:

Great crested grebe
Mute swan
Shelduck
Teal
Pochard
Snipe
Stock dove
Collared dove
Night jar
Water rail
Green woodpecker
Great spotted woodpecker
Meadow pipit
Grasshopper warbler
Garden warbler
Goldcrest
Nightingale
Willow tit
Treecreeper
Corn Bunting

Total number of breeding species, proved or suspected, *88*.

Gull movements

An investigation into the numbers of gulls roosting on Stewartby Lake during the winter months of 1967/68 was carried out by members of the Bedfordshire Natural History Society. The following figures are taken from Volume 22 of *The Bedfordshire Naturalist:*

	Total	*Small*	*Large*
1967. November 12	20,500	17,500	3,000
December 10	12,500	8,750	3,750
1968. January 14	12,000	10,500	1,500
February 11	18,000	17,000	1,000
March 10	(20,000)	Adverse weather prevented an accurate count.	

("Large" gulls refer to herring, lesser black-back and greater black-back, and "small" gulls to black-headed and common.)

Stewartby Lake is approximately 12 miles S-SW of Thurleigh, and it was noted that over half the large gulls consistently approached the lake from the north and north-east—i.e. from the direction of the Thurleigh site. The remainder came from all other directions. Small gulls showed no marked bias of entry.

From further scrutiny of the Society's records, it is calculated that on average 6,000 gulls approach

Printed image digitised by the University of Southampton Library Digitisation Unit

Stewartby Lake from the general direction of the Thurleigh site in the evening and return at first light.

Wintering wildfowl

Thurleigh is surrounded by large areas of open water within a radius of some twelve miles, which hold large concentrations of wintering wildfowl, amounting to thousands of birds. The localities in questions are Felmersham nature reserve, Pitsford reservoir, Grafham Water, Wyboston gravel pits, the Ouse valley, Stewartby lake and other clay-pits.

In addition to this, substantial flocks of ground-feeding birds, notably wood pigeons, lapwings and crows, are present in the site area during the winter months.

Conclusion

The adoption of Thurleigh as London's third airport would result in the destruction of a substantial area of relatively unspoilt habitat which supports an important population of birds typical of the county.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Country Landowners' Association

SUBMITTED BY MAJOR P. D. P. DUNCOMBE*

1. For the purposes of this hearing my evidence is given on behalf of the Bedfordshire and Buckinghamshire branches in my region, and also on behalf of the Cambridgeshire, Huntingdonshire and Northamptonshire Branches of the Association.

2. The Country Landowners' Association represents owners of agricultural land in England and Wales. The Association's members own the vast majority of privately owned agricultural land and woodlands in England and Wales, as well as other rural lands.

3. The Branches of the Association for which I am giving evidence are strongly opposed to the third London airport being sited in the vicinity of Thurleigh, and are equally opposed to the two sites proposed at Thurleigh. The Association has consulted its members within a radius of 15 miles from Thurleigh. One member with land in this area has written to inform us that he "is not opposing the proposed Third London Airport". No other member has indicated a view other than opposition to the proposals. The Association's membership within the 15 miles radius is as follows:

Bedfordshire	128	members	owning	a	total	of	36,975	acres
Buckinghamshire	61	„	„	„	„	„	22,086	„
Cambridgeshire	12	„	„	„	„	„	3,565	„
Huntingdonshire	144	„	„	„	„	„	45,996	„
Northamptonshire	94	„	„	„	„	„	29,143	„
Total	439	„	„	„	„	„	137,765	„

The affected area

4. The area likely to be affected by the land-take for the airport and ancillary urbanisation, and by noise nuisance and other disturbance associated with an international airport sited at Thurleigh is largely an agricultural area of very good quality land, well farmed and highly productive. It is mostly countryside of great rural charm and beauty, with attractive villages and estates, and having many buildings and places of architectural, historic and scenic interest.

Agriculture

5. At Stage I and at other hearings at Stage II the Association has stressed the need to conserve good agricultural land in the national interest, and has emphasised the adverse effects on farming and the farming community which the airport would have if sited in an agricultural area. This is not repeated in this evidence in compliance with the Commission's request that repetition and duplication of evidence be avoided. The Association does urge, however, that these considerations have especial relevance to the proposals for Thurleigh where the land and farming is of such high quality.

6. A feature of the agriculture in the area, which instances the high productivity of the land, is the extent to which market garden crops are grown.

7. Siting the airport at Thurleigh would bring to an end the important enterprise of our members Messrs. Bovril Ltd., at Castle Farm, Bletsoe, which has been carefully planned and equipped at a large capital expenditure, and also other farms on or adjacent to the proposed sites which are making an important contribution to agriculture.

Aerial spraying

8. In addition to interference with agricultural activities in the ways referred to in the Association's Stage I evidence, members are concerned that the presence of an international airport would reduce the extent to which aerial crop spraying could be carried out. Press reports have recently indicated the difficulties caused in this way by so relatively small an airport as Luton.

Water supply and drainage

9. As indicated in previous evidence to the Commission the Association is anxious that the siting of the airport will not result in water restrictions for the owners and occupiers of agricultural land, and is also concerned that flooding of watercourses will not be caused or increased, land drainage hampered or pollution caused. It appears inevitable that the siting of the airport at Thurleigh would lead to the implementation of reservoir proposals in the area which are at present subject to opposition on the ground they would expunge valuable farm land. Alternative means of water supply, less wasteful of land, might otherwise be implemented in at least some if not all cases. Further reservoirs for drainage control would also appear inevitable in veiw of the water supply and drainage problems of the area causing a further loss of land and hardship to members of the farming community. The Association's anxieties about the creation of new reservoirs are clearly shared by the Parliamentary Committee considering the Welland and Nene (Empingham Reservoir) and Mid-Northamptonshire Water Bill which has taken the unusual step of issuing a special report* to the effect that no more piecemeal proposals to construct reservoirs should be permitted.

Long-term investment in agriculture

10. The Association has obtained from members within 12 miles radius of Thurleigh, details of their long term investment in their agricultural properties during the last ten years, so that, as in the case of the other short-listed sites, an indication can be given

* See also p. 2224.

* Minutes of Proceedings, 29th April–15th May, 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

of the extent of such investment. Details have been received from 41 members (mostly those most proximate to the proposed sites) owning a total of 47,318 acres. The capital investment by these 41 members is as follows:

Buildings and other farm improvements	£1,621,320
Land drainage	119,444
TOTAL	£1,740,764

As gross figures these are under-stated, as several returns gave net figures without stating the amount of grant-aid, and in other cases it is not known whether the figures were gross or net. They do however give a fair indication of the heavy long-term investment in the agricultural land in the vicinity of the proposed sites, the average for these 41 landowners being £42,458. Grant aid figures are available in 27 cases, and amount to a total of £216,012.

11. A further 6 members have furnished me with details of pedigree herds, scheduled buildings and other features of land owned by them within the 12 miles radius. The information on these matters given below is therefore based on returns from 47 landowners owning 50,000 acres.

Livestock and poultry

12. The 47 landowners referred to above have eleven important herds of pedigree cattle, several of which have had notable successes at Shows. It is understood that Messrs. Bovril Ltd. will be giving separate evidence regarding their outstanding herds of Aberdeen-Angus and Herefords. The other herds referred to include pedigree Jerseys, Guernseys, Friesians, Aberdeen-Angus, Ayrshires and the only Welsh Black beef herd in Bedfordshire.

13. We have been referred to three large pig units. Breeders have expressed concern that aircraft noise will affect the conception rate, and that it might cause abortion.

14. We have been referred to two large hen units close to the proposed sites, one, at Great Staughton, being within the most intensive noise contours. It is felt that egg yields are bound to be affected by aircraft noise. We have also been referred to a pedigree herd of 200 Clun sheep (just outside 40 NNI contour shown on Commission's CTLA 4/3*) and a Highland fold (within noise contours for both proposed sites). Another member breeds horses at Wymington (just outside 40 NNI contour shown on CTLA 4/3*).

Mortgages of displaced farmers

15. The Association is concerned that owner-occupier farmers with non-transferable loans would suffer loss without compensation if displaced, by reason of having to acquire new loans at higher rates of interest in order to establish themselves elsewhere.

Noise nuisance

16. As in the case of other short-listed sites members in the area are most concerned about noise nuisance caused by the proposed airport, and the fear that loss might be suffered without compensation.

Amenities

17. The Association urges the preservation of the amenities in the area, and of the attractive character of the countryside which is rich in places of historic, architectural and aesthetic interest and scenic beauty. Members have referred to the following:

(*a*) *Buildings*

The 47 landowners mentioned above have referred specifically to 103 buildings owned by them listed as of historic or architectural interest or scheduled as ancient monuments. As it is understood other parties will be furnishing a complete list to the Commission I am not specifying the 103 buildings here, but the Association will be glad to give details at a later stage of any not included in other evidence. At Howbury Hall, Renhold (not at present listed, but now restored) musical concerts and other events are held from time to time.

(*b*) *Houses and grounds open to the public*

The 47 landowners mentioned above have referred to the following houses and grounds open to the public at certain times:

Flamingo Gardens, Weston Underwood. Within 40–45 NNI of both proposed sites.

Southill House and Park. Visited by parties of historians, architects, naturalists etc. Heronry. Ospreys have nested.

Odell Castle. Grounds open for charitable purposes from time to time.

Turvey Abbey. Gardens open from time to time.

Castle Ashby. House, gardens, park and lakes receive over 20,0000 visitors a year.

(*c*) *Areas of outstanding natural beauty etc.*

Members call for the conservation of existing and proposed areas of outstanding natural beauty, of great landscape or special scientific value, nature reserves and also villages and conservation areas in the locality. It is understood that other parties will give full details of these.

(*d*) *Woodlands*

Ten of the 47 landowners mentioned above referred to important woodlands owned by them.

(*e*) *Roads*

Some concern has been expressed about the hardship which could be caused to local inhabitants from the use of rural roads by vehicles carrying materials or otherwise used in the construction of an airport. It is assumed that road widening and other works would have to be carried out to enable the roads to be so used, and this would cause considerable disturbance in the district.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the North Bedfordshire Preservation Society*

SUBMITTED BY MR. F. G. R. SOPER

1. I live at The Briars, Bromham Park, Bedford, and I have been Chairman of The North Bedfordshire Preservation Society since 1959. I am a retired Insurance Manager. The Society ask the Commission to note that there has been in North Bedfordshire for 19 years a body specifically devoted to the preservation of the countryside, namely The North Bedfordshire Preservation Society founded in May 1950. The Society has quietly assisted in the Preservation of North Bedfordshire for many years and have supported the Local Planning Authority in their careful (and often unpopular) policy of restricting the sprawl of villages and so maintaining the truly rural character of the countryside surrounding them, at the same time maintaining the life of the villages.

The objects of the Society would be defeated

2. The North Bedfordshire Preservation Society is utterly opposed to the establishment of a major airport at or near Thurleigh. The Society exists for the preservation of natural amenities; for the promotion of public access to them; for the maintenance of rights of way; for encouraging respect for agriculture and for securing the preservation of places of historical and architectural interest. Every one of these objects would be disastrously violated by the placing of an airport in North Bedfordshire. From every aspect of the Society's interest, the northern part of Bedfordshire is eminently worthy of preservation, being the unspoiled part of the county. It is essentially ordinary English countryside that has not yet come under the influence of Metropolitan Man. North Bedfordshire is all the more precious as one of the few stretches of unspoiled countryside which although within reach of London has not been brought within the cocktail fringe or the stockbroker belt of the Metropolis. For example, the disused windmills at Thurleigh and Lower Dean are still disused windmills and have not been converted into tea houses or retreats for tired business men or exhausted Inspectors of the Ministry of Housing and Local Government.

3. Noteworthy in this area is the group of stone-built villages sometimes referred to as The River Valley Cluster. These villages, even if they survived at all in the face of an airport, could not hope to retain their character.

Education and food

4. Cognate with the Society's object in preserving natural beauty in its material form is its desire to preserve a way of life—a desire which is founded on the belief that the truest and most effective way to progress is that which is built on tradition. Bedfordshire cannot be described as one of the most glamorous counties but it can boast in particular two traditional fields of service—Education and Food.

5. In the field of education the Harpur Trust has made Bedford famous for its schools which still flourish vigorously. These worthy and suitable futures would be denied by a nearby airport.

6. In agriculture Bedfordshire has always been to the fore (it was the birthplace of the Howard plough) and mechanisation and science continue to bring increased efficiency in the clay lands of the north of the county. This is an area which should continue unfettered to produce more and more intensively its share of the nation's food.

The extractive industries

7. During the past twenty years, Bedfordshire has made a massive contribution to the nation's stock of building materials at the expense of rural amenities in parts of the county. Demands for building materials have seen increased chalk extraction in the south-west; clay for the largest brickworks in the world in the middle of the county and gravels along the Ouse valley. While it still might be possible to escape from the visual intrusion on the county, it would not be possible to escape from the incessant noise that is part of the making and operation of a giant airport.

Quiet enjoyment of the countryside

8. Parliament has striven hard during the passage of the Countryside Bill of 1968 (following the Duke of Edinburgh's conference on the "Countryside in 1970") to establish the concept of the *quiet enjoyment* of the countryside and particularly by introducing the idea of the Country Park to provide for the concentration of visitors in certain places and thereby relieve pressure on the ordinary countryside. The Society welcomes the news that the "Countryside in 1970" conference is reassembling in 1970 and it is clear that the concept of quiet enjoyment of the countryside will be further developed. It would be quite contrary to this policy to site the third London airport inland as opposed to on a coastal site.

Rights of way

9. The Society is the recognised local voluntary body for rights of way in North Bedfordshire. Nationally there is an awakening interest in the preservation and use of public rights of way in the countryside. This is evident by (i) the report of the Gosling Committee on footpaths* in March 1968, (ii) the provision of the Countryside Act 1968 providing (for the first time) for the compulsory signposting of footpaths by highway authorities and

* See also p. 2225.

* Report of the Footpaths Committee. (HMSO; 4s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

(iii) by the Town and Country Planning Act 1968 as to the preservation of green lanes.

10. The inspection of the area will show the extent to which Bedfordshire County Council is signposting the public paths in North Bedfordshire even though they may not be as advanced as counties such as Hampshire in the preservation and signposting of rights of way.

11. Quite apart from the obliteration of public rights of way over the airport area, the enjoyment of many more would be destroyed. In assessing in terms of LSD for the purpose of the cost benefit study, the Commission are asked to take into account not only the present use of rights of way, but their potential use in the future now that they are to be signposted and maintained. By way of illustration it might be asked who in 1939 would have attached much recreational value to inland waterways or disused gravel pits. If the Commission are willing to put a value on loss of rights of way the Society are willing to calculate the mileage of public paths which would be lost in consequence of the development proposals outlined by the County Planner.

12. Preservation in the countryside has always cost money as two examples show:

(1) The owner insisted that the Midland Railway should tunnel under Haddon Hall, Derbyshire in the 1860s. Today the railway is abandoned and Haddon Hall remains unspoiled as a great attraction and dollar earner.

(2) In the 1960s the Minister of Power ordered the CEGB to underground a 400 kv line across the Pennines (Woodhead to Dunford Bridge) at extra cost of £700 per yard. In the Society's view the British Airports Authority should carry some financial burden for amenity. With 100 million passengers per year one shilling a head would produce £5m. per annum.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Woburn Sands and District Society

SUBMITTED BY MR. D. A. BOSWALL

as part of case of The North Bedfordshire Preservation Society.

(1) I make the following observations as the duly appointed representative of the Woburn Sands and District Society. This is a Society of 624 members, of which I am Secretary, and which draws its membership from the villages of Aspley Guise, Aspley Heath, Bow Brickhill, Great Brickhill, Husborne Crawley, Little Brickhill, Ridgmont, Salford and Hulcote, Wavendon, Woburn, and Woburn Sands.

2. As soon as it was announced that Thurleigh had been nominated by the Commission as one of the short listed sites there was an immediate reaction amongst the Society's members against the proposal.

3. Various meetings have been held at which the matter has been discussed in some detail and as a result of such meetings it was agreed that the Society should register a protest against the Airport being established at Thurleigh.

4. Our objections may be summarised as follows:

(a) *Noise.* We fear that aircraft taking off in a S.W. direction will affect the area.

Furthermore, it was established during the South Bedfordshire sub-regional Study and Chilterns Standing Conference Recreational Survey (1968) that visitors from as far afield as Kings Lynn, Cheltenham and Braintree considered the quietness of the district to be its main attraction.

It should also be noted that the district is regarded as an extremely valuable recreational area for the population of the proposed new city of Milton Keynes.

(b) *Atmospheric Pollution.* Lying as it does in the brickfield valley, the pollution of the atmosphere by brickworks effluent has been a major cause of concern and one which has been investigated by this Society with disquieting results. Additional pollution in any form from aircraft is clearly undesirable.

(c) Urbanisation of the District, although undesirable, was accepted by this Society under the terms of reference given to the Milton Keynes Development Corporation for the new city, having due regard to the recognised need to house overspill population. The additional urbanisation necessary to service the third London Airport would be a burden the district could not carry, and to substitute an airport supporting population in place of overspill population entirely negates the reasons which persuaded the Society to accept Milton Keynes.

D. A. BOSWALL.

August 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

(iii) by the Town and Country Planning Act 1968 as to the preservation of green lanes.

10. The inspection of the area will show the extent to which Bedfordshire County Council is signposting the public paths in North Bedfordshire even though they may not be as advanced as counties such as Hampshire in the preservation and signposting of rights of way.

11. Quite apart from the obliteration of public rights of way over the airport area, the enjoyment of many more would be destroyed. In assessing in terms of LSD for the purpose of the cost benefit study, the Commission are asked to take into account not only the present use of rights of way, but their potential use in the future now that they are to be signposted and maintained. By way of illustration it might be asked who in 1939 would have attached much recreational value to inland waterways or disused gravel pits. If the Commission are willing to put a value on loss of rights of way the Society are willing to calculate the mileage of public paths which would be lost in consequence of the development proposals outlined by the County Planner.

12. Preservation in the countryside has always cost money as two examples show:

(1) The owner insisted that the Midland Railway should tunnel under Haddon Hall, Derbyshire in the 1860s. Today the railway is abandoned and Haddon Hall remains unspoiled as a great attraction and dollar earner.

(2) In the 1960s the Minister of Power ordered the CEGB to underground a 400 kv line across the Pennines (Woodhead to Dunford Bridge) at extra cost of £700 per yard. In the Society's view the British Airports Authority should carry some financial burden for amenity. With 100 million passengers per year one shilling a head would produce £5m. per annum.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Woburn Sands and District Society

SUBMITTED BY MR. D. A. BOSWALL

as part of case of The North Bedfordshire Preservation Society.

(1) I make the following observations as the duly appointed representative of the Woburn Sands and District Society. This is a Society of 624 members, of which I am Secretary, and which draws its membership from the villages of Aspley Guise, Aspley Heath, Bow Brickhill, Great Brickhill, Husborne Crawley, Little Brickhill, Ridgmont, Salford and Hulcote, Wavendon, Woburn, and Woburn Sands.

2. As soon as it was announced that Thurleigh had been nominated by the Commission as one of the short listed sites there was an immediate reaction amongst the Society's members against the proposal.

3. Various meetings have been held at which the matter has been discussed in some detail and as a result of such meetings it was agreed that the Society should register a protest against the Airport being established at Thurleigh.

4. Our objections may be summarised as follows:

(a) *Noise.* We fear that aircraft taking off in a S.W. direction will affect the area.

Furthermore, it was established during the South Bedfordshire sub-regional Study and Chilterns Standing Conference Recreational Survey (1968) that visitors from as far afield as Kings Lynn, Cheltenham and Braintree considered the quietness of the district to be its main attraction.

It should also be noted that the district is regarded as an extremely valuable recreational area for the population of the proposed new city of Milton Keynes.

(b) *Atmospheric Pollution.* Lying as it does in the brickfield valley, the pollution of the atmosphere by brickworks effluent has been a major cause of concern and one which has been investigated by this Society with disquieting results. Additional pollution in any form from aircraft is clearly undesirable.

(c) Urbanisation of the District, although undesirable, was accepted by this Society under the terms of reference given to the Milton Keynes Development Corporation for the new city, having due regard to the recognised need to house overspill population. The additional urbanisation necessary to service the third London Airport would be a burden the district could not carry, and to substitute an airport supporting population in place of overspill population entirely negates the reasons which persuaded the Society to accept Milton Keynes.

D. A. BOSWALL.

August 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the North Bedfordshire Archaeological Society*

SUBMITTED BY MR. D. HALL

I am a Master of Arts of Oxford University. During the last ten years I have made a special study of the archaeology of South Northamptonshire and North Bedfordshire and I have published papers on the archaeology of this area in a number of national and local archaeological journals.

1. I appear on behalf of the North Bedfordshire Archaeological Society whose activities extend over the whole of North Bedfordshire—an area defined broadly as that part of the County that lies north of the River Ouse. A number of other organisations, in particular:

The Bedfordshire Archaeological Council

The Bedford Archaeological Society

The Ampthill Archaeological Society

and

The Higham Ferrers Hundred Archaeological Society

join with the North Bedfordshire Society in expressing their opposition to the proposal to site the Third London Airport at Thurleigh.

2. The North Bedfordshire Archaeological Society was formed in 1962 and its present membership is about 40. The objectives of the society include the recording and investigation of archaeological sites in order to further the study of the early and mediaeval history of this part of the County. To this end members of the Society are carrying out intensive field work in selected parishes in North Bedfordshire. The Society has also organised and undertaken the excavation of the mediaeval moated grange (known as The Hermitage) in the parish of Milton Ernest under the direction of Mr. Sturdy of the Institute of Archaeology, London. Excavations are in progress at the moment on the cemetery and extensive Romano-British site at Bletsoe. Work on this site has been carried out intermittently since 1936 and the Society's work, commenced in 1967, could well continue for several seasons.

3. The protection of the countryside within the 35 NNI contour from residential and commercial development would be welcome. Yet there is little to be gained from the airport in this respect for planning policies already provide for the restriction of development in those areas that would be affected by noise. In fact, the airport proposal would be a disaster to archaeology as a result of the whole range of development to be associated with the airport: new towns, communications, services, sand and gravel workings, etc.

4. In broad terms, the loss to archaeology by the destruction of sites is a function of the acreage required for this extensive development. I have had little opportunity to examine the proposals which are being put to the Commission concerning the form that this development might take, but it would appear that the total land requirements over a 20 year period could approach 50,000 acres:

Airport Site	8,000 acres
Urban development	25,000
Sand and gravel workings	3,000
Roads, railways, services, reservoirs, recreational needs etc.	14,000
	50,000

The destruction of archaeological sites is an absolute loss to scientific knowledge.

5. It would not be possible for me to prepare a detailed statement about the effects of this associated development upon archaeological studies even if all relevant locations could be precisely determined. Apart from the actual amount of work involved, the degree of archaeological investigation that has been carried out varies enormously from place to place. Blank areas on the map are more likely to indicate that more work needs to be done than that there is nothing of consequence there. I shall, however, in this statement attempt to do three things:

(a) To establish the probable density of sites in the Thurleigh area.

(b) To indicate the importance of the sites in the Thurleigh area.

(c) To show that the resources likely to be available will be quite unable to cope with the threats posed by the construction of the airport itself, quite apart from the rapid large-scale development to be associated with the airport.

6. Collecting from published sources the scattered references to known sites does not give an adequate indication of the number of sites which actually exist. It has been shown that the only satisfactory means of determining what may lie under the surface is to undertake a careful study of every field and to combine this with a study of all the available documentary evidence. Even this work, of course, will not bring to light those sites which have left on the surface no trace of their existence.

7. On the map attached to this statement—Appendix I*—I have not attempted to show all sites known in North Bedfordshire but have shown instead

* See also p. 2225.

* p. 1989.

Printed image digitised by the University of Southampton Library Digitisation Unit

the major sites disclosed by recent field studies of certain parishes. All the sites which I have shown (except, possibly, the Bronze Age Barrow) are settlements, sites of isolated finds have been excluded. The size of the settlement ranges from a single dwelling to communities occupying several acres.

8. The map shows that the airport site has been only partially surveyed for pre-mediaeval remains. There is no reason to suppose, however, that the density of ancient settlements on the airport site is any less than in the surrounding area. The map shows that some 45 settlement sites have already been identified on the 16,000 acres that have recently been surveyed—a density of nearly three per 1,000 acres.

9. It is difficult to establish what the true number of sites may be, but in view of the number of sites which have been discovered by deep ploughing, building operations, pipe line excavations, etc., I think it would be a conservative estimate to suggest that as many sites lie concealed as are apparent at the surface. On this basis, therefore, one could reasonably assume a density of six sites per 1,000 acres. This figure omits the large number of minor areas such as slag patches showing where iron ore was once smelted.

10. An appreciation of the density and character of sites in this part of the County can be found by consulting the published work of Hall & Nickerson. A paper published in the *Bedfordshire Archaeological Journal* Vol. III is reproduced as Appendix 2 to this statement.* A similar pattern of settlement has been found in the area of survey delineated on the map. A detailed plan of Milton Ernest by Hutchings, which will be published in the *Bedfordshire Archaeological Journal*, Vol. IV, is shown in Appendix 3.*

11. Quite apart from the Romano-British and Iron Age sites, North Bedfordshire is particularly rich in the remains of deserted and shrunken mediaeval villages and their earthworks. The Deserted Mediaeval Village Research Group, led by Professor Beresford, has been cataloguing and studying such sites in Bedfordshire but their report has not yet been published. Our own work in only half a dozen parishes has already shown a remarkable number of deserted and shrunken settlements. In Sharnbrook, for example, there were once separate settlements at The Tofte and Coffle End, and the parish also contains two deserted villages at Colworth and Arnoe which themselves consisted of three and two separate parts respectively. The same kind of settlement pattern is known to extend over the area of the proposed airport. Appendix 4 is a list of some of the shrunken mediaeval settlements identified within the survey area marked on the map.

12. This complex settlement pattern, whose origin and organisation is not yet understood, offers an opportunity for combined archaeological and historical research which may well be unique. Immediately across the border, in Northamptonshire, shrunken settlements, such as Newton Bromswold, are nucleated—quite unlike the fragmentation which is characteristic of the North Bedfordshire parishes.

13. Existing buildings within the airport site will also provide opportunities for archaeological investigation. Churches in particular are a rich source of material; Appendix 5 indicates the kind of work involved.

14. In my comments on the density of archaeological sites I suggested that six sites per 1,000 acres could well be a reasonable estimate. Taking the airport site alone, and adding in the mediaeval settlements, the probable number of sites to be investigated would be between fifty and sixty—some of them quite substantial. Furthermore, it must be assumed that the bulk of these sites would be threatened within a year or two of the start of the project.

15. I must emphasise that the excavation of even the majority of these sites would be beyond the capacity of local resources. The Society has very few members who could be present during normal working hours—which would be essential in the circumstances. No doubt some volunteer observers could be found but experienced archaeologists would be in very short supply. Under normal conditions the excavation of even a small site can take many weeks, and by comparison, the pressures of a rescue excavation can often lead to inadequate study and unsatisfactory results. Even making full use of the time available between the decision on the airport site and the beginning of building operations relatively little could be accomplished by way of normal excavation.

16. Neither can I foresee that other societies in the surrounding area would be able to lend much practical assistance. Many would be heavily engaged in work dictated by the location and phasing of the many kinds of development to be associated with the airport. Even without the airport the growth in population already planned for this region is considerable —Peterborough, Northampton, Milton Keynes, etc.— and available resources elsewhere are already fully committed.

17. It would be tempting to assume that the Ministry of Public Building and Works could provide the necessary help in the event of the airport coming to Thurleigh. The Minister is indeed sympathetic to the problems of local archaeology and has continually drawn attention in his annual Excavation Reports to the increasingly rapid rate of destruction of archaeological sites throughout the country. "The increasingly intensive utilisation of land and the deeper foundations required by modern building techniques imply a total destruction of many sites. In the majority of cases, the present recording is the last opportunity to recover evidence of vital archaeological and historical significance".* The relevance of this comment to the present proposal is grimly obvious.

18. The Walsh Report, too, has summarised well the current situation in archaeology: "As archaeology is increasingly able to write history for periods or subjects for which written records fail, the monu-

* Not reproduced.

* Excavations Annual Report 1966. (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

ments that alone preserve this unwritten history are being destroyed at a much greater rate than ever before, and at a rate beyond the capacity of existing resources for even incomplete archaeological examination and record".†

19. The annual reports of the Ministry record their efforts to arrange and finance the excavation of threatened sites. Nevertheless, their resources are clearly inadequate; there is a shortage of both finance and staff and still a serious back log of material awaiting treatment. The number of sites excavated is not large—in 1968, in the whole of England, Wales and Scotland only ninety-one sites were excavated—while in addition fifty-eight grants were made to local organisations towards the cost of similar emergency excavations.

20. The importance attached to this work by the Minister is indicated by the 40 per cent rise in expenditure between 1966/7 and 1967/8 (£107,000–£148,000) but it is hardly necessary to add that this rate of increase is unlikely to continue. In short, I conclude that a truly adequate programme for the investigation of sites that would otherwise be lost to archaeology as a result of the airport and its associated development is unlikely to be forthcoming.

APPENDIX 4

Some shrunken mediaeval settlements in North Bedfordshire

Bletsoe	**Bolnhurst**
Whitwick End	Wood End
North End	The Church
Bourne End	Top End
Keysoe	**Ravensden**
Brook End	Church End
Hardwick End	Wood End
College Farm	Mowsbury
Buryfields Farm	Graze Hill
Keysoe Row	Tilwick
London End	Old Grange
Milton Ernest	**Thurleigh**
The Hermitage	Church End
Flewton End	Scald End
Knotting	Cross End
N. & S. of Knotting	Backnoe
	Blackburn Hall
Higham Park Lodge	Park End
	Robin's Folly

† Report of the Committee of Enquiry into the Arrangements for the Protection of Field Monuments 1966–68. (Cmnd. 3904; HMSO).

APPENDIX 5

Excavations at Ravensden church 1969: Summary

In February 1969 the nave and aisle floors of Ravensden church were replaced and this allowed a thorough investigation of early building stages.

The oldest feature was an elongated pit, predating the first building. It contained pottery of the twelfth or possibly late eleventh centuries. Shortly after this pit was filled the first church was built. It formed a rectangle 30 by 15 feet, corresponding approximately to the present nave. The door was 4·5 feet wide, near the present S entrance. The long walls were 4·5 feet thick and built entirely of flint and pebbles. The floor was earth, covered with a thin layer of sand. According to the layer of burning found in most parts, particularly the SW corner, the building suffered extensive fire damage before the floor levels had built up far. The S wall had to be rebuilt and still survives as the present nave S wall. Immediately on the burnt floor level, and therefore contemporary with the rebuilding, was a stonework base 4·5 feet square. The position at the centre of the W end makes it likely that it was the site of the later twelfth century font. Also on the same level at the NE was a heap of subsoil approximately 2 by 6 feet aligned E-W. It is likely that this was the base of a stone tomb or monument.

In the thirteenth century the N aisle was added and the nave N wall knocked down. The later floor layers of earth and sand spread over the footings of this wall. The tower and chancel may have been added at the same time.

Until a thorough examination of the finds has been made, it is difficult to be certain how long the earthen floors were in use, but it appears to have been used until at least the sixteenth century. There were no mediaeval burials in the nave, and none in the limited part of the aisle investigated down to the subsoil. The ancient floor levels in the nave were disturbed by four eighteenth century burials. At least two of these are in lead covered coffins.

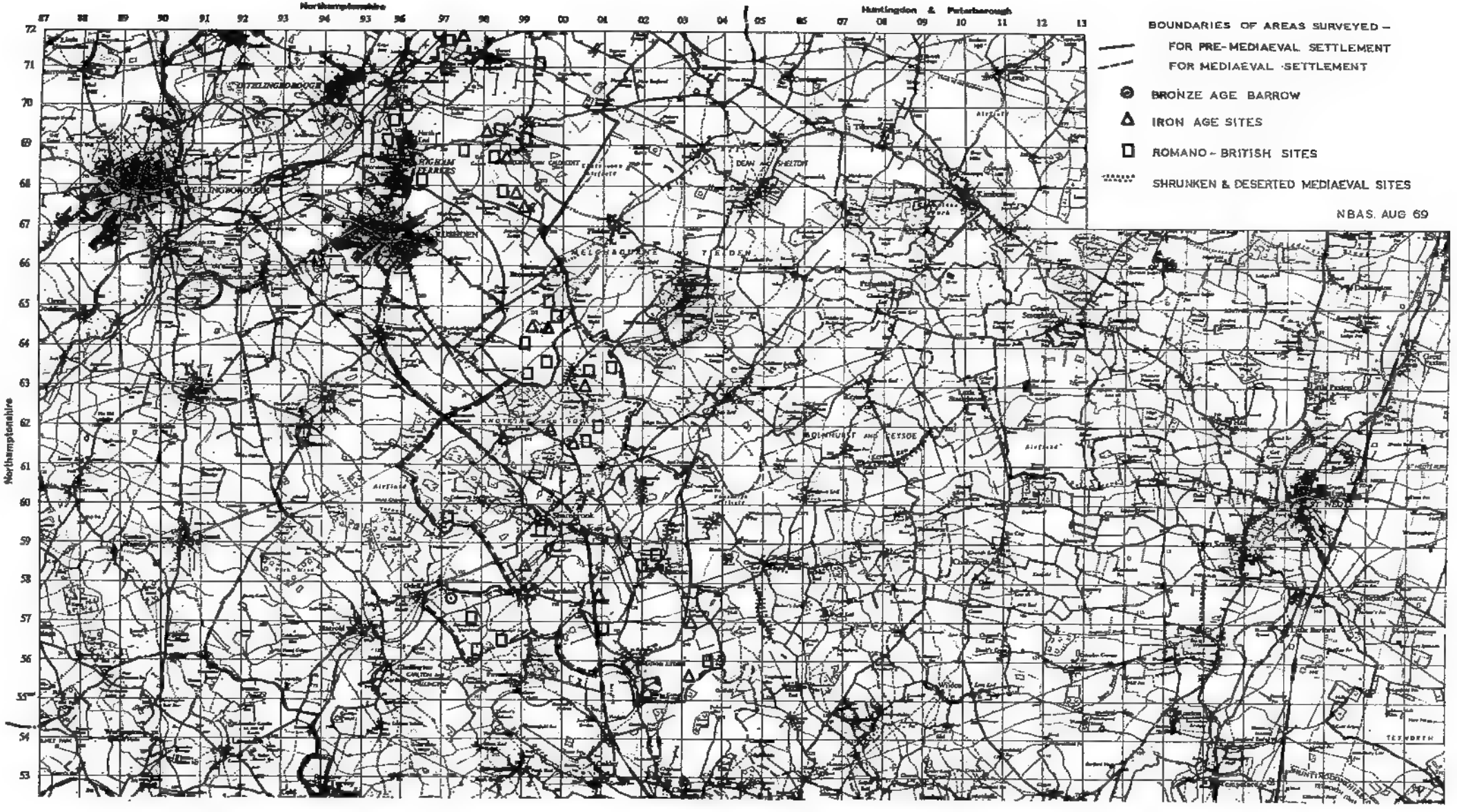
The finds were pottery sherds, stone and clay roofing tiles, various late flooring tiles including a glazed mosaic tile probably from an altar, window and sheet lead, window glass and various nails.

(From *Bedfordshire Archaeological Journal* IV—forthcoming.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

1989



NBAS Appendix 1: Major archæological sites in N. Beds.
(North Beds. Archæological Society)

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 3

Mr. H. de Beauchamp Lawson Johnston
Mr. V. Abraham
Mr. R. Atkins (*also representing Bromham Parish Council*)
Mr. L. J. Taylor
Mr. S. G. Chapman
Mr. W. R. Radnor
Mrs. E. T. Gibbs
Mr. R. J. Osborn
Mr. M. J. Pittman
Mr. F. R. Reavell
Miss C. J. Vigar
Mr. A. W. Luckhurst
Mr. E. C. Barnard
Mr. P. R. Willmer
Mr. F. Cookson (*also representing Bedfordshire Association of Parish Councils*)
Mr. M. G. Martindale (*also representing Huntingdon and Peterborough Parish Councils' Association and the Cambridgeshire and Isle of Ely Association of Parish Councils*)
Mr. M. B. Blackledge (*also representing Bedford Society*)
Mr. J. B. Osborne (*also representing Bovril Limited*)
Wing Commander C. G. B. McClure
Mr. J. G. Harris
Mr. O. M. Pozniak
Mr. R. M. Denny
Mr. T. G. Elliott

Bedfordshire Airport Resistance Association

Mr. G. C. W. Beazley
Mr. L. C. Gale
Mr. R. Westley

Pavenham Parish Council

Oral evidence was taken from these witnesses on Day Three; Wednesday, 10th September, 1969.

See pages 2229–2263

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Bedfordshire Airport Resistance Association

SUBMITTED BY MR. H. DE BEAUCHAMP LAWSON JOHNSTON*

I give evidence as Chairman of the Bedfordshire Airport Resistance Association. I am a Master of Arts of Cambridge University. I am a director of Bovril Limited and have been connected with Bedfordshire all my life having lived for considerable periods of my life in the villages of Bletsoe, Pavenham, Odell and Melchbourne. My mother's family have lived in Bedfordshire since the 15th century at Bletsoe and, for the most part, at Melchbourne. I have been High Sheriff of Bedfordshire and am at present a governor of the Harpur Trust and also a governor of the Margaret Beaufort School at Riseley as well as being one of the managers of the Church Primary School at Riseley.

I first knew that Thurleigh was one of the sites under consideration for the third London airport from an article written by Mr. Peter Masefield in *The Director* of September 1967. I was not unduly worried as Mr. Masefield in his article had discounted Thurleigh as being a possible site. Mr. Masefield tabulated in the article a number of sites and summarised his objection to Thurleigh (there referred to as Bedford) in the following words:

"ruled out on grounds of interference with military aerodromes, cost and distance from London."

It is significant that in the table under the heading of "other aerodromes closed down" he states "10 military" and under the heading "approximate defence and aerodrome costs" the word "enormous".

My residence at Melchbourne Park is about 2½ miles due North of the Thurleigh (a) site and about half a mile outside the 35 NNI and I am therefore not only concerned from the general public point of view but also to some extent personally. Melchbourne Park is a large red brick building of some 60 rooms (including attics). It was built by the St. Johns in the 1620's and extensively altered into a Georgian house in 1741. I have restored it internally at considerable expense since the last War. Besides the parts my family occupies, the house also provides three flats. My two farms, comprising some 450 acres in all, are let, but I have in hand 100 acres of woodlands which I have planted with young trees (spruce, poplar, ash and oak) within the past 12 years. I have also a large walled garden which is fully utilised for vegetables and fruit, some of which is sold outside. I have other plantations of Christmas Trees which I grow as a commercial crop.

The grounds which include some park land and two lakes, one of which is enclosed and forms a wildfowl reserve, are used on occasions for camping by Boy Scouts, Girl Guides and others, and the Bedfordshire Caravan Club pays an annual visit. The fishing in the lake is let to the Texas Instruments Angling Association, and the grounds, as well as the house, are open to the public from time to time on special occasions, and I believe give much pleasure to people in the district (which includes Northamptonshire and Huntingdonshire as well as Bedfordshire). The house is a scheduled building.

In about the middle of February, 1969 it became widely rumoured in the area that Thurleigh would probably be one of the four short-listed sites. In view of Mr. Masefield's article in *The Director* I did not take this too seriously but those in the immediate area of Thurleigh became most anxious. I was approached by Mr. T. H. K. Berry of Sevick Farm, Wilden, at the request of Mr. William Ward, who is now Vice Chairman of the Bedfordshire Airport Resistance Association, with a view to ascertaining whether I would be prepared to become chairman of an Airport Resistance Association were one to be formed. I went off on a ten days holiday overseas, and while I was away the announcement was made regarding the four short-listed sites. I returned just in time for the inaugural meeting of the Bedfordshire Airport Resistance Association which took place at the offices of the Bedford Rural District Council in Goldington Road, Bedford on the 12th March, 1969. At this meeting I was appointed chairman. The meeting was attended by some 60 people. I now produce a copy of the agenda with its two appendices marked HLJ1. During the meeting the informal constitution was adopted to enable the Association to proceed with its activities and a management committee was formed. The management committee then formed a publicity committee, a research committee and a finance committee. The informal constitution was subsequently handed to the Association's solicitors with instructions to prepare a draft constitution; such draft constitution being finally approved at a public meeting held at the offices of the Bedford Rural District Council on the 11th July, 1969. The members of the Management Committee and the various other Committees were then confirmed in office and a copy of our constitution is annexed marked HLJ2.

Since the inaugural meeting many public meetings organised by BARA have been held in villages and towns in Bedfordshire, Buckinghamshire, the County of Huntingdon and Peterborough, and in Northamptonshire, great interest in the matter having been shown in many places. It is true to say that in the main opinion has been against the siting of the third London airport at Thurleigh with very few people prepared to declare themselves in favour, and up to

* See also p. 2237.

Printed image digitised by the University of Southampton Library Digitisation Unit

about the third week of July there was no sign of an organised body of opinion in favour of the third London airport being sited at Thurleigh.

Public opinion in an area of some 20 miles radius around Thurleigh seems to be heavily weighted against the proposal.

Support has been received from many authorities, towns and villages, and annexed to my proof is a list of such authorities, villages and other bodies.

A public meeting, chaired by me, was held at Bedford School Hall in Bedford on the 5th May, 1969 attended by some 1,200 people. The meeting was addressed by Mr. Brian Parkyn, MP, Member for Bedford, Mr. Stephen Hastings, MP, an expert in aviation, and Sir John Howard, a civil engineer. These three gentlemen informed those present of such details as they were aware and explained the likely consequences which would follow the siting of an international airport at Thurleigh.

I was also in the chair at a meeting of parish councils situated within 16 miles radius of Thurleigh (a) which took place at Lincroft School, Oakley on the 6th June, 1969. It was attended by representatives from parishes in Bedfordshire, Buckinghamshire, the County of Huntingdon and Peterborough and Northamptonshire when the implications of the Commission's proposals were explained in detail by the Association's Research Committee chairman, Mr. T. H. K. Berry. There was a certain amount of lively questioning and discussion. Eventually a resolution was put from the floor:

"That this meeting opposes the siting of the third London airport at Thurleigh or any inland site."

The resolution was proposed by Mr. A. Polhill of Runhold and seconded by Mr. J. Schram of Pavenham. There were 139 votes for the resolution with 3 abstentions.

It was obvious that the representatives of those parishes present, all of whom had the authority from their own parishes, were utterly opposed to the proposed siting of the third London airport at Thurleigh.

Public meetings organised by BARA have also been held in Huntingdon, St. Neots, Rushden, Higham Ferrers, Wellingborough and Newport Pagnell, as well as in nearly all the villages within a 16 mile radius of Thurleigh, and on all occasions opinion has been found to be against the airport proposal, very few voices being raised in favour.

The Publicity Committee has arranged a number of functions, and teams of speakers have toured the villages and towns explaining the implications to members of the public. A BARA float is manned at local carnivals and like affairs and it is found that as more people begin to appreciate the grave implications much more interest is being shown and the resistance to the proposal is strengthening. Fetes are being held at villages in the threatened area; at one of which, in Bletsoe, twice as much money was raised as had ever been raised on a similar occasion before.

At the East of England Show at Peterborough a stand was manned for the three days of the Show and a great many visitors learned what an airport at Thurleigh would mean to them and a great number of new members enrolled. The Publicity Committee's float was also present at this Show.

I have noticed that since details of the suggested associated urban development have become public a great deal of concern has arisen not only in the villages which would be obliterated by the siting of the third London airport at Thurleigh but in the surrounding villages and the smaller towns such as St. Neots, Rushden and Higham Ferrers. Those in the immediate vicinity of the three proposed new towns seem particularly concerned and express fears of the effect that an influx of some 320,000 to the area with the associated development and surface communications would have upon their way of life. The details of the associated urban development appear to have made many more people aware of the magnitude of the third London airport and this has had the effect of once again strengthening resistance. I feel that people are finding it difficult to envisage an airport some four times the size of Heathrow which eventually will probably deal with something like seven times the number of passengers at the present time using Heathrow. I believe Heathrow to be of the nature of 2,700 acres and although the Commission indicate that the area within the third London airport perimeter will be some 7,500 acres I personally think that this may well finish up being nearer 10,000 acres.

The BARA Research Committee have over the last few months been actively engaged in the preparation of the Association's case and, always keeping in mind the Commission's request to avoid repetitive evidence, the Research Committee have been in close association with the Bedfordshire County Council (who are preparing the combined county councils' and other local authorities' case), the Bedford Rural District Council, the National Farmers' Union, the Country Landowners' Association and various other organisations and bodies. The Research Committee prepared a questionnaire for submission to Parish Councils in five counties within a 16 mile radius of Thurleigh and the information has been collated by the Association's planning witness, Mr. Leonard Gale of Messrs. Davidge and Partners who will deal with the sociological and other aspects affecting the area. I think it is true to say that, with very few exceptions, opinion is overwhelmingly against an international airport at an inland site although of course those in the Thurleigh area are naturally opposed in particular to the Thurleigh proposals. My Association is daily receiving finance and other offers of support and the various objections are too numerous to give in detail, but I am informed by the Association's solicitors that such objections are dealt with in other proofs of evidence or in statements forwarded to the Commission with BARA's evidence. The financial support has been given with the object of ensuring that the Resistance Association's case be presented to the Commission and for the Association to be represented at the Stage II and Stage V Hearings. The membership of the Association as at the 9th Sep-

Printed image digitised by the University of Southampton Library Digitisation Unit

tember, 1969 is 5,800 and new members join daily. It will be seen that the Association has received the support of 12,600 individuals and the support of organisations numbering many members.

Finally, I feel sure that the Commission, after reviewing all the evidence given at this hearing, must come to the conclusion that the general feeling within the area is one of horror at the proposal, it being felt that the siting of an airport some three to four times the size of Heathrow would be catastrophic and would mean a complete change in the make-up of the surrounding area and its way of life. The area surrounding Thurleigh is in the main a rural area much used for agriculture and leisure activities and general country pursuits. The proposal would mean complete destruction of a way of life enjoyed by almost all who live there.

Criticism has been levelled at BARA for endeavouring to preserve the status quo of peaceful rural life, and as such that we are preventing natural progress. I am sure that natural progress cannot in fact be prevented. In fifty years in Bedfordshire I have seen very great progress from almost total rurality to partial urbanisation. Towns and villages have grown, and so has population. This type of progression will no doubt continue. Towns like Bedford, St. Neots, Rushden, Higham Ferrers will go on growing, and the area of agricultural land must in consequence be reduced. New roads will be built and take up still more land. We in BARA are not opposed to change as such, but this is a very different thing to a complete transformation of an area some 30 miles from north to south and 30 miles from east to west from a predominantly rural region to one totally occupied by a huge airport and a ring of large towns around it (except where the country is placed immediately under the flight paths of aircraft coming in or going out from the airport); where there would be no facilities left out of doors for quiet leisure in country pursuits, and as far as the eye could see nothing but concrete and bricks of airport, roadway and towns: and to all this add a huge loss of rich agricultural land. This is what it would mean if the airport comes to be sited at Thurleigh. This would not be a process of natural evolution. It would be a revolution, ruinous to our countryside.

ADDENDUM

BEDFORDSHIRE AIRPORT RESISTANCE ASSOCIATION
B.A.R.A.

General Meeting

Wednesday, 12th March, 1969

AGENDA

1. To take note of the organisations invited to send representatives to the meeting. (See attached Appendix 1.)

2. To receive apologies for absence.

3. To confirm the rules of BARA. (See attached Appendix 2.)

4. To confirm the appointment of MacIntyre Hudson & Co., Chartered Accountants of Bedford, as auditors.

5. To confirm the appointment of Joint Hon. Treasurers:

John Robert Bates of College Farm, Keysoe.
S. George Chapman of Janet Place, Kimbolton Road, Keysoe.

6. Talk by Mr. N. Wallace on the organisation of resistance to Airport Proposals. Followed by questions.

7. To launch a fighting fund and consider subscription to BARA.

GILBERT BEAZLEY,
Acting Secretary.

APPENDIX HLJ1

Persons and Organisations invited to General Meeting of BARA on Wednesday 12th March 1969

Parish Councillors	
BLETSOE	Mr. M. C. Rowland Malna House, The Avenue, Bletsoe.
BOLNHURST & KEYSOE	Mr. D. Clark Mayfair Cottage, Keysoe Road.
COLMWORTH	Mr. E. Wooding 87 Curlew Cr., Bedford
FELMERSHAM	Mr. C. G. Hills Swiss Cottage, Church Farm, Bolnhurst.
HARROLD	Mr. B. Page Le Livre, Gold Street, Riseley.
KNOTTING AND SOULDROP	Miss Campion Forty Feet Lane, Souldrop.
MELCHBOURNE AND YELDEN	Mr. Ingram 36 Shirtley Road, Rushden N.
MILTON ERNEST	Mr. Maggs Loch Gair, Mill Road, Sharnbrook.
OAKLEY	Mr. Baldwin 29 Chantry Avenue, Kempston.
ODELL	Mrs. L. Wilson 5 Odell Road, Harrold.
PAVENHAM	Mr. Waterman Linden House, Green Lane, Clap.
RISELEY	Mr. M. Wildman 11 Irwin Road, Bedford.
STAUGHTON, LITTLE	Mrs. Jordon Beaumond H., L. Staughton.
STEVINGTON	Mr. Baldwin 29 Chantry Avenue, Kempston.
THURLEIGH	Mrs. Morris 4 High Street, Thurleigh.
WILDEN	Mr. Wallinger 229 Kimbolton Road, Bedford.
SWINESHEAD	Mr. Whitlock Brook Farm, Swineshead, Beds.
PERTENHALL	Mr. Bates Manor Farm, Pertenhall, Beds.
Organisations	
BEDS. RURAL COMMUNITY C. PARISH COUNCILS ASSOC. BED. FED. OF W.I.s	23 St. Cuthberts, Bedford.
BRIT. FIELD SPORTS S.	Mr. Waddington The Retreat, Pavenham.
NFU	57 Goldington Road, Bedford.
CLA	Major Duncombe Great Brickhill Manor.
BED. PRESERVATION S.	Mrs. Ball 52 Waller Avenue, Luton.
RAMBLERS' ASSOC.	K. Odell 40 Rosamon Road, Bedford.
BED. FED. ANGLERS	R. Meads 155 Marlborough Road, Bedford.
COUNTY PLANNER	Swan Court, High Street, Bedford.
CLERK TO B.C.C.	Shirehall, Bedford.
CLERK TO B. CORP.	Town Hall, Bedford.

Continued on next page

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX HLJ1—*continued*

CHAIRMAN OF THE BEDS. PLANNING COM. MAJ. GEN. O'CARROLL SCOTT	Mill Lane, Pavenham, Bedford.
HON. A. LAWSON JOHNSTON	Odell Manor, Odell.
E. W. MARTELL	"Anglestones" Pavenham, Beds.
R. A. H. COOPER	Highmead, Stagsden, Beds.
D. W. SMITH	Poplars Farm, Wymington, Rushden, Beds.
G. H. ROBERTSON	Dean House Farm, Upper Dean, Huntingdon.
H. E. MOORE	Tall Trees, Westfield Road, Oakley.
SIR FRANK MARKHAM	for liaison with the Leighton Buzzard area. Stratford House, Heath Park Road.
BEDS. FIRST INTERNAL DRAINAGE BOARD	47a Mill Street, Bedford.
GREAT OUSE RIVER A.	Brooklands Avenue, Cambridge.
ALDERMAN NEWTON CHAIRMAN B.R.D.C.	Moat House, Colmworth, Bedford. 41/43 Goldington Road, Bedford.
MRS. GIBBS	Cross End House, Thurleigh.
A. J. MCLURG	68 Kimbolton Road, Bedford.

Solicitors shall be instructed to prepare a deed of trust incorporating the following rules and appointing trustees.

1. **Name.** The name of the association shall be The Bedfordshire Airport Resistance Association.

2. **Objects.** To resist the siting of an airport at Thurleigh, Beds., and in conjunction with other Inland sites to urge that the third London airport be built on a coastal site and to protect Bedfordshire from the effects of airports.

3. **Management.** The Association's assets shall be vested in two Trustees:

John Robert Bates of College Farm, Keysoe.
S. George Chapman of Janet Place, Kimbolton Road, Keysoe,

or any two trustees subsequently appointed by the Management Committee and confirmed at a General Meeting. The Trustees shall have power to invest the assets of the Association and apply income and capital for purposes associated with the objects of the Association. If a General Meeting resolve that the objects of the association have been achieved, the assets shall be disposed of to The National Trust and the Bedfordshire Preservation Society in equal shares.

The Association shall be managed by the Management Committee, who shall be appointed at the Annual General Meeting, to be held in March each year, the original foundation committee to hold office until March 1970, comprising:

The Hon. Hugh Lawson Johnston	Mr. Blackledge
Mr. T. H. K. Berry	Mr. Booth
Mr. John Bates	Mr. Gibbs
Mrs. Bates	Mr. Kent
Mr. William Ward	Mr. Harris
Mr. S. G. Chapman	Mr. G. F. Osborne
Mr. Fleming	Mr. E. K. Hartell.

ex officio: Secretary C.L.A. Bedfordshire Branch.
Secretary N.F.U. Bedfordshire Branch.

The Management Committee to guide the policy of the Association and arrange for secretarial staff to administer the Association. To appoint two working committees.

(a) *Research Committee*—To obtain evidence for resisting the siting of the third Airport at Thurleigh.

(b) *Publicity Committee*—To draw the public's attention to the proposed airport at Thurleigh and the effect it would have on Bedfordshire and to raise funds for fighting the proposal.

4. **Bankers.** The treasurer to arrange for accounts to be opened at:

Barclays Bank, St. Neots. (Kimbolton sub-branch.)
Lloyds Bank, Sharnbrook (sub. of Bedford).
Westminster Bank, High Street, Bedford.

5. **Charity.** The Association to be registered as a charity.

6. The Association shall be non-political.

APPENDIX HLJ2

1. The name of the Association is The Bedfordshire Airport Resistance Association.

2. The objects of the Association are:

(a) To resist the siting of an airport at Thurleigh in the County of Bedford and in conjunction with other inland sites to urge that the third London airport be constructed on a coastal site and to protect Bedfordshire and any adjoining counties from the effects of airports.

(b) To do all such lawful acts or things as are incidental to the attainment of the primary objects of the Association, and so far as may be necessary or desirable to do such acts or things in collaboration with any person, body institution, authority or otherwise.

3. Membership of the Associaton shall be open to any person who is interested in the objects of the Association.

4. The minimum annual subscription shall be 2/6d. The Association shall have power to accept donations for any purpose not inconsistent with its objects and may make special appeals for funds to be used in connection with any such purpose.

5. Any member may determine his or her membership at any time by notice in writing to the honorary secretary.

6. The committee may on a resolution passed by three-quarters of the members thereof discontinue the membership of any member of the Association whose subscription shall be six months in arrear or for any other reason at the absolute discretion of the committee.

7. The management of the Association shall be vested in a committee consisting of the chairman, the honorary treasurer, the honorary secretary, and not more than twelve other members PROVIDED that the committee may co-opt additional members to the committee. Five members of the committee shall constitute a quorum AND PROVIDED THAT the Committee shall be responsible for the policy of the Association and shall appoint three working Committees such Committees having power to co-opt such

Printed image digitised by the University of Southampton Library Digitisation Unit

additional members as are deemed necessary to assist the Committees in their task namely:

(a) The Research Committee—To obtain evidence for resisting the third London airport at Thurleigh.

(b) The Publicity Committee—To draw the public's attention to the proposed airport at Thurleigh and the affect it would have on the district and to raise funds for resisting the proposal.

(c) The Finance Committee—To administer all funds collected or donated and to assist in raising funds, and generally to manage the financial business of the Association.

8. The Management Committee may at its option appoint a Council for the more efficient running of the affairs of the Association. The Chairman, Honorary Secretary and members of the three sub-committees hereinbefore referred to shall be ex-officio members of the Council and the remaining members of the Council shall be appointed by the Chairman. The Honorary Secretary shall maintain a nominal roll of members of the Council. The Chairman may at his absolute discretion convene a meeting of the Council at such place and time as he may deem convenient on giving not less than ten days' notice thereof to all members of the Council.

9. The Association shall at its first meeting and at every annual general meeting elect a chairman, honorary treasurer, honorary secretary together with twelve other members to constitute the committee for the ensuing year. The members of the committee shall take office at the end of the meeting at which they are elected and shall hold office until the end of the next annual general meeting. All members of the committee may be re-elected for a further term or further terms of office. The chairman for the time being of the committee shall also be the chairman of the annual general meeting.

10. The Finance Committee shall keep accounts of all moneys received and expended on account of the Association and shall present such accounts at the annual general meeting of the Association. A banking account shall be opened on behalf of the Association and all cheques drawn upon the said account shall require the signature of at least two members of the committee.

11. The financial year of the Association shall end on the 31st March in each year and a general meeting of members shall be convened by the honorary secretary as soon thereafter as possible, and in any case within three months for the purpose of receiving the annual report and balance sheet, for electing the officers and committee for the ensuing year and to consider any other business as may be necessary. Fourteen days' notice of such meeting shall be published to all members. Fifteen members present in person shall constitute a quorum at the annual general meeting. In the event of a quorum not being present the meeting shall be adjourned to such place, date and time within the ensuing 14 days as the chairman shall decide, and the members present at such adjourned meeting shall constitute a quorum.

12. A special general meeting may be convened at any time by a resolution of the committee or on the requisition of at least 25 members of the Association. A meeting held on such requisition shall be held within 21 days of the receipt of such requisition by the honorary secretary and the honorary secretary shall publish to the other members of the Association 14 days' notice of such meeting. A quorum shall be the same as a quorum at the annual general meeting.

13. All matters not hereinbefore provided for and not involving an amendment to this constitution may be dealt with by the committee.

14. The Association in general meeting by a resolution passed by not less than three-quarters of those present and voting may amend this constitution save that there shall be no power to amend clauses 2 and 3 of this constitution AND further in the event of the Association passing a resolution at any such general meeting as aforesaid to the effect that the Association's object as set forth in Clause 2 (a) hereof has been achieved then any remaining assets shall be divided between the National Trust and the Bedfordshire, the Northamptonshire and Huntingdonshire Preservation Societies in equal shares.

APPENDIX HJL 3

Bedfordshire Airport Resistance Association:

List of members

RURAL DISTRICT COUNCILS

Bedford
Biggleswade
Huntingdon
Newport Pagnell
St. Neots
St. Ives.

PARISH COUNCILS

Abbots Ripton
Arlesey
Aspley Guise
Battlesden
Bletsoe
Blunham
Broughton

Caddington
Caxton
Coton (Cambridge)
Clifton
Covington

Eversholt

Felmersham
Flitwick
Folksworth and Washingley

Great Barford
Great Shelford
Gravenshurst

Hardingstone
Haslingfield
Hockcliffe
Harrold

Kempston
Kimbolton

Milton Malsor
Milton Ernest

Printed image digitised by the University of Southampton Library Digitisation Unit

Newport Pagnell & District Association of Parish Councils:

Little Brickhill
Woburn Sands
Lavendon
Wavendon
Stoke Goldington
Western Underwood
Emberton
Olney
Gayhurst
Lathbury
Great Linford
Calverton
Haversham
Loughton
Moulsoe
Newton Blossomville
Newport Pagnell
North Crawley
Shenley
Sherington
Stanbridge
Woughton
Woolston-cum-Willon

Northill
Odell

Papworth Everard
Pavenham
Pertenhall
Podington

Ravensden
Roade
Riseley

Sharnbrook
Southhill
Stagsden
Shillington
Southoe and Midhoe
Staploe

Tempsford
Thurleigh
Tingrith
Toft
Turvey
Wollaston
Wootton, Northants
Wilden
Wrestlingworth
Wymington.

Women's Institutes

Bedfordshire
Buckinghamshire
Huntingdon } (counties)
Peterborough }
Isle of Ely
Cambridgeshire
Northamptonshire.

Parochial Church Councils

Flemersham
Pertenhall
Bletsoe
Odell.

Other Clubs and Associations

Amalgamated Power Engineering
Ampthill & District Preservation Society
Bedfordshire Old People's Welfare Council
Bedford Federation of Townswomen's Guilds
Brickhill Junior School, Parent Teacher Association
British Legion—Beds. Women's Section
College of Aeronautics, Cranfield
Harpur Trust Bedford
North Beds. Young Farmers' Club
North Beds. Preservation Society
South Beds. Preservation Society
Northants Footwear Manufacturers' Association
The Royal School of Church Music, Croydon
Rural Industries Committee—Beds. and Herts.
Sharnbrook Amateur Theatre Trust
St. Neot's Protection Society
Three in One Club, Felmersham
Woburn Sands & District Society
Bedford & District Trades Council
Shuttleworth Collection, Old Warden Airfield
British Legion—Women's Section, Beds. County Committee
Bedford Chamber of Trade
Bedford Central Branch of Clerical & Administrative Workers' Union.

Supporting Villages having no Village Representative

Biggleswade
Bletchley
Barton Le Clay
Cranfield
Colesden
Cold Brayfield
Clophill
Castle Ashby
Eynesbury
Eversholt
Great Gransden
Godmanchester
Houghton & Wyton
Houghton Conquest
Hinwick
Hemingford Abbots & Gray
Harford, Hunts.
Offord Cluny
Old Warden
Perry
Poddington
Roxton
Raunds
St. Ives
Shelton
Southoe & Midhoe
Wellingborough
Woburn & Woburn Sands
Wollaston
Wootton
Newton Bromswold
Haynes.

Bedford Representatives

Coun. J. M. Coleman, 1 Worcester Road
F. J. Goodwin, 13 Bradgate Road
Mrs. D. Wildman, 5 Greenacres
Mrs. K. P. James, 112 Gladstone Street
F. J. Clarke, 35 Wendover Drive
Mrs. Woods, 7 Byron Crescent
Mrs. F. L. Jones, 14 Brackley Road
C. M. Hoare, 27 Kestrell Road
R. Burgess, 32 Wendover Drive.

Printed image digitised by the University of Southampton Library Digitisation Unit

Village	*Representative*	*Address*
Ampthill	Mr. G. R. Warner	47 Flitwick Road, Ampthill.
Arlesey		
Aspley Guise	Mrs. H. Macario	Stove Corner, The Mount, Aspley Guise, Bletchley, Bucks.
Blunham	K. T. Armstrong	109 Grange Road, Blunham.
Biddenham	J. D. Ames	30 Church End, Biddenham.
Bletsoe	Mr. & Mrs. R. Flemming	The Old Rectory, Bletsoe, Beds.
		Mrs. Alsford, Bovril Farm, Bletsoe.
Bolnhurst	W. J. Radnor	Church Farm, Bolnhurst.
Brampton	Mrs. Temperton	14 Horseshoes Way, Brampton.
Bromham	Miss Q. Symonds	Home Close, Bromham.
	R. Atkins	42 Oakley Road, Bromham.
Buckden (Hunts)	D. Spreckley	The Tin Lid, Brampton Road, Buckden.
Cople		
Caxton (Cambs)	W. Slater	25 Ermine Street, Caxton, Cambs.
Cardington	Mrs. Cambers	Southill Road, Cardington.
Carlton	C. J. Perry	13 Rectory Close, Carlton.
Clapham	A. Waterman	Linden House, Green Lane, Clapham.
Colmworth	Miss Church	Manor Farm, Colmworth.
Clifton Reynes	W. Finn Kelcey	Clifton Pastures, Clifton Reynes, Olney, Bucks.
Clifton	Mrs. E. Wicksteed	Coromandel, Broad Street, Clifton, Beds.
Cogenhoe	C. J. Fiddes	Manor Cottage, Church Street, Cogenhoe, Northants.
Dean	Mr. Roger Horsford	Grange Farm, Dean.
Duloe and Staploe	Mr. J. Hawkins	26 Mill Hill Road, Eaton Ford, St. Neots, Hunts.
	C. J. Ibbett	41 Duloe Street, St. Neots, Hunts.
	Mr. D. Crissell	Beggary, Colmworth, Beds.
Elstow	Mr. Hill	Bolnhurst, Beds.
Eltisley	P. J. Thwaites	23 Greenfields, Eltisley, Beds.
Eaton Socon	Mrs. J. Church	The Chestnuts, St. Neots Road, Eaton Ford.
Emberton	J. Kelway	The Old Rectory, Emberton, Olney, Bucks.
Felmersham	Mr. M.Pittman	6 Trinity Close, Felmersham.
Flitwick	Mr. M. J. Randall	39 Kings Road, Flitwick, Beds.
	Mr. V. M. Howard Cramer	59 Hornes End, Flitwick.
Great Staughton	Mrs. Edmonds	The Old Vicarage, Great Staughton.
	George Peck	The Manor, Great Staughton.

Village	*Representative*	*Address*
Gravenhurst	C. West	13 Campton Road, Gravenhurst, Beds.
Great Barford	Mrs. Berens	Great Barford House, Great Barford, Beds.
Great Paxton	Mrs. Cropley	30 High Street, Great Paxton
Hail Weston	Mrs. Irons	19 High Street, Hail Weston, St. Neots, Hunts.
Harrowden	Mrs. G. Mousley	Lea Cottage, Old Harrowden.
Harlington	Mrs. C. Lee	Wood Farm, Harlington.
Harrold	G. H. Mitchell	Mulberry Lodge, Harrold.
Haynes		
Higham Ferrers	T. Obermann	42 Saffron Road, Higham Ferrers.
Haversham, Bucks.	Mrs. M. B. Astley	Steadgate, Haversham Village, Bucks.
Irthlingborough	Mrs. G. Mitford Barberton	Elgon Lodge, 15 Wellingborough Road, Irthlingborough, Northants.
Kempston	P. N. Burr	16 Tithe Road, Wood End, Kempston.
	C. J. Lightfoot	14 Fernlea Crescent, Kempston.
Kimbolton	Mr. Watson	55 Stonely, Kimbolton.
Keysoe	Mrs. McEwan	The Manor, Keysoe.
	Mrs. Bates	College Farm, Riseley.
	Mr. Clark	Mayfair Cottage, Keysoe Row West, Bedford.
Little Staughton	A. W. Luckhurst	The Bungalow, Green End, Little Staughton.
Luton	Mrs. Ball	52 Waller Avenue, Luton.
Little Addington	S. D. Tulley	The Bell Inn, Little Addington, Kettering, Northants.
Little Houghton	W. Rider (Chairman Parish Council)	Little Houghton, Northants.
Marston Melchbourne	S. J. Bedford	Knotting Road, Melchbourne
	Mr. Plant	Meadow Cottage, Melchbourne.
Milton Ernest	Mr. J. Gray	8 London End, Milton Ernest.
Mogerhanger	D. Tomas	26 Park Road, Mogerhanger, Sandy, Beds.
Northill	Mr. Bygraves	Applemead, Ickwell Road, Northill.
	A. J. Bigg	Hatch Farm, Northill.
Olney	L. B. Fairey	5 Market Place, Olney, Bucks.
Oakley	E. N. Cough	8 High Street, Oakley.
Odell	Percy Smith	20 Horse Fair Lane, Odell.
Pavenham	R. W. Ludlow	Stokesay, The Bury, Pavenham.
Pertenhall	Mr. & Mrs. Bates	Manor Farm, Pertenhall.

Printed image digitised by the University of Southampton Library Digitisation Unit

Village	*Representative*	*Address*
Ravensden	L. Taylor	Clayton, Cleat Hill, Ravensden.
Renhold	N. Verby	Ashcroft, Village Road, Renhold, Beds.
Riseley	V. Evans	5 Wells Road, Riseley.
Rushden	C. Spenser	Danemead, Heyway, Rushden.
Royston, Herts.	P. P. Smith	Uplands, Croydon Hills, Royston, Herts.
Sharnbrook	Alan Train	Templemead, Sharnbrook.
	A. W. Blackburn	26a High Street, Sharnbrook.
Silsoe	Mr. C. E. Blackman	18 Sheepfold Hill, Flitwick.
Souldrop	Mrs. R. E. Roberts	Cross Weir Farm, Souldrop, Beds.
Swineshead	A. H. Winters	The Bungalow, Green Lane, Swineshead.
Upper Dean	Mrs. Cummings	"Mafrac". Upper Dean, Hunts.
Yardley Hastings	A. J. B. Finke	1 High Street, Yardley Hastings, Northants.
St. Neots	C. Childs	Cross Hall Road, St. Neots.
	David Harrison	High Street, St. Neots.
	Mrs. Eatcliffe	Ford House, Eaton Ford.
Stagsden	G. Newman	Brookmead Farm, Stagsden, Beds.
Stevington	Albert Markham	The Cottage, Stevington.
Sandy	R. G. Percy	Deepdale Lodge, Deepdale, Potton, Beds.
Stokecoldington, Bucks.	Mr. Justice	32 Spring Lane, Olney, Bucks.
Stanwick, Northants.	A. A. Allebone	Hill House, Stanwick, Northants.
Tempsford	J. Bean	The Shrubbery, Church Street, Tempsford.
Thurleigh	Mrs. Gibbs	Cross End House, Thurleigh.
Turvey	John Carter	13 Pyghtle, Turvey.
	Mrs. Nash	The Grange, Turvey.
	Michael Farrar	Brayfield House, Gold Brayfield, Olney, Bucks.
Wilden	Mrs. E. D. Welbourne	28 Renhold Road, Wilden.
	Mrs. J. Lea	30 Renhold Road, Wilden.
Willington	E. C. Carter	7 Church Road, Willington.
Wilstead		
Wootton	The Clerk	Parish Council, Wootton.
Wrestlingworth	P. E. Greenhill	10 High Street, Wrestlingworth.
Wyboston and Chawston	Mrs. R. A. Gibson	Chawston Manor, Chawston.
	Mrs. J. Maudlin	Top Farm, Wyboston.
	Mrs. Merton Jones	
Wymington	R. S. Wilson	147 Rushden Road, Wymington.
Yelden	D. S. Colvin	Beckbridge, Yelden, Beds.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. V. ABRAHAM*

1. I am chairman of the Colmworth Parish Council upon which I have served for 18 years. I am also a member of the Bedford Rural District Council and a governor of Bushmead Secondary Modern School at which some 350 pupils attend. I am vice-chairman and trustee of the Colmworth Village Hall which is now almost completed at a cost of approximately £8,000 from funds raised over a period of some years. I am also a member of the Executive Committee of the Bedfordshire Association of Parish Councils, the associated parish councils all but two having passed resolutions against the siting of the third London airport at Thurleigh.

2. Colmworth parish has a present population of some 400 and an area of 2,147 acres and is situated some seven miles north-east of Bedford. In the village there is one grocer, a post office, a blacksmith, a public house, an agricultural contractor, a demolition contractor and dealer, a builder, a timber haulier, a garage and petrol filling station, a bulb merchant, an antique dealer, three pig breeding establishments, and egg production and distribution, and Colmworth is situated in an area of extremely good productive agricultural and market garden land. News of the fact that Thurleigh was one of the short-listed sites was received in the village in about the middle of February and notwithstanding the immediate adverse reaction it was decided to wait for the March parish council meeting as by such time it was hoped that we would have sufficient details upon which to discuss the proposal. I, and other parish councillors, attended the first meeting of the Bedfordshire Airport Resistance Association at the offices of Bedford Rural District Council on the 12th March, 1969, at which meeting we were given details of the Commission's proposals. The annual Parish Meeting took place on the 31st March, 1969, attended by a record number of 70 parishioners. This represented the highest attendance since records had been kept from 1894, the previous highest attendance having been 20. There are at present 256 on the Electoral Roll. At this meeting it was resolved unanimously to oppose the siting of the third London airport at Thurleigh and the general reaction in the village was, and still is, one of total horror at the thought of an international airport being sited at Thurleigh. The resolution was as under:

> "That this Parish Council strongly resists the siting of the third London airport at Thurleigh and any other inland airport. Not only will the inhabitants be seriously affected by the noise, but they will suffer loss of livelihood and amenities by the absorption of agricultural land as the result of an airport and its facilities."

The Parish Meeting expressed grave concern at the effects on health, particularly in relation to nervous diseases and deafness of children. The resolution only referred to Thurleigh (a) which would not have meant the obliteration of the village which Thurleigh (b) might. As the general public became more aware of the consequences there appears to be a growing resistance to the proposal particularly since the publications of the details of the Thurleigh (b) site. The uncertainty of the final alignment is causing grave concern in the village and general opinion appears to be that should Colmworth not be demolished it would be quite impossible to carry on living at Colmworth.

3. Colmworth village is one of the many North Bedfordshire villages mentioned in the Domesday Book and was held by Hugh de Beauchamp, and the Parish Church of St. Denys, which was built in the 14th Century by Sir Gerald Braybrooke, is an exceptionally fine example of the perpendicular style, and, although small, is of a scale and dignity rarely to be seen in a church of its size; it attracts many visitors each year and is recommended by the County Archivist as being very worthy of a visit. The Parochial Church Council is a very strong body which holds an annual fête and engages in other fund-raising activities. The fabric is well maintained and money is at the moment being collected for the maintenance of the church's bells—two by Joseph Knight dated 1635, two by Richard Chandler dated 1704 and the fifth bell is modern dated from 1935 only.

The Rev. Timothy Matthews, a well-known evangelist of the 19th Century is buried in the churchyard. On the north side of the chancel there is an outstanding alabaster monument in black and white to Sir William Dyer and family erected in 1641 by his widow, he was Lord Chief Justice of the Court of Common Pleas and built the Manor House in 1609, the architect being one Edmund Ibbotson, it was erected on the site of the original Norman manor which had been built by the Olyldeboeufs in about 1120.

4. A new primary school, attended by some 48 pupils, was erected in 1967 due for extensions in 1970 to which has been added a swimming pool built out of funds raised voluntarily at a cost of some £450 of which a grant of some £200 has been received. The pool is used not only by pupils but also by the parish at large and £180 has already been collected towards the cost of heating it.

* See page 2237.

Printed image digitised by the University of Southampton Library Digitisation Unit

5. Since about 1960 some 34 new houses have been built together with four old people's bungalows built by the Bedford Rural District Council and many of the older properties have been modernised.

6. The village organisations are a very strong Women's Institute, a Youth Club, the Women's Bright Hour, the Mothers' Union, a drama group, and it is quite obvious that the village hall when ready will probably be in use daily. The leisure activities are swimming and there is a regular farmers' shoot, fox hunting with the Oakley Hunt and beagling with the North Bucks.

The main concern in the village is that the establishment of a third London airport at Thurleigh would mean complete destruction of a valued way of life and the loss of a thriving village community and if not actually demolished it would be impossible to live in Colmworth on the edge of the airport in an area of extremely high noise.

I know that I am expressing the views of nearly 100 per cent of the residents of the village as it has become obvious to me and my fellow parish councillors that there does not appear to be one person in the village who favours the siting of the Third London airport at Thurleigh as this would result in the complete devastation of the magnificent North Bedfordshire rural area not only by the building of the airport itself but also by the consequent urbanisation and the building of the necessary surface connections.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bromham Parish Council

SUBMITTED BY MR. R. ATKINS*

1. I was appointed by the Bromham Parish Council on the 19th June, 1969, to give evidence on behalf of the parish at Stage II of the Commission on the third London airport enquiry. I am a member of the Bedford Rural District Council and a member of the Bromham Parish Council. I am a Fellow of the Institue of Cost and Works Accountants.

2. In about mid-February it was reported in the Press that Thurleigh had been placed on the short list for the third London airport and the immediate reaction was one of horror. The matter was raised by me at a Rural District Council meeting held on 22nd February, about a week before the Commission's short list was published, and, after a certain amount of discussion, a motion was proposed by me at such meeting:

> "That this Council notes with alarm the report that the Roskill Committee considers that Thurleigh would be a suitable site for the construction of a major airport and that this Council is determined to take every possible step to prevent this from happening."

The motion was passed but was referred back to all Committees, it having been decided that no precipitous action should be taken until full details had been made public. The Roskill's Commission's proposals were then published and made available to all committees. After discussion the resolution was adopted by all committees.

3. A village meeting was held in the 6th May, 1969, attended by some 250 parishioners and the effects as we knew them were explained to such meeting. A resolution was made in very similar terms to the resolution passed by the Rural District Council such resolution being carried unanimously. It was announced at this meeting that a petition would be sent round the village to all on the Electoral Roll, namely 2,088. Voluntary helpers contacted some 1,900 people of whom 1,325 signed the petition of objection, which is available for inspection.

4. Bromham village covers an area of some 1,945 acres with a population of some 3,500 people. I do not propose to deal in detail with details of the village as in early 1968 we prepared a planning study a copy of which is annexed hereto marked RAI.

5. It had been decided by the Parish Council as a result of reaction in the village that evidence be submitted on behalf of Bromham as, due to its size, it is one of the largest villages which will be affected by an airport at Thurleigh and is very largely residential in character. Uncertainty has been created by the ailgnment of N70E being given for Thurleigh only, since the other two inland sites are N50E and N40E respectively giving a mean of N45E which coincides with the alignment required by International Standards. Paragraph 3 of the Thurleigh *Site Information** recognises that further changes to the alignment may subsequently be justified and it would appear reasonable to suppose that there could be a further change which would bring Bromham within the 45 NNI area or indeed even higher and within one mile of the direct flight path of the nearest runway. Even at N70E Bromham village is only just outside the 40 NNI area and it would still be subject to considerable noise and some "fall out". At N45E the noise level would be 50 NNI or higher which would be unbearable and the village would be in the direct flight path with considerable "fall-out" effects. At the moment we do, on occasions, experience annoyance when the wind tunnels are used at night with an easterly wind and the night time activites at the Royal Aeronautical Establishment can now be heard quite distinctly at Bromham.

Bromham Hospital has 420 sub-normal patients and the authorities are concerned as to the effect that additional noise would have upon these patients of whom many are engaged in out of doors activities and would therefore derive no benefit during day from the noise reduction measures which might be beneficial to an ordinary Hospital. The headmistress and headmaster of two schools which have a total of 306 pupils on their rolls report to the effect that the experimental flying at the Royal Aeronautical Establishment at present is very disturbing and they are very apprehensive of the effect that any increased noise would have.

6. Bromham Park consists of 100 acres of delightful parkland and riverside area of which 45 acres are always open to the public. This oasis of peace and quiet which is extensively used by villagers and visitors would be completely ruined by the airport noise. The Park is used for fishing and bathing, and the village cricket club Bromham Nomads, which is a voluntary organisation, have built their own pavilion which they maintain on land leased from the owners of Bromham Hall which is a listed building, others being Bromham Mill, the Parish Church of St. Owen, Berry Farmhouse, a cottage north-west of Bromham Hall, and outbuildings west of Bromham Hall. The land in the parish is very fertile being largely used for agriculture and market gardening and this would be very adversely affected by "fall-out".

* See also p. 2238.

* Reproduced at p. 1801.

Printed image digitised by the University of Southampton Library Digitisation Unit

7. The villagers also view with much concern the effect that urbanisation and new roads could have upon the area. One of the proposed areas is quite close to Bromham and if a new town be sited in the Stagsden area this would undoubtedly result in a complete change in the character of the village which would in effect be completely destroyed by a proposed new road.

8. I can best summarise the village's objection to the siting of the third London airport at Thurleigh by stating that the resultant noise, "fall-out" and new road would completely destroy Bromham as a residential village.

Appendix

The development of Bromham Village

Introduction

In the post-war period the Bromham Parish Council has consistently taken an active interest in planning affairs, and indeed a few years ago established a planning sub-committee of the Council. To date the Council has considered each application upon an individual basis without reference to an overall plan for the village. For sometime we have felt that it would be desirable to develop an inhabitants' policy to act as a framework against which planning applications could be judged. The viewpoint of Mr. P. G. Laws, the former County Planning Officer for Bedfordshire in "The Ouse Valley Village Cluster, June 1967" has prompted us to produce the present report in the hope that those responsible for making planning policy and for judging planning applications will find this inhabitants' viewpoint constructive and relevant and consider it one of the more cogent of the many opinions expressed and cases made.

We found Mr. Laws' report an interesting and useful document and agreed with much of its contents.

We disagree however with those parts of the report which specifically state or imply that:

(a) Bromham has already been so spoilt by recent development that there is no longer any point in trying to preserve it as a village, and further development will cause no further harm,

(b) Bromham is now merely a suburb of Bedford; completely dependent on it for amenities, shopping, entertainment, etc., and no longer with any existence as a rural community,

(c) Bromham has no traffic problem and that additional housing can be added without creating such a problem.

This report seeks to modify to some extent the views expressed by Mr. Laws. Despite his gloomy diagnosis there is still a great demand for housing in Bromham, and the great majority of the present inhabitants would be loath to leave. How is it possible to reconcile the popularity of Bromham with Mr. Laws' views? What brings people to live in Bromham? Can we pinpoint the real attractions?

The attractions of Bromham

Bromham is still a lively, attractive, friendly village, and a pleasant place in which to live. What factors contribute to its attractiveness to its residents?

When the Planner's report refers to "attractiveness" it is most concerned with the scenic and architectural quality of a village such as is seen when driving through the main street. The emphasis appears to be on preserving the village for sightseers rather than for the inhabitants who are obviously concerned that the village should be pleasant to live in, as well as pleasant to look at. The qualities which make communities pleasant to live in are far more difficult to define than those which give scenic value, but they are readily recognisable to the members of a community. These qualities include "atmosphere, liveliness, friendliness and community spirit, and add up to give the community character and individuality.

We submit that the following factors contribute towards giving Bromham a character which cannot be equalled by any suburb.

(a) *Scenic attraction*

In view of the inhabitants, although some parts of Bromham have suffered badly at the hands of planners and developers, there is still much of undoubted scenic beauty. We believe that the illustration we include in this report fully supports our opinion. The village road, the green, the park with our ancient parish church, and the river provide scenes which rival the beauty of other villages in the cluster. We were most gratified to see that the County Planner chose a photograph of the River Ouse at Bromham for the cover of his report on Bedfordshire River Valleys.

The villagers take great pride in the appearance of the village. Evidence of the community interest and care was the award of the first prize for the Best Kept Village in 1967. The Parish Council acquired the ownership of the village green two years ago and have been able to improve its appearance still further.

Travelling fairs have started once again to pitch their roundabouts and side-shows on the village green, providing a delightful rural scene.

(b) *Open views and ease of access to countryside*

Bromham still has open country on all sides and, even in the most crowded of the recent housing estates, practically everyone has a view of open country. A couple of minutes' walk takes you into the countryside. These attractions cannot be found in suburbs, and we are most anxious to preserve them in Bromham.

(c) *The "life" and "atmosphere" of the community*

Bromham is a lively and friendly village. Local clubs and activities flourish in a way that suburbs cannot rival. Far from relying on Bedford for entertainment and activities, Bromham is very active in making and supporting its own entertainment. A few figures will serve to illustrate the interest taken in local activities.

Bromham Womens' Institute has a membership of about 169, which works out at about 42 members per 1,000 population. We can compare this with the membership of a similar organisation, such as the Towns-Womens' Guild in Bedford and other Bedfordshire towns which works out at 10 members per 1,000 population. Thus the support in Bromham is very significantly greater than in the towns.

Printed image digitised by the University of Southampton Library Digitisation Unit

How often one reads in local newspapers statements to the effect that "it was a great pity that such a good performance of a play (or concert) was so poorly attended". This is almost a standard part of any review of plays by amateur dramatic societies in Bedford districts. On the other hand a recent play by the Bromham Independent Players attracted over 400 people, which is two full houses in Bromham village hall. A pantomime staged by the Bromham W.I. filled the village hall at a public showing, although it had already been put on at a meeting of the Institute. The village hall is booked practically every night for some activity or other, often two clubs having meetings on the same night. In addition, the demand for rooms for meetings leads to quite substantial bookings of the Playing Field Pavilion. The two schools are heavily booked for evening classes, choir practices, drama practices, etc.

The annual Flower Show is another "institution" in the village and is a great occasion, not only for the villagers, but also for numbers of visitors from all over the county.

A flourishing troop of Scouts are at present having a new headquarters hut erected on a corner of the playing field.

We hope that in the last few paragraphs we have been able to convey some of the activity and enthusiasm to be found in the village.

Another factor we believe has contributed to the character of the village is that its inhabitants come from a very wide range of salary classes, and the representatives of the various salary classes are distributed randomly throughout the village. There is no district reserved for high cost housing; big houses mingle with tiny cottages. This gives the village a character quite different from the great majority of suburbs.

The dangers of further expansion

(a) *The village as a community*

Although the situation at present is very healthy, there are already signs that the life of the community could be damaged if the size of the village is allowed to increase greatly. An examination of the membership of the Women's Institute provides some interesting pointers. Thirty per cent of the members live in the oldest part of the village; 20 per cent in roads containing a mixture of old and new houses, such as Molivers Lane and Grange Lane; 42 per cent live on new estates which are fairly near the centre of the village; 8 per cent live in peripheral areas such as Box End Road.

This shows that newcomers to the village have been rapidly integrated into the village society. This ease of integration is often remarked upon by newcomers. However membership of the Institute drops off very rapidly beyond a certain distance from the centre of the village. For example, there are no members living in New Road or Thistley Green, Stagsden Road beyond the junction with Northampton Road, or Princes Road. No member comes from the caravan site where more than 300 people live. Only one member comes from the families of the resident staff at Bromham Hospital.

Northampton Road appears to provide a natural boundary to the village. Within this boundary newcomers have been readily absorbed into village life. Beyond this boundary the only people who take a part in village life are people who have lived in the village for 15–20 years.

This suggests that the character of the village might be altered radically, and for the worse, if the village grew in size beyond its natural boundaries.

(b) *The open views*

The land most eagerly sought after by developers is that which now provides the view of open-countryside and has prevented even the new housing estates from becoming purely suburban in aspect. An example of this is the rising ground south of the Northampton Road between The Swan and Thistley Green. This provides an open view for most people living in what is known as the Besbuilt Estate. The development which has already taken place south and west of Northampton Road is regrettable; further development here would be a calamity. Other areas of agricultural land and woodland providing open views for very many people are the fields stretching to the west and northwest along both sides of the Oakley Road beyond the Vicarage Green.

(c) *The amenities of the village*

The amenities, (i.e. the schools, village hall, playing field) were designed for a population of about 2,000. With its present population of about 4,000 they are stretched to their limit and, if the population of the village were to be increased significantly the present amenities would need substantial expansion. However no space has been left in the centre of the village which could accommodate such expansion. The village hall could be extended only by encroaching on the playing field which may itself prove to be too small. The schools are already completely full and further school building could only be accommodated outside the present boundaries of the village.

A large increase in population would almost certainly create a demand for new shops. The village still lacks a clinic or any daily doctors surgery and there is no branch library. Religious bodies such as the Roman Catholics and Free Churches, which at present hold meetings in the village hall, would be seeking sites for churches.

This would lead to a second "centre of gravity", somewhere outside the present boundaries, which would radically alter the present character of the village.

(d) *Traffic problems*

Whilst it is true that development of Bromham, Clapham and Oakley will not generate traffic that passes through other villages and country lanes unsuited to heavy traffic flow it must not be assumed that Bromham has no traffic problems.

The traffic problem is made more serious because the only convenient means of access to and from Bedford is by private car. The bus service is inadequate, particularly at night, and while inhabitants of the suburbs of Bedford can walk home if they miss the last bus, walking home to Bromham involves crossing Bromham Bridge. Crossing this bridge at

Printed image digitised by the University of Southampton Library Digitisation Unit

night is an adventure which can be contemplated only by the very fit and courageous.

1. *The present situation.* Access to and from the village may be considered as follows:

1.1. North to Stevington and Oakley; the road is narrow and winding. It is constricted at Rose Cottage, i.e. immediately north of Vicarage Corner, and there is very real bottle neck at the bridge immediately before Oakley Church.

1.2. South to Kempston; the first part of the road leaving Bromham is winding and it is not suitable to carry heavy traffic. Kempston UDC have expressed alarm at the volume of traffic using this road.

1.3. West to Northampton; a good road, the A428, now being brought up to reasonable trunk road standards.

1.4. East to Bedford; a good trunk road the A428 but with a serious constriction at Bromham Bridge. The traffic hazard at the bridge is already so serious that it would be extremely unwise to plan additional residential areas that would increase the traffic across the bridge.

The exit from Village Road to the A428 is poor and constricted by a bridge and a bend about a hundred yards before Village Road joins the main road.

It is envisaged that there will be a by-pass on the A428 which will obviate the need to use Bromham Bridge and will alter the perimeter of the village but this is not within any foreseeable financial approval of the Minister of Transport.

2. *Effect of completed developments*

2.1. *Molivers Lane and Wingfield Road:* this is a large estate, the great majority of householders are car owners and there is a considerable exodus of cars onto Village Road.

2.2. *Neville Crescent and Godwin Way:* a smaller development which feeds cars onto Village Road via Grange Lane and Rosemary Drive.

2.3. *Berry Drive:* cars emerge onto the Northampton Road either via Berry Drive or via Brook Way.

2.4. *Prince's Road:* a small number of houses feeding directly onto Northampton Road.

2.5. *Thistley Green/Toll Gate Close:* a development off Northampton Road and the A422 Newport Pagnell Road and feeding into these two main roads.

The effect of 2.1 and 2.2 is to increase traffic through the village and so increase the difficulties of traffic access to and from the village whilst 2.3, 2.4 and 2.5 must all occasion the traffic hazards which are attendant upon domestic traffic feeding directly onto trunk roads.

3. *Effect of developments in construction*

3.1. *Rosemary Drive:* a number of houses on Rosemary Drive are already occupied—a further number are under construction. It will be natural for these to feed direct into Village Road at an extremely difficult point, i.e. the bridge constriction on Village Road one hundred yards south of its junction with the main Northampton Road.

4. *Effect of approved future developments*

4.1. *Quenby's Paddock i.e. north of A428:* approval has been given to the erection of sixty-six houses which will be served by a road feeding into Rosemary Drive and will materially increase the hazard mentioned at 3.1.

4.2. *Cartwright's Field i.e. south of A428:* permission has been given for the erection of more than thirty houses, which will feed onto Northampton Road, and again will present a traffic hazard in doing so.

4.3. *Council Houses—Grange Lane:* it is proposed to erect, when funds are available, eighty dwellings at Springfield Drive, off Grange Lane, beyond the Old People's Bungalows at present there. To reach Grange Lane cars will either have to leave the A428 at the very dangerous corner where it is joined by Grange Lane, or use Village Road and so add to the traffic on it.

There is a particular danger in that the development at 4.2 is the "wrong" side of the trunk road. If people wish to take any part in village life danger would be caused in crossing the road to do so.

5. *Effect of possible future developments*

5.1. Parts of the area to the west of the Northampton Road and bounded on three sides by A422 and A428 have been the subject of previous unsuccessful planning applications. Had they been successful they would have fed more traffic into the trunk roads concerned and would have represented considerable danger particularly as these roads would have had to be crossed if people living there were to maintain village communication i.e. to attend schools, places of worship, social activities etc.

5.2. Similarly, unsuccessful application was made for the area between Wingfield Road and Oakley Road. Had this been granted it would have aggravated the traffic situation through the village or through Oakley Road which is an almost impossible road upon which to carry any volume of traffic.

Conclusions

The dangers to Bromham of any great increase in size, or in density of housing are as follows:

(a) Increase in size (beyond the existing boundaries of the village) will dilute and, in time, seriously weaken the character of the communal life of the village, which is so much liked by the inhabitants, both old and new.

(b) Increase in size will destroy the attraction of open views and easy access to the countryside.

(c) Increase in density within the present boundaries of the village tend to destroy the scenic character of the central and park areas of the village, and will strain the amenities of the village, in terms of schools, public halls etc., far beyond their capacity.

(d) Existing roads to and through Bromham are such that no expansion in the number of

Printed image digitised by the University of Southampton Library Digitisation Unit

people living in the village could be envisaged without a considerable improvement in the roads. The effect of these improvements could only be to further destroy the rural nature of the village, to take up valuable land and to incur considerable expense.

We consider the natural boundaries of the village are as follows:

(i) To the south—Northampton Road.
We consider it essential to avoid development along the river, or ribbon development along Box End Road. Also, as we have mentioned earlier in the report, Northampton Road appears to provide a "barrier to participation in the life of the village".

(ii) To the south-west and west—Northampton Road.

(iii) To the west and north-west—Bowels Wood and the strip of Woodland lying to the west of Woodland Drive, then along a continuation of the line of the woodland to Oakley Road.

(iv) To the north-west—Oakley Road.
Further development in this north-west corner of Bromham could only be ribbon development along Oakley Road, or as a bulge beyond the rest of the natural boundary of the village. All traffic would have to feed into the village along a narrow twisting road.

(v) To the east and south-east—the Park.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. L. J. TAYLOR*

1. I have been a member of Ravensden Parish Council since 1964 and have been appointed the representative of Ravensden in respect of the objection by the village to the choice of Thurleigh as a site for the third London airport. I am a member of Bedfordshire Rural Community Council, on which I am a representative of Bedfordshire Old People's Welfare Committee.

2. Ravensden is an attractive village situated on high ground some three miles north of Bedford. The civil parish extends southwards as far as the brook at the foot of Cleat Hill, which comprises the northernmost boundary of the Borough of Bedford. There remains however a wedge of open countryside between Cleat Hill and the nearest development in the Borough. The population is about 500 and the acreage of the parish about 2,700. There are three main centres of population—the old village of Ravensden (known as Church End), grouped around the parish church to the north of the parish; The Ravensden Crossroads area (with which I include Sunderland Hill and Wood End); and Cleat Hill. Church End is set on the southern slope of a hill surmounted by the 14th Century Decorated and Perpendicular style parish church. The village scene is rural and pleasant if not especially picturesque, and near the church are several interesting and attractive "scheduled" buildings. Apart from the old cottages, most of which have now been brought up to modern standards, there has recently been an extensive development of new detached houses along the west side of the village street, and another smaller development of high quality detached houses is to be built behind the church very shortly. The old village school building was closed earlier this year (1969) and the primary school was transferred to new permanent school premises custom-built behind the church. Thirty-nine pupils currently attend the new village school and the number may be expected to increase with further residential development. The village hall is a modern permanent brick building at the foot of Church Hill, equipped with stage, dance floor, toilet and catering facilities and a car park. It is managed by a committee of local residents and is in regular use by village organisations and for private lettings.

About one mile west of Church End is Ravensden Crossroads, where the village stores and sub-Post Office, one of the three public houses and the garage/filling station and car showrooms are situated. Residential development, mainly old but now modernised, with a little infilling of new dwellings, extends outwards from the Crossroads. Nearby is the Zion Baptist Chapel, where meetings are held every Sunday and regularly on several weekday evenings, and which has a flourishing Sunday School. Nearby also is a group of four local authority houses.

One mile to the south of Ravensden Crossroads, along the Kimbolton/Bedford Road (B.660) lies Cleat Hill, a hamlet of just over thirty houses and a farm built on a steep southerly-facing escarpment overlooking Bedford. Most are individually-designed houses and bungalows built during the last 10–15 years to an average density of three or less per acre.

3. Of the 166 houses in the parish, four are local authority-owned and most of the remaining 158 are privately owned, with a high standard of maintenance. There is one caravan site near Ravensden Crossroads, which at present caters for 16 families although it is licensed for 28 vans. It is not yet fully occupied pending completion of the main sewage-disposal installation. Here again the standard of maintenance is high, as most of the caravan dwellers are permanent residents, and the site is screened from the main road by means of trees.

4. There are 15 farms and two smallholdings in the parish, including one sheep farm, one pig farm, and two poultry farms. There are seven farm employees' houses tied to agriculture in Ravensden. Two agricultural contractors are currently operating their business in the parish.

5. Apart from agriculture, there are the following businesses conducted in the parish: a sub-post office/village stores, a garage/filling station/car showroom, three public houses, a plumber and a small private builder.

6. Altogether some 40 people have been identified who both live and work in the parish, and a further seven individuals enter the parish daily to work here.

7. The village is rich in buildings of historical or architectural merit, and the Statutory List for Ravensden compiled under the Town and Country Planning Acts includes the following buildings:

GRADE II: (i) All Saints' Parish Church.
(ii) "The Old White Lion Inn" (a thatch-roofed building at Ravensden Crossroads; now delicensed and occupied as a private house).

GRADE III: (i) "The Case Is Altered"—a thatch-roofed public house on Church Hill.
(ii) Manor Farmhouse, over 400 years old.
(iii) Highfields Farmhouse.

* See also p. 2239.

Printed image digitised by the University of Southampton Library Digitisation Unit

(iv) Hilltop Farmhouse.

(v) Oak Cottage, Church End, a timber-framed thatch-roofed dwelling of great charm.

(vi) A cottage opposite the "Horse and Jockey" public house, Church End.

(vii) Graze Hill Farmhouse.

(viii) Grays Hill Farmhouse.

N.B.: These are two quite separate buildings.

8. Village organisations, apart from the corporate life of the parish church and Zion Baptist chapel, include a thriving branch of the Women's Institute, and an "Over 60's" club, which was formed earlier in 1969 to cater for the needs of the 50 or so elderly residents of the parish. Most of these have lived in Ravensden for many years, in some cases all their lives, and they would be unwilling and unable to move elsewhere if conditions became intolerable for them.

9. The possibility of the siting of the third London airport at Thurleigh has been considered by the Parish Council, the Women's Institute and by the parishioners at the last Annual Parish Meeting in March, 1969, and the result is that the Parish of Ravensden wish strongly to oppose the siting of the airport at Thurleigh on the following grounds:

(i) the serious threat to the health and quality of life of the entire population of Ravensden it being on the 35 NNI contour for Thurleigh (b) posed by the noise of a major international airport whose runways would be only two miles away from the village if the second alternative site near Thurleigh were to be chosen;

(ii) the resultant depreciation in the value of house property in Ravensden, which would not be offset by any form of compensation; and

(iii) the resultant strain which would be placed upon transport facilities, water supplies and sewage-disposal facilities, the necessary improvements in which would have to be financed largely by the ratepayers of Bedfordshire during a period when demand would outstrip supply.

We deplore the despoliation of the countryside and residential areas inherent in the choice of Thurleigh and any other inland site, and trust that in framing their recommendations the Commission will give maximum weight to the natural advantages of Foulness as a site for a combined international airport and seaport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. S. G. CHAPMAN*

1. I am chairman of the Bolnhurst and Keysoe Parish Council and have been appointed Keysoe's representative to give evidence to the Commission. I was headmaster of the village school for twenty-eight years and I am Chairman of Managers of the Keysoe Group of Schools. (Keysoe, Thurleigh, Little Staughton).

2. Keysoe, which is mentioned in Domesday Book is a straggling village, situated some nine miles north of Bedford. It is the more populous part of the civil parish of Bolnhurst and Keysoe. The population is 444 and the village land is just over 3,000 acres. The original award map and detailed statement of the enclosure of the land in 1800 is still in existence and is held by whoever holds the office of Chairman of the Parish Council. Keysoe Row stretches along two by-roads east and west of the main B.660 road and is about two miles in length. Keysoe-Brook End is three quarters of a mile further north along the main road.

The majority of the dwellings are still village cottages, although most of them now have modern conveniences. Much care has been taken and money spent, to transform these cottages into attractive, comfortable homes. As these reflect their owners' individual ideals, and have been developed as homes for the future, fears of what may happen is a tremendous burden on peoples' minds. Some of these cottages are thatched and built with the thick walls of North Bedfordshire clay, or timber framework filled with brick or stone. Newer houses have been built as infilling, and there are only two small developments, one of five houses at Brook End, and the other of sixteen houses in Keysoe Row, with a pleasant green open space in front. The village hall, costing over £5,000, was built on this estate, in a style to harmonise with the houses. The village collected money for twenty years, to provide this hall, which was opened in 1963.

Of the 160 dwellings, 126 are owner occupied, 13 privately rented, nine are local authority houses, two of these being tied, and nine tied to agriculture, and there are three caravans. As would be expected in a village so overwhelmingly owner occupied, the standard of maintenance of property is high. Because of the straggling nature of the village and lack of large development, the view from almost every house is extensive, and there is a feeling of peace and space, which the villagers, old and new, wish to preserve.

The land is undulating and lightly wooded with small spinneys and hedgerow trees. It is one of the most rural parts of Bedfordshire, but it is also a working countryside, all of it being efficiently farmed.

3. There are twenty farms and smallholdings varying in size from three acres to 500 acres approximately. Four are market gardens, two dairy farms, two pig farms, one sheep farm, and the rest mixed, growing mostly grain and root crops.

4. The nine small businesses operate from private houses. They are as follows: Two builders and decorators; one garage; one haulage contractor; one car breaker and stock car racing stable; one agricultural contractor; one caterer and village stores and post office; one coal merchant; one thatcher. The village has three public houses, one with a filling station.

The Church, in the decorated and perpendicular style, has a 13th century font and a fine spire. Standing alone, with its vicarage and fine trees, it is an outstanding landmark.

There are two Baptist Churches. Brook End Baptist Church is one of the oldest non-comformist congregations in the country, starting as an Independent Church after the Civil War in 1652. It had associations with John Bunyan: John Donne, the first Minister, and some of his elders being imrisoned in Bedford Jail with him. The links between Keysoe and the Bunyan Meeting during the Commonwealth and Restoration periods were very close. The records of this church are almost complete from that time. In 1808, a breakaway group was formed at Keysoe Row as a Free Church. This is now Keysoe Row Baptist Church, meeting in one of the few remaining thatched churches in the country. This building is small, seating sixty people, but homely, and there is a very strong corporate life and a flourishing Sunday school.

6. The primary school, average number on roll 55 to 60, has a two acre playing field, a canteen and swimming pool, half of which was paid for by the parents in the villages of Keysoe, Bolnhurst and Little Staughton.

7. Organisations include a thriving WI, a branch of the British Legion; the Women's Bright Hour, and the North Bedfordshire Young Farmers' Club.

8. An opinion poll has been taken by the Parish Council on the siting of the third London airport at Thurleigh. All over 18 years of age were asked to give their opinion and the village was covered house to house.

The result is as follows:

Number entitled to vote	328
Against the airport	313
For the airport	9
Undecided	6

* See also p. 2240.

Printed image digitised by the University of Southampton Library Digitisation Unit

There are 95 people over the age of 60. Thirty-nine of these have lived in Keysoe all their lives. Thirty-six have lived here at least 25 years and 20 for a less period. They are very distressed and worried at the threat of having to leave their homes and familiar surroundings, and also in the case of the old village families, horrified at the thought of the destruction of their places of worship and the churchyards where their forebears are buried. The Parish Council are concerned about these older people, whose roots are in their own village, and also look with sympathy on the young married people facing the long years of repayment on their homes.

9. Resolutions against the airport at Thurleigh have been passed by the Parish Council, Parish Meeting, Women's Institute, Parochial Church Council, Parent Teachers' Association and British Legion.

10. As a former headmaster of the village school for 28 years, having taught both parents and their children, I have identified myself with them, sharing in all aspects of their community life. They are very worried and bewildered at this sudden threat of destruction, and the dispersal of the village community.

I add my plea for the continuance of the village and way of life we all love.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. W. R. RADNOR*

1. I am a member of the Bolnhurst and Keysoe Parish Council and have been appointed as Bolnhurst's representative, and it is in such capacity that I give evidence.

I am a rural district councillor for Bolnhurst and Keysoe, vice-chairman of the Parish Council and Lay-Pastor of the Bolnhurst Mission Hall.

2. Bolnhurst is a small straggling village situated on the B.660 road from Bedford to Kimbolton. There is a population of 169 people, this being made up of 13 under 5 years, 33 from 5 years to 18 years, 85 from 18 years to 60 years, and 38 over 60 years; 17 families have spent all their lives in the village. There are 27 families out of 60 who work in the village, not all of them in agriculture. There are no local authority houses in the village; the houses are mostly owner-occupied there being only 13 rented and two tied houses. The village has two places of worship, one the church standing on the edge of the village, and the other the Mission Hall which is in the centre. It has one public house and one post office and village store. In the past two years there has only been five houses changed ownership, and very little development as the local authority wished to retain the village in its present form, as it makes up part of a green belt of small villages in the north of Bedfordshire. From these facts it will be seen that here is a closely-knit community of people who love their village, the older members ask nothing more but that they should be allowed to live the rest of their days in the peace and quiet that they have known all their lives. The younger members of the community are worried not only at the prospect of losing their homes but also for the safety of their children, from the large construction lorries rushing through the village, if part of it is left, but more especially from the danger of a crashing aircraft. In the event of the airport being sited at Thurleigh, whether this be at Thurleigh (a) or Thurleigh (b), it would seem that Bolnhurst village will disappear and if a small portion is left, life in such part would become intolerable.

5. A resolution was passed at the Annual Parish Meeting held on the 11th March, 1969 to the effect that the Parish Council should do all in its power to prevent the siting of the third London airport at Thurleigh. The meeting was held in the village hall and was completely full, people standing in the entrance hall. Some twelve people could not get in and were given details later. Opposition has strengthened since the details of Thurleigh (b) were announced.

4. The farmers of Bolnhurst do not wish to see the years of hard work that they have put into their land being covered with tons of concrete, and above all the other inhabitants deplore the idea of the loss of their homes that they have loved and worked on for many years past.

5. All that I ask is that the people of Bolnhurst may be allowed to live out their lives in the peace and quiet of their beloved village.

* See also p. 2241.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MRS. E. T. GIBBS*

1. On the 18th June 1969 I was appointed as Thurleigh's representative to give evidence at Stage II of the Commission on the third London airport enquiry. I am a parish councillor and am also a member of the Playing Fields' Committee, the Parochial Church Council, and a governor of the Margaret Beaufort School at Riseley.

2. On Sunday the 16th February, 1969 I and my husband were visiting friends and during the course of conversation I was horrified to hear that there had been a report in one of the Sunday papers to the effect that Thurleigh was being considered as one of the short-listed sites for the third London airport. On Monday the 17th February, 1969 the *Daily Telegraph* also reported this fact and in the evening I was informed by Mr. S. Gammons, the garage proprietor at Thurleigh, that the village had been visited by many reporters and television interviewers. Strong interest was immediately aroused in the village. On the 18th February, 1969 we held a parish council meeting which had been arranged at the last meeting held on the 12th January, 1969. This meeting was attended by many more villagers than usual and, after dealing with the business on the Agenda, the question of the third London airport arose due to pressure from the residents at the Meeting. It was decided after some discussion that a house to house canvass be carried out and the result was as under:

Total number of voters on Electoral Roll: 400.

Result:	For	114
	Against	207
	Undecided	11

It had proved impracticable to obtain all votes as, although every house was visited on more than one occasion, certain people were either not at home or did not answer the bell. The poll related only to those over the age of 18 years. At the Special Meeting called for 27th February to count the votes, a Resolution was passed by the Thurleigh Parish Council:

"The Parish Council having now obtained the opinion of the village are prepared to take the necessary protest action against the siting of the third London airport at Thurleigh as advised by the Bedfordshire Association of Parish Councils."

On the 27th March, 1969 the Parish Annual General Meeting was attended by many more people than at any previous Annual General Meeting, the village hall being filled to capacity. Approximately 180. After open discussion the following Resolution was carried unanimously:

"That this Meeting has come out unanimously against the airport being sited at Thurleigh."

Thurleigh village has been "on the map" since Domesday Book, and is likely to have been in existence long before. It still possesses a sturdy independence, shown today by the determination of its inhabitants to insist on the individual pronunciation of the name as THURLYE. Domesday Book has it as La Lega, by mis-division of words through the ages this became "At therlye": the local habit of stressing the last syllable remains today. Current history shows an equal determination on the part of local inhabitants with regard to their future. At the 1969 Annual Parish Meeting, which was crowded, the Parish Council was firmly instructed from the floor to give all possible financial assistance to the Bedfordshire Airport Resistance Association, it did so to the maximum extent permissible under legislation which had not previously been used. This action was taken to demonstrate beyond all shadow of doubt the distress it is felt would be caused to inhabitants, and the appalling waste of land which would result from the siting of an international airport at Thurleigh. The house to house canvass already taken proved statistically the abhorrence felt at this possibility.

The village has been owned in turn by many great families down the centuries; of all these the only one recorded in St. Peter's Church is the family of Hervey whose manor at Whitwick is on the edge of the present Royal Aeronautical Establishment site; this came to them by marriage in the early 1300's. A later Hervey, George, attended Henry VIII at the Field of the Cloth of Gold, having distinguished himself at Calais, winning a Knighthood. His son Gerard became Member of Parliament for Bedford in 1554, and in 1605 a member of the family entertained James I at Thurleigh. The fine Church of St. Peter's is in part Norman, with various interesting features. It has a central tower topped with a small leaded spire, and has been the subject of great concern to the Historic Churches' Preservation Trust, in whose annual report for 1957 it featured prominently, and who over the years have been most helpful in providing monetary assistance. Having fallen into considerable disrepair, it was decided in 1948, on the advice of the eminent architect Sir Albert Richardson, that an attempt should be made to restore—as he put it—this picture of old England; the villagers pledged to give full support to a fund for repairs and restoration. By 1959 much still remained to be done, and it was decided that as the church was of such architectural value, a country-wide appeal should be launched through the BBC. The chancel was by now back in use, after an expenditure of £8,000, in the raising of which tremendous energy, ingenuity and resources had been expended. Plans have now been formulated for the

* See also p. 2241.

Printed image digitised by the University of Southampton Library Digitisation Unit

restoration of the nave to something approaching its former distinction and glory. Meantime, St. Peter's Church, Thurleigh, has become famous in that it is believed to be the first ancient church of the Church of England community to welcome Roman Catholic residents of the village to hold their services too within its walls; their own well established arrangements having been terminated by conditions outside their control. Joint services are also held.

Close by the churchyard is the castle mound, known as The Bury. The castle itself was constructed during Stephen's reign with a motte over 20 feet high, and a ditch 25 feet wide. These earthworks took their present form probably almost immediately after the Conquest, when lands were shared out among the Conqueror's followers. (It is possible that a Saxon thegn had a moated homestead on the site previously, but if any Saxon traces remain, they could only be found by excavation.) The Normans were much more advanced at castle-building, and they needed to build castles to hold down the subject population. In this case the new Norman owner was a Fleming (Bretons and Flemings joined the Normans as adventurers), and Fleming brothers got Odell and Thurleigh and other lands as well; but here one brother made his headquarters, and Odell the other. Immediately after the Conquest he probably made the mound and moat, and put up a wooden palisade, as it would not be practicable to put masonry buildings at once on the newly-constructed mound; these probably followed early in the 12th century, especially during the troubled reign of King Stephen. This Fleming family, although it had two branches, with headquarters respectively at Odell and Thurleigh, (and so developed two separate surnames—Wahull after the old form of Odell and Lega after the old form of Thurleigh) usually worked together, and so is usually treated as one barony—one of the three main baronies (Beauchamp of Bedford, d'Albini of Cainhoe in Clophill being the others), and it lasted about 200 years. (Two smaller baronies developed later, a younger Beauchamp branch at Eaton Socon, and the Traillys at Yielden.) As you see, it is a very fine earthwork. After the Fleming family had died out, the Thurleigh property came into the possession of the Grey family of Wrest; and in their MSS in the County Record Office are some 14th century instructions for cleaning out the moat. Thurleigh also has a Baptist Chapel, this Congregation was formed by a preacher from Keysoe, and such was the enthusiasm that it soon outgrew its cottage home, and a small Chapel was built on the site of that which stands at present. This well-appointed Chapel was opened in 1888. There are still elders in the village who remember, and retain, the inspiration which raised the building now standing in the centre of the village.

Another centre of community life is the village hall it having been used in 1968 on 361 occasions by many organisations. This had its beginning in a reading room at the village school. Money for this project was raised in the normal village way of Flower Shows, etc., on which much work was put in by the Women's Institute, with considerable help from the dedicated wife of the Vicar during the years after the First World War. It stands on land purchased from the Church and was officially opened on Boxing Day 1927. Since then it has been well maintained and at the present time a new Entrance Lobby, Cloakroom and Lavatory are under construction, solely dependent at present on locally raised funds and devoted local voluntary labour. This hall is in continual use for school meals, which are prepared, cooked and served there, about 50 dinners are eaten there daily. All organisations in the village make consistent use of the building, namely, Women's Institute, an extremely flourishing Youth Club which really helps in the village, also Girl Guides, British Legion Women's Section, Parish Council, Parochial Church Council, cricket and football clubs, also political organisations. Wedding receptions and Birthday parties are held there, in fact all activities connected with village life.

There is also a playing field in Thurleigh. Originally planned 26 years ago, it was to be sited in the village centre, but the land available was purchased by the Rural District Council for Local Authority Housing, and the plan fell into abeyance. However, a new committee began to raise money in 1954, and the purchase of the six acre field in mind became financially possible in 1961. £500 was paid for the field, and the seeding and cultivation of the land cost an additional £300; the overall cost was extremely low due to the enormous amount of voluntary work put into the project. The expenditure then qualified for a Ministry of Education grant which comprised 50 per cent of all costs. Since the field has been opened the Committee has raised sufficient money to keep it well maintained, and also to add fresh facilities. The latest acquisition is a cricket pavilion erected by volunteers from the committee. Sufficient money is kept in the bank at all times to meet any contingencies. There are Poors Charities for Thurleigh which through careful management now bring in about £200 annually. These have recently been combined and modernised by the trustees for the benefit of all recipients. The first of these charities dates back to 1713. This is an excellent charity for a rural parish.

There are twenty private dwellings in the village of the 16th, 17th and 18th centuries recorded as being noteworthy, many have been restored with great care at considerable expense.

In 1966 a main sewage scheme and a local authority building scheme of 46 dwellings, bungalows, maisonettes and houses were completed; also the existing Council houses were modernised. The total number of local authority housing thus being increased to 80. Thurleigh has approximately 50 old age pensioners, of whom many are housed by the Rural District Council.

The county primary school is flourishing with 73 children at present attending. This has its own swimming pool installed as a result of village fund raising, which in turn attracted a grant. Many children go on to Margaret Beaufort secondary school at Riseley, others to Bedford schools and also Kimbolton school. Among older students from the village there are some at universities, agricultural colleges and other places of further education.

Printed image digitised by the University of Southampton Library Digitisation Unit

In recent years Thurleigh has become the chosen home of a number of new residents, occupying old restored houses and also newly built dwellings. A number of new private houses are in the process of construction, and have already been sold. The village provides much valued residential accommodation for those who, forced to spend the greater part of their lives in urban "hubbub" yet seek to retain a degree of tranquility.

The RAE which occupies a vast acreage in the parish provides employment for approximately 120 people from the village, and is responsible for maintaining the high rateable value of the area. The entire remainder of the Parish consists of farmland, both agricultural and horticultural, with some stock. The former is calculated to contribute considerably to the homegrown food supply. Despite the compact centre with its community services, Thurleigh's road network spreads wide, from Bedford 6 miles away the approach is made by routes with such names as Robin's Folly, Scald End and Mill Road; continuing to Rutter's Cottages, Cross End or Park End, according to the district sought. From the distant 'clearing among the trees' of Domesday Book, the present day finds us in a well ordered and established community, set in peaceful ways on roads whose names go back to antiquity—once lost these integral values will be gone for ever.

Is it not time that the pursuit of progress at the expense of human health and sanity in this small island is moderated?

6. The present population of the village is approximately 650, there being 80 local authority houses and 118 private houses. The businesses carried on are a garage with coach service; one public house; two builders, one being an undertaker; window cleaner, and there are three shops, namely a general stores, a post office and grocery, and greengrocer. Industry is in the main agriculture, although the Royal Aeronautical Establishment affords employment for approximately 120 people from the village.

7. **Scheduled structures:**

Grade 1:

St. Peter's Church. 11th–15th century.
Churchyard Cross. Ancient monument.
The Bury Mound.

Supplementary list:
Bury Farm Cottages. N of Church.
Cottage west of church. (Red Lion House).
Cottage next to school.
Cottage east of school cottage.
Green Hedges.
Old Vicarage.
The cottage in Old Vicarage grounds.
Cottage 2nd from west of Baptist Chapel.
Cottage east of Thurleigh Green.

Cross End:
Tinkerbell. Willow Cottage.
Cross End House: 15th century timbers, bricks, wattle-daub chimney 15th century.
Cottage north of Robin's Folly.
Blackburn Hall Farmhouse. (Grade II)
Whitwick Green farm cottages (2).
Romp Hall–Old Milton Road.
Park End: Far Thatch.
Scald End: Waterfall Farmhouse.
Mill Road: Mill House.

8. It appears obvious to parish councillors that there is ever increasing resistance to the siting of the third London airport at Thurleigh, now that it has become evident at all that the village would disappear for ever.

As a tangible indication of the inhabitants' determination to avoid this fate, we have to date raised over £500 for use by the Bedfordshire Airport Resistance Association in opposing the proposal.

Attached here, and not reproduced, was Plate 9A "Thurleigh Castle site" extracted from *History of Bedfordshire.*

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. R. J. OSBORN*

1. I have been appointed by the Parish Council to give evidence on behalf of Riseley and am a Bachelor of Arts of the University of Cambridge and a Member of the Institution of Civil Engineers.

2. The inhabitants of Riseley are flattered that the Commission has considered sacrificing the complex arrangement of wind-tunnels at Twin Woods in order to avoid the destruction of the village. Three times now the immediate fate of the village has changed, first the symbolic square issued with the General Stage II Information indicated that Riseley would remain, but right on the very boundary of the airport itself. Then with the issue of the Thurleigh site Information it could be deduced from the indications of the runways that most of the village would definitely be demolished, and it has been presumed that the rest would follow suit in due course. Now with Thurleigh (b) it is found that the village is to be spared actual demolition but instead will have to exist as best it can with the extremely high side-effect noises that are to be expected from aircraft pushed to the limit at take-off in order to obtain a rapid climb. It is understood that this is necessary to attain altitude sufficiently rapidly that an acceptable reading is obtained by a noise-measuring device placed at a specified point along the flight-path (a point which appears to get moved further away with each new generation of aircraft). This exercise is apparently known as noise reduction. Scepticism is increased when it is known that methods of reducing jet aircraft noise at source do exist, but that they have not been widely adopted because it has not been mandatory for airline operators to penalise themselves financially to spare the residents near airports. Thus it appears that to date the local communities have in effect subsidised the airline operators. The inhabitants of Riseley fail to see why they should, and the majority object most strongly to proposals for siting this major airport anywhere in this vicinity, or in any populated area.

3. Riseley is a prosperous thriving village with a high proportion of inhabitants being couples in their twenties or thirties with young families. The majority of inhabitants have no desire to become evacuees or to be forced to exist in extremely unpleasant circumstances. Some do favour the airport proposal on the grounds that they will get better council accommodation without rent increases, or because they hope to benefit from bed-and-breakfast type trade. Many inhabitants have difficulty in visualising the scale of the airport proposals as there is nothing in day-to-day life in this area to draw direct comparisons with.

4. At meetings held in the village the following resolutions were passed—public meeting at village hall on 19th March, 1969:

> "That this village opposes the siting of the third London airport at Thurleigh".

With approximately 150 people present, motion carried with two votes against.

The Annual Parish Meeting was held at the primary school on the 24th March, 1969 when a resolution was proposed:

> "That this meeting protests most strongly against the third London airport being sited at Thurleigh".

and the clerk was given a list of reasons giving the grounds on which this protest was made. With approximately 70 people present the motion was carried unanimously.

5. Riseley, with a present day population of over 700 was probably a settlement in Roman times and is rich in historical associations. The village is recorded in the Domesday Book as RISELAI. The stone on which Queen Katherine of Aragon rested on her way to Kimbolton Castle is still to be seen near the roadside near the centre of the village. Annexed to my proof is a list of the Scheduled Buildings.

All Saints' Church has a history of nearly 800 years and the present vicar has custody of some remarkable records of the parish and its parishioners. There are families in the village today descended from those whose names were recorded some 300 years ago. I now hand in a pamphlet marked R01* giving details relating to the church and its various vicars from 1249 to 1955. The other centre of spiritual welfare is the Methodist church; preparations are in hand at the present time for the erection of a new building by its members.

6. There are two schools in the village. The older of the two is the primary school recently enlarged and modernised to meet urgent local demands. A larger and more imposing structure is the Margaret Beaufort School. This is a secondary modern school; officially opened in May, 1964 and built at a cost of some £96,000, it caters, as does the primary school, for a catchment area of nine villages. The school is a popular centre for sport and for further education and every autumn sees an increase in adult student enrolment. The school is now the second largest

* See also p. 2242.

* Not reproduced. Available from the Church of All Saints, Riseley.

Printed image digitised by the University of Southampton Library Digitisation Unit

centre of further education in the county and many and varied are the subjects handled.

7. The Royal Observer Corps is an active body locally, and has a very up-to-the-minute deep underground post, which has attracted great interest in this country and in visitors from abroad.

8. There are a dozen farms of varying sizes as well as small-holdings in the neighbourhood. Three establishments are equipped for all-the-year-round production of fruit, flowers and salad crops in heated glasshouses of about 2½, 1¼ and ½ acres respectively. All are still expanding. Thriving local businesses include a blacksmith, agricultural engineer, two garages, builder and cattle remover. An RDC depot has been established at the south end of the village. All these establishments provide primary employment for the village. The RAE Bedford is very close to the village and a number who live in the village are employed there. Others travel farther afield to Rushden, Bedford, Luton and London.

9. Active organisations exist for art, sport, domestic and cultural interests. These include bowls, football, cricket, Scouts and Cubs, Guides and Brownies, Mothers' Union, Women's Institute, theatre club and the North Bedfordshire Archaeological Society. The latter are exploring the possibility of uncovering a fortified village site of Iron Age origin at the north end of the village.

10. Housing development over the past ten years or so has been considerable and has resulted in the erection of 58 council houses and flats and the construction of 93 houses for private purchase. The total number of houses, many of which date from the late 17th and 18th centuries, exceeds 350. It is noteworthy that at the turn of the century the village had a population of about 1,000; there followed a steady decline until in about 1964 the village started to come to life by the building of many new houses. This was, in effect, a revitalisation of the village by natural growth and so soon to be wiped out. Many improvement grants have been made by the Bedford Rural District Council due to the fact that Riseley was one of the villages to be sewered in the post war batch.

11. Two public meetings were held during April, 1969 at which those present urged most strongly that in long term decisions of the nature of the Commission on the third London airport and with such such far-reaching consequences human values should outweigh all other considerations. It is considered that our agricultural land has a very high food producing potential and that many villages will lose their "status quo" destroying everything that matters to those who live, work and raise their families there. An airport of the size envisaged will make this part of the country a vast, congested built-up area with a network of roads and motorways. This peaceful area of rural England will completely disappear and will completely destroy that which the Countryside Act aims to conserve.

(Note: There followed a list of designated buildings of special architectural or historic interest and a provisional list for the Rural District of Bedford. This is available for inspection, by arrangement, at the offices of the Commission.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. M. J. PITTMAN*

1. I submit evidence as the nominated representative of the combined parishes of Felmersham with Radwell and Milton Ernest.

I have lived in Felmersham for two years and chose this area to provide a suitable environment in which to develop my family life.

Since my marriage some twelve years ago I have always lived within small communities.

2(a) The announcement earlier this year of a proposed airport site at Thurleigh caused some immediate concern within the communities. This was shown by the high attendance and the resolutions proposed at the Annual General Meetings of the Parish Councils.

As a direct result of these meetings, two independent committees were formed, one for each parish. Their objective being to determine the most effective method in which to oppose the proposed site.

When later in the year a second site proposal was added, these committees combined their effort and agreed to submit this evidence. To ensure that the evidence was factual and representative of opinion in parishes, it was further agreed that an attitude survey be conducted.

2(b) **Summary of survey results**

The survey was completed in July 1969 within the combined parishes. The questions asked and the full results obtained to date are set out in Appendix A.

Of the 373 households circulated 198 or 53 per cent completed a return. Almost 50 per cent of the parishioners had been resident for over ten years and 36 per cent resident less than five years.

Questions 2, 3 and 4 indicate attitude towards residing within the parishes, before proposal, now and in the future under a possible airport situation. The marking shows 4 per cent, 40 per cent and 65 per cent respectively, indicating those who wished to the leave the parishes.

The dominant factors controlling this wish to leave are shown by question 5 as being (a) loss of peace and quiet with 39 per cent and (b) loss of rural character with 31 per cent.

The marks for question 7 indicate opposition for an inland site (46 per cent) and the existence of an alternative site 39 per cent which is considered more suited. The ranking of this incomplete, complex, question was not in the main completed.

The six answers to question 8 have been split into two groups of three. The first group being control factors with 36 per cent. The second group are choice factors with 64 per cent.

The answers to question 8 indicate that 91 per cent of those completing a return are unsettled in the proposed airport situation.

A measure of the opposition to both of the proposed sites can be obtained from question 6 with 95 per cent not in favour.

2(c) The parish councils of Felmersham with Radwell and Milton Ernest have passed the following resolutions.

(i) A special meeting of the Felmersham with Radwell Parish Council held on the 17th day of May 1969 with approximately 120 members of the public present. The meeting was addressed by the local County Councillor and Mr. Richard Payne, a member of BARA. After lengthy discussion and questioning it was apparent that the feeling of the meeting was one of total opposition to the proposals.

(ii) The Annual General Meeting of the Milton Ernest Parish Council held in May 1969 with 51 members of the public present:

> "That this Parish Meeting instructs the Parish Council to use its influence to make certain that the County Council opposes the siting of the third London airport at Thurleigh, and in conjunction with other inland sites to urge that the third airport be built on a coastal site and to protect Bedfordshire and adjoining counties from the effects of airports".

These resolutions were passed on to:

(a) the Rural District Council,
(b) the Bedford County Council,
(c) the Parish Councils Association.

(iii) The Parochial Church Council of Felmersham and Radwell has passed the following resolution on the 6th May 1969:

> "It was unanimously agreed that we deplore the possibility of an airport at Thurleigh as it will seriously affect the life and work of this parish".

3(a) **General description of parishes**

The parish of Milton Ernest lies approximately four miles north of Bedford town on the A.6, it adjoins the parish of Felmersham with Radwell at its northern edge. Both parishes have as part of their boundaries the River Ouse which winds in and around the parishes. Each of the three villages is sited on rising ground from the river with Felmersham and Radwell having notable old bridges. The villages consist of a pleasant mixture of types and styles of houses, dwellings and are set amid pleasant mixed farmland. A list of scheduled buildings is given in Appendix B.* The villages form part of the Ouse "cluster" scheduled for further recreational development and conservation.

* See also p. 2243.

* Not reproduced. Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

3(b) Industrial development within the parishes is restricted to agriculture or services.

There are twelve farms within the parishes all of which are productive.

The six public houses cater not only for local inhabitants but for the visitors who come to spend some leisure time in the parishes.

The three shops provide for the day to day needs of the villages, this includes one bakehouse which supplies the surrounding area with fresh bread.

Schooling for approximately 100 children between the ages of 5 and 11 is provided at the three schools.

Industry includes a garage, an office furniture supplier, builders yard, a crop spraying company and a kennels.

3(c) There are many village and church organisations all of which are well supported, these are listed at Appendix C. Centres for these activities are either the school hall or the village hall in the case of Milton Ernest. The total bookings July 1968 to July 1969 being in excess of 200. Pure social activity also includes darts, skittles etc., at public houses.

Consequences of site development

4. If either of the two proposed sites were to be developed we would be subjected to some or all of the following environmental changes.

(a) Increased flooding hazard. At the present time the Ouse floods at Felmersham and Radwell to sufficient height to limit access on two roads by private car. This results in a detour of seven miles for persons wishing to make the journey into Sharnbrook normally a distance of 1½ miles.

(b) Vast increases in the ambient noise levels resulting in general disruption of sleep, work and recreations.

(c) Increased rents and costs (food, wages etc.)

(d) Possible property losses due to extended surface communications.

(e) Geographical changes, the addition of holes and removal of hills.

(f) Potential financial loss in property sales in a hostile market.

(g) Compensation and grants—for what and by whom.

(h) Huge increases in surface transport volume.

(i) Loss of productive farm lands.

(j) Unrestricted vibration problems in all forms of property.

(k) An increased accident hazard.

(l) Increased air and water pollution.

(m) Limitations on slender social services—dustbins, nurses, schools, water, sewerage, the growth of these services tends to lag development by 5–10 years.

Many of these changes are not or have not been made available in a detailed or understandable form to the public. This has in turn limited the ability to reach an objective conclusion on many points.

All of these points or related items have been discussed by individuals within the community and opinions have crystallised in opposition to the changes. This is not resistance to change, but realisation that the changes will in all probability be detrimental to the community and themselves.

5. I have attempted to project an image of an established, balanced rural community. The main attribute of the community being its people. A large majority of these people after consideration of the facts both collectively and as individuals feel that the proposed sites at Thurleigh are unacceptable. If either of these sites were developed these people would lose the prime benefits of joining the community, these being rural character and peace and quiet.

These two benefits written in five words cannot be fully expanded into simple sentences or be taken at their face value. They in fact represent a way of life which has to be joined to be understood, and each individual within the community will have a different understanding.

To develop either site would permanently destroy a way of life which has existed one or more generations. The mechanics of destruction would be as variable as the understanding of the way of life and would lead to the total disruption of our community as we know it now.

I must therefore as the nominated representative of the combined parishes of Felmersham with Radwell and Milton Ernest request full weight be given to all points referred to in my evidence. I have been instructed by many parishioners to make the above request.

Appendix A1

Proposed Third London Airport—Thurleigh
Attitude Survey

The Bedford Airport Resistance Association (BARA) are collecting information from the parishes of Felmersham with Radwell, and Milton Ernest, to be presented at the forthcoming public hearing arranged by the Roskill Commission enquiring into the siting of the proposed third London airport.

To help us determine public reaction to the Thurleigh scheme would you please answer the following questions to the best of your ability.

1. How long have you lived in the parish? Less than 2 years ☐
   2–5 years ☐
   5–10 years ☐
   More than 10 years ☐
2. Did you wish to leave the parish before hearing of the proposal to site the airport at Thurleigh? YES ☐ NO ☐
3. Do you feel that you wish to leave the village now that the airport might be built at Thurleigh? YES ☐ NO ☐

Printed image digitised by the University of Southampton Library Digitisation Unit

4. Would you leave the village if the airport was built even though your property were not destroyed? YES ☐ NO ☐

5. What would be the reason governing your decision to move if the airport were built?
   (*a*) loss of work ☐
   (*b*) loss of social contacts ☐
   (*c*) loss of rural character ☐
   (*d*) loss of peace & quiet ☐
   (*e*) rise of cost of living ☐
   (*f*) other reasons ☐

6. Do you wish the airport to be completed at Thurleigh? YES ☐ NO ☐

7. What are your reasons for opposing the siting of the airport at Thurleigh
   (*a*) opposed to inland sites in general ☐
   (*b*) not convinced of the need for another airport ☐
   (*c*) believe the expense cannot be justified ☐
   (*d*) because there are better sites elsewhere ☐
   (Please indicate order of importance if more than one reason applies by marking 1, 2, 3 . . . in boxes).

8. Why do you like living in the parish?
   (*a*) near to work ☐
   (*b*) brought up in the country ☐
   (*c*) for reasons of housing ☐
   (*d*) like the peace and quiet ☐
   (*e*) do not like town life ☐
   (*f*) like rural surroundings ☐

9. Would you prefer to live somewhere else? YES ☐ NO ☐

Appendix A2

Question		*Felmersham with Radwell*	*Milton Ernest*	*Total*		*per cent*
1.		21	11	32		16
		22	18	40		20
		21	7	28		14
		51	47	98		49·5
		115	83	198	=	100%
2.	Y	4	4	8		40
	N	111	76	187		98
		115	80	195	=	100%
3.	Y	35	39	74		41·5
	N	64	40	104		58·5
		99	79	178	=	100%
4.	Y	76	39	115		65
	N	28	34	62		35
		104	73	177	=	100%
5.		10	17	27		7·1
		13	15	28		7·3
		75	45	120		31·4
		87	62	149		39·0
		15	19	34		8·9
		11	13	24		6·3
		211	171	382	=	100%
6.	Y	7	3	10		5
	N	109	79	188		95
		115	82	198	=	100%
7.		86	43	129		46·5
		17	3	20		7·2
		16	3	19		6·8
		85	24	109		39·4
		204	73	277	=	100%
8.		28	33	61		10·2
		40	55	95		16
		22	34	56		9·4
		85	59	144		24·2
		49	47	95		16·1
		82	61	143		24
		306	289	595	=	100%
9.	Y	11	5	16		8·5
	N	99	76	175		91·5
		110	81	191	=	100%

Appendix C

Summary of Village Activities

Both Felmersham and Milton Ernest have old and maintained churches and are attended regularly by approximately 10 per cent of the population. During religious festivals the church at Felmersham is flood-lit and is attended by approximately 250 people. This is the main and largest church within the deaconry, and has other responsibilities.

Both churches have bell ringers and choirs.

The Mothers' Union is active and Confirmation Classes are held.

Several social events are held to raise funds with others such as Harvest Supper. Milton Ernest has a youth club in the darker evenings and runs a weekly Whist Drive for funds to aid the village hall.

The older members of both parishes have the 3 in 1 club and the Good Companions meeting alternate weeks.

There is also a branch of the British Legion at Milton Ernest.

There are very active branches of the Women's Institute in both parishes.

Sporting activities range from a cricket club to keep fit classes and both schools have swimming pools provided by local subscription and local authority grants. These pools are open outside normal school times and during the summer holidays.

Fishing and other water sports are enjoyed by parishioners and visitors alike. There is also some shooting.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. F. R. REAVELL*

1. I give evidence as the appointed representative of the parish of Sharnbrook. I am the secretary of a Study Committee set up in November 1967 by the Parish Council which decided that a detailed study of the village be made to influence its future development in the best posible manner.

I had moved to Sharnbrook in June 1960 from Hinwick as my family and I are all very fond of village life and to be near my employment at Unilever Research Laboratory. I have been a member of the Parish Council since about 1967. I am a Master of Arts of the University of Cambridge, an Associate of the Institute of Physics, and the Personnel Manager with Unilever Research.

2. (a) Towards the end of February 1969 it became known in the village that Thurleigh was being considered as one of the third London airport shortlisted sites. There was an immediate spontaneous reaction against such proposal in that the Parish Council chairman, councillors and clerk were lobbied by many villagers protesting against such proposal. At the Annual Parish Council meeting held on the 7th March 1969 there was a unanimous resolution instructing the Council to register a protest. The meeting was attended by 172 residents. Since the date of the annual Parish Meeting resistance to the proposal has firmed and actual involvement of residents has considerably increased.

(b) In April 1968 the Study Committee published an interim report with an accompanying memorandum (copies of which are annexed to this proof (Exhibit 1 marked FRR.1). This report was discussed at a Parish Council meeting at which the Council endorsed the steps already taken by the Study Committee and authorised the committee to proceed with the survey. A questionnaire, which had been prepared by the Study Committee with the assistance of the County Council Planning Office, was issued to every householder accompanied by other forms for completion by every member of the family aged 15 and over (exhibit 2 marked FRR.2).*

(c) 70 per cent of the questionnaires were returned. The forms were then forwarded to the County Council who coded the replies and prepared the necessary programme for putting through the computer. This all took place before the Thurleigh proposal was known. In about February 1969 I received a first incomplete draft (exhibit 3 marked FRR.3)* from the County Council which I presented to the Annual General meeting (on 7th March) giving the highlights of the conclusions.

It had been decided before the leakage from the Roskill Commission that I would be presenting this first draft at the Annual General Meeting. The Study Commitee are still conducting the village study despite the third London airport situation.

3. **Airport situation**

(a) Sharnbrook parish lies nine miles north of Bedford and its High Street, along which most of the older houses of the village are built, lies parallel with the Sharn Brook and most of the development of the village has been in this relatively unspoilt part of the valley of the Ouse and has a compact and somewhat "snug" appearance.

Sharnbrook parish covers an area of about 2,500 acres of land sloping from north to south towards the River Ouse and its present population is 1,767. all age groups being well balanced. The water meadows south of the village lie on gravel and were worked about 25 years ago. This area has reverted to willow scrub and is a Nature Reserve of the Bedfordshire and Huntingdonshire Naturalist Trust. These river terraces give way to undulating slightly higher ground and this in turn to the wooded hill in the north where the highest public road in the parish lies. The parish is cut on the east by the railway line which has a succession of cuttings and embankments and runs over a viaduct of ten arches over the Ouse. Sharnbrook is thus the natural centre of the north Bedfordshire villages. It is the focus in the area for much social, sporting and entertainment activities. Recent rationalisation of Diocesan organisation has made Sharnbrook the ecclesiastical centre for north Bedfordshire.

(b) **Industry**

The detailed social survey carried out in May 1968 shows the three major industries to be (i) the Unilever Research Laboratory on the Colworth estate; (ii) Hipwell and Son, Stoke Mills, Animal Food Products, and (iii) agriculture. The remaining industry comprises mainly service industries of the nature of education, shops and domestic employment. The Unilever Research Laboratory employs 1,050 staff of which 150 are resident in Sharnbrook. This research establishment, the largest of its kind in Europe, devoted to food research has highly specialised experimental equipment and a considerable investment in scientifically-controlled trials with crops, farm animals and small animals. In the event of Unilever deciding no longer to carry on at Sharnbrook its loss would transform the pattern of industry, employment and population in the village.

Stoke Mill produces compound animal feeding stuffs and employs 25 people; 95 per cent of the barley is bought locally and much of the wheat. This

* See also p. 2243.

* Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

is equivalent to 2,100 acres of barley and 1,040 acres of wheat every year. Much of this acreage would be lost by the siting of the airport at Thurleigh. A silo of capacity 2,500 tons is used for storing grain and conditioning in a wet harvest season. Agricultural and horticultural enterprises are numerous and varied.

They comprise the following 14 holdings (excluding Colworth House) of 1,500 total acres:

Hurley Hill Farm 150 acres.
Cereals—oats and barley
35 dairy cows
45 followers and beef calves
2 stallions for hunter and racehorse breeding.

Roberts Halsey Farm 175 acres.
Mostly arable cereals
100 sheep.

Chapman 21 acres.
Grass
Plans to keep pigs and horses (August 12th).

Read 12 acres.
Lettuce, potatoes, sprouts, runner beans, chrysanthemums
4,500 sq. ft. glass lettuce and tomatoes.

Shaylor 12 acres.
4 acres beans
8 acres grass.

Bedfordia Farms
650 acres (*Arno and Manor Farms*)
480 arable cereals.
200 grass leys.
Pig breeding unit at Arno Farm.
150 breeding sows and up to 7–800 piglets.

Witherick Winsey Farm 145 acres.
Wheat, barley, potatoes—all arable
Pigs 100 breeding sows and piglets
Turkeys 1,000
(Casual labour for turkeys and potatoes?)

Hughes Old Vicarage Farm 150 acres.
40 acres cereals.
Rest grass and grass ley.
100 dairy cows.
50 followers.
Has £6,000 parlour ordered but is doubtful about compensation and has therefore not continued to have this installed.

Lay Home Farm 130 acres.
100 cattle—rearing calves for stores
30 acres cereals—wheat and barley.

Lovell
12 acres cereal.
4 market garden, beans, etc.

North
Sharp
Abraham
} small acreages market gardening.

Tusting 27 acres.
20 sucklers and calves.
All grass.

The stud farm exports thoroughbred horses to over thirty countries and the noise of aircraft would seriously upset the horses which would almost certainly affect this important undertaking. The position of Sharnbrook relative to the runways as shown in the original Thurleigh *Site Information** would mean that the village would suffer considerable pollution from incompletely burnt fuel from aircraft taking off. This would seriously damage extensive crops grown in the area.

(c) **Employment**

The village enjoys full employment with over 400 residents in the village in employment. The social survey analysis showed that 40 are in professional and scientific work, mainly in the Unilever Research Laboratory and in the Royal Aeronautical Establishment at Thurleigh/Bedford. Should Unilever decide to move then a very high proportion of the staff would likewise move there being no alternative specialist employment available in the area. Even if the Unilever Laboratory were able to remain it is most unlikely that its professional staff would be willing to live or work in the high noise area of the airport.

Half of the population in employment travel at least five miles to work outside the village (38 per cent to Bedford) and it is therefore most probable that a very high proportion of these employees, already prepared to travel some distance to work would move to other villages and towns less directly affected by the airport. It follows therefore that possibly over half of the working population of the village, with their families, would leave. The social study showed that more than 50 per cent of the reasons given by families for moving into Sharnbrook were for proximity of work and to enjoy village life.

The village would therefore die or be transformed in character as we know it by the influx of the new population committed to live and work with the airport.

(d) **Amenities**

The social survey conducted in May 1968 probed the factors that attracted people to live in the village. The high response (70 per cent) to this survey strengthens the validity of its conclusions and enables the council to speak authoritatively on behalf of the village. 90 per cent expressed a preference for village, as opposed to town life, and as many as 43 per cent specifically chose Sharnbrook.

The main reasons expressed for preferring village life were "peace and quiet" (33 per cent), and "open countryside and fresh air" (24 per cent). Of the features which villagers expressed themselves most anxious to keep were "quietness" (11 per cent), "scenery" (26 per cent), rural buildings (35 per cent) and the "village social atmosphere" (27 per cent). This survey was, of course, conducted before there

* Reproduced at p. 1801.

Printed image digitised by the University of Southampton Library Digitisation Unit

was any indication that Thurleigh would be a short-listed site. These comments were obtained from written replies to open ended question in the questionnaire and were therefore unprompted. They are truly representative of the age groups and independent of the length of stay in the village. Sharnbrook can justly claim to have an extremely good balance of amenities and facilities. It is physically a compact village with an attractive blend of picturesque stone properties and new well laid out developments. A good range of shops meet most of the day to day requirements. The surrounding unspoilt countryside exemplifies the best of the Ouse valley. Sharnbrook forms the hub of the Ouse valley cluster of villages which form an area of special scenic beauty marked out by the Bedfordshire County Planning Department in a special report for preservation of its present character. The County Council have also proposed this area as having good potential for recreation under the provision of the Countryside Act 1968. Particular amenities of this stretch of the Ouse valley include the nature reserve at Felmersham and fishing along the river which attracts clubs from far afield.

The village has therefore the benefit of all these amenities of the countryside and at the same time it is within easy reach of towns. The presence of an airfield would transform the countryside through the housing developments and road links necessary to house and service the tens of thousands of people that would be imported. The natural resources of the Ouse valley would be vulnerable and in-roads into the gravel seams would ruin the valley.

(e) **Lives of present population**

Sharnbrook enjoys a community in which the new arrivals to the village over the last ten years have integrated closely with the longer established families. The result has been that many activities have flourished deriving support and strength from all sections of the village. As discussed under "Employment" this balanced community would disappear due to change in the employment pattern. The lives of those that remained would be intolerably changed.

One special group of people should be mentioned —WRVS residential home for some twenty-five old people at Sharnbrook House. The high noise level in particular would have a very deleterious effect on the residents and many of them have already expressed considerable concern to parish councillors. At the other end of the age spectrum the young are vulnerable to the effect of sudden aircraft noise. Villagers have made complaints of the disturbing effect that flying at the RAE has produced when sudden high noise levels have been generated. The population would be subjected to an intolerable barrage of noise, for the housewife and all who work in the village for 24 hours a day. Normal outdoor pursuits, especially in the summer, would be far from enjoyable.

(f) **Organisations**

There are over 25 active organisations in the village and practically all would be adversely affected by the presence of an airport. An indication of the strength of the community life and the vigour of the Sharnbrook organisations is the fact that in 1968 there were over 500 bookings for the church hall which is the main but not the only premises used for village activities and many clubs are seeking accommodation for their activities. The social survey showed that 50 per cent of the inhabitants over 15 years old took part in a village social group and a high proportion held office with an organisation. Support is as strong among the new arrivals to the village as amongst the longer established members. The well integrated community draws strength from the association of people of all ages, occupations and time in the village. The playing field is in demand by three football teams who play four to five matches a week, the cricket club with over 30 members and good pavilion and practice facilities and a tennis club reformed in 1968 which has a membership of over 100 and has financed, with the aid of loans, two new hard courts.

Notable amongst the many well supported societies in the Women's Institute with 84 members, a group of over 50 Young Wives and two very strong drama and operatic groups. One of these, "The Sharnbrook Amateur Theatre Trust" (membership 174) has a national reputation and attracts audiences from all over Bedfordshire and south Northants. The groups stage six productions a year each with at least three performances. Clearly noise would be the main disruption for both outdoor and indoor activities but the changing pattern of population would also destroy the continuity of clubs and societies.

(g) Specific evidence particular to Sharnbrook arises from the fact that it is the largest village within the immediate environs of the proposed site for the airport. The village lies in a direct line within about one mile of the end of the runways proposed in the original Thurleigh *Site Information* and it lies therefore in an area of intolerably high noise and pollution, but, of equal significance, it lies in the area of greatest danger from aircraft crashing on takeoff or overshooting on landing. The danger of crashing is a real risk but equally serious is the apprehension and nervous tension that fear of such a disaster would create in the minds of the villagers.

(h) **Listed buildings**

The old established High Street which runs parallel with the River Sharn is where most of the buildings are situated which appear either in the Statutory List or Supplementary List of buildings of architectural or historic interest.

The Statutory List consists of:

Ref. 29/1 Parish Church of St. Peter.
10/11 South Lodges, Colworth.
29/12 Pair cottages S.E. of Upper Farm, High Street.
29/14 Brookfield, High Street.
29/15 Pear Tree Cottage, High Street.
29/16 Westbury Cottage, High Street.
29/18 3 cottages, N.W. of Wentworth Cottage, High Street.
29/19 Wentworth Cottage, High Street.
29/19 Old Cottage, High Street.

Printed image digitised by the University of Southampton Library Digitisation Unit

29/19 Cottage adjacent to Old Cottage, High Street.
29/21 Row of 7 cottages near school, High Street.

The Supplementary List consists of:

Ouse Manor (Riverside House) S end of High Street.
Antonie Farm (Colworth Estate).
Winsey Farmhouse.
Hill Farm House and Barn, Mill Road.
The Old Smithy.
House SW of the Old Smithy.
Moat House, S end of High Street.
Little Thatch, Park Lane.
Pair of cottages, west of Chapel.
Cottage dated 1699.
Farmhouse next to cottage dated 1699.
Thatched cottage on S side, Church Lane.
Cottage dated 1797, Church Lane.
Cottage West of Hazeldene, Church Lane.
The Rowans, High Street (E side).
Butcher's shop near village crossroads, High Street (E side).
Wryde House, High Street (E side).
Stone Cottage, High Street (W side).
Cottage dated 1675, High Street (W side).
Midland Bank Cottage, High Street (W side).
Manor Farm House, High Street (W side).
Half Moon public house and cottage adjoining, High Street (W side).
Lloyds Bank near village crossroads, High Street (W side).

The principal and earliest building is of course the Parish Church of St. Peter which stands in a commanding position and can be seen for many miles from the south.

In the early part of the 13th century it consisted of the three easterly bays of the present nave and a shortened chancel.

Later in the century, the north and south aisles were added. These parts of the church are of the Early English or Gothic style of which one feature is the pointed arch. In the 14th century the tower was built about 10 feet west of the nave which was extended to meet it and the north or toft chapel was added at the same time. In the next century the porches were added, the chancel was extended eastwards and the two aisles westwards.

The chancel screen possibly dates from the 16th century and the front is 15th century work. The Cobbe brasses in the centre of the church are well preserved and are of considerable local interest. Sharnbrook has prospered in the best tradition of the English village over many centuries. In the last two decades it has developed as a lively, progressive community making a significant contribution to the industrial life of the country and the social and economic life of the county.

People of varying skills, professions, modern and traditional crafts, of different cultural backgrounds, both recent and long established enrich each other's lives and live together in a way which is a model of what is desirable in a community. This blending of people has been paralleled by the blending of the old and new buildings. If an airport some two and a half to three times the size of Heathrow came to Thurleigh this community would disappear. Those left would live in fear and persecution. The village and the friendly Ouse valley would be swallowed up in the faceless no-man's-land of the periphery of the airport. For Sharnbrook it would be catastrophic.

Appendix FR 1

Sharnbrook Study Committee: interim report

A. Population and Housing

The population of the village will increase to between 1,800 and 2,000 in about the next five years as a result of the taking up of existing planning permissions.

We have considered the influence of a number of factors on population:

1. **Employment**

A significant proportion of the village is employed by Unilever at Colworth House and by the RAE. Further expansion at these establishments is unlikely. Therefore, there will not be strong pressure on housing for new employees at these centres, though a proportion of present staff may wish to move into the village from Bedford and other towns and villages. On the other hand it is preferable not to have one or two employers too dominant. The Station Road site is still a possible centre for a modest amount of light industry and labour is likely to be available from the two major new developments in the village without the need for further housing.

2. **Shopping**

The projected expansion should in the main be serviced by a slight extension of the present shopping facilities. Major day to day requirements are reasonably adequately covered. Expansion over 2,000 would require the setting up of new separate shopping centres away from the High Street. This would destroy an essential physical and social characteristic of the village which is best served by a reasonable concentration of the main shops in a predominantly pedestrian area. To effect a return of the present High Street to its unspoilt character, urgent consideration must be given to removing through traffic by the provision of an alternative east-west route (see B. Communications).

3. **Primary Schooling**

Primary schooling must be available to the whole village, within the village and should not involve long walking distances. Current extensions to the school, nearing completion, will cater for the most recent expansion of the village. Further extensions are likely to be necessary to meet the projected increase to about 2,000. There is room for further expansion of the school on its present site to cope with any likely population increase beyond this figure.

4. **Community Identity**

The present population and its physical distribution gives a feeling of corporate identity through villagers meeting each other in clubs, societies, etc.

Printed image digitised by the University of Southampton Library Digitisation Unit

and in shops, pubs, etc. Considerable further expansion would produce a fragmentation of community life, upsetting the present good balance and out of keeping with the character of the village.

5. **Social Amenities**

The village supports a fair range of viable social activities. A reasonable increase in population would strengthen and extend the present activities, but an excessive expansion would be likely to result in some duplication of social activities to the detriment of the concept of a single community.

6. **Physical Development of the Village**

Development beyond the projected figure of 1,800–2,000 would necessitate taking up land outside the existing limits of the village. Major new development would be undesirable for the following reasons:

(a) *Capacity and character of approach roads* (see also B. Communications)

The village is fed by 5 approach roads. Four of these link with the A6 which by-passes the village within its present limits. The village is adequately served by this existing road pattern but the majority of the lanes (particularly Park Lane and Souldrop Road) leading from the main part of the village are not capable of further development. To do this would mean spoiling the character of the lanes.

Development along the other approach roads (Odell Road and Mill Road) would be undesirable ribbon development, some of which has unfortunately already been permitted.

(b) *Size of the village*

Present and projected developments have produced a coherent structure in which the old and the new have blended without either dominating. In no part of the village does a widespread housing development destroy the impression of a village community. The Church gives an effective focus and the road patterns provide effective links resulting in pleasing and interesting elevations at most points. This delicate balance will be stretched by the projected developments and further development would ruin it.

(c) *Rate of development*

Sharnbrook has grown quickly over the last 10 years, and there are many existing permissions to be taken up. We should now concentrate on assimilating this growth and allow the recent development to mature. Further sizeable development should not be considered for at least a generation, when consideration might have to be given to natural growth.

Conclusion on influence of population and housing on future development: The above considerations lead to the conclusion that the population of Sharnbrook should not be allowed to exceed 2,000.

B. Communications

1. **Road Patterns**

Modern Sharnbrook, with its increased and increasing population, relies entirely upon its third class and unclassified road links to the nearby A6 and to other neighbouring villages for both private and goods vehicles serving the village.

It is fortunate that the centre of Sharnbrook is situated a mile west of the A6, a former turnpike road created in 1727.

The principal east-west route from the A6 through the village is also a former turnpike road created in 1802 and now classified by the County Council as third class road C26. Though of tortuous alignment in places, it links the A1 at Eaton Socon with the A428 at Lavendon. The alternative routes for east-west traffic are the A45, which runs through Higham Ferrers to the north, and the A428, which passes through Bedford to the south.

Outside the village limits the C26 can still accommodate even the peak hour flows satisfactorily. Unfortunately this is not the case for the section of the C26 which is also the village high street, whose width falls short of present day minimum requirements. In this section the houses and shops are in the main built right up to the back edge of the footpaths and this in many ways contributes visually to the old established character of the village typified by its fine stone cottages.

In 1966, the parish council felt that with the new development taking place in the quadrant between High Street and Church Lane, a line should be safeguarded from Thomson's corner at the South End of the High Street to run south-westerly past the Windmill along Braden Gutters to the Odell Road. This in the short term could link with the peripheral road of the Manor Farm Development and possibly along the south-western boundary of the allotment field to join Odell Road between the police houses. This route should be capable of removing some of the terminal traffic to the Unilever Research Establishment from the High Street, but would increase the pedestrian hazards in Lodge Road.

The County Surveyor was informed of this proposal and whilst feeling that such a by-pass was not yet necessary, the safeguarding of such a line would be undertaken upon development taking place.

There are two other unclassified roads which run from Sharnbrook; these are Souldrop Road, which runs from the north end of the High Street, via Souldrop Village to the A6, and Park Lane, which forms the eastern leg of the village cross roads.

The first section of the Souldrop Road consists of a carriageway only between banks and hedges and does not widen out until it crosses the main line railway bridge into Souldrop Parish. This is the route taken by the United Counties Bedford-Rushden buses and by a great deal of the traffic generated by the Unilever Research Establishment, but it is not capable of serving further development. To carry out widening works would completely destroy a valuable visual asset.

Park Lane is of similar character over part of its length and could similarly not be widened without affecting the atmosphere of a village lane. To improve its junction with High Street would destroy a large block of old property and open up the centre of the village in an alarming manner.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. **Parking**

Parking in the village centre is at present very limited but the proposal for a new shop, with an area for parking in front, just off the High Street in the manor Farm estate, will help matters.

It is, however, most important that the need for parking space is kept well to the fore in any future developments in the vicinity of the High Street. Such developments must have as their priority the preservation of the present facade.

3. **Public Transport**

The existing public transport system, consisting of the Bedford-Rushden United Counties service through the village, and the Rushden-Bedford-London Birch service on the A6, is generally adequate but with the outstanding planning permission, this may well need to be reviewed at an early date.

4. **30 mph Speed Restrictions**

The ribboned sections of development on the principal roads serving the village do not comply with the Ministry of Transport's criteria for 30 mph speed restriction zones, but Colworth and Lodge Roads should be considered as special cases. They serve much of the new developments as a peripheral road used by pedestrians and cyclists, a large percentage of which are children.

5. **Footways**

These are now adequate, except for Lodge Road and Colworth Road.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MISS C. J. VIGAR*

1. I give evidence as the appointed representative of the Parish of Oakley, Bedfordshire.

I have been a member of Oakley Parish Council for 27 years and the Oakley representative on the Bedford Rural District Council for seven years.

I have lived in Oakley since January 1933 and chose to continue to live in the village on retiring from my post as deputy headmistress of the primary school, in the neighbouring village of Clapham.

2. At the Parish Assembly held on 24th March, 1969, 130 parishioners (the largest attendance at a Parish Assembly in my 27 years as a councillor, previous average attendance 30) discussed at length the effect the siting of the third London airport at Thurleigh would have on the life of the village. All present except one abstention, voted for a resolution instructing the Parish Council to register a protest against the siting of the airport at Thurleigh and also voted that a fifth of a penny rate should be contributed to the Bedfordshire Airport Resistance Association Fund. The instructions given to the Parish Council were carried out at the Council Meeting held after the closure of the Parish Assembly. Since that meeting the majority of parishioners have shown an increasing support for the resistance movement by working to raise funds. (The village fund stands at £360 and more fund raising functions are being arranged.)

3. **Situation of village in relation to Thurleigh site**

Oakley lies four miles south-west of Thurleigh and one and a half to two miles south-west of Milton Ernest, where the nearest runway is sited in the Thurleigh (b), Noise and Number Index—4-runway Airport map† and according to this map would be completely within the 40–50 noise index.

4. **Description of village**

Oakley is a very attractive village in the Great Ouse Valley, four miles north-west of Bedford, a mile west of the A.6. The population is approximately 900 and the parish covers 1,468 acres. The river Ouse forms the south and north boundaries of the village, forming two pleasant areas. The village is built along three "C" class roads, roughly in the form of a triangle. Dwellings of various types of architecture from a few thatched and tiled stone cottages and farms, late nineteenth-century Duke of Bedford cottages and farms, early twentieth century houses to a new estate of 400 modern houses (£5,000–£8,000), now being developed within the triangle of three C roads, form the village. At the present time there are about 350 dwellings in the village which will increase to 700 when the new estate is completed. The new houses are occupied mainly by young couples with families, who are mixing well with older inhabitants and are bringing new life to the village.

A well-equipped secondary modern school was opened six years ago to serve Oakley and the six neighbouring villages of Stevington, Pavenham, Milton Ernest, Radwell, Felmersham and Clapham. The present number of pupils is 360, ages 11 to 15+ and the number will increase. The fifth year pupils take the CSE and "O" level examinations. Further education classes are held at the school during the two winter terms and are well suported by residents from Oakley and surrounding villages.

A new primary school is being built on the adjoining site, two classroom first stage, to accommodate the increasing number of children living in the village. The number of children of primary school age has increased from 60 to 100 in three years. At the east end of the village is a well-planned garden estate of Memorial Homes for the elderly. This estate is made up of 22 semi-detached bungalows and 7 houses recently converted to form flats for couples and persons living alone. The homes were built in 1925 and have been modernised recently with oil-fired central heating and bathrooms equipped to fit the needs of the elderly. The whole estate is well laid out with lawns and shrubberies and makes an attractive entrance to the village. The 54 residents range from 65–86 years. Television is one of their main entertainments as a number are house-bound. The church is situated near the banks of the river on the southern boundary of the village and is mainly a twelfth century building. There is also a Methodist chapel in the village.

Oakley Manse is a Georgian mansion owned by the Dukes of Bedford until it was sold in 1935 and is also situated on the bank of the river Great Ouse.

The village has a grocery store, post office and newsagents, small antiques' business, a coaching inn with modern restaurant much patronised by people from Bedford, a garage with workshop for car repairs, a telephone exchange (now being enlarged) serving five villages. Shops will be part of new development.

5. **Activities**

The village hall is used regularly by a club for over sixties. Women's Institute (this has sent letters of protest against the siting of the airport to the County Council, Rural District Council and Member of Parliament). "Old Time" dancing club. Local

* See also p. 2244.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

cricket club functions. Old people's chiropody service, and many social functions. A pre-school age play group is held two mornings a week in the Methodist schoolroom.

6. **Agriculture**

There are three large farms within the parish—mixed farming, including a Fresian pedigree dairy herd.

Industries

(i) a plant hire firm; (ii) a haulage and plant hire contractor; (iii) builder's yard; (iv) oil storage depot; (vi) garage with repair workshops and showroom.

7. **Employment**

About 80 people work in the village and approximately 300 leave the village daily to work, including (a) Sharnbrook, Unilever Research Laboratory; (b) Texas Instruments, Bedford; (c) to commute to London. A number are retired people who have chosen to settle in Oakley.

8. **Recreation**

The river is used by a number of fishing clubs and a sailing club. A planning appraisal of outdoor recreations in the Great Ouse and Ivel Valley, compiled by the County Planning Officer of Bedfordshire and published in 1968 names a site at Oakley Bridge as a suggested priority place to be developed.

9. **Objections**

Apart from the high intolerable noise level that would be experienced by the inhabitants of Oakley, pollution and fuel spillage would occur and greatly increased traffic would build up through the village during the construction of the airport, as it would act as a link between the A.428 Northampton Road and the A.6. This is already happening, traffic has increased recently. New roads and road widening would take place and alter the whole character of the village.

In conclusion I know that I am expressing the views of both residents of long standing whom I know well, and the new residents I am constantly meeting and who express their satisfaction in having settled in this village, when I say that all are greatly disturbed by the knowledge that the third London airport could be sited at Thurleigh changing the quiet village into a place of noise and urbanisation.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. A. W. LUCKHURST*

1. I was co-opted on the Parish Council of Little Staughton in March 1967 and have been appointed by the Parish Council to give evidence on behalf of Little Staughton. I have been acting as chairman of the committee opposing the siting of the third London airport at Thurleigh. I have lived in Little Staughton since January 1967 and moved there specifically to enjoy the village way of life and the peace and tranquility of the countryside. I am managing director of Wyseplant Limited, a firm employing 150 men and women. The firm's premises are at Chawston, some seven miles east of the proposed Thurleigh sites.

2. Little Staughton lies within the 45 NNI at Thurleigh (a) and within the 60 NNI at Thurleigh (b) and the parish will therefore be subjected to intolerable noise nuisance in the event of the third London airport being sited at Thurleigh. In view of the concern expressed in the parish a meeting of the Parish Council was held on the 24th March, 1969 at which the following resolution was passed:

> "It was agreed that a committee of seven be co-opted on the Parish Council to act on behalf of the council to raise funds to be used by the Bedfordshire Airport Resistance Association in compiling and presenting evidence in opposition to using Thurleigh for the site of the third London airport."

The Council's formal resolution against the Thurleigh proposal was passed at a meeting held on the 1st May, 1969:

> "It was unanimously agreed that the council were opposed to the siting of London's third airport at Thurleigh and that they would support the Bedfordshire Airport Resistance Association in any way possible."

3. Little Staughton comprises a village of 59 private houses and 12 local authority houses with 11 farm houses and 12 farm employees' houses tied to agriculture. There is one public house, two garages, one butcher's shop, one general shop, one antique dealer, one builder and contractor, and one agricultural contractor.

The village has a primary school attended by 32 pupils with All Saints' Church of England Church and a Baptist chapel. There are two village greens and shooting over the Bushmead Estate.

The effect upon the parish in the event of the third London airport being sited at Thurleigh would be disastrous: (a) The parish would cease to exist as a centre of agricultural activity which includes horticulture and some forestry. Main crops lost would be wheat, barley, brussels sprouts and potatoes, and as is well known, Bedfordshire is the leading county for brussels sprouts' production, of which the area within the parish produces a large proportion. The whole existence of the parish depends upon farming the good agricultural land which, if not concreted, would be lost due to pollution and fuel spillage. As well as rendering the life of the village intolerable, the livelihood of some farming families would be seriously jeopardised. It seems obvious that in the event of the airport being sited at Thurleigh (b) little Staughton would cease to exist. The parish also contains two horticultural farms in addition to the horticultural activities carried on by other farmers. It is possible that the airport would occupy land now used by horticulturists, but in any event the close proximity of the airport would, I believe, cause continual damage to glasshouses by vibration and/or turbulence. The parish also affords livestock and poultry production which would cease to exist. One chicken farm, owned and managed by two brothers who have both been blind for some years, the farm has been maintained by the brothers by hard work and determination. Despite their disability they maintain their stock of some 1,000 free range layers together with a number of breeding sows. Their whole existence, happiness and independence, depends upon their familiarity with their surroundings and would make it impossible for them to carry on, were they not displaced it is most doubtful whether they could carry on working so close to the airport and so close to the great noise. A further chicken farm operated in the parish contains some 4,000 hens and this would seriously suffer from noise as would a turkey farm and a chick-breeding farm.

Other activities which would no doubt have to cease are pheasant breeding and goat keeping.

4. The parish provides employment for farm and horticultural workers who would require to seek work elsewhere and the County primary school employs two teachers and four assistants and it is likely that the school would have to close and these teachers would need to seek employment elsewhere as would the village shop assistant, the village garage assistant, and some 12 other general workers.

5. The village enjoys a wide range of amenities of the nature of country walking, hacking, hunting, football, swimming, tennis, shooting, fishing, flying, ornithology, bee-keeping and archaeology in very unspoilt countryside. Village life as such would cease to exist and I am of the opinion that it is true to say that the residents of the village are residents because of choice of the village way of life and they could

* See also p. 2245.

Printed image digitised by the University of Southampton Library Digitisation Unit

not possibly tolerate the noise and activity which an Airport would bring.

I wish to place special emphasis on the case of the two blind brothers mentioned earlier whose whole livelihood, happiness and independence would be lost. Some six retired couples have chosen the village in which to retire because of the unspoilt nature of the village and its attitude to life. These residents have invested their life savings in property and some have incurred heavy mortgages.

The village is outside the area of the airport but so far as Thurleigh (b) is concerned immediately at the end of one of the proposed runways, and at Thurleigh (a) not very far from but in the centre of the two easterly runways. Should the village not be obliterated the villagers would no doubt have to sell their properties (if this is possible) at low selling prices and move. The village butcher, the grocer and garage proprietor rely entirely on country business and were they to lose this custom they would need to move in order to survive or perhaps to be taken over by larger concerns. I believe that the village school would cease to function due to noise and children would need to be educated elsewhere involving longer distances to travel with higher local rates for transport facilities. I am also of the opinion that the health of the village population would be seriously affected as, after completing their work, either by day or by night, the residents would be unable to have sufficient rest and relaxation to enable them to maintain good health and this applies equally to the children.

6. The village has a well-supported church, a chapel, a Women's Institute and mothers' union. The twelfth-century church is in a state of very good preservation, the village having recently spent some £1,500 on it. The chapel is comparatively new and exceptional for a village of this size; it also serves other local villages. The youth club, football club and cricket club are supported also by other villages and would cease to exist. A wealth of history in the Priory and other old property would be lost.

7. During the last War Little Staughton military airfield was established and this obliterated half the village including some 14 houses, 2 public houses, one of which, namely "The Shoulder of Mutton" was a fine Elizabethan building. The village chapel was also demolished and this was a great loss it being the centre of non-conformity in the area. This loss of the chapel was severely felt until 13 years ago when the new chapel was built. Many families were displaced at that time and the villagers feel with horror the idea of several families and the new chapel being once again threatened with extinction. In view of the fact that the final site of the airport has not been definitely established it could well in fact obliterate Little Staughton in part if not as a whole. I understand that after the last war the land between the Royal Aeronautical Establishment and Little Staughton airfield was pegged out with the intention of combining the two and it is our parish's concern that, with the undulating land at Bletsoe it would be a more simple matter to extend eastward to and beyond Little Staughton. The majority of the inhabitants of the village appreciated the need for displacement in wartime but have expressed their very serious concern at what they believe to be needless disruption of their losing their country way of life and this has been very forcibly expressed.

The village population is 190 adults of which six only voted in favour of the airport, 28 were undecided and 156 voted against it.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. E. C. BARNARD*

1. I am a member of the Royal Institution of Chartered Surveyors and a Fellow of the Chartered Auctioneers' and Estate Agents' Institute. I am a partner in the firm of Allott and Barnard of 54 Harpur Street, Bedford, and have practised in the Bedford area during the past eleven years.

I have lived at Harrold since 1960 and I was, during the years 1964 to 1967, vice-chairman of the Harrold Parish Council. I have been appointed to give evidence on behalf of Harrold and Odell.

2. Harrold is a village situated some nine miles north-west of Bedford in a valley which I understand is to be included in an Area of Great Landscape Value in the Review of the County Development Plan. The present estimated population is about 1,200.

Since about the end of the last war some 65 more properties have been built and planning permission was recently granted to the Bedford Rural District Council to develop a site of about three acres on which it is thought some 40 dwellings will be erected. The village is a pleasant mixture of period cottages, stone-built dwellings and more modern houses. The older properties have in the main been modernised.

Harrold will be in the 50 NNI for Thurleigh (a) and within the 50 to 55 NNI for Thurleigh (b) and will thus be situated in an area of intolerable noise. The Parish Council have unanimously resolved to oppose the siting of the third London airport at Thurleigh.

Odell is a picturesque little village situated about one mile to the north-east of Harrold and lies within the 50 NNI for Thurleigh (a) and Thurleigh (b). There are about 100 houses, many being old cottages built of local stone and thatched and also modernised. The population is about 240 and there is a very attractive unspoilt part of the village in the area around the church and Odell Castle.

3. Harrold has a primary school attended by some 150 pupils, a secondary modern school attended by some 140, the secondary modern school taking pupils from nearby villages as well as Harrold. There is a little primary school at Odell attended by twenty-six children.

4. Harrold has four places of religious worship, namely a Congregational chapel, the Roman Catholic church, the Evangelical church, and the parish church of St. Peter—this is a listed building. There is only one church at Odell, namely the parish church of All Saints which is a very fine church situated in attractive surroundings.

5. Harrold, apart from being a residential village, has five inconspicuously sited leather factories employing about 250 people. The manufacturing of light leather has gone on in Harrold for almost 100 years and it is thought that the reasons for the establishment of this industry in the village were:

(a) the proximity of Northampton, which is about 16 miles away and was one of the very first boot and shoe centres; and

(b) the plentiful supply of water.

I have been informed that the value of exports from the Harrold leather factories is in the order of £1½ million per annum, the bulk of the trade being with the United States of America and Canada. There is already a severe shortage of labour in the factories and it is very much feared that if Thurleigh were to be selected as London's third airport the labour problem would become so aggravated that the factories would have no alternative other than to close down. There is also a builder—part of whose activities comprises a big joinery works—he employs some 60 workers on the joinery and building side. The village has a very good selection of shops, namely a general stores, a post office stores, a ladies' hairdressing establishment, a butcher, two garages one of which has attached a shop selling paints and other items, a greengrocer, and four public houses. There is also a bank open during certain days of the week. At Odell there is the usual post office stores, two public houses and an arts centre at which paintings and pottery are sold. Gravel workings at Odell are very actively being worked, planning premission having been granted on 80 acres.

6. Both villages have a village green, that at Harrold being extremely attractive with ancient buttermarket and lock-up. Harrold also has a four-acre playing field used by the Harrold cricket and football teams and as an indication of the strong community spirit the Harrold Playing Field Association collected over £6,000 in five years which was used for the purchase of the playing field. This association remains very active and has now collected just over £2,700 towards the purchase of a pavilion which will cost about £5,000.

In the centre of the village is the village institute.

There is fishing in the River Ouse and in the worked-out gravel pits in the area.

Apart from the Playing Field Association village organisations include the Working Men's Club, a youth club, drama club, Women's Institute, the Derby and Joan Club, Girl Guides, and Brownie and Cub packs. There is also a keen bell ringing group. A very successful pre-school play group has been formed

* See also p. 2245.

Printed image digitised by the University of Southampton Library Digitisation Unit

quite recently. At Odell there is some fishing and some boating, the Women's Institute, a Scouts group, and sports' club.

7. I think I can best summarise the fears of both villages:

(a) Both the villages of Harrold and Odell fear that the siting of London's third airport at Thurleigh would result in the complete destruction of a way of life in a truly rural area. Many of the residents of Harrold moved to Harrold as this is situated in one of the few areas of peaceful rural surroundings in the Bedford area which is, to some extent, spoilt by the brick fields to the South and the rather dull, flat country to the east. The unspoilt river valley cluster of villages to the north and west affords a very pleasant area in which to live.

(b) Fears have been expressed that the peaceful occupation of homes would be completely shattered and that if one wanted to buy a similar property in an adjacent but quieter area this might be difficult as many others may well have the same idea at the same time. This might well result in the cost of purchasing a house from the limited number available in a suitable alternative location being very much greater than the house one would be trying to sell in a zone affected by high noise.

(c) It must be obvious to the Commission that both villages would be located between two of the highest noise contours and the noise involved has been compared with four sports cars without silencers all racing for the same corner outside one's home.

(d) The villagers fear that the use of television would have to be almost abandoned unless those looking in were prepared to put up with the severe interference both visually and by the intense noise of aircraft overhead.

(e) It has been forecast that if one of the largest international airports in the world were to be sited at Thurleigh rates would rise dramatically during the years in which it was being constructed. The reason for this is that many of the services would have to be provided at the expense of the local authorities concerned.

(f) A new airport at Thurleigh would create an enormous demand for gravel and it seems reasonable to assume that planning permission would be given to extract gravel from still more sites in the area against which the villagers have fought so hard in the past. The use of the antiquated roads in the area would create great danger to all and particularly children and old people. Many villagers can recall the plight of the village during the period in which the M1 was under construction.

(g) Fears have also been expressed to the effect that flooding might well be aggravated as a result of the quantity of water running off the airport and associated development and it is also thought that Harrold might suffer particularly badly from air pollution. Fears have again been expressed of the risk of accidents as Harrold and Odell are on the direct flight path to the west of Thurleigh.

(Note: These followed a list of Buildings of Special Architectural or Historic Interest. It is available for inspection, by appointment, at the offices of the Commission.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. P. R. WILLMER*

1. I have been appointed representative of the parishes of Great Staughton and Hail Weston to give evidence. I am a partner in the firm of Ekins Witherow & Handley at the St. Ives Branch with offices at Huntingdon, St. Neots, Cambridge and Biggleswade. I am well acquainted with the Thurleigh area as I was born in Great Staughton on 30th December, 1929. I am a Justice of the Peace and chairman of the Parish Council of Great Staughton. I was a county councillor for Huntingdon and Peterborough until 1967 and am a churchwarden of the church of St. Andrew of Great Staughton. I have been treasurer of the British Legion at Great Staughton for the last seventeen years, the village branch being fairly strong it comprising seventy members. I am chairman of the school managers of Great Staughton County Primary School and a governor of Longsands comprehensive school at St. Neots. I am also a member of the board of visitors to the Borstal institution at Gaynes Hall.

2. Great Staughton Parish has an area of 6,400 acres and a population of 985. It is mentioned in the Domesday Survey as being lands of the Bishop of Lincoln and the thirteenth century church of St. Andrew has recently had twelve thousand pounds spent upon it on restoration. There is a wealth of history in the village which lies within the 50 NNI for Thurleigh B and within the 55 NNI for Thurleigh A, it being about 1½ miles from the end of the runways. Hail Weston has a population of some 315 and covers an acreage of 1,583 acres mainly agricultural. The subsoil in both villages is mainly Oxford clay and the Kym runs through both villages which experiences flooding problems from time to time. An historic feature of Hail Weston are the Holy Wells of Hail Weston. Hail Weston lies within 45 NNI for Thurleigh A and within the 55 NNI for Thurleigh B.

3. I first heard that Thurleigh was on the short list for the third London airport in about February 1969 and at the Annual General Meeting of the Parish Council at which eleven members were present, a resolution was passed opposing the siting of the proposed international airport at Thurleigh there being eight votes for the resolution with three abstentions. There was a well attended public meeting on the 13th August, 1968, at which not a single voice was raised in favour of the airport.

4. There are fifteen farmers at Great Staughton, one butcher, a garage, a blacksmith, a painter and decorator, two grocers, one builder, four public houses, one furniture remover and a kennels breeding Golden Retrievers. There are 51 houses at Gaynes Hall, the Borstal institution which lies within the 40/50 NNI at which there are some 150 boys from all over the United Kingdom. I understand that this institution achieves one of the best success rates of all Borstal institutions and in an article in the *Guardian* in early August, I read that Gaynes Hall was known as "the Eton of the Borstals". When at full strength I believe the institution will look after some 175 boys who are given vocational training of all types. I understand that including staff, there are some 400 people in all at Gaynes Hall which is an eighteenth century listed building. The Great Ouse Water Board's treatment works at Grafham Water lie within the parish. Brooklands Aviation are at Staughton Moor airfield at which I understand they carry out aircraft engine testing, there is also a car breaker in the village and Spillers mink and turkey farm.

Hail Weston has two public houses, a post office, two builders, a painter and decorator, an egg merchant, a grocer and a hay and straw merchant.

5. There is a strong playing fields association at Great Staughton, who have erected pavilions on the playing field at which cricket, soccer and tennis are played, the pavilions being built by voluntary funds collected by the club members and the usual grant. There is syndicated shooting and I believe, members of the syndicate come from as far away as London and the Midlands and the present fee for one gun is about £600 per annum. The usual rough shooting is enjoyed by the various farmers and there is some fishing in the River Kym. I do not need to enlarge upon the enjoyment which Grafham Water gives to many people as the Inspector will have heard of this from several of the other witnesses.

The Oakley, Fitz William, Cambridgeshire and Huntingdonshire, all meet in Great Staughton through the season.

6. Hail Weston also has a small playing field and the organisations of the two villages are the British Legion Branch, the Women's Institutes, the Mothers' Union and at Great Staughton there is a Women's Section of the British Legion together with an Over 60s Club and a Monday Club for the younger church going women of Great Staughton. Great Staughton has a Girl Guide club and Brownies and a boys' club operates in the village hall which was opened in 1937. The village hall is used for many parochial activities in the nature of weddings, cricket teas etc., it is next to the playing field.

7. There is a very modern primary school at Great Staughton which was built three years ago and is

* See also p. 2245.

Printed image digitised by the University of Southampton Library Digitisation Unit

attended by 130 pupils. A heated swimming pool has been built in the school grounds from funds provided voluntarily from members of the village together with the aid of the usual grant. The school is attended by children from other villages and is in the high noise area which will render study and homework more than difficult.

8. Apart from St. Andrews church at Great Staughton there is also a 19th century Baptist chapel and the Church of St. Nicholas which dates from the 13th century at Hail Weston which also has a Methodist chapel.

9. Listed buildings at Great Staughton are the church of St. Andrew, Place House, the Robin Hood public house which is now no longer licenced, Rectory Farm, the Old Forge, Staughton House, Garden Farm, Little Thatch, the White Hart and the 17th century village cross, Corner House and Red House, Gaynes Hall and the Manor Farm at Perry. The only listed buildings at Hail Weston are the church of St. Nicholas, Church Farm and Aubreys Farmhouse known as Page's Farm.

10. I personally like living in the country as I travel some sixteen miles to St. Ives to my office and I live in the country by choice. My wife is a country girl having been born in the country being the daughter of a fruit farmer. I find that people are particularly concerned as to the adverse effect that the siting of the third London airport would have upon their country way of life and they have also expressed concern as to the rate burden which would be occasioned by the urban development. The parish is essentially an agricultural parish and the farmers grow the usual cereal crops in rotation with some brussels, sugar beet and potatoes. It is clear that noise would be the main disruption for both outdoor and indoor activities. Concern has also been expressed as to the possible accident risk as both villages lie pretty well within the direct flight paths and whilst it is appreciated that the chances of an accident are slight, the fear appears to be present.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Bedfordshire Association of Parish Councils

on behalf of the Bedfordshire Airport Resistance Association

SUBMITTED BY MR. F. COOKSON*

1. My main employment is as secretary of the Bedfordshire Rural Community Council and because of this appointment and the wishes of parish councils and other bodies I am also hon. secretary to the Bedfordshire Association of Parish Councils, upon whose behalf I am now giving evidence.

2. With the exception of two, all parish councils in Bedfordshire are affiliated to the Association. I give evidence therefore on behalf of 99 parish councils but primarily on behalf of those Bedfordshire parish councils within a 16-mile radius of Thurleigh which are listed in the summary (which is exhibited with this proof marked FC2); which are known to have passed resolutions opposing the siting of the third London airport at Thurleigh and which are not submitting separate evidence.

The Association is, of course, supporting the 11 parish councils which are submitting separate evidence and the parishes within a 16-mile radius of Thurleigh which, because of the smallness of the populations, have a parish meeting only.

3. I think it convenient at this stage to remind the Commission of my letter dated the 28th April, 1969 a copy of which is exhibited herewith marked FC1. This letter represented opinion received in returns which were then being submitted to the Association from the 1969 annual parish meetings.

4. It is not easy for the Association to represent so many parish councils. Four of them, for example, are more than 4 miles from the centre of Thurleigh whilst others are 16 miles to the south. The problems, fears and degrees of nuisance and disturbance are therefore very different in each case but this does not detract from the fact that the proposal is totally objectionable to communities which have been established in quiet enjoyment of their rural areas over many centuries.

5. The 86 Bedfordshire parishes which are within a 16-mile radius of Thurleigh have a total estimated population of 82,318. This figure has been taken from records compiled in 1968 by the County Planning Department. The population at the 1961 Census was 71,168. A break-down of these figures is included in a summary which is exhibited with this proof marked FC2.

6. I have been present at well-attended parish meetings when questions have been asked about such things as pollution, stacking areas, local authority finance, the impact on services, flooding and the effect on the *South-East Study** and the Green Belt. Whilst such matters are of real concern to many people living in the parishes, they are subjects which require specialised knowledge and the main fears which have been expressed by parish councils and parish meetings not immediately affected by obliteration or intolerable noise may be summarised in the following sections:

(a) They endorse the evidence presented on behalf of the obliterated parishes and endorse the evidence presented by the combined County Councils and other authorities and organisations opposing the siting of an international airport at Thurleigh.

(b) The general effect such an airport would have on the rural areas and the interference it would have on the lives of people. It is believed that it would greatly change—for the worse—the character and way of life in what is predominantly a rural area.

(c) Noise from aircraft, site work transport and airport road transport. The NNI contours of 35 and above, which are shown on the 4 runway maps for Thurleigh (a) and (b), cover in whole or in part no less than 27 or 29 civil parishes in Bedfordshire alone. There are 27 for (a) and 29 for (b).

In this connection it should be remembered that the effect of introducing an NNI of, say, 35 on the people of a quiet rural area will be very different to that which is felt by urban communities and particularly those which live in the vicinity of existing airports.

(d) It would bring a large number of new settlers into the area in a manner which would upset social structure of the villages as well as overwhelming their existing facilities.

(e) Many airport employees and the supporting service workers would seek to live outside the main area of noise disturbance and would settle up to twenty miles from the airport. This would create great pressure on housing land and tend to convert rural villages into suburban dormitories.

(f) Considerable areas of good agricultural and market-gardening land in a fertile area would be lost to the nation.

* See also p. 2246.

* HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

(g) Parishes within a ten to thirty mile radius would be seriously affected by urbanisation, and changes in road width and patterns could cause serious upheavals in this area. These parishes, although possibly not suffering undue annoyance from noise, fuel spillage and pollution, would tend to become urbanised and very serious concern has been expressed at the consequences of such urbanisation, particularly the great increase in road traffic, the loss of village life, the destruction of landscape and amenities.

7. Feeling on this issue is undoubtedly running high. During my 9 years of service as secretary of the association I have seen parish councils make substantial progress in parish or village government. Their general reluctance, however, to levy rates—often for much-needed local facilities—is still very noticeable. In 1968 the average rate being levied by Bedfordshire Parish Councils for all purposes, other than street lighting, was 1·87d.

It is therefore significant that (a) 27 Bedfordshire parish councils have already chosen to contribute £583 to the funds of BARA. Many have also contributed to the funds of WARA and many of them have contributed to the full extent of their statutory powers, some for the first time. (b) Whereas in 1964 the parishioners of Bolnhurst and Keysoe filled the village school to capacity to prevent a 1d. being placed on the rates to help complete a much-needed village hall, in 1969 they filled it again to voice their opinions to the Thurleigh proposal and to consider ways in which voluntary and statutory money could be raised to fight it.

8. It has been said that parish councils, because of the smallness of the parishes, are the only true units of *local* government and therefore the only ones which can be locally governed by true democratic means. The recent Radcliffe-Maud Report* confirms this view and in Bedfordshire almost a thousand parish councillors believe in and serve this form of democracy. All but a few of them would find the building of a third London airport at Thurleigh quite irreconcilable with democracy.

* Cmnd. 4040 (HMSO).

APPENDIX FC1

Letter sent to The Board of Trade; The Ministry of of Housing and Local Government; all M.P.s in Bedfordshire, and the Roskill Commission

BEDFORDSHIRE ASSOCIATION OF PARISH COUNCILS

28th April, 1969

Dear Sir,

Third London Airport

All but two of the Parish Councils in Bedfordshire are affiliated to this Association and, as Secretary of the Association, I write on behalf of ninety-nine parish councils to oppose the building of a third London airport at Thurleigh, Cublington or Nuthampstead. We are, in fact, opposed to the building of a third London airport on any inland site as the facts and figures which have already been published show that a development of this nature is far too big and noisy to inflict on any community. This has already been clearly demonstrated in other parts of the country and huge sums of money are being raised and thousands of working hours are being allocated to demonstrating it yet again in several counties.

Although Parish Councils have very few statutory powers, they are true units of local or village government and they have a great responsibility for all matters which affect the lives of local people. They are therefore strongly opposed to the proposals which, for several thousand people, would cause the greatest interference on life which has been experienced since the War. Although the majority of people have not yet realised the full extent of the effect such an airport would have on their lives, concern is increasing. The annual Parish Meetings, which were held in March, attracted record attendances. In many parishes there was standing room only in the village hall to voice opposition and Parish Councils which wrongly pride themselves in not levying more than, say, a penny rate, are now using their full powers to make the greatest possible donation to the respective Airport resistance associations.

The facts and figures are frightening and if a third London Airport has got to be built we believe that it must be sited on the coast where it will do least harm and cause the least suffering.

Yours faithfully,

F. COOKSON, *Secretary.*

APPENDIX FC2

Parishes situated within a 16-mile radius of the centre of Thurleigh village

Name of parish council	*Population*		*Whether a resolution opposing the siting of the Third London Airport at Thurleigh has been carried.*
	1961 Census	*1968 estimate*	
Aspley Guise	1,921	2,100	Yes
Biddenham	693	712	Yes
Blunham	612	777	Yes
Campton	358	392	Yes
Cardington	308	270	Yes
Carlton and Chellington	550	773	Yes
Clapham	3,284	3,718	Yes
Clifton	1,354	2,104	Yes
Clophill	1,056	1,300	Yes
Cople	687	709	No
Cranfield	2,501	3,463	Yes
Dean and Shelton	309	311	Yes
Dunton	437	491	No
Eastcotts	2,137	2,219	No

Printed image digitised by the University of Southampton Library Digitisation Unit

Name of parish council	*Population* 1961 Census	1968 estimate	*Whether a resolution opposing the siting of the Third London Airport at Thurleigh has been carried.*
Elstow	629	683	Yes
Eversholt	450	425	Yes
Everton	215	307	Yes
Flitton	572	690	Yes
Flitwick	3,604	4,900	Yes
Gravenhurst	474	540	Yes
Great Barford	788	1,125	Yes
Harrold	956	1,073	Yes
Haynes	801	780	Yes
Henlow	2,956	1,568	Yes
Houghton Conquest	875	1,060	Yes
Hulcote and Salford	207	186	Yes
Husborne Crawley	382	360	No This is a Bedford estate village and the Duke of Bedford favours an airport
Kempston Rural	1,289	1,255	Yes
Knotting and Souldrop	258	256	Yes
Langford	1,379	2,196	Yes
Liplington	917	1,050	No, but they support the action being taken by the County Council
Little Staughton	224	274	Yes
Marston Morteyne	1,928	2,317	Yes
Maulden	1,618	1,900	Yes
Melchbourne and Yelden	342	297	Yes
Meppershall	725	825	Yes
Mogerhanger	561	654	Yes
Northill	1,446	1,693	Yes
Odell	241	231	Yes
Old Warden	457	406	Yes
Pavenham	456	548	Yes
Podington	423	393	Yes
Potton	2,070	2,674	Yes
Pulloxhill	648	772	Yes
Renhold	739	997	Yes
Ridgmont	808	700	No This is a Bedford estate village and the Duke of Bedford favours an airport
Roxton	1,060	1,008	Yes
Shefford	2,216	2,745	No
Shillington	2,787	3,360	Yes
Silsoe	672	997	No, but they support the action being taken by the County Council
Southill	991	1,075	Yes
Stagsden	400	401	Yes
Staploe	240	370	Yes
Stevington	386	482	Yes
Steppingley	243	254	Yes
Stewartby	1,235	1,173	No
Sutton	292	331	Yes
Tempsford	494	492	Yes
Turvey	745	877	Yes
Wilden	338	354	Yes
Willington	510	694	Yes
Wilstead	1,095	1,204	Yes
Wootton	1,826	2,500	No the Council believes that no decision can be made until further information is available
Wrestlingworth	393	472	Yes
Wymington	772	714	Yes
Name of parish meeting			
Astwick	35	32	No A parish meeting has not been held
Chicksands	67	33	No Opposition support given to NFU
Cockayne Hatley	122	109	?
Edworth	48	45	No
Eyeworth	89	81	Yes
Little Barford	68	58	No Parish meetings are not held. The village is opposed to the proposal for Thurleigh
Millbrook	145	137	No
Pertenhall	181	203	Yes
Upper Stondon	79	69	?
Swineshead	109	130	?
Parish councils which are submitting their own proofs of evidence			
Bletsoe	235	260	Yes
Bolnhurst and Keysoe	583	616	Yes
Bromham	2,722	3,217	Yes
Colmworth	309	349	Yes
Felmersham (which includes Radwell)	376	480	Yes
Milton Ernest	373	362	Yes
Oakley	624	881	Yes
Ravensden	525	471	Yes
Riseley	554	825	Yes
Sharnbrook	1,053	1,420	Yes
Thurleigh	531	563	Yes
Total	71,168	82,318	

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Huntingdon and Peterborough Parish Councils' Association and the Cambridgeshire and Isle of Ely Association of Parish Councils

on behalf of the Bedfordshire Airport Resistance Association

SUBMITTED BY MR. M. G. MARTINDALE*

1. I am secretary of the Community Council for Cambridgeshire and Isle of Ely, Huntingdon and Peterborough and because of this appointment I also act as secretary for the Huntingdon and Peterborough Parish Councils' Association and the Cambridgeshire and Isle of Ely Association of Parish Councils upon whose behalf I am now giving evidence.

2. There are 118 members of the Cambridgeshire and Isle of Ely association and 72 members of the Huntingdon and Peterborough association. I am therefore giving evidence on behalf of all these parish Councils, although more particularly on behalf of those councils within a 16-mile radius of Thurleigh which are listed in the attached appendix (i).

3. I wish to stress however that the opposition to the siting of a third London airport at Thurleigh is not confined to those councils likely to be directly affected by noise and immediate disturbance. Both Associations passed at their Annual meetings a resolution relating to the siting of the third London airport in the following terms.

Huntingdon and Peterborough

"That the association support to the full BARA in its opposition to the construction of an additional London airport at Thurleigh, and supports the National Association's view that any such airport should not be constructed inland."

Cambridgeshire and Isle of Ely

"That this conference is opposed to an inland site for the third London airport."

These two resolutions were carried by the unanimous vote of those present—60 members representing 36 parishes in the first case and 65 members representing 33 parishes in the second case. No opposition to the resolution was expressed either at the meetings or by correspondence from those parishes not represented.

4. In the case of Cambridgeshire and Isle of Ely perhaps more members of the Association are concerned with the possible siting of the airport at Nuthampstead and the Association is equally opposed to this proposal. However, a number of its members would be more affected by the Thurleigh site and the Association has—as previously stated—expressed its hostility to both these sites.

5. Many individual parishes have written to the Association in support of the two resolutions given in paragraph 3. A list of those which refer specifically to the Thurleigh site are given in the attached appendix (ii). No letters in support of the proposed site have been received (but one or two parish councils have written saying they do not wish to comment either way).

6. I do not wish to repeat arguments which will be given by my colleagues in Bedfordshire and Northamptonshire as to the deleterious effect of the airport on a peaceful rural area, although these are no doubt the arguments chiefly in the mind of the parishioners in the areas affected. I would however like to stress the following considerations.

(a) The two counties are primarily agricultural and the agricultural production of the area is an important national asset.

(b) There is very low unemployment in the area and the main employment need is for small-scale light industries in the market towns and larger villages to provide alternative work for the wives and families of agricultural workers.

(c) Huntingdon and Peterborough has already an agreed policy of expansion in Peterborough and in the smaller market towns which will create a sufficiency of problems in integration and the provision of social services.

(d) The agricultural community has already sacrificed some of its land for aerodromes and reservoirs in the national rather than the local interest. Disturbance from RAF and USAF aerodromes throughout the county is already considerable.

(e) The two counties also provide valuable recreational amenity of a special type in their rivers and water ways (including Grafham Water). Many hundreds of boatmen and thousands of anglers visit the area at weekends and holidays. The area is not particularly famed for its scenic beauty but it is the peace and quiet of its extensive river system and the lack of noise and urban development which provides the attraction.

It would therefore seem that a third London airport at Thurleigh would provide little—if any—benefit to the area and would adversely affect its basic character and pursuits.

7. The considerations mentioned in paragraph 6 affect the area as a whole, and the Association is

* See also p. 2247.

Printed image digitised by the University of Southampton Library Digitisation Unit

concerned with the general effect on the county rather than that in particular parishes. However, it perhaps should be mentioned that at Papworth Everard there is a famous hospital for serious heart and lung surgery cases where noise would be a particular disaster, and at Kimbolton there is a well-known residential school. Certain parishes on the Ouse are also concerned at a possible increase in the danger of flooding from water draining quickly from the runways and the built up urban areas, should these be in the Ouse catchment area.

8. In 20 years as Secretary of the Association, I have known of no other proposal which has created more general opposition than this one. Many parish councils have contributed to the funds of the two Airport Resistance Associations and a great deal of voluntary money has been deflected from social and community developments to the resistance funds. Parish councillors in this area are convinced that a coastal site is the only answer to the problem facing the establishment of a third London airport and that any additional costs would be more than justified against the loss of agricultural production and the disturbance to a peaceful, rural and residential area.

APPENDIX (i)

Huntingdonshire Parishes Within 16 Miles Thurleigh

	Population ('61 Census)
Alconbury	629
Alconbury Weston	297
Abotsley	263
Buckden	1,158
Brampton	3,068
Barham and Woolley	78
Buckworth	138
Brington and Molesworth	635
Bythorn and Keyston	244
Covington	104
Catworth	262
Diddington	119
Ellington	289
Easton	90
Eynesbury Hardwicke	80
Grafham	184
Great Gransden	476
Little Gidding	31
Memingford Abbots	628
Mamerton	130
Hail Weston	315
Houghton and Wyton	2,908
Kimbolton	824
Leighton	207
Old Weston	207
Offord Cluny	321
Offord D'Arcy	295
Great Paxton	396
Little Paxton	436
St. Neots Rural	
Spalwick	275
Steeple Gidding	56
The Stukeleys	2,909
Great Staughton	985
Southoe and Midloe	227
Stow Longa	85
Toseland	100
Tilbrook	234
Tetworth	118
Upton and Coppingford	262
Winwick	114
Waresley	183
Warboys	1,950
Yelling	231
	22,541

APPENDIX (ii)

Huntingdon and Peterborough Parishes

Abbots Ripton
Bluntisham
Buckden
Bury
Castor
Colne
Conington Parish Meeting
Covington Parish Meeting
Earith
Fenstanton
Folksworth
Hilton
Holwell-cum-Needingworth
Houghton and Wyton
Kimbolton
St. Martin Without
Newborough
Offord Cluny
Offord D'Arcy
Oldhurst
Little Paxton
Great Staughton
Stilton
Stow Longa
Tilbrook
Wansford
Warboys
Wistow
Woodhurst
Yaxley

Cambridgeshire Parishes

Coton
Eltisley
Haslingfield
Papworth St. Agnes
Papworth Everard
Great Shelford
Toft

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Bedford Society

on behalf of the Bedfordshire Airport Resistance Association

SUBMITTED BY MR. M. B. BLACKLEDGE*

1. I give evidence as the appointed representative of the Bedford Society. I am the chairman of the Society, which was set up in November 1966.

The Bedford Society is the Civic Society of Bedford.

It is affiliated to:

The Civic Trust,
The Bedfordshire Preservation Society,
The Commons, Open Spaces and Footpaths Society.

It has liaison officers with the North Bedfordshire Preservation Society and with the Bedfordshire Airport Resistance Association.

The main Objects of the Society are:

(a) to take an interest in the planning and development of the Borough of Bedford and to try to ensure that areas of natural beauty and buildings of special architectural and historic interest are protected.

(b) to encourage the provision of facilities for the enjoyment of the arts and all forms of social and recreational amenities in the town.

The Society, during its nearly three years of existence, has been one of the most active civic societies in the United Kingdom. It has taken a very important part in the expression of public opinion on the future planning of Bedford (including traffic and noise problems), in the preservation and enhancement of the quality of life in Bedford (for its inhabitants and for the tens of thousands of visitors who come to the town each year), and in the preservation and conservation of Bedford's architectural and historic heritage. The Society published a report on conservation areas for Bedford in September 1968. It has successfully opposed at a local public enquiry the design and positioning of a new river-bridge in Bedford. It is a frequent contributor to news items in the local and national press and on BBC radio and television and Anglia Television Services.

Membership of the Society is open to anyone with interests compatible with the objects of the Society.

Present serving officers are:

Chairman	Mr. M. B. Blackledge
Secretary	Mr. I. Lobban, MIOM, AMBIM
Asst. Secretary	Mr. R. H. Wildman
Treasurer	Mr. J. B. Sewter, CENG, MIEE, MTS
Committee Members	Mr. V. Farrar, ARIBA, FRSA
	Mr. J. Claridge
	Dr. A. W. Ferguson, BA, MB, BCHIR, MRCP, DCH
	Mr. E. N. Foster, FCA
	Mr. S. T. A. Bues

The total membership is made up of: 3 Life Members, 74 Individual Members, 320 Family Members.

The membership includes the Bishop of Bedford, hospital consultants and specialists, architects and surveyors, engineers, headmasters and teaching staff of local schools and colleges, the Clerk to the Harpur Trust, undergraduates, publishing and television officials, chartered accountants, local business owners, parents and retired persons; in fact, a cross-section of the people of Bedford and visitors to Bedford.

The Society has the active support of Sir John Betjeman.

The Society has studied the likely direct and indirect consequences to Bedford and its inhabitants and visitors, of the third London airport being sited at either Thurleigh (a) or Thurleigh (b).

As part of this study the Society has:

(a) examined in detail the Commission's published *Site Information**; provisional airport layout and noise and number index maps concerning Thurleigh (a)†; together with the additional *Site Information*‡ and maps concerning Thurleigh (b)†,

(b) conferred with officers of the three Societies to which it is affiliated,

(c) consulted officers of the Bedfordshire County Council, the Bedford Borough Council, the Bedfordshire Airport Resistance Association, the National Farmers' Union, the Council for the Preservation of Rural England, and the British Association for the Control of Aircraft Noise,

(d) sought the views of the medical profession in Bedford,

(e) discussed the issues with local architects and engineers,

(f) noted the reaction of last, but not least, the people of, and visitors to Bedford. The opinion of hundreds of people has been obtained by officers and members discussing

* See also p. 2247.

* Reproduced at p. 1801.

† See attached wallet of maps and diagrams.

‡ Reproduced at p. 1802.

Printed image digitised by the University of Southampton Library Digitisation Unit

the sitings with other Bedfordians and with visitors to the town and by stimulating public reaction in the local press,

(g) specially visited the localities of the Thurleigh (a) and Thurleigh (b) sites.

3. The uncertainties stated in the Commission's site information on the final arrangements for the land-take, access arrangements, runway positioning and runway alignment make it difficult for local authorities and the public to assess with any confidence the local considerations, particularly the noise problem in the case of Bedford. The noise index contours given in the site information have been used in our study; however any small shift of the southern noise lobes further towards Bedford might make a considerable difference to the effect of aircraft noise on the Borough of Bedford.

4. The Society's objection has been inhibited by the Commission's requirement that objections be confined to the site proposal in question. The Society believes that many of the important local, national and international reasons why the third London airport should not come to a site at Thurleigh (a) or Thurleigh (b) are similar to reasons for which Stansted is not in the short-list and equally apply to most inland sites including Cublington and Nuthampstead. The Society does not consider that either of these sites would be in the local interests. Because of the requirements for Stage II hearings, the objection is at present limited to the local aspects as they concern Bedford. As far as possible, the repetition of evidence being given by authorities and other organisations has been avoided.

5. **Resolution of the chairman, officers and members of the Bedford Society**

All the above-mentioned officers and the members of the Bedford Society are resolved to strongly oppose the choice of either Thurleigh (a) or Thurleigh (b) for the third London airport and agree with this written objection.

6. **Bedford Society's objection and local implications of either site being chosen**

A. The five main points of objection are:

(i) the quality of life for 70,000 Bedfordians and tens of thousands of visitors to Bedford would be seriously degraded,

(ii) the environment would be changed completely and would be damaged irreparably. The character of the town would completely change for the worse,

(iii) many thousands of Bedfordians (estimated 10,000) might have to leave the area because their place of employment would move,

(iv) the influx of about 320,000 people within 12 miles and 80,000 within a 12 to 20 mile radius of the airport would completely overload communications and services in and around Bedford, even if three new towns and new roads were to be started in 1970,

(v) the increased noise, vibration and visual impact of increased aircraft and road transport on life and structure.

B. Further detailed points of objection, some of which expand on those in A. above, are:

(i) Bedford is a medium-sized county town, being an important centre of administration, farming and market gardening, research and education. Its public schools are world-famous. Light industry continues to be attracted to the town, to its facilities, and to some of the country's best sources of school-leavers. Many of the town's inhabitants work in the numerous research establishments around the town.

e.g. Royal Aeronautical Establishment (Bedford).

Aeronautical Research Association.

Unilever Research (Colworth).

The Society considers that this country cannot afford to damage such a centre (as an airport would) because it contributes significantly to the local and national well-being. All the research establishments would suffer and would be extremely costly to move.

(ii) The splendid peaceful riverside area and parks of Bedford provide a recreational lung for the inhabitants and tens of thousands of visitors to Bedford. These visitors mostly come from industrial towns around, where they have no comparable asset. The Bedford regatta is the largest one-day regatta in the provinces and is the climax of the year's rowing on the river by town and star rowing clubs, colleges and schools. Cultural activities form an important part of the town's life with two active operatic societies, orchestras and music societies. The annual music festival in the Corn Exchange attracts competitors from many miles around. All these recreational and cultural activities would suffer from the effects of increased noise. The large influx of population into the area would saturate existing riverside facilities.

(iii) noise would constantly invade the classroom, lecture-hall, research laboratory, hospital, and home (both day and night). Aircraft and increased road activity noises would contribute to this cacophony. Children would find home-study more difficult in a more noisy environment.

(iv) Bedford, being a town favoured by education and research specialists, would be hit in a major way by the nearby airport. The specialists and their families would find themselves involved in a major exodus from the town as establishments move to more conducive environments; others would move because of the deteriorating quality of life resulting from an airport.

(v) The public health aspects could be disturbing—see MB1.

Printed image digitised by the University of Southampton Library Digitisation Unit

(vi) Bedford is endowed with many buildings of architectural and historical interest—see MB2, some of them having connections with John Bunyan and John Howard. Pressures are already great to redevelop some of the town's heritage. An airport nearby and a very large population influx to the area would add to the problems of preservation and conservation. The attractive riverside settings and town-centre could well be chosen for sites for new concrete towering hotels and airline offices. The townscape and skyline of Bedford could soon take on the appearance of the appproach roads to, and vicinity of Heathrow.

(vii) Road and rail communications in and around Bedford are already overloaded during peak business hours. It would take a considerable time to reinforce these to London and the Midlands. The town could well seize-up with traffic before relief could be brought into operation.

(viii) The state education and national health hospital services in Bedford are already overloaded and could not tolerate any increased demand. Bedfordians would probably have to suffer a further deterioration in these services for at least 5 years.

(ix) Bedford has an unemployment rate below the national average. The construction armies required to build the airport, road services, hospitals, houses and other buildings would have to be brought into the area, and quickly, if the timescale is to be met.

(x) The very large quantities of sand and gravel required for such a project would almost certainly mean that miles of unspoilt riverside on either side of Bedford would have to be sacrificed.

(xi) Bedfordians and many others would lose much of their countryside and leisure area around the town. The airport would form a barrier to the north and three new towns nearby would form, with Bedford, one poly-nucleated conurbation. Much of the planning for the area for miles around, indeed the whole region, would have to be started from scratch. Some of what has been implemented might have to be scrapped.

(xii) The Society is extremely anxious over the effect on the River Ouse of increased water extraction requirements, the likely increased sewerage outfall and river pollution, with its adverse affects on fishing, boating and other riverside recreational activities.

(xiii) Bedford is renowned for its outdoor sports activities, which the Society considers would be severely impaired by the increased noise levels.

(xiv) Finally any cost/benefit study should take into account the human suffering as part of the cost and the benefit must be the algebraic sum of gains and losses—local, national and international. On this basis, the Bedford Society is convinced that the Thurleigh (a) and Thurleigh (b) sites are not suitable for the third London airport.

7. The Society has a film record of Bedford throughout the year, which it will show to the Inspector if required.

APPENDIX MB1

Bedford General Hospital (South Wing)
Report following medical staff meeting held on 1st July 1969

The medical staff of Bedford General Hospital are opposed to the siting of a major airport at Thurleigh (a) or Thurleigh (b), or in north Bedfordshire, because, in their opinion, aircraft noise would certainly interfere most seriously with the function of the hospital.

It is known that in hospitals near London airport, aircraft noise has interfered seriously with the work of the doctors and nurses, and patients have been deprived of the quiet and repose necessary for their recovery. Some hospitals have had to undertake highly expensive sound-proofing alterations, coupled with new ventilation systems in attempts to reduce aircraft noise.

Example of ways in which aircraft noise interferes with the work of a hospital are as follows:

(a) verbal communication, either direct or telephonic, is interrupted or rendered difficult, with resultant delay, loss of working efficiency and increased risk of misunderstanding and inaccuracy,

(b) surgeons engaged in operations and other doctors carrying out practical procedures may have their concentration interrupted at critical moments,

(c) those clinical examination procedures having an auditory basis, such as stethoscopic auscultation, which are frequent and important in the routine assessment of patients, may be rendered difficult or inaccurate.

The combined effects of the above can produce a serious reduction in the efficiency of medical, surgical and nursing care.

A. W. FERGUSON
Consultant Paediatrician
R. H. WELCH, MRCS
Chairman of the Medical Staff Committee

Bedford General Hospital (South Wing)

9th July 1969

The doctors of north Bedfordshire, both those in general practice and those in hospital, are greatly concerned about the effect of the proposed international airport in this region. They feel it would have serious effects for two reasons:

1. **General practice.** Bedfordshire is not a particularly popular area for general practice at present. The effect of the establishment of this airport would be to

Printed image digitised by the University of Southampton Library Digitisation Unit

increase the local population considerably. It will undoubtedly drive a number of general practitioners away from the area who will almost certainly not be replaced and the end result would be that the remaining general practitioners would be overwhelmed by the burden of work, which at present is considerable.

2. **The hospital.** Both wings of Bedford General Hospital are situated within a few miles of the proposed airport and the noise effect here would be considerable. In other hospitals i.e. the West Middlesex Hospital and Ashford Hospital which are both within a few miles of Heathrow airport, the staff work under considerable difficulties because of aircraft noise. Some blocks have had to be soundproofed by a double glazing system and air conditioning has been installed to make conditions tolerable, but even then the nuisance value of the noise is very great. In parts of these hospitals where these measures have not been adopted, work has been seriously affected.

The cost of installing this kind of soundproofing and air conditioning is very considerable and figures of £100,000 have been mentioned in connection with the soundproofing of one hospital block alone. It should be realised too that Bedford General Hospital is about to start rebuilding, the plans have already been settled and any alterations would undoubtedly be excessively expensive.

The possible increase in population as a result of the airport being situated here would raise fresh problems of staffing and also the size of the hospital. It should be realised too that medical and nursing staff may well decide to move rather than put up with the intolerable degree of noise which we feel would be inevitable.

ANDREW G. POLLEN FRCS
Chairman of the North Bedfordshire Division of the British Medical Association

APPENDIX MB2

Bedford's buildings of architectural and historic interest which could be threatened

"The town of Bedford is one of the most interesting places in England" (Timbs and Gunn, *Abbeys, Castles and Ancient Halls of England and Wales),* but despite a wealth of historical associations, and of buildings of architectural or historic interest, Bedford is not as well-known as it should be, regardless of the massive documentation of both town and county revealed in L. R. Conisbee, *A Bedfordshire Bibliography* 1962, and *Supplement* 1967.

John Bunyan wrote: "As I walked through the wilderness of this world, I lighted on a certain place where was a den; and I laid me down in that place to sleep, and as I slept I dreamed a dream." The place was Bedford, and the den Bedford County Goal (in which Bunyan was imprisoned 1660–72), and the dream became *Pilgrim's Progress,* published in 1678. Bedford appears later in the novels of William Hale White ("Mark Rutherford") 1831–1913, and in his *Early Life of Mark Rutherford.* The town was visited by several early travellers, notably Celia Fiennes in 1700, Defoe in 1725, and John Byng (later Viscount Torrington) in 1793, all of whom left descriptions, and by Pepys and Boswell, who unfortunately did not, perhaps because they spent all their time here drinking. More recently, Bedford has figured in the reminiscences of Florence Ada Keynes, mother of Lord Keynes (*Gathering up the Threads* 1954) and Prof. Basil Willey (*Cambridge and other Memories* 1968). It has been praised by Sir John Betjeman (letter to Chairman of Bedford Society April 1968), and Prof. Nikolaus Pevsner has written that "few English towns can be compared" to Bedford for "the way the town has treated its river" (*Bedfordshire, Huntingdon and Peterborough* 1968).

The architecture of Bedford has never been fully described, certainly not from a local standpoint, and Prof. Pevsner's account in the Buildings of England series omits many buildings of great local importance, and some of much wider significance, e.g. Charles Holden's Shire Hall extensions of 1910. The Ministry of Housing and Local Government's Lists of Buildings of Special Architectural or Historic Interest in Bedford (published in 1952) contain 80 single items, only 23 of which are mentioned by Pevsner. The MHLG Lists are under revision (summer 1969) and the number of Listed Buildings is expected to be doubled.

An accurate summary of Bedford's status as a town of architectural interest occurs in a review by HVMR (in the *RIBA Journal*) of Max Lock's *Bedford by the River: A Town-Planning Report* 1952 (which included a short chapter on Townscape, and erratic list of buildings of interest, and some good photographs). The review is worth quoting at some length:

> "Bedford is one of the smaller provincial towns of which normally very little notice is taken by any but architects and very little is generally known besides its industries. In point of fact, it proves to be very attractive, full of amenities and of antiquarian interest discernible with a little study. A Saxon church (St. Peters) a cluster of 17th century (sic) and later municipal buildings, some fine schools of Blore's time and onward, an avenue of houses set back and forbidden high walls by restrictive covenants, a furniture works associated with Baillie Scott and extensive riverside walks are among its charms. One therefore welcomes the appearance of a work like this which, though strictly a town-planning report, gives (as such works often do) many illustrations, past and present, which demonstrate that attractiveness . . . ."
>
> (*RIBA Journal,* 3rd series, vol. 59, p. 380. August 1952.)

The earliest "work" in Bedford is the King's Ditch, dug by King Edward the Elder in 919 to enclose and fortify the town south of the Ouse. The west half of the Ditch was buried beneath Kingsway in 1959, but the east half largely survives. St. Peter's Church tower and chancel are Saxon, and St. Mary's Church tower and transepts are late 11th century. It is thought that the Castle Mound dates from the

Printed image digitised by the University of Southampton Library Digitisation Unit

late 11th century, but Bedford Castle was demolished in 1224, and the site has never been excavated. There is 13th century work in St. Peter's Church, and much 14th century and 15th century work in St. Paul's Church, St. Mary's Church and St. John's Church. Of Bedford's five religious houses, the sole and precious survivor is St. John's Hospital c1216, now under restoration.

There are a few remaining medieval or 16th century houses, all hidden behind later fronts. Cottages of the 17th century survive in 2–8 and 13 Cardington Road; 38 Mill Street 1760; 1 St. Paul's Square c1764; Crofton House (27 St. Cuthbert's Street); and Old Gaston House c1783, corner of St. Cuthbert's Street and Lurke Street. The best 18th century building in Bedford, and one of the best in the country, is the Swan Hotel (Henry Holland 1794). The Hospital (North Wing) is grouped around the House of Industry (John Wing 1796). Wing also designed the Town Bridge 1811–13.

The expansion of Bedford in the middle of the 19th century was due to the coming of the railway (from Bedford-Bletchley 1846 to Bedford-Luton-London 1868), and of industry (Howard's Ironworks 1835 onwards, moved to Britannia Works, built by Robert Palgrave, 1859), but pre-eminently to the revival and extension of education provided by Harpur's Bedford Charity of 1566 (the Harpur Trust). The architectural link between the stagnant Free Grammar School of the 16th–18th centuries, and the present four Harpur Trust schools (Bedford School by E. C. Robins 1891; Bedford Modern School by Edward Blore 1834; Bedford High School (Girls) by Basil Champneys 1882; and Dame Alice Harpur School by O. P. Milne 1938) is provided by the Town Hall, in St. Paul's Square. Until 1891, it was the Grammar School, and its stone-facing of 1767 (with statue of Harpur (1496–1573) in Georgian dress!) may conceal Harpur's 16th century house.

Bedford's 19th century educational expansion has left the most significant traces in the monumental Bedford Modern School (Edward Blore 1831–34), an offshoot of the Grammar School, the other schools mentioned above, and brick and stucco villas in The Crescent, Adelaide Square, and Kimbolton Road. Bedford's sole Georgian terrace, Priory Terrace (22–48 Bromham Road) stands in front of Champney's High School. Slightly earlier 19th century classical houses are 46 and 50 Cardington Road, both built by John Wing, with stone-facing and Roman porches. The greatest Neo-Classical building in Bedford is the Public Library built as Assembly Rooms 1834 in Harpur Street, opposite Blore's Bedford Modern School.

John Bunyan preached in a barn in Mill Street, where today stands Bunyan Meeting (by Wing and Jackson 1849), a huge brick classical chapel. On its east is John Howard's House c1750, and to the west Howard Congregational Church (1774 and 1849) founded by Howard the Philanthropist when he led a secession from Bunyan Meeting. Splendid statues of Bunyan by Sir J. E. Boehm 1874, and of Howard, by Sir Alfred Gilbert 1894, stand on St. Peter's Green and the Market Square respectively.

High Victorian architecture in Bedford is represented by Champneys' High School and Robins' Bedford School, together with the County Council Offices at the extreme west end of the south side of St. Paul's Square, which were built by Champneys for the Grammar School in 1886; the Shire Hall by Alfred Waterhouse 1879–81; and the Corn Exchange by Ladd and Powell 1874. Along the Embankment stands the former County Library, built as the Town and County Club by Henry Cheere in 1885. But the Victorians' greatest contribution to Bedford as a whole lies in the vast extent of tree-lined avenues and parkland to be found on the north and east sides of central Bedford (Bedford Park was opened in 1881, Russell Park in 1895) and in the superb treatment of the riverside, from the Town Bridge eastwards to Newnham Pool. The Suspension Bridge was built in 1888, and the 1914–18 War Memorial is by Charles Jagger 1922.

The monumental character of St. Paul's Square and lower Harpur Street is the chief townscape feature of Bedford. The individual buildings mentioned above and described in the works cited add up to an impressive total of great architectural and historical significance.

Most of the above mentioned buildings are in Conservation Areas proposed by The Bedford Society and the Bedfordshire County Council.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bovril Limited

on behalf of the Bedfordshire Airport Resistance Association

SUBMITTED BY MR. J. B. OSBORNE*

1. I am a chartered land agent retained by Bovril Limited as a consultant land agent.

2. Bovril Limited has since 1909 had interests in cattle rearing. Mainly, they have had estancias in Argentina where they have bred shorthorn, hereford and aberdeen angus cattle. For some time also they had ranches in Northern Australia.

3. Bovril as a product has widely been associated over the years with beef. After the Second World War, when a new generation had grown up, it was considered good policy by the directors to have a closer association with beef in the UK so that it should be clear to the general public that there was this connection between Bovril and beef.

4. Accordingly in 1946 a pedigree herd of aberdeen angus cattle was established at Ampthill in Bedfordshire. The showing of aberdeen angus, and latterly hereford cattle also, at many shows throughout the country, and the publicity obtained has, it is believed, kept before the public the fact that Bovril produces beef cattle, whereas their doing it on a much larger scale for slaughter in their meatworks in Argentina is somewhat remote.

5. This, therefore, has been the prime reason why Bovril find it important to have a farm in the UK where they can breed first class beef animals. Coupled with this has been the production of sires to export to Argentina for our own establishments and for sale in that country. Apart from this the knowledge gained in the beef industry through meeting the big breeders at sales and shows has put the Bovril directors in the best position to know what are the most suitable strains for cattle breeding in Argentina.

6. Bovril Limited has accordingly owned a stock farm in Bedfordshire for over 20 years. Initially the herd was an aberdeen angus one at Ampthill, 16 miles away from Bletsoe. In 1964 a hereford herd was also established at Ampthill.

7. When the opportunity arose for buying a better farm this was taken and Bletsoe Castle Farm was bought in 1965. This has been found to be more suitable than Ampthill for rearing top quality pedigree stock. Bletsoe Castle Farm was purchased at public auction at a cost, after taking into account subsequent sales, of £112,000. In the 4 years since purchase an additional £22,000 has been spent on providing suitable housing for the farm manager and workers and £10,400, before deducting various improvement and other Government grants of £2,850, on buildings, fencing and equipment to convert it into a first class beef stud farm.

8. The move to Bletsoe Castle Farm has been extremely successful and this is shown in particular by the successes at shows this summer. The herd has had a successful record at shows for a number of years, having won 122 championships and reserve championships in the 10 years 1960/1969. Fifty-six of these have been won in the 4 years since the move to Bletsoe Castle Farm and no fewer than 30 in 1969 alone. Wavendon Beryl an in-calf heifer was the breed champion at the following shows:

Newark & Nottinghamshire,

Devon County,

Three Counties—Malvern,

Royal Norfolk,

South of England,

Royal Show,

Great Yorkshire,

East of England.

This heifer was also inter-breed female champion at 5 of the above shows and was in 5 aberdeen angus groups that won inter-breed events.

9. If Thurleigh is chosen as the third London airport, virtually the whole of Bletsoe Castle Farm will be appropriated for the airport itself in accordance with the plans which have been produced.

10. Bletsoe Castle Farm consists of 460 acres of some of the best well drained, heavier arable land in the East Midlands. Although only 120 acres are used for grass and fodder crops for the livestock, the remaining 340 acres of arable land are essential to the effective running of the farm, both from the financial and employment point of view. In particular the crops grown on this arable land provide straw for the livestock.

11. If Bovril Limited had to find a new farm it would have to be in Bedfordshire or the neighbouring counties for convenience of supervision as the farm is the direct responsibility of the chairman of Bovril Limited, who lives nearby.

* See also p. 2248.

Printed image digitised by the University of Southampton Library Digitisation Unit

12. The stud farm has special requirements as follows:

(1) a higher standard of labour and therefore housing,

(2) fields divided into smaller units and with good enough quality fencing to restrict bulls,

(3) more loose-boxes to hold show cattle, bulls, etc.,

(4) winter housing divided into smaller units,

(5) higher quality offices and facilities for visitors.

Even if a suitable new farm could be found within a reasonable distance, considerable capital expenditure above the purchase price would almost certainly have to be spent to raise it to the necessary standards for a stud farm and there would almost certainly be a break in breeding performance and improvement for 2–3 years after the move, while the necessary improvements were being carried out.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY WING COMMANDER C. G. B. MCCLURE*

1. I am Head of the Department of Flight at the College of Aeronautics. I am a Master of Arts of Oxford University, a Chartered Engineer, and a Fellow of the Royal Aeronautical Society.

2. The College of Aeronautics was founded in 1946 for the purpose of providing advanced scientific courses in aeronautics and other branches of engineering, science, technology and management and for the undertaking of research. The governors are appointed by the Department of Education and Science and the college receives a grant from the government.

3. The college offers a series of one-year and two-year postgraduate courses in a wide range of technological and management subjects designed to enable students to fill senior and responsible positions in industry, transport, government services and research. It also offers short courses in special topics of interest to industry and as an educational service to universities.

4. The teaching departments of the college are aerodynamics, aircraft design, aircraft propulsion, electrical and control engineering, materials, production engineering, flight, mathematics, and the Cranfield School of Management.

5. The total one and two year student population at the college in 1969 is 340, and this figure is increasing at the rate of 20 per cent per year. Of this number, 129 are studying aeronautical subjects. The academic entry qualifications required are high, and in a typical year, were composed of the following:

(a) 134 university graduates,
(b) 22 professional qualifications,
(c) 172 Higher National Diplomas or higher.

6. The average age of Cranfield students is 26 years and they originate from the following sources:

(a) aircraft and associated industries	102
(b) other industry	140
(c) government services	25
(d) the armed forces	30
(e) teaching	8
(f) university and technical colleges	23

7. The students at Cranfield come from many countries. In 1968, the student population of 328 was composed of 261 students from the United Kingdom, 42 from Commonwealth countries, and 25 from foreign countries. The Commonwealth countries were Australia, Canada, Ghana, Hong Kong, India, Kenya, Malaya, New Zealand, Pakistan and Singapore. The foreign countries were Algeria, Burma, Cuba, Egypt, France, Greece, Jordan, Libya, Holland, Nepal, South Africa and the United States of America.

8. A list showing typical occupations of former students of the College of Aeronautics aged 40 years and over is shown at Appendix A.

The Department of Flight

9. The Department of Flight is responsible for the teaching of the techniques used in the flight testing and the flight development of aircraft. In addition to this primary task, the Department undertakes special contract work for the Ministry of Technology. This work includes flight test research and the carrying out of special modifications to aircraft. Recent examples have been research flying for the purpose of investigating the phenomenon of aquaplaning, slush drag research, and investigations into runway braking friction. Special modifications have been the installation of the triplex auto-land system in a Varsity, the Anglo-French navigation-attack system in a Varsity and a versatile auto-pilot computer in a Comet.

10. In addition to flying operations associated with testing and development, the Department undertakes the flying training to Private Pilot Licence standard of selected College students.

11. *Aircraft types.* To fulfil these commitments, the Department operates the following aircraft types:

(a) two Dove 5 aircraft
(b) Morane-Saulnier MS 760 Paris 1A
(c) Hiller 12B helicopter
(d) four Auster Aiglet trainers
(e) three Beagle Pup trainers
(f) Hunter F.6 (operated under contract for the Ministry of Technology)

12. *Airfield and radar facilities.* Cranfield airfield is equipped with the following navigational equipment:

(a) VHF Omni range beacon
(b) Non directional beacon
(c) Instrument Landing System installed on runway 22.

Radar assistance for the separation and navigation of aircraft during flight test operations is provided by the Royal Aircraft Establishment at Bedford to ensure that Cranfield aircraft do not conflict with the Ministry of Technology and Industry aircraft operated by them.

13. The aim of this paper is to show what effects the siting of a major international airport at Thurleigh would have on the present operations of the Department of Flight and to indicate, where possible, what would be required to alleviate these effects.

* See also p. 2248.

Printed image digitised by the University of Southampton Library Digitisation Unit

Airspace requirements of the Department of Flight to meet its allotted task

14. Instruction in flight test techniques is carried out in the college Dove and Paris aircraft. A typical sortie for the Dove varies from 25 minutes to 50 minutes, and for the Paris, from 30 minutes to 1.00 hour. Of these flight times, during normal operations in good weather, approximately 10 minutes is used for take-off and climb out, and ten minutes for the recovery and landing.

15. The seating capacity of the Dove is six students and of the Paris, three students. For the one year and two year courses the normal numbers of students flown during any one laboratory period is 18 for the Dove and 6 for the Paris. This means that each Dove will fly three times and the Paris twice. A laboratory period is normally from 2 pm to 5 pm.

15. The heavy demands of lectures and briefing mean that the time available for flying operations must be utilised with the maximum efficiency but with the present college organisation of afternoon laboratories the task is normally completed in the time available.

17. Experience has proved that to carry out these intensive flying periods the following operating criteria must be satisfied:

Dove aircraft

(a) unrestricted access to airspace up to 12,000 feet,

(b) an unrestricted operating area 30 nautical miles × 60 nautical miles,

(c) rapid recovery when Instrument Meteorological Conditions exist.

Paris aircraft

(a) unrestricted access to airspace up to 30,000 feet,

(b) an unrestricted operating area of 60 nautical miles × 30 nautical miles,

(c) rapid recovery when Instrument Meteorological Conditions exist. This is of paramount importance when the aircraft is operated with a low internal fuel state.

Industrial and university short courses

18. The Department of Flight provides a short course in flight test techniques of one or two weeks duration. Advantage is taken of this facility by the Aeronautical Engineering Departments at all but three of our universities. One of these three would like to send students on these courses, but no further capacity exists within the Department.

19. The total numbers of students involved in these courses in any one year is approximately 200. Short courses are arranged so that flying takes place during the morning and afternoon of seven out of the total of the ten working days of a fortnight's course. A maximum of 72 students can be accommodated in this way. However, this requires the maximum utilisation of both college Dove aircraft, and all pilots and lecturing staff are fully involved.

20. The operating criteria are the same as those in para. 17a. Such an intensive flying programme organised so that a maximum number of students can be flown in the limited time available means that no restriction on operation can be tolerated if the task is to be met.

The ab initio training flight

The ab initio training flight exists to train selected aeronautical students in the rudiments of aircraft handling. A number of these students progress during their time at Cranfield to Private Pilot Licence standard. To fulfil this task the flight operates four Auster Aiglet trainers and three Beagle Pup trainers. In due course, the Aiglets will be completely superseded by the Beagle Pup.

22. Students are programmed for flying when their lecture and study commitments permit. Each training period is of one hour duration and this includes the time necessary for briefing and debriefing. Average sortie lengths are 35 minutes. Because of the work load of the one and two year courses, few students have more than two or three flying periods per week. To achieve continuity in flying training, a proportion of flying instruction is carried out at week-ends for students who are available on these days.

23. *Airspace requirements.* To carry out the flying training of students to Private Pilot Licence standard, the following airspace is required:

(a) unrestricted circuit operation to 3,000 feet above ground level,

(b) an unrestricted operation area 30 nautical miles × 30 nautical miles up to a height of 5,000 feet above ground level,

(c) freedom to carry out cross-country exercises including landing at other airfields when visual meteorolgical conditions exist.

Research flying

24. From time to time the Department undertakes research flying as awarded by contract by the Ministry of Technology. At the present time the Department operates a Hunter F.6. This aircraft is used for the evaluation of braking friction on different runway surfaces. The air space requirements are thus in general restricted to the Cranfield circuit. However, it is necessary on occasions to fly the Hunter for the purposes of air tests, when its airspace requirements become that of the Paris.

25. Recent experiments using a Ministry of Technology Canberra B.2 into slush drag phenomena required the construction of special ponds on the runway. These ponds have been designated by the Ministry of Technology as a National Slush Drag Facility, and from time to time are used by aircraft firms for water drag and water ingestion trials.

26. The Department hopes that, in the future, other contracts and other aircraft will be allocated for research. It is impossible to say what kind of flying this would involve but obviously easy access to unrestricted airspace would be a fudamental requirement.

Printed image digitised by the University of Southampton Library Digitisation Unit

The effect on flying operations of an International Airport at Thurleigh

27. No proposals for the establishment of controlled airspace have yet been made in respect of Thurleigh by the Roskill Commission. Therefore, it has been necessary for the Department to make certain assumptions in respect of controlled airspace when considering the possible effects that this airfield would have on our future flying operations. These assumptions are as follows:

(a) that a Control Zone of similar size and shape to that existing at London (Heathrow) would be established.

(b) that a Terminal Control Area bounded by a line—Litchfield, Peterborough, Clacton—extending from 1,500 feet to 25,000 feet would be established.

(c) that an airway Brecon: Daventry VOR would be established.

These assumptions are shown on the map at Appendix B.*

The effects of this controlled airspace on college flying operations

28. **The Dove and Paris one- and two-year courses**

(a) *Flying time*

A study of the map at Appendix B will show that free airspace would not be available to College aircraft at a distance of 25 nautical miles to the west and 40 nautical miles to the east. This means that additonal flying time would have to be spent on climb out and recovery through a designated corridor. Although the uncontrolled airspace to the west is closer to Cranfield, the existence within it of the military airfields of Abingdon, Benson, Upper Heyford, Brize Morton, Fairford, Kemble and Little Rissington does not make it a very suitable area for flight test operations. The total area available is small, and the congestion expected within it would make flying operations of the type carried out by Cranfield aircraft unsafe without strict radar control. However it would be possible for Cranfield to operate in this area. Climb out and recovery would add 30 minutes flying time to each sortie.

29. As this area is unlikely to prove suitable for flight test operation, all flying will have to take place to the east of Cranfield. The 40 nautical miles distance to uncontrolled airspace will add 40 minutes flying time to each sortie. The effects of a 30 minute and 40 minute increase in flying time on typical afternoon laboratory periods can be seen from the chart at Appendix C.† In the chart, two typical sortie profiles are shown. The first shows a sortie of 20 minutes duration, and the second, a sortie of 40 minutes duration. Assuming that no weather minima are imposed on the Department when operating in controlled airspace and that access to the unrestricted areas is direct, the chart shows that the additional periods of 30 minutes and 40 minutes make it impossible to achieve a normal three sortie pattern in an afternoon's laboratory period.

30. **The operating costs of the increased flying time**

(i) *Dove*

Under present conditions, the two College Doves cost approximately £84 each per hour to operate. Last year, 116 students were flown in the Department Doves. This is a cost per student of £125. It is estimated that the additional flying time required for climb out and recovery in controlled airspace would approximately double the Dove flying hours per year. Operations to the west would increase operating costs by 66 per cent, and the east by 75 per cent. This means that the cost per student would be £210 and £225 respectively.

(ii) *Paris*

The MS 760 Paris, costs £167 per hour to operate. With present flying commitments, this is approximately £8,000 per year. With the high cruising speeds possible with this aircraft, it is estimated that the increased fuel consumed would only increase costs be approximately 50 per cent using either area. This would increase the yearly operating cost to £12,000. The cost per student is £230 per year; an increase of 50 per cent would make the cost per student per year £345.

31. **Industrial and university short courses**

(a) *Flying time*

The maximum utilisation of Department aircraft and personnel enables 72 students to be flown during a two-week course. Any increase in flying hours would mean that this task could not be met. The maximum number of students that the Department could train with a 30 and 40 minute increase in flying time per sortie would be 48. In financial terms, college income per short course student is £50. A decrease of one-third of student numbers would mean an annual loss of revenue of £4,000.

(b) *Operating costs*

A short course Dove student costs £40 per head per course. This figure includes the total operating cost for both Doves. If, for reasons of policy, it were decided that the numbers of short course students could not be reduced, then for the Department to meet its commitments it would be necessary for a further Dove aircraft and its associated instrumentation to be purchased. The operating cost of three Doves with the same number of students and including an additional pilot's salary, would increase the cost per student to £60 using the area to the west and £62 using the area to the east. If an additional lecturer at a gross annual salary of, say, £3,000 per year were required, this would increase student cost per head by a further £12 to £72 and £74 respectively.

(c) *Total increased operating costs for one- and two-year students and short course students*

The increase of £20/£22 respectively per short course student and the increase of £84/£100 for long-term students would add to the total operating costs of the present establishment by £14,750/£15,250 per

* Copy available for inspection, by arrangement, at the offices of the Commission.

† p. 2052.

Printed image digitised by the University of Southampton Library Digitisation Unit

year. This is composed of £20/£22 × 250 for short course students, and £84/£94 × 116 for long-term students. However, because of the lack of time available, the task could not be met with the existing establishment. It would be necessary to appoint an additional lecturer at a gross annual cost of £3,000 and to purchase a Dove and its necessary equipment at an estimated cost of £20,000. This would mean that in the first year of operation, as a result of the airspace restrictions, the cost of the college would be £37,750/£38,250, and thereafter £17,750/£18,250 per year. When this cost is combined with that of the Paris, the total extra costs in the first year are £41,750/£42,250 and thereafter £21,750/£22,250.

32. **The ab initio training flight**

With the restrictions that would be imposed by a Control Zone and a Terminal Control Area on the movements of light aircraft, it is considered that the only flying that would be permitted would be circuit training. This assumption is based on the restrictions that are imposed upon Northolt, an airfield whose situation to Heathrow is similar to that of Cranfield and Thurleigh. This would mean that all "out of circuit" work vital to the training of a competent private pilot such as spinning, forced landings, and navigation, could not be carried out without great difficulty, because the time necessary to fly out to unrestricted airspace would take up the whole of a student's allocated instructional period. Therefore, Private Pilot Licence training at Cranfield would have to cease.

33. **Research flying**

Ministry of Technology contracts are a vital part of the Department's work. Not only do they give valuable experience in the maintenance of complex aircraft to ground personnel, but also the undertaking of research plays a fundamental part in keeping Department staff abreast of the important developments that are taking place in aeronautics. If the Department is unable to operate modern military aircraft, as and when required, it will be quite impossible for the Department to carry out any more research work of this kind. This can only have a detrimental effect on the reputation of the Department as a teaching establishment.

34. **Airfield and radar facilities**

In the absence of published information on the third Airport's controlled airspace, and particularly its holding areas, it is impossible to say what would happen to the present navigational equipment at Cranfield. It is highly likely however, that the college would be unable to utilise either its VOR or NDB or the ILS equipment installed on runway 22. The closing of the Royal Aircraft Establishment at Thurleigh would mean that radar assistance for the separation and navigation of college aircraft during flight test operations would no longer be available. It is fundamental to the safe operation of aircraft engaged on flight tests that radar surveillance be available at all times. Therefore, the closing of RAE Thurleigh would mean that the college would be obliged to obtain its own radar facilities, necessitating additional capital expenditure.

Conclusion

35. The Department of Flight fulfils a vital commitment to aeronautics in the United Kingdom by the training of students in the techniques in flight testing and development of aircraft. Its present organisation is such that it is able, without undue difficulty, to fulfil this task. The siting of an international airport at Thurleigh would impose very severe restrictions on the operation of College aircraft. The Department would be unable to carry out the training of one- and two-year students and of the short course students without a fundamental reorganisation of the college and of vastly increased operating costs. Further, it would be necessary to virtually cease the flying training of aeronautical students and to carry out research contracts for the Ministry of Technology.

Therefore, the College of Aeronautics will be very severely hindered in its operations if the third London airport is sited at Thurleigh.

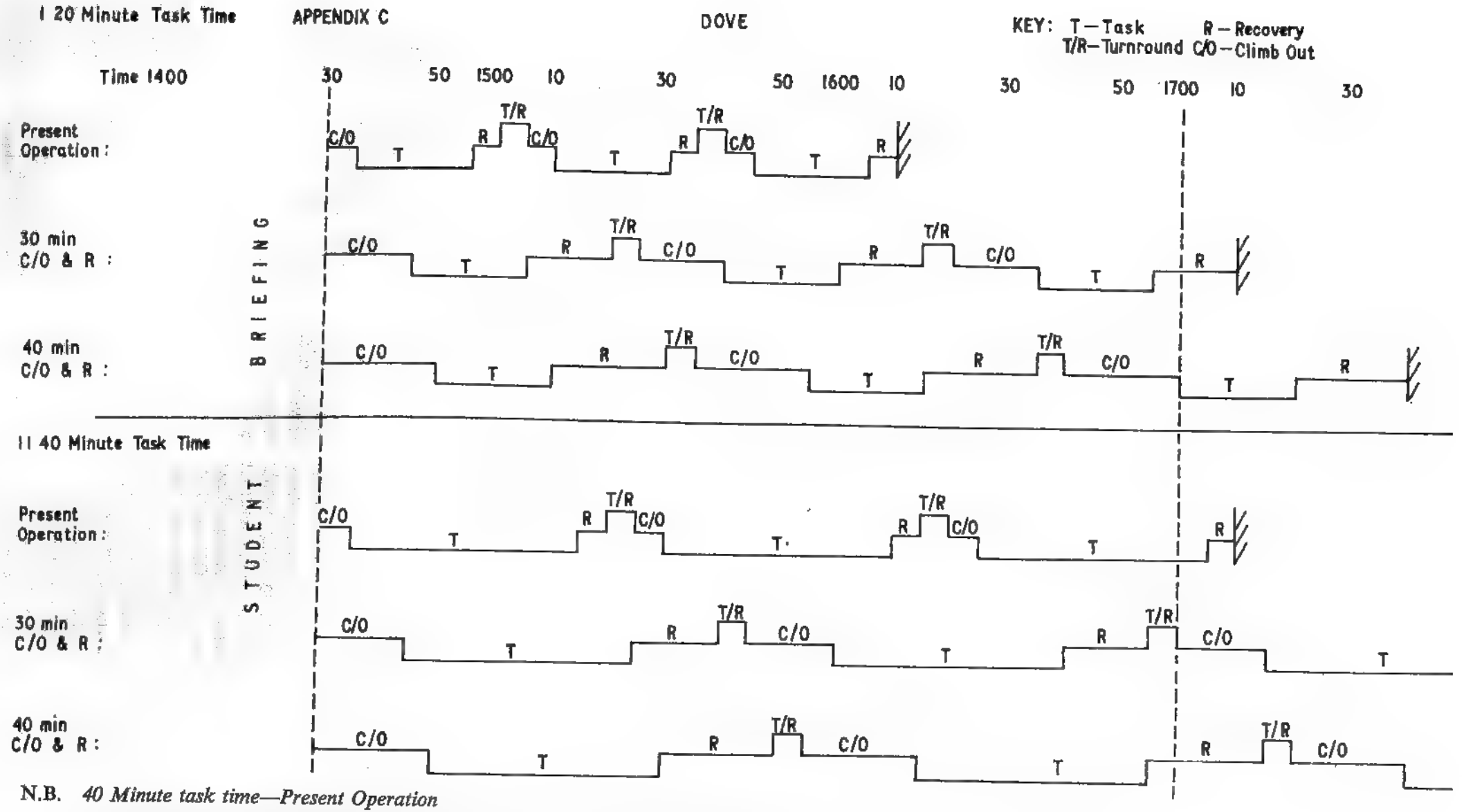
APPENDIX A

Former Students of the College of Aeronautics, aged 40 and over

Name	*Year*	*Present Appointment*
Armitage, P. J.	1949/51	Head, Test & Evaluation Branch, National Aeronautics and Space Administration, Manned Spacecraft Center, Houston, Texas.
Erb, R. B.	1952/54	Assistant Chief (Lunar and Earth Sciences Division) NASA, Houston, Texas.
Fozard, J. W.	1948/50	Chief Designer (Harrier) Hawker Siddeley Aviation Ltd, Kingston, Surrey.
Hearne, P. A.	1947/49	Director and Joint General Manager, Elliott Flight Automation, Kent.
Hinchliff, S.	1951/53	Managing Director (Director on the Board of the Dowty Group), Dowty Seals Ltd, Glos.
Hooper, R. S.	1946/48	Executive Director and Chief Engineer, Hawker Siddeley Aviation Ltd, Kingston, Surrey.
Rogers, V. A. B.	1946/48	Chief Designer, Westland Aircraft Co Ltd, Somerset.
Rose, R. G.	1949/51	Technical Asst for Apollo to Flight Operations Director, NASA, Manned Spacecraft Center, Houston, Texas.
Stanton-Jones, R.	1947/49	Managing Director, British Hovercraft, Isle of Wight.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



N.B. *40 Minute task time—Present Operation*

Where an afternoon laboratory does not finish until after 1700 hours, Air Traffic Control remains open for the additional .05 minutes or 10 minutes required.

Appendix C. Effect of 30 min. and 40 min. in flying time on typical afternoon laboratory periods.

(Wing Commander G. C. B. McClure, Beds. Airport Resistance Assn.)

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. J. G. HARRIS*

1. I have been actively engaged in farming since leaving school at the age of 16 and have 41 years' practical farming experience. I own and farm some 840 acres at Newton Bromswold and I am tenant of some 400 acres of land at North End Farm, Bletsoe.

2. I am very strongly opposed to the siting of the third London airport at Thurleigh on three very major grounds. The first is that the whole of North End Farm lies wholely within the perimeter of Thurleigh site (a); the second is that some three-quarters lies within the perimeter of Thurleigh site (b) and in either case both houses and buildings will be taken. It is obvious therefore that were the airport to be sited at either Thurleigh (a) or Thurleigh (b) North End Farm, Bletsoe, would cease to exist as a unit. This farm is owned by a family trust, the trustees being Mr. James Robinson, an agricultural valuer, and Mr. R. G. Medley, the family solicitor, the beneficiaries being my two daughters; the third is that my farm at Newton Bromswold will be seriously affected by urbanisation, one of the proposed new towns in the Raunds area being about one mile only from my farm and I know from bitter experience the difficulties of farming in the neighbourhood of a large town due to trespass.

North End Farm was purchased by my father, James Harris, in 1933, he having been a tenant thereof from 1931, and it is true to say that in 1931 the farm was in a dreadful state. It is today in very good heart due to the efforts of my father and myself over the years, the land being extremely clean and weed free. The whole of the land has been tile and mole drained and produces more than the national average. My capital investment in the North End Farm during the last four years amounts to £21,000. North End Farm is a listed building.

North End Farm

North End farmhouse is not at present occupied by me or a member of my family but might be occupied by my daughter when she is married. There are three cottages occupied by farm workers which have been modernised and are in very good order with bath, WC, main water, main electricity, bathroom with drainage to septic tanks. One cottage is brick built and two are lath and plaster but all are in very good condition. I recently spent £1,200 in modernising the cottage in the village of North End and over the years I have spent considerable sums on the cottages and farm buildings.

There is a Dutch barn and bullock yard in very good condition although built about 1931 and a building housing a drier also used for grain storage also built some four years ago. I produce and fatten from North End Farm anually approximately 200 cattle and 500 lambs. My crops comprise the usual cereals namely wheat, barley and oats, with occasional clover in the normal rotation. I also grow kale for feeding store sheep with a view to late sale.

I am of the opinion that this farm represents a very good holding in a very high productive state.

I employ at North End Farm two tractor drivers and one odd man plus additonal help from Newton Bromswold as and when required. This system of course works both ways and I visit North End Farm, Bletsoe, frequently, on occasions as many as three times a day according to the season.

The land is about one-third a light easy working fertile loam the remainder being a useful medium loam on clay subsoil.

Newton Bromswold Farm

The land is generally a medium loam on a clay subsoil.

3. It appears to be apparent to me that in the event of the Airport being sited at Thurleigh not only will North End Farm go but the farm at Newton Bromswold will suffer seriously, as I have previously stated, from urbanisation. In view of the fact that I have been closely connected with North End Farm, Bletsoe, I will suffer greatly at the loss thereof as to see it go would destroy a major part of my life's work. I am now 57 and have therefore been closely connected with North End Farm for 41 years.

* See also p. 2248.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. O. M. POZNIAK*

1. I am well acquainted with the Bedford and Thurleigh area as I was engaged on research at the College of Aeronautics at Cranfield between the years 1954 to 1957 and I joined the Aircraft Research Association in 1959 since which time I have lived in Bedford. I am an Aerodynamicist and a Master of Science of the University of London.

2. I am particularly concerned as to the effect that the siting of an International Airport at Thurleigh (a) or Thurleigh (b) would have upon sailing at Grafham Water of which sailing club I am a member. Membership of the club is at present about 1,700 of which 250 are junior members and there is a block membership of 120 of educational and service institutions. In 1968, 584 dinghies of many classes were berthed at the club, 58 keelboats consisting of Tempests, Flying Fifteens and Dragons and 54 dinghies belonging to educational authorities. Also in 1968, 201 yachtsmen have sailed on a temporary basis and the Club is open to winter associate members.

Grafham Water extends over an area of 3½ by 1½ miles and is therefore a very large and fine stretch of sailing water. It is certainly unique in this part of central Britain in permitting Olympic type courses to be set. Since its creation the sailing facilities have been appreciated by members who are drawn from far afield in this land-locked area and there is a waiting list for membership. There are class and handicap races throughout the year, in summer on Wednesdays, Thursdays, Saturdays and Sundays and in winter out of season on Sundays. In summer there are seven starts for fifteen class and one handicap race and additional races for juniors.

A number of open meetings, area and national championships and Olympic trials are held during the period from March to October.

3. **Yacht racing rules and dependence on aural signals**

In yacht racing, strict compliance with the rules (these are standard rules which are accepted internationally) is essential, not only to ensure boat safety but to turn what would be a chaotic scramble around marks into a game of skill, strategy and tactics. In the following some of the situations in which sound signals or communications are either customary or required by yacht racing rules are listed.

Rule 35. Hailing. A right of way yacht should hail when making an alteration of course which may not be foreseen by the other yacht or when claiming room at an obstruction.

Rule 36. A right of way yacht on starboard tack customarily hails a port yacht on a collision course which should acknowledge the hail. This is a common sense precaution particularly when close-hauled as sails tend to obscure vision between approaching yachts.

Rule 38.3 Hailing to curtail a luff.

Rule 42.1d Hailing when luffing to windward of a mark.

Rule 43.1 Close-hauled hailing for room to tack at obstruction.

Rule 43.2 Responding.

Rule 43.3 Limitation on right to room.

Rule 45.2 Anchored, aground or capsized.

4. It is important to realise that on some of the occasions it is essential that hails should not only be audible but also intelligible and that precise timing is required (often involving a period of a few seconds). Sound signals in the form of a gun or hooter are used to draw attention to the warning signals which precede the start and at the start itself, a sound signal is also used to warn premature starters whom the race officer subsequently endeavours to identify by means of a loud-hailer. In addition sound signals are used for general recalls after a faulty start, postponement or shortening of the course and at finish. In theory sound signals also are only used to draw the attention of competitors to the visual signals. In practice the sound signals are frequently the only ones which are noticed by the majority as for example when visual signals are obscured through the proximity of other boats at a crowded start line or cannot be distinguished through distance or bad visibility.

In addition the loud-hailer is used by the race officer who can spot boats in difficulties from his vantage point which would be unnoticed at water level, to direct the rescue launch. This is particularly important at Grafham where water temperature falls to very low level out of season. Sailing is enjoyed by people of all ages and it is imperative to avoid exposure to young and old people for any length of time as this could be fatal.

Loud-hailers are also used on occasions to pass messages to members in the Club grounds who are involved in the difficult organisation of large race meetings and also in emergencies.

5. **Noise level and interference at Grafham which would result from the location of an international airport at Thurleigh**

The peak noise level at Grafham for the proposed siting of an airport at Thurleigh would frequently reach or exceed 100 PNdB and Thurleigh (b) 95 PNdB. The noise level in the vicinity of the clubhouse and usual starting line located on the southern shore would be high, the furthest north western

* See also p. 2248.

Printed image digitised by the University of Southampton Library Digitisation Unit

corners would experience noise levels of the order of 75 PNdB.

Intelligibility of speech in the presence of a background noise depends on a number of factors but it is possible to conclude that intelligibility of speech is lost completely if the background noise exceeds the speech level by 12dB (D. W. Robinson NPL Aero report Ae 39, March 1969).

This suggests 75 PNdB at fairly close quarters and 65 PNdB at normal hailing distance of 40–48 ft. Closing speeds of sailing boats approaching close hauled depend on the type of boat and wind strength but are commonly of the order of 5–15 ft/sec, so that the period in which a hail is intelligible to leave sufficient time to respond is quite short. Aircraft noise is liable to be high over a period of about 30 seconds and hence situations in which an effective hail would be impossible are liable to arise frequently. Peak noise conditions would not only make hails unintelligible but also inaudible at a distance this could be at a noise level in excess of 85 PNdB. At best this would lead to a situation in which a right of way yacht would be obstructed when sailing rules could not be obeyed, at worst it would lead to dangerous and expensive collisions.

The only benefit would appear to be the drowning of the ensuing recriminations and "nautical language" by the noise of the receding aircraft.

The clubhouse lounge has large sliding single glazing windows and a noise level out of doors of 80 PNdB or above would seriously interfere with lectures or discussions with windows open, anything from 90 above would interfere with windows shut.

6. Grafham Water is some one and a half miles wide by three and a half miles long and covers about 1,800 acres and is the only stretch of water in this part of the country upon which can be held Olympic Trials. If racing becomes difficult or impossible the enjoyment of the majority of the members of the sailing club will be lost, and I feel that a great deal of the attraction will also be lost as competition brings zest to sailing as opposed to just pottering about. In addition, the instructional facilities provided by the education committee for school children will be affected and possibly the enjoyment of the vast number of people who come to fish or just picnic.

The open meetings attract helmsmen from all over the country, in 1968 the climax of the 1968 season was the 174 entries for the Fireball open meeting. The club has a number of non-racing members who enjoy the peace and quiet of the water and portable radios are not allowed in the clubhouse or grounds. The club has also a full season of social events. In addition to the sailing club there is an Education Centre at Grafham at which residential courses are held for school children, a fishing lodge and fishing and picnic areas open to the public and part of the water has been set aside as a bird sanctury.

From the above it is apparent that the majority of members enjoy the keenness of competition yacht racing.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. R. M. DENNY*

I have had a varied career. This started first as a Radar Technical Officer in the Royal Air Force especially concerned with navigational aids (landing aids) and the control of air traffic. Later I served as Assistant Airport Manager of Heathrow airport for three years. Comparatively recently I served with NATO for six years and was again closely associated with electronics and advanced navigational aids. I have been an associate member of the Institution of Electrical Engineers, an associate Member of the British Institution of Radio Engineers and an associate of the Royal Aeronautical Society. I am now employed in an administrative capacity.

I have used civil airlines very considerably and during the last ten years have worked in ten different countries and visited a further eight on duty or on holiday. My life-time interest in aviation has caused me to observe airline and airport development in all these countries.

Mr. Gilbert Beazley mentioned in his evidence† the fear of " airport mania". This mania is very real and the Commission should not allow the mania to influence their thinking. The Commission is being urged by the British Airports Authority to accept that there is an urgent requirement for a third London airport. This is in itself doubtful, but in considering whether the airport should be at Thurleigh I hope that the Commission will also consider what the airport should be and for whom it should cater. It is absolutely essential to examine its use.

Basically airline traffic is divided into short haul and long haul. There is a limit to the extent that long haul traffic can develop in the immediate future. Airline fares are little if ever reduced and in fact the trend is always the other way. It will be noted that BEA are presently asking for a 7 per cent increase even on domestic flights. But even if one assumes that long haul fares will be maintained at their present level for the foreseeable future, the present economic growth of 3 per cent—5 per cent per annum means that it will be 20–25 years before people will be able to fly, for example to America, in the same way as they fly to Europe at the moment. We know little now of what conditions will be like in 20–25 years time. Only 25 years ago Mr. Arthur C. Clarke, the eminent writer on space travel etc. and a colleague of mine in the Royal Air Force during the war years, was forecasting that men would land on the moon by the 1970s. Few took him seriously. Perhaps the Commission could ask his advice on what is likely to be happening in the 1990s and even the 1980s before they plan an airport at Thurleigh? I hope that the British Airports Authority will not pretend that long haul traffic would swamp even one of their airports within the foreseeable future.

The British Airports Authority should therefore plan to put all the long haul traffic on one airport; I am sure that the Authority would not deny that either Heathrow or Gatwick airport would be sufficient for this traffic for the next 20 years.

We therefore have to look at the problem of short-haul traffic which forms the main bulk of airline flights. Passengers on these flights are going to want to travel as quickly as possible from one place to another. Railways are developing again to meet the competition of flying and with the increased speeds they are planning, they will be real competitors over journeys of up to 200 miles. It is worth noting that the British Airports Authority talk of rapid rail links to the third London airport to try and persuade people that distance from London is of little object. They forget that if a fast rail—even mono-rail—link is possible between London and Thurleigh, it is much more likely between London and Paris. The Channel Tunnel is planned to be finished at about the same time as the third London airport. Have the British Airports Authority taken account of the tremendous effect that fast through trains to Paris, Brussels etc. will have on flights to these cities? When the tunnel opens there is unlikely to be any further growth in air traffic to the north of Europe for many years and there could well be a decline in air traffic for a while. I hope that the British Airports Authority will state what percentage of traffic is accounted by flights to Paris, Brussels, Amsterdam etc. I hope that they will state the effect they expect the Channel Tunnel to have on this traffic and the development of it. It is undeniable that if the third London airport is sited at Thurleigh, people from London will not travel from it by air to northern Europe. There is no point in travelling 50–60 miles away from your destination in order to fly all the way back! People in the South Midlands and East Anglia might use Thurleigh for this travel but the Commission are charged with finding a third London airport, not one to serve anywhere else in England. Moreover, what do the airlines say about having to fly an extra 50 miles or so—unnecessary miles—on the majority of their flights?

France is planning its third and fourth airports within ten miles of Paris. In fact no country in the world is planning its airports so far from its cities as is Great Britain. The Americans built Dulles Airport near Washington and are finding it a white elephant because it is too far away. Is the Commission pre-

* See also p. 2249.

† p. 2060.

Printed image digitised by the University of Southampton Library Digitisation Unit

pared to plan Thurleigh as a white elephant? The tax-payers sincerely hope not. Why should Britain be the only country to be planning an airport up to 60 miles from the city it is to serve. I ask the Roskill Commission not to allow the British Airports Authority to make this tremendous mistake.

The British Airports Authority has undoubtedly considered the likely development for short haul traffic But has it come to the right conclusions? The airline with the shortest time from city centre to city centre is going to be the one which attracts the traffic. Are airlines going to be keen to come to Thurleigh for short haul London origin traffic? The answer is "NO". They will resist moving to Thurleigh even more than they are resisting going to Gatwick. In the 7 years from 1961–1967 traffic at Heathrow grew by over 75,000 movements per annum. Traffic at Gatwick during the same period grew by less than 10,000 movements per annum. Moreover the rate of growth at Gatwick was slower than at Heathrow being 38·2 per cent as against 51 per cent respectively. The airlines do not like passengers having to travel even 30 miles to an airport. What are they going to say to a 55 miles journey?

Most countries have recognised that development is aimed towards short or vertical take off and landing aircraft and are planning their airports accordingly. The Dornier VTOL has been designed as a passenger aircraft to carry 64 people; normal development of this aircraft will probably allow it to carry 120. Without doubt the Americans will not allow the German challenge to pass unnoticed, and it will not be long before VTOL jumbo jets are available. Airlines are then going to be looking for landing sites as near to city centres as possible. The noise pattern for a VTOL is such that it is possible to screen the airport so that all save those in the immediate vicinity have little more noise than is experienced within ten miles of any normal airport. The airlines are certainly not going to be looking to Thurleigh for this airport near London. They would probably have been looking at Croydon if the Government had not mistakenly decided that it would no longer be needed. However there are other spaces which could be turned into airfields near London and I have no doubt that in a few years time, another Commission such as the Roskill Commission will be looking for a suitable site. It would be much easier for the Roskill Commission to consider this solution *now*.

One can even foresee the day when Heathrow might be the short haul VTOL airport and Gatwick be reserved for long haul traffic. Statisticians using the same type of predictions that they have used for the growth of air traffic, could well predict that Heathrow will become the VTOL short haul airport for London within the next ten years or so. They would look at the history of Heathrow airport which is an interesting indication of "planned" prediction. It was originally a small semi-private airfield and was then taken over by the RAF during the war. After the war it was designed as London's airport. It was decided that because of the likely growth of traffic and the foreseeable design of aircraft it would need to have six runways arranged in two parallel and overlapping triangles so that aircraft could always land and take off as near as possible into the wind. It was also decided that three other runways would probably be required and it was intended that they should be built in the form of a triangle on the other side of the Bath road. Further house building was sterilised so that these runways could be built if necessary. In 1947 I attended a lecture by Mr. Peter Masefield, now Chairman of the British Airports Authority, in which he expressed no doubt at all that all nine runways would be required. However, by 1950 the idea of the three extra runways had been abandoned on the basis that the six runways could deal with all the aircraft which it was possible to handle in the air space around the airport. What is the position now? Effectively only two runways are used and the British Airports Authority has decided that for future airports only parallel runways are required. For Thurleigh, of course, they seem to assume once again that it would be possible to deal with aircraft landing and taking off on four runways but most airport authorities in other countries would disagree with them.

Statisticians have taken actual figures of aircraft development and traffic development from the past and projected these forward to prove the necessity for a third London airport. What would happen if they took the requirement for runways at London airport and projected these? In 20 years it has gone from 9 runways to 6 runways to 2 runways. It would be a sensible projection to assume that within the next 10–15 years no runways will be required, i.e. there will be VTOL aircraft. The British Airports Authority say that Heathrow is nearing capacity. This is only true of peak hours and peak days. Are the comparative few who wish to travel at these times to be allowed to dictate the requirement for a new airport which would cause discomfort to many more than this few? The charter companies have learned the lesson of off-peak travel and plan their flights to take advantage of these periods. The main airlines have already started to do this rather than leave Heathrow and move to Gatwick. I sugest that they will do this still more in the coming years and on this basis Heathrow is working at less than 50 per cent capacity. As modern electronics aids increase safety in landing and aircraft are able to land and take-off at closer intervals, the capacity of Heathrow will increase accordingly. And what of Gatwick? It is operating at less than 10 per cent of capacity. The British Airports Authority should look to increased efficient use of their existing airports before planning a new one. An airport planned to cater for peaks in travel is an economic nonsense.

I hope that the Commission will ask why the British Airports Authority decided that another London airport is necessary and have not accepted some of the more amenable solutions. The British Airports Authority is responsible for four airports. Unless these develop extensively or other airports are put under their authority, the Commission will stagnate. Ambition exists in every successful executive but the Authority has no competition so that the ambition of their executives must turn towards expansion. The

Printed image digitised by the University of Southampton Library Digitisation Unit

Roskill Commission has the duty of determining that these ambitions are not satisfied by the building of a needless airport.

Unless the Authority can satisfactorily answer all these points, then certainly no airport will be required at Thurleigh by the 1980's. The Commission is unfortunately being asked to consider plans for a very costly white elephant which would disrupt the lives of hundreds of thousands of people. I hope that they will reject all the inland sites for a third London airport and in fact reject the need for this airport at all.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. T. G. ELLIOTT*

1. I am a farmer and agricultural contractor now being 41 years old. I worked with my father on a 100 acre holding from leaving school but it is true to say that I have been connected with farming from when I started to walk as, being a farmer's son, there were always plenty of odd jobs to do in and around the farm. I started in business on my own 17 years ago and have built my present farming and agricultural contracting business literally from owning one pig from when I started. I was born in Keysoe and married 17 years ago when I bought a cottage in Keysoe Row. I started building up my agricultural contracting business about 14 years ago and moved to Cateran Farm four years ago when I had the farmhouse built, as there was no farmhouse there when I purchased. I have two sons aged 13 and 11 and have always hoped that one son would carry on the agricultural contracting business and the other son the farm. Both have already shown an interest in farming as they already look after a few pigs on their own. My wife comes from Felmersham and is a farmer's daughter and therefore, like me, very attached to the farm.

2. **Thurleigh (a)**
Both Cateran Farm and College Farm lie wholly within this site and I own College Farm comprising some 90 acres. Cateran Farm is also owned by me and on it stands the farmhouse which I built in eight acres of land on which also stands the workshop and buildings from which my agricultural contracting business is carried on. I rent an additional 62 acres of glebe land, 25 acres of which I rented 12 years ago, the remaining 37 acres being taken over by me last year from my father who was the previous tenant.

3. **Thurleigh (b)**
Both farms lie wholly within the perimeter.

4. **My agricultural contracting business**
This represents a comprehensive agricultural contracting business which I have built up over the last 14 years. I have some £30,000 value of equipment, namely two big Ransome combines, three crawler tractors, one four-wheel drive, one Landrover, ploughs, drills, sprayers, etc. I own all necessary equipment to deal with all types of contract farming. I employ usually one full time assistant and one or two casual helpers according to the season.

5. **Farming activities**
My 160 acres of my own and tenanted land grow the usual cereal crops in rotation. There is some acreage of potatoes and brussels. There is no grass on either of the farms.

I own one modernised farm cottage at Keysoe Row and there is a Dutch barn and two grain stores at College Farm in very good condition. The workshop at Cateran Farm was built only four years ago where I also have a grain store used for storage only. I have put a lot of work into College and Cateran Farms of the nature of hedging and ditching, the filling and levelling of ponds and generally bringing areas of land back into active cultivation. I purchased College Farm in July, 1968. I look after my own 160 acres between contracting work which is my main activity.

6. I had always hoped to grow, that is to obtain more land and more contracting work, and my great desire is to stay put. I have built up my agricultural contracting business from nothing in 14 years into a business which carries out agricultural contracting work within a 20 to 25 mile radius of Keysoe, mainly through recommendations. Contract farming is a very personal business and it would not be possible for me to move to another area and to hope to be able to carry on where I leave off. I am therefore utterly opposed to the siting of an Airport at Thurleigh, as it would destroy my life's work and render my future bleak. Both my wife, my family and I are very attached to our home and to see this go would create great hardship.

---

* See also p. 2250.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association and Pavenham Parish Council

SUBMITTED BY MR. G. C. W. BEAZLEY*

I am a fellow of the Royal Institution of Chartered Surveyors and a fellow of the Chartered Land Agents' Society. I am in general practice as a chartered surveyor and land agent and am responsible for the management of various estates totalling some 12,000 acres in the counties of Bedfordshire, Huntingdonshire and Buckinghamshire, and am also responsible for general professional work connected with agricultural properties in these counties. I am a member of the Bedford Rural District Council and have represented the parish of Pavenham since 1958. I am a member of the Bedfordshire Agricultural Society and acted as that Society's Secretary from 1961 until 1st January, 1969. In March 1969 I agreed to act as Honorary Secretary of the Bedfordshire Airport Resistance Association and have administered the affairs of the Research Committee of that Association personally and arranged for the overall supervision of the administration of the Association as a whole.

My evidence will be presented in two parts:

(a) Bedfordshire Airport Resistance Association

1. Following press speculation that Thurleigh might be selected by the Commission to the third London airport as a possible site I became concerned as to the likely effect that an airport would have on the agriculture of North Bedfordshire, local industry and urban and rural environment in a district which I have known intimately since 1949 and am anxious to see prosper and develop without destroying its charm and character and particular local environmental characteristics. I accepted the post of Honorary Secretary of BARA as I felt that if the case against siting the airport in North Bedfordshire was to be fairly placed before the Commission on the third London airport it was essential that all organisations and individuals opposed to the project should unite to present a straightforward and objective case thus avoiding duplication of effort and wearying the Commission with unnecessary repetition. By August 1969, BARA had 5,500 paid up members but enjoys the support of many thousand more. We have not collected many signatures to petitions or other inconclusive methods of obtaining views but we have worked closely with parish councils of whom it may be fairly said that they represent the views of the vast majority of the people in the area. To test urban public opinion BARA volunteers stood on Bedford Market Square on Saturday, 9th August, and 600 new supporters were enlisted.

2. We therefore collected all the relevant information from parish councils in the area within a 16 mile radius of Thurleigh and from organisations and individuals, and we then sought expert evidence on the sociological effects likely to result from the building of an airport in our midst. We further investigated the effect of noise and of potential accident rates, and this evidence will be placed before you by the expert witnesses. We have also been in constant touch with the County Councils and local statutory boards and undertakings such as Water Authorities, River Boards, etc. to ensure that all relevant evidence was presented before you at this enquiry or at Stage III. Throughout our investigations we have tried to study in depth both the advantages and disadvantages of the Thurleigh site and at our fortnightly meetings of the Research Committee we have called in various experts to enlighten us on aeronautical matters, civil engineering matters etc.

3. As Secretary of BARA I have come in contact with many people in both towns and villages throughout Bedfordshire, North Buckinghamshire, Northamptonshire and Huntingdon and Peterborough and the overwhelming impression is one of opposition by the community as a whole to the siting of the airport at Thurleigh. The opposition in rural areas is practically one hundred per cent, but in the towns in Huntingdonshire, particularly Huntingdon itself there has been a feeling that an airport might improve the employment prospects in the district. This view is expressed by a minority who see in an airport a chance for improved job opportunity. This is an understandable and natural viewpoint and has been expressed quite clearly by trades unions in the Huntingdon area where there does seem to be a certain employment problem aggravated by the introduction of a Greater London Council overspill scheme for Huntingdon without ensuring the adequate development of industrial activity in that town and to a lesser extent St. Neots. The problem has been further aggravated by the Board of Trade's restrictive policy on issuing industrial development certificates and office development permits in these two towns. Even where industrialists have been attracted to Huntingdon they find it difficult to expand beyond their initial development by the difficulty of obtaining Board of Trade permission for an industrial development certificate. However in viewing the unemployment statistics for Huntingdon and St. Neots it is quite clear that this is merely a marginal problem which would be solved rapidly by a minor expansion in industrial activity which will probably result from the proposed expansion of Peterborough. There is, however, very considerable pressure by industry and commercial interests generally to move into the area

* See also p. 2250.

Printed image digitised by the University of Southampton Library Digitisation Unit

of Bedford, Huntingdon and St. Neots and the number of industrial development certificates and office development permits applied for and granted and refused should be obtained from the President of the Board of Trade to confirm the evidence that there is no lack of interest in development in the area and hence no reason to be concerned about future job opportunity.

4. BARA has from March until September arranged meetings in practically every affected area and arranged for people to address these meetings who have studied the effects of an airport on the particular areas concerned. Generally the meetings have been well attended and intelligent discussion of the problem has taken place. BARA has attempted to express the reason why an airport should not be sited at Thurleigh. It has never lost sight of the possible advantages to the area of an airport or the advantages in the national interest, but having considered all the factors the overwhelming sociological evidence is against an airport at Thurleigh or indeed any inland site, both in the local and national interest and this view has been overwhelmingly expressed by the population of the area at these meetings through the local press and in private conversation with individuals. The spontaneous rise of placards and notices on farm homesteads etc. as soon as the shortlisted sites were announced indicates the trouble people are prepared to go to, to defend their land and homes.

5. From my contacts with the people of North Bedfordshire affected by the Thurleigh third London airport proposal considerable concern has been expressed on the effects of the community over the inevitably long period of construction and development of the airport. These fall into three main categories:

(a) Concern is expressed that the present state of the county roads are such that the additional and undisciplined traffic of contractors, particularly gravel lorries, etc. would cause complete disruption to the local amenities. Bedfordshire roads are some of the worst in the country and quite incapable of taking the additional traffic. The County Surveyor has expressed grave concern about the state of the county roads as recently as June 1969 and the lack of funds to maintain them. Once you leave the main classified roads for the minor roads even although they may form through traffic routes such as the east-west route from Lavendon through Harrold, Odell, Sharnbrook, Riseley, Kimbolton to the A1 near Huntingdon or St. Neots, you will find that these roads have no foundations whatsoever, but successive coating of tar-spraying and the occasional light dressing of tarmacadam, but if you break these roads open you find that under three to four inches of surfacing the dust and dirt of ages. As soon as these roads are subjected to any degree of heavy traffic they become extremely dangerous as they break away at the verges and become undulating switchbacks and become a peril to all those who travel along them. Furthermore the volume of traffic in the constructional period for both the main airport and the ancillary developments and road and rail access will have to haul the gravel across these roads as there is no main road route from the river valleys and gravel resources to the Thurleigh area. The main east-west traffic routes are the Northampton-Bedford-St. Neots A428 trunk road with a secondary but much used east-west route leaving the A428 at Bromham and proceeding towards Newport Pagnell-Oxford-Buckingham-Chipping Norton and the West. Neither of these main traffic routes serve the Thurleigh area or the gravel deposits likely to be exploited in the Ouse, Nene, or Ivel valleys. Therefore from the commencement of construction work a very severe local burden would be placed on the county highways to the west of Thurleigh particularly the Harrold-Carlton-Pavenham-Oakley-Milton Ernest-Thurleigh route, and the Harrold - Odell - Sharnbrook - Bletsoe - Thurleigh route in the west, and the Eaton Socon-Bushmead-Bolnhurst-Thurleigh and the Gt. Barford-Wilden-Thurleigh and Kimbolton-Keysoe Row West-Thurleigh route in the east.

(b) The existing local population will have to bear the cost through the local authority rates of providing additional facilities such as improving county roads, educational facilities for the new population, sewerage facilities, water and river drainage facilities necessitated by the airport. All these developments as in the case of new towns will create substantially increased burdens on the finances of the local authorities who will be servicing loan costs from the commencement of the development and these loan costs will fall on the existing ratepayers until the rateable value increase created by the Airport and its ancillary developments earn sufficient revenue for the local authorities to meet the increased burden. From experience of similar large national developments being thrust upon local authorities it is unlikely that this point of equilibrium would be reached in under 10 to 15 years, during which time local ratepayers will be carrying an ever increasing burden by way of higher rates caused by the construction in their area of a national facility.

(c) The general public are sceptical about the need for a third London airport to be sited so far from London as Thurleigh, and indeed for the need for an airport in this area at all. Strong views have been expressed that by siting the airport at Thurleigh and building it of the size suggested in the site information there is a danger that it will tend to draw traffic away from the East Midlands airport and even from as far away as Manchester Ringway, making these and other airports in the Midlands and the north uneconomic to operate. Furthermore suggestions of this magnitude are in the public view often put forward as a matter of urgency by organisations and individuals with vested interest in their promotion and for the skilled statistician it is a simple matter to suggest that there is evidence statistically to support this need and that because passengers and freight traffic has risen

Printed image digitised by the University of Southampton Library Digitisation Unit

by a given percentage over the previous ten years it is likely to do so over the next twenty to thirty years. These types of statistical predictions have led to many disastrous national capital investments and I consider that an historical appraisal of transportation investment is not irrelevant to the Commission's inquiry. From the end of the Roman occupation to the mid-eighteenth century the nation's roads have been in deplorable condition, but around 1750 improvements started to take place and between 1760 and 1774 no less than 452 Turnpike Acts were passed and from 1785 to 1800 this number was increased by 643. Two general Highway Acts were passed in 1773 which further contributed to the improvement of the nation's roads. Unfortunately the method of transportation on the roads was unsatisfactory and attention turned to the canals and after a slow start around 1755 the Duke of Bridgwater obtained an Act in 1759 for the famous Bridgwater Canal, and this was the real starting point of the canal movement which developed very rapidly into a mania and by 1834 England had been covered with a network of more than five thousand miles of canals and navigable rivers. Some of the mileage still survives and forms an amenity attraction, but this investment has little significance in the economy today, and was followed by the development of the railways and the opening of the Stockton to Darlington railway in 1821. The Liverpool and Manchester railway opened in 1830 and the line from London to Birmingham in 1838. Between those two dates fifty-six Acts had already been passed for the laying of eighteen hundred miles of rail. The railway mania continued spasmodically throughout the nineteenth century and possibly the culminating glory was the opening in the beginning of the twentieth century of the Gt. Central line to London from Nottingham to Marylebone and a line now closed throughout practically its whole route and yet a project that was considered essential only seventy years ago to link the Midlands to London by yet another route built to continental loading standards for continuation through London to a proposed channel tunnel. The country was covered with railways and canals, many of which could not have ever hoped to have been an economic or even socially desirable proposition and we are now entering the era in the opinion of the public of airport mania, and the public of Bedfordshire would like these historical trends to be examined in order firstly to avoid over-investment in a sophisticated means of travel when there is no evidence of demand of the magnitude suggested, and secondly that the capital resources would be better employed in developing internal means of communication i.e. roads suitable for both public and private means of transportation and if the internal communication of a county such as Bedfordshire were made adequate and realistic then the size of the island of Great Britain is reduced to reasonable proportions and airports that are proved necessary can then be sited in locations where they will cause the least possible inconvenience to the nation as a whole and yet within reasonable travelling distance.

6. At meetings held by BARA in villages considerable apprehension has been expressed about the land take requirements for the ancillary developments particularly those associated with controlling the river Great Ouse and the river Nene. Already both these rivers discharge into the Fens and are controlled by man and liable to very rapid and considerable flooding of the valleys in the upper reaches. Impounding reservoirs will be required for storm water run-off both from new development for housing the workers of the airport and also from the airport itself. This impounding of storm water is bound to take considerable areas of land if they are to be adequate and it is unlikely that these will be suitable for use as holding reservoirs for water supply, therefore even further land take will be necessary in order to provide additional reservoirs for supplying the needs of the increased population and the airport. Further the abstraction of gravel from the limited reserves in the river valleys will result in further loss of amenity and loss of agricultural land is of great concern to the rural population. In the well wooded areas of Northamptonshire, North Bedfordshire and the western parts of Huntingdonshire, stretching from Yardley Chase in the west to Buckden woods in the east, there is a considerable danger of air pollution killing more susceptible timber species. This would mean the loss of such typical landscape and woodland trees as the elm, the ash and the oak, species which predominate in the area and form most of the natural woodland scene and in considering the cost of the airport our Association hopes that the Roskill Commission will establish from the Forestry Commission the likely losses due to air pollution of our timber reserves in the area and in their cost benefit analysis consider carefully the value of the amenity and timber production lost.

6a. In order that the public could appreciate the cost of disrupting the existing Royal Aircraft Establishment Bedford, BARA's Sharnbrook local committee undertook to carry out research in published and unclassified information, and these are attached to my proof for the information of the Commission, together with photo-copies of the articles to which they refer. We have also considered the likely effect on RAF Cardington and there is no doubt that the balloon station and weather station would be an obstruction and would have to be moved.

An endeavour has been made to establish the likely effect on the US Air Force establishment at RAF Chicksands. This has one of the most complex radio aerials in the world and whilst the purpose of the establishment is unknown, indications are that it is vitally concerned with national defence either as a means of monitoring aircraft movement or as part of some early warning system and BARA is anxious that the likely effect on Chicksands should be ascertained from the United States authorities because its closure would have a severe effect on the economy

Printed image digitised by the University of Southampton Library Digitisation Unit

on much of south-east Bedfordshire and North Hertfordshire. The Aircraft Research Association is established at Clapham near Bedford and works in conjunction with RAE Bedford and each are dependent on the other and the inevitable loss of both establishments if the third London airport is sited at Thurleigh would be a severe blow to the technological employment in the district.

(b) **Pavenham**

7. I live at Bartlemas Farm, Pavenham, a farm of some 156 acres bounded by the River Ouse on the south side and by the Oakley–Pavenham road on the east and north side and the village to the west. There is some hundred acres of arable land, normal cropping of which is potatoes, brussels sprouts, peas, wheat or barley and some 56 acres of permanent pasture of which 44 acres are river meadows subject to seasonal flooding. In addition my family farm Bury Farm, Pavenham, which lies to the north of the Oakley–Pavenham road and comprises some 150 acres of arable land similar cropping to my own, 40 acres of pasture and some 25 acres of woodland. My wife is a Bedfordshire farmer's daughter; we have been married and lived in Pavenham for 15 years. We have two children, a girl aged 10 who attends one of the Harpur Trust schools in Bedford, and a boy of 6 who attends Pavenham primary school.

8. Pavenham is situate some six miles north-west of the county town of Bedford and contains about 1,350 acres. The village is situate in one of the "S" bends of the Ouse as it meanders from Olney in Buckinghamshire through the limestone country to Bedford and the river forms the parish boundary on the east and south side. To the north are the parishes of Carlton and Felmersham and to the west Stevington and Turvey. The central core of the village is a well wooded ridge of high land and the village itself is built around either side of the main street forming part of a local traffic route from Harrold to Bedford. As you approach Pavenham from Oakley you cross the Ouse by Stafford bridge and causeway so called, tradition has it, because the Staffordshire potters used to travel from Staffordshire through Northampton to the East Coast with their wares and built the original bridge to provide better communications. Traces of a minor Roman road leading from this bridge or ford have also been traced through Pavenham park and there is no doubt that this crossing of the river is of great antiquity. The present bridge was built in 1936 but the causeway on the north side is of earlier origin and is becoming badly affected by increase of motor traffic as is evidenced by the gaps caused by cars and lorries leaving the highway and entering the meadows on either side.

Having crossed the river you rise out of the flood plain, the road runs parallel to the midland main line of British Railways at this point which is on high viaducts through part of the parish, the road then bears sharply westwards at Earwig Bend—a local farm road leads off to the east and serves a group of five County Council smallholdings all of which are intensively farmed primarily for market garden and total some 300 acres of which about 50 acres are river meadows lying in the flood plain. At Earwig Bend is also an entrance to a small holiday caravan site where touring caravans can draw in for one or two nights or a longer stay if they like and enjoy the peace and quiet of the river Ouse which has now swept round part of its graceful curve to form the north-east boundary of the parish at this point. From Earwig Bend you reach Close Road, an outlying group of 25 houses, 24 of which were built by the Bedford Rural District Council at various dates from about 1926 to 1968. Although it would have been obviously more desirable for this development to have taken place in the heart of the village, opinion frowned on local authority housing in the 1920's and the Council were forced to create this separate unit about half a mile away from the main village. Proceeding westwards towards the village we pass on the north side of the road the Hurdlefoot Caravan site which is a residential caravan site with standings for 53 caravans. This is well shielded from the public road and the public view, but is a pleasantly landscaped, well run site again enjoying all local amenities of the river Ouse and the peace of the north Bedfordshire countryside. On the left of the road is open farming country with views towards Oakley and Stevington and as one approaches the village one passes the village allotment field of some five acres and next to that a playing field presented to the village by Lord Luke of Pavenham after the last war and upon which the village have, by their own efforts, erected a substantial pavilion. The playing field is used by local cricket and soccer clubs, there are swings and other amusements for children. You then pass an attractive stone-built lodge formerly the entrance lodge to Pavenham Bury, at one time the manor house of the village and you now find on your right the start of Pavenham Park, a pleasantly wooded parkland scene. As you approach the village you then come to the village police house and Bury Farm and the start of the stone-built village of Pavenham with its cottages, larger houses and intermingled among these a few post-war houses erected with taste, care and consideration for the visual amenities of this, one of England's most attractive villages, and I would ask all members of the Roskill Commission in order that they may fully understand the concern of the inhabitants of villages such as Pavenham, so typical of the limestone area to the west of the Thurleigh site, they should all visit the village, get out and absorb its atmosphere, walk around and then imagine what life would be like to those inhabitants with jets droning a few hundred feet overhead every minute of the day, every day of the year from 1975 onwards. The village won the County Award for the Best Kept Village in 1962, 1966 and 1967. In 1968 by the rules of the competition the village was unable to compete but in 1969 received the Second Award.

9. I have analysed the working habits of the people of Pavenham and taking those people engaged in full-time employment 38 people work in the parish of Pavenham, 55 people work in the local villages around Pavenham, 48 people work in Bedford and

Printed image digitised by the University of Southampton Library Digitisation Unit

14 elsewhere. In addition some 10 people come into the parish daily to work in Pavenham. There are 55 householders who are retired and some 35 village children attend the local primary school and a similar number attend secondary schools in the area. The remainder of the population of some 548 souls comprises children under school age, and the wives of full-time workers and retired householders. This indicates that by far the largest majority of people are not merely commuters to the nearest centre of urban population, but work and live in the rural community preferring its rural attractions and preferring to be employed in worthwhile and varied occupations and avoid monotony of the assembly line by day and the tower block of flats by night. This is their way of life away from the bingo halls, the traffic jams and the hubbub of the more densely populated areas.

10. In the middle of the village is a road junction, the main road continuing towards Harrold and Carlton and a by-road leads to Felmersham. Along this road east side is the parish church dedicated to St. Peter, one of the most remarkable features of this attractive church is that few of the opposite walls of the fabric are parallel. The tower and spire are decorated and the former exhibits a west door and window above the latter a clockhole, the clock having been removed in the 19th century, the upper or belfry stage being lighted by four uniform windows. The steeple was struck by lighting on 4th May, 1800, but was subsequently reconstructed. The transept is lighted by a four-light south window. This window is thought by architects to be a curious specimen of the transition from decorated to perpendicular. The south doorway and porch are early English, above the porch is a small chamber lighted by a small two-light south window. The clerestory is perpendicular. The chancel is entered from the west under an early English arch and its floor rises slightly towards the east. The church has been fitted up with a magnificent collection of old carvings, the expense of the Squire of Pavenham about 1840. There are five old bells, the first and largest bell has inscribed on it "I.K. God Save Our King 1623". The second bell inscribed "Newcome Made Mee A 1614", the third bell has on it "Richard Gilbert. John Hodson Made Mee 1663 W.H.—Robert Fole Churchwardens". The fourth bell has inscribed on it "God Save the Queene 1602", and the fifth bell has inscribed "Diane Hipwell and William Dix Churchwardens 1796". Below the church was formerly the Manor House known as Pavenham Bury and this during the period 1957 to date has been slowly developed as a residential housing estate well screened from the main village forming an attractive and unusually varied small residential area at present containing some 25 houses ultimately expected to reach about 50 houses. Continuing through the village one passes the school inscribed upon which is "Fear God Honour the Queen" and included in the front wall of the school is the village clock. The road then continues through the remaining part of the village and on to Stavington, Carlton and Harrold.

11. Main drainage was laid by the Bedford Rural District Council and brought into service late in 1956, since when all the old village properties with the exception of one have been modernised to provide for essential modern living in the form of bathrooms and flush toilets. There is only one house left in the parish without a flush toilet, without electricity and this is presumably the owner's particular wish. The majority of the remaining properties have all modern facilities although a few are limited to WC's without bathrooms. The introduction of main water and electricity in the late 1930's of sewerage in 1956 has resulted in the raising of standards to that comparable, and in many ways far superior to, larger urban areas.

11a. *Noise Urbanisation and Change in Character of Employment.*—The village is concerned at the intolerable noise conditions which would arise if either Thurleigh site was selected for the third London Airport. The people already suffer from the noise from RAE diving test flights but this is restricted to day time flying 9 a.m.–5 p.m. Monday to Friday, and the flights are not frequent but the prospect of continual flights from the third London airport causes considerable concern and has already made houses almost impossible to sell in the village. Existing noise levels are bound to increase with the introduction of larger planes and there is no effective method of controlling aircraft noise or keeping pilots to regulations. Without the right to stand and stare or gossip in Pavenham High Street of a summer evening we would lose our right to enjoy and digest our rural environment. Instead noise would render life near impossible and urbanisation of the area as a whole would destroy the whole character of the parish. We do not want our fields, meadows, and woodlands to become the "Hyde Park" of air city. We want our parish to prosper as an agricultural and residential village in the Ouse Valley where work and leisure can be enjoyed in a pleasant environment. Airports must be sited at locations where they cause minimum interference with the life of this and future generations. No cost benefit analysis can evaluate the loss in financial terms of destroying our village as we know it. We do not live in moth balls but we do progress in a civilised manner.

12. The majority of householders are car-owners. The village is served by a regular service of buses from Harrold to Bedford, Mondays to Saturdays inclusive. The village is extremely concerned that any increase in commercial traffic will add to the dangers of using the village street, footways of which are narrow and the actual road width at certain points cannot accommodate two large vehicles proceeding in opposite directions between the buildings. There is, therefore, very considerable concern at the effect on the village of east-west traffic from the gravel bearing areas around Harrold and Lavendon, carting materials to the airport and returning empty. The thought of considerably increased heavy traffic is intolerable although it is difficult to see what alternative route such traffic could adopt, at least during

Printed image digitised by the University of Southampton Library Digitisation Unit

the construction stages of the airport and its associated activities.

13. Pavenham is famous for its rush and basket industry in the eighteenth century. The osiers and rushes were grown adjoining the river Ouse and there is still a thriving Pavenham rush industry. The rushes are gathered from the river in July and dried and cured, and the workers plait these into mats, baskets and other goods in the rush shops in Pavenham. Pavenham supplied the matting to the House of Commons in the nineteenth century and exports rush mat ware all over the world. The principal industry in the village is agriculture and this concentrates on market gardening and arable farming. The farms are of medium size and generally are family farms. The river is highly prized for fishing and visitors from many parts of the Midlands, and East Anglia come into the parish at week-ends to enjoy fishing or boating on the river Ouse. The residents are also keen on fishing and in the winter months there is keen local interest in shooting, both shooting of game which in this area is not a highly commercialised syndicated expensive military operation, but rather a local gang of farmers who enjoy getting together, doing some of their own beating and having a bit of fun. We certainly don't want to have our sport completely ruined by the third London airport. We are a friendly village and I think it is fair to say that we all row along together and help entertain each other in the best spirit of country life. We may not be a fashionable village or a commuter village, but those of us who live and work in the locality and have mud on our boots are determined to preserve the soil of Bedfordshire from the ravages of large scale development.

14. I have been asked by the Chairman of the Parish Council, who unfortunately has recently suffered a serious illness, to say that his parish council are unanimously opposed to the siting of the third London airport and at a meeting at their Annual General Meeting on 17th March, 1969, it was proposed by Mr. Wilfred Green (member of the parish council) and seconded by Mr. Desmond Mosley of Pavenham Bury Estate that Pavenham should donate its three-fifth of a penny rate to the Bedfordshire Airport Resistance Association's fighting fund and this was unanimously agreed. The Parish Council called a Special Parish Meeting on 10th April, 1969, to discuss the third London airport in detail when the following resolution was passed:

"The Meeting is unanimously opposed to the siting of the third London airport at Thurleigh."

A further meeting called by BARA was held in the village on 5th June, 1969. At neither of these meetings was a single vote cast in favour of the airport and the whole village appear to be united in their opposition.

15. In view of the fact that evidence is not being given by a representative of Carlton and Chellington parish, I feel I must draw the Commission's attention to the Carlton Training School. This is a Home Office establishment capable of taking 80 boys but currently training 55 boys. A number of the boys have previously been on probation and some are first offenders. They receive training in farming, machine shop engineering, maintenance engineering, carpentry, bricklaying, gardening and catering. The school is within the 50+ NNI and comprises some 150 acres. There has been extensive new building. Three new house units having been built in 1962. There is a new administrative block and new workshops. Existing buildings are being converted into a chapel due to be dedicated 10th September, 1969. There are some 20 families living at the school who provide the staff, the total community being about 150. The school was established in 1857 and the present headmaster is Mr. L. W. Price. It is understood that other new buildings are being held up by the current credit restrictions.

Appendix

Letter to BARA Research

Sharnbrook Committee in support of BARA

One of the features which mark Thurleigh out as distinct from the other sites for the third London airport proposed by Roskill is the presence of several high investment facilities in the neighbourhood, viz: Unilever Research, RAE, USAF Alconbury, RAF Wyton, USAF Chicksands, R & DE Cardington. Accordingly, the Probe Sub-Committee of the above Committee in Sharnbrook have been trying to obtain definitive information on RAE, Alconbury, Wyton and Chicksands in particular, so that BARA can include such important evidence in its presentation in September.

We feel that the relevant Government departments will probably give evidence to Roskill, in confidence, at Stage 3. Nevertheless, we are sure that BARA must place parallel evidence for two main reasons.

1. To make known to the public and politicians that important facilities are involved in the assessment of Thurleigh.
2. To place figures, based on the best available unclassified evidence, for the costs associated with moving or modifying these facilities, on the cost-benefit balance sheet.

Information on these four facilities has been difficult to obtain—the principal avenues have been public libraries with access to the informed technical press and Mr. Parkyn, who has asked questions in the House of Commons at our request. Substantial evidence on RAE Bedford has been found and a short summary paper covering this information has been prepared; this paper, together with copies of the more detailed articles on which it is based, is enclosed.

Work is still progressing in an attempt to produce similar documents on the other establishments. In these cases, however, information is difficult to obtain. When and if this work reaches a satisfactory conclusion, similar papers to that on RAE will be prepared covering these facilities.

The impact on RAE Bedford

1. The Roskill Commission have indicated two possible sites for the third London airport at Thurleigh. The location of these sites, which are some

Printed image digitised by the University of Southampton Library Digitisation Unit

2,500 yards apart, are such as to bring into question the continued existence of the Royal Aircraft Establishment (Bedford).

2. RAE (Bedford) is a major aeronautical research station which comes under the control of the Ministry of Technology. The establishment itself is divided into two parts—the airfield at Thurleigh and the wind tunnels site at Twinwoods, which is some two miles from the airfield. A major part of the airfield is included in both airport site areas. It follows that Aerodynamics Flight Research, Blind Landing Experimental Unit (BLEU) and Naval Air Department (NAD) will have to be removed—both activity and facilities—to another part of the country. The wind tunnels complex is, in both cases, outside the suggested airport rectangles. For the original site 4, the tunnels are about half a mile south of the south-western corner of the airport and in a position such that their continued existence must depend on such factors as: noise, general compatibility of a research establishment with other immediate airport development, security, etc. For site 5 (which is some 2,500 yards south-east of the original site), the tunnels are less than half a mile west of the south-western corner of the proposed airport area. In this position, the tunnels are directly under the aircraft flight paths, and so, to the above list of factors affecting its future, one must add the fact that airline and airport operators are unlikely to tolerate the presence of such massive steel structures so near the end of the runways and in a position which might jeopardise the reliability of airport aids for aircraft take-off and landing.

3. RAE (Bedford) was officially opened in June 1957, by Mr. Aubrey Jones, who was Minister of Supply at that time. The construction of the establishment had reached the stage where most of the major facilities were complete. There were however, some incomplete facilities, and in addition, plans for further plant development. The facilities which were operational in 1957 included:

(i) **Wind tunnels site**

(a) 13 ft. × 9 ft. low speed wind tunnel
(b) 3 ft. ×3 ft. transonic and supersonic wind tunnel
(c) vertical spinning tunnel
(d) small wind tunnels in the high speed laboratory
(e) 8 ft. × 8 ft. supersonic wind tunnel
(f) 53,000 hp gas turbine power station
(g) supporting workshop facilities.

(ii) **Airfield site**

(a) new runway 07/25—6,750 feet
(b) new runway 09/27—10,500 feet
(c) flight simulator
(d) wide range of electronic equipment, including ground cables specifically for BLEU
(e) 200 ft. stroke steam catapult mounted on a deck 5 ft. above ground level
(f) aircraft arrester gear
(g) a range of hangars and workshops.

4. Since that date in 1957, the 4 ft. × 3 ft. high supersonic speed wind tunnel has become operational and more recently there have been plans for a further large wind tunnel to be built at RAE (Bedford).

5. In his opening speech, in which the national importance of the research establishment was stressed, the Minister said that 700 contractors had been involved in the construction of the installations and that the total cost of the establishment was £30 million.

6. The probable valuation of this establishment at the present day can only be obtained by means of detailed discounted cash flow calculations. An *indication* of this figure can be obtained simply by associating working interest rates and inflation rates with this quoted £30 million valuation for 1957. If average "appreciation" rates of the order of 6 per cent or 7 per cent are taken, then the current value for RAE (Bedford) is *around* £75 million.

7. The descriptions of open days at RAE (Bedford) in the informed technical press reveal that the aeronautical research effort at the establishment is broad based. Many of the features and details of experiments outlined in the press have now become part of everyday aeronautical life. The continued importance of the role of the establishment set in the context of the present day aircraft industry, can be gauged from a ministerial reply to a recent question in the House of Commons; the Minister stated that the research facilities had played an important part in the development of "Lightning", "Jaguar", and "Concorde". These three projects, it should be noted, cover the only successful completely indigenous supersonic fighter aircraft and also both current international projects. It must be concluded, therefore, that RAE (Bedford) also makes some contribution to the provision of a firm basis for UK participation in international collaborative aircraft projects.

8. In the event of an airport at Thurleigh, which caused the closure of RAE (Bedford) as it now is, it seems unlikely that the executive and Government of this country could stand by and see this aeronautical investment reduced to nought; rather the establishment would be removed to another part of the country so that the important research effort could continue.

9. The precise cost of removing these elaborate facilities to another area can, of course, only be assessed if a thorough and detailed analysis and inspection of the establishment is made, so that permanent and movable assets can be identified and costed. Such an exercise is plainly beyond the resources of an organisation with access to unclassified information. Although it must be admitted that some of the movable assets, such as large electric motors, compressors, etc., are of extremely high capital value, it must also be remembered that the permanent features include: (a) for the wind tunnel site, all roads, buildings and services in addition to the concrete and welded steel tunnel structures and (b) for the airfield, all buildings and services, together with two very long runways, ground based

Printed image digitised by the University of Southampton Library Digitisation Unit

aircraft carrier equipment and permanent electronic aids for BLEU. It seems therefore, that a cost of removal amounting to around one half of the present day valuation at £30/40 million cannot be ruled out of the question.

10. In addition to the more tangible financial aspects of this question, there is one further point which must be made. The industrial task of actually moving such massive facilities as exist at RAE (Bedford) will almost inevitably lead to these facilities being out of action for a considerable period of time (say one or two years). This arises not only because of the physical difficulties of preparing a new site, taking RAE (Bedford) to pieces transporting the relevant items and assembling the facilities at the new site, but also because it will be necessary to negotiate and agree terms of contract with up to 700 engineering companies who will be involved in the removals and reconstruction. It would seem likely that this temporary lack of support for the aircraft industry would cause embarrassment from both defence and commercial points of view, possibly even jeopardising current aircraft projects and UK participation in collaborative exercises in the near future.

11. A fuller list of the facilities at RAE (Bedford), together with important ancillaries is attached. The articles from the informed technical press and parliamentary replies which form the basis of this paper are also appended. See also article in *The Times* "Concorde" supplement.

SCHEDULE

1. **RAE (Bedford)**

Officially opened 27th June, 1957. Seven hundred contractors involved in construction. Quoted 1957 cost: £30 million. Power requirement: 150 MW. Water requirement: 750,000 gallons per day.

2. **Wind tunnel site**

(a) *Facilities:*

(i) 13 ft. × 9 ft. low speed tunnel—speeds up to 300 ft. per second, 1,500 hp motor drives 30 ft. dia. fan. Tunnel constructed of concrete.

(ii) 3 ft. × 3 ft. wind tunnel—speeds up to mach 2. Total power 16,000 hp from two 8,000 hp motors obtained after the war from Germany. Steel tunnel construction—shell can be pressurised to two atmospheres—mach no. is varied by means of interchangeable liners. Separate, interchangeable supersonic and transonic working sections—centrifugal compressors—maximum cross section 19 ft. square.

(iii) vertical spinning tunnel—speeds up to 95 mph 1,500 hp motor-steel tunnel construction 80 ft. high, 45 ft. diameter—shell can be pressurised to four atmospheres (tunnel is for studying the behaviour of spinning models in controlled free flight in upward moving air).

(iv) high speed laboratory—collection of small supersonic wind tunnels—Power: 4,000 hp.

(v) 8 ft. × 8ft. wind tunnel—largest of its kind in Europe. Quoted 1957 value: £11 million. Speeds up to mach 2·8 (but not transonic)—80,000 hp motors drive 4 or 10 stage axial compressor—welded steel tunnel construction. Can be pressurised to four atmospheres—5,000 tons of steel used for shell, $\frac{5}{8}$" to $1\frac{3}{8}$" thick. Mach no. variation by flexible steel nozzle—rectangular tunnel layout 350 ft. × 60 ft. Shell diameter varies from 20 ft. to 47 ft.

(vi) 4 ft. × 3 ft. high supersonic tunnel—speeds from mach 2·5 to mach 5·0. Variable nozzle for mach no. variation—shell can be pressurised five atmospheres at mach 2·5; fourteen atmospheres at mach 5·0—completed 1961.

(vii) variable frequency gas turbine power station: output: 53,000 hp at 10 c/s to 50 c/s.

(viii) workshop facilities and plant to support above.

(b) *Research:*

(i) 13 ft. × 9 ft. tunnel—low speed characteristics of slender wings—VTOL and STOL aerodynamics—flight (full scale) wind tunnel (small scale) results comparisons.

(ii) 3 ft. × 3 ft. tunnel—research for SST on slender wings—variable geometry engine air intakes for SST.

(iii) VST—

(iv) high speed laboratory—pure research along advanced lines.

(v) 8 ft. × 8 ft. tunnel—research leading to Concorde (over 100 configurations tested)—Concorde variable geometry engine air intake.

(vi) 4 ft. × 3 ft. tunnel—"waveriders" i.e. lifting shapes for high supersonic speed—internal and external aerodynamics of engine intake and nozzle systems—airframe/powerplant integration.

(vii) general: In the House of Commons the Minister said that the wind tunnel facilities at RAE (Bedford) has played an important part in research effort on "Concorde", "Jaguar" and "Lightning".

3. **Airfield site**

(a) *Facilities:*

(i) runways—00/18 (4,200 ft.) and 06/24 (5,100 ft.) refurbished wartime strips—07/25 (6,750 ft.) and 09/27 (10,500 ft.) new, purpose built strips. Ancillaries include modern omni and uni directional runway lighting, five-bar approach lighting.

(ii) hangars—three hangars are used to house aerodynamics flight and BLEU aircraft.

(iii) electronic equipment for airfield — multi channel CR/DF—RAE angular fixing system —two 10 cm. long range radar—two 3 cm. short range radar with PPI consoles—3 cm. precision approach equipment for talkdown—50 cm. search radar—ILS and camera recording equipment installed on runway 27 for BLEU—ground cables near runway to provide

Printed image digitised by the University of Southampton Library Digitisation Unit

magnetic field for BLEU—(great plans for very advanced instrumentation for runway 27 in 1957).

(iv) Naval Air Department—200 ft. stroke, steam-powered aircraft catapult mounted in deck 5 ft. above ground level (the only such facility outside the USA in 1957)—higher powered catapult planned in 1957—two sets of aircraft arrester gear on runway 06/24.

(v) flight simulator—based on analogue computer —solves equations of motions of aircraft in flight.

(vi) aircraft—no up to date list available—1957 list in text.

(b) *Research:*

(i) aerodynamics flight—research using piloted aircraft—evaluation of innovations—development of new flight test techniques for general application—broad research categories:
(1) Low Speed Flight.
(2) Transonic and Supersonic Flight.
(3) Stability and Control Simulator permits dangerous flight situations to be explored in safety.

(ii) BLEU—objective: to eliminate the final visual phase of aircraft landing by introducing newly devised techniques and equipment for automatic blind landings—ILS development—radio altimeter development—auto speed control equipment.

(iii) NAD—development of catapults and arrester gear for aircraft carriers—boundary layer control research on aircraft—skyscreen = aircraft touchdown speed indicator. TRODI = Touchdown rate of descent indicator — Mirror sighted deck landing aids—helicopter research.

Note: The following items were attached but have not been reproduced:

1. House of Commons—Hansard—2nd May, 1969. Column 309.
House of Commons—Hansard—13th May, 1969. Column 210.
House of Commons—Hansard—20th May, 1969. Columns 75–6.
House of Commons—Hansard—12th June, 1969. Column 306.
House of Commons—Hansard—16th June, 1969. Column 50.
House of Commons—Hansard—1st July, 1969. Columns 81–83.

2. "Supersonic research at Bedford." *The Aeroplane*, 5th July, 1957, pp. 16–19.

3. "Wind tunnels, miscellaneous. First impressions of N.A.E., Bedford: Farnborough facilities reviewed." *Flight*, 25th February, 1955, pp. 229–232.

4. "Opening day at Bedford: flying and static displays." *Flight*, 5th July 1957, pp. 4–5.

5. "R.A.E. Bedford—and its facilities. 1. The Wind-tunnel site." *Flight*, 5th July, 1957, pp. 18–20.

6. "R.A.E. Bedford—and its facilities. 2. The airfield." *Flight*, 12th July, 1957, pp. 54–56.

7. "R.A.E. Bedford looks ahead to the mach 4–6 era." *The Aeroplane and Commercial Aviation News*, 4th June, 1954, p. 22.

8. "D.H.C. gives public demonstration of the Buffalo." *The Aeroplane and Commercial Aviation News*, 4th June, 1964, p. 23.

9. "The Industry: Bedford contributions." *Flight*, 5th July, 1957, p. 26.

10. "Aerodynamic development" by C. S. Leyman. *Flight*, 6th March, 1969. Supplement on Concorde, p. 8.

11. "Based at Alconbury—profile of a U.S.A.F. reconnaissance wing" by Humphrey Winn. *Flight*, 29th January, 1960, pp. 150–152.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire Airport Resistance Association

SUBMITTED BY MR. L. C. GALE*

I am a Fellow of the Royal Institution of Chartered Surveyors, a Member of the Town Planning Institute, a Chartered Town Planner and I have practised in town and country planning for 35 years. I am and have been since 1947 a partner in the firm of W. R. Davidge and Partners, planning consultants.

I have been asked by the Bedfordshire Airport Resistance Association to give consideration to the sociological consequences of locating the third London airport at Thurleigh.

1. I produce plan nos. WRD 1 A & B† to a scale of 1 inch to 1 mile on which I have superimposed my interpretation of the land required for the airport based on the Commission's drawings nos. CTLA 1‡ and CTLA 4/3‡ for Sites A and B. Also indicated on the plan are the 50 and 40 NNI contours shown on drawing no. CTLA 4/3 for a 4-runway airport, together with the 35 NNI contour plotted by Mr. Fleming for both positions suggested for the airport. The 35 NNI contour extends over five counties and the plans show the number of boroughs, districts and parishes which will be affected, to be, in the case of Thurleigh A: Bedfordshire 25 (plus two which are only just within the contour); Buckinghamshire 23; Huntingdonshire 24; Northamptonshire 37 and Cambridgeshire 7, a total of 118. The comparable figures for Thurleigh B are: Bedfordshire 27 (plus two which are only just within the contour); Buckinghamshire 25; Huntingdonshire 23; Northamptonshire 28; Cambridgeshire 7, a total of 112.

2. The Association have asked district and parish councils to complete a questionnaire setting out factual information. I produce schedules nos. WRD 2 A and B† which list these districts and parishes and indicate amongst other information (a) the relevant NNI contour (b) the living accommodation, schools, churches, recreational facilities and estimated population and employment. Also are indicated in the remarks column any required surface communications, where the district or parish includes a conservation area and items of general interest. These schedules have been compiled for the most part from information obtained by the Association as a result of the questionnaires completed by parish representatives. These completed questionnaires are also handed in: it is thought that it will be of assistance to the Commission to have summaries of the questionnaires on one sheet of paper and this is what the Schedules purport to be. (These schedules are not fully complete, but it is hoped that they will be fully completed by the date of the hearing.)

3. Not all the districts and parishes will be affected to the same degree, but the difference in degree is to some extent shown by the indicated NNI classifications.

4. The evidence by County Councils is adopted by the Association and the purpose of this evidence is to offer to the Commission an assessment of the social effects which will be brought to the people living in those areas which will be affected should either of the Thurleigh sites be selected as a location for the third London airport. In making this assessment, the Association have had regard to the County Planning Officer's suggestions* for possible solutions for surface communication with the airport and the least undesirable locations for the associated urban development which would be required to accommodate the additional population consequent upon the airport use. These solutions together with Mr. F. A. Sharman's suggestions† for surface communications are shown on plans WRD1 A and B.

5. It is seen from plans WRD 1 A and B that the east-west extent of the 35 NNI contour is some 50 miles. Its width is for the main part 5 to 5½ miles wide, fanning out in the west. Close to this area of extent are, in the north-west the towns of Northampton, Wellingborough and Rushden, in the south-west, Stony Stratford, Wolverton and Newport Pagnell. Immediately to the south of the suggested site for the airport is Bedford: towards the south-east is St. Neots and in the north-east are Huntingdon, Godmanchester and St. Ives.

6. Within this ring of towns, the area's primary use is agriculture with associated village communities, the largest being Olney and Roade. Flowing through the area is the River Ouse.

7. The *Site Information* for Thurleigh,‡ paragraph 5 says that the total land-take for an airport layout based on plan CTLA/1 would be approximately 7,500 acres but the possibility of a larger land-take being required cannot be excluded. Plan CTLA/1 indicates gross dimensions of length 27,000 ft. (5·1 miles) and breadth 13,700 ft. (2·6 miles). *The Times*, 3rd May, 1968, reported the views of Mr. Peter Masefield, chairman of the Airports Authority on the specification for the "ideal" airport, which could achieve a continual rate of 36 movements an hour on each runway, a total of 144 movements.

---

*See also p. 2254.

†Not reproduced. Available for inspection, by arrangement, at the offices of the Commission.

‡See attached wallet of maps and diagrams.

*p. 1807.

†p. 1845.

‡Reproduced at p. 1801.

Printed image digitised by the University of Southampton Library Digitisation Unit

The table below indicates a comparison with the specifications of plan CTLA/1 and the "ideal" airport:

	Plan CTLA/1	*Ideal*
Length of paved runway	14,000	15,000
Width of paved runway	200	200
Overun at each end	1,500	2,000
Total length	17,000	19,000
Distance between inner and other runways	2,300	3,000
Distance between two inner runways	7,300	9,000
Distance between centre lines of outer runways	12,500	15,000

The same report stated that the ideal airport might have a taxiway system and ring road and, if so, it would occupy an area 6·8 miles along by 3·4 miles wide, a total of about 23 sq. miles or nearly 15,000 acres. This is, of course, double the size given in the Site Information and it can be clearly seen why the proviso as to a larger land-take is stated.

8. The land for the airport required to meet the specification in the Site Information will require in the case of Thurleigh A the razing of the villages of Bletsoe, Keysoe, Keysoe Row and parts of Thurleigh and Riseley and in the case of Thurleigh B, Thurleigh, Keysoe Row and Bolnhurst.

9. As I said, at the start of this evidence, I have been asked by the Association to make an assessment of the social consequences on those people living in the area of a major airport being established in this area. At present, the area is one of quiet rural charm through which flow the River Great Ouse and its tributaries. As is stated in paragraph 1.6 of the County Planning Officer's evidence, this area has a distinctive character with an atmosphere of remoteness from the bustle of urban life. Apart from the classified roads traversing the area there is an absence of background noise. Since being instructed by the Association, I have had the pleasure of travelling several hundreds of miles of country roads and byways traversing the area covered by the 35 NNI contour and thereby gaining an informed impression of this countryside. The impression made on any person travelling, as I have done, is that this countryside must be visually amongst the best in England; this is not to say that it has the dramatic impact that the more hilly and mountainous scenery has. For this last reason, for the most part, it does not attract the tourist in large and concentrated numbers, it therefore has fortunately missed the commercialism that is apparent in the nationally known beauty spots and areas. Its visual beauty stems largely from the fact that it is a rolling countryside, sometimes with wide views, at other times in close country, and principally because the area is of working agricultural land. The villages within the area match in charm their rural setting; it should not however be thought that the villages are stagnating and that the world has passed them by; it is noticeable that new housing development has been added in different degrees to nearly all villages but, because of the careful and sensitive control of development by local planning authorities, such new development does not obtrude but adds life to the villages. It is not easy for me to describe in words the beauty of this part of England, but I am sure that, if members of the Commission were to do as I have done, they would make the same judgement. In this country, it is, of course, difficult if not impossible to find an area of the extent of the 35 NNI contour, i.e. 50 miles, which is not traversed by roads and railways, and running north to south are several class I roads and M.1 and three main railway lines. The noise and disturbance effects of these means of communication, however, extend only short distances away from them and do not disturb the serenity of the extensive and intervening rural areas, despite the presence of the intrusive features of the Royal Aircraft Establishment, Thurleigh, the existing airfield at Thurleigh and little used airfield at Little Staughton.

10. The villages within the area are for the most part well-knit compact communities which have become established over centuries. The local planning authorities have, as I have said, ensured by their policies and control that the more recent housing developments have been confined to infilling or rounding off, in scale and in harmony with the previously existing villages. In the rural area, sources of employment unconnected with agriculture are in the main limited to that provided by the Royal Aircraft Establishment, Thurleigh and the Unilever Research Laboratory at Sharnbrook. A substantial number of residents in villages are employed in the larger towns. A great feature of the area is the fact that so many of the villages and towns lie on or close to the Ouse, for example, Olney, Newton Blossomville, Turvey, Harrold, Odell, Felmersham, Sharnbrook, Milton Ernest, Pavenham, Oakley, St. Neots, Offord, Godmanchester, Huntingdon, Hemingford and St. Ives.

11. Mr. Kenneth Robinson, Minister for Planning and Land, said on the 15th May, 1969:

> "Social planning means planning for the maximum of human contentment."

It may well be that a third London airport is an essential to provide for the maximum of contentment for those persons who wish to avail themselves of air travel but it is a very different matter for those who have to suffer the effects of being required to live and work with it. The effects of locating a third London airport on an inland site in this country, particularly the south-east, is possibly very similar, no matter which site is selected. "Human contentment" is achieved, it might be said, broadly in three ways (a) a satisfactory means of employment, (b) satisfactory living conditions in the living space available and the environment of the area in which the living space is located and (c) good health.

12. The establishment of a major airport at Thurleigh, in providing alternative means of employment can possibly assist some people in the area, whose

Printed image digitised by the University of Southampton Library Digitisation Unit

livelihood will be advanced, but in many other cases by taking away their livelihood, for example, in agriculture, and chapter 4 of the County Planning Officer's evidence points to the importance of agriculture in the area, or by making it less pleasant or impossible to work in the previous location, can subtract from the former contentment in the work now being undertaken. As an example of the latter, it cannot be seen how the work of the 1,000 persons employed at the Unilever Research Laboratory at Sharnbrook can be continued in buildings so little distant from the edge of the airport. From schedules WRD 2 A and B can be seen the numbers of persons who are at present employed within the area approximate to A 18,250 and B 18,500.

13. The effect on health, I am not qualified to comment upon. I have, however, been made aware of the resentment of people resident affected by the noise of existing airports produced by necessarily powerful and low flying aircraft.

There is also the possible adverse effect to which attention has been directed by the Sharnbrook Parish Council of pollution and fuel spillage and of the apprehension and nervous tension of persons living and working close to the end of runways of the danger from aircraft crashing on take-off or overshooting on landing. This aspect is discussed authoritatively in the evidence of the County Medical Officer of Health.*

14. Table IV Appendix 1 of the the County Planning Officer's evidence† sets out the population which lives within 12 and 20 miles of Thurleigh, at present being just over a quarter of a million and just short of half a million respectively and that these populations are expected to about double by the year 2001. The effect on the environment on people who now live within the general area, if Thurleigh is selected, can hardly be exaggerated by stating that it will be for them a catastrophe. From the noise aspect, it is perhaps a little individious to select those villages within the NNI contours which would suffer most but it would seem certain that if Thurleigh A were adopted, residents of the following, which are within the 50 NNI contour, would find living conditions quite intolerable: Thurleigh, Riseley, Sharnbrook, Felmersham, Pavenham, Great Staughton, Buckden, Southoe, Bolnhurst, Carlton. Although outside the 50 NNI contour, living conditions in the following could only be marginally better: Harrold, Odell, Yardley Hastings, Lavendon, Little Staughton, Diddington. In all, the lives of a population of about 13,500 would be catastrophically affected. If Thurleigh B were adopted, this figure would increase to 17,500.

15. Schedules WRD 2 A and B, which are based on returns from parish councils, show that within districts and parishes affected by the 35 NNI contour there are the following. (In those parishes partly within and partly without the 35 NNI contour, no attempt has been made to exclude those populations and properties without the line.) (The figures stated are as accurate as is possible having regard to the source of the information.)

	Thurleigh A	*Thurleigh B*
Houses	44,726	46,880
Population	133,609	140,152
Farms	655	645
Schools	95	95
Churches and Chapels	161+	152+
Employed	18,248	18,473

The number of buildings of special architectural or historic interest are given in Appendix 2 of the County Planning Officer's evidence and the schedules give some indication of their distribution.

The totals above have been arrived at from questionnaires so far received and are subject to later upward revision. No revision of population is now required.

It will be seen that the total population figures are substantially above those given in the County Planning Officer's proof of evidence, Appendix 2 page 59. The reason is that, as before stated, the figures in the schedules are for the whole of the Borough, District and Parish: no disagreement with the County Planning Officer's population figures for the 35 NNI contour is intended. The same applies to the numbers of schools referred to in the Chief Education Officer's evidence.* The totals given in the schedules for buildings of architectural or historic interest at the time of drafting are incomplete.

16. The effect on the environment if the airport is sited at Thurleigh has to be contrasted with the present environment. It should be emphasised that the vast majority of the villages as being within the anticipated 35 NNI contour are located off classified roads and can be classified as quiet rural locations with minimal traffic disturbance. In place of this present environment will be the constant noise of aircraft and it has been expressed to us by a resident at distance of eight miles east of Heathrow that there is practically no freedom from the noise as a fresh burst of highpitched and searing noise occurs about every two minutes in the summer. I have already quoted the potential of 144 movements an hour on a four-runway airport.

In addition to the aircraft movement, it will be noted that the construction of the airport will involve the closing of one class II road and north to south country lanes, therefore all local traffic will necessarily be diverted to those roads and lanes remaining. In addition to the diverted local traffic, not all visiting traffic will necessarily use the new major roads which the County Council have shown to be required to serve the airport and associated urban development. Thus residents in these country lanes and roads will suffer further noise from the increased use of these highways together with petrol and diesel fumes. This increase in traffic on roads not designed to carry such volumes will not be confined to the area immediate to the airport.

* p. 1867.
† p. 1807.

* p. 1863.

Printed image digitised by the University of Southampton Library Digitisation Unit

Intercommunication north to south, for example, between in the case of "A", Riseley and Thurleigh, will be made more difficult and such journeys will involve longer travel and the use of classified rather than country roads. The country roads and lanes surrounding, because of greatly increased vehicle movement, as well as losing much of their present amenity will be more dangerous to the pedestrian as none have footpaths and many are narrow and tortuous. There is no doubt that many of these country lanes will be called upon to carry high volumes of heavy traffic in the construction period and the County Planning Officer has given his estimates of the frequency of aggregate lorry movements which would be as much as 30 per hour. The fact that they will then require widening and improvement to accommodate the increased number of motor vehicles is less than comfort to the pedestrians who have used them heretofore and know them as country by-ways.

17. The County Planning Officer has referred to the surface communications which will become necessary by the establishment of an airport. The diagrammatic route for the motorway standard primary distributor loop would traverse 27 parishes shown within the 35 NNI contour and four parishes which lie outside this contour. The diagrammatic direct route from airport to London, south as far as Barton in the Clay, traverses three parishes within the 35 NNI contour and 13 lying outside. The all-purpose primary distributor between the motorway loop and the associated urban development in the north traverses four parishes and the new road between M.1 and Bedford runs through five parishes, one of which is within the 35 NNI contour. The new rail connection traverses five parishes, four of which are within the 35 NNI contour. The surface communications suggested by Mr. Sharman in their effect on the parishes traversed would make, it is thought, no material difference to those of the County Planning Officer. It is appreciated that all lines of routes are not surveyed lines and are thereby subject to considerable amendment, however, whichever line which might eventually be required will traverse approximately the same number of parishes.

18. It will be seen that the environment of 34 parishes which would be adversely affected by noise and disturbance from aircraft would be further disturbed by the likely construction and use of heavily trafficked roads or a railway. An example in point is Little Staughton which would be traversed by two motorways and a rail link. The very full statement from the Parish Council described in detail the fears of its residents.

19. The surface communications, which the County Planning Officer has suggested as being necessary should the airport be sited at Thurleigh, will require within the area shown on Plans WRD 1 A and B, the construction of about 68 miles of motorway, 22 miles of all-purpose primary distributors and 8 miles of railways. The effect of the construction work involved in the establishment of the airport and its necessary surface communication on this quiet rural area must in itself be of catastrophic proportions and works of construction would extend over a considerable period. The existing roads in the area are, as has been described, completely inadequate to accommodate the volume of traffic which would inevitably be required in construction.

20. The County Council have shown that, should the airport be located at Thurleigh, if current policies for the control of new population are ignored, the associated urban development could be accommodated in three locations (a) the Stagsden area (b) the Sandy area and (c) the Raunds area. The land required for these urban developments would be in the region of 25,000 acres or a total of about 40 sq. miles. It is relevant to note that the 35 NNI for Thurleigh B is likely to be a further limiting constraint on development in this area and as the County Planning Officer has reported a further constraint is the air pollution zone of the brickfields.

21. It would seem abundantly clear that existing sources of aggregate will be insufficient for all the constructional works which will flow from approval to a Thurleigh location for the airport and that new and extensive sources will be required. It is to be expected that such sources will be required as close to the new developments as is, in the circumstances, possible. It can be anticipated therefore that it would become necessary to exploit fully the deposits in the valleys of the Great Ouse, Nene and tributaries. Thus further rural areas will suffer, from excavation and traversing by ballast lorries.

22. Experience of the conversion of extensive rural areas to urban use in this country is not lacking, indeed this has happened over the last 50 years particularly in those districts which now form a large part of the suburban area of Greater London. The change in character in such areas has been, of course, complete, and in fact it has constantly been deplored that planning control between the two wars was not sufficiently strong to prevent this "sprawl". The older residents of these areas, who could recall the former rural character, have had a possible advantage that urbanisation took place over a considerable period and thus people became slowly accustomed to their changed environment. The case, which would eventuate in the Thurleigh area, is that the change, considerably for the worse, would come about over a very short period.

23. As has been stated, the Thurleigh area is ringed with towns and as is to be expected, it is used extensively by residents of those towns and towns further afield for the more passive forms of recreation which only the open rural countryside can provide. This requirement for passive recreation in the area will increase as it is already planned that the surrounding towns will substantially increase population. One focal point in this rural area is Castle Ashby, part of the Compton Estate and owned by Lord Northampton. The present Castle Ashby House was commenced building in 1574 and has been extended over the centuries: the design of part of the building

Printed image digitised by the University of Southampton Library Digitisation Unit

is attributed to Inigo Jones. Capability Brown was employed in effecting improvements to the grounds and increased the size of the park. It is notable for its magnificent position in a typically English park: views from the Park are extensive. Because of its historic associations, its architectural interest and its beautiful gardens and setting, it is visited by thousands of visitors annually. The pleasure that Castle Ashby gives to those who seek quiet enjoyment and relaxation will be irreparably damaged, if it is to be subject to continual and intolerable noise: if such "showpieces" cease to attract the public, one wonders for how long in the future their upkeep can be supported.

24. Reverting to the effect of noise on the existing communities within the area, one of its consequences must be that many schools will only be able to continue if a very high expenditure is incurred in sound proofing and they will remain affected by intolerable noise nuisance outside classrooms. Recently, I have attended two public inquiries, one at Hammersmith, 9 miles east of Heathrow and one at Rochford, close to Southend airport. In the former case, the inquiry was continued only with extreme difficuly, in the latter case, speech had to be discontinued when aircraft passed over. If schools are discontinued, children will be required to undertake longer journeys to areas outside the area of intolerable noise. It may be said that the sound-proofing of school buildings can overcome this difficulty in certain circumstances: it is however not right to condemn children to the airless conditions of cave-dwellers. The sound-proofing up to a certain standard of modern school buildings is possibly not so very difficult; however, many of the County Schools and private schools in the area are of some age where adequate sound-proofing would be costly and difficult.

There is no doubt that if the airport is sited at Thurleigh, there will result increasing pressures for housing in the villages which lie outside the areas where noise disturbance would be experienced and that this housing would in many cases be of such quantity that the former character would be obliterated and a requirement arise for additional services and possible road improvements in those villages.

25. The change in the character of the present rural area to that of a vast noisy industry will of course change the whole environment of the area in which the people live. There is also the adverse effect on housewives carrying out the normal daily and weekly shopping in the village stores: besides being an everyday necessity, it is, in most cases, the chance for women to meet and talk to friends, which has previously occurred in pleasant surroundings. No doubt they could still meet, but conversation would be impossible.

26. The evidence given has up to this point largely concentrated on the anticipated effect on the general environment within the area, but as I have earlier stated, one of the factors of human contentment is satisfactory living conditions. The peaceful enjoyment of one's own house is possibly one of the most cherished requirements: if one lives in the town, one does so for the added convenience, but is aware that, in doing so, it is necessary to submit to other limitations of enjoyment, particularly noise. Excessive noise can render a house or parts of a house almost unusable. From personal experience of living in a quiet residential road, which changed to a secondary traffic route, I know that the rooms in the front of the house, particularly bedrooms, became most undesirable. The increased noises resulting from the airport's establishment will result in, for a large part, if not all, of the day, normal conversation being impossible, difficulty in concentrating sufficiently to read and particularly to study and interruption in sleep. Sound-proofing, even if possible, would result in ever-stuffy rooms with the consequent effect on well-being; air conditioning would be out of the question for almost all of the houses and cottages in the area.

Recreation would be impaired: it has come about that one of the chief sources of recreation for a large proportion of the population of the country, and in particular the older members of the community is watching television. Those living near Heathrow find this pastime particularly frustrating as constant volume alterations are essential and the picture is distorted whenever an aircraft passes overhead. The letter written by the Bedfordshire Old People's Welfare Council instances the fears in this respect.

If the enjoyment of the house is grossly impaired, the use of its garden is obviously even more so. To sit in the garden, for the purpose of enjoyment, is impossible, as is gardening, it is possibly a relief to start up the motor mower.

The Clerk of the Bedford Rural District Council* has drawn notice to a further matter of concern to his Council: there are within that Rural District some 2,420 dwellings below £30 rateable value or twenty per cent of the total number. Many of these dwellings are occupied by elderly couples: if, as would seem certain, many of such dwellings would need to be demolished, replacement dwellings, wherever they are built would need to be to a much higher standard. If replacement falls on the Council, and bearing in mind the age of most of the occupants, then the effect on rentals will be substantial: average council house rents within the Rural District are already high and would seem inevitably to increase.

27. There is also to be considered the effect of the use of Thurleigh as an airport on normal village life outside the house. Out-of-doors recreation will be particularly badly affected. For example, the enjoyment of outdoor games requiring any degree of concentration, such as tennis, bowls, golf and cricket would be extremely difficult if, during the game, the players are subjected every minute to the ear-shattering noise of low-flying aircraft. Indeed, outdoor games will become impossible and village life will inevitably suffer, because those wishing to take part in such sports will need to travel to areas outside those affected by noise. The normal enjoyment of walking in the countryside immediate to the villages

* p. 1879.

Printed image digitised by the University of Southampton Library Digitisation Unit

will cease. Possibly one of the quietest and most popular of all outdoor pastimes, fishing, could not be enjoyed. It should be appreciated that within the 35 NNI contour, there flows over 50 miles of the River Great Ouse, which is very extensively used for this sport and for boating. Reference to the two Schedules indicates the use that is made of the rivers in the area. The attached statement by Mr. W. B. Carter admirably describes the contribution which the rivers make to the life of residents of and visitors to the area. Also to the east of the airport site is Grafham Water, a large part of which is within the 50 and 40 NNI contours.

28. Many places of worship will become unusable, others will be so affected that the conduct of services will, if not be impossible, be greatly hampered by the continual interruption of aircraft noise. Churches very badly affected, whichever site were to be selected, will be at Sharnbrook, Milton Ernest, Pertenhall, Colmworth and additionally for Thurleigh B, Bletsoe. Very much the same can be said for a large proportion of functions in village halls and out-of-doors.

29. There can be no doubt whatsoever, that the life at present enjoyed in the villages and communities would no longer exist, if the airport were to become a reality. In common with many other rural areas in the country, the villages in the area house families whose forefathers have lived in these same villages: quite clearly, while, despite the tragic effect on their homes, some of the older people will be loth to leave and find a new house, their children will leave for more bearable surroundings, bringing about a break-up of the present family structure.

30. The social consequences of siting a third London airport at Thurleigh has been examined in respect of the population at present residing and working in the area. There are also to be considered the consequences to the population which would require accommodation in the area. Experience has shown that existing New Towns, although providing housing accommodation and indeed an environment very much superior to that in the more central areas vacated by inhabitants of new towns, are monotonous in character. This monotony has been created, not by inferior design either of the town or the houses, but principally because it has been necessary, in order to provide accommodation quickly, that the towns be created and built in a short time. Thus unlike all other towns in the country they have been the subject of "forced" rather than natural growth: for this reason, the variety in other towns, established in some cases over centuries, is missing. It is not seen how this defect of mass development all of an age can be overcome in providing accommodation for airport workers with the result that an unbalanced town or towns are likely to result. This imbalance is likely to be accentuated where all the inhabitants of the town are dependent on one source of employment. In the case of Heathrow employees, this imbalance is not appreciable as that airport adjoins the large conurbation of Greater London. No other town or city in the country is known which is dependent on a single source of employment and therefore no comparisons can be made.

31. In considering the associated urban developments which will become necessary, there is one further matter which is thought to be of major significance and that is the effect that such vast increases of population will have on existing town centres. As an example the County Planning Officer has referred in paragraph 3.3 to the *South-East Study** and its recommended expansion of the Bedford/Kempston area by 32,000 persons. Whether or not the Stagsden area would have its own town centre, there would be a strong attraction for the use of Bedford town centre by an additional population, very much in excess of its existing population. Experience has shown how a very much greater build-up of population than was anticipated, even when it has happened over a long period of time, has eventually produced near-chaos in the older town centres. The impact of an immense population increase will be even more startling when it occurs in a very short period of time, thus it could be anticipated that the present plans for Bedford town centre, which were based on a considerably less population, would be hopelessly inadequate. This certain result must be against the interests of the people who now live and work in Bedford and the same could be said, perhaps to a lesser extent, of other towns. There can be no doubt that the injection of these populations will lead to congested streets and pavements and further requirements of road improvements and car parking; it is not thought that such an influx into the existing town centres can be of benefit to those people who at present use them.

32. The Bedford Rural District Council has made known to the Resistance Association its anxiety about the impact of local flooding and its effect on residential premises, and the Council's Engineer and Surveyor has prepared the following note on this subject:

Surface water drainage

The impact and effect of surface water drainage from the airport and associated developments are bound to be recognised by farmers and communities familiar with the behaviour of the River Ouse during certain weather conditions and in circumstances which precede the construction of both the airport and Milton Keynes.

Since the record floods of 1947 many river improvements have been undertaken in order to minimise risk of repetition but extensive flooding occurred during 1968 reaching a level in July not far removed from those in 1947.

Average rainfall for Bedfordshire is about 20 inches but in 1968, 28·64 inches fell in the Bedford area made up as follows:

Month	*Total (inches)*
January	2·06
February	1·17

* HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

Month	*Total (inches)*
March	1·02
April	2·25
May	2·42
June	2·44
July	5·69
August	2·80
September	4·94
October	1·00
November	1·40
December	1·45
Total for year	28·64

From July onwards conditions of complete ground saturation existed with the result that there was instantaneous and total run off producing another high flood in September and frequent lesser floods well into 1969.

Flooding of domestic premises occurred particularly at Clapham where a section of High Street was under about 1 foot of water and cropped arable land along the river valley was flooded with heavy financial loss to farmers and smallholders.

It appeared that as far as possible flood water was held at various points so as to minimise flooding more nationally important agricultural areas of the fens through which the lower reaches of the River Ouse flow.

The Engineer to the Great Ouse River Authority calculates that from the airfield there will be a run-off rate of 2,000 cusecs once every two years which is equal to the bankfull flow of the river at the point of discharge. To this must be added the run-off from new roads and motorways and the urban developments in (a) the existing towns within 20 mile radius (70,000) (b) Raunds area (120,000) (c) North of Sandy (80,000) (d) Stagsden area (120,000).

During the whole of the second half of 1968 and for several months in 1969 the river was never less than full upstream of Bedford and presumably elsewhere. In these conditions even the modest rainfalls of October, November and December caused floods. How then could balancing reservoirs be discharged without creating greater floods?

It would superficially seem that since the most of the surface water would be discharged downstream from Bedford that the greatest threat from flooding would be in Huntingdonshire, the Isle of Ely and Norfolk. Under 1968 conditions however it appears inevitable that the River Authority would have to hold flood water for longer periods in upper reaches and higher and more sustained floods may be anticipated in these areas.

Unbalanced run off might also result from melting snow following prolonged severe weather as in 1963 when the balancing reservoirs may be frozen with similar consequences in north Bedfordshire as a result of flood regulation.

In all these circumstances the critical factor is the large areas of very low and fertile land through which the River Ouse flows.

33. The Rural Council also wish to draw to the attention of the Commission (a) recent capital investment by the Council in building of houses in those villages which would disappear if the airport is established at Thurleigh (b) recent capital investment in providing those villages with main drainage and (c) improvement grants in respect of the same villages and other villages which would be severely affected.

	A	*B*
(a) Housing	£489,070	£233,964
(b) Main drainage	£99,622	£23,800
(c)		£84,605

34. Attached to this evidence are the representations which have been made to the Association.

Appendix

Representation

Bedfordshire

All Saints Church, Odell.
Ampthill and District Preservation Society.
Ampthill and District Road Safety Committee.
Arlesey.
Aspley Guise.
Battlesden.
Bedford Federation of Townswomen's Guilds.
Bedford Federation of Women's Institutes.
Bedford Rural District Council.
Bedfordshire Association of Parish Councils.
Bedfordshire Competitive Musical Festival.
Bedfordshire Old People's Welfare Council.
Bletsoe Church Council.
Blunham.
Bolnhurst and Keysoe.
British Legion, Keysoe Branch.
Brown, W. I., Biggleswade.
Campton.
Cardington.
Clerical & Administrative Workers' Union Bedford Central Branch.
Clifton.
Clifton Improvement and Preservation Society.
Colmworth.
Dean and Shelton.
Edgworth.
Eversholt.
Everton.
Eyeworth.
Felmersham.
Flitton.
Flitwick.
Galbraith, C., Oakley.
Great Barford.
Green, Mrs., Pevenhall.
Harrold.
Hockcliffe.
Jones, Laurence, Felmersham.
Jackson, Peter, Stevington.
Kempston.
Knotting and Soulsdrop.
Langford.
Little Staughton.
London Gliding Club.
Mayes, A. J., Stevington.
Melchbourne and Yelden.

Printed image digitised by the University of Southampton Library Digitisation Unit

Bedfordshire—*continued*

Meppershall.
Milton Ernest.
Newland, W. F., Mauldon.
Northill.
Oakley.
Odell.
Old Warden.
Ogilvy, D. F.
Pavenham.
Pertenhall.
Podington.
Potton.
Prentice, Mary, Stevington.
Ravensden.
Renhold.
Roxton.
Rural Industries Committee (Beds. and Hunts.).
Saint Mary's Church, Felmersham Parochial Parish Council.
Sharnbrook.
Shuttleworth Collection and the Warden Aviation.
Southill.
Stagsden.
Sutton.
Tempsford.
Stotfold.
Staploe.
The 3 in 1 Club, Felmersham.
The Woburn Sands and District Society.
Wilden.
Willington.
Wilstead.
Woodward, Mrs. M., Bedford.
Wrestlingworth.
Wymington.

Huntingdonshire

Abbotsley Women's Institute.
Abbots Ripton.
Carter, W. B., Buckden.
Civic Society of St. Ives.
Eynesbury Women's Institute.
Folksworth and Washingley.
Great Staughton.
Kimbolton.
Papworth Everard.
Stow Longa.
Tilbrook.

Cambridgeshire

Coton Parish Council.
Great Shelford.
Haslingfield.
Toft.

Northamptonshire

Compton Estates, Castle Ashby.
Wollaston.

Buckinghamshire

Clifton Reynes.
Newport Pagnell and District Association of Parish Councils.
Olney.
Tingrith.
Weston Underwood.

Hertfordshire

Shillington.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. R. Westley*

Introduction

Robert Westley will say that his qualifications which may be relevant to the present hearings are:

He is a Bachelor of Science of King's College, University of London, he holds the Diploma of the College of Aeronautics, Cranfield and he is a Member of the Canadian Aeronautical and Space Institute.

He was among the first research workers[1,2,4] who studied model jet noise fields in detail and was a co-inventor[3] of the corrugated or lobed nozzle jet noise suppressor which was developed[10] for use on jet-propelled aircraft.

He was employed in North Bedfordshire on the research and development of aircraft automatic landing systems. He is still engaged on some aspects of aircraft noise research.[73]

He has piloted aircraft in the University Air Squadron, the Royal Air Force, the Royal Air Force Volunteer Reserve, the Royal Canadian Air Force Auxiliary Squadron Reserve, the Cranfield (Thurleigh) Gliding Club and flown from various airfields in the general area of North Bedfordshire.

He was born in Riseley, a village near the proposed airport sites. His family have farmed in the North Bedfordshire area from father to son since the eighteenth century and other branches of the family have farmed there for longer periods. His family own, or farm, several small holdings which are within a distance of approximately 2½ miles from one or other of the proposed airports.

He has been interested for some years in the conservation and improvement of countryside amenities in North Bedfordshire and he continues to be a member of the North Bedfordshire Preservation Society; the National Trust; The Bedford Archaeological Society; The Commons, Footpaths and Open Spaces Preservation Society; the Beds and Hunts Naturalist Trust; the Rambler's Association and the Bedfordshire Historical Society. He has been a member of the Riseley Parish Council and a governor of the Margaret Beaufort School.

The views expressed in this note are his own personal views and should not be interpreted as reflecting the views of any organisation to which he is or has been connected.

His representation deals mainly with aircraft noise. The subject has been clouded for some years by attempts to justify the widespread and extremely loud aircraft noises. The grounds were that all practicable efforts to reduce aircraft noise were being pursued, the future might hold a solution, it was unthinkable that one should stop progress in air transport and therefore one should be willing to accept standards of noise which would not be tolerated under other circumstances. This line of argument might have slight merit when one is considering an existing airport but he feels it is untenable when one is planning an airport in countryside that is unpolluted by noise. More so, when one appreciates it is planned for use in a future era of anti-pollution when it is likely that much higher standards of quietness will be in demand.

2. Review of "Site Information"*—section 5, Noise and Disturbance

It is appreciated that the Commission may have simplified[82] Section 5 to be helpful to local officials and members of the public who might not be familiar with the technical aspects of aircraft noise. However, a number of phrases may still retain technical implications of some significance. In view of the long term planning which is required for this airport, I feel it is most important that one should carefully examine the implications for Thurleigh at this stage.

2.1. *Night annoyance*

5 paragraph 13. "Separate night time NNI contours have not been prepared but, as the NNI is related to the number of aircraft movements and these are likely to be less at night than by day, it is a reasonable assumption at this stage that *the night NNI contours will be less extensive* than the day contours depicted."

I agree that this is a perfectly exact statement about NNI contours but it fails to point out that the last sentence of Section 5, para. 14, implies that the noise annoyance will be increased at night if the NNI contours at all points are not decreased by more than 17 NNI. Without aircraft special noise abatement procedures this could only be achieved if the unrestricted demand for night operations was less than 7½ per cent of the day movements. The Wilson Report[14] (page 215, para. 32–34) suggests that the average number of flights at Heathrow during an eight hour summer night was 25 per cent of the average number of day flights. May I draw attention also to the growing suggestion that large airports can only be fully economic if the aircraft movements are spread more evenly. Therefore it is reasonable to assume that the annoyance at night will be *more extensive* than the annoyance during the day.

2.2. *Special noise abatement procedures*

5 paragraph 13. "The contours relate to an average summer—normally the busiest time of the year—*with no special noise abatement procedures.*"

Special noise abatement procedures have been one of the main factors that have tended to slow the increase of jet noise over the last decade and therefore any suggestions that the Thurleigh airport will be operated without these procedures gives rise to some alarm. It is well known that these procedures

* Reference numbers—see bibliography p. 2089.

* Reproduced at p. 1801.

Printed image digitised by the University of Southampton Library Digitisation Unit

cause economic penalties and vigorous campaigns have been waged by the airline operators to have these procedures removed.

These procedures include throttle cut backs after take-off,[68] special departure routes to avoid populated areas, curtailment of payload or fuel to allow steeper climb paths, curfew on operations during certain night hours and conformance with maximum noise limits at certain points or areas.

The removal of all or some of these noise abatement procedures would result in a considerable increase of noise, say 5 to 10 PNdB, in certain areas. Nevertheless a large airport which did not require these procedures would have considerable operational and economic advantages and the pressures to remove such restrictions are very considerable. Such airports may be economically "feasible" if they are located in inexpensive rural areas or the sea and if one finds that the cost of expropriating and depopulating perhaps 100 to 200 square miles can be justified by the revenue generated by the airport. The new Montreal Airport[42] of St. Scholastique, Quebec, which is of smaller size, has announced expropriation action, for various reasons, on approximately 60,000 acres of aircraft "access corridors" at a cost of about $40 million.) Therefore even in England I include the possibility of a very much larger land-take being required. This might correspond to the area within high noise level contours and might progressively cover 75,000 to 150,000 acres for an airport of the size of Thurleigh. This, of course, is quite apart from the large areas being discussed to house the extra population.

I do not think the full significance of aircraft access corridors and their possible necessity because of noise has yet been appreciated. Nevertheless I am of the opinion that their necessity will become absolutely clear in future years as the world's population become more conscious of the critical conditions into which civilisation has been placed by the overwhelming problems of many forms of "pollution", including noise.

I appreciate that this site information phrase may only refer to the contour calculation—however if this point is not clarified it could have very serious airport operational implication and cause noise increases above those assumed.

2.3. *Noise certification*

5 paragraph 13. "It has been assumed in the NNI contours that noise certification regulations will be introduced and will lead to a reduction in the noise of aircraft by 10 NNI over the next 20 years, but that half this reduction will be offset by growth in aircraft weight."

I would like to point out that noise certification regulations will not in themselves necessarily secure a reduction of aircraft noise at the airport. An aircraft which meets the noise certification regulations, say by special noise abatement procedure, might be operated in a different way during airline operations. This point was clearly brought out during the hearing in the US Senate of Aircraft Noise Abatement Regulation S. 707 and HR 3400.[18]

The Port of New York Authority in a statement to the Aviation Sub-committee pointed out that the American Transport Associations statement before the Committee

> "is merely a reiteration of the ATA's long-standing policy of opposition to any effective Federal intervention in aircraft noise abatement. While the ATA purports to support the idea of effective regulation and control of aircraft noise through a Federal program of aircraft certification, the legislation which it proposes in lieu of HR 3400 would, in fact, do no such thing.
>
> Under the ATA's proposed bill, aircraft noise and sonic boom standard, rules and regulations would be limited to the granting of *only type certificate* by omitting the following language contained HR 3400 etc."

The statement closed by pointing to the

> "airline-organised group called the National Aircraft Noise Abatement Council,"

and stated

> "The Board of Directors of AOCI took formal action to withdraw from NANAC on 6th February, 1968 and in doing so termed further membership in NANAC 'futile' and charged publicly that the efforts of airlines and aircraft manufacturers acting through NANAC' have been largely a smoke screen which prevents a solution of the noise problem.' "

I am aware that the US Federal Aviation Agency, the body charged with executing the new Aircraft Noise Abatement Regulation, issued a Notice of Proposed Rulemaking (NPRM 69–1) entitled "Noise Standards: Aircraft *Type Certification*" Jan. 11, 1969.

This proposed and unratified certification rule does not include present aircraft, it does include supersonic transport and furthermore it appears that any effective action to ratify it is being held up by airline or manufacturer's objections on the grounds that future aircraft will be unable to meet the new noise certification, which differs only slightly from the regulations that the public in good faith understood were being met already at New York and London over the last 10 years. It also allows noise levels to rise at a plateau with increased aircraft weight. Indeed it is not clear to me at all whether the Government agencies in the USA and Britain are able to take vigorous action to enforce aircraft noise abatement regulations or whether they will pursue a policy more allied with NANAC. In the case of the USA one fortunately has the airports under the continuous threat of legal action by the public. I understand in the case of Britain, that such public action has already been pre-empted by the "farsighted" government legislation in 1949. A responsible government concerned about the public and aircraft noise might restore these rights. Under the circumstances and in the light of my experience in aircraft noise, I would consider that it is highly optimistic to assume that any effective or quick action will be taken to relieve

AOCI—Airport Operators' Council International.

Printed image digitised by the University of Southampton Library Digitisation Unit

the noise levels by the passing of legislation or by the enforcement of any existing regulations.

It must be clearly understood that no manufacturer can afford to add noise suppression to his aircraft if it endangers his competitive position. In turn, it would be naive to expect the government of a country to reject a new design of aircraft, into which it has put many hundreds of millions of pounds or dollars, on the grounds of noise, if the aircraft is otherwise successful. No airline operator will be willing to adopt noise abatement procedures if it makes his operations uneconomic or endangers his competitive position with another airline that is not so handicapped. No aircraft operator will voluntarily take vigorous steps to reduce noise if it jeopardises the economic running of the airport. Fortunately in some countries, other than the UK, the airport operator may find that litigation for damages due to noise, (suits totalling $2,815,000 for 61,000 households are now pending in Los Angeles),[72] could put him out of business if he doesn't take vigorous action to curb aircraft noise.

The need for international regulations is very clear[11,42] and has been so since the beginning of jet operations. I am very much aware of progress[52,73] in the field of aircraft noise suppression but there is a wide gulf between what is practical and what is politically or economically practicable.

Therefore I consider that it is unlikely that the increase of aircraft noise with increase of weight will be checked until very effective international regulations have been passed and enforced on a much wider scale than is being accomplished or contemplated at the present by certification or otherwise.

2.4. *Anticipated Noise "Reductions"*

5 paragraph 13, "10 NNI over the next 20 years but that half this reduction will be offset by growth in aircraft weight."

(i) I would first like to point out that the noise certification regulations will apply to an individual type of aircraft and not to an airport area as this use of NNI might imply. Therefore I assume that this statement might mean that the noise of the largest indivdual aircraft is expected to be reduced by approximately ½ PNdb per year—an amount which in one year would hardly be deteced by a person on the ground. It is indeed true, sad and extraordinary that, to be "practicable", the proposed noise certification regulations allow aircraft noise to increase with increase of aircraft weight. Furthermore one would expect an increase in NNI at the airport because of the net increase of aircraft numbers, say 15 per cent per year, or 1 NNI per year giving a net increase of ½ NNI per year and not a decrease of ½ NNI per year as suggested in the above phrase.

(ii) Next we should examine the starting noise level to which this "reduction" is referred. Some members of the public may have heard and believe the suggestion that regulations at New York and London had already limited the noise level of jet aircraft to that of propeller driven aircraft of 1958. Noise levels of a large "representative" propeller aircraft of that time were:

Perceived Noise Level (average)	109	107½	103	98½	PNdb
Perceived Noise Level (exceeded on 25 per cent occasions)	112	111	107	101	PNdb
Distance from take-off roll	2¾	3	4	5	statute miles

The present noise regulation by day is 112 PNdb at New York and 110 PNdb at London. Clearly if propeller driven aircraft noise (25 per cent) was not to be exceeded by jet aircraft noise, the measuring point for jet aircraft should be at or less than 2¼ miles for New York and 3¼ miles for London. (One non UK government agency appeared once to believe that the monitoring point, using the same near noise criteria might be put 7 miles away or, for that matter, anywhere apart from the high noise area!)

The new certification regulation proposes 108 EPNdB at 3½ *nautical* miles and at the same time it has been stated[42,67,73] that present jet aircraft may produce 110 to 118 EPNdb and that future jet aircraft may produce 109 to 116 EPNdb. If true, this suggests that present jet aircraft are exceeding the propeller aircraft criterion by 10 EPNdb and that future aircraft will exceed it by 8 EPNdb. It should be pointed out that the period at New York between 1952 and 1958, before the introduction of jets, was "highlighted by major law suits arising from noise of piston-engined aircraft." The present site information has not made it clear whether it bases the present noise levels on the "propeller driven noise levels" of jet aircraft or on the noise levels which have been put forward to prove that new certification rules are not practicable.

It is important to clarify these speculative noise reductions and the "present" noise levels because on the one hand the public may assume from this phrase that they are about to receive a 5NNI *reduction* below propeller driven aircraft standards whereas on the basis of the extra facts they might only receive an increase of (5+8) or (5+10) NNI i.e. 13 or 15NNI. A discrepancy of about 18 or 20 NNI or the difference between "intrusive" and "very annoying". This difference could push the "intrusive" contour an extra 20 miles or so away from the airfield and indeed this is what appears to have happened between 1958 and 1969.

In concluding this section I would like to draw attention to appendix I. It is a paper[11] which was circulated to an ICAO meeting that had been called in 1959 to discuss and advise on the problems which would be caused by the introduction of jet airliners. If one would kindly read the introduction and conclusion one will appreciate that Bedfordshire connected research workers did anticipate the problems in 1959, did give ample warning to the world's authorities and did suggest almost the same regulations that are still being suggested in 1969. Proposed in 1959 as "practicable" was 110 PNdb to be reduced by 2½ PNdb over 10 years to 85 PNdb. Now we hear, in 1969, crocodile tears from industry that they were given no warning and that in the future

Printed image digitised by the University of Southampton Library Digitisation Unit

the matter should be "generalised" under the "co-ordinated planning concept recently propounded by the ICAO" and that:

"all we ask is that the matter should be 'evolution' not 'revolution'. Additional time limits or sufficient advance notification would save unnecessary effort and insure that problems are dealt with correctly.

Or at any rate most of them, for there is one exception to the rule. I refer to the sonic boom about which reliable information will not become available until very late."[37]

May I say *that* is exactly the same argument as was used to introduce jet noise in 1959!, (for the sonic boom predictions one might care to read one of the earliest papers on sonic booms—again by Bedfordshire authors!)[5] How long will this comedy of errors and political ineptitude continue? Will the men of Bedfordshire have to revolt and blow up the new London Airport before someone realises that a monster has been created which produces totally unacceptable noise levels? Let us return to cold logic and the removal of the smoke screen.

2.5. *Subjective intrusiveness*

5 para. 14

Noise level	NNI
Intrusive	40–45
Intrusive/annoying	45–50
Annoying	50+

(I assume that what is headed noise level is not "noise level" but "subjective intrusiveness". One might also point out that subjective intrusiveness scale is usually associated[19] with the db(A) noise level scale of single aircraft and not with the PNdb noise level scale which is contained within the NNI scale but this point may be glossed over now.)

In my opinion "intrusive" intrusiveness is not one of the best technical terms that a layman would most easily appreciate. Indeed if at this distance I have interpreted correctly the views of the Bedford Borough Council reported in the press, it would seem that they assume "intrusive" to mean a noise that is wholly acceptable. I would like to point out that "intrusive" for single observation on aircraft has been equated to 108 PNdb.[14,32] But a diesel freight train passing at a distance of 100 ft. has been cited[32] as a lower level of 105 PNdb, a 6 or 8 lane highway with heavy traffic has a typical noise level of 90 PNdb at 50 ft. and "downtown" commercial areas with heavy traffic may have continuous background noise levels of 75–85 PNdb. I would suggest that many people in the countryside and in the towns would consider these quieter noises to be very intrusive or very annoying if one uses the language of the simple Bedfordshire men. Therefore I suggest that the technical words "intrusive" or "annoying" may not be too helpful to the public who are attempting to assess the noise of the new airport and there seems to have been very little point in introducing these terms. Perhaps the Americans have a less devious command of the English language—on an "acceptability rating" scale they rate 108 PNdb as "unacceptable" and Bedfordshire faces the compounded intrusion of about 2,000 aircraft per day.

Perhaps the use of the words "intrusive" and "annoying" was intended to be of some technical assistance. I regret I don't find this to be so because if one checks with the Wilson Report (p. 208) one finds that the "Farnborough Experiments" give intrusive as 25 and 30 NNI while the Social Survey gives "intrusive" as 35 NNI. Let us accept 25–35 NNI —these values are about 10 NNI less than the values of 40–45 NNI quoted by the site information. Turning to "Intrusive/Annoying", we find the Wilson Report gives 31–41 NNI and yet the site information gives 45–50 NNI. Continuing to "Annoying" one finds the Wilson Report gives 38–48 NNI and the site information gives 50+ NNI. (In my opinion the word "intrusive" has not yet been defined and it might, in some tests, be lower still by another 10 PNdb.)

I am aware of some controversy[41] in England over background noise but, for some years, it has been indicated[16,17,39] in N. America that subjective scales should be moved to lower NNI values (or the U.S. equivalent of NNI) when the background noise is low. (I very much doubt whether anyone who works at a noisy airport and stays at a cottage in the Canadian Wilds about 20 miles away from the airport would think twice about the validity of such a correction.) The Farnborough (Air Show) Experiments[14,19] at about 150 yards from the take-off end of the runway could hardly represent an airport area or have had a background noise which is comparable to the Bedfordshire countryside and I wonder if the Commission decided to shift the values of NNI to allow for this. If so, I would respectfully like to suggest that the scale may have been moved by 10 NNI in the wrong direction giving a total error of perhaps 20 NNI.

2.6. *Flight paths*

Section 6. "Flight path maps will not give information about the levels of disturbance caused by aircraft in the vicinity of the airport."

May I say that it is virtually impossible to give an accurate assessment of the disturbances caused by aircraft in the vicinity of the airport unless flight path maps and numbers of aircraft movements have been supplied. One might needlessly waste much time because this information was not supplied directly in the site information.

2.7. *Disturbance in stacks*

Section 5 para. 15: "The disturbance caused by aircraft held in stacks is most unlikely to reach 40 NNI."

I note that "intrusive" is below 40 NNI and furthermore the noise from stacking aircraft may be of considerable longer duration and this is not taken into account in the NNI scale although other more sophisticated annoyance scales will give due allowance for the longer duration. (A similar argument can be used for ground run ups.) Just as important is the fact that the aircraft have to leave the stacking areas and approach the airfield. At least, I would have thought that one ought to have selected two arbitrary stacking areas (one north and one south of

Printed image digitised by the University of Southampton Library Digitisation Unit

the airport) and to have indicated the paths and altitudes through which the aircraft might travel in order to connect to the final approach. One could then assess the noise effects and no doubt they will be considerable.

2.8. *Airport Layout and Noise*

I note that other large airports now being planned have at least one or two cross runways. At Thurleigh airport, both the wind statistics and the indicated required runway capacity of 100 million passengers annually for only four runways, suggests to me that this airport is grossly under designed for its supposed role and that extra runway and cross runways will be needed. (Note average passenger per aircraft at present is approximately 60!) This might well increase the initial land-take inside the airport perimeter to 15,000[A2,61] acres from the 7,500 acres suggested. It will also add a considerably larger area to that already affected by noise. I note also that the NNI contours have not been calculated for take-offs and landings in the ENE directions for the first four parallel runways and this would be assessed together with the noise effects of cross runways and stacking.

I would suggest also that this layout is one of the worst possible for sideways noise and at least a one-mile buffer zone will be required between the runways and the boundary for normal aircraft and perhaps more for Supersonic Transports. No consideration has been given for VTOL/STOL facilities and accompanying noise. No mention of ground run up noise.

2.9. *Summary*

I conclude that the site information may have:

1. Underestimated the annoyance at night by say (17 NNI—6 NNI)=11 NNI.
2. Implied that this airport could be operated without special noise procedures and therefore could have underestimated noise annoyance by another 5 to 10 NNI.
3. Revealed that an extra land-take of 75,000 to 150,000 acres may be necessary for aircraft noise access corridors.
4. Been over optimistic in assessing the effects of aircraft noise certification and it seems to disclose a very naïve attitude to the politics of aircraft noise. The public who may believe that they are about to receive a noise reduction of 5 NNI below unacceptable levels equal to piston aircraft noise may be shocked to find that they end up with an increase of 15 NNI.
5. Used technical terms of subjective noisiness which convey little meaning to the layman and indeed they may be incorrect when used in the context of a very quiet Bedfordshire background or for areas not very close to the runways. As technical words, it appears that they have been assigned the wrong NNI values. Suggesting double errors of 10 to 20 NNI.
6. Given contentious reasons for not disclosing flight path maps and numbers of aircraft. Glossed over the noise problem of stacking and flight path connections to the airfield.
7. Not considered the possibility that more than four runways and cross runways will be required with additional noise problems and has not considered take-off and landing noise in the reverse direction.

I appreciate that not all the points I have mentioned are necessarily additive at the same time but it is unsatisfactory to find that they almost all might accumulate a bias towards playing-down the annoyance of noise. Therefore the total accumulated effect could have underestimated noise annoyance very considerably and I can neither accept the NNI contours nor can I accept the proposed interpretation of them.

As a result I have attempted to independently estimate the noise levels surrounding the airport and I present them in the following section.

3. Prediction of noise levels in area around Thurleigh airport

3.1. *Estimate of flight paths*

It is first necessary to obtain information on the flight paths of aircraft which will arrive and depart from the airport.

3.2. *Site information flight paths*

I examined the NNI contours supplied as site information and concluded that the Commission had in each case made an estimate of the likely flight paths and had in each case based their NNI calculations upon these examples.

By inverting the NNI calculations it is possible to derive an estimate of the selected flight paths and, in theory, an estimate of the numbers of aircraft using each flight path. I then arrived at the following conclusions for the four-way Thurleigh airport (slightly modified conclusions were made for the two-runway case).

The site information contours indicate basically:

1. Two parallel approach paths from the ENE terminating on the two most easterly runways.
2. Two parallel take-off path starting at the two most westerly runways and departing on parallel courses on the WSW direction. One flight path departing to the NNW between Northampton and Wellingborough. One flight path departing to the SW across Olney and Stoney Stratford.
3. Two extra approach paths and two extra departure paths.

It is these last four flight paths that I find disturbing because the evidence suggests that they are not inconsistent with two "race track" type flight paths or "airfield circuits" with semi-circular ends of diameter 7 miles (6 miles) and centres approximately at Bromham, Eaton Socon, Stow Longa and Wollaston. The downwind leg connecting the semi-circular ends of the southern circuit appears to pass near Bedford, Sandy and St. Neots while the downwind leg of the northern circuit appears to pass over Earls Barton, Wellingborough, Higham Ferrers, Raunds, Molesworth and Ellington. It may be old fashioned to suggest that these are the proposed airport circuits for Thurleigh but I consider there is every likelihood

Printed image digitised by the University of Southampton Library Digitisation Unit

that such circuits will be used and that possibly they will be integrated with the flight paths for 180 degree turn departures to the east and with the arrival flight paths from the stacking areas based, perhaps, near Thrapston and Sandy.

I have assumed the above distribution of flight paths in my first estimate of the noise levels around Thurleigh airport.

3.3. *Random departure and arrival flight paths*

Even if aircraft do attempt to adhere to the ideal flight paths selected in the previous section, there is bound to be an appreciable wander from these paths. Furthermore air traffic control and pilots must deliberately divert the aircraft from these paths in order to integrate safely with the general air traffic. Another aspect is the obvious future introduction of automatic control or automatic direction of air traffic to take full advantage of the complete volume of airspace which exists around and on the approaches to an airfield. (At present the airspace along narrow paths is congested because we have not yet mastered and introduced the accurate control of aircraft over the complete volume of airspace that is available. I believe that there will and must be substantial advances in this field of control before Thurleigh airport is fully developed.)

Therefore in my second calculations of the noise distributions I have assumed that the flight paths may depart and approach the two sets of runways from all directions, that they will be restrained by minimum aircraft turning circles of 7 mile diameter and that the aircraft will flow into and out of the airport in a WSW direction through the funnels already defined by the previously mentioned race-track circuits.

It is my opinion that the actual distribution of aircraft noise around Thurleigh airport will be made up of a combination of the two flight path cases and therefore it is prudent now to consider both distributions.

3.4. *Estimate of Perceived Noise Level contours (PNdb)*

The Perceived Noise Level contours for the selected flight paths case and the random flight path case are shown in figures 1 and 2 for take-off directions to the WSW. (Additional contours are required for take-offs towards the ENE and for cross runways.)

I have assumed certain perceived noise levels which I consider are appropriate for present long-range jet aircraft. It seems to me that one should first use these values when estimating the noise levels around Thurleigh airport and then carefully consider the increase or decrease of noise levels that may result from the introduction of new types of aircraft.

(It is the opinion of some aircraft acousticians that the perceived noise level scale should be modified to allow for the extra effects of tones (say from fan noise) and for the extra effect of duration of the sound. The duration effect becomes greater at longer distances from airport. It is my opinion that more practical progress would have been made in suppressing aircraft noise if less time had been spent on sponsoring something like one or two hundred different forms of noise scales to confuse the issue. However I do concede that corrections for tones and duration should, by some means, be incorporated in future perceived noise level scales. It is generally accepted in N. America that this will be done through the adoption of the Effective Perceived Noise Level scale.)

My estimates assume the old type perceived levels for the take-off paths but, with the knowledge that approach path noise annoyance has increased with the introduction of fan jets, I have taken the liberty to use Effective Perceived Noise Levels on the approach paths. In other words it is possible that N. American opinion may consider that I have underestimated take-off noise whereas UK opinion may consider that I overestimated approach noise.

The perceived noise level contours have been plotted at 5 db intervals from 110 PNdb near the airfield to 75 PNdb at extreme distances. The transparent overlays are suitable for use on the Site Information maps or maps with four mile to one in. scales and can be readily moved as the site shifts backwards and forwards across North Bedfordshire.

4. Peace and quiet of countryside

It is not popular in aircraft operating circles to bring up the subject of background noise or the pollution of low background noise. However I must point out that any noise above the background noise is likely to be heard and strictly speaking should be considered as a source of annoyance or at least as a source of pollution. Unfortunately I do not now have at hand background noise levels for North Bedfordshire, nevertheless I do know that they were very low. For examples, in the day it was certainly possible to clearly hear jet aircraft at their cruise altitude overflying North Bedfordshire and at night, on occasions of freak weather conditions, it was possible to hear voices of people at Brook End, Keysoe from Bottom End, Riseley—a distance of about two miles over a hill. (It was not my intention to imply that Keysoe folk have very loud voices or that Riseley folk hear too well, but only that the background noise was extremely low!) A point that has not been investigated fully is that the noise from medium or high altitude aircraft does "rumble" intermittently due to atmospheric transmission.

One of the major joys of North Bedfordshire for many is the peace and quiet of the countryside and I would suggest that there are many times and places in the countryside where the background noise level might be as low as 30 PNdb *below* the lowest level of the 75 PNdb of aircraft noise that I have considered on the noise contour chart. Therefore my chart does not adequately disclose the full area which will be affected by noise from the point of view of those who value peace and quiet as a countryside amenity. I appreciate that those who examine the extent of only the 75 PNdb contour might cynically remark that already this area appears to stretch "half way" across England. Indeed it does, and to me the greatest crime that this airport will have committed is that it will have destroyed the peace and quiet of

Printed image digitised by the University of Southampton Library Digitisation Unit

the heart of the English countryside in the very area where it will be most needed in future years for relaxation by the hard pressed urban and country population. What is the "economic" value of preventing the countryside background noise levels from being intruded upon and deteriorating into urban background noise levels i.e. of preserving the peace and quiet for future generations? I would venture to say that future generations might value it as highly as the present price of land—however let us be less idealistic and value it as say 10 per cent of the agricultural value of land or about £25,000 per square mile. With say 2,000 square miles of noise polluted countryside this places a figure of something like £50 million on the loss of this amenity alone. One might argue that a larger area of the countryside will suffer noise pollution.

I apologise for having introduced and dismissed the subject of countryside amenity of peace and quiet so abruptly but in my opinion jet aircraft were introduced into service under the cloak of a gigantic misunderstanding or "hoax" and a gamble. The "hoax" was that noise levels of 112 or 110 PNdb were acceptable levels in urban communities. The gamble was that aircraft noise would be reduced between 1959 and 1969. It is therefore necessary to return to a consideration of the more critical areas of noise level which are between 75 PNdb and 110 PNdb using the conventional arguments for urban noise.

5. Estimate of effect of multi fly-overs by Noise and Number Index (NNI)

The contours in figures 1* and 2* refer to the peak perceived noise levels as each aircraft passes a given point on the ground.

Quite rightly the *Site Information* considers that the annoyance of a number of aircraft is greater than the fly-over annoyance of a single aircraft. Therefore a correction of 15 log N (where N is the number of aircraft which are heard at a point) is added to the peak perceived noise level, i.e. the effect of 100 aircraft would be to add a correction of 30 db or, in other words, the accumulated annoyance of 100 aircraft at 70 PNdb is equivalent to the annoyance of one aircraft at 100 PNdb. When 80 PNdb is subtracted from the perceived noise level corrected for multi fly-overs one obtains the quantity known as the Noise and Number Index (NNI) i.e. NNI = PNdb + 15 log N − 80.

In my opinion the number of aircraft movements at the Thurleigh airport is likely to be between 2,000 to 4,000 aircraft per day if one is considering the peak summer day case of an airport which handles 100 million passengers annually. (Indeed to argue otherwise might be to argue that increase in the number of passengers carried per aircraft would more than compensate for the rate of growth of passengers and therefore the number of aircraft operations would decrease with time and hence the third London airport is unnecessary.)

If one accepts the lower figure of 2,000 aircraft per day one might, to be consistent with the site information chart, arbitrarily allocate the flight movements as follows:

Arrivals:

80 from the north turn in. (Ellington)
80 from the south turn in. (St. Neots)
420 from the north straight-in approach. (St. Ives)
420 from the south straight-in approach. (Fenstanton)

Departures:

80 to the north race track. (Wellingborough)
100 to the NNW departure. (Sywell)
320 to the north WSW departure. (Towcester)
200 to the south WSW departure. (Silverstone)
220 to the SW departure. (Stony Stratford)
80 to the south race track. (Bedford)

(This is only one of several possible sets.)

It is now possible to use the PNdb contours of figure 1, the NNI formula and the flight movements numbers to obtain an estimate of the NNI distribution about Thurleigh airport. (One should take some care in deciding the appropriate number of movements which are heard e.g. it will be clear that points midway between the two WSW departure routes will hear 520 aircraft and not 320 or 200 aircraft.)

The Noise and Number Index for various aircraft movements including the airport range are given below:

No./PNdb	*75*	*80*	*85*	*90*	*95*	*100*	*105*	*110*	*PNdb*
1	−5	0	5	10	15	20	25	30	db
2	0	5	10	15	20	25	30	35	NNI
5	5	10		20		30		40	
10	10	15	20		30		40	45	
20	15	20		30		40		50	
50	20	25	30		40		50	55	
100	25	30		40		50		60	
200	30	35	40		50		60	65	
500	35	40		50		60		70	
1,000	40	45	50		60		70	75	
2,000	45	50	55	60	65	70	75	80	

One notes that an NNI of 30 is equivalent to 200 fly-overs at 75 PNdb, 100 at 80 PNdb, 50 at 85 PNdb, and one at 110 PNdb. An NNI of 50 is equivalent to 1,000 fly-overs at 85 PNdb, 500 at 90 PNdb, 200 at 95 PNdb, 100 at 100 PNdb and 20 at 110 PNdb.

Comparison of Site Information DRG No. CTLA 4/3* with figure 1 and the above tables suggest that the *Site Information* may have underestimated the NNI values by about 10 db. Half of this bias may be accounted for by the assumption that there will be "a reduction in the noise effect of aircraft by 10 NNI over the next 20 years, but that half this reduction will be offset by growth in aircraft weight". However, I am at a loss to account for the residual. I must emphasise that we are considering an extremely large airport with large numbers of aircraft movements and I am inclined to the view that the 40 NNI curve shown in the site information might well turn out to be 50 NNI when based on more cautious calculations. We are therefore faced with an extremely

* See attached wallet of maps and diagrams.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

serious problem because in an urban environment the Wilson Report has shown that about 50 NNI by day and 30 NNI by night is totally unacceptable. In a rural environment it is not impossible that the population will be approximately 10 NNI more sensitive giving a totally unacceptable level of 40 NNI (or 20 NNI by night) over a region which occupies a larger area than that shown by the site information.

I would like to draw to the Commission's attention the very large areas which appear to be critically affected by noise in Bedfordshire, Buckinghamshire, Northamptonshire, Huntingdonshire and Cambridgeshire.

I have reached the conclusion that such an airport site is only practicable in North Bedfordshire if one expropriates most of the land within the lowest valued contour line shown on the site information drawing i.e. about 150 square miles. If one ignores buildings within this area one appears to arrive at an "economic" cost of £37½ million for farm land or perhaps £75 million if we include simple buildings.

A point that is not frequently appreciated for a large airport is that the unacceptable NNI contours may now have spacings along the flight path of 5 NNI per 5 or 10 miles and therefore a doubling of the number of aircraft could push the critical contours outwards by 5 or 10 miles. Similarly an increase of aircraft noise by 5 PNdb would result in an additional shift of equal distance.

6. American equivalents of NNI—Noise Exposure Forecasts (NEF)

The Composite Noise Ratings, CNR, are now being superseded by a formula, NEF (similar to NNI), which is based on the Effective Perceived Noise and therefore includes tone and fly over duration effects. It is called the Noise Exposure Forecast, NEF. More than one version has been proposed but a version by ref.[74] gives:

$$NEF_{day} \sim EPN\ db + 10 \log N_{day} - 88.$$

$$NEF_{night} \sim EPN\ db + 10 \log N_{night} - 76.$$

compare $NNL = PNdb + 15 \log N - 80$.

The NEF contours of 30 NEF and 40 NEF are used to define three land use areas.

The area between 40 NEF and the airport boundary is considered suitable only for commercial and industrial development with buildings designed with special noise reductions.

The area between 40 NEF and 30 NEF is an area in which private residences may complain perhaps vigorously and concerted group action is possible. There should be no schools, hospitals, churches or theatres in this area. New single dwelling construction should be avoided in this area. Hotels, offices and public buildings may be allowed if designed with noise reduction measures. Commercial and industrial development is possible.

The area outside 30 NEF may be considered free of restrictions except that schools, hospitals and churches may require special noise reductions.

If one assumes for example that N=100 fly overs we find approximately that these two boundaries correspond to:

NNI=43 and 53 (day criteria).

NNI=31 and 43 (night criteria).

This would therefore suggest that no more residential development should be permitted within the 43 NNI contour if the day criteria is more exacting and within the 31 NNI contour if the night criteria is more exacting (which it normally is!). It also suggests that residential life within the 43 NNI is completely intolerable. All of these conclusions show remarkable agreement with the Wilson Report recommendations and yet after 8 years it still seems that they are being totally ignored.

Ironically the Americans consider that all areas are suitable for recreational purposes of non-spectator form but I have not yet been able to find out what they had in mind (perhaps a national park and golf courses for the deaf or a motor cycle trials course!). Would such a park in North Bedfordshire be a national asset or not?

7. Other recommendations for noise criteria

My opinion for some time[11] (1959) has been that there will be critical regions of annoyance around an airfield until the noise of aircraft is reduced to at least 85 PNdb.

Prof. F. Ingerslav[13] (1961) suggested that "a worthy aim to keep in mind when designing new airports is 80 db during daytime and 60 db at night". At that same time one reply from industry indicated "that succeeding generations of jet aircraft are being designed to give noise levels over the community not greater than 100 PNdb." Another reply from industry indicated 80 and 60 db were too low aims to be practical but a "worthy aim" was a compromise and suggested "that 100 PNdb and 90 PNdb for day and night operation is more realistic." Today even that goal appears elusive.

McKennell's[20,21] (1961) Social Survey at London (Heathrow) Airport is very clear—it shows that 10 per cent of the people below 85 PNdb are "annoyed", 16 per cent between 85-87 PNdb are annoyed, 23 per cent between 88-90 PNdb, 24 per cent between 91-95 PNdb, 36 per cent between 94–96 PNdb, 48 per cent between 97–99 PNdb, 51 per cent between 100–102 PNdb. He clearly demonstrates that peoples' reaction to a given noise are widely spread. Therefore one doesn't eliminate the annoyance to many other people if one excludes those living in an arbitrary area with noise than say 100 PNdb or 95 PNdb. He clearly demonstrates that the annoyance increases with the number of occurrences of the noise and this inevitably means that the annoyance will spread to wider regions if one had more aircraft. No amount of speculation on the future noise of individual aircraft or assumptions that there will not be very large numbers of aircraft at the new airport can change this spread of annoyance.

Kryter[26] (1967) indicates that, for only 50 occurrences of noise per day, the tolerable limits for rural residentials areas is 30 NNI and even at this the public reaction might vary from "no complaints to authorities" to "organised appeals to authorities to

Printed image digitised by the University of Southampton Library Digitisation Unit

stop noise". He placed the tolerable limits for city residential areas as 35 NNI and tolerable limits for mixed residential and business areas as 40 NNI. The tolerable limits in industrial areas are quoted as 50 NNI.

McClure[72] (1969) in discussing the effect of jet noise on the value of real estate suggests, "90 PNdb is ordinarily considered the watershed point between tolerable noise and annoying noise for residential areas," and concludes "property exposed to jet noise is worth 10 per cent to 20 per cent less than it would be if not exposed to jet noise".

Tyler[35] (1966) indicates that a "barely acceptable" reaction from a community is likely to occur at 81 to 85 PNdb and that is likely to be lowered to the range of 70 to 80 PNdb if operations are continuous at night and day.

Van Os[35] (1966) indicates that 42 NNI is the limit of tolerability and this is surpassed by 33 per cent of the people.

In my opinion the evidence is overwhelming that 85 PNdb (or 70 PNdb at night) from a very busy airport is likely to cause annoyance and be on the limit of tolerability.

8. Interference with speech

One of the greatest sources of annoyance by noise is the interference with speech. Again one of the pleasures of country life in N. Bedfordshire is that one is able to talk outside in a low voice. A pleasure which many urban areas are no longer able to enjoy.

There are various noise scales by which the interference with speech can be assessed and in the final assessment of this airport it would seem advisable to plot contours of one or other of the various speech interference scales to show the public how extensive the intereference will be across the country. A bibliography of aircraft noise[42] states in its summary of USAA No. 154, Aug 1960 that:

> In considering how to keep aeroplane noises near to airports to acceptable levels the arguments mentioned above have been followed. At first the accepted level was argued to be that which interfered with speech to a specified extent in the houses near the airport boundary, but it was very quickly realised that such standards could not be upheld, since they had been exceeded regularly in the past and would preclude most aircraft already operating from taking off.

I came to the same conclusion even when considering areas much further away from the airfield boundary.

Kryter[26] compares various methods for judging the masking of speech and points out that some of the "uncertainty involved in predicting community response to aircraft noise could possibly be reduced by giving consideration to speech interference from aircraft noise".

Pending more information from the Commission, one can make an approximate assessment from the Thurleigh PNdb noise contours of fig. 1 and 2. A very rough subtraction of 20 from the peak PNdb will yield figures which are about equal to the peak Speech Interference Level or SIL.

Harris[8] gives values of SIL which barely permit reliable conversation. For example 65 SIL, (say 85 PNdb), requires the listener to be as close as 1 ft. for a normal voice and 2 ft. for a raised voice. A 55 SIL, (say 75 PNdb), allows a normal voice at 3 ft or a raised voice at 6 ft. while 43 SIL (say 63 PNdb) allows a normal voice at 12 ft.

A check of figure 1 and 2 for the position in North Bedfordshire (or other counties) of the corresponding values of 85 PNdb, 75 PNdb and 63 PNdb indeed makes one realise why criteria based on speech interference levels were "dropped like hot potatoes"! It is important to realise also that, at *these levels both* close and far away from the airfield, the noise lasts for a considerable time e.g. the noise may last 1 to 2 minutes before it has risen and fallen back to 10 db below the peak and by that time another aircraft may be passing. One hears of durations of say 10 seconds close to the airfield but usually one fails to state that this is for points directly under the flight path and that the noise duration of say 10 (or 15) db down will last very much longer if one is off to one side by only 1 or 2 miles. Thus places which are relatively close to the airport but in the lower noise regions, (say the northern suburbs of Bedford), will find that some of the advantages are offset by the longer durations of the noise of each take-off.

One may conclude, a preliminary assessment of the peak 85 PNdb contour indicates that, for the frequent passage of aircraft, it is likely that outside speech will be limited to a normal voice at 1 ft. or a raised voice at 2 ft. during the peak noises and that conversation may not improve to better than normal voice at 3 ft. or a raised voice at 6 ft.

This situation over a wide area of Bedfordshire appears to be completely unacceptable.

The situation does not appear to be much better if one takes refuge in the homes of Bedfordshire. Many of the houses are of the type which are likely to give only low attention of the noise and by tradition most people sleep and live with open windows. (For examples of the Bedfordshire houses and cottages see "Bedfordshire Heritage" Beds C.C.)[42] If we assume a noise attenuation between outside and inside of 10 db then we find that the same intolerable situation, which existed outside at the 85 PNdb contour, will now be found inside at the 95 PNdb contour. If we remain at the 85 PNdb contour we find that the inside of the house allows a normal voice at 3 ft. or a raised voice at 6 ft. (Some might call this very annoying or very intrusive!)

I would suggest that the affected area might contain many more people than the *Site Information's*[82] total of 37,400, (or ambiguous 24,800)

9. Hazards to the ear due to high noise exposure or to repeated exposures

It has been accepted generally in the past that there was no hazard to the ears of people living outside an airport. The introduction of supersonic aircraft, the high rate of aircraft movements and the placing of runways very close to the airport boundary may require a reassessment of the hazardous exposure. In particular one should assess the long

Printed image digitised by the University of Southampton Library Digitisation Unit

term risks to say people living and working in Riseley and Milton Ernest.

It should be possible to do this using the damage risk criteria for repeated exposures which have been described by Kryter.[28,44]

10. Aircraft accident risks in the region of Thurleigh airport and fear associated with noise disturbance

In order to assess the likely frequency of accidents in the vicinity of a large new airport an analysis has been made of accident statistics at the major American and British airports during the period from 1962 to 1968 inclusive. The airports considered include the following:

John F. Kennedy Airport, New York
La Guardia Airport, New York
Newark Airport, New Jersey
Washington National Airport
O'Hare Airport, Chicago
Los Angeles International Airport
San Francisco Airport
Oakland International Airport
Heathrow Airport, London
Gatwick Airport, Sussex

These airports were chosen because of their relatively high rate of traffic movements and the ready availability of statistics.

Over the period from 1962 to 1968 inclusive, these airports supported a total of approximately 18,400,000 traffic movements (i.e. take-offs or landings). During this period there were a total of 11 accidents involving fatalities in the vicinity of these airports with a total of 343 people being killed. There were also 40 further accidents involving substantial aircraft damage but no fatalities and these were mainly confined within the boundaries of the airfields.

For the airport[81] planned to handle 600,000 aircraft movements per year, it might therefore be anticipated that there would be a fatal accident in the vicinity of the airport every 2·8 years, and that, in addition, there would be one aircraft substantially damaged on the airfield during take-off or landing every nine months. This assumes that the large airport safety level achieved during the period from 1962 and 1968 inclusive will remain unchanged. With increase in aircraft size, the number of fatalities per accident will increase in proportion to the number of passengers carried per aircraft. If one assumes a four-fold increase in the number of passengers carried per aircraft, say when the airport is fully developed, then the fatality rate is likely to be increased from 31 killed per fatal accident to 124 killed per fatal accident or an average annual death rate in the vicinity of the airport of 44 deaths per year.

Social Surveys (Borsky (15), McKennell (20)), of aircraft noise annoyance indicate that fear is an important factor affecting annoyance. Borsky indicates that about 60 per cent of all persons "much annoyed" expressed fear of crashes as one of the factors involved. In the case of the proposed Thurleigh airport it would appear that the high accident and high fatality rates in the area surrounding the airport will greatly increase and sustain the fear of local residents and consequently their annoyance from noise. (Statistics, which show that each aircraft passenger using the airport has perhaps only a 1 in 2 million chance of being killed near the airport, are of little consolation to the resident on the ground who may be startled or frightened several hundred times per day.)

I do not believe that this association of fear or accident alertness with loud or sudden noises is entirely irrational or that it can be dispelled even if the airport were to develop a very low annual accident record such as that achieved by the Royal Aircraft Establishment's research flying at Thurleigh. I am sure that all of us, at some time in our lives, have escaped serious injury because of forewarning given to us by loud noises. Fear of this type is instinctive and can be beneficial in normal circumstances.

It is concluded that widespread fear of accidents will inevitably be associated with the noise annoyance from Thurleigh airport and that it will be sustained and exaggerated by the high annual fatality rate which will result from aircraft crashing in the area of the airport and its surroundings.

11. The Royal Aircraft Establishment, Bedford (wind tunnel site) (noise or destruction)

I have examined a 1 in. to 1 mile ordnance survey map to establish the position of existing buildings and the new airport. I note one of the runways of the second site is almost on but at a slightly different angle to the existing runway. May I suggest that it will be a waste of money to destroy a large existing runway and replace it by an almost identical runway. Let us suppose the cost of a runway is £½ million per 1,000 ft.—this implies a loss of £5 million.

Turning to the wind tunnel site I note that one runway stops on or at the site. I therefore assume that the wind tunnel site will be destroyed. This shocks and dismays me because it is one of the foremost aerodynamic centres in the world. I have spoken to aerodynamicists from the USA, Canada and the UK who know the high reputation of the work of the RAE wind tunnels. They all share the view that the destruction of this wind tunnel site would indeed be an error of the highest magnitude and a blow to aerodynamic research and development.

I asked a colleague, who is not familiar with the site, but who is familiar with wind tunnel construction to give me an approximate estimate of cost of the facilities and provided him with the RAE publicity brochure which has been circulated June 1957, to inform the public of the facilities and activities of the Establishment. One must, very tentatively, suggest that the cost of the described wind tunnels might be of the order of £75 million. Apart from this one might speculate that the site contains other items outside the scope of public release. However this rough figure must surely make the proposed airport appear totally uneconomic.

Printed image digitised by the University of Southampton Library Digitisation Unit

12. **Public right of way system (destruction, noise and diversion)**

I have carried out research on the North Bedfordshire public right of way system which connects villages and towns to each other by footpath and bridle ways. It must be remembered that apart from the goodwill of local farmers it is the sole legal right by which the public can enter and enjoy the countryside at close hand.

I would venture to suggest that this amenity is worth at least of the order of £1,000 to £2,000 per mile of path. If one estimates the length of the system required to connect each village to its neighbouring village in a well integrated system one arrives at a figure of approximately four miles or more of path per square mile. In other words the amenity value works out at least £4,000 per square mile. (Some details of the footpath and bridleway system can be supplied to the Commission if they so require.) I would suggest that the urban aspects of the airport, the considerable noise over a wide area and the severance of long distance paths will make these paths very unattractive to all except the aircraft spotter. I suggest that the seriously affected area will be of the order of 250 sq. miles giving an economic loss of £1 million. Minute, perhaps when compared to the wind tunnels, nevertheless by some country lover's standards it will be considered a destruction which is just as great as that of the wind tunnels.

Apart from this one would require the construction of long new bridleways and footpaths to circumvent the obstructed area. It is well known in England that the construction of the simplest long distance paths, e.g. the Pennine Way, may take one or two decades of negotiations with sympathetic landowners. In the airport case, negotiations will be virtually impossible and the diversion of the paths could involve very lengthy legal proceedings.

13. **Gliding and private flying**

The control zones or control areas associated with this airport are likely to extend over a wide area and may join up with the existing London area. It therefore appears that almost all private flying and gliding will be so severely restricted by air traffic regulations that it will cease to exist. Furthermore it will be difficult for small aircraft outside this area to cross say from areas in East Anglia to other areas of England.

14. **Air pollution**

It may well be that an airport situated in an industrial or urban area does not contribute the major source of air polution. However the situation can be very different when a very large airport is operated from a clean air rural area. It is indicated in the *Newsletter* of the National Aircraft Noise Abatement Council vol. VIII, no. II, 15th February, 1967, p. 2 "that 135 small jet transports per day at Washington National Airport contributed 721 tons of carbon monoxide, 203 tons of nitrogen oxide, 156 tons particulate matter and 1,393 tons of hydrocarbons per year". The operation of say 2,000 much larger jet aircraft per day at Thurleigh airport suggests that there would be a significant amount of pollution to the area.

15. **Noise of future aircraft**

Two trends have developed in aircraft engine design. The military or supersonic aircraft have retained pure jet engines of increasing thrust and higher velocity jets while the trend in civil subsonic large aircraft has been to adapt the more efficient fan engines in which larger quantities of air flow through a fan and by-pass the main engine.

If we look at the history of turbo-jet noise reduction (ref. [33,36]) we see that for an engine of given thrust the noise ought to have decreased by about 15 db over the last ten years. This unfortunately is not the whole story because meanwhile engine thrusts have developed from 10,000 lbs. to about 40,000 lbs. and we hear mentioned now that aircraft of one million pounds weight and engines of 100,000 lbs. thrust are within the state of the art of design and manufacture. In addition there is always a tendency to increase the thrust of a given engine by improvements during its life and this increases the noise. Aircraft weights are likely to be increased during the life of a certain type of aircraft and these reduce the climb performance. The net result is that the promised noise reductions are eroded way and if we return to the certification regulations it seems, at best, a great deal of work during the last ten years has only resulted in the levels being kept partly in check. One may even argue that matters are worse because, with pure jets the take-off noise was the main problem, whereas now we have the additional annoyance of fan noise on the approach.

It seems prudent to examine two types of aircraft which may be in operation when Thurleigh Airport is in full operation.

1. The large subsonic transport e.g. the Boeing 747, Lockheed L–1011, L–500, McDonnell Douglas DC–10.
2. The medium and large sized supersonic transports e.g. the Concorde and US SST.

15.1. *Large turbo fan aircraft*

Advances in the reduction of fan noise appear to hold out promises that the large subsonic transport could have substantially reduced noise. No results have yet been published and one can only comment that it is disappointing to hear suggestions that the new proposed certification regulations are too severe for this type of aircraft and that the weight penalty to suppress the noise might be equivalent to the weight of say ten passengers.

Some predictions of the noise of the world's largest subsonic aircraft,[73] the Lockheed C–5A (admittedly a military aircraft but with turbo-fan engines), have been released and it may be worthwhile to use these as a basis to judge the noise of future heavy turbo fan transports. These results have been partly checked in flight trials and are plotted Fig. 3 which shows over plots on Fig. 27 of (ref. [11]) for comparison with the results of early jet aircraft predictions. The noise levels vary from about 130 PNdb at 2½ miles to 120 PNdb at about four miles. I do not wish

Printed image digitised by the University of Southampton Library Digitisation Unit

to imply that these noise levels exactly represent the large jets already mentioned but I do wish to point out that there are still very considerable noise problems on this type of aircraft and the trend towards larger aircraft carrying heavier pay loads will not make the task any easier to solve. I remain hopeful but doubtful that the large turbo fan aircraft will be accompanied by any significant noise reductions.

15.2. *Large supersonic transport aircraft*

These aircraft are likely to have engines with high velocity jets and reheat. A small version of this is the Concorde while a heavier version is the US Boeing SST. It may well be that the Concorde is, as a press release suggests, no noisier than the VC 10. However, I think all would admit that this type of aircraft uses a basically noisier engine and a great deal of the possible noise reductions depend on the aircraft retaining a high rate of climb.

A supersonic airliner carries a relatively small payload and therefore any deficiencies in performance may have to be compensated by a heavier fuel load and a large reduction in the take-off rate of climb. It has been pointed out that a critical region of noise for the supersonic transport is the side noise on take-off and that it may stretch out twice as far as that of normal aircraft. In other words the contours perpendicular to the take-off runway may be increased by say six PNdb. This possibility was discussed some years ago and I understood that a proposed method of reducing its effect was to place the runway in the centre of the airfield and to use distance and the airport buildings as a noise screen. The present airport design with the boundary only 200 yards from the runway appears unacceptable and I would suggest that a one or two mile buffer zone between the runway and the boundary is more realistic. One may assume that the Bedford noise levels would be increased by approximately six PNdb for a small SST and more, say 12 db, for a large SST. Also pointed out[87] is the possible deafness hazard from single exposure to very high noise levels near or under the take-off flight path. The general subject of damage due to high level short exposures or of low level repeated exposures, e.g. a large airport, could and should be assessed now.

If one searches the literature for details of supersonic aircraft take-off noise one is met with a series of speculations[85,87,85,87,88,80] on what the take-off noise should be after appropriate noise suppression and noise abatement measures have been taken (Fig. 4). The characteristics of the high velocity jets are fairly well known and I tend to accept the curve given in[80] as being the basic noise level of a typical *heavy* supersonic transport. This curve is also plotted in Fig. 3 for comparison. Clearly there is a serious problem with noise levels of 130 PNdb at three miles, and 120 PNdb at seven miles. The problem is that of trying to find a variety of methods to reduce the noise by 20 PNdb[80] indicates that the combined effects of power cut-backs, suppressors and larger engines might bring the noise down to 90 PNdb at 13 miles, but I am inclined to the view that such reductions are still speculative, that a serious problem has yet to be solved and, from past experiences, is unlikely to be solved fully.

An interesting aspect is that the throttle cut back technique would by itself, reduce the noise level to 120 PNdb at 3½ miles, 104 PNdb at 16 miles but it could, when the full climb is resumed, cause levels to increase to about 115 PNdb at 16 miles and levels of 105 PNdb could exist at distances of 25 miles. Undoubtedly this type of aircraft would have to be fitted with some form of suppressor but whether this would reduce noise by 5 or 10 PNdb is still open to debate. I take the view that it is not impossible that levels of 100 PNdb might exist at 20 miles for heavy supersonic transport.

It is for these reasons that I have so vigorously attacked the assumption that the noise of future aircraft will be decreased. I do not believe that any country with substantial aircraft or airline industries can afford to gamble *again* on the possibility that increases of noise will be contained. Therefore I believe it is prudent to have available, at least, one large airport which has a capability of handling very large noisy aircraft—if one is relying on Thurleigh airport to be in reserve for that role then I am sure the possibility of having to expropriate an area of much more than 100 to 200 square miles is very real and must be faced now before the area is covered with airport connected developments.

16. **Conclusion**

1. This note has estimated and examined the noise which is likely to occur in the area of the large Thurleigh airport.

2. One concludes that the countryside amenity of peace and quiet could be destroyed over a very wide area—probably over an area equal to 2,000 square miles.

3. Even when one examines the noise disturbance using urban airport criteria and present aircraft noise levels, one discovers a totally intolerable noise situation. It is most likely that an additional land-take of 200 square miles will be necessary to partly overcome this problem.

4. A review of the noise of future aircraft and past history suggests that some aircraft could have much higher noise levels. It seems prudent that a country which may be committeed to such aircraft should have an airport in reserve from which these noisy aircraft could operate without special operating procedures or regulations. The possibility that Thurleigh airport could fulfil this reserved role, even with the larger land-take, is rejected.

5. Thurleigh airport does not appear to be economically viable if one takes into account reasonable values for the widespread loss of amenities and the intolerable hardship which will be caused by aircraft noise.

Printed image digitised by the University of Southampton Library Digitisation Unit

References

1. Westley, R. Lilley, G. M. — *An Investigation of the Noise Field from a Small Jet and Methods for its Reduction.* The College of Aeronautics, Report No. 53, January, 1952.
2. Lassiter, L. W. Hubbard, H. H. — *Experimental Studies of Noise from Subsonic Jets in Still Air.* NACA TN 2757, August 1952.
3. Young, A. D. Lilley, G. M. Westley, R. — British Patents 1952.
4. Richards, E. J. — Research on Aerodynamic Noise from Jets and Associated Problems. *J. Royal Aero. Soc.*, Vol. 52, 1953. p. 318–342.
5. Lilley, G. M. Westley, R. Yates, A. H. Busing, A. H. — Some Aspects of Noise from Supersonic Aircraft. *J. Roy. Aero. Soc.*, Vol. 57, 1953. p. 396–414
6. Harris, C. M. — *Handbook of Noise Control.* McGraw-Hill, 1957.
7. UK — Air Navigation. 1949. (Civil Aviation Act). Sect. 40–41.
8. Miller, L. N. Beranek, L. L. Hoover, R. M. — *Comparison of the Take-Off Noise Characteristics of the Comet Jet Airliner and of Conventional Propeller-Driven Airliners.* Prepared by Bolt Beranek and Newman Inc. for the Port of New York Authority, March 1958.
9. — *Studies of Noise Characteristics of the Boeing 707-120 Jet Airliner and of Large Conventional Propeller-Driven Airliners.* Prepared by Bolt Beranek and Newman Inc. for the Port of New York Authority, Oct. 1958.
10. Greatrex, F. B. — *Noise Suppressors for Avon and Conway Engines.* Flight Test Division, Rolls-Royce Limited, Hucknall, England. March, 1959.
11. Westley, R. — A Survey of the Take-Off Noise of Jet Airliners. NRC (Canada), *Quarterly Bulletin* No. DME/NAE 1959 (3). p. 23–38.
12. — *Take-off Noise Characteristics of the Douglas DC-8 Jet Airliner with Rolls-Royce RCo–12 Engines and Daisy-Ejector Noise Suppressors.* Bolt Beranek and Newman Inc., Cambridge, Mass., Report No. 771, September 1960.
13. — *The Control of Noise.* NPL Symposium No. 12, Proc. of Conference held 26–28 June, 1961. HMSO, London, 1962.
14. Sir Alan Wilson — *Final Report of the Committee on the Problem of Noise.* Cmnd. 2056 HMSO London 1963.
15. Borsky, P. N. — *Community Reactions to Air Force Noise.* Part II. Data on Community Studies and their Interpretations. U.S. Air Force, WADD TR 60–689, March 1961.
16. Pietrasanta, A. C. Stevens, K. N. Staff of Bolt Beranek and Newman Inc. — *Guide for the Analysis and Solution of Air Base Noise Problems.* U.S. Air Force, WADC TR 57–702 November 1961.
17. — Aircraft Noise Problems. Hearings before Sub-committees of the Committee on Interstate and Foreign Commerce, House of Representatives, 86th and 87th Congresses. U.S. Gov. Printing Office, Washington, 1963.
18. — Aircraft Noise Abatement Regulation. Hearing before the Aviation Sub-committee of the Committee on Commerce, United States Senate, 90th Congress. U.S. Gov. Printing Office, Washington, 1968.
19. Robinson, D. W. Bowsher, J. M. Copeland, W. C. — On Judging the Noise from Aircraft in Flight. *Acustica*, Vol. 13, No. 5, 1963 p. 324–336.
20. McKennell, A. C. — *Aircraft Noise Annoyance Around London (Heathrow) Airport.* Central Office of Information, Social Survey 337, April 1963.
21. McKennell, A.C. — *Aircraft Noise Annoyance Around London (Heathrow) Airport.* Central Office of Information, Social Survey 337, Appendices, April 1963.
22. Bolt Beranek and Newman Inc. — *Analysis of Community and Airport Relationships/Noise Abatement* Vol. I. An approach to Analysis of Aircraft Noise Problems using Computer-Aided Techniques. Prepared for Federal Aviation Agency, Systems Research and Development Service. BBN Report No. 1093, Dec. 1964.
23. Bolt Beranek and Newman Inc. — Vol. II of above reference. Development of Aircraft Noise Compatability Criteria for Varied Land Uses. BBN Report No. 1093, Dec. 1964.
24. — *International Conference on the Reduction of Noise and Disturbance Caused by Civil Aircraft.* London, 1966.
25. — *Discussion of the Utility of Available Techniques for Measuring Aircraft Noise and Predicting Community Response.* U.S. Federal Aviation Agency, Report No. RD–66–31, May 1966.
26. Kryter, K. D. Williams, C. E. — Masking of Speech by Aircraft Noise. *J. Acoust. Soc. America.* Vol. 39, No. 1–6, 1966 p. 138–150.
27. — Jet Noise Prediction. Society of Automotive Engineers. *AIR* 876, 1965.
28. Kryter, K. D. Ward, W. D. Miller, J. D. Eldredge, D. H. — Hazardous Exposure to Intermittent and Steady-State Noise. *J. Acoust. Soc. America*, Vol. 39, No. 1–6, 1966 p. 451–464.
29. Golovin, N. E. — *Alleviation of Aircraft Noise.* AIAA Third Annual Meeting, Boston, Mass. Nov. 29–Dec. 2, 1966. AIAA Paper No. 66–090.
30. — *Technique for Developing Noise Exposure Forecasts.* Prepared by SAE Research Project Committee R2.5 for US Federal Aviation Administration. FAA DS–67–14, August 1967.
31. Copeland, W. L. Hilton, D. A. Huckel, V. et al — *Noise Measurement Evaluations of Various Take-Off-Climb out Profiles of a Four-Engine Turbojet Transport Airplane.* NASA TN D-3715, December 1966.
32. Executive Office of the President — *Alleviation of Jet Aircraft Noise Near Airports: A Report of the Jet Aircraft Noise Panel.* Office of Science and Technology, U.S. Gov. Printing Office, March 1966. (see p. 20–21).
33. Greatrex, F. B. — The Economies of Aircraft Noise Suppression. Royal Aero. Soc. Centenary Congress in conjunction with 5th Congress of the International Council of the Aeronautical Sciences. ICAS Paper No. 66–5, 1966.
34. — *Aircraft Noise. Report of an International Conference on the Reduction of Noise and Disturbance caused by Civil Aircraft.* 1966 HMSO, London, 1967.
35. — International Conference on the Reduction of Noise and Disturbance Caused by Civil Aircraft, London 1966. Committees No. I, II, III, IV, V, VI.

Printed image digitised by the University of Southampton Library Digitisation Unit

36. Richards, E. J. — *A Historical Review of Aircraft Noise Suppression.* International Conference on the Reduction of Noise and Disturbance Caused by Civil Aircraft, London 1966. INC/CI/P10. (see p. 4 or 5, Fig. 2).

37. Richards, E. J. — *The Constraining Order of Airport Noise.* University of Southampton, ISAV Report No. 148, July 1966.

38. Bishop, D. E. — Judgments of the Relative and Absolute Acceptability of Aircraft Noise. *J. Acoust. Soc. America,* Vol. 40, No. 1, 1966. p. 108–122 (see p. 120 or 121).

39. Pearsons, K. S. — *The effects of Duration and Background Noise Level on Perceived Noisiness.* Prepared by Bolt Beranek and Newman Inc. for the Federal Aviation Agency. FAA-ADS-78, April 1966.

40. Kryter, K. D. — Acceptability of Aircraft Noise. *J. Sound Vib.,* Vol. 5, No. 2, 1967. p. 364–369.

41. Sawyer, F. L. — Aircraft Noise and the Siting of a Major Airport. *J. Sound Vib.,* Vol. 5, No. 2, 1967. p. 355–363.

42. de Ruig, Ir. C. J. — *Bibliography on Aircraft Noise,* Supplement II Netherlands TDCK 15350-SII, May, 1967.

43. Robinson, D. W. Copeland, W. C. T. — *Interim Proposal for Air Attenuation Values for Aircraft Noise.* NPL Aero. Report AC28, July 1967.

44. Kryter, K. D. — Concepts of Perceived Noisiness, Their Implementation and Application. *J. Acoust. Soc. America,* Vol. 43, No. 2, Feb., 1968. p. 344–361.

45. Steiner, J. E. (The Boeing Co.) — Operational Environment Requirements of the New Generation of Large Subsonic Jets. Talk given to the Aero. Club of Washington, D.C. July 1968. *ESSO Air World,* Vol. 21, No. 4, Jan/Feb. 1969. p. 90–95.

46. Taborek, R. J. Waechter, R. W. — STOL, A Key to Airport Access—STOLPORT Design and Operating Considerations. American Inst. of Aero. and Astro. 5th Annual Meeting and Technical Display, 1968, Paper No. 68–1047.

47. Ollerhead, J. B. Wyle, Lab., Inc. — *Subjective Evaluation of General Aviation Aircraft Noise.* Prepared for U.S. Federal Aviation Administration, Office of Noise Abatement, D.C. FAA No. 68–35, April 1968.

48. Griffith, I. D. Langdon, F. J. — Subjective Response to Road Traffic Noise. *J. Sound Vib.,* Vol. 8, No. 1, July 1968, p. 16–32.

49. Hecker, M. H. L. Kryter, K. D. (Stanford Res. Inst.) — *Comparisons between Subjective Ratings of Aircraft Noise and Various Objective Measures.* Prepared for Federal Aviation Administration, FAA No. 68–33, April 1968.

56. Miller, D. N. — *Ground Access to Airports.* AIAA 5th Annual Meeting and Technical Display, Paper No. 68–1071, October 1968.

51. Browne, S. D. — *A Comparison of Access Systems to Present World Airports.* AIAA 5th Annual Meeting and Technical Display, Paper No. 68–1072, October 1968.

52. — Progress of NASA Research Relating to Noise Alleviation of Large Subsonic Jet Aircraft. Conference held at Langley Research Center, October 1968, NASA SP–189. 1968.

53. Pearsons, K. S. Horonjeff, R. D. Bishop, D. E. — *The Noisiness of Tones Plus Noise.* Prepared for Langley Research Center, NASA, by Bolt Beranek and Newman Inc. NASA CR–1117, August 1968.

54. Kolk, F. W. Graef, J. D. Ransome, R. D. et al — American Airlines and the Noise Problem. *Can. Aero. Space Journal,* June 1969, p. 215–220.

55. van Niekerk, C. G. Muller, J. L. — Assessment of Aircraft Noise Disturbance. *The Aeronautical Journal of the Royal Aeronautical Society,* Vol. 73, May 1969, p. 383–396.

56. Yost, C. A. Oates, R. W. — *Human Survival in Aircraft Emergencies.* Prepared by Stencel Aero. Engineering Corp. for NASA. NASA CR–1262, January 1969.

57. Pearsons, K. S. — *Combination Effects of Tone and Duration Parameters on Perceived Noisiness.* Prepared by Bolt Beranek and Newman Inc. for NASA. NASA CR– 1283, February 1969.

58. Webster, J. C. Lepor, M. — Noise, You Can Get Used to It. *J. Acoust. Soc. Amer.,* Vol. 45, No. 3, 1969. p. 751–757.

59. Callahan, R. H. Birk, R. F. — *Airports for Future Aircraft—A Planning Guide.* AIAA Aircraft Design and Operations Meeting, July 1969, Los Angeles, California. AIAA Paper No. 69–808.

60. Hart, W. — *Air Terminals 1975.* AIAA Aircraft Design and Operations Meeting, Los Angeles, Calif., 1969 AIAA Paper No. 69–805.

61. Marshall, E. E. — The Role of Aircraft in Future Transport Systems. *Aircraft Engineering,* Vol. XLI, No. 5, May 1969. p. 21–28.

62. Montanus, N. R. — *General Aviation—The Airport Problem.* AIAA Aircraft Design and Operations Meeting, Los Angeles, California, July 1969 AIAA Paper No. 69–820.

63. Wright, E. S. Hall, S. — *Evaluation of VTOLPORTS for Improved Airport Access.* AIAA Aircraft Design and Operations Meeting, Los Angeles, Calif., July 1969. AIAA Paper No. 69–804.

64. Paullin, R. L. Miller, J. S. F. — *Aircraft Noise Abatement—The Prospects for a Quieter Metropolitan Environment.* AIAA Aircraft Design and Operations Meeting, Los Angeles, Calif., July 1969. AIAA Paper No. 69–800.

65. Basnight, A. O. — *The Impact of Structures on Flight Operations.* AIAA Aircraft Design and Operations Meeting, Los Angeles, Calif., July 1969. AIAA Paper No. 69–809.

66. Martlew, D. L. — *Noise Associated with Shock Waves in Supersonic Jets.* Paper for AGARD Joint FDP/PEP Meeting on "Aircraft Engine Noise and Sonic Boom", Saint-Louis, France, 27th to 30th May 1969.

67. Hoover, I. H. Cochran, D. G. — *Airport Design and Operation for Minimum Noise Exposure.* Paper presented at AGARD Joint FDP/PEP Meeting on Aircraft Engine Noise and Sonic Boom; Saint-Louis, France, 27th to 30th May 1969.

68. Erzberger, H. Lee, H. Q. — *Technique for Calculating Optimum Take-off and Climb-out Trajectories for Noise Abatement.* NASA TN D–5182, May 1969.

69. Powers, J. O. Sands, J. M. Maglieri, D. J. — *Survey of United States Sonic Boom Overflight Experimentation.* Paper presented to AGARD Joint FDR/PEP Meeting on "Aircraft Engine Noise and Sonic Boom," Saint-Louis, France, 27th to 30th May, 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

70. *Contracts for Quieter Jet Engines* NASA Release No. 69–21, January 1969.

71. Ribner, H. S. Jets and Noise. *Canadian Aeronautics and Space Journal*, Vol. 14, No. 8, October 1968, p. 282–298.

72. McClure, P. T. *The Effect of Jet Noise on the Value of Real Estate*. AIAA Aircraft Design and Operations Meeting, Los Angeles, Calif., July 1969. AIAA Paper No. 69–802.

73. *Aircraft Engine Noise and Sonic Boom*. AGARD Conference Proceedings No. 42 (Pre-print) Advance copies of papers to be presented at the Fluid Dynamics Panel and Propulsion and Energetics Panel (33rd) Joint Meeting held at the Institut Franco-Allemand de Recherches, Saint-Louis, France, 27th to 30th May 1969.

74. Bishop, D. E. et al *Procedures for Developing Noise Exposure Forecast Areas for Aircraft Flight Operations*. Prepared by Bolt Beranek and Newman Inc. for Federal Aviation Administration FAA DS–67–10 August 1967.

75. *Airport Terminal Buildings*. Airports Division, Federal Aviation Agency September 1960.

76. *Noise Abatement Procedures*. Federal Aviation Agency, June 1960, November 1960.

77. Hamilton, J. *Concorde—An Exercise in Collaboration*. AIAA 5th Annual Meeting and Technical Display, Philadelphia, Pa., October 1968. AIAA Paper No. 68–990.

78. Lasagna, P. L. McLeod, N. J. *Preliminary Measured and Predicted XB-70 Engine Noise*. NASA TM X–1565, April, 1968.

79. Taylor, J. B. *Engine Compatibility Programs for the Supersonic Transport Propulsion System*. AIAA 5th Annual Meeting and Technical Display, Philadelphia, Pa., October 1968. AIAA Paper No. 68–993.

80. Schairer, G. S. O'Keefe, J. B. Johnson, P. E. *Perspective of SST Aircraft Noise Problem*. AIAA 5th Annual Meeting and Technical Display, Philadelphia, Pa., October 1968. AIAA Paper No. 68–1023.

81. Richter, G. Hoch, R. *Concept and Characteristics of the Concorde Flight Silencer*. AIAA Commercial Aircraft Design and Operation Meeting, Los Angeles, Calif., June 1967. AIAA Paper No. 67–391.

82. *Site Information for Stage II Local Hearings. 4. Thurleigh (Bedford)*. Commission of the Third London Airport. HMSO London 1969.

83. Pendley, R. E. Marsh, A. H. *Turbofan Engine Noise Suppression*. AIAA Commercial Aircraft Design and Operation Meeting, Los Angeles, Calif., June 1967. AIAA Paper No. 67–387.

84. Large, J. B. Grande, E. *The Development of Engineering Practices in Jet and Compressor Noise*. AIAA 4th Propulsion Joint Specialist Conference, Cleveland, Ohio, June 1968. AIAA Paper No. 68–550.

85. *Commercial Supersonic Transport Aircraft Report*. Federal Aviation Agency, December, 1960.

86. Power, J. K. *Special Considerations in Operation of Supersonic Aircraft*. Office of Plans, Federal Aviation Agency. For presentation at Inst. of Navigation, Fort Worth, Texas, June 19–21, 1961.

87. Satre, P. *The Supersonic Air Transport—True Problems and Misconceptions*. AIAA Paper No. 69–759, June 1969.

88. Thorne, R. G. *The Influence of Some Operational Problems on Supersonic Air Transport*. Royal Aeronautical Society 8th Anglo-American Aeronautical Conference. London, Sept. 1961.

89. Hanshaw, Thomas, C. Butler, M. F. G. *Future Demands on Airports and Airspace*. 17th Tech. Conf. I.ATA Lucerne Oct. 1967. Major Airport and Terminal Area Problems Vol. II. IATA.

90. Bolt, Beranek and Newman, Inc. *Noise Exposure Forecast Methodology and Contours for 29 Airports for 1967, 1970 and 1975*. Contract No. FA68WA–1900, summer 1969.

91. Bishop, D. E. Horonjeff, D. *Noise exposure Forecast Contour Interpretations of Aircraft Noise Trade-off Studies*. FAA–No.–69–2 Feb. 1969.

92. Bowsher, J. M. Johnson, D. R. Robinson, D. W. A further experiment on judging the Noisiness of Aircraft in Flight. *Acustica*, Vol. 17, No. 5, 1966, p. 245–267.

93. Robinson, D. W. *An Outline Guide to Criteria for the Location of Urban Noise*. NPL Aero Report AC39, March 1969.

94. Halford, J. F. *The Effect of Aircraft Characteristics on the Noise Around Airports*. International Conference on the Reduction of Noise and Disturbance Caused by Civil Aircraft London, 1966. INC/CI/P8.

Material submitted but not reproduced

Appendix 1

"A survey of the take-off noise of jet airliners" by R. Westley. National Aeronautical Establishment. National Research Council of Canada *Quarterly Bulletin* No. DME/NAE 1959 (3).

Appendix 2

The following items were attached:

1. "Aircraft noise pact, a breakthrough: need for certification." *Daily Telegraph*, 1st December, 1966.
2. "Plans to reduce jet noise now near realisation." *International Herald Tribune*, Monday, 2nd June, 1969.
3. *Estimated noise levels of 1969–1972 aircraft: effective perceived noise level (EPNdB) at Max. wt.* Table No. II. National Aircraft Noise Abatement Council, Vol. IX, No. 1, 15th January, 1968.
4. "Industry urges changes to noise proposals." *Aviation Week and Space Technology*, 9th June, 1959.
5. "Concorde as quiet as VC 10", predicts B.A.C." *Daily Telegraph*, 3rd June, 1969.
6. *New Montreal International Airport*. (Map.) Department of Transport, Montreal.
7. *Montreal International Airport* (Press releases). Department of Transport, 2120 Sherbrooke Street East, Montreal 24, P.Q.
8. Brochure of *"L'Aeroport de Paris". Air terminals 1975.*
9. *Dallas—Fort Worth Regional Airport*. A.I.A.A. Paper No. 69–805. July 1969.
10. "Concept of perceived noisiness" (table). *Journal of the Acoustical Society*, Vol. 43, No. 2, 1968. Ref. 44 Kryter.
11. *Air pollution emissions from jet engines*. National Aircraft Noise Abatement Council—Vol. VIII, No. II, 5th February, 1967; p. 2.
12. *History of turbo-jet noise reduction*. Ref. 33 Greatrex–ICAS Paper, No. 66–5, 1966.
13. *Bedfordshire heritage*. Bedfordshire County Council, 1961.
14. Advertisement. *Aviation Week*.

Printed image digitised by the University of Southampton Library Digitisation Unit

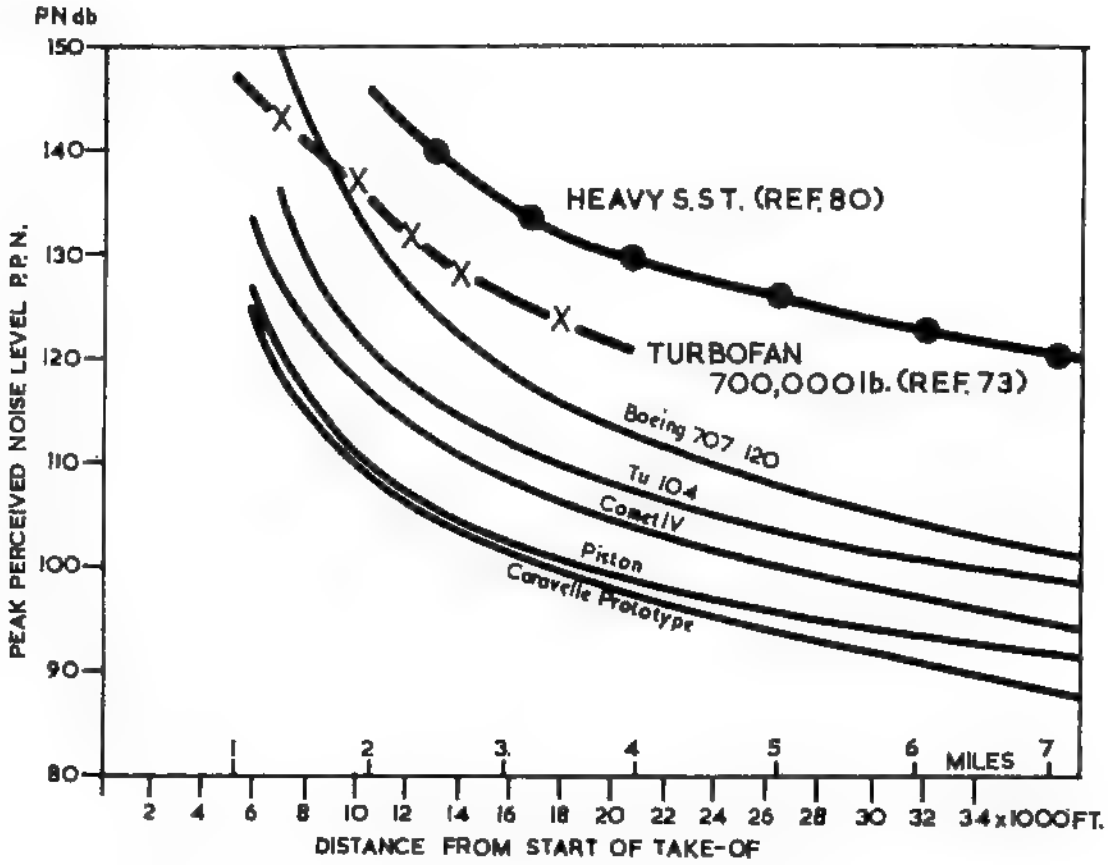


FIG 27 (REF. 11)

PEAK PERCEIVED NOISE LEVEL VS. DISTANCE

Peak PNdB versus flight path distance: future aircraft.
(Mr. R. Westley, Beds. Airport Resistance Assn.)

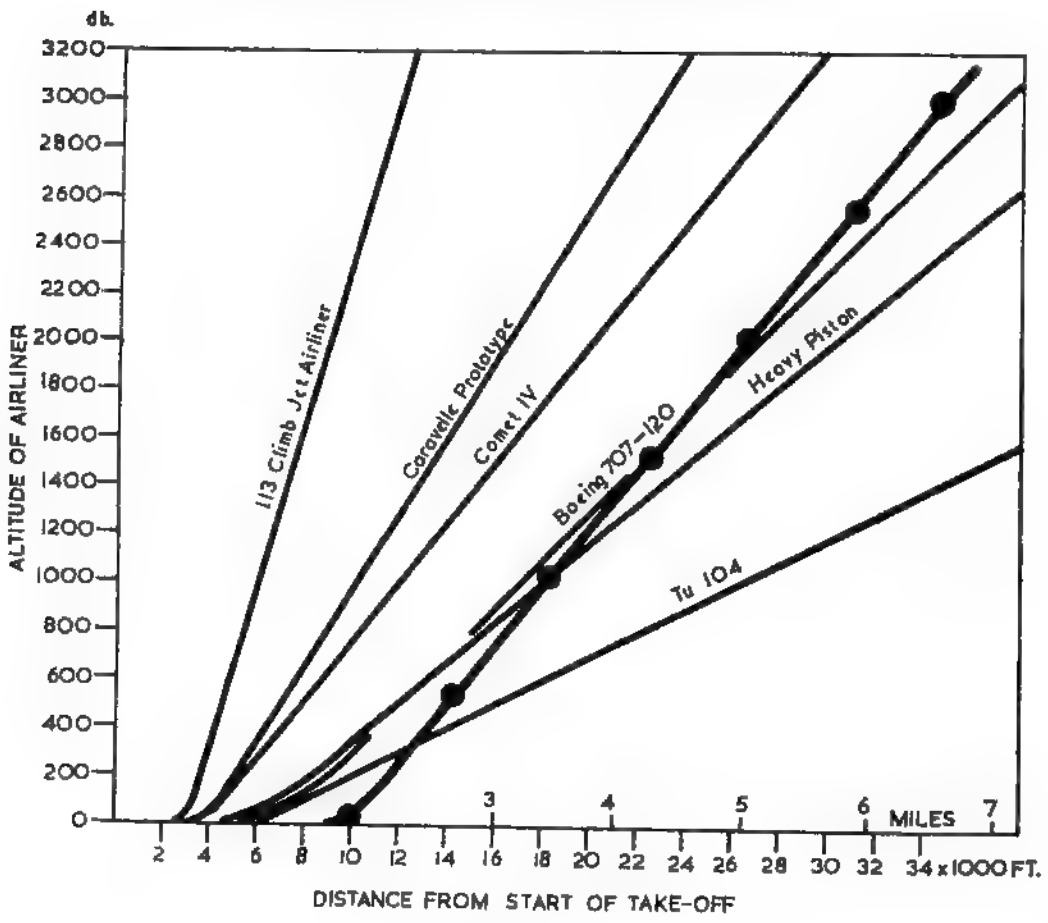


FIG 25

MEAN TAKE-OFF ALTITUDES

Mean take-off altitudes
(Mr. R. Westley, Beds. Airport Resistance Assn).

Printed image digitised by the University of Southampton Library Digitisation Unit

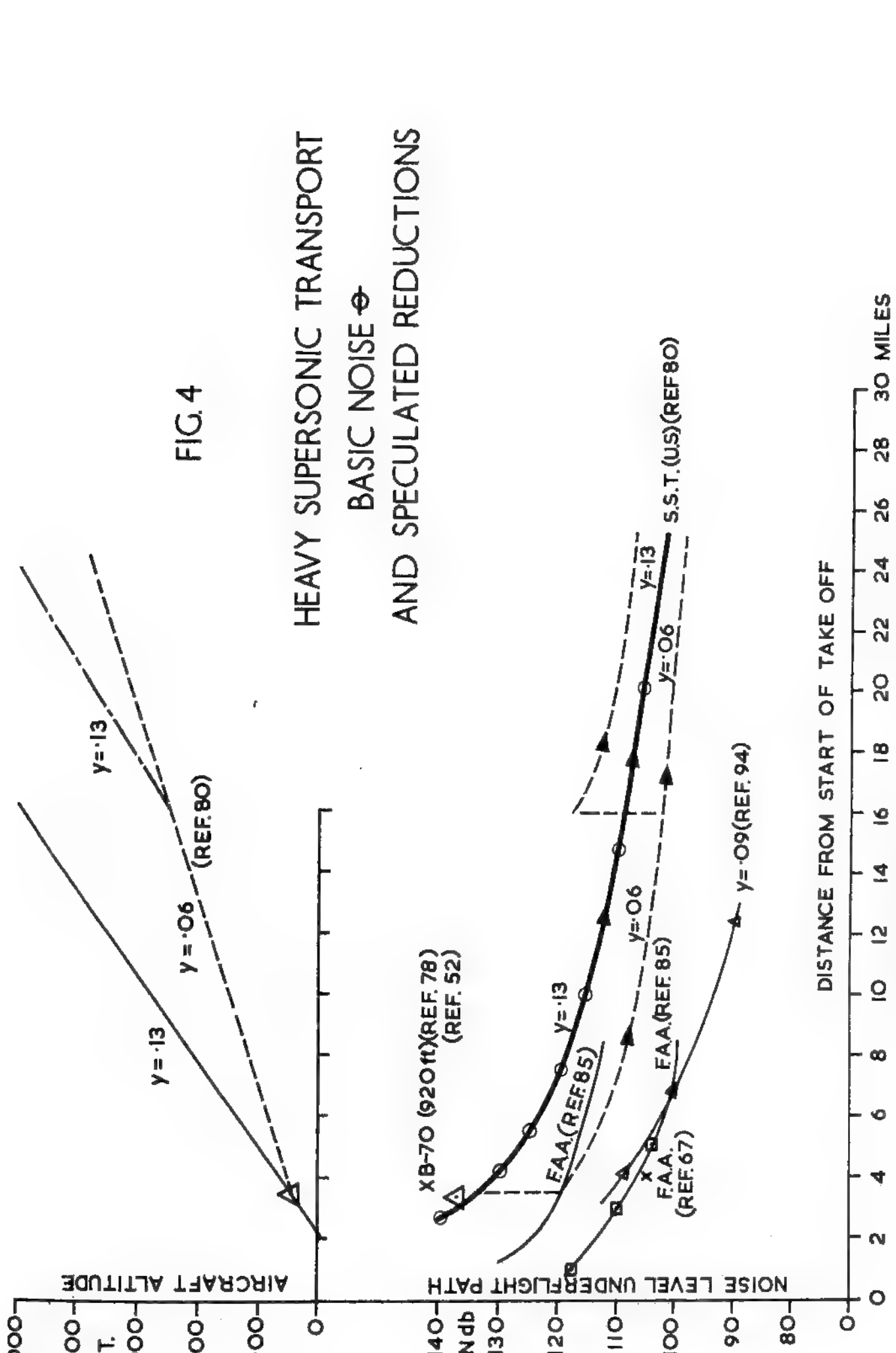


FIG. 4. Heavy supersonic transport basic noise and speculated reductions.
(Mr. R. Westley, Beds. Airport Resistance Assn.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Buckingham Association of Parish Councils

SUBMITTED BY SQD. LDR. B. LOCK*

I am the chairman of the County of Buckingham Association of Parish Councils, past chairman of the Wycombe Rural District Council and I have resided in and have been acquainted with Bucks. for 20 years.

I am fully acquainted with the make-up and lay-out of the County and the trades and industries carried on in the various towns and rural districts.

My Association is opposed to the third London airport being situated at Thurleigh and particularly in regard to the Buckinghamshire parishes, country towns, villages and hamlets which are situate either inside or neighbouring to the suggested flight paths and the 40 NNI contours thereof.

In the view and experience of my Association, urbanisation follows industry and commerce and projects like the third London airport as night follows day.

Evidence of this is irrefutable from the pattern of urbanisation which has followed the industrial growth of the Buckinghamshire towns of Slough, High Wycombe and Aylesbury over the period of the last 51 years, since the end of the First World War.

A brief history of this pattern of urbanisation is as follows:

Before the last World War Slough was a town of general industry, which had grown up round the First World War Government disposal depot, now known as the Slough Estates, which, in the 1930s absorbed a major degree of unemployed labour from the distressed areas of Wales and the North.

Both during and after the Second World War Slough expanded fast industrially, and has now become a red labour area insofar as the Ministry of Labour is concerned, and is experiencing a labour shortage.

Present figures supplied by the Ministry of Labour for Slough and District show 1,670 unfilled vacanies with an unemployment figure of 926.

High Wycombe before the First World War was mainly a furniture industry town, with 75 per cent of the population engaged in furniture industry.

During the Second World War High Wycombe and District became an industrial dispersal centre from London and now has a wide diversification of industry spread over some 460 factories and has reduced the percentage of the furniture industry to 16 per cent, the remaining 84 per cent being light industry of varying descriptions.

High Wycombe is a red labour area which has suffered a labour shortage since the end of the Second World War, and this position still prevails.

Present figures supplied by the Ministry of Labour for High Wycombe and District show 1,047 unfilled vacancies with an unemployment figure of 517.

As a result of the industrial growth of Slough and High Wycombe, Aylesbury, after the Second World War, started to expand industrially and housed industry which was unable to find space or labour in the Slough or High Wycombe areas.

As a result of this, Aylesbury changed from a County agricultural town to a town of agriculture and industry with a scarcity of labour.

Present figures supplied by the Ministry of Labour for Aylesbury show 670 unfilled vacancies with an unemployment figure of 237.

The chain of close density population and urbanisation running from Greater London through Slough and Wycombe to Aylesbury shades off outside the Borough of Aylesbury and one is left with the predominantly agricultural and rural area of North Bucks., which has already agreed to house the Milton Keynes project to deal with the virtual setting up of a new town with trade and industry to support an overspill and rehoused sector of London population.

This is a long term project, which will not disturb the delicate balance of planning of the County which has been built up since the Green Belt conception of Professor Abercrombie, and is balanced between industry, agriculture, horticulture and rural pursuits.

In addition to its agricultural, horticultural and rural pursuits North Bucks serves as a most beautiful peaceful and unspoilt recreational area for the industrial and close density population comprising the belt of urbanisation running from Greater London through Slough and Wycombe to Aylesbury as previously mentioned.

This recreational area my Association considers it essential in the public interest to retain in its present peaceful and unspoilt condition.

The present pace and complexity of Industry and Commerce which are essential for the economic survival and progress of this country can only be maintained if the public who service the same have good rural and peaceful recreational areas within reasonable reach of their homes all the year round.

This is a facility which North Bucks gives and is enjoyed by a very large sector of the British public.

An important sector of the public recreational area of North Bucks consists of these Parishes, County Towns, Villages and Hamlets placed within and neighbouring to the 40 NNI contours of the Thurleigh Flight Paths as previously mentioned.

* See also p. 2256.

Printed image digitised by the University of Southampton Library Digitisation Unit

I will for reference purposes call these Parishes, Country Towns, Villages and Hamlets "the affected area".

In addition to being a public recreational area the affected area constitutes an important part of the agricultural and horticultural public supply area for the industrialised and urbanised areas from London to Aylesbury and elsewhere.

The establishment of the third London airport at Thurleigh, with its projected land take of approximately 7,500 acres, the housing and deployment of 65,000 primary workers and, in addition, their supporting families, the housing and deployment of secondary workers and their families, and the attraction of industrial and commercial development to the third London airport area, with its attendant network of road and rail communications is, in the view of my Association, bound to industrialise, commercialise and urbanise the flight path area as shown by the NNI contours which cover an area of about 40 miles in length together with adjoining and neighbouring areas.

It will, in the opinion of my Association, also destroy the charm, character and peace of a large area of North Bucks, thus very adversely affecting that area as a public recreational area and will be a major disturbance and adverse affectation of the agricultural, horticultural and rural pursuits carried on there and of the homes and families of the population who reside there, not only depreciating the capital values of the homes and businesses in which they have invested their savings but also destroying a peaceful way of life which the maintenance of the Bucks. planning policy and also the preservation of the public interest led them to expect.

For these reasons my Association fully support Bedfordshire in the points of objection they make to the scheme which in the opinion of my Association would throw into disregard the balanced planning policy of Bucks., ruin the public recreational facilities of a large part of North Bucks., ruin the homes, ways of life and the agricultural, horticultural and rural pursuits carried on for centuries in a large part of North Bucks., and be wholly against the public interest.

My Association represents 131 out of 200 parish councils in Buckinghamshire, a county steeped in British tradition and with a long record of service both in the national and international interest.

Speaking from my experience as a pilot in the Royal Air Force, covering a period of 7½ years and flying in conditions all over the world, I have seen the advance of the aeroplane from a practical point of view, and it is my firm conviction that with the growth in speeds and size of aircraft, on a long term basis, the figures and areas set out in the report of the Commission relative to their length will be found to be too conservative, and if an international airport is established at Thurleigh then the limits set out in the Commission's Report will grow to a much wider basis than is anticipated in the report.

England is the island home of a great and densely populated nation, and, in the opinion of my Association, a coastal placement of the third London airport would be very much more in the national interest from a flying point of view, both on take off and approach, as providing better facilities for future expansion, as creating less disturbance to population and local amenities, as being better in all respects for town planning purposes and in the public interest.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Northamptonshire Association of Parish Councils

SUBMITTED BY MR. D. W. DUNN*

1. I am a Fellow of the Royal Geographical Society and I am the Secretary of the Northamptonshire Association of Parish Councils, a post I have held for three years, and I was the assistant secretary to the Association for the preceding three years. For the same period I have been the general secretary of the Northamptonshire Rural Community Council and the honorary secretary of the Northamptonshire Playing Fields Association. There are 163 parish councils and parish meetings in my Association.

2. I live in the village of Castle Ashby which falls between the 45–50 NNI contours on Site B proposal. I adopt the attitude of those other specialist or representative witnesses at other Stage II Hearings, who, finding that their homes or personal lives might be adversely affected by the proposals under review, have made a conscious effort to give their evidence unbiased by those effects.

Evidence in support

2.1. As a result of close co-operation with other objectors in the preparatory stages, I am well acquainted with the evidence submitted by Mr. Leonard Charles Gale† on behalf of the Bedfordshire Airport Resistance Association, Mr. David M. Woodhall‡ and Mr. Geoffrey Cowley§ on behalf of the Northamptonshire and Bedfordshire County Councils respectively, and in all respects where that evidence touches and concerns the rural county of Northamptonshire, I adopt and support their evidence.

2.2. I have also read, and adopt and support, the evidence of Mr. N. Fleming‖ relating to the effects of noise, and, in common with the Medical Officers of Health for Northamptonshire and Bedfordshire,¶ I adopt, and support the evidence upon the health of persons so affected submitted to the Stage II hearing (Cublington) by Dr. A. J. J. Reid.** All such evidence has clear bearing upon the case for the Northamptonshire Association of Parish Councils, which is basically an amenity and environmental one.

Breadth of representation

3.1. My ordinary duties give me a very wide field of coverage of rural and village life in Northamptonshire.

3.2. My Association has been concerned to present to the Commission an authoritative and responsible case, unaffected by emotion or "whipped-up" enthusiasms, which they feel would not be truly representative of the feelings of the parish councils and meetings they represent.

3.3. Reliance upon the evidence now presented is drawn from:

(a) additional research and testing of public opinion over the last twelve months (because the Association was also closely affected by proposals concerning the possibility of the third London airport being sited at Silverstone)

(b) special Thurleigh meetings giving wide opportunity for a free exchange of representative opinion, an opportunity quickly and vociferously accepted.

(c) replies to a form of questionnaire. The questionnaire is attached to this proof (Appendix A) and a tabulated presentation of the replies returned is attached (Appendix B). The questionnaire was sent to 63 villages, and 41 replies have been returned.

Evaluation of existing communities

4.1. Before any attempt is made to examine the impact of LAP 3 Thurleigh it is necessary to evaluate and describe the existing values of community life in the villages I represent.

4.2. Living in the country is a way of life which distinguishes Englishmen from say, Frenchmen or North Americans. English countryside has since the 18th century particularly, played an enormous part in our national character. It has influenced our speech, our architecture, our literature and our temperament. We are an island race, and the sea is said to be in our blood. But the ways and values of the inland countryside are far from widely known and shared.

4.3. In Northamptonshire, the most central of the agricultural counties of England, these rural values are keenly felt. Our largest town is still essentially a county town, and our villages are therefore not havens for those who wish to escape for week-ends from the great conurbations. They are places where people live and have lived active, wide-ranging lives for centuries in pleasant, peaceful surroundings. But, as the social and economic circumstances which supported those villages for so long have altered, so the villages have altered to meet the new circumstances. By growth, by the encouragement of local industry, (of which the shoe-trade is the clearest example) and, latterly, by accepting the influx of people who work

---

* See also p. 2260.
† p. 2069.
‡ p. 1837.
¶ p. 1835.
§ p. 1807.
‖ p. 1854.
** *Papers and Proceedings*, vol. V.

Printed image digitised by the University of Southampton Library Digitisation Unit

in nearby towns, or who use nearby communications to travel to more distant places of work, the villages have, in the best English tradition, changed their ways without losing their character.

4.4. I have heard it said that only the moderately wealthy can afford to leave the towns and live in the villages. This may be true of Surrey or Hertfordshire, but it is certainly not true of Northamptonshire. I have noticed that new housing developments offer wide choice of accommodation in dozens of villages. I do not perceive any signs of affluent boredom or one-class mediocrity in the social life or vitality of our villages. The traditional values seem to be surviving. This is largely because people are not escaping from large, unattractive cities (indeed, our towns and their suburbs are often extremely attractive places to live) but because they recognise and prefer a different pace, a rural character, in the villages.

4.5. In this connection I refer to and adopt Mr. Gale's definition of "human contentment" (para II)* and from page 1 of the Ministry's publication *Design in Town and Village* (1953), I warmly approve Thomas Sharp when he says:

> "Social considerations . . . are, of course, of vital importance. Nothing else about the village (or the town, or any other place of living) matters in anything like the same degree. The villagers, and their lives and relationships, are immeasurably more important than the village as a mere physical thing."

4.6. The very difficulties of recognising these real values highlights the contrast of their nature with the methods of evaluation referred to in paragraph 87 of the *Commission's Papers and Proceedings,* vol. VII, Stage III, part 1.†

Pattern of village life

5.1. Generalisation is difficult, due to differences among the communities likely to be affected directly or indirectly by LAP 3 Thurleigh such as:

(a) *Size:* these vary from a tiny hamlet such as Strixton, whose eleven dwellings support three farms to Roade, with 1,600 dwellings and 2,000 people employed at one engineering works.

(b) *Employment:* I would use the same two villages to illustrate the difference between "natural", or rural, and "un-natural" employment, which, while drawing upon local residents for labour, may attract people from a far wider catchment area, and are not directly the product of the countryside in which such employment is situated. I would place the "shoe villages" such as Earls Barton and Raunds in a third intermediate type of well-recognised village providing local employment in modern industry.

(c) *"Dormitory" villages:* these normally surround the larger towns, and their characteristics are immediately affected by the size and nature of their "dominant" town, e.g., the pressures upon those near Northampton or Wellingborough, which are both in the throes of expansion programmes to meet London overspill, are probably greater than the villages around Kettering.

5.2. These differences create difficult problems in residential demands, and matters relating to local employment, recreation, education and transportation, the principles being already noted in the evidence of those local and other authorities whose cases my Association supports.

5.3. Despite the differences, a very clear pattern does emerge,

(a) Beautiful villages exist in plenty, providing thousands of homes satisfying visually, aesthetically and socially for their inhabitants, and frequently the envy of those living in towns or cities.

Northamptonshire has often been called the "unknown county", which perhaps is one of its attractions.

(b) *Life gets better all the time.* This is a matter of sociological knowledge too widely-known to need elaboration. The best visual evidence is perhaps the wide field of renovation and improvement of buildings in the villages, whose balanced growth is such a notable feature of the policies of the County Planning Department. It is reflected too in changing patterns of local organisations, of recreational habits and facilities, such as new village halls or playing fields, and the vigorous support they receive.

(c) The improving travel facilities enable increasing numbers of people who would never describe themselves as "countrymen" by birth or tradition to respond to the call of the villages, and to settle in the countryside. I shall call them "new countrymen".

(d) The attitudes of the new countrymen, their wives and their children, is one of the most important things to have happened in the English village in my lifetime. Intelligent, articulate, enthusiastic, they take an active part in revitalising the way of life they have chosen. The tabulated reply to question 12(a), (b) and (c) of the Association's questionnaire provides clear evidence, if such is needed, of this widely-known fact.

Impact of planned expansion programmes

6.1. Turning now to the impact, upon this discernible pattern of the modern village community, of the expansion already programmed for the towns of Northampton, Wellingborough, Corby, and Peterborough (and, nearby Daventry in Northamptonshire and of Milton Keynes in North Buckinghamshire) I adopt the evidence of Mr. Woodhall* of Northamptonshire County Council, from the planning

* p. 2069.
† HMSO; 5s.

* p. 1837.

Printed image digitised by the University of Southampton Library Digitisation Unit

point of view, and of the National Farmers Union,* and County Landowners' Association† from the agricultural and land-use points of view.

6.2. From the village environmental view, these overspill plans have been accepted, not without opposition or regret, by my Association who recognise their scope and try to adopt a constructive attitude towards their problems. Because they are primarily overspill projects, concerned with broadly-based industrial requirements far wider than those pertaining to LAP 3, we expect the pressures, already noted at paragraph 5.2 above, will enormously increase over the entire county. Plans are being made to accommodate these pressures. Countrymen and new countrymen are nothing if not resilient and resourceful. But I have no doubt that the patterns noted in paragraph 5.3 above will undergo severe test and probably must alter. My concern is that the alteration may be so forced, that the values upon which they are based may disappear.

6.3. The existence of the severe planning disciplines inevitably places a premium upon rural values, such as being in or looking out over real countryside, a quiet afternoon's fishing, or an evening walk with a dog. And here I refer to the true countryside of England, as distinct from the Green Belts, river amenity areas, picnic areas and viewpoints of the planners' jargon which, to their credit, they are at such pains to recognise and protect. In short, the villages, as I have attempted to describe them, will be fully stretched without considering LAP 3 Thurleigh.

Effect of LAP 3 Thurleigh

7.1. *Noise.* I adopt and support all the evidence before the Commission as to the effects of *Noise*, so far as that evidence relates to the villages of Northamptonshire which would be affected by the NNI contour maps as published by the Commission, and as referred to in the evidence of Mr. Fleming.‡

7.2. It is fair to say that nowhere have I found a true grasp and appreciation by ordinary people of what those effects would really be, either to themselves or to future generations. The common experience of a visit or two to Heathrow or Gatwick has little bearing upon such an appreciation, in an area normally free from aircraft noise. Spoken analogies fail to grip the understanding, and my Association has purposely refrained, by means of prepared tape-recordings of aircraft noise etc., from trying to play upon people's emotive reactions.

Associated urban development

8.1. This, perhaps even more than noise, is seen by my Association as the greatest threat. We see no possible alternative to:

(a) The saturation and destruction of village patterns and communities as desirable rural entities.

(b) The disappearance of irreplaceable values recognised by the knowledgeable wherever England is named, values incapable of monetary compensation.

(c) Loss by the whole community because of the resulting imbalance between urban and rural life, value and traditions.

8.2. It is right to record a feeling in some rural parts that associated urban development would be beneficial in providing opportunities for diverse local employment at present found to be lacking. My Association feels sympathy with those who express this view, many of whom currently undertake long journeys to work using ill-adapted roads and transport facilities. But we feel that such complaints will be fully met in the planned development for overspill noted in paragraph 6.1 above. Further, we feel that the difficulty of appreciating the effects of LAP 3 Thurleigh, already referred to, largely outweighs the importance of this contrary view.

Time factor

9.1. I have tried to show that the growth and change of village life in Northamptonshire has been constant—no one economic or physical element has altered this pattern.

9.2. The pressures of planned urban expansions will represent the biggest single factor in this rate of growth, as recognised by the disciplines and proposals of the County Planning Authority to deal with those pressures. But at least most of those expansions (except Milton Keynes) are of existing communities, and great care is being taken to preserve the balance of community life of town and country. The growth rate will be unprecedented in this County, but the problems are well-known.

9.3. LAP 3 represents a national crash-programme of planning and execution on a scale quite unknown. There may be no technical reasons to hinder a 2-runway airport by the mid-1980's, or 4-runway by mid-1990's, but I believe that such a forced growth rate of building, with its effect upon local transportation and communication systems, and, more particularly, of associated urban development basically unrelated to the established community, will be totally unacceptable to the villages and countryside, their physical beauty, their values both traditional and therapeutic, and their whole community life.

Conclusion

10.1. I have wide personal experience of rural affairs.

10.2. I am aware both of the traditional values of rural communities, and of the effect of those values upon countrymen, old and new.

10.3. I recognise a pattern of vigorous, resourceful life in the villages.

10.4. I am already concerned about the effect on that life of expansion proposals for Northamptonshire and north Buckinghamshire already programmed, but feel that these proposals can be implemented and absorbed by the villages.

10.5. I foresee that LAP 3 Thurleigh would cause a breakdown of village life, values and traditions, quite apart from all considerations of noise, loss of land or effect upon health.

* p. 1917.
† p. 1981.
‡ p. 1854.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX A

Northamptonshire Association of Parish Councils
Third London Airport—Thurleigh

For completion and return to:

D. M. Auden,
Becke Phipps & Co.,
3 Spencer Parade,
Northampton.

by *FRIDAY, 18th JULY 1969*

1. Name of parish.
2. Name and address of Chairman.
3. How many dwellings are there in your parish?
4. (a) How many agricultural units are there?
   (b) How many of these have employees in tied houses?
5. (a) What other businesses are there? (Brief details with approx. number of employees, please.)
   (b) How many (approx.) work in the parish but live elsewhere?
6. (a) What schools have you?
   (b) How many children (approx.)?
7. What churches, chapels, etc., have you?
8. (a) Have you any especially fine or old buildings?
   (b) What are they? (Please indicate state of repair as good, indifferent or bad!)
   (c) Are any listed as of special historic or architectural merit?
9. Recreational organisations (please give approx. numbers). Does your parish support:
   (a) Allotment Association
   (b) Horticultural Society
   (c) W.I.
   (d) Usual church/chapel, etc., organisations
   (e) Outdoor societies (e.g. fishing, boating, cycling, natural history, antiquarians)
   (f) Sporting clubs (cricket, football, etc.)
   (g) Any others?
10. How many pubs or clubs have you?
11. Have you
    (a) church or parish hall?
    (b) A playing field?
    Are they fully used?
12. (a) Do you consider that newcomers to the parish have been able to fit in to the parish scene?
    (b) And play an active part?
    (c) Why do you think they came?
13. What feature of your parish do you consider most valuable to the full life and enjoyment of all inhabitants? E.g. peace and quiet? Convenient dormitory to neighbouring place of work? Employment within parish? Rural scene? Housing facilities? etc., etc.
14. (a) Have you a spokesman available to come to the Inquiry?
    (b) Name and address, please.

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix B

Parish	*No. dwellings*	*Agricultural units*	*Other Businesses (nos. employed)*	*Schools (nos. children)*	*Places of Worship*	*Fine Buildings*
Yardley Hastings	280	15	4 (60)	1 (85)	2	3
Castle Ashby	65	2	3 (30)	– (25)	1	3
Grendon	197	5	(12)	1 (36)	2	2
Cogenhoe Whiston	400	3	5 (80)	1 (150)	2	1
Hartwell	300	5	3 (50)	1 (100)	2	–
Bozeat	487	15	4 (155)	1 (122)	3	1
Wollaston	865	10	35 (1000)	2 (600)	4	7
Strixton	11	3	– –	– (7)	1	3
Gt. Doddington	380	6	4 (20)	1 (150)	2	5
Billing	365	5	6 (780)	1 (106)	4	2
Brafield	204	4	3 (10)	1 (79)	2	3
Quinton	62	3	– –	– (60)	1	3
Courteenhall	50	5	– –	– (25)	1	4
Roade	1600	4	3 (2080)	2 (600)	3	1
Ashton	110	5	– –	1 (40)	1	2
Stoke Bruerne	110	5	– –	1 (40)	2	1
Towcester	1200	10	3 (200)	3 (730)	5	1
Cosgrove	200	3	4 (44)	1 (48)	1	4
Blisworth	600	9	3 (100)	1 (230)	2	5
Tiffield	110	4	1 (10)	2 (140)	2	1
Moulton	1078	4	2 (60)	3 (300)	3	–
Overstone	240	3	1 (10)	1 (72)	1	4
Mears Ashby	165	4	4 (30)	1 (40)	1	1
Irchester	1345	4	20 (?)	1 (550)	4	1
Gt. Harrowden	28	2	– –	– (?)	2	3
Lt. Harrowden	363	4	2 (30)	2 (108)	2	3
Isham	200	8	3 (15)	1 (59)	2	6
Addington	60	1	1 (18)	– (?)	2	1
Twywell	109	2	– –	1 (40)	1	–
Woodford	460	4	2 (60)	2 (?)	3	–
Cranford	176	12	– –	1 (47)	3	6
Grafton Underwood	45	4	– –	– (10)	1	–
Warkton	45	5	1 (1)	– (–)	1	1
Weekley	54	2	4 (?)	– (24)	1	3
Thorpe Malsor	35	3	– –	– (20)	1	1
Cransley	170	7	3 (17)	– (60)	1	1
Broughton	650	10	– –	1 (400)	2	2
Pytchley	195	10	1 (20)	1 (72)	1	4
Orlingbury	128	6	1 (?)	– (–)	1	2

Printed image digitised by the University of Southampton Library Digitisation Unit

Recreational Organisations				*Facilities*		*Newcomers*		*Reasons* A—*Peace, Quiet* B—*Dormitory* C—*Parish work* D—*Rural scene* E—*Housing*
Indoor	*Outdoor*	*Cultural*	*Pubs/Clubs*	*Village Hall*	*Playing Field*	*Fit in?*	*Take active part*	
3	1	1	3	Yes	Yes	Yes	Yes	A & E
1	2	–	2	Yes	No	Yes	Yes	A & C
3	2	–	2	Yes	No	Yes	Yes	A & D
3	3	–	2	Yes (2)	Yes	Yes	Yes	B C A & E
3	3	2	2	Yes (2)	Yes	Yes	Yes	A & D
4	2	–	2	Yes	Yes	Not yet		A B C D & E
4	6	–	6	Yes (2)	Yes	Yes	Yes	A B C D & E
3	–	–	–	–	–	Yes	Yes	A & D
4	2	–	2	Yes	Yes	Yes	Yes	A B D & E
5	3	1	2	Yes	Yes	Partially		D B & C
3	2	2	2	Yes	Committee Active	Yes	Yes	A & D
3	–	3	–	Yes	No	Yes	Yes	A B & D
1	–	2	–	Yes	No	Yes	Yes	A B & D
4	3	–	4	Yes	Yes	Yes	Yes	C & E
2	2	–	2	Yes	Yes	Yes	Yes	D
1	2	–	1	Yes	Yes	Partially		A
7	5	2	9	Yes	Yes	No	Partially	A & D
2	2	–	3	Yes	Yes	Yes	Yes	A & D
4	4	3	2	Yes	Yes	Yes	Yes	A B D & E
3	2	–	1	Yes	No	Yes	Yes	A B & E
5	4	1	5	Yes	Yes	Yes	Yes	B
6	1	–	1	Yes	No	Yes	Yes	A B & D
3	–	–	1	Yes	Yes	Yes	Partially	A & D
2	3	–	4	No	Yes	Partially		B C & E
–	–	–	–	No	No	Yes	Yes	A
3	1	–	3	No	No	No	No	A & E
3	1	–	2	Yes	Not yet	Yes	Yes	B D & E
2	1	–	2	No	No	Yes	Yes	A & D
–	–	–	2	No	No	Yes	Yes	
–	1	–	3	Yes	Yes	Yes	Yes	
5	1	–	2	Yes	No	Yes	Yes	A B D & E
–	–	–	–	Yes	No	Yes	Partially	
2	–	–	–	Yes	No	No newcomers		A & D
2	1	–	1	Yes	Yes	Yes	Yes	A & C
1	1	–	1	Yes	Yes	Yes	Yes	A
2	–	–	1	Yes (2)	No	Yes	Yes	B & D
4	2	–	4	No	No	Yes	No	B
2	2	–	1	Yes	Yes	Partially		A & E
1	–	–	1	Yes	No	Partially		A & D

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Keysoe, Bedfordshire, Branch of the British Legion*

I am Mrs. Marjorie Riches, of Row Farm, Keysoe Row East, a retired Captain in the Women's Royal Army Corps, and assistant secretary of the Keysoe Branch of the British Legion. By resolution I have been deputed to put the Branch case.

In the first part of the case it is intended to show the strength of feeling among fellow legionnaires, both men and women, throughout Bedfordshire at the plight of the Keysoe Branch and its members.

The Keysoe Branch draws its membership from the parishes of Bolnhurst and Keysoe and of Little Staughton. The majority will lose their homes if either of the proposed sites at Thurleigh are selected for London's Third Airport.

An appeal was made to branches of the British Legion throughout Bedfordshire and to the branches of the Women's Sections.

As a result, a total of 3,621 legionnaires, in 34 men's branches and 19 women's branches told the Keysoe Branch that they "strongly support you in your fight to save your homes and the branch itself from the obliteration that will result if Thurleigh is selected as the site of London's third Airport".

The list of these branches and their last published membership figures, given below, shows that this support came from all quarters of the county. Even from places more threatened by other short-listed sites.

Men's branches	*membership*
Bedford	375
Bedford No. 2	41
Biggleswade	203
Blunham	36
Clophill	43
Cople	69
Dunstable	61
Eaton Socon	213
Eversholt	102
Flitwick	117
Great Barford	41
Harlington	59
Haynes	25
Houghton Conquest	58
Langford	92
Leagrave and Limbury	870
Leighton Buzzard	96
Lidlington	58
Luton	81
Marston	102
Maulden	153
Milton Ernest	24
Moggerhanger	31
Northill	144
Sandy	168
Stotfold	99
Potton	18
Sharnbrook	20
Sutton	29
Tempsford and Roxton	27
Turvey	59
Wilstead	88
Wootton	77
Wrestlingworth	64

Women's branches	*membership*
Ampthill, Bedford, Biggleswade, Clapham, Dunstable, Eaton Socon, Heath and Reach, Langford, Leagrave and Limbury, Leighton Buzzard, Luton, Moggerhanger, Sandy, Sharnbrook, Stopsley, Toddington, Thurleigh, Wrestlingworth, Yeilden and District.	878 (This figure is not published but was furnished by the County Secretary)

I now hand to the Inspector the original, signed returns from the 53 branches.

The second part of our case concerns the heavy social cost that will result if our members, and other ex-servicemen in the area, are turned out of their homes.

Keysoe is renowned for the number of 300 year old cottages, built it is thought, by refugees from the plague at Bolnhurst. These people had no title to the land on which they built, until granted title under the Enclosure Acts.

But they built well, and the owners of today think themselves fortunate to live in them. These cottages can be easily identified by the long boat-shaped gardens clinging to the side of the agricultural land behind them.

It is our contention that all are happy and content in these houses, with their gardens and they ask only to be allowed to remain.

But if they must be evicted the compensation that they can reasonably expect will not be so much that they can hope to find similar village properties in the neighbourhood at a time when 31,000 other people are similarly seeking new homes.

In support of this point of view, the Keysoe British Legion elected an honorary branch surveyor, Mr. E. C. Barnard FRICS, FAI.

Mr. Barnard was asked to inspect and value three typical, ex-servicemen's properties.

Each of these are the type described and each lies within the perimeters of the two proposed sites for the airport.

* See also p. 2261.

Printed image digitised by the University of Southampton Library Digitisation Unit

To protect the owners from unnecessary publicity, the three valuations have been called Cases A, B, and C.

I now hand to the Inspector a list of the names and addresses of the three properties so that he may identify them and inspect them if he so desires.

The valuations of these three properties are £2,000, £2,700 and £1,500 respectively.

I will now read the report of Mr. Barnard.

What we foresee happening is this. Because many of our members and other ex-servicemen in the area, are too old to secure mortgages of other properties, they may be forced to seek entry into County Council Old Peoples' Homes.

In this event the money they have just received in compensation will be controlled by the County Welfare department to enable charges of £13 2s. 6d. to be taken from each man and woman in weekly rents in the old peoples' homes. This is the Bedfordshiree system.

Not only will their money not be their own, they will have lost their independence, their gardens and their country way of life. Their lives, as they live them today, will have been destroyed.

APPENDIX

Valuations in respect of two properties at Keysoe Row, Keysoe, and one property at Bolnhurst, Bedfordshire, owned by ex-servicemen together with advice regarding the purchasing of comparable dwellings in the event of Thurleigh being selected as London's third airport

I, Edmund Courtier Barnard, am a Fellow of the Royal Institution of Chartered Surveyors and a Fellow of the Chartered Auctioneers and Estate Agents Institute. I am a partner in the firm of Messrs. Allott & Barnard, Chartered Surveyors of 54 Harpur Street, Bedford, and have been in practice in the Bedford area for the past 11 years.

As requested I have carried out an inspection of two residential properties at Keysoe Row and one residential property at Bolnhurst—which I understand are typical of a number owned by ex-servicemen in the area—for the purpose of advising with regard to the fair value of the same in the open market at the present time.

Due to the fact that the owners do not wish to become involved in the publicity which might otherwise be attracted to them I am—as requested—referring to the properties in question as Cases "A", "B" and "C", but understand the names and addresses of the respective owners and their properties will be made available to those responsible for conducting the Inquiry.

Also as requested I have given careful consideration to the problem which will confront owners—such as the owners of these properties—in trying to purchase a comparable dwelling in the vicinity should Thurleigh be selected as the site of London's third airport.

In the first place I deal with my valuations which are as follows:

Case A

Description and situation

A semi-detached period cottage of considerable charm but awaiting comprehensive modernisation, laying to the south of the Keysoe Row—Thurleigh Road at a point about half a mile to the west of the Keysoe Row cross roads.

Construction

The property is principally of timber frame and wattle and daub construction on brick footings with a thatched roof. The thatch is in fair order having been renewed about 10 years ago and patched about 2 years ago.

Accommodation

The heavily timbered accommodation has a minimum ceiling height of 6 ft. 2 in. and comprises:

On the ground floor:

Sitting Room 15 ft. × 14 ft. with large inglenook fireplace and Kitchen 14 ft. × 10 ft. 6in.

On the first floor:

Landing; Bedroom No. 1—14 ft. × 11 ft. 6 in. with door to Bedroom No. 2—10 ft. 4 in. × 11 ft.

Outbuildings

Adjoining the cottage is a lean-to shed and the other outbuilding consists of a greenhouse in the rear garden.

Services

Main electricity and water are connected but there is no hot water system and only a pail closet.

Gardens

The property is set back some 6 yards from the road with the intervening area being well maintained. The principal garden is at the rear and comprises a small lawn and large vegetable garden. This garden is screened along the south side by a belt of young elms and flowering shrubs. The fact that there is a strip of land adjoining the west side of the cottage of adequate size for the erection of a garage is considered to be an asset.

Rates

The rateable value is £14. General rates and water rates for the current half year amount to £5 6s. 11d.

Tenure

The tenure is freehold.

Valuation

I am of the opinion that £2,000 (*two thousand pounds*) represents the fair value of the property in the market at the present time, on the basis of Vacant Possession being given on completion of the sale.

Case B

Description and situation

An extensively modernised detached cottage laying on the north side of the Keysoe Row-Thurleigh Road within ¼ mile of the Keysoe Row cross roads.

Construction

The cottage is built of brick and has a gable ended

Printed image digitised by the University of Southampton Library Digitisation Unit

pantile roof. At the rear a brick and asbestos roofed kitchen and bathroom lean-to extension was added in 1968.

Accommodation

The compact and well maintained accommodation has a minimum headroom of 5ft. 10in. and comprises:-

On the ground floor:

Living Room 12. ft × 12 ft. with fireplace (new 1968) having back boiler at rear; Sitting Room 8 ft. × 11 ft. with modern tiled fireplace; Breakfast Room/Kitchen 18 ft × 8 ft. with single drainer sink unit, 3 power points, electric cooker panel, larder cupboard and built-in cupboard; Bathroom with bath (h & c), handbasin (h & c), heated towel rail and sliding door to separate W.C.

On the first floor:

Small central Landing with power point providing independent access to Bedroom No. 1—11 ft. × 12 ft. and Bedroom No. 2—11 ft. × 9 ft.

Outbuildings

The outbuildings include a timber and iron Store/Barn and a detached timber and asbestos Garage.

Services

Main electricity and water are connected and drainage is to a septic tank.

Gardens

The garden is very restricted in size and consists of a narrow piece of land running parallel to the roadside. On account of the location of the garden the property lacks privacy.

Rateable value

The rateable value is £27. General Rates and Water Rates for the current half year amount to £9 10s. 4d.

Tenure

The tenure is freehold.

Valuation

I am of the opinion that *£2,700 (two thousand, seven hundred pounds)* represents the fair value of the property in the open market at the present time on the basis of Vacant Possession being available.

Case C

Description and situation

A virtually detached period cottage fronting on to the east side of the B.660 Bedford/Kimbolton road at a point about ¼ mile to the north of the junction formed by the St. Neots road and the B.660.

Construction

The main walls are of timber framed construction with wattle and daub infilling. The roof was rethatched and wired about 3 years ago.

Accommodation

The accommodation comprises:-

On the ground floor:

Living Room 15 ft. × 12 ft. with quarry tile floor and old fashioned range fire; Kitchen 12 ft. × 9 ft. 2 in. with sink (cold only), two power points, electric cooker panel, built-in cupboard and brick floor.

On the first floor:

Staircase from the Kitchen leading to: Landing/Bedroom No. 1—12 ft. 3 in. × 12 ft. with door to Bedroom No. 2—12 ft 3 in. × 12 ft. with power point.

Outbuildings

The outbuildings include a timber and iron Store Shed, a timber and tile Wood Store, a timber and tile General Purpose Shed and a small Greenhouse.

Services

Main electricity and water supplies (cold only) are installed but there is only a pail closet.

Garden

The property is set back a few yards from a dangerous corner of the road and there is a very small piece of garden adjacent to the north end of the cottage. In brief the cottage stands on a very restricted site as a consequence of which there is no privacy, particularly as the road lies at a higher level than the garden.

Rates

The rateable value is £16. General Rates and Water Rates for the current half year amount to £5 19s. 4d.

Tenure

The tenure is freehold.

Valuation

I consider the fair value of this property in the open market to be *£1,500 (One thousand, five hundred pounds)* on the basis of vacant possession being given on completion of the sale.

I deal now with the second matter upon which I have been requested to advise, namely:

The problem of purchasing comparable dwellings if Thurleigh was to be selected as the site of London's third airport

I do not think the owners of the cottages would raise any objection to my stating that they are not the sort of people who are in the fortunate position of being able to afford to purchase a property elsewhere regardless of the price thus the all-important question arises where can they purchase alternative properties with the proceeds of the compulsory sale of their own cottages.

To go further south nearer Bedford would be out of the question as prices already rise dramatically; to go east would entail moving into a completely different area namely the fen type district lying between St. Ives and Ely and even here the chances of obtaining an equivalent cottage at an equivalent price can be considered as remote due to the influence of Cambridge; to go westward would involve moving into an area where prices are generally recognised as being on a higher level, thus only the area to the north remains to be considered.

It is my experience that country cottages in this area—by which I mean the area bounded by Rushden-Thrapston-Huntingdon within the £1,500–£2,700 price market are difficult to find at any time. To verify the present availability of cottages I have contacted 3 firms of agents practising in Rushden

Printed image digitised by the University of Southampton Library Digitisation Unit

who collectively can offer no more than 2 cottages in this area whilst 2 properties are on offer through Thrapston agents and 3 through Huntingdon agents.

The plight of ex-servicemen and others who own property of the type I have inspected would in my view be extremely serious as an adequate number of suitably priced properties within reasonable distance would not be available and the fact that many dispossessed owners and owners of other noise affected properties would be seeking comparable properties at the same time would inevitably result in prices being forced upwards thereby aggravating the position still further.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Keysoe Parochial Church Council*

I am Mrs. Sheila McEwan of Keysoe Manor, Keysoe, a member of the Parochial Church Council of Keysoe of the United Benefice of Keysoe with Bolnhurst and Little Staughton, delegated to state the case for Keysoe and the United Benefice.

The Rev. John Laird was inducted and instituted at services held at the three churches on 26th July, 1969.

In putting the care for the three churches, I will deal at greater length with that of Keysoe to show the type of church community that it is and its antiquity. I will deal at much shorter length with the sister-parishes which are similar in character and age.

Firstly I would draw attention to the proposed site maps for the airport† which show that both Keysoe Church and Bolnhurst Church are directly threatened with destruction. The possible fate of Little Staughton Church is more subtle.

This 13th century church dedicated to St. Margaret, stands to its cost on high ground and would be directly in the flight path of planes landing and taking off. Its spire, visible for miles would be an affront to any air safety officer and we fear its demolition would be demanded.

Keysoe parish church, dedicated to St. Mary the Virgin is part 12th century. Originally the gift of Simon de Beauchamp to the Priory of Chicksands, Henry VIII granted it to Trinity College, Cambridge, in whose gift the living remains.

Many fine architectural features of the Chicksands era survive so that, were it a secular building, it would rank high on the list of Ancient Monuments.

Its crowning glory is the tower of four stages with angle buttresses rising to the full length and ending in panelled and crocketed pinnacles.

This is surmounted by a very tall octagonal spire visible from four counties. Six or seven fine and ancient churches may go in the Thurleigh area but the loss of even this one, alone, should be enough to cause a National outcry.

Nor have we, the church council and congregation of Keysoe, neglected our heritage. Over the years our predecessors have so well cared for the church that the relatively small sum of £2,500 is all that we need for current roof repairs. This should be set against the £10,000 and upwards needed to restore so many other churches.

Towards the sum we need, £1,750 has already been collected and the flow of money has not ceased with the current threat. The love for our church is strong and we do not want to see its stones enshrined for ever as hard-core beneath the runway of a monster airport.

The church at Keysoe is still a living part of the community which includes many old families whose forbears are buried in the tree-girt churchyard which is kept in apple-pie order by teams of parishioners.

Just the same remarks apply to the two sister churches. The 13th century Church of St. Dunstan at Bolnhurst is surmounted by a tower 90 feet high and the parishioners have kept it in an excellent state of preservation through the centuries.

Among its treasures are a large mediaeval wall painting of St. Christopher and a window with the figure of the Blessed Virgin Mary in white and gold 15th century glass.

Because the selection for the short list of Thurleigh has placed a blight on Keysoe, that we realise may last two years, life cannot stand still. And the church, in particular has been caught at a time of change.

In November 1968, planning consent was obtained to build a new and more convenient vicarage at Keysoe. The old and rambling vicarage is being sold and work on building a new vicarage started in August this year.

It is being constructed in the garden beside the church and is due for completion at Christmas. The choice of Thurleigh will mean its destruction almost before the mortar is dry.

But all the material loss of our three churches and the vicarage will be nothing compared to the dispersal and misery that will be caused to the centuries-old communities that they serve. Close-knit these communities all are, with the tentacles of many families running through them. The priceless threads of family ties will be broken by dispersal.

* See also p. 2262.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Keysoe, Bedfordshire, Baptist Churches*

I am Charles Walters of The Garage, Keysoe Row and Minister of Keysoe Row Baptist Free Church.

Both my own church and the sister church, Keysoe Brook End Baptist Church will be demolished if Thurleigh is chosen as the site of London's third airport. The homes of those who make up our two congregations will also be destroyed.

Our forbears in Keysoe played a leading role in the history of Nonconformity under the early leadership of John Donne, who was a close associate of John Bunyan and was imprisoned with him.

The Brook End Church which he formed dates from 1652 and Donne himself was buried here in 1678. In 1741 the present Brook End Church was built, together with a schoolroom and manse. Worship has been continuous there ever since.

Keysoe Row Church dates from 1808, when it was licensed and it is renowned as being one of the few thatched places of worship surviving in the country.

At both churches there are graveyards where lie buried a great many of the forbears of our present congregations.

There is a very strong Nonconformist presence here in Keysoe with devout and constant attendances at our services.

To destroy our churches and the homes of our people would be a great tragedy from which many of our older folk will never really recover. Here they have lived all their lives and have their relations and their friends.

We find it hard to believe that our centuries-old community can be placed in such jeopardy and we pray to God that we will be allowed to continue here our way of life.

---

* See also p. 2263.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 4

Professor Sir Martin Ryle
Mr. W. A. Allen
University of Cambridge

Mrs. J. Cruse
Mr. D. Burton
Mr. G. D. Picton
Mr. J. Curran
Thurleigh Emergency Committee for Democratic Action

Mr. C. H. Lewis
Kimbolton School, Huntingdonshire

Mr. F. A. Hammond
Mr. R. N. Hutchins
Harpur Trust, Bedford Charity

Mr. K. Durham
Mr. J. K. D. Dew
Mr. J. M. Philip
Unilever Ltd.

Dr. A. W. F. Edwards
Cambridge University Gliding Club

College of Aeronautics Gliding Club

Cony & Son

Oral evidence was taken from these witnesses on
Day Four: Thursday 11th September 1969
see pages 2267–2301

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Professor Sir Martin Ryle*

I am Professor of Radio Astronomy and Director of the Radio Astronomy Observatory at Lord's Bridge, which is owned and operated by the University of Cambridge. In 1945 I started the research in radio astronomy at Cambridge and have been concerned with its development here ever since. From 1939–45 I was concerned with the design of radar equipment for the RAF and with the operation of radar, radio-navigation and communication systems.

1. The aims of radio astronomy and its importance in Britain

1.1. Astronomy is both an exploration of the Universe and an extension of our physics laboratories by providing conditions which we cannot reproduce on earth. During the last few years some of the most important discoveries in the whole field of scientific research have been made in astronomy and many of these have been due to observations made with radio telescopes.

A radio telescope comprises a large aerial system connected to a very sensitive receiver, and it is used to detect, and measure the weak radio signals of natural origin. The measurements may be used to obtain more information about bodies which are already known (such as the Sun and Moon) or to locate hitherto unknown sources in the Universe and to ascertain their nature.

Our radio telescopes at Lord's Bridge have been used in a very wide range of investigations and perhaps I may mention some of the more important aspects of radio astronomy which we have pursued, and some of the practical benefits of radio astronomical research.

1.2. The study of the atmosphere and surface conditions of the moon have direct relevance to space exploration. Cambridge observations provided information on the nature of the lunar surface and the first definite evidence on the lunar atmosphere long before the first lunar landings. The extension of such observations to the atmosphere of the planets may prove equally important. Again, our knowledge of the interplanetary gas probably owes as much to radio observations made from the surface of the earth as it does to space probes.

1.3. In the discovery and investigation of sources within our own Milky Way system, particularly those resulting from supernovae (or exploding stars), radio telescopes can provide us with information on problems of importance to fundamental physics. In these sources processes occur which cannot be reproduced by even the most advanced man-made machines. For instance, the containment of high energy particles (the great problem in utilising thermo-nuclear energy) seems to be achieved in these natural sources. Radio astronomical techniques offer the possibility of understanding the physical processes involved.

1.4. Radio astronomical observations led to the discovery of quasars in 1962 and their existence has posed a problem for the scientific world which still remains unsolved. Quasars, the nearest of which is 1,500 million light years distant, are compact bodies which give out huge amounts of energy in the radio and optical spectrum so that they are conspicuous objects even at such great distances. The very large amounts of energy involved are so great that the well understood nuclear processes may not be adequate to account for them. The study of these objects is one of our main programmes of work.

1.5. Pulsars were discovered at the Radio Astronomy Observatory at Cambridge in November 1967. The interest and activity which the discovery aroused throughout the world has now confirmed the original suggestion that they are neutron stars. These are stars reaching the endpoint of their evolution and having densities so large that a teaspoonful would weigh ten million tons. The possibility of investigating matter at such densities, far beyond those achievable on Earth, is of great importance for physical theory.

1.6. The most powerful radio telescopes can detect objects many times more distant than can be seen with the largest optical telescopes. The interest of such observations lies in the fact that the radiation from a very distant source has taken so long to reach us that we see that part of the universe as it was at an early stage in its development. We can in effect look back in time for some thousands of millions of years. The Cambridge one-mile radio telescope, which can reach further than any other instrument in the world, can explore the history of the universe back to a time when it was perhaps only one-tenth of its present age.

1.7. On the engineering side, many developments of radio telescopes and low noise amplifiers have been taken over for satellite communications systems. The automatic control of the most modern radio telescopes and the methods of automatic data handling are similar to the advanced methods which may find application in such fields as automatic machine-tool control.

1.8. Perhaps the most important practical contribution our work makes to the national scene is the training of scientists—not only for supplying the ever-increasing needs in the fields of space research and space communication, but in the many fields of electronics, automation and automatic computing where this country stands in urgent need. For example, five of our past students are now working in the Marconi Company Ltd. and are mainly concerned with communication satellite ground stations.

1.9. The Science Research Council has shown its appreciation of the importance of astronomy for the

* See also p. 2270.

Printed image digitised by the University of Southampton Library Digitisation Unit

nation by giving it especial support in Britain over the last few years. In optical astronomy the 98-inch Isaac Newton Telescope and the planned 150-inch Anglo-Australian telescope are conspicuous results of this policy. In radio astronomy the continuing support for the observatories at Cambridge and at Jodrell Bank and the plans for large new radio telescopes at these observatories has allowed the growth of teams which have produced results of a quantity and importance greater than that of any other country including the U.S.A. and Russia. There are few fields today where this can be said.

I append to this Statement a document marked M.R.1 and entitled "Note by the Science Research Council on support of Radio Astronomy" which was prepared by Mr. J. F. Hosie of the Council.* I also append the following: †

(i) Report of the Committee appointed by the Lord President of the Council under the chairmanship of Lord Fleck 1961–1964 on Radio Astronomy, marked M.R.2.‡

(ii) Report of the Science Research Council for the Year 1967–68,‖ marked M.R.3, and I direct the Commission's attention to page 11 thereof, and

(iii) Document entitled "Astronomy, Space and Radio Board's Review", marked M.R.4.

2. The radio astronomy observatory at Cambridge and its development

2.1. *The development of radio astronomy in Cambridge*

The first radio astronomical observations at Cambridge were made in 1946 on a site on the western outskirts of the city. Expansion of the work led to the construction in 1953 of the world's first radio telescope over an acre in size. In 1956, because of the rising levels of interference, the observatory was moved to the present site at Lord's Bridge and a number of large telescopes have been constructed there. The most powerful of them, the One-mile Radio Telescope, was completed in 1964 with a grant of £550,000 from the Science Research Council. The total capital investment in the Observatory is about £900,000. In February 1969 the Science Research Council announced a grant of £2·1 million for the construction of a yet more powerful telescope on the Lord's Bridge site. Survey work on the site is already in progress and civil engineering work began on 2nd June, 1969.

2.2. The new telescope, which is called the Cambridge five Kilometre Radio Telescope, will have eight parabolic reflectors situated along a five kilometre line running roughly east and west. Four of the reflectors will be at fixed points along the five kilometre line and four more will be moveable on a special rail track. The telescope is situated along part of the disused Cambridge to Sandy railway line.

The telescope is designed to operate on the internationally allocated frequencies in the range of 1,400 MHz to 10 GHz, but the main programme of work will be confined to two of those bands on 2·7 and 5 GHz. The instrument will operate in the same way as the One Mile Radio Telescope. The principle of operation requires continuous 12-hour periods of observation of the same region of sky on 16 succeeding days, with the moveable reflectors in different places. The signals derived over this period of time are fed into a computer to produce the actual map of the area. With this type of operation breaks in the continuity of the observation that might be caused by interference would normally require the complete day's observations to be repeated. Periods of operation must therefore be free of interference to be effective.

The purpose of the new instrument is to produce radio maps of very high resolution showing cosmic radio sources of many kinds in fine detail. It is convenient to compare the performance of the new instrument with that of the human eye. Expressing the detail in which we see an object, whether far or near, in terms of angular measurement, the human eye can just distinguish two objects 60 seconds of arc apart. The first radio telescope to achieve a better resolution than the human eye was the one mile telescope which has a resolution of just over 20 seconds of arc. In other words you can see a structure three times finer by the one mile telescope than by your own eye. The five kilometre telescope is designed to have a resolution of about one second of arc, some 20 times better in angular resolution than the one mile telescope. This is in fact similar in detail to what can be achieved with large optical telescopes on good sites.

The prime purpose of the new telescope is to make detailed maps of quasars and radio galaxies with the object of explaining their physical nature.

There have been preliminary plans prepared in various parts of the world for instruments comparable in performance with that of the five kilometre telescope, but to my knowledge none of them has in fact received funds. It therefore seems fairly certain that the five kilometre telescope will lead in the particular field I have discussed for at least three years, and, quite likely, longer. I should perhaps add that there are instruments now under construction which have a performance comparable to our one mile telescope, but none of these has yet been completed. We have, therefore, had some five years lead in the operation of an instrument of this size.

2.3. *Observatory's links with remainder of University of Cambridge*

The total staff of the Observatory now numbers 69 of whom 14 are University teaching and technical officers, 5 are senior research workers and 19 are research students.

In order to give some idea of the staff's links with the University I shall indicate the sort of responsibilities which they have in regard to the University.

---

* p. 2120.

† Items (i), (ii) and (iii) all available from the Science Research Council.

‡ Not reproduced. (HMSO; 7s. 6d.)

§ Not reproduced. (HMSO; 4s. 6d.)

‖ Available from the Science Research Council.

Printed image digitised by the University of Southampton Library Digitisation Unit

The types of University teaching in which the staff and research students of the Observatory are involved consist of the normal undergraduate teaching in physics, including the giving of lectures in physics, demonstration in undergraduate practical classes in physics and the less formal supervision of undergraduate work which is a feature of the Cambridge system of teaching. The staff also supervise the work of postgraduate students in radio astronomy, who have their first degree and are generally working for a Ph.D. degree, and give postgraduate lectures in astronomy and radio astronomy.

The University teaching officers of whom there are seven on the staff of the Observatory have obligations during the University term which are, on average, as follows:

Three undergraduate lectures per week for one term of the year. These take place on three separate days in the week.

Four hours per week during each term in undergraduate practical classes, on either one or two days of the week. Six hours per week undergraduate supervision in classes of two or three. Because of the crowded time-table of science undergraduates these will always be distributed over at least two or three days of the week.

One postgraduate lecture on radio astronomy per week for one term of the year.

Other staff members of the Observatory, who are more concerned with the technical aspects of the operation of the telescope, organise courses in electronics and have teaching commitments which normally include some but not all of the categories mentioned above.

Research students in addition to their research work are relied upon for the following teaching work:

Four hours per week demonstration in undergraduate practical classes in physics.

Two hours per week supervision in physics.

Both of these activities are regarded as a valuable part of their training. But, of course, they are also being educated, and apart from the actual work of the Observatory, and the analysis and study of the results they obtain at the Observatory, they have to attend lectures in astronomy and radio astronomy and the techniques involved. This year in Cambridge there are on average four lectures per week in regular courses and two less formal seminars per week given by visiting speakers. No student would expect to attend all of these, but four per week would be usual.

Undergraduate teaching in physics is spread over a number of days in the week and this teaching must of necessity take place in the University. The postgraduate teaching could be arranged, and the lectures on radio astronomy could take place, at a remote observatory, but this would not be satisfactory since many of the lectures are attended by research students in optical astronomy who would therefore have to travel out to the Observatory to attend these lectures. Furthermore many of the lectures in other branches of astronomy which our postgraduate students attend are in Cambridge. It would, therefore, be impossible both for the staff and for the research students to stay for a period of several days or weeks at the Observatory, except during University vacation.

It must be possible to make a visit to the Observatory during a single day and we therefore concluded that the maximum distance from Cambridge an Observatory can feasibly be is 50 miles. It would take three hours to do this return journey.

2.4. *The important advances in radio astronomy made at Cambridge* have included:

(a) The first measurement of accurate positions of the brightest radio sources leading to their identification with optical objects.

(b) The first maps of the distribution of radio emission over the Sun.

(c) The first radio telescope having a collecting area of over one acre. With this telescope a survey of the radio sources in the whole of the northern sky was undertaken which is still the standard reference list throughout the world.

(d) Discovery of the scattering of radio waves by the outer atmosphere of the Sun and also by the gas in interplanetary space.

(e) Discovery of the excess numbers of faint radio sources which gave the first positive evidence in favour of the evolutionary cosmological theories.

(f) The first detailed mapping of the structure of radio sources.

(g) The detection of the faintest radio sources some 100 times weaker than those detected at any other observatory.

(h) The discovery of pulsars.

These astronomical advances have resulted from the development of new observational techniques particularly in the design and construction of radio telescopes employing the principles of interferometry, aerial synthesis using moveable telescopes and aerial synthesis using the rotation of the Earth. The telescopes now in use at Lord's Bridge enable radio maps to be made of weak sources with much higher resolution of detail than has been attained elsewhere and are able to detect sources much weaker than those detected at any other observatory.

The special techniques used to achieve these results involve observations lasting for periods up to four months and can be affected by levels of interference lower than those acceptable for the telescopes at Jodrell Bank.

The important position in radio astronomy that Cambridge now holds internationally has been made possible not only through the development of ideas and their realisation in engineering terms but also to an important degree by the acquiring of a good observatory site and the protection of the radio telescopes from radio and electrical interference.

3. The siting of a radio astronomy observatory

The requirements for the site of a radio astronomy observatory for the large radio telescopes now in use and under development are—

3.1. *Proximity to the University*

I refer to paragraph 2.3 in which I deal with the

Printed image digitised by the University of Southampton Library Digitisation Unit

need for the site of the Observatory to be near Cambridge and the fact that the maximum distance must not exceed 50 miles.

3.2. *Large flat site*

To allow the construction of large telescopes without introducing major earth moving problems the variations in level must not be more than about 10 feet.

3.3. *Stable subsoil*

So that construction of telescope foundation without settlement of more than $\frac{1}{16}$" may be economically feasible.

3.4. *Freedom from man-made interference*

The observations are not easy; the signals are extremely weak (equivalent for instance to those that would be received from a transmitter situated on the moon with a power of 1/1000 of a watt (one millionth of the power of a normal ship's transmitter).

The importance of radio astronomy is recognised internationally by the International Telecommunications Union which allocates frequency bands specifically for use in radio astronomy. In this country the GPO has the responsibility for keeping these frequencies clear from radio interference from harmonic and other spurious radiation which may be unintentionally radiated from radio transmitters and radio frequency heating apparatus and also from electrical interference which can be generated by electrical machinery of many kinds. This responsibility involves careful arrangement of the frequencies allocated to transmitters in the neighbourhood of the Observatory. The distance at which any particular equipment may produce serious interference depends very much on the type of equipment being used. But from a consideration of the number and power of different sources of interference we concluded that a satisfactory site should have the following qualifications:

(a) It should be at least 15 miles from large centres of industrial activity. It will, of course, be appreciated that Lord's Bridge is only 5 miles from Cambridge. Serious radio interference has been experienced at the Observatory due to equipment in Cambridge on a number of occasions but the problems of identification and control of the interfering sources are not insuperable because of the small degree of industrial activity in Cambridge.

(b) It should be 10 miles from very high voltage electric grid lines and 5 miles from electric railways.

(c) It should include natural screening arising from local topography if possible.

(d) It should be in an area having no local industrial activity and little expected increase in residential development in the neighbouring villages.

(e) It should be at least one mile from a major road carrying heavy traffic.

4. Choice of the Lord's Bridge Site

4.1. *The original observatory site* on the western outskirts of Cambridge, which had been used from 1946, was by 1955 no longer suitable for the most accurate observational work due both to the increased electrical interference levels from domestic and industrial apparatus in Cambridge and to the increased sensitivity of the receivers. Serious interference had been experienced from electrical machinery and fluorescent lighting in the immediate vicinity of the telescopes and also from radio frequency glueing machinery and other radio frequency installations at greater distances. For the construction of the large new telescope proposed at that time, a new observatory site was essential.

4.2. *The choice of the Lord's Bridge site* was the result of an investigation of 3,000 suare miles of East Anglia and included detailed investigation of many disused airfields, areas of heathland and other poor farmland. Of the many sites considered only two fulfilled the conditions laid down in section 3 above. The first was situated in the Breckland close to Thetford. The physical attributes of the site were ideal and there was at that time little industrial activity in Thetford, although this activity has now greatly increased. The sole disadvantage of this site at the time was the likelihood of interference from radio transmissions associated with military activity in the area. In particular, the proximity of the air bases at Lakenheath and Mildenhall and the associated problems of the radio interference from ground based and airborne equipment made this site unacceptable.

The second alternative was the Lord's Bridge site. It lies about 5 miles S.W. of Cambridge, covers 200 acres and is level to within 10 feet. The land is agriculturally poor and provides stable foundations. The original survey showed that Lord's Bridge had at this time effectively no industrial activity in its neighbourhood and lay within the scheduled green belt area; it also enjoyed the screen of the Barrington Hills for sources to the south. In order to define the problem of protecting the radio observatory we prepared documents for the County Planning Officer specifying the types of development which would be harmful to our work. Most of these requirements did not appear to conflict with the development planned for the area. For instance (a) the installation of transmitters within 10 miles only occurs after consultation with the GPO who are well aware of the problems involved, (b) the siting of a new dense centre of population within 5 miles of the observatory was regarded as a serious hazard but no such development was planned, (c) major growths of the villages within about 2 miles could likewise cause difficulties but in the county plan all these villages have defined envelopes, (d) the distance from Cambridge was sufficient for no serious interference to be anticipated from most industrial activities. In particular the small scale activities of Cambridge airport were not expected to cause interference and have not done so. The only interference experienced from Cambridge has been from industrial users employing radio frequency equipment which

Printed image digitised by the University of Southampton Library Digitisation Unit

can cause serious interference at distances of several miles.

4.3. *Our experience over the last 12 years* has shown that the Lord's Bridge site is an excellent one. The freedom from interference has been maintained throughout this period by diligent application of the methods of obtaining protection from interference outlined in section 5. The only very serious sources of interference have been due to radio frequency equipment in Cambridge and to unauthorised transmissions from aircraft.

4.4. *Long term plans for radio astronomy in Cambridge.* The Radio Astronomy Planning Committee under the Chairmanship of Lord Fleck investigated the future of radio astronomy in Great Britain and in their Report published in 1965 recommended that work in this subject should be concentrated at the Universities of Cambridge and Manchester and that, if funds were available, further large telescopes should be built at each of these Universities.

With these recommendations in view, further consideration was given at this time to the long-term protection from electrical interference of the Observatory at Lord's Bridge and to the alternative of a search for a site which could be guaranteed long-term protection. An Inter-Departmental Working Party set up by the Ministry of Housing and Local Government after discussions with the staff of the Observatory presented the results of their investigation of the overall problem in a *Report on the protection of Lord's Bridge Radio Astronomy Observatory against radio and electrical interference* (August 1968). A preliminary search made for an alternative site did not reveal any areas which had specific advantages over that at Lord's Bridge. It was concluded that if the existing methods for protection of the Observatory from electrical interference was fully used the continuance of radio astronomy on the existing site would be the best solution.

In 1967 a proposal was put to the Science Research Council for the construction of a 5 km radio telescope at Cambridge, being a development of the principles used so successfully in the existing one-mile radio telescope. In February 1969 the Science Research Council announced the award of a grant for £2·1 million for the construction of this telescope at Cambridge and the instrument is now under construction at Lord's Bridge.

5. The protection of the radio telescopes from electrical interference

5.1. *The design of the telescopes*

Considerable care is taken in the design of the instruments to reduce their sensitivity to man-made radiation. In the one-mile radio telescope the sensitivity to interference is about one millionth of that to celestial sources. It is unlikely that this figure can be improved significantly.

5.2. *Siting of radio transmitters*

In this country the GPO has the responsibility for licensing transmitters, allocating frequencies for their use and for ensuring that these transmissions do not interfere with other services. The GPO has co-operated closely with the radio astronomy observatory in choosing the frequencies and siting of such transmitters so that no interference with the observations should occur. A large increase in the number of transmitters required in the area of the Observatory would make the problem of suitable allocation of frequencies much more difficult and perhaps impossible.

5.3. *The Wireless Telegraphy Act*

The provisions of this Act specify the maximum harmonic and spurious radiation which can be radiated by transmitters on frequencies other than those allocated to them and upper limits on the levels of electrical interference which can be radiated by electrical apparatus of many kinds. The detailed consideration of these limits in relation to the radio astronomy observatory is presented in a GPO report contained in the Inter-Departmental Working Party Report mentioned earlier. We note here that the legal limits provide adequate protection for many kinds of domestic and industrial equipment except in the close vicinity of the Observatory but:

(a) Some types of equipment are not covered by legislation.

(b) Some frequency bands used in radio astronomy are not covered by legislation.

I would like to deal with both (a) and (b) above in some detail, but I understand that the Commission would prefer that this should be done in the course of the Stage III evidence.

5.4. *Co-operation with local users of electrical equipment*

Local users of electrical equipment (most of whom in our experience have proved co-operative), can be advised on the suppression and screening of their installations. In some cases additional expense is involved in making modifications and the Observatory has been prepared to meet these costs. The possibility of carrying out this advisory function evidently depends on there being only a small number of cases requiring attention each year.

5.5. *Control of new developments through the County Planning Authority*

The Radio Astronomy Observatory have enjoyed the very close co-operation of the County Planning Authority over a number of years and this has proved to be a most valuable method of maintaining the protection of the Observatory from interference. The present situation is that no residential development is planned for the neighbourhood outside the existing village envelopes and the Observatory is consulted over any new commercial or industrial planning application within an agreed area. The staff of the Observatory are then able to discover what types of electrical installations, if any, are envisaged and to advise on what equipment would give virtually no interference. There are perhaps two or three applications per year for which such advice is needed.

Recent discussions with the Planning Authority concerning the Cambridge Western Bypass have resulted in agreement to take account of the position

Printed image digitised by the University of Southampton Library Digitisation Unit

of the Observatory in determining its route, to screen the road for part of its length to site service stations at some distance from the Observatory.

6. **The effect on the Observatory at Lord's Bridge of the siting of the third London airport at Thurleigh**

6.1. In the absence of any detailed plans it is impossible to make an exact assessment of the problems of radio and electrical interference likely to be experienced if the third London airport were sited at Thurleigh, but it is possible to make a preliminary assessment of those factors likely to cause serious interference. The effects of the equipment directly associated with the airport and those related to the areas of increased population will be considered separately.

6.2. *The important sources of interference associated with the airport* are:

(a) Direct radiation from ground equipment at and near the airport.

(b) Transmissions from the ground scattered by aircraft, particularly those flying close to the transmitter or to the Observatory.

(c) Radiation from transmitters installed in aircraft.

(a) *Direct radiation from ground equipment*

It must be assumed that any major airport would involve the installation of effectively all radio and radar aids now in use and that additional more sophisticated devices would almost certainly be added in the future. Existing equipment at Heathrow airport which I have examined includes:

(i) Surveillance radars which operate within a frequency band immediately adjacent to a radio astronomy frequency band which will be used extensively for cosmological observations with the one-mile telescope.

(ii) Airfield Control radars which operate with very high power in bands close to another radio astronomy band.

The details of this equipment can be presented more appropriately at Stage III of this Enquiry. It is difficult to give accurate assessments of these radars as sources of interference since it is widely recognised that spurious radiation from radars varies from one equipment to another and may vary with time. We note here, however, that if equipment of similar type, which just met the internationally accepted standards for spurious radiation, were installed at Thurleigh, then the level of interference at Lord's Bridge could make it impossible to carry on observations on two frequency bands allocated to radio astronomy.

In addition, frequency allocations have already been provided for new systems which, we understand from discussions with National Air Traffic Control Services, are under consideration but have not yet been developed. One of the bands allocated for this purpose does however lie immediately adacent to the most important radio astronomy band which would be used for the new 5 km radio telescope.

In allocating frequencies for existing airport radars, the GPO has taken account of the requirements at Lord's Bridge. In the far more extensive installations which will be necesssary at a major airport, it is unlikely that this would be possible owing both to the number of different radar installations involved and the fact that the frequency allocations must fit in with international requirements. This same problem would arise in the event of new approach or landing systems being installed; the type and frequency of the systems would have to be determined internationally.

In addition to equipment installed immediately adjacent to the runways, other transmitters (e.g. surveillance radars, ILS and VOR beacons, storm detection radar, etc.) might be installed at some distance from the airfield. The actual location would depend on the alignment of the runways and on local geography, in the case of the beacons they might be spaced 15 miles or more from the airport especially if any changes were made to the airways.

In the analysis of the problems of interference with radio astronomy the GPO report (forming part of the *Report of the Inter-Departmental Working Party on the Protection of Lord's Bridge Astronomy Observatory* against radio and electrical interference, prepared by the Ministry of Housing and Local Government), the figures derived show that high power transmitters close to the Observatory are acceptable only by very special allocation of the operating frequencies so as to avoid adjacent channel and harmonic interference in the radio astronomy bands. As indicated above, this procedure seems quite impracticable in relation to the needs of a modern airport at a distance as in the case of Thurleigh of 20 miles.

(b) *Transmissions from the ground scattered by aircraft*

The problem of radio waves scattered from aircraft, especially those flying in the immediate vicinity of the Observatory, involves the same frequency allocation problems as (a) above. The situation becomes very acute if approach paths or stacking areas are situated within ten miles of the observatory.

The Observatory is at present very favourably sited. No airway passes close to the site. The three nearest to it are Red 1, whose centre line is 28 miles from Lord's Bridge at its nearest point, Upper Airway 39, whose centre line is 22 miles from Lord's Bridge at its nearest point, and Amber 2, whose centre line is 27 miles from Lord's Bridge at its nearest point. However, if a holding area were sited four miles north of Royston as suggested in Mr. Dunford's evidence,* there would be a high density of aircraft within five miles of the Observatory and the problems of interference from scattered radiation would be severe. The positioning of approach paths in relation to the Lord's Bridge Observatory would also need careful appraisal.

(c) *Radiation from transmitters installed in aircraft*

Radio and radar equipment installed in aircraft gets more comprehensive every year; VHF and UHF RT

* p. 1851.

Printed image digitised by the University of Southampton Library Digitisation Unit

equipment, radio and radar altimeters, Doppler navigators, SSR and weather radars are already widely installed and it is likely that further equipment operating on higher frequencies will come into operation for various instrument landing systems. Considerable trouble has already been experienced due to the harmonics from VHF transmitters and from radar altimeters. Unlike the operation of aircraft from existing airfields around the Observatory, a major airport would involve aircraft of predominantly foreign nationality and effective control of spurious radiations from the installed radio equipment is therefore much more difficult to achieve. Observations at Lord's Bridge over the past 12 years have shown that the level of interference at the Observatory from airways Red 1 and Amber 2 is normally below the acceptable maximum. Serious interference has been experienced from one equipment, a radio altimeter installed in Boeing 707 aircraft. When the source of interference was eventually traced and identified, negotiations were opened resulting in the publication of an Aeronautical Information Circular (see Appendix M.R.5.)* by the Board of Trade requesting aircraft of all nationalities to switch off those particular types of radio altimeter whilst in United Kingdom airspace. In this particular case the level of spurious radiation given out by the altimeter was far in excess of the internationally recognised limits but the problems of detection, identification and control are such that the interference was experienced for a period of over a year before it was brought under control. Aircraft flying 5–10 miles from the Observatory are likely to cause an unacceptable level of interference from time to time. With the density of aircraft involved in an approach path or stacking area around a major airport, this interference is likely to be very serious.

6.3. *The sources of interference associated with the development of new towns*

The interference levels at the Observatory at Lord's Bridge from new towns associated with an airport at Thurleigh would depend on their exact siting. The suggestions put forward by the County Councils of Bedfordshire, Buckinghamshire, Huntingdon and Peterborough, and Northampton envisage sites close to Raunds, Sandy and Bedford and an increase of population of 70,000 in existing towns within a 20-mile radius of Thurleigh. Whatever areas are finally decided upon in the event of an airport going to Thurleigh it is important to consider the main categories of sources of interference which would need consideration for any area of increased population.

Radio interference may arise from the radiation of unwanted signals from radio equipment (e.g. harmonics of transmitters and from domestic television receivers) or from electrical machinery, both industrial and domestic. The most serious sources are likely to be—

(a) *Radio transmitters.* Any new major development will involve additional broadcasting and communication systems. In addition to local radio etc., there is an increasing demand for radio communication systems by police and other emergency services and by private mobile users such as taxis, contractors, etc. In addition, UHF and microwave links are increasingly used for telemetry purposes — for example by the Water and Gas Boards for monitoring their supply systems.

At present the number of such services in use around Cambridge is comparatively small and the GPO who are responsible for the licensing of these services, have been able to ensure the protection of Lord's Bridge both by determining the locations of the transmitters and by careful selection of the frequencies allocated for each service. The building of major new towns would involve a very large increase in the number of such services. It will no longer be possible to choose the sites and operating frequencies of such services in a way which can provide the protection which is at present possible because of the greatly increased number of such services which must be able to operate without mutual interference.

(b) *Housing.* An increase in the population by approximately 390,000 within a given distance of the Observatory will produce a predictable amount of radiation due to domestic electrical and radio equipment (refrigerators, vacuum cleaners, television and radio receivers etc.). The radio interference from domestic equipment in such a new town at a distance of eight miles would be very similar to that from Cambridge at the present time.

This problem has already been considered in relation to the development of Comberton and other villages adjacent to the Observatory (*Electrical interference from domestic electrical equipment in the neighbourhood of the Mullard Radio Astronomy Observatory, Lord's Bridge* dated 10th December, 1968. See Appendix marked M.R.6.) where it was shown that the present population in the neighbourhood of Lord's Bridge was comparatively close to the maximum tolerable. The radiation from domestic electrical and radio equipment in these villages is more important at Lord's Bridge than radiation from similar equipment in Cambridge. Thus it is likely that the development of a new town would not change this situation directly unless its site lay within eight miles of Lord's Bridge. But, whatever site is chosen the pressure for building in the villages close to Lord's Bridge resulting from this development might be much greater than at present and would be potentially a very serious threat to the work of the Observatory. In any event as already stated the County Councils suggest an increase of population of 70,000 in the existing towns within a 20-mile radius of the airport which could well have its effect on the villages, at least, to the west of Cambridge. The figures derived from present measurements can unfortunately only be taken as a lower limit of what is likely to occur due to the progressive introduction of new devices. Microwave cookers for example, will probably represent a major source of radio interference due to their crude design resulting from the

* Not reproduced. No. 82/1966. Aeronautical Information Service, Tolcarne Drive, Pinner, Middx.

Printed image digitised by the University of Southampton Library Digitisation Unit

present lack of adequate legislation controlling their design and use.

(c) *Industry.* It is inevitable that a major airport will attract industry and that much of this industry will be concerned with the activities of aircraft operation. Part of this activity is associated with the manufacture and servicing of radar, radio navigation and telecommunication equipment associated with the airport and the aircraft using it, and part to the fact that industries associated with these activities develop subsidiary operations in the radio and electronics field. Industrial and medical radio frequency heaters and industrial microwave heaters are typical examples of such developments.

In addition, proximity to a major airport is an important asset to subsidiaries of foreign electronic companies and agents importing such equipment. An examination of the distribution of such organisations around Heathrow appears to indicate that there is an aggregation of such firms in the area.

For these reasons the number and activities of industries operating in the new towns will be about the worst that one could find from the point of view of the operation of a radio astronomy Observatory. The very much smaller scale activities of such firms in and around Cambridge at the present time has already caused difficulties at Lord's Bridge far more severe than the operation of licensed radio services; they have eventually been minimised only after detailed arrangements with the organisations responsible.

(d) *Motor transport.* Motor vehicles cause electrical interference from their ignition system and generators; police cars and service vehicles equipped with radio telephones can cause severe interference when they are close to the radio telescopes, whatever their operating frequency because of the very large signal strength produced. The A.603 runs immediately adjacent to the boundaries of the present Observatory site and in fact runs through the centre of the site of the new 5 km radio telescope. The present density of traffic is not sufficient for either of the difficulties mentioned above to be serious. However, major new towns and the proposed increase of population of 70,000 in existing towns within a radius of 20 miles associated with an airport at Thurleigh could produce a considerable increase of traffic density but it is not possible to assess this until more detailed plans relating to roads passing near Lord's Bridge are available.

This type of interference was discussed at length with the County Surveyor in connection with the Cambridge Western Bypass. As a result of these discussions the route of the Bypass was modified and it was agreed that the most important section would be run in a cutting with tree and shrub planting to produce a measure of electrical screening. If the A.603 were to carry a far heavier density of traffic than at present, it would present a serious hazard to the work of the Observatory since it passes considerably closer than does the Western Bypass to the centre of the Observatory.

7. Consequences for radio astronomy at Cambridge of the establishment of the third London airport at Thurleigh

7.1. *Effects on the existing Observatory at Lord's Bridge*

It seems certain that the development of the third London airport at Thurleigh could result in a level of radio interference at Lord's Bridge which would make it impossible to carry on the work of the Observatory. The number of potential sources of interference is very large including ground equipment at the airport, transmissions from the ground scattered by aircraft, transmitters installed in aircraft, radio transmitters in the new towns for many essential services, domestic electrical equipment, industrial equipment, especially in connection with the electronic industry, and increased motor traffic in the vicinity of the Observatory. Artificial screening of the site from these sources of interference would not be practicable.

The information at present available concerning the siting of new population and flight paths and stacking areas associated with an airport at Thurleigh indicates that their effect upon the work at Lord's Bridge would probably mean that the Observatory would have no alternative but to move.

7.2. *The possibility of finding an alternative site for the Observatory*

As discussed in section 4, consideration was given at earlier dates to the possibilities of alternative sites for the Observatory. In the search made, no sites were found which were as good as the present one at Lord's Bridge. If it were possible to find another site a long term guarantee of protection of the site from interference would be essential.

7.3. *Practical problems of moving the Observatory to another site*

Before the technical difficulties of moving the telescopes and other equipment could be faced, a large number of other problems would first need solution in addition to the location of a technically satisfactory site, negotiations with owners for purchase of the land, with the Planning Authority to obtain agreement concerning permitted development in the surrounding area, with the public utility undertakings concerning developments in power supplies and drainage. During the period of the move the present staff would be wholly occupied with administering the change. It seems probable that the time required for the completion of the work would be four years from the time that the decision to move were taken. The cost of such a move would depend very much on the nature of the new site and whether new telescopes were erected or the existing ones moved but it seems certain that this cost would be in excess of £3 million.

7.4. *The effects on the Observatory of the loss of four years*

The international reputation of the radio astronomy observatory at Cambridge has been built on the speed with which technical innovations in the design of instruments have been brought to fruition. The

Printed image digitised by the University of Southampton Library Digitisation Unit

present radio telescope at Lord's Bridge has greater resolution and sensitivity than any other in the world and the 5 km telescope will further extend this lead. But the rate of development of radio astronomy in many countries is such that over a span of four years our existing lead would vanish and our equipment would be overtaken by new telescopes in other countries.

The first results of this would be that Britain would lose its pre-eminent place in the world in radio astronomy which it has held for over twenty years. It would be impossible to regain this position after a gap of four years.

During the time of transfer of the Observatory to a new site the staff would be unable to engage in astronomical research and many might wish to leave so that their work might continue unhindered elsewhere. The research team built up over the last 20 years would be dispersed and many might leave Britain.

At present the Radio Astronomy Observatory at Lord's Bridge is an important centre for the training of research scientists. Radio astronomy in Britain is given particular support by the Science Research Council since the techniques involved provide an excellent training for scientists entering many branches of industry. During and after the move of its facilities to another site radio astronomy at Cambridge would cease to be the important centre for this training that it now is.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX M.R.1

Note by the Science Research Council on support for radio astronomy

The Science Research Council (SRC) is one of five autonomous Research Councils acting under the aegis of the Secretary of State for Education and Science from whose Department the Council receives its funds as annual Grants in Aid. The SRC was established on 1st April 1965 by Royal Charter and within the scope of the Science and Technology Act 1965 as part of the reorganisation of Government support of civil scientific research.

Under the Act and Charter the objects for which the SRC was established were, in brief:

to carry out, encourage and support research and development in science and technology;

to provide and operate equipment and other facilities for common use in research and development in science and technology by universities, technical colleges and other institutions or persons engaged in research;

to make grants for postgraduate instruction in science and technology and to disseminate knowledge concerning science and technology.

To help them to discharge their responsibilities the Council set up three Boards each with its own Staff Division. Of these one Board deals with astronomy, space research and radio research—the Astronomy, Space and Radio Board; Mr. J. F. Hosie is Director of the ASR Division.

The SRC's Grant in Aid for the current financial year is about £46m. of which just over £11m. has been allocated to the ASR Board. Of this allocation astronomy (excluding that part done from space vehicles) accounts for rather more than £2m. of which some £600,000 is for radio astronomy. The allocations from SRC resources to astronomy as a whole and to radio astronomy in particular are increasing from year to year.

Before the SRC was created, the Department of Scientific and Industrial Research and other bodies had made possible the building up in the UK of two university centres of excellence in radio astronomy at Manchester University (Jodrell Bank) and at Cambridge University (Lord's Bridge).

At the end of 1961 the Lord President of the Council, then the Minister responsible, set up an *ad hoc* Radio Astronomy Planning Committee under the chairmanship of the late Lord Fleck. That Committee's Report,* published in 1965, described the early developments in radio astronomy and recorded that "At least until 1950, by far the major part of the advances occurred in three British groups" (the two University groups already mentioned and the Royal Radar Establishment, Malvern). Bringing its survey up to the early 1950s the Committee then recorded that "Radio astronomy is a field of science in which the UK has achieved a leading, if not pre-eminent place". . . . "The UK therefore finds itself in a leading position in a new field of science." . . . "The policy should be to afford the subject such support as will clearly maintain and if possible enhance the present outstanding level of research achievement."

The Committee recommended, *inter alia*, that no more than the existing two centres of radio astronomy should be created and that these two should be assured of adequate research support and adequate facilities for the teams at these two centres with also assurance of the provision of new radio telescopes on a reasonable scale, by 1972 if required.

The SRC publishes Annual Reports and those for 1965–66, 1966–67 and 1967–68 have all recorded the acceptance by the Council of the recommendations of the Fleck Committee. It has been stated that the Council was continuing the policy of support for radio astronomy research at Cambridge and Manchester Universities and that basic design studies for the new telescopes were being planned and then undertaken. In particular, in its 1967–68 Annual Report,* the SRC recorded that "In supporting University research the Council will intensify and extend its existing policy of selectivity with priority for astronomy . . . ." The portion of the 1967–68 Report dealing with radio astronomy is to be found at page 11. The SRC announced in February 1969 the approval of the large new radio telescope recommended for Cambridge in the Fleck Report. This three mile radio telescope is estimated to cost just over £2m. Work has begun and construction should be completed in just under three years.

The Fleck Report noted that ". . . the subject affords a good training ground for physicists, and the by-products of the research in the form of radio telescopes of advanced design may influence satellite telecommunication work. The Post Office installation at Goonhilly Down is, in fact, based on designs prepared for the Mk. II telescope at Jodrell Bank."

A Special Review by the ASR Board of the SRC, published in 1968, recorded: ". . . The best means of helping to meet national needs lies in providing a steady supply of postgraduate students trained in techniques which have a direct relevance to the needs of modern research and development. The radio astronomy schools have good records of providing to Government and industry people who are trained in a variety of modern techniques . . ."

The SRC supports the view that the best teaching occurs where the teachers are themselves actively engaged in research of high intellectual quality. This is acknowledged to be true of radio astronomy. It is therefore SRC policy that the excellent Cambridge and Manchester radio astronomy centres should continue to both teach and do research. This is only possible if the Observatories are reasonably close to the Universities. So far as Cambridge is concerned, a study of possible alternative sites showed nowhere better than Lord's Bridge within the acceptable distance of 50 miles from the University.

The Fleck Committee Report contained the following paragraph about the possibility of electrical interference:

* HMSO; 4s. 6d.

* HMSO; 7s. 6d.

Printed image digitised by the University of Southampton Library Digitisation Unit

"6.4. Use of the existing and planned radio telescopes at RRE Malvern, Jodrell Bank and Cambridge could be severely restricted by local electrical interference unless adequate areas are scheduled for radio astronomy and all reasonable steps taken, in consultation with the Planning Authorities, to facilitate the present work and to safeguard its future development. The Committee would therefore warmly welcome the continued co-operation of the appropriate Planning Authorities in safeguarding this work because they regard it as of national scientific moment.

Looking ahead to the next generation of radio telescopes, the Committee realises that the future of radio astronomy in this country could be seriously prejudiced by interference. It therefore recommends that every effort be made urgently to improve the protection of frequencies specially for this science. Some of these frequencies should be in the part of the spectrum which will shortly be considered for the use of space research and communications."

It is gladly acknowledged that the Local Planning Authorities have co-operated in keeping interference at Lord's Bridge within acceptable limts. Preservation of suitable conditions is vital to the continuation of the Observatory which is of pre-eminent world status, represents a large investment of public funds, past and now committed, and plays an important role in teaching and in training manpower very suitable to the needs of advanced science based industries.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX M.R.6

Electrical interference from domestic electrical equipment in the neighbourhood of the Mullard Radio Astronomy Observatory, Lord's Bridge

A recent and authoritative survey of the problem of radio interference from a wide range of sources has been made by the GPO and the results are contained in a report to the *Inter-Departmental Working Party on the protection of Lord's Bridge Radio Astronomy Observatory against radio and electrical interference.* This GPO report has been used as the basis of the following discussion together with experience gained at the Mullard Radio Astronomy Observatory over the last few years. It will be made clear at each stage which evidence is being used.

Among the potential sources of interference discussed by the GPO two kinds are associated with domestic users.

(i) Low power electric motors
(ii) Television receivers.

To assess the importance of electrical interference from these sources, three factors must be known

(a) *The tolerable level of the interfering signal at the telescope.* This can be accurately specified for a particular telescope and a table of values appropriate to the Lord's Bridge Observatory was submitted to the GPO by Professor Sir Martin Ryle.

(b) *The legal limits to the electrical interference* which may be produced by electrical devices. In their assessment the GPO included both existing legal limits and ones which are hoped to be introduced in the foreseeable future.

(c) *The propagation of radio waves over the ground.* The GPO have wide experience in this field and this was incorporated in their report. Measurements made by the MRAO are more restricted but do refer specifically to the area around the observatory at Lord's Bridge.

With these factors established it is then possible to calculate the distance at which one source of interference, which just meets the legal requirements, would provide a just tolerable interfering signal at the telescope.

The two likely sources of domestic interference, low power electric motors and TV receivers, are now discussed separately.

Low power electric motors

The GPO report shows that the minimum safe distance for one motor which just meets the legal requirements is 260 metres. The law of decrease of radio intensity with distance given by the GPO leads to the result that at a distance of 2·5 km (the approximate distance of the villages of Harlton, Haslingfield, Barton and Comberton from the centre of the observatory at Lord's Bridge) 2,500 motors would be required to give the same level of interference. Experience gained at the MRAO from experiments performed in Harlton, Haslingfield and Barton suggests that this number is between 2,000 and 3,000, in good agreement with the independent estimate made by the GPO. When new, some motors may reach higher standards than the legal limits but after use it is certain, from our experience, that some equipment will not meet the legal requirements. Under these circumstances the number of 2,500 motors at 2·5 km seems the best value which can be obtained.

Low power electric motors are employed in a wide variety of domestic equipment, e.g.

Refrigerators
Central Heating equipment
Vaccuum cleaners
Dish washers
Washing machines
Hair dryers
Electric razors
Electrical tools

It is evident that in a typical household there will be 1–2 motors in use for a considerable part of each day. Taking an average of 3·0 persons per household, a good value for the area round Lord's Bridge, we may therefore assume 0·5 electric motors per person throughout the area. We note that this number is very likely to increase over the years as the application of electrical equipment becomes more widespread.

This figure leads directly to a safe upper limit for the population at a distance of 2·5 km of 5,000.

T.V. receivers

The legal limits for radiation from TV receivers are much less severe than for electric motors and a single TV receiver radiating just within the legal limit would have a minimum safe distance of 1·3 km. Only a very few receivers at a distance of 2·5 km would be needed to surpass the tolerable level of interference. Fortunately there is only a very small probability of any particular TV receiver causing interference in the frequency bands used for radio astronomy. The seriousness of the problem is therefore difficult to assess quantitatively. What is certain is that if a TV receiver does cause interference then the problem of tracing it increases directly with the number of houses in the neighbourhood.

The population in the neighbourhood of Lord's Bridge

From the foregoing discussion it is clear that it is the total population within a given distance which must be considered rather than population of a particular village. Due to the steep fall in intensity of radio interference with distance, the only villages which are important in relation to interference from domestic equipment are Haslingfield, Harlton, Little Eversden, Comberton and Barton.

The population in these villages at the 1961 census and the population growth estimated or proposed the planning authority for the period 1962–81 was as follows—

	1961		Growth 1962–81
Haslingfield	855		570
Harlton	285		no figures
Little Eversden	295		no figures
Comberton	812		1200
Barton	788		160
Total	3035	+	1930

Printed image digitised by the University of Southampton Library Digitisation Unit

These figures suggest that the maximum safe population of 5,000 in the neighbouring villages determined from consideration of the interference from electric motors would be reached by 1981. A comparatively large growth of Comberton is consistent with the protection needed for the observatory at Lord's Bridge but only if the population of the other neighbouring villages do not increase above the estimated values. If they do then a large development at Comberton could provide a serious threat to the work of the Observatory.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Cambridge University

SUBMITTED BY MR. W. A. ALLEN*

I am a Bachelor of Architecture, a Fellow of the Royal Institute of British Architects, and a member of its Council. In the field of acoustics I am a vice-president of the British Acoustical Society. I am a partner in the firm of Bickerdike Allen Rich and Partners, which practices as architects, town planners, and building technology consultants. I was retained by the County Councils of Hertfordshire and Essex in connection with their Stansted studies, to advise on the standards and methods of noise protection to adopt in education buildings, and the consequent costs. The references to these matters in that evidence of county education officers to the present series of inquiries come from my report on the studies which were done in consultation with Mr. Norman Fleming.

Representation

I now represent the University of Cambridge in respect of these and certain planning problems which could arise from the selection of Thurleigh as the site for the third London airport.

Matters to be examined

1.0. I propose first to show that the University of Cambridge is a place of exceptional sensitivity to damaging consequences of excessive aircraft noise and that it should not be put at risk. Second, I will attempt to evaluate the risk associated with the Thurleigh site; and third, I comment on some possible planning repercussions.

Noise and schools as a reference point

2.0. A body of evidence about noise and schools is now familiar to the Commission and provides a useful point of departure for discussion of the problems of a university . It is accepted for schools that interference with teaching becomes unreasonable when noise intrusions in classrooms reach 55–60 dBA more than four times in an average peak hour. Windows open for ventilation provide only some 10 dB protection, and when external noise incidents go beyond the then critical levels and rates it is assumed that teaching and study areas must be protected by fixing glazing and artificial ventilation which, together with protection levels of 20–40dB. The costs of treatment range from £2 to £5 per sq. ft. overall for existing schools and from £2 to £3 for new buildings.

3.0. The Commission has been told of the practical difficulties of carrying out large programs of treatment at a relatively rapid pace. The work demands meticulous and specialised professional attention and is unpopular with builders. Treatments generally have to be applied to the exterior of buildings in order to minimise interference with internal use and they would have to be done when the total local building demand will far exceed capacity, and all imported labour will be concerned with the airport itself, its communications, and the new communities generated. In a great many cases the age and diminished usefulness of buildings will make the expenditure involved so disproportionate that their replacement will be precipitated. Most temporary buildings would have to be replaced by more robust new construction.

Universities and schools compared

4.0. The techniques, costs and problems of protection are much the same for universities as for schools, and the ways in which noise can interfere with education activities are in most ways similar. There are some important differences however, both in the nature of university problems and the standards of protection needed. And Cambridge has some particular problems that would be found in only one or two other universities.

Lecture Halls

5.0. One problem common to all universities is that audiences for lectures commonly comprise hundreds of students, where school teaching involves small numbers. In large lecture halls the listeners will be two to four times farther from the lecturer on average than in classrooms, with correspondingly poorer conditions for hearing. They are therefore more sensitive to interference by intruding noise. I put the difference at about 5 dBA, which implies that lecture halls would need protection in areas where schools might avoid it, and that they would need the higher standards of protection correspondingly sooner than schools.

6.0. Their sensitivity might be offset by using public address systems, but many people doing advanced teaching find these too inhibiting to be acceptable. It will also be appreciated that much university lecturing is not the delivery of established course material but is at the level of new thinking, which again adds somewhat to the sensitivity of the situations.

Libraries

7.0. A second problem concerns libraries. A great deal of university study is done in them at all levels up to that of the most advanced scholarship. In Cambridge this is true to an exceptional extent, due to its college and tutorial structure and to the outstanding quality of some of its collections. There are no less than some seventy-five libraries in use in the

* See also p. 2272.

Printed image digitised by the University of Southampton Library Digitisation Unit

University. Quietness is of course an established need in them and I believe they would require to be protected to the same standards as the lecture halls.

Research and quietness

8.0. Research presents a third university problem. Apart from the mental concentration often required, the experimental activity itself is often exceedingly refined and sensitive to noise or vibration. One example at Cambridge is the extensive work involving people and animals, for instance relating to nervous systems. Again, where specialised animal breeding is required, problems of hypersensitivity in pregnancy arise. Post-operative conditions in animals also create hypersensitivity to noise.

9.0. These are some of the many illustrations that could be quoted from an organisation so involved in major research as is this University. Cambridge is one of the great research centres of the world, and a risk that could confront it from an invasion of exceptional noise would be a reduction in the quality of some of its experimental work. This could not be contemplated with equanimity.

Teaching laboratories

10.0. The fourth feature at Cambridge to which I draw attention is the teaching laboratories. Many have been built in the top storeys of buildings in order to combine large spaces with good natural light. It is customary to intersperse the experimental work done in them with talks and demonstrations, and in view of the size of these rooms it is my opinion that they would need protection to the standard of the large lecture halls.

Buildings for religion

11.0. Religious services form a significant part of the College and University life at Cambridge. Here the problem of intruding noise would not so much be the interruption of communication as an intrusion upon contemplation. Most of the buildings concerned will be well-known to the Commission for they are famous throughout the world. Their glass already gives them poor protection, and it is difficult to imagine how they could suitably be given adequate insulation if, as a result of the growth of aircraft noise, this were to become necessary.

Music

12.0. The musical life of Cambridge is full and active, and in several respects famous. It forms an important element in the attraction of the University for many of its members and contributes much to the civilised qualities of Cambridge education. It takes place in all sorts of halls as well as in the chapels, and they would need a reasonable level of protection, probably comparable with that of school halls and classrooms.

Evening and vacation use

13.0. It is important to observe that laboratories, libraries, music rooms and religious buildings continue in use into evenings, when background noise subsides, and throughout the vacation periods.

Treatment and cost

14.0. If the onset of aircraft noise should make it necessary to protect the spaces and activities described, the treatment will of course involve in principle sealed windows, artificial ventilation and often air-conditioning. Many of the buildings concerned are ancient, very solidly built, and architecturally famous, both indoors and out. The modification of windows and the introduction of the equipment for artificial ventilation would be a formidable task in itself, and exceptionally so in terms of the conservation of architectural character. The costs which would apparently be involved by a general application of even the lowest standard of protection were set forth briefly in my evidence at the Nuthampstead inquiry and were of the order of £6m.

Quietness in the College environment

15.0. Thus far I have considered only indoor activities, but an outstanding feature of this University is the multiplicity of fine courts, precincts and open-air spaces of many kinds formed by and within the Colleges. Lord Holford, in his 1950 proposals for development, says that the tradition of courts and squares which is a continuing feature of British planning is found in its completest and most influential form in Cambridge colleges. They constitute together an environment of entirely exceptional quality, an important aspect of which is their quietness.

16.0. This they have sought to protect over several centuries for the greater good of the intellectual life it fosters and the protective device employed has been to screen off the noise of urban life by interposing college buildings between the streets and the quiet enclaves. It has worked admirably and been of increasing value as the University has grown and the City has become busier. It is a factor of consequence for quality in academic activity and an important element in the attractions of Cambridge for the kinds of mind upon which it depends for its excellence.

17.0. But urban noise at ground level and noise from aircraft overhead are two very different things. The exposure to the one was not great; to the other it would be total. No protection except distance would be practicable, and accordingly the University must view with dismay any substantial development of risk in respect of noise from over-flying.

Criteria for quietness outdoors

18.0. I must focus the Commission's attention definitively upon this problem, for although no criteria are established for these circumstances, some which are reasonable can be suggested, and even the least exacting among them would apparently be harder to meet than those of interior protection.

19.0. Either of the two types of criteria might be imagined. The first, somewhat like those for classrooms, would be based on the argument that noise incidents should not be loud enough to interrupt

Printed image digitised by the University of Southampton Library Digitisation Unit

ordinary conversation among small groups in the open air more often than 'x' times in some specified period. The other, more subjective, would be in terms of avoiding a sense of inability to escape from reminders of this huge, disturbingly powerful and rapidly pulsating mechanism operating not far away.

20.0. Mr. Fleming* has generally advised that when noise in the open air outside a school reaches 85 PNdb, it can be assumed that it has reached the level which, with windows open, would produce a level of 60 dBA indoors. This allows for the assumption that there will be about 10 dB reduction by the open windows, and that PNdb computations differ from dBA levels by about 15 units.

21.0. It is now apparently accepted that the difference of 15 should be reduced to 12, which presumably implies a corresponding adjustment of Mr. Fleming's limiting exterior level to 82 PNdB.

22.0. 60 dBA is the highest level which has been advanced as being acceptable in classrooms. At this point it is assumed that a definite interruption of teaching will take place. If such a criterion were applied for conversation in the open air, as a sufficiently similar situation for the present purpose, there would be no protection by open windows to be assumed, and the critical PNdB level would therefore drop by 10 from 82 to 72.

23.0. However, by common consent 55 dBA is the preferred upper limit for classrooms, and the GLC, when protecting its new teaching areas, aims at 45 dBA, with the intention that this level should not be exceeded for more than 10 per cent of the time. This is a slightly more rigorous requirement about time than four incidents per hour, but the noises envisaged were those both of aircraft and street traffic, and therefore more nearly continuous. 55 dBA would imply a PNdB figure of 67, and 45 dBA the correspondingly lower figure of 57 PNdB.

24.0. Conversation indoors in rooms of classroom size is generally easier than outside because of the confinement of the energy. It is also necessary to bear in mind in using noise criteria related to teaching that this is assumed to be a daytime activity, when levels of background noise are at their highest, whereas the college courts and enclosures are in use into the evening and night, when background noise is diminished.

Recommended limiting levels

25.0. Taking all this into account it is my view that the upper acceptable level in the protected outdoor environments of the University should be 65 PNdB, and that the lower end of the range from 60 to 65 should be the objective.

Frequency of noise incidents

26.0. There is still the question of frequency of incident to consider. Four interruptions in an average peak hour seem to me not quite relevant to the outdoor situation. On the other hand one could not accept anything sufficiently frequent as to give an impression of continuity. I suggest that when the Commission reaches the point of checking the University area for noise risk, as I trust it will if either the Thurleigh or Nuthampstead sites is selected, six to eight incidents in my proposed range would be a reasonable maximum figure to adopt.

Subjective impressions

27.0. My alternative criterion, the subjective sense of the nearby presence of a busy airport is very difficult to evaluate accurately on present evidence. There is no doubt that constant awareness of the operation of such a great mechanism nearby would be an unsettling and damaging disturbance to many people of the types which form the membership of a University, but assessment in quantitative terms would need substantial research. I believe however that the criteria I have proposed should also provide reasonable protection against this potential cause of distress.

The University a sensitive area

28.0. The purposes of this descriptive analysis should now be clear but I will draw them to a focus for assurance. The intention is to establish securely with the Commission the one general and substantial fact that the University is a place of exceptional sensitivity to aircraft noise, that it is impossible in some respects to protect, and difficult in others. It is large, and it cannot move. It depends not upon protection but upon the avoidance of risk. It should in my view be treated as a special quiet area in terms of noise risk from the air.

Assessing the risk

29.0. The question then arises: how much risk does Thurleigh present? Adequate information is not available on all aspects, but there is sufficient for purposive comment.

The status of NNI contours

30.0. I will first review the status of the NNI contours for Thurleigh which have been made available by the Commission.

31.0. First, they appear to be acquiring more authority than the Commission perhaps intended. On a map they look definitive but in reality they are only a rough guide. They can be and are computed accurately, but the computations depend on assumptions about numbers and types of aircraft, and patterns of flight operations, neither of which can be reliably anticipated. The growth of aircraft movements and of airport capacity has been consistently under-estimated, and the Commission has been unwilling to publish predictions of flight path patterns and their loadings for any of the sites.

32.0. Second, the interpretation of the contours is at present very insecure. The social response data on which their significance depends was obtained nearly 10 years ago, and only from people living near Heathrow. These people are conscious of being on the edge of a metropolis, and many are airport workers. On both counts they will tend to accept conditions quite unacceptable in a town and academic community such as Cambridge. And the data itself mainly relates to daytime conditions; it tells us less about night-time response, which is increasingly important

* p. 1854.

Printed image digitised by the University of Southampton Library Digitisation Unit

as economic pressures for night arrivals and departures continue to grow. Fresh and more thorough data have been obtained within the past two years and will apparently be available shortly. It is unfortunate that it has not been available for the Stage II inquiries. It will no doubt make possible more reliable interpretations of the computed contours, but the population sampled is said to have again been that around Heathrow, which limits its value. Also the contours themselves will still rest upon assumptions about patterns of airport operation which are only partly predictable. It is important therefore to make generous allowances for the limitations of the contour meanings, and this is insufficiently appreciated.

The school protection zone not the same as NNI zones

33.0. In any case, the Noise and Number Index is a measure of community feelings, not a guide to the interruption of teaching, study or research. For convenient comparison between sites a contour has been drawn outside the 35 NNI line and this is taken to be a rough guide to the larger zone in which schools would need protection. In view of what I have said about NNI lines one must have some reservations about these as reference contours, to begin with. There is no doubt that the zone in which schools will need protection is substantially larger than the area enclosed by any predicted 35 NNI contour, but the shape and size of the zone appears in reality to be much more dependent on details of flight paths than are NNI lines, and does not necessarily follow the same general pattern. This was demonstrated by the Stansted studies, where predicted flight paths and their loadings were available in detail. However unrealistic they might eventually have proved to be, they provided a hypothesis and the studies based on it showed how different from the NNI pattern the contour of the school protection zone could be. The latter was about a mile outside the 35 NNI contour at its closest, and about 10 miles at its farthest. It was a much more regular and bulbous shape than the NNI pattern, due to overlapping of noise incidents from neighbouring flight paths; and the greater part of it was 5 miles or more outside the 35 NNI line.

34.0. Differences of this order may not occur at Thurleigh. Stansted was aligned almost north and south, and the specified flight paths turned easterly, south-easterly, south-westerly and westerly. Such a distribution would be bound to cause a big spread of noise from a main north/south alignment. Thurleigh is more nearly east and west, and for this and other reasons the pattern of flight paths is likely to be different. My concern at this point is simply to identify the fact that a protection zone for education buildings can depart considerably from the NNI pattern, depending on the detail of flight paths, and that the NNI pattern itself is not at present a very sure guide to begin with.

35.0. The interest of the University in this matter centres of course upon what happens in an easterly direction from Thurleigh, and here I would like to draw your attention to the implications of a piece of Mr. Dunford's evidence.* He notes that about one-third of aircraft movements at Thurleigh would be in an easterly direction, and presumably the majority will turn southward as soon as they can. At Nuthampstead, where the University was interested in the northerly movements, the proportion of the total was only about one-fifth, and the westward turns were the risk.

36.0. I will now put together these several points; the weight of easterly movements; a presumed need for some to turn south and south-eastward; the inadequate guidance given by NNI contours; and the exceptional sensitivity and quality of the University. It should not be difficult to see that there is justified apprehension that it may be more exposed to the danger of noise from eastward aircraft operations than had ever been supposed. It is important therefore that the Commission should test a number of reasonable alternative suppositions about possible operational patterns to *ensure* that the University's interests in quietness are unlikely to be endangered by future developments.

37.0. Mr. Dunford's evidence raises one other point of concern. He remarks that the holding area for the two southern runways might logically lie a few miles north of Royston. If this were to prove correct, the risk at once exists that aircraft would then have to overfly the University on their way to westward landings. It might be that they could make a tight turn and keep south and west of the University, but such a proposition is entirely too precarious to be acceptable to the University as a basis for anticipated protection from noise. Apart from the main question, the University's natural growth direction is westward, the Lord's Bridge telescope lies south-west of the town as also do the new animal breeding facilities, and all these would appear to be at risk from aircraft attempting to avoid the University area in this way.

Noise risks summarised

38.0. Taking all these matters into account I summarise the noise situation in the following terms:

(a) The University should be regarded as a place of exceptional sensitivity to noise which cannot reasonably be protected or moved, and which should not be put at risk by any foreseeable development.

(b) In particular it should be able to be confident that risks will not develop from the eastward and south-eastward movement of aircraft out of Thurleigh nor from the location of a holding area near Royston.

(c) At present the evidence to justify this confidence is inadequate.

Planning aspects

39.0. I turn now to consider some possible planning risks, and begin with three postulates:

(a) that it is in the national interest to maintain the University's position among the excep-

* p. 1851.

Printed image digitised by the University of Southampton Library Digitisation Unit

tional centres of education and research in the world,

(b) that this depends upon its ability to continue to attract the necessary types and quality of mind, and

(c) that this in turn depends partly upon both the quality of physical environment, carefully and deliberately created through more than five centuries, and upon the quality of life as a whole in the City of Cambridge and its environs, where the members of the University and their families live their private lives. Cambridge is one of the most attractive cities in Britain for the kind of person upon which the University depends, and any threat to its qualities in this respect would justify deep apprehension on the part of the University.

Mr. Cowley's evidence

40.0. The Bedfordshire County Planning Officer makes a number of points in his evidence* which alert the University:

(a) the urbanisation necessary for the airport-dependent population must be additional to the commitments already initiated at Milton Keynes, Northampton and Wellingborough.

(b) A possible way of accommodating the 350,000–400,000 people eventually involved would be to put 120,000 in a new city north of the airport, another 120,000 south-west of Bedford, 80,000 in a new community eastward, adjacent to route A1, and 70,000 in villages and towns. They should all be within 12 to 20 miles of the airport.

(c) These new cities, together with the three previously committed expansions, would form an approximate ring accommodating about 1·5 million people in 30 years time. The airport would be located in the eastern half of the ring.

(d) The MOT main route, M45, from the M1 west of Northampton to Ipswich, passing north of Cambridge, could be aligned to connect with the airport.

(e) It is overall unrealistic to suppose that the building resources necessary to do all the construction involved in the time required could be mobilised in the area.

The independent consultants

41.0. It is presumably possible that the independent consultants appointed by the Commission to consider the urbanisation generated by the airport will come up with a different answer. Meanwhile the University must comment on the implications of the concepts and facts put forward in Mr. Cowley's evidence.

Route M45

42.0. I consider first some possible consequences of route M45. Cambridge would then be only about 25 miles from the airport, with a direct motorway connection. 25 miles is no great distance on a motorway today, and in 15 or 20 years' time it will be inconsequential to many people as a journey to work if the place of residence is itself attractive enough. Cambridge is undoubtedly a very attractive centre for many types of people besides academics, and it is likely to retain its advantage in this respect over any new cities in the region for some considerable period. Indeed, among a plethora of new and expanded towns and cities its quality is likely to be even more desired, and it will be subject to greater pressures for residential expansion and tertiary employment.

43.0. These are factors which County planning policies have successfully resisted since the end of the war, but this has been done in the face of great pressure. If this is increased by the backwash of Thurleigh's development needs, it is difficult to see how either Cambridge itself or the surrounding villages can survive in a form recognisably similar to that of today in terms of environment.

44.0. As the local road network west of Cambridge is developed, this area in particular would receive a considerable part of the pressure. The proposed by-pass west of Cambridge, which presumably would connect to the motorway, would further extend the effect. These are areas of particular interest to the University.

45.0. If Cambridge is kept clear of serious aircraft noise nuisance, then it may have an additional attraction over some of the other areas into which it is proposed that the airport-generated population be put.

Inadequacy of building resources

46.0. Mr. Cowley's assertion that the building resources necessary for the amount of new urbanisation involved could not be mobilised in the vicinity is not difficult to accept, and one can see several consequences flowing from this.

47.0. First, the demand for homes could get well ahead of supply, in which case people will be willing to go further afield. This could add to the pressure on the Cambridge area.

48.0. At the same time a tug-of-war can be anticipated about building resources. The huge demands of the new and expanded cities already commissioned, of the airport and its communications, of the airport-generated communities, and the industry and commerce they will attract, all seem certain to combine to drain away these resources from every existing town and city in the vicinity, including Cambridge, unless the new construction programme itself is to some extent shifted onto them. It would seem that this could be a very troublesome consequence of developing Thurleigh. It looks as though it would come off a poor fifth after the four priority commitments enumerated.

49.0. This could interfere with the University's own growth very seriously. It must therefore seek the active interest of the Commission in examining this problem of building resources with a view to avoiding local paralysis of building activity in Cambridge and elsewhere. Apart from the restriction this

* p. 1807.

Printed image digitised by the University of Southampton Library Digitisation Unit

could place on new work in the City and the University, it could cripple a programme of noise protection if this were to become necessary.

Research-based industry

50.0. A very important development which is hinted at in Volume VII of the Commission's proceedings (Para. 60),* is the local growth of research-based industry or its migration to this area. The Commission notes the increasing dependence of national economics on the activities of large international firms whose needs for efficient world-wide transport are, as it says, increasingly powerful. These are the kinds of industry which have also become aware of the great value to them of being near a university which is a major research centre. Some developments of this sort would be welcome to the University of Cambridge but are already expected to come about without external pressures. The foreseeable danger is that the combination of the University and the airport would be so attractive that pressures for excessive development of this kind might become almost irresistible. The plea would be that it is in the national interest, which might well be true. This is a type of industrio-academic activity now very familiar in America but still novel in Britain. The University urges the Commission to give special consideration to it and its possible consequences.

Direction of University expansion

51.0. The University must look with some care at its future growth areas if the Thurleigh proposals go forward. It has new animal breeding facilities and other major commitments, as well as the radio telescope in a westerly and south-westerly direction. This is the natural drift line of the University's new developments, and it is at the same time one of the areas around Cambridge which could most easily experience pressures rippling out from Thurleigh.

The chief planning questions summarised

52.0. In sum, the questions which now arouse the University's concern are these:

First: If Mr. Cowley's reasoning is correct that the implied building programme is impracticable, will this mean that Cambridge will be paralysed for building or that more of the new load will be shunted in this direction?

Second: Will the M45 and the attractions of Cambridge as a place to live combine to add excessively to the development pressures in the area?

Third: The University and airport will combine to attract powerful elements of research-based industry to areas where each is accessible. This could be in the national interest, but could have serious disadvantages for the University and City. How can the pressures be contained and directed beneficially?

Fourth: What will be the general repercussion on Cambridge as a City and University as a result of developing urbanisation for 1·5 million people and one of the world's largest transport facilities in an area with its epicentre only 25 miles away, and connected to it by good surface communications?

53.0. This last question focuses the issues. The South-east and East Anglian strategies would both be deeply affected in ways still difficult to foresee. It is hard to believe that Cambridge is far enough away from the proposed growth area to be outside the zone of its influence, and in 30 or 40 years' time it could be well within it. Some benefits can be anticipated, but they could be miniscule in comparison with the ill-effects.

54.0. These probably would not be quickly felt. Apart from other factors, the draining off of the labour force would delay the onset. But with this University and City one must look a long way ahead. The urban balance could shift towards industry and commerce. The use of the inner urban areas would intensify, in terms of traffic, competition for land and an enlarged scale of buildings. Intimacy could diminish, and congestion and background noise increase. Housing in the central areas could get squeezed out. Pressure to absorb green spaces and sports grounds might be excused by the argument that they could be replaced by others farther out. Cambridge, in sum, is a small city now with small-city advantages and big-city facilities. It could lose the former without gain in the latter.

The vital issue

55.0. I come back therefore for my final statement to the point which is crucial for the University. It must retain its ability to attract the types of people which comprise its essence as a great centre of education and research, and this depends materially upon the quality of environment and life offered both by it and the City. It is difficult to imagine what sum could be put into the Commission's cost/benefit analyses to represent losses on this front.

* HMSO; 5s.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Thurleigh Emergency Committee for Democratic Action

SUBMITTED BY MRS. J. CRUSE*

My name is June Cruse, of 44 Beech Close, Huntingdon. I am married and have two children—one of 13 and one of 6½.

I came to Huntingdon five years ago under a G.L.C. (L.C.C.) Industrial Expansion Scheme. We had been in London before though we had been unable to get any reasonable accommodation there.

Initially, my husband got a job in a factory in Huntingdon where he had to work massive overtime in order to provide even the necessities of life for us; and we are not an extravagant family. He is now working as a postman and although he has to work very hard, he enjoys the variety this job gives. Most working men are tied to the sort of industrial job they are in and have no choice. There is a definite feeling of insecurity among the people I know, and some have to commute to Peterborough, Letchworth and even London to get a decent wage.

I feel that an airport will satisfy a real need in the area because of the jobs and the prosperity it will bring. Of course an airport will be noisy, but the benefits will more than compensate.

* See also p. 2273.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Thurleigh Emergency Committee for Democratic Action

SUBMITTED BY MR. D. BURTON*

My name is Dennis Burton of 133, Mill Road, Buckden. I was born in Buckden and have lived there all my life, except for a period of five years recently, when I was doing temporary jobs at various airports and military airfields. I am now a partner in a two-man business running a garage and 24-hour breakdown service in Buckden.

My main reasons for supporting the Thurleigh airport scheme are the interests of my five children—four of whom are still at school. I believe the airport will bring good jobs for them and put up wage rates; and offer the prospect of a real future in the area.

Without it, I do not know what they will do when they grow up. The large majority of people I know in the lower wage levels feel the same way as I do. I, and many of them, would have strongly supported any group in favour of the airport, but until very recently, there appeared to be no such group available. None of us would have felt able or have had the time to get anything going on our own. In particular my business did not give me time to go to Parish meetings and the like, and anyway, I would have felt completely out of place at them.

I appreciate that the airport would involve a considerable degree of noise, but I am sure the advantages the airport will bring will far outweigh the disadvantages. I have worked at, and lived on, airports for various periods in my life and the noise never worried at them. The pay was better in those days than what I am earning now and, if it wasn't for my family commitments, I would go back to that kind of work.

---

* See also p. 2277.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Thurleigh Emergency Committee for Democratic Action

SUBMITTED BY MR. G. D. PICTON*

My name is Gwilym Derek Picton of Berkley Street, Eynesbury, St. Neots.

I have lived in St. Neots for nine years. I am married with three children of 8, 7 and 1 year. I am an assistant unit operator at Little Barford Power Station. I am a local Urban District Councillor in St. Neots and also Branch Secretary of the National Union of General & Municipal Workers in St. Neots; and Treasurer of the St. Neots Labour Party.

I am keen that the third London airport should come to Thurleigh because it could do nothing but benefit the working man in the area and would make his position and the prospects of his children as regards employment secure. I feel this very strongly in my own right in my position in the Urban District Council and as Union Secretary.

I meet and talk to a lot of people with lower income ranges particularly in semi-skilled industrial work, and the vast majority of those I have talked to have my view.

However, with the poor representation of lower paid workers in local government, these people and their point of view have not, in my opinion, had the hearing their numbers deserve. It was for this reason that I have taken an enthusiastic part in the activities of TECDA, which was the only body representing these people in any way.

* See also p. 2278.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Thurleigh Emergency Committee for Democratic Action and the Huntingdonshire Constituency Labour Party

SUBMITTED BY MR. J. CURRAN*

James Curran, Chairman of the Huntingdonshire Constituency Labour Party and of TECDA, will appear on behalf of the following organisations:

Huntingdonshire Constituency Labour Party; Huntingdon Branch of National Union of Public Employees; Wellingborough Branch of Amalgamated Engineering & Foundry Workers' Union; Huntingdon Branch of Electrical Trade & Plumbing Trade Union; St. Neots Branch of National Union of General & Municipal Workers; St. Neots Branch of Amalgamated Engineering & Foundry Workers' Union; St. Neots Branch of Electrical Trade and Plumbing Trade Union; St. Neots Branch of Society of Graphical and Allied Trades; Bedford Branch of Amalgamated Society of Woodworkers; Bedford Branch of Amalgamated Engineering & Foundry Workers' Union; Bedford (Kempston) Branch of Amalgamated Engineering & Foundry Workers' Union; Biggleswade Branch of Transport & General Workers' Union; Biggleswade Branch of Amalgamated Engineering & Foundry Workers' Union; Marston Branch of Amalgamated Engineering & Foundry Workers' Union; Luton Branch of Amalgamated Engineering & Foundry Workers' Union; Bedford Branch of Transport & General Workers' Union.

Mr. Curran will represent in full the views of TECDA—a committee consisting of delegates from the organisations mentioned above, and other interested parties. If permission be granted, witnesses will be called: Mothers, housewives, trade union officials as well as an economic expert and an expert on aviation.

Due to pressure of work on members of the Huntingdonshire Constituency Labour Party (which decided by an overwhelming majority to support Thurleigh, on 30th August), and members of TECDA, limited time has been available to compile evidence. The views of TECDA can best be summarised, in haste, as follows:

I. Introduction

We are grateful that the Commission, in considering Thurleigh as a site for the third London airport, should invite the views of ordinary working men and women in the area. While we are fully aware that there are many highly complex and technical factors which must necessarily play a large part in determining the final recommendation which will be made by the Commission in the national interest, we submit that the views held by local people are, in themselves, important.

The reason why we stress the importance of local opinion is because we believe that noise is not a factor which can be easily measured. This is not to suggest that we should fall back on guesswork—the sort of guesswork which has been fostered, at any rate, in public debate, by those opposed to the airport—and refrain from measuring flight frequency and noise intensity. We do believe, however, that reaction to noise is highly subjective.

We live in an area which is, in part, traditional airport country. We cannot help but notice that people react to noise in different ways and that their reaction depends not only on the noise level, objectively defined, but also on their views of the local airport itself. What local people think of the Thurleigh proposal, we suggest, provides a working guide to the noise tolerance of the local community.

While we appreciate that the wishes of the local community are only one of a number of factors which the members of the Commission must consider, we hope that they will give careful thought to the question of whether the majority of local people want the airport or not.

In assessing public opinion, we believe that the Commission should be wary of accepting the most vocal, the most powerful and the best organised section of the community as representing the views of the majority.

BARA has been able to call upon the support of the most wealthy members of the community, as the size of its campaigning funds indicates. BARA has hired the services of a London public relations firm to convey the impression of local majority support and, in this, the local and national press has, generally speaking, been an enthusiastic midwife.

We believe, however, that the credentials of the airport opponents must be scrutinised very carefully before they are accepted as the voice of the local community. The people who make the most noise do not necessarily represent what most people want.

The fact that a pro-airport pressure group was so late in starting should not be taken as evidence of lack of support for the Thurleigh proposal. It reflects the fact that certain sections of the community are less accustomed to lobbying than others. The genesis of TECDA is perhaps an illustration of this.

TECDA was initiated by people who were in support of the airport and found that wherever they went, people felt the same way as they did. Their first move was to contact eleven trade union branch secretaries in the St. Neots/Huntingdon area, ten of

* See also p. 2281.

Printed image digitised by the University of Southampton Library Digitisation Unit

whom declared their support of Thurleigh and expressed the opinion that their members felt the same way. None of the trade union branch secretaries were aware, however, of the date of the public hearing and it had not occurred to them to represent their views to the Roskill Commission. It should be added, of course, that TECDA was formed some time after the closing date for applications to appear before the Roskill Commission.

TECDA has operated just above and, usually well below, the breadline. Instead of dealing in thousands of pounds, we are forced to calculate—on the basis of advice from the local postman—when we can get a first-class service with a 4d. stamp.

And inhibiting vocal expression of support for Thurleigh is the assumption—and it may be just plain commonsense—that the wishes of local people will not carry much weight in relation to a decision which has, as its terms of reference, the national interest.

"Let's face it, mate, the airport is either coming or it isn't. If you ask me, they're going to put it here and a bloody good thing too!" This comment comes from a fitter, who lives in Huntingdon, and the first sentence represents what most people in the area think and to be honest what the majority of the TECDA committee also think. The fact that we do not believe that what we say or do will carry much weight does not mean, however, that we do not have strong views on the subject of Thurleigh.

The opponents of the airport have misled the community about the implications of the Thurleigh proposal. We have been told that every section of the community will suffer as a consequence of Thurleigh: farmers will be deprived of their livelihood, house-owners will lose a packet from the fall in property values, council house tenants will have to pay higher rents, ratepayers will have to pay increased rates, independent tradesmen and shopkeepers will go bankrupt, and workers will not benefit from additional employment—in fact, many BARA supporters suggest that Thurleigh would create unemployment.

Here is but one example of the misleading propaganda touted by an official BARA spokesman, Hugh Bennett of Francis Schuster Associates, Ltd., public communication consultants:

> "It is incredible now after two months of campaigning to find people still repeating the old myth that the airport will create jobs for local people."
> (BARA, *Hunts Post*, 19th June 1969).

The reason that this propaganda was received in such a cold climate is simply that, for most people, freedom from noise is not the top priority. We know from experience of local airports that they create modest prosperity and jobs for local people, and this is the reason why most people have been in favour of the Thurleigh proposal. Ironically, most of the local community have supported Thurleigh despite the fact that we were misled into accepting an inflated version of the noise that would be generated from Thurleigh, and underrated the benefits of having the third London airport. It is only recently that members of TECDA's committee have come to realise how much they, along with other people, have over-estimated the disadvantages of Thurleigh and under-estimated its advantages.

Unfortunately, no opinion poll has been conducted in the area although we have done our best to try and get one done and have approached two national newspapers through a leading market research firm with this in mind.

It is, therefore, impossible to provide comprehensive evidence about what most people think about Thurleigh Airport. There are, however, a number of opinion polls which have been conducted in the area, providing an insight into what people really feel.

Public opinion polls

The first opinion poll was conducted in March by Councillor Bellamy at the Eastern Electricity Board, Eaton Ford Depot, in St. Neots. Out of a sample of 130, 101 respondents expressed their support for Thurleigh. We should add, however, that the insecurity of employment at that time may have influenced the answers made by respondents, though it is doubtful whether this factor would account for the overwhelming support expressed for Thurleigh airport.

The second opinion poll was conducted by Mr. Fred Watts, branch secretary of the National Union of Furniture Trade Operatives, at Horatio Myers' factory, Huntingdon. Thirty-eight were in favour of Thurleigh, 2 were against and 27 did not know. The high abstention rate reflects the fact that Thurleigh was not then a major local issue in Huntingdon.

Nonetheless, it is clear that the overwhelming majority of people who had an opinion on the subject supported Thurleigh as the site for the third London airport.

The third opinion poll was conducted by Mr. Hodson and Mr. Talbert at Raunds in July. The survey was based on a door-to-door coverage of three housing estates—two public and one private. The results recorded an overwhelming majority in support of Thurleigh: 350 were in favour of Thurleigh, 60 against, and 7 "don't knows".

The fourth opinion poll was conducted by Mr. Douglas Mack on a housing estate in St. Neots, in September. Out of a sample of 40, 38 were in favour of the airport, 1 was against and 1 "don't know".

The fifth opinion poll was initiated last week at Thurleigh village itself. The survey is incomplete though we hope to obtain a saturation coverage of all the residents living in Thurleigh. Preliminary results recorded to date are: 32 in favour, 18 against and 1 "don't know".

The sixth opinion poll conducted by the *Bedfordshire Times*—a newspaper which has, incidentally, come out against the airport—is based on a sample of 500, using location of residence as a sample control. The results published on Friday, 5th September, record a large majority of residents living in Bedford to be in favour of Thurleigh.

We hope that members of the Commission will note, that, all the polls conducted by individuals hostile to as well as in favour of Thurleigh, are

Printed image digitised by the University of Southampton Library Digitisation Unit

unanimous in their findings. In all the sample areas—St. Neots, Huntingdon, Raunds, Thurleigh and Bedford—the large majority of people were found to be in favour of Thurleigh as a site for the third London airport.

We might add that individuals unknown to the TECDA committee and quite independent of our activities have spontaneously organised petitions in the last few days—the results of which are enclosed.

Trade Union support

Fifteen trade union branches representing a membership of well over 8,000 men and women have come out in support of Thurleigh as a site for the third London airport. As the list below indicates, most of the trade union branches which have supported Thurleigh are major trade unions in the area:

Wellingborough: Amalgamated Engineering & Foundry Workers Union.
Huntingdon: Electrical Trade & Plumbing Trade Union.
Huntingdon: National Union of Public Employees.
St. Neots: National Union of General & Municipal Workers.
St. Neots: Amalgamated Engineering & Foundry Workers Union.
St. Neots: Electrical Trade & Plumbing Trade Union.
St. Neots: Society of Graphical and Allied Trades.
Bedford: Amalgamated Society of Woodworkers.
Bedford: Amalgamated Engineering & Foundry Workers Union.
Bedford (Kempston): Amalgamated Engineering & Foundry Workers Union.
Bedford: Transport & General Workers Union.
Biggleswade: Transport & General Workers Union.
Biggleswade: Amalgamated Engineering & Foundry Workers Union.
Marston: Amalgamated Engineering & Foundry Workers Union.
Luton: Amalgamated Engineering & Foundry Workers Union.

We wish to emphasise a number of points about trade union support for Thurleigh.

(1) The decisions taken to support Thurleigh were made, in each case, at a full branch meeting and not by the Executive Committee of the branch concerned.

(2) No trade union branch has come out against Thurleigh, to our knowledge.

(3) Opposition to Thurleigh at branch meetings was confined to a very small minority, and in many cases was non-existent.

(4) A large number of trade union branches have full branch meetings later in the month or in October. Given the above record, the outcome of some of these meetings is not difficult to foresee.

The Bedford District Committee of the Amalgamated Union of Engineering & Foundry Workers also voted unanimously in support of Thurleigh as a site for the third London airport.

The Huntingdonshire Constituency Labour Party also decided by an overwhelming majority to support Thurleigh as a site for the third London airport. The decision taken by the constituency Labour Party was the culmination of discussion and debate at local Labour party and trade union branch level over a period of six months.

Local authorities

With a few exceptions in places such as Rushden and Corby, the local authorities in the area have come out against the airport.

We are not aware, however, of any real attempt by municipal borough, urban district or county council authorities to investigate what the people they represent actually think about the airport. In fact, we are not even certain that local opinion came within the terms of reference by which local authorities decide to oppose the airport.

We regret that the local authorities have decided to spend ratepayers' money on the campaign against the airport without having spent at least a portion of it on a survey of local opinion. The degree to which the local authorities are out of touch with public feeling on the matter is illustrated by the situation in Raunds. The above mentioned opinion poll was conducted shortly after the Raunds council decided to oppose the airport.

To take another example: The proposal that a questionnaire be distributed to the people of St. Neots and the results communicated to the Roskill Commission at a meeting of the St. Neots Urban District Council received only three votes in support. We cannot help refraining from pointing out that the three councillors who supported this amendment were all individuals who personally were in support of Thurleigh.

The comment made by The *Bedford Weekly Advertiser* about the anti-airport groups concludes this section:

> "It is not difficult to prove that most protest groups consist of ardent extremists often moved by self-interest than by any real wish to promote the well-being of those they claim to represent. One of the dangers of such groups, which are sometimes supported by powerful interests, is that so much publicity is given to their views that people, including councillors, begin to think that the protesters really do give voice to the majority of public opinion."

II. Social impact

We hope that members of the Commission will give very careful consideration to the social impact of Thurleigh. We believe that the exclusive attention devoted to noise does not represent the priorities felt by most people in the area.

This includes well-paid workers earning, say, £20 a week or more. It is particularly true of families forced to skimp and scrape on £14 a week: workers who find they are forced to work difficult shift hours to earn a decent wage: men forced to travel miles every day to get good employment: workers forced to put in heavy overtime to make up for low wage rates: mothers worried about whether their children will find jobs in the area when they leave school:

Printed image digitised by the University of Southampton Library Digitisation Unit

and mothers who hope that their children will have the opportunities deprived to their parents in the area.

We would also like to point out that, in some areas, that would be affected by Thurleigh, recreational and social amenities are very limited. A town the size of St. Neots, for instance, does not boast one cinema. Life on many of the large housing estates in the area is very restrictive, unless one happens to have a car. And widespread dissatisfaction on the estates has also been sufficient to arouse the concern of local newspapers, such as the *Hunts Post, Cambridge News* and *Peterborough Evening Telegraph,* although a radical tradition can hardly be said to be distinguishing characteristics of these newspapers.

Nor is it true that members of the small rural communities are entirely satisfied. Young people complain of the isolation and the fact that some villages are served by only two bus journeys a day to the big local town. Others complain of the appalling housing conditions: "If someone knocked down my place and gave me a new one, I'd bloody thank him for it". Others resent the sense of dependence created by tithe possession. A man who has been working for years for a farmer can be evicted at 28 days' notice from his cottage. Others complain of the long hours they have to put in to make up for poor pay; or express fears about redundancy quoted by increased mechanisation on the farms.

We should also like to point out that rural communities do not always react to change in the way that is alleged. Little Stukely and Great Stukely are typical historic, rural villages. Towering over these two villages is Alconbury air base. Yet the quickest way to make yourself unpopular in these villages is to suggest that the Americans should go home. Ironically, what headway BARA has made in these villages is based not on a plea for a quiet life free of aircraft noise but their pronouncement that, if Thurleigh airport comes here, Alconbury would go. The fear of residents in Little and Great Stukely is that they would be deprived of their Phantom jets and the benefits that go with them.

We do not believe that the entire countryside will be desecrated by concrete and tar. The problem as far as we are concerned is not lack of countryside but poor transport, overtime eating into leisure hours, and wages making car-ownership impossible, which combine to discourage the majority of the community from making full use of the countryside.

We do feel very strongly, however, that what would appear to us to be a minority opposed to the airport should get a square deal. Although we appreciate that compensation comes outside the terms of reference of the Roskill Commission, we would like to state that we feel that 100 per cent subsidy for noise insulation should be provided for people living in the central noise area.

We also feel very strongly that people displaced from their homes by the runway should be compensated at a proper market price.

Can we also suggest that an Airport Corporation be established along the lines of a Town Development Corporation so that the benefits accruing from the airport can be maximised and its disadvantages reduced to a minimum?

Appendix

This supplementary appendix was primarily intended for self-education *and covers ground which will have been dealt with in much greater depth and detail by the team of experts working for the Commission. It has nevertheless been included with the rest of the written evidence, submitted by TECDA, since some of the comments, we believe, may be of interest to members of the Commission.*

Introduction

The aim of this supplementary appendix is to discuss, in broad outline, the benefits which would accrue both to the people of East Anglia and Bedfordshire and to the nation from the siting of London's third airport at Thurleigh.

It attempts to review both the economic and social implications of the airport for this region as a whole, for it is clear that the siting of the airport must not be isolated from other broader economic and social questions. The aim of this appendix is to see the placing of the airport and a new city as a positive tool of planning and management for the South-East, East Anglia and the whole nation.

Its main conclusion is that if the development resulting from the location of the airport at Thurleigh were handled in the way suggested, then Thurleigh can be used both as a magnet to draw away development from the congested South-East and to give the East Anglia Region the positive economic stimulus it so badly requires.

In reaching these conclusions, we are following broadly those reached by the Port of New York Authority in their search for a site for the fourth major airport for that city region. The PNYA's studies emphasised the importance of an airport to the regional economy, both in developing business and as a major regional employer. At a local level the Authority, though aware of the loss of amenity to one sector of the population from the presence of an airport, took the view that an airport was potentially the single most valuable asset for industrial expansion that can be made available to the local and regional community. Similarly, this paper concludes that if the East Anglia and Bedfordshire Region is to grow and thrive, then it is absolutely essential that a development on such a large scale should take place.

Section I of the paper gives with the use of the economic and social statistics that are available, a

Printed image digitised by the University of Southampton Library Digitisation Unit

brief description of the present and future economic situation of the East Anglia and Bedfordshire Region. To a large extent it draws on data that is available in the East Anglia Economic Planning Council's Report *East Anglia—A Study** and in "The Bedford Study on Employment" by Bedford's County Planning Officer.†

Section II outlines the type of employment that will be made available as the result of both primary and induced activity, if the latter were allowed to take place. It also considers the locational advantages for new capital investment which will accrue to the Thurleigh area and the region as a result of the siting of an international Airport.

Section III deals with the whole question of regional planning in the context of the government's national policy and in the light of the ideas put forward in the documents *A Strategy for the South-East*‡ and *East Anglia—A Study*. It focuses especially on the issue of trying to maximise the growth potential of the airport to the national and regional economy. It also deals with the problems of urbanisation and housing values.

The Conclusion attempts to draw the strands of the argument together.

I

This section attempts to show that, by any of the measures normally used, the East Anglia Region is an economically depressed area.

The reasons for this can be attributed historically to its failure to attract large-scale heavy industry during the first Industrial Revolution.

More recently, the causes must be sought in its failure to attract new light industry at as fast a rate as the secular decline in employment in agriculture. The region's problems are compounded by its poor communications' network, the distribution of its population in fairly small settlements, which do not encourage large-scale industrial development, and its position to the East of the Birmingham–London industrial axis.

Most recently, the tempo of growth has quickened —and incomes and the prospects for well-paid employment, especially in the West of the Region, and most notably in Huntingdonshire and Peterborough, have improved. However, in spite of this and the schemes under the Town Development Act of 1952, the *average* picture has not substantially changed. The transition from a predominantly rural society—even in areas where there are pockets of prosperity—is painful indeed. As the Report *East Anglia—A Study* concluded: "For employees and their families there is a comparative lack of social and recreational amenities and a relatively narrow choice of employment—particularly in office and service occupations." Often, when, as in the City of Cambridge, for example, a major employer of labour, such as "Pyes", is forced to make men and women redundant, there is real hardship—for there is little alternative employment of a similar nature to take up.

Earnings: The first indicator of economic activity we look at is money earnings. Table 1 shows that of the 11 new standard economic planning regions in the United Kingdom, East Anglia is ranked ninth in the list of money earnings from employment; it is difficult to construct a regional price index, but, since there are probably few significant regional price differentials, these lower money earnings must reflect lower real incomes.

We have ranked the 40 counties of England according to average earned income from employment for the years 1959/60 and 1964/65, and Table 2 shows the ranking in this list in those years of the four counties of East Anglia, as well as Bedfordshire and Northamptonshire.

TABLE 1—

Earned income from employment

New Standard Regions	*Earned income from employment (schedule E) (1965–66 average income per case)* (£)	*Ranking*
South East	997·5	1
West Midlands	955·1	2
United Kingdom	922·7	—
East Midlands	898·7	3
North West	897·6	4
Wales	884·5	5
South West	869·0	6
Northern	868·6	7
Yorkshire and Humberside	860·7	8
East Anglia	851·7	9
Scotland	836·1	10
Northern Ireland	775·3	11

Source: Commissioners of Inland Revenue 110th Report, 1968. (HMSO).

This indicates that, although all the six counties, except for Northamptonshire, improved their ranking over this five-year period, only Bedfordshire rises above the average figure for all English counties. But even so, these figures might indicate that, under existing government policies, progress was being made towards eradicating these inter-regional wage-differentials. However, data* in the "Hunt Report on the Intermediate Areas", obtained from the Ministry of Social Security, shows that in the period 1964/65 to 1966/67, the earnings differentials for males in East Anglia relative to Great Britain increased:

Male earnings relative to Great Britain

1964/65	1965/66	1966/67
%	%	%
91·7	91·5	91·0

This deterioration was probably largely a function of the slower overall rate of economic growth for the United Kingdom for this period, but, it indicates the absence of any momentum for self-sustaining growth in the region.

* HMSO; 40s.

† P. G. Laws. *The Bedford Study—Employment*. County Planning Dept., 5s.

‡ HMSO; 15s.

* Hunt Report. Cmnd. 3985. (HMSO; 26s.) Appendix D. p. 219.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 2—

Ranking of the counties of East Anglia, Bedfordshire and Northamptonshire according to average earnings from employment (Schedule E) of all counties in England

County or region	*Average earned income from employment 1959/60* £	*Ranking*	*Average earned income from employment 1964/65* £	*Ranking*	*(b)/(a) % change in earnings (1959/60–64/65) 1959/60 = 100*	*% increase in average earnings above the national average (1959/60–64/65)*
Cambridge & The Isle of Ely	597	32	830	24	139	10
Huntingdon & Peterborough	598	31	883	10	148	17
Norfolk	548	39	761	38	139	10
East & West Suffolk	567	36	794	33	140	11
EAST ANGLIA	567		796		140	11
Bedfordshire	723	2	963	2	133	5
Northamptonshire	628	20	826	27	132	4
ENGLAND	700		892		127	

Source: Commissioners of Inland Revenue 105th Report, 1962.110th Report, 1968. (HMSO).

TABLE 3—

Frequency distribution of employment incomes 1965–66

Measures of income distribution		*Great Britain*	*North*	*Yorkshire Humber-side*	*East Midlands*	*EAST ANGLIA*	*South East*	*South West*	*West Midlands*	*North West*
Total number of cases		18,675,510	988,980	1,670,200	1,071,710	468,400	6,403,160	1,069,700	1,851,690	2,262,390
Median case	£	931	893	896	949	866	984	869	980	925
Lower quartile	£	621	597	590	621	620	654	614	651	617
Upper quartile	£	1,273	1,193	1,205	1,320	1,172	1,352	1,178	1,324	1,175
Quartile deviation	£	326	300	308	350	276	349	282	337	307

Source: Commissioners of Inland Revenue 110th Report, 1968. (HMSO).

Table 3 compares the distribution of employment income within one region with that in other English planning regions. The broad pattern which emerges is that, although East Anglia has fewer incomes at the bottom end of the scale than some other regions, it has many fewer at the top end. And, of course, it has the lowest median income of all the regions.

Table 4 compares average weekly earnings and hours worked in agriculture between the economic planning regions of England and Wales. Earnings in East Anglia are lower in this sector than in all the other planning regions; they are only two-thirds the level in the South-West. This, together with the shorter hours that are worked compared with elsewhere, is an indicator of the lack of competing demand for labour and of the considerable under-employment in the region.

In manufacturing industry, on the other hand, as Table 5 shows, low average earnings are combined with a longer working-week than anywhere else in

TABLE 4—

Earnings and hours of whole-time male agricultural workers

New Standard Regions	*For year ending 30th September 1967*		
	Average weekly earnings	*Ranking*	*Average weekly hours*
South West	390·3	1	49·5
North West	317·3	2	51·8
East Midlands	314·7	3	50·7
South East	305·2	4	49·3
England and Wales	299·2		49·4
Yorkshire and Humberside	298·5	5	49·7
West Midlands	294·6	6	49·8
Wales	287·1	7	49·1
Northern	283·7	8	47·5
EAST ANGLIA	280·5	9	47·8

Source: Ministry of Agriculture wages and employment enquiry 1966–67. (HMSO)

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 5—

Average weekly hours and earnings in manufacturing* and all industries†—males 21 and over (manual workers)

New Standard Regions	*Average weekly earnings (shillings and pence)*				*Average weekly hours*			
	Manuf. industries	*Ranking*	*All industries*	*Ranking*	*Manuf. industries*	*Ranking*	*All industries*	*Ranking*
United Kingdom	437·7	—	427·5	—	45·3	—	46·2	—
South East	459·3	1	444·3	2	45·8	4	46·6	3
West Midlands	455·4	2	444·4	1	43·6	11	44·6	11
Wales	445·8	3	422·8	3	44·1	10	45·2	10
North West	428·0	4	420·8	4	46·0	1=	46·4	2
Northern	426·3	5	413·1	7	44·9	9	45·7	8
East Midlands	424·8	6	417·1	5	45·3	7=	46·3	4=
Scotland	424·8	6=	415·4	6	45·6	5=	46·2	6
South West	422·0	8	397·3	9	45·6	5=	45·9	7
Yorkshire and Humberside	406·8	9	403·1	8	45·9	3	46·3	4=
EAST ANGLIA	399·7	10	393·8	10	46·0	1=	46·7	1
Northern Ireland	383·3	11	367·4	11	45·0	8	45·6	9

NOTE: * includes vehicles; paper, printing, publishing; metal manufacture; chemical and allied; ship, marine engineering; other manufacturing; Engineering and Electrical; Metal n.e.s.; bricks, pottery, glass; timber, furniture, clothing and footwear; food, drink, tobacco; textiles; leather.

† includes above plus mining; construction; gas, water, electricity; transport and communications; public administration; but excludes agriculture.

Source: DEP October Survey of Hours and Earnings (1967). (H.M.S.O.)

Great Britain and Northern Ireland. This indicates that where manufacturing employment does exist, working-people are compelled to work longer hours in the week because of very low hourly rates of pay.

Employment

For an area which is predominantly rural, it is to be expected that only 31 per cent of the labour force, compared with 38 per cent for England and Wales, should be employed in the secondary sector. However, food processing, which is the second most important manufacturing sector, is highly seasonal and therefore gives only highly unstable employment.

Unemployment rates, though higher than in the South-East and South-West, are not as high as in the North. However, the very large differences between winter and summer figures, regardless of the national trend in unemployment, show the extent, once again, of under-employment in the region. Lower-paid employment is probably always available in the summer, in the tourist trade and in agriculture, but this pattern offers a very uncertain economic environment for the working-people in the region.

Participation rates are always a good guide to the economic prosperity of a region. Female participation rates are 6·7 per cent lower than nationally and this reflects both the historical lack of traditonally female-employing industries and the absence of shop and office employment, found in large conurbations. With both the lowest male earnings in England and Wales and the lowest female activity rates, family incomes are the lowest in the country.

It is often argued that a more liberal attitude on the part of the Government in applying its policy of industrial development certificates to East Anglia would solve the problems of uncertain employment and low wages. The proposal in *East Anglia—A Study* was that the region might be given the advantages accorded to Development Areas. However, the problem of under-employment is much more intractable than that of unemployment. At least in an area with a declining manufacturing sector, the social infrastructure, pattern of urbanisation and, very often, the empty factory space itself exists to enable the process of economic growth to re-start. Under-employment is more difficult to solve because of the lack of the above pre-conditions for economic growth; also, action is very often not taken about it, because it appears to be less wasteful of social resources than do queues of idle men and rows of idle machinery.

TABLE 6—

Industrial Development Certificate Projects Completed 1st July, 1958—30th June, 1967

(All figures expressed as a percentage of those for East Anglia).

Region	*East Anglia*	*North East*	*South East*	*South West*	*North West*
Population*	100	207	1,066	227	419
Number of IDCs	100	36·8	23·1	26·4	14·0
Per head of population in the region	100	17·8	2·2	11·6	3·3
Area (1000 sq.ft.)	100	35·8	25·6	25·1	13·2
Per head of population in the region	100	17·3	24·0	11·1	3·2
Estimated new employment created	100	45·3	14·1	26·8	14·3
Per head of population in the region	100	21·9	13·2	11·8	3·4

*Population as of mid-1967. Registrar General's mid-year estimates of home population.

Source: East Anglia—A Study. Appendix 17. p. 140. (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

Table 6 indicates that any change in the Government's IDC policy could hardly bring about the social and economic transformation that is required to solve the problem of under-employment and low wages. In fact, according to the measures used—number of IDC projects completed, area of new floor space and estimated new employment created—East Anglia has had the lion's share of IDC's in the period 1958–67. If the absolute figures are deflated by a regional population index, then East Anglia can be shown to have benefited even more from the policy. Moreover, in the more recent period 1966–68, only 6 out of 606 applications for IDC's for over 5,000 square feet of industrial space in the region have been rejected;* just two of these from local firms. And yet, considerable regional earnings differentials continue to persist.

Population

In the Sixties, the East Anglia Region experienced the high population growth rate of any region. This was due to both a high natural birth rate and substantial planned in-migration from the London area.

Population and demand for labour projections into 1971 have been carried out by the Eastern Region Planning Council and they suggest that until that time there is unlikely to be any change in the pressure of demand for male labour.†

The tentative projections for 1981 suggest that, to quote the Study‡ "it seems less likely that the growth of employment could be accelerated sufficiently to support the very high rate of population growth forecast by the East Anglia Consultative Committee". The implication of this 1981 forecast is that, by that date, East Anglia will have a higher proportion of its population in the potentially productive age-group (15–64) than any other region of Great Britain, apart from the North-West and the South-West, and it will have the youngest age-structure of any region in the country.

It would seem that this problem has already become acute in certain population concentrations in the area. For example, no less than 39 per cent of the people living on the GLC sponsored housing estate in Huntingdon, a small expanding town under the 1952 Act, are under the age of 16.§ We do not know whether this situation is duplicated in other small expanding towns, since we have not been able to obtain similar figures. But the government publication "Needs of New Communities,"‖ which refers to the high proportion of young families and the very small proportion of the elderly in the migrant population which has moved to the expanding towns, would seem to suggest the age profile of the expanding community in Huntingdon is similar to that of other small expanding towns in the region.*

The overall condition of rapidly escalating population, heightened in specific centres such as Huntingdon, is a matter of real concern.

Unless something happens to alter the employment situation in the next two decades the flow of young people away from East Anglia could become a torrent.

Social statistics

Table 7 contains some of the important social statistics which give an indication of the socio-economic environment in East Anglia. Of greatest significance is the Table showing that proportion of pupils staying on past the school-leaving age in the region is significantly lower for each age-group than the national average. It is important to note that this pattern is common to children of all abilities in all types of secondary school. This phenomenon of early school leaving has been consistently attributed to the poor quality of rural schools, but its application to adolescents of all ranges of ability suggests that early school leaving must be partly a function of economic and leisure opportunities in the region. Low family incomes and the pull towards London to acquire factory skills are partly responsible, together with the fact that depressed economic conditions must cramp aspiration levels at school.

Bedfordshire

Bedfordshire has recently been excluded from the East Anglia Planning region, for the good reason that much of the above description does not apply to this country. As Table 2 indicated, the county has enjoyed very high incomes in the post-war period, second only to those in the London area. It has been argued that if the airport were to be located in Bedfordshire, then this would create severe pressure on the scarce resource of labour and have the same consequences for wage-inflation as a big development might in the middle of the South-East region.

The "Bedford Study on Employment" conducted by Mr. P. G. Laws, the County Planning Officer, indicates that, as far as the Bedford Employment Exchange Area (BEEA) is concerned, this economic prosperity may well be short-lived. This report makes three points which are of considerable concern.

The first, as Table 8 indicates, is that, on the basis of tentative population and demand for labour forecasts for 1971 and 1981, although by 1981 there will be an excess demand for female labour of 6,200, there may well be a surplus of male labour over available jobs of 8,000. The implication for the area is that there will be more commuting by men in search of employment to London and to the vehicle-based industries at London and Dunstable.

The second point (see Table 9) is the heavy dependence of manufacturing employment on the

---

* *East Anglia—A Study: Government Reply.* Department of Economic Affairs, July 1969.

† *East Anglia—A Study—p.* 51.

‡ *East Anglia—A Study*—p. 128.

§ Information provided by Mr. Parcell, Housing Manager, Huntingdon. This information was supplied in relation to a social survey project totally unconnected with TECDA's campaign.

‖ HMSO; 9s.

* The problem of very rapid population growth is to be found also in the Bedford area—*The Bedford Study—Population.* (County Planning Dept. 5s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

static or contracting sectors of Food, Drink and Tobacco, Marine Engineering and Bricks; these accounted for 40 per cent of all manufacturing employment in 1964. Although there has been a relatively rapid increase in employment from 1959–64, this has been concentrated largely in the professional services classification (+58 per cent) and in service employment (+4,718 jobs); over the same period only 1,228 new jobs were created in the manufacturing sector. As the Bedford Study on Employment concludes: "recent changes in the overall structure of employment in the BEEA have not been adequate to redress the concentration of jobs for men in relatively static industries."

The third point is the undesirable dependency of the area on employment in the Government Naval and Research Establishments, subject, as is this type of work, to fairly sudden and arbitrary changes in government policy.

In the light of this Report, therefore, it must be noted that the siting of London's third airport at Thurleigh would give both a needed stimulus to the ailing brickeries at Bedford and, although it may involve the re-location of the Government's Research Establishments, provide more stable employment of a similar kind to that offered by them at present.

The picture given by this section of the economic life of the region is an extremely variegated one according to present conditions. It has had to contend with the great prosperity of Bedfordshire, the partial re-awakening of Huntingdon and Peterborough and the continuing depressed conditions of Norfolk, Suffolk and Cambridgeshire and the Isle of Ely.

However, statistical indicators of the situation into the seventies and eighties, which is what one should really be considering in any discussion of the implications for large-scale development within the region in the eighties and nineties, are far more uniform.

If nothing happens to change the assumed trends on which these forecasts have been based, then the future economic prospects for the region as a whole are fairly uncertain; not only is there little likelihood of any increase in low wage-levels, but the region seems to be unable to find employment for the population which it is planned to receive, and the Bedford

TABLE 7—

Important Social Statistics

(a) **Availability of basic household amenities**

Region	*No hot water*	*No fixed bath*	*No WC*
EAST ANGLIA	19%	20%	8%
England and Wales	12%	15%	2%

Source: East Anglia—A Study appendix 24; p.148.

(b) **Percentage of pupils staying on at maintained schools beyond the statutory school-leaving age (January 1967)**

Region	*Age 15*	*16*	*17*	*18*	*19*
EAST ANGLIA	39·7	21·0	10·1	3·3	0·2
National average	46·6	26·5	13·7	4·6	0·4

Source: East Anglia—A Study table 52; p. 107.

(c) **Health and welfare**

	Ratio of acute beds to population	*Ratio of maternity beds to population*	*Ratio of population to medical staff*
EAST ANGLIA	2·8 per 1,000	0·36 beds per 1,000	74 : 1
England and Wales	3·6 per 1,000	0·45 beds per 1,000	63 : 1

Source: East Anglia—A Study p. 111.

TABLE 8—

Future trends in employment and in the working population (by sex) of the Bedford Employment Exchange Area

	1971		*1981*	
	Working Population	*Number of jobs available*	*Working population*	*Number of jobs available*
Men	42,000	38,400	50,600	45,000
Women	18,400	21,600	21,500	28,200

Source: The Bedford Study—Employment.

TABLE 9—

Distribution of male labour force amongst certain skill classifications, places of work and industrial sectors, Bedford Employment Exchange Area, 1964.

Skill Classification	*Place of Employment*	*BEEA % total employed males*	*National average*	*Industrial sectors*	*% of manufacturing employment*
Skilled manual	Engineering works	34%	32%	Food, drink and tobacco	40%
Unskilled	Brickeries	13%	8%		
Non-manual		17%	17%	Marine engineering	
Professional	Research establishments	5%	4%	Bricks	

Source: The Bedford Study—Employment

Printed image digitised by the University of Southampton Library Digitisation Unit

area seems likely to be unable to continue its present prosperity.

II

In this section we attempt to give an estimate of the total number of new jobs which the airport is likely to create directly and the nature of employment which this entails; we will also attempt to discuss the important aspect of induced employment and the variables on which this must depend.

Primary employment

The Roskill Commission has given a central estimate of the total number of new jobs directly created by the airport as around 67,000. This is based on the existing employment at Heathrow and on the assumption of a consistent 4·3 per cent annual improvement in productivity into the future.

The nature of this employment has been outlined in the evidence already submitted by the British Airports Authority.*

First, there will be staff required relating to the movements of the aircraft themselves. Employment here relates to the handling, scheduling, catering, servicing, operating and routine turn-round of the aircraft; many of the jobs created will be for the highly-skilled such as aircrew, and staff concerned with air catering, apron servicing, air traffic control and marshalling.

The second category of employment is related to the movements of passengers; they will be concerned with handling, routing, loading and unloading the passengers. Such jobs include: ground hostesses and other airline staff in passenger terminals, baggage-loaders, porters, shop assistants and the staff of passenger terminal caterers.

The third category of employment is related to cargo movements and is concerned with the handling, routing, loading and unloading of cargo. The jobs created include those of loaders and shipping agents' staff.

Along with these, there will be employment created connected with the "overheads" of an airport. These include clerical, cleaning, motor transport and accounting personnel and also airline base maintenance staff. There will be jobs for caretakers and policemen.

Much of this employment polarises into the two ranges of highly-technical and unskilled. If this were all the employment offered, then the prospect would be rosy rather than overwhelming. However, one quarter of the employment directly associated with the airport at Heathrow is concerned with the maintenance of BEA and BOAC aircraft. Most of this will remain at Heathrow, but the introduction of an entirely new generation of aircraft types in later years such as the second generation of supersonics and hypersonics—might see the establishment of main maintenance bases at the third London airport. This skilled engineering employment, together with the servicing of the 67,000—which would require the same number to judge from the national average—would create an extremely diversified pattern of job opportunities.

Induced employment

The volume of induced employment is a far more difficult figure to estimate. It depends largely on the locational advantages which proximity to the biggest international airport in Europe would offer potential manufacturing investment, government policy with regard to the regional distribution of employment and, finally, the future rate of economic growth of the UK economy, about which no estimate can be made.

The first variable is the suitability of the site for investment. This involves asking the difficult question: What are the variables influencing a manufacturer's choice of location? For some, clearly, proximity to a particular raw material base or to a particular supply network is all-important; for those orientated towards a mass, domestic market, nearness to that market is desirable. But, for many footloose industries, catering for either domestic or overseas markets, the most crucial determinants are good communications and a readily available labour force. The type of industry attracted to an airport will be that particularly orientated towards exporting. Table 10 gives a list of those industries which, in 1967, sent more than 10 per cent of their total exports by air. They may be classed as industries manufacturing high value/low weight products and those in perishable goods with rapidly-changing markets. Other categories of firms which might be attracted are those employing foreign representatives, headquarters of international companies, exporting agencies, those in the news and entertainment media and offices for which locational prestige is important.

Air freight is an increasingly important method of transportation and over the (1960–65) period the growth of exports by air was 14 per cent per annum compared with an annual growth rate of exports of only 5 per cent. If these trends continue into the future, and more recent estimates indicate that they may even be accelerating,* then by 1980 almost 30 per cent of UK exports will travel by air freight. Clearly, if the third London airport became specialised in carrying freight, then the implications of the airport for employment may be even greater.

In a paper† prepared by the Centre of Research in Social Sciences, a sample was taken of firms in the vicinity of Heathrow, which indicated that almost no manufacturing industry had sought proximity to Heathrow as a deliberate location; however, it was found that 15 per cent of all freight carried into and out of Heathrow came from within a 10-mile radius. In the future, it appears much more likely that nearness to a rapid export outlet will be of far greater importance in manufacturers' considerations.

The second crucial variable is government policy and a very big question-mark hangs over this aspect. For the government a conflict exists over the desire

* *Papers and Proceedings* Vol. II, p. 17.

* *Exports By Air* (HMSO 1967) Appendix 1, p. 34.

† *Airports and the Local Community* by Peter Smith, M.Sc.(Econ.), p. 4.

Printed image digitised by the University of Southampton Library Digitisation Unit

to maximise the contribution of the airport in every way to the national economy and its policy regarding regional development. In the evidence already submitted by the Distribution of Industry Division, Board of Trade† the Government would: "On present policies, wish to restrain (but not necessarily prohibit) development both because of the need to limit congestion and because of the risk of the less-favoured regions losing projects which might otherwise locate there." It will be argued in the next section that siting the airport at Thurleigh would be

TABLE 10—

The trade classification commodity division in which, in 1965, air accounted for more than 10 per cent of total exports and re-exports

Commodity	*FOB value of air exports and re-exports* £m	*Air share in total exports and re-exports* %
Hides, skins and fur skins undressed	18	51
Clothing	18	37
Scientific etc. instruments, watches and clocks	38	36
Leather, leather manufactures, dressed fur skins	10	28
Medicinal and pharmaceutical products	17	25
Miscellaneous manufactured articles	41	24
Other commodities and transactions	25	15
Non-ferrous metal	27	15
Electrical machinery, apparatus and appliances	48	14
Transport equipment	85	12
Live animals, excluding zoo animals, dogs and cats	4	12
Machinery other than electric	97	10

Source: Exports By Air p. 35.

sensible regional planning, in that it would be able to draw employment away from London and allow the induced manufacturing employment to revitalise what can only be described as one of the "less-favoured regions". If the induced development is restricted, as at Gatwick, however, then the government will lose the opportunity both of fully utilising the growth potential of the airport and of improving the inter-regional balance of economic activity.

The final topic in this section is: where will the people come from to obtain employment from a development which may attract a population of anything between one-quarter and one million? This is vital to any consideration of the impact of the airport on the wage-levels and general social and economic life of the region.

If the whole of the required population were to come from outside the area, say London, then the multiplier effects of this airport on the regional economy would be severely limited to, for example, the spending of their wages in local shops, holidaying within the area—and to the materials and labour required for construction of the airport, a large proportion of which would have to be found within the region.

However, it seems more likely, that a significant proportion of the labour force will come from within the East Anglia and Bedfordshire regions.

We will deal with the resulting patterns of migration to work and urbanisation in the next section, but there seems little reason to question why people in the region should not benefit directly from the airport and its induced activity.

It is argued in some places that the population of the region is in some way unsuitable and basically lacking in skill for such employment. Firstly, it should be remembered that by the mid-1990s, nearly two generations of children will have passed through the schools and technical colleges of the region. Secondly, the region is by no means devoid of the skills which are just those required by the industries listed in Table 10. Table 11, which shows the raw in- and out-migration flows for the counties under consideration during the (1960–65) period, indicates that, while there are continuing net inflows of people with the skills required in the type of industry listed above, there are also substantial outflows; in certain industrial classifications, notably Electrical and Electronic, Clothing and Leather, there is actual, or a tendency towards, net out-migration. Unless, therefore, the region is able to gain a faster momentum of growth, it will lose more of its most highly-trained labour. There seems little reason, therefore, on the basis of this data to be over-concerned at the shortage of skills. Thirdly, we would recommend that a further cost of any location at Thurleigh would be a more ambitious extension of industrial re-training in order to undertake the task of re-training the rural labour force. However, with agricultural employment contracting within the region at a rate of 4·5 per cent annually, this is a cost which would have to be borne by the economy, anyway.

III

In this section we attempt to review the possibility of the Thurleigh siting in terms of the plans for regional growth which have been drawn up by the South-East and East Anglia Planning Councils. This review must be seen in the light of the previous discussion which emphasised (i) that by 1981 the region of East Anglia and Bedfordshire will be faced with severe economic difficulties and (ii) that the size of the development envisaged could create enough employment of a varied nature both for workers already within the area and potential migrants from London.

Strategy for the South-East

The Government have neither accepted nor rejected the South-East Economic Planning Council's

† *Papers and Proceedings*, Vol. II, p. 127.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 11—

Immigration and emigration into and out of Cambridge and the Isle of Ely, Huntingdon and Peterborough and Bedfordshire for years (1960–65) for selected occupations and by sex

Standard Industrial Classification	*In-migrants*		*Out-migrants*	
	Males	*Females*	*Males*	*Females*
EAST ANGLIA				
Total economically active	43·45	20·65	31·01	15·24
I Farmers	2·11	28	1·50	22
VI Electrical and electronic	1·09	27	1·00	14
VII Engineering and allied trades	4·95	40	2·35	25
XI Clothing	8	27	7	26
IX Leather workers	5	6	5	3
XXV Professional and technical	8·33	4·85	7·79	4·20
HUNTINGDON AND PETERBOROUGH				
Total economically active	9·19	3·98	5·76	2·74
I Farmers	53	3	31	8
VI Electrical and electronic	15	2	20	6
VII Engineering and allied trades	1·23	3	57	4
XI Clothing	3	7	2	3
IX Leather	2	2	—	1
XXV Professional and technical	1·31	63	1·04	54
PETERBOROUGH M.B.				
Total economically active	3·13	1·41	2·92	1·50
I Farmers	8	1	6	2
VI Electrical and electronic	3	5	12	4
VII Engineering	61	1	46	3
XI Clothing	—	5	2	2
IX Leather	2	—	—	1
XXV Professional and technical	62	24	64	24
CAMBRIDGESHIRE AND ISLE OF ELY				
Total economically active	10·24	5·63	9·88	4·70
I Farmers	88	13	82	13
VI Electrical and electronic	33	6	26	6
VII Engineering and allied trades	1·13	8	85	5
XI Clothing	—	2	1	8
IX Leather	—	—	2	—
XXV Professional and technical	2·57	1·88	3·08	1·48
BEDFORDSHIRE A.C. WITH C.B.				
Total economically active	20·32	9·63	13·90	6·09
I Farmers	52	3	51	10
VI Electrical and electronic	93	12	43	5
VII Engineering	3·41	42	2·08	13
XI Clothing	10	35	8	9
IX Leather	5	5	2	7
XXV Professional and technical	4·38	1·75	2·72	1·07

Source: Sample census 1966—Migration Regional Report—East Anglia (HMSO).

strategy, but have invited the Council and The Standing Conference to join in the Burns' Study.* However, we will use the strategy outlined as the basis for this discussion. It may well be that the Roskill Commission will have different ideas on the subject; and that because of the enormity of the likely development around the proposed airport, they may wish to reshape completely this strategy with the third London airport as a focal point. The Roskill Commission would perhaps be fully justified in doing this, bearing in mind that this airport, set down anywhere in the South-East region, would completely alter the geographical balance of employment and development. However, this paper considers Thurleigh as a site only in terms of the strategy already outlined.

The essence of the strategy is the building up of four or five nodal growth areas at some distance from the London Area, but which nevertheless have good communications with the major conurbation, in order to act as a magnet to pull away economic activity from the heartland of the region. It is argued that with the growing efficiency of modern transport, centres for future growth can be located away from the major area of economic activity without losing the economic advantages of concentration, provided they have rapid and frequent access to the metropolis. It is also envisaged that the radial lines of communi-

* Note by Ministry of Housing and Local Government. *Papers and Proceedings*, Vol. II, p. 87.

Printed image digitised by the University of Southampton Library Digitisation Unit

cation away from London should be reserved as corridors for growth and perform the same function of diverting growth from London.

The Strategy† document proposed studies considering the following areas from this point of view: Northampton and Milton Keynes along the M.1; Swindon along the M.4; the Southampton area along the A.30 and A.33; the Medway towns area and Ashford along the M.2 and A.20; and Ipswich along the A.12. Several other less important corridors for growth were also proposed: along the M.4 to Reading; along the M.23 to Brighton and along the A.1 to Peterborough.

The Thurleigh site already stands in the A.1 corridor to Peterborough and therefore fits in exactly with the strategy as already broadly laid out. If the Commission were to accept the Thurleigh site, then it would have no difficulty in accommodating this to the plans already outlined. Hence, Thurleigh would in itself not only be well placed as airport site with good comunications to London along either the A.1 or the M.1 and the rail link to King's Cross, but it would also serve as an ideal growth zone pulling activity away from the London area. It is at the optimum distance from the London area both in so far as its airport function is concerned and its growth function.

However, Thurleigh's ability to serve both as an airport serving the London area and the nation and its potentialities as a node of growth are not limited merely to its communications' links vis-a-vis London and the South-East. The Green Paper on Highway Strategy* indicates that Thurleigh will be located on the proposed strategy route which links the Midlands and Ipswich via Northampton, Cambridge and Newmarket. Similarly, to the North, the A.1 would link Thurleigh to the Northern industrial cities and Scotland. In this way the Thurleigh site would be able to serve the rest of the country in its airport functions and would also have high growth potential at the centre of the North–South and East–West communications network.

The Commission would, therefore, in choosing Thurleigh as the site for the third London airport be killing two birds with one stone. It would be building an airport with fast surface access to London, the Midlands, the industrial North and the East Anglian coastal parts. And, it would also be creating a zone of attraction pulling away growth from the South-East due to its obviously high growth potential.

East Anglia's Strategy

The pattern of growth chosen for the area during the sixties was one in which available resources were concentrated into a few well-chosen locations, rather than dispersed over wide areas. A number of market towns made arrangements to receive overspill population and industry from the GLC area.

However, the 1966 Study adopted a strategy involving the concept of the city-region; in essence, this involved a large expansion of four centres—Peterborough, Norwich, Cambridge and Ipswich—and an increase in the work dependency patterns in the surrounding areas.

The government's response to this plan has not been especially favourable. In its reply to "East Anglia—A Study", the government stated that it would not be going ahead with the New Town proposal at Ipswich. This is especially serious for the region in view of the population forecasts considered in Section 1.

Given that the Thurleigh site would be ideal as an airport location and as a growth magnet, as argued above, what are the implications for the Eastern Region of development at Thurleigh?

Initially, we shall assume that the government feels compelled to prohibit all development at Thurleigh except that which is concerned primarily with the airport and its operation. In this case, the total expected population would be about 250,000 and most of the urbanisation would be confined to an area within a 30 mile radius of the airport itself. As mentioned above in Section II, the effect of this would be to severely limit the multiplier and growth-inducing effects in the East Anglia region. Anyone in the more distant parts of the region who gained employment at Thurleigh would either migrate permanently to somewhere nearer the airport or might be subjected to long commuting distance to work; the first alternative would be bad for those parts of the region, in that they would lose valuable, and probably skilled manpower, and the second involves considerable private and social (congestion) costs. Any restriction of industrial development would also be harmful for the nation, since growth may be restricted which might well have taken place. This paper rejects this course of action as a major misuse of public sector investment funds, which have a high social opportunity cost.

We assume, therefore, that the government will permit induced development to take place. We suggest, however, that an upper limit be placed on the inflow of population within a 30-mile radius of Thurleigh in order to encourage the diffusion effect of the airport.

Our proposal is that, if Thurleigh is chosen as the site for the third London airport, then the government should use its powers with regard to the location of industry to do the following: to designate areas and sites, probably, but not necessarily, on the sites of existing settlement patterns, to encourage the location of new industry in East Anglia, Bedfordshire and Northamptonshire. The benefits flowing from this would be considerable both to the region and to the nation, since the fullest possible growth benefits from the airport can be utilised. Clearly, there will have to be heavy public expenditure involved in building up the social infrastructure in terms of housing and urban amenities; but if the proposals in the Green Paper* on Highway Strategy are adopted, then

† *Strategy for the South-East.* (HMSO; 15s.)

* *Roads for the Future: a new Inter-Urban Plan.* (HMSO; 10s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

the road communications network would fit in very well with this conception. Sites in East Anglia, Bedfordshire and Northamptonshire would all be within easy access by road of the airport terminal and the rest of the country.

We are only sorry that we have been unable to work out and round out this proposal more fully, due to the shortage of resources at our disposal; but we hope the Commission will give these remarks serious consideration.

Conclusion

Here we attempt to draw together the strands of the argument in the previous three sections.

The central theme of this appendix is the vital necessity to the East Anglia and Bedfordshire region of a major injection of economic activity. In terms of its economic life and social services, the East Anglia region is at present a deprived area. The projections, outlined in Section 1, of population growth and demand for labour in 1981, show that the region and also Bedfordshire will face a severe economic crisis by that date which will call into question the whole viability of this area as an acceptable environment for our people to live in. We have drawn particular attention to the whole problem of underemployment, because we believe it is a special feature of the area, which has received insufficient attention and for which special remedies are required. Agriculture and its associated activities are increasingly shrinking sources of employment and prosperity to the region; and we recognise in this paper that the remedy proposed would bring about a major change in the social and economic structure of the region. There are, clearly, very strong interests working at a political and economic level, which wish to resist this type of change. The agricultural interest, in particular, would wish to discourage competing demand pressures for labour because of the higher wage bill which this would entail. However, it is the conclusion of this paper that it would be in the interests of the majority of working people to bring the third London airport and its associated development to this region.

We have also outlined what we believe will be the extremely diversified nature of the employment opportunities which would arise both from the airport and its induced activity.

We conclude that it is vital for the people in the region to have the opportunity of acquiring the skills which these job opportunities will require. That is why it will be so necessary for an imaginative training scheme to be initiated.

The section on regional planning attempts to broaden the focus of the study. For it is here that we argue that the country must not lose the valuable opportunity presented by the possibility of a third international airport of creating new sources of economic growth. In a mixed economy there is no guarantee that at any point in time or at different stages in time, the most will be made of the opportunities for growth which exist, if only they were grasped. If induced development at Thurleigh were put into a straitjacket, then a valuable opportunity will be lost to the nation of making the best possible use of such large-scale public expenditure. Not only this, but an important contribution can be made towards the dispersal of population and economic activity from the more congested parts of the South-East and the creation of a more balanced inter-regional distribution of economic activity. An airport at Thurleigh will serve both the region and the nation well.

We believe that the siting of the third London airport can bring a wide range of benefits which will bring about a qualitative change economically, socially and culturally to a region which is deprived in all these respects. We hope the Roskill Commission will consider this point of view sympathetically.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Kimbolton School, Huntingdonshire

SUBMITTED BY MR. C. H. LEWIS*

1. The Governors object to the proposal for two main reasons:

(i) **General.** The urbanisation of the whole area would radically transform its character. This point will be dealt with by other objectors.

(ii) **Particular.** The interference from noise would certainly make it difficult and might make it impossible for the work of the school to continue.

2. There is no need to elaborate on the intrusive effect of aircraft noise in classroom and laboratory, or the difficulties caused to pupils and teachers if this noise is—as it would be—incessant. However, we wish to draw the attention of the Commission to the following:

(a) In addition to having about 190 day boys, who live within a radius of 15 miles, the School provides for 300 boarders who have to live as well as work in Kimbolton. They would *never* be free from the noise.

(b) Of these boarders 125 are sons of service personnel whose work involves constant moves and makes boarding education for the children essential; 26 others are the sons of civilians working overseas. In fact, half the boarders are sponsored by local education authorities, who pay part (or all) of the fees here because they recognise that the boys must have boarding education.

We maintain that the School, besides being an important part of the local provision for boys' education, serves a valuable national purpose by providing a boarding education at a modest cost, and any interference with its working would be a serious loss.

3. When preparing the Cost Benefit Study the Commission may care to bear in mind the following facts about the investment in education that this school represents:

(a) Annual revenue provided (1968)—

	£
By parents	105,000
By LEAs sponsoring day boys and boarders	30,000
By Department of Education and Science (direct grant)	32,000
By endowments	800
	167,800

(b) Money raised by appeals since 1945—

1945–68	40,000
Endowment Fund Appeal (launched March 1963)	56,000
	96,000

(The Endwoment Fund Appeal is still open: the first product was a School Hall opened on 28th June 1969 by HRH the Duchess of Gloucester)

(c) Grants received for the repair of the structure and artistic features of Kimbolton Castle—

	£
Pilgrim Trust	3,000
Historic Buildings Council	36,000
	39,000

(d) The capital value of the School's estate is over £700,000. This is all devoted to education.

4. **Buildings.** The School has grown to its present size (490) from 29 in the past sixty years. Many of the buildings, especially the boarding houses, were bought and adapted for their new purpose, and it would be impossible, owing to their age and structure, to provide sound-proofing and air-conditioning. For the other more modern buildings sound-proofing would be so expensive that the Governors might well be unable to contemplate it.

Kimbolton Castle, the main building, contains classrooms, etc., and boarding accomodation for 100 boys. It deserves special mention owing to its architectural and historical interest, for it dates from 1525, with alterations about 1690 and (by Vanbrugh) 1710. It is not too much to say that the Castle has been preserved only because it was acquired by and has been restored by the School. Enclosed is a reprint of articles on the Castle published in *Country Life* in December 1968.*

Other buildings are brick or timber-frame and plaster, or a mixture of the two. In the Preparatory Department are several rooms of timber only.

Boarding Houses

The Castle (top floor) 1525 (altered 1690 and 1710)
Kimbolton House c. 1700
White House, 18th century
Clancarty House, 18th century
Stonely Hall, 18th and 19th century
Corner House, early 19th century
Preparatory Department, 1876.

* See also p. 2292.

* Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

Teaching accommodation

The Castle (main floor)
Studio—in Adam Gatehouse, 1763
Other buildings 1870, 1911, 1927, and several 1925–1968
School Hall, 1969

Other accommodation

Dining Hall (Castle Mews), 1870
Sanatorium, 1930
Married Masters' quarters—eleven units—varying from 17th century cottages to newly-built houses.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of The Harpur Trust (The Bedford Charity)

SUBMITTED BY MR. F. A. HAMMOND*

I am a Senior Partner of Aviation Property Consultants, a Master of Science, Chartered Engineer, Member of the Institution of Civil Engineers, Associate of the Institute of Building, and a Member of the American Society of Civil Engineers.

1. **Runway location**

The noise contours produced for any airport depend upon three principal major factors:

1. Runway orientation.
2. Position of holding areas.
3. Relationship of airport and holding areas to existing airways system.

Detailed consideration of these aspects will give the optimum routes for aircraft arriving at and departing from the airport from which the shapes of the noise contours can be determined.

2. **Thurleigh**

(a) *Runway orientation*

The available information on wind direction at Thurleigh is limited to data obtained between the hours of 06.00—16.00. The data indicates that the optimum direction for the runway orientation would be 040/220 magnetic—if wind direction was the only consideration. This would, however, route aircraft directly over Bedford and the Commission have selected a heading of approximately 080/260 which routes the aircraft in a more east/west direction. This is not the true mean but is within the ICAO tolerances of 95 per cent usability with a 20 knot cross-wind component.

(b) *ATC effects*

The runway heading must, however, be related to the National Airway system and the routing of aircraft is affected by the positioning of the holding areas.

Unfortunately, the Commission do not provide information on the routings to and from the Airways system nor the location of the holding areas.

The proximity of Thurleigh to Airway Amber Two indicates that the amount of controlled airspace would have to be increased and the existing airways system is certain to require major modification if Thurleigh was to reach capacity without affecting Heathrow.

Assumptions can be made, such as the suggestion made by Mr. Masefield in his opening statement in November* that a uni-directional flow could be established around the London Terminal area. The only solution, however, is to produce a simulated computer model which may indicate that some re-adjustment of the runways may be essential if the airport capacity is to be achieved.

(c) *NNI Contours*

The NNI Contours shown on the Commission's drawing† are based on assumptions on the routings of aircraft arriving at or departing from Thurleigh which may well vary in actual practice. The extended take-off is shown to reduce noise nuisance but the penalty on runway utilisation may be unacceptable. When Holding Areas have been established, contours may well extend to Northampton, Huntingdon, Bedford and possibly Cambridge.

Conclusion

The variables affecting aircraft routings at Thurleigh are considerable and although the Commission have shown a scheme which minimises the noise nuisance, the final solution may well have to vary for operational reasons. This will cause the nuisance to extend over the adjacent areas of population.

* See also p. 2293.

* *Papers and Proceedings* Vol. I.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of The Harpur Trust (The Bedford Charity)

SUBMITTED BY MR. R. N. HUTCHINS*

I am a Bachelor of Laws of London University and also hold the Diploma of Public Administration of that University, and I am a Legal Member of the Town Planning Institute. Since 1966 I have been Clerk and Solicitor of the Harpur Trust (The Bedford Charity); prior to that I served from 1937 onwards (apart from the war years) in local government mostly as a Solicitor with local education authorities.

The Harpur Trust

1. The Harpur Trust (The Trustees of the Bedford Charity) is an education charity established by Sir William Harpur in 1566 and first incorporated by Act of Parliament in 1764.

2. The list of Governors shows that the Trust is widely representative of Education, both public and private, as it includes 4 MPs, 12 Local Councillors, 4 Professors and 9 former pupils of the Schools.

3. The Trust is the Governing Body of four schools in Bedford which come within the definition of "Public Schools" under the terms of reference of the Public Schools Commission established 1965. In addition 2/11ths of its endowment is earmarked for pupils at maintained (State) schools in Bedford and 1/11th is devoted to old people (Almshouses).

Summary of the Trust's representations

4. Bedford is in an unusual position with easy access to London, Oxford and Cambridge and has become established as a noted centre for education, research and training establishments with emphasis on the puruit of excellence in secondary education. This concentration of effort in one field is an efficient use of scarce resources in skilled manpower. The disturbance and rapid urbansiation of the area, by the building of the third London airport would operate to the detriment of this area and the Trust ask that the Commission, in weighing up the many factors for the purpose of their Cost Benefit Study, should pay due regard to the detriment which will be caused to education in Bedford and the surrounding area.

The reasons leading to this conclusion are set out in the following paragraphs:

The Schools

5. In education terms two of the Trust schools are "Independent", Bedford School (Boys) and Bedford High School (Girls) and two of the schools are "Direct Grant", Bedford Modern School (Boys) and The Dame Alice Harpur School (Girls).

6. The total number of pupils is 3,400 ranging in age from seven to nineteen years. Of these, some 660 are boarders drawn from all over Britain and many parts of the world.

7. The total strength of the Sixth Form numbers 735; this is some measure of the part which the Trust schools play in preparing pupils for entry to Universities, and other places of Higher Education. Apart from Pilgrim School and the Convent at Bedford, and Kimbolton School, the Trust schools at present provide for practically all the Sixth Form schooling for Bedford and North Bedfordshire—the area most affected by the proposed airport.

Evidence of Mr. Patrick Shallard endorsed

8. The Trust have had an opportunity of seeing the evidence to be submitted by the Chief Education Officer of Bedfordshire County Council (Mr. Patrick Shallard, OBE, MA)* and they fully endorse the views expressed in it and these views are not repeated here. The Trust feel that the first and only local hearing of objections to the third London airport at Thurleigh should not pass without attention being drawn to the massive investment in education in Bedford and Bedfordshire by endowed foundations and private enterprise and the effect which the disturbance and rapid urbanisation of the area would have on a noted centre for education, research and training.

A noted centre for education and research establishments

9. Over the past 400 years (and especially in the past 150 years) Bedford has established itself as a noted centre of education. Ample evidence is available as to the place of Bedford in education and any printed work describing Bedford tells the same story. The most recent and authoritative evidence is the 1965 Report of the MHLG by Sir Hugh Wilson, OBE, FRIBA MTPI and J. L. Womersley, CBE, FRIBA, MTPI ("Northampton, Bedford and North Bucks. Study"), HMSO, 1965. Relevant extracts are as follows:

"Bedford is not only an educational centre, but is also surrounded by a number of technical and research institutes." (26p)

"Bedford, it would seem, has a definite attraction for offices and research institutions wishing to relocate from London." (28p)

"The social structure of the town is reflected by the fact that 16 per cent† of the working population is employed in the professional services group, which is a similar percentage to that of Oxford or Cambridge." (26p)

10. The tradition of education in Bedford has been helped by the coming of many research and training

* See also p. 2293.

* p. 1863.
† Now (1969) 18·4%.

Printed image digitised by the University of Southampton Library Digitisation Unit

establishments to the neighbourhood. Some details of the non-state schools and of the reseach and training establishments are set out in Appendix "A".

11. The Governors are convinced that the establishment of an international airport within a few miles of the Borough boundary would destroy the special value of Bedford as a centre of education, while some of the research establishments which require quiet and lack of vibration for their experiments, undoubtedly would move elsewhere.

12. The preservation of this centre of excellence for secondary education is of great importance to the nation in that pupils from all walks of life and all income groups are prepared for the Universities and other places of higher education. No other of the short listed sites would be affected to the same extent as Bedford.

Location of Harpur Trust Schools

13. All four of the Harpur Trust Schools are situated in central Bedford and within one half mile of the Town Bridge. A central location is desirable because large numbers of pupils come by train and bus from surrounding towns and villages.

14. On the alignment of the runways shown on the Commission's drawing CTLA/4/5* of 24th June, 1969 (known as Thurleigh B), all four schools are at present outside the limit of the noise contours, but if, however, Thurleigh is eventually chosen and the designers of the airport, who presumably would be the British Airports Authority, ultimately decide that a 45° alignment was essential for this site, then the noise contours would certainly impinge seriously over parts of Bedford and affect two of the Harpur Trust schools.

Proposed move of Bedford Modern School to Manton Heights (GR TL 0451)

15. However, the most serious threat to the Harpur Trust Schools lies in the close proximity of the proposed airport to Manton Heights at the junction of the Clapham Road (A6) and Manton Lane (GRTL 0451). Plans are well advanced for the rebuilding of a new Bedford Modern School (at present 1,040 pupils but likely to be expanded to 1,250 pupils) on a fine elevated site (AOD 200 feet) of some 20 acres overlooking the existing playing field and swimming pool of the school. The site is within 1¼ miles of the 40 NNI Contour on the Commission's drawing CTLA/4/5 of June, 1969 (Thurleigh B). The Trust have had to defer further architectural work on this scheme until the position is clearer. This scheme is estimated to cost at least £1m. without any soundproofing. In place of the exciting challenge of building a new public school for some 1,250 pupils on a fine unrestricted site, the prospect could be a school within the straitjacket of sound-proofing and ventilation requirements.

16. If available in time an estimate will be submitted to the hearing of the cost of soundproofing and the likely effect on the level of fees at the School.

* See attached wallet of maps and diagrams.

Major redevelopment in central Bedford held up

17. The Trust has retained eminent advice on the redevelopment of the *existing* Bedford Modern School buildings and site in the centre of old Bedford. Sir Frederick Gibberd, CBE, ARA, FRIBA, MTPI, FILA, and Messrs. Hillier, Parker, May & Rowden (Mr. H. J. Buck, FRICS, MTPI) are preparing a very important scheme for the 3·6 acre site (GR 048497) owned by the Trust N.W. of St. Paul's Square. Everything depends on the ability to proceed with the new Bedford Modern School at Manton Heights. It is noteworthy that the County Council have deferred a decision on the site of their Upper School for North Bedford until a decision on Thurleigh is reached.

The effect of the airport

18. The following is a general assessment of the effect which an international airport on the edge of Bedford would have upon the Trust Schools:

(1) *Boarders.* The Schools would be less attractive to parents of boarders who number 660 and come from all parts of the world. It is difficult to imagine parents with a free choice, choosing a boarding school on the edge of an international airport.

(2) *Day pupils.* An airport would discourage parents from coming to live at Bedford for their children's education. This tradition started in the early 19th century and continues today when the Schools attract people to take up posts in Bedford, and when others working in London, Luton and Milton Keynes, etc. choose to live in Bedford while their children are at school. The Schools would also be less attractive to parents of pupils from neighbouring counties and those with long distances for daily travel, who find this worthwhile to get the high standard and spread of subjects in the Sixth Forms.

(3) *Staff.* Staff join, and stay, at the Trust Schools for a variety of reasons, not all financial (because most teachers in all schools are on the national (Burnham) scale), much depends on the status and reputation of a school and the civilised environment which fosters the pursuit of academic excellence. Staff already change at the rate of 12 per cent per year with retirements, and younger staff obtaining promotion; with an airport on the edge of Bedford, it would be more difficult to recruit high quality staff, on which the success of the schools depend.

(4) *Increase in fees in consequence of insulation, sound-proofing and ventilation work.* The cost of sound-proofing, etc. would be heavier in the Harpur Trust School buildings which are of varied ages, going back to 1834. All the schools contain buildings of architectural merit, some listed as such by MHLG and others included in proposed Conservation Areas under the Civic Amenities Act, 1967; hence the cost of sound-proofing would be far greater than in modern schools.

19. Education is more likely to flourish in a civilised environment and in conditions of relative peace and quiet. The boys' schools work a six-day week and boarders are present for a seven-day week, and boarders would therefore, never be free from aircraft noise.

Printed image digitised by the University of Southampton Library Digitisation Unit

20. It is impossible to sound-proof the grounds of the Schools; these are not just playing fields. As in University Colleges peaceful gardens and grounds give an opportunity for relaxation between sessions and a background for thought and discussion.

Cost Benefit Study

21. The Commission, in accordance with its terms of reference is engaged on a massive Cost Benefit Study as outlined in the papers and proceedings of the Commission Volume VII part 1 "Proposed Research Methodology".* It is hoped that the Trust may be able to submit some observations on this Paper for Stage III. It is the task of the Commission to weigh in the scales qualities and values not normally expressed in terms of £ s. d. In this task, it is submitted that the Commission should have regard to the level of private investment in education in Bedford as an indication of the amount the public are prepared to pay for the pursuit of academic excellence. The following statement shows the annual revenue figure of the investment in private education in Bedford in the four Harpur Trust Schools:

	£
By parents (Tuition Fees—excluding Boarding Fees)	500,000
By the LEA (taking up free places) ...	150,000
By the Department of Education and Science by way of Direct Grant to two Schools	120,000
By Endowment from Sir William Harpur and others	80,000
	£850,000

22. The capital value of the Trust's Estate in Bedford devoted to education is approximately £3·5m. It is submitted that in no other comparable town in the country has there been such a scale of private and charitable investment in secondary education. If all other such centres of education or training in the Bedford district were taken into account, the figures of revenue and capital would be very considerable. It is therefore suggested that the Commission should make some allowance in their calculations for the detriment which the airport would make to the return from this investment.

The Trust not opposed to change

23. The Trust are not opposed to change. Over four centuries they have adapted their schools to changing circumstances with varying measures of success, the number of pupils ranging from 3 to the present record total of 3,400. Since the War ever-increasing numbers have gone into higher education and the professions.

24. The presence of the research establishments in and around Bedford adds to the richness of education in Bedford for a variety of reasons. The Schools draw members of staff and pupils from the families of these establishments and this adds a variety of parental background and experience.

* HMSO; 5s.

Map of Bedford as a centre of education and research

25. The Trust are grateful to the Commission for permission to display at the place of hearing (The Corn Exchange, Bedford) a map showing Bedford as a centre of education, research and training establishments, and the distribution of the Harpur Trust pupils all over the world. While copies of this map will not be available to other interested parties in advance of the hearing, photographs* and/or slides will be prepared for them.

A Government view of Thurleigh 1967

26. The Trust quote the Government White Paper of May 1967 *The Third London Airport*.†

> "A similarly detrimental effect on military aviation is a feature of almost any site in this part of the country, including Bedford (Thurleigh). Moreover, Bedford, while exhibiting *all the drawbacks of a site relatively distant from London*, does not offer the Silverstone district's considerable attractions from the regional planning viewpoint. *The Government has decided, therefore, that this area does NOT merit further consideration.*" (Page 17, paragraph 59.)

27. Although not relating to the main interest of the Trust—education—this statement is, in the Trust's view, significant in that it shows that Thurleigh—alone of the inland sites listed by the Commission—was as recently as May, 1967, dismissed by the Government as not meriting further consideration.

Inspection of the area

28. The Trust are glad to note that the Inspector has for the other three listed sites, made extensive journeys to see the area for himself, and he will no doubt do the same for Thurleigh. It is hoped that the quality of life in Bedford will not be judged by the present traffic conditions outside the Corn Exchange at the close of the daily sessions of the Stage II Hearing. Energetic steps are being taken by the Borough Council to cope with the motor car. What other town of population 70,000 has multi-storey car parks for 1,409 cars and more such car parks on the way? The Inner Relief Road to the South East of the Town is imminent and preparations are being made for the Western By-Pass of the Town. It is specifically asked that the Inspector will see from the inside at least one of the Harpur Trust Schools.

29. To judge the conditions in which the older pupils work for their important examinations, the Inspector should turn off the busy streets right into the school quadrangles and grounds, which even when road traffic is at its noisiest can give a sense of peace and quiet similar to Oxford and Cambridge colleges. He should also see the surprisingly quiet residential areas where the bulk of the homework and individual study is done. The Trust is collaborating with the Governors of Kimbolton School (a separate foundation) for the purposes of this Stage II

* Available for inspection by arrangement at the offices of The Commission.

† Cmnd. 3259 (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

hearing, and it is hoped that Kimbolton Castle, as the boarding school most affected by the proposed airport, will be visited as well.

Conclusion

30. As already stated, the Trust have reached the following conclusion. *Bedford is in an unusual position with easy access to London, Oxford and Cambridge and has become established as a noted centre for education, research and training establishments with emphasis on the pursuit of excellence in secondary education. This concentration of effort in one field is an efficient use of scarce resources in skilled manpower. The disturbance and rapid urbanisation of the area, by the building of the third London airport would operate to the detriment of this area and the Trust ask that the Commission, in weighing up the many factors for the purposes of their Cost Benefit Study, should pay due regard to the detriment which will be caused to education in Bedford and the surrounding area.*

32. This statement has been prepared on the basis of the facts available from the Commission and after study of some, but not all, of the facts being assembled by other bodies especially the Bedfordshire County Council. The Trust may need to supplement this statement when fuller information is available before and during the Stage II hearing.

Appendix A

Representations by The Harpur Trust (The Bedford Charity)

(Referred to in paragraphs 10 and 25)

The purpose of this table is to set out some facts to supplement the statement in HMSO Publication of 1965. *The Northampton, Bedford and North Bucks. Study* by Sir Hugh Wilson and J. L. Womersley, that "Bedford is not only an educational centre but is also surrounded by a number of technical and research institutes".

List of Schools (Independent and direct grant) research and training establishments in Bedford and Bedfordshire

I. Schools and Colleges

Map ref.	*Name and general objects*	*Staff*	*No. of graduate staff*	*No. of pupils/ students*
TL 053504	1. *Bedford School* (Independent Boys) Founded 1552. Endowed 1566.	81A	73	972
TL 046502	2. *Bedford High School* (Independent Girls) Founded 1882.	53A	37	589
TL 048497	3. *Bedford Modern School* (Direct Grant Boys) Founded 1764.	64A	51	1035
TL 054494	4. *The Dame Alice Harpur School* (Direct Grant Girls) Founded 1882.	48A	39	858
TL 100676	5. *Kimbolton School* (Direct Grant Boys) Founded 1600.	33A	28	492
TL 043501	6. *The Convent of the Holy Ghost* (Independent Girls) Founded 1907.	34	15	668
TL 038507	7. *Rushmoor School* (Independent Preparatory Boys) (includes 26 boarders). Founded 1918.	20		175
TL 057510	8. *St. Andrew's School* (Independent Girls)	20	17	205
TL 079417	9. *Hawnes School* (Independent Boarding Girls) Founded 1929.	26	24	220
TL 041503	10. *Bedford College of Physical Education* College for training of teachers. Founded 1903 by the P.T. Mistress of Bedford High School.	55A	43	450
TL 067504	11. *Bedford College of Education* Teachers Training College. Founded 1882 as the Bedford Kindergarten Co. (Froebel).	48	40	520

II. Research and Training Establishments

TL 980600	12. *Unilever Research Laboratory* Colworth, Sharnbrook. Established 1947. Food Research.	1,026	195	
TL 092355	13. *National Institute of Agricultural Engineering* Wrest Park, Silsoe. Established 1947. Research and development into engineering as applied to agriculture and horticulture.	387	56	

Printed image digitised by the University of Southampton Library Digitisation Unit

Map ref.		*Name and general objects*	*Staff*	*No. of graduate staff*	*No. of pupils/ students*
TL 081252	14.	*National College of Agricultural Engineering* Silsoe. Established 1960. Training at ordinary degree and higher degree level in Agricultural Engineering (includes post-graduate students).	110	25	150
TL 957355	15.	*Woburn Experimental Station* (Part of Rothamstead Research Station).	6		
TL 0460	16.	*Royal Aircraft Establishment* Aeronautical Research (Wind Tunnels and in flight) Established 1949.	1,500 approx.	N/A	
TL 951425	17.	*College of Aeronautics, Cranfield* Post-graduate education and research in engineering science, technology and management. Established 1945.	200A	200	550 (graduate)
TL 954421	18.	*Electrical Research Association* Wind Research Station, Cranfield. Research into wind and its effect on structures to produce new British Standard. Established 1953.	10A	4	
TL 145443	20.	*Shuttleworth College* Old Warden, Beds. Residential College. Agricultural Education. Established 1947.	10A	6	
TL 036528	21.	*Staveley Engineering and Research Centre* Clapham. Established c. 1957. Research into Machine Tools.	85	22	
TL 046517	22.	*Aircraft Research Association Ltd.* Manton Lane, Bedford. Established 1952. Aerodynamic research including wind tunnels.	234	27	

Notes

1. Sources:
   (1) Questionnaire to non-state schools and training and research establishments, August 1969.
   (2) As to the Royal Aircraft Establishment, Bedford (Thurleigh and Twin Woods), Hansard, Commons, 1969. Replies to questions by Mr. Brian Parkyn (MP for Bedford), including 5th March 1969, column 104.
2. This list covers CIVILIAN establishments only which are listed in the classified section of the local Post Office Directory. It does *not* cover:
   (*a*) Military and semi-military departments such as (1) RAF Cardington, 217 Maintenance Unit.
   (2) Ministry of Technology R&DE, Cardington (Balloons), nor
   (3) RAF and USAF Chicksands.
3. This information has been compiled in August 1969. If the Commission wish to use this material for the purpose of their Cost Benefit Study, then the Trust are willing to supplement and refine the detail for that purpose.
4. A = Academic Staff (i.e. excluding Administration).

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Unilever Ltd.

SUBMITTED BY MR. K. DURHAM*

I am a Bachelor of Science of the Victoria University of Manchester. I live at Windmill House, Windmill Hill, Biddenham, and I am Head of the Unilever Research Laboratory at Colworth, Sharnbrook, near Bedford (hereinafter called "Colworth House"). I produce a plan marked "KD1"† on which Colworth House and the adjoining 1,200 acres are shown surrounded with a green line, and on which are marked the NNI contours for a two-runway airport on Thurleigh "A" site and also on Thurleigh "B" site. I also produce a plan marked "KD2"† on which Colworth House and the adjoining 1,200 acres are shown surrounded with a green line and on which are marked the NNI contours for a four-runway airport on Thurleigh "A" site and also on Thurleigh "B" site.

1. Scope and aims of Unilever Research at Colworth House

(A) *Introduction*

Unilever Research Laboratory Colworth House, is the largest European Food Research Unit of its kind and is situated on a 1,200 acre site near Bedford. The property was purchased by Unilever in 1947 and the great attraction of the property from the point of view of establishing a Research Laboratory was that it was situated in a quiet rural area which provided the conditions of privacy, seclusion and absence of noise which are necessary requirements for scientists employed in a Research Station and also for the large number of animals required on such a station, and also provided good conditions for the growing of experimental crops under strict control and without pollution or contamination. Colworth House employs 1,026 staff and conducts research mainly into human foods and animal feeding stuffs. Its primary function is to provide a wide and far reaching service to enable the major Unilever human food companies to develop their products and processes. Our current animal stocks, necessary for this work, are about 1,500 pigs, 300 cattle and 12,000 poultry. We regard our present land holding as the minimum necessary to include this animal population on the site. The major United Kingdom food companies, Batchelors, Birds Eye, Mac Fisheries, Walls, van den Berghs, and overseas companies, manufacture and market high quality frozen, dehydrated and processed foods thus making seasonal crops and convenience foods available throughout the year.

The laboratory work is divided into three main areas: human foods research; biological testing; and animal research. These form a logical entity for our research work, and maximum scientific and technical benefit is derived from the interaction of different scientific disciplines.

(B) *Human foods research*

The work of the food divisions: Food Technology division innovates new products and processes. Food science research ensures that a new product is nutritionally adequate and taste panelling determines whether the consumer is likely to accept it. Successful development of a product is followed by scale-up of its production so that the operating company can manufacture it commercially.

More fundamental studies are undertaken by the other food divisions. Meat and Fish divisions study muscle and meat structure, post mortem changes in carcasses, and, in collaboration with Animal Research division, meat quality and meat production are studied.

Bacteriology Section, also a part of Meat and Fish Division, investigates food spoilage bacteria and their effects, and does much service work for the operating companies.

Long term biochemical problems studied in Plant Products and Biochemistry division are: the synthesis and breakdown of fats in plants and fish, tissue culture methods for producing uniform and high quality crops (e.g. oil palms) and perfumes and flavours, the structure of water which is of far reaching importance, affecting such diverse areas as meat quality and frozen vegetable texture. Extensive vegetable breeding trials in the open, coupled with crop husbandry improvements and plant pathology investigations aim to improve quality and yield of crops suitable for harvesting and processing.

Spectroscopy and analytical services are provided for all scientific staff by the Physical Chemistry Unit, which also develops new separation techniques and laboratory instrumentation. It also investigates extraction, analysis and synthesis of flavours in collaboration with Food Technology.

(C) *The work of Biology Division*

The prime function of Biology division is to determine whether a product, such as soap, detergent, toilet preparation, food and food additive, is free from hazard to humans. Experimental evidence is provided by biological evaluation tests on specially chosen small animals. Many animal strains are bred at Colworth to ensure the high standard required in this work. Biology division also conducts studies to investigate the safety of proposed new ingredients to satisfy Government Committees, the principal of which is the Pharmacology Panel of the Chief Medical Officer's Committee of the Ministry of Agricul-

* See also p. 2298.
† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

ture, Fisheries and Food. We investigate systemic and dermal toxicity, which helps to provide evidence for changes and advances in Governmental regulations in order to maintain technological advance.

(D) *Animal Research Division*

Research at Colworth House also provides an extensive farm animal research centre for United Kingdom animal feedingstuffs companies to meet current animal nutrition requirements of modern farming methods. Animal Research division conducts fundamental studies on animal metabolism and animal digestion, basic nutritional studies on cattle, pigs and poultry and determines the effect of experimental feeds.

2. Budget and cost estimates

(A) *General costs*

The estimated budget costs for 1969 are:

Revenue Expenditure (including Salaries and Wages of £1,669,000)	£2,744,000
No. of staff at 30th June, 1969	1,026
Capital Investment at 31st December, 1968:	
Land	£20,000
Buildings	£2,156,000
Plant and Equipment	£3,350,000
Total	£5,526,000

(B) *Cost of new laboratory*

If Colworth House had to be moved to another site, we have estimated that the following costs would be incurred:

New site cost 1,000 acres at £500/acre	£500,000
Cost of replacing existing buildings and services	£6,000,000
Transportation costs	£100,000
Cost of transferring 1,000 staff £350 each	£350,000
Total (say)	£7,000,000

To the above total we would have to add the costs of disruption of staff for six months, and we would have to credit the amount realised on the sale of the present site.

(C) *Cost of sound proofing*

To reduce noise levels within Colworth to anything like an acceptable level, sealed double glazed windows and complete air conditioning would be necessary. We have prepared the following estimate based on figures available to us for the cost of soundproofiing Comet House at Heathrow London Airport:

Total capital cost of soundproofing	£3,300,000
Total annual running cost	£60,000
Service modification	£50,000
Total	£3,410,000

In addition to the above we would have to face the loss of effective time by staff during the installation period and we estimate that this would represent about £1,000,000.

Details of costs are given in the Table below.

Interference with animal research

Siting the airport at Thurleigh would affect three aspects of animal research at Colworth; noise would interfere with animal production, disease would be much more readily transmitted to experimental animals from the increased human population, our Home Office Licence may be withdrawn.

(A) *Effect of noise on animals*

To obtain optimum production from animals, they must always be handled quietly and gently and not be subject to external disturbances or stress. The absence of production loss (e.g. eggs or milk) however, does not mean absence of stress. Even short upsets can cause stress which will adversely affect the control animals used in our experimental work.

Type of building	*Treatment*	*Unit cost (£/sq. ft)*	*Total area (sq. ft.)*	*Total cost (£'000)*	*Remarks*
Lab. buildings already double glazed and air conditioned	D+ modify glazing	2	75,000	150	New biology and bacteriology.
Lab. buildings	A	10	120,000	1,200	
Office buildings	A	10	16,000	160	
Pilot plant	A	10	36,000	360	
Main house	B	10	23,000	230	Structural problems likely.
Workshops	D	2	28,000	56	
Animal areas on farms	A	8	114,000	912	Doubtful if practicable.
Estate houses	C	3	30,000	90	
Wooden buildings	A	10	12,500	125	Doubtful if practicable.
	Total		454,500	3,283	

Legend: A—Roof insulation, double glazing and air conditioning.
B—Double glazing and air conditioning.
C—Roof insulation and double glazing.
D—Roof insulation only.

Printed image digitised by the University of Southampton Library Digitisation Unit

(B) *Effect of noise on egg production*

Hamm[1]* conducted field tests after claims against the U.S. Army and concluded that air reconnaissance missions produced stress in laying birds. Egg development was unaffected but the birds were kept from feed and water by the aircraft which caused loss of egg production. Dawson and Stiles[2] showed that frightening birds significantly decreased egg shell thickness and abnormal sounds caused an increase in blood spots in the egg yolk.

(C) *Effect of noise on milk production*

There is well substantiated evidence that intermittent aircraft noise completely upsets milk production in cows. The cow is trained to respond to a certain dairy routine e.g. she will associate placing food in the manger with the act of milking. The external environment is observed by the senses of the cow which then activates her hormone system to produce milk. Varying degrees of excitement, sudden noise, or any interference with the routine environment will cause the cow's milk supply to be withheld. This withholding of milk would be caused if intermittent aircraft noise were to penetrate cowsheds. As all our dairy feed experimental work depends on measurement of milk production and quality, it would not be possible to continue such work here if the site became subject to continuous, intermittent or variable noise patterns.

(D) *Effect of noise on pigs*

Pigs which were subjected to aircraft noise experienced rapid increases in heart beat rate which returned to normal when the sound ceased.[3] There was no evidence of effects on growth rate, feed intake, feed efficiency or reproduction. However, previously exposed animals were affected when subject to further noise.

Noise will therefore cause stress in cattle, pigs and poultry. It will completely upset milk production in cows, affect egg production and adversely affect any control animals used in experiments. Such noise would arise from the increase in motor traffic and from urban development in addition to the aircraft noise.

(E) *Effect of airport on animal health*

Ancillary development around the airport is likely to increase the population to 380,000. Colworth estate would thus be close to or surrounded by urban development. This site was chosen because it was quiet and isolated and dairy cows and stock used for sensitive experimental animal husbandry techniques could graze without being subject to stress or exposed to transmissible disease from the surrounding area. No hunting is allowed over the land and public footpaths will probably in future be diverted to keep walkers clear of animal units. The uninhibited passage of people through a neighbouring farm on to one of our animal units would break our isolation and render us liable to outbreak of communicable disease. A foot and mouth disease outbreak for example would disrupt many experiments and tests. Professor G. Wibberley (adviser for Milton Keynes) has stressed that it is not possible to prevent indiscriminate trespass by such an urban population onto farmland. Such trespass would invalidate our work by causing stress to animals and by communicating diseases such as foot and mouth disease.

(F) *Home Office licence*

All animal work on the site is conducted under Home Office licence. Animals under experiment must not be observed by members of the general public or non experimental staff. If trespass is inevitable, it is probable the Home Office would withdraw all permission for experimentation at pasture, which could eliminate half the sow experimentation, all outdoor sow and litter work, all cattle grazing and some calf and rearing work. This would prevent the execution of a planned experimental programme.

The effects of aircraft noise, the effects on health and possible loss of Home Office Licence would make it impossible to pursue an Animal Research Programme.

4. Biology Division

(A) *General*

Before new Unilever products or ingredients are marketed, information must be provided to satisfy Unilever that the product is safe for human use and also to make sure that the product conforms with Government regulations of the country in which the product is to be sold. Biology Division has to provide this information which, in the main, is obtained by observing the effects of such products or ingredients on laboratory animals, chosen to serve as satisfactory models for human beings. These animals must be of a desired species, specially bred for the purpose, and maintained disease-free.

Rats are used for toxicity tests, digestion, absorption and metabolism of food additives, reproduction tests, and carcinogenicity studies. They are also used for behaviour studies and skin assessments. Mice are used for carcinogenicity studies, rabbits for skin tests and guinea pigs for immunological work and inhalation toxicity.

The general toxicity tests undertaken are to meet Unilever safety requirements and, in particular, those of the Pharmacology Panel of the Food Additives and Contaminants Committee of the Ministry of Agriculture, Fisheries and Food. Government Regulations may, as a result, be altered or extended.

(B) *Animal environment and testing*

The Biology building was designed to maintain a carefully controlled environment for laboratory animals. Humidity and temperature can be controlled to close limits, air filtration ensures airborne infection is minimised, and routine maintenance in animal rooms is minimal to avoid disturbance.

Any alteration in environment is likely to affect test data such is the sensitivity to any small deviations from standard. Even the use of fly sprays, for example, may adversely affect the animals and invalidate results. Some of our tests take two years to complete. If such a test is interrupted or subject to

* See bibliography p. 2159.

Printed image digitised by the University of Southampton Library Digitisation Unit

outside interference for any reason, the time taken to complete it will be very much longer.

(C) *Effect of noise on laboratory animals*

Noise exposure can act through the central nervous system causing increased production of hormones, which result in changes in certain blood elements, organs and tissues. Such changes can be used as a measurement of the effect of noise in producing stress.[4]

Mice, exposed to loud sounds for short periods (100 dB) can have seizures. Also short term noise exposure can affect the level of certain blood elements.[5] As measurement of these particular elements is vital in certain of our experiments, exposure to such noise could give invalid results.

The effect of noise on rabbits and rats can also alter diet response patterns[6] so that more fat is laid down in certain arteries and there is a change in plasma cholesterol. Such effects would invalidate tests based on feeding materials in the diet.

In a study of long term noise stress[7] changes were observed in the animals which, even 21 days after the end of the experiment, were still evident. In toxicity testing weights of animals during the course of the test, as well as the weights of their organs after the test, are of vital importance. It has been shown that these are altered as a result of noise.[8] Rats, subjected experimentally to noise, have also been shown to reject their young, between birth and weaning.[9]

(D) *Conclusion—effects on work of Biology Division*

There is ample published evidence that noise stimulus can affect experimental laboratory animals. Rats, rabbits, guinea pigs and mice have all been affected. It could be expected that the cost of our breeding programme would rise if high frequency noise reduced litter size. The data achieved over years of careful recording and research with our standard laboratory animals would largely be invalidated.

Experiments would become very complicated with a new environmental factor with possibly variable response in species superimposed upon our test regimes. Fresh consideration would have to be given to animal behaviour studies as they depend upon complete sound proofing. New intake of species such as guinea pigs would present special problems of acclimatisation.

5. Effect of pollution on crops

Pollution from aircraft and motor cars would produce many substances toxic to higher plants: oxides of nitrogen and sulphur dioxide from fuel additives, compounds formed by reaction with ozone in sunlight which are highly toxic (e.g. to green dwarf beans), hydrocarbons which affect plant development, unknown substances which kill micro-organisms (Night Effect, Porton). The effects of these pollutants on Colworth work are likely to be:

(1) Random growth and development would increase the error in crop trials.

(2) Work in greenhouses would be seriously affected because they are difficult to air condition.

(3) Sterile work, growth cabinets and tissue culture work will require expensive air conditioning plant.

The pollutants listed above can cause leaf scorching and bronzing and growth inhibition on higher plants. Certain work at Colworth with brussels sprouts suggests that present levels of pollution can already be detected and no increase can be tolerated.

6. Effect of vibration on instruments

The effect of aircraft noise and vibration is difficult to determine. Vibration would probably affect instruments with delicate balancing systems, for example galvanometers. The high resolution mass spectrometer would probably be most seriously affected. In the past, Associated Electrical Industries Ltd. have solved this type of problem by floating the instrument concerned on an air pad and concrete plinth. If sufficient vibration is transmitted through the air or building structure this would not solve the problem. The Flavour Blender may have to be moved because operatives need complete quiet for its accurate operation.

Radio frequency transmissions from the airport may cause trouble with the NMR spectrometer.

7. Effect on drainage

Large concrete areas such as landing strips will produce an excessive run off of rainfall, some of which could be diverted to the land at Colworth House. The most serious effect would be the run off of fuels, oil, etc. into the River Ouse causing considerable damage to the river life and to the water supplies derived from the Ouse. Water supplies in the area of Colworth House are already fully utilised and certainly could not deal with any such new difficulty.

8. Effect on personnel

It has been our experience that the scientists who work in Research Laboratories very much prefer to work in pleasant rural areas rather than in built up urban areas. Both in their working and leisure hours they prefer the quiet of the countryside to the noise of the town. There is a shortage of first class scientists in this country, and those who are available can very much pick and choose where and with whom they are prepared to work. The great attraction of Colworth House at the present time to the scientists employed there is its quiet rural situation, which gives an almost ideal set up for constructive thought, and pleasant working conditions under which the scientist can give his best, and in addition he can have a home within a reasonable distance of his work where he and his family can live in pleasant and peaceful surroundings. This applies particularly to what I may call our top grade scientists, without whom the Research Laboratory could not function, but it also applies possibly to a lesser extent to our other employees in less senior positions. If the proposed new airport is sited on the originally suggested position at Thurleigh, our main building would be in the NNI 60 band, and if it is sited in the alternative suggested position the main building would be in the NNI 40 band. In either case this will give a degree of noise over

Printed image digitised by the University of Southampton Library Digitisation Unit

the general area of Colworth House of an unacceptable degree to the general public, and even more unacceptable to the type of person who we engage as our top scientists. Even though sound-proofing may be done on certain of the laboratories and other buildings reducing the noise level, this would not entirely remove the disturbance to working conditions inside such buildings and it would of course do nothing to improve the conditions when the scientists are working in the fields or in such farm buildings as are incapable of being effectively sound-proofed. It is well known that the effect of noise on staff is to cause annoyance, influence their health, and interfere with communications between them, and that this has a detrimental effect on efficiency of output. So far as senior scientists are concerned engaged on work which demands great concentration, decision-making and a high level of intellectual activity throughout the whole working day, the effect on them of a constant series of intermittent noises caused by the taking-off and landing of aircraft would be to make their performance sluggish and cause such a deterioration in the standard of their work as to make it impracticable for them to carry on effective research under such conditions. Our staff would also be faced with an enormous change in their home conditions because the surrounding area would be changed from a quiet rural area into an extremely noisy urban area. We are certain that this change in working and home conditions would not only mean a loss of effectiveness in the work of our staff but also that a considerable number of existing staff would find the condition unacceptable and would as opportunity arose leave our employment and move to other employment where their working and living conditions were more acceptable to their tastes. So far as recruitment of new staff is concerned, we consider that with the opportunities available to the type of senior scientists we require, it would be virtually impossible to get them to come to Colworth House and accept the changed working and living conditions which would arise as a result of the new airport. We feel that we would also be seriously affected in retaining and recruiting non-technical employees who may not be affected to the same degree by the noise and urbanisation of the district, but who would find that the airport offers employment at salaries which we could not afford to equal. Certainly at first there would be a shortage of available local labour required at the airport, and we believe that the airport once established would be bound to offer to pay such salaries as would secure them the labour they require, which could only mean that other employers of labour in the district would suffer. It is our considered view that quite apart from the effect of noise, vibration and air pollution on the effectiveness of the work carried on at Colworth House, the change in conditions brought about by the new airport on our employees, particularly on our most senior and junior staff, would mean that it would be impossible for us from a personnel point of view to continue to carry on at Colworth House our Research Laboratory.

15. References

1. Hamm, D. *Poult Sci. 46* 1267 (1961).
2. Stiles, P. G. & Dawson, L. E. *Poult. Sci. 40* 187 (1961).
3. Bond, J., Winchester, C. E. *US Ag. Tech. Bul.* p. 1280 1 (1963).
4. Anthony, A., Ackerman, E. J. *Acoust. Soc. Amer. 31* (11) 1430 (1959).
5. Frings, H. W. & Frings, M. *Behaviour 5* 305–17 (1953).
6. Fredman, M., Byers, S. O. & Brown, A. E. *Amer. J. Physiol. 212* 1174 (1967).
7. Geber, W. F. Anderson, T. A. van Dyne, B. *Arch. Environ. Health. 12* 751 (1966).
8. Geber, W. F. Anderson, T. A. *Comp. Biochem. Physiol. 21* 273 (1967).
9. Farris, E. J. Yeakel, E. H. *Anat. Rec. 89* 325 (1944).

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Unilever Ltd.

SUBMITTED BY MR. J. K. D. DOW*

I am a Bachelor of Science of the University of Edinburgh and a Member of the Royal College of Veterinary Surgeons. I live at The Old Mill, Sharnbrook and I am Head of the Animal Sciences Group at Colworth House.

1. As Head of Unilever's Animal Sciences Group my objections to the suggestion that the third London airport be sited at Thurleigh rest principally on three considerations: the effect of noise interference on normal animal production hence interfering to an intolerable extent with the parameters of measurement used at some point in all our experiments, the maintenance of herds and flocks free at all times from interfering communicable disease necessary to our animal experimentation, and our continued authority derived under Home Office Licence to conduct our experiments at all.

Experimentation

2. The tenets of good stock husbandry were formed from experience dated back to the inception of animal domestication. Every generation of stockmen have known and understood the need for gentle, quiet, animal handling free from any form of alarm if optimum production is to be obtained. Veterinary surgeons when interfering medically, as in herd testing for tuberculosis observe the same rules both for ease of treatment application and for subsequent performance of the patients. The Brambell Committee (1964) set up to examine the conditions under which modern intensive livestock live rejected the thesis that even "normal" production is conclusive evidence of the absence of stress. It considered that the emotional experiences of animals include rage, fear, apprehension, frustration and pleasure and it accepted that as with humans no harm remained from brief experiences, but that persistence of these emotions over a prolonged period was not tolerable or humane on health grounds. Unfortunately even short upsets are not tolerable under the ideal experimental conditions we continually try to attain.

3. Though information on the effects of high intensities of sound on most domestic animals is lacking, a search of literature over the last decade has yielded some experimental evidence.

4. Following extensive claims for damage by poultry producers against the U.S.A. army after manoeuvres, Hamm of Clemson University, conducted a field investigation over two years 1963 and 1964. He concluded that air reconnaissance missions produced stress in laying birds which *per se* did not affect egg development, but by keeping birds from feed and water resulted in egg production loss.

5. Stadelman, State College of Washington had already in 1957 conducted a series of experiments using tape recordings of aircraft noise in poultry production houses, following the resistence of poultry producers to proposals to create new airfields in and near centres of poultry production. His evidence was inconclusive, probably because in his words "four people had access to the pens and there was some alternation in labour. The birds might have become more familiar with changing conditions than would be the case on a commercial farm."

6. In a series of experiments at Michigan State University (1961) on the effect of physical disturbance, sound and light on the incidence of blood spots and other egg quality factors, Stiles and Dawson showed that frightening birds significantly decreased egg shell thickness. Thin egg shells are already a major industrial problem in this country costing the poultry producer an estimated £9 million per annum. Dawson and Stiles also showed birds subjected to abnormal sounds displayed a significantly increased incidence of blood spots in the yolk.

7. Excitement of the senses, either by physical or psychological means, is transferred to result by mediation of the hormone and nervous systems, and much of our lack of information stems from the little-published work available in this field as it relates to animal production parameters. Fortunately in the case of milk production there is well substantiated evidence from many sources.

8. A fully developed udder secretes its milk in response to hormone stimulation. The initiation and maintenance of lactation depends mainly on anterior pituitary prolactin, but adrenalin, thyroxine and other hormone secretions are also involved. This balanced hormone system is reflexly activated by any or all of the senses, which are themselves stimulated by environmental activity. In practice the cow is trained to respond to a certain dairy routine, e.g. she associated placing food in the manger with the act of milking. This stimulates the anterior pituitary gland to secrete oxytocin into the blood stream. Forty-five seconds later the circulating blood reaches the udder, stimulates the smooth muscle cells to contract thus squeezing the alveoli, and forces the milk down into the milk ducts. Varying degrees of excitement, sudden noise, unusual routine or indeed any interference with the routine environment which can be perceived by the senses gives rise to partial or complete blockage of the oxytocin supply; and milk is partially or wholly withheld.

9. This is the physiological basis underlying all the tenets of good dairy husbandry. Every action asso-

* See also p. 2299.

Printed image digitised by the University of Southampton Library Digitisation Unit

ciated with good milk production must be undertaken in a quiet and strictly routine manner so that only predetermined stimuli such as the sight of food and sound of feeding become associated by the cow with the act of milking.

10. The attached graph of Miller and Peterson, *Journal Dairy Science* 24: 225, 1941, illustrates their clinical findings.

11. This is the predictable effect we can expect if aircraft noise intermittently penetrates cowsheds. As the whole of our dairy feed experimental work depends upon measurement of milk production and quality, it would obviously be impossible to continue Unilever's dairy cattle research at this centre if it became subject to continuous intermittent and variable noise patterns.

12. In the case of pigs the best experimental evidence lies in a group of experiments by Bond et. al. at the Agricultural Research Centre, Beltsville (1962–63). Pigs were exposed to reproduced aircraft noise up to a maximum intensity of 135 db. No evidence was found that growth rate, feed intake or feed efficiency or reproduction was affected by this noise. Heart rate was assumed to be a more sensitive criterion of stress and it increased rapidly on exposure to loud noise and returned to normal on cessation. A significant intensity effect was found however when previously exposed animals were exposed to sound intensities of 120, 130 and 135 db.

13. From the evidence available in these cattle pig and poultry studies I am bound to conclude that it will not be possible to continue our experimental work if an airport is sited within one mile of our eastern boundary as is now proposed.

Health

14. We are told that to operate the third London airport, a staff of 65,000 will be required and that ancillary development would involve a population of 380,000. This means that the Estate will be partly surrounded by, or close to, urban development. Colworth was chosen as a quiet isolated part of the country on which experimental crops could be grown unaffected by trespassers, and on which dairy cows and young stock used under experimental husbandry techniques could graze without being subjected to stress or exposed to transmissible disease from the surrounding area. To maintain these conditions we came to an agreement with Lord Luke and the Oakley Hunt when we purchased Colworth that no fox hunting would be permitted across our land. This agreement has been wholly maintained.

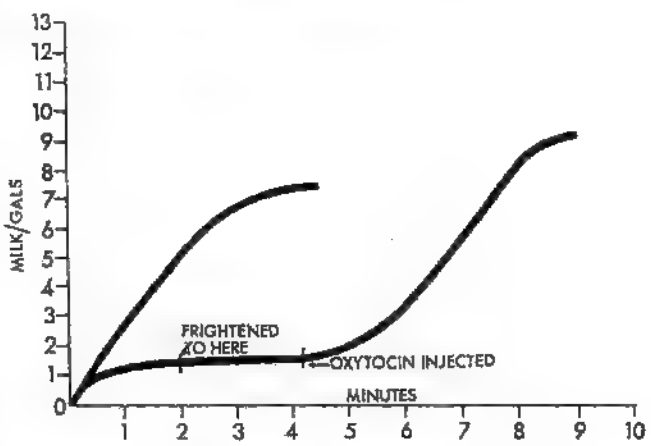
15. Further discussions are taking place now with Bedford County Council under the Countryside Act (1968) to ensure that "public footpaths" are diverted to coincide with hard roads, and walkers are kept well clear of animal units. The uninhibited passage of people through a neighbouring farm and then onto one of our animal units would completely break our isolation, and render us liable to an outbreak of communicable disease. So far our precautions have been effective but our estimates of cost based on loss of animals and experimental material and time when we faced this situation during the Foot and Mouth disease outbreak last year was £100,000 approximately per outbreak.

16. With a large urban population on our doorstep it will be impossible to prevent indiscriminate trespass. Professor Gerald Wibberley who is advising the Development Council for Milton Keynes has stressed the impossibility of preventing indiscriminate trespassing by urban populations to farmland adjacent to their homes. Though the Development Council has plans to use barriers like "M" roads, railways, rivers and factories to frustrate the ravages of trespass etc. Professor Wibberley thinks that a measure of "organised trespass" should actually be arranged for on farm land adjacent to the perimeters. Situated as near to the urban explosion as we would be, indiscriminate trespassing on a large scale would be inevitable and experimental work both with crops and grazing stock would be at unacceptable risk. This would negate the whole purpose of choosing Colworth Estate for our work.

The Home Office

17. All animal experimental work on this site is conducted under licence from the Home Office. Plans of new buildings, service roads, and adjacent fields were submitted to the Home Office to ensure that animals under experiment when outside their experimental houses will not be seen by the general public, or even by non-experimental staff. If trespass is to be accepted as inevitable, it is probable that the Home Office will withdraw all permission for experimentation at pasture. This would eliminate half of our sow experimentation, all outdoor sow and litter work, all grazing cattle work and some calf and rearing work.

18. Such a situation would make a nonsense of any well-rounded experimental programme, we could not meet the experimental needs of our business, and there would no longer be any point in having an animal experimental unit at Colworth.



The upper curve presents the rate of milk following proper stimulation one minute before milking began. The lower curve shows results when the cow was frightened by unusual noises before and two minutes after milking began. Following the administration of oxytocin the milking progressed normally.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Unilever Ltd.

SUBMITTED BY MR. J. M. PHILP*

I am a Member of the Royal College of Veterinary Surgeons and I live at Upper Farm, High Street, Sharnbrook. I am Head of the Biology Division of the Animal Sciences Group at Colworth House.

1. Unilever Ltd., has wide interests and sells an extremely varied selection of products. Largely as the result of research in Unilever Laboratories some products will contain new chemicals or be subjected to new processing methods. Before such products are marketed, we need to know that they will not present any undue hazard in use. For all product groups, we as a Company need to know this, but in addition various governments have regulations to which we must conform if we wish to sell in the appropriate countries.

2. Biology Division at Colworth House has the responsibility of obtaining information relevant to the safe use of Unilever products sold as foods, food additives, toiletries, detergents or other chemicals. The Division is staffed by scientists and graduates in human and veterinary medicine drawn from various disciplines such as biology, chemistry, biochemistry, physiology, pharmacology, histology and pathology. There are 135 members of staff, of whom 25 are University graduates and 33 highly qualified research personnel.

3. It is not desirable nor is it in many cases practicable to test new materials directly on the human therefore we observe the effects of products and ingredients in laboratory animals chosen for similarities of various physiological aspects to the human. Adequate animal experimentation can often lead to more specific examinations in a limited number of people. It will be appreciated therefore that the entire work of the Division rests on the availability of laboratory animals of the desired species bred for the particular purposes of the Division and maintained free from disease and in such a way as to make them satisfactory models for the human being.

4. To meet our own requirements and those of the various government agencies, the principal of which is the Pharmacology Panel of the Chief Medical Officer's Committee acting as advisers to the Food Additive & Contaminants Committee of the Ministry of Agriculture, Fisheries & Food, we carry out both standard investigations into systemic and dermal toxicity and also a programme of background research designed to increase knowledge of ultimate benefit to mankind. The Division therefore has programmes of research in the fields of immunology, carcinogenicity, absorption, digestion and metabolism of food additives, the pathology of rats, rabbits, guinea pigs and mice, the behaviour of animals and the breeding performance in different environments.

5. **Present environment and relevance to experimental work.**

When the biology building was designed particular attention was paid to features which would enable laboratory animals to be maintained within a carefully controlled environment. Full air conditioning to maintain temperatures within plus or minus 2°F with different temperatures for different species of animals. Particular attention was paid to the cooling capacity so that the system would cope with peaks of summer ambient temperature. Humidity control was also installed to maintain 55–60 per cent relative humidity. In addition the building was well insulated against heat loss and heat gain. With very special design of louvres in front of the windows on the south aspect. Internal fabrics were chosen to reduce routine maintenance in order to avoid disturbance in animal rooms. Stand-by equipment was provided to avoid interruption in the vital mechanical services to the building. Air filtration to a degree higher than used for personnel was installed to avoid airborne infection.

6. All these special requirements added to the cost of a conventional 45,000 sq ft laboratory building and formed a large part of the total cost of £600,000. These various requirements were considered necessary for the type of animals and laboratory work to be carried out in the new building.

7. As stated earlier, the work of the Division depends on the laboratory animals. The principal specie is the rat and a strain is employed which was originally obtained in 1935 and which is now maintained after Caesarian derivations as a pneumonia-free strain of Wistar rat. The rats are used for a variety of experimental purposes, some of which are as follows:

Toxicology tests.

Study of digestion absorption and metabolism of food additives.

Study of reproduction.

Teratogenicity investigations involving identifying changes in the development of the foetus.

Carcinogenicity tests lasting 2 years.

Behavioural studies.

Skin assessment work.

8. In many of these studies during life organ function is studied and at death pathological examination is made after all the organs in the body have been weighed. Thus any additional environmental effect on organ function and/or organ weight would be a significant factor.

* See also p. 2299.

Printed image digitised by the University of Southampton Library Digitisation Unit

9. Over the years, much thought and research has gone into work designed to increase the sensitivity of the animal tests, and it is now possible to measure quite small deviations from the standard. Any new stimulus in the environment is quite likely to affect the test data. In the past, it has been policy not to allow the use of conventional fly sprays, as even minute amounts of chemicals in the atmosphere will affect the animals over 2 years.

10. The pathology of this special strain of rat has been studied for several years to enable experimental data to be correctly assessed. Observations have been made on the physiological enlargement of the liver during pregnancy and lactation, using techniques of biochemistry, light microscopy, electron microscopy and radio active tracer studies to allow comparison between physiologically produced enlargement and that which may occur during tests of various chemicals.

11. Breeding statistics are also maintained as they are important in comparing test data obtained during reproductive studies.

12. The second main species of animal is a strain of C 57 Black Mouse which is bred on the premises and used almost exclusively for carcinogenicity studies which last for a minimum of 80 weeks. Here again, maintaining records of the standard response of the animals to their environment, and the pathology of the untreated animal provides extremely valuable data.

13. The third principal animal species bred on the premises is the New Zealand White Rabbit used for studies in dermal toxicity and the examination of the effect of products on the eye.

14. The requirement for guinea pigs is so great that in addition to breeding to provide a stand-by nucleus, additional animals of a special strain are purchased every month. Both strains are used for immunological work and inhalation toxicity. In such studies, various cells in the blood such as the lymphocyte and eosinophil play a significant part in the body's reaction to stimulus. Any change in the level of circulating eosinophils due to causes other than experimentation would be detrimental to the tests.

15. **Effect of noise on laboratory animals**

According to Anthony (1963)* rats can produce and hear sounds above those audible to humans. Rodents hear best at high frequencies (10–40 kc) whereas man is more sensitive to sound in the 1–4 kc region of the frequency spectrum. Apart from this the pattern of physiological changes elicited by noise is the same in laboratory animals as in humans. Noise exposure is associated with increased adrenocortical activity which, in turn, results in a depression of the number of circulating blood eosinophils. This has been reported in such animals as rats, mice, rabbits and also in man. Noise acts through the central nervous system to cause an increased production of hormones by the pituitary gland. This results in certain changes in blood elements, lymphatic organs and other tissues which can be measured and used to assess the severity of noise as a stress agent. (Anthony et al 1959.)

16. Anthony recommended for animal rooms that the acoustical criterion curve corresponding to the SIL–60 curve (or NC 55–60 level) be adopted as suitable for animal houses. The SIL curve is the speech interference level and NC is noise criteria as adopted by Beranek (1960).

17. Mice have been used in experiments on sound stimulus. For example, 100 db for short periods. It has been found that certain mice have clonic seizures in response to sound of the magnitude of an elevated train. Different strains could be developed depending upon the response to noise (Frings and Frings 1953). It is possible to have some strains of mice which do not show great response to sound (Anthony and Ackerman 1955).

18. When Fring and Fring compared 2 such strains during short term noise exposures, the levels of eosinophils was reduced to a varying degree in each strain. The reduction was greater with successive bursts of noise. The eosinophil response returned to normal in 24 hours, but in some cases the convulsions induced by noise were fatal.

19. Friedman et al (1967) have shown that the rat and rabbit can respond to a continuous sound stimulus, having an intensity of 102 db and an intermittent sound stimulus (200-cycle square wave duration 1 second intensity 114 db). It was shown that there was a relationship between diet and sound stimulus leading to a lipid abnormality.

20. The same authors showed that rabbits with the same diet exposed to the same stimulus acquired an increased deposition of lipid along the course of the iridic arteries accompanying a rise in plasma cholesterol.

21. Other authors have also demonstrated an increase in the adrenal cortico-steroid (hormone) secretion following upon noise stimulus (Henkin and Knigge 1963) (Duncan 1957).

22. In a study of chronic noise stress Geber et al (1966) used a relatively low sound level of 83 db (range 73–93 db), a level which would be expected to be encountered in many present day situations. Even at this level of sound stimulus they showed decrease in the eosinophils and adrenal ascorbic acid. The results at the end of a prolonged experimental period of stress (21 days) still showed a response to the stress. In a further paper, Geber and Anderson (1967) it was shown that in the rat and rabbit exposed to the same low level of stimulus (83 db frequency 20–25·00 c/s) the heart in each species was enlarged. They also found changes in the weight of the body and in the weights of other organs. Adrenals and kidneys of older rats were increased, but in the younger rats organ weights were slightly decreased.

23. Ogle (1969) has shown that high frequency sound 20 kc/s giving an intensity of 98 to 100 db affects the output and composition of rat urine. When exposed to low frequency sound the hormone, oxytocin, is released.

* See bibliography p. 2164.

Printed image digitised by the University of Southampton Library Digitisation Unit

24. There is some evidence that rats subjected experimentally to noise are more likely to reject their young during the critical period between birth and weaning, although fertility has not been shown to be affected. (Farris and Yeakel 1944.)

25. Experience within Biology Division has shown that low frequency noise such as pile drivers or pneumatic drills gave no change in animal breeding, but when animals were subjected to higher frequency noise such as metal to metal or demolition work, an effect was shown on the numbers of rats coming to weaning.

Conclusion

26. There is ample evidence in the literature that noise stimulus can affect experimental laboratory animals. Rats, rabbits, guinea pigs and mice have all been affected. It could be expected that the cost of our breeding programme would go up if high frequency noise reduced litter size. The data achieved over years of careful recording and research with our standard laboratory animals would largely be invalidated.

27. Experiments would become very complicated with a new environmental factor with a possibly variable response in species superimposed upon our test regimes. Fresh consideration would have to be given to animal behaviour studies as they depend upon complete sound proofing. New intake of species such as guinea pigs would present special problems of acclimatisation.

References

Anthony A. (1963). Criteria for acoustics in animal housing. *Lab. animal care* **13,** 340.

Anthony A., Ackerman E. and Lloyd J. A. (1959) Noise stress in Laboratory rodents. (1) Behavioural and endocrine response of mice, rats and guinea pigs. *J. Acoust. Soc. Amer.* **31,** (11) 1430.

Bernaek L. (1960) Editor. *Noise Reduction.* McGraw-Hill Book Company N.Y.

Frings H. W. and Frings M. (1953). The production of stocks of albino mice with predictable susceptibilities to androgenic seizures. *Behaviour* **5,** 305–17.

Anthony A. and Ackerman E. (1955) Effects of noise on the blood eosinophil levels and adrenals of mice. *J. Acous. Soc. Amer.* **27,** 1144.

Henkin R. I. and Knigge K. M. (1963) Effects of sound on the hypothalamic-pituitary-adrenal axis. *Ameri. J. Physiol.* **204,** 710.

Duncan I. (1957) The effect of audiogenic seizures in rats on adrenal weight, ascorbic acid cholesterol and corticosteriods. *J. Biol. Chem.* **229,** 563.

Geber W. F., Anderson T. A. and van Dyne B. (1966) Physiological responses of the albino rat to chronic noise stress. *Arch. Environ. Health,* **12,** 751.

Geber W. F. and Anderson T. A. (1967) Cardiac hypertrophy due to chronic audiogenic stress in the rat (rattus norvegious albinus) and rabbit (lepus cuniculus). *Comp. Biochem. Physiol.* **21,** 273.

Ogle C. W. (1969) The effect of high frequency sound stimulation on plasma oxytocic activity in rat. *Life Science* **8,** 163.

Farris E. J. and Yeakel E. H. (1944) Breeding and rearing of young by albino rats subjected to auditory stimulus. *Anat. Rec.* **89,** 325.

*Friedman M., Byers S. O. and Brown A. E. (1967) Plasma lipid responses of rats and rabbits to an auditory stimulus. *Physiol.* **212,** 1174.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Cambridge University Gliding Club

SUBMITTED BY DR. A. W. F. EDWARDS*

The Cambridge University Gliding Club believes that the siting of the third London airport at Thurleigh would adversely affect its operations, for the reasons given below.

Details of the history, purposes, and present activities of the Club are given in the Club's proof submitted to the Commission in connection with Nuthampstead (document number 55).†

Our assessment of the effect of Thurleigh is based on the assumption that our two sites, Cambridge and Duxford aerodromes, would be outside the control zone but within the terminal control area of Thurleigh. In view of the excessive size of other control zones, notably Manchester, this is, from our point of view, a very optimistic assumption.

Soaring flights would be severely restricted, and cloud flying made impossible, by the rules of the terminal control area. The influence of the cloud flying prohibition would be felt by our members even away from the area, because they could not receive the proper training.

In addition to the immediate effect of the terminal control area, a large control zone to the west of Cambridge would effectively block our chief cross-country routes. East Anglia is not suitable for long cross-country flights because the proximity of the sea means that, on the best gliding days inland, the area is covered with stable sea air. Our main routes for distance flights, and for triangular flights of more than 200 kms, are to the west. To the south-west the London control zone is an impassable obstacle, and to the north-west the fen country is a natural obstacle owing to the poorness of the soaring conditions there.

* See also p. 2300.

† *Papers and Proceedings* Vol. IV. Stage II: Local Hearings. Nuthampstead. (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the College of Aeronautics Gliding Club*

The three sites named are considered together because the controlled airspace requirements for the new airport are not known in detail and, therefore, two situations relative to controlled airspace are considered:

(1) Cranfield being situated inside a control zone.

(2) Cranfield being situated a short distance from a control zone, under controlled airspace at low level.

It is almost certain that (1) will apply if the airport is sited at either Cublington or Thurleigh and unlikely to apply if it is sited at Nuthampstead, unless a control zone as large as that at Manchester is eventually required. It is equally almost certain that (2) will apply if Nuthampstead is chosen.

It is perhaps relevant at this stage to consider the removal of the Club to another site.

Unlike most clubs, only half the members are drawn from the general public, the remainder are College students and staff. Considerable assistance is given to the club by the College so that inexpensive on-the-spot training facilities are available to resident students. Three of the aircraft, including the two training two-seaters, the use of the airfield and hangarage are provided by the College.

One other club machine and several syndicate-owned aircraft are also operated by the club, the cost of operation and maintenance being borne by the club. No professional staff are employed.

Many of the students would be unable to spare the time or the money to travel to another site (thereby nullifying a raison d'etre of the club), and all the faciliites provided by the College would be lost to the club, along with many of the members, whose travelling distances would become excessive. The situation would thus become that of a few enthusiasts facing the near impossible task of finding and financing a new site with new training aircraft.

Thus we conclude that removal of the club to another site is not possible and that the provision of alternative gliding facilities in the area is an extremely remote possibility.

1. Cranfield being sited inside a control zone

1.1. It is almost certain that gliding from Cranfield would be prohibited.

1.2. All flying would be under the control of the air traffic services of the airport. Although gliders are amenable to control in the sense that the pilot may avoid certain areas, they are not amenable to outside control directing them to fly at given heights and bearings and their low flying speed makes it impossible for them to vacate an area quickly. Under these circumstances it is unlikely that glider flying would be permitted within the zone.

1.3. It is possible that a dispensation would be given to gliders provided they were confined to a small area of the zone and did not exceed a stated altitude. This would probably be 1,000 to 1,500 feet. Modern training methods utilise aero-tows to 2,000 feet for much of the flying; at Cranfield the remainder of the launches are by motor-tow giving heights between 1,000 and 1,500 feet. The club's statistics over the last three years show that on average there are 2,000 launches per year of which an increasing proportion is by aero-tows. In 1969 this proportion has already reached 60 per cent of launches. Whilst the bulk of training can be carried out (albeit inefficiently) from launch heights of 1,000 feet it is unsafe to initiate some exercises from this height and it would therefore be impossible to train safe pilots with this limitation.

Soaring and soaring instruction would of course be ruled out and no clubs can exist for long on training alone without being permitted to indulge in recreational and competitive flying.

2. Cranfield being situated a short distance from a control zone, under controlled airspace at a low level

2.1. With the existing regulations, the degree of restriction would depend on the type of controlled airspace. Airways are permanent IFR, control areas are not. Since, as previously stated, gliders are not amenable to outside control, they are normally barred from entering airspace which is permanent IFR. However, at this time there is a dispensation allowing gliders to cross airways in VMC but it should be noted that gaining height by circling is not allowed and that in any controlled airspace the maximum operating height is effectively limited to 1,000 feet below cloud base in order to stay in VMC.

2.2. If the controlled airspace is an airway, this will place a ceiling on operations at its lower limit. If this is 1,500 feet amsl the restrictions will be as in 1.3 (Cranfield is 362 feet amsl). If the lower limit is 2,500 feet amsl, normal training could continue but soaring would be impossible. Aerobatic flying would also be severely restricted since inexperienced pilots are not normally allowed to initiate manoeuvres below 2,500 feet above ground.

At 3,500 feet amsl some restricted soaring would be possible, but the critical early stages of a cross-country flight would be difficult for a beginner since this would probably allow him less than 10 minutes to find a second usable thermal. (Beginners are normally told to forsake soaring and transfer all their attention to the landing phase when they descend to 1,000 feet above ground), away from home.

2.3. If the controlled airspace is a terminal control area, the upper limit for soaring under existing regulations would be 1,000 feet below cloudbase. On many days this would be as severe as the airway

* See also p. 2301.

Printed image digitised by the University of Southampton Library Digitisation Unit

case. It should be noted that the lowest grade of international certificate requires a climb to approximately 5,000 feet above ground. This is not a high level qualification: over 2,300 have been issued in this country and it is a normal qualification for entry into competitions.

2.4. The existence of a large control zone with its attendant low level airways, a short distance from Cranfield, would severely restrict cross-country flying.

In conclusion, we feel that even if the club could continue operations in the restricted manner described, we would feel continually threatened. Experience has shown that the demand for controlled airspace is always increasing and that the restrictions applied to it become greater.

We are very pessimistic about the future of the club should the third London airport be built at any of the sites mentioned.

Appendix

The Sport of Gliding in Britain

Gliding is a sport of great depth which attracts to it people from all walks of life. It is not a spectator sport. Apart from the legal requirement that no one below the age of 16 years may fly solo, there are no age limits, many of its adherents carrying on beyond the age of 60. The ground activities on the flying field provide healthy exercise for the average member, yet there is room for many physically disabled people. Gliding demands team-work on the ground and self-reliance in the air; the knowledge that his safety depends on his own decision, in common with many other sports, adds spice to the pilot's environment.

The flying activities in which the average glider pilot may indulge can be divided into four categories, local soaring, cross-country flying, competition flying and aerobatics.

While "local soaring" the pilot does not deliberately put himself out of gliding range of his base, but with modern gliders this can mean that the pilot has an area of more than 2,000 square miles to roam in.

When the pilot flies cross-country, he may be aiming to reach a particular destination, or to fly a course around turning points to arrive back home, or just trying to go as far as he can. He may be trying to better his own previous performance, taking weather conditions into account, he may be trying to qualify for an internationally recognised badge, he may be trying to break a speed record, or he may just be out to enjoy himself. His skill in flying the glider and his judgment of the weather conditions, together with a little luck, will decide whether he finishes has task or has to land in a field. His boundaries are the coast and although he seldom climbs above 10,000 feet, the height record for this country is over 30,000 feet.

Competition flying is just an extension of cross-country flying, where the pilot is pitting his skill against other pilots flying the same task on the same day. Very often handicapping and complicated scoring systems are used in order that the winner shall be the best pilot and not just the luckiest, or the man with the most expensive glider.

The retrieving crew too, can help their pilot towards success, it takes skill and judgment to take the trailer to the right place at the right time, and making sure that the pilot gets sufficient sleep between tasks is not the least of their responsibilities.

Most experienced pilots occasionally indulge in aerobatics, if only to "burn off" spare height at the end of a soaring flight. The aerobatics demand skill and concentration and certainly demonstrates the pilot's ability to handle his aircraft.

Compare local soaring with fresh water sailing, competition flying with motor rallying, aerobatics with water-skiing, all with the view of the mountaineer thrown in for good measure. Yet gliding is not a rich man's sport, there are many pilots who spend less than £100 a year on their flying.

Gliding in this country is exceptionally free from legal restriction. The controlling body, the British Gliding Association, made up from representatives from the separate clubs, has created its own aircraft inspection system, issues its own Certificates of Airworthiness and its own flying regulations which are adhered to by the movement because they come from within and are believed to be in the interests of the movement.

The Association was even responsible for the glider design requirements which were readily accepted by the Air Registration Board. This lack of interference by the State is due in part to the high calibre of the people leading the movement, gliding attracts such people, perhaps even breeds such people.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Cony & Son*

My objections to the selection of Thurleigh as the third London airport, are as follows; I represent Messrs. Cony & Son, Farmers of Manor Farm, Harrold. Manor Farm is a mixed farm, with Pedigree Ayrshire Cattle and Large White Pigs, and some 400 acres of arable crops.

The farm is on high ground, within approximately five miles of the proposed site. Aircraft taking off would, by noise and fuel deposit, cause damage to breeding stock and farm management.

The house and farm cottages also being in a high position, would be subject to the noise factor, and would become untenable. Even with the limited flying at present, we have difficulty in using the telephone when there is aircraft overhead, and I consider the buildings would have to be resited to carry on farming here.

I would also draw the attention of the commission to the effect of sudden noise to the Agricultural workers. This is most frightening.

* See also p. 2301.

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Representations

Representations were also submitted by the following who did not appear, or did not seek leave to appear and are available for inspection by arrangement at the Commission's offices.

Mr. C. D. Abbott
Mr. A. E. Alleway
All Saints' Church Parish Meeting, Odell
Ampthill and District Preservation Society
Ampthill Rural District Road Safety Committee

Bedford and District Trades Council
Bedford Federation of Townswomen's Guilds
Bedfordshire Association of Parish Councils
Bedfordshire Competitive Musical Festival
Bedfordshire Federation of Women's Institutes
Bedfordshire Old People's Welfare Council
Bedfordshire Preservation Society
Professor M. Beloff
Biddenham Parish Council and Biddenham Society
Bletsoe Parochial Church Council
Bolnhurst Village (Petition)
British Communist Party, Bedford Branch
British Legion, Keysoe Branch
British Legion, Milton Ernest Branch
British Legion, Women's Section
Buckinghamshire Federation of Women's Institutes
Mr. W. W. Bush

Mrs. E. Caddick
Calverton Residents' Association
Cambridgeshire Federation of Women's Institutes
Cambridge Water Company
Mr. W. B. Carter
Civic Society of St. Ives
Clerical and Administrative Workers' Union
Clifton Improvement and Preservation Society
Corby Urban District Council
Countryside Committee

D'Arcy and Rosamunde Ltd.

Mr. W. E. Edwards

Felmersham Parochial Church Council
Flitton Parish Council
Mrs. M. Franklin

Mr. C. Galbraith
Great Staughton Parish Council
Mr. and Mrs. P. Green

Miss J. Hancock
Mr. R. A. Harding
Hertfordshire County Council
Higham Ferrers Chichele Townswomen's Guild
Hinwick Hall Residential School
Huntingdon and Peterborough Federation of Women's Institutes
Huntingdon Rural District Council

Mr. and Mrs. P. Jackson
Miss E. M. Jones
Dr. L. H. Jones

Keysoe County Primary School Parent/Teachers' Association

Mr. D. Liddon
London Gliding Club
Mr. R. Low
Luton County Borough
Luton and Leighton Monthly Meeting of the Society of Friends

Mr. D. A. Marks
Mr. A. J. Mayes
Maywood Nursery School
Mid-Bedfordshire Constituency Liberal Association
Milton Ernest Over 60's Club

National Federation of Anglers
Mr. W. F. Newland
Northamptonshire Federation of Women's Institutes
North Crawley Parish Council

Mr. D. F. Ogilvy

Papworth Everard Parish Council
Brian Parkyn, M.P.
Mr. E. M. Peaton
Potterspury and Yardley Gobion Parish Councils
Miss M. D. Prentice

Ramblers' Association
Renhold Parish Council
Roade Parish Meeting
Royal Institute of British Architects
Rural Industries Committee
Rushden Amenities Society
Rushden Urban District Council
Miss P. S. Rushton

St. Ives Rural District Council
St. Neot's Rural District Council
St. Neot's Urban District Council
Sharnbrook Parish Council
Mr. J. T. Sheard

Printed image digitised by the University of Southampton Library Digitisation Unit

Shillington Parish Council
South Bedfordshire Preservation Society
Stagsden Bird Gardens
Miss C. L. Stapleton
Stevington Village (Petition)
Mr. W. E. Strachan
Three in One Club
Three Shires Group of Congregational Churches
Totternhoe Old People's Welfare Council
Mr. W. P. Wessel
Woburn Sands and District Society
Wolverton Urban District Council
Women's Institutes:
Abbotsley
Arlesey
Beeston
Biddenham
Bletsoe
Blunham
Bluntisham St. Helen's
Bolnhurst
Bromham
Broom
Campton
Cardington
Carlton and Chellington
Clapham
Clapham Evening
Clifton
Colmworth
Dean
Eynesbury
Felmersham and Radwell
Gamlingay
Gravenhurst
Great Barford
Hail Weston
Harrold
Henlow
Women's Institutes—*continued*
Houghton Conquest
Kempston Rural
Keysoe
Langford
Little Staughton
Milton Ernest
Mogerhanger
Northborough
Oakley
Odell
Offords
Old Warden
Orlingbury
Pavenham
Pertenhall
Podington, Hinwick and Farndish
Potton
Ravensden
Renhold
Riseley
Roxton
Sharnbrook
Shillington
Silsoe
Souldrop
Stagsden
Stanwick
Stevington
Stondon
Stotfold
Sutton
Tempsford
Thurleigh
Turvey
Wharley End
Whittlebury
Wrestlingworth
Wyboston and Chawston
Mrs. M. Woodward
Youth Hostels Association

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

MONDAY 8 SEPTEMBER 1969

THE CORN EXCHANGE, BEDFORD

Before MR. A. J. HUNT

Oral evidence was taken from:

Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils
(*Mr. N. MacDermot, Mr. Cowley, Mr. L. G. Robinson, Mr. D. M. Woodhall, Mr. F. A. Sharman, Mr. G. I. W. Dunford, Mr. N. Fleming, Mr. H. P. Shallard, Dr. M. C. MacLeod, Dr. B. A. Southgate*)

Buckinghamshire County Council
(*Mr. R. N. D. Hamilton and Mr. F. B. Pooley*)

Cambridgeshire and Isle of Ely County Councils
(*Mr. Keene and Mr. B. H. Mellor*)

Bedford Rural District Council
(*Mr. M. Connell and Mr. L. Timms*)

Bedford Corporation
(*Mr. J. B. Harwood*)

Bletsoe Parish Council
(*Mr. A. Smith and Mr. Dunkley*)

Milton Keynes Development Corporation
(*Lord Campbell*)

Newport Pagnell Rural District Council
(*Cllr. R. C. Horwood*)

Gayhurst Parish Council
(*Prince Yuri Galitzine*)

Lavendon Parish Council
(*Mr. J. Brandon*)

Olney Parish Council
(*Mr. F. Bresher*)

City of Cambridge
(*Mr. J. C. Wilkinson*)

Chesterton Rural District
(*Mr. Pugh*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector This is the last of the Stage II Hearings and on this occasion it is to enable representations to be made to the Commission on the third London airport concerning the assumption that the airport might be located on land in the vicinity of Thurleigh. I know that many here today have been present at one or more of the previous hearings, and that others will have to read the transcripts and thus be conversant with the scope and purpose of the Stage II proceedings; nevertheless at the risk of boring them, I propose to deal very briefly with the scope and purpose of the particular hearings. The simple purpose, at the Stage II Hearings, is to enable the Commission to be made fully aware of all the local implications that might follow the location of the airport at Thurleigh. All material submitted at this stage will be most carefully considered by the Commission in the subsequent and more detailed work on each of the short-listed sites. A statement has been published outlining the place of the Stage II Hearings in the overall task of the Commission, and copies of this statement are distributed around the Hall and may be obtained on request, if needed.

As on previous occasions, I will emphasise—not very hopefully!—that these hearings are about local implications. Having read all the submissions I know that many would like to comment on the desirability of a coastal site, probably Foulness; but Foulness is scarcely local to Thurleigh, and of course the opportunity for comparison of the four sites will occur later in the Commission's work.

One other point: the Commission has always been aware of the implications of an airport at Thurleigh to the Royal Aircraft Establishment at Thurleigh, and of course the wind tunnel complex. I think it may help if I say that agreement has been reached with the Ministry of Technology that detailed information will be submitted by them in the form of Stage III evidence; this should ensure that prior to Stages IV and V the full consequences to the RAE, and also the costs of these consequences, may be assessed.

As a result of pre-Hearing proceedings a total of 64 authorities and other parties were given leave to be heard. Those still wishing to appear—a total of 38—have been arranged in an agreed order, as set out in our latest version of the timetable, and copies of this have been circulated and are also freely available. Using past experience, we have programmed the Hearing to last four days. For the convenience of those who have made arrangements, I shall keep to the time-table as far as practicable, but some revision may be expedient for one reason or another. The morning sessions will commence at 10 o'clock, and continue until shortly before one; each afternoon session will commence at 2.15, and end between 4.15 and 4.30. A verbatim report is being taken, and closure at around about 4.15 or 4.30 is essential in order that the transcript writers can make their copies available for the following morning.

As to procedure: this, I think, has been fairly well established over the three preceding hearings. The majority of statements and proofs—indeed, the vast majority of statements and proofs—have been circulated, and I must say that the greatest possible assistance has been received from all concerned in the submission, not only of those proofs but in the running off of the 130 or so copies which need to make up the bundles to submit to other interested parties. That help has been quite invaluable.

There are just one or two late documents which we will have copied, and circulated as soon as they arrive. No doubt all those documents should be taken as read, and I hope that the need for examination-in-chief will be largely eliminated.

As I indicated at previous hearings it may well be the cross-examination can most usefully be directed towards defining the particular issues which the Commission should take in mind rather than, perhaps, attempt to resolve them.

As to the general issues involved, I have been working on this problem for a year, and I hope I have some knowledge of them. As far as local issues are concerned I have known the Bedford area for many years, and I have spent many days during the last year just idly driving around the area, even walking around the area, trying to absorb the atmosphere, so I hope again I may be able to follow fairly accurately what has been said in evidence.

At present about 170 parties have indicated that they are satisfied to rely on written representations; of those 104 have been received by BARA; and 66 separately. I will again emphasise that these written representations will be fully taken into account in all the subsequent work of the Commssion.

As usual I am supported at the hearing by a small team headed by Miss Wall, who is sitting at the table in front of me, and that small team has been responsible for the general arrangements of the hearing, for the collection and distribution of the papers, and they will be very pleased to assist any persons taking part in any minor procedural matters or in issuing papers, or in any other way.

Just one last procedural point, and that is that, particularly in the early stages, the shorthand writers will have difficulty in identifying persons appearing and also, of course, in knowing the interest for which they appear. To overcome this problem and to ensure that the transcript record is accurate, it would help if each person on rising for the first time and, indeed, subsequently, would identify himself or herself, and indicate the nature of the interest which they represent and, secondly, for absolute accuracy, if they would fill in the forms which are distributed on the tables and are freely available, with the required information about the name and interests of those persons. That will make certain there are no misspelt names or other small accidents.

Are there any subsidiary points of procedure which I might hope to resolve before we commence to hear the representations? If not, I will call upon the representations of . . .

Mr. Gregory May I ask one question, this is about the evidence that has been submitted by the Ministry of Technology . . .

Inspector Mr. Gregory, will you first speak into the microphone and let us know who you are.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. Gregory Michael Gregory, representing the County Landowners' Association. Sir, you mentioned the Ministry of Technology evidence at Stage III; will this be available to the general public at Stage V?

Inspector I am not aware precisely of the nature of this evidence, Mr. Gregory, but subject only to overriding defence considerations I am certain the answer will be "Yes".

Mr. Gregory Thank you, sir.

Inspector Any other procedural questions? If not, I will call upon the Councils of Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckingham, together with the local authorities which are represented by them.

MR. N. MACDERMOT *called*

Mr. MacDermot May it please you, sir, my name is Niall MacDermot, and together with my learned friend, Mr. Michael Connell, I represent a number of local authorities. Firstly, Bedfordshire, in whose area, of course, the two sites are. Secondly, Huntingdon and Peterborough, and Northamptonshire, the other two counties probably most affected by the proposal. Buckinghamshire County Council who are also considerably affected I think would be appearing separately, and calling evidence on planning matters of their own, but I understand they also wish to be associated with the evidence which I will call. Equally, Cambridgeshire and the Isle of Ely County Council are also separately represented but they wish to be associated with the evidence of the expert consultants whom I shall call, and they have kindly assisted in providing information which is embodied in the evidence of other witnesses.

I also appear for the Great Ouse Water Authority, responsible for the Grafham Water Reservoir, who have submitted written representations. I will not be calling any witness from them, but will be available to assist with my learned junior on any questions that may arise about their evidence.

As far as the District Councils are concerned I also represent a number of County District Councils who desire to associate themselves with the evidence of their County Councils, and perhaps I should just itemise them: In Bedfordshire it is Dunstable Borough Council, Ampthill UDC, Kempston UDC, Sandy UDC, Ampthill RDC, Bedford, Biggleswade and Luton Rural District Councils. One of those, the Bedford Rural District Council, will be calling separate evidence in addition to being represented by my learned friend, Mr. Michael Connell. In Huntingdon and Peterborough we represent also the Borough Councils of Huntingdon and Godmanchester and of St. Ives. The Urban District Councils of St. Neots, and Ramsey, and the Rural District Councils of Huntingdon, St. Ives and St. Neots. Finally, in Northamptonshire, the Borough Councils of Brackley, and Higham Ferrers, the Urban District Councils of Burton Latimer, Irthlingborough, Ondle, Raunds, Rothwell, Wellingborough, and the Rural District Councils of Brackley, Brickworth, Daventry, Kettering, Northampton, Oundle and Thrapston, Towcester and Wellingborough. Those I think it is right to say are the district councils within each of those three counties most affected by the proposals.

Perhaps I can begin, Mr. Hunt, by saying that the attitude of all these authorities is one of unanimous and vehement opposition to the proposals. These local authorities have been approached by a large number of private individuals and organisations anxious to make known their opposition to the airport and in order to avoid duplication as requested by the Commission we have agreed a division of functions with BARA, the Bedfordshire Airport Resistance Association and have encouraged these individuals and organisations to approach BARA and to act through that body. It is inevitable, I suppose, that there will be some overlap between our evidence and BARA's, but we have tried to keep it to the minimum and broadly it is agreed that the local authorities will leave it to BARA to represent to the Commission the very strong feelings which they know to exist among local people and organisations and the local authorities who seek rather to show the Commission what would be the effect of the proposal on their future planning and development and on the discharge of their statutory responsibilities. But I may stress that the local authorities are very well aware of the opposition and intense feeling which there is in the area and it is significant, perhaps, that no representations in favour of the airport have been made, certainly to any of these authorities in the Bedfordshire area or as far as I am aware in any of the other areas which I represent.

Mr. Hunt, it would be impossible for me to seek to speak in opening on all the points raised by the body of evidence which we shall be presenting and I do not think you would thank me if I tried. What I will seek to do is to deal with and emphasise those points which the authorities whom I represent are particularly concerned about and are anxious should be the subject of careful study by the Commission.

In presenting the case I propose to do so in three parts: firstly, to show the effect of the airport and of the associated urban development on the regional planning of this area so far as can be seen to the end of the century; secondly, to show the impact of the airport on the lives and amenities of the people who will be most directly affected, and those as I say will be dealt with in more detail by BARA; and, thirdly, to speak about more specific problems which we think call for special consideration. One of these and one of the most important, of course, is the agricultural interest, and again by agreement with the National Farmers' Union we propose to leave the detailed presentation of this case to them and I hope that the relatively few remarks which I shall make on the subject of agriculture will not be misunderstood as meaning that the local authorities are not very alive to the importance of this issue for those interests.

Most of what I shall say and what the witnesses will say will apply equally to both sites, both the original site and the revised site put forward by the Commission. Where it is necessary to distinguish

Printed image digitised by the University of Southampton Library Digitisation Unit

between them we propose to refer to the original site as Site A and the later one as Site B. As far as the authorities are concerned they have no preference—if that is the right word to use—as between one site and the other, there are some advantages and disadvantages relatively as between one and the other, but I think I can sum it up by saying that both of them are equally *abhorent*.

I shall be calling Mr. Cowley, the County Planning Officer of Bedfordshire, who will be giving evidence on behalf of all the three county councils, Northamptonshire, Huntingdon and Peterborough, but I shall be calling the other two County Planning Officers to deal in more detail with the effect on their county planning policies.

I think I can summarise this part of the case by saying that an airport at this site with its associated residential, industrial and commercial growth could not be accommodated without jettisoning regional and county planning policies, and furthermore its effect upon the area and on the people who live in it would be quite catastrophic.

The Thurleigh sites are close to the meeting point not only of the three counties but also of three regions at what is known as the Three Shire Stone near Covington, and if I may refer to the area covered by the 20 mile radius from the site which is illustrated most of it on the map* before us and refer to that during my remarks as the sub-region I hope it will be understood that is what I am referring to, the area covered by the 20 mile radius.

Now as it is well known, there have been a number of studies in recent years about the proposed strategy for the development of the south-east region to the end of the century, not all of those are in full agreement with each other and as is equally well known we are awaiting what we hope will be a definitive strategy for the south-east arising from the study by Dr. Burns, but I think it is possible to predict with more confidence the strategy for this sub-region than it would for other areas since this is one of the few areas where there is agreement common to virtually all the planning proposals which have been put forward. They all envisage a very high growth potential and a very substantial development in this sub-region and in the adjacent parts of the neighbouring region. This fact has of course been given official recognition by the firm Government decisions for new town and town expansion schemes, the existing commitments for planned expansion of Milton Keynes to the south-west in Buckinghamshire, the Northamptonshire new towns, of the expanded town developments of Wellingborough and Corby to the north-west of the site, and those of St. Neots and Huntingdon to the east and north-east of the site. These together will provide for a population increase of some 289,000 by 1981 and a further 265,000 by the end of the century, that is a total in other words of half a million additional population. This does not take into account further growth a little further afield, the most important perhaps to mention Peterborough New Town to the north-east, another very substantial expansion to the south and south-east, the anticipated expansion of Luton and Dunstable and south-east Bedfordshire which could be of the order of another 170,000 by the end of the century. Taking the 20 mile radius alone, what I have called the sub-region, the current schemes for planned expansions total about 513,000 by the end of the century, 209,000 of those by 1981. Mr. Cowley and his colleagues estimate that the total population increase in this sub-region—and I am speaking of course without the airport coming—is expected to be about 800,000, that is by the end of the century. It is not surprising that there have been expressed serious doubts as to whether in fact it would prove possible to achieve these growth rates—not, I stress, because of the difficulty in attracting industry, which of course has proved a limiting factor in the development of many new towns in other areas, but on the contrary because of other factors. Primarily, the greatest limiting factor for the development of industry in this area is expected to be the continuing labour shortage. It is a high pressure area from the point of view of employment and, as the regional studies show, this is likely to persist for many years to come.

The second reason for the doubts is the strain which this would impose on the construction industry, and the demands which it would make on the natural and social resources of the area. To quote a phrase from *The East Midlands Study*,* "this expansion"—and they are referring to the expansion in the area which I have been referring to—"this expansion seems likely to be as much as any area could absorb within a limited time".

It is also naturally an essential part of the planning of this enormous expansion—with which, if I may say so, all the planning authorities have co-operated to the full—to see that it is carried out with the least damage to high quality agricultural land—and that is illustrated in the plan marked in yellow before us—and in the preservation and protection of the countryside between the centres of urban expansion and the provision for countryside amenities and recreation for this growing population —and the area where that is envisaged will, I believe, be dealt with in more detail later, and is in general shown by the areas shaded green on the map† before us. As I shall seek to show, the proposed airport would cut directly across all these policies.

But first of all, I suggest it should be considered how it is possible to accommodate the airport and its associated development at all. Mr. Cowley, and the other County Planning Officers, accept the assumptions put forward by Mr. Jennings at Foulness, and accepted at the other Inquiries, as to the scale of the primary and secondary employment which would be attracted to, or adjacent to, the airport, and with this figure which he derives from that of some 390,000 additional population which will need to be housed. In this area, the view of the Planning Officers is that of these, about 335,000 would need to be within the twelve mile radius—the inner circle shown on the plan before us—and the remaining 55,000 which would be associated with industry and offices, who would not need to be

* See attached wallet of maps and diagrams.

* HMSO; 30s.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

established quite so close to the airport itself, within the twenty mile radius area. This twelve mile radius figure is of considerable importance in relation to this site, because, as will be seen, nearly all the existing planned expansion in the sub-region is in the outer ring between the twelve and twenty mile radii. So the planning officers have had to consider how provision could best be made, if it had to be made, within the twelve mile radius, for an additional 335,000 population—and I stress, of course, that the proposals that are put forward in this event are ones which they themselves would see with the greatest reluctance, because they would conflict with their present planning policies. But, if it had to be done, they think the best solution for it would be to house them in three areas shown in the blue circles on this plan—namely, by new towns, one of some 120,000 in the Raunds area north of Bedford, some 80,000 north of Sandy, to the east of Bedford, and 120,000 in the Stagsden area, just west-south-west of Bedford. I may say, because these proposals have been publicised in the local Press and there has been some misunderstanding about them, that the illustration in the map is purely diagrammatic in form, and of course these are not in any way firm or definite proposals. They are not ones to which the local authorities would in any way be committed. This, with the assistance of the Commission, is the best advice that the planning officers put forward of their own proposal for the solution of the problem which would arise.

That would account for some 320,000; of the remaining 70,000, it is proposed that they could be housed, as to 15,000, within the twelve mile radius in existing towns with the growth that would take place in them—mostly in Bedford itself—and the remaining 53,000 in existing towns between the twelve and twenty mile radii. Urban development on this scale would of course require substantial additional road communications linking these centres with the airport and with other population centres in the sub-region, and the planning officers' proposals for these are contained in the map T.4 in Mr. Cowley's evidence,* and in general illustrated on the plan before us.

These three sites of Raunds, Sandy and Stagsden have of course been chosen as the ones which would naturally provide the best solution of the housing problem. Disturbance, the effect on high quality agricultural land, and other factors, are relevant criteria, but they are open to relevant objections. As will be seen, much of the Raunds area would be of high quality agricultural land.

In view of what I have said already, it must be obvious that an immediate question arises—whether associated urban development on this scale could be provided in addition to the huge growth already planned under the present expansion schemes. The figures seem astronomical. Taking the planned expansion alone, together with the AUD, this would mean a total of 833,000 additional population within the twenty mile radius in a thirty year period. If we include the growth of other existing settlements, it would mean a growth of over one million—in fact, over one million one hundred thousand within that period within the twenty mile radius. A growth on this scale has never been undertaken in this country, and, as I have said, the much more moderate expansion schemes already proposed have already been questioned.

In the restrained language of the planner, Mr. Cowley expressed the view that there must be a very real doubt whether the construction industry could undertake the work, and secondly whether it would be desirable to concentrate so much capital investment in one small area. The Commission may take a more robust view that this clearly is a non-starter, and I put it that this is a true picture—that it would really be unthinkable that development on that scale could be undertaken. If so, this raises two further questions: should the existing expansion schemes be abandoned or cut back to make capacity available for the airport; alternatively, could one revise one's ideas and could the expansion schemes be regarded as suitable living areas for people working at or in the immediate vicinity of the airport? If, as we believe, the answer to both questions is "no", then our submission to the Commission is that this really rules out the choice of Thurleigh as the site for the airport. If I may say a word about both: cutting back or abandoning the existing scheme really means cutting back or abandoning the Milton Keynes and Northampton new town expansions. The other expansions are too small to make any very significant difference to the problem in hand, and anyway a number of the smaller schemes are already under way. It seems unthinkable that at this stage either Milton Keynes or Northampton, for which the new town corporations have already been set up, could be abandoned. These sites were of course chosen as a result of most prolonged and careful studies, and were chosen as the most suitable areas for expansion in what is the principal growth sector in the country—the London-Birmingham axis—and they were planned as a major element, I think the biggest element, in planning the policies of the South East Region, and to solve the population and housing problems in that area, and in particular of London overspill. If these were now to be cut back or abandoned, it would merely mean transferring elsewhere the burden of meeting the London overspill problem. The extent to which the third London airport could contribute to the solution of London overspill must be very problematical and hypothetical. The essence, of course, of overspill schemes is to transfer jobs as well as the population, and since the airport would almost entirely be creating new jobs, it does not seem to answer the overspill problem.

Secondly, arises the question which is whether these could be suitable areas for housing the airport population. As Mr. Sharman will point out in his evidence,* to go further afield than twelve miles involves a serious penalty in cost of time of journey

* See attached wallet of maps and diagrams.

* p. 1845.

Printed image digitised by the University of Southampton Library Digitisation Unit

to work, of order, it is estimated, of one million pounds per mile per year for the life of the airport. But this figure is also supported by the experience of the planning officers in this area, who show that with very few exceptions twelve miles is the maximum journey to work distance. People simply are not willing, in these areas, to undertake any longer journeys to work than this, and it seems more than unlikely that the new town corporations of Milton Keynes and Northampton would be able to attract the two or three hundred thousand inhabitants needed to their new towns on the prospect of their breadwinners having to travel up to twenty miles to work. It is clear that the airport would stand little chance in attracting labour if there were alternative labour in the new towns, and if IDC population were to be used to try to restrict the movement of industry which is present to go to these new towns, the likely result would be that the plans for both these new towns would miscarry from the start.

Mr. Hunt, I make no apology for taking so much time in dealing with the planning work, because in our view it is perhaps one of the most important problems the Commission will have to consider in relation to Thurleigh. We do not know yet the reasons that have led to the short-listing of this site, but we suspect that a factor which may have had bearing with the Commission is the belief that it would be an advantage to site the airport near an area where there are already plans for substantial expansion. We do not, of course, challenge that the airport should be sited in an area where substantial expansion is acceptable and indeed desirable, but we believe it is an illusion, and it would be an illusion, to think that the existing plans for expansion in this area could make more than a marginal contribution to the associated urban development problem of the airport, and in our view the airport should be sited in an area which needs the expansion which the airport would bring, and to bring it to this area would disrupt all the existing plans for expansion and produce a level of over-crowding locally which would be quite intolerable.

I turn now, briefly, to the question of the impact which the airport would make on the area and on the people living in it. It would, of course, to start with, mean the destruction at once and uprooting of the homes of all the people living on the airport site itself, and the destruction of the village communities sited within it. As soon as the airport began to function, it would mean also the obliteration of those villages within the 55 NNI at least, for whom life would really become intolerable, and those villages would be uninhabitable. This will affect some thousands of people—I think the precise figures will be given by BARA. Secondly, of course, the noise from the flight paths of aircraft approaching and leaving are going to affect again another very large area and many villages. The last appendix to Mr. Cowley's evidence* lists some, I think, 117 villages within the 35 NNI contour for Site A, 25 of these being designated or proposed conservation areas, and 108 villages, 27 of them conservation areas, for Site B. This, of course, is not the whole of the story of the area that would be affected by noise. As we will see from the evidence that Mr. Fleming* and the Education Officer, Mr. Shallard,† will give about the effect on schools and the need for soundproofing, the area which is going to be closely affected by noise will extend considerably beyond the areas shown on the sound contours, the NNI contours we see on the map to our left. Either of these sites would involve the loss of over 6,000 acres of high value agricultural B. This, of course, is not the whole of the story of land, land where horticulture of course plays a very important part—an aspect of our agriculture which is of increasing importance, perhaps, having regard to our proposals for joining the European Economic Community. Agriculture would of course also be clearly affected by the associated urban development. It is our belief that this area should be regarded as a priority agricultural reserve of national importance. We have certainly understood it to be such, and the policies of the local planning officers and of the Ministry of Agriculture in this area are based upon that assumption, and we believe that very great care must be given to the agricultural question before any decision be made in favour of a site in this area.

Thirdly, it would mean the spoliation of a large area of very beautiful countryside, perhaps less publicised than some others, but you have already indicated your familiarity with the area, Mr. Hunt, and I am sure you will have seen for yourself that a large part of the area affected here is countryside which by any standard is of very high quality and does contain a number of very attractive villages and centres of recreation. Indeed, when one looks at the NNI map and sees the area which would be rubbed out and annoyed by the whining and screaming and roar of jet engines, it would be difficult to find a site which would do more harm to the rural and countryside amenities in this area. As I have mentioned a moment ago, an important part of the planning here in this area has been to provide countryside amenities and recreation for the growing urban expansions. These, of course, centre round the river valleys—the Ouse Valley and, in Northamptonshire, the Nene Valley. The protection and development of these countryside amenities is complicated by the fact that these river valleys are also the source of important deposits of sand and gravel, which would be needed for urban development. This has led all these authorities to working out very detailed and precise policies to control the development of the sand and gravel work to protect the landscape and to promote recreational facilities in these areas. I shall ask Mr. Cowley in due course to produce the reports of the County Planning Authorities on this subject, to which he refers in his evidence; and I hope, Sir , that you will be able to find the time to glance through them, and you will see what very detailed and careful thought has gone into the planning of these areas and of the recreational facilities.

* p. 1807.

* p. 1854.
† p. 1863.

Printed image digitised by the University of Southampton Library Digitisation Unit

I also draw attention to the evidence of the Great Ouse Water Authority,* and I should have mentioned at the outset that I appear—I think I did—on behalf of that authority.

The effect, of course, of an airport on the reservoir at Grafham Water would be very severe. Grafham Water, as you will know, is probably the outstanding example of carefully planned provision of a wide range of recreational and educational facilities for the peaceful enjoyment of the countryside in association with the reservoir, and I stress the peaceful enjoyment, because it was a matter of deliberate policy of this authority to reject a number of proposals put to them for more noisy forms of water recreation in this area in order to achieve, as I think you will agree they have successfully done, the peculiar quality of the amenities of the Grafham Water site. They don't suggest that if the airport came here that no one any longer would want to sail on Grafham Water or the people would not come for fishing, bird watching and other recreations that they have in the area, but they do say if the airport came this site would cease to be a place of utter tranquility and peace, which they have carefully created. I think Grafham Water is just on the edge of the 55 NNI contour, and it would become a very noisy place indeed, and the same would apply to the carefully prepared plans for protecting and developing the amenities along the river valley, in particular those from Tillingham to Olney, in Buckinghamshire, from Turvey to Oakley in Bedfordshire, and from St. Neots to St. Ives in Huntingdonshire. All those areas are of high landscape quality through which are scattered most attractive villages, numbers of them being in conservation areas which do make and are increasingly making a major contribution to the outdoor recreation and water sports of the region.

A similar problem arises in the Nene Valley, particularly in the green belt buffer area shown on the plan before us, between Northampton and Wellingborough where again similar facilities have been developed and are much used by the populations of those towns.

Turning to the Huntingdon and Peterborough area, with the planned expansion of Peterborough the county will continue to have, as it has already, one of the highest rates of population increase of anywhere in the country, and this includes the two existing and active town expansion schemes one at Huntingdon and Godmanchester, and the other at St. Neots, and they envisage further expansion of these towns and of St. Ives as from the mid-80s to absorb the natural growth resulting from the immigration into these areas. These three towns form, of course, an area of development, of the south of the county, the planned development at Peterborough in the North. All of them, as you will know, Mr. Hunt, are places of great charm, they would all be most severely affected by the noise from the flight paths, and the authorities believe to an extent that not only would their future role be prejudiced, but the local authorities are most seriously concerned whether the investment which they have already made for the development of this town may not be wasted. I may add that the County District Authorities in this area are very concerned by the financial effects of the proposal for a number of reasons. They would lose the great contribution which they get from four existing service bases, including Alconbury and Wyton, which it is envisaged would have to close down if there were an airport at Thurleigh, and they see themselves likely to have to incur substantial expenditure for urban and road development which will not generate an equivalent increase in their financial resources. They are also concerned that if there were new town developments at Sandy and Raunds that these would be likely to prejudice the development of their own town expansion schemes, quite apart from the noise factors.

That largely summarises the main points I want to refer to in the evidence of the three planning officers I will be calling. I will also be calling on behalf of the counties the Chief Education Officer, Mr. Shallard; the County Medical Officer, Dr. Macleod. Mr. Shallard analyses the effect on schools in the envisaged flight path areas for both sites, and then considers the cost of sound-proofing which would be needed for those schools in order to achieve reasonably satisfactory reduction of aircraft noise. There are some 84 schools and colleges affected by site A, with a school population of over 19,000. For site B a similar number with a population slightly fewer of 18,309. The cost of soundproofing to the standard recommended would be about £1,600,000 for site A at the two runway stage; £2,400,000 at the four runway stage. Huntingdon and Northamptonshire, and Buckinghamshire would be the worst affected counties and, indeed, Huntingdonshire would have over £1,000,000 of those costs at the four runway stage. For site B the figures are slightly different, it is nearly £2,000,000, at the two runway stage, and nearly £2,300,000 at the four runway stage, and here it is Huntingdonshire and Buckinghamshire and Northamptonshire which would be the counties most affected. He deals, of course, with the local authority schools, and does not take into account the effect on other schools, but you will be, of course, hearing evidence from the Harpur Trust in relation to their famous schools in this area, and there are equally other schools in the private sector to which he does not refer.

Soundproofing, of course, can by no means be a complete answer to the problem, and we have experience of that in this area, where already a number of schools have been soundproofed as a protection against aircraft noise—they have been found to produce secondary problems of their own, with a ventilation equipment and considerable transference of noise within the schools through the ventilation ducts outside the school buildings themselves—nor, indeed for the problem of homework which is a very important part of the time spent on education, it is thought up to the equivalent of half a year's school life.

There is also bound to be some interference in fringe areas lying just beyond the NNI contours

* p. 1909.

Printed image digitised by the University of Southampton Library Digitisation Unit

referred to, and I would like to say here we support and adopt the evidence which will be given by Mr. Wilham Allan* for the Cambridge University, in paragraph 33 in particular, and 34, where he makes comments upon the school protection zone. By way of illustration, if one takes only a one mile fringe area outside the area I have been referring to, this would include a further 43 schools with over 10,000 children for site A and 63 schools with 15,000 children for site B, and it is interesting in this connection that Huntingdonshire County Council are currently spending £15,000 for a partial insulation and soundproofing of a new £60,000 primary school which they are building in St. Ives, and they are doing that against protection of the noise of the relatively small use of Alconbury airfield some few miles away.

Dr. Macleod, the County Medical Officer of Bedford† who will, of course, be giving evidence on behalf of the counties will firstly give evidence as to the general hazard to health of aircraft noise. This is largely based on and follows closely the evidence of Dr. Reid at the Cublington Inquiry, which you will recall. Secondly, he analyses the hospital and other local medical and welfare institutions likely to be affected. There are, of course, no established criteria for determining the maximum noise level which is acceptable for a hospital, but obviously hospital patients are likely to be much more sensitive to noise, and, in particular, to noise at night. Dr. Macleod has given in Appendix A of his evidence a list of the hospitals likely to be affected. These lie within four miles of the 35 NNI contour in site A, and within 6 miles of the contour for site B; although some and in particular the Bedford hospitals would be worse off in site B, the total affected would be likely to be slightly worse with site A. There are a total of 27 hospitals with 4,809 beds listed in the appendix. Appendix B also lists some 46 nursing homes, welfare homes, mental health hostels in the same area, with 1,058 beds. In addition Dr. Macleod enumerates other bodies, such as training centres for mentally subnormal, child health clinics, health clinics, health centres, as well as school health services and various community health services which would all be likely to be affected by noise from the aircraft. Evidence on this subject is, inevitably, less precise than some other evidence that will be put before you because of uncertainty about the affect of noise upon health, but in this state of uncertainty we hope the Commission will err on the side of caution in determining the weight to be attached to this factor.

I will, of course, also be calling before you the three now familiar to you consultants, experts who have given evidence at all the previous enquiries, Mr. Sharman, Mr. Dunford, and Mr. Fleming. I do not propose to try to summarise the very careful and detailed evidence which they give. I would just like to mention one or two specific points. Firstly, on surface transport and communications with London: the site lies, of course, between the M.1 and the A.1. Owing to the increasing congestion of the M.1 it is not thought that road would be likely to make any useful contribution to the solution of the problem. The A.1 would probably itself, it is thought, have some spare capacity in the early years and accordingly Mr. Sharman's* proposals provide for a new motorway link between the airport and the A.1 just south of Sandy, but from 1981 on the new dual three-lane motorway link would be required to cope with the anticipated traffic generated by the airport to and from London. He has put forward what I stress is a tentative alignment of this route, passing out of Luton and St. Albans to intersect with Ringway 3 west of Potters Bar. He also considers the possible routes from there to central London, and this motorway, he estimates, would require an additional fourth lane as from 1989. As far as the rail link is concerned he proposes that for this as for the other short listed sites the best solution to the problem would be the introduction from the start of an exclusive and advanced passenger train link from the airport to King's Cross, and he suggested this could follow the King's Cross to Huntingdon line, to just north of Sandy, and the addition of a new spur to the airport. The point that I would wish to stress, which he makes in his evidence, is that if anything less attractive than a rail link of this kind were established then the road traffic movement would be likely to be substantially increased and the impact, therefore, on the environment both in the neighbourhood of the site and between the site and London would be proportionately increased.

Another problem which we hope the Commission will go into in considerable depth, and which is of very great concern to the local authorities is the problem of drainage and sewage disposal. It is already a serious problem in the area. I know that other water authorites will be giving evidence on this matter, but I shall be calling Dr. Southgate, to support the proof of evidence which was put in at a rather late stage. which was prepared jointly by him and Dr. Hoather;† it was circulated in the first instance on behalf of the Huntingdon and Peterborough County Councils. But, I would like to stress that all three County Councils sponsor the evidence, and the Great Ouse Water Authority would wish to be associated with it as well.

Mr. Sharman emphasises in his evidence the serious nature of the water and waste problems and the need to secure a very adequate solution at an early stage. The local authorities are very concerned by the suggestion which seems to emerge from Mr. van Oosteram's evidence to be given on behalf of the Great Ouse River Authority that the site's surface water drainage system might be designed for a storm only having a frequency of occurrence of once in two years. The local authorities feel this would be wholly inadequate and would lead to a repetition of the severe flooding which they have experienced in recent years and against which remedial measures have been taken, but these would not be adequate to deal with

* p. 2124.
† p. 1867.

* p. 1845.
† p. 1835.

Printed image digitised by the University of Southampton Library Digitisation Unit

the very serious increased run-off from the site and the effect of the AUD on the drainage problems of the Ouse Valley, and this problem will be complicated further by the projected drainage schemes for the Milton Keynes New Town—you will recall the evidence we heard at the Cublington Inquiry—would drain into the Ouse Valley system, and the local authorities wish me to urge that a comprehensive drainage scheme adequate to provide protection against the severe storms of much more infrequent intervals should be provided for if the site came here and should be considered in any calculations made before the decision was reached. Bedford Borough I know will be giving their own evidence of their anxieties for their own water supplies, and Dr. Southgate will deal in particular with the problems of pollution of water abstracted at Offord for the Grafham Water Reservoir. That supplies a large area of Bedfordshire, Buckinghamshire and Hertfordshire and Northamptonshire as well as Huntingdon and Peterborough County in which it is situated, and it is accordingly one of the most important sources of supply in the whole country.

I do not want to go through his evidence in detail; let me summarise it by saying that Dr. Southgate considers that this airport proposal may raise problems on a scale not previously encountered in this country, and I will ask that the Commission in investigating these problems seek the assistance of the Water Pollution Research Laboratory of the Ministry of Technology at Stevenage of which Dr. Southgate was formerly a director.

Finally, if I could say a word about the sand and gravel problem. Production in recent years in the mid-Anglia region (which includes the valleys of the Great Ouse, Ivel, Nene and Cam) have increased steadily in recent years and in 1967 totalled nearly 4½ million cubic yards; the Bedford service area, the part of that region which includes Bedfordshire, north-east Buckinghamshire and small parts of Northamptonshire and Hertfordshire, reached nearly a million cubic yards. Mr. Sharman calculates that 1¼ million cubic yards will be needed by the airport construction alone at the first runway stage and 3·8 million for the full development. In addition, Mr. Cowley, accepting I think the figures put forward by the County Planning Officer of Buckinghamshire, estimates that something of the order of 33 million cubic yards would be required for the associated urban development and 2 million for the major traffic roads a total of 38·8 million cubic yards. This is equivalent to the annual average yield over the whole of the mid-Anglia region for a period of ten years. The authorities accept, of course, that there is likely to be some further increase in the rate of production in the region to meet the demands of existing planned urban expansions, but if this additional demand for the airport and AUD and road building had to be met as well it would mean really that all the carefully prepared policies for protecting the amenities of the agricultural interests of the area would be thrown overboard with disastrous effects for the area.

This problem indeed, Mr. Hunt, is really only another aspect but an important one of two major points I have stressed already, firstly that it really would not be possible to accommodate both the existing planned expansions and the airport development at the same time; and, secondly, that the coming of an airport would be destructive of the principal amenities of the area both for the existing population resulting from the airport and from the new and expanded towns.

Well, as that point really brings me back to my starting point I would emphasise what in short is our whole case about the effect of an airport on this area, perhaps that would be a convenient point for me to end and cease wearying you, if I have done that, and to call my evidence. I think it would be convenient if I called first the County Planning Officers, then the consultants experts and then the specialised witnesses. I will call first Mr. Cowley.

MR. GEOFFREY COWLEY* *called*

Examined by Mr. MacDermott (Bedfordshire, Huntingdon and Peterborough and Northamptonshire County Councils)

5021 Your full name is Geoffrey Cowley? — Yes.

5022 You are the County Planning Officer for Bedfordshire, is that right? — I am.

5023 And you have prepared this evidence in association with your colleagues from the county councils of Buckinghamshire, Huntingdon and Peterborough and Northamptonshire? — That is so.

5024 And put forward this evidence jointly on behalf of all those authorities? — Indeed.

5025 There are just one or two points I want to ask you in relation to your evidence which has, of course, been circulated. If we could turn first to paragraph 9.6 which is on page 36. Have you got with you copies of the four policy documents you have referred to in relation to the planning and development of recreational facilities? — I have.

5026 Could you please hand those in, there are other copies available if anyone should want them. Secondly, if I could turn to paragraph 11.3, that is on page 47, I know other evidence will be given by the expert water authorities on this subject of water pollution, but from your point of view is this a serious problem in this area? — It is indeed. I use the term "pollution" perhaps in a less restricted and technical sense from those of water engineers, but from my own experience of pollution I would say that speaking quite subjectively the rivers appear to be badly polluted compared with rivers I know.

5027 Leaving aside questions of water supply which will be for other experts to deal with, from your point of view and from the point of view of the provision of amenities in this area is the control of pollution in these rivers a matter of great importance to you? — Absolutely vital, the condition being at the moment that if you swim in the Ouse, for instance, and water gets into your mouth it tastes bad; secondly, you may suffer a sore throat; and, thirdly,

* See also p. 1807.

Printed image digitised by the University of Southampton Library Digitisation Unit

you will find after about 24 hours your tummy feels a bit funny. Against that background as I say this pollution, and against the amenity needs of the area, it is important to see that it is not least deteriorated.

5028 I think in relation to your Appendix 1 on page 51 you have been supplied with some revised figures by Cambridgeshire County Council as a result of which you would like to hand in a revised version of the total in that appendix? — That is so, it affects Cambridgeshire and implicitly the totals at the bottom.

5029 Perhaps you had better read out which are the correct figures, I think they are in the third line against Cambridgeshire. — The figures for Cambridgeshire on the third line should read in each case under the 12 to 20 mile column for 1961 9,910, for 1968 11,000, for 1981 13,760 and finally for 2001 15,280.

5030 There are copies available for anybody who wants them? — There are indeed.

5031 Is there anything else you wish to add at this stage? — There is not.

Inspector Are there any questions to Mr. Cowley from first tier authorities? Any questions from other local authorities? Any questions from any other party?

Cross-examined by Mr. Trustram Eve (Cambridge University)

5032 Mr. Cowley, would you be good enough to look at page 26 of your proof, please? In paragraph 6.2 you set out a table which produces as a result the total employment at mid 1990s at or adjacent to the airport and we see that one of the items which you list in the left hand column is service workers and you deduct 20 per cent regionally located because you are talking about at or adjacent to the airport. If we are thinking of the total employment generated by the airport and the total population which is associated with that employment would it be right to think it would come also to 20 per cent? — It is very technical this because it is almost impossible to tell the distance they will travel from these service jobs. There is a very great difference between having shoe repairs done which you will get done by someone locally and getting a very specialised service job done for which you may have to travel 150 miles, so to that extent we have of course noted them and deducted.

5033 I am not quarrelling with you, I am just seeing what the implications are. If we look at the total employment you are envisaging as generated by the airport we include the 20 per cent as well, do we not? — It could be, yes, that would be reasonable.

5034 Not necessarily within the locality of which you have been speaking, I appreciate that, and if we do the arithmetic which you do elsewhere in your proof we see a projection of 26½ thousand, is it not, and would we be right to take approximately half those as being male and female? — Yes.

5035 And multiplied by 3·4 to get the associated population? — Yes. I think it is no more than a natural inclination for me to be very precise and very fair. In being very fair I put the 20 per cent on one side, but you could be absolutely right.

5036 I am not quarrelling with the basis. One more matter, would you be good enough to look at page 29? I think it boils down to a matter of wording here. You are indicating the three possible locations of what you call new development and one of them of course is the Stagsden area which is to the south and you point out in your paragraph 7.8 on page 30 the limitations which exist in the siting of a new town in the locality? — Yes.

5037 Indeed, we can see them very clearly set out in the plan attached to the end of your proof. You do say at paragraph 7.6 at page 29: "The three broad areas of concentration of development chosen are conveniently located as near to the airport site as possible but outside the limits of noise disturbance." I know you revise that somewhat on page 30, but would you say looking at the plan which is on your left that the Stagsden area is outside the limits of noise disturbance? — The operative word is I think "squeeze". It would need a very subtle shoe horn to get that 120,000 in to avoid both the 35 NNI to the north-west and the air pollution zone of the Brickfields to the south. It could be a very tight squeeze.

Cross-examined by Mr. Gregory (Country Landowners' Association)

5038 I also wanted to deal with the urbanised area and your proof at page 30. As I understand it both of the areas shown on the map do no more than indicate by areas where you feel that so much population might be included in each? — Yes.

5039 Am I right in thinking that to accommodate the population in each one of those circles on the map it will mean starting a new town from virtually nothing? — That is so.

5040 In which case is it not right that it would by no means be populated exclusively by airport workers but you would have to introduce new town facilities to service the populated area? — Yes, indeed, you start from green fields.

5041 That being so the total population of that new town would be considerably more than 120,000 people if it is to cater for the 120,000 workers for the airport? — This was 120,000 people. We are talking about the 320,000 plus the 70,000 adding up to the 390,000 total population consequent on the airport and the 120,000 is the total population for each of the three areas identified for associated Urban development.

5042 Am I missing something here? It isn't 120,000 airport workers and their families? — Yes, in total.

5043 *Inspector* Is this right: isn't it the 120,000 airport workers plus service workers plus their dependents, not airport workers solely? — No.

5044 That is the point being made — It is the total.

5045 *Mr. Gregory* And your calculation of course is based upon what you can do when you have implemented it. You feel that would make the total service

Printed image digitised by the University of Southampton Library Digitisation Unit

population that would be required for the town generated by the airport? — Yes, the three together. I don't think we are particularly talking about service employment, service industry, you can confine yourself tightly within that, there is much interflow between various areas.

5046 Would you refer to the Sandy area. I think you say in 7.9: "The area north of Sandy as a location for 80,000 people avoids the top quality agricultural land." Am I right in thinking that the orange areas shown on that map there are areas of Grade 2 agricultural land? — Parts are Grade 2, yes.

5047 Because they would include Grade 3 agricultural land—or are you not meaning that? — No—Grade 3 and, of course Grade 1 and 2, and a certain amount is taken at Sandy.

5048 And likewise at the other two areas, generally? — Indeed.

5049 But at Sandy, one would anticipate, would one not, that a good deal deal of Grade 3 land could be taken? — Indeed.

5050 And this is land of at least agricultural quality, or better? — Yes. My own opinion is that much of the Grade 3 land is only marginally so, and very comparable to Grade 2.

Inspector Are there any other questions?

Cross-examined by Mr. H. Forbes

5051 As a result of the questions Mr. Gregory asked you, Mr. Cowley, I would be grateful if you could clarify—can you help me about your blue circles?* As a result of the answers you gave to Mr. Gregory, I am a little puzzled—there is no means, I take it, of ensuring that the population in your three blue circles will be confined to airport employees and their families? — Certainly. They will not be "company" towns.

5052 And the whole question of whether or not your blue circles do in fact accommodate the specific population for the airport and so on, will depend on the ordinary population shifts? — Indeed, and people will find their own level over a period of years.

5053 Can you tell me, then—I understand fully from Mr. MacDermot's opening and your proof the difficulty the planning authorities find themselves in with the plan you already have, but can you tell me, does it mean that there is a possibility that the overall expansion of your black squares or your blue circles may increase very considerably over what we think? — The black squares would increase if the blue circles were fully developed—is that what you say?

5054 Yes—I am just wondering—can I put it this way—you have got people coming into your black squares and blue circles—there is no guarantee in fact when all those are filled up that you will have accommodated the total population needed to support the airport? — That is true. And the answer to your question would be that both the blue circles, or to put it this way—either the blue circles or the black squares or both could increase beyond what is envisaged now.

5055 That is what I have in mind. I appreciate that you think there are difficulties in arranging expansion of this magnitude, but if the Commission decided that these difficulties are solvable, we may end up with a considerable greater population than you envisage? — You could indeed; and, before you sit down, I think I should clarify—going back to the former questions—these black squares have been pretty carefully calculated by the planning authorities, and people like the Government and the Regional Economic Planning Councils, and I think you can take it that the country indicated—symbolically, they say—is about as far as you can go unless you get a complete coalescence and a major conurbation of country intended to be separate areas.

5056 I appreciate that; but leave your blue circles out and discount the possibility of an airport at Thurleigh. The planning authorities are in a position, are they not, to be able to say, "thus far and no further". But if you get a situation where you build your blue circles, and your black squares, and there are still not enough people to work at the airport, the pressure will be on to increase your blue circles? — Indeed.

5057 *Inspector* Are there any other questions? No. Mr. Cowley, I have one or two points. Your paragraph 7(8), referring to the air pollution zones on your proposed Stagsden area—what criteria are adopted in controlling or restraining areas in relation to pollution from brick works? — I think the answer you are wanting from me is that the area, which we know to be an area in which people find it offensive to live because of the smell from brick works—within that area we try to keep development to an absolute minimum.

5058 But you can only try—is that right? — We can only try. Often there is the case where, because of brick work fumes, we think that broad development is inadvisable, and we are not infrequently overridden. So—we can but try.

5059 There is some sort of vague line drawn around the brickworks, which you consider a boundary? — That word "vague" is most opportune.

5060 The other point is: have you heard from your consultants as to their ideas about urbanisation for this project? — I have, Sir. The opinion has been requested through the Commission, and a reply has been received, but a little later on, we are told, we will be consulted. They have been given all that we have.

5061 Do you consider—you obviously did—the possibility of locating the population—say, 390,000—in one large bundle, rather than three smaller parcels? — We did indeed think of this, Mr. Hunt, and, hard put to it as we were even when restricted by the handle-able parcels, we despaired after about the first twelve hours of finding a site where we could put them.

5062 What were the constraints, for example, in the Raunds area? — In the Raunds area, we have already this major development of Northampton and Wellingborough. Up in that neck of the woods—which is outside the twenty mile radius—you have

Printed image digitised by the University of Southampton Library Digitisation Unit

Peterborough, and it did seem that, as you went up there, you were moving away from a condition which you find further down here, of existing towns already in a good sort of business upon which the development of the airport would lead. We found as we went further North that we were getting further away from London, and it was more difficult to make use of the M.1, more difficult to draw anyone at all in Milton Keynes, more difficult to relate it in a meaningful way to overloading.

Inspector I have no more questions; thank you.

Mr. MacDermot I have no re-examination.

(The witness withdrew)

Mr. Connell My name is Michael Connell—Joint County Councils. May I call as the next witness, Mr. Robinson?

MR. L. G. ROBINSON* *called*

(Examined by Mr. Connell)

5063 Are you Lawrence Gordon Robinson? — I am.

5064 Mr. Robinson, are you a member of the Town Planning Institute, and a Fellow of the Royal Institution of Chartered Surveyors; and the County Planning Officer for the County of Huntingdon and Peterborough? — I am.

5065 And were you the County Planning Officer for the former County of Huntingdonshire from 1956? — Yes, I was.

5066 I think you are also the Chairman of the Planning Panel of the East Anglia Regional Consultative Committee? — That is correct.

5067 And I think your Proof of Evidence has been circulated and read. Is there anything you would wish to add to that Proof of Evidence? — No, nothing, at the moment.

5068 *Inspector* Are there any questions to Mr. Robinson from First Tier Authorities? Other local authorities? Any other parties? No questions. The only question I have, Mr. Robinson, refers to the end of your paragraph 2.7, on page 2. You refer to the possibility of increased population elsewhere, resulting in the decline of existing town centres. This is the effect that was mentioned in Mr. MacDermot's opening—was that what you had in mind, Huntingdon and Godmanchester? — Yes, those were the two towns I had in mind. I think this would result really from a general gross paralysis due to aircraft noise.

Inspector I have no more questions.

Mr. Connell Thank you. May I call next, please, Mr. Woodhall, on behalf of Northamptonshire County Council?

(The witness withdrew)

* See also p. 1831.

MR. D. M. WOODHALL* *called*

(Examined by Mr. Connell)

5069 Are you David Woodhall? — I am.

5070 Mr. Woodhall, do you hold a Diploma in Town Planning of the Leeds School of Architecture and Town Planning? — I do.

5071 Are you a Chartered Town Planner and do you hold the position of Deputy Planning Officer to the Northamptonshire County Council? — That is so.

5072 Once again, your Proof of Evidence has been submitted and read. Is there anything you would wish to add at this stage to that Proof of Evidence? — Nothing.

Inspector Any questions to Mr. Woodhall from the First Tier Authorities? from other local authorities? from any other parties? I have no questions, Mr. Woodhall.

(The witness withdrew)

Mr. MacDermot I call Mr. F. A. Sharman.

MR. F. A. SHARMAN† *called*

Examined by Mr. MacDermot

5073 Is your name Frederick Andrew Sharman, and are you a Chartered Engineer, a Bachelor of Science in the University of London, a Fellow of the Institution of Civil Engineers and a Member of the Institution of Highway Engineers, and have you practised as a civil engineer since 1940; and have you assisted in the preparation of evidence for the Commission in their Inquiries into the short-listed airport sites? — That is so.

5074 Do you now produce formally your evidence relating to the two Thurleigh sites? There are just one or two questions I would like to ask you to elaborate. In paragraph 4.2 of your evidence, in the last sentence on page 6, you draw attention to the fact that there would be a labour and supervisory force of several thousand men who would have to be quartered in the vicinity of the airport for construction of the airport site; and you refer there to the road diversions and access improvements, and also the drainage works, that would be needed in relation to that. Are you aware that the local Rural District Council are very concerned about the public health problems relating to that labour force for the construction of the airport? — Yes, I am aware of that; but I should first like to clarify that sentence that you have referred to. The drainage, road diversion, access improvements, referred to there, are not ones generally related to the airport, but specifically to the construction camp, which is what I had in mind when referring to the problems of the labour force concerned in the construction of the airport. I did not mean to imply that the several thousand men who would be concerned in construction over a period of some years would all be accommodated in a construction camp, because the tendency is now for

* See also p. 1837.
† See also p. 1845.

Printed image digitised by the University of Southampton Library Digitisation Unit

contractors to bring their labour force from ever-increasing distances in order to avoid the very problems we are referring to. But I have it confirmed from a number of big contracting firms that on works of this size they would still be bound to establish at any rate a nucleus construction camp, and this would bring with it all the problems of imposing on local authorities obligations of health inspection, of ensuring that the sewage and waste disposal could then be dealt with; and I think it only reasonable that assurances should be given right from the outset of this that such problems as are imposed on local authorities through those reasons—they should be provided against any adverse affects on their own requirements and similar services in the area.

5075 Then, in the next paragraph, you give your figures of your estimate of the sand and gravel requirements for development of the airport site—some 3·8 million cubic yards for the full development. I think you have a breakdown of those figures, which you could produce. — Yes—if I may hand the Inspector that breakdown—(Document handed to Inspector).

5076 And again, if other people want them, there are other copies of these figures available. Turning to paragraph 5.3.3, which is on pages 9 and 10, where you are dealing with the problem of surface water run-off and the need to interpose balancing reservoirs —are you aware that there have been serious problems of flooding in this area? — I am indeed aware of that, and I have gone a little further in the calculation of the implications of this problem and the need to provide balancing reservoirs. It is a soluble problem, I have no doubt; but it is an extremely important one, in which provision should be made for retaining the excess run-off caused by the more impermeable nature of the area of the airport itself, and of the associated urban development: as much as 80 per cent of the total. The Ouse above Bedford will be affected to some degree in this way, and, while perhaps it would be unreasonable to expect that conditions should be made better merely by reason of the airport, it is equally very essential that people should be reassured that they are not being adversely affected; and when I say that the area to be taken up by balancing reservoirs would be in the order of hundreds of acres, this is on the assumption that sites can be found where such reservoirs could be to a depth of five feet. There is no guarantee that that would be possible in areas of associated development. It is a serious problem.

5077 A serious problem, which needs looking at closely. And is it possible for you to do so further, when knowing what would be the more precise plans for the development of the airport site? — Yes, indeed. There are obviously people who have this problem under close examination, and will produce the schemes, provided that the assurances are given that the criteria will be adopted in time.

5078 And I think in the next paragraph you give your views on a point which I referred to in opening, about which the local authorities are concerned—namely, that in connection with this site one should provide for a maximum storm run-off at a less frequency than once in two years? — Yes, indeed; it would be quite unfair to expose people to serious conditional patterns with a frequency to be expected of anything less than once in thirty years, and the nature of the hazard should be appreciated up to the extreme floods—once every hundred years.

5079 I think another problem with which the local authorities are concerned is referred to in the last sentence of paragraph 5.3.3, spilt oil and lubricants from the airport area will need particular attention. What are the particular sewage and drainage problems related to an airport? — There is all the usual type, wastage you get from inhabited buildings, that is foul sewage from the airport lavatories. There is also the accumulated sewage of aircraft that has got to be got rid of, and the chemicals associated with the storage necessary which do give rise to additional problems when they are discharged. There are the ordinary industrial problems from the maintenance areas, and always the risk of large oil spillage; if there are accidents of that sort, or when a large quantity of oil might suddenly get into the effluent and the water courses must be protected against this sort of accident; proper provision being made for the treatment of the foul sewage waste and, as I said, clearly in this position this requires an unusual degree, in fact it may be an unprecedented degree, of purification before the water can be discharged.

5080 One final question, you deal in your section 5.5 with the question of electric power supply. Have you received from the Eastern Electricity Board a possible method of dealing with the electricity supply problems to such a site? — Yes, I have.

5081 Are those available to the commission if they wish to see them? — This is an alternative to one briefly described in the text.

Inspector Any questions of Mr. Sharman from the first tier authorities? From local authorities? Any other persons or parties?

Cross-examined by Mr. Hugh Forbes

5082 One short question, page 9, paragraph 5.3.2, you are dealing with the necessity for the airport and the new communities—about the middle of that paragraph—to be provided with or connected to treatment plants having high quality effluent. — Yes.

5083 The provision of high quality effluent treatment plants. This brings with it, does it not, difficulties? — Difficulties in relation to—I am sorry.

5084 I am sorry, can I put it this way, the standard effluent which everybody talks about is 20/30 mark, isn't it? — I believe so.

5085 And when you reduce that to what they call 10/10, by that brilliant process known as polishing the effluent, you convert even more harmful things into nutrient salts, do you not? — Yes. This is dealt with in more detail in the later evidence Mr. MacDermot will be calling.

Printed image digitised by the University of Southampton Library Digitisation Unit

5086 I am not quite clear about who I was going to get a chance to put this question to, but would you agree with that? — Yes.

5087 This in its turn has a deleterious effect very often on the excellent growth of vegetation in the river. — Yes, I know this to be the case.

5088 *Inspector* Any other questions? No. Just one point, Mr. Sharman, this question of the storm period. I seem to remember at the Nuthampstead Inquiry that the Commission's researchers agreed the River Ouse Authority should use the 20-year storm basis. Would you regard that as reasonable or otherwise? — It is reasonable for many purposes, for sizing culverts and dealing with situations where an excess over a design quantity will not cause a major disaster, would not cause risk of loss of life or serious damage to property. It would be a passing degree of inconvenience with a reasonable amount of loss. I would not regard it as reasonable to design it if there were risk of a collapse of a major structure or a long term flooding of the overall area, and I think in fact design can't be tied to a single figure. You really have to adopt different degrees for different effects of the flood water, but 20 years is not unreasonable for a reasonable degree of inconvenience and a modest amount of damage.

5089 Yes. I take it that the view you express on the need for balancing reservoirs extended also to the urbanisation areas as well as the airport site itself? — The problem there is greater. The amount involved is greater and the difficulty of finding a site is greater.

5090 So that if there were a different solution to the urbanisation problem to that shown on this diagram here, that would need to be or may be more costly or less costly, depending upon the urbanisation proposals? — This is exactly true, yes.

Inspector I have no more questions.

(The witness withdrew)

MR. GEORGE IAN WILLIAM DUNFORD* *called*

Examined by Mr. Connell

5091 I think you are George Ian William Dunford, is that right? — That is so.

5092 And you are the Air Traffic Services Superintendent of International Aeradio Limited and have held this post ever since 1964? — Yes, I am.

5093 Have you been in Air Traffic Control for the last 17 years, initially in the Royal Air Force, before joining I.A.L. in 1955? — Yes.

5094 Your proof of evidence has been circulated, but may I just ask you this: first of all, is it correct that it applies equally to sites A and B? — Yes.

5095 I think there have been some minor slips at page 2, at the very bottom of that page there has been a typing error on the last line but one. Should it read "The normal routing of aeroplanes landing on runway 2 rather than runway 1 from such a holding area", is that correct? — Yes.

5096 Then corresponding adjustments need to be made over the page, page 3, four lines down, that should read "For aircraft landing on runway 1". — Yes, that is correct.

5097 Then in paragraph 3.2, 7 lines down, "the normal routing for aircraft landing on runway 3". I think that should be "Runway 4"? — Yes.

5098 Another three lines down "aircraft landing on runway 4" again substitute 3, is that correct? — Yes.

Inspector Are there any questions from first tier authorities for Mr. Dunford? From other local authorities? From other parties?

Cross-examined by Mr. Trustram Eve

(Cambridge University)

5099 Page 3, paragraph 3.2. As your paragraph has been amended, we see here do we not in relation to the holding area four miles north of Royston that there would be or you are anticipating the possibility of a holding level of 6,000 feet for the approaches to runway 3, and these are the aircraft which will then fly in an easterly direction before turning for the final approach path, is that correct? — Yes.

5100 This turn would take them over parts of the City of Cambridge. — Yes.

5101 When you say this turn will take them over parts of the City of Cambridge you are assuming this would be so as a routing to be adopted by aircraft which would not take an unnecessary long path, is that correct? — Yes, that would be correct. It would turn on the shortest possible distance between the holding area and the point at which they point to the final approach.

5102 Would they approach Cambridge roughly on a north-easterly direction? — Yes.

5103 Proceeding from the south-west of Cambridge or Cambridge itself? — Yes.

5104 Do they descend below 6,000 feet steadily or do they proceed at about 6,000 constantly until a later point? — No, they are descending from this level of 6,000 to intersect the final approach path between two and three thousand feet, so they are in constant descent.

5105 So, therefore, below 6,000 over the City of Cambridge? — Yes, they would be.

Inspector Any other questions? I have no questions. Thank you, Mr. Dunford.

(The witness withdrew)

MR. NORMAN FLEMING* *called*

Examined by Mr. MacDermot

5106 Are your full names Norman Fleming? — Yes.

5107 Are you the acoustical consultant with the Greater London Council, Director of the Acoustical Investigation and Research Organisation Limited,

* See also p. 1851.

* See also p. 1854.

Printed image digitised by the University of Southampton Library Digitisation Unit

and a member of the Sub-Committee on Aircraft Noise of the British Standards Institution, and were you formerly Head of the Acoustics Section of the National Physical Laboratory? — That is so.

5108 Do you formally produce the evidence which you have prepared on the noise effects for a site at Thurleigh? — Yes.

5109 And, indeed, the two sites at Thurleigh: Site A and site B? — Yes.

5110 Is there one addition you wish to make to paragraph 12 of your evidence? I think a sentence got omitted in error. — Yes, I have omitted a sentence at the end of paragraph 12.

5111 Could you dictate it at dictation speed? — It should read: "All institutions at which I estimate the noise and number index to be 30 or more and the number of noise incidents exceeding 85 PNdB by ten or more are included."

5112 That is what you are referring to in the first sentence of paragraph 13 as "the category so defined"? — Yes.

5113 One matter which you have not been asked to deal with in this evidence but perhaps you can assist on it. It is of course possible to take steps to soundproof private houses within the areas affected by noise? — Yes.

5114 Could you say what limitations in your view there are to soundproofing of private buildings? — The principal limitation, as I said is, that in soundproofing if it is to be effective, the windows must be tightly sealed, therefore one must have artificial ventilation, and for normal residential purposes artificial ventilation, I don't think, is normally acceptable.

5115 And bearing on the type of construction of the house is it sometimes difficult to provide without seriously affecting the ventilation. — It is difficult, yes, to get a sound solution; for windows we must have a space of some six to eight inches between them, and it is often difficult to provide. The ventilation unit, of course, takes up an appreciable amount of room, and they may not be easily sited in a particular room which is being soundproofed.

5116 Around Heathrow they have this problem and there are provisions, I think, for grants of up to 60 per cent of the cost for people installing soundproofing up to a certain figure. — Up to a limit of £150.

5117 If similar arrangements were made here would this sum impose a substantial financial burden on many of the people living within the areas of the flight paths? — It certainly would. If they wished to get the grants they would have to provide the other 40 per cent of the cost themselves. So, indeed, if the cost was more than the grant of £150 they would have . . .

5118 They would have to pay it themselves? — If it cost more they would have to meet it themselves.

Inspector Any questions from the first tier authorities to Mr. Fleming? Local Authorities? Other parties?

Cross-examined by Mr. Stroyan

5119 I want to ask you about soundproofing in relation to farm buildings. Now considering ordinary farm buildings involving ordinary numbers of animals, it would be fairly impossible to soundproof an ordinary property, would it not? — I am not very familiar with the type of building you are considering, but I should have thought the question of ventilation would make it virtually impossible.

5120 Of course the larger the unit involved the greater the degree of impossibility. — Yes.

5121 *Inspector* Any other questions? Mr. Fleming, on my arithmetic, if £150 is 60 per cent then 100 per cent equals approximately £250? — Yes, that is about right.

5122 Are you aware how much of a house can be soundproofed for £250? — I am not fully conversant with that.

(The witness withdrew)

MR. HARRY PATRICK SHALLARD* *called*

Examined by Mr. Connell

(Bedfordshire, Huntingdon and Peterborough, Northamptonshire County Councils)

5123 Are you Harry Patrick Shallard? — Yes.

5124 Mr. Shallard, are you a Master of Arts in the University of Cambridge and do you hold the Certificate in Education of that University? — I do.

5125 Since October 1968 have you been the Chief Education Officer for Bedfordshire and prior to that have you had twenty-two years' experience in educational administration and some teaching experience before the war? — That is correct.

5126 Just clear up one matter of detail in your proof of evidence at page 7 just for the assistance of those who wish to cross-reference anything; should it read in paragraph 14.2 ". . . see also evidence of Mr. G. Cowley (chapter 9.22)†"? — Yes, that is correct.

5127 I think you have had the advantage of reading the evidence, have you not, of Mr. William Allen for Cambridge University‡ and also the evidence submitted on behalf of the Harpur Trust? § — I have indeed.

5128 And can you say having read those proofs of evidence in broad principle you are in agreement with them? — Yes, I am.

Inspector Are there any questions to Mr. Shallard from first tier authorities? From other local authorities? From any other parties? I have no questions.

(The witness withdrew)

* See also p. 1863.
† p. 1807.
‡ p. 2111.
§ p. 2149.

Printed image digitised by the University of Southampton Library Digitisation Unit

DR. MELVILLE CHRISTIE MACLEOD* *called*

Examined by Mr. Connell.

(Bedfordshire, Huntingdon and Peterborough, Northamptonshire County Councils)

5129 Are you Melville Christie Macleod? — I am.

5130 Doctor of Medicine, Bachelor of Surgery and the holder of the Diploma in Public Health of the University of Glasgow? — Yes.

5131 And I think you have worked in the field of public health for the past 17 years and have been County Medical Officer of Health and Principal School Medical Officer of Health for the Administrative County of Bedford since 1965? — That is correct.

5132 I think you wish to make some minor adjustments to your proof of evidence, first of all at page 7, is this correct? — Yes.

5133 At the very bottom of that page in dealing with Wellingborough Junior should it read "No. of Places" rather than "No. of Beds"? — That is correct.

5134 And does the selfsame adjustment need to be made at the top of page 8 "No. of Places" again rather than "No. of Beds"? — Yes.

5135 Then passing on on the same page to Child Health Clinics and the total which you have set out there dealing with the line "4 miles outside 35 NNI" should that figure read 44 rather than 43? — That is correct, yes.

5136 Would you turn over to page 9, please, dealing with the number of pupils just above the paragraph headed "Conclusion", under "Four" should that be 18,409? — Yes.

5137 And in the first paragraph of your proof do you wish to make a deletion; ten lines down after "St. Neots" do you wish to delete from ". . . in the case of" to "the City of Cambridge" in the next line? — Yes.

5138 Is there anything else that you wish to add to your proof of evidence? — No, sir.

Inspector Are there any questions to Dr. MacLeod from first tier authorities? From other local authorities? From any other parties?

Cross-examined by Mr. Stroyan

(Unilever Limited)

5139 Dr. MacLeod, would you be good enough to look at page 3 to the paragraph headed "Working efficiency"? — Yes.

5140 You start: "Apart from its possible effects on the ear, intense noise can cause general fatigue and impair working efficiency. It is particularly distracting in tasks calling for mental concentration." Equally certainly, I take it, the tasks calling for fine movements of the hand such as surgery? — Yes.

5141 And would I be right in thinking that in the more delicate parts of those tasks requiring concentration the less degree of noise the better? — There is of course in this a good deal of individual variation, bearing that in mind exactly, I would agree, yes.

5142 And looking at the third major paragraph it appears, doesn't it, that the effect of noise on mental work of a high calibre is a very considerable one? — I did not catch the last few words.

5143 The effect of noise on delicate mental work can be very serious indeed? — I would say so, yes.

5144 What you say in that paragraph would apply with great force, would it not, to people undertaking scientific research? — It depends on the nature of the scientific research, other than in general terms I would not think I could commit myself to that at this stage.

Inspector Any other questions? I have no question.

(The witness withdrew)

DR. BERNARD ALFRED SOUTHGATE* *called*

Examined by Mr. MacDermot

(Bedfordshire, Huntingdon and Peterborough, Northamptonshire County Councils)

5145 Are your full names Bernard Alfred Southgate and are you a Doctor of Philosophy and a Doctor of Science, a Past President of the Institute of Water Pollution Control and of the Society for Water Treatment and Examination? You have a number of honorary positions in institutions concerned with water engineering and chemistry and water pollution control and has your whole professional career been concerned with research on the abatement of pollution and on its chemical and biological effects on natural waters? — Yes, that is so.

5146 I think you were from 1943 to 1966 Director of the Water Pollution Research Laboratory of the Ministry of Technology at Stevenage? — Yes.

5147 Have you prepared and do you formally produce a proof of evidence which has been circulated rather late on the problems of water pollution on the Ouse Valley system which you envisage could result from the siting of an airport at Thurleigh? — Yes.

5148 And taking it quite generally does that in your view raise some very serious pollution problems to which you draw attention in your proof of evidence? — Yes.

5149 I think this proof of evidence has been prepared in conjunction with Dr. Hoather who is senior partner in The Counties Public Health Laboratories who for the last 15 years has been advising consulting engineers on public water supplies from the Great River Ouse? — Yes.

* See also p. 1867.

* See also p. 1835.

Printed image digitised by the University of Southampton Library Digitisation Unit

5150 And is it right as you indicate towards the end of your proof that you think that detailed tests would need to be made in order to assess the pollution problem in this area if the airport were to come? — Yes.

5152* And that this would require intensive trials with pilot plant or might do? — It might do.

5153 And it is quite possible that this would produce pollution problems on a scale which has not previously been encountered in this country? — Yes.

5154 And do you think that the institution of which you were formerly a director, the Water Pollution Research Laboratory, would be able to assist the Commission in relation to these problems? — I am quite sure of that, sir, yes.

5155 I don't know if there is anything that you want to add to your proof about the particular problems of disposal of waste from the airport or the associated urban development? — Well, sir, the question of disposal from the airport itself has already been mentioned by one witness.

5156 *Mr. Sharman* I entirely endorse what he said about the need to decide on some disposal because it is quite a different problem from disposal of sewage from towns.

5157 And is the problem in this area also complicated by the proposals for dealing with the drainage and sewage disposal from the Milton Keynes new town? — Yes, the problem is the increasing volume that is going into the river which is serving as a water supply.

5158 I think you deal broadly with the intake at Offord for the Grafham Water Reservoir? — Yes.

5159 Which is very important for water supply? — Yes.

Inspector Any questions to Dr. Southgate from first tier authorities? From other local authorities? From any other parties?

Cross-examined by Mr. Forbes

5160 May I just take up with you the point I put to Mr. Sharman. You recall Mr. Sharman's evidence was that the additional population would require sewage disposal treatment works producing an effluent of a very high quality and I understood that to be a reference to the sort of 10/10 standard. Would that be wrong? — You asked previously what the effect of polishing would be on the nutrient content.

5161 I was only assuming as I think I am right that if you produce a very high quality effluent you do it at the expense of increasing nutrient salts content. — No, I would not agree with that. It makes no difference or no substantial difference to the nutrient concentration in the effluent. By "nutrient" I mean nitrogen compounds, nitrate and phosphate.

5162 I was not merely talking about polishing, I was talking about the provision of a high quality effluent on a 10/10 standard. — This 10/10 standard would be probably achieved by putting in over-sized sewage treatment plant plus a final polishing process.

5163 Would the final result be a higher concentration of nutrients? — No, you would have roughly the same.

5164 The suggestion I am putting to you is that if you put in a high quality effluent you produce something which increases the algae? — That is not so.

5165 I am not so much interested in the question of water supply, but in the river one of the things that would be encouraged to grow in these circumstances is a thing called planket weed? — Yes.

5166 And this builds up and flows downriver and produces something which is exceptionally unsightly? — Yes.

5167 And it can be exceptionally smelly as well? — Yes.

5168 This is the sort of thing and the kind of problem one might get on the Ouse? — Yes. I quite agree the more sewage effluent you put in the river the more likely you are to get increased growth of plants, whether weed or floating algae.

5169 And that makes it unpleasant from the amenity point of view? — Indeed.

5170 *Inspector* Any other question? On this last point that was raised, do I take it that the growth of algae and the like is a function of the quantity of sewage into the river and not the degree of purification? Is that what you are saying? — The processes ordinarily used for purifying sewage have little effect in removing the two algae nutrients, the concentration discharged remains not exactly the same but reasonably the same, and in my evidence I have said that if you came to the conclusion that you had to reduce the amount of phosphate or nitrate discharged you would come to the point where you would have to have pilot scheme trials. Although processes for removing have been tried on a laboratory bench there is no plant of any size operating in this country.

5171 So at this stage one cannot be certain whether it is a question of money only and cost of purification or whether one is required to be done at all? — Yes, you have to decide first what is to be done within the basin and this might involve experimental work with pilot plant.

(The witness withdrew)

Mr. MacDermot That completes the evidence for the first group of local authorities. Before I sit down may I just say in relation to the question which you asked of Mr. Cowley, sir, that as far as the local authorities I represent are concerned they would welcome the earliest possible opportunity to discuss the AUD problem with the Commission's consultants and there has been a suggestion in the correspondence that that should await further costings which are being done. We feel it might be advantageous if we could proceed to the discussions at once as it might save unnecessary work on the costings, but in

* Question no. 5151 was inadvertently omitted.

Printed image digitised by the University of Southampton Library Digitisation Unit

any event we are ready to enter into those discussions and we would welcome this as soon as possible.

Inspector Thank you for making that clear and thank all the local authorities for the volume of work that has gone into the submissions which are now before me. Buckinghamshire County Council.

MR. R. N. D. HAMILTON *called*

(Buckinghamshire County Council)

Mr. Hamilton Sir, I am R. N. D. Hamilton, Deputy Clerk of the Buckinghamshire County Council. If it would be agreeable to you, Sir, I would prefer to call my witness before you first, and then address a few words to you afterwards.

Inspector Certainly, Mr. Hamilton.

MR. F. B. POOLEY* *called*

(Examined by Mr. Hamilton)

5172 You are Frederick Bernard Pooley? — Yes.

5173 And are you the County Architect and Planning Officer for Buckinghamshire? — Yes.

5174 And have you prepared a written Proof of your evidence, which has been circulated? — Yes, I have.

5175 I think you support the evidence already given by Mr. Cowley, and give further details of the local implications and the local policies in Buckinghamshire? — Yes, that is right.

5176 There are just two points in your Proof which I should deal with. First, on page 5, you give a total of the buildings of architectural and historic interest affected by the Thurleigh A site—is there an error in the second column, headed "Supplementary List", in relation to Olney, where the figure 15 should be 35? — Yes, that is so; and then it corresponds to the same number on the second page.

5177 That is page 6, where you again set out, under Thurleigh "B", again "Supplementary List"—that is correct there, 35? — Yes.

5178 Now, on page 9, in paragraph 3.4, you refer to the Limestone Country Belt? — Yes.

5179 And is the policy for that set out in the report, entitled *North Bucks Countryside*, which Mr. Cowley has already handed in this morning to Mr. Hunt? — Yes, that is so.

Inspector Are there any questions from first tier authorities to Mr. Pooley? From other local authorities? from any other authorities? There are no questions, and I have no questions.

(The witness withdrew)

Mr. Hamilton Sir—if I may address you briefly on behalf of the Buckinghamshire County Council. I would like to divide my comments under four heads. First and foremost, may I say that we entirely adopt and support what Mr. MacDermot has said to you this morning on behalf of Bedfordshire and others. Much of the evidence which he presented has of course been put forward jointly on behalf of the Buckinghamshire County Council also, and that has been completed by the evidence which Mr. Pooley has just presented to you. Secondly, there are a few points which I would wish to say by way of addition rather than repetition, about the part of Buckinghamshire which is likely to be affected by the airport if it came to Thurleigh.

This part of Buckinghamshire is the northern end of the county, remote perhaps from the larger centres of population in the south, and some way from the county town of Aylesbury. Nevertheless, I must emphasize very strongly that it is a part of the county about which the County Council are very much concerned, and for which they really do care. They are making special efforts to preserve the Limestone Country Belt to which Mr. Pooley has referred, and which is included in the areas of high landscape value shown in Mr. Cowley's Map, T.2. You have heard representations from the Gayhurst Parish Council, and the Gayhurst Parish Meeting, which you will be dealing with later in the course of the Hearing. I hope you have gone, or will go, to Gayhurst, along the drive from the Sir Francis Drake public house. There is one of the finest walnut trees there, in England, bought with the land on which it stands for about £1,500 by the County Council. And if you go further up, you come to the parish church for which the County Council has given a substantial grant of £500, towards the cost of repairs; and then you come to the magnificent, I suppose Elizabethan, house. I simply take this as an example of the kind of interest and care which the County Council have in this part of the county, and what kind of village and what kind of building we have here. It would be a thousand pities if the coming of an airport to Thurleigh, with its noise, were to deter people from occupying and using houses of the character of Gayhurst, or Sir John Soanes' Tyringham, which is not far away. There are many villages, Sir, of beauty and considerable antiquity in this part of the county which you will have no doubt seen. Some take their names from men long since departed—I may mention Newton Blossomville from Gilbert de Blossomville who held it of the Conqueror's niece, and Clifton Reynes, named from the Reynes family, who were living there from 1275 to 1673.

Then, Sir, may I mention another example of local initiative and enterprise, which it would be a pity to spoil in any way by the noise. This is Emberton Park, mentioned on page 8 of Mr. Pooley's proof. What the proof does not say is that this is something provided by the Newport Pagnell Rural District Council, to whose enterprise and initiative the County Council have contributed something of the order of £12,000.

The County Council have also made grants to Olney and Sherington Parish Churches, and they are the owners of Cowper's Alcove at Olney.

Olney and Weston Underwood are of course the poet William Cowper's country, inspiring his poems and letters.

* See also p. 1873.

Printed image digitised by the University of Southampton Library Digitisation Unit

I hope, Sir, that these few points—trivial as they may be in relation to the problems and cost of the airport which you are considering—do show that the County Council care about this area, and I may say, Sir, that they are completely opposed to the placing of the airport at Thurleigh, with the noise of traffic and urbanisation—a horrid word, Sir, in itself, applied to an area of this kind—which it would inevitably bring in its train to this northern tip of Buckinghamshire.

Sir, might I come to my third head on which I would like to say a few words to you? and that is how we see the importance of this local hearing in the scheme of the Commission's work. We have read the *Proposed Methodology* of the Commission's research team in Volume VII of the Commission's *Papers and Proceedings*.* It is in many ways, Sir, a brilliant and thought-provoking document. We have submitted to the Commission some criticism of it. The point I wish to mention today is disagreement with its apparent wish to want to value everything in money terms, because we do not believe, Sir, that the value of non-material things, of the English countryside, of village life, and of man's enjoyment of his home, can properly be reduced into money terms. They are matters, we have said to the Commission, Sir, for subjective judgment. They cannot be reduced to numbers of listed buildings, which all have their own individual values and so forth, and multiplied by pounds, shillings and pence, and put into a computer to give the right result. To read a play is a poor substitute for seeing it acted on the stage, and even the atmosphere and feelings of these local hearings are to some extent inevitably lost in the transcripts—through no fault at all, of course, of the shorthand writers. Similarly, words and money can do little to describe the true beauty of the country. The landscape artist can do more than we can do in words and written proofs. But even that, Sir, is no substitute for seeing the country and for living in it and thereby judging its true value. Likewise, the hopes and fears and wishes of the people living there are not really to be judged by graphs and charts and numbers, but by seeing what they have to say and meeting them. This is the way to make a good subjective judgment. I have heard it said, Sir, that you are the eyes and ears of the Commission, and in our submission, Sir, it must be your view—by which I mean your inspection of the areas round here and your advice to the Commission—which must be of the greatest importance. It was therefore with the greatest satisfaction that I heard you say in opening how well you knew this area, and that you had been round it both by car and on foot; and as we place so much reliance on subjective judgment, we do place great reliance on your judgment, based on your view. This hearing, Sir, with your inspection, is our great opportunity to put before you the weight which we hope you will advise the Commission to throw into the scales against the airport coming to Thurleigh.

Now, Sir, that is the third head of what I wish to say. If I may go to the fourth head: I want to say a word, Sir, about the effect of the airport on the lives of individuals. As you know, Sir, I am afraid to your cost, at Cublington we took the step of suggesting that individuals should write to the Commission, not by way of repetitious objection to the airport, but to tell the Commission, Sir, what the effect of the airport would be on their individual homes and lives and their hopes and fears; and we did, Sir, invite them to appear before you. Many did so. One cannot say, of course, what the effect of this may be; but so far as I am concerned, the effect of reading and hearing people in this way, and meeting them in their homes, is to make me wish to redouble my efforts to secure that the airport comes neither to Cublington or to Thurleigh.

Now, of course, Sir, the Commission are carrying out their own social survey on all four sites—something one welcomed, although I must reserve the right for the County Council at some later stage to criticise, if necessary, the methods adopted, and perhaps in particular to examine the adequacy of the sample in relation to the population involved. In the case of Thurleigh, we have made no suggestions to individuals that they should write to the Commission or that they should appear from the area of North Buckinghamshire with which I am concerned. In the case of the Cublington site, our suggestions were directed to individuals within the 50 NNI contour. In the case of Thurleigh A, I think there are very few people within that contour, and in the case of Thurleigh B there are only comparatively few within that contour. But what I do want to make absolutely clear, Sir, is that the County Council are just as concerned in the case of the Thurleigh site as they were at Cublington, with the effect on the lives of individuals in North Buckinghamshire, because although there are not many in the 50 contour, there may be quite a lot in the 40 and 45, and the effects on the lives of those individuals and the personal suffering and distress which they will suffer and for which of course compensation will not be provided, should be taken into consideration. This kind of thing, Sir—the effect on the individuals of all their varying kinds—are no doubt common, Sir, to Cublington and to Thurleigh, and we hope to make it clear that neither is the site to be chosen, unless there is some overwhelming necessity of which, in our submission, there is no sign at present.

In conclusion, Sir, perhaps it is fitting, as the country with which I am concerned is William Cowper's country, if I were to quote just half a dozen lines from one of his poems. He was, Sir, I am glad to say, at one time a solicitor's articled clerk, but he was later called to the Bar (which I regret!). He was for some years a Commissioner of Bankrupts, but then, I think because of his health, he retired to Olney, where he lived for a number of years before moving on to Weston Underwood and later still to Norfolk. The lines which I am about to quote, Sir, are in substance looking with relief from Olney at London, and they are as follows:

* HMSO; 5s.

Printed image digitised by the University of Southampton Library Digitisation Unit

" 'Tis pleasant through the loopholes of retreat
To peep at such a world, to see the stir
Of the great Babel and not feel the crowd,
To hear the roar she sends through all her gates
At a safe distance, where the dying sound
Falls a soft murmur on the injured ear."

We in Buckinghamshire say, never let the great Babel with its crowd and its roar come to Thurleigh. Mr. Blake, Sir—the Inspector at the earlier Stansted Inquiry, with which of course the Commission have nothing to do—came to the conclusion, Sir, as I understand it, that it would be a calamity for the neighbourhood if a major airport were placed at Stansted. My Council ask you, Sir, after all you have read and heard and seen at and in connection with this local hearing to report to or advise the Commission in similar terms for Thurleigh, equally, as for Cublington.

Inspector Thank you, Mr. Hamilton.

MR. KEENE *called*

(Cambridge and Isle of Ely County Councils)

Mr. Keene My name is Keene, and I appear on behalf of the Cambridge and Ely County Council I will, if you have no objection, sir, call my evidence straight away.

MR. B. H. MELLOR* *called*

Examined by Mr. Keene

5180 Are you Brian Hague Mellor, and are you County Planning Officer of Cambridgeshire and Isle of Ely? — Yes.

5181 I believe you hold the Diploma in Town Planning of the London Polytechnic and you are also an Associate Member of the Town Planning Institute? — Yes, that is correct.

5182 There is just one thing I want to ask you about. The County Councils supplied population figures, of course, for the various NNIs to the County Planning Department at an early stage and these figures have been incorporated in the totals given by Mr. Cowley in his evidence?† — Yes.

5183 I believe you have some slightly more detailed figures to indicate how Cambridgeshire would be affected, is that so? — That is so.

5184 I don't want to take you through all of those in detail, but can you give the Inspector, first of all the total number of people affected by the 35 NNI and higher contours for Site A in the two runway situation? — This would be 5, 2 — I am sorry.

5185 Site A? — 3,910.

5186 And that I believe declined rather for the four runway situation. — That is so.

5187 And for Site B? — The figure would be 5,210.

5188 That again is a two runway? — Yes.

5189 That goes down to something about 3,000 with a four runway situation? — Yes.

5190 *Mr. Keene* I don't know if you have anything further you would like to add? — No.

Mr. Keene I tender Mr. Mellor for cross-examination.

Inspector Are there any questions to Mr. Mellor from the first tier authorities? From other local authorities? From any other persons?

Mr. Trustram Eve May I point out that Mr. Mellor's proof should have a consequential amendment on page 2, paragraph 2.01; it should now be runway 3 as a result of what Mr. Dunford said.

Inspector Yes. This must be right, must it not? I have no questions.

Mr. Keene That is the evidence on behalf of Cambridgeshire and Isle of Ely County Councils, which I will refer, if I may hereafter, to as Cambridge, for the sake of brevity. You may recall at an earlier Stage II hearing my learned friend, Mr. Gregory, for the Country Landowners' Association, saying that he did not want to be coy about the final attitude of his association towards all four of the sites. I certainly do not want to be coy on behalf of my clients, and there is no point in it in any event because our Stage II submissions are already before the Commission, even if you have not, at this stage, sir, had an opportunity of reading them.

Inspector I have read it.

Mr. Keene I am grateful, sir, and surprised that you have managed to do that, but that, of course, is a document which deals with our views on the comparative merits of these four sites. What I want to say today deals entirely with the local aspects of the matter within the context of Stage II when we present the local effects and local objections to Thurleigh from the point of view of Cambridge. It is very similar, you may recall, to the position adopted by Hertford at the Cublington Enquiry. Of course, like Hertford, also, we have preferred to appear separately at this inquiry rather than as part of the joint County Councils' case. It is quite obvious, if you look at any of the maps that Cambridgeshire and the Isle of Ely would not in fact suffer to anything like the same extent as the counties lying to the west of us. Those counties are the ones which bear the brunt of the noise and urban development which would accompany the proposals. Inevitably, therefore, our case has to be a little different from theirs.

May I also say that we are very glad to see that Chesterton Rural District Council* put in a separate representation. That Rural District is a part of our county which is most sorely affected by the proposal, and its evidence speaks and the representation will speak very eloquently about the likely harm that district would suffer.

* See also p. 1877.
† p. 1807.

* p. 1904.

Printed image digitised by the University of Southampton Library Digitisation Unit

The County Council has, of course, considered the impact of this proposal and of all the other proposals on the whole of this area, and has formed a view accordingly. That, of course, must colour the submission.

Having said that I do wish to emphasise that Cambridgeshire is very greatly concerned about the present proposal to site the third London airport at Thurleigh. We are concerned for a number of reasons. We are concerned, first of all, because of the possible impact on the Lords Bridge Observatory. You have already heard a great deal at the Nuthampstead Inquiry about the tremendous national and, indeed, international importance of that observatory. We have always been anxious about the Lords Bridge Observatory, and any possible damage that could be caused to it. That anxiety was expressed at Nuthampstead. All I wish to say is, we are equally concerned about any such consequences arising from the present proposal.

I do not wish to say any more, sir, not because we do not have strong feelings on the subject, but because I know the matter is going to be dealt with in a far more expert way by those who will be appearing at the later stages of this Inquiry. Very much the same is also true of Cambridge both as a city and a university. We feel we can safely leave that to the City Corporation and the University itself, and they will be dealing with it in very much greater detail. Brevity does not stem from any lack of feeling on our part, merely out of respect for those who may speak with more authority than ourselves.

There are two matters that do concern Cambridge itself as the planning authority. The first is the question of urban development. If you would not mind turning for a moment to Mr. Cowley's proof, sir . . .

Inspector Well, Mr. Keene, instead of turning to that, I wonder if you would like to defer the remainder of your speech until after lunch? I think we might adjourn until 2.15.

(A short adjournment)

Mr. Keene I was about to deal with two matters that do particularly concern Cambridge as the planning authority, sir, and I was asking you when we adjourned to look if you would at T.4* in Mr. Cowley's proof. You will see the county boundary running down the squiggly line to the east of the 12-mile radius line. It is perfectly obvious to anyone looking at that map that Cambridgeshire has really come off pretty lightly, even if one allows for the diagrammatic nature of these blue circles that is to say the western edge of the county is scarcely infringed by the planned expansion of some 80,000 persons. Even so, we are still concerned because even that site could have serious reprecussions for the Cambridgeshire villages and hamlets along the western side of the county. Not all of those working or attracted to the area by the airport are going to wish to live in those three areas of planned growth. Indeed, I understand it has been assumed that they will not be able to be located within those three areas of planned growth which would spread out to the villages and hamlets of the area, and this must include some of those in Cambridgeshire. If you like, that is the unplanned areas of development which flow from a major growth point like the third London airport. Obviously we, disliking this, as a planning authority will resist it. We hope our resistance will be successful. Nonetheless the risk is there, and the risk is something we would like the Commission to take into account, and it could cause disturbance to the present state of affairs in Cambridge. This western fringe of the county is fairly sparsely populated; it consists of a large number of small villages set in pleasant, if not very dramatic countryside, and it would be regrettable if they were to undergo any large population increase. As I said, Mr. Cowley suggested patterns are relatively kind to Cambridgeshire. They are, of course, only suggestions, and your consultants, as in a way you yourself indicated this morning, might well come up with some other pattern rather than these three blue rings we have before us this afternoon. They may think the 12 mile radius from the airport with the location of urban development is not sacrosanct. What we want the Commission and its consultants to bear in mind is the peaceful nature of the countryside in western Cambridgeshire, and we hope this will strongly influence any form of urban development which your consultants will choose. You will observe neither Mr. Mellor in his evidence* nor I have expressed the same concern about scarcity of labour that has been stressed by the joint County Councils—the western block if I can call them that. You will see the reason for that from Mr. Mellor's proof. We are in a different position. The northern part of our county is a bit out in the cold as far as the expansion of jobs and population is concerned. We do not know whether we are going to benefit from the airport. Mr. Mellor suggests we may not because of shortage of communication between the northern part of the county and the airport. Nonetheless, we cannot pretend that would be a disadvantage to us.

We have left till the last what is, in our eyes, the most serious aspects of the Thurleigh proposal, that is the question of noise. Again we cannot pretend that Cambridgeshire is going to suffer as would the western counties; the NNI contours show that it is only again part of the western fringes of the county which is crossed by the NNI contour; even so, the impact is there and it is considerable. The county is in a rather curious position of suffering more from the two runway situation whichever site is chosen than from the 4 runway situation when the airport is fully developed. That presumably arises, I suppose, from the concentration of aircraft movement of the two runways rather than splitting it on 4 runways. We are, for the record, more adversely affected by the Commission's second thoughts on Thurleigh than by their first thoughts. The upshot of it on the present

* See attached wallet of maps and diagrams.

* p. 1877.

Printed image digitised by the University of Southampton Library Digitisation Unit

calculations is that some 5,000 plus people in the county of Cambridge would come within the 35 NNI on site B and that is with the two runway situation. That, sir, is the worst of the possibilities as far as we are concerned. Runway 4 comes within the 35 NNI on site A—that again is the 2 runway situation.

Some of our parishes even come into or are crossed by the NNI going right up to the 50 mark, not to a great degree, but nonetheless they and their inhabitants of the county will suffer that aircraft noise, or that degree of noise. There are people, churches, ancient monuments, conservation areas, historic buildings, all the various features of man's existence within approximately 20 square miles of Cambridge which would fall within the 35 NNI contour. But, where we are concerned above all is with the schools in Cambridge, and the children in them who may suffer particularly when the aircraft movements, landing and take off, are considered. You have all the details, sir, and I will not go through them now; they are in Mr. Fleming's and Mr. Shallard's evidence, but what it amounts to is that as many as seven of our schools with already over 1,000 people on the roll when protective measures, as you have already heard this morning—no one really considers these protective measures can be entirely satisfactory; they leave a lot, a great deal to be desired. Although, as I say, this situation is worse with two runways rather than four runways, it still appears to us to be a serious problem because the two runway stage is presumably going to endure for a good many years.

Having said that, I don't want to spend a great deal of time on the human effects of noise nuisance. I know you have had already a great deal of evidence about this at the three previous enquiries. There is quite admirable work done at this Inquiry by BARA, which contains a great deal of information on the effects on humans of noise conditions. I would say I don't know how your commission is going to evaluate the noise when it is put beside some of the other factors, some of which are for example, the travelling time taken by passengers and others to get to the airport. What we do ask you to bear in mind, and if possible to reflect in the assessment you make of the situation, is that the human suffering from the noise and the human suffering experience by those who live in the vicinity of London's third airport, is a long term feature of their lives. It is something they have to live with, for many of them every day, something which is going to happen many times in the course of the day and, even more important, many times in the course of the night. That appears to us to be very different from the additional travelling time which might have to be undergone by airline passengers say three times in a year in whose life it is not a very significant feature. Aircraft noise to those in the vicinity of an airport is an extremely significant feature in their lives.

I have said all I want to say on behalf of Cambridge, and I hope you will not think it amiss if the County is not represented by Counsel after this afternoon. As I said, we do not think we are in the thick of this, to the same degree as other planning authorities represented here, but we shall have someone available if you wish to obtain information from the County.

Having said that, sir, perhaps I can express my thanks (having been a member of the small travelling circus that has run around from Southend to various other places ending up here), at the patience and courtesy and good humour with which you have listened to us.

Inspector Thank you, Mr. Keene. Now on page 1 of the time table I believe the Bedford Rural District Council wish to make some comment.

Mr. Connell Yes, sir.

Mr. MacDermot Before you go further, sir, may I ask if my witnesses may be released, and perhaps it would be convenient if I can ask on behalf of everyone here if we can take it that all witnesses are released after the completion of their evidence, unless there is some special request made that they stay longer?

Inspector Yes. That is the position I would like to be adopted. The less the valuable time of a witness is taken at this hearing the better. As soon as they have done their little piece it will be better and I would be glad if they will go back to their ordinary business.

Reverting to the programme, do the Bedford Rural District Council wish to make representations?

MR. M. CONNELL *called*

*(Bedford Rural District Council)**

Mr. Connell Yes. My name is Michael Connell, on behalf of the Bedford Rural District Council. The Bedford Rural District Council have submitted a separate proof of evidence in this instance because theirs is an area which embraces the whole of Bedfordshire to the north of Bedford and, in those circumstances, clearly they are the local authority most directly affected by the present proposals that are being considered.

Sir, the immediate reaction of the Rural District Council upon hearing of this proposal was one of complete opposition and this is a reaction which has hardened over the passage of time. In an effort to advance that spirit of opposition the officers of the Rural District Council have in fact co-operated with the officers of the County Council and BARA as an institution for the preparation of evidence to be put before the Commission. The sort of matters in which they have given assistance as I am instructed are the questions of flooding, the question of drainage, the question of conservation areas and so forth, and in the result they wish through me and through Mr. Timms the witness I shall call wholeheartedly to support the evidence which has been submitted this morning on behalf of the joint County Councils and which will be submitted on behalf of BARA.

Sir, of course not least amongst the considerations which is worrying the Rural District Council is the

* See also p. 1879.

Printed image digitised by the University of Southampton Library Digitisation Unit

inevitable loss of genuine country environment which has given pleasure and relaxation in the past not only to those who live there but to people who inhabit the towns and who have visited the countryside for relaxation in the past. Having said that, may I call Mr. Timms before you.

MR. LAURENCE TIMMS *called*

Examined by Mr. Connell

(Bedford Rural District Council)

5180a I think you are Laurence Timms, is that correct? — That is correct.

5181a Are you a Solicitor and Clerk to the Bedford Rural District Council? — Yes.

5182a Mr. Timms, I think your proof of evidence is numbered 4002, it has been submitted to the Commission and has been circulated, is that correct? — That is correct.

5183a Is there anything at this stage that you wish to add to that proof of evidence? — No, sir.

Inspector Are there any questions from any quarter to Mr. Timms on his proof of evidence under 4002? Mr. Timms, I have no questions, thank you very much.

Separate submissions were submitted by St. Neots U.D.C. and St. Neots R.D.C. Do I take it they wish to appear separately or do not wish to appear separately?

Mr. MacDermot No, they do not wish to appear separately nor was I proposing to call them as witnesses. If there are any questions anyone has we are prepared to answer them.

Inspector Their proofs will be taken fully into account.

MR. J. B. HARWOOD* *called*

(Bedford Corporation)

Mr. Harwood My name is J. B. Harwood, I am the Deputy Town Clerk of the Bedford Corporation. You have the Corporation representation before you and it has been submitted in the form of a written representation. I shall in fact call Mr. Dawkes who is the Director of Technical Services to present the representations and answer questions.

I wish to make some introductory comments to explain the Corporation's attitude to the suggestion that there might be an airport at Thurleigh. As you will notice the representations are short compared with the proofs of evidence which we have seen this morning, they are very short. I would like if I may just to comment upon that and explain what I have said. The Council do not wish to burden the Commission with unneccessary technical details which are being supplied by other parties and which the Commission is also obtaining from several sources. It has therefore kept its representations in general terms.

When the site information was received it was studied with very great care and the main subjects for consideration were obviously the question of noise and also the impact which a large airport complex and a large influx of people could have on the Borough. On the question of noise, the Council noted that the contours of the published map did not include the town, but however when one is considering what could be termed the sphere of influence of a large airport there could be quite a considerable nuisance from noise. It is easy to plot on a map the boundaries of an area, but when the necessary detailed site investigations have taken place such boundaries tend to be altered, and these contours could cover many areas of the Borough. This means that we are apprehensive about the noise problem and our case is that it would be taking far too great a risk to site a large airport so near to a large centre of population. Other considerations came into the question. Whether or not there was a noise nuisance, would the airport have a serious effect? The Corporation believe it could have such an effect.

As you will probably have realised it is an expanded town. It has been expanded over the last 15 years or so and one expects it will continue to expand. This expansion has been a steady growth and it has been possible by and large to see that the increased services which the amenities of modern living demand kept pace with the increase in population, but the Corporation have had in mind some time now that there must be a limit to expansion and the limit they foresee for the foreseeable future is that the Bedford urban area in general should not exceed a population of 120,000, in other words they have planned for the future for gradual expansion up to 120,000 or thereabouts. To expect the town to accommodate an accelerating expansion for housing people connected with an airport would obviously require very careful consideration. The Council feel quite strongly that if there were to be an airport at Thurleigh this additional population would have to be housed elsewhere. Their representatives also feel with the problems of drainage and what I will call road transport that they would regard it as absolutely essential, especially the arrangements to be made for drainage and for new roads to by-pass the town otherwise the highway system of Bedford will just not be able to cope with that increased traffic.

As far as drainage is concerned, the town suffered quite considerably a few years ago from flooding from the river. The risk of flooding has been substantially reduced but it is obviously going to be a retrograde step, to put it no higher than that, if we were to see a return of the flooding conditions of years ago.

Unfortunately, of course, we have not had the same success with improvements in the highways and new by-pass roads would be absolutely essential. All these of course are going to be very expensive and the road pattern we ask the Commission to consider in accessing the cost of an airport at Thurleigh.

Finally, there is one point which I think is so obvious that one has only to look at a map to realise

* p. 1881.

Printed image digitised by the University of Southampton Library Digitisation Unit

it. In Bedford we have a town with a population just short of 90,000, a town with both natural amenities, a river frontage, schools, it has got a lot of modern shops and all the other facilities which one expects of a town which is the centre of a large area. If the airport came into being then whatever arrangements were made for housing the population, whatever arrangements were made for new roads, Bedford would obviously be a magnet for a large part of the resident population of the airport, indeed even for the transient population. Not only would the close proximity of an airport have an effect on the labour situation but these various amenities which I have mentioned would have to cater for far greater numbers than those for which they were designed, and it seems that if one had over-loading in this sense then the people of Bedford would suffer. As I say, the representations are short, my opening is short and I will now call Mr. Dawkes.

Inspector Before Mr. Dawkes makes a long trip to the platform and possibly returns fruitless are there any questions which any party wishes to put to Mr. Dawkes on the statement 4118 put forward by the Bedford Borough Corporation? There are apparently no questions and I have no questions, so unless Mr. Dawkes himself wishes to say anything he need not go to the platform.

Mr. Harwood That is the Corporation's case.

Mr. A. Smith *called*

(Bletsoe Parish Council)

Mr. Smith My name is Arthur Smith, I am Chairman of the Bletsoe Parish Council. Bletsoe is one parish which is likely to be obliterated by this proposal of the airport. We are a very small parish but we feel it is incumbent on us to object and we have lodged a statement and I ask John Dunkley to formally present that statement.

Mr. John Dunkley* *called*

Examined by Mr. Smith (Bletsoe Parish Council)

5184a Would you confirm that you are John Dunkley? — That is so.

5185a And you are a member of the Bletsoe Parish Council speaking on behalf of the Parish Council? — I am indeed.

5186a I think that there are one or two errors in the second paragraph, could you correct them, please? — Yes. This was to do with the survey that we conducted and it should read five and not nine.

5187a Of the five can you add anything to that? — Well, of the five, four were from one family and they are not local people.

5188a You say in the last sentence of that paragraph: "The overwhelming majority were opposed to the Thurleigh site." — Yes, I have the exact number.

5189a You have the voting papers there, would you like to hand them over to the Inspector? — Yes.

5190a In paragraph 3(b) you have submitted some statistical detail. You know there is an inquiry going on by the Commission, have you any view on which of those two sets of figures are likely to be more accurate? — Yes, I am sure our own is far more accurate on the information we have.

5191 Turning to paragraph 4(a), the second sentence deals with agricultural statistics. Now there is a variance between those figures and the NFU figures. Would you comment on that? — In this case yes, I think we must accept that the NFU figures are more accurate than our own.

5192 There is one small typing error in the last sentence of No. 8, a very small one. It should read, I think, that "villagers will not be able to walk across the road"? — This is true, yes.

Inspector Are there any questions to Mr. Dunkley concerning the evidence on behalf of Bletsoe Parish Council? There are no questions. That is all you wish to say on behalf of Bletsoe Parish Council? That is your case on behalf of Bletsoe Parish Council?

Mr. Smith Yes. One other point, we have original letters submitted to the appendices. I think they have been handed over.

Inspector I believe Bolnhurst and Keysoe Parish Council are appearing under BARA later during the week?

Mr. Forbes That is correct, they are under my umbrella.

Lord Campbell* *called*

(Milton Keynes Development Corporation)

Lord Campbell I am Chairman of the Milton Keynes Development Corporation. Written representation has been sent to you under 4064.

I want as briefly as I can to bring out the salient problems which the third London airport would place on the Development Corporation.

As I said in the case of Wing, we in the Development Corporation are in the extraordinary position of having been charged by the Minister of Housing and Local Government to plan and build a new city and of having to publish our plans for that city at the beginning of next year without knowing whether the plans are to be set at nought by the subsequent appearance of a third London airport at Thurleigh.

I hope, sir, that I succeeded in making it clear that siting the airport at Wing would be wholly incompatible with the City of Milton Keynes as it is now being planned, and that I also made clear the disruptive effects on the development of the city—by then already started—which would follow the decision to choose Wing.

* See also p. 1884.

* See also p. 1892.

Printed image digitised by the University of Southampton Library Digitisation Unit

The choice of Thurleigh I think would be equally incompatible and equally disruptive, although the reasons for incompatibility are rather different from those applying to Wing.

Our brief, Sir, from the Minister was to plan a city to take an overspill of 150,000 from London and South Bucks, and the aim is to create a balanced community, essentially self-contained, as regards industry, shopping, public services, recreation and other amenities. Co-ordination of our proposals with other nearby towns and the surrounding countryside is vital.

By the time we publish our final Plan, at the beginning of next year, we shall have started developing the City according to this charge, and we shall be committed to receiving many industrial, commercial and other organisations. If, later on, the Government decided to put the airport at Thurleigh, not only would the work of development be dislocated, but many of the plans and policies which we have worked out over the last two years would no longer apply. They would have to be re-thought, re-phased and reco-ordinated with the local authorities and other authorities concerned.

At Wing, one of the main problems would be that Milton Keynes could not fulfil the function of an airport city without replanning and expansion of its boundaries. In the case of Thurleigh, there are other towns nearer the proposed site which could perform that role, but the expansion to take the additional 65,000 employees required (which could imply a total population of a quarter of a million) is likely to place such a severe strain on local building resources and materials, and on the sub-regional road network, that the development of Milton Keynes would suffer. If the airport were given priority in the national allocation of regional resources—as no doubt it would be—it would draw away the resources needed to develop Milton Keynes. Problems of surface water drainage and of sewage disposal, already considerable, would be made more considerable.

To cap it all—if Thurleigh B were picked, the problem of noise would probably render a quarter of the designated area of the city unfit for development. Milton Keynes has been given the highest priority by the Planning Council of the South East Region to meet the expansion of population of the South East Region in the years ahead. To build a new city of this sort, the biggest new town so far attempted in this country, virtually from scratch, and to make it as we intended to do, a city with a quality and a life of its own, not just a housing estate, we have got to build it as single-mindedly as possible; and as rapidly as resources and the provision of the necessary employment, social services and amenities will permit.

I submit, Sir, that an internationl airport at Thurleigh—as at Wing—and its associated urbanisation, would so unbalance the pattern for development in this area, and so disrupt the development of Milton Keynes, that either would prevent the Corporation from achieving the Government's charge to them. These continuing uncertainties are really intolerable for everybody concerned in this part of the world.

5193 *Inspector* Are there any questions to the Milton Keynes team concerning their statement, No. 4064? Apparently not. Lord Campbell, I wonder if you can help me—in the last sentence of the submitted proof, where you say "Almost certainly, the effective boundaries of the designated area would have to be changed and this would vitiate the understanding gained by the public from the Minister . . ." —could you elaborate a little more upon that? — Yes, Sir. What I mean is this: that if Thurleigh B be chosen, the whole of the north of the designated area is "out" for the purposes of development, and therefore we would either have to considerably reduce the population of Milton Keynes, or we would have to increase and change the designated area. If, on the other hand, Thurleigh A were chosen, it would seem to us that we would certainly, even from the distance from where we are, it would have a considerable impact on the population of the area, and it would seem to us that we would inevitably have to take extra population for which we would not have room.

5194 Yes, but what kind of understanding was gained from the Minister? — I beg your pardon. May I ask the Managing Director if he has got chapter and verse? . . . I am afraid, Sir, we have not got the quotation. But at the local public inquiry, and in the Minister's statement, we got the impression—and we think the people in the area got the impression —that Milton Keynes would not spill over into other areas; and moreover, that it would not be built at such high density that it would unduly interfere with the ground value around it. So the assurance was that it would be built at fairly low density, and these are clear understandings gained from the Minister which would be overset. I apologise that we have not got the actual report of the Inquiry here, but it is among the documents quoted in our written evidence.

Inspector Thank you very much. Newport Pagnell Rural District Council?

Mr. Horwood I represent Newport Pagnell Rural District Council—do you wish me to come to the rostrum?

Inspector No, I think not.

CLLR. R. C. HORWOOD* *called*

(Newport Pagnell Rural District Council)

Cllr. Horwod I have been asked to represent the Newport Pagnell Rural District Council because I also represent a very large part of North Buckinghamshire as a County Councillor, and I am also the Vice-Chairman of the Buckinghamshire County Planning Committee; and in addition to the statement which is before you on behalf of the Newport Pagnell R.D.C., I have been asked to say that this

* See also p. 1894.

Printed image digitised by the University of Southampton Library Digitisation Unit

statement has also been endorsed by the Newport Pagnell Association of Parish Councils, and also by the Parish Meeting—a very large and well-attended meeting—and therefore I think I may say that I do represent all the interests in North Buckinghamshire which would be adversely affected by the coming of an airport.

May I just comment upon two items only in the statement that is before you, Sir? The first I regard as being of extreme importance, and an opening has been made to me by Lord Campbell. There is no possible doubt that all of us in the area were given the most firm assurances that the new city of Milton Keynes would not spread at the edges. It was on that understanding that I and everyone accepted it—an understanding that the new city would be preferable to sporadic urban development throughout the whole area. If we have the airport as well, then we shall have a new city, and we shall have the sporadic urban development destroying the whole of rural North Bucks too; and with Milton Keynes on one side, the development up North on a different side, then life in that corner of North Buckinghamshire would be completely intolerable.

There is just one other point in the submission on which I would like to make some comment, and that is that we have had very considerable problems with flooding in North Buckinghamshire. These flooding problems have extended into Northamptonshire and North Buckinghamshire, and we hope we can find a cure for them; but if the airport comes, then our problems would begin all over again. I am not speaking, obviously, as an expert witness, but I do think on the advice of others who are that it would be completely impossible to cure our flooding problems if we were to be faced with this very substantial urban development.

I have nothing further to say, Sir.

Inspector Thank you very much. You are Councillor R. C. Horwood, are you not?

Cllr. Horwood Yes.

Inspector Are there any questions concerning the evidence of the Newport Pagnell Rural District Council, and the subsequent statement of Councillor Horwood? No. The Gayhurst Parish Meeting?

PRINCE GALITZINE* *called*

(*Gayhurst Parish Council*)

Prince Galitzine Mr. Chairman, I represent the Parish Council, and my name is Prince Galitzine. I live in the village. I have been asked to make a number of points in addition to our written statement, and I would like to emphasise that every soul in the village above the age of eighteen has objected to the siting of the airport. By this, I mean that in addition to the unanimous vote at the Parish Meeting, those unable to attend that meeting have since given their opinion.

In fact, every inhabited house in the village is scheduled as being of historic interest. One is Binstead Barn, which is mentioned in the Domesday Book; and the so-called Bath House is built over a Roman bath in the basement.

We should have added a further point to that part of our submission—that the recreational and amenity value of the area would be largely destroyed. At present, the Parish contains a very high degree of rural remoteness, peace and quietness. We should have cited as a further example the fact that a large number of wild fowl collect in the Ouse Valley; these are likely to be driven away by the airport. We should like to add a further plea on behalf of the farmers—this airport and its associated urbanisation would cause a very considerable strain on the capacity of the water authority to control flooding. The authority already faces considerable problems in dealing with the situation as it is at present, and shortly the Ouse will get enormous additional runoff from Milton Keynes. We would draw your attention to the written statement of the Deputy Engineer of the Great Ouse River Authority*—No. 4051—"In no case will there be insuperable difficulties in advising a solution to the surface drainage water problem". Our fields have been flooded almost every year. It was particularly bad in March 1967, but equally so in 1968, and even worse at the beginning of this year, in spite of the measures claimed to have been taken at the beginning of 1967. This flooding is without the water we can expect from Milton Keynes and other development areas.

Finally, as a small agricultural village of great peace and beauty, we are naturally concerned with the course of all future town planning around our area. We have watched the plans for Northampton and Milton Keynes, but we have been reasonably satisfied by the assurance of both those authorities. We repeat our submission, because we believe that it is the key not only to our own case, but to that of all our neighbours. The dumping of an additional 250,000 people in our area will destroy the equilibrium in the surrounding district. Already, it is being disrupted, and if this comes our countryside will be swamped. Surely, the side effects of such a major growth as a third London airport should be over an area where there is chronic unemployment and accommodation—neither of these exists around here. As it is, we fear that if Thurleigh is chosen, it will inevitably result in the joining up of North Bedford and Milton Keynes, with Gayhurst at the centre of a future metropolis of over one million people. We should like to ask, perhaps, was it because of this that the Government White Paper of May 1967,† stated that Thurleigh did not merit further consideration as the site for the third London airport? Thank you, Sir.

Inspector Are there any questions to Prince Galitzine, concerning the evidence and statement on behalf of the Gayhurst Parish Council? There are no questions—thank you. Lavendon Parish Council?

* p. 1898.

* p. 1909.
† Cmnd. 3259 (HMSO; 3s. 3d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. J. BRANDON* *called*

(*Lavendon Parish Council*)

Mr. Brandon Sir—my name is John Brandon, and I live in Lavendon. As you will realise, it is a "party" which is no party at all, but finds itself in the position of making representations usually to Rural District Councils or County Councils.

This is one representation which I earnestly hope will be well received. You have our statement about the proposed airport, to which I can see no need to add. All I wish to add now is to confirm the real concern which our Parish Council has. We feel that our village will suffer irreparable harm should the airport be built at Thurleigh, and so we decided to put forward our own statement rather than come under the umbrella of another institution, and hope that you will make note of this. That is really all that we mean to say; we want to keep it short, we feel that this statement that we have made contains everything that we need to say.

Inspector Thank you, Mr. Brandon. Are there any questions to Mr. Brandon concerning the statement, 4023? You are lucky, Mr. Brandon!—there is one.

Cross-Examined by Mr. J. Curran

(*Huntingdonshire Constituency Labour Party*)

5195 You live in a village which will be affected by noise if Thurleigh comes? — Yes, this is so.

5196 And you say that a very well attended general meeting was held, and the majority came out against the airport. Could you give us some idea of the number of people attending this meeting? — This is rather difficult—I was not Parish Councillor then, in fact, so I was not taking that much notice. All I can say is that the village Hall was full. I suppose it was something like 60 or 70 people.

5197 And how many people live in the village? — At the moment we have about 750 men, women and children.

5198 So that would work out to—what proportion? — I should imagine about a quarter—perhaps a little more.

Inspector Any other questions? I have no questions, Mr. Brandon—thank you for coming. Olney Parish Council?

MR. F. BRESHER† *called*

(*Olney Parish Council*)

Mr. Bresher My name is Frank Bresher, and I am Clerk to the Olney Parish Council. We have submitted our Proof of Evidence— No. 4028—and I first of all would like to make one small amendment to the first paragraph, headed "Location of Olney". This should read, of course, "10 miles west of Bedford", and not "east".

We do feel in submitting this evidence, Sir, that we have tried to make it brief and concise, and really I have nothing to add to the evidence we have put in.

Inspector Are there any questions concerning the evidence of the Olney Parish Council, No. 4028?

Cross-examined by Mr. James Curran

(*Huntingdon Constituent Labour Party*)

5199 I understand that you represent the majority of opinion in Olney Parish—on what do you base this? — Well, I think the answer to that can be seen in the statement itself, where we take our brief from the annual Parish Meeting. This was a well attended meeting, in a normal parish meeting it was well attended, a unanimous vote was taken, and the result is put in our statement here.

5200 You have a parish of 2,500 — 2,500.

5201 How many attended that meeting? — From memory I think approximately 80, which is well in excess of our normal parish meetings.

Inspector I have no questions. Thank you.

(*The witness withdrew*)

MR. J. C. WILKINSON* *called*

(*City of Cambridge*)

Mr. J. C. Wilkinson I am J. C. Wilkinson, I am the Deputy Town Clerk. We have put in a written statement in the form of a letter dated 6th August this year, and I don't think there is need to add to it. Perhaps there is an explanation due to you as to why we are not under the banner of the Cambridgeshire and Isle of Ely County Council, that is for the simple reason, that we don't share the County view that additional development in Cambridge be it housing or industry would in any way be deleterious to Cambridge as allegedly suggested in the County's view of the matter. We are concerned solely with the question of noise.

Again, admittedly, we are not as affected by noise as are others represented here today; we lie just south-east of this 35 NNI contour, but we have, with all due respect to others—the authors and originators of this assessment—no real faith in that black line. We do feel seriously there is a threat to Cambridge implicit in the Thurleigh proposals. The present assumptions are assumptions based on present knowledge as to aircraft performance and the like, and any small variation would bring that NNI contour much nearer, if not over Cambridge, to the detriment of the City.

I imagine it is hardly necessary for me to stress the seriousness of this possibility in relation to Cambridge, embracing as it does a most ancient university, who will, of course, be appearing before you and separately representing their view of the matter. It

* See also p. 1900.
† See also p. 1901.

* See also p. 1903.

Printed image digitised by the University of Southampton Library Digitisation Unit

has, of course, an international reputation based on its unique character, atmosphere, and its industrial activities lie within the scientific and technological fields where noise would be a problem.

So, sir, the City Council's view is based on the apprehension that if there is only a small variation in the assumptions as at present which lie before us this unique city could find itself irretrievably desecrated. For that reason the City Council ask that Thurleigh should be excluded from consideration when the final stage Inquiry is reached.

Inspector Any questions concerning the submission by the City of Cambridge, No. 4009? I have no questions. Thank you very much, Mr. Wilkinson.

MR. PUGH* *called*

(*Chesterton Rural District Council*)

Mr. Pugh My name is Pugh, of the Clerk's Department of the Chesterton Rural District Council. There is nothing we wish to add to the proof of evidence which has already been submitted. We would, however, like to emphasise that although the Council appreciates the County of Cambridge and Ely as a whole is perhaps relatively unscathed by the proposed Thurleigh site, we, who represent amongst other places the western fringe, will be affected more than most. Therefore, we have felt it necsesary to draw your attention to this situation by submitting a separate proof of evidence.

Inspector Thank you, Mr. Pugh. Are there any questions on the evidence submitted on behalf of the Chesterton Rural District Council, No. 4015? No questions? I have no questions. Thank you very much, Mr. Pugh. — Thank you, sir.

(*The witness withdrew*)

Inspector Now, unless I am mistaken, I have now heard the representations which were due to be heard on today's programme. Am I mistaken, or am I correct? — Yes. Well, in that case, in order not to interfere with the programme, I will declare a partial half-holiday today. We adjourn now until 10 o'clock tomorrow morning. Thank you very much.

(*The Inquiry was then adjourned until tomorrow morning*)

* See also p. 1904.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

TUESDAY 9 SEPTEMBER 1969

THE CORN EXCHANGE, BEDFORD

Before MR. A. J. HUNT

Oral evidence was taken from:

Great Ouse River Authority
(*Mr. J. Bissett, Mr. R. Billington and Mr. H. van Oosterom*)

National Farmers' Union
(*Mr. N. Wallace, Mr. J. Hawkes, Mr. A. K. Giles, Mr. J. H. D. Lee, Mr. H C. Balfour, Mr. R. B. Paynter, Mr. R. W. Osborn and Mr. W. J. Bates*)

Nature Conservancy
(*Mr. J. M. Schofield*)

Council for the Preservation of Rural England
(*Mr. R. Body, Mr. P. W. MacFarlane and Mr. A. N. Polhill*)

Country Landowners' Association
(*Mr. M. Gregory and Major P. D. P. Duncombe*)

North Bedfordshire Preservation Society
(*Mr. Hutchins, Mr. F. G. R. Soper*)

North Bedfordshire Archaeological Society
(*Mr. D. Hall*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector If we can make a start, please. There are two casualties to today's programme. The Great Ouse Water Authority appeared yesterday with the joint County Councils, and therefore their case will not be dealt with today. Also, the R.I.B.A. (Eastern Region) have indicated they are content to rely on written representations and they will not appear. This means that today's programme will be short or relatively short and in the event that it will be convenient for any of the parties due tomorrow to appear, and not otherwise, then I can hear them providing today's proceedings are finished in good time. It depends entirely on the parties. If they prefer to appear in their proper order tomorrow that equally will suit me.

MR. J. BISSETT *called*

(*Great Ouse River Authority*)

Mr. Bissett My name is John Bissett, Clerk to the the Great Ouse River Authority. On my right is Mr. van Oosterom, the Authority's Deputy Engineer whose statement has been submitted. The Pollution Officer is unable to appear here today, and on my left is his deputy, Mr. Billington who can answer any questions on the statement that has been submitted. I have nothing further to say, Sir.

Inspector Would you care to call either your Pollution Engineer or his Deputy as the case may be in case there are questions? I have one or two to ask of them. I think if he could come to the witness box he will be heard better.

MR. ROY BILLINGTON* *called*

Inspector Are there any questions of Mr. Billington?

Cross-examined by Mr. Connell

(*Joint County Councils*)

5202 Mr. Billington. I believe you have had a chance of reading a proof of evidence submitted to the Commission and prepared by Doctors Hoather and Southgate,† is that right? — Yes.

5203 Taking the matter as shortly as possible, having read that proof of evidence do you agree with its contents and conclusions? — I agree entirely with its contents and conclusions, yes.

Mr. Connell There is nothing else I need ask, sir.

Inspector Any other questions from the first tier authorities? From other local authorities? Any other parties?

Cross-examined by Mr. Wallace

(*National Farmers' Union*)

Mr. Wallace Perhaps I might ask first of all which group of evidence this gentleman is speaking to?

Inspector Mr. Clay's.

5204 *Mr. Wallace* I have just one question for you, sir, and that is in relation to paragraph 10 of your proof of evidence. This may be something which is fairly straightforward to an expert, we just want to make sure that we understand it correctly. You refer to classifications of ammonia nitrate and there you refer under 10 to the fact that the present ammonia levels are reasonably satisfactory? — Yes.

5205 The question which we should like to put to you is to what would those words "reasonably satisfactory" apply in relation to the classifications above? — I can give you the concentrations of ammonia nitrogen.

5206 You say the present ammonia levels are reasonably satisfactory? — Yes.

5207 And all we are asking is this: which of your classifications would come within that definition of reasonably satisfactory? — I think that I can be precise if I refer to the concentrations and I can answer your question by saying that they would be better than fairly clean and fall into the clean category.

5208 What you are saying is that the present ammonia levels are either not more than 0·2 or between 0·2 and 0·5? — Yes. I can give you the precise figures if you want them.

5209 Yes? — The maximum ammonia/nitrogen is 0·7 which would put it in the fairly clean category and the average concentration is 0·34 which would put it into the clean category. These concentrations are milligrammes per litre.

5210 *Inspector* Any other questions? Mr. Billington, I also am no expert, obviously, but in paragraph 9 of Mr. Clay's proof he refers to: "The standards of drinking water quality of the World Health Organisation include a maximum of 20 milligrammes per litre for nitrate nitrogen"? — Yes.

5211 That is a maximum. Then you go on to say: "The results of analysis of water samples taken at Brownshill Staunch covering a wide variety of river flows showed a maximum nitrate nitrogen of 10 with an average of 5·88." Ten appears to be to a novice both high in relation to a maximum of 20, isn't it? — Yes, In fact, the World Health Organisation standard for nitrate nitrogen is about 11·3 and not 20 as stated, and the maximum concentration and the average figures that he has quoted in that paragraph 9 are high in relation to 11·3 and you will see that Drs. Hoather and Southgate have drawn attention to this point in their evidence. It should be borne in mind, however, that the nitrate nitrogen content in the water abstracted from the river is reduced in storage in Grafham Water so that by the time it goes out of Grafham Water and into public supply the nitrate nitrogen content is sensibly zero.

5212 Then again to a layman—the last sentence of paragraph 10, "It has been established that the virus of infectious hepatitis is present in sewage effluents in the river" now . . .—I would say at once that I am not an expert on viruses. This is a matter for a biologist or medical opinion. I did briefly discuss this

* See also p. 1912.
† See also p. 1835.

Printed image digitised by the University of Southampton Library Digitisation Unit

point with Dr. Clay, who also is not an expert on viruses, and suggested to him that his written statement gave the impression that hepatitis had been isolated in the River Ouse. This is not the case, it appears to me; but one could not say that it is not there, and could not be there at some time, if it is in the effluent discharged in the river.

5213 And the last question: from paragraph 14 onwards, you appear to be dealing with the additional sewage effluent from the airport alone? — Yes.

5214 And not from the associated urban development, which we have heard might total some 390,000; so, any conclusions in Dr. Clay's paper do not apply to the urban development—is that right? — Well, Dr. Clay of course has taken into account the urbanisation in his general consideration of the problem. I agree—may I just read paragraph 14, sir?

5215 It appears to refer to the sewage works on the airport site, and the paper appears to be open. What would be the consequences of the sewage treatment of the urban population, wherever it might be sited? — Yes—paragraph 14 does in fact refer to sewage treatment of works on the site, on the assumption that a separate sewage works for the airport would be created. But I think that clearly one must infer that a high standard of effluent quality would be required by the river authority relating to the effluents from the urbanisation as well as the airport sewage. I have no more questions; thank you.

(*The witness withdrew*)

Inspector Would you care to call Mr. van Oosterom, please?

MR. H. VAN OOSTEROM* *called*

Inspector Are there any questions to Mr. van Oosterom from the first tier authorities?

Cross-examined by Mr. Connell

(*Joint County Councils*)

5216 Mr. van Oosterom—paragraph 5, on page one of your Proof of Evidence. You are dealing with the surface water drainage system, which "is to be designed for a storm having a frequency of occurrence of one in two years". Some other evidence put before the Commission suggests it should be designed for a frequency of once in 20 years. Could we have your observations on that? — First, I should like to make it clear that the design frequency referred to in paragraph 5 is the frequency which the Commission had in mind. It is not the freqency we have suggested.

5217 Perhaps we could shorten it by saying what freqency you would suggest? — Frankly, I think this is not the time and place for us to advance suggestions on the frequency. We are, and have already, entered into discussions with the Commission's engineer as to what the design basis of surface water drainage should be, but we have not yet reached any conclusions. However, I can make this point: that if we were, as a river authority, designing the improvement of fairly small existing land drainage channels, we would be unlikely to feel justified in advising people to adopt a frequency basis of more than the annual storm. We find in practice that if we design for more, the expenses of the schemes relative to farming costs becomes too high, and people are just not going to pay for it. This should not be understood as meaning that I think that an annual system is the appropriate one in this case; but I am just saying that to make it plain that when it comes down to realities, one often has to make out with something much less than people might like to have when they first think of it.

5218 You are not in a position at the present time to tell us what you would advise if there was no problem about expenditure? — We are at the moment spending £11,000 of the Commission's money to survey the water courses draining each of the three sites in our area. When we have done the survey, we will analyse the existing capacities of all these watercourses, and it is only then that we shall be really able to talk to the Commission's Engineers as to what improvements should be budgeted for, and what emphasis should be placed on the airport surface water drainage outlets.

5219 Can we turn to paragraph 10, page 3 of your submitted proof of evidence. I think you have now had an opportunity of seeing the areas where it is suggested the AUD population should be housed. Do you see on the plan* in front of us the three blue circles. Have you seen those or had you until I asked you to glance at them just now? — I think we have, but I am not absolutely convinced that we have seen the population figures.

5220 You are dealing with the question and problem of run-off from the site, and in paragraph 10, you say you have not been in a position to consider that sort of problem resulting from the AUD, but can you help us at all now you see where those proposals to put the three circles or rings are? — I think I can say straightaway the upper of the three sites shown there—

5221 It is Raunds, I think. — That I could not be absolutely sure of—

5222 The top one is Raunds. — I think probably,—

5223 *Inspector* It depends whether you mean up river. — The other two are certainly inside our basin, and would create the sort of problem we have in mind in paragraph 10.

5224 I understand Raunds comes within your boundary — isn't that right? The Raunds catchment area? — I think it lies astride actually, but I am not actually sure from this map.

Inspector Any other questions of Mr. van Oosterom?

* See also p. 1909.

* p. 1830.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross examined by Mr. Forbes

5225 Mr. van Oosterom, this question of the run-off from the airport and the urbanisation—The Ouse is a river which floods pretty constantly, does it not? —I am sorry, you said "floods"?

5226 Yes. It did during the past 12 months, which was an abnormal year, otherwise it floods in terms of full bank flooding most winters.

5227 Yes — But under normal flooding it seldom floods house property. It is only with exceptional conditions that we get that kind of difficulty.

5228 How much additional rainfall fell above the annual average in 1968? The period I have figures for only refers to Bedford. — I am prepared to take the figures. I have not any, I am afraid.

5229 I am told that for the Bedford area the '68 figure was 28·64, which is not very significantly above the average annual rainfall. — Not by normal 15 per cent.

5230 Not an unusual occurrence? — It is not necessarily just the annual rainfall so much as—

5231 It is the distribution of it. — The distribution and the state of wetness of the catchment when the really heavy rainfalls occur.

5232 We had a very unfortunate July in 1968, the result of which I am told was from July onwards a state of complete ground saturation existed in the area. — This is correct.

5233 The result of that was virtually the total run-off went into the river and produced extremely high floods. — This is so.

5234 The first of them occurring in September, and going well on into 1969. — Yes.

5235 And the village of Clapham, close to Bedford, —the village high street was flooded to a depth of one foot. — This was in July, I fancy.

5236 I have not the date I am afraid. — It could have been, certainly; but I won't dispute it.

5237 And the addition of the extra run-off you are going to get from the airport itself, and the proposals for urbanisation, are going to aggravate any situation that occurs. — It would in principal aggravate it. The extent to which it would aggravate—in other words, by how many more inches in the situation you are referring to when flooding would occur, I can't estimate, but it may be no more than perhaps an inch—it is extremely difficult to give quantities on this sort of thing, but I think one tends to exaggerate this effect rather than under-estimate it. It is the only natural thing to do, I think, but it might, considering the width of water under the flooding conditions of that kind at that moment—the actual raising of the level by having an airport there might not be more than a fraction of an inch or an inch or two, but I would not put it as high as that.

5238 By the time it is running all over and has flooded the plain I dare say that is true, but the instance of flooding is going to be higher, isn't it? — Yes.

5239 I am horrified to hear you suggest that you might be satisfied with a design for storms having a frequency of merely an annual storm — Yes, but I thing it was made clear that Clapham High Street flooding does not occur every year.

5240 Of course not. — It is a very exceptional happening.

5241 I will come to that in a moment, if I may. I don't understand very much about these things, but looking at your paragraph 5, and comparing that with your actual bank-full capacities in paragraph 6 it looks, does it not, as though the airport run-off itself in any year is bound to overflow the river or whatever it is, the stream, the channel or anything else that carries water away at the site boundary every year — There is bound to be in effect—I think I should make it clear that if one alters the face of the earth in any way by making it hard and impervious rain water is bound to get to the river systems quicker than it can at present.

5242 And in greater quantities. — The total quantity of rain water it can take to the river would remain the same.

5243 Because of your particular — But it will get there more quickly and at a higher maximum rate. Now, it is possible by proper design methods to regulate the rate of outflow of your new development in such a way that in a given frequency of design you don't get adverse effects, but the moment your storm frequency exceeds that for which you have designed there inevitably will be that effect eventually. It is a matter of economics, to decide to what frequency you can design, and whether you would be prepared to accept that there will be some additional flood damage. Obviously it is possible to make a design against a one in a thousand year frequency storm, but the amount of money which you would lock up in such works would be far and away higher than the value of the damage to which your agricultural land or other property would be subject if it is a lower frequency design.

5244 If you look at the last sentence of your paragraph 6 it reads very alarmingly, does it not? "It therefore follows that the effect of the site run-offs, in terms of increased flooding, is likely to be more serious than is immediately apparent from the excess of the design run-off over the existing channel capacities." You take a slightly more gloomy view than the figures indicate or have I misunderstood the sentence? — No, I don't think so, but in the case of the other two enquiries at which I have been present that particular point had not been made as clear as was desirable, and I have endeavoured this time to make it a little clearer, in other words what I am trying to say is that it would be wrong to infer the efficiency or the potential efficiency of these drainage channels merely by comparing the existing rainfall capacities with what the commission say the airport maximum run-off would be, because the existing capacities are, if you like, gauged to the frequency of storm which might be quite different from that for which the airport figure has been worked out. What the real figure is is something

Printed image digitised by the University of Southampton Library Digitisation Unit

which still needs to be discussed with all the parties concerned and agreed. We propose in the first place to discuss this with the airport commission engineers, and when we have got to the point where we are in reasonable agreement we propose to take them to the National Farmers' Union to make sure that they too are happy about it.

5245 But what I am extremely anxious to get clear, Mr. van Oosterom, which is not clear to me at the moment, is this: comparing paragraph 5 with paragraph 6, the figures look alarming. The last sentence of your paragraph 6 indicates that the truth is more alarming than the figures indicate, is that fair? — It might be, rather than yes.

5246 Well, is likely to be, is the wording you use, isn't it? — Well, I am unable to express any definite opinion on this until—

5247 Haven't you expressed one, Mr. van Oosterom? You said it is likely to be more serious— In fact I envisaged you can't say that it is likely, but do you as an expert on this matter say your view is it is likely to be more serious? — I said likely inevitably because until I have complete knowledge of the capacity of these respective tables I can't say; we are at the moment working out what these drainage capacities are.

5248 We then go on to paragraph 7 and you indicate there some measures would be necessary to control the discharge of the storm water to the streams.— That is right.

5249 I take it this is some kind of reservoir so the water can be held until such time as you think it might be discharged into the drainage channel? — That is what we have in mind, yes.

5250 You were here yesterday, were you, Mr. van Oosterom? — No, I was not.

5251 Have you read the evidence of Mr. Sharman?* — Yes, the relevant pages are—?

5252 Yes, and on page 10 of his proof, paragraph 5.34 he says this: "It is particularly to be noted that while it is normal to design for the maximum storm run-off expected with a frequency of two years, careful consideration should be given to the consequences of the more severe storms that may be expected once in 30 and once in 100 years." Would you agree with that? — I would agree with his basic idea that careful consideration is to be given to less frequent storms, but I would consider it incautious at this stage to put a definite figure on this.

5253 I agree, but all I am anxious to get at this stage is that your authority is prepared to give careful consideration which Mr. Sharman says is necessary. — Indeed, yes. We shall most certainly carefully, and very carefully consider all this.

5254 Can I ask you and draw your attention to the next sentence which may be even more important: "Some degree of inconvenience and damage can be accepted when such extremes occur, but where flood risk is being increased high up in a populous and developed catchment such as the River Ouse, the extent and nature of the risk needs more study than elsewhere, and additional precautions may be indicated". Do you agree with that? — Yes, in principle, certainly.

5255 And you are prepared to give consideration to the question of these additional precautions? — We are considering not only the need for regulating the rate of run-off from the airport and from the associated urban developments, but equally to take a very hard look at the existing water courses and principal rivers, and to recommend to the commission that where necessary these water courses shall be improved sufficiently to keep the level of additional risk to something reasonable in the circumstances. But, as I said earlier on, it is possibly only to design or to agree a design basis, and once your storm exceeds the frequency there will be inevitably some effect—you can't irradicate it altogether at an economic price.

5256 But the object of a balancing reservoir is to take additional storm water till the river can take it. — But only for a storm of agreed frequency. The moment your storm has a greater frequency you have more water and you can't hold it.

5257 That is a question of design and size of reservoir, isn't it? — Yes, but basically I have got to come back to the point that you have got to begin by agreeing the frequency of storm for which you are designing.

5258 Forgive me, I don't think you agree anything of the kind. What you have to agree is whether you accept the expenditure of remedial works or instance of flooding, isn't that right? You have either got a flood or you pay very heavily — I think we are slightly at cross purposes. What I have been trying to say is that if one changes the nature of the surface of the catchment, the degree of control of run-off can be based only on economic precepts, and you see the moment you get a storm of a lesser frequency than that for which your economic design is based there will be an additional effect in terms of flooding, but one assumes in deciding on an economic design basis that additional flooding resulting from the less frequent storm will have a damage effect which will if capitalised, not have justified additional capital outlay on works designed for the lesser frequency.

5259 Let me just explain why I am asking this question. We heard from Mr. Sharman yesterday that it might be extremely difficult to find areas for the necessary balancing reservoirs, and that the actual area these reservoirs cover might be low. It is this aspect of the matter which I wanted to investigate with you for a moment. — May I ask you a question. Did Mr. Sharman give any indication of what sort of areas he had in mind?

5260 I don't think he did. He was talking of 100 acres.

Inspector I think the transcript will reveal that somebody mentioned hundreds of acres.

Mr. Forbes I think Mr. Sharman said it would be over 100 acres.

* p. 1845.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector I think the figure was mentioned.

5261 *Mr. Forbes* I recall him saying that it might be difficult to find areas of that character with a depth of five feet. As far as I remember that is what he was talking about. — Well, I could possibly add here that having seen a tentative layout plan of runways, buildings, and roadways, within the squares in the commission's publications, I understand that there are considerable parts of it which will not be actually hardened surfaces, and which in fact will not be developed either as buildings or anything else, and my impression is that there would be no difficulty in accommodating these reservoirs within those squares. In other words there would be no additional land required to the 7½ thousand acres that have been quoted.

5262 I see. Can I just go on—I don't want to spend too much time on this. Looking back to 1968, and 1969, in the Ouse Valley the situation there was this, wasn't it, that for something like nine months the river was never less than full upstream of Bedford? — I have not got any figures by me, but I think this is probably true, but this season was a very exceptional one.

5263 Yes it was—what? A 30 year storm? — Well, it was said at the time that we had not had worse flooding due to rainfall, let us say—the year 1947—since 1912, as far as I can say something like a 50 year storm.

5264 In conditions of that nature when you have got a river which is already full you cannot start discharging from your balancing reservoirs without of course overflowing the river? — Yes, indeed.

5265 And if you are going to avoid that sort of situation you have got to have a jolly good balancing reservoir? — You would, but on the other hand I would question whether it would be considered economic to design on the basis of the sort of conditions that occurred during the past twelve months, these are exceptional. We are talking an airport run-off designed for a two years' storm, the 1968/69 conditions are something like 50 years.

5266 This comes down to the question of who is going to pay for that? — Yes, precisely.

5267 Whether it should be the ratepayers, the Government or whoever is going to pay for the airport? — Our impression is that certainly any control that was constructed on the airport site would be paid for presumably by the Government through the Commission, but we also intend to negotiate for any river improvements which can be shown to be necessary solely on account of this surface water drainage problem would also be paid for by the Government. I don't think there is any question of the cost falling on the ratepayers.

5268 We are a little anxious that the river authorities should stiffen up their sinews in this matter and that the cost of preventing flooding in the Ouse River does not fall on the ratepayer, but that the airport authority or whoever builds the airport it should jolly well fall on them, shouldn't it? — I don't think the airport commission could be expected to stop all flooding.

5269 Why not? They have put the airport there, haven't they? — Notionally, but flooding already occurs there, whether you have got an airport or not it does occur, and I don't think it would be fair to expect the commission to pay for stopping all flooding.

5270 Of course not, but to stop all the additional effect of the airport would surely only be fair, wouldn't it? — Fair in principle.

5271 Let's stick to principle. — But it would not be economic necessarily to stop all flooding, of the most rare storm that you can think of.

5272 I am only thinking at the moment of the last time 50 years ago, that is not terribly rare, is it? Mr. Sharman is talking about 30 and 100 years. You weren't very surprised about that, were you? — As to 100 years frankly yes.

5273 We will not go as far as that, we will stop at 50. You see, I am disturbed about this. It seems to me that unless the river authority take a different view and the airport is put here the builders of the airport are going to get away with it, aren't they, they are only going to have to build a balancing reservoir for 2 year storms instead of something like 50? — I can understand fully how your clients feel about this, but I think we have to face one thing here, that the airport proposal is merely one development which is under consideration, it happens to be a large one. Surely you appreciate that urban development which has been going on for numbers of years has had a very similar effect and so far not a single town in the Ouse Valley has troubled to put in any retention reservoirs. If we put anything like that to the planners we would get the cold shoulder.

5274 I think you are too easily put upon. — I can assure you that when it comes to the ratepayers' money they are never anxious to spend a penny, but when they can get it from somebody else's pocket they are ready to take it. It is just not reasonable to ask for protection on everything you can think of.

5275 I am not asking for that, I am asking that the river authority should give proper consideration to seeing that the effect of this airport on flooding in the Ouse Valley is reduced to negligible proportions, that is what I am asking. If that involves building balancing reservoirs to provide for 50 years floods it ought to be done on any basis of equity. — I ask you to substitute "reasonable" for "negligible".

5276 Who is going to decide what is reasonable, the people who are being flooded or the people who are paying for the airport? — As I said earlier on—

5277 If I could have an answer to that question. — I am trying to explain. We shall discuss it with the airport engineers in the first place and we engineers I hope will between us put forward what we think is a reasonable solution. We will then take this to the National Farmers' Union and if there is strong opinion about this also to the local authorities and get their approval. If they then object they can then say so and we can put our heads together again and hope for something more successful.

Printed image digitised by the University of Southampton Library Digitisation Unit

5278 I cannot get from you any sort of assurance that the river authority will see to it that a balancing reservoir of 30 or 50 years storm will have to be provided and that the airport authority will be made to pay for it or even that will have to be provided? — As to the question who pays we are in no position to decide this.

5279 "We"? — We act as advisers and designers and we are not in any way going to put our hands in our pockets for this but presumably the Government will pay. The Government is notoriously difficult in opening its purse as you well know and that certainly will not agree to pay for anything that they consider to be unreasonable. I am sure we cannot take it any further than this.

Cross-examined by Mr. Wallace

(National Farmers' Union)

5280 A lot of the questions I was going to put to you have been put much more clearly by Mr. Forbes, but there are some additional things I would like to ask you. May I say that we welcome what you said that your authority will ask the NFU if it is happy with the position. Can I just ask you first of all is that before or after the final decision as to where the airport should go? — We have undertaken with the airport commission that all three sites in which we have an interest shall be investigated quite irrespective of what will happen in the end. This will be done at Stage II of the investigations and as you probably know Stage III is in no way confined to any particular site, it is comparing the difficulties of one site with another.

5281 So we can expect an approach to be made on that issue? — Yes, indeed. In the end it will mean persuading whoever pays that what you are asking for as a suggestion will be eventually agreed to as reasonable and justified. It really comes to the official decision whether it is reasonably designed one year storm, 10 years storm or 100 years storm.

Inspector As I understand the matter the Commission has asked the river authority for its expert advice at Stage III on the implications on all three sites. Now I am not too certain that the river authority would consult with the NFU and local authorities before submitting that Stage III evidence to the Commission.

Mr. Wallace I see.

Inspector If the submission of the Stage III evidence by the river authority has to wait for detailed negotiation between the river authority, the local authorities and the NFU I can see the evidence being a little late.

Mr. Wallace Yes. If I may pursue that: does that mean to say that we could anticipate that we would get the comment at Stage V, not Stage III?

Inspector Purely speaking as the matter has arisen: my own personal anticipation would be that the submissions and the evidence, or advice, of the river authority would be part of the Stage III evidence, and would be available for examination at Stage IV and for debate at Stage V. That would be my anticipation.

5283 *Mr. Wallace* I am much obliged. Passing on, Mr. van Oosterom, I take it that you are aware of the extreme disquiet of farmers in your area already? — Yes.

5284 I am going to ask you perhaps an unfair question: would you consider that disquiet is justified or unjustified? — In the context of the last twelve months, I would readily accept that any farmer is concerned about the state of the drainage system. I think their outlook perhaps could be a little calmer. Not only was there flooding of land from the northern rivers, but also the season itself was so wet that their farming operations would be very badly interfered with, and on the whole they suffered financial loss. Whenever one suffers financial loss, one is very liable to put the blame on someone else, if one possibly can. All I can say is that the maintenance of our river system has been carried on over the years without serious criticism and without any farmer really going to town that they thought it was lacking as far as we were concerned. It has all come to a head because of this terrible season. I am not saying there would not be justification for doing something more; but the farmers have been very quiet about it.

5285 I hope that is not an invitation for us to start agitating, because we will certainly do so if you wish! — We have had quite enough for the last twelve months!

Inspector Will you pay for it, Mr. Wallace?

Mr. Wallace For what, Sir?

Inspector For this improved drainage?

Mr. Wallace I do not live in this particular area, Sir.

Inspector No—I meant the NFU.

5286 *Mr. Wallace* That is a point I am coming to, Sir. You see, Mr. van Oosterom, what you said in one of the answers, I believe, to Mr. Forbes, was—if I noted you correctly—that the expense relative to farming could be too high. You also went on to say that sometimes the river authority would have to "make do", and you also referred to the incidence of flooding happening very little, if at all, to housing and urban areas. But you did not say anything about farming. The impression that I gather from that—and is it correct? correct me if I am wrong—is that you feel, as an authority, that in pursuance of your duties, to some extent you have to write off agriculture in dealing with flood protection schemes. — I think we should answer this by pointing out that there are really two problems of flooding here. First of all, in the valley of the River Ouse itself—say, from a point near to Bedford down to Huntingdon—where even under normal flooding there is a tendency for the water to spread out over quite a large area of riverside land, an area which has been in the past farmers' grazing land and any other farming operation might result in losses. Separately, there are the small tributaries which drain the actual site itself, and it might have to come for some miles before that actually down the river. I would say that the risk of

Printed image digitised by the University of Southampton Library Digitisation Unit

flooding of those tributaries has so far been small, and there would be more concern about drainage methods if the airport comes into being. But as far as the main river valley is concerned, if flood water gets to it rather faster than in the past, as a result of the airport development, the effect in terms of increase in levels and in wider spread of the waters will be relatively small compared with what is being found to take place already. A further factor which has come into this is the fact that farmers up and down the river valley in Huntingdon and Bedfordshire have in late years changed their grass farming to arable farming—they found that the Solway Valley is very good, and I understand that stock farming no longer pays and that arable farming is a better proposition, even if there is an occasional flood risk. This has added a difficulty which has not been apparent until very recently. We, as a river authority, have undertaken to take a hard look at the river throughout Bedfordshire with a view to determining whether an improvement could be justified to relieve the flood risk on agricultural considerations, taking into account these recent changes in grazing and arable land. In a way, this is a seperate issue, but I appreciate that this factor increases the anxiety that the farmers are feeling about this development.

5287 I am grateful for that reply at length. I just want to make sure if I have understood you correctly —perhaps I could re-phrase the question I put to you. Do you consider, as the advisor to the Great Ouse River Authority, that an airport at Thurleigh would increase the danger of flooding to farmland, and, if so, would you consider—if the Great Ouse River Authority had to bear the costs—that it would be justified to prevent the extra flooding of Farmland, or that some would have to be tolerated? — There will be an additional flood risk. There will be an optimum point at which additional works could be constructed, and the cost could be justified in terms of the farmland you were protecting; but beyond this optimum point it would not be economic. It would then be a decision as to whether to extend beyond that point.

5288 So it would be correct to say that there will be an increase in fact, and, if your Authority were dealing with it, you would not consider it justifiable to mitigate that effect entirely? — Not entirely. One could not justify it in economic terms.

5289 The agitation of farmers is very justified, then? — I think it is the price one has to pay for the development of our society. It applies just as much to urban developments, road construction, anything that changes the face of the earth. It just has to be faced that this fact has to be brought about.

5290 Unfortunately, it is always the farmer who suffers! May I turn now to paragraph 7 of your Proof of Evidence—in the middle of that paragraph, "a maximum rate acceptable to the Authority". Are you in a position to tell us what is the maximum acceptable rate? — This point has really been queried already this morning, and, as I explained to you, in designing land drainage improvement schemes for agriculture as we do within the General Drainage Boards districts, on behalf of the General Drainage Boards, we have so far not come across a case where we have designed for a greater storm frequency than the annual frequency. If we did, we would be told by the internal Drainage Boards concerned that it was too expensive.

5291 I take that point. I am merely asking whether you have a figure in mind when you refer to maximum rating? — Not at the moment. What we are trying to do is to really find out what these channels are capable of taking, and from that the ratios, of what the storm frequency is, and to infer from that —that is the frequency which farmers find acceptable. You see, it is easy to demand improvement, but we have to face this: that of all these small water courses, the sole duty for maintenance lies with the owner-occupiers—if they do not at present show any great inclination to spend money, then we cannot very easily be persuaded that all of a sudden, because someone else comes into the area, the maintenance is not good enough. I am afraid that farmers themselves only are to blame, if they feel that things are not satisfactory at present, and surely we would have heard about it by now.

5293 Well, Mr. van Oosterom, what we are considering is a massive new development which is going to increase, according to your view, the risk of flooding for farmers. Farmers—to put it quite bluntly—worry that you have not refused to accept this, because it is going to cause extra flooding problems. It is not anything to do with them. It is a new factor, and we would like to know why you have not said clearly to the Roskill Commission that you are not going to tolerate this within your area. — Frankly, Sir, I think it would be unreasonable for us to take that attitude. We consider that it is possible to devise an economic basis on which to design the surface water drainage system, and the works will comprise not only potential reservoirs on the airport as it is, but also quite necessary improvements of the local water courses. Provided all this is done, it would be quite unreasonable to say "we cannot have that site". The country presumably has to have this airport; it is not for us to say that it must not be in this area.

5294 Let me just pass then to paragraph 11, and the first sentence—perhaps you will forgive me for asking perhaps an offensive question! Is this your own wording? The reason I mention that is that every time I attend an inquiry dealing with run-off and flooding, those words always appear—"there will be no insuperable problems". What would you regard as an insuperable problem in relation to this area? — An insuperable problem I would regard—where it would not be physically or technically possible to construct the necessary works.

5295 "Physically or technically"? — Yes.

5296 We are not dealing with finance, but purely "physically or technically"? — Yes.

5297 Presumably you have also worked out what the difficulties will be which are "superable"—if there is such a word? Is that correct? — Would you repeat that question?

Printed image digitised by the University of Southampton Library Digitisation Unit

5298 You have said that there are no "insuperable" difficulties—what are the difficulties that you can overcome which you have taken into account? — One has got to operate from providing the reservoirs on the sites—one has to probably improve the water courses.

5299 That is one. — I do not see any difficulty in this in principle, but I deliberately put in "insuperable" just in case there is something that we have not as yet discovered. One has to be a little cautious in making these statements.

5300 I do not know whether you attended the Milton Keynes Inquiry, but we were told there that there were no insuperable problems, and when the evidence was put forward at this Inquiry there were very real problems which had to be overcome. — I am not aware that they were insuperable—if I understand the word, "difficult"—

Inspector You are not suggesting that they were insuperable in Milton Keynes?

Mr. Wallace I am not suggesting that. I am saying that we are constantly faced with this formula, and what it means in practice is never quite plain. That is what I am trying to find out.

Inspector We will hear, perhaps, later, at Stage III.

5301 *Mr. Wallace* I shall leave it there. Just one or two questions, Mr. van Oosterom—you have referred in paragraph 9 to the need for "conveying the run-off from the site past these risk areas before the arrival of the run-off generated by the same storm in the catchment upstream of Bedford, which would include, inter alia, the discharge from the new city of Milton Keynes". Have you any idea at this time of the cost of what you would consider reasonable expenditure to enable this to take place? — No.

5302 None whatsoever? — I would not attempt to guess it. I have no knowledge.

5303 Would that be in Stage III? — It should be, yes.

5304 Just one final question, Mr. van Oosterom, in relation to your paragraph 14. You are dealing there with water resources. Can I ask you where, or from what sources, do you anticipate the water supply to the airport and its ancillary development would come? — In point of fact, this will probably be dealt with much more adequately by the statement which the Water Resources Board are submitting to the Commission. But very briefly—the Water Resources Board have suggested a number of possible developments of water resources in the south east, as you know, all of which are being investigated with a view to some being selected in two years' time for actual development. The idea is that whatever major resources are put into effect, they should all be connected with pipelines in such a way that virtually any particular area in the south east could be supplied from any of them.

5305 Let me ask you more specifically in relation to this area—what schemes proposed by the Water Resources Board can you call upon to supply the water for an airport and the additional population coming in? — I am very well aware that this question is loaded, Mr. Wallace. You are alluding presumably to the Abbotsley—

5306 That is one. — Yes, and Whitchurch is another. But equally well, the airport could be supplied from Grafham, if the present demand at Grafham is diverted to the proposed new reservoir at Empingham—there are all sorts of permutations and combinations possible.

5307 You are aware that there have been no inquiries into either Abbotsley, Waddesdon or Whitchurch? — Yes.

5308 I hope you are not taking it for granted that these schemes will receive Ministerial approval! — Indeed, no.

5309 And therefore you are left with the possibility of surface water, if a permutation with an as-yet-unratified reservoir is made— is that correct? — Yes. The inference is that the immediate water supply could be obtained from the new reservoir that is proposed. If the Mid Northants demand is switched, the supply for Thurleigh could be based on Grafham for the immediate future, but eventually the demands on both Empingham and Grafham will become so high that another source will have to be found. Whether that source would be Whitchurch or any other of them, I really cannot say.

5310 Have you expressed to the commission your concern lest the water may not be available? — No. We have no concern about the availability, in principle we are quite satisfied that provided this water or these water sources are investigated as planned by the Water Resources Board that water will be available at the right site.

5311 But unlike Mr. Forbes I am not concerned with principle, I am concerned with practice, and in practice it seems to me what you are saying is that you are relying on a reservoir either at Abbotsley, Waddesdon, or Whitchurch to supply this water, is that correct or not? — Not in the initial years necessarily, but ultimately unless the Wash project comes up as an alternative.

5312 Have you in fact informed the commission that water will not be available except in the short term, and that schemes which are not yet considered by the Minister or public inquiry will be required in the long term? — It may be put that way, yes.

5313 You have in fact said this to the commission? I am afraid this is an attitude which we must inevitably take. The Water Resources Board take the same attitude. We have got to take steps to supply water at the right place at the right time. We know the Wash may be available as an alternative; but how much time would be required for the investigation work I cannot say.

5314 I am quite glad you are a man of faith, but all I can say is that we regard it as alarming to say the lest that a reservoir on one of these sites should appear to be virtually taken for granted.

Inspector He is not saying that, surely? He is saying the water resources are there, isn't that right?

Mr. Wallace The Water resources, with respect, sir, are not there.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Surely the water is there somewhere because it could be supplied.

Mr. Wallace The reservoir at Abbotsley—there has not been an investigation on that site.

Inspector You are talking about conservation of water. All this witness is saying is surely water can be made available.

Mr. Wallace I can only put my objection as I understand it, if water which is available is conserved here at one of these three sites—

Inspector Surely he is conceding that.

Mr. Wallace Our point is simply this, that none of these reservoirs has yet been investigated.

Inspector I appreciate that.

Mr. Wallace And we would take it very seriously if it were to be regarded as inevitable that these three reservoirs were to be constructed; also it would make a farce of the public inquiry. All we are concerned with it to make sure your commission realise while in principle this may be possible at least the NFU is committed to say it is not possible.

Inspector The same principle applies to where roads or railways might go. It is also going to have an effect on people's land; land is there and roads can be put there.

Mr. Wallace I don't wish to have an altercation with you, sir, but I don't think that is the analogy—I don't want to press the point, sir.

Cross-examined by Mr. Gregory

(Country Landowners' Association)

5315 Mr. van Oosterom, can you just give me one or two facts, if you have them available, about the River Ouse, which have not yet been touched on already? Please give approximate answers if you can't give more precise ones, but can you please tell me what the distance is from the sea and what the fall is to the sea of the River Ouse from (a) Milton Keynes, and (b) Bedford? — Milton Keynes is a difficult one, but I would say about 200 feet, and Bedford is about 80 feet—fall that is.

5316 And the distance? — The distance?

5317 Approximately. — I would say Bedford about 60 miles and Milton Keynes about 150, in that order.

5318 Thank you. Isn't it right that the River Ouse is a very slow flowing river and in fact is banked above the neighbouring back in a considerable part of its course? — It is slow flowing, particularly at its lower end, but the embankments don't really extend much beyond the edge of the Fen District, and that would virtually be the point at which the river runs off the map we have in front of us.

5319 And, indeed, part of it flows across the land which is below sea level, is that not so, further down? — We endeavour to keep the water off the parts that are below sea level; that is one of our primary jobs, but if any of these embankments in the Fens. There is land below sea level on which water can flow, but this happens fortunately on very exceptional occasions. We don't encourage this.

5320 I have read somewhere even that the River Ouse has been known to flow backwards, is that so? — I think you must be misinformed there, sir.

5321 What I am getting at is, it is because of the nature of the terrain the Ouse flows over, there is this flooding problem all the way to the sea, is there not? — Well, the problems are different in this respect, that in the Fen country we have to have embankments to keep the water off the land, whereas outside the Fens when flooding does occur it is just allowed to happen because it would not be economical in terms of area of protection to embank the upper reaches of the river as well.

5322 Do you envisage that the river works to cope with the expanding towns in this area of urbanisation associated with the airport and run-off from the airport and effluent would be only a local problem or do you anticipate that it might cause difficulties further down in the areas I have been referring to? — When you say "local problem", can you define that a little further?

5323 What I mean is the immediate works that would be necessary to prevent flooding in the area, say shown on this map we have here? Would they be sufficient to ensure that there would be no flooding further down the river without works further down the river? — I think I can answer your question in this way, that when we have our bank system we have facilities for storing flood water and we see no difficulty in making that storing work when any of this new development is taking place, but above the point at which we have storage, that is to say there roughly above the town of St. Ives, there might be additional flooding which would have to be corrected or prevented to some degree by river works.

5324 I am just not clear whether the storage precautions lower down the river already exist or whether you anticipate further works would need to be done as a result of the airport and its urbanisation? — The storage at the bottom end of the river already exist, and we don't expect to have to do anything with them. We think that is capable of holding this water. After all, we are not talking in terms of holding more water, we are talking about the difficultly of dealing with water that is arriving at a fast rate.

Mr. Gregory Thank you.

Inspector Any other questions? All my points have been well and truly covered, Mr. Van Oosterom, thank you very much.

MR. N. WALLACE* *called*

National Farmers' Union

Mr. Wallace I appear at this inquiry with Miss Helen William, and Mr. Richard Paynter, the County Secretary of Bedfordshire and Huntingdonshire County Branch, of the National Farmers' Union. Perhaps this is the right stage to say that our representations are on behalf of County Branches of

* See also p. 1917.

Printed image digitised by the University of Southampton Library Digitisation Unit

Bedford, Huntingdonshire, Buckinghamshire, Cambridgeshire and Northamptonshire. Within a 16 mile radius of the proposed airport sites the National Farmers' Union has 1443 members; of these 431 have specifically asked the NFU to represent them. Perhaps I might then add this, these represent by far the great majority of those close into the airport site. Of course, as the airport became more and more remote and as the radius widened, so farmers were less sure as to what the effect would be, but even so 492 farmers replied to our questionnaires, and they represented somehing in he order of 137,198 acres.

Sir, as you know, it is my practice at these enquiries to present my evidence first, and with your permission perhaps I might do so here. If I may refer first of all to the document which we put in as NFU 1 which is listed as 4050/1,* I should perhaps say for the benefit of any who might wish to know that I am not calling any witnesses to speak to this document. Clearly it is not possible to get 492 farmers in the witness box, but one of the purposes of making five farmers available is if representatives views are required.

There are just two points which I would like to add in connection with NFU 1; the first is that all the questionnaires are available to your commission or to your consultants if so be they be required. We have not brought them with us because a lot of the information is confidential and would not be allowed to be given to anybody else.

The other point which perhaps I ought to mention on a general note in paragraph 3, where we put the cautionary note that in view of the impossibility of interviewing every farmer there may be some variation in replies given and, therefore, this is intended as a general assessment rather than a precise record.

All my other evidence has a witness to speak to it, and without any more preliminaries I will call Mr. John Hawkes.

MR. JOHN HAWKES† *called*

Examined by Mr. Wallace

5325 Are you John Hawkes, an Associate of the Royal Institute of British Architects, and Associate Member of the Town Planning Institute, and a partner in the firm of Hancock, Hawkes, Architects/Planners of Hampstead London. Have you been asked by the National Farmers' Union to examine the effect of the third London airport at Thurleigh? — I have, yes.

5326 Mr. Hawkes, your evidence has been circulated, and I only wish to take up one or two points. Am I correct that you have had the greatest possible assistance from the County Council's Planning Officers, is that correct? — I have, yes.

5327 And that you are in general agreement with the views expressed by them? — Certainly.

5328 There are just one or two points where you differ and perhaps I might ask you to go briefly through them. The first is in paragraph 1, where you take the 20-mile radius at the distance which people would be prepared to travel to an airport by car. — Yes.

5329 I believe the County Council suggested a figure of 12? — Yes. This is the figure they mention.

5330 Do you feel your view is justified? — I consider it is justified and I explain later in my evidence that existing patterns may well change in the future.

5331 Another point on which I think you differ fairly substantially is in relation to population which is going to be attracted by an airport, and you give a figure somewhere of—I am looking now at your paragraph 37, sub paragraph ii, you refer to the possibility of 10,000 to 70,000 jobs; this is in addition to what has been postulated by the Roskill Commission. — This is additional attracted population.

5332 I think you refer to the possibility of up to 750,000 population coming into the area. — Yes, indeed.

5333 Which is considerably greater than whatever figure has been suggested, whether it be 290,000 or 500,000? — Yes.

5334 Just one other point, that is in relation to paragraph 63. If I understand correctly, the purpose of your evidence in this paragraph is that there should be further research done in this area before any further major decisions are taken? — Yes.

Mr. Wallace I have no further questions.

Inspector Any questions from the first tier authorities to Mr. Hawkes? From other local authorities? From any other persons?

Cross-examined by Mr. How

5335 In your evidence you quote—Well, in 1946 in the early days of the planning of the Royal Aircraft Establishment I believe there were four farmers who came into the area of the proposed experimental station which included a five mile runway from the present Thurleigh site extending to Little—

Mr. Wallace With respect, my planning witness can't possibly answer this question. We will try to get it with another witness who is present.

Inspector I am not sure what the question is yet, to which there is no answer.

Mr. Wallace In relation to 1946, the four farmers who were affected, we have no information—

Inspector I think it might be better to listen to the question first.

5336 *Mr. How* The four farmers were affected by the establishment proposed in 1946, can you tell me have you any evidence at all of objections by these farmers during that time against the proposed siting of this establishment? — I am afraid this is a question which I cannot answer.

* See also p. 1917.
† See also p. 1920.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Are there any other questions to Mr. Hawkes? Mr. Hawkes, Mr. Wallace has dealt with the difference between yourself and the planning authorities so I do not want to pursue those. For other parties' benefit NFU JH3* actually proved somewhat impracticable for copying but for those who are interested the final copy can be obtained.

Mr. Wallace I have no further questions.

(*The witness withdrew*)

MR. A. K. GILES† *called*

Examined by Mr. Wallace

(*National Farmers' Union*)

5337 Are you Mr. A. K. Giles, do you hold the degree of Bachelor of Science and are you at present senior lecturer at the University of Reading in agricultural economics. As time is getting on, I am prepared to take Mr. Giles' qualifications as read.

Inspector We have met before, so I certainly am.

5338 *Mr. Wallace* There are just one or two points that I want to clear with you, Mr. Giles. In paragraph 6, I think it is quite clear but lest there be any doubt about it, at this inquiry as far as you are concerned Site A and Site B are virtually on a par? — Yes, apart from the small qualification that I made in that paragraph this is so.

5339 I believe that you have just one or two minor corrections which you want us to note. The first is at paragraph 17. Is it correct that £48 4s. should be 48·4 and £46 1s. in the final line should be 46·1? — Correct.

5340 And then again at paragraph 29 "Bushden" should read "Rushden"? — Correct.

Mr. Wallace I have no further questions.

Inspector Are there any questions to Mr. Giles from the first tier authorities? From other local authorities? Any other questions? I do not want to ask any questions. It is a very technical matter which will be a great help. Thank you very much.

(*The witness withdrew*)

MR. JOHN HENRY DIXON LEE‡ *called*

Examined by Mr. Wallace

5341 Before you sit down I believe you have a provisional land classification map§ which you have prepared, would you like to hand that to the Inspector at this stage. Perhaps I ought to say that it has been very difficult to produce but we have one other if anyone would like to look at it at a subsequent stage.

Inspector Just to make it quite clear, this is the provisional land classification for the area surrounding the site.

5342 *Mr. Wallace* Is your name John Henry Dixon Lee, are you a Fellow of the Royal Institution of Chartered Surveyors, a Fellow of the Chartered Auctioneers and Estate Agents Institute, a Member of the Central Association of Agricultural Valuers and the President of the Hertfordshire, Bedfordshire and Buckinghamshire Agricultural Valuers Association? Have you been resident in Bedfordshire for the whole of your life, are you a partner in the firm of Robinson & Hall, Chartered Surveyors and Land Agents of Bedford, have you been associated with that firm since 1946 and for two years prior to the war? Have you been engaged in the work of an agricultural surveyor in Bedfordshire and the surrounding area for the whole of this period and are you familiar with the north Bedfordshire and Huntingdon districts? Your firm are Valuers to the Agricultural Mortgage Corporation for Bedfordshire and parts of five adjoining counties? — Yes, that is correct.

Mr. Wallace Your proof is very clear and I have no additional questions.

Inspector Are there any questions to Mr. Lee from first tier authorities? Other local authorities? Any questions?

Cross-examined by Mr. Gregory

(*Country Landowners' Association*)

5343 As I have not had the opportunity of seeing the land classification map just to put us in the picture, briefly, Mr. Woodhall the County Planner for Northamptonshire has said that the grading of the land in this area up to a 20-mile radius is mostly Grade 3 land if it is not Grade 2. As far as the area on your map is concerned is that what you have found? — My map does not in fact cover a greater area than a maximum of 12 miles from the site. Unfortunately, the north Bedfordshire classification map has not to date been published and the information which I have obtained has been obtained from the Cambridge office where this map is being prepared. I understood it would be available by the end of August of this year but I have not seen a map. I think there are only 12 maps over the whole of the country that have been completed. The Buckinghamshire map to the west and south of the area is available and the map well off to the south east, covering incidentally Nuthampstead, is available, but otherwise the only information I have is the approximate 12-mile radius, it does not include part of Cambridgeshire to the east and Huntingdonshire to the north east and indeed this Wellingborough area, Northampton, so it is not very complete but does cover fairly effectively a 12-mile radius. — What does it show in a few words?

5344 *Inspector* Mr. Gregory, I am quite willing you should borrow this and return it to me, if you want.

Mr. Gregory Thank you, sir, but as I am coming on fairly quickly after this it would help me if I knew as soon as possible. Is there any extensive area

---

* p. 1932.
† See also page 1933.
‡ See also p. 1940.
§ Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

of that agricultural land which is below Grade 3? — No. Grade 4 is yellow on this map and there is an area here, blue is Grade 2, dark blue is Grade 1 and green is Grade 3. There is no Grade 5 land, which is brown, and the urban areas are coloured red and orange. You will see that the trend is for the Grade 3 land to be west of the area and the Grade 2 land extends covering the greater part of the airport site and extending to the east and to the south-east where we have quite a large proportion within the 12-mile area of the Grade 1 land and this includes the Sandy circle part, that is in fact Grade 1 land.

5345 That is the main interest, and as I understand it you have had a preview of the Ministry's classification map and what have you done, taken a tracing or something of that kind? — That is correct, yes.

Inspector Any other questions to Mr. Lee? I have no questions, but on your paragraph 3 in which you refer to the area as it was in 1939–45 I also remember seeing it during that period and I agree it has changed dramatically, I am in full agreement.

Cross-examined by Mr. Curran

(*Huntingdon Constituent Labour Party*)

5346 In paragraph 7 you refer to redundancy in the area affected by mechanisation. You go further and say that labour of a more skilled calibre cannot be dispensed with and you seem to think that the construction programme which an airport would create a large proportion of young people will be drawn away to more attractive and better paid work. Do you think this is a serious problem? — I think this is a point that will arise during the constructional period when excessively high rates of pay are available particularly when contract work is to be carried out to a time limit, and undoubtedly there will be an attraction during that period. There is inevitably a section of the community that prefers to work on the land whatever the circumstances and current rates of wages in this part of the world agricultural-wise are, I believe—I can't quote any definite figures, but they are relatively high and certainly well above any basic agricultural wages that one hears about.

5347 Have you got any figures for county by county wages? — No, I have not got any figures.

5348 It is true, isn't it, that in East Anglia taken as a whole agricultural workers get paid very much less than other regions? — I have seen the figures that you have produced which indicate that, but this is not East Anglia.

5349 A large part of the area affected is. — Bedfordshire is not in East Anglia.

5350 Huntingdonshire is very affected by the building programme. One other question I wanted to ask because we have been told that much of the constructional programme will be done by imported skilled labour. — What? I didn't hear you.

5351 We have been told . . .

Inspector Told by whom?

Mr. Curran Told by the Airport Resistance Association, the point being . . .

Inspector Who told them?

Mr. Curran I think the argument was that they will import skilled men into the area, it will be a closed shop and the local people won't have a say. — I wouldn't think that a lot of the contractors will mind where the labour comes from if they can persuade labour for work that has to be done in very quick time.

Inspector Any other questions?

Mr. Wallace I have no further questions. If it is of any assistance to you or to Mr. Curran to have the latest wage figures we have them available for the country as a whole and if it would be of any assistance I can call witnesses to say how much they pay their workers. Personally I think it would be unnecessary.

Inspector That is my personal view also, Mr. Wallace, but no doubt if Mr. Curran wants the information he will approach you.

(*The witness withdrew*)

MR. HUGH CRAWFORD BALFOUR* *called*

Examined by Mr. Wallace

5352 Mr. Balfour again is not unknown to you and I don't think I need read his qualifications. I will just ask you one or two points. First of all, is your name Hugh Crawford Balfour? — Yes.

Mr. Wallace I think that is all.

Inspector Are there any questions to Mr. Balfour from first tier authorities? From other local authorities? From any other parties? There are apparently no questions, Mr. Balfour, and I have none.

(*The witness withdrew*)

Mr. Wallace Sir, the last set of documents is the evidence of representative farmers. As you know from previous inquiries what has happened, I would like to offer them collectively. If anybody wishes to cross-examine them I will certainly call them.

Inspector The evidence of representative farmers has been circulated. I have looked at the evidence most carefully and realise that it is typical of all the other farmers who may be affected. Are there any questions to any of the farmers whose evidence is under no. 4050/6?

Mr. Curran I would like to speak to Mr. Paynter and Mr. Osborn.

Mr. Wallace Perhaps it would be better if I were to call them all.

Inspector Do you wish to speak to Mr. Ward?

Mr. Curran No.

Inspector Mr. Paynter?

Mr. Curran Yes.

* See also p. 1950.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. RICHARD BERNARD PAYNTER* *called*

Examined by Mr. Wallace

5353 Is your name Richard Bernard Paynter, do you manage 464 acres of Rifle Range Farm, Yeldon, Bedford, and does the farm lie approximately 3½ miles north-west of Thurleigh RAE and approximately one mile east-south-east of Chelveston aerodrome? — It does.

Cross-examined by Mr. Curran

5354 You have some comments to make and I quote: "This seems to me to be totally out of keeping with man's future psychological needs", and you say: ". . . there is a growing realisation that a purely materialistic outlook cannot provide an adequate basis for man's continued existence." Do I take it from this that you feel that any benefit that can be derived from the airport in terms of prosperity and wages is not really important? — I think it is satisfaction. If a man is not satisfied in his job he will not be happy.

5355 And if an airport extends the range of alternative jobs of a kind that would not otherwise be available is this not a good thing? — I am not able to say whether it would create dissatisfaction or not. I think you have to look a great deal further forward than the next 20 or 30 years.

5356 They might be happier if they could choose from a wide range of jobs?

Inspector Do you wish to deal with that point? The question put was that a man might be happier if he had a bigger range of jobs presumably that an airport might give. Have you any views on that? — Not really, no.

Would you say that it is likely to increase job satisfaction? — I would have thought not.

5357 You would have thought not—if, for example, you lived in Huntingdon, where there is a narrow range of jobs in the district and there was an increase, would you not think that having skilled jobs available for our children would be an advantage, that they would do the sort of work which we have not been able to do?—would this not be desirable? — It might be in some cases, but in other cases people equally will move to an area where they feel that the place might be available.

5358 So you feel that rather than thinking that we might have a wider range of industry, more industry, people should move perhaps from there and migrate? — Not necessarily. Not necessarily at all.

5359 To move on to the second point: you seem to be worried by this purely materialistic outlook, you then go on to say that you have some special problems of your own—namely, that you think it may be difficult to find a farm within the next twelve months, required for the re-investment of capital to avoid Capital Gains Tax, and then you have some other comments to make about foreign money, higher interest, etc.—do you not also think that people who want to buy a house who have probably paid payments are being somehow reprehensible, materialistically? — Not at all. It is exactly the same problems that I have experienced myself.

5360 The inference is this: that though I sympathise with your problems as regards the Capital Gains Tax, the majority of the community would in fact financially benefit from the airport—the minority, namely, the farmers, would not . . .

Inspector Mr. Curran, we are in some difficulty to know when you are putting a question and when you are making a statement.

Mr. Curran I am sorry. Would you say it was only a minority of people who would fail to financially benefit from the airport? — Would I say that a majority of people would financially gain . . .?

5361 Do you think that only a minority of people would financially suffer from the airport? — I really do not know, because I have not got sufficient evidence to say whether they would or not. I am not an expert in this, and I really could not say.

Well we will leave it at that. Thank you very much.

(*The witness withdrew*)

Inspector Mr. Curran, who else would you like to speak to?

Mr. Curran Mr. Osborn?

MR. R. W. OSBORN* *called*

Examined by Mr. Wallace

5362 Is your name Roger William Osborn; was your father a farmer and do you come of farming stock on both sides of the family, although you had to go into industry in order to acquire sufficient capital to farm yourself; so far as local activities are concerned, have you been a Parish Councillor in this area for ten years, although not at present serving; were you formerly chairman and chief organiser of Cople Playing Field Association which raised over £5,000 by voluntary efforts to set up and establish a playing field in that parish; are you a founder-director of Bedfordshire Growers Ltd., a farmer owned co-operative engaged in the packing, marketing, and distribution of fresh vegetables in this county, and having a turnover in excess of £600,000—this company will also be severely affected by the proposed airport? — That is so: I am.

Cross-examined by Mr. Curran

5363 In paragraph 6, you say that you are troubled with the whole notion of setting up an airport—"I question whether such an airport will be needed at all. A great deal of flying is purely for pleasure—holidays and so on. Those who make use of this facility have no moral right to do so at the cost of posterity". Do I understand from this that you disapprove of air transport where it is used not for

* See also p. 1955.

* See also p. 1957.

Printed image digitised by the University of Southampton Library Digitisation Unit

industrial or freight, or any useful purposes? — Yes. What I disapprove of is placing an airport on our very restricted supply of good agricultural land. I question whether, in order to achieve what I think may well be only a short-term benefit, we have the right to permanently destroy good agricultural land, wherever it may be.

5364 So, if I understand it—would you like to amend what you have written here. Here you say that a great deal of flying is "purely for pleasure"—"those who make use of this facility have no moral right to do so". — No, I do not want to amend it.

5365 In other words, people can certainly fly, and there is no reason why they should not, provided the airport is not Thurleigh? — Not necessarily Thurleigh.

5366 Would you, for example, think that people should be allowed to use air passenger services from Heathrow or Gatwick? — Yes—the damage has already been done. The point that has been made, is it not, is that an airport—another airport—is essential for the country's good. This is what I am really questioning.

Inspector And this is not a subject for this Hearing; so I think, Mr. Curran, you might leave it at that. Thank you.

(*The witness withdrew*)

Inspector Now, Mr. Curran?

Mr. Curran Could I just speak very, very quickly to Mr. Bates?

MR. W. J. BATES* *called*

Examined by Mr. Wallace

5367 Are you William J. Bates, and do you live at Manor Farm, Pertenhall, Bedfordshire; are you a director of that Company, a Justice of the Peace, Chairman of Pertenhall Parish Meeting, Chairman of St. Neots Branch National Farmers' Union, Director of Syndicate Credits (Beds. & Hunts.) Ltd., Member of the North Bedfordshire District Committee Agriculture Executive Committee, Member of the Bedfordshire and Huntingdonshire Area Advisory Committee Agricultural Training Board; do you trade as P. J. Bates & Son, and do you farm 900 acres, 886 of which are owned and 14 tenanted ? — I do.

Cross-examined by Mr. Curran

5368 If I understand you, Mr. Bates, what you are concerned with is that if the airport came to Thurleigh, that would deplete an area of countryside which is of great recreational value to the local population? — That is one point, yes.

5369 But you also seem to be concerned, in paragraph 7—"the problems of trespass would be increased considerably". — In all farming enterprises in the urban area, I understand that trespass is far greater than we experience at the moment in Northamptonshire.

(*The witness withdrew*)

Mr. Wallace Sir, that concludes my evidence, and if I may, I shall address you—

Mr. How Mr. Hunt—could I just ask a question of Mr. Wallace? (T.E.C.D.A.).

Inspector You certainly cannot ask Mr. Wallace a question.

Mr. How It is actually Mr. Lee's evidence—

Inspector Would you mind recalling Mr. Lee?

Mr. How Perhaps I could ask Mr. Lee to answer this short question from the floor.

Inspector We will try it this way, yes.

Mr. How I would like to ask Mr. Lee the question of noise effect on animals: I understand that at a meeting of the N.F.U. in the Bishop's Stortford area —I was given to understand that Mr. Wallace spoke of the noise effect on animals. He said this had no effect whatsoever on animals, only on people. Could he correct me on this, if I am wrong, please?

Mr. Wallace This is clearly not a point for Mr. Lee, who is not responsible for my actions; it is somewhat unusual for advocates to be cross-examined, but I am prepared to answer that. It was not a meeting at Bishop's Stortford—what I in fact said was that at the present time (this was some months ago) the N.F.U. had no direct evidence of the effect on animals. I did not say that it had no effect, because we were then, and are now doing, research into this—

Inspector I think we must leave it there. It is difficult enough to deal with evidence submitted without taking evidence that was given at Bishop's Stortford Hall, or some other place. Mr. Wallace?

Mr. Wallace Sir, it now falls to my lot to address you for the fourth time at a Stage II Hearing on the subject of agriculture. You are perhaps wondering whether it will be the same mixture as before, perhaps slightly re-orientated, but basically the same. My concern, on the other hand, is that the farmers and the agriculture on this area should be represented fully and with justice. What I hope will not happen is that because Thurleigh happens to be last in the four Inquiries, I should in any way fail to impress to you the real horror of the agricultural community in this area at the prospect of a third London airport.

Sir, I shall be suggesting in a moment—and I hope that your Commission, and you yourself, will accept this—that the local implications of a third London airport at Thurleigh in relation to agriculture have certain special and unique features. Nevertheless, there are bound to be some agricultural arguments which are common to the four sites, and we would ask you, Sir, to as it were read the evidence from previous enquiries in conjunction with the evidence which we put before you, so that if I leave out a point which I should have made, it should not be lost for the reason of familiarity.

* See also p. 1959.

Printed image digitised by the University of Southampton Library Digitisation Unit

Sir, we know that it is the wish of your Commission to give the fullest weight to agriculture, and perhaps, Sir, you will allow me, as this is the final Stage II Hearing, to place on record our appreciation of the sympathetic interest you have shown in our representations, and to thank also your staff—not least Miss Wall—for the assistance they have given us throughout these Stage II Hearings.

Perhaps it is a good omen—we certainly hope it is —that this Inquiry is being held in the Corn Exchange at Bedford. Certainly that demonstrates the fact that Bedford is a virile and flourishing agricultural centre.

We would draw your attention, Sir, to three things that are especially relevant to the Thurleigh site, so far as agriculture is concerned. The first, Sir, is the high intrinsic quality of the land. The second is the unique regional context in which this proposal is centred, and the third is the high proportion of horticultural enterprises in this region. With your permission, I would like to deal with those points in a little more detail.

First, as to the intrinsic high quality of the land. I find myself in the difficulty that we all find ourselves in at these Inquiries, because we are not allowed to make comparisons. Perhaps I can get over that difficulty by saying that we find it difficult to imagine that your Commission could choose a site where the agricultural land was of a higher all-round quality, or where the ancillary development would be likely to affect agricultural land of such a high intrinsic value. I do not wish to repeat the evidence which has already been put before you, but you will remember that Mr. Giles says in his evidence that this is very high agricultural land, and Mr. Lee not only gives careful information about the site, but also information on 109 parishes within the 12-mile radius —and I believe, Sir, that the five farmers whose representative views were put before you demonstrated how in practice farming here is viable and rewarding. Sir, Mr. MacDermot in his speech for the County Councils yesterday desribed this area as an agricultural priority area, and we would adopt that description of the agricultural area without reservation.

We know that the Consultant advising your Commission, Professor Wibberley, has written at length on the need to preserve good agricultural land, and therefore I do not wish to go in detail into the reasons why he and now we ourselves should take that view. He is particularly concerned with the costs of producing the equivalent amount of food from difficult and poorer land. We are also concerned, Sir, with the versatility of this land in catering for the nation's need. What we are really anxious about it that the full importance of preserving good agricultural land should be appreciated by all concerned, not least by your Commission, because we are aware that whether you take the cost of buying farm land or the gross output or the net output of the land it looks like chicken feed compared with the enormous costs of construction of an airport. In the same way, the difference between good agricultural land and bad agricultural land when costed out might appear to be marginal in comparison with these enormous construction costs. This is something which we shall be dealing with in detail in our Stage III evidence to your Commission, but in the context of this inquiry perhaps I might say that we regard cost benefit studies as giving only part of the picture, and so we have urged this upon you in the past that we are concerned lest your Commission places too much emphasis on cost benefit; particularly in relation to agriculture cost benefit figures are based on the situation as we see it today, but not what might be the case in 30 years or in 100 years, which Mr. Sharman referred to in his evidence as being reasonable to consider in another connection. We ask you to have in mind the long term needs of this country for agriculture, not just in relation to the next 10 or 20 years, but at least up to the next 100 years, because there are places about which we have heard, such as Biafra and Nigeria where, I believe, three rats fetched the price of ten shillings, and were our country's economy to begin to approach that pressure for food we would suggest that any costing produced on today's figures would be quite unrealistic.

Again, in the context of the intrinsic value of this land which seems to us to be going to be affected— and we have already said that it would be a high quality agricultural land—the researches which we carried out and which will again be referred to in our evidence in Stage III, would seem to suggest that 7,500 acres may be not sufficient for your Commission's purposes. This is based on investigation into existing airports of this country and also airports abroad. The reason I mention that is this, that it may be the case that you will in fact require something like 10,000 to 15,000 acres for your airport and, Sir, I do not need to expand on the chaos that would cause. All I would say is this, that we hope that as soon as the final figure for an airport is known the Commission will let everybody know. Again there is a conflict or difference of opinion as to the amount of ancillary population which is going to be engendered by this airport. You will see that our own consultant on planning, Mr. Hawkes, has himself revised his views during these last two enquiries as to the amount of population which this airport will cause based upon the experience in America, and if 750,000 is the population which will come into this area the effect will be quite catastrophic on agriculture. Mr. Lee has already estimated a conservative 47,500 acres which will be lost if the proposal goes through as at present envisaged.

I turn to the second point which we think is unique to Thurleigh and that is its regional context. It is bounded by the three Mark II new towns in this area; Milton Keynes, Northampton, and over to the east Peterborough. It also includes the expanding town of Wellingborough, and the N.F.U. has appeared and made representations at all those enquiries. We are concerned irrespective of the airport at the effect of this ring of expanding towns. We have called for further research into this before any further and

Printed image digitised by the University of Southampton Library Digitisation Unit

major planning decisions are taken. That, as I say, is irrespective of the airport. The fact that an airport might be plunged into that context as well is something which increases our alarm and increases our view that far more research needs to be done in this particular sub-region.

I have to deal now with possibly one advantage which the siting of an airport at Thurleigh would have from the agricultural point of view, and that is that were you to put an airport at Thurleigh you would have in fact it ringed by towns of a large size, and this would have, in our view, the effect of containing the further ripples of planning beyond those towns. Again I am treading on the borders of the Stage III functions. All I can say is if an inland site is to be the right one we would naturally wish it was contained so far as possible in these planning factors.

Having said that, may I say we regard it as a very cynical suggestion and very cynical advantage, because you would in fact be writing off, in our view, the whole of this area at one fell swoop, and when it is good agricultural land that you are dealing with that seems to us to be totally unreasonable and untenable.

Perhaps I might take up at this point the matters which were raised by Lord Campbell in his excellent speech on the part of the Milton Keynes Development Corporation, and I would associate myself with that submission and adopt it completely, but, Sir, Lord Campbell in his submission referred to the understanding in the area of what the Minister of Housing had and had not given assurances about, and as you took this up with Lord Campbell it does seem to me it would be right just briefly to mention the understanding which the National Farmers' Union has in this matter, because it will also influence our attitude to the airport at Thurleigh. Your Commission which has access, no doubt, to the Ministry of Housing records will find that Mr. Richard Crossman, the then Minister of Housing toured the area of Milton Keynes, and its surrounding district, in company with Mr., now Professor James, and Mr. Delafons of the Ministry of Housing. I, in company with a number of other people, met the Minister at six o'clock in Buckingham, and afterwards we continued our discussion in the White Hart at Buckingham, and it was specifically put to Mr. Crossman both by myself and by others that the area which he was asking for at Milton Keynes was unreasonably high, and his reply was equally specific. He said, first of all, that he had asked for such a high quantity of land because he did not want to have to hop over the boundaries of Milton Keynes at least in this century, and he referred to the difficulties of the Stevenage Corporation in this regard. He also went on to say that he wanted farmers in the North Bucks area, and I believe this would also apply to farmers roundabout the area, though it was a North Bucks Meeting, that he wanted them to know the position of what land was and was not required. The matter was again taken up at a public inquiry and subsequently in relation to powers which were given to a New Town Development Corporation under the New Towns Act, where any new town can acquire land outside their designated boundary for certain purposes, and so it was made clear at both the public inquiry by Mr. Silvester Evans and subsequently to that inquiry, that it was against the Minister's wishes and practice that land outside the New Town's corporation boundary should be acquired for purposes in relation to the new town corporation. Sir, that is why we have again grave doubts as to the total value of cost benefit studies. We find it difficult to know how to cost an undertaking of that nature upon which farmers relied and indeed not only farmers, because Councillor Norwood yesterday in his speech for Newport Pagnell made it clear that opposition to the new town was dropped on the understanding this represented the limit of encroachment into the area. We are also concerned lest cost benefit techniques should be used to go behind undertakings given by the Minister. The fact that this can't be costed or that the situation has changed, perhaps, does not alter the effect of given undertakings. That is why, Sir, in passing we have made it clear that should the third London airport be sited either at Wing or Thurleigh we would do our utmost to call into question and to start from scratch the whole matter of new towns in this area, and that would include not only Milton Keynes but the new town of Northampton.

As to the third special feature of Thurleigh, that is the predominance of horticultural activities, I don't think I need elaborate further except to say this, that horticulture is in general a higher employer of labour than agriculture and, therefore, it might be particularly hit if exceptionally high wages were to have the effect of drawing labour away. It has been suggested by the Thurleigh Emergency Committee for Democratic Action* that, and I quote from the conclusion of an introductory note and supplemental appendix where it is said: "Agriculture and its associated activities are increasingly shrinking sources of employment and prosperity to the region." That, I think, is not amplified or substantiated, but it goes on to say that the agricultural interest in particular would wish to discourage the airport because of its demand for labour and because of the higher wages this would entail. We don't think this is something which is unique to agriculture, we suspect that other enterprises will also suffer from the syphoning off of high labour wages, but perhaps I might be allowed to comment that this demonstrates the fact that the Thurleigh Emergency Committee has not really comprehended the enormous agriculture arguments there are in this area. Since that is only one argument out of many I think it is worth commenting, since this will be my only chance to do so, that the Thurleigh Emergency Committee does not hold itself out as representing the National Farmers' Union for Agricultural Workers. We regard it as far from democratic, indeed dictatorial and arbitrary, to make submissions of this kind which are not justified in substance or in fact.

* See also p. 2130.

Printed image digitised by the University of Southampton Library Digitisation Unit

I deal with the other effects on agriculture of an airport in this area, and I deal with them as quickly as I can because they have been aspects covered at previous enquiries, but perhaps I might start with drainage. You are in no doubt about the real concern of farmers in this area about the increased flooding situation which they have already experienced, and which they are likely to continue to experience in an increased form. Sir, Mr. van Oosterom was asked by myself some very awkward and perhaps somewhat difficult questions. I am sure he takes no pleasure from the fact that it does seem that farmers are going to be written off since it would not be economical to ensure that flooding does not increase upon their land. I refer also to the question of water supply and, Sir, here we always find ourselves, and I must stress this as strongly as I possibly can, in what I might describe as a chicken and egg situation, because if your commission accepts that in principle water can be made available then our chance of resisting reservoirs on technical arguments are thereby that much diminished; it is the same in relation to Milton Keynes, we were told there was no insuperable problems, now we find we have to accept in fact unpalatable proposals for water supply and drainage which would not have arisen if the matter of water supply and run-off had been considered in advance of the proposal. I can only repeat, we think if you decide that the third London airport can be sited at Thurleigh you will write the death warrant of other farmers as well either at Abbotsley or Waddesdon, or Whitchurch, and make it almost impossible adequately to fight these proopsals at the public inquiries into them.

Compensation is a matter which is and has been frequently mentioned. I don't think I need go over it again in detail, save to say in our experience compensation is not adequate and in almost all cases farmers are worse off when they are forcibly moved than they should be, and they certainly are not reinstated. We have also dealt at previous inquiries—Mr. Lee has dealt with the problems of severance, fragmentation, and trespass.

There is one matter on which we have not touched before and I am a little bit hesitant to know whether I can put it in at this stage or at Stage III, the reason being that it certainly applies to Thurleigh but it also applies to the other sites, so with your permission as I have this evidence I will mention it in broad detail and amplify it in Stage III. This is in connection with the aerial spraying of farmland and the purposes are listed here by a firm called Farm Aviation Limited: spraying nitrogen fertiliser in early spring, late spring and early summer, spraying fungicides, applying fertiliser and spraying herbicides. The advantages of using aircraft are that the application can be completed quickly regardless of ground conditions and without damaging the crop, and, secondly, because the contract service is complete, leaving the farmer to use his shrinking labour force on other activities.

The difficulties that will arise are first that to comply with air traffic control regulations and to avoid interference with airline movements close liaison with the controlling authority is required; agricultural operations, secondly, have to be carried out at low level making radio communication difficult; thirdly, agricultural aircraft normally operate from farm fields or disused aerodromes, even telephones are unlikely to be available and agricultural work is usually required at short notice, exact timing is dependent on weather conditions as again problems in routing arrangements. My information from this one firm alone is that 125 farmers in the Thurleigh area make use of this particular facility.

Now, sir, there remains little for me to do in the submission except to thank those authorities which have given us support in our submissions. It is true, of course, that farmers here are members of the public, they can be supporting the County Councils' case, the Parish Councils, amenity bodies and so forth. In every way, sir, they are committed to trying to avoid this threat to their land.

Mr. Giles in his conclusion at paragraph 32 says: "It would be impossible to argue in selecting a site, that agriculturally speaking the area is inferior in any way. All of the evidence is to the contrary." Sir, this is taken up by our other witnesses, for example Mr. Hawkes at paragraph 83* says: "For these reasons, I have serious reservations as to the suitability of Thurleigh as the site for the establishment of the third London airport." Sir, with these conclusions we entirely concur and they do in fact provide the whole basis for our case.

Sir, that concludes the points that I wish to put before you at this inquiry, unless there are any further points that you wish to ask.

Inspector I have no other points and thank you for the evidence that you have given at all four inquiries.

Mr. J. M. Schofield† *called*

(Nature Conservancy)

Mr. Schofield My name is John Michael Schofield, Deputy Regional Officer for the Eastern Region, University of Sheffield and I have worked in this region since 1963. Our report to the Commission has already been circulated and I will be only too pleased to answer any questions that may be asked.

Inspector Any questions from first tier authorities? From other local authorities?

Cross-examined by Mr. Body

5370 Mr. Schofield, your qualification is entirely that of a zoologist, is that correct? — Yes, although I have had six years experience of other branches of natural history and science.

5371 I suppose you have now had an opportunity of reading the proof of evidence submitted by Mrs. Berens? — Yes.

---

* p. 1917.
† p. 1962.

Printed image digitised by the University of Southampton Library Digitisation Unit

5372 Enough not to disagree with it fundamentally? — Fundamentally it seems in order although I cannot follow the majority of the statements she has included in her report.

5373 You do quarrel with a certain amount of it, don't you? — Only with one minor issue concerning the distribution of the black hair streak butterfly species. Mrs. Berens refers to it as being perhaps confined to two places in Britain and in fact it is considerably more than just two in this country.

5374 If I may remind you of what her evidence is: "Keysoe Park Wood, within the airport area, has been declared a site of special scientific interest as one of the very few breeding places in the East Midlands of the extremely rare black hair streak butterfly." You quarrel with that? — No. The classification was 1952 and one would expect a number of additional localities for that particular species discovered since that time.

5375 And would you agree with her conclusion: "This species is a national rarity and the destruction of its habitat would be a calamity"? — Yes, I do.

5376 In your appendix you have stated that Keysoe Park Wood may be deleted from the county schedule of scientific sites? — Yes. Keysoe Park itself has during the past ten years or so encountered a considerable degree of tree felling and planting of coniferous species which would not support that species. At the present time there are small areas within the site of special scientific interest which do contain plants such as blackthorn and privet which are the food plants for the mature insect. My information is that much more tree felling will take place and will reduce the viability of that area to support the species in that particular site.

5376A Have you had any communication with the owner of that site?— Only in the order of 12 to 18 months ago.

5377 Have you had any hint since then of any change of opinion on his part? — No. I do say, however, that it will probably be deleted from the county schedule of scientific sites. This does not mean to say that it will definitely be deleted. One revises these schedules at set periods of time and before one takes the step of deleting a site from a county schedule one makes last minute on the spot site investigations and has consultations with the owner, and it depends on those last minute consultations on that site and discussions that the final decision is made as to whether to retain or to delete the actual site from the county schedule.

5378 And therefore until you get up to date you are not in a position now to say? — Right.

5379 Then that being so let us pass to another matter, the Honeydon Nature Reserve. You know that, don't you? — Is this referred to in my report?

5380 No, in Mrs. Berens' evidence where she lists in some detail the various parts of North Bedfordshire which will be affected. — I am sorry, I haven't got a copy of Mrs. Berens' report with me at the moment.

5381 Well, it is in the Colmworth area. Are you familiar with that area? — The rural district, yes.

5382 You would not quarrel with her conclusion, would you, that assuming that she is right in saying that it is there it will be obliterated? — Is it a statutory site, sir?

5383 Not a statutory site, no, it has been designated as a nature reserve. Don't you know it? — I know it under a different name.

Inspector It rather surprises me, Mr. Body, that a roadside verge should be designated as a nature reserve.

Mr. Body It is a county classification now, I understand, but I stand to be corrected about that, I must depend on Mrs. Berens' evidence.

Inspector Perhaps she may clarify the position.

5384 *Mr. Body* If it is a roadside verge it is a very special one, is it not? — Yes.

5385 But there are in fact three rare plants there, the sulphur clover, crested cow-wheat and spiked star of Bethlehem, all three can be seen there together. — Yes.

5386 You don't doubt that that site would be obliterated by a motorway construction in the event of an airport coming? — No.

Inspector Mr. Body, there are no proposals for motorways as far as I know.

Mr. Body Obviously one is somewhat in the realm of conjecture here. He obviously cannot be sure of it, but with the aid of the material we have before us it does seem that that would be in the way of a motorway or something of that kind.

Inspector It is not certain at this point of time.

5387 *Mr. Body* Mr. Schofield, the next item I want to ask you about is on page 5 of your evidence where you refer to Sharnbrook Summit. — Yes.

5388 And that is the only location in Britain for one species of plant? — Yes, that is correct.

5389 Which plant is that? — *Cerastium brachypetalum.*

5390 That is chickweed of a very rare kind? — That is correct.

5391 And finally Bath asparagus, again is a rarity? — It has a very rare distribution in this country, yes.

5392 And one of the fairly few places? — Yes.

5393 And that too would be in danger in your judgment? — It could be.

Inspector Are there any other questions to Mr. Schofield? Mr. Schofield, I have no questions.

(The witness withdrew)

MR. R. BODY *called*

Council for the Preservation of Rural England

Mr. Body Perhaps I should explain that I represent the CPRE, the Bedfordshire Natural History Society, the Youth Hostels Association, the Northamptonshire Branch of the CPRE. There is no Bedfordshire branch of the Council but affiliated with

Printed image digitised by the University of Southampton Library Digitisation Unit

the Council are the Bedfordshire Association and the Parish Councils, the North Bedfordshire Association and the Parish Councils, the North Bedfordshire Preservation Society and the North Bedfordshire Archaeological Society, but notwithstanding that affiliation I gather that they are separately represented.

There are six witnesses I will put before you. I will call Mr. MacFarlane first to deal with the general matters followed then by Mr. Polhill who will speak for Bedfordshire, then Mr. Fell will speak for Northamptonshire, Mrs. Rixon will speak for Huntingdon and then finally two expert witnesses, Mrs. Berens on botanical matters and Mr. Green on birds.

Inspector Before you do a long hike to the rostrum are there any questions?

Mr. Connell Two matters of very minor detail in paragraph 15.

MR. PETER WEETMAN MACFARLANE* *called*

Examined by Mr. Body

5394 Mr. MacFarlane, are your names Peter Weetman MacFarlane, are you a Member of the Town Planning Institute, Fellow of the Royal Institution of Chartered Surveyors and a holder of the Institution's Special Diploma in Town Planning — Yes, that is so.

5395 I think you have been a consultant in town planning for over thirty years in this country and abroad? — Yes.

Cross-examined by Mr. Connell

5396 Mr. MacFarlane, just two matters of detail which I am asked to put right in your paragraph 15. You say: "A large reservoir at Grafham Water was opened three years ago by the" I think it should be by the: "Great Ouse Water Authority" rather than River Authority? — It could well be.

5397 Perhaps we could substitute "Water" for "River" there, and you say: "It has a car park for about 400 cars." I am told it will take 1400. You will accept that correction? — Yes. I am surprised it could be as much as that, they would have to be very scientifically packed together.

Inspector Any other questions? Thank you.

(The witness withdrew)

MR. A. N. POLHILL† *called*

Examined by Mr. Body

5398 Is your name Anthony Nathaniel Polhill, and do you live at Howbury Hall, Renhold, just outside Bedford? — That is correct.

5399 Where your family lived for many generations —I think you farm there? — Yes, Sir, that is so.

5400 And you have a whole host of local offices, which are recorded in your Proof of Evidence. — Yes, that is so.

5401 And you are here to speak particularly about the features of North Bedfordshire, which will be in danger if the airport is sited here? — Yes.

Inspector Are there any questions to Mr. Polhill concerning his Proof of Evidence? First Tier Authorities? Other local authorities? Any other parties? There are no questions—thank you for your very exhaustive survey of the villages and so on, Mr. Polhill, which will be of great help to the Commission in their research work. Thank you.

(The witness withdrew)

Mr. Body Next, Mr. Fell* — Sir, you will remember that his Proof of Evidence is in somewhat unusual form—I think you have had a glimpse of it.

Inspector Yes, indeed: it is at the back of the room.

Mr. Body Perhaps this witness could be treated as before, and not called to the box—

Inspector Are there any questions to Mr. Fell, concerning his evidence? No questions, except to thank you also for the very attractive piece of work you have provided.

Mr. Body Next is Mrs. Rixon,† to speak primarily of Huntingdonshire.

Inspector Any questions to Mrs. Rixon on her Proof concerning Huntingdonshire? No questions—thank you, Mrs. Rixon.

Mr. Body And next Mrs. Berens.‡

Inspector Any questions to Mrs. Berens, on her proof? No questions—thank you.

Mr. Body And finally Mr. Green§—I hope there are no questions for him, because I am afraid he is not able to be here—he does express apologies, Sir.

Inspector In that case we will adjourn now for lunch, before your address.

(Adjourned until 2.15 p.m.)

Inspector We are having a little difficulty in hearing words said at the microphones a little towards the back of the hall, so Mr. Body has moved forward in order to help the shorthand writers to get an accurate transcript of Mr. Body.

Mr. Body May it please you, Sir. So much has already been said, and so very cogently and authoritatively, that it seems almost idle to add to the weight of evidence or to the load of argument already submitted against this proposed site. But nonetheless I begin, if I may, by commending to the Commission the Proof of Evidence of Mr. Polhill. His is a survey of the villages whose lives after centuries will come to

* See also p. 1965.
† See also p. 1967.

* p. 1974.
† p. 1975.
‡ p. 1976.
§ p. 1979.

Printed image digitised by the University of Southampton Library Digitisation Unit

an end if the airport is sited at Thurleigh. His proof shows, in my submission, more clearly than any other statement provided at this Hearing that North Bedfordshire, certainly the parts of it that we are concerned with in this Inquiry, is an almost undiscovered and certainly not-hitherto-wholly-appreciated oasis of countryside—not spoilt yet, and typical of what rural England should be. In his words, "church spires and towers are the landmarks in a region which has little of the spectacular in the way of either buildings or natural features. It is the whole, very homogeneous tapestry that matters and gives pleasure; indeed, just because there is nothing grand or very exciting, a massive intrusion of man-made structures would destroy it completely. It is quiet, very English scenery and needs to be experienced under a quiet sky; and in a country which, further south, has suffered so much from industrial practices, this unspoilt region is particularly precious."

As you know, Sir, the upper part of the Ouse Valley is to be classified as an area of high landscape value, when the County Development Plan is reviewed. Yet this is the part which is to be encircled by still larger towns. They are planned already to grow considerably by the end of the century: the figures are before the Commission already. Within a twelve mile radius of Thurleigh there is a population of a quarter of a million. By 1981—which after all in the context of this planning decision is not so far away—there will be an increase of just about fifty per cent—one million, one hundred thousand; and by the end of the century it is planned to rise still more to one and a half million. If one is to superimpose upon those figures the figures that we have estimated for the airport and all that that means, it may be a population reaching up to nearly two million.

I believe I am right in saying, Sir, that there has never been any area in this country that has ever had to face an increase of that magnitude. It will stretch to breaking point ever amenity, every worthwhile recreation, and every facet of rural life that now exists in North Bedfordshire, and it is with that fact in mind that I would ask you to judge the Proofs of evidence of Mr. Green and Mrs. Berens. They have told you something of the quality of the flora and the bird life that are to be found—and found rather surprisingly to outsiders—within this area. Now that you have received the evidence of Mrs. Berens you may be convinced, Sir, that North Bedfordshire is important, largely because of the diverse nature of the land formation. It is this variety in a comparatively small area that causes flora to flourish in a way that they would not do otherwise. You may have detected perhaps a slight trace of hostility on my part to Mr. Schofield when he first stepped into the witness box, stemming from my appraisal of his statement which did not quite agree with Mrs. Berens' conclusions; but perhaps you may feel now that he does not in fact join issuse with her at all and that they are agreed, which does mean that both the expert from the Nature Conservancy and our own expert in this matter recognise the dire consequences that will follow from the siting of the airport at Thurleigh.

You know, Sir, I realise, that this variety is perhaps not unique, but nearly so. One has the undulating woodlands, the boulder clay and the Oxford clay, the limestone and the marshes and the gravel, the rich alluvial area and the Greensand region. I do repeat that you have the unusual effect that all these formations are to be found quite close together in this comparatively small area, and it is that combination that as much as anything has given the rich botanical life to North Bedfordshire. I am not going to try and quote the different names of plants that are in danger, but I know full well that the Commission will have their names read and will bear them in mind. The risk, I repeat, is real, and it would be a tragedy, in my submission, if they were to be lost.

I made the point before, sir, at other hearings before you, that at last the nation is beginning to be conscious of this treasure of wild life, and if it is to be destroyed then it will be destroyed in this corner of Bedford by the hand of man. Now, what will be the judgment passed upon us by another generation?

If I may refer you to the proof of evidence of MacFarlane, it is, I quote his words, "an area crying out for preservation". It is, he argued, a corridor between two major growth areas. To sever it in two by planting in its midst an airport would in the submission of the CPRE run counter to all the best principles of planning.

May I emphasise to you, sir, something which I am sure you know, but nonetheless, I feel bound to do so: the CPRE does not doubt that there are places and many such places where urban development must take precedence over the claims of the countryside. We recognise that the population of our nation is likely to swell from 55 million to not less than 75 million by the end of this century. Very many of that extra 20 million will want to live and will have to live in the south-east of England. With that fact in mind, if no other, the CPRE does not argue that status quo, it does not suggest that the countryside can be petrified, as it were, as it now happens to be. The very size of that increase in our population makes the status quo impossible. It also makes it utterly imperative that areas such as this that exist between huge growth points should be conserved. and that is why with great respect I underline to you, sir, the Conclusion of Mr. MacFarlane's evidence, that siting the airport here would be wrong agriculturally, scenically, socially and recreationally.

Having made those submissions, may I finally be allowed to join with others who have been at all four hearings, and express our gratitude to you and to your assistants, for all your help, your kindness and, if I may say so, stretching a point so far as filing of documents are concerned from time to time; we appreciate it very much.

Inspector Thank you. I would like to thank all the associations you have represented at the previous four hearings for the great amount of detailed work they have put in which should be of great help to the Commission. Thank you.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. M. GREGORY* *called*

The representations of the

Country Landowners' Association

Mr. Gregory My name is Michael Gregory, legal adviser to the Country Landowners' Association. Coming after the virtuoso performances that have gone before I feel like the third trombone from the travelling circus which Mr. Keene referred to yesterday, but even the third trombone can play an important part in a well scored work, and when I say that I represent branches with 439 members within a 15 mile radius of Thurleigh, of course, I am not boasting. I certainly feel I am a member of a travelling circus as I came directly from a working conference at Rowhampton where I experienced for myself the difficulty of trying to follow the speeches of people on the flight path to so minor an airport as Heathrow, but I will try not to let that colour my submissions today.

I fully understand and appreciate why your commission has asked those taking part at these four inquiries not to duplicate and repeat evidence, and so as before I should like to say that the CLA although it would feel very strongly about matters I have referred to at previous hearings I would fall in with what I knew you want and adopt the evidence and submissions of the very excellent case of The National Farmers' Union and of the County Councils and all the members of the Milton Keynes Development Corporation which we heard yesterday, and also, of course, we support the evidence of BARA which we have not yet had the pleasure of hearing, but it does leave me, of course, in the rather odd position that some of the matters we feel most strongly about are those I am going to refer to least, because I don't want to repeat them again particularly, as I am sure, as you assured me before, the Commission will give the fullest consideration to the evidence and submission made at the other hearings.

Now, when we come to the last of the four short listed sites we find that it is a site that would do the greatest harm to agricultural production; it is where the standard of husbandry and business acumen has been described by Mr. Giles,† who is an impartial agriculturalist, as he makes clear in his Proof, although called by the NFU, as impressively high. It is also a site where Mr. Cowley‡ said, "I can suggest nowhere in which the population could be accommodated that is either realistic in terms of achievement or desirable in terms of regional or planning objects"—that is in paragraph 2.28 of his evidence, and there, indeed, the planners have tried to conserve and preserve what must be inevitably destroyed if this whole plan of the area is to be changed by the coming of an international airport to this area. It is grim to the owners and occupiers of land, and agricultural and rural land in this area, unless it be that we know the Northampton Planning Officer§ has said that the land taken for the airport links would not be as much for that purpose as he concluded in paragraph 4.4.4 of his evidence, that the urbanisation would compel, as he put it, a completely new pattern of sub-regional, regional, and national links, not only to the south, but towards the midlands and the north. This is grim indeed for those who have to provide the jigsaw puzzle pieces of land for this purpose. It is also grim for the patriots who believe that the good agricultural land of this country must be preserved at all costs because, as Mr. Woodhall* told you, and it has confirmed to a large extent the plan put in by Mr. Lee,† that that land in this area is very largely grade 2 land. You will also see very interestingly the land classification plan, this disclosed a very substantial area of grade 1 land, the rarest land which I think is not thought to be in this country in the Sandy area where the planners feel that 80,000 population would have to be housed in the new towns if the airport were to come here.

Now, sir, my association have very fully dealt with the argument of why it is so essential to preserve the agricultural land of this country, and Mr. Wallace has done so ably also for the National Farmers' Union not only on this occasion but previously, and it would be quite wrong for me to repeat those arguments although we feel they need to be emphasised. It was most interesting to know that the urban council at this hearing hit the nail firmly in the right place when the St. Neots Urban District Council said agriculture is one of this country's most efficient industries, and its record in the last 20 years of increased productivity is unsurpassed, and on top of this achievement of productivity the industry is called on to superimpose further annual expenditure, and this challenge has been accepted by the government. Here at Thurleigh is land with the greatest potential for expansion which is the very land which is needed for this increasing expansion of agriculture to be carried on year by year, as it has had to since the war, and which apparently it will have to in the foreseeable future. Of course, St. Neots realises this is something which has always so far been met, and so, sir, I can only tell you that the Country Landowners' Association has financial objections to this site, it is an area where again we find in the evidence of our members that very heavy investments in long term improvements, just as you would expect in land of this quality so well farmed as the agricultural evidence has shown, have been made. So, sir, the position, which has been of such great concern here is that virtually the whole of the urbanisation and expansion will drain into the Great Ouse, the gently flowing river, one of the rivers which would be less able to cope with this effluent and run-off water increased as it is by other expansion schemes and in particular Milton Keynes new town. This causes the greatest concern as we heard so much this morning, and coupled with that the fear that it would inevitably bring to pass more land take for reservoirs which are being resisted and as our evidence indicates

* See also p. 1981.
† p. 1920.
‡ p. 1807.
§ p. 1837.

* p. 1837.
† p. 1940.

Printed image digitised by the University of Southampton Library Digitisation Unit

a Select Committee in Parliament* endorsed our figures by taking the most unusual step of issuing a special report to say that they felt that further piecemeal land-takes for reservoirs should not be allowed.

As I have mentioned on previous occasions, of course, what does cause the very gravest concern to the owners and occupiers of land is the fear of loss which will be non-compensatable as a result—land which is mortgaged, land which is not taken but which is devalued by urban development or noise or other reasons. I will not say any more about that even though it is possibly one of the matters that I want to go on most about, but of course they have some experience from the comparatively trivial amount of flying from the R.A.E. here and they know something about it although I understand the flying at the RAE is pretty specialised, taking place only in normal business hours.

Finally, I say above all our shackles bristle when we contemplate the disgracing of this site area and all it contains by the defacing of it. During the Reformation one of the malicious things that was done by opponents of the Church was to deface the statues, and one can go to some of our great cathedrals and see saints without faces and that kind of thing—a constant disgrace. Nothing is more ruthless than this smouldering volcano which will cover every acre of the site with this blue circle larva. Not only will it cover it but it will also obliterate it, obliterate it for all time. If one can put as an example Site B, I don't know if that is the preferred site, possibly it is as it has been put forward later than Site A, there the homes of over 1000 people will be lost simply by the obliteration that is necessary for the airport alone, four villages would go, 53 listed buildings.

If I may just very briefly deal with a matter which has not yet been touched upon and which it is not easy for me to deal with very well, I for one fail to understand those who purport to support the proposals for this airport out of sympathy for the welfare of workpeople when this great airport will wipe out hundreds of people's homes, many people's livelihoods and take away the countryside and places which they love so much, which they want preserved and have in many cases fought for. Supporting this all because as I understand it is felt that it will provide more employment in an area which is already one of high employment and of wages which are higher here than in at any other places in the United Kingdom, possibly I should say in England and Wales other than the Greater London area.

To be fair I have not yet had the pleasure of hearing TECDA's case nor have I had the opportunity of studying the evidence† which I only received first thing this morning. I am sure this evidence is valuable and certainly contains some very interesting statistics and facts, but in the short time I have had to look at it, it does reveal one basic fallacy, if I may say so. If one could just turn to the supplementary appendix I will show you what it is. It refers first to the tables and it is argued from statistics which unfortunately are no later than 1965 by and large that in East Anglia wages are lower than in any other part of the country, work opportunities are less, but what it also reveals in the only table that breaks it down into counties, Table 2, is that Bedfordshire ranks second in the average earned income category, I understand it is second only to Greater London. Table 2 only deals with counties in the eastern part of England and of course they are dragged down inevitably by the lower wages and opportunities in Norfolk and Suffolk and these are going to be unaffected by this massive airport at Thurleigh, and yet Bedford which is most closely concerned, of course, is an area which enjoys present prosperity from that point of view. But what is also not reflected in this table—it cannot be, it is too early—is that Huntingdonshire has a large expanded town, Peterborough, Northamptonshire has a large expanded town, Northampton, and these big developments go some way at least to what TECDA is calling for. I do not want to enlarge on that any further mainly because I have not had an opportunity of giving this any consideration which I know it deserves, but one does notice this paper is very clear about giving statistics because on page 13 it says: "Bedfordshire has recently been excluded from the East Anglia Planning Region, for the good reason that much of the above description does not apply to this county. As Table 2 indicated, the county has enjoyed very high incomes in the post-war period, second only to those in the London area." But also to be as fair as I can, I think it is argued that this prosperity might not continue.

Sir, I thought it only right to mention that. One only has one bite at the cherry and I will not have an opportunity of commenting after TECDA has put their case. I do ask you to bear that consideration in mind.

I would on behalf of my members beg your committee to spare these people here, spare their homes and spare their land which they love so much and are so proud of. May I also add my very great thanks for your great patience with me over it seems like the last six months, I am not quite sure how long it is, but we appreciate what the Commission is doing.

MAJOR P. D. P. DUNCOMBE* *called*

Examined by Mr. Gregory

5402 Are you Major P. D. P. Duncombe, Regional Secretary of the Country Landowners' Association for the counties of Buckinghamshire, Bedfordshire, Hertfordshire, Middlesex and Oxfordshire? — That is correct.

5403 And do you also appear on behalf of the counties of Cambridgeshire, Huntingdonshire and Northamptonshire? — That is so.

* Committee on the Welland and Nene (Empingham Reservoir) and Mid-Northamptonshire Water Bill, 29th April—15th May, 1969.

† See also page 2130.

* See also page 1981.

Printed image digitised by the University of Southampton Library Digitisation Unit

5404 I think there is one addition you want to make to paragraph 10 in that you seek to increase the figure by one member which brings the figure to 41 members, and the investment in buildings and other farm improvements is now £1,621,320 and so the total is revised to £1,740,764 and this brings the average down to 42,458? — That is correct. It is also reflected in the other figure 46 mentioned in the rest of the proof, that also.

Mr. Gregory I don't know if anyone has any questions for Major Duncombe.

Inspector Do you wish to amend the acreage of 46,433 in paragraph 10? The 41 members would presumably add to that.

Mr. Gregory Yes, I do.

Inspector I am sure the figure in due course can be supplied and we can correct the proof. Are there any questions of Major Duncombe from the first tier authorities? Other local authorities? Any other questions? I have no questions.

(The witness withdrew)

Mr. Gregory That concludes the case of the Country Landowners' Association.

MR. HUTCHINS *called*

*North Bedfordshire Preservation Society**

Mr. Hutchins I appear for the North Bedfordshire Preservation Society and the witness is Mr. G. R. Soper.

MR. FREDERICK G. R. SOPER *called*

Examined by Mr. Hutchins

5405 Your name is Frederick G. R. Soper and have you been Chairman of the North Bedfordshire Preservation Society since 1959? — I have, yes.

5406 And your qualifications are set out in paragraph 1 of your proof? — That is so.

5407 I think you have nothing to add to the statement which you set out in your proof? — I think not.

Inspector Are there any questions to Mr. Soper from the first tier authorities? Other local authorities? Any questions. I have no questions, Mr. Soper. I was pleased with your concern for exhausted Inspectors, thank you very much.

(The witness withdrew)

Inspector That is your case?

Mr. Hutchins It is, sir, yes.

MR. D. HALL* *called*

(North Bedfordshire Archaeological Society)

Mr. Hall My name is David Hall, and I am a Master of Arts, Oxford University.

Inspector Do you wish to add in any way to your statement plus the map?

Mr. Hall No, thank you, Sir.

Inspector Are there any questions of any kind concerning the evidence on behalf of the North Bedfordshire Archaeological Society? I have no questions, Mr. Hall—thank you for your submission. That, I believe, concludes my listed programme for today. Are there any of tomorrow's appearances who would wish to fill in the spare time today by making their appearance?

Mr. Forbes I am afraid I cannot accede to your request, Sir—there are too many witnesses. What I do want to say is this: one of my witnesses is one of the farmers who farms the land on which either of the sites will lie, and he is also an agricultural contractor. As you may be aware, such people are rather busy at the moment, and we would be able to secure him at 2.15 tomorrow, if you could kindly say that his evidence could be taken then. I hope it will be that the rest of the case will be closed by then—

Inspector I shall most certainly accede to your request. No—what I had in mind was that some of the other parties—such as BARA—may find it convenient—but it is equally convenient for me to hear them tomorrow.

Mr. How Sir—on behalf of TEDCA, it is impossible, as the full Committee is not here at the moment—

Inspector No—I was not pressing to bring anyone forward. I was offering an opportunity should anyone wish to take it. Otherwise, we will take advantage of this limited half-holiday, and adjourn until 10 o'clock on Wednesday.

(Adjourned until 10 a.m., Wednesday)

* p. 1983.

* See also page 1986.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

WEDNESDAY 10 SEPTEMBER 1969

THE CORN EXCHANGE, BEDFORD

Before MR. A. J. HUNT

Oral evidence was taken from:

Bedfordshire Airport Resistance Association
(Mr. H. Forbes, Q.C., Mr. H. de Beauchamp Lawson Johnston, Mr. V. Abraham, Mr. Atkins, Mr. L. J. Taylor, Mr. S. G. Chapman, Mr. W. R. Radnor, Mrs. E. T. Gibbs, Mr. R. J. Osborn, Mr. M. J. Pittman, Mr. F. R. Reavell, Miss C. J. Vigar, Mr. A. W. Luckhurst, Mr. E. C. Barnard, Mr. P. R. Willmer, Mr. F. Cookson, Mr. M. Martindale, Mr. M. B. Blackledge, Mr. J. B. Osborne, Wing Commander C. G. B. McClure, Mr. J. G. Harris, Mr. O. M. Pozniak, Mr. R. M. Denny, Mr. T. G. Elliott, Mr. G. C. White Beazley and Mr. L. C. Gale)

County of Buckinghamshire Association of Parish Councils
(Mr. A. James and Squadron Leader B. Lock)

Northamptonshire Association of Parish Councils
(Mr. T. Forbes and Mr. D. W. Dunn)

British Legion, Keysoe Branch
(Mrs. M. Riches and Mr. E. C. Barnard)

Leysoe Parochial Church Council
(Mrs. S. McEwan)

Keysoe, Baptist Churches
(Mr. C. Walters)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Ladies and gentlemen, it is ten o'clock by this clock, if we may make a start. Concerning today's programme it is I believe as planned except possibly the Biddenham Society, if their representative cannot appear himself, may appear under the aegis of BARA. Secondly, there has been some rearrangement of the seating accommodation. This is to help today's programme, I hope it will not be taken amiss by those who have been moved. Thirdly, today is set aside for what one might term grass roots representations.

In this connection may I just make one or two points that I made earlier in my opening of the inquiry. Firstly, that we are concerned here with local consequences should an airport come to Thurleigh, and in previous airport inquiries we have tried to define in a very rough way the local consequences of the proposed associated urban development that might come into an area.

The second point is that having read all the evidence very carefully and also an interesting account of what was called a "confrontation" in the local paper, it is quite obvious to me that the opponents of the airport are unlikely to convert those who support it today, at least, or vice versa, and therefore I think again the cross-examination might be directed towards defining the issues rather than attempting to resolve differences, bearing in mind the Commission is engaged at this present time in a rigorous examination of the local consequences, they will reach their own independent conclusion, these will be made available at Stage III and thereafter and those who think we have made mistakes will be able to tell us so. Having said those few things I call upon The Bedfordshire Airport Resistance Association.

MR. H. FORBES *called*

(Bedfordshire Airport Resistance Association)

Mr. Forbes If you please, sir. My name is Hugh Forbes, Queen's Counsel, and I appear for the Bedfordshire Airport Resistance Association with my learned friend Mr. Michael Broderick. The constitution, aims and objects of the Association I have the honour to represent are set out as an appendix to the proof of evidence of the Chairman, Mr. Hugh Lawson Johnston* and you will have that. I need only say I think that its main object is to resist the siting of an airport in Bedfordshire, but you may perhaps have gathered that already.

The Association has some thousands of individual members and a number of members who are various organisations. It mainly operates as a co-ordinated association and works through what you have termed and what I would also like to call the grass roots, the local authority associations, namely the parish councils. I have—I don't know whether you have—a list of the persons and organisations whom I actually represent.

Inspector I believe there is a list attached to one of the proofs.

Mr. Forbes That is a different list. May I just hand this up to you.

This is the list, sir, of the people whom I represent, attached to the Chairman's Proof as another appendix, showing what are called our supporters. Many of those are appearing separately because BARA—if I may refer to it as BARA, it is so much easier—has not sought to bully or cajole people necessarily to come under our umbrella, but has left them free to choose whether they present their own cases or have their cases presented in this way. I hope, sir, that you may perhaps be grateful that we have been able to get so many organisations under our umbrella so that I am able to put forward in one case the cases which affect these large groups of people and organisations which are shown on this sheet.

Inspector May I say that I am grateful, and the Commission is grateful.

Mr. Forbes I, too, am grateful for that assurance, sir. If one looks at this list of representations, and if one looks at the list of supporters attached to Mr. Lawson Johnston's Proof, one can see a very wide range of interests which I am called upon to represent. They run from the Parish Councils, various Preservation Societies, musical societies, societies concerned with gardens, anglers, sailing schools, gliding, and a number of other interests of that kind. Without giving them undue preference or prominence above others, it is noteworthy, I think, from the list that every County Division and Women's Institute—who are not an unpowerful body !—in Bedfordshire, Buckinghamshire, Huntingdonshire, Peterborough and Northamptonshire are not only supporters of BARA, but I am representing them before you today; and those County organisations between them represent some 22,000 countrymen.

I am calling before you today, sir, a number of witnesses. We could have called hundreds, but we have in fact restrained ourselves, and I am only calling one witness from each of the parishes which are perhaps most directly affected, and representative witnesses from certain other organisations. Besides the Proofs which those witnesses have put in, we have sent to the Commission some 106 separate representations which are not supported by evidence; but you, and the Commission, will have those available. It was not thought reasonable to call witnesses from all the organisations who wanted to make those representations, but I know that the Commission will pay attention to them as they will to the witnesses who are called.

We have co-operated thoughout with the County Councils, and I should like to acknowledge the help which they have given to us. As Mr. MacDermot said in his opening speech,* the County Councils at this Inquiry have really confined themselves to dealing with the effect on the broader plane, leaving to my Association the task of presenting evidence in a

* See also p. 1993.

* See also p. 2174.

Printed image digitised by the University of Southampton Library Digitisation Unit

more personal way the effect of this proposal on people's lives.

I have indicated to you that BARA was a grass roots organisation. It is the authentic voice of the many thousands of people whose lives, welfare and interests will be disastrously affected by an airport at Thurleigh, and from the enormous corpus of evidence and representations you would prefer, I propose to pick out only some of the points—not necessarily the most important ones I have to give you, I hope, an interesting, appetizing, hors d'oeuvre, leaving you to digest and enjoy the more substantial meal peacefully and alone.

I think the first point that one has to realise is that this area is a true country area. We are not here dealing with the countryside which one finds in the stockbroker belt around London; one is dealing with true rural areas, and true rural countryside.

It is this smiling English countryside at its best. I do not want to elaborate on the question of its beauty, that has been done by Mr. Gale,* our planning consultant who will be giving evidence, has things to say about it in his proof. You, sir, have driven round here and know what it looks like.

I do want to emphasise that this area, perhaps because it is the farthest from London of the three inland sites, has that quality of a really rural character. It is organised into small village communities, mostly of a few hundred people. They are villages which have that true feeling of community which one gets only in the country and a feeling which is lacking in less rural areas. The villages contain attractive buildings, many of them listed: schools, churches, farms, and so on, because the main preoccupation in land use terms of this area is that of agriculture.

You will find attached to Mr. Gale's proof two tables: WRD2A and B, which set out the data in relation to each of the parishes affected more or less by the airport proposal. I hope you find this useful, and it saves a great deal of disintering factual information from individual proofs. The scheme of these appendices is fairly obvious, I think, and I need not go through them. They indicate which of the parishes are affected by the NNI contours and at what particular level, and they list the various matters which occur in the villages concerned.

The countryside I have been talking about is above all a peaceful countryside. It is one where noise in general is absent and where background information is remarkable. In the evidence of Mr. Westley—and I must here apologise that we are unable to call Mr. Westley today, he is some ten thousand miles away. He offered to come at a week-end, but he cannot manage it during the week. I hope the Commission will take his evidence, and I want to refer to it in a little more detail later without his attendance here at this present moment. While mentioning Mr. Westley I would urge the Commission to allow Mr. Westley to develop his argument to them at some stage, so that it might go in amongst the Stage III material, because the paper he has produced is thought to be extremely well written and beautifully documented. I was referring to Mr. Westley's evidence for just one small tit-bit of information. If you have read it already, sir, you will find that he instances the effect of the background noise is so low that you can in fact hear people talking some two miles away in their normal voices on a still night. That is a pretty good indication of the kind of background noise or lack of it that exists in this particular area.

Inspector I thought he said he could do so when he was a boy, Mr. Forbes.

Mr. Forbes Yes. Well, I don't know that there has been much alteration since then. I will develop that in a moment if I may. This lack of background noise is of great importance when one comes to evaluate the effect of airport noise on communities unaccustomed to any noise at all, and that is a point I would like to turn to in a moment.

The peace and quiet of the countryside which I have referred to is something which inhabitants value very highly, and that is a value which BARA believes is quite impossible to convert into money terms, and this is again a matter which I would like to say a word or two about in a moment.

The countryside we are talking about lies broadly between the M.1 and the A.1, and it is tranversed by many roads; very few of these have any strategic importance at all, and the traffic on most of them is for today's standards quite absurdly low. One can walk at present in comfort and without danger along most of them despite the fact that practically none of them have any footpaths, and though they are metalled and tar macadamed they really are in essence the old country lanes which are almost a feature of a bygone age. I am making this point, sir, because it is in our submission really quite impossible to evaluate the effect of an airport on the lives and happiness of people in this area without realising the environment in which they at present exist, and that environment is, as I say, an utterly rural one. It is a countryside, not a countryside as seen by the town dweller who passes through it or spends a week-end enjoying it. It is a countryside as seen by the people who actually live in it and work in it, and nothing has so shocked and outraged the people who live there as the suggestion that an airport of this vast character should be sited in the area. The shock and outrage was perhaps even greater having regard to the fact that in the White Paper on the Third London Airport* the Government have indicated this site was not worth further consideration, a view which was reiterated or endorsed by Mr. Peter Masefield in an extremely interesting interview in *The Directors* in September 1967. Be that as it may, the reaction to this proposal has been immediate, spontaneous, violent, and overwhelming, and as an instance may I just indicate—and you will find this in the evidence of Mr. Abraham†—that at the Annual Parish Meeting in Colmworth, which is one of the villages directly

* See also p. 2069.

* Cmnd. 3259.

† See also p. 2001.

Printed image digitised by the University of Southampton Library Digitisation Unit

affected, held on the 31st March of this year, 70 people attended. I have forgotten the total population, it is a few hundred. Records have been kept in that parish of attendances at parish meetings since 1894, and the previous highest attendance recorded was 20. The enormous number, the enormous increase on the previous maximum is a pretty good indication of the interest—"interest" is a poor word—of the utter dislike and abhorrence of these people at this proposal. It has a population of 400 souls, men, women and children that is. The only voice raised in favour of these proposals was the somewhat uncertain tones of the Thurleigh Emergency Committee for Democratic Action and I don't know how seriously we are supposed to take them. Of course, when one hears an organisation which calls itself "The Committee of Democratic Action", you can bet your boots it has precious little to do with democracy, and so it is with young Mr. Curran's attempt to bring politics into this particular arena. This is not a political question, it is a question which cuts clear across every party line. There are three Members of Parliament, every one of them is utterly opposed to this proposal: Two sit in the Labour interest, and one in the Conservative.

The Member for Huntingdon, Sir David Renton, Conservative, is utterly opposed to this. The officially adopted Labour Candidate for Huntingdon for whom Mr. Curran apparently appears to speak, has gone on record as being utterly opposed to it. As I understand it, the meeting of the Constituency Labour Party (from which presumably Mr. Curran purports to draw his mandate to appear at this inquiry at all) was attended by some twelve people, and of those nine were in favour and three against. Further, my instructions are that the mandate given to young Mr. Curran was one which was not to be proceeded with unless it was approved by all the branches of the constituency, and there have been no branch meetings for that approval. So the standing of this so-called Committee of the Constituency Labour Party is pretty shaky, to put it at its lowest. And when one comes to look at the so-called Union support for this it is even more remarkable because again my instructions are that there have been no branch meetings at all in respect of many. Typical perhaps is one meeting at which nine attended out of a total Union strength, five voted in favour of the airport and four against.

As I say, it is difficult, to know precisely how seriously we should take this very late intervention by a group of determined young men, devoted no doubt to the proposition and no doubt the propaganda that the coming of an airport would put another £5 a week into the workers' pockets. If you look at the documents which have been produced—I do not propose to take very much time over them—you will see it is devoted to East Anglia, which includes of course the whole of Norfolk, Suffolk, and Huntingdon is on the very western edge of the area, and it is devoted apparently to the proposition that East Anglia is an area of low wage structure. Nothing is said really about this part of Bedfordshire, but I have no doubt it is an area of low wages also. But where you get a truly rural community you get an area of low wages and of course all it means is that if you compare a rural area with an industrial area when you look at wages the rural area comes off rather worse, and the intervention of the Committee for Democratic Action is merely, I understand, dedicated to the proposition that the best thing for the workers would be that the whole country should be covered with industrial development because rural areas are areas of low wages. I do not propose to say anything more about that particular intervention.

I have attempted to show the depth of feeling with which in the country at any rate affected by these proposals, the proposals themselves have been greeted locally, and I propose to look at some of the effects, the fears and the apprehensions of the local people. I would commend to you, sir, Mr. Gate's evidence given as a planning witness of tremendous experience, Mr. Gale's evidence of the effects on human beings and institutions of these proposals.

Inspector I have read all the evidence at least once if not twice.

Mr. Forbes I did not know if you had taken it upon yourself to read it first or would read it afterwards.

Inspector One must read what is in one's case and ask the odd questions.

Mr. Forbes May I first start with noise. Much has been said about noise. I have not had the advantage of appearing at previous airport inquiries which you have conducted, but I have no doubt you have heard a very great deal about them yourself and a great deal of evidence. I want to deal with the concept of the noise number index if I may a little later, but because so much has been already said about it I think it is sufficient for me to indicate that this proposal would bring airport noise, the noise of a very large international airport, to an area which up to now has, as I have already indicated, enjoyed an extremely low incidence of noise. Of course there are the occasional aircraft, there are very few areas in this country or I suppose in any country where one does not get the intrusive aircraft from time to time, but in the main for most of the day this area is peaceful and quiet and an area which has been enjoyed by these inhabitants in that way. I do not think I need say any more about the noise question. If I dismiss it in this way it is not because it is a matter which is regarded as unimportant, it is simply that it occurs and the damage it causes is bound to occur at any site chosen for a third London airport. The only point I wish to make about it really is that its incidence will be more appalling on this site because of the intensely rural nature of the area in which it is proposed to be sited.

Then there is the question of what has been called urbanisation, if I may continue to use that slightly horrible term. The attendant urbanisation is probably something which will have a very much more far reaching effect than the actual airport itself. Its impact is not seen to be so direct but nevertheless

Printed image digitised by the University of Southampton Library Digitisation Unit

it is probably far more dangerous because of its insidious nature.

Another witness has indicated and I would like to adopt the point that if you look at that cartoon* on the board and you look at the areas where planned expansion of some magnitude is envisaged and add to it the blue circles which the County Council envisage as housing this population, you have got a ring of heavy new development surrounding an area of rural charm, peace and quiet which lies in the middle of it. It does not require a prophet, a countryman or even a planning expert to say that the future of that central area is doomed the minute you get additional population of this character. Quite apart from that of course, sir, there is the vast amount of roadworks and other communications which will be required and which will scythe through this countryside in the way shown on that cartoon.

I have indicated already that the main preoccupation of this area is agriculture. By one of those happy self-denying ordinances BARA has left the question of agricultural evidence to the NFU and the CLA. I would only just like to add one thing on that. One of the organisations I represent, sir, is Bovril Limited, a fairly well known manufacturer of foodstuffs. There is a special agricultural point here in relation to Bovril. Mr. Osborne,† whom I shall be calling has got it in his proof, but broadly and briefly the position is that they have a very high quality breeding herd of cattle here specially arranged in special ways on a farm which will have to disappear if the airport comes and that would mean a very serious interruption with the whole of that extremely important and successful breeding herd.

Again, sir, there is another question of air pollution which I am not going to touch upon because I understand that Messrs. Unilever‡ are going to deal with matters of air pollution, so I shall say nothing about that. I mention it because it is a fear and a consequence which affects the local people.

Then there is the question of accident risk. It is very easy to pooh pooh this and say: "Well, there's only on accident per 2 million passengers", or something of that kind, but accidents occur at airfields and as aircraft get larger and larger the effect of accidents becomes more and more catastrophic. Anybody I think who lives on the flight paths or the approach or take-off paths to airfields can be forgiven for having I would have said a very reasonable fear of being involved in some air crash because as is well known most of the air accidents happen within a mile or two of the runway itself. There is a useful passage about this in Mr. Westley's§ proof which I commend to you.

One of the most important local implications is the effect on people's homes and in this regard in some way the lucky ones are perhaps those that are actually acquired, at least they are given the opportunity to leave the area even if they do not wish to do so and they will of course get full compensation for the houses which are acquired from them. But there are two points on this and I am sure these points have been made to you before, but I feel I should make them. The first is that there seems no doubt that the coming of this airport will push up the smaller house prices in the unaffected areas so that those who are acquired, although they may get full compensation for their own house, will find themselves really priced out of the market if they try to replace it in an area not directly affected by the airport. That is a very real fear and I think no Valuer would gainsay that that is the likely consequence.

The second fear is this, sir, and I just mention it. It is the airport authority's duty to rehouse displaced persons under paragraph 2 Part I of the 4th Schedule to the Airport Authorities Act of 1965. That may really affect in the main people in rented accommodation but it is also likely to affect people who find that the sum of money they get as compensation for their houses is not sufficient to enable them to acquire freehold property elsewhere, and there are very few people so affected who are going to relish the idea of ending their days in some council housing estate instead of the pleasant even if dilapidated in some cases village cottage to which they are accustomed. This is one of those difficulties one comes across over and over again. It is not really airports, it is where any compulsory purchase powers are exercised, but it is a very real difficulty and a very real hardship nevertheless. Mr. Keene has already referred to the other matter, which is the fact that tens of thousands of people who will be severely affected by the airport operations will get no compensation at all.

Then, sir, if I may pass briefly to recreation. There are many forms of recreation and country pursuits which occur in this area and all of them in one way or another are likely to be affected. The main one, perhaps, is walking in itself through the countryside. As I have indicated many of the roads are really country lanes and many people do walk through the area. People in towns I think sometimes are in danger of losing the use of their legs, but the countryman doesn't and he does walk about a great deal and to be able to do so in peace and quiet is in no small measure one of the enjoyments of living in the country. That as a means of recreation will be altered for the worse by the noise and disturbance not merely of the aircraft but of the traffic and so on which are going to come if this airport arrives.

I am not proposing to go through a list of all the recreational activities which will be affected, I am sure others have done that and you will be aware of many of them. May I just mention two, one is angling. There are some 50 miles of the river Great Ouse within the 35 NNI contour and 50 miles of a coarse fishing river means a very large number of anglers and among those I represent is the Anglers' Society and they have nearly half a million members. I am not saying that half a million members descend upon the Great Ouse but a great number of them

* See attached wallet of maps and diagrams.
† p. 1957.
‡ p. 2155.
§ p. 2077.

Printed image digitised by the University of Southampton Library Digitisation Unit

will at one time or another. I am not a coarse fisherman and personally I cannot see the fun of sitting on a bank looking at a float wondering whether it is going to bob or not, but lots of people do (many people say to get away from their wives), but one of the reasons they do it undoubtedly is because they can sit in rural surroundings in peace and quiet, and they are not going to be able to do that any more.

The other interest I would like to mention is sailing. Grafham Water is the largest inland sailing stretch available and as such it is of some considerable importance, matters like Olympic trials and that sort of thing. I do not need to remind you, sir, that it was in sailing perhaps that this country scored its greatest triumphs in the last Olympic Games. Mr. Pozniak* will give you some account of the difficulties, and you will have his proof. Sailing, of course, is a peaceful quiet pursuit, though I must confess I do not indulge in this particular variety of it, those who do can find it fiercely competitive and at various marks of the course, as Mr. Pozniak tells you in his proof, there are hails of various kinds which have to be heard and understood and the possibility of doing that right under the flight path of these aircraft is pretty minimal.

May I just mention roads? There are two aspects of this. I have already indicated—and you will have seen in your journeys here, sir—that the roads in this area are country lanes, in essence. Now, the first point is that during the construction of this airport and the related urban development and the roads and communications links which would have to be made, these little country lanes will have to bear a vast amount of construction traffic. They are not fit to stand up to it. They have no foothpaths; the traffic which uses them will be ruining them, and making horrible noises through areas which are not accustomed to it. The local inhabitants have had some experience of this through the construction of the M.1; of course, the experience they had during the construction of the M.1 will be nothing compared to what is likely to occur if this airport is constructed in this area.

The second point that I raise is this: this fine network of roads is a communication system between villages, and one is apt, perhaps, to forget—planners draw beautiful roads sweeping across vast areas of land, as we see on that cartoon,† and of course if you want to get from Birmingham to the airport, or from the airport to somewhere else, no doubt they are absolutely marvellous; but in between are these villages and their inter-connecting network, a fine tracery of roads. You put your airport in either A or B, and you could have one set of villages cut off from another without going round a very considerable distance. And it is worse than that, because the fact that you have actually abolished so many roads means that the traffic which otherwise would have used those has to be put over to other routes, which in consequence become busy highways when previously they were sleepy lanes.

I mention some of the general difficulties that the inhabitants of this area fear, the general effects which these proposals would have. The total effect, of course, appears in their proofs and in the proof of Mr. Gale. I should perhaps just mention one special matter, and that is the special requirements of the College of Aeronautics at Cranfield, about which Wing Commander McClure* speaks, who will again be giving evidence. You will see from that proof that broadly speaking the time available for instruction will be halved, and the cost will be doubled.

Sir, I have sought to indicate just one or two ways in which the inhabitants of the area are going to be affected by these proposals, and the inhabitants are utterly opposed to these proposals for those reasons, and for many other reasons.

If I may pass on to one or two other matters. The object of these Stage III Inquiries is to acquaint the Commission with the local implications. It is a difficult task for local inhabitants to do so, when so many decisions on matters—like the size of the airport, the type of development, the location of development, and so on, all matters concerned with the individual undesirable elements of this vast and undesirable proposal—are left undecided. May I just indicate one or two, because the fears of what may happen outside of what we have been told to date are the very real fears as far as the local inhabitants are concerned.

I do not wish to spend too much time on this, but I feel this should be mentioned. First of all, there is the size of the airport itself. The Commission put it at 7,500 acres, but you will see in Mr. Gale's proof that he has quoted Mr. Peter Masefield's view of what is required, and that comes out at something twice the size—and the implications of something twice the size in land terms may be much more far-reaching than the seven and a half thousand acres that we see on the cartoon.

Then there is the question of the orientation of the runways. It is obvious that if you switch the runways, you switch the noise pattern. There is the question of the amount of urbanisation. This is a very hot potato. The size of the population to be accommodated produces different figures from different experts. Mr. Cowley says something like 400,000; Mr. MacFarlane, whom I heard yesterday and who is a planning consultant of vast experience, put it at nearly double that amount—I think he said 750,000. Well, where are we? Are the local people to anticipate additional accommodation for 400,000, or 750,000 or what? We just do not know. Then there is the question of the actual location of the urban development. We only have Mr. Cowley's view — very trenchant, very expert views; the Commission is apparently working from something else. Little birds whisper that the Commission is contemplating an idea of putting the whole lot in one area. The implications of putting a population of that sort of size in one area rather than several areas produces quite a different set of effects. Sir, I am not complaining really about this—or rather, I am not thinking it is the Commission's fault. It is not. But

* See also p. 2054.

† See attached wallet of maps and diagrams.

* See also p. 2048.

Printed image digitised by the University of Southampton Library Digitisation Unit

it does make it extraordinarily difficult. Our organisation does not have this vast technical and expert witnesses and advice—it is very difficult for us, or even, I suspect, for those who have got technical or expert advice, to acquaint the Commission with the local implications when all those matters are in the air.

Inspector . I fully appreciate that: and it applies both to your clients and to the experts.

Mr. Forbes Yes, I am sure, sir. I am only making the point, and I know we shall obviously have a chance of looking at the matter again when we come to Stage V; but at this stage, I am not really in a position to give you more than I have done. There is another matter which I would like to mention because it is, I think, of some importance when the Commission comes to consider Stage IV : the size of the areas, the outlines rather which those areas are designed to contain, as shown in blue circles on that cartoon, really mean very little indeed. You may remember that I asked Mr. Cowley a question or two about this. The position is this, is it not, sir— there is no screen, no method of restraint, which a planning authority could impose to make certain that those blue circles are inhabited only by airport workers and their families, and what one might call supporting service workers and their families for that population. There will be areas where houses are being built, and there is a great pressure for house building. There is a great outsurge from London and other places. I do not think it would be unreasonable to suppose that the actual airport workers and their families and the service industry workers and their families, which are actually concerned with the airport, might in the end come to no more than 50% of the total inhabitation of those blue circles, and this means that you have to find further accommodation in these areas for the remainder of those workers. You have Milton Keynes, and the expansions in this area, with the London overspill, and you are imposing on that an additional requirement; but you have no method of ensuring that the houses are occupied by the 400,000 for whom you are planning; and that means that there will be pressures to increase these areas very considerably. Furthermore, sir, these areas have got to be increased, as far as I can see, in any case, because of what the planners in their apt way call "natural increase". One is therefore going to end up with towns of very much greater populations than are shown in those blue circles. I am not suggesting that there is anything underhand in showing those figures on that cartoon, but what I am pointing out—and I think it is a very real point—is that in the end, if you have those towns there, the populations of them are going to be very greatly in excess of the populations shown.

Then, sir, there is the question of water supply. This is in a fine state of uncertainty. We heard Mr. van Oosterom* doing his best yesterday—we have not, of course, had the water authority here. But one thing does seem certain, and I can put this, I think, to the Commission, and this is one of the fears in Huntingdonshire. You may know, sir, that there is a proposition, or a proposal, very much in the air, for a large reservoir at Abbotsley. Now, as we understand it, if there were no airport, and no urban development—it is a matter of timing—but if there were none of this, Abbotsley might not have to be required, because some other very much larger water supply source would come in in time, and if there is an airport and an urban development, then it is likely, or at any rate possible, that Abbotsley would be required in the short term in order to bridge that gap. How do we read the implications of that to the Commission ? I can only say that there is that fear, and indicate it to you, sir.

Then there is the question of land drainage, and Mr. van Oosterom's rather coy evidence about this yesterday. This again, sir, is a point which I think must be taken into account when one is considering cost in this, because I put it to the Commission that it is surely only fair that if this airport is going to mean that there is additional run-off, the run-off coming at a different time, it will mean a greater peril of floods in the area. That effect ought to be completely eliminated by the airport authority, and if that is going to happen, then one does not deal with floods only on an incidence of annually, or even two years—one deals with long term floods, and one ought to consider, when considering this airport, also the possibility of holding in reservoirs the worst kinds of floods, because only in that way can one get a true picture of the cost of construction of the airport in a way that would leave the rest of the countryside as it has been.

Mr. van Oosterom is thinking back. River authorities are among the most powerful authorities in the country today, but far too many of them are still thinking of this in terms of the old Catchment Boards, who had very few powers and very little money, and so it is, I think, that this river authority —Mr. van Oosterom was saying it was a question of what is reasonable, and "how can you get someone to pay for it". You ought to get the airport authority to pay for it, in this instance. One does not know the cost. Those are implications against which it is difficult to put before the Commission.

Sewage disposal. The sewage expert* accepted that a great deal of further work was necessary on this. Again, are we to represent to the Committee that there is a danger of having a gravely polluted water supply—a matter of very considerable interest to these inhabitants ? Alternatively, to have a River Ouse which is disfigured with great clumps of decomposing blanket weed ? One does not know. And until the engineers get down to it and say what the actual effect will be, one does not know.

All these matters are in the air, the implications are at large; we can't help the Commission at all, except to point out those matters should be looked into and the uncertainty of them all represent very real fears in the area.

Finally, may I just advert to one or two points where we feel that the assumptions, the basic assumptions of the Commission may be erroneous or the

* p. 1909.

* p. 1912.

Printed image digitised by the University of Southampton Library Digitisation Unit

implications of the proposals in the locality may be very difficult to define. The terms of reference for the Commission include "The timing of the need for a third London airport". I find that terminology difficult to follow. Does it mean the Commission has got to assume there is a need for a third London airport, and it is merely a question of saying on the basis of the children's "Cherry Stones", "This year, next year, some time, never"? Does it include also the fact the Commission are able to say "There will never be a need for a third London airport"? We very sincerely hope the Commission take the latter view of the terminology, and included in the timing is a timing so remote, so unlikely, that no third London airport will ever be required.

The implications of this are these: if the Commission don't take that view, if they take the view that there is going to be an airport here anyway—when I say "here", if there is going to be a third London airport; the implications if this is put here are, as we submit, and you will find evidence about this in our papers, that the Thurleigh area may be left with the most gigantic and expensive white elephant in British history. Mr. Beazley's evidence* (the Secretary of BARA), gives an interesting history of the various transport manias which hit this country: The turnpike road. No country was "with it", as they say today, "switched on", unless it had a whole series of turnpike roads back in the 18th century. Then came the canals, no body of business men were really fit to sit around a board room table unless they had a canal. The same with railways. One by one these modes of travel became fashionable, and everyone jumped on the band waggon, and one by one they became outdated, disused and, the final indignity—Beeching! History indicates, therefore, that airports of this kind may well follow the same pattern. If you look at Mr. Denny's evidence† you will find support for this, because a great part of that evidence indicates the future of air traffic may lie in VTOL aircraft, and if we have them there will be no requirement for airfields as far away from London as Thurleigh, because the noise of VTOL aircraft will be screened pretty adequately. airport operators will want their airfields close in. These are implications which have to be looked at, in our submission, very carefully.

Inspector Mr. Forbes, at this point we are, of course, looking into that and the forecasting data will be available in due course to criticise concerning the timing of the need for any third London airport, but it may be interesting to note that in going through your evidence, on the one hand two witnesses you quoted indicated their view that an airport at Thurleigh might be a white elephant, but Mr. Westley talks in terms of 2,000 to 4,000 movements per day from Thurleigh airport, and your planning witness talks of 144 movements per hour. The point I would like to put to you, while you are dealing with this matter generally is, one can have implications one way—an airport fully used or a white elephant, but one can't have both.

Mr. Forbes I think one can, with respect, sir. I am sorry about that, but I think if you look at Mr. Gale's evidence, and Mr. Westley's evidence,* they are proceeding on the basis of what are the implications assuming the third London airport is a roaring success, but one has got to look at the implications on that assumption, but one is not precluded from saying there is always, of course, the other possibility, and that is all we are saying, and I am indicating that there is some technical support for the other view. It is a difficult question, and I am merely throwing the chestnut into the Commission's lap, so to speak.

Inspector We have received that.

Mr. Forbes And indicating both possibilities without seeking, because we are not technically qualified to do so, without seeking to make points on one side or the other.

I would just like to make one last point about the white elephant suggestion, and that is this: London Airport must be, must it not, taking London Airport as a complex of three airports, a competitor as the main Inter-Continental Airport for North West Europe. To maintain that competitive position, vis-a-vis other airfields, say Paris and the Low Countries, which may want to be the main European site, it is very likely that this airport will have to operate on a twenty-four hour schedule. Indeed, sir, an aircraft like the Concorde is probably only financially viable if its operation proceeds on the basis of maximum utilisation. If there were curfews on take-off and landing at an airport like Thurleigh, it is going to be less attractive to airport operators. Somebody on the Continent who can offer an airport where there are no curfews is going to get the traffic. That is the basic point, and so you face the situation, in our submission, where either the airport becomes disused and a white elephant, as I have indicated, because the traffic goes away from there, or the airport authorities are faced with two possibilities: They can, of course, expropriate the large numbers of people affected to provide an uninhabited corridor—and this is a proposal which is finding favour in North America, both Canada and the States. That, of course, is an implication of enormous moment, or perhaps I am being cynical. The much more likely one is they will just operate a twenty-four hour basis and leave the people on the ground to put up with noise. This sort of matter is supported; this question of expropriation is supported by a passage which I would commend to the Commission's attention: The Institution of Civil Engineers' Paper "Airports of the future",† page 122. It was part of a Paper read by Mr. N. Hamerskjold at that symposium, and he indicates in that paper that it may be improved technology will further reduce noise to the airport community, "but I think it unlikely to expect dramatic gains from this source, and it seems that all that remains is greater use of zoning of land acquisition in the vicinity of the airport". Here he says that has a future because noise will become intolerable.

* p. 2060.
† p. 2056.

* p. 2077.
† 1967. Institution of Civil Engineers; £5.

Printed image digitised by the University of Southampton Library Digitisation Unit

I hope I am not, as it were, indicating to the Commission matters that they have already got well in mind, but I do put them forward because they are fears which are voiced in the locality to which I would like to draw the Commission's attention.

Then there is this whole vexed question of noise and number index; this is one of the fundamental assumptions lying behind the maps which the commission have drawn.* There is a lot about it in Mr. Westley's paper, and you have heard Mr. Cowley, and of course, one can see the contours have been re-drawn because the planning authorities don't accept the 40 NNI, they have gone down to 35, and have given their reasons. I would only add this, if you look at Sir Allan Wilson's report† it is perfectly clear from that that the NNI noise and number index which was devised by his committee was devised as a result of a social survey in the vicinity of Heathrow. Two things about that. First of all, sir, this was already and had been for years a busy build-up area, parts of it within metropolitan London, and parts of it only just outside. The background noise was very much higher than you get in the country. The people who live there are used to noise and accept it. Nobody who lives in London expects to have the peace and quiet of the countryside. One accepts noise as part of the, or one of the, concomitants of everyday life. Not so the country dweller, and I question very greatly, therefore, whether the results of the social survey taken at Heathrow can be properly transferred to an entirely rural area. The other point about it is that, of course, that survey was taken after Heathrow had been operating for several years, and one knows, of course, that one gets inured to it, to noise, after a time. For both those reasons I would urge that it does not follow that you can accept the NNI annoyance rating which the Wilson Report sets out.

Then, sir, there is this question of cost benefit analysis, cost benefit analysis is a fashionable thing: it is an O.K. phrase in these days. Of course, businessmen have been indulging in cost benefit analysis as they call it since the story of Esau, but they have been doing it in terms of material benefits. We have the gravest doubts whether any form of cost benefit analysis can fairly represent in money terms the matters so subjective as peace, quiet, beauty, and things of that kind. You can put a figure, I suppose, on a Picasso painting, but is that, when one looks at cost benefit analysis, is that its measure of its value as a painting? If you add up the halfcrowns of the people who are clicking through the turnstiles to look at it, is that the measure of its value as a painting? It is suggested in the Commission's papers, in the methodology papers,‡ that there is nothing very difficult in assessing in money terms subjective matters, and it is similar to a judge assessing damages for injury. This sort of approach is one we find particularly disturbing; of course a judge after the events can arrive at a figure as a matter of compensation, but what he can't arrive at by any means of that kind is the value of the situation before the event occurred. It may well be—I am out of this field, so I don't know, but it may well be the current figure for such a thing as the loss of a leg in a civil action is £4,000 damages. That is fine, that is the compensation which courts will award to some unfortunate person who loses a leg, but you can't reverse that process. You can't find somebody who says "All right, you give me £4,000 and I will have my leg amputated". At least you might be able to but he would be a pretty peculiar person. In other words, one is operating, when a judge is operating and assessing compensation, when a valuer is assessing compensation for a building or land acquired, or anything of that kind, they are not operating in the field where the choice is free, and we are desperately afraid that the fact that nobody in this area or very very few in this area, as a matter of free choice would choose to have an airport here, which is going to be masked by some brilliant backroom boffin moving his slide rule around and putting the results in a computer. Can a slide rule tell us in pounds, shillings and pence what is the value of peace and quiet which we enjoy in our rural countryside?

Can I just give one more example, at least an example which strikes me. Look at house prices? There is a very good argument that house prices in the vicinity of the airport at least in the range of medium and lower priced houses will go up rather than down because there will be a lot of competition among people who do not want to live in the boxes that are going to be put up in the three blue circles, and would rather live, despite the fact they would be extremely noisy, in one of the villages closer to the airport. They would probably be airport workers so they get their bread and butter out of the airport and are not possibly in a position to complain about the noise, but it may well be as a result house prices will go up. Are our backroom boys going to tell us that the value of peace and quiet of village community life, which these people enjoy, is a minus quantity, because the value of the house has gone up since the coming of the airport? Because this is what it looks like if one reads the methodology paper. This is what it looks like, coming out of the computer in the end. One always knows computers are taken for the most remarkable results in the name of logic, but we don't believe that sort of thing is going to be the answer. We find it extremely difficult to evaluate in any way the beauty of the countryside, the value of the countryside as a place for relaxation and recreation, and the value of peace and quiet which these people enjoy at present.

I am going to call my evidence in a moment, sir, but may I just leave you, if I may apologise to the late Mr. Bentley, with the thought (slightly misusing one of his little poems)—I leave you with this, sir: "Airport the Third, ought never to have occurred. One can only wonder at so grotesque a blunder".

May I now, sir, with the assistance of my learned friend, Mr. Broderick, call the evidence.

Mr. Broderick My name is Broderick, BARA.

* See attached wallet of maps and diagrams.

† Noise: Final report of the Committee on the problem of noise (Cmnd. 2056. HMSO; 19s. 6d.).

‡ *Papers and Proceedings* Vol. VII Stage III "Research and investigation, Part I Proposed Research Methodology" HMSO. 5s.

Printed image digitised by the University of Southampton Library Digitisation Unit

I will call our first witness, Mr. Hugh de Beauchamp Lawson Johnston.

Inspector Mr. Broderick, I am in some little trouble because my statements are carefully arranged in alphabetical order, and you have shuffled the pack.

Mr. Broderick I am afraid we have. May I give you the reference, 4047 V for Victor. Have you the list of the witnesses, sir?

Inspector I have the list. Yes.

MR. HUGH DE BEAUCHAMP LAWSON JOHNSTON* *called*

Examined by Mr. Broderick

5408 Could you tell us your full names, please? — Hugh de Beauchamp Lawson Johnston.

5409 And you live at Melchbourne Park, Melchbourne in Bedfordshire? — Yes.

5410 And you are the Chairman of BARA? — Correct.

5411 I think there is some blanks at the end of your proof, Mr. Lawson Johnston, can you now fill them in with some figures of BARA's membership? — Yes, I can give you these figures, sir. This is paragraph 2 at page 7 of my evidence. The figures are not up to August, they are up to the 9th September, which is last night. The number of members up to last night is 5,800.

5412 And I think you also received support from other persons? — May I work up to that, sir?

5413 Yes, certainly. — A member is anyone who has contributed the minimum of half a crown to the Association. I may say that we did not start enrolling members until the end of June, which was less than 2½ months ago. In addition, petitions have been signed protesting against the airport site at Thurleigh in a number of villages, in the BARA offices and at the East of England Show and at the Bird Gardens in Stansden where over a thousand signatures have been collected. I can show you these petitions and you will see that care has been taken to delete the names of those who are also members of BARA. After these deletions the number of signatures to the petitions is 6,800. So that we can say that more than 12,500 people have pledged their support for BARA in their resistance to Thurleigh all since the end of June and there were others before that whom we have not counted. The figures therefore, sir, are firstly 5,800 which I think you have down, and this is for September instead of August, and the grand total which is the second figure is 12,600. I have with me a visitors' book, the book at the Bird Gardens, and our list of members, and I have all the petitions here that we have so far been able to sort. I don't know if you want to see these. You see we have in fact crossed out a number of these so that there is no duplication.

5414 *Inspector* I am quite happy that you have done just that thing, Mr. Johnston. You may wish to leave the documents in the care of my staff on the table here for inspection during the course of the day, otherwise I am perfectly happy. — I will do that, sir.

5415 *Mr. Broderick* In addition was there a wall of resistance somewhere which was signed by people? — Yes, sir. Last Sunday, the 7th September, an open air rally took place on the sports field at Thurleigh to which a number of people trekked by car and on foot. The rally was addressed by the Members of Parliament for Bedford, Huntingdon and South Bedfordshire and also by a schoolmaster from Kempston, a doctor from St. Neots, the Vicar of Eaton Socon, and a housewife from North Bedfordshire, and many of those present signed their names on a huge wall of resistance and when we counted there were 1,789 signatures on the wall, which you will be glad to know I have not brought with me. That is all I have to add.

Mr. Broderick I have no further questions, sir

Inspector Are there any questions to Mr. Lawson Johnston from the first tier or other local planning authorities? Any questions at all? Mr. Johnston, I have no questions but as you are the Chairman of the organisation I realise and the Commission realises that this is a matter on which people feel I was going to say emotionally—passionately—and we are obliged both for the nature of the large mass of evidence you have submitted and for the manner in which it has been submitted. Thank you very much. — Thank you, sir.

(The witness withdrew)

Mr. Forbes Our next witness is Mr. Victor Abraham from Colmworth. This is 4047G.

MR. VICTOR ABRAHAM* *called*

Examined by Mr. Forbes

5416 Mr. Victor Abraham, are you Chairman of the Colmworth Parish Council and have you served on that body for 18 years? — Yes, sir.

5417 Are you a member of the Bedford Rural District Council? — I am, sir.

5418 A Governor of Bushmead Secondary Modern School? — I was a Governor from the building of the new school and as the children of older age have gone I have relinquished being a Governor.

5419 And are you Vice-Chairman and Trustee of the Colmworth Village Hall Trust? — I am, sir.

5420 Are you also a member of the Executive Committee of the Bedfordshire Association of Parish Councils? — Yes.

5421 And their evidence is being submitted later by one of the other witnesses, is it not? — Yes.

5422 Have you anything to add? — I would like to add that regarding the village hall it is now

* p. 1993.

* p. 2001.

Printed image digitised by the University of Southampton Library Digitisation Unit

completed and it is going to be officially opened next Monday by the High Sheriff of Bedfordshire.

Inspector Are there any questions of any kind to Mr. Victor Abraham?

Cross-examined by Mr. Curran

(Huntingdon Constituent Labour Party)

5423 How many people support Thurleigh in your village? — I should say nearly a hundred per cent.

5424 A hundred per cent support Thurleigh? — Yes. I don't think there is anyone for it anywhere at all.

5425 *Inspector* You are at cross-purposes. The question is how many people support Thurleigh? How many want it? — I don't think there is anyone supports it in any way whatever. I don't think there is any organisation for it in any way.

5426 *Mr. Curran* Are there any individuals living in Colmworth which you know very well in favour of the airport? — A good many of them, nearly all of them against it.

5427 But are there any individuals in a village which you know very well in favour of Thurleigh Airport? — No, sir.

5428 None at all. Could you tell us how you arrive at this information? Have you done a door-to-door canvass yourself? — Yes. We have got a BARA Committee in our village and it has been perused right through from one end of the village to the other and we have collected quite an amount of money in defence of the airport at Thurleigh, so everyone has been notified of what organisations were doing in the Thurleigh business.

5429 As I understand it everybody in the village has contributed to your cause and has subscribed in some way by giving a signature or something like that? — I don't say everyone has subscribed, but they are not as far as I can ascertain from village knowledge.

5430 Can you say how many people have subscribed? — The great majority of the village people have subscribed to the fund of BARA.

5431 Could you give some number to us approximately? — I should say between 85 to 90 per cent.

5432 Which is how many people? — The total population is 400.

5433 Feeling I think is very high, so you tell me, in the village against the airport? — The feeling is very very high indeed, more so since the new alignment on the B Plan which affects the Parish of Colmworth.

5434 And you have had, I think, a parish meeting on the subject in which 27 per cent attended? — Yes

5435 70 out of 400.

Inspector What was said was 400 total population men, women and children. — If I may come back on to that, there are 256 people on the electoral roll at the last electoral list and out of that 70 I think there were two under the age of 18.

5436 *Mr. Curran* I understand over 60 per cent of the village did not attend this crucial meeting which was discussing the future of the village. — I cannot quite hear you.

5437 Just very briefly to finish off, I am given to understand that the 60 per cent of people who are unable to attend this meeting which was discussing the future of the village, a subject which was of crucial importance, also shared your viewpoint, is that correct? — I cannot quite understand.

Inspector I didn't hear the last few words of your question.

5438 *Mr. Curran* I am sorry. I am given to understand that 60 per cent of the people unable to attend this crucial meeting discussing the future of the village at a time when feeling was very high also shared your own viewpoint and the viewpoint of those people who were able to attend, is that correct? — Absolutely, sir.

(The witness withdrew)

MR. ROBERT ATKINS* *called*

Examined by Mr. Broderick

5439 Mr. Atkins, are your full names Robert Atkins? — Yes.

5440 And do you live at "Lynn Cottage", Oakley Road, Bromham, Bedfordshire? — That is correct.

5441 And were you appointed by Bromham Parish Council on the 19th June 1969 to give evidence on behalf of the Parish? — That is true.

5442 And you are a member of the Bedford Rural District Council and a member of Bromham Parish Council? — Yes.

5443 A Fellow of the Chartered Institute of Secretaries and also a Fellow of the Institute of Cost and Works Accountants? — Yes.

5444 Is there anything you wish to add to the proof of evidence which has been submitted? — No, sir.

Inspector Are there any questions to Mr. Atkins concerning his evidence about Bromham?

Cross-examined by Mr. Curran

5445 I must applaud you for this: you conducted a petition in Bromham? — Yes.

5446 On the subject of Thurleigh, and you contacted 1,900 people? — Yes.

5447 And out of those 1,900 people 1,325 signed the petition against the airport? — Yes.

5448 The remaining people, a total of 575, which I estimate to be 30 per cent of people contacted, would not for some reason sign this petition? — That is true.

5449 What sort of people were they? — These are very ordinary people, a complete cross-section of people.

---

* p. 2003.

Printed image digitised by the University of Southampton Library Digitisation Unit

5450 I am asking you of the people who refused to sign the petition against the airport, if you could tell us a little about what sort of people the refusals were?

Inspector It is the kind of people. — That is right. I find it a little difficult to generalise on 575 people. Generally speaking many of them were the sort of people who won't sign anything on principle. A number of them were people....

Inspector Ladies and gentlemen, will you please restrain your clapping till a later time. We are trying to get an accurate record of these proceedings. I realise the feeling that exists on this matter, nevertheless it is not Old Trafford.

5451 *Mr. Curran* Would you say that these people who refused to sign the petition, these 575 people, were people living on council housing estates, for example? — Oh, no, because there are very few council houses indeed in Bromham.

5452 Were they the particularly wealthy section of the community or less well off people in the village? —I think it would be very hard to differentiate. Apart from a very small fringe people in Bromham are pretty well of the general income level, what could be described as representing the lesser paid or the better paid section of the community.

5453 So you are unable to identify the particular nature of this 30 per cent of people contacted? — Yes.

5454 Are you absolutely sure that there are not other people also in the village who are against it? — Sorry, would you repeat? Am I absolutely sure there are other people who are what?

5455 Who are not against the airport? — I can only rely upon the information which I have and the information which our helpers have. I don't think I am here to conjecture.

5456 Put it this way: if 30 per cent of those people contacted refused to sign your petition and yet at a Parish Council Meeting—and of course in most of the villages we are discussing the evidence of popular opinion against the airport—we find that a unanimous decision by all those people present was taken, what happened I wonder to the other 30 per cent who would not sign your petition against the airport? — I think in a matter as crucial as this there is lack of interest, and as I said before what is in my statement is perfectly correct, the public meeting which we held overflowed the hall and the statement that the decision was unanimous is completely and utterly correct.

5457 But the fact remains that a very large number of people in Bromham are apparently in favour of the airport? — Oh, no, Mr. Curran, you can't draw that conclusion. Why should you?

5458 30 per cent of the people refused to sign the petition against the airport, it would seem fair to conclude that they either have an open mind or that they are in fact in favour of the airport. Do you think one reason—if I can return to your meeting—one reason why people were reluctant to come along to the parish meeting was because they knew that the people who were presiding at the meeting were wealthy people, people with information, facts at their command? I find it difficult myself to stand up on my feet to a hostile audience, it must be even more difficult in a small village to go along and express your point of view in the face of farmers and people who will be controlling that meeting. Do you think they were frightened to attend? — There is no question of a ruling clique in a village as big as Bromham, there are many people, and these may well constitute your 30 per cent, which are on the estates in the village and who take no active part whatever in village activities as such, but they would not be intimidated by any pressure from any top brass should it exist, which it doesn't. The presiding people at that meeting were certainly not people of influence, power or wealth.

5459 If you turn up to a meeting in a small village, and you have been told that most people are against the airport, many people might be tempted to stay away. The fact remains that it would seem that 30 per cent of people contacted were refusing to sign your petition against the airport. What I am worried about is, what do these 30 per cent feel? Are they apathetic about it, as you say, or are they people who actually think there may be advantages in the airport?

Inspector You have put this question once, Mr. Curran. That is where you started from.

Mr. Curran I am sorry, sir....

Inspector I do not think this is going to get us very far—are you dispensing, then, with the last part of the question?

5460 *Mr. Curran* Yes, sir. Mr. Atkins, have you made any attempt to find out what the 30 per cent of people felt who refused to sign the petition? — No. I am one of 13 Parish Councillors—I have not received any, and I know that no Parish Councillor has received any intimation from a villager that he would welcome or that his family would welcome, the siting of the third London airport at Thurleigh.

Inspector Any other questions? I have no questions—thank you, Mr. Atkins.

(The witness withdrew)

Mr. Forbes Mr. Leslie John Taylor, sir: and he, sir, is "L".

MR. L. J. TAYLOR* *called*

Examined by Mr. Forbes

5461 Mr. Leslie John Taylor, are you a member of the Ravensden Parish Council, and have you been a member since 1964? — Yes.

5462 Are you a member of the Bedfordshire Rural Community Council? — I am.

5463 And on that Council, are you a representative of Bedfordshire Old People's Welfare Committee? — I am, sir.

* See also p. 2008.

Printed image digitised by the University of Southampton Library Digitisation Unit

5464 And have you been appointed by the Parish Council as the representative of Ravensden to speak at this Inquiry? — I have sir,

Inspector Are there any questions to Mr. Taylor?

Cross-examined by Mr. Curran

5465 I believe you have had a Parish Meeting on the subject of Thurleigh on March.... — No, we had no special Parish Meeting. This matter was brought up at the statutory Annual Parish Meeting in March.

5466 This is the meeting I was referring to—it was one of the.... — One of the items on the agenda.

5467 Would you please tell me how many people attended? — These Parish Meetings are not well attended. There were about 20 people there who came, including the Parish Council.

5468 And I also believe that the Parish Council has also expressed their opposition to the airport? — The Parish Council and the Women's Institute.

5469 Could you give us some idea of the membership of the Women's Institute, at the time when they decided to oppose the airport? — No, I am afraid I could not. I have not that information.

5470 So in fact we have 20 people at a meeting which opposed the airport; we have the Women's Institute meeting, of which the membership is not known; and the Parish Council. How large is the Parish Council? — Seven members.

5471 A number of other villages have conducted opinion polls to find out what people thought in the village—did you think of doing this? — No. My fellow-Councillors and I visited every household in the village, and we personally ascertained every person in the village. We have started a fund, and we have received a total result of about £21 10s. 0d.

5472 So in fact what you have done.... — It was a personal opinion poll. We have interviewed every house in the village, and the results are overwhelmingly against.

(The witness withdrew)

Mr. Broderick Sidney George Chapman—his letter, E.

MR. S. G. CHAPMAN* *called*

Examined by Mr. Broderick

5473 Are your full names Sidney George Chapman, and do you live at Janet Place, Kimbolton Road, Keysoe, Bedfordshire? — Yes.

5474 And are you the Chairman of the Bolnhurst and Keysoe Parish Council? — Yes.

5475 And as such, have you been appointed Keysoe's representative to give evidence to this Commission? — Yes.

5476 And were you Headmaster of the Village School for 28 years, and are you Chairman of Managers of the Keysoe Group of Schools? — Yes, that is correct.

5477 Is there anything you wish to add to your proof? — No.

Inspector Are there any questions to Mr. Chapman?

Cross-examined by Mr. Curran

5478 Mr. Chapman, I must say that, going into your village, I was impressed by how strongly people felt against the airport; and, if I may, I would like to ask you a few questions about life in Keysoe, which will of course be displaced by the runway. Could you tell me roughly, as you must know the village very well, how many people own cars in Keysoe? — Well, I should think it is like any other village—no better, no worse. You can work it out for yourself.

5479 Would you like to estimate—it is a small village, you must have some idea. — Well, I suppose about 75 per cent of the houses, probably.

5480 75 per cent? — I should imagine so.

5481 Which of course is high, by comparison with other villages. — Not so high—when you see some of the cars.

5482 Could you also tell me what percentage of the village own their own house in Keysoe? — Yes, I would say at least 90 per cent.

5483 90 per cent? — Yes.

5484 Yet the average for England and Wales would be less than half? — Yes.

5485 It makes Keysoe an unusual village—not merely in the sense that it would be displaced, but also in its prosperity—is that true? — Well, I was rather waiting for this. Keysoe has been mentioned in the paper quite often as a wealthy village. When I went there 32 years ago, it was a very poor village —I should know, I taught the children. It is now no more wealthy than any other village, and not so wealthy as a great many. Those houses that are owned—I should think 80 per cent of them were bought many many years ago, probably for the price of about £50 or even less. There was even one passed over in payment of a debt that could not be met—the cottage was handed over on the owner's debt. They are little country cottages—they are not villas, they are not modern houses. There is no wealth in them. So let's have less of the "wealth", please.

5486 My only point, Mr. Chapman, is that unlike certain other villages it has not got a large council house population? — No.

5487 Finally, could I say that you feel, as I do, I should imagine very strongly, that you must have, if the airport was chosen to come here, very proper and full compensation—is that correct? — I would expect proper compensation. Whether I would get it, I do not know. But what I do know is mentioned in the opening speech this morning—that a great many of the people who live in these cottages will cease to be freeholders and will become local

* See also p. 2010.

Printed image digitised by the University of Southampton Library Digitisation Unit

authority tenants, much against their will, because their small properties will not get very much compensation, compared to prices to be paid in the open market, and they are the ones I am feeling for.

I second that. Thank you.

5488 *Inspector* Mr. Chapman, I must just ask you one question that interested me. On the second page of your proof, you refer to the village collecting money for 20 years to provide a village hall, opened in 1963. — Yes.

5489 And elsewhere in the evidence, a Mr. Cookson* refers to the fact that in 1964 "the parshioners of Bolnhurst and Keysoe filled the village school to capacity to prevent a 1d. being placed on the rates to help complete a much needed village hall" . . . — Yes, I can explain that quite easily, because it is typical of Keysoe's attitude to life. The meeting in the school which, as you say, was very full and inclined to be very noisy—it required a great deal of keeping in order !—was to try to stop money being put on the rates, which meant that everybody would have to pay it. Now—I have to keep between two sides—the money was not put on the rates. The people voted against it. In my closing speech, I suggested that the village might like to subscribe to cover the debt, the loan that the Village Hall Committee had to take out, and I know that the Village Hall Committee collected far more money than the penny rate would ever have brought in. But it was free.

Inspector Thank you—I have no more questions.

(The witness withdrew)

Mr. Forbes Mr. William Rex Radnor of Bolnhurst—and his letter is C, sir.

MR. W. R. RADNOR† *called*

Examined by Mr. Forbes

5490 Mr. Radnor, are you a member of the Bolnhurst and Keysoe Parish Council and have you been appointed as Bolnhurst's representative to this Inquiry ? — That is correct.

5491 And are you a Rural District Councillor for Bolnhurst and Keysoe, Vice-Chairman of the Parish Council, and Lay Pastor of the Bolnhurst Mission Hall ? — That is correct.

Inspector Are there any questions to Mr. Radnor, of Bolnhurst Parish ? No questions, Mr. Radnor; I have no questions. Thank you for your proof.

(The witness withdrew)

Mr. Broderick Sir—Mrs. Gibbs—she is letter E.

MRS. E. T. GIBBS‡ *called*

Examined by Mr. Broderick

5492 Mrs. Gibbs, are your full names Elizabeth Theodora Gibbs, and do you live at "Cross End House", Cross End, Thurleigh, Bedfordshire ? — That is correct.

5493 And on 18th June, 1969, were you appointed Thurleigh's representative to give evidence at this Inquiry, and are you a Parish Councillor and also a member of the Playing Fields' Committee, the Parochial Church Council, and a Governor of the Margaret Beauford School at Riseley ? — That is correct.

5494 Now, on page 2 of your proof I think you have mentioned a Parish Annual General Meeting in March 1969, which was attended by approximately 180; and after open discussion it was decided to come out unanimously against the airport being sited at Thurleigh. Have you recently taken a further poll which was completed on 4th September? — Yes that is quite correct.

5495 Perhaps you could carry on from there. — The number of people on the electoral roll is 400, and 84 per cent of that number voted—the adults' signatures totalled 337—against the airport, 275 (82 per cent in favour of the airport, 35 (10 per cent), and undecided, 27 (8 per cent).

5496 I think, in addition, the sum of money raised by your village now stands at nearly £700? — This is so.

5497 Is there anything further you wish to add to your evidence ? — Nothing, except that we have a continuous programme to raise as much money as possible in this fighting fund.

Cross-examined by Mr. Curran

5498 Mrs. Gibbs, if I can take your mind back to that earlier period when an opinion poll was conducted—I think I am right in saying that 35 per cent of people interviewed came out in support of the airport. — Yes—I have not actually got the percentage but I have the figures, Mr. Curran.

5499 I think it is right—I think it is 35 per cent. Shortly after this poll was conducted, you had a meeting of the Parish Council ? — Yes.

5500 And it was packed, and a resolution against the airport was passed unanimously ? — Yes.

5501 In other words, although 114 people had previously said they were for the airport, when you had the well-attended Parish Meeting, there was nobody that was in favour of the airport. — This is perfectly correct.

5502 What do you think happened to these people —why didn't they attend this meeting ? — I cannot imagine. I just feel that possibly it was like the rally that was held on Sunday, that people did not feel sufficiently strongly to turn out to vote for the airport.

5503 Do you know why they supported the airport ? — No. I think that in our sort of area, Mr. Curran, people have nothing within their experience to compare the prospective airport with at all. Many of them have very little idea exactly what is involved.

5504 And could you tell us a bit about these ignorant people ? — No, I would not put them as

* p. 2035.
† See also p. 2012.
‡ See also p. 2013.

Printed image digitised by the University of Southampton Library Digitisation Unit

"ignorant". I would just say that they perhaps have not voyaged very far from the area, and they just have no experience except within their own jobs.

5505 Am I right in thinking that you have quite a large number of council houses—40 per cent, I think? — This is so.

5506 Would you say that many of the people who support the airport come from these council houses? — I would say that most of them that do support it do come from the council houses, but. . . .

5507 They do? — Yes, this is perfectly correct, but we have enormous numbers from the council houses who are equally opposed to it, and I have here got all the figures, which I shall pass to Mr. Hunt.

Inspector Mr. Curran—did you put the figure of 37 per cent to the witness?

Mr. Curran I think I said 35 per cent.

Inspector I make it 28½ per cent—I am not going to argue it. . . .

Mr. Curran I am sure you are right, Mr. Hunt.

(The witness withdrew)

Inspector Thank you.

Mr. Curran On the sum total.

Inspector Probably you are right then. Yes, thank you.

Mr. Forbes I call Mr. Robin James Osborn, letter "B", sir.

MR. ROBIN JAMES OSBORN* *called*

Examined by Mr. Forbes

5508 Mr. Robin James Osborn, have you been appointed by the Parish Council to give evidence on behalf of Riseley? — Yes.

5509 I think you are a Bachelor of Arts of the University of Cambridge, and a Member of the Institution of Civil Engineers. — That is correct.

Inspector Any questions to Mr. Osborn?

Cross-examined by Mr. Curran

5510 If I can ask very briefly, Mr. Osborn, how many people support Thurleigh in Riseley? — How many people are in favour of an airport coming to Thurleigh?

5511 That is right. — I have no figures of them. I should estimate them at possibly 10 per cent of the village in favour.

5512 Possibly. It may be less or it may be more. —I would say 5 to 10 per cent.

5513 You think that, estimating it, it will be 5 to 10 per cent? — Yes.

5514 Have you thought of trying to find out whether your guesswork is soundly based? Have you ever considered doing an opinion poll? — In a matter like this when there is so little factual knowledge, so many issues, so widely open, it is more important to try and find out the facts, as they will affect the community, rather than to ask people before they have the facts for an opinion.

5515 As I understand it, you had a meeting which was well attended by 30 per cent of the electoral roll, followed by a second meeting, the Annual Parish Council Meeting, in which something like 10 per cent of Riseley attended, and they voted unanimously against the airport, is that correct? — The first meeting was a public meeting to discuss the airport; there was no bias in the initial publicity for it whatsoever. At that stage very little was known about the airport before we went there. Certain knowledge was given at the meeting at which it emerged that this issue was not just an airport, but it was this airport we had now discovered we were talking about, which I think are two very different things. At that meeting there were approximately 150 people present. The total population of the village of Riseley is something over 700, it is going up all the time; that represents 21 per cent of the population. However, the meeting was in the evening, and I myself am married with three small children, but I was the only person of the family present so I represented five people there, five of the population.

5516 I see. When you actually came down to brass tacks and came out against the airport at this meeting there was 10 per cent of the population total. — Yes, that was the Annual Parish Meeting, and the airport was one issue on the agenda. I personally was not present. I was unable to be, as I had a business appointment in Scotland at that time.

5517 At this meeting taken by the Parish Council, which is a representative body of the village, the decision was taken to oppose the airport, is that correct? — As taken by evidence, yes; the motion was put up and passed unanimously on that occasion.

5518 And at that meeting, attended by 10 per cent of the population the voting was unanimous? — I am sorry, at the Parish meeting, you mean? Yes, it was unanimous.

5519 And you tell me that something like 10 per cent of the total, i.e. the same number of people who attended this earlier meeting, want the airport —Why didn't they attend this meeting? — I said at a guess it was 5 to 10 per cent probably in favour. As far as the number of people who attended the meeting, I have no figures of the past attendances at the Annual Parish Meeting, but I understand this figure is considerably above the normal figure the previous year that has ever attended.

5520 But according to your own estimate, which is nothing more than an estimate, something like 10 per cent of the people want the airport, and this is the same number of people who attended the Parish Council meeting. What I want to ask you is why did these people who want the airport not attend the parish council meeting? — Why?

Mr. Forbes I don't think—this question has been asked so many times, sir, but it is of course grossly

* See also p. 2016.

Printed image digitised by the University of Southampton Library Digitisation Unit

improper, and quite an impossible question for this witness; this witness can't possibly tell why anybody did or did not do anything.

Inspector I was hoping the witness would say as much in those terms, Mr. Forbes.

5521 *Mr. Curran* Could you tell us a bit about the people who do want the airport at Riseley? What sort of people they are? — As I have said in my evidence there are some people who do favour the airport. They are the people who reckon the airport will make things better for them as a result of it being there. I have experience of the bed and breakfast type of trade, or several people who are in council accommodation, and they think they can get better accommodation, and hope they can have that maintaining the same rent as they pay now.

5522 A lot of these people seem to come from council houses. — A good number of them, yes.

(The witness withdrew)

MR. MICHAEL JOHN PITTMAN* *called*

Examined by Mr. Broderick

5523 Are your full names Michael John Pittman, and do you live at 6, Trinity Close, Felmersham, Bedford? — That is correct.

5524 And you submit evidence as the nominated representative of the combined parishes of Felmersham with Radwell and Milton Ernest? — I do.

5525 I don't know whether paragraph 2(c) of page two of your proof has been circulated. I think a slip should have been pasted in.

Inspector It looks complete, on reading it, but there is no slip pasted in it.

Mr. Broderick "c.i" is the paragraph. *(Slip handed to Inspector.)*

Inspector I have it now.

Mr. Broderick It may be that other people have not the figures, so I wonder if the witness could read them out, possibly.

Inspector I think so.

5526 *Mr. Broderick* Mr. Pittman, in paragraph 2.c.i, dealing with the meeting of the Felmersham with Radwell Parish Council, can you give us the date and the various other figures, please? — A special meeting of the Felmersham with Radwell Parish Council was held on the 17th day of May 1969 with approximately 120 members of the public present. The meeting was addressed by the Local County Councillor and Mr. Richard Payne, a member of BARA. After lengthy discussion and questioning it was apparent that the feeling of the meeting was one of total opposition to the proposals.

5527 I understand in fact there was no resolution? — That is correct.

Inspector Any questions to Mr. Pittman? No questions, thank you very much for your statement and your proof, Mr. Pittman.

(The witness withdrew)

MR. FRANK RUSSELL REAVELL* *called*

Examined by Mr. Forbes

5528 Mr. Frank Russell Reavell of "Bargate", 1, Lodge Road, Sharnbrook. Are you the appointed representative of the Parish of Sharnbrook? — That is correct.

5529 Are you the Secretary of a Study Committee set up in November 1967 by the Parish Council which decided that a detailed study of the village be made to influence its future development in the best possible manner? — Yes.

5530 That study had nothing to do with the airport? — No, it was before the airport situation.

5531 But it does in fact produce a survey of the village which is of some interest. — Yes. I understand that the Commission has itself sponsored similar surveys through the University of this type.

5532 Are you a Master of Arts of the University of Cambridge, an Associate of the Institute of Physics, and the Personnel Manager with Unilever Research? — Yes.

5533 You have been a member of the Parish Council since 1967? — Yes.

Inspector Any questions to Mr. Reavell?

Cross-examined by Mr. Curran

5534 Just one or two questions. I unfortunately have not been able to study your survey with the attention it obviously deserves, but I congratulate you for doing it as I know how much effort it takes and how much work it means. Can you tell me why you—perhaps you did—did you follow this up with a second survey about Thurleigh? — No, we rested our activities on the first survey which was very extensive and involved over 70 per cent of active participation of the village.

5535 This was a fairly exhaustive questionnaire, was it? — Yes.

5536 You didn't think, of course, of then doing a short one, just a couple of questions? — I think the evidence of the survey which covered people of all age ranges, occupations, and lengths of stay in the village, showed quite conclusively that all these people came to Sharnbrook and wished to see the features preserved, particularly the peace and quiet and the rural atmosphere of the village community. This was overwhelming evidence that the village would in fact oppose the siting of the Thurleigh airport. It made quite redundant the need for any further survey.

5537 It was also at your Parish Meeting, I think, where 10 per cent attended, is that correct? — There

* See also p. 2018.

* See also p. 2021.

Printed image digitised by the University of Southampton Library Digitisation Unit

were 170 people attending and no more could be packed into the room; it was the occasion of the Annual Parish Meeting rather than a special meeting which was held to discuss the airport; this was out of an electoral roll of just over 1,000, quite a high proportion.

5538 Do you think that this is sufficient to know that the entire village is against it ? — I think this is, and the other evidence which we have is overwhelming.

5539 Can you tell us a bit about this other evidence ? — The evidence as I already indicated on the survey indicates the reasons why people have come to live in Sharnbrook, are those very features which the siting of an airport within one or two miles and in direct line with the flight path would completely and utterly destroy.

5540 In fact there is no mention of Thurleigh at all in your survey.

Inspector I have no questions. Thank you also for the work involved which is useful to our staff, no doubt.

(The witness withdrew)

MISS CONSTANCE JANE VIGAR* *called*

Examined by Mr. Broderick

5541 Are your full names Constance Jane Vigar ? — Yes, they are.

5542 You live at "Ashleigh", 17, High Street, Oakley ? — Yes.

5543 You give evidence as the appointed representative of the parish of Oakley, Bedfordshire ? — Yes.

5544 Have you been a member of the Oakley Parish Council for 27 years ? — Yes.

5545 And the actual representative of Oakley on the Bedford Rural District Council for 7 years. — That is correct.

5546 I think you have lived in Oakley since January 1933, and you have chosen to continue to live there on retiring from your post as Deputy Headmistress of the primary school in the neighbouring village of Clapham, is that correct ? — That is correct.

5547 I think you tell us in your proof the population is 900. Do you know what the electoral roll of the parish is ? — 756 approximately, I think that is the number.

5548 There seems to be some doubt as to the number of children in the parish, and whether the figure of 750 takes full account of them ? — No. On the electoral roll, I thought you asked me....

5549 Yes, but isn't the figure rather high ? — Well, there were not many children in the village; there were about 60, but it is a village which is increasing in number, and there are a lot of young families now coming in.

5550 Yes. One other matter, in the bottom of paragraph 2 on page 1, can you give us the further figure as to the village fund ? — £450, and we are continuing to have functions to raise more.

Inspector Any questions of Miss Vigar concerning the actual statement ?

Cross-examined by Mr. Curran

5551 Miss Vigar, do you know of anyone in the village who supports Thurleigh as an airport ? — Can you repeat your question. I am not hearing the last few words.

5552 Do you know of anyone living in your village who wants Thurleigh as the site for the third London airport ? — I don't know of any actually.

5553 Have you made any efforts to find out ? — We have collected names of people against the airport and a number would not give their signatures, because they didn't like signing documents of any kind in any case, and a few were for the airport.

5554 How many signatures did you collect ? — 427.

5555 And you had some refusals, some people would not have anything to do with it ? — They didn't know; they could not make up their minds.

5556 The total electoral roll is 756, so approximately 356 people would have nothing to do with your petition. — It was not a petition, it was just getting signatures against the airport.

5557 Can you tell me how many people opposed the airport at the Parish Council meeting? — Nobody opposed—Oh opposed the airport ? There were 127 people present at the parish assembly. There was one abstention, so that means 126 opposed it.

5558 How many were in favour ? — None.

Inspector I don't think we got your last question.

5559 *Mr. Curran* Nobody, I take it, was in favour of the airport at your Parish Council meeting. — No.

5560 And yet there are 356 people who would have nothing to do with your petition. Have you any comment to make on that ? — Do you want me to answer a question ? I have not got the question right.

5561 Nobody on your parish meeting which was well attended in fact wanted the airport, and yet 356, which is a large percentage of the village, would have nothing to do with your petition against the airport. — A large number of elderly people live in Oakley and they consider they will not even be alive when the airport comes, so they did not take a great deal of interest in it.

5562 The thing I am getting at, which worries me very much, is, why is it there is a large number of people who didn't join in the vote against the airport, would have nothing to do with it, with your petition, and yet would not attend the parish meeting ? — The 126 who opposed the airport at the parish meeting signed against it in the 400 odd —there was no comparison. Those people that would not sign or were not interested did not attend the parish assembly.

Mr. Curran Thank you.

* See also p. 2027.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. ARTHUR WILLIAM LUCKHURST* *called*

Examined by Mr. Forbes

5563 Mr. Arthur William Luckhurst, were you co-opted on to the Parish Council of Little Staughton at their meeting in March 1967 and were you appointed by the Parish Council to give evidence on behalf of Little Staughton? — Yes, that is correct.

5564 Have you been acting as Chairman of the Committee opposing the siting of an airport at Thurleigh and are you Managing Director of Wyseplant Limited which employs some 150 men and women, the firm's premises being at Chawston? — That is correct.

5565 Mr. Luckhurst, did you have a Parish Council meeting in Little Staughton about Thurleigh Airport? — Yes, it was held at the annual general meeting.

5566 That was on the 24th March 1969? — Yes, that is correct, sir. Forty people attended when it was unanimously agreed to oppose the siting of an airport at Thurleigh.

5567 And did you carry out a survey at all of the population of Little Staughton? — Yes; of 190 people on the electoral roll only six voted in favour of the airport and 28 were undecided.

5568 This was a 100 per cent coverage, was it? — Yes.

5569 So the remainder were against? — Against the airport, yes.

5570 Mr. Luckhurst, of course I gather that at your parish meeting of 40 a resolution was passed unanimously, is that correct? — That is correct.

5571 Six people voted in favour of the airport? — Six only voted in favour. This was on the door-to-door research.

5572 Perhaps you can tell me, if those six had turned up at the parish meeting and voiced their preference for the airport would they have been lynched? — Nearly, I think nearly. I think this is an indication of the feelings of the village: within four weeks we carried out a house-to-house collection and it is not a wealthy village by any manner of means and, as I said, within four weeks—and it took us four weeks because people were so hospitable, I said hospitable—we collected £310 by direct subscription and a lot of these people were old age pensioners who could ill afford to give anything at all.

Inspector Any questions to Mr. Luckhurst? No. I am glad the village stops short of lynching, anyway.

(The witness withdrew)

MR. EDMUND COURTIER BARNARD† *called*

Examined by Mr. Broderick

5573 Mr. Edmund Courtier Barnard, you live at 7 Hall Close, Harrold, Bedfordshire? — That is correct.

5574 Are you a Member of the Royal Institution of Chartered Surveyors and a Fellow of the Chartered Auctioneers' and Estate Agents' Institute, you are a partner in the firm of Allott and Barnard of 54, Harpur Street, Bedford, and you have practised in the Bedford area during the past eleven years? — That is so.

5575 I think you have lived at Harrold since 1960 and from 1964 to 1967 you were Vice-Chairman of the Harrold Parish Council and you have been appointed to give evidence on behalf of Harrold and Odell? — That is correct.

Inspector Any questions to Mr. Barnard concerning Harrold and Odell? Mr. Barnard, are you staying to speak later in the day on your valuations at Keysoe Road? — Yes, I will today.

(The witness withdrew)

MR. PETER RICHARD WILLMER* *called*

Examined by Mr. Forbes

5576 Mr. Peter Richard Willmer, have you been appointed to represent the parishes of Great Staughton and Hail Weston at this inquiry and are you a partner with the firm of Ekins Witherow & Handley at the St. Ives Branch and they have branches in other parts of this area, and were you born in Great Staughton? — Yes.

5577 Are you a Justice of the Peace and Chairman of the Great Staughton Parish Council? — Yes.

5578 Were you a County Councillor for the County until 1967? — For six years.

5579 And are you a Churchwarden of the Church of St. Andrew in Great Staughton? — Yes.

5580 And you have been Treasurer of the British Legion at Great Staughton for the last 17 years and are you a Chairman of the School Managers of Great Staughton County Primary School and a Governor of Longsands Comprehensive School at St. Neots? — Yes.

5581 Also a member of the Board of Visitors to the Borstal Institution at Gaynes Hall? — Yes.

5582 Just one matter I wanted to ask you. Have you any information to give the Inspector and this inquiry about the local feeling in the village? — Yes. Since I gave this proof of evidence a petition has been organised and 397 people voted against the airport and 5 per cent were for it, and for the benefit of Mr. Curran that is about 20 people.

Cross-examined by Mr. Curran

5583 Could you tell me what the total population of the two villages are that you represent? — No.

5584 In your petition would you say that it was more or less a complete coverage of the village in total population? — No, it is not, it was of the people asked. As you know from canvassing you

* See also p. 2029.
† See also p. 2031.

* See also p. 2033.

Printed image digitised by the University of Southampton Library Digitisation Unit

go round, people are out and that was the number of people that we were able to get hold of.

5585 Would you have said it was like 50 per cent of the villagers? — Would you speak into your microphone.

5586 Would you say it was about 50 per cent of these two villages you contacted or less? — I didn't make it clear. This petition was only organised in Great Staughton.

5587 If we think of Hail Weston, how do people feel in Hail Weston? — My tale is the same as every other village, it has been brought out over and over again today, that village people by and large are apathetic and they take a bit of getting through to, it is only those that are interested go to a public meeting and if we could only have got some of the people that allegedly are for the airport to come to the public meeting I think having listened to the evidence they would not be for it.

5588 You have got quite a lot of experience, you are a Liberal, do you find that certain sorts of people turn up to meetings in your experience? — Do I what?

5589 Do you find certain types of people turn up to meetings? Would you say that working men in general turn up at meetings? — I know you are trying to make a political issue on this. You are saying that all Labour people live in council houses and are browbeaten, that is what you are trying to get over today.

Inspector Pass swiftly away from the political scene, please.

Witness I would say there is is a lot of Labour people who are dead against the airport, sir.

5590 *Mr. Curran* Not to get involved in politics, I don't.... — You brought it up.

5591 I didn't. — You brought up about me being a Liberal.

5592 Anway, to get to Hail Weston, somebody telephoned me last night and said that the Women's Institute, a fairly Conservative rural sort of organisation, they seem to come out in favour of an airport, and yet you are telling me that Hail Weston in general....

Mr. Forbes I act for the Bedfordshire Federation of Women's Institutes and my instructions are quite clear that they are utterly and completely opposed to the airport. Unless Mr. Curran is prepared to produce some witness to the contrary I am going to object to any such suggestion.

Mr. Curran When you say that the Women's Institutes in this area are opposed to the airport are you talking about the Executive Committee of the County or talking about every single one in the area?

Mr. Forbes If Mr. Curran wants to call evidence about the views of the Women's Institute in Hail Weston let him call it, but until that evidence is in front of me I am not going to accept that as a proper question.

Inspector That must be right, Mr. Curran, particularly of this witness who is speaking for the Parish Council of the two villages.

5593 *Mr. Curran* Mr. Willmer, you have come here to represent these two villages, you must know what the people feel very well in these two villages. Are you convinced in your own mind that there is more than one or two people in this parish who want this airport? — I am not going to say just one or two, I suppose there are several, but knowing what I do from canvassing people, they will tell you one thing and do another and so when it comes down to it you don't really know what to believe.

Inspector I have no questions.

(The witness withdrew)

MR. FRANK COOKSON* *called*

Examined by Mr. Broderick

5594 Your full names are Frank Cookson and you live at 27, Furzefield, Putnoe, in Bedfordshire? — That is correct.

5595 And is your main employment as Secretary of the Bedfordshire Rural Community Council and because of this appointment and the wishes of the Parish Councils and other bodies you are also Honorary Secretary to the Bedfordshire Association of Parish Councils upon whose behalf you are now giving evidence? — That is correct.

5596 And with the exception of two, are all the Parish Councils in Bedfordshire affiliated to the Association? — That is correct.

5597 And you give evidence on behalf of 99 Parish Councils in all? — Yes, but mainly those within the 16 mile radius, and the number of course is slightly less.

5598 And some of those have given their own separate evidence and you are supporting them? — Yes, indeed.

5599 I think there are a number of villages who have not said that they are against the airport, are they villages owned by the Duke of Bedford? — That is the case. In the case of two villages as you say I have added "No" against all those that have not submitted a resolution opposing the proposal, so in actual fact although "No" appears in several cases the real number of "No's" really amounts to five in the case of Parish Councils. You see, there are two parish councils who have not passed a resolution but have stated in public that they support the action taken by the County Council, which is clear enough, I think.

Cross-examined by Mr. Curran

5600 Mr. Cookson, of those parishes which have not already been represented could you tell me how many of them had an opinion poll conducted? — I am afraid not, I have no record of this at all. This is information that has not been sought.

---

* See also p. 2035.

Printed image digitised by the University of Southampton Library Digitisation Unit

5601 So that you rely really upon parish council meetings, I take it? — No, that is not correct. In my summary FC2 I give the name of the parish council. Most of the resolutions that have come from these parish councils have in fact come not from meetings of the seven or ten parish councillors but from the annual meetings of these parish councils which this year because of the proposals have attracted record attendances.

5602 If I can just have a random look at the record of attendances. Take Dean and Shelton, do you know how many people attended the annual meeting of the parish council? — In the case of Dean and Shelton, no. I have with me papers in several files, I can give you this information.

Mr. Curran Don't worry. Thank you very much indeed.

(The witness withdrew)

MR. MICHAEL MARTINDALE* *called*

Examined by Mr. Forbes

5603 Mr. Michael Martindale, you are a Member of the British Empire, Master of Arts and Secretary of the Community Council for Cambridgeshire and Isle of Ely, Huntingdon and Peterborough? — Yes.

5604 And because of that appointment do you also act as Secretary for the Huntingdon and Peterborough Parish Councils' Association and the Cambridgeshire and Isle of Ely Association of Parish Councils on whose behalf you are now giving evidence? — That is correct.

5605 And there are 118 members of the Cambridgeshire and Isle of Ely Association and 72 members of the Huntingdon and Peterborough Association? And you list the parishes within 16 miles of Thurleigh on your Appendices 1 and 2? — Yes.

Inspector Are there any questions to Mr. Martindale? There are no questions—I have no questions.

Mr. Martindale I would just like to add a word, sir....

Inspector Certainly.

Mr. Martindale On the disturbance question—I did say in the evidence (d) on page 2, that there was some disturbance already from aerodromes in the county. I think it is relevant to mention that most of this data—for example, we have every year an open air performance and the R.A.F. aerodromes are always willing not to fly their aircraft over this performance. One imagines that a London airport would hardly have the same ability to limit their flying in the daytime!

The only thing I would like to add, since it has been raised on so many occasions this morning—it is very rare to have large attendances at parish meetings. We get the numbers every year, and unless there is some very sensational event—I should think that even if there was a proposal to drown the village, you would not get more than a certain percentage. It is roughly only 10 per cent of people who will attend any meeting, and if you get more than that you are doing very well. So to assume that because people come to meetings they are opposed to the views expressed, is rather odd.

Inspector There are no questions—thank you.

(The witness withdrew)

Mr. Broderick Mr. Blackledge, please—his letter is Q, and he is the representative of the Bedford Society.

MR. M. B. BLACKLEDGE* *called*

Examined by Mr. Broderick

5606 Mr. Blackledge, your full names are Michael Brian Blackledge, of Tennyson Lodge, Tennyson Road, Bedford, Bedfordshire; I think you are the Chairman of the Bedford Society, which was set up in November, 1966 — That is correct.

5607 And you give evidence as their appointed representative? — I do.

Inspector Are there any questions to Mr. Blackledge?

Mr. Blackledge May I make a comment, sir? I would like to say that the Bedford Society is one of many societies that have been formed every week in this country, and I think it is a sign of growing public concern as to what is happening to their environment and their way of life. A planning decision of this magnitude should be the planning decision of a century in this country, and people are watching it very closely. I know we are watching the local conditions, but also people are watching this, and I also believe that there is strong public opinion against the placing of any airport on any inland site. I would also like to make a comment, that most of the evidence that has been produced here has been in the county itself, and therefore we hope we are representing the opinions of Bedford Town. We are very proud of our town—it may not have many big architectural features, but it is a very beautiful one; we have a beautiful Embankment, and we do believe that the future of Bedford is threatened by this placement at Thurleigh.

Inspector Mr. Blackledge, I doubt whether I shall be able to take up your offer, in paragraph 7, to see your film record. But I have known Bedford for many years—I knew it back in the Wartime, when there was much less traffic using the main streets than there is now; so you need not fear that I do not have some idea of the character of Bedford. Thank you very much.

(The witness withdrew)

Mr. Broderick Mr. Osborne is the next witness—his letter is A, and he speaks on behalf of Bovril.

* See also p. 2039.

* See also p. 2041.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. J. B. OSBORNE* *called*

5608 Mr. Osborne, I think your full names are James Bourke Osborne, of 14/15, Paul Street, Taunton, Somerset? — That is my business address.

5609 And you are a Chartered Land Agent, retained by Bovril Limited as a Consultant Land Agent? — May I say that I have been associated with Bovril Limited, and their farms, since 1st January 1963, and I was resident Agent for Bovril Limited until 1967, when I became Consultant Land Agent.

5610 And were you Resident Agent in the Bedford Area? — I was.

Inspector Are there any questions to Mr. Osborne, concerning the Bovril farms? I have no questions —thank you.

(The witness withdrew)

Mr. Forbes My next witness, sir, is Wing Commander McClure, the letter is F, sir.

WING COMMANDER C. G. B. MCCLURE† *called*

Examined by Mr. Forbes

5611 Wing Commander McClure, you are the holder of the Air Force Cross, are you not; Master of Arts, a Chartered Engineer, and a Fellow of the Royal Aeronautical Society? — That is so.

5612 Are you Head of the Department of Flight at the College of Aeronautics? — Yes, I am.

5613 And I see that you are a Senior Member of Oxford University, and you deal in fact with the position of the Aeronautical College, which was founded in 1946. — That is the case.

5614 There is also, Wing Commander, attached to your proof—or to my copy of it anyway—a note about the effect of the siting of this airport on the College of Aeronautics Gliding School. — That is so, but I think the Chairman of the Gliding Club is presenting his evidence separately.‡

Inspector We have a separate place in the programme—tomorrow, Mr. Forbes.

5615 *Mr. Forbes* I am sorry, I misunderstood that. And you deal with the difficulties which you anticipate would face the College of Aeronautics if this third London Airport were sited here? — Yes, it would make our operations extremely difficult, if not impossible.

Inspector Are there any questions to Wing Commander McClure?

Cross-examined by Mr. How

(T.E.C.D.A.)

5616 Wing Commander, could you quote the average number of flying hours per week that is carried out by the Department of Flight? — The number of flying hours per week?—well, it is about 1,500 flying hours per year.

5617 And what percentage of those flying hours are contracted out to the Ministry of Technology? — I think—if I can—I think you mean we do a certain amount of flying on Ministry of Technology contracts....

5618 That is correct. — Quite a small number of hours—about 50 or 100 a year.

Inspector Are there any more questions? Wing Commander McClure, we have met your problem in a somewhat different form at Cublington—thank you for presenting it here. I have no questions.

(The witness withdrew)

Mr. Broderick Sir, Mr. James Harris, whose letter is T.

MR. J. G. HARRIS* *called*

Examined by Mr. Broderick

5619 Are you James George Harris, of The Cottage, Newton Bromswold, near Rushden, Northamptonshire? — I am.

5620 I think you have been actively engaged in farming since you left school at 16, and you have been farming for 41 years? — Yes.

5621 I think you own and farm some 840 acres at Newton Bromswold, and you are tenant of some 400 acres of land at North End Farm, Bletsoe? — That is correct.

5622 I think there is one correction you prefer to have made—on page 2, under the sub-heading "North End Farm", the second line: you say "will be occupied by my daughter". I think you prefer "might". — Yes—I have no reason to put "will".

Inspector Any questions to Mr. Harris concerning his evidence? There are no questions—I have no questions. Thank you.

(The witness withdrew)

Mr. Forbes Mr. Elliott cannot be here until 2.15, as I told you yesterday, sir, so I shall call Mr. Pozniak, who deals with sailing interests. Letter U, sir.

MR. O. M. POZNIAK† *called*

Examined by Mr. Forbes

5623 Mr. Otmar Miroslaw Pozniak, you are, I think, an Aerodynamicist and a Master of Science of the University of London; you live in Conway Crescent, Bedford, and you were in fact at the College of Aeronautics at Cranfield between the years 1954 and 1957. — That is correct.

5624 Your particular interest in this Inquiry is concerning sailing on Grafham Water, is it not? — Yes.

* See also p. 2048.
† See also p. 2166.
‡ See also p. 2046.

* See also p. 2053.
† See also p. 2054.

Printed image digitised by the University of Southampton Library Digitisation Unit

5625 For the benefit of Mr. Curran—when you talk about "class racing", you are not of course referring to social classes, are you ? — That is quite correct.

5626 It is wonderful how some of these people do not know what goes on ! Is there in fact any difficulty about the working man sailing a boat on Grafham Water ? — If anyone is sufficiently determined to spend some money on sailing, he can sail.

5627 The club at Grafham has no bar in regard to the social standing of its members ? — No, of course not.

5628 And there are, I imagine, many members of the Club who do not even own boats ? Yes, that is correct.

5629 But crew for other luckier members who do ? — That is right.

5630 I notice in Mr. Curran's proof* that he seems to stress that the working man cannot afford to be a sailor—would that be your impression, Mr. Pozniak ? — Well, I do work for my living, so I consider myself a working man.

A very good answer !

Inspector Are there any questions to Mr. Pozniak? No. Well, I actually have been sailing a racing dinghy for 20 years myself—I would like to discuss things with you, but later on, maybe. I have no questions—thank you.

(The witness withdrew)

Mr. Broderick Sir, the next witness is Mr. Denny —I am afraid I have not a letter on his proof, I hope he may be easily found in the diminishing pile. He is a late proof, sir, so it may not have a letter. . . .

Inspector Yes for your purposes, the letter is BB.

MR. R. M. DENNY† *called*

Examined by Mr. Broderick

5631 Mr. Denny, are your full names Ronald Mackinnon Denny, and do you live at "Eyrie", The Bury, Pavenham, Bedfordshire ? — That is right, sir.

5632 And I think now you are employed in an administrative capacity, but before that you had a varied career, starting first as a Radar Technical Officer with the Royal Air Force, specially concerned with navigational aids and the control of air traffic. Did you serve for three years as Assistant Airport Manager of Heathrow Airport, and more recently for six years with NATO, again closely associated with electronics and advanced navigational aids; and have you been an Associate Member of the Institution of Electrical Engineers, an Associate Member of the British Institution of Radio Engineers, and an Associate of the Royal Aeronautical Society ? — That is correct.

Inspector Mr. Broderick, on reading this proof it has occurred to me that it could scarcely come within the local implications of an airport at Thurleigh. It seems to me far more appropriate to Stage III than Stage II.

Mr. Forbes Sir, if I may—I entirely agree with you, except in this one respect : it is really part of the supporting evidence for the suggestion I put to you that one of the local implications which people fear is that they may be landed with an airport which would be completely disused, and Mr. Denny's evidence supports that view; so that in that respect it comes in here. I think I entirely agree with you, that the major part of that document should be canvassed later.

Inspector I quite see your point, Mr. Forbes; what I did not want was cross-examination to get into this very very difficult technical field, which would be debated later. Are there any questions to Mr. Denny concerning his proof of evidence ?

Mr. Eve May I just say—we have not seen his proof of evidence—may we see it over the adjournment ?

Inspector Indeed; and this is therefore a very appropriate moment to adjourn. If Mr. Denny is available to return to the witness box at 2.15. . . .

Mr. Forbes Yes, sir.

Inspector . . . . then all who wish to can study his proof then. Copies are available on the table here. We will adjourn until 2.15 p.m.

(Adjourned until 2.15 p.m.)

Inspector If we may resume.

Mr. Forbes When we adjourned, Mr. Denny was in the witness box, and I don't know whether it is necessary for him to come back.

Inspector I was going to ask, now that Mr. Denny's proof has been made freely available, 4047 BB, are there any parties who wish to ask him any questions ?

Cross-examined by Mr. How

5633 Mr. Denny, a man of your wide experience of air traffic control, would you not agree with me the airway of London, in the Metropolitan Air Control Area, is in a state of congestion now, and that by placing this third airport within the London area, this is building up an extremely massive congestion of airways that already exist ?

Inspector Well, before you reply, Mr. Denny. Mr. How, this is just the difficulty I anticipated. I think by no stretch of the imagination can the whole system of ATC covering London and the south-east stretching from the South Coast through to Bedford be really regarded as or dealt with as a local implication. This wide question of ATC is receiving the most careful consideration by the Commission and its experts, and my view is it is quite clearly a matter for Stage III and subsequent stages.

* See also p. 2133.
† See also p. 2056.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. How The purpose of my question was to ask Mr. Denny if he agreed or if he was in favour—well, he said he is not actually, but to an airport in the Bedford area—it would be of much advantage to the country than if one was built within the London area. He has already said that he believes 50 to 60 miles away from London is too great a distance to travel. I have evidence here from an international chemical firm who wish to move to Bedford and move their headquarters and one of the reasons of this was the geographical convenience for London airport to Bedford, the M.1, and the Midlands.

Inspector But wasn't your question directed towards air traffic control systems?

5634 *Mr. How* Yes. What I am actually getting at is that Mr. Denny said he believes the airport should be within the London area, and by placing the airport at Bedford, the greater distance from London, this would deter people from travelling. — I believe there is so little traffic generated in the Bedford area that the inconvenience of the airport in the Bedford area would far outweigh advantages of having one here. The Heathrow airport is fairly convenient for people who use it. Luton airport is available, and people who want to go to the Midlands can use the Midlands. But what the Roskill Commission are looking at is an airport for London, not Bedford, and not the Midlands, and this is my point, that to put any London airport at Thurleigh or anywhere near Bedford would prove within 10 to 15 years to be a complete white elephant.

Mr. How Thank you.

5635 *Inspector* Any other questions? Mr. Denny, I have no questions, because I believe this a matter to be dealt with at Stage III and subsequent stages. Thank you very much. — Can I make one point, sir. I agree, I think this is Stage III, but I would like to add I was grateful to the *Daily Telegraph* yesterday when it did confirm two of the points I put in this proof. Air Commodore Donaldson said the United States is working on a vertical take-off supersonic airliner. This is exactly the point I put, and the other one is I said that London Airport was not overloaded, and I notice the British Airport Authority have reduced the freight charges at London Airport so as to attract traffic to London Airport.

(The witness withdrew)

MR. THOMAS GEORGE ELLIOTT* *called*

Examined by Mr. Forbes

5636 Your full names are Thomas George Elliott of "Cateran Farm", Keysoe Road West, Keysoe. — Yes.

5637 I think you are 41 years old, and a Farmer and Agricultural Contractor by profession? — That is correct.

5638 I think you started in business on your own about 17 years ago building up your present farming and agricultural contracting business from only one pig? — Yes, that is correct.

5639 Is there anything that you wish to add to the proof of evidence which you have submitted. — No. What I have said is true. If anybody here wants to deny it let them ask me questions.

5640 *Inspector* Any questions to Mr. Elliott? I have no questions, Mr. Elliott, and I am quite happy you should return to harvesting while the weather lasts. Thank you.

(The witness withdrew)

Mr. Forbes Then I call Mr. Beazley, who is the Secretary of the Research Committee of BARA. His letter is AA, and he also appears on behalf of the parish of Pavenham.

MR. GILBERT CECIL WHITE BEAZLEY* *called*

Examined by Mr. Forbes

5641 Mr. Gilbert Cecil White Beazley? — Yes.

5642 A Fellow of the Royal Institution of Chartered Surveyors, and a Fellow of the Chartered Land Agents' Society, and are you in general practice as a Chartered Surveyor and Land Agent in the area, and are you yourself responsible for managing various estates totalling some 12,000 acres in the counties of Bedford, Huntingdon, and Buckinghamshire? — I am.

5643 Do you also have a very considerable professional practice connected with agricultural properties in the counties? — Yes.

5644 Are you a member of the Bedford Rural District Council, and have you represented the parish of Pavenham since 1958 on that council? — Yes, that is correct.

5645 Are you a member of the Bedfordshire Agricultural Society, and were you the Society's Secretary from 1961 to the beginning of this year? — Yes.

5646 And since 1969 I think you have been the Honorary Secretary of the Bedfordshire Airport Resistance Association? — That is correct.

5647 You give your evidence, Mr. Beazley, in relation to BARA and to the parish of Pavenham? — Yes.

5648 Just one or two matters I want you to add to what you said. You attended, I think, on the 31st July 1969, a meeting at Huntingdon? — Yes.

5649 Was that meeting called by Mr. Curran? Arranged by him? — Yes. BARA were invited by Mr. Curran to send a representative to the meeting in the school hall in Huntingdon, and I was asked to go. At this stage TECDA had recently been founded and we realised they were in favour of the airport, and I said I would go, but I did say to BARA that I would prefer a few people to attend in the room in my support.

5650 And I think in the end some 40 BARA rep-

* See also p. 2059.

* See also p. 2060.

Printed image digitised by the University of Southampton Library Digitisation Unit

resentatives turned up. — Yes. The position was that some BARA supporters in the Keysoe Kimbleton Area came to the meeting, some 40 of them arrived, and about 80 people in all attended.

5651 So the balance of 40 were presumably people from Huntingdon. — They were people from Huntingdon, yes.

5652 What is the population of Huntingdon? — About 15,200, including Godmanchester.

5653 And just while we are dealing with this thing, did Mr. Curran hold a meeting in Bedford on Wednesday, 3rd September 1969? — Yes.

5654 Designed to further the interests of his committee for so called democratic action? — It was advertised as such and held in the Civil Defence Hall in Bedford which has capacity, I would have thought, of about 80 to 100 people.

5655 How many were present? — About 41.

Inspector Any questions to Mr. Beazley?

Mr. Curran Yes.

(Cross-examined by Mr. Curran)

5656 I will answer those points later, if I may. First of all, if I could draw your attention to paragraph 4, you state about BARA that BARA never lost sight of the possible advantages to the area of an airport or the advantages in the national interest. Well, I know of you personally, and you have been very reluctant to get involved in the hullabaloo which has gone on, in fact you have been generally concerned with the research aspect of it, but, Mr. Beazley, do you think that comment is really a fair one? — Yes. I think you very largely answered the question for me. I have been involved in the research aspect. One enters all these problems realising that if indeed there is a need for an airport it has got to go somewhere, but as soon as you start to look into the effects of the airport you realise how utterly catastrophic this would be to an area such as Bedfordshire, and there is practically nothing left in the argument in favour of the airport at Thurleigh.

5657 Do you think this is fair to say, and perhaps this is understandable, that if you very much oppose a proposition you will tend to make extreme claims to support your view? — No. I don't think this is so at all. If one was convinced that the airport was both nationally necessary and desirable and Thurleigh was the only place to put it, and that owing to the mass unemployment in the district, and one thing and another, if you could produce silent planes, one might come round to thinking it was the only thing, but as we have no mass unemployment or silent planes the weight of the evidence is utterly against it. I was giving advice on the opinion for saying Thurleigh is totally unsuitable.

5658 It is true, I think, that you have had a great army of expertise and detailed information on your side, that you are in a position to evaluate possibly better than other people the significance of the airport. — I think BARA's research committee have placed themselves in the position of being able to judge the effects of an airport very thoroughly from technical experts, they have got a wide field, and we have done just that.

5659 You must understand, Mr. Beazley, that the majority of the community have not got very much information on our side, and that perhaps this is to our discredit, but we have been dependant upon the information which we received from other sources, and one such source is from Mr. Hugh Bennett,* writing on behalf of BARA, and he states it is incredible now after two months of campaigning to find people still repeating this old myth that the airport will produce jobs for local people. Do you think that is true? — I think this is very fair comment in many ways; the only types of jobs it will produce for local people, in other words people without skills in running the airport, I have always conceded is the girl at present serving behind the counter in Woolworth's may get more glamour serving duty free liquor....

5660 What we are discussing is comment by Mr. Bennett, about two months campaigning by BARA, not about you, and I know you yourself have been trying to avoid the publicity campaign. Do you think it is true to say that in fact the airport will not provide jobs for local people?

Mr. Forbes If you let him answer the question you might be able to find out what he thinks. He is in the middle of answering your question and you have interrupted him. — Yes, if I can just continue this theory of local people—the employment pull, if you like, is to take people out of Woolworth's, and put them in the duty free liquor store, and with the British Airport Authority's basis you won't have the same basic rates of pay of London Transport; these are all run by the London Transport Executive, whatever they are called.

5661 In other words, you are saying that there will be opportunities for unskilled labour on the transport. — They are not opportunities.

5662 For local people the airport will provide jobs for them, of an unskilled sort. — They will provide jobs of a sort for the unskilled people over a fairly wide spectrum, obviously, but as there is no unemployment, local people who take these jobs have to be replaced by new people running the local services. You can't have it both ways.

5663 If I understand you correctly, this communication which has the heading namely—"Myth of jobs for local people", which is the title of the campaign by BARA for two months, by its spokesman, Mr. Bennett, who works for a London public relations firm, is incorrect. — No, it is not incorrect in the sense there is no increased opportunity. I mean, people locally are not suddenly going to find themselves as air traffic controllers and the like. This is an inference....

5664 What we want to know is whether you get any jobs at all. If you recall earlier in the pro-

* *Huntingdon Post*, June 19, 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

ceedings, I think it was Mr. Hawkes who said that in the construction programme for the airport in his opinion labour will be withdrawn from wherever it was available, and some of this labour would come locally. Do you think this is correct? — If you are talking about people building the airport, some of the general labour will be drawn from local sources, if this is available, and if there is a preference to do that, but as there is no unemployment and no reserve of labour as I said before, if you do that, either your existing local services are going to run down pretty rapidly—you already have a situation where every time if there is a holiday period the bus company have to take about 5 or 10 per cent of their services off the road; they can't maintain their scheduled services. If you are going to suddenly draw those people off to act as navvies on the airport then, of course, you will have then to replace them from elsewhere. The situation is quite obvious, I should have thought.

5665 There will be jobs available in construction for local people. — There will be few jobs. I think you should realise modern contracting, construction techniques require more skills than is probably generally appreciated, and you will find the majority of the people coming to build this airport are firms with a national reputation with their own technicians to drive the vast machinery that will be involved. The number of local people capable of operating such machinery is extremely limited, therefore the job opportunity is very limited—they will probably be the tea boys.

5666 I seem to recollect that the spokesman for the National Farmers' Union said that one of the consequences of an airport would be to increase labour costs and that this was a consideration which was not merely troubling farmers in the area but also other enterprises. Do you think that labour costs as you put it or increased wages would be the result of an airport? — I think it is a question of supply and demand, but of course this applies right through the whole economy and if in fact wages in the district are forced up bus fares go up, all the service industries charges go up, your rates go up because your local authorities are having to pay over the odds to get their dustbins emptied, so you are no better off.

5667 In your opinion is it true or untrue that wages will increase? — I think in terms of purchasing power wages may well go down.

5668 Unfortunately I am not in a position to speak to that, but I am aware of the fact that wage rates are very low in certain areas affected by Thurleigh and I know a number of people who are having to travel as far as London to go to work. Would it be possible for those people to get wage rates of a comparable sort in the vicinity if an airport came to Thurleigh? — Well, I mean if you take London as an example—no doubt the Commission will inquire into this—the figures are available, but I believe the number of season ticket holders from Huntingdon to Kings Cross are 40, less than 40 people hold season tickets, and I would venture to suggest that anybody that can afford a season ticket from Huntingdon to Kings Cross is probably a member of the Bar or a Solicitor or something of that nature, and it is absurd to suggest that the workers you are describing are going to London from Huntingdon.

5669 I have a very close friend who is a fitter on a building site and he has been engaged in London for the last two months.

Inspector Will the audience please not interrupt by clapping during these exchanges, I am wanting to hear them. Thank you.

5670 *Mr. Curran* If I can consider another aspect of the way in which you have considered the advantages and disadvantages of an airport for the local community and provide information for our benefit in as unprejudiced a form as possible, there has been considerable worry amongst local people and local householders and one of the reasons that I suspect that they may be worried is because of the statements which have been made by BARA: here is one: "If you own your own house think what would happen to its value? You could lose £1,000". Do you think in fact that house values will increase or decrease if the airport comes to Thurleigh? — Here you are on a very involved subject with which my profession is very concerned. The position as I see it as a Chartered Surveyor is that during the period of uncertainty values undoubtedly will fall —in fact, there is a planning blight on the whole of the Thurleigh area down to about a 45 NNI at least at the present time. I speak now not as Secretary of BARA but as a professional man who has some knowledge of these things. Now the position is this, that under present legislation those people whose properties will be acquired will receive their compensation on the basis of the value at the date of the notice to treat. Now this date of notice to treat will be before any influx of population or workers or anything, and if the depression continues if you are living at 7, Paradise Row, Thurleigh (which does not exist, needless to say) at the present time probably, twelve months ago we will say the house was worth £6,000, it is now a very difficult proposition to sell and as far as we can judge will remain so. At the date the final decision of Government is made, which presumably will coincide with the date of notice to treat, its value may well be £5,000, that poor chap only gets £5,000. He finds that he still needs to live in the district as a whole and may want to move south of Bedford, by which time all the people who are involved in the construction and running of the airport are beginning to build up pressure on house prices; before the new towns which are shown on the cartoon* are even started already those people building those new towns will be wanting to get in, the planners, the civil engineers and the like, and he may well have to pay an inflated value to get rehoused. Therefore, it is true to say in real terms that he will have lost £1,000, it is quite possible—in fact, I think this is just what will happen unless some alternative basis of compensation is introduced and I think it will

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

be grossly unfair if the airport compensation is not based on a value before the airport proposals, the short listed sites, were announced, plus an uplift to correspond with the average national or regional rise in house prices over the period that may have elapsed until the final decision is made. I think there is nothing wrong or sinister in the fact that people will lose a very considerable sum of money if they are not very careful and if the present basis of compensation is not varied in respect of a third London airport.

5671 I must say I am getting confused by this expertise because I seem to recollect Mr. Forbes, Queen's Counsel for the Bedfordshire Airport Resistance Association, saying in fact house values would rise but this is no compensation for the noise. Is it or is it not true that house values will in fact rise in the long term? — The long term? I am sorry to come back to technicalities in a way here, but the long term is of no interest to the chap at 7, Paradise Row, Thurleigh, who is coming under the runway.

5672 This particular advertisement was published. Bletsoe and so forth are not even in Huntingdonshire. If you talk to people in the area, people say in Buckden or Offord, they believe that in fact their house values are going to drop because of the noise and there will be a noise. Is this or is this not true? — I think this is certainly true, but even the keenest airport worker, although he has a vested interest in the airport, is not going to live right under the flight approaches which Buckden will be in. The point that was made about house prices: there is a tolerance, obviously, from the 65 NNI. I believe through the columns of the *Bedfordshire Times* you have already been offered a house at 65 NNI but nobody in their right mind is going to suffer this level of interference with their private affairs—a quite hopeless situation. But beyond the immediate effect of your high noise levels there is obviously going to be an increased demand and pressure on houses.

5673 Could you possibly explain to us as you are an expert on the subject why it is that a study done in Heathrow by Mr. Peter Smith of Kent University* found that house values right on top of the airport increased and why it is that according to the Wilson Report on Noise† there is no lack of demand for houses? Could you please explain to me whether in fact these factors are likely to duplicate themselves and this situation developing in this area? — I think you cannot compare the Greater London area, especially the London side of Heathrow, with areas such as Bedfordshire. The best analogy you can get is the Datchett/Windsor area where even though the background noise level is pretty high at the best of times there is evidence building up that people are being extremely reluctant to move into that area because of the increased noise there from London Airport and that is if anything a little more comparable than the immediate Hounslow area. However, I do not think you can start to compare the quiet of Bedfordshire. At the moment we have the occasional nine-to-five flying activity from our RAE which is a confounded nuisance but we are prepared to put up with that continuing if it means that the London Airport doesn't come, but if one is suffering these extraordinary experimental planes coming over during nine-to-five in a village and if you have all that happening numerous times an hour it would be quite intolerable.

5674 I think at the meeting to which you referred you explained to us that the reason why people were prepared to pay high prices for houses right on top of Heathrow Airport was not because you get used to the noise but because there was a chronic shortage of housing. Do you think that is true? — I think in the Greater London area—that is why I say I don't think the two are comparable—I think there are a lot of occupiers of property in the Heathrow area who for a start are not there at all during the day, a husband and wife team away to work, it is only used as a dormitory, but I am afraid we in North Bedfordshire do not use our homes as dormitories.

5675 The question was do you think the reason why in fact people were prepared to live right on top of the airport was due to shortage of housing or not? — It is the general opinion that there is a shortage of housing in the Greater Metropolitan area.

5676 Am I not right in thinking—although I confess at the meeting like everyone else we didn't have the information and had to rely upon your impartial representation of the facts—am I not right in thinking that in the Wilson Report, paragraph 256, it states that shortage of housing is not the reason why people live right on top of an airport? — You are right in thinking it is the opinion of one man who wrote a report, but I am not convinced that all the results of that report are necessarily correct.

Inspector Mr. Curran, it is another subject upon which you are not going to convert this witness and he is not going to convert you. May I tell you that the Commission has been well aware for over a year of all these very difficult problems affecting property values. We have this aspect very much on board, so your questions from now on will certainly not help the Commission, they may be educating yourself, I don't know.

5677 *Mr. Curran* If I can educate myself and also other people in a more relevant and important way, you told us in your statement that in fact there is a large amount of factories who want to come into St. Neots and Huntingdon and that industrial development certificates have been refused. Could you tell us how many industrial development certificates have been refused? — I gather from regional offices of the Board of Trade the position with industrial development applications are that they try to avoid them reaching the refusal stage but that when an application is made which they think is more suited to a development area or another area of the country they do their best to persuade them first of all not to apply. The whole Board of Trade policy is to encourage the movement of industry and office

* Smith, P. S., *Study of the economic and social effects of major airports, with special reference to Heathrow Airport.* Unpublished M.Phil. thesis, University of London, 1968.

† Cmnd. 2056 (HMSO; 19s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

development away from this area and I think this may be slightly wrong in the case of Huntingdon which is a marginal problem. The way to solve that is to allocate on your town map a slightly larger industrial area and persuade the Board of Trade to issue some industrial development certificates.

5678 Do you think that if we didn't get the airport in this area we would have a problem in meeting the enormous increase of population? — Well, I think this is all a very big myth, this sort of vast pool of unemployment. There may be a problem in sort of 18 to 20 years' time, but I very much doubt whether the birth rate in Huntingdon is higher than any other part of the country and in this context there is the growth of Peterborough, there is also the possibility of attracting to Huntingdon additional industry. Somebody has got to take the pressure off Cambridge City, that is a vital necessity, and I would have thought that the Huntingdonshire authorities, if there is a problem, would be well advised to try and persuade a slight increase in industrial development and also to offer to take the pressure off Cambridge. You have all your Government Departments stuck down Brooklands Avenue in those ghastly huts and they would be as well off in Huntingdon as in Cambridge. There are all sorts of planning solutions to this problem which we will not go into here, it is hardly the realm of the Roskill Commission, but what I would say is that you are exaggerating the potential unemployment situation which can be taken adequate care of by the careful long term and immediate term planning of the towns of Huntingdon and St. Neots.

Mr. Curran May I thank you very much and state that in questioning you I was questioning not your own integrity which I know to be very considerable but the integrity of BARA's campaign.

Inspector Are there any questions to Mr. Beazley? I have no questions....

Mr. Beazley May I add one thing to my proof? The point has been made about transport generally, and its relevance or otherwise to the situation. I would like to assure the Commission that I have not made this comment in any way frivolously. I have made quite a lot of study of past history of turnpikes, canals, roads, railways—I am quite sure that when the Great Western Railway was built and run, it was not thought that Henry Ford and William Morris would ever exist, and I do feel very sincerely that there is no perfect transport policy. When we go on holiday by aircraft now, I am sure many of us would prefer to take our motorcars through the Channel Tunnel, or by some other transit system; and I hope the Commission will consider this thing rationally from the point of view of all forms of transport, otherwise I can quite see that the airport will follow quite the same sequence of events that have come to other forms of public transport. In saying this, I really realise that all the statistics are made by people who are engaged in the air transport industry, but transport through the ages does seem to have attracted a great deal of enthusiasm for the mode of transport at the expense of commercial considerations. I believe that Dr. Beeching, when he was still a doctor, said that one of the troubles he found with the railways was that so many people had become enthusiastic with Hornby trains that they had a marvellous time running trains to Pontefract, but didn't notice that they weren't carrying any passengers. I hope the historical aspects will be noted.

Inspector We shall note both the historical aspect—and the others.

(The witness withdrew)

Mr. Forbes My last witness is Mr. Gale, the Planning Consultant—his letter is X.

MR. L. C. GALE* *called*

Examined by Mr. Forbes

5679 Mr. Leonard Charles Gale, you are a Fellow of the Royal Institution of Chartered Surveyors, a Member of the Town Planning Institute, a Chartered Town Planner, and you have practised in town and country planning for 35 years. — I have.

5680 Since 1947, you have been a partner in the firm of W. R. Davidge and Partners, planning consultants. — Yes.

5681 And—although it is not mentioned in your evidence—among other things I think your firm is now, or has been, an Area Planning Officer? — It is no longer. It was for about 17 years, and then, as so often happens, an Act of Parliament takes away our living.

5682 But your firm acted as Area Planning Officer for one of the Surrey areas? — Well—our firm has been for three areas, Area County Officer within Surrey.

5683 So, quite apart from the giving of evidence, as it were, your firm has very considerable experience in the practical problems of actually acting as Planning Officer? — That is so.

5684 Your proof contains two maps and two graphs, each of them duplicated because of the necessity of looking at A and B together. I think there is only one matter which I would like you to add to your evidence, and that is during the course of this Inquiry the suggestion at any rate was made that the Commission is looking at a proposal to put the whole of the population required to serve this airport in one big town, rather than in three, as suggested by Mr. Cowley. — Yes.

5685 As this arose after you had written your proof, would you like to tell the Inspector what is your view, as a Planning Consultant, about that? — Well, I have given it a little—and I mean a little, not a lot!—of thought, but I do feel that to concentrate a population of something like, something over 300,000 in one area should not be undertaken lightly. It would have a land area of about 40 square miles, and that is approximately a circle seven miles in

* See also p. 2069.

Printed image digitised by the University of Southampton Library Digitisation Unit

diameter. I believe the position was suggested in the Raunds area—and I cannot think of any area where it would be apart from that—I rather expect it would be north of the national motorway—if you look at that position, together with the adjoining nearby towns of Wellingborough, Higham Ferrers and Rushden, and slightly to the north, Kettering, and slightly to the south-west Northampton, you then get what will be almost completely developed area some 25 miles in extent; and in fact you would be then creating a new conurbation. "Conurbation" is a word that was first thought of, I believe, during the War, and the word coined was really one of criticism, not of admiration. In planning circles that form of development is one to be avoided at all costs, not to be encouraged. In my evidence, in paragraph 30, I did voice my doubts of the wisdom of these large areas of forced growth in towns, in as much as the natural way for a town—just like a human being — is to grow gradually, and I have pointed to my opinion as to what results from such forced growth in towns, and if one thinks of a population of a town which I think would be half again as large as Southampton, all built within, say, 10 to 20 years, to me the expectation of that would be horrifying. I feel it would be a most monotonous and soul destroying city, the most monotonous and soul destroying in the country; and perhaps in Europe. I do see it having one advantage, and that is that it would remove the blue spot near Bedford; I feel that absorption of that population into Bedford would be very difficult. But apart from that, I can say that I am dead against it, for the reasons I have stated.

5686 *Inspector* Any questions to Mr. Gale, from the First Tier or other local authorities? Any other questions? Mr. Gale, I just want to ask you on one point; it concerns your paragraph 7, in which you raise Mr. Peter Masefield's ideal airport of 15,000 acres—are you aware of the evidence given by Mr. Masefield at the Stage I Inquiry?* — No, sir.

5687 You were not aware that he selected six sites, three of considerably less size than 15,000 acres. — Yes. All that I can feel, sir, is that none of those sort of sites would be ideal sites.

I have no other questions; thank you.

(The witness withdrew)

Mr. Forbes That, sir, is the evidence on behalf of BARA—there was some doubt at some stage of the morning about the . . .

Inspector I have a later message—they are expected shortly after three o'clock, and would then like to assume their place on the timetable.

Mr. Forbes They will be represented by a Solicitor from Bedford. They are supporters of BARA, and they are now appearing on their own, and they should be crossed out on my list of representations. The only other thing I would like to say, sir—or two other things, if I may!—one is that I of course adopt and support the evidence put forward by other organisations who are supporters, and by the County Councils and other local authorities. We have not of course dealt with those matters because we have left the local authorities to deal with them, but we do support those; and I would not like to sit down without thanking you, sir, on behalf of BARA.

Inspector Thank you, Mr. Forbes; and "thank you" to BARA for all their work—forced upon them. The County of Buckinghamshire Association of Parish Councils?

MR. A. JAMES* *called*

(County of Buckinghamshire Association of Parish Councils)

Mr. James If it please you, sir. I had the pleasure of appearing before you at the Cublington/Wing Inquiry; the reason why the Buckinghamshire Association of Parish Councils are interested in this Inquiry is for reasons similar to those given you at the Cublington/Wing Inquiry, and the fact that a number of our Parish Councils come within your NNI contours.

If you look at the southern part of your flight path, which is roughly 40 miles in length, you will see the village of Lavendon, and further down the village of Stoke Goldington; a number of these villages come within the Buckinghamshire Parish Councils' Association, and their interest lies within that sector of North Bucks which is within, and neighbouring to, your flight paths and NNI contours. Last time I did not introduce myself, sir—my name is Allan James, I am a Solicitor of High Wycombe; I represent 131 Parish Councils in Buckinghamshire. I speak not only from there, but also for the fact that I am Honorary Consultant to the employers' side of the British Furniture Industry in the South of England, for which I was Secretary for 21 years. I also speak from planning knowledge, in that I was instrumental in setting up a Joint Planning Committee for Wycombe. From the 30's, I have taken over all the various Departments, so I not only have a knowledge of the Association but I have very close personal knowledge on the spread of urbanisation which has resulted in the growth of commerce and industry, running from Piccadilly Circus to Aylesbury.

We in Buckinghamshire are very concerned that a project of a Thurleigh airport will continue the chain of urbanisation which has only stopped short within recent time at Aylesbury. We have watched, sir, in the last forty years, the Western Avenue and Great West Railroad resulting in a combination of industry, commerce, close intensity buildings, running all the way from Piccadilly Circus to Aylesbury. In the First World War, Slough started to expand. Between the Wars, it became an industrial area and there is now an acute labour shortage, as you have seen from the evidence. Wycombe suffered the same

* *Papers and Proceedings* Vol. I. "Stage I: Public Hearings Part I Written and Oral evidence." (HMSO; £4 10s.).

* p. 2094.

Printed image digitised by the University of Southampton Library Digitisation Unit

fate; in the First War, and in the Second War we became an industrial dispersal centre. We now face about 460-odd factories, and an acute labour shortage. Aylesbury had the pressure from Slough and Wycombe, is now no longer an agricultural town but has attracted industry, and it is suffering from the labour shortage.

If you drive your motorcar from Piccadilly Circus to Shepherd's Bush, down the Western Avenue to High Wycombe, Slough and Aylesbury, you will see nothing but close density dwellings, factories, urbanisation, and the spread of industries. Heathrow London Airport is at present making so much noise in this area that the audience in the new Law Courts at Slough find it almost impossible, and is insisting on insulation and an alteration of arrangements to make the carrying on of the pressure of work possible even in Slough. So you can understand the feelings of the people of Bucks who face not only the Cublington/Wing, but also the Thurleigh airport proposals.

Professor Abercrombie conceived the Green Belt scheme, and the planning authorities were so concerned that the spread of urbanisation from London to Aylesbury in the old days, from London to Slough, that they called a halt at North Bucks, and North Bucks has been regarded by the planning policy as not only a horticultural and agricultural and rural policy there, but also as a recreation area for the built-up area from Piccadilly Circus to Aylesbury. When you have a vast amount of industry and commerce, you must have a point of relaxation which is reasonably within reach of their homes for the workers; and this is the only point that we have left, and it is going to be interfered with by the Thurleigh Airport and the urbanisation which is bound to accompany its noise and its disturbance. We support fully the views of the Bedfordshire County Council. We support fully the views of all the District Councils that have given evidence through the Residents' Association, because we have passed through what they may well experience if your Thurleigh Airport comes to Bucks. When you are facing a land takeover of 75,000 acres, and the primary industrial population of 55,000 that you are going to have in the depths of Bucks, and on the north of Bucks, a conurbation of industrial and residential area which will change the whole character of the scene—in our view it will ruin the recreational facilities of North Bucks. It will grossly interfere with agricultural, horticultural and rural facilities. It will ruin the amenities of homes which have stood in peace, tranquillity, and beautiful countryside for many generations. It will imbalance the whole of the planning policy of Bucks, in which planning policy has been balanced between industry, agriculture, horticulture and rural policies. If this airport comes to Thurleigh, the northern sector of Bucks, which is the larder and the recreational centre for the rest of the county, will in future be a ruin, and when you are dealing with a nation which must survive by its industry and pursue its economy through the pursuit of industries, you must give the workers a recreational centre—you must give them a larder for their products—and this airport, in our view, is taking it away.

What is bound to happen, if this airport comes, in our view, is that the degree of industry and commerce which will be attracted—the degree of closeness in dwelling—the vast network of communications which will spread from London to North Bucks—you will have a continuity of urbanisation that is running from Piccadilly Circus to Bedfordshire, interspersed with Milton Keynes.

Milton Keynes was accepted by the planning authorities as a long-term, self-contained plan to house London population and London industry, both short term and for the future. The Thurleigh airport project—this is likely to throw into the discard the Milton Keynes project. It makes complete nonsense of it, because you have not got the labour, you have not got the personnel, and you have not got the services to deal with both. The Government gave us solemn assurances in Bucks that the imbalance of Bucks planning would not be disturbed by the implementation of Milton Keynes. It seems to us that it is a complete contradiction in terms that a third London airport, and the Thurleigh Airport, should ever have been proceeded with while Milton Keynes was being raised off the ground. Milton Keynes is experiencing the same fears that we have in Bucks. They realise that as the airport comes to Thurleigh, their hopes of getting Milton Keynes off to a reasonable start is a hopeless proposition.

Air transport is a supplementary transport to our traditional seaports and transport of the sea, to our goods and services throughout the years that have come to us by sea and through the sea ways. Air transport is merely a type of transport that this country is hoping to deal with, and the amount of movement by air is much less than the amount of movement by sea. We in Bucks are of the opinion that air transport should be sited at a coastal site, where it will not interfere with the homes and towns and businesses of people, which this project seeks to do; and we made no objection to it!

SQUADRON LEADER BERTIE LOCK *called*

Examined by Mr. James

5688 Is your name Squadron Leader Bertie Lock? — Yes.

5689 Do you reside at Stanway, Water End, Stokenchurch, Buckinghamshire? — Yes, I do.

5690 Are you the Chairman of the County of Buckingham Association of Parish Councils? — I am.

5691 Do you today represent 131 of those councils? — I do.

5692 And is this objection a supplemental objection to the one you made at Cublington/Wing? — Yes.

5693 Is your objection based on the evidence you have given the Commission and on the further information I have given to the Commission today? — Yes, it is.

Printed image digitised by the University of Southampton Library Digitisation Unit

5694 Does your Association fully support the Bedfordshire County Council, the District Councils and other personnel in their objections? — Yes.

Inspector Are there any questions from anybody to Squadron Leader Lock? I am sorry, Squadron Leader, your journey to the rostrum was slightly in vain, but thank you very much for your evidence.

(The witness withdrew)

Inspector Newport Pagnell and District Association of Parish Councils? This body was allocated a position in the timetable, but we have not heard from them, so I must assume they will rely upon their written representations. I am sorry, they can't even rely on those; they have not even put in any representations.

MR. I. FORBES* *called*

(Northamptonshire Association of Parish Councils)

Mr. T. Forbes My instructing solicitors are Peak Phipps and Company, Northampton, and I appear on behalf of the Northamptonshire Association of Parish Councils. I shall be calling one witness who is Mr. Derrick William Dunn, the Secretary of that Association. The great difficulty I feel I am placed in is this: you have heard representations in three separate inquiries about the proposed airport, and, of course, I am reasonably well down in the batting order of this particular inquiry and I have been preceded, very rightly so, by other more eminent members of my profession with a great deal of very good ammunition at their disposal, which they have used, if I can say so, with very great effect, and, of course, it is very close to the forefront of my mind, it has been very close to the forefront of those instructing me and the lay clients that needless repetition of course must be avoided along the lines indicated by you in your *Site Information* for Stage II.† So, of course, not only does that hold good in my evidence but, of course, it also holds good with what I say to you, and perhaps if I can at this stage say that we as an association associate ourselves completely and identify ourselves completely with everything that has been said against the proposed siting of the new London airport at Thurleigh, everything that has been said against it by County Councils, Rural District Councils, and, of course, BARA itself. May I also say at this stage that those instructing me and my lay clients, Mr. Dunn in particular, have liaised very closely with BARA and their legal advisers and their research committee, and we have endeavoured to put forward a point of view which is not a repetition at all of what they have to say although, of course, we endorse and support everything which has been put forward by them so ably today.

Of course, those I represent at the Association of Parish Councils of Northamptonshire, and, of course, that means that I am not speaking specifically for every parishioner in Northamptonshire, whether he lives in his own house or in a council house. I am putting forward the view that has been arrived at by the association itself. We will not endeavour to say that we have come to grips with everybody in Northamptonshire. We have taken the view that we should only approach really those parishes which appear to be most directly affected by bringing a new airport to Thurleigh, and that out of some 163 odd parishes in Northamptonshire the number which were taken to be affected is in the region of 63, and we have not in fact at any stage conducted or purported to conduct any man-to-man canvassing, but you will hear Mr. Dunn in due course say that he has gone very much into this matter both with the parish councils he deems to be affected, and of his own general knowledge of the people in the area, and that he can't say categorically that this is the universal voice of Northampton, as it is affected by Thurleigh. He can say this, that he has not been approached by anybody who objects to the course being taken by the Northamptonshire Association of Parish Councils, nor has he been approached by anybody who wishes to support the idea of the bringing of the airport to Thurleigh; though I can assure you had anybody done so there would have been no danger of lynching or any such violent treatment.

What the association are seeking to say is summed up by Mr. Dunn's opening remarks which I don't need to draw your attention to, that is we are seeking to put forward in this particular context an argument based on the amenity and environment as far as it affects Northampton, and although we are an Association of Parish Councils, we are very closely linked with the parish councils themselves, and that has been very ably and forcefully put forward this morning. They do very much represent the grass roots of the countryside round here, and indeed, any part of the Kingdom. They are the lowliest of bodies elected by the democratic process, as we understand in this country, and they are increasingly important. They are ancient and their importance has been, of course, highlighted by the recent Maud report on Local Government.* Therefore, although my association has but a small voice, we are most anxious that the weight we feel it is entitled to should be given to it, and we want to put forward to you, sir, some degree of the sense of urgency we feel in this matter, and the desire that we feel that what we say should be of some moment and some importance. As far as the Association's authority in the matter is concerned, that is to say what right they have to put this forward as being in any way representative of any form or class of view in Northamptonshire, I would draw your attention to the evidence of Mr. Dunn which appears under paragraph 3. We would have endeavoured to point out to the Commission, to yourself, sir, the fact that this association has been aware of the dangers of a new London airport to the county of Northamptonshire since it was first envisaged or suggested it might be going to Silverstone, and from that time onwards we have endeavoured to be and have been actively in the

* See also p. 2096.
† Reproduced at p. 1801.

* Cmnd. 4040 (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

field, testing opinion and arriving at conclusions, and when it became more definitive and we knew it was proposed to come to Thurleigh as one of the short listed sites, then more positive action was taken in the form of actual meetings arranged at what we considered to be the key parishes in Northamptonshire in the affected area. In fact four such meetings were held and you will find those meetings referred to in Mr. Dunn's evidence. In the course of those meetings some very lively discussions were had but particularly, as I am instructed, at Thrapston, where there was at the commencement of the meeting, as I understand it, a certain amount of desire voiced for the general idea of an airport in the area; I am also instructed that vociferousness was considerably reduced by the time the meeting had come to an end. My association has come into contact with both opinions for and against. The upshot of the efforts taken so far is quite simply this, that we are utterly opposed to the concept of a new London airport anywhere where it affects this particular part of the country.

The main argument here, as far as we are concerned, is the question of environment. I have read, and no doubt it is a publication which you have had your attention drawn to in the past, or you may have picked it up for yourself. It has not been referred to in evidence. It is a book called *Man and His Environment* published by the Penguin books under the Pelican trade mark, by a man who writes under the name of Robert Arvill. I don't propose to go into it in any way at all by reading passages to you because I feel that is a very fruitless pastime in this sort of enquiry. I would like to rely upon it for this : in a publication, this publication, attention is being drawn by a very able writer to the urgency, almost the moment of crisis that we have reached not only in this country, but in all parts of the world when considering the life that we are making for ourselves today, and the life we are going to provide for those who come after us in the future in creating the environment in which we live. It is a truism and obvious indeed that environment is important to anybody, whether it be environment in a very small and personal level, as in a family or whether it is a much larger scale like the area in which you live, and the point that is made in the book, and I would rely upon this is, after analysing all the desirable features which create one's environment, whether it is land, woodland, downland, water, sea, coastlines, buildings, places of historical interest, after analysing all these various types of environment factors, after having gone over and examined the way in which they are threatened, the writer of the book, and I support this, draws to the attention of the reader most strongly the tremendous importance of making sure that what we do nowadays in creating that environment is given the most careful consideration, because at no time in the history of mankind has man ever had it within his power to do so much to create his own environment for good or ill. Until the tremendous technological advances of the 20th century, man's potential as the greatest predator of all times has always been really potential. Now, with technological advances of this century and even the last three or four decades, that potential has reached actuality, and we are now creating an environment on a scale hitherto undreamed of, but with the best will in the world the experts and planners are faced with many tremendous decisions to make on planning one's environment, which are not really based on experience that has been developed over a long period. We have had enough experience of mistakes in planning of development in the past, one would have thought, to guide us in some way, but not of the scale and magnitude that things like Thurleigh airport mean to people living in the area, and what emerges from this is it is imperative, and it goes further than the ideas of the planners and experts, it is imperative that every major intrusion into one's environment is a desirable one, given the most careful scrutiny, and if there is anything which makes one feel uneasy about it, then really it should be rejected unless the arguments against keeping the undesirable nature of it are so powerful as to overwhelm the desirability of dispensing with it. This is, of course, all well and good assuming that the environment we see as threatened in Northamptonshire is one which is worth keeping, one that is desirable.

A fair amount was said this morning about the peace of the countryside, and the beauties of the country, and I don't intend to repeat it here, admittedly I suppose I can go over it again on the basis it was in regard to Bedfordshire these things were said but they apply to Northamptonshire, the beauties of the country and country life, they were described, and they don't stop on the borders of Bedfordshire and Northamptonshire. Of course, everything that was said applies to Northamptonshire itself. It is a county of beauty with rolling countryside, beautiful villages, places of interest, and one is reminded of the lines written by John Drinkwater in a somewhat unfashionable type of poem about the Midlands, indeed it was the only poem I can find written about the Midlands for some reason, but he did say that this part of the country was one of barns and comely manors, meaning buildings, planned by man but somehow moved in comely thought. I won't go on with the rest of the stanza because it does get a little bit hard to bear, but I think he captured something when he said that.

I had the great fortune to be flown over the area in a light aircraft, a most exhilarating and enjoyable experience, and there is no doubt as you fly over Northamptonshire and Bedfordshire, it is a countryside where the barns and manors are built with comely thoughts. It is a very good way of describing it, the beauty of it, particularly from the air, is breathtaking, and there is no other way of describing it. I have not flown over Cornwall so I have no need to compare it with other worthy places of national beauty, but I do think that what Mr. Dunn has said in his evidence, that this tends to be the forgotten county, and I suggest that applies to Bedfordshire as well as far as beauty is concerned. I was not aware till I was flown over just how beautiful it is. But it is not just the natural beauty of it and

Printed image digitised by the University of Southampton Library Digitisation Unit

desirability of keeping it beautiful so that we get recreation and pleasure from it, but it is also the submission of this Association the kind of life and the kind of community that exists within the framework of this countryside that it is also imperative should be preserved.

In the publication which Mr. Dunn will draw attention to in his evidence is *Design in Town and Village* published by HMSO. It is admittedly a 1953 publication and it is the work of Thomas Sharp. I will not bother to read his qualifications but there are passages in it which you are referring to by Mr. Dunn, one in particular at the very beginning is one which I will stress to you, sir, because it puts in a nutshell what this Association is trying to say: "They are, of course, of vital importance"—that is to say the villagers—"Nothing else about the village matters in anything like the same degree. The villagers, and their lives and their relationships, are immeasurably more important than the village as a mere physical thing".

Sir, what the Association are saying is this: we are not ascribing to preserve a whole series of picturesque pretty villages with beautiful buildings in beautiful countryside, we are trying to preserve a very important community life that goes on within those villages. It is immeasureably important. It has been emphasised this morning how it cannot be measured in terms of money and indeed, sir, those remarks addressed to you by my learned friend Mr. Forbes with regard to putting into financial terms the loss sustained by people who are either forced to move or feel they must move because they need the peace and quiet, putting that loss into financial terms is impossible. Everything he said about that aspect of it and the disquiet that he felt in pointing out the fact that it seemed to be at the forefront of the Commission's mind the reliance upon financial compensation, everything that was said there I endorse not only on behalf of my Association but personally as well, particularly in the very good analogy drawn with compensation in personal injuries case. It is to preserve this community life that this Association is very concerned.

Sir, the work that we have gone into in investigating the community life of Northamptonshire has provided us with some ammunition which is in the Appendix to Mr. Dunn's proof of evidence.* Firstly, in Appendix A, the Association sent out questionnaires to some 63 parishes, those we considered to be most affected, and we covered a wide range of questions. I will not read them. What they are intended to do was to give a picture of the community as a whole with particular reference to the type of people in it, who had come into it as fresh blood, as it were. Of the original returns actually 43 of those I don't believe are actually here, but they have been tabulated in the second appendix to Mr. Dunn's evidence and you will see in that appendix a breakdown of the various communities and the part that we are particularly interested in I shall draw your attention to perhaps a little bit later.

The point that we are making is that we say there is a desirable—indeed irreplaceable—environment to be found in Northamptonshire and it is threatened, and what we wish to stress is a point that Arvill stresses in the publication I have referred you to, sir, that those resources of natural desirable environment in this country perhaps more than anywhere else in the world are finite. There will come a time when we are going to run out of land and places of beauty, unless care is taken now we have not got so much that we can afford to squander it.

Sir, I think perhaps something that is not as far to the forefront in planning on this sort of scale as one perhaps would want is the acceptable and awareness of the finite nature of the beauties of England and Wales. The Association has faced up to and realised that the 20th century march is on, so for many villages in Northamptonshire which they represent they have faced the inevitability of planned expansion of the big towns in their vicinity, those of course of Northampton and Wellingborough. As you will see from Mr. Dunn's evidence they have accepted the fact that these urban areas are expanding and are planned to expand to take overspill population and they realise that they have to meet that challenge to the community life, the village life, that they seek to preserve. In the view of Mr. Dunn as you will see from his evidence, sir, that challenge is going to stretch the capability of the parishes and villages to the point where they could not sustain a further challenge from a vast undertaking like Thurleigh Airport. There is no sentimentality involved in this—of course there is some emotion, there is bound to be particularly when one's way of life is threatened to the point of extinction—but so far as they have been able the Association have put this point of view forward or are trying to put this point of view forward without any emotion, without any exaggeration at all. There is no overgeneralisation of the types of villages concerned. You will see from Mr. Dunn's evidence that he recognises differing types of villages ranging from the tiny little ones that hardly are anything more than a cluster of houses to the much bigger type almost approaching a type of town, but he does see a pattern which emerges as a whole in Northamptonshire and I would emphasise the pattern that he draws your attention to in his evidence at paragraph 5.3 that there are beautiful villages in the county and that they give housing to a very wide type of inhabitant, they are not confined to people from the upper echelons of life as there has been some talk about, the type of thing going on today, and Mr. Dunn has pointed out in his evidence that there is a wide range of types of housing. His evidence and the evidence that we have tabulated shows that these communities are possessed of a vitality which means that they are developing for the future in their own way and they are continuing and improving, that there is an increase of population in them and this is encouraged of course by the easier facilities for travel of the present day and that in consequence Mr. Dunn has sought to point out that there has developed in the villages a new type of countryman, a man who lives in the village and

* p. 2096.

Printed image digitised by the University of Southampton Library Digitisation Unit

takes part in village community life because he finds that is a very satisfying and pleasing thing to do; in other words, sir, there is the genesis of a very desirable form of environment which is going to accommodate a very large number of people for the future.

Sir, therefore in our submission we say that Northamptonshire and the villages and if you like small towns of Northamptonshire are already meeting the requirement that was emphasised in the publication I have referred to earlier: *Man and his Environment,* actually meeting this requirement of creating the environment we desire. It is in the process of being created, it is actually developing now, and we hope it will go on into the future. Sir, what gravely disturbs us is that if London Airport No. 3 comes to Thurleigh this embryo will be aborted and something substituted in its place, something engendered which is by comparison highly undesirable. I do not want to go into the reasons as to why we say it means the end of the development of village and small town life in Northamptonshire, that has already been ably argued, evidence called dealing with such matters as noise and associated urban development, it needs no further comment from me, except I would ask you to accept that it seems inevitable that this part of Northamptonshire will disappear as it is now known and understood.

Mr. Dunn indeed describes if the Thurleigh Airport came to Northamptonshire the probable consequences of the crash national programme which he describes very well in his conclusions, and I would draw your attention to those conclusions because he does say that he foresees a breakdown of village life, values and traditions, quite apart from all considerations of noise, loss of land or effect upon health. There is nothing selfish or shortsighted about this, it is the desire of an Association representing people living in that part of Northamptonshire to protect the future, sir.

It sounds as if I am vastly well read, but I have discovered a passage in a book, the *Collection of Essays of Montaigne.* You remember he was a philosopher at a time when they were not affected by the problems of London airports at all, and he sums up really in his essay "All our affections being carried beyond ourselves", and he sums up very aptly in many ways the feeling that people that I represent have about their responsibilities in this matter to the generations of the future as well as to the present, and he says: "We are never with ourselves, we are always somewhere beyond. Fear, desire and hope push us on toward the future and take from us in the meantime the sense and consideration of what is troubling us with thought of what shall be, even when we shall be no more." This really is the message and the point that we are trying to make. There is something of immeasureable value here which is being threatened. We are not only going to deprive ourselves of it, we are going to deprive our children of it and our children's children.

My friend ended up with a literary quotation, from which source I don't know whence he derived it. I cannot match that literary research with anything of my own, but I would say this, sir, that if the result of the determined opposition of ourselves and of all the other much more powerful bodies does in the end result in the shadow of a new London airport being removed from this area then we will have satisfied the proposition that was very well put and crystallised by Spinoza in his 19th proposition when he said: "He will be sad who imagines that which he loves to be destroyed. If he imagines it to be preserved he is rejoiced".

Sir, without any more from me I call Mr. Dunn.

MR. DERRICK WILLIAM DUNN* *called*

Examined by Mr. Forbes

5695 Is your full name Derrick William Dunn? — It is.

5696 I believe you are a Fellow the Royal Geographical Society? — I am.

5697 And you hold the post of Secretary of the Northamptonshire Association of Parish Councils? — I do.

5698 Have you been in that position for the last three years? — I have.

5699 And before that were you the Assistant Secretary for the Association? — I was.

5700 And you held that post for three years immediately preceding? — Indeed that is so.

5701 Have you also during the same period been the General Secretary of the Northamptonshire Rural Community Council? — Yes.

5702 Honorary Secretary of the Northamptonshire Playing Fields Association? — Yes.

5703 First of all, Mr. Dunn, I see that you say there are 163 parish councils and parish meetings within your Association? — That is so.

5704 How many parishes would you say that this Association is really speaking for in this particular inquiry? — Well, strangely enough, it is speaking for all members of the Association because in Northamptonshire there are 252 parish councils and parish meetings, there are rather a large number of parish meetings. Our membership comprises nearly every parish council and support for our case has come from parish councils as far afield as Cogenhoe, Aynho, from Weston by Welland which is on the borders of Leicestershire, and from Wicken and so on and so forth.

5705 And how many actual parishes would you say are in your opinion affected by the Thurleigh Airport proposals? — No—this is an approximate figure, because there are so many imponderables about lines of roads and general industrial development associated with the airport that we must give an approximate figure; and I would say probably between 50 and 60 could well be expected to be vitally affected by the Thurleigh proposal.

* See also p. 2096.

Printed image digitised by the University of Southampton Library Digitisation Unit

5706 And was it those 60-odd that you in fact sent questionnaires to? — Yes, it was.

5707 And I have already indicated to the Inspector the numbers that were returned. Have you in fact had any votes or petitions or anything like that organised by your Association? — No—this is not our method of conducting business. If I could just explain here the democratic method by which we do our business—without any impertinence to the body which includes "democratic" in their heading—we have an Executive Committee, which is fought annually. There are twelve members of this committee; they are empowered to act on behalf of the Association in making any policy decisions. It was their decision that we should object to Thurleigh, but, far from leaving it at that, we then held a special meeting at which our Parish Councils from a wide area were invited to come and hear the reasons why we had decided to go into the fight.

5708 How many Parish Councils did come? — Approximately 40.

5709 And were those 40 parishes from the area less affected? — I would say 30 of them, and 10 were good supporters of the Association who had come from far afield—particularly those from the Silverstone area, who were grateful for the action taken by my Association when it would have appeared that Silverstone might have been involved in this hearing.

5710 And did you in fact get an actual direction from these Parish Councils, as a result of that? — Our method was that our Executive put to them the line of action which we had decided to take, and they gave their approval.

5711 And yourself, as a person—have you been in contact with people in the area? — Yes, indeed.

And have you had—I have indicated to the Inspector that you personally have received no notice from anyone that they definitely want an airport—is that right? — Not quite. I have received no advice from any Parish Council or Parish Meeting, but not from anybody. Indeed, at the meeting, there were some few members of the public that initially thought that an airport in that area might be a good thing for them.

5712 One matter I want to add upon your proof of evidence, and that is the question of the special meetings that were held—public meetings, in connection with the Thurleigh Airport proposals, by your Association. These were referred to in paragraph 13.3(b) of your proof of evidence. "Special Thurleigh meetings", they were called. How many of these meetings were there? — There were four.

5713 And could you give the Inspector the dates and places of those meetings? — Yes, certainly. The first was held at Strixton on 16th July, the second was held at Courteenhall on 17th July, the third was held at Broughton on 3rd August, and the fourth was held at Roade on 7th August.

5714 Thank you. Is there anything else that you want to add to your proof of evidence, Mr. Dunn? — It may be of interest to mention why these particular places were selected for the meetings. Geographically they were villages which it was easy for villagers around about to come to, where there was a good central meeting place; and that was why they were selected.

Inspector Are there any questions from the First Tier or other local authorities to Mr. Dunn? Any other questions to Mr. Dunn? Mr. Dunn, there are no questions; I have no questions; but I do thank you for your very careful proof of evidence.

(The witness withdrew)

Inspector The Biddenham Society?*

A voice from the hall Mr. Codrington is lost, sir!

Inspector Well, we shall leave him for the time being. The British Legion, Keysoe Branch?

Mrs. Riches I am Mrs. Marjorie Riches . . .

Inspector I think perhaps, if you would not mind coming to the platform—it is so much more helpful for the shorthand writers.

(British Legion, Keysoe Branch†)

Mrs. Riches I am Mrs. Marjorie Riches, and I have been deputed to speak for the Keysoe Branch of the British Legion. I have nothing extra to add to our proof of evidence, except to say that we felt that we had to make an effort as our homes and gardens and, in many places, our livelihoods, would be buried under the runways if either of these sites at Thurleigh were chosen.

Inspector Thank you.

Mrs. Riches I would like to call Mr. Barnard, to support our proof.

Inspector Yes. First of all, are there any questions to Mrs. Riches concerning her proof, for the Bedfordshire Branch of the British Legion at Keysoe? No questions? Thank you, Mrs. Riches.

MR. E. C. BARNARD‡ *called*

Mr. Barnard I am, sir, Edmund Courtier Barnard; I am a Fellow of the Royal Institution of Chartered Surveyors and a Fellow of the Chartered Auctioneers and Estate Agents Institute. I am a partner in the firm of Messrs. Allott & Barnard, Chartered Surveyors, of 54 Harpur Street, Bedford, and have been in practice in the Bedford area for the past 11 years. You have my proof of evidence, sir, and I am very happy to deal with any questions that you may like to ask. But there is just one point I would like to make, in amplification of my evidence, and that is that I would like to endorse the point made earlier today about the necessity for the compensation provisions of the Land Compensation Act 1961 being amended. I think it is absolutely vitally

* Evidence available for inspection, by arrangement, at the offices of the Commission.

† See also p. 2102.

‡ See also p. 2103.

Printed image digitised by the University of Southampton Library Digitisation Unit

essential—more particularly in these cases, perhaps, than in many others.

Inspector Are there any questions to Mr. Barnard concerning his valuations made of properties listed as "A", "B" and "C" at Keysoe Row?

Cross-examined by Mr. Forbes

5715 If I might just get one figure straight, Mr. Barnard—I have been instructed that in the Bedford Rural District area, 20 per cent of the total houses and the rateable value was below £30. Does that agree with your information? — I am afraid I have not got that information, sir. I am sorry.

5716 *Inspector* Any other questions?—no. Mr. Barnard, there is one point that interests me, as a former valuer. It was the rather wide discrepancy between the actual value and the rateable values of these properties. — Well, sir, I think the rateable value is a very valid point to bring up, because here again I think, if these particular people are moved, they will be faced with increased rating values wherever they go. The reason for the relatively low rateable values is perhaps that you have indeed already got some effect from the existing airport there, which tends to keep values down a little bit, and also of course you could not get all the services which you normally expect to find in the countryside in the case of the first and third properties in the schedule.

5717 That was not quite the point I was making. In Case "A", you have assigned a property capital value of £2,000 to a property having a rateable value of £15, and then in Case "C" you assign a capital of £1,500 to one having a rateable value of £16. It seems the capital value is very much out of step with the rateable values. — Yes—I do not know why this should be, sir.

Thank you very much. I have actually walked along both Keysoe Row West and the other side, and what Mr. Barnard has just handed to me in confidence—in very strict confidence, of course—are the locations of the properties "A", "B" and "C" in the Schedule.

(The witness withdrew)

MRS. S. MCEWAN* *called*

(Keysoe Parochial Church Council)

Mrs. McEwan I am Sheila McEwan, of Keysoe, and I represent the Parochial Church Council of Keysoe of the United Benefice of Keysoe with Bolnhurst and Little Staughton. I have nothing further to add to my proof.

Inspector Thank you. Are there any questions to Mrs. McEwan, concerning her statement on behalf of the Keysoe Parochial Church Council? No questions; thank you for taking the trouble to appear, Mrs. McEwan. Is the Biddenham Society with us yet?

Voice from the hall No, sir, I am afraid he will be unable to attend . . . (*inaudible*).

Inspector Well, I shall leave the matter open. It looks as though tomorrow we may have a little time to spare—it may be that you can trust me to look at the Biddenham Society representations as written submissions, or whether you wish to appear to support them.

Voice That is very kind of you, sir

Inspector Now, I have a message which indicates that TECDA might prefer to defer their case until tomorrow—can this be explained in any way?

Mr. Curran Yes, sir. It really rests on whether you would give us permission to call witnesses to present another point of view.

Inspector Well Mr. Curran—had this happened a little earlier, and had you not left it right until the last moment, I would certainly have done so. But the whole method of running this very complicated type of hearing, where I have heard maybe ten pounds weight of literature in four days, is that the parties have prior knowledge of what others have to say. Having said that, and subject to what Mr. Forbes might say, I would be inclined to hear very, very short evidence from perhaps one or two other people; but I would not like the Inquiry to be swamped by completely new evidence that could not be examined in time for cross-examination. Mr. Forbes, what have you to say?

Mr. Forbes I do not want to shut out anything at all, sir. All I am anxious to do is that if any other evidence is going to be called, that I should have some notice of it. But I do not even know what the nature of the suggested evidence is, at the moment.

Mr. Curran If I could just explain: it is not substantial evidence. It does not raise any new facts. It does express a point of view which we feel might be of importance in assessing the situation, perhaps.

Inspector How many witnesses did you wish to call?

Mr. Curran We are entirely in your hands!

Inspector My answer is, quite simply—the fewer the better.

Mr. Curran If we are allowed to call just four witnesses . . .

Inspector Is it possible for those witnesses to say what they have to say in a very brief form indeed?

Mr. Curran Certainly.

Inspector And you could do them—when?

Mr. Curran Tonight.

Inspector How about copying—what is the position on copying?—I am told there is some hope . . .

Mr. Curran We may be able to arrange that ourselves.

* See also p. 2106.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector And how long would each proof be?

Mr. Curran About a paragraph.

Inspector Well, Mr. Forbes, I am uneasy about this; but I think it should be assimilable.

Mr. Forbes Yes, sir. With the vagaries of British Rail, one normally gets here about three quarters of an hour before the Inquiry commences; if the documents were available by, say, half past nine, there would be ample time . . .

Inspector Yes. Will you speak yourself for TECDA, Mr. Curran?

Mr. Curran Yes, sir.

Inspector And will you be available for examination?

Mr. Curran Yes.

Inspector Who else do you want to call?

Mr. Curran This has not yet been arranged—it is a matter of choosing the right person.

Inspector Having made this quite unusual concession, I think I may rely on you not to take advantage of it, and to call as few witnesses as possible, and make them as terse as possible. I have already heard a lot on this subject of the Third London Airport at the previous Inquiries. In that case . . .

Mr. Eve Sir, before any final decisions are taken on programming, my interest is that we go on first tomorrow, according to the programme. I appreciate that that is not final—nevertheless, my two witnesses are assuming that they would be coming on first, and one, I know, has to be in York tomorrow afternoon . . .

Inspector That provides an answer! Mr. Forbes, will you be here all day?

Mr. Forbes I was hoping to be able to get back by lunchtime; but I do not see anything incompatible if Mr. Eve for Cambridge were to go first, followed by Mr. Curran's people. I only make the suggestion . . .

Inspector I would be very happy with that arrangement. Is the Bedford Charity in any difficulty in perhaps deferring their hearing for an hour or so tomorrow?

A Representative of the Bedford Charity No, sir—an hour or so would be quite convenient.

Inspector In that case, I think I can give TECDA the chance they ask for. That will mean adjourning now, and tomorrow we will hear the University of Cambridge first, then TECDA, then the rest of the programme, and possibly the Biddenham Society, depending on what their representative decides. Are there any questions?

A Voice from the hall Sir, there is a gentleman here who represents the Parochial Church Council, who has not been called.

Mr. Forbes That is the Keysoe Baptist Chapel, sir.

Inspector I am sorry—yes. May I take it, while Mr. Walters is coming to the rostrum, that the programme which I outlined for tomorrow is acceptable? Excellent.

MR. C. WALTERS* *called*

(Keysoe Baptist Churches)

Mr. Walters I am Charles Walters, of The Garage, Keysoe Row, and Minister of Keysoe Row Baptist Free Church. I have one point I would like to add, and that is that at the last meeting of our Church it was agreed amongst the members that, should we have to move, the whole body of the Church would like to be kept together, so they can enjoy their worship as they enjoy it now. They do not want to be separated in any way, because 90 per cent of the congregation do live along Keysoe Row, East and West. They have lived there and worshipped there all their lives. That is all I have to add.

Inspector Are there any questions to Mr. Walters? I have no questions, Mr. Walters. I am sorry for inadvertently missing you off my list. Have I made any more errors or omissions concerning today's programme? If not—the hearing is adjourned until 10 o'clock tomorrow morning.

(Adjourned until 10.00 a.m. Thursday)

---

* p. 2107.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

THURSDAY 11 SEPTEMBER 1969

THE CORN EXCHANGE, BEDFORD

Before MR. A. J. HUNT

Oral evidence was taken from:

University of Cambridge
(*Mr. D. T. Eve, Professor Sir Martin Ryle and Mr. W. A. Allen*)

Huntingdonshire Constituency Labour Party and the Thurleigh Emergency Committee for Democratic Action
(*Mrs. J. Cruse, Mr. D. Burton, Cllr. G. D. Picton and Mr. J. Curran*)

Harpur Trust
(*Mr. C. H. Lewis, Mr. F. A. Hammond, Mr. R. N. Hutchins, and Mr. Sime*)

Unilever Ltd.
(*Mr. Stroyan, Mr. K. Durham, Mr. J. K. Dealtrey Dow, and Mr. J. McLean Philip*)

Cambridge University Gliding Club
(*Mr. A. Edwards*)

College of Aeronautics Gliding Club
(*Mr. D. W. McQue*)

Cony & Son
(*Mr. A. J. Cony*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Ladies and gentlemen, it is not yet ten o'clock, but perhaps I might explain the somewhat unusual activities. I was approached last evening by a team of the B.B.C. wishing to film material for a possible "24 Hours" programme; as you will see, they have been granted facilities, and what is to happen is that they will film up to and including my opening announcement and thereafter they and we will go about our usual business. I did say that we were going to start at five minutes past ten, but we shall start at the usual time, with the Cambridge University Society. There are, however, one or two announcements before I call upon Cambridge University: firstly, the TECDA evidence has been circulated, and the TECDA case will be inserted after Cambridge University and before the Bedford Charity; the remainder of the programme is as shown in the published time-table. There is just one other point of audibility—apparently the microphones towards the rear of the hall are not reaching, or did not reach yesterday, the gallery; so if the parties that have to speak could move forwards as far as possible, towards the front microphone, this will help both the gallery and the shorthand writers. I shall now call upon Cambridge University.

MR. D. T. EVE* *called*

(University of Cambridge)

Mr. Eve Sir, I appear as Counsel on behalf of the University of Cambridge and the Cambridge Colleges Committee, which I may refer to collectively as the University of Cambridge without disrespect to the Colleges; and my name is David Trustram Eve.

As we all know, the Inquiry is concerned to bring out the local implications of siting the third London airport at Thurleigh, and, Sir, a glance at the plan on your right† might suggest that any institution centred at Cambridge is too far away from the proposed Thurleigh site either to be local or to be affected by the proposal. However, Sir, the evidence of my witnesses and of some other witnesses show that first Cambridge has interests which are vitally affected by the proposed siting of the airport at Thurleigh, and secondly that those interests, while local in the Commission's sense, are nevertheless of more than local significance—indeed, they have national and international importance.

In cost benefit terms, there is a very substantial capital at risk in the interests which my evidence covers. Displayed, Sir, over to your right, are two plans which were also displayed at the Royston Inquiry,‡ and copies of which I understand have been supplied to the Commission. My learned colleague at that Inquiry, Mr. Layfield, explained what was indicated on those plans, on Day 4 of that Inquiry, pages 12 to 15. Sir, I do not repeat that; may I suggest, for the purposes of those who were not at Royston, just indicating shortly what is on them? The plan on the top at present is a plan of the University and College sites, washed in pink; and we may perhaps note for the purpose of this Inquiry the isolated pink area to the south-west of the city of Cambridge which represents, of course, the Radio Astronomy Observatory at Lord's Bridge. The other plan* which is underneath, and which might perhaps be revealed, shows what I might call the central sites of the University and Colleges. Of course, Lord's Bridge Observatory is outside Cambridge City, and one or two other sites. It indicates the nature of those sites by various colours, and the character of the activities by various flashes, and the colours of the sites are: pink representing science, blue representing arts, green representing administration non-teaching. The flashes: the colour gold represents laboratories; the colour orange represents chapels; the colour green represents libraries; and the colour red represents lecture rooms. The one flash represents those activities however large or small they may be on the site in question, and you recall Mr. Layfield pointing out one very large site with a very small flash was nevertheless the whole University Library.

Now, the elements at risk covered by the evidence produced on the part of my clients are a particular element and a general element, if I might call it that. The particular element, of course, is the Radio Astronomy Observatory at Lord's Bridge, and the general element is the environment quality of life at the University and in the city of which the University is its main singularity. Both these elements were the subject of evidence at Royston, and of remarks by Mr. Layfield and his description of their importance remains as relevant here as it was there. I wish only to introduce them so as to make perhaps a little more sense of my later submissions upon the effects of the third London airport upon them.

First, sir, the particular element, the Radio Astronomy Observatory at Lord's Bridge. At Lord's Bridge there are several radio telescopes, the largest and most powerful now in operation. There is the one mile telescope completed in 1964. Albeit that there are other telescopes, the telescopes now in use has a greater resolution than any other in the world, and can detect radio sources much weaker than those detectable at any other observatory in the world. The proof of Professor Sir Martin Ryle† indicates some of the achievements which have resulted from the use of the radio telescopes at Lord's Bridge. They are set out in his proof, page 9, paragraph 2.4, and you no doubt recall Mr. Layfield reading them out. They are an impressive list, and they include with others the discovery of pulsars, and the detection of the faintest radio sources some one hundred times weaker than those detected elsewhere. Indeed, the one-mile telescope at Lord's Bridge can detect radio sources so distant that because of the time they take to reach us it is in fact exploring the history of the

* See also p. 2111.

† Available for inspection, by arrangement, at the offices of the Commission.

‡ Available for inspection, by arrangement, at the offices of the Commission.

* Available for inspection, by arrangement, at the offices of the Commission.

† p. 2111.

Printed image digitised by the University of Southampton Library Digitisation Unit

universe back to a time when it was perhaps one-tenth only of its present age. These results achieved under the leadership of Sir Martin Ryle have depended, of course, upon the equipment at Lord's Bridge and of course upon the men at Lord's Bridge, the research team built up over the years attracted by the pre-eminent facilities and the reputation established there, and of course also by a site sufficiently free from radio interference so as to enable the long and painstaking surveys to be done. This equipment and these men and this site have helped to put the United Kingdom in the pre-eminent place in the world in the field of radio astronomy.

The development of Lord's Bridge as the evidence shows does not stop with the one-mile telescope which has been in operation now these five years. A grant by the Science Research Council of over £2 million has led to the start of work on an even more powerful telescope at Lord's Bridge to be completed in 1971. While there are other telescopes comparable in performance to the one-mile telescope now under construction elsewhere in the world some five years later after 1964's completion of the one at Lord's Bridge, no funds anywhere in the world have been allocated for one comparable with the 5 kilometre telescope on which construction has been begun at Lord's Bridge. Its resolution will be twenty times higher than the 1-mile telescope, already the telescope with the finest resolution in the world, and the fact is that there has been and there is and there will continue to be at Lord's Bridge something unique on this earth, something which can receive information which but for it would be unavailable to mankind.

It is against that background and the knowledge of that capital that one considers the effects of a third London airport at Thurleigh. Sir Martin's proof explains first the importance of the avoidance of radio interference; second, the steps which were taken to find a site which led to the choice of Lord's Bridge and its retention for the construction of a 5-kilometre telescope; and, third, the steps taken in conjunction with the local planning authority to protect the site and that equipment from radio interference, and Mr. Mellor the County Planning Officer for Cambridge in his proof* has something to say about that as well.

Sir Martin's proof also shows what a third London airport at Thurleigh will mean, the various types of sources of possible interference affecting the observatory at Lord's Bridge from direct radiation from ground based equipment, from scatter by aircraft, of transmitters from the ground, from radiation from the transmitters in aircraft and from sources associated with urban development. At present, of course, we cannot be certain what the degree of interference would be since there is no certainty on many matters relating to an airport at Thurleigh, on the flight paths, the holding areas, the new towns, but if what we have heard predicted turns out to be right then Lord's Bridge Observatory will have to close. I refer particularly to the evidence of Mr. Dunford† in relation to a holding area 4 miles north of Royston and from which aircraft would proceed north-easterly towards Cambridge. This is not the only possible source of trouble, but I particularly refer to that. If aircraft are to wait circling north of Royston and go west to Cambridge they will be circling over and flying over this unique and sensitive installation.

The question then will be whether the observatory can be moved successfully. Mr. Layfield addressed remarks to you, sir, on that topic at Royston as well at Day 4, page 11, and I do not go into it in the way that he did or that length. Shortly, there would be difficulties clearly in finding a site sure to be free of interference, there would be the probable dispersal of that research team and those factors, of course, are quite apart from the cost and organisation of the removal, and there must be, sir, as Mr. Layfield pointed out, grave doubts whether the entity of equipment, team and site could be successfully replaced. Even if the move were successful the pre-eminence of this country in this field would have gone, the time taken to effect the transfer would swallow up the lead which this country has established.

I turn to the general elements which I mentioned of capital at risk, the environment of Cambridge, of a University of which something special as to Lord's Bridge Observatory is, and on this I commend you the careful evidence of Mr. Allen* and first his three postulates which he makes in this context on page 11 in paragraph 39, he says: "I turn now to consider some possible planning risks, and begin with three postulates: (a) that it is in the national interest to maintain the University's position among the exceptional centres of education and research in the world, (b) that this depends upon its ability to continue to attract the necessary types and quality of mind, and (c) that this in turn depends partly upon both the quality of physical environment, carefully and deliberately created through more than five centuries, and upon the quality of life as a whole in the City of Cambridge and its environs, where the members of the University and their families live their private lives. Cambridge is one of the most attractive cities in Britain for the kind of person upon which the University depends, and any threat to its qualities in this respect would justify deep apprehension on the part of the University." Sir, threats to its qualities of which Mr. Allen speaks have developed, again catagorising, in respect of noise and in respect of the associated development attracted by an airport.

May I say something about noise and only something. Cambridge—the city, the University—Cambridge lies outside any contour drawn on any plan before the inquiry that I have seen except those of Mr. Westley,† in other words it is outside any NNI contour which has been drawn on any plan. Mr. Westley's plan of course, are PNdB and there is a danger that for some purpose the Commission will promote these NNI lines into some kind of all purpose standard, in other words to consider that they are valid for all cases and show precisely that it is

* p. 1877.
† p. 1851.

* p. 2124.
† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

all right outside them and not all right inside them. Sir, the limitations of the NNI—well, of the noise and number index as an index—are pointed out in Mr. Allen's evidence paragraphs 30 to 34. Some of them have been pointed out in different words in a letter to the *Times* of the 9th September 1969 from the Chief Public Health Inspector of Windsor. I quote one paragraph from his letter, he says, second paragraph: "The aggregate of noise for each area around the airport"—he is speaking of Heathrow—"is calculated to present an average index or nuisance. While the average might be acceptable, the highest point of nuisance may and is, in fact, at Windsor, for example, near unbearable, yet all but a small part of Windsor is classified as an area of moderate nuisance and this is monstrously unjust as it is for other districts."

Mr. Allen points out that the noise and number index contours depend upon assumptions as to the numbers and types of aircraft and the patterns of their flight operation. Their conventional interpretation depends upon social responses from the community around Heathrow not necessarily valid for communities of other kinds. And they only purport to be an indication, and not a guide to the interruption of teaching, healing or research. Indeed, a large body of evidence relating to the noise before this Inquiry does not depend upon the NNI contours. I refer to the suggested standards of the soundproofing of schools which depended on interruptions of a certain level a certain number of times per hour. Mr. Allen's proof,* in a passage accepted by Mr. MacDermot on Day 1 of this Inquiry, on page 22A, in paragraphs 33 and 34, points out how widely such a soundproofing contour can vary from NNI contours. You will, Sir, have noted that Mr. Allen's own suggested standards for quietness in the Cambridge Courts are not those based on NNI contours, and so, Sir, I do, on behalf of the University and Colleges, stress—possibly unnecessarily—to the Commission the limitations of the NNI contours as a guide to the loss which noise can cause. Mr. Allen's proof deals with activities within and without the buildings in Cambridge University, in the quiet Courts sheltered from ground noise but open to the sky. These, sir, are specially vulnerable to aircraft noise, worth the preservation of the kind that Mr. Allen suggests, a preservation which can be afforded only in the way which Mr. Allen suggests and there are the indoor activities pointed to by Mr. Allen's evidence contributing to the life of Cambridge—and I refer particularly to his paragraph 38.

Sir, the other category of threat proposed to the environment and quality of life at this University city is associated with the urban development attracted by an airport at Thurleigh. Mr. Allen's evidence is not alone in foreseeing the pressures which could lead to the overloading of this city and its centre if the airport should come to Thurleigh; and Sir I note Mr. Mellor—reference 4016, paragraphs 3.02 to 3.04 and 5.01, and Mr. Hawkes,† retained by the NFU—4050/2, paragraphs 53 and especially 54. Sir, these risks may appear small, these risks for the environment of Cambridge; but, Sir, I ask the Commission to note these things: first, as Mr. Allen points out in his paragraph 54, their effect can be slow and probably would not be quickly felt, but they are cumulative and we are looking far ahead. 30 years ahead seems a long time: it is a long time to plan for precisely, but it is only when the sons and daughters of present undergraduates at Cambridge will be themselves undergraduates. Second, there will be even greater attractions for living in and around Cambridge, if the noise is acceptable there, if all around the airport will be new towns, new cities and new development—and much of it noisy. Sir, here again—although we know that it is not a final solution to urbanisation—one of the blue circles on that plan in the Stagsden area is itself crossed by the NNI contours, and you will recall Mr. Cowley's evidence that development on that scale would indeed have to be squeezed in between features which are not attractive to live in. It may be there, of course—but it is an example of how pressures can be squeezed. Thirdly, Sir, the investment in the third London airport and its associated development will be so great as to prejudice the survival in any later cost benefit analysis of interests which could be saved if this colossal investment takes place elsewhere. Flight paths may be routed quietly now; noise procedures may be effective now; but will they be so if it means, for instance, losing air traffic to the Continent? It may then pay, in the next cost benefit analysis, to surrender interests which are seen now to be worth saving in the interest of other factors which they will predominate. The soundproofing of schools may seem to be needed now, but will it be done?—will it have enough priority when the time comes to do it? when there is so much competition for limited resources in materials and skills? Indeed, Sir, the very damage which an airport would do could mean that this would be the right of that locality to do even more damage. One hears often the argument of the thin end of the wedge: once the thick end of the wedge is inserted, the rest follows through without no difficulty at all.

Sir, may I end my remarks by saying something—again, I hope, not too much—about cost benefit analyses? I have mentioned what I have called the "capital at risk" represented by the interests which my evidence covers. Sir, the Commission's methodology document* is indeed a most valuable and impressive one, in including the basis of the proposed cost benefit analysis which the Commission is embarking upon. I think that it is not unfair to say that there are some who seem to criticise the Commission's approach on this as betraying perhaps unwarrantable materialism. They forget, Sir, at least two things: they forget that cost benefit analysis is not the only approach to the answer, and they forget also the Commission's own explanation in that document in paragraphs 3 to 5, that one is inevitably balancing

* p. 2124.
† p. 1920.

* Papers and Proceedings, Vol. VII (HMSO; 5s.).

Printed image digitised by the University of Southampton Library Digitisation Unit

interests in any case, and you are more likely to get the right balance if you attach a sensible weight to each interest. It is a points system, in which the points are balanced. There is the real advantage, Sir, we can see in the cost benefit approach, that it does enable intangible interests to compete on level terms with other factors which can be precisely costed; and, carefully done, it ensures that losses and gains of all kinds are not overlooked. But I do venture to suggest that it has some difficulties, and could include some assumptions which might mislead you.

There are of course, Sir, the difficulties of valuation, recognised by the Commission in its document, and applicable possibly above other parties to the interests which my evidence covers. Those interests, Sir, may indeed be amongst the hardest of all to value. What is the value, one asks, of the ambience of a University, old and yet alive, in a city like Cambridge? What is the consumer's surplus, in walking and talking in quiet Courts, or punting on the Cam—a quiet Cam? Sir, these things are valued by people; but it is very hard to translate them into pounds—or indeed into points. What, Sir, is the value of data which will not reach mankind except through these curious structures on a disused railway at Lord's Bridge? data from a University of which, if I may be allowed to say so, London and all its airports are an infinitesimal part? Sir, the value of such data is not necessarily only the cost of replacing the physical assets which enable them to be received —assuming that those physical assets can be successfully replaced—because you have lost the operation of that equipment while you are replacing it. And what is the value of that output, or that intake?

Sir, there are these difficulties of valuation, and there may also be, Sir, the implicit assumption that the cost of replacement of physical assets or the cost of soundproofing for the protection of physical assets is the cost to be put in the balance, when there may be other factors which have to be added on top as well. The passage that I have in mind, among others, in this book, is on page 27, in paragraph 91, where the Commission sets out strategy in analysing environmental damage. Sir, there is reference in paragraph 91(b) to schools and hospitals and other public buildings—it says that "schools and hospitals and other public buildings, the total capital cost of replacement would be relevant". Sir, it would not necessarily be inclusive; and in particular, the case of something like Cambridge University is one where one has something valuable which a replacement could hardly cover.

There is a reference to soundproofing in 91(c), for example, for schools and hospitals, "critical noise levels will be established to determine whether the buildings concerned will be uninhabitable or whether they could be effectively insulated." But, as I have suggested already, is it necessarily true that soundproofing will occur where and when it should? because, ex hypothesi, there is "profit" in soundproofing, otherwise it would not be done. But in the competition for resources, will it in fact get done when and where it should? And if it is not, then the cost of the loss would be more than the cost of the soundproofing, because you would be losing the profit as well.

Sir, in this booklet, on page 1, in paragraph 2, the Commission says, in the last two sentences of that paragraph, "the cost attaching to some non-material factors such as the imposition of noise on a previously quiet area may be assumed to be equivalent to the sum of money which might be subscribed to preserve the initial state of affairs. In other words, things are worth at least what people are prepared to pay for their retention." Sir, if attention is paid to that, then perhaps my criticism will not be relevant. At least, Sir, this is right—that sometimes we cannot actually afford to pay to retain things. There is at one time or over a period of time, a limit to the resources which are actually available—not just money, but materials and expertise and manpower. Sir, this is a point which is raised in Mr. Cowley's evidence* concerning the full utilisation of building resources on the construction of the airport. Will the soundproofing get done when competing against that lot? And knowledge not gained, and an old city's quality of life, are not retained, even if we do replace the telescope or the city or the university.

In fact, Sir, this is not a choice of priorities, and there are many existing assets which show a profit—or a consumer's surplus—which we could not afford if they were not already there, or which we could not replace if they were lost. And so the quality at Cambridge and the knowledge of the Universities are such things, and we are concerned that the full value be given to them in the Commission's exercises.

It now remains for me to call the evidence; and first of all, Professor Sir Martin Ryle.

PROFESSOR SIR MARTIN RYLE† *called*

Examined by Mr. Eve

5718 Sir Martin, you are a Fellow of the Royal Society, a Master of Arts of Oxford University, Honorary Doctor of Science at the University, holder of the King's Medal of the Royal Society, holder of the Gold Medal of the Royal Astronomical Society; you are also a Professor of Radio Astronomy and Director of the Radio Obesrvatory of Lord's Bridge? — Yes, that is right.

5719 Sir Martin, some supplementary questions on, I think, three or four parts of your proof—would you turn, first of all, to page 12, paragraph 3.4 (c), where you are speaking of the siting factors for a radio astronomy observatory, and you mention that they should include natural screening arising from local topography if possible—and, as you pointed out at Royston, Sir Martin, as far as interference in the Stansted direction was concerned, for instance, there was an element of screening there? — Yes.

* p. 1807.

† See also p. 2111.

Printed image digitised by the University of Southampton Library Digitisation Unit

5720 I wonder if you would tell the Inquiry, please, to what extent there is or is not natural screening in the direction of Thurleigh? — Yes. The level of interference from a source of transmission depends, firstly, on the height of the source of interference above ground level; secondly, on the height of the telescope above ground level; and thirdly, on the height and profile of the intervening land. It also depends on the comparative frequency which is being used. Now, in the case of the proposed site at Thurleigh, the potential source of interference to radar sets and other equipment would be at a height of approximately 250 feet above sea level, and the height of our receiving limits of our telescopes at Lord's Bridge is about 140 feet above sea level.

From examining the map it can be seen that the ground between Thurleigh and Lord's Bridge at no place rises above 250 feet above sea level, and this means that the relatively flat land in between means there is very little protection as there has been in the present site, and interference from the south—in fact the transmission will correspond approximately to that other flat land. This also applies, I think, to the proposed sites or possible sites of the town areas. There is very little protection from environment from them either.

5721 Could we turn to pages 21 and 22 of your evidence,* Sir Martin. We recall that you are dealing with the important sources of interference associated with an airport in (b) on page 20: "Transmissions from the ground scattered by aircraft", and you say at the bottom of page 20: "The situation becomes very acute if approach paths or stacking areas are situated within 10 miles of the observatory". You refer to Mr. Dunford's evidence,† about a quarter of the way down page 21, and then on page 22 in 6.2(c) you are dealing there with radiation from transmitters installed in aircraft, and you refer on page 22, the last sentence of that paragraph: "With the density of aircraft involved in an approach path or stacking area around a major airport, this interference is likely to be very serious." You are aware of Mr. Dunford's evidence, and you may also know that Mr. Dunford confirmed orally that the stacking area 4 miles north of Royston, if what he envisaged was right, would then mean the aircraft would proceed north-easterly to Cambridge and turn in order to land. I wonder if you would care to enlarge very shortly upon the effect of such manoeuvres at Lord's Bridge Observatory. — I think if this is in fact right the actual situation could hardly be worse. The point about interference from aircraft is that you are liable to get very serious results from a small proportion of aircraft. Well, in my evidence there are some details given of the particular types of equipment which have already given us trouble; some of them have now been cleared by IATA and the Board of Trade but there are others which remain, and I think will unfortunately remain. At the moment the density of aircraft around Lord's Bridge is of course extremely small; the closest airways as are mentioned in the proof are remote from the observatory. The existence of a stacking area in the position which is immediately to the south of the observatory means that there will be a very much greater density of aircraft than you would get even if airways are near to the observatory, and in particular, the possible holding area north of Royston, which would of course be the one normally in use for south-westerly landing, would involve both a high density there and, as you said in your earlier remarks, they would have to come away from this stack towards the runway exactly over the observatory, and it is the high density which means the probability of there being at any instance aircraft with equipment aboard being an enormous increase over anything that would happen with other arrangements we have considered.

5722 Do you foresee the observatory being able to continue in those circumstances on its present site? — I think the evidence of these things, of course, is indefinite from the way one would like to deal with a problem of this kind, but I myself don't see we should be able to continue.

5723 Lastly, Sir Martin, would you turn to page 28 paragraph 7.3, the end of paragraph 7.3, which starts on the previous page, and which is headed: "Practical problems of moving the observatory to another site." You mention at the end of the paragraph a cost in excess of £3 million; is that for moving the observatory as a whole? — No, sir. This was a figure which perhaps is not too relevant to be taken literally. Perhaps I can digress a little bit on this matter. I think the question of what appears perhaps to be an easy solution of moving the observatory may not in fact be realistic. Now, first of all, one has to establish there is another site which is technically feasible. One secondly has to be assured it will have a full life and will not be close to or on the edges of the fourth London airport or some new town which may arise. One must be given an assurance it in fact can continue to operate for many years. Thirdly, one must try and envisage how one can possibly move the instruments to this site without, as is indicated in my proof, destroying the observatory organisation as it exists. We have estimated that to move the observatory would occupy a period of four years. During this time most of the senior staff themselves would be concerned with the organisation of this move. The research would very largely cease. It would cease almost entirely if one envisaged moving the actual instruments which are now installed or being built at Lord's Bridge, and the question then is, as you were saying in your earlier remarks, how does one assess the effect that this four years may be removed from the lead which this country has in this branch of astronomy. It is in fact more serious than just saying we will lose a four year lead, because I suspect during this time many of our staff would feel it more appropriate to continue the rest of their scientific working life in doing some science rather than organising the concrete and, therefore, many of them would undoubtedly want to leave and take up posts elsewhere in the world where there are better opportunities for actually doing astronomy. The actual figures we worked out are quoted in my proof

* p. 2116.
† p. 1851.

Printed image digitised by the University of Southampton Library Digitisation Unit

and were related to the problem of setting up the five kilometre telescope now being built at Lord's Bridge on a new site. It turns out in fact not very much would be saved by removing the instrument now being built, and that the construction of a new instrument would, of course, allow us to at least operate one telescope continuously during the period. We estimated £3 million would probably cover the cost of obtaining a site and providing services and, of course the increased accommodation which would be necessary with these greater distances that this site would undoubtedly be from Cambridge. We estimated that at about £3 million, but this would simply allow us to pursue one part of our work. If we were to continue the programme and extend the programme, which we would have been able to do if we remained at Lord's Bridge then we must, of course, also include other instruments, and the total price here—well, again I am not taking account of the lost time—the figure would be something like £5 million to £6 million for removal of the observatory as such.

Inspector Are there any questions at all for Sir Martin Ryle? Sir Martin, the Commission are, of course, fully aware of your problem and we shall be in touch with you. Thank you very much for your evidence.

(The witness withdrew)

MR. W. A. ALLEN* *called*

Examined by Mr. Trustram Eve

5724 Mr. W. A. Allen, as you proof indicates you are a Bachelor of Architecture, a Fellow of the Royal Institute of British Architects, and a member of its Council, and in the field of acoustics you are a vice-president of the British Acoustical Society. You set out in the remainder of your introductory paragraph the firm of which you are a partner, and your retention by certain County Councils in connection with your Stansted Study, and that your work there was used as the basis for the soundproofing of schools or certain aspects of soundproofing for schools which has been covered in evidence in this inquiry as well. There is one matter I would like you to say something about which arises perhaps most conveniently in relation to page 7 of your evidence. Paragraph 25 is the culmination of the previous paragraphs starting with 18, "Criteria for quietness outdoors", and in paragraph 25 you suggest upper aceptable levels in the outdoor environment of the quiet courts. Mr. Allen, I believe that since the proof was prepared you have in fact been continuing your thoughts and researches on this matter and particularly in connection with the measurement of noise within quiet courts at Cambridge, and quiet quads at Oxford, is that right? — Yes, it is.

5725 I hope I got that right. Now, I believe that you have certain information which will be communicated to the Commission at Stage III; it is not necessary to go into figures now perhaps, but I wonder if you could indicate to the Inquiry what sort of outcome you have found from that research? —Sir, the figures were obtained from measurements in these different places which were representative of college courts and quads can be summarised as follows: for 90 per cent of the time during the day 45 DBA can be taken as the representative average sound level. For 10 per cent of the time during the day 50 DBA can be taken as representative. During the evening these figures fall off slightly by about 3 to 5 DBA, and therefore can be put into the rate 40–45 DBA and 45 to 50 respectively.

5726 We do see from your paragraph that your suggestion of upper acceptable level in the protected outdoor environments of the University are at 65 PNdB, and that the lower end of the range should be 60 to 65. — Yes. This means that my recommended criteria are of the order of 15 to 20 DBA at the prevailing representative sound levels. This is 3 to 4 times the prevailing level of loudness as a person would normally experience it. I regard this as support for my view that the figures that I have suggested as criteria are not unreasonable as limiting criteria for noise evaluation of this environment. If I may add, sir, one point; it did seem to me Mr. Dunford's evidence,* to which you referred in questioning Sir Martin Ryle—that the suggestion that planes will overfly Cambridge on a descending set of levels does indicate the risk of this noise pollution is there.

5727 *Inspector* Any questions to Mr. Allen? Mr. Allen, on your supplementary evidence, I am always a little bit slow in really gripping these perceived noise decibels, and DBA, but what you said was, for 90 per cent of the time the ambient sound levels inside the courts or—what was it—close, as the case may be was 45 DBA? — Yes.

5728 Now, translating the perceived noise decibels, that is about 57–60, am I right? — Yes.

5729 So, going back to paragraph 25 of your own proof you have you have not got too much to play with under existing circumstances. — That is so. Yes. — You have the figures quite correct.

5730 *Mr. Curran* May I ask a question?

Cross-examined by Mr. Curran

5731 In paragraph 50, do I understand this to mean that you think if an airport came to Thurleigh that the expertise, technology, knowledge stored at Cambridge University will be utilised for high technology industrial developments in this area? — I would have been very surprised if it were not valuable.

5732 It would not be valuable? — I would be very surprised if it were not valuable, if I understood the question in the acoustics of this room.

5733 Can you tell me the sort of industry which you feel would be attracted to this area as a consequence of Thurleigh? — I would expect almost any type of industry in which universities themselves have research or high levels of teaching proceding. Typical ones would be broadly speaking the electronic researches which are obviously a developing field, and shall we say all the sort of expertise, mathematical, statistical, chemical—you never can tell from

* See also p. 2124.

* p. 1851.

Printed image digitised by the University of Southampton Library Digitisation Unit

which of these areas you will draw an idea which is industrially important. This is the experience of the United States.

5734 Do you think this type of industry which might use all the knowledge of Cambridge University would also supply skilled work of the sort which would not otherwise be available? — I think, yes, it almost certainly would. I think this is again the experience of America.

5735 In paragraph 54 . . . — 54 or 34?

5736 54, you say that the urban balance could shift towards industry and commerce. Does that mean Thurleigh might lead to increased industrial development, increased employment at Cambridge? — If you take Cambridge as the centre of the city region I would expect that to be the case.

Inspector Any other questions? Thank you, Mr. Allen for your valuable evidence. That is your case, Mr. Trustram Eve. Thank you very much.

MR. CURRAN *called*

(Huntingdonshire Constituency Labour Party and TECDA)

Mr. Curran Sir, would you like me first of all to call the witnesses?

Inspector The usual procedure is that you as spokesman should have one bite at the cherry, that bite being either before or after you call your evidence. Whichever you choose I leave to you.

Mr. Curran I would like to call the witnesses first in that case, sir. The person I would like to call is Mrs. June Cruse.

MRS. JUNE CRUSE* *called*

Examined by Mr. Curran

5737 Are you Mrs. June Cruse of 44 Beech Close, Huntingdon? — I am.

5738 Married with two children? — Yes, I am.

5739 Could you tell me why it is that you want Thurleigh airport? — Well, I consider that there is a need for Thurleigh airport because of the lack of job opportunities in the area.

5740 When you say lack of job opportunities do I understand this to mean that the range of jobs—the choice of jobs—in the area where you live is restricted? — It is, yes.

5741 You say that you know people who travel long distances, working men who travel to places like Peterborough, Letchworth and London? — Yes.

5742 Could you say amongst your friends how many people you know like this? — Having spoken to neighbours and, you know, women in the course of everyday life I do know of one man in particular quite near me who goes to London every day. He is not in the higher income bracket but he certainly gets a better wage by going to London and he must find this benefits him and his family.

5743 I gather that your husband is a postman? — Yes.

5744 And this involves working at difficult hours, is that correct? — Yes, that is correct.

5745 I wonder if you could tell us about it. When does he go to work and when does he come home ?— My husband works on different shifts, perhaps working a fortnight on one shift which means getting up at half-past two in the morning or another shift, say, he has to be in by six. This sometimes means that we only see each other, say, a few hours a day. I don't know if that is of benefit to a family or not, depends how you look at this question. Also sometimes he has to go back in the afternoon. So that really his day is split, it is not like a normal day worker. You can say if you go to an office or a factory you have got set hours. Shift work does intrude on one's life, but I don't think this would be a complaint as such but the hours can be inconvenient.

Inspector Mr. Curran, I gave you very considerable latitude by allowing you three witnesses in view of your totally unprepared state in the meantime and I added you should keep your evidence as short as possible. I don't want you to use a very short proof in order to introduce a very long examination-in-chief.

5746 *Mr. Curran* I am sorry, Sir. If I can just briefly round this up with the last question. Do you think that if Thurleigh airport came there will be oportunities for your children, opportunities which would possibly give them a different sort of life, different advantages than you have had. — Well, opportunities for my children, probably, my son, probably, but more particularly I think for the youngsters in the area.

Cross-examined by Mr. Connell

(Joint County Councils)

5747 May I say that I know what your view in this matter is, you are of course perfectly entitled to hold it and I don't in any way seek to criticise you for expressing it. Do I understand, however, that you came to Huntingdon with many other people as part of an expansion scheme? — Well, as individuals, yes.

5748 So that when you went to Huntingdon it was an expanding place? — Yes.

5749 And do you understand that the future for Huntingdon is to be an expanding place? — Well, I wouldn't like to be critical about this, but one wonders whether it is an expanding town as such.

5750 You realise that the plans are, do you not, that by 1981, that is twelve years from now, there should be approximately 10,000 more people living in Huntingdon than there are at the present time? — Well, can you convince me that at that time the rate of growth will be to that extent?

5751 My question was do you realise that those are the plans? — Those are the plans, I realise, but are plans always kept?

* See also p. 2130.

Printed image digitised by the University of Southampton Library Digitisation Unit

5752 That is a matter that we shall have to wait and see, but in any event from the planning point of view Huntingdon is planned as a place of growth, do you accept that?— Well, can I say I have my doubts.

5753 It is planned as a place of growth—you can't deny that, can you? — Well, you have planned it as such, but I have a different interpretation.

5754 You have spoken of your husband's position as a Post Office worker. Of course, in that capacity he would be paid I presume at similar rates to postmen all over the country? — No, a different rate from London.

5755 And if he has shift work difficulties so would postmen everywhere else? — Yes, I expect so.

5756 And one final question: do you and your family have a car? — No, we haven't.

Cross-examined by Mr. Forbes
(BARA)

5757 Just one or two questions if I may, Mrs. Cruse. Can I just ask you about this gentleman who comes to London every day. What does he do when he gets there? — I haven't any clue. You see, I am rather hesitant about asking people what they earn.

5758 I appreciate that. — And what their qualifications or trade is and one can't always assess from a person you know what they actually do, especially at the present time.

5759 I wonder what justification you had for saying as you do in your proof in relation to this person who goes to London every day who you know that he did it in order to get a decent wage. You have no knowledge on which you could found that statement, have you? — Well, I do know he gets a better wage than he does in this area.

5760 Although you told me you didn't like to ask him what he did earn? How did you find that out? — It stands to reason if a man has tried this area and hasn't found a job that is satisfactory then you move further afield as my husband would do if he was in the same position.

5761 What you think stands to reason and what I think stands to reason may be two different matters. I am asking you for the moment for the factual knowledge on which this statement was based. Is the true answer that you have none? — I have no idea how much this man earns.

5762 Or what job he does? — No.

5763 Just another question or two. You are, are you not, the Secretary of the Huntingdonshire Constituency Labour Party? — Yes, I hold that position.

5764 One of the suggestions made by Mr. Curran is that—

Mr. Curran Mrs. Cruse is being invited to speak here as an individual and I will answer on behalf of the Constituency Labour Party.

Mr. Forbes I daresay you will, but this lady is the Secretary and I am entitled to ask her questions on that basis and I propose to do so. You see, one of the suggestions made by Mr. Curran as the representative for the Labour Party and the Committee for Democratic Action is that they have had so little time to get anything going or to organise opposition or anything of that kind. You have heard this said, have you not? — Well, I was here early yesterday morning.

5765 You have read the statement?* — Yes.

5766 It is fair of me to suggest that that point is made over and over again, isn't it? — Yes, I know that it is said in the document in haste.

5767 Were you responsible for sending out on behalf of the Huntingdonshire Constituency Labour Party a call to a meeting concerned with this airport on the 24th April 1969? — Did I send it out actually on that date, do you mean, for what reason?

5768 It is a document headed: "Huntingdonshire Constituency Labour Party. Secretary: Mrs. J. Cruse, Tel.: 2866. Thurleigh and our future. Only a small and unrepresentative minority have declared whether they are in favour of an airport at Thurleigh or not." — That is correct.

5769 You remember this? — No, I didn't know I had dated it.

5770 "An airport at Thurleigh will mean aircraft noise overhead . . . It will also create more jobs, better jobs and better pay in the area. What is more important: A quiet life without noise? or—More jobs at better pay for you and your children? You must decide." And so on. — Yes, I recall that.

5771 So the Constituency Labour Party was on the job at any rate as far back as the 24th April? — You must realise we were not on the job, don't think that, we weren't on the job, we were at that stage considering what an airport would mean.

5772 I appreciate that. You know, I take it, that the last date for submitting documents to the Commission was the 22nd August? — Yes.

5773 This document which I was reading to you ended up by inviting people to attend a meeting at the Technical College, California Road, Huntingdon, at 3.45 on Saturday, 3rd May, do you remember? — Yes.

5774 Guest speaker: Martin Lawn? — Yes.

5775 Mr. Martin Lawn is the officially adopted Labour Candidate for the Huntingdonshire Constituency? — Correct.

5776 And did he address the meeting on that occasion? — Yes.

5777 And did his address consist of an attack on the suggestion that the airport should be sited at Thurleigh? — I would not say his address consisted of an attack.

5778 He made it perfectly clear, did he not, that his view was that the airport should not be sited there? — But then he qualified that by saying that if people in the area felt this need then surely their wishes should be as such as he lives in Essex.

* p. 2133.

Printed image digitised by the University of Southampton Library Digitisation Unit

5779 But his view as expressed at that meeting was quite clearly, wasn't it, that he was in favour of a Thurleigh airport? — Well, I don't know that I have to answer that question.

5780 Were you there? — I was there, yes.

5781 Just one other question I want to ask you. On page 15 of the document* Mr. Curran has supplied us with, it is said that the Huntingdonshire Constituency Labour Party decided by an overwhelming majority to support Thurleigh as a site for the third London airport. The decision taken was the culmination of discussion and debate at local Labour party and trade union branch level over a period of six months. — Yes.

5782 When was the meeting at which the Constituency Labour Party decided to support Thurleigh as a site? Were you there as Secretary? — I go to every meeting.

5783 That is what I rather thought. Do you remember the date? — Well, this last meeting on the 30th August there was an overwhelming majority.

5784 That was the meeting on the 30th August at which you say there was an overwhelming majority. How many people attended? — Well, I am wondering whether you are allowed to ask me this question in view of the fact that it is Party matters.

5785 I daresay, but I just want to know how many people attended.

Inspector Mrs. Cruse, the position is that the question I think can be asked, it is up to you whether you decide to answer it. If you don't answer it—well.

Mr. Curran I suggest you answer it.

The witness I will answer that, there were 16 members present on the 30th August.

5786 *Mr. Forbes*—16? — 16.

5787 And am I right in thinking that the meeting could have consisted of as many as a hundred people or more? — I would not suggest a hundred. I have no idea where you get that figure from.

5788 Well, are there not, for instance, 42 members of the Agricultural Workers' Union who could have been present at that meeting and none of them were? — 42 members? Well, if you want that answer I suggest you get in touch with Lord Collinson of the National Union of Agricultural Workers.

5789 No—I am just asking really, Mrs. Cruse, for the constitution, as it were, of your Constituency Labour Party meeting on which you base the democratic nature, as I understand it, of this opposition. We know what 16 Labour supporters were found to attend this meeting—what was the voting? You say by an overwhelming majority . . . — 12 in favour, 3 against.

5790 And one undecided? — No, not one undecided —one who was a substitute delegate—

5791 So he could not vote—is that right? — Yes.

5792 So 15 voted, of whom 12 were in favour, and 3 against? — Yes.

5793 And it is on this—the twelve favourable votes —that you and Mr. Curran base your theory that this is the democratic voice of the people—is that right? — (*Laughter*)

5794 I see. I just want to know how many people could have attended what would have been a full atendance at this Labour Party Constituency meeting. — As far as I was concerned—about 30—30 to 35.

5795 Is that the total of . . . how does the Constituency Labour Party Meeting—how is it made up? — Excuse me, Mr. Hunt. I thought that GMC matters are private, if a party—the whole constitution of a GMC—I do not think it would be fair to you or to me to disclose how a GMC—

5796 This is a question of secret democracy? — (*Laughter*) It is not a question of secret democracy at all. I am wondering if you would be asking the same questions to one of my opponents—

5797 Of course I should. And Mr. Curran did. But, Mrs. Cruse, if you do not want to disclose to us the basis on which you maintain that this opposition is founded on "thousands of supporters", you do not— but, of course, the Commission will be entitled to draw their own conclusions. You realise, don't you, that this so-called Committee for Democratic Action with the support of the Constituency Labour Party is being put forward as and indication of thousands of local supporters for the Thurleigh airport, don't you ? Yes, I do realise that.

5798 So far, we have got twelve out of Huntingdonshire—do you want to increase that number ? — Do you realise also, Mr. Forbes, that working people— can I put forward this point of view—

5799 What do you mean by "working people"? — People who go to work, Mr. Forbes.

5800 Does that include me, and Mr. Hunt, and those of us present . . . — Yes. (*Laughter*)

5801 So long as we understand what terms . . . — Excuse me—could you stop that laughing at the back? It is rather disturbing—

Inspector Yes, I think it is. I understand. Please —from the back—give Mrs. Cruse a fair hearing.

Mrs. Cruse. Thank you. I was at the back yesterday, and I didn't start tittering when I could have done. Mr. Forbes, the question of holidays—quite often when you have meetings you cannot call all the delegates you might want—

5802 *Mr. Forbes* I appreciate that; but what I want to know is, what is the basis of representation? How, out of 12 people which is the total number we have who voted in favour of this in Huntingdonshire—do you erect the suggestion which I understand—I did not watch it, but I understand Mr. Curran to have said yesterday, on that implement of mass medium, the television, that you and the Democratic Committee represented more people than BARA—

Inspector Mr. Forbes, I think that question is more fairly put to Mr. Curran, because Mrs. Cruse is the Secretary. She records the votes, but I think Mr.

* p. 2135.

Printed image digitised by the University of Southampton Library Digitisation Unit

Curran is probably the better person to explain his own statements.

Mr. Forbes If I may, Sir. The reason I am asking these questions is because the Secretary is the proper person to produce evidence of the constitution of the—

Inspector Yes, I do accept that.

Mr. Forbes I am concerned with that; and I am not getting any answer.

Inspector Apparently so—that is the position.

5803 *Mr. Forbes* Are you prepared to assist me any further on the constituency of your Labour Party? — No, I do not think, at this stage, Mr. Forbes.

5804 Now, can you help me, or do you not know anything, about the Thurleigh Emergency Committee for Democratic Action? Is the Constituency Labour Party part of that organisation? — Well, it is combined—the Constituency Labour Party has pledged its support to TECDA.

5805 I see. Then just let me ask one or two more questions. If you do not want to answer, Mrs. Cruse, just say so. At the meeting on the 30th August, which we have been told something about, this is right, is it not—that none of the persons present had read either of the documents we were supplied with up to yesterday—that is the document 4041, headed "Evidence of TECDA", or the Appendix which went with it?* — No, they had not.

5806 And am I right in thinking that the decision of the meeting which you have told us about was that permission was granted to Mr. Curran to present these views, subject to approval by all the Branches in the Constituency? — I do not recall that.

5807 I cannot hear that—I am sorry. — I do not recall that, Mr. Forbes.

5808 Have you got a Minute Book of this meeting? — Of the 30th August?

5809 Yes. — Do you want to inspect it?

5810 Did you keep minutes of the meeting? — Yes, I kept minutes of the meeting.

5811 And have you got the minute book here? — No, I have not.

5812 Can it be produced? — At what stage would you like it, Mr. Forbes?

5813 I just want to know how far Mr. Curran is in fact authorised by the Constituency Labour Party to put forward any views at all at this Inquiry.

Mr. Curran If I might just cut in here, Sir—

Mr. Forbes I am sorry—I want an answer to the question.

Inspector Mr. Forbes—I think he is entitled to comment on what the question is.

Mr. Forbes Very well.

Mr. Curran If Mr. Forbes looks at page 1† of our evidence, he will notice that I have been asked to appear on behalf of the organisation, and they go on to say I shall "represent in full the views of TECDA" —"a committee consisting of delegates from the organisations mentioned above, and other interested parties".

5814 *Mr. Forbes* I shall return to the question I was putting to you, Mrs. Cruse. What I want to know is, what were the terms of the resolution which permitted, or authorised, Mr. Curran, to represent any views here—or, indeed, the Constituency Labour Party—to represent views to the Commission at all? — This was discussed some months ago. I do not know if you would probably not be aware of our application to the Commission—the terms of that. That was made some time ago, and members of my Party were aware, at an early stage, that we would be represented at this Commission.

5815 I am sure, Mrs. Cruse—I take it that the Huntingdonshire Constituency Labour Party is a democratic organisation? — Well—that is what we represent ourselves as.

5816 And, when you have a meeting and the matters are discussed, if anything is going to be done, a resolution is put to the meeting, is it not? — Yes.

5817 And voted upon? — Yes.

5818 And recorded by the Secretary in the Minute Book? — Yes.

5819 And if one wants to find out whether or not there was ever a resolution permitting the Constituency Labour Party to appear at this Inquiry, or authorising Mr. Curran to put forward any views at all, that would be recorded in the Minute Book, as a resolution? — It does not necessarily have to be a resolution recorded in the Minute Book to say that we are going to be represented at this Commission. It could be in the form of a document, or a discussion.

5820 I see. Unless you have a democratic vote, how do you know whether or not the meeting supports what is proposed to be done? — Well, because in the first place it probably comes in the form of a resolution, and from that resolution develops what is discussion or representation.

5821 But nobody can check, can they, whether or not the democratic process has been properly gone through, unless we can see whether there was a resolution put to the vote and voted upon? Is not that right? — Yes.

5822 And was that done in this case? — There was a discussion of a resolution, but perhaps my President could take over at this stage—

5823 You see, I am asking you, as the Secretary. — I know you are.

5824 You record these matters. — Yes.

5825 Was there a resolution concerning your authorising representation at this Inquiry, and was it voted upon? — Well, I decline to answer that, Mr. Forbes.

Inspector Are there any other questions to Mrs. Cruse? I have no questions; thank you, Mrs. Cruse—unless you want to re-examine?

* p. 2136.
† p. 2133.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. Curran Yes, if I may.

Inspector Certainly.

Re-examined by Mr. Curran

5826 Mrs. Cruse, could you please tell the audience here the nature of the constitution of the Labour Party? Is it or is it not true that the General Management Committee, which is made up of 32-odd people, consists of delegates from the local Labour Parties and Trade Union Branches? — Yes.

Inspector Mr. Curran—we are very informal here, but you are really putting the answers into her mouth!

Mrs. Cruse Briefly, then—delegates come from local Labour Parties and Trade Union Branches—that is, Trade Unions which have sent in affiliation fees and those Trade Unions send delegates to attend the GMC.

5827 *Mr. Curran*—And could you please tell me what the wording was of the two resolutions which were passed at this General Management Committee Meeting—

Mr. Forbes I object very strongly to this question. I asked this witness what the resolutions were, whether there was a resolution, whether they were put to the meeting and voted upon. If I had had an answer, I could have asked further questions. She refused to answer.

Inspector That is right: you cannot have it both ways, Mr. Curran.

Mr. Curran I could not agree with you more, Sir.

Inspector You had better deal with this point yourself in due course!

(*The witness withdrew*)

MR. DENNIS BURTON* *called*

Examined by Mr. Curran

Inspector Mr. Curran—to save time—we have all read the proof.

5828 *Mr. Curran* Are you Mr. Dennis Burton, of 133 Mill Road, Buckden? — Yes, I am.

5829 Could you please tell me what sort of reaction you have had from your friends about Thurleigh? — Well, before I really answer that I would like to say that I am not actually representing any Labour Party or anything. I am merely using this as a chance of getting my voice heard on behalf of a large number of my local community.

5830 And perhaps you would like to explain one thing—when was the first time that I met you? — The first time you actually spoke to me with reference to this—about three days ago.

5831 And I gave you some stickers, which you asked for—is that correct? — That is correct.

5832 And what was the response? — The response —even last evening was a typical example. A "Yes for Thurleigh" sticker was in my vehicle, I was asked for large quantities of them, and also asked by these people how their voice could be possibly heard. I said I have some petition forms with me, and one of these forms was taken from me, taken round one public house—a very small one at that!—and came back completely filled with signatures for Thurleigh.

5833 You live in a village which would be very seriously affected by noise—are you not worried about this? — Well, I appreciate that there will be some noise, but I feel it is over-ridden by the effects of the airport.

5834 We have seen your evidence, and I do not think there is need for anything further. Thank you.

Cross-examined by Mr. Connell

(*Joint County Councils*)

5835 Mr. Burton, paragraph 4 of your proof of evidence—you say that you think that the advantages of the airport would far outweigh the disadvantages, presumably in the matter of noise; and you go on to say that you have worked at and lived on airports. Can you tell us which are the airports? — I would rather go through the ones I have not. It would be much quicker.

5836 You have worked at Heathrow? — Yes.

5837 And at Gatwick? — Yes.

5838 And have you lived at those airports? — I have lived at Heathrow.

5839 And do I understand that you moved away from this sort of airport existence because of your children? — I never moved my home from Buckden. I had a caravan on the airport.

5840 You—not your wife and children. So you, as an individual, were not disturbed by the noise? — I was never disturbed.

5841 You did not subject your wife or children to it? — I did. I took them sometimes for the weekend.

5842 You never had them living there permanently? — No.

Cross-examined by Mr. Forbes

5843 I have one question, Mr. Burton. What in fact were the jobs you were doing in airports? — The actual work I was doing—I was a Contractors' Foreman, on building and maintenance of hangars and water towers.

5844 And are you still doing that? — No.

5845 You are now running a garage? — That is correct, yes.

5846 And you found—I understand from your proof —that when you were working as a Contractor's Foreman on airfields, you were earning more money? — I definitely was.

Inspector Any other questions? I have no questions. Thank you very much, Mr. Burton . . . Mr. Curran, I assumed you had no re-examination of that witness—was that correct?

* See also p. 2131.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. Curran Yes—I would like to re-examine him, if it was possible—

Inspector Please do so. You can always.

Re-examined by Mr. Curran

5847 Why is it that you returned to Buckden? — Well, as I said before, I never actually moved my home from Buckden. Why I returned to work in the area—because by this time my children were getting more grown up, and needed the discipline of a man in the house.

5848 How long have you been living in Buckden? — I have lived all my life there.

5849 And you would very much like to stay there, or would you be ready to move? — Pardon?

5850 Would you be ready to move or would you like to stay where you are? — I would love to stay where I am.

5851 I gather you are the father of five children. — Pardon?

5852 I gather you are the father of five children? — That is correct.

Inspector Mr. Curran, re-examination is re-examination and not for opening up entirely new avenues of questioning.

Mr. Curran Right, Sir. Is there anything further you would like to say?

Inspector No, you can't do that either.

Mr. Curran Thank you, Sir.

(*The witness withdrew*)

Mr. Curran May I please call Councillor Picton.

CLLR. GWILYM DEREK PICTON* *called*

Examined by Mr. Curran

5853 Mr. Picton, I see that you are an Urban District Councillor at St. Neots? — Yes.

5854 Can you tell me whether you have made any attempt to find out what people wanted about Thurleigh in your capacity as councillor? — I discussed this problem with a great number of my constituents and I have come to the conclusion that 80 per cent of the type of people that—I will make this quite clear, the type of people which I represent are in favour of the airport at Thurleigh.

5855 Did you make any attempt to go further than this impression, by for example suggesting the distribution of a questionnaire or some other. — I moved the resolution on St. Neots Urban District Council that a questionnaire be produced by the Roskill Commission, failing production of this questionnaire by the Roskill Commission it was going to be drawn up by five councillors. The resolution was rejected by the Urban District Council at the early outset of their inquiry when no real evidence had been studied by the Urban District Council, and the voting was three in favour of producing the questionnaire, and the rest of the councillors—which I believe at the time there were 15 present—was 12 against.

5856 Why was there opposition to the idea of finding out scientifically what people thought on the part of the Urban District Council? — I just couldn't say. It was accepted by certain councillors that we had got to reject the airport at all costs, and the way in which the meeting went, the majority went along with them.

5857 You, I see, are a Branch Secretary of the National Union of General Municipal Workers in St. Neots. — May I make it clear that I am not representing my trade union in this field, only the particular branch.

5858 Yes. I would like to press you on this because I know it is a small branch, and a very dispersed branch with no workers concentrated in one factory, and I know that attendances at GMW branches are often not very high. Can you please tell me how many people attended the meeting? — There were 12 people including myself attending the meeting.

5859 Didn't you think 12 rather small? — This is a large number to attend a Branch meeting that I have held; this is one of the largest numbers.

5860 Were you satisfied with that that you represented the membership of your union? — Could you repeat that?

5861 Were you satisfied that having passed this resolution in favour of the airport that you indeed represented the membership of your union? Did you take any steps to inform your members of the position taken by the union and then give them an opportunity to express their point of view? — This comes in two stages. This was not the first resolution that was put to the branch. The first resolution was put to the branch that the Huntingdon Trades Council, and the Huntingdon Labour Party should be called to look into the employment aspects of the third London airport at Thurleigh. This was then followed by six weeks and another resolution was passed that this branch of the Huntingdon Labour Party and the Huntingdon Trades Council should support the siting of the third London airport at Thurleigh, so the result of that fact, the voting at the meeting was that there was one abstention and 12 voted in favour of it. This was at the second meeting. The first meeting, the shop stewards went back to the general men on the floor and asked for their opinions and came back and reported, which they did do, and they said they had an overwhelming support and a small minority were against the airport. It followed on from there that I considered with my executive committee that we had taken a resolution here when 12 members were present, so therefore it was only fair that if there was another opinion of which we had not had any inkling or a strong voice against they should be allowed to voice this opinion. Therefore, notices went up in all the employments and the factories where my trade union members are working if they had any dissent

* See also p. 2132.

Printed image digitised by the University of Southampton Library Digitisation Unit

from this resolution to notify me by the 6th Seeptember, and this was a ten-day notice they had on this and I received no comment.

5862 Could you please tell me why it is that you yourself want an airport? — Well, as a working class man in the area in the industry, any industry that is going to come into this area is going to cause some sort of nuisance to somebody. This is going to bring a nuisance to a sector of the community where in smaller unit factories the people living in that area will be affected by this. They are in the minority, but in a way the reason why I support the airport at Thurleigh is the lack of employment that there is in this area, and the lack of employment that is going to be in this area in the not so distant future when the newcomers that have come to this town are—I am talking specifically of the area which I know, Huntingdon and St. Neots, that the industry plans for this area will not cope, I say will not cope with the expansion in population.

5863 Just one last question. Do you think as a consequence of the airport — Pardon.

5864 Do you think as a consequence of the airport that there would be created a wide range of employment which would not otherwise be available, or do you think this is a myth? — I think, yes, definitely.

5865 You think . . . — There would be a vast number of semi and skilled jobs in this area available with the outcome of the third London airport at Thurleigh.

Mr. Curran Thank You.

Inspector Mr. Curran, you want to ask him at this stage if he wants to add anything to what he has said.

5866 *Mr. Curran* Is there anything you would like to add? — The only thing, you know—I came into a place like this on Monday for the first time, and I came into here, and I was absolutely overwhelmed, you know, I can assure you. I have attended a number of meetings, but the actual legal standing of this meeting, and expertise you are fighting against, it is overwhelming and to get me to come up here and say my piece, the only reason why I am doing this is for my children in the future, and what I think of the employment situation in this given area, and I think that it will not solve any problems, any of the plans that are drawn up for this area. They will not solve the problems envisaged by the children that are being produced in this area.

Cross-Examined by Mr. Connell

5867 Perhaps not surprisingly you were overwhelmed on Monday with the expertise of this room. Do you think perhaps the expertise or those who are putting it forward might have known what they were talking about? — One has gathered this, but I also won a seat on the Urban District Council, and I read their evidence,* their expertise, and I say this sincerely, I read their evidence, their expertise, and if an expert can also go back on the evidence to which the expertise has done, it is a very hard thing to come back with the right conclusion. You have your expertise, there is no expertise on our side and they can't cross question you on this, therefore, I say this is a purely one-sided hearing.

5868 You heard the experts on Monday and Tuesday and subsequently? — I have to go to work on Monday and Tuesday.

5869 I thought you said you were here on Monday? — I came in the door on Monday after the meeting was over.

5870 So you did not have the advantage of hearing those experts nor have you presumably had the advantage of reading their evidence? — I have not read all the evidence; I read some of it.

5871 Perhaps you will take it from me that as far as I can find out all the experts in so far as they have been here have expressed opposition to this proposal. — What was their terms of reference when drawing up their conclusions, put it that way, when they were against the airport . . .

5872 You and I are going to get at cross-purposes if you ask me a question. — I am sure we are.

Inspector Please just answer questions, you will not injure your case by giving a straight answer to a straight question.

5873 *Mr. Connell* The question I asked, and I will repeat it for you, was the expert expertise that was present on Monday and subsequent days unanimously expressed opposition to this airport proposal. — Not having heard it, the evidence, yes.

5874 But it is another matter, you are an Urban District Councillor for St. Neots, are you not? — Yes.

5875 You do not wish it to be presumed by this gathering that you represent the views of that Urban District Council, do you? — No.

5876 Because the Council, the County Council express their opposition to this proposal . . . — I would like to say one point.

5877 Is that right before you are to comment? — Yes.

5878 Perhaps you can add anything else in re-examination if it is required. It has been suggested by supporters of the airport that one of the reasons why they have not done as well as they might have is because of the lack of funds. Would you support that suggestion? — Most definitely, and expertise.

5879 Yes. — Which you can only buy.

5880 Funds might bring with it expertise if experts can be found to support the airport, but is there any real reason if this is such a burning issue in Huntingdon or St. Neots why the trade unions of this area should not have supported this movement with financial support? — Why they have not . . .

5881 If this is such a burning issue and there is really such a shortage of jobs for people, why the

* Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

trade unions who presumably represent the working man could not have come up with some finance to support the voice here in favour of the airport. — If I have to answer—Do I have to answer this, because this goes into bringing individual unions concerned, and I don't want to be here to speak for them.

5882 Would you rather not answer? — Whether they have not or have is not for me to say, but I can assure you some have and some have not.

5883 Some of the unions have given financial support? — Some of the trade unions have.

5884 Should we understand from that that really the TECDA campaign has not been as financially hamstrung as it has claimed? — It has not.

5885 Has there been substantial trade union financial encouragement behind TECDA? — No.

5886 As far as the trade unions are concerned they have not seen fit to give them support? — The trade unions have not seen fit to give them support, to give financial assistance? You must understand it is very difficult for some trade union branches to say that they will donate money to a given body unless it comes from executive or district committee where it must be discussed; others have a contingency fund, but . . .

5887 There are other matters. First of all, are you a car owner? — I am a van owner, that is all I can afford.

5888 You live in St. Neots; is there at present any cinema in St. Neots? — There is not.

5889 When did it close in St. Neots? — That was 18 months or a year ago.

5890 Would I possibly be right in suggesting the cinema in St. Neots closed because of lack of support for the cinema? — Lack of support for the cinema?

5891 Not enough people went there? — To make it a viable proposition. If the property is worth X amount of money and renewing is not going to make it a viable proposition, this property is sold . . .

5892 There was not sufficient demand in St. Neots to make it a viable proposition? — At the time I remember it was. You should understand this, you are for the county council.

Cross-examined by Mr. Forbes

5893 Mr. Picton, you are, I gather, giving evidence not as an Urban District Councillor; are you giving evidence as a member of the Constituency Labour Party? — As . . .

5894 Or are you giving evidence as a member of the Committee for Democratic Action? — As an individual.

5895 Or perhaps both? — As an individual.

5896 Are you a member of the Committee for Democratic Action? — I am a member of the Committee.

5897 How big is the Committee? — It consists of about five members.

5898 Of whom you are one? — Yes.

5899 I take it Mr. Curran is another? — Yes. Mr. How is another, Mrs. Cruse is another. There are more.

5900 Mrs. Cruse, we have already seen, Mr. Curran we are to see. And you we have got there now, Mr. Picton. — Yes.

5901 Democratic Action, as I understand it involves, does it not, accepting the decision of the majority? — This is democracy.

5902 That is what you understand by democracy? — Yes.

5903 You are not a member of the Urban District Council which decided by a majority to oppose the airport? — Can I explain on that?

5904 Is not that right? It is right, isn't it? The Urban District Council decided, as I understand it, the majority at any rate were in favour of opposing the airport? — Yes.

5905 Now add anything you want to. You wanted to add something. — You are doing the questioning.

5906 Yes, but you were saying you wanted to explain something. — We have 18 members present on the Urban District Council representing 15,000 people; none wished to refer this matter back. This is democracy—none wished to refer it back to the people it concerns; they wish to take this evidence purely on their own basis, no other finding out, producing a questionnaire or anything like this, though the 18 people present were able to take this decision. How many more Urban District Councils, Parish Councils, County Councils have made this same decision?

5907 You think democracy involves having a referendum any time any questions come up before the body? — That is possible, and get things done which people want.

5908 Just one or two points. You say in your proof there is a poor representation of lower paid workers in local government. What do you mean by that? — You can take it from your evidence you produce here. How many working class men did you produce on the platform? The lower paid workers, working class men, let us put it in the right category.

5909 I am not going to answer any questions from you, Mr. Picton. I hope you will try and answer mine. You say in your proof there is a poor representation of the lower paid workers in local government, that is a statement I don't understand and I am asking you to explain it. — My explanation is that it is very hard for the lower paid working class man who has not had adequate education shall we put it that way, that he doesn't know how to sift evidence from different expertise, and he is not capable of doing this. Therefore, he doesn't find or feel himself adequate when he can get up on a rostrum and produce his point of view, so you will only get a certain type coming forward for local government and these people who come forward for local government are in the miniority, that is what I am saying.

Printed image digitised by the University of Southampton Library Digitisation Unit

5910 You mean that there are few lower paid workers who are active on urban district councils, is that what you are saying? — Correct.

5911 I understand the statement now, but of course there is the same representation for any particular section of the community, is there not, in local government, you have your vote or you don't have your vote, doesn't matter whether you are a lower paid worker or a higher paid worker? That is right, isn't it? — What do you mean, it is right?

5912 It doesn't matter what pay you get, you get the local government vote if you live in the area? — Your representation surely comes through who is standing whether you vote for a particular person or not. Can I explain my own position, I stood for an urban district council.

5913 I don't particularly want you to. — I will explain later on.

5914 Are you advocating the suggestion that local government ought to be stratified and for representation according to whether there were lower paid workers or higher paid workers? — This would put it on a more democratic basis.

5915 We now start to understand what you mean by the word "democratic" action in the title of your emergency committee. You did say in answer to Mr. Curran that as you went round "80 per cent of the type of people I represent were in favour of the airport". What did you mean by that? — I think it is self-explanatory, surely, that I work with lower paid workers, I go around the estates with lower paid workers, I also had lower paid workers working with me on finding out evidence to produce to this Commission, I hope it is not too late, the evidence, that this is fact.

5916 I am sorry, I misunderstood you because you were talking about going round the constituency you represent. You are not trying to tell the Commission, are you, that 80 per cent of the Ward or whatever it is you represent on the urban district council is in favour of the airport? — No, no.

5917 I have in my hands a copy of a newspaper called The St. Neots Advertiser dated Friday 27th June of this year in which you are quoted in these terms. Perhaps I had better introduce it by what is said: "An attempt to see if anyone in St. Neots favours the development of Thurleigh as London's third airport has met with no response at all. Coun. Bill Picton, who advertised for people wanting to see the Royal Aircraft Establishment" and soon "said on Tuesday: 'It was a great disappointment to me to get no response. I wanted people in favour of the plan to answer my advertisement. I had none whatever.'" Was that right? — That is correct.

5918 And it goes on: "He had already told St. Neots Urban District Council that he favoured the development of Thurleigh because it would bring thousands of jobs to the area and increase personal and public wealth. Coun. Picton advertised to see if his view had any support in the town or district. But no one appears to be interested. However, it does not alter my own view that this airport could be a very good thing for St. Neots.'" That is factually accurate? — Yes, that is accurate.

Re-examined by Mr. Curran

5919 Could I confine my re-examination just quickly to three points. If you can tell me, Bill, in considering trade union funds where does the money come from? Is there a lot of money at the branch level or at the central office level? — You see, Jamie, or Mr. Curran, how would you like me to speak—on behalf of my own branch?

5920 Exactly, or all trade union branches. — I know of the constitution, I have heard of other constitutions where differing things apply. I think we all suffer from the same dilemma that we are not allowed to spend money on behalf of our local branches unless we have a contingency fund to which you get private support for. The trade union contribution is used directly for the trade union movement and its national executives. But I do know that there is very little money available in local branches of trade unions.

5921 Could you tell me how much you have in your general purposes fund which you could give away? — None.

5922 Secondly, if I could ask you: you referred to the Committee as being four or five people. If I understand this correctly this referred to the people who worked on the research. If I can ask you to refer back to Monday evening on which there was a TECDA Committee Meeting, could you tell me roughly how many people were there? — About twenty people.

5923 Lastly, why is it that you don't feel—and we must be democratic about this—why you don't feel bound by the decision taken by your urban district council? — Why do I not feel bound? Because, you see, on the first outset of this I moved an amendment to the resolution that we support Thurleigh, I moved an amendment that we should not participate for or against any action over Thurleigh that involved any financial commitment. The voting at that stage was 7–6 and the Chairman didn't vote. You see, I can only say from this how split the Council was on this.

(The witness withdrew)

Inspector Mr. Curran, does that complete your witnesses?

Mr. Curran That is right, sir. Would you like me to speak on behalf of TECDA from here or from the front?

Inspector Well, I think possibly it might be best to tender yourself as evidence first and then speak afterwards.

MR. JAMES CURRAN* *called*

(Thurleigh Emergency Committee for Democratic Action)

5924 *Inspector* Will you just introduce yourself and say who you are? — My name is James Curran. I am Chairman of the Huntingdonshire Constituency

* See also p. 2133.

Printed image digitised by the University of Southampton Library Digitisation Unit

Labour Party and Thurleigh Emergency Committee for Democratic Action and I come here to convey the views of the trade unions listed. I have the trade union branches listed down here plus certain trade union branches that have written to me and I come here to represent in full the Thurleigh Emergency Committee for Democratic Action which consists of members from these trade union branches and members of the Constituency Labour Party.

5925 As to the nature of that evidence, your organisation has submitted two papers, they are both labelled 4041, one starts: "James Curran will appear on behalf of the following organisations", that is this chap, the other one is an introductory note, supplementary appendix,* which deals with some background matter. Now do I take it that the evidence you wish to put before the Commission comprises both these documents? — Well, perhaps I had better say that the supplementary appendix was prepared principally by Mr. John Wells of the Cambridge Economic Faculty who has now departed to Harvard University and I am very happy to answer questions on this. I am not an economist, I am not an expert, but if there is anybody who would like to question me in default of the person who is responsible for it I will do my best.

5926 You are prepared to do what you can to answer questions on these two documents. Now have you any more to offer in the form of evidence?

Mr. Forbes There is of course another supplementary appendix III attached to this document which purports to be a proof of Mr. Gerald James How.† I don't want to encourage any further witnesses and may I say here and now if Mr. How were called I would not wish to ask him any questions, but on the question of accuracy there does appear to be another proof.

Inspector That is what I asked particularly did Mr. Curran have any more witnesses. I take it you are not calling Mr. How?

Mr. Curran That is right. He is quoted there as an expert in aviation. He is in fact a person with a dedicated absorbed interest in aviation and he has come here to listen to the experts speak and to make his own personal comments, but he would in fact prefer not to appear on the platform.

Inspector If I may say so, Mr. How, I thought your evidence largely material which should be considered at Stage III‡ and it seems to be the position that if it is not being produced as formal evidence at this hearing it should be placed in the category of written submissions.

Mr. How I would like to submit further evidence at Stage III.

Inspector Stage III fortunately is another day. So I think we have now established upon what you are prepared to answer questions.

* p. 2136.

† Available for inspection, by arrangement, at the offices of the Commission.

‡ See *Papers and Proceedings*, Vol. IX.

Cross-examined by Mr. Connell

(Joint County Councils)

5927 Mr. Curran, we understand that your supplementary appendix here is in fact not your work at all but the work of a Mr. Wells, is that right? — Yes.

5928 Have you in fact studied Mr. Wells' evidence? — Yes, I have.

5929 And do you stand by that and support that? — I do, in fact, I support it wholeheartedly. I might add and supplement this by the fact that I have not got behind me Mr. Sharman or Mr. Hawkes, which is regretful, but I will certainly answer these questions as best I can.

5930 Has the supplementary proof of evidence been submitted to any of these bodies that you represent? — Can I make this quite clear, that this evidence is presented on behalf of the Thurleigh Emergency Committee for Democratic Action. This consists of delegates from these organisations, it is not the evidence of each individual organisation.

5931 Has the evidence been submitted to each individual organisation for their approval? — This evidence was completed at 5.30 on the morning of the day on which the Roskill Commission began, i.e. Monday morning.

5932 That is the supplementary appendix? — No, the main part.

5933 Has this supplementary appendix been submitted to them? — No.

5934 So they have no knowledge of the contents of this document? — No.

5935 So from what you tell us neither has this because of the shortage of time? — Correct.

5936 In the course of this particular document, that is not the submission but the small one, you claim as you have done on other occasions to represent the majority of people whom you come into contact with on this matter? — True.

5937 Do you base that claim on the public opinion polls which you have itemised in this document? — Can I say first of all that it is regrettable that no opinion poll has been conducted and that nobody is in a position to state what it is the majority of people think, one must merely go upon pieces of evidence which are available. Although these opinion polls are amateur they do nevertheless I think provide substantial evidence of what people in fact think.

5938 Can I ask you to look at page 8 of that document* and about the middle of that paragraph: ". . . and this is the reason why most people have been in favour of the Thurleigh proposal." Do you see that sentence? — This is which document?

5939 Page 8 of the small document just above the centre ". . . and that is the reason why most people have been in favour of the Thurleigh proposal." — Yes.

* p. 2134.

Printed image digitised by the University of Southampton Library Digitisation Unit

5940 That appears to be an assertion that the majority support your view. Do I understand from your answers previously given that you cannot possibly represent or claim to represent the majority because to quote your own words "Nobody knows what the majority think"? — That is correct.

5941 So that is an assertion which is certainly not supported by fact, by discernible fact? — I think there is a difference between what is certifiably fact in the form of incontrovertible evidence and what you derive from all those pieces of evidence and from impressions talking to people. This is in fact my impression and also on the basis of the evidence available.

5942 Should we therefore rephrase it: "And this is the reason why in my opinion most people have been in favour"? — Yes.

5943 And in support of that conclusion have you relied, in any event in part, upon the public opinion polls which you have set out in this paper? — Yes.

5944 Can you tell us for instance of the opinion poll that was conducted by Councillor Bellamy, the sample of 130 people that he questioned? Do you know at all where those people lived? Do you know, for instance, whether they would be living within the 35 NNI? — The information I received from this is from Mr. Bellamy and from the local newspapers.

5945 Can I take this quite shortly, that of the opinion polls itemised by you in this document you don't know where the sample of people questioned live, you don't know what the questions asked of those persons were, is that correct? — Well, according to Mr. Bellamy he asked whether they would support the airport or not.

5946 You don't know where they live?— — It is a very amateur survey, no interlocuting, just a bloke going along and asking people in the factory what they support.

5947 Can you tell me what Mr. Bellamy's views are? — As far as I know he is in support of it.

5948 So the opinion poll was in fact conducted by a person who was biased? — Yes.

5949 And would that apply in respect of Mr. Watts, Mr. Hodson, Mr. Talbert and Mr. Mack? — It is also true of the opinion polls which you conducted.

5950 One of the things you suggest is that Rushden is an area where support for the airport is found? — One of the opinion polls is Raunds and not Rushden.

5951 Let us look at page 15. Can you answer the question about opinion polls? — In a place like Raunds immediately after the town councils come out against an airport nobody is going to go along and produce an opinion poll which shows that 80 per cent of the people are in favour unless there is a hell of a lot of people want an airport, and to say to the contrary is nonsense.

5952 But, you see, you mention at page 15—Rushden, to pick an example—you say, "With a few exceptions in places such as Rushden and Corby, the local authorities in the area have come out against the airport". The suggestions there is that the Rushden local authorities supported the airport. Did you know that an opinion poll or a survey conducted on their behalf by the Rushden Amenities Society found that just over 20 per cent of the people questioned were in favour of the airport, and just over 60 per cent were against it? — Could you tell me when this was done?

5953 I cannot tell you the date . . . — The reason I ask is that the Rushden authorities—as you know—are in fact doing a large survey on a scientific basis, and this was inaugurated last Saturday.

5954 But this was a poll which was taken in that area which appears to show overwhelmingly—to quote your own wording—opposition to the airport. Could you accept this as a general point. Could you accept this as a general point—that unless those surveys are professionally conducted, you can get them to show anything you want? — No, I don't.

5955 You don't—well, that is an issue between us, then. You have circulated from this document a number of Trade Unions in the area, is that correct? —page 13—"Fifteen trade union branches representing a membership of well over 8,000 men and women have come out in support of Thurleigh as a site for the third London airport". How many trade union branches did you circulate to see if there was support or not? — I do not know, but I should guess about 80.

5956 Eighty? — Yes.

5957 So, giving latitude for late replies and people who did not bother to reply—you got a reply involving support for 15 out of 80? — If I may say . . .

5958 Is that right? — A large batch of that 80 were sent out a matter of ten days ago. Trade union branch meetings occur sometimes once every two weeks, once a month, once every two months, three months. So if you are trying to say from that that because there are only 15 that came out—in fact, there are 17 now! —I think you are casting a smear.

5959 Well, the 17 have had time to reply, but the other 63 have not bothered—is that right? — On the contrary. I have got letters—in fact, I can hand them over to the Roskill Commission if you like—I have got letters from the Secretary of two trade union Councils saying how splendid this is, and how the delegates on the trades council think it should and it is going to go before the branches for discussion and so forth. I might add that there are many trade union branches that I have been unable to get hold of . . .

5960 But you have been able to contact 80, and the present figures are at any rate far less than 25 per cent. — Correct.

5961 Would you turn to page 21 of this document? You are suggesting there that a problem in the area which you are representing is, amongst other things, poor transport. And "overtime eating into leisure

Printed image digitised by the University of Southampton Library Digitisation Unit

hours, and wages making car-ownership impossible". Is that right? — Yes.

5962 Do you know that the national average for households per car—one has to be careful to get it that way!—households per car is 1·9—this was at the last figures available in 1966. — This also . . .

5963 Do you know that, or accept it? — I accept that.

5964 You can take it, perhaps, that Huntingdon Town Division is a fair area for comparison purposes to see if your comment is valid? — Comparison with what?

5965 With the national figure. That is an area where there is new development and council houses, estates, and matters of that nature. Is that fair? — I think, if you are really wanting to, you could certainly compare Huntingdon with the rest of the country, but you want a better breakdown of figures.

5966 I am not going to compare the county itself as a county—although I would like to—but Huntingdon Town Division. Are you aware that the household-per-car ratiot is 1·8—that is to say, better than the national average? — I was not aware of that—it is interesting.

5967 So it is difficult, in the light of that, to support your suggestion that wages in the area make car-ownership impossible. — In considering the suggestions you have just produced—could you tell me whether this is the average number of cars per household?

5968 No households to car. — It is not households with cars?

5969 Households per car. — Sorry—it is the number of households with cars . . .

5970 In other words, the figures indicate that there is a better ratio of households per car in that division than nationally. Now, finally, on this document at page 21—I submit to you, Mr. Curran, that you are making somewhat of a wild claim when you say that "we feel that 100 per cent subsidy for noise insulation should be provided for people living in the central noise area". You see—do you really think that this is a really practical proposition, to insulate homes of the people living within the noise area? — If you look at it, it says "100 per cent subsidy". We feel ourselves, very strongly indeed, that the Government should pay for the complete noise insulation—soundproofing—for all people in the central noise area.

5971 One would have to consider whether that would be a worthwhile operation, — This comes outside the Stage II, but if it is a question of putting an airport at enormous cost at Foulness or soundproofing the houses in the area, I would say soundproof the houses in the area.

5972 But isn't the effect of soundproofing lost as soon as you open a window? — I do not claim to be an expert on noise control. All I know is what I have read in the Government publication, *Action against Aircraft Noise*.*

5973 That was perhaps an ill-considered suggestion, because it would be completely impracticable, is it not? — Well—it is granted that it is possible to have certain noise controls, and this costs money, and we felt that the Government should pay for this.

5974 Can we just turn quickly to the supplementary appendix—do you see four lines from the bottom of page 1, "Similarly, this paper concludes that if the East Anglia and Bedfordshire Region is to grow and thrive, then it is absolutely essential that a development on such a large scale should take place". Do I gather that the suggestion there is that in any event, so far as Bedfordshire is concerned, it is neither growing nor thriving? — I think, if you read further on, it says that Bedfordshire is thriving, but the problem is whether it will thrive in the future.

5975 What is the implication behind the remark, "if . . . Bedfordshire . . . is to grow and thrive"? It is the suggestion that Bedfordshire either is not or will not in the future. Have you had an opportunity of studying the evidence of Mr. Cowley?* — I regret to say that I did not give it the attention it required—I did glance through it—but I hope to do afterwards.

5976 Will you take it from me that that evidence concludes that within 20 miles of this area, there will be an extra 40,000 people in the next few years—so that is a fairly growing area, isn't it? — I am only basing this on the report made by the County Planning Officer of Bedfordshire on employment,† and it set out . . .

5977 We will come to that in a moment. Will you accept that it would appear from Mr. Cowley's evidence that Bedfordshire not only is growing, but will continue to grow? — This is your own personal interpretation; it is not the interpretation made by the County Planning Officer, who in fact said there would be a shortage of 8,000 jobs in the Bedford area—it may be that the expert has his figures wrong, and I am not in a position to discuss his figures.

5978 I think that figure of 8,000 comes at the bottom of page 13 of your appendix. It refers over the page to table 8, which appears on page 15—is that right? — Yes, page 15, table 8.

5979 And at the bottom of page 13, it says, "there may well be a surplus of male labour over available jobs of 8,000". That is where you get the figure of 8,000 that you just quoted. — Well, I seem to remember . . .

5980 Is that where you get the figure of 8,000 from? — I am really basing this on my own knowledge, which is page 2 of the Bedford Report.

5981 Did you get the figure of 8,000 from there, because that is the figure suggested in that appendix? — Well, the figure I am quoting is from the Bedford Report.

5982 It is the same figure? — Yes.

5983 Now, turn over to table 8, on page 15. "1981" — that was the year Mr. Cowley was talking about—

* Available free from the Board of Trade, 1 Victoria Street, London SW1.

* p. 1807.

† P. G. Laws. *The Bedford Study—Employment.* (County Planning Dept. 5s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

"working population, 50,600; number of jobs available, 45,000" What is the difference? — Well, the difference here—my maths is not very good—it is 4,600.

5984 So where does 8,000 come in? — If I may recall the report made by the County Planning Officer —he took different estimates, a high estimate of population growth and a high estimate of natural growth, economic growth, and it is reflected in this.

5985 Go back to the previous page—"as table 8 indicates". So that indicates that this figure comes from table 8. Is that an accurate reflection of table 8? — He is using these estimates derived from that report.

5986 But is he using it, or purporting to draw a conclusion which the figures do not support? — All I can say is that it is contained in the Report.

5987 Take the situation in 1981—if you add up the jobs available then, there will be 72,300, to go round 72,100 people. There will be more jobs than people, lumping men and women together. That is right, isn't it? — As I understand it, there was a shortage of female labour which would continue in Bedford, and if you lump these two figures together, you will get distortion. On of the problems in Bedford is the fact that the shortage of female labour is inhibiting the growth of firms in Bedford.

5988 Mr. Wells has drawn his conclusions from a document called *The Bedford Study.** — Yes.

5989 Do you understand that that was produced in 1967, on information available during 1964 and 1965 —can I just define the issue between us on this? — are you suggesting that Mr. Wells has taken his conclusions out of context—and I invite the Commission, Sir, to study this document. That is the issue between us. I do not see any point in expanding upon it. Now, Mr. Curran, I do not want to ask you any more questions save for this: you understand, do you not, that the evidence which the Inspector hears at these Inquiries has to be of a local character? — Yes.

5990 The figures which are quoted time and again in 4041, the evidence and figures which are extracted from a large area of East Anglia as well as figures relating to Bedfordshire . . . — Well . . . I know myself—I do not know what problems Mr. Wells had, but I know it is very difficult to get hold of the figures in a county-by-county breakdown. So if you cannot get the figures for average weekly hours worked in Huntingdonshire, Cambridgeshire, you must obviously take the nearest figures, which are the regional figures.

5991 But the figures are derived from the area comprising East Anglia as well as Bedfordshire? — That is correct.

5992 Considering counties as far distant from this site as Norfolk and Suffolk, and towns as far distant as Ipswich. — Some . . .

5993 And considering the situation around Ipswich is no more relevant than the conditions prevailing around, say Worcester. — Well—there are certain similarities about the East Anglia region. They all have average earnings well below the national average, so they are to some extent a homogenous group, even though there are differences within East Anglia.

5994 But that does not apply to the area of East Anglia closest to this area. — Huntingdonshire and Cambridgeshire obviously come within the range of the local effects of the airport.

5995 And the low wage levels don't apply, would you say? — Well—I think I am right in saying that in the report quoted here, that the national earnings in Cambirdgeshire and Huntingdonshire are below the average.

5996 Let us test that, by looking at page 5, table 2. These are the ranking of the counties of East Anglia, Bedfordshire and Northamptonshire, according to average earnings for all counties in England, and we deal with a ratio out of 40—where does Bedford come? — It comes second.

5997 It is not bad, out of 40. — No, it is prosperous.

5998 Where did Huntingdonshire come, in 1959/60? — 31.

5999 Move five years on, and where was it? — 10.

6000 Out of 40? — And do you know why that is? To my own knowledge, you will see that the average wage jumps up in Huntingdonshire, and the reason was that Peterborough was incorporated in Huntingdon, and if you look at the wage rates at St. Neots and places like that, they are lower than Peterborough . . .

6001 Another reason is that there are the towns of Huntingdon and St. Neots themselves, which are expanding. — That is true.

6002 So the comments which this document seeks to make about low wage levels do not apply to the local area about this area, and we are concerned here with the local implications. — Well, it may not seem of great significance to you that the average earnings are below the national average, but to some people it means a lot.

6003 And does that apply to Bedfordshire? — Bedfordshire, as we point out, is exceptionally prosperous. What we are concerned about is that its prosperity should continue.

6004 To Huntingdonshire . . . — Huntingdonshire is below the national average.

6005 Well, Table 2 speaks for itself. Would you rather see this airport go to a growth area, or a depressed area? — The reason why . . .

6006 I asked you, would you rather see this airport go to a growth area or a depressed area? — The reason why we want the airport is because we believe it would develop a depressed area. It would open up the whole area of Cambridgeshire, Northamptonshire, Huntingdonshire and we hope spread out towards East Anglia, opening it up economically, development and industry . . .

* County Planning Department. (5s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

6007 Would you rather see it come to a growth area?—which I suggest this is—or to a depressed area? — Ideally, we would have the airport in Norfolk; but it is not one of the shortlisted sites.

6008 I am wondering whether you are supporting the wrong site for the airport!

Inspector It is far from local implications, to go to Norfolk; so we won't go there.

Cross-examined by Mr. Forbes

6009 The point you are putting forward, as I understand it, is that you say an international airport—tell me if I am putting it fairly, would create first of all an increased number of employment opportunities, and secondly a greater range of employment opportunities than exist. That, I take it would be true of Cublington, Nuthampstead, and Foulness, all four sites could say exactly the same. — Correct.

6010 As far as you and the Constituency Labour Party and the Committee for Democratic Action are concerned, you see this as a sort of golden band wagon upon which you think Huntingdon and St. Neots should jump. — Can I answer that question? One of the main reasons why we believe the airport should come to Thurleigh is because we think there are very good reasons why it should not go to Foulness, but this unfortunately does not come into the Stage II part, and therefore you must only consider local factors necessarily; one must consider the local factors in Huntingdonshire and Cambridgeshire—

6011 I am trying to eliminate what are not local factors, and as far as I understand your answer to me, the prosperity to be brought by an international airport is not a local factor it is a general factor. — If I understand your question correctly, wherever the airport goes it will create prosperity and employment, yes I agree.

6012 And it only becomes a local factor, does it not, if it can be shown that the benefits—and I am not accepting there are benefits I am trying to follow your argument—that the benefits which the airport brings would be of greater benefit, of particular benefit locally? — Yes.

6013 And in order to support them you would need to show that the area to be benefited was—I don't want to use the term in its exact or technical sense, but show it was in some way a depressed area. — If as it seems average earnings are below the national average, if there are available figures, and one must take these figures from the region not the County, they are not available for the County, if there were these figures it would appear that people put in very heavy overtime well above the average, and this conforms with one's own experience of people living roundabout where I do, one can only conclude the airport will be of tremendous benefit.

6014 Of course, your evidence for suggesting that this is an area where the wages are below the national average is non-existent. — Well, if I read this correctly it shows that in Table II Cambridgeshire, Huntingdonshire, and Northamptonshire have average earned income from employment which is below the national average.

6015 It shows what? Tell me again? — If I understand Table II correctly, it shows that in Cambridge, Huntingdonshire and Northamptonshire, all three counties which would be beneficially affected by an airport, the average earned income is below the national average.

6016 What is the national average? — The national average for England is 892.

6017 Down in the last column. — Yes, and Northamptonshire was 826.

6018 It also shows, does it not, at any rate in Huntingdonshire and Peterborough the growth rate over the past two years has been above the average growth rate. — This, I submit, is partly a function of the incorporation of Peterborough into Huntingdonshire, but I will agree that we have definitely benefited from the as yet piece-meal industrial expansion in the county.

6019 I don't see that in the table. — I think Table 35 or 38,* you will see the figure for Peterborough.

6020 What I want to put to you is this; broadly speaking if you look at the country as a whole you will find that if you take it by counties, counties where a predominant industry is agriculture have wages lower than the national average and counties where the prevailing industry is some other form of industry have them higher. — Yes.

6021 Northampton is low because it is predominantly an agricultural county. This part of Bedfordshire if it were to be separated from the rest would be the same, you would expect it to be the same. — Yes.

6022 Norfolk and Suffolk are areas of low wages compared with the national average because they are agricultural rather than industrial. — Yes.

6023 And what you are saying, as I understand it, and I just want to know this, is that you advocate generally the industrialisation of rural areas in order to produce the better wage rates in those areas. — That is correct.

6024 And what happens to the countryside, as such, does not matter. — That is not correct.

6025 Well, they are incompatible, aren't they, you can't industrialise the countryside and change it from agricultural area to an industrial one without abolishing the countryside. — I think you should make a distinction, Mr. Forbes, between agricultural land and countryside. You have already heard the representative, I think for the Farmers' Union complaining that the problem of trespassing is on the increase, much of the countryside is not available to you. It is the public places, the greens, the commons, places like Port Hove, those are the countryside, but the country fields if you like, to people are banned.

6026 Do you complain about that? — I am just trying to point out to you that—well submitting to

* *East Anglia—A Study*. (HMSO; 40s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

you that if you had industrial development encroaching upon agricultural land itself this does not necessarily mean you lose a lot of the countryside which can be made use of by the majority of people.

6027 When you say "use", what you mean is the public cannot get any benefit from the countryside unless they are entitled to walk over the fields? That must be what is sub-assumed in your last answer, mustn't it? — I think there are a number of facts—

6028 Is that right? — Could you ask that question again?

6029 What you are suggesting is that nobody can get any benefit from the countryside unless he is entitled to walk over the fields, is that not right? That is what you are suggesting? — I think if a trespass notice is put up and you can't cross that field this could discourage you from using it, in which case you don't derive benefit from it; that is quite logical.

6030 I am just interested in your philosophy, and that of those you represent. You don't derive benefit from walking in the country along the level highways which are provided? — Certainly you do, you can go for long walks along macadam roads, and there are plenty of them, but there are not so many rural lanes. I myself am an incorrigible trespasser.

6031 I am sure; this is the Committee for Democratic Action, certainly. Do you know that there were in fact 160 separate footpaths in this part of Bedfordshire, apart from the roads? Have you ever lived in the country? — I first came to Godmanchester, which is a rural village, and as you see in the evidence which has been submitted by the Council for the Rural Preservation of England* it points it out as being one of the most attractive villages in the country, quite unspoiled by its admirers, with lovely historic homes. I have lived all my life save for two years over at Hemingford Abbots, which is a small rural village, or Godmanchester.

6032 You still take the view you can't enjoy the countryside unless you have to trespass on the fields? — I am not taking that view, I am merely saying—

6033 I think you were. — You can lose quite a lot of agricultural land and not lose countryside, and if I can show you what I mean, I mean for example a family came to visit us last week; it lived in Huntingdon for I think the last six years, and it is only about two miles away from the river, yet they had not once been on that river, and unless you have got a car and unless you in fact live in a small rural village where you have lots of lanes, and grass, you can go into the fields—The countryside is not all that accessible to you. You want to be able to make more use of the countryside.

6034 You know, I hear what you say, Mr. Curran, but lots of people enjoy the countryside without motor cars and have enjoyed it long before the motor cars were ever invented. — Certainly.

6035 I just want to ask you a question or two about your various activities. First of all, I understand, and correct me if I'm wrong, because I didn't see it, you made an appearance on the television last night. — I didn't see it either.

6036 No, rather naturally, but you were there. I am instructed, and again correct me if I am wrong, that during the course of some interview you told the British public that the association I represent had extracted £60,000 in subscriptions from wealthy landowners, is that right? — I think you probably in fact have got the incorrect impression of a programme which you did not see.

6037 Well, what did you say? — What I did say was in fact that the Airport Resistance Association I thought had obtained £60,000 worth of campaigning farmers, and it is fair to assume that the majority of working men probably could not make that sum of money available to an organisation which they support.

6038 Well, let us just examine it. First of all, what was your warrant for suggesting the sum of £60,000? — Well, I was told by a local journalist that this is the case.

6039 I see. — And it is reported, so he told me, in the local newspapers.

6040 Well, you know, I thought some of the things we had heard from you were a little naive, but if you believe everything local journalists tell you you would be even more naive. That was the source of your £60,000, was it? — Yes.

6041 Is that the type of accuracy we can expect from your statements gleaned from local journalists? — No, you—I have not got access to your accounts. You have. Could you tell me how much money in total you obtained?

Mr. Forbes I don't propose to answer any questions, that is not my function.

Inspector Mr. Forbes, I wonder how far this is getting us.

Mr. Forbes I am testing, if I may, sir, the accuracy of Mr. Curran's statements, many of which are bald, in my submission, and unconvincing, if they can have little verisimilitude attached to them perhaps it will help Mr. Curran, if they can't it will help me.

Inspector I would rather the questions were put on the evidence submitted rather than a television programme which I have not seen, and perhaps other people have not seen.

6042 *Mr. Forbes*—You see, Mr. Curran, I ask this question really because, as I understand it, you are saying, for instance on page 4* "BARA has been able to call upon the support of the most wealthy members of the community as the size of its campaigning funds indicate". I understand you to have been quantifying this yesterday, but that is your case, isn't it, or part of it, that my association is a wealthy association because it calls upon wealthy members of the community. Your association, I think you told us yesterday has funds of £35 because it only represents

* p. 1965.

* p. 2133.

Printed image digitised by the University of Southampton Library Digitisation Unit

the poor working man; that is the kind of impression you are seeking to give, isn't it? — The trade unions, if they wanted to could raise a fantastic amount of money. They could raise as much as the National Farmers' Union, but money has to come from the central office; the local branches can't supply that money.

6043 No. — And without the central office of the trade unions' financial backing we obviously have not got very much money. I submit to you that in—

6044 Don't submit anything to me, Mr. Curran. If you have anything to submit—. — I am answering your question. I suggest that BARA was sponsored and organised by people living in large houses in the vicinity of Thurleigh, and that they undoubtedly represented a considerable number of people living in that area, and those people include working men as well as wealthy people—

6045 Yes, but am I right in thinking you were telling us your financial fund was only £35? — No, it has actually gone up from £32 to £37.

6046 I see. The working man, of course, can contribute to a cause that he feels worth while? — Yes.

6047 I am using the term "working man" in the sense you use it. — He certainly could, in fact we have so many debts we are going to send round all the factories asking "can you help, please, pay for our debts", which we have not done yet.

6048 I want to ask you a question or two about the status of these various bodies. First of all, the trade union branches which you list on the first page of your evidence, and also on page 13*; has their authority been conveyed to you? — Well, in each case I have received a letter from the trade union branch secretary with the official seal at the top of the letter—this evidence will be provided to the Roskill Commission, to certify in fact this is official backing of the trade union branches concerned.

6049 It is a letter written on trade union note paper and signed by the secretary? — With the branch Seal, and no branch secretaries can use an official seal, save at a branch meeting — it may be small it may be large. The resolution was carried in favour of Thurleigh.

6050 Yes. How many of these branches which you listed on page 13 have you been informed that meetings have been held to give support? — How many letters have I received?

6051 No. I am sorry, let me put the question again, please. How many of the branches you listed on page 13 have told you that branch meetings have been held at which a resolution supporting the airport were passed? — I think I am right in saying in most trade union branches, no executive committee can in fact take a decision.

6052 That is not an answer to my question. It must be susceptible of a fairly easy answer. How many of these have told you that branch meetings have been held at which resolutions were passed? — As far as I can recollect all of them have.

6053 Because I am looking at a cutting in the *Morning Star* dated the 11th August 1969 which says that only five branch meetings have been held according to your committee. Is that right? — This is when?

6054 This is the 11th August. — That is quite correct.

6055 So that we are to take it that the balance whatever number it is have indicated to you that branch meetings have been held since the 11th August? — That is right, yes.

6056 Are you in a position to let us know how many people attended any of those branch meetings? — I am not. All I can tell you about it is the two branch meetings I attended.

6057 Where? — Rushton, Huntingdonshire Branch of the National Union of Public Employees, a very small branch, has a very dispersed membership.

6058 How many people attended? — About 32–34 out of a total of—what? — 110.

6059 And the other? — And the other one was at Biggleswade, the Amalgamated Union of Engineering and Foundry Workers, and there there was about 45–48.

6060 What is the membership? — I don't know, but it is a very large branch in a large industrial town, so I would estimate it to be—

6061 Some thousands? — I should think less than a thousand but over five-hundred.

6062 Am I right in the question I put to Mrs. Cruse and I will give you the opportunity of dealing with that, that at the Constituency Labour Party meeting on the 30th August you were given authority to appear at this inquiry on behalf of that Constituency Labour Party subject to approval by all the branches? — There you are incorrect. What happened at that meeting—and I intend to submit the Minutes of that meeting to the Roskill Commission—a resolution was passed supporting Thurleigh as a site for the third London airport. The second resolution was passed supporting TECDA and contributing an unnamed amount of money to the organisation, in other words, I have a mandate to appear here and say that the Constituency Labour Party support Thurleigh and the third London airport. I am not in a position to represent in detail the views of the Constituency Labour Party because in order to do that you have got to get the evidence, go back and have a second meeting, you have to have a certain period of time before the constituency meeting is held and it wasn't possible. So I am only here to represent the detailed views of the Thurleigh Emergency Committee for Democratic Action which has been supported by a resolution of the Constituency Labour Party. I am not here to do anything more than simply say that the Constituency Labour Party supports Thurleigh and TECDA.

6063 You called I think a meeting at Huntingdon on the 31st July 1969? — That is correct.

6064 At which you invited Mr. Beazley to come and he in fact brought with him 40 BARA supporters, did he not? — I have no idea. It is difficult

* p. 2135.

Printed image digitised by the University of Southampton Library Digitisation Unit

to say who supported and who opposed the airport simply because the majority of people didn't actually open their mouth.

6065 There were altogether some 80 people at that meeting? — I would have said slightly less, about 70.

6066 Mr. Beazley told us that 40 of them were BARA supporters. If there were 70 that means there were 30 non-BARA supporters in Huntingdon? — Assuming that estimate to be correct that is true.

6067 With a population of 15,000. The other matter is at page 5* of your evidence. You talk about the genesis of TECDA and you say it was initiated by two people who were in support of the airport. — I think the two is crossed out.

6068 I wondered if it was just a blob. What should be put there instead of two? — "By people".

6069 Five people? — "By people".

6070 How did the two get started? — Well, in actual fact it was two people.

6071 That is rather what I thought, yourself and one other? — That is right.

6072 When did you descend upon the scene? — I merely thought—

6073 I said when. — When did I descend upon the scene?

6074 When did you and this other person start initiating action—democratic action, of course. — I don't know when TECDA was formed, about the beginning of August, was it or late July.

6075 And this was a question of you and the other gentleman coming down and organising support for the airport? — Organising support?

6076 Yes. — Perhaps I can tell you a bit about what TECDA was since you have got a grave misapprehension about its nature. It started off simply as a group asking trade union branches to make up their mind publicly as to what they thought about Thurleigh airport. In fact, we started off not by sending propaganda out or anything, just saying what the hell do you think, could you please pass a resolution yes or no. We ourselves, obviously we want the airport. It was only when it became clear that we were not just two people, in fact there were lots and lots of people that were prepared to be involved that the thing got going.

6077 Just one last question, Mr. Curran: you are I think studying, are you not, at Cambridge and is it your intention and ambition to go into politics? — I would like to work as a full time trade union officer.

Inspector At this stage any more questions or no more questions I think we will break for lunch at least to give Mr. Curran a break.

(Adjourned for lunch)

Inspector There are just two points before we resume. I did call yesterday upon the Newport Pagnell and District Association of Parish Councils and they did not appear, but I did recall that when the Newport Pagnell RDC appeared Councillor Norwood did say their statements had also been endorsed by the Newport Pagnell and District Association of Parish Councils, so I am assuming that the Association was in fact represented by the RDC.

The second point is that the Biddenham Society were due to appear yesterday. I believe I am right in saying that they now wish their submission to be taken as a written submission. Unless I hear from them I will assume that.

Mr. Broderick I wonder if I might ask Mr. Curran one other matter which arose over lunch?

Mr. James Curran recalled

Cross-examined by Mr. Broderick

6078 Mr. Curran, it is quite shortly this: you used the name Thurleigh in the name of your organisation. I want to make it quite clear that you are not suggesting that you speak on behalf of that village? — I think only that we speak on behalf of a section of that village.

Inspector Are there any other questions to Mr. Curran? Mr. Curran it is now your privilege to sum up the case for your body.

Mr. Curran You may well derive the impression from the fact that every organisation apart from ours attending the hearing of the Commission was opposed to the airport and from the fact that all the local authorities with very few exceptions have come out against the airport that there are in fact very few people who want the airport. We submit that the opinions of local people are in themselves important in assessing the impact which the airport would make and that it is of vital importance to try and find out and investigate what in fact people really think.

In considering the local authorities as representatives of local public opinion we believe that you should first consider what attempts the county councils, the district councils, the borough councils have made to investigate what the people they represent actually think. There have been occasions at St. Neots, at St. Ives, where councillors have proposed that an opinion poll be conducted and in both cases these were turned down. We are by no means certain that in fact the local authorities used as their terms of reference in considering Thurleigh the question of what people think.

I make an exception of the parish councils because here I do believe that there has been definite contact and communication with local people and this is why in questioning witnesses I have confined myself only to cross-examining those villages which are in the immediate vicinity of Thurleigh represented by parish councillors under the umbrella of BARA because I feel that if there is genuine strong opposition to the airport it is here that you will find it. I was impressed by the evidence, the sincerity and heartfelt hostility which was expressed against the airport by many people who appeared on the witness box.

* p. 2133.

Printed image digitised by the University of Southampton Library Digitisation Unit

I would however like to say that it would be very dangerous I think to think that all parish council meetings do in fact represent what all the people in those villages think. We find a situation as at Bromham where a unanimous decision was taken in the parish council to oppose the airport and yet a third of those villagers refused to sign a petition opposing an airport. We find the same thing again in Thurleigh where the first opinion poll showed a third of the people in favour of the airport and yet at the parish council meeting an overwhelming decision was taken against it.

What I think one must consider is what sort of people attend parish council meetings. One of the witnesses who was called forward said that he himself living in Buckden and had not attended a parish council meeting and nor had any of his friends, and yet all those people he maintained wanted the airport.

I think also in considering the villages around about Thurleigh one must make a distinction between different types of villages. It really isn't true to say that a village such as Biddenham is a muddy rural small community tied to the land, and in the evidence which has been submitted by the Biddenham Society* they maintain that only 3 per cent of the whole population are manual workers, that 43 per cent of the people commute to Bedford, another 43 per cent commute beyond Bedford, and I have no doubt at all that in a village such as Biddenham you will find overwhelming opposition to an airport. But I do submit that in some of the villages where there is a large council house population, in villages such as Thurleigh and Bromham, you do definitely find strong support for the airport.

In considering what other people outside these small villages think about the airport one must turn to the opinion polls which are available in the evidence. These opinion polls as was pointed out in the cross-examination are amateur, they are also conducted by people who were in fact in support of the airport, so therefore you must necessarily retain a certain scepticism as to their overall validity. I nevertheless think that in the opinion poll done at Raunds, the results were so overwhelming at a time when the local Councils had come out against it, that they are on intrinsic evidence very, very convincing indeed. In the opinion poll which was done at St. Neots—and I am not sure whether I am allowed to say this—it has been found, and the results are 162 in favour, 13 against, and 10 don't knows.

Finally, I would like to consider one last opinion poll, and this is done by a newspaper which has come out against the airport, which has said TECDA is wrong and misguided—and if you talk to the journalists of this newspaper, you are left in no doubt as to what they think of TECDA. If I may just quote this newspaper—which, as is pointed out in evidence, was published this last week. "A new public opinion poll completed this week by the Bedfordshire Times suggests that the majority of the population of Bedford are in favour of Thurleigh or Bolnhurst being chosen as the site for the third London airport. The views of nearly 500 people have been obtained in two weeks of intensive canvassing by Bedfordshire Times reporters. The result shows that 302 people say they want the airport to be built in the Bedford area, with 191 against. Coming as they do on the eve of the airport inquiry which opens at the Corn Exchange in Bedford on Monday, these remarkable figures must be a serious blow to BARA, who throughout their campaign have stressed their absolute conviction that most of the population in the area are utterly opposed to the selection of Thurleigh, or any inland site. The figures contradict, too, the studied conclusions of Bedford's MP, Mr. Brian Parkyn, who in his evidence* to the Roskill Commission says 'Members of Parliament become experienced in assessing the quality and force of local opinion . . . and I have no doubt whatsoever that the vast majority of my constituents are opposed to the siting of the airport near Bedford'."

It then goes on to say that Bedford had been chosen because it was the largest borough, the largest concentration of population which would be affected by noise from the airport, and I think there are two things which are particularly interesting in this poll, which I believe are applicable not merely in Bedford but in St. Neots, in Huntingdon and Tempsford, and all the concentrations of population in the area; and these are: those against the airport were largely white collar workers, with the more working class people and immigrants very much in favour with few exceptions. In other words, to judge from this poll done by a hostile newspaper, working men and women in the Bedford town were in support of the airport, whereas the white collar workers, the professional people, were against it. Another thing which comes out in this poll is that people they judge to be less than 30 years of age voted almost solidly in favour of the airport being sited at Thurleigh or Bolnhurst—that young people, in other words, are solidly for the airport.

We are very grateful for this poll, because it is an impartial piece of evidence. It was done on modern market research techniques, and it came at a time when we held a public meeting in Bedford, a largely publicised meeting in Bedford, at which only 41 people attended. A good number of those people did not come from Bedford at all, they came from Huntingdonshire, and it would have been very easy to say, if there are only about twenty people from Bedford who are prepared to go along to a meeting, there could be no support for the airport; but we believe that, although people are not prepared to turn up to meetings, they nevertheless have very strong opinions on Thurleigh Airport, and the reason for their abstention in public activities is simply because working men and women very rarely attend meetings of any sort, except for certain trade union branch meetings—and only then when the message

* Available for inspection, by arrangement, at the offices of the Commission.

* Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

is put across the Tannoy system in the factory two or three times that day.

I think another thing which is interesting about this poll is that a previous poll was conducted by the Bedford Times, and this poll showed that almost 2,000 people were against the airport, and only 158 or 159, I forget which, were in favour of it. This appeal was not based on house-to-house interviewing; it was simply based on a coupon—a coupon published in the paper, and you were asked to tear it out, write in and send it in. Naturally, the people who are most articulate, the people who write letters into the local papers constantly, the people who toss off letters, sent their letters in—people, in other words, who are professional people, white collar workers. Had this opinion poll not come, it would have been very difficult to show that in fact there really are a very large number of people who do want the airport very badly. I think another source of opinion about what people feel—and we think this is a very important aspect which should at least be considered by the Commission—is the fact that every single trade union branch which has discussed this has come out in favour. As far as we know, not one single trade union branch has come out against. You see listed there the names of 15 trade union branches, in addition to the Constituency Labour Party and the District Committee of the Amalgamated Engineering and Foundry Workers Union; can we add to that decision taken by the Peterborough Amalgamated Engineering and Foundry Workers to come out in support, and also the Cambridge Committee of the Amalgamated Engineering and Foundry Workers. And in addition to these the Bedford and Kempston Transport and General Workers Union.

One has to be very cautious to avoid taking this to represent the entire membership of these trade unions. One knows very well in fact the so-called representatives who are political representatives or trade union representatives, and how they can get out of touch with the rank and file of their membership; and some of these branches have not been well attended. In one place, they are crowded if there is an attendance of 12 people—and I can well believe this. On the other hand, a number of trade union branches, depending on what their secretaries are like, their shop stewards, that sort of thing—these are very well attended, and I believe that these decisions taken by these trade union branches do indeed represent what the majority of men and women in these trade unions think.

To be absolutely sure about this, we have asked all the branches to do a full ballot of the membership. This involves an enormous amount of work—you have got to get permission from the Council and go through the usual procedure, but if in fact the Roskill Commission was interested in this sort of evidence, I think it would be worthwhile.

The next question, I think, that should be asked in considering the social effect of the airport and the advisability of this airport, is, "why is it in fact that so many people do want the airport?" And the answer is, quite simply, that a lot of people believe that they will get better wages, higher wage rates, than they would otherwise do, as a consequence of the airport. Now, this would seem to be corroborated by what the spokesman of the National Farmers' Union said, when he said that labour costs would increase; and that this is a serious problem for other enterprises.

Another factor—this is depending on what you feel about things!—equally important, is job satisfaction. A representative of the NFU said here that what mattered to him most of all was the sort of job you do, and this is one of the reasons why in fact people want the airport. If the airport came here, there would be an enormous range of jobs. It may be that the older generation would not be able to take advantage of the increased industrial expansion and the industry generated from the airport, from the jobs and also the jobs in the airport itself. But they know that their children will have the opportunity to take advantage of this, and it is those people who would derive no benefit whatever from the airport. In fact, the only effect on them is the noise—and they have no compensation. They feel very strongly in favour of the airport, because they feel that it is in the interests of their children and their grandchildren.

The next reason I think why so many people want the airport is because they pay possibly less attention to the sort of representations which have been made by the Rural Preservation Society. The line which to some extent has been taken is that these villages will not want an increase in population—they want to preserve the countryside. As far as we are concerned, we want to have increased opportunity to make use of the countryside. This means being able to afford to buy a car, and only a little over half of the population do own a car. It means having more money and leisure, working less overtime so as to go out and enjoy the countryside; and it also means the availability—not exactly of agricultural land, but of public places, because a certain amount of agricultural land is in fact farming land, and this is not for the use of the public. In fact, you get into trouble if you do make use of it. Perhaps the most beautiful spot from where I live—which is about two miles towards Offley—might well have inspired William Cowper's poem; but in the last ten years, I have only seen three people in that spot—the local doctor, a retired schoolteacher, and the local carpenter. And the reason is that you have to get through first one "no trespassing" sign and then another, and lastly there is a notice "Beware of the bull". There has not been a bull, to my knowledge, in that field for the last eight years—

Inspector I think, Mr. Curran, you might make your address, if you would, rather towards me than to your audience; you are, after all, addressing the Commission. And I hope you will try and make your points as brief as possible, and not spend too much time in the rural surroundings of Godmanchester.

Mr. Curran I am sorry. The next thing is that there are many forms of recreation, and use of the countryside is not the only one. People—and this includes people in Thurleigh—have complained that

Printed image digitised by the University of Southampton Library Digitisation Unit

it is—to quote the famous quotation from the Vice Chairman of the Parish Council—"a phantom village", a dead village. You get the same complaints from Godmanchester. I must not go into that!—but there is not much to do, and there is no place to go out dancing. There is no cinema, no bingo hall. Unless you have a car it is very difficult to get out to places like Cambridge. The last bus comes back at 10.20 which means you must miss the last five minutes of a film—this kind of problem, and this is why we want to see more urbanisation; we are not frightened of urbanisation. We want to get more recreational amenities, and this will come, we believe, as a consequence of an airport.

Very quickly to conclude why it is that so many people are prepared to put up with noise, because noise is the problem which consistently has been emphasised. We think that noise is not the thing that matters most of all, and there are very many things which are much more important. The amount of time you have, leisure time, the amount of money you have in your pocket, the things you can do, and this is why we want an airport, and we can only notice in small rural communities like Little Stewkley or Great Stewkley, and these are really small communities, right at the tip of a large American air base—You would expect those people to hate the noise, hate the Americans: these new comers coming into the place, but I can assure you if you know these villages well you will find exactly the opposite. In fact they don't want the airport to go, and one of the reasons why there has been support for the opposition to Thurleigh is because they are afraid of losing their Phantom Jets, they are afraid the Americans and the prosperity and jobs which go with it will go. This is an ilustration of how fears which have been expressed today and previously will not necessarily be realised if an airport comes to the area. We believe that if the airport came it would enormously increase the prosperity over a very wide area. It will create jobs at a time when the number of workers is increasing faster than the number of jobs, or ease wage rates in areas where wage rates are low, and that it will be of immeasurable benefit, culturally, economically, socially, to an area.

Inspector Thank you, Mr. Curran.

MR. SIMS* *called*

(Harpur Trust)

Mr. Sime I appear for the Harpur Trust, and that includes also representations on behalf of the Bedford School, Bedford High School, Bedford Modern School, the Dame Alice Harpur School, and also outside the trust those schools which are set out in Appendix A of the evidence of Mr. Hutchins, 4044,† those are the Kimbolton School, whose headmaster I hope to call before you, the Rushmoor School, St. Andrew's School, and Hawnes School.

Might I follow the excellent example of Mr. Curran and call my witnesses first? I will call first Mr. C. H. Lewis.

MR. C. H. LEWIS *called*

Examined by Mr. Sime

6079 Is your full name Cyril Hugh Lewis? I think you are a Master of Arts at both Oxford and Cambridge? — Yes.

6080 A Member of the Bar and a Justice of the Peace? — Yes.

6081 You are headmaster of Kimbolton School, in Huntingdonshire? — Yes.

6082 That school, as you have set out in your evidence before the Commission, you fear, would be affected by an airport? — Yes, that is correct.

6083 I think your school has been paid the compliment, if you can call it that, of being the most beautiful un-Woburnish country house in the country? — Yes.

6084 Does that mean you are open to the public? — Oh yes.

6085 In what kind of way does the public visit you? — This of course is a building with an 18th century exterior mostly by Vanbrugh in a setting which includes a gatehouse by Robert Adam, and it is in fact the main school building.

6086 I think in fact you have the *Country Life** reprints for four weeks when it was featured in the *Country Life*? — Yes.

6087 Would you care to submit them to the Commission to look at in their leisure moments later on? You have copies there—

Inspector I should add in one of my leisure moments last week I did go to Kimbolton and have a look at the school. I didn't go in because unlike Mr. Curran I was deterred by trespassing notices, on the gate.

Mr. Sime I thought you were going to say you had not got your half a crown.

Inspector I am not certain what they were, I thought it was a "private" sign.

6088 *Mr. Sime* As regards soundproofing, how many windows in the main school would you have to soundproof? — 215 in just this one building.

6089 You have as we see from the schedule a number of other windowed buildings which require some treatment? — Yes.

6090 I think you are rated by the Ministry of Works as Grade I in Historical Buildings — That is so.

6091 That is a fairly small category considering the number of buildings in the country? — Yes.

Inspector Are there any questions of Mr. Lewis? I have no questions. I was struck by the beauty of the setting of your school. Thank you very much.

(The witness withdrew)

* See also p. 2149.

† See also p. 2147.

* 5, 12, 19 and 26 December, 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. FREDERIC ALEXANDER HAMMOND* *called*

Examined by Mr. Sime

6092 Is your name Frederic Alexander Hammond? — Yes.

6093 I think you are known to the Inspector from previous inquiries, but for the record you are the Senior Partner of Aviation Property Consultants, a Master of Science, Chartered Engineer, Member of the Institution of Civil Engineers, Associate of the Institute of Building, and a Member of the American Society of Civil Engineers? — Yes, I am.

6094 I think you have been closely connected with this and other airports in particular the noise contours and patterns? — Yes.

6095 And you have seen the evidence of Mr. Dunford† which I think was on the first day and he appeared at page 42 of the first day. What do you say about his evidence do you agree with it? — Yes, I do.

6096 There was one matter, he said some of the sound lines we have, the contours, were not critical. You know that the Harpur Trust are hoping to build a school on the northern side of Bedford at Manton Heights? — Yes.

6097 Yes. How do the contours as laid out by the Commission affect that school? — Perhaps it would be useful if I referred to the drawing over there;‡ perhaps if we can see what we have tried to do. The runway alignment was said by Mr. Dunford and it is common knowledge, is the function of a number of factors one of which of course is wind direction. If one took the true meaning of the analysis of the available wind information at Thurleigh, the runway alignment would appear as is shown on the drawing over here, on the right, very much more vertical to the north direction than was shown by the Roskill Commission. Mr. Dunford has said and it is quite clear in the analysis that there is a wide variation possible on runway alignment which will necessarily affect the positioning of the noise contours in the area; perhaps if we can just see that. The sort of thing that would be satisfactory from an international stand point would be a spread that we have just seen, the overlay map moved in just a little more—

Mr. Sime I hope you can see the transparency, sir, it is movable and to try and demonstrate it at a later stage when you are considering how that shows—

Inspector I am well aware of this particular point, yes.— In the position of the new school, clearly the positioning of the runways there and the noise contours associated with that runway alignment can be seen to be extremely critical to the point of being totally unacceptable if runway alignment was nearer to the zero point. In the Commission's alignment it is less critical, but would nevertheless cause considerable noise nuisance. The difficulty that we have had in doing an analysis is that the Commission's noise contours which have obviously been produced from the great deal of information that has not been available to us from the point of view of the relationship of the air traffic control system, and from the point of view of holding areas. All this was said by Mr. Dunford, and does not need to be said by me, but in the final analysis should the site be selected for further detailed consideration it may well be the air traffic control considerations, the relationship of holding areas to the holding areas of other airports in the vicinity would push the runway alignment near to the mean position which is where we started off from, but on our overlay map we do of course push the noise contours right over the top of Bedford and as far as the particular school site is concerned it would make it a very untenable one indeed.

Inspector Any questions of Mr. Hammond?

Cross-examined by Major Duncombe

(Country Landowners)

6098 Can you help me with your map; would I be right in thinking that the area marking Milton Keynes New Town is in fact the village itself, and not the 23,000 acres of the designated area? — I am sorry, yes, that is correct.

Cross-examined by Mr. Broderick

(BARA)

6099 One further matter, have you read the evidence of Mr. Westley* on noise? — No.

6100 *Inspector* Mr. Hammond, you doubtless do realise that within the next two or three months the definitive alignments of this site will be published? — Yes.

(The witness withdrew)

MR. RICHARD NEWBURGH HUTCHINS† *called*

Examined by Mr. Sime

6101 Is your full name Richard Newburgh Hutchins? — Yes.

6102 You are a Bachelor of Laws of London University and also you hold the Diploma of Public Administration of that University. You are a Member of the Town Planning Institute, and you have been Clerk and Solicitor of the Harpur Trust since 1966. Before that you were serving in local government except for the war years mostly as a solicitor? — That is correct.

6103 You produce representations for the Harpur Trust. Now, there are two amendments, and perhaps we ought to deal with them for the sake of the record. In appendix A Kimbolton School, under "Staff", it is 33, and there should be an "A" added as that is academic staff as opposed to . . . — Yes, 28 academic staff in the one from last column.

* See also p. 2149.

† p. 1851.

‡ Harpur Trust map of noise contours (with transparent overlay) is available for inspection at the Office of The Harpur Trust, Harpur Street, Bedford.

* p. 2077.

† See also p. 2150.

Printed image digitised by the University of Southampton Library Digitisation Unit

6104 No, it is 33 staff academic, and then 28 in brackets. — Yes.

6105 And the other matter is over the page, the last item 22, Aircraft Research Association Ltd. That was established in 1952? — Yes, that is correct.

6106 We also say at paragraph 16: "If available in time an estimate will be submitted to the hearing of the cost of sound-proofing and the likely effect on the level of fees at the School." Have you been able to find any figures to guide you as to what the cost first of all of the new school would be because we haven't done the other school, this is entirely the new proposed schools. — Yes. In connection with the proposed rebuilding of Bedford Modern School at Manton Heights the cost of building work will be not less than £1 million without sound-proofing, and the best estimate we can get is that it might be up to 20 per cent increase in costs if you had to sound-proof it. It depends a lot on the system of construction involved, but if it was something which is of light construction it might be 20 per cent increase, sir.

6107 I think the presence or otherwise of an airport has concerned your Council, the Trust, is that right? — It has indeed, particularly in relation to the rebuilding of the modern school.

6108 In what way has it been related to the rebuilding of the new school? — The site proposed for the rebuilding of the school is above the "B" of "Bedford" on the plan, that is at the junction of the present A6 and the proposed east/west route shown there, and the Trust have suspended further architectural work on that project because of the risk of interference from the airport.

6109 Do you foresee the Trust being able to obtain the extra 20 per cent of the odd million pounds if in fact the airport did arrive in Thurleigh? — No, there is at present no public grant for sound-proofing independent or direct grant schools.

6110 Lastly, would you please introduce the big map* to the Inspector. — This large map on your left, sir, is designed to illustrate the information given in Appendix A of my proof of evidence. It shows the distribution of pupils of the four Harpur Trust schools throughout the world. It also shows the research and training establishments which have built up in Bedfordshire over the years and I particularly draw your attention to growth. Since the war in the 1950's there were five and in the 1940's there were six such establishments grown up in Bedfordshire since the war.

Inspector Mr. Hutchins, I have no questions. The Commission will be faced with the task of converting this map on my left into a form which will be published as evidence in due course.

Mr. Sime We have what I may call a miniature.

Inspector We shall come to you for help, no doubt.

Mr. Sime I think we can do better next time.

(The witness withdrew)

* Available for inspection, by arrangement at the Office of The Harpur Trust, Harpur Street, Bedford.

Mr. Sime That is my evidence, sir. This is somewhat a different aspect that I am putting to you and I start first of all with the traditional history of the town of Bedford and the area as an educational centre not only from the point of view of the schools for which I appear but as you have heard from the evidence given by the County Council there are many other schools in Bedford as well. I can only speak for the ones I represent, but they start with the Bedford School which was founded in 1566 under this Trust and the four other schools that came later under the Trust.

There always has been a great tradition here of education, not necessarily the education of the most expensive kind but for everybody. In the old days those who served overseas sent their children here and then retired. Nowadays bankers, civil servants and other persons who go into retirement and leave London and various big cities come to Bedford to educate their children if they have not already sent them there before. That has grown and grown through the years and it is quite clear you may think that if this became an airport town and an airport came here those people desiring quiet and peace which you do get in certain parts of Bedford, the quieter parts of the town to which they retire, will be completely changed, there will be a different kind of person living here. There will be a noise of some kind or another, and I do not desire to go any deeper into arguments about noise because you must have had enough of that already, but I do adopt what has been said about noise. Those parents will not come here, the parents overseas will not send their children there and bit by bit all these small schools will go down leaving only those who go to the day schools. People may think twice about coming and settling here because as you realise Bedford is well known as an educational centre, there are also a number of research centres here which help the school and no doubt the school gives towards them and there is always the possibility in fact there are some other firms and other research establishments here having easy access to Cambridge and with the technical expertise for them to assist. The question for the Commission is: is that a good thing to destroy something that has stood for many years and is traditional to the whole place? Do we wish to see these kind of schools fade away because it will be almost impossible to move? The modern school as you have heard and seen on the evidence submitted is being moved to Manton Heights. That project has come to a standstill and it may well be that it will never in fact take place and the boys will have to carry on at the old school across the way. They and the town itself will lose a very good chance of developing in a rather unique way as a large shopping centre, keeping it from what I understand is the facade of the old school as well so that it will be the old traditional place with the modern shops in it in the best tradition of modern planning. If that was realised by rebuilding Manton Heights I believe it would be of great benefit to the town let alone to the Harpur Trust.

The sound-proofing you have heard about and you

Printed image digitised by the University of Southampton Library Digitisation Unit

must have heard about that in many other places and on many other occasions and I do not propose to go into that. These schools will not be entitled to a Government grant and it will be a very expensive matter to sound-proof them if in fact it is possible for that to be done with the kind of structure they are.

You have seen those schools and I do not desire to bore you with a repetition of what they look like and their history, it is all set out in the evidence.

As regards the question of noise, you have heard Mr. Hammond, you have heard other evidence of noise. That we support. I have the greatest respect for Mr. Westley and I just mention his report. I have read his report in detail. As you appreciate it may have some points which you may consider provoking, it is typical of the man because he is a person who has studied everything. I am saying this because I hope that the Commission will really study that report because in a more humble way I was sitting in the position you are and I had him before me for the best part of eight months explaining where footpaths should be and he produced some 600 to 800 footpaths all over Bedfordshire. At first there was considerable opposition, but he always called persons, some aged and some almost ageless, and documents and he substantiated a very large number of footpaths which even the owners of the land did not know about. He is an extremly efficient man. His research was as you see into noise at the time he was here and I do ask the Commission to treat that with a very great deal of concern.

I do not think, Sir, that there is anything further I can say. I appear purely for the Trust, purely from the school angle.

MR. STROYAN* *called*

(*Unilever Ltd.*)

Mr. Stroyan As I am sure you will already have gathered Unilever put in the most strenuous objection to the proposed airport being at Thurleigh on one principal ground and that is that the presence of an airport at Thurleigh would inevitably entail the closing down of the Unilever Research Laboratory at Colworth House which is at Sharnbrook. I say at once that apart from the loss of millions of pounds that would entail also the loss of a scientific and technical asset of certainly European importance if not of even greater importance than that, for it is indeed difficult to see how a unit similar to this could be established elsewhere, apart from the loss of many years and much money and a great deal of scientific expertise and scientific data. It has taken 22 years to establish this centre and it is something which would be destroyed as it were overnight by the presence of the airport.

If you will be good enough to look at that plan† it shows the estate at Colworth House that covers some 1,200 acres. The livestock there include some 300 cattle, 1,500 pigs and 12,000 poultry. It is farmed carefully and intensively with a view to assisting the animal experiments and experiments in connection with the production of food and the feeding of ordinary farm feedingstuffs and many other variations of feedingstuffs to those animals. It is essential for their support and the presence of the animals is essential to the conduct of the research into food.

One can see from the plan that there is a large complex of buildings there. One gets but a cursory idea of the complexity of that concourse of buildings by looking at the plan, but one does get a reasonably good idea of the size of the farm and the size of the estate.

At this stage I think it is right that I should express Unilever's full support for the objection put forward by the National Farmers' Union in connection with the loss of agricultural land.

It may be, Sir, that the presence of the aerodrome would not necessarily have entailed the loss of this land to agriculture but certain it is that it would entail its loss to this particular specialised form of agriculture. One knows not what might happen to it. It may, I suppose, become building land, and it may be that pollution from the air might make it very difficult to conduct more than the most elementary forms of agriculture upon that land. But, Sir, I will not repeat what has been urged on behalf of the NFU, but I would respectfully invite you to regard it as part of our case; they have our full support.

If I may turn now, Sir, to the labour employed by Unilever at Colworth. The labour force at present is 1,026 people. If the airport were to come to Thurleigh, then there would be an immense loss of amenity for those people. Many of them are scientists of the highest qualifications, who are people who do not readily settle in rural areas unless they have the amenities which they require for their work, which include, for people of that sort of calibre, quiet and peaceful surroundings. What would happen were the airport to come here is quite clear. There would be a large influx of people to this area, and that would make the recruitment of scientists and their retention for the purposes of this research unit extremely difficult. Sir, you have listened to the County Councils' objections on the planning grounds which have been put forward: again, I do not propose to repeat this. They have our full support. I do rely upon those objections. I do rely in addition upon the evidence given by Mr. Gale,* which I am sure you will bear in mind also in this connection, Sir.

If I may glance very briefly at the objections put forward by the County Councils and local authorities, it is clear, in my submission, that all of them relate to planning objections of a character which inevitably arises wherever one is going to put a London airport. They relate to residents, and how they will affect planning considerations in matters of this sort. They are matters of general application.

* See also p. 2155.

† Evidence available for inspection, by arrangement, at the offices of the Commission.

* p. 2069.

Printed image digitised by the University of Southampton Library Digitisation Unit

Here, Sir, however, Uniliver do put forward an objection, which in my submission is quite different in kind from those which have been put before you hitherto, and the objection is in my submission really a very substantial one, because, as I have already said, the presence of the airport at Thurleigh inevitably involves the end of an asset of certainly national, certainly European, and perhaps even wider, importance, as appears from the evidence which I shall put before you very shortly. The destruction of that asset would in my submission be really a very serious matter, and a matter which in my submission requires the very serious and in more than one sense separate consideration of the Commission before taking a decision in this matter.

Of course, Sir, among other reasons, one of the main reasons for the closure of the establishment at Colworth which would follow the setting up of the aerodrome at Thurleigh is noise. You have heard a great deal about that, I do not propose to go into that in any detail. Suffice it to say this, Sir: that the four-runway airway proposed on Site A would bring the research establishment into the 55–60 NNI barrier—and I shall be putting in a map* in a moment to illustrate that. The four-runway site at B puts it in what I may broadly call the 40-plus barrier. In my submission, Sir, on the evidence, I believe that those degrees of noise make it really quite impossible to carry out scientific research of the nature which is carried out at Colworth. It is not just a question of making it difficult—it makes it really quite impossible. Sir, in that connection I rely—apart from the evidence which I shall put before you in a moment—upon what Dr. MacLeod said for the County Councils. You may recall, Sir, that when I cross-examined him briefly, he did wholly support the proposition which in my submission is an essential one—that if we are going to conduct scientific research requiring both detailed brain work and fine movements of the hands, you cannot do it with jet engines buzzing over your head all the time. It is really basically as simple as that.

There is another matter which I would respectfully urge upon the Commission in this connection, and that relates to the evidence given by Dr. Keith Howard Jones† in the Nuthampstead Inquiry. I have a copy of it before me—no doubt you have a copy in your papers, if not actually in front of you at the moment. Again I do not propose to go through that, but in my submission, Sir, Dr. Jones is dealing in his evidence with a research establishment and very similar considerations to those which we urge do apply here also; and for that reason I would respectfully ask you to include his evidence amongst my contentions.

Inspector Dr. Jones was Fison's?

Mr. Stroyan I think, Sir, he was. He was the Head of the Medical Department, Chesterfield Park Research Station.

Inspector Yes, I remember him now.

Mr. Stroyan At all events, it is a closely parallel situation. Now, Sir, it does not entirely end there, because we have also on the noise question the evidence of Mr. William Allen,* whom you heard this morning. His evidence is also most helpful in this context, and in particular I would invite your attention to paragraph 8 on page 4 of his evidence—it is a very short paragraph, Sir: "Apart from the mental concentration often required, the experimental activity itself is often exceedingly refined and sensitive to noise or vibration. One example at Cambridge is the extensive work involving people and animals, for instance relating to nervous systems. Again, where specialised animal breeding is required, problems of hypersensitivity in pregnancy arise. Post-operative conditions in animals also create hypersensitivity to noise." All those considerations apply exactly to what goes on at Colworth. Similarly, Sir, paragraph 26 is another important one—that deals with the frequency of the incidence of noise. Obviously, Sir, all these matters are matters of degree, and are probably incapable of precise consideration; but when one applies one's own knowledge of the effect of noise on one's own activities, then perhaps it is not so difficult to visualise it as it would otherwise be.

If I have understood it rightly, when the four runway aerodrome is in full operation, the amount of flights, or air movements, is going to be something of the order of 144 an hour. That is at the rate of 2,000 a day; if one visualises that, it comes out at one every 30 seconds . . .

Inspector I think 144—I should imagine that was obviously the peak.

Mr. Stroyan That may be so, Sir; but at all events, during peak hours—if one can apply that expression to air flights—it is going to be really quite intolerable. One may possibly cope with two or three an hour, but more than that requires continuous adjustments of concentration which would really make it quite impossible to concentrate on intellectual work, which requires precise mental effort, or any manual work such as operations, the fine measuring matters—the manipulation of computers, and other technical instructions—obviously quite impossible unless one can concentrate for long periods at a time.

So, as I have said, these things are matters of degree, and it is for that reason that it is particularly important, in my submission, to bear in mind the submissions put forward by Cambridge University, as to the effects of noise on an academic establishment—problems which are very very similar to these, indeed in some cases identical to those which concern research workers in an establishment like Colworth House. If the objections which Cambridge University put forward as to noise can be seriously sustained—as they plainly can—the position of Colworth House is absolutely overwhelming, because Cambridge is, I think, 30 miles from the proposed site—very roughly—and Colworth House is virtually at the end of the runway. So, if Cambridge can successfully urge the objections they do, they must be

* See attached wallet of maps and diagrams.

† *Papers and Proceedings*, Stage II, Vol. IV.

* p. 2124.

Printed image digitised by the University of Southampton Library Digitisation Unit

overwhelming in the case of Colworth House. I am sure I need say no more to make it absolutely clear that the presence of the airport would make scientific work an absolute impossibility.

Much has been said to you, Sir, on the subject of soundproofing. You will find, in the evidence which I shall put before you, estimates of the cost involved in soundproofing. In this case—the case of Colworth House—that cost is enormous. It has been estimated at £3,401,000 as capital, with an annual extra running expense of something of the order of £60,000 a year. Those figures, in our submission, really make it virtually commercially impossible to go in for soundproofing on that scale. But again it does not end there, because soundproofing in my submission is quite plainly ineffective on farm buildings. One cannot soundproof the cows, one cannot soundproof the areas where they are going in and out of the farms, and where their lives require such careful measurements of almost everything they eat and every movement which they make—it is really quite impossible to think that one could soundproof large areas where animals are of necessity out of doors for a long time —and in that connection you may recall that I asked Mr. Fleming some questions about soundproofing. He agreed with me that it was quite impossible to soundproof effectively farm buildings. He put that particularly on the obvious difficulty of doing so, and particularly also upon the air-conditions problems arising from it, which are obviously really quite insoluble in the case of farm buildings. I rely on what he said, and again I do not repeat it.

The next point which arises, Sir, is air pollution. Perhaps not a great deal is known about that, but if one looks at what Mr. R. Westley says,* one finds that there are at any rate fairly substantial deposits of various unpleasant chemicals left in the track of these jet aircraft. Again, I will not refer to this evidence in detail—it is at page 43, Sir, and I rely upon what you will find there as to the deposits from aircraft.

Those really have two consequences. Firstly they are important for ordinary farming. One knows not quite what is the amount of chemicals being dropped, may be very small at the moment, but no doubt in increasing amounts, but that applies with even more force to the sort of experiments that go on at Colworth House, because the presence of a grain of even minute quantities of extraneous chemicals is quite capable of invalidating the scientific work of what is done there.

The second point which is equally important is that pollution of the air would require very refined systems of air conditioning in order that the experiments can go on, because at Colworth there are specially bred a number of strains of animals of various sorts: pigs, rats, perhaps in particular, which are bred in sterile conditions. They are bred in such a way that they are not exposed to germs or indeed chemicals or any of the ordinary "bugs" to use a colloquial term, to which the rest of us are exposed, and the purpose of them is to provide a sort of datum floor from which experiments can be carried out. That would be totally invalidated if these animals were inhaling different sorts of chemicals. So from these two points of view, the air pollution problem is an extremely serious one, and one which makes it quite impossible to carry on if an airport comes to Thurleigh.

The next point I wish to make is that of trespass. We have heard a lot about it in rather different contexts here. It is perhaps particularly important if a lot of people are going to come and live in the neighbourhood, particularly if they are people like Mr. Curran,* we are going to find it very difficult to maintain sterile conditions in the fields, and to make it impossible to carry out the experiments without outside interference. That, of course, is particularly essential. The moment one of these people carrying, again if I may use the colloquial term "bugs" comes in from the farm next door the experiment tends to be totally invalidated, and there are good reasons and I am sure you will be paying careful attention to what is said in Mr. Durham's proof,† and there are good reasons for saying that trespass is a hazard to the activities at Colworth, and a very serious one.

Now, sir, the general environment of Colworth would be totally destroyed if one had a large influx of people and the aeroplanes buzzing about. I have said much about that already, and I won't say any more. What I may say is this, that one of the attractions to Colworth and it has many, is that it is at quite a considerable distance from London. It is not just as it were on the doorstep, it is very much further afield than that, and I don't want to trespass on another stage of the inquiry, but it is much further from London than other sites. That will not have escaped you, and that is the reason why I think I can properly use it in this way, it is where scientists who like seclusion like coming here. There are other attractions to scientists here; they are choosey people as you have heard at other inquiries. The main house has a very pleasant building with a Georgian front, and there is a preservation order on the front of the house, and also on one of the gateways, and the general outlook from the house and the amenities there are very remarkable indeed, but there is one thing which makes it particularly attractive to scientists, and that is this: that it is one of those places, it is probably the only place in this country where there are a number of scientific disciplines under the same roof, and scientists engage in different disciplines unlike the situation at universities where they are, as it were, in separate compartments and do not have to talk to each other; in this environment and for economic among other reasons although they are in different disciplines, they are compelled to talk to each other quite a lot and explain each other's works the one to the other. The result of that is that food is kept in better condition, more is known about it, and there is interplay of the various disciplines. That is something that does not exist elsewhere in this country, and it is one reason why Colworth does attract the calibre of scientists which

* p. 2077.

* p. 2133.

† p. 2155.

Printed image digitised by the University of Southampton Library Digitisation Unit

it does. One reason why it can keep them. The result of all that is that there is the reputation there which has taken 22 years to build up, that scientists of the highest calibre are attracted to Colworth and, fortunately, stay there.

The contribution which it makes to a number of aspects of public life is very considerable indeed. There is an immense outflow of information to the scientific journals, and you will hear more about that in a moment. That information goes out not just to Unilever interests, but to European interests, and indeed, gets circulated around the world. There is an immense amount of scientific data available there through computers not available elsewhere, which will be rendered practically useless, certainly invalidated, as the experiments are continuing experiments if the establishment should no longer carry on there.

Those are the important points which I have to put before you, sir, the combined effect of them, in my submission, is overwhelming in the sense that it is going to be plainly quite impossible to carry on if the airport comes to Thurleigh. What it would involve would be destruction of a very, very substantial estate of very, very great importance.

Before I call my evidence, sir, may I respectfully issue an invitation to you to have a look at it. It is, in my submission, essential to view it. I had not seen it myself until very recently, and however carefully one looks at the plans one gets a very different view and feel when you go round it.

Inspector What I can undertake is either myself or some senior member of the Roskill Team whose duty, or the team's duty being to assess all the implications of the various sites, will I am sure visit the establishment. If I may do so myself I would certainly like to, but I can't promise this will be so.

Mr. Stroyan With the assurance which you have given that some senior member, if not yourself, of the team, will visit it I am certainly content, and I am sure arrangements can be made in very short notice.

Inspector In the case of Nuthampstead we had at least four research establishments of a similar but somewhat lesser size.

Mr. Stroyan It is the size of the establishment and the complexity of the machinery there that impresses one. One cannot get a sensible idea merely by looking at the map.

Inspector I certainly would not seek to make comparisons.

Mr. Stroyan No, sir. With that assurance I am well content. In that event I will call my evidence.

MR. KENNETH DURHAM* *called*

Examined by Mr. Stroyan

6111 I think you are Mr. Kenneth Durham? — That is correct.

6112 You are a Bachelor of Science, and I think you live at Windmill House, Windmill Hill, Biddenham, and you are Head of the Unilever Research Laboratory at Colworth House? — That is correct.

6113 Do you produce a plan KD1 and another plan KD2* which shows the house in fact? — I do.

6114 You have studied the evidence tendered by Unilever in this case with great care? — I have.

6115 You have also, I think, considered much of the other evidence put before this inquiry? — Yes.

6116 In your view, if the airport came to Thurleigh, what would be the fate of Colworth House as a research establishment? — It would be quite impossible to conduct research that we need to conduct and we would have to close down. It will be the end of Colworth House as a research establishment.

6117 Well, now, I will not take you through your proof because it is before the Inspector, but there are one or two additional matters which emerge from what I said to him. I think it is right there is a preservation order on the frontage of the house? — That is correct.

6118 You heard me say a short time ago to the Inspector that one of the aspects of the work at Colworth which attracted scientists was the presence of various scientific disciplines under the same roof? — This is true. But the problem we are dealing with is one which requires enormous disciplines. We are one of the few places in the world where this is found, and this is very important to attract scientists of any calibre.

6119 How many disciplines are there? — Well over 20, arranged there, mathematics, physiology, pathology, animal pathology and physiology, and so on.

6120 Yes, and it is an attraction to scientists to find this all under the same roof? — Yes, indeed.

6121 Is there so far as you know anywhere in this country which would provide even remotely comparable facilities to those you have now? — No. There are none I know of, indeed as one thinks about this I am not quite clear wherever we would get this acreage with the right kind of situation again. I think it is impossible.

6122 It has taken 22 years to build up what you have got now. — Absolutely.

6123 What about the amount of machinery that is there, would that be readily movable? — Some of it would, of course, but I think the real point here is not so much the machinery itself, but the investment that has been put into that machinery over the years. There have been, as you have said, datum lines established by experiments with animals and biological systems over a long period of time that would have to go if we moved anywhere to another situation even if we found one that was similar.

6124 I want to ask you briefly about the contribution made by Colworth to science outside its own

* See also p. 2155.

* Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

boundaries. In what way is that contribution made? — There are several ways, firstly, of course, we participate in European and International conferences to a large extent, we publish also papers in scientific journals; a list was published, over 120 in scientific journals of international distribution and reputation. We also publish information to government sources either when we feel they can benefit by it or on request, such as to the Food Additive and Contaminants Committee, and people of this kind.

Inspector Are there any questions to Mr. Durham?

Cross-examined by Mr. How (TECDA)

6125 As you are aware, there are many flights by jet aircraft from Thurleigh at the moment being carried out; can you tell us what effect this is having on your establishment at the moment? — I think it is fair to say there are not many flights; there are some flights that cause some nuisance.

6126 And is your department . . . — May I just say something? The important point however is that the Royal Aircraft Establishment are rather a gentlemanly crowd and they work reasonable hours.

6127 Has your company taken any action against this or lodged any complaint to the RAE? — No. We find whilst they are a nuisance so is traffic moving in and around and at the moment it is tolerable.

Inspector Any other questions? I have no questions. If you have to control scientists in 20 disciplines I wish you well.

(*The witness withdrew*)

MR. JOHN KENNETH DEALTREY DOW* *called*

Examined by Mr. Stroyan

6128 Are you John Kenneth Dealtry Dow? — I am.

6129 Do you live at The Old Mill, Sharnbrook? — Yes.

6130 Are you a Bachelor of Science of the University of Edinburgh and a Member of the Royal College of Veterinary Surgeons? — I am.

6131 Are you Head of the Animal Sciences Group at Colworth House? — Yes, I am.

6132 Your proof is I think before the Inspector and I don't think there is anything further I need to ask you at the moment.

6133 *Inspector* Are there any questions to Mr. Dow? There are no questions. Mainly as a matter of interest are you meeting any success with your footpath diversion? — That at the moment is under discussion, Sir. As I indicated in the evidence we are indeed hopeful that we can come to some compromise situation which will both protect our particular interests and at the same time afford the public proper access which they require.

(*The witness withdrew*)

MR. JOHN MCLEAN PHILP* *called*

Examined by Mr. Stroyan

6134 Are you John McLean Philp? — I am.

6135 Are you a Member of the Royal College of Veterinary Surgeons? — That is correct.

6136 And do you live at Upper Farm, High Street, Sharnbrook? — I do.

6137 I think you are Head of the Biology Division of the Animal Sciences Group at Colworth House? — I am.

6138 Your proof is before the Inspector. I want if I may to ask you about a further matter of the contribution which your Department of Colworth makes to the science of biology beyond the Unilever world. — Yes. Mr. Durham made comment about our submission to the Government, the Food Additive and Contaminants Committee, but in addition to this we on occasion find that the work that we have done ourselves, our background research which enables us to more properly conduct the Unilever work, this background research can be of value to other people. This of course as Mr. Durham pointed out we do disseminate in the normal way through scientific literature, but in addition to this we find we have very much more data than we can possibly hope to publish, therefore we make available to Government bodies both in this country and elsewhere this type of data. For example, three weeks ago I was in the States discussing with the Atomic Energy Commission some work which we have done on our own account some years ago which they felt would be extremely useful to them and because of its quality would save them a considerable sum of money in their own submission to their own Government on a similar problem. The other way in which the background research that we do is passed to other people is, for example, from the skin research that we do. Our business involves the use of laboratory animals. These animals, the effects on these animals have got to predict what will happen in the human, so we find ourselves doing a class of physiology in skin which is seldom done on purely medically orientated research as would be of interest to dermatologists. Therefore, we make our findings freely available to the practising consulting dermatologists and professors at various universities so that they can benefit wherever it is possible.

6139 Is there also work on cancer of the skin? — Most of our work on cancer involves the whole body, the skin is one organ. Here I think rests one of the contentions in the proof, that we have spent a large period of time, some ten years, building up information on the normal pathology of our laboratory animals, their propensity to have cancer, so we are better able to judge in our own experimentation whether the cancer is due to what we have done or is part of the background of the animal, and again from this type of work comes quite a reasonable fall-out for cancer experts in the various institutes, particularly in this country.

* See also p. 2160.

† See also p. 2162.

Printed image digitised by the University of Southampton Library Digitisation Unit

6140 Am I right in thinking that the continuity of the experimental work that is done is of the utmost importance in this context? — It is extremely vital. In fact, I started this work when animal stocks were such that you could not hope to finish the experiment with more than 50 per cent of the animals that you started because intercurrent disease decimated the rest. For cancer work you require a minimum of two years to examine the animals and therefore we did a lot to improve our animal stock in two ways: one by employing very high quality pathologists, the other by taking steps to produce the animals by Caesarean section which means that you get rid of the infections to which they are prone and then we keep them in such a way that they will not re-acquire these infections, the principal one being pneumonia. This meant in our own experience—and the data is available—this meant instead of losing 50 per cent of our animals we reckon to finish a test with somewhere around about 80 per cent of the animals we started. This has meant much better results and the statistical significance is improved and in cancer work this quality of work is one of the things which I believe is found in only a very few institutes. In passing, it was on this particular basis that I was talking in the States, that we had been able to achieve a standard of work, both scientific work and animal handling, that made the data worthwhile.

6141 How is the data kept? — Well, one has to realise that we may handle something like 500 animals per test. The data comes from their waking life and that involves how various organs function, what the blood is like, and for each one identifiable criteria you can split them down into about another half a dozen. Then at death the exercise is to carry out a post-mortem. You take the animal apart literally and again you find that you have to examine each different part and produce in script the results of your findings. Then you want to correlate both the data you have achieved in the living portion of the test and also that obtained after death. We have developed our work to the extent that some years ago it was quite clear that we could not possibly hope to continue handling this data in the normal way of writing it down, correlating it with pen and pencil, people getting together. So we have spent the last five years putting this data into such a form as will enable it to be handled by computer and we are about I would say half-way through this process at the moment. This is quite a considerable problem but the answer is by using a computer.

6142 And is the information you get during the course of the whole of the research that you carried out made available to anyone with a legitimate interest in it? — I would not like to say that was true . . . well, when you cover it by "legitimate interest"—yes. And I think, from my experience of other research establishments, that we are much freer with our information than some others.

6143 That information serves not only your own commercial purposes, but working purposes in Europe, and to some extent throughout the world? — Oh, certainly. This year we have had scientists coming both from this country and abroad, on matters which, as I pointed out before, are of scientific research interest.

Inspector Are there any questions? I have no questions—thank you, Mr. Philp.

(*The witness withdrew*)

Mr. Stroyan Sir, that, in combination with the inspection that we hope you or one of your colleagues may make, constitutes my case.

Inspector Thank you very much. The Cambridge University Gliding Club—are you going to tell me that your problems are as before?

MR. A. EDWARDS* *called*

(*Cambridge University Gliding Club*)

Mr. Edwards Not quite! Sir, my name is Anthony Edwards—I am the Chairman of the Cambridge University Gliding Club, and I would like to take two minutes to explain precisely what activities we have that Thurleigh would interfere with. In the case of Nuthampstead, I stated that the situation of the third London airport there would probably mean the end of our Club; this is not the case in the case of Thurleigh, because we think it likely that we would still be able to continue operations in the event of the airport coming here. However, one of the main purposes of any Gliding Club is the promotion of cross-country flying, and this area around Thurleigh and around Bedford is not only extremely good for cross-country flying, but also represents a sort of gate through which we must pass to do long cross-country flies. We have flown our gliders from Cambridge over this area, down to Devon, on many occasions; we have flown as far as Cornwall; we have flown on return flights as far as Wickney, and Oxfordshire, and back again; and when we fly triangular flights from Cambridge, we regularly fly to the west, more or less using the M.1 motorway as central leg of any triangle. In this area, I have myself flown over Thurleigh, and a few months ago I passed over Bedford itself on my way to Oxford and back. This is an indication of the extent to which we use this area, which would be closed to us. In fact, to place the third London airport at Thurleigh would be to deny us our main cross-country routes. It would be to close as it were an aerial roadway, which we have established and which we have enjoyed for some 20 years. Unlike some other aircraft with which your Commission is concerned, Sir, we pass by silently—but we hope, nevertheless, you will hear us. Thank you.

Inspector Are there any questions concerning Dr. Edwards' proof and statement? There are not: thank you, Dr. Edwards. The College of Aeronautics, Cranfield, Gliding Club.

* See also page 2164.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. D. W. MCQUE* *called*

(The College of Aeronautics Gliding Club)

Mr. McQue Sir, I am David Wallace McQue, Chairman of the College of Aeronautics Gliding Club. Dr. Edwards has put the case, and I have seen you before, Sir, on at least two occasions. All I would refer to in greater detail is the appendix to my proof of evidence, that I gave you before, and point out the particular emphasis—the first paragraph on the first page, where we feel that we may be a minority sport, but we are not a restrictive body, and it is a sport enjoyed by a large number of people who in the main spend about — I have done some calculation, Sir — about one pound a week on it, so it is not a rich man's hobby at all. On the second paragraph of the second page, we have put in a little piece about this.

I have heard today, Sir, some people mention the advantages of having an airport here, as bringing increased wages, etc., to the area. But one of the things we would want would be the quality of life. One of the pleasures of life is to fly round over the countryside, and this particular area is excellent for that purpose.

I myself worked as an airport employee for about six months and I left because the quality of life was not very good there. One could not sleep well at night, with the noise.

We are quite a small body; we have now some external members besides our college people, but all the same we managed to collect £46 amongst us as an earnest of our desire to see this airport not come here, and we have contributed this to the various Residents' Associations. Thank you.

Inspector Any questions to Mr. McQue concerning the College of Aeronautics Gliding Club? I have no questions: thank you, for the third and last time. Mr. A. J. Cony, on behalf of Cony & Son, Manor Farm, Harrold?

MR. A. J. CONY† *called*

(Cony and Son Ltd.)

Mr. Cony I am Anthony John Cony; I have nothing to add to my written statement, which I have submitted, other than to say that I am a member of the NFU and the CLA, and I do agree with the evidence that they have given.

Inspector Thank you very much. Are there any questions to Mr. Cony concerning his evidence? There are no questions—thank you. That—unless I am mistaken—concludes the last item on today's programme, and, I am hoping, the last item of all the four Stage II hearings. Have I missed anybody on this occasion?

Commander Boaks I have just handed in before the Inquiry one envelope,* or one exhibit, which I would like placed on record, which has been handed in before.

Inspector I have received it—thank you.

At the end of this Inquiry, there are one or two things which I would like to say. First—I am sure that all of us must be most grateful to the Mayor, Corporation of the Borough of Bedford for making available this hall, and all the facilities that go with it. Secondly, the Commission staff and myself are particularly grateful to the staff of the Bedford Borough Council, because they have been most courteous and most helpful in the organisation of the Inquiry, even to copying Mr. Curran's last-minute evidence in a most rapid and most efficient manner. And finally, on behalf of the Commission and myself, I would like to reiterate our obligation to the Bedfordshire County Council and to the other County Councils, the local authorities, and the various organisations, and, not least, the individuals, who have come along to give evidence, and to make submissions, about the nature of the local implications should Thurleigh be selected as the site for the third London airport.

At the end of this and the other three hearings, I can only give one undertaking, one assurance, and that is the Commission will give all these local implications the most careful consideration. The Commission, of course, is now proceeding along Stage III of its procedural programme. That will be followed by Stage IV, and the final Inquiry, Stage V has been provisionally fixed for April the 6th, 1970, at the Piccadilly Hotel in London. There are copies of the notice available for any parties who are not aware of that date.

So, ladies and gentlemen, with great relief, I close the last of these four hearings. Thank you very much.

(The Inquiry was then closed.)

* See also p. 2166.
† See also p. 2168.

* Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

List of Representations

Mr. V. Abraham
(*Bedfordshire Airport Resistance Association*)
Mr. W. A. Allen
(*University of Cambridge*)
Mr. R. Atkins
(*Bedfordshire Airport Resistance Association*)

Mr. H. C. Balfour
(*National Farmers' Union*)
Mr. E. C. Barnard
(*British Legion, Keysoe Branch, and Bedfordshire Airport Resistance Association*)
Mr. W. J. Bates
(*National Farmers' Union*)
Mr. G. C. White Beazley
(*Bedfordshire Airport Resistance Association*)
Mr. R. Billington
(*Great Ouse River Authority*)
Mr. J. Bissett
(*Great Ouse River Authority*)
Mr. M. B. Blackledge
(*Bedfordshire Airport Resistance Association*)
Mr. R. Body
(*Council for the Preservation of Rural England*)
Mr. J. Brandon
(*Lavendon Parish Council*)
Mr. F. Bresher
(*Olney Parish Council*)
Mr. D. Burton
(*Huntingdonshire Constituency Labour Party, and Thurleigh Emergency Committee for Democratic Action*)

Lord Campbell
(*Milton Keynes Development Corporation*)
Mr. S. G. Chapman
(*Bedfordshire Airport Resistance Association*)
Mr. M. Connell
(*Bedford Rural District Council*)
Mr. A. J. Cony
(*Cony & Son*)
Mr. F. Cookson
(*Bedfordshire Airport Resistance Association*)
Mr. G. Cowley
(*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*)
Mrs. J. Cruse
(*Huntingdonshire Constituency Labour Party, and Thurleigh Emergency Committee for Democratic Action*)
Mr. J. Curran
(*Huntingdonshire Constituency Labour Party, and Thurleigh Emergency Committee for Democratic Action*)

Mr. R. M. Denny
(*Bedfordshire Airport Resistance Association*)
Mr. J. K. Dealtrey Dow
(*Unilever Ltd.*)
Major P. D. P. Duncombe
(*Country Landowners' Association*)
Mr. G. I. W. Dunford
(*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*)
Mr. J. Dunkley
(*Bletsoe Parish Council*)
Mr. D. W. Dunn
(*Northamptonshire Association of Parish Councils*)
Mr. K. Durham
(*Unilever Ltd.*)

Mr. A. Edwards
(*Cambridge University Gliding Club*)
Mr. T. G. Elliott
(*Bedfordshire Airport Resistance Association*)
Mr. D. T. Eve
(*University of Cambridge*)

Mr. N. Fleming
(*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*)
Mr. H. Forbes
(*Bedfordshire Airport Resistance Association*)
Mr. T. Forbes
(*Northamptonshire Association of Parish Councils*)

Mr. L. C. Gale
(*Bedfordshire Airport Resistance Association*)
Prince Yuri Galitzine
(*Gayhurst Parish Council*)
Mrs. E. T. Gibbs
(*Bedfordshire Airport Resistance Association*)
Mr. A. K. Giles
(*National Farmers' Union*)
Mr. M. Gregory
(*Country Landowners' Association*)

Mr. D. Hall
(*North Bedfordshire Archaeological Society*)
Mr. R. N. D. Hamilton
(*Buckinghamshire County Council*)
Mr. F. A. Hammond
(*Harpur Trust*)
Mr. J. Hawkes
(*National Farmers' Union*)
Mr. J. G. Harris
(*Bedfordshire Airport Resistance Association*)
Mr. J. B. Harwood
(*Bedford Corporation*)
Mr. R. C. Horwood
(*Newport Pagnell Rural District Council*)
Mr. R. N. Hutchins
(*Harpur Trust*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. Hutchins
(*North Bedfordshire Preservation Society*)

Mr. A. James
(*County of Buckinghamshire Association of Parish Councils*)

Mr. H. de B. L. Johnston
(*Bedfordshire Airport Resistance Association*)

Mr. Keene
(*Cambridge and Isle of Ely County Councils*)

Mr. J. H. D. Lee
(*National Farmers' Union*)

Mr. C. H. Lewis
(*Harpur Trust*)

Sq. Ldr. B. Lock
(*County of Buckinghamshire Association of Parish Councils*)

Mr. A. W. Luckhurst
(*Bedfordshire Airport Resistance Association*)

Mr. N. MacDermot
(*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*)

Mr. P. W. MacFarlane
(*Council for the Preservation of Rural England*)

Dr. M. C. MacLeod
(*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*)

Wing Cmdr. C. G. B. McClure
(*Bedfordshire Airport Resistance Association*)

Mrs. S. McEwan
(*Keysoe Parochial Church Council*)

Mr. D. W. McQue
(*College of Aeronautics Gliding Club*)

Mr. M. Martindale
(*Bedfordshire Airport Resistance Association*)

Mr. B. H. Mellor
(*Cambridge and Isle of Ely County Councils*)

Mr. R. J. Osborn
(*Bedfordshire Airport Resistance Association*)

Mr. R. W. Osborn
(*National Farmers' Union*)

Mr. J. B. Osborne
(*Bedfordshire Airport Resistance Association*)

Mr. R. B. Paynter
(*National Farmers' Union*)

Mr. J. M. Philp
(*Unilever Ltd.*)

Mr. G. D. Picton
(*Huntingdonshire Constituency Labour Party, and Thurleigh Emergency Committee for Democratic Action*)

Mr. M. J. Pittman
(*Bedfordshire Airport Resistance Association*)

Mr. A. N. Polhill
(*Council for the Preservation of Rural England*)

Mr. F. B. Pooley
(*Buckinghamshire County Council*)

Mr. O. M. Pozniak
(*Bedfordshire Airport Resistance Association*)

Mr. Pugh
(*Chesterton Rural District Council*)

Mr. W. R. Radnor
(*Bedfordshire Airport Resistance Association*)

Mr. F. R. Reavell
(*Bedfordshire Airport Resistance Association*)

Mr. M. Riches
(*British Legion, Keysoe Branch*)

Mr. L. G. Robinson
(*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*)

Professor Sir Martin Ryle
(*University of Cambridge*)

Mr. J. M. Schofield
(*Nature Conservancy*)

Mr. H. P. Shallard
(*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*)

Mr. F. A. Sharman
(*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*)

Mr. Sime
(*Harpur Trust*)

Mr. A. Smith
(*Bletsoe Parish Council*)

Mr. F. R. G. Soper
(*North Bedfordshire Preservation Society*)

Dr. B. A. Southgate
(*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*)

Mr. Stroyan
(*Unilever Ltd.*)

Mr. L. J. Taylor
(*Bedfordshire Airport Resistance Association*)

Mr. L. Timms
(*Bedford Rural District Council*)

Mr. H. van Oosterom
(*Great Ouse River Authority*)

Miss C. J. Vigar
(*Bedfordshire Airport Resistance Association*)

Mr. C. Walters
(*Keysoe Baptist Churches*)

Mr. N. Wallace
(*National Farmers' Union*)

Mr. J. C. Wilkinson
(*City of Cambridge*)

Mr. P. R. Willmer
(*Bedfordshire Airport Resistance Association*)

Mr. D. M. Woodhall
(*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*)

Printed in England for Her Majesty's Stationery Office by Hindson Reid Jordison Dd. 147339 K16

OP
5 MR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

OP. 1100. 120. 141

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings volume VI

Stage II: Local Hearings

Thurleigh (Bedford)

LONDON
HER MAJESTY'S STATIONERY OFFICE
1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Commission on the Third London Airport

Members of the Commission

The Hon. Mr. Justice Roskill	(*Chairman*)
Professor Colin Buchanan	Professor of Transport Imperial College of Science and Technology
Mr. A. Goldstein	Partner in R. Travers Morgan and Partners, Consulting Engineers
Mr. A. J. Hunt	Principal Planning Inspector Ministry of Housing and Local Government
Professor David Keith-Lucas	Professor of Aircraft Design, the College of Aeronautics, Cranfield
Mr. Arthur Knight	Finance Director, Courtaulds Ltd.
Professor A. A. Walters	Cassel Professor of Economics in the University of London

---

Mr. J. Caines	(*Secretary*)
Mr. F. P. Thompson	(*Director of Research*)

The Commission on the Third London Airport
Templar House
81-87 High Holborn
London WC1

Tel: 01-242 0161

SBN 11 510160 8

Printed image digitised by the University of Southampton Library Digitisation Unit

Preface

The Stage II Local Hearings are being published as volumes III to VI of the Papers and Proceedings as follows:

volume III	Foulness (off-shore)
volume IV	Cublington (Wing)
volume V	Nuthampstead
volume VI	Thurleigh.

For the convenience of users the text and the drawings of the four *Site Information* booklets (previously published separately) and of the additional site information issued for the Thurleigh Hearing will be included in each part. The page numbers of the four volumes will run consecutively so that they may, if desired, be bound up together. As the four volumes that form Stage II are being printed concurrently, it has been necessary to allocate to each part a block of page numbers that will not overlap with the other volumes. Consequently there will be gaps in the pagination between one volume and the next. These pages will be indicated thus: pages: 273–300 not used. The question numbers in the oral evidence will also run continuously. After the issue of the final volume a separate index to all the Stage II volumes will be published.

This volume contains the record of the proceedings of the Commission's Stage II public hearings in September 1969 on the local implications of the Foulness site.The oral evidence and the written proofs of evidence on which this was based are reproduced in full.

Some of those who were given leave to appear decided subsequently not to present their evidence in person at the hearings. The written proofs of the evidence which they submitted therefore fell to be considered together with other written representations. These proofs and the written representations are not reproduced in full. A list of the names of those concerned is given on page 2169. Copies of all these submissions are available for inspection by arrangement at the Commission's offices.

The oral evidence is taken from the transcripts of the hearings. Such amendments to the transcripts as were notified have been incorporated.

Note: Pages 1779–1800 not used.

Printed image digitised by the University of Southampton Library Digitisation Unit

Contents

	Page
Site information for Stage II Local Hearings, 4. Thurleigh (Bedford)	1801
Additional site information	1802
Arrangements for Stage II Hearing on Thurleigh (Bedford)	1803

WRITTEN EVIDENCE

Day 1

Bedfordshire County Council:	
Evidence of Mr. G. W. Cowley	1807
Huntingdon and Peterborough County Councils:	
Evidence of Mr. L. G. Robinson	1831
Evidence of Dr. R. C. Hoather and Dr. B. A. Southgate	1835
Northamptonshire County Council:	
Evidence of Mr. D. M. Woodhall	1837
Bedfordshire, Buckinghamshire, Huntingdon and Peterborough, and Northamptonshire County Councils:	
Evidence of Mr. F. A. Sharman	1845
Evidence of Mr. G. I. W. Dunford	1851
Evidence of Mr. N. Fleming	1854
Bedfordshire, Buckinghamshire, Cambridge and Isle of Ely, Huntingdon and Peterborough and Northamptonshire County Councils:	
Evidence of Mr. H. P. Shallard	1863
Bedfordshire, Buckinghamshire, Cambridgeshire, Huntingdon and Peterborough and Northamptonshire County Councils:	
Evidence of Mr. M. C. MacLeod	1867
Buckinghamshire County Council:	
Evidence of Mr. F. B. Pooley	1873
Cambridgeshire and Isle of Ely County Council:	
Evidence of Mr. B. H. Mellor	1877
Bedford Rural District Council in association with the County Councils of Bedfordshire, Buckinghamshire, Huntingdon and Peterborough and Northamptonshire:	
Evidence of Mr. L. Timms	1879
Bedford Corporation	1881
Bletsoe Parish Council	
Evidence of Mrs. V. F. Alsford	1884
Evidence of Mr. C. Measures	1886
Evidence of Mrs. M. Steen	1890
Evidence of Mrs. N. Mitchelhill	1890
Evidence of Vauxhall Motors Recreation Club	1890
Evidence of Bletsoe Womens' Institute	1891
Milton Keynes Development Corporation	1891
Newport Pagnell Rural District Council	1892
Gayhurst Parish Council	1894
Evidence of Gayhurst Parish Meeting	1898
Lavendon Parish Council	1899
Olney Parish Council	1900
City of Cambridge	1901
Chesterton Rural District Council	1903
	1904

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Day 2

Great Ouse River Authority:
- Evidence of Mr. H. van Oosterom . . . 1909
- Evidence of Mr. H. Clay . . . 1912
- Evidence of Mr. G. Brewis . . . 1915

National Farmers' Union:
- Survey of affected farmers . . . 1917
- Evidence of Mr. J. E. Y. Hawkes . . . 1920
- Evidence of Mr. A. C. Giles . . . 1933
- Evidence of Mr. J. H. D. Lee . . . 1940
- Evidence of Mr. H. C. Balfour . . . 1950
- Evidence of Mr. M. W. Ward . . . 1952
- Evidence of Mr. R. B. Paynter . . . 1955
- Evidence of Mr. R. W. Osborn . . . 1957
- Evidence of Mr. W. J. Bates . . . 1959
- Evidence of Mr. G. E. Richards . . . 1960

Nature Conservancy . . . 1962

Council for the Preservation of Rural England:
- Evidence of Mr. P. W. Macfarlane . . . 1965
- Evidence of Mr. A. N. Polhill . . . 1967
- Evidence of Mr. R. A. Fell . . . 1974
- Evidence of Mrs. P. S. Rixon . . . 1975
- Evidence of Mrs. A. Du Sautoy Berens . . . 1976
- Evidence of Mr. D. Green . . . 1979

Country Landowner's Association:
- Evidence of Major P. D. P. Duncombe . . . 1981

North Bedfordshire Preservation Society:
- Evidence of Mr. F. G. R. Soper . . . 1983

Woburn Sands and District Society:
- Evidence of Mr. D. A. Boswell . . . 1985

North Bedfordshire Archaeological Society:
- Evidence of Mr. D. Hall . . . 1986

Day 3

Bedfordshire Airport Resistance Association:
- Evidence of Mr. H. de Beauchamp Lawson Johnston . . . 1993
- Evidence of Mr. V. Abraham . . . 2001
- Evidence of Mr. R. Atkins (*also representing Bromham Parish Council*) . . . 2003

Bedfordshire Airport Resistance Association:
- Evidence of Mr. L. J. Taylor . . . 2008
- Evidence of Mr. S. G. Chapman . . . 2010
- Evidence of Mr. W. R. Radnor . . . 2012
- Evidence of Mrs. E. T. Gibbs . . . 2013
- Evidence of Mr. R. J. Osborn . . . 2016
- Evidence of Mr. M. J. Pittman . . . 2018
- Evidence of Mr. F. R. Reavell . . . 2021
- Evidence of Miss C. J. Vigar . . . 2027
- Evidence of Mr. A. W. Luckhurst . . . 2029
- Evidence of Mr. E. C. Barnard . . . 2031
- Evidence of Mr. P. R. Willmer . . . 2033
- Evidence of Mr. F. Cookson (*also representing Bedfordshire Association of Parish Councils*) . . . 2035
- Evidence of Mr. M. G. Martindale (*also representing Huntingdonshire and Peterborough Parish Councils' Association and the Cambridgeshire and Isle of Ely Association of Parish Councils*) . . . 2039
- Evidence of Mr. M. B. Blackledge (*also representing Bedford Society*) . . . 2041
- Evidence of Mr. J. B. Osborne (*also representing Bovril Limited*) . . . 2046
- Evidence of Wing Commander C. G. B. McClure . . . 2048
- Evidence of Mr. J. G. Harris . . . 2053
- Evidence of Mr. O. M. Pozniak . . . 2054
- Evidence of Mr. R. M. Denny . . . 2056
- Evidence of Mr. T. G. Elliott . . . 2059

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Pavenham Parish Council:
Evidence of Mr. G. C. W. Beazley 2060
Evidence of Mr. L. C. Gale 2069
Evidence of Mr. R. Westley 2077

Buckinghamshire Association of Parish Councils:
Evidence of Sqd. Ldr. B. Lock 2094

Northamptonshire Association of Parish Councils:
Evidence of Mr. D. W. Dunn 2096

Keysoe, Bedfordshire, Branch of the British Legion:
Evidence of Mrs. M. Riches 2102
Evidence of Mr. E. C. Barnard 2103

Keysoe Parochial Church Council:
Evidence of Mrs. S. McEwan 2106

Keysoe, Bedfordshire, Baptist Churches:
Evidence of Mr. C. Walters 2107

Day 4

University of Cambridge:
Evidence of Professor Sir Martin Ryle 2111
Evidence of Mr. W. A. Allen 2124

Thurleigh Emergency Committee for Democratic Action:
Evidence of Mrs. J. Cruse 2130
Evidence of Mr. D. Burton 2131
Evidence of Mr. G. D. Picton 2132
Evidence of Mr. J. Curran 2133

Kimbolton School, Huntingdonshire:
Evidence of Mr. C. H. Lewis 2147

Harpur Trust, Bedford Charity:
Evidence of Mr. F. A. Hammond 2149
Evidence of Mr. R. N. Hutchins 2150

Unilever Ltd.:
Evidence of Mr. K. Durham 2155
Evidence of Mr. J. K. D. Dow 2160
Evidence of Mr. J. M. Philp 2162

Cambridge University Gliding Club:
Evidence of Dr. A. W. F. Edwards 2165

College of Aeronautics Gliding Club 2166
Cony & Son 2168

Written representations 2169

ORAL EVIDENCE

Day 1

Mr. N. MacDermot (*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*) 2174
Mr. G. Cowley (*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*) 2180
Mr. L. G. Robinson (*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*) 2183
Mr. D. M. Woodhall (*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*) 2183
Mr. F. A. Sharman (*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*) 2183
Mr. G. I. W. Dunford (*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*) 2185

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Mr. N. Fleming (*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*) 2185
Mr. H. P. Shallard (*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*) 2186
Dr. M. C. MacLeod (*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*) 2187
Dr. B. A. Southgate (*Bedfordshire, Huntingdon and Peterborough, Northamptonshire and Buckinghamshire County Councils*) 2187
Mr. R. N. D. Hamilton (*Buckinghamshire County Council*) 2189
Mr. F. B. Pooley (*Buckinghamshire County Council*) 2189
Mr. Keene (*Cambridge and Isle of Ely County Councils*) 2191
Mr. B. H. Mellor (*Cambridge and Isle of Ely County Councils*) 2191
Mr. M. Connell (*Bedford Rural District Council*) 2193
Mr. L. Timms (*Bedford Rural District Council*) 2194
Mr. J. B. Harwood (*Bedford Corporation*) 2194
Mr. A. Smith (*Bletsoe Parish Council*) 2195
Mr. J. Dunkley (*Bletsoe Parish Council*) 2195
Lord Campbell (*Milton Keynes Development Corporation*) 2195
Cllr. R. C. Horwood (*Newport Pagnell Rural District Council*) 2196
Prince Yuri Galitzine (*Gayhurst Parish Council*) 2197
Mr. J. Brandon (*Lavendon Parish Council*) 2198
Mr. F. Bresher (*Olny Parish Council*) 2198
Mr. J. C. Wilkinson (*City of Cambridge*) 2198
Mr. Pugh (*Chesterton Rural District Council*) 2199

Day 2

Mr. J. Bissett (*Great Ouse River Authority*) 2203
Mr. R. Billington (*Great Ouse River Authority*) 2203
Mr. H. van Oosterom (*Great Ouse River Authority*) 2204
Mr. N. Wallace (*National Farmers' Union*) 2211
Mr. J. Hawkes (*National Farmers' Union*) 2212
Mr. A. K. Giles (*National Farmers' Union*) 2213
Mr. J. H. D. Lee (*National Farmers' Union*) 2213
Mr. H. C. Balfour (*National Farmers' Union*) 2214
Mr. R. B. Paynter (*National Farmers' Union*) 2215
Mr. R. W. Osborn (*National Farmers' Union*) 2215
Mr. W. J. Bates (*National Farmers' Union*) 2216
Mr. J. M. Schofield (*Nature Conservancy*) 2219
Mr. R. Body (*Council for the Preservation of Rural England*) 2220
Mr. P. W. MacFarlane (*Council for the Preservation of Rural England*) 2221
Mr. A. N. Polhill (*Council for the Preservation of Rural England*) 2221
Mr. M. Gregory (*County Landowners' Association*) 2223
Major P. D. P. Duncombe (*County Landowners' Association*) 2224
Mr. Hutchins (*North Bedfordshire Preservation Society*) 2225
Mr. F. G. R. Soper (*North Bedfordshire Preservation Society*) 2225
Mr. D. Hall (*North Bedfordshire Archaeological Society*) 2225

Day 3

Mr. H. Forbes, Q.C. (*Bedfordshire Airport Resistance Association*) 2229
Mr. H. de Beauchamp Lawson Johnston (*Bedfordshire Airport Resistance Association*) 2237

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Mr. V. Abraham (*Bedfordshire Airport Resistance Association*) 2237
Mr. R. Atkins (*Bedfordshire Airport Resistance Association*) 2238
Mr. L. J. Taylor (*Bedfordshire Airport Resistance Association*) 2239
Mr. S. G. Chapman (*Bedfordshire Airport Resistance Association*) 2240
Mr. W. R. Radnor (*Bedfordshire Airport Resistance Association*) 2241
Mrs. E. T. Gibbs (*Bedfordshire Airport Resistance Association*) 2241
Mr. R. J. Osborn (*Bedfordshire Airport Resistance Association*) 2242
Mr. M. J. Pittman (*Bedfordshire Airport Resistance Association*) 2243
Mr. F. R. Reavell (*Bedfordshire Airport Resistance Association*) 2243
Miss C. J. Vigar (*Bedfordshire Airport Resistance Association*) 2244
Mr. A. W. Luckhurst (*Bedfordshire Airport Resistance Association*) 2245
Mr. E. C. Barnard (*Bedfordshire Airport Resistance Association*) 2245
Mr. P. R. Willmer (*Bedfordshire Airport Resistance Association*) 2245
Mr. F. Cookson (*Bedfordshire Airport Resistance Association*) 2246
Mr. M. Martindale (*Bedfordshire Airport Resistance Association*) 2247
Mr. M. B. Blackledge (*Bedfordshire Airport Resistance Association*) 2247
Mr. J. B. Osborne (*Bedfordshire Airport Resistance Association*) 2248
Wing Commander C. G. B. McClure (*Bedfordshire Airport Resistance Association*) 2248
Mr. J. G. Harris (*Bedfordshire Airport Resistance Association*) 2248
Mr. O. M. Pozniak (*Bedfordshire Airport Resistance Association*) 2248
Mr. R. M. Denny (*Bedfordshire Airport Resistance Association*) 2249
Mr. T. G. Elliott (*Bedfordshire Airport Resistance Association*) 2250
Mr. G. C. White Beazley (*Bedfordshire Airport Resistance Association*) 2250
Mr. L. C. Gale (*Bedfordshire Airport Resistance Association*) 2254
Mr. A. James (*County of Buckinghamshire Association of Parish Councils*) 2255
Sqr. Ldr. B. Lock (*County of Buckinghamshire Association of Parish Councils*) 2256
Mr. T. Forbes (*Northamptonshire Association of Parish Councils*) 2257
Mr. D. W. Dunn (*Northamptonshire Association of Parish Councils*) 2260
Mrs. M. Riches (*British Legion, Keysoe Branch*) 2261
Mr. E. C. Barnard (*British Legion, Keysoe Branch*) 2261
Mrs. S. McEwan (*Keysoe Parochial Church Council*) 2262
Mr. C. Walters (*Keysoe, Baptist Churches*) 2263

Day 4

Mr. D. T. Eve (*University of Cambridge*) 2267
Professor Sir Martin Ryle (*University of Cambridge*) 2270
Mr. W. A. Allen (*University of Cambridge*) 2272
Mrs. J. Cruse (*Huntingdonshire Constituency Labour Party and the Thurleigh Emergency Committee for Democratic Action*) 2273
Mr. D. Burton (*Huntingdonshire Constituency Labour Party and the Thurleigh Emergency Committee for Democratic Action*) 2277
Cllr. G. D. Picton (*Huntingdonshire Constituency Labour Party and the Thurleigh Emergency Committee for Democratic Action*) 2278
Mr. J. Curran (*Huntingdonshire Constituency Labour Party and the Thurleigh Emergency Committee for Democratic Action*) 2281
Mr. Sime (*Harpur Trust*) 2292
Mr. C. H. Lewis (*Harpur Trust*) 2292
Mr. F. A. Hammond (*Harpur Trust*) 2293
Mr. R. N. Hutchins (*Harpur Trust*) 2293
Mr. Stroyan (*Unilever Ltd.*) 2295
Mr. K. Durham (*Unilever Ltd.*) 2298

Printed image digitised by the University of Southampton Library Digitisation Unit

	Page
Mr. J. K. Dealtrey Dow (*Unilever Ltd.*)	2299
Mr. J. McLean Philp (*Unilever Ltd.*)	2299
Mr. A. Edwards (*Cambridge University Gliding Club*)	2300
Mr. D. W. McQue (*College of Aeronautics Gliding Club*)	2301
Mr. A. J. Cony (*Cony & Son*)	2301
List of appearances	2303

Printed image digitised by the University of Southampton Library Digitisation Unit

ILLUSTRATIONS contained in volume

Page

Day 1

Fig. 1. Population growth within 20 mile radius of Thurleigh. (*Mr. G. W. Cowley, Bedfordshire County Council.*) 1828

Fig. 2. Demands upon the construction industry. (*Mr. G. W. Cowley, Bedfordshire County Council.*) . 1828

T1. Land contours. (*Mr. G. W. Cowley, Bedfordshire County Council.*) 1829

T2. Constraints. (*Mr. G. W. Cowley, Bedfordshire County Council.*) 1830

NCC 1. Map of affected area. (*Mr. D. M. Woodhall, Northamptonshire County Council.*) . . . 1844

Day 2

GORA 3. (*Great Ouse River Authority.*) 1911

NFU JH 1. Population and employment. (*Mr. J. E. Y. Hawkes, National Farmers' Union.*) . . 1930

NFU JH 2. Commuting to the GLC area. (*Mr. J. E. Y. Hawkes, National Farmers' Union.*) . . 1931

NFU JH 3. Sub-regional growth hypothesis. (*Mr. J. E. Y. Hawkes, National Farmers' Union.*) . . 1932

Sites of special scientific interest. (*Nature Conservancy.*) 1964

NBAS. Appendix 1. Major archaeological sites in N. Bedfordshire (*North Bedfordshire Archaeological Society.*) 1989

Day 3

Appendix C. Effect of 30 min. and 40 min. in flying time on typical afternoon laboratory periods. (*Wing Commander G. C. B. McClure, Bedfordshire Airport Resistance Assn.*) 2052

Peak PNdB versus flight path distance: future aircraft. (*Mr. R. Westley, Bedfordshire Airport Resistance Assn.*) 2092

Mean take-off altitudes. (*Mr. R. Westley, Bedfordshire Airport Resistance Assn.*) 2092

Fig. 4. Heavy supersonic transport basic noise and speculated reductions. (*Mr. W. R. Westley, Bedfordshire Airport Resistance Assn.*) 2093

Day 4

Milking graph. (*Mr. J. K. D. Dow, Unilever Ltd.*) 2159

Printed image digitised by the University of Southampton Library Digitisation Unit

ILLUSTRATIONS in attached wallet

Short list sites. (CTLA/5) (*Commission on the Third London Airport*)

Provisional airport plan. (CTLA/1) (*Commission on the Third London Airport*)

Thurleigh: Noise and Number Index: 2-runway airport. (CTLA 4/2) (*Commission on the Third London Airport*)

Thurleigh: Noise and Number Index: 4-runway airport. (CTLA 4/3) (*Commission on the Third London Airport*)

Thurleigh (b): Noise and Number Index: 2-runway airport. (CTLA 4/4) (*Commission on the Third London Airport*).

Thurleigh (b): Noise and Number Index: 4-runway airport. (CTLA 4/5) *Commission on the Third London Airport*).

Day 1

T3. Urban pattern (without airport.) (*Mr. G. W. Cowley, Bedfordshire County Council.*)

T4. Urban pattern (with airport). (*Mr. G. W. Cowley, Bedfordshire County Council.*)

T5. Sand and gravel resources. (*Mr. G. W. Cowley, Bedfordshire County Council.*)

FAS 1. Surface access links. (*Mr. F. A. Sharman, Bedfordshire, Buckinghamshire, Huntingdonshire and Peterborough and Northamptonshire County Councils.*)

FAS 2. London-Thurleigh surface links. (*Mr. F. A. Sharman, Bedfordshire, Buckinghamshire, Huntingdonshire and Peterborough and Northamptonshire County Councils.*)

NF 1a. NNI contours for 2 runways. (*Mr. N. Fleming, Bedfordshire, Buckinghamshire, Huntingdonshire and Peterborough and Northamptonshire County Councils.*)

NF 1b. NNI contours for 2 runways. (*Mr. N. Fleming, Bedfordshire, Buckinghamshire, Huntingdonshire and Peterborough and Northamptonshire County Councils.*)

NF 2a. NNI contours for 4 runways. (*Mr. N. Fleming, Bedfordshire, Buckinghamshire, Huntingdonshire and Peterborough and Northamptonshire County Councils.*)

NF 2b. NNI contours for 4 runways. (*Mr. N. Fleming, Bedfordshire, Buckinghamshire, Huntingdonshire and Peterborough and Northamptonshire County Councils.*)

Day 2

NFU RH2. Land losses: 12 mile zone. (*Mr. J. D. H. Lee, National Farmers' Union.*)

Day 3

Appendix B. Effect of flying operations of an international airport at Thurleigh. (*Wing Commander G. C. B. McClure, Bedfordshire Airport Resistance Assn.*)

Fig. 1. Thurleigh Airport: Peak PNnB noise contours, (assigned flight paths.) (*Mr. R. Westley, Bedfordshire Airport Resistance Assn.*)

Fig. 2. Thurleigh Airport: Peak PNnB noise contours, (area spaced flight paths.) (*Mr. R. Westley, Bedfordshire Airport Resistance Assn.*)

Day 4

KD 1. NNI contours for a 2 runway-airport at sites A and B. ((*Mr. K. Durham, Unilever Ltd.*)

KD 2. NNI contours for a 4-runway airport at sites A and B. (*Mr. K. Durham, Unilever Ltd.*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Site Information for Stage II Local Hearings

3. Cublington (Wing)

1. Introduction

The information set out below is intended to give a broad indication of what would be involved if the third London airport were to be located at Cublington. At this early stage of the Commission's work it is not possible to give final detailed plans for an airport at this site or for the surface access arrangements which would be required. The material under the various headings should, however, enable local implications of an airport at Cublington to be assessed and should provide a suitable basis for objections, comments and representations at the Stage II local hearing.*

2. As the Commission's work progresses and in the light of the evidence of the Stage II hearings it will be possible to prepare more detailed plans. These will be available for the Stage V hearings.

3. The base maps used to illustrate this material are the latest published by the Ordnance Survey. They do not show the most recent developments.

2. Airport Layout

4. The Commission recognises that there is no single airport layout which is the best possible for all the sites. Each site has to be carefully studied to establish factors, such as terrain and local geological conditions, so that the best layout at that particular site can be obtained. Detailed studies have not yet been carried out at Cublington, or any of the other short listed sites. Nevertheless, the Commission recognises the need for providing the public with some indication of the likely size and shape of a four-runway airport.

5. The layout shown at plan CTLA/1 illustrates an arrangement which would be acceptable both to the National Air Traffic Control Services and to the British Airports Authority. An airport of this design could be constructed at Cublington. It is emphasised that it is not the only possible configuration, but the basic runway separation distances which control the amount of land required are unlikely to be much less than is shown. The total land-take of an airport at Cublington with this layout would be approximately 7,500 acres (including the areas shown as "optional") but the possibility of a larger land-take being required cannot be excluded.

3. Runway Alignment

6. The runway alignment is 45 degrees east of north (grid). This is shown on the NNI (Noise and Number Index) contour plans CTLA/3/2 and CTLA/3/3. The alignment differs from that indicated by the shaded rectangle on plan CTLA/5 (Short List Sites). This new alignment provides a better balance of the following important factors: noise disturbance, existing facilities and amenities, air traffic to other civil airports, air traffic patterns, military aviation, meteorological conditions and terrain. The Commission recognises that further changes to this alignment may subsequently be justified.

4. Airport Site

7. The area proposed embraces the old airfield at Wing. The precise airport location would be strongly influenced by the need to arrange the runways and taxiways in the best possible way having regard to the existence of the valley to the west of Cublington. The falling ground to the northwest, in the vicinity of Soulbury, imposes practical limits in this direction also.

8. The site is used primarily for agriculture. It has been considered as one of a number of sites suitable for a reservoir.

9. The area is predominantly boulder clay with glacial gravel and alluvial deposits in the river valleys and outcrops of Portland sand and stone. Construction should present no serious problems although site preparation costs would be higher than normal because of the undulating nature of the terrain.

5. Noise and Disturbance

10. On the basis of the Registrar General's Annual Estimates of Population for 1968, it is estimated that about 1,200 people currently reside in the area likely to be covered by the site.

11. Estimates have been made of the probable NNI* contours for the airport at the full capacity of two runways and again at the full capacity of four runways.

12. Contours down to the 40 NNI level are shown on plans CTLA/3/2 and CTLA/3/3. Attention is drawn to the fact that these contours are of necessity approximate, and that they can give only a general indication of the areas likely to be affected. It is especially difficult to estimate the number of aircraft likely to be using particular flight paths in the four-runway case (some thirty years in the future) and the best way in which these flight paths can be routed to minimise the impact of noise on urban areas. It will be observed that the Milton Keynes designated area lies outside the 40 NNI contour.

13. The reliability of the Noise and Number Index has been questioned. This is a matter which can be

* See Appendix A for procedure and programme.

* See *Noise: Final Report of the Committee on the Problem of Noise.* (Cmnd. 2056; HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

further investigated in due course. Separate night time NNI contours have not been prepared but, as the NNI is related to the number of aircraft movements and these are likely to be less at night than by day, it is a reasonable assumption at this stage that the night NNI contours will be less extensive than the day contours depicted. The contours relate to an average summer day—normally the busiest time of the year—with no special noise abatement procedures. It has been assumed in the NNI contours that noise certification regulations will be introduced and will lead to a reduction in the noise effect of aircraft by 10 NNI over the next twenty years, but that half this reduction will be offset by growth in aircraft weight.

14. The present population (based on the 1966 Census) affected by the different NNI contours are estimated to be:

Noise Level	*NNI*	*2-runway*	*4-runway*
Intrusive	40-45	15,200	16,300
Intrusive/annoying	45-50	5,608	10,900
Annoying	50+	3,400	7,200

The Report of the Committee on the Problem of Noise reached the tentative conclusion that the critical range of disturbance was 50–60 NNI by day and 30–45 NNI by night.

15. The Commission is not publishing at this stage maps showing flight paths and stacking areas. Flight path maps will not give information about the levels of disturbance caused by aircraft in the vicinity of the airport. Such information is given by the NNI contour maps. It is not possible at this stage to indicate precisely where stacking areas might be located. However, they do not extend below 5,000 ft and the disturbance caused by aircraft held in stacks is most unlikely to reach the 40 NNI level.

6. Airport Employment

16. The introduction of a large international airport into an area is bound to create an inward movement of population. There will be those directly engaged on the airport ("primary employment"). There will be those engaged in manufacturing industry and commercial projects attracted specifically by the location of the airport ("secondary employment"). There will be those engaged in providing for the needs of the primary and secondary workers and their dependents ("service employment").

17. At this stage, the Commission's best estimate of the primary employment which the airport will generate at the full capacity of two runways is 45,000 and at the full capacity of four runways is 65,000. These figures depend on many factors, including the extent to which airlines will set up engineering facilities at the new airport. These levels of primary employment are unlikely to be reached before the mid-1980s and mid-1990s respectively. The accuracy of this forecast must depend on the date of inauguration of the airport and the subsequent build-up of traffic. The estimates are based on an analysis of employment and air traffic at Heathrow.

18. The Commission expects to receive valuable evidence on the issue of resulting urbanisation at the local hearing.

7. Surface Access

19. The total annual number of passengers using the airport when two runways are running at full capacity is likely to be about 45 million. When four runways are running at full capacity it could be over 100 million. The forecasts are tentative and are put forward to give some indication of the scale of the surface access problem.

20. The Ministry of Transport and British Rail are not yet in a position to provide definite plans for this level of traffic but it is thought desirable to provide some indication of the possibilities for use at the local hearing. It is envisaged that new roads connecting the proposed site to M1, A41 and A413 would be required initially. Subsequently additional road capacity would be required for road traffic travelling to the Midlands and London. Rail facilities to a London terminal combining existing lines and new links will be needed from an early date.

Printed image digitised by the University of Southampton Library Digitisation Unit

Arrangements for Stage II Hearing on Cublington (Wing)

Scope of Stage II Hearings

The main purpose of the Stage II hearings is to provide an opportunity for the Commission to be informed as early as possible of all the local implications which it should take into account in its further work on the short list sites. At the hearings the Commission will not be advancing proposals for an airport at the particular site in question but, on the assumption that an airport might be located there, will be asking for objections, comments and representations on the local consequences. The Stage II hearings are not intended to afford an opportunity for making comparisons between the site in question and other sites. Objections, comments and representations must, therefore, be confined to the site proposal in question. The opportunity for comparisons between the short listed sites will arise at the public hearing in Stage V.

2. The Stage II hearings are not ordinary planning inquiries. There will be nobody in the position of applicant for planning consent. Mr. A. J. Hunt, who is a Principal Planning Inspector and a Member of the Commission, will preside. He will already be familiar with the main issues involved and will not be required to decide between any conflicting views put forward. It will be for the Commission as a whole to evaluate the evidence given after the Inspector has reported to it.

Procedure for the Stage II Hearings

3. The site information published by the Commission should be sufficient to enable those concerned to appreciate the local implications of what is proposed.

4. Interested parties must apply to the Commission in writing for leave to be heard or represented at the Stage II local hearings. All applications must be accompanied by a brief statement of the nature of the evidence which it is desired to give. These applications will so far as possible be dealt with by post but if the Commission requires any applicant to present his application orally he will be asked to attend a special meeting for the purpose. Those given leave to be heard or represented will be invited to attend a private meeting to discuss what will be the main issues to be covered at the Stage II local hearings, and how the proceedings should best be conducted.

5. The Commission intends to ensure that the best use is made of the time available for the local hearings. Those given leave to appear or be represented must produce their statement, proofs and all other relevant documents well in advance of the hearing so that they can be made available to other interested parties before the hearing begins. This will largely avoid the need for examination in chief. The Commission asks that representative organisations or groups will, so far as possible, put forward a common view so that repetition of similar views and unnecessary cross-examination can be avoided.

6. In general the Inspector will have complete discretion and control over the proceedings. He will be entitled to withhold permission to call any witness whose evidence appears likely to be irrelevant or repetitive. There will be no appearance at the hearings on behalf of the Commission but any party given leave to appear or be represented may at the Inspector's discretion be allowed to cross-examine any witness called to the extent that such cross-examination is relevant to the issues before him.

7. The Inspector will before the hearing circulate to all concerned a programme of appearances and so far as possible agree this with them.

8. The hearings will be in public. A complete shorthand note will be taken. Copies of the transcript will be available for purchase from the shorthand writers, Messrs. Cherer & Co., 34, Essex Street, Strand, London WC2.

9. The Inspector will also have regard to any relevant written objections, comments and representations on the local consequences submitted by those not seeking leave to appear or be represented at the hearing. Such written submissions should reach the Secretary not later than Friday 27th June 1969.

Time Table for the Stage II Hearing on Cublington

10. The following time table shows the proposed timing of the various phases of the procedure for the local hearing on Cublington:

(*a*)	Commission material published .	29 April
(*b*)	Applications for leave to appear or be represented by . . .	16 May
(*c*)	Date of hearing of applications (if required)	30 May
(*d*)	Meeting to discuss procedure .	2 June
(*e*)	Statements, proofs and other documents (including written submissions) to be received not later than	27 June
(*f*)	Start of hearing . . .	14 July

Applications

11. The Commission is now ready to receive applications for leave to appear or be represented at the hearing on Cublington. These should reach the Secretary at Templar House, 81–87, High Holborn, London WC1, not later than Friday 30th May 1969. The hearing will start at 10 a.m. on Monday 14th July 1969 at the Borough Assembly Hall, Aylesbury.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 1

Mr. F. A. Sharman
Mr. G. I. Dunfold
Mr. N. Fleming
Mr. F. B. Pooley
Dr. J. J. A. Reid
Mr. D. P. Davidson
Mr. D. B. Rose
Mr. A. L. Bennett
(*Buckinghamshire, Bedfordshire, Hertfordshire, Northamptonshire and Oxfordshire County Councils*)

Mr. K. Summerfield
Mr. G. G. Burkitt
(*Oxfordshire County Council*)

Milton Keynes Development Corporation

Mr. G. W. Cowley
(*Bedfordshire County Council*)

Mr. D. S. Overton
(*Hertfordshire County Council*)

Watford Borough Council

Mr. C. J. Cole
Mr. S. McArdle
(*Luton County Borough Council*)

Aylesbury Rural District Council

Berkhampstead Rural District Council

Bullingdon Rural District Council

Tring Urban District Council

Wing Rural District Council

Winslow Rural District Council

Powell Duffryn Technical Services

Mr. A. C. Harding

Mr. C. Brewer

Witnesses were examined on this evidence
on Day One, Monday 14 July 1969
see pages 1529–1573

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Buckinghamshire, Bedfordshire, Hertfordshire, Northamptonshire and Oxfordshire County Councils

SUBMITTED BY MR. F. A. SHARMAN*

1.1. I am a Chartered Engineer, a Bachelor of Science in the University of London, a Fellow of the Institution of Civil Engineers, and a Member of the Institution of Highway Engineers.

1.2. I have practised as a civil engineer since 1940, and for twenty-three years I have been with Sir William Halcrow and Partners. This is a firm of Consulting Engineers employing some 350 qualified engineers, and having major responsibility in such projects as the proposed Channel Tunnel, the Victoria Line, and large scale construction projects in many parts of the world. I am an Associate of this firm.

1.3. I have been responsible among other works for the design of three airport runways and an airport terminal building, as well as for road systems, two motorways and a number of bridges. I am a member of the Executive Committee, and Honorary Secretary of the Regional Studies Association, an organization devoted to the co-ordination of physical and economic planning on a regional scale. I was responsible for preparing a report on the location of the Third London Airport by Sir William Halcrow and Partners for the Essex County Council, and subsequently, have been responsible for all work carried out by the firm for Essex County Council in connection with the location of the Third Airport, including giving evidence at the Public Inquiry on the proposal to develop Stansted as the Third London Airport, and the preparation of the Second Submission to the Commission on behalf of the Essex and Hertfordshire County Councils.† I have also prepared and given evidence at the Public Inquiry on a proposal to extend one of the runways at Southend Airport and at the Public Inquiry on a proposal to extend Rhoose Airport, and have submitted evidence at the Commission's Inquiries on the Foulness‡ and Nuthampstead§ sites for the Third London Airport.

1.4. On behalf of the Counties affected by the Cublington proposal I have collected data in conjunction with other consultants on the technical aspects of the project and present these with the object of clarifying the implications of the establishment of the airport and its effect on present and future interests in the locality.

1.5. My firm together with the associated consultants have attempted to form a picture of the physical developments involved in the project along with the movement of passengers, population and industry which will result. This picture cannot be sufficiently detailed to indicate exactly who will be affected, but it does broadly show the numbers of people and the areas of land and utilization of resources, and so gives a basis on which the total impact may be judged.

2. Regional planning

2.1. It is an axiom of this Inquiry that the third airport must be established in south-east England, and it may therefore be regarded as an integral part of the natural growth of the region. It cannot be said, however, to have a "natural" place in the geographical distribution of development, since no regional development plan has ever attempted to fit it in to an optimum position or to reconcile its requirements with the regional distribution of communications, industry and population. The only "natural" advantages would be the existence of spare surface travel facilities, the availability of otherwise unused land, the possibility of avoiding noise disturbance on any resident population, and the existence of unused labour and accommodation near the site. None of these advantages exists at Cublington to a degree which would point to its selection.

2.2. It will be seen in the evidence of Mr. Pooley,* in which the question of associated urban development is dealt with in detail, that the least disadvantageous method of accommodating the community resulting from airport employment involves the dedication of the greater part of the projected new town of Milton Keynes to airport generated requirements. If Milton Keynes is regarded as a collection of housing provided for the increasing population of the region and in need of a balancing source of employment, it could be said that the airport fits in with the regional distribution future. It has previously been stated in evidence for the Commission that the airport should be located so that the associated development could be in a growth area, rather than somewhere where it had been intended to limit all forms of building. But it is also true that the "growth area" concerned should be capable of absorbing the additional activity of the airport, as it is in the case of Foulness, without depriving desired and expected new industries which seek to establish

* See also p. 1536.

† Available for inspection by arrangement at the County Councils' offices, Chelmsford and Hertford.

‡ *Papers and Proceedings*, vol. III.

§ *Papers and Proceedings*, vol. IV.

* p. 1023.

Printed image digitised by the University of Southampton Library Digitisation Unit

themselves in the locality, of their essential labour force. In the Cublington area, there is evidence that at present industry on a limited scale is at least keeping pace with available housing and labour: with the much more rapid and large-scale residential development planned for Milton Keynes, the airport requirements would necessitate some restraints on the introduction of further industry into the area. Such restraints would imply a lack of balance in the distribution of activity within the region, but if they were not applied, a situation of excessive competition for available labour is likely to arise.

2.3. Although the Counties concerned have agreed on a notional distribution of additional airport-based population as detailed in Mr. Pooley's evidence, it should be understood from the outset that the imposition of the need to provide for this population is unwelcome to all the Authorities concerned, and is super-imposed on a pattern of development which is already playing its full part in providing for the accepted necessities of regional growth.

2.2. The assessment of whether the total use of resources in infra-structure and accommodation costs for the envisaged associated urban development is or is not an unwarrantable burden on local resource is a most difficult and complicated matter to assess and cannot be examined in detail and in perspective at the moment. It should perhaps be said at the present stage, however, that, if a decision in favour of the Cublington site is reached, it would be manifestly inequitable for the populations of the Counties affected by the disturbance and change of environment involved to be also penalised by having to shoulder an undue share of the financial burden of building up the larger communities. The separation of the costs of natural growth from those imposed by national necessity is a difficult matter and one in which airport requirements and derivatives therefrom require careful definition.

2.5. As far as the regional pattern of communications is concerned, an analysis of the movement forecasts suggests that neither the neighbourhood of existing traffic arteries, nor the expected improvement of secondary routes which might serve the site can be reasonably counted as significant advantages. The scale of movement to the airport and the growth of non-airport traffic on the existing road system are such that road and rail provision will have to be made specifically for the airport traffic in addition to all other requirements. This point is substantiated later in this evidence under the heading of Surface Communications.

3. The timing of decisions, construction and development

3.1. It is exceptionally difficult to foresee exactly when the different phases of the project are likely to be implemented partly because of the growth of air traffic itself, which is so greatly dependent on national and international economic trends, and partly because decisions on the major investment stages may not be made in a time sequence which will allow the technical requirements to be met as they arise. However, as argued in evidence previously submitted, it is considered that the first runway should become operational between 1976 and 1981.

3.2. The total earth works required for the preparation of the airport amount to approximately 122 million cu. yds of which something like 25 million cu. yds must be moved before the first runway can be brought into operation. If this result is to be achieved by 1976, a very rapid programme of land acquisition, resettlement and compensation will be essential and in addition, the principal road and rail access routes will have to be decided, acquired and developed. Apart from the question of the necessary powers to ensure that the programme can be achieved, the scale of the project is unprecedented and the effort required to ensure that the technical necessities are met while no undue hardship is imposed upon those who are displaced and disturbed by the development is a formidable one.

3.3. From the moment of a firm decision, if Cublington is chosen, all the development planning in a radius of 10 or 15 miles from the site is bound to be dominated by the requirements of the airport and its associated activities. Initial decisions will inevitably be made under considerable pressure of time, while at later stages there will be a need for continuous adjustment so that facilities are kept in step with air traffic demand. It is reasonable to predict that large scale construction will be virtually continuous on the airport site for at least 10 or 15 years and the development of housing, services and associated industry will follow suit.

3.4. The time at which the different stages of site occupation, road and rail development, noise imposition, and supporting development are to be imposed on the locality is a matter of great importance to local residents, and estimates of the programme should be made known, published and revised regularly to minimise the damaging uncertainty which will affect people, properties and amenities. There is, however, an inherent difficulty in identifying the timing of each stage of development and some degree of "blight" can hardly be avoided in the areas ultimately affected, as soon as the possibility is known.

4. Airport layout considerations

4.1. For the purpose of this evidence it has been assumed that the airport layout, and runway orientation and location, selected by the Commission will be adopted. It is of course possible that on more detailed survey and design data some modification might be found to give an all round improvement. This unavoidable fact has led to some fears that the effects described and discussed at the present Inquiry might be seriously misleading in comparison with the modified arrangement which might ultimately be adopted. In general it is true to say that the technical task of balancing topographical and construction cost factors against the consequent greater or smaller

Printed image digitised by the University of Southampton Library Digitisation Unit

imposition of noise nuisance on established communities is a difficult one, and since the orientation requirement is not fixed by wind considerations to any narrow limits, it is hard to be dogmatic about the optimum layout in advance of the most detailed study. Our own investigations are certainly no more detailed than those of the Commission: as far as they have gone, they confirm that for this site the Commission's direction and location is somewhere near to the optimum. As far as can be judged there are no factors likely to cause a serious re-assessment of the selection such as took place at Stansted, but it is desirable that an indication of commitment to the detailed layout should be given at as early a stage as possible.

4.2. The site preparation would involve earthmoving operations at the rate of about 10 million cu. yds per year at first: this scale of effort would continue for ten or twelve years, with higher peak rates and short pauses according to the need for the additional runways. The work would be highly mechanised and the most massive part of it would be confined within the site boundaries, but it represents a great deployment of activity, equivalent to concentrating the rate of construction work on 75 miles of major motorway into a site of 5 miles by 3. Drainage, road diversions and access improvements outside the perimeter would spread some degree of disturbance during construction for several miles outside the perimeter. The labour and supervisory force requiring accommodation and services on and near the site would run into several thousand men: the contractors are likely to provide temporary accommodation for the bulk of these people, but their impact on the Aylesbury area would be considerable.

4.3. In addition to the earthmoving effort, the construction of runway pavings, taxiways and aprons, airport buildings and equipment, and all the services required, will involve the continual flow of materials from all parts of the country to the site. The largest bulk item will be aggregates for the concrete and asphalt. For the completion of the first (one runway) stage, which may have to be programmed by 1976, some 1¼ million cu. yds will be needed: the scale of movement required for this would necessitate some 300 15-ton trucks per working day arriving on site from gravel pits. Altogether, some 3·8 million cu. yds of aggregates will be needed. This represents a substantial call on the sand and gravel resources of the area, which in any case would be providing large quantities for the Milton Keynes and other development projects and road improvements.

4.4. The whole of south-east England is expected to require some 60 million cu. yds of gravel annually by 1973, 20 million of this demand coming from Greater London. London's own resources are within sight of exhaustion, and it is expected that some supplies will have to be hauled there from the Solent (60 to 80 miles), as well as from other gravel regions with 50-mile average haulage distances. In this general picture of increasingly rapid depletion of conveniently placed deposits, the sources which can best supply a single site at a rate of up to 1 million cu. yds per year need to be reconciled with the planning authorities' policies for permitting the opening up of new pits. The general effect of the selection of the Cublington site would inevitably be to cause additional areas of gravel working to be in operation in the Middle Anglia and Middle and Upper Thames gravel regions for several years, compared with a no-airport or a coastal-airport situation. In all probability, some at least of these same additional areas would have to be opened up for either of the other two inland sites: we are not now concerned with comparisons, but the relative effect of Cublington or no Cublington will vary according to the alternatives.

4.5. The general layout of the proposed airport, and the surface links described later in this evidence, and the associated urban development envisaged in Mr. Pooley's evidence, all imply the establishment of a rapidly developing focus of activity centred upon an area previously expected to remain rural in character. Continuous and intensive building and civil engineering activity, and the progressive increase of primary and service employment at the airport itself, will compete for goods and services with the development of industry and accommodation otherwise intended for the area, or will displace them to less suitable locations. The question of whether these factors will make the airport itself and its associated facilities more expensive than if some other site were used is not for this Inquiry, but the effects of competing demand on all other local activities should be seen as part of the local consequences of the selection.

5. Services and utilities

5.1. *General*

5.1.1. The provision of water, electric power, drainage, communications and fuel for the airport itself, for the associated development, and for the communities serving them, requires careful planning. The cost of ensuring that such provision is adequate, and does not interfere with the rights of any existing community must be taken into account, but at this stage it must be assumed that if a decision to use Cublington is reached, all necessary allowance will have been made for these requirements.

5.1.2. It is natural that local communities, conscious of the difficulty of ensuring that their own services are developed adequately, should doubt whether it is feasible without prejudice to their own position to make provision for the sudden additional demands that would be created by the airport. They may expect to see the practicability of the extra supplies tested in detail at this Inquiry.

5.1.3. The supply authorities are not at present generally in a position to produce firm and detailed plans for meeting the hypothetical demands. Some general indications of how the situation would be met are given below, and no doubt the Commission

Printed image digitised by the University of Southampton Library Digitisation Unit

has obtained or will obtain additional information on critical questions from the appropriate bodies. But it is not possible at this stage to lay down all the conditions and requirements which existing residents and users can properly demand. Opportunities for the protection of their interests in the form of a watching brief with the right of intervention could no doubt be given at all planning stages of the new development: it is reasonable to ask for some assurances on this point to arise from this Inquiry.

5.1.4. There are many complications and special local factors to be borne in mind, but broadly, from a technical viewpoint, it is true of Cublington as for the other short-listed sites, that the problems of services, supplies and utilities could undoubtedly be solved. On the scale of this enterprise, some of the difficulties which appear impressive will actually represent a relatively small factor in the estimates affecting decisions.

5.2. *Water*

5.2.1. The airport demand requirement is expected initially to be between 0·7 and 1·5 million gallons per day (m.g.d.) and to rise to an estimated 6 million gallons per day at full development perhaps in the year 1990.

5.2.2. Apart from the airport itself, additional demand will arise to the extent that the area population will exceed the population assumed in present water supply planning, if the Cublington site is used.

5.2.3. The present plans of Buckinghamshire Water Board to meet the future demand of the area will suffice the needs of the airport and its associated urban development until the late 1970s. These plans are based on the construction of a new reservoir in Rutland. This scheme, which is at present in the committee stage in Parliament, includes a reservoir which will relieve the pressure of demand on Grafham Water reservoir, and will enable more water from there to be distributed within Buckinghamshire. At this stage Buckinghamshire would be depending on 15 m.g.d. from Grafham Water to supplement the Water Board's own resources.

5.2.4. Beyond this stage of demand no firm supply plans at present exist. The Thames Conservancy and the Water Resources Board are both investigating possible alternative solutions to meet the inevitable demand. The schemes being investigated are:

i) the construction of a storage reservoir in the Waddesdon area into which will be pumped water from the Thames. (The airport would rule out the alternative Cublington reservoir site, which might otherwise remain an option: the loss of this possibility may have to be included in any calculation of costs.) This scheme is basically for the control of water in the Thames, but it is possible that Bucks Water Board will be able to negotiate for the use of this water to supply the surrounding area.

ii) an augmented scheme from the Great Ouse Authority which would consist of tapping underground supplies in the vicinity of Saffron Walden and pumping to a convenient distribution point in much the same way as was planned for Nuthampstead.

iii) the construction of a second reservoir in the existing reservoir at Grafham Water and thus augmenting the Great Ouse Scheme.

5.2.5. The feasibility and cost of these schemes has still to be fully investigated but it is not unreasonable to assume that the water supply needs of the airport and its associated urban development can be met by existing plans in the initial years of the airport's development, and by the bringing forward, if necessary, of proposals at present under investigation to meet demands at full development. It must at the same time be recognised that the priorities which will have to be given to the solution of the water supply problems will imply interference with present long-term objectives and the acceptance of some schemes which arouse local objection.

5.3. *Sewage and waste disposal, and surface water drainage*

5.3.1. The disposal of sewage and industrial waste generated by the establishment of a four-runway international airport and its associated urban developments at Cublington (or indeed at any of the inland sites) would necessitate a co-ordinated regional sewage scheme constructed stage by stage with the phases of the airport. The cost of such a scheme would be high, in relation to existing authority plans, and should not be allowed to fall on people who would receive no consequent benefit, but, in comparison with the other capital and running costs of the project, the expenditure would not be a very significant factor.

5.3.2. There are however particular features of the Cublington site which demand special care in planning and design, and justify a request for specific assurances to safeguard the position. The levelling operations, followed by the rendering effectively impervious of a large proportion of the airport area, will completely change run-off characteristics both in total quantity and in flow direction. There will be a risk that oils and other spilt or discarded contaminators will be washed off the area and find their way to supply sources and watercourses. The principal authorities concerned (the Bucks Water Board and the Great Ouse River Authority) are alive to these risks, and will no doubt be seeking to obtain all the necessary undertakings to ensure that flood risk downstream of the development is not increased, that erosion from newly-exposed earthworks does not cause silting of channels, and that contamination of supplies is prevented. One cannot doubt that suitable arrangements of balancing reservoirs, oil traps, soakaways and water control works generally can be devised so that existing interests are preserved, but clearly the necessary expenditure must be

Printed image digitised by the University of Southampton Library Digitisation Unit

allowed for, and full and continuous consultation with the responsible water and drainage authorities will be essential from an early stage of planning.

5.4. *Fuel*

5.4.1. Aircraft fuel could be transported to Cublington either by pipeline or by road tanker. The construction of the former would involve some disturbance along its route, but ultimately would not have a great effect on local interests. Tankers would add to the traffic concentration on the road approaches and their effect would have to be allowed for in road planning and design. The preferred method should be established as early as possible, and the costs and effects allowed for in more detailed assessments of the project.

5.5. *Electrical power*

5.5.1. The Eastern Electricity Board have given details of a possible scheme of supply as far as their area is affected, and the remaining part of the problem is being worked out by the East Midland Electricity Board. It is hoped that these details will be available as supplementary evidence, to be circulated before the opening of the Inquiry. The Central Electricity Generating Board is considering the problem of the re-routing of a 400 kV main supply line necessitated by the airport, and it is hoped that this information also will be available for circulation (cf. Transcript p. 27c).

6. Surface transport

6.1. *General*

6.1.1. Proposed road and rail connections between the Cublington site and London are described below, and improvements for traffic connections in other directions are considered. Adequate road and rail provisions must be made for the opening of the airport, and then must be developed in line with air traffic growth and the choice made by passengers between road and rail travel.

6.1.2. This choice, on which the "modal split" between road and rail movement depends, is fundamental in any attempt to visualize how the surface travel of air passengers will affect the airport area. A number of mathematical models of the future passenger movement situation have been tried out. From these, provisional expectations of the road and rail journey requirements have been deduced, on the basis that passengers will use Heathrow or Gatwick if the journey there is quickest, up to the maximum capacity of those airports: others will use Cublington, choosing to go by road or by rail according to which method occupies least travel time. The latest and best origin and destination data was not available for this work, which will be repeated when later results are obtained, but it is believed that the general conclusions are near enough to allow the overall situation to be assessed.

6.1.3. On the assumptions explained under the descriptions of the road and rail links in paras. 6.2 and 6.3 below, the one-runway stage would result in a 42:58 rail to road journey ratio; whereas by 1987 this ratio would change to 49:51, and by 1991 it would become 47:53.

6.2. *Roads*

6.2.1. Two principal routes connect the Cublington area of Buckinghamshire with London. These are the A41 and the A413, both of which follow natural river valleys through the Chiltern Hills.

6.2.2. The planned improvements to the A41 are at present with the Ministry of Transport. It is proposed to up-grade the route by complete realignment from north-west Watford to the west of Aston Clinton to provide a dual 2 or 3-lane facility between Hunton Bridge and Berkhampsted and a dual 2-lane highway between Berkhampsted and Aston Clinton. This work is programmed for completion by the mid 1970s. The predicted non-airport traffic growth on this part of the route would leave sufficient capacity to provide for airport needs up to 1983, if the work is carried out on programme. It would be necessary to add some five miles of new dual 2-lane highway between west of Watford and the D ring (Ringway 3) for the opening of the airport, and as soon as possible thereafter, additional capacity between the D ring and Ringway 1 should be provided in order to reduce congestion on existing routes.*

6.2.3. The A413 is one of Buckinghamshire's "strategy routes" and has been given high priority in the County's highway planing. It is, except for the occasional length of dual carriageway, a single carriageway road of nominal 24 ft width between the A40 in the south and Aylesbury. It is anticipated that the A413 will be up-graded to a dual two-lane standard between the A40 junction and Great Missenden by the mid-1970s. A dual two-lane by-pass is planned for Wendover but it may not be constructed until the 1980s, and the dualling of A413 must be continued from the Wendover By-pass to the junction with A41 west of Aston Clinton during this period if airport traffic is to obtain effective use of the other A413 improvements.

6.2.4. By constructing a dual 2-lane link by 1983 between Chalfont St. Giles and the North Orbital Road at West Hyde and continuing this link to the Ringway 3 at Batchworth Heath, the available capacities of the A413 and A41 should be able to cater for the airport traffic needs until 1987, provided that the additional link between Ringways 1 and 3 is given appropriate capacity at all stages. This in itself is a major problem which can only be considered in combination with the primary road network programme within Ringway 3. It is only too likely that by the time that airport traffic becomes heavy, the west and north-west radial routes will be

* See map FAS/2, p. 1014.

Printed image digitised by the University of Southampton Library Digitisation Unit

working near to capacity, and new motorway routes will have to be found through the heavily built-up areas, if unacceptable congestion and delay in both normal and airport traffic is to be avoided. There may be a case for the virtual segregation of airport traffic by limiting access to a principal route at some stage, if it proves necessary to live with overloaded primary routes in general in the Greater London area. Unless some radical steps of this kind are planned, all road movement between London and the Cublington area would suffer because of the establishment of the airport.

6.2.5. Both the A41 and the A413 routes require to be connected to the airport site by a $5\frac{3}{4}$ mile dual 2-lane motorway, to be in operation before the opening of the airport.

6.2.6. From the year 1987 (on present assumptions of modal split, and using the upper limit of air passenger expansion), the airport road traffic towards London would exceed the capacity of the existing roads with their presently planned improvements. To provide adequate road-space, at loading intensities permitting acceptable journey times at peak hours, a new motorway would be required, and in all probability this would be built as a dual 3-lane facility with a severely limited number of access points. A possible route has been marked on drawings FAS/1* and FAS/2, on the assumption that the alignment would give priority to airport needs: there would however be considerable need for improving the link between London and the Milton Keynes and other expanded urban areas associated with the airport. Dotted lines on the plans indicate that the new motorway would probably be linked to these developments, but in such a way as to permit controls to be applied to traffic other than air passenger vehicles. The suggested route would pass under the runways, leaving the airport from the south-east side, and passing east of Marsworth would cross over the A41 between Berkhamsted and Tring. It would go between Chesham and Ashley Green, cross the North Orbital Road at Chandler's Cross, and join the A41 extension at Cassiobury Park. The dilemma of providing a route thence to Ringway 1 has already been described in para. 6.2.4. above.

6.2.7. Extensive road building will be required in the vicinity of the airport to cater for airport employees' needs. Assuming that initially population growth will take place at Aylesbury, Leighton Linslade and Milton Keynes, and secondary growth at Buckingham and Winslow, the motorway and road network must be phased to suit this growth pattern.

6.2.8. The employees housed in Aylesbury will be able to use the airport access link which will be used initially by airport passenger traffic in the early years of development. A new motorway will be required early on to serve the Milton Keynes and Leighton Linslade populations, feeding them into the airport at the north-east. The Buckingham, Winslow areas will, as and when required, be served by a motorway to the south-west end of the airport. This motorway would be an extension of the initial airport access link, thus providing for the inter-urban needs between the Buckingham–Aylesbury urban areas.

6.2.9. Improvements to existing roads within the area will be necessary to cope with inter-urban traffic. Further study of origin and destination data may indicate the need to provide additional capacity for air passenger and service traffic approaching the airport from directions other than from London, but this cannot be particularised at present. The principal features of the airport end of the road layout are shown on drawing FAS/1.

6.3. *Rail*

6.3.1. Although there are no conspicuously successful rail or monorail city-to-airport links operating at present in the world, all air traffic predictions for London lead to a surface travel requirement which can only be practically and economically met by the eventual establishment of a high-intensity rapid transit system. One such system which is sufficiently advanced to be relied on in planning is the Advanced Passenger Train or APT. This is under development by British Rail at their Engineering Research Centre at Derby. It consists of special vehicles which can run on existing conventional rail tracks at speeds of up to 150 m.p.h. with rapid acceleration and deceleration: the suspension system allows for a speed of 125 m.p.h. on track designed for normal operation at 90 m.p.h.

6.3.2. It is envisaged that the ultimate rail passenger needs between London and a Cublington airport would be catered for by APT vehicles having the exclusive use of track, mainly following existing rail routes, between a London terminal to be established at King's Cross, and the airport terminal building. The frequency of service could reach one train every two minutes at peak times, and the travel time would be about 33 minutes.

6.3.3. The route, selected after a study of a number of alternatives, would follow the Broad Street line between King's Cross and Willesden, connecting there with the High Wycombe line to Princes Risborough. Thence it would be on new formation following the existing single track to Aylesbury: north from there track would be relaid for two miles, and a new spur would be constructed into the airport building complex. A possible alternative at the London end would be to develop a new terminal at Marylebone, if adequate space and transfer connections could be accommodated there. The scheme proposed would allow the continuance and improvement of existing rail services where these follow the projected route.

6.3.4. Since this system, or something equivalent to it, would be required eventually, an attempt was made to find the time when its establishment would give an optimum economic return. An intermediate

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

stage, called the "semi-fast" system, using conventional rolling stock and sharing track with existing services, was considered, but on the traffic assumptions made the best result was obtained by bringing in the full APT system from the outset. This situation was therefore assumed in calculating the modal split and hence the road traffic requirements. If anything less attractive than the APT is adopted, or if a fixed-link provision is delayed, the road traffic movement generated by the airport would be increased compared with the volumes allowed for in section 6.2. Road traffic approaching and leaving the airport has a greater environmental effect than the passage of trains, so that the impact of the project on its vicinity as pictured in this submission would be understated if rail provision is inadequate.

7. Conclusions

7.1. For the efficient distribution of activity centres within the south-east region, it is desirable the third airport site should not cause competition with or displace industrial expansion drawn to an area and accepted in its long term planning objectives. The Cublington proposal conflicts with this criterion, and would cause strains on the labour, material and services resources of the locality, both because of heavy construction requirements over fifteen years or more of airport build-up, and permanently as a result of operational employment and activity.

7.2. Although the site is close to the existing main arteries of communication north-west from London, the growth of non-airport traffic in this direction is such that the provision of acceptable surface journey times to a Cublington airport would necessitate the construction of additional new road traffic lanes and a new rail system. If adequate provision is not made in this way, the whole area would suffer from the extra congestion caused by airport-generated traffic using the existing road system, both in the airport area, and in the north-western suburbs of London.

7.3. The actual airport site, though probably the best that can be found in the immediate vicinity, requires very large-scale construction effort, which would case serious disturbance over a wide area for a period of at least ten years.

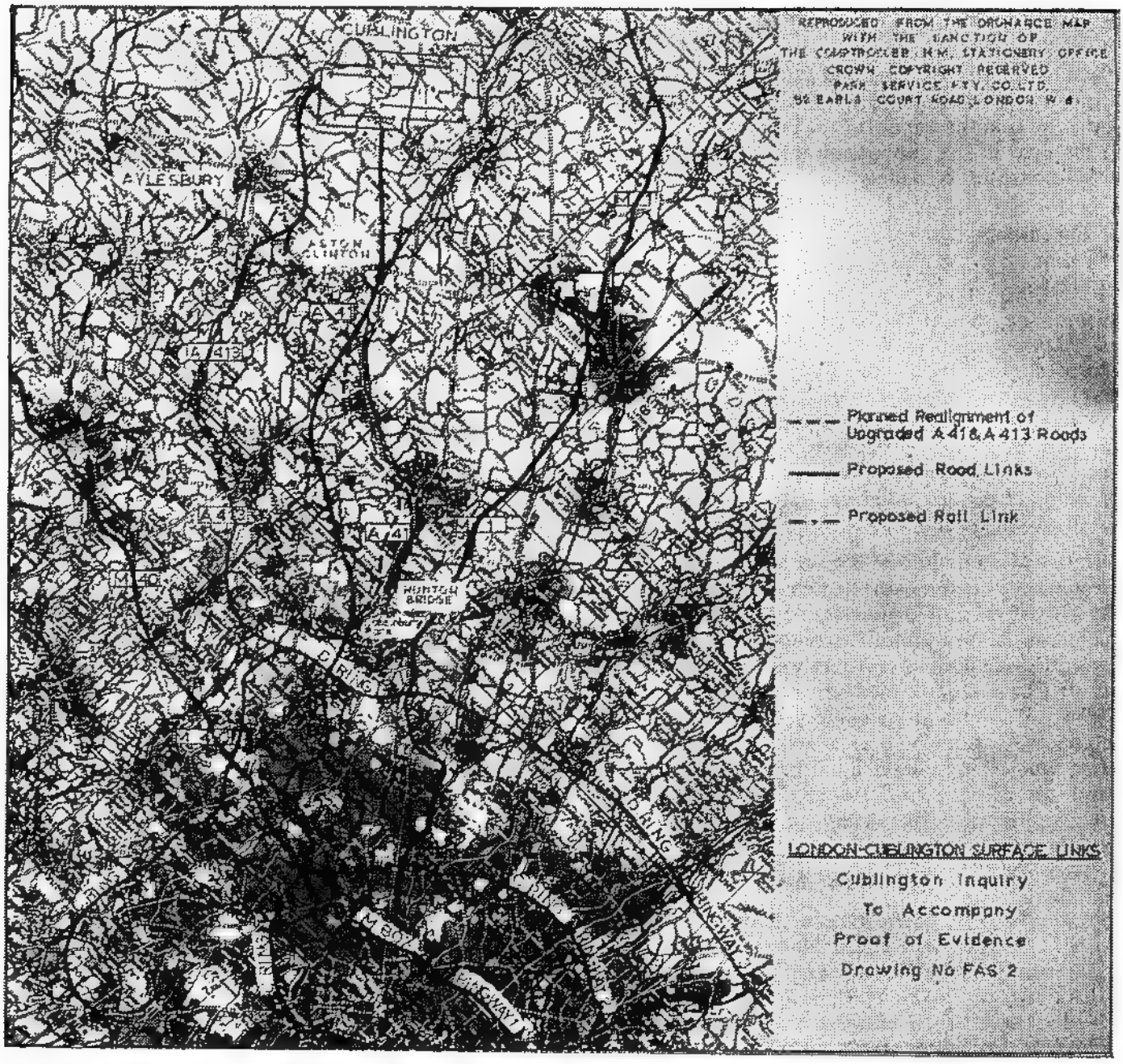
7.4. The provision of an adequate water supply for the extra expansion which the airport would cause, would necessitate an acceleration of present programmes for increased supply, storage and distribution. In order to solve the difficult problems involved, it might well be necessary to adopt more radical procedures than have hitherto been countenanced in making arrangements of this kind.

7.5. In the design and planning of the airport, it will be essential to ensure that no adverse effects are inflicted on the surrounding area, by reason of the increased and accelerated run-off of rainfall, by washing downstream of soil or contaminated material, or by the discharge of any effluents. Budgetary provision must be included for all works necessary to produce such safeguards, which may include balancing reservoirs outside the airport perimeter, involving some loss of usable land.

7.6. The effect of displacement from the airport area, the imposition of noise nuisance, and the associated urban development is described in other evidence. Little can be done, by design adjustments in the detailed planning stage, to reduce such effects.

7.7. The Officers of the Counties most concerned have co-operated with the consultants and with each other in an attempt to visualize how the site could best be utilized, and what the inevitable effects of its development would be. The weight to be attached to these effects is for assessment at a later stage, but it is clear that a great many of the decisions affecting the form of a detailed proposal for the airport ought to be studied along with local planning considerations.

Printed image digitised by the University of Southampton Library Digitisation Unit



FAS 2. London/Cublington surface links. (Mr. F. A. Sharman, Buckinghamshire, Bedfordshire, Hertfordshire, Northamptonshire, and Oxfordshire County Councils)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Buckinghamshire, Bedfordshire, Hertfordshire, Northamptonshire and Oxfordshire County Councils

SUBMITTED BY MR. G. I. W. DUNFORD*

I am the Air Traffic Services Superintendent of International Aeradio Limited and have held this post since 1964. I have been in Air Traffic Control for the last seventeen years, initially in the Royal Air Force, before joining I.A.L. in 1955. My service with the Company up to my present post has been as an Air Traffic Control Officer at airports and Air Traffic Control Centres, as an A.T.C. Instructor in the I.A.L. School and as the Assistant Air Traffic Services Manager. In addition to being responsible for the A.T.C. operations of the Company, I am also engaged on Air Traffic and Operational consultancy tasks and have recently completed two such tasks in connection with a twenty year development plan for two major international airports overseas, Nairobi and Singapore, both of which had problems in relation to nearby airports.

1. The only wind recordings that are available for the site relate to the period 1942–1945 when the airport was in use. To carry out a meaningful study of wind statistics normally requires data covering a period of at least 10 years. However, the statistics do indicate that the Commission's choice of 045° (GRID) 046° (TRUE) for the runway alignment is the optimum using a 20 knot crosswind component. The statistics do also indicate however that an alteration to this alignment of ten degrees in either direction would still enable 95 per cent usability to be achieved.

2. The elevation of the existing site is 450 ft and the available statistics show an incidence of low stratus or hill fog, however, since Instrument Landing Systems will undoubtedly be installed at least to Category II standards and probably to Category III the effects of these adverse weather conditions will be minimal.

3. Although the Commission has not published details of the Holding Areas to serve the airport, the routes from these Areas onto Final Approach or the Departure Routes with their connections to the National Airways System, these factors, nevertheless, will have a considerable bearing on the effect of Wing on existing aerodromes. In order to simplify recognition of the various runways for take-off, I have numbered the runways shown on the Commission's drawing No. CTLA1,† Number 1 for the runway shown at the top of the drawing, Number 2 for the next lower runway, Number 3 for the runway shown below the central passenger and cargo area and Number 4 for the runway shown at the bottom of the drawing. Using the standard criteria for calculating Holding Areas and taking into consideration the forecast that some 75 per cent of all landings will be made to the South West on runways 1 and 3 thus requiring these Holding Areas to be sited in positions favouring approaches from the North East, I have been able to reach the following conclusions.

3.1. The Holding Area for the runways 1 and 2 could be sited at the optimum position, with the facility in the Silverstone area and a minimum holding level of 8,000 feet.

3.2. The Holding Area for runways 3 and 4 would be difficult to locate owing to the proximity of the established Heathrow Holding Areas at Garston and Ongar. A facility could be sited in the Stevenage area which would favour landings to the South West, on Runway 3, but it would require a long intermediate approach for the North Easterly landing on Runway 4 hence the lower holding level may vary depending on the runway in use. When landings were taking place on Runway 3 the lower holding level could be 6,000 ft. When landings were taking place on Runway 4 the lower holding level could be 8,000 ft. These Holding Areas, the probable departure routes and the Controlled Airspace which would be required to protect them would, I believe, have the following effects on the aerodromes listed below.

4. **Luton**

4.1. It will be extremely difficult to locate a separate holding area for Luton and thus a sustained Instrument Flight Rules (I.F.R.) rate could not be achieved. Approach and departure procedures will be affected by the traffic at Wing and since the greater part of this traffic will be to and from the South, severe restrictions would have to be imposed. These restrictions would probably make airline operations uneconomical and would therefore produce a decline in traffic at Luton.

4.2. Some General Aviation flying could still be permitted.

5. **Stansted**

5.1. It will be difficult to locate a separate holding area for Stansted and thus a sustained I.F.R. rate could not be achieved.

5.2. Use of either the Wing (Stevenage) holding facility of of the Ongar holding facility for traffic into Stansted would be unacceptable as this would affect the traffic rates into Wing and Heathrow respectively.

* See also p. 1538.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.3. Stansted could continue as a training and general aviation centre but with restrictions to both direction and altitude of operations.

6. **Other aerodromes**

6.1. The increase in controlled airspace required would necessitate restrictions of varying degrees being placed on the following civil aerodromes:— Oxford, Cranfield, Hatfield, Leavesden, Radlett, Wycombe Air Park, Biggleswade, Elstree and Panshanger, together with the gliding areas on the Dunstable Downs.

6.2. The Research and Development flying at Bedford (Thurleigh) would be severely curtailed.

6.3. The military operations in the Huntingdon area which include the aerodromes of Bassingbourn, Alconbury, Wyton and Oakington and those in the Oxford area which include the aerodromes of Upper Heyford, Brize Norton, Abingdon and Benson would be affected to varying degrees.

6.4. The balloon danger areas D206, D206A and D129 would have to close.

7. **Air Traffic Control**

7.1. The proposed site at Wing is situated directly under Airways Amber 1 and Amber 2 to the North of the London Terminal Control Area, and I believe that serious problems would arise with the requirements for holding areas to cater for Wing and London Heathrow. At present, holding areas for Heathrow are established over Garston and Ongar, those for Wing could be as detailed in paras. 3.1 and 3.2. The proximity of these areas would mean that at times traffic into and out of Heathrow will have to climb or descend through the Wing areas and vice versa for the Wing traffic. Such a system would produce a requirement for a very high co-ordination level between the respective Control Units. It is highly probable that this high level of co-ordination would be such that it could preclude the maximum capacity of the airways system in the Southern half of England being achieved.

7.2. To overcome congestion would require a substantial increase in the size of controlled airspace on the London–Birmingham axis and a system of parallel airways each with uni-directional flow, having serious effects on a number of military airfields in Oxfordshire, Warwickshire and Gloucestershire.

7.3. From the chart published by the Commission showing the NNI contours for the four runway airport, Drawing CTLA3/3,* I presume that after take-off from Runway No. 4 aircraft routing to the South and East would be required to climb straight ahead for some six nautical miles before commencing a turn, in order to reduce noise levels over Aylesbury.

Such a restriction would cause delays to departing traffic due to the varying characteristics of aircraft during the early phases of flight and this could effectively reduce the runway useability.

8. **Conclusion**

The opening of a Third London Airport on the London–Birmingham axis would require a large extension of controlled airspace which would unduly complicate the National Air Traffic Control Service and have a detrimental effect on London (Heathrow) Airport as well as other civil and military aerodromes in the area.

---

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Buckinghamshire, Bedfordshire, Hertfordshire, Northamptonshire and Oxfordshire County Councils

SUBMITTED BY MR. N. FLEMING*

I am a Master of Arts of the University of Cambridge, Acoustical Consultant to the Greater London Council, a Director of the Acoustical Investigation and Research Organization Ltd., and a member of the Sub-Committee on Aircraft Noise of the British Standards Institution. I was formerly Head of the Acoustics Section of the National Physical Laboratory.

1. I have been asked to examine the noise situation which would arise if the Third London Airport were to be located on the Cublington site short-listed by the Commission.

2. I have considered the probable distribution of noise around the airport from two aspects, a) the long-term exposure to noise, which is expressed as the Noise and Number Index (NNI), and b) the noisiness of individual movements, which is expressed as the Perceived Noise Level in decibels (PNdB), together with the frequency of occurrence of such movements. The former is used for assessing the average annoyance which is caused to people living in the area; the latter quantities are more relevant when considering the degree of interference which may occur with the intelligibility of speech, and in particular with oral teaching in schools in the vicinity, and with communications between doctors and patients in hospitals.

3. The Noise and Number Index, as a method of quantifying the long-term exposure to aircraft noise, was devised by the Wilson Committee on the Problem of Noise† as the best means of correlating the annoyance experienced by people living around London (Heathrow) Airport (determined by means of a social survey carried out by the Central Office of Information) with the physical chracteristics of the noise to which they were exposed. It is a composite figure which takes account of the noisiness of individual flights which exceed a certain noise level, and the average daily number of such flights.

4. On the scale which was devised, the values of the Noise and Number Index corresponding to different degrees of annoyance, as determined by the average answers to the question "Does aircraft noise bother you very much, moderately, a little, or not at all" are:—"very much"—60, "moderately"—43, "a little"—31, "not at all"—7 (Wilson Report, figure 2, page 208). The Committee concluded, not solely from the answers to this question, that "exposure to aircraft noise reaches an unreasonable level in the range 50 to 60 NNI" (page 211), or that "the maximum acceptable level lies in the region between 50 and 60 NNI" (page 75). These criteria refer to disturbance during the day time. For the night time the Committee reached the very tentative conclusion that for a corresponding degree of annoyance to NNI figures would be 15 to 20 lower.

5. The site information given by the Commission for Cublington includes two maps, numbered 3/2 and 3/3, showing the NNI contours at intervals of 5 from 60 down to 40 NNI, for the airport with two runways and with four runways respectively, and I accept these contours as applicable to the particular types and numbers of aircraft, and the flight paths which have been assumed.

6. Maps NF1* and NF2* show the Commission's contours at 55 and 45 NNI, and my extension down to 35 NNI, for the two runway and four runway airports respectively. I prefer to use these contours in considering noise nuisance, rather than those adopted by the Commission in para. 14 of the *Site Information*,† for several reasons. Firstly, I believe that a lower limit of 35 NNI rather than 40 NNI should be considered. This is the level at which, according to figures 3 to 8 of the Wilson Report the presence of the airport begins to be felt. I introduce it not primarily because it is a level which need cause serious concern during the day time, but rather because it is relevant to conditions by night. Little is known about the relation between annoyance and NNI for night-time operations, though, as stated earlier, the Wilson Committee, arguing from somewhat indirect evidence, reached the "very tentative" conclusion that a reduction of 15 to 20 NNI was necessary to avoid increase of annoyance. In para. 13 of the *Site Information* it is remarked that, because aircraft movements are likely to be less by night than by day, the night contours will be less extensive than the day contours. It is unlikely, however, that the reduction in the number of movements would be so great as to completely off-set the increase of annoyance. It would, indeed, need a reduction to one tenth to one twentieth of the day-time movements to reduce the NNI values by 15 to 20. I believe, therefore, that it is desirable to take account of contours some 10 NNI lower when considering night-time annoyance. Secondly, I prefer to use 55 NNI as an

* See also p. 1539.

† Cmnd. 2056 (HMSO; 19s. 6d.)

* See attached wallet of maps and diagrams.

† *Site Information for Stage II Local Hearings*. 3. *Cublington* (Wing) (HMSO; 6s.) Reproduced at p. 1001.

Printed image digitised by the University of Southampton Library Digitisation Unit

upper limit, since this is about the value above which the Wilson Committee considered that noise exposure becomes "unreasonable" or "unacceptable". If the Commission's upper figure of 50 NNI is adopted, the region within it includes both areas where the noise exposure is "unacceptable", and also areas where the exposure, though high, may not be regarded as "unacceptable". Thirdly, in view of the variability of the reaction of different people to noise, I believe that it is sufficient to consider areas between contours spaced 10 NNI apart, rather than to attempt a finer division of the degrees of annoyance. For the contours adopted in Maps NF1 and NF2 the corresponding degrees of annoyance in the terms of the Wilson Report are:—

Within the 55 NNI contour—"unreasonable" or "unacceptable"

Between the 55 NNI and 45 NNI contours—from "unreasonable" down to "moderately annoying"

Between the 45 NNI and 35 NNI contours—from "moderately annoying" down to "a little annoying"

An estimate of the population in each of these areas has been made by Mr. Pooley* and is included in his evidence.

7. I now turn to the question of interference by noise with the intelligibility of speech. This is of particular importance in schools where interruption of oral teaching may occur, and may be particularly serious when radio or television lessons are used, and a pause or repetition is not possible. Interruption of speech communication is best assessed from the noisiness of individual aircraft movements. This is expressed by the Peak Perceived Noise Level in decibels (abbreviated PNdB), that is, the maximum level to which the noise rises as the aircraft approaches and recedes.

8. Perceived Noise Level is a magnitude based on subjective judgements of the comparative noisiness of noises of different character. An increase of 10 PNdB corresponds approximately to doubling the noisiness, and conversely a decrease of 10 PNdB corresponds approximately to halving the noisiness. An appreciation of the magnitude of the sensation corresponding to any value of Perceived Noise Level can only be gained by experience. Table NF3, which gives the Perceived Noise Level for individual motor vehicles and continuous traffic, may serve as a guide.

9. In data on the interference of noise with speech communication, the noise level is usually quoted in terms of another quantity termed Sound Level A (abbreviated dBA). There is no unique relation between dBA and PNdB, but for the noise of jet aircraft the latter is roughly about 15 dB higher than the former. The Wilson Report recommends that a noise level of 55 dBA should not be exceeded in educational institutions if interference with speech is to be avoided, (para. 119). This corresponds to approximately 70 PNdB, so that at a Peak Perceived Noise Level of 75 PNdB, and above, when the level may rise above 70 PNdB for 15 seconds or more, interruptions will begin to be serious.

10. The figure of 75 PNdB refers to the noise inside the classroom. With open windows this is normally about 10 PNdB lower than the noise outside; with closed windows and ordinary single glazing the level inside is usually about 20 PNdB less than that outside; with permanently closed windows and heavy single glazing 25 PNdB may be achieved; and with good, permanently closed double windows the difference between outside and inside may be about 40 PNdB. Consequently the Peak Perceived Noise Levels outside a school, which should not be exceeded if interruption of oral teaching is to be avoided, are approximately:—

85 PNdB with open windows,

95 PNdB with closed windows and single glazing,

100 PNdB with permanently closed windows and heavy single glazing,

115 PNdB with good, permanently closed, double windows.

In the last three cases some form of air conditioning would be necessary.

11. I have made calculations of the average number per day of noise incidents to be expected at schools in the vicinity of the airport. In Table NF4 I indicate when the number of incidents may be expected to exceed 30 per day (about 4 in a peak hour) in each of the ranges 85 to 94, 95 to 99, 100 to 114 and 115 PNdB and above. The first three ranges correspond to those where successively (1) closed windows with ordinary single glazing, (2) closed windows with heavy single glazing, (3) permanently closed good double windows, will be needed. If the number exceeds 30 above 115 PNdB no normal form of construction is likely to be adequate. Days of movements to the south-west and to the north-east are considered separately. This Table will be considered by Mr. Davison in his evidence.*

12. In the case of hospitals no criteria have been laid down for maximum permissible noise, but it is obvious that they need special consideration. Something better than can be tolerated by the well individual is desirable for the hospital patient, and the speech interference criterion must also be met, so that interruption should not occur in a doctor's examination of patients. I have made the same calculations, therefore, for hospitals as for schools, but in Table NF5 I give the approximate number of incidents to be expected in the different ranges, and I include also the noise and number index at each site.

13. I have examined all the sites listed in Appendices A and B of the evidence of the County Medical Officer of Health for Buckinghamshire,* but I have included in my Table only those where I estimate that

* p. 1023.

* p. 1045.

Printed image digitised by the University of Southampton Library Digitisation Unit

the Noise and Number Index will be 30 or more, or the number of noise incidents exceeding 85 PNdB is likely to be 10 or more in any one day. Twelve hospitals in Buckinghamshire, six in Bedfordshire, and one in Oxfordshire come within the categories so defined. The worst situated are the St. John's Hospital at Dinton, Buckinghamshire, and the Edgbury Hospital, Bedfordshire. Of the nursing homes, welfare homes and mental health hostels, twelve in Buckinghamshire and twenty in Bedfordshire come into these categories. The worst situated of these are at Woburn Sands and Aspley Guise.

14. In churches also, interruption of speech communication may cause unacceptable disturbance. In Table NF6 I give the results of calculations for some churches, on the same lines as those for schools. This is not intended to be an exhaustive list of churches which may be affected, but merely an illustration of the degree of interference which may be expected in some of those situated near to the airport. Nor have I given any special consideration to the particular requirements of churches. It may well be, for example, that the generally greater distances between speaker and listener, and the often relatively poor acoustical conditions, may call for more stringent criteria as regards the tolerable level of interfering noise.

TABLE NF3

Examples of Perceived Noise Level values

	PNdB
Heavy commercial vehicles, 30 m.p.h. at 25 ft.	90 to 100
Private cars, 30 m.p.h. at 25 ft.	83 to 90
Mean level beside trunk road with heavy traffic	90
Mean level in side road 20 to 50 yd from trunk road	80

TABLE NF4

Noise incidents at schools

	2-runway airport (before noise certification of aircraft)				4-runway airport (after noise certification of aircraft)			
	Incidents in range of peak PNdB				Incidents in range of peak PNdB			
	85–94	*95–99*	*100–114*	115 and above	*85–94*	*95–99*	*100–114*	115 and above
BUCKINGHAMSHIRE								
Adstock C.P.	×				×			
Aston Abbotts C.E.P.	+				×			
Bletchley (Schools in SE of town)						+		
Bow Brickhill C.P.					×	+		
Chearsley C.P.	× +				×	+		
Chilton C.E.P.	× +					+		
Cuddington C.E.P.	×				×	+		
Dinton C.E.P.	×	×			×	+		
Great Brickhill C.E.P.	× +		+		×	+		
Grendon Underwood C.E.P.	×	×			×			
Haddenham C.P. and C.E.P.	×				×			
Hardwick C.E.P.	×				×			
Little Brickhill C.E.P.	+				×	+		
Lower Winchendon C.E.P.	× +				×	+		
Long Creddon C.P.	× +				×	+		
Long Crendon B.C.S.	× +				×	+		
Marsh Gibbon C.E.P.	×				×			
North Marston C.E.P.	×							
Padbury C.E.P.	×				×			
Preston Bissett C.E.P.	×				×			
Quainton C.E.P.	×	×			×			
Steeple Claydon C.P.	×				×			
Stoke Hammond C.E.P.	+				×	+	×	+
Stokenchurch C.P.					×			
Stokenchurch Bartholomew Tipping C.S.					×			
Stone C.E.P.	×				×	+		
Stewkley C.E.P.	Within airport boundary							
Twyford C.E.P.	×				×			
Waddesdon C.P.	× +	×	+	× +	×	+	×	+
Waddesdon C.E.P.	× +	×	+	×	×	+	×	+
Waddesdon C.S.	× +	×	+	×	×	+	×	+
Wevendon C.P.						+		
Whitchurch C.P.	× +	×	+	× +	×	+	×	+ × +
Wing C.P.	+				×	+		
Wing C.S.	+				×	+		
Westcott C.E.P.	×	×			×			

× *Signifies more than 30 on day of movements to south-west (about 4 days in 5)*
\+ *Signifies more than 30 on day of movements to north-east (about 1 day in 5)*

Printed image digitised by the University of Southampton Library Digitisation Unit

	2-runway airport (before noise certification of aircraft)				4-runway airport (after noise certification of aircraft)			
	Incidents in range of peak PNdB				Incidents in range of peak PNdB			
	85–94	*95–99*	*100–114*	115 and above	*85–94*	*95–99*	*100–114*	115 and above
OXFORDSHIRE								
Aston Rowant C.E.P.	×				×			
Chalgrove C.P.					×			
Chinnor C.E.P.	×				×			
Chinnor—Proposed C.P.	×				×			
Finmere C.E.P.	×				×			
Fringford C.E.P.	×							
Garsington C.E.P.	×							
Great Hazley Endowed	×				×			
Great Milton C.E.	×				×			
Hethe C.E.P.	×							
Little Milton C.E. (aided)	×				×			
Stadhampton C.P.	×				×			
Tetsworth C.P.					×			
Thame—Proposed R.C.						+		
Thame Lord William's Grammar						+		
Thame The Newman Secondary						+		
Thame Rycotewood College						+		
BEDFORDSHIRE								
Aspley Guise, Fulbrook C.		+			×	+		
Aspley Guise C.P.		+			×	+		
Aspley Heath C.P.		+			×	+		
Bedford (Schools in western half)		+				+		
Biddenham V.P.		+				+		
Dunstable (Schools in western half)		+						
Haynes C.P.					×	+		
Heath V.P.		+						
Hockliffe		+				+		
Houghton Conquest C.P.	×	+			×	+		
Husborne Crawley C.P.	×	+			×	+		
Kempston (7 schools & 2 programmed)		+			×	+		
Lidlington C.P.	×	+			×	+		
Leighton Buzzard (north-east)		+				+		
Marston Moretaine, Church End C.P.					×			
Marston Moretaine, Shelton C.P.					×			
Millbrook C.I.	×	+			×	+		
Milton Bryan V.P.		+		+		+		
Ridgmont C.P.	×	+			×	+		
Stambridge		+				+		
Stewartby C.S.	×	+			×	+		
Stewartby, Broadmead C.P.	×	+			×	+		
Toddington		+				+		
Tottenhoe		+						
Woburn C.P.	×	+	×	+	×	+	×	
Wooton C.P.		+			×	+		

× *Signifies more than 30 on day of movements to south-west (about 4 days in 5)*
\+ *Signifies more than 30 on day of movements to north-east (about 1 day in 5)*

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE NF5

Noise at hospitals, nursing homes, welfare homes, and mental health hostels

Site	2-runway airport (before noise certification of aircraft)					4-runway airport (after noise certification of aircraft)				
	NNI	No. of incidents in range of peak PNdB				NNI	No. of incidents in range of peak PNdB			
		85–94		*95–99*			*85–94*		*95–99*	
HOSPITALS		a	b	a	b		a	b	a	b
BUCKINGHAMSHIRE	(1)	(2)		(3)		(4)	(5)		(6)	
Royal Buckinghamshire, Aylesbury	30					33				
Tindal General, Aylesbury						30				
St. John's, Dinton	44	20		40		45	200	100		
Manor House, Aylesbury						30				
Winslow						30				
Grove, Linslade	32		30							
Milton Keynes General			50							
Westbury Maternity Home, Newport Pagnell			20					10		
Wolverton Diagnostic Clinic			30							
Buckingham Hospital		20				30	10			
Renny Lodge, Newport Pagnell			20					10		
BEDFORDSHIRE										
Bedford General, North Wing			20			30				
Bedford General, South Wing			40			32				
Bromham			40			30				
Clapham			40							
Steppingley	33		20			30				
Engbury	33		90			52	140	220	100	
Apsley Heath Convalescent	33		90			52	140	220	100	
OXFORDSHIRE										
Victoria Cottage Hospital, Thame	35	30				40	30	30		
NURSING HOMES, ETC.										
BUCKINGHAMSHIRE										
Wing Lodge	39		200		10	46	200			
Oaklands, Woburn Sands	33		90			50	220	230	30	
Tindal Hospital, Aylesbury						30				
Oaklands, Aylesbury						30				
The Coppice, Bletchley						34		20		
Norrill, Bletchley						33		20		
Manor House, Swanbourne	35					30				
The Walnuts, Simpson						30				
The Cedars, Ampthill	36		40			33				
Ampthill Cheshire House, Ampthill	38		50			35				
Westlands, Leighton Buzzard	34		150			32		30		
Highfield, Bedford			30							
St. Madeleine's, Bedford			30							
61 de Parys Avenue, Bedford			30							
42 de Parys Avenue, Bedford			30							
9 Oaklands Road, Bedford			30							
Salvete, 15 Rothsay Place, Bedford			30							
The Haven, Park Avenue, Bedford			30							
The Dial House, Park Avenue, Bedford			30							
Waverley, Bedford			40			30				
Russell House, Bedford			40			30				
36 Castle Road, Bedford			40			30				
Cheltondale, Castle Road, Bedford			40			30				
Parkside, Bedford			40			33				
The Red House, Apsley Guise	35		90			52	180	120	60	
The Holt, Apsley Guise	35		90			52	180	120	60	
Mental Health Hospital, Kempston	30		70			35	30	30		
The Manor House, Biddenham			60			32		30		

(*a*) *On day of movements to south-west* (*about 4 days in 5*)
(*b*) *On day of movements to north-east* (*about 1 day in 5*)
Where no figure is given in the NNI columns the value is estimated to be less than 30.
Where no figure is given in the number of incidents columns the number is estimated to be less than 10.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE NF6

Noise incidents at churches

Churches	2-runway airport									4-runway airport								
	NNI	No. of Incidents in range of peak PNdB								NNI	No. of Incidents in range of peak PNdB							
		85–94		*95–99*		*100–114*		115 and above			*85–94*		*95–99*		*100–114*		115 and above	
		a	b	a	b	a	b	a	b		a	b	a	b	a	b	a	b
Hardwick	43	200								54	260	220	130	20	20			
Soulbury	55			240	50	10	190			48		110	240	120	10	10		
Stoke Hammond	36		210		10					60		100	30	130	220			
Weedon	37	20								61	30		200		20	250		
Whitchurch	55	40	130	110	120	100				58	60	30	90	220	100			

(*a*) *Day of movements to south-west* (*about four days in five*)
(*b*) *Day of movements to north-east* (*about one day in five*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Buckinghamshire, Bedfordshire, Northamptonshire and Oxfordshire County Councils

SUBMITTED BY MR. F. B. POOLEY*

I am a Fellow and Member of the Council of the Royal Institute of British Architects, Fellow and Member of the Council of the Royal Institution of Chartered Surveyors, Associate Member of the Town Planning Institute and a Member of the Institution of Structural Engineers. I am the County Architect and Planning Officer of Buckinghamshire; a Special Adviser to the Milton Keynes Development Corporation and Chairman of the Southern Sports Council Technical Panel. I have had some twenty years experience in the practice of Town and Country Planning.

The scope of this evidence

I understand that the object of the Stage II Hearing is to find out the local implications if the Third London Airport is sited at Cublington and my evidence is, therefore, confined to these considerations.

I should make it clear that my Council are implacably opposed to the Cublington proposal and I am satisfied that the great majority of people and bodies in the area are also opposed to it.

The effects of the implications of the proposal are of noise, of the airport itself, of the necessary road and rail links running through the area, of urbanisation on a large scale and the economic and other pressures which an international airport would bring.

The local implications of these effects are six-fold, namely:—

i) The effect on some 162 square miles of beautiful countryside;

ii) The effect on some 67 settlements;

iii) The effect on people and their building;

iv) The effect on services;

v) The effect on employment;

vi) The effect on the established planning policies for the area.

Although I am not required at this stage to consider other than the local planning implications of proposal, in reaching my conclusions about the effect it would have on the area I have not been unmindful of the need which the nation has for the best possible new airport. Neither have I overlooked the geographical advantages which the site has and what would appear at the first glance the excellent road and rail facilities which are near at hand.

Nevertheless there can be no doubt that the development of an airport at Cublington would represent the biggest and most sudden onslaught on nature that the region has ever had to suffer, that it would adversely affect the lives of a large number of people, would completely cut across accepted planning policies which are known to be working well and would not be possible of attainment without having serious inflationary effects on the economy of the region.

For these reasons I have come to the conclusion that siting the Third London Airport at Cublington would have disastrous local implications.

Form of evidence

I propose to divide my evidence into four parts, firstly to state the proposal as I understand it and to note our relationship with adjoining authorities; secondly to describe the area covered by the proposal and the way in which it could be affected by it; thirdly to state the regional planning policies and fourthly to give a personal assessment of the best that could be made of an urbanisation pattern if the airport were to be built at Cublington.

PART ONE

1.1. **The proposal**

The proposal is to establish in the ultimate a four-runway airport at Cublington. The site of the airport which I consider is that for the 4-runway airport on the re-aligned site described in para. 3 of the Commission's document.*

1.2. I should say at this stage that I do not agree with para. 5 of the document in which it is stated that the Milton Keynes designated area lies outside the 40 NNI contour. In my view this contour line cuts through the southern part of the designated area. I appreciate that probably great care has been taken to arrange these contours to avoid Milton Keynes but I doubt if it is possible to arrange the contours in this part of the country so that they miss all the urban areas.

* See also p. 1543.

* *Site Information for Stage II Local Hearings.* 3. *Cublington (Wing).* (HMSO; 6s.) Reproduced at p. 1001.

Printed image digitised by the University of Southampton Library Digitisation Unit

1.3. Although the lowest NNI to be given by the Commission is 40, there can be no doubt that a high degree of nuisance especially in hospitals, schools and other similar buildings, would be experienced in the area enclosed by the 35 NNI contour. I have therefore shown on the plans* in this proof of evidence the 35 NNI prepared by Mr. Fleming, the County Council's Noise Consultant.

1.4. The whole of the proposed site is in Buckinghamshire, but Bedfordshire, Northamptonshire and Oxfordshire are also affected by the noise number indices. I have, with the agreement of these authorities, included in my evidence the relevant facts affecting them. These Counties and Hertfordshire are affected by the proposal and they wish to be associated with this evidence.

PART TWO

The proposal and its local implications

2.1. **On the area generally**

Cublington is set in beautiful countryside studded with typical English villages. The site itself is one of hills and vales ranging between 310 ft and 480 ft above sea level; it is well wooded and the lanes are lined with hedgerow trees.

2.2. It is real countryside rich in wildlife. Within twelve miles of Cublington there are eighteen sites of Special Scientific Interest so designated by the Nature Conservancy. It is the first piece of real un-urbanised countryside to the north of London on the way to the Midlands. Foxes and badgers still abound in it. It could not survive in its present form the activity and urbanisation which would come with an airport.

2.3. The area is so attractive that many people visit it for leisure. The Aspley Guise, Aspley Heath area of outstanding natural beauty, the Brickhills, Woburn and Waddesdon Manor which would lie under or close to the flight paths, are particularly popular and attract large numbers of people. It is not only the beauty that attracts people to the area, but because it is large enough to give one the feeling of "being away from it all". This would change with the advent of the airport; the noise, the ground pattern cut up by new roads and the new rail connections. The peace and quite would go and the essential character of the countryside would change.

2.4. The letter to local authorities dated September 1962, from the Minister of Housing and Local Government discouraged recreation areas being established in the approaches to the main runways at busy aerodromes. Beauty spots like the Brickhills, the Three Locks, and Waddesdon Manor would therefore have to be discouraged.

2.5. **Agriculture and property values**

Evidence on the agricultural significance of the area will be given by the National Farmers Union,* The Country Landowners Association† and the County Land Agent‡ so far as the County Council's smallholding estates are concerned.

2.6. The County Valuer and Estates Officer§ will be giving evidence about the effect of the proposal on the value of the property in the immediate vicinity and the likely cost of acquiring the properties on the site itself.

2.7. **The villages**

Within the area enclosed by the 35 NNI contour there are 148 villages or settlements; within the area enclosed by the 40 NNI contour there are 67.

2.8. The villages vary in character and purpose but there can be no doubt that they provide a satisfactory way of life for their inhabitants—the families of many have lived there for generations. The villages represent a piece of man-made environment—the like of which we plan to achieve but seldom do—and which should not be given up lightly.

2.9. The following tables give the details of the villages affected and the tables are followed by photographs‖ of typical village scenes.

---

* p. vi.
† p. vi.
‡ p. 1056.
§ p. 1050.
‖ Not reproduced.

Category	*Position*	*County*	*Number*	*Totals*
1	TO BE DEMOLISHED within the site boundary	Buckinghamshire	3	3
2	INTOLERABLE within the 50 N.N.I. (excluding the above)	Buckinghamshire	9	
		Bedfordshire	3	12
3	LIFE DIFFICULT within the 50 to 40 N.N.I.	Buckinghamshire	31	
		Bedfordshire	14	
		Oxfordshire	7	52
4	LIFE ALTERED within the 40 to 35 N.N.I.	Buckinghamshire	29	
		Bedfordshire	19	
		Oxfordshire	32	
		Northamptonshire	1	81
TOTAL				148

Printed image digitised by the University of Southampton Library Digitisation Unit

Category 1: Within the Site Boundary

BUCKINGHAMSHIRE

Stewkley
Cublington
Dunton

Category 2: Within the 50 NNI contour (excluding the above)

BUCKINGHAMSHIRE

Soulbury	Whitchurch	Pitchcott
Stoke Hammond	Hardwick	Waddesdon
Little Brickhill	Weedon	Aston Abbotts

BEDFORDSHIRE

Aspley Heath
Aspley Guise
Woburn

Category 3: Within the 50 to 40 NNI contours

BUCKINGHAMSHIRE

Woburn Sands	Kingswood	Gibralter
Bow Brickhill	Woodham	Westlington
Drayton Parslow	Westcott	Dinton
Hoggeston	Upper Winchendon	Upton
Oving	Lower Winchendon	Stone
Quainton	Cuddington	Aylesbury (small part)
Calvert	Chearsley	
Twyford	Long Crendon	Wing
Charndon	Haddenham	Burcott
Edgcott	Kingsey	Great Brickhill
Grendon Underwood	Aston Sandford	Hollingdon

BEDFORDSHIRE

Husborne Crawley	Millbrook	Houghton Conquest
Ridgmont	Marston Moretaine	How End
Brogborough	Lower Shelton	Froxfield
Holcot	Caulcott	Heath & Reach
Lidlington	Stewartby	Linslade (small part)

OXFORDSHIRE

Thame	Moreton	Rycote
Towersey	Priestend	
Emmington	North Weston	

Category 4: Within the 40 to 35 NNI contours

BUCKINGHAMSHIRE

Aylesbury (part)	Easington	Preston Bissett
Lower Hartwell	Chilton	Hillesden
Upper Hartwell	Ashendon	Steeple Claydon
Ford	Dorton	Middle Claydon
Ilmer	Wotton Underwood	Padbury
Forty Green	Ludgershall	Adstock
Holly Green	Marsh Gibbon	North Marston
Skittle Green	Poundon	Bletchley (small part)
Shabbington	Chetwode	
Ickford	Barton Hartshorn	Stokenchurch

BEDFORDSHIRE

Salford	Wadd End	Haynes
Upper Shelton	Green End	Haynes West End
Wooton Green	Kempston Church End	Ampthill
Wooton		Milton Bryan
Potters Green	Kempston	Linslade (part)
Keeley Green	Kempston Hardwick	Potsgrove
Wilhamstead		Battlesden

OXFORDSHIRE

Finmere	Hethe	Albury
Mixbury	Godington	Great Milton
Cottisford	Waterstock	Great Haseley
Newton Purcell	Tiddington	Latchford
Fringford	Draycot	Chippinghurst
Little Milton	Drayton St. Leonard	Crowell
Little Haseley		Oakley
Chalgrove	Tetsworth	Chinnor
Stadhampton	Sydenham	Henton
Chislehampton	Postcombe	Lewknor
Newington	Aston Rowant	Kingston Blount

NORTHAMPTONSHIRE

Evenley

2.10. Buildings of architectural and historic interest

The area enclosed by the NNI contours is rich in buildings of architectural and historic interest. They range from the unique church at Stewkley which is the text book example of Saxon–Norman ecclesiastical architecture and which would be destroyed, to important examples of major works of architectural importance like Woburn Abbey and Waddesdon Manor, to the equally important examples of straightforward English domestic housing which is seen at its best in so many of the villages.

2.11. The Appendix to this evidence gives details of some of the buildings of architectural and historic interest. It also shows into which NNI contours they are situated.

2.12. The number of buildings involved within the NNI contours including those on the Statutory List and buildings to be listed under the Town and Country Planning Act, 1968, are as follows:—

Category 1: Buildings that will have to be demolished

Village or Town	*Statutory list*	*Supplementary list*
Stewkley	4	12
Cublington	4	5
Dunton	2	2
Total	10	19

Category 2: Building that will be situated within the 50 NNI

Village or Town	*Statutory list*	*Supplementary list*
Soulbury	6	1
Stoke Hammond	2	8
Little Brickhill	2	9
Whitchurch	13	34
Hardwick	6	6
Weedon	5	13
Pitchcott	1	2
Waddesden	4	2
Aston Abbotts	4	2
Creslow	3	0
Fleet Marston	1	3
Aspley Guise	16	9
Woburn	67	0
Total	130	89

Category 3: building that will be situated within the 50–40 NNI

Village or Town	*Statutory list*	*Supplementary list*
Bow Brickhill	3	1
Drayton Parslow	2	8
Hoggeston	3	6
Oving	10	3
Quainton	17	19
Twyford	1	3
Edgcott	3	0
Grendon Underwood	4	8
Woodham	0	2
Westcott	1	2
Upper Winchendon	2	1
Lower Winchendon	10	11

Printed image digitised by the University of Southampton Library Digitisation Unit

Cuddington	5	22
Chearsley	2	17
Long Crendon	36	38
Haddenham	16	43
Kingsey	2	1
Aston Sandford	1	1
Dinton	8	21
Stone	4	30
Wing	5	5
Great Brickhill	2	8
Husborne Crawley	3	5
Ridgmont	3	4
Lidlington	3	7
Millbrook	3	1
Marston Moretaine	4	8
Stewartby	0	2
Houghton Conquest	4	7
Heath & Reach	3	9
Thame	57	53
Towersey	3	14
Total	220	360

Category 4: buildings that will be situated within the 40–45 NNI

Village or town	*Statutory list*	*Supplementary list*
Hartwell	4	20
Ilmer	2	1
Shabbington	2	4
Chilton	8	9
Ashendon	2	5
Wotton Underwood	3	12
Marsh Gibbon	12	16
Chetwode	3	0
Barton Hartshorn	4	1
Preston Bissett	2	8
Hillesden	1	5
Steeple Claydon	3	12
Middle Claydon	3	0
Padbury	5	17
Adstock	1	4
North Marston	2	5
Bletchley	3	3
Hogshaw	1	1
Hulcote & Salford	4	7
Wootton	5	15
Kempston	10	25
Wilhamstead	0	6
Haynes	6	14
Potsgrove	2	1
Evenley	15	4
Aston Rowant	5	11
Chalgrove	4	1
Chinnor	7	32
Cottisford	3	0
Crowell	3	4
Cuddeston	1	2
Drayton St. Leonard	7	13
Fringford	1	0
Godington	2	0
Great Haseley	16	19
Great Milton	21	13
Hethe	1	0
Lewknor	5	5
Little Milton	6	20
Mixbury	2	0
Newington	6	5
Newton Purcell	2	0
Stadhampton	13	19
Sydenham	2	4
Tetsworth	5	11
Tiddington	4	8
Waterstock	1	7
Total	220	369
TOTAL ALL CATEGORIES	580	837

2.13. **Schools and educational establishments**

The Deputy Chief Education Officer will be giving evidence* about the number of children in schools and educational establishments and details of the buildings and the way in which these will be affected by the noise from the airport.

2.14. I have seen his proof of evidence and in my view the estimated cost which he gives of providing soundproofing and ventilating to these buildings is a reasonable one.

2.15. **Churches**

There are many churches in the area which would have their services seriously interrupted. The worst affected would be at Hardwick, Soulbury, Stoke Hammond, Weedon, Whitchurch and Linslade and these churches could well be made untenable.

2.16. **Health service**

The County Medical Officer of Health will be giving evidence† about the effect which the airport would have on the various health services and the Hospital Authorities will also be giving evidence on this subject.

2.17. **Special services**

I draw attention to the fact that the following special services exist within the area included by the 35 NNI line. These consist of:—

i) The diplomatic wireless station at Creslow—within the site area.

ii) The R.A.F. wireless station at Stoke Hammond—1,000 yards from the site perimeter and under one of the flight paths.

iii) The Ministry of Defence's experimental station at Westcott—under one of the flight paths.

The Central Communications Centre R.A.F. Stanbridge, Bedfordshire and the U.S.A.F./R.A.F. wireless station at Croughton, Northamptonshire, though lying outside the 35 NNI contour may also be affected.

2.18. Mr. Dunford will be submitting evidence‡ regarding the effect of the proposed airport upon the civilian and military airfields together with their air traffic control systems.

2.19. **People**

Having considered the area, the villages and the buildings, I now turn to the people who will be affected, the most important consideration of all.

---

* p. 1045.
† p. 1039.
‡ p. 1015.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.20. The following table shows the population affected on the site and in the various NNI contours:—

i) **Population affected (1968): Roskill Commission basis**

NNI contour range (4-runway)	*Population affected*
Airport site	1,400 (displaced)
Greater than 50	8,100
45–50	9,700
40–45	22,100
35–40	33,100

ii) **Population affected (1968): Fleming basis**

NNI contour range (4-runway)	*Population affected*
Airport site	1,400 (displaced)
Greater than 55	2,100
45–55	15,700
35–45	55,200

2.21. These tables indicate that life would be impossible for 10,000 people at present living on or near to the site. Many of these have lived in their homes for generations and others have moved to this part of the country because they find it attractive.

2.22. I have commented earlier that in my opinion the 40 NNI traverses the Milton Keynes designation border and I have no doubt that in the final analysis it will creep into other urban areas.

2.23. **Railways**

The Cublington area is at present served by the Euston–Birmingham–Scotland electrified railway to the east and to the west the site is within six miles of a line which runs from Marylebone to Aylesbury. The line north of Aylesbury is almost disused.

2.24. At first glance these rail links look attractive but I understand that it would be impossible except at very heavy cost to improve the Cublington–Euston line to take the additional traffic which would result from a heavy modal split to public transport from the airport to central London.

2.25. **Roads**

The existing motorway service to the site is the M1 but it is universally agreed that this route is already overloaded and incapable of serving a new major transport generating point such as an airport.

2.26. Other major routes near to the site will in the future be the M40 motorway which is already constructed to a point north of High Wycombe and will within the next seven years be completed to the north of Oxford. This motorway has been designed to deal with traffic already known to exist and for anticipated growth in traffic between London and Birmingham. I understand that it is unlikely to be capable of, or attractive to, taking traffic between the airport and London.

2.27. The other major route is the A41 London–Banbury–Birmingham road which is at the moment a trunk road, and upon which design work is proceeding to make it into an all purpose dual carriageway road. The exact alignment of this route has not been settled but I give an assessment of a possible route in Part Four of this evidence. In addition to these three motorways, the A413 road from Amersham in the south to Aylesbury is being improved.

2.28. These are only the major roads affected but it must follow that nearer to the site there would be need for many other new high standard roads superseding the existing rural roads and old country lanes. If the airport is to deal with 100 million passengers a year, even on the assumption that there is a high modal split towards rail transport then the road pattern in and around the airport would be such that the character of the countryside would undergo a complete change and become urbanised.

2.29. With the necessary expansion of the existing urban areas, peak hour flows on many of the existing routes would be more than doubled with a consequent need for extensive highway construction which is mentioned with the urbanisation pattern in Part Four.

2.30. **Statutory services, major installations**

The lines of major services illustrated on Plan 1* are as follows:

2.31. *Electricity*

The proposed airport site is crossed from east to west by the Central Electricity Generating Board's East Claydon to Sundon 400 kV overhead line which forms part of the outer national grid system around London. This line is suspended at heights of up to 160 ft and an overhead diversion of 10–15 miles would cost between £750,000 and £1,000,000. The alternative of taking the supply underground would cost approximately £4,000,000.

2.32. Another 400 kV overhead line running between East Claydon and Iver passes within 3 miles of the Whitchurch side of the site.

2.33. *Gas*

A 24 inch major natural gas feeder main for the Southern Gas Board passes within a quarter of a mile of the south-west corner of the site. An almost unlimited supply of gas can be taken from this main.

2.34. *Water*

Apart from the proposed reservoir which would be of major importance, the only existing installation of any significance is the 15 inch diameter water main passing close to the south-west corner of the site.

2.35. *Oil pipe lines*

The United Kingdom Oil Pipe Line Ltd. Thames/Mersey Pipe Line passes under the site from north-

* p. 1035.

Printed image digitised by the University of Southampton Library Digitisation Unit

west to south-east. This line is regulated and protected by the Pipe Lines Act 1962.

2.36. The Ministry of Power A/S Oil Pipe Line passes under the north-east corner of the site crossing the Thames/Mersey pipe line almost at right-angles. A cathodic installation plant is also situated just inside the site. This line is regulated and protected by the Land Powers (Defence) Act, 1958.

2.37. **Water supply—proposed reservoirs**

The northern part of Buckinghamshire has suffered for years from a shortage of water. Until the opening of the reservoir at Grafham Water in 1967 there was an embargo on large scale development in the north of the County, except for the expansion of Bletchley. The supply from Grafham will only alleviate the shortage for some five years or so and another supply must be made available by that time if projects like Milton Keynes and the expansion of other towns are to go ahead.

2.38. The Bucks Water Board is the statutory water authority for the Cublington area but they in turn rely on the Thames Conservancy Board and eventually on the Water Resources Board for their raw material.

2.39. I have had discussions with the Bucks Water Board for some years now about water supply for the Cublington area. As I understand it, the Great Ouse River Authority will be giving evidence* on this subject but I think it appropriate that I should outline the situation of the proposed reservoirs at Cublington and Waddesdon on the sites shown on Plan 1.

2.40. A great deal of publicity was given to these proposals and subsequently the Ministry of Housing and Local Government gave authority to the Board to carry out exploratory tests to ensure that the sites were suitable for reservoir purposes.

2.41. I gather that these tests have now been completed and confirm the suitability of the sites. A firm planning decision has not been taken on the proposals.

2.42. As I understand it the present situation about water is that there are many schemes which could provide an adequate supply of water to the area. So far as I am aware, however, the adoption of one or the other of these schemes is no nearer now than it was two years ago when the site of the new city of Milton Keynes was designated.

2.43. Any solution will involve major civil engineering works and unless a decision is taken soon then there will be a shortage of water which will restrict the development of the area as a whole.

2.44. **Drainage**

The site falls into two drainage areas, one to the south drains into the Thame and the one to the north into the Ouzel and the Ouse.

2.45. All of these rivers have drainage problems and there can be no doubt that engineering works will be required to deal not only with the effluent from the sewage works that will be necessary, but also to deal adequately with the surface water run off from the airport.

2.46. **Employment**

The amount of employment generated and attracted by the airport and its urban development falls into three categories:—

i) Primary employments, i.e. those working at airport;

ii) Secondary employment, i.e. ancillary employment directly connected with the airport, plus manufacturing and commercial development attracted by the airport or its location;

iii) Service employment to serve the workers and their families;

2.47. There is scope for disagreement about the numbers in all three categories but my own assessment is as follows:—

i) *Primary employment.* Estimates have varied from 34,000 to 84,000 workers. The Roskill Commission has given their "best estimate" as 65,000 workers. This figure has been adopted in this evidence.

ii) *Secondary employment.* On the basis of Heathrow experience, it is suggested that there might be 6,500 jobs directly ancillary to the airport. The additional amount of industrial and commercial development attracted to the airport location is difficult to estimate because of lack of precedent. For this category, Essex have used an estimate of 15,000 jobs.

iii) *Service employment.* This was estimated by Essex as 129,750, less 20 per cent located regionally, giving 103,750 located locally.

2.48. The estimates of employment related to an airport location in the mid-1990s are therefore as follows:—

i) Primary employment	65,000
ii) Secondary employment	
(a) directly ancillary to the airport	6,500
(b) attracted to the location	15,000
iii) Local service employment	103,750
TOTAL	190,250

2.49. This total employment of 190,250 can be related to a population total of 392,000 persons, and this figure gives some idea of the scale of the associated urban development. Most of this population would likely wish to live within twelve miles or so of the airport, although the exact radius would also depend on the location of the secondary employment which need not be at the airport. However, to help

Printed image digitised by the University of Southampton Library Digitisation Unit

assess the effect of the proposed airport on the local economy, the area which would receive the bulk of the urbanisation has been investigated and defined for this purpose as the areas of the Employment Exchanges of Aylesbury, Bletchley, Buckingham, Leighton Buzzard and Wolverton.

2.50. This study area is attractive to new industry and it is one in which employment growth is rapidly increasing. For example, between 1960 and 1967, the total number of jobs in the area increased at an average of about 3·4 per cent per annum, compared with the national average of just under 1 per cent, with the manufacturing sector growing slightly faster than the service sector. In the manufacturing sector, the main growths occurred in the food industry, engineering and electrical goods and metal manufacture.

2.51. The study area has one of the lowest levels of unemployment within the south-eastern part of of the country. In the area, unemployment in February 1969 expressed as a percentage of figures of employment, was 1·0 per cent. The statistics from which this fact is drawn are shown in the following table, which also demonstrates a considerable consistency in the unemployment levels within the area which would receive the main impact of the airport and its associated urbanisation.

Employment exchange area	*Total employment (June 1967)*	*Unemployed (Feb. 1969)*	*Total % of unemployed*	*Total vacancies*
Aylesbury	32,670	320	1·0%	533
Bletchley	13,690	120	0·9%	303
Buckingham*	5,475	65	1·2%	75
Leighton Buzzard*	8,348	70	0·8%	149
Wolverton*	11,525	138	1·2%	83
TOTAL	71,708	713	1·0%	1,143

* To these must be added unemployed youths who are covered by the County Youth Employment Services rather than the Employment Exchanges, but these amounts are so negligible that they do not alter the overall percentages of total unemployment. In detail, in North Bucks in February 1969 there were only 9 youths unemployed (compared with some 128 vacancies for youths) while for the Leighton Buzzard area there were only 3 youths unemployed.

2.52. The above percentages of unemployment compare very favourably with other areas for February 1969:—

Bedford Employment Exchange Area	1·4%
Oxford Area	1·8%
Luton Area	1·3%
Northampton Area	1·3%
Southend-on-Sea Area	3·2%
Merseyside Development Area (the lowest percentage of all Development Areas)	3·4%
Greater London	1·5%
South Eastern Region	1·5%
Great Britain	2·6%

(Source: *Employment and Productivity Gazette:* March, 1969).

2.53. For every unemployed person in the study area, there are almost two vacant jobs; in the Southend area for instance the reverse applies. In addition, there is some evidence to suggest that the duration of unemployment in the study area is generally very short. On the other hand part of Southend's unemployment is of a seasonal nature, but there even in the summer of 1968, unemployment was 2·9 per cent.

2.54. The study area is by no means "self contained" in employment terms, nor indeed is there any reason why it should be. According to the 1966 sample census, some 20,700 travelled out of the area, mainly to the surrounding neighbouring large towns such as Luton, Dunstable, Bedford, Northampton, Oxford, as well as to Greater London. Conversely, some 9,120 people travelled into the area to work.

2.55. In general terms the overall employment structure of the study area is "buoyant", and it is becoming more diversified. The changes in the economy of the area are not being brought about indiscriminately since more of the recent growth has been related carefully to the planned expansion schemes at Aylesbury and Bletchley, the latter in due course being incorporated into the Milton Keynes new city.

2.56. Since most of the recent industries are in the "growth" category, it is possible that many of the existing firms will continue to expand, so off-setting the amount of new employment which would otherwise have to be introduced to sustain the major expansion schemes.

2.57. Thus, on the basis of present evidence, the continued successful and controlled growth of expansion schemes in the Cublington area does not need the stimulus which would arise from an airport proposal.

2.58. The Milton Keynes Development Corporation will be giving evidence* to the Commission but as I understand it they will confirm that there is no shortage of interest by industrialists who would like the opportunity of establishing themselves in the area.

2.59. In my view therefore the establishment of an airport at Cublington could well lead to an acute labour shortage with rivalry between industry and the airport, particularly for male workers, and the inevitable inflation which would follow. Because the existing industries affected by inflation—cars at Luton, Newport Pagnell, etc.—take an active part in the nation's export business, the airport at Cublington could well help to lose as much foreign exchange as it would bring into the country.

* p. 1070.

Printed image digitised by the University of Southampton Library Digitisation Unit

Planning policies

3.1. Regional planning policies

Buckinghamshire, Bedfordshire, Hertfordshire and Oxfordshire are within the area of the South East Region Economic Planning Council, and the four authorities are members of the Standing Conference on London and South East Regional Planning. Northamptonshire is within the East Midlands Economic Planning Council Area.

3.2. There are four regional or sub-regional surveys, studies or reports about which the inquiry should know and I give below my interpretation of each of them:

i) *The South-East Study*,* published by the Ministry of Housing and Local Government in 1964. This study looked at the population problems in the south-east as a whole and as part of the solution to the problem proposed a new city in the Bletchley area, the planned expansion of Aylesbury and a further general growth in the south of the County. These proposals were in general terms in accordance with the policies already adopted by the Bucks County Council.

ii) *The Northampton, Bedford and North Bucks Study*† undertaken by independent consultants for the Ministry of Housing and Local Government and published in 1965. This report was a feasibility study into the expansion of the sub-region to the turn of the century and concluded that:—

(a) The site now known as Milton Keynes was suitable for a city of about 200,000 people.

(b) Northampton was suitable for expansion by about 100,000 people.

(c) The Bedford Area was a suitable location for accommodating an additional 60,000–70,000 people.

It further put forward the general thesis that in the long term these towns could be connected by continuous growth into a new major conurbation.

iii) A *Strategy for the South-East*‡ was published by the South East Economic Planning Council in 1967. This put forward the concept of "corridors of growth" and suggested that North Bucks should be one of them.

iv) More recently studies have been and still are being undertaken by teams from the various Ministries concerned, into the longer term future of the sub-region on the basis of its development as a growth area. Details of these studies are not available and appear to be lost in v) below.

v) A new study of the whole of the South East is now being undertaken by a group under the auspices of the Department of Economic Affairs, the Ministry of Housing and Local Government, Ministry of Transport and Standing Conference on London and South East Regional Planning. This body will produce a report on the South East later this year, probably before the Commission has produced its own findings, which to my mind, if I might say so, is a piece of nonsense as a state of affairs.

3.3 My own interpretation of these reports is that there are two points common to them all. The first is that Milton Keynes, Northampton, Wellingborough and Bedford make a sensible growth area, and secondly that this growth area should prevent the development of a continuous sprawl from London to Birmingham.

3.4. At the Public Local Inquiry held in 1966 into the Milton Keynes Designation Order a statement made on behalf of the Minister of Housing and Local Government said:—

> The main problem would be to co-ordinate proposals for a new town in North Buckinghamshire with the nearer towns, particularly Northampton and Bedford, whose total population will have needs that should be viewed as a whole. The growth of these towns and its effect on the adjacent country will require special co-ordination. Given this, there is no reason why these developments should create problems similar to those in existing conurbations. In particular, proper planning and control of development can prevent a continuous urban sprawl.

3.5. The proposal to site the airport at Cublington would have just the opposite effect. It would bring about pressures for Milton Keynes to develop to the south and would in fact soon lead to a continuous development between Aylesbury and Milton Keynes and thus defeat the object of the agreed planning policies for the area.

3.6. Local planning policies for high amenity areas

Plan 2* shows by hatching the areas around the Cublington site which are accepted by the County Councils as green belt areas, areas of outstanding natural beauty, areas of high landscape value or country parks or National Trust property, and areas of special scientific interest. For ease of reference the hatching does not differentiate between these categories.

3.7. The plan also shows the sites which have been proposed by the Bucks Water Board for the two reservoirs to which I have previously referred. It also has superimposed on it the 35 and 40 NNI contour lines. It will be seen that these would materially affect large tracts of the areas which it is considered essential from the local and regional planning point of view to be retained in their present form as areas of high amenity value.

---

* (HMSO; 15s.)
† (HMSO; 25s.)
‡ (HMSO; 15s.)

* p. 1036.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.8. **Bucks County planning policies**

The County of Buckingham Development Plan was approved by the Minister of Housing and Local Government in 1954 and was due for review in 1959. It was obvious however by that time that the old form of statutory plan would be incapable of dealing satisfactorily with the major planning problems that were facing the County and it was therefore decided in 1964 to produce an overall Strategic Plan much on the lines of the plans now contained in the Town and Country Planning Act 1968.

3.9. The problems facing the County can be described briefly as the need for limiting further growth in the south of the County in order to prevent total suburbia; the extension of the green belt to include the Chiltern Hills, the retention of the Vale of Aylesbury as an agricultural area, and for planned growth in the north eastern part of the County.

3.10. The County Council on the recommendation of the County Planning Committee approved in 1964 a "Strategic Planning Policy" for the County as a whole and a more detailed scheme for the north of the County which envisaged the new city of Milton Keynes, the North Bucks Limestone Country Belt and the retention of the existing village pattern.

3.11. These policies are going well. Milton Keynes is now designated and this will provide not only people from London but for some people from the south of the County when such towns as Slough, High Wycombe and Chesham reach the green belt limits which surround them; the planned expansion of Newport Pagnell, Olney, Winslow and Buckingham is under way, whilst plans have been prepared and approved by the County Planning Committee for the villages of Weedon, Wing, Steeple Claydon, Hanslope, etc. Plans for other villages are presently being undertaken as part of the Policy.

3.12. Active steps are already being taken to transfer population from the south of the County to the north. The following is an extract from a letter sent to all those who have applied for planning permissions to erect houses in the south of the County:—

> "Enclosed herewith is the planning permission for housing development in accordance with your application. Your attention is drawn to the fact that in the not too distant future land will not be readily available in the southern parts of the County and it might, therefore, be in your own interest to see if your organisation could make a contribution to the development of the new city of Milton Keynes and the expanding towns and villages around it in the north of the County".

3.13. This policy has had the active support of the Ministry of Housing and Local Government and commends itself to many people. Many would see it as a misrepresentation for the Local Planning Authority to have invited a shift of development impetus into an area which is going to be plagued with all the problems of an airport.

3.14. **Aylesbury**

Discussions are already taking place with the Aylesbury Borough Council about the future size of the town. The present population is 37,000 and the population envisaged in the approved development plan is 42,500 by 1974. Neither the County Council nor the Borough Council or the Ministry of Housing and Local Government have formally considered the future size of the town but in my view there is a general agreement that further expansion could take place in a north easterly direction. I consider that its expansion by another 20–30,000 people is a feasible proposition and this would give it a total population of 60–70,000 people within the next twenty years or so.

3.15. The present expansion of Aylesbury has been undertaken in an orderly and successful fashion, there has been a balance between industry and new housing and the renewal of the town centre. Subject to Government policies controlling the location of industries and offices, Aylesbury should have no difficulty in attracting the further employment potential to match an expansion to 60–70,000 people.

3.16. **Milton Keynes**

The Milton Keynes Development Corporation will be giving evidence about the way in which the Cublington proposal would affect them. I confine my evidence to the County Council's point of view about Milton Keynes.

3.17. Milton Keynes is an essential part of the County Council's planning strategy and they would not wish to see its construction hampered in any way. They have given warm support to the Draft Master Plan for the city and are at the moment considering in detail the way in which the infra-structure of the city would fit into the existing surrounding pattern. It is clear from the draft plan of the new city that a good deal of re-thinking would be necessary if the airport were to be built at Cublington, both from the point of view of the Development Corporation and the County Council.

3.18. The County Council would not wish to see the inevitable urban link which would be developed between Milton Keynes and Aylesbury. They have always envisaged the Cublington area as a green wedge between the city and the south.

3.19. I envisage that this green wedge will in the future provide for the leisure activities for the people from the new city of Milton Keynes, Aylesbury and the other towns. Before the end of this century we shall see a society with more leisure time and it is therefore important to retain the open character of the Cublington area.

3.20. The County Council has always envisaged Milton Keynes as being a balanced industrial city of the 21st century. If the airport came to Cublington then the city would be very much associated with

Printed image digitised by the University of Southampton Library Digitisation Unit

airport activities and become a service city and rely largely on the airport as its main form of economic strength.

3.21. Leighton Buzzard

The County Planning Officer of Bedfordshire will be giving evidence* about the future of Leighton Buzzard/Linslade and the relationship of this town to the Bedfordshire planning policies.

PART FOUR

Realisation of proposed urbanisation pattern

4.1. Housing stocks

I have tried to see how the existing manpower and housing stock of the Cublington area could readily contribute to the airport urbanisation by looking at unemployment, vacant dwellings, and people presently commuting out of the area who might be attracted to work locally if the airport came to Cublington. I have come to the conclusion that the area could make little ready contribution.

4.2. There were 713 people unemployed in the twelve mile or so radius of Cublington in February, 1969. There is evidence that many of those unemployed in the area were so for an extremely short duration, often in the course of changing jobs, while others might be unemployable or unsuitable for airport employment. In general terms, unemployment in the area could make little contribution to the airport's urbanisation. The same is true of vacant dwellings in that, on the whole, dwellings seem to remain empty only for a short period and so reflect the buoyant local economy.

4.3. Some 2,750 males commute to work daily out of the 12 mile radius, and the numbers who might be attracted to work locally at the airport or its secondary industry is conjectural. Assuming, say, 20 per cent might be attracted, then some 550 males would be available for airport employment which would give an equivalent population of 2,830 persons in terms of families and related service workers. This means that on the basis of £3,000 per person housed, this would be a saving of just over £8 million.

4.4. Building labour

The total cost of constructing the airport, its roads, rail links and urbanisation would be likely to be in the region of:—

	£m
i) Cost of airport; runways, buildings with major communication links.	250
ii) Cost of urbanisation of 392,000 people at £3,000 per person.	1,176
iii) Cost of secondary employment, 21,500 workers at say an investment per worker of £1,200 in new buildings. (Derived from estimates in the National Plan 1965).	25
TOTAL	1,451
Less existing capital assets available from 4.3.	8
GRAND TOTAL	1,443

Construction period 1976–1996 of £72 million per annum.

4.5. On the assumption of full mechanisation for civil engineering works, a degree of factory component building, then the likely output per employee per year would be in the order of £3,000. There would be required, therefore, a labour force of 24,000 workers.

4.6. The existing building labour force is in the region of 4,300 workers. I know from experience as County Architect that it would be difficult to rapidly increase investment in building in the North Bucks area with the present labour force.

4.7. In my view it would not be possible to achieve the expenditure of £72 million per annum without a serious rise in building costs. I estimate, for instance, that the cost of school building in the area would rise by at least 10 per cent and I believe that house building prices would suffer a corresponding rise. There is no need to catalogue the difficulties which would flow from this situation. It would be part of the inflationary process brought about by overloading the economy of an area already buoyant and expanding.

4.8. Materials

I have made an estimate of the amount of gravel that would be required if the airport were to be built at Cublington and on the assumption that local gravel yields about 10,000 to 12,000 cubic yards per acre then the following acreage would be required:—

Airport construction	333 acres
Urbanisation	3,333 acres
TOTAL	say 3,700 acres

4.9. There are not 3,700 acres of gravel outside the high amenity areas within Buckinghamshire and Bedfordshire that can be economically worked within 20 miles of the Cublington site.

4.10. In my view approximately half of this amount of gravel would therefore have to be brought from the Huntingdon or Upper Thames areas. It might be that there would be objections to the extraction of gravel from these areas. In any case the haulage of so much heavy material would have an adverse effect on the existing road links and make

* p. 1023.

Printed image digitised by the University of Southampton Library Digitisation Unit

traffic conditions impossible for many years. The cost of this long haulage would also materially increase the building cost of the project.

4.11. **Proposed urbanisation pattern**

I have already given in paragraph 2.49 of this evidence my assessment of the number of people who would have to be housed for airport purposes. To this number would have to be added the 1,400 displaced people from the Cublington site and the overspill from the south of the county who are to be housed within Milton Keynes. It is difficult to put a number to the latter but although some might well be employed at the airport I believe that an extra 20,000 or 30,000 must be catered for.

4.12. The total urbanisation pattern will, therefore, need to house approximately 420,000 people additional to those who live in the area at the moment.

4.13. **Possible patterns**

Many urbanisation patterns have been tested. They fall into three possible solutions.

i) The expansion of Milton Keynes to a city of 400,000 or thereabouts.

ii) The abolition of Milton Keynes as at present conceived and the construction of a series of new satellite towns grouped round the airport but linked to it by some form of public rapid transit system; and

iii) An ad hoc arrangement which takes into consideration existing regional and county strategies, the aspirations of the towns and villages in the vicinity and other local planning considerations.

4.14. Dealing with these in that order, the idea of a larger Milton Keynes would not only conflict generally with the regional plans which I outlined in paras. 3.2–3.5 but would conflict with assurances given by the Minister at the time the Milton Keynes Designation Order was made.

4.15. The second would also be at variance generally with the regional policies and has nothing to offer over the city of Milton Keynes already envisaged.

4.16. **Favoured pattern**

To my mind the most successful urbanisation pattern is likely to be found in the third category and the scheme I now put forward is based on it.

4.17. The focal point of the scheme is the retention of Milton Keynes within its present boundaries together with the enlargement of other towns around it. Whilst precise figures are shown for each town it will be understood that they can be nothing more than estimates.

4.18. I have considered, for instance, what if any contribution should be made by towns like Tring and Berkhamsted which would have good connections with the site. They would certainly be attratcive to some people. For the purpose of this exercise I consider that they would be catered for in a tolerance on the figures given below and shown on Plan 3.*

1. Towcester/Brackley Area	25,000
2. Olney	10,000
3. Newport Pagnell	10,000
4. Milton Keynes	225,000
5. Buckingham	25,000
6. Winslow	15,000
7. Leighton Buzzard Area	65,000
8. Aylesbury	40,000
9. Other villages	5,000
	420,000

4.19. **Road pattern**

The road pattern required to meet this development and the re-alignment of the A41 and A413 which would service the airport are shown on Plan 3.

4.20. The inter-urban traffic between the proposed expanded towns would produce greatly increased flows and would require an extensive programme of highway construction estimated to cost £30 million. This figure excludes:—

i) improvements to roads carrying construction traffic.

ii) construction of roads connecting between the airport and associated urban areas with London.

iii) the cost of dualling the A508 and B557 being the connections between M1 and Milton Keynes which would be required anyway to deal with the traffic generated by the new city.

4.21. There can be no doubt that the existing road system of North Buckinghamshire and the adjoining parts of Bedfordshire and Oxfordshire are totally inadequate to deal with the construction traffic, particularly gravel lorries which would be needed to supply raw materials for the development of the airport and associated urban areas.

Conclusion

I have stated my general conclusion in the introduction as being that the construction of the airport at Cublington would have a disastrous effect on the surrounding areas. In my view it should not be contemplated unless it can be shown that there is no other practicable site with a less serious effect on its surrounding area. The reasons which have lead me to this conclusion can be summarized as follows:—

i) The effect of the noise, the airport itself and its links, the urbanisation and the associated pressures will change the present rural and peaceful nature of a very large area which it is especially desirable to retain in its present general character;

* p. 1037.

Printed image digitised by the University of Southampton Library Digitisation Unit

ii) Two settlements will be wiped out and another largely so, others will be badly affected by noise, they will lose their character of peaceful country villages or as havens for people who want rest and quiet;

iii) The area is one of high employment and the airport will lead to rivalry for labour, inflation and, in turn, to demands for more urbanisation;

iv) There are very real difficulties about the supply of water and adequate drainage;

v) There are insufficient supplies of gravel and the necessary material will have to be hauled for long distances;

vi) This will inevitably spread an urban character southwards from Milton Keynes to Aylesbury and thence to London, a thing which my Council have striven to avoid, and would also lead to a continuous development between Linslade, Leighton Buzzard, Dunstable and Luton.

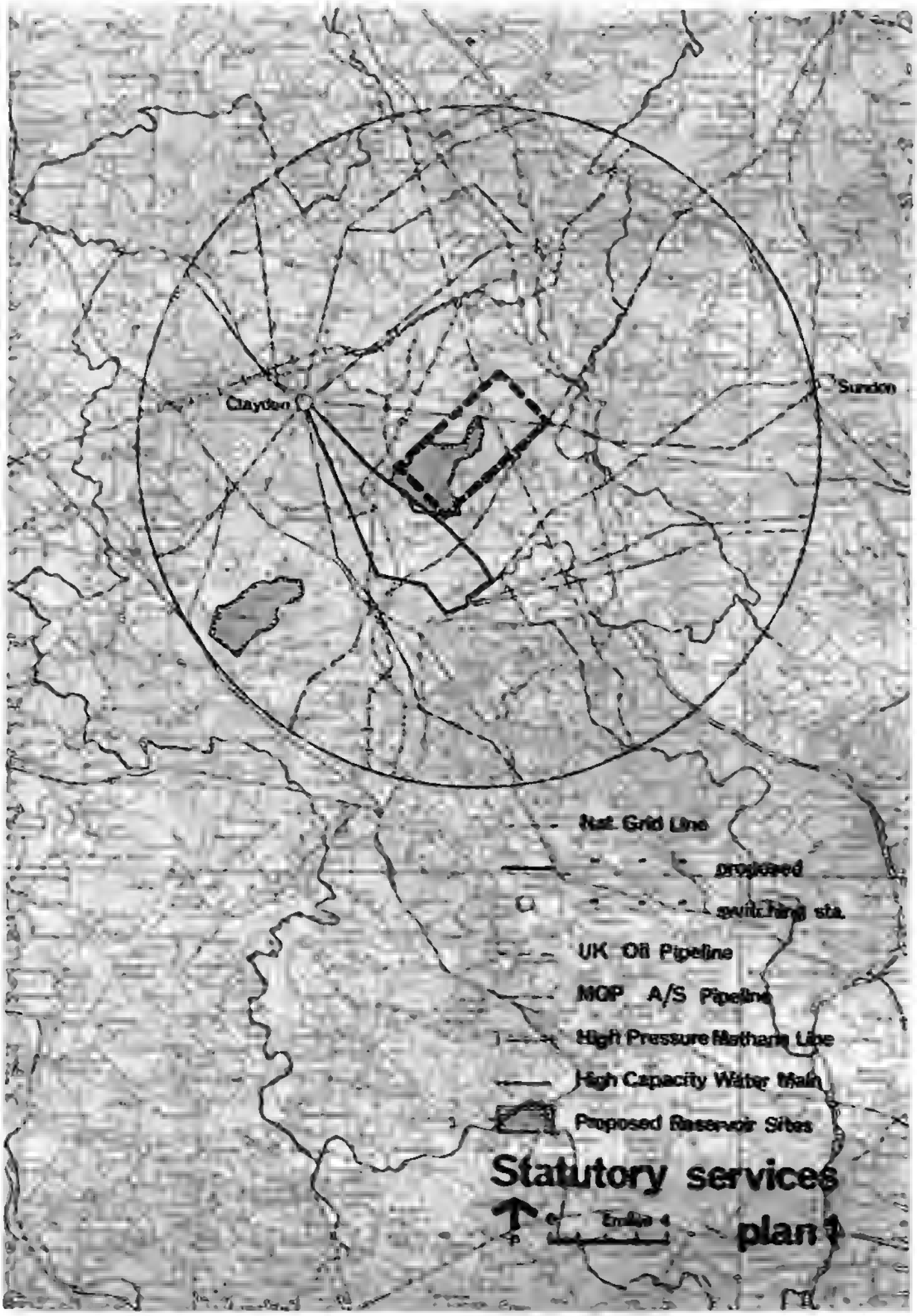
My own instinctive judgement, and I believe it is that of many local people, does not lead me to believe that a hilly site where the contours vary between 310 and 480 ft, surrounded by beautiful countryside, is a natural choice for an airport. Instinctive judgements should not be lightly set aside because of the findings of various studies which are so often inconclusive and arrive at the wrong answer. In any case they can never put a true value on things like a Beethoven symphony, a man on the moon, or the value of the retention of a piece of satisfactory environment, and would—if they had been in vogue in the 18th century—have demanded that the High at Oxford and the Crescent at Bath should both have been built on straight lines.

APPENDIX

Buildings of architectural or historic interest within the NNI levels*

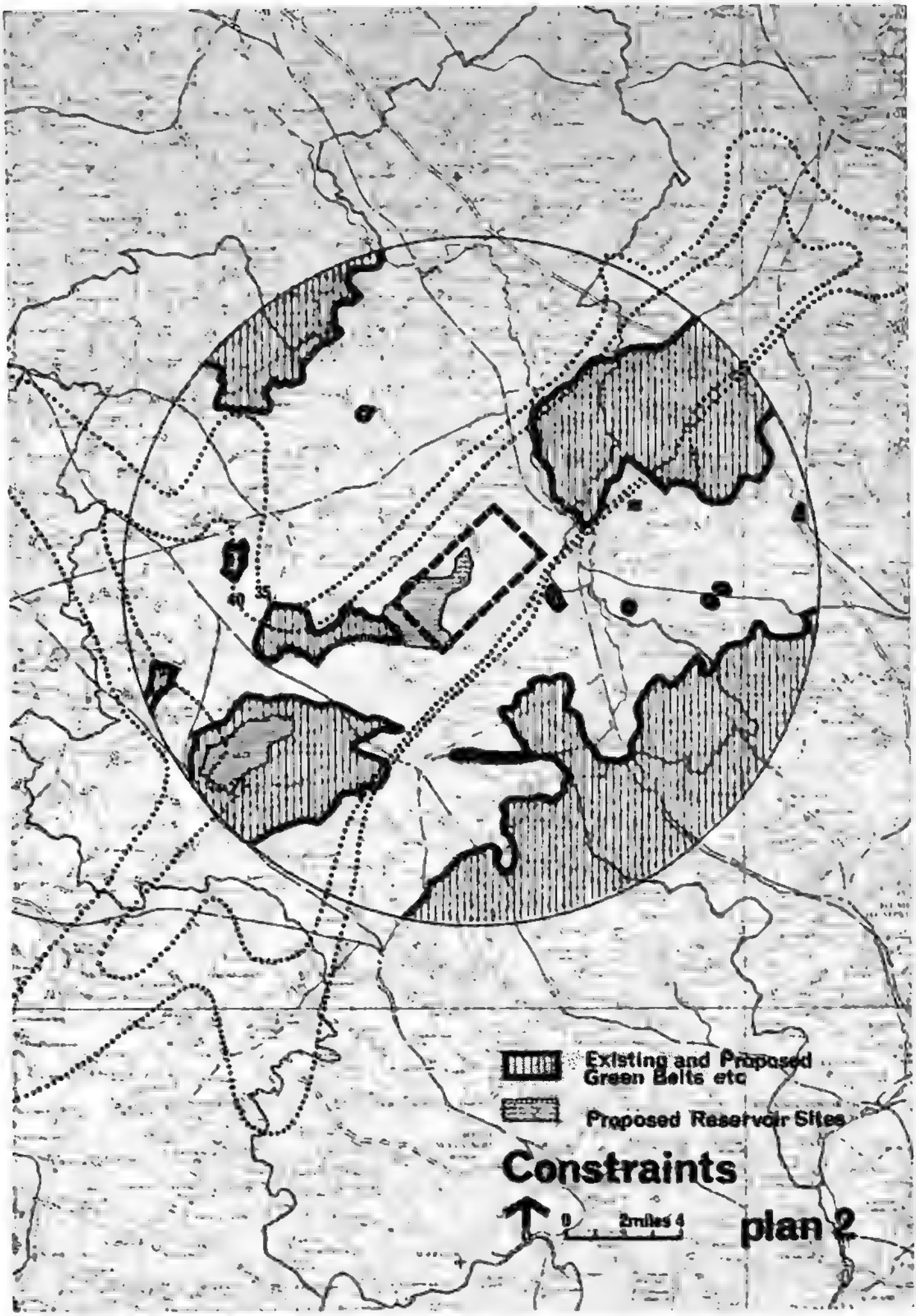
* Not reproduced. Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit



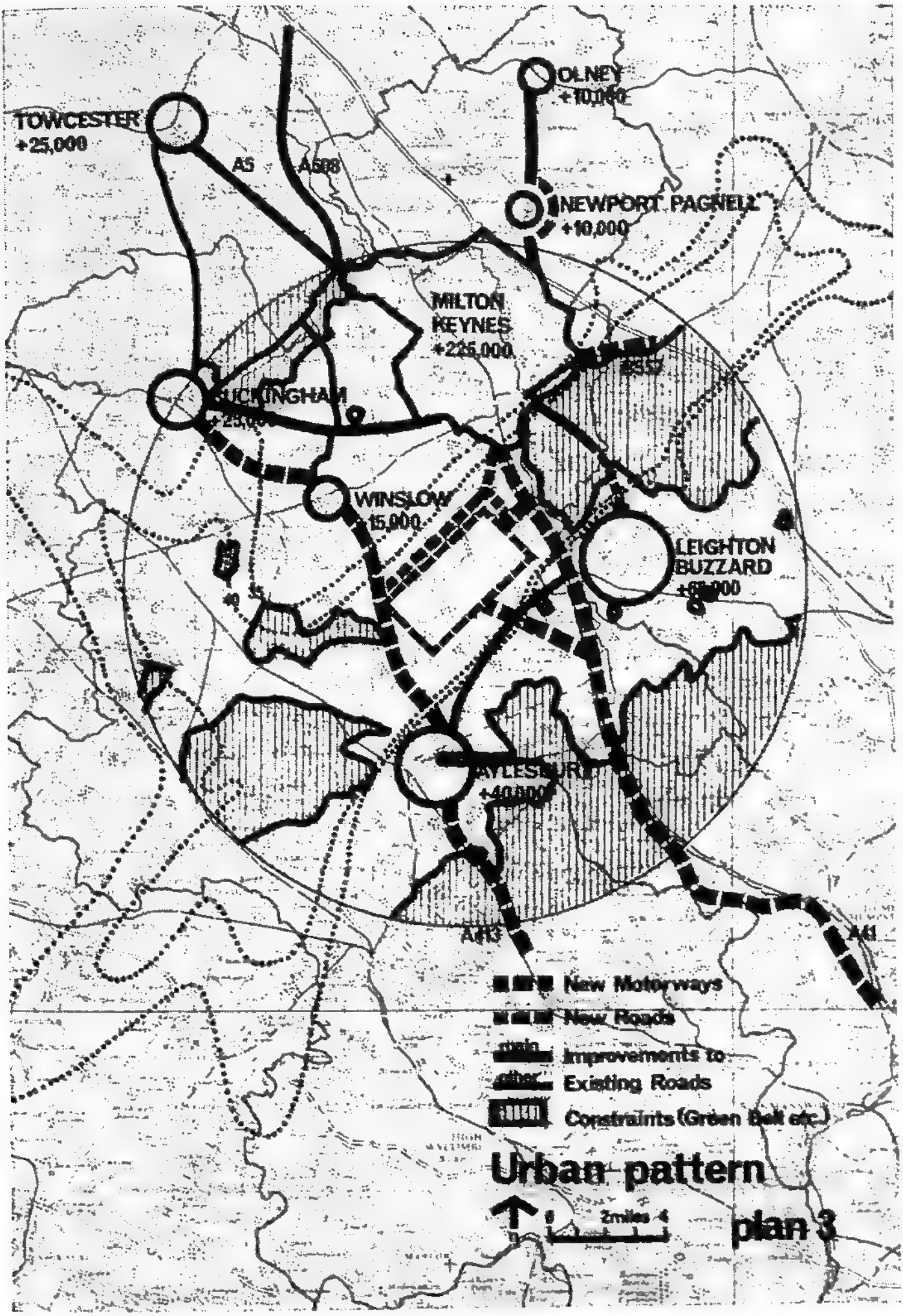
Plan 1. Statutory services. (Mr. F. B. Pooley, Buckinghamshire, Bedfordshire, Northamptonshire and Oxfordshire County Councils)

Printed image digitised by the University of Southampton Library Digitisation Unit



Plan 2. Constraints. (Mr. F. B. Pooley, Buckinghamshire, Bedfordshire, Northamptonshire, Oxfordshire County Councils)

Printed image digitised by the University of Southampton Library Digitisation Unit



Plan 3. Urban pattern. (Mr. F. B. Pooley, Buckinghamshire, Bedfordshire, Northamptonshire, Oxfordshire County Councils)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Buckinghamshire, Bedfordshire, Northamptonshire and Oxfordshire County Councils

Health and health service aspects

SUBMITTED BY DR. J. J. A. REID*

1.1. I am a Doctor of Medicine, a Bachelor of Surgery, a Batchelor of Science and the holder of the Diploma in Public Health of the University of St. Andrews. I am also a Member of the Royal Colleges of Physicians of London and of Edinburgh.

1.2. I have worked in the field of public health for the past eighteen years and have been County Medical Officer of Health, Principal School Medical Officer and County Welfare Officer of Buckinghamshire since 1967. I was previously County Medical Officer of Health and Principal School Medical Officer of Northamptonshire from 1962 and my earlier experience included other public health posts as well as a period as a university lecturer in public health and social medicine. I have also held a variety of hospital appointments.

2. Introduction

2.1. The definition of health adopted by the World Health Organization, which is a specialised agency of the United Nations, is as follows:

> "A state of complete physical, mental and social well-being, and not merely an absence of disease and infirmity."

2.2. The establishment of a new airport in an area where there is none at present, and in a part of the country which has hitherto been quiet and peaceful, is bound to interfere with the mental and social well-being of a substantial proportion of the population living in that area and will thus have a deleterious effect on health as defined by the World Health Organization. It is therefore clearly desirable to site any new airport in an area where this interference with health would be minimal.

2.3. In order to analyse the position in relation to the proposal that the airport should be sited at Wing, comments will be made on the effects on health of the population in general and on the effects on particular groups. Thereafter, the effects on certain health services will be mentioned; and certain general conclusions will be drawn.

3. The population in general

3.1. There are three factors involved here, all of which are potentially detrimental to health, namely noise, atmospheric pollution, and the possibility of physical injury.

3.2. *Noise*

3.2.1. This is a major consideration, from the health point of view, in the siting of any new airport and the likely effects of noise in such a situation must be looked upon differently from those in the case of an existing airport. As far as the latter is concerned, there will have been a gradual build-up of noise over many years and a degree of acclimatisation will have taken place amongst the population whereas, in the case of Wing, those living in the wide area likely to be adversely affected by noise have not been exposed to this gradual build-up and will thus find the noise more obtrusive. In addition, much of the area affected by the noise of aircraft in existing airports is also subject to substantial urban traffic and other noises. In the case of Wing, this has not hitherto been so; and it may therefore be concluded that the degree of nuisance caused by aircraft noise would be higher at Wing than in the case of such airports as Heathrow.

3.2.2. These facts must be borne in mind when consideration is given to the results of the study of public reaction to noise arising from Heathrow airport (Committee on the Problem of Noise, 1963).* In connection with this survey it would also be reasonable to suggest that, over a period of years before the study commenced, a process of selection had taken place amongst a proportion of the population concerned, so that those remaining in the area contained a higher than average number of people who were less disturbed by aircraft noise or who were more tolerant of it, possibly because they or members of their families were employed at the airport.

3.2.3. In considering the effects of noise on health, it must be remembered that individual human-beings vary widely in their susceptibility to potentially harmful agents. Thus identical doses of a chemical poison may result in serious illness in one person yet no more than transient discomfort in another; exposure to similar concentrations of micro-organisms can cause profound infection in some and

* See also p. 1547.

* Cmnd. 2056 (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

have no effect on others; and an apparently similar degree of stress may precipitate mental breakdown in someone yet leave somebody else unaffected.

3.2.4. This variation in individual human response is certainly to be found in relation to noise. A level which is acceptable to one person is intolerable or extremely disturbing and annoying to another. Thus the Committee on the Problem of Noise found that, at a level of 35 NNI no less than 30 per cent of people had their rest or relaxation disturbed by aircraft.

3.2.5. *Damage:* The ear varies widely in its susceptibility to noise damage. Thus while one person may be exposed to loud industrial noise for many years without any effect on his hearing, another may suffer permanent hearing loss following exposure to a lesser degree of factory noise. Discomfort or pain in the ear is valueless as a warning against noise-induced hearing loss, because the pain threshold is much higher than the hearing damage threshold. Whilst there is no definite evidence at present that intermittent exposure to aircraft noise causes demonstrable hearing loss, this is not proof that such loss does not take place.

3.2.6. *Sleep:* One of the most serious effects of aircraft noise is interference with sleep. Adequate sleep is a physiological necessity and health is likely to be damaged by a lack of sleep. Disturbance caused by the same level of noise tends to be greater at night than in the daytime, and in the home rather than elsewhere, and the intermittent nature of aircraft sound tends to increase its undesirable effect on a person who is trying to sleep. At the 35 NNI level the Committee on the Problem of Noise found that almost half the affected population were wakened from their sleep and more than a quarter were kept from going to sleep.

3.2.7. *Annoyance* is a subjective effect of noise and very difficult to measure. Noise is irritating to the community at large but whether any particular noise is a nuisance depends upon a variety of psychological and social factors. A survey of the reactions of people to noise (McKennell, A.C., and Hunt, E. R., *Noise Annoyance in Central London:* Government Social Survey; 1966) showed that the greatest disturbance was experienced by people when in their own homes. External sounds, particularly traffic and aircraft noise, were regarded as most important.

3.2.8. *Working efficiency:* Apart from its possible effects on the ear, intense noise can cause general fatigue and impair working efficiency. It is particularly distracting in tasks calling for mental concentration. A considerable amount of work has been undertaken in this field by psychologists (e.g. Broadbent, D. E.; (1958) "The effects of noise on an intellectual task", *J. Acoust. Soc. Am*, 30,824 and Carpenter, A. (1962), "Effects of noise on performance and productivity", National Physical Laboratory Symposium No. 12; London, H.M.S.O.). These investigations have shown that, depending on the type of work being done, noise increases the tendency to make mistakes although the rate of working may not apparently be changed.

3.2.9. *Mental health:* Assessing the effect of any single factor on mental health is difficult, as mental illness is usually caused by the action on an individual of a multiplicity of factors. Thus a man who has an unhappy marriage, financial problems, an uncongenial job, few friends and a chronic physical disability is more likely to suffer a breakdown in his mental health than one who has none of these misfortunes, yet it is usually impossible to say that his breakdown was due to any one of his problems in isolation. In other words, it is rarely possible to demonstrate a clear cause and effect relationship between a single source of stress and the onset of a mental illness, but that does not mean that the source stress did not play its part in the production of the illness.

3.2.10. It is for this reason that it would be extremely difficult to demonstrate beyond all possible doubt that loud aircraft noise is a direct cause of mental illness. Such noise, however, is undoubtedly stressful to a far from negligible proportion of people, even at the 35 NNI level, and it is impossible to claim with any degree of certainty that it is not a factor in the production of certain forms of mental illness.

3.2.11. In this connection, reference must be made to paras. 44 to 46 of the Report of the Committee on the Problem of Noise, which can only be described as extremely weak. Para. 44 refers to members of the committee having talked to medical practitioners with practices in the vicinity of a major airport and mentions statements made by these practitioners regarding the incidence of mental illness and the consumption of sedatives and hypnotics. Statements of this kind are devoid of scientific validity and the history of medicine is littered with inaccurate conclusions drawn from such so-called evidence.

3.2.12. Paras. 45 and 46 point to the absence of reliable studies on the effects of noise on mental health. These paras. include reference to studies carried out on crews of United States aircraft carriers and point out that such crews "do not provide a typical cross section of the population." This is a classic under-statement, as aircraft carrier crews are a highly selected group compared with civilian men and women, young and old, living near a major civilian airport.

3.2.13. In para. 291, the Committee on the Problem of Noise refers to an approach which was made to the Medical Research Council with a view to considering the practicability of investigating the effects of noise on the health of people living near an airport. The conclusion was reached that such a study would be most unlikely to produce meaningful results.

3.2.14. The difficulties inherent in trying to settle the question of the inter-relationship between noise

Printed image digitised by the University of Southampton Library Digitisation Unit

and mental illness on a scientific basis are enormous but, in other fields of medicine, it is now accepted that, where there is a suspicion that any factor may be a hazard to health, it should be treated as such until it is clearly demonstrated to be harmless.

3.2.15. Accepting the World Health Organization's definition, it is clear that the noise of an airport at Wing would have an effect on the health of many people. Such matters as loss of sleep can be proven to be harmful; but it is more difficult to prove or to disprove the possible results of other hazards, notably psychological stress resulting from noise. It can be categorically stated that it is impossible, in the light of present knowledge, to prove that noise has no effect on mental health and it must therefore be concluded that a risk exists. Under these circumstances the onus should rest on those who claim that noise has no effect on health to prove their case. Unless or until this can be done, it is important from the health point of view to site a new major airport in an area where the least effect will be produced on the population, and this points to Foulness.

3.3. *Atmospheric pollution*

3.3.1. There are many forms of atmospheric pollution, some of which are known to be highly injurious to physical health whilst others are still the subject of scientific study. As in the case of mental health, the investigation of respiratory disease is complicated by the multiplicity of factors involved. For example, people living near Heathrow airport will be affected by pollution from house fires, industrial chimneys, aircraft, motor vehicles and by their personal smoking habits; whilst the weather conditions will also be of relevance. Separating out the roles played by each of these different components in the production of respiratory disease is not easy, and trying to identify the contribution made by pollution from aircraft engines would be extremely difficult.

3.3.2. Once again, in the absence of proof that atmospheric pollution by aircraft engines is harmless in the neighbourhood of major airports, and in the absence of proof that future engines will be harmless, it is desirable to ensure that the minimum population is exposed to fall-out. This clearly points to the advantages of a site such as Foulness, where the major proportion of the concentrated fall-out would presumably take place over the sea rather than over inhabited areas.

3.4. *Physical injury*

3.4.1. Some aircraft will inevitably crash, and the chances of this happening are known to be greatest around the time of take-off and landing. The conclusion to be drawn here is that the smaller the population living in the area concerned, the less is the likelihood of a major disaster involving residents as well as aircraft passengers. Landing and taking off over the sea would be safest of all from this point of view, and might have the additional merit of raising the chances of survival of the passengers.

4. Particular groups of the population

4.1. *Patients in hospital*

4.1.1. The effects of noise on patients in hospital must be looked upon in a different light from its effects on the population in general, as the former are more sensitive to noise and, in addition, have special requirements. Hospitals make great efforts to secure quietness for patients, particularly if they are seriously ill and there are certain conditions in which exposure to sudden or loud noise can be dangerous, e.g. tetanus, eclampsia, recent myocardial infarction, the cerebral irritation phase after head injury, and acute anxiety states. Many patients in hospital have a special need for adequate and uninterrupted sleep both at night and, in some cases, at other times. Sleep can, indeed, be a vital component of the treatment of some serious conditions such as toxaemia of pregnancy.

4.1.2. There is also need for quietness if patients and their medical, nursing and other attendants are to be enabled to communicate adequately with each other. This is particularly important in the case of psychiatric patients where much of the treatment depends on conversation between patient and doctor, but it also applies to all others and the frequent intrusion of loud aircraft noise is highly disruptive of this process. Cases of unnecessary exposure to radiation could occur owing to X-ray examinations having to be repeated as a result of movement or misunderstanding of instructions. Loud noise can also make such elementary matters as the effective use of a stethoscope more difficult and can have an effect on the concentration of the surgeon as he carries out an operation, or the physician as he seeks to interpret a group of symptoms. Some of the difficulties, from a consultant physician's point of view, are given by Dr. N. Coghill (*New Scientist*, 29th June 1967, pages 768–770) in the light of his experience at a hospital five miles from Heathrow airport.

4.1.3. Thus aircraft noise of a degree which might be acceptable to healthy people would be unacceptable for patients in a hospital and this must be borne in mind in the interpretation of maps which leave such hospitals as Stoke Mandeville a short distance outside the 35 NNI contour line. The need for quietness in the environment of hospitals is universally recognised and the siting of the airport at Wing would have a serious effect, as is shown in Appendix A, based on NNI contours for a four-runway airport, from which the following bed distribution will be seen:

Within 50 NNI contour	123
Within 45–49 NNI contour	800
Within 40–44 NNI contour	19
Within 35–39 NNI contour	0
Within 3 miles of 35 NNI contour	3,361
TOTAL	4,303

Printed image digitised by the University of Southampton Library Digitisation Unit

4.1.4. These figures include a conservative estimate of 700 beds for Milton Keynes General Hospital, but they do not include the 201 beds at Princess Mary's Royal Air Force Hospital, Halton, nor some 2,759 in and around Oxford which, although further from the 35 NNI contour, would nevertheless be affected in some degree. In the latter connection, consideration should be given to the effect on the new major teaching hospital which is currently under construction in the north-east part of Oxford.

4.1.5. Thus the siting of the airport at Wing would have an enormous and harmful effect on hospital facilities. St. John's Hospital at Stone, situated on the 45 NNI contour, has 800 beds for patients suffering from mental illness, and its work would be so severely affected by noise as to render it incapable of adequately serving its function. The Royal Buckinghamshire, Tindal and Stoke Mandeville Hospitals would be affected to a degree which would make life difficult for patients and staff. The proposed district general hospital at Milton Keynes would be similarly affected, and the large number of other hospitals listed in Appendix A* would likewise suffer in varying degree.

4.2. *Residents in nursing homes, welfare homes and mental health hostels*

4.2.1. Many of these should be regarded in the same light as hospital patients, and details of the premises affected are given in Appendix B. This shows that some 73 residents' beds would be within the 50 NNI contour; 27 between the 45 and 50 contours; 98 between the 35 and 40 contours and 772 within two miles of the 35 contour.

4.3. *Dispossession and removal*

4.3.1. It would be wrong to leave this section of my evidence without referring to the 1,400 people whose homes would be demolished to make way for the proposed airport at Wing. This would be bound to have a deleterious effect on the social and mental health of some and the same would be true, although in lesser degree, in the case of those whom, although living beyond the perimeter of the airport, would be forced to move because of noise. Any major industrial development may produce such effects in some measure, but the scale involved in north Buckinghamshire would be large. It would also be reasonable to assume that many of the residents involved had chosen to live in rural tranquillity and the effects on them of being uprooted would be particularly unhappy. Worst of all would be the case of those who might want to move but could not do so because of difficulty in selling their property, and this would undoubtedly add to their state of mental stress.

5. Effects on health services

5.1. The preceding sections, dealing with hospitals and with nursing and other homes, cover one aspect of the effect of aircraft noise on health services, but others should also be mentioned.

5.2. *Community health services*

5.2.1. A substantial number of general practitioners work within the area which would be adversely affected by noise, and this number will increase rapidly as Milton Keynes develops. They, and their supporting staffs of health visitors, nurses, midwives and others, will experience noise nuisance just as will other members of the community but, as the health service workers depend on effective communication with their patients if they are to be able to function effectively, their need for as quiet an environment as possible is understandable.

5.2.2. It should also be noted that, with modern therapy, more patients are nowadays nursed through serious illness at home, without having to be admitted to hospital. They, like hospital patients, often require quietness and sleep to help in their recovery, and this again points to the desirability of siting the new London airport where its undesirable noise effects would be disseminated as far as possible over the sea rather than over an inland area such as north Buckinghamshire.

5.3. *Training centres for the mentally subnormal*

5.3.1. These, although at present the responsibility of local health authorities, are in many ways analogous to schools; and they have particular need of an environment which facilitiates communication between the teacher or instructor and the mentally handicapped child or adult. A total of eight such establishments, supplying training for some 676 mentally subnormal children and adults are, or will be in the next two years, situated within three miles of the 35 NNI contour.

5.4. *Child health clinics*

5.4.1. The need for reasonably quiet working conditions at child health clinics is obvious if adequate physical and psychological assessment of children is to be carried out. Such testing includes the routine investigation of hearing. Numerous clinics, of variable size, are held, mostly in ad hoc premises, within the area which would be affected by noise if an airport were to be constructed at Wing, the situation being summarised as follows:

Within 55 NNI contour	2 clinics
Within 50–54 NNI contour	4 clinics
Within 45–49 NNI contour	5 clinics
Within 40–44 NNI contour	15 clinics
Within 35–39 NNI contour	8 clinics
Within 3 miles of 35 NNI contour	28 clinics
TOTAL	62 clinics

5.5. *School health services*

5.5.1. These are provided at all local authority schools and, once again, a relatively quiet environment is desirable both for consultation and for such special purposes as the testing of hearing, speech therapy, and psychological investigation. Mr. D. P.

Printed image digitised by the University of Southampton Library Digitisation Unit

Davison, Deputy Chief Education Officer, in his evidence,* points out that for a four-runway airport there are at the present time 114 schools, providing education for 22,576 pupils, which would experience a minimum of 30 interruptions exceeding 85 PNdB in a twelve-hour period. The work of a further 74 schools, with a total of 27,729 pupils, and of two child guidance clinics, would also be seriously interrupted by noise in view of the fact that they are situated within one mile of the 35 NNI contour.

6. Conclusion

6.1. I have tried to describe the effects on health and on health services which would arise from the siting of the third London airport at Wing. As far as health is concerned, and accepting the definition of the World Health Organization, aircraft noise is a major factor and the airport would have an effect on a large number of people. In this connection, the Commission's NNI contour map in relation to Wing† should be interpreted with care for, whilst it shows that such centres of population as Aylesbury, Bletchley (and Milton Keynes), Bedford and Oxford as lying outside the 40 NNI line, that does not mean that they would escape from the unpleasant effects of aircraft noise. This statement would apply with particular force to patients in the substantial number of hospitals in or near these towns.

6.2. Such noise would vary with weather conditions, and no guarantee can be given about the amount of nuisance likely to be caused by future types of aircraft, nor can their future number be predicted with certainty. From the particular standpoint of health, it should be remembered that people vary widely in their sensitivity to noise, and a neat line on a map does not mean that substantial numbers of people on what appears to be the right side of it will not suffer as a result of aircraft noise. The Report of the Committee on the Problem of Noise showed that a very substantial minority of people in the general area of Heathrow airport were disturbed, in varying degree, below the 40 NNI level. It must be strongly emphasised that this minority was made up of thousands of individual human-beings and that the same would apply in the case of an airport at Wing.

6.3. In relation to such noise (and to atmospheric pollution arising from aircraft) it cannot be proved that there is no deleterious effect on health, and medical history offers all too many examples of hazards to health which were not recognized as such until many years after their introduction. Thus it was about 350 years after the introduction of tobacco to England before its harmful effects on the lungs and other organs of the body were demonstrated; a certain form of asbestos had been widely used in industry and in the home before it was found to cause a malignant disease; and mercurial teething powders were long regarded as beneficial to babies before their potentially poisonous effect was realised. Similarly, almost a century and a half elapsed between the Industrial Revolution and the realisation that the resulting atmospheric pollution was a serious threat to health.

6.4. These and many other events have led to a gradual shifting of the burden of proof in matters of health. In the past, the burden was on health workers to prove that some new substance, process or activity was detrimental to health, whereas nowadays the onus increasingly lies on the person who wishes to introduce any potential hazard to prove that it will not be detrimental to health. It is my contention that a major airport at Wing would constitute such a hazard to health, as defined by the World Health Organization, and that it should therefore rest upon is proponents to prove the contrary.

6.5. The Industrial Revolution was necessary for the economic development of this country, as is the third London airport. In the case of the Industrial Revolution, however, it was not possible at the time in question to foresee the undesirable secondary effects which it was to produce on the health of the populace, and some of these effects are, indeed, still exacting their toll today. From the experience of history it is essential to ensure that the siting of the airport accords as far as possible with the requirements of the public health, and this points away from an area such as Wing.

---

* p. 1045.

† See attached wallet of maps and diagrams.

APPENDIX A

Hospitals which would be affected by noise from a four-runway airport at Wing

No.	*Name*	*Type*	*Beds*	*NNI contour*	*Notes*	*County*
1	Edgbury, Aspley Heath	Pre-convalescent	73	Within 50 NNI	Would be severely affected	Bedfordshire
2	Daneswood, Aspley Heath	Convalescent	50	Within 50 NNI	Would be severely affected	Bedfordshire
3	St. John's, Stone	Mental illness	800	45–49 NNI	Quietness for communication especially desirable in psychiatric hospital	Buckinghamshire
4	Victoria Cottage Hospital, Thame	General practitioner	19	40–44 NNI		Oxfordshire
5	Royal Buckinghamshire	Orthopaedic surgery and obstetrics	95	Within 1 mile of 35 NNI	This hospital is the accident and emergency centre for the area and all abnormal obstetric work in the area is dealt with here	Buckinghamshire

Printed image digitised by the University of Southampton Library Digitisation Unit

6	Tindal General, Aylesbury	General	253	Within 1 mile of 35 NNI	This hospital is mainly on sloping ground above the Thame Valley facing towards the site of the proposed airport	Buckinghamshire
7	Manor House, Aylesbury	Mental sub-normality	164	Within 1 mile of 35 NNI	Shortly to be rebuilt to provide 330 beds	Buckinghamshire
8	Buckingham	General practitioner	21	Within 1 mile of 35 NNI		Buckinghamshire
9	Bletchley Maternity	Maternity	24	Within 1 mile of 35 NNI		Buckinghamshire
10	Bletchley Diagnostic Clinic	Out-patient	—	Within 1 mile of 35 NNI		Buckinghamshire
11	Steppingley	Geriatric/ convalescent	48	Within 1 mile of 35 NNI		Bedfordshire
12	Bedford General	Full range of general hospital facilities	440	Within 2 miles of 35 NNI	Hospital has two separate components, north and south wings	Bedfordshire
13	Bromham	Mental sub-normality	424	Within 2 miles of 35 NNI		Bedfordshire
14	Stoke Mandeville	General with specialist departments providing international, national, and regional services	756	Within 2 miles of 35 NNI	Large hospital which includes spinal injuries unit with seriously ill and relatively longstay patients	Buckinghamshire
15	Aylesbury General Practitioner Maternity	Maternity	24	Within 2 miles of 35 NNI		Buckinghamshire
16	Aylesbury Isolation	Infectious diseases and geriatric assessment unit	66	Within 2 miles of 35 NNI		Buckinghamshire
17	Milton Keynes General	Full range of general facilities plus possibly regional/ national specialities	Not known yet but possibly in range 700–1,000	Within 2 miles of 35 NNI		Buckinghamshire
18	Winslow	Long stay	110	Within 2 miles of 35 NNI		Buckinghamshire
19	Grove, Linslade	Smallpox	20	Within 2 miles of 35 NNI	Hospital very rarely open	Buckinghamshire
20	Clapham	Geriatric	88	Within 3 miles of 35 NNI		Bedfordshire
21	Westbury Maternity Home, Newport Pagnell	Maternity	16	Within 3 miles of 35 NNI		Buckinghamshire
22	Renny Lodge, Newport Pagnell	Geriatric	112	Within 3 miles of 35 NNI		Buckinghamshire
23	Princess Mary's Hospital, Halton	General	201	5 miles from 35 NNI	R.A.F. hospital, includes renal dialysis unit	Buckinghamshire
24	Wolverton Diagnostic Clinic	Out-patient	—	5 miles from 35 NNI		Buckinghamshire

Oxford: The United Oxford Hospitals at present include some 1,437 beds, in addition to which there are some 1,322 Regional Hospital Board beds in and around the city. A new major teaching hospital is currently under construction in the north-east of Oxford.

APPENDIX B

Nursing homes, welfare homes and mental health hostels which would be affected by noise from a four-runway airport at Wing

No.	*Name*	*Type*	*Beds*	*NNI contour*
1	Oaklands, Woburn Sands	Registered nursing home	12	Within 50 NNI
2	Lynwood, Woburn Sands	Nursing home for mentally infirm	6	Within 50 NNI
3	The Red House, Aspley Guise	Welfare home	24	Within 50 NNI
4	The Holt, Aspley Guise	Welfare home	31	Within 50 NNI
5	Wing Lodge, Wing	Welfare home	27	45–49 NNI
6	Ampthill Cheshire Home, Ampthill	Welfare home	38	35–39 NNI
7	Mental Health Hostel, Kempston	Mental health hostel for adults	25	35–39 NNI
8	Rivermead, Kempston	Home for elderly mentally infirm	35	35–39 NNI

Printed image digitised by the University of Southampton Library Digitisation Unit

9	The Chestnuts, Aylesbury	Welfare home	47	Within 1 mile of 35 NNI
10	Tindal Hospital, Aylesbury	Accommodation for the elderly	42	Within 1 mile of 35 NNI
11	Leonard West Home, Aylesbury	Welfare home	39	Within 1 mile of 35 NNI
12	Homeleigh, Aylesbury	Accommodation for the elderely	8	Within 1 mile of 35 NNI
13	The Gables, Aylesbury	Registered nursing home	9	Within 1 mile of 35 NNI
14	Oaklands, Aylesbury	Mental health hostel	30	Within 1 mile of 35 NNI
15	Rosebank, Aylesbury	Mental health hostel	12	Within 1 mile of 35 NNI
16	The Coppice, Bletchley	Welfare home	43	Within 1 mile of 35 NNI
17	Manor House, Swanbourne	Welfare home	16	Within 1 mile of 35 NNI
18	Norrill, Bletchley	Mental health hostel	30	Within 1 mile of 35 NNI
19	Mount Tabor, Wingrave	Nursing home for mentally infirm	19	Within 1 mile of 35 NNI
20	The Cedars, Ampthill	Welfare home	105	Within 1 mile of 35 NNI
21	Westlands, Leighton Buzzard	Welfare home	43	Within 1 mile of 35 NNI
22	Waverley, Bedford	Welfare home	18	Within 1 mile of 35 NNI
23	Russell House, Bedford	Welfare home	21	Within 1 mile of 35 NNI
24	36 Castle Road, Bedford	Welfare home	14	Within 1 mile of 35 NNI
25	Cheltondale, Castle Road, Bedford	Registered nursing home	10	Within 1 mile of 35 NNI
26	Parkside, Bedford	Welfare home	40	Within 1 mile of 35 NNI
27	The Manor House, Biddenham	Registered nursing home	17	Within 1 mile of 35 NNI
28	The Walnuts, Simpson	Mental health hostel	12	Within 2 miles of 35 NNI
29	Ferndale, Flitwick	Welfare home	43	Within 2 miles of 35 NNI
30	Highfield, Bedford	Welfare home	40	Within 2 miles of 35 NNI
31	St. Madeleine's, Bedford	Welfare home	15	Within 2 miles of 35 NNI
32	61 De Parys Avenue, Bedford	Welfare home	17	Within 2 miles of 35 NNI
33	47 De Parys Avenue, Bedford	Welfare home	17	Within 2 miles of 35 NNI
34	9 Oaklands Road, Bedford	Welfare home	8	Within 2 miles of 35 NNI
35	Salvete, 15 Rothsay Place, Bedford	Welfare home	10	Within 2 miles of 35 NNI
36	The Haven, Park Avenue, Bedford	Welfare home	14	Within 2 miles of 35 NNI
37	The Dial House, Park Avenue, Bedford	Registered nursing home	25	Within 2 miles of 35 NNI
38	Mental Health Hostel, Bedford	Mental health hostel for the mentally ill	8	Within 2 miles of 35 NNI

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Buckinghamshire, Bedfordshire and Oxfordshire County Councils

SUBMITTED BY MR. D. P. DAVISON*

I am a Master of Arts of the University of Oxford and hold the Diploma of Education of the University of London. I have taught for three years in primary and secondary schools and have seventeen years' experience of educational administration. I am the Deputy Chief Education Officer for the County Council of Buckinghamshire.

1. The intrusion of aircraft noise on teaching has been a matter of deep concern to the Buckinghamshire Education Authority for several years. Schools sited in parts of the Borough of Slough and parts of the Eton Rural District are gravely affected by the intrusion of noise from aircraft using Heathrow. On the basis of direct experience, therefore, the Buckinghamshire Education Authority feels strongly that the possible establishment of an even greater noise zone in a second area of the county would be greatly to the disadvantage of children and students using the education service.

2. Frequent interruptions from aircraft noise make the teachers' task markedly more difficult and more exhausting. Oral methods of teaching lie at the root of much of the work being done during the school day. Informal drama, speech training, class discussion and the reading aloud of prose and poetry are essential elements in the teaching of English. In the early stages of the teaching of a foreign language oral methods are usually adopted, and follow-up work depends on the use of audio-visual aids. Interruptions which make speech inaudible break the continuity of the lesson and the concentration of the children. Problems of this kind will arise from time to time in all fields of study. It should not be overlooked that out of doors physical education, games and swimming instruction, practical mathematics and rural studies are all facets of school life which will be inhibited by frequent aircraft noise interruptions: some learning activities (e.g. javelin, discus throwing and swimming) involve a greater degree of risk if the instructor's voice becomes temporarily inaudible.

3. The Headmaster of one of our schools close to Heathrow has written to me in the following terms:

> "The aircraft which are 'very noisy indeed'—about one in twelve of those passing nearby—come so close to the school that normally loud speech becomes unintelligible for eight to fifteen seconds. For another twenty seconds activity in the classroom is interrupted. Most of my children and staff stop whatever they are doing until the noise has receded. The damage is not so much in the short spell of inaction as in the breaking of attention. A skilful teacher working to a planned lesson scheme and utilising spontaneous response from the children has created an atmosphere; the children want to learn; they are most actively involved; music or a poem, or a short story is seen to be highly relevant to life; learning is unexpectedly vivid . . . then the aircraft roars in from London, it forces itself upon us, and for a few seconds there is nothing else one *can* be aware of; and when the aircraft has gone it has taken the children's fixed concentration with it. The teacher changes the subject, goes off at a tangent, sometimes closes the lesson, or works on trying to provide the insight he had almost given."

4. There are some situations when it is not possible to have a speech pause in the classroom while aircraft are passing over. Children's work and broadcast programmes are frequently recorded on to tape, and this process is vulnerable to external noise interference. Where a group is learning through the medium of television, radio or film, interruptions from aircraft noise can destroy the continuity of a whole lesson by drowning the spoken word, and it would be impractical to repeat the same lesson a second time.

5. Nor is it always possible to suspend activity in a practical demonstration in subjects such as science, engineering or catering because of the intrusion of aircraft noise. When speech is drowned it is possible for a vital stage in the lesson to be missed. This type of teaching is much used not only in schools but also in Colleges of Further Education. The staff of the Slough College of Technology, which is subject to intrusive aircraft noise from Heathrow, have already expressed concern at the effect this has on the teaching programme of the College. If the airport is established at Cublington there will be two Colleges of Further Education, one at Aylesbury and one at Bletchley, within one mile of the 35 NNI contour. It is estimated that between them they will in the early nineteen-seventies have an average daily attendance of 4,700 students. An increasing number of students will be adults attending short, highly concentrated part-time courses, to keep up to date with developments in their own specialised fields of work. Time and effort will be wasted unless they have reasonably quiet and uninterrupted conditions in which to study.

* See also p. 1549.

Printed image digitised by the University of Southampton Library Digitisation Unit

6. If the third London airport is sited at Cublington it will be necessary to carry out sound insulation work at the schools which are going to be most seriously affected by noise.

7. The method which has been used to assess the extent of noise interference at schools and to estimate the cost of the remedial work required is exactly the same as that given in the evidence of Mr. J. A. Springett,* Deputy Chief Education Officer for Essex County Council, at the Foulness Stage II inquiry, and by Dr. E. E. L. Owens,† Deputy Chief Education Officer of Hertfordshire at the Nuthampstead Stage II inquiry. It is briefly summarized for convenience:

7.1. Mr. Fleming (in his evidence) has provided information about the frequency and intensity of noise interruptions at each school site within the vicinity of the airport.

7.2. At those schools where the outside noise intensity reaches or exceeds 85PNdB and the number of such noise incidents reaches 30 in a 12 hour period, i.e. 4 per peak hour, it has been assumed that remedial work must be undertaken.

7.3. I am advised that there are broadly three alternative specifications which would be applied to increase the sound insulation properties of school buildings, giving respectively a sound reduction of 20 dBA, 25 dBA and 40 dBA. Appendix EC 1 summarises the work involved in each specification and gives details of the estimated cost in terms of square feet of area of accommodation. To these figures 12 per cent must be added to cover architects' and other professional fees.

7.4. In order to estimate the cost of achieving a satisfactory reduction in noise levels at those schools where the number of speech interruptions reaches 30 in a 12 hour period, the following criteria have been applied:

Outside noise intensity	*Reduction treatment*
85– 94 PNdB	20 dBA
95– 99 PNdB	25 dBA
100–115 PNdB	40 dBA

The cost of treating affected schools has then been calculated by use of the specifications referred to in para. 7.3 above, and described in Appendix EC 1.

8. A list of the schools where a two runway airport would cause the outside noise intensity to reach or exceed 85 PNdB for a minimum of 30 interruptions in a 12 hour period is attached in Appendix EC 2. Similar information for a four runway airport is attached in Appendix EC 3. Numbers on roll at each school for 1969 are also shown. Information about the Bedfordshire and Oxfordshire schools has been made available by the Chief Education Officers of those Authorities, and Mr. Fleming's investigations have included school sites likely to be affected in these areas. It will be seen that a two runway proposal will make it necessary to carry out some sound insulation work at 102 schools containing 20,102 pupils. In the event of a four runway proposal an additional 12 schools containing 2,474 pupils would require some sound insulation. The total numbers of pupils given above are based on the actual position in 1969. In addition, thirteen new schools, or major extensions to existing schools, are to be started by 1974 in areas where soundproofing will be necessary. These are shown in Appendix EC 4, and the cost of soundproofing them has been included in the estimates given in para. 9 below. This list of new schools would have to be substantially enlarged if it were decided—as might well be the case—that it would be more sensible on economic grounds to go straight ahead and replace some existing old schools by new sound-proofed buildings.

9. The cost of sound insulation work to schools for the two runway proposal is estimated at £3,006,466. The expenditure of an additional £735,665 would be necessary for a four runway proposal. A breakdown of those costs between the affected Authorities is given in Appendix EC 5.

10. Soundproofing brings accompanying disadvantages with it. Because all windows have to be kept permanently shut, sound-proofed schools have to rely entirely on a powered ventilation system. Once this breaks down work inside the classrooms can be brought to a standstill. I have visited schools in the vicinity of Heathrow which have had soundproofing treatment. One of these was built as a sound-proofed and air-conditioned school at a cost approximately 50 per cent above normal cost limits. The hall has massive beams and air ducts across the width of its ceiling, and has only high level windows. The scarcity of windows at eye level results in poor natural lighting in the classrooms, and undue reliance on artificial light. Because doors let in sound, no direct access from classrooms to outdoor teaching areas has been provided. There is an accentuation of all internal noises because of sound-proofing. The combined effect of these shortcomings has produced a school environment which, in spite of the extra money spent upon it, is less than fully satisfactory.

11. Finally, it should not be overlooked that the NNI contours shown on plans CTLA/3/2 and CTLA/3/3* are of necessity approximate, and give only a general indication of the areas likely to be affected. There is a large population living up to one mile outside the 35 NNI contour line as at present shown. There are no less than 74 schools containing 27,729 pupils now in these areas, and 15 new schools due to be started by 1974 which, while they do not fall into the category mentioned in para. 8 and so would not receive remedial treatment, would nevertheless suffer disturbance to their work.

* *Papers and Proceedings*, vol. III.
† *Papers and Proceedings*, vol. IV.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX EC 1

Sound insulation work at schools (abridged statement of work required)

SYSTEM BUILT SCHOOLS	*Degree of sound insulation* 40 dB	25 dB	20 dB
Protection of outer shell			
Changing opening windows to fixed glazing			×
Heavy glass and fixed glazing		×	
Double glazing walkway and duct	×		
Fixing inner glazing for double glazing	×		
Treatment of non-glazed wall area and fascias	×	×	(×)
Closing of roof light and compensation by artificial light	×	×	(×)
Heating and Ventilation			
Powered ventilation (fans, ducts and controls)	×	×	×
External motorised louvre blinds	×	×	×
Internal Modification			
Sound absorbent ceilings	×	×	(×)
Door treatment	×	×	(×)
PRE-1914 HEAVY CONSTRUCTION			
Protection of outer shell			
Changing to fixed glazing with medium glass			×
Changing to fixed glazing with heavy glass		×	
Double windows	×		
External doors	×	×	×
Floor insulation	×		
Ceilings	×	×	×
Heating and Ventilation			
Heating and Air equipment	×	×	×
External motorised louvre blinds	×	×	×
Internal Work			
Sound absorbents	×	×	×
Doors	×	×	×

× indicates work is required for degree of sound insulation indicated.

(×) indicates work may be required for degree of sound insulation indicated.

Costs, in shillings, of work set out above per square foot of floor area in examples worked

	40 dB	25 dB	20 dB
Post-1945 system building	89–90	50–52	39
Pre-1914 Heavy construction	93	70	66
Consultants' interpolated cost for post-1914 traditional type of building	90	55	40
New schools to be built	60	43/6	35

The foregoing figures do not include professional fees but do include (for all except new schools not yet built) an element of 18 per cent for:

(a) Alterations to drainage, paths, gardening and other incidentals consequential on the works indicated.

(b) Probable unpopularity of this form of work, especially under likely employment conditions in vicinity of airport and restriction on access to school buildings in term time.

(c) Capitalisation of additional running and maintenance costs.

APPENDIX EC 2

Schools affected by noise to an extent which requires protective work to be undertaken—2-runway operation

BUCKINGHAMSHIRE	*No. on roll*
Adstock County Primary	41
Moulsoe County Primary	27
Aston Abbotts C.E. Primary	45
Chearsley County Primary	39
Chilton County Primary	56
Cuddington C.E. Primary	73
Dinton C.E. Primary	59
Great Brickhill C.E. Primary	62
Grendon Underwood C.E. Primary	162
Haddenham County Primary	292
Hardwicke C.E. Primary	42
Lower Winchendon C.E. Primary	21
Long Crendon C.P.	213
Marsh Gibbon C.E. Primary	56
North Marston C.E. Primary	88
Preston Bissett C.E. Primary	33
Quainton C.E. Primary	85
Steeple Clayton County Primary	97
Stoke Hammond C.E. Primary	61
Stone C.E. Primary	142
(Stewkley C.E. Primary (within airport boundary)	111)
Twyford C.E. Primary	46
Waddesdon County Primary	103
Waddesdon C.E. Primary	81
Padbury C.E. Primary	63
Wing County Primary	197
Westcott C.E. Primary	62
Little Brickhill C.E. Primary	28
Long Crendon, Bernewode County Secondary	216
Waddesdon C.E. Secondary	174
	2,775
BEDFORDSHIRE	
Aspley Guise, Fulbrook C. Secondary	199
Aspley Guise County Primary	81
Aspley Heath County Primary	375
Bedford, St. Gregory's R.C. Secondary	434
Bedford, St. Joseph's R.C. Junior	402
Bedford, St. Joseph's R.C. Infant	261

Printed image digitised by the University of Southampton Library Digitisation Unit

	No. on roll
Bedford, Westfield C. Secondary	565
Heath V.P.	85
Houghton Conquest C.P.	121
Husborne Crawley C.P.	81
Kempston, Robt. Bruce C. Secondary	566
Kempston, Balliol C.P.	306
Kempston, Bedford Road C.P.	527
Kempston, Springfiled C.P.	158
Kempston, Up End C. Infant	197
Kempston, Special School	140
Kempston, Rural C.P.	105
Lidlington C.P.	101
Millbrook C. Infant	15
Milton Bryan V.P.	16
Ridgmont C.P.	83
Stewartby County Secondary	461
Stewartby Broadmead C.P.	132
Woburn C.P.	71
Wootton C.P.	338
Dunstable, Kingsbury Secondary	498
Dunstable, Qn. Eleanor's Secondary	515
Dunstable, Brewer's Hill Secondary	658
Dunstable, Beecroft County Junior	534
Dunstable, Chilton Road Primary/Infant	245
Dunstable, Icknield Primary/Infant	246
Dunstable, Lancott Primary	177
Dunstable, Lowther Primary	299
Dunstable, Watling Junior	395
Hockliffe V.A. Primary	45
Stanbridge C. Primary	149
Park Field Secondary	215
St. George of England Primary	427
Totternhoe C. Primary	219
Eaton Bray C. Primary	130
Eggington	20
Chalgrave	31
Bedford, Ampthill Road C. Primary	277
Bedford, Ampthill Road C. Infant	241
Bedford, Clapham Road Junior	355
Bedford, Clapham Road Infant	271
Bedford, Manton C. Primary	302
Bedford, Pearcey Road Junior	269
Bedford, Pearcey Road Infant	193
Bedford, Pearcey Road Nursery	44
Bedford, Priory Street Infant	165
Bedford, Queen's Park Junior	463
Bedford, Queen's Park Infant	282
Leighton Buzzard, Beaudesert C.P.I.	363
Leighton Buzzard, The Cedars	577
Leighton Buzzard, Dovery Down C. Primary	147
Leighton Buzzard, Heathwood C. Primary	150
Leighton Buzzard, Mary Bassett C. Junior	285
Leighton Buzzard, Pulford's V.A.	141
Linslade, County Secondary	245
Linslade County Primary	535
	15,928

Oxfordshire	
Great Milton C.E.	81
Little Milton C.P.	27
Stadhampton C.P.	63
Aston Rowant C.E.P.	52
Chinnor C.E. P.	546
Chinnor proposed C.P.	280
Finmere C.E. P.	49
Great Haseley Endowed	86
Fringford C.E. Primary	62
Hethe C.E. Primary	15
Garsington C.E. Primary	138
	1,399
	20,102

Appendix EC 3

Additional schools affected by noise to an extent which requires protective work to be undertaken—4-runway operation

Buckinghamshire	*No. on roll*
Bow Brickhill C. Primary	80
Bartholomew Tipping County Sec. Stokenchurch	307
Stokenchurch C. Primary	274
Bletchley-Water Eaton Junior	231
Bletchley-Manor Road Infant	135
	1027

Bedfordshire	
Haynes C. Primary	48
Marston Moretaine, Church End C.Pr.	181
Marston Moretaine, Shelton C. Pr.	77
	306

Oxfordshire	*No. on roll*
Thame, Lord William's Grammar	235
Thame, The Wenman C. Secondary	382
Thame, Rycotewood College	471
Tetworth C. Primary	53
	1141
	2474

Appendix EC 4

Extensions and new schools to be started by 1974 in areas where sound insulation will be required

	No. of places	*Cost of sound insulation*
Whitchurch County Primary	160	£24,000
Haddenham County Middle	320	£26,100
Steeple Claydon C. Combined	320	£21,000
Haddenham County First	320	£26,100
Wing County Primary Extension	160 +	£14,000
Kempston Upper	1,100	£131,250
Kempston Middle	600	£43,750
Linslade Lower	480	£29,750
Thame Proposed R.C.	120	£12,250
Lord William's Grammar	Ext. to 10 f.e.	£8,750
Thame Proposed C. Primary	280	£17,500
Chinnor Proposed County Primary	280	£17,500
Chalgrove County Primary	Ext. by 120 places	£12,250
		£388,200

Printed image digitised by the University of Southampton Library Digitisation Unit

Breakdown of soundproofing costs (for existing and programmed schools)

	2 Runway Proposal	*Additional Cost for 4 Runway Proposal*
Buckinghamshire	£642,284	£145,423
Bedfordshire	£2,212,442	£26,425
Oxfordshire	£151,740	£563,817
Total	£3,006,466	£735,665

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidencé of Buckinghamshire County Council

SUBMITTED BY MR. D. B. ROSE*

I am an Associate of The Royal Institute of Charted Surveyors and an Associate of The Incorporated Society of Valuers and Auctioneers and have been the County Valuer and Estates Officer for Buckinghamshire County Council since October 1963. Prior to that I was with the District Valuer in Bristol, Trowbridge and Bedford and before that I was in private practice. I wish to make clear at once that my own home at Stewkley (Pond House, High Street) is included within the perimeter of the Airport site and I have endeavoured to exclude any possible bias resulting from this in my proof of evidence.

I have been requested by the County Council to tender my advice on

(a) the effect on property values likely to be produced by the Third London Airport, and

(b) the likely cost of acquiring all the properties in 7,500 acres which I understand is the approximate area required for the airport itself.

(a) First phase

It is estimated from a recent survey carried out by the County Planning Officer that some 530 (five hundred and thirty) separate hereditaments lie in the area covered by the airport, and from the date the scheme for the Wing–Cublington area was first made public it was evident that no further land transactions could or would be carried out, and that a planning blight had descended on the 7,500 acres, at least until a firm decision had been taken as to choice of site. This period of uncertainty will and has already caused serious financial embarrassment to a number of owners who have properties in the market for sale, and which are at present unsaleable. This period may well last for twelve months or perhaps longer.

Outside the actual airport site and within the noise nuisance area i.e. within the 50 NNI contour line there exists a much larger number of residential agricultural and business hereditaments (Set out in *Schedule 1* attached).† During the period of uncertainty which I have already mentioned, the financial embarrassment to owners who wish to sell will be and is just as acute as that suffered by owners on the airport site. This embarrassment will not be tempered by the prospects of being able to sell to the Airport Authority, for there will be no compensation available from that Authority apart from a possible sound proofing grant.

So much for the effect on property values within and outside the acquisition site for the period up to the definite selection of the approved site. It will not so much be a drop in values, as a complete stagnation in sales. In the one case of which I am aware, of an owner being forced to sell, the individual concerned had to take a reduction on a previously agreed price of a substantial amount.

The next phase

The next phase would be the period up to the time the airport was operational, and this will be the period of maximum loss to property owners. It can be assumed that during this phase the land required for the airfield site will be in the process of being acquired. Quite apart from the vast increase of road traffic and in particular of large contractors lorries and equipment, the prospect of aircraft noise will in my opinion drive owners of most if not all of small, medium and large size country houses and residential farms (outside the airport site but within the 50 NNI contour) to put their properties on the market with a view to removal to quieter parts of the country.

The market will, of course, be completely saturated and demand would be virtually non-existent. Any comparison with the demand past and present for properties around Heathrow is clearly misleading where the enormous pressures of the London area for houses more than counterbalance the noise nuisance at Heathrow. The Wing–Cublington area is at the moment a locality where people choose to live to be away from such places as Heathrow, and the many houses of character and antiquity situated in a virtually unspoiled part of rural Buckinghamshire would be completly out of place adjoining the horrors of an international airport, I would expect such properties to depreciate in value by a substantial amount, and in may cases might become unsaleable.

The third phase

The third phase I visualize, would start when the airport is about to become operational, i.e. in not less than 5 years from now. (This could well be a considerable underestimate.) By this time the demand for houses for those employed on the airfield will begin to be felt. The larger houses of some quality and a number of listed houses of antiquity and outstanding architectural merit would not in any case be likely to suit the requirements of these people and

* See also p. 1549.

† Not reproduced. Available for inspection by arrangement at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

would become a drug on the market. The smaller properties away from the noise would, however, be very much in demand, and only later when a housing shortage developed would people be forced to choose the properties within the noise-nuisance area as a last resort. Some trading or industrial concerns would certainly appreciate in value.

I have dealt so far with owner-occupied property but the plight of most tenants is in its way just as serious. Local Authority Council House tenants would, of course, expect to be rehoused at public expense if their homes were acquired for the Airport, but tenants of all types of houses outside the Airport would have to suffer all the consequences of the noise and be in no position either, to move to other quieter rented accommodation—which is practically impossible to obtain even in normal times. In the flight from the area, not having a property to sell, they would be in a hopeless position to compete for houses.

With regard to agricultural holdings of which the County Council Small Holdings Department own and manage 12 wholly within the airfield and 5 partly inside the airfield, the effect particularly on Dairy and Stock Farms will be most serious. The land in this part of the County is on the heavy side with much permanent pasture, and the farming methods on those farms which survive would have to undergo drastic changes, with no compensation available.

It is more difficult to assess the effect of the noise-nuisance on individual assessments for Rating Purposes, but from Appeals to the Lands Tribunal in at least two cases a reduction of about 25 per cent was obtained in the Gross Values of the dwelling-houses concerned on account of noise from aircraft in the vicinity of an airport. (The cases referred to were W. E. Abbot *v.* E. G. Le-Grys and W. H. Budge *v.* W. C. Price. See *Schedule 2* attached).

(b) As already noted above, the County Planning Officer has recently listed the properties to be acquired as set out in *Schedule 3* attached, and I have briefly inspected the great majority of these properties, (apart from some of the smallholdings and areas of agricultural land which would require a good deal more time to inspect than has been available to me. I have dealt with this latter category on the basis of current price per acre).

The total value of the property which is included within the perimeter of the airfield on the basis of the Land Compensation Act 1961 is in my opinion £5,401,175 included in this figure is an allowance for disturbance.

I have not included any figure for any of the parish Churches or Chapels, as some of these buildings are beyond price and no figure that I could imagine could compensate for the loss in particular of the Late Norman Parish Church of St. Michael at Stewkley. Nor have I included the value of such things as local authority sewers, electricity high tension cables, telephone service installations etc.

SCHEDULE 1

Properties outside airport but within 50 NNI (contour) (arranged in Local Authority Rural District and Parishes)*

SCHEDULE 2

Relevant Lands Tribunal cases
Property affected by adjacent airports: reductions of existing rateable values

1. **W. E. Abbott** *v.* **E. G. Le-Grys (Valuation Officer)** The ratepayer complained about the noise from a wind tunnel used by the Aircraft Research Association. The main question was how far the appellant's house was affected more than other dwellings farther away.

The valuation officer referred to two earlier decisions of the tribunal in favour of the valuation officer, one concerning noise from a maintenance department at London Airport and another from Manchester airport. Mr. John Watson pointed out that the appellant's house and a few other houses directly facing the wind tunnel received this noise in full blast, and the conditions were different from those described in the London airport case.

It was wrong that this house should be assessed on the same basis as comparable houses more distant from the tunnel. The gross value was reduced by £17. Mr. Watson remarked that as it was the duty of a valuation officer to correct any errors in his list, this decision might result in other amendments.

2. **W. H. Budge** *v.* **W. C. Price (Valuation Officer)** The dwelling was near Southend airport and the gross value had already been reduced by £25 in the new valuation list. Since then there had been developments in aircraft, ending with jets, and said Mr. Watson, it was well established that they made the worst noise of all, particularly at take-off.

It was decided that this was something which a tenant in April 1963 could not reasonably have expected to occur, and a prospective tenant in October 1967 (when the proposal was made) would have paid less rent than in April 1963. A reduction of £12 was granted.

* Not reproduced. Available for inspection by arrangement at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

SCHEDULE 3

Properties within airport site
(*outlying* agricultural holdings not separately identified)

Stewkley

4 new houses under construction, Soulbury Road
2 Wing Road
4 Wing Road
8 Wing Road
12 Wing Road
16 Wing Road
20 Wing Road
Orchard Close, Soulbury Road
3 Wing Road
6 Wing Road
10 Wing Road
14 Wing Road
18 Wing Road

---

3 Dunton Road
7 Dunton Road
9 Dunton Road
13 Dunton Road
17 Dunton Road
21 Dunton Road
Michaelmas Cottage, Dunton Road
Hollandia, Dunton Road
6 Dunton Road
12 Dunton Road
16 Dunton Road
20 Dunton Road
22A Dunton Road
Trinity House, Dunton Lane
30 Dunton Road
34 Dunton Road
Salins, Dunton Road
Hilltop, Dunton Road
5 Dunton Road
7 South Lane
11 Dunton Road
15 Dunton Road
19 Dunton Road
The Pines, Dunton Road
South End Farm, 31 Dunton Road
2 Dunton Road
8 Dunton Road
14 Dunton Road
18 Dunton Road
22 Dunton Road
24 Dunton Road
28 Dunton Road
32A Dunton Road
36 Snowdrop Cottages, Dunton Lane
New Bungalow, Dunton Road

---

13 Orchard Lane (Polhams Farm)
15 Orchard Lane (Orchard Cottage)
18 Orchard Lane (Inglewood)
17 Orchard Lane (Lane End)
14 Orchard Lane
16 Orchard Lane (Malabar)
20 Orchard Lane

---

1 High Street South
5 High Street South
9 High Street South
13 High Street South
17 High Street South
35 High Street South
39 High Street South
43 High Street South
47 High Street South
77 High Street South
81 High Street South
85 High Street South
89 High Street South (Farthing Hedge)
97 High Street South
103 High Street South
111 High Street South (Breach Farm)
8 Taylors Lane off High Street South
30 High Street South
34 High Street South
Walducks Farm
38A High Street South
42 High Street South
46 High Street South
50 High Street South
54 High Street South
58 High Street South
60A High Street South
66 High Street South
Silver Birch Close, High Street South
76 High Street South
90 High Street South
3 High Street South
7 High Street South
11 High Street South
15 High Street South
29 High Street South
37 High Street South
41 High Street South
75 High Street South
Grove House, High Street South
83 High Street South
87 High Street South
95 High Street South
99 High Street South
105 High Street South
123 High Street South
22 High Street South
32 High Street South
36 High Street South (Dovecote House)
Manor Farm, 38 High Street South
40 High Street South
44 High Street South
48 High Street South
52 High Street South
56 High Street South (Orchard House)
60 High Street South
62 High Street South
68 High Street South
74 High Street South
88 High Street South
94 High Street South

Printed image digitised by the University of Southampton Library Digitisation Unit

Council houses in Dove Street (50)	Council bungalows in Dove Street (4)
1 Ivy Lane (Old Timbers)	2 Ivy Lane
4 Ivy Lane	5 Ivy Lane
6 Ivy Lane	12 Ivy Lane
14 Ivy Lane (Little Dormas)	16 Ivy Lane
18 Ivy Lane	28 Ivy Lane
30 Ivy Lane	32 Ivy Lane
34 Ivy Lane	
Penfold End Farm, Chapel Square	4 Chapel Yard
5 Chapel Yard	8 Chapel Yard
10 Chapel Yard	6 Chapel Yard (Fern Cottage)
1 Fishweir	3 Fishweir
5 Fishweir	7 Fishweir
8 Fishweir	9 Fishweir
6 Fishweir	10 Fishweir
14 Fishweir	12 Fishweir
1 High Street North	3 High Street North (Maytree Cottage)
5 High Street (Delamere Cottage)	6 High Street North
7 High Street	9 High Street North
11 High Street	21 High Street North (Homelands)
23 High Street North	25 High Street North
27 High Street North	29 High Street North
31 High Street North	43 High Street North
45 High Street North	37 High Street North
39A High Street North	41 High Street North
45A High Street North (Arncote)	45B High Street North (Homewood)
47 High Street North	49A High Street North
49 High Street North (The Retreat)	Antique shop & 3 lock-up garages
55 High Street North	57 High Street North
57A High Street North	59 & 59A High Street North (Sycamore Farm)
61 High Street North	65 High Street North
63 High Street North	67 High Street North (The Little House)
69 High Street North	71 High Street North
71A High Street North	73 High Street North
75A High Street North	75 High Street North
77 High Street North	New police house, office & garage, High Street North
16 Old Persons' Bungalow High Street North (Sycamore Close)	79 High Street North (Stockhall Crescent)
83 High Street (Stockhall Crescent)	81 High Street North (Stockhall Crescent)
87 High Street (Stockhall Crescent)	85 High Street North (Stockhall Crescent)
91 High Street (Stockhall Crescent)	89 High Street North (Stockhall Crescent)
95 High Street (Stockhall Crescent)	93 High Street North (Stockhall Crescent)
Sub-station site (Stockhall Crescent)	97 High Street North (Stockhall Crescent)
105 High Street North (Stockhall Crescent)	101 High Street North (Stockhall Crescent)
107 High Street North (Stockhall Crescent)	113 High Street North (Stockhall Crescent)
111 High Street North (Stockhall Crescent)	109 High Street North (Stockhall Crescent)
117 High Street North	115 High Street North (Stockhall Crescent)
121 High Street North	119 High Street North (Stockhall Crescent)
125 High Street North	123 High Street North (Stockhall Crescent)
129 High Street North	127 High Street North (Stockhall Crescent)
137 High Street North	135 High Street North (Stockhall Crescent)
139 High Street North	137A High Street North (Stockhall Crescent)
141 High Street North	139A High Street North (Stockhall Crescent)
145 High Street North	143 High Street North
149 High Street North	147 High Street North
153 High Street North	151 High Street North
157 High Street North	155 High Street North
161 High Street North	159 High Street North
165 High Street North	163 High Street North
169 High Street North	167 High Street North
173 High Street North	171 High Street North
177 High Street North	175 High Street North
181 High Street North	179 High Street North
187 High Street North	185 High Street North

Printed image digitised by the University of Southampton Library Digitisation Unit

2 High Street North (The Vicarage)
8 High Street North (The Vines)
12–14 High Street North
18 High Street North
22 High Street North
28 High Street North
30A High Street North
28A High Street North
36 High Street North (Bonham Farm)
40 High Street North
44–46 High Street North (Post Office store)
48A High Street North
52 High Street North
62 High Street North
66 High Street North
78 High Street North
80 High Street North
83 High Street North
86 High Street North
90 High Street North
94 High Street North
98 High Street North
103 High Street North
106 High Street North
112 High Street North (Ivy Dene)
120 High Street North
130 High Street North
132 High Street North
140A High Street North
142A High Street North
144 High Street North
146 High Street North
160 High Street North
Stewkley Garage, High Street North
The Swan, High Street North
Kings Head, High Street North

4 High Street North (Church Farm)
10 High Street North
16 High Street North
20 High Street North
24 High Street North
30 High Street North
30B High Street North
32 High Street North (bus garage)
38 High Street North
42 High Street North
48 High Street North
50 High Street North
60 High Street North
64 High Street North
68 High Street North
High Street North (garage and filling station)
82 High Street North
84 High Street North
88 High Street North (Stewkley Cottage)
92 High Street North (Laurel Farm)
96 High Street North
102 High Street North
104 High Street North
110 High Street North
114–118 High Street North (Grocer shop)
128 High Street North
130A High Street North
134 High Street North
140 High Street North
142 High Street North
144A High Street North
158 High Street North
Hayward House, High Street North
The White Horse, High Street North
Carpenters Arms, High Street South

---

1 Stewkley Dean Road
3 Stewkley Dean Road
5 Stewkley Dean Road
7 Stewkley Dean Road
9 Stewkley Dean Road
11 Stewkley Dean Road
13 Stewkley Dean Road
Sub-station site

2 Stewkley Dean Road
4 Stewkley Dean Road
6 Stewkley Dean Road
8 Stewkley Dean Road
10 Stewkley Dean Road
12 Stewkley Dean Road
14 Stewkley Dean Road

---

7 Bletchley Road
10 Bletchley Road
14 Bletchley Road
18 Bletchley Road

8 Bletchley Road
12 Bletchley Road (Building plot)
16 Bletchley Road

Village hall
School

Library

Littlecote Farm, Dunton Road
Littlecote Dunton Road
Printhorn Farm
North Farm, Littlecote
Kingsbridge Farm
Stewkley Kiln Farm
Bury Farm

The Elms, Dairy Farm, Littlecote
The Cottage, Dunton Road
Kiln Cottage, Dunton Road
Warren Farm
Kiln Farm
Mount Pleasant Farm, Dunton Road

Cublington
Mead Cottage, High Street
St. Nicholas Cottage, High Street
The Old Rectory, High Street
The Cottage, Church Path

The Old Post Office (opposite Bell Close)
Bell Cottage, High Street
Denchfield Cottage, High Street
Church Path, off High Street

---

1 Bell Close, off High Street
5 Bell Close
16 Bell Close
4 L/A Garages, Bell Close

2 Bell Close
12 Bell Close
14 Bell Close
South End Farm

Printed image digitised by the University of Southampton Library Digitisation Unit

1 Silver Street
3 Silver Street
5 Silver Street
7 Silver Street
9 Silver Street
11 Silver Street
13 Silver Street
15 Silver Street
25 Silver Street

2 Silver Street
4 Silver Street
6 Silver Street
8 Silver Street
10 Silver Street
12 Silver Street
14 Silver Street
16 Silver Street
27 Silver Street (Hill View)

---

2 Whitchurch Road
10 Whitchurch Road (Fern Cottage)
14 Whitchurch Road
18 Whitchurch Road
22 Whitchurch Road

4 Whitchurch Road
12 Whitchurch Road
16 Whitchurch Road
20 Whitchurch Road

Old House Farm Ridings Way
Manor Farm Ridings Way

Ridings Farm, Ridings Way
Ridings Cottage, Ridings Way

Cublington Cottage, Wing Road
Old School Premises, Wing Road

Manor Farm Cottage, Wing Road

Walnut House, Aston Abbotts Road
Lane Side, Aston Abbots Road

Yew Tree House, Aston Abbotts Road
The Cottage, Cross Roads

Soulbury
Home Farm, Liscombe
Larkshill Farm, Stewkley Road
Liscombe House & 4 cottages

Wing Lodge, Liscombe
Winscott Farm

Wing
South Cottesloe Farm
Bromwells Farm
Wing Poultry Farm
Burcott Lodge Farm

Wing Airfield
South Tinkers Hole
Ash Farm, Burcott

Dunton
Manor Farm
2 Carrington Close
4 Carrington Close
6 Carrington Close
The Rectory
1 The Green
Yew Tree Cottage
Hartwell Hill Farm
2 Hartwell Hill Cottages
The Village Hall

1 Carrington Close
3 Carrington Close
5 Carrington Close
Knapps Farm
Thatched Cottage
2 The Green
Carters Cottage
1 Hartwell Hill Cottages
The Beeches
Carrington Close (private garages)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Buckinghamshire County Council

SUBMITTED BY MR. A. L. BENNETT*

I am a Bachelor of Arts of the University of Cambridge, a Fellow of the Chartered Land Agents' Society and an Associate member of the Royal Institution of Chartered Surveyors. I have been a Chartered Land Agent for sixteen years and have been connected with the management of County Council smallholdings for most of that time.

I have worked in Scotland, Pembrokeshire and Cheshire and am at present County Land Agent for Buckinghamshire.

1. General background to statutory smallholdings

1.1. Statutory smallholdings have had a place in County Council affairs dating back to Smallholdings and Allotments Acts from 1908 onwards and throughout the various Acts which have placed a duty on County Councils to provide smallholdings the emphasis for the authority to provide them has changed as growing needs and circumstances have altered.

1.2. The present legislation comes under Part IV of the 1947 Agriculture Act and under this Act County Councils are obliged to provide smallholdings, essentially for those employed in full-time agricultural work. Though it is true to say that following a Departmental Inquiry some years ago under the Chairmanship of Professor Wise certain recommendations have been made which might alter the existing legislation, so far there is no indication when further legislation may come forward. In any case the duty for County Councils to provide smallholdings is most unlikely to be altered but the emphasis may well be to maintain and improve existing estates as long as there is a demand for them.

1.3. This then is the position of statutory smallholdings and the difficulty of acquiring new holdings to replace any which may be taken for development purposes, particularly in this part of the country where pressures for development are considerable, cannot be under-stated.

2. The Buckinghamshire small holdings estate

2.1. The total area is in the region of 8,730 acres and there are about 160 tenancies. The estates are scattered mostly throughout the part of the county north of Aylesbury and many individual farms or groups of two or three farms exist, although some large estates involving many farms occur and in particular, in the area affected by the proposed airport, three such large estates are involved.

3. General policy of the Buckinghamshire Small Holdings Committee

3.1. Prior to the 1947 Agriculture Act the policy was to have both equipped and bare land holdings, the latter being intended to provide part-time occupation for people with an interest in the land. With the passing of the 1947 Act the national policy was changed and the emphasis was on providing fully equipped full-time holdings capable of producing a reasonable living for a man and his family.

3.2. Changes in farming trends coupled with the recommendations made in the Departmental Inquiry mentioned above indicate that more holdings should be formed so that a reasonable living can be provided for the farmer, plus one other man. This policy has been embodied to some extent in the 1967 Agriculture Act which involves changes in farm structure, amalgamation grants and payments to farmers who wish to retire and give up land which can be amalgamated with other units. The Buckinghamshire Small Holdings Committee has adopted the policy of amalgamation and re-organisation where applicable and several proposals have been accepted by the Ministry of Agriculture, Fisheries & Food, (M.A.F.F.) two of which are within the proposed airport area (reference Appendix A, numbers 6 and 11) and two adjoin the area (reference Appendix B, numbers 3 and 4).

3.3. Schemes are now being investigated for amalgamation proposals for other holdings on the estates immediately adjoining the airport area (reference Appendix B, numbers 6, 7, 8, 9, 10), but definite proposals will no doubt have to await the outcome of the decision.

3.4. It is important to mention that under the 1967 Act conditions known as the Schedule III Conditions are attached to amalgamated holdings approved under an amalgamation scheme by the M.A.F.F. and these conditions affect the holding for a period of 40 years and the holding cannot be split up during that period neither can its use be changed from agriculture without the consent of the M.A.F.F. This consent is given under certain conditions but the obvious intention is that the holding should not be taken out of agriculture for the period of 40 years. The conditions attached to Schedule III have been signed by the County Council for two cases mentioned above within the airport area.

4. Details of holdings wholly or partly in the airport area and details of the tenants

4.1. For this information see Appendix A and a map, Appendix E.* Those holdings partly within the

* See also p. 1551.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

area (reference Appendix A, numbers 11, 12, 13, 14, 15, 16 and 17) the areas stated of the affected area are approximate as the actual boundary of the proposed airport where it crosses these holdings is not easy to define.

4.2. The summary shows that, assuming that those partly in the area would be displaced, a total of 17 tenants and 1,136 acres are involved, though it is possible that the 200 acres of partly affected land could be added to adjoining holdings, that is assuming that the adjoining holdings were able to continue as agricultural units.

5. The possible future of the displaced tenants

5.1. Including children a total of 51 people are likely to be displaced from the houses which are on the holdings in Appendix A. This number does not include the tenants of land which have no houses.

5.2. The chances of resettling these disturbed tenants on the Buckinghamshire Small Holdings Estate cannot be very hopeful. There are at the moment in the Milton Keynes New Town area three smallholdings tenants who will be displaced sometime within the next few years and two of these will be looking for other farms and it would be hoped that they could be found holdings in another part of the County. Unless land already equipped with houses and adequate buildings came on to the market at the right time and at the right price it would seem that the County Council cannot be expected to find alternative farms for the tenants affected in both development areas. It should not be overlooked that the value of farms in the open market in the south-east of the country is inflated due to the proximity to London and the County Council would therefore be at a disadvantage straight away if a decision was taken to purchase additional farms. If bare land was purchased the cost of equipping it with new houses and buildings would be prohibitive and far more than could be obtained from the compensation which would be received in the form of capital money paid f or the purchase of the land required for the airport.

5.3. The tenants affected would experience extreme difficulty in finding farms outside the County Council Estates. It is becoming harder every year to obtain tenancies of farms and the limited capital which most smallholdings tenants possess restricts their choice to farms of about the same size or a little larger and the number of these farms is becoming smaller.

5.4. The ages of the tenants affected were given on a questionnaire which they were asked to return, nine of the seventeen are under forty-five and five are approaching sixty-five or over. In answer to the question what would they do if they were dispossessed practically all said "look for another farm", but it must be admitted that the chances for the five elderly ones are nil. One younger one said he would emigrate. The likely conclusion is that they will all be a loss to the industry as farmers, possibly they would not be able to get suitable jobs in agricultural ancillary industries and in practically all cases there is no doubt that there would be a great loss of sound potential farmers to the agricultural industry.

6. Loss of production

6.1. The M.A.F.F. rating of the land in the Airport area is described as Grade III National average. This based on potential production. Mostly the land is heavy with clay sub-soil and where drainage is necessary and has been installed it is obvious that the land is very productive for grass land husbandry. Most of the smallholdings are under grass but some arable crops are grown and the land near Wing is more suitable for corn than the Stewkley land.

6.2. Some of the holdings, particularly those with elderly tenants, may not be equipped for modern intensive dairy production but the younger and more progressive tenants are aiming at milking production from cows to the intensity of one per 1¼ acres, or even one per acre. The potential from the 936 acres within the area, assuming that the holdings are equipped for this type of intensive farming, and this would be the policy at changes of tenancy, would be in the region of approximately 750 cows yielding approximately a total of 600,000 gallons of milk per year. At 3/4d. per gallon which is the average price paid to the producer by the Milk Marketing Board, this represents a potential loss of about £100,000 per annum to the milk industry. It should be emphasised that this is a potential loss, assuming that all the holdings affected were adequately equipped and intensively managed and this is the aim for the future and it is not the actual loss. Also it should be remembered that this would be the loss in milk output only. There would be considerable other losses in the form of young stock which would be reared as replacements for the herds.

7. Landlords capital investment

7.1. Of the holdings wholly in the area nine are equipped with house and buildings and two have houses built in the last three years (reference Appendix A, numbers 1 and 6). The buildings on the holdings vary in size, quantity, age and use but on most of the holdings there are at any rate some up to date buildings. In this financial year the Council is spending £4,500 on new buildings and improvements at one (reference Appendix A, number 6) and £5,000 on a new concrete road (reference Appendix A, numbers 15, 16 and 17).

7.2. Taking an average of £220 per acre, which allows for capital value on the open market subject to the agricultural tenancies and which allows for the varying quality of houses, buildings and land on the different holdings, the total capital value of the 936 acres is not likely to be less than £206,000. This should be assumed to be a minimum assessment and refers only to the Council's investment. The tenants' investment in the form of capital equipment, fixtures and working capital is another considerable item, the details of which it is not necessary to put forward in this evidence. Similarly the compensation for disturbance which an acquiring authority would have

Printed image digitised by the University of Southampton Library Digitisation Unit

to pay to tenants does not form part of this evidence but it might be mentioned that this could amount to between £30,000 and £40,000.

7.3. The major items of capital expenditure incurred by the County Council since 1961 on the holdings listed in Appendix A total nearly £55,000 and Government Grants received amount to over £15,000, details are shown in Appendix D.

8. Holdings outside the airport area which may be affected

8.1. Turning now to the possible effects of the airport on holdings adjoining the site or within the published noise contours it can be said without hesitation that many holdings on the estate will be so badly affected that to continue farming with stock may not be possible at all. The type of heavy land and size of holdings could mean that any other system of farming would not be economically possible and the holdings might become unlettable unless they were merged into very much larger units. At the worst, therefore, the holdings so affected could be a further loss to the estate.

8.2. In the questionnaire sent to tenants of holdings adjoining the airport area the question was asked "Do you think you would continue farming the holding"? Most replied "no, or at any rate not with stock and they would attempt to look for another holding". They all cited the effect of noise and the inevitable pressures of further development as the reasons.

8.3. The latter cannot be over stressed, this is bound to happen and it can be said with some certainty that the chance of the holdings immediately adjoining the airport being able to survive in the near future following the construction of the airport is remote due to the further certain requirements of land for roads, railways, building development and all the other ancillary work which is likely to be connected with the airport.

8.4. Appendix B shows the details of the holdings and tenants immediately adjoining the airport site and the total of 606 acres is affected. At Stewkley an amalgamation scheme involving holdings (reference Appendix B, numbers 1, 3 and 4) has been approved by the M.A.F.F. and it is hoped to provide a new house and buildings for one of the amalgamated units (reference number 1) in the year 1970–71. At Wing a start could be made in 1970–71 on an amalgamation scheme which will create two new holdings at Waterloo Farm (reference Appendix B, numbers 6, 7, 8, 9 and 10). All these new developments will have to await the outcome of the Government's decision and it is possible that, for the reasons stated in 8.3, the Small Holdings Committee would defer a decision on spending the large amounts of money involved and doubtless the M.A.F.F. would not be anxious to pay grant until the likely effects of the adjoining airport were more apparent. This would involve further difficulties experienced by the sitting tenants and a consequent loss of good land use and production. This is typical of the losses which are suffered when there is a threat of development.

9. Noise and pollution

9.1. The holdings outside the airport area but within the noise contours as shown on map 2* published by the Commission in their preliminary information are detailed in Appendix C. A total of 2,283 acres and 35 tenants are involved and practically all the equipped holdings are run as dairy units, many of them on an intensive plane.

9.2. The effect of the noise on stock is not fully known and it may be that stock born and bred in such surroundings may not be adversely affected but it is submitted that those tenants within the 55/60 NNI and within the 60 plus NNI will not be able to continue intensive dairy management without serious loss of milk production, if they can continue at all. Five equipped holdings are affected thus, two of which are at Blackgrove, Waddesdon, and these are part of an amalgamation scheme with the Schedule III Conditions mentioned before and the new buildings, house and land drainage are at the moment being carried out here at a total cost of about £23,000.

9.3. There are some holdings detailed in Appendix C, reference E, which are within two miles of the airport area but do not appear to be within the noise contours on map 2. This curious fact is viewed with some suspicion and it is submitted that they are bound to be affected by noise to a greater or lesser degree. 505 acres and 13 tenants are so affected.

9.4. The noise contours shown on the published map number 2 cannot be considered as definite lines and just outside the line the noise cannot be expected to be very different from just within. They can be regarded purely as an average likely line. For this reason a further list of holdings has been prepared which shows holdings just outside the 40 NNI contour. It is submitted that these holdings are likely to be affected in much the same way as those within the same contour. Appendix C, reference F, shows these holdings, a total of 1,203 acres and 23 different tenants are affected.

9.5. Apart from the noise the effect of pollution from jet engines, particularly at take-off, is something that cannot be disregarded. It is understood that the fall out over land at either end of the runways for some distance from the airport perimeter can be considerable and this could have, depending on its concentration, disastrous effects on grassland and crops and water troughs in fields, not to speak of springs, streams and watercourses which are the source of water supplies. In particular holdings in Appendix C, reference number A21, A22 and C1 would be affected by possible pollution, though the spread by wind could be over a much wider area.

9.6. The possible risk of further pollution due to jettisoning of fuel prior to an emergency landing also

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

cannot be overlooked. This risk might cover a very wide area around the airport but presumably those farms in close proximity to the site are the ones most likely to suffer.

10. Miscellaneous

10.1. It might be interesting to mention that the fine Norman Church at Stewkley is partly the responsibility for maintenance purposes of the Small Holdings Committee of the County Council. This responsibility runs with the ownership of Dean, Tithe and Bury Farms, Stewkley, and the ownership responsibility proportion of the County Council is one half of repairing and keeping in repair the chancel. The County Council pays an insurance premium to cover this cost.

11. Conclusions

11.1. A summary of the holdings affected by the proposal and the various degrees of effect can be given as follows (the figures in brackets indicate also included in Appendix B):

Appendix	*No. of tenants*	*Acres*	*Remarks*
A	12	753	Holdings wholly included in airport area
A	5	183	Holdings partly included in airport area
B	13	606	Immediately adjoining airport area
C	21	1218	A—40/50 NNI
C	8	569	B—50/55 NNI
C	5(2)	419 (189)	C—55/60 NNI
C	2(2)	77 (77)	D—60+ NNI
C	13(5)	505 (198)	E—Within 2 miles of airport area but contours not affecting
C	23	1203	F—Just outside 40 NNI contour and not included in E.
	102	5533	
Less for duplication	9	464	
	93	5069	

11.2. This shows that well over half the Council's smallholdings estate will be affected in varying ways. This is very considerable damage to a single land holding estate which is believed to be the largest in one ownership in Buckinghamshire.

11.3. If the Cublington site is chosen the great loss to the agriculture industry in loss of production alone is another in-road into the industry which the country cannot and should not afford. Most of the tenants of County Council holdings in this County, as is the case throughout the country, have waited patiently for a long time in order to be given a chance to farm on their own. This has been their main ambition. Their dispossession on such a scale as this proposal puts an end, more likely than not, to their hopes and means of livelihood. Their loss to the industry in enthusiasm, energy and personal ambition is a loss also to the country in the make up of its character. History has not forgotten in the past the Yeomen of England. Not for nothing has the small farmer been described as the backbone of the country. If the continued demands of progress as envisaged in this airport proposal are allowed to go unchecked it will be not without some loss to the history and character of the country.

Appendix A

Holdings partly or wholly within the airport area

Estate and holding	*Ref. No.*	*Acres in whole holding*	*Tenant*	*Tenancy started*	*Type house, Bldgs, land*	*Wholly or partly included in area*
Red Barn Farm, Aston Abbotts	1	83·2	A. F. Roff	1965	HBL	Wholly
Red Barn Farm, Aston Abbotts	2	101·1	A. & W. J. Parker	1932	HBL	Wholly
Littlecote Farm, Stewkley	3	62·8	D. A. Phillips	1962	HBL	Wholly
Littlecote Farm, Stewkley	4	54·2	Hedley Faulkner	1932	HBL	Wholly
Kiln Farm, Stewkley	5	14·2	Hedley Faulkner	1936	L	Wholly
Mount Pleasant Farm, Stewkley	6	91·5	D. G. Body	1968	HBL	Wholly
Mount Pleasant Farm, Stewkley	7	43·2	B. F. Smith	1945	BL	Wholly
Accommodation Holding, Cublington	8	63·2	L. House	1968	HBL	Wholly
Accommodation Holding, Stewkley	9	51·1	H. A. Roff	1935	HBL	Wholly
Chappell's Land, Stewkley	10	36·5	R. Faulkner	1922	L	Wholly
Bury Farm, Stewkley	11	92·0	P. Roff	1964	HBL	Partly—approx. 16 acres not in.
Dean, Tithe and Bury Farm, Stewkley	12	76·1	Henry Faulkner	1913	BL	Partly—approx. 59 acres not in.
Vicarage Farm, Stewkley	13	86·1	T. E. Baylis	1963	HBL	Wholly
Burcott Hall Farm, Wing	14	66·6	F. P. Robinson	1959	HBL	Wholly
Burcott Hall Farm, Wing	15	75·8	P. J. Harrowell	1962	HBL	Partly—4 acres & house & bldgs., not in.
Burcott Hall Farm, Wing	16	70·2	T. J. Wright	1962	HBL	Partly—64 acres & house & bldgs not in.
Burcott Hall Farm, Wing	17	68·8	J. R. Vinden	1964	HBL	Partly—57 acres & house & bldgs. not in.

Printed image digitised by the University of Southampton Library Digitisation Unit

Summary

Holdings wholly included:	12 tenants —	753·7 acres
House, buildings, land	9 tenants —	659·8 acres
Buildings, land	1 tenant —	43·2 acres
Land only	2 tenants —	50·7 acres
Holdings partly included:	5 tenants —	382·9 acres
House, buildings, land	4 tenants —	306·8 acres
Buildings, land	1 tenant —	76·1 acres

Of which the following is actually within the area: (approx.)

House, buildings land	1 tenant —	76 acres
Buildings, land	1 tenant —	17·1 acres
Land only	3 tenants —	89·8 acres
Summary of totals affected		
Wholly included:	12 tenants —	753·7 acres
Partly included:	5 tenants —	382·9 acres
	17 tenants	1,136·6 acres
Actually within area		
Wholly included:	12 tenants —	753·7 acres
Partly included:	5 tenants —	182·9 acres (approx.)
	17 tenants	936·6 acres

APPENDIX B

Holdings immediately adjoining the airport area

Estate and holding	*Ref. No.*	*Acres adjoining airport area*	*Tenant*	*Tenancy started*	*Type: House, bldgs, land*	
Bury Farm, Stewkley	1	16·0	P. Roff	1964	L	See App. A No. 11 H.B. & 76 acres in airport area
Dean, Tithe Farm, Stewkley	2	18·7	P. W. Mead	1940	L	
Dean, Tithe Farm, Stewkley	3	100·2	J. R. Goss	1959	HBL	
Dean, Tithe Farm, Stewkley	4	88·9	J. M. Cornish	1963	HBL	
Dean, Tithe Farm, Stewkley	5	59·1	Henry Faulkner	1913	BL	See App. A No. 12, B. & 17 acres in airport area
Waterloo Farm, Wing	6	—	Mrs. Syratt		H	
Waterloo Farm, Wing	7	—	Mrs. Wheeler		H	
Waterloo Farm, Wing	8	98·4	Temporary letting pending amalgamation		BL	
Waterloo Farm, Wing	9	60·5	Temporary letting pending amalgamation		L	
Waterloo Farm, Wing	10	39·4	J. Lawrence	1932	BL	
Burcott Hall Farm, Wing	11	4·0	P. J. Harrowell	1962	HBL	See App. A No. 15 71·8 acres in airport area
Burcott Hall Farm, Wing	12	64·0	T. J. Wright	1962	HBL	See App. A No. 16. 6·2 acres in airport area
Burcott Hall Farm, Wing	13	57·0	J. R. Vinden	1964	HBL	See App. A No. 17. 11·8 acres in airport area

Summary: 606 acres 13 tenants

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX C

Holdings outside the airport area which will be affected by noise according to map 2 published by the Commission in the preliminary information

Estate and holding	*Ref. No.*	*Acres*	*Tenant*	*Type: house bldgs land*	*Tenancy started*
A—within 40/50 N.N.I.					
Red Furlong, Twyford	1	68·1	G. A. Young	HBL	1958
Manor Farm, Edgcott	2	84·8	J. M. Edmans	HBL	1964
Manor Farm, Edgcott	3	112·6	D. K. Hook	HBL	1960
Manor Farm, Edgcott	4	82·4	A. G. Golby	HBL	1963
Manor Farm, Edgcott	5	23·5	A. G. Golby	L	Licence
Glebe Land, Grendon Underwood	6	74·2	S. G. White	HBL	1957
Mercers Farm, Kingswood	7	16·8	T. H. Fowler	BL	1963
Mercers Farm, Kingswood	8	60·5	H. U. Shipley	HBL	1933
Mercers Farm, Kingswood	9	57·8	D. G. Keen	HBL	1963
Lower Farm, Cuddington	10	66·1	W. M. Munday	HBL	1928
Lower Farm Cuddington	11	12·0	W. F. Oakley	L	1955
Church Farm, Haddenham	12	46·0	E. G. Jackman	HBL	1961
Church Farm, Haddenham	13	49·4	W. J. Burch	HBL	1954
Green Lane, Haddenham	14	49·5	J. H. Clarke	L	1967
Manor Farm, North Marston	15	58·2	—	BL	Licence
Manor Farm, North Marston	16	4·1	J. Brazier	HL	1929
Manor Farm, North Marston	17	56·4	D. W. J. Midwinter	BL	1964
Manor Farm, North Marston	18	51·2	V. B. Alderman	BL	1935
Manor Farm, North Marston	19	48·7	V. B. Alderman	L	Licence
Manor Farm, North Marston	20	2·2	L. R. Harwood	L	1957
Buttermilkhall Farm, Oving	21	43·1	J. H. Parrott	BL	1939
Buttermilkhall Farm, Oving	22	54·9	N. Hodges	HBL	1945
Moat Farm, Stoke Hammond	23	95·1	W. A. Kirk	HBL	1963
Summary: 1218 acres 21 different tenants					
B—within 50/55 N.N.I.					
Station Road Farm, Quainton	1	71·5	C. A. Gomm	HBL	1960
Station Road Farm, Quainton	2	66·1	N. Curtis	BL	1960
Littleton Manor Farm, Waddesdon	3	123·0	C. F. B. Jenkins	HBL	1953
Littleton Manor Farm, Waddesdon	4	115·7	R. D. Todd	HBL	1962
Cranwell Farm, Waddesdon	5	63·1	B. T. Finch	HBL	1966
Cranwell Farm, Waddesdon	6	56·8	C. H. Wright	HBL	1962
Cranwell Farm, Waddesdon	7	50·1	G. H. Heath	HBL	1962
Edgebury Estate, Woburn Sands	8	22·7	G. Ringer	BL	1964
Summary: 569 acres 8 tenants					
C—within 55/60 N.N.I.					
Weedon Fields, Weedon	1	65·0	W. A. Woodfield	HBL	1956
Blackgrove Farm, Waddesdon	2	82·5	V. G. Carter	HBL	1959
Blackgrove Farm, Waddesdon	3	82·7	D. B. Rush	HBL	1969
Dean, Tithe Farm, Stewkley	4	88·9	J. M. Cornish	HBL	1963
Dean, Tithe Farm, Stewkley	5	100·2	J. R. Goss	HBL	1959
Summary: 419 acres 5 tenants					
D—within 60 N.N.I.					
Dean, Tithe, Bury Farms, Stewkley	1	approx. 59·1	Henry Faulkner	BL	1913
Dean, Tithe, Bury Farms, Stewkley	2	18·7	P. W. Mead	L	1940
Summary: 77 acres 2 tenants					
E—close (within 2 miles of airport site) but contours not affecting					
Mitchell Leys Farm, Wingrave	1	54·8	E. R. Curtis	HBL	1940
Windmill Hill Farm, Wingrave	2	64·0	Mrs. D. M. Higgins	HBL	1935
Windmill Hill Farm, Wingrave	3	22·3	M. Higgins	L	1953
Windmill Hill Farm, Wingrave	4	67·1	G. E. Evered	HBL	1959
Waterloo Farm, Wing	5	—	Mrs. Syratt	H	1921
Waterloo Farm, Wing	6	—	Mrs. Wheeler	H	1967
Waterloo Farm, Wing	7	98·4	—	L	Licence
Waterloo Farm, Wing	8	38·8	T. J. Wright	L	Licence
Waterloo Farm, Wing	9	21·7	J. R. Vinden	L	Licence
Waterloo Farm, Wing	10	39·4	J. Lawrence	BL	1932
Manor Farm, Mursley	11	67·3	M. E. Grimsdell	HBL	1956
Manor Farm, Mursley	12	31·5	F. Ward	BL	1932
Manor Farm, Mursley	13	—	Exors. S. G. Bryant	H	1939
Summary: 505 acres 13 tenants					

Printed image digitised by the University of Southampton Library Digitisation Unit

Estate and holding	*Ref. No.*	*Acres*	*Tenant*	*Type: House bldgs. land*	*Tenancy started*
F—just outside the 40 N.N.I. but not included in E above					
Haybush Farm, Swanbourne	1	72·7	A. E. J. Claridge	HBL	1961
Kingshill, Granborough	2	14·2	W. F. Newman	BL	1940
Lower Green End, Granborough	3	100·0	E. E. Mansfield	HBL	1963
Brook Farm, North Marston	4	—	F. Brazier	H	1931
Brook Farm, North Marston	5	50·0	—	BL	Licence
Brook Farm, North Marston	6	21·3	L. R. Harwood	BL	1947
Brook Farm, North Marston	7	24·6	E. J. Seaton	BL	1923
Brook Farm, North Marston	8	40·9	W. A. Hall	L	1938
Fulbrook & Upper Denham, North Marston	9	92·0	G. Cheshire	BL	Licence
Fulbrook & Upper Denham, North Marston	10	19·9	L. R. Harwood	L	1961
Fulbrook & Upper Denham, North Marston	11	23·7	V. B. Alderman	BL	1929
Fulbrook & Upper Denham, North Marston	12	22·8	F. C. Tattam	BL	1949
Roundhill, North Marston	13	29·3	V. G. Carter	BL	1959
Hagditch & The Slad, North Marston	14	33·8	A. E. Higgins	BL	1951
Hagditch & The Slad, North Marston	15	23·6	E. J. Seaton	BL	1928
Hogshaw Farm, Hogshaw	16	86·7	G. Cheshire	HBL	1961
Claydon Hill Farm, Steeple Claydon	17	77·7	D. J. Parris	HBL	1968
Claydon Hill Farm, Steeple Claydon	18	70·0	F. C. Cowley	HBL	1958
Claydon Hill Farm, Steeple Claydon	19	66·4	D. B. Rush	HBL	1965
Claydon Hill Farm, Steeple Claydon	20	20·7	C. J. Biddlecombe	BL	1930
Claydon Hill Farm, Steeple Claydon	21	62·9	W. J. Cadd	HBL	1963
Claydon Hill Farm, Steeple Claydon	22	64·3	W. L. Ball	HBL	1964
Shabbington Fields, Long Crendon	23	40·4	G. North	HBL	1937
Accommodation Holding, Ickford	24	80·3	A. J. Neil	HBL	1957
Lockharbour Farm, Preston Bissett	25	65·1	B. J. Morris	HBL	1957
Lockharbour Farm, Preston Bissett	23	—	J. Cox	H	1957

Summary: 1203 acres 23 different tenants

Appendix D

Landlords' major capital expenditure and grants received during last 8 years on holdings listed in Appendix A (wholly or partly in airport area) (including commitments for 1969–70) (figures rounded off to nearest £) (the house improvement grant is paid annually over 20 years. The amounts shown thus * are the totals expected for the 20 years, though to date less has been received)

	Appd. A ref. no.	*Date*		*C.C. Expenditure*	*Government grant*	
Red Barn Farm, Aston Abbotts	2	1964	new buildings etc	2,038	679	
	2	1965	bathroom	629	312*	
	1	1966	ditching	68	30	
	2	1968	mains electricity	247	74	
	1	1968	new buildings	4,314	1,294	+ M.A.F.F. annual contribution towards loss
	1	1968	new house	3,415	—	
				£10,711	£2,389	
Littlecote Farm, Stewkley	3	1962	dutch barn etc	2,493	651	
	3	1963	milking parlour	462	154	
				£2,955	£805	
Mount Pleasant Farm, Stewkley	7	1964	dutch barn etc.	713	178	
	6	1968	new house	3,704	58	
	6	1969	dutch barn, yard & other improvements	4,581	2,290	Estimated
				£8,998	£2,526	
Accommodation Holding, Cublington	8	1961	bathroom	490	295*	
	8	1962	Extension to dutch barn & new road	2,038	679	
				£2,528	£974	
Accommodation Holding, Stewkley	9	1963	dutch barn etc	£1,642	£547	
Bury Farm, Stewkley	11	1962	extension of water main	54	13	
	11	1967	extension of water supply	225	68	
				£279	£81	

Printed image digitised by the University of Southampton Library Digitisation Unit

	Appd. A ref. no.			*C.C. Expend-iture*	*Govern-ment grant*
Burcott Hall Farm, Wing	14	1961	conversion	175	58
	15	1962	bathroom	654	373*
	14	1962	Rayburn	96	—
	15, 16, 17	1965	new concrete buildings etc.	6,246	2,082
	17	1965	bathroom	715	377*
	15, 16, 17	1965	water supply	974	194
	16	1966	new buildings	3,304	1,101
	14	1966	new buildings	3,234	1,078
	17	1968	house extension	967	—
	15, 16, 17	1969	new road	5,008	1,502 Estd:
				£21,373	£6,765
Vicarage Farm, Stewkley	13	1964	new house & buildings	6,396	1,250
			TOTALS	£54,882	£15,337

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Oxfordshire County Council

SUBMITTED BY MR. K. SUMMERFIELD*

Scope of this evidence:

1.1. As well as the other matters referred to in their application for leave to be heard, the Oxfordshire County Council are concerned that:

(1) roads leading from the gravel bearing areas of the County are quite inadequate to carry the gravel traffic which would be likely to arise if the third London Airport were to be constructed at Cublington, with serious consequences for highway safety and amenities;

(2) the development may give rise to flooding along some stretches of the River Thame.

Inadequacy of roads:

2.1. There are five main gravel bearing areas in Oxfordshire and Berkshire which might be called upon to provide gravel for the construction of the airport, ancillary development and the resulting urbanisation:

(1) Standlake and Stanton Harcourt
(2) Dorchester
(3) Ewelme
(4) Sonning
(5) Theale

2.2. The location of these areas and the likely routes which would be followed therefrom to the proposed site for the airport and to the proposed main urbanisation areas, are shown on map no. 1† which I produce.

2.3. In my Council's view the sections of these routes which are shown coloured blue on map no. 1 are quite inadequate to carry the heavy gravel traffic which would be likely to arise. They are inadequate because they are of insufficient width, of poor alignment and too light construction to take satisfactorily the weight and volume of traffic which could be expected.

2.4. Because of their light construction, their use by a large volume of gravel traffic would result in their breaking up and requiring not ordinary repair and maintenance, but complete reconstruction at very substantial cost.

2.5. The widths of the sections of the road to which I refer and their alignment are shown on map no. 1 and are illustrated by the photographs† which I produce.

2.6. These sections of the roads pass through a number of villages and small hamlets where, particularly because of the number of severe bends in the roads, their width and the lack of footpaths, the large volume of additional heavy traffic would be likely to result in excessive risk of accidents. I would particularly refer to the following:

Standlake
Stanton Harcourt
Eynsham
Warborough
Watlington
Chinnor

2.7. I produce map nos. 2–7 on a scale of 1/2500 of these villages showing the carriageways and footpaths through the villages with their widths. I also produce photographs illustrating the unsatisfactory nature of the routes through these villages.

Route from the Stanton Harcourt area:

2.8. The road through Standlake runs through approximately half a mile of frontage residential development with a footpath on one side only of the carriageway. This means an appreciable number of pedestrians are obliged to cross from one side to the other to use the single footpath or walk along the carriageway.

2.9. A similar situation would arise in Stanton Harcourt, but here as well there is the hazard of four severe bends in the road within the built up area to add to the risk of accidents.

2.10. The position in Eynsham is appreciably worse because along parts of the road as shown on map no. 4 there are no footpaths and no possibility of making footpaths because of the narrow width between premises on either side. There are also a series of completely blind junctions to be negotiated, where by virtue of properties being built right up to the corners of the junctions there is virtually nil visilibity. At three of these junctions large vehicles find it necessary to mount the footpaths in negotiating the turns.

2.11. In the light of this evidence I have no doubt that any appreciable addition of heavy gravel traffic to the existing traffic flow will result in an excessive increased risk of accidents because of the special hazards to which I have referred.

2.12. Finally, in relation to the route from the Stanton Harcourt area, I wish to refer to my Council's policy adopted in February 1969:

(1) that no new planning permissions should be

---

* See p. 1553.

† Not reproduced. Available for inspection by arrangement at the County Council Offices, Oxford.

Printed image digitised by the University of Southampton Library Digitisation Unit

granted for any further major gravel excavations in the Stanton Harcourt area on the grounds that roads in the area were at present inadequate to serve such development;

(2) that the Ministry of Housing and Local Government be urged that if in due course they considered it necessary for gravel to be extracted from this area on a greater scale than at present, they should first ensure that substantial financial assistance to meet the cost of necessary road improvements in the area was forthcoming from the Government.

2.13. The cost of bringing the route in question up to an acceptable standard, including by-passes for Standlake, Stanton Harcourt and Eynsham, would be of the order of £400,000.

Route from Dorchester area:

2.14. What appears to be the more direct route from Dorchester to join the B4013 at Stadhampton is quite impracticable for use by gravel traffic because of the narrowness of the roads and the existence of a weight restriction of 5 tons on the use of the Thame Bridge about 1 mile north of Drayton St. Leonard. Accordingly, the route is via A423 and B 4015.

Route from Theale area:

2.15. The route from Theale, after crossing the River Thames at Shillingford, takes the B4013 from the junction of that road with the A423 at Shillingford. This route passes through Warborough and Newington where residential development fronts long sections of the road without footpaths in Newington and a footpath on one side only in Warborough. Accordingly, pedestrians must frequently cross the road or walk along the carriageway through these villages.

Cost of improving routes within the County from the Dorchester and Theale areas:

2.16. The cost of improving these routes, including any necessary by-passes to a reasonable standard to carry major gravel traffic would be of the order of £1 million.

Route from Sonning and Ewelme areas:

2.17. This route passes, inter alia, through Watlington, Kingston Blount and Chinnor.

2.18. In Watlington there is a particularly dangerous cross-roads at a point where the overall width of the carriageway and footpaths is narrowed by frontage buildings to 20 ft 10 inches. The route also traverses the main shopping street, where the carriageway width is only 19 ft 2 inches and the footpaths on either side only 4 ft 10 inches and 4 ft. Here pedestrians frequently step on to the carriageway and there is appreciable traffic congestion. There are three right angle bends in the route through the village.

2.19. As in the case of other villages to which I have referred, the road through Kingston Blount has a narrow footpath along one side only with consequent accident risks from through traffic.

2.20. In Chinnor the road traverses 1½ miles of frontage residential development, crosses 2 junctions and makes four sharp right angle turns.

Amenity:

3.1. As well as the highway safety aspects referred to in the preceding paragraphs, the heavy gravel traffic will cause grave harm to the amenities of those living in the villages along the sections of the routes which I have described.

Flooding along the River Thame

4.1. The Thames Conservancy have given evidence as to the likely effect of the airport including ancillary development and urbanisation on flooding along stretches of the River Thame and the nature of the works likely to be necessary to increase the capacity of this river to take the additional flow which might be expected to result from such development.

4.2. Any substantial regrading of the river would necessitate the rebuilding of the bridges listed in the attached schedule at an estimated cost of £500,000.

4.3. As indicated in the schedule, four of the twenty-two bridges are listed as buildings of special architectural or historic interest by the Minister of Housing and Local Government under section 32 of the Town and Country Planning Act 1962. Their descriptions in the Minister's provisional list is as follows:

Sheet and no. on map	*Grade*	*Item*	*Notes*
7/12	II	Ickford Bridge (that part in Bullingdon Rural District)	Dated 1685 on Boundary stone in centre of bridge, but probably older. Three arches with wide cut water between 2 northern arches and buttress between central and south arch. Smaller C.18 brick arch over stream on Bucks side of river Thames. Partly in Aylesbury Rural District. Ancient Monument.
10/7	II	Bow Bridge	Over the River Thame, connecting Waterperry to Waterstock. C.18, a single brick arch with solid outcurving parapets with stone coping. String at base of parapet picking up curve of arch with keyblock in centre.
21A/26A	II	Chislehampton Bridge	Over River Thame. C.15. C.16. Eight small arches. North east side has original masonary and cut waters. Parapet broken away except over cut waters. South west side rebuilt.

Printed image digitised by the University of Southampton Library Digitisation Unit

21c/X/59	II	The Bridge and Causeway, Dorchester	X1814-16. Architect F. Sandys. The bridge has a central segmental ashlar stone-arch with similar rectangular abutments, a moulded cornice string at road level, and stone balustrade with turned balusters. Two pairs of smaller semicircular arches flank the central arch. The latter and the walls of the long sloping approach on each side are of rubble stone with solid balustrading, and were rebuilt in C.19. The sweep over the river and firm simplicity of design, softened by a curve towards the churchyard on the northern section, in a setting of willow trees, is very effective.

4.4. It would be necessary to demolish and reconstruct these bridges entirely in order to achieve any substantial improvement in the grade and waterway of the river.

Bridges over the River Thame in Oxfordshire

Name	*Oxfordshire County Council No.*	*Span*	*Construction*	*Carries*	*Remarks*
Thame	119	12′–0″, 15′–0″, 38′–0″, 2/20′–0″	Steel girders on brick faced abutments. Foundations probably shallow	B.4011 Thame to Long Crendon	
Shabbington	500	9′–0″, 9′–9″	Brick arches. Shallow foundations	Thame-Shabbington road	
Shabbington Centre	499	8′–1″, 8′–6″	Masonry and brick arches. Shallow foundations	Thame-Shabbington road	
Shabbington East	498	9′–10″	Masonry and brick arch. Shallow foundations	Thame-Shabbington road	
Ickford	76	14′–5″, 11′–9″	Stone arches. Foundations shallow	Tiddington-Ickford road	Listed building and Ancient Monument
Bow	F.66	16′–3″	Masonry arch	Bridle & private road	Listed building
Holton Mill		Not known	Not known	Footpath	
Wheatley River	607	30′, 49′–6″, 30′	Prestressed concrete beams on deep mass concrete foundations	Trunk road A.40	
Bulmore	608	10′–0″	Reinforced concrete box	Trunk road A.40	
Wheatley	125	11′–0″, 25′–6″, 29′–1″, 24′–4″	Stone arches. Foundations shallow	Thame turn-Wheatley road	
Railway bridge		Not known	Not known	Princes Risborough disused branch line	
Cuddesdon	44	2/10′–9″, 2/11′–4″, 2/12′–3″, 1/21′–5″	One steel girder span, others brick arches	Cuddesdon-Great Milton road	
Cuddesdon Mill	45	5′–0″, 7′–0″	Masonary arches	Cuddesdon-Great Milton road	
Chislehampton	36	1/8′, 4/10′–6″, 1/9′–2″, 2/10′–2″	Eight stone arches widened with concrete. Shallow foundations	B.480 Oxford-Watlington road	Listed Bldg. & Ancient monument
Jack	510	10′–0″	Brick arch widened with concrete	B.480 Oxford-Watlington road	

Printed image digitised by the University of Southampton Library Digitisation Unit

Name	*Oxfordshire County Council No.*	*Span*	*Construction*	*Carries*	*Remarks*
Jack South	511	10′–0″	Brick arch widened with concrete	B.480 Oxford-Watlington road	
Haywards	52	40′–2″	Steel lattice girders on brick abutment. Foundations probably shallow.	Stadhampton-Drayton St. Leonard road	
Drayton		Not known	Not known	Not known	
Lower Grange (Newington)	F.23	Not known	Not known	Footpath	
Long	F.39	2/8′–3″, 2/13′–0″	Steel arches on timber pile bents would require new foundations	Footpath and accommodation road	
Overy Mill	F.1	2/16′–0″	Brick arch under mill. Timber footbridge		
Dorchester	50	2/9′–0″, 2/26′–0″, 2/28′–0″, 1/50′–0″	Masonry arches. Foundations shallow	Trunk road A.423	Listed building

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Oxfordshire County Council

SUBMITTED BY MR. G. G. BURKITT*

1. Of the five matters listed in the Council's application for leave to appear at the inquiry, the first two are dealt with in the joint case submitted on behalf of the three local planning authorities, the Buckinghamshire, Bedfordshire and Oxfordshire County Councils and the matters referred to in paras. 3 and 4 of the County Council's application are the subject of evidence by the County Surveyor.

2. The fifth matter referred to in the application is that:

"There will be a serious risk that accidents to aircraft taking off and climbing will result in substantial loss of life to those living and working in the area, as well as to passengers".

3. In January 1958, the then Minister of Transport, Mr. Harold Watkinson, made the following statement in the House of Commons shortly after the crash of a Viscount aircraft in Manchester in 1957:

"Another matter which has been concerning the House, particularly one or two hon. Members who, like the hon. Member for Feltham (Mr. Hunter), live near airports, is the problem which arose after the Viscount crash at Manchester last year. I said at that time that we would study the problem of danger caused to people living near airports by aircraft accidents. Officials of my Ministry and the other Ministries concerned have been studying the problem.

I would begin by saying that the record during the past eleven years shows that the risk of an aircraft crashing on a house near a runway is, fortunately, very remote. Still, over half the aircraft crashes on the approaches to airports occur within 4,500 ft of the end of runways, and I think that the House was right to display concern about the problem.

The House should know that I have reached an agreement, in conjunction with my right hon. Friends the Secretary of State for Scotland and the Minister of Housing and Local Government and the Government of Northern Ireland, that we should now extend the present arrangements under which local planning authorities must consult my Department before granting permission for building within aerodrome approach areas. I will not go into the detailed arrangements, but, in general, the purpose is to secure that my Department is consulted about all new proposals for construction within the first .4,500 ft of the approaches to the main runways of certain busy civil airports.

I understand that similar action will be taken by the Government of Northern Ireland. This will affect the civil airports under the control of my Ministry, and I am consulting the owners of other civil airports to try to obtain the same arrangements there. I should add that it is not intended to revoke planning consents already given, but what I propose will, I hope, make a contribution to the solution of the problem in the future".

4. As the Commission will be aware, it is a requirement of the Town and Country Planning (Aerodromes) Direction 1966, that local planning authorities, before permitting development within the safeguarded limits of airfields, shall consult the Ministry of Defence or the Ministry of Aviation, and it is the policy of these Ministries to object to development, which could either immediately or eventually lead to an increase in the number of people living, working or congregating within the first 4,500 ft of the approaches to dominant runways at busy or potentially busy aerodromes. The purpose of this policy is to limit so far as possible, the number of people who will be exposed to risk in the event of an aircraft accident occurring immediately after take-off or on landing.

5. With the increase in size of aircraft and the vast increase in the number of flights which has taken place since Mr. Watkinson's statement and the potential further increase in the future, it would be reasonable to assume that the size of the main risk area will increase.

6. If it is right to resist development in these risk areas, then conversely it must be right to secure the siting of new airfields where the risk to people is minimal, namely—assuming this is practicable—where the take-off direction and the approach direction are over the sea.

7. The accident in the United States on the 23rd June, 1969, to a cargo carrying aircraft which crashed on to a main highway in Miami shortly after taking off from the town's airport must further emphasise the importance of safety considerations in selecting the site for the third London airport.

8. I would stress that my Council is particularly sensitive about the matter of safety in the light of three recent disasters to Voodoo aircraft taking off from or landing at the U.S.A.A.F. base at Upper Heyford. In one case the aircraft only just managed to avoid crashing on to two local schools which might have had the most tragic results. Following this there has been considerable pressure on the County Council to move one of the schools.

* See also p. 1553. † p. 1064

Printed image digitised by the University of Southampton Library Digitisation Unit

9. In the remaining cases the crashes occurred some distance from the airfield, namely at Deddington and Stow-on-the-Wold—4½ miles and 17½ miles respectively from the base. These disasters, however, clearly indicate the large area of risk.

10. Finally, I am to say that the Oxford and District Joint Advisory Planning Committee, whose constituent members are the Oxford City Council, the Oxfordshire and Berkshire County Councils, the Abingdon, Bullingdon, Ploughley and Witney Rural District Councils, at a meeting on the 18th June, 1969, passed the following resolution:

> "Resolved that the constituent planning authorities be advised that the Joint Committee was apprehensive about the effect on the population living within the area of the Committee likely to arise from the siting of London's third airport at Cublington."

I should explain that the area of the Advisory Committee extends from the centre of Oxford for a distance of approximately six miles in all directions.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Milton Keynes Development Corporation*

Milton Keynes New Town was designated under the New Towns Act 1965 and the Designation Order was made by the Minister of Housing and Local Government on the 23rd January 1967. The Milton Keynes Development Corporation set up as a result of this decision has taken as its terms of reference a series of documents incorporating clear statements of policy made by the Minister at the period of designation, These documents are:

1. Statement by the Minister of Housing and Local Government dated 14th April 1966.
2. Explanatory memorandum accompanying the Draft Designation Order dated April 1966.
3. Statement made on behalf of the Minister at the Public Local Enquiry.
4. Letter conveying the Minister's decision to designate the new town dated 11th January 1967.

(Copies of these documents may be obtained on request from the Milton Keynes Development Corporation).

Statements in these documents indicate that the new city was designated to provide homes for 150,000 Londoners—and people from South Buckinghamshire—over twenty years, of which accommodation for 70,000 would be provided by 1981. "The aim would be to create a balanced community with industry, shopping, public services, recreation and other amenities to the high standard to be looked for in a town of the importance envisaged." In replying to criticism that the city would lead to a continuous conurbation from London to the Midlands, the Minister states:

> "The main problem would be to co-ordinate proposals for a new town in North Buckinghamshire with the newer towns, particularly Northampton and Bedford whose total population will have needs that should be viewed as a whole. The growth of these towns and its effect on the adjacent country will require special co-ordination."

In the period since designation the Corporation have been preparing the Plan for Development of Milton Keynes and building up resources to enable substantial development to proceed. The interim Report on the Plan was published in February 1969. The final Plan will be published in early 1970.

By the time a decision is made regarding the siting of the airport the Corporation will be committed to a substantial proportion of its first five year programme. In particular, negotiations with industrialists will have been completed which will commit the programme of development for some years ahead.

Milton Keynes in relation to Cublington

In the *Site Information for Stage II Local Hearings, 3. Cublington (Wing)*,* the Commission show one of the runways extending to within three miles of the Designated Area. If accepted this proposal would dramatically change the city envisaged at the time of designation. The work so far done by the Corporation and their consultants has been based on a situation without an airport. If the airport comes then all of this work will need review. Much of it will no longer apply, and completely new plans and policies will have to be developed. By the time a decision on the airport can be made a considerable impetus in development, based on present plans, will have been achieved at Milton Keynes. Hence there would be inevitable disruption at that time. These changes can be considered under three headings:

1. Changes in the pattern of growth in the sub-region and in its environment.
2. A change in the social and economic structure of population and employment in the town.
3. Changes in the physical structure.

Changes in the sub-region and in the social and economic structures

The Commission estimate that up to 65,000 workers will be directly engaged on the airport by the mid-1990s. Bearing in mind the existing manufacturing industry in the Designated Area, the further commitment by early 1971 and allowing for growth, the population of Milton Keynes is very unlikely to provide enough workers to meet this requirement even if further new industrial expansion were to be prohibited. It would be undesirable for the city to be dependent on employment at the airport alone. The full economic potential of the airport itself can only be exploited if sites are available for industries wishing to locate close to it. Milton Keynes could only provide such sites if room were provided for further population growth other than within the Designated Area of Milton Keynes and related to the airport, and such a course would be completely at variance with the decision taken by the Minister at the time of designation of the new City (as a result of the public enquiry), to reduce the area of the proposed city, and would vitiate the understanding given to the public that the City would be contained within this reduced boundary.

It is difficult to assess the total sub-region population growth required but a figure of the order of half

* See also p. 1553.

* (HMSO; 6s.) Reproduced at p. 1001.

Printed image digitised by the University of Southampton Library Digitisation Unit

a million is not unreasonable. At this stage it is only possible to speculate on possible sub-regional growth patterns. Not only is Milton Keynes insufficient on its own to support the third London Airport; it is equally unable to meet the requirements for workers by the airport by the mid-1980s. The impact of such an accelerated programme including the airport, on the construction industry has not, and probably cannot, be fully assessed. It may be, however, that Milton Keynes would cost more as a result of the concurrent construction of the airport. There is not enough building labour in the sub-region for the construction of Milton Keynes. Labour would have to be brought from ever increasing distances at increasing expense. Existing local resources of gravel and sand, which are likely to be no more than sufficient for the construction of Milton Keynes as at present planned, would be worked out more quickly and materials would also have to be brought considerable distances, adding enormously to the building costs of both the City and the Airport.

The principal effect of the sub-region, however, would be on the environment of a large tract of land immediately south of the Designated Area. From the information published by the Roskill Commission, the only area within the Designated Area which would come within the 40 NNI line is at the extreme southern end of the Water Eaton estate. There is, however, a body of expert opinion which considers that there would be significant nuisance experienced within the 35 NNI contour. The Corporation might wish to avoid further development within this line and it would then probably be necessary to prevent further development in the area south of Wavendon and Walton, which is where the Open University has already begun to establish itself, and where Bletchleys residential and industrial development is already taking shape.

Outside Milton Keynes the main impact of disturbance from noise would be in the area immediately south of the Designated Area between Brickhill and Woburn. The potential of this very beautiful area for recreational use, which has been planned both in the Interim Report and in the County Council's policy statement for the North Bucks Countryside, would become very limited and residents of the town would have to use more distant and less desirable areas for recreational purposes.

An increased population in the sub-region would create increased difficulties in relation to the supply of water to the city, particularly in the period of 1975 to early 1980s. The Corporation would need to be satisfied that such supplies could be made available without prejudice to Milton Keynes, especially in view of the potential importance of the proposed reservoir site at Cublington for ensuring the future water supply to the City as already planned. It would also create additional problems regarding the disposal of foul sewage and surface water. Some or all of the effluent might be discharged into the Ouzel, and the new town would need to be satisfied that its own problems of sewage treatment and flood prevention, which are already exceedingly difficult, were not increased and that the amenity value of the river Ouzel was in no way prejudiced.

Changes in physical structure

A complete review of the physical proposals would be required. There would be a radical change in journey to work pattern resulting from the airport. This would produce tidal flows which would have to be accommodated by changing the configuration and capacity of the road system together with rapid transit facilities. It would also be necessary to review the effective boundaries of the Designated Area, either to omit development where it may be prejudiced by noise, or to increase the total population of the town, and, as already stated, this would vitiate the understanding gained by the public from the Minister at the time of designation, and from the Corporation since designation, that the area of the new city would not be increased.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedfordshire County Council

SUBMITTED BY MR. G. W. COWLEY*

I am the County Planner of Bedfordshire. I am a Member of The Town Planning Institute and a Member of the Institution of Municipal Engineers. My association with the area extends over a period of 21 years including 17 years experience with Hertfordshire County Council before coming to Bedfordshire in January 1965; I can therefore claim a wide knowledge and appreciation of its highly complex planning problems.

1. Introduction

1.1. The purpose of this evidence is to support wholeheartedly the submission of Mr. Frederick Bernard Pooley,† the County Architect and Planning Officer of Buckinghamshire, in opposing a Third London Airport at Cublington, and to supplement that submission in relation to the administrative county of Bedfordshire.

1.2. The Bedfordshire County Council ensured that District and Parish Councils and the Public have been advised of the information published by the Commission. The County Council have themselves examined the effect on the administrative County of an airport at Cublington on the best information so far available, and are strongly opposed to this proposal. Similar action has also been taken spontaneously by the County District Councils affected by the proposal, and I understand that all Parish Councils in this area and a great many voluntary associations support this view. A large number of private individuals have approached Parish and District Councils as well as Members and Officers of the County Council, and have been encouraged to lend their support to the Local Authorities and the Wing Airport Resistance Association in order to avoid the presentation of repetitive evidence. No representations in favour of an airport at this site have been made to the County Council, nor so far as I know, to any of the foregoing District or Parish Councils.

1.3. The broad conflicts with the planning policy of the Council which would arise from the siting of an international airport at Cublington are the restrictions it would place on the future natural development in south and central Bedfordshire, noise and disturbance and the deleterious effect on amenities and facilities for recreation and the demands on the sand and gravel resources of the County.

1.4. I propose to deal with the following matters under separate headings:

(a) Noise and Disturbance—The adverse effect on a large number of residents in Bedfordshire.

(b) County Planning Policy.

(c) Future growth development in South Bedfordshire—The work at present being undertaken in analysing the problems of the south of the county.

(d) Amenity and Recreation—The effects of the Airport and the associated urban development.

(e) Sand and Gravel—The effects of the demand from the Bedfordshire river valleys.

2. Noise and disturbance

2.1. It is assumed that the orientation of the runways and flight paths will not alter significantly. I accept the basis adopted by Mr. Fleming in considering noise nuisance as stated in his Proof of Evidence.*

2.2. It has been estimated, on the limited information supplied by the Roskill Commission,† that in the area of Bedfordshire extending from Leighton Buzzard and Linslade in the south to Kempston at the northern extremity, some 18,685 people already live within the 35 NNI contour (four runways) drawn by Mr. Fleming and about an additional 4,000 people can be expected within that area on land which is committed for residential development but where the houses are not yet built. The damaging effects of noise on people will be widespread and living conditions particularly for a large number of families within the higher NNI contours will be totally unacceptable. The NNI pattern implies that aircraft in landing will generally use the flight path on the north east side of the airport. I understand that this could well be on average for four days out of five when the prevailing wind is in the south-west; the noise from aircraft coming in to land on a straight and fairly constant line at a shallower angle than on takeoff will be intense over a number of settlements including the delightful villages of Woburn and Aspley Guise.

2.3. The schedule in Appendix A identifies number of people and dwellings affected in Bedfordshire by the NNI contours produced by the Commission and supplemented by Mr. Fleming, for the final development of four runways. The two sets of figures are for

* See also p. 1559.
† p. 1023.

* p. 1017.

† *Site Information for Stage II Local Hearings*. 3. *Cublington (Wing)* (HMSO; 6s.) Reproduced at p. 1001.

Printed image digitised by the University of Southampton Library Digitisation Unit

comparison with those given in Mr. Pooley's evidence.*

2.4. Quite apart from the noise aspect, but associated with landing movements, is the prospect of air pollution arising from jet engine fumes and unburnt fuel ejection in an area of Bedfordshire lying to the south west of Bedford already partially polluted by the activities of the Brick industry.

3. County planning policy

3.1. The Bedfordshire County Development Plan was approved by the Ministry in 1955. A large track of attractive and relatively unspoilt countryside on the Greensand extending from the northern boundary of Leighton Buzzard and Linslade to Woburn in a north-easterly direction across the county is shown on the County Map as an Area of Great Landscape Value: within it are two large woodlands designated as Sites of Special and Scientific Interest, namely Bakers Wood and Kings Wood. The importance of this Area of Great Landscape Value is such that it has been recommended to the Countryside Commission as an Area of Outstanding Natural Beauty. Virtually the whole of the south of the county (excluding the urban areas of Luton and Dunstable and Leighton Buzzard and Linslade) is covered by the proposed south Bedfordshire Green Belt which was submitted to the Minister of Housing and Local Government in 1960. Although this proposal has never been approved formally by the Minister, a Green Belt policy has since been strictly applied with the support of the Minister in accordance with his Circular 42/55. The north west extremity of the Designated Area of Outstanding Natural Beauty, referred to in para. 1(6) and subsequent paragraphs of Mr. Overton's evidence† on behalf of Hertfordshire County Council, extends into South Bedfordshire, from the county boundary to Dunstable and to north of Luton. The Designated Area of roughly, 25½ square miles lies within the proposed Green Belt and is identified on the County Map as Areas of Great Landscape Value.

3.2. In recent years, Bedfordshire has experienced one of the highest growth rates in the country and the southern part of the county has been particularly vulnerable to the pressure for housing development much of which was required to accommodate migrants from the Metropolitan Region. Only by the application of a stringent planning policy has it been possible to concentrate the bulk of new population in the urban areas of Luton and Dunstable and Leighton Buzzard and Linslade, and to protect the rural areas effectively from urban sprawl which inevitably otherwise would have followed. Whilst selected villages have absorbed a small amount of new development, this has been commensurate in scale with the needs of the rural area and full regard has been paid to the particular characteristics of each community.

3.3. The County Council's planning policy for Dunstable and Houghton Regis is set out in the Town Map for Luton and Dunstable approved by the Minister in 1963. Due mainly to the topography of the area, almost no further opportunity remains for the growth within Dunstable Borough which has a present population of roughly 30,000. Town Development at Houghton Regis for about 12,000 people is proceeding, in order to meet the overspill needs of the London conurbation and the employment needs of local industry (primarily the motor vehicle industry) in the area. At Leighton Buzzard and Linslade the population has been restricted until recently by sewage problems which are now being resolved. The new sewage works and sewage system will permit the town to grow from 19,000 to about 34,000 by 1981, contributing to the needs of the area. This growth accords with County Council policy as illustrated in a non-statutory Structure Map for the town. After 1981 further growth in my opinion is likely to result in a total population of about 50,000 which represents broadly the limit of capacity of the services there and the physical constraints on the town.

4. Future growth of development in South Bedfordshire

4.1. As a result of the work I have carried out with the officers of the Ministry of Housing and Local Government and with officers of the District Councils and neighbouring authorities, I have reached the preliminary conclusion that growth in south Bedfordshire over the period 1966 to 2001 could be of the order of 74 per cent—from 230,000 to 400,000, representing broadly the continuation of present rates of growth only which are essential to meet the needs from the growth of existing industries. There is every indication that the future demand for labour in the area will continue to exceed supply, and it is unlikely that any significant contribution could be made towards meeting the employment needs of the airport. The rate of industrial growth in recent years has only been maintained by resorting to town expansion procedures to meet employment demands of the area. The land allocated for housing in the area is adequate to meet the needs there up to 1981, representing an increase in population of about 70,000 by that date. In considering the additional 100,000 people likely to be accommodated by the end of the century, a number of alternative locations of future growth are at present being investigated, but no firm conclusions have yet been reached. The constraints placed upon the choice however, by such factors as water supply and sewage problems, landscape recreation and amenity considerations, minerals, agricultural land quality and traffic considerations are severe. The additional growth arising from an airport at Cublington will make even more difficult the task of developing an acceptable environment.

4.2. The location of the Third London Airport at Cublington would have two direct effects upon South Bedfordshire.

---

* p. 1023.

† p. 1076.

Printed image digitised by the University of Southampton Library Digitisation Unit

1. The impact of the noise pattern will necessarily reduce the range of choices available for locating the further growth in the area after 1981.
2. In addition to the growth referred to above, the airport and the associated urban development of approaching 400,000 people of whom 65,000 could be within the Leighton Buzzard area, would place a further strain upon the social, physical and economic resources of South Bedfordshire.

The siting of the Third London Airport at Cublington could have catastrophic effects on the future availability of labour in the motor vehicle industry of the Luton–Dunstable area, which is of international significance.

5. Amenity and recreation

5.1. The attractive and unspoilt landscape, scattered villages and hamlets in the Greensand area depict the English countryside at its best, and its value and potential for recreational use is considerable. The landscape is characterised by its undulations, woodlands, private parks and winding country lanes, which afford a popular retreat with numerous opportunities for quiet enjoyment. In the heart of the area is the national recreation centre of Woburn Abbey set in its unique 2,000 acre Zoo Park which attracts many thousands of visitors; also Ampthill Park which is much used by the public. The two largest villages of Woburn and Aspley Guise in particular contain a wealth of buildings of architectural and historic value and both are proposed for designation as Conservation Areas under the Civic Amenities Act 1967.

5.2. There are two physically distinct parts of the county within the 35 NNI contour, (a) the western section of the Greensand Ridge and (b) the Brickfield sector of the Oxford Clay vale with its large brickworks and extensive clay workings.

The Greensand Ridge is in fact one of three main areas in Bedfordshire (along with the Ouse Valley and the Chilterns) where the potential for recreational development under the Countryside Act 1968 is greatest.

Without the airport, the large scale development envisaged at Milton Keynes, South Bedfordshire and in the Bedford area, is in any event bound to give rise to a substantially increased demand for much needed peaceful open-air relaxation.

The Brickfield sector is of a completely different character with its problems of disturbance due to active mineral workings, dereliction of abandoned workings, atmospheric pollution and the general difficulties of assimilating large brickworks and their associated activities in a rural area. At the same time, it has possibilities for visual enhancement and for recreational development, and the first active steps are being taken towards the establishment of a Country Park based upon Stewartby Lake, which is the largest expanse of water in the county. The hope is that recreation facilities can be provided in this area to cater for the rapidly increasing needs of the county and surrounding districts, but particularly for the south of the county where there are no water recreation facilities within convenient reach. Accessibility, particularly via the M1, is good and the potential in terms of water recreation facilities could be very great. The addition of severe aircraft noise to the existing environment problems would however be a serious discouragement to efforts directed towards improving the value of this area to the community as a whole.

6. Sand and gravel

6.1. I accept the figures quoted in the evidence of Mr. Pooley* as giving a very broad indication of the extent of sand and gravel which would be needed for the construction of the airport, its associated urban development and main road network. Added to this demand is the equally vast quantity of aggregate which will in any event be required for the planned growth of the region up to the turn of the century.

6.2. In Bedfordshire, deposits of sand and gravel occur in river and river terrace deposits, and deposits of glacial gravels. The latter category has never been worked to any great extent because it is extremely erratic in nature, quantity and quality, and frequently coincides with land of the highest agricultural quality. In the main, therefore, the river gravels have been used to satisfy development demands. The working of deposits also leads to a conflict of interests, and a balance has to be struck between the needs of agriculture which is a basic national industry, the need to keep the rural landscape relatively unspoilt and the demands of the building industry. Much of the Great Ouse river valley upstream of Bedford contains areas of considerable natural beauty and attractiveness.

6.3. The conclusion that must be drawn from the establishment of the airport at Cublington is that because of the proximity of Cublington to reserves in Bedfordshire there would be a greatly accelerated demand for sand and gravel from river and river terrace reserves. At present, a firm policy exists which is designed to meet the current needs of the sand and gravel industry with the minimum harm to amenity and agricultural interests; this policy would be completely eroded. In addition the existing local road system would be entirely inadequate to cope with the resultant movement of heavy traffic over concentrated periods.

7. Conclusions

The effects of the proposed airport may be summarised as follows:

1. The serious aggravation of the problem of planning for the growth of South Bedfordshire, and in particular the effect on the labour demands for the growth of the motor vehicle industry.

* p. 1023.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. The widespread effects throughout a very large area of the county, of noise on the home environment and the opportunity for recreational pursuits particularly in the attractive area of the Greensand Ridge.

3. The resultant demand for sand and gravel which will have to be met, largely from the attractive valley of the Great Ouse.

APPENDIX A

Population and dwellings affected (4 runways)

Roskill Commission basis

	1968		*FUTURE**	
NNI Contour range	*Population*	*Dwellings*	*Population*	*Dwellings*
50+	3,331	1,078	3,791	1,231
45–50	880	288	1,099	361
40–45	6,255	2,002	7,189	2,314
‡35–40	8,219	2,610	10,590	3,400
TOTAL	18,685	5,978	22,669	7,306

‡ *The 35 NNI suggested by Mr. Fleming used for comparison purposes.*

Norman Fleming basis

	1968		*FUTURE**	
NNI Contour range	*Population*	*Dwellings*	*Population*	*Dwellings*
55+	20	6	20	6
45–55	4,191	1,360	4,870	1,586
35–45	14,474	4,612	17,779	5,714
TOTAL	18,685	5,978	22,669	7,306

* *1968 population + outstanding planning consent for residential development and unused residential allocations.*

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Hertfordshire County Council

SUBMITTED BY MR. D. S. OVERTON*

I am a Chartered Town Planner, an Associate Member of the Town Planning Institute and an Associate of the Royal Institution of Chartered Surveyors. I hold the appointment of Deputy County Planning Officer to the Hertfordshire County Council.

1. Regional considerations

1.1. Cublington in the County of Buckinghamshire has been shortlisted by the Commission on the Third London Airport as one of the sites for further consideration. The centre of the suggested site lies approximately four miles to the north-west of the extreme western boundary of Hertfordshire formed by the Tring–Berkhamsted salient.

1.2. Approximately 137 square miles of Hertfordshire (housing a population of about 148,000 people) lie within twenty miles of the site, and it is in this area that any primary effects of an international airport might be expected to be felt. By primary effects I have in mind aircraft noise, urbanisation and traffic pressures.

County policy

1.3. In both the Approved and Review County Development Plans a large part of the area is shown as being of Great Landscape Value, corresponding mainly to the area where the Chilterns cross the County. In the approved County Map and in the current Review, four Town Map areas are defined—Tring, Berkhamsted, Harpenden and the Hemel Hempstead New Town Area. The areas of Kings Langley and Redbourn are excluded from the surrounding Green Belt and there is some scope for limited further development within these villages. The south-eastern part of the twenty-mile sector is within the Metropolitan Green Belt.

1.4. The remaining land outside the towns and "excluded" areas is shown in the First Review County Map (now before the Minister of Housing and Local Government) as a proposed extension of the Metropolitan Green Belt. The Minister has indicated that he does not intend to approve this extension at present. He considers that since the present review goes only to 1973 the extension of the Green Belt would be better considered at the next review when a longer term view can be taken. In the meantime, however, the Minister has proposed that in this outer area only such development as would be appropriate in the neighbouring Green Belt should be permitted.

1.5. The towns in West Hertfordshire, particularly the Berkhamsted–Hemel Hempstead, Watford–St. Albans complex lie very close together. In order to preserve their separate identity it is vital that the open green wedges which separate them should be preserved. These wedges are very narrow in places and extensions on the perimeter of the existing towns and villages would lead to the merging and agglomeration of the built-up areas. To this end, the County Council as Local Planning Authority has successfully pursued a very strong restrictive policy to prevent development taking place in these open areas. In a similar way, an equally restrictive policy has been implemented to preserve the extensive countryside of high landscape value beyond the built-up areas.

1.6. The table below sets out the populations and distances from the airport site of each of the areas contained in the First Review Plan:

Town map areas	*Miles from Cublington*	*1968 population*
Tring	9	9,800
Berkhamsted	14	15,700
Hemel Hempstead	17	67,000
Harpenden	19	22,500
"Excluded" areas		
Redbourn	18	4,000
Kings Langley	19	3,600
Remaining rural area		25,400
Total within 20-mile sector		148,000

1.7. In April 1965 the Minister of Housing and Local Government confirmed the designation under Section 87 of the National Parks and Access to the Countryside Act, 1949, of the Chilterns as an Area of Outstanding Natural Beauty.

Regional policies affecting West Hertfordshire

1.8. The *South-East Study*,* published by the Ministry of Housing and Local Government in 1964 was the first of the recent series of plans which have examined the problems of the South-East. The Study considered the housing and land use problems of accommodating a further 3½ million population (resulting from natural increase and immigration) by 1981, and also examined the London Green Belt. while it was suggested that certain parts of the Green Belt should be re-examined (for example in the Lee Valley Area), no such proposals were made for the

* See also p. 1561.

* (HMSO; 15s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

western part of the County. The Study also suggested that some extension should be made to the Green Belt and in para. 21 on page 94, particular reference was made to the value of the Chilterns:

> "There are some areas of outstanding national scenic value—like parts of the Chilterns—which are obvious candidates for permanent protection; other less well-known features of great local importance, like Sharpenhoe Beacon, or Luton Hoo; and stretches of attractive country which need permanent protection, not so much because of their appearance, but because their proximity to a big town makes them both valuable and vulnerable."

1.9. The Tring–Berkhamsted salient and the Hertfordshire countryside to the east of Luton lie within one of the "Green Sectors" proposed by the South-East Economic Planning Council in their report *A Strategy for the South-East*,* published in 1967. Para. 33 on page 9 of the report refers to these areas which lie between the radial sectors of building development proposed by the Council, as follows:

> "We attach equal importance to the positive planning of the green sectors which cover the remainder of the region outside the London conurbation. These areas form 'buffers' between the major and minor sectors and include very wide areas of countryside with varying degrees of importance in terms of agricultural value, natural beauty, or landscape value; but they include also many smaller but growing towns and villages. In these areas, we clearly could not suggest a total prohibition on all development since existing towns and villages will grow; but our objective is to prevent by stronger planning discipline any further major urban or industrial expansions in these green sectors."

Para. 159 on page 43 goes on to define proposals for Country Zones:

> "A Country Zone would be land which is primarily rural in character. It would include agricultural and horticultural land, forests, woodlands, common land, areas of landscape value, rivers and coast, together with existing country towns, villages and other developments related to rural activities. The intention would be to protect the rural economy and its characteristics; to safeguard high value agricultural land; to confine development to rural activities and to resist the incursion of urban development. The new country zones would inevitably contain a large resident population in existing towns, villages and other settlements; and there will have to be some allowance for their essential growth. But urban encroachments would be discouraged and expansion schemes would be channelled into the areas selected for growth."

The Council emphasised that there were certain areas where the Country Zone principle should be applied immediately. Para. 160 on page 43 states:

> "It will be impossible to apply these new criteria over the whole area at once and in the meantime, while this change in planning policy is being adopted, there is an urgent need to earmark particular areas for priority attention, where the country zone principle should be applied immediately. Many of these are already designated as Areas of Outstanding Natural Beauty, and our Strategy Map presents a diagrammatic picture of the areas that merit first attention."

Nearly all the Tring–Berkhamsted Salient to a line midway between Berkhamsted and Hemel Hempstead (up to about 15 miles radius from Cublington) is indicated on the strategy map as such a Main Country Zone, as is the Hertfordshire countryside to the north and north-east of Luton.

1.10. The Standing Conference for London and South-East Regional Planning. In their publication *The South-East: a framework for regional planning* (LRP.1180—July 1968) the Conference said in para. 115 on page 31:

> "We next consider the region's coast and countryside. We have said earlier that one of our prime objectives is to seek a positive policy for the whole urban and rural landscape of the region, rather than one aimed only at safeguarding individual beauty spots or preventing the spread of particular urban areas. Further we see the need to plan for the coast and countryside on the basis of their resources—for agriculture, forestry, amenity and recreation—and not as areas simply left over from urban development. These resources must and can be nurtured in the development of the region. In Chapter 6 we presented maps showing agricultural significance, wooded areas, landscape quality and population distribution. The accompanying notes gave a regional description of these elements. We see advantages in the concept of landscape/agricultural reserves comprising predominantly rural areas of considerable extent in which the objective would be maintenance of the scale of the countryside, of agriculture and of attractive landscapes over the remaining extensive tracts of land which are still sparsely populated and relatively free from urban intrusion. Our work on this concept continues.
>
> Reference to figures 18 and 20 suggests that these reserves would be drawn so as to include areas such as North Essex, North Hertfordshire, the Chilterns, the Berkshire and Hampshire Downs, the North and South Downs, and much of the Weald and the New Forest."

1.11. The Chilterns Standing Conference was set up in 1967 jointly by the County Councils of Hertfordshire, Bedfordshire, Buckinghamshire and Oxfordshire for the purpose of reviewing and making recommendations to its constituent authorities for the preservation and enjoyment of the Chilterns Area of Outstanding Natural Beauty. The Conference has authorised the preparation of a Plan which will put forward positive proposals and policies for the preservation and improvement of the area and its

* (HMSO; 15s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

enjoyment for recreational purposes. This Plan is now nearing completion.

1.12. It can be seen that the policies (proposed or adopted) of the Hertfordshire County Council, as local planning authority, and all the regional bodies concerned are positively based on the protection of the countryside in this part of the County, its reservation for recreational use and restriction on the ground of towns and villages.

I understand that the urbanisation proposals as at present put forward by the County Planning Officer of Buckinghamshire do not specifically involve the development of land in Hertfordshire. Whatever the final pattern of urbanisation, however, there will be pressures on West Hertfordshire from people seeking homes within travelling distance to the airport as well as from new road communications through the area from the airport to Central London. I will refer to these in more detail later in my evidence.

2. Other planning considerations

2.1. Having examined briefly the regional planning considerations, I will now deal with the other major implications for Hertfordshire of siting the airport at Cublington. These fall under the following three heads:

i) Employment and housing;

ii) Amenity and agriculture;

iii) Aircraft noise.

3. Employment and housing

3.1. In determining the contribution which existing future population in Hertfordshire could make to the labour demands arising from the airport at Cublington, consideration has been given to two factors:

i) The capacity of Development Plans for future population growth at the time the airport comes into operation, and

ii) the proportion of this new population which is likely to find employment at the airport, bearing in mind the length of the journey-to-work and the competition of other labour demands.

3.2. *Population growth*

When considering the urbanisation problems which would arise from the use of the Nuthampstead site, the County Planning Officer of Hertfordshire took a maximum radius of twenty miles from the airport centre as a reasonable area of search, with the proviso that ideally any airport associated population should be within 10 miles of the site.

3.3. The contribution to the airport's labour demands could arise in two ways. First of all, during the initial period of the population build-up before substantial new building could begin, airport workers would be seeking in competition with other house purchasers, houses coming on the market by natural turn-over. This turn-over in Hertfordshire is about 5 per cent per annum. After a 4 year period, therefore, 20 per cent of the stock of dwellings might become available on the market.

3.4. The second part of any contribution could come from new development in the towns and villages within daily travelling distance of the airport. There will be a balance of development remaining in the Approved and Review Development Plans for Hertfordshire between 1974 and 1981, and there is also likely to be some limited growth in this area between 1981 and the end of the century, (by which time the airport should be in full operation).

3.5. Estimates of this new population growth in Hertfordshire after 1974 are as follows:

(i) TURNOVER OF DWELLINGS

Within 0–10 *miles of Cublington*	*Within* 10–20 *miles of Cublington*
Total stock of dwelling at 1974 = 3,800	Total stock of dwellings at 1974 = 53,000
At 3 persons per dwelling = 11,400 persons	At 3 persons per dwelling = 159,000 persons
Assume 20 per cent available (4 years at 5 per cent) = 2,300 persons (a)	Assume 20 per cent available (4 years at 5 per cent) = 31,800 persons (b)

(ii) NEW DEVELOPMENT 1974–1981

0–10 *miles*	10–20 *miles*	
Tring—2,000 persons (c)	Hemel Hempstead	9,000
	Berkhamsted	3,000
	Harpenden	1,000
	Redbourn and Kings Langley	700
	Rural Area	1,000
		14,700 persons*(d)

(iii) NEW DEVELOPMENT 1981–1996/2000 (my guess-estimate)

0–10 *miles*	10–20 *miles*	
Nil	Say,	12,000 persons(e)

* The Minister is proposing some modifications to the First Review of the Development Plan. It is not known which of these will be finally approved but their effect on this population exercise will not be significant.

3.6. Thus, the total new population derived from turn-over of dwellings and new development after 1974 ((a) to (e) above) might be in the order of 63,000 persons. It now remains to estimate what proportion of this population is likely to contribute to the employment demands of the airport at Cublington.

3.7. In the evidence of the County Planning Officer of Hertfordshire* in connection with the Nuthampstead site, the assumption was made that 40 per cent of all available housing accommodation within 10 miles of the airport site would go to persons associated with the airport, and 20 per cent within 10–20 miles. On the same basis, the population from

* *Papers and Proceedings*, vol. IV

Printed image digitised by the University of Southampton Library Digitisation Unit

Hertfordshire which might be associated with the airport would be as follows:

	0–10 *miles*	10–20 *miles*
Turn-over of dwellings	2,300 persons (a)	31,800 persons (b)
New development 1974–1981	2,000 persons (c)	14,700 persons (d)
New development 1981–1996/2000	—	12,000 persons (e)
Total	4,300 persons (f)	58,500 persons (g)
	40% (f) = 1,700	
	20% (g) = 11,700	

Possible total population associated with airport 13,400 persons

3.8. *Employment*

Over the last 10 years, labour demands in Hertfordshire, as in Buckinghamshire, have greatly exceeded supply, the numbers of employment vacancies sometimes exceeding unemployed persons by as much as five times. The table below illustrates this:

Year	*Persons unemployed*			*Vacancies on offer at Employment Exchanges*		
	Male	Female	Total	Male	Female	Total
March 1960	1,130	489	1,619	3,872	2,884	6,756
March 1965	1,318	378	1,696	5,688	3,541	9,221
March 1968	3,093	481	3,574	2,583	2,019	4,602
March 1969	3,696	476	4,172	4,226	2,243	6,469

3.9. In the face of the persistent shortage of labour and the realisation that the full development of all available industrial land throughout the county would give rise to a demand for a population growth well in excess of the Development Plan provisions, the Hertfordshire County Planning Committee has been applying a policy of severe restriction of industrial development since 1963. This policy provides that industrial land should only be developed by firms badly sited within the County and requiring relocation, or by the expansion of existing firms. This policy precludes the introduction of any new industrial firms into the County.

3.10. In West Hertfordshire, the major centre of employment is the New Town of Hemel Hempstead, whose industrial estate has expanded rapidly. There is a very wide diversification of industry in this area, including electronics, light engineering, film processing and paper making and Hemel Hempstead has also attracted significant office growth.

3.11. The capacity for future expansion in industry and offices in this area is also strong. A study has recently been carried out to measure the likely growth in employment in Hemel Hempstead, Berkhamsted and Tring, taking account of the labour supply which is likely to be available when all the housing land allocated within the Development Plan has been fully developed. This showed that if present employment growth trends continued, the land allocated for industry to Hemel Hempstead would be developed to full capacity by 1981. On this basis, the likely labour demand for the area as a whole would exceed supply by some 3,000. The potential employment growth, particularly in Hemel Hempstead, is therefore likely to be curtailed in the future by severe labour shortages.

3.12. The above study assumed that the present pattern of commuting of workers into and out of the area would continue. The signs are, however, that this may well not be the case. The Greater London Development Plan forecasts that London's population and work force are likely to continue to decline at a faster rate than its employment. In this event, commuting into London could well grow correspondingly and West Hertfordshire is likely to be a strong target for house-hunters. Demand in this particular area is likely to be accentuated as a result of the recent improvement of the main line train service to Euston following electrification. (The journey time to London from Hemel Hempstead, Berkhamsted and Tring is now only 35, 40 and 45 minutes respectively). Although large numbers already commute into London by train from this area, I understand that the line has considerable future passenger capacity.

3.13. Thus, the contribution which West Hertfordshire could make to the employment demands of the airport will be limited by the strong competition for labour from within the area and from London.

3.14. For the reasons set out in paras. 3.11, 3.12 and 3.13, I consider that the estimate of 13,400 persons in para. 3.7 should be regarded as an absolute maximum and, although it is not possible to predict with any accuracy in the future, it would be prudent to assume that *the total contribution for housing people associated with the airport might well not exceed half that figure, i.e. about 6–7,000 persons.*

3.15. No allowance has been made in these calculations for possible "draw-back" of persons who at present daily commute out of the area to work. In studying this, I have considered only those persons who have a journey to work longer than the distance between their home town and the airport, and have excluded Central London commuters who are unlikely to find the same range of equivalent job at the airport. On this basis, although Tring and Berkhamsted are within 10 miles of the airport and both are likely to be well served by road and railway connections, there are at present only about 900 commuters in this category. Allowing only for a

Printed image digitised by the University of Southampton Library Digitisation Unit

proportion of these who will find employment at the airport more attractive, I do not consider that either town is likely to make any significant contribution in this way to the airport's labour demands. I have similarly made no provision for the "draw-back" from Hemel Hempstead or Harpenden, bearing in mind that the long-distance commuting element (excluding travel to Central London) is not high and both towns are some 17–19 miles from Cublington.

4. Amenities and agriculture

4.1. As I have already said, a large area of this part of Hertfordshire has an exceptionally high landscape quality and a considerable portion is designated as part of the Chilterns Area of Outstanding Natural Beauty. In connection with its studies for the South-East Joint Planning Team (and before the sites short-listed by the Commission had been announced) Hertfordshire County Council proposed several extensions and additions to the areas indicated on the County Development Plan as being of Great Landscape Value. Some of these areas are within the twenty-mile radius of the Cublington site, and are shown (together with the approved areas in the Development Plan) on plan DSRO/1* under the notation "Areas of Great Landscape Value".

4.2. The Chilterns A.O.N.B. extends for some 40 miles from Goring in Oxfordshire, across Buckinghamshire and Hertfordshire and ends to the north-east of Luton. This area covers some 309 square miles (35 square miles in Hertfordshire) and is renowned for its beautiful beech woods, its unspoilt countryside and its fine view points. Lying within 40 miles of London it offers great scope for open air recreation to Londoners and the large population from the surrounding region, particularly on weekends and summer evenings.

Within the Hertfordshire sector of the Chilterns A.N.O.B. is the Ashridge Estate, a heavily wooded area of some 4,000 acres, which is owned by the National Trust. The Estate includes Berkhamsted Common in the south and Ivinghoe Beacon in the north. Most of it has unrestricted public access and is fine walking and picnicking country. It is regularly visited by some 10,000 people on any fine Saturday or Sunday in the summer. I understand that the National Trust consider that the capacity of the Ashridge Estate to absorb many more visitors and cars is limited if the amenities of the Estate and its woodlands are to be preserved. The introduction of very large scale population growth (associated with an airport) within easy travelling distance of Ashridge would be certain to seriously aggravate the problems of reconciling the demands of visitors with the preservation of the character of the Estate. Indeed, such are the difficulties in effectively controlling the activities of visitors over such a wide area, the point could soon be reached when the Estate would lose its present attractiveness as an extensive area of great natural beauty.

4.3. Just over the County boundary in Bedfordshire are the Dunstable Downs and the extensive open Zoo at Whipsnade, both of which also attract visitors in large numbers. Passing through the A.O.N.B. and up through the Tring salient, runs the Grand Union Canal, (now defined as a "cruiseway" under the Transport Act 1968) which is becoming increasingly popular with the public for recreational purposes. The long-distance Chilterns footpath crosses the County from north-east to south-west only some six or eight miles from the airport site. Within the A.O.N.B. also is the one National Nature Reserve in Hertfordshire comprising the four reservoirs at Tring which cover over 200 acres and have a considerable bird population. The winter population normally includes up to 1,000 grebes and ducks, 1,000 gulls and a wide range of nesting birds. The surrounding banks and rushy marshes are of great interest for their study of the marsh flora and fauna and to entomologists.

4.4. Although the Chilterns A.O.N.B. within Hertfordshire adjoins the towns of Berkhamsted, Tring and Hemel Hempstead and is well served by road and rail from London, all building development has been severely restricted since the late war years; the safeguarding of this fine tract of countryside has been achieved as a result of the County Council's Green Belt policy and control by the National Trust.

4.5. To summarise, the majority of the open countryside lying within the twenty-mile ring in Hertfordshire is made up of the Chilterns A.O.N.B., and approved and proposed Areas of Great Landscape Value; much of the remainder is of well above average landscape which, as stated earlier, forms a vital function in providing open wedges between settlements. For these reasons, the significant expansions of any of the settlements within the 20-mile sector would have a very damaging effect on the character of the area and would be quite contrary to the policies which the County Council has actively pursued for many years and which have been approved by the Minister in the Development Plan.

4.6. Within the twenty-mile radius of the airport site there are in Hertfordshire twenty-six Conservation Areas, designated or in process of designation under the Civic Amenities Act. Most of these are small villages of great character and charm. Within them there are, in total 181 buildings on the Minister of Housing and Local Government's Statutory List and 205 buildings on the provisional list.

Conservation Areas within 10 miles:

Long Marston	Tring Central Area
Wilstone	Ringshall

Conservation Areas within 10–20 miles:

Aldbury	Great Gaddesden
Little Gaddesden	Water End
Berkhamsted Central Area	Markyate
	Flamstead
Frithsden	Hexton
Nettleden	Lilley

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Conservation Areas within 10–20 miles—*cont.*

Pirton	Hemel Hempstead Central Area
Offley	Bovingdon
Redbourn	Chipperfield
Harpenden Central Area	Flaunden
Kings Langley	Sarratt
Piccotts End	

4.7. The agricultural value of the farmland within the twenty-mile sector is quite good. Most is under the Ministry of Agriculture Grade III classification, i.e. land with moderate limitations due to soil, relief or climate, or some combination of these factors which restrict the choice of crops, timing of cultivation or level of yield. Two small areas north of Tring are Grade II (land with only minor limitations).

4.8. The impact on landscape and amenity of new roads to serve the airport has also been considered. Evidence on road and rail communications is being given by Mr. F. A. Sharman* of Sir William Halcrow and Partners. He considers that improvements to the A41 and A413 should be adequate to meet airport needs until the mid-1980s.

4.9. From 1981 onwards, however, Mr. Sharman forecasts the need for a new 3-lane motor-way for the London traffic and suggests a possible route for this which is shown on Plan DSRO/1. It cuts across the Chilterns A.O.N.B. passing through attractive rolling countryside south of Berkhamsted. From there it runs south-east to the Cassiobury Park area (west of Watford) traversing the heart of a heavily wooded area which the local planning authority has proposed as an area of Great Landscape Value. From here the road turns south to join the 'D' Ring road.

4.10. A suggestion is also made for a new road link in the short-term between the end of the new A41 (at Watford) and the 'D' Ring road, passing probably between Cassiobury Park and the golf course; the latter area lies close to the centre of Watford and is a well-known area for walking and picnicking. A further link between Chalfont St. Giles and the 'D' Ring road (near Batchworth Heath) is also suggested.

4.11. All these suggested roads must be regarded as objectionable as involving intrusions into unspoilt areas of outstanding scenery which, even if carefully landscaped, would have very damaging effects.

4.12. Rail communications as forecast by Mr. Sharman would have no direct impact on Hertfordshire.

5. Aircraft noise

5.1. The NNI contours issued by the Commission† show the 40 NNI contour coming within about *two miles* of the extreme western tip of the County of Hertfordshire. The 35 NNI contour as calculated by Mr. Fleming, the accoustic consultant, runs about a quarter of a mile closer. It will be seen from the evidence of Mr. Fleming* that, in the terms of the Wilson Report,† any nuisance in Hertfordshire from the airport would be described as less than "a little annoying". I understand also that Mr. Fleming considers that, by the criteria already used at the Nuthampstead site to measure the need for sound-proofing in schools (PNdB), no Hertfordshire schools would require such treatment on account of an airport at Cublington (sited as proposed in the Commission's maps CTLA3/2 and 3/3).

5.2. Although aircraft from the airport at Cublington would neither take-off nor land directly over Hertfordshire, a proportion would fly over the County from the eastern stacking area on their way in to land and, after take-off, en route to their destination. I am advised that, in the former case, minimum heights of the aicraft would be about 4,500 ft, and after take-off, would at at least 4,000 ft. I understand from Mr. N. Fleming, who is giving evidence on aircraft noise, that, in neither case, would these aircraft be likely to cause any appreciable noise niusance to residents in the County.

5.3. It seems that the use of the Cublington airport would place restrictions on the operational use of Luton Municipal Airport and Stansted Airport. These restrictions, together with competition from an airport less than 20 miles to the west could well mean that the airlines at present using Luton would transfer to the new airport, in which case it is doubtful whether it would be economic for Luton to remain in operation. There could then be a net relief in terms of aircraft noise for the people of Hertfordshire.

In 1968 the number of people in Hertfordshire effected by noise from Luton Airport was as follows:

55+ NNI contour—	Nil
45–55 NII contour—	15
35–45 NNI contour—	600
TOTAL	615 persons

It is known that Luton's scheduled traffic for 1969 is considerably higher than for 1968 with a very much higher proportion of jets.

There is also noise nuisance from the present Stansted Airport but it has not been possible to quantify the population affected because of the difficulty of defining NNI contours where there is so much training flying and such rapid airline growth.

If as the result of the siting of the Third London Airport at Cublington these airports are closed or their operations are reduced, these would be local advantages to be set against the numbers affected by noise from Cublington.

6. Conclusions

6.1. In summary of my evidence, I would make the following major points:

* p. 1007.
† See attached wallet of maps and diagrams.

* p. 1017.
† Cmnd. 2056 (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

i) The area of West Hertfordshire which lies within an area of twenty miles of the airport site includes five towns (Tring, Berkhamsted, Harpenden, and Hemel Hempstead), and extensive areas of unspoilt open countryside containing many villages of great character and charm which are designated as Conservation Areas. Much of this countryside is of outstanding landscape value and is an important recreational area for Londoners and population in the region. The introduction of very large-scale population growth (associated with an airport) within easy travelling distance of much of this countryside must be regarded as a serious threat to the prospects of preserving the character of these unspoilt areas.

ii) For many years, the County Council has pursued a strong restrictive policy against the expansion of the towns and villages in this area, both in its development plans and in development control. Together with policies of restricting employment growth, these have been directed towards preserving the unspoilt landscape and the separate identity of towns and villages in the area. Regional studies have confirmed these policies.

iii) Taking into account that most of the future population growth will be some ten miles or more from the airport site, it is unlikely that the contribution which Hertfordshire would make to the housing demands of the airport would exceed 6–7,000 persons.

iv) An airport at Cublington would be likely to necessitate the construction of new major motorway links with London which would cut through the Chilterns Area of Outstanding Natural Beauty and other Areas of Great Landscape Value. Even with careful landscaping, these roads would be bound to damage very severely the attractive scenery through which they would pass.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Watford Borough Council*

SUBMITTED BY MR. G. H. HALL

Borough of Watford
Town Hall
Watford

15th July 1969

A. J. Hunt, Esq.
Principal Planning Inspector
Ministry of Housing and Local Government
Whitehall
London SW1

Dear Sir,

Stage II of Local Hearing—Cublington (Wing)

I am writing to thank you for your courtesy in allowing a representative of the Borough Council, Mr. J. A. Giddings, to speak at the Inquiry.

The Borough Council refer particularly to items 4.9, 4.10, 4.11 together with item (iv) of 6.1 of the evidence of Mr. D. S. R. Overton† on behalf of the Hertfordshire County Council.

The Borough Council would raise the strongest possible opposition to the siting of the roads as referred to in these paragraphs.

Yours faithfully,
G. H. HALL
Town Clerk

---

* See also p. 1563.

† p. 1076.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Luton County Borough Council

SUBMITTED BY MR. C. K. COLE*

1. I am the Director of Luton Airport and I have held this appointment since August, 1964. For two years prior to that date I was Deputy Airport Commandant at Luton and I have had previous experience at international airports overseas as Airport Commandant at Lagos and Freetown and prior to that as an Air Traffic Control Officer at Kano and Lagos from 1948. I qualified as a pilot in the Royal Air Force in 1942.

2. The Luton Borough Council took the decision to establish a Municipal Airport in 1934 and the site was acquired in 1936. The airport was first licensed in April 1938 and was officially opened by the Secretary of State for Air, Sir Kingsley Wood, on 16th July, 1938.

During the 1939–45 War, the airport was used by the Royal Air Force for training purposes and several factories connected with the aircraft industry were established in buildings erected within the site.

Since the War there has been a continuous and increasing use of the airport by civil airlines.

3. The airport lies to the east of Luton and is less than 3 miles from the M1 motorway. The projected construction of Luton's Eastern By-pass, which is in the Ministry of Transport's Preparation Programme and will be in effect an extension of the existing Motorway Spur Road, will provide a shorter and quicker direct road connection between the airport and the motorway. The airport is approximately 32 miles by road from Central London and is quickly accessible from the Midlands and North London as well as being in the centre of a considerable population within a radius of 20 miles estimated at 4,000,000.

4. Since the construction of a concrete runway in 1960 and the completion of the M1 motorway, there has been a remarkable increase in commercial traffic at the airport as shown by the following numbers of passengers arriving at and departing from the airport:

1961	9,539
1962	43,417
1963	137,297
1964	174,545
1965	213,111
1966	362,581
1967	419,117
1968	696,835
1969 (estimated)	1,400,000

5. The number of aircraft movements has also increased very considerably in the same period as is shown by the following figures:

	Total movements	*Commercial air transport movements*
1961	30,086	580
1962	27,668	1,258
1963	30,894	3,153
1964	36,937	4,248
1965	30,714	3,895
1966	41,120	6,033
1967	42,769	7,839
1968	48,031	9,513
1969 (estimated)	56,000	15,000

6. To cope with the increased and increasing traffic the Corporation have greatly extended the available facilities including the construction of a concrete runway, taxiways, aprons, car parks, hangars, roads, fire station and terminal buildings and have also installed radio, direction finding and radar equipment in addition to runway and approach lighting. The installation of an Instrument Landing System has been completed this year. In addition to the concrete runway there are two grass runways.

7. The total capital expenditure incurred or in hand at the airport exceeds £4,000,000. The estimated gross revenue of the airport in the financial year 1969–70 is £900,000 and this will produce an estimated net surplus of £193,025 after making full provision for all expenditure (including annual loan repayments and interest).

8. The principal aircraft operators at Luton Airport include the following:

Autair International Airways Ltd. (a subsidiary of Court Line Ltd.)

Britannia Airways Ltd. (a subsidiary of Thomson Travel Holdings Ltd.)

Monarch Airlines Ltd. (a subsidiary of Cosmos Tours)

Dan-Air Services Ltd.

Channel Airways Ltd.

British Midland Airways Ltd.

The first four are associated with major inclusive tours organisers such as Clarksons, Sky Tours, Cosmos Tours, Everyman, Lunn-Poly and with several other tour operators. The Aviation Division of Sir Robert McAlpine & Sons Ltd. provide charter,

* See also p. 1564.

Printed image digitised by the University of Southampton Library Digitisation Unit

hangarage and maintenance facilities for a substantial number of executive aircraft. Other operators based at Luton include Autair Helicopter Services Ltd. and Luton Flying Club Ltd.

The aircraft operators are not only engaged in inclusive tour traffic but also undertake trooping and other charter passenger traffic as well as freight.

Many other operators regularly make use of Luton on ad hoc charter and for reasons of weather diversions.

9. It is evident that Luton Airport, by reason of its road and rail communications, is very conveniently situated for the Inclusive Holiday Tour traffic. It not only caters for local traffic of this type generated within a radius of 20 or 30 miles, but also serves the North and Midlands and the Greater London area from which passengers come by coach or private cars. It is estimated that 20 per cent of all traffic of this type in the United Kingdom is handled at Luton Airport, which makes a valuable and probably indispensable contribution to the airport facilities of London and the South East and affords relief to Heathrow and Gatwick which are said to be approaching saturation point. Still greater relief to Heathrow could be obtained by transferring to Luton some internal scheduled services between London and the North and North West.

10. The airport is open for traffic seven days a week, twenty-four hours a day, and the Air Traffic Control service is continuously manned. The Inclusive Tour traffic has been largely seasonal in character from March to October inclusive which creates considerable peak demands on all airport facilities, but the season is now being extended and there is a tendency for a greater number of winter holidays to be arranged. The principal routes of the Inclusive Tour traffic are to Europe and the Mediterranean, although it is also contemplated that in the near future some of the operators will be desirous of arranging longer distance holiday flights to such places as the Bahamas, West Indies and Africa necessitating the use of longer range equipment.

11. A plan has been prepared and is attached to this Proof of Evidence* (marked CKC1) showing the existing national airways system and the principal routes taken to and from such airways by commercial aircraft landing at and taking off from Luton Airport.

The majority of commercial aircraft to and from Luton Airport travel to the south and therefore join the national airways system at either Beacon Hill or Brookmans Park. If the Third London Airport was located at Cublington (Wing) considerable congestion would arise in the already overloaded airways, and would result in severe restrictions on commercial traffic movements to and from Luton Airport.

12. In addition to Inclusive Tour, Charter, and Executive Aircraft operations, there are several scheduled services emanating from Luton. British Midland Airways Ltd. run scheduled services to Jersey, Guernsey, Dublin and Belfast. Channel Airways operate a bus-stop service between Southend and Aberdeen with intermediate stops at Luton, East Midlands, Leeds–Bradford, Tees-side, Newcastle and Edinburgh.

13. The amount of Air Freight Traffic at Luton Airport, which in 1968 was 912·4 metric tons and for 1969 is estimated to increase by about 50 per cent, is not at present large, but it has considerable potential in this respect.

Luton is well placed to serve North London thus avoiding a good deal of cross-London surface transport and there is much industry and commerce within a radius of 20 miles.

14. The present Intermediate Terminal Building which was designed for a Standard Busy Rate of 500 passengers per hour came into use in May, 1966. It was estimated that it would suffice for 5 years, but the growth of traffic has been such that at peak times, particularly when these coincide with delayed flights, the building is seriously overloaded. The Council have recently decided to undertake an interim extension of the Terminal Building which has now been brought into use and which caters for a Standard Busy Rate of 1,000 passengers per hour. Having regard to the prospects for continued growth in traffic, at the rate of approximately 30 per cent per annum, it is apparent that many other facilities at the airport will be inadequate to meet the demand and the Corporation have been considering further permanent extensions of some magnitude including the possible construction of an additional runway 10,000 ft in length. No decision on the wider question has yet been made, but the Corporation have commissioned Sir Frederick Snow and Partners to investigate and report on the several factors which influence the planning of, and determine the need for, the future expansion of Luton Airport. A copy of their Terms of Reference is attached to this Proof of Evidence (marked CKC2). The Corporation have also retained Dr. E. J. Richards, Vice-Chancellor of Loughborough University and his associate, Mr. C. S. Waters, to advise them and Sir Frederick Snow and Partners on questions of aircraft noise which may arise in connection with the airport.

15. Although the Corporation do not contemplate the establishment at Luton of an airport of the size and character now under consideration by the Commission, the Corporation consider that if the Third London Airport was located at Cublington (Wing) there would be a very considerable adverse effect upon Luton Airport. It is therefore urged that, in submitting any recommendations or observations with regard to the location of the Third London Airport at Cublington (Wing), due account should be taken of the existence of Luton Airport, the considerable contribution it is at present making to

* p. 1087.

Printed image digitised by the University of Southampton Library Digitisation Unit

airport facilities in the London and South Eastern area, its potential for further expansion, the need to ensure that it can continue to operate effectively, and the very considerable capital expenditure which has been or is being incurred with the full approval of the Central Government.

CKC 2

County Borough of Luton: Luton Airport Development Terms of Reference to Sir Frederick Snow and Partners, Airport Planning Consultants

1. To investigate and report upon the several factors which influence the planning of and determine the need for the future expansion of the airport.

2. The Scope of the investigation shall include but not be limited to the following factors:

(a) aircraft and passenger movements
(b) cargo traffic
(c) general aviation
(d) aircraft maintenance
(e) surface access to the airport
(f) navigational and telecommunications aids
(g) meteorological conditions
(h) air traffic control and safety requirements

3. To advise the Council on the requirements for topographical and obstruction surveys and soil investigations and to make arrangements for authorised surveys to be carried out.

4. To act on behalf of the Council in discussions with the appropriate Government Departments and other Authorities responsible for and concerned with aviation matters.

5. To consult with the utilities authorities concerning the capacity of the main electrical, water and soil water services.

6. To consult with Dr. Richards, who will be appointed by the Council, on the problems associated with aircraft noise caused by the airport.

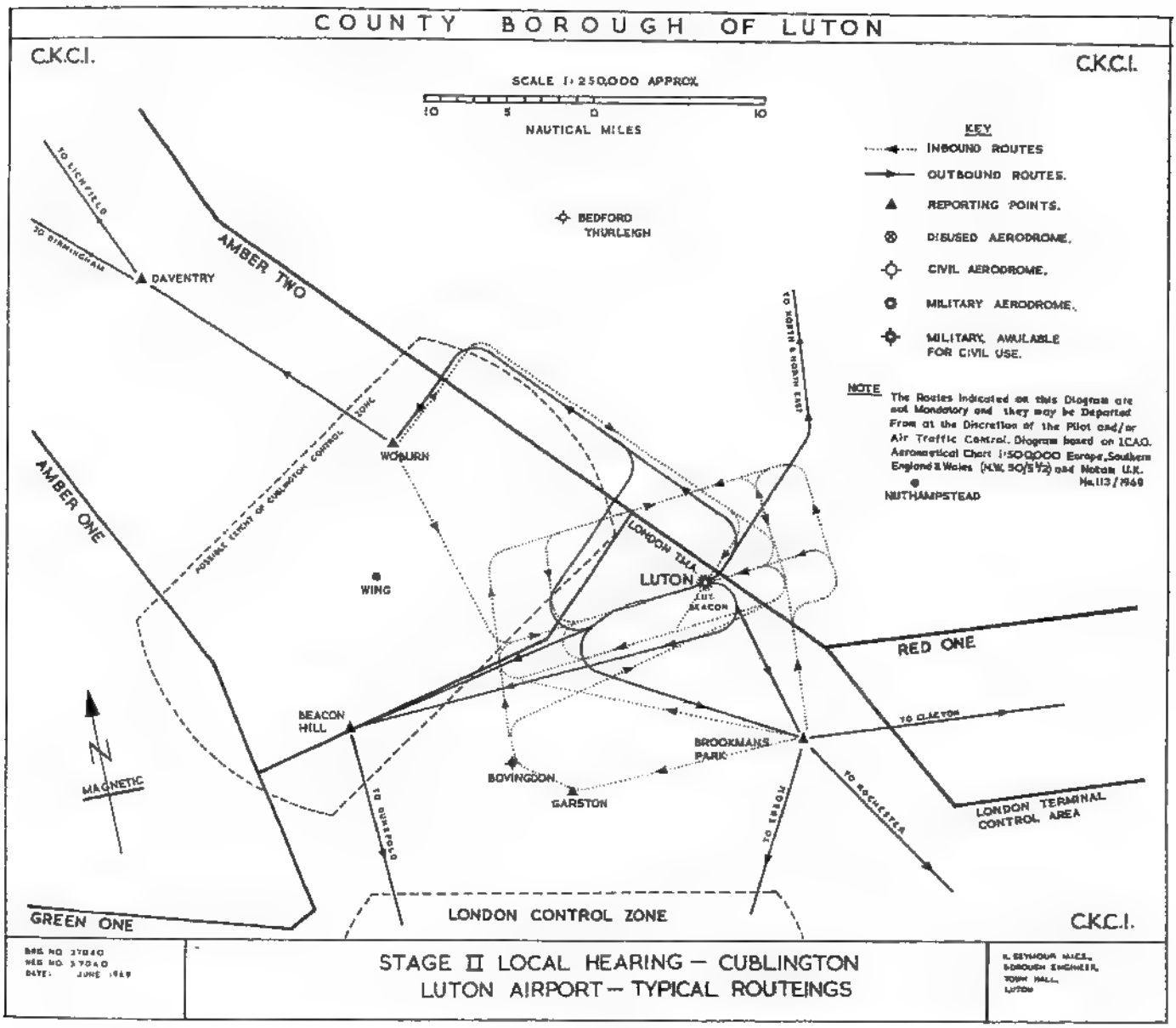
7. To appoint and employ, in agreement with the Council, such specialist consultants as may be necessary to assist the investigations.

8. To prepare an outline plan showing the future development of the airport and the method by which phased expansion could be achieved.

9. To prepare estimates of cost of the work and economic analyses of the effect of the development of the airport.

10. To investigate the economic consequences of a possible decision to ban night flying between the hours of 11 p.m. and 6 a.m.

Printed image digitised by the University of Southampton Library Digitisation Unit



CKC 1. Luton airport. Typical routeings. (Mr. C. K. Cole, Luton County Borough Council)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Luton County Borough Council

SUBMITTED BY MR. S. MCARDLE*

1. I am the Deputy Planning Officer for the County Borough of Luton and I have held this post since January 1969. Prior to that date, I was Assistant Borough Planning Officer. My qualifications are B.Sc.(Econ.) and I am a Professional Associate of the Royal Institution of Chartered Surveyors.

2. The establishment of the Third London Airport at Cublington is opposed on three main grounds:

(a) The problems of urbanisation.

(b) The effect on Luton Airport.

(c) The consequences on the supply of labour available to the town's industry in an area where the supply of labour is already a major problem.

3. **Urbanisation**

i) The problems inherent in further growth in South Bedfordshire are being examined jointly by the two planning authorities concerned, Luton County Borough Council and Bedfordshire County Council, and the Ministry of Housing and Local Government.

ii) The population of this area in 1966 was approximately 235,000 and this is expected to grow to 300,000 by 1981 and to 400,000 by the end of the century. Further work on these population figures has indicated that they probably err on the conservative side.

iii) There are several constraints upon growth in the area which limit the capacity of its population reception. The Chilterns Area of Outstanding Natural Beauty and the proposed Woburn Area of Outstanding Natural Beauty perform a valuable recreational function not only for the area but for a wide area north of the River Thames.

With the development of Milton Keynes, there would be drainage difficulties if there were to be large-scale additional development draining to the River Ouse upstream of Bedford. In addition, of course, an aiport at Cublington would sterilise parts of the area as far as urban development is concerned by virtue of the aircraft noise it would generate. A plan† (marked SM1) is attached hereto indicating the areas referred to in this paragraph in relation to the proposal to site an airport at Cublington.

iv) It seems likely that the area with its relatively developed range of urban infra-structure, would be expected to accommodate a significant proportion of the total population generated by an airport at Cublington. The Commission has estimated that a two-runway airport will employ 45,000 people and a four-runway airport 65,000, "on site". If it is assumed that ancillary organisations will provide employment equivalent to 10 per cent of that "on site" total, that manufacturing industry will provide 15,000 jobs and that a multiplier of 2·5 for service industry employment (based upon Heathrow experience) is reasonable, the total number of jobs dependent upon an airport at Cublington could be of the order of 120,000 (with two runways) and 215,000 (with four runways), supporting a total population probably in excess of 250,000 (two runways) and 450,000 (four runways). Even if the area is expected to accommodate only 25 per cent of this population, by the turn of the century this could amount to a further 100,000 people.

v) It is contended that it is extremely undesirable that South Bedfordshire should be expected to accommodate a further population of anything like 100,000 in addition to the population of at least 400,000 which is already expected by the turn of the century. Because of the constraints upon growth already listed, the problem of accommodating the expected growth without an airport at Cublington is already severe.

The area may well have to go beyond its own boundaries to solve its problems, even without an airport at Cublington. The airport would make matters much worse because, as well as increasing the population to be accommodated, it would rule out possible development in parts of the area where growth is being considered. Thus the effect of an airport at Cublington would be to increase the pressures on the area whilst at the same time reducing its potential to accommodate growth.

4. **Luton Airport**

i) The Proof of Evidence* submitted by the Airport Director indicates the contribution which Luton Airport makes to the airport facilities of London and the South East and the extent of the inclusive tour holiday traffic which is handled at the airport. It also gives details of the present

* See also p. 1565.

† See attached wallet of maps and diagrams.

* p. 1084.

Printed image digitised by the University of Southampton Library Digitisation Unit

air traffic and passenger movements and the operators at the airport.

ii) In addition, Luton Airport also performs an increasingly valuable function in helping to diversify the economy of the County Borough. Luton is very heavily dependent upon manufacturing industry (63·7 per cent of employment in Luton Employment Exchange Area in 1966) and within this sector the dominant employer is the motor vehicle industry (47 per cent of employment in manufacturing industry in 1966). This contrasts sharply with the situation in the South East Standard Region where, in 1966, 65·9 per cent of employment was in service industry, 32·5 per cent in manufacturing industry and 1·6 per cent in agriculture and extractive industries. The service industry sector is the weaker of the major partners in Luton's economy, and even if Luton Airport is allowed to expand as market pressures dictate, service industry's share of employment in 1981 in the Luton Employment Exchange Area is only expected to be 41·5 per cent as against 36·6 per cent in 1966.

If the location of the Third London Airport at Cublington imposed restrictions upon Luton Airport to the extent that operators no longer found it economical or beneficial to operate from Luton, service industry's share of employment would decline to 35 per cent. In such an event, the dependence of the County Borough upon manufacturing industry would be further increased.

5. **Labour supply**

i) The establishment of an aiport at Cublington would have two different effects upon the economy of Luton. Firstly, it would cause greatly increased competition for labour in an area where labour is in short supply. This might seriously weaken the economy of the town. Secondly, it would have the partially compensating effect of helping to diversify the economy of a wide area, including South Bedfordshire.

ii) Employment at Luton Airport has grown rapidly, as the following table indicates:

1962	170
1963	366
1964	509
1965	626
1966	909
1967	not available
1968	1,637
1969 (estimate)	2,000
1971 (estimate)	3,000

If Luton Airport continues to expand, a labour force of 6,000 by 1976 would probably be a conservative estimate. If Luton Airport was to close, or because of restrictions placed upon commercial movements, light aircraft only were able to use the airport, the majority of those employees who are skilled personnel would probably transfer to Cublington or to other London Airports over a period of time. Thus the County Borough would, as already indicated, lose much-needed labour and an important diversifying element.

iii) It has been calculated that, within Luton Employment Exchange Area, there will be a labour supply shortfall of 12,000 by 1981, if the existing balance of daily inward to daily outward work movements remains constant. In an area of competition for a scarce supply of labour, it is unlikely that Luton will be able to increase significantly its amount of inward work movement. Already by 1966, 25·6 per cent of Luton's daytime workforce was resident outside the County Borough. It can be seen, therefore, that the loss of the majority of the 6,000 airport workers by 1976 would be a setback to Luton's chances of achieving a more satisfactory balance between the various types of industry and of reducing the anticipated labour supply shortfall.

iv) The direct loss of airport employees would not be the only impact upon labour supply in Luton of the establishment of a Third London Airport at Cublington. Cublington would also prove to be a major generator of employment in industries related to the airport and in service industry, and this would further increase the competition for labour in areas where it is a scarce resource. It has already been shown that the total number of jobs dependent upon a four-runway airport at Cublington could be of the order of 215,000, of which about 150,000 would be "off-site". An employment magnet of this size located only about 15 miles from Luton would clearly compete very seriously for labour supply which is needed by the County Borough.

v) It seems clear, therefore, that the establishment of a Third London Airport at Cublington could seriously weaken Luton's economy, which is geared to such export-oriented industries as motor vehicles, engineering and electrical goods, chemicals and clothing. As an example of the wide-ranging distribution patterns of Luton's industry, only 8 out of nearly 90 manufacturing units with an employment register larger than 50 persons supply over 60 per cent of their output to other local industry.

As a whole, 43 per cent of the British motor vehicle industry's products were exported in 1968 (Central Statistical Office Monthly Digest of Statistics, April 1969), and Vauxhall Motors put the export figure from their Luton and Dunstable works combined at 35 per cent for the same year. Clearly, it is not in the national interest that the growth of such industries should be unduly restricted.

Printed image digitised by the University of Southampton Library Digitisation Unit

6. It is contended that the establishment of the Third London Airport at Cublington would result in extremely undesirable pressures for greater urbanisation, may well result in the closure of Luton Airport, which would be damaging to the economy of the County Borough, and might cause further damage by greatly increasing competition for labour in an area where it is in scarce supply.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Aylesbury Rural District Council

SUBMITTED BY MR. A. E. TOY*

1. I have been employed by the Aylesbury Rural District Council since 1939 and assumed the post of Clerk of the Council in 1943. I have, therefore, been Clerk for more than 25 years.

2. The major part of the area to the north of Aylesbury consists of quiet country villages, the only serious in-roads into the peace of the countryside is the trunk route A41 which does carry a certain amount of heavy traffic. From time to time there are rocket tests on the Government Rocket Propulsion Establishment at Westcott, whilst these are noisy the tests are of short duration lasting not more than two minutes (generally less).

3. The area affected by the noise contours as shown on the map† attached to the Roskill Commission's report, indicate that there will be a torrent of noise through the major portion of the northern area of our district. Starting with the villages of Weedon, Hardwick and Whitchurch, these will be on the immediate edge of the airport runways and the conditions in these villages will be intolerable. The next group of villages i.e. Waddesdon and Fleet Marston would not be so heavily affected, but most of the population of the villages reside within the 50 NNI. As one proceeds West there are other villages such as Quainton, Westcott, Haddenham, Stone and Long Crendon and many small hamlets which, although outside the 50 NNI contour, will suffer almost as badly from noise as those within that contour.

4. The creation of an airport and surface transport routes will cause a rapid increase in the rate and run-off of storm water. The majority of the run-off can only find its way into the River Thame which runs throughout the rural district and ultimately forms the boundary between Oxfordshire and Buckinghamshire. At the present time on the county boundaries at Ickford we experience floods; so much so, that further building of any size has had to be stopped. If the volume of water increases rapidly, then it is feared that this village and several other parts of our flat areas alongside the River Thame will suffer severe flooding.

5. The area of the district which will lie within the 50 NNI will be worse off than those parts of villages taken for demolition to make way for the runways of the airport itself, insofar that there will be no compensation in the same manner as it will be given to those persons who actually lose their homes. The villages of the Aylesbury Rural District will be the ones to have the greatest disadvantage and yet obtain very little compensation for those disadvantages. Obviously the value of the properties immediately adjoining the airport will reduce.

The Rural District Council owns 50 houses in the villages of Hardwick and Weedon and as these are on the side of the villages nearest to the runway, they will be the first to be affected by noise and it may be that my Council will have to consider finding other sites and possibly moving the families out into other villages.

6. Weedon has recently been the subject of a special planning survey by the Bucks County Council, who decided that in view of the village charm and quietness, it should be retained in its present form and character. These qualities would be destroyed in the event of an airport being but a mile or so away.

7. As to planning generally, it is envisaged that the northern section of our district would not be attractive to the professional and executive class of person who now live in the villages, and they would vacate the area to live where noise would not be such a great nuisance. This would leave those who have to remain as a one-class community and destroy the advantages of the present mixed communities which we enjoy today.

8. The area to the north of Aylesbury is a good counterbalance to the highly urban type of development taking place in the Borough and some of our neighbouring towns. It should be preserved as far as possible in its present form not only for the enjoyment of those who live within it, but as a place where the urban populations find an opportunity to relax.

9. On the southern side of our area we are experiencing difficulty in finding further land for development, and indeed, those villages immediately to the south of Aylesbury are regarded by the planners as areas where only limited building should take place.

10. In addition to the ordinary dwellinghouse, the Rural District has a big Mental Hospital at Stone and this, although not within the 50 NNI, is only a short distance away from it. There is also the big Rocket Propulsion Establishment at Westcott and there are two prisons at Grendon Underwood. These will be affected by the noise to a major degree. Almost at the end of the runway there is also a Diplomatic Wireless Station at Creslow, and it is obvious that this would have to be dismantled if the airport is established on the site.

* See also p. 1565.
† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

11. Immediately outside the 50 NNI contour is the very valuable National Trust property of Waddesdon Manor which, in the ten years since it has been open to the public, has been visited by 370,000 people—last year's visitors numbered over 62,000 and it is expected that there will be over 70,000 this year. Such a national asset will be seriously harmed if it is subjected to airport noise and many visitors from the cities and towns and villages will cease to find the peaceful atmosphere which Waddesdon Manor gives to the nation.

12. The Rural District Council is apprehensive that the influx of persons desiring to work at a new airport would occasion sewerage and sewage disposal problems throughout the whole of the area.

13. As to the surface transport, the A41 is a trunk route through the area leading from Tring–Aylesbury–Birmingham and traffic on this would be so heavy that, in fact, it would probably have to be doubled or trebled in size in order to accommodate the extra vehicles. There is also the A413 running from Aylesbury–Buckingham which passes through Weedon, Hardwick and Whitchurch and this would be one of the first routes which vehicles could take to get away from the airport. Here again the whole of the area in the 50 NNI would have ground noise as well as air noise to contend with, and life would be intolerable.

14. I have seen the draft of evidence of Mr. F. B. Pooley* the Bucks County Planning Officer and agree with his statements and the statistics so far as they relate to the Aylesbury Rural District.

---

* p. 1023.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Berkhamsted Rural District Council

SUBMITTED BY MR. S. C. REDDING*

I am the Clerk of the Berkhamsted Urban District Council and submit the following evidence on behalf of the Council.

It might be thought that the distance separating Berkhamsted from Cublington is so great as to reduce any disadvantages to the Urban District to negligible proportions. There are, however, certain aspects of the proposal which are vitally important to the Urban District and are the basis of the Council's objection to the siting of an airport at Cublington.

The evidence which follows is set out under the following heads:

1. Description of the Urban District and its relationship to the site.
2. Effect on areas of high amenity value.
3. Planning policy of the Hertfordshire County Council.
4. Land use and housing.
5. Local authority services.
6. Transportation.
7. Noise.

1.1. **Description of the Urban District district**

The Urban District of Berkhamsted is a small compact area of 1,982 acres only, situated astride the trunk road A41.

It is a valley town of the Chiltern Hills and is some six miles south-east of the feature known as the Tring Gap where A41 emerges from the Chiltern Hills into the Vale of Aylesbury.

The town has a long history, connected particularly with the Castle which was built following the Norman invasion and, it may be supposed, to guard the approaches to London from the direction of Tring.

The Urban District is mainly residential, this type of development having been influenced by the presence of two Public Schools and the fact that the area is easy of access to persons travelling to London daily for business purposes. In more recent years this has been emphasised by the growing industrial activities in the neighbouring areas of Hemel Hempstead and Watford.

1.2. **The relationship of Berkhamsted to the site**

The Cublington site is 12 miles north-west from the western boundary of the Urban District. The largest centre of population in anything like a direct line from Berkhamsted to the site is the Urban District of Tring, through which trunk road A41 passes en route to Aylesbury. The major part of the intervening area is agricultural, with large cement workings at the village of Pitstone, and there are a number of attractive villages in this area.

2.1. **Effect on areas of high amenity value**

The country between Berkhamsted and Cublington is a mixture of the hilly Chilterns landscape and the almost flat area of the Vale of Aylesbury. Immediately to the north west of Berkhamsted is an area of some 4,000 acres of National Trust property, formerly forming part of the Ashridge Estate of the Brownlow family. Much of this area is open heathland and woodland, freely open to the public.

2.2. The National Trust property mentioned above is already used by a very great number of people, particularly at week-ends and holiday periods, when motorists are able to drive out from the Greater London area and spend their leisure time in the country free from any onerous restrictions. This demand is likely to increase with the increase in leisure time and greater facilities for travel.

The vast increase in population envisaged by the construction of an airport will undoubtedly lead to an increased demand for recreational facilities and the inclination of the new population to make for areas where they can take air and recreation unrestricted by the limitations of highly developed agricultural areas. The Ashridge Estate of the National Trust would provide such an area, but this in turn would create problems of control, not the least of which is the parking of motor vehicles. Already, at week-ends and holidays the effect of increased motor traffic on the neighbouring roads is very apparent, creating difficulties by congestion at road junctions and necessitating the employment of additional police officers for traffic control duties.

The present natural beauty of the National Trust area is likely to undergo a change, not for the better.

3.1. **Planning policy of the Hertfordshire County Council**

In general it can be said that the development of Berkhamsted Urban District has been subject to strict limitation by planning control.

In reference to the Berkhamsted Area in the Hertfordshire County Council's County Development

* See also p. 1566.

Printed image digitised by the University of Southampton Library Digitisation Unit

Plan—Report of Survey, 1962 the following population figures are given:

Population at Census 1951	11,627
Town Map Area, approved 1958, population by 1973	15,010
Population at Census 1961	13,768.

The Report of Survey points out that by 1961, or about halfway to the date of the original target, just over 63 per cent of the proposed increase had been achieved. This was a reflection of the rapid growth in population which was taking place in the south east of England generally. The population provided for Berkhamsted at the First Review was 17,374 persons, an increase of 16 per cent or 2,300 persons beyond the population envisaged by the original plan.

The demand for land for residential use shows no signs of decline and in preliminary discussions between the Council and the Herts County Council on the subject of the Second Review of the Town Map the Council suggested that some 60 additional acres of land would be required to deal with the natural increase of population in the area up to 1981. The Minister is proposing a modification of the present Town Map which would make such an area available for development. This modification is the subject of objections which remain to be considered by the Minister, and a Public Inquiry will commence at Hertford on 1st July.

The undeveloped areas within the Urban District have been regarded as a proposed extension of the Metropolitan Green Belt and the First Review Proposals proposed that a Green Belt notation should be applied to such areas. Whilst the Minister has now indicated that a decision on Green Belt policy will be deferred until consideration of the Second Review proposals, a Green Belt policy will, with very few exceptions, be applied in the interim period.

It will be seen, therefore, that there is not likely to be any major change of planning policy so far as the release of land for large scale residential development is concerned.

4.1. Land use and housing

In considering proposals for changes in the Town Map, the policy of the Urban District Council has been that the existing character of the town shall remain without major change, and particularly, in the sense that no widespread development shall, assuming this to be possible, take place. This policy has been emphasised at both the First Review and the initial discussions on the Second Review of the Town Map.

Apart from the area of land mentioned in 3.1 above, there is in fact extremely little land now available for use in the Urban District for any purpose. The pressure for the development of any small area of land for residential purposes is quite intense, and includes the sub-division of the gardens of existing properties.

This pressure is increased by the improvement in travel facilities afforded by the electrification of the Euston main line and the desire of more people to live within easy reach of their place of employment. The major housing development in the District in recent years has been by the local authority, who have major schemes in construction at the present time. In spite of those developments, the requirements of new housing applicants and of those existing house occupiers affected by clearance proposals, will need more new houses in future years. Land for these can be found only with difficulty and probably only by development of unused allotment garden land owned by the Council.

In the circumstances, it would be extremely difficult, if not impossible, for the District to cater for any influx of population arising from an airport at Cublington. The possibility of this need must be taken seriously, and it is in fact referred to in the evidence prepared by the Bucks County Council.

5.1. Local authority services

The possibility of any substantial increase in population of Berkhamsted, consequent upon the construction of an airport at Cublington, must be looked at in the light of important local authority services in the District.

5.2. Sewerage and sewage disposal

The local authority sewers are being used almost to capacity, the Sewage Disposal Works having been reconstructed some years since to cope with the population figures referred to in 3.1 above. It would not be possible for the present system to serve a greatly increased population without major problems involving new sewers and increased disposal capacity. In this context it is assumed that any additional population, even if living outside the Urban District boundary would have to use the existing services of the Urban District.

5.3. Refuse disposal

The facilities for disposal of refuse, whilst adequate at the present time, have a limited life and the Council is already taking preliminary steps to find an alternative disposal area. The disposal of refuse from the development associated with a major airport would affect a very wide area, but even in a district as remote from the airport site as Berkhamsted, the effect of an increased population would soon create difficulties in this field.

6.1. Transportation

As has been stated above, Berkhamsted is built along both sides of trunk road A41. The inadequacies of this route have for long been realised and the County highway authority is shortly to publish proposals for the construction of a new road from Hunton Bridge to the western boundary of the County beyond Tring, by-passing Kings Langley, Berkhamsted and Tring. If the proposal to construct an air-

Printed image digitised by the University of Southampton Library Digitisation Unit

port at Cublington, with the problems of communications associated with the scheme, had the effect of delaying or prejudicing the road construction proposals, the traffic situation in the towns referred to above would become intolerable.

7.1. **Noise**

The Berkhamsted Urban District is within easy distance of the London Airport at Heathrow and from time to time the stacking of aircraft takes place over the district. Whilst the noise from the aircraft is not intolerable to most people, any increase in this type of aircraft operation could only be viewed with concern.

The conclusions which the Council reach in the foregoing are that they object to the construction of an airport at Cublington for the following reasons:

1. The construction of an airport at Cublington will be prejudicial to the amenity value of existing areas of high amenity value.
2. The proposal, so far as it could affect the Berkhamsted Urban District, would be contrary to the existing and future planning policy of the local planning authority.
3. There is insufficient land in the Berkhamsted Urban District to provide sites for additional houses likely to be required to house an influx of population from the Cublington area.
4. The existing services provided by the Urban District Council, particularly in relation to refuse disposal and sewerage and sewage disposal, are planned to deal with known population estimates and would be insufficient to cope with unexpected increases in population.
5. Trunk road A41 which passes through Berkhamsted, is inadequate for present needs without taking account of future traffic developments. Proposals for the construction of an alternative route are in hand and nothing should be done in the way of highway considerations for a new airport which would delay or prejudice this highway proposal.
6. Whilst the noise experienced by residents in Berkhamsted from the stacking of aircraft using Heathrow Airport is moderate in character, any increase in this activity through the operation of an airport at Cublington is likely to be objectionable.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bullingdon Rural District Council

SUBMITTED BY MR. L. C. WORT*

1. The Bullingdon Rural District includes that part of the County of Oxford lying between the City of Oxford and the Chiltern Hills with the exception of Thame Urban District. The District has an area of approximately 140 square miles and a population of 51,790.

2. The 35 NNI contour includes approximately 35 square miles of the district with a population of almost 9,000. Of this area seven square miles with 700 people are also within the 40 NNI line. The area affected is mainly residential and agricultural and comprises all or part of twelve parishes.

3. The effect of noise at this level may not be utterly intolerable as in other areas to the north-east but nevertheless in the Council's view it will be an extremely serious nuisance to the people concerned and a quite unjustifiable interference with their daily lives.

4. The second and even more serious ground for concern is the effect the airport would have on surface water flow and increased flood danger. It is understood that the greater part of the proposed airport site drains to the south and eventually the water would reach the River Thame. This river enters the Rural District east of Thame and then forms the boundary between Oxfordshire and Buckinghamshire to a point north-east of Waterperry after which it turns south and flows through the centre of the district to its junction with the River Thames at Dorchester.

5. The flooding of considerable areas on both sides of the River Thame already occurs and villages which are directly or indirectly affected by this flooding that is where there is a danger of flooding of property, are Wheatley, Chiselhampton, Drayton St. Leonard and Dorchester-on-Thames. Any increase in the speed and/or quantity of run-off in wet periods caused by the large paved areas and buildings to be found on a major airport is bound to increase the danger of flooding in all the villages bordering the River Thame.

---

* See also p. 1566.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Tring Urban District Council

SUBMITTED BY MR. T. W. JONES*

I am the Surveyor of the Tring Urban District Council and the purpose of this evidence is to convey my Council's unanimous and complete opposition to the proposed siting of the Third London Airport at Cublington. The implications of such a public meeting on 16th May, 1969 to ascertain the views of the residents of Tring. This meeting endorsed the Council's opposition to the proposal.

The implications of the proposal are most detrimental to the residents of Tring and the vicinity, primarily because of the urbanisation of the area which would undoubtedly ensue. The effects of a sudden growth in population and traffic in this area are dealt with under the following headings:

1. The danger of "swamping" the town by a sudden increase in population.
2. The effect of land use and housing.
3. The effect on areas of high amenity value.
4. The effect on Local Authority services.
5. The effect of increased surface traffic.
6. The effect on the planning policy of the Hertfordshire County Council.

1. The danger of "swamping" the town by a sudden growth of population

1.1. Tring is a small market town astride the trunk road A41, and is situated 7 miles south-east of Aylesbury, 5 miles north-west of Berkhamsted and 9 miles south of Cublington.

The Urban District has an area of 4,407 acres and a population of 8,470, most of which is concentrated in the town which lies at the north end of the district at the foot of the Chiltern Hills. The remainder of the district is pleasant well wooded country extending southwards up the hills to Cholesbury in Buckinghamshire. The south and west boundary of the urban district coincides with the Bucks boundary. This county boundary is again common with part of the northern boundary of the urban district. The eastern boundary abuts the Berkhamsted Rural District.

The town is mainly residential and is contained within a triangular shaped area formed by the Upper Icknield Way to the north, the A41 to the south and Grove Road to the east. Up to 1961 the town grew relatively slowly, from a population of 5,017 in 1951 to 6,087 in 1961. However there has been fairly rapid residential development since 1961, resulting in a present population of 8,470. This recent and current development has taken up all but 40 acres of the land zoned for residential purposes within the previously mentioned triangular area. The development of the remaining 40 acres will commence this year and this, together with the current development is anticipated to realise a planned population of 11,750 by 1973.

The recent and current development has been encouraged by the electrification of the railway to London and the new industrial developments at Aylesbury, Hemel Hempstead, Luton and Watford.

The provisional proposals for the second review of the Town Map provide only for a natural increase in the population between 1973 and 1981 when a population of 13,100 is anticipated. No additional land will be zoned for residential purposes in the second review. The increase in population will be accommodated by infilling and redevelopment of old properties.

1.2. From the foregoing it will be appreciated that the various services which were reasonably adequate until 1961 have been severely strained by the subsequent residential development. Schemes for the provision of improved services have since been prepared and many of these are about to be implemented. These improved services have been designed to cater for the 1981 planned population and they are most urgently required.

1.3. Any uncertainty expressed at this stage as to the future population of Tring, would be likely to result in a re-appraisal of the undermentioned schemes and thus inevitably lead to delay in implementation.

(a) *Shopping*

The Council are about to enter into a partnership agreement with a developer for the provision of a safe, convenient and attractive shopping precinct in Action Area No. 1 of the Town Centre where the necessary increase in retail floor-space is 27,000 sq. ft.

(b) *Main drainage*

A new valley sewer adequate for the foul effluent from a population of 18,500 will be laid this autumn.

(c) *Sewage disposal*

Instructions to proceed with detailed design work for additional treatment plant at the sewage disposal works, have been issued to a firm of consulting engineers. The new works will cater for a population

* See also p. 1566.

Printed image digitised by the University of Southampton Library Digitisation Unit

of 14,300 (including 1,200 from the Berkhamsted Rural District.

(d) *Trunk road*

The Council have for many years campaigned for a by-pass road and now, at long last, the Ministry of Transport are about to publish details of their proposals for such a road. It is expected that the construction of this road will start in 1971 and completion is anticipated in 1973.

(e) *Education*

For many years Tring lacked modern school buildings. Three new schools have been built in recent years and these will be just able to cope with present and forecasted demand from the planned population.

A building programme has just been approved to enable the secondary modern school to be converted into a comprehensive school in 1971.

1.4. Any further rapid increase in the population of Tring would therefore "swamp" the town. The present services are incapable of catering for any increase. The projected improved services will be inadequate to deal with an appreciable increase beyond the planned population.

Any possible reason for delaying the construction of the by-pass road is viewed with alarm by residents. The traffic conditions on the existing A41 are extremely dangerous to pedestrians in the town centre where the trunk road has a carriageway width of only 16 ft 9 inches and footpath widths of 3 ft 6 inches to 6 ft in the narrowest part within Action Area No. 1. The existing shopping facilities in the town centre are within properties which reached the end of their useful life many years ago and some of these are now derelict and becoming dangerous. The properties have not been re-developed because of their unsatisfactory location abutting the trunk road.

1.5. If Cublington is chosen as the site for the airport, urgent schemes for the improvement of living conditions in Tring will be shelved or delayed for re-appraisal.

The probable increase in the population of Tring, as contemplated by the County Planning Officer of Buckinghamshire in his evidence* on the possible proposed urbanisation pattern resulting from the airport, could overwhelm Tring. His personal assessment on the contribution made by Tring and Berkhamsted would be a tolerance on a population of 420,000. A tolerance on such a large figure could mean an overwhelming increase in the population of a small town.

2. The effect on land use and housing

2.1. Physical features particularly major roads dictate the form and extent of town expansion; the limitations to the expansion of Tring being the Upper Icknield Way to the north, the proposed A41 by-pass to the south together with the Chilterns Area of Outstanding Natural Beauty. The possibility of providing a road to the east of Grove Road and near the canal is being investigated in order to link the two former roads and thus complete the network for the traffic system.

2.2. Any spilling of residential development into the Vale of Aylesbury on the north side of the Upper Icknield Way, is most undesirable. This is land of high landscape value and is included within the proposed extension of the metropolitan Green Belt. Furthermore the boundary of the Chilterns A.O.N.B. is only some half a mile distant from this road.

The open land abutting the southern perimeter of the built-up area of the town is similarly designated and any residential development within this area of natural beauty would be strongly resisted by various authorities and organisations.

The east of Grove Road is an area of flat land extending to the canal which again forms the boundary of the Chilterns A.O.N.B. This intervening area is land of high landscape value and within the proposed extension of the Metropolitan Green Belt.

2.3. Private developers have bought all the land available for residential purposes, and the houses are sold as rapidly as they can be built. Existing houses offered for sale do not remain unsold for long and this reflects a situation where the existing demand for housing accommodation exceeds the supply.

The Local Authority is having great difficulty in meeting the demand for Council houses because of the unavailability of land and the high cost of land. The Council have no alternative but to build on allotment land even for the provision of housing for the elderly.

2.4. The sudden influx of population would therefore aggravate an already difficult housing problem.

3. The effect on areas of high amenity value

3.1. The areas used for recreational purposes in the locality are Cholesbury Common, Berkhamsted and Northchurch Commons, Ashridge Estate and Ivinghoe Beacon (National Trust Land) and the Dunstable Downs. These areas are already used extensively, particularly at week-ends, by people living in north London, Watford and Luton.

3.2. The vast increase in population arising from the siting of the airport at Cublington would result in a far more intensive use of these recreational areas and thus detract from their function of providing pleasant leisure facilities.

4. The effect on local authority services

4.1. The final effluent from the Council's sewage disposal works discharges into the reservoirs of British Waterways which are situated on the northern boundary of the Urban District. There is no river or stream into which the effluent can be discharged. The proposed improvements in the disposal works as mentioned in para. 1.3(c) are designed to produce an

* p. 1023.

Printed image digitised by the University of Southampton Library Digitisation Unit

effluent to Royal Commission standard. Any substantial increase in the volume of this effluent could not be discharged into the reservoirs without the consent of the Thames Conservancy and British Waterways. Such consent would undoubtedly impose severe limitations on both quantity and quality of the effluent.

4.2. The provision of facilities for refuse disposal are already extremely difficult. At present the refuse from Tring is transported to Radlett, a distance of 20 miles each way. A careful search for alternative and more convenient tipping facilities has proved abortive apart from one possibility at Ivinghoe Aston where it is proposed to use a disused lime quarry in conjunction with the Wing Rural District Council. This is only a medium term scheme and it is being subjected to continual delays due to various objections.

5. **The effect of increased surface traffic**

5.1. The road traffic from Cublington to London could use the A41 until such time as a major highway is built for the purpose. This might result in the proposed by-pass road proving inadequate during this period and some of the traffic might consequently use the existing trunk road through the town centre. A resumption of the problems mentioned in para. 1.4 would be intolerable.

The Council is already apprehensive about the probable future effect of the Dunstable–Aylesbury traffic which is being diverted through the northern residential area of the town. This traffic together with the future increase in traffic generated by the expanding cement works at Pitstone will create problems. Any addition to this traffic, such as that resulting from the siting of the airport at Cublington, would cause considerable detriment to this residential area.

6. **The effect of the planning policy of the Hertfordshire County Council**

6.1. The District Council supports the County Council in their policy of restricting the future expansion of towns and villages in this area so as to preserve the unspoilt landscape and prevent the merging of the towns and villages.

There is already a shortage of labour in the area and the policy of restricting employment growth is therefore essential.

The establishment of a major airport would inflate costs and encourage the urbanisation of this area.

Conclusions

As far as Tring is concerned the siting of the Third London Airport at Cublington would:

(a) Delay the implementation of urgently needed improvement schemes.

(b) Probably result in an overwhelming increase in the population of the town.

(c) Adversely affect the use of the land surrounding the town and intensify housing difficulties.

(d) Reduce the contribution made by areas of high amenity value towards leisure and recreation.

(e) Overburden the sewage and refuse disposal facilities.

(f) Create serious road traffic problems.

(g) Contravene the existing and future planning policy of the Local Planning Authority.

I have not previously mentioned the question of noise from the aircraft landing or taking off at Cublington as the effect on the residents of Tring is rather uncertain. At present the residents suffer somewhat from the noise of the aircraft using Luton Airport. Any increase in aircraft noise is likely to be objectionable.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Rural District Council

SUBMITTED BY MR. W. E. THOMPSON*

I am Surveyor and Public Health Inspector to the Wing Rural District Council, which post I have held since 1936.

My Council are firmly opposed to the suggestion that the Third London Airport should be sited at Cublington (Wing) and from my knowledge of the Districts' 10,000 inhabitants, I can confidently say that the great majority of them, both those native to the area and those who have more recently settled in the area are strongly of the same opinion and would prefer to see such proposal sited off the coast, e.g. Foulness.

1. Site area

The site proposed of the airport as shown on the Commission's drawing No. CTLA5† would appear to include parts of the parishes of Cublington, Wing, Aston Abbotts and Soulbury in this Rural District. These areas include the following dwellings:

Cublington: 75. Wing: 7. Aston Abbotts: 2. Soulbury: 11. A total of 95.

Of these 20 are rated as agricultural and the primary use of all the area is agricultural. In addition to the dwellings there is a Church, a Chapel, Garages, Farm and Storage Buildings with a total rateable value (including dwellings) of £12,874.

The village of Cublington, having had mains water in common with a great majority of the properties in the Rural District since 1938, has also main drainage discharging to a small treatment works north-west of Silver Street.

The buildings in this airport area include four which have been listed as being of special Architectural or Historic interest and scheduled for preservation under Town and Country Planning Act Regulations.

2. Noise area

The contours provided by the Commission of the Noise and Number Index for a four-runway airport on this site (drawing No. CTLA3/3)† cover the whole of the parishes of Cublington, Aston Abbotts, Soulbury, Stoke Hammond and Great Brickhill and parts of the parishes of Wing and Wingrave. I estimate that some 840 dwellings housing some 2,360 persons would be within this area, which is bounded by the 40 NNI contour.

Within the 50 NNI contour there are some 305 dwellings 102 of which are owned by this Council and within the 60 NNI contour are some 98 dwellings 48 of which are owned by this Council. In all the Council own 495 houses in the seven villages affected. There are 23 houses at Cublington which would be demolished and have to be replaced elsewhere and, in addition based on the Commission's findings, those houses within the 60 NNI would become uninhabitable and, as I understand it, in view of other noise experts, any dwellings within the 50 NNI contour would also become uninhabitable. The cost of replacement to my Council in respect of the houses within the site and within the 50 NNI would be in the order of £532,000.

A large number of the remainder would require sound proofing and this would be a considerable burden on the Housing Account even if indeed it were practicable to provide satisfactory sound proofing. In my view it is not a sound proposition for an ordinary dwellinghouse.

In addition to the dwellings this area includes primary schools at Aston Abbotts, Great Brickhill, Stoke Hammond and Wing, and a newly built Secondary Modern School at Wing.

The dwellings include residential homes for elderly people at Wing and Chelmscote (Soulbury) and groups of bungalows for aged persons in all those villages totalling 97. The area includes also nine additional "Listed" buildings, five Churches and five Chapels.

3. Drainage

The provision of an airport covering 7,500 acres of land, most of which will be paved or covered with impervious material, will obviously make a great increase in the rate of run off of rain water, and the ditches, streams and watercourses will need enlargement or supplementing with new drains to cope with the increase in flow. This aspect of the proposal will be dealt with by Engineers of the Ouse River Authority and Thames Conservancy.

At the moment surface water is a problem and becoming an increasingly great problem in my Council's district. Flooding occurs already in the centre of the village of Stoke Hammond adjacent to the Old Peoples' Homes recently erected by the Council who have approved a scheme costing £2,000 to try and remedy the situation. This is in addition to any schemes which are being carried out by the Ouse River Authority. The situation in Stoke Hammond has become progressively worse over the last few years and appears to be a result from the increased housing development which has taken place at Stewkley and Soulbury from whence surface

* See also p. 1566.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

water drains to the watercourses flowing through and near Stoke Hammond.

The main trunk road through my Council's district the A418 which is an important link road cross country from East Anglia M1 to Aylesbury, Oxford and the South and West, regularly floods in the winter and is frequently reduced to single track operation. Any substantial increase in the peak quantities of surface water will well result in this road being blocked altogether at times.

Similarly the major road leading out of my Council's district to the South B489 Leighton Buzzard–Ivinghoe road connecting to Tring and Berkhamsted also floods and will similarly be liable to complete blockage if there is any increase in the peak volume of surface water.

The small main drainage schemes at present provided for the villages would soon be overloaded by the sewage accruing from such development. If a new Township is required to house the 65,000 workers envisaged in the Commission's report, the standard of effluent required from the new sewage treatment works is bound to be very high and the cost of installation and maintenance correspondingly so. The pollution prevention officer of the Great Ouse River Authority will be giving evidence on this point. The estimated flow of sewage from such a Township would be 8 million gallons per day and the probable cost of a treatment plant to deal with it £1½ million.

4. **General planning policy**

The northern half of my Council's district is becoming more and more vital as a "recreational lung" between Aylesbury, Leighton Buzzard and Bletchley. There is a great deal of equestrian activity in the area centred at Wing and the canal and river complex in the valley of the Ouzel is popular for walkers, motorists and inland water way vessels. There are now three Boating Clubs operating on the waters in the area and the Leighton Buzzard Angling Club is, I understand, one of the largest in the country attracting many anglers from as far afield as London and Birmingham. The Three Locks area at Stoke Hammond is being planned as a Marina type sporting and recreational centre and the Brickhill area is very popular for its woodland area. This recreational use has become greater and, in fact, more necessary as the surrounding towns of Aylesbury, Bletchley and Leighton Buzzard have expanded, and in view of the vast increase in population as a result of the Milton Keynes Development (which will ultimately incorporate Bletchley) the recreational area such as this is a vital planning aspect of balanced living. The imposition of an airport of the size and for the use suggested with its consequent increase in population would completely nullify the efforts of the local Planning Authority to provide proper amenities in this area.

5. **General**

In general terms, I agree with the comments and views of Mr. Pooley in so far as they relate to my Council's district. If Leighton Buzzard were to be increased by an additional 65,000 persons as envisaged by Mr. Pooley, this would inevitably mean a large increase in dwelling accommodation in my Council's area as Leighton Buzzard expanded and would probably result in a chain urban development stretching from Luton through Dunstable (which is already joined to it) through Leighton Buzzard to Wing.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Winslow Rural District Council

SUBMITTED BY MR. R. G. BROWN*

1. General statistics of the Winslow Rural District

Area at 1st April 1969	34,436 acres.
Population mid-1968	9,540.
Population per acre	0·26.
Rateable Value at 1st April 1969	£321,441.
Rateable Value per head of population	£33 13s. 11d.
1d rate 1969–70, as estimated	£1,270.

2. The Winslow Rural District Council are most strongly opposed to the suggested siting of the airport at Cublington (Wing), about half of the area as shown on the Site Map being in the Winslow Rural District and in the event of the airport being established in that vicinity would result in the most serious repercussions on the viability of the Council's district. In this connection it is noted that para. 2 of the *Site Information*† states that the possibility of a larger land-take cannot be excluded.

3. The proposal would result in about 1,200 to 1,300 people at present resident at Stewkley and Dunton in the Council's district being displaced as their homes would be destroyed. Also it is estimated that approximately 6,000 other persons residing in the Council's district would be seriously affected, a large number of these being so close to the site that it would be impossible for them to continue to live in their homes. In addition the remaining part of the Council's area would suffer some considerable nuisance and hardship living so close to such an airport as is proposed.

4. The village of Stewkley, the larger part of which is situated within the site area itself, would cease to exist and the problems this would cause both to those resident in the site area, and in some respects far more so to those living immediately adjacent to the site area, are innumerable. The numbers of properties and rateable value of properties within the site area, and of those immediately adjoining are as follows:

Within the site area	*No. of properties*	*Rateable value*
Stewkley—dwellings (including part other use)	373	£21,334
—other properties	42	£ 2,337
Dunton —dwellings	21	£ 1,028
—other properties	4	£ 75
Total		£24,774

Immediately adjoining site area		
Stewkley—dwellings (including part other use)	78	£7,089
—other properties	1	£ 200
Dunton —dwellings	4	£ 223
—other properties	None	—
Total (b)		£7,512

Total of (a) and (b) £32,286.

There is also an oil pipeline (United Kingdom Oil Pipeline Co.) running through the parish of Stewkley, most of which crosses the site area for a distance of approximately 2.3/5ths miles. The rateable value of this is £1,737, and as this undoubtedly would have to be diverted, almost certainly mainly outside the Council's district, the rateable value would be lost. It is estimated that as a result of properties being demolished and those ceasing to be able to be occupied the 1d rate would be reduced by about £160, and probably by a further £7 as a result of the diversion of the Oil pipeline. It is considered that there would undoubtedly be many other properties within the Council's area which would cease to be occupied, especially those of the higher class residential type. All of these factors would throw a resulting burden on the remaining ratepayers of the district as it would not be possible for the Council to cut down on their existing services with the possible exception of the maintenance of the sewage disposal works at Stewkley. This latter matter would raise rather an acute problem as the sewage disposal works are within the site area, whereas there are about 70 houses immediately outside the site area with their drainage being dealt with at the sewage disposal works; however as it is unlikely anybody would be able to live in these 70 houses the matter would possibly resolve itself. It is quite apparent that Stewkley would cease to exist as a village, which is something that appears to be incomprehensible to any right thinking person. There would be the utmost hardship caused to all the residents and in particular to those living in rented accommodation. The Council themselves own 66 houses and 42 bungalows at Stewkley, all but 6 being in the site area. The problems of rehousing both private and Council tenants would be practically overwhelming, apart from the financial considerations involved, if the Council was required to do so. There is a large proportion of old people in the village, the vast majority of whom are born and bred Stewkley people. The village is a tightly knit community with good social and communal activities, and the majority of the people would be hard put to find other suitable homes in an area where they would feel at home.

5. The Council consider that the provision of the airport would result in a large part of the area within

* See also p. 1566.

† *Site Information for Stage II Local Hearings* 3. *Cublington (Wing)*. (HMSO; 6s.) Reproduced at p. 1001.

Printed image digitised by the University of Southampton Library Digitisation Unit

some miles (say 5 to 10 or even more) becoming urbanised which would completely alter the character of the area. To this concept the Council is opposed. There is already pressure for development because of Milton Keynes and therefore it is felt vital that open areas between Milton Keynes and other towns in this part of the country are kept as such, to give in effect breathing spaces.

It is increasingly important that such areas, which may be described as balancing areas, are not further reduced in size as to become virtually useless. Should both Milton Keynes and the airport come to this area it would be very difficult, if not impossible, to keep any such areas in being.

6. The proposal will result in the loss of valuable agricultural land, not only the 7,500 acres of this site area, (or such larger total as may be required) but also for the construction of modern highways to serve the airport—a formidable figure.

The Council fully support views on this point opposing the site which it is understood will be expressed in evidence by other bodies.

7. The Council would draw attention to the very great problems which will arise as to provision of water supplies, sewerage and sewage disposal highways and disposal of surface water. Although the supply of water is a matter for the Bucks Water Board as the Statutory undertakers, my Council as a constituent member of the Board are gravely concerned in as much as the present supplies are barely adequate to serve the needs of the area, and the problem will be acutely aggravated if it is necessary to obtain additional supplies to serve the large working population of the airport and the huge number of passengers.

My Council is responsible for sewerage, and look askance at having to consider how it would be possible to provide adequate main drainage to cope with 65,000 (four runways) workers and a daily average of 270,000 passengers (100 million per annum, four runways). The site area is on a watershed, probably mainly in the Thames area, and presumably the sewage would have to be discharged into a stream running into the Thames, or possibly pumped into the River Ouse, a tributary of the Great Ouse. There are no streams with sufficient flow to cope with such large quantities. As regards the Great Ouse this itself is already a problem especially as it will have to take the additional sewage from the new town of Milton Keynes.

Highways of course, are a function of the County Council, who will no doubt put forward their own views on this particular problem. How to deal with surface water would be very difficult as there would be tremendous quantities from both the airport and the new highways.

The terrain of the adjoining area suggests that flooding of considerable magnitude would occur at times of heavy storms.

8. One of the greatest objections, if not the greatest, is the noise factor, and on this point my Council are in full accord with what it is understood will be put forward by other bodies both official and unofficial. However it is desired to record the Council's objection to the basis on which the Site Information as to NNI contours has been made. It is considered that as there is no certainty that there will be a reduction of 10 NNI over the next twenty years the noise levels should not have been reduced by 5 NNI on what is merely an unwarranted assumption. Accordingly the population figures quoted as para. 14 of the *Site Information* are misleading, as many more people are likely to be affected than those quoted. Furthermore it is said the contours are approximate and give only a general indication. This hardly inspires confidence in the inference that Milton Keynes will not suffer unduly, being outside the approximate 40 NNI contour.

9. It is understood that what is known as "fall out" from aircraft cannot be avoided, and if so this will be the cause of considerable nuisance to thousands of people over a wide area.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Powell Duffryn Technical Services*

Introduction

It is evident that the proposed airport and its associated increase in population will change the surface water drainage conditions in areas downstream of these developments. The local authorities are particularly concerned as the riparian areas in the valleys of the River Thame, the Wing Brook, and the River Ouzel are at present subject to occasional flooding.

This matter is also the concern of the Thames Conservancy and the Great Ouse River Board who are submitting their own comments. This submission is being made on behalf of the Wing Rural District Council, Winslow Rural District Council, Aylesbury Rural District Council, Berkhamsted Urban District Council and Tring Urban District Council, Bullingdon Rural District Council.

Available data

There is very little observed data available and therefore the following is largely based on theoretical considerations which are adequate to indicate the problems, but which would need to be supported by measurement in the event of the developments proceeding. The average annual rainfall is 26 inches and the catchments and locations are shown on the attached plan.

The airport site area is 7,500 acres (11·7 sq. miles) and is approximately bisected by the watershed between the Thame and Ouzel drainage systems. The area under consideration is generally underlain by relatively impermeable clays. Permeable Lower Greensand and chalk beds occur to the south-east as the ground rises to the Chiltern Hills. Upper Greensand beds occur to the north-east of Leighton Buzzard.

Present conditions

The coefficient of run-off for the whole area is at present about 34 per cent, giving an average flow of 0·65 cusecs/sq. mile, i.e. 10 cusecs in Wing Brook, 9 cusecs in the Hardwick Brook and about 70 cusecs in the River Thame at Shabbington gauging station (10 miles downstream of Aylesbury). The average flood flow at Shabbington is said to be 710 cusecs (i.e. 6·6 cusecs/sq. mile) and the estimated maximum flood 1,100 cusecs.

Conditions after completion of the airport development and the resulting urbanisation

The following factors would result in increased flows in the drainage systems at all times as well as in times of flood:

i) The development of paved and covered areas and their drainage systems would result in increased run-off of at least double the present rate.

ii) The run-off would be accelerated and concentrated, say by 20 per cent, thereby increasing the flooding effect.

iii) The increased population, both permanent and in transit, would result in increased effluent discharge as water supplies would have to be imported into the area.

iv) Effluent dilution is barely adequate now at times of low flow and this problem would be severely accentuated.

v) The proposed reservoir site at Cublington would be occupied by the airport and this loss would accentuate the water supply problem and also eliminate a development which would have alleviated present flooding.

An attempt has been made to quantify these factors as follows:

i) and

ii) Assuming a flood precipitation of ten times the normal average and a doubling in the run-off, this would give an *additional* flood flow of 8 cusecs/sq. miles of developed area, i.e. 47 cusecs from the airport site into the Hardwick and 47 cusecs into the Wing Brook plus about 35 cusecs from Aylesbury and 57 cusecs from Leighton Buzzard.

iii) Taking a population increase of 40,000 at Aylesbury and a water consumption of 60 gals/head/day, the *additional* effluent flow to the River Thame would be 4 cusecs. Similarly, for Leighton Buzzard, taking a population increase of 65,000, the *additional* effluent flow into the River Ouzel would be 7 cusecs. Taking a passenger volume of 100 million per annum and a consumption of 5 gals/head/day, the *additional* effluent from this source would amount to about 8 cusecs into the River Thame and 8 cusecs into the River Ouzel.

The total additional flows from all sources under drought, average and flood conditions into the River Thame below Aylesbury and into the River Ouzel below Leighton Buzzard are given in the attached table.

Conclusions and recommendations

The main conclusions from the above can be summarised as follows:

i) The additional flood flows due to the airport and associated urban developments would

* See also p.1567

Printed image digitised by the University of Southampton Library Digitisation Unit

seriously increase the existing danger of flooding in both river systems but particularly in the River Thame (13 per cent).

ii) At times of drought, the flows in the streams would not be sufficient to dilute adequately the additional effluent, particularly in the River Thame (44 per cent, giving a total effluent content of over 60 per cent).

Measures which would alleviate this situation include the following:

i) The provision of retention of reservoirs and weirs in the streams upstream of potential flood areas to damp out flood surges.

ii) Straightening and improving stream courses at strategic points to improve the flow characteristics.

iii) Discharge of effluent by pipeline to a point where adequate dilution can be effected.

A pre-requisite for the design of these works is, of course, the assembly and detailed analysis of all available data and the procurement by measurement of such additional data as is feasible in the time available.

S. C. BREARLEY
Chartered Engineer
Powell Duffryn Technical Services

Additional flows due to airport development

River Thame at Shabbington	*Drought flow*	*Average discharge*	*Flood discharge (normal)*
Additional run-off			
Airport	1	4	47
Aylesbury urban growth	1	3	35
Population growth			
Transit and industrial at airport	8	8	8
Aylesbury	4	4	4
Total additional flow	14	19	94
Present flow	32	70	710
Future flow	46	89	804
Percentage increase	44	26	13
River Ouzel below Leighton Buzzard			
Additional run-off			
Airport	1	4	47
Leighton Buzzard urban growth	1	5	57
Population growth			
Transit and industrial at airport	8	8	8
Leighton Buzzard	7	7	7
Total additional flow	17	24	119
Present flow	70	150	1,500
Future flow	87	174	1,619
Percentage increase	24	16	8

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. C. Harding

Cublington
Leighton Buzzard
Bedfordshire

25th September 1969

Sirs.

We have lived and worked in Cublington as did our families before us all our lives.

We are now retired, and have managed to buy our little cottage, which would be demolished if the airport were to be sited here. We love this little village and wish to end our days here in peace.

If we had to move because of airport we would rather go to a village in the area.

Yours truly,

A. C. HARDING

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. C. Brewer

2 Wing Road
Stewkley
Leighton Buzzard, Beds.
25th June 1969

Dear Sir,

Thanking you for the leave to appear. I wish to make the following statement.

As a Stewkley man born and bred I think I have a right to say NO to Stewkley becoming part of the Third London Airport.

I've always lived here, my wife wanted to live here, and I hope my child will be able to live here.

I am not a born orater, so maybe I can air my views by writing.

I've been converting two houses—making them into one, over a period of eight years, apart from the cost, its just how we wanted it, why should we slave to perfect a dream, to have it all taken away.

Our village is one big family, rich or poor, old or young we all know each other, and live together in harmony, don't take this all away. I've worked in new modern towns. This being my job, and none of it compares with our own happy village.

Yours faithfully,

C. Brewer

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 2

Aylesbury Borough Council

Bletchley Urban District Council

Mr. A. Smaith
Mr. C. B. Bates
(*Newport Pagnell Rural District Council*)

Little Brickhill Parish Council

Bow Brickhill Parish Council

Granborough Parish Council

Haddenham Parish Council

Newton Longville Parish Council

North Marston Parish Council

Pitstone Parish Council

Wingrave with Rowsham Parish Council

Winslow Parish Council

Pollution Prevention Office
Deputy Engineer
(*Great Ouse River Authority*)

Bedford Corporation

Mr. S. W. Pacey
Mr. M. S. Leslie
Mr. J. B. Saunders
(*Leighton-Linslade Urban District Council*)

Stone with Bishopstone Parish Council

Thame Urban District Council

Ploughley Rural District Council

Aston Rowant Parish Council

Great Haseley Parish Council

Hethe Parish Council

Towersey Parish Council

Bucks Water Board

Witnesses were examined on this evidence
on Day Two, Tuesday 15th July 1969
see pages 1573–1593

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Aylesbury Borough Council*

A. Status of Aylesbury

A.1. Aylesbury is a Non-County Borough with an area of 3,594 acres and an estimated population of some 37,000. It is an attractive and comparatively prosperous market town set in the vale which takes its name and with industrial and commercial activity increasingly contributing to its prosperity and general well being.

A.2. Comprising compact urban development, no point of its perimeter is more than two miles from its Market Square, which geographically is the centre of the town.

A.3. The Borough lies immediately South of the Cublington (Wing) site as this is shown representationally by black hatching on the plan entitled "short-list sites" published by the Commission† (see plan annexed).‡ The town is approximately 40 miles from London and the A41, A413 and A418 pass directly through it, intersecting in the Market Square.

A.4. Aylesbury is the largest town within a radius of some 10 miles of the "short-list" site and is the County Town for Buckinghamshire occupying a conveniently central position within the County. As such it contains the administration of Buckinghamshire County Council, Aylesbury Borough Council and Aylesbury Rural District Council together with that of the Royal Bucks and Associated Hospital Management Committee, the Bucks Medical Executive and the No. 1 District Headquarters of the Thames Valley Constabulary. Apart from its Petty Sessional and Juvenile Courts, the Courts of Assize, Quarter Sessions and the County Court also sit in Aylesbury. The town additionally accommodates the area offices of the more usual Government departments.

A.5. The town possesses a number of modern schools of which the Aylesbury College of Further Education and the Boys' Grammar School, the Girls' High School, the Technical High School being selective secondary schools, provide educational facilities for a very much wider area than the Borough itself.

A.6. This is also true of the unselective secondary schools though to a lesser extent since a number of the larger villages enjoy their own unselective secondary schools.

A.7. A number of hospitals are centred in the town, namely, Stoke Mandeville Hospital, The Royal Bucks and Tindal General Hospitals, the Manor House Hospital for Mentally Sub-Normal Children and within a mile or so of the Borough boundary the hospital with which this latter unit is associated, the St. John's Hospital for Mental Health. The reputation of the Spinal Injuries Centre at Stoke Mandeville is, of course, international.

A.8. Evidence will no doubt be submitted by the Regional Hospital Board or the appropriate Hospital Management Committee as to the effect on these institutions of the proposal to site an Airport at Cublington and on the imminent rebuilding programme for Manor House Hospital, and also the proposed rebuilding programme for Stoke Mandeville. The Borough Council, however, felt it right to stress that Aylesbury is a hospital centre.

A.9. At the present time, the town provides the principal place of employment and the administrative, business, shopping, market and social centre for a very wide rural population estimated to be at least equal to its resident population.

A.10. The Aylesbury Cattle Market which is owned by the Borough Council is the largest Cattle Market in Buckinghamshire. Two markets a week are held, one for fat stock and the other for dairy and store stock. The average entries for the last four years up to 31st December, 1968 have been:

Fat cattle, dairy and store cattle	15,572
Fat and weaning calves	5,624
Fat and store sheep and lambs	23,189
Fat and store pigs	11,712

(Owing to foot and mouth disease restrictions no dairy and store stock markets were held from 24th November, 1967 to 9th February, 1968.)

B. Manner in which consideration has been given by the Borough Council to the Cublington proposal

B.1. Publication by the Commission of its "short-list of sites" indicated to the Borough Council that the Cublington site as delineated on the Commission's plans would not involve the taking of any land from within the Borough. This being so the Borough Council's consideration of the proposal differed at the outset from the consideration that had to be given by the County Council, the Rural District Councils in whose area the required land lay, and any voluntary organisations drawing members from within the affected areas. In its consideration, therefore, the Borough Council has attempted to contrast the future pattern of development for the Borough as programmed or foreseen prior to the publication of the "short-list" with such development as could realistically be envisaged if an airport of the magnitude proposed were to be sited in close proximity to the Borough boundary.

* See also p. 1573.
† See attached wallet of maps and diagrams.
‡ p. 1118.

Printed image digitised by the University of Southampton Library Digitisation Unit

B.2. An attempt was then made by the Borough Council to assess and balance the respective advantages and disadvantages of the two situations in the interests of the town and its inhabitants. In doing this the Council sought the benefit of the views of as many individuals and organisations, representing all shades of opinion, as possible.

B.3. To assist in its task the Council formed a Special Airport Committee representative of all political views on the Council which had the advantage of representation at meetings of local authorities in the area arranged by Wing Rural District Council and at a meeting of organisations and interested bodies arranged by Bucks County Council at the Odeon Cinema, Aylesbury.

B.4. Following publication of the Commission's *Site Information** for Cublington—which the Borough Council found disconcertingly brief—the Borough Council arranged a public meeting in Aylesbury on the 22nd May to which local organisations were invited together with all interested members of the general public. This meeting was given wide publicity and was organised not as a "protest meeting", but to enable a full opportunity to be given to all persons living or working in the Borough to express their views either as individuals or in a representative capacity. The views so expressed proved of great assistance to the Council. The Borough Council considered itself bound to take very careful note, in reaching its conclusions, of the fact that the views so expressed were unanimously in opposition to the development of an airport at Cublington and in particular to the adverse effects which such a proposal would have on the quality of life expected to be enjoyed by those living and working in the town.

B.5. The Borough Council has been aware of the views of, and the part played by, the voluntary "resistance" organisations and has taken careful account of the numerical support for these organisations by inhabitants of the Borough.

C. Objection by the Bucks County Council

C.1. In preparing its representations for the Commission the Borough Council was aware that the Bucks County Council had expressed itself implacably opposed to the Cublington proposal and intended to submit expert technical evidence at the Stage II Hearing, for which purpose eminent consultants has been engaged to advise on a variety of aspects.

C.2. In these circumstances, the Borough Council considered that it would neither serve the interests of the ratepayers of the town nor assist the Commission if it were independently to engage technical consultants to provide evidence which would in all probability be similar or identical to that submitted by the County Council.

C.3. The Borough Council unanimously supports the Bucks County Council in its opposition to the proposal.

D. Post-war planning history of Aylesbury

D.1. In the immediate post-war period, with the conception of New Towns as a solution to the relief of congestion and overcrowding in the Metropolis of London, Aylesbury received some consideration as an appropriate area for the establishment of a New Town. It was at that time a small attractive market town of something less than 20,000 population.

D.2. In the event, for reasons which perhaps are not in the present circumstances relevant, Aylesbury was not designated as a New Town. However, in 1952 with the passing of the Town Development Act of that year the Council was immediately approached by the Government to explore the contribution which the town might make under the provisions of that Act in affording facilities for the transfer of industry and population from London.

D.3. After protracted negotiations between the Borough and County Councils, the Government and the London County Council (now the Greater London Council) agreement was reached that the population of Aylesbury, which by then was some 23,000, be increased to 42,500 by 1974. This scheme of expansion commenced in 1958.

D.4. As a result of increased densities now being encouraged for residential development it seems more likely that a population nearer to 45,000 could be reached by 1974 with the use of land available within the Borough boundary.

D.5. In 1964, a study was undertaken by the Ministry of Housing and Local Government in consultation with other Government departments and local planning authorities of the problems which might be expected to arise in the South East over the next 20 years as a result of anticipated growth and movement of population. The results of this study were published as the *South East Study 1961–1981** and this document suggested that Aylesbury should be capable of further expansion to accommodate approximately 30,000 more people by 1981.

D.6. Although the proposals contained in this Report have not been specifically adopted by the Government, it has been made clear to the Council by the Ministry of Housing and Local Government that the Ministry would like to encourage some further expansion of the town basically along the lines of the present Town Development Scheme.

D.7. The first Report of the South East Economic Planning Council, entitled *A Strategy for the South East** and published in 1967, made no specific reference to Aylesbury in its text but in a plan forming part of the Report, Aylesbury was shown as

---

* *Site Information for Stage II Local Hearings 3. Cublington (Wing)* (HMSO; 6s.) Reproduced at p. 1001.

* (HMSO; 15s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

being within an area indicated as a "Country Zone". A "Country Zone" was defined in the Report as

> ... land which is primarily rural in character. It would include agricultural and horticultural land, forests, woodland, common land, areas of landscape value, rivers and coasts, together with existing country towns, villages and other developments related to rural activities. The intention would be to protect the rural economy and its characteristics; to safeguard high value agricultural land; to confine development to rural activities and to resist the incursion of urban development. The new Country Zones would inevitably contain a large residential population in existing towns, villages and other settlements; and there would have to be some allowance for their essential growth. But urban encroachment would be discouraged and expansion schemes would be channelled into the areas selected for growth. ...

Although the first Report of the South East Economic Planning Council has not been formally adopted by the Government, from advice obtained from the Economic Planning Council it would seem that that Council would look favourably upon a further limited expansion of Aylesbury as envisaged in the earlier South East Study Report.

D.8. From the views expressed in both these Reports and from advice obtained from the Government, the Borough Council and the town foresaw for its future a planned expansion of the town to a population of between 60–65,000 by 1981, with growth thereafter occurring only by way of a natural increase in the population.

D.9. The Borough Council welcomed this form of planning for its future, holding the view that it would give the opportunity for the town to reach a reasonably viable population for an urban community with a diversity of employment, at the same time permitting the town to enjoy the character of a County market town and the advantage of protection from urban development in the extremely attractive rural areas surrounding it.

D.10. Until 1958 Aylesbury had been basically an agricultural centre whose limited industry was centred mainly in the field of printing, the manufacture of food products and certain light engineering. There is no doubt that it was a viable entity and would undoubtedly have remained so in its then existing form even without encouragement from the Government to participate in the scheme of town expansion.

D.11. It will be seen that in some two decades a pleasing and attractive market community has been faced with a series of planning proposals the effect of which could only materially change the town's character. Through careful and selective planning over the long term it has, however, proved possible to retain a great deal of the charm and character of the town whilst controlled development has been taking place. Certainly, the original concept of development within the existing urban area without affecting the natural attractions of the rural surroundings has been adhered to.

D.12. Although, having regard to the size of the town, the earlier proposals have been far reaching and the effect of the implementation on the town has been substantial, none of these proposals has in any way approached the magnitude of the current proposal to consider Cublington as a site for a major International Airport.

E. Town development

(a) *Generally*

E.1. As previously stated, the implementation of the town's scheme of expansion under the Town Development Act, 1952 commenced, to all intents and purposes, in 1958, when agreement was reached with the London County Council, as it then was. This scheme is being effected in conjunction and with the co-operation of the Greater London Council, the Buckinghamshire County Council, the Ministry of Housing and Local Government, the Department of Employment and Productivity and the Board of Trade.

E.2. The Borough Council exercise planning powers delegated by the County Council and its policy both as a planning authority and as a town development authority has been to preserve a balance between the introduction of new industry and commercial concerns, the housing programme and the other services necessary to maintain these activities.

E.3. Development of industrial and commercial premises, houses, schools, shops and the provision of other services has been carefully co-ordinated with the appropriate Government departments, other local authorities and the statutory undertakers in such a way as to maintain this balance and to ensure that the town did not suffer from development "indigestion".

E.4. In these circumstances, therefore, the Council has always been concerned that the present scheme of expansion should extend over the period determined at its inception, viz. 1958–1974. Such a policy has required considerable forward planning and this planning has been consistently based upon the decisions embodied in the present approved Town Map and the intention that an appropriate rate of progress would be followed. In addition, the plan for expansion was prepared and implementation has proceeded on the assumption that substantial development in the areas surrounding the Borough would not take place.

E.5. The Borough Council and the Local Planning Authority have endeavoured throughout not to mix urban development with rural activity within the Borough boundary and have attempted overall to create a close urban development with a pleasant environment. The advantage of such a policy is demonstrated by the fact that the shopping and community facilities of the Town Centre are within easy reach of the new residential and industrial development taking place on the periphery.

Printed image digitised by the University of Southampton Library Digitisation Unit

E.6. It has also followed from this policy that the expansion of Aylesbury has not encroached on the attractive rural countryside of mid-Bucks which surrounds it and the many picturesque villages have, therefore, been able to retain their identity without in any way becoming absorbed within the town complex.

E.7. It is the belief of the Council that the success of this policy has found satisfaction in the villages and with the townspeople alike and particularly amongst those who live and work in the new residential and industrial estates.

E.8. It would no doubt have been possible to have adopted, in consultation with the Local Planning Authority and the Government, an alternative policy of substantially increasing the boundaries for development thereby absorbing a number of villages within the town causing great encroachment into the rural area. The considered view was that such a scheme of development would not have been in the best interests of either town or country. The Council regard the many villages within the sphere of influence of Aylesbury, and whose residents look to Aylesbury as their urban centre, to be a great asset. Without doubt the fact that Aylesbury presents an image of a busy flourishing market town set in the countryside, with its many surrounding villages in which senior management can live if they so wish, has proved an important feature in attracting industry from London to Aylesbury for relocation.

E.9. Of particular concern to the Borough Council is the fact that after many years of active town development and upheaval and at a point in time when the town of Aylesbury is beginning to settle down and re-emerge as a town entity, a new and diametrically opposed proposal having far reaching consequences should be considered.

(b) *Residential*

E.10. Since the Council commenced its scheme of expansion in 1958 approaching some 2,700 municipal housing units have been built for letting. Of these units approximately four in every five have been occupied by families who have moved from London either in connection with the re-location of an industrial firm in Aylesbury or on recruitment for local employment under the Industrial Selection Scheme of the Department of Employment and Productivity.

E.11. During the same period approximately 3,000 houses have been built within the Borough boundary by private enterprise, including some built by Housing Associations for letting. This programme accords with the original view that an approximately equal number of private and municipal housing units would be required to cater for the expansion scheme.

E.12. It might be right to assume, although this factor is not easy to assess, that a very high proportion of owner-occupiers of new houses provided by private enterprise moved to Aylesbury from London or from other large conurbations.

E.13. It is known that a large proportion of the families moving to Aylesbury have done so because of its attraction to them and in order to enjoy the pleasant environment it has to offer both for living and working. Furthermore, such families have moved in the belief that any further development of the town would be along the lines of the town expansion programme previously outlined and indeed, until publication of the Commission's *Short-List of Sites** for the Third London Airport there was no reason for them to suppose otherwise.

(c) *Industrial*

E.14. Since 1958 approximately 60 acres of industrial land have been developed by the Borough Council and at the present time site and off site works costing some £160,000 are being carried out which will make available a further area approaching 50 acres South of the A41 on the North West Borough boundary for selected industrial development.

E.15. The Council itself has provided over 600,000 sq. ft of industrial accommodation and has further schemes, either at the construction or planning stage which will increase the total to over three-quarter million sq. ft. This industrial accommodation is or will be occupied on long leases by over 30 firms who have moved predominantly from the London area with the encouragement of the Greater London Council and the Board of Trade.

E.16. During the same period over one million sq. ft of production, storage and warehousing accommodation has been built privately within the Borough together with some 340,000 sq. ft of new offices and ancillary development.

E.17. Within its policy of industrial expansion, the Council has been alive to the desirability of maintaining an ever widening field of industrial diversity. As a result of this policy the town now enjoys industrial activity spread deliberately over an extremely wide spectrum ranging through printing and bookbinding; the manufacture of electronic, mechanical and scientific instruments; food preparations; soft and alcoholic drinks; rivets and riveting machinery, geared motors; radio, television and motor components; spectacle frames; upholstery; gramophone records; hairdressing preparations; non-ferrous metals; contact lenses; agricultural machinery; tailoring and clothing; carbon paper and typewriter ribbons; marketing and packaging equipment; car park meters; office equipment and stationery; scales and measures; heat exchangers; watches; timber and joinery; shop fittings, together with a variety of other light engineering and industrial processes.

E.18. For some industries and commercial concerns established in the town Aylesbury is clearly a convenient location. It is known from the close

* *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore)* (HMSO; 6s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

contact which the Borough Council maintains with local industry that the majority of these undertakings are in Aylesbury because this is where they wish to be, and, in fact, there are probably few cases where Aylesbury is a location of absolute necessity. Aylesbury's industries are not particularly inter-related, in view of their operation in widely diverse fields, and as far as is known few are dependent on supplies from or marketing to other local firms.

E.19. In these circumstances, the Council can foresee the possibility that the siting of an International Airport at such close proximity to the town could be considered a disadvantage by some firms to their activities and that such firms could well be minded to seek premises elsewhere.

E.20. Should any movement on these lines take place, industrial premises so vacated might well find a ready market with other concerns who would look upon the proximity of a large airport with more favour or, in fact, as a definite advantage. The Council have particularly in mind general airport servicing activities. This, however, gives rise to the fear in the mind of the Council that Aylesbury could lose its undoubted present advantage of diverse industrial activity and become in the nature of a single service industry community, basically subservient to the airport and dependent entirely on the success or otherwise of such airport.

E.21. The Council, therefore, view with considerable concern the far reaching effects which the establishment of an airport at Cublington could have upon much of its local industry and many of its new residents who have been positively encouraged to come to Aylesbury as being a town which was and would remain a country town in a semi-rural area and which could provide and would continue to provide pleasant working conditions and an attractive environment for living. It is reasonable, in these circumstances, to suppose that many industries and families would feel that they had been enticed to Aylesbury on false premises and, therefore be minded to move away from the town.

F. Labour

F.1. The town of Aylesbury is fortunate in not being an area of unemployment.

F.2. Although information will undoubtedly be available to the Commission from the Department of Employment and Productivity it is felt proper by the Council that the attention of the Commission should be especially drawn to the low unemployment figures over a large number of years for the town and the immediately surrounding area administered by the local branch of the Department of Employment and Productivity. There is no reason to believe that this situation will not continue whilst diversity of industrial activity is enjoyed.

F.3. By way of illustration from figures supplied by the Department, and taking June as a typical and convenient month, in 1965 during what might be described as an unrestricted period in the economy, 148 persons were unemployed out of a working population of approximately 35,700 against outstanding notified vacancies of 1,014. In the same month of 1967, being a post "Credit Squeeze" period, 303 persons were unemployed out of a working population of some 38,000 against 594 notified vacancies. In June, 1969—the latest figures available —the unemployment figure was 308 out of a working population of nearly 40,000 with 828 notified vacancies. These figures are inclusive of males and females over the age of 18 years.

F.4. The current figure represents unemployment of approximately 0·77 per cent. This continues a pattern extending over a period of very many years —even before the commencement of town expansion —in which unemployment in Aylesbury has been in the range of only one-third of the national average percentage of unemployment.

F.5. Even during times of seasonal or national unemployment Aylesbury has never reached the national percentage of unemployment, nor even the Eastern and Southern Regional level. This not only confirms natural prosperity in the area but also reflects the wisdom of the Council's policy of widening the diversity of industrial activity.

F.6. These figures do also indicate the fact that there is no surplus potential to meet the vast demand for labour which the development of an airport in close proximity would create. The period during which such an airport was under construction would be a particularly difficult time. It would have the effect of attracting labour from a town in which there is already full employment and this could only be to the detriment of existing industries and to construction work allied to the Town Development programme.

G. Road pattern

G.1. Like the majority of towns, Aylesbury suffers something of a traffic problem, although there is no doubt that in comparison with the larger conurbations the problems experienced in Aylesbury would be regarded as modest.

G.2. With the planned expansion of the town, a comprehensive road pattern was prepared and much of this has now been completed. Substantial works are currently in progress and others will soon be carried out. Capital expenditure of almost £2,000,000 has been incurred since 1958 in achieving these highway improvements, which in accordance with the overall development programme have been designed to cater for the population envisaged by 1974, and on the basis that only limited urban development would take place in the immediate surrounding areas.

G.3. It is inevitable that radical replanning would be necessary if urban development on the scale which a national airport at Cublington might involve were to take place within the sphere of influence of Aylesbury.

Printed image digitised by the University of Southampton Library Digitisation Unit

G.4. As part of the highway pattern which has been evolved, three sides of a dual-carriageway inner relief road have been constructed within which are contained predominantly the whole of the town centre facilities and amenities. The fourth side of this inner relief road "box" will be constructed in due course by the diversion of the trunk road A41 from its present route along the High Street.

G.5. The A41 and A413, to which the Commission refer in their *Site Information*, are principal traffic routes within the town's highway pattern. The A418 although not specifically referred to by the Commission, is in a similar category. These three principal roads all pass directly through Aylesbury intersecting at the Market Square in the town centre (see plan annexed). The Council views with considerable alarm the suggestion that the A41 and A413 might be considered as roads suitable for servicing the proposed airport site.

G.6. With no less alarm the Council view the possibility of the A41, A413 and A418 before any major works of improvement or diversion were possible, being used as a means of access to the proposed site from the south by airport construction traffic.

H. Town centre

H.1. To meet the demands of the growing population a major scheme of redevelopment has taken place in the town centre. Although in the context of a town the size of Aylesbury it is a scheme of some ambition, it has been planned with a particular programme of town development in mind and to cater for a population which the Government and successive Reports on strategic planning in the South Eastern area have led the Council to believe was the maximum which might be anticipated during any period in which forecasts made at the present time could be valid.

H.2. Whilst town centre facilities could no doubt be provided to meet the needs of a population greater than that at present envisaged for Aylesbury, major replanning would be required if Aylesbury were to become a shopping and amenity centre for any considerable urban development in the surrounding areas generated by the establishment of an airport.

J. Surrounding urban development

J.1. The Council view with the greatest concern that an airport at Cublington would generate a vast need for urban development in the surrounding rural areas. These are areas of beautiful countryside which the Bucks County Council together with the many District Councils concerned and not least the town of Aylesbury have jealously regarded as being part of the heritage of the County and the Country in general.

J.2. The Borough Council regard the surrounding rural area and its many villages as a major asset to the town and its people. The vast urbanisation generated by an airport could well result in a virtually continuous urban sprawl from the Greater London area through to Northampton, extending in a westerly direction to encompass Aylesbury and district as well as the airport site and its surroundings.

J.3. Although the *Strategy for the South East* previously referred to envisaged future development in terms of "growth sectors" the Economic Planning Council was at pains to point out that its "Country Zones" had been deliberately drawn to cut across growth sectors to separate major centres of development by large stretches of open countryside giving a clear and recognizable distinction between town and country. This emphasis seems to the Council both logical and highly desirable.

K. Noise and nuisance from aircraft

K.1. The Borough Council has noted that the NNI contours shown on the map accompanying the *Site Information* for Stage II relating to Cublington (Wing) are identified only to 40 NNI. Even so, the contour at this level in respect of a four-runway airport is shown crossing the trunk road A41 and A413 on the north-western outskirts of the town. On both sides of the A41 where this crossing occurs there is development. On the north-east side there is a very substantial residential estate whilst the south-western side is occupied by the largest industrial estate in the town, the majority of which is on land owned by the Borough Council as part of their expansion scheme.

K.2. The Council have made no attempt to project the contours below 40 NNI, since it would be inevitable that such a projection would progressively affect more of the town.

K.3. The Council have noted that the NNI contours indicated on the plan accompanying the Commission's *Site Information* have been drawn on the assumption that there will be reduction in the noise level of aircraft over the next 20 years. Whilst the Borough Council do not contest this assumption with evidence, they do question whether in such a matter which is likely to affect the living conditions of so many people, such an assumption should lightly be accepted.

K.4. The Council also note that in para. 12 of the *Site Information* the Commission draws attention to the fact that these contours of necessity are approximate and can only give a general indication of the areas likely to be affected. The Council regard as significant that the contours so shown on the map do, in fact, avoid all the major urban communities in proximity to the proposed airport site. This coincidence is viewed by the Council with the utmost suspicion.

K.5. The Borough Council urges the Commission to accept that in considering any nuisance by noise likely to be suffered the most pessimistic circumstances should be considered rather than those creating grounds for optimism which could well, in the event, be misplaced. Once such an airport has been estab-

Printed image digitised by the University of Southampton Library Digitisation Unit

lished residents within the vicinity would have to suffer any nuisance, in whatever degree it might arise, for generations to come. In the view of the Council this is a situation which should not in any circumstances be countenanced, particularly where alternative sites might be available capable of causing less suffering to a resident population.

K.6. Having regard to the present provisions for the payment by the Government of grants towards sound-proofing and other works to mitigate nuisance by noise, it could well be that no property within the Borough would qualify for such grants notwithstanding a considerable degree of nuisance from noise which might be suffered. In any event, the Council understand that such grants as are payable by the Government are not sufficient to meet the reasonable cost of effecting such works. It should in this context be stressed that because of the nature of Aylesbury as an administrative, business, educational and hospital centre the quantum of sound-proofing which would need to be carried out could be very substantial causing inconvenience and expense with resultant hardship to the owners and occupiers of those buildings concerned.

K.7. Although in the *Site Information* published by the Commission the town of Aylesbury is not shown within a flight path the Council are not satisfied that the Borough would be free from the adverse effect of "fall-out" of kerosene or other substances from flying aircraft.

K.8. For a National airport of such magnitude to be sited so close to an urban community of the size of Aylesbury seems to the Council to be wrong in its conception and gives rise to a major fear, having regard to the volume of air traffic ultimately envisaged, of the possibility of aircraft failing in flight whilst over the town.

L. **Summary of the Council's views**

i) Aylesbury Borough Council is unanimously opposed to the concept of a major airport at Cublington (Wing).

ii) It unanimously supports the Bucks County Council in its objection.

iii) Aylesbury would to its detriment cease to be a Country town surrounded by rural amenity and pleasant villages.

iv) It would be entirely wrong for the inhabitants and industries of Aylesbury again to be subjected to radical change in the character of the town after so recent an upheaval.

v) The enlargement of the town of Aylesbury to provide urban development to meet residential and other needs of an airport would inevitably involve sprawl into the adjoining rural areas thereby losing for the town its whole character of compact development.

vi) The diversity of industrial activity at present enjoyed by the town could be adversely affected.

vii) Families attracted to the town by the opportunity to enjoy a pleasant environment for living and working could well consider they have been seriously let down.

viii) Similarly Industry from London who have been re-located in Aylesbury could well no longer retain the desire to remain in the town and feel they had been encouraged on false premises.

ix) The vast labour requirement of a major airport both in construction and operation could cripple existing firms in a town which has virtually no unemployment.

x) Major capital projects of town centre and highway redevelopment only just completed or under construction could require radical replanning.

xi) In view of the part the A41, A413 and A418 play in the road pattern of the town, these roads should not in their present form be considered as possible means of access to the airport either for purposes of construction or operation.

xii) Extensive urban development of the rural areas surrounding the airport would be viewed with dismay by town and country alike as destroying both a local and a national amenity.

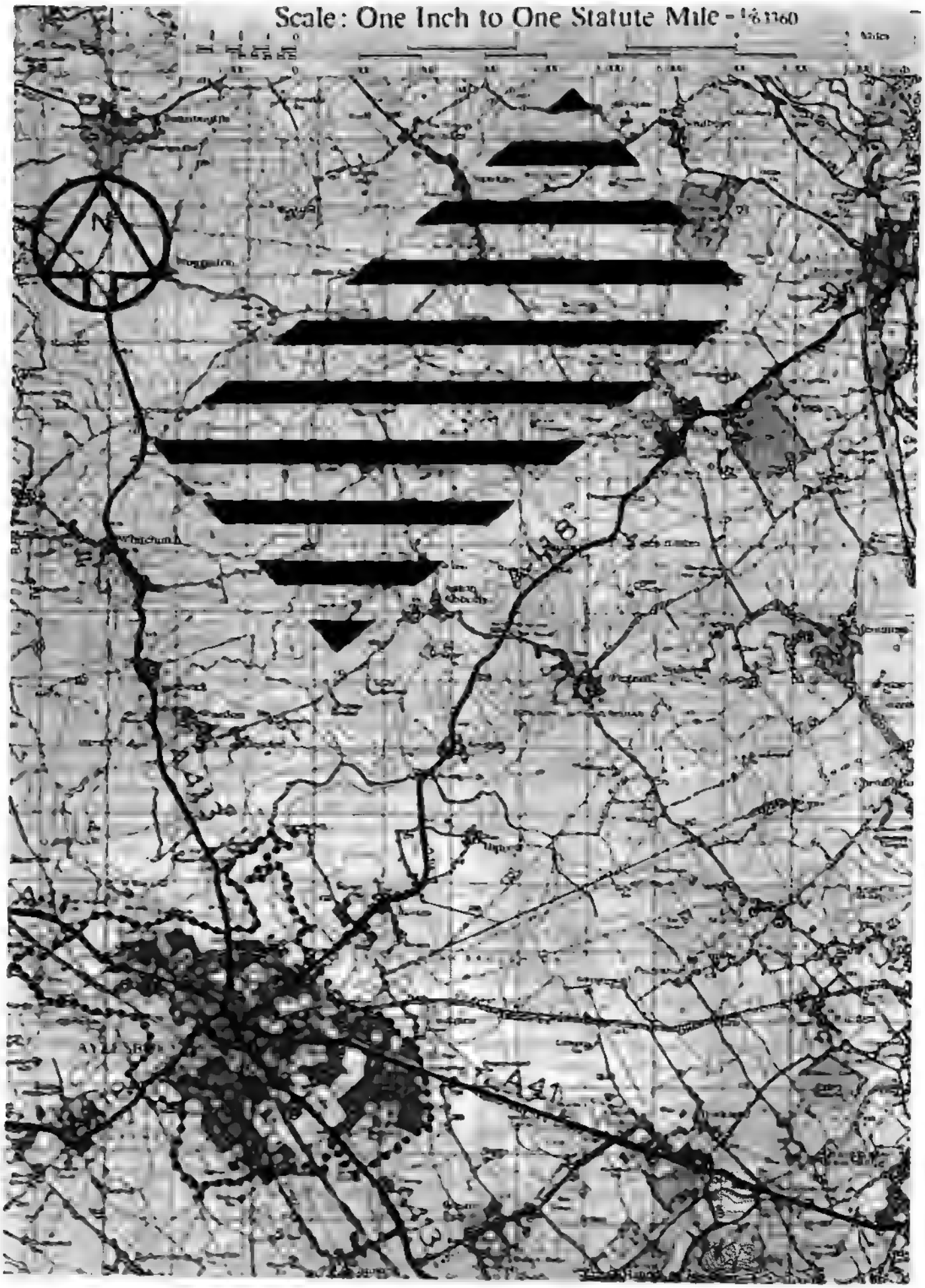
xiii) Residential and industrial areas of the town are shown to be within 40 NNI (for a four-runway airport). Noise disturbance at varying levels, therefore, must be anticipated over a wide area which would adversely affect the quality of life in the town.

xiv) The Council considers that a pessimistic rather than an optimistic view should be taken where questions of noise and other nuisance arise.

xv) The Council being satisfied that nuisance by noise would be suffered by inhabitants of the Borough, are concerned that under present provisions no, or insufficient, financial assistance would be available to assist owners or occupiers in mitigating the nuisance or discomfort.

xvi) The Council are not satisfied that the Borough would be free from the adversee ffects of "fall-out" of kerosene or other substances from flying aircraft or from the danger of aircraft failing in flight.

Printed image digitised by the University of Southampton Library Digitisation Unit



Proposed airport site relative to Aylesbury. (Aylesbury Borough Council)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bletchley Urban District Council*

1. The Bletchley Urban District Council make the following statement to the Commission on the Third London Airport.

2. Bletchley is a town lying on slightly undulating ground astride the A5 at the crossing of the River Ouzel and the Grand Union Canal. The town is the southernmost portion of the designated area for the Milton Keynes new town. To the east are the pleasantly wooded hills of the Brickhills and Aspley Heath, to the north the rolling agricultural land on both sides of the A5 as far as Stony Stratford and Wolverton. To the south-west of the town at a distance of some five miles is Stewkley which will be absorbed if the airport is sited at Cublington.

3. In 1895 the Parishes of Fenny Stratford and Simpson were constituted the Fenny Stratford Urban District Council, the Parish of Bletchley was added in 1898 and in 1911 the name was changed to the Bletchley Urban District Council. Since that date the Parish of Water Eaton was added in 1934 and there has been a small adjustment of boundaries with other Urban and Rural Districts. The total acreage of the town is 4,459 acres.

4. The population in 1968 was estimated at 26,440 which shows a rapid and sustained increase over the 1951 population figure of 10,916. The majority of persons living in the town are employed on the various industrial estates mainly owned by the Council and are housed in substantial Council housing developments within the town. The Council own some 4,128 houses, bungalows and flats and are at present in the process of erecting some further 2,200 Council houses as part of an expansion programme in conjunction with the Greater London Council.

5. The town is intensively developed both by industrial premises, commercial and shopping uses, private and Council housing estates and the town is excellently served by main line rail services direct from Euston to Bletchley and by the A5 which runs through part of the town and by its proximity to the M1 motorway. All these factors lead to the importance of the town in the area being as it is the major source of industry and employment for some miles around. Nonetheless although mainly urban in character the town retains its close links with the agricultural communities surrounding the town and there is a well attended cattle market once a week.

6. In 1951 the Council was the first Local Authority in the country to operate schemes under the Town Development Act, 1952 for industrial expansion and it has been this concerted policy of attracting firms from London which has established the population growth and the resources of the town. This process continues to be a major factor in the influence of the town within the concepts of the new city. It is predicted that the town and its commercial and shopping uses will within the new town have to sustain a vastly greater population than within the boundaries of the Urban District.

7. The Council have considered the effects the siting of the airport at Cublington will have upon the area and would make the following observations:

(a) The Council feel that a very serious impact will be made upon the town by the extremely heavy growth of traffic in and around Bletchley if Cublington is chosen as the site, particularly so if the airport buildings should happen to be erected on the north-west side of the runway or alternatively if the road link with the Motorway is taken northwards rather than eastwards. Whilst this will depend upon road patterns the situation would clearly affect the plans for the new city whereas the interim report of the Development Corporation indicates the general road pattern running north and south they may find that it would have to be re-orientated to an east west direction. Bletchley will be the nearest large town to the airport and because of that it is likely to suffer the most serious effects from road traffic and should in fact the Bletchley station be chosen to act, even temporarily, as a rail point for the airport then this would only add to the present over-loading of the highways within the Urban District.

(b) As has been mentioned above the Council have taken considerable trouble in the past to introduce industry from London into this area. They will continue to play this very major part within the new town and if industry were to be attracted to surround the airport this will materially effect the chances of encouraging other industries to come to Bletchley. If the airport is going to provide anything like the 65,000 jobs in primary services one can assume that the greater part of the labour force will be drawn from the Milton Keynes area. Consequently the industrial intake into the designated area itself will be effected because something like 150,000 people would be concerned with supplying most of the 65,000 workers for the airport which in itself would mean that the amount of industrial development in the area would have to be cut down or conversely the size of the new city itself materially increased to cater for both the industry already envisaged and the workers for the airport. It would be disastrous if the new city were to become merely a dormitory area without self supporting industry. In this context the Council fully supports the published statements of the Milton Keynes

* See also p. 1574.

Printed image digitised by the University of Southampton Library Digitisation Unit

Development Corporation concerning the proposed siting at Cublington. The existing industries in Bletchley will also be affected and will find it difficult to keep employees with such varied competition.

(c) The Council are concerned as to water supplies in the area. The supply for the new city including Bletchley are not at all yet satisfactorily clear and the introduction of this vast new consumer may well put an undue strain upon the supplies of water to the whole area. It is known that Cublington was one of the two sites suggested for development as North Bucks storage reservoirs which would have served the area concerned. It would mean now that alternative sources would have to be found for both the town and the new city.

(d) It is anticipated that the effects of the airport on surrounding country areas will mean that they will no longer be pleasant areas where the residents of Bletchley would normally expect to be able to go for quiet and solitude and to be able to re-charge their batteries. It is felt that this pleasant environment which surrounds the town is part and parcel of the town's amenities and as much a part of the way of life of the residents as the local cinema, pubs and community associations and bearing in mind that the present area to the north will be extinguished by the new city the town will be left with only a small part of the land to the south to fulfil this need.

(e) It is noticed from the published information that the 40 and 45 NNI contours touch the southern portion of the town. Whilst it cannot, therefore, be said that the town will according to that information be seriously affected by noise it can be anticipated that the whole of the town will be within a 35 NNI contour and sufficient noise will be created by the proximity of the airport which in itself would be some 100 ft above sea level higher than the town would create a continuous nuisance from noise interrupting the working and leisure activities of the residents. It is not known what effects noise of this intensity will have upon sleep but in such a large area of residential accommodation serious interference with this necessity will have far reaching effects both on human existence and in workday performance.

(f) The Council's development of 2,200 houses at Water Eaton is in itself partly within the 40 contour and this would mean that persons will be coming from London, an area where the noise is accepted from road and the air at a high level, to an area where they would reasonably not expect such intrusive noise. The result may well be that the Council will find great difficulty in persuading persons to come to this area and this in itself will have effect upon industrial growth of the area.

(g) It is understood that it can be expected that the air traffic will cause nuisance to television and radio reception and indeed the occasional air-flights over the town already provide such interference.

8. The Council, therefore, are of the opinion that a development of such magnitude ought to be sited where it is less likely to adversely affect the lives and living conditions of so many people.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Newport Pagnell Rural District Council

SUBMITTED BY MR. A. SNAITH*

1. The Newport Pagnell Rural District Council are absolutely opposed to any inland site for the Third London Airport, and the possible site at Cublington in particular.

2. The Parish Councils in the area are opposed—the Newport Pagnell & District Association of Parish Councils and the individual parishes, have asked this Council to present their Statements and these are attached.

3. The aforementioned fully support the Bucks County Council's opposition to the use of any inland site and have by agreement, left the expert evidence to be submitted by the County Council and W.A.R.A.

This Statement is concerned with particular local aspects:

4. Summary of reasons for opposition

(a) **Noise**

Generally
Specific Parishes
Remainder of District
Amenity and Leisure.

(b) **Increased urbanisation**

More than half the Milton Keynes New City is to be built within the Rural District, and this itself will have a very considerable impact on this country area, an airport at Cublington would increase the extent of urbanisation very considerably.

(c) **Drainage**

There are problems in dealing with foul drainage from the Milton Keynes development, there are very serious problems in dealing with the increased rate of discharge of surface water from the Milton Keynes development, any further increase in the drainage requirements will be detrimental to the whole of the Newport Pagnell Rural District area as the drainage is to the River Ouzel and the River Ouse, both of which run through a large part of the Rural District.

(d) **D. W. S.**

The effects of considerable air traffic on the Diplomatic Wireless Station at Hanslope.

5. Supporting Statements in respect of these reasons are set out on sheets following, together with the Statements from:

Bow Brickhill Parish Council

Little Brickhill Parish Council

Newport Pagnell & District Association of Parish Councils.

6. Noise—general

Expert evidence will be given by others of the effects of noise generally, the Council accept the information as given on the Commission's map as being the best facts available at this time, but question the reliability of the information.

The contours can be varied by a slight re-alignment, changes in aircraft design, *i.e.* V.T.O.L., changes in type of aircraft being used, or perhaps moderated by silencing the aircraft.

7. Noise there will be, people living in the area are appalled by the thought of it. Some people lived in towns and have retired here; some work in towns and cities but live with their families here. The coming of an airport defeats this purpose.

8. Some who can be named, know from first-hand experience, the effect on them of the airport at Heathrow, having moved from that area to escape from the noise.

9. People will be affected by noise to a lesser or greater degree, at their work, in their leisure, in the time they hope to be refreshed by sleep.

10. Children's progress in school will be affected adversely and certainly the efforts of teachers frustrated—the attention of a class at a lesson is diverted by noise—teachers work under a strain. I have personal experience of noise and its effect upon children, having until the last war taught in London. I was evacuated with my school and after the war stayed on in the country to enjoy the more peaceful country life.

11. The Council of Europe's Committee on Health and Social Questions in its recent study of aircraft noise states that "noise is an injurious product of economic activity, which must be controlled if man is to get the full benefits from his own achievements". The Report states that 15 out of 34 children attending a school near Orly Airport suffered from injury to the inner ear, and that noise endangers health from interruption of sleep.

12. The effect of noise on children's education has been confirmed by independent H.M. Inspectors of Schools when they have visited schools near an airport (para. 259 of the Final Report on Noise).

13. The 50 NNI contour as shown on the Commission's map, affects the parishes of Little Brickhill and Woburn Sands in this Rural District. Life in these parishes will be intolerable.

Little Brickhill Parish

14. The whole of the parish is within the 50 NNI contour, estimated population 400, with 120 houses.

* See also p. 1574.

Printed image digitised by the University of Southampton Library Digitisation Unit

Gross Value £15,313, Net R.V. £10,533. The Parish is situated 480 ft above sea level on the side of a hill facing the proposed airport site. In this situation the impact of aircraft noise may be greater than if the village was on the level. Attached is a statement by the Little Brickhill Parish Council, giving more details relating to this parish.

Woburn Sands parish

15. Part only of the parish is shown within the 50 NNI contour. For the following figures, the line has been accepted as the barrier between the 50 NNI contour, although the Commission are well aware that noise does not suddenly change on this line. Within the 50 NNI contour, the estimated population is 600. The number of houses is 165. 12 shops and offices Gross Value £27,922. Rateable Value £19,718. Estimated population for the whole parish is 1,650. There are several old persons homes in and around Woburn Sands, and several sanatoria controlled by the Greater London Council. The G.L.C. ought to be invited to comment on the effect of noise, as the sanatoria are on the hillside, probably about 450 ft above sea level.

The Woburn Sands Parish Council oppose the use of the Cublington site, additional evidence is being given on behalf of the village by W.A.R.A.

Noise—remainder of district

16. The Council urge the Commission to take careful note of the findings in the Final Report on Noise (para. 304) that if the critical range of annoyance in daytime is 50–60 NNI, at night the critical range is 30–45 NNI. The Commission's contour maps only show down to the 40 NNI. There must therefore be a far greater area subject to the critical range of annoyance at night. See page 215 of the Report on comparison of daytime and night time annoyance.

Noise—amenity and leisure

17. The Brickhills and Woburn Sands are in an area of outstanding natural beauty, the hills are very extensively wooded and it is a favourite resort for peace and quiet for many people from towns and cities around. At weekends literally hundreds of people visit the woods, peace and quiet will be destroyed by the constant sound of aircraft, and their value as a means of refreshment and leisure will be destroyed. Peace and quiet will become increasingly scarce, increasingly threatened, increasingly valued, but no expenditure by future generations will be able to recover this asset if we, today, have not invested heavily enough in its preservation.

Urbanisation

18. Newport Pagnell Rural District is a very pleasant rural area providing homes for about 15,000 people. The Government have decided to build the New City of Milton Keynes in the area and more than half the designated area of Milton Keynes New City lies within the Newport Pagnell Rural District. The great majority of people living in the Rural District did not want the New City of Milton Keynes, they opposed the proposals but were over-ruled by the Minister.

19. Our people realize that development of the New City will inevitably lead to congestion of our roads, to a very considerable change in the way of life of people now resident here but having seen that the Interim Report of the Development Corporation they are coming to terms with the idea of a new city and in the main are impressed with the plans, hopes and visions shown in the Interim Report.

20. There will be considerable upheaval caused by this New City development—to add to this the additional upheaval caused by the construction of a major airport—the temporary housing of construction workers, the noise of traffic and construction, with eventually another quarter of a million people to be housed in the locality, is asking too much.

21. Local people do not see how the Milton Keynes development proposals can be implemented if the airport is sited so near to the City of Milton Keynes. Indeed the Development Corporation through its Chairman Lord Campbell, have stated that if an airport comes there must be some rethinking of their plans for Milton Keynes. It seems such a pity that these plans prepared with such care and presented in the Interim Report for the people of the area in such a way as to command respect and general approval should be jeopardised at this stage.

Drainage—foul

22. All foul drainage in the Rural District eventually is discharged into the River Ouse—a slow flowing sluggish river—or its tributaries.

23. The Milton Keynes Development Corporation have received a report from their Consultants, Messrs. J. D. & D. M. Watson, which includes a biological survey of the Great Ouse and Ouzel Rivers. From these reports, it appears that it is just possible to deal with the foul drainage from Milton Keynes and discharge an effluent into the river which may, but only may, be acceptable. Is it possible for the River Ouse to take any additional foul discharge from a greater population? the inference is NO!

24. The Commission should ask the Development Corporation to make available the up-to-date information already in their possession and if the Cublington site on other grounds is considered suitable, the Commission should obtain details of the costs of providing a Regional foul drainage system for the area which will not result in pollution of the Ouse. The cost of installing such a system should not be borne by the ratepayers of the Rural District who will not benefit from the rate income of the airport sited in another rating area.

Printed image digitised by the University of Southampton Library Digitisation Unit

Drainage—surface water

25. The runways of the airport appear to be the dividing line between the Ouse and Thames River Authorities. Some of the surface water run-off from the airport and increased urbanisation to the south-west of the flight path, will run into the River Thames. Evidence on this will be submitted by others.

26. Some of the surface water from the runways and buildings at the airport may discharge into the area of the Ouse River Authority but the major threat is from the increased urbanisation situated north-west of the flight path and the resultant increased rate of discharge of surface water.

27. The main river draining the area north-west of the flight path is the River Ouzel, which joins the River Ouse at Newport Pagnell. Much of the Ouzel Catchment Area lies upstream of Milton Keynes Designated Area but it is certain that development of Milton Keynes alone will result in an increase in the rate of the total surface water run off to the River Ouzel.

28. At Newport Pagnell and below, the Ouse and Ouzel flood considerable areas of land (including dwellinghouses)—with the increased rate of run off from Milton Keynes, these flooding problems will increase unless major works are carried out.

29. The Milton Keynes Development Corporation are considering a report on surface water drainage, from their Consultants, Messrs. J. D. & D. M. Watson, and the Commission should make use of the information so recently obtained.

30. Even in connection with the Milton Keynes development, the construction of balancing reservoirs if accepted, may result in some increase in the frequency of floods at and below Newport Pagnell. The River Authority will have to enlarge and improve the river channel downstream of Newport Pagnell so as to accommodate the increased rate of flow.

31. An airport at Wing might well double the rate of surface water run off, will create problems which will necessitate very major widening and dredging of the River Ouse for many miles down river, and the cost of so doing should be ascertained. It will also apparently be necessary to take more agricultural land for the formation of additional or larger balancing reservoirs. How much more land?

32. This is a very serious matter to people living in the Rural District who already suffer from flooding damage, the prospect of greater and more frequent floods, is alarming.

D. W. S.

33. At Hanslope, grid reference 820450 is situated the Diplomatic Wireless Service Station. This Station mainly receives wireless transmissions from Diplomatic sources abroad. We know the effects of aircraft circling overhead, on Television, is there a similar affect upon radio reception? The Commission should obtain evidence on this if it has not already been submitted, by the appropriate Government Department.

34. The Parish Councils in the Rural District have agreed that this Council should present Statements for them.

35. Attached is a copy of a resolution from the Newport Pagnell and District Association of Parish Councils, made at their meeting held on 3rd May, 1969 from which it will be noted that no less than 22 Parish Councils present voted unanimously to record their opposition to the siting of the airport at Wing.

36. Various Parish Councils have subsequently passed resolutions to this effect and have asked that this Council should bring to the Commission's attention, their opposition. Most of the Parish Council meetings were after public meetings had been held in the villages, so it can be said that these represent the views of a great majority of the people living in the Rural District.

37. The two parishes which will be affected by intolerable noise within the 50+ NNI contour, are Little Brickhill and Woburn Sands, Bow Brickhill parish is within the 40 NNI contour.

38. Attached are statements by the Little Brickhill and Bow Brickhill Parish Councils.

39. The Woburn Sands Parish Council having held a Public Meeting, also record their opposition. At the Public Meeting it was decided to form a local branch of the Wing Airport Resistance Association, and it has been left to that organisation to express the views of the people of Woburn Sands.

Printed image digitised by the University of Southampton Library Digitisation Unit

Newport Pagnell and District Association of Parish Councils

8, Park Way
Woburn Sands
Bletchley, Bucks.
3rd May, 1969

Dear Mr. Dunbabin,

Third London Airport

A meeting of the above Association was held on April 29th at the R.D.C. Offices, Newport Pagnell, at which Mr. D. Lawson spoke on behalf of W.A.R.A. and Mr. R. Payne for B.A.R.A.

The following resolutions were carried unanimously and without anybody speaking in opposition and without any abstentions.

1. That this meeting is most strongly opposed to the siting of the Third London Airport at Wing or Thurleigh because such a development would cause severe disruption and disturbance in the lives and livelihoods of thousands of people living within the rural district and would destroy the rural character of the neighbourhood.
2. That this meeting is also opposed in principle to the siting of the Third London Airport on any inland site, and supports its' siting on the Maplin Sands or in some other coastal region where no agricultural land would be taken and the least disturbance and disruption would be caused.
3. That the cost of building the airport should not be of prime consideration in the choice of site.

There were present at this meeting, representatives of the Parish Councils of the following towns and villages only:

Little Brickhill
Woburn Sands
Lavendon
Wavendon
Stoke Goldington
Weston Underwood
Emberton
Olney
Gayhurst
Lathbury
Haversham
Great Linford
Loughton
Moulsoe
Newton Blossomville
Newport Pagnell
North Crawley
Shenley
Sherington
Stanbridge
Woughton
Calverton
Woolston-cum-Willen

C. B. Bates
Hon. Secretary

Statement of the Little Brickhill Parish Council

The Little Brickhill Parish Council submit the following statement for the local hearing opening on 14th July, 1969.

1. This ancient village, well known in coaching days is situated on the A5 trunk road, 480 ft above sea level, with its 800 years old church, a considerable variety of dwelling houses, inns and farms. It is a truly rural area surrounded by woodland and is so pleasant that the Bucks County Council are in the process of designating it as "An area of outstanding natural beauty". It is entirely free from any industry other than farming. There is a large field owned by the Parish Council and used both as a Playing Field and a School Sports Field.

2. The population numbers approximately 350. As is happening in many parts of Great Britain, the percentage of elderly and retired people in the village is steadily increasing, being now about 20 per cent of the total. Most people are employed in professions and industries in Bletchley, Luton and Dunstable. There is a very active village life with a branch of the Womens' Institute, a thriving Gardeners Club which organises every summer, an excellent Horticultural Show and Gymkhana which is well supported by people from miles around. We also have a Youth Club for young people between the ages of 12–18 years. The church through its various activities meets the spiritual needs of the villagers.

3. The following are the names of the Parish Councillors and their occupations:

Mr. W. Griffiths (Chairman) Technical Director (Retd.)
Mr. P. Tinworth, Chartered Quantity Surveyor.
Mr. S. Entwisle, Retired.
Mr. D. Moseley, Farmer.
Mr. J. Sinfield, Die Setter (Plastic Products).

This Parish Council at its Annual Meeting held on 23rd May, unanimously passed a resolution recording its strong objection to the proposed siting of an airport at Wing and instructed the Clerk of the Council to apply for leave to appear or be represented at Stage II of the hearing of the Commission.

At a public meeting held on 2nd April, 1969, at which 42 people were present, the following resolution was carried unanimously after a lengthy discussion of the problem:

Printed image digitised by the University of Southampton Library Digitisation Unit

"That the residents of Little Brickhill are totally opposed to the proposed siting of a Third International Airport at Wing".

The Local branch of the Womens' Institute have also passed a similar resolution of objection.

4. The following are the main reasons expressed by the Parish Council and the residents for their objections.

The village being situated on an important trunk road is already subjected to a considerable amount of noise, vibration and inconvenience from heavy transport vehicles. Should the airport be sited at Wing with the proposed layout of runways, the village would be further seriously affected by the noise and vibration of aircraft through being in the 50 NNI contour area. Also with the enormous increase in vehicular traffic in and around the airport and the general disturbance due to the necessary construction of buildings and roads, the whole character of our beautiful village and surrounding countryside would be completely destroyed. Also being a well wooded area, we are concerned about the effect on the trees, shrubs and countryside of the fall out of fuel from aircraft, which we understand takes place when they are taking off and landing.

Finally, there is the vital Question—Which is more important, the health of human beings being disastrously affected year after year, and their living conditions made intolerable with the resultant increase in the already gigantic cost of the National Health Scheme, *or* the cost of constructing airports on reclaimed land in areas which are now almost free from people. Without the slightest hesitation, our answer is, the health of human beings.

Statement of the Bow Brickhill Parish Council

The Bow Brickhill Parish Council submit the following statement for the Local Hearing at Aylesbury opening on the 14th July, 1969.

1. The village of Bow Brickhill, lying on a scarp overlooking the Ouzel Valley, is one of great variation and charm. Its pine and beech woods, its heather-covered and grassy open spaces, its delectable view of at least a dozen parishes, with outlines of Daventry and Hillmorton, prove it to be what it appears—a genuine beauty spot.

Its houses and quiet insets follow the same trend, with ancient cottages and the not-so-old merging in friendly fashion with the new and the modern.

A timbered house, at the Corners, one or two wattle and daub cottages, an ancient farm house and a Victorian Manor Farm still remain, though some dwellings have gone down before the bulldozer to modernise the road system. The old Post Office—originally the Dame's School, still stands, but a modern up-to-date post office cum supermarket have replaced it.

The ancient pub has gone and in its place stands a fairly modern double-fronted building. The old Chapels, too have gone, giving way to a modern adjunct to the local school, and two bright and sparkling semi-detached houses. The Church of All Saints, a 12th Century foundation, stands high above the village—a beauty spot in summer, but well-nigh un-approachable in winter.

The village boasts no playing field—a sore point with some—but there is a small village green, near the War Memorial, where in days gone by stood an old "pound".

Social acitivities take place in the Church Hall, in the centre of the village, and the area is served a weekly visit of the Mobile Library.

2. The village, for several years, seemed full of elderly people, but the reverse is now apparent. Two new estates and a quiet off-road have given a fillip to the village, and young mothers with their young families seem to abound. It would seem that the executive type has discovered the village. These commute on fast, electrified trains to London and the provinces, and find Bow Brickhill an excellent dormitory and a desirable week-end spot.

An active W.I., a Mothers' Union, a Parent-Teacher Association, a weekly social club, coffee mornings and evenings in support of these, choral and drama efforts help to brighten the scene. An annual visit from "East-Enders", a Christmas Party for the Senior Citizens, a get-together for games on the Rectory lawn bring together all types and denominations.

3. The Parish Council consists of five members and a Clerk.

They are:

1. Frederick O'Dell—Chairman—a builder and joiner and the local rep. on R.D.C.—and a Charity Trustee.
2. Norman Gurney—a retired farmer, School Manager, and formerly R.D.C. rep. for 15 years.
3. Roland West—retired Railway Clerk—Chairman of the School Managers—member of the Parochial Church Council—Treasurer of Free-will Offering Scheme and a Charity Trustee.
4. Elias Burton—retired Railway worker.
5. Frederick Gilbert—factory worker—secretary of his Trade Union—active member of Toc. H.
6. Clerk—Audrey O'Dell—School-teacher.

This Council convened a special meeting in the local school, with a guest speaker from W.A.R.A. to discuss the possibility of the Third London Airport being sited at Wing. 50 electors were present—these consisted of Mothers' Union, W.I., Social Club, and others representing all sections of village life.

It was decided unanimously, after lengthy discussion and careful consideration to pass the following resolution:

We, the Parish Meeting object strongly to the proposed Third London Airport being sited at Cublington, on the following grounds:

Printed image digitised by the University of Southampton Library Digitisation Unit

(a) Noise intrusion into our education programmes in the village school by day, and the dramatic and choral activities of this village by night.

We consider "stacking" in this particular region will render cultural work impossible.

(b) The increase of traffic on our roads to and from the airport, particularly as we are in such close proximity to the new city of Milton Keynes and consequently sandwiched between it and Cublington.

(c) The consequent overcrowding of our rural amenities with the possible desecration of the same.

(d) The laying waste, in extravagantly expensive fashion, the farms, houses and lives of our neighbours in nearby villages.

4. The meeting ended with one thought clearly defined in everyone's mind:

The airport should be situated on a coastal site to avoid many of the inconveniences already named, and to satisfy a strong public opinion

P. AUDRY O'DELL
Parish Clerk

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Granborough Parish Council*

21, Winslow Road
Granborough,
Bletchley

20th June 1969

The Secretary of the Commission
Templar House
81–87 High Holborn
London WC1

Dear Sir,

Cublington (Wing), Third London Airport

On behalf of the above Parish Council, being the voice of the Parishioners of this village, I beg to submit the following statement of evidence to the Commission.

At the Annual Parish Meeting, held on 26th March 1969, unanimous opposition was expressed to the siting of the third London airport at Cublington.

During recent years the character of this village has changed from an entirely agricultural community to a residential area for commuters and retired people, who reside here to enjoy the quiet and peace of the rural countryside.

The only industry are very active agricultural enterprises of a family nature.

Although we lie outside the 40 N.N.I. contour, it is felt that Urbanisation resulting from an airport so near, the inevitable increase in traffic to and from such airport, would disrupt and irreparably damage the amenities of this unspoiled village.

We therefore strongly protest at the possibility of the spoiling of this village and our HOMES, by the siting of an airport at Cublington, and thank you in anticipation that this statement will be submitted at the hearing on 14th July.

Yours faithfully,
R. P. BATES
(*Hon. Clerk*)

* See also p. 1575.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Haddenham Parish Council*

The Haddenham Parish Council submit the following statement for the local hearing at Aylesbury opening on 14th July, having passed a resolution to oppose the building of the airport at Wing, following a unanimous decision, with one abstention, at the Annual Parish Meeting on 31st March 1969.

Objections

We oppose the building of the new London Airport at Wing. We are in the 45 NNI area. Within this area we should suffer great inconvenience through noise and vibration. We feel the noise would make our daily lives unbearable: even with soundproofing it would disrupt the education of our children. We have people living in this village who previously lived in Beaconsfield, and moved here to get away from the sound of aircraft approaching Heathrow Airport. Secondly, many of our attractive old houses and cottages and village walls are made of witchert. Witchert (a mixture of local clay and straw and used even as late as 1948) collapses under the effect of vibration. Being out of the area where compensation might be payable great financial hardship would be felt.

We are fearful of a large influx of people into a rural area, where even now the number of jobs outnumber the applicants because the character of the area would be changed from open fields to surburbia, with a conurbation comparable to that of Lancashire or Yorkshire. It is a country area on the edge of the Chilterns, with attractive villages and quiet walks where one of our growing industries is tourism.

We deplore the loss of valuable agricultural land, not only for the immediate runways, but for the building of houses and amenities for the employees and their dependants, and the consequent effect on our rivers and fishing. The pollution of the air from gasoline vapour would damage crops, wild life and plants. The airport and its supporting services would increase the demand for water, sewage disposal, electric power and gas, all of which would erode the rural character of the area.

We realise that the new airport is a necessity for Britain, but with her rapidly increasing population it would seem better husbandry to take note of the Dutch way of life and their interest in increasing their land acreage, rather than reducing it. The mental happiness of people which is affected by their living surroundings, should be considered and land must be available for pleasure where peace can be found.

In the interest of future generations in a small island, land should not be squandered and laid waste for immediate gain—the future must be considered, and we therefore feel that Foulness is a more suitable site.

We also deplore the length of time it is taking to reach a decision on this matter; by the time we have finished arguing France or Holland may well have constructed a new airport, taken the trade, and made the need for such a vast undertaking in Britain obsolete.

History

From the name, almost certainly meaning "Hadda's Homestead", we know the village is of Saxon origin, about 570. The first recorded mention of Haddenham occurred in 1086 when the Domesday surveyors showed it to be a well established community stretching the length of its stream, extending as far as Scotsgrove where a water mill existed on the same site as the present one.

At the Norman Conquest the Manor of Haddenham was given to Archbishop Lanfranc who in turn gave it to Gundulph, Bishop of Rochester. At the dissolution of the Monastries in 1540 the Manor was leased by the Crown to private people and although the old Manorial system of government continued the relationship between tenant and overlord was unsettled. By the year 1625 the villagers made a concerted effort to free themselves from services of labour, and did so by payment of £1,532—a huge sum for that period indicating the sound financial condition of the village. This was further proved in the Civil War years 1642–46 when many levies were made in support of the Parliamentary Army.

Houses of architectural interest

Many houses in the village are of interest for their individuality (e.g. the Bone House in the High Street, with rustic decoration worked on the rendering) or because they form part of picturesque groups such as Flint Street, Gibson Lane, High Street, or Fern Lane.

Of special architectural interest are: Grenville Manor Place, dated 1569, the Manor Farm House and Great Tithe Barn, dating from 15th Century, Church Farm House, possibly the oldest in the village, the Beehive, with an attractive Georgian shop front, Dove House and Barn and Dovecote. These are early 17th Century, the Dovecote being 15th Century and built on the site of an ancient fort, Oak Beam Cottage—a cruck cottage—an ancient form of timber house construction, Swiss Cottage built about 1708, and of course the Church which dates from Saxon times. Many others besides these are on the Minister's scheduled list of houses worthy of preservation, most of which have been reconditioned and are now occupied by people who have chosen to live in the village and share in the community life.

* See also p. 1575.

Printed image digitised by the University of Southampton Library Digitisation Unit

The village to-day

It is a growing village, about 300 new houses have been built within the last 10 years, there are 222 Council houses, some 10 shops, a post office, and 7 public houses. There are 4 churches—Church of England, a Methodist Church, a Baptist Chapel, and a Roman Catholic Church.

We have a large village hall which provides an excellent centre for dances, fetes, twice weekly bingo, dancing classes, and a thriving playgroup. The roller skating sessions are very popular, as are the occasional whist drives. The hall made a profit of about £500 last year, thus ensuring that its redecoration and repairs do not become a liability on the rates. In one week recently £600 was collected for charitable concerns.

The Youth Club meets twice weekly in the Old British Schools; more than £450 is being spent by the County Council on converting a room in this building into an attractive coffee bar.

There is a fine playing field, used by the Cricket and Football Clubs and the village in general. A further two acres has just been purchased and plans are afoot to develop these fields with a pavilion and tennis courts.

More than 400 children attend the two Primary Schools in the village, and land is owned by the County Council Education Department on which it is hoped to build a Middle School in 1970–71.

There is an active Darby and Joan Club with some 60 members, and also over 30 clubs and societies of widely varying interests. Regular meetings of the Parish Council, Womens' Institute, British Legion, Mothers' Union, Young Wives Groups, and other societies provide continuity with very varied programmes. The Village Society with occasional meetings introduces interesting and often controversial topics of village interest, generally ending in discussion.

The churches all have their annual social programmes, varying from Harvest Suppers to the Summer Fetes. The May Garland Fair (run by the Haddenham Liberal Party) is of particular interest, reviving the traditional country garlands that were taken round the village on the first of May, and introducing ones of modern design.

The annual flower show is always well supported and the general quality of exhibits is high. The Gymkhana grows in strength from year to year and lately profits from this have been given to the Playing Fields Pavilion Fund.

The Haddenham Singers have a fame outside Haddenham, having once appeared on television, and their regular concerts are much enjoyed. A fairly new organization to Haddenham is the Pre-School Playgroup which is proving extremely popular.

In the winter language classes are held in one of the schools, and for the more energetic there is the Keep Fit Association.

There are 2,068 on the electoral roll. Many have been born here and lived here all their lives, and at least a third have moved here and chosen to live in Haddenham, not only to enjoy the peace and quiet of the country life, but also to join in the life of an active rural community. It is outside the commuter belt, though a few people travel up to the City every day, the majority work in Aylesbury or Oxford, farm the surrounding land, or are employed locally in factories, such as Joseph Lucas (Export) Ltd., Spicer Hallfield Ltd., Airtech Ltd., Grossmiths, and Alexander Engineering.

To-day money can be collected to employ Counsel to fight unsuitable planning applications: just recently £250 came from the village to oppose the building of a large grinding mill, because it was felt that the noise, dust and smell, would have disturbed the peace of the nearby houses, and that the extra traffic generated would have been unsuitable in the narrow village lanes. The Minister in his wisdom supported the village and refused the appeal.

The Parish Council members are from all levels of village life. They are:

Chairman: Mr. J. N. T. North, Stockbroker.
Vice-Chairman: Mr. A. P. Boddington, Farmer.
Miss D. M. Alderson, Spinster.
Mrs. V. F. Buswell, Housewife.
Mrs. W. E. Carslake, Shopkeeper.
Mr. A. R. Chalk, General Manager, Spicer Hallfields.
Mr. J. Clarke, Farmer.
Mr. E. Griib, Welder.
Mr. G. Morris, Garage Proprietor.
Mr. W. T. Rose, Farmer.
Mr. F. Rushton, Production Contoller.

Haddenham is a live community, proud of its history—fearful for its future. We present to the Commission our considered opinion that it would be detrimental to the way of life, not only of our own village, but also to the whole Rural District of Aylesbury, if the Third London Airport were sited at Wing.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Newton Longville Parish Council*

The Newton Longville Parish Council submit the following statement for the local Hearing at Aylesbury opening on 14th July 1969.

1. The Parish

The Parish was first mentioned in the Domesday Book 1087, although the Parish Register does not commence until 1561. The Domesday Book records the area of the Manor of Neutone as 10 hides (1,200 acres).

The earliest recorded history of the Parish concerns the Priory of Cluniac Monks which was situated on the site of the present Manor House. By the original donors, Newton Longville became a cell to this Priory.

The Parish adjoins South West Bletchley and is situated approximately sixteen miles north-east of Aylesbury, the county town. According to provisional plans it is considered that one point on the Southern perimeter of the Parish will be no less than two miles from a proposed runway.

There are several fine old buildings in the village whose structures could possibly be damaged by excessive noise. The most notable of these being, St. Faiths Church (12th Century), the Manor House, and several old cottages. Other buildings of social importance are; the post office, Baptist and Methodist Chapels, two public houses, the village hall and the church hall.

A new primary school has recently been built in the village; as with all modern buildings there is a predominantly large area of glass. Teaching conditions under excessive noise would be intolerable.

2. People

The population is approximately 1,800. There is a wide cross section of people and although the average is reasonably low there are many elderly and retired residents to whom exposure to excessive noise would undoubtedly be harmful.

Many of the working population are employed by local industries but an increasing number commute to London and other towns and expect the peace and quiet of village life in the evenings and at weekends.

The village is extremely rich in social activities, set out below is a list of clubs and organisations which are active:

Woman's Institute	Youth Club
Young Wives	Football Club (Sunday League)
Mothers' Union	Childrens Play group
Retired Peoples Club (Newtonians)	British Legion

3. Parish Councillors

The Parish Council members have varied occupations from butcher to executive and therefore represent a wide cross section of village life and views. The Councillors are unanimous in expressing their abhorrence to the Third London Airport being sited at Cublington (Wing).

At a general Parish meeting held on April 22nd, 1969 the following resolutions were unanimously passed:

That the meeting:

(a) deplored the use of land on which the village of Stewkley now stands and the loss of further agricultural land in North Bucks.

(b) the severe disruption of living conditions by reason of noise levels.

(c) The great change of land use in the surrounding area for construction, housing and roads.

The meeting also felt that a more suitable site could be found in a coastal area.

4. Further comments

The parish has always in the past been subjected to little or no noise. The effect on residents if there was continual aircraft noise could only be harmful.

* See also p. 1576.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of North Marston Parish Council*

Long Gables
Portway
North Marston
Bletchley, Bucks.

20th June 1969

The Secretary
Commission on The Third London Airport
Templar House
High Holborn
London WC1

Dear Sir,

Third London Airport—Cublington Site

The inhabitants of North Marston have over the last few months expressed their firm opposition to the siting of the Third London Airport at Cublington. These protests have been made at public discussions and debates and letters have been addressed to the Commission; further letters are attached hereto. In addition, various fund raising activities have taken place to raise money to oppose the project.

The feeling in this village is so strong that the Parish Council has instructed me to write to you pointing this out, and has asked me to give you a description of our village which is so near to the prospective site for the Airport that the almost constant noise, the industry, the increased road traffic and the general upheaval would completely destroy the village as a farming and residential community, and ruin the lives of its inhabitants.

There are some 500 people living in North Marston and they form a lively and enthusiastic community. A look through the Parish Register and other old records will show that a great many of the families have resided here for generations. A large proportion of the families, about 150 people, derive their livelihood from the land; they either own or tenant farms or are occupied in associated trades, and the farms are mainly dairy farms. There are about 60 retired people, living a quiet and pleasant life in the countryside they know well, and over the last few years a number of people, perhaps some 40–45, have come to the village and bought or built homes from which they commute to London, Aylesbury and other surrounding towns. These newcomers have been welcomed by the older residents and the village now is an homogeneous community with a lively and active concern for its existence and wellbeing.

This community of interest is evidenced by the number of thriving associations active in the village and the cross-section of the population represented in them. First amongst these organisations is the Parish Council, consisting of five members. The Chairman is a young man farming in his own right, two of the Councillors are housewives (one of whom is also the Postmistress), another member is a local historian and the fifth is an operative at a local brickworks. I am the Clerk and am a Secretary working in Aylesbury.

In addition to the Annual Parish Meeting, which over the years has been well attended, some 20 per cent of the families being represented, the Parish Council holds 10 to 12 meetings and committees a year. Within the limit of its small 1d. rate (£40), the Council has made and encouraged many improvements in the village and to augment this small rate income, much voluntary effort has been put in. An interest in the village life and appearance has been fostered by improving and increasing the street lighting, by tidying up and maintaining the village greens, including kerbing them to prevent their being used as car parks, and by the provision of a bus shelter. Draining work has been carried out at the recreation field so as to restore it to the use of the community, and litter bins have been provided. All this has taken place over the last three or four years. Plans are now afoot to restore the historic Holy Well of Sir John Schorne which lies in the village, to provide a car park and also to provide playing field equipment for the children.

Some indication of the pride and sense of responsibility which has always existed in North Marston can be gauged from the fact that the Village Hall was built after the 1914–18 War from monies collected within the village, with no outside help at all. A remarkable effort by so few people—it is, of course, a memorial to those men who died in the war. The management of the Hall has been delegated to a Committee consisting of a representative of each of the village organisations and over the last year or so this Committee has embarked upon, and partly carried out, a programme for the complete re-wiring of the electrical equipment, the installation of an up-to-date heating system, and complete redecoration, inside and out. People from all classes in the village have given and are giving voluntary help with these works, and the Hall is becoming more and more the centre of entertainment for the village.

* See also p. 1576.

Printed image digitised by the University of Southampton Library Digitisation Unit

There is a Mothers' Club which has 30–35 members and meets regularly every other Monday. Its aim is not only to provide opportunities for sharing activities and opinions, but also the education of its members in civic affairs. It also promotes schemes to provide gifts for charitable purposes. Last year it raised and donated £30 to Stoke Mandeville Hospital.

A Social Club was formed many years ago and this meets in the village hall and provides a focal point for many who wish to spend a quiet evening playing darts or dominoes or just chatting over a glass of beer.

An active and energetic Cricket Club is in being, whose games are followed with enthusiasm by the village, and its members and supporters are drawn from all sectors of the community.

A flourishing branch of the Mothers' Union meets in the village and provides that hardcore of mature female advice and help so necessary in a small district. They have set a high standard over the years and their influence is felt particularly when families fall on hard times or suffer through illness. People know that in times of stress they will never fail to receive willing help and guidance from the Mothers' Union.

The younger element in the village is catered for by a Youth Club organised by a member of the Methodist Chapel and this Club gets strong support for its activities of amateur theatricals, games, charity walks and the like. To my knowledge, no children from North Marston have been found in need of any legal or moral advice or guidance for many, many years.

During the winter months a Table Tennis Club meets regularly twice a week in the village hall, and competes very successfully in the Aylesbury and District Table Tennis League.

North Marston is a village which finds not only the majority of its occupations within its own boundaries, but also most of its daily requirements. We have a fine old Church which has a grand and impressive history dating from the early 13th Century and there is a thriving Church community to support it. A door to door collection in this village a year ago resulted in £230 being collected towards the renovation of the building. You will have received a separate letter from the Churchwardens about this historic building. A Sunday School attached to the Church is held regularly and is extremely well attended. There is also a Methodist Chapel in the village which, again, is very well supported, both in its services and in its other activities.

This gathering together and sharing of interests is again shown in the support given to local celebrations held annually. Two Fetes are held, one in June for the Church and one in August for the Village Hall funds. In addition, there is an annual Firework Party in November and a Carol Procession through the village each Christmas. There are two very old Charities in North Marston, one to benefit the poor and the other to provide for the upkeep of the Church clock. As part of the work of the Poors Charity, a party is organised at Harvest time for all the old folk in the village, at which they are given a Dinner and gifts, and entertained to a show by the rest of the village.

We have a fine new Primary School for our young children, a Sub Post Office, a Village Shop (General Store and Butcher), a Public House, and a Mobile Library service, all of which serve this small but active population of North Marston.

No-one would claim that North Marston is a beautiful village; there are, in fact, a few eyesores, but equally there a number of old and beautiful buildings, quite apart from our splendid Church. Many of the farm buildings and cottages date from the 16th and 17th Century and these provide not only homes, but also valuable links with the past. However, North Marston is not just a collection of old farm buildings, or a black blob on a map. It is a living community whose livelihood, health and happiness depend upon maintaining the village and its surrounding area in broadly the same condition as it is now, and not having it devastated by the close proximity of a gigantic Airport.

I append a copy of the Resolution which was passed at the Parish Meeting held in the Village Hall on 27th March 1969:

> RESOLVED that this Meeting very strongly opposes the establishment of the Third London Airport at Wing, or at any other inland site.

and I ask you to register the vehement objections of the North Marston Parish Council and the villagers of North Marston to the proposed siting.

Yours faithfully,

A. C. DEUNG (Mrs.)

Clerk to the Parish Council

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Pitstone Parish Council*

1. Pitstone is a small village of some 900 inhabitants in a parish about four and a half miles long and one and a half miles wide. It lies at the eastern end of the Vale of Aylesbury and is surrounded by beautiful countryside. The southern part of the parish is within the Metropolitan Green Belt and an Area of Outstanding Natural Beauty, and includes part of the Chiltern Hills escarpment. Pitstone Common is part of the National Trust Ashridge Estate. The greater part of the parish is farm land. The majority of the population work outside the village choosing to live in the village because of the beautiful countryside and peace and quietness. The character of the village has attracted new inhabitants and has been part of the lives of some families for generations. The centre of the village would be about six miles from the airport.

2. Pitstone has two general stores, a butcher's shop, a bakery, two public houses and where it joins the neighbouring village of Ivinghoe, a new County Primary School. The cricket and football clubs play on the large recreation ground, the best in the district, which is near the Village Hall in the middle of the village. The Early English Church stands on higher ground at the south-west corner of the village. It is an attractive building of great historical interest with among other things a Norman font, Mediaeval floor tiles and chest, and a Jacobean pulpit. In the fields to the east of the village is Pitstone Windmill, which is reputed to be the oldest windmill in the British Isles. It is the property of the National Trust and has recently been restored by local volunteers.

3. There is no need of employment for people living in Pitstone that the airport might satisfy. Some employment is provided in the village by a cement factory, but roads and public transport give easy access to local towns of Aylesbury, Leighton Buzzard, Dunstable and Luton and, by the Euston main line from Tring station three miles away, to London.

4. The special community character of the village would be lost by a large increase of population. The present population is large enough to support many successful organisations with many members from Pitstone and from the adjoining village of Ivinghoe, some meeting in Pitstone and some in Ivinghoe. The religious communities are Church of England, Nonconformist and Roman Catholic. There is an Allotment and Garden Association, a Cricket Club, a Darby and Joan Club, a Dramatic Society, a Football Club, a Local History Society, a pre-school Play Group, a Scout Troop, a Girls Brigade, a Women's Institute, a branch of the Workers Education Association and a Young Farmers Club.

5. At a well attended Village Annual Assembly the following resolution was passed with all villagers present voting in favour except for one who abstained from voting: "This Meeting opposes the proposed siting at Wing of the Third London Airport and urges the Parish Council in turn to do all in its power to oppose the Third London Airport being sited at Wing".

6. Pitstone Parish Council, elected by an over 75 per cent poll of the electors, is a fair representation of the inhabitants. The members are:

Councillor J. D. Hawkins (Chairman), Farmer.
Councillor R. Treacher (Vice Chairman), Telecommunications Engineer.
Councillor Mrs. E. Banfield, Housewife.
Councillor Mrs. M. Henshell, Housewife.
Councillor A. Horn, Retired Railway Signalman.
Councillor K. Saunders, Printer.
Councillor C. B. Scott, Industrial Chemist.

Pitstone Parish Council are unanimous in opposing the siting of the Third London Airport at Wing.

7. If the Third London Airport is built at Wing, in addition to the noise of aircraft the village would be adversely effected in two main ways. Firstly it is situated on a direct route southward from Wing, towards London which would obviously have to carry a large volume of traffic through the centre of the village even though special roads may be built to carry the traffic elsewhere. Experience in Pitstone shows that traffic will take the direct route avoiding the slightly longer more suitable route away from the village. There is already a traffic problem in an east-westerly direction through centre of the village, the subject of several recent protest meetings and the cause of many complaints to the Bucks County Council. Much of this traffic is in connection with the Pitstone cement factory, but most of it results from Pitstone being on the direct route between Luton and East Anglia, and the West Country. Siting the airport at Wing would result in Pitstone having large volumes of traffic going north and south as well as east and west through the centre of the village.

8. Secondly Pitstone would seem to be the obvious place to build some of the many houses that would be required in connection with the airport. Very little extra building can take place in Pitstone without encroaching on White Land, spoiling the countryside and destroying the character of the village. There is a strong probability that Pitstone would lose its special character as a village if the airport came to Wing.

* See also 1576.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wingrave with Rowsham Parish Council*

The Parish Council of Wingrave with Rowsham submit the following statement for the Local Hearing at Aylesbury opening on 14th July 1969:

1. (a) The village of Wingrave is prominently placed on a low hill approximately five miles from Aylesbury, Leighton Buzzard and Tring, and about one mile from the perimeter of the proposed airport; and with its sister hamlet of Rowsham is situated in an entirely rural parish made up of good farming land.

(b) The village was entered in the Domesday Book, and many families have their origins in the distant history of this place. Their ancestors are buried in the two burial grounds; their families and homes, cultural and religious loyalties are deeply involved with the village and surrounding countryside.

(c) There are eight working farms in the village of Wingrave, five in Rowsham, and two in outlying parts of the parish. Some of the farms, houses and cottages are of very ancient origin and we believe that three have Preservation Orders on them. The old manor house is an extensive building of considerable interest, set in spacious grounds and with magnificent views across the Vale to the Chiltern Hills; it is now known as Mount Tabor Convent and is an Anglican home for physically and mentally handicapped children. There are four village shops, one including the Post Office; three public houses, and the village is served by the County Mobile Library; there are three churches, the Anglican parish church, Congregational and Methodist, all three with very strong links with the history and people of Wingrave. The Recreation Ground was originally given to the village by Lord Rosebery, and with the adjoining Village Green on which the Parish Council have recently completed extensive improvements, we consider to be of quite exceptional beauty and interest.

2. (a) The people of Wingrave and Rowsham. The current Electoral Roll shows a total of 659 people. There is a quite extensive council house development on the N.W. side of the village, old peoples bungalows, and there are a considerable number of old and retired people. As geographically the parish is made up entirely of farms and farmland, there are many farmers and farm workers; but many of the parishioners work in Aylesbury, Leighton Buzzard and other nearby towns, and even commute to London; this service which this village gives to these other towns in providing a restful country home is one which is becoming increasingly important. There are many organisations and activities within the village and parish, which give to it a very strong sense of community, and bridge the gaps of class, political and religious allegiances easily and naturally. There is a thriving Women's Insititute, British Legion, Youth Club, Cubs and Brownies, Pre-School Playgroup, Over 60's Club, Allottment Society, organisations run by the three churches, and the sports clubs —Cricket, Football, Bowls and Tennis (all of them very long established and very active indeed). The Recreation Ground Committee, a sub-committee of the Parish Council, has for some twenty-five years very efficiently maintained the Recreation Ground, and about ten years ago was instumental in providing a large modern Pavilion with kitchen, showers, toilet, changing rooms and tea room which is also used for committee meetings etc.; although aided by the Parish Council, it raises most of its finance through its own activities, whist drives, annual fete etc.—always well supported by the village. All these activities foster a strong community spirit into which newcomers are welcomed, naturally absorbed and quickly integrated. The village school is an example of this integration; of the eighty village children of appropriate ages, all but one are pupils, and the parents represent a complete cross-section of the community—members of the professions, farmers, farm workers, artisans, labourers, business executives, shop keepers and civil servants. There are many annual events which have become a part of the unifying history of Wingrave—Feast Sunday in the parish church, the Recreation Ground Fete, May Day celebrations in the School etc. Wingrave is not merely a "picture postcard" village, but a social entity of the life, rooted in the history, the character and English way of the beauty of England—a vital and positive community not yet tainted with the pall of urbanisation.

(b) The Clerk of the Parish Council is Mr. H. B. Allis the village school headmaster, the Chairman Mr. D. S. Dunker F.C.I., Vice-Chairman Mrs. M. J. Whitfield schoolteacher, Mr. J. L. Roberts Deputy Chief Inspector for Buckinghamshire, Mr. L. A. Tomas farmer, Mrs. M. Greene speech therapist, Mr. P. T. Southerwood farmer, and Mr. J. Talbot company director. The Parish Council is, and has been for many years, very active in seeking to improve the amenities of the village and to protect and preserve the rights and interests of the parishioners.

(c) The Parish Council called a special meeting of the parish on 12th March 1969 to consider the

* See also p. 1577.

Printed image digitised by the University of Southampton Library Digitisation Unit

proposed siting of the airport at Cublington. One hundred and thirty-three parishioners attended and the following resolution was passed by 123 votes to NIL, there being five abstentions: "That this parish wishes to express its unqualified opposition to the siting of an airport in the Wing/Cublington area." A Working Committee to be known as the Wingrave Airport Resistance Committee, and consisting of the seven parish councillors with seven other parishioners was established to work in liaison with the County Council and W.A.R.A. Over 500 parishioners over the age of 18 have signed the Wingrave Petition Form expressing their opposition to the proposed siting; each document has been countersigned by a parish councillor to vouch for the signatory, and the names have been checked against the Electoral Roll or otherwise verified. These signatories represent more than 78 per cent of the electorate, and as far as we can calculate, approximately 72 per cent of the total population of the parish.

(d) The Wingrave Parochial Church Council have passed unanimously the following resolution: "That this Council wholeheartedly support the opposition which has been organised by W.A.R.A. to the proposed airport at Wing". The Wingrave Women's Institute passed the following resolution unanimously: "That this meeting wishes letters of protest against the siting of the proposed Wing-Cublington airport to be sent to Mr. R. Maxwell M.P., W.A.R.A. and Mr. A. G. Hunt, Inspector". The following resolution was passed unanimously at a Society Meeting on 12th June 1969: "The Wingrave Methodist Church views the prospect of a third London Airport being sited at Cublington with grave concern, as it would cause complete disruption of the life of the village, and we therefore express our unswerving support for the opposition being presented by the Wingrave Airport Resistance Committee". The following resolution was passed unanimously at a meeting of members held on 9th June 1969 (representing 25 mothers with 27 pre-school children): "The Wingrave Playgroup is greatly concerned at the prospect of the third London Airport being sited at Cublington, so dislocating the life of many town and village communities. Our particular anxiety is the possible ill-effects of the pressure of urbanisation and intermittent noise on pre-school children throughout the affected area and especially those for whom we cater in this village. We strongly believe that this is one of the very many valid reasons why the airport should be sited on the coast in an area where there is a low density of population." Expressions of support to the opposition have also been received from the Sunshine Club, Mount Tabor Convent and the British Legion.

3. Protests and comments from individual parishioners have been received and are given on a separate schedule hereto, marked "Schedule I." These comments are taken from the Wingrave Petition Forms and can be verified thereon.

4. Further comments of the Parish Council. We wish to draw attention to the six grounds of objection as entered on the Wingrave Petition Form, copy of which is attached hereto and marked "Schedule II", and in addition would like to add the following points which would be likely to affect the people of this parish, either directly with their implications to the village, or in a general way as ratepayers and taxpayers, and as members of the wider communities of the county and the country:

(a) The vast influx of population, the burden of new road and rail links; the Wing site would destroy the domestic and industrial development of mid-Bucks, and the natural development of villages and towns; this in its turn would create a "refugee" problem, disruption of lives, personal loss and distress to possibly tens of thousands of people over a wide belt across the county. (NB the Government's directive in the choice of a new airport—"where it would cause least disruption of private lives".)

(b) The disastrous effect of the proposal on the Village Plan prepared by Sir Hugh Casson Conder and Partners, and approved by the Planning Authority in 1968. Their plan describes the village as follows: "The old part of the village has great assets; the approach from the south is sudden and dramatic with the church tower seen as a mark above the crest. The working farms that border it mark the transition to the open countryside and ensure a clean and sharp definition to the village; the Recreation Ground, the War Memorial Green and the village pond provide an internal geography of unusual visual interest. If planning action can preserve this sense of definition and entity . . . then the heritage and sense of place can be shared by the newer development to the north west . . . the value of the old part of the village is that it can demand a certain respect and love that will help to attract the right sort of development to the new". The inevitable pressures that the siting of this airport, only two miles away, would impress on the planned development of the village would completely destroy its character, the definition and entity of which the planners speak, and the community sense which this engenders.

(c) A new Through School (ages 5–12) is planned to replace the present Primary school in Wingrave, which will accommodate children from neighbouring villages in addition to the growing number of pupils from the parish. There is considerable anxiety about the distracting effect of noise upon the teaching of

Printed image digitised by the University of Southampton Library Digitisation Unit

our children, particularly those in the younger age range who are more susceptible to its effects. Secondary stage education for the parish children is covered by schools at Wing, Aylesbury and Leighton Buzzard all of which would be seriously menaced. The one-time manor at Wingrave is now the Mount Tubor Convent, an Anglican home for mentally handicapped children; it is situated in several acres of private grounds. The noise disturbance and loss of country amenities would be felt acutely by the sisters and staff, and might well destroy the effectiveness and purpose of the work with the children.

(d) The situation of Wingrave and Rowsham in relation to Aylesbury, Tring, Leighton Buzzard, London and other towns: many parishioners elected to invest their money and labour in making homes in the country to give access to their employment in these towns; the towns rely on such villages for the domicile and well-being of their workers. This airport would destroy this desirable disposition, together with the peace of mind of the people both at work and at home; coupled with this is the very real and nagging menace of air crashes.

(e) The dependence of the parish on local hospitals: there are five, not including nursing homes, but including the Stone Hospital for mental disorders (the proximity of this one might well be an advantage) and the world famous Stoke Mandeville Paraplegic Hospital —all of which would be seriously menaced by the airport.

This evidence is submitted with the full co-operation, approval and sanction of the Parish Council, the Wingrave Airport Resistance Committee, and through the authority given at a Special Parish Meeting, the people of this parish.

SCHEDULE X

Comments from individual parishioners

The Parish Council would like to point out that apart from those matters which directly affect the physical situation of the village and the hamlet of Rowsham, the people of the parish are legitimately concerned with any threat to the places where they work, with services on which they have to rely (schools, colleges, hospitals etc.). with the geographical setting of the parish in the county and in relation to other towns, and as ratepayers and taxpayers with the expenditure of public moneys.

1. "Waste of public money involved in cancellation of plans for Milton Keynes, the Reservoir, Village Plans and the Plan for S.E. England Development—the whole strategy of planning for Bucks and the Outer Metropolitan area would be destroyed." (*Shirley*).

2. "The difficulties, dangers and expense which would arise from the disturbance to the natural water cachment area, drainage to Ouse and Thames over the area of the proposed airport. This would also aggravate the forecast water shortage". (*Roberts*).

3. "The immense, underestimated and disproportionate difficulty and cost of levelling on this site". (*Thomas*).

4. "I endorse the National Trust terms—'The monstrous unsuitability of this site'—this would be an end to all efforts to conserve what remains of Bucks as a rural area—amenity considerations are likely to grow in importance with every succeeding generation." (*Ellis*).

3. "Plans are well forward and a developer selected for the redevelopment of Leighton Buzzard—the town being only slightly offset from the runways it will be almost uninhabitable through noise and kerosene fallout. In Leighton Buzzard an independent census shows 72 per cent against the airport. Aylesbury in a similar situation at the other end of the runways has already been substantially redeveloped. The development of both towns could not cope with the increased traffic for a new airport at Wing." (*Dunker*).

6. "The Bucks Water Board and the Thames Conservancy have devoted four years and a lot of public money to find this site for the Reservoir—has the Roskill Commission considered the importance of this scheme to maintain the level of the Thames in flood and drought? There is no alternative site for the reservoir with the same advantages." (*Roberts*).

7. "The Commission's proceedings purport to be 'throughout fair, open and impartial, with all decisions supported by reasons in detail.' There appears to be unfairness and irregularity in the procedure: Wing not in Stage I with no public hearing; Wing short-listed without forewarning; not among the eleven sites in the Government White Paper 1967; Stanstead's 'advantages over other sites' suddenly abandoned; Commission failed to consider relevant criteria including Town and Country planning; no cost/benefit analysis to justify the inclusion of Wing available, or for dropping Stanstead; meagre and inadequate information published by the Commission; unwillingness to publish the criteria and research governing the short-list desision; has the Commission considered the implication of the Regional Plan for S.E. England?" (*Dunker*).

8. "All the arguments against Stanstead apply equally well to Wing; but unlike Stanstead, Wing is no longer an operational airfield and has been reclaimed to agriculture at considerable cost." (*Irving*).

9. "As a student I wish to emphasise that education in the Aylesbury schools and college would become almost impossible." (*Cervi*).

Printed image digitised by the University of Southampton Library Digitisation Unit

10. "I farm 400 acres of good agricultural land and produce 30,000 gallons of milk in an average year, 150 tons of grain, 50 fat steers, 260 fat lambs, 200 fleece wool; all this would be lost if an airport came." (*Tofield*).

11. "Must we destroy our countryside—for which we fought in two world wars?" (*Richards*).

12. "Being one of an increasing number of residents in Wingrave who have to work in London and suffer the effects of noise, fumes and nervous wear, and who commute this distance to find the present peace and quiet—may I add this comment: London itself must suffer if the remaining accessible countryside is destroyed." (*Luke*).

13. "If this should ever come to pass, England can no longer be called a civilised country." (*Purgeter*).

14. "My property was purchased after a lengthy search and at great personal expense in order to find somewhere in peace and quiet, away from large towns and industries. An airport at Wing would make it impossible to find a similar situation in this area." (*Purslow*).

15. "There would be serious effects on the health and lives of the children at the Convent." (*Stevens*).

16. "An airport next door to one of England's oldest medieval churches—Wing church—is itself more than sufficient reason for my opposition to this horrifying scheme." (*Hills*).

17. "I consider this an immoral use of land in view of the imminent population explosion." (*King*).

18. "This countryside is one of the amenities of London itself." (*Welling*).

19. "Chronic misuse of Britain's natural resources in view of alternatives available, which in themselves could be a most exciting and profitable planning project—coastal sites." (*King*).

20. "Concordia discors' (Horace Epistles)—The Wing site is not economic or safe." (*Welling*).

21. "Bucks is still one of the lovliest counties in England—please do not destroy what is left to us." (*Coleman*).

22. "The destruction of the churches at Stewkley, Wing and Cublington is sacrilege—Wing is the oldest church in England." (*Barker*).

23. "I have experience of many international airports—no other nation wastes valuable agricultural land." (*Hewitt*).

24. "Too much of our countryside has already been taken: it is surely more admirable to reclaim land from the sea than to take any more of this highly populated country, which can already use every available acre to house our people." (*Howard*).

25. "It is a false premise that 'Progress cannot be denied' and justifies any travesty of human rights. What is the question—immediate expense or long-term consequences?" (*Whitfield*).

26. "An airport at Wing six times the size of Heathrow? The geography of the site does not lend itself to such expansion." (*Shirley*).

27. "Can we have a cost/benefit analysis from the point of view of the residents of mid-Bucks, and a careful assessment of the effects of such an airport from a human point of view over the next thirty years?" (*Snow*).

28. "This would mean writing off the objectives and expense of plans for Milton Keynes and the Reservoir; this waste of money and opportunity must be added to the cost of the airport." (*Snow*).

29. "Milton Keynes was designated by the Ministry of Housing and Local Government for the overspill population of London and south Bucks; this airport would completely defeat this objective —did the Roskill Commission offer an alternative site when considering the relevant criteria for short-listing Wing?" (*Roberts*).

30. "As an officer of the County Council based in Aylesbury, I bought a property at Wingrave as being a pleasant country area, quiet and within easy reach of Aylesbury. If an airport comes to Wing NO such place will exist." (*Mountain*).

31. "The Village Plan provides for the natural and desirable development of the village over a period of possibly twenty years. Any forced rapid development would destroy the nature of the plan and Wingrave would become a dormitory for airport workers, and thus lose its identity." (*Whitfield*).

32. "The present road through the village would not take the volume of construction traffic required to build a new airport. Wingrave lies on the road between Wing and the A41 at Tring. Much construction traffic would come this way." (*Whitfield*).

33. "Land is such a precious commodity that we simply cannot afford to miss such an opportunity to reclaim marginal coastal areas—as such countries as Holland and Hong Kong have been doing all this century." (*King*).

34. "In view of the proximity of the proposed new town, this together with an airport would almost obliterate north Bucks, making a concrete jungle." (*Tapp*).

35. "As a farm worker I feel that the noise from an airport will seriously affect the livestock in this area". (*Cervi*).

36. "As I am easily upset by noise I am sure the airport at Wing would be unbearable for me." (*Cervi*).

37. "Having a crippling disease I very rarely get out from my home, so television is very entertaining for me. I dare not think what it would be like with an airport at Wing." (*Rickard*).

Printed image digitised by the University of Southampton Library Digitisation Unit

38. "In my opinion it is socially wrong to site any new airport of the kind envisaged at Wing, inland—such projects should be confined to coastal areas." (*Sliage*).

39. "It may cost less in pounds, shillings and pence, but it will cost a great deal more in the coinage of human happiness." (*Roberts*).

Wingrave Airport Resistance Committee.
Associated with Wingrave Parish Council

Chairman: D. S. Dunker, F.C.I.
42 Nap End Lane,
Wingrave,
Aylesbury.
Tel. Aston Abbotts 281

PETITION FORM

I———————— of ————————

———————————————

———————————————

wish to protest in the strongest possible terms against the proposed site of an airport in the Wing/Cublington area, on the following grounds:

1. The already comprehensive development plans for the County, and this village in particular.

2. The menace of noise, kerosene fumes and vibration; the effects of noise on nerves and health, education, church services and everyday conversation, five hospitals, and the children's home at the Convent, Wingrave.

3. The loss of livelihood and investment for farmers, farm workers and allied industries; the loss of thousands of acres of high quality farm land.

4. The complete loss of identity which this Parish would suffer, with congestion of roads, traffic and housing; the disruption of homes, traditions, village and church ties.

5. Financial loss through debased value of property; loss of livelihood through being forced to move; the injustice of inedequate—or complete lack of—compensation.

6. The virtual destruction of a wide path across the County of unspoilt England, the churches—some unique and irreplaceable—old buildings, estates and homes; the beauty of clean, quiet county air.

Other comments ————————————

———————————————

———————————————

———————————————

SIGNED ————————————

DATE ————————————

COUNTERSIGNED ————————————
Parish Councillor

N.B. Those signing this form should be 16 plus years of age, resident in the Parish, and liable to be affected by an airport at Wing.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Winslow Parish Council*

Population estimated 2,350

Description of parish

Of Saxon origin on hilltop 380 ft above sea level on main A413 road with lateral links to Leighton Buzzard and Bicester. Slow, steady expansion through centuries with mixed architecture of past 400 years and more recent expansion of new housing estates. A market town with Charter from 1235 and expanding livestock market serving radius of about 8–10 miles, the anticipated closure of some other local markets will add emphasis to the importance to the rural locality readily accessible to the major centres of population. Parish Church Gothic with slight Saxon residual, Catholic Church, Congregational and two Baptist Chapels. Modern Secondary School and new Primary School advanced in plans to replace existing which will become a Kindergarten standard. Selection of shops for all normal daily needs. Post Office with sub-sorting office and newly opened automatic telephone exchange. Fire Station and Magistrates Court. Railway Station now closed on Oxford–Bletchley line but probable reopening on development of Milton Keynes. Old Peoples Home and Geriatric Hospital. New Health Centre. Well equipped sports ground. There is one Bank with a second to open shortly. Historic buildings include Winslow Hall, having associations with Sir Christopher Wren. Also the Historic Keaches Meeting House dates 1625. The town is also one of the well known centres of hunting in the district for the Whaddon Chase.

Description of people

Exceptionally friendly, and quickly embrace newcomers into wide variety of local organisations. Atmosphere of general goodwill and fellowship. Wide cross-section of livelihoods and walks of life who have formed community with unusual degree of camaraderie.

Residents

Some families of very ancient origin being traceable for 400 years. Most recent arrivals quickly adapt themselves and rapidly become imbued with local pride. Mixed proportion of retired from large towns and families dependant on breadwinners employment in surrounding towns, industries and areas, who wish to live the peaceful country style of life. The residents are a society who have chosen to remain in the area or have come to the district mainly due to its peaceful seclusion and the recognised benefits which are associated with life in the true countryside.

Employment

Largely in brickworks at Calvert, Ministry depots at Westcott and Arncott, factory or commerce in Aylesbury, Bletchley or to lesser extent Buckingham. Strong cross-section in agricultural and allied industries. There is limited light industry with mainly female labour adequate for the labour force now available. Further development is anticipated which would cater for suitable labour availability from the Planned Town Expansion.

Statement of Parish Meeting and Resolution

Special meeting called to discuss airport implications. About 50 attended, vote against airport of 48, 2 supported and 1 abstained (airline pilot). Annual Parish Meeting, subject raised, having majority against proposals.

Ratification by Parish Council

Parish Council supported unanimously recommendation of Parish Meeting and pledged support to County, R.D.C., W.A.R.A. and similar organisations for protection of countryside.

Grounds for objection

Winslow is a homogeneous society having a progress outlook which however is tempered by the desire to avoid the spoilation of the town and district and of the rural benefits acruing by too rapid development or industrialisation.

IT IS SUBMITTED THAT:

1. The degree of aircraft noise, whilst not necessarily being consistently intolerable, would however cause grave interferance and inconvenience to the residents of the Parish in their daily lives at work or leisure, and that at night this could become intolerable for the great majority who have known only the utmost peace and quietness.

2. Whilst an airport together with all its ancillary connections would necessitate a major reappraisal of the road system in the district which it must be assumed would largely bypass existing communities, there would of necessity result a substantial increase in the traffic on the roads within the town and parish which would be a major source of irritation from noise, fumes and risk to public safety for those of the Parish who are totally unaccustomed to such intrusions upon their mode of life.

3. Whilst the suggested flight paths do not pass over the town, the direction of take-off in a South-Westerly direction would lead to the normal prevailing winds carrying exhaust fumes or kerosene drop-out in the direction of the Town.

4. Any benefit which might acrue from the siting of the airport and all ancillary trades would not compensate for the virtual destruction of the Town and Parish, which would be engulfed in the resulting population explosion.

* See also p. 1578.

Printed image digitised by the University of Southampton Library Digitisation Unit

5. Values of many types of residential property unlikely to be of interest to airport employees would be depreciated without adequate compensation to their owners who would be amongst those most likely to vacate the area for quieter territories.

6. Whilst agricultural workers cannot now be regarded generally as un-skilled, the incentives of higher wages and shorter working hours would dilute the existing force of skilled and semi-skilled labour who are already in short supply for the farms in the Parish.

7. The C.E.G.B. and other major overhead power lines which have been sited on compromised routes following strong local representations would be moved to routes probably less acceptable to the amentities.

8. Vibration from aircraft of progressively increasing size and power, stacking, approaching and taking off would cause vibrations which would be likely to cause extensive structural damage to many of the older properties.

9. Despite all modern techniques, interference would be caused to the T.V. and radio reception which are one of the main sources of entertainment for inhabitants of an area without a cinema or similar modern modes of entertainment of the more populated areas.

10. No suppositions, no anticipations, no theorising and no compensation could mitigate the loss to the tranquility of the area which only those who live in it and have come to love it can fully appreciate and know what there is to lose.

In conclusion the Parish Council of Winslow, being the duly elected representatives and having taken all necessary measures to ascertain the attitudes and reactions of the populace, request that all due consideration be given to this *Statement of Case* by the Commission in assessing the merits or otherwise of the listed airport site, and reiterate their unanimous opposition.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Great Ouse River Authority*

SUBMISSION BY POLLUTION PREVENTION OFFICER

General

1. The River Ouse in its upper reaches is a source of raw water for four water undertakings. The Buckingham Water Board's intake from the river is situated at Foscote, downstream of Buckingham. The Bedford Water Board abstract water from the river at Clapham upstream of Bedford and the Great Ouse Water Authority take water from the river at their intake at Offord to supply Grafham Water. The Nene and Ouse Water Board abstract water from the river at Brampton, near Huntingdon.

2. In addition to its importance as a source of raw water for domestic supply the river in its upper reaches affords excellent coarse fishing and also adds much to the natural beauty of the countryside.

3. The prevention of pollution aspect of the Cublington proposal has therefore to be considered from the aspects of the effect of water supplies, public health, fisheries and amenities.

4. Pollution from the proposed site at Cublington would only be likely to affect inland waters. It does not appear that there is any likelihood of underground waters being affected. Pollution of watercourses can be considered under the headings of (1) Surface Water run-off and (2) Sewage Disposal.

5. As regards (1), danger of pollution could be reduced to a minimum by the adoption of appropriate measures to prevent spillages of oil from storage tanks and leakages from distribution pipelines gaining access to surface water drains and by the provision of adequate oil intercepting tanks on all surface water drains. The River Authority would expect to be fully consulted.

6. As regards (2), this includes the treatment of the sewage from the primary airport population and the sewage from the resulting urbanization. In the absence of definite information about the disposition of the urbanization population and the consequent likely distribution of sewage effluent between streams in the Great Ouse and the Thames Conservancy areas comment on the sewage disposal aspect can only be made in general terms.

7. The effect on the river of the sewage effluent resulting from the urbanization population must be considered as additional to the effect of the development of the new City of Milton Keynes and of natural population growth in the river catchment area as a whole.

8. It is estimated in the report on the Water Resources of the Great Ouse Basin made to the Ministry of Housing and Local Government by Messrs. Binnie & Partners in August 1965, that the River Ouse at Bedford now contains about 7 m.g.d. of sewage effluent. In 1981 it may contain 19 m.g.d. and by the year 2001 35 m.g.d. The proportions of sewage effluent in terms of average dry weather flow of the river would be 20 per cent, 40 per cent and 56 per cent respectively. Under extreme drought conditions the corresponding figures would be 40 per cent, 65 per cent and 77 per cent.

9. These estimated increases in the proportion of sewage effluent in the river which take into account Milton Keynes new City development and the natural growth of population in the catchment area may change the chemical and biological characteristics of the river water to such an extent as to present formidable problems of treatment to the aforementioned undertakings who are abstracting water from the River Ouse for domestic supply. The river intake of the Bedford Water Board at Clapham is the Board's major source of supply and the river intake of the Great Ouse Water Authority at Offord is the Authority's only source of supply. It is, therefore, essential that these major sources of domestic and industrial water supply should not become jeopardised in the future as a result of changes in water quality due to the increased concentration of sewage effluent in the river water.

10. I consider that the large future increase in the amount of sewage effluent in the river which will result from the Milton Keynes development and the natural population growth in the catchment area, together with the run-off from well fertilised agricultural land may in themselves create a serious situation as far as quality of the river is concerned and that in these circumstances it would be undesirable for any additional major discharges of sewage effluent as is envisaged from the airport urbanisation to take place.

SUBMISSION BY THE DEPUTY ENGINEER

Note: In reading this statement reference should be made to plan GORA 2*, on which have been shown the catchment boundaries, rivers, geological formations and licensed sources referred to in the text.

Hydrology and geology

1. Approximately 48 per cent of the area of the site indicated in the Commission's published material is located within the Great Ouse River Authority's area. Part of it drains to the River Ouzel via the Wing Brook and the Grand Union Canal (sub-catchment No. 6) and the remainder is drained to this river via unnamed watercourses passing through Soulbury and Stoke Hammond (sub-catchment No. 8).

* See also p. 1579.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. The surface of the relevant parts of these two sub-catchments consists of clays (Kimmeridge, Oxford and Gault) but a permeable stratum lower greensand occurs in part of the valley of the River Ouzel.

3. The average annual rainfall of sub-catchments Nos. 6 and 8 is of the order of 26 ins. (660 mm). The average combined run-off, as estimated from the Authority's records of river flows for their gauging station on the River Ouzel at Willen, 5 miles downstream of Bletchley, is 8·8 ins. (223 mm).

Land drainage

4. The River Ouzel is statutory main river and maintainable by the Authority. Parts of the watercourses draining the area in which the site is located are within the drainage district of the River Ouzel Internal Drainage Board. The boundaries of this district and the extent of the watercourses maintained by this Board have been shown on plan GORA 2. The remaining lengths of these watercourses are maintainable by the riparian owners and/or occupiers.

5. It is understood from the information supplied by the Commission's officers that the site surface water drainage system is to be designed for a storm having a frequency of occurrence of once in 2 years, and that the maximum rate of run-off under design conditions from the site as a whole will be of the order of 2,000 cusecs (57 m^3/sec). Assuming this rate is directly proportional to the site area, it is deduced that the maximum rate of run-off to Great Ouse river system will be of the order of 970 cusecs (27·5 m^3/sec).

6. The aggregate bankfull capacities at the site boundaries of the existing drainage channels is of the order of 650 cusecs (18·4 m^3/sec). However it would be incorrect to infer that the run-off from a once in 2 years storm from the existing catchments would be of the same order as these combined capacities. It may well be less. The effect of the site run-off in terms of increased flooding is thus likely to be more serious than is immediately apparent from the excess of this design run-off over existing channel capacities.

7. In order to protect land and built-up areas downsteam of the site from this risk, it will be necessary to provide means for controlling the discharge to these streams to a maximum rate acceptable to the Authority. Additionally it may be necessary to carry out agreed improvements to these watercourses for some distance downstream of the respective outlets.

8. In addition to the general requirement stated in the preceding paragraph attention must be drawn to two existing major drainage problems in the River Ouzel basin. The first is at Leighton Linslade where parts of the built-up area are already liable to occasional flooding. The Urban District Council and the Authority are at present making an investigation into possible flood relief measures and this may result in a scheme for re-modelling the rivers through the town. Any acceleration of run-off due to surface water discharges from the airport site via the Wing Brook would therefore require to be taken into account if the envisaged protection from flooding is to be maintained.

9. The second problem arises from the surface water drainage of the new town at Milton Keynes. A number of detention reservoirs will be provided by the New Town Corporation as part of the surface water drainage system. The time required after a storm to empty these reservoirs may be sufficiently long to extend beyond the time of the arrival of a flood peak from the airport site. It will be necessary to take this complication into account in designing the storage required for the airport water, which may have to be released at a rather slower rate than would be acceptable if Milton Keynes was not expected to come into existence.

10. Similar problems may arise from the disposal of surface water from the "urbanisation" likely to be associated with the airport development, but in the absence of information about the areas in which this will be located, no detailed comment can be given at this stage.

11. It is anticipated that in neither case there will be insuperable difficulties in devising an acceptable solution to the surface water drainage problem. It is essential however that there should be early consultations between the Commission's staff and the Engineer of the Authority, or between the respective county planning officers and the Authority's Engineer, as appropriate, to ensure that the basic design criteria as well as the drainage works shall be mutually agreed in detail in advance of construction.

Water Resources

12. The major underground sources in the area over and through which the site drainage would have to pass if discharged to the Wing Brook, are shown on plan GORA 2. The licensed daily and annual abstraction rates are listed in Appendix A.

13. The site is situated within the Bucks. Water Board's supply area. The urbanisation areas may be located partly within that Board's area but also in those of the Bedfordshire Water Board and the Luton Water Company.

14. The Water Resources Board and the respective River Authorities are currently planning the development of the additional water resources needed in South-East England up to the end of the present century. Subject to the Authority's Pollution Prevention Officer's remarks concerning river water quality, no serious problem is foreseen in making available to the respective water undertakings the additional sources they would need for meeting the airport demand and the needs of the additional population referred to in the Commission's published material.

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix A

Licence No.	*Name*	*Source*	*G.P.D.*	*(l/sec)*	*M.G.A.*	*($m^3 \times 10^6$)*
	Public water supplies					
7/5	Bucks Water Board	Battlesden	1,200,000	63	400	1·8
7/4	Bucks Water Board	Sandhouse Station	960,000	50		
7/11	Bucks Water Board	Sandhouse Station	360,000	19	350	1·6
7/1	Beds Water Board	Leighton Linslade	580,000	30	211·7	1·0
8/4	Beds Water Board	Leighton Linslade	500,000	26	127·75	0·6

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Kingsey Parish Meeting*

The Kingsey Parish Meeting submits the following statement for the Local Hearing at Aylesbury on the 14th July:

1. The village of Kingsey is one of the few unspoilt villages representative of the Victorian era with little development since those days. It has no shops, no post office, no public house, and no village hall. The village consists of the Manor House, which is a Class 1 Scheduled Monument built in the days of King Charles I, Tythrop Park, The Old Vicarage, eight farms, about twenty cottages, and a Victorian church. It has a total population of 120. It is one of those rarities, a quiet community away from the rush of modern life yet near enough to it not to become dead.

2. The community life of the village centres round the church built by the then Squire in late 19th Century. Although a small community, the annual fete or village cricket match in aid of church funds is an occasion in which everyone in the village participates. From this small community with an adult population of 70 about £100 a year is raised. Some who live in the village work in Oxford in Pressed Steel, some for Molins in Saunderton, some for Local Government and some are retired, but it is basically a farming community. A flourishing coach service is based in the village and the majority of the cottages in the village are owner occupied.

3. The village is too small to have a Parish Council but a Parish Meeting is held under the Chairmanship of Brigadier S. H. Kent, a retired Army Officer now working for the Jockey Club in London, who lives in the Old Vicarage. He is assisted by Mr. Cotton who lives in Tythrop Park and is a partner in a firm of London Stockbrokers. The Parish Meeting met on 20th May and passed a unanimous resolution supporting the objections of the Buckinghamshire County Council to the proposed Third London Airport at Cublington (Wing). This meeting had the largest attendance of any Parish Meeting since records have been kept.

4. The village is within the noise contours of the map of the proposed airport and is concerned not only with the noise but also with the inevitable building and development both of roads and housing which will follow the construction of the airport at Wing. The essential rural atmosphere of the village which is almost unique in England as one of the very few remaining unspoilt Victorian villages will be lost.

* See also p. 1585.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bedford Corporation*

The Borough of Bedford has an area of 6,012 acres with a population of just under 70,000. Apart from an area to the north recently added to the Borough by boundary extension where development is now proceeding, it is to all intents and purposes wholly built up, with just under 22,000 domestic properties and, as it is a regional centre, a large number of commercial enterprises, as well as the normal industrial establishments. In addition to the usual Local Authority schools, there are two training colleges, three principal independent schools (one for boys and two for girls) and two direct grant schools (one for boys and one for girls). Both colleges and four of the non-maintained schools have boarders as well as day pupils. It is therefore, an educational centre of some importance.

The Borough is some twenty miles from the site shown on the maps provided with the Site information and lies to the north-east of the site. It seems, therefore, that under normal conditions, with prevailing winds from the south-west, Bedford would be beneath the approach path to an airport at Cublington. Although the noise diagrams provided by the Commission indicate that the 40 NNI contour does not quite reach the Borough, it is understood that such contours are liable to be inaccurate and that it is difficult to forecast accurately the precise point at which noise would reach the 40 NNI level. In any event, when such an airport was operating at reasonable capacity, the Council have no doubt that noise from aircraft would be a nuisance, at time unacceptable, to those living and working in the Borough as the results of a survey which was carried out within a radius of 10 miles of Heathrow (at the request of the Wilson Committee, who reported to Parliament in 1963 on the problem of noise) showed that at 30 NNI 22 per cent of the population were prevented from sleeping and 40 per cent awakened; at 25 NNI 20 per cent were prevented from sleeping and 35 per cent awakened and, still at 25 NNI, 25 per cent of those questioned complained of interference with conversation and 35 per cent that their houses vibrated. If, when the wind was between north and east, it became necessary to reverse the direction of take-off, Bedford could be even more seriously affected by aircraft noise and could lose its attractiveness to those wishing to take advantage of its present pleasant environment and of its standing as an important educational centre.

It is observed that the precise location of an airport at Cublington would be strongly influenced by the need to arrange runways and taxi ways to the maximum advantage having regard to the valley to the west. Relatively minor variations of runways, etc. could increase the adverse effect of noise upon the Borough.

Bedford has been expanding steadily since the end of the War and on the average has grown by about 1,000 persons per annum. The Council have welcomed steady growth of this kind which has been due to a variety of factors, not the least of which is the variety of employment opportunities available in the area. Expansion of public services has at considerable cost kept pace with this expansion of population and the Borough Council has as a matter of policy, ensured that shopping, industry and commerce have similarly expanded to provide amenities and employment opportunities. The local building and civil engineering industries are not particularly strong and it is usually necessary for major works to be undertaken by firms from outside the area. It would be difficult and probably uneconomic to increase this steady growth rate dramatically, as the existing resources of the area could not do the work required.

While it seems obvious that much of the increase in population which would arise from a new airport (and the Commission's estimate of 65,000 persons in primary employment generated by a four runway airport in the 1990s is noted), would be housed in the new city of Milton Keynes and the expanded Northampton, as well as in the towns and villages to the south and west of the site, there is no doubt that many people associated with the airport would wish to live in the Bedford area. It is understood that persons employed at Heathrow, for instance, are in many cases willing to travel upwards of 20 miles daily to their work and with the increasing availability of private cars this tendency is likely to increase. Bedford could, therefore, be faced with induced expansion of its population by persons working outside the area and commuting daily. This kind of population creates an additional financial burden on the Local Authority, as the rates per head levied in respect of domestic property are less than the cost per head of public services. In other words, increased population without the rateable value arising from the factories, shops, offices or, in this case, airport, in which they work, is a financial drain upon the existing community. This adverse financial effect is long term and would not arise solely from persons coming to reside within the Borough. Many persons engaged on the airport would live in the County of Bedfordshire, thus stimulating the need for County Services, in particular, schools, health services and road improvements, without the rateable value arising from the airport. With the Borough of Bedford ratepayers contributing through the County precept some 30 per cent of the County Council's requirements, it is submitted that the location of the airport at Cublington would be a financial burden of some magnitude to be borne by the Bedford ratepayers. If, in addition to the large number of persons directly employed at such an airport, there were a substantial increase in

* See also p. 1585

Printed image digitised by the University of Southampton Library Digitisation Unit

secondary industries, trades and commerce in the areas immediately adjoining the airport, the adverse effect of the commuter population upon the finances of Bedford would be even more marked.

Bedford is traversed from east to west by the River Great Ouse, which is one of the principal amenities and attractions of the town. Over many years the Corporation has spent large sums in acquiring river-side land and laying it out as attractive formal and informal walks and pleasure grounds. This attractive feature would be very seriously affected if the river were to suffer pollution greater than exists to-day. The Corporation is concerned because it appears that any effluent arising from the airport, and it seems clear that the amount would be substantial, added to that which will arise from the new city of Milton Keynes, will have a deleterious effect on the river, particularly at times of low flow. During dry weather the flow in the river is sometimes so low that a situation could arise in which there was more sewage effluent than natural water in the river. This matter will no doubt be put before the Commission in considerable detail both by the River Authority and by the Bedfordshire Water Board and the Corporation wish to support the points which they will make.

Bedford has very considerable traffic difficulties, not only in a north/south direction, due to the lack of adequate bridges over the River Great Ouse, but of recent years has experienced a substantial growth of heavy commercial traffic in an east/west direction. While some of this is local, a greater part is clearly from much further afield and is partly due to the growing attraction to shippers of the East Anglian ports. If an airport at Cublington were to increase east/west traffic, as seems probable, it would be essential for routes which would not traverse the Borough to be provided for such traffic. It is understood that there may be some tentative plans for dealing with such traffic, but it is emphasised that the improved east/west road facilities would be essential before the airport were operational, because the existing east/west route through Bedford has already reached saturation point at certain times in the day.

For the reasons outlined above, the Bedford Corporation object to the proposal to site the Third London Airport at Cublington (Wing).

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Leighton-Linslade Urban District Council

SUBMITTED BY MR. S. W. PACEY*

1. My Council objects as strongly as possible to the siting of the Third London Airport at Cublington mainly on the grounds of noise and the urbanisation which would be part and parcel of the development of an airport of the size envisaged just over the borders of the Urban District.

2. **Description of Urban District**

Leighton-Linslade Urban District has an area of 4,135 acres and a population estimated at 19,000. The Urban District comprises the adjoining townships of Leighton Buzzard and Linslade and it was formed on the 1st April 1965 from the previous separate Urban Districts of Leighton Buzzard and Linslade. Leighton Buzzard was previously in Bedfordshire and Linslade in Buckinghamshire. The Urban District of Leighton-Linslade is now completely in Bedfordshire and immediately adjoins Wing Rural District in Buckinghamshire. I submit a plan showing the boundaries of the Urban District marked in blue.†

3. Leighton Buzzard is an old Market Town. The Council owns the market rights which the guide books say are mentioned in the Domesday Book. A stall market is held in High Street each Tuesday and Saturday.

4. The Parish Church of All Saints Leighton Buzzard is reputed to date from 1288 and again in the guide book to the Town is referred to as a miniature cathedral. It has a spire which rises to a height of 191 feet.

5. At the eastern end of the wide High Street stands an attractive stone market cross reputed to date back to the late fourteenth or early fifteenth century.

6. The township of Linslade, although physically part of Leighton Buzzard, can be regarded as a separate thriving community. It has grown over the last 100 years around the railway station which is on the main line between Euston and the North but originally it stood on the banks of the River Ouzel which is now the area known as Old Linslade. The earliest reference to Linslade is said to be as far back as 966 and again the guide book says mention is made of a mill at Linslade at the time of the Domesday Survey.

7. I mention these facts only to give an indication of the age of Leighton Buzzard and of its character.

8. The town is situated in the midst of beautiful and varied scenery. To the north there is the hilly well-wooded countryside of Heath and Reach, the Brickhills and Woburn. To the west lies the fertile Vale of Aylesbury and its quiet villages. To the south and east there are the Chilterns, including Dunstable Downs, Whipsnade Park and the Ashridge Estate which are an area of outstanding natural beauty. Within the boundary of the Urban District is the Southcott Stud belonging to Mr. Evelyn de Rothschild. Just over the boundary is the Ascott Stud belonging to the same owner and a little more than a mile away are the Mentmore and Crafton Studs of Lord Rosebery—all famous for the racehorses bred there.

9. **General**

Following a survey carried out by Bedfordshire County Council in 1966 the Council were informed that, for shopping purposes, the influence of Leighton Buzzard and Linslade spreads out well into the adjoining Rural Districts of Wing and Luton. The whole of the suggested site of Cublington falls within this trading area.

10. It has been the policy of the Council that the Urban District should develop as a pleasant residential area catering for needs as wide as possible but at the same time industry should be encouraged to come here, within of course, the limits laid down by Government policy. It is believed that this policy has been followed successfully. The Urban District is growing at the rate of approximately 1,000 persons a year.

11. The Council has recently completed the construction of a new sewage disposal works at a total cost of about £730,000 which is capable of treating the sewage from a population of 33,500 persons. At the present time the Council is in the process of obtaining the approval of the Ministry of Housing and Local Government to a main drainage scheme to serve the western area of Linslade and which is estimated to cost £250,000. It is hoped that the construction of these main trunk sewers will commence before the end of the year. The construction of an estate of houses which will have to be drained by these sewers has already commenced.

12. The population of the Urban District is planned to grow to 33,500 persons by 1981 at an average of 1,000 persons a year. This target is being exceeded and is likely to be reached five years earlier i.e. by 1976. This rate of growth however may be further accelerated as the local planning authority has only recently been asked by the Government to release land for housing development in the Urban District, in advance of the time when it was proposed to release it, as a contribution towards relieving pressure on the Outer Metropolitan area of London.

* See also p. 1586.

† Available for inspection by arrangement at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

13. **Effect on Leighton Buzzard and Linslade if airport sited at Cublington**

If the site at Cublington is chosen as the site of the Third London Airport the Council considers that the character of the Town and the lives of its inhabitants will be altered beyond recognition.

14. The site is only a half mile away from boundaries of the Urban District. The edge of the site is shown by a dotted red line on the plan. It seems to the Council inconceivable that large scale development connected with or ancillary to the airport would not spill over into the Urban District and convert Leighton Buzzard and Linslade into a Town completely dependent upon the airport. If the anticipated level of employment generated by the airport is taken to involve a population of 392,000 people which is the figure I understand was used by Essex County Council at an earlier inquiry, and if other airports are a guide, nearly all these people will, of course, be immigrants to the area and it must be a statement of fact that if only a small portion of the workpeople likely to be attracted to the airport came to reside in Leighton Buzzard, the character of this pleasant country market town would be destroyed or altered beyond recognition.

15. Many of the Town's population have deliberately chosen to live here away from the noise and bustle of town life and within easy reach of most attractive countryside. The presence of a large international airport so near at hand would completely alter this way of life to the absolute detriment of those inhabitants and would change a planned development of the Town to one both explosive and probably undesirable. As an example of the latter we could easily have high density terraced development in areas of low density high class residential development.

16. The Commission says the Ministry of Transport and British Rail are not yet in a position to provide definite plans for surface access to the proposed side but, with the Urban District lying between the site and the M1 and the railway line, it is possible that these links would pass through tne Urban District and if so would almost certainly affect property in the District adversely.

17. The effect of the airport at Wing would be noticed as soon as construction started. It seems logical to assume that Leighton Buzzard Station would be the rail terminal for the development until a rail link to the site was established. For the time being the existing road links via A418 to Wing and Soulbury Road to Soulbury would have to be used. The access to both roads from the station would have to be improved considerably to take the additional traffic and this would almost certainly involve the demolition and redevelopment of a lot of property in the central area of Linslade.

18. So far as permanent road links from the motorway and existing trunk roads are concerned, the east-west projected routes in recently published plans of the Ministry of Transport *Roads for the Future** lie well to the north and the south of the Wing site. If the site at Wing were selected presumably additional expense will be involved in constructing connections to these links otherwise a link through or near Leighton Buzzard would have been selected in the first place. Again an east-west link passing through or near the Wing site would, as I have said, presumably pass through the Urban District and affect property in it.

19. One of the biggest problems which would affect Leighton Buzzard during the period of construction of the airport would be the amount of sand and gravel which would be required for the project. There are several large sand and gravel pits in the Urban District and just over its borders. It seems to me that all these pits would be overworked without much regard for rehabilitation because speed would be the most important thing. The roads in the Urban District would have to bear ballast carrying vehicles on an almost unimaginable scale. This would affect the amenities of a large number of houses in the District and make road improvements essential, again probably to the detriment of private and business properties. Furthermore, the Council can foresee the need for gravel deposits along the line of the River Ouzel to the north of Leighton Buzzard to be opened which would seriously affect this very pleasant countryside.

20. The character of the Chilterns, which contribute so much to the beauty of the area in which Leighton Buzzard and Linslade are situated is being conserved and safeguarded under a Standing Conference formed by the four County Councils in whose areas The Chilterns fall. According to the Press this Conference has been congratulated by the Ministry of Housing and Local Government on the progress it is making. I think the efforts of the conference will amount to nothing if the Airport comes to Wing because of the tremendous impact that it would have on the countryside.

SUBMISSION BY MR. M. S. LESLIE†

1. **Noise**

As has been said earlier the western boundary of the Urban District is only about half a mile from the boundaries of the site at Cublington. The 40 NNI contour as at present published by the Commission cuts across the north-western corner of the Urban District. From personal observations I have kept near Heathrow Airport and at Windsor and with the aid of a noise and number index contour map prepared in 1967 I consider that 40 NNI is too high a minimum value and that a high degree of nuisance would be caused outside this contour. Windsor falls between the 35 and 45 NNI contour and I found the noise level at Windsor quite intolerable at times. It is in the western and north-western parts of the Urban District that most development is at present taking

---

* (HMSO.)

† See also p. 1588

Printed image digitised by the University of Southampton Library Digitisation Unit

place, thus within five years many more people will be living within half a mile of the 40 NNI contour as at present drawn. The additional population arising from this new development is likely to be about 7,000 to 7,500 people.

2. The Council have noted that the Commission says that the reliability of the Noise and Number Index has been questioned. I understand that the Index was compiled in 1961 when the proportion of jet engined aircraft to the total volume of air traffic was very much lower than it is to-day. I feel that the Index can be dangerously misleading and therefore do not place reliance on the fact that as at present the bulk of the Urban District appears to be outside the limits of disturbance or annoyance. In addition, the Commission says that the present alignment of the runways may be changed. If there were only a slight change in a clockwise direction a major part of the Urban District would be more seriously affected and the lives of even half of its inhabitants affected to a considerable degree.

3. Allied to noise is the height at which aircraft landing at Cublington would pass over the northern part of the Urban District seeing that the end of the runways could be as close as fifteen hundred yards from the District boundary. This could not help but materially affect those few houses lying immediately beneath the flight path. It has also been noticed at other airports that jet engined aircraft taking off and landing leave behind what appears to be a trail of incompletely burned fuel. This "fall out" would also affect the northern and north-western parts of the Urban District.

SUBMISSION BY MR. J. B. SAUNDERS*

1. **Financial effects**

At the formation of the Urban District on the 1st April 1965 the rateable value was approximately £822,000. Within the last two months this figure has topped the £1,000,000, an increase of 22 per cent in four years. This shows in financial terms the growth of the Urban District.

2. I have noticed a decision of the Lands Tribunal of the 13th March 1969 (*W. H. Budge v. W. C. Price Valuation Officer*) to reduce the assessment of a bungalow at Southend from £120 to £108 gross value because it was situated "on the fringe" of Southend airport specifically on the noise from jet aircraft. At the same sitting of the Tribunal (*W. E. Abbott v. E. G. Le-Grys Valuation officer*) a reduction, 10 per cent of gross value, was made in respect of a house at Bedford on the grounds of noise from the aircraft research association establishment at Thurleigh. Many houses in the Urban District might be considered to be "on the fringe" of the airport if it were sited at Wing and if these decisions of the Lands Tribunal were followed, it could mean a substantial reduction in the rateable value of the Urban District with a consequent increase in the rate in the pound to maintain the same income. Thus those ratepayers whose rateable values were not decreased would have an increased rate-burden to bear. I acknowledge however that if one assumes that there would be substantial development within the Urban District if the airport came to Cublington this would offset any reduction in the rateable value of the Urban District because of noise.

3. Apart from the question of reductions in rateable values on the grounds of aircraft noise I would anticipate proposals for reductions in rateable value from ratepayers on the grounds of greatly increased vehicular traffic and loss of amenity during the period of the construction of the airport when there would be less likelihood of increased rateable value brought about by additional development being available to make up for any reductions in assessments approved.

4. So far as sewage disposal, trunk sewers, refuse collection and other services is concerned, any increase in the planned population of the Urban District beyond 33,500 would necessitate an increase in the capacity of the works and additional sewers which would be a burden on the Districts existing ratepayers before the additional development provided increased rate income. The Council is experiencing this kind of difficulty at the moment in that the loan charges on a new sewage disposal works, with space capacity to take the effluent from a town of 33,500 persons, are being met by the present ratepayers. This has meant that the Council's existing rate in the pound has met with criticism although the wisdom of the Council in going ahead with the construction of the new works is now generally understood.

5. There is also the point that the Cublington site lies wholly within Buckinghamshire and that County would have the benefit of the rate income from an airport undertaking on that site. This income would be considerable; I understand that the rateable value arising from Heathrow is in excess of £2,500,000. None of this rateable value would be available to Bedfordshire thus the inhabitants of Leighton-Linslade would be faced with heavily increased costs to be met out of their own rates alone whilst at the same time facing the discomforts arising from an international airport on their doorstep.

† See also p. 1588.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Stone with Bishopstone Parish Council*

The Commission Secretary
The Roskill Commission
Templar House
81–87 High Holborn
London WC1

26th June 1969

Sir,

Third London Airport

Local Hearing on Proposed Cublington (Wing) Site

1. The undersigned, A. M. Perry, Chairman of the Stone with Bishopstone Parish Council and J. Willans, Chairman of the Stone Villages Association, jointly present hereunder the majority views of the inhabitants of Stone, Bishopstone and Hartwell, in the county of Bucks.

2. The Stone with Bishopstone annual Parish meeting rejected unanimously the proposal for London's third airport at Cublington and agreed to a further meeting at which it was agreed that the Parish Council and the Stone Villages Association would act in concert to oppose the plan. The Stone Villages Association's mandate is to act to preserve the amenities of the villages and look after their residents' intrests wherever possible.

3. The proposal for siting the third airport at Cublington, with all its implications, is causing great concern in our rural community. A petition organised recently showed over 90 per cent of the inhabitants to be opposed to the proposal.

4. Whilst it is unlikely that any land in the Parish will be required directly for the airport, we have no doubt whatever that urbanisation will spread to a large area around the focus of the airport, engulfing a number of villages and towns, which will inevitably lose their identities, disappearing, swamped in reinforced concrete, bricks and steel. Rural life, which is what this area is all about, will change completely from what we know it now. Good agricultural land will be requisitioned for housing and industrial development, roadways, services, etc. Altogether a substantial part of the Vale of Aylesbury with its beautiful, peaceful countryside will be despoiled.

5. The Commission's provisional airport plan for Cublington may understate the disadvantages likely to accrue from disturbing noise. We feel strongly that the N.N.I. contours, whilst appearing finite and limiting on the map, will not be so in fact for several reasons. We envisage serious nuisances from noise and air pollution spreading over far wider areas than shown. It is greatly regretted that approach paths together with approach heights are not indicated. We feel strongly that these will have a serious effect much further afield than indicated by the 40 N.N.I. contour.

6. We can find no solace in partial compensation for soundproofing costs. It must surely be self evident that people living in rural areas do so to enjoy rural amenities and do not wish to be confined to their houses by the necessity of fleeing from noise.

7. It is difficult to understand how such a project can bring benefit to the people of North Bucks. Unemployment is at a level around 0·3 per cent–0.2 per cent which implies there are virtually no employable people available. The enormous direct labour requirement and the even huger indirect labour needs will have to be satisfied almost entirely by non-indigenous sources and local agricultural labour will be milked.

8. Finally we question the necessity for a large international airport in this position because of the stress, anxiety and reduction of rural amenities it is bound to impose on people and places and we are bound to ask whether in fact it is good sense to develop an enormous international passenger and freight handling facility such as this in a densely populated country! It is possible the increased benefit likely to accrue to Britain through trade, tourism, etc. will not be sufficient to justify the damage to property and particularly people, their health and way of life, which will certainly follow in the wake of so vast a development.

Yours truly,

A. M. Perry
Chairman
Stone with Bishopstone Parish Council

J. Williams
Chairman
Stone Villages Association

* See also p. 1585.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Thame Urban District Council*

The Thame Urban District Council have endeavoured to ascertain the effects upon the urban area and its inhabitants which would follow the construction of a large international airport on the Buckinghamshire site in the area of Cublington, Stewkley and Wing. We seek to produce evidence to the Commission which will demonstrate clearly the very serious affect which the project would have upon the town, its inhabitants and the quality of life of the community.

Thame lies on the border of Oxfordshire and Buckinghamshire about equidistant from the City of Oxford and the Borough of Aylesbury. It has a population of 5,600 people and plans are in hand for a slow expansion of the population to reach 10,000 people by 1980. It is proposed that this expansion should be completed in such a way as to preserve the character and charm of this country market town which is at present almost uniquely unspoiled by any ill-planned recent commercial, industrial or residential development. The Oxfordshire Country Council Architects Department have completed a Conservation Study† of the town which has been adopted by the Oxfordshire County Council who have declared the areas comprised in the study as conservation areas under the Civic Amenities Act 1967. From this Act they will derive special powers for the overall conservation of the whole area. A copy of the Conservation Study is submitted to the Commission herewith.

If the airport is constructed on the Cublington site, not only will the peaceful market town atmosphere be entirely destroyed, but also the urban expansion associated with the airport will inevitably affect the rural pattern of trade in the town and it is feared that the pressures it creates will eventually supersede the conservation plans which have been so carefully laid for the preservation of this fine country market town. The Council also objects to the proposed siting of the airport at Cublington because the noise nuisance which it will generate will cause serious disruption of the existing pattern of every day life in the area as can be seen by examining its impact under the following headings:

Education

1,400 full-time pupils are educated at four schools in the town. Approximately 880 of the pupils have their homes in the town and the remaining 370 come from the surrounding areas mainly west of the town in Oxfordshire. About 30 or 40 pupils come from nearby areas of Buckinghamshire, east of the town. In addition approximately 550 persons receive further part time education at evening classes held at the schools on one or two nights each week. The noise nuisance arising from almost continuous heavy air traffic will seriously affect the progress of the education of these persons in both their academic and recreational activities, and the Thame Urban District Council supports the evidence produced by the Oxfordshire County Council upon this subject.

Hospitals

The Victoria Cottage Hospital at Thame has 19 beds and has facilities for general surgery. It also provides treatment for convalescent and cardiac patients. Within the next two years a Health Centre will be constructed adjoining the hospital to accommodate General Practitioners' surgeries, Consultants' clinics, Child Welfare and associated health services. The efficiency and effectiveness of all these services will be seriously impaired by any noise nuisance to the detriment of the local population.

Highways and traffic

The A418 road running from Aylesbury to Oxford passes through the town of Thame and already the traffic it carries seriously affects the Lower High Street area of the town. A recent traffic survey showed that 8,100 vehicles per day approach Thame from the last junction on the west side of the town, while on the same road on the Aylesbury side, east of the town, 7,900 vehicles per day use this approach road. The A418 is a 24 ft wide single carriageway and traffic engineers estimate that this road will be totally congested when the traffic reaches 9,000 passenger car units per day. There are plans for a by-pass road to accommodate the through traffic using the A418 road but there is no prospect of the road being constructed for at least five years and in all probability sufficient funds will not be available for the scheme until ten of fifteen years' time owing to the fact that it will probably involve the construction of two bridges across the river Thame and also expensive embankment work across the flood plain of this river. Under these circumstances the route through the town is likely to reach saturation due to the continuing growth of motor vehicle traffic and if the airport is constructed very serious problems will arise, initially from the large volume of gravel carrying vehicles which could be expected to use the route through the town when travelling between the airport site and the west Oxfordshire and Berkshire gravel fields. A single commercial vehicle is calculated as three passenger car units and on this basis the town could expect total congestion of the Lower High Street and town centre immediately construction work begins. It can only be envisaged that the nuisance will become progressively more acute as the volume of traffic generated by the airport itself increases.

* See also p. 1589.

† Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Employment

1. The main source of employment for the male population of the town is provided by the motor vehicle factories at Cowley. A shift system operates at these Manufacturing Plants and when they are working near full capacity almost half of the labour force will be working on a night shift. Those of them who live in the Thame district will be endeavouring to sleep during the daytime when the noise nuisance from the airport could be expected to be at its worst. Special importance is attached to this factor because the Cowley Plant of British Motor Holdings is being substantially expanded and as the town of Thame expands towards 10,000 by 1980, it is anticipated that a large proportion of the new population will be employed by the Company's Subsidiaries at Oxford.

2. The Thame Urban District Council has recently developed an Industrial Estate of some eighteen acres on the edge of the town and at the present time this is being expanded to some thirty-three acres in all and there are ample employment opportunities for the working population of the town. The employment opportunities which will arise from the construction of the third London Airport would therefore be of no benefit to this town's population, but it would drastically increase the stress to which they are subjected during their working lives.

In order to gauge the feelings of the local inhabitants the Council held a public meeting which was very well attended and a unanimous show of hands at the conclusion of the meeting showed that the people of Thame are united in their opposition to the siting of the airport at Cublington, and the Council therefore express their strongest possible objection to the siting of the airport on this site and they support the Oxfordshire County Council in the evidence they have submitted* to the Commission. They also endorse the evidence of the Wing Airport Resistance Association.† The evidence the Council has submitted above is particularly relevant in view of the large numbers of signatories to the petition from the residents of Thame and district who are individually in opposition to the siting of this airport in this area.

Regrettably the Council does not have the necessary resources to submit complex technical evidence in connection with the degree of noise nuisance which could be anticipated in the area of Thame. The Council feels that this does not detract from the relevance of their evidence because the injury which will be suffered from this source will vary according to the intensity of the noise and the Commission can assess, from the data which they have at their disposal, the magnitude of the harm which the town will suffer.

---

* p. 1064.

† See Day 3 written evidence.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Ploughley Rural District Council*

Waverley House
Vicester, Oxon
OX6 8NU

25th June 1969

The Commission Secretary
Commission on the Third London Airport
Templar House
81–87 High Holborn
London WC1

Dear Sir,

With reference to your letter of the 30th ultimo, it is not intended that my Council's representative at the Public Inquiry, which will in all probability be myself or the Deputy Clerk of the Council, will take more than five minutes to state their case at the public hearing on Monday, 14th July and in fact with the leave of the Inspector, it may on hearing evidence from other persons be considered unnecessary to do more than register the Council's objection.

I am asked by my Council to submit their objection on the following lines:

1. That in their opinion the location of an international airport in the centre of the country, which will cause annoyance and disturbance to the public over a large radius generally and over a smaller although still large area more particularly, should not and indeed cannot be tolerated.

That the location of the third London airport at Cublington (Wing) would be a further intrusion upon the lives of a quite a large number of residents in the Rural District of Ploughley which already has a large American aerodrome at Heyford, a civil aerodrome at Kidlington, an aerodrome at Weston-on-the-Green where parachute training is undertaken at all times of the day and on occasions at night.

That in the opinion of the Council, this international airport should be located on a coastal site where the maximum amount of aircraft movement can take place over the sea.

2. That an inland aerodrome would mean the loss of thousands of acres of good agricultural land which from an economic point of view, this country just cannot afford. For this reason a coastal site where land can be reclaimed from the sea or where marginal land is located should be used irrespective of additional cost.

Yours faithfully,
WILFRED C. WIGNEY
Clerk of the Council

*See also p. 1589

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Aston Rowant Parish Council*

The Parish consists of the villages of Aston Rowant and Kingston Blount and the hamlets of Kingston Stert and Chalford, and has an acreage of 2,923 acres. and a population of 700.

The Parish is entirely rural and residential in character. Apart from agriculture and one transport firm situated in Kingston Blount, there is virtually no local employment.

The Parish stretches from the crest of the Chiltern escarpment into the Thame vale, and in consequence of its situation in an area of great scenic beauty, attracts residents and visitors from urban areas such as Oxford and High Wycombe and even London, in search of peace and quiet in rural surroundings.

Many of the older buildings are constructed in the local traditional materials of brick, flint and lime mortar. The damage likely to be caused to the fabric of these buildings by the excessive vibration from giant aircraft is clearly a matter of grave concern.

This degree of amenity is already prejudiced to some extent by the proposals to extend the M40 motorway, and by the disturbance already existing caused by the large number of airfields with which Oxfordshire and the areas immediately surrounding the County boundary is already infested. It is felt very strongly indeed by the residents of this Parish that any addition to the existing level of noise will destroy the peace and quiet, in search of which they have come here to live.

The agricultural land in the Parish contains some of the best grazing land in the whole of the United Kingdom. There are also valuable woodlands on the Chiltern escarpment. Serious anxiety has been expressed by farmers and landowners on the affects of the discharge of exhaust gases and fumes into the atmosphere, apart from the affects of noise on stock.

In view of the foregoing considerations, this Parish Council supports the Oxfordshire County Council in its opposition to the choice of Cublington as a site for the third London Airport.

* See also p. 1589.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Great Haseley Parish Council*

1. The Parish and Village of Great Haseley

The Parish of Great Haseley, comprising 4,349 acres, is the largest in Bullingdon Rural District but the population of 580 is relatively small (one person per 7½ acres compared with an average of one person to nearly 2 acres for the Bullingdon Rural District as a whole). The corresponding rateable value is about £26 per head (£36 for the Bullingdon Rural District as a whole).

The land is almost entirely devoted to farming, both arable and live-stock. The country is of an open undulating type and little wooded. Farm holdings, nine in number, vary in size up to nearly 1,000 acres, and farming is in general of high reputation and, in some cases, is outstandingly modern and efficient.

In general the buildings, both large and small, in the village itself and throughout the Parish are of the 18th and 17th centuries and are built mainly of local stone with clay tiled or thatched roofs. Some more buildings, mainly bungalows, have been added. There are a number of buildings of historic and architectural interest such as:

Rycote Chapel (restored and maintained by the Ministry of Public Buildings and Works), Rycote House itself and Haseley Court without the village, and within it, the Parish Church (partly 12th century), Great Haseley Manor, the Old Rectory and the 14th century Tithe Barn.

In the village are three general stores, one of which houses the Post Office, one Public House (thatched), a bakery and a smithy wherein the erstwhile champion farrier of England practises his art. The church is a particularly interesting building with some medieval monuments. Past incumbents have included the famous John Leland, Sir Christopher Wren's father, and Owen Oglethorpe, who later became Bishop of Carlisle and crowned Queen Elizabeth I. There is a good village Primary School and a spacious sports field, but no village green.

2. The People of the Parish

The population of the Parish is about 580, of whom a significant proportion are retired from active life. Most of these are old age pensioners and many have come to this Parish for peace and quiet. Although the main industry within the parish is agriculture, the number of persons employed in it are not in proportion to its importance (there is much mechanisation). The majority of the actively employed population are commuters to Oxford and other places nearby in the motor industry, local authority employment, printing, building, nursing, etc., etc. There are also a number of persons professionally employed in Education (Oxford University), Engineering, Architecture, Accountancy, Music, and business of various types. In some cases they commute to London.

Despite the disparity of occupation of the residents there is a remarkably thriving village community spirit, much encouraged by a very live Women's Institute, an active Youth Club, and a prominent branch of the Young Farmers' Club. There are also a flourishing Horticultural Society and a Cricket Club.

3. The Parish Council

The affairs of the Parish, within the scope as defined by the relevant Local Authority legislation, are administered by a Parish Council of seven members. The occupations of these Councillors are Farmer, Householder (the only lady on the Council), Inspector in the Motor Industry (Trade Union Secretary), Retired Civil Engineer (F.I.C.E.), Electronics Engineer (M.I.E.E., employed at Harwell Atomic Energy Research Establishment), Vehicle Examiner (MoT), and Merchant Banker.

The Parish Council has met and passed a resolution to the effect that it deplores the suggestion that an International Airport should be built at Cublington (Wing) and wishes to record its objections in the terms of the evidence that it has prepared for submission to the Commission and set out in this statement.

4. Reasons of Objection

The Parish of Great Haseley is opposed to an International Airport at Cublington (Wing) for several reasons:

i) *Noise.* Great Haseley is in the approach path to Benson Airfield and is also affected by aircraft using Abingdon. Already there is considerable noise nuisance by day. The addition of civilian jet aircraft at 2½ minute intervals from Wing would cause an intensity of noise that would become intolerable.

On the other hand, the nights in this rural area are relatively quiet and peaceful with only occasional disturbance. The noise of night flying of jet aircraft, though less frequent than by day, would have an impact out of all proportion to this frequency.

ii) *Radio and Television Disturbance.* Great Haseley is a rural community to a great extent self-dependent for its relaxation and amusement. Radio and television play a far greater part in the lives of its people then they do in an urban community where other forms of evening occupation and amusement are usually readily to hand. Already aircraft using Benson cause much disturbance especially to television viewing and there is much anxiety as to the effects of vastly increased aircraft movement on the scale proposed for Wing.

* See also p. 1590.

Printed image digitised by the University of Southampton Library Digitisation Unit

iii) *Loss of Land and Associated Urbanisation.* There would be a loss of good land for agriculture of tens of thousands of acres. The proposed airport itself needs 7,500 acres and to this must be added all the land needed for the associated urban development for residential and service purposes, said to be eventually for up to 500,000 persons. In effect, this would mean a sprawling conurbation far larger than Oxford, and, as in the case of Oxford or far more so, would lead to the spread of a demand for land and accommodation throughout every village within a twenty mile radius.

All this might mean an increase in land and property values, but in the long run it would be a tragedy. The country as known and enjoyed by those who were born in it, by those who have come to settle in it and by those who visit it from time to time, would disappear and the pleasant, quiet, rural character of this part of England would be gone for good.

iv) Although perhaps beyond the terms of reference of this stage of the Commission's inquiry, the Parish of Great Haseley would like to state their opinion that, on account of the reasons given which apply also to most inland sites, the proposed airfield should be located on the sea coast, especially where, as at Foulness, an addition to the acreage of England would be made. This is far preferable to location on a site where the airfield and its associated development would absorb a large portion of this overcrowded and undersized island. In the long term this warrants a considerable increase in initial cost.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Hethe Parish Council

Hethe is a small parish of some 360 inhabitants and is within the NNI contour 35. Little development has taken place since the war apart from a small council house estate. Many families have lived here for generations, although now many young people have left the parish because of this non-development. Resulting from this approximately 120 parishioners are beyond middle age and approaching retirement or are retired.

The parish enjoys many amenities, the Parish Church is historic and the R.C. Church is used for worship for other surrounding parishes as is the Methodist Chapel. The Village School is well attended, 18 scholars, who also have a Girl Guide and Brownie Troop and a Parent/Teacher Association.

The Village Hall is in constant use, activities include the W.I., Darby and Joan Club, Children's Clinic, Mobile Library, Horticultural Society, Village Fetes and etc. The Parish includes a Post Office and Shop, Off Licence and Shop, Electrical Shop and Petrol Pumps, Carpenters Shop and a Public House.

There are four farms within the parish and many residents are connected in some way, either fully employed or partly, working close to their homes.

Furthermore existing aircraft noise from the adjoining USAF Base is rapidly increasing both day and night, apart from the training wing at Bicester. We further consider that safety is a very important factor, there have been three air crashes in the vicinity this year.

In unanimously opposing this siting the Council feel that with the rapid increase of air traffic, safety and noise are very important considerations and feel a coastal site must be the right decision.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Towersey Parish Council*

The parish of Towersey embraces an area of 1380 acres. It comprises 10 farms, a manor house, a general store cum post office, a public house and some 140 residential buildings. There are a village green and recreation ground.

Situate in the heart of a rural area, away from main roads or regular air routes and with no public transport other than an occasional bus service to Thame, traffic is light and the village enjoys an unusual absence of discordant noise.

The populations total 430 persons with a large proportion of young people, but an element of the elderly due to the existence of a block of old people's flats. It has an active community life, with morris and folk dance groups, a women's club, local cricket team and village hall. An annual festival is held.

There is little local employment and economically it depends largely on outside work, notably the motor works at Cowley.

Consonant with an expression of views at the Annual Parish Meeting the Council, which consists of 5 members being a farmer, a nurseryman, a railway worker, a builder and a retired person, have decided to submit an objection to the suggested site at Wing on the following grounds:

It is considered that the noise from the airport on what is at present an unusually quiet spot would consititute a severe nuisance and further that there would be loss of rural amenities consequent on the probable spread of building by overspill from the airport into an area which is still unspoiled by development whether industrial or residential.

* See also p. 1591.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bucks Water Board*

The Bucks Water Board is the statutory water authority, with an area of supply as outlined on the map† submitted to the Commission, from which it will be seen that the whole of central and north Buckinghamshire is the responsibility of the Board.

The Board wish to make the following comments upon the proposal to site the Third London Airport at Cublington.

1. Effect Upon Existing Sources

At the present time the bulk of the Board's existing sources consist of deep wells/boreholes in the chalk of the Chiltern Hills. These sources would not be affected by the Cublington proposals. The Board have, however, a river abstraction source at Foxcote, about two miles to the north-east of the town of Buckingham. To the extent that additional sewage effluent was drained into the River Great Ouse upstream of the point of abstraction, this source (the Foxcote source of the Board) might be adversely affected by reason of deterioration of the quality of the raw water in the river.

2. Effect on Future Sources

Under the Water Resources Act 1963, the responsibility for the securing of adequate resources has been placed upon the River Authorities and, in this connection, the Board would wish to support the representations that have been made by the Thames Conservancy‡ and the Great Ouse River Authority§ and the Water Resources Board. The Water Resources Board have referred to the proposal contained in their report entitled *Water Supplies in South-East England* for a possible large surface storage reservoir at Whitchurch. It is confirmed that the Board have been a party with the Thames Conservancy to the investigation of this site and that it has been shown geologically that the site is a sound one.

3. Distribution of Water

The Board understand that if the Third London Airport was sited at Cublington, there would be a much more rapid growth of development generally in central and north Buckinghamshire. If this comes about, it will be the Board's duty to provide the necessary distribution works of water supply.

4. Finance

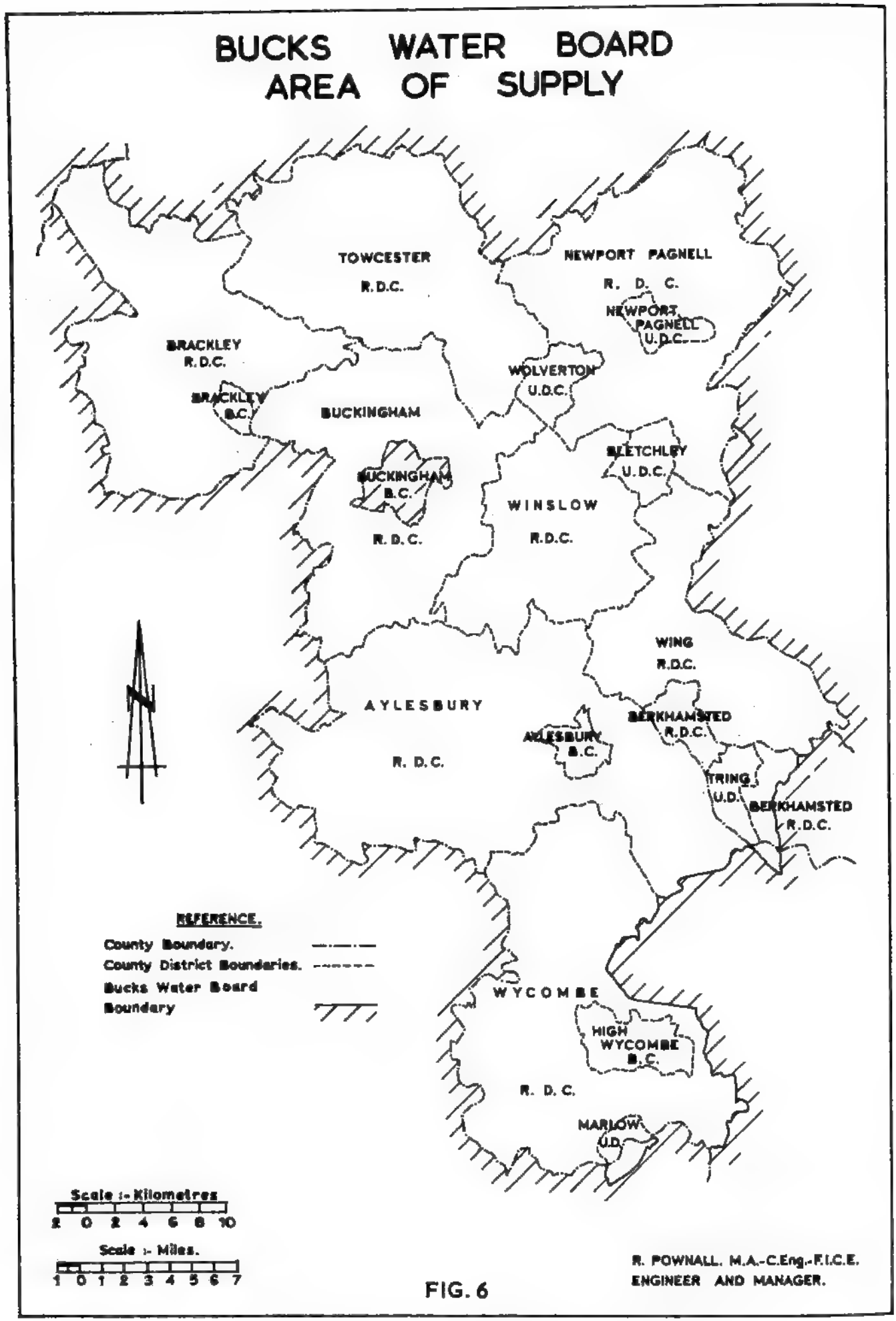
Due to the fact that the only natural sources of water are remote and the area in question is part of the deficiency zone as referred to in *Water Supplies in South-East England*, heavy capital expenditure would be involved in providing the water supplies required for the Airport itself, and for the additional population drawn into the Board's area.

The Board's existing Water Charges are necessarily high by general standards. The Airport development, and the rapid accompanying population expansion, would inevitably raise charges still further, particularly in the short term, since it is recognised in the water industry that there is invariably a ten year gap between incurring capital outlay and the corresponding consumer income.

---

* See also p. 1592.
† p. 1160.
‡ p. 1464.
§ p. 1141.

Printed image digitised by the University of Southampton Library Digitisation Unit



Bucks Water Board: area of supply. (Bucks Water Board)

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 3

Mr. J. D. A. Fennell
Mr. D. R. Skinner
Sir Arthur Bryant
Sir John Betjeman
Sir Eric Fletcher
Mr. G. I. Ginn
Mrs. V. Osborn
Mrs. A. Morton
Sir Ludwig Guttmann
Capt. D. J. Bellingham
Mr. W. G. Andrews
Mr. T. Hancock
Mr. R. A. Waller
Mr. D. M. Lumb
Wg. Cm. C. G. B. McClure
Mr. D. W. McQue
Mr. V. J. Scott
Mr. H. A. C. Evans

(*Wing Airport Resistance Association*)

Stewkley Action Committee

Rev. J. E. H. Williams

Mrs. P. Gallimore

Witnesses were examined on this evidence
on Day Three, Wednesday, 16th July 1969
see pages 1597–1637

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY MR. J. D. A. FENNELL*

1. I am the Chairman of the Wing Airport Resistance Association and live at Lawn House, Winslow, Buckinghamshire.

2. In October 1968 a number of private individuals alarmed at the prospect that Silverstone might be selected as the site for the third London Airport formed the Silverstone Airport Resistance Association (S.A.R.A.). We were greatly concerned about the threat that such a proposal would present to the whole of north Buckinghamshire and south Northamptonshire.

3. Towards the end of February 1969 it became apparent from press comment that Silverstone was not likely to be included upon the Commission's short list of sites but that Wing or Cublington would almost certainly be included. It was felt that this possibility presented a similar threat to the north of Buckinghamshire and in order to meet this threat an approach was made to a number of people living in the area who were invited to join in fighting the proposal.

4. On 4th March 1969 the Commission published its short list of sites which included Wing.

5. There followed an unparalleled and spontaneous reaction on the part of the general public puzzled in the first place that Wing, which had never been considered or mentioned previously in any Government white paper on the subject should now be on a short list of four. Secondly they were anxious and frightened that this proposal represented a threat to their whole way of life and to so much that they valued and treasured in the countryside.

6. Shortly thereafter I was approached by Alderman Ralph Verney, Chairman of the Buckinghamshire County Council Planning Committee and asked whether what was formerly S.A.R.A. would be prepared to undertake the role of representing the general public at any inquiry held into the Wing proposal. I readily agreed.

7. At a meeting held at Winslow on 10th March 1969 the Wing Airport Resistance Association was formed. A copy of the constitution of the association is attached to this statement and marked J.D.A.F.1.

8. On 20th March 1969 a meeting was held at the Equestrian Centre, Wing to which all interested parties were invited. I reported the steps that W.A.R.A. had already taken and it was unanimously resolved by all those present (there were 200 or more) that the proposal should be fought by all means possible both on the technical and political fronts.

9. The aims of the Association as set out in the constitution have been the guide lines of our activities. They are:

i) to ensure that all people who might be affected by the siting of the third London airport in the region of Wing be kept fully informed of the implications of this project.

ii) to co-ordinate and represent public opposition to the construction of the airport and to ensure that the Association's views are presented to any body investigating the siting of the airport including the Roskill Commission.

10. The Association then set out to secure the help and assistance of the various Members of Parliament whose constituencies were likely to be affected by the proposal. Accordingly invitations to become Vice Presidents of the Association were extended to and accepted by

James Allason, Esq., O.B.E., M.P.
(Member for Hemel Hempstead)

Stephen Hastings, Esq., M.C., M.P.
(Member for Mid-Bedfordshire)

Arthur Jones, Esq., M.P.
(Member for South Northamptonshire)

Robert Maxwell, Esq., M.C., M.P.
(Member for Buckingham)

Gwilym Roberts, Esq., M.P.
(Member for South Bedfordshire)

Sir Spencer Summers, M.P.
(Member for Aylesbury)

The Association was also fortunate enough to persuade

Sir Aubrey Ward, D.L., J.P.
Chairman Bucks County Council, and

D. E. Hutchinson, Esq., M.B.E.
Chairman Northamptonshire County Council

to become Vice-Presidents as well. Mr. David Roberts who had been President of S.A.R.A. kindly consented to become President of W.A.R.A.

11. Mr. John Pargeter, a local solicitor, undertook to become Honorary Secretary of the Association and set aside a room in his office which then became the headquarters of the Association.

12. The Association has always envisaged its particular role as that of alerting and informing public opinion as to the implications created by the proposal and of being a vehicle through which individual members of the public could voice their objection.

* See also p. 1605.

Printed image digitised by the University of Southampton Library Digitisation Unit

13. Accordingly the Association's activities have been divided into two

i) the mobilising of public opinion

ii) the presentation of a technical case to the Commission through counsel and experts.

The second aspect will be self evident from the evidence presented at this Inquiry and I do not propose to refer to it further.

14. Throughout the preparations of the case all those concerned have been conscious of the difficulty of combining the presentation of the reasoned technical submissions to the Commission with the expression of popular opposition of those most likely to be affected. This latter consideration has led to many forms of opposition as for instance the displaying of car stickers. Again the village of Stewkley carries a substantial number of hoardings and posters which are no more than an attempt by the villagers to draw attention to their feelings and plight. I hope the Commission will not dismiss such things as mere propaganda or improper attempts to exert pressure upon it but will appreciate it is impossible to persuade those whose homes and whole way of life stand in peril to view the matter with detached equanimity. There was and indeed still is an enormous desire in ordinary members of the community to participate in the expression of opposition to the proposal.

15. The Association's composition may be divided roughly into four parts

i) officers

ii) executive committee

iii) area representatives (or "grass roots committee")

iv) members.

16. From the outset the Association sought and obtained members from all walks of life and those of all political persuasions and none. The Association's Constitution provides

3. *Membership*

Membership shall be open to all who are interested in the aims of the Association. There shall be no membership subscription but the Association may take appropriate steps to raise funds to achieve its aims.

That the Association is open to everyone has been the cornerstone of the W.A.R.A.'s existence. There is attached to this statement marked J.D.A.F.2A* and J.D.A.F.2B* the forms upon which application for membership was invited.

17. Initially the officers and executive committee were elected and co-opted on an ad hoc basis but on 4th June 1969 at a general meeting of the Association held in the Bossard Hall, Leighton Buzzard the following elections were made:

Chairman—J. D. A. Fennell	(Winslow)
Vice-Chairman—N. Wallace	(Little Horwood)
Hon. Secretary—A. J. Pargeter	(Soulbury)
Hon. Treasurer—E. de Rothschild	(Ascott)

Executive Committee

G. I. Ginn	(Stewkley)
The Lady Hartwell	(Oving)
A. Hugh Smith	(Grendon Underwood)
A. H. I. Lonie	(Bletchley)
A. C. Lovejoy	(Hardwick)
D. Lewson	(Stony Stratford)
W. J. Manning	(Wing)
A. Miscampbell	(Aylesbury)
W. Randall	(Leighton Buzzard)
D. Skinner	(Aylesbury)

18. The Association always envisaged that in order to co-ordinate public opposition effectively and avoid duplication of effort each area or village should have its particular organiser and that in each area where there was a wide body of support there should be a local W.A.R.A. committee. Accordingly the grass roots committee under the chairmanship of Mr. W. J. Manning has expanded from very humble beginnings until it is now representative of 15 towns and 188 villages. Attached to this statement as J.D.A.F.3* is a list of the villages and areas from which W.A.R.A. draws its membership. I have divided this for the sake of convenience into the Rural District Council Areas immediately affected and then an alphabetical list of the other areas. An asterisk indicates an area where there is a local W.A.R.A. committee.

19. On 26 June 1969 the Association had more than 61,766 members.

20. The Association also embarked on a wide programme of public meetings within the affected area and there is attached to this statement marked J.D.A.F.4 a list of such meetings.

21. Although the Association has always been concerned to be primarily a vehicle for the expression of private opinion a number of statutory bodies and various societies have passed resolutions supporting W.A.R.A. and there is attached to this statement marked J.D.A.F.5 a list of such bodies and societies. I also produce a sample of the letters and resolutions which have been passed by the various organisations and which the Association has been invited to transmit to the Commission.

22. Many members of the Association have not previously been involved in public affairs. They feel however that this proposal presents a unique threat to their lives and that even though the statutory bodies had expressed total opposition to the proposal their own individual voices should be raised in protest too. They feel with a burning resentment that a

* Not reproduced. Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

project which will destroy one of the more beautiful parts of the Home Counties namely the Vale of Aylesbury is a negation of all that planning and progress should represent in an advanced technological society.

23. The Association hopes that by mounting a case based in the first place on technical evidence it will be be possible to demonstrate to the Commission that Wing is an unacceptable site for the third London airport. In the second place it hopes that whatever criteria the Commission adopts the views of so large a body of public opinion which is intimately concerned by the proposal will not be ignored.

J.D.A.F. 1.

Constitution of the Wing Airport Resistance Association

1. *Name*: The name of the association shall be the Wing Airport Resistance Association.

2. *Aims:* The aims of the Association are:

(a) To ensure that all people who might be affected by the siting of the third London Airport (hereinafter called the airport) in the region of Wing be kept fully informed of the implications of this project.

(b) To co-ordinate and represent public opposition to the construction of the airport, and to ensure that the Association's views are presented to any body investigating the siting of the airport including the Roskill Commission.

3. *Membership:* Membership shall be open to all who are interested in the aims of the Association. There shall be no membership subscription but the Association may take appropriate steps to raise funds to achieve its aims.

4. *Officers:* The Executive Officers of the Association shall be:

The Chairman
The Vice-Chairman
The Honorary Secretary
The Honorary Treasurer

These Officers shall be elected by the Committee.

5. *The Executive Committee:* The Committee shall consist of representatives of interested bodies and certain private individuals. The Committee may invite other representatives or individuals to become members of the Committee as it may think fit. All executive authority in pursuit of the aims of the Association shall reside in and be exercisable by the Committee.

6. *Expenses of Administration:* The Committee shall out of any monies received by the Association pay all proper costs and expenses of administarion and management of the Association and use the residue as it thinks fit towards achieving the aims of the Association. The Committee shall not involve itself in any expense in excess of monies received or guaranteed.

7. *Winding up:* In the event of the winding up of the Association when it is considered at a general meeting there is no further purpose for the Association any remaining funds belonging to the Association shall be transferred to one or more charitable bodies as may be selected by the Executive Committee.

J.D.A.F. 3

Villages and areas from which WARA draws its membership

AYLESBURY R.D.C.

*	Ashendon	52
*	Aston Clinton	413
	Aston Sandford	18
*	Bierton	523
	Boarstall	17
*	Brill	140
	Broughton	16
	Buckland	83
	Chearsley	181
	Chilton	24
	Creslow	
*	Cuddington	278
	Dinton	234
	Dorton	70
	Drayton Beauchamp	41
	Fleet Marston	28
	Ford	53
	Grendon Underwood	149
*	Haddenham	887
	Halton	5
*	Hardwick	135
*	Hartwell	3
*	Hulcott	49
	Ickford	143
	Kinsey	
	Kingswood	51
	Long Crendon	543
	Lower Winchendon	38
	Ludgershall	
	Oakley	118
*	Oving	252
*	Pitchcott	
*	Quainton	380
	Quarrendon	28
	Shabbington	26
*	Stone, Hartwell, Bishopstone	483
	Stoke Mandeville	465
	Upper Winchendon	94
	Upton	39
*	Waddesdon	158
*	Weedon	238
*	Wendover	643
	Westcott	164
	Weston Turville	809
*	Whitchurch	523
	Woodham	22
	Wootton Underwood	76
	Worminghall	18

BUCKINGHAM R.D.C.

	Beachampton	60
	Calverton	43
	Chackmore	81
*	Charndon	
	Dadford	42
	Gawcott	2
	Goddington	17
	Hillsden	2
	Leckhamstead	1
	Lillingstone Dayrell	2
	Lillingstone Lovell	

Printed image digitised by the University of Southampton Library Digitisation Unit

* Marsh Gibbon	263
Maids Moreton	180
Poundon	2
Ratcliff	20
Stowe	275
* Thornborough	110
Tingewick	2
Twyford	

NEWPORT PAGNELL R.D.C.

Aspley Guise, Aspley Heath	606
Hanslope	150
Hollingdon	4
* Stoke Hammond	70
* Woburn, * Woburn Sands	668
Loughton	11
Old Stratford	362
Passenham	23
Salford	20
Great Woolstone, Little Woolstone	30
Woughton-on-the-Green	90

WING R.D.C.

* Aston Abbotts	257
Burcott	36
* Cheddington	392
Crafton	
* Cublington	147
Grove, Ledburn	32
Mentmore	59
Rowsham	11
Slapton	111
* Wing	502
* Wingrave	350

WINSLOW R.D.C.

Adstock	7
Dunton	1
* Drayton Parslow	305
East Claydon	54
* Granborough	167
* Great Horwood	316
Hoggeston	29
Hogshaw	
* Little Horwood	65
Middle Claydon	45
* Mursley	214
Nash	79
* Newton Longville	307
* North Marston	217
Padbury	110
Shenley Brook End	8
Singlemorough	23
* Stewkley	787
* Swanbourne	217
Tattenhoe	
Winslow	775
Whaddon	72

Aldbury	161
Ambrosden	35
Amersham	213
* Ampthill	42
Ascott House	1,049
Ashley Green	1
* Aylesbury Borough	11,077
Banbury	10
Barton	1
* Beaconsfield	173
Beckley	59
Bedford Borough	9
* Bedgrove Estate (Aylesbury Borough)	12
* Berkhamstead	1,727
Bicester	4
* Billington	165
* Bledlow	291
* Bletchley Borough	4,307
Botolph Claydon	40
* Brickhill Great, Little, Bow	450
Britwell Salome	2
Buckingham Borough	129
Battlesdon	33
Butlers Cross	95
Bourne End	28
Calvert	3
Caddington	1
Chalfont St. Peter, St. Giles	35
* Chartridge	1
Chesham	78
Chesham Bois—Hyde Heath	52
Chinnor	50
Chipping Norton	4
Chislehampton	149
Cookham	1
Cowley	1
Cranfield	255
Cuxham	1
Culworth	24
Dagnall	
Deanshanger	620
Denham	8
Dunsmore	18
Dunstable	100
Downley	21
Eaton Bray	21
Edlesborough	5
Eggington	45
Ellesborough	183
Eversholt	73
Farnham Royal	3
Fenny Stratford	1
Flitton	147
Flitwick	5
Forest Hill	57
Frithsden	107
Fulmer	9
Garsington	2
Gerrards Cross	1
Goring-on-Thames	2
Great Haseley, Little Haseley	106
Great Milton, Little Milton	108
* Great Missendon, * Little Missenden	871
Gubblecote	1
Harlington	558
Hastoe	5
Haversham	2
Hazlemere	5
* Heath & Reach	321
Hemel Hempstead	24
Henley-on-Thames	2
Hockliffe	52
Holton	187
Hook Norton	1
Holmer Green	74
Houghton Regis	3
Horsendon	19

Printed image digitised by the University of Southampton Library Digitisation Unit

Hudnall	1
Husborne Crawley	114
Horton	10
Hulcote	18
Hyde Heath	52
* Ivinghoe }	172
Pitstone }	
Jordans	44
Kettering	1
Kimble	62
* Great Kingshall }	160
* Little Kingshill }	
* Launton	13
Leagrave	1
* The Lee	694
* Leighton Buzzard }	4,243
Linslade }	
Little Gaddesdon	454
* Long Marston and District	424
Long Wick	118
Lower Heyford	1
Luton Borough	51
Marlow	4
* Marsh Gibbon	3
Marston St. Lawrence	1
* Marsworth	235
Maulden	1
Milton Bryan	72
Monks Risborough	5
Moreton	74
Nettledon	27
Nether Heyford	16
Newport Pagnell Borough	15
Northall	5
Northchurch	379
Oxford Borough	34
Offley	1
Olney	1
Penn	154
Potter Row	71
Potsgrove	31
Potterspury	239
Prestwood	1,343
* Princes Risborough	1,618
Ridgmont	27
Rushmere	1
St. Leonards	14
Sandy	1
Saunderton	28
Sherrington	3
Slough Borough	2
Southcourt	3
Soulbury	119
Stanbridge	5
Steeple Claydon	189
Stony Stratford	528
Stoke Poges	26
Stratton Audley	1
Studham	3
Sulgrave	1
Tebworth	1
Terrick	2
Tetworth	1
* Thame	965
Tiddington	94
Tilsworth	1
* Toddington	1,530
Totternhoe	120
* Tring and district	2,220
Towcester	26
Towersey	87
Verney Junction	11
Waterferry	41
Water Eaton	1
* Waterstock	52
Wavendon	257
Westoning	1
Wheatley	129
Whiteleaf	3
Wiggington	22
Wingfield	2
Wolverton	15
Woodside	1
* Wycombe Borough and district	709

MISCELLANEOUS

Bucks area	350
Other areas	178
Bedfordshire	1
Berkshire	22
Bristol	5
Cambridgeshire	3
Canada and U.S.A.	10
Cheshire	6
Cornwall	3
Derbyshire	3
Devon	12
Dorset	5
Essex	67
Glamorgan	4
Gloucestershire	6
Hampshire	9
Hertfordshire	134
Ireland	1
Kent	18
Lancashire	2
Leicestershire	3
Lincoln	3
London	216
Middlesex	33
Northamptonshire	44
Nottingham	3
Oxfordshire	49
Scotland	3
Shropshire	3
Somerset	1
Suffolk	6
Surrey	55
Sussex	20
Wales	1
Warwickshire	18
Westmoreland	1
Worcestershire	7
Yorkshire	10

J.D.A.F. 4

W.A.R.A. public meetings

13th March	Meatmore Parish Meeting
15th March	Leighton Buzzard Preservation Society
17th March	Edlesborough Parish Council
17th March	Stewkley Parish Council
20th March	Helpers' Meeting, Equestrian Centre, Wing
24th March	Heath and Reach
25th March	Great Horwood Village Hall
25th March	Stowe Parish Council
25th March	Old Stratford
27th March	North Marston Village Hall
28th March	Bucks County Council Public Meeting, Odeon Cinema, Aylesbury
28th March	Aston Clinton Preservation Society
31st March	Aylesbury Rotary Club
31st March	Aylesbury Rotary Club
31st March	Mursley Village Hall
31st March	Woburn Sands Village Hall
1st April	Little Brickhill Village Hall
1st April	Grendon Underwood
3rd April	Ladies Circle, Bletchley

Printed image digitised by the University of Southampton Library Digitisation Unit

8th April	Harlington Village Hall
9th April	Wing Rural District Council Offices
9th April	Stone Village Hall
10th April	Princes Risborough Parish Hall
10th April	Swanbourne—Winslow Village Hall
10th April	Long Marston Village Hall
14th April	Cheddington Residents Association
14th April	Leighton Buzzard, Bossard Hall
15th April	Aylesbury Round Table
16th April	Bletchley Disabled Club
16th April	West Dunstable Residents Association
16th April	Tring Society
17th April	Wavendon Parish Meeting
17th April	Toddington Parish Council
21st April	Bow Brickhill
22nd April	Newton Longville
22nd April	Elmhurst Council Estate, Aylesbury
23rd April	Aylesbury Trade Union Council
23rd April	Bletchley Grammar School
24th April	Oakley Village Hall
24th April	Ivinghoe, Brookmead School Hall
25th April	Haddenham
29th April	Stoke Mandeville Ex-Serviceman's Hall
29th April	Representative of Parishes in Newport Pagnell R.D.C.
30th April	Leighton Buzzard, Bossard Hall, Representatives of Parish Councils & Societies
1st May	Wing Secondary School Hall
3rd May	Drayton Parslow
6th May	Quainton Parish Council
8th May	Weston Turville Parish Council
8th May	Bierton Parish Council
8th May	Long Crendon Parish Council
8th May	Buckland Parish Council
9th May	Wing Village Hall
12th May	Brooklands Hall, Leighton Buzzard
13th May	Soulbury Village Green Open Air Meeting
13th May	Dunstable Civic Centre
13th May	Grange School, Aylesbury
14th May	Granborough Parish Council
14th May	Great & Little Brickhill Parish Hall
15th May	Great Missenden
15th May	Eaton Bray Village Hall
15th May	Woburn Sands Village Hall
16th May	Eversholt Village Hall
16th May	Tring U.D.C.
20th May	Brill Parish Council
20th May	Hoggeston Village Hall
20th May	Aspley Guise Village Hall
21st May	Mentmore Women's Institute
21st May	Hanslope Parish Council
22nd May	Borough Assembly Hall, Aylesbury
23rd May	Waddesdon Village Hall
27th May	Woburn Parish Meeting
27th May	Kensworth Village Hall
28th May	Thornborough Village Hall
28th May	Thame Town Hall
2nd June	St. George's School, Leighton Buzzard
4th June	Leighton Buzzard, Bossard Hall
12th June	Ickford Village Hall
13th June	Dinton Village Hall
18th June	Ellesborough Parish Meeting
20th June	Gerrards Cross Congregational Hall
24th June	Flitwick Village Hall

J.D.A.F. 5

Local societies supporting Wing Airport Resistance Association

NAME	ADDRESS
Ampthill & District Preservation Society	2 Church Avenue, Ampthill, Bedford.
Ampthill Rural District Road Safety Committee	Council Offices, 12 Dunstable Street, Ampthill.
Aston Clinton Association	12 London Road.
Aston Clinton & Buckland Horticultural Society	Farthings, New Road, Aston Clinton.
Aylesbury Gardening Society	1 Rothesay Close, Aylesbury.
Aylesbury Methodist Circuit	3 Market Hill, Whitchurch, Aylesbury.
Aylesbury Orchestral Society	89 Broughton Avenue, Aylesbury.
Bedfordshire Old People's Welfare Council	23 St. Cuthbert's Street, Bedford.
Berkhamstead Branch of the National Council of Women	1 Upper Ashlyns Road, Berkhamstead, Herts.
The South Bedford Preservation Society	52 Waller Avenue, Luton, Beds.
Bedfordshire Federation of Women's Institutes:	
Eggington	9 The Orchards, Eggington, Leighton Buzzard.
Westoning	11 Church Road, Westoning.
Dunstable	119 Beechcroft Way, Dunstable.
Fulbrook	3 The Close, Station Road, Woburn Sands, Nr. Bletchley, Bucks.
Flitwick	27 The Avenue, Flitwick.
Puloxhill	22a High Street, Puloxhill.
Slip End & Distruct	10 Elaine Gardens, Woodside, Luton.
Chelgrave	1 Toddington Road, Tabworth, Leighton Buzzard.
Studham	Hope Cottage, Pickford Road, Markgate, Nr. St. Albans, Herts.
Toddington	Herne Willow Farm, Toddington, Dunstable.
Houghton Regis	26 Hadrian Avenue, Dunstable.
Hockliffe	6 Alland Avenue.
Flitton & Greenfield	15 Holmewood Road, Greenfield.
Heath & Reach	9 Sheepcote Crescent, Heath & Reach, Leighton Buzzard.
Woburn	Old Police House, Woburn.
Salford & Haicote	The Bungalow, Salford, Bletchley.
Totterhoe	36 Wellhead Road, Dunstable.
Sherborne Crawley	Chain Cottage, Aspley Guise, Bletchley.
Eversholt	Eversley, Witts End, Eversholt, Bletchley.
Wooton	South Fields, 34 Bedford Road, Wooton.
Ridgemont	33 Church Street, Ridgemont.

Printed image digitised by the University of Southampton Library Digitisation Unit

Eaton Bray	9 Church Lane, Eaton Bray, Dunstable.
Houghton Conquest	Little Thickthorn, Houghton Conquest.
Ampthill	59 Bedford Street, Ampthill
Aspley Guise Evening	The Hollies, West Hill, Aspley Guise, Nr. Bletchley.
Millbrook	Mulberry Cottage, Millbrook.
Tingrith	4 High Street, Tingrith, Bletchley.
Haynes	Farthings, Haynes, Beds.
Kempston Rural	39 Ridge Road, Kempston, Beds.
Streatley	New Farm, Barton Road, Streatley.

Berks, Bucks & Oxon North Road Federation of Racing Pigeon Societies	105 Desborough Avenue, High Wycombe.
Bletchley & District Disabled Club	B.R.C.S. Physiotherapy Dept., Westfield Road, Bletchley, Bucks.
Buckinghamshire Federation of Young Farmers' Clubs	Y.P.C. Office, County Farm, Stoke Mandeville, Aylesbury, Bucks.
Buckinghamshire Rural Studies Association	2 Friars Furlong, Long Crendon, Aylesbury.
National Federation of Business & Professional Women's Clubs of Gt. Britain & Northern Ireland	"Browhead", Hillside, Leighton Buzzard.
Chalfont St. Giles Preservation Society	Half Penny, Furze Mill Lane, Chalfont St. Giles, Bucks.
Chalfont St. Peter & Gerrards Cross Historical Society	Carey House, Orchehill Avenue, Gerrards Cross, Bucks.
Council for the Preservation of Rural England (Brill Area Branch)	Bolebec Place, Whitchurch, Bucks.
Council for the Preservation of Rural England (Buckinghamshire Branch)	The Long House, 8 Bishopstone, Aylesbury.
Council for the Preservation of Rural England (North Bucks Branch)	Apple Tree Cottage, Woughton-on-the-Green, Bletchley, Bucks.
Council for the Preservation of Rural England (Oxfordshire Branch)	Wood Green Cottage, Witney.
Council for the Preservation of Rural England Penn County Branch	Seelys Farm, Beaconsfield, Bucks.
The Country Landowners' Association	7 Swallow Street, London, W.1.
Countryside Committee of Beds. Rural Community Council	23 St. Cuthberts Street, Bedford.
The Dunstable Society	13a West Street, Dunstable, Beds.
The Gaddesden Society	Glebe Cottage, Little Gaddesden, Berkhampstead.
The Great Gaddesden Residents Association	8 Church Meadow, Gt. Haddesden, Hemel Hempstead.
Women's Institute	9 Ford End, Haddenham, Aylesbury
Hyde Heath Village Society	"Winstons", Hyde Heath, Bucks.
The High Wycombe Society	17 London Road, High Wycombe, Bucks.
Leighton Buzzard Preservation Society	1 Woodland Avenue, Leighton Buzzard, Beds.
Linslade Horticultural Society	23 Southcott Village, Linslade, Leighton Buzzard.
Little Horwood Residents Association	"Water Croft", 2 Mursley Road, Little Horwood.
Methodist Church Aylesbury Circuit	3 Market Hill, Whitchurch, Aylesbury.
The Methodist Church London North West District	2 The Cloister, Rickmansworth, Herts.
Mid-Bedfordshire Constituency Liberal Assn.	George's Hall, Biggleswade, Beds.
Middle Thames Ramblers	24 Lancaster House, South Lynn Crescent, Bracknell, Berks.
Mursley Ruri-decanal	Linslade Vicarage, Leighton Buzzard, Beds.
Naphill Village Hall & Playing Fields Council	18 Allens Drive, Naphill, High Wycombe.
The National Council of Women of Gt. Britain (Berkhampstead Branch)	1 Upper Ashlyns Road, Berkhampsted, Herts.
National Farmers' Union (Sth. Beds. & East Bucks Group)	Ravenstone Chambers, High Street, Leighton Buzzard, Beds.
North Marston Church	Glebe Farm, North Marston, Bletchley.
North Marston Mothers Union	10 School Hill, North Marston.
Parochial Church Council	Little Brickhill, Bletchley, Bucks.
Seer Green & Jordans Soc.	Wilton Cottage, Puers Lane, Jordans, Beaconsfield, Bucks.
St. Michael's, Stewkley Parochial Church Council	Fern Cottage, Stewkley, Leighton Buzzard.
The Penn & Tylers Green Soc.	Kele Cottage, Penn, Bucks.
Sundon Park Residents Assoc.	22 Kinross Crescent, Sundon Park, Luton.
The Tring Society	1 West Leith, Duckmore Lane, Tring, Herts.
Wendover Society	Bucksbridge House, Wendover, Bucks.
West Dunstable Residents Assoc.	58 Borrowdale Avenue, Dunstable, Beds.
Wingrave Church	95 Winslow Road, Wingrave, Aylesbury.
Wing Parochial Church Council	Wing Vicarage, Leighton Buzzard, Beds.
The Woburn Sands & District Society	Pine Ridge, Wood Lane, Aspley Guise, Bletchley.
Bucks Federation of Women's Institutes	Stuart Lodge, Stuart Road, High Wycombe.
Haddenham Women's Institute	9 Ford End, Haddenham, Aylesbury.
Kensworth Women's Institute	129 Common Road, Kensworth, Nr. Dunstble.
Longwick Women's Institute	Kent Cottage, Longwick, Aylesbury.
Marsworth Women's Institute	41 Vicarage Road, Marsworth, Nr. Tring.
Weedon Women's Institute	Turpin's Orchard, Weedon, Aylesbury.
Whitchurch Women's Institute	35 Oving Road, Whithcurch, Aylesbury.

Printed image digitised by the University of Southampton Library Digitisation Unit

Wigginton Women's Institute	"Delldene", Chesham Road, Wigginton, Nr. Tring, Herts.
Wilstone Women's Institute	19 New Road, Wilstone, Tring, Herts.
Wingrave Women's Institute	San Remo, Winslow Road, Wingrave, Aylesbury, Bucks.
Winslow Women's Institute	47 Sheep Street, Winslow, Bucks.
Woburn Sands & District Society	Pine Ridge, Wood Lane, Aspley Guise, Bletchley, Bucks.

Parish Councils in Buckinghamshire supporting Wing Airport Resistance Association

AMERSHAM RURAL DISTRICT

Amersham
Ashley Green
Chalfont St. Giles
Chalfont St. Peter
Cholesbury-cum-St. Leonards
Coleshill
Great Missenden
The Lee
Latimer

AYLESBURY RURAL DISTRICT

Ashendon
Aston Clinton
Bierton-with-Broughton
Brill
Buckland
Chearsley
Chilton
Halton
Hardwick
Long Credon
Quainton
Stoke Mandeville
Weedon
Wendover
Westcott
Weston Turville

BUCKINGHAM RURAL DISTRICT

Adestock
Biddlesden
Maids Moreton
Middle Claydon
Radclive-cum-Chackmore
Shalstone
Steeple Claydon
Stowe

NEWPORT PAGNELL RURAL DISTRICT

Little Brickhill
Cold Brayfield
Great Linford
Hanslope
Haversham-cum-Little Linford
Great Linford
Moulsoe
Newton Blossomville
Olney
Sherington
Wavendon
Weston Underwood
Woburn Sands
Woughton-on-the-Green

WING RURAL DISTRICT

Aston Abbotts
Cheddington
Cublington
Edlesborough
Great Brickhill
Ivinghoe
Marsworth
Mentmore
Pitstone
Soulbury
Stoke Hammond
Wing
Wingrave

WINSLOW RURAL DISTRICT

Drayton Parslow
Dunton
Granborough
Great Horwood
Hoggeston
Little Horwood
Newton Longville
North Marston
Stewkley
Swanbourne
Whaddon
Winslow

WYCOMBE RURAL DISTRICT

Bedlow-cum-Saunderton
Fingest & Lane End
Great & Little Kimble
Hambledon
Hughenden
Lacey Green
Little Marlow
Longwick-cum-Ilmer
Medmenham
Princes Risborough
Stokenchurch
Wooburn
West Wycombe Rural

Printed image digitised by the University of Southampton Library Digitisation Unit

Parish Councils in Bedfordshire supporting Wing Airport Resistance Association

BEDFORDSHIRE ASSOCIATION OF PARISH COUNCILS:

AMPTHILL RURAL DISTRICT

Aspley Guise
Aspley Heath
Battlesden
Cranfield
Eversholt
Harlington
Flitwick
Flitton
Houghton Conquest
Gravenhurst
Husborne Crawley
Milton Bryan
Ridgmont
Moulden
Silsoe
Woburn

BEDFORD RURAL DISTRICT

Kempston Rural
Little Staughton
Odell

BIGGLESWADE RURAL DISTRICT

Arlesey
Northill
Southill

LUTON RURAL DISTRICT

Billington
Caddington
Easton Bray
Eggington
Heath & Reach
Hockliffe
Stanbridge
Streatley
Sundon

Other Parish Councils supporting Wing Airport Resistance Association

NAME	ADDRESS
Turville Parish Council	Oak Tree Cottage, Turville Heath, Henley-on-Thames.
Urban District Council of Thame	Town Hall, Thame, Oxon.
Aldbury Parish Council	Cherrycroft, Aldbury, Tring, Herts.
Brackley Rural District Council	Brackley Lodge, Brackley, Northants.
Stadhampton Parish Council	The Limes, Stadhampton, Oxford.
Old Stratford Parish Council	39 Manorfields Road, Old Stratford, Wolverton, Bucks.
Kingsey Parish	The Old Vicarage, Kingsey, Aylesbury, Bucks.
Deanshanger Parish Council	25 Church Lane, Deanshanger, Wolverton, Bucks.
Pulloxhill Parish Council	30 Tyburn Lane, Pulloxhill, Herts.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY MR. D. R. SKINNER*

1. I am an Insurance Agent and am the General Secretary of the Aylesbury Trades Union Council. I am also a member of the local Advisory Committee to the Department of Health and Social Security; a member of the Buckinghamshire Advisory Committee to the Department of Employment and Productivity; a member of the Mid Bucks Productivity Council and Chairman of the Programme Planning Committee; Group Treasurer of the Scout Association; Branch Secretary of the Waddesdon and District British Legion; Benevolent Secretary of the Whitchurch and District British Legion; Secretary to the Mid Bucks (Vale) Group of British Legion Branches; Treasurer to the Waddesdon Village Hall Committee; and Delegate of the National Union of Insurance Workers to the Aylesbury Trades Union Council.

2. As an Insurance representative I cover an area stretching from Winslow to Aylesbury and from Doddershall and Quainton to Weedon and Hardwick, I can say that I visit one in every three houses in this area. As a member of the British Legion, I have knowledge of the people living in a large area of Mid Bucks and, as the General Secretary of the Aylesbury Trades Union Council which has over 5,000 affiliated members, I have knowledge of a great deal of working class problems.

3. I would say that to my knowledge, the majority of people in this area are against the Third London Airport being sited at Wing. Without studying the Noise and Number Index contours, they know that there will be a serious noise problem from the airport, not only from the aircraft landing and taking off but from testing and taxi-ing and also from the general build-up of traffic in this area. This is despite expert opinion expressed one way or the other. They have heard that the alignment of the runways have already been altered from the original plan and can be further altered and they know that NNI contour annoyance figures are only based pn average aircraft on an average day with average traffic with an average person listening, and they are very suspicious of averages and statistics. They know that aircraft are becoming larger and they suspect noisier. They have read of the effect of supersonic bangs, etc, and they are afraid when eventually an aircraft does crash in this area, they will be in danger. They know that Heathrow is still expanding and they believe and despite any assurance to the contrary they will still believe that if an airport comes to Wing, it will keep growing and absorbing the surrounding countryside.

4. They realise that the character of the countryside will change and they believe that the whole of the countryside will become urbanised to accommodate the vast amount of families moving into this area. They have already seen Aylesbury and Bletchley expand beyond recognition and this expansion has taken place gradually over the past twenty years. They do not think that amenities have kept pace with this expansion and are suspicious of any large scale expansion in this area. In the villages, the change has been more gradual and it has been the policy of the Bucks County Council not to enlarge villages beyond their capability to absorb newcomers. This has met with widespread approval from the majority of people living in village communities.

5. They do not desire any increase in traffic through the villages and they wonder why they are to be suddenly overwhelmed with development. They wonder why existing airports cannot be fully employed to take the anticipated increase in air traffic and they wonder why an airport at Foulness which they read is requested by the people living in that area cannot be built. An airport which would reclaim land from the sea which they believe is quite feasible. They wonder why this cannot be done and they are suspicious of any expert who says this cannot be done.

6. From the Trades Union's point of view, I must state that the Aylesbury Trades Union Council have only had a general discussion on the subject of the airport but on a vote, the majority of delegates present were against the airport at Wing. Some Trade Unionists, a Branch of the Transport and General Workers Union in particular believe that an airport at Wing would benefit them in an increase in wages. This is because they know that the rate for tanker drivers at Heathrow is well above the Mid Bucks rate. However, any rate fixing for a job would be subject to negotiation and would depend upon the demand for workers and the supply of workers in this area. From the wages point of view, no doubt a certain number of workers in this area would benefit from the siting of an airport at Wing but I personally believe that health and happiness comes before anything else and that the pursuit of money is not everything. In this view I am supported by many of my colleagues in the Trades Union Movement.

7. The Engineering and Craft Unions appear to be against an airport being sited at Wing. They know that there are many vacancies for workers in this area and that despite closures and redundancies from some large factories in this area the majority of workers

* See also p. 1608.

Printed image digitised by the University of Southampton Library Digitisation Unit

are being absorbed without trouble. They know that proposed new factory development coming to this area together with the factories being planned in the Milton Keynes area will absorb any spare personnel.

8. In the Aylesbury district people have seen the Technical College, College of Further Education and the Industrial Training Centre come into being during the last few years and educating their children to a very high standard and they believe that work available in this area can absorb the output from these establishments. Their main worry is that when their children grow up and marry, there is a lack of accommodation for them to start married life. This is a worrying problem for most parents and they believe that with an airport coming to this area, there would be less accommodation available. They know that there are 3,500 families in the London area who are homeless and that the Minister of State for the Department of Health and Social Security has stated that these numbers are rising. They are suspicious that the excuse of an airport in this area would mean the bringing of many of these people into the area. Whilst the airport and roads are being built, they know that the temporary workers will create a problem and they honestly doubt if any supposed prosperity that the airport will bring will in fact be worth the trouble.

9. I myself know that many old people really dread the thought of an airport at Wing and that many Trade Unionists do not want an airport in this district.

I am fully in accordance with this view.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY SIR ARTHUR BRYANT*

I am a historian, an Honorary Doctor of Laws of the Universities of Edinburgh, St. Andrews, and New Brunswick, a Fellow of the Royal Society of Literature and of the Royal Historical Society, a Vice-President of the Royal Literary Fund, an ex-President of the English Association and a former Chairman of the Committee of Management of the Society of Authors. For thirty-three years I have written a weekly page on public affairs in the *Illustrated London News*, and have contributed regularly, at different times, to the *Sunday Times*, *Observer*, *Sunday Express* and other national newspapers. My experience has not been wholly confined to writing, for I served as a pilot in the first World War, and have been a Schoolmaster, a Local Government educational administrator and Principal of a Technical College. I am a Barrister-at-Law, an Honourary Liveryman of the Leathersellers' Company, an honorary member of the Southampton Chamber of Commerce, and a Trustee of the Historic Churches Preservation Trust. For nearly a quarter of a century now I have been Chairman of the St. John and Red Cross Hospital Library, and for twenty years a farmer and breeder of pedigree cattle, in Dorset and, since 1964, in Bucks.

I first came to live in the county in 1925 and today have a house at Wotton Underwood at the western end of the Vale of Aylesbury and a farm at Crafton near Wing. Between the wars I lectured every winter on local history for the Oxford University Extension Delegacy in most of its towns and many of its villages and during the last War, as Lecturer to H.M. Forces, in its Army Camps and R.A.F. stations, including Cublington. In the years when I was a Governor of Ashridge and Chairman of its Educational Council, I used to pass several times a week through Stewkley and Wing on my way to and from my then home at East Claydon. I thus have a wide personal knowledge of the county, its topography and history and particularly of its central strip known as the Vale of Aylesbury which crossed it diagonally from N.E. to S.W. and which the proposed Third London Airport, if sited at Cublington, would transform from a thriving agricultural district of distinctive scenic beauty, full of historical and cultural associations, into an urban and industrial conurbation given over to perpetual noise.

For owing to the alignment of the proposed runways, it is precisely the Vale of Aylesbury, with its beautiful villages, rich pastures and wealth of historic houses and cottages which would be destroyed, as we and successive generations have known it. I can think of no comparable area in southern England—certainly none within fifty miles of London—where a greater extent of unspoilt scenic beauty and rural peace would be transformed by the requirements of an international airport several times the size of Heathrow; indeed, if a site had to be chosen for the express purpose of inflicting the maximum possible damage on rural amenity and historical association, it would be hard to find one more capable of doing so. From Thame in Oxfordshire to Woburn in Bedforshire, as the maps issued by the Commission on the Third London Airport show, a galaxy of lovely villages unsurpassed anywhere between the industrial Midlands and the Channel coast would be engulfed in a corridor of continuous noise and uproar—the three Brickhills, Stoke Hammond, Soulbury, Aston Abbotts, Cublington and tiny secluded Dunton—both of which, with Stewkley, would be demolished—Hardwick, Weedon, Hoggesden, Whitchurch, Oving, Pitchcott, Quainton, Dinton, Cuddington, the two Winchendons, Grendon Underwood, Chearsley, Long Crendon, Ashendon and, probably, though outside the 40 and 45 NNI contours, the hill town of Brill, while a far wider area stretching from Buckingham and Stony Stratford in the north to the centre of the Chiltern hills and comprising almost the entire rural part of the county would be robbed of peace and quiet. Of Quainton—by no means the most outstanding of the Vale's villages—with its exquisite Winwood almshouses, windmill, grey church tower and clustering, mellowed red brick houses beneath its sheltering hill, I wrote during the War: "In this place, with its still unbroken peace of centuries, the past is very near to the present. All English history—its strength, its sleeping fires, its patient consistency—are contained in its speaking silence." It is this silence and peace that a great international Airport would unavoidably destroy for ever. An organic part of the permanent heritage of England, as near to perfection as anything of its kind at present existing, which has taken centuries to evolve and has bred successive generations of good Englishmen and today supports highly efficient and up-to-date industry producing the most essential of man's needs—food—would be sacrificed to the requirements of a form of transport, the space demands of whose terminals are so extravagant and wasteful of other national assets, including homes and farmlands, that, with the present pace of technological and scientific progress, it seems more than possible that in the course of the next half century some other and less wasteful means of providing air transport will be sought and found. Yet

* See also p. 1610.

Printed image digitised by the University of Southampton Library Digitisation Unit

should the airport and its ancillary towns and industries be rendered superfluous by new inventions, the permanent national asset which had been destroyed to construct them could never be replaced.

If one stands on the summit of Muswell Hill—one of the noblest viewpoints is southern England—and looks eastwards up the Vale of Aylesbury one can see the extent of what would be destroyed or transformed. It is hard to define the beauty of the Vale, for it is compounded of ever-changing light, but whether seen from the Chiltern escarpment or from the hills which rise like islands in the midst of its undulating plain, that checkered landscape of soft greens and browns, reflected clouds and far blue horizons is unsurpassed anywhere in southern England. It is the landscape which Rex Whistler painted and the deep-rooted countryside which A. G. Macdonell in his *England Their England* described with such affection and understanding: "the loveliest of English names, the Vale of Aylesbury . . . Pasture and hedge, mile after mile after mile, grey-green and brown and russet and silver where little rivers tangle themselves among reeds and trodden watering-pools." With the county's southern part now given over to suburbia, industrial Slough and the western approaches of Heathrow, and much of the north to be swallowed up in the projected new town of Milton-Keynes-cum-Bletchley-cum-Wolverton, the survival of the Buckinghamshire landscape for future generations depends on the preservation of the Vale of Aylesbury. It should not be forgotten that of the ever-growing number of American and foreign travellers who come to England to see its historic sights, landscape and antiquities, a large proportion visit and pass through Bucks, and that the rich agricultural vale below the Chiltern escarpment, with its buttercup meadows, hedgerow elms and red-brick and half-cast 17th century cottages and soft blue horizons is often the first and unforgettable impression they receive of the English countryside. Even on the most mercenary considerations, it would seem a mistake to transform such a currency-earning tourist asset into a vaster and noisier Heathrow if any less beautiful and historic terrain can be found to accommodate an international airport.

The Vale is as rich in history as in beauty. It lies at the heart of the famous political shire which was the home of Hampden and Burke, of Disraeli and Rosebery, of the Grenville cousinhood which governed England through its most brilliant member, Chatham, at the apex of Britain's 18th century glory, and, more recently, at Chequers, with its close associations with Cromwell, the country retreat of Britain's two great War Ministers, Lloyd George and Churchill. "All this part of England," wrote Disraeli, who loved it and delivered many of his speeches to gatherings of his farming constituents in Aylesbury, "is history." Once, asked in the House of Commons by a mocking opponent, where now were the freemen of Bucks, he replied "Where one would expect to find them, of course, in the county of Bucks!" Among the historic houses—in addition to countless humble homes no less comely and ancient—which would be affected to a greater or lesser degree by noise and increasing urbanisation are Chequers and Hampden, Hartwell and the wonderful 14th century Doddershall—one of the oldest of England's habited houses and situated in what would be the heart of the noise storm and vibration-disturbance—Oving, Ascott and Mentmore, Dinton, Tythrop, Dorton, Chilton and Wotton, and the great National Trust properties of Claydon and Waddesdon with all their treasures.

I have not dwelt specifically on the villages—Stewkley, Cublington and Dunton and, inevitably before long, one fears, Aston Abbotts, Wing and Soulbury—whose homes and surrounding farms and fields would disappear altogether with the building of the airport and its runways and access roads. Of the three churches that would be immediately demolished two are included among the notable churches of the county listed in the National Trust's *Atlas* and Sir John Betjeman's *Guide to English Parish Churches*, while Wing, little more than a mile from one of the projected runways, is believed to be one of the oldest, and even possibly the oldest place of religious worship in the country. Stewkley, of which not a stone would remain if the airport were to be built here, is among the finest of the very few Norman churches remaining in England and, as such, a national architectural treasure, whose destruction, if civilisation and Christianity survive, future generations would find it hard to forgive. In the little church of Dunton, with its box pews, gallery and medieval roof-timbers there is an inscription which reads:

> "For 800 years successive generations have met here to offer the sacrifice of praise and thanksgiving and to pray for themselves and others to your heavenly Father. . . . You stand on Holy ground hallowed by ages of Christian worship."

Those to whose lot it fell to demolish these churches would stand on such holy ground, as, indirectly, would those who had to order their demolition. In these and in every parish church in the county are the names of the men who in two world wars gave their lives defending, as they thought, their familiar homes and fields. In some cases they numbered half the adult male population of the village. They fought and died that England, as they knew it, might endure and be saved from destruction, and that the Englishman's traditional freedom from tyranny and arbitrary injustice won by their forefathers should be preserved for their posterity.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY SIR JOHN BETJEMAN*

I am a member of the Royal Fine Arts Commission.

My reasons for making this statement are two. I am a disinterested person from outside who has no property in the area. In the course of my work as a topographical writer who also makes films and broadcasts, I visit many parts of England using my eyes, nose and ears.

When I heard that there was to be an inquiry about Cublington, I felt impelled to make a statement. I had known the county well and in 1948 John Piper, the artist, and I, published an illustrated guide to the county with John Murray.

There are three sorts of country in the counties near London. The most prevalent is the *near-country*, that is to say places where fields survive among widely scattered houses and which are not quite suburb. South Buckinghamshire is an example. Much of Surrey is another. Then, secondly, there is *consciously preserved country* such as may be found in Sussex and which becomes National Park, this is often unproductive moorland and heath and belts of conifers. The third sort of country is the kind into which the proposed siting at Cublington falls. That is to say, it is real country where agriculture is a primary occupation where the same families have lived for generations, where the farms and villages are the gradual growth of the centuries, the new blending fairly comfortably with the old as it does in Soulbury and indeed in all the villages in the area threatened.

The scenery here in North Buckinghamshire is the sort that Henry James described as "unmittigated England." Elms, oaks, ashes and sycamores, red brick farms, houses and barns, the brick varying from the dark brownish red of tudor brick through the dark red brick patterned with "sanded headers", (dark blue glazed bricks) popular in the 18th Century, to the pale red and yellowish brick of the early 19th Century particularly on the Bedfordshire borders of the area. There are half timbered cottages with brick infilling and in the western part of the area limestone cottages with brick quoins.

There is thatch for roofing as well as tiles and slates. It is all unpretentious village building and could never be replaced. The roads between the villages wind and climb, the prospects vary every few yards. Considering how near to London the Cublington site is, it is amazing what wide prospects there are from its heights, of trees and broad vales. It is the scenery that inspired William Cowper and John Milton.

I visited all the villages near the Cublington site having not seen them since 1948 and found them surprisingly little changed and where new houses had been introduced I could see that with time they will be part of the pattern of each village. The least spoiled and the saddest was Dunton whose church is one of the very few churches in Buckinghamshire, to escape Victorian "restoration", at any rate so far as the nave is concerned. It has box pews, clear glass and a west gallery. It has the vestige of a village green and attractive Georgian and Tudor brick houses, sycamores and an unfenced road. This village is to be entirely destroyed. The village of Hoggeston, a mile north west of it, will become so noisy as to be uninhabitable, and is really one of the best villages in Buckinghamshire, so far as the eye is concerned. Cublington itself, with its red brick and thatch, is the sort of village one would give a prize to as undisturbed England. That, too, will disappear. The long street which is the village of Stewkley is a true story of the growth of the century. Its Norman church is one of the few complete tri-partite churches in England and was most sympathetically restored by George Edmond Street in the last century. Wing is another varied village with more to show even than Stewkley and it has a Saxon church of unique plan and impressive splendour of proportion. To go to the western part of the area threatened, Whitchurch is singularly unspoiled, despite the fact that a main road runs through it. Its church is Medieval, stately and enormous. The village is full of old cottages and what looked like large farms or small manor houses, it has winding streets and trees and garden walls. In fact, I am not sure that it isn't the best village of the lot threatened with destruction or partial destruction.

It is no good though thinking of these churches and villages and country houses as buildings worthy of preservation. One has to think of them in terms of people. They are part of the lives not only of the people who are going to be turned out of them but of everybody in the neighbourhood who knows this part of Buckinghamshire and with the growth of Aylesbury, Bletchley and the new town of Milton Keynes, the part chosen for the site is a vital bit of real country as a relaxation from the noise of industrialised urban life and the bleakness of planned dormitory towns. This is not, I realise, a matter of economics. One cannot assess in terms of cash, or exports and imports, an imponderable thing like the turn of a lane or an inn or a church tower, or a familiar sky line. Just try driving as I did with the wind behind you and a western sun, on the leaves of elms and oaks, along the pleasant undulations from

* See also p. 1612.

Printed image digitised by the University of Southampton Library Digitisation Unit

Winslow via Swanbourne, Drayton Parlsow and Hollingdon to Soulbury and you will see what I mean. All the same it is what one means by England and to lose this bit of unselfconscious intimate and friendly country so near to London is to lose part of ourselves—and also maybe part of the tourist trade.

I write as a Londoner who has explored all the counties of England, south of the Trent, fairly thoroughly. I would say that if there were the possibility of an aerodrome near to London which would destroy the peace of a maximum amount of genuine English landscape only Stansted would be a worse choice.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY THE RT. HON. SIR ERIC FLETCHER

I am the Member of Parliament for East Islington. I am a Fellow of The Society of Antiquaries and an ex-member of its Council. I am a past President of the British Archaeological Association. I am a Solicitor of the Supreme Court and from April, 1966 to November, 1968 was Deputy Speaker of the House of Commons and Chairman of Ways and Means.

I have taken a life-long interest in Pre-Conquest ecclesiastical architecture in this country, and have conducted a number of excavations and written a series of papers on Pre-Conquest Churches.

I understand that the proposals for establishing the Third London Airport at Cublington could involve the demolition of All Saints, Wing.

I would regard this as a piece of inexcusable vandalism. It would destroy one of the most important monuments of Pre-Conquest Christianity in this country.

The Church of All Saints, Wing, is unique in many respects. There are only three surviving Pre-Conquest Churches of basilican plan in this country of which Wing is one, although there are others of which literary records remain.

There are only three Pre-Conquest churches which retain a crypt, and the Church at Wing is one of these. The co-incidence in All Saints of the basilican plan with the retention of a crypt raises issues of considerable historical and archaeological interest.

During recent years some progress has been made in exploring the significance of the architectural developments of Anglo-Saxon Church building, and its relevance to the conversion of England to Christianity in the Dark Ages.

Whereas there is some literary evidence of the 7th century conversion of Kent and Northumbria, little is known from literary sources about the equally significant mission of St. Birinus and of Wilfrid in the 7th century to Wessex and Mercia. The Church of All Saints, Wing, is of outstanding importance in the study of this subject.

The late Mr. Dudley Jackson and I conducted a series of excavations at Wing in 1960 and 1961 and published a paper in the British Archaeological Association Journal dealing with the apse and crypt of the Church.

Whilst our conclusions have been received with respect in knowledgeable quarters, they were by no means exhaustive and indicated further lines of inquiry.

In these circumstances, I am sure that I am speaking for all those interested in the history of the Anglo-Saxon Christendom in saying that it would be most deplorable if this unique and important national monument were to be sacrificed.

I am also aware that the proposals for an airport at Cublington would involve the destruction of St. Michael and All Angels at Stewkley and destruction of this church would deprive the nation of an outstanding example of Norman architecture.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY MR. G. I. GINN*

1. I was born and educated in Bedford. I am 49 years old. I have been Headmaster of Stewkley School for the past 16 years.

2. **Stewkley the village.** It stands in beautiful and fast disappearing rural countryside within 40 miles of Tower Bridge. It should be preserved as a recreational area for town and city dwellers. It has several buildings of historic value including a 13th century manor house, an Elizabethan farmhouse and of course the Norman Church.

3. **The School.** It is a four teacher school with 124 infants and juniors. The school plays a big part in the community life of the village. Out of school activities include:

Christmas Carol Concert for the Village in the Village Hall—proceeds to Charity.

Christmas Carol Service in Church—proceeds to charity.

Musical concerts to the Village Chapels, when asked.

A May Day festival of dancing in the village square—proceeds usually to charity but this year to W.A.R.A.

The village children are very stable, friendly, good-natured and quite charming. A family relationship exists naturally between staff and pupils. We have very few difficult children in the school and any we do occasionally have usually come in from elsewhere. New children from outside are always made a great fuss of by village children and settle in very quickly. This does not happen as a result of pressure from teachers. It seems to be the nature of Stewkley children. I naturally regard them as something rather special.

4. **The Dramatic Society** (a typical village organisation). This started in 1953 and has continued without a break ever since with 25–30 members. The current ones were school children when I arrived in the village. The society represents a complete cross section of the community and has in it young and old, the rich and the not so rich, church people and chapel people. Everyone works together very successfully. The Society puts on two three-act plays a year in the Village Hall. There are good audiences from Stewkley and surrounding villages.

5. **The villagers.** Stewkley is not just a dormitory village, it is a living, thriving community which has taken a thousand years to evolve. Many organisations exist in it. The typical villager is independent and has a liberal outlook on life. Opinions are apt to be held very strongly in the village, particularly about airports, but there has never been any question of violent disagreement, or of villagers coming to blows over the matter. I may say that the pro-airport faction is very very small, but there has been no hint of persecution by the vast majority. In this tolerant community any action of this kind would be unthinkable. New residents to the village frequently remark how friendly everyone is in the village, and this is true.

6. Since the airport threat, the village has been particularly united. The best qualities of the English have shown themselves in the face of disaster. There has been unstinted effort, and a gay determination to preserve their village by all means in their power. It is a source of pride to me to be sharing this ordeal with them and I feel very honoured to speak for them. I am not alone in this. Their talents, and fighting spirit are recognised by surrounding villages and Stewkley has emerged as the natural leader of those opposed to the siting of the airport in this area.

Other objections (objective) to siting the airport here

The danger of precedent

(a) Rural England is precious and fast disappearing. This airport, with ancillary developments, would eventually cover an enormous slice of rural England. If it were sited here, or indeed anywhere inland, a dangerous precedent would have been made. The 4th airport would be built with far less fuss.

(b) The Stanstead inquiry showed clearly that an airport sited there would be a mistake. Most of the objections to Stanstead also apply to Wing. Is not the real question: Where *on the coast* ought the 3rd London Airport to be?

*See also p. 1614.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY MRS. V. OSBORN*

1. In the event of Cublington being chosen as the site for London's Third Airport, my whole life and that of my family would be completely ruined.

2. I have lived in Cublington for 15 years but have been associated with the area through four generations. My family and that of my husband, having their roots in Aston Abbotts.

3. Ridings Cottage, my home, was at one time a farmhouse and historical records go back 500 years. A great amount of time and money have been spent in renovation and preservation of the house.

4. The surrounding garden of ¾ acre has glorious views over undulating countryside and over the years ornamental trees and shrubs have been planted and tended with loving care.

5. I have two daughters aged 12 and 7 years. The younger over the past four years has suffered severe asthma and it is of great importance that we live in an area unpolluted by smoke and fumes.

6. My parents and those of my husband live in Aston Abbotts, approximately 1½ miles away. We are both only children and therefore feel a sense of duty to be as near them as possible and they, in their turn would feel utterly lost, should we be torn apart.

7. My husband is a Master Grocer and is carrying on the business in Aston Abbotts which his parents established 50 years ago.

8. A business built on hard work and personal attention to customers.

9. Living in a village, one becomes an integral part of the community. Church, Chapel, Mothers' Union and Women's Institute bring people together. Warm friendships exist between both old and young.

10. To be severed from Cublington, my family, home, garden and good friends—the thought is unbearable and quite unthinkable.

*See also p. 1616.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY MRS. A. MORTON*

1. I shall not go into technical details against the proposed airport. I am being adequately represented on this count by the Wing Airport Resistance Association. These are my own feelings as a native of Wing and an ordinary housewife.

2. I was born and grew up in Wing and after some years away, I married and returned here to build a house and raise a family. I came back not because Wing is unique in England, nor because my family tree goes back some 100 years and I know the area well but because it is a pleasant place to 'live' and I stress 'live'. I want to learn to 'live' and not be caught up in the suburban commercialism which stifles so many people.

3. Being outside the actual airport boundary, our house will not be flattened but it will be impossible for us to continue to live here. Mainly for noise reasons but also because it will no longer be a "pleasant place to live" but an asphalt jungle with concrete trees inhabited by metal boxes. We would find it virtually impossible to sell our house or to buy another house in a similar situation and with a view like ours. It would also mean uprooting myself, disrupting my children's education and parting from my mother who lives alone a few doors away.

4. These are a few personal reasons I have. They are the same as many, many others you will hear. They must not be disregarded—they are all valid. If Britain really needs such a large airport—and this I question most strongly—then it *must* be where it is of least destruction and inconvenience. Cost is irrelevant when spread over future decades. For the sake of saving a few million pounds, you are considering raping People, a way of life and acres of land when there is an obvious alternative in a coastal site. It happens all the time in the name of Progress. Real progress comes from learning to love and live together—*not* from making more money and building bigger and bigger monsters of concrete and metal. *These monsters are destroying us.* Sometime soon someone has got to cry STOP and *we* are saying it now. We *must* have a time and a place to stand and stare or we are nothing.

*See also p. 1616.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association and the British Medical Association, Buckinghamshire Division

SUBMITTED BY SIR LUDWIG GUTTMANN*

1. I have carefully studied the statements of the Royal Buckinghamshire & Associated Hospitals Management Committee and the County Medical Officer of Health for Buckinghamshire,† and I am in full agreement with all the points made by these authorities.

2. The Buckinghamshire Division of the British Medical Association represents a complete cross-section of the Medical Practitioners living, and working, in the area. There are 340 members in the Division.

3. At the recent Annual General Meeting there was unanimous opposition to the Wing Site. In addition many members have written, or spoken to the Executive Committee of the Division, supporting their opposition to the Wing Site.

4. Medical opposition to the site is twofold. On a personal basis Doctors regard the site as a considerable nuisance. On a professional basis they regard the site as detrimental to the health of the patients for whom they are responsible.

5. Some members will have their livelihood, or their homes, or both, physically altered by the actual siting of the Airport itself, plus the associated developments in housing, transport facilities, etc. It is impossible to estimate numbers in this situation due to lack of information about the plan.

6. Some members have written to say they will emigrate, at least from this area, if the Third London Airport is sited at Wing. Many others have expressed the view that they would seriously consider emigration.

7. One of the pleasing aspects of our profession is the freedom to work where one wishes—within obvious limitations of selection etc. It is generally the practice that Doctors live near their work—unlike other professions where it is quite common to live and work in widely separated places. North and mid-Buckinghamshire has certain attributes which make it attractive to medical people for living and working. This is basically a rural area, but with easy access to commercial and cultural centres such as Oxford, London, Northampton, Bedford, Aylesbury and High Wycombe. Proefssional attractions in the area are many—reasonable Doctor/patient ratio, high class post graduate facilities, good relationships between various branches of the profession including G.P., hospital beds, health visitor attachments and good facilities for in and out patients, some notable international and regional specialist units. These attractions have always helped in recruiting Doctors into the area. Any major change which would alter any of the positive factors, combined with the certainty of some loss through emigration, could only reduce recruiting into the area and thus tend to lower standards of service.

8. As a learned profession, with a direct responsibility for the health of the local population, we feel very strongly that we must express fears for their future health. Although there is no positive proof, yet, of detrimental health effects from the potential noise—and air pollution—this does not mean that it cannot happen. History is full of examples of comparable situations where bitter health lessons have been learned after many years of tolerating potential hazards.

9. I would like to add my personal experience in the problem of aircraft noise, as the former Director of the National Spinal Injuries Centre, Stoke Mandeville Hospital, from 1944 to 1966. Stoke Mandeville Hospital contains the largest Spinal Injuries Centre in the world, with a total of 220 paraplegics and tetraplegics, dealing with both acute and long term stages of injuries and diseases of the spinal cord. These men, women and children suffer from one of the most severe afflictions of the body which can befall a human being. An injury or disease of the spinal cord results in a paralysis of all voluntary movements below the level of the injury, which may affect just the lower part of the body (paraplegia) but may affect also the greater part of the body (tetraplegia). Furthermore, control of bladder, bowels and sexual function is abolished and most forms of sensibility are also affected. A great number of these patients suffer from pain, which can be aggravated by various external factors, amongst which noise plays a very important part. In the acute stages, one of the predominant symptoms is the disturbance of sleep, which, of course, adds to the psychological upset of these patients.

It was during the war that I became very much aware of the deleterious effect of aircraft noise on these patients, particularly in the acute stages. Therefore, I can already speak from personal experience in this matter. To be subjected to continuous noise of the modern aircraft, such as would occur from a large airport in the neighbourhood of Aylesbury,

* See also p. 1618.
† p. 1038.

Printed image digitised by the University of Southampton Library Digitisation Unit

would very seriously interfere with the treatment and rehabilitation of these patients.

10. The Paraplegic Sports Endowment Fund has just built on the sports ground of Stoke Mandeville hospital a Sports Stadium for paralysed and other disabled men, women and children, where many sports events of the disabled will take place during the year, both in the Stadium itself and on the open sports ground. As Director of the Stadium, I am very seriously concerned that this valuable work of using sport for the physical and psychological rehabilitation and social re-integration of the disabled into the community would be seriously interfered with by the noise from modern aircraft, if an airport were set up in the neighbourhood of Aylesbury.

11. My concern regarding the seriously ill patients in the National Spinal Injuries Centre is also extended to other seriously ill patients in Stoke Mandeville Hospital, including in particular children and burns cases. Moreover, as already mentioned in the other reports, there is a relatively large number of geriatric and elderly patients, who also would suffer from the constant noise of modern aircraft and would have their lives made utterly miserable in consequence.

In conclusion, I can only view with alarm the prospect of having modern aircraft operating in the neighbourhood of Stoke Mandeville Hospital and am strongly opposed to the setting up of the third London airport at Wing.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY CAPT. D. J. BELLINGHAM*

1. At a meeting of the Aston Abbotts Parish Meeting on the 2nd May 1969 a resoltuion opposing the siting of the above at Cublington (Wing) was passed unanimously.

2. The Parish of Aston Abbots is an agricultural area, there being 11 farms in the parish, of which eight are owner occupied. The land is highly productive, well farmed and maintained. The number of persons in full time employment in agriculture in the village is 36 (30 per cent of the householders in the parish—some persons reside outside the parish and work in Aston Abbotts also). The term agriculture includes horticulture.

3. There are 95 house properties in the parish, all of which are well maintained and possess modern conveniences. 33 of these are owner occupied. A further 24 are tied cottages provided by the employer in connection with farming and private service. 38 houses are rented.

4. The village is picturesque, and 11 of the houses are over 200 years old, being valuable and irreplaceable in their present setting. Those of historical and archaeological interest are listed.

The Old Cottage (now village shop). In the centre of the village, originally a farmhouse, dates back to pre 1500 and scheduled as an historic building.

Burst-on Farm part to before 1700. A scheduled building on or close to site of the original village of Burston.

The Abbey Originally a farm, owned and maintained by the Monastery of St. Albans until the time of the dissolution of the Monasteries. A large house in a beautiful wooded garden with some fine and rare specimen trees; part of an original moat forms an attractive feature of the present garden. The Abbey was for some time the home of the explorer Sir James Clark Ross, discoverer of the Magnetic Pole. Buried in the parish churchyard in 1862. During the Second World War the Abbey was the home of the late Dr. Eduard Benes, then President of Czechoslovakia.

Oak Farm A unique property, and one of the oldest in the village.

Royal Oak Public House Half timbered period property dating back to 1700.

Church Farm Similar to above.

The Parish Church of St. James dates back to before 1325 when the first vicar was instituted. The stone tower is original; the nave and chancel were largely re-built about 100 years ago.

5. There are at present 59 persons on the church electoral roll. Services and Sunday School are held each week. The Methodist Church was built in 1862. Services are held each Sunday, also Sunday School, and mid week women's services, the current membership being 20.

6. The village is a particularly close knit community with a population of 276 (208 adults, and 68 children under the age of 16 years). Many of the householders have roots going back through two or three generations who have lived in this or neighbouring parishes. 43 householders are employed full time in the village, and 23 wives of householders; 55 householders and young persons work in the local towns, and 35 people are eligible for retirement pensions.

7. Village activities are enjoyed by a wide cross section of the community, and we have an active Mother's Union; Ladies Club; Youth Club; Football Club; a biannual fete in the grounds of the Abbey, whist drives, bingo and many other social activities in the Church Room. Each year an old folks outing is arranged by the village.

The village has a modern primary school.

8. We have recently applied for permission to change from a Parish Meeting to a Parish Council, and there is a growing interest in parish affairs.

9. The northern end of the parish would it would seem, disappear in the actual site, dispossessing farmers of their land. Some of this land in the site, forms part of the land known as Great Ground, renowned for its capabilities as grazing and fattening land, and mentioned in history books as being used for providing beef and mutton for the Tudor courts of England. Future developments arising from the building of an airport here would undoubtedly make further encroachments. The parish is particularly lucky in enjoying some of the finest scenic landscape in the county—at Lines Hill for example, which has views across the Vale of Aylesbury to the line of the Chilterns and over Oxfordshire.

10. The Parish feel that Aston Abbotts, which is typical of many of the beautiful unspoiled North Bucks villages, should be allowed to develop in its own way, and that North Bucks should be preserved in accordance with the plans of the Bucks County Council, and wish to go on record to this effect in the strongest possible terms. Aston Abbotts is situated away from main roads and enjoys a quiet country

* See also p. 1622.

Printed image digitised by the University of Southampton Library Digitisation Unit

atmosphere. A large number of people enjoy the amenities of the parish as tourists, particularly at weekends, when there is an influx of visitors to the area. The effect of siting an airport at Cublington would destroy these amenities, by bringing in increased road traffic, with the likely alteration of existing roads or the building of new roads, urban development, and place the village in the 60 to 40 NNI contour line. This would mean that the average villager, who lives here because he likes the way of life in North Buckinghamshire, would find it necessary to move and would suffer a financial loss as a freeholder, or as a tenant. Alternatively if he stayed, in a village which could become an acoustic slum, then his way of life would be completely altered—a way of life which 96 per cent of the parish earnestly wish to preserve.

The Parish Meeting would finally restate its opposition to the proposed siting of the airport, and would like the Commission to know the strength of the feeling of the Parish following the shattering effect this proposal has had.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY MR. W. G. ANDREWS*

1. I am the Chairman of the Parish Council, and have been Chairman for the last 14 years. I have lived at the Three Locks since 1912. The house I live in was built in 1937, prior to this I lived with by father who was licensee of the Three Locks Public House from 1912 to 1936. My house adjoins the Three Locks, behind which runs the Grand Union Canal and a tributary of the River Ouse, a favourite spot for people to visit at weekends and holidays. As many as 300 cars can be seen along the Canal and River on a Sunday afternoon in the summer. The Canal is also used for fishing competitions by the very active local Angling Club, and competitions are held during the season every three or four weeks. Soulbury is in the 55 Noise Contour, and besides the terrible effect on the village itself and the land around, it would completely destroy the area of the Three Locks as a recreational area as mentioned above. In addition, the canal is now used regularly for pleasure boating, and the enjoyment and entertainment obtained as a result of this during the summer would be ruined. We are also most concerned as to the possible effect by Kerosene fall-out on wild life, and of course fish in the Canal, and are concerned that this over a period of time may be polluted.

2. There are, of course, many objections that can be made, but I feel that these are particular points so far as Soulbury and the area of Three Locks is concerned.

* See also p. 1622.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY MR. T. HANCOCK*

1. I am a Fellow of the Royal Institute of British Architects, and senior partner in the firm of Hancock, Hawkes, architects/planners of Hampstead, London. I am an associate of Beyer, Blinder, Belle, Associated Planners, of New York. I am Visiting Associate Professor of Urban Planning at Columbia University, and consultant planner to the Peterborough Development Corporation. I have been in private practice since 1955, and I have carried out a number of regional studies. These include a study of the Oxford-Didcot region; the study for a New Town in Mid-Wales for the Welsh Office, and a study of the future demands within the Pembrokeshire National Park on behalf of the National Parks Commission (with Economic Associates); and regional and sub-regional studies for Peterborough New Town. I have been asked by the Wing Airport Resistance Association to examine the effects on the locality of siting the Third London Airport at Cublington.

2. I have examined the effects that the airport would have on the existing environment at three levels:

i) the site occupied by the airport

ii) the area that would be affected by the resulting aircraft noise pollution

iii) the patterns and extent of urbanisation resulting from growth of the airport together with associated uses, including the new and expanded towns needed for the people working in the airport, ancillary uses and associated and linked industries.

I. Airport site

3. The proposed airport site occupies an area of approximately 5 by 3 miles, although it must be understood that a somewhat larger area may ultimately be required. It is adjacent to and north of the village of Wing and encompasses the villages of Stewkley, Cublington and a part of the village of Dunton. The population that would be displaced numbers about 1,400. The employed population is primarily engaged in agriculture.

4. Some 29 buildings listed as being of Historic or Architectural Interest would almost certainly be demolished. These are sited as follows:

	Statutorily listed	*Supplementary list*
Stewkley	4	12
Cublington	4	5
Dunton	2	2

5. The church of St. Michael at Stewkley would be demolished. This is an extremely beautiful church, and one of the finest examples of late Norman architecture in this country. The church of St. Nicholas at Cublington might eventually be demolished.

6. The Cublington site includes the diplomatic wireless station at Creslow which would certainly require relocation. Two oil pipes pass under the site. Part of the site has already been earmarked as a possible location for a reservoir; the other alternative being in the Waddesdon area. This option would therefore have to be abandoned. The suitability of the terrain for a reservoir emphasises the steep contours of the site, where the variation in height is over 150 feet, from about 340 to 500 feet a.o.d. The implications of this topography on site preparation, runway construction and drainage are considerable. Although the difficulties would not be insuperable they would be very costly to overcome.

7. The site is higher than the surrounding land and the airport development would be on the skyline. The visual effect on the surrounding countryside would be very considerable, although some landscaping measures could be taken to reduce the intrusion.

8. The immediate effects would be severe: the displacement of some 1,400 people, the destruction of their homes and a number of superb historic buildings; the relocation of expensive installations and considerable construction difficulties. In my opinion, however, it is the complete social disruption which is of the greatest importance.

9. The destruction of the three villages would mean the end of *communities* with a tradition of continuity: gradual dissolution would be impossible. The effects on the farming community would be harsh, with little opportunity for finding new farms. The village communities have been established over many hundreds of years; their loss would be a tragedy.

II. Noise pollution zone

10. The second level affected by the airport would be the noise pollution zone. This zone has two aspects:

(a) The effect of noise on the existing population and way of life in the area.

(b) The effect of noise on future development around the airport—it would create an area where future development would be socially undesirable.

* See also p. 1623.

Printed image digitised by the University of Southampton Library Digitisation Unit

11. Different noise levels will have varying effects on settlement patterns. I have divided the noise levels into three broad zones:

(a) *Above* 50 *NNI*—Within this zone there is likely to be very considerable disruption and disturbance to existing communities and the noise level may cause discontinuance of existing uses.

(b) 35–50 *NNI*—Within this area there will be disturbance to existing communities but continuation of most existing uses is probable.

(c) 25–35 *NNI*—This level of noise would be intrusive in existing rural areas; I consider that new residential development associated with the airport should not be within this area. (It should be taken into account in urbanisation proposals that certain uses, such as schools and hospitals, are more seriously affected at the lower NNI levels than general residential and employment areas).

12. Throughout the year for a total period of three months the wind direction will cause take-off and landing direction to be reversed and the area affected by noise will reverse. Therefore areas not normally affected by aircraft noise will be subject at these times to very severe disturbances, and this would have serious effects on hospitals, schools and homes.

50 NNI+ area

13. The 50 NNI zone would be some 20 miles × 3 miles.

14. Excluding the villages that would be demolished there are some 12 settlements in this area, which have a population of about 8,000 persons.

15. This population is predominantly rural. The airport would undoubtedly destroy the way of life in the area even without noise pollution; for instance, the physical severance and the void created by the enclosure of the airport site and approach roads would sever existing community relationships; considerable disturbance would be caused by construction works, continuing for maybe two decades.

16. The Wilson report* in its analysis of population affected at various NNI levels found that 82 per cent of the population within the 50 NNI zone were "a little annoyed" and 52 per cent found it "very much annoying". Bearing in mind the changed character of the whole area it is possible that the 52 per cent "very much annoyed" might wish to leave (a population of 4000). However, the market for their properties would be limited. Compensation or grants for insulation would be necessary. The consequent effect on property values would be harsh. Certainly the area would suffer from a market blight for many years.

17. The 50 NNI zone includes 219 listed buildings. The utility of many, particularly the churches, would be affected by noise. Edgebury Recovery (pre-convalescence hospital) with 73 beds, Danes Wood Convalescence Home with 50 beds, two welfare Homes at Aspley Guise with a total of 55 beds, Oaklands Nursing Home, Woburn Sands with 12 beds, 6 Child Health Clinics and a large number of schools would be seriously inconvenienced even if noise insulation was provided.

18. From a landscape and amenity point of view the eastern and western ends of the 50 NNI contour cover areas of high recreational value. To the east Woburn, part of Woburn Park, the Brickhill and Three Locks tracts—to the west the Waddesdon area. These areas, to which the local population, tourists and weekenders are attracted, would be eroded by noise pollution. Apart from these superb tracts the general landscape and village character, churches and incidental features of interest, together composing the rural scene, would be contaminated. Fishing, riding and the other quiet rural pastimes would be seriously affected.

19. The 50 NNI area would be affected by kerosene fall-out, pollution and run-off from the airport; (if American experience, consequent public concern, research and prohibitions are any guide).

20. *Conclusion: 50 NNI zone:* I contend that this zone would in effect become a "no man's land" between the airport site and areas where normal activity might continue (although prejudiced). To summarise:

(a) The entire character of the area would change. Increased traffic, roads and other construction would transmogrify the landscape and cause physical severance. The present social structure of the area would completely disintegrate.

(b) Some 4,000 of the existing population might be driven from the area by the intolerable noise pollution.

(c) The personal stress and disruption on the remaining people would be intense.

(d) Special uses such as some schools and other social and community buildings could not continue to be used in the area.

(e) The great potential the area has for future development as a recreational area would be lost, to the local people, Milton Keynes new city and the metropolitan area.

21. 35–50 *NNI zone:* The 35 NNI zone would be some 45 miles × 6 miles and covers some 270 sq. miles, over one third of the area of Buckinghamshire.

22. The population within the 35–50 NNI contours is approximately 66,000, living in some 133 villages, small towns and fringes of the built-up areas of Aylesbury, Bletchley and Bedford.

23. Airport noise would have considerable impact on the area, causing inconvenience and disturbance to the existing populations. However, (excluding the effect of increased traffic due to the airport), the way

* Cmnd. 2056 (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

of life would superficially continue, although the type of population and socio-economic structure would change.

24. The Wilson Committee found that 73 per cent of people were still "a little annoyed" at 40 NNI and 29 per cent were still "very much annoyed"; at 30 NNI these values fell to 51 per cent and 22 per cent. Some of the people in this zone, particularly those who have chosen to live here because of the rural character, would be likely to move away. The remainder, although disturbed, will most likely remain. If those "very much annoyed" (say 30 per cent) moved this would be some 20,000 people. Over a period a larger population might move away to more rural and quieter areas, their homes would then be occupied by those working at the airport or associated industries.

25. There are a large number of buildings of architectural and historic interest in the zone including a number of houses open to the public. In all there are 1,191 listed buildings. The noise would generally reduce the recreation value of the Ampthill/Woburn area to the east; the Thame area to the west and the Claydon area to the north. Pollution could prejudice local pastimes such as fishing.

26. There are in the zone 819 hospital beds, 125 beds in nursing homes, welfare homes and mental health hospitals, 28 child health clinics, and a large number of primary and secondary schools. In the case of special uses which are more susceptible to noise, those lying inside the 25 NNI should also be be considered. There are a large number of hospital beds just outside the 35 NNI including Bedford General (400); Stoke Mandeville (756).

27. *Conclusion* 35–50 *NNI zone*

(a) There is likely to be a gradual change in character of the area from a predominantly rural area to one more closely related to the airport urbanisation and activities.

(b) Some 20,000 people might leave the area within a short period and those not leaving would suffer from disturbance and the changing physical and social environment.

(c) The noise would seriously prejudice special uses such as schools.

(d) The recreational potential of the area would be reduced.

28. 25–35 *NNI zone:*
The existing rural population would find this level of noise disturbing. It would also prejudice special uses.

29. This level of noise is still high (22 per cent were "very much annoyed" at 30 NNI in the Wilson Committee report). It therefore would seem undesirable to site any new development in this zone.

30. Some 3,500 acres (15 per cent)of the Designated Area of Milton Keynes new city fall into this zone. It follows that either a considerable area would be sterilised for residential use or, if developed, the noise level would substantially reduce the attractiveness of the new city; thereby increasing development pressures outside the noise pollution zone.

III. Growth area

31. The third area affected by the siting of the airport is the area of consequent urbanisation. This includes the requirements of the airport and associated workers, their families, the industrial workers associated with growth stimulated by the airport and the additional population required to service these increases. The extent and effect of this area will be widespread, greater than the noise zone which, in turn, may be altered according to the optimum location of the urbanisation. I have first examined the broader, regional setting for this urbanisation.

Regional structure

32. I consider the proposed siting of the airport at Cublington to be unique insofar as it is located in the great classical London-Birmingham–S.E. Lancashire growth corridor. The phenomenon of growth in this corridor throughout the nineteenth and twentieth centuries was studied by geographers such as Fawcett as early as the 1930s. It is the predominant axis of economic and urban growth in the British Isles. Growth is continuing despite restrictive planning policies which have attempted to reduce its relative attractiveness, and despite policies of industrial inducement and direction to other regions. Thus, at the London end, the Green Belt policy, together with the building of satellite New Towns was implemented in an attempt to control London's growth, resulting in a new pattern of annual growth around London, and creating an ex-urban situation beyond the Green Belt.

33. The foremost question to consider is whether it is good regional planning to site the airport in such a natural growth area.

34. The Cublington "sub-region"* is mainly in the South-East Economic Planning Region, partly within the Greater London boundary; and the northern part of the sub-region is in the East Midlands Economic Planning Region.

35. *Strategy for the South East*† (1967) envisaged an increase in the population of the South East region from 16·8 million (Greater London 8 million) to 19 million by 1981 (Greater London 8 million) and by natural increase alone to 23 million by 2001.

36. The airport generated growth could account for between 6 per cent and 16 per cent of the growth in the region to the turn of the century or from 400,000 to 1,000,000 people. These figures illustrate the scale of the urbanisation that would result, and

* The sub-region is defined in paragraphs 47–49 below, and is illustrated in Drawings TH1 and TH2. It encompasses an area within 30 miles of the airport site.

† (HMSO; 15s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

the consequent great importance of the choice of regional location of the airport. I have therefore examined future proposals for the adjoining regions and for the more immediate area.

37. In 1962 the Buckinghamshire County Council clarified their proposals for a new city in north Buckinghamshire, in order to focus the land demands for growth within the county, thereby relieving pressures in the south of the county, and helping to meet the needs of London and the South East.

38. Subsequently, these proposals were included in the *South East Study** (1966), and later in the South East Economic Planning Council's *Strategy for the South East*. The latter proposed a long term strategy based on the concentration of the population increase in a series of growth sectors radiating from London, separated by country zones. One of the major sectors of growth centres on M1 running towards, and including, Northampton. In diagrammatic form, this sector would include the easternmost half of the Cublington airport site. The South East Economic Planning Council recognises the economic attractiveness and strong growth potential of the M1 sector.

39. The absence, however, of any major potential growth points in the western sub-region, and its value as a recreational and agricultural zone was recognised by the South East Economic Planning Council's inclusion of this area in a "green sector". (See Drawing TH3).†

40. Whether or not the airport is sited at Cublington, it is estimated, that, by the turn of the century, some 6 million additional people will have to be accommodated in the South East of England. There are only a limited number of areas in which this population can be readily housed; one of these is in the M1 sector. For the long term, therefore, my opinion is that this sector will be under very great pressure and will possibly absorb a million or so additional people.

41. It is clear, therefore, that Cublington airport would be within a major band of great natural growth, where development has been occurring for the past two centuries, and in which pressures will continue and grow.

42. The natural locational advantages of this area are sufficient to induce considerable growth without additional external stimulus. Restraints have been placed upon development in the form of substantial financial and other incentives to develop elsewhere in the country and in the limitation of I.D.C. permissions; but these are really effective only in marginal areas. The problem in the Cublington sub-region is how growth and development may be restrained to be consistent with the natural and social resources of the area. This is a problem of which the local planning authorities have been well aware for some time; and which they have been striving to control.

43. It is however, not only a question of restraining growth to an acceptable level, but of restricting development within a wide sector. It is an essential part of current planning strategy to maintain areas of green countryside to separate urban areas, in order both to preserve their identity and, more importantly, to give "breathing space". Cublington and the area to the south are sited in such a green country sector, and it is my opinion that this must be strictly preserved against major incursions of development.

44. The Third London Airport and the associated new major communications routes will be a strong catalyst of growth, particularly in industrial and commercial enterprises. It will be a focus for some social and recreational activities. Thus the ideal airport location should be in an area where growth and development are to be positively encouraged, and where such a catalyst is needed to achieve these ends.

45. I hold that the combination of the strong "natural growth" corridor (paragraph 32) together with the powerful catalyst of the New Third London Airport would produce a very rapid growth, which would completely urbanise the sub-region, and preempt any rational regional planning. Siting an airport at Cublington would be putting a match to a powder keg and the results would be explosive.

Characteristics of the sub-region

46. The majority of airport employees will live within convenient travelling distance, say 5–15 miles of the airport site, although executives from the airport may well live in rural areas 30 miles or more distant. I believe that it is valid to make this distinction between the airport workers and executives in the short term, although in the longer term, with the distance of the journey-to-work being less of a deterrent, the trend will generally be towards a more dispersed pattern of living.

47. The workers in secondary employment servicing the airport staff and those employed in attracted and ancillary industry will not have such direct ties to the airport site. The majority of these could well live some 20 miles from the airport; thus they would be as close to their workplace as the airport workers to the airport.

48. In order to suggest the optimum area for urbanisation and to be able to assess the effects of it, I have carried out an analysis of an area within 30 miles of the airport site. This, for convenience, I have called the *sub-region*.

49. The population of the sub-region is some 4,120,000 (1966; 10 per cent Sample Census). The main existing centres of population are Northampton C.B. (124,010), Oxford C.B. (108,780), Reading C.B. (126,370), Luton C.B. (152,940) and some 1½ million of Greater London's population. Major expansions are now in process or starting at Northampton and Milton Keynes. Planned expansion within the sub-region, without airport growth, alone will account for an increase of some 700,000 people by 1981.

* (H.M.S.O.)
† p. 1198.

Printed image digitised by the University of Southampton Library Digitisation Unit

50. *Workplace and population patterns:* A workplace analysis has been carried out for the sub-region. Major focuses of employment are shown on Drawing TH1 and workplace totals are given in Column 6 of Table THA.

51. Drawing TH1 indicates a clear division of employment patterns, population and settlement characteristics running along the axis of the airport site across the sub-region. To the north of this axis the major centres within the sub-region are Northampton C.B. (population 124,000; workforce 67,000) and Bedford M.B. (population 67,400; workforce 37,400). Wellingborough U.D. (population 31,900; workforce 15,000) on the northern edge of the sub-region and Banbury M.B. (population 25,000; workforce 16,700) on the western edge are secondary centres.

52. The two larger northern centres show fairly similar characteristics of employment attraction. Northampton C.B. employs a high proportion of its own workforce and attracts the remainder mainly from the rural areas of Northants R.D. and Brixworth R.D., taking only 480 workers from Wellingborough U.D. and a minimal number of commuters from further afield. Bedford, a smaller town, exerts an influence over a slightly wider area, although it provides about two thirds of its own workforce and draws the remainder chiefly from the neighbouring areas of Bedford R.D. and Kempston U.D. In general, the northern half of the sub-region appears to show a localised and intricate rural commuting pattern based on a net of interdependent small market towns.

53. As is clear from the Drawing TH1, the weight of employment (and population and urbanisation) lies to the south of the airport site axis and is especially marked in the south eastern quarter of the sub-region. However, even here, other than on the fringe of the sub-region, the commuting pattern appears fairly localised. Luton, the major employment centre nearest to the airport site, contributes 75 per cent of its own workforce attracting much of the remainder from neighbouring areas of Hertfordshire and Bedfordshire, including 4,270 workers from Dunstable.

54. It can be assumed that the existing workplace pattern will be considerably changed by the growth of the Milton Keynes new city which will lie to the north of the airport site axis.

55. *Influence of conurbations:* A substantial part of the sub-region was included in the area covered by the Ministry of Housing and Local Government's *Northampton, Bedford and North Bucks Study*, published in 1965 by H.M.S.O. Para 7 on page 6 of that study describes the area as "subject to the influence of two major population groups. By far the most important is the Greater London metropolis . . . but the influence of Birmingham is also felt especially in the northern parts of the area."

56. There are strong and obvious industrial and economic linkages between the sub-region and the Birmingham conurbation e.g. through the structure of motor industry, but the statement quoted above is not entirely supported by the workplace analysis. The Birmingham conurbation featured as a workplace only for a few residents in the sub-region, in Northampton C.B. and Daventry R.D., and Daventry M.B. is taking Birmingham overspill. On the other hand, the G.L.C. area exerted influence as far north as Brockley and Bedford R.D. and reached an extreme in Bushey U.D. and Chorley Wood on the edge of the G.L.C. area. The influence of the G.L.C. area is illustrated on Drawing TH2.

57. The workplace analysis showed that the commuter flow is by no means all out of the sub-region to the G.L.C. area. Elstree, for example, draws 6,450 persons or 29 per cent of its total workforce from the G.L.C. area, representing a net gain of 1,600 persons.

58. The Maud Commission Report on Local Government in England* has recognised the cohesion of the northern sector, by stating (p. 284): "The development of Milton Keynes will greatly strengthen the socio geographic links between north Buckinghamshire and Bedfordshire, and we consider essential the inclusion of these areas in the same local government unit"; and later, in relation to the southern sector of the sub-region (p. 286): ". . . the whole of the county is under strong London influence. . . . The county's pattern of settlements is also largely related to the main communications which run across the county to and from London."

59. This distinct division should, in my opinion, be maintained and any development linking the Milton Keynes/Bedford region with London, avoided.

60. *Future population and employment:* The population required to support *essential airport activities* appears to be a figure approaching 400,000. There seems to be general agreement on this, but estimates of the total population that might be attracted to the vicinity of the airport vary considerably, largely dependent on the varying estimates of associated and attracted industries.

61. Estimates of total population have been put as high as three quarters to a million people.† The airport will undoubtedly be a major economic catalyst and it would seem advisable in reviewing future urbanisation patterns to allow for the full potential that can accrue from the airport.

62. I hold that lower employment and population estimates may be correct for short-term projections, but severe restrictions on development would be necessary even to maintain the employment level at the upper limit previously quoted and experience shows how difficult it would be to maintain those restrictions.

---

* Cmnd. 4040 (HMSO; 40s.)

† See, for instance the evidence of the Town and County Planning Association to the Commission on the Third London Airport: transcript of the Hearing on Friday, 8th November, 1968, p. 30. (*Papers and Proceedings*, vol. I, p. 115. (HMSO; £4 10s.))

Printed image digitised by the University of Southampton Library Digitisation Unit

Land requirements

63. It is necessary to consider the area of land required for the consequent urbanisation associated with the airport, and that needed for the natural growth of the existing population. There are at present 4,120,000 people within the sub-region. In twenty years time the expected natural increase could be about 900,000 people. As stated previously the incoming population resulting from airport, and airport associated employment, could be between 400,000 and 1,000,000 people. However, many of the existing (and natural growth) population would engage in employment resulting from the establishment of the airport. The total population of the sub-region would thus be between 5,100,000 and 5,700,000 a net increase of between 1 million and 1,600,000.

64. The area of land required for urbanisation will depend on the overall density of development and the size of population growth. Taking a high density for urban uses of 17 persons/acre, a population of 1,000,000 would require 60,000 acres and 1,600,000 people some 90,000 acres. These areas *exclude* all additional related development, such as regional communications and service provisions. Larger acreages would be required if the density of development was in the order of 12 persons per acre (as currently proposed for the development of Milton Keynes) and it is interesting to note that the South East Economic Planning Council in the *South East Strategy** suggests an overall density of 10 persons per acre for urbanisation by the year 2000. 1,600,000 people at 10 persons per acre would require 160,000 acres or 250 square miles. However, it is likely that the urbanisation will take place at an even lower density similar to the average density of suburban growth since 1950. This has been taking place at between 6 and 8 persons per acre. The total area that could be required might thus rise to 230,000 acres, 360 square miles. These different estimates of land requirements are shown diagrammatically on drawing TH3.

65. I postulate, therefore, that the amount of employment, and hence of population, is likely to be at a very high level. The pressure for development would probably result in a substantial proportion of urbanisation occurring within the area affected by the noise pollution zones.

66. There is the additional difficulty of inducing people to live in planned settlements, particularly where there are alternative choices as wide as in the Cublington sub-region. The tendency to develop sprawl across the sub-region would be difficult to control.

67. In considering the locational needs of the airport and of the associated urbanisation, it must be realised that the two have requirements which are often diagrammatically opposed: the airport itself should be located where the least number of people are affected; and the associated urbanisation should be in an intended growth area, where the catalytic effect of the airport can be used to the fullest advantage.

68. *Landscape and leisure:* The sub-region is, for the most part, an area of good English countryside, unspoiled by urban dereliction or sprawl, and well wooded. It contains part of the London Green Belt and its proposed extension. It lies within the only great landscape swathe of any significance remaining in the London–Birmingham corridor, serving the London conurbation. Some of the attractions of the area have already been touched upon in paragraph 18 above; these are, in many respects, typical of the area. Although a substantial zone would be sterilised for residential development by the noise pollution blanket, it would nevertheless remain attractive for industrial and associated uses with consequent deleterious effects on the landscape. Even if these developments could be avoided, the recreational potential of the area would obviously be minimised by the prevailing noise levels.

69. Development of the scale engendered in the sub-region by an airport would destroy its value as open space, as a "breathing space" for London's population. Lying just north of the Chilterns and south of the Milton Keynes–Bedford–Northampton growth area, the locality has great actual and potential recreational benefits for the growth area and the northern part of Greater London. Urbanisation would eventually consolidate between London and the airport, resulting in a major extension of the metropolitan area into the Green Belt and the Chilterns area. It might lead to a considerable loss of regional recreational facilities; the Dunstable Downs, the Gliding Club of Great Britain, Whipsnade Zoo—each of which, even if not actually built upon, would be affected.

70. *Resources:* There would be an immediate and continuing heavy demand for labour and resources in the sub-region of any site for a third London Airport, and demand which it would be extremely difficult to meet in the Cublington area without the substantial importation of labour from elsewhere: not only is the relevant labour market small, but the unemployment rate is already one of the lowest in the country at 1·0 per cent.

Employment area	*Jobs vacant* (June 1969)	*Unemployed* (June 1969)
Aylesbury	670	237
Leighton Buzzard	152	48
Bletchley	360	116

71. This same over-demand would affect the construction industry, again in labour and other resources to an unprecedented degree. There would be an explosive demand for all services, particularly for water. These problems are soluble but at very considerable cost, including the inflation of the local economy.

72. The East Midlands Economic Planning Council in their 1966 report* draw attention to the planned

* *Strategy for the South-East* (HMSO; 15s.).

* *The East Midland Study* (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

growth in the Northampton sub-region of some 200,000 by 1981, and state: "This expansion seems likely to be as much as any area could absorb in a limited time; the demands it will make on the natural and social resources of the sub-region will be very considerable." The same problem of resources and absorption are raised in the S.E. Strategy which comments on the 300,000 increase by 1981 in the Milton Keynes–Northampton growth area as follows: "The growth . . . will create severe pressures in the area which will need urgent attention. Two major factors which will be crucial to success (of these projects) will be the improvement of the road network linking these towns; and the build-up rate of housing construction. . . ."

73. Bearing these reservations in mind it is hard to see how the necessary airport site and access works together with the associated urbanisation could be carried out without abandoning the agreed growth proposals and transferring the resources to airport construction.

74. *Communications:* The sub-region is served by M1, (10 miles from the airport site), which is already to capacity in its southernmost stretches, There are however, some improvements planned. The area is also served by the A41 programmed for completion to motorway standard in 1975–78, linking with the London D-ring in 1980. The M40 Oxford–London Ringway 3 is to be completed in the mid-1970's. The A5 runs within 5 miles of Cublington.

75. Although north-south communications are more or less adequate at present, an alternative route to M1 will be needed in the near future, regardless of the siting of the airport. Existing east–west communications are poor and there is little planned improvement; however, the Green Paper *Roads for the Future*† does propose a "Strategy Route" between M1 north of Luton and Harwich via Bishop's Stortford. This road, too, is planned to serve the existing traffic growth, and it may have little spare capacity in the long term. There are no major routes planned to the Midlands, excepting the existing M1/M45 route.

76. This leads me to the question of traffic congestion, particularly on M1, which has no spare capacity for users of the airport. These future users will not all be located at a London terminal and they will be both affluent and mobile. It is clear that the location of an airport where existing major communications routes in all directions are congested, and where new routes would be needed in all directions (to London and to the Midlands, east and west, and on a concentric pattern) would involve a very heavy additional budget.

77. The sub-region is served by the main London–Birmingham–Manchester–Glasgow railway, electrified for much of its length; and by the Aylesbury–Marylebone and Bletchley–Bedford lines. Although the present service is good, I have some doubts as to whether it is good enough to attract the proportion of passengers necessary to maintain an economic balance in the transportation system; a new system such as the Advanced Passenger Train would necessarily be required.

Function of the airport

78. I also have reservations about the future function of the airport if sited at Cublington. It is specifically referred to as the Third London Airport, with the implication that it is primarily to serve the south-east of England and, at the Stansted hearings, the suggestion that it could be located in another region was said by the Inspector to be out of order. It is clear that a site at Cublington would readily attract passengers and freight from the Midlands, thus increasing the pressures on the Third London Airport and perhaps bringing nearer the need for yet further airport provision. Conversely, a site at Cublington would draw pressures off from the Midlands' airports, and make their further improvement economically infeasible.

79. The new city of Milton Keynes given the Third London Airport at Cublington, would not be able to meet its specific purpose of easing London's overspill problems; for the solution to this problem is one of taking people and *their job opportunities*, from London. This policy would clearly be impossible if the city were to be used primarily or exclusively for housing the airport population; and an alternative new city project elsewhere in the South East of England would presumably be required.

In Summary

80. In my opinion it would be disastrous to site the Third London Airport, this major catalyst, in an area where growth will take place of its own accord. The opportunity would be lost to produce growth in a more desirable location elsewhere. The combination of the natural pressures for growth and the consequent airport growth could lead to malignant over-urbanisation and congestion in this growth sector.

81. It is essential for this area to remain as a considerable green landscape swathe, effectively limiting annular London growth outwards and containing the southerly growth from Birmingham, Coventry, Rugby, through the Northampton and Milton Keynes growth area.

82. If the Third London Airport is developed at Cublington then the totality and detail of official proposals at local, regional and central government levels published, fostered and progressed during the past decade will be negated with a consequent severe planning "blight" of the area, and a lowering of the authenticity of any further policy proposals in the minds of the people.

† (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

LIST OF APPENDICES

Drawing TH1 Employment Centres in Cublington Sub-Region

TH2 Commuting to G.L.C. Area from Sub-Region

TH3 Equivalent Land Requirements for Urbanisation within "South East Strategy" Growth Corridor.

Table THA Workplace Analysis for Sub-Region.

TABLE THA
Cublington Workplace analysis

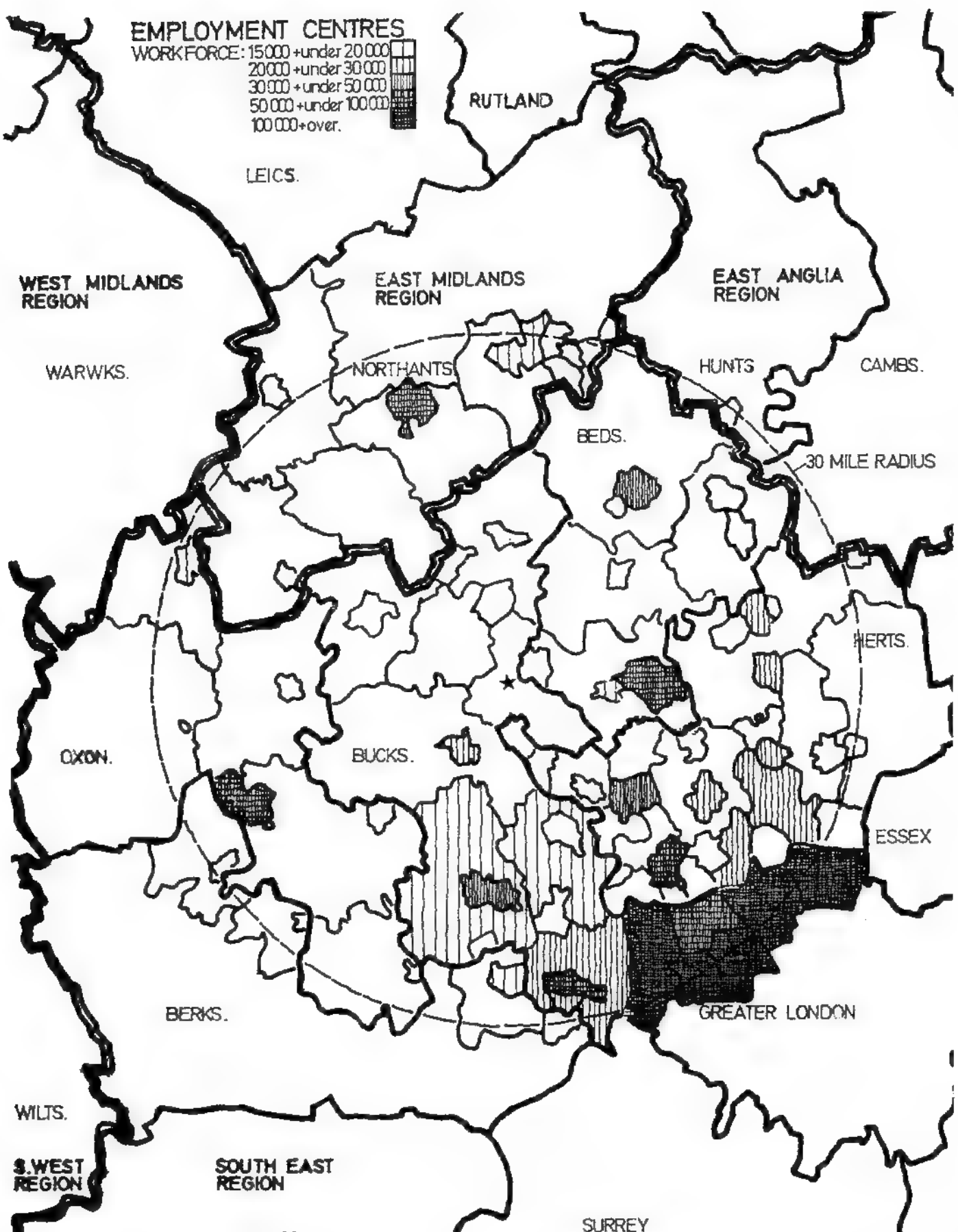
		(1) no.	(2) no.	(3) %	(4) %	(5) %	(6) no.
	NORTHANTS.						
1.	Daventry RD	17,020	8,070	52·3	40	—	4,400
2.	Daventry MB	6,690	3,110	123·7	—	71	3,790
3.	Northampton CB	124,010	60,460	111·8	91	—	67,180
4.	Northampton RD	20,270	8,860	71·0	40	—	6,450
5.	Wellingborough RD	15,040	7,180	77·4	54	—	5,620
6.	Wellingborough UD	31,860	15,480	96·7	75	—	15,000
7.	Irthlingborough UD	5,270	2,730	94·7	60	—	2,590
8.	Rushden UD	17,820	8,880	105·3	73	—	9,330
9.	Higham Ferrers MB	4,080	2,090	99·5	42	—	2,080
10.	Raunds UD	4,830	2,530	83·6	68	—	2,130
11.	Towcester RD	16,880	7,860	71·1	54	1	5,750
12.	Brackley RD	11,920	5,290	68·1	45	1	3,690
13.	Brackley MB	3,370	1,610	110·1	63	—	1,760
	OXON.						
14.	Banbury MB	24,940	12,180	138·9	87	—	16,740
15.	Banbury RD	17,180	7,730	52·9	41	—	4,380
16.	Woodstock MB	2,100	1,120	81·9	49	—	930
17.	Ploughley RD	31,290	14,710	77·3	54	—	11,540
18.	Bicester UD	7,530	4,020	97·4	45	1	3,920
19.	Oxford CB	108,780	48,380	172·0	94	—	81,780
20.	Bullingdon RD	48,000	21,770	46·1	32	1	10,540
21.	Thame UD	5,450	2,480	89·0	54	—	2,230
22.	Henley RD	25,640	11,100	58·5	42	—	6,780
23.	Henley-on-Thames MB	10,420	5,040	86·5	58	—	4,400
	BERKS.						
24.	Wallingford RD	21,890	9,680	63·9	45	1	6,340
25.	Wallingford MB	5,500	2,470	110·3	53	—	2,710
26.	Abingdon MB	15,030	6,860	88·5	52	—	6,090
27.	Abingdon RD	34,110	15,250	54·4	36	—	8,590
28.	Cookham RD	18,270	8,920	53·8	35	11	5,040
29.	Maidenhead MB	41,230	19,470	99·7	61	12	19,420
30.	New Windsor MB	27,980	14,620	78·2	53	11	11,560
	BUCKS.						
31.	Eton UD	4,410	2,330	70·7	42	5	1,680
32.	Slough MB	81,980	43,810	141·7	76	10	61,470
33.	Eton RD	71,930	34,260	72·3	31	7	25,200
34.	Beaconsfield UD	11,390	4,890	86·6	47	23	4,270
35.	Marlow UD	10,350	4,820	66·7	44	10	3,300
36.	Wycombe RD	58,590	26,600	62·5	43	9	17,210
37.	High Wycombe MB	53,920	26,580	129·0	82	6	33,970
38.	Amersham RD	62,430	28,450	60·7	45	24	17,870
39.	Chesham UD	18,660	9,200	78·7	54	17	7,340
40.	Aylesbury RD	34,880	16,090	81·9	57	4	13,360
41.	Aylesbury MB	34,610	17,270	123·8	82	2	21,200
42.	Winslow RD	9,070	4,150	66·4	46	2	2,840
43.	Wing RD	9,360	4,580	46·3	37	4	2,240
44.	Bletchley UD	23,110	10,500	108·4	77	2	11,350
45.	Buckingham RD	8,780	3,930	84·8	60	1	3,360
46.	Buckingham MB	4,520	2,090	123·7	69	—	2,550
47.	Wolverton UD	13,670	5,990	101·7	67	2	6,090
48.	Newport Pagnell RD	14,170	6,480	66·3	45	1	4,420
49.	Newport Pagnell UD	5,120	2,680	120·7	66	—	3,210

Printed image digitised by the University of Southampton Library Digitisation Unit

	(1) no.	(2) no.	(3) %	(4) %	(5) %	(6) no.
HUNTS.						
50. St. Neots UD	10,110	4,820	88·5	69	—	4,300
BEDS.						
51. Bedford RD	34,250	15,590	88·6	45	1	13,910
52. Bedford MB	67,390	32,090	117·4	76	1	37,400
53. Kempston UD	11,190	5,580	53·4	25	—	3,150
54. Ampthill UD	4,540	2,010	133·2	42	3	2,640
55. Ampthill RD	29,310	13,670	60·3	45	2	8,530
56. Leighton-Linslade UD	17,580	8,290	93·9	69	3	7,810
57. Dunstable MB	29,230	13,680	141·4	64	3	19,100
58. Luton CB	152,940	74,330	114·1	85	2	84,470
59. Luton RD	35,260	16,410	45·4	29	2	7,980
60. Biggleswade UD	8,740	4,080	121·6	71	—	4,920
61. Biggleswade RD	30,440	14,150	70·6	47	1	10,140
62. Sandy UD	4,840	2,190	88·9	62	—	1,960
HERTS.						
63. Baldock UD	56,240	3,540	80·5	44	—	2,870
64. Hitchin RD	23,040	10,830	50·7	35	5	5,880
65. Letchworth UD	27,150	13,490	151·8	81	2	20,340
66. Hitchin UD	25,610	12,780	97·0	55	3	12,410
67. Stevenage UD	56,240	26,140	112·0	85	3	29,160
68. Hertford RD	10,320	4,940	46·7	33	12	2,500
69. Ware UD	13,740	6,810	79·3	46	14	5,470
70. Hertford MB	18,530	8,940	129·5	65	12	11,470
71. Hoddesdon UD	20,500	9,930	78·1	45	23	7,890
72. Chesthunt UD	41,360	21,000	68·6	40	46	14,820
73. Welwyn RD	7,170	3,680	58·2	29	10	2,220
74. Welwyn G.C. UD	38,820	18,910	122·2	76	6	22,980
75. Hatfield RD	43,250	21,090	96·3	54	20	20,340
76. Harpenden UD	21,230	9,120	61·8	40	17	5,800
77. St. Albans RD	42,150	18,050	51·7	33	12	9,700
78. St. Albans MB	50,730	25,270	100·4	64	9	25,350
79. Hemel Hempstead MB	64,090	31,420	96·4	75	7	30,350
80. Hemel Hempstead RD	14,040	6,530	73·5	33	10	4,880
81. Berkhampstead UD	14,280	6,550	76·9	52	14	5,090
82. Berkhampstead RD	6,720	2,960	49·1	33	10	1,540
83. Tring UD	7,790	3,520	72·9	47	9	2,650
84. Watford RD	56,920	28,050	38·0	21	29	11,480
85. Chorleywood UD	7,420	3,100	35·6	22	42	1,270
86. Rickmansworth UD	28,430	13,450	62·5	37	29	8,630
87. Watford MB	75,960	38,190	144·4	74	12	51,510
88. Bushey UD	22,400	10,470	52·3	21	36	5,720
89. Elstree RD	28,280	14,280	143·4	56	34	20,230
90. Potters Bar UD	25,510	12,430	54·6	34	51	7,140
GREATER LONDON						
91. Hillingdon	227,820	116,790	111·9	61	61	130,060
92. Harrow	204,040	104,710	56·0	46	46	60,800
93. Ealing	292,750	156,840	98·0	52	52	153,790
94. Brent	282,490	151,850	92·2	46	46	140,650
95. Barnet	308,950	155,890	70·1	43	43	112,080
96. Enfield	264,760	138,270	81·0	52	52	113,300

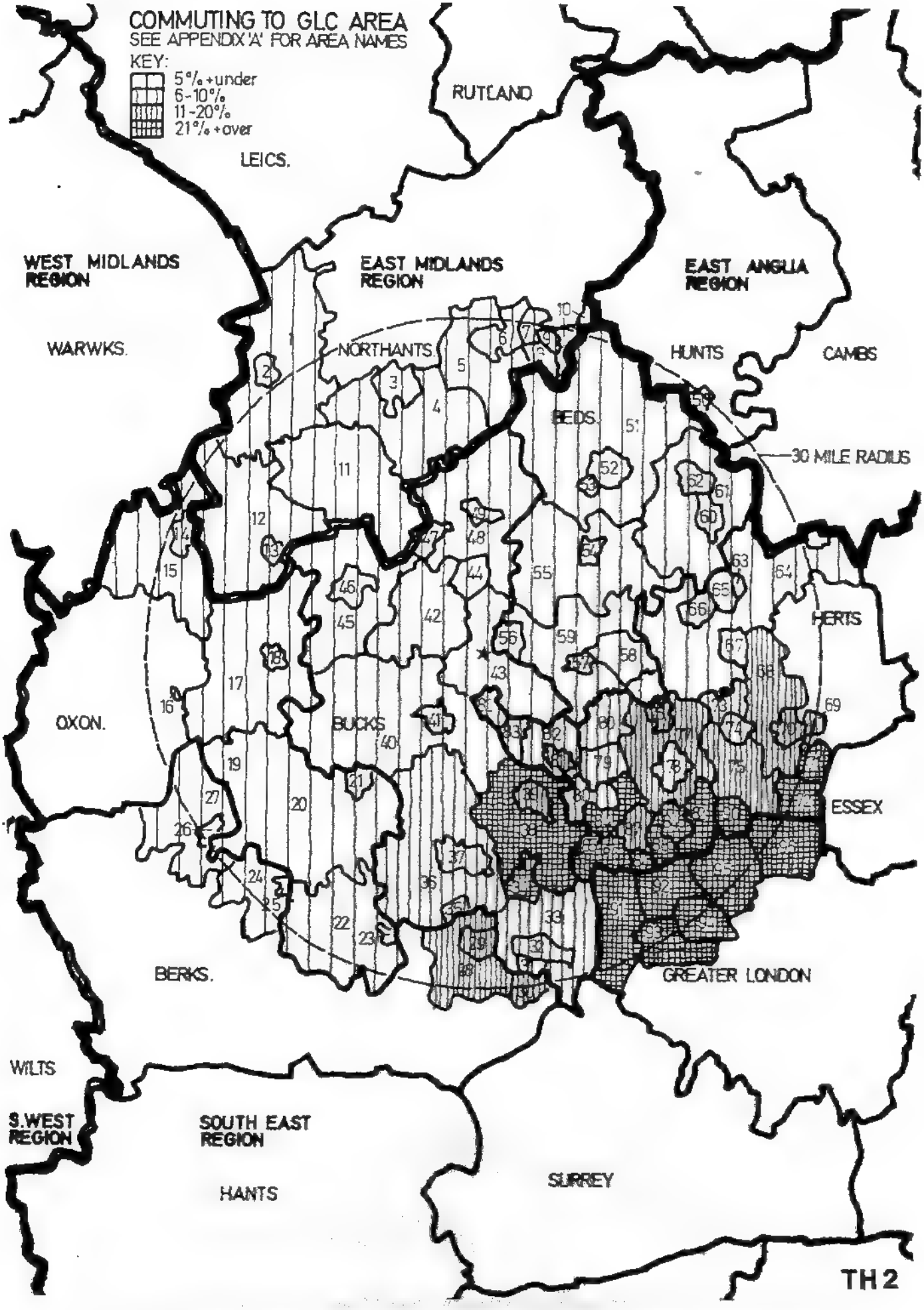
(1)=Population Sample Census 1966.
(2)=Number of residents in employment.
(3)=Employment in L.A. area as % of residents of area in employment.
(4)=% of residents in employment working within local authority area.
(5)=% of residents in employment working within G.L.C. adm. area.
(6)=Total employment in local authority area (workforce).

Printed image digitised by the University of Southampton Library Digitisation Unit



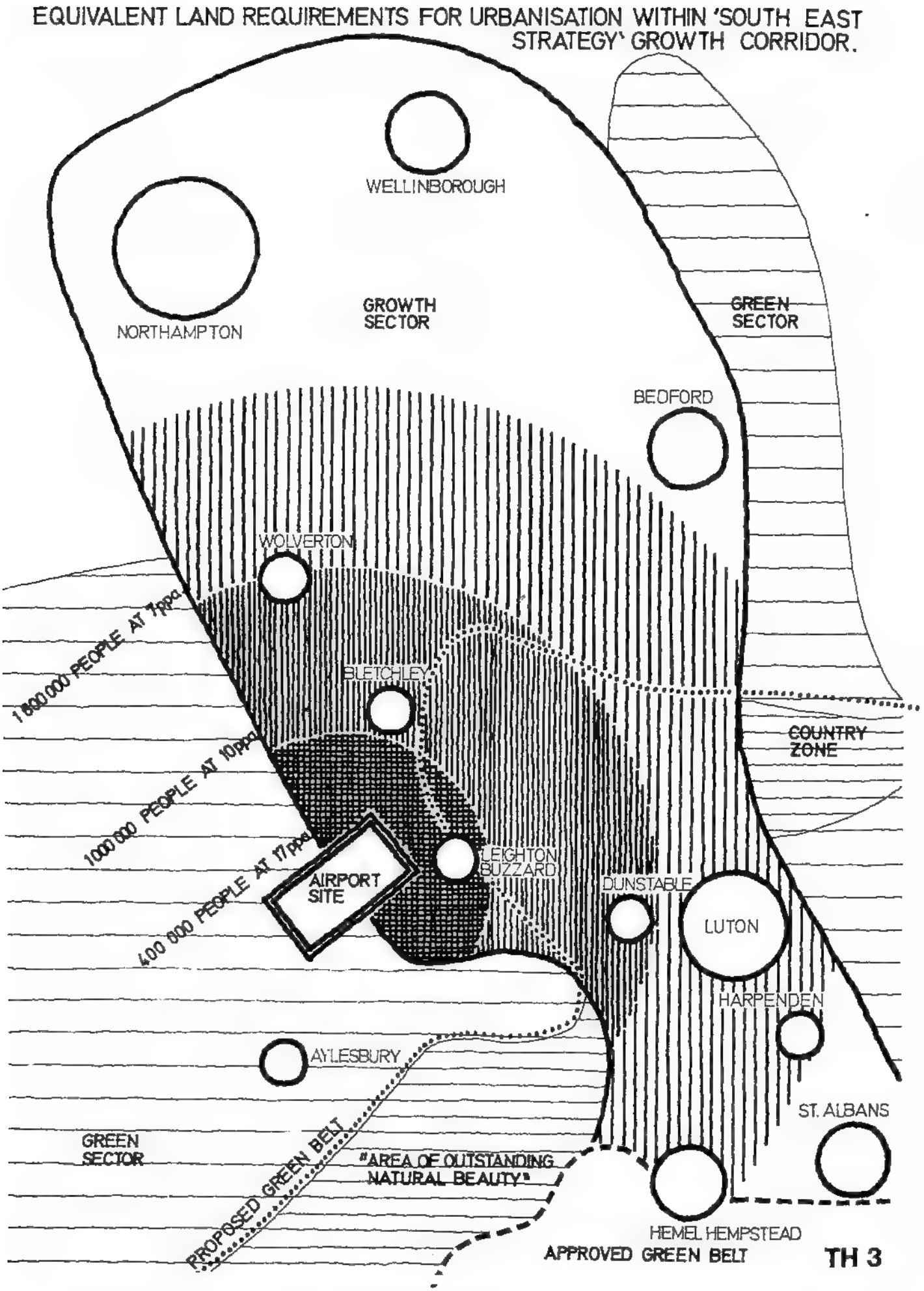
TH 1. Employment centres (Mr. T. Hancock, Wing Airport Resistance Association)

Printed image digitised by the University of Southampton Library Digitisation Unit



TH 2. Commuting to GLC area. (Mr. T. Hancock, Wing Airport Resistance Association)

Printed image digitised by the University of Southampton Library Digitisation Unit



TH 3. Equivalent land requirements for urbanization within "South East Strategy" growth corridor. (Mr. T. Hancock, Wing Airport Resistance Association)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY MR. R. A. WALLER*

I am a Master of Arts of the University of Cambridge and a member of the British Acoustical Society and of the Society of Environmental Engineers.

I am Head of the Environmental Development Group of W. S. Atkins & Partners. W. S. Atkins & Partners are Consulting Engineers concerned with Planning, Engineering and Management and have a staff of about 1,000.

I have been active in the noise and vibration field for 12 years. During that period I have been concerned with a wide range of problems including the planning of airports and motorways and the effect and control of many types of noise in the home, factory and office. I have made a special study of the economics of noise and vibration control.

During the past 4 years I have been responsible for research work which has pioneered techniques of evaluating the effect of sources of annoyance in the home environment.

I am the author of many technical papers and have lectured (on an occasional basis) at a number of Universities.

1. I have been asked to examine and to comment on the noise-nuisance problem likely to result from the location of the Third London Airport at Cublington.

2. I have concentrated on the nuisance due to aircraft noise as it effects householders. This in no way reduces the importance of noise nuisance to schools and hospitals and to recreational facilities, etc. Mr. Fleming's evidence† on behalf of Buckinghamshire's County Council, I understand, will cover the problem as far as schools and hospitals are concerned.

3. In view of the lack of definition of the airport requirements it is not possible to calculate with precision the numbers of people who will be exposed to different levels of noise. It seems to me to be more important at this stage to discuss the basis of estimation of the nuisance at Cublington. The basis of estimation is more than usually important in this case where one of the alternative sites, namely the one at Foulness, is totally different from the other three. Although there is doubt in my mind as to the accuracy of some of the data produced by the Commission, I propose to largely ignore this aspect and to concentrate rather on the interpretation to be put on the noise contours which the Commission has produced. There are three main points that I wish to make in this respect.

4. Firstly a straight-forward use of the data obtained from the survey around Heathrow Airport indicates that a large proportion of the population are seriously affected in the area of the lower values of NNI—the commission have not taken account of this in their calculations.

5. Secondly the area around Cublington is mostly quiet. The nuisance at a given NNI value may be greater because the environment is at present of a higher quality than around Heathrow and the population may well contain a higher proportion of people sensitive to noise nuisance.

6. Thirdly for the noise nuisance at night not to exceed the nuisance during the day, so far considered, the flights during the night must not exceed, at most, 10 per cent of those during the day. This may prove to be unduly restrictive for a new, purpose made, international airport.

The Noise and Number Index as a predictor of aircraft noise nuisance

7. There are many indices of aircraft noise which have been proposed by various people in various countries. I accept, however, that the Noise and Number Index (NNI) is the best measure of aircraft noise nuisance that has been tested in practice in this country. It is clearly capable of improvement, perhaps by using effective PNdB rather than PNdB to take into account the pure tone components of the noise and the duration of the noise. This may well improve the accuracy of the measure but a number of general limitations will remain. The fact that NNI is the best measure available is no reason to ignore its limitations and certainly no reason why the statements and conclusions made by the Wilson Committee* should be accepted without question.

8. The Noise and Number Index was developed from a study in 1961* around Heathrow Airport and several years after the Airport became a significant source of noise nuisance. The Index represents, therefore, the result of an experiment around an established airport. It is not a predictive measure and it does not purport to allow us to predict accurately the effect of aircraft noise on a previously unexposed population. Accepting that it is likely that the annoyance will broadly correlate with NNI in the area of Cublington, it may be more severe in the early years until people either adapt to the noise or the more sensitive ones move away. The relationship between NNI and nuisance was established many years ago and it is possible that there has been a change in our

* See also p. 1627.
† p. 1017.

* *Noise*: Final Report of the Committee on the Problem of Noise. (Cmnd 2056). (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

reaction to aircraft noise due, for example, to the increase in our standard of living.

9. Further, as a general rule, people do not perceive noise in an absolute sense. They tend to relate what they hear to a datum level. Commonly, this is the background noise which exists in their own environment. Background noise can be defined as that level of noise in which it is not possible to distinguish any particular individual source of noise. In towns, the background noise consists largely of noise due to traffic. In rural areas, and to some extent in villages and small towns, the background noise will be less than it is at present around Heathrow.

Estimation of NNI contours

10. As I have said in spite of its limitations the NNI is our best measure of aircraft noise nuisance. Our check calculations indicated NNI values about 5 units higher than the Commission's published contours. Bearing in mind the uncertainties regarding the number and type of aircraft movements and the flight paths which are likely to be used, this is within the possible error of estimation. I have adopted, therefore, the Commission's contours where they have been plotted and have extended them pro rata down to 25 NNI (Figs. 1 and 2)* for the day time. In doing so I have positioned the landing path from the North to avoid Bedford as far as possible. In general I have tried to minimise noise nuisance within the limitations of flight paths indicated to me by Mr. Lumb. For night time nuisance I have plotted NNI down to 15 NNI (Fig. 3)* assuming the number of flights during the night to be 25 per cent of that during the day-time. This proportion is Mr. Lumb's† indication of what will happen as a result of commercial pressures if there are no limitations on the number of night flights.

11. There is little doubt that noise from future aircraft will be less for comparable sizes than present aircraft. The proposed noise certification procedures, however, allow for heavy aircraft to have slightly higher noise levels. This will to some extent offset the benefits to be derived and the Commission's estimate of a reduction of 5 NNI for a given amount of air traffic is reasonable. Information about likely noise levels from the new aircraft now being introduced and not subject to noise certification is hard to come by. It seems that the Jumbo jets about to be introduced will probably be quieter than the long-range Boeing 707s, so that, apart from initial teething troubles, these should not present an additional noise problem. The present 707s and VC 10s etc. will be in service for many years to come and the full effect of noise certification may not be felt in its entirety for probably twenty years.

12. The noise nuisance in the two-runway case is dominated by the effect on the existing population. This effect will be a function of the existing background noise in the area, of the existing character of the area and of the sensitivity to noise of the existing population.

13. The four-runway configuration represents a time when the present population will be in a minority as large numbers of people will have moved into the area to satisfy the demand for employment ("primary", "secondary" and "service") generated by the Airport. The total nuisance due to noise is likely to be dominated by considerations of where the new population is housed rather than where people live at the moment. Further, by this time the character of the area will have changed and the background noise will be higher than it is at the present, particularly in those areas which were previously rural. The background noise will have been increased due to the higher level of road traffic and due to the presence of light industry. In this situation the annoyance to individuals caused by a particular level of aircraft noise is likely to be less severe than it was in the two-runway case. The existing population, although perhaps less annoyed by a particular level of aircraft noise will, of course, be annoyed by other things as well and the situation would correspond quite closely to that which exists now at Heathrow.

14. Mr. Hancock* has therefore considered the way in which the area is likely to develop in the vicinity of the airport and within the noise affected areas.

15. For the two-runway case, I have also plotted the situation when the wind causes take-off and landing to be reversed. I understand that this will occur roughly for twenty to twenty-five per cent of the time (Fig. 4).† This is of course not quite a proper use of the Noise and Number Index which is intended to represent a long term average and is the basis of the main contour maps. It does, however, give a better indication of the area of noise nuisance on those days (about three a fortnight) when planes take off and land in the reverse directions, and also shows the need to choose the flight paths in the reverse direction with as much care as in the prevailing direction. The nuisance on those days when it does occur will be at least as bad as the nuisance in the main noise affected areas with equal "NNI" values. The implications (planning restrictions, need for sound proofing, etc.) are probably also similar. Not knowing when the nuisance will occur will prevent people from ordering their activities to avoid it, e.g. operations in a hospital could not be scheduled to take place only on quiet days.

16. The effect of stacking whilst waiting for landing clearance is to produce areas about 7 × 2 miles in which the NNI levels can reach 30–35 during peak periods of the year. Although the noise exposure is relatively low stacking over residential areas could annoy large numbers of people and should be avoided.

* See attached wallet of maps and diagrams.
† p. 1209.

* See attached wallet of maps and diagrams.
† p. 1208.

Printed image digitised by the University of Southampton Library Digitisation Unit

Interpretation of NNI contours

17. I stated earlier that the relationship between NNI values and the amount of annoyance was a function of the population exposed to the noise and of the background noise. For an area such as Cublington, which is not at present subject to any significant aircraft noise nuisance the prediction value of NNI can be questioned. In particular it is possible that the nuisance at Cublington will be underestimated by using the reactions of the population around Heathrow in 1961. I have tried to assess, therefore, the possible magnitude of this underestimate.

18. For urban areas I have assumed that the present noise climate is similar to that of West London without the aircraft noise and that the effect of the NNI contours will be the same. In rural areas the background noise is commonly 10 dB less than in suburban or urban areas and the population is not exposed to noise nuisance to nearly the same extent, in particular there is less traffic. I consider, therefore, that the effect of a given value of NNI contour is in a rural area is equivalent to one ten units higher around Heathrow. There is a possibility, however, with the higher levels of aircraft noise that the reaction to the noise is not related so much to the background noise, which would be very low compared to it, but to something nearer to it in magnitude such as the normal levels of speech. One would not expect these to be significantly different in rural and urban areas, and therefore for noise and number indices above 50 I have not made any adjustment. For areas which are intermediate between rural and urban I have taken intermediate values of the adjustment. Table I summarises these adjustments. I have ignored any difference in the sensitivity to noise of the population compared to that around Heathrow. I believe that this may be significant but have no data on which I can base a reasonable prediction.

19. I have visited the area but have not carried out a noise survey. I have divided the area into the three categories in order to indicate the magnitude of the effect.

TABLE 1

Summary of proposed adjustments to NNI for comparative purposes

	NATURE OF AREA		
NNI as plotted	*urban*	*urban rural*	*rural*
30	0	+5	+10
40	0	0	+ 5
50	0	0	0

20. I now come to what I consider to be a most significant feature of my evidence. This relates to the interpretation that we should not put on these Noise and Number Index contours. There is an unfortunate but widespread tendency to describe these contours in terms of effect perceived by the aberage person. Thus the Wilson Committee* quotes the range of 50 to 60 NNI as causing people to be very much annoyed and taking their information, plotted for the results of the "Farnborough" experiment, 30 NNI is regarded as intrusive indoors†. One might be misled into thinking that below 30 NNI the noise nuisance was no longer sufficiently significant to be intrusive. However, the descriptions quoted such as "intrusive" are those used by the "average person". The average person in the experiment found 30 NNI to be the level at which the noise became intrusive—i.e. one half of the population already found it to be intrusive. Below this level a substantial minority will still find the noise intrusive and their needs should be taken into account. One would not design the height of a door to suit the average person. It is only at 0 NNI that there is no annoyance and no intrusion. (See Table 2 and Ref. 1, p. 209 para. 19).

* Cmnd 2056. (HMSO; 19s. 6d.)

† I cannot reconcile the descriptions ascribed by the Commission to various levels of NNI with those published by the Wilson Committee, they seem to underestimate the nuisance by 10 NNI. (See Table 2).

TABLE 2

Opinions of 'average' person at various levels of NNI

NNI	*Social Survey* around Heathrow*	*Farnborough* experiment*		*Roskill* Commission*
		Indoors	*Outdoors*	
65		unbearable	unbearable	} annoying
60	very much annoying			
55				
50		very annoying		annoying/intrusive
45	moderately annoying		very annoying	} intrusive
40		annoying		
35			annoying	
30	a little annoying	intrusive		
25			intrusive	
20				
15		noticeable		
10			noticeable	
5	not at all annoying			
0		not noticeable		

* Ref. † p. 208, fig. 2. (*Wilson report*).

† *Site Information for Stage II Local Hearings.*

Printed image digitised by the University of Southampton Library Digitisation Unit

21. The Wilson Committee concluded that 50 to 60 NNI is the level at which aircraft noise becomes an unreasonable nuisance for the average person. This was based on the Heathrow data which showed that at this level the nuisance due to aircraft noise became worse than the nuisance due to other things, such as traffic. This is then the level at which aircraft noise obtrudes significantly into the environment of West London and the surrounding area. To apply this criterion directly to the data around Cublington involves making the assumption that it is reasonable for its environment to be allowed to deteriorate at least to the level of West London. Although this will probably happen in the long run I do not think it to be reasonable to assume this as a basis for assessing the nuisance. In any case, this deterioration itself will be a source of annoyance to the existing population of the area as a whole including those not affected by aircraft noise. If, however, the present noise climate in the Cublington area is 10 to 15 dB lower than that of West London then the 'unreasonable nuisance' criterion would be between 35 and 50 NNI.

22. If the same criterion was applied to aircraft noise as is applied to industrial noise in mixed industrial and residential areas, then the maximum NNI that would be permitted would be somewhere between 20 and 30 depending on the amount of existing road traffic and light industry. This has been pointed out by Dr. D. W. Robinson of the National Physical Laboratory, who in a recent paper* compared the significance of various criteria including B.S. 4142†. This standard, applying as it does to noise from industry in mixed industrial and residential areas, does not take account of aircraft noise but the important feature is that it attempts to avoid any reduction in the quality of the environment.

23. However, the conclusions of the Wilson Committee on the effect of aircraft noise on the environment will only be valid if we are prepared to accept that the environment around Wing can be allowed to deteriorate to the level that it has deteriorated to in the vicinity of West London, and then to allow aircraft noise up to the level of other sources of annoyance in such an environment.

24. I prefer, therefore, to describe the effect of various levels of NNI in more details and in accordance with the Table 3 which abstracts the results quoted by the Wilson Committee, this Table clearly indicates the fact that people's reactions to noise vary enormously. At 60 NNI the Heathrow survey shows that approximately two-thirds of the population were moderately annoyed but that at 30 NNI still about one-third of the population is moderately annoyed and nearly a quarter is very much annoyed. reducing the noise nuisance by 10 NNI only reduces the proportion of people annoyed by about 15 per cent; there is no sudden elimination of the noise problem. Towns such as Ampthill, Aylesbury, Bedford, Bletchley, Buckingham, Leighton Buzzard and Linslade are thus significantly affected.

25. Using the figures quoted by the Commission in their *Site Information** (para. 14) ignoring their names for the categories but using instead the data in Table 3, the numbers of people subject to noise which

TABLE 3

Percentage of population affected at various NNI levels as reported by the Wilson Committee

	NNI		
	30	40	50
Very much annoyed or worse	22	29	52
Moderately annoyed or worse	34	49	65
A little annoyed or worse	51	73	82
Not at all annoyed	29	16	9
Intrusive or worse (estimated)	50	65	80
Startles	43	53	59
TV picture flicker	59	69	76
Disturbs rest or relaxation	26	34	44

they find intrusive, moderately annoying and very much annoying have been re-calculated in Table 4. It can be seen that the actual numbers likely to be annoyed are considerably in excess of the Commissions' figures and those outside the 40 NNI have not yet been included.

TABLE 4

Numbers of people likely to be affected by noise* above 40 NNI

	2-runway	*4-runway*
Intrusive or worse	16,700	24,400
Moderately annoying or worse	12,900	18,900
Very much annoying or worse	9,100	14,400

* Based on Roskill Commission's figures for people affected by noise in excess of 40 NNI only and applying Table 3 (Table 1 has been ignored).

26. Using the same basic data and my proposed adjustments to the values of NNI, the total numbers of people within 25 miles of the Airport whose reactions fall into the various categories are given in Tables 5 and 6. These numbers are of necessity approximate although they are based partly on the figures given by Mr. Pooley† and partly on the 1966 census.

27. The Wilson Committee concluded that during the night an equivalent amount of annoyance was produced by 15 to 20 units less than during the day. This is probably due to the lower night time background noise levels and also to the increased sensitivity of people during the night, for example when they are trying to get to sleep. It may be that in rural areas the difference between the night and daytime background noise is less than it is in urban areas. Whatever the details of this are, the fact remains that unless the number of night-time flights is substantially less (at least 90 per cent less) than that

* "An outline guide to criteria for the limitation of urban noise." NPL Aero Report. AC 39. March 1969. Table VII.

† BS 4142 Method of rating industrial noise affecting mixed residential and industrial areas (BSI, 1967).

* *Site Information for Stage II Local Hearings*. 3. *Cublington (Wing)*. (HMSO; 6s.) Reproduced at p. 1001.

† p. 1023.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 5

Number of people (existing population) likely to be annoyed (moderately) by aircraft noise within 25 miles of 2-runway airport and above 25 NNI

NNI	*Number of residents*		*%* people annoyed*	*Number annoyed*
25–35	rural	67,000	49	32,800
	urban/rural	26,600	41	10,900
	rest	10,500	34	3,600
35–45	rural	26,900	57	15,350
	rest	24,700	49	12,100
45+		9,000	65	5,850
			Total†	80,600

* See Tables 1 and 3.
† Without my adjustments figure would have been—66,550.

TABLE 6

Numbers of people (existing population) likely to be annoyed (moderately) within 25 miles of 4-runway airport by aircraft noise above 25 NNI

NNI	*Number of residents*		*%* people annoyed*	*Number annoyed*
25–35	rural	153,300	49	75,000
	urban/rural	39,200	41	16,700
	rest	56,500	34	19,200
34–45	rural	28,700	57	16,350
	rest	26,500	49	13,000
45+		17,800	65	11,580
			Total†	151,830

* See Tables 1 and 3.
† Without my adjustments the figure would have been—123,280.

during the day, more nuisance will be caused. The extent of the NNI contours at night is almost entirely a question of the regulation of flights during that time. For example if it were assumed that flights continue at the same rate as during the day then the effective NNI values would be something like 15 to 20 units greater than those shown on the day time maps. Based on Mr. Lumb's estimate of the number of night flights if no restrictions are applied the situation is still effectively 5 to 10 units worse during the night compared to the day. Both situations would clearly represent a very serious problem indeed. The Commission's statement that the NNI contours at night would not be any worse than the daytime ones shown is difficult to understand.

28. It is known that there is considerable pressure from operators for more night flights at Heathrow which has been withstood on noise grounds. Is it intended to apply similar restrictions to a new international airport in a rural area?

Summation

29. In terms of the summation of the total effect of the noise nuisance my previous research* into this aspect indicates that the total nuisance is doubled for each increase in the NNI of 10. That is to say, that 50 NNI is twice as bad per capita as 40 NNI or, alternatively, 200 people subject to 30 NNI is equivalent to 100 people subject to 40 NNI. In this way it is possible to aggregate the total exposure to noise. Taking the data in Table 5 and converting the numbers of people between the various noise contours, an equivalent number of people exposed to 45 to 55 NNI has been derived in Table 7.

* "Environmental quality, its measurement and control". Seminar on Urban Renewal, Brussels. 1968.

TABLE 7

Effective number of people exposed to 45 NNI or more and within 25 miles of airport (No adjustments 2-runway)

NNI	*Number of residents*	*Modifying factor*	*Effective number*
25–35	104,100	0·25	26,025
35–45	51,600	0·50	25,600
45+	9,000	1·00	9,000
		Total	60,825

Conclusions

30. The Commission's method of assessing annoyance considerably underestimates the numbers of people involved.

i) In using the opinion of the "average" person the Commission have overlooked the fact that people's reactions vary considerably. In particular a large proportion of people are annoyed by exposure to aircraft noise well below 40 NNI.

ii) The underestimate is exaggerated still further by what appears to be a misinterpretation of the data contained in the report of the Wilson Committee on Noise.

iii) Extending the day-time contours down to 25 NNI, which about a quarter of the population still find moderately annoying, shows that towns such as Ampthill, Aylesbury, Bedford, Bletchley, Buckingham and Leighton Buzzard are significantly affected.

iv) Using the data given in the Report of the Wilson Committee on Noise and taking into account the proportion of people likely to be annoyed at the various levels of exposure to aircraft noise down to 25 NNI at least 123,000 of the existing population will be annoyed at the 4-runway stage. This compares with the Commission's figure of 18,100.

v) I have made an allowance for the lower background noise that exists around Cublington compared to around Heathrow, where the reactions to aircraft noise were established. This increases the number of people annoyed to more than 151,000.

vi) In addition I consider that the population living in the area around Cublington is likely to be more sensitive to noise than that around Heathrow where the more sensitive may have left.

Printed image digitised by the University of Southampton Library Digitisation Unit

31. Noise nuisance at night will be worse than that during the day unless the number of night flights is no more than 10 per cent of that during the day. In view of the commercial pressures it may prove difficult to restrict night flights to this extent.

32. The noise environment of the whole area is likely to gradually deteriorate as the area becomes urbanised and industrialised and surface traffic increases. People not directly affected by aircraft noise are nonetheless likely to suffer noise nuisance as a result of the airport's development.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

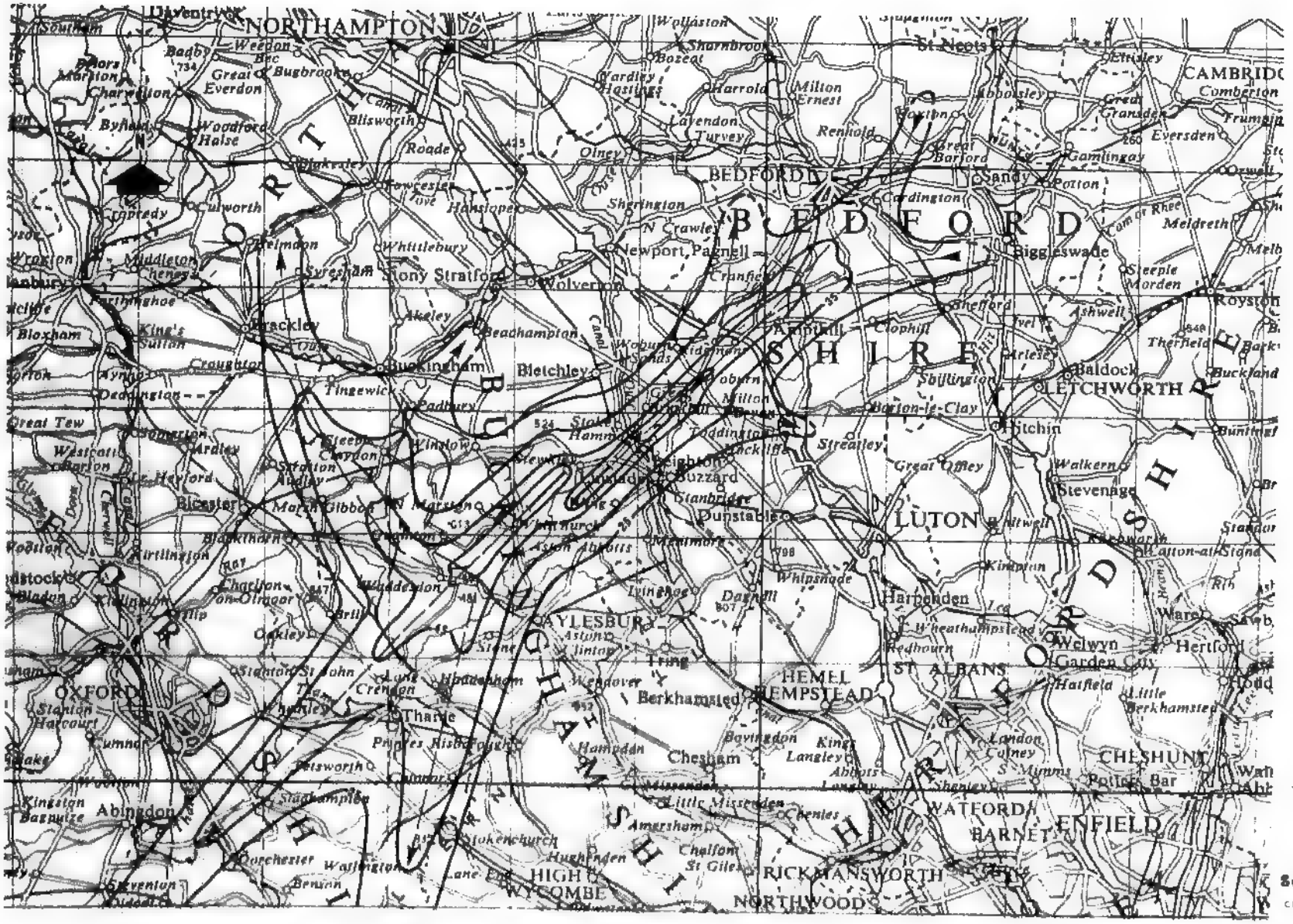


Fig. 1. NNI (day): 2-runway with noise certification. (Mr. R. A. Waller, Wing Airport Resistance Association)

Printed image digitised by the University of Southampton Library Digitisation Unit

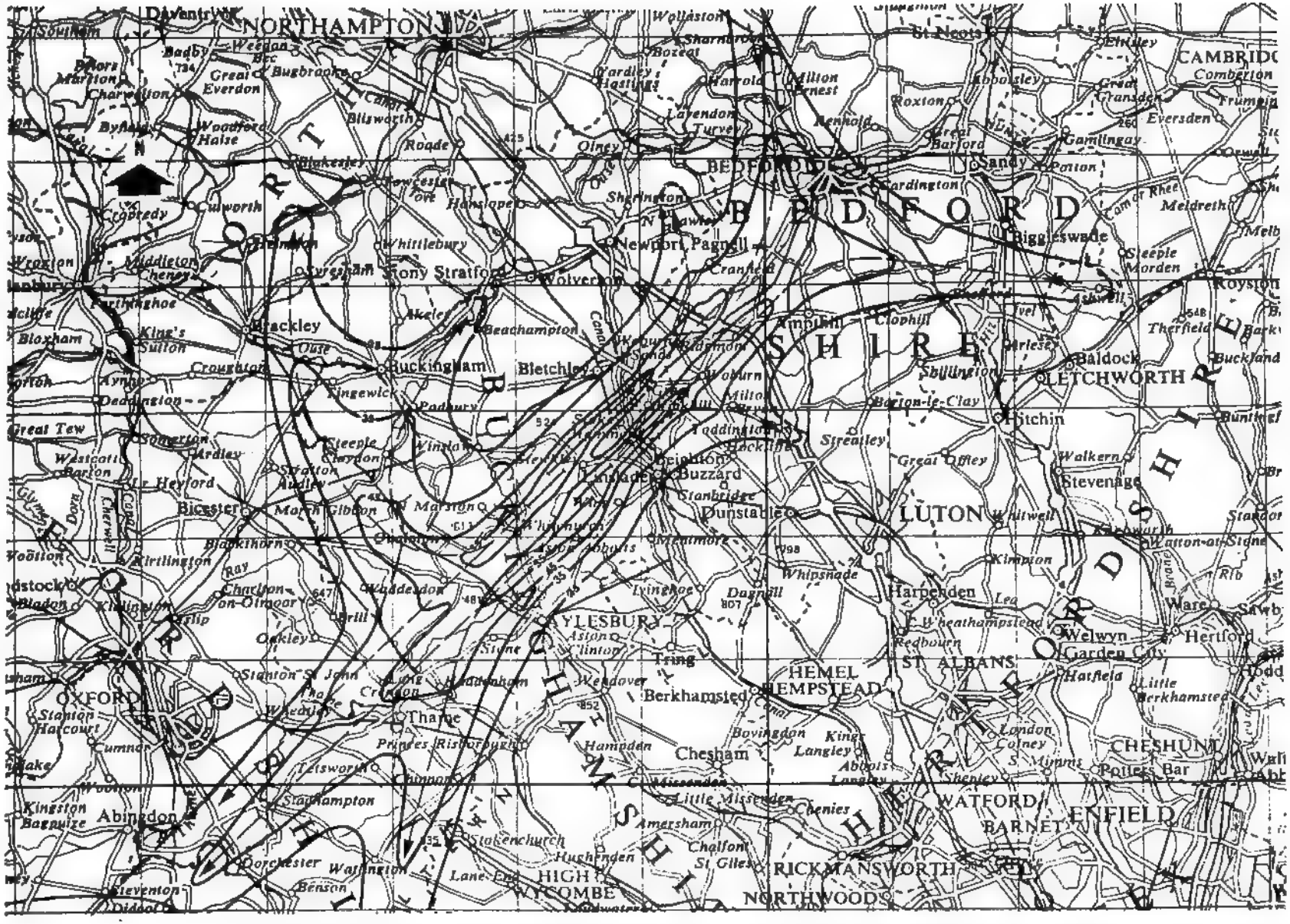
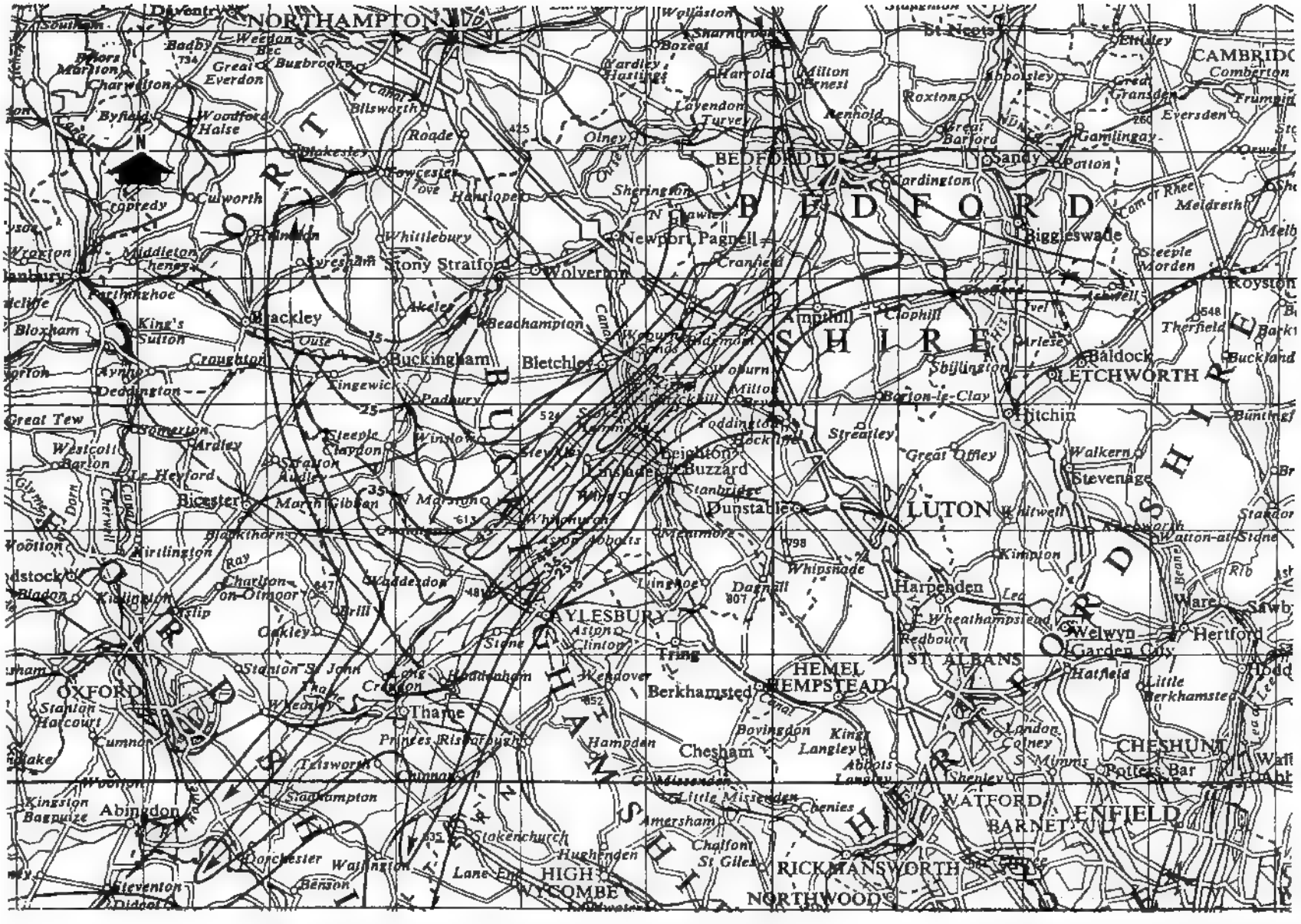


Fig. 2. NNI (day): 4-runway with noise certification. (Mr. R. A. Waller, Wing Airport Resistance Association)

Printed image digitised by the University of Southampton Library Digitisation Unit



NN1 (Night) : 4 Runway
With noise certification

Scale: 1" to 4 miles

Fig. 3

CROWN COPYRIGHT RESERVED

Fig. 3. NNI (night): 4-runway with noise certification. (Mr. R. A. Waller Wing Airport Resistance Association)

Printed image digitised by the University of Southampton Library Digitisation Unit

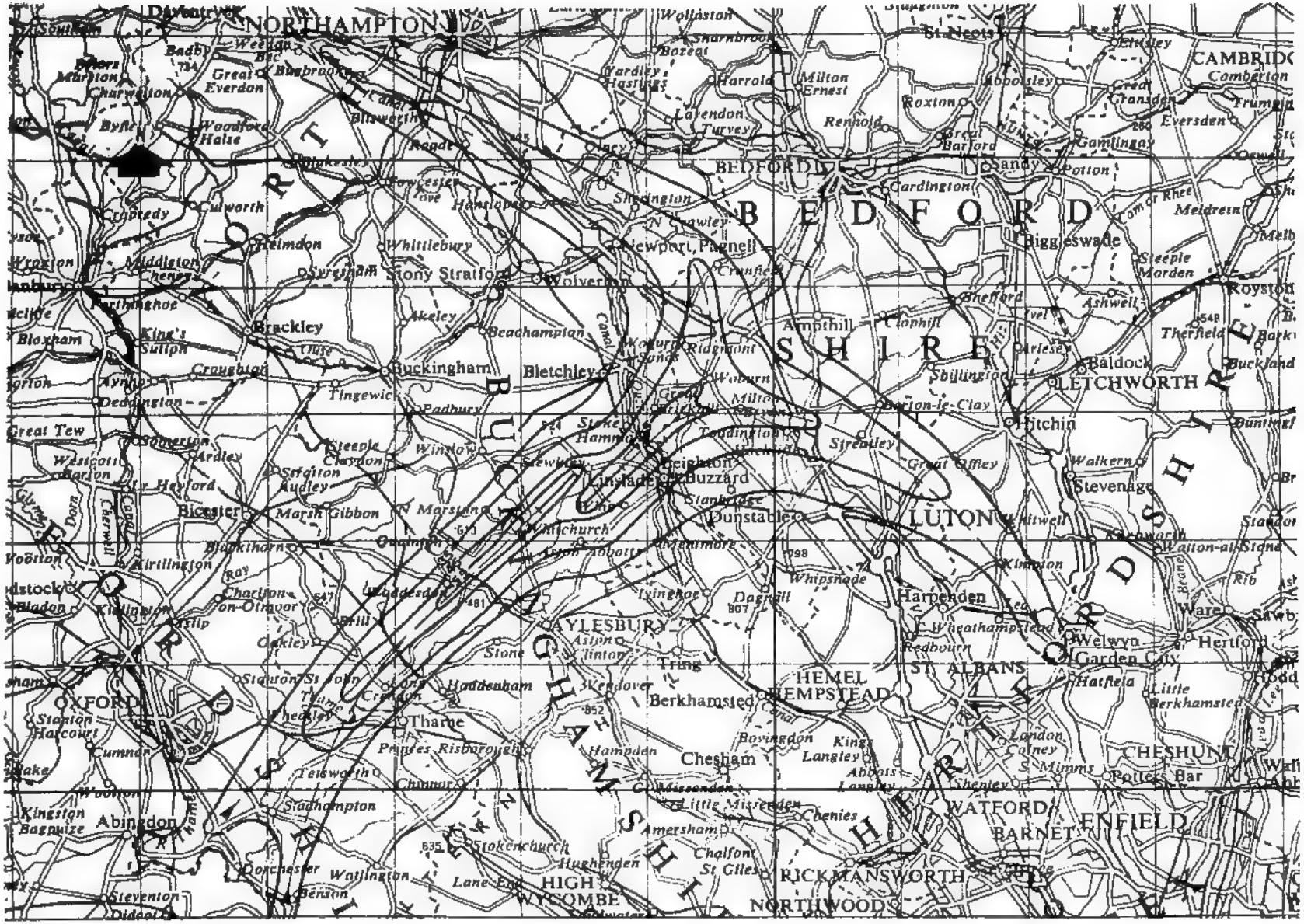


Fig. 4. NNI (day): 2-runway reversed take-off with noise certification. (Mr. R. A. Waller, Wing Airport Resistance Association)

Evidence of Wing Airport Resistance Association

SUBMITTED BY MR. D. M. LUMB*

I am a Bachelor of Science, a Chartered Engineer and an Associate Fellow of the Royal Aeronautical Society. I am a partner of Alan Stratford and Associates, Aviation Consultants. During the last five years Alan Stratford and Associates have been retained to investigate and report on potential development of fourteen airports, or airport sites, in the United Kingdom. These include studies connected with the Third London Airport, Luton Airport and South Hampshire.

Most of these studies involved investigation of air traffic control and surface access problems. ASA was also commissioned to investigate and define the problems of and propose solutions for the integration in to A.T.C. system of vertical take-off and landing aircraft mixed with conventional aircraft traffic in the North of England. I was the partner responsible for this work.

I have approximately 2,000 hours of logged operational flying time on civilian transport aircraft, of which about 300 hours were on operational assessment work involving knowledge of the practical application of air traffic control, both in Europe/Middle East and in the U.S.A.

I have been asked to comment on Air Traffic Control and Surface Access considerations.

Air traffic control

1. The main difficulties associated with Wing as a site for a major international airport from air traffic control considerations are associated with its position which is located under and between Amber 1 and Amber 2 airways at a point where these airways are converging to combine at Daventry.

2. Although initial take-off and final landing flight paths could, with some manipulation, be fitted into the existing controlled air space pattern, implementation of the necessary holding areas for the proposed runway direction (045 grid) would necessitate a substantial increase in controlled air space.

3. To site the two holding areas required near to the ideal position abeam the runways would not be possible without considerable re-arrangement of the existing pattern. The southerly holding area would overlap with that of Heathrow's northern holding area at Garston, and the northerly holding area would be in an unacceptable position blanking off important altitudes of Amber 1 and Amber 2 airways.

4. To site the holding areas to the east of Amber 2 would be possible, the northerly one near Northampton and the southerly one at Letchworth. This would have the minimum effect on the present airways structure, but would involve an increase in controlled air space and the removal of some of the lower flight levels available on Amber 1 and Amber 2. It would introduce very long downwind approach paths when landings were taking place to the north-east, which would occur on about 20 per cent of occasions.

5. The economic penalties resulting from the holding areas being located to the east of Amber 2 would probably mean that a complete re-structuring of the controlled airspace around London, and re-orientations of airways Amber 1 and Amber 2 would be the most acceptable solution. This solution, however, would lead to large increases in controlled airspace.

6. Siting of a major airport at Wing would eventually limit the growth of traffic at Luton Airport, particularly if the present runway remained in use. Luton would ideally require a separate holding area, further increasing the need for additional controlled air space. These developments would in turn restrict movements at Stansted Airport if the intention were to allow that airport to develop.

The departure and landing routes would cause restrictions to be placed on some of the military airfields to the south-west, such as Upper Heyford, Abingdon and Benson, and on Cranfield and Bedford to the north east, and the general aviation airfield at Oxford would also be affected. The London Gliding Club at Dunstable would find its activities further restricted, probably to the point where gliding became an impractical activity in that area. Other gliding areas at Thame and possibly Booker would have their activities curtailed.

7. Summarised, it would be possible to adopt departure, approach and holding areas and link them into the present air traffic control system but only by introducing additional controlled air space and uneconomic penalties on operations. Such a solution, however, would be far from the optimised reorganisation of air space which is logically needed for an airport of the size proposed. The eventual solution would, in my opinion, have to be a major re-structuring of controlled air space both around the London area, between London and Birmingham, and possibly extending as far as the North coast of Wales and North West England. This would result in large increases in controlled airspace, with its attendant disruption of, and limitations on, military and general aviation activity along a densely air trafficked axis of the country. Apart from a location which would physically interfere with final approach and initial departure paths of an existing airport, it would be difficult to find a site in South Eastern England for the Third London Airport where integration with the

* See also p. 1630.

Printed image digitised by the University of Southampton Library Digitisation Unit

air traffic control system poses more problems, or one where the eventual solution will require more reorganisation of navigational aids and controlled air space.

8. The benefits of improved navigational aids and aircraft control in such forms as pictorial displays, improved radar and data links, etc. will undoubtedly help to alleviate the difficulties associated with awkward siting of airports. It can be argued however that these improvements should, where possible, be utilised in providing better services to air space users in expediting the safe, rapid and orderly flow of traffic rather than in bolstering up an over extended A.T.C. system. Much of the efficiency and potential of these aids is likely to be consumed in the latter task if an airport is situated at Cublington.

Surface access

Present and current planning position

9. *Roads:* The M1 motorway runs within 10 miles of the proposed site, and the A5 within 5 miles. There are believed to be tentative proposals to link both the M1 and A5 by means of a mainly new dual carriageway road to the A418 south-west of Leighton Buzzard, within 2 miles of the site. The A413, linking the A40 at Gerrards Cross with Buckingham via Aylesbury is being improved.

The A41(M) linking Berkhamsted with Watford and the proposed London D-ring is scheduled for completion by 1975, and the relevant portion of the D-ring by 1980. South of the A41 line, the M40 Oxford to London D-ring is scheduled for the mid-1970s. Present road distance, via the M1 from Wing to Central London is 45 miles and a typical off peak road journey time is 1 hr. 20 mins. Peak journey times are very variable because of congestion. Present road distance from Wing to Heathrow is 40 miles, with an off-peak journey time of 1 hr. 5 mins.

10. *Rail:* The main Crewe–Rugby–Bletchley–Euston electrified trunk route is some two miles east of the site, and is also the Birmingham–Coventry–London route. To the west (7 miles) there is the branch line between Aylesbury and Marylebone. North (3 miles) is the cross-country Bletchley–Bedford rail line connecting to the un-used Bletchley–Oxford link. Present Bletchley–Euston fastest (non-stop) train time is 49 minutes, and Euston–Bletchley (non-stop) 42 minutes. Bletchley–Birmingham is 1 hr. 35 mins. (four stops) and Birmingham–Bletchley is 1 hr. 15 mins. (2 stops).

11. The present and currently planned roads in the area have obviously been designed for the natural growth in traffic transversing and generated within the area. It is not likely, therefore, that they would be capable of absorbing the large increase in movements which would eventually be occasioned by building a major airport at Wing without substantial modification, improvement and extension. Before meaningful decisions could be taken on the efficient provision of surface links there are several important factors to be considered which relate to traffic origination, destination and modal splits.

The location of the site between the industrial midlands of the Birmingham–Coventry–Leicester arc and London will encourage more traffic to move directly to the airport from the former areas than is presently the case at Heathrow. It appears unlikely therefore that a concentration upon improving the airport–London link would of itself be sufficient in the case of Wing, and the improvement of the links fanning out towards the North West through to the North East will also demand a high priority. To meet the demand generated by its position the area would need to become the centre of a web of surface links.

12. Such a pattern would help to distribute the loading on present and planned facilities, and hence postpone to some extent the reaching of saturation on some of the links. On the other hand, it would eventually be more demanding on land usage and interference with amenities. It may be that on more detailed study, this levelling of the load would not significantly reduce the costs of the airport–London road and rail links. The latter links would need to be provided at an early stage in any case, and the costs of their airport spurs and provision for future traffic increases would be incurred. A detailed cost-benefit analysis is required to establish these possibly very significant extra costs.

13. Whilst there is a considerable percentage of passengers that transit through the centre of London in using the present airports, and hence have a tendency to use public transport, an airport located at Wing might, by the nature of its position, attract a higher percentage of passengers more likely to use private transport. Presuming that some form of high-speed rail link is required for London's third airport, the situation at Heathrow, in the absence of a rail link, it not analogous. What statistics are available for Heathrow on passenger origination, destination and modal splits are likely to be misleading if applied without caution to the site at Wing.

14. There may be a tendency, based on Heathrow/Gatwick experience and statistics to over-emphasise the percentage of traffic which will be carried on the airport–London surface links and hence conceal the importance and costs of the additional links in other directions which may be required for Wing.

15. There seems therefore to be a particular requirement in the case of Wing for an attempt to be made to establish passenger origination, destination and modal split, together with the true costs and effects on amenity of providing the necessary links which might otherwise remain concealed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the College of Aeronautics, Cranfield

SUBMITTED BY WING COMMANDER C. G. B. MCCLURE*

Introduction

1. The College of Aeronautics was founded in 1946 for the purpose of providing advanced scientific courses in aeronautics and other branches of engineering, science, technology and management and for the undertaking of research. The Governors are appointed by the Department of Education and Science and the College receives a grant from the government.

2. The College offers a series of one-year and two-year postgraduate courses in a wide range of technological and management subjects designed to enable students to fill senior and responsible positions in industry, transport, government services and research. It also offers short courses in special topics of interest to industry and as an educational service to universities.

3. The teaching departments of the College are Aerodynamics, Aircraft Design, Aircraft Propulsion, Electrical and Control Engineering, Materials, Production Engineering, Flight, Mathematics, and the Cranfield School of Management.

4. The total one and two year student population at the College in 1969 is 340, and this figure is increasing at the rate of 20 per cent per year. Of this number, 129 are studying Aeronautical subjects. The academic entry qualifications required are high, and in a typical year, were composed of the following:

(a) 134 University graduates
(b) 22 Professional qualifications
(c) 172 Higher National Diplomas or higher.

5. The average age of Cranfield students is 26 years and they originate from the following sources:

(a) Aircraft and associated industries	102
(b) Other industry	140
(c) Government services	25
(d) The Armed Forces	30
(e) Teaching	8
(f) University and Technical Colleges	23

6. The students at Cranfield come from many countries. In 1968, the student population of 328 was composed of 261 students from the United Kingdom, 42 from Commonwealth countries, and 25 from Foreign countries. The Commonwealth countries were Australia, Canada, Ghana, Hong Kong, India, Kenya, Malaya, New Zealand, Pakistan and Singapore. The Foreign countries were Algeria, Burma, Cuba, Egypt, France, Greece, Jordan, Libya, Holland, Nepal, South Africa and the United States of America.

7. A list showing typical occupations of former students of The College of Aeronautics aged 40 years and over is shown at Appendix A.

The Department of Flight

8. The Department of Flight is responsible for the teaching of the techniques used in the flight testing and the flight development of aircraft. In addition to this primary task, the Department undertakes special contract work for the Ministry of Technology. This work includes flight test research and the carrying out of special modifications to aircraft. Recent examples have been research flying for the purpose of investigating the phenomenon of aquaplaning, slush drag research, and investigations into runway braking friction. Special modifications have been the installation of the triplex autoland system in a Varsity, the Anglo-French navigation-attack system in a Varsity and a versatile auto-pilot computer in a Comet.

9. In addition to flying operations associated with testing and development, the Department undertakes the flying training to Private Pilot Licence standard of selected College students.

10. *Aircraft Types.* To fulfil these commitments, the Department operates the following aircraft types:

(a) Two Dove 5 aircraft
(b) Morane-Saulnier MS 760 Paris 1A
(c) Hiller 12B helicopter
(d) Four Auster Aiglet trainers
(e) Two Beagle Pup trainers
(f) Hunter F.6 (operated under contract for the Ministry of Technology)
(g) Canberra B.2 (operated under contract for the Ministry of Technology).

11. *Airfield and Radar Facilities.* Cranfield airfield is equipped with the following navigational equipment:

(a) VHF Omni Range Beacon
(b) Non Directional Beacon
(c) Instrument Landing System installed on Runway 22.

Radar assistance for the separation and navigation of aircraft during flight test operations is provided by the Royal Aircraft Establishment at Bedford to ensure that Cranfield aircraft do not conflict with the Ministry of Technology and Industry aircraft operated by them.

12. The aim of this paper is to show what effects the siting of a major international airport at Cublington would have on the present operations of the

* See also p. 1631.

Printed image digitised by the University of Southampton Library Digitisation Unit

Department of Flight and to indicate, where possible what would be required to alleviate these effects.

The airspace requirements of the Department of Flight to meet its allotted task

13. Instruction in flight test technique is carried out in the College Dove and Paris aircraft. A typical sortie for the Dove varies from 25 minutes to 50 minutes, and for the Paris, from 30 minutes to 1·00 hour. Of these flight times, during normal operations in good weather, approximately 10 minutes is used for take-off and climb out, and 10 minutes for the recovery and landing.

14. The seating capacity of the Dove is six students and of the Paris, three students. For the one year and two year courses the normal number of students flown during any one laboratory period is 18 for the Dove and 6 for the Paris. This means that each Dove will fly three times and the Paris twice. A laboratory period is normally from 2 p.m. to 5 p.m.

15. The heavy demands of lectures and briefings mean that the time available for flying operations must be utilised with the maximum efficiency; but with the present College organisation of afternoon laboratories the task is normally completed in the time available.

16. Experience has proved that to carry out these intensive flying periods the following operating criteria must be satisfied:

Dove aircraft

(a) Unrestricted access to airspace up to 12,000 feet.

(b) An unrestricted operating area 30 nautical miles × 60 nautical miles.

(c) Rapid recovery when Instrument Meteorological Conditions exist.

Paris aircraft

(a) Unrestricted access to airspace up to 30,000 feet.

(b) An unrestricted operating area 60 nautical miles × 30 nautical miles.

(c) Rapid recovery when Instrument Meteorological Conditions exist. This is of paramount importance when the aircraft is operated with a low internal fuel state.

Industrial and university short courses

17. The Department of Flight provides a short course in flight test techniques of one or two weeks duration. Advantage is taken of this facility by the Aeronautical Engineering Departments at all but three of our universities. One of these three would like to send students on these courses, but no further capacity exists within the Department.

18. The total numbers of students involved in these courses in any one year is approximately 200. Short courses are arranged so that flying takes place during the morning and afternoon of seven out of the total of the ten working days of a fortnight's course. A maximum of 72 students can be accommodated in this way. However, this requires the maximum utilisation of both College Dove aircraft, and all pilots and lecturing staff are fully involved.

19. The operating criteria are the same as those in para. 16(a). Such an intensive flying programme organised so that a maximum number of students can be flown in the limited time available means that no restriction on operation can be tolerated if the task is to be met.

The ab initio training flight

20. The ab initio training flight exists to train selected aeronautical students in the rudiments of aircraft handling. A number of these students progress during their time at Cranfield to Private Pilot Licence standard. To fulfil this task the Flight operates four Auster Aiglet trainers and two Beagle Pup trainers. In due course, the Aiglets will be completely superseded by the Beagle Pup.

21. Students are programmed for flying when their lecture and study commitments permit. Each training period is of one hour duration and this includes the time necessary for briefing and de-briefing. Average sortie lengths are 35 minutes. Because of the work load of the one and two year courses, few students have more than two or three flying periods per week. To achieve continuity in flying training, a proportion of flying instruction is carried out at week-ends for students who are available on these days.

22. *Airspace requirements.* To carry out the flying training of students to Private Pilot Licence standard, the following airspace is required:

(a) unrestricted circuit operations to 3,000 feet above ground level.

(b) an unrestricted operating area 30 nautical miles × 30 nautical miles up to a height of 5,000 feet above ground level.

(c) freedom to carry out cross-country exercises including landing at other airfields when visual meteorological conditions exist.

Research flying

23. From time to time the Department undertakes research flying as awarded by contract by the Ministry of Technology. At the present time the Department operates a Hunter F.6 and a Canberra B.2 aircraft. These aircraft are used for the evaluation of braking friction on different runway surfaces, and for the measurement of slush drag on aircraft take-off performance. The air space requirements are thus in general restricted to the Cranfield circuit. However, it is necessary on occasions to fly the Hunter for the purposes of air tests, then its airspace requirements become that of the Paris.

24. The experiments with the Canberra B.2 into slush drag phenomena required the construction of special ponds on the runway. These ponds have been designated by the Ministry of Technology as a

Printed image digitised by the University of Southampton Library Digitisation Unit

National Slush Drag Facility, and from time to time it is used by aircraft firms for water drag and water ingestion trials.

25. The Department hopes that, in the future, other contracts and other aircraft will be allocated for research. It is impossible to say what kind of flying this would involve but obviously easy access to unrestricted airspace would be a fundamental requirement.

The effect on flying operations of an international airport at Cublington

26. No proposals for the establishment of controlled airspace have yet been made in respect of Cublington by the Roskill Commission. Therefore, it has been necessary for the Department to make certain assumptions in respect of controlled airspace when considering the possible effects that this airfield would have on our future flying operations. These assumptions are as follows:

(a) That a Control Zone of similar size and shape to that existing at London (Heathrow) would be established.

(b) that a Terminal Control Area extending from 1500 feet to 25,000 feet for a distance from Cublington of 25 nautical miles would be established.

(c) that the present Upper Air Route 39 would become an airway.

These assumptions are shown on the map at Appendix B.*

The effect of this controlled airspace on college flying operations

27. **The Dove and Paris one- and two-year courses**

(a) *Flying time*

A study of the map at Appendix B will show that free airspace would not be available to College aircraft at a distance of less than 15–20 nautical miles from Cranfield. This means that additional flying time would have to be spent on climb out and recovery through a designated corridor. The effects of this additional flying time on a typical afternoon laboratory period can be seen from the chart at Appendix C.† In this chart, two typical sortie profiles are shown. The first shows a sortie of 20 minutes duration, and the second, a sortie of 40 minutes duration. Assuming that no weather minima are imposed upon the Department when operating in controlled airspace, it shows that 30 minutes additional flying time required for climb out and recovery would mean that a normal three sortie pattern could not be achieved in an afternoon's laboratory.

(b) **The operating costs of the increased flying time**

(i) *Dove*

Under present conditions, the two College Doves cost approximately £84 each per hour to operate. Last year, 116 students were flown in the Department Doves. This is a cost per student of £125. It is estimated that the additional flying time required for climb out and recovery in controlled airspace would double the Dove flying hours per year, and that this would increase operating costs by 66 per cent. This means that the cost per student would be £210.

(ii) *Paris*

The M.S. 760 Paris, costs £167 per hour to operate. With present commitments, this is approximately £8,000 per year. With the high cruising speeds possible with this aircraft, it is estimated that the increased fuel consumed would only increase costs by 50 per cent. This would increase the yearly operating cost to £12,000. The cost per student is £230 per year; an increase of 50 per cent would make the cost per student per year £345.

28. **Industrial and university short courses**

(a) *Flying time*

The maximum utilisation of Department aircraft and personnel enables 72 students to be flown during a two-week course. Any increase in flying hours would mean that this task could not be met. The maximum number of students that the Department could train with a 30 minute increase in flying times per sortie would be 48. In financial terms, College income per short course student is £50. A decrease of ⅓rd of student members would mean an annual loss of revenue of £4,000.

(b) *Operating costs*

A short-course Dove student costs £40 per head per course. This figure includes the total operating cost for both Doves. If, for reasons of policy it were decided that the numbers of short course students could not be reduced, then for the Department to meet its commitments it would be necessary for a further Dove aircraft and its associated instrumentation to be purchased. The capital cost of this would be £20,000. The operating cost of three Doves with the same number of students and including an additional pilot's salary, would increase the cost per student to £55. If an additional lecturer at a gross annual salary of, say, £3,000 per year were required, this would increase student cost per head by a further £12 to £67.

(c) *Total increased operating costs for one- and two-year students and short course students*

The increase of £15 per short course student and the increase of £85 for long term students

* Not reproduced.
† p. 1215.

Printed image digitised by the University of Southampton Library Digitisation Unit

would add to the total operating costs of the present establishment by £14,500 per year. This is composed of £15 × 210 for short course students, and £84 × 116 for long term students. However, because of the lack of time available, the task could not be met with the existing establishment. It would be necessary to appoint an additional lecturer at a gross annual cost of £3,000 and to purchase a Dove and its necessary equipment at an estimated cost of £20,000. This would mean that in the first year of operation, as a result of the airspace restrictions, the cost to the College would be £37,500, and thereafter £17,500 per year. When this cost is combined with that of the Paris, the total extra costs in the first year are £41,500 and thereafter £21,500.

29. *The ab initio training flight.* With the restrictions that would be imposed by a Control Zone and a Terminal Control Area on the movements of light aircraft, it is considered that the only flying that would be permitted would be circuit training. This assumption is based on the restrictions that are imposed upon Northolt, an airfield whose situation to Heathrow is similar to that of Cranfield and Cublington. This would mean that all "out of circuit" work vital to the training of a competent private pilot such as spinning, forced landings, and navigation, could not be carried out without great difficulty, because the time necessary to fly out to unrestricted airspace would take up the whole of a student's allocated instructional period. Therefore, Private Pilot Licence training at Cranfield would have to cease.

30. *Research flying.* Ministry of Technology contracts are a vital part of the Department's work. Not only do they give valuable experience in the maintenance of complex aircraft to ground personnel, but the undertaking of research plays a fundamental part in keeping Department staff abreast of the important developments that are taking place in aeronautics. If the Department is unable to operate modern military aircraft, as and when required, it will be quite impossible for the Department to carry out any more research work of this kind. This can only have a detrimental effect on the reputation of the Department as a teaching establishment.

31. *Airfield and radar facilities.* In the absence of published information on the Third Airport's Controlled Airspace, and particularly its holding areas, it is impossible to say what would happen to the present navigational equipment at Cranfield. It is highly likely however, that the College would be unable to utilise either its VOR or NDB or the ILS equipment installed on Runway 22. Further, it is not known what effect the siting of a Third Airport at Cublington would have on the operations of the Royal Aircraft Establishment at Bedford (Thurleigh). It is fundamental to the safe operation of aircraft engaged in flight test operations that radar surveillance be available at all times. Should it be considered necessary by the Ministry of Technology to cease flying operations at R.A.E. Thurleigh because of the proximity of an airport at Cublington, the radar assistance available to the College from R.A.E. Thurleigh would no longer be available. This means that additional capital expenditure would be necessary for the College to obtain its own radar facilities.

Conclusion

32. The Department of Flight fulfils a vital commitment to aeronautics in the United Kingdom by the training of students in the techniques in flight testing and development of aircraft. Its present organisation is such that it is able, without undue difficulty, to fulfil this task. The siting of an international airport at Cublington would impose very severe restrictions on the operation of College aircraft. The Department would be unable to carry out the training of one- and two-year students and of the short course students without a fundamental reorganisation of the College and of vastly increased operating costs. Further, it would be necessary to virtually cease the flying training of aeronautical students and to carry out research contracts for the Ministry of Technology.

Therefore, the College of Aeronautics will be very severely hindered in its operations if the Third London Airport is sited at Cublington.

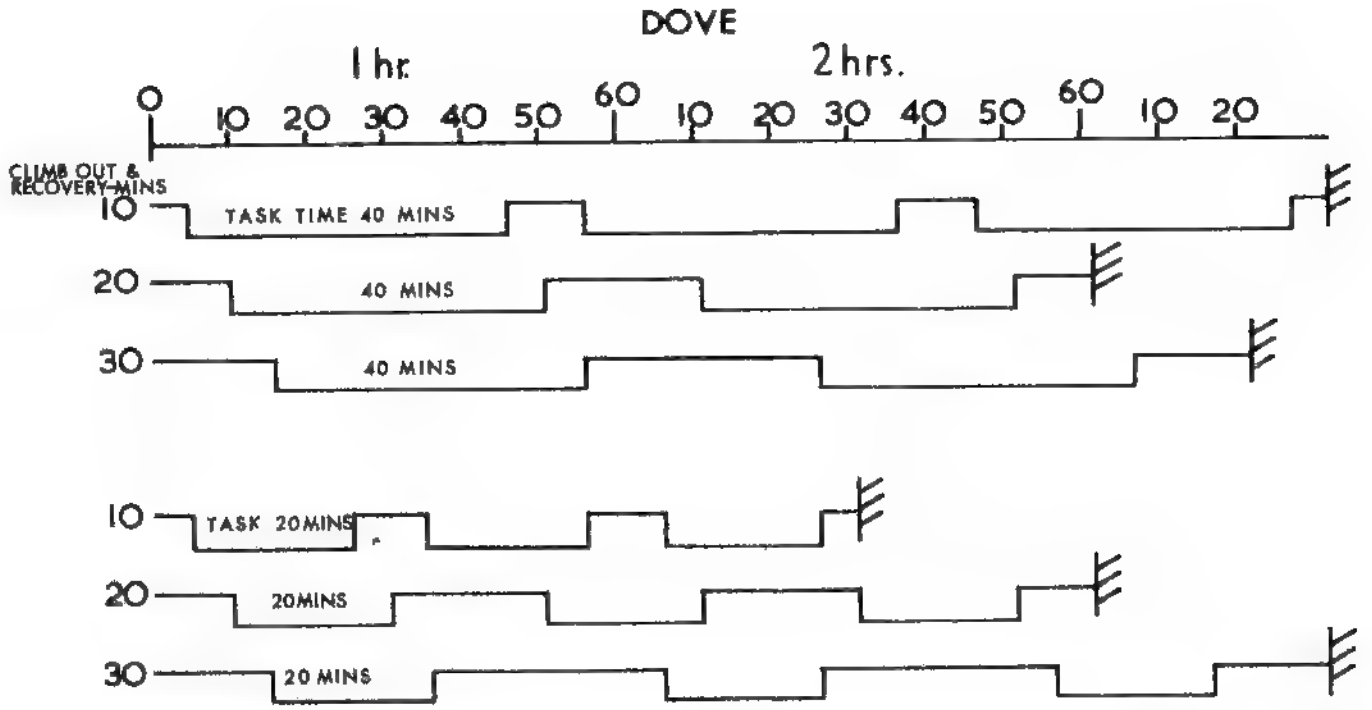
APPENDIX A

Former students of the College of Aeronautics, aged 40 and over

Name	*Year*	*Present appointment*
Armitage, P. J.	1949/51	Head, Test and Evaluation Branch, National Aeronautics and Space Administration, Manned Spacecraft Center, Houston, Texas.
Erb, R. B.	1952/54	Assistant Chief (Lunar and Earth Sciences Division) National Aeronautics and space Administration, Houston, Texas.
Fozard, J. M.	1948/50	Chief Designer (Harrier) Hawker Siddeley Aviation Ltd., Surrey.
Hearne, P. A.	1947/49	Director and Joint General Manager, Elliott Flight Automation, Kent.
Hinchliff, S.	1951/53	Managing Director (Director on the Board of the Dowty Group,) Dowty Seals Ltd., Glos.
Hooper, R. S.	1946/48	Executive Director and Chief Engineer, Hawker Siddeley Aviation Ltd., Kingston, Surrey.
Rogers, V. A. B.	1946/48	Chief Designer, Westland Aircraft Co. Ltd., Somerset.
Rose, R. G.	1949/51	Technical Assistant for Apollo to Flight Operations Director, National Aeronautics and Space Administration, Manned Spacecraft Center, Houston, Texas.
Stanton-Jones R.	1947/49	Managing Director, British Hovercraft, Isle of Wight.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



Appendix C. Effects of additional flying time on a typical afternoon laboratory period.
(Wing Cmdr. G. C. B. McClure, Wing Airport Resistance Association)

Evidence of Wing Airport Resistance Association

SUBMITTED BY MR. D. W. MCQUE*

The effect of the siting of the Third London Airport at Nuthampstead, Cublington or Thurleigh on gliding by the College of Aeronautics Gliding Club

The three sites names are considered together because the controlled airspace requirements for the new airport are not known in detail and, therefore, two situations relative to controlled airspace are considered:

(1) Cranfield being situated inside a control zone.

(2) Cranfield being situated a short distance from a control zone, under controlled airspace at low level.

It is almost certain that (1) will apply if the airport is sited at either Cublington or Thurleigh and unlikely to apply if it is sited at Nuthampstead, unless a control zone as large as that at Manchester is eventually required. It is equally almost certain that (2) will apply if Nuthampstead is chosen.

It is perhaps relevant at this stage to consider the removal of the Clubs to another site.

Unlike most clubs, only half the members are drawn from the general public, the remainder are College students and staff. Considerable assistance is given to the club by the College so that inexpensive on-the-spot training facilities are available to resident students. Three of the aircraft, including the two training two-seaters, the use of the airfield and hangarage are provided by the College.

One other club machine and several syndicate-owned aircraft are also operated by the club, the cost of operation and maintenance being borne by the club. No professional staff are employed.

Many of the students would be unable to spare the time or the money to travel to another site (thereby nullifying a raison d'etre of the club), and all the facilities provided by the College would be lost to the club, along with many of the members, whose travelling distances would become excessive. The situation would thus become that of a few enthusiasts facing the near impossible task of finding and financing a new site with new training aircraft.

Thus we conclude that removal of the club to another site is not possible and that the provision of alternative gliding facilities in the area is an extremely remote possibility.

1. Cranfield being sited inside a control zone:

1.1. It is almost certain that gliding from Cranfield would be prohibited.

1.2.1. All flying would be under the control of the air traffic services of the airport. Although gliders are amenable to control in the sense that the pilot may avoid certain areas, they are not amenable to outside control directing them to fly at given heights and bearings and their low flying speed makes it impossible for them to vacate an area quickly. Under these circumstances it is unlikely that glider flying would be permitted within the zone.

1.2. It is possible that a dispensation would be given to gliders provided they were confined to a small area of the zone and did not exceed a stated altitude. This would probably be 1,000 to 1,500 feet. Modern training methods utilise aero-tows to 2,000 feet for much of the flying; at Cranfield the remainder of the launches are by motor-tow giving heights between 1,000 and 1,500 feet. The club's statistics over the last three years show that on average there are 2,000 launches per year of which an increasing proportion is by aero-tows. In 1969 this proportion has already reached 60 per cent of launches. Whilst the bulk of training can be carried out (albeit inefficiently) from launch heights of 1,000 feet it is unsafe to initiate some exercises from this height and it would therefore be impossible to train safe pilots with this limitation.

Soaring and soaring instruction would of course be ruled out and no clubs can exist for long on training alone without being permitted to indulge in recreational and competitive flying.

2. Cranfield being situated a short distance from a control zone, under controlled airspace at a low level

2.1. With the existing regulations, the degree of restriction would depend on the type of controlled airspace. Airways are permanent IFR, control areas are not. Since, as previously stated, gliders are not amenable to outside control, they are normally barred from entering airspace which is permanent IFR. However, at this time there is a dispensation allowing gliders to cross airways in VMC but it should be noted that gaining height by circling is not allowed and that in any controlled airspace the maximum operating height is effectively limited to 1,000 feet below cloud base in order to stay in VMC.

2.2. If the controlled airspace is an airway, this will place a ceiling on operations at its lower limit. If this is 1,500 feet amsl the restrictions will be as in 1·3 (Cranfield is 362 feet amsl). If the lower limit is 2,500 feet amsl, normal training could continue but soaring would be impossible. Aerobatic flying would also be severely restricted since inexperienced pilots are not

* See also p. 1632

Printed image digitised by the University of Southampton Library Digitisation Unit

normally allowed to initiate manoeuvres below 2,500 feet above ground.

At 3,500 feet amsl some restricted soaring would be possible, but the critical early stages of a cross-country flight would be difficult for a beginner since this would probably allow him less than 10 minutes to find a second usable thermal. (Beginners are normally told to forsake soaring and transfer all their attention to the landing phase when they descend to 1,000 feet above ground, away from home).

2.3. If the controlled airspace is a terminal control area, the upper limit for soaring under existing regulations would be 1,000 feet below cloudbase. On many days this would be as severe as the airway case. It should be noted that the lowest grade of international certificate requires a climb to approximately 5,000 feet above ground, This is not a high level qualification, over 2,300 have been issued in this country and it is a normal qualification for entry into competitions.

2.4. The existence of a large control zone with its attendant low level airways, a short distance from Cranfield, would severely restrict cross-country flying.

In conclusion, we feel that even if the club could continue operations in the restricted manner described, we would feel continually threatened. Experience has shown that the demand for controlled airspace is always increasing and that the restrictions applied to it become greater.

We are very pessimistic about the future of the club should the Third London Airport be built at any of the sites mentioned.

APPENDIX

The sport of gliding in Britain

Gliding is a sport of great depth which attracts to it people from all walks of life. It is not a spectator sport. Apart from the legal requirement that no one below the age of 16 years may fly solo, there are no age limits, many of its adherent carrying on beyond the age of 60. The ground activities on the flying field provides healthy exercise for the average member, yet there is room for many physically disabled people. Gliding demands team-work on the ground and self-reliance in the air; the knowledge that his safety depends on his own decision, in common with many other sports, adds spice to the pilot's environment.

The flying activities in which the average glider pilot may indulge can be divided into four categories, local soaring, cross-country flying, competition flying and aerobatics.

While "local soaring" the pilot does not deliberately put himself out of gliding range of his base, but with modern gliders this can mean that the pilot has an area of more than 2,000 square miles to roam in.

When the pilot flies cross-country, he may be aiming to reach a particular destination, or to fly a course around turning points to arrive back home, or just trying to go as far as he can. He may be trying to better his own previous performance, taking weather conditions into account, he may be trying to qualify for an internationally recognised badge, he may be trying to break a speed record, or he may just be out to enjoy himself. His skill in flying the glider and his judgement of the weather conditions, together with a little luck, will decide whether he finishes his task or has to land in a field. His boundaries are the coast and although he seldom climbs above 10,000 feet, the height record for this country is over 30,000 feet.

Competition flying is just an extension of cross-country flying, where the pilot is pitting his skill against other pilots flying the same task on the same day. Very often handicapping and complicated scoring systems are used in order that the winner shall be the best pilot and not just the luckiest, or the man with the most expensive glider.

The retrieving crew, too, can help their pilot towards success, it takes skill and judgement to take the trailer to the right place at the right time, and making sure that the pilot gets sufficient sleep between tasks is not the least of their responsibilities.

Most experienced pilots occasionally indulge in aerobatics, if only to "burn off" spare height at the end of a soaring flight. The aerobatics demand skill and concentration and certainly demonstrates the pilot's ability to handle his aircraft.

Compare local soaring with fresh water sailing, competition flying with motor rallying, aerobatics with water-skiing, all with the view of the mountaineer thrown in for good measure. Yet gliding is not a rich man's sport, their are many pilots who spend less than £100 a year on their flying.

Gliding in this country is exceptionally free from legal restriction. The controlling body, the British Gliding Association, made up from representatives from the separate clubs, has created its own aircraft inspection system, issues its own Certificates of Airworthiness and its own flying regulations which are adhered to by the movement because they come from within and are believed to be in the interests of the movement.

The Association was even responsible for the glider design requirements which were readily accepted by the Air Registration Board. This lack of interference by the State is due in past to the high calibre of the people leading the movement, gliding attracts such people, perhaps even breeds such people.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY MR. V. J. SCOTT*

I am a Naturalist and have lived all my life at Aston Abbots, Aylesbury, Bucks. For the last twenty years I have made a study of bird movements in this area. The evidence I now give deals with the facts connected with local Starling roosts, numbers, flight routes and possible hazard arising from these bird movements to aircraft land and taking off in an area close to the roosting sites.

There are two particular roosts with which I am concerned, one is at Claydon Woods and the other at Fox Covert, Aston Abbotts. Although I have no information on the approximate numbers of birds using the roost at Claydon Woods, I do have some facts on flight directions and distance. I have more detailed facts on the roost at Aston Abbotts, the winter occupation of which apparently alternates with that of the Claydon site.

Claydon Woods roost: This is approximately six miles from the perimeter of the proposed airport site—Grid reference 7123. From the end of October onwards flocks of well over 1000 birds were of daily occurrence, flying towards the Claydon site from all directions from a short time before sunset to about dusk, the actual times at which the birds could be seen depending of course on distance from the site. Flock size increased up to about mid-January and started to drop off sharply in late February.

In the mornings birds do not leave the roost in dense flocks, but radiate outwards in a circular pattern, gradually thinning out with distance. The time of leaving the roosts in the morning is more variable than time of arrival and would seem to vary according to weather.

The height of the flocks also varies, and with conditions of low cloud, fog or mist sometimes the flocks are only just clear of the ground, rising to clear the obstacles in their path.

Distance: large flocks travelling towards the Claydon roost have been noted (personal observation and others) passing over Brill, Oakley, Cuddington, Aylesbury, Bierton, Aston Abbotts, Wing, Soulbury, Bletchley, Buckingham, Winslow and Whitchurch. Lack of reports north-west of Claydon is due to lack of personal observation.

Aston Abbotts, Fox Covert roost: This is just under one mile from the perimeter of the proposed airport site—Grid reference 847194. It is some 7 acres, blackthorn coppice with mature oak and sycamore. It is occupied usually from the end of October to the end of February at intervals of two or three years, the last occupations being in 1966/67 and 1967/68 with behaviour similar to that at Claydon, with vast flocks coming in from all directions near dusk. The flocks vary from a few dozen birds to vast flocks more than half a mile long and containing probably upwards of 20,000 birds.

When the roost was used in 1952 the numbers almost certainly exceeded one million birds but this was exceptional.

An estimated count of roosting starlings in mid-January, 1967 based on the average roosting density per cubic yard of occupied roosting space gave a total exceeding 500,000 birds. This is a conservative estimate.

Effect of loud aircraft noise on birds

Various species react in different ways; in general the birds with which this statement is concerned are extremely tolerant of a very high level of noise, even during the night. As an example, I refer to the mass roosts in Central London which are unaffected by traffic noise.

Attempts to force starlings to abandon the roost at Aston Abbotts some year ago by using shot-guns as the birds settled in to roost was a complete failure. Flocks of thousands flew into the air, only to settle within minutes in other parts of the wood.

It appears extremely unlikely that flocks passing to and from the local sites would avoid overflying the proposed airport.

It is also most unlikely that the birds would abandon their roosting sites, both of which (Aston Abbotts (Fox Covert) and Claydon Woods) are actually outside the area of development as far as one can gather at this stage.

Further data on bird behaviour

It is impossible to forecast which site will be used until the first birds arrive in October/November, and it is also quite impossible to forecast numbers, as these obviously are subject to great variation year by year, due to a variety of causes, many of which are quite obscure; it would appear that a high percentage of the birds are winter visitors from the continent.

Altitude

Flocks approaching the roosts generally come in from a height which I would estimate as about 200 to 300 feet under clear skies, but under conditions of low cloud or fog they may be very much lower, sometimes in fact only a few feet above the ground, following the undulations of the ground and rising abruptly to avoid obstacles such as hedges or buildings.

* See also p. 1633.

Printed image digitised by the University of Southampton Library Digitisation Unit

Birds leaving the roosts in the mornings do not leave in dense flocks, but radiate outwards in ever widening circles generally at a height of 100 to 200 feet, again flying lower in misty conditions.

Flight times

These are closely linked to times of sunrise and sunset, with some variation associated with cloudy or misty conditions.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Airport Resistance Association

SUBMITTED BY MR. H. A. C. EVANS*

The propable effect of the proposed Cublington Airport on independent schools in the area

1. Evidence presented by Harold Arthur Carlyon Evans, M.A., J.P., Headmaster of Swanbourne House School, Swanbourne, Bletchley, Bucks since 1947, Chairman of the Incorporated Association of Preparatory Schools in 1960.

2. This evidence is based on replies to a questionnaire which I circulated to the independent schools in Buckinghamshire and Bedfordshire situated within 10 miles of the 50 NNI contour on the map published in the Site Information for Stage II Drg. CTLA/2.† I did not circularise any schools in Oxfordshire. A copy of the questionnaire is attached.

3. A number of the schools and their Principals are known to me, but if particulars beyond the scope of the questionnaire were required I could only speak of my own school from personal knowledge.

4. Nine schools replied asking to be included in my evidence and I have divided them into three classes:

Class A.

Ashfold, Dorton Aylesbury.
The Knoll, Woburn Sands, Bletchley.
Swanbourne House, Swanbourne, Bletchley.
Sutherlands, Linslade, Leighton Buzzard.

Class B.

Hartwell House, Hartwell, Aylesbury.
The Prebendal School, Aylesbury.
St. Louis Convent, Aylesbury.

Class C.

Akeley Wood, Buckingham.
Franciscan Preparatory School, Stony Stratford, Wolverton.
Ladymede, Little Kimble Aylesbury.

Class A. These schools considered that they would have to close or move elsewhere.

Class B. These Schools would try to carry on, but expect to be so seriously inconvenienced by noise that their future would be jeopardised by having to spend large sums of money on sound-proofing their premises (see para. 6.) and/or by falling numbers caused by bad teaching conditions.

Class C. These schools expect to suffer considerable inconvenience as a result of increased aircraft noise interfering with their outside activities by day and with the quiet of their boarders by night.

* See also p. 1635.
† See attached wallet of maps and diagrams.

Schedule I

	Number of schools recognised/unrecognised		*Number of pupils day/boarding*		*Number of people for whom the schools provide sole/part source of employment*	
A. Schools that would close or move	3	1	43	259	69	16
B. Seriously inconvenienced	2	1	388	90	41	15
C. Considerably inconvenienced.	3		137	181	44	23
	schools recognised/unrecognised		*pupils day/boarding*		*Employees sole/part*	
TOTALS:	8	2	568	530	154	57

Printed image digitised by the University of Southampton Library Digitisation Unit

Schedule II Type of school/age range of pupils involved.

	CLASS A close or move	*CLASS B seriously inconvenienced*	*CLASS C considerably inconvenienced*
Pre-preparatory Age: 4–8	40		
Preparatory Age: 7–13	262	388	318
Secondary Age: 13–18			
Further Age: 17–22		90	
Totals:	302	478	318

5. Note on Class B boarding schools that would have to close down or move elsewhere.

a. These 3 schools containing 262 pupils are all Recognised as Efficient by the Department of Education and Science. 25 per cent of their pupils come from within 30 miles, another 39 per cent from within 50 miles and 11 per cent from overseas. Other pupils are children of parents whose jobs, either in the Services or in business, involve them in frequent moves, and who therefore need boarding education for their children. The independent preparatory schools are almost the sole providers of boarding for children up to the age of 11. The schools in this category are therefore clearly fulfilling a need.

b. It will be seen that these schools have a predominantly local connection; one quarter of their pupils come from within 30 miles, and two thirds from within 50 miles. Therefore if the schools had to move more than about 30 miles from their present localities they would lose a large proportion of their intake. Most of their present pupils might be expected to move with them, but many of those on their entry lists would drop out. On the other hand schools would have to move at least 15 miles in order to be quite free from inconvenience from the airport.

Schedule III Boarding Schools and their pupils

Name of school	*Percentage of pupils living within:* 30 *miles*	30–50 *miles*	*overseas*	*others*
Ashford	25	35	10	30
The Knoll	19	47	17	17
Swanbourne House	33	30	7	30
AVERAGE	25	39	11	25

(Note: The distribution of boarders in Class C schools is very similar.)

c. Difficulty in acquiring premises elsewhere. It will be seen that the boarding schools would have to look for new premises in a very restricted area, between 15 and 30 miles from their present localities. Suitable properties are likely to be few and costly. But it seems quite possible that the schools would receive no compensation for having to leave their present premises, as none of them are likely to be demolished in order to make room for the runways. On the other hand the value of such large properties situated so close to the airport is likely to fall very sharply. If the property could be sold at all, the sale price would be totally inadequate for the purchase of suitable premises elsewhere.

6. **Noise.** I have read the evidence to be submitted by Mr. Norman Fleming,* the noise expert retained by the County Councils of Bedfordshire, Buckinghamshire and Oxfordshire. I have visited Buckinghamshire Education Department to see the Noise Map drawn by Mr. Fleming and to ascertain the position of the schools referred to in my evidence. The following schools lie within the 85–94 Peak Perceived Noise decibel area of a 2-runway airport.

Class A schools: Ashford with 110 pupils
The Knoll (56)
Sutherlands (40)

Class B: Hartwell House (90)

The remaining schools in these two classes lie within a mile of the 35 NNI contour, viz:

Class A: Swanbourne House

Class B: The Prebendal School
St. Louis Convent

The schools in the 85–94 PNdB area would therefore certainly need sound-proofing, and, judging by the information I obtained from Bucks Education Department, this would cost more than any independent school could be expected to afford. A 2-runway airport would involve the County Education Authorities in an expenditure of £3,006,466 to soundproof schools containing 20,102 children, This works out about £150 per pupil. It might therefore be thought that Ashfold and Hartwell House would be faced with expenditure of about £15,000, and the two smaller schools with about half that amount. But in fact I believe that the costs would be considerably higher, because the Education Authority's estimates include a number of post-1945 system-built schools, whereas those with which I am concerned are all comparatively old buildings. In post-1945 system buildings it costs 39/- per square foot to reduce noise by 20 decibels. For pre-1914 heavy construction buildings the cost is 60/-. The Knoll is 75 years old, Sutherlands is pre-1945. Hartwell House and Dorton House, the home of Ashfold, are houses of great antiquity and beauty, both listed as Historic Monuments and dating from 1575 and 1626 respectively. The difficulty of sound-proofing them would be great, the cost astronomical.

The three schools within a mile of the 35 NNI contour would, in my submission, be so gravely affected by adverse conditions resulting from the airport that they might well find it impossible to continue in business. It is difficult to believe that the 96 boarders at Swanbourne House would have uninterupted nights, for, as Mr. Fleming says, by night a lower level of noise constitutes a nuisance than by day. It would certainly be difficult to persuade parents that a school so close to a major airport would not be undesirably noisy. Independent schools rely entirely on parental choice, and peaceful surroundings are one of the great assets of the boarding

Printed image digitised by the University of Southampton Library Digitisation Unit

schools under consideration—an asset highly valued by parents. Further, in both boarding and day schools it is not enough just for pupils and teacher to hear each other speak indoors. Many activities take place out of doors, not only recreation and physical education but an increasing number of lessons in Science, Nature and Local Studies, and practical mathematics. Inside the classroom the spoken word is continually assuming more importance, and the written word less, for example in Radio and Television lessons, and particularly in Audio-Visual Language teaching, where it is of cardinal importance that the tape-recordings in the foreign language should be heard with complete accuracy.

7. Deterioration of environment. All the boarding schools would suffer severely from the increasing urbanisation which would inevitably result from the coming of an airport with its huge labour force and the requirements of housing and communications. It is not in such areas that this kind of school flourishes.

8. Compensation. If it is eventually decided that the Airport must come to Wing then full compensation should be paid for schools which either have to close down or transfer to new premises. For schools remaining the full cost of sound-proofing should be borne by public funds.

9. Conclusion. Compared with the numbers in the state educational system that would be affected by the proposed airport, the numbers in independent schools are very small. But for the schools with which I am concerned the prospect is one of very real hardship to those who own and run them, to those employed in them, to those who have chosen to send their children to them, and, last but not least, to the children themselves.

QUESTIONNAIRE

1. Name and address of school.
2. Names of Principal, with degrees etc., and Proprietor.
3. Number, sex and age-range of pupils.
4. How many boarders? How many day pupils?
5. If you take boarders, what percentage, approximately, comes from (a) within 50 miles, (b) within 30 miles, (c) overseas.
6. For how many people does your school provide (a) their sole employment, (b) part of their employment?
7. Brief details of the school, e.g. How long has it been going? Are the buildings of historic significance?
8. Distance from runway.
9. NNI contour, if applicable.
10. Would you have to close or move? Why? What would this involve? (Estimates of cost are not required.)
11. If not, what inconvenience would you suffer?

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Stewkley Action Committee*

Stewkley Action Committee: constitution

The committee was democratically elected to deal with the campaign for the defence of the village, at a public meeting in March, which was called by the Parish Council.

About 500 people present unanimously passed the following resolution:

"This Parish Meeting vehemently objects to the proposed siting by the Roskill Commission of London's Third Airport in this area, which will result in the complete annihilation of Stewkley with its unique Norman Church, furthermore it pledges its support to those organisations resisting the siting of an inland airport".

Since the Commission's short list was published, and it was made clear that the whole of Stewkley would be demolished, the villagers have been absolutely united in their determination to prevent with all means possible the siting of the airport in this area.

The task of the Committee has been to guide and co-ordinate the villagers' many activities.

The Committee meets weekly in a room above one of the public houses, and anyone is admitted to the meetings. Public meetings to report progress and initiate new projects are held every month.

The Stewkley Action Committee appreciate that the Commission have a very difficult job to do. An unenviable one.

The great new London airport is an exciting project which should fire the imagination of all those who welcome progress and wish to see Britain maintain her important position in this technological age.

We believe that there are more suitable sites for this airport than Wing and we are naturally concerned and anxious that the Commission should take into account all those facts which are so important to the people of Stewkley when making their decision.

It is in this spirit that we shall present our evidence to the Commission.

1. **The village community**—what's special about Stewkley—the importance of the community—the effect of breaking it up.

1.1. Stewkley is a very closely knit community and to break it up suddenly would have very serious effects on the lives of people of all classes.

1.2. Stewkley is a vigorous growing community. The new people find it easy to slot into the village life, and derive great satisfaction from belonging to the village.

1.3. The crime rate in Stewkley is extremely low as also is the record of delinquency or broken marriages.

1.4. There are a great number of well supported group activities in the village.

1.5. Most people like Stewkley and wish to stay here.

1.6. The majority of the older villagers have roots in Stewkley and the surrounding villages going back several generations.

1.7. The root families have inter-married and so a great number of people are related.

1.8. Many business relationships and family friendships have existed for generations and so are very strong and important to those involved.

1.9. People like to travel to work—enjoy living out of town, away from place of work.

1.10. Village life promotes in people an interest in each others' affairs and a genuine concern for the welfare of others. This is a great comfort to the elderly, or those in trouble of any sort.

1.11. It is known that elderly people soon die when suddenly moved from their accustomed environment.

1.12. The wide range of trades and businesses existing in the village will be listed.

1.13. Children and young people—review of activities and their importance in this village.

1.14. Many traditional annual village events are eagerly awaited, and industriously supported during the year.

2. **Homes**

2.1. There is no decay in Stewkley. Houses and property are never allowed to fall down.

2.2. Old houses are being lovingly restored or modernised, standard amenities added, the resulting houses have charm and character.

2.3. Many new houses have been built in recent years and more are under construction.

2.4. New building has been by "infilling" and not by extending the old village boundaries. Thus improving the character of the community.

2.5. A brief description of the village will be presented listing, houses, shops, public houses, garages, tradesmen, businesses, public buildings and amenities and monuments, farms, school, church and chapels.

2.6. A list of the important and historic buildings will be presented.

* See also p. 1635.

Printed image digitised by the University of Southampton Library Digitisation Unit

3. **Education**

3.1. Effect of the interruption of school work caused by moving children and closing local school.

3.2. Children who travel to secondary schools outside village and mix with children from surrounding area would, in many cases, be moved right away.

3.3. Delinquency rates always increase among groups of children who are moved away from a close knit community. Stewkley has a particularly low delinquency record and if these children are moved they may be more deeply affected.

3.4. Increases in the numbers of children at school and in the birth rate will be tabulated.

4. Local tradesmen and industry

4.1. Local tradesmen serving the village would lose their livelihood and would be unlikely to be able to start again elsewhere.

4.2. Farmers, many of them tenants, will face severe difficulties in finding new farms and many will give up farming and drift into some unskilled job which does not utilise their talents and experience.

4.3. Small businesses based in the village would face hardships, different in each case. Many draw their customers from the immediate area.

4.4. Larger companies in nearby towns would lose skilled personnel who now live in the village and who would nearly all move right away.

4.5. The business or professional careers of several people have already been adversely affected because they cannot sell their houses and move to accept promotion.

4.6. Business and professional careers will be affected if people are forced to move, many will wish to move right away from an airport and may have to take sub-optional employment in a new area.

4.7. The local builders are already badly out of pocket because they can not sell new houses built in the area.

5. **Places of worship**

5.1. People feel so strongly about our beautiful Parish Church that a group of them living nearby have formed a preservation committee for the Church and will be presenting their evidence separately.

5.2. The church and two Methodist chapels are much loved and well used and form centres of lively activity.

Villagers refusing to leave

A substantial group of villagers feel so strongly that they have signed a petition pledging that they will not give up their houses under any circumstances.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Rev. J. E. H. Williams*

I beg to put in writing my objections both as Parish Priest and Householder to the proposed siting of the 3rd London Airport at Wing.

The village of Whitchurch is a community of just under 1,000. A village of considerable beauty, individual interest, surrounded by some of the best grazing land in the County. Under the most recent siting it would come at the end of and between the two most central runways. This I am led to believe would mean that life for the inhabitants would be intolerable owing to excessive noise, vibration and petrol fall out from the planes, flying almost continually overhead. While the surrounding grazing land and crops would suffer much damage.

I would also mean that the schools in the village and schools generally in the area would find it extremely difficult to carry on their normal teaching programmes and that the congregational worship of God in church and chapel would be reduced, if not impossible, extremely difficult.

The Church, situated about 400 yards from the end of the runway, would be subjected to severe vibration and would in all probability, have to have the tower reduced in height. Since we have almost completed the exterior restoration of this very lovely and spacious 13th century building, having already spent over £5,000 on the work, the village would no doubt feel very strongly about this.

At the same time we are aware that the proposed siting is based on minimum requirements and that the further enlargement of the area would mean the complete removal of the village, the village church and the desecration of the extensive graveyard which is still in use.

I would further point out that Whitchurch itself a lovely old village and of considerable size, is situated in the middle of some of the loveliest countryside in Britain and that the proposed siting of the airport at Wing would mean the virtual destruction of a large part of that countryside, of at least three churches, two of which are of exceptional historical and architectural interest, and the serious interference and noise and vibration of the normal congregational worship of at least five others.

I cannot help feeling that there must be other areas where, in siting an airport even of this size, less damage and inconvenience to both community and countryside would be inflicted.

* See also p. 1637.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. P. Gallimore*

Fern Cottage
Stewkley
Nr. Leighton Buzzard
Bedfordshire
Stewkley 302

June 13th, 1969.

Dear Sir,

Thank you for your letter of 30th May granting leave to appear at the hearing. I would imagine I would not require very much time at the hearing. The following is the statement which the St. Michael's Guild wish to put to the Commission.

St. Michael's Guild protest vehemently against the siting of the Third London Airport at Wing as this will mean the destruction of our village and the splitting up of the community of the village of which we form a part. We are a group of approximately twenty women who meet fortnightly alternating with a work party to raise money for the church or with a speaker on a wide variety of subjects. Most of our members have children who go to school either in the village or at Wing or Leighton Buzzard and they feel that an interruption of their lives probably involving going to a different school could easily be harmful. But the most important aspect is that if the airport came here the area would be developed and they might easily find themselves bringing up their children in a town which is something they do not want. Obviously there is a great difference in the pace of life between a town and village and it is just because our members would rather their children were brought up in the slower pace of a village that we live here in the first place and we object strongly at having our way of life threatened.

Our objections go further than just being forced to live in a built up area—we want to live in Stewkley itself. Our members vary in age, their husbands do a variety of different kinds of job and we have different outlooks on life, but we are united in our rejection to the idea of having our village destroyed.

Yours sincerely,
PRIMROSE GALLIMORE (MRS.)
on behalf of the
St. Michael's Church Guild.

---

* See also p. 1636.

Printed image digitised by the University of Southampton Library Digitisation Unit

Day 4

Mr. W. H. Ruthven
Mrs. B. Kilty
Mr. W. J. Smith
Mr. E. Kapui
(*Cublington Airport Supporters' Committee*)

Survey of affected farmers
Planning evidence
Agricultural evidence
Mr. C. A. Rogers
Drainage evidence
Evidence of representative farmers
(*National Farmers' Union*)

National Trust

Nature Conservancy

Mr. P. W. Macfarlane
Mrs. A. Maude
Capt. Sir Thomas Barlow
Youth Hostels Association
(*Council for the Preservation of Rural England*)

St. John's and Manor House Hospital Management Committee

Chiltern Society

Country Landowners' Association
Cox, Long & Co.

Beacon Villages Society

New College, Oxford

Leighton Buzzard Arts Club

Witnesses were examined on this evidence on Day Four, Thursday 17 July 1969 see pages1641–1677

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. W. H. Ruthven*

'Gowrie',
Nearton End
Swanbourne
Bletchley
Bucks

28th May 1969

A. J. Hunt Esq.
Commission on the Third London Airport
Templer House,
81–87, High Holborn
London W.C.1

Dear Sir,

Site for third London airport

I wish to submit the following points towards the arguments against the third London airport being sited at Cublington (Wing) and beg leave to present them to the local Hearing.

1. **Safety**

A survey of aircraft safety during the year 1968 was carried out by *Flight International* and published in their issue for 16th January 1969, details of which I quote as follows:

> There were 150 accidents and incidents reported during the year, including 16 (10½ per cent) to aircraft stationary on the ground and 59 (40 per cent) during ground manoeuvring following touch down. 32 incidents (21 per cent) occurred during taxying, take-off and initial climb, 29 (19 per cent) in cruise and 14 (9½ per cent) during the descent and approach.
>
> It can be seen therefore that of the original 150 incidents initially reported, only half actually occurred during flight. We can see how that 42 per cent of these in-flight accidents occurred during the first phase of flight. One third of these were fatal—mostly caused by engine failure or loss of height on the initial climb phase. The descent and approach phase now represents 19 per cent of in-flight incidents.

If the new airport was to be sited at Cublington, the critical take-off phase of flight would be over the inhabited areas of Whitchurch, Hardwick, Pitchcott, the Winchendons, Waddesdon, etc., with the approach over Bedford, Aspley Guise, Woburn, the Brickhills, Stoke Hammond and Soulbury. Admittedly the above named are mostly villages with relatively small populations, but an aircraft deviating a few degrees off the runway centre line could easily stray over Aylesbury or Oxford on take-off and Bletchley or Leighton Buzzard on the approach. When siting an airport, which is potentially the largest and most active in the world, it would be criminal to ignore the possibility of an accident during the critical phases of flight, thus exposing hundreds of innocent bystanders to danger. It would seem obvious therefore, that an area which allowed for approach and/or climb away over an unpopulated area (such as the sea) would be far preferable to an area such as Cublington.

2. **Access**

The present system of railways, roads and motorways would soon prove quite inadequate for an airport of the magnitude planned. The M1 is already running virtually to capacity between Luton and London, and could not be expanded to the 18 lanes which have been suggested as a probable requirement. New roads would, therefore, have to be built to cater for such an increase in traffic. Going north, the M1 is less heavily loaded, but a large proportion of the traffic takes the narrow M45 ,to head for the North West. This again is running almost to capacity, and empties into an ordinary dual-carriageway before meeting the pitiful A5. Suggestions that the third London airport could also serve the Birmingham area would not solve the problem that I understand will arise within the next ten years, that is the need for an airport to serve the Manchester-Birmingham conurbation. It would seem more realistic to locate the airport in the position where it will best serve the capital rather than try and achieve an ineffective compromise. Existing local roads such as the A413 between Winslow and Aylesbury, would have to be re-routed to avoid the airfield.

3. **Accommodation and services for airport workers**

It is suggested that an airport of the size proposed will eventually provide employment for some 65,000 people, which with their dependents would mean that homes for about a quarter of a million people would

* See also p. 1641.

Printed image digitised by the University of Southampton Library Digitisation Unit

be required. This is just about the proposed population of Milton Keynes, which is already planned as a London overspill. Obviously these extra people could not also live in Milton Keynes, and it would appear unlikely that Aylesbury, Bletchley, Leighton Buzzard, etc., could expand sufficiently to absorb so many people.

Two reasons why the building of Milton Keynes has been rather slow in starting are basically water and sewage. It was to solve the former that an extended survey was carried out in the North Buckinghamshire area, resulting in the proposed reservoir in the valley round Whitchurch—almost the identical spot selected by the Roskill Commission. It is difficult to see how an area which is ideal for a reservoir (as indeed it appears to be to the casual observer) can possibly be also suitable for an airport demanding level runways some 2½ miles long. The cost of levelling and filling must surely be prohibitive. The sewage problem has still to be solved.

4. Noise

Examining the figures and maps in the site report for Cublington,* two particular points are worth mentioning. Firstly, the NNI maps are only marked as far as the 40 contour line. According to the Wilson report on Noise,† the "intrusive" figure for a rural area at night is 25 NNI and surely, to be fair, contours should be marked down to this level. The other point is that the numbers of people affected appear to be taken from the electoral registers and, therefore, only represent those over 21 years of age. If all teenagers and children are added the numbers must be at least doubled, and I would have thought that these younger people are just as likely to be affected as their elders,—more so in some ways, if one takes into consideration the number of times that teachers will have to stop talking whilst aircraft are passing and the resultant loss in education time.

5. Other Local Problems

The Central Electricity Generating Board has just completed a large overhead pylon scheme, radiating from their base at Claydon. The cables were laid above ground because of the high cost of underground work. Presumably, if the Cublington site was chosen, it would be necessary to remove these new pylons and lay underground cables around the area. The cost of this would obviously have to be borne by the Airport rather than the CEGB.

Cublington lies beneath one of the main North-South airways, which would have to be realigned to miss the airport. Whilst, admittedly, an airway is not a visible concrete structure like a road or railway, its location and routing does depend on a network of ground beacons, which would be extremely expensive to move.

Travelling as I do between Swanbourne and Aylesbury each day, I am frequently struck by the incidence of mist and fog in the Whitchurch area. I realise that various organisations are working hard on systems by means of which blind landing will be safe and commonplace but, as yet, such events on a loaded airliner are the subject of newpaper headlines. Should not every attempt be made to selected a more fog-free site?

I trust that you will consider all the above points valid and take them into consideration when locating the third London airport.

Yours faithfully,
WILLIAM H. RUTHVEN

---

* *Site Information for Stage II Local Hearings* 3. *Cublington.* (HMSO; 6s.) Reproduced at p. 1001.

† Cmnd. 2056 (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Cublington Airport Supporters' Committee

SUBMITTED BY MRS. B. KILTY*

I am writing in support of an Airport at Cublington. Firstly this seems to be an ideal site from the country's point of view (Economy) as this seems to be the cheapest and best equipped site.

The ground here is not good agricultural land, it is used mainly for horse breeding and the land that is farmed produces mainly barley, and only 2 out of 5 harvests are ever successful.

We need work around this area if we are to keep our children near to us, after they have left school. Children are leaving school with 'O' and 'A' level qualifications and no position to fill. Out of 8 students leaving colleges with full technical qualifications, only one is able to find work around this area. This, then is a waste of schooling, as either the student must leave the area, or must go into an office or a bank—which could have been done if the student decided to leave school 4 years earlier. There is no choice for children in villages, as they must go to the school which is nearest to them. Another good reason for having the Airport here would be the school, which would have to come with it, and the qualified teachers, as at the moment there are several unqualified teachers up at the Junior school. Both the Primary and Secondary School, cater for the children of 15 villages, and both are seriously over-crowded. Several schools in surrounding districts have had to be closed down through lack of teachers. I feel that an Airport would give children an initiative to work hard, as a job connected with an Airport conjures up glamour and excitement—not surprising with the cut rate fares to any part of the world that one is entitled to after working there for several months. Rate of pay would be better as a young apprentice working near or at an airport could earn 4/- per hour, whilst an apprentice doing the same job in this area would only earn 3/- an hour. With the higher rate of pay, so would come a better standard of living, more money into the area and a better way of life all the way round.

Public services

The public transport for the area surrounding Cublington is not very frequent. There are six buses per day, which run from Cublington to Aylesbury, charging a bus fare of 3/8d return, only one bus per week to Leighton Buzzard, but none running back! Stewkley has seven buses per day running to Leighton Buzzard, with a bus fare of 3/1d return, or 1/9d single, only one or two buses per week run to Aylesbury. There are no buses running on a Sunday. Soulbury has the same service as Stewkley, but with a fare of 2/1d return and 1/2d single. Wing has a slightly better service, with one bus running per hour, to both Leighton Buzzard and to Aylesbury, with a fare of 2/1d return—1/2d single, and 3/6d return—1/11d single, respectively. Mentmore has a service of six buses per week—which are divided into Leighton Buzzard and Aylesbury.

It is plain to see from these figures that we do not have a good regular service of buses running to and from the villages—but if an airport was to be sited here there would be a big demand for regular transport—not only to Aylesbury and Leighton Buzzard, but to Bletchley and Milton Keynes as well. This would be just one of many things which would come with an airport, not just for the above named villages but for smaller villages—some of which never even see a bus—never mind about get one!

Social services

There are hardly any social activities around this area, for young or old people. For teenagers, there are usually one or two youth clubs, which are only held once a week, but as they are rarely held in small villages, it is a case of getting there best way you can! As Leighton Buzzard and Aylesbury are the two nearest towns concerned with the Cublington area, I have made a list of the clubs in these towns. In Aylesbury, there is one Political club, two youth clubs, one ex-servicemen's club, one Darby & Joan club, (5) five social clubs, and six sports clubs. Making a total of sixteen clubs, in a town of 32 thousand people. In Leighton Buzzard we have one political club, two youth clubs, four social clubs, and six sports clubs. Making a total of 13 clubs in a town of thousand. Not only must they suffice for the town's population, but also for many small villages outside the towns. There are of course several Rotary Clubs, Round Tables and Women's Institutes. With the majority of these clubs, people must be over 18 or 21 to join. There is a dance held every Saturday at Aylesbury, but thanks to the bus service, not many villagers can attend it. There is a dance held in Leighton Buzzard nearly every Saturday, but as Stewkley and Soulbury have their last bus running at 9.30 p.m., and the dance doesn't finish until 11.45, not many teenagers from those two villages go! At Wing, we have a Darby & Joan Club and a Sports & Social Club, and also a youth club. The Darby & Joan and the youth club are held once a week, and the Sports and Social Club is open weekends for family entertainment. People under the age of 18 are not allowed to join

* See also p. 1641.

Printed image digitised by the University of Southampton Library Digitisation Unit

the club, and are not allowed in unless with their parent or guardian, and once in the club, you are not allowed to leave your parent's side. No wonder teenagers never bother to go! The majority of teenagers, to go to a really good dance, have to travel approx. 11/12 miles to Dunstable—again a lot depends on the buses, but at the moment I am talking about the villages lucky enough to be on the bus route, such as Wing, Wingrave and Aston Abbots. Firstly a bus has to be caught into Leighton Buzzard (2/1d–2/8d), and then a bus into Dunstable, (4/-), the last bus for Leighton Buzzard, leaves Dunstable about 10.40 p.m.

As you can see from this report, a very exciting life is certainly not led by all around this area, this is one of the main reasons—according to several probation officers and welfare workers—why there are so many juvenile delinquents in this area, *boredom*, there are two cinemas at Aylesbury, and one at Leighton Buzzard—usually showing one film all week, the charge to see the films is now anything between 4/6d to 6/6d, so added on to the bus fare and several other small charges, it does not add up to a very cheap evening out! There is at the moment a very high percentage of 12 to 16 year olds, who are taking drugs, this is yet another case of boredom and the want of excitement, these children think and hope that drugs will be an outlet for their needs of fun and thrills. If an airport was to be sited in this area, there would have to be an incoming of clubs, dances—bowling etc. to cope with the population increase due to the airport. One has only to look at any paper from an airport area to see that there is something going on every night—not only for youngsters, but for middle-aged and old aged alike.

Welfare services

In the vicinity of Cublington there are only three hospitals, these all at Aylesbury 7 miles away. Tindall General Hospital—used mainly for old people's welfare and disease of the stomach, they also treat all ear nose and throat illnesses, and also treat children for tonsils and appendix. Royal Bucks deals mainly with maternity and accidents, and Stoke Mandeville, well known for its work with burns and with paraplegics. All of these hospitals are short-staffed and very crowded. The next nearest hospital to Cublington/Wing is either Luton & Dunstable (12/14 miles), Thame (13/15 miles), Banbury (28/30 miles), and even Oxford, as far out as 38/40 miles. We have been informed that it would be impossible for operations to be carried out at an "airport hospital", this we are inclined to disbelieve for various reasons, one being that London can boast of at least three eminent hospitals—and these are all sited no further from Heathrow than Wing or Whitchurch would be. Another reason is that hospitals would be sound-proofed to a certain extent and an operation would be carried out deep within the centre of the hospitals. It is clear that we do need more hospitals and naturally an airport would bring them, or alternatively it would bring a need for extensions to be built onto the existing three hospitals, and would also provide the money needed to build them. Also at Aylesbury is a home for the mentally handicapped, which has to cater for a radius of 25 miles, and so is of course rather in need of larger premises. We have been told, not once but many many times that an airport would bring illness unlimited, and in a matter of weeks, we would all be stone deaf! Such rubbish is of course laughable, as one has only to visit any airport in the world, and find the answer for themselves. Another point we had raised was that living near to an airport would soon reduce everybody to complete nervous wrecks, and with the noise of the aircraft, lack of sleep (again through noise), constant roar and screams of jets, the inability to conduct a natural conversation, the shattering of broken windows, etc., etc., etc., would soon cause us to have nervous breakdowns! To prove this ridiculous theory wrong however, a doctor writing to the *Lancet* medical journal, commented that there were more nervous breakdowns in North Bucks than any other county in England—*not* through noise, but through frustration and boredom! The majority of villages have not their own doctor's surgery and the nearest dentist is at Leighton Buzzard or Bletchley or Aylesbury, a distance of some 5, 12 and 10 miles (respectively). Doctors are usually also in the same position, being able to hold a surgery at each village only once a week, any other time to see him, one must travel the required distance to his surgery in the town. There are only approximately 8 opticians catering for a 15 mile radius, half the number again of chiropodists and not many more specialists. Of course the welfare of old people must be considered, but I have found on my researches, that a large number of old people would welcome an airport for the life it would bring to the area, not only for the youngsters, but for themselves, several have told me that with a feeling of gaiety and life around them they feel much younger and much more alive, and there is nothing that they enjoy better than to be in the company of younger people.

Therefore, it would appear not only a large majority of young people want the airport to come to Cublington, but also a large number of middle aged and old aged people, who are fighting not for what they own, but for the better future they can foresee for their children and grand-children.

SUBMITTED BY MR. W. J. SMITH*

Being one who is in favour of a local airport I am a member of C.A.S.C.

The reason being that they stand for better prospects for this area, also standing for a site far in advance of the present London Airport Heathrow.

I wish to speak on the items that are listed and

* See also p. 1641.

Printed image digitised by the University of Southampton Library Digitisation Unit

hope that this will give you some help, for by helping you we are trying to help both Britain and the local area.

Items listed

FOR THE AIRPORT

1. An airport very high above sea level free from fog except slight mist at times.
2. Central point between the east and west coasts.
3. Main line stations in the district.
4. Main roads old and new to all parts of England.
5. Room for expansion if ever required.

FOR THE AREA

1. Better living as a fair increase in population means more shops thus giving a greater selection.
2. Local work for people instead of a weekly cost of transport to meet from wages earned.
3. More chances of my children living in this area if work available.
4. Better roads in this area, the roads being the same in Wing as in 1940 despite the much larger volume of traffic to date (no bye-pass route for the A418) although this was proposed some 25 to 28 years ago, this is the prime example of the area showing what is done by the local and rural Council.
5. Local areas of land being used to the advantage of all instead of the few.

I send items given by W.A.R.A. team and enclose a letter from Mr. Maxwell and estimate my length of time to speak on the items about 15 to 25 minutes.

P.S. My age is 50 and I have three children.

Items marked

INDUSTRIES

80 per cent of workers work in Luton, Dunstable or Aylesbury with a few in Leighton Buzzard where there are very few skilled jobs for the young people.

POPULATION

Population now estimated 11,800 and increase of 100 per cent in about 12 years, these are mainly due to people coming to this area not the young staying in their place of birth.

SPORT AND RECREATION

No entertainment for the area except the Wing Sports and Social Club, this the older generation tried hard to get closed.

Taken from "General Local Information"

INDUSTRIES

Agriculture and its associated rural undertakings are the principal local industries. The mixed loam, sand and clay soils produce heavy crops of corn and roots and provide excellent pasturage for sheep and cattle. Sand and gravel deposits worked for brick-making and other building uses. The traditional craft of basketmaking is still carried on in Wing.

POPULATION

Estimated at 8,900 (1960).

SPORTS AND RECREATION

There are well-supported clubs for cricket, football and other outdoor sports Golf courses are at Leighton Buzzard, Dunstable and Ashbridge. Wing has a well-equipped children's playground. Hunting is available with the noted Whaddon Chase and other packs. There is excellent fishing in the Grand Union Canal and the River Ouzel.

Dances, whist drives, entertainments, socials and public meetings are held in the village halls, where facilities are also provided for indoor games. Social clubs, cultural societies and young organisations are active throughout this Rural District.

SUBMITTED BY MRS. E. KAPUI

Please note the following information in support of the proposal to site the Third London Airport at Cublington (Wing). The need for industry in this area will be very large. At the moment there is no industry in Wing or Cublington or many surrounding villages the only employed people in Wing are at the two village schools and on the land. People living in the villages have to travel into the towns to work. There will be an average of 100 children each year leaving school to look for work (in Wing alone) and in the next ten years the unemployed figures for this area could rocket. There is at least ten firms in Aylesbury that have closed or will be closed by August this year making large redundancies. But even the car industries and others which we rely upon mainly for work, cannot hope to cope with the large influx in population that is inevitable in this area in the next few years, by means of the new city of Milton Keynes. The

Printed image digitised by the University of Southampton Library Digitisation Unit

children in our schools whether they be budding scientists or engineers find no scope for employment, and unless they are prepared to leave home and travel to the cities or to other countries to better themselves, they know that unless they move out very early in life they will remain in the same rut without the opportunity to advance. Or the alternative of going to work in one of the factories, offices or shops in the surrounding towns for a meagre sum half of which goes in bus fares. We need this airport to save our dying villages, to save our dying country. The sooner it is realised that this is the only place to put the Third London Airport the better. We have the need for industry, for new blood, for a dying area. A need to live, not only to exist. For our children to be able to make a decent living with a standard much higher than that which is ours. Only an airport locally could give us this. This is a heart felt plea from a mother of three young children who sees a rosy future for them, if this airport materialises. We cannot let *this opportunity slip from our grasp*. I shall attend the enquiry in Aylesbury and will give evidence if required to. I would also like a date and time if possible to call to give evidence in support of our President, His Grace Duke of Bedford. I shall be visiting His Grace on July 11th when he returns from holiday and as he is a very busy person we would like to give a date and time if possible.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers Union*

NFU Survey of Affected Farmers in Buckinghamshire, Bedfordshire, Oxfordshire and Northamptonshire

1. Scope of the survey

Questionnaires were sent out to 1,215 NFU members by the Buckinghamshire County Branch, 373 by the Bedfordshire County Branch, 200 by the Oxfordshire County Branch and 80 by the Northamptonshire County Branch. This distribution covered farmers in an area of 15 miles radius from the centre of the proposed airport at Cublington. Such a distribution was thought to be necessary due to lack of precise information in order to ascertain the views of not only those farmers in the immediate area of the site but from those likely to be affected by noise nuisance and the housing and ancillary developments.

The questionnaires were sent to full-farming members and the results have been analysed.

2. Replies to questionnaires

Buckinghamshire received 402 completed forms in the 15 mile radius of which 148 related to farms within a 5 mile radius—Bedfordshire received 102 completed forms of which 38 related not only to the Cublington site but also to the Thurleigh site—Oxfordshire received 45 completed forms and Northamptonshire 10 completed forms.

There is a grand total of 559 farmers about whom we have factual information.

This represents a farming acreage of 118,044 acres of which 70,764 acres are farmed by 320 owner-occupiers and 47,280 acres farmed by tenants. Of the 599 farmers who replied 538 were against the siting of the airport at Cublington and 472 members expressed their wish to be represented by the National Farmers' Union at the Inquiry. 388 members felt so strongly that they are contributing to a fund to defray the cost of the NFU putting the agricultural case at the Inquiry and many of these farmers have already contributed, in addition, further sums to the Wing Airport Resistance Association.

3. Description of farming

The following facts emerge from the survey:

(A) *The airport site*

In an airport site based on the site information, there are just over fifty farmers who would lose all or part of their land. The total acreage both inside and outside the site area is 7,951 acres. 5,443 acres are farmed by 34 owner occupiers, 10 of whom also farm 1,034 acres of tenanted land in the vicinity.

Tenant farmers affected by the airport site number 13 and farm 1,454 acres. The average size of a farm in the area is about 160 acres.

(a) In the potential site area there are:

31 farmers who would lose all of their land

2 farmers would lose over half of their land

14 farmers would lose varying proportions of their land

5 non-members were not eligible to ask the NFU to represent them but of the remainder 39 members specifically asked for this.

35 members said they were willing to pay a levy to assist the NFU in fighting the propsals.

(b) This is a mixed farming area with arable land yielding up to 35 cwt of wheat and barley to the acre. Hay is widely made for feeding cattle on the farms and yields of 2 tons to the acre are the average.

(c) The following livestock is kept:

35 farmers keep 1,727 beef cattle

24 farmers keep 874 cows

15 farmers keep 2,915 pigs

27 farmers keep 5,495 sheep

17 farmers keep 236,252 head of poultry.

(d) 20 farmers employ 71 full-time workers and have 27 tied cottages.

(e) The 47 who were willing to reply state in the past ten years that there has been an aggregate capital investment amounting to £225,000. 21 members state they have sons or relatives whom they hope will follow them in their farms.

(B) *The 15 mile radius*

Taking a fifteen mile radius from the centre of the Cublington site and excluding the figures for the airport site as given in 3(a) above, the following sample figures are:

(a) 512 farmers record an acreage of 110,113 acres. These range from over 1,000 acres down to single figures but the average acreage is 215 acres. 316 owner-occupiers farm 65,321 acres and 254 tenants farm 44,792 acres but this includes 129 owner-occupiers who are also tenants of some 16,738 acres of this rented land.

(b) Corn yields on average are slightly over the 35 cwt to the acre, potatoes yield around 12 tons to the acre and hay crops at 2 tons to the acre.

* See also p. 1653.

Printed image digitised by the University of Southampton Library Digitisation Unit

(c) 282 farmers keep 24,310 beef cattle
207 farmers keep 10,625 milking cows and followers
118 farmers keep 29,087 pigs
165 farmers keep 51,571 sheep
156 farmers keep 318,700 poultry

(d) In addition there are several famous horse breeding studs in the area breeding the best strains of pedigree horses, many of which are exported.

(e) 773 workers are employed and there are 695 tied cottages.

264 farmers replied to the question, state that they have spent an aggregate of £4,026,000 on capital investment during the past ten years and 250 farmers state that they have sons or relatives whom they hope will follow them in their farms.

4. **Reasons for objection**

Having invited many farmers to state their views on the Cublington proposal at recently held meetings and in our questionnaire, their objections can be summarised as follows:

(a) Farmers deplore the taking of agricultural land which is in good heart when other non-productive areas are available elsewhere for development. Due to the taking of 23,000 acres for the new city of Milton Keynes, over one hundred farmers in that area will be searching for alternative farms, there is also the threat of a further 5,000 acres in the vicinity being required for surface reservoirs. Therefore the competition for alternative farms is considerable in a land where good agricultural land is a national heritage and once it is developed it is lost for all time for food production.

(b) The off-shore site is strongly favoured by some 473 farmers returning the questionnaire.

(c) Apart from the 7,500 acres required for the airport itself, there must be widespread demands for additional land to provide for such services as roads, railway link lines, refuse disposal dumps, water storage areas, etc. All this extra development can affect many famers within the fifteen mile radius which is an area already over-burdened by future development plans. There is no spare labour in the area and all the new population will require new housing and services.

(d) Already farmers are experiencing trespass, vandalism, rubbish dumping, sheep worrying by dogs from urban development already taking place in the Bletchley area and it is pointed out that apart from changing the whole pleasant character of the area, it will virtually be impossible to farm in a large area outside the confines of the airport site.

(e) The serious nuisance of increasing aircraft noise is very much in evidence owing to the build up of bigger jet aircraft from Heathrow and Luton airports. With even bigger jet planes landing and taking off almost continuously, the noise will be absolutely unbearable.

(f) The problem of land drainage and run-off will present a special problem, in that the river Thame rises in the area and a part of the area is within the boundary of the Great Ouse River Authority with streams running into the Ouse. With the vast volume of water from run-off and urban drainage having to be disposed of into the slow running River Ouse or alternatively into the Thames, the disturbance to land in these catchment areas can cause even more flooding than is experienced in the present conditions which are causing grave concern to the farmers. Large areas of good agricultural land would undoubtedly be required for flood-water reservoirs.

5. **Compensation**

In considering the level of compensation for loss of agricultural land or disturbance, the vast majority of farmers stress that no amount of compensation will persaude them to give up their land for development. Many require that compensation would have to be well above the current standards to enable them to find farms in other areas at prices, already increasing rapidly, due to the competition, not only from other farmers locally who will be dispossessed in the new city area but from farmers generally in similar areas elsewhere. Tenant farmers, whose compensation is hopelessly inadequate, are in an even worse position due to the lack of rented farms on the market throughout the country.

6. **Conclusions**

(a) The area involved by the proposed airport site is well farmed and although classified in the Ministry's Agricultural Land Service survey as Grade III and IV, the production of food in this area is well up to the national standards. The area is situated at the north-eastern area of the fertile Vale of Aylesbury which is well known for its feeding qualities for livestock. It is open land with little woodland and is being farmed efficiently and that part of the area of the old war-time aerodrome at Wing has for the most part been brought back into arable production.

(b) The land is broken up by hills and valleys containing farms of several hundred acres to much smaller units and much capital has been invested by the farmers to keep pace with the ever increasing need for efficiency.

The site permits, at present, a block of country upspoilt by urban development between the developing towns of Aylesbury, Leighton Buzzard and Bletchley. Beyond the site area, the land and standard of farming in the fifteen mile radius from it which forms the other part of our survey is also extremely high and includes considerable areas of Grade II land. The good market gardening area around Maulden with potential yields of fifteen tons of potatoes to the acre, corn land producing two tons to the acre and with high numbers of beef cattle, sheep, pigs and poultry from south of Aylesbury into Northamptonshire and Bedfordshire should be preserved for the nation's food supplies. Milk production is high and

Printed image digitised by the University of Southampton Library Digitisation Unit

serves the London market in the main with easy communications throughout the area but this will be lost should the site be developed.

(c) If Cublington becomes the Third London Airport, all these advantages will disappear and the vast majority of the land north of Aylesbury will become a huge area of urban development linking up with the new city of Milton Keynes. If the airport servicing population is to be catered for in a new town, this must presumably be Milton Keynes which has been designed to accommodate the over-spill population from South Bucks and Greater London. Otherwise the present designated area of 23,000 acres will have to be increased considerably to house this new population.

Our policy is to ask authorities to seek out non-productive, non-agricultural land and in this case of an airport, there is the unique opportunity of being able to use re-claimed land on a coastal site by constructing it off-shore. The vast majority of our members have recorded this in their replies to the questionnaire.

Planning Evidence

SUBMITTED BY MR. J. E. Y. HAWKES*

1. I am a partner in the firm of Hancock & Hawkes Architects/Planners of Hampstead, London. I have been asked by the National Farmers' Union to examine the effect that the Third London Airport at Cublington would have on future urbanisation and land requirements in the area.

Existing settlement characteristics

2. The existing settlement pattern around Cublington is generally rural, but there is a considerable variation in the character of the sub-region to the North-West and South-East of the proposed airport site.

3. An analysis of the 1966 Sample Census shows that in the sub-region, defined by a radius of approximately 20 miles from the centre of Cublington airport site, the population was about 1,128,000 (details of this and of workplace location are set out in Appendix A and Plan NFU/JH.1). The only settlements of over 50,000 population and the major centres of employment were:

		Population	*Workforce*
	Luton	152,940	84,470
	Hemel Hempstead	64,090	30,350
	High Wycombe	53,920	33,970
Part of	Watford	75,960	51,510
	Bedford	67,390	37,400
	St. Albans	50,730	25,350

4. The present population is concentrated into the south-eastern half of the sub-region in which all the above major centres are sited. The largest town in the north-western half is Bletchley with a population of 23,110 (workforce 11,350). However, the proposed new town of Milton Keynes is within this sector and is planned to reach 250,000 population. The population of the south-eastern half is approximately 825,000 and of the north-western 303,000.

5. All the main employment centres (in para. 3) were net importers of workers except for Hemel Hempstead which was close to an import/export balance. The analysis shows a strong localisation of employment attraction throughout most of the sub-region. The exception to this employment pattern is a general pull exerted by the Greater London Council area. This is strongest in the south-eastern fringe of the region, where in Chorleywood UD 42 per cent of the employed residents work in Greater London. This proportion reduces northwards and to the north of a line from Aylesbury to Hemel Hempstead no Local Authority area has more than 5 per cent of its working population commuting to London.

6. The sub-region as a whole is fairly self-contained particularly in the north-western area. The influence of London and areas of more dense population are generally confined to the south-east of the Chilterns some ten miles to the south of the airport site.

Regional influence on local urbanisation

7. In order to examine the size and form of local urbanisation associated with the airport at Cublington it is essential to examine the broader strategic urbanisation pattern at regional level.

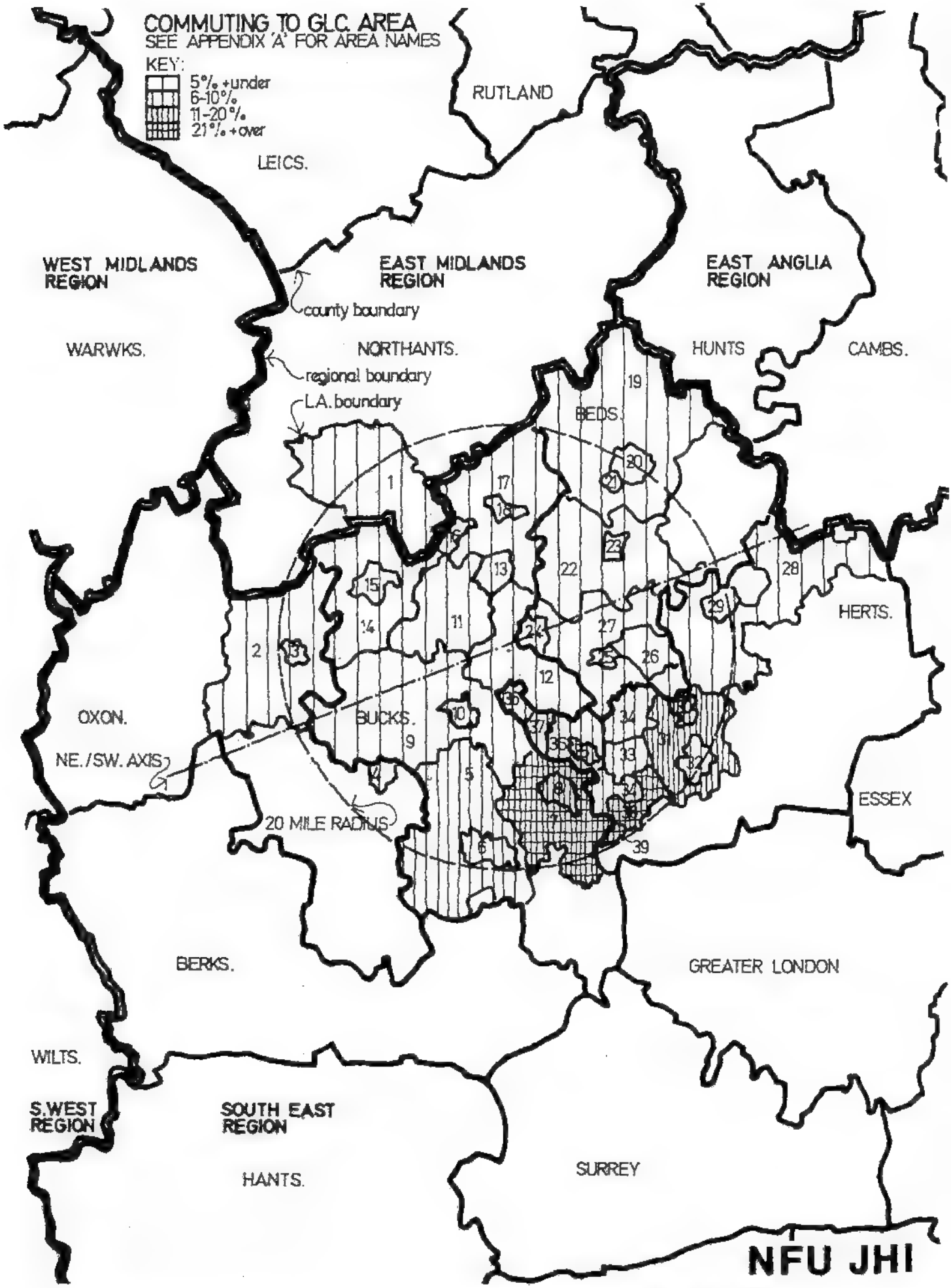
8. The development of the airport and associated uses is likely to be the largest single catalyst for growth in the south-east in the next quarter century and the opportunity should be taken to restructure the settlement pattern at regional scale. The development associated with the airport should therefore be considered, not only in terms of local form, but on how the local form can best be devised to complement the regional pattern.

9. The airport site lies in the South-East Economic Planning region, and some 15 miles south of the East Midlands region. The impact of local airport urbanisation is therefore likely to effect the policies of two regions.

10. The South-East region's population is expected to increase by about 6 million by the turn of the

* See also p. 1654.

Printed image digitised by the University of Southampton Library Digitisation Unit



NFU JH 1. Commuting to GLC area. (Mr. J. E. Y. Hawkes, National Farmers' Union)

Printed image digitised by the University of Southampton Library Digitisation Unit

century. If the airport generated growth reaches the upper limit of three quarters of a million set out later in my evidence, it will account for over one tenth of future growth in the area. This emphasises the scale of urbanisation that may be required and the importance of the correct regional location. I have therefore examined future proposals for the South-East and East Midlands regions.

11. An essential part of current planning thought is the creation of growth zones in areas that are already urbanised or on transportation axes. This has the advantage of avoiding sprawl into agricultural or recreational areas; it takes advantage of the existing basic infrastructure; and helps the restructuring and improvement of the existing fabric. Complementary to this is the conservation of rural areas as country zones.

12. A major dilemma in the siting of an airport on an island site is that the airport and noise zone should be in a sparsely populated area, whereas the associated urbanisation should be in a growth area.

Regional proposals

13. The South East Economic Planning Council's *Strategy for the South East** (1967) concludes that a long term strategy should be based on the concentration of the population increase in a series of radial growth sectors separated by country zones. They proposed a major growth sector to the north-west of London along the M1, London/Northampton axis and that on each side a wide sector should be preserved as open countryside. The strategy included the development of Milton Keynes (250,000) as a new city and the modest expansion of Bedford (30,000).

14. These proposals were closely tied to the East Midlands EPCs proposals for major growth in the Northampton sub-region (Northampton 100,000, Wellingborough 50,000 and other smaller expansions). It has constantly been emphasised that this group of developments must be planned as a whole to act as a counter magnet. The SE Strategy in considering the M1 growth sector states—Para. 41

> "The first priority will be to build up a large planned conurbation as a counter-magnet at the end of the sector. Already, plans for the new city of Milton Keynes are well advanced, and proposals for a major expansion of Northampton in the East Midlands Region are being examined, an expansion scheme for London overspill is going ahead at Wellingborough, and the possibility of a modest expansion at Bedford is being considered. These four towns, none of which is more than twenty miles from any of the others, are sufficiently close to form an extended city region of the Southampton/Portsmouth type; and their situation half-way between London and Birmingham could create a counter-magnet to both conurbations".

15. The South East Strategy emphasises the importance of retaining the Woburn/Chiltern area as a break between London and the new counter-magnet city. Paragraph 41 continues

> "the accidents of geology have created large areas within the sector which will have to be guarded as a country zone, mainly the eastern end of the Chilterns, and the fine country around Woburn in the centre."

16. Furthermore the Buckinghamshire County Council's Development Plan and policies for conservation are based on maintaining the areas of high landscape value and rural character in the south of the county and on strengthening the green Belt policies around the Metropolitan area.

17. In principle urbanisation in the M1 corridor generally conforms with regional growth proposals. The main considerations are therefore; the scale and type of growth; the detailed location of urbanisation and its phasing bearing in mind the potential congestion and coalescence that might occur and the strain on available resources.

18. Later I consider the implications of local airport urbanisation. Before this it is important to establish as far as possible the scale of population and urbanisation that might be generated by the airport. It is essential to do this as different scales of urbanisation could require different locations. My belief is that the best location is one that would allow sufficient growth to take full advantage of any economic benefits that may result from the establishment of the airport. To locate development where a restrictive policy is necessary cannot be the best solution. Its use as a positive catalyst must be preferable.

Employment demand and resultant population

19. In projecting employment generation due to the establishment of the airport I have adopted a method of high and low estimates providing a possible range of total employment and population. I consider this more realistic than attempting to predict a single fairly specific total. The advantages of considering a range is firstly that it draws attention to the scale of demand that might arise without restriction and secondly it allows for areas of possible urbanisation to be selected which would allow for the maximum economic utilisation of the airport.

20. I have examined the likely employment demand, the resultant support population and have the following observations to make:

Employment

21. PRIMARY EMPLOYMENT: (Directly connected with the airport):

The Commission has given as their "best estimate" a figure of 65,000 for 4 runways. I consider this to be a reasonable assumption, but the Heathrow employment is estimated to rise to 62,000 by 1981 for a two-runway airport and should some activities be transferred from Heathrow to Cublington at a later

* (HMSO; 15s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

date, total employment could rise to the upper estimates of 85,000.

Range—65,000 to 85,000

22. SECONDARY EMPLOYMENT: (engaged in manufacturing industry or commercial projects attracted specifically by the airport):

i) *Those forming an integral part of airport services:*
The estimate of 6,500 based on Heathrow experience appears reasonable.
range—6.500

ii) *Attracted industry and offices:*
This is by far the biggest variable in the employment projection not only in itself but because of its cumulative effect on service employment. American experience indicates a range from 10,000 to 70,000 jobs. I believe that the demand is likely to vary considerably according to the relationship of a particular airport site to regional/national communications and employment centres; although demand can be channelled by central government, regional and local planning policies and the design of transport interchange facilities giving access to the airport. I have set out below a number of points which lead me to the conclusion that it would be wise to allow for a high level of attracted employment:

(a) International airport: the airport is to be an international airport and will be in competition with other European airports such as Paris and the Scandinavian Airport at Saltholm opening in the early 1970's. I believe that in the interests of obtaining international economic benefits, certain national or regional policies may have to be modified. There would be enormous disadvantages in restricting international development pressures.

(b) This view is reinforced by the Government's reply to the first report of the SEEPC *A Strategy for the South East* in which two significant points are made in relation to the government's control of development:

i) paragraph 19ii—"The Board of Trade, in administering the IDC controls already regard an applicant's contribution to exports as a major factor to be taken into account."

ii) Paragraph 23ii—"The importance of retaining London's role as an international business centre would be taken into account in considering proposals from overseas organisations seeking to establish headquarters or branches in London."

It is therefore possible that international economic considerations would have preference over regional planning considerations in decisions affecting international trading.

(c) Air freight: International air freight services, facilities and exports from the United Kingdom have increased rapidly during the past decade. Export shipments by air increased in value from £219 million in 1961 (6 per cent total exports) to £483 million in 1966 (9·6 per cent total exports). In 1963 some 136,000 tons of freight were handled at Heathrow and facilities are planned for 1 million tons by 1980. It is well known that in terms of values of exports Heathrow is already the third biggest "port" in the country. There is no evidence that this trend will not continue or that it will not influence future industrial and commercial location as sea, rail and road facilities have in the past.

(d) Proximity of industry: Studies on the relation of industry in North West London to Heathtow suggest that there is some interlinkage between the airport and industrial location in the area. However, Heathrow is not a good example since there have been restrictive industrial policies in the area since it was established as London's airport—and in some ways it could be taken as an example of what might result from a policy of restricting associated industrial growth. In the United States the development of Airport Industrial Parks has increased rapidly in the last decade and a report published by the Federal Aviation Agency in 1965 reports that there were currently some 200 industrial sites in various stages of development. The report specifically draws attention to the advantages of direct access to the airport, and the ability to provide rapid delivery. The proposed Saltholm international airport has an industrial area within the island site.

(e) Apart from freight considerations there are advantages in industrial location for salesmen and visiting foreign businessmen connected with the industry, particularly in the case of an international organisation. Similarly businesses such as exporting agencies, headquarters of international or export orientated companies, and prestige offices could be attracted by an airport location. The Commission state that the number of passengers using the airport at full capacity could be over 100 million. No estimate is given of the percentage that might be on business but this will be considerable. It would be reasonable to assume that any commercial/office concern with international interests and without ties elsewhere would be attracted by the vicinity of an airport provided labour resources were available locally. The high male employment in the airport could result in a pool of female employees suitable for supporting major office employment in the area.

(f) Although no research has been done to enable specific figures to be established, reports referring to the Third London airport consistently

Printed image digitised by the University of Southampton Library Digitisation Unit

emphasise the advantages of industrial location near the airport and the need to maximise the economic potential of the airport.

(g) Social balance: A completely different but possibly equally important reason for allowing and encouraging associated industrial growth is the need to achieve a reasonably balanced social community. A new town developed solely for airport workers would be a "one industry" town such as the mining and railway towns of the last century. It might suffer from lack of diversification due to the absence of a wide choice of jobs for the workers (or their children in the future) narrow educational and technical training facilities, dangers of redundancy of particular skills at anytime and possible major redundance in the long term. The new development should be based on a broad enough employment base to provide a reasonable choice of work and to enable it to diversify if necessary in the future.

23. The possible range for secondary employment therefore could be between 16,500 and 76,500 employees.

24. The range for primary and secondary employment is therefore:

Primary (Airport)	65,000 to 85,000
Secondary (Airport) / Secondary (Associated)	16,500 to 76,500
Range	81,500 to 161,500

25. Service Employment

The possible range for service employment using a multiplier of 2·5 and allowing for 20 per cent in regional location is therefore:

(65,000 + 16,500 = 81,500) = 97,000 employees to (85,000 + 76,500 = 161,500) = 193,000 employees.

26. Total Employment Range

This gives a total local employment range of:

(65,000 + 6,500 + 10,000 + 97,000) = 179,000 to (85,000 + 6,500 + 70,000 + 193,000) = 354,000 employees.

Range 179,000 to 354,000

27. Population and Housing Requirements:

Using a multiplier of 3.42 on the employed male population, the total population to be accommodated would be between 373,000 and 742,000.

28. Land Requirements

Excluding the airport site itself and regional communications, I consider that a town density of 17 persons per acre could be achieved by careful planning (excluding the main regional communication links). This would require development of between 22,000 and 44,000 acres to house the attracted population. However the density of development will depend to some extent on the location of urbanisation and the current policies on density in the surrounding region. For instance, the draft proposals for Milton Keynes propose 8 dwelling/acre. Such policies would tend to reduce the overall town density of any further development for the airport. (Should the overall density be decreased to 12 persons per acre the upper land requirement would be 60,000 acres.)

29. Further land would also be needed to improve major regional routes additional to the M1, for improved rail communications and ancillary uses such as water storage.

Local urbanisation

30. The ultimate need for urbanisation will depend on many factors and on achieving a balance between demand and correct planning strategies insofar as this is possible, although the form of urbanisation should be such that it can be extended to maximise the benefits of economic pressures for development.

Scale of urbanisation

31. The M1 corridor is a natural growth area. Considerable growth can be expected to take place in it even without stimulus from the airport. For the past two centuries urbanisation and communications have continually increased on the London–Birmingham–Lancashire axis. This trend continues today and an increase of some half million people is already envisaged under current plans in the Milton Keynes, Bedford, Northampton area.

32. Bearing in mind that this is one of the main nautral growth areas around London and the South-East it must be anticipated that a high proportion of the expected increase of 6 million by the turn of the century will be located in this general area.

33. I therefore consider that natural growth pressures together with already planned schemes could alone result in a further 1 million or more people being accommodated in this sector. The establishment of the airport would undoubtedly accelerate this trend and the combined natural and airport catalyst could result in demands for even greater development. It must be remembered that growth generated in the next 20 years would itself stimulate further growth after the turn of the century.

34. The north of the sector is already receiving overspill from Birmingham (for instance Daventry) and further drift and overspill from the Midlands might well be increased by an airport.

35. Such growth could eventually lead to a continuous urban corridor running through the centre of England with its attendant congestion of communications along the narrow linear belt. It is therefore important, I believe, to consider possible long term means of relieving or damping down the pressure for continued growth in this corridor rather than providing further stimulation. The airport could be used as a catalyst elsewhere, thereby helping to divert this pressure.

Printed image digitised by the University of Southampton Library Digitisation Unit

Form of urbanisation

36. The broad regional pattern of creating a counter magnet to the north of the airport and conserving the Chiltern/Green Belt area as open space implies restriction of any new growth in the area south of the airport and the concentration of urbanisation to the north of the airport.

37. Milton Keynes could contribute to the airport needs, but I personally consider it would be unwise socially to develop it as an entirely airport supported town. Furthermore, the capacity of the designated area may be reduced if development is excluded from areas affected by noise.

28. The development of Milton Keynes together with the expansion of existing towns in the area would provide for limited growth. But growth on a large scale, which I believe is inevitable, would require a radically different solution, including further new town developments of the Milton Keynes scale in the northern sub-region.

39. However, it is hard to conceive that major pressures for urbanisation could be entirely resisted between the airport and London. Such development would firstly prejudice the green area which provides an essential element in the growth corridor as a "breathing space" and recreational area for London. Secondly it would tend to concentrate the centre of gravity of new development halfway between the proposed counter magnet and London resulting in a continuous extension of the Metropolitan area rather than establishing a separate growth area.

40. Furthermore the airport site and noise zone would destroy a large part of the recreational zone and its activities (e.g. gliding). This would be a serious loss both to the new airport urbanisation and to Milton Keynes, quite apart from its national tourism and metropolitan recreation values.

Conclusion

41. The prospect of generating further major growth and the long term consolidation of urbanisation along the M1 corridor, leads me to the conclusion that the full development potential of the airport would have to be restricted to avoid over-development and congestion and that in the meantime the establishment of the airport between the counter magnet and London would have prejudiced the regional planning structure of the area. For these reasons I have serious reservations on Cublington as a suitable site for the establishment of the Third London Airport.

CUBLINGTON—WORKPLACE ANALYSIS (APPENDIX A)

	1	2	3	4	5	6
Local Authority Area	*Population Sample Census 1966*	*Number of residents in employment*	*Employment in L.A. area as % of residents of area in employment* %	*% of residents in employment working within Local Authority Area* %	*% of residents in employment working within GLC Adm. Area* %	*Total Employment in Local Authority Area (Workforce)*
Northants						
1. Towcester RD	16,880	7,860	71·1	54	1	5,750
Oxon						
2. Ploughley RD	31,290	14,710	77·3	54	—	11,540
3. Bicester UD	7,530	4,020	97·4	45	1	3,920
4. Thame UD	5,450	2,480	89·0	54	—	2,230
Bucks.						
5. Wycombe RD	58,590	26,600	62·5	43	9	17,210
6. High Wycombe MB	53,920	26,580	129·0	82	6	33,970
7. Amersham RD	62,430	28,450	60·7	45	24	17,870
8. Chesham UD	18,660	9,200	78·7	54	17	7,340
9. Aylesbury RD	34,880	16,090	81·9	57	4	13,360
10. Aylesbury MB	34,610	17,270	123·8	82	2	21,200
11. Winslow RD	9,070	4,150	66·4	46	2	2,840
12. Wing RD	9,360	4,580	46·3	37	4	2,240
13. Bletchley UD	23,110	10,500	108·4	77	2	11,350
14. Buckingham RD	8,780	3,930	84·8	60	1	3,360
15. Buckingham MB	4,520	2,090	123·7	69	—	2,550
16. Wolverton UD	13,670	5,990	101·7	67	2	6,090
17. Newport Pagnell RD	14,170	6,480	66·3	45	1	4,420
18. Newport Pagnell UD	5,120	2,680	120·7	66	—	3,210

Printed image digitised by the University of Southampton Library Digitisation Unit

	Beds.	1	2	3	4	5	6
19.	Bedford RD	34,250	15,590	88·6	45	1	13,910
20.	Bedford MB	67,390	32,090	117·4	76	1	37,400
21.	Kempston UD	11,190	5,580	53·4	25	—	3,150
22.	Ampthill RD	29,310	13,670	60·3	45	2	8,530
23.	Ampthill UD	4,540	2,010	133·2	42	3	2,640
24.	Leighton/Linslade UD	17,580	8,290	93·9	69	3	7,810
25.	Dunstable MB	29,230	13,680	141·4	64	3	19,100
26.	Luton CB	152,940	74,330	114·1	85	2	84,470
27.	Luton RD	35,260	16,410	45·4	29	2	7,980
	Herts.						
28.	Hitchin RD	23,040	10,830	50·7	35	5	5,800
29.	Hitchin UD	25,610	12,780	97·0	55	3	12,410
30.	Harpenden UD	21,230	9,120	61·8	40	17	5,800
31.	St. Albans RD	42,150	18,050	51·7	33	12	9,700
32.	St. Albans MB	50,730	25,270	100·4	64	9	29,350
33.	Hemel Hempstead MB	64,090	31,420	96·4	75	7	30,350
34.	Hemel Hempstead RD	14,040	6,530	73·5	33	10	4,880
35.	Berkhampstead UD	14,280	6,550	76·9	52	14	5,090
36.	Berkhampstead RD	6,720	2,960	49·1	33	10	1,540
37.	Tring UD	7,790	3,520	72·9	47	9	2,650
38.	Watford RD	56,920	28,050	38·0	21	29	11,480
39.	Chorleywood UD	7,420	3,100	35·6	22	42	1,270

Agricultural Evidence

SUBMITTED BY MR. A. K. GILES*

Qualifications

1. I am a graduate of the Queen's University of Belfast, holding the degree of B.Sc. (Econ.), in the upper division of second class honours. My first professional appointment was to the Department of Agricultural Economics at the University of Bristol as an Assistant Agricultural Economist, and subsequently as Agricultural Economist. During six years at Bristol I was closely involved in the preparation of farm-group performance data for use by advisory officers in the West of England. In 1960, I was appointed as a lecturer in agricultural economics at the University of Reading, and was promoted in 1968 to a senior lectureship. Whilst at Reading I have had (and still have) special responsibility as "Farm Management Liaison Officer" to the National Agricultural Advisory Service, SE Region and have been responsible for the preparation of an annual handbook of local "Farm Business Data" (1) for use by advisers. More recently I have become responsible for the planning of all official departmental extra-mural work, including financial farm surveys undertaken, by contract, for the MAFF.

2. My personal research interests have included "farm business management", "labour relations in agriculture" and, more recently, "the interraction of urban development and agriculture". I am the author of 40 separate publications in these various fields including, recently, a major report on the agriculture of the area designated for the new city of Milton Keynes (2). I am currently examiner in farm business management at the Universities of Cambridge, Nottingham and Belfast, and at the Agricultural Colleges of Essex and Berkshire. I am a member of the Executive Committee of the Agricultural Economics Society, and am also a member of the International Association of Agricultural Economists and the Farm Management Association, in addition to working on numerous national working parties and committees related to farm economics.

Instructions

3. In April of 1969, I was invited by the National Farmers' Union to prepare, in respect to the site at Cublington (Wing), shortlisted by the Roskill Commission as a possible site for a third London airport, "a considered report on the merits of the land required for the airport itself, and to comment on the effect were the ancillary development to take place to the degree suggested by planners". This I agreed to do on condition that I could prepare and submit my evidence on an entirely independent basis.

Submission

4. My submission is presented in three main sections:

Part I — A detailed description and assessment of the actual proposed site.

Part II — Some assessment of the agricultural implications of possible ancillary development.

Part III — Summary and conclusions.

This submission is based, in particular on:

(a) A general knowledge of the area, acquired

* See also p. 1654.

(1) Appendix 1. Farm Business Data, 1969.

(2) Appendix 2. *Milton Keynes: 1967. An Agricultural Inventory* (Sept. 1968).

Printed image digitised by the University of Southampton Library Digitisation Unit

during the course of my involvement in farm survey and advisory work.

(b) Specially undertaken field work involving over 30 farm visits in the "site" area, recently carried out with the assistance of a colleague (Mr. D. J. Ansell, B.Sc. Agr. Econ.).

(c) Recently arranged conversations with agriculturists (other than farmers) working professionally in the area, e.g. representation of the National Agricultural Advisory Service, the Agricultural Land Service, the Country Landowners Association, the National Farmers' Union.

(d) A study of published data, e.g. Land classification maps; Parish statistics; Farm Management Survey Results.

(e) Being the co-ordinator of a research project, and author of a subsequent report, on the agriculture and agricultural consequences of urban development at nearby Milton Keynes.

Part I The actual site

Physical description

5. The Roskill Commission's map of shortlist sites (CTLA5)* suggests a rectangular site of some 7,500 acres ("but the possibility of a larger land-take . . . cannot be excluded"), which, allowing for some subsequent realignment, has its southernmost tip approximately four miles north from the centre of the town of Aylesbury. The site lies due east and within about a mile of Leighton Buzzard, between the A413 road from Aylesbury to Buckingham, and the A418 road from Aylesbury to Leighton. Three miles from the northernmost tip lies Bletchley and the area designated for Milton Keynes. The site embraces parts of the parishes of Soulbury, Stewkley, Wing, Cublington, Aston Abbots, Whitchurch, Creslow, and Dunton.

6. The site lies mainly within the 300 ft and 450 ft contours. The generally undulating nature of the landscape is especially marked in the south-eastern and also in the north, looking towards Bletchley. The Creslow area, in the south-east, has been designated as a reservoir.

7. Dominant, amongst a variety of parent materials in the area, are Boulder clays with intrusions of Oxford, Kimmeridge and Gault clays. This combination of clays give rise in the main, to clay-loam or loam top soils, and generally speaking, the natural drainage is admitted by agriculturists and by farmers in the area to be not good. Throughout the area, however, and specially in its northern and southern aspects, pockets of glacial gravels produce small areas of somewhat better drained stoney loams. Annual rainfall approximates to 25 inches and is evenly distributed—and it is this combination of relief, rainfall and soil conditions that have made the area, part of the traditional Aylesbury Vale with its farming based on pasture and grazing livestock.

8. According to the recently published Agricultural Land Classifications map* (Sheet No 146—Provisional) a large proportion of the Cublington site is classified as Grade 3, with a significant portion also as Grade 4 agricultural land, on a five point scale. It is important that non-agriculturists should appreciate the significance of these grades.

Grading, in this context, reflects the agricultural flexibility of land, taking into account such factors as soil structure, drainage, yield capability, altitude and slope and climate. Thus:

Grade 1 is land "with very minor or no physical limitation to agricultural use. . . . Most crops can be grown including the more exacting horticultural crops".

Grade 2 is land "with some minor limitation . . . a wide range of crops can usually be grown, though there may be restrictions in the range of horticultural crops and arable root crops".

Grade 3 is "land with moderate limitations . . . grass and cereals are the principal crops, land in the middle range of the grade is capable of giving reasonable yields under average management. Some of the best quality permanent grass laid may be placed in this grade where the physical characteristics of the land make arable cropping inadvisable".

Grade 4 is "land with severe limitations . . . generally only suitable for low-output enterprises; a high proportion of it will be under grass".

Grade 5 is "land with very severe limitations . . . generally under grass or rough grazing". Several implications of this form of grading should now be appreciated.

(a) As in all such divisions, there is no very clear cut distinction between one grade and the next at the margin. At this point, some more or less arbitrary judgement is necessary.

(b) The working of the five gradings, implies that the middle band is a much wider one than any of the others. Thus, Grade 2 has only *minor* limitations, and Grade 4 *severe* limitations (with Grade 1 and Grade 5 having "no limitations" and "very severe limitations" respectively). Thus Grade 3, includes all land between and with *minor* and land with *severe* limitations, and inevitably, therefore, represents a wide band. It is, in fact, estimated that some 50 per cent of the whole country will fall into this category. By contrast Grade 1 is estimated to contain a mere 5 per cent.

(c) The principal crops in Grade 3 are cereals and grass, with, presumably, much of the latter devoted to milk production since it is not (like Grade 4) associated with low output enter-

* See attached wallet of maps and diagrams.

* MAFF, with 'Explanatory Note' (Feb. 1968).

Printed image digitised by the University of Southampton Library Digitisation Unit

prises. It therefore supports two of the stable products in British agriculture.

9. Land in the suggested airport site at Cublington is not very markedly varied in quality. It is probable, for instance, that the Grade 4 land is only marginally less good than the adjoining Grade 3. Some, of course, is better than other; some is better drained than other. Bearing in mind, however, that the cereals often follow leys local advisers have suggested, at best, it is capable of wheat yields of 35 cwts per acre and barley of 30 cwts per acre and that milk yields are certainly not lower than average. At worst, the land is capable of supporting grazing stock with a stocking rate (calculated by me) of 1·9 "forage acres for grazing livestock unit". This figure is slightly less intensive than the average figure of 1.7 for a group of individual farms costed by Reading University* and which correspond in 'type' to the Cublington site, when treated as 'one farm'. It is in this general context that, I believe, local farmers (without overstating their case, and using, relatively speaking the laymans' language) honestly talk of the locality as "good" and sometimes "very good" farm land. Informed local opinion values the land at £300 per acre, and rents on the tenanted and part tenanted farms (visited by Mr. Ansell and me) average £5 9s per acre. This is 18s per acre above comparable EMS standards.

Farming structure and pattern

10. The previous section of this evidence has described the underlying physical basis of this area. Agricultural potential, rests also on such human elements as the *imposed* farming structure, the make-up of actual farm systems and the ability and attitudes of the farmers in situ. This, and the next two sections examines these factors and is based on an intensive programme of farm visiting carried out in the area during May 1969. On the basis of information provided by the NFU, half of all the farmers believed to have some land (however small) in the suggested rectangular site were visited. Questions related to farm details, investment and employments levels, farmers dependence on farming, future intentions and general attitudes. A copy of the questionnaire used is appended to this proof†.

11. The pattern of visiting was as follows:

Parish	(1) *Numbers believed to be effected by loss of land*	(2) *Numbers visited*	(2) / (1) × 100
Stewkley	34	16	47%
Wing	6	3	50%
Soulbury	9	4	44%
Cublington	6	3	50%
Aston Abbotts	4	2	50%
Whitchurch	6	3	50%
Dunton	2	1	50%
Total	67	32	48%

* Farm Management Survey Results—latest 3 year average for 'Milk Producing, Mixed Grass and Arable' (see 'Farm Business Data' 1969 Part I Group 2).

† Appendix 3.

In the event only one of the 32 farms visited had no land at all that is likely to be in the designated site—in so far as anybody can, at this stage, be precise about where boundaries could be drawn. An attempt was made to include in the Survey any especially large holdings and most of those thought to be situated completely in the site, so as to maximise the actual amount of relevant land surveyed. In fact the total acreage of the 32 farms visited was 8,638, and although, in the event some of this land need not be embraced by the site boundaries, all but six of the farmers believed that their buildings and homes would be, and as much as 6,000 acres could be involved on these farms alone.

12. Assuming that the designated site could be as much as 8,000 acres (no plans or maps or statements are available to suggest anything more precise than this), and assuming that some 90 per cent of this area is in fact farm land (various local estimates put the figure at about this level), then the total farm land that could be positively sacrificed to an airport site itself might well be in the order of 7,200 acres. In view of the various important unknowns involved, a close reconciliation between the surveyed acres, the actual agricultural land likely to be sacrificed and the quantity and location of land occupied by the unvisited holdings, is neither possible nor meaningful. The significance of the following data lies in the fact that it relates to an area of 8,638 acres, located almost precisely where the airport site is proposed. Converted to an acreage basis the financial data can be applied to any particular acreage that in the event might be involved.

Farm size

13. Of the 32 farms visited, and believed to occupy a very substantial part of the site area, about one quarter were under 100 acres; just over another quarter were between 100 and 200 acres and 46·9 per cent were over 200 acres. The area cannot, therefore, be regarded as one of predominantly small farms, especially as many of the smaller holdings tend to be concentrated in and around the parish of Stewkley.

The actual size distribution of farms visited was as follows:

Acres	No	%
0– 9	0	—
10– 49	1	3·1
50– 99	7	21·9
100–199	9	28·1
200–299	5	15·6
300–399	2	6·3
400–499	3	9·3
500–599	1	3·1
600–699	2	6·3
700+	2	6·3
	32	100·0

Pattern of tenure

14. A total of 68·7 per cent of all farmers interviewed own all or some portion of their land—40·6

Printed image digitised by the University of Southampton Library Digitisation Unit

per cent owning all of their land, and 28·1 per cent part owning and part renting. Just under a third (31·3 per cent) rent their land entirely, mainly in the lower acreage groups—and for these people, despite the relatively high rents in the area, the threat of rent-based compensation, plus the well known phenomenon of small farmer immobility (recently examined by Miss R. Gasson)* presents severe personal anxiety.

The pattern of farming

15. The overall pattern of farming is based on a division of 60 per cent grass (with slightly more permanent pasture than leys) and 40 per cent arable, almost entirely cereals, with barley the dominant crops, and wheat in second place. Only 6 of the 32 farms do not grow cereals, and only 5 do not engage in some form of beef production. One half of the farms are producing milk (with 4 herds over 100 cow, 8 herds between 40 and 100, and 4 below 40); 18 (of 32) keep sheep; 15 keep pigs, whilst only 3 keep poultry on any significant scale.

Whilst the area can, therefore, be described as fairly mixed, it can also claim to have a significant degree of concentration on the enterprises which feature in the government's latest programme for selective expansion i.e. wheat, barley, beef and pig-meat.†

Employment and cottages

16. Farming in the area is sustained by the employment of one full-time hired worker per 116 acres, supplemented, of course, by a fairly heavy share of manual work from the farmers themselves, especially in the lower half of the acreage range. A total of 60 cottages are provided on 32 farms, although fairly unevenly distributed, again reflecting the "two structures" which exist in this area.

Pattern and rate of investment

17. By the application of standard capital values to the cropping and stocking in the area, and the use of machinery valuations obtained during farm visiting, it is estimated that the level of tenants' capital (i.e. live and deadstock and machinery) in the area amounts to £58 per acre. This compares with the remarkably closely corresponding FMS figure of £59 per acre and suggests that, compared with the average, the area is in no sense under-capitalised so far as the intensity of the actual farming systems are concerned.

The gross value of fresh investment in fixed equipment on 32 farms over the last ten years (whether by landlord or tenant) has amounted to some £292,000. Although this investment has, inevitably, been made unevenly as between the individual farms, it represents an average of just over £9,100 per farm or £910 per farm per year. At £3·4 per acre per year, this compares very favourably with the figure of £5·4 per acre measured for the whole of Bucks for a three year period by Harrison.* In fact, the number of farms in the area investing in fixed equipment has been gradually increasing over the past decade as the following figures show:

Year	*Number of farms in sample investing in fixed equipment*
1960	9
1961	7
1962	9
1963	10
1964	13
1965	16
1966	16
1967	16
1968	16
1969*	14

* includes work carried over from 1968, and in progress.

The different types of investment undertaken reflect the mixed farming character of the area already referred to:

Type of investment in last 10 years	*Incidence as a % of total*
General purpose buildings	25·7
Improvements to existing buildings	11·5
Drainage	10·0
Cottage work	10·0
Dairy buildings	7·1
Covered yards	5·7
Silos	4·2
Road works	2·9
Concreting yards	2·9
Drying installations	2·9
Elect. installations	2·9
Other miscellaneous	14·2
	100·0

Economic potential

18. By the application of standard output figures, based on a combination of local and national yield data, and expected prices the potential gross agricultural output from the 8,638 acres included in this survey has been estimated by me at £544,240 the equivalent of £63 per acre. This figure compares very closely indeed with the latest three year average (allowing for some obvious effect of time lag) from the FMS of £61 per acre. Potential net output (i.e. GO less feed and seed) amounts to £375,873 or £43·5 per acre again closely comparable with the latest three year average from the FMS of £40·5 per acre.

19. It should be stressed that in order to depict fairly the normal economic potential from the orthodox farm land in the area, no account has been taken in these calculations of certain specialised and "non-farm" based enterprises. These include a large broiler unit based on 18 acres of the disused Wing aerodrome. Owned by the Fatstock Marketing

* "Occupational Immobility of Small Farmers" by Ruth Gasson. *Journal of Agricultural Economics*, Vol. XX No 2. May 1969.

† *Annual Review and Determination of Guarantees* 1969. (HMSO) p. 5, para 3.

* *Farming Change in Buckinghamshire* (1961–63) by Alan Harrison (Reading University, Dept. of Agr. Econ. Feb 1967).

Printed image digitised by the University of Southampton Library Digitisation Unit

Corporation, it employs a staff of 13 persons, and has an annual throughput of 880,000 birds, giving an annual turnover of some £440,000. The majority of the unit's 24 broiler houses could not be transferred, because of age, to an alternative site. Also in the area is an egg packing station employing 20 persons. This unit has a large turnover which, for reasons of confidentiality, will be disclosed only with the permission of the owner. The value of bloodstock activities and of other rural amenities generally (e.g. an equestrian centre) have also been omitted from this essentially quantitative assessment of agriculture, but they cannot be ignored in any overall cost/benefit analysis.

20. Similarly in this context, account must be taken of the resources potentially released from agriculture when farm land is lost, although, because of questions of immobility, it is less easy to be certain about this than it is in the case of "lost" output. On the assumption, however, that the majority of working capital and labour will in fact be re-employed either on other farms (creating an eventual release of agricultural resources through a buffer-like effect) or elsewhere in the economy, the following estimates, using accepted conventions, have been made.

Potentially released resources

	Total on 8,638 acres (£)	£ per acre	FMS equiv.
Seed*	13,743	1.6	1.5
Fertilizer	25,334	2.9	4.0
Feed*	154,624	17·9	19·0
Labour (paid and unpaid**)	112,762	13·1	12·5
Power & Machinery	75,175	8·7	9·5
Sundries	41,346	4·8	5·0

* Taken into account in net output calculation.
** Paid is approximately twice unpaid.

Taking into account the average rent actually paid in the area by tenants £5·45 per acre, the standard "Management and Investment Invoice" can therefore be placed £8·55 per acre (FMS equivalent £8·5).

Full details of the calculations employed in this input/output assessment are as follows:

Details of Standard input/output calculations

Cropping	*Acres*	*Standard Gross Output per acre*	*Total Standard Gross Output*	*Standard Seed Cost per acre*	*Total Seed Cost*	*Standard Fert. Cost per acre*	*Total Fertiliser Cost*
		£	£	£	£	£	£
Wheat	885 ×	50 =	44,250 ×	3·0 =	2,655 ×	4·5 =	3,983
Barley	2,147	39	88,733	3·0	6,441	3·5	7,514
Oats	260	39	10,140	3·0	780	3·5	910
Mixed Corn	176	39	6,864	3·0	528	3·5	616
Beans	12	40	480	4·5	54	3·0	36
Swedes	6	—	—	1·0	6	5·0	30
Kale	58	—	—	1·0	58	5·0	290
Temp. Grass	2,147	—	8,000*	1·5	3,221	3·0	6,441
Perm. Grass	2,757	—	—	—	—	2·0	5,514
Rough Grazing	220	—	—	—	—	—	—
Sub totals	8,638		153,467		13,743 (£1·6 pa)		25,334 (£2·9 pa)

Livestock	*Numbers*	*SGO per head £*		*Standard Food Costs*	£
Dairy Cows	1,110 ×	135 =	149,850	28% of S.O. =	41,958
Dairy Followers	823	30	24,690		
Beef Cows	26	—	—	30% of S.O. =	32,175
Fat Cattle**	890	80	71,200		
Store Cattle**	284	40	11,360		
Ewes	2,180	10	21,800	10% of S.O. =	2,180
Sows	256	75	19,200		
Other pigs over 6 months**	7,230	10	72,300	70% of S.O. =	78,311
Hens	11,070	1·75	19,373		
Turkeys	500	2	1,000		
Sub totals			390,773	Total	154,624 (£17·9 pa)

Total Standard *Gross Output* from 8,638 acres = £ 544,240 (£63 pa)

Standard *Net Output* =

Standard Gross Output: £		544,240
Less:		
Standard Seed Cost: £	13,743	
Standard Feed Cost: £	154,624	168,367
Standard Net Output =	(£)	375,873 (£43·5 pa)

Standard Power & Machinery costs
20% of Net Output = £ 75,175 (£8·7 pa)

Standard Total Labour Costs†
30% of Net Output = £112,762 (£13·1 pa)

Standard Miscellaneous Costs
11% of Net Output = 41,346 (£4·8 pa)

* *Actual* sales of hay, herbage seeds and turf on one specialised holding.
** Throughput *not* average numbers.
† Paid and unpaid manual labour.

Printed image digitised by the University of Southampton Library Digitisation Unit

The farmers

21. Nearly two-thirds of the farmers in this area are under the age of 50, and retirement does not, therefore, feature strongly in their plans for the immediate future. The precise age distribution of the 32 farmers interviewed was as follows:

Age	*No*	%
Under 30	0	—
30–39	8	25·0
40–49	12	37·5
50–59	6	18·8
60–69	4	12·5
70–79	2	6·2
80+	0	—
	32	100·0

22. In the opinion of the witness there is little about these farmers to distinguish them from any other cross section of the industry, although it might be possible to make some differentiation between the outlook of the smaller and the larger farmers. As, already stated, in terms of farm structure, this distinction is fairly clear cut in this area. Experienced advisors familiar with the area, however would testify to the locality having its share of progressive young men, even on the smaller acreages.

23. Sixty-nine per cent of the farmers interviewed are full-time farmers, with the remainder (31 per cent) "part-time" in the sense that they have some other income earning activity as well as farming. Only 19 per cent, however, have an income other than from farming, which is greater than their farm incomes. In the great majority of cases 'other income" is either nil or negligible.

24. Seventy-two per cent of the farmers in the area hope to remain in farming if their present farms are taken from them. This figure corresponds almost exactly to pattern of replies when the same question was put to farmers in the Milton Keynes area in 1967.* In that case, the difficulties likely to be associated with remaining in farming were explored and documented in detail. At Cublington they have not been, but there is no reason to suppose that difficulties and attitudes will be markedly different from those experienced a few miles away. Apart from the general difficulties of supply and demand, farmers in the Cublington area feel that the twin pressures from Milton Keynes and Cublington can only add to the problems of many farmers in this part of Bucks, who by preference, if they have to move, would prefer not to move too far. Very few of those spoken to could seriously contemplate the possibility of continuing farming on the immediate boundary of an international airport; and if these feelings were not supported by any firm evidence confirming that this is not possible, the fact that reduced acreages would offer less viable and even non-viable units, was uppermost in the minds of those likely to be so effected. Only 2 farmers of the 32 interviewed could seriously contemplate farming in these circumstances.

* *Milton Keynes. An Agricultural Inventory* 1967. Pages 33–35.

25. On the more general question of their attitude to a possible airport at Cublington it is worth stressing that while nobody welcomed the thought, the attitudes expressed to the interviewers were responsible ones. The normal issues of disturbance to community life generally and farming in particular were, of course, stressed. Seventy-five per cent of those interviewed referred to the "good" farm land, as described in an earlier section, and whilst the majority could see no good reason for siting an airport on such land, 12 (37·5 per cent) recognise possible strategic reasons for an airport being sited somewhere between London and the Midlands in line with good communications. The desire not to have an airport here, however, seemed more related to a genuine respect for the land and the local community, than simply in order to get it on "somebody else's doorstep" at all costs.

Part II the implications of ancillary development

26. If the major part of this evidence has been concerned with an agricultural evaluation of the airport site itself—this is because it is possible to be precise in respect to the site itself in a way that it is not possible (with the information available) about the extent of, and effect of, ancillary development. Also, to the extent that accurate detail has been obtained about a site, which in general farming characteristics, does not differ widely from much of the surrounding land this detail can reasonably be applied to that surrounding land.

27. In its Site Information for Local Hearings the Roskill Commission has suggested that "primary employment" generated by an airport at the full capacity of four runways will eventually involve 65,000 persons. Multiplying this number by an assumed 3·5 (to allow for average family size) would imply a total "primary population" of 227,500. Many yardsticks are quoted in respect to population densities, most of them between 10 and 20 persons per acre. Taking the midpoint of 15, a primary population of the size suggested could, therefore, demand land in the order of 15,000 acres, although something less than this total (as at Milton Keynes, and as at Cublington) might actually be in current agricultural use. An assumption of 90 per cent present agricultural use would imply 13,500 farm acres. To this demand for land must be added an equivalent demand by (as yet) unspecified numbers (and their families) in "secondary employment" and "service employment" —and possibly a further demand for land in order to provide additional motorway facilities (at say 15 acres per mile) to supplement, or at least, link up with those already in existence. Depending therefore on the precise level of the various social relationships which have been assumed here, it is not difficult to envisage an eventual total land requirement for incoming population based on multiples for the estimated figure for the primary population.

28. These arguments confirm that the principal effect upon agriculture of any inland airport site will

Printed image digitised by the University of Southampton Library Digitisation Unit

come not from the 7,500–8,000 acres required for the site itself, but from the eventual surrounding ancillary development. No firmer basis for the relationships assumed here seem likely to alter this general proposition.

29. Precisely where ancillary development would take place in respect to the Wing site is not for this witness to anticipate. Presumably, however, much of it would take place somewhere in and around the Aylesbury, Leighton Buzzard, Milton Keynes and Buckingham quadrangle, or, if Milton Keynes is to be preserved for its stated purpose (i.e. housing London's overspill population) within the Aylesbury, Leighton, Buckingham triangle.

30. In terms of land classification this area is very similar to the Cublington site itself, i.e. predominantly Grade 3, with a substantial area of Grade 4 and smaller pockets of Grade 2 land.

An examination of parish statistics for 22 parishes in a ten mile radius from the 8 parishes effected by the site itself, and occupying over 45,000 acres, shows the following comparisons in terms of farming pattern:

	The eight parishes touched by the airport site	*22 surrounding parishes*
	%	%
% arable crops	37	31
% of all grass	63	69
% of grazing livestock units in dairy cows	33	30
dairy followers	30	23
beef cattle	29	30
sheep	18	17

This very close similarity suggests that the same performance data that have been calculated for the Cublington site—which corresponded so closely to the appropriate FMS data—can quite reasonably be applied to the land in the wider area prescribed here, on which it has been assumed that urban development will sooner or later take place.

Summarising, this data was as follows:

		£ per acre
Gross output:		63·0
Net output:		43·5
less		
Fertilizer	2·9	
Labour (paid twice unpaid)	13·1	
Power and machinery	8·7	35·0
Sundries	4·8	
Rent	5·5	
= Management and investment income		£8·5

31. Finally in this section, it is important, in the opinion of the witness, to stress the general point that the effect of urban, industrial and motorway development on agriculture can depend on precisely how that development takes place as well as on how much of it there is. Thus it may be less disruptive to the efficiency of agriculture, as such, simply to replace a certain well defined sector of it with carefully planned urban development, rather than to allow urban development to take place on a piecemeal basis, with existing towns and villages gradually encroaching on and disturbing the management of profitability of viable farm units. Where large scale and planned "replacement" is envisaged with natural boundaries minimising the dissecting of farm units (e.g. at Milton Keynes) the effect upon agriculture is essentially one of reducing, all round, the level of resources employed in that industry. Where, on the other hand piecemeal development takes place over a long period of time (and this seems very probable in respect to the ancillary development associated with a major airport site) the effect on farming efficiency itself can be extremely disruptive. This is so for two main reasons. Firstly because the loss of any part of a farm implies, at once, a loss of output, which because of the relatively fixed nature of many farm inputs (e.g. labour, machinery, general overheads) is not accompanied by a corresponding reduction in costs. Inevitably, therefore, resource-use is effected adversely and profits fall. Secondly, uncertainty about the future in an area threatened by urban development has an immediate effect on the willingness of farmers to invest, with a consequent running down of the economic potential of an area. This effect of uncertainty has been witnessed in detail in the Milton Keynes area, and is referred to in appendix 2*. There is no reason at all to assume that this damaging effect of uncertainty will not be felt, in a similar way, in the urban "catchment area" associated with any airport site that is chosen.

Part III summary and conclusions

32. No agriculturist familiar with the Cublington site—and probably no farmer resident in it—would claim that the area is "first class" agricultural land in any rigorous sense of the term. Indeed, contemporary land classification systems would refute the suggestion. As predominantly Grade 3 land, however, with an emphasis on high-class pastures, forming part of the Aylesbury Vale, the area can indeed be described as "good" and in parts (with assistance from artificial drainage) "very good" land. This, in fact, is the implication of a Grade 3 classification. In terms of the intensity of the working capital employed, of crop yields and of overall stocking density, all measurement by the witness and all reflected in potential output per acre, there is again, nothing to suggest that this area is not entirely compatible with the large proportion of the country's farm land with which, physically, it has been graded. In terms of overall farm structure the area is adversely effected by a segment of relatively small holdings centred in one parish, but, with nearly 50 per cent of the farms visited being over 200 acres, (and a quarter over 400 acres) this cannot be described as an area of small farms, and an increasing rate in the level of investment in fixed equipment in recent years may point to a further improvement in its agricultural structure.

33. In my opinion, therefore, it would be impossible to justify the selection of this site on the grounds

* *Milton Keynes. An Agricultural Inventory 1967.* Pages 22 and 30–32.

Printed image digitised by the University of Southampton Library Digitisation Unit

that agriculturally speaking, it is of low economic potential or is in any way inferior to many other areas with which it has been graded—bearing in mind the true implications of that grading.

34. In wider economic terms it must be stressed that in so far as any individual entrepreneur attempts, over a period of time, to assemble that particular collection of resources that are ideally suited to his production programme than any enforced transfer of those resources to other situations and activities would suggest a less than optimum use of those resources, at least for some time. This may be especially and more permanently true of farmers themselves, who, if unable to find alternative farms—and many of them feel, that present methods of compensation will mean that—are relatively speaking unequipped for alternative employment.

35. Where piecemeal urban development introduces fragmentation and uncertainty to the farming scene, a less efficient use of resources is almost certain to follow. It is this type of ancillary development, which combined with development already scheduled at Milton Keynes, seems likely in the minds of many local inhabitants to alter the whole character and rural amenities of this part of Buckinghamshire. The fact that it is less easy to quantify such matters than it has been to quantify the strictly farming characteristics contained in this proof, makes them, in overall economic terms, no less important. Indeed, the contrary may well be the case, and these wider issues must clearly be considered in the light of the broader strategy of location theory.

Evidence of Mr. C. A. Rogers*

1. I am a Fellow of the Royal Institution of Chartered Surveyors, Fellow of the Chartered Auctioneers' and Estate Agents' Institute and Member of the Herts, Beds and Bucks Agricultural Valuers' Association. I live at Whitchurch, Bucks and have resided in the Aylesbury District since 1929 and have practised as an Agricultural Valuer for forty years. I joined the firm of Reader & Son as a Partner in 1945 and I have been engaged in Agricultural Valuations and sales of farms in Buckinghamshire and its adjoining counties.

2. **Instructions**

I have been instructed by the National Farmers' Union to give evidence of the value of farms and other matters in the airport site and its adjacent area.

3. **Land**

I have seen the National Farmers' Union survey of farms in the area, I have also seen the Ministry of Agriculture's land classification of the airport site as shown on the Ordnance Survey Land Classification Map Sheet No 146. This map indicates that the land in question has been classified by the Ministry as Grade 3 and 4, with a small area of Grade 2 on the south-western corner of the site. I am well acquainted with the area, which comprises medium loam, some sandy loam and clay, as well as easy working loam over limestone.

The NFU Survey shows the number of farms affected, their tenure and their areas. The average size of farms in the area is shown as about 160 acres, but there are twelve holdings having an area of over 200 acres, the largest unit being 1000 acres and that is Creslow Manor Farm, which is situate on the outskirts of the village of Whitchurch and has some easy working loam over limestone, as well as some medium loam and a small area of clay. This holding has been renowned for its fertility and beef fattening potential. It has land that will produce 30/40 cwts of grain per acre and its pastures are capable of carrying over a beast per acre. It is a first-class farm and there are others in the aiport site.

The next largest holding is Old Park Farm, Wing, which extends to 761 acres, including 179 rented. 177 acres of the old Wing airport site, shown on plan as South Cotesloe, are now under the plough and included in Old Park Farm, Wing Holding. According to the owner/occupier, this old airport land now produces in a reasonable season 32/35 cwts of barley and wheat per acre, but this does not take into consideration the area of ground which has been reclaimed from the old runways which have been brought into cultivation.

The estimates of yields obtained in the NFU survey indicates that on average 30/40 cwts of grain can be obtained from the land in the Airport Site in a reasonable season.

The farms in the Airport Site and its adjacent area are mixed arable and stock holdings and crops grown are wheat, barley, oats, beans and some potatoes. The holdings are well farmed and fully stocked, as is shown by the amount of live stock referred to in the NFU survey.

The following farms in Buckinghamshire have been sold by auction in recent years.

* See also p. 1655.

Printed image digitised by the University of Southampton Library Digitisation Unit

Year	*Name of holding*	*Acreage*	*Price per acre*
1964	South Cotesloe Farm,Wing (Pt old Wing airport)	177	£300
1964	Holborn Hill Farm, Oving	301	£252
1966	Land at Halefield Farm, Wendover	34	£273
1966	Two enclosures of land at Worlds End, Wendover	21¼	£241
1967	Manor Farm, Broughton	142	£232
1968	Two enclosures of land at Stones Ground Farm, Whitchurch	20	£390
1968	Lopemede Farm, Long Crendon	116	£418
1968	Redborough Farm, Mentmore	345	£260
1968	Hogshaw Farm, Hogshaw, North Marston	170	£224
1969	Widmore Farm, Asheridge	207	£350

In my opinion, the present value of the Airport Site and its immediate adjacent land, with vacant possession, is on average £300 per acre, but the value of some holdings with good modernised residences, cottages, up-to-date fixed equipment, proper drainage and managed efficiently, would be greatly in excess of that figure.

4. **Severance**

The proposed boundary of the airport site will cause the severance of several holdings and where severed land outside the airport site is rented it can, when the landlord has adjoining land, be amalgamated with other holdings, but in the case of owner/occupiers, the land could be an uneconomic unit.

5. **Live stock**

The NFU Survey shows that the following live stock is kept on the Airport Site and its adjacent area: 1,727 beef cattle, 874 cows, 2,915 pigs, 5,494 sheep, 236,252 head of poultry—on the assumption that it is only commercial stock, their total value must be in the region of £376,250.

Excluding the poultry, the greater percentage of live stock are disposed of at the following markets, which are situated at : Aylesbury—6½ miles, Bletchley—6 miles, Tring (Herts)—9¼ miles and Winslow—6½ miles from the centre of the proposed airfield.

Aylesbury, which is the largest market in Buckinghamshire, has two weekly markets—Wednesdays for fat stock and Fridays for dairy and store cattle. The average entries for the last four years to 31st December last at Aylesbury were: 15,572 fat, dairy and store cattle, 5,624 fat and weaning calves, 23,189 fat and store sheep and lambs, 11,712 fat and store pigs. These average figures would have been greater, but owing to foot and mouth disease restrictions, no dairy and store stock markets were held from 24th November, 1967 to 9th February, 1968.

6. **Availability of farms**

Farmers wishing to extend their activities are finding it difficult to obtain other holdings either to rent or buy. My firm have only had two farms to let since 1946 and this is because any owner retiring from farming usually desires to sell his holding rather than let it. If, therefore, Wing is chosen for the third London airport, the dispossessed farmers will possibly have to purchase at figures in excess of that which they will obtain for their freeholds and may not even be able to find a farm. They may also be faced with difficulty over the present financial restrictions and high rates of finance.

Drainage Evidence

SUBMITTED BY MR. H. C. BALFOUR*

1. I am a Member of the Institution of Civil Engineers, a Member of the Royal Society of Health, a Member of the Institution of Public Health Engineers, and Associate Member of the Institution of Water Pollution Control. I am a Member of Council of the Institution of Civil Engineers and also a member of their Hydraulics and Public Health Board.

2. I am a Partner in the firm of D. Balfour and Sons who over the past eighty years have been engaged in schemes of water supply, surface water drainage, sewerage and sewage disposal.

3. My firm have acted as Consulting Engineers to many of the local authorities in close proximity to the proposed airfield, including Buckingham Rural District Council, Winslow Rural District Council, Leighton-Linslade Urban District Council, Wycombe Rural District Council, Tring Rural District Council, Berkhamsted Rural District Council. My firm have been concerned with schemes in the locality at, Linslade, Newton Longville, Whaddon and Nash, Great and Little Horwood, Mursley, Swanbourne, and Winslow.

4. The National Farmers Unions are concerned that the proposals could have a detrimental effect on the interest of their members by reason of the large additional volume of rain water which will have to be discharged to the water-courses from the run-

* See also p. 1655.

Printed image digitised by the University of Southampton Library Digitisation Unit

ways and airport buildings. They are also concerned at the possibility of pollution of the water-courses from oils and chemicals discharged with the surface water and the discharge of sewage effluents resulting from the large number of staff employed and by passengers in transit.

5. The area selected is remote from any major water-courses and lies in the catchment areas of the Great Ouse River Authority and The Thames Conservancy. The northern and eastern portion of the area is drained to four streams which flow in an easterly direction to join the River Ouzel near Linslade. The southern and western portion of the area is drained to the Creslow Brook which joins the River Thame about a mile north-west of Aylesbury.

6. The proposed site is largely clay with areas of glacial gravels in the south-western part. I anticipate that the clayey nature of the area will cause a relatively high rate of storm water run off from those areas which are not used for runways, buildings, etc.

7. I have estimated the surface water run-off from the site as it exists at a maximum rate of about 1,500 cubic feet per second (cusecs) and a maximum daily flow of about 200 million gallons per day (mgd) based on a storm likely to occur once in 20 years. The maximum rate of run-off to be expected from the airport site will be about 3,500 cusecs and a maximum daily flow of about 350 mgd based on similar intensities.

8. The existing system of streams and rivers is quite unable to accept such high rates of flow and I consider that provision must be made to restrict the flow to the existing water-courses to rates not in excess of those experienced at present. This could be ensured by the provision of storage lagoons to provide retention for flows over and above those occurring at present.

9. The proposed new town of Milton Keynes is to be constructed around and to the north of Bletchley which is only some three miles north of the proposed site. There have been difficulties in agreeing on satisfactory means of storm water and treated sewage effluent discharges to the River Ouse and Ouzel and final agreement on these points has not yet been completed.

10. From the figures given in the Commission's booklet I estimate that a volume of about 4 million gallons per day of domestic sewage will have to be treated. I think that it is unlikely that it would be treated on the site as it would probably be more economic to discharge the crude sewage either to Aylesbury or Milton Keynes for treatment.

11. If the sewage is to be treated at Milton Keynes and discharged to the River Ouse there will be a very large proportional volume of treated effluent in the river. Since the Great Ouse is used for water extraction special problems of either treatment or effluent disposal will arise, either of these are likely to be expensive.

12. I consider that the siting of an aiport at Cublington will increase the risk of pollution of the streams and ditches and the National Farmers Union will wish to be assured that all precautions are taken to prevent oil and special chemicals, such as those used for fire fighting, de-icing runways, cleaning down aircraft, from being accidentally discharged into surrounding rivers.

13. I am anxious to direct the Commission's attention to the serious problems which will arise with disposal of foul sewage and storm water from the proposed airport and to the high cost dealing with these. I am unable to give estimated costs of the works likely to be required until it is known what the proposals are for the drainage for Milton Keynes.

14. In considering the matter I have mentioned the proposed new town of Milton Keynes but presumably there will be considerable further urbanisation in the surrounding area which will aggravate the problems which I have raised.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Representative Farmers

SUBMITTED BY MR. E. J. VENN

1. Mr. E. J. Venn, Hartwell Hill Farm, Whitchurch (Dunton), Aylesbury, Bucks.

2. Rural District Councillor for Dunton. Chairman of Agricultural Trading Group of Leighton Buzzard. Past Chairman of Winslow Branch of NFU.

3. **Farming experience**

Father's farm at Stoke Hammon. Came here in 1947 after 5 years military service; total acreage farmed 210 acres. 184 acres owner-occupied since 1963, accommodation land at Whitchurch rented. 26 acres. Type of farming.

Mixed Dairyherd (50)+followers (100) corn (70 acres) sheep and pigs (200).

4. **Capital invested**

Since buying the farm, 100 acres have been tile mole drained under Ministry of Agriculture Schemes. New hay barn erected for 200 tons hay. Normal machinery, including new £1,000 tractor this spring, and a similar new one in 1967.

The farm has been threatened by proposed reservoir since 1964, which if it comes, would leave about 40 acres.

Intentions were to put up an £8,000–£10,000 milking set up this year.

Present amount of money invested (£17,000), in stock, crops and machinery returns 20–25 per cent per annum, taking good and bad years together.

5. **How affected**

If the airport becomes a reality on this site, the whole of the farm would go. The only land remaining would be the rented land in Whitchurch, on the edge of the designated area.

I have an AMC Mortgage fixed at 6 per cent, which has 23 years to run, and would be lost. The present AMC Mortgage rate is 10¼ per cent.

I would lose a farm which is in a state of high fertility and I know I could continue to make a fair living in the foreseeable future.

All the labour force on the farm is family labour.

If we have to move away, everyday contact with relatives, including ageing parents, will be broken.

We have only had two holidays, bar the odd weekend, since 1947 in 1966–68 and also, like thousands of other farmers, work Saturdays, Sundays high days and holidays, tending the stock.

6. **Future plans**

New milking set up for larger dairy herd.

At the moment it is difficult to make plans for the future until we know what our position will be here. If the farm goes, I hope to continue farming in England, but pressure on farm land must be very great and I would consider myself lucky to get another farm within 50 miles.

7. **General comment**

I am very concerned at the loss of agricultural land in Britain which must surely continue to make the food import burden greater and could be a factor, in years to come, in determining our independence of other countries.

SUBMITTED BY MR. B. J. HEDGES

1. Trading partners: John Hedges, Edith W. Hedges, Benjamin J. Hedges, William G. Hedges. Trading as Messrs. J. Hedges & Sons.

2. **Type of farming and time in the district**

We have been farming land at Littlecote for over one hundred years, now in fourth generation, for majority of the time under Rothschild family Mr. Leopold Rothschild being the present owner. We have expanded over years from 290 acres to our present acreage of 525. The type of farming is mixed as this suits both the type of soil and buildings available. Stocking is as follows:

110 milking cows
90 dairy replacements
100 beef cattle
200 breeding ewes (330 lambs) (fattened)
35–40 breeding sows (producing weaners 500–600)
220 acre arable consisting of:
67 acre wheat (sold for milling)
153 acre oats and barley for stock feed (Ground on the farm).

Printed image digitised by the University of Southampton Library Digitisation Unit

3. **General effect of airport**

Being tenant farmers we would find it impossible to find another holding of the same standing. We have had 300 acres of the holding threatened by a reservoir for five years, having tried without much success to find land. Rents on the open market are a great deal higher than old established tenants.

Within the event of the airport, many farms in the area would be compulsorily purchased, most would be forced to sell up, which would put a lot of stock and machinery on to a very weak market. We are very concerned about this because all our capital as tenant farmers is tied up in stock and machinery.

Compensation would have to be very substantial; this holding is a good viable business built up over many years, but tenant farmers have no hedge against inflation because we do not own the land. The cost of the land bears no relation to what can be produced off it, making it very difficult for a tenant farmer to buy land.

We think that in the event of the airport coming, those farmers who wish to carry on farming as we do, should be moved lock, stock and barrel to another farm of equal standing at the Airport Authority's expense and to receive compensation for upset. We should be better off, not worse off, especially as we are supposed to be moving for the benefit of the country.

4. **General farming**

A farmer's greatest asset is the skill and knowledge of the land he farms gained by experience over the years, as the airport would take our land this would be lost. We have also spent a great deal of money on land drainage, this would be lost. The fixed equipment would be a dead loss; we have grain drying plant, new dutch barns, two bulk milk tanks, most of it installed within the last seven years, approximate investment £10,000. We have also farmed this land in strict key rotation keeping the land in good heart. This is a most important factor, because when one tries either to rent or buy a farm, most have not been farmed as well as your own.

5. **Is the land worth farming?**

We consider this land to be worth farming. It has provided the Hedges' family with a fair living over the years. Also it has provided a living for the famliies of three regular men and some part-time workers.

The milk produced would provide for 2,400 people every day. (300 gallons average 1 pint per person per day), cheapest source of protein in the human diet.

42,400 lbs of beef which would provide a Sunday joint for 350 families (2½ lbs average joint once a week.)

13,200 lbs of lamb would provide joints for another 100 families a week (2½ lbs per family).

Also 100 tons of wheat a year and weaner pigs.

This land produces good average crops at economic prices.

6. **Farming future if airport does not come**

The potential of this land is good, with better drainage we can grow better crops. As the land is high with good fall off drainage is more effective than a lot of places. Also most of our equipment is installed with the view to intensification.

SUBMITTED BY MR. P. WARREN

1. Mr. Peter Warren, Old Park, Wing, Leighton Buzzard.

2. I am on the River Ouzel Internal Drainage Committee and on the Milk Records Committee. I am also a Vice-Chairman of the Bucks County Show and in charge of the cattle section.

3. I have lived in the area all my life and at Old Park since I was two. I left school in 1935 and farmed with my father at Old Park and later Cottesloe which was bought in 1940. I married in 1946 and farmed Old Park on my own. After approximately ten years I took on most of Cottesloe and in 1964 bought 210 acres of the old airfield and 49 acres of land adjoining called Bramwells making my total acreage to 761.

4. This is a mixed farm comprising 75 milking cows averaging 990 gallons. A beef unit producing 90 fat beasts a year also a breeding flock of 140 Border Leicester ewes producing this year 240 lambs. I grow 320 acres of cereals of which approximately 100 acres is wheat, 40 acres oats and 180 acres is barley. I make usually 150 acres of hay each year which is sufficient to feed the stock numbering around 300 head in winter. Everything is fed on home grown cereal except for a small amount of bought in protein and minerals.

5. If I had to leave this farm now, I think it would be almost impossible to find another of the same acreage in such good order as this one. There is no compensation for having to be turned out of one's farm against one's will. If I was only paid on agricultural value by the time capital gains had been paid there would not be enough money left to buy another farm. I think that if I am to be turned out then compensation should be at least double agricultural value.

6. In my case the proposed boundary for the drome splits me in half. If it came, all the past five years slogging to improve and clear the old airfield of rubbish and concrete would all be wasted, my machinery would only be used for half its capacity.

Printed image digitised by the University of Southampton Library Digitisation Unit

I would have to buy all the food in for the livestock instead of growing it as the land in question is all arable. It would also take from me Cottesloe farm house, including 30 loose boxes and dutch barn. I have invested a considerable sum in reclaiming some 30 acres of concerete.

I have recently altered my milking parlour and put in a bulk tank, a concrete road had to be made for the tanker. I have also put up a covered yard to cope with extra milking cows. As I run my farm on a small staff I am highly mechanised and several thousand pounds is invested in machinery.

7. I cannot understand why my farm and surrounding land is graded 3 and 4 when it is obviously highly productive. I produce well above the national average in cereals and over the last ten years have not averaged less than 950 gallons per cow.

8. My plans for the future before Wing was short listed were to carry on and intensify still further, until my son now aged 11½ is old enough to start farming himself; his main love is everything to do with Old Park. In fact the whole family love and take an interest and help at busy times. I plan to go and live at Cottesloe when my son eventually takes on Old Park as I did.

9. In addition, I have put up a large indoor riding school which is a training centre for riders and horses. Most of the leading show jumpers come here. Local riding clubs come for instruction. Ponle Club Camps are held and many courses in all branches of equestrianism are held. Also disabled riders are helped. Young farmers come for rallies etc. and many charity do's are organised. This is run mainly by my wife and three daughters. This is a very go ahead project, with a large capital investment which would have to completely cease if the aerodrome ever came.

SUBMITTED BY MR. J. H. KELLNER

1. Mr. John Hugo Kellner, Upper Hollingdon Farm, Soulbury, nr. Leighton Buzzard.

2. Upper Hollingdon Farm at present, consists of that parcel of land contained in the following Ordnance Survey Nos. for Bucks, XX13, XX10, XX9, namely OS Numbers 219, 333, 332, 330, 328, 274, 284, 285, 281, 282, 283, 275, 273, 272, 271, 270, 269, 268, 267, 266, 264, 261, 262, 260, 259, 258, comprising some 348·24 acres or thereabouts.

3. I am owner-occupier and serve on the Bucks Executive Committee of the NFU. I have been Chairman of the Leighton Buzzard branch of the NFU on two occasions. I am ex Public School, served an apprenticeship to mechanical engineering, and an ex Member of the Institute of Mechanical and Production Engineers, and I am also a company director. My wife and I serve on the Church Parochial Council, and my wife is also a Parish Councillor.

4. I have farmed this land since 1948. My father having sold his farm at Iver, Bucks, in 1944. At present the farm is run as a mainly arable enterprise, cropping 50 acres Oats, 100 acres Wheat and 150 acres Barley. About 100 acres are in grass as a rotation for wheat. I have drained some 250 acres of this land (I still have about 100 acres to drain, for which drainage schemes have been prepared.) I have built a Dutch Barn 45 × 80 ft., concreted yards and have built a cow shed, implement shed and a 500 ton grain store, and a battery house for 2,300 hens and I have installed my own water supply. I have recently gone out of milk production and I am putting in a calf rearing and beef production unit. I also run a small 500 turkey unit for the Christmas market.

5. This farm is a good grass and wheat land farm, and for this end, I am extending my poultry unit to 17,000 in the immediate future and to 30,000 in about 18 months. The calf rearing and beef herd will be expanded to about 150–175 head. Cereal production will stay at about 250 acres. A barn hay drying unit is in the process of being installed, and further cattle sheds will be required, and an automated silage system will be necessary. Two new battery houses holding 15,120 hens each, are required, the first one will be in operation this year.

6. As I see the proposed airport, I should lose about one-third of my land, and it so happens that they are taking the best. Of the remainder, I do not know what effect the noise will have. I cannot imagine it would be possible to keep hens in a battery house. This means I should lose the major reason for beef production, i.e. poultry manure is the best fertiliser for grass production, and is so to speak a free ley product. In fact it would be fair to say that the whole farming policy would have to be rethought. It is my experience that new policies are expensive and long term in fruition. The whole unit would in fact, be most uneconomic.

7. This leads to the question of compensation. What is the compensation for twenty years work wasted? In the past, victims of compulsory purchase have been very badly treated. Very often one is one of many, all in similar circumstances—everyone knows it is a forced sale—one of perhaps 10 or so in the district, so all you get is give away prices—everything at a fraction of its use value to the occupier. So as a basis to overcome this and perhaps partly in the form of a redundancy payment by the community as a whole—for it is the community who force these compulsory purchase sales on individuals, a tenant should get about £100 per acre for disturbance and owners twice the average district value for the land taken. In addition all improvements carried

Printed image digitised by the University of Southampton Library Digitisation Unit

out over the past 5–10 years should be paid for at replacement values. Inflation being what it is—what looks dear today, will seem very cheap in 5 years time. I also accept that should we have deflation, then the same principle applies.

8. I suppose that during the twenty years I have been here, I have spent about £30,000 on improvements—these have covered such things as buildings, implements, dutch barn, grain store (this alone cost over £12,000) battery house, land drainage, water supply and mains electricity. On top of this, you require a working capital to provide the machinery, tractors, seeds, fertilisers and live stock. This would come to another £100 per acre or so.

9. As a farmer, it is my duty to leave my farm in a better state than when I took it. I have two sons, the eldest of which has turned 17, and wants to become a farmer. I hope that he will be able to take over "here", if there is a "here", to take over. Farming and people do not go together, an airport here, would end farming and finding another farm with all the amenities of this one, would be a long and expensive undertaking—perhaps emigration would be the only answer.

10. There is also the question of taxation. I understand that capital gains becomes payable on the so termed increase in value paid under compulsory purchase. I have always maintained that farms only keep step with inflation and the real value of money—I am not proposing to develop this point, as it is outside the scope of this letter. However, since in the subsequent re-investment of one's capital in another venture, the purchase price includes the expected taxation which the vendor will be liable for. Thus, victims of compulsory purchase become liable for paying two lots of so termed capital gains. This of course, is victimisation of the individual by circumstances imposed on him by the community and is iniquitous. We must insist that all cases of victimisation, which compulsory purchase imposes, must be tax free.

Lastly, whilst not wishing to see the Third London Airport sited here, for all the reasons stated in this letter, as a law abiding individual, it is not possible for me to forcibly oppose the will of the community, We, on the other hand, as part of this community, expect that it will treat us with honour, justice and dignity.

SUBMITTED BY MR. B. FONGE

1. Mr. Bryan Fonge, Manor Farm, Waterprerry, nr. Wheatley, Oxfordshire.

2. Partner in Farm Business of Messrs. E. Fonge and Son. Attended course in Agriculture at Berkshire Institute of Agriculture—awarded the Institute Certificate.

Vice Chairman, Thame Branch of National Farmers' Union. Branch delegate to County Executive Committee and member of following sub-Committees:

1. Finance, Legal and Administration
2. Parliamentary (Chairman)
3. Pigs
4. Crops.

Chairman, Thame Farming Club, Vice Chairman, County Federation of Farming Clubs, Member of Waterperry Parish Council.

3. The farm business

I am a partner in the family business and have been working on the farm for 16 years. My father, E. Fonge is the other partner and he has been farming Manor Farm since 1930. The family have farmed in Waterperry parish for over 100 years.

Manor Farm is approximately 244 acres in size and at the present time is devoted to 125·5 acres of barley, 5 acres of oats. 26 acres of wheat, 36·7 acres of grass and 13·7 acres is fallow with spinneys covering another 4 acres. Buildings, roads, etc. account for the remainder. The farm carried the following livestock on 1st June, 1969: 5 boars, 139 sows and gilts and 402 young pigs—a total of 546 pigs. In addition there were 2,080 laying hens.

4. Objections to siting of Third London Airport at Wing, Buckinghamshire. I have two main objections to this proposal, as follows:

1. *Noise*. The frequency and low altitude of aircraft flying over Waterperry means that the traditional quiet rural nature of the district will be lost. In addition to the disturbance this will cause to the inhabitants, sudden and loud noise of this nature will seriously upset the poultry and, to a lesser extent, the pigs.

2. *Flooding*. The farm is situated on the River Thame and there has always been a certain amount of flooding in the winter months. During recent years there has been a serious tendency towards more frequent and worse floods in the winter and, of greater economic significance, frequent flooding in the summer months. In 1968 there was serious flooding on more than ten occasions, including serious flooding in July which caused 6 acres of barley to be lost and preventing 20 acres of land from being effectively fallowed resulting in a complete loss of one year's production from 26 acres.

The primary cause of this flooding is undoubtedly both the large increase in urban run-off from development in the Aylesbury,

Printed image digitised by the University of Southampton Library Digitisation Unit

Thame and Chinnor areas and the Government sponsored and grant-aided agricultural drainage schemes which have been carried out on many farms in the Thame catchment area. In addition to these major causes can be added the increase in road building and widening and sewerage schemes in many villages and a very significant increase in annual rainfall in the area in recent years. The Thames Conservancy have recorded this rainfall increase as a steady one over the past five years from 26 inches to 33 per year. In view of the nature of the sub-soil over most of the area—a heavy clay—almost the whole of the extra rainfall has found its way into the River Thame.

The increased flooding problem in the area has been the subject of many discussions at meetings of Thame Branch of the National Farmers' Union and as a result representations were made to the Thames Conservancy to improve the cleaning out and removal of obstacles in the River Thame. A meeting was held with this Authority and arrangements were made for better management of the sluice-gates at Waterstock Mill. Unfortunately this type of action can be only of limited local value and the Branch sent a resolution to the Oxfordshire Branch early in 1969 asking that top-level discussion with all the parties concerned be arranged. The Parliamentary Committee of the County NFU Executive Committee were sympathetic to this view and a meeting with the Thames Conservancy at County level was held in April, 1969.

Evidence was submitted from all parts of Oxfordshire to this meeting and it was very evident that urban run-off and improved land drainage were causing serious flooding problems in the whole of the Upper Thames area. In particular, farmers in the Cherwell Valley and between Oxford and Lechlade on the Thames itself were finding that large influxes of water from the airfields of Brize Norton and Upper Heyford were, in time of heavy rainfall, far too great to be dealt with by the normal water channels. Either the water floods land adjacent to the airfields or, if it is piped into river courses by sufficiently large drains, causes flooding in the river valleys. It is believed that very large increases of flood water have also come from increasing urban development at Swindon and Witney. Another example of the effect of urban run-off was experienced at Bicester a few years ago when the local council proposed to drain a new housing estate into a farm ditch. The farmer concerned protested that this would flood a large part of his farm and the the council eventually agreed that this was likely and provided a large drainage pipe to the river. This, of course, was of advantage to the farmer whose land would have otherwise been flooded but put large quantities of water into the river at a very rapid rate and this, no doubt, contributes to flooding problem lower down the water course.

It is obvious, therefore, that the River Thame, whose source is within the proposed area of the airfield at Wing will, as a result of the large area of concrete, buildings, roads at the airport itself, the effluent discharge from the airfield services, together with all the urban and servicing development which must surround the airport and the many new and widened roads, be expected to deal with a very large increase flow of water. This will cause a very serious problem in normal times and is likely to be catastrophic in times of abnormal rainfall. Many acres of good farm land in the valley of the River Thame will, therefore, be lost to economic production and, it is suggested, the problem will carry on to the whole of the lower Thames itself. This, in turn, will necessitate the holding of large quantities of water in the Thames above Benson and causing flooding in the Upper Thames Valley as well.

Once the airfield had been built the only solution to this problem would be to embark upon a major plan of improving the flow of water in the whole of the Thame and River Thames basins by widening, straightening and deepening the main rivers. This would be extremely costly and so alter the whole nature of the rivers concerned as to raise matters of principle concerning fishing rights, navigation and the traditional amenity status of Old Father Thames himself. In fact I believe that to adequately deal with all the extra water from vast developments in the Wing area will either ruin my farm and many others besides or else mean that the River Thames and Thame will have to become large, deep-sided drainage ditches and not the meandering rivers that we all enjoy.

5. An explanation of my present farming system. Although the traditional farming practice in the Thame valley was, until recent times, based on river meadows which fattened cattle and sheep in the summer months this has now become completely uneconomic and it is impossible to argue a case for its continuance. In recent years practically the whole of this farm has been under the plough and cropped with cereals on a rotation as advocated by the National Agricultural Advisory Service of the Ministry of Agriculture. Because of the increased flooding in recent years, however, the risks of lost crops and unusable land has necessitated a change from this system. This, in its turn, has meant the less efficient use of capital equipment such as tractors, combine harvestors and grain storage equipment and some 26 acres of riverside land is now used for the grazing of sows in the summer months only. The use of the land for this purpose, useful as it is in the pig enterprise, produces a very much lower return than the former cereal crops. Should the problem of flooding

Printed image digitised by the University of Southampton Library Digitisation Unit

increase an even greater acreage would have to be devoted to this type of use and further reduce the profitability of the farm.

Any consideration of alternative types of farming almost always show the need for an increase in the farm labour force but this is impossible because of the proximity of the motor industry and high wages at Cowley and the absence of a spare cottage on the farm and also the difficult layout of the farm. The main enterprise on the farm is now the production of pigs and some £9,500 has already been invested in specialised buildings for this purpose and more will be required for the housing of sows, farrowing accommodation and fodder storage buildings. Under modern farming methods it becomes impossible to direct capital from one type of production to another and, for many years to come Manor Farm, Waterperry can only produce cereals and pigs on the scale needed to provide an adequate return on the capital invested and a reasonable standard of living for myself and my family.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Trust

SUBMITTED BY MR. M. J. ROGERS*

1. Preface

This written statement is submitted in response to the invitation issued by the Commission and in particular bearing in mind the remarks of Mr. Justice Roskill made at the private meeting on the 14th June, that such statements would carry equal weight with oral representations through Counsel at the Local Hearing.

2. Introduction

The National Trust for Places of Historic Interest or Natural Beauty was founded in 1895 and incorporated by the National Trust Act 1907. As its full title implies, it exists to promote the permanent preservation for the benefit of the nation of land and buildings including their contents of beauty or historic interest and as regards land for the preservation of its natural aspect features and animal and plant life. It is a charity dependent on public subscriptions and gifts and is not in any way state aided.

The Trust owns and opens to the public over a hundred major houses and thousands of acres of countryside, ranging from mountainside to beaches, moorland to woodland. Included in, and well representative of, this range of property are those described below which the Trust believes must be adversely affected by the siting of a major airport at Cublington. Copies of the Commissioners' own maps have been marked to show the position of these properties.

As additional material copies of an article dated 10th November, 1960 and reprinted from the *Times* newspaper, entitled "Held in Trust for Nation", are enclosed together with copies of booklets describing Ascott, Waddesdon and Claydon.†

3. Description of National Trust Properties affected by the proposal

a. Ascott: Stands half a mile from proposed perimeter of airport and to the east; 261 acres including gardens, grounds, park and cricket field; views over Vale of Aylesbury to Chilterns; grounds contain unusual trees, herbaceous borders, walks, fountains and bulbs. House contains the Anthony de Rothschild collection of French and Chippendale furniture, pictures, including works by Rubens, Hogarth, Gainsborough, Hobbema and Dutch painters; and Oriental porcelain containing examples of Ming, K'ang Hsi periods and Chun ware of the Sung Dynasty, and given to the National Trust in 1950.

Number of visitors over the last five years: house and grounds—26,572.

1969 Opening times—April–September, Wednesdays, Saturdays and Bank Holiday Mondays 2—6. Also Sundays, July, 6, 13, 20, August, 3, 17, 24, 31 from 2—6.

b. Waddesdon: On the outskirts of the village of Waddesdon, 6 miles north west of Aylesbury, 11 miles south east of Bicester. Eight miles from perimeter of proposed airport, and to the south-west. House built by Baron Ferdinand de Rothschild in French Renaissance style 1880–1899. Stands on hill-top surrounded by grounds extending to 160 acres. Wooded parkland with fine trees, shrubs and lawns. Large aviary of 18th century design stocked with a variety of birds. House contains Waddesdon collection of French decorative art of the 18th century, including magnificent furniture, a unique group of Savonnerie carpets, a large collection of Sevres and Dresden china, important pictures of the French 18th century school, including notable portraits by Reynolds and Gainsborough and important works by Dutch artists of the 17th century. Magnificent library remarkable for its French 18th century bindings. Collection of armour etc., given to the National Trust in 1957 by Mr. James de Rothschild, with additions via the Treasury and loans from Mrs. James de Rothschild.

Number of visitors over the last five years: house —191,892, grounds—40,740.

1969 Opening times: 26th March—26th October, Wednesdays to Sundays, inclusive (including Good Friday) 2–6. Bank Holiday Monday 11–6.

c. Claydon House: Half a mile from Claydon station adjoining Middle Claydon Village, 13 miles north-west of Aylesbury, 3½ miles south-west of Winslow, approximately 10 miles west "as the crow flies" from the perimeter of the proposed airport.

Built 1752–68 by the Second Earl Verney on the site of an older house. Contains a series of magnificent rococo state rooms with wood carvings by Lightfoot, ceiling plaster by Joseph Rose in the saloon, a great staircase with fine inlaid work, a Chinese Room, Florence Nightingale's Bedroom and Museum. Given in 1956 by the Verney family. The Trust owns the greater part of the garden and has restrictive covenants over the surrounding parkland extending to 392 acres.

Number of visitors over the last five years: house and grounds—50,420.

1969 Opening times: March–October. Daily except Monday but including Bank Holiday Mondays, 2–6. November–February by appointment only.

* See also p. 1661.
† Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

d. Coombe Hill, nr. Wendover: Eight and a half miles north-east of Princes Risborough, 1½ miles west of Wendover; ten miles south of perimeter of the airport. Comprising 106 acres of downland rising to 852 ft highest viewpoint of the Chilterns. View over the Vale of Aylesbury including Aylesbury and beyond. Given in 1918 by Lord and Lady Lee of Fareham. Very greatly used at all times of the year by walkers and those admiring the view. No assessment of numbers can be given, but an assessment can be made by looking at the wear and tear on the footpaths on the property which shows that very many thousands of visitors enjoy it annually.

Scheduled as a site of scientific interest by the Nature Conservancy. A Nature Trail laid out by the Bucks, Berks, and Oxon Naturalists' Trust in conjunction with the National Trust shows a great variety of interesting flora.

e. Ivinghoe Hills: These hills form part of the Ashridge Estate which extends to some 4,000 acres. Eight miles south-east of the perimeter of the airport. The hills are part of the north-western edge of the Chiltern Escarpment rising to 700 ft at Ivinghoe Beacon and 811 ft at Clipperdown. Extensive views over the Vale of Aylesbury and beyond. Enjoyed by many thousands of people annually for air and exercise and for admiring the view.

f. The King's Head, Aylesbury: Partly mid-fifteenth century building with large contemporary window in the parlour which bears the arms of Henry VI and his wife Margaret of Anjou. Given in 1925 by the widow and family of the Hon. Charles Rothschild; let to Messrs. Charringtons by the Trust.

One of the most interesting historic buildings in Aylesbury, very much frequented by overseas visitors.

4. The effect on National Trust properties

a. Ascott: There will be a considerable change in the character of the village of Wing with the inevitable development of roads, light industry, housing, etc., within the neighbourhood, which will adversely alter the environment of this property and which is at present surrounded by the quiet Buckinghamshire countryside.

Aircraft noise will be at above the intolerable level which, with the increase in road traffic, will completely destroy the quiet of this area.

b. Waddesdon: Aircraft noise. Waddesdon is directly in line with the runways and thus directly under the flight paths of aircraft. It stands on the top of a hill over 500 ft above sea level and, therefore, the noise nuisance will be accentuated above the house and that part of the grounds near the hill-top. The Commission's Noise and Number Index shows Waddesdon near to the 50 NNI contour.

c. Claydon: Aircraft noise. Claydon will be affected by an increase in the noise levels and stands near the 40 NNI contour as shown on the Commission's Index. At present the area is exceedingly quiet, being in the quiet pastoral countryside of North Buckinghamshire. The increased urbanisation of the area as a whole will also adversely alter the environment of this property.

d. Coombe Hill, Wendover: Aircraft noise. Lying near to the turning point of aircraft using the Eastern runways at take-off, this hill-top will be exposed to considerable noise nuisance. In particular the viewpoint, which is the highest point and faces north-west towards the airport site, will suffer.

e. Ivinghoe Hills: Aircraft noise. There is bound to be an increase in noise levels particularly from climbing aircraft at this property, accentuated by the effect that the viewpoints, very much visited by the public, look north and north-west towards the airport site.

f. King's Head, Aylesbury: Aircraft noise. The noise nuisance to the town of Aylesbury is bound to increase, thus affecting this ancient hotel.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Nature Conservancy*

1. Introduction

The Nature Conservancy was established by Royal Charter in 1949 to provide scientific advice on the conservation of the natural flora and fauna of Great Britain; to establish, maintain and manage nature reserves in Great Britain, including the maintenance of physical features of scientific interest, and to organise and develop the research and scientific services related thereto. Further powers have been conferred upon the Conservancy in various statutes, notably Part III of the National Parks and Access to the Countryside Act, 1949.

Following the establishment of the Natural Environment Research Council on 1st June, 1965, and by virtue of Section 3(3) of the Science and Technology Act, 1965, these functions have been formally transferred to the Council. As a Charter Constitutent body of the Council, the Conservancy continues to exercise these functions on behalf of the Council.

The attached report has been prepared by the Conservancy to provide information on the scientific interest of the Cublington area and the implications for nature conservation of the proposed development of the area for use as an airport.

2. Review of areas of scientific importance

As new knowledge becomes available, the relative scientific importance of particular sites has been kept under review and a major comparative survey of important sites is at present being carried out by the Conservancy on a Great Britain basis. Sites within the area under consideration have provisionally been classified as follows:

Grade I—sites of international or Great Britain importance;

Grade II—sites which are either of equivalent status or only slightly less important;

Grade III—sites of high regional importance, rated as high quality Sites of Special Scientific Interest, but not of comparable quality to those in Grade II or I.

Grade IV—sites of Scientific Interest of local importance notified under Section 23 of the National Parks and Access to the Countryside Act, 1949.

Sites within a 10 mile radius of the site of the proposed airport, which would qualify for inclusion in any of the above Grades are referred to in 4 below, together with relevant Grading.

3. General description of Cublington area

The airfield site lies in an area of relatively simple geology in which the various strata dip gently to the south-east. Owing to the low dip the effect of topography on the direction of the outcrops is considerable and the lines marking the junctions between the various formations depart significantly from the general north-east—south-west trend. The actual site of the airfield lies on Kimmeridge Clay of the Upper Jurassic but this is covered unconformably a short distance to the south-east by the Gault (Cretaceous). The Chalk escarpment of the Chilterns lies six or seven miles to the south-east of the site. To the north-west of the site and about 2½ miles away, the Kimmeridge Clay gives way to Corallian clays. To the west and south of the proposed airfield lie the geologically significant Portlandian and Purbeckian outliers of Aylesbury and Whitchurch, while to the north-east a broad outcrop of Lower Greensand appears at a distance of four miles and separates the Kimmeridge Clay from the Gault.

Bedfordshire

The Greensand area contains representative examples of a series of acidophilous and mesophilous habitat types ranging from acid grassland, heather/bracken associations, silver birth/Scots pine woodland, peatlands and mixed deciduous woodlands on the boulder clay.

Extensive woodlands on the south western part of the Greensands are mostly of oak, ash, and small leaved lime and have a rich and varied ground flora. Kings Wood is of great significance as it contains a number of plant and animal species which are regionally rare and, in some cases, of national importance. The value of the site is enhanced by the juxtaposition of heathland communities at Rushmere and Rammamere.

Along the Greensand escarpment the Wavendon Heath Ponds form an acid flush. Sewell Marsh is a base rich wet pasture while Tottenhoe Castle forms part of the link between the western chalk grassland (Wilts, Hants, and Berks) and the eastern chalk grasslands (Kent and E. Anglia).

Buckinghamshire

The main concentration of Sites of Special Scientific Interest lies along the Chilterns escarpment between Princes Risborough and Ivinghoe. Ellesborough Warren and Coombe Hill are examples of chalk grassland showing increased colonization by scrub, and early stages of woodland development. To the north east Pitstone Hill exhibits similar vegetation and carries a varied population of moths, butterflies and other insects. Behind this site and lying on the dip slope Clipper Down is a small area of chalk grassland with many interesting plant species. The Ivinghoe Hills although subject to intensive recreational pressure is one of the few remaining areas of

* See also p. 1662.

Printed image digitised by the University of Southampton Library Digitisation Unit

extensive chalk downland on the Chilterns. There are a large number of uncommon plants here. There is also a wide range of aspect and slope; Incombe Hole lying within the site is of physiographical interest.

The Geological SSSIs in Bucks are of very mixed character ranging from large tracts of chalk downland through pits and quarries of varying size to roadside ditches and a single erratic boulder. In general they would not be affected by the construction of the airfield *per se* but would be vulnerable to "development arising as a secondary consequence of the implementation of the Cublington proposals".

Hertfordshire

Undoubtedly the most important site in this area is the Tring Reservoir complex. Tring Reservoir National Nature Reserve is of national importance for its breeding and wintering wildfowl. It is the site of a winter gull roost holding up to 8,000 birds and also contains a heronry unique in the fact that the birds nest in reeds and not in tree-tops as is normal. The bird populations are the subject of research projects by the British Trust for Ornithology and other workers.

The reservoirs are sited on ancient marshland and several rare plants, e.g. Mudwort (limosella aquatica), Marsh Orchid (dactylorchis praetermissa), Early Marsh Orchid (d. incarnata) and Bog Pimpernel (anagallis tenella) are thought to be relics of the ancient marshland flora.

In the event of the airport being sited at Cublington, the direct effect on the bird population of urban development and aircraft noise would not be serious. However, the great increase in the number of visitors would create considerable problems of disturbance and habitat destruction around the reservoirs.

Grove and Stubbings Woods are probably the finest natural beechwoods in Hertfordshire with a rich and varied flora.

Oddy Hill, Tring is an important grassland site with a very interesting flora on Middle Chalk.

Ashridge Estate is a large area of botanical and ornithological interest already subject to considerable public use.

These three sites are all particularly susceptible to public pressure, which would certainly increase to a very serious level if the airport were sited at Cublington.

4. Sites of special scientific interest

Acting under powers conferred by Section 23 of the National Parks and Access to the Countryside Act, 1949, the Nature Conservancy has notified the local planning authorities concerned of the following Sites of Special Scientific Interest within a 10-mile radius of the site of the proposed airport:

	grade
1. Ashridge Estate (formerly Aldbury and Ivinghoe Commons) (SSSI)	IV
2. Bakers Wood and Rushmere Heath (SSSI)	II
3. Bletchley Pit (PSSSI)	IV
4. Bugle Quarry (SSSI)	III
5. Calvert Brick Pit (PSSSI)	III
6. Clipper Down (SSSI)	IV
7. College Wood (SSSI)	IV
8. Coombe Hill (SSSI)	III
9. Dancers End (SSSI)	III
10. Ellesborough Warren (SSSI)	III
11. Grove and Stubbings Woods (PSSSI)	III
12. Incombe Hole, Steps Hill } 13. Ivinghoe Hills (SSSI) }	III
14. Munday's Hill Pit (SSSI)	III
15. Oddy Hill, Tring (PSSSI)	IV
16. Pitstone Hill (SSSI)	III
17. Rammamere Heath and Kings Wood (SSSI)	II
18. Sewell Marsh (SSSI)	IV
19. Soulbury Erratic (PSSSI)	IV
20. Totternhoe Castle (Pt. PLNR, Pt. SSSI)	II
21. Totternhoe Meadow (PSSSI)	IV
22. Tring Reservoirs (NNR and SSSI)	I
23. Wavendon Heath Ponds (SSSI)	IV
24. Webster and Cannon's Pit (PSSSI)	III
25. Whitchurch Road Section (PSSSI)	III
26. Woodham Pit (PSSSI)	III

The map attached* to this Report indicates the location of the above sites in relation to the proposed airport site.

Several sites proposed for notification under Section 23 of the above named 1949 Act are also shown.

5. Conclusions

The direct effect of a major airport on the scientific value of the sites named would appear to be minimal. Developments to provide the airport with road and rail access, housing accommodation, and recreational facilities may lead to some loss or reduction of the scientific merit of these sites largely because of increased public pressure.

Should an airport be constructed on this site, consultation at an early stage is requested especially where recreational facilities are planned to safeguard the more important of these sites.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Council for the Preservation of Rural England*

SUBMITTED BY MR. P. W. MACFARLANE

1. I am a member of the Town Planning Institute, a Fellow of the Royal Institution of Chartered Surveyors and a holder of the Institution's Special Diploma in Town Planning.

2. My firm is Minoprio, Spencely and Macfarlane, Town Planning Consultants, of 83 Pall Mall, London, SW1. I have specialised in town planning for over thirty years, both in this country and abroad.

3. I have inspected the Cublington (Wing) site and the immediately surrounding area. In my opinion its development as the third London airport would seriously prejudice rural amenity and constitute an undesirable intrusion into an area of unspoilt countryside.

4. The site is located about 40 miles north-east of London (Marble Arch) and is part of a relatively isolated plateau of high land rising to about the 450 ft contour just to the north of the Vale of Aylesbury, which is bounded on the south by the Chilterns, about 7 miles away. Linslade and Leighton Buzzard are situated in the valley of the River Ouse about 1½ miles east of the suggested airport. Bletchley, which would form the southern boundary of Milton Keynes New Town, is about 2 miles to the north and Aylesbury about 4 miles to the south. Road A413 at one point skirts the site on the west, road A418 parallels the site on the south, about a mile away, whilst the main railway line to London runs along the Ouse Valley through Linslade to the east. The existing M1 Motorway is about 7½ miles away to the north-east.

5. In the South-East Economic Planning Council's Report *A Strategy for the South East*,† Cublington lies within one of the proposed major Green Sectors which are closely related to the Main Country Zones, in that the emphasis in both is on preservation. However, on the north-east Cublington is bounded by a proposed Sector for Future Growth whose western boundary, which is coterminus with Cublington's eastern boundary, follows the Ouse Valley and includes Milton Keynes, and Northampton. Thus immediately to the east and north of Cublington extensive development can be anticipated which makes the conservation of the Green Sector in which Cublington is situated all the more important.

6. Cublington is within an area which is relatively densely developed with substantial sized agricultural villages of ancient origin. Most of these are hilltop settlements where further development would tend to spill over the hillsides and be conspicuous when viewed from a distance. The village of Cublington would be completely eliminated, and so would Stewkley, for all practical purposes. Soulbury, though just outside the airport boundary, would be in an area of extreme noise intensity and would almost certainly have to be evacuated. Other nearby villages which would be most seriously affected by noise, lying just to the east of the airport boundary, are Whitchurch, Hardwick and Weedon; the last named has been declared a conservation area by Bucks County Council. Life in any of these could be made quite unbearable, as well as in Dunton, Stoke Hammond and Aston Abbots. Most of Wing would be just outside the 40 noise contour, as would be the greater part of Aylesbury, but the residential amenities of both would suffer.

7. There are two further areas of note which deserve mention. To the south-west is the village of Waddesdon with its emparked manorial lands on high ground, falling within the 50 noise contour, and to the north-east of the airport site is the hill ridge of Woburn Sands rising to over 500 ft. This contains common land which is frequented by the public and there are several view points. This area is tending to develop as a recreational lung. The whole of it is within the 40 noise contour and parts fall within the 60 noise contour. Woburn Village itself is in the 50 noise contour. At the base of this hill ridge is the River Ouse and the Grand Union Canal where use for pleasure boating is increasing.

8. The Cublington site varies considerably in level. The old airfield between Cublington and Wing occupies level ground, but there is a pronounced and quite steep fall to the south-west, as a tributary of the River Thame penetrates the site and almost severs it in two, the villages of Cublington and Dunton occupying sites on high land on each side of the valley. I understand that this part of the site is under consideration by Bucks Water Board for a reservoir. There is also a fall, though less pronounced, to Soulbury on the north-eastern part of the site. Particularly taking into account the valley penetration of the site on the south-west, its full development for the airport would involve extensive levelling and filling-in of this valley.

9. The size of the airport buildings would be immense and their scale would be out of all proportion to that of existing nearby development. Their hard, mechanical lines would be a ruthless imposition on the countryside and the airport would be associated with a blaze of lights which would be seen from miles away. Furthermore, because most of the surrounding development to which I have previously referred is hilltop villages, they would see the airport.

* See also p. 1662.
† (HMSO; 15s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Thus, as well as having their peace shattered by noise and traffic, they would have their view shattered by buildings and their night-sky emblazoned by lights. There would also be a similar, though rather more distant, view of the airport from the residential development and the open spaces along the Woburn Sands ridge across the Ouse Valley.

10. Ultimate primary employment at the airport for about 65,000 persons would be anticipated, equivalent to a total additional population of about 250,000. In addition, the airport would undoubtedly attract a wide range of manufacturing and commercial projects, giving rise to much secondary and service employment. Probably, therefore, an ultimate total extra population of between ¼ m. and ½ m. would be involved. Whilst part of this would no doubt be steered into the New Town of Milton Keynes and, to a lesser extent, into an expanded Aylesbury, and even to Oxford (about 22 miles away), Bedford (about 20 miles) and Luton (16 miles), a good deal would probably wish to settle in the attractive villages and small towns in the Vale of Aylesbury, such as Thame, which is an outstanding example of a potentially vulnerable settlement. This pressure would extend to the Chiltern villages, particularly to those located at the junction of the Chilterns with the Vale of Aylesbury, such as Princes Risborough and Wendover.

11. An immense volume of road traffic would be generated, in spite of the use which would undoubtedly be made of the main railway line to London. Even accepting that much of this would be canalised into new roads or greatly improved existing roads, many vehicles would find their way through existing villages, much to their detriment.

12. The direct loss to agriculture would be immense. Cublington is good land farmed in fairly large units. In spite of its relatively high elevation it is really part of the fertile Vale of Aylesbury. Disruption to the agricultural way of life would extend far beyond the airport boundaries, making life unbearable in numerous villages which accommodate and service the rural community. In my opinion, the consequences of siting the third London airport at Cublington would be so adverse to so many interests, agricultural, scenic, residential and recreational, that a site elsewhere should be chosen.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Council for the Preservation of Rural England

SUBMITTED BY MRS. A. MAUDE

My name is Barbara Maude, and I live at South Newington, near Banbury. I am a member of CPRE Headquarters Executive Committee and Vice-Chairman of CPRE Oxfordshire Branch, which is opposed to the siting of the third London airport anywhere inland. The Oxfordshire Branch has 1,077 individual members and 103 affiliated societies, of which at this hearing I represent the Oxford Field-paths Society and the Soil Association (Oxford-Region Group) in addition to the CPRE Oxford-shire Branch itself.

The main grounds on which CPRE Oxfordshire opposes an airport at Cublington are:

(a) Noise and vibration, causing damage to the health of inhabitants and the structure of buildings.

(b) Heavy traffic generation on all roads between the gravel-bearing areas of the Thames and Windrush valleys and the airport.

(c) Disruption of local life.

(d) Loss of land through the demands of indus-tries ancillary to the airport, and possible influx of population.

(e) Consequent loss of fieldwalks and other country pursuits.

(f) Damage from flooding.

The landscape

The part of Oxfordshire which would be thus affected, and which we have identified as that lying within the estimated 35 NNI contour, and generally about 12 to 14 miles from the runways, consists of gently undulating land, long settled and historically noted for the fertility of its soil and the high stand-ard of its farming. It is remarkable for the variety of its architecture because, although not in the Cots-wold part of Oxfordshire, outcrops of fine limestone at Great Milton and the Hazeleys has led to the construction of a great number of fine stone houses in what is otherwise a predominantly brick region. These houses, of true Cotswold character, have added considerably to the architectural distinction of the villages. While nowhere spectacular, the landscape is everywhere pleasant, mellow, well cared-for and planted; much of it is in the Chiltern Area of Outstanding Natural Beauty, and some of it is in the Oxford Green Belt. It has from the earliest times attracted an educated population, as witness the many fine houses mentioned above, and whose descriptions follow; and this tradition continues today, when many people working in Oxford, whether in industry or in the University, find the area peaceful, quiet and beautiful yet easily accessible from the city.

Traffic

This affects everyone today. In the Thame valley, which is only traversed by two A roads, the A40 and the A418, most of the villages lie off any classified road, and their inhabitants are thereby assured of reasonable peace and quiet.

Experience elsewhere however suggests that, once construction began at Wing, heavy lorries crowding the main roads might tend to make detours, and their way through some villages now undisturbed.

Water

Flooding has always presented a problem in the Thame valley; most of the villages are built well away from the river because of this. With the increased run-off which results from any increase in built-up, areas, this problem is getting worse rather than better and the vastly increased run-off created by the con-struction of the runways would call for such drastic measures to get the water away as must radically alter the whole landscape. There would also be the inevitable loss of beauty caused by the dredging and straightening of the river bed which would be necessary.

The places in the landscape

Thame

In July 1965 the Council for British Archaeology published its list of towns with historic centres meriting preservation, and Thame was one of the six Oxfordshire towns outside the City of Oxford to appear on this list. In 1965 Lord Esher wrote of Thame's High Street, "It is unquestionably the top conservation priority in our area". In 1967, Oxford-shire County Council decided to carry out a Conserv-ation Study in Thame, one of the first three such studies in the county, and this was completed in 1968. Designation of a large Conservation Area covering most of the centre of Thame is expected shortly.

Public meetings about the Conservation Study have been well attended, and the proposals have been welcomed in the town. In the written statement accompanying an Informal Town Map of 1964 (amended 1966) the suggestion that vehicular traffic should be removed from the High Street was made, and many in the town hope that this will soon become practicable. Many other moves to conserve the buildings in the town and improve the quality of the environment are being canvassed, not only by CPRE but also by the Chamber of Trade.

In the spring of 1969 an Investigator of Historic Buildings from the Ministry of Housing and Local

Printed image digitised by the University of Southampton Library Digitisation Unit

Government carried out a re-survey of Thame's many old buildings, and he has recommended a massive increase in the number of listings in the town, from 60 to about 180 buildings listed Grade II, plus about 24 houses on the Supplementary List.

Thus it is clear that people of Thame are actively concerned with the conservation of its buildings, and with its improvement as a place to live and do business in; while the inhabitants of Thame enjoy the sight of its many old buildings and do business at its weekly markets, in its many shops and at the Charter Fairs held in the town, few of them may be aware of the historic significance of the town.

Whether this is so or not, Thame has a long history and a strong civic tradition. Brown and Guest in their History of Thame record that a settlement may have existed at Thame in Roman times. The first written record of Thame's existence, however, dates from 675 AD. About 1078 the Bishop of Dorchester removed his See to Lincoln, and the Bishops of Lincoln held the manor in Thame until 1543. A market Charter was granted by John in 1215, and confirmed by Henry III in 1227 and again by Edward III in 1329. The names of families which first appeared in Thame's records in the 14th century and earlier are still to be found in the local telephone book. Thame Abbey was founded about 1138, while the Chapel at the Prebendal is usually dated 1241. The church of St. Mary was started about 1240, with many subsequent additions and alterations, and in Church Road the former Lord Williams Grammar School is dated 1569 and Church Farm Barn and Dovecote date from the same period. The Quartermains of Rycote built alms-houses in Church Road in the 15th century, and these were rebuilt in the 16th century by Lord Williams. The Bird Cage Inn, one of the finest old buildings in the centre of the town, dates from the 15th century and is unusual and exceptionally picturesque. Elsewhere in the town centre there is a mass of buildings dating back to the 16th century, many with later fronts, and in one of the older houses some extremely interesting and fragile wall paintings, earlier reported destroyed, have recently been rediscovered in an attic.

Apart from its historic past, Thame is a market and school centre for a wide area round about, and has a growing light industrial estate. The present population is about 5½ thousand, which is expected to grow to about 8½ thousand by 1981, but even now 1,300 children attend the maintained schools in the town and more go to a church school and nursery schools and playgroups. The County Council have built an Old People's Home in Thame, and the local council have provided a large number of old people's flats, housing in all about 150 retired people. The old and the young would both suffer badly from the noise if the airport were built at Wing, and the cost of noise insulation in schools alone would be tremendous.

As a market centre Thame suffers from fairly acute car parking problems, and with roads approaching the town from seven different directions there is considerable congestion at times, particularly between Priestend and Bell Lane, where the Oxford-Aylesbury road, the A418, runs through part of the town. A by-pass is planned, and a line for an Inner Relief Road to take other traffic away from the High Street area has been surveyed and discussed. With increasing amounts of parking space behind the High Street's buildings and the construction of the by-pass, an inner relief road and a North East Perimeter road round the area scheduled for major residential development NE of the town centre, many of Thame's traffic and parking problems will be resolved, and there will be a very good chance of making the centre an even more pleasant place to do business in. The removal of cars from part of the town centre will not only make life there more pleasant, it will also provide relief from noise and vibration for many of the old houses, and make the restoration and modernization of others more economic. Are all these efforts towards making Thame a really civilised place to be nullified by the noise of jet aircraft thundering overhead from an airport at Wing?

Buildings: In Thame there are far too many fine buildings to describe in this case. Some historic details of a few outstanding buildings are mentioned above, and a full description can be found in the Ministry of Housing and Local Government's "Revised Provisional List of Buildings of Architectural or Historic Interest" (Ref. No. HB 1719/274/2B, issued June 1969) for Thame Urban District.

One notable building not mentioned above stands SE of the town, at Thame Park, the site of the Cistercian Abbey mentioned earlier. The building is described fully in the Provisional List, and it may be noted that while this is a private park, its owner has often allowed local youth groups such as Scouts and Guides to hold outdoor meetings in his grounds. The park is extensive, with many fine trees and meadows, and its whole atmosphere would suffer badly from over-flying were Wing Airport to be built.

Summary: Thame is a historic town of acknowledged importance, with over 200 buildings of historic or architectural interest. It is a market town and school centre; it is a town where genuine efforts are being made to conserve the old and improve the quality of living of the inhabitants, and it is a growing place: it is scheduled to expand to over 8,500 people by 1981, which it is estimated may mean over 2,000 school places. To inflict the flight path of a major international airport at Wing on Thame would be a monstrous act.

According to our preliminary information Thame would be subjected to about 42 NNI by a 4-runway airport, or about 35 NNI by a 2-runway version. According to the Wilson report,* page 213, figure 7, the percentage of people (near Heathrow) liking their area less because of aircraft noise at these two levels of NNI were about 12 and 27. Inflicting this degree of

* Cmnd. 2056. (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

aircraft noise on a country market town, in a society increasingly objecting to noise of all kinds, would force many people to try to leave a place for which they have great affection. If one considers the replies to some of the other questions asked in the social survey round Heathrow and applies the answers to the Thame area, the prospects for the people of Thame are grim.

Hazards—noise and vibration: These would affect 200 or more buildings of architectural or historic interest, between 1,500 and 2,000 schoolchildren by 1981, a population of about 8,500 by that date, and many retired people living in homes and flats built for them by the local authorities.

Traffic: While Thame expects to have a northern by-pass within a few years, construction traffic involving sand and gravel haulage from the Thames Valley would affect the town before the by-pass became a reality.

Water: Thame suffers from quite severe drainage problems in some areas. The maximum recorded flow at Thame Bridge is about 1250 cusecs, and further development in Thame may add about 80 cusecs to this. Any additional storm run-off from Wing (the watershed of the Thame stretches right over to the proposed site) could worsen the already serious flooding problems in the NE part of the Urban District.

Garsington

The village, population now over 1,500, stands on the top of a hill with almost direct line of sight to the proposed Wing airport site. Almost all the working population commute to Oxford and return to Garsington for peace outside the city and the car factories. The village already has some traffic problems because of the very narrow, winding lanes in the central core (pre-Domesday settlement). The old core is sufficiently compact and valuable to be made a Conservation Area, and a CPRE village group has made a survey and recommended a Conservation Area. Between the wars Garsington had a considerable reputation as an intellectual retreat, and it still has a number of people with connections with this era who treasure the quiet of its heavily wooded core.

There are two schools in the village, and a home for old people, and aircraft flying over Garsington hill would not make their life easier. Traffic passing the village hall (much used) up a 1 in 4 hill seriously interrupts proceedings in that speakers must stop while vehicles pass. The addition of aircraft noise would render this sort of social life impossible.

Buildings:

i) Church of St. Mary. Grade II(A) Listed. Transitional Norman Tower about 1160, nave 1225, with chancel arch and aisles including S arcade slightly later, about 1250. 15th century roof and gargoyles, superb situation with open views.

ii) Manor House and Dovecote. 17th century, coursed rubble, two storeys and attic, old tile roof. North front flanked by tall yew hedges about 20 ft high—of great architectural merit and historic interest. Dovecote 17th century, Both Listed Grade II.

iii) The Red Lion. 18th century, 2 storeys, roughcast, old tile roof, Listed Grade II.

iv) The Kennels with barn: 17th century, 2 storeys and attic, Listed Grade II.

v) Manor Farmhouse. 18th century, rubble with squared quoins, two storeys and attic, old tile roof, interesting windows, door with cantilever hood. Listed Grade II.

vi) Home Close and Granary. 17th century, 2 storeys with attic, squared rubble with dressed quoins, old tile roof. Fine terrace with lime trees. Granary, half-timber with brick infill, hipped old tile roof, on staddle stones. Both Listed Grade II.

vii) Farm Cottage. 16th century, two storeys, thatched roof. Formerly a pub, Listed Grade II.

viii) Lychgate. Probably 15th century, timber braced frame. Listed Grade II.

ix) Others: There are 23 other buildings on the Supplementary List, of a great variety, some of which undoubtedly would be Grade II by present standards.

Summary: A large commuter village with a fine old centre core at the top of a hill on the site of a pre-Domesday settlement. The height of the village makes it more vulnerable to noise from aircraft and gives almost a direct line of sight to Wing. Valued by intellectual workers who live in the old core, and commuters from Oxford who come there to escape the noise of their working environment.

Hazards—noise and vibration: would affect the peace sought by those who live there, would interrupt social life in the village hall and teaching in the two schools, and would affect the old people in the home, who cannot escape.

Great Haseley and Little Haseley

Great Haseley is a compact old stone village almost entirely free from development in the last 50 years; the green at Little Haseley, surrounded by barns, cottages and trees, presents a fine picture. A wide variety of inhabitants, with a disproportionate number of retired people and pensioners who have chosen the village for its great peace and charm. Inhabitants range from the former champion farmer of England (still in practice) to architects and accountants, people working in building, printing, at Harwell and in Oxford University. There is a lively community spirit, with a number of local societies.

Buildings:

i) Church of St. Peter. Dating from about 1200, the tower is 14th century while other parts are of later date. Chancel is late 13th century, with contemporary geometrical windows. A

Printed image digitised by the University of Southampton Library Digitisation Unit

number of fine monuments. Listed Grade II (A).

ii) Manor House. Late 17th-early 18th century, altered, two storeys and attic. Fine 17th century chimney with three square shafts with moulded heads. Grade II Listed.

iii) Manor Stables. Two storey stone with old tile roof. Grade II Listed.

iv) Church Farmhouse. Three storey 18th century building of rubble. Grade II Listed.

v) Church Farm Barn (Tithe Barn). A particularly interesting 14th century building with seven bays and a half hipped old tile roof. Projecting entry on the S. side is gabled with a moulded stone archway. Grade II Listed.

vi) Haseley Farmhouse with Barn. The house is 17th century, two storeys, rubble, with old tile roof. Grade II Listed.

vii) Crucks. Grade II Listed.

viii) Stone's Farmhouse (Little Haseley). 16th–17th century, rubble, with old tile roof, chimneys with 2 brick diamond shafts. Grade II Listed.

ix) Granary and Barns (to W of [viii]). Weatherboarded granary and rubble barns, both with old tile roof.

x) Small house (30 yards E. of viii). 16th–early 17th century, two storey rubble, old tile roof, chimneys with brick diamond shafts. Grade II Listed.

xi) Haseley Court (Little Haseley). 18th century three storey rubble house, described at length in the 1949 Provisional List. (Recently damaged by fire). Grade II Listed.

xii) Haseley Windmill. Outside the village on a bare hill this is partially derelict though much of the original machinery is still inside. Restoration being planned.

xiii) Manor House (North Weston, near Thame). A 16th century building, altered 19th century. Two storey L-shaped block, colour-washed brick with old tile roof, massive chimney with diamond shafts.

xiv) Others. The Supplementary List contains no less than 18 further entries, many concerning houses which would nowadays be Grade II if re-investigated.

Summary: Great Haseley and Little Haseley are ancient places with great charm and character and many fine old buildings. A wide variety of inhabitants, with a disproportion of elderly people, but thriving community spirit. Apart from noise and T.V. interference due to aircraft from Benson, quiet and lovely places.

Hazards—noise and vibration: The present aircraft nuisance is often considerable during the day, but night flights from an airport at Wing and much increased day flying as the airport developed would destroy the night time silence and make the days hideous. It would hardly be worth living in the villages, away from the amenities more usually associated with noise.

Little Milton

A compact stone village on the B4013 between Stadhampton and Milton Common, sufficiently fine as an architectural and historic entity to have six buildings listed Grade II including the church and 19 more on the supplementary list, probably more than half the village. Some well-done and expensive new houses have been inserted between the old, and have attracted people who prefer village life.

Buildings:

i) The Manor House and Lodges at the entrance. The house is 16th century altered, roughcast with stone quoins, moulded stone string over the first floor windows, a parapet with coping carried round the gables and an old tile roof. Many further details in the 1949 Provisional List. The single storey Lodges are 18th century, with hipped thatched roofs. Lodges and House Grade II Listed separately.

ii) The Lamb Inn. 17th-18th century colour-washed rubble with half-hipped thatched roof. Grade II Listed.

iii) Greystones Stores and Barn. 16th-17th century, two storeys, coursed rubble with thatched roof. The barn, also thatched, is weatherboarded. Grade II Listed.

iv) House 30 yards W.S.W. of the P.O. Has a T-shaped plan, 16th-17th century, two storeys and attic, rubble, old tile roof. Grade II Listed.

v) St. James' Church. 19th century, good example. Grade II Listed.

vi) Other houses: there are about 30 other 16th, 17th and 18th century farmhouses, houses and cottages, most of them on the Supplementary List.

Summary: A quiet, compact village, good enough to be a fine Conservation Area. Somewhat disturbed by traffic through the narrow main street, but otherwise quiet and rural in character.

Hazards—noise: would affect the peace of the village far more than the traffic.

vibration: could have a bad effect on the older houses, particularly those away from the road and not at present subject to traffic vibration.

traffic: Sand and gravel haulage from the Dorchester area during the construction phase would cause added danger in the narrow main street.

Sydenham

A somewhat spread out village of 250 souls half a mile from the B4445 Thame-Chinnor road. No through traffic worth speaking of, in the middle of a

Printed image digitised by the University of Southampton Library Digitisation Unit

wide agricultural area, farm buildings right in the village including two thatched, weather-boarded barns. About ten other thatched properties, some with considerable charm, some new development fitted into the village, three pubs. Those not working on local farms commute to Chinnor or to Oxford, but live in Sydenham for the peace and space.

Buildings:

i) Church of St. Mary. Probably 13th century, very much altered, with an interesting weather-boarded tower. Grade II(B) Listed.

ii) Ryder's Farmhouse. 18th century chequer brick, two storeys and attic, old tile roof. Grade II Listed.

iii) A number of other 16th–17th and 18th century buildings, 4 on the Supplementary List, more would be Grade II by present standards.

Summary: A community of completely rural character, fairly low density and the quieter for it. Agricultural workers and commuters. Valued for its quiet and some good buildings. Overall impression of some charm.

Hazards—noise and vibration: would both affect the peace of this village, and tend to destroy the reasons many may have for living there.

Towersey

A quiet village hidden away between the A4129 Thame–Princes Risborough and B4445 Thame–Chinnor roads, a mile from each with no through traffic to speak of. Considerable community spirit round the Towersey Festival held every year, for which funds are being raised to build a Hall. Folk singers have come from as far away as Canada to sing the regular Ceilidhs held in the village, and several people in the musical world have houses or cottages there. Some people work in agriculture locally; the majority travel to Thame, Chinnor or Oxford. Several good groups of houses.

Buildings:

i) Church of St. Catherine. Mainly 14th century, much restored. 12th century font and early 17th century pulpit. Grade II(B) Listed.

ii) Church Farmhouse. 17th century, two storeys, timber-framed with brick infilling. Grade II Listed.

iii) Small House and Barn (150 yards N. of church). A mixture of brick and rubble, thatch and old tile roof, 17th–18th century. Grade II Listed.

iv) Others. Some fourteen other miscellaneous 17th, 18th and 19th century houses including The Manor House appear on the Supplementary List.

Summary: A quiet village with considerable community spirit. Many who live there work elsewhere, but return there for peace, space, freedom from traffic and from noise. Considerable pressure for further development to house others who want to have a part of these pleasures, but planning policy restricts development, due to sewage and other problems.

Hazards—noise and vibration: would destroy what many people like about Towersey, and in particular might seriously affect music in the village, and hence both the Festival and the spirit of the place.

Chislehampton

A small hamlet beside the Thame, with several notable buildings from the 17th and 18th centuries, plus very recent bungalows and houses of quite high quality. Perhaps half the working population, mainly professional and managerial, commute to Oxford, the remainder being engaged in agriculture. The B4013 from Wallingford meets and joins the B480 from Oxford in the hamlet, just by the recently partly rebuilt bridge over the Thame, Grade II Listed, but despite the traffic on these roads and the 'planes from Benson the atmosphere is generally quiet and rural. Much dairy/stockfarming along the Thame.

Buildings:

i) Church of St. Catherine, consecrated 1762 but contains early 17th century double decker pulpit. The interior is a good example of its period, with a gallery at the west end supported on columns and wood panelled reredos. Grade II Listed.

ii) Camoys Court. 17th and 18th century rebuilding of much older house. In an article in the Archaeological Journal P. S. Spokes wrote "Over the C14 (14th century) half and in first floor ceiling are contemporary beams and wall plate; above them is a well preserved cradle type roof of three bays, the entire king posts with semi-circular braces remaining". Grade II Listed.

iii) Chislehampton Lodge. Built 1765–68 under Samuel Dowbiggin junior as architect. Recorded in great detail in the Provisional List for Stadhampton made in 1949, and maintained in fine condition. Listed Grade II (including stables and coachhouse).

iv) Coach and Horses Public House. Recently well modernised by the brewers, 18th century, colour washed brick. Listed Grade II.

v) Several 18th and 19th century cottages and two farmhouses, some would be listed by present-day standards. Marylands Farm-house Listed Grade II.

Summary: A small, quiet hamlet scheduled for no further expansion, half the working population agricultural, the rest go to Oxford. Several fine old buildings and some good new houses by the river. Valued for its rural quiet, apart from some day-time traffic and over-flying from Benson.

Hazards—noise: affecting the valued quiet of the hamlet and the stock-breeding.

Printed image digitised by the University of Southampton Library Digitisation Unit

vibration: affecting the several notable older buildings.

water: extra storm load on the Thame could cause very serious flooding. One farmer has had land flooded 11 times in the winter of 1968–69, despite major dredging works on the Thame from Drayton down to confluence with the Thames.

Traffic: As Stadhampton.

Moreton (Thame Urban District)

A quiet hamlet at the end of an unclassified road off the B4013, about ¾ of a mile from the main part of Thame by footpath across fields. More or less divided into two parts, one of council houses and others mainly occupied by farm workers and commuters to Oxford, the other mainly older buildings occupied by professional people. The older part has an early 19th century Methodist chapel, three farmhouses, ten older houses, 15th–18th century, all but one restored and two or three modern bungalows, spreading out from a green and pond, the only common in Thame Urban District. The Ministry of Housing and Local Government Investigator of Historic Buildings (H. M. A. Armitage) has recently recommended listing of the majority of the older buildings. The atmosphere is quiet and pleasant, only occasionally disturbed by flights from Benson. Abundant bird life, no through traffic, many people walk out from Thame to Moreton at weekends and in the evenings in the summer.

Buildings: Recommended for listing.

i) Methodist Chapel, rectangular brick, slate roof, 19th century.

ii) Moreton Farm House (no longer an agricultural dwelling), brick and old tile roof, early 18th century probably, thoroughly modernised 1964. 17th century half-timbered granary with brick infilling on straddle stones behind.

iii) Vine Cottage. 15th or 16th century rubble and timber thatched cottage.

iv) Folly Cottage. Similar to Vine Cottage.

v) Spencer Cottage. Two-storey brick and stucco cottage, part 18th century, modernized and extended in the last decade.

vi) Moreton Thatch. Probably 16th century half-timbered rubble infill cottage with modern clay tile roof, rafters from earlier thatched roof projecting below the eaves. Modernised 20th century.

vii) Brook Cottage, one of a pair with Moreton Thatch. Not yet modernised, but may come on the market shortly.

viii) The Old Bell (formerly a pub). Elegant small two-storey building in brick and slate roof, 18th century, fine front door (not original). Very well restored after the last war.

ix) Straddles. Long, low two-storey rubble and stone thatched cottage, pink washed. Formerly village bakehouse, probably dating from 16th century.

x) Jessmere. Two-storey half-timbered, brick infill house, old tile roof, restored during the 1930s with modern additions. 16th–17th century?

xi) Willow Cottage. Three cottages knocked into one, two storeys, very steeply pitched tiled roof formerly thatched. Undergoing further modernization.

xii) Prospect Cottage (S end of village). Stone and brick cottage, part 16th (?) century.

xiii) Elm Tree Farm (S end of village). 16th/17th (?) century half-timbered two-storey cottage, rubble infill, recently modernised and re-roofed.

Many other cottages have disappeared in the last 30 years, but the hamlet has now apparently stabilised at its present size, about 50 households in all.

Summary: A small quiet hamlet, with perhaps a dozen interesting old buildings, almost all well restored or modernized in the recent past. Much valued for its peace by its inhabitants and walkers from Thame, with the only common, a small green, in the district.

Hazards—noise: would affect the whole atmosphere of the village and spoil the peace for which it is valued by inhabitants and visitors.

vibration: could have a bad effect on some of the older buildings.

Also note: The Cuttle Brook, a tributary of the Thame, runs between the town of Thame and Moreton. In the past it has flooded badly, without actually affecting the village. However, extra storm load on the Thame could cause the brook to back up and flood much low lying agricultural land.

Rycote (Great Haseley Parish)

A group of buildings and a chapel lying 500 yards north of the B4013 Thame–Wallingford road, completely surrounded by fields and woods. Formerly the site of an immense house built by Lord Williams of Thame, which was destroyed in 1745.

Buildings:

i) Rycote. 15th-16th century, altered, with a modern stone, two-storey projecting extension. Amply described in the 1949 Provisional List, and very well cared for. Grade II Listed. Remains of brick octagonal tower and some walling by N.E. corner.

ii) Stable Block, Dovecote and Granary at Rycote. 16th, 17th and 18th century, the granary stands on straddle stones. Stable Block listed Grade II.

iii) Rycote Chapel. Mid-15th century, beautifully restored as an ANCIENT MONUMENT by the Ministry of Public Building and Works. Very fine interior, with a domed pew which

Printed image digitised by the University of Southampton Library Digitisation Unit

may have been built for Queen Elizabeth I who was at Rycote on three occasions. Fully described and recorded in the 1949 Provisional List and elsewhere; a very notable building. Beside the chapel is an immense yew tree, said to date from the reign of Stephen.

Summary: A group of buildings of great antiquity and value on a historic site, out of sight of the nearest road 500 yards away and giving a wonderful impression of hidden peace. The only interruptions of the peace are the many visitors and overseas tourists who come to look at the chapel.

Hazards—noise: would completely destroy the peace of the site.

vibration: could affect all the buildings.

Stadhampton

A small hamlet through which pass the B4013 and the B480. Large open green with a number of houses straggling round the green, dating from 17th–20th century. No great character, but valued for its rural quality. Perhaps three quarters of the menfolk work in Oxford, the rest locally in agriculture. Historical associations with the battle of Chalgrove.

Buildings:

i) Church of St. John the Baptist. Rebuilt except for some 15th century walling in the north aisle and the 18th century tower. Brasses dated 1498 and 1508. The tower, is in not very good repair, is rubble with ashlar quoins, bracketed and moulded cornice, coping and tall stone vases on the corners. Grade II Listed.

ii) Manor Farm. A fine 17th century rubble building, two storeys with attic, old tile roof. Chimney stack with two diamond shafts. Grade II Listed (?).

iii) D'Oyley's Farmhouse. 17th century (altered in the 19th century) stone house, two storeys and attic, with old tile roof and flanking chimneys with diagonal shafts.

iv) A number of other 17th, 18th and 19th century cottages which would be listed by present-day standards. Millstream House Listed Grade II.

Summary: A quiet commuter hamlet with a number of old buildings. A fair amount of through car traffic and over-flying from Benson. Valued for its rural quality.

Hazards—noise: affecting the quiet which falls at night.

vibration: affecting several old buildings, in particular the church.

water: Extra flood/storm load on the Thame could back up a tributary of the main river and flood part of the village. The road between Stadhampton and Chislehampton is often flooded (B480 Oxford–Watlington road also carrying the B4013 Thame–Wallingford traffic, a route scheduled for improvement).

Traffic: Gravel and sand haulage from the Dorchester area during the construction stage of an airport at Wing would pass through Stadhampton, creating noise, danger and vibration.

Tetsworth

A hamlet on the A40 London–Fishguard Trunk Road, at present severely affected by noise and vibration from traffic through its centre. The proposed M40 extension will remove the through traffic to a line several hundred yards further South, and some of the effects will remain. However, the improvement in Wheatley when the A40 dual carriageway took the traffic away from a residential area should be remembered, and Tetsworth should not be afflicted with noise from a new source when that from an old one is considerably lessened. Open green by the A40 opposite most of the houses.

Buildings:

i) The Swan Hotel. A fine late 17th–early 18th century brick building with old tile roof. Generally of fine appearance, amply described in the 1949 Provisional List. Grade II Listed.

ii) Harlesford House, Attington House and several others, fine examples from the 17th and 18th centuries. Altogether the hamlet has 4 listed buildings, plus Grade II Church, but should have twice as many by present-day standards.

Summary: A small hamlet which is about to lose its devastating through traffic. Could become a pleasant quiet village later, but aircraft noise could well destroy the peace regained. Surrounded by open countryside, with many footpaths and bridleways.

Hazards—Those stemming from the A40 and about to be ameliorated could return if Wing were chosen, albeit in a different form.

Tiddington with Albury

1. **Albury.** A compact group of half-a-dozen houses and a church, very quiet, at the end of a lane 400 yards from the A418. Also the site of the Oxfordshire County Teaching Farm.

Buildings:

i) Albury Rectory and grounds. Finely and lovingly restored by its owner over the last 15 years, a simple but elegant early 19th century building, stone, two storeys. Set amongst fine trees with a view across lawn and paddock to a tree-lined lake (kingfishers and wild duck). Grade II Listed. (Historic associations with Rycote.)

ii) Several other buildings, all in good order, one thatched 17th–18th century, brick, timber-framed upper part. Church of St. Helen, Listed Grade II.

Printed image digitised by the University of Southampton Library Digitisation Unit

Summary: A quiet and isolated group of houses, very quiet atmosphere, fine trees and birds.

2. **Tiddington.** A commuter village straddling the A418, mostly postwar houses, but some, away from the main road, earlier. To the South of the main road a lane rises to the top of a hill where several good houses command wide views.

Buildings:

i) Tiddington House. Early 18th century, two storeys, vitreous brick. Grade II Listed.

ii) Cottage by Manor Farm. Two-storey 16th century timber-frame thatched cottage, with interesting small-brick chimney and windows. Grade II Listed.

iii) Several other 16th and 17th century cottages, which should be listed.

iv) Sandy Lane Farmhouse. Brick and timber-framed house, well restored. Late 17th century, should be listed. Isolated from the main hamlet on unclassified road.

Summary: Basically a commuter (to Oxford) hamlet with a group of older houses away from the main road through its centre.

3. **Draycot.** A group of 17th century farm buildings, isolated and quiet, half a mile from the main road. By current standards would probably be listed Grade II.

Hazards—noise: would destroy the peace of Albury and Draycot and affect the older buildings in the quiet part of Tiddington away from the main road. Would also damage the peace of the commuters who have chosen the rural site of Tiddington in preference to the noise and confinement of the City of Oxford.

Waterperry AONB OxGB

A small hamlet, with a wide variety of buildings, rather strung out. An unclassified road leads into the village, a private road (bridleway) leading out. No pub, village store in the main street, Waterperry Horticultural School and local farms are the main employers. One or two professional people live there, it is within easy reach of Oxford and yet very quiet and rural. Basically a quiet, sleepy place to live.

Buildings:

i) The Church of St. Mary, originally Saxon, is an immensely interesting and valuable small building. The original tall chancel arch remains, filled in and with a 13th century arch below. It was enlarged in the 12th and 13th centuries, but is still relatively small. The stained glass is of an extraordinary variety, including 13th, 14th, 15th, 16th and early 19th century examples. Brass dated 1540, a palimpest of 1450, an effigy of a knight, probably late 14th century, under a rich canopied wall tomb in the South aisle. Grade II(A) Listed.

ii) Waterperry House. A great square building of three storeys, the west front has seven bays with a large central Ionic Palladian window on the first floor. The North front has six bays, the back of the house is 17th century, with irregular mullioned and transomed windows. Grade II Listed.

iii) Manor Farmhouse, The Old Rectory (The Vicarage?) and a number of other cottages; 17th, 18th and 19th century houses and cottages, some lovingly restored. There is also a 17th century timber-framed cottage by the entrance to the drive to Waterperry House.

iv) Bow Bridge. A beautiful 18th century single brick arch bridge over a channel of the Thame on the bridlepath leading to Waterstock. It lies in meadows which are frequently flooded by the Thame (6–8 weeks in the winter 1968–69) and it could be in grave danger if water levels rose much further. Grade II Listed.

Summary: A quiet, rural hamlet of an open character, with a very notable church (Grade A) and two other 18th century Grade II buildings, plus a number of others which should be listed.

Hazards—noise: affecting teaching at the horticultural school and the rural quiet.

vibration: affecting the very valuable stained glass and other buildings.

water: affecting a listed bridge if *any* additional storm run-off comes down the Thame.

Waterstock AONB OxGB

A small, compact hamlet with very few buildings from the present century. An unclassified road runs through the village, but carries no through traffic. A very quiet atmosphere, many half-timbered buildings with brick infilling, and a large number of fine trees, including Wellingtonia, Gingko, Copper Beech and Red Willows. One local resident has planted 300 trees in the last five years, a small example of the loving renewal taking place. Few if any of the inhabitants work outside the village, apart from one or two professional people; commuting to Oxford is almost unknown. A world-famous equestrian trains horses and riders near the hamlet. The Thame and its wooded watermeadows attract a very wide variety of birds, including swans, kingfishers, herons and other smaller species such as yellow wagtails. Very peaceful. No pub. Frequent flooding of the low-lying meadows, they were covered for 6–8 weeks during the last winter with considerable loss to local farmers.

Buildings:

i) The Church of St. Leonard. Partly 14th century, the remainder was rebuilt in the late 18th and 19th centuries. Notable wall monument dated 1641. Glass of two dates reported in the east side of the north aisle, the top part in the tracery being 15th century, the lower part more

Printed image digitised by the University of Southampton Library Digitisation Unit

recent, a genealogy of the Asshehurst family with a last entry in 1848. Grade II (B) Listed.

ii) Waterstock Mill. Built on an island between two branches of the Thame, partly 15th century rebuilt in the 16th and 17th centuries. Timber-framed with brick infilling with an old tile roof. Very picturesque, and carefully restored (in 1957) and maintained. Sluice gates on either side; the flooding does not normally enter the house, but if the flow increased and raised the level by another foot the house could be uninhabitable. Historically very interesting, a mill stood here at the time of the Domesday Book. Listed Grade II.

iii) Four other buildings are Listed Grade II, and a number of others would also be listed by current standards, 16th-18th century.

iv) Ickford Bridge (on the Bucks border) dated 1685 but probably older.

Summary: A very quiet, compact rural hamlet with particularily fine trees and bird life by the river. Grade B church and five other listed buildings, one 15th century.

Hazards—noise: destroying the hardly disturbed peace of the village, preventing the riding school from operating and affecting the wild life.

vibration: affecting the older buildings, particularly the glass in the church.

water: causing severe flooding and affecting a valuable listed building if *any* additional storm run-off is added to the Thame.

Cuddesdon and Denton AONB OxGB

Cuddesdon is a village on a hill, only about three miles from the edge of Oxford but genuinely rural in character; the green belt policy has restricted all but minor development in the village. The village has been the Bishop of Oxford's residence since the 16th century, and Cuddesdon Theological College is located there. Some 60 postgraduate theological students, many married and living in rented cottages in the village, attend the College, and the College's annual Fete is attended by up to 2,000 people every year. Most of the working population commute to Oxford and live in Cuddesdon for its peace, and many of the commuters contribute to the growing community spirit (Sports and Youth Clubs, Parish Council spending money on improving the recreation grounds). Walking in the quiet countryside round about is growing more popular, and much signposting of rights-of-way has been done recently. The Green has been registered as Common Land under the recent Act; there is one shop, a post office and a pub.

Denton is a hamlet more or less adjacent to Cuddesdon, and coming under the same Parish Council has close connections with the other part of the village one hundred feet higher up the hill.

Cuddesdon is particularly vulnerable to the Wing airport proposal; though lower than Garsington Hill it is very exposed to the North East, whence aircraft from Wing would appear climbing on full or nearly full power. The Theological College would clearly suffer terribly, and the Bishop's House would lose the peace it should be granted in our society.

Buildings:

i) Church of All Saints. Built about 1180, aisles added in 1240. The windoes are mostly 13th century and early 14th century, clerestory windows from about 1500, and the upper part of the tower 17th century. Magnificent setting, dominating the village, with fine trees in the background. Grade A or II Listed.

ii) Manor Farmhouse. 16th–17th century, two storeys and attic, rubble with dressed copings, old tile roof. N.W. of the house are an unusually large number of barns, stables of rubble with old tile roofs. All Listed Grade II.

iii) Theological College and Vicarage. 19th century, good examples.

iv) The Old Vicarage (and boundary wall) 18th century, two storeys, rubble, old tile roof. Supplementary List.

v) Cuddesdon Mill House and Cuddesdon Mill. 18th–19th century, both Supplementary List.

vi) Denton House, Stable Block and Cottage (three buildings separately Grade II Listed). The house is 16th–17th century, altered in the 18th, probably in 1757 which date appears on the cast lead rainwater heads. The stable block is late 17th century, a two storey building, square stone block with hipped stone tile roof and octagonal central lantern. The cottage is 15th–16th century, part of a barn.

vii) Chippinghurst Manor. 16th–17th century, much restored, two storeys, stone, old tile roof. A fine U-shaped plan building described at length in the 1949 Provisional List, restored fireplaces and the chimneys particularly noted. Grade II Listed.

viii) Others: there are a number of other houses from the 16th century and later in Cuddesdon and Denton which are on the Supplementary List and would probably be upgraded to II if re-investigated.

Summary: A hilltop village with a fine ancient church. Postgraduate Theological College occupies many of the inhabitants, the working population mostly commute to Oxford and return to the rural peace after work. Little new development in line with Green Belt policy, apart from some fine architect-designed houses still building in Bishop's Wood and a row of ill-sited council houses.

Hazards—vibration and noise: apart from spoiling the peace of the village, would severely affect the Theological College, and might lead to damage to the ancient church.

Printed image digitised by the University of Southampton Library Digitisation Unit

water: frequent flooding by Cuddesdon Mill would be made worse by extra storm run-off into the River Thame.

Great Milton

An ancient village; originally a collection of satellite hamlets around a central core, some of which, such as Ascott, have "lost villages". The village is remarkable for the unusually large number of big houses (seven in all) and also for the fact that it contains two prebendal farms. All these buildings are of stone, a fact which they owe to the presence of the quarries previously mentioned. The village has a long history; there is some evidence that there was a Saxon Priory on the site of the present Manor house; while the two prebendals for the upkeep of stalls in Lincoln Cathedral were already established in the early 14th century.

Buildings:

i) The Limes, Stable Block and wall (two separate Listings, Grade II). The Limes is early 18th century, two storeys, rubble stone with ashlar quoins and coved stone eaves, old tile roof. The stable block to the right of the house is L-shaped and irregular of rubble stone with old tile roof, and together with the wall the two buildings form a very attractive group.

ii) Small House (90 yards SSE of King's Head). Late 18th century two-storey stone building with part slate, part old tile roof. Grade II Listed.

iii) Great Milton School. Part 16th century, with righthand wing dated 1854. Two-storey and attic, rubble stone with ashlar quoins, old tile roof. Interesting five shaft chimney. Grade II Listed.

iv) Terrace of cottages on SE side of Green. 16th–17th century, long block, single storey and attic, colourwashed rubble stone. Grade II Listed. The group includes The Bell Inn, separately Listed Grade II.

v) Monkery Farmhouse, Barn and Dovecote (three separate Grade II Listings). 15th–17th century, former Prebendal farm, three-storey, rubble, with hipped old tile roof; the Barn is 17th century, stone with old tile roof, and the Dovecote is similar.

vi) The Priory, and Nos. 1–6 Priory Bank. The Priory is early 17th century, the cottages slightly later, all linked by walls. Profusely described in the 1949 Provisional List, six separate Grade II Listings.

vii) Lych Gate Cottage. Grade II Listed.

viii) Church of St. Mary the Virgin. Norman, enlarged and practically rebuilt in the 13th century. A very fine building with 15th, 16th and 17th century additions inside and outside. Grade A Listed.

ix) The Manor, Gateway and walls, and Dovecote at the Manor (three Grade II Listings). Originally Manor Farm, 17th century altered, partly modern, two-storey and attic. The Gateway is 17th, consisting of stone archway with carved ornament round the arch, central in a U-shaped group of stone walls with stepped weathered tops. The Dovecote is 17th century, circular stone with conical old tile roof and lantern.

x) The Great House and Stables. A fine late 17th–early 18th century building, with South front designed by Wyatt (1806). L-shaped group of stone stables, old tile roof.

xi) Romneys Court, barns and stables. 16th–17th century, altered 18th and 19th, two storeys, stone, hipped old tile roof. Two Grade II Listings.

xii) 12 other Supplementary Listings, many would now be Grade II and others added.

Summary: A beautiful place with a commuter population, consisting of people employed at Cowley, and executives and professional men.

Hazards: There are already bitter complaints about the amount of aircraft noise caused by the trainer 'planes from Benson. Any increase of this nuisance such as would be caused by the existence of the third airport at Wing would render life in this village, which because of its altitude is peculiarly vulnerable, quite intolerable.

Effects on people

1. *Young people in schools.* In the area of Oxfordshire likely to be affected by the proposed airport at Wing there is a large school population, chiefly in Thame, the town likely to suffer more than any other from aircraft noise. Approximate figures from Oxfordshire County Council Education Department are as follows:

Village or Town	School population	Notes
Thame	about 1,300	+150 at Rycotewood College
Wheatley	700	
Chinnor	550	Increasing rapidly
Great Milton	75	
Great Haseley	75	
Aston Rowant	55	
Tetsworth	50	
Little Milton	25	
Garsington	90	
Cuddesdon	25	
Stadhampton	55	
Approximate Total	3,000	

There are also a number of small private schools including nursery schools which raise the total to well over 3,000.

Hence over 3,000 pupils in 15 or more schools in Oxfordshire would suffer from interruptions in teaching were the third London airport built at Wing, on present-day school populations. With the scheduled increase in the size of Thame and population

Printed image digitised by the University of Southampton Library Digitisation Unit

growth in the villages round about this might rise to 3,500–4,000 by the time Wing became fully operational.

2. *Old people.* In Thame alone the County Council and Thame Urban District Council have provided places in homes and flats for about 150 old people. Elsewhere other old people's accommodation has been built, and in some villages there are disproportionately high numbers of people of pensionable age, who have retired to the villages for the peace and quiet they offer. (In particular the Haseleys and the Miltons.) Not only do our older citizens deserve some peace, they are also often less mobile, less able to move away, and more reliant on entertainment in their own homes through television. Wing Airport could seriously affect their enjoyment of retirement, among other things rendering television watching almost impossible due to sound and vision interference.

3. *People in the market town of Thame.* While many of Thame's working population travel to Oxford, Aylesbury, Haddenham and even Princes Risborough, High Wycombe and London to work, others come into the town during the day to work, to the markets and to the shopping centre. Thame's population is about 5½ thousand at present, but is expected to grow to 8,500 by 1981. The farmer or shopper coming into Thame to do business by day, the returning worker by night, the fixed population, the schoolchildren gathered in from the surrounding villages, all these would suffer if the airport were built at Wing.

4. *People in the countryside and villages.* The approximate populations of the various parishes which would be affected by noise from aircraft using Wing are as follows, from figures supplied informally by Bullingdon Rural District Council:

Parish	*Approx. present population*		*Note*
Aston Rowant (and Kingston Blount)	670		(*)
Chinnor	3,740		(*)
Cuddesdon and Denton	400		
Garsington	1,720		
Great Haseley (L. Haseley and Rycote)	610		
Great Milton	800		
Little Milton	400		
Stadhampton (and Chislehampton)	740	6,780	
Sydenham	360		
Tetsworth	520		
Tiddington with Albury	550		
Towersey	430		
Waterperry	170		
Waterstock	80		
Watlington	about 2,500		(*)

(Note that the starred (*) parishes would not suffer greatly from aircraft noise, but during the construction stage heavy sand and gravel haulage traffic through the parishes along the B4009 from Ewelme and the Thames Valley would seriously affect the inhabitants.)

Agricultural employment in the villages is declining with increasing mechanisation, and many villages are becoming quiet havens for commuters working in the major towns around and in Oxford and London. Improved roads from London will make it easier for people to work in London and live in peace in the Oxfordshire countryside. Is this peace to be destroyed by aircraft from Wing; is there to be nowhere to hide?

Many people have saved to buy cottages in this part of Oxfordshire to retire to, and have put much effort into restoring old village houses and agricultural workers' cottages, now redundant, in the hope of finding peace in a beautiful part of England. They have put up with the few aircraft which fly overhead from Benson RAF base; all over England one must put up with a few aircraft going by, but a continuous stream from an international airport would be too much and must lead to a heavy drop in property values.

In this quiet countryside there is little public transport, and as far as is known not a single cinema or theatre in the area likely to be affected. Car owners can drive into Aylesbury or Oxford, or even High Wycombe, from the village they live in for an evening's entertainment, but many depend on self-made occupations and on radio and television. In the coming years most television transmissions will go over to UHF, and this type of transmission is badly affected by aircraft. Interference-free "piped" television will hardly be economic in small villages and hamlets, and thus with up to one aircraft passing over every two minutes television will no longer be a pleasure. And it is hardly likely that there will be any form of compensation from public sources, any reduction in the licence fee.

Those who wish to entertain themselves will still be able to do so, but making music, reading or going to discussion groups on winter evenings will be far less of a pleasure if they are punctuated by the noise of aircraft flying overhead. Those who ride, an increasing number of people in this area, would have an added hazard to contend with—even when they escape from the public roads onto the ample local net of bridleways, while walkers on the even more extensive range of footpaths would lose a great deal of the pleasure they seek away from the roads in this quiet countryside.

In conclusion—We summarize our views by saying that, having regard to the facts set out here, we feel that the construction of the Third London Airport at Wing would impose such discomfort, and cause such misery and destruction over such a wide area as to make it totally unacceptable to our society, if we are to continue to make any claim whatever to civilised values.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Berkshire, Buckinghamshire and Oxfordshire Naturalists' Trust

SUBMITTED BY CAPTAIN SIR THOMAS BARLOW

I live at Pednor Close, Chesham, Buckinghamshire.

I am Honorary General Secretary of the Berkshire, Buckinghamshire and Oxfordshire Naturalists' Trust.

This Trust is an organisation with nearly 2,000 members, whose aims are to record and study the wildlife of the three counties, and to protect it; to establish nature reserves; and to promote conservation in the countryside. It is one of 36 similar organisations throughout the country, working under the auspices of the Society for the Promotion of Nature Reserves.

The Trust has acquired a great deal of knowledge concerning the wildlife of North and Mid Bucks and of the conditions which suit the flora and fauna that are to be found in the area covered by the proposed airport site and in the surrounding countryside.

Character of the area

The area has two main features: one the predominantly agricultural landscape around Wing and Cublington; the other the conspicuous Chiltern Hills, a few miles to the south of the airport site.

The Wing/Cublington area

Wing lies in the middle of a plain which stretches from Oxford to Leighton Buzzard and Bicester with hardly any largescale urban complexes in it. This gives it an ecological importance as an undisturbed, unfragmented area of considerable size which is unique in south-eastern England. It has come to be recognized that the size of an area is an important consideration in reckoning what wildlife will survive in it; the larger it is, the more likely that the profusion of species which go to make up the English countryside have the best chance to prosper, and also that rare species, too, will be enabled to continue. The more an area is fragmented by roads, industry and built-up areas, the more plant and animal communities will become isolated from each other and so less able to find all the conditions which they need for existence. The many members of a plant or animal community are very dependent on each other for many factors in their life chain—food, shade and so on. If one such factor is removed by a barrier such as a road, or by obliteration of habitat, as for instance by an airfield, the effect on wildlife will be far more widespread than can be measured simply by the physical size of the new feature.

In this case, therefore, where we are considering a great stretch of countryside stretching from the Berkshire Downs on one side, to the fens on the other, we must see the Wing area as only part of a whole, but because it lies near the middle, it is a vitally important part. The construction of the new city at Milton Keynes, a few miles to the north-east, will markedly upset the balance for the wildlife of the region; an airport on top of it will accelerate the process greatly.

We apologise for extending our survey beyond the 10 to 15 miles radius that we were given in our terms of reference, but we feel that we cannot properly describe the effects which the airport would have here, unless we make this point about fragmentation as clearly as we can. As the area is cut up by new roads, by increases in the size of every town and village round about, wildlife will be cut off and violently disturbed. Many species will not be able to adapt themselves, and so will disappear. This is not, of course, to say that the countryside will become a desert, but it will change its character. Existing traditional forms will go, and be replaced by something duller, and more uniform. The Motorways show that vegetation returns to the verges, but is not the same as that which was there before; it is less exciting; less varied.

The flora and fauna are those which are typical of an undisturbed region of fields, hedgerows, scattered woods and unspoilt roadside verges on a soil of clay and greensand. They contain the common species of plants and birds in as great profusion as anywhere in the country. By disturbing the balance we make them less common, and so we denude the total stock of the country.

This is the general argument. In addition there are a number of special sites in the area, where particular species are found, rare because they are fragile or in some way vulnerable. Such sites are particularly prone to destruction by disturbance, and many of those which we list later would be likely to disappear.

The Chiltern Hills

The second major physical feature of the area is the range of the Chiltern Hills, extending south of the Vale of Aylesbury, and parallel to the line of the airport runways, some ten miles distant. In this area the danger, if the airport should come, would be slightly different. Although there would be some division of the Chiltern range by new communications, with the fragmenting result already described, the main effect would follow from the large increase in the number of people visiting the hills for recreation and amenity.

Printed image digitised by the University of Southampton Library Digitisation Unit

The pressure of people is already felt at the popular beauty spots, and it is causing erosion of soil, as at Ivinghoe Beacon, and denudation of vegetation—partly by their feet, and partly by their cars. This is a process that, once set in motion, rapidly gets worse, and it certainly will get worse as the hills become the grandstand for watching airport operations, and the focus of recreational activity for the new population.

Reservoirs and water areas

Water areas need special mention. They are scarce in this part of Bucks, and it is well known that demand for space on the water vastly exceeds supply—for angling, sailing, swimming, recreation of all sorts, and this includes the study of natural history. There are three main sites of importance, at Foxcote Reservoir, Grimbury Reservoir and Weston Turville Reservoir. All are being used to capacity for many different activities. Additional use is bound to react unfavourably on the wildlife which frequents the sites, and clearly there will be additional use if there is an increase in the number of people living in the vicinity.

Water pollution

We fear that an increase in the number of people in the area may lead to a rise in the amount of pollution in all the water resources, and hence to ill effect on animal and plant life.

Air pollution and paraffin fall-out

Because there is at present no heavy industry and no extensively built-up area, there is a high degree of freedom from pollution in the atmosphere, and hence wildlife which is sensitive to pollution has enjoyed success. We fear that there is bound to be a rise in the foreign elements present in the air as industry and population build up, and this will in particular affect such forms of life as lichens and insects. Paraffin fall-out is not a phenomenon about which we have much experience, but there is evidence that vegetation and probably insect life in the path of the runways may be affected for a distance of several miles. If this is so, then the direct destruction of wildlife which would result is increased well beyond the actual limits of the runways themselves.

Special sites

We can show how more roads, more built-up areas and, of course, the actual airport area itself will all reduce the area available for wildlife, and how it is not just the space which these new developments take which affect matters, but much extra ground as well that becomes useless.

We can show, too, how more people will bring more disturbance and this in turn will drive animals and birds away, make conditions unsuitable for insects and cause the disappearance of plants.

Besides this general deterioration there is the effect to be considered on some eighteen sites which contain features of particular importance—rare species or habitats of special interest. There are five of these within a five-mile radius of Wing, and another thirteen within ten miles.

Those within five miles are:

Cheddington—West End Hill

The most important site for the uncommon local flower, chiltern gentian, and notable too for the very local tall broomrape. Also has interesting butterflies, while fossils and ammonites are found in the chalk pit here.

Cheddington—Bierton Power Station disused railway line

An important site for breeding birds, with a high density of warblers.

An interesting community of plants is developing here.

Rammamere Heath

Declared by the Nature Conservancy as a Site of Special Scientific Interest (SSSI). A site of geological interest where the Lower Greensand caps the Boulder Clay; it is a site for two interesting plants—lily of the valley and claytonia.

Bragenham Wood

This wood has an area of wet woodland which is unique in this part of the country, containing an alder swamp and golden saxifrage, with bog asphodel close by. It is a breeding site for woodcock, little grebe and water rail.

Brickhills

An area on the Upper Greensand with the appropriate flora and woodlands, where crossbills sometimes nest.

In the wider ten-mile radius are the following thirteen sites:

Ivinghoe Beacon and Steps Hill, and Ashridge

The National Trust will presumably comment on the effect which the airport would have on their property here. We can say that it has an immensely interesting flora, which includes spring gentian, and the rare pasque flower; its breeding birds include meadow pipits, grasshopper warbler and whinchat; it has various species of blue butterflies. Wintering birds include short-eared owl and great grey shrike. Both breeding and wintering birds, and the rare chalk flora are extremely susceptible to disturbance.

Pitstone Hill

A hill with open chalk downland which has free public access, but is also an SSSI, by virtue of the very local plant *senecio integrefolia* which grows here. A valuable site for orchids (including fragrant orchid), and also for the same sort of flora which is to be found on Ivinghoe. Bird and butterfly population is likewise to be compared to that of Ivinghoe, and liable to the same threats.

Printed image digitised by the University of Southampton Library Digitisation Unit

Clipper Down

This SSSI in the Chilterns is the main site for the pasque flower, a flower much threatened by visitors picking it, or digging the plants.

Dancers End (Tring)

An SSSI which is the best botanical site in the county with a wide range of scarce and local flora, including herb paris, solomons seal, columbine, Chiltern gentian and clustered bellflower. It is also one of the few county breeding sites for woodcock and nightingale.

Aston Clinton Ragpits (Chilterns)

Another site of uncommon chalk flora, and breeding place of the rare Chalkhill blue butterfly.

Hale Wood Escarpment (Chilterns)

An interesting geological site with a chalk/clay alignment which would suffer badly from exposure to human pressures.

A botanical site for Chiltern gentian and candytuft.

Weston Turville Reservoir (Aylesbury).

An immensely important site for plants of marsh and chalk fen type, for birds, including breeding great grebes and water rail, and for migrants. At least two very rare species have been recorded here (cettis warbler and moustached warbler), so that habitat is suitable for small birds on migration.

Amongst the mammals to be found here are otter, a rapidly decreasing species in Bucks, and noctule bat.

This site has as much use by anglers, yachtsmen as it can stand, and still maintain suitable conditions for wildlife. Any increase in human usage, to which it would be subject if the population increases much more, will undoubtedly lead to the elimination of its flora and fauna.

Coombe Hill

A National Trust property. A chalk hill with clay capping, already much frequented by the public, where increased use could lead to damage to vegetation and erosion. It has botanical interest as a site of Heather and Broom.

Chequers Box Coombes

These coombes on the Chequers Estate contain many unusual plants and shrubs of the chalk, including golden saxifrage, vipers bugloss, *daphne mezereum* and musk orchid, box and juniper.

Eythrope—Nursery Spinney

Has one of the four remaining heronries still inhabited in Bucks.

Stone (Eythrope Road)

A geological site with silver sand quarry.

Bugle Quarry

An SSSI, a geological site with fossils.

Foxcote Reservoir (Buckingham)

Already mentioned as one of the few large areas of water in this part of the country. A very important wildfowl refuge because it has so far been undisturbed. It is under pressure for its use to be widened, and this will certainly lead to wildfowl forsaking it.

Because these sites are either themselves small, or the particular species which they contain exist only in a small colony, they are especially susceptible to changes in the conditions and to disturbance. They will be amongst the first casualties of the general development in the area which will follow the start of construction.

The effects of the airport can be summarised as follows:

Complete destruction of habitat and consequent elimination of existing wildlife will take place in the area covered by the runways and airport buildings, and to all intents and purposes within the airport perimeter. It will be replaced to some extent by grass forms of vegetation cover, of little interest.

Habitat will also be eliminated along the area of new roads, and in areas required for new accommodation.

Road widening will seriously affect existing habitat wherever these operations take place.

Open spaces, particularly in the Chilterns, will begin to lose their vegetation under increased pressure, and will suffer erosion of the soil.

Water areas, rivers and streams may be expected to contain higher levels of pollution, which will affect fish populations, and mammals such as otters, areas of nesting and feeding for birds, insect life and plants.

Air pollution will affect sensitive plant life and insects.

The area covered by the airport and its ancillaries, together with new roads, and new accommodation, may occupy at least 118,000 acres. All this is good habitat for wildlife, and it will be utterly lost. It represents a significant proportion of the total area available for wildlife, and its loss will consequently mean a significant reduction in the country's total stock.

Over a large part of the remainder of the region disturbance will occur and the existing wildlife will find it hard to remain where it is.

Thus the whole character of the countryside will alter radically for the worse, and the present richly varied scene will be replaced by a degraded and monotonous vegetation, no native mammals and only poorly representative in birds and insects.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Youth Hostels Association (England & Wales)

We are unable to be separately represented at the hearing of the above site, but the Council for the Preservation of Rural England are being authorised to mention our observations in support of their case.

The general reasons for making comments are contained in the first four paragraphs of our statement on Foulness*, a copy of which is enclosed for your convenience. We feel that a site at Cublington should be strongly opposed because of the large amount of beautiful countryside which would be directly affected by the development itself and the noise and nuisance, and also by the consequential replanning of Milton Keynes and possible extensions of other neighbouring towns for the supporting population.

* Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the St. John's and Manor House Hospital Management Committee

SUBMITTED BY DR. D. C. WATT*

I am a Doctor of Medicine, a Bachelor of Surgery, a Bachelor of Science of Glasgow University, and a holder of the Diploma in Psychological Medicine of the Royal College of Physicians, London.

I have worked as a psychiatrist for twenty-four years, for seventeen of which I have been a Consultant Psychiatrist of St. John's Hospital, Stone, Aylesbury, Buckinghamshire, since 1961 as Medical Director.

The psychiatric effects of noise can be categorised under the following heads:

1. Interference with speech;
2. Interference with sleep;
3. Annoyance;
4. Fear;
5. Effect on performance;
6. Production and aggravation of psychiatric illness.

The effect on the normal population and on the residents of a psychiatric hospital needs to be considered.

The degree of interference with speech depends upon the type and intensity of noise which can be combined into an articulation index. It has been shown that noise which interferes with speech leads to a large number of errors in communication, the expenditure of greater effort in articulating and comprehending articulation with consequent annoyance, nerve strain and fatigue, (Davis, H., Broadbent, D.E.). At NNI 40 and 55 interference with speech is complained of by 57 per cent and 78 per cent of people respectively (*Noise*.† HMSO, 1963).

The report of the Committee on Problem of Noise† (HMSO, 1963) details widespread interference with falling asleep and interruption of sleep from airport noise. There is a widespread individual variation and many people establish a high degree of tolerance. Intermittent unexpected noise is more severe in effect than continuous noise; the high frequencies are more serious than lower frequency noise. At NNI 40 and 55, 32 per cent and 56 per cent of people respectively are prevented from getting to sleep; 34 per cent and 50 per cent of people respectively say rest and relaxation is disturbed; 54 per cent and 69 per cent of people respectively are woken up by noise (*Noise*, HMSO, 1963).

The degree of annoyance, the kind in the vicinity of an airport, is discussed fully in the Report of the Committee on the Problem of Noise and expreessd in the Noise Number Index. Increased irritability has been demonstrated with continuous high frequency noise and also with unexpected intermittent noise (Davis, H., Broadbent, D.E.).

The effect of noise on performance varies with the type, frequency, expectedness, and intensity of the noise. It has been demonstrated, however, that fewer errors occurred in workers who used ear-plugs in noisy conditions even though these were not welcome, (Weston and Adams). Broadbent has shown that in noisy conditions tasks requiring vigilance are done more slowly, more errors are committed and fatigue occurs more quickly (Broadbent, D.E., 1951, 184, 1955).

Sudden, unexpected noises produce a startle which can sometimes be detected as pallor, dilation of pupils, increased pulse rate. This probably varies considerably from individual to individual, and passes off quickly. At NNI 40 and 55, 52 per cent and 61 per cent of people respectively are startled by noise (*Noise*. HMSO, 1963). There have been no investigations on what the result may be if this effect is prolonged or repeated over a long period, but it can be inferred that the effect is harmful. Watson (1920) found a conditioned fear response to toy animals was produced in young children if their initial presentation was accompanied by loud noise, and the injurious effect of startle on invalids is a matter of ordinary clinical observation.

The report of the Committee on Problem of Noise made only perfunctory and casual investigation of the problem of production of psychiatric illness by noise, and what they say supports their own later statement that there are no reliable studies of the effect of noise on the mental health of an ordinary population. Jansen (1959) found amongst steelworkers a greater degree of complaint of domestic difficulty in those people who worked in intense noise, which has been attributed to increased irritability.

St. John's Hospital has 800 beds and has attached to it two nurses' homes and 58 staff houses. It provides psychiatric services for most of the county of Buckinghamshire; about 450,000. It operates both as an acute hospital, where about 900 people a year are admitted and discharged for acute psychiatric illness, and as an institution in which people live for much longer periods suffering from severe disabilities; it also contains about 200 old people. About 50 to 60 patients with various degrees of psychiatric disability visit the hospital daily for treatment; they are supported by their relatives who depend upon assistance from the hospital to carry this out. The buildings of this hospital are of varied character and spread over a wide area. The main part of the hospital is a two-storey brick building housing 600 patients

* See also p. 1664

† Cmnd. 2056. (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

comprising 21 wards, an assembly hall, kitchens, and doctors' quarters. There are several outlying, single-storey buildings of very light construction; one of these is a modern high-standard, flat-roofed building, housing 60 patients with a kitchen, dining-room, treatment wing and research laboratory. About half the walls of this building are composed entirely of glass. Two other of the outlying buildings are wards of temporary EMS type, built shortly after the war and housing 60 patients. Into these three wards acute patients are admitted for assessment and treatment and the main part of the turnover of the hospital (800 discharges) takes place in them. The impossibility of sound-proofing these buildings is obvious. The other outlying buildings, which are of similar light construction, house about half the hospital's patients during the day for occupations of various kinds.

According to the estimates of the Roskill Commission the hospital is crossed by NNI contour 45. According to the WARA expert on noise it lies at about NNI 53. According to the Report of the Committee on Noise, (HMSO, 1963) therefore 57 per cent to 78 per cent will have communication by speech interfered with; 32 per cent–56 per cent will be prevented from falling asleep, 40 per cent–69 per cent woken up and 34 per cent–50 per cent find rest and relaxation disturbed; 52 per cent–61 per cent of people will be startled, according to which prediction of NNI contours proves correct. These are estimates for day-time. Allowing a 10 per cent–15 per cent increase in NNI for night, as recommended by the Committee on the Problem of Noise (HMSO, 1963) the hospital will then be well within the 55 NNI contour, described by the Committee as very annoying to unbearable and with 78 per cent of people finding interference with conversation, 69 per cent woken up and 61 per cent startled.

Communication by speech is the essential part of psychiatric investigation and treatment and the interference to be anticipated would preclude medical work being carried out. A psychiatrist working at the West Middlesex Hospital, 5 miles from London Airport, states that noise at that hospital causes serious interruption of work; that he has frequently to break off in the middle of a sentence and wait for a long time before it is possible to resume and that this impairs his efforts to influence patients and patients do complain of the irritation caused (Haldane, 1969). Conditions at St. John's Hospital will presumably be more severe than at the West Middlesex Hospital, where it has been found necessary to insulate and air-condition a new medical block at a cost of £110,000 (Coghill, N., 1967). It can therefore be anticipated that at St. John's there will be a severe impediment to medical work with an increase in errors, irritability and fatigue. The effect on patients of interference with sleep, fear and annoyance is bound to be severe with such a high proportion affected. The staff, who undertake this exacting work, many of whom are necessarily housed within the curtilage of the hospital, will have their working resources wastefully depleted.

It is an obvious advantage to patients of this hospital to have a considerable proportion of the staff living nearby. Considerable efforts by the hospital authorities have been directed to achieving this. It can be anticipated that staff will be discouraged from living in this area. Recruitment of staff is already a very serious hospital problem. An exacerbation due to loss of amenity in the area is likely to result in a cessation of part of the hospital's services.

Common sense suggests the impracticability of sound-proofing this hospital which probably would have to be resited should the airport be established at Cublington. There are no studies of the effect of noise on an existing psychiatric population, but it is known that patients suffering from depressive illness are particularly sensitive to and upset by noise. This illness is the most frequent acute condition dealt with by a psychiatric hospital and is recoverable in favourable conditions. It should also be noted that disturbance of sleep is a very frequent accompaniment for psychiatric illness which would certainly be aggravated by noise of the level to be anticipated from an airport at Cublington.

Manor House Hospital, situated within the town of Aylesbury, at present houses 165 patients. In order to meet the pressing need for further accommodation of this type, an enlargement of this hospital to 350 beds, mainly for children, is due to commence within a year. The adverse effects to be expected from an airport at Wing, as described above, on a population of children suffering from mental disability, would be such that I believe serious consideration must be given to abandoning these plans and siting the hospital elsewhere.

References

Broadbent, D. E.	(1951). "The Twenty Dials and Twenty Lights Test under Noise Conditions". APV 160/51. The Psychological Laboratory, Cambridge, England.
Broadbent, D. E.	*Quart. J. Exp. Psychol.* 6, 1: 1954.
Broadbent, D. E.	"Noise: its effect on behaviour". *R. S. Prom. Health J.* 75, 541: 1955.
Burns, W.	*Noise and Man.* London, John Murray, 1968.
Coghill, N.	"The Thunderers". *New Scientist*, 29, June, 1967, 768.
Davis, H.	"Effects of Noise on Human Behaviour and Communication". *Arch. Indust. Hyg. & Occ. Medicine*, 3, 227, 1951.
Davis, H.,	editor "Auditory and Non-auditory Effects of High-Intensity Noise". Project ANEHIN: Final Report. Joint Project 1301, sub-task 1. Report No. 7, Central Inst. for the Deaf, St. Louis, Mo. and US, Naval School of Aviation, Pensacola, Fla.
Haldane, F. P.	(1969). Personal communication.
Jansen, G.	"Zur Entstehung vegetativer Funktionsstorungen durch Larmeinwirkung", *Arch. Gewerbepathologie und Gewerbehygiene* 17, 238: 1959.
	Noise: Report of Committee on Problem of Noise. HMSO, 1963.
Watson, J. B. and Raynor, R.	*J. Exp. Psychol.* 3, 1: 1920.
Weston, H. C. and Adams, S.	IHRB, Report No. 70. HMSO, 1935.

Printed image digitised by the University of Southampton Library Digitisation Unit

Additional Evidence

In my main submission to the Commission I have used two sets of NNI contours. I now understand that Mr. Fleming has accepted the Commission's calculation of NNI contours, and I therefore wish to discard the conclusions based upon alternative estimates.

The following table summarises the figures for the population affected by noise at St. John's Hospital which I wish to take into account:

Percentage of Population at St. John's Hospital affected by airport at Wing.

	%
Spoken communication interfered with	57
Prevented from falling asleep	32
Woken up	40
Rest and relaxation disturbed	34
Startled	52

Mr. Fleming's report also shows the frequent occurrence of serious noise intrusion to be anticipated.

It should be borne in mind that while the percentages given by the Royal Commission on noise are those for a normal population customarily living in the neighbourhood of London Airport that at St. John's Hospital is composed of individuals who are psychiatrically ill.

I also wish to submit further evidence bearing on the production of psychiatric illness by noise.

Loss of hearing due to noise has been known for many years and the level at which this occurs may afford some indication of the level at which more general damage to the nervous system may occur. Environmental noise in cities has now risen to the level at which damage to hearing can occur and the question arises how far loss of hearing due to age is compounded with loss of hearing due to noise (Rodger, 1969). To find an answer Rosen (1964) made an expedition to the Mabaans people living in a remote area of the Sudan in exceptionally noise free surroundings even for a primitive community. They were found to have very little hearing loss with age. Those in the seventh and eighth decades of life had a loss comparable to those in the second decade in Western communities. In addition they do not have blood-pressure rise with age, coronary artery disease or duodenal ulcer and the incidence of other diseases attributable to stress is much lower than in the West.

Two comparisons of hearing of people living in urban areas with that of those living in exceptionally quiet surroundings have both shown superior hearing in the latter group (Hinchcliffe, 1959; Glorig and Nixon, 1962).

Two consultant psychiatrists in the NHS in this country now have evidence of increased psychiatric illness and hospital admission from the area covered by London Airport flight path and are about to publish a paper on this subject (M. F. a'Brook, C. F. Herridge, 1969).

References

1. a'Brook, M. F Personal communication. 1969.
2. Glorig A., Ward, A. D., and Nixon, J. "Damage Risk criteria and industrial deafness". In *The Control of Noise*: the National Physical Laboratory Symposium, No. 12, London, HMSO, 1962.
3. Hinchcliffe, R. "The threshold of hearing of a random sample rural population". *Acta. oto-laryng* (Stockh.) 50, 411: 1959.
4. Rodger, T. F. "Noise in Relation to Health". In *Theory and Practice of Public Health* (ed. Hobson, W.) 3rd. edition. Oxford University Press, London (in press).
5. Rosen, S. "High frequency audiometry in presbycusis: a comparative study of the Mabaan tribe in the Sudan with urban populations". *Arch. Otolaryng.* 79, 18: 1964.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Chiltern Society*

The Society

1. This Society was founded in 1965 to encourage high standards of town and country planning and architecture, and to stimulate public interest in and care for the beauty, history and character of the Chiltern Hills.

The Society has over 1,225 individual members and 125 affiliated organisations comprising Rural District and Parish Councils as well as local amenity bodies.

Its aims

2. The main concern of the Society is the care and preservation of the Chiltern Area of Outstanding Natural Beauty, so designated by the Ministry of Housing and Local Government, not only because of its natural beauty but also on account of its proximity to London and other large urban areas for which it serves partly as a dormitory area but chiefly as a recreational lung.

3. The many activities of a recreational nature that people enjoy in the Chilterns area are all of a relaxing and peaceful nature, such as walking, riding, picnicking, boating (limited), cycling, nature study and other pursuits for which our English countryside is so well-suited. The joint standing conference of the Bucks, Herts, Beds and Oxon County Councils is at present conducting a survey of the recreational needs of visitors to the Chilterns' many public beauty spots on account of the increasing number of people enjoying the amenities.

Our objections

4. Following from our desire to conserve the Chiltern Hills comes our concern at the proposals to site a third London Airport so close to this area. Our main fears for the area are that any such airport would have a highly detrimental effect on the amenities of the Chiltern Hills, both for those who live there and for those who visit them for recreational purposes. These fears fall under three headings:

i) The noise contours published for the prevailing runway conditions do not seem to be in the slightest degree reassuring. Not only do they give absolutely no attention to the stacking and descent of aircraft, but the noise factors of larger and supersonic aircraft of the future will make nonsense of these studies—and what of the days when the prevailing winds are reversed, such as when (pace June 1969) we have large anti-cyclonic conditions giving magnificent summer weather with winds from the northeast?

ii) Allied to the noise problem is the jet fuel "splashout" that seems to be an increasing problem both in the US at large airports, and at Heathrow. Not only is the smell most objectionable to anyone trying to enjoy living in or visiting the countryside, but the effects of this unburned fuel on health and natural ecology have yet to be assessed.

iii) Any airport of the size envisaged will inevitably mean a very substantial increase in accommodation for all those engaged in its operation. The whole southeast is already under pressure of population increase and nowhere perhaps is this felt more keenly than in the Chilterns, with their proximity to London, Luton, Slough, Reading, Oxford and other industrial centres. To increase this pressure by an additional need to provide for as many as 250,000 extra inhabitants is to put an unbearable load on the area. Not only is one thinking of the homes they will need, but also the roads, schools, shopping centres and other urban developments needed by such a community. We are already committed to the new town of Milton Keynes in this County: to add another town the same size—and an airport—would deprive the area of altogether too much countryside. On top of this, the needs for fast access to London would be sure to require carving additional motorway roads through the Chilterns.

Conclusion

5. While we recognise that none of the evidence we submit is of an original nature, we believe that coming from the foremost amenity society in the area it will serve to reinforce that given by the Bucks County Council and other objectors.

In matters of planning on such a vast scale the long term factors should be taken seriously into consideration, and it is our contention that despite the enormous costs involved the solution is to site the third London airport at Foulness where the damage to the natural and human environment will be minimal and the positive advantages at their maximum.

---

* See also p. 1665.

Printed image digitised by the University of Southampton Library Digitisation Unit

British Airports Authority
Heathrow Airport-London
Hounslow
Middlesex

27 June 1969

Mr. M. E. Davies
25 Burgesswood Road South
Beaconsfield
Buckinghamshire

Dear Sir,

I write to acknowledge receipt of your letter dated the 22nd June concerning the noise of aircraft over Beaconsfield.

You live about 1⅛ miles to the east of the centreline of Airway Amber 1. This airway is 10 miles wide. However, the navigational aid marking the centreline has, in itself, a certain tolerance which could cause it to vary within acceptable limits either side of the optimum position and this, together with the tolerances in the aircraft receiver equipment, may account for aircraft flying over Beaconsfield. Also, for reasons of separation, Air Traffic Control "fan aircraft out". From this you will appreciate that the centreline of the airway although, in theory, is the route along which aircraft fly, in practice, it is by no means a tramline along which aircraft pass nose to tail.

We would expect most aircraft over Beaconsfield to have reached a height of 3,000 feet. As soon as they advise A.T.C. that they have achieved this altitude, they are likely to be given their climb clearance to cruising level. Thus, it is possible that many aircraft over Beaconsfield will have applied extra power in order to commence their climb. It is probably for this reason that you notice some aircraft "discharging marked trails of unburnt fuel".

As you will know if you have seen our correspondence with the Clerk of the Beaconsfield UDC, the control of aircraft flying in controlled air space is a responsibility of the Board of Trade. However, the airway Amber 1 after it leaves Beaconsfield passes to the north west to a radio aid at Beacon Hill (near Princes Risborough) and thence to Daventry in Northamptonshire. Unless aircraft have already been given their clearance to climb up to cruise level, aircraft are required to pass over Beacon Hill at 4,000 feet.

If you wish to pursue this matter further, I suggest you contact the Divisional Controller of the Board of Trade, Southern Division, Heston Aerodrome, Hounslow, Middlesex.

Yours faithfully,
(Mrs.) P. C. Ward
Operations
(for General Manager)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Country Landowners' Association*

SUBMITTED BY MAJOR P. D. P. DUNCOMBE

1. The Country Landowners' Association represents owners of agricultural land in England and Wales. The Association's members own the vast majority of privately owned agricultural land and woodlands in England and Wales, as well as other rural lands.

2. **Members affected**

The Branches of the Association in my region are strongly opposed to the third London airport being sited in the vicinity of Cublington. The Association has consulted its members within a radius of 15 miles from the proposed Cublington site for the airport as shown on the Commission's plan CTLA5. No member has indicated support for the proposal, though I have seen press reports that the Duke of Bedford would favour the airport in the locality of Woburn, the Trustees of which estate are members of the Association. The Association has the following membership within the 15 miles radius of the proposed site:

Buckinghamshire	182 members owning a total of	70,151 acres
Bedfordshire	88 members owning a total of	24,069 acres
Hertfordshire	40 members owning a total of	7,546 acres
Oxfordshire	12 members owning a total of	3,503 acres
TOTAL	322 members owning a total of	105,269 acres

3. **The area affected**

The area likely to be affected by the land-take for the airport and by urbanisation, noise, nuisance and other disturbance associated with an international airport sited at Cublington is largely good quality agricultural land and countryside of charm and beauty, containing many buildings and places of historic, architectural and scenic interest. It is an area where livestock and bloodstock breeding and rearing is concentrated.

4. **Agriculture**

The Association has in its evidence at Stage I and elsewhere at State II urged the need to conserve good agricultural land in the national interest, and has emphasised the adverse effects on farming and the farming community should the airport be sited in an agricultural area. In compliance with the Commission's request that repetition and duplication of evidence be avoided, the Association will not repeat it at this hearing, but does stress that these considerations apply fully to this proposed site. This is especially so in view of the predominance of livestock farming in the area and its important contribution to British agriculture.

5. Further, a substantial acreage of agricultural land has already been taken or earmarked for development in this area, and the area could ill afford to lose more to major developments. So much of the remaining farm land would be encompassed by adjacent urban development that the agricultural industry in this important farming area would inevitably be seriously hampered. Much of the farm land which could be expected to be affected by the proposed airport and its ancillary urbanisation has already been reprieved for planning reasons from the land-take of the proposed "Pooley Town" (which preceded the Ministry's proposals for Milton Keynes new town) and from the original draft order for the new town at Milton Keynes.

6. **Water supply and land drainage**

As indicated in previous evidence to the Commission the Association is anxious that the siting of the airport will not result in water restrictions for the owners and occupiers of agricultural land, and is also concerned that flooding of watercourses will not be caused or increased, or land drainage hampered. It is thought that coupled with the building of Milton Keynes new town, the airport and its ancillary development will present acute problems, and might also result in additional farm land being taken for reservoirs.

7. **Long term investment in agricultural improvements**

In order to indicate as far as possible the extent of investment in long-term improvements of agricultural land in the locality, the Association has sought details of such investment in the last ten years by members. I have received details from 42 members owning a total of 45,772 acres in the vicinity of the proposed site. The gross capital investment by these 42 members is as follows:

Drainage	88,764
Buildings and other farm improvements	2,033,150
	£2,121,914

This indicates a heavy long-term investment in this land, the average for the 42 landowners being £50,521. The total grant aid for these improvements is not known to me, as in a few cases figures are not available, but in the remaining instances I have been

*See also p. 1666.

Printed image digitised by the University of Southampton Library Digitisation Unit

notified of £211,445 paid by the Ministry of Agriculture, Fisheries and Food in grants. The above figures do not include improvements which have not yet been completed.

8. **Pedigree herds**

A feature of the locality of the proposed site is the large and important herds of pedigree cattle, sheep and pigs. The 42 landowners referred to above have 20 pedigree herds of cattle in the area (Friesian, Guernsey, Ayrshire, Dairy Shorthorn, Red Poll, Danish Red and Aberdeen Angus) most being over 100 head, and five being over 200 head. I have been given details of flocks of pedigree Suffolk and Clan Forest sheep and herds of Landrace and Large White sows. One member who farms adjacent to the proposed airport site at Drayton Parlsow, point out that it has taken him years of selective breeding to reach the present high standard of his flock of Suffolks.

9. **Studs**

There is a concentration of stud farms in the vicinity of the proposed airport site.* Several studs carry out bloodstock breeding, rearing and training immediately adjacent to it, and these would be unable to continue were the site developed for the airport. Others can be expected to be vulnerable to disturbance by noise, land traffic and urban development. There is at present no scientific evidence available to the Association regarding the effect of aircraft noise on bloodstock breeding and training though it is hoped to submit such evidence at a later stage. Several experienced bloodstock breeders have pointed out to me that thoroughbred horses are highly sensitive animals, and in their view the effect of noise close to the airport on the behaviour of the animals would be disastrous for studs.

I have received information from members who own studs at Wing, Southcourt (Ascott), Whitchurch, Weedon, Adstock, Nash, Mursley, Whaddon, Mentmore, Waddesdon, Heath and Reach, Stratton Audeley, Aston Abbots, Godington and Liscombe. The majority of these studs export bloodstock either directly or through Tattersalls. Those who have given me details of export sales within the last few years show exports to 19 countries amounting to 206,678 guineas. Many classic winners have been bred at the studs immediately adjacent to the site. The capital expenditure of our members on these studs amounts to a very large sum, and the stallions at these studs are worth many thousands of pounds a year in stud fees.

Other equestrian activities are carried on close to the proposed site. For example horses are broken and schooled at Stockgrove within the intrusive noise contours, and our member, Mr. P. Warren, who it is understood will be submitting separate evidence, has an equestrian centre at Wing.

*See attached wallet of maps and diagrams.

10. **Noise nuisance**

Members in the area are most concerned about the noise nuisance that will be caused by the proposed airport, and the danger that they might suffer loss without compensation. Fears are expressed regarding the effect upon livestock, bloodstock and poultry and upon milk yields.

11. **Amenities**

The area is rich in places and buildings of historic, architectural and aesthetic interest as well as countryside and villages of beauty. North Buckinghamshire is already losing an extensive acreage of its countryside to Milton Keynes new town and other developments. The total detriment to rural amenity would be immense if in addition the airport were sited at Cublington. The Association urges the preservation of the amenities in the area, and members have referred to the following:

(a) *Buildings*

The 42 members referred to in para 7 above have referred specifically to 83 buildings owned by them listed as of historic or architectural interest or scheduled as ancient monuments. It is understood that other parties will be furnishing the Commission with comprehensive evidence of listed buildings. To avoid duplication I am not specifying the 83 buildings referred to, but the Association will be glad to give details at a later stage of any not included in other evidence.

(b) *Houses and grounds open to public*

The 42 landowners mentioned above, have referred to the following attractive houses and grounds which are open to the public at certain times:

Waddesdon Manor: 40,000 visitors a year.

Claydon House: 12,000 visitors a year. Claydon Concerts take place at the House.

Old House, Hoggeston: gardens open for charity from time to time.

Liscombe Park: grounds open for charity from time to time.

Nether Winchendon House: house and grounds frequently open.

Stowe School: grounds and state rooms open 18 days a year. Duckery and nature reserve set aside for research.

Ascott House: house and grounds attracted several thousand visitors in 1968.

Model farms at Old Linslade Manor: receives overseas visitors and schools.

(c) *Proposed international golf courses*

Two international golf courses are proposed

Printed image digitised by the University of Southampton Library Digitisation Unit

to be established in the vicinity by members of ours, viz:

i) Milton Keynes Development Corporation —at Howe Park Wood or Shenley Wood (within the new town designated area);

ii) Messrs. Cox, Long & Co. Ltd.—at Stockgrove Park (within the intensive NNI contours). Planning permission has been obtained and our member is ready to commence the work.

(d) *Areas of outstanding natural beauty etc.*
Members have referred to the desirability of conserving existing and proposed areas of outstanding natural beauty and of great landscape or scientific value, and also villages and conservation areas in the locality. It is understood that the Buckinghamshire County Council will be giving details of these.

(e) *Proposed open university and University of the Air*

Milton Keynes Development Corporation propose to establish an Open University and the University of the Air at Walton Hall (within the new town designated area).

(f) *Woodlands*

Seven of the 42 landowners mentioned above referred to important woodlands owned by them.

12. The proposed site is crossed by two oil pipelines and a line of pylons. A further line of pylons is planned to cross the flight path close to the proposed runways. Much of the site is also the proposed site of a reservoir. These are factors to be taken into consideration in a cost/benefit analysis of the site.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cox, Long & Company Ltd.
Church Square
Leighton Buzzard
Bedfordshire

18th June 1969

A. J. Hunt, Esq.
Inspector
Commission on the Third London Airport
Templar House
81–87 High Holborn
London W.C.1

Dear Sir,

Third London Airport

I am writing on behalf of my Company as above, who are the owners of Stockgrove Park, an area of about 400 acres. It contains a residence in which I personally live, several cottages etc. and in addition my Company are proposing to lay out a golf course for which they have outline planning permission from both the Bedfordshire and Buckinghamshire County Authorities. The land is such that it is considered without question one of the finest courses in the Country can be made. It is our intention to make it such. We now learn that this area is within the 60 NNI range of the airport site.

I suppose one may rightly assume that a third London airport is a necessity and that being so that one may further assume that it has to be sited in one of the four selected areas. I would therefore at this point like to make my personal views clear. If it is shown that the Wing area is the site which it is in the best interests of the country to utilise for the purpose then as an individual I would agree to this site without complaint, and I hope the vast majority of residents would be similarly minded.

As the Managing Director of the Company, however, who owns the land for the proposed golf course I have a duty to that Company and to the 500 prospective members of the proposed Golf Club to protest at the nuisance that will be caused by the airport and the adverse effect it would have on the project.

I need not enlarge. There are a thousand and one reasons that can be given as to why the airport should be placed somewhere else, and I have no doubt that a thousand and one reasons will be given you to take it somewhere else. I would, however, ask you kindly to consider the special reasons given in this letter which I venture to think are exceptional. I feel sure I can count on your interest.

Yours very truly,

W. D. LONG
Managing Director

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Beacon Villages Society*

The Society covers the villages of Pitstone, Marsworth, Ivinghoe and Cheddington, the countryside towards Wing and towards (and into) the Chiltern Area of Outstanding Beauty. The area of concern also extends into the Metropolitan Green Belt, and into the tactitly agreed Buckinghamshire White Land, which is today normally accepted by The Minister as Green Belt when deciding Planning Appeals. Membership of the Society is 140, with Sir Wm. Hart as President, and includes eight Parish Councillors, two Rural District Councillors and one County Councillor.

The B.V. Society now represents a kind of informed and acknowledged amenity conscience to which people and other bodies refer in times of "planning stress". For example, the Society, in conjunction with one other group, obtained 2,000 signatures in another amenity matter 4 years ago. Activities aim at preservation and harmonious development. Some of the Society's Officers made a special study of the Parliamentary Measures designed to improve the quality of the English town and country, and have kept a close watch on the South East Economic Plans as they may affect Bucks and Beds. So far the famed "Wing, Tring and Ivinghoe" area has been free of appreciable urbanisation, but it would be particularly vulnerable to any inroads. The Society's district is essentially one of southern English beauty, and preserves a subtle quality and a degree of quietness now rarely found in the home counties; values which will be increasingly sought by the as yet voiceless people of the next century.

The Commission is asked to refer to the single-sheet submission, made by the Society at the time of its Request to be Heard in July, which gives details of our work, affiliations and competence. That sheet also indicated the long complex local area improvement "battle" which is being slowly won on many fronts. All this would be made meaningless if the airport were sited at Wing, and it would be impossible to recover the amenity balance by any sort of compensatory planning.

With the airport at Wing it is probable that our own area will suffer much from Noise, but (with the vague situation as to the eventual exact runway sitings, the eventual stacking programmes, the ultimate size of the port and of the craft using it) it is impossible for us to be precise about the full seriousness of this item, which we will not elaborate, but will leave to other bodies at the Hearing to argue more fully for us.

Our members point out that the district suffers prolonged periods of low cloud and mist. Already aircraft occasionally pass over, flying blind and at unusually low altitude in such weather. This in itself is probably not considered dangerous in these days of complex radio aid, and is not unknown in other areas in the U.K.; but our Society feels that the combination of 750 ft hills, 5 high industrial chimneys, extremely large aircraft, and of the very occasional error (human, engine, radio, altimeter, icing, structural etc.) will lead to a permanent feeling of insecurity in our villages, and to the inevitable (if once-in-years) extremely serious accident, especially when—as often—the long cloudy periods completely obscure the hills and ground features.

At the Hearing we expect to take this sheet, and the Submission quoted above, as read; and only wish to expand slightly our main countryside argument and a less general matter of air pollution. This may arise from the fact that we are down one of the two prevailing wind directions from the airport site. In the absence of (burnt and unburnt) jet aircraft-fuel pollution estimates from the Commission, we can only state that we think the nuisance may be serious for our own locality; we think that the Commission should present data on the subject before Stage V.

Submission of the Beacon Villages Society

This Society, affiliated to the CPRE, The South Beds and The Chiltern Societies, registered with The Civic Trust and The National Society for Clean Air, represents villages and an area to the south east of Wing which are of great and quiet beauty, and have a unique southern English nature. It would be an extreme failure of planning not to preserve this vital amenity, and pass it unharmed to the citizens of the next century.

When the Society was established good planning had not matched the speed of change, and immediate action was necessary to secure a rational balance. Since that time our body, in cooperation with others operating in this area, has seen the formal recognition of the Chiltern Area of Outstanding Natural Beauty, with all that implies for future National responsibility and adjacent area co-ordination (in the sense and intention of the 1968 Town & Country Planning Act). We have argued for, and believe we have assurance of, the continuation of the North Buckinghamshire green-belt policies, and we are active in obtaining modification of area traffic conditions which could damage these belts, or the comfort and security of people long resident in Bucks.

* See also p. 1669.

Printed image digitised by the University of Southampton Library Digitisation Unit

We co-operated in the observation and estimation of the very important leisure potential in the AONB and the country to the south of Wing, following the requests of the central Government through the County Councils. We have been continuously alert to limit nuisance or eyesore; this has included re-siting of power-lines, the saving or addition of tree-cover and hedges, village planning, removal of refuse-tips, reduction of noise, and of air pollution. We have a seat on the N. Bucks Clean Air Council. More recently we obtained from the County Council the setting up of a permanent Liaison Committee to consider the progressive long-term reduction of a special local landscape, noise and pollution problem. We have co-operated with the legal bodies in close examination or registration of all the treasures, eyesores, and common-land rights of our area.

Were Wing airport to be sited in the given tentative position, all the above carefully nurtured and steady improvements would be permanently and seriously damaged by direct effect, equally so by later secondary development. The effects on our area could be even worse if the runways are resited, or expanded at a later date; whatever present intentions, pressure to expand, to provide for increasing radial flight paths, and to give facilities for 500–1,000 seater planes, would be almost certain by 1990–2000. As we (and the AONB) are downwind from Cublington for one of the two prevailing directions, we think noise would be more troublesome than our sound contours indicate; and we would experience some of the air pollution already affecting Heathrow, and becoming serious near large U.S.A. airports. An AONB of the Chiltern type cannot be considered in terms of nominal sharp boundaries, but presupposes no major interfering development beyond its edges; it was not the intention of The Minister that the Chiltern Scarp where our Society is situated should be isolated inside intensive activity, nor that it should become badly contexted in the manner of Stonehenge. Sufficient land to balance amenity and need has already been given up by N. Bucks at Milton Keynes, and a sound countryside policy between that city and the Chilterns is vital to our area.

For reason of direct countryside policy interest we apply to speak at the Third London airport Hearings, Stage II in July, and subsequently at Stages III and V.

Additional Evidence

We have stated our concern about the great beauty of the Bucks, Beds and Hertfordshire countryside which we will not repeat except to underline the fact that there is no one here to speak for the deprived citizens of tomorrow, and to say that a preservation and development battle which is being slowly won will become a hollow victory if the airport comes to Cublington. We deny the recently stated theory that amenity in a shrinking countryside can be in any way equated to monetary values; and where the falseness of this theorem is half-recognised, we resist the tendency which sometimes follows to omit the incalculable from decision-making. We ask, what will be gained if the populace can only escape by swift flights from a spoilt English Countryside to a crowded Costa Brava, a spoilt West Indies, or a desolated conurbation in the U.S.A.?

Coming to very specific points which could affect our Members and villages directly, we draw the Commission's attention to the enormous supply of portland cement which would be needed for the airport. We think this could amount to many dozens of giant road vehicle journeys out (and home) per day for perhaps 10 years. Because we have in our area the cement factory which is nearest to the proposed airport site we foresee some very difficult transport problems. Already there are urgent representations and discussions as to how the *currently* expanding output of the factory can possibly be handled on local roads, and a half-promise has been made that if this works supplies cement to Milton Keynes for instance, then that place shall be served by rail transport. This would not be practicable with the airport. Be it noted in passing that a 20 year struggle about the amenity planning of this cement plant is beginning to bear fruit, improvements have been initiated, and there are hopes of an eventual far-reaching landscaping of the works.

Another point for the Commission's consideration is that our Beacon area villages (Ivinghoe, Marsworth, Pitstone and Cheddington) which are on the edge of Green Belts and the AONB, would become the logical sites for a large influx of airport employees—who no less than anyone else wish to escape the noisy racket of their daytime activity, and many of whom still wish to live close to their work. This urbanisation would destroy the very nature of the Chiltern country close to us, which it has been the purpose of the AONB Designation to protect. The possibility of residential development does not mean that our aircraft noise risk would be negligeable (especially as we do not know the exact airport site), but we cannot as yet claim to be in the situation of those unfortunate enough to be under the projected flight paths.

Our members include walkers and outdoor enthusiasts, and one of our villages contains nearly the oldest and one of the most used Youth Hostels of the Southern Region. I propose to read to you a statement about the direct effects the airport would have on these activities: (read footpath statement).

Printed image digitised by the University of Southampton Library Digitisation Unit

Another matter we wish to enlarge on is the possibility of air pollution originating from the airport. As a background to this risk, we again have a local situation where a very long pollution battle is being steadily won, since our area has suffered intermittent trouble from cement works odours and brickworks fumes, and constant vigilance has been necessary. It would be unfortunate if all this gain and planned future improvement were to be cancelled out by the springing up of aircraft exhaust troubles. In the absence of any figures and forecasts of pollution from the Commission, sir, we are in a difficult position, but we must emphasise that we do not think that this problem will be negligeable on an inland site (as it would be on a location where prevailing winds blow out to sea). To justify our own villages concern, it must be pointed out that winds appear to blow from Cublington to us for 30–50 days a year, although we must readily admit that Linslade, Leighton and Bletchley would receive the winds from the airport 3 or 4 times as much.

I have handed you, sir, a letter from a responsible engineer which describes a single, it is true, but a very clear and very bad case of exclusively airport pollution in the U.S.A. It is also true that this was at Los Angeles International Airport, but it was observed under conditions when the frequent and notorious Los Angeles auto-smog could not account for the matter. I spoke last week to a senior civil servant and engineer (whom unfortunately I must not name) who witnessed something similar, though less extreme, at Kennedy field, New York. These airports are smaller, with fewer flights, than Wing would be. I have had a further conversation with a civil airline pilot (who also flew at Wing in the war). He stated that the current 727 Boeings come in to land at 80 per cent power to Heathrow, using inferior fuels from a pollution point-of-view—as do most American airlines, and that the fuel-smother produced is much worse than previous craft have ever caused, when landing. Yet we are on the brink of very much larger craft and engines, and much greater numbers of craft landing, departing, and running-up. We have very little control over the fuel foreign airlines use. Technical references on the subject are somewhat complacent, but do clearly reveal that there is a problem already, and that this could become serious. The design battle is certainly not completely won as far as jet-engine pollution is concerned, and not even tackled yet for the giant engines now being designed. The pollution work on engines seems to concentrate on steady states, whereas much of the excess carbon or unburnt kerosene emitted seems to appear during times of aircraft acceleration and deceleration. I have handed you too a list, sir, of references which seem to indicate that there *is* a potential problem, and that there is no guarantee that enough effort will be devoted to the problem, here or elsewhere. One thing does seem to be clear, and that is that jettisoning of fuel is rare, and carried out on such long paths and heights that kerosene does not reach the ground. I have spoken by phone to the Medical Officer of Health's department in the Borough of Hounslow, where I was told that kerosene smells occur for a mile or so from the perimeter down the prevailing wind on perhaps 40–50 days a year. It was not claimed that this was more than unpleasant, nor that it was continuous. But again, Wing would be much larger, with far more flights, and very very much larger planes with still undesigned engines and many kinds of fuels. At the least it seems probable that pollution in the areas to the southeast, east and northeast of Wing could approach current urban levels; it might be far worse. We submit, sir, that the Commission should produce long-term forecasts and estimates of the likely burnt and unburnt fuel contaminations which would occur in 1990 in our own and other perimeter communities; estimates which we can all examine and discuss. These estimates could also include the contribution of the very heavy road traffic in the immediate area. The kind of pollution problem we have mentioned seems to build up more in "inversion" weather, and a quick examination of such Met Office figures as were available seemed to show more of this inversion in central England, than occurs on the sea coast.

Finally, we wish to raise the matter of general weather conditions in our area, and local risk—even with automatic landings as stated in our Case sheet. The prospect is disturbing to we communities just under the hills, though accidents to the future 500 and 1,000 seater planes might occur only once in a decade or more. We have spoken to several war-time pilots who flew from Wing and they all state that at this space of time they cannot remember clearly the relative flying conditions, but ex-technical and ground staff still resident in the area think there are periods of unusual mist and low-cloud here. But the figures we have obtained from the Meteorological Office at Bracknell, of which we have handed you a copy, sir, seem very conclusive, and incidentally show how much better a coast site can be.

The 10 square miles of the suggested Cublington airport is covered with a network of definitive footpaths which are becoming increasingly valued in the widespread upsurge of rambling activities, and the need for walkers to escape from even the country roads. The mileage of such paths within the perimeter is 32 (not counting bridleways); and to this must be added an effective loss of 77 miles in a zone extending one mile each side of the port area and 3 miles at each end where the low and noisy flight paths are —i.e.: the area which would become devoid of convenience and walking pleasure at *all* times, and where through route paths would have become dead-ended by the perimeter. It is to be noted that this would be a *total loss*, not balanced by a gain anywhere in Bucks, or indeed in the whole country. The absence of these paths does not only concern the villages which would be wiped out, but also deprives the people of areas a little further away (like our own), of very convenient walking tracks within easy reach but not right on their own doorsteps—a facility which all countryside walkers appreciate.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. M. J. Campbell, the Southern Area officer of The Ramblers' Association who has put in a general statement to the Commission for that body, wishes to be associated with this specific statement as well.

We regard this potential complete loss of 109 miles of paths as a most serious matter.

References

"A survey of Air Pollution in Communities Around the John F. Kennedy International Airport, September–October, 1964." Melvin Nolan, Technical Assistance Branch, Division of Air Pollution, U.S. Department of Health, Education and Welfare, Public Health Service. Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio. June 1966. (54 pages + 23 appendix.)

Air Pollution Emissions from Jet Engines. (Lozano, Melvin and Hochheiser). *Journal of the Air Pollution Control Association*, p. 392–394, 1968 (could be 1967, not marked on the reprint).

"Air Pollution Emissions from Jet Aircraft Operating in the New York Metropolitan Area". (Hochheiser and Lozano). Society of Automotive Engineers' Meeting, held on April 29th–May 2nd, 1968. 7 page paper, reference 680339.

Smoke Reduction in Jet Engines. (Faitani—Pratt and Whitney Company). *Esso Air World*, Vol. 21, No. 2, Sept./Oct. 1968, p. 34–41. Also see p. 47 same issue.

The Control of Atmospheric Pollution from Gas-Turbine Engines. (Durrant—Rolls Royce Company). *Esso Air World*, Vol. 21, No. 3, Nov./Dec. 1968, p. 65–70 Published from Esso Publications, Ferguson House, Marylebone Road, N.W.1.)

"Air Pollution from Commercial Jet Aircraft in Los Angeles County". (George & Bernard *Air Pollution Control of Los Angeles County*).

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Meteorological Office

Meteorological Office
London Road
Bracknell
Berkshire

3rd July 1969

The Secretary
Beacon Villages Society
Mrs. E. Banfield
Green Lane
Ivinghoe
Leighton Buzzard
Beds.

Dear Madam,

Reference your letter dated the 2nd July, the following table is the nearest we can get to your suggested table:

	Percentage of Time visibility below 1100 yards		*Percentage of Time visibility below 220 yards*		*Percentage of time ⅝ or more of cloud with cloud base below 500 ft*	
	Wing	Shoeburyness	Wing	Shoeburyness	Wing	Shoeburyness
Winter (Oct-Mar)	15·6	5·6	5·5	2·0	10·9	4·2
Summer (Apr–Sep)	2·8	1·3	0·7	0·5	3·8	1·6

It must be noted that the above table is based on records for Wing for the period August 1942 to July 1945 whereas the data for Shoeburyness cover the 10 years 1959 to 1968. Moreover the observations summarised for Shoeburyness are limited to the hours 0600 to 2100 whilst at Wing the full 24 hours were covered. Ideally comparison should be based on observations for the same period, of ten years or more, at the 2 sites but the above table is considered to give a reasonable indication of the relative frequencies of fog and low cloud.

A charge of £3 is made for the extraction of this information.

Yours faithfully,
J. Briggs

Evidence of Mr. W. H. Finch

As a Technical Director and Divisional Manager of Isotope Developments, which was a company in the Elliott Automation Group and now of Nuclear Enterprises Ltd. I have travelled frequently by air in the last 16 years.

I have been asked to give a definite account of any instance where I have encountered bad air pollution at the larger airports.

One such occasion was at Los Angeles International Airport in October 1966 on a day when the well-known smog due to car exhausts was minimal and, being a Sunday, industrial pollution was also low.

The weather was fine, there was virtually no wind and the temperature was around 80° F.

The whole airport was bathed in the odour of burnt aircraft fuel the smell was most unpleasant and the concentration was sufficient to cause stinging and burning in the eyes.

Take-off was delayed for nearly two hours because of the poor take-off visibility and when eventually airborne we saw that the smog was confined to the airport and to immediate surroundings.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of New College, Oxford*

SUBMITTED BY MR. C. B. HARWOOD

I am a Fellow of the Chartered Land Agents Society practising mainly as Land Agent to New College, Oxford.

1. New College is an educational institution enjoying charitable status and owning as part of its endowment some 1,254 acres of agricultural land near the villages of Weedon and Hardwick and also at Fleet Marston.

2. During the past ten years the College has considerably improved its property in the area, having spent some £50,000 of its own money on farm dwellings, buildings and land drainage works. Grants from public funds amounting to about £21,000 have been made in addition to the College's own expenditure.

3. Rents on the college farms in the area have risen from £3,986 in 1959 to £8,636 in 1969 and now produce about one seventh of the College's total income from agricultural land. At the same time the cost of repairs has been considerably reduced.

4. These figures give an indication of the confidence of the College, and also of those responsible for authorising contributions from public funds on behalf of successive governments, in the capacity of these farms for worthwhile production.

5. The rising figures of rent indicate that this confidence has not been misplaced. In the ordinary course of events I should expect the income from the estate to increase further and to invest further capital as the opportunity for productive improvements occurred.

6. The siting of a large commercial airport at or near Cublington would have a depreciatory effect upon the property of the College and would act as a disincentive to further capital investment.

7. The main depreciating factor would be noise. Even at less than the highest intensity this would disincline people to live and work in the neighbourhood when comparable accommodation and employment are readily available elsewhere.

At the end of existing farm tenancies it could become difficult to replace the existing tenants of ability and resource with others of equal calibre. Farming and production standards would decline and College investment would become insecure and diminish.

A reduction in College income from its endowment, and indeed a failure to increase it at least as fast as inflation, would lead to a burden on public funds in the form of increased education grants paid by local authorities over a wide area if the same standards of academic excellence as at present were to be maintained.

8. Similar results could be expected to follow the establishment of another large employer of labour in the area, indeed the farms in the area already suffer from competition by other and better paid industries round Aylesbury. The farms at Weedon and Hardwick would lie in the worst possible position from this point of view.

9. The College is also concerned about the possible effects on land drainage resulting from a large increase in the volume and speed of run-off to the river Thame or its tributaries.

10. The situation of some of the College land makes it almost inevitable that if an airport were established at Cublington the freehold would suffer erosion to provide ancillary services in the shape of water and electricity supplies, roads, landing lights, signalling apparatus etc.

11. For the reasons which I have given the College is utterly opposed to the establishment of an airport in this area and urges the Commission to reject the proposed site as unsuitable.

* See also p. 1672.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Leighton Buzzard Arts Club*

The Leighton Buzzard Arts Club is an organisation which provides cultural activities in Leighton Buzzard. It was founded in 1946 and has four sections, a Music Club, a Drama Group, an Art Section and a Photographic Club. Their activities include concerts, dramatic productions, art and photographic exhibitions, and the programme extends from September to July each year. There are two or three events in any one year.

The Music Club arranges seven concerts during the season, given by professional artists of international reputation. The Club is a member of the National Federation of Music Societies and its work is assisted by funds from the Arts Council.

The Drama Group produces three full-length plays each season and each play is performed on four nights. Evenings of one-act plays are also performed, with the object of encouraging new artists and producers. At least two evenings every week are devoted to rehearsals of dramatic productions.

The Art Section holds four exhibitions each year, including two exhibitions of children's art, and an active Art Group meets every week of the season.

The Photographic Club meets fortnightly and holds an exhibition of the year's work at the end of the season.

The Arts Club has a membership of approximately 250. Audiences of 200 persons are usual at dramatic productions and at concerts the audiences number 100. Special concerts such as those given by symphony orchestras, can command audiences of 300–350 persons.

If the Third London Airport were to be sited at Cublington all these activities are likely to be seriously affected by aircraft noise, and the effects of this nuisance on concerts and plays will, in all probability, prove devastating. Since Leighton Buzzard has no professional theatre, the Arts Club provides the only opportunity available to the townspeople and people from surrounding villages, for the enjoyment of "live" performances.

The Management Committee of the Arts Club has agreed unanimously to register its strong opposition to the siting of the Third London Airport at Cublington, so near to an important centre of population.

Attached is a copy of the Club brochure for the season 1968–69,† which gives an idea of the activities and standing of the Arts Club.

---

* See also p. 1672.

† Not reproduced. Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 5

St. Michael's Church Preservation Committee

Bucks Federation of Women's Institutes

Mrs. S. L. Sargeant

Weedon Women's Institute

Sq. Ldr. B. Lock
(*Bucks Association of Parish Councils*)

Mrs. D. R. Rogers

Mr. E. G. R. Taylor

Aylesbury Industrial Group

Mid Bucks Liberal Association

Sir John Rothenstein
Dr. D. M. Allen
Mr. B. Bateman
Capt. D. J. Bellingham
Mr. D. Brown
Mrs. E. Brunner
Mr. A. C. Chandler
Mr. R. Crabbe
Mr. A. C. Lovejoy
Mr. D. Midwinter
Mr. J. E. Midwinter
Mrs. P. M. Murphy
Dr. B. W. A. Ricketson
Mrs. B. Taylor

Mr. E. J. Payne
Mrs. C. Walsh
(*Cublington Airport Supporters Committee*)

Mr. R. Bramwell

Mr. J. M. Cornwall

Stewkley Local Labour Party

Witnesses were examined on this evidence on Day Five, Monday 21st July 1969, see pages 1677-1714

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of St. Michael's Church Preservation Committee Stewkley, Buckinghamshire*

In March of this year after the short list of proposed sites for the Third London Airport was published by the Roskill Commission, a committee was founded in Stewkley to help protect from demolition the Norman Church of St. Michael and All Angels. The Parochial Church Council gave the Committee their blessing and endowed it with £40 for the work they proposed to carry out. The public have since contributed generously to this fund.

The Committee consists of:

Sir Gilbert Inglefield, G.B.E., T.D., A.R.I.B.A., F.R.S.A., M.A. Sir Gilbert is a member of the Royal Fine Art Commission, a Trustee of the British Museum and was Lord Mayor of London in 1967–68. He lives at Egginton House, Leighton Buzzard, Bedfordshire.

J. E. Moore, Esq., F.R.I.B.A., Principal lecturer School of Architecture, Northern Polytechnic, of 10 Litchfield Way, Hampstead Garden Suburb, London N.W.11.

David E. Stubbs, Esq., N.D.D., M.S.I.A., Industrial Designer, of Maytree Cottage, Stewkley.

Helen Stubbs, Dip.A.D.(Hons.) F.R.S.A., Textile Designer, of Maytree Cottage, Stewkley.

The aim of the Committee is to inform architects, historians, amenity societies and the public at large of the threat to this perfect Norman building.

The support we have received is shown in the accompanying documents. The original letters, photostat copies of which are given here, are available for inspection on request.

Some additional evidence will be given at the local hearing.

---

1. Description of the Norman church at Stewkley

The Norman Church of St. Michael and All Angels at Stewkley in Buckinghamshire has been described in "Magna Britannia" by Lysons as being "among the most ancient and most perfect Norman structures in England". The building is exceptionally interesting as a complete example of a 12th Century church and it contains very good carving and moulding of that date.

It was built under the direction of the canons of Kenilworth between 1140–1150 and 1170 was given by Geoffrey de Clinton, Chamberlain to King Henry II, to the Priory of Kenilworth. It was then in the Diocese of Lincoln. The Diocese of Oxford was formed by Henry VIII upon the dissolution of the Monasteries. The county of Buckingham continued in the Diocese of Lincoln until 1845, when it was added to the Diocese of Oxford.

The plan of the church is one of the three fundamental designs used in the 12th Century, a three celled church with an axial tower. It is built of limestone rubble mixed with local iron limestone. The west front is particularly rich Norman work. The central doorway has two shafts at either side, the inner ones with spiral ornament running up to richly carved capitals. The main doorway is flanked by two blind arches, each carved with chevron and with birds and animals on the columns. The great arch has a singular tympanum, which is unusual if not unique. It has a long central keystone, with a small semi-circular canted arch on each side of it. The face of the tympanum, above the arches is carved with winged monsters and foliage. The centre arch forms a doorway and is deeply recessed to take the place of a porch, and is seldom found in Norman buildings. The North doorway is enriched with chevron mouldings and pillars with sculptured capitals. Above the chevron is an embattled moulding, which is very uncommon. On the jamb of the South doorway are three sundials.

The square tower is richly ornamented with blind arcading, which is decorated with chevron moulding. Under the parapet is a string course with grotesque gargoyles at the angles, and between them on each wall a gargoyle representing one of the symbols of the Evangelists, a lion, an eagle, a man and an ox.

Round the whole of the exterior and interior runs a string course of intricate moulding and every window is bordered with chevrons. The amount of carving is almost bewildering in its opulence and variety.

Inside the two great arches supporting the tower are richly ornamented with carving. Each arch is of two depths, the outer one with chevron, the inner one carved with an astonishing variety of beakheads, cats' heads and forty other decorative devices. The chancel has a quadripartite vault, i.e. one divided into four cells by intersecting diagonal ribs. The windows throughout the church are uniform, but those in the choir and sanctuary are enriched with a double row of chevron moulding, while those in the Nave have only a single chevron. The font is Norman.

St. Michael's is compared with the church of St. Mary at Iffley in Oxfordshire but the latter was altered considerably from the original Norman design.

Stewkley church is a remarkable example of unspoilt Norman parochial church architecture and it

* See also p. 1677.

Printed image digitised by the University of Southampton Library Digitisation Unit

stands today almost as the Normans built it over 800 years ago. Except for a modern porch and vestry (not attached to the church), and one or two small alterations inside, the church has been untouched.

This village church is probably the finest example of Norman Parish church architecture in the country. It must be retained.

---

2. Address by Sir Gilbert Inglefield on behalf of the Preservation Committee

How many and diverse issues are at stake in this Inquiry! No doubt the assessors have already investigated the incalculable damage that may be done to a farming community, the immense unhappiness that could be inflicted on innocent country folk in the immediate area, and the acute discomfort that may come to those in nearby villages and towns.

It would seem that such disasters can engulf a liberty-loving people at the whim of authority. One could have believed it possible in the dark days of the Industrial Revolution in England. But in the twentieth century, when we should have progresed along the paths of civilisation, it seems almost unbelievable that against the will of a vast majority, a new, irrational, sordid and ugly way of life should be able to be imposed. That those dark Satanic Mills which the poet, William Blake, so feared, could be realised on this green and pleasant land is a most disturbing realization. Yet it may happen. The home of the Buckinghamshire and the Bedfordshire man can no longer be his castle: the paternal acres that he has, for generations, ploughed can no longer be his own. His protests may fall on deaf ears, as they have in countries, the lives of which have been, as we know so well to our cost, regimented under Fascist, Nazi, dictatorial organisations. Is England to follow suit?

I have no doubt that these points have been put to this Inquiry, with, I trust, full emphasis.

It may well have been suggested that man is a transitory creature: that in a few generations, few will remember the countryside as it used to be:

"The woods decay, the woods decay and fall,
The vapours weep their burthen to the ground,
Man comes and tills the field and lies beneath,
And after many a summer dies the swan."

Yet, in spite of Tennyson's gloomy observations, trees will grow again and the grass re-appear, and new generations of men be born. Nature is replaceable.

But may I put another aspect? Great works of art are irreplaceable. "A thing of beauty is a joy for ever, its loveliness increases." Let it never pass into nothingness.

Perhaps, as never before, have we been so conscious of our native works of art—of all works of art in our country. With better education, with a more liberal outlook, which did not obtain last century, we appreciate and we cherish our artistic heritage. "Ars longa, vita brevis"—life is short but art is immortal. Thus we have over the last fifty years inaugurated societies, formed associations and spent many millions of pounds to conserve what we really value. Perhaps you may have seen Titian's great picture "Bacchus and Ariadne" now restored to its original beauty in the National Gallery? The restoration has taken a long time, enormous labour and considerable expense. Why was it done? Because this is a great work of art that is part of man's heritage. And it is right it should be so evaluated. Well over a million pounds is being raised to preserve York Minster from disaster. Even in the midst of a Communist state, no roubles have been spared in restoring—and in restoring magnificently —every pinnacle, spire, church and building in the lovely City of Leningrad which I recently visited. We must not stray into speculations of political ideologies but perhaps some of us might have been a little surprised to find so much spent on such splendid bygone treasures in such a materialistic state. Let us accept, with humility, the lesson.

So man has come to a turning point. On the one hand he values more than ever before—perhaps the inhabitants of Renaissance Italy realised it—the real value of things of beauty. They are one of the few life-lines left to which poor struggling mankind can cling, that he may keep contact with a spiritual, an aesthetic element of his existance. They are too the very few lamps left to guide him through this vale of tears.

Where then does conflict arise? It is between the spiritual aspirations of man and his materialistic urges. This is a significant struggle, and here indeed before us now, at this moment of time, is a battlefield.

It may seem to some that the demolition of the little church of St. Michael and All Angels at Stewkley is of little importance. It is, of course, an appalling and dreadful thought that the villages of Stewkley and Cublington may be levelled. Why then concern oneself with one particular building? Why indeed? You see, to demolish this church is to destroy a great work of art and a thing of outstanding beauty. One can argue on three points. The Christian aspect—to demolish a thriving church which, in its hallowed and consecrated acre, has been the centre of worship for over eight hundred years, is a terrible thing. One could say, however, that the Almighty can be satisfactorily worshipped in a tin shed or in the open fields (if any open fields are to remain). Let me not at this stage enter into the realm of Christian ethics although I hold strong personal views. One could stress the sentimental side, that a village church

Printed image digitised by the University of Southampton Library Digitisation Unit

is a greatly loved building and in mediaeval days, the focal point of the life of the community. No: let me argue on the enormity of the crime to destroy a great work of art and a thing of beauty; for, once it has vanished, it can never, never be revived.

Stewkley Church is a very rare example of a small unspoilt Norman Parish Church, constructed in 1150, just prior to the Transitional style of which there are, of course, more examples in England. It has been rightly described as "among the most ancient and most perfect Norman structures in England". There are other larger examples of Norman work—the fine Church of Melbourne in Derbyshire springs to mind—but few retain, as Stewkley does, its pristine state. Here no tiresome but well intentioned hand of the Victorian restorer has been at work. It is a complete, a text book example of perfection, and as a small, tiny untouched twelfth century village ecclesiastical building, I believe it to be unique. For this alone, it must be retained.

It has a wealth of architectural features that are characteristic of the period, the diversity of mouldings and carvings and ornaments that are a source of joy to the connoisseur and a treasure-trove to the archaeologist. Everything is in a state of careful preservation. Since 1961, over £5,000 has been spent—and spent most judiciously—on its maintenance. The fabric is completely unspoilt and what examples of nineteenth century furnishings to be found there, are moveable and insignificant.

This church is one of the greatest village monuments in the countryside. The masons of that period built sturdily: their work endures. It would, I suggest, be impossible to take down the fabric and re-erect it elsewhere without irreparable damage. And the cost of doing this would incalculable. And who would foot the bill? If this little building vanishes, then something of intrinsic beauty will vanish for ever and future generations will be the poorer. It would be an act of indescribable vandalism which in this age of reason is utterly indefensible.

Must materialism win? Surely not—and where do we go from here? For instance, in the City of London, land for office and business premises is desperately needed. Why not then pull down that outdated structure—so expensive to maintain—the Cathedral of St. Pauls? There are, after all, many other more useful examples of Wren buildings around. Why not build in its place, a vast steel and concrete block of offices that could well be the new premises for that section of the Board of Trade that deals with the future planning of new aerodromes? It would afford spacious and, I am sure, much needed accommodation. London is sorely in need of a landing place, an airport for helicopters. What better central area could be found than that adjacent to the House of Commons on the site of a demolished Westminster Abbey? After all, its statues and tombs and memorials could well be housed in the South Kensington Museum. Such a procedure would be an equally logical sequence of thought. Why should the encumbrance of an antiquated building stand in the way of progress?

Stewkley Church is, on its small scale, as important as the Abbey or St. Paul's. Is man to remain Homo Sapiens, or to become Homo Volitans? Is he to sacrifice the things that are milestones in his path of civilised progress, for creating artificial environments to further his migratory instincts and to gain wealth for himself?

By presenting to you the case for preserving this most important, this unique, this lovely little church, I hope I may kindle one more incandescant faggot to the fire of indignation against the wilful destruction of so much that is beautiful? Let me present the signatures of civilised people who have endeavoured to show their justifiable indignation. Let me show you letters from eminent people sympathetic to our cause. Let their voices be heard—let me suggest, as others have suggested, that to build an aerodrome in this part of the country is utterly wrong and indefensible.

Total number of signatures received in support of the Committee by June 26th 1969,

Letters from architects	42	
Letters from societies and private individuals	54	
Number of signatures in visitors' book: 15th March 1969–23rd June 1969	1,557	
New visitors book (in church) 23rd June–26th June	215	
Signatures from architects	409	
Signatures from others	585	
of these there are: town and civil planners:	68	
designers:	33	+ 12 = 45
Total number of signatures up to June 26th 1969	2,862	

List of those people of acknowledged reputation in the fields of architecture, art history etc, who have written to us in support of our aims,

Sir John Summerson, C.B.E., F.B.A., F.S.A., D.Litt. A.R.I.B.A., Lecturer in History of Architecture, London University, Trustee National Portrait Galley, Curator Sir John Soane's Museum, London.

John Pope-Hennessy Esq., C.B.E., F.B.A., F.S.A., Director and Secretary Victoria and Albert Museum, London.

Professor John G. D. Clark, F.B.A., M.A., Ph.D., Sc.D., Disney Professor of Archaeology, Cambridge University.

Printed image digitised by the University of Southampton Library Digitisation Unit

Professor J. H. Napper, Professor of Architecture, University of Newcastle upon Tyne.

Lord Holford, Professor of Town Planning, Member Historic Buildings Council for England, Royal Fine Art Commission, Life Peer (F.R.I.B.A.).

Sir Gilbert Inglefield, G.B.E., T.D., A.R.I.B.A., M.A., F.R.S.A., Hon.R.B.A., Lord Mayor London 1967–68, Royal Fine Art Commission, Trustee British Museum.

Sir John Rothenstein, C.B.E., Hon. L.L.D., M.A., Ph.D., F.M.A., Director Tate Gallery 1938–64.

Viscount Esher, P.P.R.I.B.A., F.R.I.B.A., M.A., F.I.L.A., Trustee London Museum, Member Royal Fine Art Commission.

Sir John Betjeman, C.B.E., Royal Fine Art Commission.

Sir Eric Fletcher, M.P., F.S.A., Member of the Council and ex-President of the British Archaeological Association, Trustee British Museum, Deputy Speaker House of Commons.

Dr. Roy Strong, F.S.A, Director of the National Portrait Gallery.

Norman Reid, Director since 1964 Tate Gallery.

Sir W. T. Monnington, P.R.A., R.A., Trustee British Museum, President Royal Academy from 1966.

Marquess of Angelsy, President of Friends of Friendless Churches, Royal Fine Art Commission, President National Museum of Wales.

Gwilynn Roberts Esq., Member of Parliament South Bedfordshire.

Geoffrey Thompson Esq., Librarian and Director of Guildhall Library, London.

Connell William Winfall Esq., Assistant Professor Amhurst College, Mass., U.S.A.

Denys Lasdun Esq., C.B.E., F.R.I.B.A., Architect of New National Theatre, Southbank, London.

Dean of Westminster.

Professor Dewi Prys Thomas, Professor of Architecture, University of Wales.

SUPPORTING LETTER FROM
MR. JOHN HOPE-HENNESSY

Thank you for your letter of June 14th. I am greatly distressed by the threat that the Church of St. Michael at Stewkley may be demolished. I have not myself visited this church, but I know it well by reputation, and it is unanimously looked upon as a building of exceptional distinction and importance. I earnestly hope that you will be successful in your campaign to save it from demolition.

SUPPORTING LETTER FROM
SIR JOHN SUMMERSON

Thank your for your letter of 14th June.

The destruction of Stewkely Church should not be contemplated for a moment. A building of this antiquity and distinction should be regarded by planners as if it were a totally indestructible natural feature—a granite mountain in a fathomless lake.

If Stewkley Church were sacrificed to the making of an airport a precendent would have been established which would put all our ancient monuments at risk and grossly injure our reputation as a nation which cares for its past.

SUPPORTING LETTER FROM
PROFESSOR J. H. NAPPER

I write to support the case presented by Stewkley Church Preservation Committee to the Roskill Commission next month.

There must be very few churches of this period which have suffered so little in the past 800 years by way of alterations and additions. Living in an area where Norman building achieved some remarkable achievements (Durham Cathedral) I know how little now remains at the parish church scale which is not mutilated beyond restoration. At Stewkley you have this gem which I sincerely hope will not be demolished for such a temporary thing as an airfield. It is well for us to remember that this county is now seeing the withering of one form of transport after only 100 years. Less than that period may see another change.

If the proposed airport means the destruction of the village, to preserve the church alone would be a sad thing and I assume your evidence will make this clear. The siting of airfields near habitable areas appears to me to be barbarous and modern technology is quite capable of finding a civilised answer if it is challenged effectively.

SUPPORTING LETTER FROM
WOOLWICH & DISTRICT ANTIQUARIAN SOCIETY

The members of this Society are shocked and dismay at the possible destruction of St. Michael and All Angels Church, Stewkley. We read reports of it in the *Daily Telegraph* and in *The Field.*

Printed image digitised by the University of Southampton Library Digitisation Unit

Of course, we recognise the need for progress but regard this as wanton destruction of an irreplaceable part of our national heritage, something for which we are only passing trustees, answerable to our descendants. We are ashamed that people of our generation appear to think that such destruction is necessary.

The Society has about 170 members.

SUPPORTING LETTER FROM
REVD. P. WILKINS

The Parochial Church Council of the Parish of St. Peter, Cassington, Oxfordshire, at their meeting held on the 12th June, 1969, unanimously resolved to support the preservation of the Norman Church of St. Michael, Stewkley, Buckinghamshire, built by Geoffrey de Clinton, Chancellor to King Henry I, who also built the Norman Church of St. Peter, Cassington, on the ground that the destruction of so fine a Church, acknowledged to be an even better example of unspoilt Norman work than the unspoilt Norman Church of St. Peter, would in their opinion be a loss of such magnitude as to counterbalance any advantage in siting London's Third Airport at Cublington.

SUPPORTING LETTER FROM
MR. ADRIAN WATERLOW

With reference to the paragraph on page 18 of the *Daily Telegraph* of June 6th, I have visited from an architectural point of view more than **8,000** old Churches in England and consider Stewkley Church outstanding among them. It would be unthinkable that it should be destroyed for whatever purpose and would be vandalism of the worst kind.

SUPPORTING LETTER FROM
THE ANCIENT MONUMENTS SOCIETY

Thank you for sending the Society the petition about the threat to Stewkley Church if the Third London Airport should be built at Cublington. I am glad to sign the petition on behalf of the Society and in view of the time limit set I send it immediately without attempting to get other signatures. We have already considered this matter in the Society and, I am able to sign officially on behalf of the Society.

SUPPORTING LETTER FROM
THE FRIENDS OF FRIENDLESS CHURCHES

I have signed the petition of Stewkley Church on behalf of this Society.

SUPPORTING LETTER FROM
SIR BASIL SPENCE

Thank you for your letter which I have just read on my return from Geneva.

Actually, I have been approached by other bodies for support for Stewkley Church, which seems a very beautiful one and I think it would be tragic if it were to be destroyed along with other buildings. We have so few buildings left of this date that a it is well worth preserving, in my opinion, if it is at all possible.

In any case, I thought that the Third London Airport was almost certain to be at Foulness which in my opinion would cause the least nuisance and be of the most value, though I understand it would cost more initially.

SUPPORTING LETTER FROM
MR. DENYS LASDUN

Thank you for your letter of 7th June. I have much pleasure in stating to your Preservation Committee my personal support for the preservation of St. Michael's. I have noted with interest that this matter was the subject of favourable comment, so far as your Committee was concerned, in the Architects' Journal recently. I have, in the meantime, contacted Mr. J. M. Richards, Editor of *Architectural Review*, who also supports your case.

SUPPORTING LETTER FROM
PROFESSOR ARTHUR LING

Thank you for your letter of 7th June. I would naturally support any efforts by your Committee, or anyone else, to preserve the church in the village of Stewkley. It is clearly a very fine example of Norman architecture and has been well preserved without mutilation.

It is difficult for me, however, to judge the relative merits of the case for a Third London Airport and that for the preservation of St. Michael's Church. The issues are on an entirely different scale and of a different kind. Nevertheless, I feel that your Committee is quite right in protesting, for it may well be that the accumulation of objections from various bodies on various aspects could outweigh any advantages which the promotoers of a Third London Airport at Cublington might put forward in support of their case. I therefore strongly support your Committee in making known its objection to any proposal for the demolition of St. Michael's Church.

Printed image digitised by the University of Southampton Library Digitisation Unit

SUPPORTING LETTER FROM
MR. FRANK HAWES

Having seen your letter in the A.J., I would like to support your fight to preserve Stewkley Church and the rest of North Bucks. from the incursions of the British Airports Authority.

I notice that you have already had a letter on this letter head from John Fryman so in sorting out the immense stack of correspondence which I trust your letter will produce, perhaps you had better put mine under the heading of ex-Northern Polytechnic Students who remember your acoustics lectures.

I know that even the British Airports Authority Engineers accept that on all counts, except finance, the Foulness site is to be preferred. We must persuade the Government that the loss to the nation of such buildings as Stewkley Church cannot be omitted from their financial considerations simply because it is too vast to be assessed.

SUPPORTING LETTER FROM
SIR ERIC FLETCHER

It is quite true that I have promised to give some evidence to the Roskill Commission about Wing Church.

I am naturally equally concerned about preserving St. Michael's, Stewkley, and have signed and return the petition you have sent me.

SUPPORTING LETTER FROM
MR. JOHN G. FRYMAN

I have just read your letter in the *Architects' Journal* and was very concerned to see the price of progress(?). In your last paragraph you invite support for your preservation appeal and this I unreservedly give, especially in relation to the fine Norman Church.

It must be obvious to everyone, except our misguided lords and masters, that Foulness is the obvious and right site for London Airport unless an alternative can be found even further away. Certainly agricultural land in the northern belt around London, with its historic and economic value, could not possibly be seriously considered except perhaps by a lunatic. I therefore wish you well in your fight to preserve this fine building.

SUPPORTING LETTER FROM
MR. W. KAY-KORZEN EWICZ

I have read your letter in the *A.J.* and I am writing in support of your campaign for the preservation of Stewkley Church.

I know this church well and have taken some photographs of it some time ago—a marvellous piece of Norman architecture which obviously should not be destroyed, whatever the reasons.

SUPPORTING LETTER FROM
MR. DAVID MOIZER

I write to you in support of your letter in the *A.J.* of 23rd April.

I agree with you entirely that a building as unique and irreplaceable as Stewkley Church should not be destroyed, or indeed have its essential environment destroyed if there are other possible solutions to the problem.

Architects normally benefit from development, and we do not generally stand in the way of progress, but I seriously doubt if the present line of development in air travel can properly be construed as progress.

Amenity and other Societies represented

Royal Fine Art Commission
Royal Institute of British Architects
Design and Industries Association
Ancient Monuments Society
Society for the Protection of Ancient Buildings
Historic Churches Trust
New Churches Research Group
Friends of Friendless Churches
Council for the Care of Churches
Royal Society of British Sculptors, Vice President
Royal Society of British Master Glass-Painters
International Society of Christian Artists, UK
Society of Catholick Artists
South Eastern Society of Architects
Sevenoaks Society
The Henley Society
Society of Architectural Historians of Great Britain
The Chiltern Society (1,225 individual members and 125 affiliated bodies)
Scarborough Civic Society
Scarborough Archaeological Society
Bedfordshire Preservation Society
Town Planning Institute
Regency Society of Brighton and Hove
CPRE: Rutland, Scarborough, North Bucks, Craven Yorkshire, Leicestershire branches
National Trust—Worcestershire branch
CPRE: Northamptonshire branch
Woolwich and District Antiquarian Society
Tewkesbury Civic Society
Canterbury Society.

Printed image digitised by the University of Southampton Library Digitisation Unit

Support received from various groups, individuals, universities, architects etc,

54 letters of support from private individuals
42 letters of support from architects
1,557 signatures in Church visitors' book (March 15th–June 23rd 1969)
University of Bristol, University of Wales, University of Manchester } Schools of Architecture
Libraries Committee—Kensington and Chelsea
Principal Chelsea School of Art and Staff
Art Critic of the 'Guardian'
County Architects Department, Lincoln
County Architects Department, Chester
Architectural Association
Bromley Design Group
Principal and Staff Hornsey College of Art
Buckinghamshire Co. Council Architects Offices
City Architects Office, Norwich
Northampton School of Art
University of Sheffield, Dept. of Architecture
Robert Mathew, Johnson Marshall and Partners, Architects
Kitson and Partners, Architects
Tewkesbury Borough Council
Vicar Tewkesbury Abbey
University of Surrey
British Medical Association
Head of School of Architecture, Hull
Surrey County Council, Architects Department
School of Architecture, Oxford
Williamson, Faulkner, Brown and Partners, Architects
Leonard Massasseh and Partners, Architects
Denys Lasdun and Partners, Architects
Architects Office, Lincoln Co. Council
Architects Office, Leicester Co. Council
County Architects Dept. Cheshire
London and Upjohn, Industrial Designers
David Du R. Aberdeen, Chartered Architect
Technical Editors: *Architectural Press, Architects' Journal*
University of Hull
Manchester College of Art and Design
Camberwell College of Art and Crafts
University of Newcastle, Architecture Dept.
Dept. of Architecture and Civic Planning, University of Nottingham
Arthur Ling and Associates, University of Nottingham
City of Leicester Polytechnic
Regional College of Art, Kingston-upon-Hull
Wyvern Design Group, Devizes
County Architects Department, Preston
Borough Architect, Ealing.

Countries represented in the Church Visitors' Book

Spain
Wales
Australia
Canada
Virginia, USA
Puerto Rico, USA
South Africa
Germany
Russia
Guernsey
France
Wisconsin, USA
Netherlands
Denmark
Scotland
Czechoslovakia.

Counties of Britain represented in Church Visitors' Book

Buckinghamshire
Bedfordshire
Berkshire
Cambridgeshire
Cheshire
Devon
Dorset
Derbyshire
Middlesex
London
Northumberland
Glamorgan
Anglesy
Hertfordshire
Staffordshire
Suffolk
Kent
Shropshire
Surrey
Warwickshire
Northamptonshire
Oxfordshire
Durham
Yorkshire
Lincolnshire
Pembrokeshire
Wiltshire
Herefordshire
Westmorland
Lancashire

Typical comments from Church Visitors' Book

"Anyone who might destroy this will deserve the contempt of future generations."

"Churches will stand long after airports are obsolete."

"Please do not destroy a treasure that can never be replaced."

"We pray our heritage will be preserved."

"This church belongs to the people in the past and the people in the future and is not for this generation to destroy."

"It would be a crime against civilisation to destroy this church."

"This is not only the most perfect small Norman Church in the County, but in the whole of the Country. I for one am prepared to fight for its preservation in anyway that is open to me."

"No-one but a soulless degenerate whose only God is the almighty dollar could contemplate the destruction of this important and lovely building. It is known to every student of architecture and mentioned in every book on famous parish churches."

"Leave it (the church) and us in peace."

"Let those who touch such a building be judged."

"It is inconceivable that such sacrilege could even be considered in our country."

"What the Normans have built the vandals now seek to destroy."

"To demolish this church would be an act of vandalism by a corrupt, treacherous and wretchedly

Printed image digitised by the University of Southampton Library Digitisation Unit

incapable Government. Must everything be destroyed by incompetance?"

"We cannot afford *this* price for *any* airport."

"As a town planner, to destroy villages, village life, and superb pieces of architecture, including this Norman Church, just for the convenience of a few economists' short sighted reasons, can only exemplify the poor state of the country's present day standards when the alternative is so obvious."

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bucks Federation of Women's Institutes*

The National Federation of Women's Institutes is a body of countrywomen, formed to "improve and develop conditions of rural life".

There are Womens' Institutes in 187 villages in Bucks. Membership is 9,757. Officers of the Federation are as follows:

County President:	Mrs. Argent
County Chairman:	The Lady Burnham
Vice-Chairmen:	Mrs. Dewick, Mrs. Thirlway, Mrs. Williams
Hon. Treasurer:	Mrs. Geeves.

Members are all country women, most of them are housewives and their ages range from 17 years old to any age.

The activities of the individual Institutes are bound up in the objects of the Federation and these would cease to exist over the entire area covered by the proposed airport and the resulting urbanisation.

The Bucks Federation of Womens' Institutes therefore would like to put before the Roskill Commission the following evidence to support the protests against the Third London Airport being sited at Wing/Cublington area. We are approaching this problem entirely from the point of view of loss of amenity to homes and families, of people who are living in rural areas at present, and whose way of life will be entirely changed.

From information we have received we understand that Cublington will be completely wiped out, and that part of Wing will also be destroyed. We feel it unnecessary to labour the distress that this will cause the inhabitants of these villages. Other villages immediately affected will be Stewkley, Whitchurch Wingrave, Weedon. This represents 275 members and their families.

We have collected evidence from the following Institutes who are sited within 10 miles of London Airport, Heathrow: Taplow, Eton Wick and Boveney, Wraysbury, Farnham Royal, Stoke Poges and Wexham.

1. **Noise**

(a) *General.* 24 Institutes representing 1,689 members and their families have submitted evidence to show that the noise from London Airport has affected their daily lives. They state that it is frequently impossible to hear the radio, television, normal conversation and telephone conversations when aircraft are flying overhead, whether in the home or in the garden.

(b) *Schools.* 3 Institutes representing 282 members and their families: It has been found that lessons in schools have had to be halted while aircraft are flying overhead and school children both at school and at home working at homework, have lost concentration owing to the interruption.

2. **Vibration**

2 Institutes representing 150 members and their families as well as 2 individual members have stated that serious damage has been caused to homes near the runway—cracked ceilings, damage to walls etc.

We have had letters from the following Institutes, who are within 10 miles radius of the proposed new airport, who believe that their way of life will be vitally affected by the siting of the Third London Airport at Wing (Cublington): Bletchley, Buckingham, Steeple Claydon, Grendon Underwood, Nether Winchendon and Chearsley, Cheddington, Dinton, Ford, Haddenham, Weedon, Wendover, Weston Turville, Dagnall, Ivinghoe and Pitstone, Edlesborough, Mentmore, Wingrave, Whitchurch, Cublington, Wing, Stewkley, Swanbourne, Stoke Hammond, Mursley, Drayton Parslow, Little Horwood, Maids Moreton. These Institutes represent 1,214 members and their famlies.

Noise

All the above Institutes are concerned about the extensive noise affecting their lives and health and the effect on the children at schools within this area. Much concern is also expressed about the noise affecting patients in hospitals in Aylesbury, Stone and Stoke Mandeville.

Schools

We understand that certain schools will be closed, in particular, a Boys Preparatory School at Swanbourne and a Secondary Modern School at Wing. Great difficulty will be found within reasonable distance, for educating children who are at present at these schools.

Traffic

Other Institutes in Buckinghamshire, as well as those specifically listed above, are distressed at the possibility of vast roads being built, and the subsequent danger and inconvenience to their rural way of life.

In conclusion, we would like to point out that the siting of a Third London Airport in this entirely rural area, will inevitably result in the total change in the way of life of many hundreds of families. We are primarily concerned as a rural organisation with preserving the rural way of life which we feel is of

* See also p. 1679.

Printed image digitised by the University of Southampton Library Digitisation Unit

great value and part of the heritage of Great Britain. South Buckinghamshire has already been very much built up, and if a great part of mid-Bucks and north Bucks becomes urbanised with a new airport and the proposed New Town of Milton Keynes, there will be little countryside left in Buckinghamshire.

We would like to state that we have, of course, letters from Institutes substantiating all the information given, should these be required by the Commission—in all 63 Institutes representing 2,908 members. Much information we have received, we have not included in this summary, as we feel that the points raised will be ventilated by other organisations such as the CPRE, the NFU, and WARA.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Drayton Parslow Women's Institute, and Drayton Parslow Airport Committee

SUBMITTED BY MRS. S. L. SARJEANT*

1. By a resolution of the Drayton Parslow Airport Committee passed the 19th May 1969 it was resolved that I should apply for leave to appear on behalf of the Committee at the Stage II hearing in Aylesbury on the 14th July 1969.

2. By a resolution of the 319th meeting of the Drayton Parslow Branch of the Womens' Institute duly convened and held on the 21st May 1969 it was resolved that I should apply for leave to appear on behalf of the Drayton Parslow Branch of the Womens' Institute at the Stage II hearings in Aylesbury on the 14th July 1969.

3. Having regard to my age (31) and sex it was subsequently agreed with the Chairman of the Drayton Parslow Parish Council that in my evidence I should attempt to deal in somewhat greater detail than has been possible in the statement of the Drayton Parslow Parish Council, with the following aspects of village life and the probable impact of the Third London Airport upon them if sited at Cublington (Wing):

(1) Adults with less than 10 years residence
(2) Children
(3) Womens' Institute
(4) Recreational facilities

Section 1: Adults with less than ten years residence

Thirty-five of the 132 householders in the village, have lived here for less than ten years. This figure can be sub-divided as follows:

22 house owners
7 Council tenants
6 tenants of private landlords

(it will be recalled that the overall total of owner occupied houses in the village is 58—see the statement of the Drayton Parslow Parish Council.)†

Four of these householders are old-age pensioners and with the exception of one, who moved here to be near her daughter who is married to a farmer in the village, the remaining three specifically chose this village for its peace and quiet and the peace and quiet of the immediate surrounding area, the availability of suitable property which in one case afforded scope for improvement, the community life in the village and the delightful countryside of North Bucks.

There has been a sharp increase in the number of young children during the last ten years and of the 35 householders in this bracket 15 have at least one child under the age of five. See also the increase in primary school numbers over the last five years from 18 in 1965 to 36 in June 1969.

These younger families moved to the area for a number of reasons:

1. Peace and quiet of the immediate and surrounding countryside.
2. The availability of property which offered better value for money both in terms of bricks and mortar and ground and which in many cases gave scope for improvement.
3. Their children's health, and the concept of rearing them in what is still real country surroundings.
4. Village school with excellent reputation.
5. Electrification of the railway and access to the M1 motorway making for easy commuting.

Section 2: Children

We appreciate that a time comes in any child's life when it must travel daily to school, but we think that this should not be before the age of 11.

The children here give their mothers great comfort when their voices are heard in the playground and the very young children like to know their mothers are "down the road". If a child is injured or suddenly becomes ill it is reassuring to know that it can be brought home immediately.

At the present time any four year old may attend the village school on Friday afternoons prior to full attendance at four and a half. But this would not be possible if the children had to join a larger school.

We consider that the siting of the Third London Airport at Wing would entail inevitably the closure of the village school, which is of an age which, in our opinion, could not be adequately sound-proofed. It must follow that the very advantages which we consider uppermost in the continued existence of the village school would disappear.

The resultant interruption of schooling would cause unnecessary hardship for children at the beginning and in the middle of their educational life in the primary school.

We think that the provision of transport for young children daily to quiet areas a considerable distance away would waste an undue amount of the children's leisure time and add an unjustifiable burden on the local rates to pay for their travelling costs.

---

* See also p. 1679.
† p. 1403

Printed image digitised by the University of Southampton Library Digitisation Unit

Section 3: Womens' Institute

The local branch of the Womens' Institute, founded in 1939 has a membership of 32. Two of these are founder members and recently a number of younger members have joined which has reduced the average age to 40–45 years from over 50. The Womens' Institute play a vital part in village life and at every function and activity members are to be found working and organising.

We do not think that with the airport in such close proximity village life in Drayton Parslow could continue as we know it.

Section 4: Recreational facilities

Village Fetes were held in 1967 and 1968 and another is planned for 1969. Over £200 has already been raised to equip the children's playground. Last year £400 was paid out and this amount was made available with the aid of Educational Authority, National Playing Field Association, and other grants added to our own contribution.

We consider that this money, for which no compensation could be paid, would have been completely wasted.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Weedon Women's Institute*

The Committee and members of Weedon Women's Institute are writing to express their consternation and horror, from a woman's point of view, at the possibility of the siting of the Third London Airport at Wing.

We understand the new airport would probably cover an area 4 to 6 times the size of Heathrow, with the noise increased proportionately. Owing to the prevailing winds Weedon would be in the direct line of take-off, with aircraft roaring over us at a very low altitude at 2-minute intervals day and night all the year round.

We would be in the critical area of disturbance which would cause very serious health hazards to the inhabitants from both noise and kerosene fumes. Jumbo jets, cargo planes and the Concorde would add enormously to the disturbance.

The Aylesbury area has five hospitals, including a large mental hospital, and Stoke Mandeville, with its world-famous Paraplegic Unit.

We would also like to draw attention to the following points:

1. With vast areas of rich agricultural land being absorbed, food production would be lost with possible rise in prices.
2. With aircraft constantly roaring so low overhead, doors and windows would have to be permanently closed summer and winter.
3. Smuts from kerosene fall-out would affect not only the vegetation, but would prevent children and babies from being put into gardens; furthermore washing could not be dried outdoors.
4. Our village school would be in the line of critical noise.
5. The quiet rural life of this area as it now exists would be completely destroyed. Because of the present peaceful environment a large number of people, many of whom are middle-aged or retired, have invested money in property which would probably suffer a substantial decline in value.

We fought for freedom, now we must fight to retain our countryside and our heritage.

---

* See also p. 1679.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Squadron Leader B. Lock*

I am the Chairman of the County of Buckingham Association of Parish Councils, past Chairman of the Wycombe Rural District Council and I have resided and have been acquainted with Bucks for 20 years.

I am fully acquainted with the make-up and layout of the County and the trades and industries carried on in the various towns and rural districts.

I have read the publication issued by the Commission on the Third London Airport,† which has appeared to limit itself to the somewhat narrow fields of airport placement, lines of communication, disturbance to population and amenities in the various Noise and Number Index contours of the flight path, and nowhere appears to have considered the impact of the proposed international airport on the County as a whole.

Before the last World War, Slough was a town of general industry, which had grown up round the First World War Government disposal depot, now known as the Slough Estates, which, in the 1930s absorbed a major degree of unemployed labour from the distressed areas of Wales and the North.

Both during and after the Second World War Slough expanded fast industrially, and has now become a red labour area insofar as the Ministry of Labour is concerned, and is experiencing a labour shortage which, in turn, leads to high wage rates and to the bringing into Slough by means of bus and other transport of labour from outlying areas, even as far as High Wycombe. Present figures supplied by the Ministry of Labour for Slough and District show 1,670 unfilled vacancies with an unemployment figure of 926.

High Wycombe before the First World War was mainly a furniture industry town, with 75 per cent of the population engaged in the furniture industry.

During the Second World War High Wycombe and District became an Industrial Dispersal Centre from London and now has a wide diversification of industry spread over some 460 factories and has reduced the percentage of the furniture industry to a percentage of 16 per cent, the remaining 84 per cent being light industry of varying descriptions.

High Wycombe is a red labour area which has suffered a labour shortage since the end of the Second World War, which has led to high wage rates, and this position still prevails.

Present figures supplied by the Ministry of Labour for High Wycombe and District show 1,047 unfilled vacancies with an unemployment figure of 517.

As a result of the industrial growth of Slough and High Wycombe, Aylesbury, after the Second World War, started to expand industrially and housed industry which was unable to find space or labour in the Slough or High Wycombe areas.

As a result of this, Aylesbury changed from a County agricultural town to a town of agriculture and industry, with rising wage rates and a scarcity of labour.

Present figures supplied by the Ministry of Labour for Aylesbury show 670 unfilled vacancies with an unemployment figure of 237.

Dealing next with Bletchley, this town, after the Second World War, commenced a pattern of industrial expansion similar to that of Aylesbury, and developed a light Industrial Estate which is now also suffering from a shortage of labour.

Present figures supplied by the Ministry of Labour show 362 unfilled vacancies, with an unemployment figure of 116.

With the advent of the Milton Keynes project, one factor which disturbed the industrialists of all four towns was whether the development of this town would attract a flow of labour from Slough, High Wycombe, Aylesbury and Bletchley, creating a further labour shortage and inflationary wage rates, doing damage both to the domestic side of industry and to the export trade.

These doubts were dispelled by the information that Milton Keynes was going to become an over-spill area for London housing on a long term project basis and would be self-contained from a labour point of view.

In between Aylesbury and Milton Keynes we are now faced with an international airport project, taking up some 7,500 acres of rural and agricultural land, with a substantial displacement of local population and a more substantial damage to local amenities over a wide area through noise, the building of national lines of communication and the building of residential facilities for a population of some 65,000 employees and their supporting families.

This means a spread of urbanisation across the County roughly from Slough to Milton Keynes.

From a National Planning point of view, the site of the Third London Airport would destroy the vulnerable balance which has so carefully been built up by the Bucks County Council since the last World War on the cornerstone of the Greater London Plan projected by Professor Abercrombie, which recommended the prevention of the further spread of urbanisation from the South to the North

* See also p. 1682.

† *Site Information Stage II Local Hearings. 3. Cublington.* (HMSO; 6s.). Reproduced at p. 1001.

Printed image digitised by the University of Southampton Library Digitisation Unit

of the County and which included the concept of the formation and preservation of the Green Belt.

Speaking on behalf of the County of Buckingham Association of Parish Councils, they are whole heartedly opposed to the establishment of an international airport at Cublington (Wing) as suggested in the publication issued by the Commission of the Third London Airport but not only for the reasons I have previously mentioned of the imbalance of labour, the inflation of wage rates, the disturbance of industrial production and damage to amenities and the public interest in the whole of the County, but also to the destruction of the North Bucks agricultural industry, which has always been regarded as a defence industry and a national consumer industry for the saving of imports and also has been regarded as the one remaining unspoilt rural sector of British heritage in the whole of the County of Buckingham.

It is the view of the Association that the four industrial towns of Slough, High Wycome, Aylesbury, and Bletchley need the continuance of North Bucks not only as a centre for the supply of agricultural and horticultural requirements but also as a natural and delightful recreational centre which is vital for the wellbeing and progress of industry.

It is the view of the Association that to discount the necessity of looking at the County as a whole is completely wrong, impractical and too narrow, and gives rise to lack of both short and long term thinking from a National point of view.

Taking the flight path area and Noise and Number Index contours as a whole, they cover some of the most delightful country towns, villages and hamlets within the Home Counties and certainly within the County of Buckingham, and the residents in these districts have carried on agricultural, horticultural and other pursuits over many centuries.

With the growth and increasing tempo of industry, many people have spent a great deal of money in taking up residence there, as an area in which they can live and refresh themselves from the ever increasing tempo of industry and commerce.

My Association represents 126 out of 200 Parish Councils in Buckinghamshire, a County steeped in British tradition and with a long record of service both in the national and international interest.

Speaking from my experience as a pilot in the Royal Air Force, covering a period of 7½ years and flying in conditions all over the world, I have seen the advance of the aeroplane from a practical point of view, and it is my firm conviction that with the growth in speeds and size of aircraft, on a long term basis, the figures and areas set out in the report will be found to be too conservative, and if an international airport is established at Cublington then the limits set out in the Commission's Report will grow to a much wider basis than is anticipated in the report.

England is the Island Home of a great and densely populated nation, and to establish an international airport in the unspoilt northern rural sector of the County of Buckingham shows, in the opinion of my Association, a narrowness of concept and a lack of maginative forward planning which is wholly against the national interest.

In the opinion of my Association, a coastal placement of the Third London Airport would be very much more in the national interest from a flying point of view both on take off and approach, as providing better facilities for future expansion, as creating less disturbance to commerce and industry, as creating less disturbance to population and local amenities, as being better in all respects for Town Planning purposes and in the Public Interest.

At a General Meeting of my Association held on Saturday, the 21st June 1969, the meeting, after discussing my foregoing evidence and having a debate thereon, passed the following unanimous resolution:

> "That this Association strongly opposes the establishment of the Third London Airport at Cublington (Wing) as suggested in the publication issued by the Commission on the Third London Airport for the reasons set forth in the proof of evidence of their Chairman, Squadron Leader Bertie Lock, which they unanimously confirm and adopt and direct to be forwarded to the said Commission as their objection accordingly."

County of Buckingham Association of Parish Councils

PARISH	RURAL DISTRICT
Ashendon	Aylesbury
Aston Clinton	Aylesbury
Amersham	Amersham
Ashley Green	Amersham
Adstock	Buckingham
Akeley	Buckingham
Bierton-with-Broughton	Aylesbury
Buckland	Aylesbury
Beachampton	Buckingham
Burnham	Eton
Bradwell	Newport Pagnell
Bow Brickhill	Newport Pagnell
Bledlow-cum-Saunderton	Wycombe
Bradenham	Wycombe
Chesham Bois	Amersham
Coleshill	Amersham
Chartridge	Amersham
Chenies	Amersham
Cholesbury-cum-St. Leonards	Amersham
Chalfont St. Peter	Amersham
Chalfont St. Giles	Amersham
Chearsley	Aylesbury
Chilton	Aylesbury
Cuddington	Aylesbury
Castlethorpe	Newport Pagnell
Cheddington	Wing
Cublington	Wing
Chepping Wycombe	Wycombe
Dinton-with-Ford & Upton	Aylesbury
Drayton Beauchamp	Aylesbury
Denham	Eton
Datchet	Eton
Dorney	Eton
Drayton Parslow	Winslow
Emberton	Newport Pagnell

Printed image digitised by the University of Southampton Library Digitisation Unit

Edlesborough	Wing	Newton Longville	Winslow
East Claydon	Winslow	North Marston	Winslow
Ellesborough	Wycombe	Oakley	Aylesbury
Farnham Royal	Eton	Oving	Aylesbury
Fulmer	Eton	Olney	Newport Pagnell
Fingest and Lane End	Wycombe	Penn	Amersham
Great Missendon	Amersham	Preston Bissett	Buckingham
Gerrards Cross	Eton	Pitstone	Wing
Great Brickhill	Wing	Princes Risborough	Wycombe
Granborough	Winslow	Quainton	Aylesbury
Great & Little Hampden	Wycombe	Radclive-cum-Chackmore	Buckingham
Great & Little Kimble	Wycombe	Radnage	Wycombe
Great Marlow	Wycombe	Seer Green	Amersham
Great Linford	Newport Pagnell	Shabbington	Aylesbury
Haddenham	Aylesbury	Stoke Mandeville	Aylesbury
Halton	Aylesbury	Stone-with-Bishopstone	Aylesbury
Hardwicke	Aylesbury	Stoke Poges	Eton
Hulcott	Aylesbury	Sherington	Newport Pagnell
Horton	Eton	Stoke Goldington	Newport Pagnell
Hanslope	Newport Pagnell	Soulbury	Wing
Haversham & Lt. Linford	Newport Pagnell	Stoke Hammond	Wing
Hambleden	Wycombe	Shenley Brook End	Winslow
Hughenden	Wycombe	Stewkley	Winslow
Ickford	Aylesbury	Swanbourne	Winslow
Iver	Eton	Stokenchurch	Wycombe
Ivinghoe	Wing	Tingewick	Buckingham
Ibstone	Wycombe	Turweston	Buckingham
Latimer	Amersham	Twyford	Buckingham
Little Missenden	Amersham	Taplow	Eton
Lee	Amersham	Turville	Wycombe
Long Crendon	Aylesbury	Waddesdon	Aylesbury
Leckhampstead	Buckingham	Weedon	Aylesbury
Lavendon	Newport Pagnell	Wendover	Aylesbury
Little Brickhill	Newport Pagnell	Westcott	Aylesbury
Little Horwood	Winslow	Weston Turville	Aylesbury
Lacey Green	Wycombe	Whitchurch	Aylesbury
Longwick-cum-Ilmer	Wycombe	Worminghall	Aylesbury
Little Marlow	Wycombe	Westbury	Buckingham
Maids Moreton	Buckingham	Wexham	Eton
Marsh Gibbon	Buckingham	Wraysbury	Eton
Milton Keynes	Newport Pagnell	Wavedon	Newport Pagnell
Moulsoe	Newport Pagnell	Weston Underwood	Newport Pagnell
Marsworth	Wing	Woburn Sands	Newport Pagnell
Mentmore	Wing	Wing	Wing
Mursley	Winslow	Wingrave	Wing
Medmenham	Wycombe	Whaddon	Winslow
Newton Blossomville	Newport Pagnell	Wooburn	Wycombe
North Crawley	Newport Pagnell	West Wycombe	Wycombe

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. D. R. Rogers*

I wish to apply, as Chairman of the School Managers of the Whitchurch County Primary School, for leave to appear at the Local Hearing into the Cublington (Wing) site for the Third London Airport opening at Aylesbury on the 14th July, 1969.

After we have been waiting fifteen years for a new school in the village a site has finally been chosen and if this airport comes we should not be able to have our children educated in Whitchurch; we should lose our new school and it would mean that the children would be taken away from their country surroundings into the towns to be urbanised and they would be losing their own heritage.

* See also p. 1683

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. E. G. R. Taylor*

Having a great deal of local knowledge of Wing, I feel most strongly that it is my duty to draw the attention of the Commission to certain points which, to my mind, need to be emphasised.

During my service in the Royal Air Force I was stationed in 1943 at Wing and lived on the airfield. I am aware of its deficiencies as a practicable aerodrome because of the undulating terrain and the many days wasted when fog produced "no flying".

For some years, I was a headteacher in Slough and lived near Langley and well remember the effects of aircraft and road traffic noise fifteen years ago. It was one of the reasons I left Slough and became headteacher of Wing School with its 350 pupils. The peaceful air of this delightful corner of Buckinghamshire captivated us and my wife and I and our three children have no desire to see it trampled underfoot by shortsighted planning. The school and my schoolhouse are next to the 7th century Church of All Saints and if an airport were to be built, the position of church and school would be untenable. The impossibility of teaching efficiently in so-called sound-proofed schools, with little prospect of outdoor teaching and confinement to closed-windowed classrooms, are facts known only too well by my colleagues who soldier on in that incessant din known as "Heathrow Air Space". A headteacher was forced to retire early because of the noise and then was unable to hear his farewell citations because of that self-same noise. This example is typical of many told to me by harrowed teachers struggling along within ten miles of London Airport. There the schools are understaffed and high quality replacements are more difficult to obtain causing the overworked education officers more problems in their attempts to maintain standards. I understand from records kept by a school similarly placed to the schools at Wing that up to 95 decibels have been recorded in the classrooms and 70 decibels may be recorded every 2 or 3 minutes thus making teaching impossible until the noise dies down. At Windsor, some six miles from London Airport, 100 decibels level has caused all teaching to stop as even at the 70 decibels limit, conversation between individuals can be carried on only by shouting. The larger aircraft destined for the Third London Airport are expected to put up a louder record than those using the smaller airport at Heathrow.

One might be tempted to assume that at Wing, the overall number of population concerned might be as small as 16,300 as is estimated in paragraph 14 of *Site Information.** However in paragraph 13 it is stated that the NNI contours relate to an average summer day. In this area the percentage frequency of wind is exactly as great from the north as it is from the south according to Met. Office records over a twelve months period. It appears from a study of a year's wind records that aircraft may well take off for 4 months of the year in a northerly direction. If NNI contour maps had been published to show the lines in force for 4 months of the year it would have been most helpful as such densely populated areas as Bletchley, Wolverton, Milton Keynes, Kempston, Leighton Buzzard, Dunstable and parts of Luton would then all come within the 40 NNI contour. I consider it most misleading to the general public that the contours for northerly take-offs were not published. I enclose a chart compiled from Met. Office figures to illustrate my point.†

From contacts I have had with people from elsewhere, it appears that the vast majority of the people of Britain does not care where the airport is put as long as it is not near to their homes. It is staggering to realise that people living as near as Bletchley and Luton still believe they are out of danger due to the misleading effect of publishing only one set of NNI figures as though these applied for a whole year instead of for eight months only. For the average member of the threatened community, a contour map showing the actual sound levels at varying points around the proposed site would have been more to the point. As one of the holding areas for Heathrow is over Watford, the holding area for an airport at Wing could well be over Luton.

At no time has evidence been forthcoming to indicate that the NNI method of assessing the value of a site for airport development, has any international standing. It obviously has some value to lull the electorate into a false sense of security.

The county schools at Wing catering for nearly 700 pupils and serving an area of 50 square miles, are situated within ¾ mile of the runways and the noise and the visual distraction will necessitate their discontinuance. The consequent re-schooling and increase in transportation involved will be costly both in time and money. Soundproofing included it may well cost the rates some 12 million pounds to evacuate the schools around the Wing site. The lowering of educational standards for some 50,000 scholars in this area and the enormous waste of young children's leisure time involved in daily transport to quiet areas, is greatly to be deplored. Effective teaching time may be cut by 20 per cent and the normal high break-down rate among teachers is bound to increase as excessive noise and air pollution take their toll.

As Chairman of the following village associations: Wing Primary School P.T.A.; Wing Youth Club; Wing Old People's Club, Wing Hall Club, and as a

* See also p. 1683.

† (HMSO; 6s.). Reproduced at p. 1001.

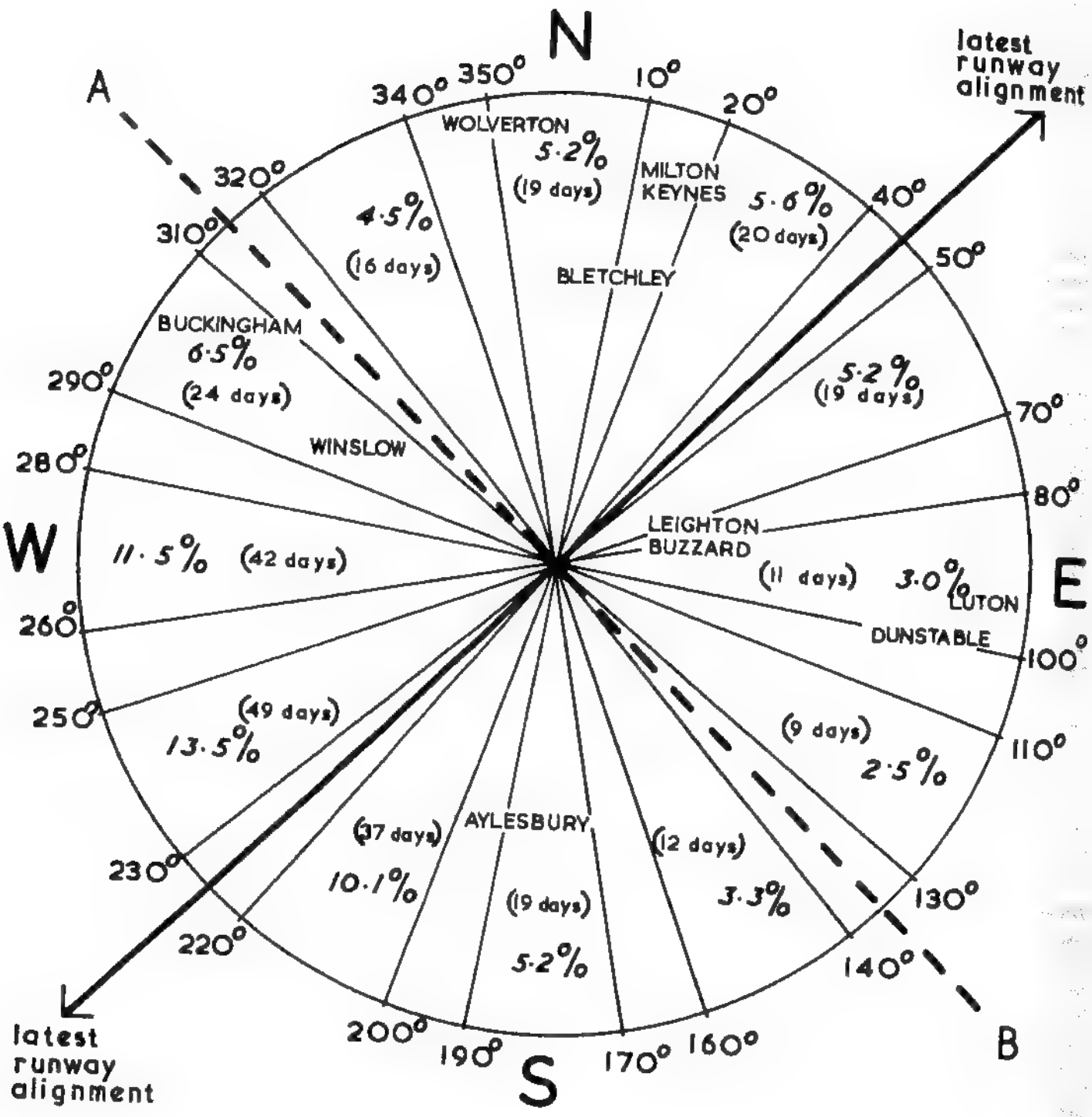
† p. 1318.

Printed image digitised by the University of Southampton Library Digitisation Unit

Parish Councillor, I can vouch for the massive opposition of the People of Wing to the proposed siting of the Third London Airport at Wing.

In her Commonwealth Day Message, Her Majesty The Queen stated that she was reassured that human beings are more important than machines, and that the happiness of mankind is even more important than the spectacular achievements of science. We, of the Inland sites, implore the members of the Roskill Commission to note well Her Majesty's statement.

Printed image digitised by the University of Southampton Library Digitisation Unit



Percentage frequencies of wind (Mr. E. R. G. Taylor)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of The Aylesbury Industrial Group*

Background

1. The Aylesbury Industrial Group (referred to hereafter as "the Group") formed in 1956. The present Chairman is George Stuart Young, O.B.E., a Director of Bifurcated Engineering Ltd.

2. The Group consists of 53 Firms all of which have factories or other premises in or close to the Borough of Aylesbury.

3. At a General Meeting of members held at the New Friarage Hall, Walton Street, Aylesbury on 12th May, 1969, it was resolved to oppose the proposal to the site the Third London Airport at Cublington (Wing).

4. The Group represents a wide cross section of manufacturing and other industry ranging from the old established industries of Printing and Rivet making through the manufacture of Agricultural Machinery, Aluminium Alloys, Records, Foodstuffs, numerous light engineering products and car park meters. A full list of the current membership is annexed at Schedule 1.

The Pattern of Employment

5. Aylesbury and the surrounding area have been fortunate in the post war years in that a high level of employment has been maintained. This level is well above the National average. This has been so even in years when there has been a recession. The figures for May 1969 (which are typical) give a clear indication of the unsatisfied demand for labour.

Unemployed: 236 men
31 women
22 boys
13 girls

(*Note:* of the men, 42 are over 60 and 54 disabled. 10 of the disabled are over 60. 6 women are disabled).

Vacant Jobs: 364 men
209 women
182 boys
238 girls.

These figures, taken from the local office of the Ministry, include all those temporarily out of work and those who for various reasons, are unemployable and must be viewed against a total working population in Aylesbury and the immediate area of the order of 40,000. Throughout the whole period of Aylesbury's post-war growth, this pattern of full employment has been maintained.

6. The Aylesbury Borough Council have since the War, adopted a policy of diversified growth in Industry. New Industry has been attracted to the town and the level of new factory building has been carefully matched to the available housing. Aylesbury has been one of the towns to which the Greater London Council has under the Industrial Selection Scheme of the Department of Employment and Productivity sent families wishing to move out of London. Indeed since 1958 the Aylesbury Borough Council has provided some 2,160 units out of a total of 2,700 municipal housing units built since that date for such employees and their families coming to work and live in Aylesbury, almost all of them from the Greater London Area. Without this injection of outside labour into the area the balanced industrial development of the area could not have proceeded as it has.

7. The Aylesbury Borough Council has constructed and leased much well designed factory and other industrial buildings and more is planned to bring the total of Council owned and built premises to 750,000 sq. ft. This building programme takes full advantage of attractive lay out and siting that cannot be achieved in the more congested urban areas and when taken with the substantial expansion programmes by individual firms has provided many modern factory buildings with good working conditions. Some thirty firms have moved to Aylesbury with the help and blessing of the Greater London Council and the Aylesbury Borough Council and the substantial further developments now envisaged will attract more firms who are looking for the kind of agreeable working conditions provided within the limits of the compact and planned industrial development of the town and many of the firms already in the area have expansion plans of their own.

8. Many of the Group's members contribute significantly to Exports.

Objections

9. The Group fears that the demands for labour during the construction phase would seriously retard or at best make much more difficult the building programme for housing and factory premises to continue the balanced expansion of the town's industry.

10. After construction is complete the Group fears that the already severe labour problem will be altered substantially for the worse and that the labour difficulties in the area will inhibit expansion plans, particularly in those industries where special skills are required.

11. The basis on which many firms have elected to come to Aylesbury will be materially altered. Aylesbury will cease to be a modest but none the less prosperous town set in easily reached and beautiful countryside. The very features which made Aylesbury attractive to those firms will to their employees be submerged in the extensive urbanisation that would inevitably surround the airport site.

* See also p. 1685.

Printed image digitised by the University of Southampton Library Digitisation Unit

12. The accelerated rate of growth envisaged for the town if the airport comes to Cublington will destroy the balanced and broad based growth established over the last twenty years. The whole employment picture would be altered if a large number of employees in the area worked for a single employer in this case the Airport Authority. This could bring difficulties.

13. Recruitment of labour from outside the town will be made much more difficult. Families may well choose to go to one of the other developing areas rather than come deliberately to an area in which there is bound to be interference from noise, and where an extensive urbanisation programme has made or will make heavy demands on the surrounding countryside.

14. Industrial Development Certificates (if still applicable) may if the labour position becomes acute, be drastically curtailed. During a period of severe strain on local labour resources Industrial Development Certificates were refused. If this occurred again as a result of too much strain being placed on local labour resources then expansionist minded firms who have no special need to be near a major airport might well decide to move away from the area. It is open to question whether sufficient fresh industry or services connected with the airport would wish to come to the town to fill vacancies. It may very well be that the area lying on each side of the airport site and which would be affected less by noise would be preferred.

15. In general, the Group do not consider noise a relevant ground of objection, save in so far as it may affect recruitment or compel those who live in the worst affected areas and who work in the town to seek employment elsewhere. The labour position has always been difficult such a loss of even a small part of the established labour force must make it worse.

16. The airport will draw particularly heavily upon office, clerical and secretarial staff. Such employees are already difficult to recruit and the heavy demands of the airport will make an already difficult situation worse.

17. A particularly acute problem may well arise in senior executive posts. One of the attractions for senior men is the wide choice of pleasantly situated and in some cases very beautiful villages in which they can make their homes. Many of these villages will be seriously affected by noise and others totally destroyed. Senior executives and their families may well find such conditions unacceptable and elect to move from the area. Similar problems would face firms seeking to replace senior staff lost in this way.

18. The Group fears there will be serious interference with both road and rail communications in the area both during the construction phase and later when the airport is in operation. It is anticipated that the construction of an airport at Cublington would involve the use of much heavy earth moving and grading equipment and the carrying of very large quantities of aggregate and gravel into the site area. Extensive enlargement of the existing road system with all its consequent disruption would seem to be inevitable. All these factors taken with the great increase in traffic flow through the area to and from the airport by both passengers and airport staff and the rise in traffic density from the increase in population will in the view of the Group, combine to affect communications adversely.

SCHEDULE 1

Artech Ltd.	Designers and Manufacturers of Mobile Communications Equipment. Electronic Circuit Manufacturers. Light, Medium and Heavy Fabrications.
Agro Electrical Co.	Electrical Manufacturers.
Antiference Ltd.	Manufacturers of T.V. Aerials and Tubular Metal Furniture.
Aylesbury Brewery Co. Ltd.	Beer, Wine and Spirit Manufacturers.
Aylesbury Motor Co. Ltd.	Motor Vehicles and Tractors, Repairers and Traders.
Aylesbury Steam Laundry Co. Ltd.	Laundry and Dry Cleaning
Aylesbury Turned Parts (True Screws) Ltd.	Precision Turned Parts for the Aircraft, Automobile and General Engineering Industry
Bifurcated Engineering Ltd.	Manufacturers of Rivets and Rivet-setting Machinery.
Bruynzeel Wood Products Ltd.	Manufacturers of Wood Ware.
C.B.S. Records Ltd.	Manufacturers of Tapes and Records.
D.C.A. Industries Ltd.	Manufacturers of Doughnut Machinery and Prepared Bakery Mixes.
Delta Carbon & Ribbon Manufacturers Ltd.	Manufacturers of Carbon Papers. Ink Ribbon and Endorsing pads.

Printed image digitised by the University of Southampton Library Digitisation Unit

Eastern Electricity Board.	Electricity Supply Authority.
Electroloid Ltd.	Electro-Chemical Engineers.
Electropower Gears Ltd.	Power Transmission.
Elm Engineering Ltd.	Manufacturers of Aluminium Strip and Tube.
Esso Petroleum Co. Ltd.	Motor Vehicle Workshop.
S.G.S. Fairchild Ltd.	Semi-Conductor Manufacturers.
G.T. de Fraine & Co. Ltd.	The Bucks Herald.
General Heating Ltd.	Industrial and Domestic Heating Engineers. Warm Air Specialists.
Hazell Watson & Viney Ltd.	Printers and Bookbinders.
Hills & Partridge Ltd.	Flour Millers.
Hunt Barnard & Co. Ltd.	Printers and Book Manufacturers.
International Alloys Ltd.	Aluminium Smelters.
Industrial Stapling and Packaging Ltd.	Manufacturers and Distributors of Industrial Stapling and Packaging Equipment and Staples.
Jarvis Halliday & Co. Ltd.	Wine Shippers
Joseph Lucas (Exports) Ltd.	Export Packers and Distributors.
Klockner-Moeller (England) Ltd.	Manufacturers of Electrical Control Gears.
Leading Plastics	Plastic Manufacturers.
Merx Optical Co. Ltd.	Manufacturing Opticians.
Morris Garages Ltd.	Private/Commercial Vehicle Distributors and Repairers.
Mourton Ltd.	Manufacturers of Sheet Plastic Accessories.
Negretti & Zambra Ltd.	Instrument Makers.
Nestle Company Ltd.	Manufacturers of Milk and Food Products.
New Holland Sperry Rand Ltd.	Manufacturers of Agricultural Machinery.
North & Randall Ltd.	Manufacturers of Soft Drinks.
Joseph Parkins & Co. Ltd.	Manufacturing Stationers, Die Stampers, Copperplate & Lithographic Printers.
Pertec Ltd.	Manufacturing Chemists.
Readers Digest Association Ltd.	Periodicals.
Redifon Air Trainers Ltd.	Manufacturers of Flight Simulators Training Aids, Industrial Control.
Rexel Ltd.	Manufacturers of Stapling Machines. Staples, Nyrex and Plastic Goods.
Roblin & Sons Ltd.	General Engineers and Welding Fabricators.
R.P.E. Westcott	Government expended research departments
Salada Foods (U.K.) Ltd.	Manufacturers of Ice Cream Cones and Wafers—Also Confectionery.
Frederick Samuels Ltd.	Colour & General Printers.
Schwarzkopp Corionol (U.K. Division) Ltd.	Manufacturers of Hair, Health and Beauty Preparations.
Schweppes Home Ltd.	Fruit Drink Manufacturers.
Shaw & Kilburn Ltd.	Motor Agents and Engineers.
Southern Gas Board	Gas Supply Authority
Thermo Engineers Ltd.	Manufacturers of Heat Exchangers.
United-Carr Ltd.	Cold Rolled Sections Manufacturers and Manipulators.
Versatile Fittings (W.H.S.) Ltd.	Vizusell Store Fitting System, Versi-Form Display Equipment, Versi-Wall Partitioning System.
Watches of Switzerland.	Watch Importers.
The Wine Traders Consortium Ltd.	Wine Traders.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Mid-Bucks. Liberal Association*

To avoid reiteration of the technical case against the Wing site, which we understand will be presented by others, our members would like to make known their views which have been arrived at after considerable discussion and examination of the facts as known to them which are as follows.

The UK is one of the most densely populated places in the world and despite the known efforts to control the rate of population rise it is sure there will be significant increases for the foreseeable future, adding to this pressure the higher standard of living will mean people will want more space for recreation, and in their wish to get out of the present conurbations and enjoy the peace of the country they are already experiencing an increasing congestion on the main roads in this area at week-ends and holiday periods.

The planned industrial development of the area bordering on the proposed airport is being successfully achieved bringing with it improved educational and employment opportunities and also one of the lowest un-employment rates in the country. The inception of the new town of Milton Keynes and the achieved and planned growth of Aylesbury, and some of the surrounding villages, will create the situation where more and more people will be wanting to enjoy the shrinking areas of scenery and peace.

We understand that of the 59 million acres of land available in the UK only half now remains for food production. Long term planning would therefore indicate the need to reclaim land at some stage in the near future. Therefore to convert good farm land away from its present use and to later reclaim marginal or marsh lands for agricultural purposes does not appear to be in the best National interest.

We are, therefore, entirely against the proposals to construct a Third London Airport at Wing in which we can see no long term advantage and a certain lowering of the quality of life for a considerable number of people.

* See also 1686.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Sir John Rothenstein*

As already indicated, I shall be representing—it will take five minutes or less—that the aircraft noise level in this area is already as high as is tolerable and often much higher.

Royal Air Force Benson is (to quote a Royal Air Force authority) "an extremely active RAF station", with three squadrons of Argosies in "continuation training"; this involves an optimum number of day and night flights, and Newington, like a few other villages, lies within the flight plan. (In addition Benson accommodates the Queen's Flight, and there is an appreciable number of visiting VC 10s and Army aircraft and helicopters.)

The approved flight routes of Royal Air Force Benson and the contour lines of aircraft disturbance from Cublington show an overlap in this area. A noise situation, therefore, that can at present cause intense suffering to inhabitants of this region would be pushed well beyond the bounds of human tolerance.

No documents or other enclosures, but by mid-July I hope to have collected corroborative testimony from other villages in this immediate neighbourhood.

I take it that in due course you will inform me of the day and time at which to present myself at Aylesbury.

* See also p. 1688.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Dr. D. M. Allen*

Following the granting of leave to appear at the Stage II hearing on the Wing site, I now send my written statement. This statement is in three sections, the first of which contains my personal objections. The second section contains an estimate of the loss of agricultural production and the final section offers an opinion on the effects of a major development on a wide area surrounding it.

1. Personal objections

The siting of an airport at Wing will seriously interfere with the way of life of myself, my wife and four young children. The Commission has been unable to advise me whether or not my family will be displaced by an airport in spite of having made what are probably spurious estimates of the number of people affected.

If the airport comes to Wing the best I can hope for is that my home will be demolished. But what opportunity will there be for me to join another rural community in the vicinity? The alternative of being left just outside the perimeter fence at 50–55 NNI is unacceptable. If this happens the value of my house is likely to be so much reduced that it will be financially impossible to move.

2. Loss of agricultural production

My post as technical head of a livestock improvement service qualifies me to make an impartial estimate of the loss of agricultural production in terms of livestock products. I must emphasise that these are personal estimates and do not necessarily reflect the views of the organisation for which I work.

Beause government policy accepts the need to increase home beef production this commodity has been chosen to illustrate the effects of an airport on agricultural production.

The land area affected including the airport and its approaches is assumed to be 8,000 acres.

* See also p. 1688.

Production estimates are based on the rearing of surplus male calves from the dairy herd and their slaughter at about 18 months of age to produce carcases of 560 lb. This is now a common system of production and with reasonably efficient management the home grown feed required to produce one animal can be supplied from the annual production of 0·7 acres of grassland and 0·3 acres of barley. Thus each acre can support the production of 560 lb of carcase beef.

At present levels of beef consumption this means that 8,000 acres would produce the beef required annually by 100,000 people.

The calculation takes no account of the acreage required for developments associated with an airport including housing developments. Suffice it to say that each additional acre would support the production of beef to more than satisfy the annual requirements of a further 12 people.

3. Effects on a larger area

When a large acreage of land is developed the immediate loss of agricultural production is clearly important. But so also is a consideration of the modification of production in the surrounding area. Such an analysis has already been carried out for the original requirement of 22,000 acres for Milton Keynes (Casey *et al.*, 1968).* A main conclusion of this report is that the new city will have far-reaching effects on the surrounding agriculture. Presumably increasing the size of the city to accommodate airport staff and the airport with its high turnover of passengers and all that that implies will have even greater effects. Thus the airport will alter the character of a large area. This is, I believe, a serious matter in the major rural belt separating the industrial Midlands from the SE.

* Casey, H., Giles, A. K., Harrison, A., and Mills, F. D., (1968) *Milton Keynes 1967: an agricultural inventory.* University of Reading, Dept. of Agricultural Economics.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. B. Bateman*

Introduction

This brief report outlines the effect the building of the Third London Airport at Wing (Cublington), in Buckinghamshire, could have on the nearby hamlet of Horton.

The report has been based on the information produced by the Commission for the Third London Airport and is, consequently, general in terms but, nevertheless, such information as was produced has been sufficient to make it abundantly clear that a large part of countryside around the hamlet would be urbanised, such is the magnitude of the project.

The hamlet objects to the proposal to make such a massive change in the chosen way of life of so many people. This is not, as may seem to some, to stand in the way of progress, but is to put a higher worth on the human needs which are not measured in material terms from those which are.

1. **Horton**

1.1. Horton is a hamlet of about twenty houses situated in the eastern spur of Buckinghamshire about four miles south of Leighton Buzzard. The hamlet enjoys the amenity of very picturesque scenery around it and also contributes to the wide variety of agricultural activities which are integral with the county.

1.2. Situated between the sharp bends in the B488 with the moated Horton Hall as its nucleus, Horton has, undoubtedly, been larger than it is now, when the agricultural industries were less mechanised. Some Victorian cottages were demolished during the Great War and one older cottage had to be demolished in the 1950s, but a recent development, in a carefully designed group has restored the homogeneity of the hamlet.

1.3. The present Horton Hall dated from 1832, but a house was recorded on the site in the Domesday Book whilst other cottages have been traced back to the 16th and 17th Century as part of the then Duke of Bridgewater's estate.

1.4. The community living in Horton used to be, almost entirely, supported by local agriculture, but now it is divided between those who carry on this tradition and those who choose to live in rural surroundings as a respite from their urban activities.

2. **The Third London Airport**

2.1. The need for a third airport for London, to supplement Heathrow and Gatwick, has been under consideration since the mid-1950s and is now made clear as a result of the report of a Committee set up on 21st November, 1961 and the White Paper entitled *The Third London Airport*† presented to Parliament in May 1961.

2.2. It is recognised that the new airport, wherever it may be, must contribute to and conform in the development of this country as a major commercial European Power and consequently must be designed to handle, or be capable of extension to handle, the air traffic of 2000 A.D. and beyond.

2.3. The size of airport envisaged will handle 45 million passengers per year whilst two runways are in use and 100 million passengers when the full four runways are built. (*Site Information* produced by the Commission for Cublington (Wing)).‡

2.4. To carry these numbers of passengers to their destination requires some considerable land transport connections and the Commission has said that "it is envisaged that new roads connecting the proposed site to M1, A41 and A413 would be required initially. Subsequent additional road capacity would be required for road traffic travelling to the Midlands and London. Rail facilities to a London terminal combining existing lines and new links will be required from an early date".

2.5. The airport as envisaged will generate a population of about 75–100,000 of employees and their dependents.

3. **Local implications**

3.1. The suggested road link to M1 would probably carry a very considerable proportion of those passengers leaving the airport by road, since M1 reaches the greatest passenger generating areas of London most directly, a subsidiary link to A5 could also be made. The link would likely follow an even contour route as shown in Map I.§

3.2. The rail link suggested would clearly be to the electrified route into Euston and again would follow a route indicated on Map I.

3.3. Bearing in mind the NNI chart (shown on Map II)§ the accommodation for the extra population generated in this area by introducing the airport to the region would be best sited either to north west or the south east of the airport site, so as to be clear of the more noisy zones.

At the proximitiy most suitable development on the north west side of the site would conflict with the Milton Keynes new city and its requisite "breathing space" so, accordingly, the south east side, with better communication links can be seen as a site more likely to be favoured.

Inevitably, it would seem, an area of several square miles south of Leighton Buzzard would loose its rural character altogether.

---

* See also p. 1690.

† Cmnd. 3259 (HMSO; 3s.).

‡ p. 1001.

§ Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

4. Conclusions

4.1. In the event of the building at Cublington (Wing) of the Third London Airport the hamlet of Horton would loose its present rural character.

4.2. The subsequent development of the road link as suggested (3.1., 3.2) would take valuable agricultural land from a farm in the hamlet.

4.3. Development of the rail link and the subsequent increase in rail traffic would raise the noise level in Horton near to some of the worst areas of noise due to aircraft.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Captain D. J. Bellingham*

1. I would like to state that I oppose the siting of the Third London Airport at Cublington (Wing).

2. I am a farmer and agricultural contractor at Longmoor Farm, Aston Abbotts. I was a pilot for seven years with the Royal Air Force, and for eighteen years a BOAC Captain until December 1963, when I retired to take up full time farming. For the last four years of my career in BOAC I flew on Boeing 707 aircraft, and was also Deputy Flight Manager for the Boeing 707 Flight at London Airport (Heathrow).

3. The size of this farm is 166 acres, and I concentrate on the production of beef and sheep, and the growing of cereals.

4. I bought the farm in November 1960, when it was in a very dilapidated state, both the buildings, house and land. I have invested a great deal of capital in the enterprise, in buildings and building improvements, field drainage schemes to about half the acreage, ditching schemes, fencing and in many other aspects. In 1965 I started an agricultural contracting business to run in conjunction with the farm, and have also invested heavily in this project—for example, I now operate seven tractors and four combine harvesters to mention only some of the equipment and have four full time employees plus other help.

5. It would appear that some of the land of Longmoor Farm would lie within the proposed site, and naturally, I view with the greatest concern any reduction in the size of this holding. Any cutback in size would seriously affect my farming operations. Furthermore, taking agricultural land for the airport, on the scale envisaged would also very seriously affect my livelihood as a contractor, as my operations range over the area in question. I also view with concern the further encroachment which would inevitably take place if this site were chosen, arising from the need to provide services for the airport, in the form of road improvements, new access roads, urbanisation, and so on. I foresee that with this further development farming and contracting in the area with such land as may be left, would become impossible.

6. Our farmhouse and buildings would appear to lie close to the boundary of the site, and on the 60 NNI contour line. This area is essentially an agricultural one, and at present we enjoy a quiet and peaceful scene. Noise on this scale—together with fumes—would represent an intolerable level to me, my family and employees, and would mean that we should be faced with either selling up at a considerable loss, or staying and accepting a tremendous curtailment in my business activities, and suffer noise and disturbance on a scale which would affect our health. I should say that I speak from experience, having once moved from a house on a busy trunk road, because of the noise and fumes of road vehicles.

7. This farm is now in good heart, and possesses some of the finest fattening and grazing land in the country. Some of it forms part of an area known as Great Ground, mentioned in history books as being used for the production of beef and mutton for the Tudor courts of Windsor. The land is very productive, and as an example prizes given by the Chiltern Hills Association for crops grown on this farm are as follows:

1966 1st prize for Spring Wheat

1967 3rd prize for Winter Wheat
1st prize for Winter Oats

1968 3rd prize for Winter Oats
2nd prize for Spring Wheat
Reserve prize for Winter Wheat
Reserve for Cup for the three varieties.

Further in 1967 sample strips were cut in a field of Winter Wheat for Dr. R. C. Woodward M.A. (Oxon), B.Sc. (Agric.), Ph.D.(Cantab), F.I.Biol. The highest yields recorded in these strips was at the rate of over 3 tons per acre.

8. Finally, I am greatly concerned at the effect that such a proposal as this can have upon an area pending a final decision. The effect on the community is shattering, many of the routine operations of day to day life are shelved because of this indecision of the future, and we have to live in a stultifying atmosphere.

* See also p. 1690.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. D. Brown*

The siting of the new airport will cause an infringement of basic liberties of myself my family, my local community and my town, viz.: it will interfere with liberty of speech, the right of reasonable education for our children, it will interfere with the basic freedom of communication, i.e. T.V. will be seriously affected. It will be a health hazard on the grounds of excessive noise. It will be a real risk of physical danger. (The fuel to be carried by some of the new proposed jets, is of greater weight than a comet jet of the present time). What a holocaust this would cause if it crashed on a town, and several large ones are in direct line with the proposed run in.

* See also p. 1691.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. E. Brunner*

Thank you so much for your letter giving me leave to give evidence at the Hearing starting on the 14th July, at the Borough Assembly Hall, Aylesbury.

I am objecting to the siting of the Third London Airport at Wing on behalf of Mrs. David Gladstone and myself (Mrs. Patrick Brunner).

These objections are compiled under 2 headings:

1. General objections.

2. Personal objections i.e. The effect that the airport will have on Wotton House and on the village of Wotton Underwood.

General objections

If one has any kind of love for England and the countryside, it cannot be limited to one's own selfish interests. Therefore I would beg the Commission to study carefully the effect on some 162 square miles of beautiful countryside, which Councils and individuals have been fighting desperately to preserve for posterity, should the new airport be sited at Wing.

There must, obviously, be an effect on settlements, people and buildings, and people still have, fortunately, deep roots in the countryside and without these a country cannot survive. Economically, as these areas have full employment the question of bringing further employment does not arise. They are not depressed areas which would welcome such a stimulus to their failing economy.

Further development of an airport at Cublington would be a violent intrusion on a quiet, precious, countryside and would harm a large number of people who are happy in their environment, have chosen where they want to live and cannot be lightly swept away.

We know that Cublington is set in beautiful country-side full of typical English villages and that it is varied, undulating with hills and vales. Most important of all the first real un-urbanised land to the north of London. This would cease to exist. Further it is an area that people like to visit—Stewkeley Church one of the most perfect and important Norman Churches, remaining, in England, the Brick Hills, Chilton, Wotton, Dorton all affected and Waddesdon would lie under the flight paths. How can the public enjoy its leisure and much needed escape from noise near to main runways?

The advantages to the Wing Site would appear to be good rail and road services. But what about the millions of pounds which will have to be spent on compensation? Apart from the irreparable damage to an area rich in buildings of historic and architectural value. At least 149 villages will be affected and 3 totally demolished.

The new airport, we are told, is to attract more and more visitors to England, among them—we hope—will be numbers of Tourists with their foreign currencies, what are we going to show them of rural Bucks if over 160 square miles are lost permanently?

Surely, the whole area, which, in many cases is less than an hour from London is invaluable as a Tourist attraction. The vale of Aylesbury with its lovely blue light and gentle villages will be engulfed and ruined.

Another very important point that should be carefully considered and is, perhaps, not sufficiently appreciated is that people living in an area of continual noise are much more susceptible to neurosis and psychological disturbances than those living in quiet rural areas. Children brought up in these environments will be adversely affected and there will be a need for more and more rehabilitation centres and more and more psychologists. A heavy additional expense on the Health Service and England can ill afford a race of Zombis.

Lastly, in my considered opinion, the siting and building of an airport should cause inconvenience to the least possible number of people (20,000 will be affected if Wing is chosen) and should be capable of expansion. What will happen when the Cublington Site is too small? Will more of the Home Counties be engulfed by a greedy octopus and suffer the fate of their unfortunate neighbours?

Foulness, would as an alternative site appear to offer many advantages.

1. Few people disturbed.
2. Nothing of architectural beauty destroyed.
3. The Bird Reserve could be moved.
4. The Essex County Council are in favour of having the new airport.
5. The Army now seem to be more amenable at giving up their experimental land.
6. And most important of all at Foulness there is room for expansion.

The loss to the Cockle Industry is very sad, but perhaps new cockle beds could be started and adequate compensation paid.

Personal objections to the siting of the new airport at Wing and adverse affect on Wotton House

Short history partly quoted from Lysons' story of Buckinghamshire. Part viii Wotton to Wynardisbury. London 1836. "Wotton-Underwood, in the hundred of Asshendon and deanery of Wadesdon, lies about nine miles nearly west of Aylesbury, and about the same distance from Bicester, in Oxfordshire. It was called Wotton-Underwood from its situation with respect to Bernwood forest, which was disforested by King James I. The Manor, among many others,

* See also p. 1692.

Printed image digitised by the University of Southampton Library Digitisation Unit

was given by William the Conqueror, to Walter Giffard, Earl of Buckingham; Mabel, daughter and co-heir of Walter the second earl, is said to have brought it in marriage about the year 1097, to Richard de Grenville, from whom there had been an uninterrupted line of male succession, through twenty generations, to the present proprietor, the Marquis of Buckingham.

Wotton-house has been from time immemorial the seat of the Grenvilles. The present Mansion was built in 1704, after the model of Buckingham-house" —which later became known as the Queen's Palace and finally as Buckingham Palace— "this mansion was the principal and favourite residence of the Right Hon. George Grenville, first Lord of the Treasury and Chancellor of the Exchequer in the early part of the reign of his present majesty; it is now the residence of Lord Temple, the Marquis of Buckingham's eldest son. . . ."

A Dukedom was conferred upon the Marquis who became Duke of Buckingham and Chandos. The Grenville's traced their descent to pre-Canute to Rollo the Sea King.

Wotton is unique for 3 reasons.

1. It is the only House in England almost identical to the original Buckingham house prior to its becoming Buckingham Palace.
2. It is the only large house by Sir John Soane to survive in country areas.
3. Capability Brown's first job on his own. He was working, at the time, with Kent at Stowe and was lent by the Marquis of Buckingham to do the landscaping at Wotton. The House was saved from demolition in 1957 by Wing-Commander Patrick Brunner and myself—it was, in fact, bought from the Demolition Contractors.

The Historic Building Council recommended that a Grant of £40,000 should be made by the Ministry of Works towards its restoration. The landscaping included about 400 acres of park land, 50 acres of lake, pleasure grounds and woods. This area had been broken up, but was bought back after prolonged negotiations from 5 different owners!

The park and farm land are farmed. Grenvill's Wood is a young plantation of oak, conifers and Norway Spruce.

Most of the rest of the land, lakes, woods, etc is a sanctuary for Wild Life. And is being continually filmed and visited by ornithologists, lepidopterists, botanists, archaeologists etc. The fishing is let to the Vale of Aylesbury Angling Association.

The public, on request, are given permission to walk round.

Field days are arranged by the various interested groups for the study of their particular subject in wild natural surroundings. The Editor of Countryside will shortly be taking a party of children from Grange School, Aylesbury on a nature-spotting outing. It is unnecessary for me to emphasize the importance of complete quiet for these operations and the therapeutic value on those who have the privilege to visit this outstandingly beautiful area.

The damage to the House would be shattering. We are within the NNI 40 contour almost in line with the main runways. The House has been used in the past by visiting American professors, who wished to work here—on account of the total quiet—during their sabatical year, i.e., professors of Musicology, Historians, Philosophers, among them.

Television and theatre producers and writers have stayed here so that they could work away from the exhausting noise of the metropolis.

Large numbers of visitors pass, yearly, through the House, these include educational groups. Many Schools and the Educational Department of the Bucks County Council send large parties. They are given lectures on architecture, history, landscaping etc.

A degree of concentration is demanded by those giving the lectures and by the recipients. It would be quite impossible to give these valuable lectures full of specialised information with jets thundering overhead. For us, who have saved Wotton for posterity with love and unselfish motives it would be a heart breaking disaster. All that we have tried to achieve, shattered. In this noisy rushing disturbed world we have tried to make a small contribution to humanity.

The scene, here, has not changed since the House was built. The cattle, on the westside still graze up to the Ha-ha and on the east-side up to the superb gates and screen designed and executed by Robinson, the greatest of the English Wrought-Iron craftsmen.

The village is unspoilt, saved by dedicated people who want to live here in peace and preserve "their bit of England"

Sir, I beg you to read my letter and evidence with understanding of the depth of feeling which has prompted it.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. C. Chandler*

Having been born in the village of Long Marston and my forebearers having lived in this village and district for generations, I hereby object to the siting of the Third London Airport for reasons stated as under vis:

1. Airport site Location.

(a) As a layman with some technical knowledge who is well acquainted with the area concerned, I am of the opinion that, the Cublington site is most unsuitable for this purpose, that it would prove very expensive to develop and even in this day and age, when in the eyes of all those in authority, thousands of millions of pounds are chicken feed, it would prove over expensive, even if one ignores the loss of productivity, from some of the best agricultural land in this country for ever.

(b) As the site so obviously was not selected for its technical suitability, the only reason for its selection, in my opinion is obvious. Public opinion proves this wrong.

re. No. 1(a)

Although this has no bearing on the case, I would respectfully submit, that in my opinion this should read, "local sand and stone". Portland stone is quarried in Dorset, as i.e. Leighton sand from Leighton Buzzard.

2. Employment.

I accept the fact, that as the report states the airport would create some employment. It also appears to be a fact that this is an area of full employment. Up to date to my knowledge, also, there has been an advertisment in the local press for months on end, for workers at a local aircraft firm. On this shewing it becomes apparent that, the necessary labour force would to a great extent have to be brought into the district, with the consequent urbanisation of thousands of acres of rural countryside. I would therefore suggest, with the greatest respect to all concerned, that those who would seek employment at an airport, should be prepared to move to the immediate vicinity where one is built, rather than expect those who wish to remain in the Cublington, Dunton, Stewkley districts to be turfed out of their homes, some whose forebears have lived in the area for centuries, possibly into their graves.

3. Material considerations should not be allowed to destroy for ever this area of nature and beauty which is here, for everybody to see and read, which include several Chapels and at least three old Churches, the most notable of which is "St. Michael and All Angels" at Stewkley, one of the most valuable of historic buildings in the country. These old Churches were built by the old craftsmen of the time, not for money and/or material gain but for the love of God and beauty, whereas the monstrosity which is now proposed would be an eyesore for ever.

Here I quote Mark Chap. 8 v.36—"For what shall it profit a man if he gain the whole world, and lose his soul".

4. I am open to correction on this, but assuming the area of England adds up to approx. just under 51,000 square miles, first consider that x number of square miles are already used up to date, for development of one sort or another, i.e. Factories, houses, roads etc., and this project, takes, say (for the sake of argument) 150 square miles = 7,500 acres to 8,500 acres or more, plus access roads, rail links, houses, industry connected with airport and what have you? To which add x thousand acres per year for natural development, roads, etc., there must come a time when there will be no open country left. Measured against infinity, this would seem to be not all that far hence. Therefore when the next major war comes, which is as certain as night follows day, there will not be enough land from which to produce food to feed the population, and the enemy will starve them into submission, this should be a sobering thought.

I should mention the following which I trust will be presented by people more qualified than my humble self. Effects on, hospitals, Schools, Places of Employment, Recreation, Nature reserves, Reservoirs, Green Belts. Noise and fall out and in particular accidents one of which could prove to be the greatest disaster of all time.

To come down to my own immediate locality vis. the Long Marston area. Looking at the map we appear to be somewhere in the route of any road connection to the A.41. From what one sees and hears any suggestion of imposing an extra volume of traffic on to the M.1 would be just plain daft. Looking at the figures so lightly quoted in No. 7 = 45 millions to 100 millions, this would require in my humble opinion, a motor way of gigantic size direct to London, which could if so routed devastate this area. Again if air transport i.e. helicopters etc., were used, we would have intolerable noise. I am, to put it mildly, surprised at anyone suggesting a development such as an airport without first going into details of access.

To conclude, just in case any misinformed person thinks that I have a vested interest in the area, I have not, I was born in Long Marston in the year of our Lord 1901 not very far from where I sit writing this. Educated at Long Marston C. of E. School, left school at the age of twelve and started work in the building and allied trades. Retired at the age of 65 and am now a pensioner. I am simply taking my present action for God and my fellow human beings

* See also p. 1692

Printed image digitised by the University of Southampton Library Digitisation Unit

especially of the future, not for my own selfish ends.

I would draw attention to Phillipians Chap. 4 v.8— "Finally, brethren, whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report; if there be any virtue, and if there by any praise, think on these things."

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. R. Crabbe*

On behalf of Leighton Organs of Vicarage Lane Wing I wish to oppose the proposed siting of the Third London Airport at Wing.

My firm has been established for sixteen years. Our business is the construction, rebuilding, repair and tuning of pipe organs. This involves the testing and tuning of organ pipes in our workshop. To voice and regulate an organ pipe it is necessary to recognise by ear a pitch of 10,000 frequencies per second. This is impossible in the neighbourhood of an Airport. I found that when working on organs near Heathrow and Luton Airports, it was necessary to suspend all testing and tuning of pipes while flying was in progress, because of aircraft noise.

I moved to Wing for the sake of quietness. By sheer hard work during the last sixteen years I have built up a reputable business which serves an area bounded by London and Birmingham, Oxford and Cambridge. I maintain by contract no fewer than 150 pipe organs. After starting single handed I employ four full time staff. It is essential that I live in the area in which I work, and if I am compelled to leave Wing, I face losing the fruits of sixteen years hard work. My staff, who live locally face losing their employment, and my customers their service.

While I appreciate that only a comparatively small business is involved, it is a very specialised work. It also serves a widespread community dependent on a specialised service, not easily replaced.

While my main objections are on behalf of my business and customers, I also wish to object personally on behalf of myself and my wife. If we have to leave the district, we shall have to face living at a distance from our married daughter and her two children who will not be able to follow us.

On behalf of a small business, but one of specialist importance, and on behalf of two small but happy and close families, I wish to object most strongly to the proposed siting of the Third Airport at Wing.

* See also p. 1693.

Supporting letter from: The Incorporated Society of Organ Builders

I am sorry to learn that one of the sites under consideration for London's Third Airport is at Wing and that one of the runways would be but half a mile from your works.

For the voicing, tuning and testing of organ pipes absolutely quiet conditions are essential.

This is not my opinion alone, but would be confirmed by any organ builder. With a runway within half a mile, pipes of high pitch, which are used in every organ, would be quite inaudible when planes are passing.

Living as I do some two miles from Biggin Hill Aerodrome, and writing as a practical voicer of organ pipes, I know that it would be impossible to work when planes are passing.

I hope you will make these points clear when you meet the Roskill Commission at your local inquiry

Additional Evidence of Mr. R. Crabbe

My firm has had full membership of the Federation of Master Organ Builders for several years, and is in the top category. We have contracts with the Ministry of Social Security and the British Embassy abroad.

Concluding on a personal note, I believe that human happiness is more important than anything else, and I consider that many, many people will be made desperately unhappy if Wing is chosen for the Third London Airport.

Abbreviated List of Organs Built/Maintained by Us

Athens (Greece) English Cathedral. (Rebuilt).
Luton, Christ Church. (4 manual, rebuilt).
Woburn Parish Church, Beds. (3 manual, rebuilt).
Wootton Parish Church, Beds. (3 manual, rebuilt).
Renhold Parish Church, Beds. (3 manual, rebuilt).
Bedford, Christ Church. (3 manual, rebuilt).
Bedford, Priory Methodist Church. (3 manual, New Organ).

Printed image digitised by the University of Southampton Library Digitisation Unit

Bedford, Bunyan Meeting. (3 manual, restored).
Linslade Parish Church, Bucks. (3 manual, rebuilt).
Winslow Parish Church, Bucks. (3 manual, rebuilt).
Woughton Parish Church, Bucks. (3 manual, restored).
Bushey Parish Church, Herts. (3 manual, rebuilt).
Birmingham, Yardley Parish Church. (3 manual, rebuilt).
Cambridge, St. Paul's Church. (Rebuilt).
Ivinghoe Parish Church, Bucks. (Rebuilt).
Aston Clinton Parish Church, Bucks. (Rebuilt).
Stewkley Parish Church, Bucks. (Rebuilt).
Stewkley Methodist Church, Bucks. (Rebuilt).
Lacey Green Methodist Church, Bucks. (New organ).
Bierton Parish Church, Bucks. (Rebuilt).
Halton Parish Church, Bucks. (Rebuilt).
Wing Parish Church, Bucks. (Restored).
Castlethorpe Parish Church, Bucks. (New organ).
Waddesdon Parish Church, Bucks.
Nashdom Abbey, Bucks. (Rebuilt).
Princes Risborough Parish Church, Bucks. (Rebuilt).
Princes Risborough Baptist Church, Bucks. (Rebuilt).
Wolverton Methodist Churches, Bucks. (Both restored).
Irchester Methodist Church, Northants. (New organ).
Leighton Buzzard Baptist Church, Beds. (Rebuilt).
Dunstable Polish Catholic Church, Beds. (Rebuilt).
Eaton Bray Parish Church, Beds. (Rebuilt).
Maulden Parish Church, Beds. (Rebuilt).
Biddenham Parish Church, Beds. (Rebuilt).
Bromham Parish Church, Beds. (Rebuilt).
Wilstead Methodist Church, Beds. (Rebuilt).
Bedford, Brickhill Baptist Church. (New organ).
Bedford, St. Cuthbert's Church.
Bedford, Howard Congregational Church.
Watford, Christ Church. (Restored).
Watford, Leavesden Hospital. (Restored).
Sarratt Parish Church. (New organ).
Oxford, Marston Parish Church. (Rebuilt).
etc.

SUPPORTING LETTER FROM: THE FEDERATION OF MASTER ORGAN BUILDERS

One of the members of the Federation, Leighton Organs, proprietor R. Crabbe, A.I.S.O.B., is protesting against the proposed siting of the Third London Airport, which if proceeded with, would cause him to suffer considerable hardship in earning his living as he would be forced out of the district from where his main work is derived.

We confirm that it would be impossible to work as an organ builder in a workshop near an airport as the continual aircraft noise would prevent the voicing of organ pipes, both for individual stops and for complete organs being erected.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. C. Lovejoy*

The following is a brief statement of the consequences on the lives of the members of my family should the Third London Airport be sited at Wing (Cublington).

In view of Mr. Justice Roskill's observations at the private meeting on 16th June, I no longer seek to appear personally before the Inspector provided that, as promised, an equal weight is given to my written representation.

1. Personal details.
Name: Alan Charles Lovejoy. Age 36 years.
Married, two sons aged 5 years and 3 years.
Occupation: Marketing director.
Address: Portway, Hardwicke, Aylesbury, Bucks.

2. Having purchased my home some eight years ago I have each working day since then tolerated over three hours travel a day commuting to my office in order to raise my family in the peace and unpolluted atmosphere of the countryside.

3. During this period a major portion of my income and of my free time has been spent on extending this modest house, and my wife and I have spent countless hours in personally constructing garage, conservatory, greenhouse and stable, and developing what is becoming a mature garden from meadowland.

4. Situated as we would be some 1,500 yards from a central position at the western end of the proposed airport perimeter we would be in a zone where, based either on decibel or N.N.I. ratings, it would be impossible for any normal person to be domiciled.

5. It is reasonable to claim that it would not be possible at any price to soundproof the house in any reasonable way to make existence within it tolerable.

6. In view of the foregoing, and the fact that no State compensation is available unless property is actually requisitioned, I understand that the current market value of my home has fallen to a figure approximately one-third of the value as of January this year.

7. This values does not cover the current mortgage on the property. Thus the financial loss to me is crippling.

8. Should adequate State compensation eventually be forthcoming, there are two other major and highly personal consequences as a family unit:

(a) Social. The whole life of our family is concentrated within this area—friends, interests, community involvement. For us the airport would mean our total removal from the area; a total severance from this involvement.

(b) Health. The airport "blight" is having a detrimental effect on the physical and mental health of both my wife and myself—as it is on many others in this area. The eventual choice of Wing—with its resultant problems—will add greater stress.

Conclusion. Quite apart from the wider logical and moral consequences of siting an airport at Wing, the effect on our small family unit would be shattering to our present way and standard of life and to our future.

I therefore lodge my personal objections in the very strongest of terms.

* See also p. 1694.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. D. Midwinter*

Having been granted permission to appear at the hearing on No. 3 Site, Cublington, the undersigned intend to give evidence on the general lines herewith.

As Yeomen Farmers in the parishes of Oving and Whitchurch and Tenant Farmers in North Marston Parish.

Description of farm business, resume of production Effect of Airport proposals regarding noise and pollution, together with development of services on farm livelihood.

Historical associations of family with parish and agriculture and any relevant information connected with the foregoing.

* See also p. 1694.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. J. E. Midwinter

In accordance with procedure I herewith submit my intentions concerning the hearing regarding Site No. 3, Cublington.

Having been granted permission to appear at the hearing my evidence is generally as follows.

As elected County Councillor for Winslow and Stewkley Division and representing some four thousand electors a large majority of whom will be most severely affected by your proposals. My general comments concerning effect on Rural and County livelihoods, comments regarding general validity of site information concerning noise and position of proposed site. Certain historical and local information to be selected at random. Such statistical and factual information concerning noise and requirements of agricultural land as contained in H.M. Government's report on Stansted inquiry, where such information can reasonably also relate to any other site (Cublington). Any comments or quotations relevant to needs of nation from responsible statesmen or leading figures past or present. Need for development of this type to be undertaken on coastal or offshore site from the point of view of noise and population effects. Lastly but by no means least, such information concerning own family and other local families right to remain undisturbed and service to nation, etc.

I do not expect the foregoing evidence to exceed 30 minutes in length.

Additional Evidence by Mr. J. E. Midwinter

I am strongly opposed to any proposal to site the Third London Airport at Cublington; my reasons for this are briefly as follows:

1. This island is already overcrowded in terms of human population. Therefore, any major development of this magnitude should, without question, be sited on offshore or coastal site, where least disruption from noise and development will be experienced.

(a) The Rt. Hon. Julian Amery, Minister of Aviation and Member of Cabinet prior to 1964, is on record having stated that this island was overcrowded at twenty-five million persons.

(b) Many off-shore sites exist which would be ideal for your proposals, one of the most attractive of these being the Wash. Latest proposals for this combine a four-runway International Airport–Seaport for ocean-going ships, two freshwater lakes and the building of a city for three-quarters of a million persons.

2. One assumes that the vast majority of people residing in such a pleasant rural environment do so by choice, this area of Bucks. being a particularly pleasant and rewarding place in which to live. The desecration and pollution of this area would, I suggest, be incomprehensible and as a result it is unlikely that any of the present members of this local life would remain.

To even suggest the demolition of such villages as Stewkley, Dunton, Cublington and part of Wing, together with the intermediate hamlets and properties such as Creslow, Littlecote and others, is nothing less than wanton vandalism.

Whitwhurch, Oving, Pitchcott and North Marston would suffer noise and pollution which would inevitably drive the inhabitants from these villages. I remain unconvinced of the accuracy of the NNI as printed in your Site Information and am sure that the future generations of jet aircraft will produce noise levels far more disturbing and injurious than envisaged.

This will make Winslow, Granborough, Swanbourne, Hoggeston and Hogshaw as untenable as the aforementioned.

(a) Professor Richards stated at Stansted enquiry that 25 NNI was more applicable in the countryside than the 35 NNI suggested by others and as such, noise contours would cover a larger area and affect more persons than you are prepared to admit.

3. The financial loss which would occur to residents of this area would be nothing less than tragic.

Parishioners, whether tenants or owner-occupiers, mortgagees or owners in-credit, will find no hope in compensation for there can be no compensation that is adequate for demolition of homes that are treasured and ways of life that are loved by those who choose them.

For those whose homes are unqualified for compensation, the position would be even worse financially and they would be resident in acoustic slums.

4. Agriculture. Active service in World War I apart, I have farmed land in the parishes of Oving, North Marston and Whitchurch for more than three score years.

I am sure that the mixed farming which is prevalent and traditional in this part of Bucks. is more productive than most other areas of Great Britain and that grain and both livestock and milk production are above average in their quality.

Printed image digitised by the University of Southampton Library Digitisation Unit

Land of the quality to be destroyed, if your proposals succeed, is becoming very scarce and the amount likely to be taken, both for an airport itself and the development of highways, services and homes, would be scurrilous and scandalous.

5. In conclusion, Sir, I would remind you that many of the families residing hereabouts can, with pride, refer to ancestry dating back, like my own, many centuries past. Some are, by comparison, new arrivals.

The vast majority of all have had relatives, both close and distant, who served this Nation in one or both dreadful world wars. Some, like myself, returned from the battles in reasonable health, some wounded little or much, either in battle or from the inhumanities of the Prisoner of War camps. Some returned not; they are remembered by widows and dependants, in our Churches and Memorials.

All served that this Nation would remain free, and the people therein free to choose their own destiny and ways of life, not to have incursions of this nature forced upon them. Lloyd George stated in 1918 "This should be a land fit for heroes to live in". Such sentiments are still applicable.

I cannot think that your Commission could be so utterly disregarding of the strength of the opposition to your proposals for this site as to make this your final choice. Should you do so I wholeheartedly align myself with the parishioners of Stewkley and other villages in my opposition by whatever other means necessary.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. P. M. Murphy*

I have lived in Stoke Hammon since 1950, when my husband and I bought Tyrells Manor Farm, with its Queen Anne farmhouse (which is designated as being of historic interest), fine dairy buildings which have been further improved over the years and 150 acres of land, which was extended to 250 acres in 1955.

My two daughters, now aged eighteen and fifteen, were born here and have strong local ties.

During the last nineteen years I have built up my pedigree Guernsey herd, which now consists of 220 head, including bulls and young stock and produces over 200 gallons of milk per day. The herd has won the Bucks. Milk Recording Cup for the best Guernsey herd in the County on nine out of the thirteen times it has competed. Surplus stock is sold all over the country and several bulls have been sold to the Milk Marketing Board for use at Artificial Insemination Centres. It is my contention that if the airport comes to Wing, not only would the milk yield suffer, but the cows would abort and the health of the stock would suffer from noise. The grassland, from which extremely high production is obtained would suffer from petrol fall-out. Should, as seems likely, land be required for roads or ancillary services, the property would become an uneconomic agricultural unit. Eleven acres are already subject to flooding from the River Ouzel and the extra water from airport drainage would aggravate this.

Not only is my own livelihood at stake, but also that of my employees. I have four full-time employees, who, with their families represent a total of eighteen people. One of these employees has been with me for sixteen years, another ten years. They are an integral part of the farm and should they leave due to the threat of the airport, it would be extremely difficult to replace them by stockmen, and women—of similar calibre. They are naturally worried at this threat to their livelihood, homes and education of their children.

Apart from these personal objections I feel most strongly that this airport should not be sited in this rural area, where it will affect the lives of so many who have chosen to live and work in the countryside.

I enclose a letter from the Secretary of the English Guernsey Cattle Society in support of my objection.

* See also p. 1694.

Supporting letter from: The English Guernsey Cattle Society

In support of Mrs. Pamela Murphy's objection to establishing a Third London Airport at Cublington, I confirm that for the past nineteen years Mrs. Murphy has maintained a very fine herd of pure bred registered pedigree Guernseys at Stoke Hammon, Bletchley.

This herd, under the registered prefix "Tyrells", is well known throughout the country and overseas and on more than one occasion has been used by the Society for demonstration purposes to our official panel of judges.

Accordingly it would be detrimental to the interests of our breed should this herd be disbanded in the event of the airport at Cublington being proceeded with.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Dr. B. W. A. Ricketson*

I would like to make a representation at the hearing against the proposed airport at Cublington on three counts, namely: (1) personal; (2) my proposed business, and (3) the Commissions apparent belief in the meaningfulness of the NNI scale.

1. My wife and I are both from London, and to give ourselves a pleasant environment and our children a permanent home, a job and our house were chosen in the countryside. We have been at Pitchcott since 1955. A change to a bustling and noisy environment would frustrate our preferred way of life.

2. I am at present building a laboratory for the calibration of thermometers at low temperatures. It will be necessary in the next few years to construct calibration machines that will reach down to temperatures close to a millidegree from absolute zero, where inputs of energy of an erg (a pin dropping from a height of 1 millimetre will produce this amount of heat) become important. To obtain a vibrationally free environment at incident noise levels of 100 dB with the particularly high low-frequency content, will be very difficult unless very expensive conditions are created.

3. In the public discussion concerning the noise nuisance of aircraft from the proposed site at Wing, the Noise and Number Index (NNI) has been accepted by both the Commission and the Resistance Groups as an expression of a natural law, confirmed by a Government Committee (Wilson 1963)†

The NNI scale was based on one experiment carried out around Heathrow Airport and was useful at the time as being better than nothing. Since that date indices have become available from other countries: Composite noise rating (U.S.A.), Stor-rindex (Germany), Indice de Classification (France), Annoyance Index (Australia), Noiseiness Index (South Africa) and Noise Exposure Index (Netherlands). To these must be added the International Standards Organisation, Aircraft Exposure Level. Although all the formula for calculating these indices show that there is an approximate relationship between the noise made by an aircraft and the number of aircraft, there is a difference in what is considered "bearable". In general, a lower level of noise interference is recommended than that associated with the NNI scale. This is not surprising considering the particular circumstances under which the Heathrow experiment was made.

However, there is another index on intermittent noise, the Traffic Noise Index, contained in British Standard 4142, which can be converted to the NNI scale (by the expert), and gives an indication of a British reaction to a noisy environment during daytime. This standard gives a "lower dissatisfaction rate", i.e. where 35 per cent of the population are dissatisfied with the environment, as 40 NNI, in approximate agreement with the other national scales. It can well be argued that a population that is 35 per cent "dissatisfied" is not living in a satisfactory environment and that an acceptable limit is 35 to 38 NNI (daytime only figure).

The contours of NNI which have been issued must only be taken as very approximate. To obtain the map, air traffic control experts are asked to estimate ("guesstimate" is a better word as we are talking of ten years hence) the aircraft movements, which requires information on number of aircraft coming in and leaving for the various traffic lanes between internal and international airports. The noise distribution from present day light and heavy aircraft is known, and from rate of climb and descent a computer may be used to obtain contours of equal NNI. The assumptions are so numerous, that at best the maps can be taken only as an indication of the future reality.

Noise, by definition "unwanted sound", is in the nature of things subjective, psychological and sociological. In making a decision on how the population will react to the threat of an increase in noise in the community, the Commission must make some estimate on the correctness of the NNI contours and whether our present standards of noise environment are likely to place people in the dissatisfied group.

With all the uncertainties, the 20 NNI contour should be taken as the boundary to the area to be affected adversely.

I must add that I am not an expert in noise, but have read through some of the scientific literature and corresponded with a few of those who are carrying out research in sociological noise. If the Commission and the public will realise the difficulties and uncertainties inherent in estimating a noise environment and the community reaction to such a noise, the arguments will be better informed.

I believe that some of the points raised in this letter may require explanation or amplification, and consequently I request permission to appear in person.

* See also p. 1695.

† Cmnd. 2056, HMSO.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. B. Taylor*

The technical arguments against the siting of the airport at Cublington, Wing are being dealt with by the experts and so the objections which I make are mostly personal. They are the same ones which you will hear from many other ordinary people, but how can one stay quiet and passive when one's home and whole way of life is threatened with destruction. The natural instinct is one of horror, and a determination to fight this diabolical threat.

I was born in Wing and my paternal family tree goes back several generations in this village. Both my husband and I have lived in some part of North Bucks. for over forty years, and we have one daughter twelve years old. Our home is at Burcott—a small hamlet on the outskirts of Wing. We had this home built for us nearly eleven years ago and have worked constantly ever since to shape a pleasant garden from a rough field. Our home overlooks a valley of green fields and woodlands—a haven of peace and tranquility and one of the main reasons for our choosing this site.

We now face the threat of losing all this as Burcott lies within the site area shown on the Commission's drawing No. CTLA 5.† We are told we should be compensated, but how can money compensate people for the destruction of their homes, the wasted years of planning and toiling and the loss of their whole way of life. What price can be placed on these things which to us are priceless.

My husband works in the nearby town of Leighton Buzzard and if our home is destroyed we shall move away from this dstrict since we do not wish to live within sight or sound of an airport. Thus at the age of fifty my husband would have to seek new employment.

Apart from any personal losses the thought of the wholesale devastation of a vast area of our beautiful rural farming countryside, along with so many homes and historic churches appals me. Indeed no words could ever adequately describe the feelings of myself and my family.

All this destruction in the name of progress. How can a free, democratic country like England do this to its people—deny them the right to live how and where they choose; take away their homes and land without so much as "by your leave".

A democratic government governs by the will of the people—is it then the will of the people that this vast destruction of our country should be allowed. If so, then what is happening to us today could well be the fate of others in future years for some new enormous project. It is time this kind of "progressive destruction" was halted, or there will be nothing left of our green and pleasant land.

I believe it is our duty to preserve for future generations, our way of life, our beautiful and productive countryside, and the historic buildings which our predecessors built, cherished and fought for over the years, against would be vandals.

* See also p. 1696.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cublington Airport Supporters' Committee

SUBMITTED BY MR. E. J. PAYNE*

Section A—Communications

SUBSECTION I: ROADS

One of the major advantages Cublington has as a site for London's Third Airport is its easy access in all directions by road. The following are propositions for ensuring an easy flow of traffic to and from an international airport at Cublington.

Airport Ring Road

To ensure free traffic flow an international airport must have an arterial ring road. To build such a ring road using present roads in the area is quite feasible.

For example such a ring road could combine parts of the A418, A413, B4032 and B488 respectively. Such a proposed ring road would not meet with too many construction difficulties. Feeder roads could lead off any point of this ring road to the airport. Many of these "feeders" could use minor roads that ran across the airport site.

Would the tradesman benefit? Yes. Garages and shops along this ring road would profit enormously, thus exploding the claims of W.A.R.A. that the local trader would suffer.

Routes Through to the Rest of the Country

North Bucks is rich in route communications and a list of connecting roads would be as follows:

From Buckingham

A422 (West)	via Banbury to the W. Midlands.
A422 (East)	on to A5 at Stony Stratford (connections North/South).
A413 (North)	leading to Northampton and E. Midlands.
A413 (South)	via Aylesbury to connections to London.
A421	via Bicester to connections with the West.

The importance of Buckingham as a meeting point of these vital routes would necessitate a small ring road which could be constructed without too much difficulty.

From Aylesbury

A413	(see Buckingham).
A41	(a through route) from London to Birmingham and North.
A418 (North)	to Bedford with connections to E. Anglia.
A418 (South)	via Thame to Oxford.
A4101	to industrial South Bucks.

From Bletchley

A5	primary North–South route.
B557	connection to M1 at Apsley Guise.
B438	Hemel Hempstead with connections to London.

From Leighton Buzzard

A4012	to Hockcliffe then on to A50 to Leicester.
A418	Bedford.
B4032	could be used as airport "feeder".

The "Big Five" Routes

By far the five most important routes the M1, A5, A50 and A41, all North/South and A422 East/West. All these five are far superior routes to the others in the area and the four "A" routes are all being modernised somewhere along their length.

Conclusion

C.A.S.C. realise that such routes as these must be modernised and all to extra cost, but the same problem would exist anywhere else in the British Isles.

SUBSECTION II: RAILWAYS

Railways are still regarded as the prime factor in the conveyance of passenger traffic. Within 15 miles of the Cublington site are five passenger lines and one goods line (which can be re-opened for passengers). In addition a further five abandoned lines with the tracks removed, but bridges and earthworks still intact. The Verney Junction to Quainton Road line is beyond reclamation.

The five passenger routes with the nearest stations are:

1. Euston—Manchester	Bletchley (or Leighton Buzzard)
2. St. Pancras—Nottingham and Leeds	Luton
3. Marylebone—Aylesbury	Aylesbury
4. Paddington—Birmingham	High Wycombe
5. Bletchley—Bedford	Bletchley

The goods line which could be re-opened is:

Bletchley to Oxford

This line caused considerable protest when it was closed eighteen months ago to passenger traffic. It could be easily re-opened to provide a rail link to the West. By far the most important item is that this line runs through Winslow which is referred to in our

* See also p. 1697.

Printed image digitised by the University of Southampton Library Digitisation Unit

"P-Plan" as the most likely site for rehousing development (see section on rehousing facilities).

The now disused Winslow station is one of the nearest to the airport site. It could be re-opened and reconstructed to become the central airport rail-link terminal. Trains for London could run as far as the loop onto the "Great Central line" at Calvert and thence via Aylesbury to Marylebone. One big advantage of using this route to London would be not to overload the already extremely busy Bletchley-Euston route. Winslow Station could also serve trains to Oxford with connections to the West. Trains to Birmingham and the North could be boarded at Bletchley. Trains to the East and North East could be boarded at Winslow and across the fly-over at Bletchley. Also on the Winslow line is Bicester where passengers could change for Leamington and the West Midlands.

Abandoned Lines

Of the abandoned lines (Verney Junction—Banbury, Leighton Buzzard to Dunstable, Cheddington—Aylesbury, Wollerton—North Pacwell, Aylesbury—Rugby) only one would be of any use re-opened that of Verney Junction—Banbury.

This line could be opened to enable the airport to bring in labour from Banbury, Brackley, Buckingham. This would cut the amount of people needed to move into the area thus cutting the size of necessary housing development.

Of all the other lines all of them could be serviced just as well by road to save the cost of "reclaiming" them.

Conclusion

C.A.S.C. realise that railway plays a predominate part in serving an international airport. It is up to British Rail to provide that service and the re-opening of the vital Bletchley—Oxford route must be foremost in their preparations.

Subsection III: Waterways

The Cublington site is unique in that it is the only one with a canal next to it. The canal is a form of transport badly overlooked in this country. In Europe canals are used for the conveyance of numerous bulk goods. The canal in this case is the Grand Union which is known as a broad canal, i.e. it is able to take 13 ft. beam barges capable of carrying almost 80 tons. Because this mode of transport is not heavily taxed, is not heavy on fuel, does not pay such heavy insurance they are able to charge only a fraction of that of road or rail transport.

It is our (C.A.S.C.) belief that if an airport is built at Cublington a steady supply of bulk building materials (e.g. cement) could be brought down by canal. This would mean a heavy cut in transport rates over long and medium distances and could thus lower the cost of construction.

Leighton Buzzard has old wharves ideally suited for stores of construction materials brought down by canal.

Another use of the canal would be to supply aircraft fuel in bulk, thus keeping it safely off the roads. (Liverpool and London refineries are both accessible by canal.)

Section B—Construction and Services

Subsection I: Construction

The construction of an international airport at Cublington would be much aided by the easy accessibility of many of the required materials, e.g.: Cement for concrete: is abundant in this area with works around Dunstable, Northampton and Aylesbury.

Steel: Corby and Wellingborough are ideally close. Also steel from Wales could be brought up by rail via Oxford—Bletchley line.

Sand: Abundant around Leighton Buzzard.

Plastics: Luton and Welwyn Garden City contain large industries of this type.

Bricks: (if required). From Bletchley.

Others include glass from London, paint from Buckingham, timber from numerous close districts.

Also it is interesting to note that 16 per cent of all building contractors are based in Greater London.

Subsection II: Electricity Supply

When the airport is built it will need a huge supply of electric power. The principal main transmission line for London and the South runs close by with primary power stations at Northampton, Bedford and Luton. Aylesbury is connected by a principal spur from Luton.

Subsection III: Oil

Airports need a constant supply of fuel to run efficiently: to provide this pipelines will be required with a refining plant at the airport. A pipeline crosses the airport site from Hook refinery near Southampton to join with the trunk pipeline at Northampton. This trunk pipeline runs from Liverpool to London thus giving a wide choice of sources of fuel for the airport.

Subsection IV: Gas

If natural gas is required it is already on the site provided by a pipeline from the North Sea.

Conclusion

From all points of view, C.A.S.C. believes it a solid case, on the services and construction question, for an airport at Cublington.

Printed image digitised by the University of Southampton Library Digitisation Unit

Section C—Rehousing—P Plan

The "P-Plan" is a plan drawn up by the C.A.S.C. in which Winslow is put forward as a site suitable for rehousing.

If an airport is built at Cublington the people displaced will require somewhere to be rehoused. Bletchley housing development is for L.C.C. overspill and so is Aylesbury. Leighton Buzzard has its own redevelopment plan. This leaves Buckingham or Winslow in the district. Buckingham is "cramped" already and would probably be unable to develop on a large scale. This leaves Winslow, a small town of ideal situation in respect to providing homes for airport employees and rehoused persons. It is on a major road and has a station that can be re-opened (see communication) C.A.S.C. firmly believe the planners should exploit Winslow as the airport town.

The full details of the "P-Plan" will be brought forward at the Stage III hearing.

Section D–Agriculture and Geology

Subsection I: Agriculture—The Argument Against

North Bucks. lies in an agricultural region known as the scarplands. Permanent pasture and cattle rearing are the main keynotes of agriculture of this area.

To suggest (as some anti-airport sources do) that North Bucks. is an important arable area is ludicrous. A survey conducted in 1937 showed only 20 per cent of Bucks. farmland to be under the plough. During the war the percentage rose to 50 per cent due to wartime demands, though the output was poor. Arable agriculture has again fallen to peacetime standards in North Bucks., even then the main arable areas are to the south of the airport site south of Aylesbury.

In a 1961 national census only 4 per cent of total manpower was employed in agriculture as opposed to 7 per cent in the transport and communications field. This has also risen considerably in the past eight years. Surely this is a strong case for the airport?

Subsection II: Geology

A C.A.S.C. survey found North Bucks. to consist of limestone culcareous grits or sandstone on high ground, and low ground of clay, proving this to be a suitable foundation.

Section E—Tourist Industry and the Effects

An International Airport at Cublington would open up the heart of England as a tourist centre. The areas which would attract many tourists would be:

The Cotswolds: already quite popular.

Stratford on Avon: Birthplace of Shakespeare and a veritable magnet for American visitors.

Woburn Abbey: world famous.

Sulgrave Manor: ancestral birthplace of George Washington.

Stowe School.

These and many other famous centres would be close at hand to tourists who landed at Cublington Airport. North Bucks. itself could become a "tourist trap" with its many "olde worlde" villages and fine old churches. Many local people would benefit from the tourist trade as inhabitants of other areas such as Cornwall and Wales have. Yes! Cublington Airport would enhance, not destroy North Bucks. charm.

Final Summary

From every point of view Cublington is the most suitable site for London's Third Airport and C.A.S.C. will give it every ounce of support they can.

Cublington Airport Supporters' Committee

Submitted by Mrs. C. Walsh*

Cublington is a small village of some forty houses and a population of just under 200. The main occupation of the village used to be farming, but after much modernisation and mechanisation the number of people employed in this work in the village has been reduced to four.

Men now commute to Aylesbury, Bicester, High Wycombe, London, Luton and Oxford. The employment offered in the local towns is mainly of light engineering, the wages are medium to low compared with the national average, while the cost of living is high and in no way relates to the wages earned. Better employment is found in the larger towns, but the benefit of this is offset by the high cost of transport.

During the past forty years the population of Cublington has risen by a mere twenty people, two shops and a bakery have closed, leaving Cublington with just a Post Office. The children which at one

* See also p. 1697.

Printed image digitised by the University of Southampton Library Digitisation Unit

time had a recreation ground, but that has now been declared unfit. For the teenagers there is nothing, they have to go to the towns for entertainments and with our local transport services this is out of the question and is another reason why the young people have been making Cublington a village of refined people and businessmen who can afford to enjoy the best.

These people are the main speaking force against the airport, they mean to completely monopolise the area. There are still many ordinary people who want this airport because of the better standard of living it could bring. Many of them sit behind closed doors hoping for it, afraid to come out in the open with it so great is the feeling of oppression from the other side.

Something must be done about these dying villages. It can't be a good thing to have to walk three miles to the doctor's surgery and commute twenty miles to work, not in the twentieth century.

A large proportion of the land the proposed airport will use, is at this minute not being used for agriculture. In fact large quantities are laid out for turf contracting, and the breeding and training of horses, both for jumping and racing. This, though providing a profitable income for its owners does precious little for anyone else, and in no way can it be called agriculture.

Figures issued by the Ministry of Agriculture show that out of five harvests grown only two are of any use. This is, they say, because of the presence of a large amount of boulder clay in the subsoil.

This airport must come to Bucks., it will serve to modernise such old towns as Buckingham, once the County Seat, now a disgrace. The education would improve, by this I mean a more comprehensive range of subjects would be taught that aren't now because there is no call for them in the local employment.

In the nation's interest this airport should be sited at Cublington. Many of the communications needed exist already in this area and only need enlarging upon. This area is crying out for development: too long it has been held back by the many land-owners who sit on the Council. It suits them to have it as it is, but it doesn't suit the rest of us who find it pretty hard to manage.

There is much support for it here. There will be less destruction, less people to be upheaved. No large towns to be seriously affected by noise.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. R. Bramwell*

Having been a resident on Wing Airfield for the past five-and-a-half years I have taken a great interest in its future, and it was obvious at the start of my observations that this land could be put to no better use than an airfield, particularly in view of the fact that taking a SSW to NNW view of the area on a map the three wartime airstrips of Wing, Great Horwood and Silverstone are within a fifteen-mile stretch of Land which is of moderate to poor farming land.

The area of Cublington and Wing has been given over to horse rearing and equestrian pursuits to the exclusion of other farming activities or on a reduced scale, the good land produces good crops which are seldom *harvested well* due to three in five bad harvest periods. The subsoil immediately under Wing Airfield is London Blue Clay and I personally visualise the Underground linking through this area with London and Manchester taking in Northampton, Coventry, Birmingham and Leicester areas for passenger and cargo transport, with Cublington Airfield Station Underground.

It has become increasingly possible to realise that large motorways are not the total answer to the traffic problems, snow persistently blocks our roads and fog is an ever present hazard, therefore we must put the main travelling facilities underground where progress in construction and future use is not hampered by national hazards. This plateau through the Chilterns is a natural airfield and in view of the fact that the population in this area is likely to increase at a rapid rate an airport is a *must* to serve this influx who should not be compelled to travel south to find an airport.

There is bound to be distress among the older people who are likely to be disturbed therefore it behoves the powers that be to safeguard the future for these people by rehousing adequately and compensating in a fair and just manner. It is a human tragedy that ill feeling on a considerable scale is engendered by the present method of selection and in view of my recent experience of victimisation of trades-people I believe that it is better to have official inquiries as to suitability and give a definite decision. I realise that experts differ and procrastinate very often for personal reasons, but with an eminent judge in control it would be possible to give a majority decision.

Many theories have been expounded and doubts expressed in opposition to the Airport and at the Inquiry I would like to have an opportunity to question some of the experts on these points of interest. Many of the villages in the area are dying or are being bought up by commuters who are the main opponents of the siting of an airport in this vicinity they are people who earn their money miles away but like to adapt a superior attitude to the local inhabitants of these villages.

Many stories have been told about the many lives saved during the war by the availability of Wing Airfield when all other airfields were fog bound, there are many wartime pilots who vouch for the authenticity of these statements and I am sure can be verified from records existing on the flight operations of this airfield during the war.

Great stress has been made about the noise question, but the valley between the airfield proper and Wing village itself acts as a muffle and minimises the intensity of any noise from aircraft.

The General public are progressively being excluded from access to the countryside by land enclosures on a large scale, the farmers in this area require continued payments of large subsidies to enable them to live in the manner they have been accustomed to in the past and more and more farmers are turning to horse breeding and rearing to add to their income and pleasure, this to me is a short-sighted policy and will lead to over production of unwanted mounts.

The land which could be allocated for an airport is unique in so far that it covers quite a large area at a height of approximately 400–450 ft. above sea level with no abrupt rises to its plain area, but gently sloping approaches which are favoured by pilots. Any valleys which are of a minor nature could be easily spanned by a flyover principle with possibly erection over aircraft factories or service depots thereby minimising surface obstruction.

The extension to the M6 and the nearness of A5 and M1 give valuable access at the moment to outlying areas, coupled with the close proximity to the main line railways at Stoke Hammond and Aylesbury with the additional link with the Bletchley Bicester line at Winslow.

I realise that this may appear to be a rambling report on a serious subject, but when one visualises the service renders on the hovercraft principle eliminating the use of winding service roads by travelling direct to any service or emergency such as ambulances, fire appliances or any urgent motive service, even passenger transport could be hovercraft over such a large expanse of an airport apron.

Finally I would like to voice an opinion that aircraft size should be limited and any increase in efficiency of future engine power should be sacrificed to cut down the noise of the engines and not to build aeroplanes to the maximum of engine efficiency.

* See also p. 1704.

Printed image digitised by the University of Southampton Library Digitisation Unit

On recent visits to Heathrow I have become increasingly aware of the conglomeration of surface buildings which create such an ugly sight over a large area, I realise that in the piecemeal way in which the present situation has been built up at Heathrow it is inevitable that such a mess could be created again if individual aircraft companies were allowed to do their own building, it is my suggestion that the new airfield should incorporate modern erections on the perimeter and at apron level not obstructing the visibility of approaching aircraft except for operational buildings concerned with the flights and not the service.

The roofs of large buildings built into the sides of the hill could support many acres of flat service area, it is a wonderful opportunity to create a superbly efficient model for the rest of the world to copy, instant landscaping can deal with the visible amenities and the area needs a very up-to-date sewerage and drainage system which is a point of argument at the present time.

Supplementary Report

I make no apology for submitting a supplementary report on the siting of the London International Airport at Cublington.

In view of Judge Roskill's comments on Mr Millard's activities I take my theme from remarks made by a Wing Councillor (Mr. Bandy) to the effect that people had to be "frightened" to make them realise that he could not have the airport in his area.

Much will have been said about the pros and cons of the airport siting, but little will have been said about the social and leisure activities of the many thousands of workers who will be moving to this area to live near their jobs, unless facilities for them are provided for leisure time in conjunction with the proposed development then it is a foregone conclusion that troubles will develop amongst the young people.

We are daily reading in the Press about the youth of today and their permissiveness and drug taking and the question is always asked what can be done about it? No one seems to have any suggestions about what should be done because most people who ask the questions are out of touch with reality, which is simply that youth seeks to sweep away any boundaries which restrict their powers of achievement but the restrictions and barriers which have been created eventually wear down their resistance with the result that it becomes a matter of live for today and hang the consequences, even the students whom one would expect would break away from his or her restrictions become frustrated and indulge in all sorts of irresponsible activities in order to show off because ebullient youth is naturally demonstrative and exhibitionist in character and unless this ebullience is directed or given a chance to find the right channels for showing off, their trouble starts. I have personally associated with youth to help them to find an outlet with some success but it is an uphill job against local authorities who are mainly concerned with how much is there in it for me either in prestige or monetary gain.

Cricket has gained a new lease of life by trying a new form of approach, but where are the facilities for the workers to indulge in the new found interest, for believe me the workers want to participate not just to watch, in tennis, cricket, football, sailing, fishing and the indoor activities of basket ball, weight-lifting, wrestling, six-aside football and athletic training generally, if you provide the facilities you will get the response but do not let the local authorities control it or it will result in stalemate.

I believe that this Cublington site is the only one which can solve these vexed questions of participation.

You must not have hordes of people rushing to the coast jamming the roads on every fine weekend or holiday period, let us have another big stadium and in view of Mrs. Warren's great effort for the Equestrians in our midst why not a centre for the horse lovers with a trotting track, pony racing and jumping, run as a commercial undertaking, because I realise that all this takes a lot of money, however, if you are having large firms moving in they will have the nucleus of sports clubs already organised, but the whole point is that this must be a co-operative effort and not sectional or the whole thing will fall flat with bickering.

It would be very unwise to make the same mistake which has been repeated at Oxhey, Stevenage, Harlow and Hemel Hempstead and Kings Lynn, the planners make pretty arrangements but little thought is given to leisure activities apart from a hall for bingo or concerts, accommodation must be provided for physical activities, it costs more and is therefore avoided like the plague, I believe that the Roskill Commission can make recommendations and I hope something on the foregoing remarks can be considered.

Finally what about the close-knit community of Stewkley which will have to move, where will they go? what is wrong with giving them a small town of their own with financial interest in their own community on a proportionate basis. I believe that this country should set an example in town planning on a new proportionate participation basis, this has been tried in a different form at Welwyn Garden City and Bourneville but never with the residents having a financial interest in the proceedings or in its eventual future. I herewith venture to make suggestions for Stewkley New Town in North Bucks.

Upon assessment of the true value of a given property a proportion of £1 shares be allotted to the houseowner in addition to a new house which his

Printed image digitised by the University of Southampton Library Digitisation Unit

shares will represent, no one to possess more than one residence either owner or occupier, the owner would be called upon to pay his rates in the normal way to their own central authority which is composed of members of the town itself. Tenants of houses who are to be displaced would receive a house and shares, but would pay for the shares in addition to the rates, the extra payment made to provide cash to cover mortgage payments on the cash used to build their houses for which they are the freeholders with voting rights.

The township should be run on public company lines with *all* residents participating and taking an interest in its upkeep and administration, no one person or group of persons to be allowed to own a preponderant proportion of the shares in order to influence policy, staffing of administrative bodies and services to be drawn from the locality and the aim should be to have a divergent choice of labour to encompass this end, in addition to the existing local people who receive first choice.

If the financial position is taken care of at the start, then all other associated activities will evolve from the native acumen of the residents with as little interference as possible from outside.

It would be a pity not to try something along these lines in view of the fact that the total disruption of communities in the past has not led to a satisfactory solution in human rehabilitation, I may be just a dreamer but at least I can dream of means to try to help people who cannot help themselves through lack of finance or ability or force of circumstances. I do not seek Utopia but earthly happiness for the greatest number.

At the present time the Stewkley people appear to be a very united body capable of managing their own affairs and if as a body they were able to participate in the choice of a site for their new town I feel sure that their pride will accomplish great things.

There are magistrates and other skilled administrators who live in this area of Stewkley and presented with such a challenge they will rise to the occasion. Long Marston Airfield has been suggested in view of the fact that Great Horwood may come under the present Airport Scheme but I think that the new town should be adjacent to the railways with its own station.

It is common knowledge that most local authorities are bankrupt because they are overwhelmed by demands that cannot really be met, but the public demands them and the political factions create emotional disturbances for political ends which in my estimation is a vicious spiral which can only lead to continued chaos unless you have the public taking closer participation in the running of their towns.

If the Government are moving into this area in a big way it behoves them to consider the whole aspect of these problems and not just the airport, this area is ideal for a great National Park with commercial participation and with the public access to financial interest in its income as in the Betting Board's activities, there is no doubt whatsoever that unless people can see some return for their expenditure in a visible advantage it will be of little use to spend the money.

You have your Wimbledon and your Wembley and other public activities where many are refused admission for lack of space, it is time other outlets were available. The New Maude Report does not in any way tackle this problem, but in my estimation only aggravates the issue. The people do not seem to matter as long as the administration is re-organised with the results that can easily be foretold in bureaucratic stalemate. The foregoing preamble may not be admissible evidence to the inquiry, but I felt impelled to put pen to paper on the subject with which I have been associated for forty-five years with little signs of any significant enlightenment.

Certain points for consideration re Cublington site are worth mentioning at this juncture regarding obvious saving in costs by the saving in fuel over the Foulness Site (which has been mentioned very frequently in these parts as the only possible site to be economically feasible), such as the fact that Cublington is 450 A.S.L. and additionally I presume that all heavily loaded aircraft are travelling west, thereby saving a hundred miles each way in actual flight.

Comments on North Bucks, Farming Land

Much has been said about the farming land of North Bucks., if it was all that is said about it the local farmers would not require subsidies and deficiency payments this can be said of even the best of land in Lincolnshire, Lancashire and Northants where the weather over the past ten years has made arable farming hopeless without support. It is my belief that arable farming in all but the best areas should be discontinued and more attention to be paid to stock raising for exporting to the rest of the world who need our breeding livestock to improve or maintain their own basic requirements.

The amount of money spent on supporting bad farming could eradicate foot and mouth disease for ever, even to helping other countries to defeat this menace to livestock. The cost of producing cereals in this country is prohibitive and when one considers that the real grain growing countries of the world are overproducing then it behoves us to put to use these great tankers which can carry 250,000 tons or more at one trip, or even more than enough in one shipment to cover the production of the best land in this country.

It would appear from close observation of the weather pattern over the past five years that there is a steady decline in the good weather pattern, it is even reported that the arctic circle has had a shortage of snow but more severe icing, it is likely that these conditions could continue to deteriorate in Europe therefore more reliance should be placed on stock-raising and our own native ability as engineers and

Printed image digitised by the University of Southampton Library Digitisation Unit

research scientists to keep abreast of the world's trade. Europe has tried to be self supporting with very little success, squabbles are constantly breaking out with consequent requests to us to help in some way, I honestly believe that we must keep up our close ties with the rest of the Commonwealth and this will require a very efficient airways service using Cublington as a major airport and possibly a livestock airport in Northants between Northampton and Market Harborough adjoining the main line railway to encompass the assembly of livestock from all parts of the country for shipment.

It all may be wishful thinking on my part but I have put it on paper to be seen or judged for its feasibility and application.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of M. J. M. Cornwall*

I am a schoolmaster on the staff of a State school in South Northamptonshire. My home and roots are in Buckingham, where I was born. For many years I have been active in public life, having been Mayor, Chairman of the Borough Development Committee, Chairman of the Art and Crafts Society, Chairman of the Buckingham Council of Christian Churches, a Deacon and Lay Preacher, Youth Group Leader, Chairman of the local Liberal Association and President of the District Toastmasters' Club. My wife is a native of Aylesbury and we have two young sons. I lead the fullest possible life now as Liberal Prospective Parliamentary Candidate for North Buckinghamshire, but find a little time for my life-long hobby of fishing and the necessary one of gardening.

Sir, you have heard and read an enormous quantity of evidence which has been founded on real experience, incontrovertible logic and faultless statistics. At the same time you have clearly been impressed by the desperate urgency and warm sincerity of the various witnesses. I do not omit from this the C.A.S.C. Committee who have clearly worked hard on their genuinely held but, I think, misguided case.

With compelling clarity, alliances like the Stewkley Action Committee have presented their evidence and displayed their own personal qualities. It is this latter kind of factor that I wish to emphasise, Sir. The spirit of these people, and I know them, is the genuine crusading spirit of our county's hero John Hampden. We do not believe that man was born to go down on his belly before the State.

A speaker here in Aylesbury at the end of the famous demonstration clarified the reaction of our people if the Wing site is chosen. "As God lives, we will fight!" he said. This was no empty threat, and the Commission must have regard to it. I am persuaded through my long-standing contacts that if the demolition men were to arrive in Stewkley there would be serious violence. The marches, the careful work and organisation, the constitutional presentation of their case, were like the deliberate drawing of a sword. Let Whitehall beware of that weapon and the people's anger.

You have heard, Sir, that Milton Keynes is regarded in North Buckinghamshire as a glutton for land. Let me assure you that the implication of the Development Corporation's axe symbol has not been ignored. The dictatorial powers (and I used that word advisedly) of that non-elected authority are viewed by many of us with abhorrence. We were touched on the raw by the Corporation's well-founded assertion, "We are dictators, we are not accountable to you at all. We are accountable to the Minister".

Now there seems to be the threat of another non-elected body in the shape of the British Airport Authority being in charge of a major land-use in Buckinghamshire. I submit, Sir, that from a democratic viewpoint the implications of this prospect are of real importance. The people in charge of our destinies and in considerable power over our money would, again, not be accountable to us at the polls.

I was profoundly impressed by the concluding remarks of Mr. Gregory last week. It would indeed be degrading and a national disgrace to send men to destroy the material manifestations of the spiritual and cultural heritage of the communities that have for so long occupied the proposed airport site. It would be heartless and unfeeling to break up the communal ties of the area and turn the people out of their homes.

Sir, it would not be possible.

---

* See also p. 1710.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Stewkley Local Labour Party*

The village and parish of Stewkley is a closely-knit community, many of the families being descendants of families which have lived there for many generations. These old families are inter-related resulting in extended kinship networks in the village and stress would be caused if these were to be broken up. Elderly people would be particularly affected if they were to be removed from the environment in which they have lived all their lives and in which several generations live and are therefore able to give and receive aid as may be necessary. Older people can be especially helped by the younger ones if they are ill, or can no longer care for themselves entirely, whilst younger people can receive aid in such matters as child-minding, particularly if the mother is ill or works outside the home. Some of the old age pensioners live in bungalows which have been built during the past few years, thus providing a more easily run home, whilst retaining them within the community.

Some of the people living in the parishes of Dunton and Hoggeston are closely related to those of Stewkley parish, and in addition children from these parishes attend the primary school in Stewkley, transport being provided by means of special school buses. Children of the ages five to eleven years thus have the advantage of living within a comparatively short distance of the school. For older children there are schools at Wing approximately three miles, Leighton Buzzard five miles and Bletchley seven miles away from the village of Stewkley itself.

Whilst everyone living in the area would lose their homes and sense of identity within a community, many people would lose their means of earning a living and also, for some, a whole way of life. Those who would lose their employment include both employers and employees in the egg-packing station, six builders and contractors, five grocery shops, including the Post Office and the Co-op, all of which sell a wide range of goods, also a drapers shop. There are four public houses and a small hotel in the village and other services include a garage and a filling station, a milkman, baker, electrical engineer, plumber, ladies and gentlemen's hairdresser, coach proprietor and a haulage contractor. Business premises would all be lost with the trade and goodwill which have been built up together with the jobs of all those working in them.

Loss of the school would mean loss of employment for the teachers, cooks, lunch supervisors and school crossing attendant. Also affected would be the policeman and district nurse living in the village. Roadman, assistants in the public libarary, caretaker of the village hall, a butcher living in the village who provides a mobile shop and domestic workers.

The village hall is used as a surgery by two doctors whose main surgery is at Wing, two other doctors having a surgery at Whichurch. Not only would these lose many of their patients, but the members of the community would lose the services of medical practitioners who they know well and whose patients some of them have been for many years.

Some life-long residents and also newcomers to the village find employment outside the parish in such places as Leighton Buzzard, Bletchley, Newton Longville, Dunstable and Aylesbury. Employment includes work at Vauxhall Motors and the London Brick Company, construction, civil and light engineering workers and various categories of professional and clerical workers. Stewkley is conveniently situated within easy reach of employment whereas if these people were to lose their homes they could be forced to travel longer distances to work in order to keep their present jobs and could face increased costs because of this factor.

The area outside the villages is used for agricultural purposes and if this land were taken away from them both farmers and farm workers would be likely to lose, in addition to their homes and employment an entire way of life. Because of the urbanisation which would result from an airport in this area, and because of other development also. Many people would be unable to obtain other farms or jobs on farms and in spite of being skilled in their own industry, would be forced to try to find employment of another kind from which they would be unlikely to obtain the same satisfaction which they derive from care of livestock and cultivation of the land.

Ninety-one new houses have been built and thirteen are in the course of construction. Some of these are occupied by people who were already living in the area, but others by people who have been attracted by the character of the village and by its convenience with regard to nearby towns and employment.

The current growth of population in the parish of Stewkley is shown by the figures of the Register of Electors. The Register from February 1966 contained 764 names; for 1967 there were 772, that for February 1968 showed 800 voters whilst for the current year from February 1969 shows 846. An increase of approximately 5 per cent. The numbers could again increase as more houses are built in the village, thirty-one having been designated.

* See also p. 1711.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 6

Ashendon Parish Council
Chearsley Parish Council
Dorton Parish Meeting
Lower Winchendon Parish Meeting
Waddesdon Parish Council
Wotton Underwood Parish Meeting

Mr. A. E. Toy
Mr. D. C. T. Graves
Mr. B. H. Fuller
Mr. S. Holmes
Mr. D. Judd
Mr. H. Minnitt
Mr. V. J. Scott
Mr. R. G. Parsons
Mr. W. S. Trickey
Mr. F. K. Wood
Mr. T. Warren
Mr. D. J. Watts
Mr. W. G. Andrews
Mr. S. F. Jones
Dr. V. E. Lloyd Hart
Miss C. Harris
Dr. P. S. Brown

Cublington Parish Council

Mr. A. J. Biggs
Miss C. Bodington
Mr. A. E. Males
Mrs. P. O. Manley
Mr. B. G. Osborn
Mrs. S. L. Panter
Mr. A. J. Radwell
Mr. A. C. Read
Mrs. R. A. Roger
Mr. R. Smith

Council for the Preservation of Rural England

Mr. V. G. Walker

Drayton Parslow Parish Council

Mrs. A. K. Jones

Great Brickhill Parish Council

Mr. F. A. Day
Lt. Col. I. B. Addis
Mr. S. E. Baker
Mrs. P. Johnston Bolton
Mrs. C. M. Mahon

Premier Farm Products

Mr. J. M. V. Tinworth
Mr. J. G. C. Spencer Bernard
Mr. C. Greenacre

Witnesses were examined on this evidence on Day Six, Tuesday 22 July 1969, see pages 1717–1732

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Ashendon Parish Council, Chearsley Parish Council, Dorton Parish Meeting, Lower Winchendon Parish Meeting, Waddesdon Parish Council, Westcott Parish Council, Wotton Underwood Parish Meeting*

1. This is the statement of a Joint Committee composed of the Ashendon Parish Council, Chearsley Parish Council, Waddesdon Parish Council, Westcott Parish Council and the Parish meetings of Dorton, Lower Winchendon and Wotton Underwood.

2. These Local Authorities represent parishes on or to the southwest of the A41 and have combined together to submit to the Commission the of Third London Airport their representations on the common effects of the proposed siting of the Third London Airport at Cublington, upon the areas they represent.

3. There is attached hereto an individual statement from each Local Authority describing the geographical and historical background of the villages concerned, their population, working and social activities and certain special points concerning individual parishes.

4. The nearest of the villages to the proposed site is Waddesdon which would appear to be some seven miles from the end of the runways. The farthest village represented is Dorton which would appear to be twelve miles from the runways. The majority of the area would be directly in the flight path of aircraft taking off from Cublington.

5. At present this area has little air traffic movement inflicted upon it. Certain private small aircraft are occasionally seen at weekends and other passenger and service aircraft flying at great heights throughout each day, but in no way could it be said at the moment to be a problem. With the siting of the airport at Cublington this will radically change. It can reasonably be expected that aircraft will pass over the area, it is understood at the rate of one aircraft every ninety seconds, thus subjecting the villages to all the worse possible effects of air traffic movement. The villagers who have in no way been used to noise and vibration can anticipate the physical and mental oppression of air activity and a noise nuisance according to the published information between 50 and 40 NNI which will make their working activities, their ever increasing leisure time, and the absolutely necessary sleep they must have, virtually impossible. It cannot be stressed too highly that not enough is known in this country as to the effects upon an individual's health by subjection to this intensity of noise and activity. It must also be pointed out that the problem will have a new aspect in as much that the majority of persons in this area who would be subjected to such a nuisance have not during their natural lives encountered more than a modicum of noise. They have been nurtured in an environment of quiet and solitude in pleasant surroundings with a high amenity value and all this would be altered.

6. Because of the situation of this area it would be especially prone to the hazard of aircraft safety. Only this year there have been two reported cases, one in the United States of America and the other in this country of aircraft taking off narrowly missing causing vast destruction of property and life. Whilst the villages appear on the map to be well scattered, within the context of a large aircraft taking off at speed this is little protection and the chances of houses and people being the unfortunate victims of an air accident must be rated as less than fifty fifty.

7. It is understood that aircraft using modern fuel leave a kerosene fallout trail which over a long period of time debilitates the ground causing a loss of crops and damge to stock. It is understood from residents who have lived near London Airport that washing, for example, is often found to be affected by dirt and smuts caused, so it is alleged, by the presence of the airport.

8. This area has varying television reception at the best, indeed Westcott gets a better picture from France than London. The interference from aircraft would ruin this leisure activity.

9. It would not be anticipated that much of the area with which these authorities are concerned would be affected by major works connected directly with the airport. It is quite conceivable that Waddesdon which already sits astride the very busy A41 will in the early days of the airport receive further vehicular traffic creating in its wake traffic hazards to the population. It would also be anticipated in this respect that the apparently shelved plans for a Waddesdon and Aylesbury Bypass would be brought to life and put into effect with a consequent loss of land. Similarly if the A41 to which a connection will obviously be made to serve the airport was found to be inadequate, then the construction of any motorway link would make vast inroads into this area.

10. One of the major functions of this area is to provide a high standard of amenity in a countryside aspect for people who live in Aylesbury within the confines of a town and industrial centre. Every weekend, especially so, in fine weather brings evidence of this interest in this part of Buckinghamshire being within easy reach not only for the individuals in the motor car but for cyclists, ramblers and campers. If the amenity is to be despoiled by the airport then this facility given to people who live in

* See also p. 1717.

Printed image digitised by the University of Southampton Library Digitisation Unit

Aylesbury will not be found in this area nor it is suggested for many miles around and the airport will have the same effect upon all its boundaries. It is therefore important to note that people who have moved to Aylesbury because of the availability of work and accommodation, many of them from London and possibly in a bid to avoid the noise, bustle and rat race of a big city, will only find that they have jumped out of the frying pan into the fire and again will be subjected to the same if not increased nuisances.

11. It has been stated that the airport will maintain a working force of 65,000 people solely employed in connection with the aerodrome plus possibly the same number for all the eventual peripheral services and industries. Clearly these people must have somewhere to live and it will not be long before urbanisation affects this area. Whilst it is true to say that the area is certainly by any standards not the best to be developed because of the nuisances to which it will be subjected, this has not prevented substantial residential development in equivalent positions adjacent to London Airport and it is assumed that in the absence of control it will not prevent the urbanisation of this area. Even in a slight degree this will have an effect with the straightening of what are otherwise pleasant winding roads, provision of street lighting where none has existed before and the influx of a population to communities to whom they will seem intruders and thus a general disruption of a way of life.

12. The Local Authorities concerned clearly appreciate that some twenty years will elapse from a decision to the completion of an airport at Cublington and that problems will arise piecemeal to an eventual climax. They also fully appreciate that in this technical world the method of air transportation including take off and landing may have altered so radically that little or no noise problem arises, but they are entitled to consider their objections in the light of what is known now to be the effects of air traffic and to consider the worst position and not the best. To do anything less would be failing in their duty.

13. The Authorities have, however, been mindful of those people who live in their areas who have expressed some support for the airport. In the majority of cases, and we are only talking of a limited number of people, their support is associated with the increase in employment. The Authorities feel that this is a point well made except that the same facilities for employment will exist with the new city of Milton Keynes and with the expansion of Aylesbury to its ultimate population of 70,000 in any case. Conversely the persons who are against the siting of the airport at Cublington cannot be said to be militant or at least as vociferous as those whose properties will be taken for the airport or who live closer. In the main they have been willing to rely upon their Parish Authorities to speak for them, but this does not mean that the Authorities are not confident that they represent the vast majority of the inhabitants of this area.

14. The Local Authorities are aware that the Commission is charged with the task of a cost benefit analysis of the four sites concerned and they are sure that the Commission will be mindful of the human problems that will arise from the positioning of the airport anywhere in England. In as far as this criteria is compatible with their terms of reference then the Authorities ask that full weight be given to the local implications of what is proposed.

Statement of the Ashendon Parish Council

1. The Ashendon Parish Council submit the following statement at the Local Hearing to the Commission on the Third London Airport.

2. Ashendon crowns a hill in the Vale of Aylesbury and is set in a delightful pastoral scene, with the Chilterns looking romantic on the horizon. The parish includes the hamlet of Pollicott (Upper and Lower) about half a mile south of the village. The Norman church is set on the top of the hill with clusters of cottages and houses at its foot shaded by trees.

3. The population is now about two hundred and twenty and of the working population some sixteen work in Aylesbury, fourteen at the Rocket Propulsion Establishment at Westcott, four commute to London, twenty-one work out of the village and twenty-three in the village. There are seven farms providing mixed husbandry, a small concrete works, a shop and sub Post Office, a public house and a village hall. The bus service is only on three days a week and very limited.

4. The church of St. Mary is an ancient building of stone in the decorated, Early English and Perpendicular styles. The tower is fifteenth century but the font is Norman. In a medieval recess lies a thirteenth century knight clad in chain armour still about to draw his sword. The pulpit with its raised panels, the altar table, a high chair in the chancel and a long oak chest are all Jacobean. This church is a good example of a simple stone building. The living is joined with Wotton Underwood.

5. The majority of the land is owned by the Crown but this has not always been the case. Indeed, the Crown only acquired the land in 1930 purchasing the village as part of the Wotton Estate of Earl Temple. Since then only a few persons have been able to buy the freehold of their property and the farmers and inhabitants are mainly tenants. Because of the agricultural background of a large estate, the families are often closely related. However, this has not meant that the villagers are not willing to accept newcomers into their society provided every-

Printed image digitised by the University of Southampton Library Digitisation Unit

one appreciates the delightful countryside and has no wish to despoil the magnificent views.

6. The village has, for its size, a large number of active organisations. There is a Village Hall Committee, Playing Fields Committee, Women's Institute, Mothers' Union, Football Club and the Gatehangers. Every year there is a fête in the village and during the year one or other organisation will hold or run jumble sales, whist drives and a childrens feast.

7. Last year the villagers asked the County Council to create a Parish Council and at the ensuing election for councillors seventy-five per cent of the electorate voted. This interest in public affairs is maintained by an active Council who have used their very limited funds to provide some essential street lighting on a dangerous corner outside the village hall. The village has no sewerage system, but one has been proposed by the Rural District Council and is now with the Minister for approval. Development is restricted by the present planning policy preventing the construction of houses on the skyline but planning permission has been granted for the redevelopment of the village shop to provide better premises. It is hoped that the Rural District Council will erect a few Old Person's bungalows sometime in the near future, but this is the only fresh development that can be anticipated.

8. The village is a favourite for weekend motorists lying as it does between the main A41 and the villages of Brill, Chearsley and Cuddington. This traffic hardly disturbs the peace and tranquility of the village nor does the occasional noise that rises from the rocket testing at Westcott.

9. Ashendon is one of the two sites that has been considered by the Bucks. Water Board for a North Bucks. Central Storage Reservoir. The other site is Cublington where it is now proposed to put the Third London Airport. The Board have indicated that the valley here is suitable for the construction of a reservoir to contain water pumped from the Thames, but a decision now has to be taken by the Water Resources Board. If the site is chosen then the scheme will be opposed by the Council as far as possible. However, if the Airport goes to Cublington, Ashendon valley becomes an inevitable choice.

10. This village is, therefore, one where an active interesting community lives containing a fair proportion of old people mainly supported within families. All apply their various talents to the common end of helping the village. But this peace and their endeavours will be worth nothing if the Airport goes to Cublington. The village lies in what must be the take off flight path and at five hundred feet above Ordnance Datum it is one of the highest points around and will be that much nearer the noise and air activity with all its attendant problems and risks.

11. The proposed sites were announced quite by chance on the day of a Parish Meeting and at that meeting a resolution was passed to oppose the site at Cublington and the Council authorised to take whatever steps they felt necessary. The Council with this mandate at once sought the co-operation of the adjoining parishes and now leads a group of seven Parish Authorities who have combined with the sole purpose of making known their views in a way which it is hoped the Commission will not find unduly repetitive. All the village societies are behind this action having passed resolutions in support, individuals have written letters to the Commission, and joined W.A.R.A. Despite the fact that this village is not directly affected by the construction of the Airport in the same way as villages nearer the site it is quite clear that all inhabitants appreciate the absolute disaster to them if the site is chosen and have, therefore, taken this stand, they hope not in vain.

Statement of the Chearsley Parish Council

1. The Chearsley Parish Council submit the following statement at the Local Hearing to the Commission on the Third London Airport.

2. Chearsley is situated on the north side of a small valley through which the river Thame flows. The village enjoys a southerly aspect sheltered from the worst of the north winds by the high ground behind it. The long axis of the village follows the slope of the ground from close to the crest of the ridge forming the northern boundary of the Thame Valley, down almost to the river's edge. Looking south the view extends as far as the Chiltern Hills over the relatively flat Vale of Aylesbury. To the north of the village the countryside is composed of low rolling hills with soft contours typical of this part of North Buckinghamshire. From the higher part of the village the view eastward reaches up the valley to the Thame to the very region of the proposed airport.

3. The first settlement at Chearsley was founded by Cedric, a Saxon Chieftain, hence the name "Cedric's Lega". He apparently obtained the title to the land by vanquishing King Arthur's forces at a battle on the site of the village. Previously the Romans had built a road through the region of the village and this forms the basis of the present main road through Chearsley to Long Crendon. At the time of the plague most of the settlement was situated near the river below the church, after the plague this site was vacated in favour of the high ground and the infected old houses destroyed. Earth works remain as an indication of this site. Not far away is a farmhouse in whose walls live all that remains of the famous Notley Abbey founded in 1162 by the first Earl of Buckingham. The Church the Monks watched over till the Dissolution is set below the village near the river. The church first existed in the twelfth century and was extensively rebuilt and

Printed image digitised by the University of Southampton Library Digitisation Unit

altered in the early part of the fourteenth century. The nave has a roof of the tie beam and collar variety and is a fine piece of fourteenth century carpentry. The windows are of various dates, some are fifteenth century and contain original quarry glass of the period. The chancel structure nearly all dates from the fifteenth century and contains one good brass in the floor of John Frankeleyn and his wife dated 1462. The font bowl beautiful with fluting and foliage has been here for seven centuries, it is about the same age as the piscina which the fifteenth century masons set back in the wall when they rebuilt the chancel. The roof of the chancel is five hundred years old and the little sanctus bell is older than the Reformation.

4. There is no industry in the village other than agriculture there being some three farms, a poultry farm and a market garden. The population of the village is nearly four hundred and of the working population twenty-six work in Aylesbury, five or six commute to London and the rest work either in the village or in neighbouring areas.

5. The village has one county primary school with some forty-one pupils attending, contains approximately one hundred dwellings and has a public house and a village store. Whilst there are no outstanding historic buildings there are some scheduled timber framed houses of great antiquity, many witchet built cottages peculiar to this part of the country and the original Manor House forms the basis of the structure of Chearsley House in Church Lane. During the past few years four small estate developments have taken place and at present seven old persons bungalows are in course of construction. It is understood that there are some two dozen Planning Applications granted for development not yet exercised.

6. The village supports a flourishing Women's Institute, Cricket Club and Youth Club and strong membership of other societies centred mainly in Aylesbury.

7. The village contains one local notary in Dr. Robert Simpson (D.Mus.) who is a composer and has been a member of the B.B.C. Music Division since 1951. He is a prolific writer of both music and books upon symphonic composers and is regarded as an authority on the works of Beethoven. He claims that the present quietness of the village is essential for his work. Dr. Simpson is one of two active Fellows of the Royal Astronomical Society who pursue their interests in the village.

8. This village situated at a small cross roads enjoying a reasonable quantity of traffic to and from Aylesbury and Long Crendon, Ashendon, etc., is very peaceful with many back lanes and quiet cul-de-sacs. The peace is enjoyed not only by persons born and bred in the village but by people from other areas who come in search of such peace and quiet and now live and enjoy an active life in this area. Some of the people are in fact refugees from the environs of Heathrow fleeing from the effects of the airport. Many are the type of person unable to exist in the confined atmosphere of large communities, and who retain their sanity and capacity to work efficiently by choosing a quiet open environment, such as Chearsley provides, to live in. The village could look forward to a small amount of further development increasing its population to some four hundred and fifty persons, such developments mainly being infilling and back land development. The present services could easily support such an increase without any trouble. If the airport were to be sited at Wing it would be reasonable to expect that this village could be affected by urbanisation spoiling its whole way of life. The Parish Council have met and resolved to make this objection in opposition to the proposed siting of the aerodrome and this action is supported by local residents and local associations.

Statement of the Dorton Parish Meeting

1. The Dorton Parish Meeting submit the following statement at the Local Hearing to the Commission on the Third London Airport.

2. Dorton lies approximately 250 ft above sea level on the clay lowland between limestone hills. The rock strata of the village is of Jurassic Kimmeridge and Ampthill clay, both impervious rocks which lend the land particularly useful for dairy farming. A small stream runs through the village and fossil remains are abundant on its bed. The limestone Dorton Hill is porous and the sheep and pigs are better suited to it. The Manor of Dorton had its origin in Saxon times and the Conqueror granted it to the Gifford family and in the course of time it passed to various families notably the Dormers who built Dorton House and their descendants the Aubrey (-Fletcher) family. It was as the result of the building of the house that the village sprang into life. The estate on which the house stood and the surrounding land required considerable maintenance and the house itself doubtless employed many servants for a variety of jobs. The village originated to house these people and as a result the dwellings were of a poor and unreliable nature. Consequently few old buildings remain in Dorton, the oldest in fact are the church and of course the house itself. The shape of the country and its farming economy have changed little in the last century or so. The farms in the village are Victorian buildings and most of the houses belong to this century some being built since the Second World War.

3. The position of the railway halt on the London to Birmingham line opened the village up somewhat from its sheltered past but it lasted a mere forty years and in fact had little effect upon the village.

4. The present population is some one hundred and twenty-two excluding the staff and boys in the

Printed image digitised by the University of Southampton Library Digitisation Unit

school (about 150) which now occupies Dorton House. The only local association is the Dorton Social Club with a very small membership.

5. There are six farms, three dairy, one mixed, one arable and agricultural contractor, one of which is not farmed but is leased to another farmer for grazing. Of the working population three work in Aylesbury, one commutes to London, thirty to forty actually work in the village and the remainder work in adjoining areas.

6. Dorton House is an Elizabethan Mansion completed in 1626 by Sir John Dormer. The house was altered in the 1780's by Sir John Aubrey but restored to much of its original condition by Sir Henry Aubrey-Fletcher in 1904 to 1911. In 1939 it became a school for the blind and in 1955 became the preparatory school which it is now. The building (open to the public in the summer months) is well known for its fine plaster ceilings and elegant panelling. The Aubrey-Fletcher family have long been associated with the village by reason of their living in the house and it was their ancestors the Dormers with whom Prince Rupert stayed with in January 1644 on his way to join Charles 1st in Oxford during the Civil War.

7. Of this village it can be truly said that the past speaks here with a quiet voice from Norman to Jacobean days. The buildings are grouped together with the little church of St. John the Baptist and the village is shaded by fine trees. Because of its humble purpose in origin, and because of its singular lack of attraction to tourists Dorton has remained one of the few unspoilt villages in this part of England—a hamlet where everybody knows everyone else and many are related one to another. In a part of Buckinghamshire so perfectly rural the intrusion of an excess of present day bustle would cause irreparable harm.

Statement of the Lower Winchendon Parish Meeting

1. The Lower Winchendon Parish Meeting submit the following statement at the Local Hearing to the Commission on the Third London Airport.

2. The small village of Lower Winchendon, within eight miles of a proposed runway, lies on the lower slope and foot of a ridge which separates the valleys of Ashendon and the Thame. More than fifty years before the Norman Conquest the boundaries of the village were defined by King Ethelred II and the village has a long and honourable history centred round the activities of the Augustinian Monks at Notley Abbey and Nether Winchendon House. It will be seen from the brochure* which is attached relating to the house that it has been occupied by many notable persons and families and for the last four hundred years has been in the Bernard family.

3. The population of the village is approximately one hundred and thirty-five of which eight work in Aylesbury, fourteen in the village and sixteen elsewhere.

4. There are forty-seven houses, one primary school with thirteen children on the roll, eight mixed farms, a thirteenth century Parish Church, and a nineteenth century Mission Hall.

5. The church is noted for a single-handed clock set in the tower in 1772 by Jane Berrisford who hoped that it would remind people that life should be soberly and honestly lived and the clock has recently been restored to working order.

6. The village is a popular tourist attraction of the weekend motorist type, the house often being open to the public and the village having open weekends when the houses and gardens are open for inspection. This is a popular exercise and persons living in Aylesbury and thereabouts find the experience of entering the peace and solitude of this tiny village with its air of history and dignity most rewarding.

7. The Chairman of the Parish Meeting and those who support him are in opposition to the airport site at Cublington and have agreed to make these representations.

* Not reproduced.

Statement of the Waddesdon Parish Council

1. The Waddesdon Parish Council submit the following statement of the Local Hearing to the Commission on the Third London Airport.

2. Waddesdon is situated on a small hill 5½ miles along the A41 from Aylesbury. The rising ground above the village forms part of the Rothschild Estate. To the northeast there are pleasant views over lower ground to Quainton and beyond.

3. The village had its origins as part of the Duke of Buckingham's Estates but the majority of the buildings have been erected during the last one hundred years. This followed the erection of Waddesdon Manor. The village now consists of some nine hundred houses, including one hundred and fifty council houses.

4. The population is estimated to be approximately one thousand seven hundred of whom some two hundred commute to Aylesbury, fifty work at the Rocket Propulsion Establishment at Westcott and one hundred work in the village.

5. There are some ten farms, seven associated as part of the Waddesdon Manor Estates and mainly all

Printed image digitised by the University of Southampton Library Digitisation Unit

cattle farming. There is a racehorse stud owned by Mrs. Rothschild. There is a light engineering and motor repairing industry.

6. The village has twelve shops and a hairdresser's, four public houses, a police station with an establishment of four officers who patrol the area and fire brigade premises, with engines on a voluntary call-out basis. The Brigade is manned solely from the village and their area of operations is quite extensive. There are three schools, two primary with about eighty pupils each, and one secondary modern school with some two hundred pupils. The catchment area for these schools includes seven adjoining villages. The village is well served by two bus services, the Oxford County Bus Service and the Red Rover Bus Service, so that during peak times there is a service to Aylesbury about every ten minutes and off-peak times there is a bus every hour. The mobile Library Service visits the village. There is a sub-Post Office, an automatic telephone exchange and a bank open during some days only each week. The village has a doctor whose area covers most of the adjoining villages and there is a resident District Nurse.

7. The local clubs and associations are well patronised and include a Football Club, Cricket Club, Bowls Club, Tennis Club, Women's Institute, Young Wives Club, Darby and Joan Club, a branch of the British Legion and Mothers' Union. There is a Discotheque operating for the youth of the village.

8. There appears to be little history associated with the village prior to the coming of Waddesdon Manor although in the 1800's there was a silk mill after which Silk Street is named, and there was a small cottage industry for the making of Buckingham lace. In 1874 Baron Ferdinand Rothschild bought the Waddesdon and Winchendon Estates from the Duke of Marlborough, and started the work of levelling and planting Lodge Hill on which the house now stands. The house was completed in 1889. It was designed in the French Renaissance style by the French architect, Gabriel-Hippolyte Destailleur, and the gardens were laid out by another Frenchman, the landscape gardener, Laine. Baron Ferdinand had a particular love and understanding of French eighteenth century art and was also a collector of fine English eighteenth century portraits and the paintings of the earlier Dutch and Flemish masters. Waddesdon displays most of the great works of art he collected during his short life. Miss Alice de Rothschild succeeded him on his death in 1898. She too was a keen collector of very individual taste, and added the arms and armour and much of the Sevres china to the collection. On her death in 1922 Waddesdon was left to James de Rothschild and when he died in 1957 he bequeathed the collections and the house to the National Trust with an endowment to ensure their maintenance.

9. There is a Parish Church, a Chapel and the Roman Catholic community meet in the Village Hall. The church is Norman but the tower is fifteenth century. The most impressive possession of the church is the stone giant lying at the entrance to the chancel, a knight in armour above, 7 ft long, his hand on his sword and a lion at his feet.

10. There has been little development during the last five years except for erection of an Old Persons Home at Anstey Court and some small council development, but planning permission has recently been granted for twenty-two units on two-and-a-half acres of land off the main road and this is expected to be the last substantial development within the village. There is little room for infilling, the houses giving an impression of being cramped together in many places. The majority of land is owned either by the Church or the Rothschild's Estate. It is, therefore, not available readily for development. The presence of the airport at Cublington could radically alter prospects for development with the possibility of ribbon development between Waddesdon and Quainton and Whitchurch eventually leading to coalescence.

11. The village sits astride the A41 which is a busy main road carrying traffic at all times of the day and night. It is, therefore, used to both the nuisance from noise and the traffic hazard caused. However, in the early days of the development of an airport it must be expected that there will be a substantial increase in traffic on this highway. Although the main road passes through the village there are quiet back lanes and generally the village gives the impression that it tolerates the presence of the road without deriving much benefit therefrom.

12. The Parish Council have decided to make these representations to the Commission in the belief that they represent the majority of the inhabitants and they are supported by the local associations.

Statement of the Westcott Parish Council

1. The Westcott Parish Council submit the following statement at the Local Hearing to the Commission on the Third London Airport.

2. Westcott is a small village situated half a mile off the A41 7 miles north of Aylesbury situated on level ground at the foot of the hill leading to Ashendon. The village contains mixed development, there are a few examples of seventeenth century thatched houses and a one time Gate Lodge to Waddesdon Manor stands on its own slightly out of the village. The Church of St. Mary the Virgin was built in 1867 and designed by Mr. G. Street, R.A. The expense of this building was met by the Duke of Buckingham and Chandos. The building as a whole conforms to the decorated style like that of its mother church of St. Michael's, Waddesdon.

3. More modern development has taken place as the village is the centre of the Rocket Propulsion Establishment of the Ministry of Technology. The Ministry has also erected some of its own housing

Printed image digitised by the University of Southampton Library Digitisation Unit

accommodation and there are small private residential developments off the main street. The village has one public house, two shops and a Post Office and is visited by the mobile library.

4. The approximate population is three hundred and twenty persons, but there is a large influx into the village each day of persons working at the Rocket Propulsion Establishment.

5. There are five farms of the mixed dairy and arable type employing some fifteen persons. Of the remaining population approximately fifty work in Aylesbury, five commute to London, twenty work in the village and the remainder work at the Rocket Propulsion Establishment.

6. There is a flourishing Women's Institute of some fifty members, but most other recreational facilities are associated with the Rocket Propulsion Establishment. There is an active glider club based at the Establishment.

7. The Council has met and resolved to make these objections to this Inqury in opposition to the siting of the Airport at Wing. This resolution was supported at a Parish Meeting and by the Women's Institute.

8. The village depends to a great deal upon the existence of the Rocket Propulsion Establishment. With the future in this respect assured for many years the village has in the past few years seen small private developments and the Aylesbury Rural District Council have recently decided to erect six old peoples' flats in Lower Green for their purposes. The Council would look forward to more houses and a new primary school being built in the area but with the possibility of the siting of the aerodrome at Wing it might be that the existing situation of the Rocket Propulsion Establishment, on the previous war-time aerodrome, must be abandoned because of its possible effect upon aircraft. If this were to be the case it could spell doom for the village committing it to an existence of a small backwater village with no local source of employment other than agricultural labour and it would almost certainly mean that the present plentiful bus service to Aylesbury would stop, thus limiting facilities to the villagers.

9. The inhabitants are used to a certain amount of noise from the Establishment, but in the main this passes over their heads and is probably heard more by some of the neighbouring villages. This trivial and only occasional noise is of no consequence and is nothing like the noise to which the village could be subjected by the presence of the aerodrome at Wing.

Statement of the Wotton Underwood Parish Meeting

1. The Wotton Underwood Parish Meeting submit the following statement at the Local Hearing to the Commission on the Third London Airport.

2. You find Wotton Underwood only if you are looking for it. The village lies below Ashendon off the road to Brill. The ground is relatively flat and well wooded.

Formerly known as Wotton under Bernwood Forest, the village has existed at least from the time of the Norman Conquest, if not from earlier days, and was then in the possession of Walter Gifford, a tenant-in-Chief of William the Conqueror. One of the de Grenville family was his sub-tenant. The Grenville family continued to hold the Manor until the last Duke of Buckingham and Chandos died and was buried in Wotton church. Tombs of the Grenvilles in the church exist from 1352 down to Richard, the third Duke, who died in 1889 and the Lady Anne-Hadaway, his daughter, who died in 1890. In the Grenville Aisle are buried two prime ministers, a secretary-of-state, a First Lord of the Admiralty, a governor of Madras, three dukes and four privy councillors.

Wotton House was rebuilt in the nineteenth century, the gardens being laid out by Capability Brown. The church is early fourteenth century and the chancel is somewhat offset in relation to the nave. The tower is surmounted by a copper spire, 75 ft. in height, and there are six bells, the middle four having been cast in the Bicester foundry of Edward Hemmins.

The last Duke died in 1889 succeeded by the Earl Temple. The land was eventually sold to the Merchant Venturers and many parishioners were evicted. Only four years ago the Merchant Venturers sold the land to a syndicate of the tenants who now own their land.

3. The population is approximately seventy-five, about a third of what it had been in the days of the Dukes. Most work in the village or are retired. There are three farms. The village has little amenities, the school closed last year and the railway halt was discontinued before Beeching.

4. This quiet backwater sees little of life. It has attracted several notable persons to retire there or take weekend cottages. Tranquility and absence of activity leads the inhabitants into a sense of security which the proposal to site the airport at Cublington would prove false.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. E. Toy*

My objections to the proposal to establish an airport at Cublington (Wing) are as follows:

I have lived in the village of Waddesdon for twenty-five years and have always found it to be a haven of peace and an atmosphere of relaxation from the everyday turmoil of office life. The very long stretches of countryside through fields and parkland where one can walk in quietness give me an opportunity to obtain much physical and mental relaxation to enable me to carry on refreshed in my weekly work. The advent of an airport would destroy everything I value in the countryside, and I should no longer find Waddesdon a desirable place in which to live.

I have been looking forward to retirement in the village in the matter of only two years from now, and I built my hopes on a very happy time amongst people with whom I have lived for a quarter of a century and who are my very good friends.

An airport will prevent conversation with my pals and we would no longer be able to enjoy a quiet pint and a talk, but have to increase the ordinary tones of our voices into a shouting match.

Waddesdon lies in the direct flight path of aircraft and life in the village will be intolerable. The inhabitants will suffer severely and ultimately the population would move away to more quiet zones, leaving the village to die.

The A41 road runs through the village and although a bypass is being considered, the route will be so near to the village that the noise of fast moving surface traffic will be heard throughout the village, thus doubling the noise nuisance from aircraft.

I wish to lodge strong objection to the use of Cublington (Wing) as an airport site.

---

* See also p. 1717.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. D. C. T. Graves*

We wish to lodge our objection to the proposal to build the Third London Airport at Wing.

Broadly our objections fall into two sections—the first on business grounds, the second amenity.

1. Ashfold is a boarding school for well over a hundred boys and it is perfectly clear that the school would have the greatest difficulty in functioning efficiently under the impact of the expected noise levels. Lessons punctuated at 2½ minute intervals by the roar of enormous jet aircraft are hardly likely to be successful, to say nothing of the difficulties which would be encountered in trying to carry on the numerous outdoor activities associated with a boarding school. In addition, we submit that in the circumstances envisaged, a full night's sleep for our boys, vital if academic standards are to be maintained, would be nearly impossible.

2. As can be seen from the enclosed guide book,† Dorton House is a Historic Building in receipt of a grant from the Historic Building Association, and open to the public during the summer months. The building, completed in 1626, is Jacobean in style, and of exceptional interest from both the historical and architectural points of view. The main staircase and some of the ceilings are perfect examples of the period (the latter amongst the finest examples in the country), and both attract visitors from far and wide. Obviously much of the amenity value would be lost if jet aircraft were constantly passing overhead. It is not perhaps entirely without significance that a proposal to erect a line of 400 kV electricity pylons near the building and neighbouring Wotton House was turned down by the Ministry of Power following a Public Enquiry in 1966. If a single line of pylons was then deemed to be a danger to the beauty of this lovely valley, how much more damaging would be the construction of a great airport at Cublington? The noise, oil film fall out, and accompanying urban sprawl would surely ruin one of the few remaining unspoilt areas of true countryside in central Buckinghamshire.

On these grounds we therefore submit our objections and trust that another and less catastrophic site may be found for the building of London's Third Airport.

---

* See p. 1718.
† Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. B. H. Fuller*

The following is the statement that I wish you to consider:

Our home is situated at map reference SP.842199 and is occupied by my wife and myself, our elder daughter, aged seventeen, who is a sixth year student at Aylesbury High School and our son, nine, who attends the Aston Abbotts Primary School. Our younger daughter, aged twelve, is mentally handicapped and is a boarder at Mount Tabor Convent, Wingrave (map ref. SP.872190).

We moved to Aston Abbotts on 21st October 1965 after my transfer (officially stated to be "in the public interest") from UKAEA Culham Laboratory, Berks. to UKAEA, The Radiochemical Centre, Amersham, Bucks. and chose to live at Aston Abbotts for the following reasons:

1. As my wife and I were both brought up in the country we required a home with the peace and quiet of a village.

2. We needed a house large enough for our growing family and with more than the usual size of garden.

3. I needed to be within one hour's journey from Amersham.

4. As property prices in the immediate vicinity of Amersham are very high we looked further afield, eventually finding this pair of cottages.

These cottages are two of a block of four and when first seen were dilapidated, unoccupied, subject to an Improvement Order and the garden neglected for many years.

At a great deal of expense we had the place modernised and improved, we have also put a great deal of work into the garden and purchased a considerable number of trees and shrubs. So now, although we have a nice home, we also have a large mortgage.

As can be seen from the map reference mentioned above we are situated on a rise within a few yards of the proposed airport boundary near the point where aircraft will be becoming airborne. Therefore we would be exposed to maximum noise, vibration and fumes, causing living to be intolerable and damaging the structure.

The obvious thing for us to do if the airport were sited here would be to move away, but the only direction in which I can go is towards Amersham and then I would get into the high price area again. Also I can only move if this house can be sold which is extremely unlikely bearing in mind its position.

We are informed that there will be no compensation for damage caused by aircraft in flight and also that eventually the price of property around an airport is likely to rise "except for houses near the end of runways" which includes this house.

So I visualise the situation where we have a house, intolerable to live in, collapsing about our ears, a garden where plants are killed by paraffin fumes and impossible to dispose of, therefore unable to move to a quieter area.

Furthermore, my wife has stated quite definitely that, if the above situation does arise, she will not remain here, so that will mean the break up of our family!

We are also very concerned about the effect of noise on our younger daughter and the other mentally handicapped children at Mount Tabor Convent, Wingrave. Sudden loud noises cause them real distress which, in our daughter's case, will be aggravated when she is staying at home.

My wife's father, the children's only surviving grandparent, who stays with us for a few weeks at a time several times a year, is most upset at the prospect of the airport being here, particularly as one of the advantages of staying here is that he can get away from the aircraft noises at his home at Woking, Surrey.

From the foregoing it is quite plain that I wholeheartedly oppose the idea of Cublington (Wing) being used as a site for the Third London Airport: in fact, after successive governments over the years have laid down and enforced policies of planning to preserve amenities, for a government to inflict such a vast ruination of amenities on any community is sheer folly, particularly when the nuisances could be kept to a minimum by using a coastal site.

Yes, I would like to appear personally at the Local Hearing.

---

* See also p. 1718.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. S. Holmes*

Further to your letter dated 29th May 1969, I hereby set out my own personal reasons for not wanting to have the above airport sited at Cublington.

Six years ago I moved from Yorkshire to Buckinghamshire because of my job. Partly because of the great difference in price between property in Yorkshire and property in Buckinghamshire, I finally settled on my present home—3 Church Row, Aston Abbotts, Aylesbury. This property is really two cottages which have been converted into one, therefore I have ample space and enough bedrooms.

Another reason why I prefer to live in Aston Abbotts is that it is a nice quiet village, and six years ago, it was obvious that no great development scheme was scheduled to take place.

My wife and I have really settled down in our present home, even though it has meant a great deal of work and money, to do necessary alterations, to bring my cottage up to its present standard.

My mother-in-law, aged seventy-six also lives with my wife and I, and she too, finds the village life very much to her liking.

Although all my children are now married, they have, in fact, married Buckinghamshire partners, one living in Aylesbury, one in the village and the remaining one (along with her husband and son) actually lives with me.

If the Third London Airport is sited at Cublington, my cottage will be on the very fringe of the airfield, and may even have to be demolished to make way for new roads, etc. In this respect, no one knows just what will happen. However, this I do know, the noise will be intolerable to my family and myself. Had I wished to live near to a major airport six years ago when I moved to this area, no doubt I would have purchased a property near to either London or Luton.

Also, as the noise nuisance will be far too excessive for me to even consider living with, how do I go about obtaining alternative accommodation. At my age (fifty), mortgages are not easy to obtain and in view of the rising price of property, I do not think for one moment that I could even afford to purchase alternative accommodation which would compare to what I am now living in. Needless to say, if the Airport did come to Cublington, I don't for one moment imagine that I would be able to sell my property for anything near its true value, as no one in their right mind would want to live on the very edge of a major airfield.

Various people who are in favour of the Airport being at Cublington, say it will bring added work to the area. This may be true to a certain extent, but at what cost? The cost of green fields, peace and quiet and the right for an Englishman to pick and choose where he wants to live. To be fair, I fully realise that England does need another airport to keep up with the way of life, but I strongly feel that this should be sited at Foulness, where even the Council want it and various large concerns are eager and willing to pour money into the project to make a site that is worthy of England—also a site that can be enlarged whenever the need arises.

I have heard at numerous meetings on the above subject, that in time the Airport will have to be enlarged to over double its anticipated size, which in turn will gobble up more good agricultural ground and make more and more noise.

I apologise for the lengthiness of this latter, but I feel so strongly against the proposal to site the Airport at Cublington, that I just felt I had to put it into my own words.

I appreciate the work the Buckinghamshire Council is putting into this objection to the Airport and for what it is worth, you have my wholehearted support.

---

* See also p. 1718.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. D. Judd*

I wish to thank the Commission for their grant of leave to appear at the local hearing opening at Aylesbury on 14th July.

I wish to make the following statement:

Although my family and I have only been resident in Aston Abbotts for three years, we have grown very fond of our natural surroundings and enjoy a very amiable atmosphere with our neighbours and many friends in the surrounding villages. Although we have no ancestral ties it would be a wrench to have to uproot ourselves.

My wife's family live close at hand at nearby Kimble, which was one of the reasons for us leaving Staffordshire. We lived in Wolverhampton, 15 miles north of Birmingham and have lived in the town and also in an overspill area on a council estate. In ten years of marriage, my wife and I now experience a sense of belonging and contentment which always eluded us in our environment in the North Midlands.

After visiting Buckinghamshire on several occasions we were impressed by the beauty and serenity of several villages along with the panoramic landscapes as one toured this wonderful county. Another attraction was the fresh air and healthy atmosphere, which I knew would be beneficial to myself, as I suffer with bronchial trouble.

Our main reason for choosing to move, however, was our youngest child Steven who developed bronchial asthma at the age of two and I was determined to do my utmost to help him with his illness.

Now, at the age of five, he has very little trouble and I can only attribute this improvement to our surroundings.

Our cottage is situated along with three others and two bungalows in an acre of land which provides for most of our needs in the growing of vegetables and flowers which for me is an irreplaceable way of life after living in the town.

I am the tenant of the above mentioned and my wife and I, our two children Angela aged seven and Steven aged five also my sixteen year old sister share a comfortable and secure relationship, along with the rest of our community.

My sister and I both work in Aylesbury and at the present time are both settled in our jobs.

The education of my two children is assured at the local village school where they have the good fortune of enjoying a "family like" atmosphere and I am certain that a break to a new school at their present age would be detrimental to their progress.

My main concern if we were to stay in the area is that they would have to travel, in my estimation, at least 5 miles and even then they would be at a disadvantage due to the extent of noise interference and constant interuption of their concentration.

At this age I feel this amount of travel to be excessive, especially in the winter months when one has to consider children leaving home in darkness and arriving back home in darkness is a too great a risk.

Visualising in the future a growing metropolis which in the space of approximately ten years will be double the area of the present London Airport our country lanes and unique undulating meadows will be replaced by hangars and stores and administrative buildings with the addition of sprawling road systems, large flows of traffic and a gigantic development prgramme to facilitate the needs such as accommodation and recreation of up to half a million people.

These circumstances will only transfer the hustle and bustle of large towns to this area and in my own humble opinion after one has experienced the country life (which is life as it should be lived) there is no alternative.

With such a large influx of people the only answer to the housing problem would be massive blocks of flats which my wife and I are against as they provide a most unnatural habitat.

My home will be directly affected by noise disburbance which would be in my opinion unbearable and I would be forced to move away for this reason.

I would therefore have to venture further south due to climatic conditions in my son's interest and in an effort to find more humane conditions on behalf of all my family.

With the noise of air and road traffic plus the dangers caused by air pollution, i.e. kerosene drop-out spraying the agricultural establishments as well as our own individual plots this little paradise will be reduced to another black smudge on the map.

I beseech you, please think twice and spare this area as such areas are quickly diminishing and we and especially the next generation will not even have the choice of our environment.

---

* See also p. 1719.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. H. Minnitt*

1. My ancestors have lived in the village of Aston Abbots for forty-seven years and my wife and myself have been residents for thirty years.

2. I have a sister and her family living nearby whom I would not wish to leave.

3. My intention in moving to Aston Abbots was to join my parents and enjoy the peace and quiet of country life.

4. My garden and house have very special attraction for me, having spent many hours (and finance) the good maintenance, general improvements and decorations of the house, and labours in the garden. In addition, I have a workshop attached, which is used essentially for my livelihood as a Bespoke Sheomaker. This would be entirely lost if I had to move.

5. I am the owner-occupier of the house which is freehold.

6. My age is sixty-five.

7. My wife and I occupy the above property.

8. As stated above, my work is carried out in the workshop adjoining the house.

9. I very much wish to continue living where I am. Due to the ages of my wife and myself, coupled with my wife's indifferent health, any move would cause considerable hardship.

10. In the unfortunate event of having to move, my choice would be to another village in the area.

11. Should the house be affected by the noise of aircraft I would naturally object. The question of whether or not I would then consider moving would depend on to what extent the health of my wife and myself was affected.

12. In view of the fact that my business is carried out in the workshop adjoining the house the proposal for an airport at Cublington would not be welcomed by me should this necessitate my removal from Aston Abbotts.

I trust the above details will be of guidance and assistance to the Commission.

---

* See also p. 1719.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. V. J. Scott*

On thanking the Commission for the grant of leave to appear at the hearing into the Third London Airport (Cublington) site, I wish to make the following statement:

My ancestry in this area goes back a number of generations, my great grandfather being a member of an old Cublington family and my grandmother being from a Stewkley family. My great grandparents moved into the house in which I live when it was built in 1854 and the house has remained in the family to the present time; my wife and I having lived here since our marriage eleven years ago. I have an elderly uncle (aged seventy-five years) living less than two minutes walk away, he is the last survivor on my mother's side of the family.

Although this house is a very small semidetached cottage it thus holds strong sentimental attractions, apart from having been comfortably modernised for present-day living conditions. The property has an enclosed garden with mature hedges and a 60 yard long wall on the west side. It is a well established garden of a quarter acre with a small but highly productive orchard. Its special attraction is the considerable variety of rare plants which, as a professional botanist and horticulturalist, I have collected from many countries overseas. Some of these plants are almost unknown in cultivation and it would probably prove disastrous to move them and prohibitively expensive to obtain replacements. On these grounds alone I do not wish to move, and would refuse to live under urbanised conditions anywhere.

Apart from not desiring to move, I would find it financially impossible to obtain a similar place, as my house is just outside the actual airport, but so close to the actual site and within a very high noise contour where life would be quite intolerable, and no one but a fool would purchase it at its present value.

My place of work is in this village, where I am professionally employed in horticulture.

Just over a year ago my wife started a small business here, an animal boarding establishment, which is gradually building up to a satisfactory size. She started this business, in which I assist, after having to give up full time work because of medical reasons, the more or less seasonal nature of her business enables her to alternate busy periods of hard work with frequent slack periods, and under these conditions maintains reasonable health. The proximity of an airport of the proposed dimensions would force her out of business, as domestic animals from quiet areas some distance away would be terrified if subjected to such noise as would occur here.

Apart from the personal reasons stated above I consider the proposal to virtually destroy some of the most attractive villages and countryside in North Bucks. to be one of the worst examples of blatant disregard for the feelings of thousands of local people, exhibited by any British Government in peacetime.

* See also p. 1719.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. R. G. Parsons*

My house is situated within the 55–60 Noise and Number Index Contour, just outside the proposed Cublington (Wing) Airport boundary. The noise would be so great at so close a range, that neither my wife nor myself could stand it. We are both well over fifty years of age and are certain that we should suffer a breakdown of health. I am aware that a niggardly grant will be available for soundproofing, but that will be no use to us as my wife suffers from claustrophobia, and would go mad if all the doors and windows were permanently closed. Therefore we would be forced to move away. This then is my first objection.

Secondly I object on financial grounds. Being outside the boundary I would get no compensation. I am further of the opinion that being so close, I would be unable to sell my property at all, let alone for what the place is really worth. Quite frankly it would ruin me.

My third objection is on business grounds. Exactly one year ago, I purchased the above two dilapidated cottages standing in approximately three-quarters of an acre of flat good ground, but wild and ungardened for many years. Having travelled 5,500 miles all over England in search of such a property my wife and I thought we had at last found somewhere in beautiful countryside away from the rat race, where we could partially retire. We intended to set up a small nursery business and accordingly proceeded to organise. Now with one greenhouse erected we have been forced to abandon our original plans until we know that we shall be spared from this proposed monstrosity. We have put nearly all our money into alterations and in pursuance of our project which if the airport comes will all be wasted. It is extremely doubtful if any edible produce could be grown in the polluted atmosphere and certainly losses in glass would be unbearable.

I also object to this continued erosion of good agricultural and horticultural land by buildings and concrete and to the ever increasing spoliation of the beautiful countryside when other more suitable sites are available.

I intend to be present at the hearing, i.e. make a personal appearance.

---

* See also p. 1719.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. W. S. Trickey*

I wish to thank the Commission for leave to appeal at the hearing on 14 July. My reasons are as follows:

Aston Abbott was the home of my wife's parents for more than forty years. Her brother has also owned a cottage in the above village for thirty years. Our only daughter and family live in Cublington and as my wife and I are over seventy we should not wish to be separated from them. We came to the village on the advice of our doctor owing to my wife's asthma. I rent a council house and have a lovely garden and have put much hard work into it. I was a prison officer until my retirement. All I ask now is to spend the rest of my days in this beautiful unspoiled and delightful countryside.

* See also p. 1719.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. K. F. Ward*

I wish the Commission to give consideration to the following objections I have to the proposed siting of the Third London Airport at Cublington (Wing).

I have lived in the attractive village of Aston Abbotts for some thirty years with the exception of two years spent in Central London and the six years of World War II. I have lived in my present house, originally as tenant but now as owner, for twenty-two years. My purchase of the house some three years ago was largely inspired by the thought of owning a house in a quiet rural community when I retire in about fifteen years time. Since purchasing the house, I have, at considerable financial expense, carried out improvements to the property and, at this moment, have the materials purchased for further improvements this summer. In view of both the time and the money spent I have no wish to move from a house of my own choosing nor do I wish to move further away from my place of employment. The present character of the village of Aston Abbotts, if indeed the village even survives the planners attempts to obliterate this charming rural area, will of necessity completely change if a major international airport is constructed in such close proximity.

As a wartime pilot of heavy aircraft, I have personal knowledge of both aircraft and airfield noise and I have no wish to live with this for the rest of my life. After spending my working day as a teacher in the Secondary School at Wing, itself well within the limits of objectional noise, the idea of returning home to a village which in the years of the building of the airport must suffer from the passage of machinery and materials and then from actual aircraft noise, I find quite impossible.

I have no doubt that, if forced to move, I would suffer considerable financial loss even if indeed I can find alternative housing in the area within travelling distance of my work.

I trust that from the objections stated above that the Commission will give serious consideration to an alternative site where life, as I know and enjoy it, can continue.

---

* See also p. 1720.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. T. Warren*

In reply to your letter of the 28th May, I wish to thank the Commission for granting me leave to appear at the hearing in Aylesbury beginning on 14th July.

My main objections to the Airport being sited at Cublington are firstly and mainly, noise and air pollution, also the taking of good farmland, surely there must be useless land where it would not be such a great loss to the country.

I, personally, was born and lived most of my life in London and my wife and I came here fifteen years ago, for a peaceful and healthy life, I have worked hard to buy a cottage and improve it myself and spent a lot of my savings on it, which brings me to my second fear. I have no wish to live in Aylesbury in a council house and what kind of compensation could I expect to purchase another house? I think it would be very difficult to buy another with prices rising all the time and everyone looking for houses at the same time. It would cause a lot of hardship and heartbreak for all concerned.

If the Airport comes here and my house is not wanted I think we will be about 600 yards from a runway and I suppose left to suffer the noise and air pollution. Health must suffer and it might be impossible to sell one's house and also there would be no compensation. My wife and I are over forty-five years of age and we like the country and if we had to move I would hope to get a similar house in quiet surroundings.

I object to the Airport coming to Cublington on the points I have made and I would like to appear at the hearing in Aylesbury if the day is convenient for me.

---

* See also p. 1720.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. D. J. Watts*

I thank you for your letter of 28th May, notifying me that the Commission has granted me leave to appear at the Cublington local hearing. I propose to made a personal appearance at the hearing, and I now wish to make the following statement.

The siting of a major airport at Cublington would have a very serious effect on my family and myself in four main directions:

a. The health and comfort of my family.

b. The education of my children.

c. The value of my property.

d. The future of my professional practice.

These aspects are considered further below.

1. It appears from the official maps issued by the Commission, that my home is situated right on the 50 NNI noise contour, but just outside the boundaries of the proposed airport site. The disturbance to amenities, initially during development by contractors' plant and vehicles and later and more particularly by airport noise and increased traffic, would impose an intolerable nervous strain on my family, probably accompanied by an element of physical danger. Pollution of air and ground in the vicinity of the airport is a cause of considerable anxiety, but even more devastating would be the excessive noise. The main reason for moving to Aston Abbotts two years ago was that my family should be able to enjoy the peace and quiet of country life and the pure, healthy atmosphere of this area. We also have frequent visits from relatives, including elderly parents who are pleased to have a break rom the noise and dirt of the industrial Midlands—they would certainly not come if we have a major airport almost on our doorstep. We fear that the airport would destroy all these attractions, without bringing any mitigating compensations.

Peace and quiet would cease to exist; fresh air indoors would be almost impossible, as excessive noise would not permit open windows; gardening would lose most of its pleasure if accompanied by almost continuous noise; we are all fond of and my children are learning music—we want to be able to hear it without constant interruptions; the wild life we value so much, particularly birds (our three children are members of the Young Ornithologists Club, the junior branch of the Royal Society for the Protection of Birds) would soon depart. In short, life in and around Aston Abbotts, which is now most attractive in many ways, would become unpleasant, unhealthy and dangerous both physically and mentally if the Third London Airport is permitted to come to Cublington.

2. My three children are all attending schools which will be seriously affected. The two youngest (ages eight and eleven) are at the Aston Abbotts Primary School, which is well within the 50 NNI contour and nearer to the proposed site than my home, and the eldest (aged twelve) is at Wing Secondary School. In each case the noise level would make normal teaching methods impracticable and even if satisfactory alternative methods of teaching can be devised to replace oral instruction, some degree of quiet is essential for proper concentration.

3. The financial implications of the proposed airport are most disturbing. My bungalow, of attractive design, beautifully situated and well built, was completed in 1967 at considerable cost and now has a market value estimated to be in excess of £7,000. The advent of a major airport in such close proximity would certainly reduce the market value, possibly to less than the original cost. Bearing in mind the very substantial increases in building costs and land prices, the prospects of acquiring a comparable property elsewhere, but within reasonable distance of my professional office, but without serious financial loss, appear remote. Alternatively, I am advised that the cost of adequately soundproofing my bunglow would greatly exceed the maximum permitted grant which may be available. If forced to leave this area, we should seek a residence where the threat of an airport would be impossible, perhaps in the heart of the Welsh or Scottish mountains, or possibly even overseas.

4. I am in practise as a Chartered Accountant in Linslade, Leighton Buzzard, an area which, although just outside the 40 NNI contour, would nevertheless still be seriously affected by noise. Four main disadvantages are apparent:

(a) Concentration on professional work, much of it complex, would be greatly hindered by excessive and frequent aircraft noise; highly confidential interviews with clients would be difficult; and it is probable that staff difficulties would be aggravated.

(b) Out of approximately 180 clients, five are within the proposed airport boundaries and would lose their homes and businesses locally; about forty would be so seriously affected (particularly farmers) that the majority of them would find it necessary to leave the district, and of the remainder about two-thirds would be adversely affected in varying degrees, and it is probable that some of these, particularly the older people who could retire earlier than

*See also p. 1720.

Printed image digitised by the University of Southampton Library Digitisation Unit

originally intended, would also leave the affected area. The resultant loss of fees income would make it difficult to continue the practice at a profitable level.

(c) Because of the likely reduction in fees, and the other disadvantages, disposal of the practice at anything like its present capital value would be impossible. When I acquired the practice in 1964, I found it necessary to borrow much of the purchase price; the amount outstanding has been reduced, but the diminution in value which could result from the proposed airport might well make it difficult to cover the balance.

(d) It is necessary for me to live within easy daily travelling distance of my professional office. It would be very difficult, if not impossible to do this without being very seriously affected both at home and office by noise, and in travelling by traffic difficulties which would inevitably result from the vastly increased number of people who would be using the roads.

To sum up, I regard the proposal to site the Third London Airport at Cublington as quite intolerable, and I urge the Commission to reject the proposal. I have referred above only to the immediate effects on myself, my family and my business; many other wider objections arise, such as the loss of excellent farming land, the effect of noise on hospitals in the area, the destruction of many beautiful and ancient buildings, particularly churches, objections on planning grounds, traffic control problems, etc., which have my full support, and on which the Commission will be hearing expert evidence on behalf of thousands of local residents.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. W. E. Andrews*

I wish to thank the Commission for the grant of leave to appear.

I wish to make the following statement re proposed Third London Airport.

My grandfather came to live in the village of Soulbury in 1869, my father lived in the village all his life, moving to the Three Locks public house 1 mile from the village in 1912 until 1928. He then had a house built 200 yards from the public house towards Stoke Hammond.

I married in 1937 after having a house built between my father's house and the Three Locks. I myself cleaned thirty thousand bricks from a brick kiln to have this house built, so not only money but a lot of labour was put into this project by me.

We shall be living in the 60 NNI area, what will this house be worth to me if we have an airport within 1 mile?

I am sixty-six years of age, my wife is sixty-two, has suffered from asthma for over twenty-five years, for confirmation contact Dr. Stephen Hall, chest specialist, Yendal Hospital.

The noise and fumes will certainly kill my wife and at my age where can I move to and why should I?

At the Three Locks which is in the Ousel Valley, hundreds of people come to enjoy the scenery, boats on the canal and fishing during the summer, all these families would also suffer.

I have a daughter living with me aged twenty-five who with a son will inherit my father's house in time, this is not much of a prospect for them.

I would also like to point out that around half of the people owning houses or tenants would be over sixty years old living in the village.

I wish to appear at the public hearing.

---

* See also p. 1720.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. S. F. Jones*

Thank you for your letter of the 28th May. I would point out however that whether or not the County Council had taken an interest you would have heard from me in this matter.

Three years ago my wife and I and our two teenage sons decided to move out of Bletchley as it was becoming noisy and conjested and would get worse due to the building of Milton Keynes New City, also we needed larger premises for our business, antiques and bygones.

We bought an early eighteenth century house with a mid nineteenth century village school in the grounds. We chose Soulbury partly because it had the property we required and assumed, wrongly it seems now, that no further large-scale development was planned for this area.

The house had been neglected for many years and needed extensive and expensive basic repairs, all the windows needed replacing, twenty-three in all and as the house is on the Ministry's List of Protected Properties, these were subject to Planning Permission, an electro-osmotic damp-proof course was installed by Rlentokil Ltd., bathroom and toilet and central heating were installed, this together with putting in a new doorway, making a usable kitchen has been done with the help of a grant from Wing R.D.C. and we are now restoring the interior as and when we have the money to do so.

The house is about 40 ft. high and stands in one of the higher parts of the village, so that although being very well built it is bound to suffer damage from vibration, being so close to the end of the runways.

I therefore must register my strongest objections to this proposed development for the following reasons: damage to property, intolerable noise and disturbance and the very real health hazard due to fall-out of unburnt fuel from low flying jets.

I shall attend the hearing on the appropriate day to enlarge on this statement if necessary, but will not insist on my right to make a verbal statement.

---

* See also p. 1720.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Dr. V. E. Lloyd Hart*

Thank you for you letter granting my application to appear before the Local Hearing beginning on 14th July, regarding the Third London Airport—proposed site at Cublington.

I enclose a brief statement and would still like to attend the hearing.

Statement

1. My wife and I moved to Manor Farm, Soulbury seven years ago, that I might have a farm to which I could retire and which I would hope to pass on to my son, an additional reason being the quietness of the locality.

2. The old farmhouse being unsuitable, I had to build another, in which we now live and where we hoped to continue in our retirement.

3. As a physician, I have found many people on retirement, are unhappy if they move from their old surroundings, since it is difficult for them to make fresh friends in late middle-age. This is a strong reason why as few people as possible should be dispossessed of their homes, when they are reaching the end of their working life.

4. Many hours of work have gone into our garden' and much capital and weeks of work have gone into improving the farm, including the buildings, etc. I presume all this will be lost.

As a physician working in the General Hospitals at Aylesbury, I am also extremely perturbed about the noise likely to be caused, which patients tolerate so poorly. The Commission may not realise that Aylesbury has an extremely large number of beds for such a small town and I understand that with an aeroplane passing overhead it becomes quite impossible to listen to the heart or to chest sounds, thus upsetting outpatients, ward examinations and the like and possibly might interfere with the delicate electronic apparatus now being increasingly used in cardiology, etc. (heart pacemakers for example.)

Finally, would not the Commission organise a large jet aeroplane to fly as though landing at Cublington, following the proposed runway as low as possible compatible with safety and then simulating a take-off and the sort of circuit it would make? Were this advertised in the local papers as going to occur at a particular time and date, it would give many thousands of people the opportunity of knowing what the noise really would be like, instead of being told in decibels, which convey very little to at least 99 per cent of the people concerned.

* See also p. 1720.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Miss C. E. Harris*

I will state at once that I am a resident of the village of Soulbury and wish to *attend in person* the local hearing to be held in Aylesbury. I also wish to make the following statement.

I am twenty-two years of age and have lived in Soulbury for the whole of that time, as have my ancestors for hundreds of years. My parents are now old and do not wish to leave our home or our village. My father has a one-man business in this area, which could not be transferred to another area. My mother has recently been ill and any serious upheaval, especially as proposed by this monstrous airport could prove fatal to her. My grandparents are buried in our churchyard here: I do not wish to suffer the loss of *any* church in this area or to witness the exhumation of my family from the cemetery! Neither do I desire that our beautiful countryside and fine farming area be murderously buried under hideous runways and endless miles of concrete.

Site the proposed airport at Foulness, where it is away from homes, where it can do much less harm and where it is WANTED! I cannot face with equanimity the destruction of life as it is now, in my village.

* See also p. 1721.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Dr. P. S. Brown*

Thank you for granting me leave to appear at the Cublington Local Hearing.

I wish to make the following statements:

I came to live at Southend Farm, Cublington, with my wife in 1946 when I was demobilised from the medical branch of the R.A.F.V.R.

My wife's ancestors have lived in the neighbourhood for over three hundred years and this house has been in their possession for two hundred years.

My wife's father was born here and he and many of her forbears are buried in the local churchyard.

In 1954 we purchased Southend Farm and for three years builders were at work on extensive reconstruction. Much time and energy was also spent in making the garden and we have recently purchased a further two adjoining acres in which we have planted over five hundred trees and are in process of developing this land into an informal garden. The house appears in the Schedule of Ancient Buildings.

In 1947 I went into partnership with a doctor in the neighbouring village of Whitchurch. This practice has gradually grown and extended in all directions and serves a wide area.

I have now been in the practice over twenty years and my patients are my friends.

If the Airport were built here the practice would be split up and partly dispersed and would no longer support two doctors.

I would not wish to continue to practise in this area and it would be almost impossible to obtain a similar partnership at the age of fifty-four.

My wife has two older sisters living 2½ miles away, and my mother lives 5 miles away.

I would like to appear at the Hearing.

---

* See also p. 1721.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Cublington Parish Council*

On 8th March 1969 at a Parish Meeting held at Cublington the following resolution was passed by an overwhelming majority:

"That this Parish is totally opposed to the proposed Airport at Cublington and wishes the Parish Council to take all possible steps to prevent this site being chosen."

Every acre of this Parish appears to fall within the proposed Airport perimeter which will involve the loss of all land and every building within the Parish. The Council is most concerned at this wholesale waste of land, which is entirely agricultural land, because of both the loss to the occupiers and the loss of such a valuable amenity to the community. In considering the overall cost of an airport at Cublington the Commission must consider that the prospective value, as an amenity to the country as a whole, of such a large area of farmland within 50 miles of London will, in say twenty years time, be many times the market value of such land today. Once this land has been lost it can never be replaced even by reclamation from an outlying coastal site.

The Airport will cause the demolition of the lovely old Church and the Chapel and the desecration of the burial ground that has been used for relatives of many present parishioners for over five hundred years and the Council strongly objects to this.

There are over 190 residents in the Parish of Cublington and of these forty-seven are aged over sixty. The Council is most anxious to protect them from the destruction of their homes. It is a far more cruel blow for the elderly to lose their homes and the friendships in the community in which they live and more difficult for them to adapt themselves to an entirely new environment. A very large proportion of the parishioners have families and relations in Cublington and in the neighbouring villages and it will be impossible for these ties to be preserved if every resident is to be moved and rehoused.

Cublington is a quiet picturesque village and apart from the Church which was built in 1307 there are a number of old buildings which are registered as of historic importance. It will be impossible to move the residents to suitable houses in similar surroundings and it is a great injustice to force the parishioners into a modern faceless town or city.

Many residents in Cublington are tenants of many years standing at rents far lower than the present market rate. They will suffer great hardship if offered a council house at three times their present rent. The Council feels that such tenants must be protected and there seems to be no compensation to cover these cases. Many owner occupiers will find it impossible to obtain a suitable house for the amount of compensation they will receive and those over forty will now have great difficulty in obtaining a mortgage.

Farming is the only trade carried on in the Parish and there are both owner farmers and tenant farmers in Cublington. Both types of farmer will suffer financial hardship from the acquisition of their farms. Good vacant farms are very scarce and even with reasonable compensation the owner farmer will have to face the future liability for Capital Gains Tax and the near certainty of having to move to a smaller and less productive farm. For tenant farmers the acquisition of their land is almost certain to mean that they will have to leave farming, as alternative farms to rent are not available at rents equivalent to those ruling in the Parish.

It is apparent that the contours of the proposed site are most unsuitable for a level airport. The cost of preparing level sites for the four runways and ancillary works will be very high and this should be costed most carefully as a major point against the selection of this site.

---

* See also p. 1721.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. J. Biggs*

I am utterly opposed to the Airport being sited at Cublington for the following reasons:

1. The loss of my home and land (200 acres) which my family has farmed for 300 years.

2. The loss of our ancient church and churchyard, where my parents, brother and sister are buried as well as many members of my family in past years.

3. The complete destruction of our pleasant village and its friendly community.

4. The terrible waste of thousands of acres of some of the best agricultural land in the country. The pollution and sterilisation of thousands more acres from fumes and fall-out.

5. The fact that 2,000 people would be made homeless and scattered in all directions, far from relations and life-long friends, in a completely strange neighbourhood. I myself am eighty-two years old, much too old to be uprooted.

---

* See also p. 1722.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Miss C. Bodington*

Thank you for your letter granting me leave to appear at the Local Hearing in Aylesbury opening on 14th July. I do wish to appear.

I also wish to state in this letter my reasons for wholeheartedly opposing the choice of Cublington (Wing) as the site for the Airport. My house stands on the site of the Airport. I bought it three years ago when I moved to Cublington from Devon to be near my sister and her husband after the death of my brother with whom I had lived for the previous twenty years. I invested more than half my total savings in this property and intended to make it my home for the rest of my life and did not want to be saddled with a mortgage. To lose my home and garden which I have designed and made from scratch and to which I have become very attached and worse still to be separated from my family and friends depresses and worries me very much, as does the possible necessity to find and buy another house and settle and make friends in a new neighbourhood. At the age of sixty-nine this is very difficult, especially as I live alone, I want to live in a small but not isolated village, near to my family and friends and find Cublington ideal.

Finally I would like to add that apart from my personal problem surely it is necessary for the general population living in the suburbs of NW London and for those who will come to the new town of Milton Keynes to have some nearby stretch of open country where they can enjoy rest and *quiet* from the stress and noise of their everyday working lives. At present thousands of them do just that every weekend and I do feel very strongly that this beautiful countryside should be preserved for us *all* to enjoy. I pray the Airport will *not* be sited here in Cublington.

---

* See also p. 1722.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. E. Males*

Thank you for the grant of leave to appear.

I wish to make the following statement:

My wife and family have lived in Cublington for about twenty-eight years.

I have a daughter living at home with the wife and she and I both work in Aylesbury and believe you me it is very nice to come home to the peace and quiet of the country.

My family and I certainly have no wish to leave the country, especially now that we have just moved into a council bungalow and this is indeed a great boon to wife and I to have no stairs to climb after doing so for years and years as my wife suffers from varicose ulcers and I was born a cripple with spina bifida which has left its mark resulting in weak lower limbs, i.e. weak spine and legs and with the bungalow there is just enough garden for me to occupy my time when I retire and as I have now turned sixty-four years of age retirement is not far away. There is another point I would like to point out to the Commission and that is the lovely view from my bungalow and to have an airport here would indeed be sacrilege there is no other word for it, as much agricultural and grazing fields would be lost forever.

If we must have as an alternative a reservoir we say yes to that, but *no* to airport.

Afterthought: My sons live within a few miles of Cublington, they have cars and are very good to us and we certainly do not wish to split up, also my wife has relations here and at Stewkley.

---

* See also p. 1723.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. P. O. Manley*

I thank you for your letter dated 28th May 1969 granting leave for me to appear at the Cublington Local Hearing. In reply I would confirm that I would like to appear personally at the hearing in Aylesbury commencing 14th July 1969.

In my statement I would put forward the following statement.

We are newcomers to this village during the last three years, until then we did not know of Cublington although it transpired that an uncle lived and attended the Aston Abbotts village school.

Our reason for coming to Cublington seemed predestined. My husband's firm previously had moved from Hayes, Middlesex to Watford. We lived in Southall. The journey by car to Watford was a slow, traffic-bound one. Also living in one of the flight paths of Heathrow Airport we wanted to move nearer to Watford. Noise from planes circling overhead and revving up on the ground, together with a constant smell of oil were a real source of worry to us. It was a great relief to live in an area where peace prevailed. We chose Cublington by chance in our many house-hunting outings. We liked the village, although we first saw it after a thunderstorm. The same week as we started negotiations to purchase 5 Bell Close, Cublington, our Southall house was going through the procedure of selling.

We have sunk our capital into this house and do not have a mortgage. My husband is forty-one years old. No doubt we would have difficulty in obtaining a mortgage, especially as my husband's health was not A1 in recent years.

My family consists of my husband, self, a girl aged twelve, a boy aged ten, plus a cat, which is worshipped by our children. Their worry is that should we have to move, they might lose the cat or that it might be run over in a built-up area.

I would hate to have to live in an area near another airport, having experienced the noise and smell from aircraft, especially since the large jets have been in service during the last ten years. The noise did upset me and I suffered from nerves.

Should the Third Airport for London come to Cublington we should want to live out of the noisy area and it would have to be towards the Watford district. The financial prospects worry us. Houses like ours in a radius of say 10 miles of Watford are about £1,500 more than here. We have spent a fortune on the garden, beside the hard labour and pain. I suffered a bad back through digging and was in a plaster jacket for six weeks. Also we have had carpets fitted and new curtains where necessary, beside other incidentals necessary when one moves house. If we have to move what compensation would we receive? No doubt the cost of a similar house in the Watford area would not be covered. Therefore we would have to apply for a mortgage. My husband has a chest condition which, no doubt, would increase insurance permiums to cover the mortgage in the event of his death before the mortgage is cleared.

My children attend local schools. My daughter commenced at Wing County Secondary School last September. My son is in his third year at Aston Abbotts C. of E. Primary School. My son found the changeover of school difficult and we had trouble with him over this. Another change besides the one he has at eleven plus would no doubt have adverse effects upon him, not only now but in his future life.

These are my fears and concern should Cublington be chosen as London's Third Airport.

* See also p. 1723.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. B. G. Osborn*

I would like to thank the Commission for the grant of leave to appear at the Hearing of the Proposed Site of the Third London Airport, Cublington, to be held in Aylesbury on the 14th July and I would like to make the following statement.

1. I am the local grocer living in Cublington, but having my shop a mile and a half away in Aston Abbotts, so if the Third London Airport was sited at Cublington, I should lose first my home and one-third of my business and be left with a very uneconomic business and no home. The remaining business would disappear as Aston Abbotts became a ghost village because of the noise caused by one of the runways going through part of that village.

2. My ancestors have lived in this area for over 250 years and those of my wife for four generations.

3. My own parents and those of my wife, are both living in this area and being that we both are only children our parents would miss us most now they are getting older if we all had to move away from each other.

4. The cottage where I have lived for over the last fifteen years dates back to before the Black Death. During these last fifteen years my wife and I have put a great deal of money and time into the house and garden. The garden I have filled with trees, fruit trees, flowering trees, shrubs and bulbs, which could not be moved.

5. Of my two children my youngest daughter aged seven suffers very badly from asthma and having a school so very close is of very great help to her because anytime she has a bad attack at school the teachers can telephone through and we can collect her in a very few minutes.

6. I do not want to move away from Cublington because it would cause me very great hardship, losing my business which is just outside Cublington and therefore I should not qualify for compensation.

7. I cannot stress too emphatically the upheaval and distress this would bring to me, my family, my home, friends and the financial loss it would incur.

---

* See also p. 1723.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. B. L. Panter*

My husband and I thank you for the grant of leave to appear, against the siting of the Third London Airport at Cublington.

We most strongly object for the following reasons.

We have lived in the same house for over twenty-eight years, all our married life, my husband came here as a baby with his parents from a nearby village. He has worked on farms all his life and does not want to be moved away to a life in town. He is nearly sixty years old, has never worked indoors and would find it impossible to get a job in town.

We are tenants in a little cottage, from which we do not want to move. Indeed, we should not be able to afford the rent of a council house if offered one. Although our cottage is small we have kept it in good repair and we grow our own vegetables in a well-kept garden. It is our *home* the only one we have had together and the only one we want. All our friends are here in Cublington and we would not know where else to go.

I am prepared, if necessary, to appear in person on behalf of my husband and self.

* See also p. 1723.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. J. Radwell*

My personal objections to the Third London Airport being sited at Cublington are as follows:

The main objective to moving to Cublington to live was to escape from the noise, bustle and the confines of town and city life. This was particularly relevant to my family, as I suffer periodically from attacks of migraine and my wife is of very nervous disposition. Her nervousness is accentuated living in the narrow confines of a town or city. Village life as far as we were concerned offered us quietness and a more relaxed atmosphere which suited both of our temperaments.

We considered also that by moving to a village that our two children would be more happy and contented. Their education appears to be undertaken far more successfully by a village school, who seem to take more trouble and more care than the schools in a town or city. Their health is far better and they have proved to be more happy and contented than when they lived in a town.

Another reason I came to Cublington to live was the opportunity it gave me to purchase the bungalow where I live from the local council. This plan has of course had to be shelved since the threat of the Airport.

At present in this country, with its democratic processes we have a choice of living where we want to, whether it be city, town or a rural district. We appear to be getting less choice as time goes by and where there is an introduction of schemes which are largely heralded as "progress" in areas where people have settled from choice. These people seem to me to be getting the "thin end of the wedge" as they are completely uprooted from their chosen environment and are scattered in areas where all of the original ties are lost and invariably to a way of life they did not seek and did not particularly want.

How do we define progress? that is the question we ask ourselves. Is it this grandoise and commercial scheme, based on purely economic reasons. Or is it a way of life where we seek to improve our living standards in the way we live them, in the choice we make of them and also very importantly, where we live. Do we seek to absorb the best from nature or do we jump on the band waggon of commercialism? Do we try to give more time to the pursuits and relaxations of life, or do we never stop running, never to relax, never to pause, to enjoy the things we have at present. Is not the progress of people more important than the progress of machines and their various aspects? Are we to assume that all we have got to look forward to is the pursuit of commercial gain and not the pursuit of contentment and fulfilment.

Will we in two or three hundreds years be able to equally appreciate the arts of a commercial world with the arts of the countryside which we can appreciate now? The poetry, music, painting, sculpture, etc., which have lived in people's minds the longest, have in the main, been based on the glories of the countryside and the wonders of natural things. Can we really expect to compare this heritage with the one we propose to leave to our children if we wrought havoc in the present, by spoiling our countryside, by building these edifices? Do we leave them the prospect of vistas of concrete, brick and macadam or do we leave them green fields, growing trees and flowering hedgerows?

Where do I go if the Airport comes to Cublington? What choice do I have if I still want to be employed in my present employment? I say I have none, as where I go in this area I will be affected by the Airport. The only choice this leaves me with, to enjoy the way of life I am accustomed to, is to emigrate to a country where there is still room to breathe and where the prospect of a rural environment can be enjoyed for at least my families lifetime.

Can I really expect to get the same community spirit of a village in a street or suburb of a town or city? This appears to me to be the only place I would be rehoused in, if the airport came. I doubt this very much. Would town or city living conditions be able to give me the pleasure and the relaxation which I enjoy at present? No! to my own experience, it never would, as the smaller communities have easier communication with one another, and there is a communal spirit which can never, or very rarely be found in the urban or metropolitan communities. In a village you see and are involved in life, in a town or city you only see minutely and are only partially involved in life. In a village and its rural aspects you see the seasons come and go in more vivid detail, most often in a town or city you only experience a change in temperature.

I can only add that what I feel and have indicated, in my letter is only a poor substitute for the following verses written by John Clare the rural poet, whose inspiration was the country.

Me not the noise of brawling pleasure cheers;
In nightly revels or in city streets;

But joys which soothe, and not distract the ears,
That one at leisure meets

In the green woods, and meadows summer-shorn,
Or fields, where bee-fly greets

The ears with mellow horn.

* See also p. 1724.

Printed image digitised by the University of Southampton Library Digitisation Unit

I love to walk the fields; they are to me
A legacy no evil can destroy;

They, like a spell, set every rapture free
That cheer'd me when a boy.

Play—pastime—all Time's blotting pen conceal'd,
Comes like a new-born joy,

To greet me in the field.

For Nature's objects ever harmonize
With emulous Taste, that vulgar deed annoys;

It loves in pensive moods to sympathize,
And meet vibrating joys

O'er Nature's pleasing things; nor slighting, deems
Pastimes, the Muse employs,

Vain and obtrusive themes.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. C. Read*

I would like to thank the Commission for the grant of leave to appear at the enquiry into the above, and would like to make the following statement:

I have lived with my family at Cublington all my life and I am now married with two small children. I am now farming 220 acres and this would mean losing my home and business, which I have worked very hard to improve over the past twenty years. I am a tenant farmer and it is almost impossible to rent another farm of this acreage in or around this area, as I do not wish to move away. I have two elderly parents living in this village and my wife also has parents and a handicapped sister living nearby, and we do not feel that we want to move away, as there might be such a time when we are needed.

Apart from the personal view of this terrible upheaval it will cause me and my family, I feel that it is very wrong to flatten four villages and takes acres of fertile agricultural land when there are thousands of acres of barren land miles from villages and towns and this must surely be the answer to avoid disrupting so many peoples lives.

* See also p. 1724

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. and Mrs. R. A. Roger*

We thank you for leave to appear before the Roskill Commission (on 14th July) on siting the Third London Airport at Cublington (Wing) and wish to make the following statement:

1. We have lived in Cublington for sixteen years.

2. We have relations in a nearby village.

3. We chose to live here for peace and quiet after the day's work and to be within convenient travelling distance to business, school and relatives.

4. The cottage is thatched, sixteenth century and overlooks rolling countryside. It has always been of considerable interest to our friends and acquaintances from abroad.

5. We are owner occupiers.

6. Middle aged and planning to retire here—have have just spent over £1,000 on improvements.

7. We have one daughter aged six and a half.

8. Business and school in Aylesbury.

9. We have no desire to move and would find it impossible to obtain a similar site.

10. Our house would be demolished.

11. We prefer village life and must be within easy reach of Aylesbury.

12. We feel that the agricultural land and people's homes taken for the site would be lost in vain, as future aircraft will make obsolete such as the planned inland airport, by the fact that they will rise vertically and fly from city to city.

Willing to appear in person at the hearing.

---

* See also p. 1724.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. R. Smith*

Thank you for your letter of the 28th May and for this opportunity of making representations in writing to the Commission.

In connection with the second paragraph of your letter may I say that with or without the County Council's circular letter of the 1st May I should have made application to your Commission to be heard.

In making the following representations may I say that I shall attend the hearing prepared to comment on this statement if called upon to do so.

I am not qualified to make any technical assessment as to the justification or otherwise of siting a major airport, together with its attendant servicing requirements, housing and other essential facilities on a hilly site in the heart of rural Buckinghamshire, but must leave this to the many national and local Councils and Societies who are prepared to do so. I can only tell you how the decision to site the airport here would affect my own family.

My wife and I were born not far from Cublington, and our families and all our friends live in this district. We do not want to live anywhere else and will not move unless absolutely forced to do so.

When we married five years ago we purchased three of a terrace of five cottages in Cublington. The cottages were in very poor condition and we knew that before they could be turned into a proper home some years of back-breaking work lay in front of us. We would not have been prepared to embark on an enterprise like this if there had been any prospect of our home being affected by any planning proposals. Nobody we consulted could tell us of any such proposals and indeed the chances of there being any in a remote village like Cublington seemed to be so small as to be hardly worth consideration.

Now, five years later, we have spent our entire savings and almost every spare moment of our time (including our annual holidays) restoring the cottages and turning them into the kind of home in which we wanted to live and bring up our children. We have just reached the point where we are beginning to reap the benefit of our work.

I am sure you will understand from this the effect that the arrival of an airport at Cublington would have on our lives. We have become very attached to this quiet, friendly village and it is difficult for us to contemplate living anywhere else. No other home could bring us so much pleasure as the one we have created for ourselves and no amount of compensation could ever make up for our five years' labour.

One last thought. If this proposal affects me to this extent, how much more must it apply to the many older people in the village who will feel unable to write to you, but whose families have lived here for generations.

---

* See also p. 1724.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Council for the Preservation of Rural England*

SUBMITTED BY MR. E. C. ROUSE

I live at Oakfield, North Park, Gerrards Cross, Buckinghamshire.

I have lived in Buckinghamshire since 1910 and am intimately acquainted with the area concerned in this hearing. I am Vice-Chairman of the C.P.R.E. Buckinghamshire Branch and have been so for a number of years. I have been Chairman of the Penn Country Branch, a part of the County Branch, for six years. I am President of the Royal Archaeological Institute and of the Buckinghamshire Archaeological Society. I am a Fellow of the Society of Antiquaries and of the Royal Society of Arts. I am authorised to represent the C.P.R.E. and its Buckinghamshire Branch, the Royal Archaeological Institute and the Buckinghamshire Archaeological Society. The Buckinghamshire Historic Churches Trust also wishes to be associated with the architectural part of my evidence against the siting of a Third London Airport at Cublington.

The C.P.R.E. as a national body, having considered the merits of the four airport sites shortlisted by the Roskill Commission, has concluded that on amenity and social grounds there are overwhelming advantages in choosing an offshore site. Not only does this mean that by the construction of an airport land is not lost but gained, but the land area affected by noise can be at least halved through the use of flight paths over the sea, and other attendant disadvantages are also greatly reduced.

In the Commission's short list, the only offshore site is that at Foulness and the C.P.R.E. has accordingly decided to support the choice of Foulness and to express outright objection to the three inland sites.

This view is shared by the Buckinghamshire and other C.P.R.E. branches concerned with the Cublington site.

My evidence relates almost wholly to the County of Buckinghamshire and I deal first, on behalf of the C.P.R.E., with the foreseeable effects of an airport at Cublington on the countryside, landscape and general amenity of the area.

The evidence which I give first is on behalf of the C.P.R.E. and deals with the effects of an airport on the countryside, landscape and general amenity.

I set out in Appendix A to this Proof of Evidence a list of the Officers and the Executive Committee of the C.P.R.E. Buckinghamshire Branch, which has seven area branches, covering (with the exception of the area covered by Wing Rural District Council) the whole of the county. The County Branch and the area branches have together a membership of nearly 700.

I ought to make clear in the first place that the purpose of the C.P.R.E. is simply expressed in its title. The Council was formed over forty years ago to bring together the numerous bodies which were concerned at a time when there was no official planning or control over the ravages being made in towns and the countryside by unrestrained development.

The Council finds that, despite the changed circumstances of the present day, the objects for which it was formed are still the purposes for which it now exists, which may be stated briefly as "to promote and encourage for the benefit of the nation the improvement and protection of the English countryside and its towns and villages and the better development of the whole environment".

It will be appreciated that, such being the objects of the C.P.R.E., its members cannot be expected to do other than oppose a project which would violate everything for which it exists. We may accept that it is in the national interest that there should be a Third London Airport, but we also contend that it is no less a national interest that it should not destroy what it is intended to serve.

It has seemed, from the increasing interest which has been evident since the war in local history, in natural history, in archaeology and in planning at all levels, that the influence of the environment in which we live on our way of life is receiving increasing recognition among the public and by all engaged in our government, even in some parts of the industrial world.

We have experienced bombing and destruction during wars, but nothing so widespread, so permanent and so damaging in its effects as what is involved in proposals to establish an airport inland when other courses are open.

This hearing is, however, concerned with the local scene and with the effect of the establishment of an airport at Cublington and within a radius of 10 to 12 miles. Before taking a look at the countryside and the villages which may be directly affected, a glance must be permitted further afield, because the mere area of the airport enclosed by its perimeter fences and even the contour lines of varying volumes of sound interference, are only the beginning of the story.

Airports require for their construction large quantities of sand, gravel and cement, for which the most readily available source in this case would appear to be the Thames Valley, whose river meadows

* See also p. 1725.

Printed image digitised by the University of Southampton Library Digitisation Unit

are already suffering steady and serious encroachment. These basic materials are heavy and would have to be carried by road to Cublington from south of the Chilterns. It seems inevitable that for this purpose many of the existing roads would need to be strengthened and widened, quite apart from the road requirements of the Airport when in operation.

In the second phase, as the Airport develops and attracts an increasing number of people to liven ear it, those who can afford to do so will seek to live in the Chilterns and in those parts of the centre and north of the county which have been protected by the County Council for so long. The Milton Keynes New Town was projected in order to enable the County Council to direct and control expansion of population to the north so as to preserve the Metropolitan Green Belt and its extension (80,000 acres) as rural areas, in the face of the steady pressure from London. The population of the County of Buckinghamshire is some 542,000. Over the years new population arising from the Airport, its ancillaries and the industries likely to be attracted is expected to add to it another 400,000, and that located in the centre of the county. In addition, therefore, to the extensive area, amounting to some 12 square miles, where the existing countryside would be replaced by runways and the buildings and installations of the Airport itself, room must be found in a wide outer zone for the industrial and other ancillaries of air transport and for housing those who work at the Airport and in its multifarious connected services and establishments. If 22,000 acres (or about 35 square miles) are deemed necessary for a population of a quarter of a million people at Milton Keynes, the area which the Airport complex would require, and in which country towns and villages would be absorbed and largely lost in an urban and suburban environment, would amount to no less than 30,000 acres (or about 50 square miles).

The establishment of an Airport in the Wing area must therefore be considered in conjunction with a number of other factors. The county has already received or is about to receive, several severe blows to its nature in this very part. The M1 motorway has resulted in the loss of much land and disrupted farms and estates and cut parishes in half, with added noise and inconvenience. The New City of Milton Keynes will destroy an area of some 20,000 acres of open country and agricultural land; and if the Airport inroads are added to this, it will inflict an intolerable loss in this area. Industrial expansion is already making inroads at Wolverton and Bletchley. Moreover the actual Airport area is only the beginning. New and bigger roads, housing, light industry, hotels, cafes, garages will all be needed. If it is conceded that the Airport capacity may well be saturated in ten or fifteen years, there is no room at Cublington or the other inland airport sites for expansion except at the expense of further invasion of the countryside and the destruction of amenity and valuable buildings. The very serious loss of agricultural land is dealt with by other bodies represented at this inquiry.

It is now necessary to look a little more closely at the area itself, taking the area between the runways as the centre and a radius of 10 to 12 miles.

The effect of an airport on the flowers, plants, trees and wild life of the Airport is being made the subject of special study by the Buckinghamshire, Berkshire and Oxfordshire Naturalists' Trust. Theirs may not be a story of dramatic loss of flora and fauna of great rarity, but of the loss of countryside as the home of living things.

There are many fine and historic large houses in the area, Waddesdon, Mentmore, Woburn, Ascott-in-Wing, Hartwell, Claydon; fine churches at Stewkley, Whitchurch, North Marston and Wing; and everywhere buildings of architectural or historic interest. These are all matters of great concern to the Buckinghamshire Archaeological Society and the Royal Archaeological Institute.

As to the nature of the area represented by our 10 mile circle, it is one of pure, rural, open undulating country, unspectacular but extremely beautiful, remote and, above all, quiet, which is its chief charm and recommendation—a place to which people come for peace and refreshment; in fact a typical piece of rural England. The view north-eastwards from the high ground near Whitchurch and along the Buckingham road, at present an unbroken vista of open countryside, will be completely destroyed, and in its midst placed the whole vast airport complex, stretching a considerable way towards Leighton Buzzard. Most of the villages have a quiet character of their own. Whitchurch has many important houses and cottages in a mixture of brick, timber and stone. Stewkley has a long street lined with many good houses in brick and timber and its church, of international repute, is at the centre. Cublington, withdrawn, shrunk to half its size as a result of an early medieval enclosure and the Black Death, is the very epitome of this quiet rural countryside. Creslow contains a medieval house and the pastures that used to fatten the cattle for the Royal Household. Wing, likely to be placed within a mile of the very airport perimeter, is a place that scholars, architects and historians from all over the world visit on account of its Saxon and later church—the only surviving aisled basilica in the Midlands, with a chancel and crypt of the seventh and tenth centuries. The effect on such places as this can well be seen by visiting Harlington, Harmondsworth, East Bedfont and Stanwell, in close proximity to London Airport; they are now swamped by poor modern development, almost uninhabitable through noise and have suffered demolition of many of their important and attractive buildings because people have moved away. In the case of Cublington there are no fewer than eighteen such villages or hamlets falling within the 50 NNI contour. Five may well suffer total or partial demolition (Cublington, Stewkley, Soulbury, Dunton and Creslow); seven (Whitchurch, Hardwick, Weedon, Stoke Hammon, Aston Abbots, Wing and Great Brickhill) will be in a vulnerable area and may well be rendered intolerable by noise and traffic; while the remainder, Oving,

Printed image digitised by the University of Southampton Library Digitisation Unit

Pitchcott, Waddesdon, Cuddington, Little Brickhill and Drayton Parslow, will be seriously affected, as well as Hoggeston, Swanbourne, North Marston, the Winchendons and Granborough. A total of no fewer than sixty-five small towns, villages and hamlets within 10 miles of the Airport may well be affected. This clearly constitutes an unthinkable threat to rural peace and amenity which the C.P.R.E. will fight to the last.

Rural England does not consist merely of acres of countryside and villages; it has atmosphere and it has people. Shatter the environment, destroy the atmosphere, disturb the people and rural England is destroyed as surely as if *all* the acres and villages concerned were razed. In view of the very particular pressures on the countryside elsewhere in the county, we believe it is vital that this area at least should not be interfered with, so that it may remain in peace and quiet as a welcome oasis and breathing place.

I give in Appendix B to this Proof of Evidence a list of the threatened villages and I refer in Appendix C to the policy of the County Council towards them, which has been active and consistent for some years. The three plans mentioned in Appendix C are available for reference if required.

I now pass to the architectural and archaeological features likely to be involved. These comments have been prepared, in conjunction with officials of the Royal Archaeological Institute of Great Britain and the Buckinghamshire Archaeological Society, as well as from long and intimate personal knowledge of the buildings and sites concerned and by reference to standard works on the subject. The officers, etc., of these organisations are listed in Appendix D.

The most serious threat is to Stewkley, which appears likely to suffer demolition of the church and most of the village. The Royal Commission on Historical Monuments* lists no fewer than thirty items in or about the village and says of the church: "The building is exceptionally interesting as a complete example of a twelfth century church and contains good mouldings and carving of that date. Among the fittings are some alabaster figures, probably part of a fifteenth century reredos". Pevsner† says it is ". . . the most splendid piece of Norman parochial architecture in Buckinghamshire, and in addition exceptionally complete and unaltered". It has a high place in Collins's "Guide to English Parish Churches", edited by John Betjeman (1958) and is in fact one of only two churches having vaulted chancels in the county. (The other is at Upton-cum-Chalvey.)‡ It was built or founded by the same benefactor and masons as Cassington, Oxon., namely Geoffrey de Clinton, who was Chamberlain to Henry I; Cassington is 1120–30: Stewkley 1140–50. The church therefore has a far greater than merely parish or county importance. It is in fact a textbook example of its type on a par with Iffley and Barfreston. A great deal of money has only recently been spent on maintenance and restoration. Dovecote Farm and Manor Farm are important sixteenth and seventeenth century buildings and at least a dozen cottages of the same date and a moated site, are good and important examples of their type and period. In addition there are several eighteenth and early nineteenth century dwellings that merit attention. It is unthinkable that any of these valuable monuments should be destroyed and indeed that such a course should even have been contemplated in a civilised country.

Dinton appears to fall within the airport perimeter and will therefore presumably also have to be sacrificed. The church here has many unusual seventeenth and eighteenth century features grafted on to a twelfth century nucleus. The gallery and box pews and the charity inscriptions are particularly interesting. There are a number of brasses. The Rectory is a splendid early eighteenth century building and there are one or two good cottages in the village, making up a charming whole on high ground in open, rustic surroundings.

Cublington, likewise threatened with extinction, has a less impressive church, but possesses many other features of interest. The church is typical of many Buckinghamshire examples and its loss would be severe. The Royal Commission, already quoted, says: "The church is a small but interesting example of early fifteenth century architecutre. The late twelfth or early thirteenth century chest is noteworthy". Here again there has been a great deal of recent work and expenditure on upkeep and conservation. The most splendid Royal Arms of George II, 1743, is notable. In addition eight other items are listed. Among these is the Beacon, a fortified mount and village enclosure, where the plan of the old village and part of the enclosure can still be traced. This is valuable evidence of an early medieval enclosure or migration, possibly due to the Black Death of 1349 and the site has never been archaeologically excavated. Other deserted village sites are known on or near the airfield perimeter and others may well exist (Creslow, Lower Burston, Chelmscote, etc.). The eighteenth century Manor House and many individually humble properties go to make up a valuable whole.

Wing, the only Saxon aisled Basilican church in the Midlands and the object of pilgrimage and study by scholars from all over the world, is the subject of Appendix E to this Proof. The importance of this building cannot be over-stressed and the ill-effects of vibration and fumes on the structure and fittings (glass, monuments) may well be serious.

It is difficult to see how Creslow can escape. Even if not demolished, it would become uninhabitable. This is one of the few medieval stone houses (fourteenth century and later) in the county and there are surviving remains of the former parish chapel, recently restored with a grant from the Ministry, in

* Bucks., North, 1913. HMSO.
† The Buildings of England: Buckinghamshire, 1960. Penguin.
‡ See also Francis Bond, English Church Architecture, 2 vols., O.U.P., and A. W. Clapham, English Romanesque Architecture after the Conquest, O.U.P., 1930.

Printed image digitised by the University of Southampton Library Digitisation Unit

whose control the property is vested. Moreover, Creslow Great Ground, one of the largest surviving unenclosed fields in England, was once pasture for fattening the Royal cattle. The monument to Samuel Westcar, a one-time grazier, is in Whitchurch Church.

This latter building and the whole village on high ground, containing twenty-six items listed by the Royal Commission on Historical Monuments, will be subject to the full blast of aircraft taking off or landing on two runways, less than a mile from the airport perimeter and it is difficult to see how services could continue, with aircraft landing or taking off at one-minute intervals little more than a couple of miles away. The church suffers from particularly friable masonry and contains wall paintings in a delicate state that will certainly be damaged by vibration. A great deal of restoration work has in recent years been done here and is still proceeding. The magnificent chancel with elaborate sedilia and piscina and a number of stall standards recall this church's association with the great Abbey of Woburn. Two houses in the main street, dating from the fifteenth century and many other smaller properties of brick or lath and plaster or timber construction must similarly be affected. Hardwick and Oving, a little further away, are almost equally vulnerable to this damaging feature.

At its north-east end the Airport area appears to intrude into Liscombe Park, one of the most ancient demesnes in the county, containing a fourteenth century chapel and a house of sixteenth and seventeenth century date with later additions. The church and village at Soulbury, less than a mile distant, must also be seriously affected—the Commission list thirteen items in the parish, and, standing on high ground as Whitchurch does at the other end, conditions will be well nigh intolerable. Lovett's School, 1724, is an important nine-bay structure.

Other churches with important features which come within the damaging sound contours are: Swanbourne (delicate wall paintings); North Marston (important masonry, carvings, mouldings, shrine of John Schorn, wall paintings—the finest late fifteenth century work (with Hillesden) in the county); Stoke Hammond (much fifteenth century glass in nave and chancel windows, liable to damage by jarring); Great and Little Brickhill (friable masonry); and Drayton Parslow.

There are a number of great houses involved, some of which are National Trust properties, the effect on which, with their priceless contents and details, to say nothing of the visiting public, may well be imagined: Ascott-in-Wing, Waddesdon, Claydon, Nether Winchendon, Chilton, Hartwell, etc.

The bodies that I represent deplore any thought of actual demolition at Stewkley, Cublington, Creslow, Dunton or Wing. And they are deeply concerned at the possibly damaging effect of aircraft noise and traffic vibration, fumes and dust, as well as development or urbanisation, on many of the outstanding properties listed in close proximity to the Airport.

If this development is permitted, it will result in the total annihilation of three or four villages or hamlets and the rendering almost uninhabitable, with consequent loss or damage to valuable architecture, of nearly twenty others.

APPENDIX A

Council for the Preservation of Rural England

Buckinghamshire Branch

President: Enid Lady Burnham, C.B.E., J.P.

Vice-President: Elliott Viney, Esq., D.S.O., M.B.E., J.P.

Chairman: The Earl Howe, C.B.E., D.L., J.P.

Executive Committee

REPRESENTING AREA BRANCHES

Brill:

Mrs. G. P. S. Macpherson
Mrs. Lance Coates

Buckingham:

Mrs. N. Young
Leslie H. Reid, Esq.

Chess:

Rear Admiral R. S. Wellby, C.B., D.S.O.
Group Captain David Hay
E. W. Stafford, Esq.

North Bucks.:

Mrs. S. C. F. Allen
Peter Hall, Esq.

Mid-Chiltern:

Sir Patrick Astley Cooper, Bt.
Miss I. M. Pogson

Penn Country:

E. Clive Rouse, Esq., M.B.E., F.S.A.
Mrs. C. A. Pitcher, M.B.E.
Spencer Reis, Esq.

Winslow:

Christopher N. Weatherby, Esq.
Lt. Col. R. S. G. Close-Smith
Captain J. Ellerton, R.N.

Printed image digitised by the University of Southampton Library Digitisation Unit

ELECTED MEMBERS

T. Leigh de Fraine, Esq., Chairman, Bucks. Parish Councils Association.

E. H. Frankland, Esq., County Surveyor and Bridge Builder.

Mrs. J. B. Cowdy, Hon. Secretary, Bucks. Naturalists' Trust.

Don Small, Esq., District Officer, Forestry Commission.

H. W. Grimmitt, Esq., C.B.E. (retired), Chief Inspector, Ministry of Power.

R. C. W. Lester, Esq., Area Manager, Eastern Electricity Board.

F. H. Pavry, Esq., B.SC., A.C.G.I., A.M.I.C.E.

F. B. Pooley, Esq., C.B.E., A.R.I.B.A., F.R.I.C.S., A.M.T.P.I., County Architect and Surveyor.

Hon. Treasurer: F. A. Burch, Esq., F.I.M.T.A.

Hon. Secretary: R. G. Alexander, Esq., C.B.E.

APPENDIX B

Villages within the 50 NNI Contour

X = certain destruction.
I = possible destruction.
II = within airport area, or intolerable noise.
III = noise, and subject to serious interference by the airport development complex.

Whitchurch	I or II	Soulbury	I
Hardwick	II	Aston Abbotts	I or II
Weedon	II	Wing	II or III
Oving	III	Dunton	X or I
Pitchcott	III	Stewkley	X or I
Waddesdon	III	Great Brickhill	II or III
Cuddington	III	Little Brickhill	II or III
Cublington	X or I	Drayton Parslow	III
Stoke Hammond	II	Creslow	X or I

Villages within 10 miles

Winchendon (Upper and Nether)
Horwood—Great
Horwood—Little
North Marston
Swanbourne
Winslow
Nash
Woughton-on-the-Ground
Ivinghoe
Drayton Beauchamp
Aston Clinton
Steeple Claydon
Middle Claydon
Botolph Claydon
East Claydon
Grendon Underwood
Quainton
Wingrave
Granborough
Bletchley
Heath and Reach
Leighton Buzzard
Marsworth
Western Turnhill
Hoddesdon
Haddenham
Hartwell
Stoke Mandeville
Halton
Dunton
Wendover
Ellesborough (Chequers)
Aston Sandford
Thornton
Whaddon
Mursley
Stone
Bishopstone
Wotton Underwood
Ashendon
Mentmore
Hulcott
Bradwell
Loughton
Shenley
Newton Longville
Drayton Parslow
Milton Keynes
Walton

APPENDIX C

Village Plans

Bucks. County Council have been active and objective in recognising the need for protecting villages and small towns from piecemeal development and, where threats are already strong, have prepared plans for future guidance. Three villages for which plans have been published are directly relevant to this inquiry and a few excerpts may not be out of place.

Wing

The proximity of the rapidly expanding employment centres of Luton, Dunstable, Bletchley and

Printed image digitised by the University of Southampton Library Digitisation Unit

Aylesbury and the demand for a "house in the country" have led to increasing pressures for housing development in Wing. This demand will be further stimulated when the New Town in the north of the county gets under way and as more and more families become one or two-car owners.

The village plan will serve the function of an instrument for development control, whereby all future proposals for development can be viewed in the context of the need to preserve and enhance what is best in the village, at the same time providing for the needs of the growing population.

Although Wing is situated on high ground, very little of the village can generally be seen from the surrounding countryside. This is mainly due to the scattered pattern of trees and whilst many of these are not perfect specimens, collectively they perform an important function in the landscape.

Unlike many villages, Wing is compact and has the appearance of a miniature town. The close pattern of development in the older parts, particularly in the High Street, tends to strengthen this impression. Compactness, therefore, is a strong feature in giving the village character. Another contributing factor is the widespread use of terraces, and although many of these are not outstanding architecturally, they provide a sense of continuity and enclosure to many street pictures.

Wingrave

In 1965 the County Council commissioned Messrs. Casson, Conder and Partners to prepare a report and plan as a guide to future development in Wingrave village. The village lies just off the main Aylesbury-Leighton Buzzard road, A418 and is approximately 5 miles from both of these towns.

Wingrave is an off-centre village—an old group with a younger one-sided spread. The older part in the south-east, centred around the church, the school and the recreation ground and strongly edged with a group of farms, was—and to some extent remains—a place of strong and defined character. It is set on a plateau with the ground sloping away to the south, and it is probably this sharp fall that has prevented outward expansion to the south with the result that later developments have sprawled to the north-west and, to a minor extent, to the north-east. These late nineteenth and early twentieth century developments now probably exceed in bulk those buildings which form the old village and give it its particular character—a rather unusual character with large central spaces linked at the corners. The tail has got as big as the dog.

Weedon

The village lies on the end of a spur at about 350 ft. above sea level with views to the south and west over the Vale of Aylesbury to the Chilterns and to the north over rolling country towards Whitchurch. The Aston Abbotts road runs along the crest of the spur whilst the roads to Hardwick and Aylesbury drop down to lower ground as they leave the village.

The village is in two parts in typical Bucks. fashion with the main part at the junction of the roads to Aylesbury, Hardwick and Aston Abbotts. To the east is a typical "Endship", a detached settlement called "East End".

As Weedon is so near to Aylesbury and its attractions so considerable, the pressure for development is likely to be strong and unless carefully controlled this could result in:

(a) Loss of village character by growth.

(b) Destruction of the character of the streets by the necessity of road widening.

(c) New buildings of inconsistent character, shape and material.

The purpose of the village policy and plan, therefore, is to secure for posterity, whilst acknowledging the need for change, the heritage that history has given us in this charming village.

The County Council is, and has been, aware of the need of preserving what is characteristic in the towns and villages of the county in a time of rapid development. In this it has had the steady support and encouragement of the C.P.R.E.

There is evidence that it has not been unsuccessful. It is this careful and sympathetic reconciliation of old and new which is now at risk.

APPENDIX D

Officers and Council of the Royal Archaeological Institute 1968–1969

Patron:

Her Most Gracious Majesty the Queen

President:

E. Clive Rouse, M.B.E., M.A., F.S.A.

Past Presidents:

Miss Joan Evans, D.LITT., LL.D., LITT.D., HON. A.R.I.B.A., P.P.S.A.

Sir Mortimer Wheeler, C.I.E., C.H., M.C., D.LIT.' D.LITT., F.B.A., P.P.S.A.

Professor W. F. Grimes, C.B.E., M.A., D.LITT., F.S.A., F.M.A.

C. A. Raleigh Radford, M.A., D.LITT., F.B.A., F.S.A., F.R.HIST.S.

P. K. Baillie Reynolds, C.B.E., T.D., M.A., F.S.A.

D. B. Harden, C.B.E., M.A., PH.D., F.S.A., F.M.A.

Printed image digitised by the University of Southampton Library Digitisation Unit

Honorary Vice-Presidents:
C. W. Phillips, O.B.E., M.A., F.S.A.
Sir Thomas Kendrick, K.C.B., M.A., D.LITT., LITT.D., HON. A.R.I.B.A., F.B.A., F.S.A.
L. E. Tanner, C.V.O., M.A., F.S.A.
Miss M. D. Whinney, D.LITT., F.S.A.
G. F. Webb, C.B.E., M.A., HON. A.R.I.B.A., F.B.A., F.S.A.
Professor C. F. C. Hawkes, M.A., F.B.A., F.S.A.
C. C. Oman, M.A.
I. D. Margary, M.A., F.S.A.
Professor Jean Boney
Miss K. M. Kenyon, C.B.E., M.A., D.LITT., F.B.A., F.S.A.
Miss V. M. Dallas, M.B.E., F.S.A.
Sir Gerard Clauson, K.C.M.G., O.B.E., F.S.A.

Vice-Presidents:
Sir Trenchard Cox, C.B.E., M.A., D.LITT., F.S.A.
H. M. Taylor, C.B.E., T.D., M.A., M.SC., PH.D., F.S.A.
A. J. Taylor, M.A., F.S.A., F.R.HIST.S.
Professor S. S. Frere, M.A., F.S.A.

Council:
F. T. Baker, M.A., F.S.A.
M. J. Craig, B.A., PH.D., F.S.A.
C. F. Stell, M.A., B.ARCH., A.R.I.B.A., F.S.A.
A. H. A. Hogg, M.A., F.S.A.
John Hopkins
B. K. Davison, B.A.
J. G. Dunbar, M.A., F.S.A.
Mrs. B. B. Parry
S. E. Rigold, M.A., F.S.A.
T. D. Tremlett, M.A., F.S.A.
Miss M. D. Whinney, D.LITT., F.S.A.
J. M. Lewis, M.A.
P. A. Barker, M.A., F.S.A.
D. J. V. Fitz-Gerald, M.A.
Miss J. K. Macdonald, B.A.
I. M. Stead, M.A., PH.D., F.S.A.
D. E. Strong, M.A., D.PHIL.
O. J. Weaver, B.A., F.S.A.
D. J. Bonney, B.A., F.S.A.
J. W. Brailsford, M.A., F.S.A.
N. Cooper, B.A.
P. Kidson, M.A., PH.D., F.S.A.
Mrs. P. Tudor-Craig, PH.D., F.S.A.

Officers and Committee of the Architectural and Archaeological Society for the County of Buckingham

1968–1969

President:
E. Clive Rouse, M.B.E., M.A., F.S.A.

Vice-Presidents:
Bishop of Southwell
G. Eland, F.S.A.
Professor W. F. Grimes, C.B.E., F.S.A.
Bishop R. M. Hay
C. M. Trelawny Irving
E. Clive Rouse, M.B.E., F.S.A.
Sir John Guillum Scott

Hon. Secretary:
Elliott Viney, F.S.A.

Hon. Treasurer:
J. R. Worboys

Hon. Editor
E. Clive Rouse, F.S.A.

Hon. Archivist:
Miss C. Baker, F.S.A.

Hon. Librarian:
Mrs. E. Elvey

Natural History Section:
Miss J. Easton

Committee:
E. H. Bailey
A. H. J. Baines
Mrs. S. Bradford
S. A. Comben
Mrs. A. M. Durbridge
G. R. Elvey
C. S. Fay
C. N. Gowing, M.A., F.M.A.
Mrs. J. M. Grimmitt
J. F. Head, F.S.A.
A. H. Packe
B. Pullen (Chairman)
K. R. Webb

Printed image digitised by the University of Southampton Library Digitisation Unit

Memorandum on Wing Church

By DR. H. M. TAYLOR and MR. DENNIS SPITTLE

(Note: This memorandum is intended to summarise present views about the church.)

The History of Wing Church

The earliest history of Wing church is not recorded in any surviving document. However, for architectural reasons (as set out below), its foundation should be attributed probably to the late seventh or early eighth century.

No English churches of this period were built to a size commensurate with the later idea of a large building. Yet Wing must have been accounted fairly large and important in its day. As such it would have been the church of a community of priests, probably organised on a monastic basis.

The foundation of this community would belong to the period of the consolidation of the early English Church, rather than to the first years of the conversion to Christianity. This age was dominated by the great bishops Theodore and Wilfrid; the impetus of whose work continued, well after their own deaths in 690 and 709, to be a formative influence on the development of English life.

Any monastic community at Wing probably disappeared during the ninth century; for the insecurity brought by the Viking invasions of England upset many established patterns of life. But the church itself appears to have stood without any serious damage.

In the tenth century Wing belonged to a lady Aelfgifu, who was perhaps the divorced first wife of King Eadwig. Between the years 966 and 975 she bequeathed Wing to King Edgar. It may have been about this time that work was carried out on restoring the church.

During the centuries following the Norman conquest the manor of Wing belonged in turn to several famous families, which may have made their contribution to the work carried out on the church in their day. However, the most interesting connection, so far as the church was concerned, started when Wing was sold to Robert Dormer (later Sir Robert) in 1515 (see below).

Wing Church and its Historians

Interest in Wing church was aroused over a century ago by the great Victorian architect Sir Gilbert Scott, who first drew attention to its significance. The study of the building was fostered by Sir Gilbert's son, G. G. Scott the younger and by other architectural historians of his day. It was the opinion of these men that Wing was an early monument of some importance.

J. T. Micklethwaite wrote in 1896: "Altogether the church shows the basilican form (of building) better than any other now standing in England and will give a better idea of what our first English churches looked like."

G. G. Scott also had commented on the completeness of the early church: "The additions of later times, while they have added new beauties, have but little obscured the primitive character of this venerable monument."

Historians in the first half of our own century were less certain than their predecessors about its early date; they had not distinguished clearly between the two distinct phases of Anglo-Saxon work in the building. Nevertheless they continued to regard it as a primary source for their studies.

A careful re-examination of the fabric of the church over the past ten years has led towards the conclusions set out below. And we are now in a better position than ever to recognise the importance and unique character of the building.

The Building of the Church

1. *The Earliest Period*

The early church consisted of a nave with north and south aisles, and an apsidal presbytery raised over a crypt.

The west part of the aisles opened to the nave through the three round-headed arches on each side: their east parts seem to have been closed off from the nave by solid walls and may have formed separate chapels. Also a doorway in the east wall of the north aisle may have led to a further chamber to the east.

The polygonal apse was approached by steps leading upwards, under an arch: though it is uncertain whether the present arch is original. To the side of these steps were two small staircases going down to the crypt. This crypt had a small enclosed chamber at its west end: also there were three rectangular, protruding chambers to the north, south and east, which may have contained altars, or shrines with relics of saints.

At the west end of the church there are two doorways in the north and south nave walls, above the level of the arcades, which would have given access to a wooden gallery. Such a gallery would have been reserved for important persons attending the church.

The building is constructed of rough limestone rubble, rendered with plaster on the interior. The arches are turned with flat stones or re-used Roman tiles.

The style of the building suggests that it was constructed most probably in the late seventh or

Printed image digitised by the University of Southampton Library Digitisation Unit

early eighth century. For it is related to the elaborate architecture developed towards the end of the seventh century. This development owed much to the impetus of St. Wilfrid, who built two great churches, at Hexham and Ripon, with ailes, galleries and crypts. These were inspired probably by contemporary architecture in the city of Rome.

This elaborate style does not seem to have continued in England for very long; nor was it adopted all over the country at any time. (The church of Reculver, Kent, founded *circa* 669, belonged still to the simpler traditions of the early seventh century: it survived till its wanton demolition in the nineteenth century. Escomb and Jarrow in the North were aisleless and considerably smaller: it seems they were influenced by masons from France.)

Neither of Wilfrid's churches survives. However, there are two major buildings of this period, still standing, that probably were influenced by their style. One is Brixworth, Northants, founded shortly after 675: the other is Wing.

Brixworth was described by Sir Alfred Clapham as "perhaps the most imposing architectural memorial of the seventh century yet surviving north of the Alps". Wing was built on a rather smaller scale, but is of the same class of importance and interest. Neither Brixworth nor Wing can be paralleled easily in the whole of northern Europe for the scale and completeness of its fabric surviving from this early period.

Also, the two buildings do not duplicate one another; rather they are complementary. At Brixworth the aisles have been destroyed and the arcades blocked, also most of the apse is a modern rebuilding. Wing preserves both its nave arcades, the north aisle is still intact and the apse and crypt are basically works of the early period, under a slightly later remodelling.

2. *The Late Anglo-Saxon Period*

The east end of the church underwent a transformation in the tenth or eleventh century.

First, the crypt was altered. The internal walls were thickened and heavy piers were erected, obstructing much of the internal space: this was intended to carry the stone vaulting.

Secondly, the apse was remodelled; to bring it into line with the latest architectural fashions of the age. It was this which gives it its characteristic decorative features of pilasters, arches and pediments. This sort of decoration is best known in England on the late Anglo-Saxon tower of Earls Barton, Northants. But it occurred in a similar way on the apse of Deerhurst, Gloucestershire (now in ruins).

At the same time, the double window, divided by a baluster, was inserted high up in the east wall of the nave.

3. *Wing Church in Later Ages*

The basic features of the early church have not been obscured by alterations in later periods. Such work as has been carried out has been concerned principally with improving the lighting and with adding new structures as annexes to the building.

The most important changes in the fabric have been the insertion of the two pointed arches in the east parts of the nave walls (in the thirteenth century); and the rebuilding of the outer wall of the south aisle (in the fourteenth).

The fifteenth century additions of a west tower and north and south porches, together with the renewing of the parapets, gave the church its characteristic exterior silhouette without affecting greatly the interior appearance.

4. *The Monuments*

Wing church contains three magnificent tomb monuments of the sixteenth and seventeenth centuries, erected by members of the Dormer family. Of exceptional interest among these is that of Sir Robert Dormer, of 1552. This has been described as "the finest monument of its date in England". It is distinguished by the pure classicism of its Renaissance decoration, which may have been influenced by the ideas of the group of men around the Lord Protector and the Duke of Northumberland. The actual design may have been inspired by a work of the north Italian architect Sanmichele.

Conclusion

Throughout its existence Wing church has retained a remarkable unity and harmony of design, which complement its unique historic and artistic importance. But its significance is based on more than these qualities alone: for, with reference both to the earlier and later Anglo-Saxon periods, the study of the building is not complete. It provides a continuing and irreplaceable document for historians of architecture.

(Richard Gem—Peterhouse, Cambridge.)

Major publications concerning Wing church

Scott, G. G. *Essays in the History of English Church Architecture*. London, 1881: p. 44 and plate 10.

Micklethwaite, J. T. "Something about Saxon Church Building": in *Archaeological Journal* 53, 1896, pp. 307–8 and 341–4.

Royal Commission on Historical Monuments: *Buckinghamshire North*. HMSO, 1913, pp. 331–5.

Baldwin Brown, G. *The Arts in Early England*, Vol. 2; "Anglo-Saxon Architecture". London, 1925: pp. 106, 243, 320–3, 486 and passim.

Clapham, Sir Alfred. *English Romanesque Architecture before the Conquest*. Oxford, 1930. Passim pp. 95, 98, 110, 113, 114, 156.

Printed image digitised by the University of Southampton Library Digitisation Unit

Vere Woodman, A. *All Saints, Wing: A Short Account of the Church* pamphlet. 1958.

Pevsner, N. *The Buildings of England; Buckinghamshire's*. Harmonsworth, 1960. pp. 294–6, 19, 25.

Jackson, E. D. C. and Fletcher, Sir Eric G. M. "The Apse and Nave at Wing, Bucks." in *Journal of the British Archaeological Association* 25, 1962. pp. 1–20.

Taylor, H. M. and Taylor, J. *Anglo-Saxon Architecture*. Cambridge, 1965. Vol. II, pp. 665–672 and figs. 618–620.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. V. G. Walker*

Thank you for your letter of 28th May granting me permission to appear at the Cublington Local Hearing. Below is the written statement required.

I am protesting against the proposed airport at Wing for the following reasons:

1. The noise of the aircraft.

2. The noise of the increased road transport. This would increase past my house which is on the main Aylesbury-Leighton Buzzard road.

I was ill some years ago and as a result cannot tolerate excessive noise.

3. The whole aspect and nature of the country near to my home would be changed for the worst.

4. I should have to leave the district.

As I work locally, own my house and have relatives and friends here, this would be a great emotional loss.

I should, no doubt, lose financially and would get no financial compensation. I should also have to find a new job and this might present certain difficulties because of superannuation and so forth.

5. I think it is a national disgrace that no real explanation has been given for including Wing as a proposed site.

There must be many better sites than Wing; apart from the other three proposed sites.

6. *I query the underlying supposition that the country requires a Third London Airport.*

The south-east of England is already overcrowded. Put the country's airports in the north-east and the required movement of trade, manufacture and population will follow.

* See also p. 1726.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Drayton Parslow Parish Council*

Part I

SUBMITTED BY MR. H. G. DICKENS

1. By a Resolution of the Drayton Parslow Parish Council, duly convened and held on the 19th May 1969, it was unanimously *resolved* that application be made forthwith to the Commission on the Third London Airport by the Clerk for leave for the Parish Council to be represented by me, its Chairman, at the Stage II Hearing on the Cublington (Wing) site for the proposed Third London Airport, to be held in Aylesbury on the 14th July 1969.

2. It appeared to me that the views which my Parish Council desired to express in Part III of this Statement upon what we consider to be the implications for the village and its inhabitants would be the more meaningful if presented in their only proper context—the context, that is to say, of the village as it is and not as (in the absence of such information) we or the Commission may imagine it to be.

3. So far as I am aware—and though a Mursley man born I have lived in Drayton Parslow for thirty-four years and am married to a Drayton girl—no attempt had ever previously been made, for no necessity had arisen, to assemble a complete survey of the village and its inhabitants, nor were any useful figures other than estimates available.

4. I therefore enlisted the help in the village of a volunteer working party which included a Drayton Parslow housewife with some previous experience of Market Research to gather information and to present a study of the village. Part II of this Statement is that study.

5. We do not claim that Drayton Parslow is unique. On the contrary, we believe it to be typical of those villages in the area (and there are many) which are still substantially untouched by development and industrialisation. It is an ordinary village with ordinary people, and in our opinion and experience the implications of the Third London Airport for Drayton Parslow are equally applicable to other such villages in the immediate vicinity.

* See also p. 1727.

Part II

DRAYTON PARSLOW: A SHORT STUDY OF A NORTH BUCKINGHAMSHIRE VILLAGE

Foreword

The Registrar General publishes no figures for a community as small as Drayton Parslow. The total population figure as at 14th June 1969 is based on the Electoral Register (qualifying date October 1968) amended to cover comings and goings, with a house-by-house check on the under twenty-ones. The other figures are the result of research and consultation by members of the village in every age group. The fact that in each breakdown the figures have totalled back suggests that they are as accurate as are likely to be obtained from any source.

Inevitably the categorising of occupations in particular will give rise to comment within the village itself. In a society of individuals categorisation of any sort is anathema, and there will be many people holding responsible positions or who have special skills who may feel slighted not to have been singled out for personal mention.

Acknowledgement must be made to the countless people who have contributed to this statement and to those who have made available information of an entirely confidential nature which would not normally be divulged.

Introduction

The Civil Parish of Drayton Parslow (1,749 acres) lies 4 miles south-west of Bletchley in North Buckinghamshire and 6 or 7 miles north-west of Leighton Buzzard, surrounded by its sister villages of Newton Longville to the north, Mursley to the west, Stewkley to the south and Stoke Hammon to the east. Its long main road rises gently on an alignment 45 degree east of Grid North from the 400-foot contour to its highest point at the church, on the 475 ft. contour, with views across the Ouzel Valley to the Brickhills beyond.

Five farms are situated behind and on each side of Main Road. Four others lie dispersed within the Parish boundary.

Drayton Parslow has no miracles of architecture, ancient or modern. The fourteenth century stone built Holy Trinity Church is like hundreds of others of its period scattered across England. All the other buildings are of brick. There is an eighteenth century Rectory, a seventeenth century manor farmhouse and a few reputedly sixteenth or seventeenth century half-timbered or wattle-and-brick cottages and farmhouses, with various dwellings of all ages to modern council houses and bungalows.

See map and photographs appended.*

* Not reproduced. Available for inspection by arrangement at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

I THE PEOPLE

Total population = 382
males = 184
females = 198

1. Age groups

Under 5 years	27	
5–11 years	39	
12–16 years (at school)	23	
16–21 years (left school)	22	
Total under 21		111
21 to pensionable age		209
Men 65–70, women 60–70	29	
70–80 years	26	
Over 80	6	
Over 90	1	
Total of pensionable age		62
TOTAL		382

2. Occupations

(a) **Based on head of household**—132 households.

(i) *In the village or centred in the village*

Retired	38
Agriculture and Allied Trades	21
Building and Allied Trades	11
Shop, pub, inclusive	4
Local factory	4
*G.P.O.	7
TOTAL	81

(ii) *In the near neighbourhood*

Railways	2
Brickworks	13
Light Industry (Bletchley, Aylesbury)	14
G.P.O. Bletchley	2
Others (professional, clerical, special crafts)	10
TOTAL	41

(iii) *Commuters*	9
TOTAL	131

(One householder = no information.)

* The General Post Office has a training establishment on the edge of the village.

(b) **Married women**

Several women are "gainfully employed". As in many cases their jobs are of a part-time nature and the hours of work related to family commitments, no attempt has been made to analyse them in depth. Ten work at the G.P.O. establishment, four are employed at the school. There is one school teacher and a few women working in shops and light industry outside the village, four self-employed within the village.

(c) **Young people who have left school (22) plus those over 21 living at home (20)** Total 42

Office, banking, accountancy	12
Shops, hairdressing	4
Further education, research	6
Trades: (building, electrical, etc.)	4
Light industry	9
Farming	3
Others (G.P.O., etc.)	4
TOTAL	42

There is no unemployment in Drayton Parslow.

It has been quite clear when collecting this information that there are several people who could earn more and hold higher positions if they were prepared to leave the area. They are not.

3. The Retired

Men aged sixty-five upwards } sixty two
Women age sixty upwards } persons

(a) **Residence in the village**

Only nine in this age group have less than twenty years residence in the village. But these nine chose the area with specific reference to the rural quiet, the convenience of access to, and by, their children and grandchildren and the character of the area.

Twenty-seven of the sixty-two were born in the village. Two eighty year olds are still living in the houses in which they themselves and their mothers before them, were born. The ninety year old has lived in the same house for seventy-two years.

(b) **Relations**

Only eight of the sixty-two are without relations (other than spouses) either in the village or the very near neighbourhood. For the remainder (fifty-four) the closeness of their immediate families is of vital importance (q.v. Section I 5 —Families).

(c) **House ownership** (38 of the total 132)

Owners	15	
Council houses	17	
Tenants	6	(some on a nominal rent)
TOTAL	38	

(d) **Activities**

Although officially "retired" this is an age group of intense activity: many of them saying, with truth, that they have never been so busy. They are keen allotment holders, are involved in odd jobs about the village, hedging and ditching, caring for their grandchildren. Many of them hold office or serve in the various associations, Women's Institute, Friendship Club, Parochial Church Council, etc.

Printed image digitised by the University of Southampton Library Digitisation Unit

4. The Children

(a) **Under fives**

Four babies have been born since April. There are twenty-three others under five.

(b) **The School**

The village school, built with private money, was opened as a Board School in 1878 and in its first week received sixty-nine entrants.

The first entry in the log book states that there had been no school in the village for seven to eight years.

Later the school was reduced to children of primary age only.

In 1967 a proposal by the Education Authority to close the school in the interests of rationalisation evoked a reaction in the village surpassed in recent years only by the reaction to the inclusion of Cublington (Wing) on the Short List of sites for the proposed Third London Airport (q.v. II 10).

(i) *Attendance*

Of the children in the village aged five to eleven *all except three* (who were already settled elsewhere when their families came to the village) are attending the school.

(ii) *Growth over past five years*

1965—18 children
1966—24 children
1967—24 children
1968—28 children
1969—36 children 14 juniors
22 infants

(iii) *Staff*

Headmistress (now resident Mursley)
M.A. Oxon. First-class Diploma in education. Grammar School and Infant School experience.

Infant Teacher (resident Swanbourne)
Fully qualified with twenty-two years teaching experience in various grades of school.

Both teachers hold higher qualifications than would normally be found in a village school. Both have chosen to work in Drayton Parslow in preference to taking more highly paid or more prestigious posts.

Also, cook, kitchen helper, playground supervisor, caretaker, student teacher (from outside the village).

(iv) *The families*

Of the children at present attending the school.
six are fourth generation.
Three are third generation.
Two are second generation.

(c) **Older children**—23

Five children go to Grammar School.
Six are at boarding school.
Twelve are collected daily by coach to go to secondary modern schools.

(d) **School leavers**—22

See table on occupations: Section I 2(c).

Not all the school leavers have found the job which might be their ultimate selection, but none are without employment.

The majority of the young men over sixteen have some form of personal transport.

5. The Families

(a) **Local households**

Ninety-four of the 132 households can be said to be "local", i.e. hailing from the immediate neighbourhood.

(b) **Native born**

One hundred and eighteen of the 382 total were born in the village.

(c) **Pre-1837**

Twenty-two of the names on the current electoral register appear, sometimes with morphological variants, in the parish records covering the year 1559–1837. Pre 1837 names: Bates, Bond, Chappell, Cox, Dickens, Duncombe, Hickman, Higgs, Horn, Hounslow, Jackman, Kirk, Norcott, Pitkin, Pratt, Stone, Tarbox, Tattam, Turney, Viccars, Walduck. One family, for example, has 169 entries over the period.

Of the families still living in the village:

Three can be traced to the sixteenth century (earliest available record).
Five can be traced to the seventeenth century.
Ten can be traced to the eighteenth century.
Three can be traced to the early nineteenth century.

(d) **Inter-relationships**

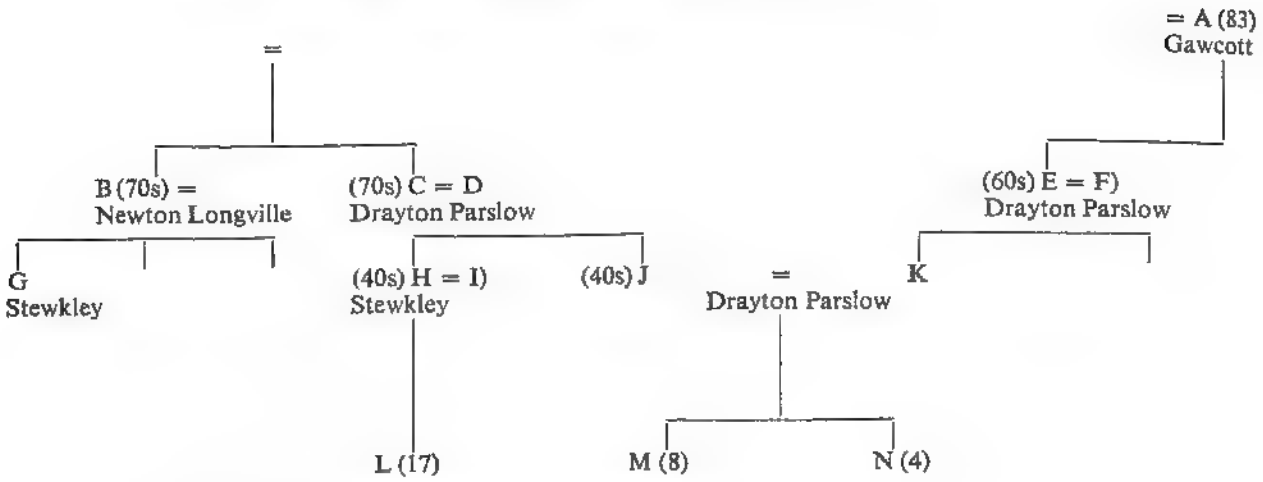
Some of the children and indeed some adults have produced their family tree, demonstrating the closeness of the family links over the generations and the extraordinary inter-relationship between members of the old local families. All are without exception too complicated to be included here.

The relationships are not confined to this village but extend, as they have done for many years, to neighbouring towns and villages.

The responsibility that each generation shoulders in respect of its parents and indeed other relatives is best illustrated in the form of an abbreviated table. The close care and help which this demonstrates is typical of the area and many other examples might have been given.

Printed image digitised by the University of Southampton Library Digitisation Unit

ABBREVIATED TABLE OF TWO DRAYTON PARSLOW FAMILIES
(males on left-hand side of marriages). Ages in brackets.



A is visited twice weekly by E. Has odd jobs done for her by C, J and K.
CD visit or are visited daily by JK, MN and EF.
C tends the garden of B who is paralysed.
G visits B regularly.
K helps EF with household duties.
I cycles from Stewkley three times a week to help CD. Does all their washing.
HI and L cycle from Stewkley at the weekend to visit CD.

6. Village activities

(a) Outdoor life

A great deal of time is spent out of doors, tending allotments and gardens, the children playing. There are keen followers of the Whaddon Chase Hunt.

(b) Associations

Vegetable Producers Association: All the village are members. The V.P.A. undertakes the bulk buying of seeds, fertiliser and sundries. It also owns two marquees which are available free for village occasions and are hired to neighbouring villages. There is a team of marquee erectors. q.v. 7.

Women's Institute: Membership thirty-two. Monthly meetings. q.v.7.

Friendship Club: Membership twenty-five. Monthly meetings. q.v.7.

Cricket Club: The fixture card has forty dates for the current season: 19 home, 21 away. q.v. 7. This season they are the holders of the Drayton Parslow-Little Horwood Challenge Cup.

Children's Playground Association: Formed three years ago to raise money to maintain, and equip, the children's playground, which now has a slide, rocker, swings and sandpit. q.v. 7.

Bellringers: The bellringers meet weekly for instruction and practice in the art of bellringing.

Drayton Parslow Church has six bells. The tenor bell was cast in 1591 in Drayton.

7. Village Annual Events

Church

Patronal Festival Gift Day.
Harvest Thanksgiving.
Christmas Whist Drive.
Summer Barbecue.

Baptist Chapel

Sunday School Anniversary. (The school has a half holiday).
Sunday School Summer Outing.
Summer Fete.
Ladies' Outing.
Christmas party and tree.
Christmas bazaar.

Methodist Chapel

Christmas bazaar.

Combined Churches

Women's World Day of Prayer.
Service of Remembrance.

Women's Institute

Children's party.
Birthday party.
Summer fete.
Party for Pensioners.

School

Sports day.
Summer outing.
Christmas party.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cricket Club

Summer fete.
Annual dinner.

V.P.A.

Summer show.
Autumn show.

Friendship Club

Annual dinner.
Summer outing.

Conservatives

Annual dinner.
Jumble sale.

Weekly Whist Drive

Annual drive for blind.
Christmas poultry drive.

The Meet

The Whaddon Chase meets annually outside the Three Horseshoes.

Children's Playground Association

Summer fete.

8. The Parish Council

	Age bracket	*Length of residence in the village*	*Occupation*
Chairman			
Mr. George Dickens	50s	34 years	Contractor
Clerk			
Mr. Alan Tattam	30s	native born and bred	Fitter
Mrs. Irene Clare	30s	7–8 years	School teacher
Mr. Gordon Critchley	40s	17 years	Farmer
Mr. Arthur Kirk	60s	7 years	Probation Officer
Major Christopher Maud, M.C.	40s	21 years	Farmer

Drayton Parslow has one representative on the Winslow R.D.C.

II THE VILLAGE

1. History

The first written mention of the village is in Domesday Book 1086. The Lower Manor was held of the Bishop of Lincoln, the Upper Manor "Lewis of Nunham held of King Edward and then of King William".

There are still traces of the moat of an adulterine castle probably dating from the twelfth century.

In 1339–40 Nicholas de Passelewe from whose name the Parslow derives, was Sheriff of Buckinghamshire and Bedfordshire.

In 1563 the Advowson and Manor were granted by Queen Elizabeth to her relative and former tutor Sir John Fortescue.

During the seventeenth and eighteenth centuries the village was noted for its flourishing bell foundry (Chandler's). "Never a bad bell" *Cock's History of the Bells of Buckinghamshire*. Many are still in use.

In common with all basically agricultural communities a good deal of hardship resulted from the enclosures: complete records and map of which are still in the village. Flora Thompson's *Lark Rise to Candleford* (World Classics 1954) portrays life in an agricultural community at the turn of the century closely paralleled to the tales told by the old men of life in Drayton Parslow. (Both Juniper (Lark Rise) and Drayton were in the Hundred of Cottesloe).

Men from the village served and died in both World Wars and are commemorated on the Memorial where a service of remembrance is held every November.

Population:

1801—307
1861—468
1901—369
1969—382

Source: 1801–1901 from Buckinghamshire Baptisms, Marriages and Burials (Vol. II—1913).

2. The Land

The total acreage of the Civil Parish is 1,749 acres.
Acreage under cultivation—1,300 acres approx.
Allotments, recreation ground, common land—49 acres.

(a) **Recreation ground**

Part of the recreation ground is registered as Common Land, the bulk belongs to the Carrington Trustees and is leased to the Parish Council. The whole contains the cricket pitch and the children's playground.

(b) **Allotments**

Also belong to Carrington Trustees, leased to the Parish Council. All are taken up.

(c) **Common land**

Forty acres, formerly allotments, are leased to a farmer by the Parish Council on behalf of the village. The revenue is distributed between widows and widowers to the value of up to £2—£2 10s. each p.a. and the remainder, in the form of coal, spread between all those in the village who qualify as Common Holders (two years' residence and the payment of 1s. p.a.).

Printed image digitised by the University of Southampton Library Digitisation Unit

3. The Farms

(a) **Labour position**

Area under cultivation—1,300 acres approx.

The pattern of farming in the village has been changing gradually over a period of some years. Small holdings have become less viable and have in the main been absorbed into larger units. More and more land has been brought into production on a much more intensive scale to cover increased overheads and rising costs. As labour has drifted to better paid jobs so these farms have become increasingly family units, depending less on outside labour and are now worked with modern equipment on minimum manpower. One farmer has recently installed a Gascoigne Six Stall Abreast Milking Parlour and Bulkholder Tank to meet the problem.

(b) **Soil**

This is third-class farming land: sand at the church end, heavy clay for the greater part. Basically it is two-crop (corn and grass). However, the increased use and the improved range and quality of fertilisers, better drainage (much of it on Government money) has resulted in vast increases, to a yield comparable to land which is recognised to be intrinsically better.

(c) **Types of farm**

There are five small-holdings and nine farms within the Parish. One specialises in research and veterinary work.

The others are mixed farms, arable and stock.

Ten of the farmers and smallholders are tenants. One whose rent has recently been increased is extending his range to include an Intensive Calf Unit (at a cost of £15,000) to help to offset his rise in overheads.

Four are owners. One of them has been farming his 200 acres since 1912.

(d) **Livestock**

Cattle	705
Sheep	850
Pigs	108
Poultry	5,000

(e) **Effect of urbanisation**

Within the village there is an inbred respect for farm land and property. Already the increasing urban-educated population in the nearby towns has resulted in incidents of carelessness and indeed vandalism.

4. Dwellings

(a) **Ownership**

There are 132 occupied dwellings in the village.
Fifty-eight are owned by the occupant.
Forty-six are Council owned.
Twenty-eight are tenanted.

(b) **Facilities**

All have main drainage, indoor sanitation, running water and electricity. There is one exception: an old gentleman who very reasonably prefers his own well water and the light of oil lamps.

(c) **The buildings**

The Rectory, built in 1754, is mentioned by Nikolaus Pevsner: (The Buildings of England: Buckinghamshire. Penguin 1960). "The garden side is one of the most charming pieces of early domestic Gothicism in the County". This is the only house in the village that can be dated with certainty.

Sixty-four of the houses have been built since just before the war; those apart there are examples of almost every age, none except the Rectory making any claim to architectural distinction but each with a character of its own: early Victorian cottages with patterned brick faces, four farms probably dating from the seventeenth century with later additions, two bakehouses whose Deeds date from the sixteenth century, which certainly incorporate some of the original building in their fabric, several thatched cottages, again with parts dating from the sixteenth century. Traces of stone foundations in The Manor Farm House and Lower Farm suggest earlier buildings on the same site.

The village is, frankly, a conglomeration of styles and periods.

5. Places of Worship

Remains of a Saxon preaching cross still in the churchyard indicate an early date for some form of Christianity in the community.

(a) **The Church of the Holy Trinity**

Records of the Rectors of the Parish begin in the year 1232. The existing church of the sixteenth century is said (Arthur Mee) to contain fragments of three previous buildings on the site.

Sunday services (q.v. I.7).

(b) The first mention of Dissenters in the village is in 1695.

Baptist Chapel—built 1830.

Sunday services.
Sunday school for children of all denominations (q.v. I.7).

The Manse is serving three villages: Newton Longville, Mursley, Drayton.

Printed image digitised by the University of Southampton Library Digitisation Unit

(c) **Primitive Methodist Chapel**—originally in the building which is now the village hall. Constructed on its present site in 1912.

Sunday services (q.v. I.7).

(d) **United activity**

There are also united services every month in alternating places of worship. Congregations vary between thirty to fifty persons.

People of all denominations attend one another's money raising activities.

The churchyard of Holy Trinity is the burial ground for the whole village. With the exception of the newcomers all village and many neighbourhood families have relatives and forebears there.

6. Village Facilities

Pub: The Three Horseshoes has been functioning as an inn certainly since the mid nineteenth century, probably a good deal longer.

Post Office: At present in the Carrington Hall.

General stores: Carrying groceries, chemists' lines, newspapers, milk, stationery, tobacco and sweets. Agency for cleaning clothes and shoe repairs.

Mobile shops: Butchers, co-operative stores, green grocery, fish, bakery.

Mobile library: calling fortnightly.

Mobile baby clinic: calling monthly.

Ambulance service: transport for those requiring treatment outside the village.

Bus services: Several times daily to and from Leighton Buzzard, Bletchley, Oxford.

Carrington Hall: Owned by the Carrington Trustees. Let to the Parish Council: Available, subject to bookings, for any village activity.

7. Wild Life

The village is inclined to take its wild life a little for granted. Field fruits and flowers are gathered in their season. For those whose eyes are open there are many different animals—rabbits, hares, foxes, weasels, stoats, water rats, moles, voles, barking deer (Muntjacs) and badgers, game birds, birds of prey.

In 1907 a school competition was won with a collection of 110 different wild flowers. In 1965 the winner's granddaughter and a friend collected, as a school project, 117 different specimens.

Of two young men in the village at present at university one is reading zoology another botany.

8. The Air

The *Comprehensive Gazetter of England and Wales* (William MacKenzie *circa* 1900) states: "Drayton Parslow . . . is noted for its bracing air".

Even in summer it is seldom free from wind, often from the east, which in winter blows fiercely across the fields and through the village.

The inhabitants believe the air to be unusually healthy.

It is perhaps significant that of the fifty-eight interments in the last fifteen years only six were aged under sixty-five. Thirty-four were aged over seventy-five years, fourteen of these over eighty-five years.

9. Ambient Noise

Main Road is a secondary road: it gives way at both ends to other secondary roads. It serves only a limited amount of through traffic. There is little aerial activity.

On account of the general quiet and the ease of hearing approaching vehicles there is a tendency among both the old people and the children to cross the road by ear.

The greatest volume of village noise comes from farming activities during haymaking and the harvest, and from motor bicycles at weekends: a farmer has given the young men a field to use as a scrambling course.

Apart from the sounds of birds and beasts, childrens voices and the occasional passing car there is no background noise in Drayton Parslow.

10. Village Reaction to the short-listing of Cublington (Wing) as a Possible Site for the Third London Airport

(a) **Parish Meetings**

In January 1969 it was resolved unanimously to oppose any proposal to site the Third London Airport at Silverstone.

Following the publication of the Short List of Sites by the Commission a Parish meeting on 10th March resolved unanimously to oppose the choice of Cublington (Wing).

The attendance at the first meeting was well above average, at the second there was standing room only.

(b) **Membership of the Wing Airport Resistance Association**

When signatures for membership to W.A.R.A. first started to accumulate in the village for bulk despatch to Head Office, the names were ticked off against the Electoral Register. While adult membership is therefore accurate there is no record of what proportion of the twenty-two sixteen to twenty-one year olds have signed.

It is believed that about half of them may be pro-airport.

Of the 271 adults in the village 236 are W.A.R.A. members. Twenty-seven adults are believed to be pro-airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

The overwhelming majority of the village intends to stand by its homes and its way of life. This is, after all, John Hampden's County.

III CONCLUSIONS

Preliminary

1. Where necessary, we shall refer for convenience to *Noise: Final Report of the Committee on the Problem of Noise* (Cmnd. 2056) as "NFRC"; and to *Site Information for Stage II Local Hearings* 3. *Cublington (Wing)** as "CTLA III".

2. We note:

(a) That plan CTLA I† is regarded by the Commission as a possible but not definitive configuration of the layout of the proposed Airport;

(b) That the Commission cannot exclude the possibility of a larger land-take being required than the 7,500 acres contemplated by CTLA I;

(c) That the proposed runway alignment is 45 degrees east of North (Grid) but that the Commission recognises that further changes to this alignment may subsequently be "justified";

(d) That even the location of the proposed airport and runways as disclosed by plans CTLA III/3† and III/2† and 5† is itself open to change;

(e) That the NNI contours shown on plans CTLA III/2 and III/3 are approximate and claimed only to give a general indication of the areas likely to be affected; and that in any event the reliability of the Noise and Number Index has itself been questioned; and

(f) That the Committee on the Problem of Noise reached, in 1963, the tentative conclusion that, subject to the concept of a noise and number index being well founded the *maximum* acceptable level lies in the region between 50 and 60 NNI by day (NFRC para 302) and 30 and 45 NNI by night (NFRC para 304).

General considerations

3. We are not qualified to criticise the reliability of the NNI concept as such but

(a) We note that the Wilson Committee omitted to comment or draw any conclusion from the sharp break which is plainly visible between the 30 and 35 NNI contour in the majority of the lines plotted in Figures 3A, 3B, 4, 6 and 7 in Appendix XI to that Committee's Final Report, and

(b) We observe that the Farnborough and Heathrow tests were conducted with a sample group who may be presumed to have been accustomed to a far higher ambient noise level by day and by night than an aurally unsophisticated rural population and that, so far at any rate as the Heathrow tests were concerned, the sampling itself is open to question in the sense that many of those whose threshold of tolerance was significantly lower than the 50—60 NNI range which is said to be critical may be presumed to have left the area some time, if not years, before the tests were conducted.

4. If therefore we do not criticise the reliability of the NNI concept as such, we do nonetheless question a number of the conclusions which the Wilson Committee drew from it. In particular we question the proposition that the "hard core of imperturbables" (NFRC, Appendix XI, para 36) form anything like 30 per cent of the population.

5. Further, and with particular reference to all the contours disclosed in plans CTLA III/2 and III/3, our attention has been drawn to the letter from Mr. E. H. Burgess (Special Director and General Sales Manager, Concorde, B.A.C. Limited) published in *The Times* on the 2nd May 1969 from which we quote the following passage:

> "Concorde's side-line noise admittedly could be slightly worse than today's aircraft. There are at present, however, no side-line regulations anywhere in the world, and even if such legislation comes into force it is unlikely that Concorde will meet any problems at more than a small percentage of airfields. At by far the great majority of the world's airports there are alternative runways so positioned that any lateral noise coming from them is a nuisance to no one."

Jumbo jets are already today's aircraft; the SST is tomorrows.

6. If, despite the variables in airport layout, location and runway alignment to which the Commission have drawn attention, the NNI contours disclosed in Plans CTLA III/2 and III/3 are to be taken as giving a useful general indication of what would be involved, it appears to us that the scope for variation from the layout shown in CTLA I would in fact be limited to adjustments of a very minor order because of the proximity of the Milton Keynes designated area, Aylesbury and Leighton Buzzard for which the recent 2° runway re-alignment is said to provide a better balance. We think it reasonable to assume that Mr. Burgess is under—rather than over—stating the lateral noise problem presented by Concorde and it would seem to follow the the provision at Cublington (Wing) of Mr. Burgess' alternative runways would not be feasible without falling even fouler of the Scylla of Milton Keynes or the twin Charybdis of Leighton Buzzard and Aylesbury.

7. It follows from all the above that we consider the omission from Plan CTLA III/2 and III/3 of the 30 and 35 NNI contours renders those drawings nearly as meaningless as, with respect, the Commission's statement in para 12 CTLA III that "it will be observed that the Milton Keynes designated area lies outside the 40 NNI contour".

* Reproduced at p. 1001.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

8. We have been unable, somewhat to our surprise, to discover in Chapter VIII or elsewhere in the Wilson Committee Report any discussion of the effect of aircraft noise upon cattle and stock. We understand, however, that, domestic pets apart, the animal population in the Heathrow area is scarcely a factor to be taken into account and we assume that at the time the Committee sat there was as little evidence available to it on this aspect as clearly there was in relation to human physical and mental health.

9. We do not know what justification there may be for the Commission's assumption (para 13 CTLA III) in regard to the NNI contours that noise certification regulations will be introduced and will lead to a reduction in the noise effect of aircraft by 10 NNI over the next twenty years, though we do agree that it is already manifest that any reduction which may be achieved will be largely, if not entirely, offset by growth in aircraft weight and power. We consider twenty years to be a long stretch by any standard and, assuming the Commission's assumption to be justified in the end, a long one for those in particular to serve who are already within the first and last score of years of the normal human life span. While not disputing para 261 of the Wilson Committee Report, we do not believe that successive Ministers' senses of duty have been sufficient to diminish the volume of or the justification for complaint in the Heathrow area since 1963.

10. The implications of Section 40 and 41 of the Civil Aviation Act 1949 are not lost upon us, nor will they be lost upon the farming community particularly those operating intensive breeding, milking, calf or poultry units in the affected area. Happily, we have had no experience of collecting the evidence necessary to support the limited right of action available to those who suffer actual loss and damage as a result of aircraft noise but we imagine that the first essential step is positively to identify the offending aircraft, an operation difficult enough by day, impossible by night, and in practical terms out of the question with aircraft movements on the scale contemplated at the Third London Airport.

11. We recognise the considerations which persuaded the legislature in 1920 not only to limit the right of action in respect of aircraft nuisance but also the remedy by excluding the availability of an injunction. There are, however, other interests, business and private, quite as legitimate as those of airline operators and it appears to us that they are entitled to consideration before, not after, they are deprived of their legal remedy.

Particular considerations

12. The 2° re-alignment of the runways since first publication of Plan CTLA 5 does not in our view make any significant difference one way or the other so far as Drayton Parslow is concerned though it reduces the shortest distance between the northernmost runway and the village by perhaps 150 yards, to no more than 2,300 yards.

13. So far as may be determined from Plan CTLA III/3 the entirety of the most densely inhabited part of the village lies between the 40 and the 45 NNI contour, a few of the dwellings at the north-eastern end and nearly all the land south of Main Road being within the 45 and 50 NNI contours.

14. Having regard to the variables to which we have referred in paragraph 2 and to our belief that the "*maximum* acceptable level" (to use the Wilson Committee's original careful phrase in para 302 NFRC) or "the critical range of disturbance" (to use the Commission's phrase) is likely to be significantly lower than 50 NNI for a population unconditioned to intensive aircraft movements in an environment with a low ambient noise level, no useful purpose would be served by our attempting to speculate further upon the question which is at present obviously unanswerable—namely whether our village would lie within or without the periphery of the Third London Airport if sited at Cublington (Wing).

15. Within or without the periphery, we believe that our village would become un-inhabitable, at least by its present population, but without prejudice of course to those who would come later borne along on the "inward movement of population" created by such a thing and therefore prepared or compelled to tolerate the intolerable by reason only of the necessity or convenience of living close to their work.

16. Even if our village were "spared" in the sense of lying outside the airport periphery and our apprehensions unfounded with regard to life within the 40 NNI contour, we are not unaware that in the immediate vicinity of the airport other massive civil engineering works would be inevitable in the interests of providing (inter alia) road and rail links with the Midlands and London on a scale hitherto unknown in this country and probably anywhere in the world. In this context we do not, with respect, find anything meaningful in the Commission's references to M1, A41, or A413 beyond confirmation of our suspicion that it is no better to form the foundations of a fly-over than to be flattened by a runway.

The implications for Drayton Parslow and its inhabitants

17. It is clear from Part II of this statement as well as from the photographs annexed, that it is not open to us to argue (otherwise possibly than in relation to the Rectory) that the demolition of Drayton Parslow would entail the loss to the nation of priceless architectural gems, nor the dispossession of more than three eighty-or-ninety-year-olds from the homes in which they and their parents were born.

18. It is however equally clear from Part II of this statement that a very high proportion would be dispossessed of the village and the neighbouring villages in which they and many generations of their forebears were born and bred and in which they have lived all their lives.

Printed image digitised by the University of Southampton Library Digitisation Unit

19. Drayton Parslow is a balanced community with the age groups in a state of more or less constant equilibrium. Many years must pass before that state is reached, for example, in a New Town and we think it important for the old and the young to be aware of, to know and to live with one another. Each age group reacts upon and has its responsibilities to the others and here in the majority of the old village families they have the opportunity, denied to those who live in the new suburbia, to recognise them.

20. This is not, we think, a matter of sentiment so much as inter-dependence and survival. As we have attempted to illustrate in the Abbreviated Table of Two Drayton Parslow Families, the geographical proximity of the three main age groups (the children, the working adults and the retired) is a matter of vital practical importance in a society which is still in 1969 so predominantly local and rural in its origins. It would in our opinion be no solution at all—even if it were possible—to re-house such families en bloc elsewhere once dispossessed of Drayton. Remove one element from the structure and other elements living not necessarily in Drayton but in some neighbouring village suffer hardship which no welfare state and certainly no compensation can alleviate.

21. City dwellers with local roots far shallower than the majority of Drayton families and conditioned to wholesale redevelopment of urban areas, may be inclined to dismiss the redevelopment of a cemetery as a matter of modern inevitability scarcely touching them. All the old Drayton families and many of the neighbourhood families as we have tried to show in Part II, have relatives and forebears buried locally. For them, and particularly for the older ones, the redevelopment of a local burial ground whether at Drayton or Stewkley or Soulbury would be an act not merely of desecration but of psychological cruelty.

22. There are other things for which there could be no compensation. Notwithstanding the enclosures, there does not appear to have been (at any rate within the last 100 years) any shortage of allotment land for the men of the village to cultivate and well within living memory a man was regarded as a poor husband who could not provide his family with vegetables grown by himself, all year round. Drayton is still self-sufficient in this respect to a surprising degree. The diminutive plot to be found on modern housing estates is a poor thing in comparison with the very considerable areas within easy reach of their homes which the older men of the village in particular cultivate in Drayton.

23. Not to put too fine a point upon it, we consider that so sudden a change of environment would significantly shorten the lives of those in the village who are now retired.

24. But not only is the village a balanced community, it is a going concern with a community life and institutions and an existence of its own which is evolving all the time. Change it has already accommodated as a consequence (inter alia) of the development of Bletchley and the electrification of the Euston line bringing with it an element, unknown before, of commuters. It faces further change with the advent of the New City and change it will if it is to survive at all; but in the context of an airport at least twice as large in area and designed ab initio to handle many times as many million passengers per annum as Heathrow, we do not consider that change is so much in issue as the village's very survival.

25. We imagine that the majority of the occupants of the seventy-four tenanted dwellings in the village would be entitled not to compensation but to the offer of alternative accommodation which we fear would inevitably be suburban. But the people of Drayton Parslow even in 1969 are essentially countrymen. They, and particularly the elderly among them, would be fish out of water denied the time for the ordinary processes of evolution.

26. Even if the village were outside the periphery of the airport and survived the inevitable ancillary land-take in terms of surface access requirements, it seems to us plain that the primary school could not continue. The 1967 proposal to close the school was bitterly resented by all sections of the community and the objections were based on three main grounds, all of which we consider to be equally applicable here. Those grounds were, in no particular order:

(a) That it was an unusually good school, with classes manageable in size and with a remarkably good record—the "going concern" point.

(b) That, whatever might be inevitable and acceptable for eleven year olds, it was neither inevitable, desirable nor acceptable for five year olds to have to travel daily by bus several miles out of the village, particularly in the winter months, even without year-round British Summer Time and

(c) That it is psychologically good, both for the Infant Class and their mothers to know that each is within easy walking distance of the other in event of any kind of emergencies.

27. The present school building could not in our view be sound-proofed to the standard requisite for teaching within the 40 NNI contour nor probably to the standard requisite for life within the 35 contour. Already, one lady resident in the village but teaching full-time in Bletchley informs us that children at the back of her classes cannot hear when aircraft are passing overhead in summer time. Bletchley is not, so far as we are aware, a low flying area.

28. If it be said that the airport would provide work for the village and trade for its businesses, we do not agree. Quite apart from the fact that there is full employment in Drayton Parslow, the skills of the village are not the skills required either in the

Printed image digitised by the University of Southampton Library Digitisation Unit

construction or the operational stages of an airport. As with the canals in an earlier age and as with the motorways since the war, the labour force would, we have no doubt, be foreign to Buckinghamshire.

29. The electrification of the Euston line completed in the Spring of 1966 has brought another element to the village, the commuters. Young themselves for the most part and with young children they are willing and enthusiastic—sometimes perhaps over enthusiastic—participants in village life. To the extent that they bring new money to the village and its tradesmen they bring it at a rate which the village can assimilate and the tradesmen accommodate without over-trading. They came to the village for a variety of reasons but without exception the over-riding reason was their discovery or realisation that North Buckinghamshire constituted the last remaining area within daily commuting range of London which could be described as real country and, reduced to its simplest terms, they considered it important that their children should grow up in an environment in which real trees still grew. It is doubtful whether any of them were so foolish as to suppose that the area or the village would remain so predominantly agricultural as it is now but they believed, as in our view they were entitled to believe, that notwithstanding the New City the change which would come over the village and the locality would be sufficiently gradual to be acceptable. They did not expect, any more than did those who were born and bred in Drayton Parslow or its neighbour villages, that the State would propose to ride roughshod over North Buckinghamshire against the will of the overwhelming majority of those of all ages who live there.

30. There are, in Drayton Parslow, those who are self-employed in businesses which, though not confined to the village, are essentially local in character depending upon local good-will built up by themselves over many years. For the tiler, for the small contractor, for the agricultural merchant, none of whom rely upon advertising as a means of attracting business but rather upon their local reputation the airport would mean not only the loss of their clientele but displacement to an area where their name and local reputation meant nothing.

31. Particular problems and loss would, we think, face the farmers of the village—problems and loss which ironically would be enhanced in direct proportion to the amount of their respective land and buildings *outside* the airport periphery or if the 50—60 NNI range were to be adjudged the critical range of disturbance for compensation purposes.

(a) In the absence of evidence to the contrary, we see no reason for anyone to assume that the abortion rate in cattle, sheep and pigs would not show a sharp rise well below the 50 NNI contour.

(b) It is, (inter alia) vital to the concept of intensive milk-producing, veal-calf rearing and poultry units that the live-stock be kept calm at all times. At what NNI contour such ventures become impossible, we do not know, but again we have no doubt that it is well below the 50 NNI contour.

(c) It has been asserted in some quarters, though on what authority we do not know, that Kerosene fall-out from aircraft in the landing or take-off configuration would render a wide area outside the actual periphery of the airport a sort of no-man's land in which no useful crop would grow. If this be so, it follows that the farmers and small-holders of Drayton Parslow face a peculiar problem indeed.

(d) The farmers' problem would not even be solved by compensation on a generous scale; dispossessed owners and tenant farmers alike would be plunged into the scramble for alternative land, not nowadays easy to find anywhere in England, suitable in type, area, price and/or rent for their resources.

(e) One Drayton Parslow farmer at least—and there may be others of whom we do not know—farms not only land within the Civil Parish but also land in two other nearby Parishes in roughly the same spatial relationship around the periphery of the proposed airport as his Drayton land. If any one of his units becomes unfarmable, the balance of the enterprise he has built up and planned must surely be disturbed.

(f) The problem is by no means limited, so far as the inhabitants of Drayton Parslow are concerned to the farmers as such. It is clear from Part II Section I (2) (a) that agricultural and allied work still, even in 1969, provides the largest single source of employment among adults in the village.

32. It is no doubt possible to argue and for the argument to be supported by cost-benefit studies of the problem, that if land is to be reclaimed from the sea its most profitable application would be agricultural and that this alone would justify the location of the third London Airport at Cublington (Wing) since it has been conceded in Part II that this is third class agricultural land. But to argue so, whatever cost-benefit studies may suggest, is in our opinion to ignore two points central to the issue.

33. First, that the location of the Third London Airport inland sterilises with concrete a far larger area than the explosive south-eastern quarter of England can afford not merely in terms of agricultural but for all other purposes including in particular housing and the manufacturing industries. Such purposes may at least be said to improve the quality of human life without the sudden and total disruption of family life or the enjoyment of life itself.

34. If the SST is tomorrow's aircraft, it has been suggested that VTOL will be the day after tomorrow's. We have, however, no reason to suppose that if, at

Printed image digitised by the University of Southampton Library Digitisation Unit

any time in the future, the land-take involved at Cublington (Wing) is found grossly to exceed requirements, the surplus will be any more readily released than Crichel Down was to Commander Marten. In any event, by that time, the dispossessed will have disappeared.

35. The argument to which we have referred in paragraph 32 also ignores the most elementary human rights and entails the enforcement by the State of a sacrifice by those within and for miles around the affected area which no national emergency exists to justify. The people of Drayton Parslow have faced sacrifice before, too many the supreme sacrifice; but who in relation to the Third London Airport can pretend that any difference exists between the Highland Clearances of the late eighteenth and early nineteenth centuries and the location of the Third London Airport at Cublington (or for that matter at any other inland site) save the fact that the one was motivated by private gain and the other would be perpetrated in the name of the State on behalf of those who are not called upon to sacrifice anything?

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. K. Jones*

In common with a great many other people in this area I feel that I must register a strong protest against any proposal to site an airport at "Wing".

I and my family moved to this village only some two years ago, as a deliberate step to avoid the sort of urban life which would of necessity be our lot should the present proposals lead to the "Wing" site being chosen. During that fairly short time we have become fully integrated in village life here and play an active part in various fields.

In all, we are five. My wife and I are both about thirty years old and our children, two boys and a girl, are all under seven. We are buying the house we live in and have spent some considerable time and sums of money on conversion to suit us as a family.

The commission's report so far is far too vague to be precise about an airport's probable effects on us. Although an outline of the site is given the riders to the statement do not rule out the possibility of our property being included, if not in the airport itself, for other services.

Assuming that the airport is to be sited at "Wing" we are faced by two alternatives:

1. An airport of vast size only two or three hundred yards away. This would make life quite intolerable for us. We would suffer disruption in a great many ways some of which we are not yet aware of. Some I list below:

(a) Sleep would be difficult by day or night. (We have personal experience of this as my parents live in Ealing, well outside the supposed 40 NNI foot print for Heathrow where conditions due to noise are really quite unbearable).

(b) Conversation within the house would be extremely difficult due to noise unless a large amount of sound insulation was carried out. Outside the house it would be somewhat worse (once again 2a refers).

(c) The character of the surrounding area would of necessity change from a rural to an urban one with a vast increase in the population, thus producing a very different environment for our family from the one we had planned.

(d) Following on 1.c. It is my firm belief that educational standards in the area would fall. Low population density usually goes with a high teacher to pupil ratio and visa versa. This would have a direct effect on my family (The youngest two children would feel the effects of such a change from the very beginning of their school careers).

(e) As far as I myself am concerned I am nearing the end of my first year at a teachers' training college. I hope to spend a further three years there to complete a B.Ed. course. While it is unlikely that aircraft noise will be a serious problem inside this time, the increase in traffic attendant on such a vast construction and the uncertainty of our position here is bound to lead to a certain amount of deterioration in my own capacity for work.

2. The commission's report does not state in final terms the size and position of the possible site. Indeed it speaks of possible increases in the amount of land required and also of possible resiting within undefined bounds. This being so we cannot rule out the possible aquisition of this property by the Airport Authority. This would lead to the following problems:

(a) Disturbance possibly before the end of my present course of studies which might well prove to be disastrous.

(b) Buying a new house would be accompanied by severe problems. Despite compensation (the rates of which are stated with enough looseness to enable the Airport Authority to get away with the sort of rates of compensation, unfairly low, that have been associated with compulsory purchase orders in the past.) the purchase of a house will be nearly impossible for me when my present status (student) is taken into account. In the unlikely event of my being able to obtain a loan from a building society the loan would have to be negotiated on the strength of an income rather less than half that of my previous occupation which was taken fully into account when negotiating my present mortgage. This situation would not be greatly relieved by my qualifying as the grant (tax free) which I now receive is larger than a teacher's basic salary without increments. This problem is further qualified by the necessity to re-house my family in the Bletchley area where my course of studies is based.

In general then the foregoing notes show some of the problems associated with the possible siting of the Third London Airport at Wing, which we would have to face. I must add that the problems outlined in "1" could only be solved by selling up and getting out, a self imposition of the situation outlined in "2". Therefore in practical terms the siting of the airport in this area can have only one effect on us as a family, namely that in terms of housing we would have to accept a very much lower standard either as a choice, being the lesser of two evils, or by compulsion.

* See also p. 1727.

Printed image digitised by the University of Southampton Library Digitisation Unit

Because of these measures I am firmly against the airport being sited locally and should it ever come the the point it is my present intention to make it as difficult as possible for any authority to acquire the freehold of this site by compulsion. I believe that in the very long term the Foulness site is very much more suitable for this project and I see no reason why a beautiful stretch of English countryside should be ravaged for what will eventually become out of date in the next few decades.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Great Brickhill Parish Council*

1 (a) Much of the village was rebuilt about 1850 and since then a certain amount of development has taken place, mainly since the second World War. The site is 100 ft. higher in elevation than the proposed airport at Cublington, and two miles from the proposed runways. Good views over unspoilt countryside to the West and South East are features of the Parish.

(b) There are ten farms within the Parish, in nine ownerships. The Manor House, built in 1840, has recently been the subject of extensive alteration and modernization, and the Manor Garden has long been a focal point for local fund-raising for various organisations. Last year the Annual Garden Party for the Bletchley Disabled Association was held there.

(c) In the village there are 6 scheduled cottages with a fine 16th Century Tithe Barn, one Farmhouse and the Rectory also scheduled.

(d) There are two shops, one of which is also the Post Office, one Garage and a processing Dairy handling 35,000 bottles of milk daily for distribution over a wide area of North Bucks.

(e) Two Public Houses, the Duncombe Arms and the Red Lion, cater for a considerable volume of customers, who drive long distances to enjoy the peace and quiet, and the unspoilt view.

(f) The County Mobile Library pays weekly visits, and the Village Recreation Ground and Cricket Field are the envy of many neighbouring villages.

(g) The Parish Church of St. Mary's, part of which dates from the 13th Century, has recently been restored externally, at the cost of £2,100 assisted by a Grant from the Bucks. Historic Churches Trust (£300) and a Loan from the Oxford Diocese (£500). The remainder of the money required has been raised through the enterprise of the Parishioners. Another feature of the Church is the fine Hills organ (1877) which a number of visiting organists play.

2 (a) There are 457 people on the Electoral Roll, sixty of whom are members of the Good Companions Club, run under village arrangements for Old Age Pensioners. Some businessmen commute daily to London but there are numerous men in the upper management bracket with offices in Bletchley, Leighton Buzzard, Dunstable and Bedford.

(b) There is a thriving Branch of the Women's Institute, seventy strong, who meet regularly.

(c) The village Cricket Club, apart from having a full fixture card in the season, also arrange a number of social events.

(d) There is an excellent Parish Hall which is heavily booked throughout the year, and in addition to those organisations already mentioned, it is used regularly by the Children's Play-group, Boy Scouts, Ex-Services Association, Youth Club, etc.

(e) Annual Village events include a Summer Barbecue for the W.I. and Parish Hall funds, an Autumn Fair for the Church, and a Single Wicket Cricket Match.

3 (a) At the Annual Parish Meeting it was unanimously agreed that the Parish Council would lodge an objection to the proposed siting of a Third London Airport at Cublington, and would apply for leave to appear at the Local Hearing, and also recommended that individual parishioners should support W.A.R.A.

(b) Members of the Parish Council are as follows:

Chairman: Major Philip Duncombe (Landowner and Regional Secretary of The Country Landowners' Association).

Vice-Chairman: Mr. Rodney Woodgate (Manager, North Bucks. Dairy).

Members Mr. Cecil Curtis (Retired Company Director)—Parish Representative on Wing R.D.C.
Mrs. Daphne Barker (Housewife).
Mr. Arthur Bates (Newsagent).
Mr. Richard Turner (Farmer).

4 (a) Great Brickhill is scheduled as being of high landscape value and is in the process of being designated an Area of Outstanding Natural Beauty, and features in the North Bucks. Countryside Plan as follows:

"The greatest demand for country recreation occurs in the most attractive parts of the countryside—the wooded area, the parklands and the areas of landscape value. The Brickhills area is probably the most popular and the nature of its terrain and its cover of woodland allow it to absorb a large number of cars and people without damage to its amenity value."

"Although the Brickhills, because of their topography and wooded nature are probably able to absorb a large number of cars and people, the close proximity of Milton Keynes means that the use will become extremely intensive and that the extent to which the demand is met must be carefully

* See also p. 1728.

Printed image digitised by the University of Southampton Library Digitisation Unit

examined in the light of amenity considerations."

From this it will be seen that any proposed airport at Cublington will wipe out these advantages outlined by the Bucks, County Council.

(b) Being 100 ft. higher than the proposed airport site, noise will be a major factor to be considered as the whole parish, although lying in the 40 NNI contour, would be seriously affected by the 50 and 55 NNI to the North West and South East, with the four-runway alignment directly straddling the village.

(c) Church Services in the recently restored Parish Church would be impossible, and the Church Tower on which over £500 has just been spent, would be vulnerable to vibration.

(d) Tuition in the newly built Church of England Controlled School on the highest point in the village would be impossible. Built two years ago at a cost of £26,500 (plus £4,000 on equipment), there are 71 pupils at present in this single-storey, open plan school, which is due for expansion in 1973 to house 200 pupils.

(e) The siting of the airport at Cublington would mean for Great Brickhill a complete loss of the main assets of the village, i.e. the peace and quiet of the beautiful surroundings for which the village is well known, and it attracts many visitors. People from all walks of life, among whom are three Consultants and a Research Chemist who work at home in Great Brickhill, have settled her to enjoy the amenity and do not wish this to be shattered by a Third London Airport at Cublington, with all its ancillary effects likely to be felt for miles around.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. F. A. Day*

Thank you for your circular letter granting me permission to appear at the Hearing regarding the above.

I wish to make the following statement:

1. **Family**

First of all I would like to say that both my wife and myself were born in the London area. We were brought up and worked in the London area for a long period of time. After marrying we began to look further afield for a quieter and more relaxed way of living. Eventually we moved to Buckinghamshire and after a number of years found it possible to start buying a 500 year old cottage, together with a friend. Both parties had difficulty in raising the down payment, but as we had found what we thought was the perfect place, this was eventually managed. We have now lived in Great Brickhill for nearly nine years. Previous to that we were in Bletchley for seven years. We now have two adopted children aged four years and eighteen months.

2. **Location**

Should the airport be built at Cublington the runway would be two miles away from Great Brickhill and our knowledge of airfields and aircraft is enough to know that this would make our present way of life intolerable. It is understood that by way of compensation there is the possibility that house occupiers would be helped to double glaze the whole house. In our particular surroundings we feel that the idea of living in a sealed double glazed sterile unit abhorrent. Also unless the roof was lined with lead there would be no point in double glazing to keep out the noise, due to the nature of the construction of our house.

3. Planning permission has recently been granted for an extension to be incorporated on the side of our house for my widowed mother. Until the result of the Hearing has been announced all building work has been postponed indefinitely, which is causing my mother great anxieties about her particular future.

4. The effect of the noise would compel us to move away from the area all together and this would impose a great hardship on me and my family as

(a) I am buying the house on mortgage and because of credit restrictions I would have difficulty in purchasing a house of the same size and amenities as our present house.

(b) I work in a very specialised company—machine tools—and would probably have difficulty in finding a similar job in another area.

5. Our home is shared and jointly owned with a friend and by moving away we would impose a hardship on her as she retires in ten years time, so there must obviously be more anxieties about her future.

6. Becasue our children are legally adopted our home and circumstances are under scrutiny from The National Adoption Society and the Buckinghamshire County Council (Child Care Officer). It is also our intention to adopt more children and change of environment and living conditions could prejudice our case.

7. Our house and garden is particularly suitable for children—just under one acre of garden with an uninterrupted view of eleven miles of countryside and adjoining woodlands.

The general effect of the proposal has been to make me and my family seriously think of moving even now. Unfortunately it is very difficult to select anywhere in this country, as who is to say that the same thing won't happen again. We have even thought that the only safe proposition would be to emigrate to New Zealand where we feel that progress has not taken such a hold. We would feel extremely sorry to do this as we love our own country, but such proposals as this airport forces us to give up everything for which we have worked and saved so hard.

---

* See also p. 1729.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Lt. Col. I. B. Addis*

I wish to thank you for your invitation for the grant of leave to appear at the hearing in connection with the matter of the Third London Airport.

After many years service with the army necessitating a considerable number of moves I finished my service in Berlin at the time of the Berlin airlift. During the whole of those days my wife and I lived near to the airport at Gatow and throughout the day and night we suffered the considerable noise of aircraft flying over our house every few minutes. It must be remembered that at that time the aircraft were piston engined but nevertheless the noise was considerable and we were delighted to get away from it all upon my retirement from the Army.

In 1948 we settled at my present address where I am the owner occupier. Since that time we have appreciated the rural life and the quietness of the countryside. We have a large garden and spend a considerable amount of time in it. Should the new airport come to Wing our peace would be disturbed considerably and with the noise life would be unbearable. We are both over sixty-five years of age and at this time of our life we do not feel like moving away for the sake of quietness and would consider it most unfortunate to have to put up with the distress facing us. The value of our property would also decline and there may be damage done to the structure of our old house on account of the flight path being just above it. We also do not appreciate the possibility of aircraft paraffin falling all over our property.

I have been a Churchwarden for the Little Brickhill Church for a number of years and as parts of this old Church go back to the twelfth century I am more than concerned as to how the ancient fabric will stand up to the aircraft noise and vibration.

---

* See also p. 1729.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. S. E. Baker*

I would like to express my appreciation in granting me a personal hearing, and wish to make the following statement:

For twenty-one years I worked in Nigeria, and in 1967 my wife and I were forced to leave owing to the Civil War in Biafra. In consequence I lost my employment and our entire personal possessions.

Upon returning to this country I had to seek employment, and at the age of forty-eight this was not easy. However, I was successful.

Accommodation was not so easy, but after many months of searching we eventually found a cottage which was within our means and in a situation we had dreamed about for many years. This cottage was purchased in 1968, and we invested our life savings in its purchase, improvements and preservation. I know you will appreciate the pride and joy my wife and I have experienced in having a home of our own in our Homeland for the first time in our lives.

With the proposed building of the airport at Cublington we shall be in the line of approach and take-off, with maximum noise nuisance. Last year we spent one week-end at a cottage four miles distant from the end of Stansted run-way. For the whole of one Sunday a Boeing 707's crew practised landing and take-off procedure. During that period wireless and TV reception was impossible, conversation could only be carried on by shouting, and the whole cottage was subjected to abnormal vibration. What, therefore, would living conditions be like with Jumbo Jets taking off and landing every minute? Are my wife and I now to be forcibly uprooted again for the second time in the space of a few years, having at last found peace, security, and having invested our life's savings? It must be appreciated that if the airport scheme goes through the market value of this property will be reduced, and if any compensation is awarded it will certainly fall short of the labour and expenses incurred in renovating this cottage, not to mention the hours of labour spent in resurrecting the garden.

Furthermore, what chance would I have of finding employment in another district at my age?

As a final general observation we feel that our small country cannot afford to lose any more land through huge projects such as this, and that we should be well advised to take a lesson from the Dutch who have with amazing success enlarged their tiny country to house its tremendous industrial programme without disturbing the people and tranquility of the countryside, and have encouraged such facilities as the successful docking of the super tankers of the present and future, of which this country has no facilities at present. In this tiny island is it not time we preserved our heritage and natural beauty instead of making it a land of aerodromes, cities and industrial complexes separated only by artificial parks. If one had lived overseas for as many years as we have one would be fiercely proud of our heritage and natural beauties.

Thank you, Sir, for allowing me to express my case, and I trust it will receive sympathetic consideration.

* See also p. 1729.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. P. Johnston Bolton*

Firstly may I express my appreciation to the Commission on the Third London Airport for granting my application for leave to appear at the Cublington local hearing.

My family, husband, two year old daughter and teenage brother have recently moved to this delightful part of the village of Little Brickhill. We moved partly because of my husband's work, partly because we needed a larger house but mainly because we wanted the peace and quiet afforded by this house and very large garden. The house was improved to our own specification and the garden, formerly a wilderness, was landscaped to our satisfaction. It is our firm opinion that the siting of the Third London Airport at Wing will shatter once and for all the seclusion which we now enjoy. Whilst we could possibly get used to a jumbo jet or Concorde flying over our country retreat every two minutes we could not combat the ensuing air pollution from aviation fuel and the risk of a jet aircraft crashing on to our house and demolishing it as happened recently. We are a young growing family and have put all our hard earned money into acquiring our own house in a place of our own choosing; if the airport is sited at Cublington we will have to sell our property, probably at a great loss, thus causing extreme hardship, and move away from our familiar environment.

Although these may seem purely selfish reasons for not wanting an airport so near to our village I assure you that a majority of the people in this area have the same feelings and would be affected in the same way by the siting of the airport at Wing.

Other factors to be taken into consideration are the siting of the new city of Milton Keynes in the North Bucks area and the lack of facilities in the area to deal with a major aircraft disaster with a possible total of 450 severe casualties.

The proposed new city of Milton Keynes will swallow up many thousands of acres of valuable North Bucks agricultural land. North Bucks cannot afford to lose more acres of outstanding natural beauty and useful farm land. A major airport such as the one envisaged at Wing will need many thousands of people to staff it, causing a great loss of labour to industries already established in the area, and these people must all have homes to go to and more land will be needed for this purpose.

Although Aylesbury has three large hospitals these also have to serve the surrounding North Bucks area and the situation at the moment is most difficult. I myself have been waiting to go into hospital for a minor operation for three months now and I cannot think how all the casualties could be accommodated were a jumbo jet or Concorde to crash in the district. We just do not have the facilities to cope with an emergency of that magnitude and as far as I know there are no plans for new hospitals in the area, with the exception of the proposed Milton Keynes development.

In conclusion I would state my personal opinion that a major international airport, possibly the largest air terminal in the world, should be sited as far away as possible from suburban, rural and industrial areas. The needs of human beings to talk, work, sit in the garden, watch television or participate in recreational hobbies in peace and quiet should outweigh all other considerations when the siting of the busiest airport in the world is under discussion.

I am not qualified to say that the airport should be sited at Foulness but I would point out that several major American airports are sited on the coast and I feel that in the cause of humanity we should follow their example.

---

* See also p. 1729.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. C. M. McMahon*

Thank you for your letter of 28th May, and your leave for me to appear at the Cublington Local Hearing.

I wish to state my grounds for opposition to this proposed airport.

My husband and I moved into Buckinghamshire last September. We had been searching for a house to buy since July and finally moved into our present home in mid-December. It was the only house we considered after inspection. The "period properties" we like do not come on to the market very often, and are quickly sold. We were also limited as to area. My husband works at Hanslope Park, near Stony Stratford, and I am an internal student of London University and cannot move too far from London for fear of losing my internal studentship. We were attracted to the Brickhill area because the ridge of high ground on which it stands is the most beautiful part of North Buckinghamshire—probably the only beautiful countryside in the area.

The house we finally chose is of considerable aesthetic and historic merit. Part of the structure was originally a mediaeval long house (one-storey). The upper floor to this part, and the chimneystack were added about 1600. The main fireplace is brick and stone and is similar to the Tudor fireplaces at Titchfield Abbey, but larger, spanning ten feet. It is particularly interesting because it has an extremely flat brick arch. I have never seen a similar arch and the experts tell me it is most unusual. Upstairs we have another fireplace of the same date, this time of bevelled stone and about five foot six inches across. Our neighbour—the original house is now two dwellings—has a similar, slightly larger stone fireplace, and probably another still under plaster. The rest of our house is mainly Georgian.

When we moved in last December there were only small modern grates, and little evidence of the old fireplaces. Since then we have laboured to open then up and restore them. This has taken much hard work since the larger fireplace was damaged and had to be made safe. We have also uncovered the old beams—an unpleasant task—and discovered an original doorway. I will not list the other improvements laboriously made. Were we still camping amidst our rubble when we heard that Cublington was a suggested site for the new airport. One cannot live among heaps of bricks and we continued. As the hearing approaches we prepare to decorate—anxiously. We lie within the 50 NNI contour.

We could not live so near an airport. My husband works for the Diplomatic Wireless Service which involves evening, and sometimes night shifts. He is a light sleeper, and his odd hours of work exacerbate this tendency.

We could not bear to leave a home we feel we have created with our own hands at the expense of so much time and enthusiasm. I teach full time, and am also working on a thesis for the degree of M.Phil. My husband has been seconded by his employers on to a full-time course that he finds very exacting. We could little afford the time that we have spent.

We chose our house as a home for a life-time. We like it. We like the generous rooms and the layout. We like the small enclosed garden which is green and mature with flowering trees, flowering shrubs and lilac hedges. We have plans for the future both for house and garden, but already the main rooms are beautiful.

We are not affluent people. We paid £5,300 for our house and the rest has been achieved by sweat. Where else could we go? If the "period property" market were swollen by the tide of period house owners from Stewkley and Soulbury and surrounding areas, prices would rise, and the supply would not equal the demand. We should never find another house like the one we have.

Many others in the Cublington area must have similar tales. There are a wealth of beautiful old houses in the nearby villages. Lovely Georgian Woburn is within the 50 NNI contour. Many, like us, must have chosen this part of the countryside, designated as an area of outstanding natural beauty, as the most charming part of North Buckinghamshire. The people here cannot believe that "authority" would destroy so much. They cannot believe that an airport would be sited where its planes would annoy the southern part of Milton Keynes and ravage its most attractive environs. I have heard so many people say, "They couldn't flatten this village", "They couldn't destroy Woburn", "They couldn't knock down our house". I hope they are right. The voiced opposition to the proposed airport at Cublington is only the tip of the iceberg.

Please do not destroy our homes.

* See also p. 1730.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Premier Farm Products Ltd.*

SUBMITTED BY MR M. R. RAKUSEN

Thank you for the grant of leave to appear at the Local Hearing on the Cublington (Wing) Site.

I wish to make the following statement.

Both my wife and I regard the threat of the new Wing airport with great concern and anxiety.

For the past eight years I have worked within one and a half miles of the main Heathrow runways and during the day have suffered the intolerable noise of aircraft, which increases both in volume and frequency as the years go on. Telephone conversation during the passing of a plane is impossible, and, during the daylight hours in the summer, this happens every forty seconds!

In 1965 I purchased some land in Little Brickhill on which I built a house, occupied in 1966, in order to get some peace and quiet during the time I am not at work. I think that the name "Tranquillus" we gave our house demonstrates the main purposes for which we moved into North Bucks, as at times the noises from Heathrow and Northolt bound planes were becoming worse at our old home in Harrow on the Hill.

If Wing airport comes we will have no alternative than to move. We understand that in normal circumstances our house is worth £20,000, but I have little doubt that the type of person interested in such a property would not entertain it within three miles of a major airport.

I will not be attending the meeting at Templar House on the 16th instant, but, providing that the date when notified to me is convenient, I still wish to appear in person at the Hearing.

* See also p. 1730.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. J. M. V. Tinworth*

My husband and I, returning from the Far East, spent sixteen months in London, and decided before a year was out, that we would never become used to the noise. After many months of searching we at last found a house and large garden most beautifully situated. We are well away from the road; on two sides are fields and woods—the view is wonderful and everything is peaceful. Our great joy is the garden and gardening. We also decided that this would be a wonderful place to bring up children, they are now two and four years old, and spend most of their days outside. Whey my Mother-in-Law retired she came to live with us because it is peaceful and quiet here.

However, should the airport be built at Cublington (Wing), all this would be lost to us as we live in Little Brickhill and would be directly under a flight path.

Our television and radio reception would be spoilt—this would most of all affect my Mother-in-Law and next, the children. Living in a small village with infrequent public transport, one is somewhat cut off from things going on elsewhere, and television and radio help to make up for this, education and entertainment-wise.

I feel our children's education will almost certainly be seriously affected by noise. This would be a great blow to us, as the problem of obtaining the best education for their early years, that we could find locally, has occupied a lot of our time and has only recently been settled.

The whole area in which we chose to live is mainly a country district, and this we prefer. When the building of the new city of Milton Keynes gets under way, a large wedge of countryside close to us will be lost. Should the airport come to Cublington, this, together with all the extra land needed to house airport staff, extra roads, etc., will leave us living in an excessively noisy built-up area; the very last place we would have chosen to live.

Our reasonably fresh air would be filled with exhaust fumes, not to mention the kerosene fall-out which might well affect our health and spoil our garden. In addition, with aircraft constantly taking off and landing not very far away, there is the enormously increased possibility of aircraft crashes in this area.

If the airport is sited at Cublington, then I think we would be forced to move, although we should almost certainly suffer a heavy financial loss, and it seems improbable that we would find such a beautiful site again. My husband might then have much further to travel each day, and we might also be forced to plan the children's education all over again.

My family and so many others will lose the simple pleasures of a quiet country life. I would ask the Commission to choose an off-shore site for the Third London Airport.

* See also p. 1730.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. J. G. C. Spencer Bernard*

I am grateful to you for the grant of leave to appear before you. I wish to make the following statement.

The absence of major roads and the scarcity of bridges over the River Thame has helped to make this picturesque village of Nether Winchendon one of the most charming places in the County. The large four Tudor or earlier houses and the many cottages of similar period combine to give an appeal to its many visitors which is perhaps unique in this area. I would be very happy to introduce any members of the Commission to the place should they so choose. All this is a considerable amenity to all the visitors from nearby urban areas, quite apart from those who are fortunate to live here.

I live in one of the greater Homes of England, which you will see described in guide books, and our family have lived here for over 400 years, though its history is more than twice as long. It is visited by tourists and scholars from all parts, but especially by Americans whose towns of Winchendon and Bernardstown and Bernardsville are named after this place and family, and New England is rightly proud of them.

My wife and I are well over sixty years of age and it would be a tragedy if our lives and those of our eleven children and grandchildren were made so intolerable that we had to leave. It would also be a great financial harship to be compelled to do so.

We are not on the actual site of the proposed airport, but I understand that in this particular area normal conversation at a distance of a few yards would be virtually impossible; while music, to which we are all devoted, would be a thing of the past. Nor indeed would Church services in our recently restored 13th century church be a reasonable proposition.

As a farmer of nearly 700 acres of my own land, I am fully aware of the damage which would certainly accrue to land, crops and livestock by paraffin vapour spray from rising planes. As a former pathologist (M.D., F.R.C.S.) with published work on cancer, I am unable to convince either myself or others that there would not be a significant increase of some forms of cancer in this area, probably cancer of the respiratory tract. This village is directly in the flight path of the proposed airport and at a distance from the proposed runways at which planes would not have reached 3000 feet from take-off and would therefore exert a significant paraffin vapour effect above us.

This same distance and orientation in respect of the airport brings a grave risk of life and property in this village in the event of a plane crash shortly after take-off . . . the most frequent occasion. And there will undoubtedly be crashes at some time of which insurance companies are fully aware. The ever growing size and power of modern planes would make such a disaster increasingly serious for any airport not sited over water.

---

* See also p. 1731.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. C. Greenacre*

I wish to thank the Commission for the grant of leave to appear. I shall be delighted to attend the hearing and state my objections to this monstrous scheme.

I wish to make the following statement.

I would like to protest strongly against an airport being built in the Wing area. I was born in the village of Drayton Parslow and have lived here all my life, apart from war service I have lived in this house forty-two years and my ancestors date back in this vicnity over 400 years. I rent a smallholding and if I have to move it would be almost impossible to start again. In the event of the airport coming one's relatives and circle of friends will be scattered.

Apart from the personal inconvenience this airport means to all the people around one can only be appalled to think the powers that be can with complacence envisage the destruction of homes, this beautiful countryside with its innumerable historical buildings and turning it into a concrete desert, which if I may say so will be an utter waste of money and land as by the time it is finished the jump jet will be here and large runways will not be needed.

* See also p. 1731.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 7

Dunton Parish Meeting

Mr. G. Davis

Dr. L. S. Michaelis

Hardwick Parish Council

Mr. and Mrs. L. W. Coleman

Mr. P. Fehr

Oving Parish Council

Mr. S. R. K. Ball

Mrs. F. J. Barff

Mr. and Mrs. A. Morrison

Stewkley Parish Council

Mrs. D. Bates

Mrs. F. W. Grace

Mr. V. F. Bratton

Mr. and Mrs. J. B. Brown

Mr. F. R. Cole

Mr. A. B. Cozens

Mr. F. C. Coles

Mr. A. B. Faulkner

Mr. J. D. Faulkner

Mrs. E. M. Grace

Mr. M. A. Hardings

Mr. J. W. Mead

Mr. P. J. Preston

Mr. P. E. Wheeler

Mr. D. B. Head

Wittnesses were examined on this evidence on Day Seven, Wednesday 23 July 1969, see pages 1735–1746

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Dunton Parish Meeting*

On behalf of the Dunton Parish Meeting, I submit the following statement:

1. Dunton remains a small village but enjoys a long history dating back to Norman times. It is recorded that the Bishop of Bayeux was the Norman owner of Dodintone, and Turstin de Giron his sub-feudatory. The estate continues in the possession of the Giron family until the reign of Edward II. In about 1348, Sir Henry Chalfont, Knt. possessed the manor. In 1434 the estate belonged to the Hampden family and continued with them till about 1730 when it was sold to Sarah Churchill, Duchess-Dowager of Marlborough, who gave it to her grandson, the Hon. John Spencer. It passed from him to his grandson, Earl Spencer. The present Lord of the Manor is Lord Carrington.

2. The Parish comprises upwards of 1,500 acres of agricultural land in farms of varying size. The inhabitants are predominantly engaged in agriculture and include some families whose forebears have belonged to Dunton for generations.

3. The Church is a small but ancient ediface, parts of which date back to the 12th century. In recent years much work of restoration has been carried out, but the simple architecture remains unchanged. In addition to the weekly services and festivals, special services are always well attended. The churchyard which has been the resting place of the dead for many centuries, is still in use.

4. The Rectory is a commodious building about 200 years old and near to the Church on the north west side stands the Manor House.

5. There is a Village Green and a Village Hall.

6. Records confirm the regularity of civil meetings and at the Annual Parish Meeting held on 17th March 1969 the proposed siting of the Third London Airport at Cublington was considered at length and the following resolution was passed:

> "That this duly convened meeting of the inhabitants of the Civil Parish of Dunton, Buckinghamshire, held in Dunton Village Hall at 7.30 p.m. on Monday, 17th March 1969 registers entire opposition to the proposal that an airport should be established in this neighbourhood, and affirm its full support in every way possible to all organisations—already established—whose purpose it is to oppose and prevent the establishment of this airport anywhere in Buckinghamshire, Hertfordshire or Bedfordshire."

If there are any questions that you would like to put to me, I shall be pleased to hear from you.

* See also p. 1735.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. G. Davis*

I oppose the siting of the Third London Airport at Cublington most strongly for personal and family reasons.

I built my detached house in Bushmead Road, Whitchurch in 1953. I considered a number of sites, but decided on this one because it offered a number of advantages which made it practically ideal for my purpose.

1. The village of Whitchurch is one of the best examples of an attractive Mid-Bucks village.

2. It is well supplied with amenities—two garages, a variety of shops—butcher, baker, grocers, greengrocers, confectionery and antiques.

3. It is the right size to be an active village community in which to be involved.

4. My site of nearly half an acre, on the brow of Whitchurch hill commands a fine view of the Vale of Aylesbury and the Chilterns. Eighteen village churches are visible from my garden.

5. It is only five miles from my work in Aylesbury.

I planned to make this my home for the forseeable future. I planted thirty-six fruit trees which have matured and are now cropping well. My wife and two sons have taken root here too. I am serving as a School Manager, Parish Councillor (Hardwick Parish Council as my house, although in Whitchurch village is in that parish) and Sidesman at the Church. My wife serves on the Parochial Church Council and is President of the very active Women's Institute of seventy members. Integrated as we are in the village affairs, we have received much from Whitchurch. At the same time we believe we can contribute something in return, and get some satisfaction from making that contribution.

If the airport comes to Cublington I believe it would be disastrous for my family because of the intolerable noise—the house is less than three miles from all four runways (half a mile from two)—and the inevitable urbanisation of the area—we are country lovers and could not settle satisfactorily in an urban area—we should have to move to more congenial surroundings.

At this stage in our life—I am fifty-nine—to be uprooted and settle elsewhere would be hazardous and entirely disadvantageous.

1. It would be highly unlikely that I could find another home with equal suitability and convenience to the family.

2. It would be difficult indeed to become as happily integrated as we are at Whitchurch in another community. We are sixteen years older.

3. It would almost certainly be much more distant from my work.

4. My property (and my wife's who also owns a house in Whitchurch) would greatly depreciate in value.

5. In finding another suitable property I should be in competition with hundreds of others who are seeking to do the same, and would have to pay an enhanced price.

6. To take the most optimistic possiblity, that we found a suitable home elsewhere we should undoubtedly suffer:

(a) an incalculable social loss;

(b) a considerable financial loss and

(c) considerable inconvenience.

7. To take the pessimistic possibility, in addition to these disadvantages we may have to add:

(a) a less convenient and less suitable home;

(b) uncongenial surroundings, all of this, in cumulative effect make the possible siting at Cublington a threat to me and my family and our life at Whitchurch which we think would be nothing short of a disaster.

* See also p. 1737.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Dr. L. S. Michaelis*

I am grateful for being granted leave to appear before the commission, surprised at being asked not to appear, but willing to await your invitation, should what I have to say make you feel that the M.D. behind my name does not stand for mentally defective. It is disconcerting to be asked by the county clerk to send this to him, by you, not to do so. Copies of these remarks will go to him and to the local secretary of W.A.R.A.

This, then, is my statement:

1. I agree with the urgent need for a Third London Airport.

2. I disagree with its location here or at any other inland site.

3. My personal objections are: I have only just moved here, because I had to make ends meet in semi-retirement and took this small house. Soulbury promised peace and quiet. It also fulfilled the condition of a base suitably placed to enable my wife (physiotherapist i.c. disabled childrens dept., Milton Keynes, at present Red Cross Clinic Bletchley) and myself (research fellow at my old department for spinal injuries, Stoke Mandeville Hospital) to save travelling time. From the very start of preparations for the building operations my house will be at the cross-roads of bulldozers, later in the sixty noise zone. Even if my wife and I were deaf, vibration and fumes would drive us out. We should lose part of our savings invested here and be unable to find a place more suitable near the Aylesbury-Bletchley axis.

4. Professionally I leave the objections on behalf of Stoke Mandeville Hospital to Sir Ludwig Guttmann. As an accident surgeon, I have to point out the folly to count the neighbourhood of the Motorway as an asset. Already one of the danger-routes, it would, widened to eighteen lanes, become an asset only to the undertakers along the line. And why should anyone want to cross the Atlantic in two hours, to spend the same time getting to London, getting stuck at the bottleneck of the Finchley road.

5. It is doubtful, whether the miles of runways will be completed before town-centre to town-centre travel by VTOL becomes the rule. Are the development engineers of Rolls Royce and Hawker Siddeley being consulted?

6. The combination of a port and airport at Foulness makes sense. It is vitally needed if London is to defend itself against the gigantic new port of Rotterdam. Its higher cost would serve two major purposes. As to cost estimates, see Concorde.

* See also p. 1738.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Hardwick Parish Council*

The Hardwick Parish Council submit the following statement for the Local Hearing at Aylesbury opening on the 14th July.

1. **Hardwick Village**

This village is well within the 50 NNI area.

The main part of the village lies to one side of the A413. The road enters the village over an old stone bridge across the brook—the parish boundary—through an avenue of lime trees. The parish consists of undulating farm land and fields, trees with high elms; typical Thames valley scenery. Field footpaths lead to other villages.

Hardwick is complete having:

A very old Parish Church mostly 14th and 15th century.

A Primary School. The schoolrooms are used for functions and events.

A School House.

Two village greens surrounded by houses. One is kept mown and used as a playing field.

A Post Office and store.

A Public House.

An old chapel used for electrical repairs.

Allotments.

There are four farms in the Parish given to mixed farming.

2. **Housing**

There are over 80 dwelling houses. More than a quarter of these are 17th century or older and in good repair. Three are scheduled as being of special interest. There are eleven thatched cottages. Half the houses are privately owned; the rest are rented or tied. Twenty two are Council Houses.

If it is decided to bring the airport to Cublington the village is bound to change in character and ultimately disappear.

Householders who have built or bought houses would get no compensation. They would be unable to sell their property at a fair price and having put their money and savings into the upkeep and improvement of their houses and gardens, would not be able to afford to purchase elsewhere within reasonable distance; there is a great housing shortage in the locality.

Mortgagors who are growing older would be at a great disadvantage trying to obtain another mortgage.

Dwellers in tied and rented houses would have to move.

Council house tenants have been alloted their houses because they have been unable to find housing accommodation. They will not be rehoused by the Council as every village has its own waiting list and the only Council building at present is for old people.

All the inhabitants would be faced with a major disaster.

3. **The People**

The population of the Parish is 250.

The people are hardworking, friendly and co-operative. Half of the families belong to the district. They are real country people who know and understand the countryside and value its peace and quiet. They have lived here for generations and their friends and relations are here or in nearby villages.

A quarter of the householders are concerned with agriculture. There are farmers, specialists in dairy work, drainage, thatching, hedging and general agriculture and gardening. It is essential for them to live near their work. Others are builders, electricians, teachers, working locally or in Aylesbury, also traders, factory and shop workers. Both men and women are employed in Aylesbury.

Twenty of the houses are occupied by retired people and old age pensioners.

Fifty children attend the Primary School, including the under elevens from Weedon Village.

The School building and School house belong to Dr. Bridle's Charity which also provides benefits for children and old people.

All the people have the advantage of a mobile Library van calling once a fortnight. The village store provides for some requirements. Vans deliver milk, meat, fish, groceries, coal and laundry, not to mention ice cream. Many shop also in Aylesbury, four miles distant, travelling by bus or car.

4. **The Parish Council**

There are five members of the Parish Council.

Mr. A. G. Cleaver, Chairman, who is in charge of a dairy herd;

Miss G. M. Wood, Vice-Chairman, a retired Local Government Officer;

Mr. A. Creed, land drainage foreman;

Mr. G. L. Davis, Chief Inspector of Weights and Measures;

Mr. G. L. Kay, Bookbinder, Printing Works, Aylesbury;

Mrs. Z. L. Dickens, S.R.N.—clerk.

* See also p. 1738.

Printed image digitised by the University of Southampton Library Digitisation Unit

A well attended Parish meeting was held in March and another after the publication of the Roskill Commission's Information on Local Hearings. The proposed airport was discussed. Two Parish Council Meetings have also been held and at all these there was unanimous objection and determination to oppose the siting of the airport at Cublington. Fears were expressed about the noise, urban encroachment, new roads with vast increase of traffic which would cause great personal inconvenience and loss, destruction of homes and way of life, and the disintegration of a pretty truly rural village with a well integrated Community.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. and Mrs. L. W. Coleman*

We thank you for granting us leave to appear at your enquiry and beg to submit the following statement:

My wife and I, and our families before us, have always enjoyed the natural pleasures—and the community responsibilities—of life in a small village. That is why we moved to Hardwick.

Our childhood and early married life was spent in the Worcestershire hamlet of Holberrow Green and the village of Walton-le-Wolds in Leicestershire. Here we raised our four children whose physical and mental well-being is proof of the value of clean fresh air and a way of life which breeds self-reliance and the ability to enjoy leisure without recourse to a dependance on packaged herd entertainment.

Job opportunity having obliged us to live near High Wycombe and within daily commuting distance of London we resided in an old farm house near Marlow. The area became very built up and this coupled with obligations to ailing parents having resulted in both financial and physical strain led to our decision in 1968 to seek a smaller modern house in which we could eventually retire and where living costs and a more peaceful existance would be financially and medically beneficial.

In November 1968 contracts for a new house at Hardwick were exchanged. Taking a very long term view of this move we spent a not inconsiderable sum on luxury and labour saving extras although this meant taking all our capital and heavily mortaging our future as credit restrictions had made the sale of our Marlow house less easy and therefore less remunerative than had been expected.

Completion on the new property did not take place until the end of February which was only just prior to the announcement of Wing as a possible airport site and clearly we would not have gone ahead had we known about this. I am assured by my solicitors that no entries relating to the matter were included in the Register of Local Land Charges at the time searches were made and apparently even if information was in the possession of the Local Authority and it was not revealed there is no redress. One queries the protection of searches in these circumstances.

Our reasons for living in Hardwick are aesthetic, financial and medical. The airport would destroy all this and even if we were able to find alternative similar accommodation in another village with convenient access to my work there would still be a considerable and embarrassing financial problem. Would compensation fully cover the extras I have expended, the legal costs incurred—in part on abortive searches—and the cost of moving elsewhere? If my property were not required immediately would I be faced with the dilema of being unable to sell reasonably and therefore unable to move elsewhere?

Airports cannot avoid noise and pollution from the air and traffic and population congestion on the ground. North Bucks is one of the truly rural areas within possible commuting distance of London and Cublington is the centre of an area surrounded by hospitals in very specialised spheres which need peace and quiet. From the aspects of safety, health, crops, animal husbandry and preservation of our natural heritage I submit that the airports should be cited near the coast where these adverse factors can at least be minimised.

* See also p. 1739.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. P. Fehr*

I want to express my sincere thanks to the Commission for the grant to motivate my personal concern regarding the site of the planned Third London Airport.

As one of the inhabitants living in Hardwick, my wife and myself feel that our existence is in danger if Wing is the final selection for this airport. According to the latest publications we are situated virtually at the end of one of the runways. Needless to say, that the noise and exhaust fumes will make life intolerable. The thought of aircraft taking off over our village and, whilst under full power with maximum load, passing overhead is absolutely frightening to us.

Five years ago we bought a new house and garden with facilities which we just could afford as a young couple. We so far put every penny of both our incomes and all our effort into our home and we are especially loving the pleasant and quiet surrounding of the country side.

So far we have been a happy family with future plans and a feeling of security. Over-night our £9,000 property became practically worthless, as it is impossible to find any buyer with the threat of an airport at the bottom of the garden.

At the present stage already we suffer financial disadvantages.

My flexibility as employee is extremely limited.

Our property cannot be used as security for any financial transaction.

Any hopes of selling the well-developed house and garden with a normally expected profit are out of the question.

These financial aspects are of very great concern to us, as we could not move away, with our home worth only a fraction of the former value, and under the expected conditions we could not face continuing to live where we do at present.

We realise that you must receive quite a number of similar letters.

We are not objecting to progress and necessary future developments for the interest of the society as we are part of it, but we have strong objections that we as a minority have to suffer and to pay for the benefits of the whole country.

For us it is not understandable that modern technicians are locating huge installations like an airport in those few left islands of peaceful country side, although there are other opportunities.

Our hopes and fears are entirely in your hands and we are confident that you will find a just solution.

* See also p. 1739.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Oving Parish Council*

1. The Oving Parish Council submit the following statement at the Local Hearing to the Commission on the Third London Airport.

2. Oving is poised on the crest of a high range with fine views over the Vale of Aylesbury about three miles north-east of Waddesdon and close to Whitchurch. Pitchcott, an adjoining hamlet, was ecclesiastically united in 1902 and now forms part of the civil parish.

3. The population is approximately two hundred and fifty which is little more than thirty years ago. Of the working population commute to Aylesbury, forty work at the Rocket Propulsion Establishment at Westcott and some twenty in the village. There is no industry but the whole area is given over to agriculture. There are ten farms providing mixed husbandry and, one has a pedigree Guernsey herd.

4. The village enjoys few services, there is one shop and sub-post office, two public houses, one of which is a very old scheduled building, but no school (it was closed recently), no doctor, and no police house. We do enjoy a good bus service both to Aylesbury, Buckingham and Northampton.

5. There are two Churches, one at Oving and the other at Pitchcott, and a Methodist Chapel. The Church of All Saints is an ancient building of stone principally in the Early English Style and consisting of chancel, clerestoried nave of three bays, south aisle and small modern north transept, south porch and a western tower containing a clock and three bells. The Methodist Chapel, rebuilt in 1869, affords one hundred sittings.

6. Other than the Church the only other associations or organisations are a Mothers' Union, and a football club. There is no village hall but the Parish Council has provided a recreation ground.

7. At Pitchcott there are two more farms and a few houses but passers by would hardly think that this hamlet has any connection with Oving as the main Waddesdon to Whitchurch road skirts Oving in front of Oving House and you have to turn off the road to reach the village. Oving House, the present residence of Lord Hartwell, enjoys magnificent views over the Vale and contains some beautiful wood carving and richly decorated ceilings.

8. It will be seen that the impression given by the village is one of peace and quiet with little noticeable activity and this is one of the reasons why several people have found it just right for their retirement.

9. Oving is shown in the published information concerning the airport to be less than two miles from the end of the runways and exactly in line of take-off of all aircraft therefrom. It will, therefore, be subjected to a degree of noise that will make speech, activity, thought, even life itself virtually impossible. Assuming that no land is actually required for the airport and this is not made clear as presumably the peripheral area will attract industry and services, then the land owned by the villagers will be sterilised by the noise and oppression from air activity. Indeed for the land to be acquired as part of the site would be more beneficial to the owners than otherwise because it will be worthless in their hands as agricultural land.

10. In the peace of the countryside the villagers are just not used to any degree of noise and to subject them to noise within the 50 and 55 NNI contours will have disastrous effects upon them. The land, if it remains in agriculture will be debilitated by kerosene fall-out and stock will be impossible to keep.

11. At such short distance from the runways, the village is directly in line and thus in danger of crashing aircraft. It would appear, therefore, that if the Airport comes to Wing the inhabitants will have to live not only in abnormal conditions but also fear. All plans for the future of the area, which had included a school between Oving and Whitchurch, will go, and the village will be doomed to eventual destruction.

12. With such obvious and major objections to the siting of the airport on our door-step it seems trivial to mention such ancilliary matters of television reception. The Council ask the Commission to realise that whilst dealing with a cost benefit analysis this village contains people who will have to live with the problem that is created.

---

* See also p. 1739.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. S. R. K. Ball*

I wish to thank the Commission for the grant of leave to appear.

I wish to make the following statement.

I have lived in this area for thirty-five years and at my present address for thirty-two years, which is ever since my marriage, also I have a son who resides at Whitchurch and a daughter at Gerrards Cross, therefore I would like to remain here, being the owner-occupier of my house I have spent a great deal of money on the property, to make it to my liking, and hope to enjoy the comforts when I retire in approximately five years time.

* See also p. 1740.

At the moment there is only my wife and I living here, but had hoped that one day one of my children would occupy the house, and reap the benefit of my work and spending.

I would be most upset to move, for one thing my age would prevent me from obtaining a mortgage, and for sentimental reasons also I would want to live in a village if I had to move, as I like the peace and seclusion of the life, as to where I would want to go, I just do not know, except that I would like to be near my children.

If the airport was built at this proposed site, living here would be unbearable.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. F. J. Barff*

Thank you for granting me leave to appear.

I wish to make the following statement:

We came here from the West of England in July 1966 for the purpose of living in a completely rural area within easy reach of London. We scoured the country for many months before finding this house which with its garden and surroundings we find ideal. Peace and quiet are essential to the value of it, both for ourselves and our visitors. These include missionaries, nationals of other countries and the children of missionaries serving abroad.

One daughter lives at home and teaches in the next village. My son is soon to take up a job in a part of London from which it is easy to get home, chosen largely for this reason. He will need the pure air and peace and quiet to be found here.

I am fifty-nine, and the owner occupier. We do not wish to leave this village, and it would cause very great hardship, distress and uncertainty should this become necessary. I have no idea where we should go.

We should detest the noise and civilization which an airport would bring. The family plans have all been made on the assumption that this would continue to be our home.

It seems to me completely unreasonable to build a new city and a new airport so close to each other, and to contemplate blotting out such an enormous area of beautiful countryside in one county.

* See also p. 1740.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. and Mrs. A. McL. Morrison*

We are a family of five and chose the Oving area for its beauty, peace and the obvious effect of good town and country planning. Out house commanded a small premium because it stood on land conserved as an area of great natural beauty. No question of any development being permitted and judging by the hikers and picnicers these planning decisions are much appreciated.

The Church and Chapel thrive and the children roam free in the village. There are eleven under the age of 10 within 100 yards of this house.

If the airport came all this would go and we would have to move the home and family if we could afford it. We have already had this experience in the U.S.A. when an international airport was constructed.

These are our personal views as residents of Oving. In a broader sense we do not accept your NNI sound ratings and consider them optimistic. We feel that you will get nothing like a true reaction from villagers since information about the airport is scanty and hard to obtain, e.g. one pays 7/6d. for a report and within 2 pages are referred to another report costing 19/6d.

It seems odd that any planners should take a conserved strip of country, perch an airfield on top of a dominating hill and construct runways to bring at least six pleasant old villages into the noise zone.

* See also p. 1741.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Stewkley Parish Council*

The Stewkley Parish Council submit the following statement for the Local Hearing at Aylesbury opening on the 14th July.

1. The village of Stewkley is one mile and three-quarters long, with approximately 1,250 inhabitants.

It is practically a self contained village; there are a number of farms, one at least having been farmed by the present family quite one hundred years.

Also there is a fine old Manor House, built in the sixteenth century, and in the garden a Dove-cote built 1704. There is also, Dovecote Farm, part of it early Tudor, and the Parish Church of St. Michael, a unique Norman Church, built in the 12th century—a church visited by folk from all parts of the world. A well preserved church. These and several other spots in Stewkley are listed in the Royal Commission on Ancient Monuments.

There are two Methodist Churches built many years ago in love and sacrifice.

In the village one will find a mixture of old and modern cottages and houses, all seeming to blend together pleasantly, and it is very definitely a growing village for during the last six years 91 houses have been built, 13 are being constructed and plans for a further 31 are in existence.

There are five grocers shops, one combining the Post Office; not only groceries are available, but many other goods necessary to a community, even to boots and shoes and paints.

Quite recently a Library has been built by the Bucks County Council, indeed, it is a great asset to the village, one which we can be proud of, and furthermore, an excellent Recreation Ground owned by the Parish Council and managed by a small committee.

There is a Village Hall, built by Mr. Robert Courtneidge and Mr. London, utilised for many meetings, by many organisations, also Doctor's Surgery is held there, three times weekly.

There is an excellent swimming pool, patronised by people from the surrounding villages—very popular.

There are four Public Houses and these also have old building comined with new, and are in themselves attractive, also there is a very well stocked Drapers Shop.

There are two Garages, one North and one South of the village, and two antique businesses.

A Memorial stands in honour of the heroes of the two World Wars, at about the centre of the village, where the people congregate once yearly, a service is held and the grass and flowers surrounding it—well kept.

There is a Primary School, older children go to the Wing and also the Bletchley Secondary Modern Schools, and some attend the Cedars School at Leighton Buzzard.

Plans are in existence for a new school to be built in Stewkley, which will take a larger number of children; the first school of the Three Tier System about to be introduced in the area.

There is also a Men's and Women's Hairdressing Saloon, been in existence for quite a number of years.

2. There are 250 Old Aged Pensioners in Stewkley; many have their roots here, and will speak of generations past, a great number have never left the village, at least, only for an occasional holiday. They have lived all their lives amidst the seclusion of family and friends. Others will have left the village when young, because they have found work more attractive in the towns, but many have returned to retirement in Stewkley, and apart from these, there are elderly folk who have chosen to come here, have bought property, hoping to enjoy the peace and quiet of the countryside.

One cannot bear to think of what will happen if families are separated, for it is inconceivable that they can pick up the threads of community life such as it is here—elsewhere.

Even now, some of the older folk are worrying at the thought of being removed, and the Parish Council fear that it will cause suffering, illness or probably death.

Stewkley is an exceptional village of owner occupiers, lots of people have acquired their property by sheer industry and thrift. Many young couples have come to Stewkley buying their homes, and hoping to live in the village, for they really like it here. They do not want to be moved.

There are 124 schoolchildren attending the Primary School. They are able to exercise in the Recreation Ground when they wish; there is a part set aside for them.

They take part in the May Day activities; the May Queen is chosen and crowned, the usual dancing follows, a delight to watch, a tradition upheld.

The children certainly play a great part in the activities of the village. There are several concerts and plays given, and usually a place for them in any fete or show held.

* See also p. 1741.

Printed image digitised by the University of Southampton Library Digitisation Unit

We have an active Drama Group. who have most certainly put on some excellent plays.

The Church and the Chapels hold annual fetes and bazaars, so do other organisations of the village, for instance, we have a very active Women's Institute, Mens and Womens Sections of the British Legion.

There is a Mothers' Union, the Womens Own, and the Bright Hour, and also a Mens Mutual Class, all regularly held.

We have Brownies, Cubs and Scouts meetings, also the Royal Ancient Order of Buffs. Many Whist Drives are held, often for Charity, also a tug-of-war on Boxing Day. There are occasional dances, principally country dancing.

Also, a very successful Darby and Joan Club, Young Wives Club, and good Choirs.

Each Chapel holds an Anniversary, and after having special Sunday Services, they meet early on Monday morning and for three-quarters of the day, steadily process through the village, singing hymns. This is also upheld by many followers, relations and friends, many of whom make this a time of reunion.

There is a Fair which visits Stewkley in early October it has done so for many years. This is the Stewkley Feast.

The Harvest Festivals of Church and Chapels are certainly great occasions.

Cricket and Football matches are regularly played, both away and at home, and a great deal of interest shown. Cups and shields have been won—they are successful teams.

We also have a team of Bell Ringers, and it is interesting to listen to the changes being rung.

There is a substantial percentage of agricultural workers, and many small but thriving businesses exist. Several Master Builders, Woodworkers, one an elderly gentleman, a master craftsman, whose fame has stretched far, and even today at the age of 90 is still restoring and repairing violins. There is a haulage contractor, a Coach Proprietor, who also runs the School Bus, an agricultural contractor, a Coal Merchant, milkman, a newsvendor, a baker, these all reside in and serve the village. We also have living in the village a very capable and much liked District Nurse, and our Policeman is much interested in village life.

Regarding employment quite a number go to adjacent towns, finding them easy of access from Stewkley.

3. The Parish Councillors, some of whom have been serving for many years, seven in number, are from all walks of life.

Miss Johnson, Independent, J.P. and also Rural District Councillor.

Mr. O. Cheshire, Brick Worker, and also Rural District Councillor.

Mr. J. Hedges, Farmer.

Mr. J. Faulkner, Farmer.

Mr. K. A. Sibley, Engineer.

Mr. I. Stonhill, Plant Operator.

Mrs. A. E. Beasley, Housewife.

A Parish Meeting was held on 17th March 1969, to consider the Siting of the Third London Airport at Wing, and the following Resolution was unanimously passed. Approximately 500 persons were present. Mrs. A. E. Beasley in the Chair.

> "This Parish Meeting vehemently objects to the proposed siting by the Roskill Commission of London's Third Airport in this area, which will result in the complete annihilation of Stewkley with its unique Norman Church, furthermore it pledges its support to those organisations resisting the siting of an inland airport."

Copies were sent to Roskill Commission, Mr. Robert Maxwell, M.P., Bucks County Council, Association of Parish Councils and the Winslow Rural District Council.

Words are inadequate to explain just what it will all mean to the folk of Stewkley. As a Parish Council we are confident that the people, young and old alike are 98 per cent against the siting of a Third London Airport at Wing.

To put a village such as Stewkley under concrete, and to break up an old and closely knit community would be nothing short of a tragedy, a criminal act, and even though the existing inhabitants may not live to see it, we are sure that the voice of the Historian would be heard in the future, deploring such an act of vandalism.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. D. Bates*

Thank you for granting permission for me to appear at the Local Hearing in Aylesbury on 14th July 1969.

My house is in the area of the Third London Airport. I am sixty-three. My family have lived in this area since 1647.

I wish to appeal for the older section of the community, the over sixties. There are 215 of this age group in this Parish, five are over ninety years of age. I am Chairman of the Darby and Joan Club, also a member and I attend the meetings. The Club meets for fellowship and recreation.

More than this, all members know that they can bring before the committee their problems, secure in the knowledge that we shall do our utmost to help or put them in touch with those who can.

The sick are visited, we try to make sure each one feels they are not alone or unwanted.

These are the real people of Stewkley—bred and born here. They served their day and generation in the bad old days before Grammar School and Secondary Education became available to all.

Before the days of sanitation, electricity, street lighting and transport. Forty years ago these amenities were unknown. Stewkley is an active and progressive village. These are some of the people who have worked hard through the years to make it so.

They are the grand-parents and parents of the eight university graduates, teachers and nurses and many who hold good positions in the banks and offices in Aylesbury and Leighton Buzzard. All these started their education in our village school.

Throughout the centuries (our Church is 800 years old) the people of Stewkley have never been subservient to Feudal Lords.

The farms are mainly independent units, passed down from father to son. There are many independent businesses employing local labour.

Here we have strong family ties. It is quite exceptional for old people to die away from home. They are cared for by their families in their own homes—helped by our competent doctor and district nurse.

Apart from a few tenants in the older cottages and the council and tide, the houses are owner-occupied.

Those who have grown up here have bought new homes many of which have been built in the last five years. There are many who have bought homes to retire in peace and quiet away from the rush and noise of the towns.

I ask you to consider the inhabitants, especially the older ones, who will be uprooted from their homes, families and friends to be placed in concrete blocks in a new city or scattered around in strange places is unthinkable. Here they are people, anywhere else they will become misfits—unknown and unwanted.

Progress is one thing, but to do this to human beings in unwarranted cruelty.

---

* See also p. 1741.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. F. W. Grace*

My name is Marjorie Grace and I am Enrolling Member of the Stewkley Branch of the Mothers' Union. I have submitted my evidence to the Commission but I should be grateful if I may add one point to this evidence which has arisen since the submission.

Thank you for allowing me to speak.

The Presiding Members of the Rural Deaneries of Bletchley, of Wing and of Claydon wish to link their protest with my original letter.

These Deaneries comprise thirty villages, which, although they may not be totally destroyed as Stewkley will be, if the airport is sited at Cublington, will come within the noise contours and will suffer fall-out and possible urbanization.

I have the lists of the villages of these Deaneries here, but do not propose to read them unless you wish it.

The M.U.'s of the Rural Deanery of Wing

Wing
Aston Abbotts
Cheddington
Ivinghoe
Edlesborough
Linslade.

The Deanery of Bletchley

Bletchley
Bow Brickhill
Gt. Brickhill
Little Brickhill
Fenny Stratford
Broughton
Moulsoe
Milton Keynes (village as it now is)
Soulbury
Stoke Hammond
Wavendon
Simpson
Woughton.

The Deanery of Claydon

Whitchurch
Adstock
Granborough
Oving
Padbury
Winslow
North Marston
East Claydon
Middle Claydon
Claydon.

* See also p. 1742.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. V. F. Bratton*

First, I must thank you for granting my leave to appear at the Cublington hearing, in connection with which I wish to make the following statement.

My wife and family (now three children) and I, moved to Stewkley just prior to the initial announcement of the proposed airport sites.

The move to this district was because of my work as a G.P.O. Telecommunications Engineer on promotion to the Bletchley Training Centre. Stewkley was chosen because of its peaceful nature, coupled with the fact that it was the only place near Bletchley (with a residence of suitable size, convenience, position and price) that would not be enveloped by the new city of Milton Keynes. We went to great pains to find this residence, spending nearly a year of searching and travelling from our previous home at High Wycombe, some thirty miles away.

My wife and I are joint owner occupiers of the residence mentioned above and from the information published it will either be on the proposed site or *just* outside. In either case the result for us is the same, we would have to move should the airport actually be sited here and try to find a similar residence in a similar situation, as far away from the airport as possible and yet still near to Bletchley.

This I fear is not as easy as it sounds as most other four bedroomed houses in the situation we desire are being sold at something like £1,000 more than they would be at Stewkley. So if our present residence did come on the site even allowing for compensation at current market price for Stewkley we should be approximately £1,000 worse off ignoring legal fees and removal charges.

Also, if we were just outside the airport the market price would drop still further at Stewkley, the consequences being obvious.

We would of course prefer to go on living where we are at present, having only just established our roots, enabling us to savour at least some of the fruits of having done so.

P.S. I still wish to appear in person at the hearing.

---

* See also p. 1742.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. and Mrs. J. B. Brown*

My wife and I note that our application to be heard on the destruction of our home and disruption of our lives has been condescendingly granted. For this elementary right we owe you no thanks but remind you of your grave responsibility not to abuse the undemocratic powers you have been given, but to consider people and to remember that it is lives and homes you threaten to destroy in your omnipotence.

We therefore enclose our statement which we state in advance is emotional but we have our home and way of life to lose. If our statement needs amplifying by our personal appearance we would attend the hearing. We trust that you will read this and remember that it is not easy to compose a defence of that which is vital to oneself.

STATEMENT

Part I: General Reasons for Opposition

1. **Economic**

Even Civil Servants should be aware of the folly of destroying irreplacable farm land and valuable property.

2. To devastate the cream of the Home Counties, North Bucks, with its fine countryside, its buildings and churches, its wild life, is an act of vandalism even too terrible for the C20.

3. **Village Life**

It is hard to describe to anyone not living here the very real community life of our village. It is not a suburban dormitory but one of the rapidly vanishing villages where people really know each other and work together in the many organisations and take pride in their village. Where you find that the people around you are friends not neighbours.

4. As teachers we strongly deplore the effects that urbanisation has on children and to force children to live in an urban slum such as Milton Keynes can do nothing but harm.

Part II: Personal

We have lived and taught in the district for nine years—four of them in Stewkley. My wife is Senior Mistress, myself a Science Graduate. We came from London and under no circumstances would we return to an urban life and if we were to be uprooted we would prefer to leave this country altogether.

We own this house, which was derelict when we came. We have spent four years of hard work, turning this into a home, making a garden from a wilderness and putting the out-buildings in order. If this were to be destroyed we could not face this effort again. We had hoped to improve the fine and now rare 18th century barn, to put the out-buildings to good use such as calf-rearing or deep litter and to convert the unique bacon-curing tower to an Oast house-type home. We have over the years made very many good friends in the district including ex-pupils. We have, we think, through our interest in the childrens' welfare made many worth while contacts and gained a good local knowledge. This is a teaching asset which is not to be lightly destroyed. Our hobbies are antiques and we have again built up useful connections in the trade which would take years to re-establish elsewhere.

In addition to ourselves we have a student living with us that will have to be rehoused. We are animal lovers and our pets could not possibly survive in an urban area having been born and bred in this environment.

My wife's mother, who is ill, is looking forward to making her recovery in the peace and quiet of the countryside away from London.

As Christians we will not stand by and see our churches destroyed and graveyards desecrated, especially that of the church at which we worship—Dunton which is completely unspoiled and this is how we intend it shall remain.

Please believe that we are sincere in stating that you will only move us by force. We love this village—its people and the wonderful feeling of belonging and being cared about. Not money—not anything on this earth could justify destroying this community.

---

* See also p. 1742.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. F. R. Cole*

I write to formally record my objection to the proposal that the Third London Airport be sited at Wing and thank the Commission for granting leave to appear at the Hearing to be held at Aylesbury.

You will already have on file a letter which I wrote some weeks ago voicing my objections, but since that date the Commission's revised plan has been published and it is evident that whereas before it seemed likely that our home would be outside the boundary of the airport, it now appears that our home is sited directly on runway four and will therefore certainly be demolished.

In view of this, the effect upon our home and future has materially changed and I therefore set out in detail my objections to the proposal.

1. My wife and I were married in October of last year and we chose Stewkley in which to set up our home, being convenient to Leighton Buzzard (where we both work) and a pleasant, rural setting for our future family life.

2. Our house is newly built, completed in September last year. It cost us over £5,000 and we have a considerable mortgage.

This house may now be demolished. Despite the fact that a measure of compensation is payable, this cannot ease the pain of seeing our first home bulldozed to the ground and the results of our very considerable struggle and labour erased over night.

3. Immediately our home is lost to us we shall become one of a great number of families forced to find alternative accommodation which—by the nature of things—will soar in price as the pressure of hundreds of families seeking new homes is felt locally.

4. We shall have lost perhaps three years capital appreciation on our present home and be forced to pay inflated values for our new home. We shall therefore be very much worse off financially—perhaps by as much as £1,500 (i.e. 3 years at 5 per cent by £5,000 on our present home plus the effect of the scarcity value of the new home).

5. As a local government officer, I anticipated that in furthering my career I would have to make perhaps another two moves in the next seven years. As a result of the indecision caused by the search for the new airport, houses locally cannot be sold and I am virtually tied to my present employment until the fate of Stewkley (Wing) is known. By this time the opportunities I seek may well have passed me by.

These then are my personal reasons for objecting to the airport—and it is natural that personal matters take precedence over community matters but one cannot ignore the effects on the community.

6. Hundreds of families in the threatened villages —Stewkley, Cublington, Dunton, etc—will be made homeless.

7. Hundreds of good houses will be razed to the ground and thousands of acres of rich farm land will be lost for ever—at a time when the world's feeding problems are becoming increasingly acute.

8. Life will become unbearable for thousands of people in the vicinity of the airport as a result of noise, air pollution and the bedlam associated with increased traffic serving the airport.

9. When there is a great opportunity of adding to the country's wealth by creating out of virtually nothing a new asset on coastal wasteland at Foulness —at no great disturbance and no wastage of natural assets—it seems criminal to desecrate the land at the three inland sites at a great loss in natural assets. The effect of this will as I see it result in a net deficit in economic terms.

I shall welcome the opportunity of attending at Aylesbury in due course.

---

* See also p. 1742.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. B. Cozens*

I have to thank you for leave to appear at the Cublington (Wing) Local Hearing, as granted in your circular on 28th May, and to state I wish to do so.

My objections to the siting of the third London airport at Cublington are, briefly, these:

1. My family's life will be totally and unreasonably disrupted. Having recently moved into the area we should have to move out again with all the upheaval and interruption to our children's education that this would entail.

2. My professional life, as Deputy Head of a Secondary School soon to move into new buildings on the fringe of the airport site, will also be disrupted as will the education of those children in adjacent schools.

3. The farmers who will be dispossessed will have difficulty in finding comparable holdings elsewhere.

4. The distress caused to all inhabitants of the affected area, but particularly to those aged members of families who have lived in the area for centuries, some of whom are already at their wits' end with worry.

5. The sheer effrontery of a suggestion to turn well over 1,200 people out of their houses when there exists another site officially said to be suitable, where the human disturbance caused would be much less and where, according to reports of the Local Hearing already held there, the airport would be welcome.

* See also p. 1743.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. F. C. Coles*

May I express my deep concern and dismay at the prospect of the possible siting of the Third London Airport in the vicinity of Stewkley, the destruction of even more areas of our already dwindling countryside and the awful sweeping away of the houses and other buildings which constitute the village. My parents and ancestors were natives of this village for as far back as records go and I have personally lived in this building for nearly sixty years, it has been the focal point of all my business activities—the supervision of the erection of schools and other public buildings—the likelihood of finding suitable alternative accommodation at this period of ones life seems somewhat remote. Much of my life and money has been devoted to the adaptation of what is a relatively older building, mainly with a view to provision for pursuing ones occupational hobbies etc. into the years after retirement, the lack of these facilities would make life in the future unbearable if not impossible.

One feels that in order to avoid so much of the anxiety that has arisen as the result of the Commission's enquiries, assurance would have been given to the possible displaced and dispossessed people—in the early stages—that alternative accommodation equal in value and amenities to that of which they are likely to be deprived.

Failure to do this means that a relatively small section of the nation's population is being forced to bear an unfair proportion of the burden of providing for the new airport when it should in fairness, be shared equally as a national necessity.

I would like to take this opportunity to request permission to appear at the Local Hearing at Aylesbury which I understand starts under your direction, starting 14th July.

* See also p. 1743.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. B. Faulkner*

Every one of the 1,200 adult inhabitants of Stewkley is being urged to write to you in support of the Wing Airport Resistance Association. We are all prepared to fight to the last ditch to preserve our homes and land and cannot emphasize enough the advisability of siting the Third London Airport at Foulness where Essex as a whole would welcome it with open arms.

A great many people appear to think that the proposed Airport will merely take about ten square miles and completely overlook the further thousands of acres which would be swallowed up by the expansion of the much publicised road and rail links which at present are pitifully inadequate to cope with the visualised increase of connecting traffic with the airport. There just is not enough *spare* land around here for future expansion without depriving thousands more people of their homes. Whereas at Foulness the scope for further expansion after the initial project is completed, is limitless.

Stewkley itself is a thriving and expanding village —during the last five years alone there have been over fifty new privately owned houses built and twenty new council bungalows. We know that "new people" can buy homes elsewhere and that council tenants will be re-housed, but how about the hundreds of older folk living in small rented cottages—where will they go? They have lived in this village all their lives as did the two generations before them—their families still live within the village limits—the thoughts of tearing up their roots and contemplating living "heaven knows where" is enough to break their moral fibre and spirit completely and even in some instances of the ending of their actual lives prematurely by the shock of upheaval.

After pleading for our village and friends therein, we come to ourselves who will be hit possibly harder than anyone as we shall lose our livelihood *completely* with no chance whatever of "starting up again" elsewhere.

We live in the largest old house in the village dating back to the 15th Century as my family has done for the last hundred years—incidentally we have spent thousands of pounds on renovation and modernisation during the last two years. It is the last remaining Manor House of the original three in the Parish and is listed for Preservation—laughable isn't it!

At the Manor House we run an Egg Packing Station employing twenty local people who have been with us all their lives. We may be small as Packing Stations go, but never-the-less we still have an annual turnover of at least £250,000 and plans were afoot for massive expansion until the "Airport Threat" blew up in our faces. If this airport should come here—not only we, but our largest egg producers would cease to exist. One just cannot descend on a different area and poach other packing station producers and retail outlets. It's taken fifty years to build our business up and we were hoping to hand it on to our young son who is very keen to "take over from Daddy and Grandad" as soon as he's old enough.

We have already lost financially over this terrible business. We were in the process of selling a house we had originally purchased for a driver—the contracts were awaiting signature, until all the airport scare appeared in the press and *both* prospective buyers backed out and we are now saddled with a £3,500 house that no-one will even look at.

I sincerely hope that the hackneyed phrase "people before money" may now sound a little more real and possibly the hardships being faced by just one of the said "people" *might* be taken into account by *some* person with a heart instead of a computer type brain to guide him.

On looking back over the foregoing, I think you must realise why we feel so bitter about the Roskill Commission and the powers that be at Whitehall who insist on treating people as mere pawns on a chessboard to be pushed around with little or no say in the direction of their lives.

Who wants compensation when one's whole way of life is at stake?

* See also p. 1744.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. J. D. Faulkner*

I have lived in the village of Stewkley all my life—forty-seven years, and my ancestors before me for several centuries.

The house in which I live was built by me at great expense ten years ago. It is very pleasantly situated and has entailed a great deal of work to get it to its present state.

I have a wife and my two daughters are both at a critical stage in their education at the Cedars School in Leighton Buzzard.

I have an aged father and many relations and friends whom I have no intention of leaving.

My brother and I farm in partnership 370 acres. 350 of which are within the proposed airport boundary—the remaining acreage would be of no further use.

We have built up a large herd of Landrace pigs, which have taken years of hard work—numerous cups and awards have been won for quality pigs.

We have recently spent £10,000 on a new piggery, and we prize such a very profitable herd. We keep 400 ewes with 600 lambs. A new building to house 120 head of cattle and to store hay is in the process of erection.

We have 180 acres of arable from which the corn is ground to feed the stock.

I am chairman of the Stewkley Cricket Club, which is very active and successful—having many young players, all the members live in this village. A very keen interest is taken by a large number of followers, this we know by the consistent attendance of spectators at every match.

I am also chairman of the local Liberal Association, a Parish Councillor, and serve on several other committees.

I am a Trustee of the Methodist Church which I have attended all my life, and to which a great attachment has been formed.

It can be seen from this letter that to move from Stewkley would be a tragedy for my family and myself which could never be overcome.

I wish to appear in person at the Inquiry—where I shall endorse the fact that together with my fellow villagers I refuse to see Stewkley disappear under concrete.

---

* See also p. 1744.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. E. M. Grace*

I am writing this letter on behalf of my aged mother-in-law. She wishes to thank you for leave to appear at the local hearing on 14th July, which, of course she will be unable to attend, but wishes to state the following.

She is eighty-six years old and has lived in Stewkley all her life. She has been a widow for thirty years with relatives living nearby. She lives alone.

Her house is quite old and her garden charming and well cultivated, having belonged in her family for years.

She owns her house and is inordinately fond of the locality as it holds her childhoods memories upon which she now lives.

If the airport came here and her house was destroyed as it would be, without doubt she would die, as she is now in the state of mind which could not adjust itself because of age, to any other form of living.

This is just a true and simple statement of fact and not a dramatic idea of the imagination.

Like many other old people she would have no desire to live if her present way of life was interfered with.

Her family have lived in Stewkley for over 400 years, and like many other aged people here, her roots are completely entangled in life of the village.

* See also p. 1744.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. M. A. Hardings*

I thank you for your letter of the 28th May 1969, granting me leave to appear at the local hearing in Aylesbury and this I will be most pleased to do.

I wish therefore to make the following statement:

I have lived in the village of Stewkley for the past eight years though have had connections with it for the previous twenty years, my wife was born here and has lived here all her life with *all* her relatives and a family which through certain branches can be traced back for generations.

Our present home in which we have lived for three and a half years is a medium sized detached house, about six years of age, prior to this we moved, when married, into a small detached bungalow where we lived for four years from the completion of building.

My wife and I have no family and therefore to us, our nephews and niece are our family and we would not wish to be split up as they and their parents mean a great deal to us, also my parents in-law are Stewkley residents. Furthermore, my own family having connections with the village and Stewkley being such a delightful place, my own parents though living all their lives in North Surrey had visualised moving here for their retirement.

Stewkley has been to me a refuge from the war-time bombing in the London area. A place of happiness, where I met and married my wife. An area of friendship here I have found and known more close companionship than I could have done in a lifetime at Kingston-upon-Thames.

It has had a need for me, I am Clerk to the Parish Council and have been for eight years and also I hold the office of treasurer to the Darby and Joan Club. I helped to form the now established Scout Group. It has enabled me to carry on the community service work which I started whilst still in my 'teens in Surrey. It has provided opportunity, I was trained and am fully qualified as an Engineer and yet since moving here have left my vocation and with a colleague we have built up a successful local lingerie manufacturing and retailing business of which I am Director and General Manager. You will see from above that I owe a great deal to Stewkley and would be more than sorry to have to leave.

I'm sure that if the airport were sited here it would certainly ruin my family life, and though it may not ruin my business life it would most certainly have an adverse affect on it. Though the business is in Leighton Buzzard, to move there would be far too close to an airport for comfort, and yet there is no other place in the vicinity and yet far enough away, where I would wish to go.

In conclusion I would add that obviously there is a need for a Third London Airport but just as obvious is the fact that anybody with the threat of it on their doorstep, or as in my case "In the lounge," will not want it, will protest and protest most strongly. One feels that there must be better sites affecting far less people, sites in fact where only a handful of people would be disturbed. One also wonders if it would set a precedent if it came to Stewkley, if in fact a village some two miles long and with a community of over twelve hundred people has, in fact, ever been razed to the ground in the name of progress. My own view is that it would be shear desecration to flatten Stewkley, and downright sacrilege to touch one stone in our unique historical Norman Church of St. Michael's. I therefore implore the Commission to give the deepest of thought to the final siting, which I am sure you will do. But please, oh please consider the fullest human aspect, and hope and pray that reason will win over in your decision.

---

* See also p. 1744.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. J. W. Mead*

I wish to appear at the Hearing of London's Third Airport siting at Cublington (Wing) to state my case for myself, wife and children who are five years of age and attend the village school.

We have lived in the village of Stewkley for several generations with our relations and friends. I live next to the Farm which my parents, brothers and myself own.

I have bought a cottage recently and modernised it. I earn my living in the village having a milk round and on the farm. I have no other ways of earning my living. My father volunteered and fought for four years in France so we could live in peace at Stewkley.

* See also p. 1744.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. P. J. Preston*

I wish to express the strongest possible objections to the proposal to site the Third London Airport at Wing.

Obviously I have an "axe to grind" because I live inside the area, but I am not opposed to progress. I believe that Britain will be best served by building the new airport at Foulness where there is space to expand and the opportunity to create an airport and a dock complex which will enable us to maintain our lead in world trade.

I am a member of the Wing Airport Resistance Association and I support all that they have to say, as I support also the evidence to be given by our Local Action Group.

I want to bring to your attention the hardships which your proposal would bring and already have brought to me and my family.

Firstly my career. I am Chief Designer at Lancer Boss Ltd. in Leighton Buzzard a local company producing a range of heavy capacity fork lift trucks and container handling equipment. If my house in Stewkley is demolished I shall not want to buy another in the area of the airport, and indeed my employers have stated that they would consider moving the design and sales centre out of the area if the airport should be built.

For the last eight years of my career I have specialised in the design and development of this type of equipment, and all my experience has been in this field. I am able to hold a very responsible and well paid position in this industry but I should have to start again much lower down if I transferred at my age to another type of work.

Lancer Boss holds an important position in the world market for these heavy equipments and our main competitors are in the U.S.A. There are no other companies in the U.K. working in this field.

I know that I should be offered similar work in the U.S.A. and if I were forced to move I think it possible that I would accept, although I have no inclination to do so now.

Let me tell you about my family. My two children go to the village primary school in Stewkley, they both like the staff and enjoy school very much. It is a good school and we should be sorry to have to take them away.

My wife's family are an old Stewkley family. Next door to us lives her elderly widowed mother and she derives great comfort from being so close to her family. Able to share her problems and fears.

Next door to Mother-in-law lives my wife's brother and his family. Next door to us in the other direction lives my wife's cousin and her family.

Throughout this village and the surrounding villages we have many relatives and old friends. I am a newcomer myself, although we have lived here now for six years, and I greatly enjoy the deep sense of belonging and well-being which comes from having so many friends about me. My wife feels the same way but perhaps more deeply than she really knows. I think that she would find it very difficult to settle into a new environment.

We have lived in this house for three years. It was very delapidated and with no kitchen, bathroom, or drainage when we bought it, but it was all that we could afford and we could see that if we put up with the inconvenience and worked hard it could be restored to the fine Georgian house that it once was.

No building society would advance any money on the house but we eventually got a loan from the Winslow R.D.C. We have worked at it since then saving our money to buy materials and doing most of the work ourselves. After three years we now have proper amenities inside and are working to renovate the outside. Throughout all the work we have always been consoled by the thought of the fine home which we would finally have.

I do not know the words to describe the despair we shall feel if our house should have to be knocked down. You will realise that even at the moment it is valueless.

If you have managed to read this far you will appreciate that I could go on listing reasons why you should not demolish our home, and our village. and destroy our way of life, and perhaps tip me out into the wrong kind of job, but I think that you now have a good idea of how I feel.

I hope that the Commission will make the right decision. One that will stand the test of time and still be seen to be right in the future. Technology must be used to make life better for people. A splendid new airport is a great asset, but not if sited where it will cause misery to great numbers of people.

---

* See also p. 1745.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. P. E. Wheeler*

I thank the Commission for grant of leave to appear, and wish to write the following statement.

I oppose the siting of the airport at Wing for these reasons.

1. My livelihood depends on farming. My greatest objection to the plan is that it would force me to leave the farm where I have lived and farmed all my life—as my father before me did for most of his—and I would have considerable difficulty in finding another. Because of the amount of farmland already being taken in North Bucks for the new town and the projected reservoirs, it is likely that there would be 200 applicants for every farm, so my living, and that of my wife and children would disappear.

2. I have been to the trouble of having a house built close to the farm, which I have paid for with some degree of hardship, and it would cause me and my family severe personal distress to have to leave it.

3. My daughter attends a grammar school in Leighton Buzzard, and having to leave the area would interfere with her education at a critical stage.

4. My wife's family has lived in this village for four generations and her aged father—like many of the old folk of the village—views with understandable distress and trepidation the inevitable bulldozing of the churchyard where his forebears are buried.

5. The worry and uncertainty which we have had to endure for some months, and which will continue for some time, whatever the government's eventual decision, has had, is having, and will continue to have a deleterious effect upon the health and well-being of everyone in the village, especially the aged and those who, like my wife, are of a nervous disposition.

For these humanitarian reasons, Sir, I oppose the siting of the Third London Airport at Wing.

* See also p. 1745.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. D. B. Head*

I wish to thank you for the opportunity of placing before you the following statement concerning the proposed siting of London's Third Airport at Cublington (Wing).

1. I moved my family into this area following the offer of employment by a company based in Dunstable. My work involves research into the reduction of exhaust gas pollution from motor vehicles. In this work I naturally come into contact with exhaust gases and, since the test engines I am concerned with are run on test beds, a certain amount of noise.

2. In view of the foregoing remarks I wish to be away from noise and air pollution during my leisure time. I did a great deal of house searching in the area before deciding to buy my present home.

3. The features I particularly looked for and found in the village of Stewkley are as follows:

(a) The roar of the M1 motorway cannot be heard at night.

(b) The noise of the fast London/Manchester railway system can only be heard on a very still night, and yet is close enough to allow commuting into London as the occasion demands.

(c) The fumes from the various brickworks in the area only detected on very rare occasions in the village.

4. In addition to finding these features I am particularly pleased that my children are able to grow up in the country away from the noise, filth and corruption of our large cities.

5. Since living in the village of Stewkley I have found the villagers extremely friendly. They have offered assistance on numerous occasions covering such items as unblocking my drains (yes even on a new house system), giving a load of top soil to raise the level of my garden, the loan of a garden roller to roll my new grass and, when my car broke down, the offer of lifts to work. These are small items in themselves but serve to illustrate the type of community that exists in Stewkley. Not unique, but certainly not usual in this modern age.

6. The moving of such a community would result in the complete destruction of this atmosphere which has built up over many generations. There is at present a strong feeling of solidarity which is apparent throughout English history when crises have arisen. It is the solidarity upon which governments have relied when asking the country to support it in times of extreme peril. By destroying Stewkley you not only destroy part of the English countryside but also part of the English backbone. We must draw the line at this annihilation of the community spirit so lacking in large cities otherwise we shall end up with an impersonal "Brave New World" type of society. This would not only result in the self centred attitude so apparent in large city dwellers, but perhaps a not so *Brave* country after all.

With the greatest respect to you, Sir, in your most difficult decision I wish you to know that I will resist most strongly any attempt to bulldoze the village of Stewkley from the map.

---

* See also p. 1745.

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 8

Dr. D. MacCarthy
Mr. P. G. Bedcalf
Conservators of the River Thames

Dr. W. B. Armstrong
Stoke Hammond Parish Council

Mr. W. J. Bates
Mr. P. J. Boyd
Mr. S. T. Dancer
Mr. J. R. Jeffries
Dr. J. R. Lumb
Mr. F. O. Gregg
Weedon Parish Anti-Airport Committee

Mr. R. W. Chiddick
Mrs. A. F. Cornock
Mr. C. Fraser
Mr. H. Hague
Mr. M. H. J. Radcliffe
Mr. D. F. Ryder Richardson
Mr. D. G. A. Smart
Mr. K. Walker
Whitchurch Parish Council

Mr. A. R. S. Ball
Mr. I. Beckett and Mrs. R. A. Beckett
Mr. C. Brown
Mr. L. Coates
Mrs. D. Foulger
Mr. R. E. Main
Mrs. J. Ryder Richardson
Wing Parish Council

Mrs. F. R. Black
Mr. A. G. Harris
Miss D. M. Harris
Mr. R. G. F. Heley
Mr. E. F. Kidd
Mr. C. Morton
Mr. J. Pearse
Mr. N. V. Rogers
Mrs. K. H. Royal
Mr. and Mrs. J. R. West
Mr. D. Barrington
Mrs. S. W. Jennings
Mr. R. S. Mereditch
Mr. A. Tomkins
Mrs. J. White
Mr. A. W. Phillips

Witnesses were examined on this evidence on Day eight, Thursday, 24 July 1969, see pages 1749–1771.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Dr. D. MacCarthy*

Thank you for the opportunity given me to present a statement to the Commission.

I have lived in Weedon for 19 years, I am a doctor, a child specialist, with a wife and four children.

We live in a house which has particular charm and will be the home of my family I hope for many years to come. I could well have chosen to live in London or any large town to practise my speciality but I particularly wished to work in a country area and to live in a country village.

My reasons for objecting to the siting of the Third London Airport at Wing are:

1. The destruction of our way of life as it now is, by aircraft noise of intolerable degree.

2. The urbanization that is likely to result with the building of this huge airport within one and a half miles of the village. I will not enlarge upon this objection as it is insignificant compared with the first.

Noise and the ordinary person

There are scientific studies which point to the harmful effect on health due to noise but I only wish to point out what common sense and general experience indicate to all of us, members of the Commission and threatened villagers alike, namely that:

(a) Sudden noise is always irritating and a prolonged loud noise frustrating, so that an *effort is required to keep one's composure.* Under continuously noise conditions or frequently repeated noisy interruptions, this effort becomes cumulatively exhausting and *adds greatly to the ordinarily acceptable fatigue of work.*

(b) Irritation whether expressed or stifled can reach a point where sleep or appetite or blood pressure or all three may be affected.

I speak from personal experience of working in Aircraft carriers, Naval Air Stations and towns with serious aircraft noise and also experience of teaching under conditions with very heavy intermittent traffic noise.

(c) At a distance of one and a half miles from the take off point of a jet aircraft ordinary talking voice or wireless programme becomes inaudible for fully twenty seconds while the aircraft is going over. I have personally timed this at a point just west of London Airport. If the flight frequency at the proposed Wing Airport reaches one per two minutes, as we are told it will, then communication other than by shouting becomes impossible for twenty out of 120 seconds. Those who leave Weedon to work elsewhere during the day will come home at evening to these conditions, when what they need is rest.

(d) Would we get used to it, as people got used to trains passing within a few yards? Jet Aircraft noise is a constant, intense stream of sound of all frequencies impinging on the hearing apparatus. It is much less tolerable than the intermittent clattering of train noise.

Danger

The number of flights per year may reach a total of 12,000 to 15,000. Is there any big airport in the world with a record of no crashes? It is virtually certain that in a matter of several years there will be a disaster of some sort. Weedon is right in the line of the flight path, I consider that the danger is by no means neglible. And once an accident had occurred I would be living under a similar kind of apprehension as the people of Aberfan. I consider we are being exposed to a risk and our feelings about it are being ignored.

Damage to Property

The effects of exhaust fumes of 15,000 flights a year are as yet unknown, but who can be complacent about it?

Damage to my life and financial loss

Faced with intolerable noise and its effect on health I would feel obliged to move my family to somewhere out of reach of it while continuing to work in the area I serve: but I shall be unable to do this for financial reasons. My house being worth extremely little I shall not be able to afford a similar or even a barely adequate home for my family elsewhere.

Having spent 20 years in completing the purchase of my house I naturally feel extremely bitter about the turn of events that may reduce its value to a fraction of what it should be.

The alternative is to live on in Weedon with other friends who may decide to do the same, with double glazing and shut windows winter and summer, with conditions of life utterly different to those I originally found here.

If the country were at war and Wing was about to become the scene of a big battle, I would have to

* See also p. 1749.

Printed image digitised by the University of Southampton Library Digitisation Unit

consider myself a refugee and take the chance of deterioration of my property and accept the disruption of my life. But we are not at war and although I agree that a third London airport is needed by this country I cannot accept that damage to people's way of life on such a large scale can be justified by any considerations in peace.

My case is typical of people, numbering thousands, who have chosen one of the traditional ways of life in this country, a country life, a village life.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. P. G. Medcalf*

As a private individual living within a very short distance from the end of the runways of the proposed Wing Airport, I recently indicated my desire to appear before your Commission. I understand now that you would like a written statement of my views and I give them below.

My name is P. G. Medcalf. I am Chairman and Managing Director of Hunt Barnard & Company Limited, an old established printing company in Aylesbury which also has a subsidiary company in Bedford. I live at Priory Court, which is situated in the middle of High Street, Whitchurch. I have lived there for over ten years and have lived elsewhere in the area since 1938. The house is a particularly convenient one for me since it allows me to live within easy reach of both our factories and at the same time reasonably easy reach of London, where I am working probably two or three days per week. I have four children, three of whom are still living at home. Whitchurch is a particularly practical and pleasant village to live in in that it is almost self-sufficient in terms of shops. It has two butchers, a baker, one good grocers shop and two general stores, one of which deals in vegetables. This means that the village has a considerable advantage of many villages within easy reach of Aylesbury in that on a day-to-day basis it is independant of Aylesbury for shopping which over the last few years has become more and more difficult due to the traffic and parking problems. Whitchurch is very much more a village community than, for example, many villages on the South side of Aylesbury where I lived before.

As I understand it, since my house will be within about 1,000 yards of the take-off end of the runways, it will virtually be untenable should the airport come and it would seem that in these circumstances I would have no option but to leave the area, which would be most inconvenient for both business and private reasons. It would, incidentally, seem that I should be put in a most unfair position from a financial point of view since I understand that there will be no compensation for anyone whose house is not within the confines of the airfield and it would therefore seem most unlikely that I could find an equivalent house without a very considerable financial loss. Should I have to move my choices are:

1. to find an equivalent house in some other part of this area, or

2. to move to London.

London property will obviously be very expensive and, should I remain in the Aylesbury area I should have to move to the London side of the town to avoid the airport noise and congestion. Property in this area is a great deal more expensive so in either case I should sustain considerable financial loss.

In general terms I am most disturbed by the prospect of the airport being built at Wing. I have outlined above the effect it will probably have on my private life. I am also convinced that it will have a very bad effect on my business life and that of my company. The development will not increase the market for print as far as we are concerned (we are predominantly printers for publishers). It will, however, very much accentuate the problems of obtaining and keeping skilled work people since one of the few things we can offer key people is a pleasant living environment. It would seem that with the advent of Milton Keynes and Wing airport the greater part of Buckinghamshire is bound to become urbanised in a comparatively short space of time and therefore this area will lose a great deal of its attractiveness particularly to higher grades of technicians and managers who greatly value the kind of life which Buckinghamshire can offer when compared with fully industrial areas. I believe my attitude would be shared by almost all the residents of Whitchurch and the nearby villages and I believe also that most Aylesbury industrialists will feel the same.

Thank you for the opportunity of putting these views forward. I hope you will allow me the privilege of appearing before you to put these views personally.

---

* See also p. 1749.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of
The Conservators of the River Thames

Introduction

1. The Conservators of the River Thames, in addition to their functions in relation to the River Thames above the landward limit of the Port of London, under the Thames Conservancy Acts and Orders, 1932 to 1966, are the Drainage Board for the Thames Catchment Area for the purposes of the Land Drainage Acts, 1930 and 1961, the Pollution Prevention Authority for the Thames Catchment Area responsible for the enforcement within that area of the provisions of the Rivers (Prevention of Pollution) Acts, 1951 to 1961 and the Authority exercising within the Thames Catchment Area the "new" functions of a river authority under the Water Resources Act, 1963 as applied by the Thames Conservancy (New Functions of River Authorities in Thames Catchment Area) Order, 1964, as amended. The proposed Cublington site lies within the Thames Catchment area.

2. If London's third airport were sited at Cublington this could be expected to attract to the area a population of up to 500,000 persons by the year 2000 A.D. The establishment of the airport, and the consequent urban development, would give rise to large additional demands for public water supplies and would result in the discharge of large volumes of effluent to watercourses within the areas concerned. The large impermeable areas created by the airport itself and by the urban development would all cause accelerated run-off from rainfall, so giving rise to drainage problems. The airport itself would thus directly affect the Conservators' interests and the resultant urban development would also affect those interests to the extent that the development occurs within the Thames Catchment area and to the extent that water from the resources of the Thames Catchment area may be required to be provided to meet future demands outside that area in parts of the catchment of the Great Ouse.

Water Resources

3. A population increase of up to 500,000 persons by the end of the century would give rise to demands for public water supplies of up to 40 million gallons per day. It is assumed that the likely areas for the urban development associated with the airport would be in the vicinity of one or more of the following places:

Milton Keynes in the Great Ouse Catchment;

Luton and Dunstable in the River Lee Catchment;

Aylesbury and Bicester in the Thames Catchment.

The water undertakings responsible for public water supplies would be the Bucks Water Board in relation to the Milton Keynes and Aylesbury areas, the Oxfordshire and District Water Board in relation to the Bicester area and the Luton Water Company in relation to the Luton and Dunstable areas.

4. It is thought likely that much of the development which would result from the establishment of the third London Airport at Cublington would inevitably occur in the Bucks Water Board's area. Prior to the proposals for the airport at Cublington the Bucks Water Board had estimated that by the year 2001 demands in their area would exceed their resources by some forty-two million gallons per day and that this deficiency would largely arise from the development in that part of their area which lies within the catchment of the Great Ouse. This estimate allowed for the degree of development then planned for Milton Keynes. With the third London Airport at Cublington the Bucks Water Board would be faced with considerable further demands for water and their estimated deficiency in 2001 A.D. would be considerably increased until further assured supplies could be obtained. It is understood that the Bucks Water Board would wish to obtain their future water supplies from the River Thames.

5. That part of the Bucks Water Board's area which is in the Great Ouse Catchment Area lies within the central deficiency zone referred to in the report of the Water Resources Board entitled "Water Supplies in South East England". The sources from which water will be drawn and transferred to meet future demands in different parts of the central deficiency zone are matters for consideration by the Water Resources Board.

6. The Bucks Water Board initiated investigations into potential reservoir sites at Whitchurch and Waddesdon. These reservoir sites were recommended for investigation by the Water Resources Board in their report "Water Supplies in South East England" and the Conservators, at the request of the Water Resources Board, arranged for further investigations to be carried out. Consulting engineers were jointly commissioned by the Conservators and the Buckes Water Board to carry out the necessary further investigations. The two potential reservoirs are particularly well placed for the transference of Thames water to the Great Ouse Catchment if that course were decided upon, but the Whitchurch reservoir site occupies much of the same area of land as is proposed for the site of the Cublington Airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

7. The potential reservoirs at Whitchurch and Waddesdon would be required to augment stream flows in the Thames Basin to safeguard existing abstractions of water in times of dry weather, in addition to their use for the provision of public water supplies. Releases of water for the former purpose could be made direct to the River Thames or via certain tributaries, such as the River Thame. These releases would be of general benefit to the river system and in particular could provide additional dilution to future effluents over and above the inadequate amounts which natural flows would provide in time of drought.

8. The value of the potential reservoirs at Whitchurch and Waddesdon would be greatly enhanced in the light of the water supply demands and effluent disposal problems which a third London Airport in the area, with its resulting urban development, would create. The loss of one of the two potential sites owing to its co-incidence with the airport site would thus be all the more serious.

Land Drainage

9. The proposed site for the airport lies on the water-shed between the Thames and Great Ouse Catchments. Any urban development associated with the airport in the area east of Aylesbury would also lie mainly within the Thames Catchment. Both areas are in the sub-catchment of the River Thame, to which they drain naturally by small streams. Urban development in the vicinity of Bicester within the Thames Catchment would drain to the River Ray and thence via the River Cherwell to the River Thames at Oxford.

10. The Thame Valley is predominently agricultural in character having a catchment area of some 265 square miles, a large proportion of which comprises impervious clays. The gradient is generally of the order of 1 in 2,000, although this steepens slightly at the upper end of the catchment. The main channel is flanked over much of its length by broad flood plains some 200 to 400 yards in width. The bank full capacity at Drayton St. Leonard some three miles from the confluence with the River Thames is approximately 1,000 cusecs and at Thame 300 cusecs. These figures compare with estimated peak flood flows of 1,600 and 700 cusecs, respectively.

11. As a result of changing land use there is at the moment considerable pressure from agricultural interests to improve conditions in the Thame Catchment generally. In a catchment of this character some degree of flooding must be accepted, but what particularly concerns agricultural interests is the length of time that water remains on the ground.

12. Any solution to the problems of the Thame Catchment is complicated because of the number of mills in the catchment, most of which are in various states of dereliction. Several road bridges consisting of numerous small arches also cross the valley. The Conservators are at the present time carrying out extensive maintenance dredging of the lower reaches of the River Thame, but in so doing they are meeting opposition from other riparian interests chiefly concerned with the preservation of the character and amenities of the valley. At least one of the bridges referred to is of historic interest and difficulties have been experienced in resolving the water rights of mills.

13. At the present time disposal of surface water is giving concern in some of the low lying urban developments in the Thame Catchment, in particular at Ickford and in new development north east of Thame. The present limited expansion of Aylesbury has required channel improvements including the provision of balancing storage, and the impact of further development is at present being investigated with a view to further limited local improvements.

14. The construction of large impervious areas of runways, taxiways, hard standings, together with the associated development in connection with the airport itself, will result in greatly increased peak rates of discharge of surface water. The tributary to which this discharge would most probably be made is the Hardwick Brook which at present has a capacity of no more than 80 to 100 cusecs downstream of the airport site. It is clear that balancing storage of peak run-offs would have to be provided for the airport drainage to the extent of reducing peak outflows approximately to those arising from the present undeveloped catchment. Some channel improvement of the Hardwick Brook to its confluence with the River Thame would even so be required and some structural works may be involved.

15. In the area of possible urban development east of Aylesbury numerous small streams drain the Chilterns Escarpment between Wendover and Marsworth concentrating to the River Thame near Hulcot at the centre of a relatively flat plain. These streams are comparatively small, and high water levels exist generally in the area. Urban development in this area and on the scale anticipated would require

(a) A limited amount of balancing storage to reduce peak run-off. The amount of storage would need to be limited, otherwise prolonged high base flows could arise and it is essential that the residual flooding which is still likely to occur in the Thame Valley should not be unduly prolonged;

(b) Extensive improvement to the River Thame probably to its confluence with the River Thames, a distance of some 25 miles. This improvement would be required both to improve the existing drainage characteristics of the area of development and to cater for the increased flows arising both from surface water and effluent disposal. This work will involve considerable structural works including the rebuilding of several highway bridges and the possible replacement of mill

Printed image digitised by the University of Southampton Library Digitisation Unit

structures by new impounding structures after the determination of the mill rights;

(c) Suitable provisions for the drainage of the upland catchment which would probably be intercepted by the development.

16. Urban development in the vicinity of Bicester would be in an area which is extremely difficult to drain at the present time. The gradient is rather flatter than that of the Thame Valley, being approximately 1 in 4,000 and there is a higher proportion of impermeable area. A number of small villages are experiencing difficulties with the disposal of surface water and large areas of farm land have been inundated for lengthy periods during the past twelve months. Difficulties would be experienced with regard to mill rights, there being numerous impounding structures which serve conflicting interests. From the present appreciation of the problem it seems not unlikely that large scale development in this catchment would again require improvements over the whole length of the River Ray, and that part of the River Cherwell from the Ray confluence through Oxford to the River Thames.

17. It seems quite clear that urban development on the considerable scale anticipated would result in large scale changes in the arterial watercourses involved, although the precise extent could only be determined by detailed investigation which it has not been possible to carry out. It is certain, however, that the improved watercourses would be out of regime and would involve the Conservators in greatly increased expenditure on their maintenance.

Pollution Prevention

18. So far as the airport itself is concerned, on the assumption that all sewage and trade effluent (including all aircraft servicing and washing drainage but excluding clean closed-circuit cooling water if required) will be discharged to soil sewers and that all oil fuel storages will be made properly spill and leakproof, the only polluting matter likely to contaminate surface run-off will be oil from wholly accidental spills and leakages on runways and roads and chemicals used on runways for de-icing, etc. Such surface water run-off will need to be passed through oil interceptors and finally into lagoons before discharge to streams. To prevent pollution it is desirable that final lagoon storage for oil-film separation and biochemical oxidation should be incorporated in any storage areas provided for land drainage control purposes.

19. The disposal of purified sewage and trade effluents from sewage works serving both the airport itself and the associated urban development will present problems necessitating the treatment of effluents to high standards. The receiving streams in the Thames Catchment provided very low dilution, and solely for the maintenance of satisfactory stream conditions the Conservators will need to require high standards of effluent quality limiting the content of suspended solids, biochemical oxygen demand and possibly ammoniacal nitrogen in effluents. In addition the receiving streams are used for water abstraction including public water supply and the River Thames is the source of approximately two-thirds of London's public water supply. Effluents will need to be substantially free from toxic matter and very strict control of trade effluents will be required to eliminate risk of accidental gross discharges of noxious trade effluent passing to sewage works.

20. The addition of large volumes of sewage effluent to the Thames Catchment will increase the nutrient content of the flow of the Thames and its tributaries and will thus increase problems of algal biosynthesis both in streams and rivers and in reservoirs. Whilst neither the extent nor the possible solutions of this problem can at present be forecasted it may be necessary in due course to require the removal of most of the nitrogen and phosphorous content of effluents, to ensure the provision of diluting water, or to provide for the short term storage of stream flows at selected points or to control the problem by a combination of these means.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Dr. W. B. Armstrong*

I am an Assistant Physician, and have for many years worked in the Aylesbury Hospitals and at St. John's Hospital, Stone. It is now very nearly nine years since I moved, with my wife and two sons, to live at Pitchcott. We chose deliberately to live in a rural area, and until recently we had no inkling that any major development might threaten the rural peace of Buckinghamshire.

On the information which has been available to the public, I have, of course, carefully studied the implications of the construction of the proposed aerodrome at Cublington (Wing). My home would clearly be affected by noise to an extent which would make life, by our standards, intolerable. There are limitations to what can be achieved by sound-proofing a house. I believe that this cannot be done effectively without, at the same time, introducing full air-conditioning. I cannot believe this would be a practicable proposition for my home, but even if it were, discussion of this point is irrelevant, for neither my family, nor myself intend to spend all our time indoors. The care and enjoyment of our garden, not to mention outdoor walking and other exercise, would be for us virtually impossible.

Apart from the problem of aircraft noise, the development of the area round the proposed aerodrome must mean an enormous increase in traffic carried by the roads, in the area about the aerodrome. The noise and disturbance due to this would, of itself, gravely affect a home like mine, which is close to a through road.

Without wishing to claim any special privilege as a doctor, I venture to say that my work is fairly demanding, and that I require a measure of peace, privacy and quietness when I am off duty. This would clearly be denied me in my present home, should the aerodrome be sited at Cublington. My wife, of course, is at home more than I am, and would suffer proportionately more. My two sons are now students and away from home for part of the year, but, nevertheless, deserve peace and quietness when at home, whether still studying, or, later, on leave from work.

In effect, so far as my family and myself are concerned, the construction of the aerodrome at Cublington would mean that we should quite certainly be forced to move from Pitchcott, and possibly away from Aylesbury altogether. Besides the loss of a home, for which my family and I feel great affection, such a move would involve very considerable personal expense, for which, so far as I am aware, no compensation would be payable. It is not irrelevant to add that in the years we have lived at Pitchcott, we have developed friendships and relationships with our neighbours in the area, all of which would be disrupted if we were forced to move.

I have, of course, subscribed to the organisations representing the amenity interests of Buckinghamshire, and would like to express the very deep distress which my family and myself would feel, not only by the damage to our personal lives, but by the damage which may be done to some of the most pleasant countryside within fifty miles of London.

So far as my professional work is concerned, I have indicated how this would be affected by the threat to my home. This is perhaps not the place to mention the effects of the aerodrome upon my work in the hospitals, for representations on this subject will be made by the Hospital Authorities, and by the local medical profession, speaking together.

---

* See also p. 1754.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Stoke Hammond Parish Council*

1. The parish of Stoke Hammond lies entirely within the 45 to 60 NNI contours of a possible four-runway airport at Cublington (Wing). The village would be less than 2 miles from the northernmost runway and immediately below the flight-path. Aircraft would be constantly passing overhead at an altitude of about 750 ft.

2. The population of the parish is nearly five hundred. It is a lively, active community in which many organisations and clubs participate in a friendly, democratic spirit.

3. Church and chapel exert a strong influence on the village and the Sports Club enthuses the younger members with a high degree of keeness. The Women's Institute is extremely active and does much to maintain the corporate spirit of the village. Other organisations include the following:

Mothers' Union
Chapel Guild
Cubs and Brownies
Political Associations
Whist Drive

4. The village has its own C. of E. controlled primary school, built in 1967, which at present has 63 pupils and 3 teachers. This school is destined to be for the 5—9 age group and will serve other villages in the neighbourhood.

5. The occupational distribution of the population is approximately as follows:

	per cent
Agriculture	10
Railways and industrial	30
Distributive and clerical	15
Miscellaneous	25
Retired and pensioners	20
	100

6. Indigenous economic activities are provided by agriculture, one garage, one agricultural engineering work-shop, one village shop, one public house and a boat-hiring yard.

7. The village is sited about half-way between Leighton Buzzard and Bletchley. The Grand Union Canal traverses the parish whose eastern boundary is formed by the R. Ouzel. The Ouzel valley, from Leighton Buzzard to Bletchley and has been declared an area of "high landscape value" and under the Milton Keynes new city scheme has been designated for development for water-based recreation.

8. The Parish Council consists of five members as follows:

David Kessler—Chairman, publisher.

Councillor I. T. E. Gadsden, C.C.—Vice-Chairman, farmer.

Mrs. Pamela Murphy—farmer, member of Council of Association of British Dairy Farmers.

Arthur Barron—railway permanent way sub-inspector.

William Kirk—farmer.

9. At a Parish meeting held in the village hall on 25th March, 1969, attended by fifty-six electors the following resolution was passed unanimously with one abstention:

> "That this meeting views with grave concern the possibility of Cublington being selected as the site for the third London airport and requests the Parish Council to take whatever steps are necessary to voice its objections in the strongest possible terms."

10. In addition, a score of parishioners have written direct to the Secretary of the Commission, a similar number have indicated their willingness to appear at the hearing, and three dozen have requested the Parish Council to represent their individual views.

11. The correspondent of the school has written the letter attached hereto in which he voices the opposition of the school managers to the proposal.

12. The objections of the Parish Council, speaking on behalf of the village, may be summarised as follows:

(a) The noise level would make life, as it is lived today, intolerable.

(b) The consequent disruption of the social and economic life of the village will completely change its character.

(c) The loss in both human and economic terms is at present difficult to gauge but the geographical position of the village would seem to indicate that house and property values will fall disastrously. This will entail much suffering especially for elderly people approaching or beyond retiring age, many of whom have lived all their lives in the village, and who are entitled to expect peace and quite. Moreover, there would seem to be no basis for a claim for compensation.

* See also p. 1754.

Printed image digitised by the University of Southampton Library Digitisation Unit

(d) Agricultural land is also likely to fall sharply in value with no expectation of compensation while the loss of agricultural production will be serious. In this connexion, attention is drawn to the evidence presented by Mrs. Pamela Murphy of Tyrells Manor Farm in this parish.

(e) Agricultural and horticultural production is liable to suffer further damage from exhaust petrol fall-out from aircraft.

(f) Additional damage to the amenities and character of the village will be caused by the greatly increased volume of road traffic passing through.

(g) The village and surrounding country is already liable to flooding. The drainage and sewage disposal problems arising from an airport at Wing will throw an additional strain on the resources of the Ouzel valley.

Additional Evidence Submitted by the correspondent of the School

As the correspondent of the Stoke Hammond Primary School Managers, may I ask you, in your capacity as Chairman of the Parish Council, to oppose most strongly the proposal to bring the third London Airport to Wing. We are, as you will know, within the maximum noise contour as shown on the maps published, and there would be no alternative but to close our village school if this project should be so unwisely sited at Wing. This would be a very sad thing for the parents and children of Stoke Hammond but to try to teach little children with such noise and distraction going on would be quite impossible. It would mean that our children would have to be taken probably some great distance to another school which would be further expense to the taxpayer and altogether most unsatisfactory for all concerned.

And so, Mr. Chairman, may we urge you to represent us, and to do all you can to oppose this idea, and let us hope that good sense and reason can make the authority see that from our children's education alone, it is not a good site at Wing, for the "Third London Airport".

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. W. J. Bates*

With reference to your letter of 28th May 1969. Thank you for granting me leave to appear. The evidence which I would be prepared to give is as follows (i) I originated from Great Brickhill and my wife from Stoke Hammond. We left this area when I joined the Metropolitan Police in 1925. I did all my service in the locality of Heathrow Airport. After retirement from the police I served with Hawker Aircraft, Kingston-on-Thames five years and Post Office Supplies, Chessington, nine years.

After forty-five years of noise and bustle we decided to retire to our place of origin, "Stoke Hammond." I am now sixty-nine and my wife is seventy-two and we sincerely hope this village will remain as it is now nice and quiet. The noise of 'planes taking off and landing at Heathrow is something to be experienced to be understood, and something we failed to accustom ourselves to.

2. I am a keen gardener and know from experience how much the fall out from 'planes is detrimental to crops.

3. Having known this district for so many years, I would deplore any effort to commercialise it.

4. All the roads in this area are virtually country lanes, very narrow and unfit for any heavy traffic which an airport at Wing would necessitate. The bridges over the canal and River Ouzel are mostly of the hump-back variety and generally unable to carry more than one line of traffic with very low weight restrictions. I would strongly object to a main road passing through Stoke Hammond both from the noise point of view and the traffic hazards involved.

5. If the airport was built at Wing my wife's relatives would lose not only their farm but their home as well and on their behalf I would strongly protest.

6. I am of the opinion that the Foulness site should be chosen for this airport.

* See also p. 1755.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. P. J. Boyd*

I thank you for granting me leave to appear before you. I wish to make the following statement.

My family which consists of two small boys, my wife and myself have lived in Stoke Hammond for six years, our cottage which we have fifty per cent renovated ourselves is situated on the green in a most pleasant and quiet position. We moved to Stoke Hammond from the Luton area specifically to live in the peace and quiet of the countryside.

We are opposed to the siting of the airport at Wing, because it will destroy all that we have worked for, the noise will be unbearable and my wife and children will suffer most, added to this, I work in a factory at Luton and on travelling home twenty miles to get away from noise the opposite will be true.

The value of my cottage would be negligible and it would be extremely difficult if not impossible to start all over again buying a new home in the Luton area, having lost my capital which is represented by my cottage.

My parents who are retired had hoped to move to the village to be with us in their old age, but this would of course be impossible.

* See also p. 1755.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. S. T. Dancer*

Thank you for your letter and the grant of leave to appear at the hearing. I do intend to appear and wish to make the following statement.

The published maps† of the proposed site of the Third London Airport at Cublington show that one runway will reach to within one mile of my home at Church Lane, Stoke Hammond, and another will also be within one mile of Bragenham Farm, in the Parish of Soulbury, where I work and of which I am part owner. Both places are also within the 60 Noise Contour line.

I have lived either at the Farm or at Stoke Hammond all my life and value the peace and beauty of the area most highly. My wife, who formerly lived in London, shares my views and fully appreciates the peace and quiet of the countryside.

Already we have noted a drop in the valuation of the farm, and I am sure the same applies to the bungalow, Lea Garth. I do not believe that these properties will ever again approach their former values, relative to similar properties unaffected by the airport development.

During the last war, I served six years in the Royal Air Force, much of the time as a navigator on heavy bombers. I even flew from the old airfield at Wing. On demobilisation, I was thankful to be able to return to this particular part of the country, for my travels abroad had shown me that the landscape along this stretch of the River Ouzel valley was unique, and compared favourably with any of the places I had visited in the world.

The continued enjoyment of all this will be ruined by the roar of jet aircraft approaching to land, not only for me, but for thousands of local residents, and countless visitors to the countryside. In addition, my children and generations to come will be denied the pleasure of growing up in these surroundings.

I consider that the siting of the airport at Wing would not only rob me personally of capital assets I have worked hard over many years to own, but will also force many of us to endure an environment to which we are unsuited and completely opposed.

It would seem we have secured our homes and way of life against the foreigner, only to be shackled by some of our own countrymen.

---

* See also p. 1755.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. J. R. Jeffries*

I purchased the above property in 1961 in order that I could be reasonably close to my place of work (the London Gliding Club, Dunstable) whilst at the same time, enjoying the peaceful pleasure of a rural atmosphere and coupled with the potential of developing the site agriculturally in order to implement my income. I also saw that the architecturally attractive property which was built in 1800, was highly suitable as a permanent home for the raising of a family. This has subsequently taken place—my three children having been born in the house and having thereby become true locals. The two eldest currently attend the village school.

Since moving into the house, I have been promoted to the position of Manager/Chief Flying Instructor at the London Gliding Club which is not only the most highly paid gliding job in the U.K., but also the position in the gliding world which offers the most potential (siting the third London Airport at Wing excepted). In view of the fact that the above property, indeed the whole village, would be sited directly in line of the flight path of one of the proposed runways at Wing, none of the original objects for which I moved into this property could be fulfilled. I think it is no exaggeration to say that attempting to live in the property or village in such circumstances would be quite beyond the reasonable limits of human endurance.

Further, the siting of the third London Airport at Wing would mean that the controlled air space which almost certainly would surround it, would encompass the London Gliding Club at Dunstable and therefore, if not directly, certainly indirectly it would mean the closure of this Club and as a result, the position which I now hold would no longer exist. As the position is unique, both salary and workwise in the gliding movement, it would be irreplaceable and it is fair to assume that this would automatically result in a considerable drop in personal income and the cessation of a job in which I am very happy.

In short, the siting of the third London Airport at Wing would be a complete personal financial disaster; to say nothing of the personal hardships and unhappiness suffered in uprooting house, home and family and having to find another job, probably of an entirely different nature.

* See also p. 1756.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Dr. J. R. Lumb*

I retired here (Great Brickhill) after fifty years in the practice of medicine at the age of seventy-one years in 1960 in order to live a peaceful life in an exceptionally quiet rural area as I am a gardener and have no other hobby. I had a bungalow built for that purpose.

My wife is seventy-two years of age and is an invalid.

My daughter, aged thirty-nine years, divorced, lives with me and is in charge of the Occupational Therapy clinic in Bletchley. She has two sons also living here aged twelve and four years respectively. The latter suffers from asthma.

My special reasons for wishing to oppose the proposed third airport are as follows:

1. My bungalow would be sited two miles from the airport and in the middle between the two flight lanes(as shown on the map)† from the airport and so about ½ mile equidistant from the two paths, each with a noise number of fifty-five. This would affect the health of my wife and grandson aged four who are both asthmatics and liable to be made worse by noise and possible fall-out.

2. My income would be drastically affected as my daughter pays me rent for the use of her part of the bungalow. She would wish to move further away for the sake of the younger boy's health. My only other source of income, apart from small pensions, is the rent of another house, which I bought six years ago, opposite this bungalow and the letting value would be reduced. My wife would wish, if not compelled for health reasons, to move elsewhere to live and I would be forced to sell at a loss.

3. If unable to sell, gardening would become a very trying occupation and one which I should have to give up. I have just under one acre of land which would gradually become waste as I cannot afford a gardener's wages now as they have doubled since I came here.

* See also p. 1757.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. F. O. Gregg*

I thank you for granting me leave to appear before you and wish to make the following statement.

I moved to Woburn Sands nearly nine years ago intending to make the village my permanent home after having obtained an appointment with a firm which had recently opened at Bletchley. I chose Woburn Sands specifically by reason of it being a quiet and pleasant village and as such well suited for residence with a growing family. Although my residence is situated on the A50 road I had ascertained that since the opening of the M1 Motorway traffic had been small and the road could be considered to be a quiet one.

My house is my own property and has a garden of some size which I have managed to keep in good condition. I have three children two of whom are going to direct grant grammar schools in Bedford.

My own appointment entails a fair amount of hard work and long hours and I am in need of rest, peace and quiet on returning home. My children are given a considerable amount of homework and they too need peace and quiet if they are to work effectively.

I feel that the inevitably serious noise arising from planes passing continuously and virtually overhead would make adequate rest, sleep and, as concerns my children, work quite impossible and would therefore force us to leave our present home. I should like to add that my house is approximately eighty years old and due to absence of cavity walls and the somewhat old fashioned design of the windows it would be virtually impossible for any effective sound-proofing to be carried out. This difficulty appears, by the way, to arise in quite a number of properties in my area.

I note from the published map† that the flight path to one of the two runways passes directly over the Woburn Sands—Bletchley road, which I use daily, and therefore also between high ground on one side and a proposed 300 ft. high brickworks chimney on the other. I feel that this involves a serious crash hazard along the road and I am not willing to put up with such daily risk.

Quite apart from the fact that I consider it a serious hardship to have to give up a home on which much care has been lavished I would stand to incur serious financial loss in that house prices will deteriorate if an airport is constructed. Woburn Sands will suffer all disadvantages but is too far from the airport to be of interest to any personnel working there. As far as I know no compensation for such unwarranted loss has ever been contemplated.

I hope that the arguments set out in this letter will be of interest and will contribute to a decision to the effect that no major airport in this area could be warranted.

---

* See also p. 1757.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Weedon Parish Anti-Airport Committee*

1. **Constitution of the Committee**

These objections are put forward on behalf of a committee which was formed and elected at the Annual Weedon Parish Meeting on the 18th March 1969, and comprises three members of the Weedon Parish Council, including the Chairman, and six residents of the parish who are not members of the Parish Council, and one additional member has since been co-opted.

2. **The Objects of the Committee are:**

(a) To object in the strongest possible terms on behalf of the residents of the parish of Weedon to the siting of the Third London Airport at Cublington.

(b) To collect the views of the parish on this subject.

(c) To decide how best these views can be represented to the Roskill Commission.

(d) To arrange for the presentation of the objections on behalf of the parish, either personally or in writing.

(e) To support Buckinghamshire County Council and all other official and unofficial objectors to the fullest extent so far as their objections affect the residents of Weedon.

In presenting these objections it is the intention of the Committee to illustrate the effect of the coming of a large airport to the enjoyment of life by the individuals and the community of the parish.

It does not intend to deal with general and technical aspects which will be presented by other authorities and bodies.

It is encouraging individual residents to appear before the Commission or to send written representations.

3. **Geographical Situation**

The parish of Weedon lies approximately three miles due north of Aylesbury and is situated on the east side of the main Aylesbury to Buckingham A413 road. The parish comprises the village itself and surrounding farmland extending to a total of 1,796 acres. It has the advantage of being off the main road with little through traffic but at the same time enjoying good communications with neighbouring areas.

According to the noise and number index published by the Roskill Commission with the *Site Information* for Stage II† the greater part of the parish and the whole of the residential area would lie between the fifty and sixty noise contour lines for a four runway airport. It is estimated that part of the residential area would be within 1,500 yards from one of the runways in the case of a four runway airport and almost directly under the flight-path of the eastern-most runway.

4. **Population and Employment**

The population at the time of the last census was 312 and it is now estimated to be 360. A number of the adult population work within the village on agricultural and other pursuits, but the bulk of the working population works in Aylesbury and some commute to and from London. There are 126 separate households in the parish and of these 33 are occupied by retired persons or retired couples, some with younger members of their family. Some of the population are natives of the parish who have spent their whole lives there, and others have chosen to come and live in the parish because of its unspoilt rural character, its beautiful views and surroundings, its accessibility and freedom from continuous through traffic.

At present children in the village under the age of eleven go to primary school in the neighbouring village of Hardwick and those over eleven years of age go to school in Aylesbury. The Local Education Authority was proposing to build a new school at Whitchurch to replace the old school building at Hardwick but the Committee understands that if the airport comes to Cublington there will be no question of building a new school at Whitchurch. This would involve all children from the village being taken to Aylesbury schools from the age of five. The Committee considers that this would destroy a valuable link for the children with village life.

5. **Survey of Parish Opinion**

The Committee arranged to take a survey of the opinion of the parish by delivering to every household a written questionnaire in the form of the attached specimen. Set out below is a summary of the main opinions revealed by replies received.

Questionnaires distributed	126
Questionnaires answered	118
Number of questionnaires showing householder in favour of the airport at Cublington	1
Number of questionnaires showing householders against the airport at	

* See also p. 1757.

† Reproduced at p. 1001.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cublington	117
Number of householders undecided	4
No return	4

Of the houses in the village seventy are owner occupied, forty-four are rented and five are tied houses.

The main reasons given by householders for objecting to the airport were:

Excessive noise	111
Interference with privacy	89
Increase of ground traffic ..	102
Interference with music and T.V. ..	83
Interference with health	88
Complete change of character of the area	20
Reduction in value of property ..	17
Kerosene contamination	11

Other grounds included need to change job, affect on pets, danger from flying accidents, damage by vibration, lack of sleep, harm to wildlife, disturbance to neighbouring hospitals at Aylesbury and the complete abandonment of all plans for the area.

6. **Charity Land**

Charity land in the parish of Weedon is likely to be affected if the Third London Airport is situated at Cublington. The Charities concerned are dated approximately 1560, 1790, and 1903.

There are three parcels of land totalling 55 acres (44 arable and 11 pasture), all in the north-east part of the parish. These are all within approximately one mile of the parish of Cublington and are well within the 50 NNI and produce an annual income of £270.0.0d.

As this Charity Land is so near to Cublington and also in the main take-off path from the suggested Airport it seems reasonable to assume that kerosene fall-out from low-flying aircraft would so injuriously affect crops that this land would lose much of its agricultural value.

The result would be that beneficiaries of the Charities would lose some of that which has been their rightful inheritance for many centuries.

7. **Summary of Objections**

The objections of this Committee to the siting of the airport are summarised as follows:

(a) For a four runway airport the parish would be within the "annoying" (50 to 60 NNI) noise contour. When the airport was in full swing such a degree of noise in an area situated as it is on the south-west side of the runways would, it is considered, make life in this parish quite intolerable from noise alone and it would have to be abandoned as a residential area.

(b) It is anticipated that the ground communications between the airport and other main roads and centres of communication would take up large areas of the parish and what is at present open country would be covered in concrete.

(c) The character of the village and parish as a quiet residential area would be completely and utterly changed and as a residential area would eventually cease to exist. This aspect is very disturbing to those residents who have recently come to the parish following the publication by the Buckinghamshire County Council that this village, being one of the few unspoilt villages in the neighbourhood of Aylesbury, was to remain very largely in its existing state as regards development.

(d) The parish is not within the area of the airport itself so that property in the parish would not be purchased and paid for at market value and although dwellinghouses here would become uninhabitable and unsaleable there would be no compensation for the very serious depreciation in values which would result.

(e) The census taken by this Committee as revealed above makes it clear that there is an overwhelming opinion against the proposed siting of the airport at Cublington and that it would be most unwelcome for the reasons given.

Printed image digitised by the University of Southampton Library Digitisation Unit

Addendum: Written Questionnaire

WEEDON PARISH ANTI-AIRPORT COMMITTEE

It would be appreciated if all questions are answered as completely as possible.

1. NAME OF HOUSEHOLDER
2. ADDRESS
3. NUMBER OF OCCUPANTS (include children) | NAME | AGE (if under 21) | OCCUPATION (school)
4. Are you opposed to an airport at Cublington? Yes/No. (If No, give reasons in 9 below).
5. Do you own your own house?
   Do you rent your house?
6. Tick the principal ways in which you consider the airport could effect you personally in Weedon:
   - ☐ Noise nuisance
   - ☐ Lack of privacy
   - ☐ Increase of traffic
   - ☐ TV or music
   - ☐ Describe any other ways:
   - ☐ Health
   - ☐ Change of job necessary
   - ☐ Pets
   - ☐ No effect at all
7. Will you consider moving from the parish if the Airport comes? Yes/No/Uncertain.
8. List your main objections/reasons in favour/ of the proposed Airport where different from 6 above:

We thank you for the support you have given the Committee by completing this questionnaire. It will provide valuable facts for the case we will be presenting to the Roskill Commission on behalf of Weedon.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. R. W. Chiddick*

With reference to your letter dated 28th May 1969, I confirm that I wish to appear in person at the Cublington local hearing, and that my opposition to the siting of the proposed Third London Airport at Cublington is based on the following grounds:

1. I moved to my present house in 1964 from Epsom in Surrey, in order to get away from an urban area which was becoming increasingly affected by noise from aircraft using Heathrow airport; also to acquire an old cottage which could be modernised. After six months search and inspecting many properties, I found and purchased outright my present cottage which is situated in a quiet cul-de-sac overlooking the Vale of Aylesbury and approximately four miles from my place of employment. The cottage is one of a group on Schedule III of the List of Buildings of Architectural or Historic Interest under the Town and Country Planning Acts.

2. The Aylesbury Rural District Council has approved a maximum discretionary grant for improvement, and I have financed this and other improvements including modern drainage, plumbing and central heating, and my wife and I have spent the greater part of our spare time working in the house and garden.

3. If the airport is constructed at Cublington, the situation of my property so close to the perimeter of the airport and on the 55 NNI contour, would make it impossible to continue living here, and for the same reasons it is highly improbable that it would be possible to sell the property either at all or for a sum which would enable me to acquire a similar property elsewhere. Indeed, the character of the property combined with its pleasant surroundings make it virtually certain that a comparable property could not be found.

4. I am employed as a Senior Assistant Quantity Surveyor by the Bucks. County Council at the County Offices, Aylesbury, and as I am fifty-five years of age I am certain that I could not obtain another appointment elsewhere at a similar salary. My wife is employed in part-time clerical and library work at the Quarrendon County Secondary School, Aylesbury, and would be unlikely to obtain similar employment elsewhere as opportunities are very limited.

5. My son and daughter are both married, and from time to time they and their families visit us and stay for varying periods. Such visits would be precluded if the airport came, particularly as my daughter has young children.

6. The nature of my work, which requires a high degree of concentration, makes it essential for me to be able to relax and rest in quiet and congenial surroundings, which the coming of an airport would certainly destroy, particularly at night time. My wife is very sensitive to noise of any kind and would be unable to bear continuous aircraft noise at the anticipated level.

7. My wife and I wish to go on living where we are, and for the reasons stated in 3 and 4 above an enforced removal would cause financial embarrassment amounting to disaster. My property, which is my major asset and which represents thirty-seven years of work will become valueless, and at my age it would be impossible to acquire another property on a mortgage basis. I would therefore be forced to seek rented accommodation.

8. If it were possible to find such accommodation, it would clearly have to be much further from my present place of employment, and this would entail additional time and money spent in travelling.

9. In my opinion, the siting of the proposed Third London Airport at Cublington would completely destroy the whole character of the surrounding area and would impose severe and inequitable hardship on all those people who would be forced to leave their homes.

---

* See also p. 1757.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. A. F. Cornock*

I am the owner-occupier of the above house. My husband, Mr. A. F. Cornock (aged sixty-six) and I (aged forty-eight) moved to Weedon in 1963. At that time, the flat in which we lived in Harrow was bought by a finance company and we were forced to move—the second time that this had happened. We decided that to prevent further unwelcome moves, we must buy a house and in anticipation of my husband's retirement, we decided to move to the country. We have both always wished to live in the country, since neither of us is happy in a town and, in my husband's case, insomnia had made a quiet neighbourhood increasingly essential. Weedon was one of the few suitable places near enough to a good railway service to enable us to work in Wembley and to visit my parents with comparative ease in Harrow, and in which house prices were within our means. We were fortunate enough to find a 17th Century cottage in idyllic surroundings; for me at any rate, a life-long wish.

It is clear that noise conditions in Weedon, in the event of a third airport being sited at Cublington, would be intolerable to both of us and we should be forced to move. Although both of us have terminated full-time employment, we are both still employed in work of considerable use to the community: work which can be continued only if somewhere as suitable as Weedon can be found. The difficulty in finding such a home six years ago suggests that this will not be easy.

The work to which I refer is as follows.

My husband was formerly Manager of the Patent Department of The General Electric Co. Ltd. at Wembley, and was then their Senior Patent Consultant from 1960 to 1967. He is still the consultant to that Patent Department since his retirement and needs to visit both Wembley and London frequently (between two and three times a week, on average). Since his retirement, he has also done mathematical research (on computation, and on the flow of viscous liquids).

I am employed by The General Electric Co. Ltd. at their Hirst Research Centre at Wembley as acting head of their Statistics Department (on a part-time basis), they having been unable to find anyone to replace me since my resignation in 1967. I am a past Vice-President of the Royal Statistical Society, a past Chairman of the Institute of Statisticians, and, from 1966 to the present time, have been Honorary Treasurer of the International Association for Statistics in the Physical Sciences. I have lecturing commitments in London because of the shortage of lecturers in industrial statistics. Furthermore, I am Chairman of a committee to study the teaching of probability and statistics in technical colleges and colleges of technology, set up by the Royal Statistical Society and the Institute of Statisticians. All of these activities require quietness for concentration, and ease of travel to London.

In addition to these material drawbacks arising from the presence of a modern airport, there are other perhaps more vital considerations. It does not seem to me unreasonable that we should expect to have some security of tenure in civilised surroundings or else life is not worth living. Only the most important matters should override this requirement. In my opinion the provision of facilities for enabling a relatively few people to shorten their air journeys by a minimal amount is not sufficient justification for upsetting the whole of the daily lives of many tens of thousands of householders.

* See also p. 1758.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. C. Fraser*

I refer to the grant of leave to appear at the local hearing at Aylesbury.

I fear that I am no scribe and have endeavoured to compile a statement, but with little success, my feelings are so difficult to put in writing, but come more easily in conversation.

As shortly as possible I have served my time in the regular Royal Air Force before and during the war, I have had my own motor business for twenty years and have now retired to a small country Pub. All this effort will be thrown to the four winds if the airport should be built here.

I trust I shall have the opportunity to express myself verbally before the Inspector.

---

* See also p. 1758.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. H. Hague

With reference to your letter dated 28th May '69 regarding the above hearing, I wish to confirm that I want to appear in person to amplify if necessary my objections to the siting of the airport at Wing.

I have only recently moved to Weedon, in November of 1968. I had spent the previous fourteen months searching for a suitable house, at considerable expense and effort. I finally found what I considered to be a satisfactory bungalow at Weedon.

The most important attribute being its location in a very quiet area, this being essential as my wife is a chronic migraine sufferer and must have absolute quiet during her frequent attacks. Some other attractions in Weedon are its close proximity to my work and its elevated rural position.

If the proposed new airport is built at Wing, my property would be within the fifty Noise and Number Index contour. The house would clearly then be untenable for my wife and I.

I can confidently say untenable as I have extensive personal experience of living in the proximity of aerodromes during the past seven years, including London Airport and several Air Force aerodromes including Benson, Thorney Island and Coltishall, where the air traffic density was comparatively very light, but I found even at these lower noise levels at much lower recurrence rates then envisaged here, the noise quite intolerable, and in three instances I was forced to find alternative accommodation.

---

* See also p. 1758.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. M. H. J. Radcliffe*

I would like to thank the Commission for allowing me to submit evidence. I am not in favour of the siting of the third London Airport at Wing for the reasons listed below:

1. **As a local resident**

The area is a blend of rural activity and light industry and is the first of its type this side of London. The character of the area will be entirely ruined by the proposed airport and a very large number of people will be forced to change their way of life and even their jobs.

A number of villages, including Weedon in which I live, will be entirely destroyed by the airport and will become uninhabitable either through new roads and rail lines or noise and kerosene vapour.

This will result in a virtual complete loss to the residents of the value of their property without any compensation, and it will be impossible to find similar residences anywhere else in the locality, even assuming one had the wherewithal.

2. **As a Manager of a local Company:**

Lancer Boss Group, Leighton Buzzard

Lancer Boss, for whom I work, are a relatively young, fast-growing Company, employing approximately 700 people and exporting fifty per cent of their output of fork lift trucks. Over the last few years substantial sums of money have been spent on designing new models to tackle the world market, which has already resulted in a £52m. contract for the American market over the next ten years.

Our future world growth is dependent upon supplying competitive, up-to-date trucks when required, and this will only be achieved provided we remain competitive. There is already in the area a substantial shortage of labour, and whilst we could consider the re-siting of the factory, it would be uneconomic and time-consuming to do it if we can possibly avoid it, and if we did so we would certainly lose out in the world market during this period.

The initial construction activities for the airport and Milton Keynes will create, certainly in the early years, a net deficit of labour available in the area, whether it be skilled, unskilled, clerical, administrative or technical.

Whilst thereafter it could be argued that there will be more labour available, this is unlikely to be the case, because people will not be encouraged to move to work in an area which is dominated by the noise of Jumbo Jets.

3. **As a National**

I believe we are missing one of the greatest, and in fact sole, opportunity, at least for the next half century, to offer competitive facilities to Rotterdam which will become the largest transport centre in Europe. The siting of a major international airport capable of handling Jumbo Jets and closely linked to a port the size of London offers us a chance to operate the most modern, international, intermodal transport system in the world.

Thus Foulness is perfectly sited to provide a really first-class intermodal transport conurbation with land, sea and air links both for U.K. and the Continent, whilst at the same time using existing shipping facilities and taking the minimum of land from agriculture.

4. **Communications**

The existing communications are quite inadequate for any real expansion and any extra motorway or major roads will not substantially help the build-up of local traffic even if they overcome some of the direct airport traffic.

The rail communications to London from either Aylesbury or Leighton Buzzard within one hour each side of the rush hour are packed full to the extent of first-class carriages having to be used by third-class passengers from Harrow to Euston on the Bletchley line or from Amersham to Marylebone on the Aylesbury line.

The existing local roads are only just able to take present local and through traffic.

The average travelling time from Weedon to the centre of Leighton Buzzard, a distance of ten miles, is already approximately twenty-five minutes morning and evening.

* See also p. 1758.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. D. F. Ryder Richardson*

I thank you for your letter of the 28th May 1969 granting me leave to express my views on the possible siting of London's third airport at Cublington.

I am entirely in opposition to the use of this site for the reasons I now give.

I am twenty-five years of age, married with two children aged two years and one month respectively. I was born in Whitchurch and spent the first twenty-two years of my life in that village. When I married I moved three miles to my present address and now live in the most peaceful surroundings in one of the few unspoilt villages in North Bucks and in a house (of which I am the owner) which dates back to the middle of the 17th Century.

I live in the country by choice since I feel that this is the only suitable place to bring up a family with the freedom and peace that is afforded by a village such as Weedon.

An Airport sited at Cublington, although not destroying my house, would force me to move away from the area since the noise of air traffic in the 60 NNI contour (within which my house is situated) will be, I am assured, completely unbearable. Even the disturbance caused by the construction of the airport would to my mind ruin the charm of the area.

I have discussed with my wife the possibility of moving and we are both appalled by the idea but feel that if we are forced to leave Buckinghamshire we should settle in Eire since our future in this country is diminishing daily and the siting of an airport on our doorstep would be the final disallusionment. This would mean moving away from my widowed mother, who lives in Whitchurch, and both she and her grandchildren would suffer from such a separation.

I freely admit to being lucky enough to be able to afford such a move despite the obvious financial loss that I shall suffer since I shall be unable to find a buyer for a house (at present worth £14,000) situated within the 60 NNI contour, and as far as can be ascertained no compensation would be given me to cover this loss. Furthermore I recently purchased a building site in the same village (at a cost of £4,500) where I intended to build a home into which my family and myself were to move. The possibility of a nearby airport has, naturally, put a stop to any development there and instead I have had to make further financial outlays on my present house to accommodate my family.

I am the Managing Director of a company which purchases derelict houses and restores or converts them into homes of character. Our present restoration is taking place at Soulbury ($\frac{1}{4}$ mile from the airport site). The house is due for completion on the 1st September 1969. Prior to the airport threat I had a firm offer for its purchase; naturally this has been withdrawn because of the uncertainty of the future of the area and no further offers have been forthcoming. In view of this I can now only envisage a financial loss on the property. In addition to this, the Company is having great difficulty in finding any suitable conversion subjects and trading is at a near standstill.

The uncertainty of the plans for this beautiful part of rural England is causing considerable hardships and should the site at Cublington be chosen for the airport these would be greatly intensified. To move from the area would put an end to what is, at present, a very pleasant future for my family and will also destroy an affinity with the area and its inhabitants that I have gained during the twenty-five years of my life.

I can assure you that although this letter is written in the first person, the feelings expressed are those of the majority in this part of the county and I trust that when making the final choice for the site of the airport you will take into consideration the points I have made.

I am appealing to you to spare my family's home and future and if I can clarify any points I shall be only too pleased to do so at the Hearing in Aylesbury at which I intend to be present.

---

* See also p. 1759.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. D. G. M. Smart*

Regarding the proposed new London Airport at Wing.

I thank you for your permission to appear at the hearing as the proposal to put the new airport in Bucks will certainly affect my whole life and that of my family.

I believe that Weedon is within the fifty noise level which is described as "intolerable" although being outside the airport perimeter we will not qualify for full compensation apart from possibly some help to soundproof our house.

We have lived here for eleven years and during that time have spent over eight thousand pounds to make our house and land into an exceptionally pleasant little country estate.

My wife breeds dogs. She also breeds and rides horses. Both of these pursuits will be impossible if the airport appears. Our garden on which much money and loving care have been expended will no longer be habitable.

The house was originally bought because we so much liked the quiet and charm of Weedon.

I work in Aylesbury and find it most important for the good of my work (and health) to be able to retire to a quiet country village in the evenings.

I hope that all members of your commission before coming to a decision about this airport will all visit Weedon to appreciate the quiet old world charm—enjoyed by so many people—which they are planning to destroy. I shall be delighted to show them round my garden of which we are so proud. Incidentally we are opening it this weekend to the public for the first time and would be heartbroken to see all our work on it wasted under a pall of plane smoke and fuel.

If the airport must come here then I do not quite know what we shall do as my work is in Aylesbury and to find a similar garden and field away from the noise of Wing would mean moving far away out of the district with increased travelling costs plus the enormous costs of such a move.

In the event of this site being chosen I hope that full and proper compensation will be allowed to all such as myself who will suffer and lose so much.

I look forward to being able to put all these points and more again at the hearing.

---

* See also p. 1759.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. K. Walker*

My wife and I are both Trained Nurses, fifty-two years of age, and by the time we retire will have completed about seventy-five years of public service in the hospitals of this country.

It is our wish to settle here in this peaceful village when we retire, having developed our friendships within and around the village.

We moved from a Nottinghamshire mining area for two main reasons:

(a) My wife and two young children were affected by atmospheric pollution from nearby coal tips.

(b) We needed to be near to Bedford where my wife's parents and her handicapped sister were requiring help and attention. This need has increased over the years as I am sure you will understand.

We took up residence in the village in 1950.

Our two sons and daughter have enjoyed their life in this community and have profited in their health and learning. My youngest son is just sitting his examinations at the local Grammar School.

My wife and I have decided to give a home to her mother or sister, should there be a serious breakdown in her relatives' situation in Bedford. We are able to make regular visits there as the journey by road is only 45 minutes.

A good proportion of the people who live in the vilage and its environs are, like ourselves, engaged in public services and must find this situation a quiet backwater away from the demands of an exacting professional service.

We enjoy quite a reputation in Buckinghamshire as an attractive village and many people escape into this tranquil oasis to recharge themselves with a fresh appreciation of the natural beauty of the countryside, fresh air and palatable beer and enjoy life at a more rational tempo.

I believe that it was no accident which brought President Benes to this area in the last war, or Ainsworth the founder of "Punch" and his contemporaries should form a poet's circle in this village. We have had a surfeit of high ranking Service Officers who have retired here—what better judges of peace can one call upon than the Generals?

Wild life can still survive the generations of huntsmen from Royalty down to Dorian Williams and we can boast of running hare and fox, waterhen and pheasant and the nightingale has nested here in recent times. Ross of Arctic fame lay up in the next village between voyages and explorer Fawcett claims Aston Abbotts. Perhaps we may furnish other men of quality who will write their names in fame? Every green acre is a precious Heritage to protect against the advancing concrete spoilation which is publicised as necessary for our economic survival.

There is always a paucity of information put out by the planners on the total ecology of the human condition. Whenever will a planning commission include such experts as anthropologists, sociologists, psychiatrists, doctors, and nurses?

The enormity of the mental, spiritual and physical damage which would be created on the people by any government implementing the proposed airport plan is beyond the comprehension in any terms of any economic expert.

It may be said that I may not live to see the completion of the project, that is more than likely.

I protest in the name of future generations that we must preserve all we can of the countryside and this area in particular.

You will of course expect me to suggest an alternative site for an airport. The same principles apply. It must be away from any area where a community live in the same sort of situation as myself.

We could build an airport out at sea; this would offer a difficult technical problem for planners and engineers and scientists to solve. It would not directly affect the people in their environment, it would provide employment for those in need, it might provide for a prototype seaborn town to absorb the rise in world population. The Dutch are experts in sea reclamation schemes. The cost? less than the channel tunnel.

If the channel tunnel scheme goes through, will we need a third airport?

I do not intend to suggest the use of one of our offshore islands or I might be accused of political affiliations. The Swedes I believe utilize such an island as their main airport.

Current air traffic

Apart from the local small airports and gliding clubs, there has been a growing increase in helicopter ambulance services bringing seriously injured patients to Stoke Mandeville Hospital. Any delay in this traffic could be fatal to the patient. Will the Airport Authority be prepared to guarantee that there will be no hold-up or re-routing of this vital service to the community—I am entitled to know this answer as it affects my work.

* See also p. 1759.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Whitchurch Parish Council*

Objections of the Parish Council to the proposed siting of the Third London Airport at Wing are as follows:

1. It would completely destroy the peaceful rural life that we now enjoy because:

(a) unbearable noise as indicated by the noise maps issued for the proposed project,

(b) pollution of the atmosphere, particularly as we shall be situated at the take off end of the runway.

(c) Increase in population and traffic associated with the airport.

(d) There are five farms in the Parish, four of which are owner occupied and in some cases have been in the same family for two to three generations. These families and a large proportion of the inhabitants who own their own homes and have done so for many generations will lose their inheritance.

(e) The social and cultural life of the village, we have a School, two Churches, Women's Institute, Youth Club, Darby and Joan Club and these would find it very difficult to function at all, and passing the time of day in the village street would be a thing of the past, and the friendly community spirit would disappear.

(f) A house to house canvas showed that ninety per cent of the population were in opposition to the siting of the airport at Wing.

* See also p. 1760.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. R. S. Ball*

Thank you for your letter dated 28th May granting leave for me to appear before the commission.

I wish to make the following statement:

An airport at Cublington would ruin this area, it would be impossible to live here.

I was born in the area thirty-one years ago and moved to the above, from Oving, with my wife, in 1964, since when we have been blessed with a daughter who is now two years old.

We want to go on living here, that is what we bought the house for, to live in, not to be blasted! out of our home into which we have sunk all of our capital, carrying out improvements for additional comfort and convenience.

It would be a tremendous hardship to move if an airport comes. For a start the value of our home would have been halved at least, how could we then raise another mortgage to re-house my family, it was nearly impossible six years ago, and I don't think the commission needs me to tell them how much more difficult it has become since.

If we are forced to move for peace and quiet it would be most inconvenient as we would leave relatives behind who in a few years time will reach an age when they will be looking toward us for a helping hand.

I am but one of many who wish to be able to go on living in this area, as we now know it, and we will go on hoping and praying, that the authorities and powers that be will see to it that reason and sanity will prevail and we will be able to go on doing, just that.

Thank you very much once again for giving me the opportunity to state my objections.

---

* See also p. 1760.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. I. Beckett and Mrs. R. A. Beckett*

I thank you for granting leave to appear at the Cublington local hearing and I wish to make the following statement:

My husband and I come from very old Bucks families, both of which have their roots in The Vale of Aylesbury.

My own has lived in Whitchurch for some three centuries and probably longer if the records were searched. My mother, who resides with us, was herself born in the village seventy-four years ago and, after travelling the World as the wife of a serving soldier, was only too delighted to return to Whitchurch to live out her remaining years with those members of her family who are still here.

I myself came to Whitchurch from London, where we were then living, to reside with an aunt on the outbreak of war and have stayed here as a resident in the village I have known and loved so well as a child.

I married at the end of the war when my now husband returned from service in the Far East and have occupied two rented properties in the village, before buying my present home.

My husband and me chose to invest our limited resources in this cottage and have since spent a considerable amount of time and labour as well as a good deal more money in making it what it is today—a cottage we are very proud of and in which we hoped to spend the rest of our lives.

To us the surrounding countryside and the whole way of village life has a great attraction. From our garden we can see The Vale of Aylesbury and can enjoy the things which to us are most pleasant, bird and animal life so far undisturbed by any extraneous commotion.

My husband, who is now fifty, is employed at Waddesdon and would not wish to change his job at this stage, as he would have to if the airfield came to Wing, because the noise over our cottage, which is some 800 yards from the end of the proposed runway would make it quite impossible to us to continue living here.

There is also the less publicised annoyance which is sometimes worse than noise, the kerosene fall out from engines on maximum lift, as they would be over our cottage, with its coating of oil over everything and also the reek of it.

Our present lovely garden would lose its greenery and all the wild life would vanish, no more sitting outside on a warm summer evening and enjoying what we have always thought to be our heritage. Instead we would always have to stay indoors,with windows and doors tightly shut to avoid being covered in filth and smuts and to escape the unbearable and continual noise. This lovely pink cottage and its garden would soon be a very sorry spectacle indeed. What is now a suitable home for us and which represents our stake in this country would certainly have no appeal to anyone else under such conditions. We should be reduced to a very low state financially as we could never hope to recover what we have put into our house. What we could get to buy another house in an area far away from here would be sheer conjecture as obviously everyone else who could do so would be moving out as well.

We have no wish to leave our home and, apart from the usual considerations, it seems inconceivable in this day and age that anyone can even suggest building an airport inland. When one considers the appalling noise and the safety of residents, it surely must be obvious that all future airfields should be built on shore-lines. The stacking of incoming 'craft can be more easily handled away from built up areas and the safety of passengers is also increased in the event of a forced landing as has been shown when 'planes have landed on water. Present noise levels would also point to difficulties in taking off fully laden jumbo jets from inland sites.

One other thing which causes us great concern is the taking away of prime agricultural land from a country which can only grow half its own food in a world which is slowly committing suicide by overpopulation and an increasing food shortage.

In your letter you do suggest that it is not necessary for us to appear at the hearing. Since we feel that our whole way of life is being challenged and everything we hold most dear in great danger we must be present to do everything we can to help our cause.

---

* See also p. 1760.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. C. Brown*

I thank you for the grant of leave to appear at the Local Hearing on the above site.

I wish to make the following statement.

Although I was born in Oxfordshire, being the eldest of a family of eleven, I had to spend most of my school holidays away, and these I spent with my uncles at Hardwick and Blackgrove, Quainton. I have getting on for 100 relatives directly descended from my great grandfather, most of whom live in Buckinghamshire or Oxfordshire close to the mid Bucks area. In the two counties we farm and own nine farms and rent one.

I married my wife in September, 1921, and we have farmed until October 1967 all that time and lived in outlying farms. We have lived at two, but since 1929 I farmed and lived at Burston, near Aston Abbots.

I always promised my wife that as we approached seventy I would build her a thoroughly up to date bungalow, and this I have done. I am now nearly seventy-five and my wife seventy-four. Being unable to buy a building site on Burston Farm, I chose this site at Whitchurch, because it is quiet on a bottle necked road and overlooks much of the famous Vale of Aylesbury. My wife and I built this expensive and up to date bungalow after buying the building plot. It cost a lot of money, and, owing to our age, we could not repeat the operation or pay for it, although if the airport came, I should say that we should have to reluctantly move, owing to health reasons.

My wife and I live alone, but this is the headquarters for all our relations; hence the size of the bungalow and nearly always someone is here. We have no children, but brought up one boy and two girls whose parents (the mother was my wife's sister) died when they were under seven years old; this is their ancestral home.

The bungalow has cost over £15,000 and now I am faced with large capital gains tax charges over raising the money.

I spent twenty-seven active years with N.F.U. Committees and only had to retire in 1962 owing to war wounds, when I had to give something up. I was Aylesbury Branch Chairman and County Branch Chairman, and, amongst other numerous committees over several of which I became Chairman or Vice-Chairman at county level, I served for twenty-seven years as N.F.U. representative on the County Juvenile Employment Committee.

All these various connections have made our life a very happy one to look back on, and I should hate to move.

I do not propose to attend the preliminary meeting in London on the 16th June, but I do wish to appear in person at the Hearing. I shall, however, not be available from 28th July to 2nd August inclusive, and 18th August to 22nd August inclusive.

P.S. I would welcome a visit to my bungalow to verify all my statements.

* See also p. 1760.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. L. Coates*

I write with reference to your letter of 28th May and thank you for granting me permission to appear at the above hearing which is to be held at Aylesbury from 14th July onwards.

As requested, I enclose herewith a Statement setting out a number of points relating to my own house, my family and my farming business which I should like to bring to the attention of your Commission.

If it can be arranged, I should appreciate the opportunity of appearing in person in order to testify to this Statement and to amplify it where necessary.

Statement

1. I am sixty years old and have lived in Whitchurch for the last seven years and in Mid-Buckinghamshire for over thirty years.

2. My house at Whitchurch, dating from the Sixteenth Century, incorporates in its grounds the site and most of the Norman fortification known as Bolebec Castle.

3. After the last war I started to found a farming business because I was convinced that it was a sound policy for England to have a flourishing agriculture as well as flourishing industries. As a Director of Coates Brothers & Co. Ltd., world-wide manufacturers of inks for printing and other surface coating products, I already had interests in manufacturing industry and am still the Deputy Chairman.

4. I chose to farm in the Aylesbury district of Mid-Bucks because it was a famous livestock farming area and I believed that England was predominately suited to livestock farming. I also wished to be within convenient travelling distance from London, owing to my manufacturing interests and responsibilities. I chose the area North and West of Aylesbury because it was scheduled under the Town and Country planning procedures as a white area reserved for agriculture.

5. My farming business, operated through a Company structure, has steadily expanded and now involves 800 acres, an investment approaching £250,000, and a gross annual production of £40,000. The main products include milk, beef, sheep and corn but poultry, eggs and market garden crops are also produced. The total Estate comprises seven farm houses and nine cottages and all the staff are resident.

6. My elder son, aged twenty-seven, is a qualified Land Agent who will take over the management of the land from me, and the husband of my elder daughter, who gained a Doctorate of biological research at Rothampstead, is aged thirty-three and now carries a main responsibility for the success of the farming activities.

7. Without interruption from airport development, I am confident that the younger generation have the knowledge and resources and will to build up this farming enterprise to something still larger and more important.

8. As 500 acres of the land at Pitchcott and Quainton would be in the direct line of flight and only 2 or 3 miles from the runways if an airport were sited at Cublington, it is doubtful whether it would be possible to continue a livestock farming enterprise in the face of such a handicap. Apart from the disturbance to the animals, it is not likely that the best stockman could be engaged to live under conditions of continued disturbance from noise. In any event, I, myself, should be forced to leave as my own house at Whitchurch would be even nearer to the runways.

9. Although any inland site for a modern gigantic airport will of necessity cause inconvenience to inhabitants, it must be recognised that more disturbance to rural life and agriculture will be caused in a livestock farming district than in one devoted to growing cereals and other crops. It is essential for stockmen to live where their stock live.

10. The cost to myself and family and farming organisation if an airport were to be sited at Cublington would be likely to involve a sum running into tens of thousands of pounds and it may be that the younger generation will decide to start up overseas rather than trust again that any area scheduled for farming will not even so be taken for development.

---

* See also p. 1761.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. D. Foulger*

May I thank you for the grant to appear at the hearing.

I wish to make the following statement.

1. My husband has lived in this village all his life and his ancestors for hundreds of years.

2. We have a large number of relatives living in Whitchurch and Weedon who we would not like to see scattered to other parts of the country.

3. I myself came to live in this village fifteen years ago when I got married, having previously nursed in Aylesbury.

4. My house and garden is very precious to both my husband and myself, as the largest part has been built and modernised with our own hands, and, as most of the inside walls were originally outside ones, it is unique in the fact it has nine inch brick walls throughout (and is also built on rock). We would lose much more than money could buy if we had to move, we should also loose all our hopes for a future of peace and quiet in one of the most beautiful settings anyone could wish to have, as we overlook the ancient and historical Castle Hill and Moat, and the Vale of Aylesbury.

5. My husband and I are joint owner-occupiers of our house.

6. We are both in our early forties but at an awkward age for my husband to readjust himself to different types of employment.

7. We have five children between the ages of four and thirteen years all living here with us.

8. My husband is a Dairyman with his own business. I help him by being his assistant and book-keeper. All our children go to Whitchurch or Aylesbury Schools.

9. I wish to go on living in Whitchurch for the rest of my life. I would be very sorry to have to leave behind what my husband and I have worked so hard to attain within the last fifteen years. It would cause me considerable hardship to move away from here.

10. If my house had to be taken over to accommodate the airport I should never think of moving to any other part of *this* country because in my opinion "Free England" would have gone, and I should have a feeling of insecurity wherever I lived on her soil.

11. If my house is not on the site, but would be affected by noise, I could not go on living here, as my middle child suffers from ear trouble and is severely affected by noise. We also would not be able to stand the strain of constant air polution and noise. I could not say where we could move to, as moving was never in our thoughts.

12. We also own two cottages in Oving Road and 1¼ acres of smallholding in Bushmead Road, which we hoped would be used for the benefit of our children in years to come, but which would surely go, even though the cottages come under the Ancient and Historical Buildings Act.

I should have thought human lives and hopes, consecrated land, ancient and historical buildings, National Trust properties, reservoirs and good farm land far outweighed £.s.d. especially after reading the enclosed in today's *Daily Express*. "A message from the Queen. Young people have not forgotten that human beings are more important than machines the Queen has told the chairman of the Joint Commonwealth Societies' Council, Lord Amory, in a message for Commonwealth Day tomorrow."

The message continued, "I am reassured that young people have not forgotten that the happiness of mankind is even more important than the spectacular achievements of science."

After a speech by our Queen like this how could the Commission still consider Wing as the Third London Airport.

---

* See also p. 1762.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. R. E. Main*

Further to my telephone conversation with your Mr. Batson on 12th May, I have completed the enclosed application and have attached to it a note as to why I consider the siting of the proposed Third London Airport at Cublington to be particularly difficult for me.

If you care to amend, add to, elaborate, delete, re-write and/or get it typed I should be only too glad to have your assistance and advice.

Much as I dislike the idea of "parading a disability" I think that this is one occasion when such considerations must be laid aside.

Statement

I have today signed a form requesting to appear at the local hearing into the site for the Third London Airport opening in Aylesbury on 14th July, 1969.

Should the airport be sighted at Wing it would completely destroy all the efforts I have made over the past twenty years to provide some independence and security for myself and my family.

Having been invalided out of the services after the war with a spinal injury, I bought a plot of land in Whitchurch and raised a mortgage in order to build a bungalow especially designed to make my life in a wheelchair convenient and reasonably independent. Since then, with my wife and children we have worked for and enjoyed a country life in our bungalow overlooking a very fine view of the Vale of Aylesbury looking forward to the completion of our mortgage repayments. Now it seems that all our hopes will go for nothing.

Judging by the Commission's provisional plans if the airport comes to Wing we shall find ourselves in an area of intolerable noise at the south western ends of the runways.

To move house would be impractical. Needing specialist housing as I do, involves land purchase and building or house purchase and costly commission. Living in such an unfavourable site the sale of our present bungalow would never realise enough to clear our current mortgage, buy land and build again. Providing, of course, that land was available and supposing the unlikely event of a new mortgage being advanced to a disabled person of my age. So we should be left to live out our lives under conditions which we do not want and for which we have never asked.

Our utter loss, with many others would seem to provide the country with only temporary financial gain; a Fourth International Airport already being mooted as a necessity in a few years time. That hundreds and thousands of people should be living with this burden is unthinkable. In a country which boasts of such a high degree of scientific knowledge and technical skills, to create such an airport by the childishly simple method of despoiling many square miles of useful and beautiful countryside toegether with its way of life and amenities would seem to show complete lack of imagination and foresight.

Further evidence

In considering the views I expressed in my letter to the Commission dated 19th May, 1969, I feel that these only stated the case concerning myself, my wife and children when we are indeed a whole family in this village.

During the past ten years, as the result of bereavement, first my father and later my mother-in-law have made their homes here in Whitchurch.

In that they moved in order to be near us leaves us morally responsible for the future quality of their lives. My mother-in-law particularly appreciates life here having, until 1966 lived in the Esher district of Surrey where life was continually disrupted by air traffic from Heathrow.

Older people, at a time in life which should be stable, are appalled by such uncertainties yet diffident to involve themselves in something so much outside their experience as a Public Enquiry. So it falls to us as the younger generation to voice their feelings of opposition against this Third Airport scheme at Cublington.

We, all of us, have lived and worked in towns and we view with horror the implication that this entire area stretching from Slough in the south to Buckingham in the north would ultimately become one vast, noisy, smelly development linked to London. For this reason as well as the aforementioned reasons, we are all implacably opposed to the siting of the Third London Airport at Cublington.

I rely upon my written statements to the Commission as being my main source of evidence, but I shall attend that part of the hearing relative to the village of Whitchurch.

---

* See also p. 1762.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. J. Ryder Richardson*

Thank you for your letter of 28th May 1969, in which you grant me leave to appear at the hearing in Aylesbury for the siting of the Third London Airport. I am stating my objections to the site being at Cublington:

1. My house, which I own, is, according to the survey map, in the direct path of one of the runways, and therefore it would be impossible for me to continue living in it, as the noise would be unendurable.

2. It stands in 1½ acres of garden, commanding a magnificent view of the Vale of Aylesbury, and the property, which includes a cottage with a large garden, is valued at £25,000. As I understand I should receive no compensation I would stand to lose a great deal should I wish to sell.

3. My late husband was the local General Practitioner here for thirty years, and his partner and another doctor still use the surgery, which is adjacent to the house and part of the property.

4. I myself have lived here twenty-nine years, and have never considered going anywhere else, and my housekeeper, a life-long companion, who occupies the cottage, is old, and her health could not stand up to a move. Added to which, my son and his wife and family live in Weedon, a nearby village, and thus all my interests are here.

5. My chief hobby now is my garden, to which I have devoted a great deal of time and money, and this would be ruined by the fumes from the aircraft, and the noise. My two dogs would be terrified, and my wireless and television rendered useless by interference.

6. In the event of the airport being at Cublington I would in all probability leave this country altogether, as I consider this intrusion by the state on our lives and properties would mark the end of democracy and the liberties of the individual.

I feel that no proper thought has been given to the siting of the airport—the very idea of putting the largest one in the world in the middle of one of the smallest and most densely populated islands is sheer madness. It should be on the coast, where land can be reclaimed for expansion. The extra cost would be made up in a few years, and far fewer people would have their lives disrupted or completely ruined.

Should any of these points not be clear I shall be only too pleased to elucidate them when I attend the hearing.

---

* See also p. 1762.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Wing Parish Council*

1. The parish

Wing comprises nearly nine square miles of highly productive countryside, having as its centre a compact village situated at the end of a spur some 400 feet above sea level. It has a present population of about 2,000 people including the hamlets of Burcott, Ascott, Littleworth and Crafton together with the dwellings which house the workers engaged on the surrounding farms and estates. Apart from agricultural workers, most of the villagers look to the neighbouring towns for work, shopping and entertainment and many commute daily by car or 'bus to Leighton Buzzard, Luton, Dunstable, Bletchley or Aylesbury, there being no shortage of work in these rapidly expanding employment centres. In fact, owing to Wing's strategic location in relation to these growing towns, an elaborate plan has been devised by the Buckinghamshire County Council Planning Department for residential development over the next 20 years in order to accommodate a further 1,200 people. Local shops prove adequate for day-to-day needs and good 'bus services exist to Aylesbury and Leighton Buzzard. Wing has Church of England, Methodist and Congregational churches, four inns, an Old People's Home, a spacious village hall with a part-time library, a sports and social club and a large recreation ground for the use of children and adults.

2. Education

In the field of education, Wing serves as an educational centre not only for the village but for the surrounding rural areas. The facilities available embrace all ages, commencing with:

(a) A Play Group for children of pre-school ages, registered at present for 20 children per day.

(b) The County Primary School with 215 pupils of whom 25 per cent come from the neighbouring villages.

(c) The County Secondary School which is contained in a modern building some 10 years old, well-equipped and with extensive playing fields. The present strength is 450 pupils with plans already approved for an increase to 600 when the school becomes comprehensive. 75 per cent of the scholars arrive daily from outside villages within the Wing Rural District, from Soulbury, Stewkley, Dunton, Whitchurch, Cublington, Pitstone, Ivinghoe, Eddlesborough, Dagnall, Slapton, Aston Abbots, Wingrave, Ledburn, Mentmore, Cheddington, Northall and Rowsham, a total area embracing some 50 square miles.

(d) For those over school age, there is the Evening Institute supplying an interesting range of subjects for study under the auspices of the Bucks. County Council and the W.E.A.

The interest of the community in the local schools is shown by the following facts:

(i) The pre-school Play Group is run by voluntary workers as a contribution to village life.

(ii) The Parent-Teacher Associations of both the Primary and Secondary Modern Schools have provided each of them with swimming pools, something which few urban areas can claim.

3. Points of Interest

The notable mansion of Ascott attracted 7,000 visitors last year. This picturesque building containing the famous collection of pictures, furniture and porcelain, together with the grounds of over 260 acres were given to the National Trust in 1950 by Mr. and Mrs. Anthony de Rothschild and are a constant source of pleasure to people from all parts of the country. The 16th century Dormer Hospital or Almshouses act as a link with the long history of Wing which is most strongly exemplified by the parish church of All Saints. Wing Church, dating from the 7th century, is of the greatest possible historical and architectural interest. Bearing testimony to the universal appeal of Wing Church are the 700 names annually inscribed in the visitors' book. The church is regarded as the most notable pre-Conquest building in Buckinghamshire, in that, of the limited number of Saxon churches surviving in England, it preserves most fully the original basilican plan of the early church. In addition it possesses a seventh century apse above a crypt of the same date which, together with the other Saxon features throughout the building, render the church almost unique in this particular field.

A more recent innovation is the Wing Park Equestrian Centre, fully in keeping with the traditional sporting activities of the district, and which has already gained considerable international interest.

It is hardly surprising that during the summer months, Wing becomes something of a tourist centre with visitors by car and coach viewing the village's attractions and, as often as not, staying to picnic in one of the many adjacent beauty spots.

4. Inhabitants

These can be divided into two main groups:

(i) A hard-core of village people derived from ancestors who had lived in Wing not merely for generations but for centuries. Reference to Parish Registers shows an uninterrupted

* See also p. 1763.

Printed image digitised by the University of Southampton Library Digitisation Unit

record of families who have formed part of the village community for at least 400 years; such names as Buckmaster, Heley, Honour, Windmill, Woodman and Woolhead appear in 16th century records with those of Biggs, Corkett, Fountaine, Jordan, Pease, Prentice and Rickard joining them during the following 100 years or so. The strong family bond in the village is one of its most striking features.

(ii) Increasing numbers of people, attracted by the peace of village life, who have come to Wing either to seek work in the neighbouring towns or simply for retirement.

Due to the peaceful environment and the fact that there is no form of industry within the village or any immediate contact with an urban area, life in Wing is of a particularly rural nature. For the younger residents, the return to the village after work in local towns forms an ideal means of recuperation and relaxation whilst, for the "older citizens", the Wing Rural District Council has made ample provision in the form of comfortable bungalows together with an attendant warden.

5. Social Life

As would be expected from the foregoing description of the inhabitants of Wing, one of their most remarkable characteristics is their strong community spirit. This can be simply illustrated by a list of social activities within the village which cater for all tastes and for all ages. For the young there are Cubs, Scouts and Brownie groups, Dancing Classes and a Youth Club with a present membership of 50. The more energetic may join the Badminton Club, the Wing Cricket Club or the Wing Football Club, which has three teams competing with considerable success in the local leagues. The ladies support the Women's Institute and the Wing Mothers' Club to the extent of some 50/60 members in each whilst the Mothers' Union and Burcott Chapel Sisterhood receive enthusiastic patronage. The Hall Club provides opportunities for the playing of billiards and table tennis. In addition, the Wing Social and Sports Club has recently built its own headquarters which have provided a most attractive modern feature to the village.

The 260 elderly people living in retirement are by no means forgotten as apart from the Old People's Club to which many belong, there is also an active Senior Citizens' Welfare Committee which arranges a programme of events, not only for the entertainment of the old people, but also to raise funds for outings and gifts. The Committee keeps a careful record of all pensioners so that continuous supervision may be maintained as to their well-being.

6. Effect of Airport

Meagre though the details are which have been made available of developments to be expected in the event of Wing becoming the site of the Third London Airport, the most serious effects to the parish will be felt as follows:

(a) The inevitable destruction of valuable farmland and the associated farmsteads.

(b) The pretty hamlet of Burcott on the north side of Wing parish is directly in the path of the proposed site and faces the prospect of complete destruction. This would involve the loss of 48 homes, nearly all owner-occupied and including one well over 300 years old recently restored to its original beauty. The 128 people so affected form a cross-section of Wing inhabitants in that many were born and bred in their present surroundings and many more have recently settled in their present homes with a view to retirement. Apart from the views across the eight Burcott farms, the hamlet contains many rare and beautiful trees and shrubs with two fine clumps of Scotch Pine dominating the skyline and a huge Mulberry over 100 years old. Nothing could possibly restore to these people anything to compare with that which they are in danger of losing so completely.

(c) For the rest of Wing, the principal hardship would inevitably be caused by the noise of aircraft taking off and landing and the vastly increased road traffic which must occur. With the runway skirting what would then be left as the edge of the village, the maximum impact of fall-out would be felt in Littleworth and the Wantage Crescent development owing to the prevailing south-west wind. It is ironical and would be tragic that this area was selected because of its situation far from the main roads as the site for the Wing R.D.C.'s settlement for the old people of the village. The remainder of Wantage Crescent was given mainly to young people with small children.

(d) It is absolutely certain that the introduction of an airport of the dimensions contemplated, with the consequent violent transformation to urbanization, would completely destroy everything which makes Wing and the neighbouring villages so essential a part of our national heritage. The effect on the inhabitants, especially the older members and small children, would be quite overwhelming since those whose homes were spared destruction would find themselves engulfed in the centre of extreme urbanization in place of the rural peace to which they are now accustomed. The imagination can conjure up only a picture of destruction and devastation of everything which the inhabitants of Wing and those who visit its pleasant surroundings have learned to regard as something to be enjoyed not only in the present but in perpetuity.

7. View of the Parish Council

The Parish Council is firmly opposed to the selection of Wing as the site of the Third London Airport

Printed image digitised by the University of Southampton Library Digitisation Unit

and is satisfied that this view is shared by the great majority of the village people. When it was first learned that Wing had been placed on the short list, a parish meeting was called to assess the feelings of the parishioners and, following the meeting, a postal referendum was taken on all who were on the electoral roll. This showed a majority of 80 per cent against the airport being sited at Wing and there is evidence that opinion has still further hardened against the project. It has become obvious to many who were undecided in the beginning that any benefits which might acrue to the district through such a development would be more than offset by the complete disruption of life as they now know it. To gain confirmation of this opinion it is necessary only to stand behind our Saxon church and enjoy the unsurpassed beauty of the view across the valley towards Cublington and then walk for some quarter of a mile, keeping in view the length of the proposed airstrip, until Castle Mound is reached and then to stay awhile on the site of the Norman bailey and look across the fields towards Stewkley. Even now the splendour of our lovely countryside is marred by the prospect of the Airport overhanging the scene like a grotesque nightmare. The members of Wing Parish Council implore the Roskill Commission to ensure that this becomes no more than an unhappy memory.

List of Parish Councillors with occupations

W. J. Bandy (Chairman)	Civil Servant (Clerk of Works) Retd.
D. Bennett	Agent Ascott Estate.
H. F. Broad	Headmaster—Leighton Buzzard Grammar School.
H. W. R. Fowler	Sub-Postmaster—Wing.
R. R. Liscoe	Electrician.
S. J. Pease	Toolmaker.
F. A. Randall	Headmaster—Olney Primary School—Retd.
Mrs. M. M. Read	Housewife—Play Group Leader.
A. E. Smith	Shopkeeper—Hardware & Electrical.
E. G. R. Taylor	Headmaster—Wing Primary School.
F. J. Taylor	Excavator Driver.
H. R. Ayris (Parish Clerk)	Deputy Farm Manager

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. F. R. Black*

I signed the deed for the completion of the purchase of my house on the 10th January 1969 and at that time both I and my professional advisers were completely unaware of the Commission's proposal to short list Wing as a site for the Airport.

Having possession of our house at Wing and being contracted to sell our house at High Wycombe my wife and I and our three children had no alternative open to us than to move to Wing as planned on 25th March 1969.

In deciding to move house, we were motivated by the desire to live more in the country than we had been at High Wycombe. We were looking for a house of character which had more spacious accommodation than our High Wycombe house. We were also looking for land to enable us to keep ponies for the children to ride and for other recreational purposes. We were looking for a house which was away from a main road, and thus away from noise and danger to children and animals. We were looking for a house with a view. We were looking for a house which was pretty, old and of architectural interest and which at the same time possessed that great serenity of a building in which people have lived in happily for centuries. As well as this such a house had to be within commuting distance of my office in London and easily accessible for me to travel on business to various parts of the country and in particular to be not too far from the M1 motorway. On top of all this it had to be at a price we could afford. In large measure, all these attributes were well satisfied by the Old Vicarage which we bought after searching for five years.

I attach to this letter a copy of the sale particulars of the house† from which the Commission may judge our delight on the acquisition of such a property. Apart from its glorious view over unspoilt countryside its close proximity to the magnificent and ancient parish church add an additional feeling of peace to its situation.

If the airport comes to Wing the nearest runway will be about half a mile from the house and will be clearly visible from it. The noise no doubt will be deafening. I understand that it is unlikely that the house would be demolished to make way for the airport but that it falls within the 50 contour noise level.

If the airport comes we in the long term will have to move as the whole character of the area will change and a number of our requirements listed previously will no longer be satisfied. However, at the present time and until such time as the Commission has either decided against Wing as the site or the value of our land becomes enhanced by the presence of the airport we cannot afford to sell as there now exists a moratorium on property in the area. Property has become difficult to sell and values have dropped sharply. We therefore have to sit tight and pray that the airport does not come and if it does wait until the airport itself enhances the value of the land in its close proximity.

In the meantime the house is in need of decoration and repairs some of it so urgent that it cannot wait for the final decision of the Commission in December 1970.

The outside of the house has required repainting, a damp proof course has had to be put in and dry rot dealt with at once. Rooms affected by dry rot have had to be redecorated. the guttering has had to be renewed. Expenditure on these repairs has exceeded £4,000 and owing to the possibility of the airport coming to Wing the Historic Buildings Council will not consider a grant. In making this expenditure I have realised that if the airport comes I will probably have thrown my money down the drain and it is only my strong feeling that it won't come that sustains me.

In purchasing our house we have extended ourselves to the limit as we intended it to be our home for life. We have possibly more capital than we can afford sunk in it and we could well sustain substantial capital loss. We certainly would if for some reason we were forced to leave now.

We have now made friends in this area and our children are happily settled in schools. The prospect of moving house with its attendant worry and expense appals us. If we were forced to leave I don't know where we could go to retain the rural characteristics of Wing whilst maintaining accessibility to London and the businesses that I visit in the North and Midlands.

From the above you can see that we would suffer considerable hardship if the Airport were sited at Wing and I would ask that the Commission bear my evidence in mind in deciding where to site the airport.

I wish to appear in person at the hearing.

---

* See also p. 1764.
† Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. G. Harris*

My wife, three children and myself moved to our present home in the hamlet of Burcott two years ago. We bought the house, not only because it was of the size that we require, but also because it was situated in the rural area which is an essential part of our chosen way of life.

My job (as Chief Development Engineer with Broom and Wade Limited, High Wycombe), like many other senior executive positions in modern industry, is a demanding one and I consider that the ability to return home to a relaxing and totally contrasting environment is of fundamental importance. As hitherto rural areas (such as the County of Bucks) become more industrialised, it is of vital importance to preserve "oases of calm" where rest and leisure may be enjoyed away from the stress of industrial life.

My house started life as a farm homestead in the 17th century and was extensively modified in the latter half of the 19th; it remains substantially in that form today. The garden was laid out in about 1900 and has been tended and cared for ever since. One of its major features is a mulberry tree (one of the largest in N. Bucks) which is probably at least 300 years old and which still yields a prolific crop every year. Here is represented a continuity of endeavour by people of this village which is part of our heritage; my family and friends reap the benefit of toil and forethought of generations who have gone before. It is unthinkable that we should consider that we have the right to destroy for ever this house and replace it with something which will bring no pleasure—and certainly no peace—to our children and their children.

If the proposal to site London's third airport at Cublington were to be implemented, my house would either be demolished or become uninhabitable—the plans put forward are too approximate to know which. In either case the financial implications for me would vary from difficult to disastrous. Where would I move to? Within practicable reach of my job I would be most unlikely to find a comparable home. I would thus be forced into a major move, involving disruption of my career and our children's education.

I do not deny the increasing (and seemingly inevitable) pace of air transport throughout the world—on the contrary, I am a frequent air traveller. I completely reject, however, the proposal to construct London's third airport at the Cublington site, both for the reasons set out above and because the advantages to be gained are overwhelmingly outweighed by the disruption in the lives of thousands of citizens of this country and by the irretrievable loss, both for ourselves and for generations to come, of the very essence of England's green and pleasant land.

* See also p. 1764.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Miss D. M. Harris*

I would like to thank the Roskill Commission for granting me leave to appear, and I wish to make the following statements as to the reasons why I feel very strongly *against* the airport coming to Wing.

The questions of noise, pollution, sewerage, urbanisation, traffic and overcrowding have all been dealt with hundreds—thousands—of times.

So, indeed, has the loss of our homes, our agricultural land, our countryside, our churches and our churchyards which have for generations sheltered the bones of our ancestors.

If these go, then our whole way of life goes with them, and for we old ones (I am seventy three) there can be no beginning again; there would be no time—no wish—no energy to rebuild a new life in a new place. There are hundreds like me, distressed, worried too, about the financial side of a move and in many cases, a loss of income. I have had some experience of compensations, in my case it was long drawn out. A cold outlook.

Most of all, I am against *any* new gigantic *inland* site because of the inhumanity of the whole dreadful plan.

* See also p. 1764.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. R. G. F. Heley*

Thank you for your letter dated 28th May, granting me permission to appear at Cublington (Wing) Local Hearing concerning the proposed siting here of the Third London Airport.

So far as I can make out from your plans my home will be destroyed if this site is chosen, but like so many of my friends and others in the district, I would like firstly to state that I am utterly opposed to it coming here, not only for the very strong personal reasons which appear below, but also for very many practical considerations which to all of us who live hereabouts make the site seem most unsuitable, these objections will doubtless be put before you by an abler advocate than myself.

My personal grounds for opposition disregarding these more obvious and general ones are as follows.

I was born in Wing, and am probably as completely native to this area as anyone now living, my ancestry in the district being traceable on one side of my family directly to 1332 when my direct ancestor John Gurney died at East Marsh—he was almost certainly a direct descendant of the first lord of Wendover who held lands in this area before the Norman Conquest. On the other side of my family my ancestors can be traced for several centuries. The countryside hereabouts is my native land and means more to me than any other few square miles of the earth's surface—the churchyards you propose to desecrate are permeated with the dust of my ancestors, who were even probably involved in the building of Stewkley Church itself which you plan to destroy. I know every field and copse in this area, and am familiar with most of the birds, insects and plants that are (or were!) indigenous to it. Apart from all this it quite passes my understanding how any born Englishman could consider destroying so much good farmland, and demolish (among others) two of the finest parish churches in the Country—Wing and Stewkley. The former contains the largest and finest Saxon Chancel Arch still standing and probably the finest of our four surviving Saxon Apses and Crypts. It also has the unique distinction of having been founded by a Saxon queen. Stewkley church is without any doubt at all the most perfectly preserved example of a small Norman church in the Country. The loss of these two unique architectural gems would be a far greater loss to our English heritage, than was the destruction of the large, but much later cathedral at Coventry by Hitler's bombs.

I live alone in my own small many-roomed home, which after years of hard work and money spent upon it exactly suits my requirements (which are various and many). At the age of sixty-three, I should be quite unable to adapt another house to my rather peculiar needs. Here I have the quiet and exactly the conditions to pursue my many interests after many years of having to do incongenial work. Here I can write books (one at the moment is being subsidised by the Arts Council and is shortly to be published by Messrs. Chatto & Windus Ltd.) Here I can get on with my musical composition so long as my hearing lasts out. I can also pursue my studies of tropical lepidoptera of which I have a collection here of many thousand species, besides literature etc. This collection is not only valuable, it is also very fragile and calls for very careful storage conditions. In addition to these I house here an extensive collection of colour reproductions of Old Masters, destined at my death to enrich the Bedfordshire Central Library. These also run into thousands, and need special storage facilities to prevent foxing of the mounts. I also have here many documents, and other unique papers which are necessary to me for my literary work, I simply cannot conceive rehousing them all at my age.

My garden here is a fairly large one and contains many rare plants that I greatly value, collected over the years, few of these would be likely to survive transplantation into different soil conditions—my garden, like my home is the ultimate result of many years striving, and I could never recreate it; I think it would break my heart to leave it now. Being myself a product of pre-1914 war years, I am utterly out of tune with the modern world—here in Burcott I can escape and indulge my simple pursuits in peace.

Except for one elderly relative living in nearby Wing, for whose wellbeing I am solely responsible, I am virtually alone in the world. I have happily many friends here, one of whom is building a bungalow on a piece of land next to my home so as to be near to me in my old age—his and his wife's presence nearby would be a great benefit and comfort to me. What I should do if the airport came here I simply cannot conceive, I suffer from an incurable disease of the inner ear which makes any loud noise very painful to me, if I am to escape total deafness I should certainly have to move to a quieter area, but to uproot my elderly relative from her home and family treasures in Wing would certainly kill her—they are her life. My friend who is building his bungalow near to me would not be able to leave the vicinity of Leighton Buzzard because of his work. With all of my good friends dispersed I can foresee no future for myself at all. As regards compensation, you might as well offer to pay damages to a man whose wife and children you have murdered. Probably the kindest thing would be to put me into a gas-chamber and make an end of me.

* See also p. 1765.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. E. F. Kidd*

Thank you for your letter dated 28th May, after reading it I would like to be granted a personal hearing for reasons I give below.

I would point out however that as my wife agrees with the contents of this letter she is prepared to use this letter as her protest and waive a personal hearing but insisting that her protest is noted.

Firstly I am sure you will understand that I have a very personal reason for objecting to the airport being built on the proposed site. As I would lose my home, and as you know since history has been recorded Englishmen have fought and died for their homes. I am an Englishman.

If in the name of *Progress*, or to help the country, I thought that my losing my home might help, it would make my loss a little easier but I do not consider these reasons occur in the remotest way, for the following reasons.

As we have always had to import into this country to survive and at the present moment our country's bill for imports is at a level that we are in serious difficulties. The thought of taking such a large acreage of some of the finest food and dairy farm land from this country is absolutely critical. The import figure for one year to cover the loss of produce would be bad enough, the cost over years would be fantastic.

The loss of the proposed site is unthinkable, but to this North Bucks has already had land taken for the new Milton Keynes City (250,000 people). Bletchley, land for the G.L.C. overspill development (30,000 people) and proposed land for the reservoir (how many acres). How much land for the new airport city, how many people to be housed (40,000—60,000) or will it be more. North Bucks is Finished.

There is no unemployment in the area, is it the idea to take labour from the new city, or the other towns around. Already many towns complain of labour leaving the places of residence to work. To allow this to happen would be a betrayal to Town Developers and to the industries that would be required to come to the towns and the new city.

From the highly populated areas around the proposed site so many people will be affected by noise and air pollution, but the most terrible thing to me is, what happens if an aircraft comes down, the destruction would be terrible.

In villages you find many people who have retired after working in towns and cities. They have invested their all into their homes so that they can spend their last years in peace and quiet. Many of these people live on their pensions or small fixed incomes. They cannot afford to move, they do not want to move, they just want to live in happiness in the position they have chosen. Please leave them to end their days in happiness.

In this area there are many old people living alone at the age of seventy and over. This generation of people are very independent. They will have to be rehoused, at a great cost, but the important thing is that they will lose their independence, and when you take this away from them you sentence them to death.

Many of these things will have been said, and will be said at other enquiries, rightly so. All this I hope will lead the commission to believe that there should be no third or fourth or any other international airport at Wing or any other inland site. If the commission recommends any inland site it will set a precedent with far reaching effects. Whose homes will be next, where will it be, the fourth inland international airport. It is no good saying it will not happen, the third is necessary because the planners could not estimate correctly for London's Heathrow and Gatwick Airports. I beg this commission not to allow this proposed airport to be built on an inland site, not only for me, but for everyone else in the country so that they will not have to go through the worry and misery over losing their homes that my family and the other families in the proposed areas have had to go through.

I would like to bring to the commission's attention the fact that the mental strain that thousands of people have been forced to bear will remain with many people for the rest of their lives. A criminal does not have to wait the length of time for a verdict or pay so much for his defence, as the people in the areas concerned have had to do, and I hope that the people who deal with such matters, not only on airport sites, but other proposals which affect the homes and rights of human beings will remember it.

There are many more reasons I could give for the airport not to be sited inland, but I, like most of the other people, know the country's need for a third international airport. For the reasons I have given, for the good of the country I consider that there is only one siting for such an airport and that is at an estuary site. Firstly land can be reclaimed which is an asset to the country. Reclaim is a fact well known, one country already virtually exists on reclaimed land. Other international airports have been built on reclaimed land, (fact). If further developments are required, more land can be reclaimed (fact). By

* See also p. 1766.

Printed image digitised by the University of Southampton Library Digitisation Unit

modernisation and connection of existing rail and roads, which we already pay enough taxes for and would give us some long awaited improvements that we have already paid for. A good fast service could be provided to London (fact). This service now to be provided for 1973/4 for London Heathrow.

Noise would not cause such problems at a coastal site, and it has already been shown from press reports on aircraft disasters, that many more lives have been saved when aircraft come down in the sea, than when crashing on to land or towns.

The fact also that a Deep Port could be built in conjunction with an airport increases the earnings power for the country and over the years can become such a great asset to our country. I consider that the initial cost, even if greater than building an inland site should not be considered bearing in mind people. If it is so I feel the earning power in the future from an estuary site would be the much better investment for the country.

I hope you will see from my letter how deeply I feel over this very important matter, and that you will consider my reasons for objecting to this international airport being built at Wing, or at an inland site sincere enough for me to be allowed to state this reason personally at the enquiry.

People or Science, what is it to be, if Science comes first we have lost our heritage.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. C. Morton*

Background

I have lived at Wing for ten years and am buying my own house. I am married with two children who go to a local primary school.

My wife's family have lived in Wing for over ninety years. I chose to live here, and do not intend to move under any circumstances—so you will have to put your airport somewhere sensible—on an estuary or coastal site.

The following is a résumé of some of the points I intend to raise in public at the inquiry.

1. The fact that neither you nor anyone else in the present structure of our society has any right to impose such a monstrous proposition on the inhabitants of such a large area when there are viable alternatives.

2. No inland site of the size envisaged or the planes envisaged is a practical proposition, especially in an area which is:

(a) Highly productive in agriculture.

(b) Contains large towns in its immediate vicinity.

(c) Contains many unique villages which would be destroyed either physically or environmentally.

(d) Has great value as a recreation area.

(e) Is the selected habitat of people who have deliberately chosen a specific way of life.

3. The inferred intent to stifle the voice of the people in this matter.

4. The published site details† and maps‡ show that either you have not done your homework, or that you have deliberately lied, in order to impose this airport on us.

Examples

Your report

4/8 Ony a very small part of the site is being considered as a reservoir.

5/10 More than 1,200 people would be rendered homeless. You carefully forget to mention the ghost towns, such as Wing, which an airport would create. Neither I nor anyone else could tolerate life ½ a mile from your proposed monster.

5/12 The NNI level maps are ridiculous, even my young children laughed at your lines carefully drawn to exclude high population areas.

5/12 Peter Masefield has said that four runway full capacity will be in less than thirty years.

5/13 Peter Masefield has also said that the third London Airport will be the largest cargo airport in Europe—cargo will have to be flown in mainly at night in jumbo jets to be economic. Night noise level, and general NNI level will thus be higher.

5/14 I suggest you study the 1961 London Airport noise reaction, and you will find your definitions quite ludicrous.

5/14 Why NNI figures only to forty? Even at twenty-five a large proportion of the population finds this level intolerable.

6 No mention of a satellite town that would (Foulness enquiry) put the land take up to at least 20,000 acres.

7/20 The M1 could not cope with the surface traffic—even more land and disturbance.

The total inadequacy of the site information appears to be a deliberate attempt to deceive us all.

Circular letter dated 28th May

5. I take issue with your saying that you will *grant* us permission to defend our homes, way of life, environmental and educational standards. I *will* appear at your enquiry.

6. We do not live in a police state or totalitarian dictatorship, and if human lives are to count above money then the people of this area will establish this once and for all.

7. Your snide comments about the County Council show that you object when the electoral representatives of the people fulfil their electoral function.

8. The above illustrates that this is:

(a) A battle against the tyranny of faceless bureaucracy.

(b) A struggle for principles.

(c) A battle for common sense—only coastal sites make sense in the late 20th and early 21st century.

(d) A battle for economic sense—only a new site unencumbered by the above considerations and linked to a port complex will pay off.

(e) A battle to show that the people of this country will still fight for their freedom, and I mean fight in every sense of the word, and to any length.

---

* See also p. 1767.

† *Site Information for Stage II Local Hearings 3. Cublington (Wing)* (HMSO, 6s). Reproduced at p. 1001.

‡ See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. J. Pearse*

Thank you for leave to appear at the local hearing at Aylesbury of the Third London Airport site.

I should like to make the following statement:

I bought my property five years ago (in bad condition) and moved here from Chiswick. I wanted peace and isolation after the noise of London.

In these five years I have spent a considerable amount of time, money and hard work improving the property and am just beginning to reap the benefit.

I have a wife and eight year old daughter and a new baby expected in September. My mother who is eighty also lives here.

I have my own business which is conducted from my home. It has taken three years to build up and is now thriving on goodwill and recommendation. At the age of forty-eight the prospects of moving and starting from scratch again do not bear thinking about.

If the airport came to Wing, as my house is situated on the old airfield it would mean leaving this area, my daughter leaving Aston Abbotts school where she is very happy and doing so well, as for my mother, I don't think her health would stand a move and she certainly does not want to be left behind in an old people's home.

I would like to appear before the commission and put my views as above to them.

---

* See also p. 1768.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. N. V. Rogers*

I thank you for your letter of the 28th May, granting leave to appear at the Local Hearing in accordance with my application.

As a young man I worked in London, and after demobilisation from war service, I decided to get away from London into the country, by taking training to be a teacher. Successful in this, I obtained a post as assistant master at Wing, in 1948. I have lived here ever since and brought up my family here. My son, who lives at home with me, now twenty-two years of age, has an excellent employment in Leighton Buzzard.

By about 1950 my mother, a widow, moved next door to my house and so did my father-in-law (since deceased) and my mother-in-law. Both these ladies, now eighty-seven, still live nearby and I provide them with accommodation.

My property was originally two cottages and numerous stables and outbuildings. In the course of time and mainly by the efforts of the hands of myself and my wife, we have modernised the buildings and converted stables into two more houses. Also a vast amount of work has gone into terracing gardens, lawns etc. I now own four house properties, live in one, have two for elderly relatives and let one furnished.

I look upon the capital value at £14,000 or the letting value of these properties at £20 a week as being able to provide money to supplement my pension in old age and a great deal of hard work and money has been directed to this end.

If the airport comes, these four properties will become worthless, unsaleable and unlettable as no one will want to live in them due to aircraft noise. They are situated approximately 1000 yards from the flight path of aircraft approximately 1000ft. high.

I object most strongly to aircraft noise rendering my properties unusable and worthless and being denied any compensation at all. If the airport does come, I should want to move right away from the area and I should have to change my job, and suffer financial hardship for the rest of my life. I am now fifty-five and would most strongly object to being forced to give up what I have worked hard to build up during the last twenty-one years.

I teach at the local school in Wing, and like many teachers I would dislike intensely having to teach under the noise of aircraft screaming overhead.

In conclusion I object most strongly to being told (from the best information I can get), that no compensation will be payable. When Hitler's air-planes dropped bombs and rendered homes destroyed and unlivable in, war damage compensation was paid from State funds. Now it seems that British planes will render homes unlivable in, due to noise and paraffin fumes, and no compensation will be paid for loss of capital value and no compensation will be paid for all the upset of having to start life again somewhere else. A road accident victim gets compensation for severe bodily injury—lose a leg and the courts will award thousands of pounds. Lose your home and all you have built up in a life-time, to aircraft noise and fumes, and one gets nothing. British justice?

---

* See also p. 1768.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. K. H. Royal*

I am in receipt of your letter of 28th May concerning the above matter. I am now putting into writing my reasons for opposing the building of the Third London Airport in this area.

Apart from my personal reasons in opposition which I will set out as requested, I should also like to make it clear that I am not simply wishing the airport on any of the other sites chosen just to save ourselves. It should obviously be built where it will inconvenience the least number of people, and also be of the greatest advantage to the many. My own knowledge from the visits and enquiries I have made, is that the majority of people viz. the ordinary man in the street, not even mentioning industrial concerns and business houses, is that the airport would be welcomed if it were to be built at Foulness. Our land is too small now to cope with the multiple demands made on it. Surely reclamation of land is too great a blessing to toss lightly aside; many more such undertakings could only add to our ultimate prosperity and good.

I was widowed at the age of fifty-one in 1966, shortly after leaving a London Hospital following a serious heart condition. I now suffer from a chronic heart disease. Because of my health, I sold my home in Surrey to come to this quiet little hamlet, to be closer to my only duaghter who lives in Leighton Buzzard. I invested a lot of capital in a new bungalow here in order to get the quiet restful life the doctors insisted I had and to have some help when I am ill. In my previous home I was in a direct line of flight from the London Airport. It was the increasing noise from aircraft that finally made me take the step of giving up my home where I had spent a happy married life.

Before coming here I made enquiries about the area. I was told that it was white belt country and that there was no likelihood of its being appropriated for other purposes, not for some long time to come, if ever. There was a vague reference to the possibility of the reservoir, but that seemed harmless enough, and did not disturb me. Now I find that I am faced with one of two equally fearful prospects. My home is either to be demolished or to find itself in the excessive noise area!

If I lose my home or have to leave it because my health would suffer, I have no place to go to be close to my only close relative and where I can get the help I have to have at intervals of serious sickness. I have a little part time teaching post within a few minutes walk from my home, which supplements my widow's pension. I have spent a great deal of money on this bungalow, and am just beginning ty get over the dreadful shock I suffered as a result of my husband's sudden death. I have made maon friend in this little hamlet and in the village of Wing, and am again just once more beginning to feel that I can face up to the problems of widowhood.

It has been a hard struggle to gain sufficient confidence to go out and about, meeting people and participating in local social, political and academic activities. I do not think I could ever do this again.

My health has improved beyond belief since I came to this area. This is endorsed not only by my former friends from Surrey who visit me, but the local people here have also remarked upon the change for the better in me since I arrived here only nine short months ago! If people want noise, entertainment and industrial areas, they usually go to the places catering for these desires, but people like myself who want and must have peace and quiet choose to live in just such a place as this . . . a quiet little backwater tucked away from all the maddening frustrations of modern everyday noise . . . PLEASE do not subject us to the abomination of the Third London Airport!

---

* See also p. 1768.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. and Mrs. J. R. West*

We thank you for your letter of 28th May giving us leave to appear at Aylesbury from 14th July onwards.

Our Statement is as follows:

"We came here some eighteen months ago from the Amersham/Beaconsfield area in order to live in a more peaceful and rural part of the country. In this respect we proved correct, noise from aircraft over the Beaconsfield district was increasing annually, and indeed is worse now than when we left.

The constructing and construction of an airport here would make life intolerable for us from the point of view of noise, obnoxious smells and an escalation of traffic of all types. We did not move here to be uprooted by any outside agency and therefore most strongly object to an airport here.

It is almost incredible, that after months of planning, no more accuracy as to the position of the airport has been given to those affected in the area than that of four miles to the inch."

* See also p. 1768.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. D. J. Barrington*

I am aged twenty-seven and live with my wife and three children at 3 The Close, Woburn Sands. We have lived here two years. We formerly lived in Yorkshire until I took a position in Hemel Hempstead. Even though Woburn Sands is thirty miles from my work we chose to live there because of its charm and setting in the countryside. I have lived in two industrial towns and hope not to have to do so again.

We wished to find a community of 1,000/2,000 where we could make our life and become part of the village. We hoped for a village in itself attractive and clean and surrounded by countryside so that I any my family could take advantage of being able to walk into the countryside through fields and woods. We also wished for a village with local organisations we could join, take part in and partly govern. In Woburn Sands we have achieved all this. We have the countryside largely unaffected by progress and we and other local people make full use of it. We have also fitted into the village and feel we belong to it. It is only its relative smallness and intimacy that has made it possible to achieve contentment with life.

If we had to move it would be the most distressing thing that had happened to us. We would have to try and find another village but they are disappearing all the time. We should also have to uproot the life we love and our children's schooling would suffer.

Before we left the intrusion would have to be intolerable. I don't know if the airport would make it so. Certainly noise and pollution of atmosphere are as potentially intolerable to me as strict spoilation of the countryside. If what I learn from the W.A.R.A. leaflets is near the truth then I could not stand the noise. The only other parallel I have is a friend who lives two miles from London Airport. In his house the noise is grossly in excess of what I can stand but I have no real way of comparing this with Wing.

Having dealt with the personal aspect I would like to state my views on the general effect on society.

I believe the public are against encroachment into the countryside generally. Unfortunately, there is no way in which a person with limited administrative knowledge can show his opinion in an easy way as, for instance, when it comes to local and national issues one can vote for a politician who stands for ones views. Planning and conservation of the countryside never seems to come into it.

Nearly all the people that now live in villages do so, in my view, through choice. It would be more convenient for them to live in a town. Their choice is the environment and benefits, in varied forms, I have previously said are personal to me. I think it apparent that increasing numbers of people wish to move into the country; and, further, as living standards progress, town dwellers wish, on an increasing scale, to enjoy the countryside's benefits during their leisure hours. To me it just seems common sense that the countryside must be preserved. It can only be one in a thousand projects that can be allowed if the projects destroy a chosen way of life.

It follows that I could only contenance an intrusion if it were unanswerable that the nation could not go on reasonably well without it. In this case I know there is another site where land of beauty need not be lost and where noise would affect only a little land and for less people. Any extra cost through the choice of Foulness cannot begin to bear upon the priceless loss of the amenity value of now and the future for this area. A trifle saved now at this cost for those living in the area and future citizens and their chosen way of life just cannot, in my view, be countenanced.

When I hear, as I have recently an ex-Ministry of Housing official say we cannot expect in the future the separation of town and country as we know it today I despair for our future. Something must be done to stop the eating up of our countryside and use must be made of land that is not arable and without beauty. If the commission save the outstanding natural beauty of this area and the lives of those in it and those to come they will do the people of this country and their heritage a great service.

* See also p. 1768.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. S. W. Jennings*

I live at the address "Holloways," 45 Chapel Street, Woburn Sands, and I am a retired Police Superintendent aged sixty-seven years.

I retired from the Buckinghamshire Constabulary on completion of approximately thirty-eight years' service in February 1960.

I oppose as strongly as possible the airport being established on the proposed site at Cublington—and I do this also on behalf of the many retired people living in the district of Woburn Sands.

I know well the whole of this lovely County of Buckingham and I have no hesitation in saying that the delightful village and environs of Woburn Sands is unsurpassed for its tranquility and natural beauty.

I am a great lover of the countryside and for my retirement I built my home to enjoy to the full the peace and quiet which I looked forward to so much.

Both my wife and myself are now thoroughly enjoying our home and (to us) the lovely garden we have created.

The amenities we have (including easy public transport and excellent shopping facilities) mean everything in life for us and we certainly trust that the coming of the airport to Wing will never materialise and so force us to be uprooted in our latter years and remove elsewhere. I want (above all things) to remain here which is the place where my parents married and I was born.

I have listened with strict attention and agree fully with all that has been said by others opposing the airport. Once more I say "I trust that it will not materialise here."

---

* See also p. 1769.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. R. S. Meredith*

I am aged twenty-three years, married, with two children, and work locally as a journalist. I would like to place on record on behalf of my family and myself a strong objection to the Third London Airport being sited at Cublington, near Wing, or for that matter at any inland site bounded by populous areas.

I am not a member of, or subscriber to the Wing Airport Resistance Association as I find it difficult to attune my views solely to that of a mandate prepared by someone else.

I would therefore be most obliged if you would consider my objection as independent from and additional to the many others you will see and hear.

I was born in Bletchley and have lived in the immediate area all my life. My home at Woburn Sands, in fact in the parish of Aspley Guise, stands just within your own published 50 NNI contour.

It is a detached house, standing in its own grounds, with a pleasant garden. Chosen not entirely as an investment, but as a home for my family, it had all the qualities I considered necessary two years ago for a relaxed and pleasant environment in which to live—having regard to all the foreseeable developments locally, such as the Milton Keynes new town, and the expansion of other nearby towns.

I believe that the quality of life in the whole area, and incidentally, a much wider area than that admitted on your contour maps, would be so radically affected by a large nearby international airport as to make it extremely disturbing audibly for everyone, and particularly harmful to young children at an important stage in their development and education.

The noise of the proposed airport would, in my opinion, be comparable to that of a persistent headache. Sometimes a mild drone, at others an ear-splitting pain.

Babies with headaches, children with headaches, mothers and fathers with headaches. I would be able to work, to earn a living no doubt, but would anyone be able to relax?

Modern regional planning has not envisaged housing workers in the middle of industrial belts, in homes beneath busy railway embankments, or alongside the main arterial roads, such as the M1 motorway . . . as indeed it might, and did, fifty years ago.

It makes even less sense in the last quarter of the 20th century to propose, even in a nightmare of desperation about the "national interest" that people should be subjected to live beneath a beehive of ironmongery, jet engines and kerosene fumes.

I therefore have very grave fears for the well-being of my family, and everyone else locally, if the airport is sited at Cublington.

I would ask you to treat very lightly the claims being made in favour of the airport by certain individuals, whatever their personal motivation, on the grounds that the benefits they claim would be purely incidental to the coming of an airport and not created by design.

Further, all these community benefits, i.e. more trade, the need to meet a demand for more sophisticated leisure activity, in short, "new life" will be met by intention, and under more pleasant conditions with the development of Milton Keynes new town.

I claim to know very little about the aircraft industry or its technological development, but in the course of my work a great number of publications pass through my hands which are carefully read and noted.

There would seem to be, at least, some reasonable hope that in the future aircraft can be made lighter—I refer to a development of carbon-fibre composite by government scientists at the Cranfield College of Aeronatics.

I would hope that this discovery might lead to aircraft engines becoming less powerful and noisy, the weight-cost-power ratio becoming more economical for airlines to operate smaller aircraft, and the options on vertical take-off being opened to many more aircraft manufacturers than at present.

In view of this perhaps a gigantic new international airport twenty years hence would not be as vital as it now seems. A system of inter-city air/heli-ports may become more useful and desirable. Additionally, more acceptable by reason of their limited size and disturbance area.

If it is the case that we still need a new international airport, then I hope your Commission will recommend to the government that it would be an intolerable imposition to site such a venture anwhere inland.

And further, if it is the case, then the facts of the case must be these: England is a proud, but extremely small country. To carve a chunk out of its centre would be so lacking in commonsense as to be near lunatic.

If it were vital to my home to build another coal bunker, it might be comfortable and convenient for me to build it in the lounge, warm and dry while I

* See also p. 1769.

Printed image digitised by the University of Southampton Library Digitisation Unit

watched television. But for the sake of everyone else it would be infinitely more sensible to built it outside.

An improbable parody perhaps, but consider for a moment taking a small country like Britain and destroying physically forever, a living area of it for the sake of commerce.

Consider it again, particularly when the very real alternative is to create "more Britain," by making our own man-made airport, perhaps linked with a sea-port, on an estuary site.

The alternative, I belive, would capture the admiration of the world, and earn you the sincere thanks of the British people.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. Tomkins*

I would thank you for the grant of leave to appear before the Commission re: the proposed airport at Wing and I wish to make the following statement:

"My wife and I moved to a new house in the village during the summer of 1967. This property is our first house for which we paid £5,350. This is owned by us. Although we both work in London, we chose to live in the village because of the peace and quiet firstly, and secondly, because of it's proximity to the M.1 Motorway with the ease of access to London that it affords.

The positioning of the airport at Wing will destroy beyond all doubt the peace and quiet with its attendant advantages, and revert the travelling position to what we experienced prior to moving to Woburn Sands, when a journey of twenty-two miles took one and a half to one and three-quarters hours.

In this context the following adds point to the travelling position. We are thirty-five miles from home to office and in the summer of 1967 this could be completed comfortably and with safety in forty-five minutes.

This same journey, due to increased volume of traffic over the last two years now takes fifty-five minutes.

The traffic increase with arrival of the airport at Wing would place an intolerable strain on the use of the motorway, particularly in the two-lane section between Hemel Hempstead and Watford, where on Friday nights and the evenings before public holidays the average maintained speed on the two-lane section is *fifteen m.p.h.*

Over the last two years we have spent £1,250 on the house and garden, over and above the initial buying price of the house, which would be completely unrecoverable when we had to sell the property.

We would be forced to do this as living in the area of an airport the proposed size of the third London Airport would be intolerable and cause unnecessary hardship from noise, kerosene fallout, increased traffic and complete disruption of the way of life we moved to the village to obtain and enjoy.

Regarding noise, and particularly interference by noise, we have invested £300 in high fidelity equipment including V.H.F. tuners capable of receiving stereophonic broadcasts. Jumbo jets and similarly sized aircraft severely interrupt V.H.F. signals due to "shadowing", therefore, destroying enjoyment and satisfaction we gain from listening to these programmes.

In summary, we would wish to continue living in the area, and would suffer considerable hardships and financial loss by moving out from the area. The hardship factor would be severely increased due to protracted travelling times, increased strain in much heavier traffic conditions and the loss of relaxation and pleasure due to high repetitious noise levels when aircraft are coming in at low levels to effect a landing at Wing.

We would, therefore, strongly oppose the siting of the third London Airport at the Wing (Cublington) site.

---

* See also p. 1769.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. J. White*

I live in the village of Warendon, my husband's and my choice, as we wished to live in country surroundings. Therefore, it follows that my objection to a Third London Airport being sited at Wing is for the following five reasons:

1. **Noise,**

Constant aircraft overhead will interfere with:

(a) Family life, the excessive noise causing lack of sleep, interrupted conversations, family activities in the country cut down to a minimum and strain and friction.

(b) Interruption of education, as class teaching, and T.V. schools programmes will have too much interference.

2. The despoiling of acres of *good farm land.* We have already lost enough to Milton Keyne's Development. Some of the land, particularly the Wing—Stewkley area, is very well farmed land—we cannot afford to lose this, or to live on yet more imported food.

3. We have already been warned that there are difficulties to be overcome to provide *water* for this area now, so we are going to be even shorter of water if the airport is sited at Wing.

4. **Our position**

We are just about a mile outside the New Milton Keynes City. If the airport should be built at Wing we shall be an isthmus between two large hives of industry and life will be intolerable.

5. The effluence of water and sewage, which again will be some problem placed as we are between Wing and Milton Keynes.

* See also p. 1770.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. A. W. Phillips*

I wish to make the following statement concerning the proposed siting of the Third London Airport at Wing.

The house in which I live with my family (wife, two young children and mother-in-law) is my own. It is a very old house in a particularly attractive setting and is unique in so far as it took me over eighteen months to find the right property to buy.

All my savings have been invested in this house together with a lot of effort and worry. It is not my intention to see it reduced to rubble in order that an airport can be built which would be better sited at sea.

It is very difficult for me to put into words all that I feel on this subject, but I cannot help wondering where we are going to these days in the name of progress.

In the last few years we have all come to expect the most extraordinary things from our government, but the suggestion that an airport of such an immense size should be situated within an area which is probably the most rural and unspoilt in southern England, makes one despair of any commonsense prevailing in high places.

I will not move, I am not interested in talk of compensation. I will fight for what is mine. Freedom of choice and speech are the two most important things to me and indeed to most people in this country.

It is time for the government to put people before money, and I together with thousands of others, will see to it that they do!

---

* See also p. 1770.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Representations without Application for Leave to Appear

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Representations Without Application for Leave to Appear were Received from the Following:

Addy, M.
Adstock Parish Council
Aitken, E. S. (Mrs.)
Alcock, G. H.
Aldbury Parish Council
Alderman, D. (Mrs.)
Alderman, F. E. (Mr. & Mrs.)
Alderman, H. (Mrs.)
Allen, J. H. & E.
Andersshon, G. (Mrs.)
Arnold, J. E.
Ash (Mr. & Mrs.)
Ash, D.
Ashendon Parochial Church Council
Aslett, P. R. G.
Aston Abbot Church of England School
Atkinson, M. (Mrs.)
Aylesbury Orchestral Society
Ayris, H. R.
Ayris, S. A. (Mrs.)

Baker, C. (Mrs.)
Ballantyne, A. (Mrs.)
Barlow, Sir Robert & Lady
Barnard, M. G.
Barrett, E. (Mrs.)
Bates, A. J.
Bates, F. G.
Battlesdon Parish Council
Baylis, D. W.
Beasley, A. E.
Beasley, B. A. (Mrs.)
Bell, E. (Miss)
Berkhampstead Rural District Council
Betts, L.
Billington Parish Council
Bishop, M. G. (Mrs.)
Bishop, M. G.
Blake, T. W.
Bliss, F. W.
Blunt, Sir Anthony
Bocock, C. W.
Bodsworth, M. (Mrs.)
Bodsworth, S. W.
Bonar, M. E. (Miss)
Bonham, J. A. (Mr. & Mrs.)
Boothman, D.
Boughton, M.
Boughton, R.
Bowman, M. E. (Mrs.)
Brackley Rural District Coucil
Brewer, F. J.
Briggs, G. M. B.
Brockless, T.
Brooks, A.
Brooks, J. W.
Brown, E. L. (Mrs.)
Brown, L. G. (Mrs.)
Buckingham, C. (Mrs.)
Bunyan, S. (Mr. & Mrs.)
Bunwood, E. H.
Burt, F. W.
Bucks. Association of Horticultural Societies
Bucks. Society of Architects
Business and Professional Women's Club, Leighton Buzzard

Campbell, A. (Mrs.)
Campbell, J. (Mr. & Mrs.)
Campbell, M. J.
Cann, B. J. (Miss)
Capp, F. G.
Capp, H.
Capp, M. (Mrs.)
Carr, C. R.
Catholic Women's League, Princes Risborough
Cattle, E. M.
Chapman, W.
Chappel, A. M.
Chappel, M. I. (Mrs.)
Chappel, W.
Charlton, J. (Mrs.)
Charlton, J. H. (Mrs.)
Chilton Parish Council
Claridge, A. E. J.
Clark, A. E. & F.
Clark, F. L.
Clarke, G. (Mrs.)
Clarke, W. F.
Clarkson, L. (Mr. & Mrs.)
Claxton, R. M. (Miss)
Claydon Concert Patrons
Cole, F. R. (Mr. & Mrs.)
Colgrove, B. M.
Colgrove, E.
Colgrove, S. W. K.
Coman, B. (Miss)
Congregational Churches, Burcott & Wingrave Group
Cook, G. E.
Cook, H. W. R.
Corbett, P. J.
Cory-Wright, F. N.
Council for the Preservation of Rural England, Northants Branch
Coward, (Mr. & Mrs.)
Cox, D. A.
Cox, D. A. V.
Cox, Long, & Co. Ltd.
Cranwell, D. T. (Mr. & Mrs.)
Cranwell, S.
Crompton, M. E. (Mrs.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Cublington Parish Council
Cuddesdon & Denton Parish Council
Cuddington Parish Council

Dancer, E. A. C.
Dancer, W.
Dancombe, F. J.
Dancombe, L.
Davey, M. G. (Mrs.)
Davies, K. (Mrs.)
Dawson, J. G.
Delafield, J. G.
Denne, J. M. R. (Mrs.)
Deung, E. J.
Deverells Farm, Occupier of
Devereux, W. M. (Miss)
Dibb, D. O. (Miss)
Dickens, M. A. (Miss)
Dickens, R. F.
Dicks, R. K. J. (Miss)
Dodds, J.
Dorling, J. A.
Dovey, H. O.
Dowdall, A. B. (Mrs.)
Drayton Parslow Parish Council
Drayton St. Leonard Parish Council
Duberly, N. R. (Mrs.)
Dyke, F. C.

Edlesborough, Parish Council
Elliot, J. H.
Elliott, L.
Evans, H. A. C.
Evers, M.
Ewers, A.

Faulkner, B. (Mrs.)
Faulkner, C. N. (Mr. & Mrs.)
Faulkner, H.
Faulkner, H. (Mrs.)
Faulkner, M. I. (Mrs.)
Featherstone, E. M.
Field, C.
Flewin, J.
Ford, W. F. (Mr. & Mrs.)
Fortey, L. C.
Fox, W. (Mrs.)
Fremantle, J.
Froggatt, C. A.

Gadsdon, K. T.
Galliford, D. W. (Mr. & Mrs.)
George, F. W.
George, M. (Mrs.)
Gerrard Cross Parish Council
Gibb, —
Gibb, R. M. S.
Gibbs, W. J.
Ginge, F. W.
Ginger, E. L.
Ginn, G. I.
Ginn, B. B.
Gowin, E. F. (Mr. & Mrs.)
Grace, F. W. & M.
Granborough Parish Council
Graves, D. C. T.
Great Horwood Parish Council
Great Missenden Parish Council
Great Ouse Fishery Consultative Association
Green, L. M. (Miss)
Greenacre, L. (Mrs.)
Griffiths, O. E.
Gueterbock, E. (Brig. & the Hon. Mrs.)
Guillame, E. (Mrs.)
Gurnett, A. M.
Gurnett, W. A.

Hall, E. E. (Mrs.)
Hall, P. (Mrs.)
Hansen, E. J.
Hardings, M. S.
Hardwick Parish Council
Harman, E. (Mrs.)
Harris, J. (Miss)
Harrison, R.
Harwood, D.
Haughey, E. J.
Hayes, R.
Hedes, T.
Heley, R. G.
Henley, H. S.
Hewett, P. (Miss)
Hibbard, J. A. (Mrs.)
Hibberd, S. L.
Higgs, C. H.
High Wycombe Society
Hill, M. G.
Hockley, H. F.
Hone, Sir Evelyn
Hounslow, F. V.
Hoy, B.
Hughes, G. K. (Mr. & Mrs.)

Icknield Court Home
Ingram, Professor J. T.
Inner London Education Authority
Innis, M. K. (Miss)
Irons, B. E. C.

Jarvis, D. C. T.
Johnson, R.
Jones, A. (Mrs.)
Jones, P. D.

Keen, E. J.
Keen, J.
Kenedy, G. E.
Kibble, G. E. (Mrs.)
Kilty, J.
Kinvig, C. G.
Kirby, M. J.
Kirk, A. C. S.
Knight, R.
Knocker, P. B.

Lacey, G. E.
Lambourne, M. (Mrs.)
Lasham Gliding Society

Printed image digitised by the University of Southampton Library Digitisation Unit

Lawrence, S.
Lawson, D.
Leighton Buzzard Arts Club
Leighton Linslade Industrialist's Committee
Liberal Association Mid-Bedfordshire Constituency
Lilley, R. E.
Line, B. (Mrs.)
Little, V.
Local Labour Party Stewkley
Long, Credon Parish Council
Long, J. P. (Mrs.)
Long, R. E. (Mr. & Mrs.)
Lonie, A.
Lonie, A. H. I.
Lukes, M. W.
Luton & Leighton Monthly Meeting
Luxemburg, M.

Madelor, L. J.
Maldon Rural District Council
Manasse, O. E. (Dr.)
Marshall, M. A. (Mrs.)
Marsh Gibbon Parish Council
Mathers, K. C. (Mrs.)
Mayne, M. E.
Mayne, R.
McCarthy, A. C.
McCarthy, J. (Mrs.)
McDonald, K. J.
MacKenzie, K.
McIntyre, K.
Mead, M. R. (Mrs.)
Mead, M. F. (Mr. & Mrs.)
Mead, W. J. (Mr. & Mrs.)
Methodist Church Aylesbury Circuit
Methodist Church Leighton Buzzard Circuit
Methodist Church London N.W. Circuit
Methodist Church Stewkley Circuit
Middle Claydon Parish Council
Midwinter, D. (Mr. & Mrs.)
Minch, E. (Mrs.)
Mitchell, G. O.
Mitton, H. M.
Morris-Adams
Morris, M. H.
Mursley Parish Council
Mursley Ruri-Decanal Conference
Mursley Womens Institute

National Deaf Childrens Society
National Union of Agricultural Workers Oxfordshire Committee
Neville Rolfe, D. (Miss)
Noble, J.
North, B. F.
North Crawley Parish Council
North, G. E.
North Marston Parish Council
North Marston Mother's Club

Oak, E. G. F.
Oliver, J.
Oram, J. A.
Osborn, A. E.
Osterfield, G.
Oving Parish Council
Owen, E.
Oxford City Council
Oxford Federation of Women's Institutes
Oxford University

Painter, B. J. S.
Parker, F. A. & F. E.
Parker, N. E. (Mrs.)
Parker, S. N.
Parrott, S. R.
Pelham-Reid, R. M. C.
Pinkard, N. J. G. (Mrs.)
Pitkin, A. H.
Price, J. T.
Princes Risborough Parish Council
Princes Risborough Women's Institute
Pryer, R. R. L.
Puckey, G.
Puslow, N. (Mr. & Mrs.)

Radcliffe, H. C.
Ramblers Association
Randall, W. E.
Raven, J. M.
Read, A. T.
Reading, R. J.
Redding, M. L.
Reed, E. C.
Rick, W.
Rickes, M. J.
Rimner, G. H.
Roade Parish Council
Roads, J.
Roberts, D. B. & C.
Robinson, E.
Rose, P.
Rosebery, Lord
Rove, L.
Rowe, S. A.
Rowe, W. G.
Royal Buckinghamshire & Associated Hospitals Management Committee
Russell, V. F.
Rutaven, P. M.

Sablury, J.
St. Michaels Stewkley Parochial Church Council
Sawyer, E. E. (Mrs.)
Sawyer, W.
Scott, J. B.
Scott-Smith, J. B.
Scott-Smith, R. A. (Mrs.)
Selby-Lowndes, E.
Sharman, L. H.
Shaw, I. (Miss)
Shipburn Parish Council
Simmons, A. G.
Smith, E. A.
Smith, K. (Mr. & Mrs.)
Smith, L.
Smith. M. R. (Mrs.)
Smith, R.
Smith-Cresswell, I. (Mrs.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Snoxell, S.
Stadhampton Parish Council
Stamp, S. (Mrs.)
Stanton St. John Parish Council
Stanton St. John Women's Institute
Steeple Claxdon Parish Council
Stewkley Labour Party
Stewkley Mother's Union
Stewkley Women's Institute
Stiggers, D.
Stiggers, G. M. S. (Mrs.)
Stoke Church Parish Council
Stoke Manderville Parish Council
Stone, G.
Store, J.
Swain, F. P. F.
Swanbourne Parish Council

Tattam, A. (Miss)
Tattam, A. T.
Tattam, L. R. (Mrs.)
Tatton, M. (Mrs.)
Tatton, S. K. (Mrs.)
Taylor, B. C. (Mrs.)
Tennant, N.
Thame, Medical Practitioners
Thame, Solicitors, Accountants & Estate Agents
Thorley, R. T.
Thrower, R. (Mrs.)
Tingrith Parish Council
Toddington Old Peoples Welfare Committee
Tomlinson, D. M. (Mrs.)
Tricker, R. S.
Tring Society
Turnstall, P. R. (Mrs.)
Turbey, E. M. (Mrs.)
Turney, K. G.
Twyman, H. R.

Viceais, F. G.
Vince, J. N. T.
Vincent, A. E.

Waldock, W. J.
Walduck, R.
Walduck, W. J.
Walker, F. (Mrs.)
Walker, M. M.
Walton, J. (Mrs.)
Warburton, R.
Ward, G. H.
Watson, C. M. & W.
Watson, C. (Miss)
Watson, J. F.
Watson, L. M. (Miss)
Watson, W. J.
Watts, J.
Welsh, E. H.
Wenman, H. E.
Wheeler, H. F.
Wheeler, P. E.
Wheeler, W.
Whitchurch Women's Institute
Whitfield, M. J. (Mr. & Mrs.)
Wildsmith, I.
Willes, W.
Willis, C. E. (Mrs.)
Willis, R. (Miss), Willmott, G. E.
Wills, S.
Wing Post Office
Wingrave Women's Institute
Winslow Parish Council
Winslow Women's Institute
Winsor, E. (Mrs.)
Woburn Parish Council
Wolverton Urban District Council
Woollatt, R.
Wright, D. (Mrs.)
Wycombe Air Park

Yates, B. J.
Young, D.
Youth Hostel Association

Objectors Sponsored by Buckinghamshire County Council

Wendy Adams
Dr. D. M. Allen
Mrs. H. A. Alderman
Mrs. M. M. Alderman
E. Angryk
Mrs. F. S. Armstrong
C. Ashall

Mrs. L. A. Baker
W. G. Bandy
Miss M. G. Barnard
C. E. Barrow
Mrs. G. R. Welch Bartram
C. Beasley
Mrs. N. Beasley
Mrs. K. Beeson
Mrs. L. Biggs
S. H. Blackmore

I. A. Bonar
Mr. & Mrs. J. Bond
A. Bond
Sir Bryan Bonsor
A. Boothman
Mrs. B. Bowkett
Mrs. A. P. Bowley
P. W. Boyd
Mrs. I. Brandon
E. G. Brazier
Mrs. F. D. Brazier
Mrs. M. E. Brazier
C. Brewer
B. W. Brewer
H. L. Broomfield
S. C. Broomfield
V. A. Botherton
W. E. Bowsher

Printed image digitised by the University of Southampton Library Digitisation Unit

D. W. Brown
Mr. & Mrs. C. E. Browning
J. Burrell

M. A. Caley
Dr. C. D. Campbell
Mrs. E. M. Capp
J. Capp
Mrs. A. Carter
C. C. Carter
Miss M. G. J. Carter
F. Cassidy
Mrs. C. Chapman
A. Chappell
F. Chappel
J. A. Chappell
P. F. Chappell
V. E. Chappell
W. Chappell
W. Chappell
Mr. & Mrs. Cheney
Miss J. Cheney
Mrs. C. J. Cheshire
H. Cheshire
Mr. & Mrs. J. Cheshire
Mr. & Mrs. Clark and F. Mead
Mrs. G. M. Clark
Mrs. G. P. Clark
F. J. Clarke
P. J. Clarke
S. T. Clarke
A. G. Cleaver
Mrs. M. C. Cleaver
F. C. Coles
L. T. Coles
M. A. Copelin
A. H. Corkett
J. M. Cornish
Mr. D. A. Cox
J. F. Crowther
R. H. Cummings
Mr. & Mrs. G. Cutter

Mrs. M. Danbury
S. T. Dancer
H. C. Dashwood
M. G. Davey
Mrs. K. Davies
J. M. Davis
T. E. Dickens
F. W. Dowdey
D. J. Dunn

Dora M. Edmunds
R. A. Edmunds
B. Edwards
Mrs. D. M. Edwards
L. J. Edwards
W. E. Edwards
D. Z. Elliott
M. Evans
M. V. Evans
Mrs. R. Evans
D. H. Eyers

Mrs. M. J. Faulkner
M. R. Faulkner
R. Faulkner
Mrs. D. M. Flatt
Mrs. J. Ford
H. O. Forster
A. H. Foulkes
R. Francis

Mr. & Mrs. Galbraith
D. R. Gammon
P. F. Gibbins
D. F. Gilby
D. J. Goldney
J. H. Goodman
M. F. Grant
Mrs. E. Green
A. W. Greenslade
A. J. Gregory
C. W. Gurnett
H. O. Gurr

Miss J. Hainsworth
Mr. & Mrs. C. A. Hall
Mrs. M. Hall
W. G. Hance
H. W. Handford
D. Hankins
A. C. Harding
Mrs. G. D. Harding
P. J. Harding
W. J. Hardwicke
E. F. Harrup
D. B. Hasberry
F. G. Hatcher
Mrs. E. E. Hedges
E. F. Hedges
Mr. & Mrs. J. Hedges
Mr. & Mrs. L. H. Hedges
S. F. Hedges
F. Heley
F. J. Heley
K. P. Henley
Mr. & Mrs. F. Hinds
Bessie Hinton
Mr. & Mrs. E. G. Hollis
M. Holman
D. H. Hooper
Mrs. K. M. Hosler
G. E. W. Household
Mr. & Mrs. S. G. Hounslow
G. Hulme
Mrs. C. M. Humphreys
K. S. Hunter
P. Hutber

C. W. Isherwood

L. J. P. James
J. R. Jeffries
D. G. Jones
N. G. Symons-Jones
T. A. Jones
Mrs. E. Judd
P. A. E. Jump

Printed image digitised by the University of Southampton Library Digitisation Unit

J. W. Kaye
M. Keane
Mrs. H. Keasey
W. S. Keasey
Mrs. A. M. Keen
Dora Keen
F. Keen
R. J. Keen
Mrs. E. Keenan
J. H. Kellner
C. Kempster
Mrs. G. Kempster
A. H. Kenlock
Mrs. E. Kent
Mrs. M. Kent
Miss L. R. Kimble
Mrs. M. R. King
F. L. Kiteley

Miss P. Lacey
B. M. Lack
J. L. Lambert
S. M. Lanther
G. C. Lawrence
K. Lewis
D. Loader
L. R. W. Long
R. J. Longhurst
E. A. Luddington
R. Luxford

J. A. E. Maclean
D. H. Markes
C. Marlow
H. J. Marsh
V. Mathias
R. J. Mayne
R. McGregor
F. Mead and Mr. & Mrs. Clark
F. C. Mead
G. E. Mead
J. Mead
Mrs. M. E. Mead
P. W. Mead & M. F. Mead
R. M. Mead
W. J. Mead
Mrs. M. Merry
Mrs. E. Morris
H. N. Morris
S. A. Munro
I. B. H. Murray
Sir Ralph Murray

H. Neal
Mrs. D. E. Newton

C. G. O'Callaghan
H. G. Osborn

R. J. Packard
S. L. Painter
R. C. Plamer
A. K. Paradine
Mrs. D. E. Parker
N. D. Parrott
J. Patching
B. Perry
G. R. Picton
C. J. Pike
G. R. Pinkney
J. Y. Pollock
C. Pratt
D. Protheroe
D. S. Pullinger

Edith J. Randall
Mrs. M. Reid
L. Richards
Mrs. J. R. Richardson
E. J. Robinson
T. W. Robinson
Dr. T. Roden
J. M. & T. B. Rowe

J. H. Sawyer
J. F. Scrivener
S. H. Servante
Mrs. V. E. Servante
G. W. Sharp
W. J. Shephard
Mrs. A. Short
Rev. H. J. Silltoe
A. E. Simmons
G. S. Simmons
T. W. Simmons
Wg. Cdr. G. L. Sinclair
D. E. Smale
Mrs. E. Smith
E. V. Smith
H. A. Smith
I. E. Smith
J. M. B. Smith-Cresswell
J. S. Smith
R. E. Smith
Mrs. C. N. H. Solloway
Miss M. E. Southern
C. W. Sparkes
E. Stamp
E. V. Starr
W. S. Steel
M. Stevens
Miss P. Stewart
Stewkley Recreation Assn.
I. H. Stonehill
H. M. Sylman
W. K. Symers
J. H. Symn
F. Szostik

Mrs. B. Taylor
R. J. Taylor
Miss C. Terry
P. I. Thomas
S. L. Thomas & A. K. Thomas
Miss I. O. Towers
D. M. Tyson

E. J. Venn
S. W. M. Viccars

Printed image digitised by the University of Southampton Library Digitisation Unit

Miss B. Walter & F. Spear
F. W. Walter
Mr. & Mrs. E. Warrick
C. J. Watts
R. J. Weatherhead
C. C. Westley
A. J. Wheeler
D. B. White
J. S. Whitfield
W. G. Whitehead
S. C. Willey
H. Williams
R. F. Williams
Mrs. E. Willis
Kathleen F. Willis
G. Winfield
W. Winsor
T. E. Wood
Mrs. A. Woodward
J. A. W. Woodward

R. C. Yorke
P. R. Young
S. N. Young

Z. Zelent

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

Monday, 14th July, 1969

THE ASSEMBLY HALL, AYLESBURY, BUCKS.

BEFORE MR. A. J. HUNT

Oral evidence was taken from:

Buckinghamshire, Northamptonshire and Oxfordshire County Councils (*Mr. R. Millard, Mrs. F. A. Sharman, Mr. G. I. W. Dunford, Mr. N. Fleming, Mr. F. B. Pooley, Dr. J. J. A. Reid, Mr. D. P. Davison, Mr. D. B. Rose and Mr. A. L. Bennett*)

Oxfordshire County Council (*Mr. Hill and Mr. K. Summerfield*)

Milton Keynes Development Corporation (*Lord Campbell and Mr. Ismay*)

Bedfordshire County Council (*Mr. N. MacDermot and Mr. G. Cowley*)

Leighton-Linsdale Urban District Council (*Mr. M. Connell*)

Hertfordshire County Council (*Mr. D. Keene and Mr. D. S. R. Overton*)

Watford Borough Council (*Mr. Illings*)

Luton County Borough Council (*Mr. J. C. Southwell, Mr. C. K. Cole and Mr. S. McArdle*)

Aylesbury Rural District Council, Berkhampstead Urban District Council, Bullingdon Rural District Council, Tring Urban District Council, Wing Rural District Council and Winslow Rural District Council (*Mr. Lymberry*)

Aylesbury Rural District Council (*Mr. A. E. Toy*)

Berkhamstead Urban District Council (*Mr. S. C. Redding*)

Bullingdon Rural District Council (*Mr. K. Edwards*)

Tring Urban District Council (*Mr. T. W. Jones*)

Wing Rural District Council (*Mr. W. E. Thompson*)

Winslow Rural District Council (*Mr. R. G. Brown*)

Powell Duffryn Technical Services (*Mr. S. C. Breasley*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector This is a Stage II Local Hearing to enable representations to be made to the Commission on the Third London Airport, concerning an assumption that the Airport might be located on land in the vicinity of Cublington. As in the case of the two previous hearings at Foulness and Nuthampstead, it may be helpful if I make a few brief comments about the scope and purpose of the Stage II proceedings.

Shortly, these occur at an early stage in the Commission's overall programme, and their purpose is to ensure that the Commission is made aware of all the local implications which should be taken into account. All material submitted at this stage will be most carefully considered in subsequent and more detailed work on each of the short-listed sites.

A statement has been published outlining the place of this and other Stage II hearings within the overall task of the Commission, and copies have been distributed around the hall and are otherwise freely available upon request.

I should perhaps stress the hearing is about local implications, because having read the entire submitted proofs and statements, a very large number of them refer to the comparative merits of Foulness, and this must be a matter for consideration at later stages. As a result of the pre-hearing procedures, a total of no less than 811 authorities and other parties were given leave to be heard. Those still wishing to be heard may do so in an agreed order, commencing with the First Tier authorities. That agreed order and our best estimate of the timetable have been circulated, and copies of the timetable are also available.

It, the timetable, has been based upon experience gained at the two previous hearings, but, of course, must be subject to such revision as is dictated by the actual progress of the hearing.

The morning sessions will commence at 10 o'clock and continue until shortly before 1 o'clock. Each afternoon session will commence at 2.15 and end between 4.15 and 4.30. A verbatim report is being taken, and closure at about 4.15 to 4.30 is necessary in order that the transcript writers can prepare their transcript for the following day.

Concerning procedure, the vast majority of statements, proofs of evidence, and the like, have been circulated, and I really must thank all those who have cooperated so well with the Commission to enable this mammoth task to be undertaken in time. Some late documents will be made available as soon as they are copied this morning. In any event, documents should be taken as read, and the need for examination-in-chief thereby largely eliminated. Since all matters raised at this hearing will be subjected to the most rigorous examination during the later stages of the Commission's work, that is, Stages 3, 4 and 5, I believe it will be most useful if cross-examination is directed towards defining issues rather than attempting to resolve them. Nothing can be gained, and much valuable time can be wasted, by unnecessary repetition.

As a Member of the Commission which has been studying the problem for over one year, I have, I hope, some knowledge of all the issues involved. Concerning local implications, I have known this locality, the Wing locality, for a long time, and during the past year have spent a great number of days looking round the area. I have read every one of the submissions, at some risk to my eyesight, and I believe that I shall be reasonably conversant with all the matters that are to be raised during the hearing.

At present, about 594 parties have indicated that they are satisfied to rely upon written submissions. That number includes approximately 180 who did ask to be heard, and then withdrew their request, and decided to rely upon a written submission. Copies of these written submissions are available for inspection by any who may be interested. There are just one or two cases where parties have requested that certain personal circumstances should not be made public, and naturally we have respected those requests.

I would again stress as much as I can that written submissions will be fully taken into account, equally with those supported by an appearance, in all the subsequent work of the Commission. On behalf of the Commission, I have here a small staff headed by Miss Wall, who is sitting at the table in front of me, and they will be very pleased to assist any persons taking part in the proceeedings by issuing papers, by resolving minor procedural problems, and helping in any other way possible. If there are any major procedural points which may be puzzling people, I will do my best to resolve them before we actually start to hear the respresentations. Are there any major points of procedure which should be resolved? If not, I have just one final point of detail to mention, and that is that we are, of course, very concerned that the transcript should be as complete and accurate as possible, and the transcript writers have very great difficulty in a large hearing of this nature in identifying the persons who rise early in the proceedings, and in particular, in accurately hearing their names; so to overcome this problem, there are two points.

Firstly, would each speaker, when first speaking please identify himself or herself, and indicate the interest, if any, which they represent. Secondly, at some convenient time, would they please fill in a form which is obtainable at the table, giving full details of their names and so on, and that will be incorporated in the transcript; therefore their name will be correctly spelt, and their interest will be correctly identified.

In that case, then, I will now call upon Mr. Millard to present the representations of Buckinghamshire, Northamptonshire, and Oxfordshire County Councils.

Printed image digitised by the University of Southampton Library Digitisation Unit

COMBINED REPRESENTATIONS OF BUCKINGHAMSHIRE, NORTHAMPTONSHIRE AND OXFORDSHIRE COUNTY COUNCILS

Mr. Millard May it please you, sir, my name is Richard Millard; I am the Clerk of the Buckinghamshire County Council, and I appear, with my deputy Mr. R. N. D. Hamilton, for the County Councils of Buckinghamshire, Northamptonshire, and Oxfordshire. The situation is a little complicated, because much of our evidence is also put in on behalf of the Hertfordshire and Bedfordshire County Councils, but they are separately represented. Furthermore, in respect of what it says on the face of some of the sheets of evidence, Hertfordshire alone are no longer associated with the evidence of Mr. Pooley, the County Planning Officer of Buckinghamshire, or with that of Dr. Reid, the County Medical Officer. In addition, the Oxfordshire County Council, for whom I appear, wish to add some short additional and special evidence, and to make a short statement, copies of both of which I think you have.

Inspector Yes.

Mr. Millard As the Commission has stated in their published documents, and as you have said today, the purpose of this Inquiry is to enable the Commission to be informed of all the local implications of the possible choice of Cublington or Wing as the site of the Third London Airport, and to hear objections, comments and representations on the local consequences. While I shall endeavour to be as dispassionate as possible, and to bring out any points which appear to us to favour this site, I am bound to say at once that the main burden of my case will be one of thunderous opposition to the choice of Cublington as the site of the Third London Airport. No only are the individual Councils whom I represent implacably opposed to this choice, but they believe that this is also the view of the vast majority of those living anywhere near to the area, which will be evident from the case, not only of the other authorities but of all the various bodies and individuals who will come before you at this Inquiry.

You already have, sir, the Proofs of Evidence of the eight witnesses whom I propose to call, and they represent a considerable volume of paper which we both have in front of us. Their only distingushing mark is that they are all in grey covers, unlike any others. It would be both unnecessary and time consuming for me to attempt to traverse the wide field covered by the whole of this evidence in my opening, and I propose to confine myself to a broad sketch of my case, bringing out what the County Councils which I represent consider to be the more important points, and also attempting to knit their comments into those of some of the local bodies and individuals who will follow me. What I have to say is largely based on an amalgam of the evidence which I am submitting, and I shall only occasionally attribute broad points to the evidence of individual witnesses. Merely because I do not mention any particular evidence does not for one moment mean that we do not regard it as significant.

Everyone recognises that your Commission has a tremendous task, and one which is bound to provoke enormous opposition from many quarters to the proposed inland sites which the Commission have tentatively put forward as the field of their choice. When, after their earlier deliberations and public hearings, the Commission gave out that short list of four sites, the inclusion of Cublington on this list was received in this area with amazement and indeed incredulity. Indeed, one might say that, on first driving over the site selected by the Commission, with its heavy undulations and deep valleys, one might be forgiven for thinking that one had misread the map and come to the wrong place altogether! Furthermore, we have all known in this area for several years that a valley on this site, which may be seen on the map in front of you, has been earmarked for some time as the site of a reservoir, which would be 150 feet deep; and it is somehow, we feel, a little difficult to reconcile this with the idea of constructing runways over it. I personally shall say little about this reservoir, but I would not for one moment underestimate its importance generally, and its significance to your task. It is a matter of great complication in the water reserves and in a special sense it will be dealt with later by the Thames Conservancy, the Bucks. Water Board, and others.

The reasons which led the Commission to include Cublington in their short list are largely shrouded in mystery, and the Commission have so far refused in spite of persistent requests to reveal the full reasons which led it to select this site. All that we do know from their public information is that the choice is provisional, that it is based on incomplete information, and in particular that the choice has taken little or no account of planning considerations which you, Sir, particularly wish to hear from us today. Indeed, this is of course set out in the booklet published by the Commission.* I hope that at the end of my case the Commission will be left in no doubt that whatever advantages they may at first have seen in this site, the disadvantages are so enormous that it should in no circumstances form the subject of their final selection.

I can perhaps liken the establishment of a four runway airport in any area, particularly in this area, to the dropping of a stone in a pool. The immediate splash represents the disturbance caused by the building of the airport itself; but the ripples from this initial disturbance spread wider and wider over a large area of country. I propose to examine broadly the practicability of the proposal and the initial effects in the immediate locality, and then to go on and consider the implications over the vastly wider area which would suffer from the impact of this airport. It would not be putting it too high to say that the drop of the stone in this particular pool would be regarded locally, and indeed very widely.

* *Site Information for Stage II Local Hearings.* 3. *Cublington (Wing).* (HMSO; 6s.). Reproduced at p. 1001.

Printed image digitised by the University of Southampton Library Digitisation Unit

as a disaster of the first magnitude, whose advantages —whatever they may be—are far more than counterbalanced by the destruction, disturbance, and indeed misery which it would bring in its train.

Continuing with my analogy of the stone in the pool, we may perhaps usefully look at the site. The map* which you see there is based on Mr. Pooley's evidence,† and those present may find it useful to refer to it from time to time. The site is a typical fine piece of rolling English countryside, measuring some seven by two and one half to three miles in area, and with considerable undulations, particularly at the western end with levels varying between the highest and lowest point by as much as 170 feet. It is true that on one corner of the site there was the wartime Wing Airport, but in round terms this only covered about 500 of the total of 7,500 acres which form the subject of your Commission's provisional choice. It can perhaps therefore be assumed that the choice of site was hardly, if at all, affected by the siting of the former wartime airport. To convert this area of rolling English farmlands with its three villages of Cublington, Stewkley and Dunton possibly—and it is not absolutely clear how much and how far Dunton itself is affected—into a modern four runway airport would be a colossal task. Not only would it mean bulldozing away these attractive villages and many isolated farms and houses, but Mr. Sharman‡ estimates that in order to produce the necessary levelling of the site it would mean removing the staggering total of 122,000,000 cubic yards of earth—and if it is levelled at the rate of upwards of 10,000,000 cubic yards of earth a year, spread over a period of ten to twelve years, it would be necessary to bring into the site a total of more than three and a half million cubic yards of sand and gravel to construct the runways and buildings. That is, of course, in addition to all the other innumerable steel work and other components of the buildings which would be required. Mr. Sharman estimates—and this perhaps puts the thing rather graphically—that at least in the early stages the arrival of the sand and gravel alone, not to mention the lorries bringing materials and supplies, would mean that at least three hundred 15 ton trucks would bring the material to this site from gravel pits every day. Much of this traffic would have to travel along narrow unsuitable roads, not only near the site itself but as far away as remote villages in Oxfordshire, from the gravel pits; and indeed the County Surveyor of Oxfordshire will be telling you something of that problem. There is too the question as to how far local, or some local suppliers, competing as they will be with the development of Milton Keynes and all the general development in this area, can meet the needs of as much as three and a half millions cubic yards in the time that it would be required, and it seems highly probable that the haul for a good deal of the material would have to be from very much further afield—indeed, way down in Hampshire and beyond that.

All these works on the site would in themselves create an appalling scare on a lovely piece of countryside, to say nothing of the noise, the mess and the disturbance which would obviously go on for years and years. It would by any standards be an extraordinarily expensive operation. I am not permitted, and I do not propose to transgress your rules, to refer at this Inquiry to other sites; but perhaps I may be allowed to generalise that the site works and the earth moving and the levelling on this site would be high in cost in comparison with equivalent works in other areas. But it is right and proper that I should accept at once that this could be done, with the aid of modern earth moving and other engineering equipment, and done within the sort of time scale which it would be necessary to follow in order to meet the timing needs, whatever they may be, in the middle 1970's, of a new Third London Airport.

If I may turn aside from the no-man's-land of the site itself, perhaps we may look for a moment at the question of providing access to it. At present, of course, the site is served by ordinary lanes and minor roads, and it must be axiomatic that new roads and connections to railways would have to be provided at an early stage, thus further carving up and disfiguring an even larger area of the surrounding countryside. I do not propose to go at length into various possibilities, which are canvassed in detail by Mr. Sharman, and Mr. Pooley, and indeed one of the instances is shown there on the map* on the board. Suffice it to say that so far as communications are concerned, there are no readymade accesses to this site, either by road or rail. From an early stage, therefore, heavy expenditure would have to be incurred both to bring passengers to and from the airport and—perhaps equally important—to provide means of moving the employees from wherever they happen to live. There would be a period of a few years—but this period would not in fact occur until some years hence—when planned improvements of some of the major roads such as the A.41, coming fairly near to the site, would have spare capacity when they are completed; but it is important to stress the vital point that when the airport is fully developed, additional and probably exclusive provision would have to be made for access by road and rail between the airport and London. Mr. Sharman develops this in his Proof, but basically it amounts to this: that once you have the full scale of a four runway airport, up to one hundred million passengers a year, nothing but an exclusive motorway and an exclusive, or almost exclusive, rail line would really do the trick.

Before we leave the site itself, there is the question of the air traffic control pattern, and in a sense this is local but it is obviously a matter which will be canvassed by Mr. Dunford at the later stages of your

* p. 1035.
† p. 1023.
‡ p. 1007.

* p. 1035.

Printed image digitised by the University of Southampton Library Digitisation Unit

Commission's proceedings—I have no doubt at Stage III, but of course it will be discussed very fully at Stage V. I am, however, calling before you Mr. Dunford, whom you know well; and I would only refer to the conclusion of his evidence at this stage—I am purposely avoiding going into all the detail of this matter.

With the opening of a third London Airport on the London–Birmingham access, this would require a large extension of controlled air space, which would unduly complicate the national air traffic control service and have a detrimental effect on London Heathrow Airport, as well as on other civil and military aerodromes in that area.

So much for the airport itself, and the means of getting to it. Perhaps we could turn to considering the ripples which extend so much further outwards in this pool. This brings us at once into the sphere of local and regional planning in its widest aspects. First, there is the enormous population which the existence of the airport would generate. On the Commission's own figures for employment at the airport, and adding the likely numbers of employees in service industries, associated industries, and those who would be automatically attracted to the vicinity of the airport, and multiplying this by the numbers of members of families of those who were employed, one reaches a staggering total. Many estimates will no doubt be made in the course of time about this total; but the experts whom I am proposing to call estimate that this means in round terms an ultimate total of no less than 400,000 people into the area within the ambit of an airport of this sort, projected over the next twenty years or so. Mr. Pooley has gone to great trouble to see where these 400,000 people can be housed, and he has proposed what is known as the—to me ghastly, but I am told it is a word in the suitable jargon—urbanisation pattern of the development associated with this airport. This urbanisation pattern—in other words, where you would put the people, in common parlance—is set out in detail in Mr. Pooley's proof and I do not propose to examine here precisely what he suggests. I would, however, emphasise that neither Mr. Pooley nor anyone else, and in particular the planning authorities from the adjoining counties, suggest that development on this scale or of this kind is for one moment desirable in this area. Indeed, the contrary is the case.

If I may take two examples: first of all, Milton Keynes was proposed as a new city to take overspill first from London and later also from the towns in South Bucks. which are encircled by the Green Belt, and to attract industry of the right type to provide employment for those people.

If in fact Milton Keynes were to become the Airport City, its whole character and purpose would be changed. Milton Keynes Development Corporation themselves make clear in their evidence their whole conception of the manner in which this City should develop would require complete rethinking. Furthermore, it would mean that the population, or a large part of the population and the industries who are willing to go there, and are intended to be housed there, would have to go somewhere else, and the purpose of this important counter-magnet in the South-East planning scene would be largely destroyed.

Perhaps I might pause to interpose for one moment that, as you will hear later from the Development Corporation, in fact they already have industrialists wishing and willing to come there; negotiations for the provision of industry during the early stages of their development are already complete, and it needs little emphasis to show that Milton Keynes is a place which will attract, by its communications and situation, industry on a massive scale as soon as it gets going, and indeed, in anticipation, as it has already done.

The other example I should like to give is Aylesbury, which has a character of its own as a modestly expanded country town with thriving modern industries. Aylesbury would be bound to suffer enormously from the impact of the airport, and to undergo radical changes in its character, and suffer great strains on its employment. All this I will not go through in detail, because it will be elaborated for you by the statements and evidence of the Aylesbury Borough Council.*

But perhaps most important of all in this regional planning context is the entirely distorting effect on the economy of the area, which the coming of an airport to Cublington would bring with it. This part of the country is one where there are enormous pressures for development, industry and expansion. One of the important objectives of planning in the area since the war has been to canalise these powerful economic and other forces into the right channels, and to secure that the development takes place in the way it should, and within reasonable bounds. If, superimposed on these natural strong economic pressures in this virile corridor between London and the Midlands there were to be established an airport, bringing with it an associated population of 400,000 people, and the employment in which the working section of that population would be engaged, the pressures would increase enormously. Not only would these impinge on the physical planning of the County, but also on the labour market, and this is a most important point where unemployment is already very low compared with other areas. Mr. Pooley gives you the figures in his proof, but this is in fact, and has been for some time, an area of very low unemployment, and the result of all this would be little short of disastrous.

The Buckinghamshire County Council has always recognised that they would have to take a share of the growing population in the South-east, which, together with the economic factors, creates the pressures to which I refer. The original concept of

* p. 1111.

Printed image digitised by the University of Southampton Library Digitisation Unit

building a large new City on the site at Milton Keynes was their answer to this problem; by that they hoped to concentrate their share of additional population and industry in a suitable place. In this way they also hoped to be able to retain all the best features of the Chilterns and the middle of the County, and the South.

It would be if I may say so hard, to say the least of it, if the contribution which the County Council made in this way and their foresight in putting forward this proposal were in itself by creating the City of Milton Keynes held to justify yet another—perhaps it is not putting it too high to say—sacrifice in the shape of having this airport imposed upon their area.

In their evidence to the Commission at the public hearings at the end of last year, the British Airports Authority* set out seven basic requirements against which the merits of possible sites for a third London Airport must be judged. The fifth of these reads: "Community interests. The site must be such that the airport can be integrated satisfactorily with the prospective future social and economic pattern of the area". At a later stage in their statement the went on to give what they called amplification of the seven requirements, and on this particular item, their amplification was even more pertinent, and it read as follows: (you, Sir, of course have these papers) "Community compatability, the airport located to take full account of the effects on the neighbouring population, on land use, buildings, and other objects of historic and social importance, as well as taking account of the growths of population and employment opportunities". I need hardly say that those whom I represent feel that what is proposed here, or what would be proposed if the airport came to Cublington, could hardly be said in any way to fulfil that basic requirement which the British Airports Authority lay down.

So far I have dealt sketchily with the broad, rather cold planning principles which have to be considered in relation to this area. But perhaps I might now introduce a note of greater colour and warmth into the picture by emphasising quite simply in layman's language what a frightful sore thumb an airport of this size, with its associated urban development, the roads and the railways, and so forth, would mean in an area of such lovely countryside, which planning policies over the years, and particularly since the war, have striven so hard to preserve. To the south there is, of course, the Chilterns, which I have mentioned already, and which are designated as an area of outstanding natural beauty. Then the Vale of Aylesbury on the northern edge of which this site lies, and this lovely area of undulating countryside upon which your Commission have now cast their eyes. This whole area, not only the site of the airport, but miles around, would never be the same again if the airport were to come to Cublington, and a large slice of the heritage of the English countryside, villages and towns would be blighted as a consequence of the arrival of this monstrous and inappropriate intrusion. All this is developed more fully in the evidence before you, and I leave this aspect with that simple summary.

So far I have said nothing at all about the effect on the people who live and work and are educated in this area at the present time, and the moment has come to turn briefly to this aspect.

First perhaps I should mention the question of noise. This is a subject upon which there seems to be the most endless scope for difference of opinion as to the effects which an airport would produce in given areas, and to the interpretation of what have come to be known as noise number indices drawn on the Commissions' map following the principles of the Wilson report.* I am glad that I shall not personally be called upon to give a dissertation as to how the noise number indices are in fact compiled, but fortunately all the experts advising the Commission, and me, seem to understand fairly clearly what they mean. In general, I will leave the evidence of Mr. Fleming,† who will be well-known to you as a great expert in this subject, to speak for itself, and would only make two or three points on it.

First of all, whatever interpretation one places on the effects on life in the future within various NNI contours, it must be common ground that life would be well-nigh intolerable within the higher limits, and the great majority of poeple now living there would have to move. To give you one example, the charming villages of Whitchurch, Hardwick and Weedon, which would lie just under the runways, would be almost as ruined by noise as if they had to be demolished.

Secondly, and the second example, the effect of any given NNI in a quiet country area would be far more objectionable than in a closely knit urban area with existing heavy traffic, and other noise, so that the tendency for people living in the country to find life intolerable would be that much the greater. This, I accept, is a matter upon which there will be all shades of opinion, but as a proposition I think it would be difficult to contest. This would perhaps apply even more by night than by day, because people used to sleeping in quiet country areas, where the hooting of an owl and the occasional passing car are the only noise to which they are accustomed, would be much more easily disturbed by night flying than those living in towns. Indeed, I might mention that only two days ago a neighbour of mine, who like myself, lives in the country, said he had been to stay recently with some friends in Hounslow, who seemed to be quite accustomed to the noise of aircraft passing over at night, and in fact he and his wife had practically no sleep at all, and determined that under no circumstances would they ever accept an invitation to stay the night again.

* *Papers and Proceedings*, Vol. I, p. 3. (HMSO; £4 10s.).

* *Noise: final report of the Committee on the problem of noise.* (Cmnd. 2056) (HMSO; 19s. 6d.).

† p. 4017.

Printed image digitised by the University of Southampton Library Digitisation Unit

There are, then, the special cases of schools and hospitals, which are dealt with partly in Mr. Fleming's evidence, and partly in that of others, including Mr. Davison* and Dr. Reid.† I will not go in detail into Mr. Davidson's evidence, but I would especially draw attention to the fact that on the standards laid down by Mr. Fleming, and it is important, if I may suggest it, to read those two proofs together because they very much interlock, it would be necessary to carry out some sound insulation at 114 existing schools with a total of well over 20,000 pupils, at a cost approaching £4m. Still further schools which are planned in the area would be similarly affected.

Finally, the Aylesbury area is particularly rich in hospitals—this is "finally" on the noise issue—and you will have evidence before you to show that special considerations applying to them would clearly mean that noise would have a very serious impact on their work. This also applies to the other health institutions detailed in Dr. Reid's evidence. Perhaps I might at this stage especially commend to you the general dissertation, which I am sure you will read as an objective and a learned one, on this subject, on the effects of noise on health which Dr. Reid, gives in his evidence.

At last, this brings us to the people themselves, upon whom the major impact of an airport on this site would fall. Mr. Pooley in his evidence has described the villages which would be materially affected. There are 148 of them within the 35 NNI contour, and 67 within the 40 NNI contour. All these would be seriously affected to varying degrees, and life in these villages would never be the same again. But I am extremely anxious to avoid any suggestion of exaggeration. It would certainly be unreasonable to suggest that however different life might be, people could not go on living in many of these villages. I should, therefore, like to concentrate my attention on three villages within the site and the 12 within the 50 NNI contour, where they would be either turned out of their homes, or life would by any standards, become impossible for many, but even there, as I say in a moment, perhaps not for all.

Mr. Pooley says that we are talking of 1,400 people within the site, and 8,500 within the 50 NNI contour, or nearly 10,000 in all. These figures are slightly higher than the Commission's own, but a few hundred more or less hardly affects the issue, and if I might deal with it in broad terms on those figures, while the situation for the 10,000 would be bad on any showing, there may be those who would suggest that some at least of these would go on living there; but it must be common ground that, if one accepts the greater refinements of Mr. Fleming's NNI contours, at least 3,500 of that 10,000 people, namely those who live within the site, or within the 55 NNI contour, would find the conditions of life unreasonable and unacceptable, and therefore would be bound to move. Even this 3,500 is a considerable figure, although I do not for one moment accept that they alone would feel it necessary to move from the site or the vicinity of the airport. Other living near but not quite so near would, one feels sure, be similarly affected.

But whatever the precise figure may be, perhaps we should work on this figure of 3,500 for the moment. That means a very large number of people would be driven away from this area if the airport were to come here. What are these people being asked to give up?

Now, sir, this is where I would ask you particularly to look at the statements of the Parish Councils and the evidence within the high NNI areas. I know, sir, you have been flooded with paper, and I shall have a few words more to say about that. I was delighted to hear you say at the beginning that you had already ploughed through this mountain of documents, but from that I am sure you will have already obtained a graphic picture of the close attachment to their villages, the love of the countryside and its peace and, perhaps above all the importance to each of these people of the close knit integrated communities in which they live and have their lives and, in many cases, their roots, going back for generations. The hardship caused by turning out these people would be incalculable. They are tied to their homes and villages by deep affections, interests and associations which would all be irretrievably destroyed if they were to be moved. They would lose the homes they have lived in and often their forebears have lived in, and on which they have lavished great attention; land they have farmed and, in many cases, the jobs they have had since their youth.

I do not propose, sir, to quote in any detail from these statements, but there are just three or four short points I would like to make which in a sense epitomise this picture to which we draw attention to the area particularly. First of all, in the evidence of the Stewkley Parish Council*—I am sorry to say it seems to have no number, but it will no doubt be easily identifiable—there is given a very vivid picture of a thriving community life in that threatened village and of the inter-relation of the individuals who live there and, indeed, part of it is summed up in one phrase which says: "one cannot bear to think of what will happen if families are separated, for it is inconceivable they can pick up again the threads of community life such as it is here in another place".

Among the innumerable individual statements, No. 5238,† and if I may I will just briefly paraphrase it, this man describes himself as a relative new-comer to Stewkley with a wife who is a native and relatives who live in three adjoining houses. He says he has worked hard to restore his house, and "I do not know the words to describe the despair we shall feel if our house should have to be knocked down."

---

* p. 1045.
† p. 1038.

* p. 1442.
† (Mr. Preston) see also p. 1456.

Printed image digitised by the University of Southampton Library Digitisation Unit

Then from No. 5233*—they have lived and worked in Cublington all their lives and their families before them. They have managed to buy a little cottage, they love the little village and wish to end their lives there in peace.

No. 5226,† who is another new-comer to Stewkley, has found an unusual sense of community life in that village.

Then finally 5224‡—and I am sorry I am giving these in the reverse of numerical order,—describes himself as a Stewkley man born and bred who has converted two houses into one over a period of eight years and is now getting this as he wants it. "Why should we have to save for a perfect dream and have it taken away; this village is one big family".

That, sir, I think, is how I would sum up those little examples of which you have hundreds before you, of what it would mean to these people to be moved. It may well be said that large numbers of people have moved before, in slum clearance as well as decanting from London may very well be given as an instance, but I would venture to suggest that this is an utterly different problem. People living in close-knit urban areas can be moved to other and better areas of a similar kind where the advantages of better living conditions may well compensate or largely so for their change of environment and associations and, indeed, it could be done and sometimes perhaps has been done, that they have all been moved together from one urban area to another, but the people we are talking about do not want to live in towns or urban areas. Many of them have said so very forcibly in their representations. It is surely quite impracticable to contemplate that it would be possible to move them even individually on this scale to other rural areas and, even more impracticable to think that whole communities can be moved together to other rural villages, and it is these communities as well as the individual roots which are of such immense importance in this context, and from the many representations that you have received matter so much to the people of whom we are talking.

By concentrating on those who would almost certainly have to be moved I do not want for one moment to underestimate what would be lost by other people living in the area, but not quite so near the site. Not only would there be those who would be affected by noise, but they and others for miles around would suffer loss of peace and country atmosphere by the construction of road and rail access, the greatly increased traffic, and the intrusion of the vast urbanisation on their doorstep. I have no doubt that others will elaborate this in the situation of those rather further away more fully than I am doing in this opening, but all in all, in short these individual communal and amenity interests are priceless and irreplacable assets one must, in my submission, weigh very heavily in the scales against the choice against Cublington as the site of the proposed airport. That is why the Buckinghamshire County Council in particular wanted your commission to hear or to read as many as possible of the individual tales of woe which this airport would provoke, and wanted you, sir to see in person the different representative sample of them, representing as they do all types and kinds not, if I may interpolate as a handful of supporters have suggested all of one kind, but it is very very noticeable that by the representations you have received representing all types and conditions of people from every particular aspect. In this way, sir, we hope you may be able to bring home to your colleagues the full enormity of what this proposal would mean to those most seriously affected—here I must be slightly careful in what I say, but perhaps it is not overstating it to say your commission has not been particularly pleased with the Buckinghamshire County Council for encouraging so many people to come here before you. I hope it will not be a burden to you, but I hope sincerely that the result of your seeing them and reading their representations will be to convince you and your colleagues that the prospect of turning out these unfortunate people, breaking up these communities and damaging the amenities of the area is something which just cannot be contemplated. Perhaps I may epitomise my argument by borrowing one of the individual objector's points, that it would be unprecendented in peacetime to obliterate two substantial villages and render two others virtually uninhabitable.

A new point has arisen in the relevance of those statements by the report which appeared in the Press three days ago which I assume is correct, which states that your commission have commissioned the Department of Sociology at Essex University to do a Market Research Project on social life in areas affected by these sites, and it says about 300 will be interviewed in each of the sites—three sociology lecturers are engaged with it. It will be a factual survey and among the subjects covered are work in the localities, friendships among people, and their leisure-time activities. I assume it is a correct report, and in the light of that may I make an earnest plea that the Commission would think it proper to pass to those sociologists the not inconsiderable bundle of individual representations which have been received from people answering just the sort of questions which the sociologists are seeking to ask. I appreciate, of course, they will no doubt do a careful sample, a cross-sample market survey. I do not suggest they should fog the issue of that survey by taking at random the statements which have been put in to you, but I do very strongly ask that they at least have before them the statements which have been put in at this inquiry in order that they can see what they are looking for, even if they do not take what appears there as part of their actual survey.

Whilst those whom I represent have always felt these human factors to be of cardinal importance, I feel bound to emphasise them with renewed vigour

* (Mr. A. C. Harding) see also p. 1106.
† (Mr. D. B. Head) see also p. 1458.
‡ (Mr. C. Brewer) see also p. 1107.

Printed image digitised by the University of Southampton Library Digitisation Unit

in the light of the contents of your Commission's recent publication on their proposed research methodology, whatever that may mean—I beg your pardon, sir in the light of the contents of your commission's recent publication that is its famous Volume VII of their papers.

Inspector I am glad it is famous.

Mr. Millard Perhaps it is wiser to call it "infamous". It purports to suggest that even human factors, about which I have been talking, can be measured in money terms, but I would, and those whom I am representing, would argue most strongly that there are factors which can only be weighed in the scales of subjective judgment, and not in the purely scientific impersonal manner contemplated by Volume VII which, quite frankly, sends a cold shudder down one's spine.

Apart from the purely personal side, if I may now move on to another aspect, there are, of course, a number of incidental features of hardship which will fall upon those most affected, of which perhaps the financial is one which I should particularly mention. Here may I refer to the evidence of Mr. Rose,* the County Valuer for Buckinghamshire, who gives his expert opinion about the blight which would descend on property values in a large area around the site, and which would continue for a great many years. I should perhaps say that Mr. Rose admits openly in his proof that he is a resident of Stewkley, but I hope you will agree with me that he has managed to preserve a dispassionate approach on the subject, which must be very difficult for him. It is true that Mr. Rose envisages that, when the airport begins to come operational, this process would tend to reverse itself, but of course, by then, all those not actually within the site (whose property would be purchased) but who nevertheless felt bound to move would have suffered the very heavy loss which the depreciation in the value of their properties would bring upon them.

Another facet of hardship and, indeed, of national damage, is the loss of agricultural land. Others will be dealing more fully with this, but there is one part of the Buckinghamshire County Council's case which is a particular example of the problem agriculturally. It so happens that nearly 1,000 acres of the Council's statutory smallholdings lie within or astride the boundaries of the site, and Mr. Bennett,† the County Land Agent, is giving detailed evidence about the impact of this problem on 102 tenants in a larger area of whom some 17 would actually lose the whole or part of their holdings. The County Council would have little hope of replacing or re-equiping the land which would be taken and thus re-housing the tenants, at an economic price which the small holdings' finances would bear, and the tenants themselves would have even less chance of finding small farms on their own. Thus the majority of them would cease to be their own masters, having to work for other farmers or leaving agriculture altogether.

There are many other particular facets of the problem of hardship, I will not give any further examples but will leave them to the evidence which will come before you and all these innumerable statements. Perhaps I might beg leave after this evidence to make some comment about those at a later stage in the proceedings.

So, sir, the County Councils whom I represent say in summary that while it would be possible to put an airport at Cublington, and to provide for the associated urban development, to provide road and rail access and the like, there are no obvious advantages of this site, and that the arguments against this choice are overwhelming. Apart from high costs, difficult technical problems of air traffic control and the like, the placing of an airport here would be a flagrant violation of planning principles, would destroy a large tract of beautiful English countryside and, above all, would bring intolerable and unjustifiable hardship to large numbers of people.

Without being accused of being dramatic, I wonder if I may conclude by borrowing a point made by one of the objectors in his statement by reminding you that this is John Hampden's County, and its inhabitants will resist the intrusion of this airport, with all the spirit of that historic figure.

Now, I have reached the point at which I call my evidence. My first witness is Mr. F. A. Sharman.

MR. FREDERICK ANDREW SHARMAN*

Examined by Mr. Millard

Are you Mr. Frederick Andrew Sharman? — Yes.

Are you a Chartered Engineer, a Bachelor of Science in the University of London, a Fellow of the Institution of Civil Engineers, and a Member of the Institution of Highway Engineers? — Yes.

I think you have practised as a civil engineer since 1940 and for 23 years you have been with Sir William Halcrow and Partners of whom you are now a partner. This is a firm of Consulting Engineers employing some 350 qualified engineers, and having major responsibility in such projects as the proposed Channel Tunnel, the Victoria Line, and large scale construction projects in many parts of the world? — Yes.

I think you were responsible for preparing the report on the location of the Third London Airport by your firm for the Essex County Council, and subsequently have been responsible for the work carried out by the firm of Halcrow in connection with the third London Airport including giving evidence at the public enquiry at Stansted? — That is so.

* p. 1050.
† p. 1056.

* See also p. 1007.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. Millard With that brief introduction, sir, may I throw Mr. Sharman to the wolves.

Inspector Are there any questions of Mr. Sharman? By the First Tier Planning Authorities? Any of the First Tier Planning Authorities?

Mr. Millard Before they start, I should have mentioned that there are one or two minor corrections. Perhaps I might give them and get them on the shorthand note. Mr. Sharman, as I have already indicated, is a partner in his firm. On page 8, in some copies of the evidence, the last four lines are repeated at the top of page 9 and should be deleted. On page 10, paragraph 5.5.1: replies have been received from the East Midland Electricity Board, and the Central Electricity Generating Board, but it has been given insufficient detailed information to justify the circulation of addenda; the 400 kV main supply line mentioned would have to be diverted on to a route involving some 15 miles of new construction—That will be on the shorthand note, and perhaps we can leave it there.

Inspector Are there any questions from the First Tier Authorities. Any questions from any other local authorities? Any questions at all of Mr. Sharman?

Cross-examined by Mr. Banfield
(Beacon Villages Society)

3501 Will Mr. Sharman give me an estimate of the total amount of cement which may be removed from the local works to the airport site? — That would be rather difficult to give off the cuff. It is certainly of the order of hundreds of thousands of pounds, in harmony with the figure of over 3 million in regard to aggregate, much of which would be used in concrete—I do not think I would like to be more precise than to say it would be some hundreds of thousands of pounds, but a figure can be defined if the commission are interested to have it worked out.

Inspector I think any more detailed figure can be the subject for Stage III. Any more questions.

Cross-examined by Mr. Robert Bramwell
(Bramwell Farm)

3502 In view of the fact we have a real expert in front of us and the possibility of this airfield, which I am a great supporter of, in addition to others, I would like to ask the question: in view of the fact he is most connected with the Victoria Line, what are the possibilities of the underground to this airfield? That is the first question, can you answer it? — Yes.

3503 I have several of them, that is the first question. — Yes; the passenger capacity required for the ultimate development of this airport is of the order of 10,000 people per hour, so that this can only be catered for by exclusive use of the normal track taking passengers to a town terminal, and this is hardly catered for by an extension of the ordinary underground system. There is, of course, always the possibility of supplementing the communications by a net-work adjoining or joining on to the underground system, but I think that the picture painted in my evidence of the principal links to London and the necessary links to other parts of the country is the best one I can give of the general requirements for an airport at this site.

3504 In view of the fact we are talking well ahead of time, well ahead of my time, the year 2000, an underground is more or less hazard free from snow, rain, floods, things like that, because they cause it no trouble. In view of the fact that the Manchester people, I believe, have decided to have a complex underground, London's underground, the new Victoria Line has proved a great success, and you are concerned with the — If we are trying to think ahead, with an airport of this size, it is obvious we are not just —

3505 *Inspector* Please, you are going to have an opportunity later. You are now being given the opportunity of asking questions.

3506 *Mr. Bramwell* I am asking this.

2507 *Inspector* It sounds like a statement to me.

3508 *Mr. Bramwell* I am asking, in view of the fact of this, would it not be feasible for this underground to be cargo-carrying as well as passenger, to this airport site? — A rail link, I envisage, would be primarily designed for passenger traffic; cargo would, of course, find its place on it, but there is a tendency for cargo distribution from airports to be by road and I expect this will continue.

3509 What is the nearest source of aggregate ballast for this airport, to this particular site? What would you say you would consider to be the most convenient one? — I have examined the resources map of the area, and it is certainly clear that none of the sites in the immediate area can satisfy the need, and if you look at the demand for the whole area, as explained in the relevant passages in my evidence, I think it will be clear that the burden of this aggregate requirement will cause considerable difficulty, and considerable re-arrangement of aggregate sources, and the opening up of extra pits which would otherwise be postponed.

3510 In view of the fact that the most suitable sand and gravel available is at Leighton Buzzard, considering its world wide reputation, could it not be obtainable from this area? — I am sure resources there are insufficient for the whole needs of the airport, although no doubt as much as possible would be obtained from the nearest sources.

3511 *Inspector* Any other questions? Just two points, Mr. Sharman, paragraph 4.3, you calculate approximately 1 and 1 quarter million cubic yards for the first one runway stage, and 3·8 million cubic yards for a four runway—there seems to be some discrepancy on these figures just on face value, it seems to me, that the 4-runway figure is now more than three times—Does this take account of the taxi-ing ways and other items in the first stage? — Yes, that is

Printed image digitised by the University of Southampton Library Digitisation Unit

the explanation; to make the airport workable at all a great deal more than merely the first runway would have to be constructed, and this takes more than the proportion of one quarter of the total.

3512 Just referring again to para. 5.5.1—in addition to dealing with the problem of re-routing this 400kV main supply line, you also mention in the first sentence that the problem of supply is being worked out by the East Midland Electricity Board. Do I take it that there is no overriding problem of supplying electricity to this site? — There is no more than the normal amount of problem involved here, but the difficulty was to make a distinction between the hypothetical supplies for the new Milton Keynes development without the airport, and the whole situation with the airport: thus you had a more difficult exercise than we carried out for instance for some of the other sites, and we were not able to present you at this stage with any very helpful picture of the total extra that will be needed for the airport itself.

Inspector I have no more questions. Is there any re-examination by the other first tier authorities for whom Mr. Sharman is appearing as a witness? Apparently not. Mr. Millard—any re-examination?

Mr. Millard No, sir, there is nothing that I wish to ask.

Inspector Thank you, Mr. Sharman.

(*The witness withdrew*)

MR. G. I. W. DUNFORD* *called*

Examined by Mr. Millard

3513 Are you Mr. George Ian William Dunford? — I am.

3514 And are you Air Traffic Services Superintendent of International Aeradio Limited, and have you held this post since 1964? — I am.

3515 And I think you have been in Air Traffic Control for the last 17 years, initially in the Royal Air Force before joining International Aeradio Limited in 1955? Your service with that Company up to your present post has been as an Air Traffic Control Officer at airports and Air Traffic Control Centres, as an A.T.C. Instructor in the I.A.L. School—that is the International Aeradio School—and as Assistant Air Traffic Services Manager. — That is correct.

3516 And in addition to being responsible for the A.T.C. operations for the Company, you are also engaged in air traffic and operational consultancy tasks and have recently completed two such tasks for a twenty year development plan for two international airports—namely, Nairobi and Singapore, both of which had problems in relation to nearby airports. — That is so.

3517 With that introduction, I shall formally submit Mr. Dunford's evidence.

Inspector Any questions by the first tier authorities to Mr. Dunford? Any questions by the second tier authorities? From any other persons or bodies?

Cross-examined by Mr. R. Bramwell

3518 In view of the fact that you are a knowledgeable person on airways—you said that you are not aware of the wind movements on this particular airfield. In view of this, it is rather surprising, in view of the importance of this development, that such an investigation has not been taken on since this particular Inquiry started. It is common knowledge amongst local people who are even opposing the airfield that half the prevalling winds are from the north—NNE, NNW—and in these circumstances perhaps a re-alignment could make a lot of difference to this particular airfield. We as supporters of this airport wish to have it there, but not necessarily in the four lane system —

Inspector Mr. Bramwell—please. You may make your statement of your views later on. Can you just try and confine your remarks to a simply understandable question?

3519 *Mr. Bramwell* Yes, sir. I am not a skilled advocate, you see—

Inspector Do not try to be, Mr. Bramwell. Just put a simple question, and we will all get on much better.

3520 *Mr. Bramwell* (*to the witness*) In view of the fact that aircraft have got to take off in cross winds, what is the element of risk attached to this? Can you answer that particular question? — Yes, there are permitted cross wind components which airlines use; and above these cross wind components, they will not allow their pilots to either take off or land.

3521 In view of the fact that in recent weeks the wind has been prevailing from the northerly direction, how has this affected your flying today? — I think you must be very careful in talking of "prevailing". I did say in my evidence that the only wind recordings for this precise site are those taken during the War years—1942–1945—and these were obtained from the Meteorological Office; they have been broken down and we can in fact determine from these the optimum runway direction. As I did say in my evidence, normally we would like statistics for a period of at least ten years. We do not have them here, so the best we can do is the three year period, and from an examination of those statistics it would appear that the Commission's alignment is the optimum. Although I have said that some slight change up to a maximum of ten degrees is permissible.

3522 In your reference to fogs, you mentioned certain conditions that prevail occasionally on these hilltop sites. I have lived on this site for five years. I have been struck very forcibly by the absence of

* See also p. 1015.

Printed image digitised by the University of Southampton Library Digitisation Unit

fogs, and I have taken the liberty of contacting the Meteorological people to ask them about other sites, and they said that Wing was free from fog, and in fact the Inspector gave this information and it was on the general news on the radio. I have since made investigations from pilots who use this site, and they said that Wing was on a par with Prestwick in its lack of interference from fogs. Have you any knowledge of this? — No, I have not. But if you consider my evidence, you will see that I have said that there will be installed at this airport instrument landing systems which will negate the fear of any poor weather conditions, so it is really not a material point.

3523 As a last question: what is the attitude of pilots to landing in foggy conditions? Do they prefer instrument landings, or to be able to land in full visibility? — I am sorry—I didn't understand—

3524 Would the pilot rather be able to see where he is landing, rather than instrument land? — I think this is a very natural reaction. Any pilot would rather see where he is going, rather than rely solely on instruments.

3525 *Inspector* Any other questions? Mr. Dunford, I regret I have no questions for you. Is there any re-examination?

Mr. Taylor My name is Taylor, and I am Headmaster at Wing; I would like to ask a question.

Inspector I am sorry.

Cross-examined by Mr. Taylor

3526 I have lived in Wing for the last 14 years. I also lived on the airport during the war, and I am well aware of the foggy conditions. Did you enquire of any local people?—the schools?—for your knowledge of Wing? — No, I did not. I obtained all my information from the Meteorological Office.

3527 Well; it is a pity; schools have a good service. Children could have told you how often the wind —

3528 *Inspector* But, Mr. Taylor, the figures from 1942 to 1945 that Mr. Dunford referred to are the years when you were there.

3529 *Mr. Taylor* That is right. Yes; but I have the latest figures.

Cross-examined by Mr. W. J. Smith

3530 I would like to ask a question, please: my name is Smith, and I live in Sing. Can he give me any definite figure for the number of foggy days at Cublington or Wing in relation to such a . . . (*inaudible*) — I did not get the last part.

3531 Could you give me the amount of foggy days during the war years at Wing, when it was used as an airport? Can you give me any figure in relation to such an airport as Heathrow? in other words, the amount of fog that acually lost flying time during the war years? — No, I am afriad I cannot. I would have to have Royal Air Force figures, records, to show when they could not fly; but developments have taken place since those days, particularly in civil aviation, which now permit aircraft to land in difficult weather conditions. As I said, the mere fact that there is some instance of low stratus and hill fog at this particular site should not be overstressed, because instrument landings do overcome this problem.

3532 But one does hear of an airport not very far away—such as Luton Airport—there does not seem to be an awful lot of fog in that vicinity, and yet Wing is still higher and better situated—

3533 *Inspector* It may cut short this particular point if I say that during Stage III, quite clearly the Commission will seek more detailed information about meteorology, including what is obtaining from the Wing school. If that is of any help, I give the information.

Mr. Smith Thank you very much, sir.

Inspector Any questions? Any re-examination?

Mr. Millard I think all my colleagues have already intimated that they do not wish to; and I do not.

(*The witness withdrew*)

MR. N. FLEMING* *called*

Examined by Mr. Millard

3534 Are you Mr. Norman Fleming? — I am.

3535 And I think you are Master of Arts of the University of Cambridge, Acoustical Consultant to the Greater London Council, a Director of the Acoustical Investigation and Research Organisation Ltd., and a member of the Sub-Committee on Aircraft Noise of the British Standards Institution. — Yes.

3536 And you were formerly Head of the Acoustics Section of the National Physical Laboratory? — I was.

3537 And in fact, like Mr. Dunford and Mr. Sharman before you, you have given evidence at previous Inquiries into the selected sites for this airport? — That is so.

3538 That is all I want to ask Mr. Fleming; but there are a number of corrections on his evidence. I was given them sufficiently in time this morning for us to have two hundred copies prepared, and anyone can have one who wishes. Perhaps I may refer to them—"Table NF5, page 10, under the heading "Hospitals—Buckinghamshire—delete Bletchley Maternity, Bletchely Diagnostic Clinic"—I must confess that means nothing to me at all!—"Bedfordshire—add Aspley Heath Convalescent (with same figures as Edgbury; Table NF6, page 12, 4 runway airport"—I won't read the figures. With

* See also p. 1017.

Printed image digitised by the University of Southampton Library Digitisation Unit

that, I shall leave Mr. Fleming to those who wish to question him.

Inspector Any questions from first tier authorities?

Cross-examined Mr. N. McDermott

3539 I am Neil McDermott, and I appear on behalf of the Bedfordshire County Council. I would like to ask Mr. Fleming one or two questions about his tables NF4 and NF5, on pages 9,* 10 and 11 of his statement of evidence. I notice that, taking his NF4, in columns (1) and (5) you have two different markings—a plus sign indicating the effect when there is a reverse traffic flow— — Yes.

3540 That is to say, reverse from the normal prevailing traffic flow; and the same on NF5, in a number of the columns which are headed by a little "b", you are also dealing with reverse traffic flow, — Yes.

3541 Am I right in thinking that these tables indicate that there will be substantial areas in Bedfordshire which will be adversely affected during the times of those? — Yes.

3542 Traffic flows which do not figure in your maps of the NNI contours as being the most seriously affected areas? — Yes. There are more likely to be schools or hospitals which would be affected outside the NNI contours in those northern areas than in the southern areas.

3543 And is the reason for that that when you are drawing the NNI contours, quite properly you have to take an average of all the days and all the uses of the traffic flows? — That is correct. A NNI is indicated by a measure of the long term nuisance over a period of weeks or months, which takes into account the average disturbance between the southward movements and the northward movements.

3544 Whereas, when you are dealing with hospitals and schools, you have to look at what the big factors are on the worst days—is this a fair way of putting it? — I think the Education Authorities have considered that if there are a large number of interruptions of only, say, one day in five, on the average, it is too bad to be tolerated.

3545 It would still interfere seriously with the education work? — Yes.

3546 And is it a fair inference to draw from that that on those days when there are reverse flows, this means the noise disturbance for ordinary people living in the area is going to be pretty severe too? — Yes. On those days.

3547 On those days; and it is only because the NNI contours are evening out an average over all the days that they do not reflect and do not depict the annoyance which those people are going to suffer? — No—they are not intended to depict that.

3548 And there will be periods of time, as we have seen from recent experience, when you will get a substantial period of reverse flow with a wind going for a long period in the opposite to the prevailing direction? — That is so.

Inspector Any other questions from first tier authorities? from other local authorities? from any other persons or bodies?

Cross-examined by Mr. Taylor

3549 Taylor, of Wing. This applies to all the four sites; but would you not agree that the Commission were rather remiss in not publishing these alternative NNI contour lines, so bringing in a far greater number of people who would then know exactly where they stand? Would you not agree that the figure, when this wind flows from the north-east, is more likely to be in the region of two to one, or at the most possibly three to one—I have examined the records over the years, and that is what I make it—

Inspector You can give your evidence later on, Mr. Taylor.

3550 *Mr. Taylor* But I wanted to ask that question whether he thought the Roskill Commission was rather remiss in not publishing the contour lines for the four months of the year instead of just for the eight months of the year? — No. As I explained, the NNI is intended to be a figure which represents the long-term annoyance over periods of months, and I have taken, and I think the Commission will have taken, figures which are derived from the Meteorological statistics as to the time in which the wind is in different directions.

3551 Would you agree then that to the ordinary common person who has seen these maps and looks up his house on the map, and finds he is safe—would you not agree that gives him a false impression of what he may well be in for? — I think he must take into consideration just what the NNI means, that it is intended to be a figure expressing the longterm annoyance and not what he gets on any particular day. On some days he may get a lot of noise, but on other days, when movement is in different directions, he may get very little.

3552 Would you think—as an expert—that the non-expert would appreciate this? — I think so. I do not think it is a very difficult conception.

3553 I feel it is, and people I have spoken to about it just do not understand that there is any other reverse flow or what 40 NNI means — No, unless one has studied it, perhaps not.

Cross-examined by Mr. Bramwell

3554 I think Mr. Fleming is on our side! He sticks to facts—

Inspector And you stick to questions, Mr. Bramwell.

* p. 1019.

Printed image digitised by the University of Southampton Library Digitisation Unit

3555 *Mr. Bramwell* It would appear from what Mr. Taylor has just said and what I have found out, that these NNI figures are guess work. We have already mentioned this wind from the north, and we all know that a strong wind over a hilltop site can carry sound right away from the valleys and such, roundabout. Were tests taken for the immediately eastern wind on the site in question?—can you answer that?

Inspector He cannot answer it, because the Commission published the figures—the NNI contours.

3556 *Mr. Bramwell* The point is this: has he worked these figures out from the contours the Commission produced? — I have said in my evidence that I have accepted as the basis, the Commission's contours as representing the case for the flight paths and the number of aircraft which they have assumed.

3557 But it is not from actual tests taken at the site, by yourself? — No. NNI contours are not normally derived from actual tests; it would take years and years of testing to get sufficient information.

3558 It would appear so from what you say. We have, however, a good example at Luton—is the Luton Hospital badly affected—Luton and Dunstable Hospital, on the road between Luton and Dunstable—what is the NNI prevailing at that hospital?—I could not say, without going into an examination of it. I do not remember just where it is—

3559 So therefore you won't know whether the Vauxhall workers, in the factory right underneath, are affected by the noise of the planes? As an expert, I thought you may have visited these places. — I do not know that, no.

3560 Thank you very much.

Inspector Any other questions?

Cross-examined by Mr. Scott Smith

3561 I would like to ask Mr. Fleming if he agrees that the effect of noise at 20 NNI level is a significant level in noise nuisance? — I have said, I think, in my evidence that I consider 35 NNI as a reasonable lower limit to consider as regards the noise—not particularly for the daytime, but taking into account night-time; that at 35 in the day-time, the average nuisance was expressed in the social survey as a little, but during the night-time at 35 there would be moderate nuisance. At 25, I would say, during the night, would correspond to about 35 during the day.

3562 To refresh my memory—could you please quote the actual significance of 20–25? In the Wilson Report,* the percentage of people who said they found difficulty in sleeping — One has to be very careful in interpreting that figure in the Wilson Report, in which it gives the percentage of people who were affected as regards sleeping, being awakened, that sort of thing. If one goes back to the report on the social survey, from which those figures are derived, it is specifically stated there that the answers to that question which give that figure should not be taken into consideration in trying to assess the degree of nuisance; that particular question was asked in the social survey for other reasons.

3563 What is the significance of these percentages? — I think—I am not an expert on the methodology of social surveys, but they were asking those questions in order to derive the scale which they got for annoyance. If you look at the figure—I forget which figure it is for the moment, if you will excuse me I shall look at the report—

3564 *Inspector* Just while Mr. Fleming is looking up the figure—Mr. Scott Smith, are you appearing as an individual?

3565 *Mr. Scott Smith* An individual, yes.

3566 *Mr. Fleming* The particular question to which I think you are referring is figure 3A on page 210 of the Wilson Report, and according to that at 25 NNI, I think you said—

3567 *Inspector* I think actually he said 20–25.

3568 *Mr. Scott Smith* I considered this as lowest of the figures—I did say originally 20. — Well, the figure does not quite go down to 20, but it would be something like 30 per cent. of the people. In answer to the question—as I think I am right in getting this question!—"have you ever been awakened by noise of aircraft", in answer to that question 30 per cent. of the people said "yes".

3569 What I was trying to find out was if these figures are discounted as reasons for objecting to an airport site inland, what significance have they got? — They were included in the social survey for the purpose of arriving at the scale of annoyance, and in the report on that social survey, they particularly warn against using the answers to this question to assess the annoyance. If you turn to fig. 4 you will see that at 20 NNI only 10 per cent of the people, when questioned, said that one of the things they disliked in the local living conditions was aircraft noise, 10 per cent. If 30 of them were regularly awakened by aircraft noise, more than 10 per cent. would say they disliked aircraft noise as one of the things about local conditions. The question was not asked in order to get the effect of annoyance. The question was: Have you ever been awakened? If they have been awakened once in the last 10 years, the answer should be Yes.

Mr. Scott Smith Thank you.

Cross-examined by Mr. John Cornwall

3570 My name is John Cornwall; I am a school master. I am also Prospective Liberal Parliamentary Candidate for the Buckinghamshire division. May I refer to the social survey that Mr. Fleming has mentioned. I have not seen the survey; perhaps I should. Does it refer to the practical difficulty of

* Cmnd. 2056. (HMSO; 19s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

teaching when aircraft noise interferes? If it does not refer to the effects on teaching, of course, I could put it right for Mr. Fleming and the social survey — The social survey does not refer to the effects on teaching; I did not get the last part of the question.

3571 *Mr. Cornwall* It was not a question at the end; it was a comment. I could supply first-hand information on that aspect of difficulties caused by aircraft noise.

Inspector Any other questions?

Cross-examined by Mr. W. J. Smith

3572 I would like to ask in relationship to noise, getting away from aircraft, what would actually be the NNI of a normal flow of traffic on the main road through a village such as Wing, where quite a lot of people live, as using a by-pass road—what would be the actual NNI of an aircraft in relation to a diesel wagon carrying bricks, gravel and sand, which is the normal traffic through Wing every day of the week? — It is not possible to answer that question, because the NNI has only been dervied for use in connection with aircraft noise where the frequency of incidence is much less usually than you get from traffic along a busy road. But in my evidence I did give some figures concerned with the actual noisiness of such incidence. The noisiness, for instance, of a heavy industrial vehicle at 25 feet distance and 30 miles per hour is between 90 and 100 PNdB, and one would get that, perhaps, from an aircraft at 4,000 ft. altitude, something of that kind.

3573 In actual fact an aircraft taking off from an aerodrome would be somewhere in this vicinity from the nearst village, which would be Wing. Wing would be the nearest village to the airport, Stewkley would be involved as well as Cublington, Wing would be the nearest village, therefore the approximate NNI or PNdB, which I am ignorant on, this would be the approximate distortion to people living in Wing from an airport at Wing? — No, the noise falls off more rapidly when the aircraft is close to the ground, as it would be for the noise at Wing; the aircraft would be on the ground largely.

3574 So the people actually living nearest the airport would get less noise than has been imagined? — People to the south of the airport would get less noise than people 10 miles out who were directly below the flight path where the aircraft were at 4,000 ft.

3575 Thank you very much, because this is very different from the evidence submitted. — It is obvious from the contours that the contours are close together at the side of the airport—Wing is at about 40 NNI, I think, on the Commission's contours, and the people well out, 10 miles away, would also be at 40.

Further cross-examined by Mr. Cornwall

3576 Does the social survey to which Mr. Fleming has referred say anything at all about the effect on schools television programmes, their educational value and the likely destruction of that service in the schools affected, by aircraft flying over.

3577 *Inspector* Have you read the County Council's evidence in this matter?

3578 *Mr. Cornwall* I have not, but I am asking Mr. Fleming about the effect on schools.

3579 *Inspector* The Education Officer deals with this matter in depth.

Mr. Cornwall Good.

3580 *Inspector* Mr. Fleming, do you want to answer the question? — No, except to say the social survey did not particularly consider schools.

Inspector Any other questions?

Cross-examined by Mr. Phillip Otton
(Wing Airport Resistance Association)

3581 My name is Otton, and I appear for the Wing Airport Resistance Association. May I enlarge upon your remarks in respect of noise disturbance at night. You said that disturbance during the night is more significant than during the day? — Yes.

3582 Is it right that at the moment the percentage of night flights to day flights is in the region of about 10 per cent? — I should have thought it was much more. I have not got the actual figures, but at the time that the Wilson report was published, the night flights were about 25 per cent of the day flights, although they were distributed.

3583 Even at 25 per cent, is it right that there are considerable commercial pressures from the airline operators to try and increase the number of night flights into London Airport? — I am not an expert on air traffic.

3584 If that were so, would it mean that there would be a substantial increase of disturbance through noise during the night? — Yes, that is so, and in my evidence I have assumed that there would be an increase over what there was at the time of the social survey round Heathrow.

3585 It would follw, would it, that any significant increase in night flying would mean a significant increase of disturbance for people living in the area? — Yes.

3586 Including all those well within the 35 NNI contour? — Yes.

Inspector Any other questions? I have no questions. Is there any re-examination from Hertfordshire?

Cross-examined by Mr. Keene

3587 Mr. Fleming, is it right in fact that you have extended the NNI contours shown by the Commission to 35 NNI precisely to take some account of the

Printed image digitised by the University of Southampton Library Digitisation Unit

nuisance caused by aircraft noise at night time? — Yes, indeed.

3588 You were asked about the 20 NNI; would it be a short task to draw a 20 NNI for any airport? — It would be almost impossible, except in the case of an airport with very few flights.

3589 Can you give us any idea roughly how much of England and Wales would be covered by a 20 NNI? — I have not really considered that, but I think if you were going down to 20 NNI, all the holding areas for the different airports would come in, and probably you would have to consider the traffic in all the airways.

Mr. Millard I have no re-examination, thank you.

(*The witness withdrew*)

Mr. Millard I now call Mr. Pooley.

MR. FREDERICK BERNARD POOLEY* *called*

Examined by Mr. Millard

3590 Is your full name Frederick Bernard Pooley, and are you a Fellow and Member of the Council of the Royal Institute of British Architects, Fellow and Member of the Council of the Royal Institution of Chartered Surveyors, Associate Member of the Town Planning Institute, and a Member of the Institution of Structural Engineers? — That is so.

3591 Are you the County Architect and Planning Officer of Buckinghamshire; a Special Adviser to the Milton Keynes Development Corporation, and Chairman of the Southern Sports Council Technical Panel? — Yes.

3592 Have you had some 20 years experience in the practice of Town and Country Planning? — Yes, I have.

3593 Just, sir, to get it for the record at the right stage, is it a fact that your evidence is now being given, not as stated, I gather, but on behalf of Buckinghamshire, Bedfordshire, Northamptonshire and Oxfordshire County Councils? — Yes, that is so.

3594 With that, I will leave Mr. Pooley to be questioned by others.

3594 *Inspector* Any questions from the First Tier planning authorities?

Cross-examined by Mr. Niall MacDermott (*Bedfordshire County Council*)

3595 You make clear in, for example, para. 3.3 of your report, the area close to this proposed site is an area of proposed growth, a substantial growth area? — Yes.

3596 As is well-known, the definitive strategy for development in the south-east of England has not been finally drawn up yet? — It has not.

3597 A great deal of work to which you refer is being done on that at present? — Yes.

3598 Whatever conflicting views may be had upon that, does there seem to be a general concensus that this area, falling as it does in the London/Birmingham corridor to which Mr. Millard referred in his opening, is a likely area for growth? — Yes.

3599 I think you, as the County Planning Officer of Buckinghamshire, have been really actively concerned in recognising and giving proper definition to the plans to meet that growth? — Yes.

3600 You refer in particular in para. 3.8 onwards to your county planning policies, and in 3.11 you say: "These policies are going well" and they include, apart from Milton Keynes, the planned expansion of Newport Pagnell, Olney, Winslow and Buckingham, then various village expansions, which are planned, quite irrespective of and without regard to any proposal for an airport at Wing/Cublington — Completely without regard to the airport.

3601 What is the nature of the pressures which you and the other planning authorities think need to be met by expansions of that order? — Sir, there is pressure to develop for residential development in this area.

3602 One knows that in some areas where planning authorities are seeking to encourage development, there is a great problem about attracting industry to give employmet. — Yes.

3603 Some New Towns have had difficulties? — Yes.

3604 Do you envisage any difficulty over the planned expansion in this area of attracting industry? — No, I believe that this is an area to which industry will come voluntarily and like it, and industry will expand here.

3605 Is it partly in order to meet that demand that these plans have been drawn up? — Yes, it is one of the vital factors in siting Milton Keynes; everybody was certain that a new city in this part of the country would have no difficulty in being a successful city in terms of industry.

3606 You give in paragraph 4.18 the figures of how you suggested the urbanisation connected with the airport might be met if the decision was in favour of this site? — Yes.

3607 What I want to get clear is—you deal there with the housing for a population of some 420,000? — Yes.

3608 Associated directly and indirectly with the airport. What would that represent as a proportion, if that is the convenient way to give it, of the kind of expansion that was being contemplated, or was being contemplated in these places irrespective of the airport, without the airport? Have you any over-all figures? — Yes. It would be a completely different concept. Without the airport we had the city of Milton Keynes, and we had very modest expansion

* See also p. 1023.

Printed image digitised by the University of Southampton Library Digitisation Unit

of the villages and little towns around, so there was no conflict between this industrial city and the surrounding development, but this would add up to about 150,000 people more than the original concept, it would be a completely different kettle of fish.

3609 When you are speaking in para. 3.11 of the present planned expansions, the total of those expansions would be substantially less, over 100,000 less than the 420,000 you speak of in para. 4.18? — Yes, that is so.

3610 What in effect you are doing, and have been driven to do in 4.18, if I understand you rightly, is to pre-empt for the airport requirements virtually the whole of the planned expansion, and then add a substantial additional expansion to that? — Yes, I think that is fair.

3611 Would that additional expansion that you would be driven to, in your view accord with good planning for the area? — No, I think it makes the best of a bad job, and I think in many ways it conflicts with the regional policies that planning authorities have been trying to hammer out for the last ten years or so.

3612 One knows you or any other planning authority would do your best, but in fact is there a limit to which you can restrain natural pressures by planning policies? — Yes, I think that is also fair comment.

3613 In fact, if you were to pre-empt in that way all the planned expansion of this area for the purposes of the airport, do you think, taking a long view, a planning authority would find it easier to restrain yet further expansion to meet the kind of development for which you are already planning? — Yes, I think if the airport were to come to Cublington, then I think the planning authorities, whoever they might be, would be in a terrible position, and probably be unable to restrain the second round of growth that would be inevitable.

Inspector Any other questions from the First Tier authorities—from other local authorities? Any other questions?

Cross-examined by Mr. Bramwell

3614 Mr. Pooley, what is the population of Buckinghamshire? — At the moment, about 600,000 odd people.

3615 Less than a million? — Yes.

3616 Is it not a county of villages, mainly? — No, in fact slightly more than half the population of Buckinghamshire are now engaged in industry; in fact you have very large industrial areas; you have Milton Keynes, Aylesbury, High Wycombe and Slough, but in the north certainly it is mostly villages and small towns.

3617 In view of the fact that the whole population is roughly about ½m., they cannot be very large industrial areas, are they, really? — As a matter of fact, in the southern part of the county you have the Slough Industrial Estates, which must be one of the largest industrial estates in this part of the country.

3618 What is the significance of the pipelines over this site that we are speaking of? — The significance is that these were the routes chosen by the various national authorities for getting from one large area to another. It happens to be almost geographically in the centre of the country, of course.

3619 In view of the fact that this is a tremendous undertaking, have you considered what would be the feasibility of a split level airport on this site? — I have not considered this. This would be a matter of local design, detailed design at a later stage.

3620 What are your comments about the obstruction of buildings in airfields at any time, the large industrial buildings that are on the perimeter of an airfield? — All buildings, of course, in the vicinity of an airport are controlled by the Aviation Ministry, they must not exceed certain heights.

3621 In view of the fact you are the main person concerned with the feasibility of developing this site, should it come along, what is the possibility of the buildings being at airfield level and with fly-overs over the roofs of these buildings with access to the outside roads from this site giving a large area of flat space due to this method of construction, thereby preventing obstruction by building these essential operational buildings on the airfield proper? — It is unlikely that I should be primarily concerned with an airfield if it came here; that is the first question. The second question, this is a matter of money, civil engineering and structural engineering; you can do almost everything providing money is available, but it seems to me off hand, and I have not considered this, it is unlikely.

3622 In view of the fact that there are railway lines on four sides of this particular site, would access to them not be very acceptable and useful? — Yes, one of the advantages of this site, as I say in my proof, is that it has railways on two sides of it, but the disadvantages outweigh its advantages, in my view.

3623 Would the Bicester/Bletchley line then be eliminated from your reasoning? — No, that is not so near as the other two.

3624 In view of the fact you are very concerned with the reservoir in addition to the Milton Keynes project, what are the possibilities of the reservoir continuing to be constructed further from the site in question? — I am not a water engineer, but I listened to the water engineers a great deal when they wanted to place the reservoir here, and they convinced me, at least, that this site was one of the best in the south for a water reservoir.

3625 It would appear that from the picture on the platform that the water seems to encroach much further on the airfield on the drawing than actually

Printed image digitised by the University of Southampton Library Digitisation Unit

takes place, is that accurate? — The cartoon map* here I think truly represents the details we had from the Water Board, and they seem to follow the contour lines, I think they make sense.

3626 In view of the Green Belt areas surrounding this site, they of course include the villages we have been discussing — No, not all of them, certainly; there are lots and lots of villages in my proof that are not in those Green Belt enclosures.

3627 In view of the fact that we have had a lot of talk about the fall-out and that sort of thing, in your experience, as you probably have investigated this, has there been any sort of devastation due to this sort of thing over Green Belt areas, or any places in the vicinity of an airport?

3628 *Inspector* We are talking about kerosene fall-out, which is mentioned in many statements, is that right?

3629 *Mr. Bramwell* Yes, I am. — I am not an expert on the fall-out of an aircraft. I have obviously in the last year or so whilst this project is in the offing, read a lot about it. I have observed Heathrow, and I would have thought that the general concept that you do get kerosene smell and fumes is a reasonable one, and I would have thought where that happened, it obviously detracted from an area used for amenity purposes.

3630 We are people who have tried to do a lot of investigation into this from our own general standpoint. You are an expert for this particular area; you are proposing to have a reservoir in this area. In view of the fact that within a very short distance of Heathrow there are roughly about 15 reservoirs, and I should imagine that evidence would be available to prove that this point was either yes or no on this particular subject we are talking about —

Inspector Again if I can possibly help here, we are going to check this point of kerosene fall-out.

Mr. Bramwell Thank you very much.

Cross-examined by Mr. W. J. Smith

3631 You say that North Buckinghamshire has roughly ½m. people living in Buckinghamshire; you also say one of the biggest industrial estates in Buckinghamshire is some considerable distance from Aylesbury. Could you give me the actual amount of employed people in Aylesbury that travel to Aylesbury from outlying villages? There must be quite a lot. Could you also tell me the amount of employment which —

Inspector Mr. Smith, a little slower so that you can be quoted in the shorthand note.

3633 *Mr. Smith* Could you therefore tell me what would be the actual amount over the past 10 or 20 years employment increase in an area such as Leighton Buzzard and all villages round that area; could you give me the actual increase which has been made in employment for this local area, as at the moment I would say that some 50 per cent of the people from the Leighton Buzzard area have to commute to places such as Luton and Dunstable, and not so much Aylesbury because there is not so much work there, to find employment, this bringing false figures of employment of this particular area where an airport is to be sited. I should know, because I travel 25 miles —

Inspector Mr. Smith, your question is so long, we forget how it started.

3634 *Mr. Smith* Could you give me the actual amount of increase of local employment in Leighton Buzzard and surroundings in the last 20 years? — I cannot give the figure, but in my proof I give the figures given to us by the Department of Employment and Productivity, that there has been 3·4 per cent per annum increase, general increase in employment in this area. I do not break it down into Leighton Buzzard, but taking the airport area as a whole, obviously there is less unemployment here than in almost any other part of the South-East Region, and the growth in industry and employment in the same area is as great as in any other part of the Region, although I have not got the actual figures for Leighton Buzzard by itself. The first part of your question, I think was simply this. I think you said that there were 500,000 people in North Bucks. I said the population of Buckinghamshire as a whole was 600,000 odd; that was not North Bucks.

3635 So in actual fact we have no actual figures for actual people—the employment in this particular area is way below the actual figures for population over the previous ten years due to the influx of immigrants, etc., of all classes. — My evidence is whether these people commute and care to go down the motorway to earn higher wages at Vauxall's factory at Luton, where they care to earn their living, demand as a whole of employment in Leighton Buzzard and other areas and villages around the district is remarkably low. You will never stop people commuting up to Luton and these other areas for higher salaries, they will go there in any case.

3636 But people have to commute to earn these high salaries to cope with the high costs of living, which are nothing to do with the Commission, but due to the fact there is no work in Leighton Buzzard. To substantiate the fact local enquiries could be made, but there is not sufficient work in the Leighton Buzzard Area for people who live in that area and the surrounding areas, and they have to commute when they do not want. I have to because there is no employment.

Inspector Again may I say this, in due course you can say all this, but can you try and restrain what you have to say and put a question?

3637 *Mr. Smith* Could you disagree or agree that there is insufficient work for local people without them having to commute for their living? — I can't

* Not reproduced. This map was a composite of Plans 1, 2 and 3, see p. 1035–37.

Printed image digitised by the University of Southampton Library Digitisation Unit

agree. The facts given to us show that there are more positions than there are people applying for them, though I would accept that people with specialised employment and specialised earnings must go outside this employment area.

3638 According to your statements there are no specialist people in the area, they are just ordinary people like me who work and have to work —

Inspector Mr. Smith, what is the question?

3639 *Mr. Smith* What type of specialist people do you visualise in your reply just now? — In general our experience is there are quite a number of people who are quite happy to motor over to Luton every day to work there.

Mr. Smith I will bring this up later.

Cross-examined by Mr. A. C. Chandler (Long Marsden)

3640 Can you tell me what impact this would have on an area of green belt that is shown in the box in green at the bottom of the map?* — This presumably is the green area to the right hand side of Aylesbury?

3641 Yes — I think the airport project would have an adverse effect on this; it is a piece of very nice countryside that is enjoyed by people who go there for recreation and those who live there and, in my view, the airport proposal would have an adverse effect and change the character of that little piece of green belt.

Cross-examined by Mr. Philip Otton (Wing Airport Restance Association)

3642 I think you know that W.A.R.A. will be calling Professor Hancock, on the planning aspect of the case. He has made some estimates, the first of those is that the area withing the 35 NNI contour is approximately 270 square miles of Buckinghamshire —would that be right? — Yes, that is about right.

3643 *Inspector* May I intervene, because this touches on a question I wanted to put to Mr. Pooley. You say on your page 1 that the local implications include the effect on some 162 square miles of beautiful countryside. Perhaps we can resolve which the 217 square miles refers to and which the 162 square miles refers to. — Well, I think the 162 miles refers to the whole of the area contained in the 40 NNI.

3644 *Mr. Otton* The figure I was suggesting is the area inside the 35 NNI—would you accept that? — I have not calculated it, but it would seem reasonable to me.

3645 Does that represent approximately a third of the whole of the area of Buckinghamshire? — It could well do.

3646 I do not know whether you can help me again: the present population within that 35 NNI contour, would you accept it is in the region of, about, 65–66 thousand people? — Yes, I accept that.

3647 Of course, you would anticipate, as you say, an increase of that population in the event of an airport? — Yes, I would.

Cross-examined by Mr. Michael Gregory (Country Landowners Association)

3648 I wounder if you could clear up a little more on your proposals for housing 420,000 extra people in the neighbouring growth areas—paragraphs 4.18 of your evidence. If I understand correctly, you suggest Milton Keynes would take the greatest proportion of these at 225,000, and this is put within the present designated area, is that so? — Yes.

3649 What is the planned ultimate population at present for Milton Keynes? — In the neighbourhood of a quarter of million.

3650 Have you calculated what density would be needed if an extra 225,000 were to be imported and this, of course, includes natural growth, does not it? — This figure is simply this: it is taking the existing designated area of Milton Keynes, the people who live in it already, and on the assumption the airport is here, the way in which most people will earn their living and parts of the existing city that were going to industry should then be used for housing. This gives you an increased figure over the present one.

3651 I am not quite clear what you mean by "present, now", you mean the population today in the designated area? — Yes, simply these figures represent the increase in population of any designated area, Milton Keynes. There are at the moment some 40–50 thousand people living in Bletchley, and you see, if you add that to this you will get more than a quarter of a million proposed at the moment.

3652 I see, so the ultimate size of Milton Keynes is not within your scheme to be all that much bigger than that planned in the designation. — What is suggested here is there should be no alteration at all to the designated area.

3653 The whole nature of Milton Keynes New Town would be changed, would it not? The present concept is to take 17,000, I believe of London overspill. — Yes, I put it in my proof. I think that Milton Keynes, if the airport has to come to Milton Keynes, that the situation would need to be re-thought.

3654 Nos. 1 and 2 in your scale in paragraph 4.18, Towcester and Olney, what distance are those two towns from the propsed site? — Only, I suppose, ten to twenty—they are about the twenty miles range, depending on the ultimate road pattern.

3655 There is a circle on the plan* in your proof, is that 12 miles? — Yes.

Inspector Any other questions? Any re-examination?

* p. 1037.

* p. 1037.

Printed image digitised by the University of Southampton Library Digitisation Unit

Re-examined by Mr. Millard

3656 Just one. You were asked, Mr. Pooley, about the employment and unemployment situation in Leighton Buzzard, is that set out on page 17 in paragraph 25.13 of your evidence? — Yes, it is in general terms.

3657 Does that show in fact there was only 3·8 per cent unemployment in Leighton Buzzard? — It does.

3658 And that the total vacancies were just over double the total number of unemployed? — That is so.

Inspector I have no questions.

DOCTOR JOHN JAMES ANDREW REID * *called*

Examined by Mr. Millard

3659 Is your name John James Andrew Reid? — Yes.

3660 Are you a Doctor of Medicine, a Batchelor of Surgery, a Batchelor of Science and the holder of the Diploma in Public Health of the University of St. Andrew? — I am.

3661 Are you also a Member of the Royal Colleges of Physicians of London and Edinburgh? — Yes.

3662 In the light of those conditions, might I also ask you, are you a Scot? — Yes.

3663 I think you have worked in the field of public health for the past eighteen years and have been County Medical Officer of Health, Principal School Medical Officer and County Welfare Officer of Buckinghamshire since 1967, and previous to that you were County Medical Officer of Health and Principal School Medical Officer of Northamptonshire from 1962? — Yes.

3664 You have also in fact been doing work as a University Lecturer? — Yes.

Mr. Millard For the record, Dr. Reid is also now only appearing for Buckinghamshire, Northampton and Oxfordshire.

Inspector Thank you. Any questions by first tier authorities?

Cross-examined by Mr. David Keen
(Hertfordshire County Council)

3665 Dr. Reid, I think you have had notice of this question. Could you turn for a moment to your appendix A? — Yes.

3666 We in Hertfordshire, of course, are every bit as concerned with noise as Buckinghamshire and the other County Councils, and we have noticed you have included in your tables a number of hospitals and, indeed a great many more nursing homes and so on, than Mr. Fleming produced in his appendix; that is right, is not it? — I believe so.

3667 As I understand what you have done, you have just included all the hospitals and nursing homes, etc., within a line drawn three miles beyond the 35 NNI — That is so.

3668 Have you done any calculations as to the amount of noise, whether in NNI or in perceived noise disturbance which would be experienced at these various hospitals and nursing homes? — No, for the reason Mr. Fleming gives, taking it down to 35 that is meaningful below that—weather conditions and other factors will affect the amount of trouble one experiences from aircraft from time to time. It seemed to me in presenting a paper relevant to Wing that I should take some figure and three miles seemed a reasonable figure. No doubt the Commission will if it finds it interesting look at similar figures for other sites.

3669 Would you disagree with what Mr. Fleming said a little while ago, which was, in effect, three miles under the flight paths is one thing, but three miles as direct right angles is a different kettle of fish? — This depends on the circumstances of the data.

3670 It depends on that, but it is also very much influenced by the particular flight paths. — Yes, but I would also point out I am dealing here with people who are ill in hospital, which the Wilson Comission's evidence points out are in a different category from other healthy human beings.

3671 As I understand what you said a moment ago is that these are hospital and welfare institutions, and you would like the commission to look at them to see what the degree of noise nuisance would be on these particular institutions. — I think they should be made aware of these to decide whether it is relevant or not.

Mr. Keene I think we will leave it like that.

Cross-examined by Mr. MacDermot

3672 Dr. Reid, on that last point, does it appear that the nursing and welfare homes, mental health hospitals in your appendix B which find their way into your list there are in fact almost all also to be found in Mr. Fleming's list in his table NF5?* — I believe so, yes.

3673 Ferndale Athletic is in your list but not in Mr. Fleming's list? — Yes.

3674 No doubt the reason is as Mr. Fleming was telling us, of how seriously the Bedford Area is affected on the occasion of reverse traffic flows? — Yes.

3675 Though you compiled your list in a different basis it ends up in fact with almost the identical result? — Yes.

Mr. Keene If I can just come back to that.

* See also p. 1038.

* p. 1021.

Printed image digitised by the University of Southampton Library Digitisation Unit

Further cross-examined by Mr. Keene

3676 You agreed with a question put to you, in fact you have shown a total of 38 nursing homes and welfare homes and mental health hospitals in your Appendix, it is ten more than Mr. Fleming shows in his appendix? — Yes.

Inspector I am sure our experts will have a good sort-out of the two lists to decide what is involved.

3677 *Mr. MacDermot* The purpose of my question was merely directed to —

3678 *Mr. Keene* NFI*—it is exactly the same thing.

3679 *Mr. MacDermot* They are shown separately but not in Appendix B.

Inspector I think we can resolve this point. Any other questions by local authorities? Questions by any other persons?

Cross-examined by Mr. Philip Otton

3680 Can I just deal in a little more detail in regard to the National Spinal Injury Centre at Stoke Mandeville? — Yes.

3681 It is a world famous hospital, is it not? — Yes, indeed.

3682 And deals with a high degree of paraplegic and tetraplegic patients? — Yes.

3683 And is it right a great number of these patients suffer from extreme pain? — At an early stage in the illness they may be in considerable pain and discomfort.

3684 Is that discomfort—can it be seriously aggravated by various external factors including noise? — That is one of a number of factors which can have a bearing on the situation.

3685 Apart from that, the work in that particular sphere are there also children and adults treated in this hospital? — There is also a unit for that, yes.

3686 Do they also suffer from the effects of noise when they are in the early stages of these afflictions? — Again like any seriously ill patients one hopes for peace and quiet to let them sleep and recover.

3687 How do you view the prospect of noise and other disturbances from the third London Airport on such an institution as the National Spinal Injury Centre? — I think it would be extremely unfortunate and very hard on the patients.

Cross-examined by Mr. Bramwell

3688 This enquiry seems to be revolving round one very important thing, noise. In view of the fact we have now got down to mental institutions, doctors and medical men would be able to tell us what proportion of people in these mental institutions are there as a result of noise that they have experienced. — I think if you read my evidence you will see why it is completely impossible to answer this question. The Wilson Committee* consulted the Medical Research Council, which is the most eminent body in this country in the field of research on that point. It, as I point out in my evidence on mental illness, is caused by many factors. Rarely can you say in the case of one ill person "This was caused by one factor alone", it is caused by many things, but some people who are susceptible to noise—I have no doubt it is a factor, but to try and resolve this by research would be the work of many years duration, and this has never been done so far as I know anywhere in the world.

3689 As a first-aider for over 50 years—I was a first-aider of several big engineering factories employing dozens of men where noise was well above the NNI in most cases, and in view of the fact you are a Scot, a Northerner, have you any experience of the factories in Lancashire where noise can't be recorded in the weaving mills as to the effect of noise there on people? — I have considerable experience of a very similar situation in the jute weaving factories, and in the case of older people one finds a loss of hearing apparently attributable to this work and these working conditions for many years.

3690 What age would you say that was occurring? — This is very difficult to gauge, the effect on human beings will vary; some people early in life, by middle age, others in late life—you cannot generalise with human beings.

3691 Have you any idea whether boredom would have any effect on mental disturbance more than noise? — I am sorry?

3692 Would you consider people suffer more from mental disturbances caused by boredom than by actually the effects of noise on them? — It would be wrong of me to quantify this because, as I said,— boredom may indeed be a factor in mental health, but there are so many, you can't take one out of order and say it is this more than the other—it depends on the individual human beings.

3693 Have you any sort of knowledge about the effect of noise of Luton Airport on the hospital at Dunstable, Luton? — I have no direct experience of having worked or been in that particular hospital.

3694 I am rather amazed; we have a large hospital adjacent to an airfield —

Inspector You must not be amazed. Please ask questions at this stage; you can express your amazement later on.

3695 *Mr. Bramwell* Thank you. In view of the fact we have this airfield which is on a hill top site, what possibility is there of noise being dissipated by the valleys surrounding it? Have you any knowledge of this sort of thing and the effect on people? — I

* See attached wallet of maps and diagrams.

* Cmnd. 2056.

Printed image digitised by the University of Southampton Library Digitisation Unit

think this is a question for Mr. Fleming rather than me. I have merely tried to point out that to some healthy people noise is very distressing, to some ill people noise is extremely distressing, but the effect of particular valleys or hypothetical points like that—I do not think I can give any meaningful answer.

3696 We have a phenomenon cropping up in the past two years where noise is something which has a very stimulating effect—we have pop groups, and how it stimulates them. I have worked in engineering where noise is a stimulant and people sing on top of their voices when noise is at its highest the stimulation on them is incredible to see. Have you experienced this? — I have read reports of damage being done to the ears by pop groups and as a public health doctor I would say my colleagues and I throughout the country find a progressing and increasing number of complaints are concerned with noise with people having lack of regard for other people's feelings and being concerned with their own selfish ends.

3697 Going to excess, in other words? — What is excess to one person may be moderation to another.

3698 I have experienced this feeling of elation with noise, and I like to sing on top of my voice when operating machinery —

Inspector Very interesting, but not a question.

Mr. Bramwell I am trying to get to the effect of noise on people —

Inspector The doctor is trying to help you, if you ask questions and not tell us your experience.

Mr. Bramwell I am verifying the doctor has no experience of what effect noise has on people. I will prove that —

Inspector Prove it when you address me later on, but just ask questions now.

Mr. Bramwell Thank you.

Cross-examined by Mr. Taylor

3699 Speaking as a founder member of the British Association for the Disabled Centre at Stoke Mandeville, obviously we are all suffering from a certain form of illness, and I am trying to plough through about 1,500 pages which came out about five days ago. It is as much as one can do to get through the evidence so I have not been through the last 1,200 or so, but I have seen no great mention of the effects of our international standings in Stoke Mandeville or bringing children and adults who are disabled from all over England Wales and Scotland, to Stoke Mandeville, and bringing them from all over the world, because this is the first stage of its sort in the world. Surely would you agree—I think you will, that to bring people from all over the world from peaceful hospitals situated on the moors to Stoke Mandeville for their national games is going to add a greater effect, have a greater effect on those particular people in the five days they try to sleep there and do their best than even the children who are consigned to this place for nine months at a time —for the Stoke Mandeville Games and the British Sports Association Games—they are going to deteriorate rapidly within this £300,000 stadium. — Ideally one would like to bring them to somewhere where they can enjoy themselves—this would be a factor, I think it is less important than some of the factors I have mentioned. Disease I think must be the first importance but I agree this is a marginal point.

3700 You mention in your evidence — No because I knew the hospital was submitting its own evidence.

Inspector Any other questions? I have no questions, Dr. Reid. Any re-examination by the Associated County Councils?

Mr. Millard I have no re-examination, sir.

(*The witness withdrew*)

MR. DAVID PATRICK DAVISON* *called*

Examined by Mr. Millard

3701 Are you David Patrick Davison? — Yes.

3702 Are you a Master of Arts of the University of Oxford and do you hold the Diploma of Education of the University of London? — Yes.

3073 Yes. Have you taught for three years in primary and secondary schools and have you had 17 years experience of educational administration? — Yes.

3704 Are you Deputy Chief Education Officer for the County Council of Buckinghamshire? — Yes.

Mr. Millard I think, sir, I will leave Mr. Davison to other questioners.

Inspector Any questions from the first tier authorities? Any questions from other local authorities? Any questions from other persons; No questions from other persons. Mr. Davison, I have no questions either.

Mr. Millard That must be the absolute record, sir. I have no re-examination.

(*The witness withdrew*)

MR. DAVID BRIDGEMAN ROSE* *called*

Examined by Mr. Millard

2705 Are you Mr. David Bridgeman Rose? — Yes, I am.

3706 An Associate of the Royal Institute of Chartered Surveyors and an Associate of the Incorporated Society of Valuers and Auctioneers and have you been the County Valuer and Estates Officer for Buckinghamshire County Council since October 1963? — Yes.

---

* See also p. 1045.
* See also p. 1050.

Printed image digitised by the University of Southampton Library Digitisation Unit

3707 Prior to that were you with the District Valuer in Bristol, Trowbridge and Bedford, and prior to that were you in private practice? — I was.

3708 Lest there be the slightest suggestion of bias, you make no secret of the fact your own house is within the area which would probably be due for demolition, for inclusion in the site of this airport? — Yes.

3709 I gather you have dismissed that not unimportant fact from your mind in making this dispassionate assessment? — I tried to do so.

Mr. Millard With that, sir, I leave it to other questioners.

Inspector Any questions from the first tier authorities? Any questions from other local authorities? Any other questions?

Cross-examined by Mr. F. J. Taylor Burcott

3710 Mr. Rose, is the shaded area shown on map CTLA 5,* the one which shows the places to be demolished? — The area in what looks to be dark brown.

3711 That is the area called "The site". — Yes.

3712 Burcott, which is clearly shown as being well within the site, is where I live, in this shaded area, and yet you mention two farms as being demolished in that hamlet.

3713 *Inspector* What house is it?

3714 *Mr. Taylor* My house is not in Burcott. I live at the corner of the road leading down from Mount Pleasant Farm. I am speaking for a lot of my neighbours who asked me this question, they asked it continually over the last few weeks, and I was told that this shaded area indicates the site in which all the dwellings will be demolished. Yet we are shown in Mr. Maxwell's map,† the map which is in the back of Mr. Maxwell's statement, as being clearly in the site.

3715 *Inspector* Who is Mr. Maxwell?

Mr. Taylor Mr. Maxwell is the Aylesbury Town Clerk. I mentioned Mr. Maxwell because the plan in the back of his statment shows very very clearly the site area.

3716 *Inspector* Can I make absolutely clear that the only site area which has been published must be one derived from this map published by the Commission.

Mr. Taylor That is the one we have been working on, sir.

3717 *Inspector* CTLA5‡?

Mr. Taylor That is correct.

3718 *Inspector* I think it is somewhere said, in fact it must be, that this represents the approximate boundary of where the airport might be, but it is certainly not definitive as to its outer edges. Does that help at all?

3719 *Mr. Taylor* Well, I am a local parish councillor, and we have not had any information of any other map being available for us. We have to answer a lot of questions from local people and this is the one we have been working on, and yet this statements comes out, and we find its evidently a different map which the final statements are produced from.

3720 *Inspector* Can I make two points clear. The area shown is the one on plan CTLA 5. But the area shown on there is said, in the descriptive material, to be—I think the word used is "approximate", because at the time this map was published it was not possible to say and is not possible now to say what the final boundaries of the airport might be—does that help you?

Mr. Taylor Thank you, sir.

Inspector I think while this witness is in the box we might adjourn. I have one or two questions to ask, but it is now five minutes to one, so we can now adjourn for lunch and resume at 2.15.

(*A short adjournement*)

Mr. Millard Sir, just before Mr. Rose completes his evidence, there is one matter—in a sense it is a personal one, but it would obviously apply to a great many people. I have almost finished my case; when I have done so, would it be in order for my witnesses to be released? or would anyone need them later? Perhaps you could give some similar ruling for other witnesses.

Inspector I am quite sure that it is in everybody's interest that they should be able to go about their normal duties with the very minimum of delay, and not be kept at this hearing. As far as I am concerned, I am certainly quite willing for persons to leave the hearing as soon as they have finished their particular evidence or statement. Is there anyone who wishes to ask any more questions of any of the witnesses who have appeared this morning? Apparently not; so they are all quite free to leave.

Mr. Millard We might put it, perhaps, on the basis that if anyone wants a witness to remain until later, the onus is on him to seek your permission to retain that witness.

3721 *Inspector* Certainly; but it would be quite unreasonable to keep people unnecessarily. I was going to ask Mr. Rose some questions; but before I do so, are there any other questions to him? If not—Mr. Rose, on the first page of your statement—paragraph A, dealing with the first phase after the blight, as it were, has descended upon the area—you do say that no further land transactions could or would be carried out. Is this actually the case, to your

* See attached wallet of maps and diagrams.
† p. 1118.
‡ See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

own personal knowledge? have transactions in property completely come to a standstill in the area? — To the best of my knowledge this is so. There are some new houses which have just been completed in the village— a terrace of four, I think—which to my knowledge, the owner, who is a builder, has been quite unable to sell; and he has in fact let them unfurnished temporarily until the situation clears up.

3722 And then, roughly on the same point, on page 2 of your proof,* about midway down, you say, "In the one case of which I am aware, of an owner being forced to sell, the individual concerned had to take a reduction on a previously agreed price of a substantial amount". The point that I am interested in is this: that the Commission is doing a good deal of work to ascertain what is the effect of an airport on property values, and I am wondering whether there is any chance of this kind of information being made available to the Commission on a confidential basis. One would not want to publicise the circumstances of an individual, of course; but we are concerned to find evidence in this sort of thing. — Yes. The property which is situated in Aston Abbotts is not on the area for the airfield proper. It is certainly in an area which is likely to be effected by noise to some extent so, without mentioning names, the owner of this property had bought another house in Stewkley, and he was about to sign a contract for the sale of the property at Aston Abbots when the news broke that the third London airport might be in this vicinity, and negotiations were immediately broken off. He had a very great deal of difficulty in getting anyone else to come along and buy it. And you will appreciate, owning two houses with his somewhat limited means was an embarrassment to him. He did in fact find a purchaser in the end: the reduction in price from his previous figure was, I believe, about twelve per cent. But it would be dangerous to take that particular transaction as being more than one particular piece of evidence—one swallow does not make a summer, of course.

Inspector I appreciate that, of course.

3723 *Mr. Millard* Sir, if you wish to pursue this idea of information to the Commission—so far as I am concerned, if I may take some responsibility for the Council in these matters, on a confidential basis—I would see no difficulty in Mr. Rose providing such information as may come his way, providing the owners agree —

3724 *Inspector* Obviously the owners would have to agree; but the Commission is interested in this question of what kind of depreciation is likely to occur as a result of the initial consequences of an airport—like the Heathrow situation with supply and demand —

3725 *Mr. Millard* Yes. Mr. Rose's conjecture on that is that you get a big fall off for some years, and then obviously when people reach the stage where they must live somewhere, up it goes again.

3726 *Inspector* We are attempting to reduce this type of thing to figures.

3727 *Mr. Millard* May we just leave it then, Sir, that if your office would care to get in touch with us, we will do what we can to assist in this particular matter.

3728 *Inspector* And our research staff follow up with your Mr. Rose—this could be helpful—

3729 *Mr. Millard* There would be no objection, provided the owners agree.

3730 *Mr. Rose* Sir—in my total valuation concerning the current value of properties on the airport —included in it is an item for disturbance which covers the loss of goodwill to a number of small businesses—shops, village shops, and that sort of thing. Much of that comes to me confidentially, because I happen to be known personally to the owner of the particular business. I would be a bit doubtful about disclosing that sort of thing.

Inspector I quite appreciate that. I have no more questions.

Mr. Millard Nor have I. Thank you, Mr. Rose.

(*The witness withdrew*)

MR. A. L. BENNETT* *called*

Examined by Mr. Millard

3731 You are Antony Lewis Bennet? — I am.

3732 You are a Bachelor of Arts of the University of Cambridge, a Fellow of the Chartered Land Agents' Society and an Associate member of the Royal Institution of Chartered Surveyors? — Yes.

3733 And have you been a Chartered Land Agent for sixteen years, and have you been connected with the management of County Council small holdings for most of that time? — Yes, I have.

3734 And I think you have worked in Scotland, Pembrokeshire and Cheshire and are at present County Land Agent for Buckinghamshire. — That is so.

3735 With that introduction, sir, I will leave Mr. Bennett to the other witnesses.

Inspector Any questions by the first tier authorities? Other local authorities? any other questions?

Cross-examined by Mr. Bramwell

3736 Mr. Bennett, you are concerned with the small holdings, and they are rather small areas in character —are they profitable undertakings, as small holdings? — Are you meaning individually, or collectively?

3737 Individually. — Well, it can be said that some of the very small ones—the poor land units, for instance—it would be very difficult to give a reply,

* p. 1050

* See also p. 1056.

Printed image digitised by the University of Southampton Library Digitisation Unit

because they are farmed along with other units; but generally speaking the farms are profitable units, because they are of a size which enables them to be so.

3738 That is incorporating the poor ones as well as the productive ones, the profitable ones, bringing them all together. You say a profit over the joint effort? — Might I ask what do you mean by "profit"? —do you mean to the Council, to the landlord, or to the individual tenants?

3739 To the individual tenants. — Oh, indeed they are, yes, a profit to the tenants. Otherwise they would not remain in business.

3740 In view of the general belief that small farms are unprofitable, is it the father figure of the County Council behind it that makes it a success, or is it each individual farmer? — I think the first part of your question would lead to some considerable discussion. I am sure in my own mind that small farms are not profitable—I have seen no good reason for them to be so.

3741 What is the main occupation? — The only occupation is farming.

3742 I mean as regards the class of farming—dairy —? — Principally dairy farming.

3743 In view of the fact that overproduction is considered to be prevalent of milk, is it likely to continue to be a profitable undertaking? — I think the milk will continue to be a stable industry on the small farm, and I do not think there is any indication at the moment that the milk market is becoming flooded by over-production by small farms.

3744 In those circumstances, do the black lands on the northern side of this proposed site come under the control of the County Council? — I am sorry—I do not know where you mean —

3745 It is a portion that is prone to flooding—very damp ground. — Much of the land in the Vale of Aylesbury is very heavy clay—it is not prone to flooding, but it is certainly heavy land—is that what you mean?

3746 Yes, indeed—in other words, where crops can be grown very effectively, but the difficulties of harvesting them is considerable. — That depends on many things—like all agricultural land, the quality of the land will vary depending on the floodability of the soil, all sorts of contingencies. In many cases it is found that this Vale of Aylesbury land is very profitable, provided the land is under drained.

3747 Would it be worth while to do this to the land? — Yes, where it is necessary, indeed.

3748 And on the area immediately adjacent to the airfield—do you own also those portions of land — — I am sorry —

3749 Do you own also those portions of land on the northern side—is that under County Council control? — Near Stewkley—yes, much of it is.

3750 And during the war, was there some interference with the farming—it did continue during the war, didn't it? — I was not here then, but as far as I know those farms continued to be farmed during the war, yes.

3751 Did the operation of an airport interfere with them in any way? — An airport?

3752 Yes, the bombing airport. — I am afraid I do not know. I could not answer. I certainly have not read any records of any such interference.

3753 You mentioned in your report that on some of these farms—and you mentioned two—the equipment is used generally amongst these groups—is it so in the case of — I am sorry—where did I say that?

3754 You said that the older farmers are not up to date — Yes—I think I said that some of the farms where the tenants are rather elderly, the capital equipment provided by the landlords might not be so extensive as a newly-equipped farm—that is so.

3755 And in order to bring them up to date, that would be expensive? — It would depend on what the particular tenant required.

3756 Are any of these farmers of a standard that could take on a bigger farm? — Indeed, yes.

3757 But there are none available in this area. — They become available occasionally. We do have a system, and where possible we move the tenants from the smaller holdings to the larger ones.

3758 In view of the fact that some of these men may be able to take on larger farms, would it not be possible for them to go to larger farmers in other areas, immediately they are made available, with financial — If such land is available, yes.

3759 To the advantage of the farmers themselves. — Yes—to the advantage of the farmers themselves?

3760 Yes—the efficient ones. — Well, as in many industries—no-one is particularly anxious to leave, but if he cannot stay he would no doubt look somewhere else; but the number of farms available is becoming very few.

3761 In Bucks, of course. — All through the country.

3762 I have seen estate agents with hundreds of farms on their hands — May I ask, are you talking about farms for sale, or to let?

3763 For sale. Letting is different. — Yes, very different. Most small holding farmers are not in a position to buy farms nowadays, unless they have outside means.

3764 But if these men are efficient, as you claim, why not have capital made available to them to move to other areas? — Who is going to provide the capital?

3765 We have a mortgage corporation to do these things. — At ten and a quarter per cent?

Printed image digitised by the University of Southampton Library Digitisation Unit

3766 That is not my problem! Thank you.

3767 *Inspector* Any other questions? Mr. Bennett, I have just one minor point. Your paragraph 9.5—have you personal knowledge of the effect of pollution from overflying jet aircraft upon crops and springs, and other features that you mention? — Personal knowledge of jet overfly—no, sir, but I have personal knowledge of considerable pollution caused by fallout from brickworks. It is an instance which is peculiar to this part of the country where there are several brickworks, both on the east and west fringes of the country.

3768 *Inspector* I am talking purely about pollution from aircraft—have you any personal knowledge? — Not personal, only what I have read.

Inspector I have no other questions. Any re-examination from the associated Councils? Mr. Millard?

Mr. Millard No, sir, I have no further questions. And that, sir, is my case.

(*The witness withdrew*)

Mr. McDermott Sir, I have the consent of the Bedfordshire County Council and the Hertfordshire County Council to introduce Milton Keynes Development Corporation at this stage, because Lord Campbell has to be in London by six o'clock—has the County Borough of Luton any objections?

Mr. Hill If it please you, sir, Oxfordshire —

Inspector Yes—you are associated with Bucks.

Mr. Hill Yes, and we support everything that Mr. Millard has said. Hill, Planning Solicitor, Oxfordshire.

Statement by MR. HILL
(*Oxfordshire County Council*)

The Oxfordshire County Council supports everything Mr. Millard has said on behalf of the other authorities, but there are two matters which Osford wishes to put forward separately—one is a proof of evidence by the County Surveyor, Mr. Summerfield, and he is here now in case you or anyone who is here now wishes to ask questions. There is also a statement by the Clerk—I presume that there would be no questions in respect of that, but if it is so wished, might Mr. Summerfield formally be put in as a witness now so you and others might ask questions —

Inspector I think, as Mr. Summerfield is dealing with the rather important question, that he might go into the witness box and just prove the evidence.

Mr. MacDermott I do not think there is any objection to Lord Campbell going first —

Inspector I think that, as Oxford is associated with the Bucks. case, let us try and dispose of Mr. Summerfield.

Mr. Hill This will only take a few minutes.

MR. K. SUMMERFIELD* *called*

Examined by Mr. Hill

3769 Mr. Summerfield has a further series to put in—may he do that now, sir? (*to the witness*) Mr. Summerfield, is your full name Kenneth Summerfield, are you MSc, FISE, and are you County Surveyor of the Oxfordshire County Council? — Yes.

3770 You have your proof; is there anything further you wish to add? — No, sir, there is nothing I wish to add—though of course I shall answer questions.

Inspector Any questions on the proofs submitted by the County Surveyor of Oxfordshire County Council? from the first tier authorities? from the other local authorities? any questions? I have no questions; thank you, Mr. Summerfield.

(*The witness withdrew*)

Mr. Hill We also put in a statement of the Clerk†—I presume you do not wish to ask questions as to that —

Inspector No. The Milton Keynes Development Corporation.

Opening speech by LORD CAMPBELL‡
(*Milton Keynes Development Corporation*)

Lord Campbell Thank you, sir. My name is Lord Campbell, and I am Chairman of the Milton Keynes Development Corporation. I am extremely grateful to you, sir, for letting me jump the queue.

Our written statement of evidence has been sent to you, sir. I understand that you have asked people appearing to be self-denying in any additions they make to their written evidence; but we, sir, are in the extraordinary position of having been charged by the Minister of Housing and Local Government to plan and build a new city, and of having to publish our plans for that city at the beginning of next year without knowing whether the plans are to be set at nought by the subsequent appearance of a third London airport on our doorstep. Therefore, I wonder if I might be forgiven if I have a few minutes to rebut a couple of heresies which seem to be abroad about Milton Keynes and the possible airport at Wing; and then to emphasise one or two problems. I hope that no-one will interpret the comparative brevity of my statement as a measure of my conviction.

First, the heresies. It is being suggested that the new city of 250,000 people will need the airport to attract investment and to provide employment. This is not true. There is no shortage of enquiries from industry and from other big employers, for sites in the new city. With its splendid geographical location, and road and rail communications, we see no difficulty in attracting to the city all the employment

* See also p. 1064.
† p. 1068.
‡ See also p. 1070.

Printed image digitised by the University of Southampton Library Digitisation Unit

that it will need. We do not need the airport to provide jobs, and we are planning the city to be self-contained as regards employment.

It is also being suggested that Milton Keynes can offer the third London airport at Wing as it were a ready-made city to house its work force. It would be quite wrong to assume that the new city would be in a position to serve this purpose. It would not be big enough, and the plans which we are developing would anyway be unsuitable.

The points I want to emphasise are these: Our brief from the Minister for Housing and Local Government was to plan a city to take an overspill of 150,000 from London and South Buckinghamshire, and the aim is to create a balanced community, mainly self-contained, as regards industry, shopping, public services, recreation and other amenities. Co-ordination of our proposals with other nearby towns and the surrounding countryside is essential at every point.

By the time we publish our final Plan, at the beginning of next year, we shall have started developing the city according to this charge, and we shall be committed to receiving many industrial, commercial and other organisations.

If, later on, the Government decided to put an airport at Wing, not only would the work of development be disrupted, but many of the plans and policies which we have worked out over the last two years would be aborted and would no longer apply: they would have to be re-thought, re-phased, and re-co-ordinated (if there is such a word) with the Local Authorities and other Authorities concerned.

When you take into account the tens of thousands of people required to build and to service any community, let alone the work-force for other incoming employing organisations, the present designated area could not house any number approaching the 65,000 workers which I understand an airport would need by 1990. It is impossible to believe that an extension of the designated area would not be inescapable if it were successfully to serve a great airport.

Nowadays, the road system is the basis of any urban plan. Our road system has been planned for movement within the city, to and from work. It would have to be entirely replanned—and so would the regional roads—to take rush hour flows to and from an airport, and this in turn would mean changing all the residential and landscaping plans which have been based on the road system.

Then the problems of water supply, sewage disposal, and surface water drainage, already very considerable, would certainly be made much more considerable. Airport noise would be likely to inhibit development at the southern end of the city, thus further involving change of our present plans.

Lastly I would like to stress the aspect of this whole affair which, perhaps, causes me personally the greatest concern. The people in this corner of North Buckinghamshire have had the proposal for a new city hanging over their heads since 1962. Now that the public inquiries have been held, the boundaries of the city designated, and interim plans made public, and our final plan imminent, are they really to be faced in a year or two with yet another proposal, for an international airport, with the changes in the city's terms of reference and boundaries, and probably size, that would follow, and with the whole rigmarole of public enquiries again?

I submit, sir, that the site of the Third London Airport at Wing would not only play havoc but would delay the building of the city of Milton Keynes, but would prolong to an intolerable extent the uncertainties which have been hanging over this part of Buckinghamshire for far too long.

In conclusion, if I am asked any questions which are above my head, may I ask Mr. Ismay, the architect of Milton Keynes, to assist me; if you want his criminal record, I can arrange that.

Inspector I do not think we need that, Lord Campbell. Are there any questions to the Milton Keynes Development Corporation collectively from the First Tier authorities.

LORD CAMPBELL *and* MR. ISMAY *called*

Cross-examined by Mr. Niall MacDermott (Bedfordshire County Council)

3771 I would like to ask a question dealing particularly with the first point in your additional statement, namely you are rebutting the heresy that Milton Keynes would need the Airport. If I may say so with respect, that is something with which we fully agree. Mr. Pooley this morning explained that if the airport did come, the solution which he would recommend for the urbanisation would be that which is shown on the large map we have in front of us,* which would mean devoting the whole of Milton Keynes and all the planned expansions of neighbouring towns, and adding to those planned expansions slightly to meet the direct and indirect population required to service the airport. The question which I want to ask you, and I apologise for the lengthy preamble, is: taking a long term view, what do you feel would be the effect, both for Milton Keynes and for the area as a whole, of attempting to do that which Mr. Pooley has recommended? — I cannot talk for the County, and the County is the planning authority, but I would have thought that in the long term, there would be a danger that what would happen would be with the industry and other

* p. 1037.

Printed image digitised by the University of Southampton Library Digitisation Unit

employment already coming into the area, the natural growth and expansion of industry already in the area, and the airport, I would have thought it would have been "all this and Hell too". It seems to me almost impossible for the future to control natural development, really to prohibit a natural in-come in order to allow enough jobs for the airport.

3772 Have you found in the work you have already been doing on Milton Keynes that there is a strong natural growth element in this area? — Yes, but there is a strong natural growth in the area already.

3773 Is it that you were referring to when you said you had no difficulty at all in finding industry willing to come to the Milton Keynes area? — Yes, some of it was natural growth of industry in the area, and the other was a fairly long queue of employers, industrialists, offices, institutions and so on, waiting to come to Milton Keynes. Its position on M.1 and A.5, very good railway services, makes it very attractive for people, London, Birmingham, east and west, and so on. In fact we have already had really quite firm applications involving 20,000 new jobs.

3774 These are from people who, for good reasons of their own, want to come to this area? — People who want to come to this area.

3775 This, I take it, is the pull of what has been called the London/Birmingham growth corridor? — Yes.

3776 Apart from the problem that you would have of replanning Milton Keynes itself, you do not feel that would be the end of the road, there would be problems that would be created by bringing the airport to your doorstep? — Yes.

3777 Have you any comments to make on the effect of having this particular aspect of the airport, upon the recreation facilities which you had been envisaging for Milton Keynes? — Yes; of course, partly actually the noise levels are going to frighten people away, and psychologically I think the coming of the airport is going to affect many of the people who would want to come and live here, and make their homes here, because of the thought of being near an airport. It is very important that people can work, and people outside Milton Keynes, we must recognise the effect on amenities in the surrounding countryside as well as in the designated area itself.

3778 In your present plans, leaving out of account the airport proposal altogether, have you envisaged Milton Keynes to any appreciable extent supplying labour and housing for the employment demands of South Bedfordshire and Luton, the motor industry, or is that something separate? — No, sir, we have regarded the employment in the City as being largely self-contained; we reckon, although some people will commute out of it, some people will commute into it. Our intention, we have always said from the beginning, is that this would be a balanced city of houses and jobs and social services, and it would destroy the balance.

Inspector Any other questions from First Tier authorities? By other local authorities?

Cross-examined by Mr. Maxwell
(Borough of Aylesbury)

3779 Have you had the opportunity of reading the evidence which has been submitted by the Aylesbury Borough Council?* — No, I have not; I may have had an opportunity, but I have not read it.

3780 Has Mr. Ismay had the opportunity of reading it? — (*Mr. Ismay*): Yes.

3781 Following on what Lord Campbell has said, some of the fears that he sees, would Mr. Ismay agree that the representations that the Borough Council have made fall very much in line — — (*Mr. Ismay*): I am terribly sorry, I have not read them; I thought you were saying have I read the evidence of Bucks County Council. I am sorry, I have not read it.

Mr. Maxwell I am sorry.

Cross-examined by Mr. Arthur Snaith
(Chairman, Newport Pagnell Urban District Council)

3782 May I ask Lord Campbell if you have problems dealing with the foul drainage and surface water drainage from the Milton Keynes Development area? — Yes, we have problems; we have just had the consultants' report. It is going to be very expensive, when we build Milton Keynes, to prevent flooding in the area, and downstream of ourselves being worse than it is already, and even more expensive to keep it as it is at the moment. Discussions are already taking place with the Ministry of Housing and Local Government and the other authorities concerned. I should have supposed that the coming of an airport would enormously add to those problems. This seems to be a reasonable assumption, but I say that without any technical evidence on which to support it.

3783 I was going to ask you that very question, because as a certain amount of surface water drainage from the Cublington site goes into the Ouzel, which is in your area, I would have thought it would have embarrassed you? — I think it probable, but I have not got technical evidence of that.

Inspector Any other questions from local authorities? Any other questions from other persons?

Cross-examined by Mr. Cornwall

3784 My first question is—may I just say that I am glad to find I am in good company, not being the only person here who has not read all the evidence; I know Lord Campbell has all his work to do; I have

* p. 1111.

Printed image digitised by the University of Southampton Library Digitisation Unit

my work to do at school. From a democratic standpoint has the Development Corporation any objections in principle to the possible presence of a second non-elected authority being in charge of the major land use in this County? — That, sir, is a "Have you stopped beating your wife" question.

Inspector What has it to do with the local implications of a Third London Airport, because I ought to know that.

3785 *Mr. Cornwall* I think the implications for democracy of the presence of a Third London Airport are very much felt by people in this part of the world.

Inspector We are considering the implications on the local population of a Third London Airport.

3786 *Mr. Cornwall* We are, sir. The Development Corporation has no views to express on the question I asked? — I almost certainly would have views to express if we were discussing it in a pub and not in an inquiry, about the Third London Airport.

3787 Perhaps we will be able to discuss it somewhere else in public in future. My second question, and I am afraid this may come in the same category as the first: does the Development Corporation view with displeasure the possible existence of another non-elected authority involving the local ratepayers in expense, and that against their will?

3788 *Inspector* I see the drift of this one, and leave it to you to answer; whether you like it or not, it is up to you, Lord Campbell, it is up to you. — No, I do not.

3789 *Mr. Cornwall* Thank you for hearing me, sir.

Inspector Any other questions?

Cross-examined by Mr. Bramwell

3790 I will be very brief on this one: in view of the fact that the Milton Keynes Development is a Government project, this inquiry is also a Government project, I am rather surprised that Lord Campbell has had any necessity to come into it at all; this ought to have been sorted out amongst themselves rather than coming before this hearing. Thank you. — I should say that I obtained the permission of the Minister of Housing and Local Government to offer evidence before you.

Inspector Any other legitimate questions? I have no questions, Lord Campbell, and I think however brief your statement was, you put your point very clearly indeed. Thank you. Now Bedfordshire County Council.

MR. NIALL MACDERMOT *called*
(Bedfordshire County Council)

Mr. MacDermot May it please you, sir, I appear with my friend Mr. Michael Connor on behalf of the Bedfordshire County Council. Bedfordshire County Council are also representing at this hearing the interests of the Dunstable Corporation, the Ampthill Urban District Council, and the following Rural District Councils: Ampthill, Bedford, Kempston and Luton, and they all wish to be identified with the evidence which has already been given, and the case which is being presented on behalf of the Bedfordshire County Council. I should have said Kempston Urban District Council—I apologise.

Firstly and obviously we wholly support the case which has already been put forward by Mr. Millard and his witnesses on behalf of the Joint County Councils, and a great deal of the factual evidence, insofar as it concerns Bedfordshire, was, of course, supplied by the County Council to those witnesses. I propose to call one additional witness, Mr. Cowley, the County Planning Officer, to assist as far as he can the Commission by outlining the relevant planning policies of Bedfordshire County Council, to show how they would be affected by the Airport, and to give some additional information about the local effects of the proposal. May I say that it is an understandable but perhaps regrettable matter that some of these admirable proofs of evidence which have been formally put in this morning are not in fact heard; it is inevitable if we are to keep these proceedings within a reasonable compass of time, but I am sure you would agree, having read them, that they have been most ably prepared, and put forward arguments very clearly and cogently.

As far as the Bedford elected authorities are concerned, there appears to be completely unanimous opposition to this proposal for an airport at Wing/Cublington. The Bedfordshire County Council themselves, having examined carefully its effects, have declared themselves strongly opposed. All the County District Councils, and I believe all the Parish Councils concerned have taken a similar stand. Also a very large number of private individuals have approached the County Council, or one or other of the other Local Authorities, or their elected members. They have all been urged to lend their support to the case being presented by the Local Authorities, and the Wing Airport Resistance Association, rather than themselves to duplicate evidence by their own individual representations. But I hope the Commission will be in no doubt that there is very strong and very widespread resistance at all levels to this proposal. What is perhaps even more significant is that we have received no representations whatever in favour of this proposal, that is to say, the County Council, and as far as we know, that applies also to the District and to the Parish Councils.

Printed image digitised by the University of Southampton Library Digitisation Unit

The County Council's case falls really into two parts, firstly the effect of the Airport on the lives of the people who live, who work, and who seek their recreation in the area; and secondly the effect on the pattern of growth of South Bedfordshire, and in particular on the demands for labour and housing to meet the demands of existing industry, but of course is a pattern which is dominated by the motor industry based on Luton and Dunstable.

As everywhere, the people living in the flight paths are dismayed by the prospect of having their peace shattered by the roar of modern jet engines, and they are not an insignificant number. As far as Bedfordshire alone is concerned, there are now some 18,685 people living within Mr. Fleming's 35 NNI contour, and land already committed for housing for an additional 4,000 people within that area. Of course, there are many people living outside the 35 NNI contour who will be seriously affected by noise, partly due to the different pattern when there is the reverse flight, and partly due to the fact that people's reactions to noise vary so greatly. The effect of noise for Bedfordshire will undoubtedly be worse on those days when aircraft are flying in the opposite direction to that which they use when there is the normal prevailing wind. This on average means one day in four or five. But I think experience shows, and I have no doubt the Luton Airport will be able to supply figures to confirm it, that you do at times get quite long periods when even the majority of flights will take place in the reverse direction, and therefore the NNI contours, whilst presenting a fair picture, no doubt an over-all picture for the average effects over a long period, must not be taken as accurately defining the areas where the people are going to be adversely affected by noise. At times some people are going to be very badly affected. This, of course, came out very strongly in the evidence which has already been laid by Mr. Fleming* and by Mr. Davison,† and by Dr. Reid,‡ dealing with the position of the highly sensitive users of hospitals, nursing homes, welfare homes and schools, because these are places which cannot be expected to carry on with a high level of noise on one day in five, or for fairly long periods, maybe a month at a time of the majority of days, and so it is, as we say, from their evidence that parts of Bedfordshire will be seriously affected at times outside the NNI contours, and when one looks at Tables NF 4 and 5,§ which I referred to this morning in cross-examination, one sees that it includes places like Bedford itself, the town of Bedford, Leighton Buzzard, Dunstable, and Ampthill, to mention only the larger population centres, besides bringing in a great number of other villages.

The same picture emerged when we looked at Mr. Davison's proof, and it is quite striking if I could just refer you to the last page of his proof of evidence, where he gives in appendix E.15 a break-down of the soundproofing costs for existing and programmed schools, the striking figure is that for the two runway proposal, the total would be £3,600,000, and Bedfordshire of that is £2,212,000, more than 2/3rds of the total costs of soundproofing would fall in Bedfordshire. This shows the very much larger extent to which Bedfordshire will be affected by noise than appears just by glancing at that NNI contour map, and you will see in the earlier appendices the long list of schools in Bedfordshire which would be affected, and which would require soundproofing, in that way.

Apart from the residents themselves, the County would be very seriously affected from the point of view of the amenity areas, the areas of high amenity value. In South Bedfordshire there are really two groups of land which are specially protected for countryside and amenity purposes. They are the South Bedfordshire Green Belt, which links with Hertfordshire's as part of the Outer Metropolitan Green Belt, and is a continuation of the line of the Chilterns. It is that we have before us only shown as shaded, that part which comes within that circle but I will ask Mr. Cowley to hand to you a plan* which he has prepared which does show a continuation of that, how it affects South Bedfordshire. Then, though not formally approved, this Metropolitan Green Belt is being strictly applied, with the consent of the Minister.

The second area is an attractive belt of unspoilt countryside along what is known as the Green Sand Ridge, and that extends from North Linslade and Leighton Buzzard north to Sandy. One sees the beginning of it just within the circle just north-east, going from the airport site. Again the plan which Mr. Cowley will produce shows how that extends as a belt right across the County. That is shown on the County Map as an area of great landscape value, a large part of which has been recommended to the Countryside Commission as an AONB. That includes two sites of special scientific interest; it contains two large villages which are proposed to be designated as conservation areas, Woburn and Apsley Guise, both of which are extremely rich in buildings of architectural and historic value. It flanks Ampthill, which is also proposed as a conservation area, and of course, is an outstanding example of 18th Century architecture. In the heart of it is Woburn Abbey itself, which is within the 50 NNI contour. This, of course, has become a national recreation centre attracting thousands of visitors every year.

If we look at Table NF 5 of Mr. Fleming we see that at the four runway stage, the number of incidents in the range of 85 to 94 pndb which is to be expected at Woburn Sands is of the order of 220 a day on a

* p. 1017.
† p. 1045.
‡ p. 1038.
§ p. 1019.

* p. See attached wallet of maps and Diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

normal flight path, and 230 a day with the reverse flight path. This, of course, gives some indication of what would be the noise nuisance at Woburn Sands, hardly the conditions for the peaceful enjoyment of the beauty of the countryside. The Green Sands area, therefore, is one of the three main areas in Bedfordshire, the third one being the Ouse Valley, which have the greatest potential for recreational development under the Countryside Act. The proposed development without the airport at all, at Milton Keynes and in South Bedfordshire, are, in the County's view, bound to lead to substantially increased demand for facilities for recretation, and the possibility also is being considered of using the blighted areas of the worked out brickfields for recreational purposes, and is now being experimented with at Stewartby Lake. So there can be no doubt in our view that the effect of the continual noise nuisance from large numbers of aircraft would detract very seriously from the attractions of this area for recreation, and for the peaceful enjoyment of the countryside.

Before I leave the amenity aspect, there is one other matter I would like to mention, and that is the particular importance for Bedfordshire of the sand and gravel demands that would result from this airport. This is a matter of particular concern to Bedfordshire and its amenities, really in a dual way. There is the enormous demand for sand and gravel, and the construction of an airport here would accelerate that immensely, and we believe would result in a great demand for sand and gravel from the rivers in the Great Ouse Valley. The County Council have had a carefully worked out and very firm policy to try to meet current needs for the sand and gravel industry with the minimum harm to amenity and to agriculture. It is the County's belief that that policy would inevitably be destroyed by the proposal for an airport here, and the additional demands that that would make. Of course, I only emphasise the point that has been made already, the affect for amenity of people living in the area over a very wide area is going to be tremendous from the thunder of these lorries travelling backwards and forwards carrying aggregates, and returning empty through the villages, and towns, during the long period of construction. It is an aspect of the nuisance and disturbance which the airport would bring to people living in the area which certainly should not be overlooked.

If I can turn to the second half of the case, that of employment and urbanisation: the picture in South Bedfordshire is that this is an extremely prosperous area with a heavy and growing demand for labour. As I have said, it is dominated by the demands of the motor industry based at Luton and Dunstable. The preliminary conclusion which has been reached in joint studies made by the local authorities concerned together with the Minister of Housing and Local Government is that growth in South Bedfordshire by the end of the century over a period of 35 years, from 1966, could be of the order of 74 per cent. This would broadly be a continuation of the present growth rates, and would mean increasing the population from the present 230,000 to a population of 400,000. This, and I stress it, is growth which is essential to meet the demands of existing industries. This point goes to the heart of our objection on planning grounds to this proposal: all the indications are that the future labour demand will continue to exceed the supply, and to introduce an additional labour demand on the immense scale which would be generated by the third London Airport could, in Mr. Cowley's opinion have quite catastrophic effects on the labour position of this area and for the motor industry. This is not something just of local importance, it is of national importance, and something which could indeed have international repercussions.

As one knows, modern industries are organisations on an international scale and if they find they are unable to expand and develop themselves as they would wish in one area where they are established, while taking a long term view they would consider taking their development elsewhere.

Again, we believe this aspect of the matter must be viewed against the background of national policies which are designed to restrain a little growth in the south-east in favour of growth in other areas. I appreciate what we are dealing with at this Inquiry is local effects, but one cannot judge, in my submission, properly what would be the local effects by seeing what would be the effect of this locality on national policies, and it does not follow that if as is being suggested would have to be the case such capacity for expansion as there is in this area is to be preemptive for the airport, it does not follow that other expansion which would otherwise have taken place will be unable to take place. At least it should be recognised if it is going to mean a serious inroad and breach into existing national policies.

We would support entirely the view expressed this morning by Mr. Pooley and reiterated again by Lord Campbell this afternoon, that any attempt to contain the growth in this area to what would be required for the airport alone, the 400,000 or so, would be exceedingly difficult, and taking the long term point of view the likelihood is that there would be a second round of development. For reasons which I will adumbrate this is less likely to take place in South Bedford area and might take place more in the Buckinghamshire area.

As far as South Bedfordshire is concerned the position at the moment is that the planning authorities are having the greatest difficulty in finding how they would be able to accommodate this expansion of 170,000 or so by the end of the century, that is disregarding the airport. Dunstable has reached the limit of its expansion; town development is proceeding in Houghton Regis for about 12,000. Leighton

Printed image digitised by the University of Southampton Library Digitisation Unit

Buzzard and Leighton-Lindslade are due to grow from about 15,000 to a population of 34,000, that is by 1981, and it is considered another 16,000 or so on top of that is about the limit it is possible due to physical constraints in Leighton Buzzard. So when we take into account all the usual planning restraints there are on water, and sewage problems, mineral requirements, agricultural land, water sewage and drink considerations, it is going to be exceedingly difficult to find a land requirement for those 170,000. To introduce on top of that an additional constraint of the noise affected areas from the airport, the additional pressure of development associated with the airport, this we believe would be an intolerable strain on the resources of South Bedfordshire, and this, indeed, would mean that if that development did come to South Bedfordshire we then would reach the position which was referred to in the first of his conclusions by Mr. Sharman in his evidence this morning at paragraph 7.1; he says: "For the efficient distribution of activity centres within the south-east region, it is desirable the third airport site should not cause competition with or displace industrial expansion drawn to an area and accepted in its long term planning objectives. The Cublington proposal conflicts with this criterion, and would cause strains on the labour, materials and services resources of the locality, both because of heavy construction requirements over fifteen years or more of airport build-up, and permanently as a result of operational employment and activity." That, in brief, sums up very clearly the point I am making on our planning objections to this proposal. It might be thought that an airport with its associated attractions to industry would be a tempting bait for authorities in an area, and we know that in respect of one of the sites at least it is the view taken by the local authority. Well, all those considerations have been weighed up by Bedfordshire as by the other local authorities in this area, and their answer after due deliberation, if I may try and summarise it concisely is that we do not like it, we do not want it, we do not need it, and we do not see how we can accommodate it.

I will call Mr. Cowley, sir.

MR. GEOFFREY COWLEY* *called*

Examined by Mr. MacDermott

3791 Are you Mr. Geoffrey Cowley, the County Planning Officer for Bedfordshire? — I am.

3792 A member of the Town Planning Institute and a member of the Institution of Municipal Engineers? —Yes.

3793 And does your association with this area extend over a period of 21 years, including 17 years experience with the Hertfordshire County Council before coming to Bedford? — That is so.

3794 And you have, of course, prepared a proof of evidence which the Inspector has before him? — I have.

3795 Dealing with the first part of your evidence, dealing with noise effects and effects on amenity, have you in fact prepared a plan* which you produce a copy of illustrating the points you are making? — I have.

Mr. MacDermot Would it be convenient, sir, if I hand you my copy so that you and the witness have one. I am afraid there are only two copies made.

Inspector Yes. (*handed*)

3796 *Mr. MacDermot* Perhaps you can indicate, Mr. Cowley what are the main points illustrated on that plan. — The main points illustrated on the plan are the local authority boundaries, the main roads, and perhaps conservation areas of this general area. The proposed areas of outstanding natural beauty, areas of high landscape value, and indication of areas likely to be developed before 1981. The boundary of the NNI contours. The boundary of the proposed green belt. The general area of Milton Keynes and, lastly, two sites of special scientific interest.

3797 Just before tendering you for cross-examination I would like to ask one or two questions to amplify your evidence on the planning aspects of this proposal. Firstly, can you explain shortly what your present problems are from the point of view of employment and urbanisation in South Bedfordshire, without the airport proposal at all? — Without the airport proposal at all we are facing a tremendous problem of accommodating in South Bedfordshire the natural growth of the area and there I refer not to the more natural increase of the existing population but principally to the natural growth of the predominant industry, namely the motor industry, and this is having the effect of virtually throwing overboard the existing County policies for the area and even embarrassing the increasingly less restrictive policies of government in this region.

3798 I think it appears from Mr. Pooley's evidence† Bedfordshire have agreed that if the airport were to come here they would try as part of their contribution to the urbanisation problem to find accommodation for some 65,000? — Yes, indeed.

3799 Could you indicate where you first of all evnisage they might be housed? — The 65,000 might result because of the coming of the airport as part of the urbanisation pattern, would have to go outside the boundaries of Leighton Buzzard Urban District, would have to go outside the boundaries of Dunstable Borough, and the area of search for the location of these 65,000 people would be roughly on that north-

*See also 1072.

* See attached wallet of maps and diagrams.

† p. 1023.

Printed image digitised by the University of Southampton Library Digitisation Unit

west south-east axis between Leighton Buzzard and Dunstable.

3800 Is that the area which you have already been considering for purposes of the 170,000 expansion by the end of the century? — This is indeed so, and our deliberations so far have shown that whilst it might be physically possible to get up to about 10,000 people in that area it would raise enormous problems, not least drainage, sewage and water supply.

3801 So quite apart from the problem of actually accommodating them within the time would it not only from the employment aspect but from the housing aspect by pre-empting what elbow room you have in meeting your local requirements for the end of the century? — Indeed, and it would be a doubling of an almost unsolvable problem.

Inspector Any questions from the first tier authority? Any questions from the local authorities?

Cross-examined by Mr. Michael Connell
(Leighton-Linslade Urban District Council)

3802 You mentioned the expansion of population in the Leighton-Linslade Urban District Council to 34,000 by 1981. — Yes.

3803 That, I think, is taking an average increase of just over 1,000 per annum. — Yes.

3804 Is it the fact that that increase has already been exceeded within this area at the present time, that rate of increase? — That is so, the rate of increase is already exceeding our expectations, has already been exceeding it, and has accelerated or bids fair now to accelerate even more in view of the Minister of Housing and Local Government's request for the releasing of extra land for private house building in or immediately adjacent to the outer Metropolitan Area. This stimulus in Leighton Buzzard would probably bring back the 1981 forecast to perhaps 1976 or 1977.

3805 Yes. You mentioned earlier in your proof of evidence that the new sewage disposal works has recently been constructed in the Urban District Council's area. Is that envisaged to take care of the sewage disposal from the population of up to 35,000 people? — This is my understanding of the present position.

Inspector You said "constructed". The proof says "Sewage problems which are now being resolved".

3806 *Mr. Connell* I think it has in fact been constructed. — You may well have evidence from Leighton-Linslade's surveyor. I think he will be able to fill this out for you.

3807 Thank you. I think that could possibly cater for the population of up to 50,000 at the maximum, is that right? — I have no specific knowledge on this point, but I would imagine that such works of that size and only just built could be expanded by that amount.

3808 But stretching the maximum to approximately 50,000 that is still way below the 65,000 which is the figure we have before us. — Yes, indeed.

3809 *Inspector* To be perfectly accurate this says "Plus 65,000". Any more questions to Mr. Cowley?

Cross-examined by Mr. Bramwell

3810 My main questions are regarding the gravel winning and water for public use. Could you please tell me how the Stewartby Lake came into being? — What is known as Stewartby Lake is an area of some 250 acres of water alongside the original and main London Brick Company Works at the town of Stewartby. It resulted from the extraction of brick earth over the past few years, and is now filled with water.

3811 Is it for public use? — I can't hear you.

3812 Is it for public use? — The Stewartby Lake has been offered to the County Council by the London Brick Company at a peppercorn rent.

3813 *Inspector* I think you may be at cross purposes. Do you mean for public water supply?

3814 *Mr. Bramwell* Yes.

3815 *Inspector* The question is more public for drinking purposes. — It is not so used at the present time.

3816 *Mr. Bramwell* But it is available for the purpose—it would be? For that purpose with the present methods of water purification, water is almost—almost anywhere can be used. The River Thames is used almost four times. This would be ideal for a large water conurbation. — I know the lake has been considered by the water authorities and has been said by them to be not suitable for water supply purposes. It has, of course taken very many years to fill up to its present level and is not one which naturally re-fills over a short period, so once used it would have gone.

3817 In view of the fact that gravel and ballast would have to be won in very great quantities and Bedfordshire is well endowed with these it would mean if there was excavation to any great extent in Bedfordshire it could create a very deep lake to fill with water for public consumption. Would that be a feasible thing? — It would be feasible to fill such areas of the county which are going to be covered by water anyway because of the extraction of brick earth and many other minerals not least gravel—were we to go ahead as you suggest the County would become a large area pock marked by gravel pits and reservoirs joined by little strips of land.

3818 It is already on part of the brick works. — This is roughly the position in the brickfields now.

Printed image digitised by the University of Southampton Library Digitisation Unit

3819 Can you tell me if any water from the "Grafham Water" is brought down to this area? — Water available in Grafham — I am not sure of the precise position, but the river authorities will help you. I understand it is about to reach the feed towns of this area.

3820 So you are having to take water from the Peterborough Area to bring it to this area for use? — The Grafham water is fed from the Ouse and the Ouse as you know starts up from this area and flows down to Bedfordshire, the express point is right down at the far end well below Bedford itself.

3821 *Inspector* Any other questions? I have just one point. It has been mentioned this likely continued growth of the motor industry in Luton which will underpin the increasing population that you contemplate—I am not certain whether you would agree to answer the question or Luton, but what is the attitude of the Board of Trade to this continued expansion? — If I can answer the question obliquely, the attitude of the Board of Trade in so far as that connotes willingness to grant industrial development certificates is a matter of little effect, in that land is already owned by the motor industry covered by extant valid terms and IDCs which can be used. The attitude of the Board of Trade through the years has been to favour the expansion of the motor industry there. If reinforcement of their views were needed two recent pieces of evidence of their intention, namely the abandonment in Bedfordshire of a very large test track to be coming into use by the end of this year for Vauxhall Motors, and secondly the expansion last year of an extremely large spare parts centre, the most modern in Europe for Vauxhall near the Torrington edge of Dunstable, and the Planning Authorities giving an undertaking that it will view sympathetically the further expansion of that spare parts centre in that area. Were there to be any doubt about the fact that the motor industry is firmly aground these two further things have bedded it down into that corner.

Inspector Any further questions? Any re-examination from the Associated County Councils?

Mr. MacDermot I have no re-examination, and that is the case for the Bedfordshire County Council.

MR. KEENE *called*

(*Hertford County Council*)

Mr. Keene I appear on behalf of the Hertfordshire County Council, and also the Hemel Hempstead Borough Council. Unless you have objection to this procedure, sir, I would prefer to call my witness first and make my submissions to you afterwards.

Inspector I see no objection.

Mr. Keene I will call Mr. Overton straightaway.

MR. DAVID SHERREN RAWLE OVERTON* *called*

Examined by Mr. Keene

3822 Are you David Sherren Rawle Overton? — Yes, I am.

3823 Are you a Chartered Town Planner, an Associate Member of the Town Planning Institute and an Associate of the Royal Institution of Chartered Surveyors? — Yes.

3824 Also the Deputy County Planning Officer to the Hertfordshire County Council? —That is right.

3825 I do not think there is anything you want to add to your evidence-in-chief? — No.

Inspector Any questions from first tier authorities? From other local authorities? From any other parties? Any questions of Mr. Overton? I am in the same position, Mr. Overton. I have no questions.

(*The witness withdrew*)

Mr. Keene I hope I can be as short as possible. Can I just make one preliminary point, before I get to the real substance of this matter. It was said by my learned friend, Mr. Millard a little earlier on that Hertfordshire were no longer associated with certain proofs of evidence of witnesses he was calling. I would not like that to be interpreted as meaning either that we positively disassociate ourselves from Buckinghamshire or, for that matter that we have changed our mind on this. There was a misunderstanding as I am instructed earlier on and it has resulted in this confusion. The position is that we are calling joint evidence as it were of the outside consultants, namely Mr. Sharman,† Mr. Fleming,‡ and Mr. Dunford,§ who are, of course, as you know, are consultants and have been at other enquiries. As you, sir, are very well aware, of course, this is not the first of the local inquiries that Hertfordshire have been represented at. The reason for that, of course, is perfectly simple, that there is more than one short listed site which affects the county of Hertfordshire. It is not my job here today to try and expound what the County Council's position is with regard to all those four sites and, indeed, I have no doubt you would quickly rule me out of order if I should attempt to do so. All I am here to do, and this is why the county council is represented here, is to ensure that the effects, and indeed, the possible effects for that matter of the Cublington proposal on Hertfordshire and its planning policies and upon its inhabitants are fully taken into account by the Commission and nothing escapes the Commission's attention. This I say because it forms the context of the remarks I am about to make. The part of Hertfordshire which

* See also p. 1076.
† p. 1007.
‡ p. 1017.
§ p. 1015.

Printed image digitised by the University of Southampton Library Digitisation Unit

is likely to be most affected by the Cublington proposal is what is called by Mr. Overton in his proof* the Tring—Berkhampstead salient. If you will look for a moment at the plan† attached to his proof you will see the Tring—Berkhampstead salient, it is rather like a fist being shaken in the direction of the airport site. If you follow the fist up the arm as far as the shoulder you come in fact to a 20 mile radius mark. That is an area that we have quite deliberately chosen, because in our view that is the area where the pressures resulting from this tremendous growth point (that is the third London airport) are most likely to be felt, that is the area we think is going to be mostly affected should the airport come to Cublington. That is an area which has even at the present time a population of getting on towards 150,000. At the last count it was 148,000. Virtually all of that area of Hertfordshire, apart from the existing townships and from the particular localities of Redbourne and Kings Langley and either existing Green Belt or proposed Green Belt, the Tring—Berkhampstead salient, this is, as you will no doubt readily be aware one of the green sectors proposed in *Strategy for the South East*.‡ As a responsible planning authority Hertfordshire obviously would resist very strongly any attempt to locate any of the associated urban development within this particular area of Hertfordshire.

It is thoroughly unsuitable for a major urban expansion, and we are supported in our view on this, I think, by just about every study that has been done of the south east of England.

The suggestion of Mr. Pooley, the Buckinghamshire County Planning Officer, did of course recognise this so far as the major relocation was concerned. May I say that we make no complaint whatsoever about this suggestion—Hertfordshire comes off very lightly; but that, of course, is not the end of the story. It seems to us to be inevitable that there are going to be pressures on this part of Hertfordshire in any event as a result of the Cublington proposal. There must be pressures on the existing housing provisions, and also pressures for new residential development to take place.

Then, keeping this within the confines of existing villages, it is in our view going to be difficult to avoid this having some harmful effects, because many of these villages are places of very great charm indeed, even looking at the bare statistics. There are 26 existing or proposed conservation areas within this 20 mile radius of Hertfordshire alone. It seems to us to be difficult to envisage any substantial location of population within that area without causing considerable harm to the conservation areas, and indeed to all the other very pleasant parts of this area of Hertfordshire.

* p. 1076.
† See attached wallet of maps and diagrams.
‡ (HMSO; 15s.).

But we are also very much concerned about the other effects of introducing a very large population within easy reach of West Hertfordshire. The area we are concerned with includes some 35 square miles of the Chilterns area, of outstanding natural beauty, including in particular the Ashridge Estate, which is fairly fully dealt with in Mr. Overton's proof. Again it is not going to be at all easy to prevent the attractive scenery of these areas from being damaged by what must be a fairly vast increase in the number of visitors—it must have a recreational attraction to the large population that would come with the airport. We of course realise that Milton Keynes without the airport is bound to have some such effect; what we would say about that is this: that Milton Keynes involves a substantially smaller population than on any calculation is going to accompany a third London airport, and in particular the third London airport, if it is sited at Cublington, looks likely to involve a very substantial expansion both of Aylesbury and Leighton Buzzard, which are, of course, extremely close to this attractive area. That of course is a matter which is between the existing planning situation and the existence of Milton Keynes as a growth point, and what appear to be the likely consequences of introducing a third London airport in this area.

Perhaps, sir, the aspect of the present proposal that we feel is most harmful from our point of view is the planning authority re. the new road proposals. It is suggested by Mr. Sharman for the period after 1981—I think he times it somewhere round 1987. I should, of course, make it quite clear that we are not criticising Mr. Sharman's proposals as such, given the context in which he has had to make them. He is, of course, our witness, as much as he is Buckinghamshire's witness, and I have no doubt that he has done the best that he could possibly do. That does not mean that we have to leap for joy at the suggested road routes through Hertfordshire, because we most certainly do not. They involve driving at least one new motorway through the Chilterns area, outstanding in natural beauty; and, if that fact were not of itself sufficient, across a proposed area of great landscape value northwest of Watford. I understand, Sir, that Watford themselves are here and they are to make some representation later on that.

It seems, therefore, that the fact that Mr. Sharman is putting these routes everywhere as an unescapable consequence, and we are therefore accordingly concerned about this. However well one landscapes a motorway, it inevitably causes disruption, it causes further noise, and it causes severance problems and all the other all too familiar consequences which flow from motorway proposals. This, Sir, as I said, is the aspect of the present proposal that we are most concerned with.

Sir, I should add a word, or perhaps a few words, about noise. We are in the fortunate position, as

Printed image digitised by the University of Southampton Library Digitisation Unit

far as one can see, of not being greatly affected by noise from the proposed airport, and we do not suppose that Hertfordshire, as things stand, is likely to be seriously affected. Even so, we are conscious that the proposed site and the proposed runway alignments are not immutable. Already the runways at Cublington have been re-aligned once since the original alignment was shown on the short list details; and of course very recently, to bring this home to us even more, we had the new Thurleigh Mark 2 site proposed, very substantially different from the original site put forward. So, sir, we are conscious of the fact that changes can occur. All we would wish to do in this context is to emphasise the fact that we do have 150,000 people in close proximity to the present site, and to ask the Commission to bear very much in mind that perhaps re-alignment could affect the population.

Having said that, I have in all fairness got to add that Hertfordshire will, it seems, benefit in a rather limited way from the proposals as far as noise is concerned: I am referring to the impact it will have on Luton and, to a lesser extent, the Stansted area. We are, of course, very grateful for small mercies shown to us in this way. But we are of course only too well aware that it is being done at the expense of a lot of other people—people who are represented here today. It was wrong, and in the present situation, most impolitic of us to say "we welcome the Cublington proposal on that score". We don't. Its slight benefit really pales into insignificance. That is the position that the County Council would wish to take.

Inspector Thank you, Mr. Keene. I did get a note that Watford, who did not actually seek leave to appear wished to ask questions of your witness—it slipped my mind at the time. What is Watford's position? Where is Watford?

Mr. Illings My name is Illings, sir—Watford Borough County Council.* I only wanted to ask two questions to emphasise the points made by Mr. Keene.

Inspector I wish you had stood up and made yourself known before. It means recalling the Hertford witness.

Mr. Illings I would not ask for that to be done. I think Mr. Keene has emphasised fully the two points we wished to make about the road patterns affecting Watford.

Mr. Keene I am only too happy to call him—

Mr. Illings All I want to be quite sure of is that Watford are able to put their point of view.

Mr. Keene That is so, Sir.

Mr. Illings Thank you very much.

Inspector The County Borough of Luton?

* See also p. 1083.

MR. J. C. SOUTHWELL* *called*

(*County Borough of Luton*)

Mr. Southwell I am an Assistant Secretary of the County Borough of Luton, and I appear on behalf of the Council. The Council appears as objectors to the proposal to establish a third London airport at Cublington for two main reasons.

The first is, as the owners and operators of an airport, full details of which are given in the evidence of the Airport Director. The Council do of course appreciate that detailed evidence as to the effect of the establishment of the third London airport at any listed site is appropriate for Stage III of the Commission's work, but the Council are concerned to ensure that the Commission are fully aware at this Stage II hearing in respect of the inland sites of the existence of the present level of operations at Luton Airport. The Airport Director's evidence† demonstrates that the airport is a highly successful municipal enterprise, and that the growth of traffic in recent years has been phenomenal. The level of operations at the airport are such that it is clear that the airport is in fact now making a very substantial contribution to the pattern of international air traffic in the country.

The second reason for the Council's appearance at this Inquiry is in their capacity as the local planning authority, concerned with the environment and development of a prosperous and expanding town with many important industries, the majority of which—as has already been mentioned to you today—plays a major part in the export market and are of immense importance to the national economy.

The Council are also, of course, concerned with the planning and the environment of the areas adjacent to the County Borough.

The effect of the establishment of a third London airport at Cublington falls under two main headings, the first being the question of urbanisation and the second the effect on the labour situation. The Deputy Planning Officer's evidence deals with the objections of the Council to the Cublington site on these grounds.

As time is getting on, Sir, and I see from the timetable that it was hoped to hear two more authorities today, I do not propose to say anything else in opening, save to say that I have had an opportunity of reading the evidence submitted by the County Councils and the Council would adopt and support their arguments, and in particular of course the arguments of Mr. Cowley,‡ and also the points made so ably in the opening of his speech by my learned friend who appears on behalf of Hertfordshire County Council.

* See also p. 1084.
† p. 1084.
‡ p. 1072.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Mr. Southwell, I want to be absolutely certain you are not inhibited by time—

Mr. Southwell No, sir, I feel I can do nothing else at this stage. I shall call Mr. Cole, the Airport Director.

MR. C. K. COLE* *called*

Examined by Mr. Southwell

3826 Mr. Cole, you are Charles Kenneth Cole, — That is so.

3827 And are you the Director of Luton Airport, and have you held this appointment since August 1964? — Yes.

3828 For two years prior to that date, were you Deputy Airport Commandant at Luton? — Yes.

3829 And have you had previous experience at international airports overseas as Airport Commandant at Lagos and Freetown and prior to that as an Air Traffic Control Officer at Kano and Lagos from 1948? — Yes.

3830 And are you qualified as a pilot, and were you so qualified in 1942 in the Royal Air Force? — I was.

3831 There is one further supplementary question I would put to you, to remove any possible contention; and that is in relation to paragraphs 4 and 5 of your proof. The figures for the number of passengers and airport movements for the year 1968 show a slight change from the figures given at the previous Inquiry. — That is so.

3832 And can you confirm that the reason for this is that all the figures in paras 4 and 5 of your proof are taken from official figures published by the Board of Trade, and at the Nuthampstead Inquiry the Board of Trade's figures for 1968 were not available? — That is correct.

Inspector Any questions? from first tier authorities? any other local authorities? any—

3833 *Mr. MacDermott* I am sorry, I missed the bus on the first tier, I am afraid. Can you help us at all about the reverse direction flights at Luton Airport? how frequently do they take place? — Yes, I think I can. The direction of flight is principally decided by the prevailing wind direction—this being south-westerly in this part of the country. We have to look at records in the last two or three years, and over a 12 month period 75 per cent of our movements took off and landed towards the west, into the south-westerly wind. Obviously on that reference, twenty five percent is the reverse.

3834 One in four, reverse direction? — Roughly.

3835 And did you have from time to time periods where for a shorter period, as it were, the prevailing wind was in the opposite direction? — This is so. This happens of course with a change in weather conditions—other wind directions.

3836 Can you recall how long such periods might last? would it be over a period of a month, or six weeks, you would get a 50–50 split— — Yes, this has happened. Last year, in July and August, there was an unusual wind condition.

3837 Is that a busy period—July, August? — Yes, it is, of course.

Cross-examined by Mr. Bramwell

3838 You are indeed a very valuable witness at this time!—you can probably answer some questions, being a neighbour of ours. Do you get many complaints about your aircraft operations? — We get complaints, yes.

3839 Do they amount to mass marches? — No, not exactly. We don't have mass marches, to my knowledge.

3840 Have you had objections from such places as Vauxhall, or adjacent to your airfield, about noise that is interfering with work? — No, we have had no formal objection of that type.

3841 Have you had objections from the Luton and Dunstable Hospital? — No, that is not the case.

3842 In other words, no institutions or anything like that have complained about your activities? — No institutions—not of the type you have mentioned, certainly. Social groups or institutions of that sort have complained, of course.

3843 Recently in the press there has been comment by pilots about the dangerous nature of the Luton Airport.

There may be a lot of hysteria about certain things like this; most people are disturbed when they read in the local paper that your pilots are rather considering banning using the Luton airport. Is there anything in this at all?

3844 *Mr. Southwell* If I might intervene at this stage, I wonder how far this sort of question in relation to Luton Airport is relevant to this inquiry. I can see from the point of view of comparison that this questioner, and certain other questions might be relevant, but I wonder how far the question of what is purely a domestic difficulty of dispute, or whatever it might happen to be, in relation to Luton Airport, is in fact relevant in relation to Cublington.

3845 *Inspector* Mr. Bramwell, what do you say; what is the relevance of your question?

3846 *Mr. Bramwell* The point is this, as I said before, I am not a skilled advocate, so I have got to operate off the cuff, so maybe I go a little round about in getting down to the gist of what I am getting at.

3847 *Inspector* What Luton are saying is: what have possible complaints by pilots concerning the

* See also p. 1084.

Printed image digitised by the University of Southampton Library Digitisation Unit

use of Luton Airport to do with the possibility of a Third London Airport being established at Cublington?

3848 *Mr. Bramwell* It is this, that what is it that the air pilots are objecting to that makes the Luton Airport so objectionable—

3849 *Inspector* I think if you do not mind, Luton, let the witness deal with this.

3850 *Witness* I certainly think that statements which have been made in the press which are perhaps ill founded and incorrect, or taken out of context, should not be taken as the true position at Luton Airport. I would like to add that the airport is operated as safe as any other airport can be, and there is no foundation in fact for the criticism you may have heard.

3851 *Mr. Bramwell* I am glad to receive your assurance on that point. You are, I believe, extending the Luton Airport to a further distance to extend the runways? — No, that is not so, there is no policy decided to extend the runway at present at all.

3852 You intend to intensify your activities by 35 per cent, I believe? — The traffic is increasing; whether the Council decides to accommodate this traffic in the near future is not for me to say here.

3853 It is a wholly owned Council airport? — It is indeed.

3854 You made a profit of less than £200,000 on the last operational year? — A profit of as much as.

3855 Yes, less than £200,000? — Yes.

3856 Would this site not be far more valuable as a building site than the profit you can turn out from the airport?

Mr. Southwell Again at this stage I wonder what is quite the relevance of this question.

Mr. Bramwell I think we will let that pass.

3857 *Inspector* Any other questions to this witness? Just one point, Mr. Cole, you are saying that you have this 75 per cent take off towards the west. Are aircraft known to take off to achieve that 75 per cent with some 5 knot tail wind, or something of that nature? — That can happen. It is a general figure, and over a 12 monthly period, it averages out like that.

Inspector I have no more questions, thank you.

Mr. Southwell I have no re-examination.

(*The witness withdrew*)

MR. SYDNEY MCARDLE* *called*

Examined by Mr. Southwell

3858 Mr. McArdle, are your full names Sydney McArdle, and are you the Deputy Planning Officer for the County Borough of Luton, and have you held this post since January, 1969? — Yes.

3859 Prior to that date, were you Assistant Borough Planning Officer for the County Borough? — Yes.

3860 Are your qualifications B.Sc.(Econ.) and Professional Associate of the Royal Institution of Chartered Surveyors? — That is correct.

Mr. Southwell I have no supplemental questions.

Inspector Any questions by the first tier authorities? Any questions by other local authorities? Any other questions? I have no questions, thank you. (*The witness withdrew*)

Mr. Southwell That concludes the representations on behalf of the County Borough.

Inspector We are now getting towards 4.15; as Mr. Lymbery is in some trouble, and he has six witnesses, if it is possible for Aylesbury to defer their place—?

Mr. Maxwell Yes, I have spoken.

Inspector May we try and clear your witnesses first, Mr. Lymbery, then I will leave it entirely to you when to make your closing address.

Mr. Lymbery As you know, I appear for the six District Councils which are next on the list. I propose to call one witness from each of those Councils, and also an expert in matters concerning effluent and drainage generally. The first one I will call is the Clerk of the Aylesbury Rural District Council, Mr. Toy.

MR. ARTHUR EDGAR TOY* *called*

Examined by Mr. Lymbery

3861 Mr. Toy, is your name Arthur Edgar Toy? — That is so.

3862 Are you a Member of Order of the British Empire? — I am.

3863 You are Clerk of Aylesbury Rural District Council? — I am.

3864 I think you have been employed by that Council since 1939? — Yes.

3865 And have been Clerk since 1943? — Yes.

3866 Your proof of evidence is before the Commission? — That is so.

3867 Is there anything you wish to add to that proof? — I think not.

Inspector Are there any questions by first tier authorities to Mr. Toy? By other local authorities? By any other persons? I have no questions, Mr. Toy, thank you.

(*The witness withdrew*)

* See also p. 1088.

* See also p. 1091.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. STANLEY CLIFFORD REDDING* *called*

Examined by Mr. Lymbery

3868 Are you Stanley Clifford Redding? — That is so.

3869 You are Clerk of the Berkhamsted Urban District Council? — I am.

3870 You have submitted a proof of evidence to the Commission? — That is so.

3871 Have you anything you wish to add to that proof? — No, sir.

3872 *Inspector* There is just one point, Mr. Redding, before we offer you for cross-examination. In your paragraph 1.2, giving X miles, you have left the miles blank, north-west of the western boundary of the Urban District. A. I am sorry, that is an omission; it should be 12.

Inspector Any questions by first tier authorities to Mr. Redding? Other authorities? Any other persons? I have no questions, Mr. Redding.

(*The witness withdrew*)

Mr. Lymbery Regrettably Mr. Wort, the Clerk of the Bullingdon Rural District Council, is not available today, but I have Mr. Edwards, Deputy Surveyor to the Rural District Council, who would be prepared to answer any questions on that proof.

MR. KENNETH EDWARDS† *called*

Examined by Mr. Lymbery

3873 Are you Mr. Kenneth Edwards? — I am.

3874 I think you are FRICS, MRSH? — That is true.

3875 Are you Deputy Surveyor to the Bullingdon Rural District Council? — I am.

3876 Have you studied the proof of evidence of Mr. Wort, the Clerk of the Council? — I have indeed, sir.

3877 Are you prepared to answer any questions arising out of that? — I am.

Inspector Any questions by first tier authorities concerning the proof of Mr. Wort? By other local authorities? Any questions by any other persons? I have no questions.

(*The witness withdrew*)

Mr. Lymbery Mr. Jones, please, Surveyor to the Tring Urban District Council.

MR. THOMAS WILLIAM JONES‡ *called*

Examined by Mr. Lymbery

3878 Are you Thomas William Jones? — I am.

3879 Are you the Surveyor of the Tring Urban District Council? — Yes.

3880 You have submitted your proof of evidence to the Commission? — I have.

3881 Is there anything you wish to add to that proof? — No.

Inspector Any questions by first tier authorities? Other local authorities? Any other questions? I have no questions. I might observe it is a most unusual authority that has no possibilities of growth, Mr. Jones. Most small authorities rather press for it.

(*The witness withdrew*)

MR. WALTER ERNEST THOMPSON* *called*

Examined by Mr. Lymbery

3882 Are you Walter Ernest Thompson? — Yes, that is correct.

3883 What are your qualifications? — I am an Associate of the Royal Institute of Chartered Surveyors, and member of the Royal Society of Health.

3884 I think you are Surveyor and Public Health Inspector to the Wing Rural District Council? — Yes.

3885 I think you have submitted a proof of evidence to the Commission? — I have.

3886 There is on my copy a blank space on page 2 at the end of the top paragraph? — Yes, that should represent the cost of replacing the number of houses which will be rendered uninhabitable if the airport is sited at Cublington, and that figure should be in the order of £532,000.

3887 Is there anything you wish to add to your proof? — Nothing further.

Inspector Any questions by first tier authorities? By other local authorities? Any other persons?

Cross-examined by Mr. Taylor

3888 Do you think, Mr. Thompson, you could get the labour to soundproof all these buildings and schools in the area with the prospects of all this labour being used on the airfield itself? It is difficult enough now. — I do live in Leighton Buzzard, and I do know that it is impossible to get labour now.

Inspector Any other questions? I have no questions, thank you.

(*The witness withdrew*)

MR. REGINALD GRAHAM BROWN† *called*

Examined by Mr. Lymbery

3889 Is your name Reginald Graham Brown? — Yes.

* See also p. 1093.
† See also p. 1096.
‡ See also p. 1097.

* See also p. 1100.
† See also p. 1102.

Printed image digitised by the University of Southampton Library Digitisation Unit

3890 Are you Clerk of the Winslow Rural District Council? — I am.

3891 Have you submitted a proof of evidence to the Commission? — I have done.

3892 Is there anything you wish to add to that proof at this stage? — No, sir.

Inspector Questions from the first tier authorities? From other local authorities? Any other persons?

Cross-examined by Mr. Bramwell

3893 It may surprise you to know we had your town in view for a new town in a sense. I am told you have a railway station at Winslow? — That is so.

3894 Then what is the reason for restricting your town to such an extent you have to close the railway station? — I can't answer that question.

3895 What I am trying to aim at is that you have a live railway running through your town and it has now been closed down because of lack of use. — It is closed down for passenger traffic only. Although the station is closed down for passenger traffic the line is still used for goods.

3896 It is actually useable? — Yes.

3897 It could be available for passenger use in case the airport came to Wing. — Indeed, you will have to address that question to the railway authorities.

3898 I am asking you as Clerk to the Council. — It is possible.

3899 What is the population at the present time? — Winslow Parish is estimated at the present time to be about 2,600.

3900 Have you restricted policy on its growth? — We are restricted by the local planning authority.

3901 You have only 2,600, but you have a railway station. — It serves other places. It did serve—it does not serve now but it did serve other places besides Winslow.

3902 What is the terminal end of your particular line? — I have no idea.

3903 From Bletchley to where? — From Bletchley to Oxford, and it did have a direct line to Buckingham and Bicester.

3904 It is a remarkable link up between two large places like Bletchley and Oxford. — I thought it was very good.

3905 You have lost it? — We have lost it.

3906 As passenger. — Yes.

3907 Is this due to the fact you have not enough population to make it worth while? — I think it is partly the reason.

3908 You have been sitting in this hall listening to people saying they have nowhere to house the possible workers of this airfield; could not Winslow house some of them and re-open the railway station to make it more feasible? — According to Mr. Pooley it could do.

Inspector Any other questions? I have no questions.

Re-examined by Mr. Lymbery

3909 Just one question in re-examination: are there the sort of facilities there or could there readily be the sort of facilities there to accommodate passage of 100 million people per annum from Winslow do you suppose? — I am afraid there are not.

(*The witness withdrew*)

MR. SYDNEY CHARLES BREALEY* *called*

Examined by Mr. Lymbery

3910 What is your full name, please? — Sydney Charles Brealey.

3911 Are you a Chartered Engineer? — I am.

3912 Of Powell Duffryn Technical Services? — I am.

3913 What is your qualification? — I am a Fellow of the Institute of Electrical Engineers, a member of the Institution of Mining Engineers, and a Member of the Institution of Quarrying.

3914 I think you hold also the degree of Bachelor of Science? — Yes, I am a Bachelor of Science, and a Chartered Engineer.

3915 Have you prepared a report; I think, in skeleton form because of the paucity of information available, prepared this report and submitted it to the Commission? — Yes, I have.

3916 Have you been particularly concerned with the question of water run-off from the airport and the danger of consequent flooding? — Yes.

3917 And also the question of river pollution? — I have.

3918 Have you also considered recently the statement by the Pollution Prevention Officer for the Great Ouse River Authority, No. 3362?† — I have.

3919 And also representations of the Conservators of the River Thames, 3387?‡ — Yes, I have.

3920 Yes. Do you find yourself in agreement with what those statements say? — I find myself in general agreement. I have tried to quantify matters where the statements generally are in rather general terms, rather than in numerical terms.

3921 Do you foresee very real problems indeed if the airport site is placed at Cublington? — Yes, I think there would be a most serious increase in

* See also p. 1104.
† p. 1141.
‡ p. 1464.

Printed image digitised by the University of Southampton Library Digitisation Unit

flooding and particularly in the River Thame area, and also the River Ouzel Valley and during drought conditions I think there will undoubtedly be problems for effluent considerations, soil considerations in the water.

3922 At this stage, Stage II, perhaps there is little more which you could add to your report, is that so? — Yes; it has been very difficult to find any figures. There does not seem to be very much in the way of recorded information, considering the catchment areas which are in question, but I have received a little further information from the Meteorological Department, but it needs quite considerable study to put this into quantitative terms.

3923 It may well be you will have an opportunity at a later stage of looking into this matter in much greater detail, but in order to prevent flooding and to bring the effluent in rivers up to proper standards and a greater increase in population areas, how would this be reflected in cost? — It is very difficult to say without being able to do preliminary designs on the work involved, but from experience of this time it invariably runs into six figure samples, six or seven figure samples.

3924 This would be a costly exercise, would it? — It would be rather a costly exercise to obtain the necessary information, to design such works, and at this stage it is undoubtedly not justified.

3925 What about the cost in the end of widening rivers, constructing reservoir tanks or whatever one would be able to construct? — All one can say about that is that it would be a considerable sum of money, and I would not like to go any further than that at this stage.

Inspector Any questions from the first tier authorities? From other local authorities? From any other persons.

Cross-examined by Mr. Bramwell

3926 Flooding, of course, is water in the wrong place, is not it? — That is correct.

3927 When terribly short of water in such a place we have to find out why it is put in the wrong place. You speak of run-off, what run-off are you speaking of other than natural run-off? — I did not quantify the additional run-off due to the airport and urbanisation of the areas in the catchments.

3928 Would it not be possible for this new site to do something about carrying the major portions of its run-off away from the rivers? — Possibly, but hardly practicable. It will eventually find its way into the catchments of these rivers.

3929 One of the big points about flooding—I have been concerned with it, and I got these local authorities to do something about it and it has not flooded since—I did something. I know a lot of flooding takes place because local authorities do not get down to the job of doing something about it, and when it is brought forward as a red herring, in this sort of business—

Inspector Please, please, let us have a question.

3930 *Mr. Bramwell* You seem to be an expert on these things; could something be done, forgetting the costs, to stop this flooding which has been taking place before we get an airport here? It is a nuisance to everybody all this flooding. — Well, as an engineer, anything can be done at a price; it is up to politicians and such people to decide whether the possible works can be afforded and whether it is justified.

3931 We visualise in spending hundreds of millions on a thing like this. Therefore, if run-off of water is one of the hazards to be overcome in pollution a few millions will have to be spent to make the rivers suitable to take it away? — Yes.

Re-examined by Mr. Lymbery

3932 Would the proposed reservoir at Whitchurch have been an important factor in eliminating flooding in the Thames catchment area? — I think there is no doubt this proposed reservoir would improve the conditions in the River Thames quite considerably.

3933 This would, I suppose, form something in the nature of a storage tank? — That is so.

3934 Therefore you would not be so much at the mercy of flood and drought conditions? — That is so.

3935 Of course, that is a reservoir which is virtually on the airport site? — Correct.

3936 And so we are deprived of that method of eliminating the problem at the present time, — Yes.

3937 *Mr. Bramwell* May I ask a further question.

Further cross-examined by Mr. Bramwell

3938 It was brought to my notice about a year ago that there are about six or seven springs in the area of the new proposed reservoir; are you aware of this? — I am not in fact aware of that. I do know generally you get springs along the clay beds.

3939 *Mr. Bramwell* I do not know how you feel, perhaps, this reservoir will take off a great amount of water that is likely to be the natural run-off of the airfield—

Re-examined by Mr. Lymbery

3940 Which reservoir are you thinking of that will take off the run-off of the airport? Which reservoir? — I was not referring to the reservoir.

Printed image digitised by the University of Southampton Library Digitisation Unit

3941 I was wondering if you agree there was any? — No, but the airport site is on the top of the site—on the Whitchurch proposed site for the reservoir which I have a plan* of in the statement.

Inspector I have no questions.

Mr. Lymbery That is the evidence I propose to call.

Inspector Very well.

Mr. Lymbery I wonder whether it is convenient to address you now, sir or at some other later stage.

Inspector We can fit you in at any time to suit you.

Mr. Lymbery Thank you.

Inspector If Aylesbury would not mind we could adjourn till first thing tomorrow morning. We have had a very good day.

Mr. MacDermot Could I raise a point about the order of appearances sir? There are two parish councils who I am in fact representing as part of the case put forward by the Wing Airport Residents Association. Instead of their being listed to appear on Wednesday, 16th July, with the rest of the organisations who are represented they appear on Tuesday 22nd July. They are the Aston Abbotts Parish Council and the Soulbury Parish Council. I believe the reason for that was we suggested ourselves that it might be better to defer them in case anybody thought those two councils were being enabled to jump the queue by being represented by us, but as I see it there are a great number of parish councils tomorrow and that consideration does not apply. I am wondering if anyone would mind if we were in fact to call those two witnesses—I expect they have their proofs, with the rest of the evidence on Wednesday.

Inspector I am ignorant slightly on this point. I think the reason that these parish councils were set down on Tuesday was or may have been just local arrangements with the Buckinghamshire County Council that they might precede the individuals that might wish to speak in that parish, but I will do whatever is convenient. If it can be arranged between the parties it would be convenient.

Mr. MacDermot May we leave it that unless someone tells me they have an objection to which I would give consideration they will be dealt with on Wednesday.

Inspector Yes.

Mr. Millard This was part of the arrangement whereby the individuals from the areas followed the parish councils.

Inspector That is exactly what I thought it would be.

Mr. Millard The parish councils at Aston Abbotts and Soulbury will appear on Wednesday, followed by about 30 individuals from Aston Abbotts and Soulbury—and they, of course, have been warned to come on that day.

Inspector My feeling in the matter is that it is entirely, as it were, for the parish councils themselves and for the local councils themselves, to resolve this matter, and I would not wish to act as arbiter as to which appeared at which point.

Mr. Millard I am perfectly happy about it. Perhaps we could discuss it through the usual channels and arrange whatever is most convenient. That is clearly the reason why they have been put in that particular place.

Inspector I thought so, and I would be very happy to leave it to the interested parties to agree amongst themselves.

Mr. Millard I am sure we will be able to resolve it.

Inspector May we then adjourn until 10 tomorrow morning?

(*Adjourned until tomorrow morning at* 10 *a.m.*)

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

Tuesday, 15th July, 1969

THE ASSEMBLY HALL, AYLESBURY, BUCKS.

BEFORE MR. A. J. HUNT

Oral evidence was taken from:

Aylesbury Borough Council (*Mr. R. Maxwell*)

Bletchley Urban District Council (*Mr. R. C. Tetlow*)

Newport Pagnell Rural District Council (*Mr. A. Snaith*)

Granborough Parish Council (*Mr. R. P. Bates*)

Haddenham Parish Council (*Mr. W. Carslate*)

Newton Longville Parish Council (*Mr. D. Holt*)

North Marston Parish Council (*Mr. J. Morton*)

Pitstone Parish Council (*Mr. G. Hawkins*)

Wingrave with Rowshaw Parish Council (*Mr. D. Duncan*)

Winslow Parish Council (*Mr. A. Wigley*)

Great Ouse River Authority (*Dr. H. Clay and Mr. H. van Oosterom*)

Kingsley Parish Meeting (*Brig. S. H. Kent*)

Stone with Bishopstone Parish Council (*Mr. Perry*)

Bedford Borough Council (*Mr. J. M. Bell*)

Leighton-Linslade Urban District Council (*Mr. M. Connell, Mr. S. W. Pacey, Mr. M. S. Leslie and Mr. J. B. Saunders*)

Thame Urban District Council (*Mr. L. T. Gadge*)

Ploughley Rural District Council (*Mr. A. M. Brace*)

Aston Rowant Parish Council (*Mr. P. Elmer*)

Chinnor Parish Council (*Mrs. D. Tucker*)

Great Haseley Parish Council (*Sir R. Taylor*)

Towersey Parish Council (*Mr. G. Andrews*)

Bucks Water Board (*Mr. R. S. Cox and Mr. R. Pownall*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Good morning, ladies and gentlemen. I see by the somewhat depleted attendance this morning that we did good business yesterday. Just one or two points: the shorthand writers are striving very valiantly to try and catch the accurate names and details of speakers, but they are not being assisted by the return of the little forms giving the correct spelling of names and the details of for whom the persons appear. The slips are available on tables round the room, and on Miss Wall's desk, and they should be posted in the small green box in front of Miss Wall. This will avoid people being recorded for posterity under names they will not recognise.

Our programme for today is relatively unchanged. The Aylesbury Borough Council, whom we did not hear yesterday, will go first, and then I think subsequent authorities will not mind the interjection of the Great Ouse River Authority, who have a witness who can be here this morning but not this afternoon. In any event, their evidence may be quite useful to subsequent authorities. I intend that they should go in and bat second.

We have heard from Buckingham R.D.C., withdrawing their intention to appear. Chilton Parish Council—Number 3245—have withdrawn and intend to rely upon their written representations; and Great Linford Parish Council are now to be represented by the Association of Parish Councils of Newport Pagnell District, who in turn are represented by the Newport Pagnell R.D.C.

I am not too sure how long the hearing of the local authorities will take, but in the event that we make good progress Mr. Wallace, of the National Farmers Union, has kindly agreed to fill in for the rest of the day with his case, and I also intend to call Mr. H. V. Rutland, an individual who cannot attend next week, if that also is possible. I shall call upon the Aylesbury Borough Council.*

MR. R. MAXWELL* *called*

(*Borough of Aylesbury*)

Mr. Maxwell I am Reginald Maxwell, Town Clerk and Solicitor of the Borough of Aylesbury. I find myself in something of a dilemma, being the first of the Second Tier Authorities submitting evidence on its own behalf. My dilemma is—should I follow the precedent of the County Councils by way of introduction and reiterate in some detail my Council's views, or rest on the assurance which you, Mr. Hunt, have given that written representations will carry full weight with the Commission whether or not they are verbally embellished at this hearing. In hopeful optimism I have decided to accept your assurance.

Inspector If I may say so, Mr. Maxwell, I have read your proof with great interest. I think, if I may say so, it is a remarkable document, and I can assure you that it will carry full weight.

Mr. Maxwell Thank you, Mr. Hunt. In these circumstances I will merely say that the Borough Council have tried to set out in reasonably concise form their feelings regarding the proposal to consider as a site for the Third London Airport, Cublington (Wing). These views have been unanimously endorsed by the Members of the Aylesbury Borough Council and were formulated after long and careful consideration by a Special Committee and after the benefit of hearing opinions expressed at a Public Meeting arranged by the Council in this hall. A meeting, I might say, not purporting to be a protest meeting, but purely a meeting at which those who had any feelings about the proposal could freely express them.

As a result, the Council find themselves unanimously opposed to the concept of a major airport at Cublington. It unanimously supports the Buckinghamshire County Council in its objection and perhaps I can say in this respect that, knowing the Buckinghamshire County Council had engaged eminent consultants to advise on a variety of aspects and proposed to submit the expert technical evidence which it did yesterday, the Borough Council did not feel that it would serve the interests of Aylesburians nor assist the Commission if it were independently to engage technical consultants who no doubt would have produced evidence similar or identical to that submitted to the County Council.

The representations which the Council have made to the Commission refer purely to the problem foreseen by the Council as likely to arise in Aylesbury if an airport were sited at Cublington, and the effect such a proposal could have on the compact urban development which the Council has by deliberate policy tried to create within its scheme of expansion.

Briefly, the Borough Council are concerned with the effect that an airport could have on the quality of life in the town generally, and particularly of the upheaval which would be caused not only by the operation of such an airport but, as well, during its period of construction—upheaval coming so soon after a period of some ten to fifteen years of redevelopment and new development within the Borough as a result of the scheme of expansion which the Council are undertaking in association with the GLC under the Town Development Act, 1952.

The Council view with despair the effect which a proposal of such magnitude must inevitably have upon the town and submit that it would be entirely wrong for the inhabitants and the industries of Aylesbury to again be subjected to such radical changes to the character of the town after many years of active town development when Aylesbury is beginning to settle down and re-emerge again as a town entity.

The Council have fears of the adverse affect it could have on the diversity of employment it now enjoys, on the labour situation in an area which

* See also p. 1111.

Printed image digitised by the University of Southampton Library Digitisation Unit

fortunately does not suffer from unemployment; that many families who have been encouraged to the town by the opportunity to enjoy a pleasant environment for living and working could well consider that the town no longer offered those amenities with an airport so closely sited.

These fears I would respectfully submit were echoed by Lord Campbell yesterday in some of the comments he made so concisely and authoritatively regarding Milton Keynes.

Milton Keynes will be a new City, and if Lord Campbell is concerned about the psychological effect on his City, in equity how much greater must these fears be within a community which already exists and has been encouraged to accept a degree of expansion; admittedly in scale very much smaller than Milton Keynes, but with consequences no less important in their contribution to human happiness.

I offer myself to answer any questions so far as I am able on the evidence submitted by the Aylesbury Borough Council.

Inspector Thank you. Are there any questions to Mr. Maxwell, from the First Tier Authorities? from other local authorities? from any other person? No questions? Mr. Maxwell, I have no questions—thank you very much. Is the Great Ouse River Authority with us?

Mr. van Oosterom Sir, I am the only representative here so far—I am the Deputy Engineer. The Clerk and the Pollution Prevention Officer are not here yet, for some reason.

Inspector I think, then, I had better hold you over until you are fully represented.

Mr. van Oosterom If you would not mind, sir.

Inspector Very well. Bletchley Urban District Council?

MR. R. C. TETLOW* *called*

(*Bletchley Urban District Council*)

Mr. Tetlow My name is Raymond Tetlow; I am the Solicitor to Bletchley Council. My task has been made considerably easier this morning, after listening to Mr. Maxwell for Aylesbury, because I feel he has said a lot of things which apply to Bletchley. The only material difference is that I notice that we seem to have fallen off.

May I make two points?—first, that my Council strongly supports the case which has already been made to you by the Buckinghamshire County Council, and the statements which have been submitted on behalf of the urban Corporation. For nearly 20 years now, my Council has been encouraged by the Government and local agencies to expand within the town development, and within that period it has doubled its population. It has attracted industries, some of which within their own spheres are household names. It has had, before Milton Keynes came on the scene, plans for its future; it still has those plans within the general development plan of the new town. Its aim had been to create a viable township, situated in an area surrounded by great landscape value; that amenity should be enjoyed by its inhabitants in such a way that it can make a positive contribution to the country. It has played its part, along with Aylesbury, of taking overspill from London. All those plans and efforts could well be lost entirely by the presence of an airport at Cublington, in such a form that we coalesce into a vast conurbation.

Inspector Any questions for Mr. Tetlow from the first tier authorities? From other local authorities? From any other persons? No questions? I have no questions. Thank you.

(*The witness withdrew*)

Inspector Newport Pagnell R.D.C. who are also representing: Newport Pagnell and District Association of Parish Councils, Little Brickhill Parish Council, Bow Brickhill Parish Council.

MR. A. SNAITH* *called*

(*Newport Pagnell Rural District Council*)

Mr. Snaith My name is Arthur Snaith, Newport Pagnell Rural District Council, former headmaster in this area, and school master who served for many years in the London area. I wish to present the case for the Council and that of Newport Pagnell Association of Parish Councils and for individual Parish Councils as mentioned in my statement. Whilst we fully support the case as presented by Buckinghamshire County Council and to be presented by W.A.R.A. I would like to draw attention to certain points, and I only need to refer to the blue paper* which lists the headings of the accompanying statement. Under 4(a) I would refer especially to noise as it affects the work of children in schools. As a retired headmaster I have worked in schools for over 40 years, 17 of them in the London area and 7 in classrooms in a school which abuts on to the busy Fulham Palace Road which connects Hammersmith Broadway to Putney Bridge, those years were in the '20s when it was a busy tram route and busy bus route also, with many heavy vehicles passing along. I know of the strain of trying to teach children under such conditions, and it interfered with the progress of children and imposes a great strain on the teacher. To work in a classroom close to the road was an unpleasant stint shared as equally as possible amongst staff and children, in other words the teacher would

* See also p. 1119.

* p. 1121.

Printed image digitised by the University of Southampton Library Digitisation Unit

only be there for a period and then not have to go again until his turn came. The headmaster realised the staff difficulties and hence the arrangements made. This emphasises the point made by Mr. Davison* for Bucks County Council's report.

My second point was made most admirably by Lord Campbell, the use or a designated area of Milton Keynes is in the Newport Pagnell Rural District Area. This has worried the area for the last six years, and the threat of an airport with its noise and increased urbanisation seems a second bitter blow to Newport Pagnell Rural District.

My third point is on drainage, a subject which I know will be covered later today, but as Lord Campbell mentioned, there are problems dealing with foul drainage and increase in surface water run-off in Milton Keynes area—he has had a report from eminent engineers, and I understand they have been told that the problems are capable of solution at a cost. With the increase due to the development in Bedfordshire which we were told yesterday, a natural growth of 100,000, with the construction of an airport and ancillary development for another 65,000 as Bedford's share, and as much of this drainage is towards the Ouzel and eventually to the Ouse, this will add greatly to the problem of flooding in the Ouse Valley. This problem I can assure you is already serious in such a slow flowing river as we in Newport Pagnell District know.

Finally, the point of the Diplomatic Wireless Station at Hanslope. The effect of considerable air traffic we know is to interfere with television and radio, and we hope the Commission will have been in touch with the appropriate involved department.

My case is as stated, sir, and I shall be pleased to answer any questions.

Inspector Thank you. On the last point I can assure you if we have not already done so we will do so, that is concerning the Diplomatic Wireless Station. Are there any questions to Mr. Snaith? From the first tier authorities? From other local authorities? From any other persons? I have no questions. Thank you, Mr. Snaith.

Is the Great Ouse River Authority complete now?

Mr. Watson My name is Watson, Deputy Clerk of the Authority. I apologise for my late arrival and that of Dr. Clay. We met with a rather unexpected difficulty. Since we arrived we have been asked whether our evidence could be postponed for a few minutes more because I understand Mr. MacDermot is appearing for Bedford County Council, and he is particularly interested in hearing the evidence of Dr. Clay.

Inspector Yes, certainly, if it is all right with you. We will all wait until Mr. MacDermot arrives.

* p. 1045.

MR. R. P. BATES* *called*

(*Granborough Parish Council*)

Mr. Ba·es On behalf of Granborough Parish Council I would like to submit the case as in our statement, and I would only like to emphasise the points which are put there.

Inspector You are Mr. R. P. Bates, the Clerk?

Mr. Bates Yes. As in our statement, the whole of the village has considerably changed in character during the last few years and we now have an almost new population from the outside and these people have come into our village entirely to enjoy the peace of the rural countryside. I would like to emphasise the two remaining agricultural industries are of a family nature, in the main, and families who resided in our village for many years.

I think all I need add is on the last paragraph, that we are a village of homes, and not a village of houses, and we are very much afraid that having been told urbanisation will come to the north-west of the airport that we will be involved in that urbanisation, and we shall therefore, as I say, lose our homes and not houses; thank you, sir.

Inspector Thank you. Any questions at all to Mr. Bates concerning the statement of the Granborough Parish Council? There are not any. Thank you, Mr. Bates.

MRS. W. CARSLAKE† *called*

(*Haddenham Parish Council*)

Mrs. Carslake My name is Winifred Carslake, representing the Haddenham Parish Council. Apart, from the statement which I believe you have, I would like to say I cannot stress too much that the mental happiness of people is very important, that the placing of an airport at Wing will disturb our whole way of life as we are within the 45 NNI contour. Therefore it would cause a great deal of stress to numerous people living in the village who are financially unable to leave the area. Noise can affect our health. Vibrations can affect our property, and we feel our whole way of life will be completely swallowed by the services required to implement the airport.

Imspector Any questions concerning the statement of Haddenham Parish Council? I have no questions. Thank you very much.

Mr. Hawkins My name is Hawkins, I am chairman of Pitstone Parish Council, I have been asked to say we are unable to be present this morning, and could this be postponed in the afternoon.

Inspector Yes. I have a written statement from Kingsey Parish Meeting,‡ is there anybody here to

* See also p. 1127.

† See also p. 1128.

‡ Written evidence available for inspection, by arrangement at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

support it? If not it will be taken in the usual way as a written representation. Anybody here for Marsh Gibbon Parish Council* If not the same considerations will apply . Middle Claydon?† Ditto.

MR. D. HOLT‡ *called*

(*Newton Longville Parish Council*)

Mr. Holt My name is Donald James Holt, I am a councillor for the Parish Council, and I refer to our written statement. At the general meetin of the Parish Council held on 22nd April, 1969 the following resolutions were unanimously passed: (1 that the, meeting deplored the use of land on which the village of Stewkley now stands and the loss of further agricultural land in North Bucks; (2) the severe disruption of living conditions by reason of noise levels; (3) the great change of land use in the surrounding area, for construction, housing and roads.

I would like to speak on (2) and (3). Noise levels—I refer to drawing CTLA3/3§ which is the four stage, the four-runway airport; firstly the 40 NNI contour is one mile from the village. I would refer on this point to paragraph 13 on page 2: My Council would like to say that if the assumption implicit in the paragraph, namely the airport noise, does not diminish but in fact might increase, we suggest the contour as shown at 40 NNI could in 20 years time prove to be as high as 45 or even 50 NNI.

At full capcity this noise level is not intermittent noise, but eventually will be a level of continuous noise. Night noise. We are disturbed at the figure of 30 NNI for critical disturbance at night. In view of the large proportion of elderly and juvenile inhabitants we consider the figure of 30 NNI to be too high. May I point out at this point we estimate a quarter of the inhabitants of the village are children under 10 years of age.

Change of Land use: firstly, airport employment-I refer to paragraph 6 on page 3. At four-runway full capacity 65,000 people on a 5-day week will mean 45,000 people per day to and from the airport. Living accommodation must be provided and should Milton Keynes be developed as proposed, this would mean very heavy traffic movements through or very close to the parish. Should Milton Keynes not be developed as proposed there is bound to be considerable development to accomodate this number of people, i.e. 250,000 including wives and families. The Parish Council would deplore the urbanisation which would be involved.

In conjunction with the access roads required, this would involve a complete change of the areas as it is today. Not only would there be aircraft noise but also a high level of traffic noise, and much of this traffic noise would be at night. Thank you, sir, that is all we wish to say.

Inspector Any questions to Mr. Holt concerning the statement of the Newton Longville Parish Council? I have no questions, thank you.

MR. J. MORTON* *called*

(*North Marston Parish Council*)

Mr. Morton I have nothing to add to the written evidence you received from us. I would like to endorse everything that has been written and answer any questions that might be put to me.

Inspector Are there any questions to Mr. Morton concerning his statement on behalf of North Marston Parish Council? I have no questions, thank you very much.

MR. G. HAWKINS† *called*

(*Pitstone Parish Council*)

Mr. Hawkins I am Geoffrey Hawkins, Chairman of Pitstone Parish Council. I should like to make one correction in our evidence: Paragraph 4, it should read "pre-school play group", not "free school play group".

My Council has asked me to stress two points. Our main case rests on the increase in traffic through the village, and the ubanisation of the village. As to the increase in traffic, there is one other definite increase that we know will happen, and that is the cement factory in the village is increasing its production by two-thirds this year, which will inevitably mean an increase in traffic and will further make this traffic through the village if the airport goes there, still worse.

As far as the urbanisation is concerned, the Parish Council have taken in the past great trouble to preserve the rural character of the village, taking part in the Bucks County Council Village Improvement plans, they have taken a lot of trouble to get this Improvement Plan out with a lot of tree planting, and they do feel that the urbanisation of the village will not only spoil the countryside, but will also spoil the village community, that is an organism on its own, a successful viable organism which will be destroyed by any great extension of the village urbanisation. That is the case, with the written evidence.

Inspector Are there any questions to Mr. Hawkins concerning the statement of additional evidence on behalf of Pitstone Parish Council?

Cross-examined by Mr. Bramwell

3942 I would like to ask this speaker if he is satisfied with the state of the roads with the traffic using them

* Written evidence available for inspection, by arrangement, at the offices of the Commission.

† Written evidence available for inspection, by arrangement, at the offices of the Commission.

‡ See also p. 1130.

§ See attached wallet of maps and diagrams.

* See also p. 1131.

† See also p. 1133.

Printed image digitised by the University of Southampton Library Digitisation Unit

at the present time, from the cement works. Please answer each question in turn. — The problem with this traffic from the cement works is that what the village requires is not that the traffic shall continue on the road through the centre of the village, but that the traffic shall be taken to the Upper Icknield Way, the road that runs parallel to the road through the village, the Lower Icknield Way, and would have the effect of taking the traffic, both through traffic and cement works traffic, away from the village. We believe it is not a matter of improving the roads in the centre of the village; that will perhaps make things a little better, but will not solve the problem. What is needed is that the traffic should be taken away from the village.

3943 In other words, you sorely need a bye-pass? — As a matter of fact there is a bye-pass in the Upper Icknield Way, but traffic does not choose to use it. That is why in our evidence we have said although roads may be constructed specially to serve this airport, there is no means to prevent traffic if they think that through the village is a more direct route, in using it.

3944 Sir, I know your village quite well. It was at one time a very attractive one. You do your best now to improve its present state, but is it not true that you have got one of the most devastating and unhealthy fall outs from the cement works on to your village in all weather, when the wind is in the right direction to drop this stuff on you, and has your village increased in population in spite of this fall out? — It is quite true that the village has increased in population to a certain extent, certain limited extent. As to the fall out, the Parish Council have taken great trouble over the past years, in the first instance, trouble to find out whether there really is any damage to health, and they can find no proved direct damage to health from the fall out. On the other part, they made great efforts, and perhaps have been successful in getting the fall out lessened in that new dust extraction plants are going to be fitted to the cement works, and we are assured that the overall result will be less fall out than we have at present.

3945 On my last visit I was quite amazed to see almost new houses almost on the perimeter of their works.

Inspector Mr. Bramwell, I do really find it impossible to see the connection with the Third London Airport.

3946 *Mr. Bramwell* I am trying to draw attention to the fact that people have got used to something far worse than noise, the fall out which they are enduring most of their lives, and these people continue to move into the area. The village is increasing in spite of the fact that it is regularly in the Press about the fall out.

3947 *Inspector* Having made the statement, do you wish to ask any more questions on the point?

Mr. Bramwell I will leave it at that, thank you.

Inspector Any other questions to Mr. Hawkins? I have no questions, thank, you Mr. Hawkins.

Inspector Stone with Bishopstone Parish Council: does anyone know whether they intend to appear later, or have they any information about the intentions. Is Stone with Bishopstone Parish Council with us?—Apparently not.

MR. DOUGLAS DUNCAN* *called*

(*Wingrave Parish Council*)

Witness My name is Douglas Duncan; I am Chairman of the Wingrave with Rowsham Parish Council and Chairman of the Wingrave Airport Resistance Committee, which is composed of the 7 Parish Councillors, together with 7 other parishioners. At an open parish meeting held on the 12th March, this year, a Resolution was passed *nem. con.* expressing opposition to the siting of the airport at Cublington; subsequently over 73 per cent of the total population of the village have signed the Wingrave Petition form, each document having been verified and countersigned by each Parish Councillor, and in accordance with my brief, I have delivered these documents† to the Commission this morning.

In the schedule of the evidence we have submitted to you, sir, are given 39 comments from individual parishioners. The Petition forms from which these originated have been kept in a separate parcel on the top of the main body of documents which I handed in this morning. Over and above the scope of our written evidence, I would only like to add these very brief points:

Wingrave is a social entity of the English way of life rooted in the history, character and the beauty of England. It is a vital and positive community not yet tainted with the pall of urbanisation. It is also a village notable for democratic integration and community spirit which demonstrates a really impressive involvement of all sections of the community in the organisation and the affairs of the Parish, and this is true also of the democratic way in which our evidence has been collected and presented, the whole parish having been involved throughout. On this matter, I may say that the Parish has been more united than on any other local issue in living memory.

We admit that we are fighting for survival—survival as a village, as families and as individuals in our own homes, but in these struggles we know we are joined with perhaps hundreds of thousands of other people over Buckinghamshire and neighbouring counties.

But in this struggle for personal survival, the people of my parish are not blind or indifferent to

* See also p. 1134.

† Available for inspection by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

the existence of a developing nation or the need for a new airport for this nation to maintain its position in a competitive commercial world. We recognise that a new airport must come somewhere; but we are still utterly convinced that in putting an airport at an inland site such as Wing, the long-term losses to this country would be far greater than any possible gains, and that such a decision would be bitterly resented by the English people in the future. In support of this contention, we instance the situation of this tract of countryside in relation in particular to London itself. Unless a green circumference of real English countryside is preserved around the capital itself, we think it will be a signal for the spread of urbanisation in all directions. This will deny to the town dweller any reasonable access to the countryside and any hope of a quiet yet accessible home uncongested with pressures of urbanisation. We think it would also tend to destroy the attractive image of England amongst overseas visitors, for whose needs this airport is designed to cater.

It has been suggested, sir—unjustly, no doubt—that the other members of the Roskill Commission are too ashamed of this wicked proposal to put in an appearance here—

Inspector That is quite untrue, of course; and you know it, Mr. Duncan.

Mr. Duncan However this may be, we hope that you, sir, in your solitary dominion, will be able to sway, as it were, the justice of the matter.

Finally—being a schoolmaster, I must ask you to excuse me from your further deliberations. Instead of this exercise in adult education, I really ought to be furthering my onslaughts on juvenile complacency.

Inspector Are there any questions to Mr. Duncan concerning the statement of Wingrave Parish Council?

Cross-examined by Mr. Bramwell

3948 The gist of your statement is that you do not want any expansion at all in your village.—The expansion of this village, like other parts of this county, is very adequately accounted for already. Wingrave is subjected to a plan on which a great deal of public money and time was spent, and the development of Wingrave, as with the development of this whole part of the county, is wholly accounted for. That is one of our objections. Is that clear?

3949 I understand your answer. In other words, you say that you prefer to see the majority of people in towns, and not living in your village? — I prefer to see a sensible adjustment between towns and villages, which is wholly desirable from everyone's point of view.

3950 Not everyone's—because obviously the town dweller would not be so eager to get away from his town into other areas, and apply for building sites for his houses. Your village has with many others refused permission for building in your village. — We have no power in the village to refuse permission to anyone—that is governed by the Planning Authority.

Inspector I think you have made your point, Mr. Bramwell. And you are not going to win!

Mr. Bramwell As long as I have made my point!

Inspector Thank you, Mr. Duncan. I have read both your statements and the very pointed comments of your signatories to the petition. I shall now deal with Winslow Parish Council, if they are with us.

MR. A. WIGLEY* *called*

(*Winslow Parish Council*)

Mr. Wigley My name is Alan Wigley; I am a Fellow of the Royal Institution of Chartered Surveyors, and I am Chairman of Winslow Parish Council. I wish, Sir, to submit formally the representations which you have received in writing. I would only add, sir, that this representation has been circulated within the town before the Parish Council Meeting, which upheld it, as there have been no adverse observations, I therefore regard it as supported. That is all I have to add, sir. Thank you.

Inspector Are there any questions to Mr. Wigley, concerning the statement of the Winslow Parish Council?

Cross-examined by Mr. Bramwell

3951 You had a colleague here yesterday, I believe, and I queried with him the question of the railway station. Could you give your comments about the closing of this station? — I did not attend the hearing yesterday, therefore I am slightly in a difficulty as to how to answer that question.

Inspector Could you put the point that you made yesterday to the Winslow Rural District Council?

3952 *Mr. Bramwell* Yes. First of all, you have a population of 2,000 or thereabouts. The railway line is still in use, but only for goods traffic. You have a railway station there, and it connects Oxford and Bletchley with your small town, and there have been questions and comments made here about the housing of anyone who was an employee on this airfield and the difficulties in accommodating them. In view of the fact that you are a small town with a railway station, could your small town not be increased to a greater size to have this railway station re-opened? — With respect, I would suggest that the enlargement of Winslow by itself would not be sufficient answer to re-opening the railway station and equally, with respect, I would suggest that this has no connection with the airport and is entirely bound up with the development of Milton Keynes,

* See also p. 1139.

Printed image digitised by the University of Southampton Library Digitisation Unit

and it has been intimated that when the new city is further developed in perhaps ten or fifteen years time, or maybe less, then there is every probability of Winslow Station being re-opened, whether it enlarges or not, for the benefit of those wishing to get to Milton Keynes. I do not think that it is reflected on the airport at all.

3953 I am merely ascertaining the possibilities of accommodation of people who would be working on this airfield, in view of the fact that it has been stated at this meeting yesterday that Milton Keynes could not accommodate them. I was just ascertaining what possible expansion there could be in existing small town or villages in the area.

I think the question of planning is a matter which is beyond your or my decision, and must be left to those experts.

Inspector Any other questions? I have no questions, thank you.

(*The witness withdrew*)

Mr. Hamilton I am Hamilton, from the Bucks County Council; I wonder if before you go onto the Bedfordshire and Oxfordshire Parish Councils—I do have letters from the Middle Clayton and Marsh Gibbon Parish Councils, to the effect that they feel that, with the submission of their written statements,* there is no need for them to be present in person.

Inspector Thank you, Mr. Hamilton; and of course they must know that their written representations will be taken fully into account. Thank you. I think Mr. McDermott is now here, so we can now deal with the Great Ouse River Authority.

Mr. Watson I shall call Dr. Clay.

DR. H. CLAY† *called*

(*Great Ouse River Authority*)

Dr. Clay Would you like me to read my statement?

Inspector No, Dr. Clay. Dr. Clay is of course the Pollution Prevention Officer of the Great Ouse River Authority: his statement has been circulated. Are there any questions concerning that statement from the First Tier Planning Authorities? From other local authorities? from any other person?

3954 *Mr. Bramwell* Sir, regarding the pollutions of these rivers, we are all concerned irrespective of whether we have an airfield or not. Is it not possible to instal better and more efficient purification plant at the sources of the effluent, and make sure that these purification plants could be large enough to be available to more than one authority?

Well, that is something, of course, which is going along in all parts of the country all the time. One is getting an increase of sewerage disposal works—small and inefficient sewerage treatment works are gradually being closed down and the sewage from these villages is being treated at larger works; but of course there is a limit at which that process can be carried out. It does not follow, of course, that because sewage works are small—

3955 And, of course, most of those small sewage works are in — It does not follow that they are necessarily increasing.

3956 In view of the efficiency of the aerobic principle nowadays, is it not possible for this to be more widely used, in smallish areas, rather than depending on a large collection of the effluent? — I am not quite sure of the meaning of this question, but I think I ought to say that all conventional methods of sewage treatment—and I am thinking particularly now of the secondary treatment—are aerobic, whether the secondary treatment is carried out by biological filters or by activity during the second treatment stage in which sewage works are involved.

3957 In view of what was said—the aerobic system that you are operating is not on a large scale. There are isolated areas where sewage is carried from them to the central section—individual aerobic ones, perhaps depending on the installation by the householders themselves—it would appear that in many cases development in certain areas is being restricted by the sewage disposal problem, and on the Wing Airport this is one of the finest aerobic systems which was installed in this country today—

Inspector A very long statement Mr. Bramwell—what is your question?

3958 *Mr. Bramwell* Is it not possible to put more new aerobic tanks to cut down the amount of effluent getting to the—

Inspector I gather that the position is that the sewage be purified twice—once at a pre-treatment plant at individual dwellings—is that the drift of your question?

3959 *Mr. Bramwell* The whole point is this—that the aerobic system is on a small scale. The eventual outflow will be more or less cleared away and the aerobic system will take care of any deposits, which it does in the case of Wing.

Inspector What is your question?

3960 *Mr. Bramwell* I am just saying that the aerobic system is not being developed to the full, and I was querying whether this could not be more widely used on a smaller scale. — All I have to say, sir, is that the aerobic system is the one which is applied generally all over the country for sewage treatment, irrespective of the size of the works. The only exceptions are the extremely small sewage works which serve individual houses or groups of houses,

* Available for inspection, by arrangement, at the offices of the Commission.

† See also p. 1141.

Printed image digitised by the University of Southampton Library Digitisation Unit

where you have a septic tank and where the effluent to the septic tank soaks away to the ground.

3961 We seem to be at cross purposes on this. To give an example—I have quoted a figure for installing a large septic tank on my land, an aerobic tank, and the outflow from this will go into the ordinary stream system, and this amount I am speaking of—there are no sewer beds included in this —

3962 *Inspector* But are you suggesting that this sort of thing might be appropriate for an urbanisation of roughly 400,000 people?

3963 No, but what I am meaning is this: that in view of the fact that we have effluent coming from many independent sources, that could cut down the volume in order to accommodate any further inflow from any other place. — Sir, the type of installation that you mentioned a few moments ago is, I think, a form of septic tank; and if the effluent from a septic tank is discharged into a stream which gains access to a river or a stream, that is a septic tank effluent which has received no biological purification, and an effluent of that kind would not be acceptable for discharge to a stream by a River Authority.

3964 Sir, you have had at Wing for the past twenty years —

Inspector I think you can give that in evidence, Mr. Bramwell. Are there any other questions?

Cross-examined by Mr. Wigley

3965 Mr. Bramwell has raised the question of sewage in the rivers and streams. Could I ask what problems arise—the alleged runoff of spillage of kerosene oil and such other runoffs into the rivers? — Well, in answer to that question —

3966 *Inspector* Could I just get the question clear?—are you referring to runoff from the aerodrome itself, or are you referring to a thing which has been mentioned in the statement, which is kerosene fallout on the surrounding countryside?

Mr. Wigley I am referring to the runoff from concrete runways.

Inspector As in the airport itself?

3967 *Mr. Wigley* As in the airport itself. — In reply to that question, one does get surface water runoff from hard surfaces and from runways at an airport, and for that reason particularly septic tanks invariably could be provided on all surface water drains, and provided these oil interceptors are of adequate capacity, they should retain the oil or kerosene and prevent it from getting access to a stream.

Inspector Are there any other questions to Dr. Clay?

3968 *Mr. Bramwell* Just before you go—is it not true that all filling stations as such are compelled to put interceptors in and they are very effective? — Yes, that is a normal River Authority requirement, that garages should instal an oil interceptor, and, as you say, they are normally effective. Of course, it is a question of size. When you get a runoff of high intensity, of course you get a very rapid rate of runoff from a large area such as a runway at a large airport— if the interceptors on an airfield are of adequate size and if they are properly maintained, they should be sufficient to prevent serious pollution of water.

3969 *Mr. Bramwell* Just one question I would like to ask you finally: in view of the motorways having runoff and that sort of thing, with polluted water— does that polluted water pass through interceptors before entering your systems? — I am afraid I have had no experience of motorway drainage. The only one I have in mind is a new motorway in Baldock, where I think the surface water does not run into a river, it runs into . . . (inaudible) . . . I am afraid I have very little experience . . .

3970 *Inspector* Just two points in paragraph 9 of your statement, Dr. Clay: you refer to possible changes which "may change the chemical and biological characteristics of the river water to such an extent as to present formidable problems of treatment to the aforementioned undertakings who are abstracting water from the River Ouse for domestic use." Could you enlarge on your use of that word "formidable"? — Yes. Among the problems that I think water authorities who extract from the Great Ouse are worried, they wonder whether their flouridation processes, which work reasonably well at the present time, may do so in future, if the concentration of ammonia in the river water is increased to a considerable extent as a result of an increase in the sewage effluent discharged into the river. Water authorities, and of course the River Authority, who share a common interest, are also concerned about other constituents. We are concerned about the increase of fluorides in the river water, which may involve the water authorities in additional expensive treatment. Also a matter for concern is the nitrates, which of course are present in the highest quality sewage effluent, and also phosphates, for which the same thing applies. Those constituents which are in the effluents of the highest quality are produced by conventional methods of treatment, and increase the . . . (inaudible) . . . of the river authority and increase the biological productivity, and there is a possibility that serious trouble may arise due to the growth of algae in the water.

3971 *Inspector* In paragraph 10, I see that you comment—"together with the run-off from well-fertilised agricultural land". Is the use of artificial fertiliser becoming a problem in this connection? — I think it is a problem already. I have referred to the problems that the Great Ouse River Authority have already experienced—difficulties in water treatment due to the certain growth of algae, which had an

Printed image digitised by the University of Southampton Library Digitisation Unit

effect on their filters—I am sorry, I have lost the thread of the question—

3972 *Inspector* I was saying: to what extent is the increasing use of artificial fertilisers a problem; and you have really answered my question. — I think I should say that the general consensus of opinion amongst the agricultural experts is that the application of nitrogenous fertilisers to agricultural land is likely to increase, perhaps three or four-fold, in the future—that is on grassland, not arable. I think the present rate of application to arable land is dying, but it is considered that a need for a greater amount of nitrogenous fertilisers on grassland . . .

Re-examined by Mr. Watson

3973 There is one development in connection with investigations into the quality of the Bedford Ouse. Could I therefore ask Dr. Clay to deal with it now? It is a matter of concern not only to the River Authority, but also to the Ministry that there are existing difficulties regarding the quality of the water in the Bedford Ouse; would you tell the Inspector, please, what is happening now as regards investigations into this? I have in mind the committees which are constituted under the chairmanship of officers of the Ministry. — Well, the Minister of Housing and Local Government has decided to set up a committee which will be a national committee which will be under the direction of a senior engineering inspector of the Ministry, to study whether the river water quality is being affected, with particular reference to the use of rivers for domestic supplies for the country as a whole, and the Ministry consider that the water quality problems in the Great Ouse area are so urgent that an assistant committee for the Great Ouse should be set up; and the first meeting of that committee will take place in September, and it will report to the River Authority within a period of twelve months.
3974 The position is so urgent, Dr. Clay, as things stand at the moment, is it?—quite apart from any possible developments arising out of a proposed airport? — Yes. Oh, yes.

The committee has nothing to do really with the possibility of additional flows reaching the river from the airport? — One of the main concerns of the committee will be the effect on the water quality of the increased quantity of sewage effluents which will be discharged to the River Ouse, as a result of growth in the catchment area, and in particular the new city at Milton Keynes.

Inspector Are there any questions to Dr. Clay concerning that?

Further cross-examined by Mr. Bramwell

3975 It would appear that you have a very large scale . . . (inaudible) . . . in the slow-moving rivers— — I am afraid I do not quite understand—

3976 You are growing plants because there is so much food in the river from nitrates and so much that you have algae growing in the rivers. — Yes, I suppose that is quite correct.

Cross-examined by Mr. McDermot

3977 I gather from the conclusion of your written statement—do you think that it would be undesirable for any additional major discharges of effluent to take place, such as would result from the airport urbanisation. We have heard in evidence—and it is illustrated on the map before us*—the possible distribution of urbanisation flowing from an airport at this site. That is to say, envisaging the whole of Milton Keynes being used for this purpose, and the other towns having their population increased by the amounts shown on the chart. Have you yourself had an opportunity to consider what would be the effects for you and for your Board of additional urbanisation on that pattern? — Well, in my view it would be additional development but the urbanisation or the effect of urbanisation as far as the incerase of effluent from the sewage effluent was concerned in addition to Milton Keynes would be undesirable in so far at the very least it would certainly increase the difficulties in the water from the point of view of water authorities who are extracting water from the river for domestic supply.

3978 Would your authority be able to study the proposals put forward and supply to the commission your detailed comments on the effect that they would have on your Board? — Yes. I think the position at the moment is that we do not know, of course, what the alternative options of choice are for the distribution of the urbanisation population.

3979 I appreciate that, and none of us know it, but there has been put forward on behalf of the Buckinghamshire County Council and supported by other local authorities a suggested possible distribution of population which would be attracted by the airport, and as I say that was illustrated on this map which we see in front of us. Did I gather from your answers that you have not yet had an opportunity to consider them in detail? — That is so.

3980 Would you be able to do so and let the commission have your comments on the way in which it would affect your problems? — Yes, certainly.

3981 Would that include costing or possible estimates of the costs of protective measures which would be needed? — Well, I think as far as possible the costs or estimate would be a matter which the River Authority would not be concerned with.

Inspector Mr. MacDermot, the commission will have to be, of course, as part of the Stage III and Stage IV procedures and the Commission will be considering this urbanisation problem very carefully including both the statements here made and other

* p. 1037.

Printed image digitised by the University of Southampton Library Digitisation Unit

considerations, and as a result of their conclusions on urbanisation they will be in touch—in fact they are in touch with the River Authority and other appropriate authorities as to costs.

Mr. MacDermot I am obliged, sir.

Inspector That is the posistion. Thank you, Dr. Clay. No further re-examination?

Mr. Watson No questions, sir.

Inspector Thank you.

(*The witness withdrew*)

MR. H. VAN OOSTEROM* *called*
(*Great Ouse River Authority*)

Witness My name is van Oosterom. I am Deputy Engineer of the River Authority. I do not wish to add to the statement which has been handed in already. I shall be pleased to answer any questions.

3982 *Inspector* Thank you. The proof of Mr. Oosterom has been circulated, the Deputy Engineer of the River Authority—are there any questions from the First Tier Authorities, or from other local authorities? From any other persons, are there any questions? If surprisingly there are not then I have one or two points I would like clarified, if you do not mind. Paragraphs 5 and 6, Mr. Oosterom, I think we have some difficulty in understanding one another. In paragraph 5 you refer to the storm frequency of one in two years being 2,000 cusecs. I understand that our research team have now agreed to a 20 year basis, is that not right? — Not to my knowledge, but we have had discussions with them and we have suggested to them that one in two year frequency storm might not be sufficient to satisfy the local farmers and our own interests, and that the Commission might very well be asked to increase the storm for which they have designed the equipment to once in 20 year frequency, but there is no final agreement on this so far as I know of, and I certainly would expect this rather high demand to be resisted because it is bound to be expensive in terms of works.

3983 Yes. Referring again to paragraph 6, we have this situation from paragraph 5 where the maximum rate of run-off to the Great Ouse River system will be approximately 970 cusecs on the 2 year storm basis, and the bank-full capacities of the existing drainage channels is 650 cusecs. Quite obviously 970 into 650 does not go—very well. You then go on: "However it would be incorrect to infer that the run-off from a once in 2 years storm from the existing catchments would be of the same order as these combined capacities". Well, have not we agreed that the 2 year run-off at 970 is in fact much greater than the 650? — Yes, I realise this—you took up this point with me at Nuthampstead.

3984 You then go on: "It may well be less". I am not certain what may well be less. — The run-off from the one in two year storms.

3985 I see. But the short point is what you are really saying is 970 into 650 will not go. — That is the main inference, but what I also want to point out is that if a once in two year storm occurred over that particular site now it does not necessarily follow that that would produce bank-full conditions—it might quite well be less than the 650.

3986 But why? — Because a natural drainage channel, sir, will if not meddled about with by men assume certain dimensions of its own depending on the number of characteristics, and one of the characteristics influencing it is the—you can call it the dominant discharge of the particular district.

3987 Yes. — And this is why I am saying the once in two year storm is not necessarily the dominant discharge, it might be more, it might be less, so I do not want you to think that merely in comparing these two figures that I have quoted here, 650 and 970, that that is the order of the problem. Farmers will expect to be protected from certain frequencies of flooding, and it may well be necessary to do rather more than provide a capacity for 970 cusecs, if the once in two year figure is to be useful at the moment. They may well expect allowance to be made for higher frequencies because that is what they are enjoying at the moment.

Inspector I am now with you, thank you.

Mr. Bramwell May I ask a question, sir?

Inspector Let me have my little say first, if you will. I have no more questions.

Cross-examined by Mr. Bramwell

3988 What I wish to ask is this, talking about 650 and the larger amount, is not it true that above the 650 mark reserve easements come into play? — I am not sure that I understand the question. The reserve easements, did you say?

3989 Yes, in other words areas in which the additional flooding can relieve the pressure on the banks. Are there any easements areas that could fill up sort of, to take off the floor of the river? — I take your point. In the drainage channels immediately affected in the site area there are no flood embankments and therefore since the channel is running bank-full—that is level with the adjoining ground—if there is then further increase of discharge of water the water will spread out on to the surrounding land, and unless that land is deliberately set aside for flood storage purposes someone is going to complain, and there certainly are not anywhere in the Ouzel Valley under the present arrangement, of course, provisions for allowing land deliberately to flood so as to absorb a relatively high level.—It is, of course, predicted that the surface water drainage at Milton

* See also p. 1141.

Printed image digitised by the University of Southampton Library Digitisation Unit

Keynes should be based on this kind of system. This is the point, that would make the drainage of the Cublington Site even more difficult than the other airport sites in my authority's area because one might say that the flood storage capacity of the Ouzel Valley has already been reserved in a way for Milton Keynes. They have the first call on the capacity that is to be provided, and the airport being higher up in the valley will have to have a second floor because that water will arrive later, but it does mean, as I point out in my statement, that the storage to be provided at Cublington may therefore have to be higher than at some other sites in our area because the storm capacity in the river system is already allocated.

Inspector I have found one further point, I knew there was another one, it is on map GORA 2. There is the line which starts below the figure 2 on the left hand side of the plan, it is a dot-dash line with a broken shading below, it carries on eastwards above Dunton, across the proposed airport boundary and then finishes. What does that signify? — I must apologise to you that it is not included in the legend, but it is intended to denote the south-west boundary between Kimmeridge Clay and the Gault.

Inspector I have no further questions.

Cross-examined by Mr. MacDermot

May I ask a question. There are two things I do not quite follow. Firstly, when you are talking about the additional flood dangers which would flow from the airport that you have been considering, are these just dealing with the problems of the surface run-off from the site itself or also the problems from the additional urbanisation which would result from bringing an airport here? — The figures in my statement are related only to the drainage of the airport site itself, but I have alluded further in my proof to the problems that would arise from the urbanisation if it is going to take place in our drainage basin. The problems will be very similar, and if any of the towns shown on the map in front of you are to be expanded significantly and thereby generate their own surplus drainage in large volumes, it will be equally necessary for us to advise the planning authorities to be quite sure that there is included in the development a means for controlling the rate of run-off from this new development area or areas, so as to safeguard from additional flooding the riparian owners and towns and villages downstream of these developing towns.

3990 You indicated the present reserve capacity, as it were, would be absorbed by the Milton Keynes Development, if I understood rightly. — On the River Ouzel.

3991 So what you are now threatened with is two additions to that, one of surface water run-off from the site itself, secondly the additional urbanisation in other towns that we see shown on the map? — That is correct.

3992 *Inspector* I am not quite sure—you see we also show Aylesbury which goes Thamesward, and Winslow. — Winslow would be in our area, but on the Buckinghamshire branch of the Ouse, but Leighton Buzzard, for instance might pose quite a problem. It is not incapable of solution, but the developers must be prepared to spend money on flood prevention. This is essential.

3993 *Mr. MacDermot* Whose job will it be to quantify for the Commission—would you supply the information as to what would be needed and someone else calculate costs? — We are having investigations under Stage III of this investigation with the Commission's engineers, surveying the water course drainage on each site in our area with a view to determining exactly what drainage control work and improvement works will be required and those costs will then be taken into the grand reckoning when all sites are compared one with another.

3994 Have your calculations and discussions so far covered only the question of surface run-off from the airport site itself? — Only from the airport site itself. We have as yet not been informed, except this morning when we saw the plan, where the urbanisation at any of the sites was likely to take place.

Inspector I think I must clarify a point here. The Commission is employing its own planning consultants to advise on the question of urbanisation, and it may not necessarily be the case that the Commission's planning consultants in the first instance, and the Commission's specialists may adopt urbanisation proposals exactly similar or similar to those put forward by the combined County Councils. This, I foresee from what has emerged today, does seem a problem, as you may well imagine, and I think we must follow this particular chap along, because it may mean either a resolution of the urbanisation problem between the Commission and the County Councils or conceivably two separate calculations. It is a problem.

3995 *Mr. MacDermot* If I put my other hat on for a moment, may I ask whether the County Councils will be consulted as matters progress by the Commission on these problems?

Inspector Yes, they certainly will. The timing of the thing is probably at the end of Stage III and Stage IV when a resolution of any conflicting matters is provided for, but I foresee difficulties over timing, and I think in view of what I have seen arising this morning this requires quite urgent consideration.

3996 *Mr. MacDermot* I am content.

Inspector I have a note of this.

3997 *Mr. MacDermot* I am obliged. The point that I wanted to ask about was that you said in your

Printed image digitised by the University of Southampton Library Digitisation Unit

written evidence that up to now you and the Commission's officers have been considering the matter on the basis of the site surface water drainage system being designed for a storm having a frequency occurrence of one in two years, and in answer to the Inspector you said that it was being considered whether this should be reviewed on a basis of a once in twenty years storm protection being written into the system. You said that if that were done or if that were approved there was likely to be considerable resistance because works of that character would be bound to be expensive. Supposing protection works were not done to protect against the danger of a once in twenty year storm, can you give us an indication of what the scale area of the risk is that we are talking about? What is the sort of flooding that has to be anticipated in this area from a one in twenty year storm and where would it be? — It is not an easy question to answer as you will appreciate. Without having contours of the River valleys it is extremely difficult to find exactly where flooding would occur, but I would say that on the smaller drainage channels—if you will refer to our plan, of the small drainage channels between the site and the River Ouzel, some of those are included in the Ouzel internal drainage district. The boundaries have been indicated with a thin broken line. If you take, for instance, the Wing Brook you will see this line on either side of the river, Well, now, those boundaries are fixed at a height of eight feet above known flood level, and you may be able to judge on the assumption that the rising ground is reasonably uniform, that the extent of the flooding would be about half way between the river channels and the broken lines. It is therefore fairly narrow flooding that would occur there, but when one gets down into the places like Leighton Buzzard there is a very real risk that historical floods that have occurred there will repeat themselves at much greater frequency and there, of course, houses are affected.

3998 This is what I particularly had in mind where, subject to what Mr. Hunt has just said about the views which the Commission form on urbanisation; up to now we have been hearing at this inquiry or we have been discussing matters on the basis of an expansion of the Leighton Buzzard area. It cannot be Leighton Buzzard itself, it must be outside Leighton Buzzard, the Leighton Buzzard area of additional 65,000 people. If in addition to this we are to have a period of storm risk with a run-off from the airport from which there is no protection will this not seriously increase the flood danger in Leighton–Linslade–Leighton Buzzard area? — Undoubtedly, it would, and we would regard the provision of flood prevention works as a basic essential of any major town development, not only connected with this airport development but with any development. I think this is a problem that has been ignored conveniently on account of costs in the past, but I think the modern society will no longer put up with it, particularly, I might add, after the very wet season and serious flooding that has been experienced in the country in the past 12 months.

3999 Yes. As one knows, when flooding does occur in an urban area there are enormous losses suffered by ordinary people, many of them uninsured and for which they get no compensation. — This is correct.

Mr. Bramwell Can I come back in view of what has gone before; —

Inspector This has gone on for some time, it cannot go on for ever. This is not a debate between you and the witness. This is the third time you have been on your feet with this witness.

Mr. Bramwell Yes, but I am interested in canals. It is a very interesting point. We have a man who knows the points, and I have great faith —

Inspector I have been very lenient with you.

Mr. Bramwell Yes, but when you consider I am just one person only supporting my colleagues at work, and I have to carry the can for them.

Inspector Very well.

Further cross-examined by Mr. Bramwell

4000 I am asking this gentleman, who obviously knows his job, and I like to speak to people who do know what they are talking about, and under these circumstances, is not it true that canalisation of an area of Leighton–Linslade has been a great asset to the flooding in that area, in dispersing waters along its length? I would like you to answer that question first, and I tell you I have other questions, and I would like them answered individually, please. — I have had no hand in the design of this particular canal of course, but it is a fact that Wing Brook discharges in the first place into the Grand Union Canal before it actually reaches the Ouzel, and because of the works incorporated in the canal system some of the water coming down the Wing Brook is in fact carried along the canal and not discharged into the River Ouzel until one reaches the downstream side of the town, that is on the north side.

4001 In othe words, you have the matter in hand if you had the capital to go ahead with it? — Well, if the Inspector will permit me to say this, I am an engineer and given the money we will do the job.

Inspector That is the watchword of engineers, Mr. Bramwell. Give them the money and they will do the job. They must have the money. Any other questions? Is that your case?

Mr. Watson Yes, I have no further questions.

Inspector Thank you very much. Referring again to the local authorities, I am told the Kingsey Parish Meeting is here.

Printed image digitised by the University of Southampton Library Digitisation Unit

BRIGADIER S. H. KEMP* *called*

(*Kingsey Parish Meeting*)

Brig. Kent My name is Brigadier Sydney Kemp. I am Chairman of the Kingsey Parish Meeting. I wish to support formally the evidence which we have circulated in writing. The only point I would like to emphasise is that the Parish Meeting met on the 20th May and passed unanimously a resolution supporting the objections to the Third London Airport at Cublington, and that this meeting had the largest attendance of any meeting since records have been kept.

Inspector Thank you. Any questions from first tier authorities? From other local authorities? Or any persons? No. Thank you.

MR. PERRY† *called*

(*Stone with Bishopstone Parish Council*)

Mr. Perry My name is Perry and I am Chairman of the Stone with Bishopstone Parish Council. I am speaking on behalf of J. Williams, the Chairman of the Stone Villages Association, who is at the moment in Australia. You have copies of our evidence, and by my presence I hope that I can represent the approximately one thousand people who are behind us in this evidence, and here I rest in case there are any questions.

Inspector Any questions to Mr. Perry from First Tier Authorities? Other authorities? From any other persons? No questions, thank you very much. I think that probably deals with all admitted Parish Councils from Buckinghamshire, this morning. The next authority is the Borough of Bedford.

MR. J. M. BELL‡ *called*

(*Borough of Bedford*)

Mr. Bell My name is John Marshall Bell; I am Chartered Surveyor, and I am the deputy Director of Technical Services of the Borough of Bedford. I submit formally our written representations dated 17th June to which I wish to add nothing, but I will, of course, answer any questions which may be put.

Inspector Any questions to Mr. Bell in connection with representations by Bedford Corporation from First Tier Authorities—from other local authorities —any other questions? I have no questions, Mr. Bell, thank you for your attendance.

MR. M. CONNELL§ *called*

(*Leighton—Linslade Urban District Council*)

Mr. Michael Connell May it please you, sir, my name is Michael Connell, and I represent the Leighton-Linslade Urban District Council. The boundaries of the Urban District Council in fact adjoin the Wing Rural District Council, but they do come to within one half a mile of the proposed site for the airport.

I shall be calling three witnesses before you; each of them have submitted proofs of evidence to the Commission. The first will be Mr. Pacey, who is the Engineer and Surveyor for the Rural District Council; secondly Mr. Leslie, who is the Chief Public Health Inspector to the Urban District Council, and thirdly Mr. Saunders, who is the Treasurer. I think you have all those proofs of evidence.

Inspector I have.

Mr. Connell The grounds of general opposition have already been clearly stated on behalf of the Bedfordshire County Council. However, as the Urban District Council in Bedfordshire most closely situated to the proposed site, we wish to add a little more detail to that objection, which we wholeheartedly support. Indeed, we feel that we are bound to do so, because we believe that the Leighton-Linslade town area is the only such area of comparable size so closely situated to any of the three proposed inland sites for the Airport.

The present population of the Urban District area is 19,000, spread over the old market town area, which can be traced back to the time of the Domesday Book and before. As has already been stated, it is, of course, situated in a most attractive surrounding area close to the Chilterns, to the Ashridge Estate, and also to the Vale of Aylesbury. In the past the policy has been one of steady and controlled expansion, increasing at the rate of approximately 1000 persons per annum, at the same time within this expansion maintaining, it is hoped, the character of a pleasant residential area, and also of a considerable local shopping centre for surrounding people.

Recently, as you will have seen from the evidence, and as emerged from Mr. Cowley's evidence*, given on behalf of the Bedfordshire County Council recently, a large sum of money was spent in this area on new sewage disposal works, but that would, of course, be wholly inadequate to cater for anything of the size of increase that is now envisaged. Those works are now completed, and there is also proposed now a new main drainage scheme in this area, which at the present moment awaits Ministerial approval. All this would permit an increase of the population from 19,000 to in the region of 33,500 by 1981, if one was able to keep the expansion within the limits that we would wish. However, the pressures already around this area are such that without any airport proposal for the area, it is envisaged that

* See also p. 1144.
† See also p. 1150.
‡ See also p. 1145.
§ See also p. 1147.

* p. 1072.

Printed image digitised by the University of Southampton Library Digitisation Unit

the figure of 33,500 may well be reached 5 years earlier than had been planned, that is to say by 1976. The pressures on this area are obvious; not only is it an attractive residential area, but it serves, besides supplying people for its own local industries, substantially as a commuter area, not only for London, by virtue of the Euston line and the main line station, but also for other towns, such as Luton, which are in easy reach.

The effect of the airport proposal on this area can readily be seen. The planned expansion takes us up to the figure of 33,500; adding the aditional 65,000 one reaches, of course, a total of virtually 100,000 persons, and although it is appreciated quite naturally that nothing like the whole of that amount of people can go to within the Urban District Council's area, nonetheless the fact must be that that area will be stretched to the limit. This, it is feared, will inevitably result in a complete change in the character which will be inflicted upon the residents of the area in which they live. The difficulties which will result from the heavy flow of traffic have already been referred to. There will, of course, be substantial requirements for the construction of new roads and new railways; one envisages that Leighton Buzzard Station being a main line station on the Euston line, as I have mentioned, will be at least one of the focal points for the future expansion should the site come to Cublington.

In addition, the local sand and gravel pits will be much in demand. The immediate difficulties there are, of course, the heavy flow of traffic which will be required to carry the sand and gravel to and from the site. The more distant difficulties will be, of course, the question of the rehabilitation of those sand and gravel pits.

The question of noise: as you will see from the plan which has been submitted by Mr. Pacey,* the 40 NNI contour crosses the north-west corner of the UDC area. It so happens that it is in this particular corner of our area that present expansion is taking place, and within the next five years an additional population of some 7,500 people in that quarter is anticipated. It should also be mentioned that together with that increase in population, there will be three new school sites also within the area which would be most affected by the noise as coming within the 40 NNI contour. The development, and therefore the new influx of people to this area, would have to suffer most substantially the disadvantages from the proposed airport site, and perhaps I can leave this point by saying quite simply this, that we are no more satisfied than are any other of the local authorities represented here that 40 is the correct limit as showing which are the areas which will be affected by noise. Indeed, it would only take a small variation in the airport runway alignment for the Urban District Council to be very much more largely affected by this problem than at present appears to be the case.

An additional difficulty which has been touched on this morning in the evidence of Mr. van Oosterom, is the difficulty of flooding, and although this is not specifically dealt with by Mr. Pacey in his proof, I would like, with your leave, to ask him a few extra questions on that point.

It might be that the proposal would have been slightly more acceptable to this area if there was some obvious advantage which could be pointed out to the local residents from the proposal. The hard fact, unfortunately, so far as can be seen, is that none, or very few of the financial benefits of this proposal would benefit those in the Leighton-Linslade area. Undoubtedly, many people already living in that area will claim and one feels will be very much entitled to a reduction in their rateable value, and whilst that may be counterbalanced by the substantial increase in population in the area, the hard fact is that the proposed site lies wholly within the Buckinghamshire area Leighton-Linslade is wholly within Bedfordshire, although it is so close to the site, and would not in those circumstances in any way benefit from the rateable income to be expected should the airport come to Cublington.

It is for these reasons that the Urban District Council that I represent join the Bedfordshire County Council in their objection, and emphasise so far as they are able the local feeling that is against this proposal, particularly bearing in mind the proximity of a town of the size of Leighton-Linslade to the proposed site. Having said that, may I call first of all before you Mr. Pacey.

MR. SPENCER WILLIAM PACEY* *called*

Examined by Mr. Connell

4002 Are your full names Spencer William Pacey, and are you a Member of the Institution of Civil Engineers, Associate Member of the Institution of Water Engineers, Member of the Institution of Highway Engineers, do you hold the Diploma in Town Planning of the University of Nottingham, and are you Engineer and Surveyor to the Leighton-Linslade Urban District Council? — I am.

4003 Mr. Pacey, I think one fact should be made clear; is it the case that when you prepared your proof of evidence, you had not had the advantage of seeing at that stage the proof submitted by Mr. Pooley on behalf of the Buckinghamshire County Council? — No, I had not.

4004 So there is now included into the additional figure of 65,000 the influx of population which you feared in your proof of evidence? — Yes.

4005 Mr. Cowley, on behalf of the Bedfordshire County Council, did deal with this matter yesterday.

* Available for inspection, by arrangement, at the offices of the Commission.

* See also p. 1147.

Printed image digitised by the University of Southampton Library Digitisation Unit

May I ask you this, to emphasise the point. There is an area between Leighton Buzzard and Dunstable which would appear to be a possible area for the housing of some of the 65,000 persons who it is envisaged might be imposed upon Leighton Buzzard. Is it the fact that there has been a Sub-Regional Study Group carrying on studies connected with the housing of overspill from Luton and Dunstable? — Yes.

4006 Has it been decided, or is it suggested by that Sub-Regional Study that many of these persons should be housed in the area between Leighton Buzzard and Dunstable, that is to say in the sort of Stansbridge/Tilsworth area? — No, that is not strictly correct. The Working Party of the Sub-Regional Study of which I am a member is considering a figure of 100,000 which I think Mr. Cowley mentioned in his evidence. There are a number of options for population distribution which I do not think can be made public at this stage, but which you, Sir, no doubt will have the opportunity of taking from the Sub-Regional Study Report.

4007 In any event, that is one of the areas which the Sub-Regional Study Committee have been considering for growth? — Yes.

4008 Is there in any event considerable pressure in the Leighton Buzzard area for expansion? — Yes.

As I have indicated, have you been trying to keep that within such limits as you are able, in the past? — Yes. There are fast physical limits to which we can grow, mainly because we are bounded on two sides by sand workings, thirdly by the watershed on the north-west side, and fourthly, I think most important, by the limitation of sewage disposal on the present site. I say that advisedly, because we have room for expansion up to 50,000 on the present site, but if we are asked to go beyond that, it would mean a complete new works again.

4009 There are two other points. I have mentioned some new development in the north-west area of the Urban District Council's region. In that area, are three new school sites proposed? — Yes.

4010 And this morning we have heard some evidence concerning the problem of flooding in the Leighton-Linslade area. That obviously is a very real problem, is that correct? — It is a problem; it is a question of degree at this stage. Having served in an area where flooding up to the bedroom ceilings is not unusual, I regard this as a nuisance value flooding rather than a serious flooding.

4011 Could you tell the Inspector when it was that last in the area there was nuisance value flooding occurring? — That was last autumn.

4012 About September or October of last year? — Yes. But of course, one has to realise this will obviously increase if there is any urbanisation between Dunstable and Leighton Buzzard, because it does increase the permeability factor and gives much quicker runoff.

Inspector Any questions to Mr. Pacey from First Tier Authorities? From other Local Authorities? From any other parties?

Cross-examined by Mr. Bramwell

4013 Mr. Pacey, it has been mentioned that you are considering a sewage system, or a drainage system being installed. I believe your above sea level number is about 180 or thereabouts? — About 260.

4014 In view of this, are you installing pumps to deal with the flow, or to what area will this flow from your drainage system? Could you answer the questions individually, please? — Let me make it clear we have just completed a complete new sewage disposal works for a population of 33,500, that is completed. What we are doing at the moment is to deal with independent drainage schemes to service certain areas of the town which are not at the moment adequately drained. This will be dealt with by pumping.

4015 The outflow from your sewage system which has been established is into the Ouse or—? — Into the Ouzel.

4016 In other words, even with this new drainage, would that adequately deal with flooding, or are you still in need of a large comprehensive drainage system to eliminate flooding entirely? — We are talking at the moment purely about foul sewerage. If one is talking in terms of surface water drainage and flooding, this is a completely separate system, and as Mr. van Oosterom said, the River Board are at the moment in the process of preparing a report on the possibilities of alleviating flooding within the central Urban District. This was promised by September, so I shall hold him to it.

4017 *Inspector* Any other questions? Is your new sewage disposal plant in the north-west area? — That is right.

4018 Is that safe from flooding? I see it is above the canal. — It is by the canal. We have had no flooding of that particular area of the canal. The only flooding I am aware of in the canal area is in the south-east part of the district where it is due to overflow from the River Ouzel into the canal. We have got two surface water outfalls discharging into the Canal, but they are not sewers.

4019 I was very seriously held up in Leighton Buzzard by traffic over a bridge. Is that part of a drainage system? — No, sir, this is a scheme. We have delegated County roads in our District, but not delegated County bridges, so I throw that back to the County Surveyor.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector I wondered if it was due to the river channel there. I have no more questions, thank you.

Mr. Connell I have no re-examination.

(*The witness withdrew*)

MR. MAURICE STEPHEN LESLIE* *called*

Examined by Mr. Connell

4020 Are you Maurice Stephen Leslie, and are you a Member of the Royal Society of Health, you hold the Certificate of the Royal Sanitary Association of Scotland, and are you the Chief Public Health Inspector to the Leighton-Linslade Urban District Council? — That is correct.

4021 I think your proof of evidence has been submitted to the Inspector and the Commission. There is just one other question I would like to ask you: within the Leighton-Linslade Urban District Council area, is it right there are 12 schools? — That is correct.

Inspector Any questions to Mr. Leslie on his proof, by First Tier Authorities? Other local authorities? Any other parties?

Cross-examined by Mr. Niall MacDermot

4022 Mr. Leslie, I was interested in the statement in your evidence that from personal observations you have "kept near Heathrow Airport and at Windsor and with the aid of a noise and number index contour map prepared in 1967" you "consider that 40 NNI is too high a minimum value and that a high degree of nuisance would be caused outside this contour". I am wondering if you could enlarge on that a little, and give the nature of your observations, and what led you to reach this conclusion? — I spent several days in the area of Windsor, and from Windsor into Heathrow Airport, and during the period of those observations I found that the noise at times was intolerable, and the duration of the noise went on for very long periods. I find that Windsor is in the 40 NNI contour line, somewhere between 35 and 45, and it led me to believe that the 40 NNI contour is not one which the public can regard as something which is of minimal value, because outside that contour line there must be, in my opinion, a very high degree of nuisance.

4023 Have you in mind any particular users or particular people when you were forming this judgement, or are you thinking of the ordinary householder? — The ordinary householder in general.

4024 These were visits you made specially for this purpose, were they? — Yes.

4025 In order that you could try to reach your own assessment of the effect of these different noise levels? — Yes.

Inspector Any other questions? If I might just comment on your paragraph 2, Mr. Leslie, I know the published document in which the reliability of the noise number index has been questioned. What we tried to get across here was that our public sessions had indicated that the public are not satisfied that this rather carefully calculated noise and number index could be used as an adequate means of measuring the effect of noise upon people. I am not certain whether your paragraph 2 is intended to show that because planes are very much bigger now, and therefore the figures should be bigger—is that what you had in mind? — That is one aspect of it, but the whole thing was derived from a social survey carried out in 1961 around or within 10 miles radius of Heathrow. I think that it was taken from about 1900 people, and irrespective really of whether any aircraft flew over the area or not. I understand large districts of people in the survey were totally unannoyed at that time, and that the aircraft noise and their reactions or non-reaction was used in compiling the survey, and at that time, too, the proportion of jets and volume of air traffic was very low.

4026 That is the point I really want to make, that that of course was reflected in the NNI contours in 1961. If you see the 1961 contours, they are very much smaller than they are in the 1967 ones, which you have now seen. — Yes, they are very much smaller.

4027 *Inspector* That reflects the increase in number of movements, and the noise of individual planes. I have no further questions.

(*The witness withdrew*)

MR. JOHN BLUNDELL SAUNDERS* *called*

Examined by Mr. Connell

4028 Are your full names John Blundell Saunders; are you the Treasurer of the Leighton-Linslade Urban District Council? — I am.

4029 Have you submitted your proof of evidence covering the financial effects of the proposed airport site, to the Commission? — Yes.

4030 I want to ask you two questions, if I may, in expansion of your proof of evidence. Firstly, have you read recently of a large number of applications for reduction in rateable value of premises by occupiers near to Heathrow Airport? — Yes, I have.

4031 Was that one of the factors which you bore in mind when anticipating similar applications should the airfield come to Cublington? — Yes.

4032 As regards the first case that you mentioned in your proof of evidence, the case concerning

* See also p. 1148.

* See also p. 1149.

Printed image digitised by the University of Southampton Library Digitisation Unit

somebody living near Southend Airport perhaps one factor should be made additionally clear, that that gentleman had already had a reduction of £25 because of the nuisance value of the airport on his house? — That is true.

4033 *Inspector* Any questions to Mr. Saunders from First Tier Authorities? Other Local Authorities? Any other parties? There are no questions, and I have no questions, thank you, Mr. Saunders.

(*The witness withdrew*)

Mr. Connell That is the case for the Leighton-Linslade U. D. C. In case it is necessary, may I formally ask for the release of those witnesses?

Inspector Certainly, Mr. Connell.

MR. LEONARD THOMAS GADGE* *called*

(*Thame Urban District Council*)

Witness My name is Gadge, Chairman of the Finance Committee Thame Urban District Council. There is just one thing perhaps I would like to underline in the submission of evidence that perhaps has not been quite emphasised enough, and that is that the increase of population which we envisage for the next few years, the development is to take place on rather low lying land, it is difficult and expensive to develop, and with the increasing flood danger that has already been spoken of this morning and yesterday due to discharge into the River Thame, this would increase very much both the cost and the difficulty of the operation, and indeed might well make it too difficult to undertake.

Inspector Any questions to Mr. Gadge from the First Tier Authorities? From other Local Authorities? From any other parties?

Cross-examined by Mr. Bramwell

4034 What is the extent of flooding in the Thame area? — Parts of the towns are flooded at times of storm, but the low-lying fields along the side of the river are constantly flooded during the winter.

That is a long term thing—that is over the years? — Yes.

4035 *Inspector* Any other questions? I have no questions; but with regard to the last paragraph, I think you need have no fear that your Council has not been able to afford very expensive experts, because I think you put your position very clearly indeed. Thank you very much.

MR. A. M. BRACE† *called*

(*Ploughley Rural District Council*)

Mr. Brace My name is Anthony Brace, and I am Deputy Clerk of Ploughley Rural District Council. I have nothing further to add to the written statement; I simply present myself to answer any questions for my Association.

Inspector Any questions from the First Tier Authorities? other authorities? any other parties? I have no questions on your short and very clear statement, Mr. Brace: thank you.

MR. P. EMLER* *called*

(*Aston Rowant Parish Council*)

Mr. Emler My name is Peter Emler, and I am Clerk to the Aston Rowant Parish Council. Most of the points raised in the summary which we submitted have already been very fully covered by representatives from other bodies, so I will not go through our general objections. I think it will suffice to say that we support the Oxfordshire and Buckingham R.D.C. in all the particulars of their objections.

There is one point I would like to enlarge on, if I may; it was briefly mentioned by Mr. Kenneth Summerfield, the Oxfordshire County Surveyor, in his proof. He mentions that the B.4009 road is one of the roads likely to be used by lorries carrying gravel to Cublington. This road traverses the whole length of our village, and is the only road of any consequence it is proposed to use this road as an access road to the M.40 motorway extension. It is already used very extensively by heavy lorries; about one and a half miles away is a cement works, and over 400 heavy vehicles a day leave this particular place alone. Mr. Summerfield very rightly draws your attention to the effects on road safety of any increase in heavy vehicles using the road, and we would like to emphasise this in the strongest possible manner. The continual use of this poorly surfaced road, which was originally built for horses and carts—and in parts for chariots—has been of concern to my Parish, and the damage caused to walls and buildings has already been apparent. Any increase in weight of loads can only make a bad situation desperate.

That is all I wish to say.

Inspector Are there any questions to Mr. Emler? on his short original statement by the Aston Rowant Parish Council? and his additional evidence? there are no questions. I have no questions; thank you for coming, Mr. Emler.

MRS. DORIS TUCKER *called*

(*Chinnor Parish Council*)

Mrs. Tucker My name is Mrs. Doris Tucker, and I am a member of the Parish Council, Chinnor, and I am deputising for the Chairman who has had to leave us for an hour. With regard to the copy of

* See also p. 1151.
† See also p. 1153.

* See also p. 1154.

Printed image digitised by the University of Southampton Library Digitisation Unit

our protest being sent in—I must say that our Clerk has in fact sent in one—what has happened to it, I cannot imagine. At any rate, I shall read our very brief paper.

"I am authorised by the Parish Council of Chinnor to oppose the use of Cublington as the site for the Third London Airport on the ground of the hardship it would cause to the people of this village. Although geographically Chinnor would be well clear of the runways, it would suffer disturbance from noise, coming within the 40 NNI contour but there is, we feel, perhaps a more urgent reason why we should oppose the scheme.

The village has now a population of about 4,000, having more than trebled its size during the last ten years. There was no overall co-ordination of planning—the roads, the sewers, the schools and social amenities are not adequate for the present population. What we fear from an influx of a great number of people into the region (if Cublington becomes the airport) is an irresistible demand for further development in this village, with services that are not adequate. In consequence, it is considered that there should be a pause in development for at least a decade in order that amenities can be brought up to date with the present demand; and to this end it is the policy of the Parish Council to resist any influence at all which might give rise to further growth until a mature community has been established.

The village lies at the foot of the northern escarpment of the Chilterns. It is an area of outstanding natural beauty, and provides a pleasant and peaceful environment for the inhabitants and one which we hope it will be possible to preserve."

If I may add a few words to the written report—I would like to say that 18 months ago, the Parish Council were disturbed by the fact of this large development on the periphery of the village—some, I think, up to 100 houses—which was rapidly developed with the result of an extraordinary and sudden increase in the population. The number of babies born in one year was quite startling. As a result of this, the Parish Council worked out that in 13 years time there would be a terrific bulge in the teenage population. As a result, they established a sub-committee of the Parish Council to look into the matter, as to how far Chinnor, as at present situated or as likely to be situated in the foreseeable future, could cater for this large teenage population. The result is the report which I have handed to the Inspector, which I think is very relevant, as it was produced without any thought of such a large development within 13 or so miles as the Wing Airport.

* Available for inspection, by arrangement, at the offices of the Commission.

Inspector Any questions to Mrs. Tucker?

4036 Mrs. Tucker, this sudden battle of the bulge in Chinnor—is this due to the proximity of the cement works? — No, I think it is due to the fact that a great many young people, unable to buy houses at a price they could afford nearer to the big centres of population such as Slough, High Wycombe, even the outskirts of London, were moving out to Chinnor. They were young, just-married couples.

4037 Do you happen to know why the Planning Authority allowed such a considerable expansion of Chinnor as opposed to other local villages in the area? — I think it was because the water and main drainage had come to Chinnor, and this made it possible to extend. I may say that by this time there is no possibility for the immediate moment of further expansion because they will need fresh sewage works.

4038 So, at 4,000 population, you are temporarily at a stand still? — Well, as a matter of fact, we did have a village survey made by the Planning Authority in Oxford, and they envisaged a total maximum of 4,500—development will bring us practically to this now.

Sir Reginald Taylor *called*
(*Great Haseley Parish Council*)*

Sir Reginald Taylor I am a Fellow of the Institution of Civil Engineers, formerly Director of Public Works in Kenya and Nigeria. I am Chairman of the Parish Council of a very humble Oxfordshire village of Great Haseley.

Mr. Chairman, I have your assurance that our written evidence will have full consideration, and in that case there is no need to repeat it; but there are one or two features that may be underlined.

The main thing feared by the Parish of Great Haseley is the demand that will be made for land and housing for what could only be a small proportion of the 500,000 persons who would ultimately need to be accommodated, if Wing Airfield were to be developed. We have this sort of pressure existing now, from Oxford and this has become far more formidable, and this village will entirely lose its character owing to the urbanisation that is visualised. Much evidence has been given as to the existing full employment in this part of the county—already agricultural labour is very short in the village of Great Haseley, and there is a fear that it would almost disappear.

Lastly—and perhaps it is not quite correct to bring this in here—I would make a plea to put the airport on the coast. The day must come when we have got to expand the area of this island; reclamation of the Wash, the Solway Firth, Morecambe Bay, and the marsh lands and islands of the East

* See also p. 1155.

Printed image digitised by the University of Southampton Library Digitisation Unit

Coast are bound to occur. Why not start now, with this new airport?

Inspector Sir Reginald—there is in the audience today the main objector to the airport at Foulness, who lives in a very delightful village near Foulness. At the Foulness Inquiry there was no proposal that the airport should be built at Wing: so I prefer to keep the reverse situation here. Are there any questions?

Mr. Bramwell I would like to state one thing—

Inspector You cannot "state" anything.

Cross-examined by Mr. Bramwell

4039 I shall ask a question, then. Have you ever been to Lancashire? — To Lancashire—yes.

It is a county of a population of seven million—

4040 *Inspector* Where the Third Airport will not go!

4041 *Mr. Bramwell* Where the airport will not go, sir.

(*to the witness*) Have you seen the amount of lovely countryside, including Windermere, in Lancashire? — Yes, yes. But is Windermere in Lancashire?

4042 Yes. — No—Westmoreland.

Inspector We are definitely off track!

4043 *Mr. Bramwell* All these people seem to consider that the lovely countryside is in—

Inspector You will have ample opportunity to explain this to me in due course.

4044 *Mr. Bramwell* I am just giving them food for thought, sir!

Inspector Well, I have no questions, Sir Reginald; and thank you for coming along to present the case for your Parish Council. Hethe Parish Council?* Their statement materialised this morning, but if they are not present, I shall treat it as a written submission. Towersey Parish Council?

MR. G. ANDREWS† *called*
(*Towersey Parish Council*)

Mr. Andrews My name is Geoffrey Andrews, and I am a member of the Towersey Parish Council, who have asked me to read the following brief statement of their views on the proposed site of the third London airport at Wing.

"The Parish of Towersey embraces an area of 1,380 acres. It comprises ten farms, a manor house, a general store-cum-post office, a public house, and some 140 residential buildings. There are a village green and recreation grounds—"

Inspector Mr. Andrews, you may read your short statement with pleasure if you wish to but there is no need to if you do not wish to, because it has been circulated.

Mr. Andrews In that case, I shall terminate it.

Inspector Are you sure?

Mr. Andrews Quite sure.

Inspector Thank you very much, Are there any questions to Mr. Andrews concerning the circulated statement or submission by the Parish Council of Towersey? There are no questions—you may be quite sure that your representations will be taken into account.

Have I omitted, or are there present now, any local authorities or Parish Councils who were called earlier and were not then present? Have I missed anyone? Then, to conclude today's official programme—the Bucks Water Board.

MR. R. S. COX* *called*
(*Bucks Water Board*)

Mr. Cox My name is R. S. Cox, I am a Fellow of the Institute of Municipal Treasurers and Accountants, a Fellow of the Chartered Institute of Secretaries, and I am Clerk and Treasurer to the Bucks Water Board. The Board are a statutory water authority to the area covered by the proposed site, and written evidence has been submitted to the Commission: so, unless you so desire, I do not propose reading the statement because I understand it has been distributed.

The main items to which the Board would draw the attention of the Commission are:

(1) The possible effect of additional sewage effluents on the Board's source of supply at Foxcote—and this has already been referred to in the evidence of the Great Ouse River Authority† (2) the effect on future sources, and particularly that proposed large storage reservoir sited at Whitchurch (3) the effect of the rapid growth increasing the necessary distribution works and (4) the very heavy financial burden which would be involved in providing supplies both in regard to high expenditure requiring much higher interest rates, necessitating high water charges and the possible need for some means to find finance, since there is invariably a ten year gap between incurring capital outlay and the corresponding consumer income.

I would be happy to answer any questions on the legal, financial, or administrative side; and Mr.

* Available for inspection, by arrangement, at the offices of the Commission.
† See also p. 1158.

* See also p. 1159.
† p. 1141.

Printed image digitised by the University of Southampton Library Digitisation Unit

R. Pownall, the Board's Engineer and Manager, could deal with any technical and engineering questions.

Inspector My guess, for what it is worth, is that there will be some questions asked on the technical side. We managed very well yesterday, when Lord Campbell and Mr. Ismay occupied the chair side by side. Could the Engineer please come forward, and you can bat as a combined team against any questions.

MR. R. POWNALL *called*

4045 *Mr. Cox* Sir, if I may—perhaps I should give his professional qualifications—you are Raymond Pownall? — Yes.

4046 You are a Master of Arts, and a Chartered Civil Engineer, being a Member of the Institution of Water Engineers, and a member of the Institution of Civil Engineers? — Yes, correct.

4047 And you have been engaged in the design, construction and operation of water works for the past 32 years, and have you been engaged for the past 22 years by the Bucks Water Board? — Yes.

Inspector Any questions to the joint wisdom of the Bucks Water Board? First Tier Authorities? Other local authorities? Any questions?

Cross-examined by Mr. MacDermot

4048 *Mr. MacDermot* You will see that I am wearing my other hat today! [*Mr. MacDermot appeared on behalf of Wing Airport Resistance Association*] (*to the witness*) May I take it that the assurances given when I was questioning the Great Ouse River Authority about seeing that these additional costs referred to are taken account of in the cost benefit analysis at Stage III, applies equally for the Bucks Water Board? — (Mr. *Cox*) That—I am very much obliged for that, sir. We have not been invited; we shall undoubtedly be invited to submit these costs.

Inspector I just want to make that clear, a point that I made earlier—that there has to be some resolution, I think, of that difficulty—of where the proposed urbanisation is going to be. This problem has to be met. But, subject to whatever may be done in that direction, all costs of urbanisation—and I mean all costs!—will be taken into account by the Commission and all appropriate sources will be contacted to help in that task.

Cross-examined by Mr. Bramwell

4049 Mr. Cox, learned Counsel's queries are, I am sure, supported by all of us as regards the costs! Can you tell me if the developments required in your area are limited, due entirely to the finance available—could you answer those questions separately, please? — (Mr. *Cox*) I think perhaps I should answer that, sir. I am sure that most people know that the Water Board have a statutory duty to supply water to all domestic consumers, subject to satisfactory guarantee under s.37 of the Water Act. Mr. Bramwell, so far as consumers are concerned, subject to the Minister's powers, unless we can see that it would affect domestic supplies, we should have to supply them. So the answer to your question is that we have certain statutory duties to supply water, and my sole reason for bringing finance into it was to point out the fact that it would be an expensive proposition which would possibly mean that other consumers would have to pay for it.

4050 Is it not so that it is essential to be putting forward this sort of thing now, irrespective of the entry of an airport into this area? If you have a trunk water system supplying various areas, a combined water system — (Mr. *Pownall*) We have a great variety of source and they are to some extent inter-linked; but only to a limited extent.

4051 In other words, there are limited sources from which you could draw water at the present time. In other words, if there are any areas in other parts of the country, within say 60 or 70 miles radius, you could not draw on your supplies? — (Mr. *Pownall*) Not at the present time, no.

4052 In other words, you would need a trunk system? — (Mr. *Pownall*) I am not sure what storage you are referring to—

4053 I am not referring to a specific storage, Sir; but, were any available, you could not use it for lack of a trunk system. Do you use the Grafham water? — (Mr. *Pownall*) We take a limited amount, sir.

4054 Do you anticipate stepping out in any other direction for a water supply to linkup—would you know what means of supply are available? — (Mr. *Pownall*) This is primarily a matter now for the Water Board and the two authorities concerned. They are the statutory body selecting sources of water, and it is their determination on these matters which is awaited.

Cross-examined by Major Duncombe

4055 Mr. Cox, paragraph 2, further sources of water, with particular reference to Whitchurch site seven-eighths of which is in the rectangle of the proposed airport site. Now that the initiative for the decision on the siting of the surface reservoirs has passed to the Water Resources Board, what is the timing expected, say, in which a decision is taken on the Whitchurch Site? I have heard 1970–1971. Could you please confirm this? — (*Mr. Cox*) It is round about that date, I would say, but we have no definite information yet. What we have been asked to investigate is certain sources to cover any interim period. At the moment most of the

Printed image digitised by the University of Southampton Library Digitisation Unit

planning on major water supply seems to be awaiting the result of the Thames Ground Water Investigations. Until those are approved I would be doubtful as to whether we will get a definite decision as to whether it will be "yes".

4056 So it would be reasonable to suppose this decision might come about the same timing as Stage V of this Inquiry? — I would think so.

4057 *Inspector* Stage V, for your information, is hoped to be accomplished during the spring of 1970. Any other questions relating to this? Reverting to paragraph 2 can I be clear on the function of the proposed Whitchurch Reservoir—would I be right in assuming that the intention is first to prove the water supply is in the Thames valley, then if that is a suitable source this reservoir would be used to store those waters, as a storage reservoir, is that possibly the position? — (*Mr. Pownall*) I do not know that is the position. I think you are referring here to the Thames Conservancy Ground Water Scheme, and the Thames Conservancy Ground Water Scheme is entirely separate to that. It is a scheme for bringing ground water into the river in order to maintain the flow. The purpose of this reservoir is to store water flows against the needs of a summer drought.

4058 The point is obviously that it is to store water from downstream, and not from the different catchments in the Stewkley area? — No, from the lower reaches of the Thames, mostly.

Inspector I have no more questions. Thank you very much. We shall be in touch, I am quite sure, very shortly, during Stage III.

Are there any Parish Councils that I have forgotten in today's programme? If not it is a very convenient time to adjourn for lunch. After lunch I hope to deal with Mr. Rushton who is one individual, and then the National Farmers' Union.

Mr. MacDermot I think on the latter point, information has arrived that Mr. Wallace is unable to be here this afternoon. He is engaged at a meeting in London, I am told.

Inspector Is that so? In short the National Farmers' Union is a non-starter until tomorrow. I think there is little point in resuming just to hear a single individual so I am afraid all I can say is that I see no alternative but to declare a half holiday, because we have no further business for today. We will resume at ten o'clock tomorrow morning.

(*Adjourned until tomorrow morning*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

WEDNESDAY, 16TH JULY, 1969

THE ASSEMBLY HALL, AYLESBURY, BUCKS.

Before MR. A. J. HUNT

Oral evidence was taken from:

Wing Airport Resistance Association (*Mr. MacDermott, Mr. J. D. A. Fennell, Mr. D. Skinner, Sir Arthur Bryant, Sir John Betjeman, Mr. G. I. Ginn, Mr. V. Osborn, Mrs. A. Morton, Sir Ludwig Guttmann, Capt. D. J. Bellingham, Mr. W. G. Andrews, Mr. T. Hancock, Mr. R. A. Waller, Mr. D. M. Lumb, Wing Commander C. G. B. McClure, Mr. D. W. McQue, Mr. V. J. Scott, and Mr. H. A. C. Evans*)

Stewkley Action Committee (*Mr. G. I. Ginn*)

St. Michael's Church Guild (*Mrs. P. Gallimore*)

Whitchurch with Creslow Parochial Church Council (*Rev. J. E. H. Williams*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Concerning the programme, it has been intimated by Messrs. Ellis Piers and Young Jackson that the Cublington Parochial Church Council are now content to rely upon their written statements and, of course, the usual undertaking about the care taken with written statements apply.

Mr. Robert Bramwell has approached me to say that although his submissions were thought to be part of the Cublington Airport Supporters' Association's Supporters' Committee he wishes to appear separately. I have of course given him leave to do so. Additionally, as Vice-President of the Supporters' Committee he will appear to assist in the presentation of the Supporters' Committee case. I have asked him to differentiate between his own case and that of the Supporters' Committee, and I have no doubt he will do so when the time comes.

Without further ado I will call upon the Wing Airport Residents' Association to present their case.

Mr. MacDermott Before opening the case on behalf of the Wing Airport Resistance Association might I raise one matter on behalf of the Bedfordshire County Council. I am afraid I have not had an opportunity to discuss this with Mr. Millard, so I am speaking solely on behalf of the Bedfordshire County Council, but he may wish to comment on what I say. You said yesterday, and we were very glad to hear you say it that the consultants and experts who are working for the Commission on urbanisation will be making their own assessment of the possible urbanisation implications of the airport on this site which may depart in some ways from the proposals put forward by Mr. Pooley, and which we have been discussing here. You said yesterday it would be the Commission's own conclusions about the most satisfactory form of urbanisation that would be costed for the purposes of Stage III and Stage IV.

Inspector Well, just to clarify that particular point: I thought it right to indicate that the Commission's resources also being limited they would probably wish to cost whatever urbanisation proposals they consider ought to be costed, and not necessarily take on board other proposals by other authorities, but then I am speaking as a single member of the Commission and I do intend to report this matter to the Commission.

Mr. MacDermott That is what I understood you to say, and what I was trying to express, that it would be the Commission's own views on urbanisation which would be costed. I think you also said when it came to costing you would consult with all the organisations and bodies concerned who could contribute usefully to that. The point which I would like to make is this, respectfully, to suggest that it might help to save time at Stage IV, and we are as anxious as anyone to make the best possible use of the limited time available, it might help to save time if during the consideration that your experts are giving to urbanisation proposals if they have different proposals to put forward or to suggest which differ from those put forward by the County Councils, we suggest it would be a very great help if you were to authorise and instruct your experts to discuss in confidence those matters with the planning authorities before they reach a final conclusion. We are not asking, of course, that they have got to reach agreement with us. They have to reach their own conclusions to advise the Commission accordingly, but we feel that if we have to wait, as it were, until they have completed their exercise and the costing has been done that it might defer discussion and argument which might more usefully take place at an earlier stage.

I only mention this because I think it has been the experience of our authority and perhaps other authorities that some of the experts working with the Commission have been a little hesitant, not being quite sure how much it is proper for them to discuss with the local authorities what is in their minds. We would, of course, treat any discussion of this kind wholly in confidence, and we are only anxious to see the Commission have all the assistance that they can have. I therefore make that request on behalf of the Bedfordshire County Council.

Inspector Thank you.

Mr. Millard Well, I would like to make two comments on that. First of all, I personally have had with our technical people an initial interview with the consultants who are doing the urbanisation for the Commission. We did rather understand that we might in fact be consulted informally at a later stage, but if it had an implementum it would merely help in avoiding any inhibitions in this discussion. Whilst I am on my feet I wonder if I might raise another point which was in my mind, and which I also have not had time to talk with Mr. MacDermott about— Of course, this inquiry is taking place on the basis of urbanisation proposals put forward by Mr. Pooley which have been with the other planning authorities and with WARA's technical planners as well. If in fact your consultants put forward entirely different or substantially different urbanisation proposals a problem arises as to whether and when those will be open to discussion. What I have in mind particularly is that by the time one reaches Stage V there will be rather a lot of other material before the Commission at that time and it would be difficult and irksome for any discussions to take place in detail about the urbanisation proposals for the four sites in so far as they might differ from the proposals put forward by the planning authorities.

I do not know whether the Commission have given any thought to this rather important practical problem, but it may be one of very considerable moment if their own consultants put forward something which was really quite different from the urbanisation proposals which form the basis of discussion and consideration before you, sir.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector I hope you will accept, Mr. MacDermott and Mr. Millard, this was precisely the point that was concerning me during the discussion yesterday. I fully appreciate the points that have been made. The Commission has given some initial considerations to this problem, and I had fully intended arising from yesterday's proceedings to raise the matter at the Commission's next meeting on Friday.

Mr. MacDermott I entirely support that; I am very grateful for what you have said.

Inspector Mr. MacDermott, there is just one further comment, presumably of the same kind, just behind you.

Mr. Maxwell (*Town Clerk, Aylesbury*) Appreciating the confidential nature of the early discussions with the County Planning authorities, and limit on the number of people that could be consulted by the Commission at that stage, can we ask on behalf of the urban communities, and I am thinking of Leighton Buzzard as well, that they should not be so confidential that the Planning Authorities cannot also consult the local District Councils in matters which may affect their fine towns?

Inspector I am glad you have formally raised the point, Mr. MacDermott; it is on the transcript, and will also be dealt with by the Commission in due course.

Representations by Wing Airport Resistance Association

Mr. MacDermott As you know, I appear with my learned friend Mr. Phillip Otton on behalf of the Wing Airport Resistance Association; perhaps I may refer to them from now on by their more familiar abbreviation of WARA.

On the 4th March, when the Commission announced Wing as one of the short-listed sites, there was an immediate, vigorous and spontaneous reaction throughout the area by people who were anxious to preserve their way of life, and the countryside they know and love. Accordingly, this Association was formed within a matter of days. From the start they worked in very close harmony and cooperation with the Local Authorities, and indeed at an early date the Chairman of the Buckinghamshire Planning Committee requested WARA to represent the general public, as opposed to the elected authorities, at any Inquiry into this proposal.

Although WARA has among its members a number of well-known local names, I must emphasise at the outset that it is a grass roots organisation; its membership now exceeds 61,000 people, this is the individual membership, and this has been carefully card-indexed, and I think I can say avoids duplication. The organisation comprises a strong local organisation of Local Committees and organisers representing some 15 towns and over 188 villages in Buckinghamshire and Bedfordshire. As an example, perhaps an outstanding example, I would mention the Local Committee which works under the name of Wings Off Wing, which covers four of the villages most directly threatened, immediately outside the airport site, namely the villages of Whitchurch, Oving, Hardwick and Weedon. They have obtained the support of 98 per cent of the population of those villages in active membership of their organisation. That is a very remarkable feat of organisation in this short time, and shows the degree of solidarity that there is.

The objects of the organisation have been firstly to keep people informed of the implications of the project, to raise funds for this campaign, and to coordinate and lead public opposition, and present the Association's views to the Commission. At an early stage they decided that they should themselves present a technical case with the assistance of the best technical advice that was available, as well as making clear to the Commission the strength of the popular opposition.

You told us that you had been visiting the area for some days, and you will no doubt have seen the evidence and fruits of that organisation, and I hope that this will in no way be misunderstood by the Commission. When people's way of life has been threatened, being British people they react, and react vigorously in every way that they can, and they naturally want to demonstrate, to march, to put up posters, put stickers on their car windows, and do anything and everything that is possible and open to them to make known what their feelings are. We know and they know that the Commission have to make, and are making, a most detailed and technical study of all the implications of this very difficult problem, and that careful economic analyses will be made, and these will influence the decision enormously. But they hope, and we all hope, that it will never be thought that the emotions aroused in the hearts of people whose lives are going to be affected will never be considered to be any relevant factor, and so part of our case will be to seek to present to you a picture of what people feel locally about this proposal.

Among the witnesses whom we will call, I will call the Chairman of WARA, Mr. Desmond Fennell, who gives in his statement a history of the organisation, and an outline of its constitution and activities. I would draw attention to the very impressive list of over 180 different societies and statutory bodies who have all asked WARA to represent their interests at this Inquiry, and as you will see, they include some 83 societies and some 99 parish councils, 62 of them in Buckinghamsire, 31 in Bedfordshire, and 6 in neighbouring counties. The societies are voluntary organisations covering a vast range of social activities, Women's Institutes, musical societies, local amenity organisations, every kind of organisation where people come together in order to organise their joint social activities.

Printed image digitised by the University of Southampton Library Digitisation Unit

We could, of course, have called witnesses from each of these organisations; they would have been very eager to come. But we have heeded throughout the Commission's plea to try to avoid repetition, and so the case that we will be presenting will be in the form of sample evidence, given by different people representing different aspects of the community. The case that we are presenting will be in three parts, firstly what I may describe as the reaction of ordinary people in the area, and people who know and love the area; secondly people who will speak to special interests which are affected, and who have asked us to represent them, and thirdly the evidence of three independent experts, one dealing with the noise problem, the second with air traffic control and surface transport, and the third with the problems of planning and urbanisation. May I say that at the outset we have had one difficulty in presenting our case, and that is that we come to this Inquiry, as does everyone else, not knowing more than the barest outline of the proposal itself, and not knowing why the proposal has been made. This, of course, is a departure from accepted planning principles and procedures. We appreciate the reasons that have led to the Commission having to conduct its inquiries in this way. The fact is, unlike planning inquiries, we do not have any witnesses coming forward to explain the proposal, to argue for it, and to submit themselves to cross-examination.

When people read the short-listed sites, in this area they were exceedingly bewildered; they could not understand why this site, which has I think virtually never been mentioned publicly in this connection before, should have been selected. They could not understand why Stansted was omitted but Nuthampstead included; their confidence has perhaps been not enhanced by the introduction of a revised siting for the Thurleigh site, but for the purposes of this Inquiry the real difficulty is that they do not know what considerations led to the short listing of this site.

The result is that in spite of the admirable efforts by Mr. Bramwell, for which we are genuinely grateful, in giving some life to these proceedings, we still do not know what is the case that we have to meet, so if it seems that in some of our evidence we seem to be hitting the air, I can only plead that that is not altogether our fault.

If I could turn to the first part of our case, the reaction of ordinary people, the first reaction was, as I have stated, one of dismay and incomprehension. They simply cannot understand how it is that one of the most beautiful valleys in South-eastern England, the Vale of Aylesbury, could have been suggested as the site for an airport. The members of WARA are fortunate in having to speak for them on this aspect two outstanding masters of the English language, Sir Arthur Bryant, and Sir John Betjeman. Sir Arthur Bryant, who has lived and farmed here for nearly 25 years, stresses in his statement that with the projected development of Milton Keynes in North Buckinghamshire, "the survival of the Buckinghamshire landscape for future generations depends on the preservation of the Vale of Aylesbury". Sir John Betjeman, who I suppose is probably the greatest living authority on the beauties of rural England, certainly the southern half of England, gives it as his considered opinion "that if there were the possibility of an aerodrome near to London which would destroy the peace of a maximum amount of genuine English landscape, only Stansted would be a worse choice".

I would like to draw attention in particular to the statement of evidence of Mr. Skinner, who is a member of the Executive Committee of WARA, and who has perhaps unique opportunities to judge the reactions of the ordinary people in this area, because he combines in himself a number of attributes. He is by profession an insurance representative who estimates that he visits personally one in three of the houses in the area immediately affected; he is Secretary of the Mid-Buckinghamshire Group of British Legion Branches, and he is also General Secretary of the Aylesbury Trades Council. In his short, but you may think remarkable statement, he summarises very carefully the emotion felt by the great majority of people living in this area, their concern about the destruction of the countryside, and their amenities, the intrusion of traffic and development on a gigantic scale, the dangers from air crashes, and above all, the infliction of aircraft noise on their lives.

These people are suspicious, and I will regretfully suggest rightly suspicious, of any NNI contours, of statistics, and of averages. They know that their way of life will be destroyed and they resent it, and they resist it. Nor are they, and I speak here for the great majority, attracted by the employment prospects following from this development. We have heard a few lone voices at this inquiry welcoming those employment prospects. Mr. Skinner will tell you that this matter was considered at a meeting of the Aylesbury Trades Council. I want to make it clear that I am not representing at this inquiry the Trades Council and I am not suggesting that they have studied the matter in depth, but he will tell you that they did have a general discussion, and on the vote, a majority of the delegates present were opposed to the proposal. There is in this area a high level of employment, as you have heard, and a high level of skilled employment, and the main concern among workers in this area is the one of lack of accommodation for their children when they grow up and marry, if they are to be able to remain and work in this area. They believe that the advent of an airport here, with all the pressures for housing, people coming to work in connection with the airport, would make it more difficult and not less for their children to find housing and start their married life here.

Printed image digitised by the University of Southampton Library Digitisation Unit

Sir, I spoke of people's distrust of statistics. I would like to say a word here about the cost/benefit analysis which the Commission will have to make into these four sites. We will, of course, be making our comments upon the very carefully prepared document which the Commission have distributed on methodology; I would not for my part suggest that it is infamous. All I would say at this stage is that people also have a distrust, and again I would suggest a healthy distrust of attempts to express in money terms, things which they value more highly than money, things which they genuinely consider to be priceless. Of course, the sums have to be done, and it is quite right to work out the costs and benefits of those things which can truly be costed.

But at the end of the day, someone—and I suppose at the end of the day it will be the Cabinet—will have to weigh up and decide how much it will be worth spending in order to preserve for future generations part of our priceless heritage. I wonder—I ask it rhetorically—who will be compelled to try and put a price on Stewkley Church. Mr. Rose recoiled from the task. I hope that no-one will seek to cost it at the cost at which it could be knocked down to a Texan oil millionaire, still less that that would be the benefit derived from its removal. I hope, sir, that you have been able to see it. For those who treasure Romanesque architecture, it is of great and unique value, and its destruction is unthinkable. Its loss would be quite literally immeasurable.

We will be calling the Headmaster of Stewkley School, who comes from that village. We will be calling a housewife from Cublington—Mrs. Osborne—and another from Wing—Mrs. Morton; and the Chairmen of the Aston Abbotts and Soulbury Parish Councils, to speak on behalf of some of the parishes who are most directly threatened.

Sir, before dealing with the expert evidence that we will call I would just like to outline to you briefly the case and the witnesses whom we shall be calling to support as to specialised interests. I shall be calling Wing Commander McClure of the Cranfield College of Aeronautics to tell you how the work of that College would be very severely hindered in its operations as a result of reductions in controlled air space. It is possible that the College will have to close down; there is not sufficient information available at the moment to verify that fact, but it is quite clear that they would be severely affected. An additional flying time in order to reach uncontrolled air space would mean that less training surveys would be carried out. Less student training would be possible. The operating costs per student would increase, and training—in particular of private students for pilots' licences—would have to cease altogether. To try and maintain the existing layout of other training would necessitate additional staff and aircraft—again at considerable cost: and he gives estimates of those costs.

Secondly, Mr. McQue, who is Chairman of the College of Aeronautics Gliding Club, will explain why the introduction of the airport at Wing would spell the doom of that Gliding Club. There is no possibility of removal to another site—that is not practicable; and it is clear that they would not be able to continue, with an airport so close at hand. In a wholly admirable appendix, he describes what a healthy and invigorating sport gliding is, and shows how much the members of the Club would lose if their Club was closed down.

We shall be calling Mr. Victor Scott, who is an experienced local naturalist, who will speak to the hazard of bird strike from local starling groups. He may not know much about flight expertise; but he does know about birds. At Aston Abbotts, the roost is estimated to have over half a million birds; the flocks vary from a few dozen to over 20,000 birds. They come in at levels varying from two to three hundred feet in clear skies down to almost ground level in the evening. These birds are extremely tolerant—unlike local residents!—to a very high level of noise, even at night; and it is Mr. Scott's view that it will not be easy to shift them.

Fourthly, we will be calling Mr. Evans to speak on behalf of the problems of the individual schools in this area. He is the Chairman of the Incorporated Association of Preparatory Schools, and Headmaster of the Swanbourne House School. The number of schools involved is of course small compared with numbers of the State schools, of which you have already heard evidence; but the effect on them is likely to be more severe. The parents of children in these schools have a greater degree of choice: they look in particular for peaceful surroundings for their schools, and if they do not find it, they can and will remove their children. Being boarding schools, they have the additional problem of noise at night, and most of them are in comparatively old buildings that do not easily lend themselves to sound proofing. Indeed, two of the buildings at one school are historic monuments, dating from the 16th and 18th centuries. They also have quite a substantial local attendance—a minority of local children—which would make it difficult for them to move to another area. Mr. Evans circulated a questionnaire to the schools concerned, asking them to give their own judgment of how they would be affected; four of them, with 302 pupils, said that they would have to close down altogether. Three, with 478 pupils, said they would try to carry on, but the interference would be so great that their future would be jeopardised. Three, with 380 pupils, expected to suffer considerable inconvenience. Mr. Evans considers that this airport would result in very real hardship for these schools, for their staff and, not least, for the children. If the airport is to come, they ask that full compensation should be paid to any schools that have to close down or transfer, and that the full cost of soundproofing should fall on public funds.

Printed image digitised by the University of Southampton Library Digitisation Unit

Finally from this group I shall be calling Sir Ludwig Guttman to speak on behalf of the Buckinghamshire Division of the British Medical Association, who have also asked us to represent their interests. He is, of course, the world famous former Director of the National Spinal Injuries Centre at Stoke Mandeville, and he will be speaking on behalf of 340 members living and working in this area, who are unanimously opposed to the Wing site. Their position is both personal and professional: personally, there is no doubt that the transformation of the area would lead to a number of them leaving the area, and some to leave the country. From the medical point of view, they strongly support the case so admirably presented by Dr. Reid, the Medical Officer of Health. In particular, they support what he has said about the potential health risk from noise and from air pollution by kerosene fallout. We were glad to hear you say, sir, that the Commission were proposing to check the problem of kerosene fallout, but we fear that there would be relatively little material to check. The fact is that this is a matter, like many other things, about which not enough is known, and there is no certain knowledge. This is one of the unquantifiable risks, but the general view of the Doctors living in this area is to support Dr. Reid in saying that this is a risk which must seriously be taken into account, because experience has so often shown how a health hazard could remain hidden for a long time without its causal effect being known. Sir Ludwig will be able to supplement Dr. Reid's evidence on the effects of noise very directly from his own experience at Stoke Mandeville. Based on wartime experience, it is his considered view that the noise of aircraft could very seriously interfere with the treatment and rehabilitation of patients. This applies not only to the treatment of paraplegics, but also other seriously ill people, especially children, elderly patients, and people suffering from burns.

I can turn now, sir, to expert evidence. I am not seeking to cover, by any means, the whole of the evidence that we are presenting—again, we have heeded your plea to try to avoid duplication. We have co-operated very closely with the County Councils and acknowledge the generous help which our organisation has received from them. In broad outline, we are in complete agreement with their experts, and we adopt and support their evidence on matters with which our experts do not deal. At times our experts give perhaps a different emphasis and go into some matters especially related to noise, which have not been dealt with by the County Council experts. We have not tried to duplicate the special work which Mr. Fleming* did in relation to schools and hospitals. I should perhaps also mention that we have been in close contact with the N.F.U. and with the C.P.R.E., and we have sought to avoid duplicating their evidence. Many of our members, of course, are also members of those organisations, and so the farming aspect and the countryside aspect dealt with by those organisations are adopted by us, and we seek to rely on their evidence.

If I can deal first with the evidence that we shall be giving on the noise factor: perhaps the single item of greatest concern and interest to our members. We shall be calling as our expert, Mr. Waller, who has twelve years' experience of studying noise and other environmental problems associated with the design and construction of airports, motorways, housing, offices, and factories. He has made special research on evaluating the source of annoyance in the home, and it is particularly in connection with this subject that his evidence is directed. Among the main points that he makes are, first of all, to draw attention to the limitations of the NNI index. He accepts, of course, that the Wilson Report* is the information that we have got in this country—it is about the only method that has been tested, but it is based on a survey around Heathrow many years ago indeed, and the Wilson Committee themselves recognised how inadequate a basis that was, and they stated in the Introduction to their recommendations—para. 544 of their Report—that certain discrepancies between the physical characteristics of the noise and the degree of annoyance caused have been established. Much more work is required in this field. We know of course that the Board of Trade are working on the result of a further survey, carried out at Heathrow, I think, last year; it is a pity that that is not available for us at this stage. I hope that the Commission will get as early as possible what the results of that survey are, and also will see and use their influence to see that they are made available as early as possible to the other noise experts concerned in these Inquiries. But it will have that limitation again: that it will be basically a Heathrow survey, and the NNI index is not a predictive measure of what will be the consequence of introducing an airport into an area which has not already got an airport; nor, of course, will the new survey help any more on that problem. We should not make the assumption that people's reactions at Wing would be the same as people's reactions at Heathrow. There is a great difference, we believe, in the reactions of people living in an urban environment, and we hope that the Commission will not be led to conclude that because people living at Heathrow have got used to a certain level of noise, that people at Wing would get used to that after a period of time as well. If one is to make that assumption, one has to make the assumption that the environment and the quality of life in this area is to be allowed to deteriorate to the level at which it is around Heathrow, and that is a very serious assumption to make, as the noise nuisance is relative and not absolute—relative to the general level of background noise. We think it is a reasonable assumption that the nuisance value in an area such as

* p. 1017.

* Cmnd. 2056 (HMSO; 19s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

Wing-Cublington would be substantially greater than around Heathrow, and Mr. Waller has sought to quantify that difference, and you may think he has put quite a conservative figure on it.

There is a widespread tendency to talk of the NNI contours in terms of the effect of aircraft noise upon the average person. We feel that this is unfortunate and misleading. The so-called "average person" here means fifty per cent of the population—fifty per cent of the people annoyed at a given level of noise. That was based on a survey which showed in the area where that survey was carried out that 30 per cent of the people appear to be impervious to noise at almost any level. So if one is taking about annoyance to 50 per cent it means 50 out of 70 per cent were potentially sensitive to noise, and is a very high proportion indeed of the people who are open to effect by the worry by noise.

The Central Office of Information Survey also showed that as people's reaction to noise varies normally there are still very substantial numbers of people affected by noise outside the contours where the so-called average person is annoyed. For example, at 30 NNI, which means outside the contours we see before us there are still about a third of the population moderately annoyed and nearly a quarter very much annoyed. The fact that they are in a minority, albeit a substantial minority, does not mean these are unreasonable people or that annoyance to them is something that can be ignored or discounted, and in the total they add up to a very large number of people.

Using the population figures supplied by the Commission and by the County Councils, and adjusting them to take account of the factors I have mentioned, Mr. Waller has calculated as best he can the numbers of the existing population he believes are likely to be annoyed at both the two- and four-runway stages, and the conclusion he reaches is that at the two-runway stage a total of some 80,000 people are likely to be annoyed by aircraft from this site. That compares with the figures in the Commission's *Site Information* of 5,000 against the heading "Intrusive annoying" and 3,400 against the heading annoying", in the Commission's tables.* It includes substantial numbers of people who are in the 25–35 NNI band, and this is the area where one third of the people are moderately annoyed, and that is illustrated in figure 1 to Mr. Waller's evidence where he has drawn the contours, and it will be seen that area brings in and it includes Ampthill, Linslade-Leighton Buzzard, Thame, Woburn Sands, Cardington, and the eastern outskirts of Bedford. At the four-runway stage his figure is 150,000 people annoyed and, besides the others I have mentioned this, illustrated on figure 2†, will include in addition the whole of the built-up area of Bedford, including Buckingham, Bletchley, Didcot, and a quite substantial proportion of the designated area in Milton Keynes New Town. Of course, the additional population of that area are not brought into the 150,000 conclusion.

Mr. Waller has also considered in some detail two other problems: firstly the question of noise nuisance at night. With respect, he cannot follow the Commission's assumptions that the night NNI contours will be less than the day contours. The Wilson Committee found that at night an equivalent amount of noise was produced by 50 to 70 units of NNI index less than during the day. This means that unless the number of night flights is at least 90 per cent less than during the day more nuisance will be caused. It is well known that the commercial pressures for more night flights at Heathrow have been withstood on noise grounds owing to the dense population affected. We presume that one of the objects of selecting a site in a rural area is to remove this inhibition and obtain the full economic use of the airport; if so, our aviation expert, Mr. Lumb,* based on United States experience, thought night traffic is likely to reach 25 per cent of the day time traffic and by "night time traffic" we are referring to between the hours of midnight and seven in the morning—we can get from him the actual hours. Mr. Waller has therefore plotted the night time nuisance in figure 3 down to 15 NNI. There is a typing error on that plan, it should read that it is on the four runway stage, and not the two runway. It is shown that at the four runway stage at night very substantial numbers will be annoyed by aircraft noise over an area including Bedford, Leighton-Linslade, Leighton Buzzard, Aylesbury, Buckingham, Bletchley, Didcot and, again a large part of the Milton Keynes designated area.

Secondly, Mr. Waller has considered, again separately, the noise effect when the wind direction causes reverse landings and take-offs in the reverse direction owing to the wind being in the opposite direction. This requires an adaptation of the NNI which purists might say is improper, but it is in fact the best that can be done, and it does give a better indication of noise nuisance on those days when the aircraft have to land and take off in the reverse direction. We know now from the evidence that we received from Luton Airport that this occurs one day in four, not as one day in five as was taken by Mr. Fleming in his evidence. Figure 4† shows the effect in the form of noise contours at the two runway stage at the time of the reverse take-off and landings, and a comparison with figure 1 shows that on this one in four the nuisance, for example at Leighton-Linslade-Leighton Buzzard, will rise from the 25–35 NNI band where about a third are moderately annoyed or worse, into the 35–45 where about half are moderately annoyed or worse. The 35 NNI contour will pass through Newport Pagnell, and the greater part

* p. 1001.
† p. 1199.

* p. 1209.
† p. 1208.

Printed image digitised by the University of Southampton Library Digitisation Unit

of Luton will be within the 25–35 NNI band. Also another substantial part of Milton Keynes New Town Designated Area will be affected. Mr. Waller would be the first to recognise the limitations of the estimates and calculations that he has made, but whatever may be those estimates I submit that they do show that it is clear a very large number of people indeed, and many more than are indicated on the Commission's *Site Information*, are going to be affected by noise nuisance if an airport is brought to this site.

I wish now to turn to the evidence of Mr. Lumb, who is our expert on air traffic control and surface transport matters. He has considerable experience of problems in planning airports in the United Kingdom, and also practical experience as a civil pilot. On air traffic control he reaches broadly the same conclusions as Mr. Dunford,* namely that the airport would require a substantial increase of controlled air space, and impose serious restrictions on other civil and military flying. He summarises this part of his evidence by saying: "It would be difficult to find a site in South-east England where integration with the air traffic control system poses more problems, or one where the eventual solution will require more reorganisation of navigational aids and controlled air space".

On surface transport, Mr. Lumb perhaps lays rather more stress than Mr. Sharman† did upon the surface transport problems arising out of the pull which the Birmingham–London corridor site might have for traffic from the west and east Midlands. He does not think that meaningful decisions can be taken on this without origin, destination and modal splits without further work being done on these subjects, and stresses the statistics available from Heathrow are likely to be misleading if applied directly to Wing, while a greater spread of movement, which would result on Wing—for this reason, whilst it might postpone to some extent the saturation of some of the transport links, Mr. Lumb takes the view that eventually surface transport to this site is likely to be more demanding on land usage and cause more interference with amenities, and result in greater cost by reason of this spread in the movement in traffic.

I come finally, and perhaps to our most important evidence of all, that of planning and urbanisation, and I shall be calling Mr. Tom Hancock‡ who is a distinguished regional planner. He is Visiting Professor at Columbia University, consultant planner to Peterborough Development Corporation, and has been engaged on a number of regional planning studies in this country. I think his main points may be stated shortly: the third London airport will probably be the largest single artificially created magnet for expansion and development that can at present be foreseen. It is obvious that the third London airport should be sited, if possible, near an area where urban expansion is both possible and desirable. The Birmingham–London growth corridor to which reference has been made is the outstanding natural growth area in this country, and the government, of course, recognise this by designating Milton Keynes and Northampton New Town and other planned expansions in that corridor. These are planned to play an important part in the total London overspill scheme to move up to a million people out of London. It is of the essence in that scheme, of course, to move jobs with people because if you only move people out of London and leave the jobs behind the result is that other people move in rapidly to fill the jobs and the object of the over-spill scheme is defeated.

If the thought behind the proposal to site the airport at Wing is to take advantage of the growth potential of the London–Birmingham corridor and in particular of Milton Keynes, then, in Mr. Hancock's view, this is a short-sighted approach. Firstly, it wastes what is a unique opportunity for positive planning, namely the opportunity to use the third London airport magnet to draw growth into the area where on planning grounds it is desirable, but which lacks the pulling-power of the strong natural growth area. Secondly, it will mean bringing a quite excessive pressure to what is already the main natural growth area in the country. The problem in the London–Birmingham corridor is not going to be how to promote growth—that I think emerged very clearly from Lord Campbell's evidence, but it is going to be hard to contain it. In Mr. Hancock's phrase, siting of the airport at Cublington would become the match to a powder keg and the results would be explosive. Thirdly, it would erode the policy of using Milton Keynes development towards the solution of the London overspill problem, because it would mean using Milton Keynes not for the London overspill programme of taking the jobs with them that we describe, but attracting population in connection with the airport.

This is neither the time nor the place to argue whether it is desirable to try and make a third London airport also serve the role of the third Midland's airport. I would only say at this stage, we would challenge that view. We do not believe it will help to produce a sensible and balanced national airport pattern, nor would it help towards an effective regional structure, and it would mean the problem of the truly international Midlands or North-Western airport would be being delayed, and it would also run the risk that the third London airport would reach its saturation and the next generation would be faced with the horrors of a fourth London airport.

Finally, Mr. Hancock also concludes that this Birmingham–London corridor itself is an ill chosen

---

* p. 1015.
† p. 1007.
‡ p. 1187.

Printed image digitised by the University of Southampton Library Digitisation Unit

site on planning grounds. It is an essential part of the proper planning of this corridor to maintain the best areas of true countryside, to separate the urban areas, to preserve their identity, and to give breathing space for countryside and recreational activities. An analysis of the sub-region, and by that I mean an area arbitrarily taken by Mr. Hancock, including a 30 mile radius from the site, the analysis of that area shows there is a clear division of employment pattern, population and settlement characteristics running across the south region, along the axis of the airport. It is a real natural boundary at the present time. It is significant that this was recognised by the Maud Commission on Local Government* who foresee that Milton Keynes will greatly strengthen links between North Buckinghamshire and Bedford, and recommended they should be in the same local government unit. The boundary came approximately along the axis of the airport site. They also recognise that the southern sector was strongly under London influence. This is shown by the employment and commuting patterns. In Mr. Hancock's view the natural barrier which this rural area serves against further encroachment of the metropolis would be destroyed by siting an airport here.

Perhaps I can conclude, sir, by reading to you the last paragraph of Mr. Hancock's evidence. What he says is:

> If the Third London Airport is developed at Cublington then the totality and detail of official proposals at local, regional and central government levels published, fostered and progressed during the past decade will be negated with a consequent severe planning "blight" of the area, and a lowering of the authenticity of any further policy proposals in the minds of the people.

That summarises, I hope at not too great length, the main points of the evidence which we will be calling. Owing to the nature of the procedure at this inquiry, it is quite understood and accepted, where proofs are taken as read, it is difficult for the witnesses coming forward here to have the opportunity to convey as they would like to the feelings and concern which they have about the proposal to site the airport here. At the end of the day, this is a human problem, and it is going to affect people, and many people, in their lives. We were very pleased to hear the announcement that there is to be conducted in what time is left a sociological survey to try to assess what would be the effects of bringing an airport to these various sites.

What we also do not know, and which certainly no survey in the time available can tell us is, what will happen to people whose lives are disrupted by having an airport brought to destroy their homes. What happens to these villages, these communities? What happens in the interference with children's education; what happens to the old people when they are cut off from the communities in which they have lived their lives? What does this mean in terms of health and happiness, quite apart from all the matters which can be considered in a cost/benefit analysis? We do not know, but these are among the imponderable factors to which we attach immense importance. We are frightened. We are anxious that the Commission, being immersed as they are bound to be in an enormous amount of technical and detailed evidence, may lose sight of these human values involved.

We have sought in the evidence that we have presented before you to try to give you just a cross-section of what people feel in this area, and we will supplement that as far as we are able in the oral evidence which they will give today. With the assistance of Mr. Otton, I will proceed to call our witnesses. May I mention first that there are a number of bodies whom we represent, who have put in written evidence, and who do not wish to supplement it by oral evidence today. They include the Winslow Women's Institute, the High Wycombe Society, Aldbury Parish Council, the Battlesden Parish Meeting, the Aylesbury Choral Society, the December Festival, the Aylesbury Orchestral Society, and Mr. Fowler, who is the sub-postmaster of Wing.* I think you have the references to their evidence.

Inspector I have read them; I know all the names are there.

Mr. MacDermot May I mention that I am afraid Sir Eric Fletcher is unable to be here today, and so his evidence also will stand as written evidence,† and you will remember he, who is a great authority on Wing Church, speaks of the threat to that Church, and its unique importance for historical and archeological reasons, apart from its beauty. He also, of course, supports strongly the representations which have been made about Stewkley Parish Church.

Inspector There is one point on Sir Eric Fletcher's proof, and that is that in the third paragraph he says: "I understand that the proposals for establishing the Third London Airport at Cublington"—I am not certain whether it is "could" or "would".

Mr. MacDermot It is "could"; what he is most concerned with is the danger that might flow if for any reason the church were demolished. The Commission themselves have said that this alignment of the site cannot be taken as final. Wing is extremely close, and it would not need much change. If, for example, somebody thought you could save Stewkley Parish Church by altering the alignment, but you would also destroy Wing Parish Church, which would be an extremely serious matter for other reasons; also we do not know what the effect on the Church would be from lorry traffic and from vibration of one kind or another.

The first witness whom I will call is Mr. Fennell, the Chairman of WARA.

---

* Cmnd. 4040. (HMSO; 40s.).

* Submissions not reproduced. Available for inspection, by arrangement, at the offices of the Commission.

† p. 1178.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. JOHN DESMOND AUGUSTINE FENNELL* *called*

Examined by Mr. MacDermott

4059 You are John Desmond Augustine Fennell, and are the Chairman of the Wing Airport Resistance Association? — That is so.

4060 Was this Association formed within a few days of the announcement of Wing being included in the short list? — Yes, it was.

4061 Are you organised on the basis of village committees and organisers? — Yes, we are.

4062 With a Central Executive Committee? — Yes.

4063 I think you have up to date figures now beyond those in your statement, of the total membership now of WARA? — Mr. Hunt, if you have observed para. 18, page 4 of my proof, there have now been prepared two additional appendices for the proof; JDAF 3 is to be revised with the latest figures showing the analysis of where the membership is drawn from, and with your permission perhaps that might become JDAF 3A.† In paragraph 19 it should now read that on the 16th July, the Association had 61,766 members.

4064 One knows, Mr. Fennell, in some organisations one can get rather inflated figures of the membership with considerable duplication. Have your organisation in fact card indices of your membership? — Yes, we have been meticulously careful to see that there was no duplication. I cannot, of course, guarantee that there may not be some, but so far as it has been humanly possible to avoid that, we have done so, and should the Inspector and should you desire, or indeed any member of the Commission, to inspect the signatures, the original signatures are seen on the left-hand side of the room, and there is a card index which tallies completely with the signatures that have been provided. The Chairman of the grass roots Committee, Mr. Manning, who had the particular responsibility for this, is standing beside them now.

4065 Does that appendix showing where the membership is drawn from, illustrate how the vast majority of the membership is from the towns and villages directly threatened by this airport? — Yes, we have sought to do that in two ways, first of all to do it by showing the five Rural District Councils principally affected, then at the very end to provide an alphabetical analysis of those outside that area, but we have shown where people come from areas not directly affected; that is on page 12 and 13 of this subsequent appendix.

4066 Does this very substantial membership reflect the strength of feeling in the area about this proposal? — Yes, I hope it does. I have never been concerned with any organisation such as this before, but certainly those who have, tell me that the reaction which there was to this proposal is quite unique for this part of the country, and indeed a number of people think, for any part of the country.

4067 I think you have also brought up to date with a revised appendix the total number of the very many and varied organisations who support WARA, and have asked us to represent their interests? — Yes. I think the corrected figures are that there are 58 societies and 111 Parish Councils, and may I endorse what you said so far as the Societies are concerned, there is a sister organisation of WARA called Wings off Wing. They have had particular responsibility for four of the villages most directly affected, and I appear on their behalf here today as well.

4068 Have you in fact received from virtually all these societies, and from a great many individuals, letters voicing their protest and their anxieties? — Yes, we have.

4069 In order not to overburden the Commission, rather than putting the whole bundle in, have you in fact prepared just a sample bundle of 8 of those letters to illustrate the kind of support that you have been receiving? — Yes, I have. Perhaps I may hand those in. (*Same handed.*)

Inspector Thank you, Mr. Fennell.

4070 *Mr. MacDermott* Is there anything further, Mr. Fennell, you would like to add to what you have put in your written statement? — No, sir, I do not think there is.

Inspector Are there any questions to Mr. Fennell from the First Tier Authorities?

Mr. Millard No questions; I am wondering whether one might be favoured with a copy of those 12 letters?

Witness Of course.

Inspector Are there other bundles of copies? I do not know whether the supporters would like one?

Mr. MacDermott If anybody would like one, we would supply one.

Inspector Any questions to Mr. Fennell from other Local Authorities? From other persons?

Cross-examined by Mr. Michael Gregory
(*Country Landowners Association*)

4071 May I just get the record straight, on the list of local Societies supporting the Wing Airport Resistance Association, I observe that the Country Landowners Association address is given as 7 Swallow Street, London W1; incidentally, it is "Country" Landowners, and not "County" Landowners, but I think it is only right to point out that the supporting organisations are the local branches

* See also p. 1163.
† Incorporated into JDAF 3, p. 000.

Printed image digitised by the University of Southampton Library Digitisation Unit

of Buckinghamshire, Bedfordshire, Oxfordshire, Hertfordshire, North Hants and Huntingdonshire, because Headquarters' policy is to remain rather coy at this stage, and to show their hand better at a later stage in order to be able to protect the interests of their members who might be concerned with other areas. — I accept your point.

4072 I should like also to assure you that it does not mean any diminution of support from the Country Landowners Association. — I am glad to hear that.

Inspector Any other questions?

Cross-examined by Mr. Payne
(Cublington Airport Supporters Committee)

4073 I am E. J. Payne, I am Chairman of Cublington Airport Supporters Committee. I would like to ask Mr. Fennell how he arrived at the figure of 98 per cent in the villages of Oving, Wing, Whitchurch and Hardwick? — I hope I was not misinformed. I was told those by Mr. Alan Lovejoy, who is Chairman of the Wings off Wing Society.

4074 Did he produce any evidence of this fact? Did he give any factual evidence at all? — No, I was prepared to accept his word.

4075 Secondly, on page 12 of your report under "Miscellaneous", you have a number of counties. I presume those are people who are supposed to be against the Airport in these counties of places such as Kent, that is 16, Shropshire with 3. Are not these people quite a distance away from the airport site to be concerned? — Yes, of course they are. We have tried not to look at this on a parochial basis; we have looked at this on two bases, first of all those who were directly affected, but we cannot shut our eyes, if people from other parts of the country wish to lend their support and their assistance, that is the basis on which they were included. It is the basis on which the breakdown has been supplied, so there would be no suggestion that we have been incorporating numbers of people in this part of the world who are not directly affected. I hope by showing it in that way, there can be no such illusion or doubt.

Cross-examined by Mr. Bramwell

4076 Mr. Fennell, we of the Supporters' Committee have been very disturbed about the element of fear brought into these discussions that have been taking place over the past few weeks, and in view of the fact that on our very doorstep, we have disputing evidence in Luton of a lot of the evidence that has been put forward by your Society, why has this evidence at Luton not been verified by your Committees, which apparently are very widespread and influential, I refer to the Luton and Dunstable Hospital; I refer to other institutions in Luton; I refer to the Vauxhall Motors works right up against the airport. Here is evidence which refutes most of the remarks that have been passed around regarding the danger of this airport. Could you please answer that? — I am not quite sure which of your questions you want me to answer.

4077 Concerning the evidence available but which has not been used in refuting evidence that you have put forward concerning the dangers from this airport, insofar as the Luton and Dunstable Hospital have never made any complaints whatever to the Airport. Vauxhalls have never complained to the Airport that their men cannot work. Their planning offices, very expensive planning offices where men have to concentrate on the job, there has never been any complaints from them, therefore this refutes most of the evidence you have put forward on the matter. — May I answer it in two parts. I have never sought nor has indeed any member of WARA, to make any comments about what Luton and Dunstable Hospital has done. Secondly, so far as Vauxhall Motors are concerned, no representations have been made on their part at all. All that I can tell you is that there is on the Executive Committee a shop steward from Vauxhalls who feels this is an extended threat to this part of Buckinghamshire. The only other matter which may or may not be relevant is that the member of Parliament in whose Constituency Luton falls, I think, Mr. Gwilym Roberts, has been one of the most active supporters on our behalf, and has constantly come to try and alert people to the threat that this airport proposal represents.

4078 This is rather evading the issue. Luton Town has a population of over 200,000 and you mention two or three. Is this not ludicrous, such a thing as this, we are aiming at this: an old lady said she was scared stiff about the possibility of the airport coming because the cottage will —

Inspector Mr. Bramwell, this is getting into a disputation again, which it must not get into.

Mr. Bramwell I am merely stating evidence has been available to rebut these things which are taking place, and it has been put in the press, and it ought to be rebutted. There was one man who —

Inspector Please, you have had a lot of latitude; please be reasonable. If you have a question, put it. If you have no question, sit down.

4079 *Mr. Bramwell* I asked does he consider that evidence that has been put forward by WARA on the siting of the airport here is really supported by evidence that he has got in his possession from towns adjacent to airports. — The answer is Yes.

4080 This evidence has not been put forward before the —

Inspector We are obviously in for a trying time; it is very hot outside; let us try and keep cool inside. One more request; not too many bites at the same cherry, please. I did ask this Association—there are

Printed image digitised by the University of Southampton Library Digitisation Unit

only five of you there—to organise yourselves. Please try and put your questions through one person; it is so much better that way.

Mr. W. J. Smith This is a personal question.

Inspector Why do you sit there as part of the Supporters' party?

Mr. Bramwell Mr. Chairman, may I speak on this point. We are all individualists here representing thousands of people, and for one person, this is a very serious proposal. I would like the dispensation to individuals on this Committee to speak, in view of our fewer numbers, to allow them to speak.

Inspector I will do so provided there is no repetition.

Cross-examined by Mr. W. J. Smith

4081 I would like to ask how can you state that WARA have put forward a case and got the support of so many people when only one type of person has been allowed in your meetings? I personally at Wing was refused admission to a WARA meeting because I was known to be a supporter of the Cublington Airport.

Inspector Mr. Fennell, I prefer you not to answer that question. This Commission is considering the reports that have come to us about victimisation in this matter; we have no evidence of this, and in any case, we have no responsibility for law and order in the Wing district at this hearing, which has the special purpose of ascertaining what local people think about the proposal, that is the issue here, so please do not look over your shoulder at what happened before, but later on express your views about the coming of the airport.

4082 *Mr. Smith* What I actually mean is how can you say that you have people in support of the airport not coming to Wing, when they only hear one particular point and are not allowed to hear anyone else's point due to the fact that we have not the funds to establish meetings, etc. as WARA was?

Inspector Before the witness answers, we cannot organise local opinion for you. I am here to hear what you have to say, and I will do so in due course.

4083 *Mr. Smith* I appreciate that. — The answer is this. I have no personal knowledge about this incident which you are speaking about, and if again, for which I have no evidence, there has been any threat or violence, I deprecate that, and deplore it completely. It has no part in our case or its presentation, but I do not know whether the meeting you speak about was a public meeting, or whether it was a meeting of those who were against the airport. If it was a public meeting, and you were excluded, that clearly was extremely wrong. If it was a meeting of those who were against the airport, then possibly you were not to be counted amongst their numbers, you might not have had anything constructive to add to the proceedings, and possibly, I do not know because this is speculation, you were not invited to it anyway, but I am afraid you are asking me to speculate.

4084 I had and still have in my possession an official form received from the Committee inviting me to this meeting, and on me stating it was for people who did not want the airport to come, and people who were undecided, and arguments against, how can you give people a full unvarnished appearance and picture of the airport when it comes to Wing when only describing one side of the question. — I have never envisaged it as part of our organisation as a resistance body to go round the countryside organising supporters; I would have thought we could have left that to you.

4085 You did that very well —

Inspector Mr. Smith, the real thing that matters is that you are now here, and I have assured you, you will have an opportunity to state your point of view, and it is the Commission that matters, initially, anyway.

4086 *Mr. Smith* Mr. Fennell seems to be evading the question I will just let that lie at that.

Cross-examined by Mr. Payne
(Cublington Airport Supporters Committee)

4087 I would like to ask one further question. I was just looking at your proof again; I notice you have quite a bit of support from towns and villages in Oxfordshire? — Yes.

4088 I would like to say that it seems rather strange that those villages and towns which are in close proximity to the United States Air Base, which I believe is a Bomber Command base at Upper Heyford, did not show very considerable support; there is Lower Heyford, and I am afraid I cannot find Upper Heyford at all. Now would you explain this? Let us not forget as most aircraft enthusiasts know, a bomber in actual fact has a higher noise rating than civil aircraft. — I did not know that.

4089 This is true, but do not you think it is rather strange, you have not got such a lot of support in that area? — No, one cannot account for any particular pockets of support. It may be because there is nobody in WARA who is aware of it, it may be that there has been nobody there who has formed a local WARA Committee, I do not know.

4090 *Mr. Payne* It just seems rather strange to me, that is all.

Mr. Bramwell I would like to explain something. This reflects on your department here. Up to now I have spoken a lot, I may have helped you in many ways. We as a Supporters Club have been supplied

Printed image digitised by the University of Southampton Library Digitisation Unit

with only two lots of these statements—two. We are all living in separate domiciles, separate homes, and I have been independent on this matter from the onset. I did not receive independent supplies, I had to go and collect them from someone else. Our Chairman, who lives in Bletchley, did not receive independent supplies, I had the supplies that were sent to him at a different address. Only Mrs. Walsh in the village of Cublington was given a set. We have other people who sent independent statements to the Commission, did not receive independent supplies, themselves. This is one of the reasons for what seemed to be the rather disjointed way of presenting our case.

Inspector Mr. Bramwell what did the person do who received the documents?

Mr. Bramwell We were informed they had received them, and we had to go to that home, or take them away, in order to discuss them.

Inspector Did the person concerned get in touch with the Commission and explain the difficulty?

Mr. Bramwell I got in touch with the Commission personally; I did not get any further documents, I questioned the Post Office authorities if they had any parcels at our office; they said everything has been delivered.

Inspector Is there a letter to the effect that somebody from your Association approached the Commission for another set, or one more set of papers?

Mr. Bramwell I thought the quickest method was to ring Miss Wall on this; I think she will confirm I did contact her on it.

Inspector We will look into it. Are there any other questions to Mr. Fennell? I have no questions, Mr. Fennell. I would just like to say that the Commission is concerned with people, and we are obliged to your Association for all the work they have done to bring all this material before us. Thank you, very much. — You are very kind.

(*The witness withdrew*)

Inspector Before the subsequent proceedings—I think you will have found Miss Wall very helpful, and I think you will find that the papers will be found.

MR. D. SKINNER* *called*

Examined by Mr. MacDermot

4091 Your full name is Dennis Reginald Skinner? — Yes, sir.

4092 And you are a member of the Executive Committee of WARA? — I am.

4093 As I said in my opening—are you an insurance agent, the General Secretary of the Aylesbury Trades Union Council, and Secretary of the Mid Bucks (Vale) Group of British Legion Branches? — I am, sir.

4094 In addition to that, apart from the various public functions you perform, are you Group Treasurer of the Scouts Association? — The local branch, sir—yes.

4095 And as a result of all your local activities and work, do you come into contact with a very large number of people in this area? — I do, sir.

4096 And have you in your statement attempted not to put forward personal views so much as to give a picture of public opinion in the area, as you judge it from your contacts? — That is what I tried to do, sir.

4097 There is one matter in particular I would like to ask you to deal with a little further, and that is: what the reaction of working people, industrial working people and organised working people, in this area is? We have heard a lot, of course, on behalf of the villages who would be affected; you perhaps are able to tell us a little more of the people who either live, or certainly work in industry, in the surrounding towns. What do you judge to be the reaction of those people? — Well, sir, the people who live in the villages outside Aylesbury, as I have said, are really against the airport. I would say that possibly all the thinking people—and in my job I go to people who do think of the future, I see people who think about the future, as an insurance agent; and they do not want the airport. Of the other people I would contact, of the men, I would say ten, twenty per cent, "well, without looking too far ahead, the airport may be a good thing—may be". Of the women—I have met perhaps five women who said they would not mind the airport. I think every other woman in the area, in the villages, are against the airport.

4098 And what about the people who work in surrounding towns? — Well, I have spoken to people who mostly work in Aylesbury —

4099 That is a fairly good example! — And again, most people, when they think about it, do not want the airport. They are people living in Aylesbury itself, mostly in Council houses, by the way; most of them on the South side of the town, who are away from what appears to be the noise area—if you believe these figures. They can see the airport might have some advantages in the short term. There must be some people who would be looking to advantages in the way of higher wages and job opportunities.

4100 What sort of proportion—it would be only hazarding a guess—what sort of proportion of the working people would you say are taking that view, that they would welcome the airport for those reasons? — I only deal with trade unions, that is all

* p. 1172.

Printed image digitised by the University of Southampton Library Digitisation Unit

I can give a basis on, because I do not go down Aylesbury itself, although my colleagues do, and again they give me some idea of the figures; but on a vote at the Trades Union Council Meeting, which was not a very full meeting because there were some organisations not there—one big organisation was not there because it was discussing the airport—and this voting showed that the unions were against the airport—if that organisation had been there, the voting would have been much more. The Transport and General Workers—one of the branches—they were there, they had an unusual number of representatives there that evening. The resolution had not been sent, but it was in its right form, so the President could not take note of that resolution, but the representative of the National Union of Journalists himself stated that he himself was for the airport, as he would sell more newspapers—although he again stated that the unions were against it and were against the airport coming to Wing. They forced the issue and the vote was taken, and in the end the majority were against the airport.

4101 And in your view, does this reflect the general view of working people in this area? — I would say it does reflect the general view of working people in this area. I would say some people want it for their own point of view, but the majority of people, if they think ahead a little bit, knowing how Aylesbury and this area have developed, and needing and wanting more amenities, know that if the airport comes it is going to be extremely doubtful if they can get the amenities straightaway—we have seen schools being built for the population, and being overcrowded before they are opened; we have seen planners getting approval to do things making the working classes very suspicious; so therefore they are slightly suspicious of any plans and any figures.

4102 Thank you.

Inspector Any questions from the First Tier Authorities? from other local authorities? from any other parties?

Cross-examined by Mr. Payne

(*Cublington Airport Supporters Committee*)

4103 Mr. Skinner, you did mention that you dealt mainly with trade unions. Could you tell me what percentage of persons employed in industries in Aylesbury—everyone in Aylesbury are in trade unions? — I do not know. I think in Aylesbury that I deal with in trade unions—all I know is that the trade union council represents 5,000 trade unionists in Aylesbury District which, I would say, is a considerable number of employable people.

4104 But people not in trade unions could be in support of the airport? — Oh, certainly.

Inspector You are making a statement, Mr. Payne: you may do that later on.

4105 *Mr. Payne* Yes, certainly. (*to the witness*) I would like to ask you—you said that a newsagent would sell more papers. Surely the airport would provide bookstalls, controlled by the larger companies? — The airport —?

4106 You are trying to say that a certain member of the trade union council would make more money from newspapers. What you insinuated — — No— I am just saying what he said.

Inspector We shall never hear, Mr. Payne, who the newspaperman really was!

Cross-examined by Mr. Bramwell

4107 Mr. Skinner, as a trade union man who represents a considerable number of trade unionists, as you say, would you care to give the Assembly the proportion of votes for and against at your Aylesbury trade union council meeting on this subject? — I do not think I can.

4108 I have the figures here, I have been given them by a member in this hall, of 8 for, 9 against—a majority of one. This, I believe, was published in the press at the same time. It does not support your claim that the great majority of people are against the airport—8 to 9!

4109 *Inspector* I think the first part of this question is: are you able to accept that the voting, as reported, was 8 for, 9 against? — Certainly, I would say.

4110 *Mr. Bramwell* You were present at that meeting? — Yes.

4111 And you were the majority of one? — Yes.

4112 Would you say that that indicates a good cross-section of the voting likely to be put before it? — There were many delegates present who did not vote—four delegates belonging to — (inaudible), one from the ETU, one was a Vice-President —

Inspector Mr. Skinner, could you move a little closer to the microphone, please? — there is some difficulty in recording what you say.

Mr. Skinner Yes. So therefore I say that at that particular meeting, at which 26 delegates were present, which represents 13 branches—that was the usual voting. It was not an official Resolution—

4113 You are seeking to qualify this decision, but the point is this: would it not be possible that those who were present could equally have voted in a similar line—9 to 8—in a similar sort of vote — — As I have already stated, there were only 26 delegates present—if they had those present who were at the discussions on the resolution of the airport, and if they had come and had voted against the airport, as they were entitled to do, then I am afraid the voting would have been considerably more.

Printed image digitised by the University of Southampton Library Digitisation Unit

4114 You will admit that a 9–8 majority is not a very significant one? — I agree, but against that there is the fact that at that meeting this resolution was brought up without the knowledge of any other delegates present, so therefore they had no time to discuss it properly at their branch meetings.

4115 Do you deplore that this information was released to the press, for general information? — I deplore it, yes; but it is entirely up to the members' people, and if they think it should be put in the paper, that may be so.

Cross-examined by Mr. W. J. Smith

4116 Being a member of a trade union, ETU, who had a deputation at your particular meeting—surely you know as well as I do that the deputation of trade union membership does not represent a percentage of membership of trade unions. The trade unions are non political and absolutely unbiased, in any definition of any form of politics —

Inspector I think that is a statement. I think, Mr. Skinner, you are being asked to say whether you agree with it or not.

4117 *Mr. Smith* Could I ask—how could Mr. Skinner say that his delegates represent even on an 8–9 basis, the feelings of the members as regards the area in relation to the Airport? — I cannot say that. All I am saying is what actually happened at the meeting. I deplore the number of people—as I said before, it was unfortunate that there was this other meeting held that night. I would agree with you that there should be more people there—that is democracy for you. At your ETU meeting, for instance, I have no doubt that out of your 200 members there may have been 10. Perhaps five voted for the Airport, four against—and one not interested. That is democracy for you.

4118 In my particular branch, there has never been a discussion at all on the airport. — No, there has not. I assume that your Branch was not interested.

Inspector I do not think we can carry this much further.

Further cross-examined by Mr. Bramwell

4119 Just one question, if I may—in this time of ours, people—men and women—are classed as no longer indispensable. Nowadays it is stated generally that no man or woman is indispensable. Would you agree, Mr. Skinner, that in a factory you have got people on particular jobs who are virtually indispensable, and their absence would make production very very difficult —

Inspector What on earth has this to do with the subject in hand?

Mr. Bramwell Sir, the subject in hand is this: if you look around this hall —

Inspector The subjects in hand are the local implications of a third London airport.

4120 *Mr. Bramwell* If you look around this hall now, how many engineers working in Vauxhall and places like that are represented? They are busy working, and that is why our members are looking to what we say here. They have jobs to do, they are needed there, and we said, "you stick to your jobs", although they would have liked to be here. I am just asking Mr. Skinner to give some information on this matter—are some of those workers in these key industries, are they on shift systems or what? — Well, sir, Vauxhalls—do they work a shift system there? do they work three shifts or two?

4121 *Mr. Smith* As a Vauxhall man, I can definitely say that Vauxhall work a two shift system, a day and a night shift. I was working from 8.30 last night until 7.30 this morning, and I shall be working again tonight — — Therefore I shall say that anyone who wants to come to support you —

4122 *Mr. Smith* I would like to —

Inspector You can make your comments, and tell us what you know about the inability of the people to take part in your case, during the presentation of your case.

Mr. Smith I would mention that many are on days —

Inspector You tell us this in due course. That is what you are here for.

Mr. MacDermot I have no questions, Mr. Skinner. Thank you.

(*The witness withdrew*)

SIR ARTHUR BRYANT* *called*

Examined by Mr. Otton

4123 Sir Arthur, your proof of evidence has already been submitted to the Commission. You are a historian—is that right? — Yes.

4124 And an Honorary Doctor of Law of the Universities of Edinburgh, St. Andrews, and New Brunswick, a Fellow of the Royal Society of Literature and of the Royal Historical Society—is that right? — Yes.

4125 You have also held a number of distinguished positions in the study of history and literature, and is it right that for the past thirty or more years you have been a regular contributor to the national newspapers and periodicals? — That is so.

4126 I think you have lived and farmed in this area for at least forty years. — Yes.

* See also p. 1174.

Printed image digitised by the University of Southampton Library Digitisation Unit

4127 And you have a wide personal knowledge of the county, its topography, and history; and particularly of its central strip, known as the Vale of Aylesbury. — That is so, yes.

4128 Sir Arthur, how do you view the prospect of the proposed third London Airport being sited at Cublington? — Well, of course I can only speak as a historian and a lover of the rural Buckinghamshire. What naturally disturbs me is the fact that the alignment of the runways—which is, I think, dictated by geographical factors which are inescapable—would in fact make the whole of the Vale of Aylesbury, from Woburn in Bedfordshire to Thame in Oxfordshire, a corridor of continuous noise. Apart from the disruption of villages in this eastern end, and the transformation of the Vale from a scenic area of great beauty—perhaps more beautiful than any other area that I know of, within fifty miles of London—at present almost completely unspoiled as far as scenic beauty is concerned, and the end of the Vale of Aylesbury as it has been known by ourselves and our ancestors; I have said all this in my statement and I won't worry the Court by repeating it. I do feel that very careful consideration should be given to the question of whether it is worth, should this particular area be chosen, destroying something of permanent importance to the country, including of course the area producing, in a most efficient manner, the most important of all the important commodities needed by Man—food, in order to provide a technical medium which is, I would have thought, with the rate of technological progress, almost certain to be superseded within the next half century by some less wasteful manner of getting aircraft onto and off the ground.

One other point which has occurred to me since I prepared my evidence—I see it has been suggested that it would be more convenient to business men in the Midlands area to have an airport situated at Cublington than to go to an airport which might in other ways be more convenient to the country, and cause less damage to the country, at a greater distance. I would like to make this comment: that it does seem to me to show rather a lack of proportion to suggest that three villages at least should be demolished and their inhabitants turned out of their homes and their farms, a whole area of great scenic beauty and great agricultural productivity, transformed, and a planning programme of four counties and three important towns overridden, merely in order to provide greater personal convenience to those carrying out the very important duties of our export trade: for it would not itself endanger the export trade.

Inspector Are there any questions from First Tier Authorities? other local authorities? any other parties?

Cross-examined by Mr. Payne
(Cublington Airport Supporters Committee)

4129 Sir Arthur, I would like to ask you just one question, if I may: as a farmer, could you tell me the chief crop of the area? — I can only really speak for my own limited farming experience, as that of a dairy farmer; so far as I am concerned, the chief crop is milk. But whether this is the chief crop of the area, I am not in a position to say. I would have said that dairy and cereal farming—but I speak merely with personal knowledge—about 50–50—but I do not know.

4130 I have been informed that one of the chief crops is barley. Surely, barley is not used so much for the manufacture of food as for the manufacture of beer?

Inspector But beer is a food, is it not?

Sir Arthur I am ashamed to say that I am not a beer drinker myself, so I cannot answer that question. But I would have thought it was a food.

Inspector Seriously, Mr. Payne—the NFU will be giving evidence later, so you may like to address your questions to them.

Mr. Bramwell Mr. Chairman, the thing that Sir Arthur has just told us is very interesting, but it is not included in his statement. If you grant to us the freedom of speech that he has had, we will be very pleased.

Inspector I am allowing people to add sufficiently to their proofs, and that will include you.

Mr. Bramwell Thank you!

Cross-examined by Mr. W. J. Smith

4131 This valuable land in the Vale of Aylesbury—is it so valuable that in a recent paper a flying club is going to instal a flying field for aircraft on this very land, where the Roskill Commission think to put an airport? is the ground so valuable that it can be used for this purpose? — I am afraid I know nothing about this at all, I cannot answer. The only thing I can say is that obviously an airport which would be three or four times bigger than Heathrow, quite apart from the very large area of ground which would be transformed into urban land—which possibly you yourself would not object to—would immobilise a far vaster area by the continuous noise overhead. I know what the noise in the neighbourhood of Heathrow is, and I can well visualise what the noise would be in an area literally stretching from the Oxfordshire border to the Thame; and to the people who live in that area who know that it does include some of the most beautiful scenery in England —

Interjections Hear, hear!

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector We can, I think, do without interjections. I have no questions; I think any questions of agriculture can be dealt with, again, by the NFU in due course.

(*The witness withdrew*)

SIR JOHN BETJEMAN* *called*

Examined by Mr. MacDermot

4132 Sir John, you are, I believe, a Member of the Royal Fine Arts Commission, and I think this is not in your written statement—you are a Trustee of the Historical Churches Preservation Trust. — I am.

4133 And one of the Central Council for the Care of Churches, and I think you are on the Oxford Diocesan Advisory Committee, which includes North Buckinghamshire. As is well known, you have made a very widespread study of the beauties of rural England and English villages and English churches. — Yes.

4134 I think you also, many years ago now, wrote an illustrated guide to this part of the country, with illustrations by John Piper; and I think that was recently brought up to date. — It was not brought up to date very lately; it was published shortly after the War, and I should think I would change a lot of it now, if I read it through again with great care, because things have changed so much.

4135 Sir John, I want to avoid repetition of what is in your written statement; but you do conclude—and I quoted it in my opening, by saying that if one was to choose an airport site, which would do the maximum damage to the English landscape, only Stansted, in your view, would be a worse choice. Until Sir Arthur gave evidence just now, we heard relatively little about the importance of the beauty of the countryside in this area. Can you tell us why it is that you attach such importance to this valley? — Because North Buckinghamshire and the parts of Bedfordshire up to Woburn—that very beautiful Georgian brick town, which I suppose is better even than Petworth in the South of England, as a perfect town. It is a real country. It is not at the moment tourist country, and it is an essential lung for people who have to live in industrial places to get into. That is where you can hear birds and hear your footsteps, with small box hedges, the honeysuckle at this time of year, and to industrialise it is to industrialise something we cannot spare.

4136 Are there many such places of this quality left in south-east England? — Not so in the south-east of England, no. Except round in Essex and the Hertfordshire borders, that is to say the Stansted area.

4137 I think that you have had an opportunity to read Sir Eric Fletcher's statement* about Wing Church. — I have not, no, but I do know the church.

4138 You know the church itself, and the work he has done on it, no doubt? — I also know Saxon churches such as Wing are very rare indeed. Wing is irremovable. These churches are very strange in Saxon times—there were about only four churches to equal it at that date.

4139 As I am sure you are aware, Wing Church itself is at present just outside the suggested area of the airport itself, but the Stewkley Church, of course, if this airport comes there would like the whole of the village of Stewkley have to be destroyed. — Yes.

4140 Would you like to comment from your great knowledge of churches on what that threat represents? — I think that Stewkley Church is one of the—well, you can put them in single figures—perfect Norman Churches in the country; Burfordston comes near it, Burfordston in Oxford, and Stewkley—and it was beautifully restored by George Edmond Street, the architect of the Law Courts in the late 19th century, and to take it away, it would be like taking away one in your own parish, your own favourite building. So far as Buckinghamshire is concerned it is the Norman building, and as far as England is concerned it is one of the only perfect Norman tripartite churches. I would like to add one other church that is going to be destroyed, because it is a perfect one in its way—I hope you do not mind my mentioning it, Dunton, a nice dim little church, like a village church used to be in the days of Cowper's water colours; the chancel is Victorian, but the west gallery and the box pews and the clear glass are very rare. There are never more than six in each county of that sort.

4141 You must have studied this area in great detail at the time when you were preparing your guide book. What were your reactions and impressions when you returned again recently to visit it in connection with your evidence for this inquiry? — I was enchanted by the way it had not been changed: the trees, and the fields, and a great many of the farm buildings were still there, and I went to a place, to Whitchurch, and Oving, and Hoggeston, a perfect group of villages, they were a relief after coming out of Hendon or somewhere to find the real thing.

Mr. MacDermot Thank you. If you will wait a moment there may be other questions.

Inspector Any questions from the first tier authorities? From other local authorities? From any other persons?

Cross-examined by Mrs. Kelty

4142 I would like to ask you, Sir John, why since this airport threat has been hanging over the area,

* See also p. 1176.

* p. 1178.

Printed image digitised by the University of Southampton Library Digitisation Unit

why the sudden interest in Wing Church, because it is in a disgusting state, nobody has ever bothered about it before, and there is hardly any attendance. I have lived in Wing all my life, and I do not go. — That often happens.

4143 But this is beyond the point. Since this threat of the airport everybody is concerned about Wing Church. — I suppose it is because—Can I answer that? I suppose it is because they suddenly realise it might go.

4144 Yes, but I mean, there is so much money collected to fight against the airport, why did not somebody think of collecting to help keep the church in a condition which it should be kept in? That is what is puzzeling me over these churches.

4145 *Inspector* You are doing very well, you have put your question. Wait for a reply. — I think the Historic Churches Preservation Trust has given a lot of money to churches of this kind. I cannot name them now. I was not expecting that question, but, of course, I have given money myself to Wing, dropped it in the box many times and I have been there more than once.

4146 *Mrs. Kelty* Well, a short time ago a person in Wing died and she left money for the upkeep of the church. Her sister—I know she is a WARA member—she was very concerned about the church, nobody would bother to do it up, and she was wondering what was happening to the money her sister had left for the church.

Inspector I do not think Sir John can help you on this point.

4147 *Mrs. Kelty* No, but all I want to point out is now everybody is concerned about the church, and this is one thing that I want to ask about. — Everyone is concerned about the church. I think people are beginning to like something other than just money a bit more, and they are just beginning to look at things of beauty, and buildings.

4148 It has taken long enough I must say. — Yes, this thing may help it.

Cross-examined by Mr. Smith

4149 Sir John, I would like to ask a question. It is a very short question. Why all of a sudden the churches —I am a Christian, I have been all my life but I have never been to Wing Church except for weddings, funerals. Why all of a sudden protection of Wing Church? What is the actual damage that one would expect will be done to Wing Church? We know Cublington and Stewkley will have to be demolished, but it is like a box of fruit, you always get one or two bad things. What will be the damage to Wing Church, that is the main question? — I don't know about the damage to the building, I should have thought why there has not been sudden interest in Wing Church— I should say there has been continuous interest or it would not still be there for over a thousand years. I hope it will go on.

4150 But what will the actual airport do to the Church, that is my question. — What will it do to the church? Oh, I should not think it will do very much damage. I do not know, but it depends on the foundations. I have not examined them, I am not a structural engineer. I think somebody who knew about it could tell you.

4151 I will grant you this; in that case why is so much imagination being given as regards the damage of churches of the beautiful churches round here if the airport is doing no damage to them? — People have gone into that question, on the effect on buildings, and it is not until you have to go into detail you find out people do find out about that sort of thing. A lot of research is made into it. We have to do it about cathedrals where a heavy aeroplane, the Concorde could pass. The Central Council for Churches know about that.

4152 Would you define Exeter Cathedral as a beautiful church? — Yes, of course.

4153 I went to Exeter Cathedral two weeks last Saturday when the Air Display was on, and I asked the local people, and there seemed no change or falling down of the churches round that area. This is exactly the same thing as we would have in Wing if the airport comes.

Inspector I know it is difficult, Mr. Smith, but you are making assertions, and you can make them in due course.

Cross-examined by Mr. Bramwell

4154 I am very pleased to make your acquaintance, Sir John, in person if at a distance. It has usually been a voice that I have heard.

Inspector You can get closer later.

4155 *Mr. Bramwell* It has been very pleasant to listen to you, but following on Mr. Smith's questions, has there actually been any reports published of damage done to any public buildings, particularly the large buildings such as St. Pauls and other churches in London, which have been subjected for scores, or hundreds of years to traffic of one description or another which would affect the foundations, of which you are aware? Regarding Wing Church has there been any report which has shown any detrimental change or damage to foundations of these large buildings in London? — Yes. St. Pauls, of course, the underpinning of that was a very serious business.

4156 Of course, that is a case of traffic absolutely on top of the building itself, and has there been any other building of such size, such as the Law Courts, and that sort of thing—has there been any defect in those? Any difficulty? — The Law Courts are fairly new, they were finished in about 1881, and so I

Printed image digitised by the University of Southampton Library Digitisation Unit

cannot tell you, but I should think by the 19th century people knew better about foundations of large buildings and towns. After all, in the Middle Ages and even in the 18th century, they were not expecting a lot of traffic and they were not expecting a lot of noise overhead other than that of birds.

4157 Furthermore, sir, you would no doubt be interested to hear that I have honeysuckle and wild rose growing in my hedges. — Very nice.

4158 I have thistles on my land which are frequented by the goldfinches, but mine is a very isolated spot. All the hedges have been cut down roundabout. — Oh dear.

4159 And as you are aware, there are thousands and thousands of miles of hedges cut down in this country, eliminating the homes of millions of prospective birds. — I quite agree.

4160 And I believe you are a person who has taken this to task very greatly. Yesterday, unfortunately, you were not present, and we had remarks from the River Authorities regarding the growth of algae in our polluted rivers due to nitrogen and phosphates getting into them. Are you aware of any serious investigations taking place as to the detrimental effects of intensive farming on the bird life and pollution of our rivers?

Inspector I do not think this is a question for this witness. He has not given evidence on it.

4161 *Mr. Bramwell* No, but you have been lax in certain respects, sir, and Sir John, as I have, has a very wide field of knowledge of all sorts of things. I am wearing two hats today: as an individual, and as a member of a cast. Yesterday you granted a certain amount of freedom to a gentleman who is also wearing two hats. I was just asking if this could be extended to me.

Inspector What is the question?

4162 *Mr. Bramwell* The question is, has Sir John, who has wide knowledge of all sorts of things, any information as to the spoilation of the countryside by intensive farming methods?

4163 *Inspector* What has this got to do with the third London airport?

4164 *Mr. Bramwell* With London airport, one of the biggest questions being asked at the moment is the taking of valuable farming land, in this particular plateau we are discussing, the water shed drops into the Ouzel, and the Thame, and under those circumstances any sort of spoilation from the airport could be controlled by intercepters, but there are not any to stop any sort of intensive cultivation fertilizers getting into the river through intensive farming. I am only asking if there are any studies being made on this particular spoilation. — The answer is "yes".

Cross-examined by Mr. Payne

4165 I would like to say, Sir John, I think what Mr. Bramwell was trying to outline was the effect of fertilizers and intensive farming methods. Does it have a greater effect on the dissipation of wild life than an international airport in the district? — It could if the hedges were destroyed and the trees were cut down and there was nothing but siloes and the smell of silage.

Inspector I have no questions, Sir John.

Re-examined by Mr. Otton

4166 I do not know if you are aware, Sir John, that in fact some £5,000 has recently been spent on Stewkley Church? — I do, yes.

4167 Are you also aware that in fact the government has been carrying out detailed investigation on the effect of supersonic aircraft on all sorts of buildings, including churches, but the results of this are not yet published? — Yes.

4168 I suppose if the inhabitants of Wing felt they could no longer live there and departed and left an ancient monument in the shape of Wing Church there that would be a very sad occasion. — Yes, because a church is dead if it is not used—It is not dead, I am sorry. It is not dead, it goes on without people in it, but because it is being used and while there is some Christian families, churches must still go on standing up.

(*The witness withdrew*)

MR. GEOFFERY IVOR GINN* *called*

Examined by Mr. Otton

4169 May we have your full name? — My name is Geoffery Ivor Ginn.

4170 And you live at the School House at Stewkley? — Yes.

4171 You are also the headmaster of Stewkley School? — Yes.

4172 Is that the only school in the village? — Yes.

4173 Is it a four-teacher school? — Yes.

4174 With some 124 infants and junior pupils? — Yes.

4175 How long have you been there as headmaster? — This is my sixteenth year.

4176 Can you tell us a little about the school itself? — Well, the school is just over one hundred years old.

Inspector I think we should avoid trespassing too much on what is already in the written proof.

* See also p. 1179.

Printed image digitised by the University of Southampton Library Digitisation Unit

4177 *Mr. Otton* If you please, sir. In your position as headmaster for 16 years, have you had your finger on the pulse of village life, and in particular how it affects your school and school children? — Yes. It is a great advantage to live in the village. So many of my colleagues who are headmasters and headmistresses live somewhere else and come to the village to work. I think this is a great mistake.

4178 How have you felt the reaction of the villagers and children to the prospect of a third London airport being sited at Wing? — Well, we have done a count in the village and it seems that there are 98 per cent of the population totally and completely opposed to the siting of the airport, and this is not surprising because if it is put where it is proposed to put it the whole village will come down and everybody will have to move.

Inspector Any questions from the first tier authorities? Other local authorities? Any other parties?

Cross-examined by Mr. Smith

4179 I would like to ask you—you have lived in Stewkley for 16 years? — Yes.

4180 As headmaster of the school? — Yes.

4182 Can you give the percentage of exactly how many of your pupils over the past 16 years now reside in Stewkley in relation to the number of people who left the area due to lack of work? — I can't answer that question. People have left, some have stayed. Why they have left the area I really could not say.

Cross-examined by Mr. Payne

4183 Could you possibly tell me what your village has to offer above any other village? What I am trying to get at is, and put in normal words is, what is so special about Stewkley for it to be preserved above any other village in this country which may be replaced by a large airport, apart from the church? — I can only answer that personally I was not born in Stewkley. It was my misfortune. I hope I shall be allowed to put my bones there. All of us who live in Stewkley love Stewkley. To us it is a very special place, and there are 1,225 people who do not intend if they can help it that it will be flattened.

4184 Surely there are similar numbers of people in other villages. — There may be, but I do not live in them.

4185 What would you give me as one man—you are doing it from a biased basis, can you tell me what is so special about Stewkley? — The fact I live in it and love it, that is what is special to me.

4186 I am afraid I cannot accept that, but that is the end of my questions. — You live in Wing, sir.

4187 I live in Bletchley, sir. — I see.

Cross-examined by Mrs. Walsh

4188 I am Mrs. Walsh, Cublington Supporters, Vice-Chairman. I have your evidence before me; could you explain the third sentence in the fourth paragraph? — Which one is that?

4189 "We have very few difficult children in this school and any we do actually have usually come from elsewhere". — This in fact is true. It is not my opinion. My staff agree with me on this, and I did mention the fact to one of Her Majesty's Inspectors who called in a few weeks ago. I said I was not sure whether this was so, was this because I was very prejudiced, and very prone to village children that I teach, and he said no, this is in fact true. Village children, perhaps it is the surroundings and the way of life, do not seem to have the psychological problems that town children do seem to have. I have no facts or figures to support this.

4190 By that, do you mean, the same could apply to any village, as it is not quite clear. It seems as though Stewkley is the only one with special children. — I can only say I hope it applies to many more villages too.

Cross-examined by Mr. Bramwell

4191 Mr. Ginn, your village has the reputation of being—well the outstanding reputation of being the longest village in the country, perhaps in the British Isles. Can you tell me the length between the last house and the first one? — I understand it is one and a quarter miles.

4192 And the approximate width, have you any idea of that? — The approximate width of the village do you mean?

4193 In other words, there has been no development much further from the road itself, the roadside properties. — Yes, that is true.

4194 What would you say has been the reason for this ribbon development in this way? — Well, I do not really know what you mean by "ribbon" development.

4195 Well, you were or are one of the educational officers at this particular village, and you ought to have no difficulty in giving me information as to why it is developed like a long string rather than a proper conurbation. — Well, I take it because the village, sir, in fact, runs along the watershed, this must be a historical reason. It was probably the drier part of the land. The farms developed on either side, and I do not think it is correct to call it a ribbon development. This was a term used in the last fifty years, and Stewkley is a very old village.

4196 Would you say it is a historical — — Green —

4197 In effect a ribbon development. Let us refer to it as that, it is better than putting any other name to

Printed image digitised by the University of Southampton Library Digitisation Unit

it. Has it any difficulties in communication? — You mean inside the village?

4198 Yes, within the village. — Not that I would think, not serious ones anyway.

4199 In actual fact, what is the situation regarding the installation of telephones and that sort of thing in that area? — I have no idea at all.

Inspector I have no questions. Thank you.

MRS. VALERIE OSBORN* *called*

Examined by Mr. Otton

4200 Are you Mrs. Valerie Osborn? — Yes.

4201 Where do you live? — In Cublington.

4202 What is the address? — Ridings Cottage, Cublington.

4203 How long have you and your husband and your families been associated with Cublington and its immediate area? — We came to live in Cublington when we were married, 15 years ago, but my husband has his roots mainly in Ashton Abbots; his family having lived there for about two hundred years.

4204 And if the airport were sited in this proposed site, how would it affect you and your family? — Firstly, my husband has approximately one third of his business in Cublington. This would undoubtedly go, or come to an end, but the other two thirds are in Ashton Abbots 1½ miles away, and being on the perimeter of the airport he would have virtually no business left at all.

4205 What about your parents and his parents, do they live in the area as well? — Yes, my parents came down from Hampstead in London eight years ago, but they have been in and out of the area since I was a year old, which is 37 years.

4206 You conclude your evidence by saying: "To be severed from Cublington, my family, home, garden and good friends—the thought is unbearable and quite unthinkable". Is that how you view it? — This is absolutely true. I cannot envisage my life anywhere else.

Inspector Any questions from the first tier authorities? Other persons?

Cross-examined by Mrs. Walsh

4207 Mrs. Osborn, paragraph 9 of your evidence, you mention a number of community activities. Could you please tell me how often the Women's Institute meets? — The activities that I mentioned in the village, Church, Chapel, Mothers' Union, Women's Institute—the Women's Institute meets once a month, the first Thursday of the month in the evening at 7.15.

4208 Thank you. Also the Mothers' Union is in fact not centered in Cublington at all, it is in Aston Abbots. — No. The Mothers' Union at Cublington and Aston Abbots are both under the same churches. The Mothers' Union is held in Aston Abbots, but the opening and closing meetings of the Mothers' Union are alternatively held in Aston Abbots and Cublington, and the Mothers' Union Church Banner stands in Cublington Church for six months of the year and the other six months in Aston Abbots.

Inspector Any other questions? I have no questions. Thank you Mrs. Osborn.

(*The witness withdrew*)

MRS. ANNE MORTON* *called*

Examined by Mr. MacDermott

4209 Mrs. Anne Morton, I think as evidenced from your statement, you live in Wing? — That is right.

4210 You were indeed born and grew up in Wing? — Yes.

4211 You have lived there since your marriage, and your family have been there for some generations? — Yes.

4212 If the Airport came to Wing, you I think express the view that you would not be able to continue living there? — Yes, that is right.

4213 Why is that? — If I may go to this, in view of the map which is now shown here,† as far as I can make out, the road which is shown (*indicating*) will probably go bang through the middle of my house.

4214 *Inspector* I think it is fair to point out that Bucks would not claim this to be an accurate position of that road; it is diagrammatical. — Precisely, I would add to that, because if you say that it is not accurate, but I would dispute that, probably it is highly likely that when they build it, it will go through the middle of my house.

4215 *Mr. MacDermott* Even supposing it does not happen, leaving the Airport as close as it would be, do you think you would be able to continue living with your family in Wing? — I do not. As I said before, mostly because of noise. I do not like noise, not that particular kind of noise. I came back to live in Wing because it was a reasonably pleasant place to live. If the Airport comes, it will no longer be a pleasant place to live.

4216 Have you given thought to this matter with your family, supposing you did have to move, what sort of disruption is this going to mean to your life? — It is going to mean uprooting myself disrupting my children's education, and also parting

* p. 1180.

* See also p. 1181.

† p. 1037.

Printed image digitised by the University of Southampton Library Digitisation Unit

from my mother, who is a widow who lives alone a little way down the road, that it is highly unlikely we would find another situation similar to the one we have at the moment.

4217 Do you think it unlikely you would find a home which you could move to which would offer you anything like the amenities you have now at Wing? — Certainly not.

Inspector Any questions from either the First Tier authorities or other local authorities? From other persons?

Cross-examined by Mr. W. J. Smith

4218 Mrs. Morton, you have lived in Wing for a period of time; your husband works in Wing? — No, he works some distance away.

4219 Does he come home every night? — Yes.

4220 You do not mind this at all? — No.

4221 Would you like to think when your children grow up, that they would have to go through life the same as this, travelling to work? — My husband's job does not entail him going into the office, which is some distance away; his work takes him around and about. We happen to be sitting bang in the middle of that.

4222 You have no objection to your children becoming office workers and travelling about, suffering the same fate as your husband, when conditions could be better for you? — My husband does not suffer any plight in travelling around; it is part of his job. When my children grow up, I hope that they will be able to do what they want to do, and they will not have something like this monstrosity thrust upon them.

Cross-examined by Mrs. Kelty

4223 You said you did not like noise, yet you live on the main road? — Yes.

4224 And you must admit there is a heck of a lot of noise on that road? — Yes, it is quite a noisy road, I would agree with you, but I do not think you can compare this with what is going to be one of the largest airports in the world, a mile and a half away from my kitchen window.

4225 So many people say about noise, they think because airplanes are getting bigger, there is going to be more noise. Why should there be? There is more noise from a small Mini than —

4225 *Inspector* Let us leave it at that question. You asked a question, and then you go on.

— You said why should there be more noise?

4227 *Mrs. Kelty* Yes — Because I have not yet been given any evidence that the people who plan these airplanes and make them and are responsible for their construction, are seriously thinking of cutting down the amount of noise they make. I am not against progress of any kind, but I am —

4228 But — — Please let me finish—I do not think that anyone has the right to put a thing of this size in the middle of such a small island before they can make and invent an aeroplane which makes less noise, uses less fuel, and causes less destruction to everyone and everything around it. When they can make these things, then perhaps we can say O.K., but not until.

4229 We have evidence that we got from the jumbo jet people —

Inspector Mrs. Kelty —

Mrs. Kelty But we have —

Inspector Mrs. Kelty, please, just a moment please. You are not going to agree on this; you are going to have your view at the end of the day, so is Mrs. Morton. It is far better for you to state your view in due course than to enter into a disputation; you will get nowhere.

4230 *Mrs. Kelty* What I wanted to say, she has not seen the evidence published in the local paper about the noise of jumbo jets; it was a photostat copy of evidence.

Cross-examined by Mr. Payne

4231 Mrs. Morton, you did say that as far as you knew, that road would run through your house. Could you give me your address in Wing? — 33 Aylesbury Road, Wing.

4232 I have just been looking at the Ordnance survey map. I just noticed that that second bend along on the A.41 which is —

Inspector Mr. Payne, this is a red herring; these are proposals virtually in cartoon form; they are suggestions by the County Planning Officer of Bucks, not, I understand, actually supported by the County Council, not finally approved by the County Council. Whatever highway system comes here ultimately will have to be vetted by the Ministry of Transport and all sorts of people. This dotted line on this map is probably about a mile wide. It would be quite silly to go into details of which house they would take.

Mr. Payne According to that it runs about a mile to the south of Wing.

Inspector You cannot follow this point up.

Cross-examined by Mr. Bramwell

4233 Mrs. Morton, I have not had the pleasure of making your acquaintance in Wing before, though I visit there quite a lot. Your evidence has been given

Printed image digitised by the University of Southampton Library Digitisation Unit

in quite a dramatic way as regards noise and that sort of thing. I would just like to state, in a sense following on what Mrs. Kelty said, there has been noise tests on heavy lorries, buses, and that sort of thing, and on your particular road the NNI gets up to 110. Do you notice that or do you not, and does it aggravate you in any way?

Inspector Mr. Bramwell, you might at least ask sensible questions. NNI does not apply to normal road traffic. NNI was a measure of aircraft noise.

4234 *Mr. Bramwell* Shall we say decibels?

Inspector It makes quite a difference.

4235 *Mr. Bramwell* Let us say decibels; it is up to 110 decibels for lorries and buses outside your front door; does it in any way aggravate you and have not you considered that a quieter area, in view of your requirements for a quiet area, does not encourage you to move to a different spot, quieter? — I do notice it, yes, and at times it does worry me, but one cannot have everything. I am prepared to take the noise that a few lorries make, outside my door, because this is not sustained, it happens more in the summer than it does in the winter. It happens more in the early morning with big lorries changing gear at the top of the hill. I am prepared to take this, because I can put up with it, but I will not put up with an enormous airport with planes coming in and out every few seconds, and with a noise level that is intolerable—and not only that, but it is destroying the country, a way of life, people, and everything that is entailed in this vast monstrous suggestion, and that is very very different, Mr. Bramwell, from putting up with a few lorries that go past my door.

Inspector It is perfectly obvious, Mr. Bramwell, there is a vast difference of opinion between Mrs. Morton and yourself. The best thing to do is to let Mrs. Morton express her views, and you express your alternative view.

Mr. Bramwell I am very pleased you mentioned that; I enjoy hearing Mrs. Morton speaking, I feel she would make a fine actress of a dramatic society.

Cross-examined by Mr. E. G. R. Taylor

4236 I would like to take up with Mrs. Morton the question which Mr. Smith of Wing raised about commuting, because this does crop up quite often since I have been listening. I wonder whether Mrs. Morton would agree she would much prefer her husband to commute and come home to Wing at night than to have the advantage of a nice job at the airport and be around all day and not have to come home? — I would, yes, most definitely!

Inspector I have no questions, thank you, Mrs. Morton.

Mr. MacDermott I have no re-examination.

(*The witness withdrew*)

Mr. MacDermott Sir, I propose to call slightly out of order Sir Ludwig Guttmann, because he is in a difficulty this afternoon.

SIR LUDWIG GUTTMANN* *called*

Examined by Mr. MacDermott

4237 Sir Ludwig Guttmann, I think you are giving evidence on behalf of the Buckinghamshire Division of the British Medical Association? — Yes.

4238 You are, of course, as is well-known, the former Director of the National Spinal Injuries Centre at Stoke Mandeville, and have held many other distinguished medical posts. I think you are still President of the International Medical Society of Paraplegia? — Yes.

4239 As is well-known, you have been responsible for revolutionising the treatment of paraplegics; are you also still very actively concerned with the Sports Stadium that has been built for paraplegics at Stoke Mandeville? — Yes. We have built it, and it is just about finished. I am the Director of this.

4240 I think you attach enormous importance to sports in the treatment of paraplegics? — Not only of paraplegics, but of any disabled persons.

4241 Stoke Mandeville, as we know, is situated a few miles south-east of Aylesbury? — Yes.

4242 It would, therefore, be outside the noise contours as shown on this plan, which does not mean, of course, it will not be hearing aircraft noise. — It is just on the edge.

4243 Sir Ludwig, I think a subject on which you may be able to help particularly is the effect of noise on the treatment of seriously ill people. — Yes, that is so.

4244 What would you care to say about that? — Well, first of all I would like to mention how great the damage to the whole person is as a result of an injury to the spinal cord, and the higher the injury is, the more serious is the condition of the patient. In regard to those who have broken their neck—and this is now a very great number of people—they suffer also from severe detriment to their respiration and pulse, and these people are of course very seriously ill, apart from the physical condition. If the body is thrown into chaos, the soul must follow, and the psychological effects of such an injury—which is one of the most tremendous to mankind—is thus affected on the psychological condition, in particular in the early stages. In the Stoke Mandeville hospital, the National Spinal Injuries Centre is the largest institution or hospital of its kind in the world. We have 225 patients: the figure given was only 220, by the way.

* See also p. 1182.

Printed image digitised by the University of Southampton Library Digitisation Unit

4245 Are you concerned about the prospect of this airport coming here, for its effect upon the treatment of patients at Stoke Mandeville? — Very much so, sir, because fortunately or unfortunately I have had some experience—personal experience—of the effect of noise on some of these patients during the War, when the aircraft did not create such noise as the modern aircraft do today; but I can speak from personal experience here of the deleterior effect of noise—any noise—on these patients.

4246 Do you have to take special steps to try and minimise— — This was a great difficulty. The people are suffering from sleeplessness, and of course any additional noise in the night—from the evening—wakes them up. The doctor has to give them drugs, and the drugs have an adverse effect on the activity of these people the next morning. This is a vicious circle, and the people are impeded in their rehabilitation and profoundly affected. During the War, when the people came from the battlefront with severe wounds, and had nightmares of their experiences, any noise of aircraft set up profound reactions.

4247 Have you also had the chance to read the statement of evidence of Dr. Reid,* the Medical Officers of Health? — Yes, I have carefully studied both the documents of Dr. Reid, and of the Buckinghamshire Council.

4248 What comments would you like to make? — I entirely absolutely, agree with both these statements.

4249 He deals with the potential hazard to health from noise, saying that this is an area about which far too little is known, and that one cannot ignore the risk that it may have an as-yet-hidden serious health hazard. — I agree; but there is another point I would like to mention, that I have mentioned already in my document on this question of pain. You know —every layman knows—that pain is increased by noise, and there is no queston that these patients, in particular the paraplegics, are suffering very great pain, sometimes intolerable pain. Sometimes there is shown a hyper-sensitivity and the slightest noise, even the slightest touch, produces a profound exaggeration of their discomfort and pain.

4250 And, speaking for the Buckinghamshire Division of the British Medical Association, can you say that the medical profession locally are unanimously opposed to this proposal? — I can say that. In fact, as quite a number of the practitioners live not very far from the area, the view is expressed that they would rather migrate—and not only to another area but from the country. I do not need to tell you what that means, when we need to have British doctors.

4251 Are there in fact a considerable number of doctors living within the 35 NNI contour, as illustrated on this map in front of us?† — Yes, I would say that at least 15 or 20 of the doctors live quite near to that area, Wing. They will immediately have to leave because, apart from the other points which have been already made, their actual work is—I here again speak from personal experience, as you know, as I have pointed out, I am still consultant at the Duchess of Gloucester Hospital for paraplegics, and when I go there and have to examine a patient I have to stop, my concentration is interfered with—if I have to telephone to someone I have to stop to ask the person not to speak because I cannot hear him, and that is extremely disturbing.

4252 Where is that located? — In Isleworth; and I can also say, as far as I know, there have been reports from the West Middlesex Hospital on this point.

4253 You told us about the need for patients to sleep—what about the need for doctors to sleep? — That is just the point, that the doctors have interference with their work, as I pointed out, and this applies also to their severely ill patients, And here, as you say, we have in this area relatively great number of old people, and as you know old people have difficulty sleeping. However, this applies also to othre severely ill people, in particular burns—we have a Stoke Mandeville Hospital Advanced Unit and if you were to see these poor people suffering any noise—and here again is the same vicious circle: if we give them drugs the next morning they are drugged and hopeless.

Inspector Are there any questions from the First Tier or other local authorities? from any other persons?

Cross-examined by Mr. E. G. R. Taylor

4254 I am hesitant to question the Doctor, but I, like Mr. MacDermott, wear many hats! I would first of all like Sir Ludwig to confirm my standing in this particular field—would you agree, Sir Ludwig, that I have served with you on the Executive Committee o the Sports Committee for the Disabled since its inception five or six years ago? — Yes.

4255 I would have thought, when costing people were putting in their case, that they have a good point here. Would you agree that you may get all the road casualties that may occur with the M.1, and all the aircraft and burns casualties at your hospital at Stoke Mandeville? — Yes, they are very efficient. Mr. Lewis, the Surgeon of Dunstable, an excellent hospital, is very anxious to send his injured people very quickly to Stoke Mandeville Hospital. There must be other external factors, but this is the effect.

4256 Thank you. I think, Sir Ludwig, you are too modest, because I notice in your evidence you have not mentioned the real thing that you are doing at the moment, which is on a national basis and on an international basis—you are promoting the health of the world through Stoke Mandeville. Would you not agree that if this airport comes, all our plans for this

* p. 1038.
† p. 1037.

Printed image digitised by the University of Southampton Library Digitisation Unit

bringing of people from all over the world to compete not only from April to November, but all the year round, to this sports stadium, that plans will fall way below target? — I can answer this in two parts—first of all, as regards the members of the medical profession—they come here from all over the world to learn our methods, and we have at Stoke Mandeville developed an outstanding post-graduate teaching. We can say that we are a university in ourselves, and this is of course of great importance for the education of young doctors who come to us from all over the country and from all over the world. With regard to the sport—we are already interfered with by the noise of the passing trains. I shudder to think what will happen if in addition every two minutes an aeroplane comes from either direction. This would greatly interfere with our work, and that would be a thousand pities, to destroy a work which is giving the lead to the whole world in this particular field of medicine.

4257 This stadium is definitely No. 1 in the world? — It is the first time that a stadium has been built specifically for the paralysed and other severely disabled people.

4258 And it would be a great, great pity if we could not build on from there? — I really cannot believe for a moment that this project will not materialise.

Cross-examined by Mr. Payne

(Cublington Airport Supporters Committee)

4259 Sir Ludwig, could you just answer me this one question: would you say that taking the country as a whole, that this area is short of hospitals, or does it have more than the national average per head of population? — It is difficult to answer, but I can tell you that this area has a great number of hospitals.

Cross-examined by Mr. Bramwell

4260 I am extremely pleased to be able to ask a few questions from you, Sir Ludwig. One of them is the stimulating effect of noise on some people, as a first question, please. — Yes. I pointed out the stimulating effect of noise on pain and on sleep, and this of course really has serious effects on severely ill people. It depends what kind of noise it is, if I hear a Beethoven symphony this has indeed a very nice stimulating effect on me but a noise like an aeroplane especially of the modern type has a most terrible effect. It applies to people who have spinal cord injuries and spinal cord diseases; it applies also to people suffering from so called neuromas, other neuromas and lesions of the nervous system. I take it you have been in the First World War, and have had some experience from your comrades who had this terrible pain, and perhaps you had amongst your friends those who told you that every noise makes them absolutely mad. I invite those people who are in favour of the third Airport at Wing to go to the Duchess of Gloucester House in Isleworth the Hostel for paraplegics and listen to the terrible noise of the aeroplanes which pass over every minute or two minutes. They will really realise the terrible effect which the noises are having not only on the disabled but on the whole staff. It is quite impossible for me as a medical consultant to this house to examine patients during the constant loud noises and it also applies to the admission boards which are held at regular intervals between myself and representatives of the Ministry of Labour.

4261 Aye, that is so; and I have friends who absolutely hate dead silence, and one of the things which I would like to ask you a question on is London people coming into the country—those that have been displaced—experience intense fear at the silence —

Inspector Who said so?

Mr. Bramwell I was associated with people —

Inspector You say so—you are certain?

4262 *Mr. Bramwell* Yes, indeed it can be proved. There is proof of this. I was associated with the Oxhey Estate, which was developed by people moving out of London and it was common knowledge that some wanted to come back because they could not stand the silence. These people have a stimulation from the noise and surroundings there, and it would appear that the relation between the noise levels that can be stimulating and those that are depressing has not been arrived at. However, in view of the fact that there is an effect of noise on brain stimulation and that sort of thing, the Doctor is in a position to be able to tell us if developments taking place in this area at the present time by industrialisation, which is creeping up generally—that the special site that he has at the moment is likely to be so special as it is at the present time. — First of all, I do not know what evidence you have about the brain stimulation of noise on people who come to a quiet area. That is not my experience at all—my experience is largely contrary, that people who come from very silent areas are extremely disturbed by noise and I invite you to go to the area of Barnes, for instance, in London, and go through, house to house—you will hear some stories about the effect of noise. It is the contrary to what you say, and you will know probably that certain countries have used intensive noise for their prisoners—and I have had experience here from the Nazis in Germany—to break the people down; so it is just the contrary to what you say.

4262 That, of course, is taking noise to extremes. — Yes. It is not a very great difference to the noise in the Barnes area!

4263 Yes—we have made research in that area. It is about 50–50.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. J. Cornwall

4264 I am a schoolmaster, sir. The evidence that has been presented to this Inquiry on behalf of Buckinghamshire Education Committee* indicates that of course, as I know personally, teaching and learning are hindered by noise. The evidence submitted by the Education Authority also indicates that it is possible, by the provision of special equipment within the schools, to provide ventilation within a sound-proofed building. Have you, sir, as a doctor, any views at all about the effects of living in artificial conditions of that kind—can it be damaging in any physical or psychological way? — I am grateful for that question because in my private practice I have some school teachers who come to me from the London area because of their suffering from noise. What is suffering is their concentration, and this is, of course, against the ideas and ideals of teaching of children. With regard to the ventilation—of course we must have ventilation even in sound-proofed areas, but if you ventilate the whole thing, then you get more noise, and it is again here a vicious circle. I am glad that you asked that question, because amongst my patients from the school teachers who wanted to have neurological or psychological treatment because of being disturbed by noise, would have no doubt that with hundreds of aircraft flying overhead this will increase.

4265 In other words, you would accept my subjective judgement—that a force draft ventilation system does have a deleterious effect on teacher-pupil relationships, and consequently on education? — I think so.

Inspector Are there any other questions? I have no questions.

Re-examined by Mr. MacDermot

4266 Are there particular problems about soundproofing at the Stoke Mandeville Hospital? — None at all! Stoke Mandeville Hospital is a hospital which has been built from wooden barracks during the War, and although there are plans for a new hospital, it will take at least 10 or 15 years before these materialise, and if the danger exists that the Wing Airport will be materialised, then of course the planning will have to start again, and I do not need to tell you what that will mean again to patients.

4267 But is it right, sir, that a very large proportion of the patients at Stoke Mandeville are in fact in converted wartime buildings? are they suitable for soundproofing? — Not at all.

Mr. Bramwell May I just ask one question?

Inspector Very well.

Fruther cross-examined by Mr. Bramwell

4268 Doctor—I am aware in a certain way of the tremendous work you are doing, and it is a very essential thing. I am somewhat concerned about the encroachment of industrial research onto your hospital—in view of the fact that you are still more or less operating in wooden huts, would it not be fine if you could have a modern hospital building for your special purposes, in an area where you are not likely to be disturbed by the encroachment of industry or anything like that, in an area where one of your fellow-countrymen said was the finest in the world?—one of the South Wales valleys? — In answering this question, I can answer with the answer given by those two ladies who lived for many years in Wing—Stoke Mandeville is today not a name of just a hospital: it is a name of a concept, a concept of hope, and it is supported in our midst, in Buckinghamshire. Are you really suggesting that this great achievement should be transferred somewhere else? Surely not! But I shall tell you one thing: if you pass any hospital, any major hospital, you will find a sign "Quiet Please". This applies just to motorcars. You are an intelligent man, and you will realise what will happen if in addition to the noise of the motor cars and motor bicycles, we will have areoplanes to go over the hospital. One does not need to be a doctor to see its tremendous deleterious effect, and I must repeat that hospitals in the neighbourhood of airports have protested.

Inspector I am sure there is no re-examination; and I have no questions. As it is a little late, we shall adjourn now and we will resume at 2.30.

(*A short adjournment*)

Inspector One point before we start the afternoon's proceedings: Two of the Cublington Airport Supporters' Committee have represented to me that for family reasons they cannot attend after half-past four. I quite understand. I myself find it difficult to concentrate much beyond that time, listening to so much material; the shorthandwriters also have problems in getting the transcript ready for the following morning, so I propose to close the proceedings sometime shortly before half-past four this afternoon. It may well be that we may not complete today's programme; I hope we shall, but we have to be prepared for the contingency that we shall not. If not, what is left will be carried over until tomorrow morning, except possibly the Cublington Supporters Committee, and I will talk to them as to when we can take them at their convenience. Tomorrow morning also we are taking just for a short while a private individual who cannot be present next week, Mr. Ruthven.

Mr. Wallace I am sorry, sir, if what in fact is being said is that the Cublington Airport Supporters' Committee may be coming on very much later than expected this would place some of us, I think in difficulties because it might mean we would have to bring our experts at a difficult time. We were expecting them to go on before us, and if it could be achieved we would very much welcome it.

* p. 1045.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector I am sure, but I think I have got to have in mind here that these people because of their commitments can't be here in full strength, and this must be my main consideration.

Mr. Wallace As the person who is time-tabled to come after Cublington Airport Supporters' Committee, may I say that I would be only too glad if they went on before me tomorrow morning, if they cannot be reached today.

Inspector Supposing, Mrs. Walsh, we cannot put you on this afternoon, how would tomorrow morning do?

Mrs. Wallace No. Our chairman would be unable to come tomorrow.

Inspector You see, we are running into great problems. When could you come as a body again?

Mrs. Wallace Monday.

Inspector I see. Mr. Wallace?

Mr. Wallace It would certainly embarass us.

Inspector I am sure.

Mr. Wallace Because the Cublington Airport Supporters' Committee have made considerable representations in relation to agriculture and I would think it helpful if they, at least some of them, could be here particularly Mr. Bramwell to deal with their evidence at the same time as our experts. I am sure it would assist you and them.

Inspector Yes. Let us carry on for the time being and decide later this afternoon how to resolve this matter. It may be it will resolve itself.

Mr. Wallace Yes.

Inspector Mr. MacDermot?

CAPTAIN DONALD JOHN BELLINGHAM* *called*

Examined by Mr. Otton

4269 Tell us your full name please? — Donald John Bellingham.

4270 Chairman of the Aston Abbots Parish Council? — Yes.

4271 Do you also speak as an ex-BOAC Airline Pilot? — That is correct.

4272 You have lodged your proof with the Commission, and in the course of it you relate that your Parish Meeting held its meeting and was unanimously opposed to the siting of the airport at Cublington? — That is correct.

4273 And is the likely result of the present proposed siting of the airport that the northern end of the parish would disappear entirely, and that obviously is a matter which your parishoners view with great foreboding? — Yes, that is right.

4274 Does that mean that they would have to move if that were to happen and they would suffer financial loss as a freeholder or as a tenant? — Yes, I think this is the case.

4275 Alternatively if he stayed in the village, you would envisage it would become an acoustic slum? — Yes, that is correct.

4276 And this is the current way of life which 96 per cent of the village community earnestly wish to preserve? — Yes.

Inspector Any other questions? By local authorities of any class or kind? Any other questions?

Cross-examined by Mrs. Ketley

4277 I want to ask you, Captain Bellingham, if you are so against the airport, why did you spend such a lot of your time with aircraft as a pilot? — I think you have misconceived the idea. I have nothing against aircraft. I realise they are a necessary part of our life. I recognise there must be a third London airport. What I do not recognise is that it should be at Cublington. I spent five years working at London airport, and I had an office just off the end of one of the main runways. I had the chance of early retirement from BOAC, and one of the reasons I took it was to escape from the rat race. Whilst I was working at London airport I lived in Weedon, this is a considerable distance away from the airport, something like 40 miles, but I did not look upon it as a burden, this journey. I looked upon this as some relief at the end of the day, I must say, when I pointed my car towards North Bucks, and I came to live at North Bucks for this reason, to escape from the noise.

Inspector I have no questions. Thank you.

(*The witness withdrew*)

MR. WILLIAM GEORGE ANDREWS* *called*

Examined by Mr. Otton

4278 Mr. Andrews, you appear as the Chairman of Soulbury Parish Council? — That is correct.

4279 Is that a position you have held for the past 14 years? — That is correct.

4280 You live at Three Locks? — That is correct.

4281 You have lived there since 1912? — That is correct.

4282 Is Three Locks an area which is in the 55 NNI contours? — Yes, it would be.

* See also p. 1184.

* See also p. 1186.

Printed image digitised by the University of Southampton Library Digitisation Unit

4283 As is Soulbury, and is Three Locks an area of considerable beauty and relaxation and recreation for people in the area? — Yes, very much so.

4284 A lot of local Fishermen come along and try their hand there? — Yes, quite a number.

4285 Is the Parish Council opposed to the proposal? — No doubt, they have asked me to represent them

Inspector Mr. Andrews, speak a little nearer the microphone in due course. Questions from local authorities? Questions from any other persons?

Cross-examined by Mr. Bramwell

4286 Sir, in your position in the council, do you view the congestion that has now arisen around Three Locks by the restriction of the parking facilities and that for the large numbers of people who are getting there at the present time? I am informed it took 1½ hours to get a drink on Sunday, and I wonder if you could give us some idea as to what your council's view is about making facilities available for the great attraction that Three Locks has to the general public who appear to be flocking there in their thousands? — I suppose that is what a lot of people do come there for. However, Three Locks has no jurisdiction. The facilities of parking—if you have been down there I do not suppose you will dispute it for one moment. What else is to be done as regards the public house and assisting the people I do not know. I do not know what the County Council would allow there. There is nothing I can do about that, I am sorry. Incidentally, I will say this much: I do welcome the people down there on a Sunday because while they are down there and off the roads they are definitely not likely to cause accidents anywhere else.

Mr. Bramwell Thank you.

Inspector Any questions?

Cross-examined by Mr. W. J. Smith

4287 What is the actual expansion in Soulbury over the past ten years? — What I think the growth of expansion is?

4288 What is the growth of population in Soulbury over the past ten years? — I should say round about, maybe 100, that is all.

4289 Would this be less or more than the actual numbers of children that have been born in that area over the same period? — Well, incidentally, we have had young people come into the village and tried to get young people into the village because, incidentally, we were a village of older people dying out.

4290 This is not answering the question. Is this more or less than the number of people who have been born in the village over the same period of ten years? — No. I would not necessarily say so.

4291 In other words, people have left Soulbury? — Not that I am aware of.

4292 Well, if there are less people living there now, sir, than the number of people born over the past ten years, people must have left Soulbury. — They have not left Soulbury. There has not been many young people coming in during the last few years. I have had Council houses built there to encourage young people to come to the village.

4293 What were the council houses built in Soulbury over the past ten years? — How many?

4294 Yes. — I should say roughly 20.

4295 Twenty in ten years, and the population of Soulbury is what? — About 500.

4296 A very small percentage, I think you will agree? — I can't answer that.

Inspector I have no questions.

Mr. MacDermott No re-examination. I now call Mr. Hancock.

MR. TOM HANCOCK* *called*

Examined by Mr. MacDermot

4297 Are your names Tom Hancock? — Yes.

4298 Are you a Fellow of the Royal Institute of British Architects, and a senior partner in the firm of Hancock, Hawkes, architects/planners of Hampstead, London? — Yes.

4299 Are you also an associate of Beyer, Blinder, Belle, Associated Planners of New York? — Yes.

4300 Are you Visiting Associate Professor of Urban Planning at Columbia University, and consultant planner to the Peterborough Development Corporation? — Yes.

4301 Since 1955 have you been in practice and have you carried out a number of regional studies including a study of the Oxford–Didcot region? — Yes.

4302 The study for a New Town in Mid-Wales for the Welsh Office? — Yes.

4303 A study of the future demands within the Pembrokeshire National Park on behalf of the National Parks Commission? — Yes.

4304 And regional and sub-regional studies for Peterborough New Town? — Yes.

4305 The Inspector has your statement of evidence, and I summarised a good deal of it in my opening speech today, so I propose to confine my questions just to additional matters. I think since writing this statement of evidence you have received a copy and had an opportunity to study to some extent a report by the Port of New York Authority on *Airport Requirements and Sites to Serve the New York–New Jersey Metropolitan Region*? — Yes.

---

* p. 1187.

Printed image digitised by the University of Southampton Library Digitisation Unit

4306 Does that report deal with comparable problems in relation to New York and New Jersey to those now confronting the Commission? — Yes.

4307 Does it include studies on the effects of development and expansion resulting from the John F. Kennedy and Newark Airports? — Yes.

4308 I am sure it is a lengthy document, is it? — Yes, a quite considerable document.

4309 Can that be made available for the Commission if they wish to have a copy of it? — Yes.

4310 Could you just briefly summarize what are the points that you glean from that document which seem to be relevant to this inquiry? — Yes. I contend in my written evidence that the likely consequential urban growth will be in the order of between 400,000 and one million people by the 1990's. There is very little evidence to support that view, but the Report of the Port of New York Authority does say it sees in the region of 17 million people, which is a comparable region to south-east England, including London, that airport employment in 1959 was in the order of 120,000 people directly or indirectly employed and by "indirectly employed" this report means it was airport related employment and not employment in linked or associated industries, and that figure rose to 162,000 by 1965, that is in the order of a 30 per cent increase. If you take a multiplier of about 3, that would give us a population directly related to the airport of half a million or so, and this bears out, I think quite strongly, the contention that I set out in my written evidence.

4311 I think we have had an estimate from the County Councils of the growth of population resulting from those directly or indirectly employed in the sense you have been using the term at the airport as being of the order of 400,000? — That is correct, and within the lower limit I suggest in my written report.

4312 Yes, and this evidence from this American report confirms that that is likely to be the lower limit, is it? — It certainly does and it confirms my view which I hold quite strongly that the upper limit is likely eventually to be exceeded.

4313 Does this report deal with the question of the consequent attraction of other industry, other employment to the area? — Not directly; it deals with the economic results in the region, not in terms of associated and linked industries, therefore one must rely on evidence which is very meagre, but is available on the Los Angeles Region.

4314 I do not think you were here when the evidence we had from Mr. Pooley* on Monday related to the urbanisation pattern which is shown on the plan† we have before us. He said that if the urbanisation expansion shown there, which included the whole of Milton Keynes, and the expansion of the other towns to the extent shown was used in order to meet this 400,000 requirement, he did not think that it could stop there; that he thought there would be a second round of consequent urbanisation. Do you agree with that view? — Yes. I think the second round will overtake the first —

4315 They will overlap? — They will certainly overlap; the pace will be more rapid than anticipated in other evidence.

4316 Does that mean it will be difficult to confine the use of this expansion projected on this plan for that purpose of the 400,000 dependent on the airport? — Not difficult, quite impossible since there is natural growth expected in the region and sub-region, and at the end of my written evidence this is the radius of 30 miles round the Cublington site of 90,000 people expected by the end or by the turn of the century.

4317 Can you elaborate a little on the reasons why it would not be possible to confine the expansion of this area to that 400,000? What other industry would be attracted to the area? — Firstly, there are on-going policies and projects to deal with the general growth of the south-east of England taking place in this area, and I refer specifically to Milton Keynes New City, but there are other small expansions taking place simultaneously. There is natural growth of the area continuing. There is natural growth, natural industrial growth of the area continuing. As I have said, this level could be something additional, 900,000 people towards the end of the century, and it is foolish to suppose you can add to that the catalytic implications in any rational way. If you take the green belt proposals, that is the limiting of the natural concentric growth, pressure to the north of London, it would mean the green belt proposal would or could be fractured at a fairly early stage; it would certainly mean Milton Keynes New City would have to change in characteristics absolutely, and that the present proposals would have to be completely re-thought. It would mean the enormous concentration of growth in this area along the line of M.1 and the electrified railway, to the extent that would require the early building of a duplication of the M.1. All these things put together mean that the project is, to my mind, regionally unfeasible.

4318 We know, of course, that the Burns Study has been carried out under Dr. Burns to try and arrive at a definite strategy for development in the south-east. — Yes.

4319 Whatever emerged from that, is it in your view a fair certainty there must be extensive development in the Birmingham–London corridor? — Yes, certainly, to the level I have already indicated twice.

4320 And, in your view, to get a proper balanced development of the south-east, it is desirable to add

* p. 1023.
† p. 1037.

Printed image digitised by the University of Southampton Library Digitisation Unit

to that great magnet, which the third London airport would constitute? — I say such a decision would be absolutely wrong.

Inspector Any questions from the first tier authorities?

Cross-examined by Mr. Keen

4321 Professor Hancock, I wonder, could you just help me on paragraph 79 of your proof. — I am with you.

4322 I take what you say about the changes in the function of Milton Keynes which would follow from the proposals of the County Planning Officer, but I do not at the moment fully understand the last point you are making in paragraph 79 in the last two lines, where you say: "and an alternative new city project elsewhere in the South East of England would presumably be required". Why would that be? — I can explain this very simply. If Milton Keynes is to be used for employed—to house people employed at the airport, and if the present policies to deal with growth of population in the south-east are to be made, then logically it follows a further city proposal would have to be put forward to deal with the latter matter, that is the natural growth of the south-east.

4323 I am sorry, are you suggesting the population in the south-east of England is going to be higher if the third London airport goes to Cublington and elsewhere in the south-east? — No, but as you know, the policies of successive administrations since the war, and I think one that is generally adumbrated by most of us is to relieve congestion, and the miseries, if you like of the central cities, particularly London, by a policy of renewal and overspill, and to deal with that overspill population would, I contend, require a project of the order of Milton Keynes, if the present Milton Keynes project were to be used to house the airport population.

4324 Or possibly its equivalent in some other form? — Well, I cannot presently conceive an alternative form.

4325 For example, if the 225,000 that can be catered for by Milton Keynes are taken, let us say, partly from the inner metropolitan region, and partly from the outer metropolitan region, but there must be, surely some space capacity in this region for them in terms of houses and industrial capacity, must not there? — Taking the former, of course, as I have said, all policies since Abercrombie's proposal for London all followed strictly the idea for renewal and consequentially, unfortunately, overspill results, and whether you mean by forming linear towns or square, or whatever, or merely amorphous sprawls outside the existing conurbation, it would necessarily have to take place. With regard to the second, the point that concerns me very strongly, if you look, as I suggest, in my written evidence at the situation of Cublington as it is athwart the access from Lancashire, Birmingham, London, where industrial growth is satisfactory compared at any rate with the development areas and grey areas in this country, which are not entirely outside the south-east by the way, then I would suggest that industrial growth can start in its own natural growth population without importation of this particular category.

4326 The 225,000 in Milton Keynes, have to come from somewhere. — Yes, as you know the evidence is that several ministerial statements have been made on this, that population will largely come from renewal and overspill of London.

4327 Even if it is used in order to house those employed at the airport or at industrial productivity or serving the airport, that population still has to come from somewhere. — There is the difficulty, because for the policies of the great central cities to work, industry too has to be relocated, hence our rather dampening IDC procedure, for instance, and if then the sort of employment created by the airport is new employment, employment within the central city would not be affected if Milton Keynes were used.

4328 In so far as it is new employment, this surely is new industrial expansion which would have taken place somewhere in the south-east. — Yes.

4329 It is not additional to the total. — Well, it is additional possibly in this sense that if you located it here and you are rapidly creating the communications annexed to it, the industrial consequences would be very considerable. You would have the location in this favourable spot of many growth industries which in my view should be located elsewhere, taking the general level of economies of other regions of the country.

Inspector Any other questions from local authorities? Any other questions?

Cross-examined by Mr. Bramwell

4330 *Professor Hancock*, from your report it would appear you have made a site study of Wing site, is that true? — Yes.

4331 You state in paragraph 12 that for roughly 25 per cent of the year the wind directions are in an entirely different direction. — Yes, this is what I was advised on.

4332 You have been advised on that? You did not personally investigate this at that point? — No.

4334 I see. — I did not have a wind indicator, and so forth, no.

4335 The point is that evidence has been placed before us, perhaps not sustantiated by officialdom, but officialdom seems not to have made such enquiries, but from both sides of the fence, that the wind directions of this site are 50 per cent of the year from the northerly direction, north, north-west, or north north or——

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector There is no evidence to this effect, except from you, and you have not yet given your evidence.

Mr. Bramwell Quite. This gentleman will not appear again. I am just ascertaining if he had personally found it was 25 per cent.

Inspector All I am saying is that the basis of your questions is not accurate, that is all.

4336 *Mr. Bramwell* Has he ascertained that it is only 25 per cent of the time that this wind direction is different? — I have not personally no.

Cross-examined by Mr. Payne

4337 Professor Hancock, it was mentioned earlier that there would be some difficulty in finding the people to come into this area to be employed by this airport. I think it was mentioned earlier. Would not it be possible to bring these people down from the deprived areas of North-East England, and also the Rhondda Valley in South Wales where there is a very high standard of unemployment, because it is a known fact that the airport will provide a tremendous amount of jobs for unskilled workers. — Well, personally, nowhere in my evidence do I suggest it would be difficult to find workers if the airport were here. Secondly, I think it is a matter for central government; you should address your question to them.

Cross-examined by Mrs. Walsh

4338 Page 1, paragraph 3, the last sentence there, you said the employed population is primarily engaged in agriculture. Do you have any figures for stating what percentage of the population, the employed population is engaged in agriculture? — No, the Census statistics are too large to say this with any accuracy. It was, I think, an assumption.

4339 Would it not then be true to say the majority of people in this area are employed in engineering? — I would not say so.

4340 *Mrs. Walsh* You would not. Thank you.

Inspector Thank you.

Croos-examined by Mr. W. J. Smith

4341 Could I deal with a question I would like to ask you. In the information given by the Wing Parish Council, it states, referring to Wing, which is a district I know very well, that most of the people now commute to Luton and Dunstable; this is definitely not agriculture. Would you give me the reason for this? — This is my evidence, and the Parish Council's is theirs. This is based on my examination.

4342 *Inspector* Mr. Smith, perhaps I could help you on this. I had this point noted, Mr. Hancock. I have been round this area, I have known it for 25 years. Where do you get the impression the employed population is primarily engaged in agriculture? What is the basis of the statement? — The basis of the statement is essentially one from firstly, examination of the site. This refers to the airport site itself, 5 miles and 3 miles, and secondly from what evidence we have managed to get from sources and from unemployment statistics.

4343 *Mr. Smith* My second question is: what sized motorways do you expect will have to be in this area? We have heard a lot about the land that is going to be used for motorways. What size of motorways would you visualise will be required to service this area if an airport is put at Cublington? — If an airport is built at Cublington, I should think the resultants would be rather more than is at present envisaged, because as well as the amplification of the M.1 which would be one, and the A.41, which is coming up to motorway standards by the 1970's, there would have to be very considerable improvements, in fact duplication of east-west communications; I would think you would certainly need the M.45 building east-west, and probably one to the south.

4344 This would be another motorway similar to the M.1? — Yes.

4345 I have a placard here which was issued by WARA which says "Wing is 38 miles from London. Expert evidence indicates that the M.1 would have to be enlarged from 6 to 18 lanes or the equivalent to handle the extra passenger traffic." Would you agree with that? — I am sorry, would you repeat the question?

4346 The amount of land required, basing it on the WARA pamphlet, that it would have to be increased from 6 to 18 lanes? — I would not agree with that.

4347 This is assuming, of course, all the traffic goes to London. — Yes. Of course, it is the Third London Airport, and one must assume the 100m. passengers going to use the airport are essentially from the London direction.

4348 You would assume all the people that come to London Airport at the present come just to come to London, and not elsewhere in the country? — I would not say that at all. I would say a very high proportion of them actually move through Central London.

4349 An airport outside London, geographically central for London, north, south, east or west, would be far more beneficial, and does cut down traffic congestion in London and the central areas of London? — Yes, this is rather getting outside I think my evidence, because it does bring in the relationship of the Third London Airport with the existing London airports, and indeed the regional airports.

Inspector I think that is a bit outside the scope of this particular inquiry. We have trespassed somewhat into this area but the question of where

Printed image digitised by the University of Southampton Library Digitisation Unit

traffic to the four alternative sites may come from is being investigated by the Commission now, and certain figures will be put up for examination at Stage III. Any other questions?

Cross-examined by Mr. Payne

(Cublington Airport Supporters Committee)

4350 I have one further question to ask Professor Hancock. Which do you think in your opinion is the major factor in the conveyance of passengers and freight traffic to and from an international airport, road or rail traffic? — Presently for both purposes, road.

(Cross-examined by Mr. E. G. R. Taylor

4351 Would you agree that the evidence with regard to Wing Parish Council does not agree with your statements as supplied to the Airport Committee? You are quoting the area encompassed by the villages of Stewkley, Cublington and part of the village of Dunton, therefore evidence with regard to the occupations of the majority of people in Wing does not apply actually to your statement, does it? — I am sorry?

4352 The evidence which was quoted to you from the Wing Parish Council's case, which we have not been supplied with—— — Quoted to me by whom,

4353 Mr. Smith — I cannot recall that question; there were several questions.

4354 He said in Wing Parish Council's evidence,* which comes next Thursday, they said that the majority of people do not work in agriculture; that is basically what he said. It was quoted in regard to your facts here that the employed population is primarily engaged in agriculture. Whether or not that is true, Stewkley, Cublington and the village of Dunton— surely evidence about Wing, which is just outside the site, does not apply?

4355 *Inspector* This must be so; the proof clearly refers to the displaced population of 1,400. It is a question of fact. Are there any other questions? Just one other point for Professor Hancock. On your para. 19, I am still hopefully tracing kerosene fallout, and I come to you because you say: "The 50 NNI area would be affected by kerosene fall-out, pollution and run-off from the airport; (if American experience, consequent public concern, research and prohibitions are any guide)."— Yes.

4356 Can you elaborate, please? — Yes, this statement is based on the Los Angelean research work which is now going on. Agreed there is a very different climatic situation in that area, but there is very considerable concern and considerable research going on. I do not have the references with me, but I have them in my office.

4357 Stage III lies ahead; any help will be welcome. — I have noted that.

Inspector I have no further questions, thank you.

Mr. MacDermot I have no re-examination. (*The witness withdrew*)

MR. ROY ANTHONY WALLER* *called*

Examined by Mr. MacDermot

4358 Is your full name Roy Anthony Waller? — Yes.

4359 Are you MA (Cambs.) and a member of the British Acoustical Society and of the Society of Environmental Engineers? — Yes.

4360 Are you head of the Environmental Development Group of W. S. Atkins and Partners, who are consulting engineers concerned with planning, engineering and management? — Yes.

4361 Have you been yourself active in the field of noise and vibration for a period of 12 years? — Yes.

4362 And been concerned with a wide range of problems, including the planning of airports, and motorways, and the effect and control of many types of noise in the home, factory and office? — Yes.

4363 Have you done special research work on techniques of evaluating the effect of sources of annoyance in the home environment? — Yes.

4364 Again your statement of evidence has been circulated, and is before the Inspector. I think there is one correction which I mentioned in my opening, figure 3 should refer to a 4-runway and not to a 2-runway stage? — That is correct; there is also a second correction in table 2. .

4365 That I think comes in the last column, some brackets have got omitted. The column headed "Roskill Commission", the word "Annoying" should apply to the graph from 65 to 50 NNI, is that correct? — Above 50.

4366 The "Annoying/Intrusive" is 50 to 45? — That is right.

4367 And "Intrusive" is the 40? — 40 to 45.

4368 I think since you prepared your statement, you have obtained a paper which was a technical report of the Federal Aviation Administration, DS 67 22, on the effects of background noise upon perceived nuisance? — That is correct.

4369 Does that have any material which is relevant to the points you are putting forward in your evidence? — Yes, in my evidence I assess the probable effect of the lower background noise in a rural area compared to an urban area, and I did this on the basis of my general knowledge of noise. This report

* p. 1495.

* See also p. 1199.

Printed image digitised by the University of Southampton Library Digitisation Unit

specifically relates to aircraft noise. It does indeed confirm my figures. The report discusses some experiments that were carried out in the United States, and the increased noise which one obtains for the adjustments, rural compared to urban, are somewhat greater than those that I have taken, but bearing in mind this is experimental work rather than field work, I do not wish to alter my assesment; I think it confirms it.

4370 There is one other matter I would like to ask you about. One of the sections of your evidence to which I referred in my opening this morning, deals with what you consider to be the risk of much greater and wider noise nuisance due to night flying rather than day flying. — Yes. As far as we know, and the evidence is a bit sparse, that you get as much annoyance at night, or due to the night time flights, as you do to the day time flights. If the number of flights during the night is10 per cent of that during the day, Mr. Lumb suggested that commercial pressures would result, if unrestrained, in 25 per cent of the number of day flights. He also mentioned, and I was a little bit puzzled by the Commission's reference to night flights, and I must admit being even more puzzled reading the *Papers and Proceedings*, volume VII, *Proposed Research Methodology*,* where in para. 50 there seems to be implications that it would be worth while introducing some inducement for airlines to operate during the slack periods, which presumably refers mostly to the night time period, in order to spread the load throughout the day. This would suggest a somewhat higher figure still possible for the number of night time flights.

4371 What period are we talking about when we say "night time"? Do we mean hours of darkness or particular hours of the clock? — I do not think one can define precisely, I would say between 11 and 6, or 12 and 7, or 8 hours.

4372 It is that period where at the moment at Heathrow the number of flights are very substantially restricted to enable people to get some sleep? — Yes.

4373 Bearing in mind that reference in para. 50 of this volume VII are you still of the view, or perhaps more strongly of the view that there is likely, if the airport is sited here, to be very strong pressures indeed for increased use of the airport at night compared with Heathrow? — Yes.

4374 Does this confirm the view you have expressed about the risk of nuisance at night? — Yes.

4375 You have plotted that on one of the charts† at the end of your evidence to which I have referred. Are you able to make any kind of estimates of the numbers of people who are likely to be annoyed within the areas shown on that chart? — Yes, the parallel figures to table 6 with my adjustments, and assuming that the effect of a given level of the noise and number index at night is 20 units greater than during the day; the figure that I get is 201,000 would be moderately annoyed, and 251,000 by day.

4376 That includes the towns which I have referred to in my opening? — Yes, this is based on Mr. Lumb's estimate of 25 per cent, the number of night time flights being 25 per cent of the daytime.

4377 Is there any other point you wish to add to your evidence? — I do not think so.

Inspector Any questions from the First Tier authorities? Other local authorities? Other persons?

Cross-examined by Mrs. Walsh

4378 Para. 4 of your evidence. Would you please enlarge on it for me? — Yes, the Commission have in their siting information used descriptions which presumably are those of the average person. If you get a level of NNI of, to take the typical example, they say somewhere between 40 and 45 NNI is the level which is intrusive to the average person, this means that a slightly lower level, say 35, you might infer that the noise nuisance was no longer intrusive, whereas in fact a significant proportion of people would still find it intrusive; the average person might not, but 40 per cent might do.

Cross-examined by Mr. Payne

4379 I notice that you based a certain amount of your evidence on the Wilson Report.* Could you tell me when this report was conducted? — The survey was conducted in 1961; the report was published in 1963.

4380 It is 7 to 9 years since then, and is there any chance that conditions could have altered, that people could have become more immune to noise in that time? — Do you mean people in general?

4381 People generally in large cities and around Heathrow, and this sort of thing. — Can I answer, the question I think, one is: are the people around Heathrow likely to be less annoyed by noise than they were previously. I think taking the population as a whole, bearing in mind that the population round Heathrow is not necessarily the same now as it was in 1961, I would not be surprised if the degree of annoyance had fallen. I would not really be surprised if it went up and down, but I would expect there to be a slight reduction, in fact, because of the general natural evolution of the population there, and the people affected by noise would expect in time to move on, and the people moving in would expect to be a little less annoyed by noise. As far as the population of the country as a whole is concerned we really have not got any evidence which way it is going. One could argue as the standard of living is rising, that

* (HMSO; 5s.).
† p. 1207.

* Cmnd. 2056. (HMSO; 19s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

people might put a greater value to the quality of their environment. Of course, this conflicts with putting a greater value on the motor car and this sort of thing. It is difficult to say which way it is going.

Cross-examined by Mr. W. J. Smith

4382 What would be the actual number of dwellings at the moment empty round Heathrow Airport due to people being unable to stand the noise of the aircraft? — I have no evidence of that whatever. I would be very surprised if there are many empty houses there round Heathrow.

Cross-examined by Mr. Bramwell

4383 This particular site that we are discussing is a very rare thing. Have any of your figures that you are quoting been obtained from an airport at 450 feet—I will ask several questions; could you answer each one? — You mean—?

4384 Above sea level. I do not think you have any other airports in the country that are high level airports; can you comment on that? — None of my data was obtained from airports of that level.

4385 London Airport is only about 88 ft. above sea level. — I would accept that.

4386 Additionally is it not possible that when we are getting up to 450 ft., we have another factor here; is not there a tremendous variation in wind movement generally? I live on the airport, you see, and there are 500 or 600 planes a day pass over me between 4000 and 5000 ft. We just know they are going over, we look up, that is all it bothers us. There are light planes operating from Cublington Airport site now, 5 or 6 in fact, and the noise from them at 500 ft. is far more than a heavier plane at 3000 ft. In view of the fact that we are at a high level, could it be that the distribution of noise due to this high level could have a greater effect on the higher planes, the heavy planes that fly at anything from 3000 ft. upwards? — I would not have thought the fact that the airfield was at 400 ft. would have any significant effect on the airplanes at 4000 or 5000 ft.

4387 It does in fact. I wondered in view of the fac[t] you have these figures here that have gone into some detail, that figures should have been taken from a site that was at that level, because they are contradictory. If you are taking figures from a site which is 88 ft. above sea level, and we are talking about a site which is situated at 450 ft. above sea level, the wind strength at 450 ft. can only—

Inspector Mr. Waller is giving his evidence, you may give yours.

4388 *Mr. Bramwell* I am ascertaining whether any of the evidence which he has placed before you has been taken from a site higher than 200 ft. above sea level.

4389 *Inspector* He has answered the question twice already. Are there any other questions? I have two points, Mr. Waller. The first one, on page 8, at the end of paragraph 21, where you refer to what as a non-expert I have been calling ambient background noise in Cublington may be 10 to 15 decibels lower than West London, I raised a somewhat similar question at Nuthampstead with the witness for the Stevenage Development Corporation who had made a similar statement saying that the difference between the Stevenage residential areas and West London residential area, he then went out and actually got some data; have you seen that data? — No.

4390 If I can quote it properly, it showed that the PNdB level in the Stevenage residential areas was roughly 5 decibels lower than in certain areas round West London, round Heathrow. I cannot recall the four areas round Heathrow, but I think Langley was one. Would that differential between Stevenage New Town residential area, which it was said was designed to reduce noise to a miniumum, or ambient noise, would that 5 db. reduction which that witness gave roughly correspond, do you think, with the 10 to 15 PNdB lower in a true rural area like Cublington. — It is not inconsistent, certainly; I am not intending to say that the whole of this area is lower than the area round West London, as far as background noise is concerned. I think there is little doubt in my mind that the background noise in a truly rural area is 10 to 15 lower than in an urban area; there will be parts of Aylesbury where the background noise will correspond fairly closely to around Heathrow, I would think.

4391 The other point is on your table 6. The revised affected population of roughly 201,000 which you consider would be subjected to night annoyance was based on a reduction of 20 NNI below the day-time figures, is that right? — It was based on the night time contours being 10 less in number, that is the night time contour of 15 would correspond to the day time contour of 25, but the effect being 20 units worse, the Wilson Committee suggested perhaps the effect was 15 to 20 units worse, and I have taken the upper limit as an example.

Inspector Thank you very much; I have no more questions.

Cross-examined by Mr. Cornwall

4392 I wonder if there is any advice that you may have to give to any people who positively like noise, and find it mentally stimulating if at present they happen to live in the country?

Inspector I am not sure the question requires an answer.

Re-examined by Mr. MacDermot

4393 Do you think that it would be easier for you to reach a conclusion and give advice relating to this site

Printed image digitised by the University of Southampton Library Digitisation Unit

when you have available the results of the further Board of Trade survey whose results we are waiting for shortly? — In some respects yes; in some respects no. It is possible that the survey, which I understand is going into more detail than the previous one, might show up such things as the effect of background noise in more detail, which the previous one did not take into account at all, and this sort of thing may well help, but as far as the differences which I am suggesting may exist between the population which in the main is not exposed to aircraft noise, and there are parts of the area which are exposed to fairly low aircraft noise, one would expect to react differently to a population which has been exposed to aircraft noise now for more than ten years.

4394 You will not know the answer to that question from the further survey? — We will never actually find the real answer.

(*The witness withdrew*)

MR. D. M. LUMB* *called*

Examined by Mr. Otton

4395 Mr. Lumb, are you David Michael Lumb? — Yes.

4396 You are a Bachelor of Science, a Chartered Engineer and an Associate Fellow of the Royal Aeronautical Society? — I am.

4397 You are a partner of Alan Stratford and Associates, Aviation Consultants, who during the last five years have been retained to investigate and report on potential development of fourteen airports or airport sites in the United Kingdom? — We have.

4398 And did this include studies connected with the Third London Airport, Luton Airport and South Hampshire? — Yes.

4399 We have your proof for the Commission, which is directed, is it not, towards the consideration of air traffic control and surface access? — That is right.

4400 In your section on air traffic control, you come to the conclusion that the proposed site would lead to a substantial increase in controlled air space—is that correct? — That is correct.

4401 Do you contemplate that as a desirable happening? — No. Any extension in controlled air space virtually prohibits a large number of people from using that space, that would like to, such as private flights, Wing Commander McClure's activities, gliding—military stuff as well.

4402 And in your section on surface access, you envisage, in para. 11, a more extensive development of roads due to the greater demand generated by the postition of the proposed site. — Yes.

4403 And in that respect, do you envisage more extensive development of roads, particularly to the east, west and north, than is envisaged by the County Council plan which you see before you? — Particularly to the north-east, through to the north-west, I can see a lot of the traffic at present transitting through London coming to the county direct from the industrial areas to the north of the site.

4404 In your proof, you make reference to the Amber 1 and Amber 2 airways. Have you now acquired a map in which these are fully set out and explained, and do you desire to annexe it to your proof before the Commission? — Yes.

4405 *Inspector* I have a map* which shows Amber 1 and Amber 2. We shall deal with these things at some very great length in Commission proceedings. I shall, of course, willingly take the document, but I am not sure how far we can go in this very complex matter at this stage.

4406 *Mr. Otton* I do not propose to take the matter any further, sir. (*To the witness*) Can we just clarify one impression that has been given—in fact, you have not been a pilot in the past, but a flight engineer. — That is right—I was an engineer and pilot.

4407 For B.O.A.C.? — Yes, and Hawker-Siddeley.

4408 We will be hearing in a few minutes, evidence about bird movements, particularly starlings, in the area immediately adjacent to the proposed runways. Assuming that the movement might include about 20,000 starlings at any one particular time, moving across or along the runways at a height of about two to three hundred feet at dusk, would that, in your view, create any hazard to the aircraft using the site?— Yes. Any large flock of birds forms a potential hazard, and we have had several fatal accidents over the last few years attributable to bird strike and so on.

Inspector Any questions by other local authorities? from any other persons?

Cross-examined by Mr. Payne

(*Cublington Airport Supporters Association*)

4409 Sir, do you agree with Professor Hancock's previous answer to a question which I asked earlier, that rail transport is predominantly more important in the conveyance of passengers and freight than road transport is, from a major international airport? — It is more important at Gatwick than it is at Heathrow.

4410 Do you believe, though, that the Cublington site is an ideal site from the railways point of view? — It has advantages. I would want to know how you define "ideal" before classifying it as that.

4411 By "ideal" I mean the fact that there is within the area three main London-to-North lines—the St. Pancras to the North, Paddington, and London Euston via Bletchley to the North, and also you have the remainder of the Great Central into Marylebone.

* See also p. 1209.

* Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

— Yes, I accept there are a lot of very useful rail links at the moment; but I think these links would soon get saturated, and one would be forced to create links with the airport. I agree, during the very initial stages, yes; but their long term use would be very limited.

4412 But surely the railways could cope? because at one time they used to carry more passengers, so they would be going back to the stage where they had the railway boom. — Yes, but some of those lines you mention are very heavily trafficed at the moment, especially the electrified lines; and there is the problem of integrating the express traffic with the fast moving main traffic on the trunks.

Cross-examined by Mr. E. G. R. Taylor
(Headmaster, Wing Primary School)

4413 Mr. Lumb, one of the points in having an airport is to make a profit; therefore, would not the Authority, like the Electricity Authority, which has a lot of machinery doing nothing all night—would they tend to charge lower landing fees for aircraft using the airport at night, to encourage the use of it at night—would not the airways take it up—would not all this escalate? Surely not only the B.O.A.C. and people like that who would want that—surely the airport authorities would tend to increase the traffic at night? — Yes.

4414 *Inspector* If there are no more questions—there are just two points, Mr. Lumb. First of all: I was interested in your second paragraph, in which you referred to your work in the integration of the A.T.C. system of vertical takeoff and landing, as against conventional aircraft. I was surprised that that problem had arisen in any way at that stage. — A lot of the various Government Departments are looking very actively at this—these problems—at the moment, and there is a lot of work going on at present.

4415 Has it reached the stage where work has been necessary on the integration of VTOL and conventional landing aircraft in the A.T.C. system? — I think it has. It was one of the problems which was recognised as being potentially worrying earlier on, and it was selected as one of the problems for study. Our clients in this were Hawker-Siddeley.

4416 You did give us some supplementary evidence on bird strike. Without mentioning names, I did look into this problem on a bigger scale at a certain other site where we were looking into bird strike, and we would be investigating the whole problem, I said at the time, in detail. But I was interested in your statements that bird strike had caused, I think it was crashes—

Mr. Lumb Fatalities.

4417 In a number of aircraft—the last one, surely, was this Electra aircraft? — Going back in my own experience, I would estimate something between a half thousand and a thousand fatalities since 1960, directly attributable to bird strikes. The Electra was one of the last ones I recollect. We have had increased accidents as well as fatalities, of course.

4418 Do you happen to know if any of the fatalities were modern jet aircraft? — You are not classifying the Electra and Vanguard?

4419 No—I am saying that modern jet aircraft seem to be more immune to fatal accidents—though not to damage, of course. — No. Offhand, I cannot remember whether there were any pure jet amongst those. We have had pure jet accidents, and perhaps the flocks here are more dangerous to the big chaps than the single large seagull.

4420 And have you any knowledge of whether any of the fatal accidents were caused by birds as small as starlings? — It is very difficult to get precise details on some of this. Wasn't the Vanguard one caused by starlings? I can do a little more research on this, and let you have it.

4421 We are grateful for any additional information form any source, at Stage III. I can say no more than that. I have no other questions—thank you.

Mr. MacDermot I have no re-examination.

(The witness withdrew)

WING COMMANDER MCCLURE* *called*

Examined by Mr. McDermot

4422 What are your full names? — Charles James Buchanan McClure.

4423 And are you Head of the Department of Flight at the College of Aeronautics, and have you been so since 1949? — That is correct.

4424 Are you a Master of Arts of Oxford University, a Chartered Engineer, and a Fellow of the Royal Aeronautical Society? — Yes, I am.

4425 You have put in your statement, which has been circulated, commenting on the ways in which this proposed airport would affect, as far as you can foresee, the College of Aeronautics. — Yes, I have.

4426 Is that of necessity limited, and in parts somewhat vague, because of lack of precise information as to how the airport would operate? — Yes. I think that what would be our main concern in our operations is the size of the restricted area space, and we have simply assumed that we should have to fly between 15 and 20 miles underneath the restricted area space before we could get up to the levels for test flying.

4427 And is that one of the chief difficulties that would be created for you? — this is the major difficulty. Our main work in the Department is to take our student engineers in our laboratory aircraft and simulate a series of flight tests in which

* See also p. 1211.

Printed image digitised by the University of Southampton Library Digitisation Unit

they actually take the controls. This is our main object in life.

4428 Have you anything else to add to your statement of evidence — No, nothing further.

Inspector An questions from first tier authorities? Other authorities, other interested persons,

4429 *Mr. Bramwell* Sir, the object of gliding of course is to make use of thermal currents—

Inspector I think you are on the wrong wavelength. We are not talking about gliding; this is not the gliding witness. There are two witnesses—

Witness We have the Chairman of the Gliding Club who will give evidence about it.

Mr. Bramwell I see. Thank you very much.

Inspector I have no questions, except to say that we will take careful note of your problems.

(*The witness withdrew*)

MR. DAVID WALLACE MCQUE* *called*

Examined by Mr. Otton

4430 Are your full names David Wallace McQue? — Yes.

4431 Senior Technical Officer, College of Aeronautics, and Hon. Chairman, College of Aeronautics Gliding Club? — Yes.

4432 I think you point out there is over half of your members drawn from the college students and staff, and it would not be practicable for you to move your club to another site? — Not in its present form.

4433 And for the reasons you set out it is improbable in the extreme that you would be able to continue gliding if this site is chosen for the third London airport? — That is correct.

4434 I think you also include in your statement what would be the effects on you if either of the other two inland sites were selected? — That is right.

4435 Is there anything you wish to add to that statement of evidence? — No, that is all of it.

Inspector Are there any question from any local authorities? Any questions from other persons?

Cross-examined by Mr. Bramwell

4436 Sir, is it not a fact that gliding is absolutely dependant on thermal currents and the absence of these currents absolutely remove all operations at any time? — Not quite exactly. We do not rely entirely on thermal currents; there are other means of gaining height, by waves and by hills as at Dunstable.

4437 Towing? — So the craft can be got in the air in the first place, but it can remain in the air using rising air currents either on the actual hillside, from thermal sources, or the waves downstream of the hillside.

4438 Yes. Are there rather small hills in this area at any rate for that operation? — Well, they serve a useful adjunct. This is actually quite a good thermal source.

4439 In view of the fact your establishment is government sponsored in this—. — The actual club is not sponsored by the government.

4440 But it is a private thing entirely, is it? — The club now has half its membership from outside.

4441 I see. How many gliding clubs are there in places like Wales with steep slopes or in Scotland which has areas of very few population? — In Scotland there is one large gliding club that I am going to visit at the end of this month. There are one or two other places in the highlands, but most of the gliding clubs in this country are the same sort of distance from London as we are because this is where people work and they come up from London and towns around for their hobbies in the weekend.

4442 Are there any in Wales, gliding clubs? — I believe there are two.

4443 Are not these areas really suitable for that sort of thing where you have the large uplift, you can fly almost at any time, can't you? — Not in mountainous areas because to start with you only fly in reasonable weather you see, where you can see where you are going. This is quite important, really, and with gliders especially you have to have somewhere where it is safe to fly and land, because you could have to go down at any time.

4444 Do you glide in winter time? — Yes. Mostly in the winter time we use that period for training flying where we do take the gliders up two or three thousand feet which is well into the control zone of this new airfield, and that is the time we do the bulk of our training. In the summer time, this time of year we do the bulk of our cross country flying.

4445 I saw them at the weekend, yes. Which is the nearest one to yours to here? — The nearest other gliding site?

Yes. — Dunstable.

4446 It is the Dunstable one? — Dunstable is the nearest. In that direction there are other sites, there is High Wycombe, Henley A.T.C., and the one farthest north is near Coventry.

4447 Is Dunstable a very efficient one? — I am not recommending them.

4448 I thought probably you knew of the — — Well, they have a larger membership than we have, and they operate quite effectively as far as I know.

* See also p. 1216.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. Smith

4449 In recent times it has been announced in papers—this is only what I have read, and whether it is true or not I do not know—that Dunstable Flying Club may have to close down due to expansion of air traffic problems from Luton. — I have seen something but I cannot comment on it at the moment because this has not been resolved yet. This is in the hands of the Board of Trade, and it is up to them to sort it out. What has happened is that the air traffic has grown at Luton Airport, and they are now asking for more restrictions. How this will affect Dunstable I do not know. If it does effect us severely it will put more pressure from people who are flying at Dunstable to join us.

4450 In the event of Dunstable closing down the nearest place you can land at if you have to when you run into trouble — — You mean to say you expect we always go from one gliding site to another?

4451 Presumably. — That is not always true. You can land on a farmer's field, and they are usually co-operative.

4452 That is not really advisable, is it? — I have only done it a couple of times, and I have always had a cup of tea out of it.

4453 I was trying to get at—the tea is very nice and I could do with one myself now, but in the event of Dunstable closing down this is surely going to take an awful lot of support and amenities away from your actual club as regards flying to Dunstable. — I can't think of anybody flying to Dunstable—I flew to Bicester on Monday. I did not land there, I went there and came back. I might have had to.

4454 In the event of it being closed by Luton, what effect would it have on your gliding club as regards your air space? — Due to Luton expanding their air space, the air space Luton would ask for I am sure would not affect us tremendously; it would cut off some of our area, but—

Inspector We are going round in circles, because if the airport came here it might affect Luton.

Mr. Smith I could not agree more, sir, they would probably close it down.

Inspector Thank you, Mr. McQue. We meet again at Thurleigh, I see. Thank you.

MR. VICTOR J. SCOTT* *called*

Examined by Mr. MacDermot.

4455 What are your full names? — Victor John Scott.

4456 You are a naturalist and have lived all your life at Aston Abbotts? — That is correct.

4457 You have put in your statement of evidence, which has been circulated, in which you give information which is available of the starlings roosting at Claydon Woods and Aston Abbots. — That is correct.

4458 I do not think you claim to be an expert on the subject of bird strikes? — Not at all.

4459 You are giving what information you have in case it is of use about the quantities and habits of starlings in this area? — Yes, purely information as a naturalist with a wide knowledge of wild life in this area, and I know nothing at all about possible strike hazards to aircraft.

4460 Is there anything you wish to add to your statement of evidence? — The only thing I might in fact add is that I have only mentioned the large flocks of starlings which use the area. In addition to this we do have fairly large flocks of gulls in the winter months, birds which are mainly feeding on ploughed land and other types of farm land, but their flight pattern is a rather haphazard one and has not followed a consistent pattern like the starlings which I outline in my statement.

Mr. MacDermot Thank you very much. Just wait there a moment.

Inspector Any questions to Mr. Scott?

Cross-examined by Mr. Keene

4461 I do not suppose, dealing with your last point, that you have any idea of the numbers of gulls which have been roosting in the area in winter? — Regarding gulls I can give you some approximate figures. The gulls roost which would take birds from the area of the proposed airport site would be the gulls roost at Startops End Reservoir Marsworth where last winter at the peak of the roosting density there were estimated to be something like 5,000 black headed gulls returning to the reservoir from surrounding farm land each day.

4462 Are there any other large sources of gulls in the neighbourhood of the proposed airport? — I do not know of any.

Inspector Any other questions?

Cross-examined by Mr. Bramwell

4463 As a fellow naturalist, Mr. Scott—another of my hats—I would like to talk to you about something of the Wing airport itself at the present time regarding birds. Have you visited the Wing Airport site at all of recent years? — I can't say I have been very much on the actual airport site. I know the area very well as a general area, but I do not make a practice of trespassing on private land without permission.

* See also p. 1218.

Printed image digitised by the University of Southampton Library Digitisation Unit

4465 It is not altogether private, because there is a bridle path over it; in fact there have been several paths. — I know the general site, yes.

4466 The point is that you have not seen the hundreds of carrion crows of that area of the airfield at the present time. — I have not. I have seen large flocks of rooks passing over.

4467 It is not amusing, because I see them quite frequently, but you see, the majority of people in this area do not know carrion crows in large quantities are feeding on carrion brought out from the broiler units on to the airport property and these are feeding on dead poultry, and all sorts of stuff that is in there, and I think you, perhaps, as a naturalist in the area would know this is taking place. — I know carrion crows will congregate anywhere where there is food of that type available, but I do not know that this is relevant to my document here, because if the airport was to be sited there the source of carrion would disappear and the carrion crows would, therefore, disappear or disperse.

4468 Quite true it would disappear. Are you aware of the flocks of plovers that are in the airport area as well? — I am.

4469 They are in a field adjoining my farm—it is on the Cublington Road. — At various times of year flocks of plovers will appear on any type of land which provides suitable feeding quarters. At the present time of year large flocks congregate on grass land which has been mown for hay, but these flocks do not appear regularly following a very definite pattern, and very large plover flocks are certainly not extremely common in this area at the present time.

4470 There is a large flock at the present time in this area because the field in question that they used to occupy in large numbers was ploughed and for two years it remained ploughed—I used to own it in fact. Now, it has returned to arable and back have come the plovers. What I am pointing out to you is this: the ploughing of this land disturbed the plovers and they went elsewhere. Now, would the restriction or diminution of birds in the areas used by the starlings enable them to travel elsewhere? — I am glad you mentioned this point, because it has enabled me to say what I wish to say. That is the type of woodland which is used as a common roosting place by starlings in winter as your otherwise type of woodland of standards with coppice and ordinary types of woodland such as Forestry Commission woodland and private woodland would not be suitable for most starling roosts.

A clearing of trees, by this I mean hedgerow trees, there are very small areas of woodland on the actual airport site, this would have very little, if any, effect on the numbers of starlings in the area. In order to stop these mass starling roosts from being occupied, you would have to cut down every major area of standards with coppice woodlands over a radius of perhaps 20 miles.

4471 That, of course, is supposition, is it not? — Yes, it is.

4471 What was the largest quantity of starlings congregating in the south of England? — In the year 1952 a number of naturalists who were quite experienced ornithologists estimated that the largest occupied roosts at Fox Covert in Aston Abbotts was the largest occupied roost in Britain—not every year.

4472 Is it not true the largest roosts are in London itself? — Most definitely not.

4474 *Inspector* If there are no more questions, I have just one point, Mr. Scott. There is the small Fox Covert south of Aston Abbotts; there is another Fox Covert shown on the Ordnance plan half way between Wing and Stewkley abutting the north-east side of the road. Can you place that? It is exactly half way between Wing and Stewkley, just between the road and Burcott Lodge Farm. — I have seen small flocks of birds using this, but the numbers are limited by the unsuitable type of woodland in that covert.

4475 Reverting to your statement on page 2: "Attempts to force starlings to abandon the roost at Aston Abbotts some years ago by using shot guns as the birds settled in to roost was a complete failure", I take it in the first place that this large flock of starlings is not exactly a popular local phenomenon, is that right? — The only adverse effect of the starlings was apparently on the actual blackthorn covert itself, which is used as undergrowth in the fox covert which is maintained for the benefit of the local hunt, or it was originally planted for that purpose. Therefore the use of the blackthorn successively over the period of years does in fact kill it, and certain areas of the blackthorn have in fact been completely killed by the excreta of the starlings when used in two successive years. That was the main reason I think why an attempt was made to dislodge the starlings from this particular roost, not because of any nuisance value, either to local farmers or dwellers. The starling is mainly a beneficial bird in agriculture.

4476 Assuming that the Third London Airport came to this site, I assume there would not be too much hunting in the Fox Covert, therefore the Fox Covert could be converted into some kind of wood which would not harbour starlings? — That would be possible, of course, by cutting down all the blackthorn.

4477 Then if you say that standards with coppice are starling country, some other form of woodland? — Yes, but it would be difficult to remove all standards with coppice in the area that starlings

Printed image digitised by the University of Southampton Library Digitisation Unit

could possibly use near the airport. I have mentioned a site some miles away from the Aston Abbotts site which was in fact used last year.

(*The witness withdrew*)

MR. HAROLD ARTHUR CARLYON EVANS* *called*

Examined by Mr. Otton

4478 Are you Mr. Harold Arthur Carlyon Evans? — Yes.

4479 I think you are Headmaster of Swanbourne House School, at Swanbourne, near Bletchley? — Yes.

4480 You have been there since 1947? — Yes, that is correct.

4481 Are you Chairman of the Incorporated Association of Preparatory Schools, or were you so in 1960? —Yes, that is so.

4482 You have prepared evidence for the Commission based on replies to a questionnaire which you circulated to the independent schools in Buckinghamshire and Bedfordshire situated within 10 miles of the 50 NNI contour on the map; is that right? —Yes, I did.

4483 In your proof you are at pains to emphasise that the number of independent schools compared with state schools is small, but still in your view the predominantly local character, the choice of alternative premises in the event of closure or moving would be limited; is that so? — Yes, this I think is a very important point.

4484 As a result, as you say in your Conclusion, the prospect is one of very real hardship to those who own and run such schools, to those employed in them, those who have chosen to send their children to them, and last, but not least, to the children themselves? — Yes.

4485 Is there anything you would like to add to your statement? — No, I do not think there is anything else.

Inspector Are there any questions from the First Tier authorities on the evidence by Mr. Evans? Other local authorities, other persons? I have no questions. We have the details very carefully noted, Mr. Evans, thank you very much.

(*The witness withdrew*)

Mr. MacDermot May it please you, Sir, that completes the evidence on behalf of WARA. I am asked to raise the question about the signatures of our 61,700 members. I do not know whether you wish them delivered to the offices of the Commission or not? If anyone wants to check them, they can be removed.

Inspector It would be most embarrassing to have them delivered. I do not propose to look through them to see whether they are plus or minus a dozen or so; I am perfectly prepared to accept the numbers are there, and leave it at that.

* See also p. 1220.

MR. G. I. GINN* *called*

(*Stewkley Action Committee*)

Witness I have a short addition to my evidence which we have handed to you this afternoon. First of all, I am a schoolmaster, I live in Stewkley, and I am also Chairman of Stewkley Action Committee. This committee has been democratically elected by the villagers. It reports regularly to them and is guided by their wishes, and I feel that the villagers have done me a great honour in selecting me to speak for them.

If the Third London Airport is sited at Wing/Cublington my village is scheduled to disappear under the runways. Our village is vigorous, self reliant, kindly and sociable. It is growing. There are old inhabitants whose ancestors have lived here for hundreds of years, and there are now people living in new houses. We all fit well together. Everyone is made to feel he belongs. The village is a healthy, happy, going concern. We find it incredible that anyone should contemplate our complete removal, and the utter destruction of our homes. There is no national emergency, and we are not at war with anyone.

No-one in Stewkley believes that the proposed destruction of our village can be justified, particularly when more suitable airport sites are available. If airport sites built on reclaimed land are more expensive, which we doubt, then the public, who have to foot the bill, should have the option to choose.

This document† which I have handed over to Inspector Hunt this afternoon has been compiled by the people of Stewkley, by their relatives and friends. We have paid no experts; we have not sought the help of well-known people. This book describes in human terms what it would mean to destroy a village community.

I have included in the book some comments from the villagers. A farm worker writes: "I sincerely hope that the right decision will be made, as so much self-sacrifice has been put into the effort to preserve this village, not only by our own villagers, but by those who have recently made a home here. My thoughts are with the older folk—how terrible that they cannot bide those few remaining months or years in the surroundings which have become part of themselves".

A local builder says: "The life of the village community, not understood by the real townsman, is the breath of life to us." And here is a very pertinent one in the circumstances, from a young father and mother; they say: "We moved to this area eight years ago from Hayes—5 miles from

* See also p. 1179.

† Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Heathrow. To move again for the same reason is unbearable".

Finally I have put in one which I think reflects the spirit of the vast majority of the villagers: "We do not enjoy or intend to be pushed around by other people for their own ends. If an Englishman's home is his castle, then we will defend ours to the last ramparts as we volunteered to do in the war".

Notwithstanding your request, there are only two copies of that; quite clearly it is not sensible to expect a village community to produce a large number of copies of this nature.

Inspector I propose to leave them with Miss Wall for the rest of the inquiry before they go on to the Commission, for inspection by anyone who wishes to do so. Are there any questions from First Tier authorities concerning Mr. Ginn's statement? From other local authorities? From any other persons?

Cross-examined by Mr. W. J. Smith

4486 I will ask the same question of you as I did the gentleman from Soulbury. Exactly how many people have been born in Stewkley over the past ten years? — This is in the evidence which I have handed to the Inspector Hunt.

Inspector You are very naughty, because these chaps should really have it.

4487 *Mr. Smith* An approximate figure will do. — In fact the balance of young people and old people is about the same. Will that do? We have a graph here which I have no doubt you will be able to see in due course. If you want to know whether the village in fact is increasing in size—

4488 This is the actual question — I can tell you. These are the figures in fact from the Parish Council. In the last 6 years in the village 91 houses have been built. These are new ones; 13 are proposed to be built, and of course the village is being infilled; that means it is not being extended; the gaps in it are being filled up.

4489 Just to check those figures again—91, 13, 31. There have been one or two demolished after? — Well—not many. The thing that has been done—which is stupid, it seems to me—is to repair old houses. People who want to live in Stewkley seem to want to live there so much and they are so keen they will take an old cottage which is probably not worth very much and spend thousands on it—this happens very often.

4490 So the number pulled down to make room for the over 100 — — Yes, the new houses which have been built are in fields—they occur in the heart of the village.

Cross-examined by Mrs. Walsh

4491 How many rows of houses in Stewkley have been bought and made into one home? — I do not know any, except one—that does not mean there is only one, of course—it means that I only know of one.

Cross-examined by Mr. Payne
(*Cublington Airport Supporters Association*)

4492 Sir, you said on page 3 of your manuscript—part 14—you say "many traditional annual village events are eagerly awaited, and industriously supported during the year". Could you enlighten me on a few of these events? — The annual events in the village?

4493 Yes. — First of all, we have a very flourishing Dramatic Society, and we have two productions a year of three act plays. We have—this is, of course, from the school—a carol concert in the Village Hall; this seems to be very popular every year. It started off in the school, we had to move it into the Village Hall because we could not accommodate all the people who wanted to come. We do an annual Carol Service on the last day of the winter term—it becomes increasingly difficult to get people into church. We have an annual Mayday, which we hold in the Chapel Square. I have them listed here, and I do not think I can find them—

4494 *Inspector* I think there is also Stewkley Parish Council representation—I seem to recall there was a whole list of village activities. — Yes.

4495 *Mr. Payne* And one other point: again on the same page, on point 9, you say people like to travel to work. Do you have any evidence to support this? — None, except that they live in Stewkley and obviously do travel to work. If they did not like it, I would assume they would move to a town where they worked.

Inspector Any other questions? I have no questions. Thank you, Mr. Ginn.

(*The witness withdrew*)

MRS. P. GALLIMORE* *called*
(*St. Michael's Church Guild*)

Mrs. Gallimore My name is Primrose Gallimore, and I represent the St. Michael's Church Guild. I only wish to emphasise the points in my evidence, and particularly the strong feeling against the destruction of the Church for which we work both by raising money for its upkeep, and actually working in the church.

Inspector Are there any questions to Mrs. Gallimore? Local authorities? from other persons? No questions? I have no questions; thank you, Mrs. Gallimore.

* See also p. 1226.

Printed image digitised by the University of Southampton Library Digitisation Unit

REV. J. E. H. WILLIAMS* *called*

(Vicar of Whitchurch; Also representing Whitchurch with Creslow Parochial Church Council)

Rev. Williams Would you like me, sir, to just read the Minutes of the Parochial Church Council Meeting that was held recently, first of all? "At a meeting of the Council held on 30th March 1969 to consider the proposed airport at Wing, it was proposed and carried unanimously that the following protests should be made:

1. The Council views with complete dismay and abhorrence the above proposal in view of the fact that it will render the normal congregational worship of God which is the special concern of the Parochial Church Council, impossible.

2. The runway sited some 400 yards from the Church will cause the virtual destruction of the building through vibration. The Church is of outstanding historical and archaeological interest dating back to the 13th century as well as being one of the finest Church structures in Buckinghamshire. The fabric has only recently been restored at considerable expense.

3. The Council therefore gives emphatic support to the wide-spread opposition to this scheme which is being promoted by Whitchurch Parish Council, the Rural District Council and Buckinghamshire County Council."

And then, sir, my own objections as Parish Priest and also as representing the Church here in Whitchurch. "The village of Whitchurch is a village of—"

Inspector I have read this most carefully—it has been circulated to all present.

Rev. Williams I think, then, there are only one or two points I would make in view of the fact that really Whitchurch has not been mentioned a great deal in the press, and it is one of the largest villages, apart from Stewkley, which is involved. It has a population of not much under a thousand, and there are a lot of new houses there. We have had about a hundred new houses in the last ten years. As I have said, the Church is one of the most beautiful that we have in the county. Also what has not been mentioned is that the area covered by my parish was designated as a reservoir area, and a large part of that area was; and it seems to me rather senseless that a large part of that area should have to go, when it surely must be possible to find places which would not take immense work of earth removal—which would be necessary in this area. Also, it seems to me that many countries now are trying to do as much as they can to conserve their land for agricultural and population reasons, and not only in Holland but in various other countries they are reclaiming land from the sea. It seems to me that we are in a country that cannot take a great deal more population, although we have added to it tremendously in recent years, and it seems to me that we should be looking for reclaimed land in making these tremendous projects. I was recently down in Dorsetshire, and it seems to me that you could lose an airport quite easily there at Salisbury Plain without affecting villages at all. Here we are affecting not only our own villages, but quite a number of villages, and a large number of churches.

Inspector Any questions to the Reverend Williams? No questions; and I have no questions. Thank you for coming.

(*The witness withdrew*)

Inspector We are not going to hear the Cublington Supporters' case today, I fear—I think, Mr. Payne, we cannot leave you till Monday, so I must leave it to you to decide how to manage without your Chairman. You will be batting first thing tomorrow morning.

Mr. Payne Could the Chairman speak separately next week some time?

Inspector Yes; but I must insist that the main case is made tomorrow so that people know what your case is. I shall allow you to speak individually later, in view of the exceptional circumstances; but we must know the main burden of your Association's case, and I am sure you will go away quietly tonight and talk about it.

Mr. MacDermot I do not know whether Mr. Payne is in difficulties to make it tonight—

Inspector The two ladies have made it quite clear that they have families to take care of. I am sure at the end of the day there will be no prejudice to either side. We shall rise now; and resume tomorrow morning at 10 o'clock.

(*Adjourned until* 10 *a.m. tomorrow morning*)

* See also p. 1225.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

THURSDAY, 17TH JULY, 1969

THE ASSEMBLY HALL, AYLESBURY, BUCKS.

Before MR. A. J. HUNT

Oral evidence was taken from:

Mr. W. H. Ruthven

Cublington Airport Supporters Committee (*Mr. W. J. Smith and Mr. B. Kilty*)

National Farmers' Union (*Mr. N. Wallace, Mr. J. E. Y. Hawkes, Mr. A. K. Giles, Mr. C. A. Rogers and Mr. H. C. Balfour*)

National Trust (*Mr. M. Fitzgerald amd Mr. M. J. Rogers*)

Nature Conservancy (*Mr. M. J. Woodland*)

Council for the Preservation of Rural England (*Mr. R. Body*)

St. John's and Manor House Hospital (*Dr. D. C. Watt*)

The Chilton Society (*Mrs. M. Tomlinson*)

Country Landowners' Association (*Mr. A. Gregory and Major P. D. P. Duncombe*)

Beacon Villages Society (*Mr. B. Banfield*)

New College, Oxford (*Mr. C. Harwood*)

Leighton Buzzard Arts Club (*Mr. J. Ferris*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector We have a full programme today, and without wishing in any way to hasten the early appearances, I would ask them to bear in mind those who are programmed later, and not take up more time than is necessary, for example in examination in chief on papers already submitted. There are quite a large number of witnesses later on in the queue today.

Secondly, the Cublington Airport Supporters' Committee were programmed to be heard yesterday, but owing to the rate of progress, and a specific request of two of the members of the Committee that they should not continue after 4.30, we adjourned at 4.30 with their case unheard. After the adjournment yesterday, there were discussions as to how I might fit this Committee in, and it was agreed they should appear this morning, with their Chairman appearing separately on Monday to deal with his particular matter, which I think is Access.

I have today, this morning, received a letter from the Chairman which says that "The Committee had fully prepared its case for Wednesday, 16 July as scheduled by your Commission. Preparation had been made to ensure that all individuals concerned would be present. This will unfortunately be impossible for Thursday, 17 July, when only one member of the CASC will be present. We would ask you to allow us to present our evidence on Monday, 21 July, which is the first opportunity this Committee will have to attend the Inquiry. We crave the Commission's indulgence in this, and feel sure you will grant us an opportunity to give our evidence in a full and complete manner."

I have considered this very carefully. I have decided not to accede to the request for several reasons. Firstly, the adjournment yesterday was specifically at CASC's request; secondly I see they have two members present this morning, and I have explained to them that Stage II is exploratory in character, we are trying to find out what are the nature of local implications, and they will not be prejudiced in stating quite plainly what they feel about the Airport, and alerting the Commission on any particular aspects which they feel the Commission's attention should be focussed upon. So in those circumstances I have decided to hear them in their proper order in the Programme, because the programme was drawn up so that this particular kind of local interest should be heard together.

There is one final point. I did agree earlier to hear Mr. W. H. Ruthven first; after Mr. Ruthven I will take the programme in the agreed order, with CASC coming next. Mr. Ruthven, would care to come up to the stage; the document number is the letter 3291.

MR. W. H. RUTHVEN* *called*

Inspector Mr. Ruthven, have you been present at earlier meetings of the Commission?

Mr. Ruthven No, I have not.

Inspector It may help you to know three things. First, I have read your letter very carefully; secondly, all the points in it have been very fully covered by other parties, except the point you made about air safety, and in this connection I can tell you that the Commission is itself undertaking a very careful study of air safety statistics on information sought in this country, and in other parts of the world.

Mr. Ruthven I see.

Inspector If that will help you to reduce your contribution, I will hear it on that basis.

Mr. Ruthven Thank you.

Inspector Do you wish to add anything to the letter?

Mr. Ruthven Not in accident rate. I might say that I incidentally doubt where we are going to get 100m. people a year coming to London Airport. At present the figures are that London Airport Heathrow is the fourth busiest in the world, with something like 12½m. to 13m. people a year. The busiest airport in the world is Chicago O'Hare with 27m. Presumably if and when this Third London Airport comes, Heathrow, Gatwick, etc. will remain open still handling virtually a capacity load. I just wonder where we are going to get that many people coming to England, and are we just going to make this Third London Airport into a gigantic crew station for the airlines of the world?

Inspector Mr. Ruthven, the point you raise is not strictly a local implication to be dealt with at this hearing. The answer to your question how the 100m. or whatever figure may ultimately be used has been arrived at will emerge later in the Commission's proceedings.

Mr. Ruthven I see.

Inspector Are there any other points?

Mr. Ruthven No, I think my letter stands as it is.

Inspector It is very clear; thank you very much.

MR. W. J. SMITH* and MRS. B. KILTY† *called*

(*Cublington Airport Supporters' Committee*)

Mr. Smith Owing to the fact there are only two CASC members present, would it be possible for the CASC members to have their —

Inspector I am sorry, Mr. Smith, would you repeat that?

Mr. Smith As there are only two persons from CASC representing CASC, would it be possible for each member to be on the stage instead of being asked the questions from below in the audience?

* See also p. 1229.

* See also p. 1232.
† See also p. 1231.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector You would both like to bat together, would you?

Mr. Smith Yes.

Inspector Certainly. While you are taking your place, I must just mention that on behalf of CASC yesterday it was, I think hinted by Mr. Bramwell that there had been some discrimination over the question of distribution of documents. We have checked the records and we find that in fact CASC made no official application, as far as we can find, for leave to appear. Several letters were received which were combined together and used in our judgment to regard as an application for leave to appear and we sent one batch of documents to Mrs. Kilty and one batch to Mrs. Walsh. Therefore it is a fact that CASC had two complete sets of documents before the hearing. I note this merely for the record and in defence of our very hard working staff.

Mr. Smith Good morning, sir, I am Mr. W. J. Smith, No. 31 Moorhills Road, Wing, a member of the CASC Committee. Several things I would like to bring up for the benefit of the Commission are points in favour of the airport for Wing. Wing site is the most central area of any of the sites mentioned.

Communications to the site are very good, and could be made better without excessive cost. The main roads, old and new, are very straight. In the "Wing Rural District Official Guide", it says: "Wing, centrally situated in the Rural District to which it gives its name, lies 3 miles south-west of Leighton Buzzard, 7 miles north-east of the county town of Aylesbury, 8 miles south of Bletchley, and 10 miles north-west of Tring. London is 44 miles distant by road. This Rural District is served by the London Midland Region of British Railways with the main line from Euston to Scotland which traverses it from Tring to Leighton Buzzard. An alternative route is from Marylebone (Eastern Region) or Baker Street (London Transport) to Aylesbury. Bus services link the villages with Leighton Buzzard, Tring, Aylesbury and other surrounding towns where long-distance coaches may be connected for London and all parts of England. Road access is very convenient, as the A418 which passes through this Rural District links Aylesbury on the trunk road from London to Birkenhead (A41) with Leighton Buzzard, and Hockliffe which stands on the trunk road to Holyhead (A5) and the A50 main road to Leicester and the North."

These are roads which remain in use; the Guide was made, I assume, about 1960. The road situation has been improved since that date—many roads have been improved: the M.1 which lies to the east, and many older roads which lie to the west.

Also in favour of the airport is the fact that expansion is plentiful, because ground is very very easily obtainable to the existing airport, if so required.

Benefits for the area: better living conditions for the population of Wing and surrounding districts due to the fact that population will be larger than at present due to people coming to the airport and living in the district. Some choose to call it urbanisation—I call it just a larger population. This will bring more shops, thus bringing down the cost of living, which is very high at Wing at the moment due to the few shops there having no competition.

The second point for the airport—work. In Wing at the moment there is no industry whatsoever, except one or two local people who work on the farms—the exact number I cannot quote, as I have not been able to obtain the information; but I do know that the majority of people who commute dó so to Luton, Dunstable, Aylesbury and other places in the area: not, as suggested by the Parish Council, only to Bletchley, as the only access to Bletchley from Wing is via the railway which runs from Leighton Buzzard.

The 'bus service which is mentioned in the Council folder (which is their evidence) is very inadequate. I can quote a few examples, but not the whole lot. The first 'bus to Aylesbury comes via Wingrave, goes back to Aylesbury, and arrives in Aylesbury approximately at quarter to eight. As the majority of people start work at 7.30, it means it is too late for workers to commute from Wing. The services to Luton and Dunstable are very very sparse: I can speak a little from personal experience here, as I have used them when my own car—which is my only means of transport here!—is out of commission. The first 'bus for Luton and Dunstable is 6.25 to 6.30; there is another one at ten to seven or round about that time. There are no more buses to Luton from Wing after that, as far as I am aware. This could be verified by a 'bus timetable, if the Commission wishes to do so, which would give the official times.

After doing a day's work—that is on the day shift—I find that if I work until 4.30, I am fortunate at Dunstable to catch a bus that goes to Wing; being on maintenance at Vauxhall myself, times are not always guaranteed. This is my own experience, but it would of course apply to others. If I can not catch the bus at 4.30 there is one at 5.30; after that there are no more through buses to Wing. The only way is from Dunstable or Leighton Buzzard, changing buses and then transferring to Wing. This, Sir, is the local bus service.

Also, the work: the local work in Leighton Buzzard is very, very bad. There are vacancies at Leighton Buzzard, as has been referred to in previous evidence; but these vacancies were not described as to what category they came into, and what pay is rewarded for one man's labour at the end of a week to keep a wife and family on, due to the fact that at present in Wing we pay approximately the same rate for housing as at Luton and elsewhere in the country. This, on top, means that local wages are insufficient to live on. Thus, people like myself have to commute to Dunstable and elsewhere to earn enough money, so that we have an additional charge of approxi-

Printed image digitised by the University of Southampton Library Digitisation Unit

mately £2 a week, which is not liable to any discount on taxation. Thus, my cost of living, because of living in Wing, is £2 a week higher than in Luton.

The local airport would bring work to this area, which would bring work to all types, skilled and unskilled. We have heard one of the people stating, at the Parish Council Meeting in Wing Hall, that there would be jobs for skilled people in the airport, etc., but the only people locally would be people getting work cleaning runways, cleaning windows, latrines, toilets, etc. This does not place very much mentality on the people of Wing and district, and I think, sir, that the people of Wing and district would welcome this airport favourably, to obtain local employment in the vicinity of their own area.

Now to change the subject once again and get back to roads: the roads in Wing are in a very poor condition. This has been emphasised by WARA, in so far as access to the proposed site would be very difficult due to the poor roads. WARA did not state that roads were planned to by-pass Wing a matter of 25 to 30 years ago, and are still awaiting planning permission. This is the progress we get at present in Wing!

Inspector Mr. Smith, I want to give you a lot of latitude because I realise that your case is not perhaps as well organised as other people's; but you have submitted, or there have been submissions, under No. 3024,* of the bones of your case. I would like you not to go too far or to add too lengthily to the broad bones of your case as set out in the document.

Mr. Smith All I was trying to do, sir, was to put in one or two extra points for the other members of CASC who are not present.

Inspector What I really want are your views, or your own Committee's views.

Mr. Smith That is right, sir. As I was saying—the better roads for the area would be obtained if the airport came, thus improvements all round would be beneficial for the village. The local land uses—at present it is retained for agricultural purposes—I have, sir, in my pocket the Leighton Buzzard *Observer*. I am not trying to emphasise agriculture because I know nothing of this subject; but what I would like to point out, sir, is that agricultural ground, which has been a very big subject of WARA, at present has been allocated for flying. I have that copy of the Leighton Buzzard *Observer*. That is all I have to say, sir.

Inspector Thank you. In order to keep some order in the proceedings—is that all you have to say?

Mr. Smith That is all, sir.

Inspector So, if I invite questions to you now, that will deal with the CASC?

Mr. Smith Yes.

Mr. Millard I wonder, sir, if I might suggest that it might help us if Mrs. Kilty added anything else, and then we could deal with the whole CASC case together?

Inspector I am quite willing to adopt that procedure.

Mr. Millard I would defer to anyone else's views; but we would then have one bite at the cherry instead of two bites at two cherries.

Inspector I wonder if there might be some difficulty as to who would reply to which question?

Mr. Smith If this is what suits the proceedings —

Mrs. Kilty I want to put forward for education. The airport in Cublington would bring facilities—we would have to have stores and better education. Our old primary school is very old, and at present damp, and the headmaster and the teachers just cannot give their best to the children. The result of this is that children at ten and eleven cannot read or write, but when they go up to the Secondary Modern School they do begin to read and write, and I feel that if an airport came we would have to have better facilities for the children. Those first years of their schooling life would bring them to a higher level so that the Secondary Modern School could cope with the children. I have been asked to point this out by several of the mothers who have young children in the school. One mother had her child's report yesterday, and it was a terrible report, and she just sat and cried about it, because the child cannot read and cannot write. It was a very bad report. She has a lovely singing voice, and she did not even get a good report for that; the mother was really choked by this. Another mother asked me to point out that one of her children is at Secondary Modern School, but before he went there he could not read. He has had the education at the school, and he has had a prize for advancing so well while he has been up there. They all feel that it is the state of the school—it is not the teachers. You cannot blame the teachers for the state of the school, because there are such big classes for such big class groups. I am sure our primary school teachers do their best, and that is the only thing I feel very doubtful about. I will say that I am lucky, my children learn quickly. The little boy has just passed to the Grammar School, and so it is the mothers of other young children that I am speaking for who just have not got the nerve to come here themselves. I do feel if an airport came it would bring better education. We have been told that aeroplanes coming over disturb children, they cannot learn, but in Northolt and around Heathrow I have relations, and so I know what I am talking about, they have collected GCEs very easily up there, and they have all got good jobs. They have the planes where they are living at Heathrow all the time, but it does not hinder their education at all.

* Cublington Airport Supporters' Committee Evidence, p. 1231.

Printed image digitised by the University of Southampton Library Digitisation Unit

I am just speaking for others in the village, and I do not know what else I can say about it. It is just noise and I personally think children thrive on noise. I have a family so I know what I am talking about. They used to sit and do their homework with the gramophone or wireless blaring away, and they always had good marks at school.

If an airport did come we should have to have better facilities for the children, better social amenities. At the moment the children in the village and I mean teenagers in the village have nothing to do but stand outside the pub and across from the pub and they run in and out for a lemonade. They have nothing whatsoever in the village to do. They just get bored, and that is why, I think, we have such a high rate of delinquency, and now I hear that drugs have started round the area. I think it is just boredom because they do not know what to do with themselves.

I have talked to children and to teenagers quite a lot and I have a teenage family. I feel very much on this point for education and amenities for the younger children.

I do not know really what else I can say, sir.

Inspector Thank you, Mrs. Kilty. Let me get this quite clear, that, together with whatever observations are in your written statements, is for the time being the case of CASC? — (*Mrs. Kilty*) Yes.

Cross-examined by Mr. Millard

4496 If I may ask questions, so to speak jointly to the team, and whoever seems appropriate will answer them. I wonder first of all if we might—I am only going to ask a few general questions and leave it to my friends to pursue any other points, but I wonder if we might first get into perspective the strength of CASC. Can either of you tell us how many members you have on your Committee and your Organisation? — (*Mr. Smith*) The chairman has the information, and also the members, the numbers of people who have agreed to support CASC.

4497 I have not, I am afraid. — (*Mr. Smith*): I am afraid I cannot supply them at the moment, but may be the chairman can supply them. There are five members on the CASC Committee. If you would like, perhaps the chairman can furnish you with the information you so desire, the total strength of CASC. There are five on the committee.

Yes. — (*Mrs. Kilty*) We have members in Aylesbury, Leighton Buzzard, Bletchley, besides ourselves.

4498 I appreciate your difficulties today, but can you give us in loose terms? Is it thousands, hundreds, dozens? — (*Mrs. Kilty*) Hundreds, I would say.

4499 Hundreds of people. In what sense have they actually joined and subscribed to your organisation?

— (*Mrs. Kilty*) No, we do not ask for any money from anybody, because we are just fighting for what we feel are our rights. We do not ask for money, we are all working class people and we just cannot afford to give for anything.

4500 I see. You will perhaps arrange for us to be given the figure on Monday, as to what — — (*Mrs. Kilty*) I can tell you now. I know it was at the last count 600.

4501 We will take that as a working figure. May I just ask you this. Out of that 600, if you like, 6 members of your Committee have put in statements, is that so, or there are those six statements from your committee? — Yes.

4502 I think you know there are some 815 other written statements. — (*Mrs. Kilty*) Yes.

4503 Now, of those, do you accept that only eight of them are in support of the areodrome, CASC's case? — (*Mrs. Kilty*) No, I do not think so. I think you will find among the evidence others that support the airport. — (*Mr. Smith*): There are, if I can probably assist, quite a number of people in Wing and District who are completely in favour of the airport coming that have not submitted evidence due to the fact they did not think they were allowed to do so.

4504 But nothing could be made clearer than the fact they were allowed to submit evidence. But surely you would accept there are in fact only eight supporting letters in the bundles of which three came from your house, Mrs. Kilty. — (*Mrs. Kilty*) Yes.

4505 However one puts it, it seems fairly clear CASC does not represent a large or vocal section of the community of this area. — (*Mr. Smith*) I can only quote from a referendum taken by the Parish Council, taken at Wing. The referendum was taken, and the results which you probably already know—a lot of people in Wing did not bother to vote, these being people who could not care less whether the airport comes or not, so they did not take either side, and I would assess the figure at somewhere about 20 per cent.

4506 I ask the Inspector to draw an inference from the figures before him, and your guess is as good as anybody else's as to how others would vote, is it not? All your case really amounts to, is it not, is that it is worth destroying the countryside for purely material benefits. — (*Mr. Smith*) I have no material benefits except one, this being my children will grow up and live with me in the area they were born in instead of doing as at present people do from Wing, leaving the area to go and live elsewhere due to the low percentage of local work being available. Local work is at Leighton Buzzard. I do not know if you have any particular figures from the Leighton Buzzard Labour Exchange, if you have the figure of the number of vacancies perhaps you also have the figure supplied from the Labour Exchange of the types of jobs available and rates of pay, then you have to assess what is a married man's wages.

Printed image digitised by the University of Southampton Library Digitisation Unit

4507 We do not want to get involved in details of these figures, but you heard Mr. Pooley's evidence,* and it is a fact, is it not, that in the whole of the area, Aylesbury, Bletchley, Leighton Buzzard, Wolverton, the number of vacancies substantially exceeds the number of unemployed. — (*Mr. Smith*) Definitely, I agree with that, yes.

4508 And in that respect this part of the country is rather unusual compared with many others? — (*Mr. Smith*) Yes, but this is evading the actual issue of local employment, because if you were to take all the people in Leighton Buzzard alone who commute from Leighton Buzzard to Luton and Dunstable to earn a wage sufficient to live on because local wages are not enough, surely the employment rate for Leighton Buzzard would be completely different. You would find you would have people on the dole who would not go to Luton and Dunstable due to the fact there should be in your estimation local work, and I disagree on this point.

4509 But there is in fact local work and there is more local work than people available to do the job. — (*Mrs. Kilty*) Where? — (*Mr. Smith*) What type of work are you instigating? What are the wages, if you can clarify this one I will accept your statement.

4510 Clearly only we can talk in generalities, but they are the figures issued by the labour exchange. — (*Mr. Smith*) According to the figures of WARA you have a terrific amount of votes supporting your case. Could you quote me the percentage of the total population of the area you cover? This is a similar type of thing as what you are asking me to put to you.

4511 I do not for a moment accept that. I have made my point and I will not press the matter further, but I do not think for one second that I can accept there is a shortage of employment in this area. Is not the answer to this that you do not like quiet and lack of facilities of the country and you would rather go to live in town? — (*Mr. Smith*) I quite agree on that point. For the people who want to live in the towns, they are in the same position as myself. I am a Council house tenant. I have been a Council house tenant with Wing Rural Council now for 16 to 17 years. Can you tell me what is my position or reason if I go to Aylesbury and ask for a Council house I get the reply, I know "Where do you live now?" This is why I live in Wing and do not live in Luton or anywhere else.

4512 But why did you in fact ever come to live in Wing if you do not like the country? — I came to Wing when I was married because my wife's mother died on the day I got married and left a father on his own and we lived with my wife's father in Wing. This is how I came to get a council house in Wing. I have lived there ever since, and during my time of employment in work at Wing. I came down from Leicester to live in Wing as a qualified electrician. I have been in the trade to date 29 years. I have lived in Wing 21 years.

4513 The broad fact is that you are not a countryman by origin and merely are living there through force of circumstances. — Pardon?

I said the plain fact is that you are not a countryman by origin and are merely living there through force of circumstances. — I disagree with that. I like Wing very much.

4514 But you cannot have your cake and eat it; you cannot have the country and this airport. — I said that I like Wing. As regards the country, the country is the same anywhere. I have just been down to Devon and Cornwall, and I come from Leicester. I have also been to Wales. I have been anywhere you care to mention in this country either in the forces or in civil life, and I would say to you, sir, that the countryside round Wing is no different to the countryside elsewhere in the country. (*Disturbances in the hall.*)

Inspector May I please request that Mr. Smith, this witness is given a fair hearing, please.

4515 *Mr. Millard* It would in fact cease to be country at all if the airport came there, would not it? — It would, as you say, cease to be country if the airport came, but you must realise this, that if the airport came to Wing people would come to live in Buckinghamshire, and the countryside elsewhere in the country would not be disturbed, but if the airport goes elsewhere people in Wing will have countryside and the countryside elsewhere will be destroyed, so wherever you suggest putting the airport you destroy countryside, and also you put people in the area. I think this should suffice for your questions.

Mr. Millard I will leave the Inspector to understand that involved answer, Mr. Smith.

Inspector Bedford?

Cross-examined by Mr. Michael Connell

4516 Michael Connell, Bedford County Council. Mr. Smith, as I understand it, your main complaint is that to get to work you have to travel from Wing to Luton, is that correct? — I travel from Wing to Dunstable.

4517 From Wing to Dunstable? — That is so.

4518 Mr. Smith, would you tell the Inspector how far that is? — From Wing to Dunstable is approximately 11 and a quarter to 11 and a half miles—I have not actually measured the distance.

4519 So the substance of your complaint is to get sufficient wages from work in Dunstable you must travel a total of 22 miles a day? — This is so, yes.

4520 Would you tell the Inspector how long that journey takes you? By car from Wing to Dunstable? — By car, it takes me approximately a half an hour,

* p. 1023.

Printed image digitised by the University of Southampton Library Digitisation Unit

but I am an individual. There are people who have not cars and travel by bus.

4521 I am asking you; it takes you half an hour? — It takes half an hour.

4522 So again the substance of your complaint is that you spend up to one hour a day to get to work? — One hour a day to get to work and to get home. It costs also £2 a week travelling expenses.

4523 Are you aware, Mr. Smith, that the average worker who lives and works in London may well take up to 35 or 45 minutes to travel two or three miles to his work? — As you are talking about London, could you give me the distance between Piccadilly Circus to Kentish Town Station?

Inspector Mr. Smith, we will not get anywhere by you both asking each other questions. At the moment will you try to reply to the questions that are asked?

4524 *Mr. Connell* Mr. Smith, the question I asked was were you aware that for a person who lives and works in London it may well take him up to three-quarters of an hour to travel three to five miles to his place of work? — My answer to your question is, having worked in London I found I could get from Kentish Town where I lived—this is before I was married—to the West End, Piccadilly Circus, Vigo Street where I was actually working, and I could get there and back in approximately 25 minutes by tube.

4525 That was twenty-one years ago, as I understand it. — Yes.

4526 The traffic problems, I suppose were rather less. — I was in London only a few weeks ago, and I found the tubes just as efficient a few years ago as they are now.

4527 Do you think you made a mistake by coming to Wing in the circumstances? — I did not make a mistake; I came to Wing to live with my wife's father.

4528 You work in the motor vehicle industry, do you? — Yes.

4529 Would you agree it is a very vital industry in this country at the present time, a very important industry in this country? — It is, but so are other industries.

4530 Are you aware one of the concerns of certainly the planning officers who have given evidence to the Inspector is that there may be a lack of employment for the vital motor industry if the airport should come to Cublington? — If the airport comes to Cublington and local people all work at the airport, I agree, but from evidence submitted by WARA people will be brought down to work in the airport, so it does not apply.

4531 One of the main complaints that you are aware of is there may be a shortage of labour for the motor industry. — There is a shortage at Vauxhall motors, but this is only due to the low wages being paid in relation to local industries.

4532 They pay low wages? — They pay low wages now in comparison to what they did ten years ago.

Inspector Any questions from the Local Authorities?

Mr. Millard May I ask your indulgence for a moment, sir, not to ask a question, but to avoid going up a side alley which might have arisen. May I say I do not accept the criticism of the education service by Mrs. Kilty, but I do not think it would be an advantage to you or anybody else if I were to deal with them in detail.

Inspector Thank you.

Mrs. Kilty May I say something?

Inspector No.

Mrs. Kilty I only want to ask a question.

Inspector No, you cannot, and you are not going to ask a question.

Mr. Maxwell (*Town Clerk Aylesbury*) I have found myself in some difficulty because whilst I have no questions to ask of this organisation in relation to what I feel is the information which you are seeking on behalf of your Commission, as will be appreciated by many people in this hall many statements have been made which are erroneous, quite wrongly, and in some way criticisms of local authorities. It seems to me that you would be wrong to try and pursue questions like exchange of Council houses and statements made by Mrs. Kilty. I do not know who it is, Mrs. Barbara Kilty or whether it is Mrs. —

Mrs. Kilty Mrs. Barbara Kilty.

Mr. Maxwell Then there is a statement by Mrs. Wendy Kilty on behalf of this organisation which makes again a number of allegations about things which are quite wrong. Should one pursue this or not? It seems to be a waste of time but on the other hand I would hate the local Press to report these things and nobody on behalf of other authorities or Borough Councils question them.

Inspector I realise this type of hearing is most unusual, but my purpose here and the Commission's purpose here is to seek only information relevant to the Commission's task, and I am just simply taking no notice either in letters or other statements of things that do not bear strictly on the Commission's task.

Mr. Maxwell Having put that on the Record I have no doubt the local newspapers will accept what I say and I rest content.

Mr. MacDermot I have some questions.

Cross-examined by Mr. MacDermot

4533 Mr. Smith and Mrs. Kilty, I would like to preface my questions by saying that I think and hope I understand fully the things you are putting forward, and you are perfectly entitled to your point of view,

Printed image digitised by the University of Southampton Library Digitisation Unit

and to put it forward, of course. Firstly I would like to explore a little further how many people and what sort of people it is that you claim to represent. You said there are five members on your Committee —is that right?

Mr. Smith That is right.

4534 Are you elected or did you elect yourselves?— The Committee was formed by volunteers and have been told that they are in this position, and they have been elected from the number of people at the hall when we had the meeting in the Wing Hall, they were elected at these meetings by members in Wing Hall.

4535 Were you present at the meeting? — I was present.

4536 How many people were there? — I would say probably 20, 25.

4537 From those 25 this Committee was formed of five people? — That is true.

4538 Did you have some procedure for recording the membership of your organisation; do people sign a membership form? — We have no membership form; we have not funds to run to paying for a lot of paper, etc.

4539 How do you know when a person is a member? — The Chairman could give you that information better than myself.

4540 Have you recruited any members yourself? — I have not actually recruited to CASC, but I have quite a number of people I have spoken to at work, as far as we are concerned at Luton and Dunstable, in fact at Gloucester a few weeks ago, I was even actually told they recruited people locally.

4541 Do you regard those people who expressed sympathy as being members among the 600? — No, certainly not.

4542 How is this 600 constituted? That is what I want to get at, how the 600 is constituted, what does somebody do to become a member of your organisation? — (*Mrs. Kilty*) They just come and ask if they can do anything to help us, and they are willing to support us.

4543 Do you write their name down somewhere? — Yes.

4544 You have a list of members, have you? — Yes, the Secretary has, I have not.

4545 This is a list of people who have expressed sympathy, and want to help you? — Yes.

4546 You record their names, perhaps, do you? — Yes, I think she has got the addresses.

4547 Perhaps that list could be produced, could it? — Yes, I will see her.

4548 Because that would show how many of you come from the villages in the area, how many from the surrounding towns; Do you know roughly what the breakdown is, about how many come from the villages, how many near the airport site? — (*Mr. Smith*) This would be purely guesswork rather than actual figures.

4549 You do not know? — Not without the actual figures.

4549 Do you think there are more in the villages or more in the surrounding towns? — That I would not know.

4550 Do you know, Mrs. Kilty? — (*Mrs. Kilty*) No, I do not know for sure, but I do know that we have supporters—this might surprise you—from Stewkley and we have supporters from Wingrave, and from Aston Abbots, and Aylesbury, Leighton Buzzard and Bletchley. — (*Mr. Smith*) The amount of people and the zone of the actual membership, you will appreciate, focusses and circles round the actual distances we were able to cover, being only a few.

4551 I appreciate your difficulties and your limitations. Shall we consider first the position of people in the villages, either directly on the airport site or who have come from Wing, near to it. — Yes.

4552 I think you will agree that the people who are of your point of view are a minority, that the majority of people are opposed to the airport? — The people actually are a minority, I give you this, but one must also take into consideration that when I asked at the village meeting for a vote to be taken on this issue by the Parish Council, I also asked for this vote to be taken down to the age of 16 years of age. I stated this at the meeting, because I said that people who are now 16 years of age would be 21 or over by the time the airport was built; these are the people who want the airport. I am 50, too old to work at the airport, but it is the younger generation who will benefit from his airport and not people like myself.

4553 Have you made any count among the teenagers or the younger people; any poll among the younger people? — There was a poll taken at the school by Mr. Taylor, the headmaster, who is also in charge of the Youth Centre. Mr. Taylor could most probably supply you with figures of this particular meeting.

4554 As far as the Parish Council are concerned, they said—speaking of Wing—that their poll showed a majority of 80 against the airport, and there was evidence that opinion had hardened still further against the project. I think you said that you thought that perhaps 20 per cent were of your point of view? — This is right.

4556 Was that derived from these figures given at the Parish Meeting? — Yes, this is right.

Printed image digitised by the University of Southampton Library Digitisation Unit

4557 You have not done any separate poll of your own; have you held public meetings? — We have held public meetings, yes.

4558 How many? — Not very many because finances do not run to hiring halls.

4559 How many? — About four or five.

4560 About the same attendance you spoke of, about 20? — I did not check the attendances.

4561 Is the reason why the people who are of your point of view are in favour of the airport in general the argument which you have put forward today? — The average people who are in favour of the airport are the younger generation, but you have got people like myself in favour of an airport to benefit not myself, or theirselves, but to benefit their children, which is what this airport would do.

4562 Their reasons are the same reasons as you have been putting forward today? — More or less, yes.

4563 The main one that you have been putting forward is the greater job opportunities, the greater opportunities for more highly paid work? — This is quite so.

4564 Without having to travel as far as Luton, that is right, is it? — The point is that if you take the village of Wing, which I live in at the moment, and I can quote almost anywhere else, if you take the village of Wing, the number of people residing in Wing, despite the evidence submitted by the Parish Council,* as to the number of local people, the Parish Council will be submitting its evidence in due course, but the number of people living in Wing and the number of people that lived in Wing taken from the official guide is now 100 per cent more than it was approximately 10 years ago. This 100 per cent increase is not due to local children marrying and staying in the village, although there are one or two who do, but this is due to a large influx of people coming to Wing from outside, buying houses which were built by the Council a few years ago, and also people that married and got houses in Wing.

4565 You appreciate this is a general pattern all over the country, and is due to the reduction in the number of people employed in agriculture, and the increase in the numbers employed in industry? — I disagree that this is the pattern all over the country. I came originally from Leicester —

4566 It is certainly true in Leicestershire? — I have lived in Luton, it is quite some years ago. You will find all families living together in Luton due to the fact there is local employment.

4567 I think it would help if you could try to concentrate your mind on my question and answer it as shortly as you can. If you had your personal choice, would you rather live in Wing or nearer to your work? — I like living in Wing because my home is now there; if I have a chance of employment being brought locally, which they are not there, obviously I will take that chance.

4568 What is it you like about living in Wing? — I like living in Wing because I lived there when I was first married, and I lived there ever since.

4569 Is it your attachment to your house, or do you like village life and the surrounding countryside? — It is the fact I like Wing itself, I also like the surrounding countryside, but as I said previously, the surrounding countryside is the same anywhere.

4570 You appreciate if a vast airport came immediately on your doorstep, it would utterly transform the surroundings of Wing? — It would transform the surroundings of Wing, this I quite agree.

4571 Would you rather live in Wing as it is now, or a mile or two away from Heathrow Aerodrome? — As regards Wing as at the moment, and Wing at the side of Heathrow Airport, as you define it, I see no difference between Uxbridge, which is not very far from Heathrow, and Wing as regards community of people.

4572 You are not answering my question and I will repeat it. Which would you rather do, live in Wing as it is now, or live a mile or so away from Heathrow as it is now? — Would I rather live in Wing now as it is now, or would I rather live in a place near Heathrow?

4573 A mile or two away from Heathrow as it is now? — If I lived in Uxbridge as I do in Wing, I would live in Uxbridge.

4574 I have asked my question twice now; I shall not ask it again. I leave it there. — My job, sir, is an electrician; you are a public speaker.

Inspector This is not a question of being a public speaker; it is a question of answering a plain question. It is no more difficult than that. — The question was: would I rather live in Wing as it is now, or would I rather live near Heathrow Airport.

4575 *Inspector* I think the question as originally put was: would you rather live in Wing as it is now in its existing environment, or in Wing if Wing was one mile from the existing Heathrow Airport; I think that was the original question.

Mr. MacDermot I certainly will take it from that point. — To me it would be no different.

4576 You think it would make no difference? — No difference whatsoever.

4577 It is because you think it would make no difference to the quality of your life that you would welcome the airport for the increased job opportunities? — This is so.

* p. 1100.

Printed image digitised by the University of Southampton Library Digitisation Unit

4578 I think this question should be directed more to Mrs. Kilty, who has spoken on education. Do you understand that if the airport came that the population of Wing itself would be likely to be increased substantially? — (*Mrs. Kilty*) Yes, I do.

4579 You would think because a lot of people have to come and work there, that Wing would expand to a bigger place which would then have bigger schools? — Better education, yes.

4580 And better education, because they were bigger schools which could accordingly give a better education.

Mr. Smith If I could answer?

Mr. MacDermot Let us take it one at a time; I am asking Mrs. Kilty. Is it right that you believe that you would get better education at Wing because you would be able to have bigger schools owing to the increase in the population? — (*Mrs. Kilty*) Yes, I do.

4581 Supposing you are wrong about that, and supposing the authorities said: it would not be right to build houses today near to this aerodrome, and people who are going to work at this aerodrome will have to live at places like Milton Keynes, Leighton Buzzard, Aylesbury, Linslade, Buckingham, and so on, and drive or be driven to the aerodrome, and leave Wing just about the size it is, would you then feel you were really benefitting? — As long as the education is better I would not mind how far it was the children had to go to school.

4582 We know your boy—we are delighted to hear it—has got a scholarship to Aylesbury Grammar School. — Yes.

4583 He will have to travel there? — Yes.

4584 If the result of having the airport is that he still has to travel there, but at night he is going to have a lot of aeroplanes, how do you think he is going to benefit in his education? — I do not think that will make much difference. I live right on the main road. We have heavy lorries going right through and there is planes continuously over now. I never really took notice of it; somebody drew my attention to it yesterday, and I am really telling the truth on that; they said had I noticed? I said no, because I am so used to the noise on the road, that I just was set in to noise, I do not take any notice.

4585 I do not know if you can help us any more about the membership or organisation of your Committee? Have you yourself been taking any active part in that? — I help all I can, but I am not on the Committee.

4586 What work have you been doing? — I run them out if they want to go out anywhere to see anybody connected with the airport, I drive them, on the support for the airfield. I drive them there. I take anybody that wants to go that cannot get there otherwise by car.

4587 You mentioned that quite a number of the supporters were from surrounding towns, like Aylesbury, Leighton Buzzard, Luton? — Yes.

4588 Are you able to tell us, have you spoken to those people yourself? — Some of them, yes.

4589 What is their interest in the airport coming to this site? — Quite a few of them said they had originally come down from London, and they were promised when they got here that they would get London rates of pay, but when they got here the money is lower, so they would like to see the airport here so the wages specially in all the industries would have to go up to London level, and as the cost of living in this area is dearer than it is in London, they would welcome an airport.

4590 If I may say so, it is not surprising that a number of people should take that point of view. What I am interested in is to try to find out, if I can, how many people take it. Do you know of any kind of activity that has been organised in any of these towns to try to find out how many people take this point of view? — There have been surveys and they have asked us if they can do anything to help, when they go about, to get support.

4591 Do you know what the result is? — Do we want them to get anything up for funds, but when we started out on this, we were determined not to ask anybody for money as they can ill afford to give anything.

4592 Do you know in fact whether surveys were carried out of this kind? — Yes, they did carry surveys out.

4593 Have you got the results? — No, I have not; the Secretary has got them.

4594 Who is that? — Wendy Kilty.

4595 Is she a relation of yours? — Yes, she is my daughter.

4596 Have you seen them? — I have seen them, yes, but I could not explain them to you, I am afraid; I do not understand them.

4597 I do not know if you can help on this, Mr. Smith. You work in Luton. Do you know if anything has been done in Luton try to and find out what proportion of people are supporters? — (*Mr. Smith*) This I cannot tell you personally, because I do not know, because I have been on nights now for some few months; the consequence is that some of the meetings I have not been able to attend, but I do know from the work in the Dunstable area that there are a lot of people at present working in Dunstable not in the correct industry who would welcome the airport, not for beneficial gains or higher rewards, but a local job rather than travel to Leighton Buzzard where they are working at present, thus saving the cost of travelling, which is enormous, especially in the winter when it is very difficult.

Printed image digitised by the University of Southampton Library Digitisation Unit

4598 So there are some people who would find it was nearer employment and who do welcome it for that reason, even if they did not get higher wages? — I personally myself would work at an airport if I was 20 years younger; I would rather work at an airport in Wing for £5 a week less than what I earn at Dunstable at the present time. Does that satisfy your question?

4599 I think I take your point. I gather the implication is that you would not at your present age, because of your family responsibilities? — My present age is 50, so if the airport is started tomorrow, and it would take, perhaps Mr. Hunt could give the figure, somewhere round 5 to 10 years, by the time the airport was built I would be 60, I am afraid a little too old.

4600 Retiring age—I take your point. You are not able to help us with any numbers, or anybody of organised opinion representing in towns the viewpoint you are expressing? — The numbers of people that are in favour of the airport that speak to me personally at work, and also people I meet in Dunstable and Luton and in Leighton Buzzard are not members of CASC, but they still support the airport coming. We cannot, and it is impossible for CASC to obtain as WARA have done a full number of people in favour of the airport coming due to the fact we have not the cash or the facilities that WARA have to do this.

4601 Nor could your union do it? — My union is the Electrical Trades Union, the Plumbers, I cannot remember the full title, but they do not usually back anything which has a political basis. My union is non-political.

4602 There is nothing political about this. — This is not union business.

4603 Could we get the people who are the members of the Committee? You told us there are five members. It is your daughter, Mrs. Kilty, who is the Secretary? — (*Mrs. Kilty*) Yes.

4604 The Chairman is —? — Mr. Payne; Miss Brennan is the Treasuer.

4605 You are on the committee, Mr. Smith? — (*Mr. Smith*) Yes.

4606 Who is the fifth member? — I am on the Committee, but I am an inactive one at the present on the Committee due to the fact I am on night shift.

4607 You are one of the five? — Yes.

4608 Do you know who the fifth is?

4608 *Inspector* Is it Mrs. Walsh? — (*Mrs. Kilty*) Yes. — (*Mr. Smith*) We also have, who is not here today, we could not contact him, the President.

4609 *Mr. MacDermot* Mr. Bramwell, would that be? — (*Mrs. Kilty*) No the Duke of Bedford is the President.

4610 Who is it?

Inspector The Duke of Bedford.

Mr. Smith Owner of Woburn Abbey.

4611 *Mr. MacDermot* Have you any letter or written evidence to show that the Duke of Bedford is your President? — This I could not really say. I have not the documents or the evidence. The Chairman, who will be here on Monday, could probably answer this question for you.

4612 It would be intersting to see the evidence. Has he ever been to any of your meetings? — Once again, I cannot help you on this, because I have not been to the meetings myself at recent times due to being on night shift.

4613 Have you any evidence to support your contention that the Duke of Bedford is your President? — You could contact him yourself.

4614 *Inspector* Let us be fair, Mr. Smith. The question was: do you know, have you any evidence to this effect. — I have been on nights; I have not seen any evidence due to the fact I have not been to the few meetings.

Inspector You could say no; that is the answer.

4615 *Mr. Wallace* Mrs. Kilty and Mr. Smith, I believe it is correct to say that you have no personal knowledge of agriculture yourselves?

Mr. Smith I have no personal knowledge of agriculture, and I do not think Mrs. Kilty has.

Mrs. Kilty No real personal knowledge, only as I told you, Mr. Wallace, I have noticed fields that have been ploughed up recently and sown with wheat that have not been ploughed up and sown for 40 odd years.

4616 *Mr. Wallace* Is it correct to say you and myself met the Inspector yesterday, and agreed that as the issues between us were clear, we would not seek to cross-examine you today?

Mrs. Kilty Yes.

4617 *Mr. Wallace* In return you would not seek to cross-examine our agricultural witnesses?

Mr. Smith This is quite so.

4618 *Mr. Wallace* Are you prepared to stick by that?

Mr. Smith Yes.

Mrs. Kilty Definitely.

Mr. Wallace It would assist the Commission if that is on record, that we have differences of opinion, but they could come out in the proceedings.

Inspector Any other questions of the CASC representatives?

Cross-examined by Mr. Douglas Duncan (Chairman, Wingrave Parish Council)

4619 I do not know if you can clarify for me this point; you referred yourself to submission 3024 from

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. Bramwell;* would the two members of CASC organisation agree that that constitutes part of their case, and if so, would they be prepared to answer questions on it? — (*Mr. Smith*) 3024 I have on the table here. If I can answer any questions, I will willingly do so —

4620 *Inspector* Mr. Smith, we may be at cross purposes. The Commission was in great difficulty, or the Commission staff, in knowing just which representations form part of the CASC's submissions, and the point that is being made is that Mr. Robert Bramwell's submission—in fact three lots I think in all from Mr. Bramwell—are numbered 3024, and *prima facie* appear to form part of your Committee's case. I think you are being asked first of all: do you still say this particular document No. 3024 from Mr. Bramwell is part of your Committee's case?

Mrs. Kilty No.

Mr. Smith Mr. Bramwell is or was acting as our speaker or chairman yesterday, but he is not appearing as a member of CASC; he is appearing as an individual, and his evidence is issued as such.

4621 *Inspector* I think we want to get this absolutely clear. You, as representing the Committee officially, are now, as it were, withdrawing your recognition of Mr. Bramwell's submissions?

Mrs. Kilty Yes.

Mr. Smith This is so, yes.

4622 *Inspector* Does that help you, Mr. Duncan?

4622 *Mr. Duncan* That does, because my remarks I had to say did relate specifically to that very peculiar document, and in that case I must withdraw; thank you, sir.

Cross-examined by Mr. Ginn
(Stewkley Action Committee)

4623 May I draw your attention to sheet No. 1 of the evidence of CASC† bottom paragraph on the righthand side; I will read it to you if I may: "Something must be done about the dying villages". Would you please define what you mean by a dying village? — (*Mr. Smith*) Shall we say Wing, for instance. We will quote Wing as a dying village. Wing at present has more old age pensioners in Wing today than it had 20 years ago; the number is increasing every year. If this keeps on at the present trend, this was actually brought up by one of the Wing Parish Councillors, Mr. A. Smith, when he stated that Wing was a dying village, and he is in a better position to know this than myself.

4624 Have not you said this morning that a number of houses have been built in Wing over the last few years? How then can you claim that this is a dying village? — Houses have been built in Wing, but the people that now occupy those houses are mostly elderly people. All the houses which have been built in Wing of recent times, the last allocation of houses for people in Wing were council houses, and also old age tenants bungalows. The Wing Rural Council have now cleared some further ground in the High Street due to demolition of part of the old village, some of the old village which was originally classed as historical value has now been demolished to build more old people's bungalows.

Cross-examined by Mr. John Cornwall
(Prospective Liberal Candidate, Bucks.)

4625 May I refer, Mr. Smith and Mrs. Kilty, to your evidence on welfare services in your duplicated submission, where you say that "a doctor writing to the Lancet medical journal, commented that there were more nervous breakdowns in North Bucks than any other county in England—not through noise, but through frustration and boredom". That is what I wish to refer to. May I ask you whether it would surprise you that I have spoken this morning to Dr. Lavis, the Medical Officer of Health for that very large area of North Bucks, and he has said to me this morning, "To suggest that there are figures to support that assertion" and I quote him "is loose nonsensical talk". — (*Mrs. Kilty*) It was written in the Lancet, the Doctors' monthly journal, and I could not tell you the name of the doctor, I forget it. Mrs. Walsh could have told you had she been here, because her doctor pointed it out to her in the Lancet Journal. She asked him "what effect will noise have on us"—she said "we must know this", and he gave her the Lancet and said, "there is your answer". So she said, "that is only through boredom", and he said, "that is what the doctor wrote". I cannot tell you the doctor's name—she would know.

4626 In view of that answer, would it surprise you, Mrs. Kilty, to know that a Sub-Editor of the Lancet has stated this morning that he cannot recollect any such point ever being made in the Lancet? Would it also surprise you to know that Dr. D. C. Watt, of St. John's, Stone, has consulted several other doctors, again this morning, and has pointed out that a point of this nature made in the Lancet would certainly not be missed by members of the profession in the area, and that they have no recollection of such a point? — (*Mrs. Kilty*) I shall ask Mrs. Walsh if she can remember the date of the Lancet.

Thank you — (*Mrs. Kilty*) And I shall ask her to let you have it. I shall see her this afternoon.

4627 *Inspector* Just to get the position straight, Mrs. Kilty—the statement in question is in a statement from your daughter? — That is right: Mrs. Walsh told her. She was reading it to her.

* p. 1346.
† p. 1232.

Printed image digitised by the University of Southampton Library Digitisation Unit

4628 *Mr. Cornwall* May I tell you that this morning, Dr. Lavis has told me that the causes of mental illness are often not known? Only one thing is very often clear—that they are in fact inherent in the person. — I see.

4629 In view of that, no doubt you will accept Dr. Lavis' assertion, which is a professional one, that such an assumption is, in his own words, "loose, nonsensical talk"?

Inspector We have had expert evidence on this.

4630 *Mr. Cornwall.* Yes, but I would like to have Mrs. Kilty's comment, if we can have it. One small point, then, Mrs. Kilty—admissions into St. John's, Stone are of course recorded, but I understand from that establishment that admissions are not broken down into North Bucks and South Bucks, and so again there can be no statistical evidence for the assumption made in your submission. — Yes. Well —it is not mine.

4631 You stated earlier, either Mr. Smith or Mrs. Kilty—I am not sure which it was—that you did not do any money raising, you did not ask any people to give money because working class people—I think you put it that way, I do not like class categories myself—working class people cannot afford to give Would it surprise you at all if you were to learn that some working class people did give to WARA? — (*Mrs. Kilty*) No, not after the frightening letter they got from the County Council. I should agree with that.

4632 Mr. Smith or Mrs. Kilty—have either of you been in a classroom with the background hum of a forced ventilation system going on and been in there still when the forced ventilation has been switched off? — (*Mr. Smith*) I have not actually been in a classroom, because ventilation and heating systems were very sparse when I was at school. But where I work now, at Vauxhall, on the ground floor of No. 11 Bay, it is all—and I mean all!—forced heating and ventilation.

4633 Will you accept that teaching and learning is easier when the forced ventilation system is switched off? — As I say, I was not at a school where they had it; but in Leicester I was on the school on the corner—if you know Leicester you will know it, it was on the corner of Abbot Park Road—

Inspector This is not helping the Commission for me.

Mr. Smith — so I had more noise at the school than from forced ventilation, but it did not interfere with my education.

4634 *Mr. Cornwall* I shall accept your assertion as a personal one, but I hope you will also accept mine, that in general teaching and learning are more difficult with background of this kind. — Not being in an educational hazard, I would not know.

4635 You would accept it, then? — I would accept it.

Cross-examined by Mr. Scott Smith

4636 I see that there is a letter in the collection submitted to the Commission from a Mrs. E. Kapui.* Could either of you enlighten us as to what her position is? — (*Mr. Smith*) Mrs. Kapui is at present our press officer.

4637 Thank you. Could you answer a point which she makes in that letter? — (*Mr. Smith*) I will try, if I can.

4638 I have my typescript of this, because the handwriting is difficult to go over quickly—I hope you will correct me if this is wrong, but there is a sentence about halfway through the letter saying, "Only an airport locally could give us this"—meaning a decent standard of living—"for our chlidren". I think that is fair; would you say that this statement "only an airport locally" is an accurate description of CASC's view as a whole? — Well, Mrs. Kapui was probably trying to —

4639 I am sorry—could you say "yes" or "no", please? — This is rather difficult —

4640 *Inspector* The question was: is this CASC's view as a whole? Could you answer that question? — CASC's view as a whole—if this is an answer to your question—is that only an airport could give us better living conditions because in view of recent statements and happenings from the local Councils, we are not likely to ever get local employment in industry, so only a local airport could bring local jobs to the area. This is probably what she meant, and this is the opinion of CASC.

Inspector Any other questions? There are no more questions, and I have no questions—thank you very much, Mrs. Kilty and Mr. Smith, for coming along.

Mr. Smith I shall let you have that paper, sir.

Inspector Which paper is this?

Mr. Smith The *Leighton Buzzard Observer*, Sir.

Mr. MacDermot Before the witnesses leave—may I ask if we could have some indication of who is to come on Monday, and what subject they will deal with, because they will affect the decision of WARA as to whether they need to be represented?

Inspector Thank you, Mr. MacDermot. Mr. Smith—do I take it that when Mr. Bramwell arrives, he will not now be contributing to the contribution of CASC?

Mr. Smith No—his evidence is quite independent of CASC.

* p. 1233.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector So your President, Mr. Payne, should appear on Monday afternoon, I think, to deal with the matters raised in his statement, which are primarily roads, access, and that kind of —

Mr. Smith Roads, rivers, access, etc., Sir.

Inspector In other words, the subjects mentioned in —

Mr. Smith In his statement, yes.

Mr. MacDermot And do we know when Mr. Bramwell will be appearing?

Mr. Smith This I cannot tell you, sir, as I do not know.

Inspector But we are quite clear—as far as you are concerned, Mr. Bramwell is now an individual?

Mr. Smith He is an individual, Sir, yes.

Inspector From our point of view, Mr. MacDermot, I am afraid I just do not know as of now. I did arrange yesterday morning, at his special request, to take him with CASC, when he assured me that he was associated with CASC. That state of affairs, it seems, has ceased to exist, so in my view he now reverts to individual status, and we will have to find him and agree with him when he appears as an individual. I am afraid not having heard from him this morning, I can take it no further than that.

Mr. MacDermot If the officers could let us know—when they know—when he is appearing . . . May I ask also that Mr. Smith and Mrs. Kilty be good enough to convey to their Chairman the request that we made in cross-examination for them to produce those lists of members and the other points that were raised? all the relevant documents?

Inspector There is a risk that this may be forgotten, because I do not yet have, of course, a copy of the transcript —

Mr. MacDermot There is a list of members. There is a brief point of the presidency of the Duke of Bedford. There are the results of their own surveys, that they have carried out. I think it was mentioned that there had been surveys. And records of any meetings.

Inspector Yes. Can you talk to Mr. Payne between now and Monday, Mr. Smith?

Mr. Smith I am afraid I won't be able to do that, but Mrs. Kilty —

Inspector Mrs. Kilty, could you do that?

Mrs. Kilty Yes.

Inspector If you can talk to WARA, and make quite certain you have those four items listed, then Mr. Payne can deal with them on Monday. Thank you very much for coming.

(*The witnesses withdrew*)

Inspector I think we are back on programme now, with the National Farmers' Union.

MR. WALLACE* *called*

(*on behalf of The National Farmers' Union*)

Mr. Wallace Sir, at the risk of trying your patience further, and also that of this Inquiry, I would like to raise the question of Mr. Bramwell once more in two regards, particularly as there have been allegations of unfairness attached to this Inquiry. I would like to ask first whether Mr. Bramwell will have the right to demand that my witnesses—all of whom are very expensive gentlemen—shall have to come again when he finds it convenient to come —

Inspector The short answer is "no".

Mr. Wallace And secondly, I have a number of comments to make of Mr. Bramwell's proof of evidence,† which will not be complimentary. He is not here to hear them; of course, he will be able to make his own submissions in due course, but again I thought I would put the situation to you because I must comment on his proof of evidence. It is a pity that he is not here, and I do not want it suggested that we have taken this advantage of him.

Inspector I realise we have this difficulty in a long Inquiry where all people cannot be here all the time. I am sure your comments will be fair, on his evidence. He will be able to speak in due course if he wishes to. The Commission has agricultural advice—expert advice—and all things received at this stage will be fully considered and dealt with at later stages.

Mr. Wallace There are just one or two other preliminary matters. We have prepared a map of farm buildings in the area‡—these are perforce scarce documents, because they all have to be put down individually. I would like to hand in a copy to you in a moment, Sir, and anyone who wishes to inspect our other copy will be welcome to do so.

The other thing is that there are three appendices to Mr. Giles' proof of evidence; they are in fact published reports by the University of Reading§ to which he refers. We have in fact a half dozen copies of each—we would like to hand in three to you, and anyone who particularly wants these would be welcome, but I do not think they are material to this particular case, only as reference —

Inspector Judging from the bundle that I see in your hand, Mr. Wallace, that looks like Stage III evidence.

---

* See also p. 1235.
† p. 1346.
‡ Available for inspection, by arrangement, at the offices of the Commission.
§ Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. Wallace Yes, Sir. I shall hand them in, but they are, as I say, only for reference.

Inspector Mr. Smith has just handed in a copy of the *Beds and Bucks Observer* of July 15, which contains the report of the Flying Group occupying land in the proximity of Wing Airport in the near future—next Spring. He did mention it at some time, either in his evidence or in cross-examination. The paper is here, and is available for inspection if required. Thank you, Mr. Smith.

Mr. Wallace Sir, I would prefer not to comment on that. There are certainly doubts as to its veracity in any case, and it is to some extent hypothetical. Again, I do not want it to be thought that we skated over any issue which may be relevant to this Inquiry —

Inspector I give you my undertaking we shall not regard you as skating in this matter, Mr. Wallace.

Mr. Wallace Thank you. If I may follow my usual practice, of calling my evidence first—there are one or two amendments which I should like to make to NFU 1 CW†—that is our reference, you reference is 3043 —

Inspector Yes, I have them all.

Mr. Wallace This is the survey of affected farms, and there is an amendment on page 3 which we would like to make. It is at point (f), which reads at the moment "The problem of land drainage and run-off will present a special problem, in that the River Thames rises in the area . . ." That has got an unwanted "S", and should read "the river Thame". There are no further amendments to that. I shall call my planning witness, Mr. John Hawkes.

MR. J. E. Y. HAWKES,‡ *called*

(*Examined by Mr. Wallace*)

4641 Your name is John Hawkes, and you are an Associate of the Royal Institute of British Architecture, an Associate Member of the Town Planning Institute, and a partner in the firm of Hancock, Hawkes, Architects/Planners of Hampstead, London. — I am.

4642 I have no further points to put to you.

4643 *Inspector* Are there any questions from the First Tier Authorities? From other local authorities? From any other persons? Any questions to Mr. Hawkes? Mr. Hawkes, the basis of your statement is substantially, of course, as for Nuthampstead, so I ask you no more questions on the point. Just as a matter of detail, I see in para. 28, on the question of the draft proposals for Milton Keynes, that you have arrived at what I find to be the lowest ever figure, of eight dwellings per acre. What was the basis of that? — That was indicated from the draft plan as a possible ultimate density.

Inspector I have no questions—thank you very much.

Mr. Wallace I have no re-examination.

(*The witness withdrew*)

MR. A. K. GILES* *called*

(*Examined by Mr. Wallace*)

Mr. Wallace Sir, there are one or two minor amendments to which I shall refer in Mr. Giles' proof of evidence. The first is at the bottom of page 1 —the first footnote, where "Farm Business Data" is given as 1968—it should read 1969. The other minor amendments are on page 3, in paragraph (b), which is just over halfway down —

Inspector It should be "Grade 3".

Mr. Wallace It should be "Grade 3", sir. And one final matter is that the Farm Management Survey results referred to in the footnote on page 3 are of Reading University.

4644 (*To the witness*) Are you A. K. Giles, a graduate of the Queen's University, holding the degree of B.Sc. (Economics) in the upper division of second class honours; was your first professional appointment to the Department of Agricultural Economics at the University of Bristol as an Assistant Agricultural Economist, and subsequently as Agricultural Economist; during six years at Bristol were you closely involved in the preparation of farm-group performance data for use by advisory officers in the West of England; in 1960, were you appointed as a lecturer in agricultural economics at the University of Reading, and were you promoted in 1968 to a senior lectureship. Whilst at Reading, did you have, and do you still have, special responsibility as "Farm Management Liaison Officer" to the National Agricultural Advisory Service, S.E. Region, and have you been responsible for the preparation of an annual handbook of local "Farm Business Data"† (1) for use by advisers. More recently, have you become responsible for the planning of all official departmental extra-mural work, including financial farm surveys undertaken, by contract, for the M.A.F.F.? Have your personal research interests included "farm business management", "labour relations in agriculture", and, more recently, "the interaction of urban development and agriculture"; are you the author of 40 separate publications in these various fields including, recently, a major report on the agriculture of the area designated for

* Not reproduced.
† p. 1235.
‡ See also p. 1237.

* See also p. 1243.
† Available from University of Reading.

Printed image digitised by the University of Southampton Library Digitisation Unit

the new city of Milton Keynes; are you currently examiner in farm business management at the Universities of Cambridge, Nottingham and Belfast, and at the Agricultural Colleges of Essex and Berkshire; are you a member of the Executive Committee of the Agricultural Economics Society, and also a member of the International Association of Agricultural Economists and the Farm Management Association, in addition to working on numerous national working parties and committees related to farm economics? — That is correct.

4645 I have only one question to put to you: I believe that you placed great importance on your complete independence as to the production of this report? — That is right; that is the only basis on which I was prepared to undertake the request to do this work.

4646 And I believe it would be true to say that we welcomed the fact that this was a completely independent report. — Yes.

Inspector Any questions from the First Tier Authorities? Other local authorities? No questions. Mr. Giles, I have no questions; I am quite sure that this work will be very useful to the commission in subsequent stages. Thank you.

(*The witness withdrew*)

Mr. Wallace I hope we shall get full marks, Sir, for the speed at which we are proceeding!

Inspector I had high hopes of this, Mr. Wallace!

MR. C. A. ROGERS* *called*

(*Examined by Mr. Wallace*)

4647 Is your name Cecil Albert Rogers; are you a Fellow of the Royal Institution of Chartered Surveyors, Fellow of the Chartered Auctioneers' and Estate Agents' Institute and Member of the Herts., Beds. and Bucks. Agricultural Valuers' Association; do you live at Whitchurch, Bucks., and have you resided in the Aylesbury District since 1929 and have you practised as an Agricultural Valuer for forty years; did you join the firm of Reader & Son as a Partner in 1945 and have you been engaged in Agricultural Valuations and sales of farms in Buckinghamshire and its adjoining counties? — Yes, Sir.

4648 I believe you want to make one slight amendment to your proof of evidence, on the second page; would you tell the Inspector what it is? — Yes, Sir. Paragraph 5, "Live Stock"—in the second line, after "airport site", I want to include "and its adjacent area". So that it reads: "The N.F.U. Survey shows that the following livestock is kept on the Airport Site and its adjacent area".

4649 I have no further questions.

4650 *Inspector* Are there any questions from anyone present to Mr. Rogers? No questions. Mr. Rogers, I have one point of interest: I was rather intrigued at the seemingly low price on the sale of Hogshaw Farm in 1968—for example, as compared with the farm above. Is there any easy explanation of that very big difference? — It is a farm which is situated—I would not say in the bad land, but it is in a low-lying area, on the other side of the Claydon Hills going towards the Claydon Estate, and it is not very well equipped with buildings and, without any disrespect to the previous occupier, it could have been in a better state, which had deteriorated during the War and not got back in good order.

Inspector I have no more questions; thank you.

(*The witness withdrew*)

MR. H. C. BALFOUR* *called*

(*Examined by Mr. Wallace*)

4651 Is your name Hugh Crawford Balfour, and are you a Member of the Institution of Civil Engineers, a Member of the Royal Society of Health, a member of the Institution of Public Health Engineers, and Associate Member of the Institution of Water Pollution Control; are you a Member of Council of the Institution of Civil Engineers and also a member of their Hydraulics and Public Health Board; are you a Partner in the firm of D. Balfour and Sons who over the past eighty years have been engaged in schemes of water supply, surface water drainage, sewerage and sewage disposal? — I am.

4652 And has your firm acted as Consulting Engineers to many of the local authorities in close proximity to the proposed airfield, including Buckingham Rural District Council, Winslow Rural District Council, Leighton-Linslade Urban District Council, Wycombe Rural District Council, Tring Rural District Council, Berkhamsted Rural District Council; and have your firm also been concerned with schemes in the locality of Linslade, Newton Longville, Whaddon and Nash, Great and Little Horwood, Mursley, Swanbourne, and Winslow? — Yes, Sir.

4653 Just one other question to you which is this: is it correct that not only were you asked to produce

* See also p. 1250.

* p. 1251.

Printed image digitised by the University of Southampton Library Digitisation Unit

an independent report but you were told if anything to err on the side of under-estimation? — Yes.

Inspector Any questions?

Cross-examined by Mr. Michael Connell

4654 Mr. Balfour, paragraph 8 of your proof of evidence; you suggest there that provision must be made to restrict the flow into the existing water-courses to rates not in excess of those experienced at present. Is that because there was knowledge that on occasions flooding is a problem in the Leighton–Linslade area? — Yes.

4655 Could you give the Inspector any recent examples of the nature of that flooding, for instance, was there some in the autumn of last year, do you know, in that area? — There has been a certain amount of flooding, I gather, in the area generally from time to time.

4656 You cannot help us as to how recent that problem has arisen? — No, I think it is a general history.

Inspector Any questions? I have no questions. I just comment that we of course are fully cognizant of your comment in paragraph 13. — Yes.

Inspector As to the costs of the works which could be involved. Thank you.

Re-examined by Mr. Wallace

4657 There is one matter I should have perhaps put, which escaped my mind. Mr. Balfour, have you been able to see the report which has been produced for the Milton Keynes Development Corporation in relation to this problem? — No, sir. I have been to Milton Keynes, but at the time of my report being prepared I was told it was not officially confirmed and agreed.

4658 Lord Campbell, as I understood him when he was making his statement earlier in this inquiry did indicate that the problems related to Milton Keynes were so substantial that a further airport in the area might make the problems even more difficult to deal with. Would you agree with that generalisation? — Yes, this was my point in paragraph 13.

(*The witness withdrew*)

Mr. Wallace In view of the absence of my friend, Mr. Bramwell, I anticipate that there will be no questions to my individual farmers, sir, and perhaps I might therefore, to save your time and this Inquiry, offer them collectively for the cross-examination and if anybody wishes to speak to any of those individual farmers I would be only too happy to call them.

Inspector Yes. The evidence of Mr. Venn, of Whitchurch (Dunton) Aylesbury? Mr. B. J. Hedges? Mr. Peter Warren, Old Park, Wing? Mr. John Hugo Kellner, Soulbury? Mr. Bryan Fonge, Manor Farm, Waterperry? Their proofs* have been circulated. Are there any questions concerning their evidence? I have no questions, it is all very clear. Thank you very much.

Mr. Wallace It remains for me to make submissions on behalf of the National Farmers' Union. Perhaps I might say I appear on behalf of four County Branches which are particularly involved in this proposal. They are Buckinghamshire County Branch; the Bedfordshire and Huntingdonshire County Branch; the Northampton County Branch, and the Oxford County Branch. Perhaps I might also say all 472 members of the Union have specifically requested that we should speak on their behalf. Those 472 members live within a 15 mile radius of the airport.

Again, sir, perhaps I might be erring too much on the side of caution, but perhaps it is right to put on record what I know is known to your Commission and also the vast majority of the people in this inquiry, that I myself personally live within a few miles of the proposed Wing Airport Site, and I happen to be the Deputy Chairman of the Wing Airport Resistance Association.

Inspector I did not know that, Mr. Wallace.

Mr. Wallace Did you not, sir. Well, certainly the Secretary did. I think it will be clear to you, sir, from the presentation of our case that the same procedure is being used here as at other Stage II inquiries, and we are relying on independent evidence, and I hope you and anyone else who cares to think about it will accept there is no special National Farmers' Union bias in favour of Wing over and above the other sites; we are carrying out our opposition or our information rather to this site on the same basis.

Sir, our evidence has been put before you, and I do not wish to go over it in any great detail, I should like, however to highlight certain of the points with which we are concerned, and which we think the Commission should specially look at, and then try to draw conclusions from that evidence which seem to us to follow logically.

The first point I wish to make at this inquiry is this, and I believe it is one which will fully meet with your approval. That the point of these Stage II Inquiries is to determine the effect of the proposed site on the locality, and not to draw comparisons with other sites. So, we would suggest that comparisons with other sites may be implicit in the evidence which has been put before you by the Cublington Airport Supporters Club,† and that there is perhaps a danger in view of the published Ministry of Agriculture information on this site of

* p. 1253.
† p. 1231.

Printed image digitised by the University of Southampton Library Digitisation Unit

treating it in a comparative way. My task is not to convince the Commission that Wing is more important agriculturally than the other sites, but to demonstrate that an airport sited at Wing will have really damaging effects and far reaching effects on agriculture and farmers over a very wide area. One of the problems which we are faced with when we present the agricultural case is as to the definition of agricultural land or good agricultural land. It may be looked at from the point of view of the intrinsic quality of the land. It may be looked at from the point of view of the investment and return on investment on that land. It may be looked at, perhaps, from the point of view of structure. It may be looked at from the point of view, perhaps of the correct or incorrect use of limitation of agricultural land. It may be looked at from the point of view of farmers' livelihood. We have expressed publicly on a great many occasions and also to the Ministry of Agriculture itself our grave concern at the Land Classification Maps which they are producing under their new scheme at the present time. Our main concern, sir, is this, that we believe they do not tell the full story, and we have found that planners once they see a map such as this are merely using it as an indication of where they may or may not go, and planners tend to think that the only places where they do not have to go are areas of Grade I and Grade II classification. I believe it is to say the Ministry itself realises this has caused damage in the past, and I am sure you, with your agricultural consultants in whom we have complete confidence will have taken this point on board, but, sir, we do not rely perhaps as much as some people on a mere agricultural classification map. It is a truism, but I believe nonetheless valid for that, that there are no bad farms, only bad farmers. Therefore, we suggested what the Commission ought to ask in relation to this site are questions such as these: Are farmers in this area making good use of their land within the particular limitations and climatic conditions that prevail here? Are farmers by and large making a living from their land? Are farmers in this area contributing to national food needs and to import savings? Sir, if the Commission finds favourably in relation to those three questions then we would suggest that any indiscriminate disruption based on the land classification map of agriculture in this area would be unjustified. That is why we feel you will find particular value in the evidence of Mr. Giles, and I would like, because these are important to us, just to refer very briefly to some of the points that he makes.

You will see in paragraph 9 of Mr. Giles proof of evidence* that he says in the second and third lines: "It is probable, for instance, that Grade IV land is only marginally less good than the adjoining Grade III". Sir, I think I can say without any fear of contradiction that next to their surprise at Wing being designated at all farmers of this area who are shown as farming Grade IV land, were absolutely astonished, and I think they would challenge any member of the Commission—perhaps challenge is the wrong word, but invite any member of the Commission who cared to do so to come and see what they are doing with this Grade IV land. That is something which I must bring to the attention of the Commission on their behalf.

Again, sir, just briefly if I can refer you to paragraph 13 of Mr. Giles' proof of evidence, he refers to the fact the area cannot be regarded as one of predominantly small farms, and again paragraph 15, the final paragraph, he says this: "Whilst the area can, therefore, be described as fairly mixed, it can also claim to have a significant degree of concentration on the enterprises which feature in the government's latest programme for selective expansion i.e. wheat, barley, beef and pigmeat".

Then again just to refer quickly to paragraph 18 of his evidence you will see that this area compares favourably with the survey of the University of Reading.

Perhaps I might spend some time quoting from Mr. Giles' evidence in relation to his conclusions, because I think they could not better express the feelings of farmers in relation to this site. You see in paragraph 32 he says: "No agriculturist familiar with the Cublington site—and probably no farmer resident in it—would claim that the area is 'first class' agricultural land in any rigorous sense of the term. Indeed, contemporary land classification systems would refute the suggestion. As predominantly Grade III land, however, with an emphasis on high-class pastures, forming part of the Aylesbury Vale, the area can indeed be described as 'good' and in parts (with assistance from artificial drainage) 'very good' land". You see in paragraph 33 he says: "In my opinion, therefore, it would be impossible to justify the selection of this site on the grounds that agriculturally speaking, it is of low economic potential or is in any way inferior to many other areas with which it has been graded—bearing in mind the true implications of that grading".

Sir, I do not think I need labour that point any more, but it is a real fear of farmers that because the land classification appears to give this land a fairly low category that the viability and virility of farming in this area would be overlooked.

Perhaps I may turn to the farmers themselves. The point which I would like to ask you to note, and this comes from the Survey which we produced, is that 1215 members reside in a 15 mile radius from the site, and that of those 1215 who were circularised 559 sent in answers to their questionnaires. That is, according to my calculation, getting on for very nearly 50 per cent. I might add also that these questionnaires—the bundles, are available for inspection at any time by your commission

* p. 1243.

Printed image digitised by the University of Southampton Library Digitisation Unit

should they so require. As I am precluded from comparisons, all I can say is that you will no doubt from your experience be aware of the normal reaction of farmers as to questionnaires who have generally speaking better things to do than to fill them in, and that seems to us to be a very high percentage. We are glad the commission is taking note of what the people think, and this particular section of people thinks very deeply about this subject, as is clear from the returns.

Indeed, sir, if I may be allowed to waste your time by one facetious remark, I think the only time that we have achieved a greater proportion to this was in relation to a recent questionnaire which had one question phrased as follows: "How many workers do you employ broken down by sex?" In relation to the questionnaire perhaps we should make this point clear: that it is accurate as far as the members' returns are concerned. There are always difficulties in relation to these returns because statistics tend to vary during the course of the year and, therefore, if your Commission were to find any of the figures to be different from other published figures the reason may well be they were taken in a different point of time or on a different basis, and this is certainly something which we would only be too happy to clear up.

Continuing with the individual farmers, the Cublington Airport Supporters' Club suggest that farmers are somewhat in the doldrums: 500 local farmers say it is wrong, and we suggest the Commission would have to have exceptionally good reasons for preferring the evidence of one or two members of the Cublington Airport Supporters' Club to that of the men actually engaged in agriculture in this area. The short view of it is that farmers want to continue notwithstanding any views expressed by Cublington Airport Supporters' Club. Sir, we would suggest to you and your Commission that farmers in this area are in a quite different context from farmers anywhere else in the South-east or may be even in the whole of the country. We would suggest that nowhere in the country has the farming community received so many knocks over such a short period of time from so many authorities.

Perhaps I might itemise them, sir: We had the M.1 and clearly that is getting into the realms of past history, but it is fairly recent in terms of farming. We have had pipe-lines of all descriptions. We have had proposed reservoirs at Waddesdon and Whitchurch, the threat of which are still hanging over our heads. We have had Milton Keynes, which we fought bitterly, and now we have the airport proposals.

In many ways I would be content to rely on what Lord Campbell said, because he put up a very attractive plea on behalf of the farmers, but I hope that your Commission will realise that farming is a long term project. It is not something done from year to year. It is something which has to be planned ahead like any other industry. No other area, we would suggest, has had threats so sustained and held over it. Farmers punch drunk already by what has hit them in the past feel that this is totally unreasonable and unjustified that they should now be faced with another proposal which would involve large quantities of land. Milton Keynes hung over their heads for something like 6 years, because it was preceded by what I might term "Pooleyville", Mr. Pooley's own proposals. This is going to hang over us for another two years, and if the Commission were to decide to put the airport here then it would mean far greater uncertainty over a wide area in relation to land required for ancillary development. We come to you today and quite simply ask you in relation to this site: Please leave us alone. We have had enough, and we just want to get on with the job of farming in this area.

Again, sir, the Cublington Airport Supporters' Club has made a great issue of employment in this area. I pass over the question of whether there is unemployment in this area and I pass over whether such employment overrides other considerations such as environment. What we cannot stand as a farming community, and we would take issue very strongly with the Supporters of the Airport, is in this regard: that employment is going to be made available in the new city of Milton Keynes. We heard from Lord Campbell that already something like 20,000 jobs were going to be provided in the area. In our view there will be more variety of work in Milton Keynes than would come from an airport, and we believe also that it would be at far less cost to the local inhabitants.

As I have already mentioned, the National Farmers' Union fought hard against the Milton Keynes project. It said it was wrong, and we can hardly say we were encouraged, but it so happens to be a fact a number of regional planners are now beginning to say it was perhaps the wrong place to put it. Nevertheless, having made that decision we believe it is right it should be made to work. It would be intolerable in our view to plunge the farmers, not only in the Milton Keynes area, but all round, into further uncertainty which would result from putting the airport here at Wing. I would add also that we have had very close discussions with the Milton Keynes Development Corporation, and we are doing all we can to mitigate the effect of the development, and that development, on farming, and again it would be quite unthinkable that they should be disrupted. We ask the Commission to note this point in relation to Milton Keynes. In our view, if the airport were to come here, Milton Keynes would have to be redesignated. We believe that is so on moral grounds, and we believe it also may be so on legal grounds, though clearly until it was actually contested that could not be proved. The reason for this is clearly we were fighting it on London-South

Printed image digitised by the University of Southampton Library Digitisation Unit

Bucks overspill and not in relation to this project at all. The reason also is that the then Minister of Housing gave us a specific undertaking that this represented the limit of government intentions as to this area.

Now, sir, if Milton Keynes had to be redesignated it would take time, it would take at least almost one possibly two years to get through the proceedings of designation. Add to that, sir, what the Milton Keynes Development Corporation have already said, that it would need to be redesigned, and you get another year or two, so you would not have access to the Milton Keynes new city, in our view, for something like six years. Assuming you start building as soon as you get your interim plan. I mention that because it is assumed that Milton Keynes is a God-send to this proposal, and you just start pushing people in forthwith. This is not, in my view, correct, and this area has no advantages as to spare capacity as against any other area. If time is of the essence, as has been suggested, then clearly Wing is not going to be very helpful. If time is not of the essence then again desperately not to overstep my brief in the limits of this inquiry other proposals might also become palatable.

Not only have we had Milton Keynes in this area, but we have a situation which again, I think, does not exist elsewhere, and that is of a circle of expansion. I refer to you Milton Keynes, Daventry, Northampton, Wellingborough and Bedford, and we have expressed on several occasions our extreme concern at this circle of expansion and its effect on agriculture. There has been research done on an interdepartmental basis by the government on writing many interdepartmental reports—it has not seen the light of day and apparently has been shelved in favour of the Burns Committee Report, but when you have that rapidly expanding concentration of development we feel it would be quite wrong to add an airport further to the south.

I turn now to the question of drainage, and I would say again I think without a shadow of contradiction that the farmers feel real resentment in this area on the whole subject. I myself presented the National Farmers' Union case against the Milton Keynes project, and we told the Minister he would have severe problems in relation to drainage and three years later he has had, or at least the Corporation has had to agree with us. Very severe flooding takes place already from Daventry to Bedford by reason of, we think, development, although this is being investigated at the present time. May I just tell you the sort of things that happen?

If you had storm water, a field of corn could be under water for only three hours but it is enough to mean it is quite unusable again. It may not to the planners appear to be very important to have flooding for three hours, but to the farmers it is exceedingly important, and so we have serious doubts whether even on the report that Milton Keynes Development Corporation have before them that they will prevent further flood. Sir, we just cannot conceive what it would be like if an airport were to be put here as well.

Now, sir, I feel it must fall upon me to comment on Mr. Bramwell's evidence, not so much because we attach very much importance to it, but because it is not possible to test it in cross-examination, and the Commission presumably is bound to pay attention to all that has gone into it.

I hope not only that Mr. Bramwell will not be prejudiced, but that we will not be prejudiced by the fact that we were not able to ask him direct about his views. If you would turn to Mr. Bramwell's proof of evidence, perhaps I might say briefly some of the comments that have arisen from the farming community; these are by no means all, because there is very little in relation to agriculture if anything, which is of any value or merit whatever.

In the second and third lines of his proof he refers to the fact that "it was obvious at the start of my observations that this land could be put to no better use". It does seem he came to the matter with a preconceived idea, and what he said about research, I hope when he presents himself to give evidence, and presumably we will not be here then, because we were not expecting to have to come again, that you will ask him how much original research he did in order to produce this proof of evidence.

You will see in the bottom line of para. 1 and the third line of para. 2 that he contradicts himself within the space of four lines. He refers to the land first of all as being moderate to poor farming land, and then proceeds to describe it as good. He refers to the fact that "The area of Cublington and Wing has been given over to horse rearing and equestrian pursuits to the exclusion of other farming activities". With respect, and I would say this to him were he here, this is sheer rubbish. The amount of land that is really taken up for horse rearing is remarkably little, and when horses are running about the fields, there are almost always flocks of sheep grazing in the same area, and if that is not agriculture, I do not know what is.

Mr. Bramwell refers to the fact that three out of five harvests have been bad. I have put this to local farmers, and their reaction is: how does he know, because with modern drying equipment, it is possible to produce dry corn, and they have said that they have not experienced any disastrous or unfavourable conditions in the last five years. I should perhaps ask you also, when you have Mr. Bramwell before you, to ask him about his own farming activities.

Inspector Mr. Wallace, I am not sure—it is up to you, but you have put in the document by Mr. Giles; are you not satisfied with that?

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. Wallace I am more than satisfied with it. What I am concerned about is this, that Mr. Bramwell makes statements as though his *ipse dixit* proves them, and if he makes, for example, a statement that the area is given over to horse rearing, and later that more and more farms are turning over to this form of activity, we want to be sure that the Commission realises that that has no foundation in fact. Unless we tell you, we envisage that your Commission may be put in the invidious position of having either to accept it, or disregard it without having good cause to do so.

Inspector We will consider that.

Mr. Wallace May I with respect put the ball back in your court. If you feel that we do not need to cross-examine or to comment on Mr. Bramwell's evidence further because it will not appreciably assist the Commission, then I will cease to do so, but if there is any doubt in your mind, I would prefer to continue.

Inspector I am not going to accept that one, Mr. Wallace. I am going to say this, that you have put forward a very carefully prepared document by Mr. Giles, who is clearly an expert of very considerable calibre, and that will be considered by the Commission, amongst all other things. How much further you feel it must be gone into now, I am afraid I must leave to you.

Mr. Wallace I will only make this comment, and that is in our view there is no substance whatsoever, to Mr. Bramwell's agricultural evidence, and having said that, I will not pursue the matter further. I think that can also apply in respect of the other documents which have been produced by the CASC which do not materially add to what Mr. Bramwell has said, and which I think might fall in the same category. Indeed, I must pay tribute to the honesty of Mrs. Kilty and Mr. Smith in confessing that they have no expert knowledge of this matter, and it would be unprofitable to go into that any more.

I only have one or two other points to make, therefore. I have not specifically at the moment referred to Mr. Rogers' evidence, and I do not think that I need to go into detail about the effect on farming of this airport in terms of availability of other farms, in terms of the problems arising from having to look for another farm, because apart from the fact that we have made very strong representations to you in the past, I know that this will be clear to your advisers.

I do want to make this point clear in relation to compensation, that in our experience, and experience gained from this area, compensation paid to the farmers in 90 per cent of the cases, or perhaps even more, is insufficient and inadequate. We appreciate that is no fault of the Commisssion. All we ask you to note is that that is our experience, and that therefore the livelihoods of farmers are very much at stake. As has been commented in many other parts of this Inquiry, and also from our own planning evidence, we are advised that the effect of an airport here at Wing will have far greater effects than any comparable part of the south-east, and therefore it is our opinion that a greater number of farmers will be affected if you put the airport here than in any other area of the south-east.

I have not referred to the farmers' evidence; you yourself have mentioned that their story is told clearly, and I believe it is told sincerely and with dignity, and I hope it will help to show how five local farmers here react to the problem. So I just, unless you wish to ask any questions yourself, end with these two submissions: first, that the area is important agriculturally; and secondly that it is an area with special problems and in a special context and therefore, Sir, in our view the Commission will not find it easy to justify on agricultural grounds the placing of an airport at Wing. I have no other points to make, unless you wish to raise any further points?

Inspector I have no points, thank you very much, Mr. Wallace. It has been mentioned to me that Mr. Gregory of the Country Landowners' Association, and also Mr. MacFarlane, the witness of CPRE are in difficulty about when they can appear today. Have they been able to make any arrangements with preceding parties?

Mr. Gregory Mr. Body has assured me that I will be on in time for me to put the CLA case and catch my train.

Mr. Fitzgerald I appear for the National Trust; I think I am next in the order of batting. I have not been approached; I am anxious to be helpful, but we had assumed that we would also be finished before lunch. I do not anticipate the Trust case will take longer than 15 minutes, subject of course to cross-examination.

Mr. Body I appear for CPRE. Mr. Macfarlane has to leave regretfully at 12.30. His proof has been circulated; I hope he is not going to be subjected to cross-examination. Perhaps I might, through you, invite whether there is any challenge to what he says?

Inspector Mr. Macfarlane's short proof on behalf of the CPRE is No.3250. Are there any questions to submit to Mr. Macfarlane on his proof? There are no questions. In that case, we will deal with the National Trust.

MR. M. FITZGERALD* *called*
(*National Trust*)

Mr. Fitzgerald Can I introduce myself; my name is Michael Fitzgerald of Counsel; I am instructed by the Solicitor to the trust, whose address you

* See also p. 1259.

Printed image digitised by the University of Southampton Library Digitisation Unit

have on your file. If it is helpful I can give it to you again.

Inspector No.

Mr. Fitzgerald I am calling Mr. Rogers, whose proof has been circulated.

MR. MICHAEL JAMES ROGERS* *called*
(*The National Trust*)

Examined by Mr. Fitzgerald

4659 Are your full names Michael James Rogers; you are an Associate of the Royal Institution of Chartered Surveyors, and a qualified Associate of the Land Agents Society, and are you the Area Agent for the Northern Home Counties, that is the area in which certain National Trust properties are situated, which it is the Trust's concern will be affected by this proposed siting of the Third London Airport at Cublington? — I am.

Mr. Fitzgerald I submit this witness for any questions which may be required of him.

4660 *Inspector* Are there any questions to Mr. Rogers on his proof on behalf of the National Trust?

Cross-examined by Mr. Gregory
(*Country Landowners Association*)

4661 Mr. Rogers, just one point on Claydon House, which is a National Trust property mentioned in para. 4 of your summary. Are there not some chamber music concerts at Claydon House which are sometimes broadcast? — Yes.

4662 Are there not leading artists from Europe, and indeed throughout the world appear and perform at these concerts? — That is true.

4663 *Inspector* Any other questions? I have no questions.

Cross-examined by Mr. Banfield
(*Beacon Villages Society*)

4664 Are you aware that a number of villagers have been on the Ivinghoe Hills at the weekend taking a census for the Bucks County Council Countryside Committee? — I am.

4665 Were you aware that a number of people coming on the Hills said they come here for the peace and the quiet in the north and west, are you aware of this? — Yes.

Inspector Are there any other questions? There are no other questions, thank you (*The witness withdrew*).

Mr. Fitzgerald If I can shortly make one or two ancillary points, originally it had been the intention of the Trust to submit to the Commission written representations, but the depth of feeling was so strong amongst Trust members of this area that it was thought necessary to instruct Counsel, myself, to come on their behalf. It is an interesting fact that the Trust's properties which may be affected by this proposal represent really in microcosm everthing which the Trust stands for. They represent great houses, Waddesdon and Claydon; they represent great collections of works of art, china, etc. at Ascott and Waddesdon, and they represent grounds open to the public of great beauty, and places for recreation also at Waddesdon and Ascott. Fourthly they represent in the Trust's ownership of the Chiltern Escarpment at Ivinghoe Hill and Coombe Hill, areas available for the recreation and enjoyment of the public, not only of a local character, but of regional and national importance. It would be difficult to think of a more important area of the country as far as the Trust is concerned, and without in any way escaping and trying to depart from the local character of this in any way, it is right that the Trust should make their point before you.

So far as the actual effect on these particular houses and properties is concerned, it is really a matter of very detailed examination, but quite clearly, in my submission, Waddesdon, which is one of the most important houses that the Trust has, will be very directly affected, situated as it is south-west of the proposed airport site, and on the NNI plan within the 45 to 50 category. The Trust views that situation with particular alarm, and indeed all the matters which Mr. Rogers has raised in his proof of evidence the Trust would ask and urge to be most specifically and carefully considered, as we know it will, when you and the members of the Commission come to their final conclusions upon this site.

I ought to mention one other thing. I do not know whether it is your intention to visit any of these properties; I am not quite sure of the scope of this inquiry as far as that is concerned.

Inspector No, I did explain at the beginning of the inquiry when you were engaged with zoos and other things, that I have known the area for very many years, and I have spent a number of days in the area recently and beforehand, and various members of the Commission's staff will be researching all the points that are raised at these meetings.

Mr. Fitzgerald I am obliged; I fully appreciate that. I did not know if you wanted to visit any of the specific houses, and wanted to be taken round by Mr. Rogers?

Inspector I have the booklets, and I will make quite certain I see them in due course.

* See also p. 1259.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. MICHAEL JOHN WOODLAND* *called*

(*The Nature Conservancy*)

Mr. Woodland My name is Michael John Woodland, Regional Officer for the Nature Conservancy. I had a team of Conservancy officers who are available for cross-examination on the report already submitted to you. Its format is the same as we had at the previous Stage II hearing, and the format will continue for the other hearings so there will be a consistent format. I am not quite sure how you would like to deal with these officers if there are questions to be asked, but I await your guidance.

Inspector The drill will be just as prevailed at Nuthampstead I will now ask whether there are any questions to the Nature Conservancy concerning their statement, including the list of SSI's contained in their submission. Are there any questions on this statement? There are no questions, so therefore your three witnesses are unemployed. I was most interested to see that following a Royston erratic, there is a Wing erratic.

Mr. Woodland There is.

Inspector Now we have the Council for the Preservation of Rural England, including the Bucks, Berks and Oxfordshire—

MR. RICHARD BODY, *called*

(*The Council for the Preservation of Rural England*)

Mr. Body Sir, I think I do appear for rather more than that number of bodies, and perhaps I might list them:

The CPRE is a national body;
the CPRE Buckinghamshire Branch, and seven of its sub-branches;
the CPRE Northamptonshire Branch;
the CPRE Oxfordshire Branch;
the Oxford Field (inaudible) Society;
the Soil Association of Oxford Region Group;
the Berks, Bucks and Oxford Naturalist Trust;
the Royal Archaeological Society of the County of Buckingham;
and finally the Youth Hostels Association, who have asked to be associated with our case.

Certain of these bodies which I have listed are added to WARA's formidable catalogue, but, as you realise, we are allies in this battle and there is no conflict between us on that score.

I have four witnesses: Mr. Macfarlane† you know about already; Mrs. Angus Maude,‡ representing the Oxfordshire Branch in particular; Mr. Edward Rouse—he is the Vice Chairman of the Buckinghamshire Branch, and he has unfortunately been unable to come today, but has said he will come next week, which will be the conclusion of our case. And fourthly, Sir Thomas Barlow,* on behalf of the Buckinghamshire and Oxfordshire National Trust—and there are no less than 2,000 members in this area.

I can open my case quite shortly, and say in the plainest terms that the CPRE are adamantly and implacably opposed to this site. Anything less than total opposition would be a compromise to its principles. The CPRE exists, as you know, Sir, to promote and encourage for the benefit of the nation the improvement and protection of the English countryside and its towns and villages, and for the better development of the whole environment. Forty years have passed—

Inspector Mr. Body, would you please give your name, for the record?

Mr. Body Richard Body. Forty years have passed since the Council was formed, and broadly the need for its existence has never been greater than it is today. One cannot imagine an issue that comes more near to the core of its purpose than the question of where this third London airport is to be sited. It must follow that the CPRE and all the many organisations that are affiliated with it—and they run into scores and scores—are actively and anxiously concerned with this question now.

When the CPRE was formed, both the public in general and, one regrets, Whitehall and Shire Hall, were asleep to the insidious attacks upon the countryside. Urban development has been accepted, as you know only too well; and, as you know, the Planning Acts have yet to be put upon the Statute Book. Even now one regrets that still only a minority of the nation has woken up to the threats, and I say this especially in view of the evidence that we have heard this morning from Mr. Smith and Mrs. Kilty. There are perhaps two horrifying statistics which should be underlined, in view of what they said, and in view of the complacency about this problem that is still to be found in many, many people. The first is the estimate which you have heard before, Sir—the estimate from the Government that before the end of this century another million acres of our countryside is going to be devoured by the rapacious needs of houses and factories and the like, and yet in that same period the population of the country is going to leap from some 50 millions to nearly 80 millions; and you know, Sir, from what has been said before at this hearing, that in this South East area alone, natural increase alone will result to an increase of 4 millions—almost half the size of London. The pressures of use on our countryside, and especially such countryside as still survives within a radius of,

* See also p. 1261.
† See also p. 1263.
‡ See also p. 1265.

* See also p. 1276.

Printed image digitised by the University of Southampton Library Digitisation Unit

say, 50 miles from London, is going to be immense, and this is one of the few—the very few—areas of land left of which it can truly be said that it is still the countryside.

The pressures on this part of rural England are going to be immense, even if the third London airport is not cited here. If perchance it is imposed here, the strictures which will be passed upon us by another generation—and I have in mind in particular the observations made by Mrs. Kilty and Mr. Smith earlier—will be too severe for ordinary language, because one hopes that that generation will grow up to have a higher standard of values, and they will without question regard those values as being very important and more essential than some of those that were hinted at earlier this morning. It was right that those witnesses should speak about youth, but the Youth Hostels Association—which embraces nearly a quarter of a million young people, most of whom are drawn from homes of limited means—is a body which is actively trying to overcome some of the difficulties and failings which those two witnesses spoke about, which Mr. Bramwell himself has alluded to in his proof of evidence. They have some 250 hostels in this country, and it is noteworthy that almost a quarter of their membership is drawn from an area within striking distance of where this site is now proposed. There are many areas of outstanding natural beauty in this area—Woburn Sands is one example—and all of this falls within the 40 noise contour, and some even within the 60 noise contour. It would be invidious if this were selected; this remarkably wide radius of rural England is, in my submission, more than worthy of being conserved.

We make no further points, which, so far as I can gather from the great mass of paper that has sat upon my desk these last few days, have not been made by other parties interested in this hearing.

The first, Sir, is that those villages which will not be wholly eliminated near the site will have to be expanded considerably, and their expansion will take the form of spilling over the hillside and will mar the view for many miles. You, Sir, are familiar with the contours and the landscape and you will obviously see the force of that point.

The second is that the size of the airport buildings will obviously be vast. They are bound to have hard mechanical lines, and, no matter how hard they try, these inevitably will jar. And when darkness comes, they will bring a blaze of light which will be visible over an area much greater than most other sites that could be considered. These factors on top of the noise would bring to the inhabitants of this part of rural England a life so alien to what they have now as to be beyond endurance.

Mr. Rouse for Oxford and Mrs. Maude for Oxfordshire are able to set out some of the details. I gather you will have received already a proof of evidence the like of which I have never seen before from Northamptonshire,* and not even Miss Wall's ingenuity could be expected to copy this 140 times over! Those proofs do set out the details, and obviously I would not go into them now. But may I underline just one or two sentences? The last sentence of Mr. Rouse's proof—"if this development is permitted, it will result in the total annihilation of three or four villages or hamlets," and I hope those who have supported this proposal will bear in mind that phrase "total annihilation"; "and the rendering almost uninhabitable, with consequent loss or damage to valuable architecture, of nearly twenty others". That is, I submit, not an exaggeration. It is the only inference to draw after reading the catalogue of natural history, local history, of archaeological and architectural, that he and others are able to give.

Mrs. Maude, in her proof, Sir, draws a conclusion which is in itself cogent.

She says: "We summarise our views by saying that having regard to the factors set out here we feel that construction of a third London airport at Wing would impose such discomfort and cause such misery and destruction over such a wide area as to make it totally unacceptable to our society if we are to continue to make any claim whatsoever to civilized values". May I particularly draw your attention to the fact she does give details of flooding, and I will say no more about that because Mr. Wallace has drawn your attention to it as well and clearly at some subsequent stage the Commission will go into that matter in greater detail.

Sir Thomas Barlow's proof† is, I suggest, of some special significance. At page 1 of his proof he gives facts which may be obvious when one's attention is drawn to them, but they are less axiomatic to those not so familiar with wild life, and the point he is making, and this is something which I think I must emphasise as strongly as I can, that it is now recognised that the size of the area is an important consideration in reckoning what wild life will survive, and the more the area is fragmented by roads or built up areas then the more plant and animal communities become isolated from each other and so less able to find all the conditions which they need for existence and you, sir, of course, know only too well that when one is considering this site it is not just one small area of rural England, it is in fact in a belt which stretches from the Fens almost down to the Berkshire towns uninterrupted, and it is of such a size that it is able to support a strength and variety of natural life which might well be impaired if in this belt were to be put something so enormous as this mammoth airport.

In page 3, if I may draw your attention to it he does speak of the following fact that this area has been free of air pollution for a considerable time and

* Available for inspection, by arrangement, at the offices of the Commission.

† p. 1276.

Printed image digitised by the University of Southampton Library Digitisation Unit

that factor alone has added to the richness of natural life, and prevented the destruction of species as well. He has also listed 18 sites of particular importance.

One cannot claim in this area any Brent geese which one heard so much about at the Foulness inquiry, but may I speak and in just one sentence, because I have one eye on the clock, just to refer to the astonishing variety of really rare species in this area: *claytonia*, golden Saxifrage—I am going to mispronounce nearly all of them: bog asphodel; little grebe and water rail, cross bills, spring gentian, and the rare pasque flower, the short-eared owl and great grey shrike. Then something which is unpronouncable on page 5, *senecio integrefolia*, which is a very local plant, and in a site of special scientific interest. Herb Paris, Solomons seal, Chiltern gentian and clustered bellflower. Cettis warbler and one I have never heard of before, the moustached warbler, and a noctule bat. The vipers Bugloss, and then something—I need help from the Nature Conservationists, the *daphne mezereum*. That is an astonishing variety for an area which is still so close to London. In his proof he says there may be 118,000 acres occupied not just by the airport but what will come with it, and it is a significant proportion of the total area left for wild life in this country. His conclusion is one which I suggest is quite irresistible, his words are these: "Thus the whole character of the countryside will alter radically for the worse, and the present richly varied scene will be replaced by a degraded and monotonous vegetation, no native mammals and only poorly representative in birds and insects".

Well, sir, I know these are matters which the Commission will pay special heed to along with all the other social amenities which other witnesses have spoken of. These are matters that I would draw your attention to and underline in opening my case, and now as I say, with that eye on the clock may I put those witnesses before you, beginning with Mrs. Maude?

Inspector It might be helpful if I were to ask whether there were any question for them. I have been through all the three proofs with great care and I have no points on them. I think it most unlikely there will be points for them. If either you or I were to ascertain this then that is an end to the matter.

Mr. Body Then I mention Mrs. Maude and I look round to see if there are any questions.

Inspector Any question concerning Mrs. Maude's proof? No.

Mr. Body Sir Thomas Barlow?

Inspector Any questions to Sir Thomas Barlow concerning his proof? I have no questions.

Mr. Body As I pointed out to you earlier, Mr. Rouse will be here next week.

Inspector We will see him on Tuesday. Thank you very much, Mr. Body. Now, how are we fixed with you, Mr. Gregory?

Mr. Gregory If it suits you, sir, and the others, it would be helpful to adjourn for lunch in the usual manner and I will have ample time thereafter. Of course, I am most willing to continue now if you prefer it.

Inspector No. I think we will now adjourn for lunch and resume at 2.15 and then take the Country Landowners' Association.

(*A short adjournment*)

Inspector It has been brought to my notice that Dr. Watt of St. John's and Manor House Hospital Management Committee, Stone, has been away from his duties all day because he is last on the list of appearances today. I shall be taking the Country Landowners' Association first, but if those appearing subsequently would not mind deferring to Dr. Watt, he could go back to his important duties all the earlier.

Mr. Gregory I am no longer in any personal difficulty, because quite clearly I will catch the 4.10, which is the train I must catch whatever happens, so if the Doctor would like to come on first?

Inspector I think I would like to do this, so can Dr. Watt please appear now.

DR. DAVID CAMPBELL WATT,* *called*

(*St. John's and Manor House Hospital Management Committee*)

Inspector Dr. Watt, I have, of course, thoroughly read your two submissions, and during lunchtime I have risked my digestion by skimming through the last one again. I can assure you that all the information contained in these will be carefully looked at by our research team; they may well be in touch with you in due course on any points arising, and the Commission will take full account of the representations in their further task. Having said that, I leave you to add as you wish to your statements.—Thank you very much, Mr. Hunt. As you know, I represent the Management Committee, which is in charge of two hospitals, one of them a small hospital, Manor House Hospital in Aylesbury, and a much larger one, 800 beds, St. John's Hospital at Stone. St. John's is my main concern, as it is much more seriously affected by sound, by noise from the airport than Manor House Hospital. I just wanted to make one or two points in regard to it. St. John's Hospital, as I have said, is a hospital of 800 beds; it provides all the

* See also p. 1280.

Printed image digitised by the University of Southampton Library Digitisation Unit

psychiatric services for a population of about 450,000 people. Its primary job is, of course, dealing with the psychiatric casualties, people who are already ill, but is also concerned with the mental health, and well-being of the community. As I have indicated in my report, a great deal of improvement and rebuilding has taken place at St. John's very recently. I would estimate something in the region of £½m has been spent on the hospital in about the last five years. As I have also indicated, Manor House Hospital is due to be rebuilt, and the building should start within a year. I think it is beyond dispute that very serious noise affects will occur at St. John's Hospital should the airport be placed at Wing.

The burden of my submission is this: this will have a very serious effect first of all on the mental health of the patients, and secondly on the work carried out at St. John's Hospital. If I take the effect on the health both of the patients at St. John's Hospital and the population at large, I have indicated in my report that there are very few direct studies, and direct measures of the amount of psychiatric illness produced by noise. I think the reason for this is probably that until very recently, the problem of noise was confined to industry, to people situated such as the crews of aircraft carriers and other particularly noisy situations like that where the noise was not continuous, where it did not intrude upon the homes, private lives, rest and relaxation of the people concerned.

Within the last five years, perhaps, the noise of traffic has become of general concern, and the noise of airports I think is of even more recent origin, and certainly such a widespread continuous noise affecting such a large number of people is a new sort of problem that has really hardly received attention. Nevertheless, in my supplemental report, I did indicate one study of this kind which is direct; most of the evidence appearing on the matter which I have been shown is indirect and inferred.

If I may come to the second effect I am concerned with the effect on the work of the hospital. I want to take up only one point of the several that I raised in my report, namely the effect on communication with speech. I looked through the evidence submitted by Mr. Fleming,* the acoustics expert, and I noticed he lists for St. John's Hospital that there would be 200 incidents in a day when noise would rise to the level that it would seriously interfere with speech. I would like to indicate the effect of this by saying: imagine what the effect on this hearing would be if interruptions of that degree and frequency occurred. It could hardly be continued, and one can see the force of my submission that the work of this hospital could not go on. I submitted an aerial photograph† of the hospital, as well as a description of it which I think made quite clear that the question of soundproofing the whole hospital and airconditioning it is absolutely out of the question. That is all I want to say, Mr. Hunt. I am glad to answer questions if I can.

Cross-examined by Mr. Cornwall
(Prospective Liberal Parliamentary candidate)

4666 Dr. Watt, to put your case even more briefly, then, the effect of noise on a situation that depends on a person to person relationship is of most vital importance; it would be of most vital importance in the sort of field I am engaged in, that is in education? — Yes, that is so.

Inspector Any other questions? I have no questions, Dr. Watt, thank you very much for bringing these matters to our attention. (*The witness withdrew*)

MRS. M. TOMLINSON* *called*
(The Chiltern Society)

Inspector Will you give your name and for whom you appear? — My name is Marjory Tomlinson, and in addition to being a member of the Council, the governing body of the Chiltern Society, I am also a Rural District Councillor representing Chalfont St. Giles on the Amersham Urban District Council, and Chairman of the Chalfont St. Giles Residents Association, which supports WARA. I have one or two points which I should like to add to my proof. The first thing is that as you will have seen from our proof, we are representing the whole of the Chiltern area, regarding as our main raison d'être the maintenance of a high standard of town and country planning in the area which is designated as an Area of Outstanding Natural Beauty.

If an airport is built at Wing it will, I understand necessitate the building of two new motorways to handle the enormous increase in traffic from London, or which will go straight through the AONB and that in addition to this, there might be a helicopter service linking the new airport with Heathrow, which would also pass over the AONB. The whole purpose of the Chiltern AONB is to provide a recreational lung, not only for the population of the surrounding areas, but for the whole of the London conurbation, and even further afield. I think I am right in saying that the Chiltern area is the only AONB in the south-east area north of London. A proposal to site an airfield so close to an AONB surely cannot be equated with an AONB designation of which is only one stage of a national plan.

Just one more point I would like to mention on para. 4 subsection (iii) of our Report. I live in South Bucks where a large number of the more highly

* p. 1017.
† Not reproduced.

* p. 1283.

Printed image digitised by the University of Southampton Library Digitisation Unit

paid Heathrow personnel, such as pilots, prefer to live, and I visualise building pressures increasing in the attractive towns and villages such as Thame and Wendover within a 20 miles radius of Wing Airfield, thus forcing County Area Planning Committees increasing their populations, thus being forced to vary the pattern of South Bucks villages by being turned into unattractive monotonous sprawling urbanisation. This would in turn generate more traffic to clog what are at the moment quiet winding roads, necessitating many expensive road widening schemes for this increased volume in traffic.

Inspector Thank you, Mrs. Tomlinson. I had in fact misinterpreted this particular letter; I thought this was a letter of the Beacon Villages Society. Do you wish to refer to the letter from the British Airports Authority*? I may say that the Commission is, of course, in constant touch with all these bodies concerning flight paths, so we have the information. — It is just that I feel that the noise that Beaconsfield have suffered, that is the noise which necessitates even teachers stopping in the middle of their classes because of noise to my mind might very well happen at this distance from Wing, bearing in mind that Beaconsfield is 12 miles from Heathrow, and the fact they were beginning their climb at 3,000 feet, therefore needing more power at this particular juncture would mean there would be much more noise, and that might very well happen in relation to Wing over the Chilterns. That was my point.

Inspector Are there any questions to Mrs. Tomlinson concerning her written proof plus her added statement? No questions, Mrs. Tomlinson.

MR. MICHAEL GREGORY* *called*
(*Country Landowners' Association*)

Mr. Gregory May it please you, Sir; my name is Michael Gregory, Assistant Legal Adviser to the Country Landowners' Association. It it would suit you, I would propose to submit Major Duncombe, my witness, and then address you afterwards.

MAJOR P. D. P. DUNCOMBE* *called*

Examined by Mr. Gregory

4667 Are you Major P. D. P. Duncombe of Great Brickhill Manor, Bletchley, Buckinghamshire? — Yes.

4668 Are you the Regional Secretary of the Country Landowners' Association for the Counties of Buckinghamshire, Bedfordshire, Hertfordshire, Middlesex and Oxfordshire? — I am.

Mr. Gregory Although the CLA were able to assist the Commission by duplicating the proof of evidence, I am afraid there are a number of typing errors which were not corrected before that went in; could I just point them out?

Inspector Certainly.

Mr. Gregory I think they nearly all appear on the third page, the third line, Stretton Ardley should be Stratton Audeley. At the beginning of the next paragraph, the second sentence, there is a lovely word, "intersine noise"; it should have been "intrusive noise". At 11(a), the last sentence, Buildings, the figure 80 should be 83. Then under (b) the second of the houses open to the public, "Claydon House" is not at "Hoggeston"; that has obviously been taken from the line below by mistake. I have only one question for Major Duncombe: the branches of which you are Regional Secretary are opposed to the siting of the airport at Wing. Have you also the support of the Northamptonshire and Huntingdonshire branches? — That is so.

Inspector Are there any questions to Major Duncombe concerning his proof? There are no questions, and I have no questions, thank you very much, Major. (*The witness withdrew*).

Mr. Gregory May it please you, Sir, that being so I feel that coming in my position in the batting order, when there have already been a number of century stands by those appearing before me, and as I have had the pleasure of addressing you on two previous occasions on a number of the matters which affect our members in this area as in others, I feel that my function today is to knock up a quick few runs so that a timely declaration may be made.

This puts me in the rather unusual position that I want to emphasise most the matters which I am not going to refer to at all, but I do appreciate, as you very kindly indicated to me before, that your Commission does take the very greatest notice of the matters which are put in in writing, and which the later batsmen adopt from the cases that have gone before them, so with great confidence I feel that even though in my submission to you I do not mention perhaps some of the things which we feel most strongly about, it is appreciated that we do put it forward with the greatest of emphasis.

To shorten very considerably the submissions of the Country Landowners' Association, I can tell you straight away that we adopt the cases of our members who have gone before us, the Buckinghamshire County Council, the Milton Keynes Development Corporation, and the National Trust, and of course, we also adopt the cases of the National Farmers' Union, and of the Wing Airport Resistance Association, which, if I might say so, were very excellently prepared and presented. If I could

* See also p. 1285.

Printed image digitised by the University of Southampton Library Digitisation Unit

add emphasis to what the CLA wants to say and is not going to say in order to keep to your rules of non-duplication, I think all I need do is to point out that in the 15 miles circle from the centre of the proposed site, the Country Landowners' Association have 322 owners of agricultural land owning over 105,000 acres of agricultural land, and of these, we have had nothing but opposition to the project expressed, but one understands from what the Supporters' Association have said that one of our members, the Duke of Bedford, appears to hold a contrary view to the rest of them.

The other matter I may mention is that we took the perfectly arbitrary circle of 15 miles because one does not know what areas are going to be affected by urbanisation, but of course our members in the area of Towcester and Olney are not included in this, and I have not heard from them because at the time that our evidence was published it was not known that those areas might be suggested for taking some of the urbanisation. Normally, of course, I would want to make a submission about agriculture in the area, but this has been done so excellently by the National Farmers' Union that it only falls to me now just to mention one or two points about the whole of our case, which I think are issues which have been touched upon and not quite covered.

What I would emphasise on the question of agriculture in this area is that this is a predominantly livestock area, and this could be of great importance in considering the siting of a noisy thing like an airport, because although at this stage we are not able to help you so much on the effect that noise might have, say, on milk production, on calving and on breeding, we do hope that we might be able to clear this up better at a later stage, if not ourselves, we certainly want to see it is done by others, and have already started on that. But this area is not predominantly livestock as a matter of accident; it is because it is so eminently suited for livestock rearing and production. If noise is going to have an effect upon animals, of course, it is quite clear that the kind of animals that it is most likely to affect are the most aristocratic of the breed, not only man, but of bloodstock. I want to mention bloodstock because it does happen that in this area there is a concentration of very important studs. There is also some very important herds. I would like to have said more about that. I feel all that need be said is to point out the importance of these herds has been brought before you already. If I mention bloodstock in particular, it is because it has not been. I think it is quite clear that certain of those studs could not carry on in the position they are now were the airport to come to this site. Five of them are within the area of intensive noise, 40 NNI and above. Others are very close indeed, such as Mentmore, which is outside the noise contours, but is close by. I think it would be wrong for me to submit that aircraft noise is bound to have a very serious effect on every stud in the area; at the same time, I think one must point out that with a project of this kind, which is bringing not only an airport with its noisy aircraft, but the associated urbanisation into the area, one just does not know how these very specialised enterprises are going to be affected. South Buckinghamshire, this has been pointed out to me several times by those who live here, has gone; it has been said to me now, that with Milton Keynes Development Corporation developing their new town, if the airport were to come to Wing, that is the rest of Buckinghamshire gone to all intents and purposes from the rural point of view. Perhaps that is a slight exaggeration, but it does indicate that with the increased traffic, the increased pressure of population, some of these enterprises are going to suffer very considerably indeed, and some not be able to carry on.

It is not just an historical accident, also that there is a concentration of studs in this area. This is because this area has proved itself by the magnificent stallions that have been bred and been so successful here. Of course, the importance from the national point of view of this is that these are very valuable from the export point of view. A stud owner mentioned to me only yesterday a very strong bite he has had from a country to which he has not exported before of an order worth 75,000 guineas, which has just come up this week, just an indication of the export value of this kind of enterprise, involving livestock. The CLA has not put in a map on this occasion; we put in a map last time, and your Commission was unable, or did not reproduce that, for very understandable reasons, but if it is of any assistance at all, we can submit a map pointing out where the studs were located; we would very gladly do so.

Inspector I think this would be helpful, Mr. Gregory.

Mr. Gregory I will certainly do that, Sir. Another matter I have addressed you on before, so I do not have to touch on it again, is our very great concern in this area as in others, on the question of drainage and water supply, which has been so well covered by other evidence, and we know that this is a serious problem. The only comment I think I could make here is that it is very odd that the site of the proposed reservoir should coincide with the proposed site for an airport. No doubt this would be very convenient to seaplanes, but from the landowners' point of view it would indeed be tragic if the result of this were to be that some other land elsewhere were to be committed to the deep, and along with it the hopes, and possibly the livelihood of farmers.

The position of water supplies in this area of England is such that I think all landowners, certainly the Country Landowners' Association, is most anxious that the Water Resources Board shall be

Printed image digitised by the University of Southampton Library Digitisation Unit

able to come up with a barrage scheme, or something of that kind, which is going to eliminate the need for reservoirs, or reduce substantially the need for reservoirs, and the less land that is committed too early for them the better, because it would be so wasteful if it turned out not to be needed.

Moving to another issue, when I addressed you on a previous occasion I did emphasise my submission that any site that causes a noise nuisance to a new town was a bad site. Here again there is no need for me to repeat those reasons, but I should like just to say this is even more so in the case of Milton Keynes, not only for the reason which Lord Campbell so eloquently pointed out on the first day, but there is a new factor here, and that is the land taken for Milton Keynes would coincide with the land taken for the airport and the ancillary urbanisation, and one can imagine how very serious that is for the agricultural community. We feel it is owed to the agricultural community who are giving up so much land for Milton Keynes that it should be a success. But you have heard so much about the misfortunes of farmers who are displaced in this way, and if there is to be this massive displacement at the same time, of course, their position would be very much more serious than in the case of, say, Nuthampstead, where I had the pleasure of addressing you last.

There is just one other factor which Lord Campbell did not mention, and that is the plan shown in the latest proposals for an international golf course; and the position of that golf course as shown on their draft proposals, which have not yet been approved by the Minister, of course, are very close to the 35 NNI line. One wonders whether it is really a viable proposition to establish a golf course so close to an airport. One may be able to establish a golf course; some may be able to put up with the aircraft in the near vicinity; but one wonders whether the local championship would ever be undertaken on such a site!

I have also been asked by our members, Cox, Long & Co. Ltd. to draw attention to their written submission* about their proposal, which would be very much more affected, because their proposed golf course will be at Stockgrove Park, which would be affected most severely because of the NNI. Drawn for the prevailing wind, that would be—if I interpret the matter correctly—within the 55 NNI, and with the takeoff in the opposite direction it would appear to be even more severe. So we lend our greatest support to Messrs. Cox, Long & Co.'s anxiety that their proposed golf course would be very seriously prejudiced. This is not just a wild hope of theirs; they have planning permission for the course. The course has been designed by a very eminent golfing architect, and they are in the most unfortunate position of being ready to start and not knowing whether to do so or not. The golf course may be a very useful adjunct to a new town, but a hopeless one, in my submission, to an international airport.

I really do not think there is any need for me to say anything at all on the question of noise, even though this is probably the matter which worries members most and the matter they would most want me to bring before you, except to emphasise that where capital has been expended on a specialist enterprise or one which is unique in any way at all, then if the value of that is taken away if not demolished by noise nuisance, not only is something lost, but something is lost which may never be compensated for. In fact, it is often very much better to lose something entirely than to have it reduced in its use.

On the question of the planning permission that has been mentioned, there are two things which have happened recently which, I contend, bear out entirely the submissions of the planners, which were put in their evidence. One of these is the Minister's decision not to go ahead with the Ipswich New Town. This letter* came out on the 19th June; the position there was that he made a draft designation order for Ipswich New Town, and did not confirm it. If I may just read one paragraph from his letter: "The Minister is of course very conscious of the size and complexity of London's housing problems, but he has had regard to the fact that in the past 2 years the Government have decided to go ahead with the development of large new towns of Milton Keynes, Northampton, and Peterborough, all of which are intended to make a substantial contribution to the housing of Greater London. Over the next ten years or so these three major projects will make heavy demands on finance and building resources and on new sources of employment. Over the next five years therefore the Government think it best to concentrate on ensuring the success of the three new towns together with other new towns still in the course of development". So he is not going ahead with the Ipswich project; but that appears to confirm very much what the planners said about the strategy for this area. I think the supporters of the airport were not here, but I think it would be very significant to them to notice how the Minister—Lord Campbell in particular—are going to see that Milton Keynes is a success and, with all the resources of the Government Development Corporation has of money and power, they can see that it is a success.

The second thing that has happened is a report of the Standing Conference on London and South East Regional Planning,* which was on my desk when I played truant from this Inquiry on Tuesday—I imagine you have already had it—

* p. 1288.

* Available from the SCLSERP, 26 Old Queen Street, SW1.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector It is on the Commission's agenda tomorrow also.

Mr. Gregory I am glad of that, because I need not read anything from it. What they do there is, they consider the siting of the third London airport, and take each of the four shortlisted sites—in particular they come down heavily against Cublington, in my submission for the very reasons that the planners have put forward at this Inquiry. And, of course, they support Foulness for the reasons they give there—

Inspector I knew you would make it in the end, Mr. Gregory.

Mr. Gregory I beg your pardon?

Inspector That you would use the word "Foulness".

Mr. Gregory Well, Sir, it is very difficult not to use that word! and I endeavour to use it very quickly before you stop me, when I do. Just one last thing, Sir: I am quite sure that the Commission is not surprised at the frightened incredulity of the many people who are opposed to the coming of the proposed airport to this area, because they cannot see this particular piece of countryside being transformed into airport country. Sir, I have tried to envisage the morning on which the demolition party turn up face-to-face with St. Michael's Church at Stewkley; and it fills me with the kind of horror one feels when a man is condemned to be executed. Someone has to go through the physical act of taking the man to the place of execution and killing him; likewise here. If the airport were to come to that site, somebody will have to go through the unthinkable task of wiping clean the whole of that airport site, together with every feature of it—demolishing every building, desecrating every church, desecrating every grave in the grave yard, and rubbing out every one of the hereditaments—the 530 separate hereditaments which Mr. Rose has mentioned on the airport site alone.

You may be glad to know that I have lost the last part of my submission, Sir; but it is this: I have detected, I think, some criticism that the owners and occupiers of this area have vented their feelings, sometimes with a certain amount of passion. But, Sir, I would point out this; that they are people who are in love, and you cannot tell somebody who is in love that he must behave dispassionately, that he must behave with cool logic, or that he must fall out of love; and these owners and occupiers in this area are in love with a part of their country. In many cases it is country which is owned by those I represent, and has been owned by their ancestors and predecessors, and they have manifested their love by the way they have endowed it. It is true that there are some edifices crumbling in this area which should not be so; there are many which have existed for centuries and have been preserved, and immense sums of money have been spent not only on the appearance but on the long term agricultural importance of them. As Major Duncombe's proof of evidence points out, had the 42 landowners whose figures we have put together been those landowners closest to the proposed site, the investment in drainage and the like is over two million, and this very high figure—which averages out at over £50,000 per property concerned—indicates that this is an area which has attracted men who have been prepared to expend a very great wealth on their properties in this area, and this is shown in the area as one can see. A person like yourself who knows it so well, particularly these very famous estates which the National Trust referred to—Sir, what I am saying in brief is this: these men have manifested their love not only by the way they have reacted to what they look upon as an appalling transformation of their life, but in the way in which they have invested their money into it so lavishly, and one cannot wonder at their incredulous fear of this huge Leviathan which they see approaching them, blowing steam out of its nostrils and bellowing in a most frightening way.

I have no more to say, except to say that the evidence that has been put forward by so many persons from so many points of view does indicate, in my submission, that an inland site such as Cublington can scarcely be justified from any point of view, and that Cublington in particular just could not stand the transformation, from the social, amenity and every other point of view which the coming of an air site would entail.

MR. BERNARD BANFIELD* *called*
(*Beacon Villages Society*)

Mr. Banfield My name is Bernard Banfield; I am the Public Relations Officer of the Beacon Villages Society, and I am a Chartered Engineer and have been resident in Buckinghamshire for 35 years. I would like to read a supplementary statement which enlarges the case which we have sent in.

"We have stated our concern about the great beauty of the Bucks, Beds and Hertfordshire countryside which we will not repeat except to underline the fact that there is no one here to speak for the deprived citizens of tomorrow, and to say that a preservation and development battle which is being slowly won will become a hollow victory if the airport comes to Cublington. We deny the recently stated theory that amenity in a shrinking countryside can be in any way equated to monetary values; and where the falseness of this theorem is half-recognised, we resist the tendency which

* See also p. 1289.

Printed image digitised by the University of Southampton Library Digitisation Unit

sometimes follows to omit the incalculable from decision-making. We ask, what will be gained if the populace can only escape by swift flights from a spoilt English countryside to a crowded Costa Brava, a spoilt West Indies, or a desolated conurbation in the U.S.A.?

Coming to very specific points which could affect our members and villages directly, we draw the Commission's attention to the enormous supply of portland cement which would be needed for the airport. We think this could amount to many dozens of giant road vehicle journeys out (and home) per day for perhaps ten years. Because we have in our area the cement factory which is nearest to the proposed airport site we foresee some very difficult transport problems. Already there are urgent representations and discussions as to how the currently expanding output of the factory can possibly be handled on local roads, and a half-promise has been made that if this works supplies cement to Milton Keynes for instance, then that place shall be served by rail transport. This would not be practicable with the airport. Be it noted in passing that a 20 year struggle about the amenity planning of this cement plant is beginning to bear fruit, improvements have been initiated, and there are hopes of an eventual far-reaching landscaping of the works.

Another point for the Commission's consideration is that our Beacon area villages (Ivinghoe, Marsworth, Pitstone and Cheddington) which are on the edge of Green Belts and the AONB, would become the logical sites for a large influx of airport employees —who no less than anyone else wish to escape the noisy racket of their daytime activity, and many of whom still wish to live close to their work. This urbanisation would destroy the very nature of the Chiltern country close to us, which it has been the purpose of the AONB Designation to protect. The possibility of residential development does not mean that our aircraft noise risk would be negligible (especially as we do not know the exact airport site), but we cannot as yet claim to be in the situation of those unfortunate enough to be under the projected flight paths.

Our members include walkers and outdoor enthusiasts, and one of our villages contains nearly the oldest and one of the most used Youth Hostels of the Southern Region. I propose to read to you a statement about the direct effects the airport would have on these activities: 'The ten square miles of the suggested Cublington Airport is covered with a network of definitive footpaths—"

Inspector Mr. Banfield, there is a limit to the amount of reading which I am going to allow you to do. You know this should have been submitted in time to be circulated; as you have put it in I shall allow you to make the main points in your statement. But as to supplementary matters, please put them in and take them as read.

Mr. Banfield Sir, I would point out that this has not been circulated; this is not our fault, because no less than anyone else here we are very pressed for time. It is very difficult to get these things done in time for you.

Inspector The question of the footpaths, which I have here, is perfectly plain. It is information that the Commission will obtain anyway, and there is no point—

Mr. Banfield I could not accept this entirely willingly—

Inspector I am afraid you will have to accept it, because the way the Inquiry runs rests with me, and there is a limit.

Mr. Banfield Do you think the people here are aware that 109 miles of designated footpath will be lost?

Inspector That may be quite easily stated in time for it to be circulated.

Mr. Banfield Our members are all very busy people, and we have done our best—

Inspector I appreciate this, but other people who are queueing up behind you are also busy, and they are waiting for you to read material which should have been circulated.

Mr. Banfield I would accept this with some reserve, Sir.

Inspector Mr. Banfield, you must accept that the way this Inquiry runs is my business. I have to arrange things. I am quite happy that you should read your main statement, and refer to these matters; but your reading of such documents—

Mr. Banfield I am sorry to waste your time, but we are very hard pressed, just as the Commission is. I do hope you accept this.

Inspector I appreciate this, yes. It would be quite easy for you to refer to the total number of miles without reading the full statement.

Mr. Banfield We do have the further backing of the Ramblers' Association for this, Sir!

Inspector Mr. Banfield, the Ramblers' Association were in the same position as everyone else. They were asked to submit specific details of evidence in time, which could be circulated. Just imagine if this vast amount of material dealt with this week had been dealt with in this manner! I am giving you much more latitude—

Mr. Banfield May I continue with the main statement, then?

Inspector By all means.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. Banfield "Another matter we wish to enlarge on is the possibility of air pollutions originating from the airport. As a background to this risk, we again have a local situation where a very long pollution battle is being steadily won, since our area has suffered intermittent trouble from cement works odours and brickworks fumes, and constant vigilance has been necessary. It would be unfortunate if all this gain and planned future improvement were to be cancelled out by the springing up of aircraft exhaust troubles. In the absence of any figures and forecasts of pollution from the Commission, Sir, we are in a difficult position, but we must emphasise that we do not think that this problem will be negligible on an inland site (as it would be on a location where prevailing winds blow out to sea). To justify our own village's concern, it must be pointed out that winds appear to blow from Cublington to us for 30–50 days a year, although we must readily admit that Linslade, Leighton and Bletchley would receive the winds from the airport three or four times as much.

I have handed you, Sir, a letter from a responsible engineer* which describes a single, it is true, but a very clear and very bad case of exclusively airport pollution in the U.S.A. It is also true that this was at Los Angeles International Airport, but it was observed under conditions when the frequent and notorious Los Angeles auto-smog could not account for the matter. I spoke last week to a senior civil servant and engineer (whom unfortunately I must not name) who witnessed something similar, though less extreme, at Kennedy airfield, New York. These airports are smaller, with fewer flights, than Wing would be. I have had a further conversation with a civil airline pilot (who also flew at Wing in the war). He stated that the current 727 Boeings come in to land at 80 per cent power to Heathrow, using inferior fuels from a pollution point-of-view—as do most American airlines, and that the fuel-smother produced is much worse than previous craft have ever caused, when landing. Yet we are on the brink of very much larger craft and engines, and much greater numbers of craft landing, departing, and running-up. We have very little control over the fuel foreign airlines use. Technical references on the subject are somewhat complacent, but do clearly reveal that there is a problem already, and that this could become serious. The design battle is certainly not completely won as far as jet-engine pollution is concerned, and not even tackled yet for the giant engines now being designed. The pollution work on engines seems to concentrate on steady states, whereas much of the excess carbon or unburnt kerosene emitted seems to appear during times of aircraft acceleration and deceleration. I have handed to you too a list, Sir, of references† which seem to indicate that there is a potential problem, and that there is no guarantee that enough effort will be devoted to the problem, here or elsewhere. One thing does seem to be clear, and that is that jettisoning of fuel is rare, and carried out on such long paths and heights that kerosene does not reach the ground. I have spoken by phone to the Medical Officer of Health's Department in the Borough of Hounslow, where I was told that kerosene smells occur for a mile or so from the perimeter down the prevailing wind on perhaps 40–50 days a year. It was not claimed that this was more than unpleasant, nor that it was continuous. But again, Wing would be much larger, with far more flights, and very very much larger planes with still undesigned engines and many kinds of fuels. At the least it seems probable that pollution in the areas to the southeast, east and northeast of Wing could approach current urban levels; it might be far worse. We submit, Sir, that the Commission should produce long-term forecasts and estimates of the likely burnt and unburnt fuel contaminations which would occur in 1990 in our own and other perimeter communities; estimates which we can all examine and discuss. These estimates could also include the contribution of the very heavy road traffic in the immediate area. The kind of pollution problem we have mentioned seems to build up more in "inversion" weather, and a quick examination of such Met. Office figures as were available seemed to show more of this inversion in central England, than occurs on the sea coast.

Finally, we wish to raise the matter of general weather conditions, in our area, and local risk—even with automatic landings as stated in our Case sheet. The prospect is disturbing to our communities just under the Hills, though accidents to the future 500 and 1000 seater planes might occur only once in a decade or more. We have spoken to several war-time pilots who flew from Wing and they all state that at this space of time they cannot remember clearly the relative flying conditions, but ex-technical and ground staff still resident in the area think there are periods of unusual mist and low cloud here. But the figures we have obtained from the Meteorological Office at Bracknell,* of which we have handed you a copy, Sir, seem very conclusive, and incidentally show how much better a coast site can be."

Inspector Thank you very much. Of course, we have all this data available from the Met. Office, at the Commission.

Mr. Banfield I do appreciate that you may have it; but we were not aware that you had it—we were not given any figures by the Commission.

Inspector The Commission staff is available, should you require any sort of detail of this kind, and they will help you if they can. Are there any

* p. 1291.
† p. 1292.

* p. 1293.

Printed image digitised by the University of Southampton Library Digitisation Unit

questions to Mr. Banfield, on his original short proof and very much longer supplementary statement? There are no questions; I have no questions. The point about kerosene fallout, Mr. Banfield—you may have appreciated that we are interested in that.

(*The witness withdrew*)

MR. CHRISTOPHER HARWOOD* *called*
(*New College, Oxford*)

Mr. Harwood My name is Christopher Harwood; I am a Fellow of the Chartered Land Agents Society, practising mainly as Land Agent to New College, Oxford.

I make no apology for dwelling on the financial implications of siting an airport at Wing upon the College, since the Chairman himself has described this Stage of the Inquiry as one of the largest cost benefit analyses that has ever taken place. I think it may be helpful if I just reiterate a little bit on paragraph 6. in my proof, in which I said "The siting of the airport would have a depreciatory effect on the college". I can speak with some knowledge on this subject, because we have another airfield situated close to—albeit a military airport—in Upper Heyford in Oxfordshire, which is run by the United States Air Force. We have found there that the effect of the airport upon our property has been to depreciate houses and building plots in the village by approximately 40 per cent of the value which we consider they would otherwise fetch. In the case of farms, the depreciation is not quite so large—possibly there is less freedom of choice for the farming community over the years in the farms which are available.

In this case the depreciation is approximately 20 per cent of the full freehold value, and this is supported by figures which I have already submitted from which you will see our average rents in Aylesbury area are about £7 per acre, and I consider that an ordinary investor buying land, and I should emphasise the "investor", this is not the farmer buying a farm, in particular would then find that the return he required on his investment would rise from four per cent to five per cent, and this would immediately depreciate the value from £172 per acre to £140 per acre. This extended over the whole of the College Estates in the Aylesbury area would give a total of £43,750.

4670 *Inspector* Thank you. Are there any questions of Mr. Harwood? Mr. Harwood, the 40 per cent depreciation on residential sites at Upper Hardwick, have you many such sites in the village? First of all, what kind of sites are they, single plots? — Largely infilling plots, in some cases farm yards which have been traditionally situated inside built-up areas of the village and became redundant some time through amalgamations, to an extent in some cases of three quarters of an acre sites on which one would hope to establish a number of houses.

4671 How do you arrive at your 40 per cent depreciation? — That has been arrived at by comparing Upper Hardwick village with other villages, and the prices which we have obtained in both villages for comparable plots.

Inspector Thank you. I have no more questions.

The Oxford Preservation Trust are now relying on written representations.* We next have the Thames Valley Gliding Club, but we have been unable to extract from that body any kind of proof. Are they with us at all? Then we have the Leighton Buzzard Arts Club.

MR. JOHN FERRIS† *called*
(*Leighton Buzzard Arts Club*)

Mr. Ferris My name is John Ferris, I am standing for the Chairman of Leighton Buzzard Arts Club who is unable to be here today.

Inspector Mr. Ferris did you say? — Yes. I am standing for our Chairman who is unable to be here today.

Inspector Yes.

Mr. Ferris Plainly the siting of an airport would seriously affect local societies of music and drama in the area. You have our proof, sir, indicating the extent of our activities and copies of our brochure. I would like to draw your attention to paragraph 2 on page 2 of it, where we go overboard saying we are the only people providing the only opportunity available to townspeople and people from surrounding villages for the enjoyment of 'live' performances —this is obviously a mistake, a misprint, it should be the 'chief opportunity'. I am not able to speak of the many local dramatic societies of the villages and also in Leighton Buzzard we have another dramatic society, one which is flourishing. The extent of our audience is the greatest part of our case, that our concerts are professional ones and supported by up to 100 each production, and our production of dramatic plays vary from Pinter to pantomime with audiences of up to 600–700 for each performance during the week. I believe questions have been

* See also p. 1294.

* Available for inspection, by arrangement, at the offices of the Commission.
† See also p. 1295.

Printed image digitised by the University of Southampton Library Digitisation Unit

raised regarding the activities for production of activities for younger people in the area, and we have in fact offered opportunities for children, teenagers, for stage work, and instrumental performances, and in offering them cheap prices as audiences for these performances, and we are well supported in this way. We believe these activities, live performances of music and drama, would be forced to end if an airport were sited at Cublington, and for drama and music the local population would then have to travel far afield which many would not be willing or able to do, and in these respects we must say this area would become a cultural desert.

Inspector Thank you. Any questions of Mr. Ferris on his evidence? Any questions on his additional statement? I have no questions, Mr. Ferris. Thank you very much.

That concludes today's programme, and also the hearings for this week. May I just remind those remaining at present in the hall that it has to be cleared tonight and the hall will be open for the Inquiry to reconvene at ten o'clock on Monday next.

(*Adjourned until* 10 *o'clock Monday* 21*st July*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

MONDAY 21 JULY 1969

THE ASSEMBLY HALL, AYLESBURY, BUCKS

Before MR. A. J. HUNT

Oral evidence was taken from:

St. Michael's Church Preservation Committee
(*Sir Gilbert Inglefield*)

Bucks Federation of Women's Institutes
(*Mrs. M. Brazil*)

Drayton Parslow Women's Institutes, and Drayton Parslow Action Committee
(*Mr. S. Sarjeant*)

Weedon Women's Institute
(*Mrs. E. Cox*)

Bucks Association of Parish Councils
(*Mr. A. James and Sq. Ldr. B. Lock*)

Miss D. M. Rogers

Mr. E. G. R. Taylor

Aylesbury Industrial Group
(*Mr. A. M. Miscambell and Mr. G. Stuart Young*)

Mid-Bucks Liberal Association
(*Mr. P. Kinsey*)

Newington Parish Council
(*Sir John Rothenstein*)

Dr. D. M. Allen

Mr. B. Bateman

Capt. P. J. Bellingham

Mr. D. Brown

Mrs. P. Brunner

Miss E. P. Carpenter

Mr. A. C. Chandler

Mr. R. Crabbe

Mr. A. C. Lovejoy

Winslow and Stewkley division, Bucks County Council
(*Mr. D. Midwinter*)

Mrs. P. M. Murphy

Dr. B. Ricketson

Mrs. B. Taylor

Cublington Airport Supporters' Committee
(*Mr. E. J. Payne and Mrs. C. Walsh*)

Mr. R. Bramwell

Mr. J. M. Cornwell

Stewkley Local Labour Party
(*Mr. R. Maxwell*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Good morning, I have one or two brief announcements before we start today's programme. The timetable is substantially as published, except in two respects: some persons have withdrawn and will be content to rely upon written submissions —and I shall refer to these as we run through the programme. In certain other cases, we have as yet received no proof, so I do not know whether the parties concerned wish to appear or not; and no doubt we shall find that out as the programme proceeds. Finally, may I just make the point that there is no need to read statements already submitted; these have been circulated to all parties and to the press by means of this rather elaborate procedure which results in the table in front of Miss Wall, and so no useful purpose can be served by reading statements already put in.

I now call upon the St. Michael's Church Preservation Committee.

SIR GILBERT INGLEFIELD*called*

(*St. Michael's Church Preservation Committee, Stewkley*)

Sir Gilbert Inglefield You have, Sir, already in your possession, I think, our report on this subject; but would you allow me to add one or two further observations and perhaps enlarge on one or two what we consider very important points? You will, I am sure, have read my views and remarks on pages 7 and 9, so, as you said just now, you do not want me to refer to them again—

Inspector I can assure you I have read them most carefully, Sir Gilbert.

Sir Gilbert Inglefield Today I am arguing one point only: and let me make that clear—I am protesting simply on the issues involved in destroying a priceless and irreplaceable work of art and the ultimate conclusions that such a disastrous policy can create. I am on this occasion dealing with neither moral or religious aspects—however strongly, of course, I may wholly sympathise with those issues which have been discussed last week. I am totally opposed to this scheme. Stewkley Church is a very important work of art indeed. There are of course other ecclesiastical buildings of this great Late Norman period—there are great cathedrals—Durham springs to mind—and other great buildings which have Norman work in them. There are other village churches, but very few. Some of them may be more spectacular than ours—Melbourne in Derbyshire, Iffley in Oxfordshire, Barfrestone in Kent—all Norman churches; but none have wholly escaped the hand of the improver or the addition of a later stylistic accretion. Stewkley is unique as a small, absolutely untouched village church with an unbroken tradition since it was built in 1150. I repeat the word "unique". It is therefore a heritage of immense importance, of incalculable significance. You will find on pages 11 and 12 a description of its architecture: may I just for a moment show you a photograph* to illustrate one or two points —

(*photograph displayed*)

Sir Gilbert Inglefield One of those photographs you will see shows the carvings. You will notice some gorgeous carvings of beasts, human beings, and various subjects. Perhaps some of those figures—who knows—could be the caricatures of village folk of the period; perhaps of the masons who built the church; perhaps of the parish council. They are great and important artifacts, supreme examples, if I may so put it, of art folklorique, as the French who prize such things might classify them. You will notice the entrance to the main doorway has a very peculiar feature, a single uncarved key stone in its middle which I think is unique. I repeat "still uncarved"—perhaps should this Inquiry prove successful we might record it by carving on that stone.

On page 13 you will notice a summary of the figures of those who have responded to our appeal: over three and a half thousand signed: of those 537 are eminent architects, 42 of whom have written in strong letters; 68 are town planners, and, an interesting point, 8 professors have contacted us from America. These are important statistics, sir.

Look at page 14 at the names of some of the people, many, indeed a great many, I am sure, are well known to you. Are they to speak in vain? A building—as Sir John Summerson, Curator of the Sir John Soane Museum puts it—of this antiquity and distinction should be regarded by planners as if it were a totally indestructable national feature. Strong words. I quote that great cathedral designer Sir Basil Spence: "I think it would be tragic if it were to be destroyed". Sir Nikolaus Persner, eminent art historian: "This extremely important Norman church should not be allowed to disappear".

Let me add perhaps a more personal note: letters I have had, such as those from Lord Anglesey, who concludes in a friendly fashion: "It must be Foulness. I shall emigrate if it is not". Lord Esher, who is Past President of the Royal Institute of British Architects, and from people like Lord Holford—they are all urgent pleas. Look at the list of societies and associations who voice their views. You will find them on page 16.

Let me add a note to the deliberations which I attended of the Fine Arts Commission, for I myself

* see also p. 1299.

* not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

have recently been made one of the Fine Arts Commissioners. The Chairman, Sir Colin Anderson has allowed me to say that in a private discussion the Commission would entirely disapprove and would greatly deplore the destruction of Stewkley Church, and the Fine Arts Commission is a very powerful organisation. Let me add, too, that I have had a private talk with Mr. Duncan Sandys on his interests for the Civic Trust. Let me just quote the views, because I think they are interesting, of the Woolwich and District Antiquarians Society—they speak fearlessly and to the point, I think, "We regard this as wanton distruction of an irreplaceable part of our national heritage, something for which we are only passing trustees, answerable to our descendants". Those are indeed noble sentiments. Will they go unheeded?

What does the ordinary layman say? Mr. Waterlow, who lives in Surrey writes: "I have visited more than 800 old churches in England and I consider Stewkley Church outstanding amongst them". I personally find myself in entire agreement with what Mr. Clark of Haslemere writes: "That any group of civilised persons could contemplate such an action is almost beyond belief". A writer from Hertfordshire puts the matter with admirable sincerity: "It is like cutting up a priceless Reubens to use the canvas to patch up a hole in a hen coop". Bravo! That hits the nail on the head.

I have quoted a few of the opinions contained in this document all of which you can see should you wish in their original form.

Let us come to the nub (as Mr. P. G. Wodehouse would put it). Let me quote again Sir John Summerson about this church: "Its destruction would put all our ancient monuments at risk". This is a terrible and appalling thought. Why is it terrible and appalling? Because surely it challenges our proper sense of values; on the one hand we are taught rightly to reverence, to appreciate, and to cherish the creations of God—man himself for instance made in the likeness of his creator—and the beauties of nature, and also to appraise with intelligence and appreciation the works of art that man creates conditioned, as I am convinced, by the direct inspiration of God. How else does one explain the divine spark that stimulated Leonardo da Vinci, Beethoven, and the architect of the Parthenon? A work of art is the greatest manifestation of man's ability—to have painted the ceiling of the Sistine Chapel is a greater achievement, a more significant example of man's genius, than to have placed, as happened but a few hours ago, two men on the moon, which is after all the result of long patient and sometimes painful endeavour.

I think we appreciate the importance of works of art. You have but to frequent the sale rooms of London to discover the materialistic and monetary value—which we put on the graphic arts and furniture and objects d'art. You have but to assess the enormous sums that are spent on restoration of ancient buildings and the preservation of pictures.

I have referred to appreciation of arts, how highly we value them. Then, sir, comes this slap in the face. How illogical can we get? Unnecessarily to destroy a work of Art? Man is transient—art is constant. Once a thing of beauty has gone it cannot—I repeat cannot—be recreated. The flower withereth, man dies; both are reborn in a generation. But Stewkley Church cannot be re-created, and here values are again in conflict. Man has important requirements for his 20th Century civilisation. A new airport is necessary, but it can well be provided preferably on a coastal area absolutely adequately without the destruction of things that are of vital importance. Which is really—and let us get down to realities at last—the more important? To save man two minutes in time, or with proper communications Foulness need not be more than a quarter of an hour or twenty minutes —

Inspector I must intervene. Foulness is not really an allowed word. This hearing is quite strictly to consider the local implications should an airport come to Cublington/Wing, and the question of comparison and relative merits is not, strictly not for this Inquiry. I am sorry.

Sir Gilbert Inglefield I fully appreciate your point, sir. Shall we instead of mentioning Foulness say some other spot near the open area of the sea. Would that be in order.

Inspector I would rather, sir, that you stuck to selecting local implications, which is the only subject of this hearing.

Sir Gilbert Inglefield I appreciate that, I apologise. Well, I return to my point about how man can justify this action, if by placing an aerodrome at Wing he can save a journey of twenty minutes is that equal compensation for the destruction of a building like Stewkley Church? You must make your choice and be judged by future generations.

But let me repeat those words of Sir John Summerson, that the destruction of Stewkley Church will put all our ancient monuments at risk. You see, Stewkley Church may be but the thin end of the wedge if this argument is carried to its logical conclusion. Down with Stewkley Church to make a runway—it is equally logical to demolish the Tower of London to create a much needed motorway through the City. Why spend a few million pounds in preserving York Minster when its removal would greatly help traffic congestion? How admirably the crypt and vaults of Peterborough Cathedral could be converted into a public swimming pool which would be used alas perhaps by more people than those who frequent its services. Away with such out of date uneconomical and mediaeval educational structures such as Kings or Trinity College at Cambridge or those extravagant buildings at Oxford. Indeed, sir, where do we go from here?

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Thank you, Sir Gilbert. Any questions concerning the statement read by Sir Gilbert Inglefield? No questions, Sir Gilbert, thank you very much. Does that conclude the case for St. Michael's or do you wish to make any further representations? Thank you very much.

Before I call the next appearance, the Bucks Federation of Women's Institutes, I did omit to mention that we have agreed at 2.15 this afternoon to hear Mr. Payne of the Airport Supporters' Committee. Mrs. Walsh has asked to appear with him. I have agreed to this. Mr. Bramwell who I understand is appearing on his own behalf will appear immediately afterwards, so they will be certain to be here at that time as a matter of convenience because I believe some others may attend at that time to ask questions.

MRS. MIRIAM BRAZIL* *called*

(*Bucks Federation of Women's Institutes*)

Inspector Would you care to give your name?

Mrs. *Brazil* Miriam Brazil. I am a member of the Executive of the Bucks Federation of Women's Institutes and we did submit written evidence but we would like to just add something to it. Is that permissible to alter some of it? I do not propose to read it through.

Inspector Please don't read it. I have read it.

Mrs. *Brazil* The paragraph which I would like to alter, if I may, "From information we have received we understand that Cublington will be completely wiped out, and that part of Wing will also be destroyed. We feel it unnecessary to labour the distress that this will cause the inhabitants of these villages. Other villages immediately affected will be Stewkley, Whitchurch, Wingrave, Weedon. This represents 275 members and their families." I would like to alter it, if I may, to: "From information we have received we understand that Cublington and Stewkley will be completely wiped out and we have 15 members in Stewkley Women's Institute who will be affected by this."

Inspector Do you wish to add in any other way to your statement?

Mrs. *Brazil* No, I think everything else is covered. I should just like to point out that we haven't much information that we have received we have not included in this summary as we felt that the points raised would be ventilated by other organisations such as the Preservation of Rural England and the National Farmers' Union.

Inspector Are you satisfied they have done so?

Mrs. *Brazil* Yes.

* See also p. 1307.

Inspector Are there any questions concerning the statement of the Bucks Federation of Women's Institutes? I have no questions. Thank you very much for coming.

Is the Beds Federation of Women's Institutes represented? Apparently not. The Oxfordshire Federation of Women's Institutes who are next on the programme have said that they will rely on their written evidence.*

MRS. SHENA SARJEANT† *called*

(*Drayton Parslow Women's Institute and the Drayton Parslow Action Committee*)

Inspector Would you care to give your name?

Mrs. *Sarjeant* Shena Sarjeant. I would like to point out I am also representing the Drayton Parslow Action Committee and I would like to say a few words over and above my statement. I am a housewife. I live in Drayton Parslow and I am a member of the local Women's Institute and the Drayton Parslow Action Committee. The latter was democratically elected by the parish.

The Women's Institute and the Action Committee have done me the greatest honour in selecting me to speak for them.

If the Third London Airport is sited at Cublington/Wing our village will be seriously affected by noise as we are in the 40–50 NNI contour.

The main evidence of our village will be submitted tomorrow by the Chairman of the Parish Council and in my written evidence I have elaborated a few very important points which are of particular interest to me.

To uproot the older generation and the inevitable splitting of family ties would be absolutely criminal. Human misery and sacrifice cannot be justified. I am stressing this point because there are 33 people (8·7 per cent) over the age of 70 for whom no alternative accommodation could compensate and the alternative of an old people's home away from their families can only mean a quick death.

You will have heard a great deal of duplicated evidence, but I should like to repeat that we in Drayton Parslow were absolutely horrified when Cublington/Wing was listed as a possible site and the implications which follow are equally horrific.

Inspector Any questions to Mrs. Sarjeant? I have no questions. Thank you very much.

MRS. IRENE COX‡ *called*

(*Weedon Women's Institute*)

Mrs. *Cox* My name is Mrs. Irene Cox. I am a member of the Weedon Parish Anti-Airport Com-

* Available for inspection, by arrangement, at the office of the Commission.

† see also p. 1309.

‡ See also p. 1313.

Printed image digitised by the University of Southampton Library Digitisation Unit

mittee and President of the Weedon Women's Institute. Our letter has been circulated to your Commission but there are one or two things I would like to say with your permission.

Weedon Women's Institute is only a small institute but it is a very active one and it has been in existence for 33 years. One of our founder members still attends the meetings regularly and she is a very active member.

As everyone knows, Weedon Women's Institute is a countrywomen's organisation and we in Weedon are essentially countrywomen either by birth or by choice, and we who have gone to live in Weedon we do very definitely want to live in the country because we love it. Our national official magazine is called "Home and Country" and that I feel is precisely what we in Weedon at the moment are fighting for.

Our letter expressed our immediate reactions to the news that Cublington had been short-listed as a possible site for the third London Airport. Our feelings have not changed in this respect except to become more strongly opposed because since we wrote that letter we have seen maps which have been issued by the Commission and various other information and we realise now that our village would be well in the 50 NNI contour—in fact, it would appear we should be nearer 60 than 50. Should the airport come part of the village would be within one mile of one of the runways and we should be directly under the flight path.

Apart from the objections raised in our letter, obviously as women our chief concerns are our families and homes, apart from the fact that we realise that our village would be completely changed —we cannot envisage just how it would be changed— our families I think have been well catered for by the appropriate authorities, that is in regard to health and education, and so it is our homes that we are so deeply concerned about and from two aspects, financial and physical. I am speaking merely as a woman for women. I am not going to be technical, I am not going to try to be clever, I am merely speaking from the heart. It is our menfolk who provide the money as everyone knows, but we housewives are responsible for budgeting and for making full use of that money and we really are extremely concerned about the effect that this proposed airport, should it come, would have upon the value of our homes.

As we said in our letter, we have got old people— retired people—who have bought property in the village. We have a cross-section of people who have bought property and none of us can afford to lose in value on the property, which we hoped would be a security for the future. As to the physical aspects concerned, obviously the whole life of our village would be completely changed—but we should be in constant fear of crashes, both from take-off and landing. As Mr. Gregory for the Country Landowners* so very rightly said during the course of his evidence last Thursday, we all love our very beautiful little village; but we, the women, are in love with our homes. After all, it is the men who build and provide the houses, but it is we, the women, who make the homes.

Just to change the subject slightly — Henry Longhurst, in the Sunday Times yesterday, wrote, I shall admit, about an entirely different subject, although he was mentioning the destruction of the countryside. May I quote? He wrote: "As always on these occasions, there would be two schools of thought, one saying 'you cannot stop progress', and the other replying, 'no, but there is nothing to stop me trying, if it is going to destroy what I have come to love'." It is that which we in W.I. are trying to do.

May I, Sir, finish by just repeating the last sentence of our letter—"We fought for freedom: now we must fight to retain our countryside, our heritage, and, I might add, our homes". Thank you.

Inspector Any questions to Mrs. Cox? Thank you, Mrs. Cox.

MR. ALLAN JAMES† *called*

(*County of Buckingham Association of Parish Councils*)

Mr. *James* If it please you, Sir, my name is Allan James, and I am representing the County of Bucks Association of Parish Councils. There are two hundred Parish Councils in Bucks, of which I represent 131.

As you know, Sir, in any county the Parish Councils are the voices of the local communities. They are one of the few remaining safeguards we have against remote control and dictatorship, and they are solidly against this proposal. They are of the opinion that the concept of the Cublington/Wing airport as set in your Memorandum of Explanation‡ has not taken into account the effect of the airport on the county as a whole. They think the concept is too narrow, too short-term, and too restrictive in the review it has given. We want to fill in the gaps, because we represent the people who have lived in Bucks for many generations. We know as a matter of experience that urbanisation follows industry and commerce as night follows day, and we know that if the Wing Airport concept is brought about, urbanisation will spread from the south to the north of Bucks. We ask you to bear with us whilst we make out our case on what we think of your project.

We think your project is a dagger poised at the rural heart of Buckinghamshire and before it kills

* p. 1285. † See also p. 1312.

‡ *Site information for Stage II Local Hearing. 3. Cublington* (H.M.S.O., 6 s.). Reproduced at p. 1001.

Printed image digitised by the University of Southampton Library Digitisation Unit

the rural heart of Bucks, let us review the background of the spread of urbanisation and industry in Bucks over the last 50 years. We start with the First World War, in Slough, which was a small country town, and during the First World War became a War Disposals Depot for the Government. That War Disposals Depot in between the Wars, and during the Second War, formed itself into a very large industrial state, covering the whole field of general industry, bringing about overspill towns from London, bringing about the spread of population and urbanisation. All you have to do today is to take a tourist to see that there is not one green area of country left there. It is a continual built up area from Greater London to Slough, which was one of the things which the Abercrombie Plan took under review and tried to provide a buffer state by means of the Green Belt. As a result of this spread of industry, Slough is suffering from a labour shortage, the statistics of which you have before you, and is restricted to incoming industry. But that was only the start. The First World War and the Second World War brought about a similar pattern in the High Wycombe district area. That used to be a small furniture manufacturing town with some paper mill industry; as a result of the Second World War it became an industrial dispersal area, and has changed into an industrial town. It has now 460 factories, and the percentage of furniture industry is 16% as against 75 per cent pre-war; and we have 84% of general industry.

As a result of the last World War and the introduction of general industry, we have suffered for years from an acute labour shortage, and the statistics you still have before you show how urbanisation spread from Slough to Wycombe.

What about Aylesbury? As a result of Slough and Wycombe being closed for industry, Aylesbury has expanded industrially and is now suffering from a shortage of labour. In Bletchley also we are suffering from a shortage of labour. Then, Sir, we were faced with the project of Milton Keynes, and industry in Bucks was very concerned that a large industrial town was going to be built at Milton Keynes. When, however, we realised that this was a project which would have very longterm effects, that it was going to be an overspill town from London and, above all, that it was going to be a general industrial and not a specialised aircraft industry centre, we realised that if the Government honoured its pledges and really made it an overspill town with labour coming as industry gradually developed, then it would not create the effect anticipated in the rest of the county. We were horrified, however, when we heard of the project of an international airport at Cublington/Wing. We knew that your figures of 7,400 acres of land takeover and a population of 65,000—which will easily become 100,000—poise a much more dangerous dagger at the heart of Bucks industry as well as at the heart of Bucks rural scene. We know that if you start to build an international airport at Wing you will bring about an imbalance of labour at Slough, High Wycombe, Aylesbury and Bletchley—you must do, to get the technical labour and the skilled and unskilled labour you are talking about—and the figures which you have given in your Memorandum.

Sir, in this day and age, speaking from a long experience of British industry, you will know that we live by our export trade, and the creative and the productive nature of our exports must have some relaxation from the built-up areas. The nearest relaxation and larder for our industrial area is North Bucks—the very area which this project seeks to urbanise. If that sector is urbanised, you will have a stretch of urbanisation from Greater London to North Bucks, with no area of relaxation, no larder for industry, no larder for the people.

Was there ever such a travesty of town planning, industrial planning or labour planning? Your Minister will be able to get the figures from the Ministry of Labour; your Minister will know from his records how the balance for Bucks, the whole balance for the whole county, between industry, agriculture and rural amenities as a whole, has been second to none.

Now, Sir, I have dealt with the industrial and labour situation; but what of the human side of this terrible problem? What of the 200 communities who are dead against it, and whose life will be ruined in greater or less degree? What are they to say—their homes spoilt, their jobs gone, their area transformed from what has been so ably described by Sir Arthur Bryant* and Sir John Betjeman† in their evidence before you as two of the most lovely scenes in the South of England, and one of the very few recreational areas and agricultural areas left in the South of England—can any planner, any Government, any collection of individuals, search their hearts and minds and their brains and really say that Wing is going to be an international airport of the future? Can they ruin a countryside? Can they desecrate a county? Can they imperil industry—export trade and home trade? In the dozen or more industries which we have in this country? It just does not make sense, and it appears to many of us to have been afterthought put in after the other three sectors you have in view. Sir, I represent the Berkshire Association of Parish Councils; you will have before you representations put in by those Councils, and how their homes, their way of life, and their jobs, are affected, in the 200 communities they represent. They are true, traditional and continuity pictures of a way of life; you know what devastation this airport will bring about. Many of them give you graphic details; others less graphic. But you have to bear in mind that when a Parish Council sends its case to you, they have not the vast resources of money that the Government and the larger authorities have. They are giving you the human picture, which I

* p. 1174. † p. 1176.

Printed image digitised by the University of Southampton Library Digitisation Unit

know you will give equal regard to as if they were represented on a more professional and monetary basis. We in our position as representing the Association of Buckinghamshire Parish Councils have tried to place before you the history of industry in this county, the chaos the airport will cause to industry. We have tried to place before you the hardship, the terrific disturbance and the unnecessary suffering you would cause to a large number of communities. We also pray in aid of the farming industry. That has been a defence industry in this country, and a larder for the industry of Buckinghamshire and outer areas. We ask you to say that that must be considered too; because if you destroy this particular area, you will be destroying a very large sector of Buckinghamshire agriculture.

We also would finally ask you to bear in mind this: that if a county is asked to contribute something to a nation, then you must view the national picture as a whole. This airport has been brought about largely because passenger traffic has been taken over by the air from the sea. We are a seagoing nation. There are miles, and hundreds of miles, of coastal area which have carried out passengers to and from all parts of the world, up to now. Why should they not continue to carry out passengers in the air instead of the aea?

Inspector Cublington-Wing, Sir! May I come back to this point? This hearing is not concerned with where else the airport might go. It is concerned with the assumption that the airport might come to Cublington-Wing, and the local implications of that event.

Mr. *James* I am addressing myself, Sir, to the question of air traffic, which is a national issue —

Inspector This is not a national inquiry. It is a local inquiry into the local implications, into the assumption that an airport might come to Cublington-Wing. The national implications will be a matter for later consideration at other inquiries.

Mr. *James* And will the Association of Buckingham Parish Councils have a right to appear at the national inquiries?

Inspector That is a matter for the Commission to decide in due course; but it does not alter the fact that this hearing is to ascertain the local —

Mr. *James* May I raise one point of protest? If I am going to be muzzled to a local hearing, on the national issue, that is grossly unfair to the Buckingham Association of Parish Councils and the people of Bucks —

Inspector This may be so. I am afraid, Sir, that I did not completely catch your name or —

Mr. *James* My name is Allan James—Solicitor, of High Wycombe, and Solicitor to the County of Buckinghamshire Association of Parish Councils. I also happen to be the Honorary Consultant to the British Furniture Industry for the South of England, and I have know the industrial side of this county for over 30 years.

Inspector That is precisely the kind of information that the Commission is seeking at this stage; but if you refer to the original Hansard Statement, you will see that the whole intention of the Stage II local hearings was to ascertain the local implications of a particular short-listed site. I do ask that in the interests of efficiency we keep to that particular subject now.

Mr. *James* Having made my point, and knowing only too well the danger of a restricted area of reference, I shall pay no further comment on the coastal necessity of an airport there. But what I do add in conclusion is this: that come what may, the County of Bucks Association of Parish Councils, and Bucks as a whole, will fight and fight again at all levels to stop this dagger being forced into the rural heart of our county, which we think is a desecration of the county, contrary to public interest and contrary to the national interest.

I shall call my witness, Squadron Leader Lock.

SQUADRON LEADER B. LOCK* *called*

Sqdn/Ldr. *Lock* I am Squadron Leader Bertie Lock, of Stanway, Water End, Stokenchurch, Bucks; I am the Chairman of the County of Buckingham Association of Parish Councils, past Chairman of the Wycombe Rural District Council, and I have resided and been acquainted with Bucks for 20 years. Sir, you are in possession of a copy of my statement. I understand you do not wish me to read it; I offer myself therefore for questioning on my statement, if anyone wishes to question me.

Inspector The statement of Squadron Leader Lock has been circulated—Document 3036. Are there any questions concerning that statement?

Cross-examined by Mr. Cornwall

4672 Sir, does your Parish, and do Parish Councils in general, deplore the implications for democracy of the possible revival of a non-elected authority —

Inspector Mr. Cornwall, this is not an inquiry into democracy. It is an enquiry into an airport.

Mr. *Cornwall* There are local implications for democracy, which I am sure the local people feel are important —

Inspector But are not the matters being considered at this hearing. There are other venues, other platforms, for that particular line of inquiry.

Mr. *Cornwall* I am sure that the Squadron Leader will view that reply with the same displeasure as I do, Sir.

* See also p. 1312.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Are there any questions concerning the statement made by Squadron Leader Lock? I have no questions.

Re-examined by Mr. James

Mr. *James* I would like to produce a supplementary list of the communities, which is not in your proof.

Inspector Certainly. (*List handed to Inspector*). There has been produced the complete List of the County of Buckingham Association of Parish Councils. That is the case for the Parish Councils? Thank you, Mr. James.

Inspector Mr. Graves, the Joint Headmaster of Ashfold School, is appearing tomorrow. Mrs. D. M. Rogers, Chairman of the School Managers of Whitchurch County Primary School?

MRS. D. M. ROGERS* *called*

(*Chairman of the School Managers of Whitchurch County Primary School*)

Inspector Mrs. Rogers, I have your letter—No. 3052. I understand you wish to add something?

Mrs. *Rogers* I have nothing to add to that evidence.

Inspector Thank you. Document 3052 has been circulated—any questions concerning that to Mrs. Rogers? Well, Mrs. Rogers, I have read your statement—thank you for coming to the platform. Mr. Taylor, Headmaster, Wing Primary School?

MR. E. G. R. TAYLOR† *called*

(*Headmaster, Wing Primary School*)

Mr. *Taylor* Mr. Hunt, I have sat through many hours of this Commission in Aylesbury; I know you have sat through many many more elsewhere; but after retiring from these proceedings on Thursday I saw some notices in the local paper—not headlines, but remarks, which I would like to have permission to discuss, as it does concern my case. My case, as you will have read, is not particularly with respect for Wing School as to Wing; but I would like to paint a picture of Wing School which I hope will give the Commission a different impression of this little school from that which you may well have obtained from the evidence of Mrs. Kilty†, which was given last Thursday. May I proceed with this supplementary evidence?

Inspector Yes—I hope it is not too long.

Mr. *Taylor* It will not take five minutes, I guarantee.

Inspector I think you must give the Commission some credit, Mr. Taylor, for not — You do understand —

Mr. *Taylor* I understand. I give the Commission 100 per cent credit for getting the right answer from this, but I doubt if I can extend that same credit to 60,000 readers of the "Evening Post".

Inspector With respect, Mr. Taylor—this Inquiry is not a venue for people to contact an argument with the press.

Mr. *Taylor* Yes, I understand. The witness on Thursday was a member of Wing Primary School—she was a temporary assistant cleaner, and I am sure the teaching staff would like to know —

Inspector Mr. Taylor—please let us be responsible in this, please.

Mr. *Taylor* Visitors to this school are enchanted by its beauty and its surroundings. The proposed airport site is on the horizon; there are no other buildings visible, apart from the odd farm building, between us and the site. It is a beautiful site, in the countryside; it is not one of the delapidated schools—it has no damp in the school building. The only damp is in the school pool. It was built in 1850, but surely that should be no detriment to the school. It is a good solid building, given by Lord Ogglesdon; more money has been spent on the repair of the school than even the cost of the school itself. The extensions which we hope to have—the architects in their wisdom have decided that the present school buildings are of such a good standard that this building must be retained. It is an excellent school. We have the best swimming pool in Bucks. We have taught nearly a thousand children and adults to swim in our pool. We are a modern school; we teach by I.T.A. reading; we have taught French for six years. We have been with our parties to Paris, Cologne, Brussels—next year we hope to fly to Paris. This is not the picture which you heard last week, of Wing Village School. The school has six classes, two of which are infant classes. The other four are called the Junior School Classes. Their teachers, teaching in the junior classes, have gained promotion to headships. Is this the picture of a damp, depressing school? I have two Honours graduates of three universities on my staff. Is this the picture of the usual British school? I have an ex-Lieutenant-Colonel on my staff, an ex-Colonel of the British Army. This school is unique. I had not realised it until Mrs. Kilty's remarks made me start to think what we were —

Inspector Mr. Taylor, are you informing Mrs. Kilty, or the Commission?

Mr. *Taylor* The Commission, of course. Mrs. Kilty did admit, when I taxed her about her statement—this was in the press, not the front page, but it was read. "There are several unqualified teachers at this school" — I told Mrs. Kilty this was not so,

* p. 1315.
† See also p. 1316.

Printed image digitised by the University of Southampton Library Digitisation Unit

and she agreed to withdraw it. When I saw her the next day she said "they wont let me withdraw it", pointing to her friends on either side. Intimidation? No, I hope not.

Inspector Mr. Taylor, this is not being helpful, and I think you must know it is not being helpful. It may be helping you, but it is not helping the Commission at all, this kind of thing.

Mr. *Taylor* Well, I will go by your ruling, sir, that it is not helping the Commission, although it might be helping me. I have my printed evidence here. I am afraid the chart that is mentioned at the bottom of page 1 was given to the Commission in small numbers, not 200, so if anyone would like to see the chart and of winds in this area I have a copy or two here.

I have nothing to add to my printed evidence, which is general evidence against this airport, except that which I have mentioned. At Silverstone, at Northampton—discussion on Silverstone, at Wing, Aylesbury, on a subject which I think is so vital yet no one wishes to talk about it in connection with this airport, and that is, the airport will come to the centre of England, the centre of the road system, the centre of the rail system, the centre of the canal system, the centre oil pipe line system, the centre of the North Sea Gas pipe line, the Electricity Board's National Grid pass there, and I would think it is the number one target for nuclear attack, but nobody wishes to know this. I cannot discuss it at length because the Defence Department will deal with this at a later stage, but with regard to the Defence Projects in the area this may not be mentioned.

I am willing to answer any questions that may be put to me now.

Inspector Are there any questions to Mr. Taylor concerning his statement?

Cross-examined by Mrs. Walsh (Cublington Airport Supporters' Committee)

4673 Mr. Taylor, in your statement, you said travelling is an enormous waste of children's leisure time. Do you realise that children in Cublington now leave home at ten minutes past eight to arrive at Wing at nine o'clock?—Yes. I remember when you did it too.

4674 May be, but school children are already doing this. — It is a shame, isn't it?

4675 You also state that the presence of an airport at Wing would lower the standards of education. Can you give us some examples of academic achievement at your school, please? — Yes. We — Academic? You are not referring to this horrible scholarship business, are you?

4676 As well. — As regards Scholarships, we come up to the Bucks average; sometimes we get ten children through, sometimes two. On the average we get five or six, which is the national average for this type of area. As regards scholarships if I can take, Mr. Inspector, a typical group: my canteen staff, my cook's son is a Bachelor of Arts of London University: Mrs. Green the assistant cook, her son has passed his 'A' Levels. The other lady in the canteen has a son and daughter who are both at grammar school or high school. Yes, now you see— I must not miss any out. There are ladies working in the canteen whose children have not achieved this great academic height, but they are good solid citizens, and at the youth club when I meet them again they can stand up and talk as you yourself have been doing. I have been very proud of you Carol, standing up there with Eddy Payne, standing up and talking; I don't agree with what you are saying, but I am proud of the way you stand up to try and put the best of a bad case.

Inspector On that remarkable note of agreement, shouldn't you stop questioning now?

4677 Mrs. *Walsh* Yes, I think so. You have some remarkable cooks.

Cross-examined by Mr. Bramwell

4678 I, as Vice Chairman of CASC would have liked to have welcomed the member of your staff in this Chair, Mr. Woodhams who was at one time Chairman of CASC. — On a point of information, Mr. Inspector, were you saying Mr. Woodhams was a member of my staff?

4679 Yes. — No, he is on the staff of the school next door.

4680 I beg your pardon. At any rate, he was a school teacher, and you were speaking of prejudice and that sort of thing. Mr. Woodhams was the Chairman of CASC, and he ought to have been sitting here, but he was prevented, and I am sure in view of the fact he is at another school may well be able to deplore this sort of prejudice that can be extended to a member of any school, and that he ought to have freedom of choice in the first place. — I have no prejudice against Mr. Woodhams; he is a friend of mine.

Inspector If you have all finished being prejudiced, are there any more questions?

Cross-examined by Mr. Ginn

4681 I am another school master, I am afraid. Would Mr. Taylor tell us how far it is from Cublington to Wing? — From my present buildings to the runway?

4682 No, from the village of Cublington to Wing? — I think it is about 2½ miles—would you agree Carol?

Printed image digitised by the University of Southampton Library Digitisation Unit

Mrs. *Walsh* It is 2½ miles, and it takes 40 minutes to get there.

4683 Mr. *Ginn* Would Mr. Taylor explain how it is that it takes children 50 minutes to get from Cublington to Wing on a bus? — Would I explain?

4684 Yes. — Well, because they route—the bus transport organisation, which is Todds, I believe in this case, routes their bus so it leaves some children at Aston Abbots school, and then it goes round and picks up secondary school children. — Is this relevant?

4685 Yes. Would you therefore agree that the reason why it takes so long is because the local community really is not prepared to pay enough rates in order to see they get there quicker? — I am afraid I did not hear the last sentence.

4686 Would you agree, therefore, it lies in the hands of the local community to pay more rates so that better and quicker transport can be provided? — Well, I would not actually know. I would not think they should pay more rates to get quicker transport.

I think this is an important point that is raised —
4687 *Inspector* Surely, it could be pursued at some more appropriate place. — Yes, we can deal with this.

4688 I hope so. — I assure you we can.

Inspector Any more relevant questions, please? Thank you, Mr. Taylor, I have no questions.

Now we have Messrs Ellis Piers and Young Jackson, representing Aston Abbotts Church of England School, and that has been withdrawn, they are relying on written representations.

Aylesbury Industrial Group?

MR. A. M. MISCAMPBELL *called*

(*Aylesbury Industrial Group*)

Mr. *A. M. Miscampbell* I appear on behalf of Aylesbury Industrial Group. I want to call Mr. George Stuart Young whose written proof is before the Commission.

Inspector Would you give your name.

Mr. *Miscampbell* Yes, I am A. M. Miscampbell, of Wilkins & Sons, Solicitors, Aylesbury.

MR. GEORGE STUART YOUNG* *called*

(*Aylesbury Industrial Group*)
Examined by Mr. Miscampbell

4689 Are you George Stuart Young? — I am.

4690 A director of Bifurcated Engineering Limited, Chairman of the Industrial Group, and Chairman of the High Wycombe and Aylesbury District Employment Advisory Committee, which is a committee set up by the Ministry of Employment and Productivity? — I am.

4691 Mr. Young, in addition to the matters set out in your proof, which is before the Commission, did you cause a questionnaire to be circulated amongst the members of the group called the Aylesbury Industrial Group, a list of which is appended in Schedule 1 to your evidence? — Yes.

4692 As the result of that questionnaire were you able to give certain, or are you now able to give certain further information for the Inspector's assistance, with regard to the views of the group individually? — I am.

4693 Of the questionnaires which were circulated, were 33 copies completed and returned, and did four members of the group give their answers by means of a personal interview organised by your solicitors? — Yes.

4694 Of the remaining members of the group, are 3 of them statutory bodies, and therefore prevented from giving an opinion in this matter—those are the Southern Gas Board and the Eastern Electricity Board —

Inspector Yes, I see.

4695 Mr. *Miscampbell* Were the remaining members contacted by telephone through your solicitors? — They were.

4696 As a result of these various approaches are you able to summarise the findings as follows: do 39 members of your group support the group opposition to the siting of the Third London Airport at Cublington? — They do.

4697 Do four members support the view that the airport should come to Cublington? — Yes.

4698 And did 7 members fail to give sufficient information to judge their views properly? — That is so.

4699 Are the total number of workers represented by the employment who oppose the siting of the Third London Airport at Cublington in excess of 9,000, comprising those who have given that information to the group? — That is so.

Inspector Thank you. The statement has been circulated of the Aylesbury Industrial Group, No. 3254, are there any questions concerning that statement or the supplemental details now given in evidence? Any questions?

Cross-examined by Mrs. Walsh

4700 In a town where employment is so good, can you give me details of how many factories have closed in the first six months of this year? — I am afraid I do not know.

* See also p. 1319.

Printed image digitised by the University of Southampton Library Digitisation Unit

4701 It is three. — Thank you.

Inspector That is evidence, not a question, of course, Mrs. Walsh. Any other questions? I have no questions. Thank you very much. That concludes your case?

Mr. *Miscampbell* Yes, it does.

Inspector The Mid Bucks Liberal Association.

MR. PHILIP KINSEY* *called*

(*Mid Bucks Liberal Association*)

Mr. *Kinsey* Statement on behalf of the Mid Bucks Liberal Association by Philip Kinsey, a graduate in geography of Oxford University; resident in Amersham, Bucks; Prospective Liberal Candidate for the Mid Bucks Division.

The Association has passed the following resolutions concerning the Cublington Airport proposal.

The Association is seriously concerned at the choice of Cublington as a possible site for the building of London's third Airport. It asserts that as a matter of principle in these cases, the avoidance of widespread inconvenience to a large number of residents must take priority over other considerations. It believes that any economic rewards which would come from having an airport so near could be had, if so desired, by other means of expansion less socially disruptive. It will support those authorities and organisations which seek to put the strongest case possible against the siting of the Airport at Cublington. It urges the County Council to make a careful study of the effects on the County should the airport be sited at either Thurleigh or Nuthampsted, and will do all in its power to make sure that residents in the village have opportunity to air their opinions on the subject.

That was a resolution passed on the 26th March 1969.

The following resolution was passed on the 3rd of June, 1969: This Association deplores the decision of the Roskill Commission to withhold the reasons for the short-listing of Cublington as London's Third Airport from the public bodies which have requested it, and notes with regret that the opportunity for individuals to put their cases at the Public Inquiry has been curtailed.

The Association has branches and members in all parts of the Constituency and in general the opinion has been that the possibility of having a large airport at Cublington arouses fear and anxiety and it will radically change the environment in an unwelcome way. More specifically fear has been expressed concerning the increased level of noise, the widespread change in land use which the Association believes would go beyond the projected acreage and produce a very great measure of urbanisation and thirdly the destruction of amenities.

In amplification we would point out that the County has some 3,225,108 acres of non-urbanised land which includes commons, rough grazing, the slopes of the Chilterns, etc. The County can expect to lose some 1,000 acres of land annually for normal expansion purposes, schools, housing estates, playing fields, etc. This likely to be a continuing loss of farming land. (In 1965–66, 1,000 acres were taken. These are the latest figures available).

Estimated acreage need from this open land for:

A reservoir at Whitchurch or Waddesdon—2,500 to 3,000 acres.

Milton Keynes, 17,700 acres of existing farm land but with existing villages 21,900 acres in all.

Cublington Airport: needed immediately 7,500 acres but "the possibility of a larger land-take being required cannot be excluded". This figure of at least 7,500 acres is for the airport itself and does not include land for access roads, housing estates for the 190,250 people to be employed at the airport and in the supporting services.

These potential needs are all estimated, and may, and in the case of Cublington, well be exceeded: big bites into the open farmland acreage. We fear that moreover, the Milton Keynes-Cublington airport complex will turn North Bucks into a second Middlesex: that county now macadamised, that less than a hundred years ago supplied London from its market gardens with vegetables and prime spring lamb from its grazing fields.

We further consider that much of the area which would be affected by an Airport is of outstanding natural beauty and peacefulness (even yet in North Bucks "the Lowing herd wind slowly o'er the lea"), and that as such it is of great amenity value; that such value will become more important as time goes on and that its quiet, wide open spaces with good clean air so near to London should be preserved.

Nor, to these recreational facilities, do we forget the important educational and health facilities for the handicapped.

We further fear that the siting of an airport in this area will be another step in encouraging urban infilling between the industrial Midlands and London, thus putting another nail in the coffin in a well-known geographical metaphor.

The Association is not offering any technical evidence but would make two observations on the noise problem:

There is already a considerable amount of aircraft noise in the area which, while it cannot be described as intolerable is an irritating inconvenience and affects television reception.

* See also p. 1322.

Printed image digitised by the University of Southampton Library Digitisation Unit

Nowhere in the technical evidence so far produced —I say this subject to what has gone on in the Inquiry whilst I have not been here—has any observation been made on the effect of topography on noise levels. It seems strange to us that the maps showing noise levels completely ignore the sounding board effect of the Chiltern Scarp and its outlying hills.

In a few cases we have heard the argument used "The airport will bring needed employment". We reject this argument. Buckinghamshire is an area of full employment (see any edition of any local paper with its pages of advertised jobs), and so far from having an unemployment problem there is now an unsatisfied demand for workers. On the 9th June 1969 it had 1898 registered unemployed (many of them being temporarily out of work changing jobs, etc). This represents 0·8 per cent, as against 2·2 per cent for the national average. These figures are admittedly for one month only and a summer month at that, but the fact remains the area has had for many years an unsatisfied labour demand. We fear, with others (the County Planning Officer and the Aylesbury Industrial Group) that the establishment of an airport at Cublington could lead to an acute labour shortage.

We do not believe that the existing laws of the country afford sufficient protection for the individual and small communities against the harsher effects of the sort of upheaval entailed in this airport proposal. We would instance in this respect the inadequacies of the laws relating to compulsory purchase and the meagreness of the help available for sound-proofing against noise.

We therefore consider that the price in human and social terms of building an international Airport at Cublington far exceeds the cost of reclaiming land at an estuarine site.

Inspector Thank you. Any questions?

Cross-examined by Mr. Bramwell

4702 Sir, you lead the Liberal Party at this hearing and in view of the statement you have just made it would appear that a reversion to farming would be an ideal thing. Don't you think your balance of payments would be rather out of it if your industry did not sort it out better? — I certainly agree if we did not have any industry we would not have too happy a state in the balance of payments, but I do not consider that really this could be used as a case for having an airport at Cublington when in fact as in our written evidence* we put forward the view we were going to need more land anyway, and there would be or have to be land reclamation, and we consider that we ought to preserve the existing farming land for farming land and any further expansion might take place on reclaimed land.

* p. 1322.

4703 Are you aware, sir, in the East Midlands 127,000 acres of land have not been planted this year? — I am not aware, but I can only say I am not aware of that — I am not quite clear on the point you are trying to make.

4704 I am merely saying reclaimed land is very costly, a very costly job, when we have land that cannot be used which is in existence at the present time. I am very well aware it is a costly job in reclaiming land, and I think you are referring to reclaiming of old industrial sites, and I believe these ought to be reclaimed too.

4705 *Inspector* I think you are at cross purposes. I think what Mr. Bramwell is putting to you is there has been some very recent press publicity on the fact that some agricultural land has not been planted this year — Is that right? What he is putting to you, in fact, as I gather the position is, is why reclaim land until that land is planted. I believe that is the question being put.

4706 Mr. *Bramwell* Yes, indeed. — In answer to that, I would say there are some purposes for which reclaimed land inland could not be suitably used, and I would suggest an airport is an example of this. I still maintain, however, that future population projects of this country are such that all the land we can get our hands on is going to be needed.

4707 I would like to say I am referring to the reclamation of coastal land, not land inland which is in a derelict state—There are thousands of such acres now, but I am merely referring to the fact that land that was carrying produce last year has not been replanted this year; up to almost 200,000, over the whole of the British Isles. — Surely this is a problem for the Government's own agricultural policy.

4708 *Inspector* A very good answer, and I think that concludes that particular line of questioning. Mr. Kinsey, before you depart from us, you horrify me by one figure in your amended proof in which you say quite blandly that housing estates for the 190,250 people to be employed at the airport — What is the basis for your figure of 190,250 people to be employed at the airport? — I am sorry, I believe this to be a mistake, a typing error, in the sense these statistics were from the official published ones. I am certain this is a typing error and I apologise for that.

Inspector Thank you.

Stewkley Local Labour Party?* If they are not with us we will take their written statement in the usual way as a written submission.

Now, Messrs Hamnett Rafferty and Co.* are not appearing on behalf of Lord Rosebery, they are relying upon written representations, and I believe also upon other representations by other parties.

* Written evidence available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Davies, Brown and Co. are not appearing on behalf of Mr. A. H. I. Lonie.* Is Sir John Rothenstein with us, also representing Newington Parish Council?

SIR JOHN ROTHENSTEIN† *called*

Sir John Rothenstein My name is Sir John Rothenstein, I am representing the Newington Parish Council. I understand one has to give one's former profession. I was director of the Tate Gallery, and Rector of the University of St. Andrews. It is not my intention to add to the overwhelming evidence presented to this Commission in respect of the destruction of much exceptionally fine and some quite unique architecture that would follow in the wake of an international airport at Wing or of the destruction of an English county. But I would—and sharply—remind any protagonist of the primacy of cost-effectiveness that tourists still come in their hundreds of thousands to see precisely those things in England that this proposed airport would destroy —it is a large item to be included in any cost-effective calculations.

I want rather, however, to speak for a portion of east Oxfordshire that will be adversely affected by this proposed airport and is already under stress—sometimes severe stress—from noise. I refer to the area around the RAF training station at Benson. This part of Oxfordshire already suffers the unending din of heavy lorry traffic along its narrow, winding country lanes. According to the regional road surveyor the B4013, for instance, has become, in use, a lorry trunk road and the villages along it are battered and deafened by commercial traffic of the heaviest kind. Much more serious, of course, in the area of RAF training flights from Benson, is the relentless circuiting of Argosy transports. Benson, to quote an RAF authority, is "an extremely active RAF station", with three squadrons of Argosies on a programme of continuation training that involves an optimum number of day and night flights. In addition, it accommodates the Queen's Flight and there is an appreciable number of VC 10s and Army aircraft and helicopters flying in and out for visits. The area within and under the flight plan of Benson is already living under a degree of stress from noise that is as high as is tolerable and not infrequently much higher.

Lengthy practice circling flights at low altitudes, then, already constitute a major stress in the area for which I am speaking. May I illustrate. There have been occasions when we have had to evacuate our own house for several hours. At the last Newington Parish Council meeting, at my house, I had to telephone RAF Benson to ask for a suspension of their flying to permit the parish councillors to hear one another speak. On its resumption at 9.30 p.m. we had to adjourn. The experience of Chalgrove is identical.

The approved flight routes of RAF Benson and the noise contour lines of aircraft disturbance at Cublington show an overlap in the part of east Oxfordshire for which I am speaking. I am testifying, therefore, that a noise situation that can cause intense suffering to inhabitants of this area would be pushed well beyond the bounds of human tolerance. This I am saying also on behalf of the Newington and of the Chalgrove Parish Councils, and I would remind the Commissioners that the Parish Councils of the area for which I speak have passed resolutions formally deploring any siting of an airport at Cublington.

The sacrifice of human well-being entailed by the Cublington proposal is of a magnitude that carries it beyond any point at which it would be morally defensible.

Inspector Thank you, Sir John. Any questions of Sir John concerning his submitted proof and additional statement? No questions.

DR. D. M. ALLEN* *called*

Dr. *Allen* I am Dr. Allen of the University of Reading. I am the technical head of the livestock improvement service covering England, Wales and Scotland. The views I express on agriculture are my own and do not necessarily reflect those of the organisation for which I work. I do not propose to spend time adding to the personal objections which I have stated in my written proof except to say that they are strong. Nor do I waste the Commission's time dealing with the planning aspect on which I have opinions but no expert knowledge, all I note is that we in agriculture lose 50,000 acres a year to development, and as someone who tries to survey this year by year it makes my job that bit more difficult. However, I would like to elaborate briefly on the estimates of potential agricultural production which I have made in my written proof.

Mr. Giles of the University of Reading appearing for the National Farmers' Union has made an appraisal of the area as an agricultural economist.† His estimates are necessarily historical, the aspect is in the future, and I have therefore preferred to make estimates of the potential production using existing techniques which are being applied by large numbers of above average farmers over the whole country.

My estimates accept the Land Classification map and the suggestion that most of the land in the airport site falls into Grade 3 and 4. I have a slight dispute in my mind with the Land Classification map in that I regard its classification as being one describing the flexibility of the land for agricultural use and not necessarily its limitations when it is used for enterprises which are suited to it.

* Written evidence available for inspection, by arrangement, at the offices of the Commission.

† See also p. 1323.

* See also p. 1324.

† p. 1243.

Printed image digitised by the University of Southampton Library Digitisation Unit

Home beef production is a commodity which I have chosen to illustrate, potential production, and this seems to me reasonable insofar as the little NEDDY report for agriculture* has asked for a substantial increase in home beef production and this is part of my task. My estimates are based on 8,000 acres. This is a guess arising from a rather vague statement made by the Commission that they felt that they could not rule out a larger land take than 7,500 acres, so I suggest 8,000 as being a reasonable figure to work on for the airport site specifically. It may seem curious that in my evidence I have chosen a very specific type of beef production to make this estimate of production, but it seems to me one suited to the land and one which would give a type of farm policy which would be suited to the land also. This is what is known in agriculture as the 18 month system of beef production using the Autumn born calves surplus to the dairy herd, rearing them indoors for one winter, grazing them during the first summer of life and then finishing them during the second winter to be fattened in the Spring. At the time they are a year and a half, the typical carcass weights of these cattle are 560 lbs., and using information from farms all over the country even on poorer land than we are talking about now it seems that the home-grown feed required for this production of 560 lbs. per carcass can be supplied from the annual production of 0·7 acres of grass and 0·3 acres of barley. Multiplied by the acreage involved and divided by the average annual consumption of beef by the population at this time this implies that the site could produce sufficient to satisfy the annual requirements of 100,000 people. 100,000 people looks roughly like a Cup Final crowd. I could not of course guarantee that the Cup Final crowd have an average beef consumption nor for that matter do I wish to imply that the Prime Minister and whichever member of the Royal Family who attends the Cup Final should go without beef, but this is the size of the potential production. Brought down on to an acreage basis, one could project a calculation for the extra land involved in this area. I am saying that an acre of land can produce the beef to satisfy at present levels of consumption the annual beef requirements of something over twelve people.

Inspector Any questions?

Cross-examined by Mr. Banfield (Beacon Villages Society)

4709 Is there any evidence that noise will influence the production of beef? — I think not.

4710 Is there any other evidence that noise will be an inconvenience to farmers? — Yes, there is evidence that over a period of time animals always tend to become adjusted to noise. In the short term it can cause very serious effects particularly with young animals when they are experiencing it for the first time, but this is a difficult question which has never really been decided. There are certainly airfields in the country with stock near them but no major airport which has a heavy concentration of stock around such as this one would have.

Cross-examined by Mr. Bramwell

4711 Sir, as a steers expert how do you view the Irish steers and the influx of over 600,000 Irish steers per year into our markets? — I believe this is not the Commission's business except insofar as some of these steers may appear on the site suggested for the airport. As far as agriculture is concerned they are extremely important to us.

4712 One of the most important points about this livestock business seems to be now the concentration of the intensive production by the mechanised farming methods. What is your view on the cowtel which is situated within this area? — That particular cowtel produces milk, not beef, and I have no views on this.

4713 This is an experiment in milk production, of course. There are great possibilities for the same sort of thing and in view of that I wondered if there was any thoughts in the beef trade of this being applied in this way. — There are major beef units run on similar lines. They are efficient and not always aesthetically acceptable and one awaits how far the recommendations of the Bramhall Committee will be implemented before expressing an opinion on this.

4714 I don't know, sir, whether you were present at any of the previous hearings here, but great stress was laid on the pollution of rivers from various sources and there has been great concern about the effluent from farms. Would you not consider that any area of high land was likely to spill effluent more quickly into rivers than the low lying land which is usually used for beef production? — That depends entirely on the action which farmers take to deal with the effluent which they produce.

Cross-examined by Mrs. Knight

4715 In a long term forecast would you estimate that we would need more beef than your estimated 100,000 lbs, so that by the time the airport was built, we would be in fact needing more taking into account that we might be in the Common Market so that it would be even more disastrous? — It is difficult to offer an opinion on these things. Consumption of beef is largely determined by price. In fact, the current level of beef production is below the pre-war level, it has fallen from 55 to 45 lbs. This is due I think to price. It is difficult to see into the future and how prices will change and therefore how the consumption of beef will alter; it depends also on personal spending power. To most people beef has become a luxury in recent years. I think it is a luxury that we would like to indulge in more often and there

* N.E.D.O. Agricultures Import Saving Role, H.M.S.O., 20s.

Printed image digitised by the University of Southampton Library Digitisation Unit

is certainly a potential increase in beef production which shows all over the world. We are a long way behind our friends in the United States in terms of beef production. There is nothing to suppose that we would not rise to that consumption if the beef was available at the price.

Inspector Any other questions? I have no questions, Dr. Allen, thank you very much.

MR. BERNARD BATEMAN* *called*

Mr. *Bateman* Sir, I am Bernard Bateman. I am an architect and live at Horton which is a hamlet near to Leighton Buzzard. I have submitted a report to the Commission on behalf of the people who live in the hamlet showing our objections to the proposed siting of the airport at Cublington. These objections are that the road and rail links and the urban development which will be an integral part of the proposal will rob us of our chosen way of life and in fact some of us part of our land and livelihood.

To this report I should like to add my own protest. I was born near to the proposed site, went to school in Leighton Buzzard and have recently spent all of my spare time over five years working hard to modernise a 17th century cottage which is now my home and consequently saving it from destruction. You will understand, sir, that I see myself as a country man and a country lover perhaps with some justification.

In making my objection I would like to remind the Commission that no suggestion of such a major project as the airport has been included in the proposals for this region even as recently as 1967, when *Strategy for the South East*† was published.

If we continue to develop our country in such a piecemeal manner nothing but utter chaos will be left for our descendants in the not too distant future. Since the pressures of population and change are constantly accelerating we must look further ahead than the extra runway space needed around London in 1976 and in solving our problems we must not destroy the whole way of life in the vast store of our countryside because of our own short-sightedness. Whatever the supposed economic advantages of Cublington might have they cannot possibly outweigh the loss to the country in other ways if the proposal becomes a reality.

Inspector Thank you, Mr. Bateman. Any questions to Mr. Bateman concerning the submission dealing with Horton hamlet and also this additional personal statement?

Cross-examined by Mr. Payne (Cublington Airport Supporters' Committee)

4716 Mr. Bateman, you mentioned a little while earlier about development on a piecemeal basis. Surely just looking at the map* in front you see that there are four towns either side which are expanding fairly fast around the airport site. Surely it would be ideal to build the airport in the middle and build one large block of development instead of putting the airport somewhere else and then creating piecemeal development? — I do not think that this matter has been put forward by the Commission, sir.

4717 No, but you have only to look at any map to see that the airport site is in the middle of four fast developing towns. Surely it is better to put the airport in the middle as it is there, the actual site including those four towns, and make one conurbation, one large block, than to build piecemeal? — What I am suggesting to the Commission is that we should be looking at a map of Britain.

4718 Yes, but even if you do look at a map of Britain you see that this area is near enough joined on to the Greater London expansion scheme, so surely it would be better to site an airport here and build the whole lot in one large block than anywhere else—just as an example the North Yorks Moors or anywhere else?

Inspector I think it should be known that the Commission is of course very much aware of all the planning implications of a third London airport and we are in touch with the Burns team which is studying the whole problem once again at this moment. Are there any more questions? I have no questions. Thank you, Mr. Bateman.

CAPTAIN D. J. BELLINGHAM† *called*

Capt. *Bellingham* I am Donald John Bellingham. I am a farmer from Aston Abbotts and I would like, sir, to make a short supplementary statement. This statement concerns the question of pollution by exhaust gases from gas turbine engines. As far as I know, no investigation has been carried out into this question. However, it would seem that the Americans are sufficiently concerned about the problem to be looking into it at this moment and we await their findings with great interest.

Now you have already heard from a number of previous witnesses about the problems associated with atmospheric pollution and I would simply like to add these few points. The Boeing 707 aircraft will burn roughly in the area of 1 ton of fuel from the point of its departure until it reaches 1500 ft. on its climb out. A Jumbo jet will burn just over 1 ton. The Concorde similarly will burn about a ton and a half up to 1500 ft. Now I have taken 1500 ft. as a datum point assuming this to be the altitude at which exhaust gases will start to be dissipated in the open air, but this is by no means certain. The Commission

* See also p. 1325.
† (H.M.S.O. 15s.).

* p. 1037.
† See also p. 1327.

Printed image digitised by the University of Southampton Library Digitisation Unit

state that London's third airport will handle 600,000 flights a year, so even if we take a low average of one ton of fuel burned up to 1500 ft. for every flight we shall then have the staggering figure of 600,000 tons of aviation fuel.

Inspector Captain Bellingham, half of those will be landing.

Capt. *Bellingham* I am corrected, I accept that, of course, 300,000 tons of fuel in a year. Now this of course will be burned roughly within the area of the 15 NNI contour line, but once burned these fumes will then drift downwind and looking at the map I would suggest that the wind will be normally north of south so that the drift will take place over Aylesbury and Leighton Buzzard. We have had previous evidence that aircraft will be taking off in a westerly direction 75 per cent of the time so that the drift mainly will be over I would suggest the Aylesbury and Leighton Buzzard area. The effect of this together with other forms of pollution from road vehicles and from urbanisation itself I would suggest will have very serious effects on our health and our well-being. For this reason alone I think we have good cause for siting London's third airport at a coastal site.

Inspector I could see it coming but I couldn't avoid it!

Capt. *Bellingham* I had to get it in.

Inspector Are there any questions to Capt. Bellingham?

Cross-examined by Mr. Bramwell

4719 You paint a very alarming picture. When one considers that the major petrol companies of this land of ours is selling 100 million gallons of petrol a year we are already dealing quite effectively with our lungs and everything else and in view of the fact that most of the outflow for the site is going to be dissipated is it not more alarmist than factual, this sort of thing? — You raise a number of points there. I am not sure of the figures of fuel for road vehicles but road vehicles of course operate all over the United Kingdom and you do not have the heavy concentration which you get at Cublington, Wing.

Inspector. I said in my opening statement that certain aspects will be quite impossible to resolve at this hearing and I am fairly certain that this is one of them. I can say that what Capt. Bellingham and other people have said will be thoroughly investigated by the Commission during the remaining stages of its work.

Cross-examined by Mr. Bramwell

4720 One other point, Sir: you were speaking of a figure of 1500 feet—is it not a consideration of this, when one realises that the proposed airport starts off 450 feet above sea level, thereby having left the pad, she is already well up in the air? — I am not sure I get your point, Sir.

4721 The point is, Sir — this is a high-level site, therefore at almost all times there is a draught of wind one way or the other. By the time it reaches Cublington, it is roughly about 600–700 feet up. This is because it starts off from the site at 450 feet above sea level. — The aircraft start at 450 feet—what is the difference?

4722 What I am saying, Sir, is that on the lower lanes this plane is already well up, and the fumes are being dispersed before it reaches the lower levels. — You would get some dispersal, yes, but at 1500 feet these fumes do not go off. I have only given a figure within the 1500 feet altitude; a jet will reach 1500 after it has travelled a distance of 5 nautical miles horizontally.

4723 Thank you. We await the investigations of our Chairman with great interest.

Cross-examined by Mr. Benfield (Beacon Villages Society)

4724 I wondered if you were aware that your figure of 300,000 within a radius of the airport, which I believe is correct, is comparable with the quantity of fuel borne in Central London on a 3–5 mile radius—were you aware of this? — I am sorry—I cannot answer this question.

4725 I believe this is so, Sir.

Inspector Are there any other questions? I have no questions. Thank you.

MR. DEREK BROWN* *called*

(Thame, Oxfordshire, Service Manager)

Mr. *Brown* As a tiddler who has just recently moved out of the main stream of Southend and come to the quiet backwaters of Thame, may I just add a few words to my letter, which concerns the basic principle here of liberties of individuals—and it is as an individual that I appear.

In the past, we fought to defend our rights with cudgels, spears and firearms; here, we are a little more sophisticated and we are fighting with words. More genteelly; but the feeling engendered should not be a whit less violent, for the basic freedoms of individuals—nay, even of one individual—are affected. What is the basic difference between the situation in 1939 and 1940, when our fields were studded with poles to prevent Hitler taking over our homes and villages and towns, to the situation now when the spectre of hordes of airport users with their noise and nuisance to those living in this beautiful area. Make no mistake, Sir—this is not an inanimate air-

* See also p. 1328.

Printed image digitised by the University of Southampton Library Digitisation Unit

port taking over. This is as clear cut an issue as in 1939 —

Inspector Mr. Brown, I do not wish to interfere with any individual speaking, but this hearing is convened to help the Commission as to what the local implications might be if a third airport came to Cublington.

Mr. *Brown* Precisely, Sir; and the freedom of individuals is surely of paramount importance to this Inquiry.

Inspector I am concerned at the end of the day to have evidence to take back to the Commission, recorded, as to what the effects would be in the ways which have been described by a great number of people here previously.

Mr. *Brown* With due respect—surely the freedom of individuals is of paramount importance, and equal to the technical terms that have been given?

Inspector You have made that point; I accept that.

Mr. *Brown* I have nearly finished. If I may just finish? Here we have another group of people—that, is the airport users—in the person at the present of the planners, wishing to take over innocent people. You said earlier that it is not an inquiry into democracy—true; but democracy is concerned with balancing the wishes of the majority with the rights of the individual. I would say that the wishes of the majority and the rights of individual are in accord—to resist the airport users.

Inspector Thank you. Any questions to Mr. Brown? I have no questions.

Mrs. P. Brunner* *called*

Mrs. *Brunner* Sir, my husband and I saved this very beautiful house from demolition. I do not want to go over my proof of evidence, because I have said in that everything that I felt; but I would like to make one or two corrections. Mr. Pooley—Bucks County Council—the last page,† 11 — "Wootton House for reconstruction"—this should read, "restoration". The house was gutted, but not destroyed, by the fire. Page 10—Wotton is identical with, and built simultaneously with, Buckingham House. Wotton House was built in 1704, and not rebuilt in the 19th century. These points may seem very unimportant, but they are very important to me, because obviously it would not have been worth saving a house rebuilt in the 19th century.

In my proof of evidence, I omitted to say that Wotton House is listed as a No. 1 historic building. We also have poetry readings and concerts; among those who have appeared are Sir John Gielgud, Patrick Garland, who has just won the International Poetry Prize, and other artists of international fame. As we have been so busy saving and restoring the house, we have not yet been able to issue a Guide, for which I do apologise; so I do hope that you will send a representative—if it was yourself, Sir, it would be wonderful, but as I am sure you are very busy . . .!

My last point is that since the beginning of the Inquiry, the air activity in the neighbourhood has been quite extraordinary. From silence, we now have night and day flying —

Inspector Not guilty!

Mrs. *Brunner* No, I am sure of that; but I only wanted to say that since all the Boeing 707 aircraft and the DC8s have come, they have sadly disturbed my sleep, and these are not really overhead. That is all I have to say; and thank you for listening to me.

Inspector I have just one point, Mrs. Brunner—that certainly the Commission staff—and, if it is possible, I myself—might pop in to look at the house. Certainly, the Commission staff will take care of this. Are there any questions? I have no questions; thank you very much. I am not quite certain about Miss E. P. Carpenter—we seem to have received no proof —

Miss *Carpenter* Sir, I am present—may I say a word, by your permission, although I have not submitted a proof?

Inspector Yes—would you mind coming up, so we can see you properly? Would you care to give your address?

Miss E. P. Carpenter *called*

Miss *Carpenter* I would just like to repeat very briefly what I said in my original application—two points: noise disturbance and the great increase in motor and rail traffic. I do think that these factors would completely alter Thame and the surrounding area of its whole character, and I would like to say that my work as a Health Visitor would no doubt be affected if the proposed airport did come to Cublington-Wing. As most of this work is health education and preventive medicine amongst young and old, I feel most strongly that siting the airport here would not help the mental and physical health of those living here. I would add that I have used a day of my leave to come.

Inspector Are there any questions? I have no questions. Thank you for sparing us a day of your leave, Miss Carpenter.

Mr. A. C. Chandler* *called*

Mr. *Chandler* Sir, I am a retired ecclesiastical stone mason and builder, from Long Marsden. My

* See also p. 1329. † p. 1023.

* See also p. 1335.

Printed image digitised by the University of Southampton Library Digitisation Unit

evidence has been circulated, and I have nothing to add.

Inspector Thank you for coming. Are there any questions for Mr. Chandler concerning his circulated statement? I have no questions; thank you very much, Mr. Chandler. Mrs. J. Charlton, of Thame—not here. Mr. A. R. Christie-Mutch—he has submitted no proof, and he is not here. Mr. R. Crabbe, Proprietor, Leighton Organs?

MR. RAYMOND CRABBE* *called*

(*Proprietor, Leighton Organs*)

Mr. *Crabbe* Sir, my name in Raymond Crabbe, and I live at Vicarage Lane, Wing. I have already submitted a statement which I understand has been circulated, and I would like to add to that statement a further proof of evidence which arrived too late for inclusion with my statement. It is from the Federation of Master Organ Builders, and is as follows: "One of the members of the Federation—Leighton Organs—associated with the Incorporated Association of Organ Builders is protesting against the proposed siting of the Third London Airport at Wing which, if proceeded with, would cause him to suffer considerable hardship in continuing with his living, and he would be forced out of the district from which he derives most of his work. We confirm that it would be impossible to work as an organ builder in a workshop near the airport, as the continual aircraft noise would prevent the voicing of organ pipes and also the individual stops and the complete organs which are being completed." That is signed by the Secretary.

I would like to add just a further short statement: my firm has had full membership of the Federation of Master Organ Builders for several years, and is in the top category. We have contracts with the Minister of Social Security and British Embassies abroad. I believe that man's human happiness is more important than anything else, and I consider that many many people would be desperately unhappy if Wing is chosen for the Third London Airport.

Inspector Thank you. Are there any questions?

Cross-examined by Mr. Payne

4726 Mr. Crabbe, could you tell me how long it actually takes to tune the average organ? — That varies considerably. I have been engaged for three days on one particular organ. That is, of course, different from voicing pipes.

4727 What would be the actual period when you would need the absolute silence? — That could be a very long time. To voice an organ would probably take three or four weeks.

4728 Do you do this in small stages, or do you have to have a long break of silence? — It is a very tiring job, involving an awful lot of patience; and you cannot do it in one continuous job. One has to have breaks from it, obviously, as one has to in any job involving great concentration and patience.

Cross-examined by Mr. Bramwell

4729 Sited at Wing as you are—and as a motor engineer I am very interested in the possibilities of disturbance to you of the brick lorries which comes from Leighton Buzzard—does this not in any way affect your work? — Well, I think the chief concentration uses the main road—we do occasionally get lorries from Stewkley district, but most come from Leighton Buzzard and we are well away from that noise.

4730 *Inspector* Mr. Crabbe—I cannot allow you to go without asking you how to voice an organ! — Well—I have with me a very small organ pipe. (*Mr. Crabbe illustrated by playing on pipe*). That is the sort of thing we have to listen to—not of that size, of course, you must understand that an organ comprises pieces of pipe of different sizes and characteristics. The different characteristics of these pipes is determined solely by the harmonic structure —you get the different sorts of pipe, and the difference between a pipe that produces a keen or biting tone and one that has a very flute-like tone is in the different harmonic structure; and then there is the very high tone that I have just illustrated.

4731 *Inspector* And this is something that is done solely by the human ear? — Absolutely.

4732 *Inspector* There is no complicated electronic means — No.

Cross-examined further by Mr. Bramwell

4733 Just supplementary to that—should the airport come this way—the Welsh Valleys are an ideal place —

Inspector Please sit down, Mr. Bramwell.

Mr. *Bramwell* I am not being facetious, Sir.

Inspector You are making a statement anyway; and not a question.

Mr. *Bramwell* I am merely stating that one of the largest —

Inspector Make your statement later on. I was asking a serious question of a serious witness.

Mr. *Crabbe* May I give you a copy of my statement?

(*Copy of statement handed to Inspector*)

* See also p. 1333.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Dr. Judith Hart, and Mr. R. N. Hart, are not here—they are relying on their written statements.* Mr. A. C. Lovejoy?

MR. A. C. LOVEJOY† *called*

Mr. *Lovejoy* I have submitted personal evidence on the way it would affect myself and my family; I did not propose to make any further statement, unless there are any questions.

4734 *Inspector* Are there any questions to Mr. Lovejoy? Mr. Lovejoy, what does your journey involve—the three hours per day travelling? — I drive to Aylesbury, and then take a train to London, and then walk to my office; and come back, the same way. Hence the three hours per day.

Inspector And you think Hardwicke is worth it? — I think Hardwicke is very worth it—at the moment.

Inspector We have had no proof from Mr. and Mrs. C. Matheson—are they present, and do they wish to speak? D. Midwinter and J. E. Midwinter —?

MR D. MIDWINTER‡ *called*

Mr. *Midwinter* I am David Midwinter, and I am the son of, and representing, the County Councillor Mr. J. E. Midwinter, who represents the Winslow and Stewkley Division of the Bucks County Council. I would like on his behalf to make a small additional statement in addition to the written evidence.

Inspector Certainly. The evidence is under No. 3012; there are three submissions.

Mr. *Midwinter* The County Councillor wishes to voice the strongest possible opposition to any proposal to site the Third London Airport at Cublington. His main reasons are the complete and utter desecration of a very fine and beautiful rural area, the demolition of a large part of this area—Stewkley, and other villages within his constituency—the pollution and noise which will be suffered by other villages, particularly Whitchurch, Oving and Pitchcott, some of which fall within the 50 noise contour, as stated on your map. He feels that the noise and pollution may be far greater than it is in the published map§—the map published by your Commission—and I would refer you to the evidence given at the Stansted Inquiry, if I may, by Professor Richards, who stated that a 25 NNI would be more applicable in the countryside—one assumes that that was given on the basis of the undulating terrain —

Inspector Well, it was not, actually. I have read this statement, and we are well aware of it; and there has been evidence given on this point of adopting a lower NNI in country districts, but we have the point well in hand.

Mr. *Midwinter* The concern of the County Councillor is that there would be a far greater number of people affected by your proposals than your Commission is prepared to admit at this stage, both from the actual airport site, the number of people involved in noise and pollution, and the desecration of the surrounding countryside with regard to roads and other development. He would also like to make it quite clear that he feels that any major development of this nature should take place at a coastal or offshore site, in view of the expanding population of this country; and I would again refer you to the evidence and the statement on record from the former Minister of Aviation. That is the evidence submitted by the County Councillor.

Inspector Any questions concerning the evidence submitted on behalf of the County Councillor, Mr. Joseph Midwinter? I have no questions; thank you very much.

MRS. P. M. MURPHY* *called*

(*The Tyrells Herd of Pedigree Attested Guernseys*)

Mrs. *Murphy* I am a dairy farmer from Stoke Hammond; I am a member of the Council of the Royal Association of British Dairy Farmers, and a member of the English Guernsey Cattle Society. My only point that I would like to bring to your attention is the problem of drainage. You have heard a great deal about this, but I believe I am the only riparian owner before you. There has been an abnormal amount of rainfall in the past year, but we have noticed very very considerable increase in the flooding on land that is admittedly liable to flood, and this is undoubtedly due to the increased building in Milton Keynes and in the villages. There is an enormous additional amount of surplus water already going into the River Ouzel; with the airport coming to Wing, and 48 per cent—I believe it is—of the surplus drainage going that way, the effect on agriculture of a large part of Ouzel Valley would be disastrous. That is all I would like to say, Sir.

Inspector Are there any questions of Mrs. Murphy?

Cross-examined by Mr. Payne

4735 Mrs. Murphy, I would like to question you on the flooding that you mentioned of the Ouzel. Is it not true that the Great Ouse River Board has a future plan for dredging the Ouzel? — Yes. Con-

* Available for inspection, by arrangement, at the offices of the Commission.

† See also p. 1335. ‡ See also p. 1336.

§ See attached wallet of maps and diagrams.

* See also p. 1339.

Printed image digitised by the University of Southampton Library Digitisation Unit

siderable work has been done over the years by the Ouzel Drainage Board, and of course by the Great Ouse River Authority; but at the same time you are building an enormous amount of houses further down in Milton Keynes. This all has to go into the River Ouzel. Eventually, you are going to require dykes the size of those in Holland—as things stand it would appear anyway, certainly. We spoke to Mr. Pooley when he was planning what we then called Pooleyville, and he said there were only two problems—they could not get the water there, and they could not get the water away. There is this tremendous problem of getting the water away. To put an airport on top of that is going to be extremely difficult to get the water away. This is purely my experience as a farmer—I have no technical knowledge of this.

4736 *Inspector* Mrs. Murphy, I am a little puzzled here—did you say that you think that the more recent difficulties in drainage have been due to building in Milton Keynes? — Yes, and Stoke Hammond, because there is so much extra surplus water going into the river.

4737 But you are above Milton Keynes, aren't you, in the water-ways system? — Yes, but it has all got to get away.

4738 But their water is stopping yours getting into the queue? — Yes.

Inspector Thank you.

Dr. Barrie Ricketson* *called*

Dr. *Ricketson* My name is Barrie Ricketson, I am a practising physicist. I have worked on noise problems and done noise research, but I am not an expert on sociological noise, but finding myself in a very high NNI contour I have gone through libraries, and to American, and British experts, and discussed what exactly is the meaning of those contours. This is set out in my third point which I make to you, sir, and I would just like to amplify this, as it does not in fact indicate the way the Commission might look at these contours. The evidence from the experts on all your hearings has indicated that there is a considerable doubt in a large number of areas.

I think there is no doubt that these contours that we have here are the best estimate that is possible at the moment, but what I do not think is understood by the people of the area is the probability of this estimate in fact being the true one. It is in fact very low. There are too many guesses that have to be made to produce these types of contours, and I would like to suggest that if the argument that we are having on these proposed sites is to be more intelligent, what should be produced are probability curves for the different contours, so that if different types of aircraft, different mixtures of aircraft for the future are taken it can be seen what the real fact is likely to be. Aylesbury thinks it is safe at the moment, but it only takes at a guess a short take-off aircraft having to go to Norway, Denmark, Sweden, say this was the type of aircraft that was decided to be used, and it is possible that Aylesbury would be under those contours. I should, therefore, like the Commission and general public to get a much clearer feeling for the actual noise problem, not to accept the actual curves that have been placed before us as anything more than the best and not necessarily a very high probability. That is the comment to my third section.

I should also like to add a short comment on atmospheric pollution. In the further stages of this inquiry I would very much like the Commission to call an expert on the problem of future jet engines which are likely to produce nitrous oxide, and it is when it combines with water vapour in the air that it turns to nitric acid, and this is not the present problem, this is a future problem with high efficiency future jet engines, and I think the Commission should study very carefully the relation of nitric acid to the agricultural and human problem. For myself, sir, living in Pitchcott, I am right under it—if it comes here I go. Thank you.

Inspector Any questions of Dr. Ricketson?

Cross-examined by Mr. Philip Kinsey (Mid Bucks Liberal Association)

4739 I would just like to ask you if you have had any experience at all on effects on noise of topography, the land falls? — Yes. I am not an expert on noise, I am a physicist, but I have gone out to look at the papers, but when it comes to large scale topography, I think you must remember that the decibels scale which these NNI contours are, say the nucleus—the 3 decibels is a very big difference in terms of energy so that when you get reflections from a mountain or trees it does not make quite so much difference as a small case. If you are sitting in the middle, of say, Whitchurch High Street, this is where you are getting the enormous amount of noise due to reflect between two houses. It is the very local factors which will affect people.

Cross-examined by Mr. David Allen (Purcott)

4740 Am I right in assuming from what you have said that you are suggesting the only time we will really know what the noise contours are like is when aircraft are actually taking off from this airport? A second quick question—I am not entirely sure whether you are suggesting that it would be nitrous or nitric acid. Can you answer the second question first please? — This is a fixation process of NO coming out of the jet engine. This combined with the water—can you tell me which one it is?

4741 There is a great difference between nitrous acid—it is a laughing gas. — I think nitric.

* See also p. 1340.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector May I plead this again appears to be a matter which has been amply ventilated, it may be resolved elsewhere. I have a note of the point, and it is on record.

4742 Mr. *Allen* In either case I think it would be only fair for us to realise nitric acid is a highly corrosive acid.

Dr. *Ricketson* I am sorry, what is the first point?

4743 *Inspector* The question of noise contours, I think the point that was being made is that contours shown would be—Put your point again.

Dr. *Ricketson* I think I understand it. When I come to look at the basic equations on which the contours are based, all it is is a relationship between number of aircraft and how it affects you, it should be multiplied on noise level to give you some nuisance—This is not, I do not think, the main error. The main error is guessing what sorts of planes we are going to have in the future. I mean, if the supersonic plane turns out to be a really efficient machine it will mean a large number of supersonic planes taking off, and this will be much noisier than the subsonic planes, you can be fairly sure of this sort of thing. I think as a best estimate 10 NNI that has been taken of the expected contours from the work at Heathrow is reasonable. The probability is not all that high if it is correct.

Inspector I think it is fair to say the Commission's own opinion said that "Attention is drawn to the fact these countours, that is the noise contours, are of necessity approximate, and they can only give a general indication of what is the area likely to be affected." Even the two runway airport is dealing with flight paths, types of engine, other factors when two runways would be fully utilised, and the four runway airport is dealing with a similar situation, when the four runways would be fully utilised. That is looking far and away into the future. So, Dr. Ricketson is quite right, the difficulties are very great.

Cross-examined by Mr. Bramwell

4744 Would you be able to give us any idea at all of how the NNI contours will be moved sideways by strong cross winds, that is to say ones from the north-west or south-east? Can you give us an estimate in miles of how far the 50–40 NNI contours will move? — I am sorry, this is, I think, definitely a case for the expert.

Inspector If it is any help, experts are working upon this point now. Any questions?

MRS. B. TAYLOR* *called*

Mrs. *Taylor* Thank you, sir, for letting me have this opportunity to speak. I believe you have my evidence before you, and you do not wish me to read that, but things which I said in there of course are my own personal views, though I know they are the sentiments of a lot of people. If you will allow me I would like to speak of one other aspect which is with us already. That is the state of dreadful uncertainty and anxiety in which we are all living. We have been doing so ever since we first heard Cublington/Wing was on the short list. It dominates our whole life, and our thoughts, and to look across from ones home, as I do, over the countryside at cattle grazing in the fields, to realise that is where one of the runways would go is very frightening and, to us, it seems little short of torture. This is why I ask you to be very sure to report to the whole of the Roskill Commission that the ordinary people, and there are a lot of us, mean to fight this right through, so that we can preserve for future generations these things which to us are very dear and are so truly a part of England.

Thank you, sir. That is all I wish to say.

Inspector On the point of uncertainty, I am sure you will appreciate the uncertainty applies to three other sites.

Mrs. *Taylor* I am well aware of that, sir.

Inspector The Commission is very much concerned about this question, and it is one of the reasons why we are pushing forward with all possible speed to resolve it.

Mrs. *Taylor* I can only speak as to how it affects me personally, sir.

Inspector I realise that only too well. Are there any questions? I have no questions. Thank you, Mrs. Taylor.

Inspector Mr. and Mrs. Turner, are they with us? Mr. C. K. Wiggs? Neither of those submitted proofs so I am not surprised they are not here today. That appears to conclude the normal programme—am I right? Are there any more persons who were scheduled to be heard today? Any persons on the programme who have not been heard? In that case, we will adjourn for lunch, and I will remind you this afternoon I shall hear Mr. Payne of Cublington Airport Supporters Club, now accompanied by Mrs. Walsh, and also Mr. Bramwell. Therefore, the hearing is adjourned until 2.15. Thank you.

Inspector When you are ready, ladies and gentlemen. It will be remembered that when CASC put the majority of their case last week I did agree to hear Mr. Payne concerning his aspect of the matter which I see is labelled "Communications" in Document 3024. Mrs. Walsh has asked to appear with him so I now call upon these two to deal with the remaining part of this aspect of the case.

* p. 1341.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. EDGAR JOHN PAYNE and MRS. WALSH* *called*
(*Cublington Airport Supporters' Committee*)

Mr. *Payne* I am Edgar John Payne of Bletchley, Buckinghamshire. I am Chairman of the Cublington Airport Supporters' Committee. We are putting our case forward today in support of the airport site at Cublington.

Inspector Let us get this absolutely clear. The main case was made last Thursday and you know perfectly well that it was a special arrangement whereby you are appearing to as it were fill in a gap which could not be filled in last Thursday.

Mr. *Payne* Very good. It is perhaps significant that I am permitted to put forward our case on the same day as the American Apollo moon landing. This is a great step forward in the history of mankind just as an airport at Wing would be in the history of North Buckinghamshire.

Ever since the industrial revolution of the 19th century Britain has progressed from agriculture to industry, North Buckinghamshire has been one area which was slow off the mark in the race to prosperity. Now, however, its chance has come in the shape of an international airport. We of Cublington Airport Supporters' Committee believe that this chance should not be wasted. I should now like to hand it over to Mrs. Walsh.

Mrs. *Walsh* I really haven't got much to say because our case was put forward by Mrs. Kilty and Mrs. Smith and seeing that Mr. Hunt is rather short of time I therefore think I will not add any more to my evidence.

Inspector I am not short of time, what I am short of is the right to give each party two bites of the cherry.

Mrs. *Walsh* Is it permissible or not?

Inspector Let us hear it first and see what it is all about.

Mrs. *Walsh* This airport we feel will serve to give this area a boost, bring a better quality of life for the younger generation of North Bucks. Heading our reasons for this belief is the need for everyone to earn a decent living for their family. An airport will provide this. Another reason is that there is an urgent need for better local transport and facilities. Yet another reason is the need for better recreational pursuits for the younger generation.

Large areas of the proposed site are not used for agriculture—turf contracting, horse breeding, training of racehorses and now a number of acres let to a flying club, yet you say it is valuable.

These are not all the reasons I could quote, but to carry on would be to take up too much valuable time. In conclusion I would like to say that such an airport would cause suffering and sorrow in some cases, but not enough to outweigh the tremendous benefits it would bring.

Inspector Not strictly permissible but you have said it. Mr. Payne you are standing on your written statement, I take it, are you?

Mr. *Payne* That is correct.

Inspector Any questions from first tier authorities to the residue of the CASC case?

Mr. *Hamilton* Might I say, sir, that I do not propose to ask any questions but I would just say this is not of course because the County Council accept the case but it is in the light of the comment you made at the opening of this hearing that cross-examination should be devoted to defining the issues and not to resolving the issues. I have no comparison with the statements which have been put in by CASC to sufficiently define the issues and I do not therefore wish to take up your time by trying to resolve them.

Inspector Thank you, Mr. Hamilton.

Mr. *Maxwell* (*Borough of Aylesbury*) My feelings, Mr. Hunt, are the same as Mr. Hamilton on behalf of the County Council and as I said on an earlier occasion on Thursday many of the suggestions and allegations which have been made are in some way criticisms of local authorities but they do not seem to me to be matters which you are concerned with.

Cross-examined by Mr. Otton
(*Wing Airport Residents' Association*)

4746 Mr. *Otton* You appear here today in your capacity as Chairman of CASC, is that correct?

Mr. *Payne* That is correct.

4747 Mr. *Otton* How long has that organisation been in being?

Mr. *Payne* I would say roughly about four months. I couldn't give you any exact time in dates.

4748 Mr. *Otton* I expect it has been brought to your notice that when the first part of the case was put the other day we specifically asked that you should produce the records of the organisation?

Mr. *Payne* That is correct.

4749 Mr. *Otton* What records do you in fact hold?

Mr. *Payne* We have records of people's addresses who do support us and at the last count they numbered 632.

4750 Mr. *Otton* Are those before you today? Are these records in front of you now?

Mr. *Payne* No, they are not. They are in the strictest confidence, but if the Roskill Commission would like to see them I would gladly hand them to them, but not to anybody else.

* See also p. 1342.

Printed image digitised by the University of Southampton Library Digitisation Unit

4751 Mr. *Otton* You did hear we did want to see them and we did ask specifically that Mrs. Walsh should submit them here today for our perusal. Did you know that?

Mr. *Payne* No, I did not.

4752 Mr. *Otton* Did you know that on Wednesday when WARA presented their case all their signatures and all their documents in respect of their membership were produced in this hall and a card index to support it?

Mr. *Payne* That is correct, but did WARA ask the people who put forward their support, did they tell them it was in the strictest confidence?

4753 Mr. *Otton* Are you saying all your 632 when they signed your documents told you that it was in strict confidence?

Mr. *Payne* We informed them it would be in strict confidence.

4754 Mr. *Otton* Why be so coy about the identity of the support?

Mr. *Payne* Because there have been numerous not threats but allegations against certain supporters of our Committee, abusive telephone calls, threats also of bad feelings.

4755 Mr. *Otton* Are you seriously suggesting that if you were to produce those documents here today you have fear for the members who signed those documents?

Mr. *Payne* That is correct.

4756 Mr. *Otton* Mrs. Walsh did not raise any such objection the other day. Is this an attitude of mind that has built up since she gave her evidence the other day?

Mr. *Payne* No, it is not, but I do not know that Mrs. Walsh has given any of this evidence yet.

Mr. *Bramwell* Mr. Chairman, please, this is a character assassination by an organisation. It is for the Commission, surely.

Inspector No, it is not. Carry on.

4757 Mr. *Otton* We also asked that you should produce proof of your claim that the Duke of Bedford was your President. Have you any document to support that claim?

Mr. *Payne* If anybody would like to contact the Duke of Bedford I am quite sure he will verify this statement.

4758 Mr. *Otton* Is there any document, Mr. Payne, to support that contention?

Mr. *Payne* There is no actual document.

4759 Mr. *Otton* Have you written to him?

Mr. *Payne* We have, on several occasions.

4760 Mr. *Otton* Has he replied?

Mr. *Payne* He has.

4761 Mr. *Otton* Where are those letters?

Mr. *Payne* These letters are in the strictest confidence between our President and our Committee.

4762 Mr. *Otton* But none of those letters support your allegation that he is your President?

Mr. *Payne* He is our President.

4763 Mr. *Otton* Why are you so coy about disclosing those letters? Are you suggesting they might threaten the life of his Grace the Duke of Bedford?

Mr. *Payne* No, I do not honestly believe this, but anything disclosed in strict confidence it is naturally in strict confidence with the Committee.

4764 Mr. *Otton* You were also asked to produce a record of the number of meetings and the number of people attending each meeting, have you any such record?

Mr. *Payne* We have such records.

4765 Mr. *Otton* Where are they?

Mr. *Payne* If the Commission want to see them we can send the records of these meetings.

4766 Mr. *Otton* Why haven't you produced these today if you are prepared to let the Commission see them?

Mr. *Payne* I am just putting forward my case as the Chairman said.

4767 Mr. *Otton* You said that you were here in your capacity as Chairman of the CASC organisation. Are you now saying that you do not so appear?

Mr. *Payne* I do appear as the Chairman but I put forward the Chairman's evidence.

4768 Mr. *Otton* How are these records kept? Are they in some sort of notebook? How are these records compiled?

Mr. *Payne* We have them in a file.

4769 Mr. *Otton* How big is the file?

Mr. *Payne* Well, I would say normal foolscap size. I am not too sure on sizes of files, I do not actually measure them.

4770 Mr. *Otton* And I gather that you also have not collected any funds at all and have not solicited for any form of financial help from any of your members?

Mr. *Payne* We do not believe we get support in the form of extortion.

4771 Mr. *Otton* I am not suggesting that, don't misunderstand me. Is it right that there are no funds?

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Payne* We have a certain amount of funds.

4772 Mr. *Otton* Where have they come from?

Mr. *Payne* We received a payment from the ITV for appearing on the "Today" programme and they sent a cheque for our funds and we have taken up subscriptions from Committee members, only we do not usually ask for funds.

4773 Mr. *Otton* How much do these subscriptions work out to?

Mr. *Payne* They work out to 5s. 0d. a week, that is all.

4774 Mr. *Otton* And how many meetings do you hold?

Mr. *Payne* We hold one meeting every Monday night and if anything arises that is a justification for me to call an emergency one.

4775 Mr. *Otton* Where are those meetings being held?

Mr. *Payne* We have them at Wing Hall in the small hall adjoining the large hall and also hold them at Mrs. Walsh's house, Mrs. Kilty's house and the Press officer who recently left us, Mrs. Kapui.

4776 Mr. *Otton* You say Mrs. Kapui has left; has she resigned from your Committee?

Mr. *Payne* Yes, that is correct. The statement verifying this was in the Luton Post.

4777 Mr. *Otton* And she wishes to withdraw her proof today from the bundle of proofs submitted by your organisation, are you aware of that?

Mr. *Payne* I had no idea of that.

4778 Mr. *Otton* Mrs. Walsh was also asked to produce a copy of the Lancet in which she claimed that her doctor said that noise could be beneficial to certain people.

Mr. *Payne* Mrs. Walsh can answer this.

Mrs. *Walsh* I don't want you to say Mrs. Walsh was asked to produce it. I have not given evidence yet, nobody—least of all you—spoke to me.

4779 Mr. *Otton* You know my instructing Solicitor handed you a piece of paper on which he wrote out each of the documents that he was asking you to produce?

Mrs. *Walsh* I wasn't here that day, sir. Mrs. Kilty and Mrs. Smith were present that day, it wasn't me.

4780 Mr. *Otton* Have you not seen that document?

Mrs. *Walsh* We have not.

4781 Mr. *Otton* Did you know that Mrs. Kilty said she was prepared to bring that document to your notice?

Mr. *Payne* That is correct, but such things can be overlooked.

4782 *Inspector* It ought not to have been overlooked, Mr. Payne, because I have been at considerable pains to try and fit CASC in. I appreciate the difficulty in the circumstances, but it was made quite clear to Mrs. Kilty that these documents would be called for and it seems a little odd that over the weekend she should not have made that request known to you.

Mr. *Payne* May I just state that when we started to settle the basis of our evidence we decided that everybody should have their own personal subject to bring forward and everybody would keep this evidence to themselves without too much inter-work between each other.

4783 *Inspector* What is being asked here is a question concerning a matter which is in the written submissions before the Commission. It is surely a very simple thing to produce whatever evidence there is in support of a written submission for the Commission.

Mr. *Payne* I agree, but I am being questioned on my evidence, surely, I was told I was to put forward my own case.

4784 *Inspector* But Mrs. Walsh was made a specific request to present that evidence.

Mr. *Payne* Mrs. Walsh could not forward that evidence.

4785 *Inspector* Mrs. Walsh, you are sitting there. Are you able or not to throw any further light on the statement in your written evidence concerning the latter?

Mrs. *Walsh* The letter did not appear in my evidence.

4786 Mr. *Otton* I accept that and you are absolutely right, I am sure, but you have no doubt read Mrs. Kilty's evidence?

Mrs. *Walsh* Yes.

4787 Mr. *Otton* And you have heard or seen the fact that she refers to the Lancet?

Mrs. *Walsh* It is possible, yes. This article Mrs. Kilty has written in here about in the *Lancet*, it was seen in the *Lancet* and it was seen by me not by the doctor Mrs. Kilty has quoted but in a dentist's surgery.

4788 Mr. *Otton* We were allowed to believe the other day when Mrs. Kilty was giving her evidence how she saw this article, that it was brought to her attention by her doctor.

Mrs. *Walsh* Mrs. Kilty I believe made it quite clear that I gave her the information, not that she had it handed to her at all.

Printed image digitised by the University of Southampton Library Digitisation Unit

4789 Mr. *Otton* So now it didn't come from the doctor at all but somebody's waiting room?

Mrs. *Walsh* It was at a dentist's waiting room.

4790 Mr. *Otton* And may we take it that Mrs. Kilty has made no attempt to hand that document to you since she gave evidence for the purpose of today's proceedings?

Mrs. *Walsh* By the document do you mean the copy of the Lancet?

4791 *Mr. Otton* I do.

Mrs. *Walsh* We do not have a copy of the *Lancet*. We are not in the habit of removing magazines from the dentist's surgery.

4792 Mr. *Otton* Did you ask the dentist whether you could borrow it?

Mrs. *Walsh* I have had no reason to go back there.

4793 Mr. *Otton* Are you sure that this document does in fact exist?

Mrs. *Walsh* Yes.

4794 Mr. *Otton* Mrs. Walsh, may I just ask about your evidence. Your concern as I understand it is basically that you are disappointed in the growth of North Buckinghamshire in the past years and you hope by siting an airport here it will lead to a greater growth and greater facilities?

Mrs. *Walsh* Yes.

4795 Mr. *Otton* You have been here I think on several of the days, did you hear Mr. Pooley and Professor Hancock say that the real trouble and difficulty about North Buckinghamshire is not the problem of building up Buckinghamshire but a problem of containing its growth in the next decade or so? Did you hear that?

Mrs. *Walsh* Yes.

4796 Mr. *Otton* You do appreciate that with the advent of Milton Keynes and the other scheduled developments around it there will be a considerable build-up of all the facilities which are inevitable from such development?

Mrs. *Walsh* Yes.

4797 Mr. *Otton* Where do you live at the moment?

Mrs. *Walsh* Cublington.

4798 Mr. *Otton* In Cublington itself, and about how far would that be away from the runways?

Mrs. *Walsh* I don't know exactly where the runways are going to be. I do know according to evidence that my house would be destroyed.

4799 Mr. *Otton* Will you move away from the area?

Mrs. *Walsh* I shall have to go where the Council puts me, I am afraid.

4800 Mr. *Oton* Is this a prospect that you really relish?

Mrs. *Walsh* I will just have to put up with it. I make my bed, I must lie on it.

4801 Mr. *Otton* You have also heard of the big problem of noise that will come with it?

Mrs. *Walsh* Yes.

4802 Mr. *Otton* Sonic boom?

Mrs. *Walsh* Yes.

4803 Mr. *Otton* Are you prepared to pay that price for having it here?

Mrs. *Walsh* Yes.

Inspector I don't think there is any evidence that sonic boom will happen right on the threshold of the airport, surely?

4804 Mr. *Otton* Perhaps not. Mr. Payne, where do you live at the moment?

Mr. *Payne* Bletchley.

4805 Mr. *Otton* And do you contemplate staying in Bletchley with the advent of the airport?

Mr. *Payne* Most certainly.

4806 Mr. *Otton* How far away will you be from the runways?

Mr. *Payne* Well, from what it appears I would say about 4/5 miles.

4807 Mr. *Otton* Are you inside the noise contours shown on that map?

Mr. *Payne* On that map no, but on other maps I see, yes.

4808 Mr. *Otton* Let us deal with that one because that is the map we are working from. You will be outside the 35 NNI and so from that point of view you would not be affected by the noise that the airport could bring?

Mr. *Payne* On that map I cannot really tell because it is only Milton Keynes, but it is not Bletchley itself. It is West Bletchley I live.

4809 Mr. *Otton* I am sure I will be corrected if I am wrong, you will in fact be outside the 35 NNI contour, will you not?

Mr. *Payne* Only just.

4810 *Inspector* Is it your evidence that anybody outside the 35 NNI will not be affected?

4812 Mr. *Otton* Not outside, inside, that is what it comes to?

Mr. *Payne* What about traffic?

Printed image digitised by the University of Southampton Library Digitisation Unit

4813 As far as that is concerned, you are not going to be as concerned as those are who are inside the 35 NNI? — I do not think I shall be as affected as other members of CASC, as well.

4814 I wondered if the fact that you would be outside, and aim to still live in Bletchley, would enable you to have the view that you would like the airport where it is? — Yes, I do not mind if it is moved a few miles to the left, nearer Bletchley, as well.

4815 If you were to be living, say, within a mile or two of the runways—somewhere like Wing—would you prefer to live at Wing as it is now, compared to living a mile or so away from the runways at Heathrow? — I don't mind at all. I was born at Wing.

4816 And would you be quite happy to live in Wing, which would be reduced to a noise environment similar to a mile or so from Heathrow? — No. Noise has never worried me; I always sleep soundly.

Cross-examined by Mr. David Allen

4817 I have some questions to both Mrs. Walsh and Mr. Payne: Mrs. Walsh in the submissions given here, Mr. Payne in his written evidence,* regarding agricultural production. Mrs. Walsh, you have stated that an increasing proportion of the airport site is devoted to horse breeding. What proportion? — (Mrs. Walsh) I am afraid I cannot divide it up into percentages —

4818 Is it a high proportion? — The horse breeding is not on the proposed site—it is the training of the race horses and the equestrian pursuits.

4819 And what proportion of the acreage is concerned with this? — I would not venture to tell you. But it seems to be a large area of land.

4820 Maybe three percent? — Oh, no — far more than that.

4821 What proportion of the acreage is to be taken over by the Chiltern Flying Club, then? — Somewhere in the region of fifty.

4822 I think they are asking for 24 acres. — I would accept your word for it.

4823 Do you know how they will run this club? — what will they do with the surrounding area? — I am sorry —

4824 They will have a runway in the 24 acres— what will they do with the surrounding area of acres. I suggest it would be used for agricultural production. — Not really—knowing the woman who owns it as I do, I presume it would be used—24 acres —

4825 Mr. Payne—you say in your written evidence "arable agriculture has again fallen to peacetime standards"—what precisely do you mean by that? — (Mr. Payne) In 1937, the survey showed 30 per cent of the land under plough. It rose during the War to 50 per cent. I can show you a reference for this —

4826 Are you implying that the standard of agriculture is governed by the proportion under the plough? — I am not implying this. The reason for my coming here is the production in agriculture —

4827 I see—now you say that the production on the acreage has fallen to peacetime standards, that proportion ploughed? — As it was in this book, yes, I agree—it was The Geography of the British Isles, I believe Cassell are the publishers—I can get you the exact book, with page references —

4828 Do you know anything about the increase in production in current terms of yield per acre between 1937 and 1969? — I don't know—I only read this book.

4829 I suggest you look at this evidence. Are you suggesting that an acre of grass is unproductive? — In some respects.

4830 Would you concede that there are acres of grass producing the levels of yield of a thousand gallons of milk? — In some parts of the country, I suppose it is—such as Devon.

4831 Devon is hardly the most happy example! Is there anything to prevent an acre of grass in relation to this site from producing these levels of production? — If it is being used for horses, it would.

4832 Let us talk about the comparatively large proportion of acreage not used for horses — Such as where?

4833 Let us say something like 7,000 of the 7,500 acres we are talking about. — Have you figures to verify this?

4834 Have you figures to suggest it is not different?

Inspector You see where we get to! The point is that we have had some rather careful evidence from the National Farmers Union, and we have our own agricultural experts who will vet this.

4835 Mr. *Allen* Mr. Giles' evidence* differs sharply from this, Sir.

Inspector That is for the Commission, to decide which to accept.

4836 Mr. *Allen* Another point, Mr. Payne: you suggest that in 1961, 8 years ago, only 4 per cent of the total manpower of the country was engaged in agriculture. — That is right.

4837 And you go on to say that that is opposed to 7 per cent in the transport and communications field. What has this to do with the efficiency of agriculture? I suggest that the figure is now lower, and that the

* p. 1342.

* p. 1243.

Printed image digitised by the University of Southampton Library Digitisation Unit

efficiency is higher, and has in fact improved more than any of the other industries in the country. — I think the people improved, not the efficiency.

4838 Do you want us to go through a collective farm type of arrangement, with a man per acre, for agricultural efficiency? — What I am asking for is employment. It is all very well, agricultural efficiency, if you are not going to employ people but use machines instead.

4839 And how are you going to feed your employed people? — Ever since the 19th century Britain has turned from an agricultural to an industrial power. This is still happening, and surely it must come, and surely we will be supported by countries in the Commonwealth, such as Australia, New Zealand, Canada —

4840 With what Commonwealth country do we have an excess on our balance of payments? — I would not know.

4841 It is Australia. There is no other. What do you think the possible import savings are of the estimates of the increased agricultural production which will take place in the next four or five years? — I would not know that either.

4842 It is about 200,000,000. What industry is going to produce that amount of exports for us, which is likely to be — What about the car industry?

4843 We are not doing it. — Have you evidence for this?

4844 You look at the balance of payments figure — — It is not only these industries that give benefit, but there is another industry which can benefit, which is the tourist industry, which will eventually become a big dollar earner.

4845 As what—coach tours around the airport? — No—the airport is convenient for the Cotswolds, which is a specially American tourist attraction. You have Stratford. You have Woburn Abbey. You have Windsor Castle, you have Kenilworth Castle—you have places of interest —

4846 Woburn is close to Luton Airport; Windsor is near to Heathrow. What are you going to serve from here? — This is an international airport —

4847 So could they be. — They are not at the moment —

Inspector The statement is that Luton could be an international airport; and there are certain problems involved!

4848 Mr. *Allen* Indeed. I merely come back to this point; that you have completely failed to assess the significance of agriculture in general, and in this area in particular. Thank you, Mr. Payne.

Inspector If that last remark was intended to be a question, you might wait for an answer, Mr. Allen.

Mr. *Payne* Could I just add to that point? If we had stayed as an agricultural power, we would not have attained the greatness we have, in the early part of the century.

Cross-examined by Mrs. Murphy

4849 May I ask Mr. Payne and Mrs. Walsh whether they know anything about agriculture? whether they have ever worked on a farm, or farmed in any way other than what they have read in the popular press?

Mr. *Payne* I have worked on a farm.

4850 Mrs. *Murphy* For how long, and when?

Mr. *Payne* It was ???????? Farm, owned by Mr. ???????? who is, I believe, an accepted member of the Executive Committee of WARA. It was about 7 years ago, just after I left school, actually. It was only for about eight months, during which time I looked for a better job, because agriculture to me is not a very good job.

4851 Mrs. *Murphy* Mrs. Walsh—do you know anything about agriculture?

Mrs. *Walsh* The only thing I know about agriculture is the fact that I was brought up in a farming village, and what I have written in my statement. I do not go into detail on agriculture; I do not pretend to be an expert. I only tell you what I see with my own eyes, and I know a horse from a cow.

4852 Mrs. *Murphy* Because you have criticised your local farmers very much indeed.

Cross-Examined by Mrs. Taylor

4853 I would like to ask a question of Mrs. Walsh. It seems to me that you want an airport here to provide better amenities that you don't have in your village now. If you are so disechanted with the local amenities, is there anything to prevent you from moving elsewhere? If you have a better life if the airport came, we would have a worse one. — Yes— there are plenty of reasons why I cannot move. — But you will have to move if the airport comes. — Yes, but I shall have an assisted move.

Inspector Mrs. Taylor—I think this is rather taking the question—Mrs. Walsh is entitled to express her views, as is anyone else.

Mrs. *Taylor* Yes.

Inspector Just as the organ people are not obliged to move to North Wales —

Mrs. *Taylor* I take the point.

Cross-examined by Mr. Taylor
(Headmaster, Wing Primary School)

4854 Another Taylor, Sir—but no relation! And it is not too pleasant to see one's former pupils in

Printed image digitised by the University of Southampton Library Digitisation Unit

the dock; but that is what I wish to ask about. Mrs. Walsh did ask me the academic achievements of children from Wing Primary School—I would like to ask Mr. Edward Payne if he was a pupil of Wing Primary School? — (*Mr. Payne*) I was.

4855 And where did you go from there? — From there I went to North Wales, and I attended a County School, Ysgolsir Ffestioniog; it was a comprehensive system, and I was put into the A scheme; and when I moved back I was placed in Bletchley School.

4856 There you are, Mrs. Walsh!—that is one of our academic achievements! The other point—and I am, as Mr. Hunt is, absolutely impartial over this—it is just for information. The question of a committee without an association intrigues me; I have been in many associations, but it took me years to get on the committee—but in your association one seems to be put on the committee as soon as you join the association. Can you tell me how that is, and how many in your association are on the committee? — (*Mr. Payne*) We may abuse the word "committee", but even in Czechoslovakia today there is something called a Committee, but it has not got an Association backing it up.

4857 So you do not have an association, just a committee? — We have a committee, and supporters.

4858 But those supporters may not be members of your association? — They are members of our supporters. We call it our supporters; we could call it an association.

4859 Like not being a member of Luton Football Club, but a member of the Supporters Club?

Inspector Mr. Taylor, we are really more concerned with the merits —

Mr. *Taylor* I did say it was for information!

Cross-examined by Mr. Brown

4860 One of the reasons you give for wanting an airport is the fact that it is very much closer to the west—can you tell us just how much time is wasted at international airports . . . — (*Mr. Payne*) Could you—I didn't?

4861 Could you tell us just how much time is wasted at international airports, as it would save fuel, it was something like 100 miles nearer than an alternative site — — I don't know about saying that in my evidence — The only thing I mentioned about the waste was the east-west road routes and the railway —

4862 I am sorry—I may have the wrong evidence. I took it as part of your evidence. — Do you mean, nearer to the west for planes?

4863 Yes—thereby saving fuel. The question I am asking is, how much traffic time is wasted in stacking? — I am not an aviation expert —

4864 *Inspector* How much stacking time is wasted, in what —?

Mr. *Brown* In other words, aircraft have to be stacked in —

4865 *Inspector* But which stacks?

Mr. *Brown* On any airport presumably, and there would be the same here —

4866 *Inspector* But surely it depends on which airport?

Mr. *Brown* I should have thought that any airport must have some form of stacking.

4867 *Inspector* Well, Mr. Brown, they all have stacking; but it is a question of how much they use. Planes only stack when they have to queue up; it depends entirely on how many planes there are to come into the runway, and this differs according to the time of the year, and the airport.

4868 Mr. *Brown* The point is taken. Presumably, though, there will be stacking and wasted fuel that way?—would you agree with this? (*Mr. Payne*)—I think the best thing would be to refer to other evidence about this —

Inspector Mr. Brown, the whole question of air traffic control will come to the various different airports, and the routes that will be followed. The route, mileage, and the amount of stacking that may be involved, will all be dealt with in very much more detail in later stages of the Commission's work.

Mr. *Brown* Thank you.

Cross-examined by Mr. Bramwell

4869 Mrs. Walsh—your reference to the "elusive land"—could you detail, please, what you refer to? — I was really referring to the fact that they say it is valuable agricultural land, but it is used for the training of race horses.

4870 Have you any idea as to what the situation is, after the pollution has been removed from this land? — No. It certainly makes a jolly good mess on the road.

4871 Perhaps our experts will tell us how long it takes before it is put back! Mr. Payne, as an interested party in railways—how do you view the closing down of the small railway stations in the local villages—apart from the general Government policy, but from your own point of view? — I should imagine that a lot of these were brought about by the decline in the use of rail transport, presumably due to the decline in population in the villages.

4872 Mr. Payne, how would you view the re-opening of these stations in these villages? — (*Mr. Payne*) Well, I personally think that with the roads becoming congested as they are, in the future many of the branch lines which are now closed today must

Printed image digitised by the University of Southampton Library Digitisation Unit

be re-opened to cater for the tremendous amount of passenger traffic, as a tremendous amount of freight traffic will be taken by road.

4873 Would you view the railway in connection with these villages and towns as a permanent link rather than an intermittent link by buses? — Yes, I would, I think that the railway tends to give a far better service in terms of long distance transportation in this area than the roads would.

4874 You have not appeared quite so often as some of us at these meetings, Mr. Payne, but from what you have heard would you consider in view of the great number of villages that have been represented here, if they were developed even slightly they would absorb very large amounts of people moving into the area without any great disturbance to amenities? — Do you mean by those people coming in, railway lines would be re-opened?

4875 Yes. — This is up to British Railways Board, but it would be rather a good thing if they were re-opened.

4876 And it is numbers that matter? — Yes; it is population that matters in the case of passenger lines.

4877 By what you have seen of them—I think you have done quite a survey of these railways—is there a possibility these could get back into use in a very short time? — Yes. I have a few lines here I can tell you about. The lines to be brought back near enough straight into service again: Bletchley/Oxford line which was closed two years ago. Naturally there would have to be a fair amount of track-laying, but as long as the rail works are still there they would be able to be re-opened. In fact all the lines in this district could be re-opened, except the Ferney Junction which was closed in '36; it would not be of any large benefit to the airport if it was re-opened.

4878 In view of the knowledge which you have about railways, are you aware the Ministry of Transport have stated they could move two million people in two hours in London? — I was not aware of that.

4879 They would rely on the Underground linking up with the outside lines. — This is quite possible, yes.

Inspector Any questions? I have no questions.

4880 Mr. *Otton* One matter before Mr. Payne leaves, sir. He did mention that if the Commission should require it the record of membership would be lodged with the Commission. We are concerned about this matter, quite clearly, because we made a full and frank disclosure of our membership. We hope a similar courtesy would be extended to us from CASC. We earnestly ask that their records be lodged with you, sir, on whatever terms the Commission feel appropriate.

Inspector Well, the Commission has come here at Stage II to invite supply of local information. I am not at all certain the Commission as a whole—I cannot speak for the Commission as a whole—would wish people to divulge information which they did not wish to divulge. All I can say is that all information which is relevant the Commission would welcome.

4881 Mr. *Otton* The only reason that arose, as you would appreciate, sir, we are an organisation of some numbers, and we would very much like to know the strength of the opposition that is in fact against us, and its distribution throughout the areas.

Mr. *Payne* We have, if you would wish to see something—we can disclose to you results of surveys which we have taken in Aylesbury, Leighton Buzzard, and if you would like us to we can send copies to you.

Inspector Mr. Payne, I think the position is this: it must be for your Committee to decide what information they think should or should not be released. This is for you. But, I can see the difficulties in releasing part of the information and not other parts of the information, because people might want to know how one ties up with the other.

Mr. *Payne* It is up to a decision of the Committee on what they release, but I shall have to bring this forward before our Committee.

Inspector It has been quite plainly put. WARA have made it quite clear to the Commission the strength of their support, and they have produced documents for the inspection of all concerned. If you wish to make known to the Commission the strength of your support then you are being asked to do so.

Mr. *Payne* Thank you very much, sir; we shall.

MR. ROBERT BRAMWELL* *called*

Inspector Mr. Bramwell, you are appearing, I take it, in your capacity as an individual?

Mr. *Bramwell* Yes, indeed, sir. I am Robert Bramwell, Poultry Farmer, Bramwell's Farm, Cublington Road, Wing. I have no further evidence I wish to add to my statement as presented, and I am quite prepared to answer questions on the details of my statements, and other relevant questions to those; I am quite willing to deal with them within the control of the Inspector. Thank you.

Inspector Any questions from First Tier Authorities? Any questions concerning Mr. Bramwell's Statement, No. 3024?

---

* See also p. 1346.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Hamilton* (*Deputy Clerk Bucks C.C.*) For the reasons I mentioned in the case of the last two witnesses I propose to ask no questions.

Inspector Thank you. Any other questions from other local authorities? From WARA?

Cross-examined by Mr. Otton

4882 Mr. Bramwell, you support the project for siting the airport in North Buckinghamshire? — I do indeed.

4883 Were you at one time a member of CASC? — No. I was appointed Vice President after the Duke of Bedford volunteered to be President.

4884 Were you present when the Duke of Bedford volunteered to be President? — I was not, no.

4885 This is something you have heard, is it? — You may be surprised—you are a solicitor, and we are just friends and supporters together. We trust each other, and we do not ask for documentary evidence for anything that is said.

4886 You have disassociated yourself with CASC, have you not? — I am still the Vice President of CASC. I am not a Committee Member.

4887 Not a Committee Member, you are a Vice President? — Yes.

4888 How did you come to be a Vice President?

Inspector Mr. Otton, Mr. Bramwell has said he is giving evidence as an individual.

Mr. *Otten* I will not pursue that then, sir. Mr. Bramwell, I think you were at some stage of this Inquiry purporting to appear as part of the CASC Committee, and you have severed your connection with them since. — I have been an adviser to many organisations, and I tender my advice which they would not accept on certain items.

4889 Yet they did not want it for the rest of the conduct of this inquiry? — I advised them, and I think this will answer a lot of questions that have been asked.

4890 I see. You take a great interest in many spheres of life and public life? — I do indeed.

4891 I gather from your statement you envisage, and perhaps I can quote you: "I personally visualise the Underground linking through this area—that is the airport area—with London and Manchester, taking in Northampton, Coventry, Birmingham and Leicester areas for passenger and cargo transport with Cublington airfield station underground". — Indeed.

4892 Is that your . . . — I honestly believe this, within the next thirty years that will take place; I hope to live to see the year 2,000, even though I am over 60 now.

4893 I am sure you will, Mr. Bramwell, due to the terrific Buckinghamshire air you breathe. — No, sir.

4894 But, Mr. Bramwell, I wonder if you have in fact got your feet on solid Buckinghamshire land, because this is all complete fantasy, isn't it, this Underground situation? — Sir, what has happened today, this morning, was fantasy just a few years ago when even some of the pre-eminent scientists were saying they would be on the moon in ten years—I said they would do it in three. They have done it—that is how it is fantasy.

Inspector Did you have a £10 bet? — I did not trouble, sir.

4895 Mr. *Otton* I am sure WARA would be prepared to lay you odds there will not be an Underground all the way through to Coventry, Northampton, and Birmingham. — Perhaps you are not aware that evidence actually is available now regarding an Underground which shows Manchester is coming down into Cheshire, and London is starting to come towards the north-east.

4896 Yes. Did you hear the evidence of Mr. Pooley,* and that of Professor Hancock?† — I did indeed.

4897 They appear to agree that if the airport were to be sited in the proposed area it would mean that there would be 270 square miles of Buckinghamshire inside the 35 NNI contour. — As with many other experts I heard about the NNI contour, and I just ignore them.

4898 This was their evidence—you heard it. — I heard it, and a lot of it is plagiarism which I ignore.

4899 Perhaps they got it from you, but assuming it is a fact, is this a prospect which you welcome for Buckinghamshire? — Indeed I do.

4900 A third of its area affected by the 35 NNI contour? — I come from a county that started this country on to the industrial road, and helped with its finances to a tremendous degree in the past—that is Lancashire—and urbanisation and development does not frighten me one bit, sir.

4901 You have no fears at all about its fundamental change in this rural area of England? — None whatsoever. As a boy I viewed 470 chimneys every morning I went to school, and that did not worry me, not in the least.

4902 There is no noise from chimneys. — I worked as a weaver as a boy. I left school at 13, I went half-time at 12 as a weaver, and by the time I was 14 I had two looms, and a weaving shed is one of the noisiest places in the world. That did not trouble me, nor the people who still work there.

---

* p. 1023. † p. 1187.

Printed image digitised by the University of Southampton Library Digitisation Unit

4903 The majority of the inhabitants of Buckinghamshire who are members of WARA have no experience of that sort of noise in the past and would like to be immune to it—You appreciate they are the sort of people whom I represent? — I notice some people fading away through lack of interest. A bit of noise might stimulate them a little.

4904 You are at present in Wing? — Yes.

4905 You are a poultry farmer there? — My wife has a small poultry unit, and I help her.

4906 How many acres is that? — We have ten altogether.

4907 That property, is it likely to disappear under the runways? — It is a debateable thing, because my farm has buildings which I was informed were erected for the new London airport in 1942, and one of them is a very large building that is built so substantially that it is still in an extremely good state of repair.

4908 It looks as though that would form a major departure area or arrival lounge for the London airport, perhaps. — That is your own conjecture, but as far as I am concerned I would not dare make any remarks like that.

4909 No. Has that property been on the market? — It is indeed.

4910 Is it on the market now? — Yes.

4911 How long has it been on the market? — Three or four years.

4912 You have not been able to sell it? — No.

4913 I suppose if this were to go through and your land were to become part of the complex, you would benefit by the compensation? — To tell the truth, if I get no compensation whatsoever I have got two good hands—I am an engineer, a jolly good one, and I can quite easily start earning my living in fresh fields, so I am not troubled about financial gain whatsoever.

4914 Are you asking WARA to believe that compensation is not in your mind when you have a farm on your hands which you cannot sell? — Not at all. I went to work in a filling station in the past few months, and I found I was quite able to deal with young people equally as well. It is a challenge to me and I enjoy life.

4915 What is the asking price of these ten acres of yours? — About £10,000.

Cross-examined by Mr. Taylor

4916 Mr. Bramwell, I think you might be pleased to know that I enjoy your eggs every morning for breakfast. — Fine—Do you.

4917 Do you like being a poultry farmer? — No.

4918 Which would you prefer—and you stick to the facts—Would you prefer to go back to the mill with all the noise or to be a poultry farmer even if you do not like it very much? — Well, the situation has changed to this effect. The reason I do not want to be a poultry farmer—You are asking questions and I will answer them. I do not mind poultry farming, I love poultry farming, I am an expert on poultry —

4919 I know you are. — I have had the Stoke Manderville people come and see me on certain ideas of mine, but I suffer from sinusitis and a weaving mill would have the same effect on me as poultry farming does as regards feathers and dust.

4920 Would you believe a weaving mill would have the same effect on me as all these aeroplanes? — Yes, quite so.

Inspector Just a minute, Mr. Taylor. I am inclined to the view we have probed Mr. Bramwell's personal life enough.

Mr. *Taylor* Fair enough.

Cross-examined by Mr. Allen

4921 I should like to take up one or two points in your evidence. Firstly, on the basis of your evidence —you suggest three in five harvests are bad. — I am speaking for my own local area. I live right amongst this arable land, and the farmers of my area I give all credit to, because he is a jolly good trier, and does not get the end product he deserves. The unfortunate weather conditions that prevail over the past number of years have given him a lot of difficulties.

4922 How many years? — Over the past five years I am speaking of. I lived on Wing Airport since Christmas 1963. I have seen things happening. I have seen them burn all the hay off the ground over the past three years, every year; hundreds of tons of hay has been burned off because they could not get it in. This year has been the best year they have had in ten years, and all good luck to them.

4923 Are you basing this three bad years in five on something historical because it was part of your experience? — We are dealing there with an area. — This year has been exceptional, and is not likely to be repeated for some time, so in view of the fact farmers are not getting their hay off and crops are standing very high—they have grown so well because of this weather, the crops have grown so well they look beautiful in the fields, but if we get a wet autumn you lose another harvest, because the land is boulder clay, and the size of machines and the combines are so great—they are wonderful machines and if they are on good land and solid ground they are marvellous and do marvellous things to get produce off, but once they get on boulder clay in bad weather they are in difficulties.

Printed image digitised by the University of Southampton Library Digitisation Unit

4924 We really ought to get a good harvest in that case. May I pass on to the suggestion in your evidence which seems to single out the farmers of North Bucks as requiring payment of large subsidies to enable them to live and something they have been accustomed to. Is this a particular problem of North Bucks farming? — I do not think it is altogether just for Bucks. I am speaking of the area I know of, in view of the fact it has been stated the farmers owe the banks—and this is not speaking of the ordinary land farmers at the present time—owe the banks £519 million.

4925 Not then in the Cublington area specifically? — We are fortunate in the Cublington area in having one or two people who are wealthy farmers but there are one or two struggling very hard in the sense they do not mind if they move.

4926 So I would be right in saying your statement refers to national agriculture and not specifically to this area? — I think that can apply to national, but the best farmers on good land are having great difficulties, and even this land as already stated, 3 and 4 grade, even they are even worse off.

4927 At a later stage in your evidence you follow through this argument and suggest arable farming is really not suited to this area, and you then go on to say: "It is my belief that arable farming in all but the best areas should be discontinued and more attention paid to stock raising? — Yes.

4928 This would be typical of the Cublington site? — I still consider stock can be raised close up to the airports. I have seen sheep on an airport, and there is no doubt about it, rearing stock would not be interfered with by noise. It does not trouble them because there are farmers who have installed loudspeakers into their dairies, and they find they get better results, so cattle must appreciate it. In fact my own poultry—take their case, poultry are very noisy amongst themselves. Sometimes it is such a din I can't talk to my wife because of the poultry surrounding my home. I have to say "Will you repeat what you say because I can't hear it for the birds".

4929 I am sure birds don't mind each other, and aeroplanes don't mind each other, but that is not what we are talking about. However, this is a suitable area for stock farming? — It could be.

4930 Not amongst the runways? — It could be in conjunction with it. I don't see an airport could in any way affect stock-rearing.

4931 I see. That is the idea. — I visited Stansted a few weeks ago, and it is a wonderful little rural place. I can't see that the airport there has done any real harm to the amenities of the area; it has been well landscaped, and it is a very attractive place, and I would not mind in the least having a house built right up to the perimeter of the airfield, and if somebody told me they had built me one tomorrow I would start to move in.

4932 Just a final point, and this comes back to the weather pattern business, which you raise again in the last part of your evidence. The suggestion there from your close personal observation over the past 5½ years, the weather pattern is declining. Is this really a valid statement in view of the long term nature of changes in weather pattern? — I have been studying weather since I was a boy, and I have been a naturalist since I went to school. In fact I was very often taken to task for playing truant. I watched the weather and I was told by a clever old man to watch for various signs, and my neighbours say: "He knows when to get in his hay".

4933 But would you accept that during this period which now seems to be a longer one there has been a massive rise in agricultural production despite the weather? — And there has been a great decline in recent years. I have mentioned there are 120,000 acres had to go out of production in the east Midlands for the bad weather they had, so therefore in other areas they are affected by this weather condition.

4934 *Inspector* Mr. Bramwell, the question was very simple, has total production risen? — Total production has risen in the same way that every other production has risen by mechanisation of these things, and mechanisation of course is eliminating labour to a great extent. One of the arguments of the Unions today is that they don't want machines.

4935 Mr. *Allen* And has production in agriculture risen faster than in most other industries? — If you take the total acreage which has gone out of production I should imagine you are on the same basis as before.

Cross-examined by Mr. Kidd

4936 I am not an engineer, weather expert, well-meaner or such a clever man as Mr. Bramwell, but there was one point that you have just spoken about that you visited Stansted a short while ago, is this correct? — I did, yes.

Inspector I didn't realise the subject of Stansted had arisen.

4937 Mr. *Kidd* I didn't bring it up. — I don't mind answering any questions if you allow them.

4938 All I am asking is would you say that the Stansted area is very similar to where you and I are living? — It is an agricultural area in the same way. It is a very attractive area, yes.

4939 Would you say it was similar? — It is very similar other than the fact that it is not surrounded on its extreme perimeter by large industrial areas that are developing.

4940 And we have around here large industrial areas? — That is correct, yes.

4941 Why have we therefore got an inquiry here?

Printed image digitised by the University of Southampton Library Digitisation Unit

4942 *Inspector* It is no good asking Mr. Bramwell that, surely.

Mr. *Bramwell* Might I make a remark on that?

4943 *Inspector* I can give you the answer. The answer is that this site has been put on the short list and Stansted was not. I was not aware that Mr. Bramwell had referred to Stansted in his reply to that question, but again I must come back to this point, that this hearing is specifically concerning the repercussions and local implications of a possible airport at Wing.

4944 Mr. *Kidd* I quite understand this. I feel it is important. I have listened to two people who quite frankly don't seem very concerned whether their homes go or not. I am wondering if when the day comes that a decision is made that it should be Wing that they will be so pleased to go around and meet the people who have to leave their homes. This is no reflection on you at all, but I don't believe Mr. Bramwell, you or anyone else has got the moral right to decide that this airport should be inland in any way whatsoever.

Inspector This is quite right, but you can make this submission, in fact you have made it, but we are now dealing with questions to Mr. Bramwell concerning his evidence.

4945 Mr. *Kidd* Thank you. He has answered the question I wanted answered, that the site at Stansted is virtually no different to where we are and yet it was turned down. — I would like to say this, making reference in that way I said that Stansted itself is a rural area but it has not got the industrial areas around it neither has it got the railways. I was referring to Stansted that I thought it was a very attractive place where I wouldn't mind living.

Inspector Yes, and you have gone to a great deal of trouble to tell me, Mr. Bramwell. Any other questions?

Cross-examined by Mr. Banfield (Beacon Villages Society)

4946 Mr. Bramwell, look at page 2 of your statement. You refer to the fact that you believe a great many lives were saved during the war by the availability of Wing airfield when all other airfields were fog-bound and while you were answering questions you said that you knew one particular pilot who could vouch for this. This is at variance in what we have found in investigating all the wartime pilots and so on. Would you tell me who this pilot was and what he said? — I am in a better situation even better than yourself in this way, that I actually live on Wing airfield and my farm is on the approach road to this airfield and pilots very often come along this way to take a look at the old place, they see me about there and they have a chat, and time after time they tell me the same thing. There is a gentleman present in this hall now who was working on the airfield and he vouches for the fact that it was very often fog free. On one particular night he was present—I believe it was the Cologne raid—and there was a sudden terrific deafening noise from the air and they wondered what was happening and 90 Lancasters came down at Wing airfield because they could not come down at any other field in the country and they had been directed to Wing. I think you will find lots of people who can vouch for that and the gentleman I think is here today who could vouch for that.

Inspector Whether he is or not you see, Mr. Banfield, you yourself have put in evidence on this point as part of your statement and you know perfectly well there are three years' records for that airfield during the war, so how can subjective opinions of one person help when there are factual records?

Mr. *Banfield* The point was that Mr. Bramwell did actually say he knew a specific pilot who could vouch for the fact that Wing was better and I was asking who that was.

Inspector But a pilot could only give a subjective opinion, couldn't he? Any other questions?

Cross-examined by Mrs. Murphy

4947 Mr. Bramwell, you and Mr. Payne seem to have a down on horse breeding. I am a local farmer and I don't breed horses, but would you not agree that there is a very great deal of export of these horses and bloodstock and that this goes to the balance of payments? — You are speaking to the wrong man, I love horses, but I think this could be part of future development in the area by providing amenities for it, but it is not part of this programme.

Inspector Is this positively your last appearance, Mr. Taylor, you have questioned this witness once.

Mr. *Taylor* It arises from a previous speaker but one about the aeroplanes landing.

Cross-examined by Mr. Taylor

4948 Mr. Bramwell, you and I both agree we live on the aerodrome. — I know you had some connection with flying.

4949 I am asking questions. — I think if the public knew you had some connection with flying they might appreciate some of the remarks you make.

4950 I think if you look up the war records that being in the Air Force one had some connection with flights, most people know that, and I live on the airfield, and my evidence was that many times it was fog-bound. I grant you it might be fog-free when the rest of the country was fog-bound, but I am puzzled where they put those 19 Lancasters.

Printed image digitised by the University of Southampton Library Digitisation Unit

4951 *Inspector* I think it was 76, to be exact.

Mr. *Bramwell* 90.

4952 *Inspector* Is this going to help? It is known we have three years' records, factual records, not people's subjective views.

Mr. *Bramwell* The Commission could discount this if it was untrue.

4953 Mr. *Taylor* If that is the Commission's report obviously I must accept 76. I should not have asked that, should I. We live just over a thousand yards from you and it has been jolly foggy lately. — There are planes flying and we have night planes flying over us. I have got to admit this, that very often I am fog-free when you have got it.

4954 That is the point I am trying to make, it can be very foggy a thousand yards away and the airfield is fog-free. — I can give you some evidence that might be interesting. When I started to do something on this field I went in for horticulture. I was given permission by the Bucks County Council to install 3½ acres of glass, but when I made enquiry from the Meteorological Office about weather conditions at varying times to see if the Wing area was a better area than the others I had to admit my particular plot was even better than Worthing for light which is supposed to be the finest in Britain.

Inspector I think you will be far better off taking my view about this matter. We will look into the full meteorological situation affecting Wing, have no fear of that. Any other questions?

Cross-examined by Mr. Payne

4955 Mr. Bramwell, you live as you stated on or in the middle of the airport site itself? — On the perimeter, yes.

4956 What was your reaction or your immediate reaction when you learned that Wing was chosen as a site by the Roskill Commission? — It verified beliefs I had had for years.

4957 During your past I believe you had something to do with inland waterways? — I am a descendant of a barge worker.

4958 In that capacity could you tell me as it is known that Wing is the only site with a canal running by in Western Europe the canals are being used for bulk transport, could this canal be used for bulk transport in the construction of the airport? Don't forget the costs are far lower than road transport. — I am of the firm opinion about the canal in this area, that it is a wide gauge canal which can take the ones that are used in Lancashire which can take 80 tons at a time. They could serve the airport in that respect.

4959 What do you believe is the major transport facility an airport must have, a road or rail? — I believe in the rail side of it.

4960 And do you believe that Wing is the best possible site from the railway point of view?

Inspector Comparative. No.

4961 Mr. *Payne* Do you believe that Wing is an ideal site with railways in the district consisting of east-west traffic? — Even before I became acquainted with you, Mr. Payne, I am a great map reader and I have scores of maps in my possession, I was a great cyclist in the past, used to travel thousands of miles, and when I looked at the map why we beside others should be put into the melting pot with the rest of them I realised that the railway facilities around this site were far better than any other site chosen, and therefore I consider that greatly enhanced its possibilities as an airfield.

4962 A little earlier on you answered questions was also asked earlier, has agricultural production risen more than other industries, but in your belief does agriculture earn more money from abroad than, say, other industries in this country? — I doubt it. It is a large earner but it is a large importer of feeding stuffs which we cannot grow in this country, maize in particular.

4963 So in your belief industry is more important than agriculture? — I believe it is.

4964 Especially in this area? — Indeed I do.

4965 And lastly would you agree with what was said about Wing airfield, it was not the fog but it was the runway alignment which was against Wing airfield and which gave pilots such a bad opinion of it? — Indeed.

Further cross-examined by Mr. Kidd

4966 I am sorry, but this is evidence that is put before you regarding my home. I must ask one or two more questions on the question of canals. Can you tell me on what authority you speak yourself on this, Mr. Bramwell? — Well, sir, this may surprise you, give you something to laugh about —

4967 I am sure it will surprise me, nothing is going to surprise me more.

Inspector It is taking enough time as it is now.

Mr. *R. Bramwell* I was born alongside Wigan Pier before it was pulled down, my home was right against Wigan Pier.

4968 *Inspector* The question is as was put. — I was adjacent to Wigan Pier which is a canal pier. I went to live almost alongside the canal and I helped my father who was a coal heaver on the barges. Coal was brought from the various pits to the towns.

4969 Mr. Bramwell, can you try and answer the question a little more briefly? It is very interesting but not for the purposes of the inquiry. — He is asking what authority I have to speak on canals.

Printed image digitised by the University of Southampton Library Digitisation Unit

4970 Mr. *Kidd* Are you a professional man who can speak professionally with authority on canals? — I can speak of having used them.

4971 I have been for a boat ride on the canal but I am not a professional. You say in Europe they use canals, but what canals are you speaking about? — What are generally used at the present time for the conveyance of slow goods.

4972 What canals? — I can give you a good indication immediately out at Ware, there is a very large granary and it is served almost entirely by barge transport from London.

4973 But you honestly expect the Commission to believe that the Grand Union Canal could transport the type of requirements that are required as you are talking about used for Europe?

Inspector You see, again, the Commission is perfectly capable of getting in touch with the transport authorities and finding out what is the capacity of the Grand Union Canal in comparison with the quantities that are to be moved.

Mr. *Kidd* I am very sorry.

Inspector Any other questions? Mr. Bramwell, thank you for your contribution to the whole proceedings. That I believe to be the end of our scheduled programme. Are there any persons who should have been heard this morning and who are now present? If not Mr. John Cornwall has asked to be heard. He has submitted a very short statement which has been copied and circulated.

MR. J. M. CORNWALL* *called*

Mr. *Cornwall* My name is John Martin Cornwall. Mr. Hunt, you have as you just mentioned seen and read my short submission. It may be less submissive than the majority but I felt it a good thing from the point of view of the Commission's information that the atmosphere in this area, the atmosphere of the various public meetings and all the other evidence, should be within the Commission's area of knowledge. It was with that intention that I wrote in the form that I have.

In the second paragraph my point is that CASC are genuinely sincere and that we do indeed admire their personal control, that is a tribute to the personal character of the members of the CASC Committee.

I do support the point of view that Mr. Kinsey presented this morning, and all the material that he brought to the Commission's attention—in particular the point that the people had not been given the reasons for including Cublington in the Commission's short list. I feel very strongly that the premise on which the decision to include Cublington was adduced should be available, to be challenged at the earliest possible stage. In the fourth paragraph of my submission—and may I say that this is all perfectly serious—I refer to the possibility of violence. Now this, Sir, is a real implication of the possible siting of the Third London Airport at Wing.

Inspector You will understand, Mr. Cornwall, that the Commission has been charged by Parliament to do a certain task —

Mr. *Cornwall* Yes, and surely Parliament itself must recognise that one of the points which it must determine when weighing up the cost effectiveness of Wing is the possibility of local disorder. There are law-abiding citizens in this area who would defend their homes and heritage in the most literal way. They would calculate the cost of such action, and still carry it out.

I referred in the first paragraph of my submission—I have not a great many letters after my name—I referred to the various activities I have been involved in the area. I mentioned that I was a lay preacher; I ought to add that I have preached in churches of various denominations in Stewkley, Burcott, Wingrave, Winslow, Aylesbury, Edlesborough, and Wendover; and the people in most of those churches well know that if the airport came to Wing it would involve great expense in sound-proofing their existing buildings. This would be a very great drain on their resources. At the same time, people in all kinds of organisations, with the objects of their existing organisations to pursue, have had to turn to organising opposition to the possibility of an airport, and consequently their work within those organisations has suffered, because they have not been able to devote time and money to them. But I know that you will appreciate this, Sir.

I particularly draw attention, last of all, to my final paragraph. I know you, Sir, were impressed by Mr. Gergory—I think it was last Thursday afternoon—this is a genuine feeling that I have as an orthodox man, that I do not believe that it would in fact be possible to put the airport here. The opposition, up to the very edge of the last ditch, would be too strong. The cockles have not got their Hampden, but we have!

Inspector Are there any questions to Mr. Cornwall? I have no questions; thank you. And that, unless I am corrected — there is someone there to speak?

Mr. *Weerd* I am from the Stewkley Labour Party, Sir—may I speak?

Inspector Please.

* See also p. 1350.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Weerd* My name is Alec Weerd, from the Stewkley Labour Party; there is clearly some mix-up in arrangements, Sir. I rang the Roskill Commission, and they gave me a time—4 o'clock this afternoon—for our Member of Parliament to be here; but your secretary tells us that she knows nothing of this arrangement. So, in that case, I am standing in for Mr. Maxwell.

Inspector Will Mr. Maxwell be here at four?

Mr. *Weerd* I hope so, Sir, yes.

Inspector Is he a local man, or moving in this direction?

Mr. *Weerd* Moving in this direction from Oxford, as far as I know.

Inspector Under those circumstances, if Mr. Maxwell is coming here—I would not like to adjourn for the day and for him to arrive at four o'clock. I shall adjourn the Inquiry until four o'clock, to allow for this arrangement which has apparently been made with the Commission's offices in London, and ascertain exactly what the position is. We will resume at four o'clock, and if Mr. Maxwell is not then present, then I shall take the case as put by you, Mr. Weerd.

(*A short adjournment*)

MR. ROBERT MAXWELL* *called*
(*Stewkley Local Labour Party*)

Inspector I make it just about four o'clock. May I call upon Stewley Local Labour Party. I think Mr. Robert Maxwell is speaking for them.

Mr. *Maxwell* Thank you, sir. It was kind of you to adjourn the meeting for a few moments, which I know were appreciated not only by myself, having been delayed through traffic, but by the rest of those attending the Inquiry being able to have a breather.

I will not go over the field covered so well by the representatives of the Milton Keynes Development Corporation and the Bucks County Council, and many others who have already spelt out in considerable detail the reasons for their objections to the siting of the third London airport at the Cublington/Wing Site, and I am sure, Mr. Hunt, you will be relieved at that admission straight away. I fear I can add nothing to the excellent evidence provided which showed positively the serious harmful changes locally and in the built-up region both on its social and economic structure that would be caused by the siting of this airport which, in my view, should be avoided.

I would sum up the opposition of the Stewkley Labour Party as well as my own as being reasoned opposition as opposed to those who claim their opposition is thunderous. The choice of Cublington Wing for an Airport would have disastrous effects on the inhabitants of Stewkley, besides disrupting the building of Milton Keynes, of which you have undoubtedly heard such a great deal.

A further point I would like to make is that I know, and we know, that cost effectiveness is going to be one of the major criteria used by the Commission, apparently, in determining as to where the airport should be sited, because I and the people of Stewkley, and members of Stewkley Labour Party, fear that on a cost effectiveness basis, and if that be the sole criteria, that we are likely to find ourselves chosen as the site, I have come here today on behalf of the Stewkley Labour Party to invite you, Mr. Hunt, and through you the members of the Commission and your colleagues in the appropriate Governmental Department who will be deliberating as to the final choice of this airport before it is formally submitted to the Houses of Parliament to bear in mind that although on a cost effectiveness basis accountants and financial specialists might well prove the Cublington/Wing site is cheapest, this can only be done at the expense of disrupting the lives of many thousands of people and, in the final analysis, it would amount to this: that people matter less than money. I, and the members of the Stewkley Labour Party—and I hope I speak for all the people concerned or threatened by the possible siting of this airport—thoroughly and violently object to that interpretation. We feel that people matter more than money.

A further point I should like to make is that in arriving at a figure of cost effectiveness we are hoping that you and those of you who will need to take this decision will be taking in the other extraneous advantages of siting this airport, such as the benefits to be obtained from learning in this country how to drain land from the sea. We live in an island with an ever growing population, and we need more and more land. I am certain that during the rest of this century and beyond we will need to practice the Dutch skills of reclaiming land from the sea and if we site this airport at Foulness our engineers and civil contractors will be given an opportunity to acquire the skills and know-how of how to do it.

Inspector Mr. Maxwell, I have been trying to stop the word "Foulness" being used all the week, not very successfully, but this is considering of local implications and not comparative merits. I trust henceforth the word "Foulness" will not be heard again.

Mr. *Maxwell* My apologies, Mr. Hunt. I knew of your ruling as to order, but we would expect the man in charge to pull us up.

Inspector There are some very skilled operators already in the audience.

* See also p. 1351.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Maxwell* The people of Stewkley, most, I think, have lived in that village, have been born there and their parents, grand parents, and great grand parents, have been born in this village; the families are very closely knit, and they just cannot face the prospect of being moved and transplanted, because it would shatter something that has taken generations to build up, centuries in fact. I see no way of compensating these people, be they old age pensioners, young people, tradesmen, or whomsoever they are, and I merely add that these hardships that the people of Stewkley and any others that would be involved were the airport to be sited in this area are something that no amount of money could compensate, and no amount of public good could replace the feeling that their houses have been pulled down, or destroyed, and they are required to move.

I will not worry you with a great deal of detail, Mr. Hunt. I would like in conclusion merely to say this: our opposition to the siting of this airport is implacable. It will be reasoned. If, however, at the end of the day, after having listened to ours and everybody else's views, the Commission were to come down in favour of siting the airport at Cublington/Wing and that decision were to be endorsed in Parliament, then as law abiding citizens, of course, we shall have to accept that decision — (*Cries of "No! No!"*).

We hope it will not come to that, sir.

My purpose in making this point to you, is to invite you to bear in mind this: that if the decision did come this way, then one of the recommendations that I should like to see in such a Report is that the Commission should recommend that the compensation losses as they stand be more generously interpreted with specific instructions given to district boundaries to this effect. The reason I wish to mention this point here today is because, being a realist and knowing that this is one of the possible sites, I would rather see, if this site were to be recommended, in the recommendations of the Commission that will deal with these issues now, a recommendation such as this now rather than afterwards. Secondly, that people who face higher rents and increased travelling costs after their removal to another place, should receive the capitalised value of the cost of the differential. Thirdly, an opportunity for those people who would like, those people to be resettled as a community—and this is vital to the people of Stewkley, if possible at least to say where this could be done for these people who would wish to take part in such a community development should obviously be assisted.

This, Mr. Hunt, concludes my evidence on behalf of the Stewkley Labour Party, and I would like to thank you again for being good enough to listen to me.

Inspector Are there any questions to Mr. Maxwell? If there are—would you mind going into the witness box?

Cross-examined by Mr. Payne

4974 Mr. Maxwell, as M.P. for North Buckinghamshire, could you tell me if an airport coming to Wing, with the largest increase of population to such an airport, would it necessitate constituency changes? — Yes, it would, because the added number of people would mean a definite change in the boundaries of the constituency.

Inspector Mr. Payne, before we go too far along this line—is this questioning which will help the Commission in ascertaining the local implications of the airport?

Mr. *Payne* I believe it would actually; but it was the only question I wanted to ask. Thank you.

Inspector Well, it is not really clear to me at the moment; perhaps I may get the drift of your question when I think about it. Are there any other questions?

Cross-examined by Mr. Cornwall

4975 Mr. Maxwell, far be it from me obviously at the moment to speak as a competitor as far as parties are concerned over the constituency as a whole—but, on a point of information, can you tell me precisely how many people in Stewkley and in Stewkley Labour Party the final part of your submission accurately represents? — Well—I cannot give the numbers just out of my head, straight away, but I am satisfied that it represents the vast majority, not just of the Stewkley Labour Party but the people of Stewkley themselves. I have spoken to many of them during the course of a few weeks, as well as a number of letters I have had from people in Stewkley.

Cross-examined by Mr. P. Kinsey

4976 I am not here as a competitor in this capacity! You mentioned in your submission, the compensation loss. Now, it seems to me, in the evidence that I submitted this morning, I also brought up this point—do you not feel that the laws concerning the rights of individuals in small communities are insufficient to cope with the sort of social behaviour that this airport proposal would bring about? — I entirely agree. The laws as they stand at present are quite insufficient to cope with this kind of problem, but this Parliament has recognised this recently, for instance, and we are introducing amendment legislation covering the payment of compensation to tenant farmers who will be displaced by Milton Keynes. My reference to the Inspector was to note that, if this site was chosen, I hope he would use his good offices to see that they should load the compensation in this way; but that does not mean to say that we do not need to amend our laws in addition to deal with this

Printed image digitised by the University of Southampton Library Digitisation Unit

matter. But there is a great deal that could be done administratively by the Commission making such a recommendation. The change of the law is a slow and cumbersome process, because of the lack of parliamentary time. In addition to the administration request, I shall join with my colleagues interested in this matter to bring about a change in the law to deal with this even more effectively. This one could possibly do by administrative procedures, such as I have referred to in my submissions to the Inspector.

4977 Secondly—can you think of any other planned upheaval the size of this particular proposal ever having been tried before? — I can think —

4978 I mean, in a non-totalitarian State. — Yes, I can. The difference of scale is not the size—London Airport is a larger size than the proposed airport—the ruling difference is the time. The traffic congestion is such that they will need to bring this about in a much more prescribed time scale; and something like this has never happened, as far as I know, anyway, in a democracy.

4979 In view of what you said about the inadequacy of the laws relating to individuals and small communities, and what you have already said about the scale of these operations, how can you feel so certain that if the proposal were to appear at Wing, it would be accepted by law-abiding citizens gladly? — I can, of course, only speak for myself and for those I represent. We conduct our affairs in this country on the basis that we will oppose by all legitimate means open to us, but once it is the law of the land we accept it. Equally, of course, it is a fact that laws must be reasonable. No-one can deny that London needs a third airport. What we are arguing about is that to have the site here would be wrong, unreasonable, harsh and unnecessary; and by this I stand, and so, I know, do the vast majority, and I know that Mr. Hunt, who has the burden of listening to our objections to this, has not been left in doubt that we are serious about this. But I hope nobody is coming here to say that illegal means should be used to oppose—I think that is really a query which I could not entertain—nor would anyone really treat it seriously. I take this final point: that I do not think one could guarantee that it would not be used in the event.

Cross-examined by Mr. Maxwell

4980 You have told us what you believe to be the view of the vast majority of the Stewkley Labour Party. Would I be right in thinking that the similar view is that of the vast majority of your constituents in North Bucks? — Yes, you would indeed be right; it is the view of the vast majority of the people regardless of party or creed. It does not make sense to anyone that one of the loveliest counties in England, which has already been sapped to give up a lot of land at Milton Keynes, reservoirs, expansion of all kinds and nature, industry, should now have this imposed upon them, this enormous installation of an airport, with all its consequences to the interference to the quality of life and the damage to the way of life of the people. People living here feel that it would be unfair to the people of Bucks, or to the people of Beds or Northamptonshire. We say: away with the inland sites and go to that site, Mr. Hunt, which you do not want me to mention.

Cross-examined by Mr. Payne

4981 Just one further question—I am sorry to delay you —

Inspector You are not delaying us, Mr. Payne; it is just that you pop up so many times.

4982 Mr. *Payne* I am sorry, Sir! Just in the course of the last question: Mr. Maxwell, if you knew that the vast majority of your constituents were in favour of the airport, would your view still be the same? — My personal views would be the same; but then I would be obliged to, and would be willing to, go and represent them and their views, on their behalf, yes.

Inspector I am right this time! there are no more questions. Thank you very much, Mr. Maxwell. Unless there are any more to be heard —

Mr. *Maxwell* (*Borough of Aylesbury*) Sir, in view of this concern as to the strength of CASC—and I ask the question now while the representatives are still here—I would like to ask you personally first on the procedure —

Inspector You may certainly ask for the information; whether I am able or willing to answer, you will see.

Mr. *Maxwell* Clearly, Sir, the concern of many people here today is the evidence of CASC. The evidence which the Commission will have obtained during the five days hearing here has been obtained by way of objection in many cases. Now, the question I would like to ask—because Mr. Millard and Mr. MacDermot and Mr. Otton were very unsuccessful in obtaining any satisfactory evidence as to the strength of the membership of the CASC Committee—is it the intention that the Commission will have had a copy of the verbatim report, or is it intended that you yourself will be submitting a report in the normal way of planning inquiries to the Commission? That is my question.

Inspector The answer is, both. The reason that the verbatim reports are being taken, partly, is that they are fed back to the Commission members each day, or each following day, when a report of the previous day's proceedings appears on the desk of each Commission member. The answer to the second part is that I shall report, and have been reporting, to the Commission on the outcome of all the local hearings, but not in the form normally undertaken by the Ministry of Housing.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Maxwell* Well, Sir, so much of this evidence has been submitted in the way of objection, that I would ask whether you would consider accepting a submission from me now?

Inspector Yes?

Mr. *Maxwell* It is that we all have the benefit of hearing both the questions asked by Mr. Payne, Mrs. Walsh, and Mrs. Kilty—and Mr. Bramwell, who was, we first thought, associated with this organisation, but whom we know now is not. We have had the benefit of hearing these questions; we have also had the benefit of hearing such evidence as they put before you. In reading the verbatim reports, a very considerable number of pages will be taken up by questions asked. It is very much in hearing, I think you would agree, rather than reading what has been said; and I would ask that you draw the attention—what I ask you to consider is specifically advising the Commission, or drawing their attention to the difficulty which Mr. Millard and Mr. MacDermot had on Wednesday, and Mr. Otton today, in securing any satisfactory evidence as to the strength of their support; and to question, Sir, whether this organisation does not in fact consist of three members who have appeared before you during the course of this Inquiry. Thank you, Sir.

Inspector Mr. Payne, do you wish to comment in any way upon that suggestion?

Mr. *Payne* Certainly. I would like to say first of all that our Committee does not consist of three members actually. I have just been handed the address of WARA's solicitors; we are going to give them all the necessary evidence of our support that we can. We shall also give them the names and addresses of the Committee members, and I am sure that if the Aylesbury Council would like to have the same, we would be quite willing to give them the same information as to WARA.

Inspector The position we now seem to have reached is this. From my point of view, as an emissary of the Commission, it is not for me to dictate the format of evidence given at any participation in these hearings; this must be for them to decide. What has been said is on record, including the latest reply by Mr. Payne, and I hope that over the course of the next two or three days this particular difficulty may resolve itself.

In that case, I shall adjourn—certainly!—until 10 o'clock tomorrow morning.

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

TUESDAY 22 JULY 1969

THE ASSEMBLY HALL, AYLESBURY, BUCKS

Before MR. A. J. HUNT

Oral evidence was taken from:

Assenden Parish Council, Chearsley Parish Council, Dorton Parish Meeting, Lower Winchendon Parish Meeting, Waddesdon Parish Council, Westcott Parish Council, Wotton Underwood Parish Meeting
(*Mr. R. Tetlow*)

Mr. A. E. Toy
Mr. D. C. T. Graves
Mr. B. H. Fuller
Mr. S. Holmes
Mr. D. Judd
Mr. H. Minitt
Mr. V. Scott
Mr. R. G. Parsons
Mr. W. S. Trickey
Mr. K. F. Ward
Mr. T. Warren
Mr. D. J. Watts
Mr. W. E. Andrews
Mr. S. F. Jones
Dr. V. E. Lloyd Hart
Miss C. E. Harris

Cublington Parish Council
(*Dr. P. Brown*)

Mr. A. J. Biggs
Mrs. C. Bodington
Mr. G. A. Cheney
Mr. A. E. Males
Mrs. P.O. Manley
Mr. B. G. Osborn
Mrs. S. L. Panter
Mr. A. J. Radwell
Mr. A. C. Read
Mrs. R. A. Roger
Mr. R. Smith
Mr. R. Body
Mr. E. C. Rouse
Mr. V. G. Walker

Drayton Parslow Parish Council
(*Mr. H. G. Dickins*)

Mr. A. K. Jones

Great Brickhill Parish Council
(*Maj. Duncombe*)

Mr. F. A. Day
Lt. Col. I. B. Addis
Mr. S. E. Baker
Mrs. P. Johnston Boulton
Mrs. C. M. McMahon
Mr. M. R. Rakusen
Miss J. M. V. Tinworth
Mr. J. G. C. Spenser Bernard
Mr. C. Greenacre

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Ladies and gentlemen, the programme is substantially as printed. I have received notice that Mr. Body who is appearing for the CPRE is delayed en route so their appearance will be delayed until Mr. Body arrives. We shall be inserting the Headmaster of Ashfold School after the joint appearances of the Ashendon and related parish councils.

COMBINED REPRESENTATIONS OF

ASHENDON PARISH COUNCIL
CHEARSLEY PARISH COUNCIL
DORTON PARISH MEETING
LOWER WINCHENDON PARISH MEETING
WADDESDON PARISH COUNCIL
WESTCOTT PARISH COUNCIL
WOTTON UNDERWOOD PARISH MEETING*

Mr. *Raymond Tetlow* I am Clerk to the Ashendon Parish Council and I appear on behalf of the Parish Councils of Ashendon, Chearsley, Westcott and Waddesdon and the Parish Meetings of Dorton, Lower Winchendon and Wotton Underwood, who have combined together to submit their statement to the Commission, which you have. It was by coincidence that on the date the information was released that Cublington was one of the four sites for the third London airport my own Council had a meeting that evening and immediately commenced raising support from adjoining authorities of their own status with a view to both presenting a consolidated case and avoiding unnecessary repetition. The result of these activities was the setting up of a Joint Committee of these seven authorities who have spent much time and effort in preparing a written description of the villages concerned and a statement of the common implications thereon.

It could be said that a group of villages lying between ten and fourteen miles from the airport might be worrying unnecessarily, but they are geographically placed clearly in the take-off path of all aircraft from Cublington and, whilst supporting and sympathising with the local authorities immediately affected by the construction of the airport, we join the larger number of villages whose inhabitants will not be removed from the area but will have to live with the consequences. The area concerned can be described as being entirely truly rural and the presence of the airport at Wing will be a gross interference on the standard of amenities at present enjoyed.

I should perhaps mention one further thing, Mr. Hunt, that because and solely because of this proposal we have seen an unprecedented amount of co-operation in our parish councils within the area, something which will I think augur well for the future.

Inspector I have read with very great interest the combined submissions of these seven parish authorities and on behalf of the Commission I thank them very much for the trouble taken in compiling all this information. Are there any questions of Mr. Tetlow concerning his statement or the joint submissions of the seven authorities? One point that interests me on the Westcott submission, Mr. Tetlow, was the reference in paragraph (9):

"The inhabitants are used to a certain amount of noise from the Establishment but in the main this passes over their heads and is probably heard more by some of the neighbouring villages." What sort or kind of noise is emitted? — It is the firing of rocket engines there, which is intermittent, you may have no noise for some period of time and all of a sudden you will have a series during the day of several loud explosions. Where my own village is situated on the hill we very often get the noise effect far more than Westcott does because we are 90 degrees to the horizontal. You might go most of the day without anything and then have a series of bangs. Some of the noise can be quite frightening, but this is not the biggest noise by any means to people who live in the area, but they look up and wonder what has dropped.

4984 Is there any warning given? — Not that I know of, I think they come to accept it. Most of the people who live in Westcott are primarily employed there, they take it as an occupational hazard.

Inspector Thank you. There are apparently no questions and I have no more questions.

Inspector I may get a bit lost among my papers today, but I now come to the individuals supporting the joint authorities.

Mr. J. G. C. Spencer Bernard, 5121. I have an application this morning from Mr. Arthur Edgar J. Toy to appear, which I have granted.

MR. ARTHUR EDGAR TOY* *called*

Mr. *Toy* My name is Arthur Edgar Toy and I live at 112, High Street, Waddesdon. I am a local Government officer and for the past 30 years I have worked with the Aylesbury Rural District Council, and for 26 years I have been Clerk of that Authority. I speak, however, today as an individual and not in any way connected with my official capacity.

I have lived in the village of Waddesdon for nearly 25 years, and I have always found it to be a most peaceful and pleasant village and the villagers always helpful one to another. I view with great concern the possibility of all that the village has meant to me and to the rest of the villagers being torn assunder by noise from aircraft which, in my opinion, will render the present mode of life unbearable and all that we have lived for will be destroyed.

* See also p. 1355.

* See also p. 1362.

Printed image digitised by the University of Southampton Library Digitisation Unit

The majority of the village lies within the 50 NNI contour and the rest of the houses are only just over that line, indeed they are so near as to make the line of demarkation of no real consequence between one part of the village and another.

Our village is well suited to a quiet mode of life and has all the amenities which go to make up a communal and happy life so long as its present character is maintained.

There are cricket, football, tennis and bowling facilities for outdoor sport and the many organisations associated with the village which operate throughout the area.

I am particularly interested in the Bowling Club and have noted with great pleasure how our visitors have commented on the excellent facilities and the quietness which our ground gives. One recently described it as a "haven of peace". I am also President of the Waddesdon Football Club, and I feel that aircraft flying immediately over the football pitch will destroy the attention of the players and spectators and ruin the game.

I am deeply concerned about the activities of the local Waddesdon Singers, of whom I am a member. It will be useless for us to try to maintain this little group of singers if our weekly rehearsals are to be drowned by aircraft noise. Although we are a small group we visit old people's homes in Aylesbury and around the district and give great pleasure to the patients and inhabitants of these homes, but the existence of aircraft will so destroy our rehearsals as to render it impracticable to carry on. The same remarks also apply to the Services which are held in the Parish Church and the Methodist Church in the village, as both of these are within the 50 NNI contour and again I feel that the noise will lead to closing down of services in both places of worship.

It may be argued that all the points I have put forward can be put forward in respect of any inland site for an airport, and with this I agree, and I feel strongly that if it is at all possible for the airport to be sited in a place where much of the noise is expended over sea areas, then this will represent the least damage to public life; and it must be remembered that public life is only an accumulation of private life. I therefore earnestly hope that the points I have raised, which are not mere sentiment, but are in fact representations of a way of life in the countryside, will be taken into serious consideration in determining the siting of the Third London Airport.

Inspector Thank you, Mr. Toy. Any questions? No. Thank you.

Mr. D. C. T. Graves* *called*

Inspector I have read your statement, Mr. Greaves, and note your concern. Have you anything more to add?

Mr. *Graves* I am John Crispin Graves, Joint Headmaster, Ashfold School—not really, sir, except I would just like to make two points: (1) that I am headmaster of a school which is in a very interesting historic building open to the public; and (2) in view of the effects of the airport I feel that we should have to move from where we are at present, and I doubt if the school would be able to continue. I would make the point that the Incorporated Association of Preparatory Schools, of which we are members, is the only type of school which provides boarding education for the under 14 age group.

Thank you, sir. I stand by my statement.

Inspector Thank you very much. Any questions of Mr. Graves concerning his statement 3274 or his additional evidence? Thank you, Mr. Graves.

Are there any individuals here supporting or within the jurisdiction of the Ashendon, Chearsley, Dorton, Lower Winchendon, Waddesdon, Westcott, Wotton Underwood Parish authorities?

In that case may I move on to Aston Abbotts and Soulbury. From Aston Abbots:* 3721, Mr. F. Boothman;* 5002, Mary Georgina Jenny Carter.*

5039, Mr. B. H. Fuller?

Mr. B. H. Fuller† *called*

Inspector Mr. Fuller, I have read your statement, do you wish to add to it in any way?

Mr. *Fuller* There is nothing very much in addition to that rather long statement sir. I would just like to emphasise the point that our particular residence is just at the southerly corner of the proposed site, and will be exposed to maximum noise and disturbance by the aircraft taking off from the nearest runway, the site. We shall have no, as far as I can see, possibility of any recompense from the damage done and this will cause us grave personal and financial embarrassment. After all that, sir, I have no further statement to make.

Inspector Thank you, Mr. Fuller. Any questions to Mr. Fuller concerning his written submission and additional statement? Thank you.

Mr. Stanley Holmes‡ *called*

Inspector Mr. Holmes, I have your letter—do you wish to add anything to what you have said therein?

* See also p. 1363.

* Written evidence available for inspection, by arrangement, at the offices of the Commission.

† See also p. 1364.

‡ See also p. 1365.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Holmes* Not really; I think I have covered all my points.

Inspector You have made your points very strongly, yes. Any questions to Mr. Holmes? Thank you, Mr. Holmes, for appearing.

MR. D. JUDD* *called*

Inspector I have read your letter, Mr. Judd: do you wish to add to it?

Mr. *Judd* No.

Inspector Are there any questions to Mr. Judd concerning his letter? Thank you, Mr. Judd; I have no questions. 5013, Mr. D. Loader?† 5010, Mr. H. Minnitt?

MR. H. MINNITT‡ *called*

Inspector Mr. Minnitt, I have read your letter; have you anything to add?

Mr. *Minnitt* Yes, Sir. Since time immemorial my craft has been known as "the gentle craft". Bring this airport within a mile of my workshop, and the life of my wife and myself will be very very hard. We will have noise; I shall not be able to work satisfactorily. We are old, and it is a very very quiet and nice existence.

Inspector For your age, Mr. Minnitt, you look markably fit.

Mr. *Minnitt* I feel fit. And may I appeal on behalf of old people who wish to continue to live in the peace of a very quiet countryside? Thank you, Sir.

Inspector Are there any questions to Mr. Minnitt concerning his statement?

Cross-examined by Mr. Osmond
(Council for Preservation of Rural England)

4985 Mr. Minnitt, what is your craft? — My craft, Sir—I was trained in London—I am a bespoke shoemaker.

MR. R. G. PARSONS§ *called*

Inspector I have read your statement, Mr. Parsons; are there any additions you wish to make?

Mr. *Parsons* I have nothing to add to what I have stated precisely in my letter, my objections—apart from the fact, of course, that I agree with all the other people.

Inspector Yes. How far have you got, Mr. Parsons?—what is the size of your first greenhouse?

Mr. *Parsons* It is only 30 by 10, but —

Inspector But it is a start. Are there any questions to Mr. Parsons? I have no questions; thank you very much.

MR. VICTOR SCOTT* *called*

Inspector Mr. Scott, I have read your letter—have you anything to add?

Mr. *Scott* I would just like to add that my home is a very small semi-detached cottage in a very charming village, the village of Aston Abbotts; and while my statement was submitted purely as a personal one, it is very typical of the plight of a lot of other people in the same position as myself, and I do ask that the Commission give very long and careful consideration especially to the way in which this proposed airport would affect many old people and people who do not enjoy the best of health, who have probably lived in the village all their life or most of it. They would be very, very badly affected indeed if they had to move. I do ask that this should be considered as far as possible. At the moment our village is a very peaceful one; it is small but it is charming, and apart from the occasional vehicle passing through the village in the early morning, the early part of the day is quiet. We can listen to the song of the birds in our beds. We want this to continue; we do not want the rest of our lives to be completely ruined by the relentless noise by day and night. I feel that I speak not only for myself but for hundreds of people, thousands of other people in this area, who wish to remain there and to have it remain the same for the rest of our lives and those of the generations yet to come. That is all I wish to say.

Inspector Any questions to Mr. Scott? Thank you, Mr. Scott; you may return to your plants and your starlings.

Mr. G. W. Sharp, No. 5173?† Mr. W. S. Trickey, No. 5070?

MR. W. S. TRICKEY‡ *called*

Inspector Mr. Trickey, I have read your statement—have you anything to add?

* See also p. 1366.
† Written evidence available for inspection, by arrangement, at the offices of the Commission.
‡ See also p. 1367.
§ See also p. 1369.

* See also p. 1368.
† Written evidence available for inspection, by arrangement, at the offices of the Commission.
‡ See also p. 1370.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Trickey* No further questions.

Inspector Are there any questions to Mr. Trickey concerning his written submission? Mr. Trickey, thank you for coming along.

Mr. K. F. Ward* *called*

Inspector Mr. Ward, I have your written statement; have you anything to add?

Mr. *Ward* No, Sir, not at this stage really, except to re-emphasise most strongly my feelings as an individual who has chosen to live in a quiet country village. I must say that I have spent several years of my life in London, and I have no wish whatever to return to the conditions which, it appears, a large section of the community are quite happy to tolerate. This is the village I have chosen to live in, a quiet country village, and here I wish to spend the rest of my days. That is all I wish to say.

Inspector Thank you. Any questions? I have no questions, Mr. Ward.

Mr. T. Warren† *called*

Inspector Mr. Warren, are there any additions to your written submission?

Mr. *Warren* Not really, except that I would like to endorse the last man's remarks about life in general in a town; and I would be very sorry to see the airport come here.

Inspector Any questions to Mr. Warren? I have no questions, thank you, Mr. Warren.

Mr. D. J. Watts‡ *called*

Inspector Mr. Watts, do you wish to add to your written statement?

Mr. *Watts* Not so far as my personal circumstances are concerned, but I would like to add just a note in connection with the village as a whole. In my capacity as the Treasurer of the local branch, the village branch, of WARA, I think it illustrates the feeling of the village as a whole that in precisely three months, the village has raised over £408 for the Wing Airport Resistance Association.

Inspector Any questions to Mr. Watts concerning his written statement or additional evidence? I have no questions; thank you very much, Mr. Watts.

Now, I have a note that a Mr. Spike, of Wingrave Road, Aston Abbotts, may wish to appear. I have no record of having heard from him previously. Is Mr. Spike with us? I am afraid he must remain shrouded in mystery.

Have I missed any individuals from the parish of Aston Abbotts? We will move on to Soulbury, then —No. 5012, Mr. W. E. Andrews.

Inspector Representation of Mr. W. E. Andrews of Soulbury.

Mr. W. E. Andrews* *called*

Inspector Mr. Andrews, we have met before, I believe?

Mr. *Andrews* I believe we have.

Inspector Have you anything to add to your written submission?

Mr. *Andrews* The only thing I would like to say, sir, is that I think it would be a great pity if our beautiful landscape was affected by this project which would virtually destroy all around. I think that is all I can add, sir.

Inspector Any questions to Mr. Andrews concerning his written submission? Thank you, Mr. Andrews, for your second appearance. Mr. and Mrs. W. C. O. Andrews† of "Wragmore", Soulbury. Mr. and Mrs. K. R. Embleton†, No. 5047.

Mr. S. F. Jones‡ *called*

Inspector Mr. Jones, I see that you say you find it necessary to add to this written submission. Do you wish to do so?

Mr. *Jones* I only make a point that has not so far been raised today but obviously has been before, the fact that one of these days one of these planes is going to crash and I don't fancy being underneath it.

Inspector Yes, that is a point which has been taken, I agree. Any questions to Mr. Jones concerning his written statement or additional evidence? Thank you, Mr. Jones.

Dr. V. E. Lloyd Hart§ *called*

Inspector Dr. Lloyd Hart, do you wish to add to your written submission?

---

* See also p. 1371.
† See also p. 1372. ‡ See also p. 1373.

* See also p. 1375.
† Written evidence available for inspection, by arrangement, at the offices of the Commission.
‡ See also p. 1376.
§ See also p. 1377.

Printed image digitised by the University of Southampton Library Digitisation Unit

Dr. *Lloyd Hart* I have three points, sir. As the position is I don't think it would be possible to listen to half of the jets going over, and there are many more jets in Aylesbury and vicinity than any other comparable town of which I am aware, Luton is within 15 miles. I think there is something like 3,000 jets within the area. How one can hope to listen to a jest or a conversation when a jet is going over I think it is quite impossible.

The cost of soundproofing hospitals makes it quite prohibitive and I think this is a major factor on the medical side. Another point that may not have been raised is the inability to get sufficient doctors, they are unfortunately in very short supply. I know of one family doctor in the neighbourhood who would immediately leave if the airport came. I know of one consultant from my own experience who says that he would go. I believe it would be very difficult to support adequately a big medical area if the aerodrome came here.

Inspector The point was made rather forcibly by Dr. Lutwig Guttmann.

Dr. *Lloyd Hart* I am sure it was. One other point as a general physician I feel strongly about and that is the moving of elderly people from their homes. The one thing they need are roots, and there are a large number in this area and it applies to all of them. If they are moved their roots go, it is impossible to make friends when you are old compared with youth.

The work that we have done on our house and farm, the house has been renewed, but that is a small point compared with the others that I have raised.

Inspector Thank you very much Dr. Lloyd Hart. Any questions concerning Dr. Lloyd Hart's written statement or additional evidence? I have no questions. Thank you very much. I am sure I shall be wrong on pronunciation—Mr. L. S. Michaelis*, 3 Laburnham Cottages, Soulbury.

Miss C. E. Harris† *called*

Inspector Miss Harris, do you wish to add to your written submission?

Miss *Harris* Yes, I do. My letter addressed to yourself was mainly from the personal point of view as no doubt many others of us who are here today. It is the personal view, the taking of our homes, being destroyed; those of us that have lived here all their lives having everything taken from us. But my personal vocation takes the form of personnel welfare, I spend most of my days listening to people's hopes and fears, as you were doing yourself today. Their fears often take the form of perhaps the children playing truant from school, other problems, but just recently their problems have been much greater. It is not the fact that we may not be able to pay the rent one week but that we may have no homes over our head to even attempt to pay the rent for. What are we going to do? We can see no solution. What can one say to people like this when they come to you for help and you can see no help there for them?

Also, I do not wish to see our beautiful countryside ruined, as it would be. I do not wish to see our farmland destroyed, our rich and very profitable agricultural land. I do not want to see old people being displaced, not being able to live in peace and quiet but perhaps have to end their lives in the top storey of a block of flats endless feet high.

I feel somehow that we have an alternative here. Why can't the Government use it? This I think is our question—please will the Government take their alternative.

Inspector We are talking about the consequences should the airport come to Wing and you are dealing very well with that. The other subject is outside the purview of this inquiry.

Miss *Harris* Well, thank you very much for allowing me to speak.

Inspector But you have sufficient there to make your point.

Miss *Harris* Thank you very much.

Inspector Any questions? Obviously not.

We now come to Cublington Parish Council. I have a letter from Ellis Piers & Young Jackson saying they will not appear for Cublington Parish Council. I just forget who is appearing but whoever it may be will he please come forward.

Dr. P. Brown* *called*
(*Cublington Parish Council*)

Dr. *Brown* Dr. Paul Brown, and I appear on behalf of the Cublington Parish Council. Our statement has already been submitted and I do not think there are any further points which I wish to add.

Inspector Are there any questions to Dr. Paul Brown concerning the submitted statement on behalf of the Cublington Parish Council? For my part, Dr. Brown, the statement speaks well for itself, thank you very much.

* Written evidence available for inspection, by arrangement, at the offices of the Commission.

† See also p. 1378.

* See also p. 1379.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Hamilton* There is just one point, Dr. Brown is also on the list of individuals, I don't know whether he wants to say anything.

Inspector Well, you are still there, Dr. Brown, do you wish to add in any way to your own personal statement?

Dr. *Brown* Yes, I would like to add my personal statement because I am a country doctor and all my patients or nearly all my patients live within the vicinity of the airport, I feel I should be failing in my duty to them if I didn't say a little bit on their behalf. I would like to quote from the World Health Organisation these words: "Health is a state of complete physical, mental and social well-being and not merely an absence of disease and infirmity." This enviable condition is obviously vulnerable in a number of ways. Noise can disrupt sleep, cause annoyance, interrupt conversation and trains of thought, as well as inflicting physical damage on the ears. Without invoking the last effect at all, it is quite clear that according to the World Health Organisation definition, health is prejudiced by interference with peace of mind, privacy, the pursuit of work or pleasure, or with the basic requirement of natural and undisturbed nightly sleep. However, the impression seems to persist in the mind of some people that more subtle effects of noise, in the field of physical or mental illness, may exist. If the airport comes to Cublington all those factors will appertain.

Inspector Any questions to Dr. Paul Brown? I have no questions, thank you. Individuals from Cublington Parish.

Mr. A. J. Biggs* *called*

Inspector Do you wish to add to your written statement?

Mr. *Biggs* Yes, I have one or two things I should like to mention. We have been told by other witnesses beforehand that in Cublington there is a population of 200 people, there is 40 of them under school age and there is a few of course older ones. It is a very nice village and of course, sir, there is a lot of people in the village, the older people, have fought in two world wars, who bought their private houses and had hoped to live a quiet retirement. Their church and chapel and all the old buildings—the whole village—would be knocked down, about 70 houses, making 200 people homeless, and where they go I don't know, but they would be right away from the relations and friends.

Of course there is the agricultural land. I understand it is going to take thousands and thousands of acres that produce a tremendous lot of food which would need to come from imports. I don't know that I have got any more to say. It would be a very terrible thing if it comes to Cublington.

Inspector Are there any questions to Mr. Biggs? Have you lived in Cublington all your life? — Yes, and my family have lived there for 300 years.

Mrs. C. Bodington* *called*

Inspector Mrs. Bodington, do you wish to add to your written statement?

Mrs. *Bodington* I have a few points which I would like to add perhaps and emphasise some of the others. Firstly, I would like to add emphasis to what I said in my letter. In common with almost all the other residents of Cublington I am desperately anxious to be able to keep my home and to go on living in the village near my family and among my friends.

The second point I would like to make is that most of the land in this area is of first-class agricultural quality and as such should surely be given very careful consideration before it is obliterated for ever under concrete runways, roads and buildings of a mammoth airport. I think, too, that with the very rapid development in aeronautical technique these days this huge airport may well become obsolete in the next ten years—vertical take-off or possibly rocket propulsion may be the method used for getting aircraft airborne in the future. We may need our farmland more than these four mile long runways.

Lastly, our villages. Surely they are a unique feature of our countryside and their centuries old village churches—what a wonderful tribute these buildings are to the craftsmanship of a byegone age. They mean a very great deal to us and they should be preserved and treasured and our lovely countryside kept unspoiled, a breathing space and place of recreation for the hundreds of people who come every weekend and holiday time to enjoy a picnic meal in the peace and quiet and the fresh air of the country. On my way to Cublington last Sunday I counted no fewer than 15 cars parked by the roadside while the occupants enjoyed the sunshine and peace of a beautiful summer's evening. So I submit that this area of rural England should be preserved not only for the benefit of those who live here but also for those of us who come to escape even for a few hours from the noise and turmoil of the towns and cities where they have to live and work. That is all I have to say.

Inspector Any questions to Mrs. Bodington? I think no questions. Thank you. I have on my desk Mr. G. A. Cheney but apparently no submissions. Is Mr. Cheney with us?

* See also p. 1381.

* See also p. 1382.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. G. A. CHENEY *called*

Inspector Did you make a submission? Have we lost it or what is the position?

Mr. *Cheney* Yes, I did.

Inspector Did you apply to be heard?

Mr. *Cheney* I did, yes. I think it is the most terrible thing that we should have to come here and fight and fight for what belongs to us. I have here the history of Buckinghamshire, my family dates back to Domesday, and I still want to live in Cublington and I think we have every right to try to live there. I don't know why on earth this should happen to us and we still have to fight for what belongs to us. If we are going to push places of worship down and also push the dead out of their graves to have level ground I don't think we will progress much like this. It is a terrible thing. I have been on most of the airports round the country, my work took me there, and I know that there are plenty that could be used instead of knocking villages completely down. Where are we going if they knock us all down? Will they take us in the desert and leave us to die or ship us or what? Where will the money come from to pay us, because every day we pick our paper up and we are in debt to someone. We buy places, we are set up as long as we live, and then we have to come to this and fight for them back again. You wake up in the night, you are wondering whether you are going to have a roof over your head five minutes or not. There is plenty of places where these could be stuck where they are not wiping villages off the map and it is a terrible tragedy to come here and fight for our own.

Inspector Any questions to Mr. Cheney? I have no questions.

MR. A. E. MALES* *called*

Inspector Mr. Males, do you wish to add to your statement?

Mr. *Males* Yes. This is personal still. Since writing to you I thought of what my doctor told me about two years ago, the groin on the left side is worse with age and nothing can be done about it. Just over a week or so ago my present doctor let me have pain killing tablets to kill the pain also at the bottom of the spine. I was advised by my doctor to come to the country from the town in 1951 to avoid a nervous breakdown—in fact, I have the letter he wrote. I think that is all I have to say. Thank you, Chairman, ladies and gentlemen, for listening.

MRS. P. O. MANLEY† *called*

Inspector I have read your statement. Do you wish to add to your statement?

Mrs. *Manley* I would like to add a few words on the speech that Lord Kennett made, it is called "Lost"—"One day in the near future a motorist in his air-conditioned car, having driven along the motorway, over what used to be the river valley, along where the old town was before they knocked it down, into a filling station where a churchyard used to be, across a dam where three agricultural villages lie drowned, will draw up beside the road with a puckered brow and say to himself: 'Let's see now—where was I going?'."

Inspector Any questions? I have no questions. Thank you.

MR. BERNARD G. OSBORN* *called*

Inspector Mr. Bernard G. Osborn, do you wish to add to your letter?

Mr. *Osborne* No, sir, nothing more to add.

Inspector Letter 5145 has been circulated—are there any questions to Mr. Osborn?

Cross-examined by Mr. Harry Minnitt

4986 My name is Harry Minnitt. I understand Mr. Osborn is in business on his own. What future can Mr. Osborn see for himself and his family? Actually none, because the shop is outside the area of Cublington, and a lot of our trade is in the Cublington area, so there will be left a useless business.

4987 But then again your shop is within, as the crow flies, a mile from Cublington Cross. — Yes.

4988 Well, then you just answer for your shop, your business—answer to your business; can you see any future in your business at all in Aston Abbotts? — No. Aston would become a dead village.

Mr. *Minnitt* That is all. Thank you.

MRS. S. L. PANTER† *called*

Inspector Mrs. Panter, your short letter is amazingly to the point. Do you wish to add to it in any way?

Mrs. *Panter* May I just add one point. I wish to emphasise the hardship caused to tenants living in farms cottages who would not be able to claim any compensation whatsoever, who would also be unable to obtain a comparable rented cottage anywhere in the surrounding district. Also the elderly man, coming 60, who not only would lose his home and

* See also p. 1383. † See also p. 1384.

* See also p. 1385. † See also p. 1386.

Printed image digitised by the University of Southampton Library Digitisation Unit

work, but because of his age would be unable to obtain any other position.

Inspector Thank you, Mrs. Panter. Any questions to Mrs. Panter? No. Thank you for coming.

MR. A. J. RADWELL* *called*

Inspector Do you wish to add anything in any way to your statement, Mr. Radwell?

Mr. *Radwell* I do not wish to add anything, sir, but I would like to reiterate one of the things I said in that particular letter. That is the freedom of the individual to live where he wants to. I feel, and I cannot emphasise this too strongly—I would suggest that the Committee examine this in very fine detail—the freedom of the individual is getting less, in my estimation, as to where he lives and where he chooses to live in this particular country because of this particular aspect of encroaching urbanisation, technical aspects of various airfields, dams, reservoirs, etc. We pride ourselves in this country in having freedom of individual choice. I suggest, sir, that this freedom is getting less and less as time goes by, and I would like to suggest that this particular aspect, as far as this particular area is concerned, gives us an ideal opportunity to stop and examine the encroachment on freedom of the individual.

That is all I wish to say, sir.

Inspector Thank you. Any questions? I have no questions.

MR. ARTHUR C. READ† *called*

Inspector Mr. Read, again your letter is short but right to the point. Do you wish to add to it in any way?

Mr. *Read* I would like to say, sir, that I am angry over the suggestion by some people that agriculture in this area is poor. On our own particular farm production over the last twenty years has increased by nearly 50 per cent per acre. This has been achieved by the lifetime's hardwork by my father, and by myself, and the reinvestment of a large percentage of the profits. As I am only the tenant farmer, the compensation we would receive would not allow us to take another farm, even if it is possible, which is very doubtful in this area.

If this airport came here, I would not only lose my home, my business, I should be split from my family and friends, and to most of us who live in small villages, I think no compensation would ever pay us for this. Thank you, sir. (*Applause*)

Inspector A little polite clapping is one thing, but please, no stamping of feet. He has left the witness stand so there are obviously no questions. Thank you.

MRS. ROBERT A. ROGER* *called*

Inspector Mrs. Roger, I have read all the points you raise in your letter. Do you wish to add to your letter in any way?

Mrs. *Roger* Only just to say, if I may, that before my husband and I came to Cublington we lived in London and on the outskirts of Glasgow, and we have no wish to live anywhere else but in Cublington, and to be allowed to bring up our small daughter amongst the children she is happy to be with, and in the fresh country air.

Also, I would like to say that I was born in Aylesbury, and all these changes I find very hurtful.

Inspector Thank you, Mrs. Roger.

MR. R. SMITH† *called*

Inspector Mr. Smith, do you wish to add to your written statement?

Mr. *Smith* No, sir, I have nothing to add. Thank you.

Inspector Any questions of Mr. Smith concerning his statement, 5204? I have no questions. Thank you.

MR. G. WINFIELD‡ *called*

Inspector Is Mr. G. Winfield here? No.

MR. S. N. YOUNG‡ *called*

Inspector Mr. Young was apparently expecting to be in hospital, and may not yet be out of hospital.

Are there any persons I have omitted to call from Cublington? Thank you.

I see that Mr. Body has now managed to reach us. Mr. Body, I will ask you to deal with the residue of your matters.

* See also p. 1387.
† See also p. 1389.

* See also p. 1390.
† See also p. 1391.
‡ Written evidence available for inspection, by arrangement, at the offices of the Commission

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. R. BODY* *called*

(Council for the Preservation of Rural England)

Mr. *Body* I thank you, sir, and I hope I have not caused anyone any inconvenience.

Inspector None whatsoever.

Mr. *Body* I will call on Mr. Rouse.

MR. EDWARD CLIVE ROUSE* *called*

Examined by Mr. Body

4989 Are your names Edward Clive Rouse? — Yes.

4990 Do you live at Oakfield, North Park, Gerrards Cross, Buckinghamshire? — Yes.

4991 Have you lived in Buckinghamshire since 1910? — Yes.

4992 Are you intimately acquainted with the area concerned in this hearing? — Yes, I am indeed.

4993 And among the offices you hold, have you been for many years the Vice Chairman of the CPRE Buckinghamshire Branch? — Yes.

4994 Have you been Chairman of the Penn Country Branch, of the Council for the Preservation of Rural England? — Yes, I have.

4995 Are you President of the Royal Archaeological Institute and of the Buckinghamshire Archaeological Society? — Yes.

4996 A fellow of the Society of Antiquaries and of the Royal Society of Arts? — Yes.

4997 Accordingly, are you authorised to represent the Councils for the Preservation of Rural England and its Buckinghamshire Branch, the Royal Archaeological Institute and the Buckinghamshire Archaeological Society? — Yes.

4998 In addition to that the Buckinghamshire Historic Churches Trust also wishes to be associated with the architectural part of your evidence? — That is correct.

4999 I think there are one or two amendments to your proof. — Yes, I should be glad if those could be noted, sir.

5000 Perhaps if I may deal with one or two corrections in the appendices. First of all, Appendix B, I think it should be Dunton and not Denton? — Yes, that is right.

5001 *Inspector* It has got itself as Dinton somewhere else in the proof. — Yes; it is very difficult.

5002 Mr. *Body* Then in that long list of villages within ten miles that would be affected should it be Woughton on the Ground? — That is its full name. It is one of those queer places where the people, locals, call it "Woofton".

5003 Two places to be added are Western Turnhill, and Hoddesdon. — Yes, that is correct.

5004 Then in Appendix D, the officers of the Architectural and Archaeological Society, page 2, the President is no longer Lord Cottesloe, but yourself. — That is correct.

5005 I think you have been asked to state who are the authors of the memorandum on Wing Church, which comprises Appendix E. — Yes.

5006 The answer to that is Dr. H. M. Taylor and Mr. Spittle. — Yes.

5007 And yourself? — Yes.

5008 In a sentence or two, perhaps we ought to have the qualifications of Dr. Taylor and Mr. Spittle. — Dr. Taylor is now recognised as the leading authority on early Saxon architecture in this country; he has written a monumental two volume book on it. He was Vice Chancellor of Keele University, and is now in Cambridge. Mr. Dennis Spittle is Senior Investigator for the Royal Commission on Historical Monuments, and is Honorary Secretary of the Royal Archaeological Institute.

5009 In addition to those two and yourself was the matter contained in that appendix checked by members of the Council of the R.A.I.? — Yes, that is correct.

5010 As far as your proof itself is concerned, it is your wish, is it not, to add slightly to it; on page 3, do you feel your proof as it now reads gives sufficient weight to the great imbalance that may be caused to this development? — That is a point I would like to emphasise further. This enormous increase in population consequent upon the airport, if it comes, would virtually cut the county in two; it would destroy its homogeneity, and it would make a fearful imbalance with such a tremendous weight of population concentrated in a band virtually across the whole of the middle of the county.

5011 On page 4 you have in one very short paragraph referred to the historic country houses in the area. Is there anything you feel ought to be added to that in that context? — I have wondered whether sufficient weight has been given to the enormously high quality of these houses and their contents; Waddesdon, Claydon, and numerous places, what the effect of an airport complex so near to them would be—I honestly do not like to contemplate.

5012 Then over on page 5, on reflection do you feel that you have given sufficient attention in your

* See also p. 1392.

Printed image digitised by the University of Southampton Library Digitisation Unit

proof to the nature of the terrain? — This is a point which certainly affects the C.P.R.E. most closely, and I would, if I may, like to amplify that point a little.

5013 Yes. — The area of the site is an extraordinarily undulating one. It astonishes me such a district should ever have been considered; to make an adequate airport out of that area will mean the most colossal operations, which will transform the entire landscape; the tops of hills will have to be removed. The spoil put into the valleys to fill them up. I dare not think what the effect will be on the upper and lower waters of the Thames which flow through the site. Not merely will the airport buildings and the whole complex be intrusive, but the entire contour of that piece of country which we value in the C.P.R.E. will be completely changed.

5014 Is there anything further you feel ought to be added to your proof? — As regards the architectural side, I speak for three architectural bodies. Wing may not be directly concerned for distruction, but I wonder if sufficient emphasis has been given to that. This is not just another nice country church; it is a monument of international importance, and the same with Stewkley—scholars come from all over the world to study Stewkley—I will not go into detail now. I have given certain details in my proof of evidence, but the insensitiveness of the English nation to our cultural heritage astonishes me, that it should ever have been considered necessary to destroy such monuments as this. Even during the war when I was in the air force and stationed at St. Eval in Cornwall it was necessary for the exigencies of war to destroy part of the village, but even during the war they took the trouble to preserve St. Eval Church on the very perimeter of the airfield. In this case we are proposing to destroy completely three village churches, one of them an international monument.

5015 *Inspector* I think I should correct you. I know St. Eval. I also worked on St. Eval during the war. The proposal is to use a certain amount of land as the Third London Airport. The question of what will be necessary to demolish will follow very much later when details are known, and I can well imagine it will be possible to retain Stewkley Church if an airport ever came to Wing. The point has been made, and surely made with great force by Sir John Betjeman amongst other people that to retain the church just as a church with no worshippers might not be a good thing, and I do ask you in comparing St. Eval and Stewkley just to note that the details of how this might happen are by no means decided. — Thank you.

5016 Finally, Mr. Rouse, your conclusion reads as follows, according to your proof "If this development is permitted, it will result in the total annihilation of three or four villages or hamlets, and the rendering almost uninhabitable, with consequent loss or damage to valuable architecture, of nearly twenty others." Is that still your view? — I certainly stand by that.

5017 And that must inevitably, in your judgment as a student of architecture over very many years, lead to grave injury being done to the fabric of any church or historic building in the vicinity of this airport? — This is true. I have indicated the main points at which danger and difficulty may be expected in this respect in my general proof.

Inspector Are there any questions from First Tier Authorities to Mr. Rouse concerning his proof of evidence and additional evidence? Any questions to Mr. Rouse? I have no questions, Mr. Rouse; thank you very much.

(*The witness withdrew*)

Mr. *Body* Sir, that completes my case. I have forfeited any right to address you on this occasion, having addressed you earlier.

Inspector I was not sure whether you wished to add one or two points; but, as you do not wish to, may we say that we appreciate all the detailed evidence in your submission. It will be used very much in the Commission's research staff's future duties. Thank you very much. Now — Bierton-with-Broughton Parish Council—perhaps I may be corrected on the pronunciation of "Bierton"?

Mr. *Hamilton* Sir, it is "Bierton".

Inspector Thank you. Is there nobody here from Bierton-with-Broughton Parish Council? I think there is one individual from Bierton—Mr. V. G. Walker, No. 5113—either Mr. or Mrs. Walker.

MR. V. G. WALKER* *called*

Inspector Mr. Walker, do you wish to add to your letter in any way?

Mr. *Walker* Yes. I should like to add to my letter. I should like first of all to reiterate very strongly, as far as I am allowed to in this Commission meeting, how very strongly and emotionally I feel about all this. It will upset me personally by the noise, of the airport, the airplanes, the road transport; the spoiling of the countryside—that is my personal complaint. My second point, which is very important, is that the country is prepared to sacrifice itself, no doubt, on behalf of the good of the whole country if it can be shown that a Third London Airport is necessary. I do not know that that has been shown—it has not been proved to my satisfaction —

Inspector I am afraid, Mr. Walker, that will be a question to be considered in the Commission's Inquiry. The proposal here is the actual siting of an

* See also p. 1402.

Printed image digitised by the University of Southampton Library Digitisation Unit

airport at Cublington; the question of the material supporting the timing and the need will arise in other stages of the Commission's work.

Mr. *Walker* And the other point which concerns me very much is the fact that we are here having to put points why it would be inconvenient to have an airport at Wing, or why there should not be one at Wing, when this is one of the four sites which have been selected from the country as a whole. I am not satisfied that other and better sites are not available, and I think this is what concerns most people, and this is very much a worry to me.

Inspector That again is not a subject for this hearing, I am afraid.

Mr. *Walker* Nothing seems to be a subject for this hearing. Without being personal, it seems to me that when people cannot pronounce the name of "Bierton", it is a pointer to what the Commission knows as to what it is doing. Furthermore, I would like to make one last point, and that is to speak for many people who feel that it is a complete waste of time appealing or making a protest, on the view that if the Government has made up its mind to put an airport at Wing, it is going there. Thank you very much.

Inspector Thank you. Are there any questions to Mr. Walker? Thank you, Mr. Walker. Dinton with Ford and Upton Parish Council, also representing Cuddington Parish Council, Ickford Parish Council, and Worminghall Parish Council?* Drayton Parslow Parish Council?

MR. H. G. DICKENS† *called*
(*Drayton Parslow Parish Council*)

Mr. *Dickens* My name is H. G. Dickens, and I am the Chairman of the Drayton Parslow Parish Council.

Inspector I have read the evidence of your Council twice, very carefully. I must congratulate you upon the plain but very admirable statement of the facts of your village; and again on your conclusions. Do you wish to add anything?

Mr. *Dickens* There are one or two things I would like to emphasise. You have congratulated us on our evidence; I would like to point out that this was arrived at by the whole of the village. Everyone was so concerned with this terrible thing that the whole village united. They came to us few who were on the Council with various points of view. They are really distressed at the thought, Sir. As you know, our village lies very close to Stewkley, and the badly affected area. We are all faced with demolition itself. The only way I can describe the feelings of the people is to compare this thing to Aberfan. Apart from the loss of property, Aberfan can be rebuilt; but our village would be gone forever. Also, an awful lot of people in this area are connected by intermarriage of the villages—it is not just one village we are talking about, the whole area is inter-related through marriage. It is just a local circle. Parents are living in the next village, the children go to them and attend to their wants. This is what happens all the way round. It is not only certain homes and livelihoods, it will absolutely distrub the whole of the livelihood and their outlook on life for a large number of people. I am afraid it will shorten the lives of some f the olderrt residents. A widow came to me the other evening and said, "What can we do to prevent this? Just what can I do? I have got my children, I have saved, I have got my cottage, and I hoped to stay here." She has friends who come in and see to her wants; she could just see nothing in the future, and she is only one. Another thing that is worrying in a village such as ours—it may seem pointless to some people, but yesterday evening a young mother was going past my place with a bunch of flowers to the churchyard, to put them on a grave. To us, tombstones are not labels for corpses—they are put there with love and affection by people, and they are respected. If this thing comes, and we are demolished and our churchyard is levelled, the bones are collected and put in a communal pit with a tablet with the names we can remember—we could never forgive ourselves for allowing it to happen. Thank you for listening to me, Sir.

Inspector Thank you, Mr. Dickens. Are there any questions to Mr. Dickens? I have no questions. I hope your elderly gentleman who lives with his oil lamp and his well water will go on for a long time, Mr. Dickens!

Mr. *Dickens* Oh, he'll go on!

Inspector Individuals from Drayton Parslow? Mr. Charles Greenacre?* Mr. Patrick Hutber?* Mr. A. K. Jones?

MR. A. K. JONES† *called*

Inspector I have quite a long submission from you, Mr. Jones.

Mr. *Jones* Yes—I am afraid it was a bit long!

Inspector Would you like to add anything to it?

Mr. *Jones* There is one correction I would like to make, which occurs on page 5—it is paragraph 1 (e), at the top of the page, on the fourth line from

* No evidence submitted.
† See also p. 1403.

* Written evidence available for inspection, by arrangement, at the offices of the Commission.
† See also p. 1415.

Printed image digitised by the University of Southampton Library Digitisation Unit

the top—that sentence should read "I hope to spend a further three"—not four—"years". I would like to take this opportunity, really, to emphasise the particular difficulty that I am in, should I have to move. By this choice of career, I have more than halved my income; it would mean that my attempts to negotiate a similar mortgage would be very very hopeless, virtually impossible, from what I have been told by the building society. I did ask your permission earlier, if I added to my submission—this is a very general nature—which Mr. S. F. Jones has already referred to this morning—the likelihood of an accident. I know that this will be looked into at a later date, but I think on this point my particular point is best made at this time, because of the possible effect on the area of an accident. I would like you to consider an aircraft taking off in a north-easterly direction, and suffering power failure shortly after takeoff. It cannot be ruled out. The pilot would be in an extremely difficult position. Ahead of him, the Brickhills extend in undulating country for some distance; the turn to the right along the Ouzel Valley could not really be executed with no power; and the pilot would be forced almost into a course of action which would take him very near us, to the Sutton area or the southern edges of Milton Keynes. If he could not get over the top of the Brickhills, he would be tempted to turn to the left, which would, in certain circumstances and conditions, put people at risk. I realise that this would be looked at very carefully by the Commission, but I thought I would like to raise it at this time. Thank you very much.

Inspector Are there any questions to Mr. Jones concerning his written statement and additional evidence? Thank you, Mr. Jones. Are there any other individuals who wish to appear for Drayton Parslow Parish Council? Dunton Parish Meeting—I have had a letter this morning—Mr. R. J. Weatherhead, who spoke to me yesterday—"As you are aware, I am due to appear on behalf of Dunton Parish Meeting, and for myself, at the local hearing at Aylesbury on 22nd July. I regret however that as mentioned to you today, I shall be unable to attend, due to circumstances beyond my control, and I ask you to accept my apologies. I realise that my written submission will receive full consideration by the Commission, and no doubt the Rector of Dunton, the Revd. H. J. Sillitoe, will emphasise points where necessary." Is the Rev. Sillitoe with us? nobody from Dunton Parish Meeting? Individuals from Dunton? Mrs. Mary Hall?* Rev. R. J. Sillitoe† is not here—Mr. R. J. Weatherhead has written this letter —

Mr. *Hamilton* Sir, may I just say that I am quite sure that the Rev. Sillitoe is likely to be here at some time or other—he in fact looked in yesterday morning. I was just wondering if he did appear after you had risen, could I tell him that we could possibly fit him in later —

Inspector I shall carry on until the end of today's programme, and then, if we miss the Rev. Sillitoe, we can fit him in tomorrow or the next day.

Mr. *Hamilton* And, Sir, it may be that other people are here now who were not here at the beginning—I do not know, Sir —

Inspector I shall just see. Great Brickhill Parish Council?

Mr. P. Duncombe* *called*
Great Brickhill Parish Council

Major *Duncombe* I am Major Philip Duncombe, Chairman of the Great Brickhill Parish Council; you have my proof, No. 3255.

Inspector I have read carefully through it, Major Duncombe—you have given a very comprehensive picture of your village. Do you wish to add to that statement?

Major *Duncombe* One amendment, please, Sir. In paragraph 2 (a), there is a misprint there—there are 457 people, not 528, on the electoral roll. And two comments, please: one on para. 4 (a). I spoke of high landscape value—the proposed Area of Outstanding Natural Beauty. On Mr. Pooley's map† before you, Sir; I wrote this very much from the village point of view, but in fact this whole idea of the three Brickhills and part of Woburn being scheduled as an Area of Outstanding Natural Beauty is a very much larger fear—it features in the North Bucks Countryside Report, to cater not only for visitors from considerable distances away, but also as one of the main recreational areas for Milton Keynes. Also, it is the view of the villagers, from a distance, and also we have heard mention of the Lakes Estate this morning—they have got a large concentration of houses from which the occupants can enjoy the unspoiled view of the three Brickhills all in a row.

The other point, Sir, if I may—paragraph 4 (b), where I refer to the noise hazard of living 100 feet from what I have taken as the end of the site, which is about the boot in Soulbury—since Mr. Waller's noise evidence last week it is clear that Great Brickhill is in an area which is intolerable to live in when the reverse flow which one or two mentioned last week is in operation, which is one day out of four throughout the average year. That is all I have to add, Sir.

* Written evidence available for inspection, by arrangement at the offices of the Commission.
† p. 1735.

* See also p. 1417.
† p. 1037.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Thank you, Major Duncombe. Are there any questions concerning that evidence? There are no questions; I have no questions. Thank you very much. Individuals from the Brickhills? Mr. F. A. Day, No. 5125?

MR. F. A. DAY* *called*

Inspector Do you wish to add to your very clear statement?

Mr. *Day* Just one small point. Towards the end of my statement I mentioned that if the airport comes I shall take my family away. We have considered where we could go, and I have come to the point now where I feel that anyone who can place an airport in the vicinity of this area could do almost anything anywhere. I mentioned emigration—we have gone into this carefully, and I have also talked with colleagues who find themselves in similar circumstances, and they agree with me. When I look at these people, I find that they are all of one group—they are contributors, rather than takers. This is the only extra point I wish to make.

Inspector Thank you. Any questions concerning Mr. Day's evidence? Thank you very much. Squadron Leader D. Hankins?

Major *Duncombe* If I may help, Sir—he cannot get here until after lunch, and I had arranged to ring him about now to see if there would be a programme after lunch. Would you be prepared to hear him tomorrow?

Inspector I most certainly would. I cannot prolong the hearing for the benefit of people who drift in and out at their leisure, but I shall certainly fit him in either tomorrow or Thursday.

Major *Duncombe* Thank you very much, Sir.

Inspector Dr. J. R. Lumb?† From Little Brickhill—Lt. Col. Addis?

LT. COL. I. B. ADDIS‡ *called*

Inspector Do you wish to add to your written statement?

Lt. Col. *Addis* Nothing, except from a very personal point of view. I would like to reiterate that I am very concerned about the churches of Little Brickhill and Great Brickhill, which I have mentioned in my statement, and I think this is of the utmost importance because I do not think the fabric of those two churches would stand up to air noise; and of course, services—as Major Duncombe pointed out—would be very difficult to hold.

Inspector Thank you. Are there any questions? I have no questions; thank you very much.

MR. S. E. BAKER* *called*

Inspector Mr. Baker, would you care to add in any way to your written statement?

Mr. *Baker* Mr. Chairman, when I wrote that letter I wrote that I thought as a person in rather a unique position having just settled in this country, but since writing that I have come across several people in similar circumstances to myself and they feel quite as strongly as I do, that coming back to this country after many years abroad and investing one's life savings in a place where one thinks one's roots have eventually taken we are going to be literally flung out again. The general concensus of opinion among my friends is to say: "We'd better go abroad again", which is a pretty sad state of affairs.

Inspector Have you really found life more stable in foreign countries?

Mr. *Baker* Mr. Chairman, there are many aspects of life in foreign countries that are acceptable—lower Income Tax to start with. But we do feel very strongly about this. Having come back to England, naturally we always dreamt of coming back, having probably overspent on a small cottage, a piece of ground, the things we had dreamt about for years and years, and now we are faced with this possibility of being completely uprooted again.

Inspector I appreciate your point very much, yes.

Mr. *Baker* I have nothing more to add at all except I do trust that small voices are taken into consideration.

MRS. P. JOHNSTON BOLTON† *called*

Inspector Do you wish to add to your statement in any way?

Mrs. *Bolton* I would just like to say that my statement to the Commission expressed a very personal opinion and to add two points that were put to me on behalf of the ladies of the village of Little Brickhill: one point being that if the airport is built at Cublington the mothers of young children are going to experience great difficulty in getting the children to sleep because of the constant noise, thus

* See also p. 1419.
† p. 1474.
‡ See also p. 1420.

* See also p. 1421. † See also p. 1422.

Printed image digitised by the University of Southampton Library Digitisation Unit

causing a health hazard. Point 2 being that the same mothers are going to find it virtually impossible to put out their washing to dry in the fresh air because of the air pollution and washing will come in dirtier than it went out. Thank you.

Inspector Any questions to Mrs. Bolton concerning her written submission and additional evidence? Thank you for coming along.

MRS. C. M. MCMAHON* *called*

Inspector Good morning, Mrs. McMahon, do you wish to add to your statement in any way?

Mrs. *McMahon* Yes. I think we have all read, Mr. Chairman, of the Peasants' Revolt. I think it is high time there was another grass roots revolution in this country—what with docks, motorways, airports, the whole country becomes a second Los Angeles.

I do not wish to add very much to my personal statement except to state that my position is the same as dozens of others heavily affected by the airport, where people who have worked and saved and scrimped and worked hard in our houses—and old houses, many of them—and now find ourselves in the position of having them either bought up by the airport or, even worse, having them rendered virtually uninhabitable and highly unsaleable.

We hear rumours in this area about this being a favoured site of the Commission, I expect they hear rumours in all areas. We hear the Commission is not really interested in the evidence of individuals. One hopes these rumours are without foundation. We have heard a certain amount of this feeling already this morning, you must excuse us, we are afraid. I believe myself—I like to believe—in the good faith of the Commission, in the personal probity of the Commissioners. I believe the Commission cannot oppose the clear will of the people that this airport goes to Foulness where it is desired by the local Government.

Inspector There are obviously no questions to Mrs. McMahon. Mr. Rakusen, I hope my pronunciation is correct.

MR. M. R. RAKUSEN† *called*

Inspector Do you wish to add to your statement, Mr. Rakusen?

Mr. *Rakusen* Well, Mr. Hunt, the only point I think I should mention is that this is the only day I have been here and we have heard everybody against the airport, and thank God I haven't heard anybody for the airport, no doubt you have on other days. But I am wondering on my own experience whether any of the people against the airport or even the people who are for the new airport have had to do what I have had to do, work within 2,000 yards of the main Heathrow runway. Over the years of course it has steadily got worse. The noise is at times completely intolerable, it is impossible to carry on any sort of conversation on the telephone. We have telephone sales operations with eight girls who live under the same sort of conditions as they have been living on the moon—soundproofed, double glazed, and even they have to put the telephone down occasionally, they just can't hear. I think if everybody in this district realised what this noise really means and what it really is. After all, most of the people living in this area are going to go into their garden. Well, I am in a block of offices in a factory where we don't have to go into the garden, fortunately, but even within the offices—all of which are thoroughly soundproofed—it is as I say quite intolerable and quite impossible.

If I may end on another note. I have also been through this village of Bierton many times in my life, I have never known how to pronounce it and I apologise for any apparent rudeness, which was extended to you before.

Inspector Are there any questions concerning this proof? I have no questions and no doubt you will now return to "Tranquillus".

MRS. J. M. V. TINWORTH* *called*

Inspector Mrs. Tinworth, I see you also return from foreign parts. Have you anything to add to your written statement?

Mrs. *Tinworth* Yes. I would like to add some remarks because since I wrote the statement we have of course gone on studying all the evidence we could find out about the airport and about the lives of other people living close to airports. I think we were hoping to find that the effects on our family life would not be as bad as we anticipated, but in fact I think we have found from all we have heard and read that the general day to day and night to night effect of an airport so close to the village will be much worse than we anticipated.

It is very hard to envisage all the little things that will be changed. You appreciate the big things—the noise, the air pollution, possible greater danger from the aircraft and the urbanised area in which we shall live, but there are all the other little things which will affect us and many other thousands of families and I would like to mention just a very few of these, there were a great many of them.

* See also p.1423. † See also p. 1424.

* See also p. 1425.

Printed image digitised by the University of Southampton Library Digitisation Unit

My husband when he is very busy, which is very frequently, brings home work in the evenings and at weekends, he brings it home because he says he will not be interrupted by his staff, he can do the complicated things at home despite the children. Well, if the airport comes with the noise that will be quite impossible, he will have to stay at the office in the evenings and at weekends. This is something that has never happened to us before and I think is very bad, especially with the young children.

Then my mother-in-law lives with us. She certainly can't stand a lot of noise, sometimes the children worry her in this respect, but the airport noise would be far, far worse and if we didn't leave the area ourselves we definitely would have to find her alternative accommodation. This is particularly disappointing to us because with much difficulty we had obtained planning permission to extend the house to give her rooms on her own so she can feel independent. But there will be no point in doing this, we would have to find her somewhere to live away from us and that is worrying when someone is getting older.

Another small worry which will also affect so many other families, the children's education. As I said in the statement this is very important to us. We were planning when they were old enough for bringing home homework we would convert their rooms into studies as well so they could study in peace and quiet, but there will be no point we realise in that, of course, because nowhere in the house will there be sufficient quiet to do this.

The thing that hit me most, I think, was last Sunday morning. I got up very early to go gardening at six o'clock because it was nice and cool. The garden is very important to us, we have a large one and we all like it and are keen gardeners. Then at six o'clock it was absolutely quiet, there was no traffic, no aircraft, no hay drier or tractors or anything. I realised then if the airport comes to Wing that will never happen again, at least every few minutes there would be this tremendous noise and we would be forced to stay indoors much more. The garden, our main interest in a way, would really no longer be of any use or pleasure to us. I think it was then that I felt quite convinced that if the airport should come to Wing that whatever the financial loss we would then sell the house and move right away, which would distress us a great deal as we are very happy in this area. So therefore I do hope that the airport will not come to Wing.

Inspector Thank you. There are obviously no questions to Mrs. Tinworth.

Inspector Are there any more individuals to be heard from Brickhill? Are there any individuals which I have overlooked during the course of the programme?

MR. J. G. C. SPENCER BERNARD* *called*

Mr. *Spencer Bernard* My name is Spencer Bernard.

Inspector You are from Nether Winchendon House, Aylesbury. Do you wish to add to your statement in any way?

Mr. *Spencer Bernard* Not to add, but to emphasise certain points. The point to be made about our family being in the place a long time and, of course, we have a very fine house, which is probably common to many other areas, but the point I would particularly like to stress here is the danger, as I see, from being only eight miles away from the end of the airport where the aeroplanes get up. We have all seen that paraffin vapour trail, and we do know what it does to our crops and livestock. Also I am very concerned, having done a good deal of work on cancer, on the nature of the results of this paraffin vapour on people, you and I. That is not a thing to be overlooked at all. Cancer from paraffin has been known through nearly 80 years, and if we spread our country with it we do not know what it will involve. The other thing I would like to stress is the safety factor: we in our village are about seven to eight miles from the end of the runway. When the planes are getting up, this is the point at which they would crash, and crash they do, because Insurance Companies know all about this sort of thing, and it will happen one day. Crashes on land are so much more disastrous, not only to the people on the ground, but buildings, and to the people in the aeroplanes, whereas in fact when they crash in the sea, as is well known, most of the crews and passengers are rescued by rowing boats, and this dreadful sword of Damocles will hang over us with every plane that comes over us.

I think that is all I would like to stress, because the other parts, the nuisance to life, you have heard all about from other places, although it is of particular interest to me and my family.

Inspector Are there any questions? I have none. Thank you very much.

Unless I have missed or omitted any persons listed in the programme—There is apparently somebody else at the back of the hall.

MR. CHARLES GREENACRE† *called*

Inspector Mr. Greenacre, do you wish to add to your statement?

Mr. *Greenacre* Yes, I would like to say that I am a smallholder. I have lived in the village all my life, and when I came out of the army I thought I would be left in peace, to get a livelihood. I have lived here for 42 years. I like this part of the country, and I do not think it should be destroyed, not for the

* See also p. 1426.
† p. 1427.

Printed image digitised by the University of Southampton Library Digitisation Unit

sake of this airport. I think there should be other places where you could put it. If I can say so, if they are planning and starting to build a town, and build schools they will be useless if this airport comes here.

Inspector Anything else, Mr. Greenacre?

Mr. *Greenacre* No, sir, I think that sums it up. I do not want it.

Inspector Any questions to Mr. Greenacre? Thank you, Mr. Greenacre.

Are there any other persons that I have overlooked during the course of the morning? Well, what I propose to do now is to adjourn for ten minutes, because I seem to have run through my programme for today. I should imagine we will have to adjourn at the end of those ten minutes because I want to hear the other parties who have been programmed for subsequent days when it is convenient to them, but I will make an announcement about the future of the Inquiry in about ten minutes time, after I have consulted my masters at the table down there. We now adjourn for ten minutes.

(*A short adjournment*)

Inspector May I now formally adjourn the Inquiry until ten o'clock tomorrow morning, because we have run out of programme for today. Tomorrow we will deal with the programme as planned, and also on Thursday, because although we almost certainly have not got a full day on each day it is the most convenient for those persons who have made arrangements to appear either tomorrow, Wednesday, or the next day, Thursday. Therefore, we adjourn now, and arrangements for tomorrow and Thursday will be as per programme, except possibly Mr. Lymbery, Q.C., representing certain of the District Councils, will be appearing first thing at ten o'clock on Thursday morning. Are there any questions concerning the programme before I formally adjourn the Inquiry?

In that case we adjourn now until ten o'clock tomorrow morning.

(*Adjourned until tomorrow morning at ten o'clock*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

WEDNESDAY 23 JULY 1969

THE ASSEMBLY HALL, AYLESBURY, BUCKS

Before MR. A. J. HUNT

Oral evidence was taken from:

Dunton Parish Meeting
(*Rev. Sillitoe*)

Miss P. K. Wolf

Mr. G. Davis

Mr. L. S. Michaelis

Hardwick Parish Council
(*Mrs. G. Wood*)

Mrs. C. W. Coleman

Mr. P. Fehr

Oving Parish Council
(*Mr. P. Young*)

Mr. S. R. K. Ball

Mrs. F. J. Barff

Mr. A. Morrison

Stewkley Parish Council
(*Mrs. A. E. Beasley*)

Mrs. D. Bates

Mrs. F. W. Grace

Mr. Y. F. Bratton

Mr. J. B. Brown

Mr. F. R. Cole

Mr. A. B. Cozens

Mr. F. C. Coles

Mr. A. B. Faulkner

Mr. J. D. Faulkner

Mrs. G. M. Grace

Mr. M. A. Hardings

Mr. J. W. Mead

Mr. P. J. Preston

Mr. P. E. Wheeler

Mr. B. Head

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Good morning, ladies and gentlemen. The programme for today is substantially as previously arranged except that I have four individuals who either missed their turn yesterday due to our rather early finish or who wish to appear early in the day, so unless there are objections from the Hardwick, Oving and Stewkley Parish Councils and their supporters may I take these four first. Are there any objections to taking these four first? In that case I will call the Rev. Sillitoe in connection with the objection by the Dunton Parish Meeting.*

REV. SILLITOE* *called*
Dunton Parish Meeting

Mr. *Sillitoe* Sir, I would first of all like to express on behalf of Dunton and Hoggeston and our Parochial Church Council in Parish Meeting our very deep appreciation and of course concurrence with those who have already addressed this inquiry in opposition to the proposal to site an airport in our area, who have spoken with such cogency, eloquence and learning and speak from so many and varied standpoints from which this proposal may be validly opposed. They have come from many and distinguished walks of life and we in Dunton and in Hoggeston and of course in Buckinghamshire as a whole are deeply grateful to them for the incontrovertible evidence that they have given.

As Rector of Hoggeston and Dunton and the lawful husband of the owner/occupier of Hurdlesgrove Farm I wish to amplify what I wrote in my letter of the 20th June, for this proposed airport vitally affects me in my historic office as Rector of Hoggeston and Dunton and also vitally affects me in a very personal capacity at Hurdlesgrove Farm, as much as anybody who has appeared at this inquiry.

First as to Hoggeston. It possesses an ancient church, considerably restored in 1882 but with parts which date back to the 12th century—800 years ago. It has a number of ancient remains—at the end of the south aisle a piscina dating from the 14th century. At the eastern end of the south aisle the 15th century stone stairs by which the Rood loft, up the chancel entrance, was reached and from which the Gospel at Mass was sung remain. There is the recumbent figure, against the north wall of the sanctuary, said to be that of William de Bermingham who died in the 13th century. Hoggeston Church is a building of architectural and historic interest and as such is a national asset, but above all it is a House of God—God's house in Hoggeston.

Now from the map† it seems obvious that Hoggeston Church would be gravely affected, putting it in its mildest terms, if not rendered utterly unusable. There are the motorway and new roads—these will between them devastate the village apart from questions of airplane noise and fall-out.

Dunton Church. The church is in the main unrestored. The nave was built in 1140. It is of course a small and simple building but even so is replete with items of architectural interest. The piscina on the south wall of the sanctuary is 13th century. There is a 12th century blocked up doorway on the north side of the nave with most interesting carvings, the chancel arch is 15th century. Outside on the south wall of the chancel there is a "scratch" or "Mass" dial. I have not cited all the architectural items of interest in either Hoggeston or Dunton, but Dunton is like Hoggeston of great architectural interest, but most important it is a House of God—it is God's house in Dunton.

The map plainly shows that the airport would involve the demolition of Dunton Church, the destruction of the Churchyard and the demolition of the Rectory and the houses of the village.

Hurdlesgrove Farm The farm comprises some 438 acres—it is a dairy farm: Friesian cattle, brucellosis tested and accredited. The herd is pure imported Friesian. Last year the milk yield was 96,000 gallons, and by 1971 we expect the yield to be 160,000 gallons. The total stock today is 285 head, but by the end of 1971 we expect it to be about 500. Our land is able to carry more than one cow per acre, which is good by any standard. By 1971 we have good hope to be able to export between 50 and 60 heifers each year. We are able to grow, when necessary, two tons of wheat per acre. The land is *not* poor land—in fact farmers know that today, today land is what you make of it by expert farming methods. Some £100,000 is invested in plant, machinery and livestock.

However, apart from questions of noise and fall-out, both most serious realities, whatever the theorists may say—the motorway as shown on the map would obliterate the farm, which is in its way, I submit, a national asset. Of course, I am aware that that map you see in front of you is not exact in those red spots and size. I am fully aware of that, and more than that—and I, of course, hope this is completely true, and what I am trusting to God is true, that that map is only putative, and God grant it will never become more than putative—that is what we are here for. I submit Hurdlesgrove Farm is in its way a national Asset.

I have spoken in general in what may be termed material terms of the loss and hardship the Airport would impose upon us. I now desire to register my opposition to the proposed airport as the Rector of Hoggeston & Dunton, in my office as a priest of the Church of God, for all this matter of discussion is for me no mere material or architectural matter, or

* See also p. 1431.
† See also p. 1037.

Printed image digitised by the University of Southampton Library Digitisation Unit

historical matter, but it is essentially a matter involving spiritual and moral issues; and human rights, human lives have a spiritual connotation—at least they have among those who claim in any sense to be Christians. Put bluntly, to destroy a Church—a building dedicated, given to God—God's house, *His* house, is sacrilege, and let those who contemplate this act remember it is written that who so defiles the Temple of God him will God destroy. Then our Churchyards, the resting places of the bodies of our beloved dead—only ten days ago I committed to the earth in Dunton Churchyard the body of a faithful friend and Churchman. Is his grave, and the graves of many another to be desecrated to provide an airport? I say a vehement and determined "NO!" which I know will be re-echoed. But what of human rights? Have the villagers no rights to their homes? Who can measure the amount of human misery that is entailed by people whose homes are "requisitioned" —a term coined in Hell to justify a devilish act. I may be mocked for being emotional—a common charge when faced with naked and embarrassing truth—but, of course, there is emotion, for we are men and women; without emotion we become robots, which is the evident ambition of some to make us. God *is—is*. He lives and reigns, and he will have the last word—overriding all human courts of justice in the day of Judgment which, as the Son of God warned: "With the same measure that ye mete to others it will be measured to you again". This is a spiritual issue, but it devolves on men in human terms to vindicate it. Let it be put on record that this proposal will be met and contested to the end with utter determination, not merely with words.

I do not know the actual authors of this wicked proposal because to me, and to many others, it is a wicked proposal, who no doubt sit comfortably immune themselves from its consequences, but even so, let them realise that they will become known and execrated. As one thinks of them one remembers some words of Livy in which he summed up the character of a man who essayed to destroy Rome and so civilisation—as they propose to destroy ours—he wrote of Hannibal—"inhumana crudelitas, nihil sancti, nullis deam metus milla religio"—pitiless cruelty, no moral sense, no fear of God, no religious scruples. I attach that to the proposers of this business. Also, I remember—hopefully I admit—that the late Lord Hewart, the Lord Chief Justice of England wrote in his book *The New Despotism*, that there would surely come a time when there would not be enough lamp-posts in Whitehall on which the people would hang the bureaucrats. Today, the trampling under-foot of the human rights has become so frequent that Bureaucracy takes it for granted that it can do it. But, at this moment there is the beginnings of re-action in a very modest Bill before the Lower House of Parliament on the matter of human rights. I occupy, I am fully aware, only a humble position as the Rector, duly instituted and inducted, of the Parish, but as such I have rights sunk deep in English History, which this proposal would violate. I shall fight for those rights, if it be necessary.

Commonly it is only the small and defenceless groups of people whose human rights are trampled upon, but here and now a county is threatened. I am confident that Buckingham as a whole will rise in resistance to this monstrous proposal. There will, of course, be traitors and hirelings—there always are. But we shall have support from Bedfordshire, Hertfordshire, Oxfordshire, Berkshire and Northampton. This will be no storm in a tea cup, but a violent hurricane, inspired by the spirit of God which will possess the souls of men.

We pray that by God's mercy and providence the necessity for this will not arise, because this monstrous proposal will have been abandoned. But, if this proposal does take shape, I shall take my part—whatever it involves—in resisting it. We shall, if necessary, fight—fight to the bitter end—for our homes, the graves of our dead, and our Houses of God. (*Applause*)

Inspector I am sure there are no questions. Thank you, Reverend Sillitoe.

Inspector I am sure there are no questions to the Reverend Sillitoe? Miss P. K. Wolf, of Hanstead Stud?

Miss P. K. Wolf *called*
(*Hanstead Stud, Weedon Hill*)

Miss *Wolf* May I say how grateful I am for this opportunity to speak on behalf of myself as a stud owner in the Parish of Weedon. I must emphasise that these are my own opinions, and are not conflicting with those given by the C.L.A. on behalf of the studowners in the area of the proposed airport.

First: Why are thoroughbred studs important? It is generally believed that studs consist of rich owners dabbling in a rich man's hobby of breeding a luxury commodity—the race horse. Though this may be true in some cases, nevertheless all stud-breeders, whatever their financial or social status, contribute considerably toward the economy of this country. It would be pleasant to have time to explain this in more detail, but without that time I shall try and confine myself to the essentials. A large majority of stud owners are farmers. Farmers farm because it is a way of life they enjoy and hope will give them a decent living. Farming is also fully recognised as being an essential and vital contribution to the economy of this country. Studowners breed racehorses because they too enjoy this way of life, and they too contribute enormously to the economy of this country. The racehorse produces £35,000,000 annually in betting tax, and also is in the "top five" of our exports. Not only is it a high dollar earner,

Printed image digitised by the University of Southampton Library Digitisation Unit

but Japan is one of our biggest buyers, and we sell to Canada, Australia, New Zealand, South Africa, India, Pakistan, the West Indies, the Middle East, all countries in Europe including the Communist Bloc and Russia. You can see, therefore, that there is a vast demand to satisfy this supply as well as our own racing industry. Of such importance is the British Racehorse that the Government has set up the Horse Race Betting Levy Board under the Chairmanship of Lord Wigg to improve the amenities of the racecourses and racehorses for the benefit of this country in all racing activities. And if there were no studs, there would be no racehorses. If the exports did not justify the value of the thoroughbred there would be no Government backing.

Second: the importance of the land on the racehorse. I came to this area in the parish of Weedon in December, 1958, bringing with me a few mares and a herd of cattle. Previously, I was in Hertfordshire on land quite unsuitable for stock-rearing. Our cattle sold well but nothing exceptional, and some of our yearling racehorses sold well on their breeding, but anything middle-class fetched far too little. The land was gravel with a high mineral content. This bred horses, light of bone with persistent bony enlargements known as splints, which if not successfully treated can permanently lame. No amount of manufactured vitamins made any difference to the size or consistency of the bone. Considering the highly bred stallions chosen for the mares the race record of their offspring was not as good as it should have been. The rich owner put this down to having no luck. It is quite remarkable, therefore, that those very same mares when brought from Hertfordshire to this area of Buckinghamshire produced stock with excellent bone and high racing performances. For instance, of three mares visiting stallions in 1959 and carrying to those stallions for eleven months on this land in the Vale of Aylesbury, one produced the winner of the 2,000 Guineas to what was thought a moderate stallion. Also in the same way I produced cattle to win the Champion and Reserve Champion at Tring and the Reserve Champion at Aylesbury Christmas Fatstock Shows, and ever since I have consistently topped the market with my beef sale prices. Added to this I use no minerals or vitamins in my horse or cattle feeds, except the latter have high magnesium salts to prevent milk fever or grass disease. In advertising my Farm and Stud I liken this land to Ireland and call my place "Little Ireland". The Vale of Aylesbury used to be noted for the wonderful hunters it produced, and in Queen Elizabeth the First's days the Royal beef herds were sent here to fatten off; and in this modern day and age land does not deteriorate. Indeed, the numerous studs nestled in and around the Vale have produced more than their quota of Classic winners. Newmarket is valued as the home of the racehorse because the land is on chalk. Here in the Chilterns we all know about the chalk, and my farm which is on clay has been found to have large seams of chalk.

Third and last: if the airport comes. I cannot say, should the airport come here, how seriously this would affect me financially; it could be disastrous or rewarding, but finance is not enough. To succeed. I have proved both to myself in my early days here. and now to you, that land is of paramount importance to my business, and I would ask you if you have any idea how all the studs, likely to be affected by this airport, can each find a farm of the size, and with the ideal conditions necessary, for their breeding industry? For this is the Vale of Aylesbury, and there is no finer stock rearing land in the country.

It is not yet known how low flying heavy aircraft will affect the thoroughbreds, but it is known that they are nervous and highly strung, and when frightened do themselves serious and even fatal damage. Every time the big Army helicopters come over my place, the mares scamper about so I know that anything heavier and noisier will really frighten them and I could not afford to stay and experiment. The mares in foal would almost certainly abort and no insurance would cover me on this. Anyway, I would not want such disasters to happen and would have to give up my Hanstead Stud in consequence.

Although there is much more to add, I hope that what has been said clarifies the importance of my business to myself and to thousands of others, and my colleagues, and that we should remain in the Vale of Aylesbury and its boundaries in peace.

Inspector I take it there are no questions to Miss Wolf? Thank you. Mr. Davis, of Whitchurch—do you wish to speak?

MR. G. DAVIS* *called*

Mr. *Davis* Please, sir. I am Guy Davis of Tylers, Bushmead Road, Whitchurch. I have submitted written evidence to the Commission and there are one or two aspects of it which I should like to emphasise briefly.

I and my family oppose the siting of the Third London Airport at Cublington with unswerving resolution. We are doing this because we believe that it would be a catastrophe for us and thousands like us.

We live in Bushmead Road, a lane connecting Whitchurch with Cublington—a beautiful country lane winding down a lovely stretch of undulating pastoral Buckinghamshire into the valley of the Whitchurch brook and up the hill beyond into Cublington.

Winter, spring, summer and autumn we walk it; in every season it has a charm and splendour of its own.

*See also p. 1432.

Printed image digitised by the University of Southampton Library Digitisation Unit

Our house, on the south side of this road, has a commanding view of the Vale of Aylesbury—we have identified 21 parish churches from the house, from Dunton and Stewkley in the North East, Wingrave and Ivinghoe in the South East, beyond Aylesbury to Kimble, Princes Risborough and Bledlow Ridge and as far away as Tetsworth in the South West round to Waddesdon and Pitchcott in the West.

We have lived here for 16 years, in the house we planned ourselves, on the site we selected out of many. This is our home, our children have been brought up here, our friends are here, and we are all active members of a thriving village community, in one of the best of Buckinghamshire's splendid villages.

If the airport comes to Cublington, it will put an end to all this. We could not live about two miles from the end of the runways. We should be refugees without compensation.

Inspector Thank you. Any questions to Mr. Davis? Thank you very much, Mr. Davis. Dr. Michaelis, of Soulbury?—do you wish to add to your letter to us?

Dr. *Michaelis* Thank you—if I may.

Inspector Certainly.

DR. L. S. MICHAELIS* *called*

Dr. *Michaelis* I would like to start with an observation which I think is permissible. After I sent in my letter, it occurred to me to enquire, how did Cublington Airport first come to be considered a possible site; and I have the strong suspicion that this idea arose because of a misconception for which, as an accident surgeon, I feel up to a point competent to speak. I believe that one of the main arguments for siting the airport at Cublington is the neighbourhood to the M.1, and somebody seems to have had the idea that this is an advantage, giving potential passengers a chance to go to London as well as to Birmingham, in a comparatively short time. I believe that this is one of those cases which we know so well, where a gadget is designed to do two things and turns out to be unable to do either of them well.

The M.1 is already one of the best known graveyards of this country. I don't know whether you realise what the traffic which the airport would bring would mean in terms of additional lanes to make it possible for about 500 people every two minutes to travel either to London or to Birmingham, and in the case of London or Birmingham, assuming that they get there alive, how are they going to get into either town because at the moment already with six or eight lanes there is a bottleneck at either end before you enter the town. There is no question that it would take the comparable traveller from New York about as long to get into the City of London from Cublington as it took him to get from New York to Cublington. This is nonsense and I am quite certain that the travelling public will not stand for it for long.

Inspector It is also not to do with local implications. The Commission will be issuing a detailed forecast of where the traffic to and from this airport will be, how it will be catered for, where it will go, and this will be published during Stage III and can then be criticised in detail.

Dr. *Michaelis* I will confine myself then to the second aspect and that is my patients in Stoke Mandeville Hospital. I think you will agree with me that there is no kind of patient who would suffer more from the noise both from the skies and from the roads, in addition the traffic to and from the airport would seriously interfere with the helicopter traffic which we over the last 15 years have carefully built up to bring these new severe accident cases. I know it is only one point among many but so is everything we say. I would like to have this point considered among others. Thank you.

Inspector Any questions of the doctor? Now may I move on to the Hardwick Parish Council.

MRS. G. WOOD* *called*
(*Hardwick Parish Council*)

Mrs. *Wood* My name is Georgina Wood. I am Vice-Chairman of the Hardwick Parish Council. I do not intend to read this statement submitted by the Parish Council as so many of the points mentioned have already been made to the Commission and I am sure that they have been noted. But Hardwick is one of the parishes that will suffer most severely from the building of a large airport on the Cublington site as it lies in the southwest corner of the site just outside the area. The Parish Council, however, are most anxious that their objections to this airport are made clear; they feel that the village as such, the parish as such, will suffer very severely from this and they do want to register their objections.

Inspector Mrs. Wood, your statement makes very clear all the facilities and attractions of your village. We do know that it is right under the proposed fly-out. Thank you very much for coming along and stressing that objection.

* See also p. 1433.

* See also p. 1434.

Printed image digitised by the University of Southampton Library Digitisation Unit

It is one of the rules at this hearing that the evidence should be taken as read. I wonder if the applause can also be taken as read. Thank you.

MRS. L. W. COLEMAN* *called*

Mrs. *Coleman* I am Mrs. Coleman from Robin Hill, Hardwick, and I would like to thank the Commission for giving me the opportunity of putting my personal points of view which I will do in two stages, first of all general.

I am against inland airports of this size no matter where they be. The centre of this island is already very congested, congested both in the air and on the ground. I think it is completely irresponsible to consider adding to that congestion by putting another airport inland when we have a coastline all round us.

Inspector Mrs. Coleman, again we are touching on this delicate question. If you could substitute "Cublington" for "inland" site I think your evidence is wholly admissible.

Mrs. *Coleman* We will carry on with Cublington as being the centre. My personal point of view to begin with is that I am very allergic to noise, petrol and diesel fumes of any description. We have always lived in a rural area and we hope to retire to one. That is why we moved from South Bucks which was becoming congested to Hardwick for peace and quiet. We have to be near to London for business reasons. This area is one of the very few truly rural areas left. Is it that the heritage of a future generation is going to be removed by this irresponsible planning of putting an airport in what is one of the few truly British rural areas? Thank you, Mr. Chairman.

Inspector Thank you, Mrs. Coleman.

Mr. *Coleman* Well, I will be very brief, Mr. Chairman. 30 years ago in company with very many others we went to fight against the threat to our countryside and our individual way of life. My wife and I and our family before us have always enjoyed the natural pleasures and the community responsibilities—I stress "responsibilities" because I think life in the country is a responsibility—and it was because of this that we moved to Hardwick We are not farmers, incidentally, we are newcomers to Hardwick, but we like living in the countryside and I submit, Mr. Chairman, that there is nothing wrong in liking living in the countryside.

My wife has covered I think most of the points and you have our written letter of the 26th June and I would merely ask the Commission to ask themselves whether progress is not getting out of hand. This man to the moon and everything else, this is absolutely wonderful, but I think this is just another step to reducing mankind to computerised ants and I think that this sort of thing is just as important a battle as trying 30 years ago to stop Hitler doing it.

* See also p. 1436.

MR. P. FEHR* *called*

Mr. *Fehr* My name is Fehr and I am living at Lower Road, Hardwick. I want to thank the Commission that I have the chance to appear and that I am able to explain my problems. I have already written and I want only to add to my submissions that coming five years ago from Germany to this areas as a foreigner my intention in the beginning was only to stay for a fairly short visit in this country as I am employed by an English/German firm. In a short time I took a great liking for this country and I decided to settle down in Hardwick. So my wife and myself like the area very much and we invested everything in our property. Within a short time since the airport siting was chosen or possibly to be chosen near Hardwick our whole future is in danger insofar as that all our efforts, all our savings, are largely in danger and we might not be able to exist for longer time as such. So in this case I only wanted to point out really that this is a very grave matter and I want strongly to oppose the siting of the airport.

Inspector You have made your objection very clear. Thank you very much. According to my list I move on now to Oving Parish Council.

MR. P. YOUNG† *called*
(*Oving Parish Council*)

Mr. *Young* Ladies and gentlemen, I represent Oving Parish Council. Firstly, I would like to say this: it has been mentioned this morning that many of us perhaps in this audience are —

Inspector Can we just have your name for the record?

Mr. *Young* P. Young. Going back to the two world wars when we all had our backs to the wall and this airport suggested for Bucks is no different to me and I am fully prepared to sit here this morning and say that I will never give in whilst such a thing is thrust upon us.

I think you will agree that we have one of the best villages in Bucks that there is anywhere. I have had the opportunity to come through and travel through and show people Bucks—Americans, Germans, Canadians and many men from all over the world, and what do they say to me—what a splendid village

* See also p. 1437.
† See also p. 1438.

Printed image digitised by the University of Southampton Library Digitisation Unit

"I would love to retire here." The effect is the same as when we go to North Wales and we say what a beautiful country because it is strange to us. We see these surroundings every day and we do not pay very much attention, perhaps not as much as we should. We have the wild life of this area which we should perhaps see more often, but we are only just beginning to do this because it is just shown up. I can only speak of Oving as I know it having been living there for thirty years and also the small village of Pitchcott which is part of our parish.

I would like to say this. My largest concern I think where this airport is concerned are the elderly people of my village—men that have worked and toiled on the land for years and years and years at small wages to give us what we have here today. I think we must think of these people. Now if the airport comes to Cublington it will disrupt all these people in many ways. Firstly, they will be frightened by the noise, as all of us will. Secondly, they may lose their houses and they may be sent to other parts of the country and they lose touch with one another. This is serious in elderly people, very very serious in elderly people.

I would like to say here this morning of the village of Oving that one family arriving at a village can make a whole lot of difference. I would like you this morning to put down on your notepaper the name of Barff, a family recently arriving in our village. This family has made a great deal of difference to our village. They are of a religious nature, they are top line musicians, top line singers, and they also entertain people, to educate them in the way of life. They look after I could say the spastic side of our life, people who look after Mongol children—I know this because I have seen that with my own sight—and they are concerned with everyone in our village. If the airport were to arrive and send a family like this one I am talking about into another area we would suffer greatly. Never forget this name, it will come to you one of these days, make sure. This is one thing.

Now going on to the farming side. I wouldn't know anything about this but there again the people of Oving have taken over their farms from their forebears and they have brought them up to the present day and they are happy living here and they do not want to be moved away because of this airport arriving.

Perhaps some of the congregation were at Whitchurch Church on Sunday when we had our flower festival—three large gardens open to the public, and when you looked into Whitchurch Church on the Sunday evening it was absolutely magnificent, the layout of the flowers and such which I am sure you could not have here if the airport arrived because I cannot see that these flowers could grow under the fall-out of kerosene and the like.

That is all I have to say. Probably I have not put it over to you very well, but I would say this: take the advice as we did from Winston Churchill during the war—"We will never surrender." I think this is the thing. We must carry on to the ultimate end. We will treat this thing as we treated Adolf Hitler.

Inspector This is a submission to the Commission, not to the audience.

Mr. *Young* Thank you, sir.

Inspector Your point I think is very well taken by the audience.

Mr. S. R. K. Ball* *called*

Mr. *Ball* My name is Stanley Ball, I live at "The Gables", Whitchurch Lane, Oving. There is really little more I can add to the letter I sent to the Commission but I would like to say that I have lived in this area for 35 years in which I brought a family up and my boy lives in Whitchurch. I am getting on now in age. I have managed to buy this property and I hope to remain here in my retirement, but I am afraid if London airport comes to Cublington I don't know really if it is possible for me to live there, and on the other hand I cannot see that I could sell my property to even buy property and where else I could live. Therefore I really do oppose the airport coming to Cublington.

Mrs. F. J. Barff† *called*

Mrs. *Barff* My name is Barff and although my family and I support all those who oppose the proposed airport my appearance here is personal on our own behalf just to amplify all that I wrote about our family's protest.

We bought the Old Rectory at Oving three years ago. We bought it having moved from Bristol to be within easy reach of London in a completely rural and perfectly quiet area in a house big enough not only for our family needs but for the many visitors and friends in this country of many walks of life and nationals of other countries overseas to be able to come and stay with us and have a quiet holiday. Lest this be thought trivial reason, we looked up in our visitors book and for the year 1968 there are 90 names and for this year so far 50.

One of my daughters is training to teach mentally handicapped children and these are sometimes included amongst our visitors and an airport would completely do away with all the value of the reasons for inviting these Africans chiefly from other countries and these particular sort of handicapped children to our home.

---

* See also p. 1439. † See also p. 1440.

Printed image digitised by the University of Southampton Library Digitisation Unit

Our family now have grown up in this home and I just have no idea what we would do if the character of the area were changed by this airport, and so I protest against it with everything I can.

Inspector Thank you, Mrs. Barff. Any questions? Mr. J. H. Goodman?

MR. A. MORRISON* *called*

Mr. *Morrison* I thank you for the opportunity to register my objections. My name is Alistair Morrison and I am appearing for both my wife and myself and my family. We live in the village of Oving. For four years I lived in the USA in the Chicago area and have personal experience of the arrival of an international airport near to this city. As a result the firm I worked for had to move its offices out of the area. It is this experience that convinces me that the village life in Oving would cease completely if this airport was built and the residents of the village would have to be moved. This to my mind I believe is a tragedy. The Oving Whitchurch Ridge has long been classified as an area of great landscape value, and though I have not been in this village very long I see in my deeds going back for 40 years that they make reference of this as regards development permitted, and throughout my deeds, on the official search forms, I see that the word "conservation"—"great natural beauty"—come up again and again.

No one can say how we will travel by air in twenty years time. The rate of technological change is accelerating the whole time and it might well be on the cards that in twenty years time our current international airports may be completely obsolete. However, no one would be able to restore this countryside, no one would be able to reclaim the settled communities that we have at present, and in my personal opinion they are much too valuable to destroy. With the arrival of the new city of Milton Keynes the settled structure in the countryside around this great city is what is needed. If you bring an airport in, in addition to a new city, I think it will place the whole of North Bucks in turmoil.

One last word for people who are not here today, these are the retired people who have invested most of their capital in small cottages in the village. I think of all the community they are perhaps the most worried and being older they worry the most, and these people are completely despondent about the future. If they move I believe you would destroy their lives.

Inspector Thank you, Mr. Morrison. The last on my list is Mr. P. R. Young of Longview. Is that the gentleman who has already appeared?

Mr. *Young* Yes, sir.

* See also p. 1441.

MRS. A. E. BEASLEY **called*
(*Stewkley Parish Council*)

Mrs. *Beasley* Sir, my name is Alice Emeline Beasley and I am Chairman of the Stewkley Parish Council. I do wish to thank the Commission for being allowed to speak and to appear especially to confirm the statements sent in by the Stewkley Parish Council and I would with your permission like to add a little more.

There was in that statement an omission of an Egg Packing Station employing male and female workers, and I am also representing at least 80 people who have written to the Commission—they are unable to attend; most of them are elderly people, and I am quite sure that every consideration will be given to their letters.

Inspector We are under no illusion whatsoever about the feelings of the people of Stewkley.

Mrs. *Bearsley* I am sure you are not, sir. (*applause*)

May I particularly request, sir, that special consideration be given to the community aspect—to part families and neighbours, which would inevitably ensue should an airport come to Wing would cause suffering which cannot here be described. Already the elderly inhabitants are worrying—"What will happen to us, and where shall we go?" they say. This question has been put to me quite a number of times, and I have seen tears in the questioners' eyes.

It seems inconceivable in this day and age that people representing a village the size of Stewkley, taking into consideration Cublington and Dunton, that they should be uprooted irrespective of age or circumstances and, as far as we know, leave to find another corner in which to live possibly in an already overcrowded area. That in itself would be intolerable to country people, and not everyone would care to go just where they are sent. As a Parish Council we are mainly concerned with people.

Inspector Thank you—Any questions to Mrs. Beasley? You say in your statement that your words are inadequate to explain what it will mean to the folk of Stewkley—I do appreciate this.

Mrs. *Bearsley* Thank you, sir. (*applause*)

Inspector Turning to the individuals supporting Stewkley Parish Council. Mrs. D. Bates, 5057.

MRS. D. BATES† *called*

Mrs. *Bates* Mrs. D. Bates, Stewkley, representing the Darby and Joan Club, which is affiliated with the

* See also p. 1442.
† See also p. 1444.

Printed image digitised by the University of Southampton Library Digitisation Unit

Old People's Welfare, Aylesbury. I thank the Commission for allowing me to speak, and I do not wish to read the letter that I have sent to the Commission in June.

Our Chairman has said all, I think, that it is possible to say. She is the Secretary of the Darby and Joan Club—like myself, she is there each week.

We have in Stewkley 215 inhabitants over 60 years of age. When you are young you can cope with a lot of things. We have four people over 90, and it just seems too incredibly horrible to contemplate. Thank you very much. (*applause*)

MRS. F. W. GRACE* *called*

Mrs. *Grace* Sir, my name is Margory Grace, and I am Enrolling Member of the Stewkley Branch of the Mothers' Union. I have submitted my evidence to the Commission, but I should be grateful if I might add one point to this evidence which has arisen since this statement was submitted. Thank you for allowing me to speak. The Presiding Members of the Rural Deanery of Bletchley and Wing and of Claydon, wish me to link their protests with my original letter. These deaneries comprise 30 villages which although they may not be totally destroyed, as Stewkley will be, if the airport is sited here, at Cublington, will come within the excessive noise contours and will suffer fall-out and possible urbanisation. I have the lists of these villages and these deaneries here, but I do not propose to read them, unless you so wish it, sir.

Inspector I do not think there is any need to read them, if you hand them to us we will have a note of them. Thank you.

Cross-examined by Mr. Cornwall

5018 Mrs. Grace, from your knowledge of people living in Stewkley, would you say the spirit of defiance is still growing?

Inspector I do not think you ought to ask questions like that. It is not a responsible act.

Mr. *Cornwall* It may be the truth.

(*Cries of:* "It is our livelihoods". "And the Answer is 'Yes'.")

Inspector May I just please intervene. I have listened very carefully, and I fully appreciate the feelings of the people concerned. On the other hand, will you please understand the Commission has been appointed by the Government to do a task. It is doing no more than that. It is doing it precisely in the way which the Government laid down.

(*Cries of:* "What a Government!")

Inspector I would ask that the people who make irresponsible statements should direct them in the right direction.

Mrs. *Grace* Do I answer that question?

Inspector If you wish.

Mrs. *Grace* In answer to that question, I must state that I actually myself have signed a paper where I say that I will not ever move. (*applause*)

Inspector Mr. K. A. Sibley, Stewkley Recreation Association? No. Miss Barnard* is withdrawn. Mr. Bonar*? Mr. I. A. Bonar?

MR. V. F. BRATTON† *called*

Mr. *Bratton* First, I thank the Commission for allowing me to appear, and as I have already forwarded a letter which you have seen, and as a lot of previous speakers have mentioned a lot of the points I intended to, I think I would just formally like to register my protest from the point of view that I feel the airport, if sited here at Cublington, will affect my freedom as an individual, and also will affect me financially.

Inspector Thank you. Any questions?

MR. J. B. BROWN‡ *called*

Mr. *Brown* Thank you, sir, for this opportunity to speak. I would say very briefly that my name is John Brown, and I am a Science Graduate and I teach locally. Rather than prolong proceedings I merely wish to state most categorically that I do not intend under any circumstances to be moved from my home and my village. Thank you, sir. (*applause*)

MR. F. R. COLE§ *called*

Mr. *Cole* My name is Cole, and I live at 137A High Street, North Stewkley. I represent myself and my wife, therefore, what I am about to say does not in any way cover technical aspects of this proposal, it is a purely personal thing, and I think the technical aspects can well be dealt with by the experts you have had before you.

* See also p. 1445.

* Available for inspection, by arrangement, at the offices of the Commission.

† p. 1446.

‡ p. 1447.

§ See also p. 1448.

Printed image digitised by the University of Southampton Library Digitisation Unit

The first thing, as far as we are concerned, is if it does come to Stewkley, our home will be demolished, and we shall have to seek an alternative home in the villages around. Obviously, if there are hundreds more in the same predicament, this will mean comparable homes will fetch prices which are very much higher than at the present time. I estimate that the loss of capital which has resulted since this proposal has been made, and with the inflation which will arise in the nearby villages as a result of scarcity, values of other homes—I can well be in terms of cash £1,500 out of pocket. But, of course, this is not money alone. As has been said before, money is not really important. Both my wife and I are very conscious of the fact that as newcomers to the village—we have only been here nine months or so—it is in a way a little precocious of us to stand up here and put objections when people who have lived in the village for very many years, their fathers and grandfathers before them lived in the village, would seem to have very much more serious grounds of objection. We chose Stewkley to live in because we like a rural atmosphere. We have always lived in a rural village, and my home County of Herefordshire is, I think, very similar in character to the area we are living in now. We are very happy here. I think Stewkley as a village has a community interest the equal of which I have not seen before. I do not know what the reason for this is, except perhaps there seems to be a great many Methodist Chapels in the village, and I think perhaps where we get a strong religious feeling in the village you do get this community spirit.

If in fact the very worst happens, and the airport does come to Cublington, then I certainly would leave the area altogether, and I am sure this will probably apply to a great many other people. The other thing is, of course, if very many people leave the area, for them to leave the area in fact is cutting off the very spirit of their existence, as far as their friends and families and homes are concerned.

That, sir, is all I wish to say. Thank you for hearing me.

Inspector Thank you for saying it.

Mr. A. J. Cozens* *called*

Mr. *Cozens* A. J. Cozens, High Street, North Stewkley. I should like to thank the Commission for the chance to add to what I have already written to them. In view of your previous remarks I will not make any further comments on my personal feelings, but I do identify myself very closely with the thoughts expressed by previous speakers. Speaking from a professional point of view I would like to stress one item which has not received sufficient publicity, to my mind —

* See also p. 1449.

Inspector What is your profession?

Mr. *Cozens* I am Deputy Head of a Secondary School in Bletchley, which at present is nearing the end of its life in some rather ramshackle buildings, and in a year's time is moving into a brand new £½ million building on the very edge of Milton Keynes, five miles approximately now from where we are in Stewkley, which would therefore put it very close indeed to the boundary of the proposed airport.

I have made it my business to speak to colleagues who taught in schools near the London Airport and, perhaps even more important, to children who have been to schools close to London Airport. I do not myself relish the prospect of teaching or playing a large part in organising the daily life of a school in this predicament. I do not relish the thought of having to stop at every two words I say in order to wait for aeroplanes to pass. This is going to make life very very difficult indeed, particularly bearing in mind the modern techniques, and the modern equipment which is used in teaching nowadays. This is very much a reversive step from that point of view. I certainly would not like any children of mine to be educated under those circumstances, and I am certain the same applies not only to village of Stewkley and other people affected, but I am sure it will apply to the Members of the Commission also.

Inspector Thank you, Mr. Cozens. I omitted, or passed by, Mr. F. C. Coles.

Mr. F. C. Coles* *called*

Mr. *Coles* Sir, I am a native of England and of this county, and of the village of Stewkley; and when I heard about the possibility of this airport, it was a rather terrifying prospect, when I realised the effect it was going to have on the village of Stewkley. I have many friends in Stewkley—I know most of them, and I would like to register a protest against the airport coming to this locality. The reason for this protest is that it will completely demolish Stewkley, and I feel it will ruin a large part of the county of Buckinghamshire, and also destroy the lives of many of the native people. There is one other thing I would like to say: I think a lot of anxiety could have been prevented had the natives of these villages been assured at the outset and given some intimation as to what their ultimate fate was likely to be.

Inspector Thank you, Mr. Coles. Mr. Martin Evans?† Mr. T. Farrington? Mr. Farrington has not submitted a statement, as far as I can gather, so apparently he is not here. Mr. A. B. Faulkner?

* See also p. 1450.

† Written evidence available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. A. B. FAULKNER* *called*

Mr. *Faulkner* Sir, I would like to emphasise from my letter to the Roskill Commission that I am one of the largest employers of labour in Stewkley. As an egg packing station, I would cease to exist, as no egg producer would be able to keep intensive poultry here, and virtually all my producers are situated within this area. I would not be able to buy another business elsewhere. On behalf of my family and my staff, I sincerely hope that we do not see three generations of hard work and sacrifice in the egg and farming industry just ended by a wrong decision in siting this airport at Cublington. Thank you.

Inspector Are there any questions? Thank you very much

MR. J. D. FAULKNER† *called*

Mr. *Faulkner* I am a farmer from Stewkley; I could give you some figures to show that our production per acre is as good as any in the country. But I want to speak about the community spirit of Stewkley: being Chairman of two committees and a member of several other committees, I am well able to speak with confidence. Our cricket club has records dating back to 1882, but it is quite possible it was formed even before that. One of the original rules was that each man should either have been born in Stewkley, or live in Stewkley; this rule is strictly kept today. As far as we know, we are the only local club for miles which keeps to this rule. It would be impossible, without a strong community spirit. The club is very proud of its playing record—two years ago we won three cups; this season we won one cup, and reached the semi-finals in another. The people of the village show a keen interest in all the activities of the club, which is proved by our scorer—she was born in Stewkley, but she still loves the village now that she lives in Luton, and every March she comes and scores for us. We also boast the largest number of spectators of any village in the area. Stewley Football Club have made plans for a new pavillion costing £4,600; we have Government approval for half, and we have most of the other half in the Bank. Stewkley has many activities for young and old, and anyone thinking to destroy a community of this size and spirit must be mad and it must not be allowed to happen.

Cross-examined by Mr. David Head

5019 I would like to ask a question about the pavillion. Has that been called off, or not?—will it be built, in view of this airport proposal?—Well, we are going to use our own money that we have in the Bank. We are going to use that to put it up, and we hope the Government will pay for it afterwards.

The grant which was previously given has been withdrawn? — Yes, it has been withdrawn.

MRS. E. M. GRACE* *called*

Mrs. *Grace* Mrs. Grace is my mother-in-law; she is aged 86. She has not in fact asked to appear, but I did write a letter for her. All the points about her that she wished to say, I am sure were covered by Mrs. Beasley.

Inspector Thank you, Mrs. Grace.

MR. M. A. HARDINGS† *called*

Mr. *Hardings* I am the Clerk of the Parish Council, and Treasurer of the Darby and Joan Club; and I thank you for allowing me to appear at this hearing. I have nothing to add to my personal written statement—I am sure the Commission will come to the correct decision with regard to the siting of the Third London Airport. But generally, locally, we all hope and pray it will not be Stewkley. Thank you very much.

Inspector Any questions to Mr. Hardings? Thank you very much. Mr. R. J. Longhurst?‡ Mr. J. W. Mead?

MR. J. W. MEAD§ *called*

Mr. *Mead* I am J. W. Mead; thank you very much for giving me leave to appear. I am also representing my father and mother and brother here today. We have lived and farmed in Stewkley for generations. My father volunteered for France in the 1914–18 War, and consequently lost his leg; both he and my mother depend on my running the small holding to supplement their pensions. I also have a small milk run round in the village, and have no training for other jobs. I have bought a cottage close to the farm, as my father is incapable of doing anything. My brother works for a local Builder in the village, and has also built his own house near to the farm, as we are a family unit.

I have two small children just started school, and my brother has two also.

* See also p. 1451.
†See also p. 1452.

* See also p. 1453.
† See also p. 1454.
‡ Written evidence available for inspection, by arrangement, at the offices of the Commission.
§ See also p. 1455.

Printed image digitised by the University of Southampton Library Digitisation Unit

My father fought for the right to live in peace and freedom: are his efforts and those of others in vain? If Hitler had come here, we may have been left in peace.

We managed by a united effort to buy our farm a few years ago, and if the airport comes it will destroy my mother and father completely, and affect my brother and myself for the rest of our lives.

We have all worked together to earn our living, and we would be at a loss to find another farm at the compensation we would get. Our relations and friends all live in the village, and we have no knowledge of living or working outside the village. We have no intention of moving, except by the use of force. Thank you.

Inspector Thank you, Mr. Mead. Mr. I. B. H. Murray?* Mr. R. J. Packard?*—he is not appearing. Mr. B. Perry?* Mr. A. W. Phillips is coming tomorrow. Mr. P. J. Preston?

Mr. P. J. Preston† *called*

Mr. *Preston* My name is Preston, and I live in Stewkley, of course. Sir, I have written you a long letter telling you how the proposal will affect myself and my family, and I hope that you have been able to read that and that you propose to attach some degree of weight to it. But I also wanted to take this opportunity to speak to you, and I wondered what more I could say to convince you just how deeply we feel about this, and how much we value our homes and our way of life. All that I can do, I think, is to ask you to believe me when I say that if, in the final event, you want us to move out of our homes, you will have to fight me in the road and on our doorstep. (*Applause and cheers*)

That may sound rather pathetic, even funny —

Inspector It does not sound at all funny, no.

Mr. *Preston* I was about to say that I have spoken to a lot of people in Stewkley, and most of them are not here today because this is not their way: but they also say that they are prepared to die rather than lose their homes. I know these people, and I know that they are in earnest, and I shall be proud to stand and fight beside them. If I were in your position, Sir, I would not take kindly to being threatened in this way, but I am trying to —

Inspector But you are not threatening me, Mr. Preston, or the Commission. The Commission has been charged by the Government of the day to do a job. The Commission's duty is to make a recommendation to the Government.

Mr. *Preston* Indeed, I understand that.

Inspector Thereafter it will be for the Government of the day to make whatever decision it thinks fit.

Mr. *Preston* I understand that, and I refer not to you personally, but to you as representing authority collectively.

Inspector I am not used to representing authority!

Mr. *Preston* I would just say then, again, Sir, that I hope you will believe that what I say is true.

Inspector Your words are recorded, Mr. Preston. (*applause and cheers*)

Mr. P. E. Wheeler* *called*

Mr. *Wheeler* I do not wish to add a lot to what I have written in my letter I sent you, but I was bred and born in Stewkley and I just would like to take up a point, and that is the one where tenant farmers have had land taken from them for Milton Keynes, and for this airport. I understand from Mr. Wallace of the National Farmers Union that the position is that every tenant farmer who was thrown out of his land would be one in 200 seeking another position. There are, I should say, at least 50 small tenant farmers round the parish of Stewkley, and all those are going to be thrown out of their homes, their farms. Where are they going? What are we going to do? Has the Government no consideration for such people? If so, why is this hearing being held at all? It has no business to be, and I hope that they will never bring this thing to Stewkley, and I do not think they should. Thank you.

Cross-examined by Mr. Cornwall

Are you aware that very recently in Berkshire when a tenant farm became available, 208 applications were made for it? and that the applicant who received the farm put in a tender of £15 per acre? — I don't know much about Bedfordshire, but I know what it is like round about this district now, and if this airport comes onto the top of Milton Keynes, I know what it will be like all over the country. Never mind about Bedfordshire or anywhere else— it will be just the same all over the country. We stand no chance of getting one anyway, if we are thrown out.

Inspector I have one more letter just received, from Mr. Head, of 284 High Street. Mr. Head?

Mr. D. B. Head† *called*

Mr. *Head* My name is David Head; I am a Chartered Engineer, and I live at 28A High Street

---

* Written evidence available for inspection, by arrangement, at the offices of the commission.

† p. 1456.

* p. 1457 † p. 1458

Printed image digitised by the University of Southampton Library Digitisation Unit

North, Stewkley. I would like to thank you for the opportunity of appearing this morning. I speak on behalf of myself, and my family—my wife and two sons. In my work, I am involved in the reduction of atmosphere pollution of exhaust from motor cars, and one of the things which surprised me is that, as far as I can see from the evidence given to you, no mention has been made of the exhaust gas emission we might get from motor vehicles.

Inspector On the contrary—it has been mentioned several times.

Mr. *Head* I apologise, then, for mentioning it again. But that does not really detract from what I have to say. In this country we are not required, at this moment, to limit the amount of exhaust gas pollution emitted from motor cars. At the moment I am working particularly on legislation introduced by the Federal authorities in the United States, including, of course, California, and Canada. The question of pollution has been taken up by most of the major European countries; however, the United Kingdom has not fallen into line with them, and I would like to submit that this is an indication of the lack of thought of the Government towards the health of the people who live not only in the cities, but in the country as well; and maybe this is some indication of the way in which the whole aspect of this decision is going to be made. If we are not going to worry about the health of the people regarding atmosphere pollution by motor cars, then I feel that this is some indication of the attitude of the Government. Having made this point, which particularly concerns me in my work, I would like to endorse the views expressed by Mr. Preston. I am fighting the proposal to put the third London Airport at Cublington-Wing. I am not fighting for adequate compensation: I am not fighting for compensation at all. I am fighting for a way of life, and be quite sure, we will fight for it. (*Applause*) Thank you.

Inspector To deal with the air pollution point: this has been raised on a number of occasions, both in written submissions and in evidence, and I had, before coming to this Inquiry, started inquiries into the question of this problem, not only in this country but abroad as well. As to your second point—I have, ofcourse, no comment. That, as far as I can gather, concludes the list of persons supporting Stewkley Parish Council. Are there any additional persons supporting Stewkley Parish Council? Are there any persons who were scheduled to appear in to day's programme, who have not been heard? If there are not, I would just comment on tomorrow's last and final day of this programme, when we are due to hear the Stoke Hammond, Weedon, Whitchurch, Wing, Pitchcott, and Woburn Sands Parish Councils; but before that, Mr. Lymbery, who represents a number of Rural and District Councils, will be making a closing speech. He was unable to make this speech during the last week, so tomorrow's programme will commence for about half an hour or so with Mr. Lymbery's closing speech, and then conclude with the Parish Councils and the supporting individuals, which I have mentioned.

In conclusion, concerning the Parish of Stewkley, I can only add that I have sat here for over a week. I have known Stewkley for nearly 30 years, on and off; I have heard the Stewkley Action Committee, the supporters and the Church Preservation Society, and now the Parish Council and the individuals, and I think it can be said that I am under no illusion as to the feelings of the people of Stewkley. Thank you very much. (*applause*)

Mrs. *Robertson* Can I say that when I came here twenty years ago, an old man said to me, when describing the villages here, "Stewkley—God help them!" (*laughter*)

Inspector I remember this! I shall adjourn the Inquiry until ten tomorrow morning, because I have run out of business.

(*Adjourned until* 10 *a.m. tomorrow*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

THURSDAY 24 JULY 1969

THE ASSEMBLY HALL, AYLESBURY, BUCKS

Before MR. A. J. HUNT

Oral evidence was taken from:

Dr. D. MacCarthy
Mr. P. G. Medcalf

Aylesbury, Bullingdon, Wing and Winslow Rural District Councils and Tring and Berkhampstead Urban District Councils
(*Mr. Lymbery*)

Dr. W. B. Armstrong

Stoke Hammond Parish Council
(*Mr. D. F. Kessler*)

Mr. W. J. Bates
Mr. P. J. Boyd
Mr. S. T. Dancer
Mr. J. H. Jeffries
Mr. D. A. Lambourne
Dr. J. R. Lumb
Mr. F. O. Gregg

Weedon Parish Meeting
(*Mr. R. Robertson*)

Mr. R. Chiddick
Mrs. J. Cornock
Mr. and Mrs. C. E. Fraser
Mr. H. Hague
Mr. M. H. J. Radcliffe
Mr. D. F. Rider Richardson
Mrs. D. G. M. Smart
Mr. K. Walker

Whitchurch Parish Council
(*Cllr. Todd*)

Mr. A. Ball
Mr. I. Beckett
Mr. C. Brown
Mr. L. Coates
Mrs. D. Foulger
Mr. R. E. Main
Mrs. J. Rider Richardson

Wing Parish Council
(*Mr. J. Bandy*)

Mr. F. R. Black
Mr. A. G. Harris
Miss D. Harris
Mr. R. Heley
Mr. E. F. Kidd
Mr. C. Morton
Mr. J. Pearse
Mr. N. V. Rogers
Mrs. K. Royal
Mrs. J. West
Mr. D. Barrington
Mr. S. W. Jennings
Mr. R. S. Meredith
Mr. A. P. Tomkins
Mrs. J. White
Mr. A. W. Phillips

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Good morning, ladies and gentlemen. The programme today is substantially as set out on the programme, with the exception that Mr. Lymbery, was to have appeared first to speak on behalf of six District Councils. I have had a number of requests from individuals to be heard in turn, which I am delighted to accede to, but of course they cannot all be heard at once. I understand that Mr. Lymbery is willing to give way to Dr. MacCarthy in the first place—is that correct?

Mr. *Lymbery* Yes.

Inspector Thank you. So may I first deal, then, with Dr. D. MacCarthy, of Lear House, Weedon.

Dr. D. MacCarthy* *called*

Dr. *MacCarthy* In my statement, I referred to the effects of noise as appreciated by the ordinary person as opposed to scientific observations about the harmful effect of noise. I felt that the Commission should look at this in a way that they can measure for themselves. When one is holding a conversation, or is listening—whether it is in normal talk or listening with a stethoscope—and one is blotted out for as long as 20 seconds, this requires an effort of self-control, not to give way to impatience and frustration. It is useless to express impatience and frustration. I know from personal experience that many interruptions of this kind by noise become cumulatively exhausting, and in the high noise zones that you see on the map† which affect my village and neighbouring villages, I should say it was obvious to the ordinary that this kind of stress will be damaging to health in the long run. Private individuals have redress against various nuisances in everyday life—against pollution, against litter, against noise—and these are respected; but because some people can put up with noise and work in extremely noisy conditions, it is somehow considered that anybody can tolerate these conditions. I am quite sure that the ordinary person appreciates the stress which this particular kind of intermittent, blotting-out, noise, produces. This is the main burden of my statement to the Committee.

Inspector Thank you very much, Doctor. Are there any questions? Thank you very much. Now, before I ask Mr. Lymbery to speak, are there any other what I might term urgent individuals who cannot wait for half an hour or so? until Mr. Lymbery has spoken?

Mr. *Medcalf* Sir, it would be a great help for me if I could be away before 11 or soon after.

Inspector Mr. Lymbery—any objections to one more?

Mr. *Lymbery* No, Sir. But may I say that I am in no difficulty, but those whom I represent —

Inspector I appreciate that. Mr. Medcalf?

Mr. Peter G. Medcalf* *called*

Mr. *Medcalf* Thank you very much indeed, Sir, for letting me speak a little earlier. I have very little to say in respect of what I have submitted, but I would like to make the points very quickly. My first point is that Whitchurch is a particularly well balanced and self-sufficient community, and therefore very well worth preserving in its present situation. I think that most houses—in fact, I am quite sure that most houses will be completely untenable if the airport comes on the envisaged site, and in the position that is outlined. I think they will be untenable for two reasons. Mainly because of the noise and pollution; but I think also that the communications which will apparently be required by the airport will cause disruption to the village as it now exists. It seems to me that people living in the village will, I think, have one alternative—and that is to move away. It does seem to me that in moving away they are bound to sustain considerable financial loss, for which I am afraid there is no compensation unless the houses are well within the perimeter of the airport; and while I do not wish to envisage the necessity for moving away—I would much rather that the airport did not come—if it has to come, it does seem to me that reasonable compensation should be offered all those people who have to sell their houses at a very much depreciated figure.

My final point is really concerned with the fact that I am an industrial manager in Aylesbury. I believe that in general the urbanisation of North Bucks which must result from this airport will completely alter the commercial environment of Aylesbury, and as far as the old-established industry is concerned, I am quite sure that it will make our recruitment problems a very great deal worse than they are now; and I am quite certain that in the needs of my own industry, which is printing, it will make the situation worse rather than better. That is all I would like to say, Sir.

Inspector Thank you, Mr. Medcalf. Are there any questions?

Mr. *Medcalf* Thank you, Sir.

Mr. Lymbery† *called*

Mr. *Lymbery* Sir, as you know, I appear for the six District Councils—the Aylesbury, Bullingdon,

* See also p. 1461.
† Reproduced at p. 1037.

* See also p. 1463.
† See also p. 1463.

Printed image digitised by the University of Southampton Library Digitisation Unit

Wing and Winslow Rural District Councils, and the Tring and Berkhamsted Urban District Councils. These districts are some of those whose populations and institutions are certain to be affected, and affected very seriously indeed, if the airport comes to Wing.

Sir, you have already had a proof of evidence* from a representative of each of these Councils dealing with the particular problems affecting their own district, and as far as possible, in accordance with the wishes of the Commission, we have avoided duplication. You have heard those witnesses on Monday of last week; what has occurred in the meantime I am afraid I am not very fully conversant with, so perhaps you would grant me some indulgence if I should inadvertently repeat what has been said.

May I say this—that in addition to the points which I have specifically made on behalf of the Councils, they do very substantially rely upon the points made by the County Council and WARA? Not unnaturally, these Councils feel that they have the responsibility of their own parishes, and are anxious that nothing should be left unsaid, and that no point should be allowed to go, as it were, by default. For these reasons, they wish to add their voice as the representatives of the people whom they represent.

Sir, it may or may not be that by the time that a Third Airport comes to be built somewhere, there has been some reorganisation in local government as a result of the Maud Report.† and that District Councils in their present form may or may not have ceased to exist. But whatever has then occurred, there is bound to be some council, some body, representing the people, some body involved in responsibility for housing, sewage, and other services, and some body involved in expenses of substantial magnitude.

One can call the areas of Local Government what one likes. One can change them into forms of a different nature. But, the essential thing is that although one changes the areas of Local Government, the people remain the same, and it is the people who matter.

There are, in fact, sir, five points upon which I would briefly like to touch at this stage:

(1) what one might call "obliteration" (and this refers to the airport site itself);

(2) the problem which affects a substantially wider area, the problem of nuisance by noise;

(3) the problem which affects a wider area still, that is to say nuisance by other factors which is bound to result from the influx of very large numbers of population into what is predominantly a rural area, and from the prospect of perhaps something in the region of one hundred million persons per annum, necessitating new roads and other services;

(4) the problem of planning; and,

(5) a special problem, and a problem of some magnitude, it is submitted, which is that concerning flooding and sewage disposal.

To deal with the first point, "obliteration". This is not the sort of obliteration which one has experience of in towns and villages in war time. Of course on the one hand it is not attended by the terrible consequences of loss of life and injury. But, on the other hand, those places have generally risen again, sometimes as greater and prouder communities than before. What one has here in this kind of obliteration is a form of oblivion—buildings and communities which will have gone for ever. Wing and Winslow districts are those which are concerned in this particular problem, because it is in those districts that the eleven square miles of airport site would be placed. So far as can be seen from the proposals, Cublington would vanish entirely as a community. Stewkley would vanish entirely as a community. Cublington would go with 75 houses, a 15th Century Church and other buildings, four of which are listed as of special architectural or historical interest, and scheduled for preservation. Stewkley would go with 373 houses, a Norman Church, a substantial number of other buildings and properties of special charm and beauty. Part of Dunton would be destroyed, 21 houses, and a part Norman Church and other buildings. A further 20 dwellings would go in the parishes of Wing, Aston Abbots and Soulbury. In all it would appear that 1600 people or more would have to leave their homes; a total of about 500 houses would be demolished, and these people would be deprived not only of their dwellings but of their places of worship and other institutions which many of them enjoy in their own communities. If one is thinking in terms of international finance, in countless millions of pounds, and if one is thinking in terms of tens of millions of people passing through each year, these inhabitants in terms of their numbers, their wealth, and their power, are, of course, small indeed, but what I think one should appreciate, and what I do ask the Commission to appreciate is this: that every community has its inhabitants, every community is also in trust for the future, and quite apart from the problem of resettlement—and this would be a serious problem indeed—there is the question of obliteration of entire communities which could never rise again as communities, and this, of course, is a catastrophe for those people who are directly concerned. I do ask the Commission to give the fullest possible weight to this particular factor.

Turning to the second point, the question of nuisance, by noise, it appears that within the 60 NNI contour there are a number of villages, and it is the Aylesbury District which is particularly affected by this factor, lying as it does, to the south-west of the

* See also pp. 1091–1103.
† Cmnd. 4040 (H.M.S.O.).

Printed image digitised by the University of Southampton Library Digitisation Unit

airport site. In the Aylesbury District one has the villages of Hardwick, and Weedon, and Whitchurch. You have heard this morning a gentleman from Whitchurch speaking as to the possible effect upon that village, and I would adopt what he said in relation to all three of those villages. Particularly, sir, you might care to note that the village of Weedon has recently been the subject of a special Planning Survey of the Buckinghamshire County Council who decided, in view of its charm and quietness, that its present form and character should be retained. Also within the 60 NNI contour there are some 98 houses in the Wing District, and also 82 in the Winslow District, and it would appear that these villages and homes would be uninhabitable by virtue of noise alone, let alone other forms of nuisance which would, of course, entirely change the character of these communities as well. Within the 50 NNI contour, which again is a high level of noise nuisance, one finds in Aylesbury District five further villages, those of Quainton, Westcott, Haddenham, Stone, Long Crendon, together with a number of hamlets; in Wing there are 305 dwellings within the 50 NNI contour and also some in Winslow. There are many who feel that at a figure over 35 NNI substantial annoyance is caused particularly at night time, but in day time also, and over the 35 NNI contour we find very large areas of Wing and Winslow Districts to the sides of the airport; also a great part of Aylesbury District, a substantial part of Bullingdon District in Oxfordshire, those, of course, lying to the south-west.

Homes and schools, and there is a large secondary modern school in Wing—500 pupils, a school for which there have been improvements planned, substantial extensions, which are being undertaken this year. There is a mental hospital at Stone, old people's homes, and other institutions, all of which are well within the 35 NNI contour, and some, of course, within the higher levels still. For many of these people the nuisance caused by noise alone, let alone other factors, would be a disaster, for although houses in the 35–55 bracket are perhaps not officially uninhabitable, many people living there would find it impossible to continue and would have to move and find the position insufferable. Of course, for them, leaving their homes, leaving their immediate district, monetary compensation would be little compensation indeed but, of course, it would seem that within that bracket no compensation at the moment is foreseen. This is a big problem affecting a very substantial number of people, people who not only own their own houses but, of course, there are the councils also involved. There are a substantial number of council owned properties and these may well find themselves in substantial difficulties in relation to these properties.

I will not go further into the question of noise because I know you have Mr. Fleming's report,* and many people must have spoken to you about it already in the last few days. Sir, I move on to the next point, which is the nuisance created by other factors, and in particular, by the influx of the large number of people, vehicles and equipment which would be involved in the construction of an airport if it came here owing to the construction of one or two new towns or in the expansion of existing towns to cope with the airport population, and, of course, a large influx of people concerned with the running of the airport itself if and when it comes. This problem primarily affects Winslow and Wing and Aylesbury Districts because of their proximity to the airport site. Also, to a lesser extent, it affects the districts of Bullingdon and also the district of Tring. At present one finds basically in the area a village community life, predominantly a country area in these villages, many people would be working in the villages or nearby. A substantial number, of course, do commute to towns nearby or even further afield, but they are balanced and cohesive wholes. With the advent of anything from 65,000 to 300,000 or 400,000 people in the vicinity, with the huge forces of construction and building labour injected into the area there would be a flood of additional population within ten or 15 miles of the airport site, draining the accommodation and services, making much more acute the competition for housing which, of course, exists at the present time, causing gross increases in traffic both in the towns and in the villages; also the local roads, both before and even after any additional motorways were to be constructed. These people who would come in would have little in common with the communities in which they will have to come, and few of them may be country folk but, of course, they may come from distant parts, and the majority of them one imagines would be town folk with really little in common with the people into whose area they were brought and little in common with the area itself.

There is this further point, sir, that has been made this morning: that in so far as industry exists in the neighbourhood now, this would be put at a disadvantage because one does find, and I think there has been some experience of this—I believe you have heard evidence before—of the effect on employment at Heathrow where you have airport industries brought into the area to which loads of skilled persons certainly, and possibly semi-skilled raised very substantially in the immediate vicinity may well be prejudiced. People live in the country because they like it. Some people live in the country and work in the country. If they do not want to do so they would go to the towns. Some people live in the country and work in the towns but relish the thought of coming home in the evenings or weekends to enjoy the peace and quiet which is offered there. But, sir, what happens if an airport does come with all these people and with the consequent urbanisation? Well those people who prefer the company must either stay there and lump it or they have to move off somewhere else with or without compensation. The position of compensation is only part of the

* p. 1017.

Printed image digitised by the University of Southampton Library Digitisation Unit

problem because the present question more and more nowadays is: "Where do the people go?" One hears of reservoirs and other institutions and facilities being constructed, all these things take up land. There are fewer and fewer places where one can run to in order to find peace and quiet. It is not only a question of compensation. This is a small island, and unless one goes very far afield into, perhaps, Scotland or very sparsely inhabited places, there is virtually nowhere for people to go in substantial numbers.

The next point I would like to touch on, again fairly briefly, is the question of planning. There are two aspects here: first of all there is the aspect of planning effective amenity areas. The area which is bounded by Aylesbury, Leighton Buzzard and Bletchley is one of great charm which, as you yourself may have observed, it is I think what is called sometimes a balancing area into which many people from these towns and towns further afield, for instance Hemel Hempstead and even the greater London area, an area into which these people come in order to enjoy relaxation in the country. It is in my submission most important to preserve an area such as this, more particularly so, if one finds that there is another large town, that of Milton Keynes, coming into the neighbourhood, because those people too will require somewhere to go to get away from the town in the evenings or at weekends and this, of course, is a wonderful area into which they can go. In this area people enjoy various facilities. One has the canal and river complex there where people have boating clubs, angling clubs, and so forth. They enjoy the woodlands, the open fields for picnics and rambling, and so on. There is a great deal of equestrian pursuit in the neighbourhood. One has the National Trust Property at Waddesden Manor where about 60 or 70 thousand people a year go in order to enjoy the pleasure of its peace and beauty which it has to offer. It is important in our submission to preserve this amenity. It would seem, though, if the airport came, eleven square miles would go under concrete, or whatever one has on an airport site, and as to the remainder it would cease to have much attraction for those who wish for peaceful recreation in the countryside. Another effect would be this, that if this area virtually ceased to become attractive for people to go to for their country recreation, it would have the effect of throwing a greatly added strain on other landscape areas, such as the Ashridge Estate, which is National Trust Property, immediately to the north-west of Berk hamsted, and also, for instance, those areas, Ivinghoe Beacon, and Dunstable Downs, and so on, big as they are there is a limit to which they can absorb the countryside visitor or the tripper, and there is a limit to which the problems of traffic can be met in these areas and, at the moment, of course, although one does find a certain amount of congestion in those areas, the areas themselves can absorb the people who go there. But if there is a greatly added strain of people coming from Milton Keynes and all those connected with the airport also looking for the countryside, those who come to Dunstable Downs and other remaining areas of peace in the vicinity could very well find that the area was becoming completely saturated and instead of peace one would have the exasperation of traffic jams and probably nowhere in which to find their own private picnic spot without having a whole host of people there. This is a problem, big though the areas are.

The other aspect of planning affects the towns of Tring and Berkhamsted. Berkhamsted is 12 miles, roughly to the south-east, and Tring, of course, is substantially nearer. How would they cater for the additional burden of population, because it would seem inevitable that unless and until large airport towns were built people connected with the airport or with its construction would inevitably look for accommodation certainly within the radius in which those towns find themselves. Berkhamsted has experienced development to a substantial extent, but it has been the subject of strict planning control. The Minister is proposing a modification of the present town map which would make 60 additional acres available for natural increase up to 1981, and I believe an Inquiry was held at Hertford into this matter earlier this month, but as to the remainder of undeveloped land in Berkhamsted, which is not all that great, it is land to which the green belt policy applies, pending the second review proposals. However, effort has been made and is being made to retain the character of Berkhamsted without very much change. The pressure to develop the small areas of undeveloped land is now intense, but it is a pressure which has been contained by rigid planning control, but any further pressure which would inevitably come from the presence of the airport or from the construction of an airport, or both, would be a pressure which would be virtually impossible to contain, and the character of Berkhamsted it is feared would alter and the place would become not only altered in itself, but part of a large urban sprawl, which would affect the whole of this part of Buckinghamshire and Hertfordshire.

Sir, Tring is also affected in this way. There has been a fairly rapid residential development from the population having risen from 6,000 in 1961 to 8,500 in 1968. This has taken up to 40 acres of land zoned for residential purposes. The development of the remaining 40 acres in Tring is due to commence this year to accommodate a planned population increase to 11,750 by 1963, but what is feared in Tring is that if the airport came Tring being only some eight or nine miles away from the airport site—of course, we do not know quite how far it would be, because we do not know exactly what roads would exist, but it would be certainly within that distance—the town would, it is feared, become swamped. The character of that town too would alter, and as in the case of Berkhamsted, but perhaps more so, it would be brought within an area of urbanisation or greater

Printed image digitised by the University of Southampton Library Digitisation Unit

urbanisation of this part of Buckinghamshire and Hertfordshire. It is feared that the services, that is to say, the shopping services, main drainage and other services, all of which have been geared to the planned increase in Tring, would be quite unable to cope with any substantial increase in population. An even greater fear is that if the airport were to come this would result in delay in implementation of a number of improvement schemes which are at the moment or are about to be put into effect. I need not repeat those, they are dealt with by the District Surveyor at paragraph 1.3 of his proof of evidence. These are some of the aspects of planning which would affect the districts which I represent. Of course, there are far wider aspects which could affect the County Council, and these matters have no doubt been put very forcefully to you, but I would ask you, sir, to consider this point along with all the other aspects of planning that have been submitted to you.

The final point I wish to make is the question of drainage and sewage disposal. As you will appreciate, sir, the proposed airport site is at the top of the water-shed, to the south, the run-off is into the Thame and thence to the Thames which, of course, is under the control of the Thames Conservancy. To the north the run-off is into the Ouzel and thence into the Ouse, which is within the control of the Ouse River Authority. The problem is two-fold. To the south there is already flooding of considerable areas on both sides of the Thame on occasions of heavier rainfall. This affects Ickford on the borders between Oxford and Buckingham. It affects that village so much that any further building to any greater extent has to be stopped. It also affects the villages of Chearsley, Hampden, Milton, and Dorchester on Thames, for this is a substantial stretch of the Thame, from the Thame thence down to its junction with the Thames, a very large part of which river would have to be either deepened or widened in order to accommodate the additional water which would inevitably flow down to an airport site. To the north there is also flooding to some extent on the roads of the A.418 and the B.489. These are liable to flood in winter time, and also I am told there is flooding in the centre of Stoke Havant, which is in fact worsening in the last few years, apparently, so far as can be seen, as a result of some increase in houses at Stewkley and Soulbury. If this is so, it is of significance because the additional building at Stewkley and Soulbury would, of course, be minute compared with the buildings at the airport site, and additional run-off from these small areas would be minute compared to the additional and increased rate of run-off from an airport site. One way in which this flooding might have been obviated would have been by the construction of a reservoir which is marked on the map* on the airport site. This would, of course, have acted as a form of storage tank so that in times of heavy rain and anticipated flood the water could be stored and released in times of drought and low levels.

I simply in parentheses make the point which must have been made countless times before, but it would seem odd to select the same site for an airport which has been selected for the reservoir, but that is quite beside the point. The point is unless this is constructed there or a reservoir is constructed in the very near vicinity this remedial factor which would help to obviate flooding would have been removed.

As against that, one has the two factors that the run-off from the airport site, from the concrete, the pavement, the buildings there would be very greatly increased. Secondly, of course, with the additional three or four hundred thousand people, whatever the figure is, the additional amount of water discharged from the homes and factories and offices, and so on, would be of very very great magnitude, and these two factors alone would clearly exacerbate the problem of flooding unless there were some very substantial and extensive measures taken in order to remedy it. This, so far as can be seen, would apply both to the water-shed to the south and that to the north.

The second point which is related, in a way, to this is the problem of effluent, because as I understand it at the present time the effluent content in the rivers in times of drought is as high as it should be. It is getting towards the maximum proper level, but with a greatly added population in that area, both in homes and offices, there would be a very substantial increase in effluent, and it is feared that unless extensive measures were taken to obviate this the effluent level in the rivers both to the south and to the north would go well beyond the proper level, but because one cannot be precise as to the problem at this stage—you have the evidence of Mr. Brealey,* the consultant engineer who I think on Monday of last week appeared, you also have the evidence of the gentleman from the Ouse River Authority, No. 3362†, you have also statements from the Thames Conservancy.‡ I know they have not pursued the matter in this Inquiry, but Mr. Brealey you will remember has read the report of the representative of the Conservators of the River Thames, No. 3387, and told you he had read that report; he agreed with the contents and that it set out the problems as he saw them, and I would advise you, sir, to pay very careful attention indeed to the evidence of Mr. Brealey, and to those two proofs of evidence, 3362 and 3387.

Sir, obviously a great deal of inquiry and research must be gone into with this particular problem; this may appropriately be a matter for Stage III of this Inquiry, when a greater amount of research will have been carried out, and a great number of figures will be available. But this is a problem, it is submitted, of very considerable magnitude, and we would invite

* p. 1567.
† p. 1141.
§ p. 1464.

Printed image digitised by the University of Southampton Library Digitisation Unit

the Commission's very careful attention to this problem, when all the material facts become known at a later stage. It is one which affects, of course, not only those districts with which I am concerned, and concerns them very gravely, but also districts much wider afield.

Sir, those are the points which I wished to make briefly before you. I have not gone into a great deal of detail, because I know you already have a considerable amount of detail before you. I have endeavoured to touch briefly on the very important problems as seen through the eyes of these local Councils. I do not wish to engage in any further repetition; may I simply conclude by saying this: that simply for people whose happiness is at stake to say (no matter how sincerely or how forcibly) that "we do not want the airport here", of course, is not a ground for saying that the airport must not come here, unless their requests and entreaties are supported by strong and proper grounds and reasons. In my submission, there are very strong reasons on a number of grounds, some of which I hope to have put before you—very strong grounds and reasons why the airport should not come here, with its attendant disruption to the whole of this part of Bucks and beyond. I would respectfully ask you, Sir, in view of course not only of the very little which I have said, but in view of all the facts which you have heard at this Inquiry, to advise the commission to recommend Her Majesty's Government that this is not the proper site for the Third London Airport. I am very much obliged to you, Sir, for allowing me to speak at this stage.

Inspector Thank you, Mr. Lymbery. Now, my problem now is that I have about five individuals who would like to speak, or have said in advance that they would like to speak, fairly early, in advance of the main cases of the Parish Councils. Would the Parish Councils object to my taking them at this stage?

Mr. *Kessler* Sir, I would like to get away if I could —

Inspector I must do my best to please everybody! Is Dr. Armstrong with us?

Dr. *Armstrong* Yes—I could wait a little while —

Inspector How long are you likely to be, Doctor?

Dr. *Armstrong* Not more than five minutes.

Inspector Can you give Dr. Armstrong five minutes, Stoke Hammond?

Mr. *Kessler* Yes.

DR. W. B. ARMSTRONG* *called*

Dr. *Armstrong* Sir, I am Dr. Armstrong, and I live in Pitchcott: Pitchcott lies on the conjectured 55 NNI. I have already submitted a statement to the Commission, and I am grateful to have leave to appear here in person. I will not repeat all that I have submitted already, but with your permission I would like to amplify and add a little.

I appear as an individual, but I know most of my fellow-parishioners personally, and I know that virtually all have sent documents of protest against this proposed siting of the airport. The population is about 35; we may be among the smallest villages directly involved in this crisis, but we all care for our homes and the countryside in which we have all deliberately chosen to live. Our houses are not threatened with actual destruction, but with damage that would render them virtually uninhabitable. I have already said that the siting of a major airport at Cublington would force my family and myself to leave Pitchcott; we should probably leave the area altogether, and I believe that many of my fellow-villagers would do the same. May I refer briefly to a point already made by other witnesses? It is well recognised that the greatest dangers of accidents threaten during the operations of taking off and landing; Pitchcott would seem to lie directly beneath the line of ascent. Accidents will occur—though, we hope, rarely!—and the danger to any man, woman or child hardy enough to remain in Pitchcott is sufficiently obvious. This point is mentioned in the evidence of the Medical Officer of Health, to whose evidence I personally very much hope that the Commission will attach great weight. My own professional work is in four of the hospitals to which the Medical Officer of Health refers in his evidence, and I would like to support very strongly all that he says with regard to the hospital services in which my whole professional life is involved. At St. John's Hospital in particular, my colleagues and I believe that medical work would simply not be possible if this airport were sited at Cublington. Thank you very much.

Inspector Any questions? Thank you very much, Doctor. I propose now to accede to Stoke Hammond, unless there is any of the four individuals who quite desperately cannot wait for a while. Stoke Hammond Parish Council? May I just say, before the individual Councils appear, that I have been here for, I think, seven and a half days; and I believe I have heard just about every possible objection that can quite clearly be made to an airport from a local point of view. So, therefore, if the remaining individuals could abstain from referring too much to their representations which they have already made, that I have, of course, read, this would help us to include those who wish to appear, as soon as possible for business or other reasons.

MR. D. F. KESSLER* *called*
(Stoke Hammond Parish Council

Mr. *Kessler* My name is D. F. Kessler, and I am

* See also p. 1467.

* See also p. 1468.

Printed image digitised by the University of Southampton Library Digitisation Unit

Chairman of the Stoke Hammond Parish Council. I shall be brief, Mr. Hunt. But there is one new factor which has arisen since the Parish Council which I represent made its statement, which I should like to bring to the attention of the Commission.

I myself have lived in Stoke Hammond for 23 years. In my capacity, I represent the village people, many of whose families have lived in the village for very many generations. We wish explicitly to express our total and complete abhorrence of this scheme, which we think will damage the life of the village irreplaceably. We shall not be obliterated, as some other villages like Stewkley or Cublington or Dunton, but we shall die a lingering death. Stoke Hammond is sited less than two miles away from the projected airfield, and right under the flightpath. Aeroplanes will be passing above us at a height of something like 750 feet every two or three minutes. The interference with the life of the village will therefore be as complete as it is possible to be, but at the same time we shall not be destroyed. The parish will be blighted. The noise from the aircraft will create a situation which may make life quite intolerable. Many of our village activities such as those connected with the school, the church, the Chapel, will cease to function, and the flourishing Sports Club will disintegrate. The dairy farmers will disappear. The increase in stormwater and sewage disposal will create great problems. Our roads—the vast increase in road traffic will bring destruction and in this connection I want to add that the noise factor from the motorway —

Inspector Mr. Kessler, it is not the Commission's motorway!

Mr. *Kessler* Thank you, Sir. I understand that, but it would seem as though there is a project here that after an airport came, then the motorway may well come into being.

Inspector This has already been raised.

Mr. *Kessler* But above all, in addition to the inconvenience caused by the noise factors and the traffic factor, I think we must bear in mind, and we must ask the Commission to bear in mind, that the savings of many of the villagers of a lifetime will be put in jeopardy. People who have invested their money in their homes and property will find it completely dissipated. Land and property values will fall disastrously, and to cap it all there is no provision on whatever for compensation or rehousing, because we are not actually on the airport site. Even industry is unlikely to come our way, for who would build a factory 500 feet below the flight paths of jet aeroplanes? The area will become desolate and derelict.

That is one factor which has been referred to already this morning, is one which I would like, on behalf of our Parish Council, to raise again—to beg the Commission to take this point into particular consideration, and to by no means under-rate its importance.

Inspector Thank you. Are there any questions? Thank you very much. Individual appearances from Stoke Hammond?—Mr. W. J. Bates?

Mr. W. J. Bates* *called*

Mr. *Bates* My name is W. J. Bates, and I live at 16 The Green, Stoke Hammond. I have already made a statement, Sir, and to save this court's time, if you would regard that, as I have written it, if you will accept that, that will suffice.

Inspector Mr. Bates, owing to the short day yesterday I have had an opportunity to read all these documents yet again; I have read the document in question, Mr. Bates, I can assure you. Thank you for coming.

Mr. *Bates* I would like to add, Sir, for the benefit of the audience here, that I have had a considerable amount of experience of the noise caused at Heathrow Airport, and it is very objectionable. Thank you.

Inspector Thank you. Mrs. A. R. Booth? Mr. P. J. Boyd?

Mr. P. J. Boyd† *called*

Mr. *Boyd* I live at Stoke Hammond. Thank you very much for letting me appear. There is only one thing, if I may bring it up, that I have not put in my letter—and that is about the flooding. I personally have been flooded a year ago, and had about two feet of water through the house. Obviously, if this airport comes, it is going to be an enormous problem. So as far as I am concerned, it is an absolute tragedy for this area, if it comes. That is all I have to say, Sir.

Inspector Are there any questions?—thank you. Mr. S. T. Dancer?

Mr. S. T. Dancer‡ *called*

Mr. *Dancer* My name is S. T. Dancer, and I live near the church in Stoke Hammond. I have made my statement to you, Sir, and I still feel very strongly and sincerely everything I say in it. It was more difficult to say little—I could have said pages more, but I have just come along today to bring the statement which I have made.

* See also p. 1470.
† See also p. 1471.
‡ See also p. 1472.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Thank you; any questions to Mr. Dancer? Mr. J. M. Davis?* Mr. J. R. Jeffries?

MR. J. R. JEFFRIES† *called*

Mr. *Jeffries* I live in Stoke Hammond, and my statement is there for you to read on a personal basis; but what I would like to make a few points about is the problem of air space, which is not generally appreciated. I think most of the people concerned with Wing appreciate the facts of noise, the smell of kerosene, and conurbation and the general use of space for the airport itself; but what the majority of people do not realise is the vast amount of air space which such an airport could paralyse. London Airport is a fraction of the size of the airport proposed at Wing, but London Airport paralyses completely from all forms of private flying of aeroplanes an area which is roughly 600 square miles, and extends from the ground up to infinity. In the case of the proposed airport at Wing, the air space which would be required there for the control zones would be technically joined up with that of the existing London Airport, and would form a vast area through which no type of private flying would be permitted. This would mean that amongst other things, the thing with which I am personally concerned, the London Gliding Club at Dunstable, would disappear; along with the London Gliding Club there would be Luton Flying Club, there would be the Upward Bound, which is a highly subsidised form of flying for young people; there would be the Gliding School for the Royal Air Force at Bicester; there would be the Club of Aeronautics at Cranfield, to mention but a few. All these would disappear, because they would not be allowed to fly in this air space. The result would be that in the Southern half of England, from a gliding point of view, there would be one major club left, and this would have to be the only club which could cope with all the people who come out of London. Booker, which is near High Wycombe, and which already partly serves this purpose, would be severely restricted, and no practical gliding could take place there.

The sum result of this is that gliding would be impossible for those people who wish to do it, and the number of people who do do it, is considerable in the south-east of England, in any sort of serious form. It would also mean that the London Gliding Club which, as gliding clubs go, is the largest and oldest club in the country, could no longer do subsidised gliding work for the local Councils, of which we do a considerable amount at the present time, in order to allow to students a test of their feelings about gliding, whether it is an activity which they would like to do.

The other effect on air space would be that in view of the Wing Airport control zone and the London Control Zone would virtually touch each other, all private traffic would have to go to the west in the first place, and then to the north.

Inspector I can assure you that air traffic control and its problems will be very fully dealt with at Stage III, and it is not really appropriate to Stage II, as a local consequence.

Mr. *Jeffries* Could I say that as far as the London Gliding Club is concerned, it provides a spectacle for people who come to Dunstable Downs, and indeed a very high proportion of people who come there do so to watch the gliding. This would disappear as a local attraction as far as local people are concerned, and there is a considerable number, something like 300, I think, in our club. This would be a sport which would disappear for them also.

Inspector Thank you very much, Mr. Jeffries; are there any questions?

Mrs. *Kilty* I would like to ask you how many of the youngsters can afford to go gliding —

Inspector This, you see, is the difficulty. Mr. Jeffries is really appearing under Stoke Hammond, and I think the clear intention was that those at the hearing under the general cover, as it were, of Stoke Hammond, would be dealt with in the main certainly, under the parish concerned—the local parish consequences. Mrs. Kilty, this question of the Third London Airport, and air traffic control generally, and all forms of flying, will be looked at very very carefully at Stage III; it is really quite a waste of time to go into it at this stage, I can assure you. Are there any questions? Thank you, Mr. Jeffries. Mr. M. Keane? Mr. Kessler, you are listed as an individual; do you wish to appear in that capacity?

Mr. *Kessler* No thank you, Sir.

MR. D. A. LAMBOURNE *called*

Mr. *Lambourne* I live at 16, Tyrells Road, Stoke Hammond; I am a sportsman, just joining the local Sports Club, which, if this goes in, we will be unable to carry on. As an individual, I have a particularly noisy job, and I like the peace and quiet which I would not have if this comes on. There is nothing else to say from all the other points which are very well covered.

Inspector Very brief; very pointed: thank you very much, Mr. Lambourne. Any questions? Thank you. D. E. Snell—not here? Are there any other individuals from Stoke Hammond Parish? Now I again ask my question—whether I am permitted to insert some individuals before coming on to Weedon Parish Council. Mrs. Robertson, would you object to my trying to take these individuals?

* Written evidence available for inspection, by arrangement, at the offices of the Commission.

† See also p. 1473.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mrs. *Robertson* It depends on whether anyone in Weedon wants to speak!

Inspector It is more difficult making this programme up than it is finding a site for the Third London Airport!

Mrs. *Robertson* Very well—they can go ahead.

Inspector Dr. Lumb? do you wish to appear?—you are on your feet now, so please go up!

Dr. J. R. Lumb* *called*

Dr. *Lumb* I live at 14 Heath Road, Brickhill, and may I just add to my statement that the flight paths to the north east, as shown in map no. 4,† would now go directly over my house at Great Brickhill? There would be a rating of noise at 50 NNI, and therefore the two members of my household—my wife and my grandchild, who suffer from asthma—will be very seriously affected by noise to such an extent as to possibly shorten their lives. So I should have to leave the district and sell my house, if I can find a purchaser, at possibly a great loss. That is all I wish to say.

Inspector Are there any questions?—thank you very much. Mr. F. O. Gregg I understand would like to be dealt with fairly soon.

Mr. F. O. Gregg‡ *called*

Mr. *Gregg* My name is Gregg, and I live in Station Road, Woburn Sands. I have already submitted a statement which needs very little amplification. The only point I wish to make is, quite apart from the question of noise—of which you must have heard a great deal—there is the question of danger. Woburn Sands is virtually immediately under the approach line of the airport, and lies on a spur of high ground. There have been a number of accidents where houses were destroyed, where lives were lost, although the approach was as flat as a pancake. I feel that around Woburn Sands it will be even more dangerous, as planning permission has recently been given for a brick works—again underneath the approach line—with a chimney expected to be 300 feet high. I do not know how high planes will be travelling in this area, but mistakes have happened, and I feel that these mistakes combined with the high ground and this chimney would make this area a very dangerous one. For these reasons, I feel I would definitely have to leave and sell my house, and probably suffer considerable loss. Thank you.

* See also p. 1474.
† See attached wallet of maps and diagrams.
‡ See also p. 1475.

Inspector Are there any questions?—thank you' Mr. Gregg.

Inspector Are there any other individuals who cannot be here and wait for their turn behind the listed Parish Meetings and Parish Councils? In that case, Mrs. Robertson, Weedon Parish Meeting.

Mrs. R. Robertson* *called*
(*Weedon Parish Meeting*)

Mrs. *Robertson* I am the Chairman of Weedon Parish Meeting, Chairman of the Aylesbury Rural District Airport Sub-Committee. I formally present the evidence of Weedon Parish Anti Airport Committee on behalf of the Chairman Mr. J. O. Jones who is unable to be here today. I have little to add to it, but I would like to add there are six farms and one stud with a farm in our Parish which I do not think we have noted, also that we are a New College Living and New College did make reference to values, but I do not think I need add anything more because I have a good supporting group behind me.

Inspector Are there any questions concerning the Submission of Weedon Parish Council? Any questions? I have no questions. Thank you.

Residents in Weedon, 5067, Mr. Richard Chiddick.

Mr. Richard Chiddick† *called*

Mr. *Chiddick* I wish to affirm the written evidence which I have put in, also to support the evidence I have heard here today against the Airport coming to Wing. Very briefly I would like to emphasise owing to my age I would find it extremely difficult to obtain employment elsewhere in the particular work which I do, and for the same reason it would be impossible for me to obtain a mortgage to purchase another house elsewhere.

Briefly, I feel that the burden which this sort of sacrifice imposes on a limited number of people for a national project is most unfair. I stand by what I said in my statement. I have recently been to Heathrow to a position as nearly as comparable as I could without trespass with my residence to the proposed airport. I have no doubt at all that my present residence would become completely untenable owing to the noise, and I went at a relatively quiet time to London Airport.

The final point I want to make, which has come to my notice, is that in the event of an airport being sited at Wing and because my property is thatched, and it is already a doubtful insurance risk, and one

* See also p. 1476.
† See also p. 1479.

Printed image digitised by the University of Southampton Library Digitisation Unit

which it is very difficult to obtain insurance for, and the siting of the airport here would make it property that would become uninsurable.

Mrs. Joan Cornock* *called*

Mrs. *Cornock* I would like to amplify just a little the written statement which I understand you have read. Some five years ago my husband and I decided we could no longer bear living in London, and we put a good deal of effort into finding a suitable place to live in which was peaceful, quiet, and aesthetically satisfying. In addition to this my husband's health was broken down, partly as a result of insomnia from traffic and aircraft noise. Despite the fact we have to drive 90 miles a day to and from work we felt it was worth doing this to live in Weedon. I now feel that all this is at risk, and I wish to add my protest against the siting of the airport. We shall no doubt because of this reason be forced to move again, because of the position of Weedon with respect to the aircraft noise, and I think it is very probable that we should lose considerably financially.

I am by profession a statistician, and I have not yet had a chance to read the cost benefit analysis report, but I believe that it is probable they have not included in the proposed cost of the airport the compensation which in equity if not in fact would be paid to people who live in places which would not actually be destroyed but would become untenable. Thank you, sir.

Inspector When you do get the opportunity of reading it you will find that a shot has been made at this, but not directly on a compensation basis. I am sure you will enjoy reading it. Thank you.

Mr. and Mrs. C. E. Fraser† *called*

Mr. *Fraser* Charles Edward Fraser, Licensee of the Five Elms at Weedon and the point I would like to make, sir, is that you have heard all the technical evidence, but I would like to make this point, on a personal matter of evidence. In my particular case I am semi-retired, having had a business 40 years; before that I was a regular airman. I know a little about aircraft and how they are noisy, and we were in the flight path from Heathrow, over Whiteley. To be right on the end of one of the runways in a small country pub would be absolutely impossible, and this applies to any other business in the area. That is all I have to say.

Inspector Thank you. Any questions?

Mr. Harold Hague* *called*

Mr. *Hague* Thank you for allowing me to come and speak, sir. I would like very briefly to add to my statement. I have unfortunately, and I mean unfortunately, had very considerable personal experience of aircraft noise problems. I have been unfortunate in so far as I have lived recently at the BEA Sound-Proof Hospital at Southall End in Middlesex for a period of five months. Previously I lived very close, about two miles, to Thorney Island in Hampshire, also Coltishall in Norfolk, and more recently Benson, Oxfordshire. In all those situations I found the noise from relatively low traffic density which I encountered to be extremely intolerable to myself and my wife. Having recently moved to Weedon a few months ago because we are after quietness in surroundings, I find myself in a situation which I consider at least one hundred times worse than any previous situation which we have already found intolerable to us, and it has taken me considerable time and expense to find a suitable property in close proximity to Aylesbury which was sufficiently quiet to make the place habitable to both myself and my wife. My wife is a chronic migraine sufferer and, of course, noise is just not tolerable. I now find myself in a position where I will have to sell my house and move from the area at a very heavy financial loss, I anticipate, because no worker would be idiotic enough to buy property at Weedon if an airport is sited at Wing. This is why I am strongly opposed to the siting of an airport at Wing.

Mr. M. H. J. Radcliffe† *called*

Mr. *Radcliffe* My name is Radcliffe, Vine Cottage, Weedon. I do not want to substantially add to the four part evidence I have submitted, one part I gather is out of order at this stage, for which I apologise. I would like to reinforce one point: apart from the fact our house certainly might well collapse, apart from the fact it will be worth virtually nothing at the end of it, it will almost certainly be the case that there will be a substantial housing shortage at this stage. So, assuming one had the werewithal, which again I would certainly have not, I think it would be virtually impossible to buy a similar house in the district. Linked with the second part, the reason for this is out of the second part of my evidence, concerning my employment at Leighton Buzzard; it is apparent most of the companies in the area are high grade companies. We have just obtained a £50 million contract from America, and we are carrying out a similar sort of exercise round the world to get more. There is therefore a labour shortage to achieve and construct the required—whether it

* See also p. 1480.
† See also p. 1481.

* See also p. 1482.
† See also p. 1483.

Printed image digitised by the University of Southampton Library Digitisation Unit

be motorways or airports. Houses will have to be built first, but to build those houses you will have to bring more people in, with the result that a large number of us will end up for a period completely homeless. Other than that I do not wish to add to the statement I have already submitted.

Inspector Thank you.

MR. D. F. RYDER RICHARDSON* *called*

Mr. *Ryder Richardson* I live at The Royal George, Weedon. I note your remarks about having heard every objection possible to this airport siting, but I would like to point out that the experiences and friendships I have gained during 25 years of my life are threatened, and so I do feel a personal plea to reinforce the written statement is justified. There are two points I would like to emphasise from my written statement. The first is that a number of problems are caused to me personally by not only the placing of the airport and the possible siting of the airport, but the uncertainty of the whole thing. The fact I recently bought a building plot at Weedon upon which I hoped to build my home. Development is now impossible on this site because of the uncertainty and it is therefore costing me £7 a week in lost interest, and I can see no possible compensation for this.

Secondly, I am a director of a property company whose life is so far 12 months. We have our first conversion at Soulbury, £12,000 approximately is tied up in this development. We had in the past a firm offer to purchase this property, but naturally since the airport was disclosed, or the possible site for it was disclosed, we lost this offer and have had no other offers at all.

Thirdly, the company also has great difficulties in finding further conversion prospects because the property trading in this area has become completely stagnant. As I say, I can see no possible compensation forthcoming for any of these things. If the airport is siting at Cublington, I feel for the sake of my family's health a move would be absolutely vital, and I believe I shall have to go to Southern Ireland, because the future in this country seems to be becoming smaller every day. There again I stand to lose between £12,000 and £14,000, since my house is within the 60 NNI bracket, and would be completely unlivable in.

Finally, I would like to point out my own personal wish and that of my family is to remain in Weedon and to continue to enjoy the peace of the country and the beauty of this rural area in which I was born and bred. Thank you, sir.

Inspector I certainly did not want to restrict any opinion or information concerning personal hardship. My comments were rather to the broader issues that have been covered so many times during the Inquiry. Thank you very much.

MRS. SMART*
(ON BEHALF OF MR D. G. M. SMART) *called*

Mrs. *Smart* I am representing my husband who cannot be here today because of his business commitments. I have nothing to add to my husband's letter, except to say my own family would suffer and we probably would have to move at enormous expense—enormous loss actually of money which we have put into our house. My husband could not come home and rest peacefully under all that noise after a very very hard day's work. That is all I have to add.

Inspector Thank you. Any questions? Thank you.

MR. KENNETH WALKER† *called*

Mr. *Walker* Thank you for the privilege of coming here to explain my point. I wrote in as an individual; I know there are many other considerations, and I am quite sure the case I put forward is not unique, it is just very pleasant to know the individual has a voice in this country. I was thinking about this occasion and this is the first time I have had an opportunity of coming into an Inquiry. I suppose it will all be reduced to cold print without a ripple of air, and I wonder if sometimes we might take something and put a bit more passion into the submissions you have heard this morning.

My wife and I came down to Weedon because there was a nurses' training school in Weedon—that is the reason for my entry into the village in 1950. We are both approaching retiring age, we have sick relatives in a convenient place, in Bedford. We cannot get them to come over to the village, and we make frequent journeys backwards and forwards, and this would affect us as individuals, but I suppose by the time the airport does come, if it is built, I shall probably be dead, but I would hate to think I sat apathetically on the side-lines and let them convert this beautiful countryside into a jungle of concrete, aircraft, housing estates, and factories, and so on. I think in this world of ours we need more of these oases into which people can escape from the tension of life. This is why many of the people living in the village are employed in public service. We do do a great deal of service to the community, and often it is these services which bring strain. Also there are

* See also p. 1484.

* See also p. 1485.
† See also p. 1486.

Printed image digitised by the University of Southampton Library Digitisation Unit

people in the village who have retired from the smoke, from the pollution, from the airports, as we have heard on several occasions, and these people seek peace and health in which to end their days. (*applause*)

Inspector I am sure there are no questions. I have on my list Dr. MacCarthy*—I am sure we have had him. Dr. Roden?†

Mrs. *Robertson* He is coming if he has time after surgery.

Inspector Very well. We will keep going. Miss Terry?†

Mrs. *Robertson* She can only come if she can bring her dog, and I do not think her dog wants to come.

Inspector A very wise dog. Is there any more evidence or are there any more individuals from Weedon Parish Council? Then Whitchurch Parish Council.

Cllr. Todd‡ *called*
(*Whitchurch Parish Council*)

Cllr. *Todd* I am a representative of the Whitchurch Parish Council, and the Council have asked me to attend the hearing in case you require any enlightenment on points raised in the letter which was incidentally approved unanimously by the Council. Other than that I have nothing further to add.

Inspector Thank you, Councillor Todd. Any questions concerning the various points made by Whitchurch Parish Council in that statement? Thank you.

Mr. *Payne* I have just one question.

Cross-examined by Mr. Payne

Mr. Todd, could you possibly give me the figures for the canvass of population in opposition to the siting of the airport which was taken in Wing?—I am not quite absolutely sure of the numbers, but I think it was 90 per cent.

Mr. Anthony Ball§ *called*

Mr. *Ball* Thank you for letting me come to this hearing this morning, sir. There is precious little more I wish to say that is not already in my statement, but if there are any questions I would like to answer them.

Inspector Any questions concerning Mr. Ball's letter under 5051? Thank you for coming.

Mrs. R. A. Beckett and Mr. Ian Beckett* *called*

Mr. *Beckett* You said you did not want repetitious evidence, in which case my mother would wish to stand down, and I wonder if in her place I could be allowed to say a few words.

Inspector Yes, certainly. I do not wish to stop anyone saying that which they wish to say.

Mr. *Beckett* My name is Ian Beckett, of 31 Oving Road, Whitchurch. I would like briefly to emphasise perhaps some of the points of the younger residents of the village. I think this would be best in a few words, but to repeat the words of Her Majesty the Queen on the last Commonwealth Day. "Young people have not forgotten that human beings are more important than machines. I am re-assured that young people have not forgotten that the happiness of mankind is a far more important thing than spectacular achievements of science".

That is all I wish to say, sir.

Inspector Thank you, Mr. Beckett. (*applause*)

Mr. Charles Brown† *called*

Mr. *Brown* I am Charles Brown, of Moss Farm. Sir, I wish to state that I support the Whitchurch case absolutely, but I do not claim to be part of the case because I have only lived at Whitchurch two years. You have my statement giving you my wife's and my own lives which took part very largely just three miles away. The statement states why we are not living on the farm we farmed. We just came to Whitchurch because we know it well—I have all my life and my wife has for a very long time—the statement explains our position absolutely, sir. I expect to be pulled up by you, sir, and told I am not a Whitchurch man, but I did complain because the literature which came to me from the County Council to object—well, I waited a very long time before I heard from the authority, and being an old man—I am 75 tomorrow, sir, I panicked —

Inspector Never!

Mr. *Brown* Yes, I did, sir, and I wrote to the County Council and so they put me in Whitchurch Parish. I probably should have come up as an

---

* p. 1749.

† Written evidence available for inspection, by arrangement, at the offices of the Commission.

‡ See also p. 1487.

§ See also p. 1488.

* See also p. 1489.

† See also p. 1490.

Printed image digitised by the University of Southampton Library Digitisation Unit

individual applying directly to the Commission, but it is not my fault. It is the Commission's fault, sir, entirely; they were so dilatory—it upset the whole district, and you have my letter of protest again about that.

I would like to correct my statement, sir. There is a misprint: "I farmed out in the fields . . ." it says till 1947, but it should read "1967". Also in my statement I have explained what my bungalow cost, roughly: the bills have come in since, and that is a very moderate sum compared to what I have got to fork out, very moderate, but anybody knows that who has had anything to do with builders recently.

As regards where my bungalow is—it was quite safe when we went there, because there was a field adjoining for sale, and an application was put in to build on it, and it had to be announced in the Conditions of Sale that it was accommodation land only. So we put all our money that we had saved into building this lovely bungalow, feeling safe; and we heard no noise to the contrary until after we were living in it, and it has put us into a frightful mess if the aerodrome comes, because I understand we are in a dangerous position by which we shall be kicked out. We have got to get out. I can't hope to see my money back, and by then I shall be 78 years old—I am slipping now—what I shall be like when I'm 78 I'm afraid to think! This is a personal matter, but it affects my wife and I, and there must be lots of similar cases. I expect to be pulled up now! I had a N.F.U. business which was very active, it fell to my lot to go round as County Chairman to farms, and fields, where London Airport was built on. It was a very appalling sight, and it knocked me flat, very much; and I came in and my wife looked after me properly when I got home. This was during the blackout, and there were these people already who were knocked out of their homes—people in the blackout need looking after, and I'm sure I did! Thank you very much. (*Applause*)

Inspector Mr. Brown, you say at the end of your letter—"I would welcome a visit to this bungalow to verify all my statements". We certainly do not need to verify your statements, Mr. Brown—but I may come and see you all the same.

Mr. *Brown* I hope you will, Sir!

MR. LANCE COATES* *called*

Mr. *Coates* Sir, I live at Whitchurch; I have brought up a family of four, not in Whitchurch but within five or six miles from the Cublington Site. I wrote a letter to the Commission on June 14, and set out all the particulars relating to my family, and my farming business; and I am grateful to you, Sir, for allowing me to add one or two things to my statement. I speak first of all as a householder in Whitchurch; and, like other people who have spoken, I should be faced with the position of having to move, because I think Whitchurch will become a dead village, although it is one of the most attractive and historical villages in the district. Secondly, I speak as an owner of land and a farming business which houses 15 families, apart from my wife and myself, and employees, directly or indirectly, about 20 people. And, lastly, I speak as, I hope, a commonsense citizen. I am a director and a vice chairman of a public company which operates internationally, and I have travelled widely and seen what other countries do about their airports. I want to be brief, and I only want to try and make points which have not been repeated already, as far as I know, at this hearing. I have been here only once before, but I have read some of the submissions, and I want to try to make points which will not be repetitive.

I have already said in my statement that my farming business, which is conducted now by my family, would almost certainly have to be abandoned, because it is a livestock business and, apart from the effect on the animals, I think it would be impossible to get stockmen of the right kind who would live under the conditions of airport noise and disturbance; and I would like to emphasise that this area is a livestock district. It always has been. England is livestock country, and I am not sure that everybody appreciates that, because by its climate England must be a livestock country, and its main production is livestock. Only about 13 per cent of the country's agricultural production is cereals: I did hear somebody earlier in the week ask a question about the main crop in this area, and they rather wanted to make a point that it was barley and used for beer; but of course it is not, it is livestock. The main crop of this area is livestock, and it is not by chance that it is so. It is so for a particular reason. It is because of the limestone ridges all round the Vale of Aylesbury, and limestone is essential for building bone on animals. This is also why there are so many horse breeding studs near here; and if you look at the geographical map of England, you can see that the limestone ridges run all the way from Portland in Dorset to the Yorkshire Moors. This happens to be an area where limestone ridges build good skeletons of animals, and the animals are fattened in the lush Vale of Aylesbury. So I wanted to emphasise that point, and add it to my statement.

I do not know whether I am allowed to make one or two observations as a commonsense citizen —

Inspector Provided they are local implications!

Mr. *Coates* Yes. Well—they have local implications, of course, because what we are faced with here is this despoilation of a part of the countryside which I think is almost unique. It is certainly as priceless as some art treasures which the Government quite recently — (*prolonged applause*) — the Government

* See also p. 1491.

Printed image digitised by the University of Southampton Library Digitisation Unit

quite recently helped to find a million to stop a Leonardo da Vinci cartoon going to America; but in the same breath they think of spoiling something as beautiful as the stretch of countryside from Thame to Whitchurch. If anybody has motored from Thame to Chearsley, through Winchendon to Pitchcott, to Oving, Whitchurch, Cublington, and can really think that it is wise to spoil that area of countryside—because it would be in the direct flight-path of aircraft—well, it does seem irresponsible. Take the tourist trade—people who come to this country. They come, not to see airports or conurbations like Los Angeles—they come to see what is beautiful and what is irreplaceable, and it seems to me to be absolutely terrible—it is as terrible as letting art treasures —I think more terrible! than letting art treasures go from this country, to consider spoiling an area of countryside like that.

I think the most telling thing—I hope this is a legitimate observation!—which I have heard at this hearing is that if an airport were sited at Wing, one loses something for ever, but one gains something which may become obsolete in a relatively short time; and it does not seem to me to make sense, in a small island, to make a huge airport. One has to take into account not only what is to be constructed, but what is lost, and lost for ever; because what is constructed is constructed maybe for a short period. The kerosene jet engine certainly won't last for very long; but the limestone ridges here are irreplaceable, and will be lost for ever. And so, Sir, I do not know whether I could just end up by asking a question. Could I ask you, Sir, how many people on the Roskill Commission have either had the experience, or will have, of motoring over that distance which I have mentioned, from Thame to Whitchurch and Cublington?—because it is an experience!

Inspector Mr. Coates, I cannot answer questions obviously on behalf of individual members of the Commision; but I can tell you that I have done it several times. Not that specific route, perhaps, but routes of similar kind. I have lived here in years gone by. But very recently I actually came up by Pitchcott to Dunton. Thank you. Mr. G. L. Davis we heard, either yesterday or the day before—I am losing all count of time! Mrs. Doreen Foulgar?

Mrs. D. Foulgar* *called*

Mrs. *Foulgar* My name is Doreen Foulgar, and I come from Whitchurch; I gave you my statement of all I needed to say, and everything was in that statement. I do not wish to add anything else.

Inspector Mrs. Foulgar, I have read your statement very carefully. Are there any questions on it? Thank you. Mr. M. Holman?* Mr. R. E. Main?

Mr. *Main* Perhaps I would be forgiven for speaking from the floor, Sir?

Inspector Yes, of course.

Mr. R. E. Main† *called*

Mr. *Main* My name is Robert Main; I think I have little to add to my written statement, but I do wish to emphasise the horror with which I and my family regard this proposed siting. Three generations, of ages from 9 to 90, have lived in Whitchurch, and apart from the fact that we have a great deal to lose, we think that it is inhuman to uproot the elderly from their peaceful surroundings. For my part, resettlement would present great problems. We love our village as it is now, and we have no wish to see it disappear without trace. Thank you, Sir, for the opportunity to put my case.

Inspector Thank you: are there any questions?

Mr. J. Patching?‡ Mrs. J. Ryder Richardson?

Mrs. J. Ryder Richardson§ *called*

Mrs. *Ryder Richardson* Sir, I live at Whitchurch, and I have already sent a letter of my statement, Mr. Hunt, and there is very little that I would like to add, except that I would like to stress the fact that there has been a surgery attached to my house for over 100 years now, and my late husband was a doctor in the village for over 30 years, and I have been there now for 30 years, so I consider myself one of the oldest inhabitants and feel very deeply for all my friends and all the people who live in Whitchurch for the great worry and the great unhappiness they must all be suffering at the moment. If I myself have to move, I do not think that I would stay in this country; but there are so many people who have not the wherewithal to move away where they wish to, and I cannot envisage whole villages being sited in different parts of the country without any background and with their roots torn up. They would die at once. Therefore, I feel very concerned for everybody in our village.

Also, I would like to say, Mr. Hunt, that if you accept Mr. Charlie Brown's invitation to go and see him, I would be very pleased if you would also pay

* See also p. 1492.

* Written evidence available for inspection, by arrangement, at the offices of the Commission.

† See also p. 1493.

‡ Written evidence available for inspection, by arrangement, at the offices of the Commission.

§ See also p. 1494.

Printed image digitised by the University of Southampton Library Digitisation Unit

me a visit, because I could show you one of the most beautiful views from my house—and the idea of having to move and leave this beautiful village where my friends are and my son and his family live is, to me, quite unthinkable. But I would like you to see my view before it disappears!

Inspector Thank you. Are there any other residents of Whitchurch Parish who wish to be heard? Wing Parish Council.

MR. J. BANDY* *called*
(*Wing Parish Council*)

Mr. *Bandy* I am William John Bandy, Chairman of the Wing Parish Council. May I thank you, Sir, and the Commission, for giving me the opportunity to appear to present the statement of Wing Parish Council? We have nothing to add, but I would ask your indulgence to make one or two observations. Having listened throughout the hearing to many expert and other opinions, and looking at the map on the platform, I feel Wing is in a cleft stick—the A41 is shown dividing the other end of the proposed site, with Wing in the crutch of that division, without any escape to the North. We must either stick it out, or accept the best we can get for our property and move away somewhere. I am sure the whole neighbourhood is keenly aware of the hardship such as Mrs. Beasley, the Chairman of Stewkley Parish Council, spoke of yesterday, especially with regard to the elderly; but I take comfort in remembering what Her Majesty the Queen said in her Message to the Commonwealth, to the effect that "people matter more than money". Also, the sentence used by His Royal Highness the Prince of Wales, during his investiture tour, that the environment in Wales should not be disturbed unnecessarily. I hope this also applies to North Bucks.

Sir, Wing Parish Council supports the Wing District Association of Parish Councils, and the County Association, in their opposition to the siting of the Third London Airport at Cublington-Wing, and the National Association's resolution against an inland site. I hope we shall not be deprived of our heritage and countryside—which is admitted to be "good to behold". Thank you.

Inspector Thank you. Any questions to Mr. Bandy concerning his statement, on behalf of Wing Parish Council?

Cross-examined by Mrs. Kilty

5020 In your statement, you say that people commute from Wing to Bletchley by car or bus. What buses run from Wing to Bletchley? — Like so many others, I have not good use of buses—I cannot quote the timetable.

5021 There are no buses running. — Not directly, no.

5022 And you say about the recreation ground for children and dogs—and yet I know of some Wing boys that formed a football team, and you would not give them permission to play on that football ground. — I do not think you are quite correct — I am quite correct! — Could you —

Inspector Mrs. Kilty, let us keep the questioning on a reasonable level, please. You have put your question—just wait for an answer.

Mr. *Bandy* To my knowledge, I have not refused anyone. In fact, the Parish Council do encourage both football at all times —

Inspector Before we go any further, let us see this thing in perspective. (*applause and cries of "Hear, hear"*) I have come here to ascertain the local implications of a Third London Airport. I do not wish to hear, and it is quite irrelevant to discuss local parish matters. (*applause*) These can be resolved in other places.

5024 Mrs. *Kilty* I am aware of that, but Mr. Bandy agreed to the Council that we have plenty for the teenagers that an airport would not bring, but there is nothing at all for the children — (*cries of "Nonsense! Nonsense!"*)

5025 *Inspector* The more interjections we get, the slower we will move on. The point is, what do you say to the provision of facilities for youth? is that correct?

5026 Mrs. *Kilty* Yes, that is right. — Well, there are facilities in the village for youth, and it is up to the youth to make use of those facilities, and it is up to the parents to aid them in providing more facilities.

5027 Yes, but they have not got facilities, and you know that.

Inspector That is a statement, Mrs. Kilty. I am not going to have this Inquiry deteriorate into a parish squabble; it is much too serious for that. —

5028 Mrs. *Kilty* And you said about the Almshouses—isn't it true that once the Council wanted them down to make a railway there? — I do not know of that. The development for the road—the diversion through Wing has been talked of for 40 years—anything could happen.

Cross-examined by Mr. Payne

5029 Mr. Bandy, do you agree that the A.418 which runs through Wing has three rather dangerous curves on it, through the village? — I do.

5030 Do you agree that if an airport was built, at Wing, it would necessitate building better and larger

* See also p. 1495.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. E. F. KIDD* *called*

Mr. *Kidd* Good morning, Mr. Hunt. Firstly might I thank you on behalf of my wife and myself for allowing me to appear to speak, and what I am saying, I can assure you, she agrees with.

My name is Mr. Kidd, and I live in the very beautiful hamlet of Burcott which I understand you know very well. Being here yesterday I also gather you know Stewkley very well. Listening again this morning I think you know the area very well. I think you have lived here. This makes me wonder, sir, why you are here or —

Inspector You must wait until the chapter unfolds at Stage III.

Mr. *Kidd* So I hope you will leave this county and the Vale of Aylesbury with it in your mind to tell the rest of your Commission that this airport site should not be sited in this beautiful area.

Inspector That would be an assumption you ought not to make.

Mr. *Kidd* It is the hope. My wife and I moved from Bletchley to the hamlet five years ago. When we were first married we rented a very small house, and from that time onwards we worked to find a place of our own where we wanted to live. You must have been impressed, especially yesterday, I think, Mr. Hunt, by the concern of the people for their heritage.

A few years ago I was travelling through Europe and I had a cause to pass through the town of Arnhem in Holland and took the opportunity of visiting the military cemetery there. I am sure you know that many of our very brave airborne soldiers are buried there; many of them 18 and 19 years old, with very little time for training. I would like to read, if I may, a passage off one of the head-stones which so affected my wife and I, so deeply, it brought us to tears—I am not ashamed to say this. I am sure that the parents of the particular boy would have no objection to my reading this, and it reads thus: "With other comrades by your side, that we in peace might live, for us they died". As I have said, this affected us so emotionally to think that what they fought for and died for, for us to live in peace, might be taken away from us and many other people, that what they fought for was in vain and their lives wasted. Did these boys and many others die for the right of the individual's freedom in vain? I hope sincerely that the Commission, the Government, and any other people concerned with the choosing of a site for the proposed Third London Airport will think well on these things before choosing a site in the name of science and progress before human beings.

English people can be pushed a very long way for many given reasons. They are the most tolerant people in the world, until it affects their homes. Also, when the large majority in the area object to the compulsory taking of their homes and freedom, to live where they want to live, I am sure I speak for many people when I say: "Don't push this tolerance too far". The government, I hope through you, sir, will be made well aware of this.

I said in my written evidence that a criminal does not have to wait so long for a verdict or pay so much for their defence as the people in the proposed sites are having to do: the worries, the tears—tears of men, yes men, women and children should come to the notice of the Commission—this is a period in our lives that will never be forgotten, whatever the decision may be.

English people are normally law abiding citizens, until something that affects their heritage arises. The possibility of my home being compulsorily taken from me for an airport that in my mind I know should not be sited here for various reasons is enough for me to say that I am unable to associate myself with those against civil distrubance; if my home is compulsorily taken away from me I shall fight for my home in every way I can, and I am sure many other people will do the same.

The Government has asked for this Inquiry to decide whose homes, villages, land and livelihood should be compulsorily destroyed. I do not believe that any government has the right to ask any person or commission to do this. If this is so, many people in this country, even in this hall, have fought not only one war, but two wars, in the name of freedom of the land for heroes to live in for nothing. Is it for nothing? The *Daily Express* this morning, and I quote: "Mr. Will Rogers, Joint Minister of State, stated yesterday that London's Third Airport is already costing £1 million for the Roskill Inquiry and will cost more than £200 million to build —"

Inspector Mr. Kidd, I have listened very patiently, but can you keep to the subject matter of the Inquiry. I have read the papers this morning; we can all read the papers. The subject of Inquiry is into the local implications of an airport. I do not think the cost of the Commission is a local implication.

Mr. *Kidd* I think it is a very local thing, don't you? If we are paying taxes for it — (*Cries of "Hear, Hear!"*)

Inspector Mr. Kidd, all people pay taxes.

Mr. *Kidd* Exactly, this is why I think it concerns us as much as anyone else. I understood the Commission was to find out the various costs and various aspects, and yet we have a statement here that already it is decided the airport is going to cost £200 million. I wonder, has the airport already been decided?

Inspector No, it has not.

Mr. *Kidd* I believe due to the fact that stout-hearted English people defeated the Government Department at another—and I will not mention the

* See also p. 1502.

Printed image digitised by the University of Southampton Library Digitisation Unit

name, sir—well known proposed site for the Third London Airport, a decision was made to set up the Roskill Commission so that a decision could be made that would leave a loophole for politicians and Parliament to state that it was a recommendation of the Commission, to make it easier for the politicians. I hope the Government will have noted a lot more stout-hearted English people have a voice at this Inquiry. The Members of the Commission, I am sure, living at home like us, whose parents, wives and children love their homes like us, should tell the Government they cannot and will not sentence their fellow beings to compulsory loss of their homes and heritage.

For the reasons I have given, I do not think the Inquiry is being held in a democratic fashion. I know different — (*cries of agreement*) it is democratic dictatorship. — (*cries of agreement*).

We are sincere people, and if, as pray God, I hope, the airport is not sited here, we shall not cheer, we shall not wave; we shall go to our Churches and thank God.

There is only one thing I ask you. You have had an invitation from people this morning to visit their homes. I am not only asking you, sir, I ask the Commission, and Members of the Government, when they decide where an airport site should be—anywhere—that they go to the homes of the people, and say: "We are taking away your homes in the interest of science", or anything else you like to put, or money. Thank you, sir. (*applause*)

Inspector Any questions of Mr. Kidd? Thank you.

MR. C. MORTON* *called*

Mr. *Morton* My name is Morton, and I live in Wing. I have submitted written evidence, and you obviously have got a copy of all written evidence. I would like to add to this and enlarge upon it.

When I first read Wing was to be considered as a possible site for the Third London Airport, I was utterly bewildered. I thought the report in the papers must be mistaken, but I hope by now the complete unsuitability of the site has been technically proved to you over the last seven days, and you are hearing the voices of the people who are telling you "No", again, and again, and again. However, the fact remains we are fighting against a proposed monstrous act of vandalism. My initial bewilderment has, like many other people, turned to deep anger in a determination to defend not just my own bit of freedom, but a principle of democracy that would be undermined if you were to ignore the voices of the people and construct your monster not just here, but on any inland site. I know I amongst many others waited anxiously for the published *Site Information** that we were promised. We wanted to know why we had been chosen. What made this even remotely suitable? What would happen to us in the area, and full details of the airport and the massive urbanisation that was going to accompany it? What happened? The report could only spare us three pages. Three pages that they proposed to destroy at least 20,000 acres and ruin thousands of lives. Then we found the information was wrong in many cases. It was clear that the Commission, or the civil servants supporting it, have not bothered to do enough research or that they have mislaid it, and I refer to my examples in my written evidence. Mistake after mistake was made. Statements by people like Peter Masefield have just been ignored.

You made an accusation yesterday, Mr. Hunt. You said a questioner was irresponsible to ask whether the depth of opposition was growing. The irresponsibility is the Commission's and the Government's. If you propose to commit an act of violence upon us, do not pretend to be surprised or shocked when people tell you they will defend themselves —

Inspector You are making yourself quite clear. I appreciate your feelings, but you know quite well what the status of the Commission is. I am sure you do.

Mr. *Morton* I know the status of the Commission, but the Commission has in its written proposals, as I say, given us misleading and wrong information, and this scares all of us. We have said we would fight, many of us. I would like to amend that to "defend", because we are being attacked violently by this proposal. — (*cries of "Hear, Hear!"*.)

Lots of us have tried to behave like thinking, reasoning and patient human beings, but do not under-estimate us or dismiss us. Please do not give us wrong information or misleading information and attack our County Council when they help us to fight, because they have done a magnificent job, and I would like to thank them, all of them, and especially Mr. Millard. Our message is, you can take your outdated 19th century idea for an inland airport, and you can stick it on an estuary or a coastal — (*loud applause*) — Let this Inquiry and any other Inquiry prove once and for all that we are now going to behave like 20th Century planners and human beings. We have had enough violence, noise and human misery and destruction for this century. Let us learn to live with regard for each other, in peace and tranquility. (*cries of "Hear, Hear!" and loud applause*)

* See also p. 1504.

* Reproduced at p. 1001.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. E. F. KIDD* *called*

Mr. *Kidd* Good morning, Mr. Hunt. Firstly might I thank you on behalf of my wife and myself for allowing me to appear to speak, and what I am saying, I can assure you, she agrees with.

My name is Mr. Kidd, and I live in the very beautiful hamlet of Burcott which I understand you know very well. Being here yesterday I also gather you know Stewkley very well. Listening again this morning I think you know the area very well. I think you have lived here. This makes me wonder, sir, why you are here or —

Inspector You must wait until the chapter unfolds at Stage III.

Mr. *Kidd* So I hope you will leave this county and the Vale of Aylesbury with it in your mind to tell the rest of your Commission that this airport site should not be sited in this beautiful area.

Inspector That would be an assumption you ought not to make.

Mr. *Kidd* It is the hope. My wife and I moved from Bletchley to the hamlet five years ago. When we were first married we rented a very small house, and from that time onwards we worked to find a place of our own where we wanted to live. You must have been impressed, especially yesterday, I think, Mr. Hunt, by the concern of the people for their heritage.

A few years ago I was travelling through Europe and I had a cause to pass through the town of Arnhem in Holland and took the opportunity of visiting the military cemetery there. I am sure you know that many of our very brave airborne soldiers are buried there; many of them 18 and 19 years old, with very little time for training. I would like to read, if I may, a passage off one of the head-stones which so affected my wife and I, so deeply, it brought us to tears—I am not ashamed to say this. I am sure that the parents of the particular boy would have no objection to my reading this, and it reads thus: "With other comrades by your side, that we in peace might live, for us they died". As I have said, this affected us so emotionally to think that what they fought for and died for, for us to live in peace, might be taken away from us and many other people, that what they fought for was in vain and their lives wasted. Did these boys and many others die for the right of the individual's freedom in vain? I hope sincerely that the Commission, the Government, and any other people concerned with the choosing of a site for the proposed Third London Airport will think well on these things before choosing a site in the name of science and progress before human beings.

English people can be pushed a very long way for many given reasons. They are the most tolerant people in the world, until it affects their homes. Also, when the large majority in the area object to the compulsory taking of their homes and freedom, to live where they want to live, I am sure I speak for many people when I say: "Don't push this tolerance too far". The government, I hope through you, sir, will be made well aware of this.

I said in my written evidence that a criminal does not have to wait so long for a verdict or pay so much for their defence as the people in the proposed sites are having to do: the worries, the tears—tears of men, yes men, women and children should come to the notice of the Commission—this is a period in our lives that will never be forgotten, whatever the decision may be.

English people are normally law abiding citizens, until something that affects their heritage arises. The possibility of my home being compulsorily taken from me for an airport that in my mind I know should not be sited here for various reasons is enough for me to say that I am unable to associate myself with those against civil distrubance; if my home is compulsorily taken away from me I shall fight for my home in every way I can, and I am sure many other people will do the same.

The Government has asked for this Inquiry to decide whose homes, villages, land and livelihood should be compulsorily destroyed. I do not believe that any government has the right to ask any person or commission to do this. If this is so, many people in this country, even in this hall, have fought not only one war, but two wars, in the name of freedom of the land for heroes to live in for nothing. Is it for nothing? The *Daily Express* this morning, and I quote: "Mr. Will Rogers, Joint Minister of State, stated yesterday that London's Third Airport is already costing £1 million for the Roskill Inquiry and will cost more than £200 million to build —"

Inspector Mr. Kidd, I have listened very patiently, but can you keep to the subject matter of the Inquiry. I have read the papers this morning; we can all read the papers. The subject of Inquiry is into the local implications of an airport. I do not think the cost of the Commission is a local implication.

Mr. *Kidd* I think it is a very local thing, don't you? If we are paying taxes for it — (*Cries of "Hear, Hear!"*)

Inspector Mr. Kidd, all people pay taxes.

Mr. *Kidd* Exactly, this is why I think it concerns us as much as anyone else. I understood the Commission was to find out the various costs and various aspects, and yet we have a statement here that already it is decided the airport is going to cost £200 million. I wonder, has the airport already been decided?

Inspector No, it has not.

Mr. *Kidd* I believe due to the fact that stout-hearted English people defeated the Government Department at another—and I will not mention the

* See also p. 1502.

Printed image digitised by the University of Southampton Library Digitisation Unit

name, sir—well known proposed site for the Third London Airport, a decision was made to set up the Roskill Commission so that a decision could be made that would leave a loophole for politicians and Parliament to state that it was a recommendation of the Commission, to make it easier for the politicians. I hope the Government will have noted a lot more stout-hearted English people have a voice at this Inquiry. The Members of the Commission, I am sure, living at home like us, whose parents, wives and children love their homes like us, should tell the Government they cannot and will not sentence their fellow beings to compulsory loss of their homes and heritage.

For the reasons I have given, I do not think the Inquiry is being held in a democratic fashion. I know different — (*cries of agreement*) it is democratic dictatorship. — (*cries of agreement*).

We are sincere people, and if, as pray God, I hope, the airport is not sited here, we shall not cheer, we shall not wave; we shall go to our Churches and thank God.

There is only one thing I ask you. You have had an invitation from people this morning to visit their homes. I am not only asking you, sir, I ask the Commission, and Members of the Government, when they decide where an airport site should be—anywhere—that they go to the homes of the people, and say: "We are taking away your homes in the interest of science", or anything else you like to put, or money. Thank you, sir. (*applause*)

Inspector Any questions of Mr. Kidd? Thank you.

MR. C. MORTON* *called*

Mr. *Morton* My name is Morton, and I live in Wing. I have submitted written evidence, and you obviously have got a copy of all written evidence. I would like to add to this and enlarge upon it.

When I first read Wing was to be considered as a possible site for the Third London Airport, I was utterly bewildered. I thought the report in the papers must be mistaken, but I hope by now the complete unsuitability of the site has been technically proved to you over the last seven days, and you are hearing the voices of the people who are telling you "No", again, and again, and again. However, the fact remains we are fighting against a proposed monstrous act of vandalism. My initial bewilderment has, like many other people, turned to deep anger in a determination to defend not just my own bit of freedom, but a principle of democracy that would be undermined if you were to ignore the voices of the people and construct your monster not just here, but on any inland site. I know I amongst many others waited anxiously for the published *Site Information** that we were promised. We wanted to know why we had been chosen. What made this even remotely suitable? What would happen to us in the area, and full details of the airport and the massive urbanisation that was going to accompany it? What happened? The report could only spare us three pages. Three pages that they proposed to destroy at least 20,000 acres and ruin thousands of lives. Then we found the information was wrong in many cases. It was clear that the Commission, or the civil servants supporting it, have not bothered to do enough research or that they have mislaid it, and I refer to my examples in my written evidence. Mistake after mistake was made. Statements by people like Peter Masefield have just been ignored.

You made an accusation yesterday, Mr. Hunt. You said a questioner was irresponsible to ask whether the depth of opposition was growing. The irresponsibility is the Commission's and the Government's. If you propose to commit an act of violence upon us, do not pretend to be surprised or shocked when people tell you they will defend themselves —

Inspector You are making yourself quite clear. I appreciate your feelings, but you know quite well what the status of the Commission is. I am sure you do.

Mr. *Morton* I know the status of the Commission, but the Commission has in its written proposals, as I say, given us misleading and wrong information, and this scares all of us. We have said we would fight, many of us. I would like to amend that to "defend", because we are being attacked violently by this proposal. — (*cries of "Hear, Hear!"*.)

Lots of us have tried to behave like thinking, reasoning and patient human beings, but do not under-estimate us or dismiss us. Please do not give us wrong information or misleading information and attack our County Council when they help us to fight, because they have done a magnificent job, and I would like to thank them, all of them, and especially Mr. Millard. Our message is, you can take your outdated 19th century idea for an inland airport, and you can stick it on an estuary or a coastal — (*loud applause*) — Let this Inquiry and any other Inquiry prove once and for all that we are now going to behave like 20th Century planners and human beings. We have had enough violence, noise and human misery and destruction for this century. Let us learn to live with regard for each other, in peace and tranquility. (*cries of "Hear, Hear!" and loud applause*)

---

* See also p. 1504.

* Reproduced at p. 1001.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. JAMES PEARSE* *called*

Mr. *Pearse* James Pearse, the Farm House, Wing. Five years ago I moved to Cublington when I bought the property. If I move it will be by force. That is all I have to say.

MR. N. V. ROGERS† *called*

Mr. *Rogers* Mr. Hunt, I thank you for the opportunity of coming here. You have my written statement, and my sole reason for coming here is to see if you have any questions to ask of me.

Inspector I have no questions. Thank you, Mr. Rogers. Your statement is admirably plain.

MRS. KATHLEEN ROYAL‡ *called*

Mrs. *Royal* I should like to thank you, first of all, for giving me leave to appear here today. I find since I signed my statement that I have one or two things to add. Apparently—since this Inquiry started, I have found that my home will not now be demolished as I had originally thought, but together with the rest of Burcott I should be on the boundary of the proposed Third London Airport. This to me appears even worse than being demolished, as the noise from which I tried to escape from Heathrow Airport by coming to Wing would be increased many times.

I am a widow, and I suffer from a chronic heart condition, and I sunk my capital in my present home, which was only completed twelve months ago, because I have to have peace and quiet upon medical recommendation. So I chose the peace and quiet and the beauty of Buckinghamshire. This same countryside and its villages were the subject of a feature article in the journal called "This England"—it is just those villages that this airport would destroy. I came here and I spent my capital because I thought I was here to stay. I could not afford to move again—where could I hope to establish myself again as happily as I have become here in the hamlet of Burcott? I came as a complete stranger, and I have been welcomed warmly by one and all of the residents in the hamlet. I have only one daughter, who lives in Leighton Buzzard; if I had to leave—and I would have to, because my health could not stand the noise—I would literally not have anywhere to go where I would have any sort of relative to look after me during my occasional bouts of quite serious heart trouble. If I did not receive some compensation, I could not go anywhere; but if compensation were available, I should not want to go. The Queen's speech has already been mentioned, Sir, and I am sorry to mention it again; but I would like to refer to it. I think we have no greater advocate than the Queen herself. If human beings are more important than machines, and if the happiness of mankind is more important that the spectacular achievements of science—please, Sir, would you recommend that we are left here to live our lives in peace—peace, without Concorde? (*applause*)

Inspector Thank you. Mrs. J. West and Mr. T. R. West?

MRS. J. WEST* *called*

Mrs. *West* Apologies, Mr. Hunt!—my husband is unable to be present. I am Mrs. J. West of Burcott; as stated in our letter to the Commission, we moved from the Amersham area eighteen months ago because of the increase in the number of aircraft from Heathrow and the urbanisation of the surrounding area. We chose to live in the Wing area because of the peacefulness and the beautiful countryside; and now, after nearly two years of hard work to put the house and garden in order, we are shattered to find that it may end up as a heap of rubble. My family, with many others, feel that we will have to fight this with every means at our disposal.

Inspector Thank you. Are there any other residents from the Wing Parish Council? Woburn Sands? The Woburn Sands Parish Council?† Individuals from Woburn Sands? Mr. David J. Barrington?

MR. D. J. BARRINGTON‡ *called*

Mr. *Barrington* Sir, thank you for letting me speak. I won't weary you with repeating what I have said; but I want to tell you, Sir my personal feelings—and I stress they are my personal feelings—my feelings since becoming involved. I am a young man; if later I say a little too much, I hope you will excuse me.

When I wrote my statement, Sir, I tried to take a plain, ordinary view, without any technical knowledge at all in fact. I mentioned in my letter that I had no experience of the noise. I never had it brought home to me how serious the noise was, and then I got a shock, because I heard on the wireless an interview with a householder. This householder's dwelling

* See also p. 1505.
† See also p. 1506.
‡ See also p. 1507.

* See also p. 1508.
† Written evidence available for inspection, by arrangement, at the offices of the Commission.
‡ See also p. 1509.

Printed image digitised by the University of Southampton Library Digitisation Unit

was near Stansted, near the runway; and the reporter, or interviewer, met the householder in his house, and the householder said that recently the noise of jets had increased. Whilst they were talking, two jets went over in the space of two minutes and the voices of the reporter and the householder were absolutely drowned. At that moment, Sir, I was struck so vividly that this noise was the most intolerable and vile intrusion into life, that I could imagine. I had taken a quiet view, perhaps ready to be steamrolled over, when what had to be done was to fight and shout with every means—not quite so loudly, perhaps, as the jets, Sir! In short, I was shattered after hearing that noise. I decided that I would do everything in my power to stop the airport. Sir, in the experience I have had in the last few weeks, other people are coming round to this way of thinking. Many people are realising that if this site is chosen, there will be an uprising, and I shall be in the uprising. I do not believe that people will sit by and let their houses, their own treasures, be killed. Killed, Sir. Those people, and those in the surrounding areas, will stand on the proposed site, first to defend it and then, for myself, Sir, to fight for it. Thank you, Sir.

Inspector Thank you. We have heard from Mr. F. O. Gregg; he was here earlier. Mr. S. W. Jennings?

Mr. S. W. Jennings* *called*

Mr. *Jennings* I am most grateful to you, Sir, for granting me leave to appear. On 18th June, I submitted a statement showing in detail the grounds of my objection to the proposed airport site. I have nothing to add to that, or to detract from it, excepting that with your permission I would like to make three short observations.

Prior to my retirement, it was my privilege to serve the community of this country for something approaching 40 years, and I know the people, the populace, very well, and in particular the populace of the villages north of Aylesbury. I can say with complete confidence that they are very reasonable, tolerant, and understanding people. Secondly, I do know that the County of Buckinghamshire is possibly the most beautiful in the whole country. I do know that since my retirement, I have been living in the village of Woburn Sands, where I was born. I know it to be very beautiful, I have no reason to wish anything to be distrubed; and I want to continue now what I think I have earned—quiet enjoyment for the future. Thank you very much, Sir.

Mr. R. S. Meredith† *called*

Mr. *Meredith* Good morning, Sir; thank you for permission to appear. I would like to add just a few points to this statement I have already made, with regard to the future. In the past few days, the fact that we are really living in the technological Space Age has been brought home to us. What kind of world shall we be living in, in 50 years time, is beyond the average imagination. Let us make sure that the kind of airport we build and the place in which we build it is not so rigidly tied up to the basic principles of the planning of yesterday that in a few decades it becomes as obsolete as a Victorian railway station. In the next century, the great social problem is not going to be unemployment, but what to do with leisure time, as man's ingenuity to get machines to work for him develops. The physical business of work will become well behind the pursuit of relaxation, culture and education; places of sanity must be reserved for this purpose. I ask the Commission: please, do not lay waste the lives of many thousands of people today by pouring concrete on what may be the paradise of the future.
(*applause*)

Mr. A. P. Tomkins* *called*

Mr. *Tomkins* Sir, I asked for leave to appear; I believe you have my written statement, and have read it. I would like to confirm that statement, and my presence here this morning, as being utterly opposed to Wing Airport. Two particular considerations, both of which are partially mentioned, I would wish for a moment to amplify. The first concerns a particular enjoyment that I am sure my wife and I are not the only ones to share in the area, and that is something which is relatively new around the country—that of stereo broadcasting. We were hearing this morning particularly personal objections to the siting of Wing Airport at Wing, and this is one that is very, very strong for my wife and myself. We get considerable enjoyment—dare I say?—perhaps from not having a television, but enjoying the music that is being put over on stereo broadcasts which, with ingenuity and the help of a local engineer, we are able to receive quite adequately at the moment from Birmingham. Undoubtedly, as far as interference is concerned, as Woburn Sands is right on the flight path and within the 50 NNI contour, the jets will completely disrupt this. Colleagues of mine at my London office who live in the proximity of Heathrow have extreme difficulty in obtaining any conditions at all whereby listening to music and all the enjoyment that can be gained from this is possible.

The other fact, having mentioned my London office, is that one of the reasons for moving to Woburn Sands was to enjoy in our leisure moments—which, as the last speaker has mentioned, are on the increase—the countryside which, as Woburn Sands is

* See also p. 1510.
† See also p. 1519.

* See also p. 1513.

Printed image digitised by the University of Southampton Library Digitisation Unit

situated in a particularly beautiful part of the country, and is particularly peaceful and quiet, is yet within easy access, afforded by the M.1. I am given to understand that we are talking in terms of present conditions; we cannot anticipate, as regards this airport, what might happen by way of provision of roads, extra railways, or anything else. I stated in my letter that, as regards the present, this condition of the motorway for heavy volumes of traffic. As far as the M.1 is concerned, it is well-nigh saturated, particularly on Friday evenings and Monday mornings, and it is also increased between the Watford turn-off and that at Hemel Hempstead. Looking at this, the easy communication that we enjoy at the moment, and which is, I think, one of the advantages of the motorway being built in the first place goes by the board completely. I find it difficult to anticipate that if Wing Airport is built on this site, that road and railway construction is going to work satisfactorily to absorb the extra load; and for these two reasons, and the others already stated in my letter, I object on behalf of my wife and myself, most strongly regarding the airport at Wing.

Inspector Mr. and Mrs. E. Warrick?* Are there any other residents from Woburn Sands? Mrs. Jill White from Wavendon?

MRS. J. WHITE† *called*

Mrs. *White* Good morning; thank you for letting me appear here today. I think you have my evidence?

Inspector I have, yes.

Mrs. *White* Good, because they told me it was lost. I just had one or two extra things. We chose Wavendon because we love living in the country, mostly, and also because my mother, who lives in Woburn Sands, and my mother-in-law, are in their late seventies. Another thing—we have been told that there is a shortage of water—in fact, because of this we have been changed to another supply, which is horrible, and in fact there is a lot of stomach upsets in our area from it. I am afraid this is going to get worse. Another thing is we are very close to Milton Keynes, and it means that we are going to be virtually cut off, if we have Wing Airport on one side and Milton Keynes the other. It will be like a little dead village in the middle. My husband works two hour shifts alternate, nights and days; it is difficult enough to sleep in the day time—it will be even worse. My son and myself both have migraine, and any extra noise makes life intolerable for us. That is all I have to say.

* Written evidence available for inspection, by arrangement, at the offices of the Commission.

† See also p. 1514.

Inspector Thank you. Is Mr. A. W. Phillips of Stewkley here?

Mr. *Phillips* Yes.

Inspector Please!

MR. A. W. PHILLIPS* *called*

Mr. *Phillips* Thank you very much for letting me come this morning; I am sorry not to have come yesterday. I come from Stewkley. We all know what that means! In addition to the evidence I have written to you, I just want to say—and I mean it, I can assure you—that I won't have any misguided fools in Whitehall telling me where I can or can't live—and if they think they are going to, they have a fight on their hands! (*applause*)

Inspector Any questions? Thank you. Now that, to the best of my knowledge, completes my programme. Are there any individuals or other parties who have been granted leave to appear, who have not been heard? There are apparently none.

Mr. *Hamilton* Sir, if I may—I would, on behalf of Bucks County Council, like to say a few words of thanks to you; and may I say at once that Mr. Millard would, I am sure, have wished to be here today, but this morning is unfortunately the Quarterly Meeting of the Bucks County Council, and I am sure you will understand his absence. I believe, Sir, that we may not have achieved a record in the matter of the number of days spent at a hearing—I believe, though I am not sure, that we may have achieved a dead heat with another place —

Inspector They were not such full days at the other place. You win on points.

Mr. *Hamilton* But I am, Sir, very conscious that because of the choice that was made as to the manner of the presentation of local views, a record number of people have appeared before you, and, more particularly, Sir, that you have had to read and digest a record number of written statements and submissions, many of which, Sir, I am afraid, have probably been in manuscript and must have been somewhat trying to you for that reason. The events of the last few weeks, Sir, have emphasised in our minds that we did make the right choice; but we do realise and appreciate very much, Sir, what a great burden this has placed on you. The Commission, Sir, will be hearing a good deal more from the County Council at the later stages, but this has been our great occasion to put before the Commission through you the local effects—the expert opinions on the local implications, views on the aesthetic, on the human and, if you like, as Mr. Sillitoe said yesterday, the emotional aspects of putting an airport here; and I

* See also p. 1515.

Printed image digitised by the University of Southampton Library Digitisation Unit

do, Sir, very sincerely wish, on behalf of the County Council and indeed all those who have appeared in the last seven days, in one way or another in association with the Council to thank you, Sir, for all the care and trouble you have so obviously taken in reading and digesting all the material which has been placed before you, and also, Sir, for your kindness, courtesy, and consideration, to all those who have appeared before you. Many of them, Sir, I am sure, have not had occasion to speak in public on their feet at an event of this nature, and the atmosphere which you have been able to maintain has, I am sure, been of tremendous help to them. We do, Sir, very, very sincerely thank you.

And finally, may I just add a word of thanks to the staff, whom you have had down here with you? The marshalling of the enormous volume of papers, and the arrangement of a programme to fit in so many people must have been a formidable task indeed; but so far as we are concerned, everything seems to have gone like clock work, and we are indeed grateful to them all.

Inspector Thank you. (*applause*)

Mr. *Maxwell* (*Aylesbury Town Clerk*) I am sure that all my colleagues of the Second Tier Authorities would wish to thank you, Sir, for your kindness and tolerance to all the many witnesses who have appeared before you, and for the efficiency and helpfulness of your staff. And we hope that you have found what you heard in Aylesbury of interest, and that you will pass it on to your colleagues on the Commission.

May we be forgiven also for expressing our appreciation of Mr. Moore and his assistant for the excellence of the amplification which he has arranged in a hall which cannot be regarded as having the sophistication that the Third London Airport would have; and a word of praise would be merited, Sir.

Mr. *Bandy* May I say on behalf of the local Councils, that we join with Mr. Hamilton and the Clerk of Aylesbury in saying how much we appreciate being one of Millard's Citizens, and being under your chairmanship?

Inspector Thank you, Mr. Bandy. May I just say, on behalf of myself and the Commission, that we in turn extend our very grateful thanks to the Aylesbury Borough Council for making all this available, and for their staff, for all the courtesy they have afforded us, and all th epeople who have visited the proceedings? Secondly, to Mr. Millard of the County Council staff, we are also most grateful for assistance for presentation of their case, and for assistance to us in bringing all the individuals from the parishes to the hearing in a proper order and to everybody's satisfaction.

I also was going to mention the unknown gentleman at the back of me, who has never failed to find the right microphone; and I also think that the amplification has been absolutely first class.

Finally, we are most grateful to the County Council, the Second Tier Local Authorities, Mr. Bandy's Third Tier Local Authorities, all the associations and other individuals who have come along to present such a clear picture for us of the local implications of a Third London Airport at Cublington-Wing; and I reiterate that that was the purpose, and the sole purpose, of this hearing. Thank you very much indeed; and I say again that all oral and written submissions will receive the most careful consideration of the Commission in their future task.

Thank you. The hearing is now closed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

List of Appearances

1773

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Lt. Col. I. B. Addis
Dr. D. M. Allen
Mr. G. Andrews
(Towensey Parish Council)
Mr. W. E. Andrews
Mr. W. G. Andrews
(Wing Airport Resistance Association)
Dr. W. B. Armstrong
Mr. S. E. Baker
Mr. A. Ball
Mr. S. R. K. Ball
Mr. H. C. Balfour
(National Farmers' Union)
Mr. J. Bandy
(Wing Parish Council)
Mr. B. Banfield
(Beacon Villages Society)
Mr. D. Barrington
Mrs. F. J. Barff
Mr. W. J. Bates
Mr. R. P. Bates
(Granborough Parish Council)
Mrs. D. Bates
Mr. B. Bateman
Mrs. A. E. Beasley
(Stewkley Parish Council)
Mr. I. Beckett
Mr. J. M. Bell
(Bedford Borough Council)
Capt. D. J. Bellingham
(Wing Airport Resistance Association)
Mr. J. G. C. Spencer Bernard
Mr. A. L. Bennett
(Buckinghamshire, Northamptonshire and Oxfordshire County Councils)
Sir John Betjeman
(Wing Airport Resistance Association)
Mr. A. J. Biggs
Mr. F. R. Black
Mrs. C. Bodington
Mr. R. Body
(Council for the Preservation of Rural England)
Mr. P. J. Boyd
Mrs. P. Johnston Boulton
Mr. A. M. Brace
(Ploughley Rural District Council)
Mr. R. Bramwell
Mr. Y. F. Bratton
Mrs. M. Brazil
(Bucks Federation of Women's Institutes)
Mr. S. C. Breasley
(Powell Duffryn Technical Services)
Sir Arthur Bryant
(Wing Airport Resistance Association)
Mrs. P. Brunner
Mr. D. Brown
Mr. R. G. Brown
(Winslow Rural District Council)
Dr. P. Brown
(Cublington Parish Council)
Mr. J. B. Brown
Mr. C. Brown
Lord Campbell
(Milton Keynes Development Corporation)
Miss E. P. Carpenter
Mr. W. Carslate
(Haddenham Parish Council)
Mr. A. C. Chandler
Mr. G. A. Cheney
Mr. R. Chiddick
Dr. H. Clay
(Great Ouse River Authority)
Mr. L. Coates
Mr. C. K. Cole
(Luton County Borough Council)
Mr. F. R. Cole
Mr. F. C. Coles
Mrs. C. W. Coleman
Mr. M. Connell
(Leighton-Linslade Urban District Council)
Mrs. J. Cornock
Mr. J. M. Cornwell
Mr. G. Cowley
(Bedfordshire County Council)
Mrs. E. Cox
(Weedon Women's Institute)
Mr. R. S. Cox
(Bucks Water Board)
Mr. A. B. Cozens
Mr. R. Crabbe
Mr. S. T. Dancer
Mr. D. P. Davidson
(Buckinghamshire, Northamptonshire and Oxfordshire County Councils)
Mr. G. Davis
Mr. F. A. Day
Mr. H. G. Dickins
(Drayton Parslow Parish Council)
Major P. D. P. Duncombe
(Country Landowners' Association also representing Great Brickhill Parish Council)
Mr. D. Duncan
(Wingrave with Rowshaw Parish Council)
Mr. G. I. W. Dunford
(Buckinghamshire, Northamptonshire and Oxfordshire County Councils)
Mr. K. Edwards
(Bullingdon Rural District Council)
Mr. P. Elmer
(Aston Rowant Parish Council)
Mr. H. A. C. Evans
(Wing Airport Resistance Association)
Mr. A. B. Faulkner
Mr. J. D. Faulkner
Mr. P. Fehr
Mr. J. D. Fennell
(Wing Airport Resistance Association)

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. J. Ferris
(Leighton Buzzard Arts Club)
Mr. N. Fleming
(Buckinghamshire, Northamptonshire and Oxfordshire County Councils)
Mr. B. H. Fuller
Mr. M. Fitzgerald
(National Trust)
Mr. and Mrs. C. E. Fraser
Mrs. D. Foulger
Mr. L. T. Gadge
(Thame Urban District Council)
Mrs. P. Gallimore
(St. Michael's Church Guild)
Mr. A. K. Giles
(National Farmers' Union)
Mr. G. I. Ginn
(Stewkley Action Committee also representing Wing Airport Resistance Association)
Mrs. F. W. Grace
Mrs. G. M. Grace
Mr. D. C. T. Graves
Mr. F. O. Gregg
Mr. C. Greenacre
Mr. A. Gregory
(Country Landowners' Association)
Sir Ludwig Guttmann
(Wing Airport Resistance Association)
Mr. H. Hague
Mr. T. Hancock
(Wing Airport Resistance Association)
Mr. G. Hawkins
(Pitstone Parish Council)
Mr. M. A. Hardings
Dr. V. E. Lloyd Hart
Mr. A. G. Harris
Miss C. E. Harris
Miss D. Harris
Mr. C. Harwood
(New College, Oxford)
Mr. J. E. Y. Hawkes
(National Farmers' Union)
Mr. P. Head
Mr. R. Heley
Mr. Hill
(Oxfordshire County Council)
Mr. S. Holmes
Mr. D. Holt
(Newton Longville Parish Council)
Mr. Illings
(Watford Borough Council)
Sir Gilbert Ingelfield
(St. Michael's Church Preservation Committee)
Mr. Ismay
(Milton Keynes Development Corporation)
Mr. A. James
(Bucks Association of Parish Councils)
Mr. J. H. Jeffries
Mr. S. W. Jennings
Mr. A. K. Jones
Mr. S. F. Jones
Mr. T. W. Jones
(Tring Urban District Council)
Mr. D. Judd
Mr. D. Keene
(Hertfordshire County Council)
Brig. S. H. Kent
(Kingsey Parish Meeting)
Mr. D. F. Kessler
(Stoke Hammond Parish Council)
Mr. E. F. Kidd
Mrs. B. Kilty
(Cublington Airport Supporters' Committee)
Mr. P. Kinsey
(Mid Bucks Liberal Association)
Mr. D. A. Lambourne
Mr. M. S. Leslie
(Leighton-Linslade Urban District Council)
Sq. Ldr. B. Lock
(Bucks Association of Parish Councils)
Mr. A. C. Lovejoy
Mr. D. M. Lumb
(Wing Airport Resistance Association)
Dr. J. R. Lumb
Mr. Lymberry
(Aylesbury Rural District Council, Berkhampstead Urban District Council, Bullingdon Rural District Council, Tring Urban District Council, Wing Rural District Council and Winslow Rural District Council)
Mr. Lymbeny
(Aylesbury, Bullingdon, Wing and Winslow Rural District Councils and Tring and Berkhampstead Urban District Councils)
Dr. D. MacCarthy
Mr. MacDermot
(Wing Airport Resistance Association)
Mr. N. MacDermott
(Bedfordshire County Council)
Mr. R. E. Main
Mr. A. E. Malles
Mr. S. McArdle
(Luton County Borough Council)
Wing Commander C. J. B. McClure
(Wing Airport Resistance Association)
Mrs. C. M. McMahon
Mr. D. W. McQue
(Wing Airport Resistance Association)
Mrs. P. O. Manley
Mr. R. Maxwell
(Aylesbury Borough Council)
Mr. R. Maxwell
(Stewkley Local Labour Party)
Mr. J. W. Mead
Mr. P. G. Medcalf
Mr. L. S. Michaelis
Mr. D. Midwinter
(Winslow and Stewkley division Bucks County Council)
Mr. R. Millard
(Buckinghamshire, Northamptonshire and Oxfordshire County Councils)
Mr. H. Minnit

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. A. M. Miscampbell
(Aylesbury Industrial Group)
Mr. A. Morrison
Mr. J. Morton
(North Marston Parish Council)
Mrs. A. Morton
(Wing Airport Resistance Association)
Mr. C. Morton
Mr. R. S. Meredith
Mrs. P. M. Murphy
Mr. H. van Oosterom
(Great Ouse River Authority)
Mr. V. Osborn
(Wing Airport Resistance Association)
Mr. B. G. Osborn
Mr. D. S. R. Overton
(Hertfordshire County Council)
Mr. S. W. Pacey
(Leighton-Linslade Urban District Council)
Mrs. S. L. Panter
Mr. R. G. Parsons
Mr. E. J. Payne
(Cublington Airport Supporters' Committee)
Mr. J. Pearse
Mr. Perry
(Stone with Bishopstone Parish Council)
Mr. A. W. Phillips
Mr. P. J. Preston
Mr. F. B. Pooley
(Buckinghamshire, Northamptonshire and Oxfordshire County Councils)
Mr. R. Pownall
(Bucks Water Board)
Mr. M. H. J. Radcliffe
Mr. A. J. Radwell
Mr. M. R. Rakusen
Mr. A. C. Read
Mr. S. C. Redding
(Berkhampstead Urban District Council)
Dr. J. J. A. Reid
(Buckinghamshire, Northamptonshire and Oxfordshire County Councils)
Mrs J. Rider Richardson
Mr. D. F. Rider Richardson
Dr. B. Ricketson
Mr. R. Robertson
(Weedon Parish Meeting)
Mr. C. A. Rogers
(National Farmers' Union)
Miss D. M. Rogers
Mr. N. V. Rogers
Mr. M. J. Rogers
(National Trust)
Mrs. R. A. Rogers
Sir John Rothenstein
(Newington Parish Council)
Mr. D. B. Rose
(Buckinghamshire, Northamptonshire and Oxfordshire County Councils)
Mr. E. C. Rouse
Mrs. K. Royal
Mr. W. H. Ruthven
Mr. S. Sarjeant
(Drayton Parslow Women's Institutes and Drayton Parslow Action Committee)
Mr. J. B. Saunders
(Leighton-Linslade Urban District Council)
Mr. V. Scott
Mr. V. J. Scott
(Wing Airport Resistance Association)
Mr. D. Skinner
(Wing Airport Resistance Association)
Mr. F. A. Sharman
(Buckinghamshire, Northamptonshire and Oxfordshire County Councils)
Rev. Sillitoe
(Dunton Parish Meeting)
Mrs. D. G. M. Smart
Mr. R. Smith
Mr. W. J. Smith
(Cublington Airport Supporters' Committee)
Mr. A. Snaith
(Newport Pagnell Rural District Council)
Mr. J. C. Southwell
(Luton County Borough Council)
Mr. K. Summerfield
(Oxfordshire County Council)
Mrs. B. Taylor
Mr. E. G. R. Taylor
Sir R. Taylor
(Great Haseley Parish Council)
Mr. R. C. Tetlow
(Bletchley Urban District Council)
Mr. R. Tetlow
(Assenden Parish Council, Chearsley Parish Council, Dorton Parish Meeting, Lower Winchendon Parish Meeting, Waddesdon Parish Council, Westcott Parish Council, Wotten Underwood Parish Meeting)
Mr. W. E. Thompson
(Wing Rural District Council)
Miss J. M. V. Tinworth
Cllr. Todd
(Whitchurch Parish Council)
Mr. A. P. Tomkins
Mrs. Tomlinson
(The Chilton Society)
Mr. A. E. Toye
(Aylesbury Rural District Council)
Mr. W. S. Trickey
Mrs. D. Tucker
(Chinnor Parish Council)
Mr. N. Wallace
(National Farmers' Union)
Mr. R. A. Waller
(Wing Airport Resistance Association)
Mrs. C. Walsh
(Cublington Airport Supporters' Committee)
Mr. K. Walker
Mr. V. G. Walker
Dr. D. C. Watt
(St. John's and Manor House Hospital)
Mr. K. F. Ward
Mr. T. Warren

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. D. J. Watts
Mrs. J. West
Mr. P. E. Wheeler
Mrs. J. White
Mr. A. Wigley
(Winslow Parish Council)
Rev. J. E. H. Williams
(Whitchurch with Creslow Parochial Church Council)
Mrs. G. Wood
(Hardwick Parish Council)
Miss P. K. Wolf
Mr. M. J. Woodland
(Nature Conservancy)
Mr. P. Young
(Oving Parish Council)
Mr. G. Stuart Young
(Aylesbury Industrial Group)

Dd. 147338 K16

Printed in England for Her Majesty's Stationery Office
by J. W. Arrowsmith Ltd., Bristol

1778

UNIVERSITY OF
7 MR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

OP.1100.120.140

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings volume V

Stage II: Local Hearings

Cublington (Wing)

LONDON
HER MAJESTY'S STATIONERY OFFICE
1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Commission on the Third London Airport

Members of the Commission

The Hon. Mr. Justice Roskill	(*Chairman*)
Professor Colin Buchanan	Professor of Transport, Imperial College of Science and Technology
Mr. A. Goldstein	Partner in R. Travers Morgan and Partners, Consulting Engineers
Mr. A. J. Hunt	Principal Planning Inspector, Ministry of Housing and Local Government
Professor David Keith-Lucas	Professor of Aircraft Design, the College of Aeronautics, Cranfield
Mr. Arthur Knight	Finance Director, Courtaulds Ltd.
Professor A. A. Walters	Cassel Professor of Economics in the University of London

---

Mr. J. Caines	(*Secretary*)
Mr. F. P. Thompson	(*Director of Research*)

The Commission on the Third London Airport
Templar House
81-87 High Holborn
London WC1

Tel: 01-242 0161

SBN11 510159 4

Printed image digitised by the University of Southampton Library Digitisation Unit

Preface

The Stage II Local Hearings are being published as volumes III to VI of the Papers and Proceedings as follows:

volume III	Foulness (off-shore)
volume IV	Nuthampstead
volume V	Cublington (Wing)
volume VI	Thurleigh

For the convenience of users the text and the drawings of the four *Site Information* booklets (previously published separately) and of the additional site information issued for the Thurleigh Hearing will be included in each part. The page numbers of the four volumes will run consecutively so that they may, if desired, be bound up together. As the four volumes that form Stage II are being printed concurrently, it has been necessary to allocate to each part a block of page numbers that will not overlap with the other volumes. Consequently there will be gaps in the pagination between one volume and the next. These pages will be indicated thus: pages: 273–300 not used. The question numbers in the oral evidence will also run continuously. After the issue of the final volume a separate index to all the Stage II volumes will be published.

This volume contains the record of the proceedings of the Commission's Stage II public hearings in July 1969 on the local implications of the Cublington (Wing) site. The oral evidence and the written proofs of evidence on which this was based are reproduced in full.

Some of those who were given leave to appear decided subsequently not to present their evidence in person at the hearings. The written proofs of the evidence which they submitted therefore fell to be considered together with other written representations. These proofs and the written representations are not reproduced in full. A list of the names of those concerned is given on page 1517. Copies of all these submissions are available for inspection by arrangement at the Commission's offices.

The oral evidence is taken from the transcripts of the hearings. Such amendments to the transcripts as were notified have been incorporated.

Note: Pages 927–1000 have not been used.

Printed image digitised by the University of Southampton Library Digitisation Unit

Contents

	Page
Site information for Stage II Local Hearings: 2. Cublington (Wing)	1001
Arrangements for Stage II Hearing on Cublington	1003

WRITTEN EVIDENCE

Day 1

Buckinghamshire, Bedfordshire, Hertfordshire, Northamptonshire and Oxfordshire County Councils:	
Evidence of Mr. F. A. Sharman	1007
Evidence of Mr. G. I. W. Dunford	1015
Evidence of Mr. N. Fleming	1017
Evidence of Mr. F. B. Pooley	1023
Evidence of Dr. J. J. A. Reid	1038
Evidence of Mr. D. P. Davison	1045
Evidence of Mr. D. B. Rose	1050
Evidence of Mr. A. L. Bennett	1056
Oxfordshire County Council:	
Evidence of Mr. K. Summerfield	1064
Evidence of Mr. G. G. Burkitt	1068
Milton Keynes Development Corporation	1070
Bedfordshire County Council:	
Evidence of Mr. G. W. Cowley	1072
Hertfordshire County Council:	
Evidence of Mr. D. S. Overton	1076
Watford Borough Council	1083
Luton County Borough Council:	
Evidence of Mr. C. K. Cole	1084
Evidence of Mr. S. McArdle	1088
Aylesbury Rural District Council	1091
Berkhamstead Rural District Council	1093
Bullingdon Rural District Council	1096
Tring Urban District Council	1097
Wing Rural District Council	1100
Winslow Rural District Council	1102
Powell Duffryn Technical Services	1104
Mr. A. C. Harding	1106
Mr. C. Brewer	1107

Day 2

Aylesbury Borough Council	1111
Bletchley Urban District Council	1119
Newport Pagnell Rural District Council:	
Evidence of Mr. A. Snaith	1121
Evidence of Mr. C. B. Bates	1124
Little Brickhill Parish Council	1124
Bow Brickhill Parish Council	1125
Granborough Parish Council	1127
Haddenham Parish Council	1128

Printed image digitised by the University of Southampton Library Digitisation Unit

	Page
Newton Longville Parish Council	1130
North Marston Parish Council	1131
Pitstone Parish Council	1133
Wingrave with Rowsham Parish Council	1134
Winslow Parish Council	1139
Great Ouse River Authority:	
Evidence of the Pollution Prevention Officer	1141
Evidence of the Deputy Engineer	1141
Kingsey Parish Meeting	1144
Bedford Corporation	1145
Leighton-Linslade Urban District Council:	
Evidence of Mr. S. W. Pacey	1147
Evidence of Mr. M. S. Leslie	1148
Evidence of Mr. J. B. Saunders	1149
Stone with Bishopstone Parish Council	1150
Thame Urban District Council	1151
Ploughley Rural District Council	1153
Aston Rowant Parish Council	1154
Great Haseley Parish Council	1155
Hethe Parish Council	1157
Towersey Parish Council	1158
Bucks Water Board	1159
Day 3	
Wing Airport Resistance Association:	
Evidence of Mr. J. D. A. Fennell	1163
Evidence of Mr. D. R. Skinner	1172
Evidence of Sir Arthur Bryant	1174
Evidence of Sir John Betjeman	1176
Evidence of Sir Eric Fletcher	1178
Evidence of Mr. G. I. Ginn	1179
Evidence of Mrs. V. Osborn	1180
Evidence of Mrs. A. Morton	1181
Evidence of Sir Ludwig Guttmann	1182
Evidence of Capt. D. J. Bellingham	1184
Evidence of Mr. W. G. Andrews	1186
Evidence of Mr. T. Hancock	1187
Evidence of Mr. R. A. Waller	1199
Evidence of Mr. D. M. Lumb	1209
Evidence of Wing Commander C. G. B. McClure	1211
Evidence of Mr. D. W. McQue	1216
Evidence of Mr. V. J. Scott	1218
Evidence of Mr. H. A. C. Evans	1220
Stewkley Action Committee	1223
Rev. J. E. H. Williams	1225
Mrs. P. Gallimore	1226
Day 4	
Mr. W. H. Ruthven	1229
Cublington Airport Supporters' Committee:	
Evidence of Mrs. B. Kilty	1231
Evidence of Mr. W. J. Smith	1232
Evidence of Mrs. E. Kapui	1233

Printed image digitised by the University of Southampton Library Digitisation Unit

	Page
National Farmers' Union:	
Survey of affected farmers	1235
Planning evidence	1237
Agricultural evidence	1243
Evidence of Mr. C. A. Rogers	1250
Drainage evidence	1251
Evidence of representative farmers	1253
National Trust	1259
Nature Conservancy	1261
Council for the Preservation of Rural England:	
Evidence of Mr. P. W. Macfarlane	1263
Evidence of Mrs. A. Maude	1265
Evidence of Capt. Sir Thomas Barlow	1276
Evidence of the Youth Hostels Association	1279
St. John's and Manor House Hospital Management Committee	1280
Chiltern Society	1283
Country Landowners' Association	1285
Additional evidence by Cox, Long & Co.	1288
Beacon Villages Society	1289
New College, Oxford	1294
Leighton Buzzard Arts Club	1295
Day 5	
St. Michael's Church Preservation Committee	1299
Bucks Federation of Women's Institutes	1307
Mrs. S. L. Sargeant	1309
Weedon Women's Insitute	1311
Sq. Ldr. B. Lock	1312
Mrs. D. R. Rogers	1315
Mr. E. G. R. Taylor	1316
Aylesbury Industrial Group	1319
Mid Bucks Liberal Association	1322
Sir John Rothenstein	1323
Dr. D. M. Allen	1324
Mr. B. Bateman	1325
Capt. D. J. Bellingham	1327
Mr. D. Brown	1328
Mr. E. Brunner	1329
Mr. A. C. Chandler	1331
Mr. R. Crabbe	1333
Mr. A. C. Lovejoy	1335
Mr. D. Midwinter	1336
Mr. J. E. Midwinter	1337
Mrs. P. M. Murphy	1339
Dr. B. W. A. Ricketson	1340
Mrs. B. Taylor	1341

Printed image digitised by the University of Southampton Library Digitisation Unit

Cublington Airport Supporters Committee: *Page*
Evidence of Mr. E. J. Payne 1342
Evidence of Mrs. C. Walsh 1344
Mr. R. Bramwell 1346
Mr. J. M. Cornwall 1350
Stewkley Local Labour Party 1351

Day 6

Ashendon Parish Council; Chearsley Parish Council; Dorton Parish Meeting; Lower Winchendon Parish Meeting; Waddesdon Parish Council; Westcott Parish Council; Wotton Underwood Parish Council: joint statement 1355
Ashendon Parish Council 1356
Chearsley Parish Council 1357
Dorton Parish Meeting 1358
Lower Winchendon Parish Meeting 1359
Waddesdon Parish Council 1359
Westcott Parish Council 1360
Wotton Underwood Parish Meeting 1361
Mr. A. E. Toy 1362
Mr. D. C. T. Graves 1363
Mr. B. H. Fuller 1364
Mr. S. Holmes 1365
Mr. D. Judd 1366
Mr. H. Minnitt 1367
Mr. V. J. Scott 1368
Mr. R. G. Parsons 1369
Mr. W. S. Trickey 1370
Mr. F. K. Ward 1371
Mr. T. Warren 1372
Mr. D. J. Watts 1373
Mr. W. G. Andrews 1375
Mr. S. F. Jones 1376
Dr. V. E. Lloyd Hart 1377
Miss C. E. Harris 1378
Dr. P. S. Brown 1379
Cublington Parish Council 1380
Mr. A. J. Biggs 1381
Miss C. Bodington 1382
Mr. A. E. Males 1383
Mrs. P. O. Manley 1384
Mr. B. G. Osborn 1385
Mrs. S. L. Panter 1386

Printed image digitised by the University of Southampton Library Digitisation Unit

	Page
Mr. A. J. Radwell	1387
Mr. A. C. Read	1389
Mrs. R. A. Roger	1390
Mr. R. Smith	1391
Council for the Preservation of Rural England: Evidence of Mr. E. C. Rouse	1392
Mr. V. G. Walker	1402
Drayton Parslow Parish Council	1403
Mrs. A. K. Jones	1415
Great Brickhill Parish Council	1417
Mr. F. A. Day	1419
Lt. Col. I. B. Addis	1420
Mr. S. E. Baker	1421
Mrs. P. Johnston Bolton	1422
Mrs. C. M. McMahon	1423
Premier Farm Products	1424
Mrs. J. M. V. Tinworth	1425
Mr. J. G. C. Spencer Bernard	1426
Mr. C. Greenacre	1427

Day 7

Dunton Parish Meeting	1431
Mr. G. Davis	1432
Dr. L. S. Michaelis	1433
Hardwick Parish Council	1434
Mr. and Mrs. L. W. Coleman	1436
Mr. P. Fehr	1437
Oving Parish Council	1438
Mr. S. R. K. Ball	1439
Mrs. F. J. Barff	1440
Mr. and Mrs. A. Morrison	1441
Stewkley Parish Council	1442
Mrs. D. Bates	1444
Mrs. F. W. Grace	1445
Mr. V. F. Bratton	1446
Mr. and Mrs. J. B. Brown	1447
Mr. F. R. Cole	1448
Mr. A. B. Cozens	1449
Mr. F. C. Coles	1450
Mr. A. B. Faulkner	1451
Mr. J. D. Faulkner	1452

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Mrs. E. M. Grace 1453
Mr. M. A. Hardings 1454
Mr. J. W. Mead 1455
Mr. P. J. Preston 1456
Mr. P. E. Wheeler 1457
Mr. D. B. Head 1458

Day 8

Dr. D. MacCarthy 1461
Mr. P. G. Medcalf 1463
Conservators of the River Thames 1464
Dr. W. B. Armstrong 1467
Stoke Hammond Parish Council 1468
Mr. W. J. Bates 1470
Mr. P. J. Boyd 1471
Mr. S. T. Dancer 1472
Mr. J. R. Jeffries 1473
Dr. J. R. Lumb 1474
Mr. F. O. Gregg 1475
Weedon Parish Anti-Airport Committee 1476
Mr. R. W. Chiddick 1479
Mrs. A. F. Cornock 1480
Mr. C. Fraser 1481
Mr. H. Hague 1482
Mr. M. H. J. Radcliffe 1483
Mr. D. F. Ryder Richardson 1484
Mr. D. G. M. Smart 1485
Mr. K. Walker 1486
Whitchurch Parish Council 1487
Mr. A. R. S. Ball 1488
Mr. I. Beckett and Mrs. R. A. Beckett 1489
Mr. C. Brown 1490
Mr. L. Coates 1491
Mrs. D. Foulger 1492
Mr. R. E. Main 1493
Mrs. J. Ryder Richardson 1494
Wing Parish Council 1495
Mrs. F. R. Black 1498
Mr. A. G. Harris 1499
Miss D. M. Harris 1500
Mr. R. G. F. Heley 1501
Mr. E. F. Kidd 1502

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Mr. C. Morton 1504
Mr. J. Pearse 1505
Mr. N. V. Rogers 1506
Mrs. K. H. Royal 1507
Mr. and Mrs. J. R. West 1508
Mr. D. Barrington 1509
Mrs. S. W. Jennings 1510
Mr. R. S. Meredith 1511
Mr. A. Tomkins 1513
Mrs. J. White 1514
Mr. A. W. Phillips 1515

Written representations without leave to appear 151

Oral Evidence

Day 1

Mr. R. Millard (*Buckinghamshire, Northamptonshire and Oxfordshire County Councils*) . . . 1530
Mr. F. A. Sharman (*Buckinghamshire, Northamptonshire and Oxfordshire County Councils*) . . 1536
Mr. G. I. W. Dunford (*Buckinghamshire, Northamptonshire and Oxfordshire County Councils*) . . 1538
Mr. N. Fleming (*Buckinghamshire, Northamptonshire and Oxfordshire County Councils*) . . . 1539
Mr. F. B. Pooley (*Buckinghamshire, Northamptonshire and Oxfordshire County Councils*) . . . 1543
Dr. J. J. A. Reid (*Buckinghamshire, Northamptonshire and Oxfordshire County Councils*) . . 1547
Mr. D. P. Davison (*Buckinghamshire, Northamptonshire and Oxfordshire County Councils*) . . 1549
Mr. D. B. Rose (*Buckinghamshire, Northamptonshire and Oxfordshire County Councils*) . . . 1549
Mr. A. L. Bennett (*Buckinghamshire, Northamptonshire and Oxfordshire County Councils*) . . 1551
Mr. Hill (*Oxfordshire County Council*) 1553
Mr. K. Summerfield (*Oxfordshire County Council*) 1553
Lord Campbell (*Milton Keynes Development Corporation*) 1553
Mr. Ismay (*Milton Keynes Development Corporation*) 1554
Mr. N. MacDermot (*Bedfordshire County Council*) 1556
Mr. G. Cowley (*Bedfordshire County Council*) 1559
Mr. D. Keene (*Hertfordshire County Council*) 1561
Mr. D. S. R. Overton (*Hertfordshire County Council*) 1561
Mr. Illings (*Watford Borough Council*) 1563
Mr. J. C. Southwell (*Luton County Borough Council*) 1563
Mr. C. K. Cole (*Luton County Borough Council*) 1564
Mr. S. McArdle (*Luton County Borough Council*) 1565
Mr. Lymberry (*Aylesbury Rural District Council, Berkhamstead Urban District Council, Bullingdon Rural District Council, Tring Urban District Council, Wing Rural District Council and Winslow Rural District Council*) 1565
Mr. A. E. Toy (*Aylesbury Rural District Council*) 1565

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Mr. S. C. Redding (*Berkhamstead Urban District Council*) 1566
Mr. K. Edwards (*Bullingdon Rural District Council*) 1566
Mr. T. W. Jones (*Tring Urban District Council*) 1566
Mr. W. E. Thompson (*Wing Rural District Council*) 1566
Mr. R. G. Brown (*Winslow Rural District Council*) 1566
Mr. S. C. Brealey (*Powell Duffryn Technical Services*) 1567

Day 2

Mr. R. Maxwell (*Aylesbury Borough Council*) 1573
Mr. R. C. Tetlow (*Bletchley Urban District Council*) 1574
Mr. A. Snaith (*Newport Pagnell Rural District Council*) 1574
Mr. R. P. Bates (*Granborough Parish Council*) 1575
Mrs. W. Carslake (*Haddenham Parish Council*) 1575
Mr. D. Holt (*Newton Longville Parish Council*) 1576
Mr. J. Morton (*North Marston Parish Council*) 1576
Mr. G. Hawkins (*Pitstone Parish Council*) 1576
Mr. D. Duncan (*Wingrave with Rowshaw Parish Council*) 1577
Mr. A. Wigley (*Winslow Parish Council*) 1578
Dr. H. Clay (*Great Ouse River Authority*) 1579
Mr. H. van Oosterom (*Great Ouse River Authority*) 1582
Brig. S. H. Kent (*Kingsey Parish Meeting*) 1585
Mr. Perry (*Stone with Bishopstone Parish Council*) 1585
Mr. J. M. Bell (*Bedford Borough Council*) 1585
Mr. M. Connell (*Leighton-Linslade Urban District Council*) 1585
Mr. S. W. Pacey (*Leighton-Linslade Urban District Council*) 1586
Mr. M. S. Leslie (*Leighton-Linslade Urban District Council*) 1588
Mr. J. B. Saunders (*Leighton-Linslade Urban District Council*) 1588
Mr. L. T. Gadge (*Thame Urban District Council*) 1589
Mr. A. M. Brace (*Ploughley Rural District Council*) 1589
Mr. P. Emler (*Aston Rowant Parish Council*) 1589
Mrs. D. Tucker (*Chinnor Parish Council*) 1589
Sir R. Taylor (*Great Haseley Parish Council*) 1590
Mr. G. Andrews (*Towersey Parish Council*) 1591
Mr. R. S. Cox (*Bucks Water Board*) 1591
Mr. R. Pownall (*Bucks Water Board*) 1592

Day 3

Mr. MacDermot (*Wing Airport Resistance Association*) 1598
Mr. J. D. A. Fennell (*Wing Airport Resistance Association*) 1605
Mr. D. Skinner (*Wing Airport Resistance Association*) 1608
Sir Arthur Bryant (*Wing Airport Resistance Association*) 1610

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Sir John Betjeman (*Wing Airport Resistance Association*) 1612
Mr. G. I. Ginn (*Wing Airport Resistance Association*) 1614
Mrs. V. Osborn (*Wing Airport Resistance Association*) 1616
Mrs. A. Morton (*Wing Airport Resistance Association*) 1616
Sir Ludwig Guttmann (*Wing Airport Resistance Association*) 1618
Capt. D. J. Bellingham (*Wing Airport Resistance Association*) 1622
Mr. W. G. Andrews (*Wing Airport Resistance Association*) 1622
Mr. T. Hancock (*Wing Airport Resistance Association*) 1623
Mr. R. A. Waller (*Wing Airport Resistance Association*) 1627
Mr. D. M. Lumb (*Wing Airport Resistance Association*) 1630
Wing Commander C. G. B. McClure (*Wing Airport Resistance Association*) 1631
Mr. D. W. McQue (*Wing Airport Resistance Association*) 1632
Mr. V. J. Scott (*Wing Airport Resistance Association*) 1633
Mr. H. A. C. Evans (*Wing Airport Resistance Association*) 1635
Mr. G. I. Ginn (*Stewkley Acton Committee*) 1635
Mrs. P. Gallimore (*St. Michael's Church Guild*) 1636
Rev. J. E. H. Williams (*Whitchurch with Creslow Parochial Church Council*) 1637

Day 4

Mr. W. H. Ruthven 1641
Mr. W. J. Smith (*Cublington Airport Supporters Committee*) 1641
Mrs. B. Kilty (*Cublington Airport Supporters Committee*) 1641
Mr. N. Wallace (*National Farmers' Union*) 1653
Mr. J. E. Y. Hawkes (*National Farmers' Union*) 1654
Mr. A. K. Giles (*National Farmers' Union*) 1654
Mr. C. A. Rogers (*National Farmers' Union*) 1655
Mr. H. C. Balfour (*National Farmers' Union*) 1655
Mr. M. Fitzgerald (*National Trust*) 1660
Mr. M. J. Rogers (*National Trust*) 1661
Mr. M. J. Woodland (*Nature Conservancy*) 1662
Mr. R. Body (*Council for the Preservation of Rural England*) 1662
Dr. D. C. Watt (*St. John's and Manor House Hospital*) 1664
Mrs. M. Tomlinson (*The Chilton Society*) 1665
Mr. M. Gregory (*Country Landowners' Association*) 1666
Major P. D. P. Duncombe (*Country Landowners' Association*) 1666
Mr. B. Banfield (*Beacon Villages Society*) 1669
Mr. C. Harwood (*New College, Oxford*) 1672
Mr. J. Ferris (*Leighton Buzzard Arts Club*) 1672

Day 5

Sir Gilbert Inglefield (*St. Michael's Church Preservation Committee*) 1677
Mrs. M. Brazil (*Bucks Federation of Women's Institutes*) 1679

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Mr. S. Sargeant (*Drayton Parslow Women's Institute, and Drayton Parslow Airport Committee*) . . 1679
Mrs. E. Cox (*Weedon Women's Institute*) 1679
Mr. A. James (*Bucks Association of Parish Councils*) 1680
Sq. Ldr. B. Lock (*Bucks Association of Parish Councils*) 1682
Mrs. D. M. Rogers 1683
Mr. E. G. R. Taylor 1683
Mr. A. M. Miscampbell (*Aylesbury Industrial Group*) 1685
Mr. G. Stuart Young (*Aylesbury Industrial Group*) 1685
Mr. P. Kinsey (*Mid-Bucks Liberal Association*) 1686
Sir John Rothenstein (*Newington Parish Council*) 1688
Dr. D. M. Allen 1688
Mr. B. Bateman 1690
Captain P. J. Bellingham 1690
Mr. D. Brown 1691
Miss E. Brunner 1692
Miss E. P. Carpenter 1692
Mr. A. C. Chandler 1692
Mr. R. Crabbe 1693
Mr. A. C. Lovejoy 1694
Mr. D. Midwinter (*Winslow and Stewkley division, Bucks County Council*) 1694
Mrs. P. M. Murphy 1694
Dr. B. Ricketson 1695
Mrs. B. Taylor 1696
Mr. E. J. Payne (*Cublington Airport Supporters' Committee*) 1697
Mrs. C. Walsh (*Cublington Airport Supporters' Committee*) 1697
Mr. R. Bramwell 1704
Mr. J. M. Cornwall 1710
Mr. R. Maxwell (*Stewkley Local Labour Party*) 1711

Day 6

Mr. R. Tetlow (*Ashendon Parish Council, Chearsley Parish Council, Dorton Parish Meeting, Lower Winchendon Parish Meeting, Waddesdon Parish Council, Westcott Parish Council, Wotton Underwood Parish Meeting*) 1717
Mr. A. E. Toy 1717
Mr. D. C. T. Graves 1718
Mr. B. H. Fuller 1718
Mr. S. Holmes 1718
Mr. D. Judd 1719
Mr. H. Minnitt 1719
Mr. V. Scott 1719
Mr. R. G. Parsons 1719
Mr. W. S. Trickey 1719

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Mr. K. F. Ward 1720
Mr. T. Warren 1720
Mr. D. J. Watts 1720
Mr. W. G. Andrews 1720
Mr. S. F. Jones 1720
Dr. V. E. Lloyd Hart 1720
Miss C. E. Harris 1721
Dr. P. Brown (*Cublington Parish Council*) 1721
Mr. A. J. Biggs 1722
Miss C. Bodington 1722
Mr. G. A. Cheney 1723
Mr. A. E. Males 1723
Mrs. P. O. Manley 1723
Mr. B. G. Osborn 1723
Mrs. S. L. Panter 1723
Mr. A. J. Radwell 1724
Mr. A. C. Read 1724
Mrs. R. A. Roger 1724
Mr. R. Smith 1724
Mr. R. Body (*Council for the Preservation of Rural England*) 1725
Mr. E. C. Rouse (*Council for the Preservation of Rural England*) 1725
Mr. V. G. Walker 1726
Mr. H. G. Dickins (*Drayton Parslow Parish Council*) 1727
Mr. A. K. Jones 1727
Major Duncombe (*Great Brickhill Parish Council*) 1728
Mr. F. A. Day 1729
Lt. Col. I. B. Addis 1729
Mr. S. E. Baker 1729
Mrs. P. Johnston Boulton 1729
Mrs. C. M. McMahon 1730
Mr. M. R. Rakusen 1730
Miss J. M. V. Tinworth 1730
Mr. J. G. C. Spencer Bernard 1731
Mr. C. Greenacre 1731

Day 7

Rev. Sillitoe (*Dunton Parish Meeting*) 1735
Miss P. K. Wolf 1736
Mr. G. Davis 1737
Dr. L. S. Michaelis 1738
Mrs. G. Wood (*Hardwick Parish Council*) 1738

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Mrs. L. W. Coleman 1739
Mr. P. Fehr 1739
Mr. P. Young (*Oving Parish Council*) 1739
Mr. S. R. K. Ball 1740
Mrs. F. J. Barff 1740
Mr. A. Morrison 1741
Mrs. A. E. Beasley (*Stewkley Parish Council*) 1741
Mrs. D. Bates 1741
Mrs. F. W. Grace 1742
Mr. V. F. Bratton 1742
Mr. J. B. Brown 1742
Mr. F. R. Cole 1742
Mr. A. B. Cozens 1743
Mr. F. C. Coles 1743
Mr. A. B. Faulkner 1744
Mr. J. D. Faulkner 1744
Mrs. G. M. Grace 1744
Mr. M. A. Hardings 1744
Mr. J. W. Mead 1744
Mr. P. J. Preston 1745
Mr. P. E. Wheeler 1745
Mr. D. B. Head 1745

Day 8

Dr. D. MacCarthy 1749
Mr. P. G. Medcalf 1749
Mr. Lymbery (*Aylesbury, Bullingdon, Wing and Winslow Rural District Councils and Tring and Berkhampstead Urban District Councils*) 1749
Dr. W. B. Armstrong 1754
Mr. D. F. Kessler (*Stoke Hammond Parish Council*) 1754
Mr. W. J. Bates 1755
Mr. P. J. Boyd 1755
Mr. S. T. Dancer 1755
Mr. J. R. Jeffries 1756
Mr. D. A. Lambourne 1756
Dr. J. R. Lumb 1757
Mr. F. O. Gregg 1757
Mr. R. Robertson (*Weedon Parish Meeting*) 1757
Mr. R. Chiddick 1757
Mrs. J. Cornock 1758
Mr. and Mrs. C. E. Fraser 1758
Mr. H. Hague. 1758

Printed image digitised by the University of Southampton Library Digitisation Unit

	Page
Mr. M. H. J. Radcliffe	1758
Mr. D. F. Ryder Richardson	1759
Mrs. D. G. M. Smart	1759
Mr. K. Walker	1759
Councillor Todd (*Whitchurch Parish Council*)	1760
Mr. A. Ball	1760
Mr. I. Beckett	1760
Mr. C. Brown	1760
Mr. L. Coates	1761
Mrs. D. Foulger	1762
Mr. R. E. Main	1762
Mrs. J. Ryder Richardson	1762
Mr. W. J. Bandy (*Wing Parish Council*)	1763
Mr. F. R. Black	1764
Mr. A. G. Harris	1764
Miss D. Harris	1764
Mr. R. Heley	1765
Mr. E. F. Kidd	1766
Mr. C. Morton	1767
Mr. J. Pearse	1768
Mr. N. V. Rogers	1768
Mrs. K. Royal	1768
Mrs. J. West	1768
Mr. D. Barrington	1768
Mr. S. W. Jennings	1769
Mr. R. S. Meredith	1769
Mr. A. P. Tomkins	1769
Mrs. J. White	1770
Mr. A. W. Phillips	1770

List of appearances 1772

Printed image digitised by the University of Southampton Library Digitisation Unit

ILLUSTRATIONS contained within this volume

	Page
Day 1	
FAS 2. London/Cublington surface links. (*Mr. F. A. Sharman, Buckinghamshire, Bedfordshire, Hertfordshire, Northamptonshire and Oxfordshire County Councils*)	1014
Plan 1. Statutory services. (*Mr. F. B. Pooley, Buckinghamshire, Bedfordshire, Northamptonshire and Oxfordshire County Councils*)	1035
Plan 2. Contraints. (*Mr. F. B. Pooley, Buckinghamshire, Bedfordshire, Northamptonshire, and Oxfordshire County Councils*)	1036
Plan 3. Urban pattern. (*Mr. F. B. Pooley, Buckinghamshire, Bedfordshire, Northamptonshire, and Oxfordshire County Councils*)	1037
CKC 1. Luton airport. Typical routeings. (*Mr. C. K. Cole, Luton County Borough Council*)	1087
Day 2	
Proposed airport site relative to Aylesbury. (*Aylesbury Borough Council*)	1118
Bucks Water Board: area of supply. (*Bucks Water Board*)	1160
Day 3	
THI. Employment centres. (*Mr. T. Hancock, Wing Airport Resistance Association*)	1196
TH 2. Commuting to GLC area. (*Mr. T. Hancock, Wing Airport Resistance Association*)	1197
TH 3. Equivalent land requirements for urbanisation within "South East Strategy" growth corridor. (*Mr. T. Hancock, Wing Airport Resistance Association*)	1198
Fig. 1. NNI (day): 2-runway with noise certification. (*Mr. R. A. Waller, Wing Airport Resistance Association*)	1205
Fig. 2. NNI (day): 4-runway with noise certification. (*Mr. R. A. Waller, Wing Airport Resistance Association*)	1206
Fig. 3. NNI (night): 4-runway with noise certification. (*Mr. R. A. Waller, Wing Airport Resistance Association*)	1207
Fig. 4. NNI (day): 2-runway reversed take-off with noise certification. (*Mr. R. A. Waller, Wing Airport Resistance Association*)	1208
Appendix C. Effects of additional flying time on a typical afternoon laboratory period. (*Wing Cmdr. G. C. B. McClure, Wing Airport Resistance Association*)	1215
Day 4	
NFU JH 1. Commuting to GLC area. (*Mr. J. E. Y. Hawkes, National Farmers' Union*)	1238
Day 5	
Percentage frequencies of wind. (*Mr. E. G. R. Taylor*)	1318

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

ILLUSTRATIONS in attached wallet

Short list sites (CTLA/5). (*Commission on the Third London Airport*)

Provisional airport plan (CTLA/1). (*Commission on the Third London Airport*)

Noise and Number Index: 2-runway airport (CTLA3/2). (*Commission on the Third London Airport*)

Noise and Number Index: 4-runway airport (CTLA3/3). (*Commission on the Third London Airport*)

Day 1

FAS 1. Surface access links. (*Mr. F. A. Sharman, Buckinghamshire, Bedfordshire, Hertfordshire, Northamptonshire and Oxfordshire County Councils*)

NF 1. NNI contours for 2 runways. (*Mr. N. Fleming, Buckinghamshire, Bedfordshire, Hertfordshire, Northamptonshire and Oxfordshire County Councils*)

NF 2. NNI contours for 4 runways. (*Mr. N. Fleming, Buckinghamshire, Bedfordshire, Hertfordshire, Northamptonshire and Oxfordshire County Councils*)

Appendix E. Holdings wholly or partly in airport area. (*Mr. A. L. Bennett, Buckinghamshire County Council*)

Third London airport model. (*Mr. W. G. Cowley, Bedfordshire County Council*)

DSRO 1. (*Mr. D. S. R. Overton, Hertfordshire County Council*)

SM 1. South Bedfordshire in relation to proposed airport. (*Mr. S. McArdle, Luton County Borough Council*)

Land drainage. (*Aylesbury, Berkhamstead, Bullingdon, Tring, Wing and Winslow Councils*)

Regional map: NNI 2-runway airport. (*Aylesbury, Berkhamstead, Bullingdon, Tring, Wing and Winslow Councils*)

Regional map: NNI 4-runway airport. (*Aylesbury, Berkhamstead, Bullingdon, Tring, Wing and Winslow Councils*)

Day 2

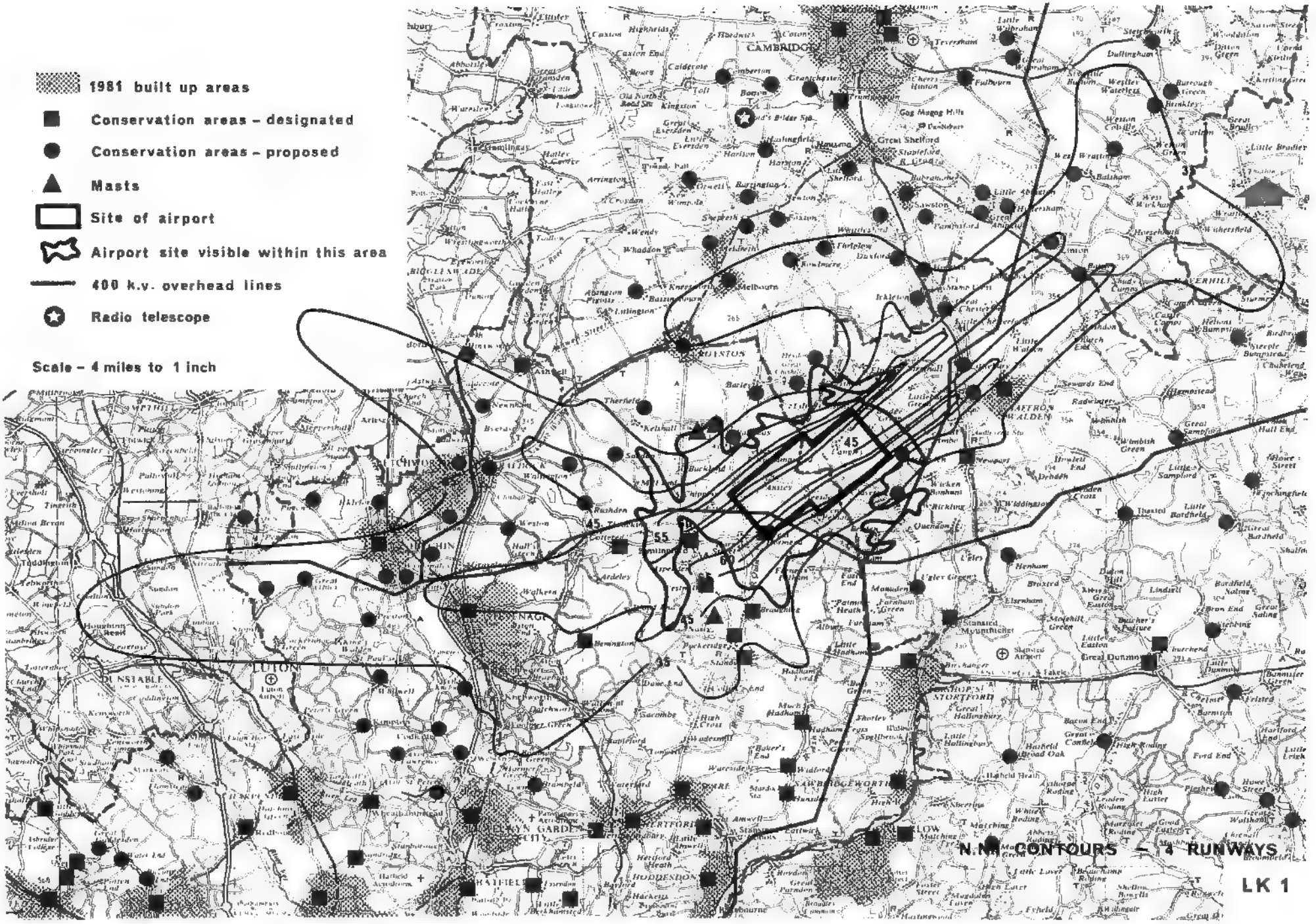
GORA 2. Catchment boundaries, rivers, geological formations and licensed sources. (*Great Ouse River Authority*)

Day 4

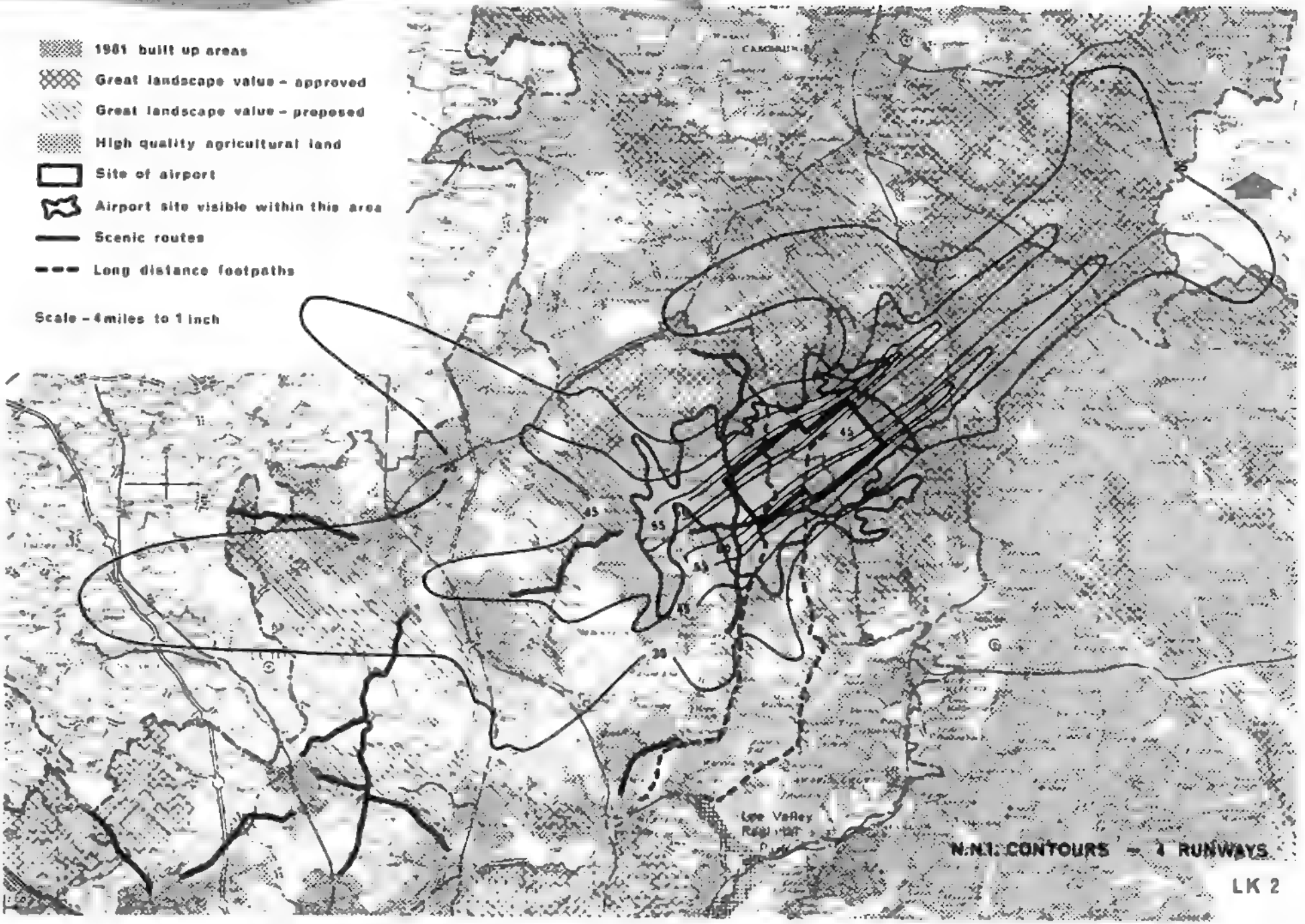
Location of area of special scientific interest. (*Nature Conservancy*)
Stud farms. (*Country Landowners' Association*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



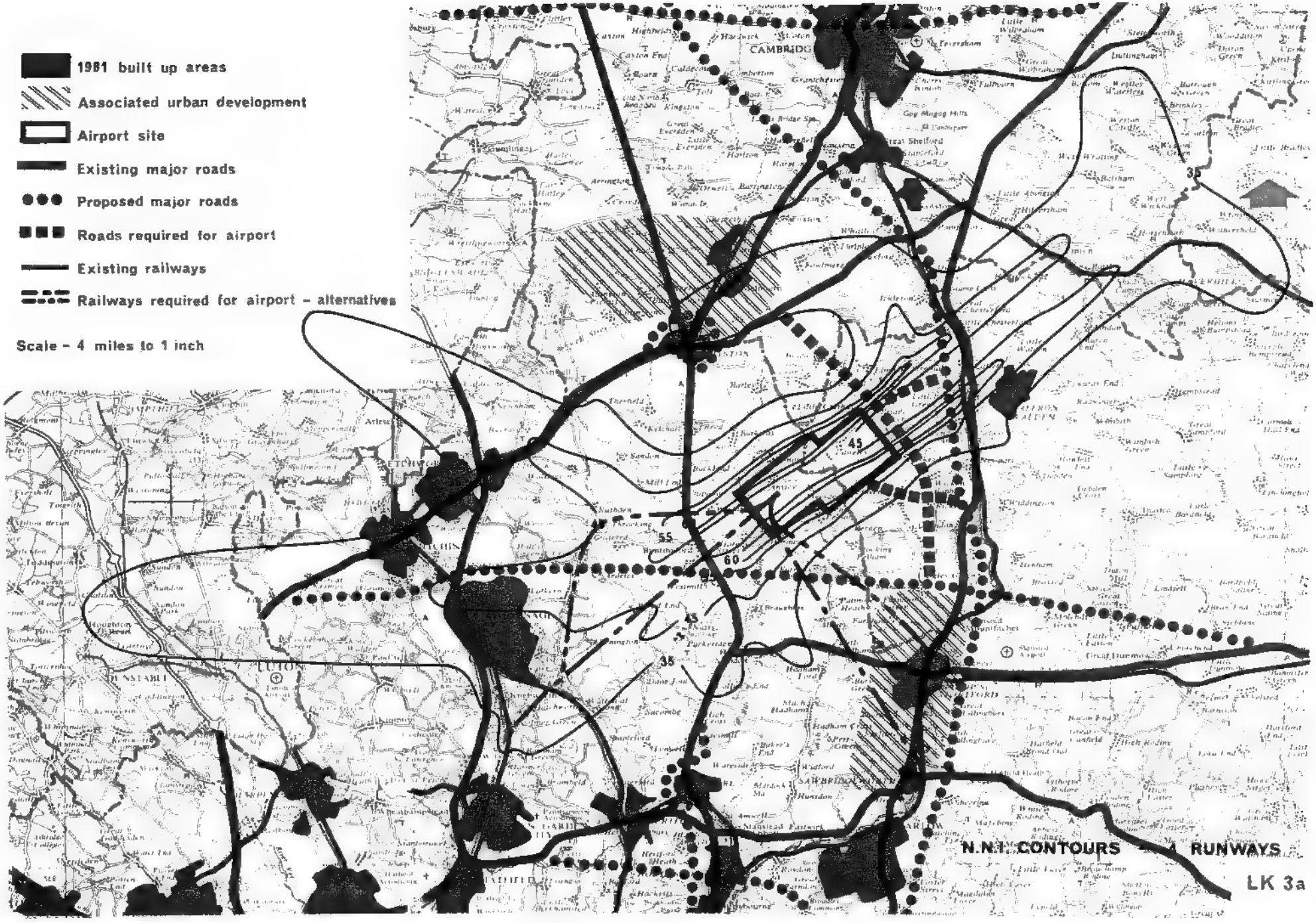
LK1. General plan
(Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils)



LK2. Agriculture, amenity and recreation
(Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils)

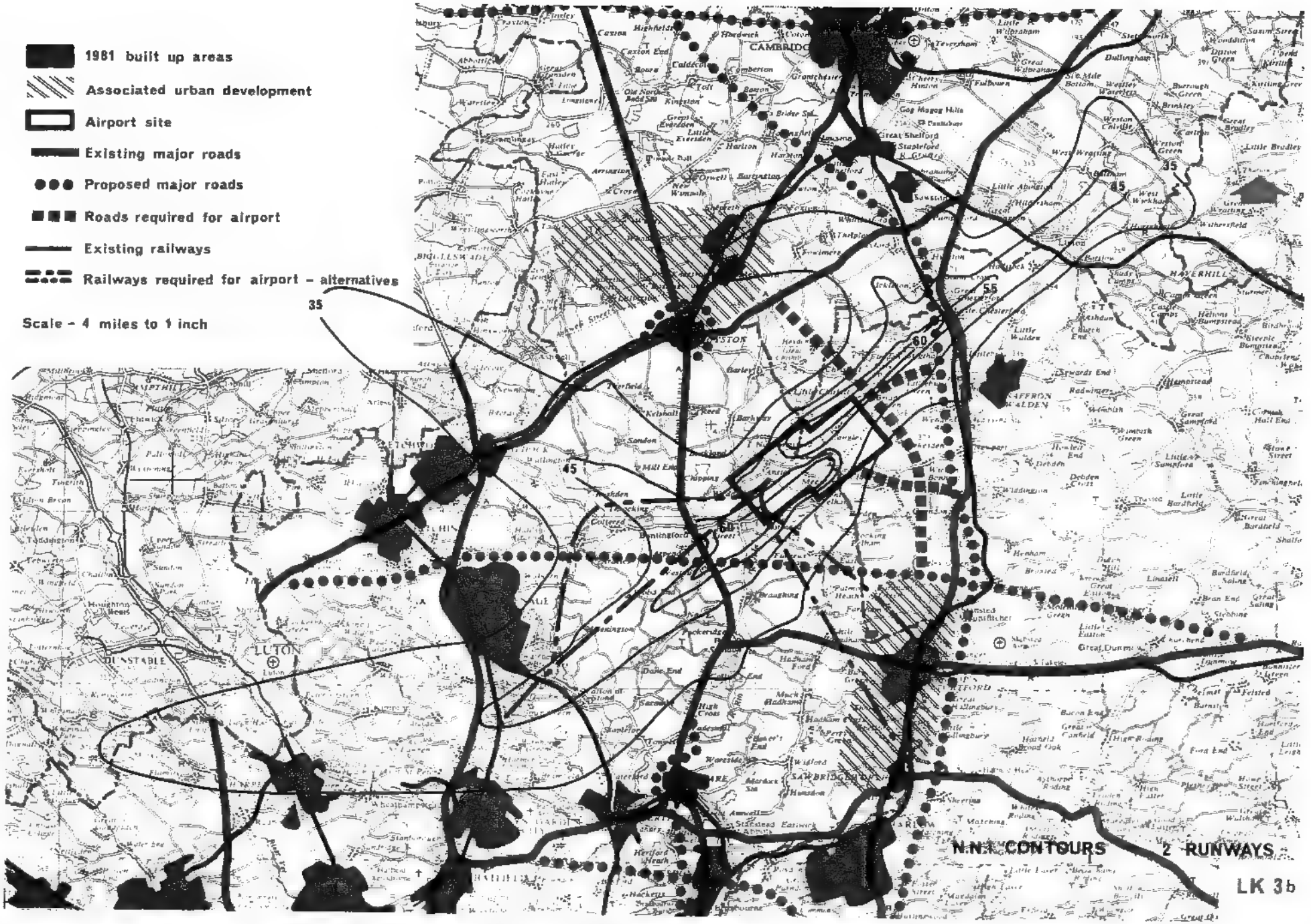
Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



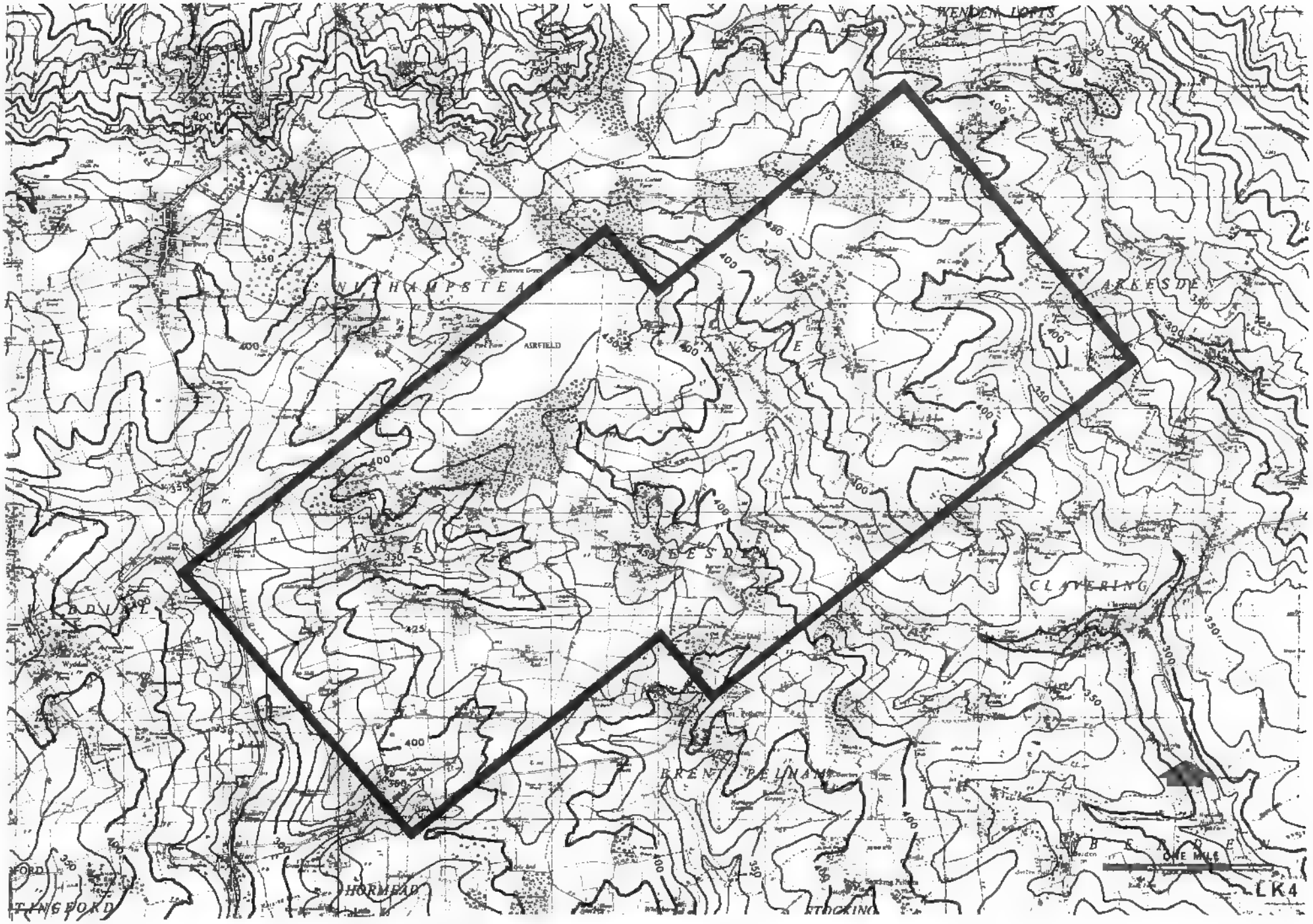
LK3a. Existing and suggested urbanisation and communications: 4-runway airport
(Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils)

Printed image digitised by the University of Southampton Library Digitisation Unit



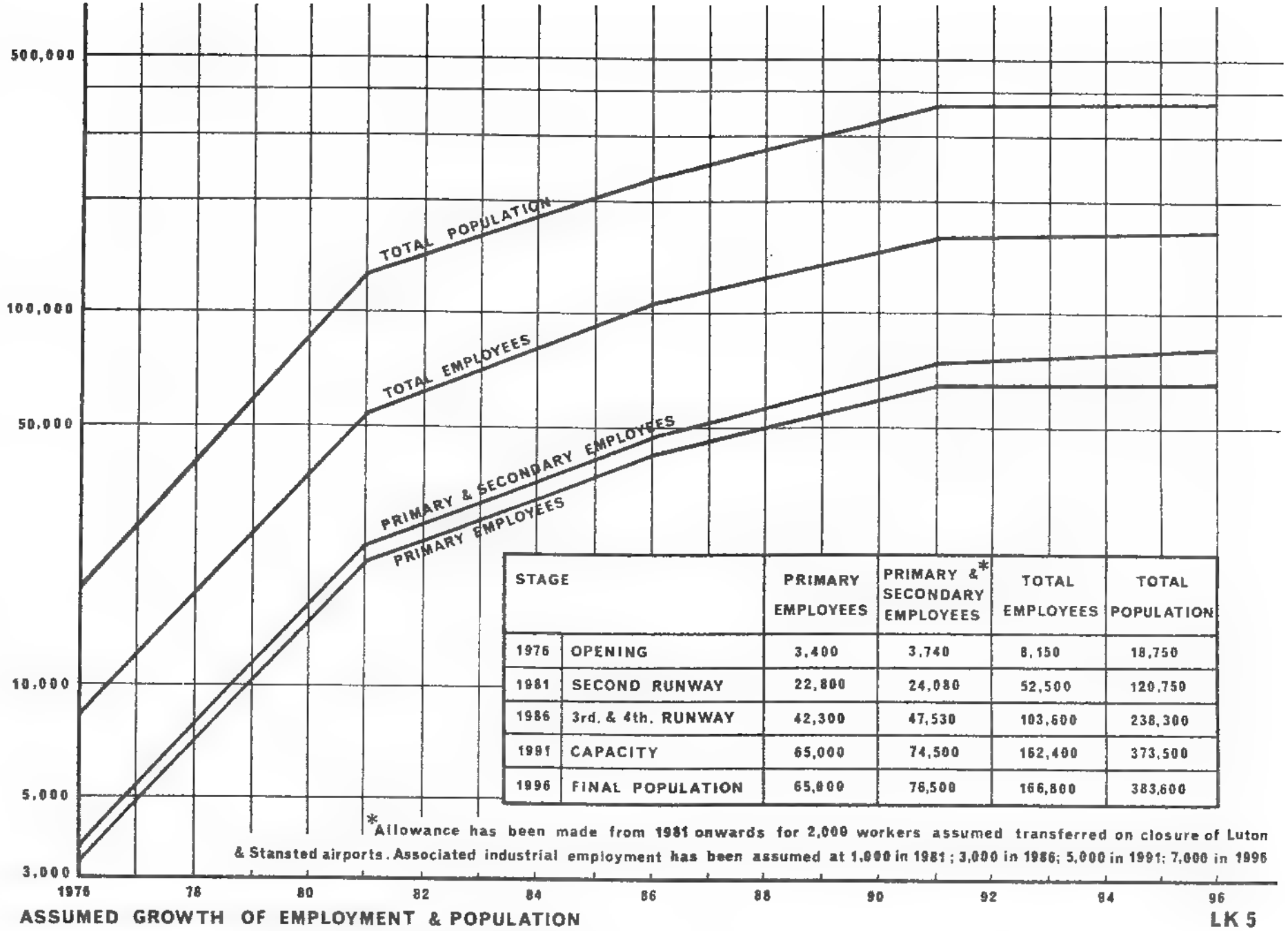
LK3b. Existing and suggested urbanisation and communication: 2-runway airport
(Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils)

Printed image digitised by the University of Southampton Library Digitisation Unit



LK4. Contour plan of airport site
(Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils)

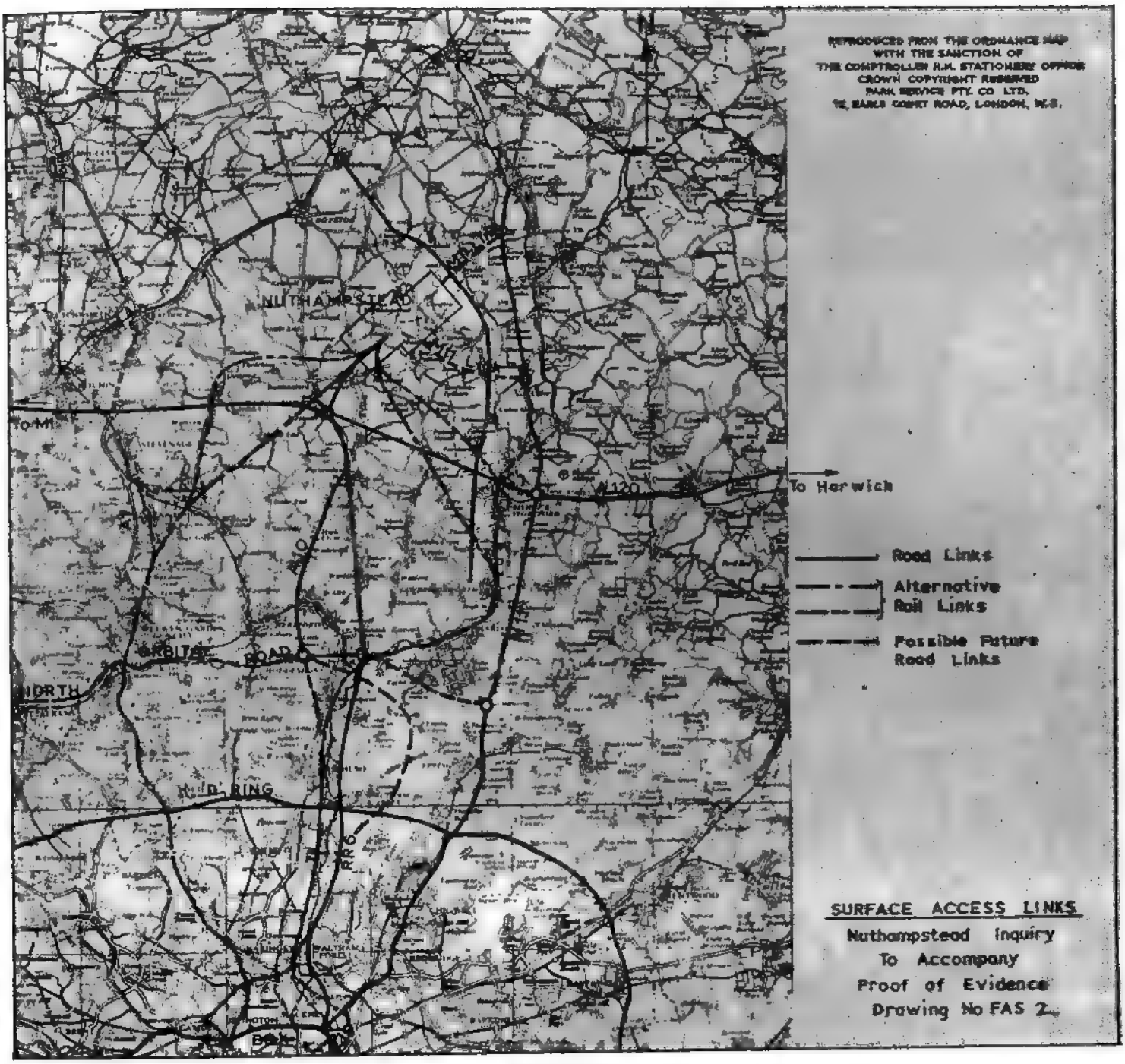
Printed image digitised by the University of Southampton Library Digitisation Unit



	STAGE	PRIMARY EMPLOYEES	PRIMARY & SECONDARY EMPLOYEES*	TOTAL EMPLOYEES	TOTAL POPULATION
1976	OPENING	3,400	3,740	8,150	18,750
1981	SECOND RUNWAY	22,800	24,080	52,500	120,750
1986	3rd. & 4th. RUNWAY	42,300	47,530	103,600	238,300
1991	CAPACITY	65,000	74,500	162,400	373,500
1996	FINAL POPULATION	65,800	76,500	166,800	383,600

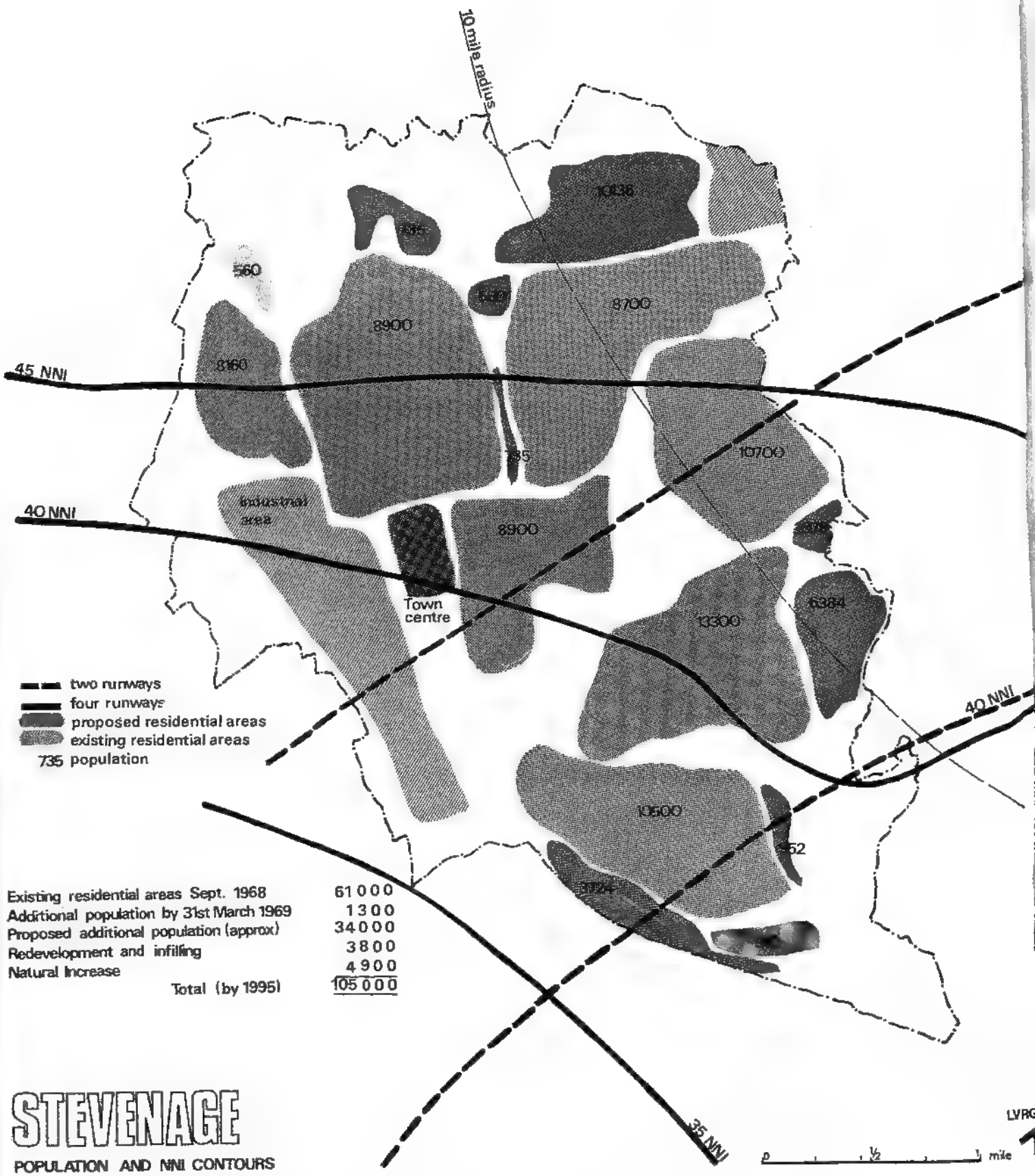
*Allowance has been made from 1981 onwards for 2,000 workers assumed transferred on closure of Luton & Stansted airports. Associated industrial employment has been assumed at 1,000 in 1981; 3,000 in 1986; 5,000 in 1991; 7,000 in 1996

LK5. Assumed growth of employment and population
(Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils)



FAS 2. Surface access links. (*Mr. F. A. Sharman, Essex, Hertfordshire, Cambridgeshire, and Isle of Ely County Councils*)

Printed image digitised by the University of Southampton Library Digitisation Unit



Existing residential areas Sept. 1968	61 000
Additional population by 31st March 1969	1 300
Proposed additional population (approx)	34 000
Redevelopment and infilling	3 800
Natural increase	4 900
Total (by 1995)	105 000

STEVENAGE

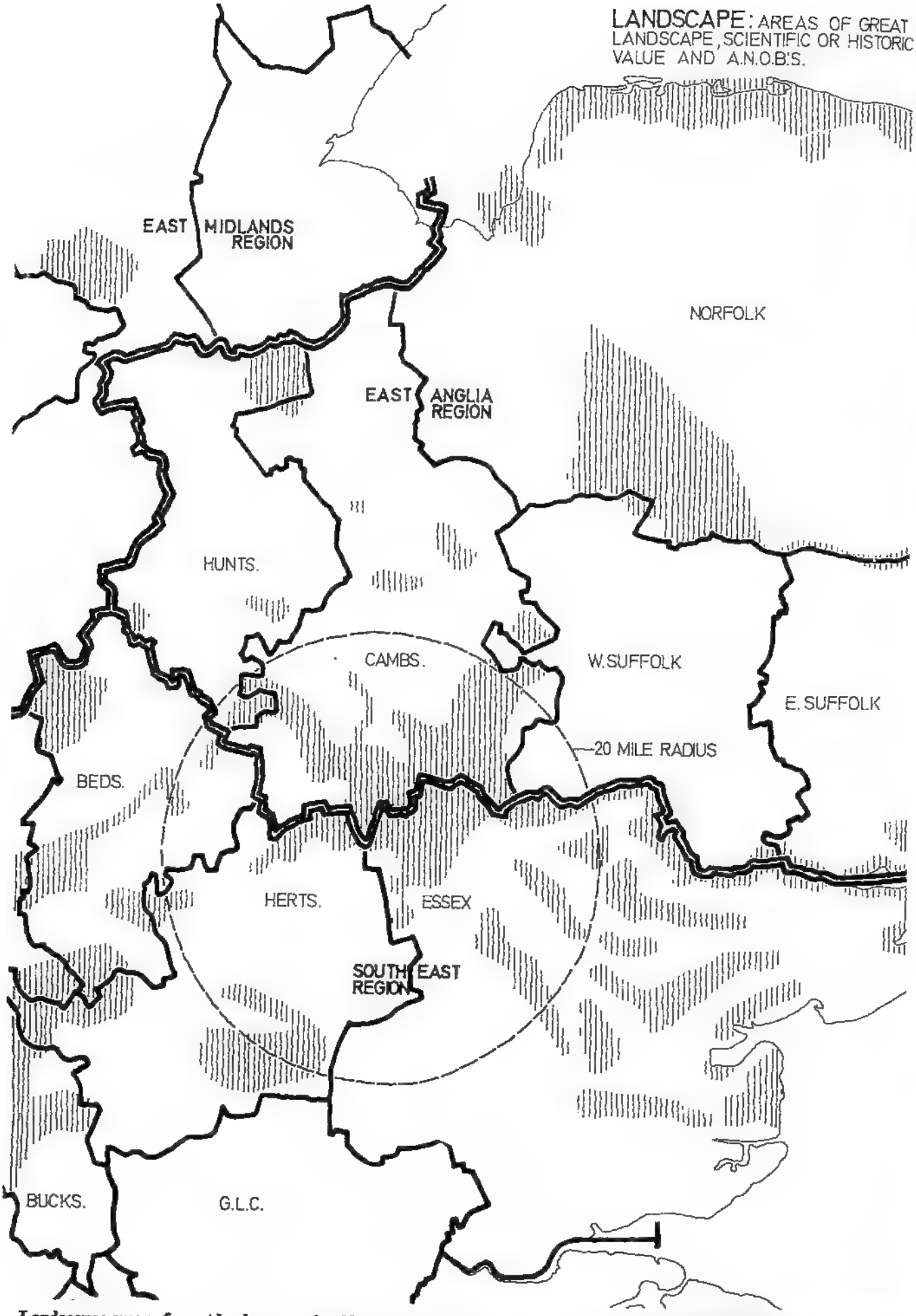
POPULATION AND NNI CONTOURS

Stevenage: population and NNI contours. (*Mr. G. Berry, Stevenage Development Corporation*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Stevenage: schools, hospital and NNI contours. (*Mr. G. Berry, Stevenage Development Corporation*)

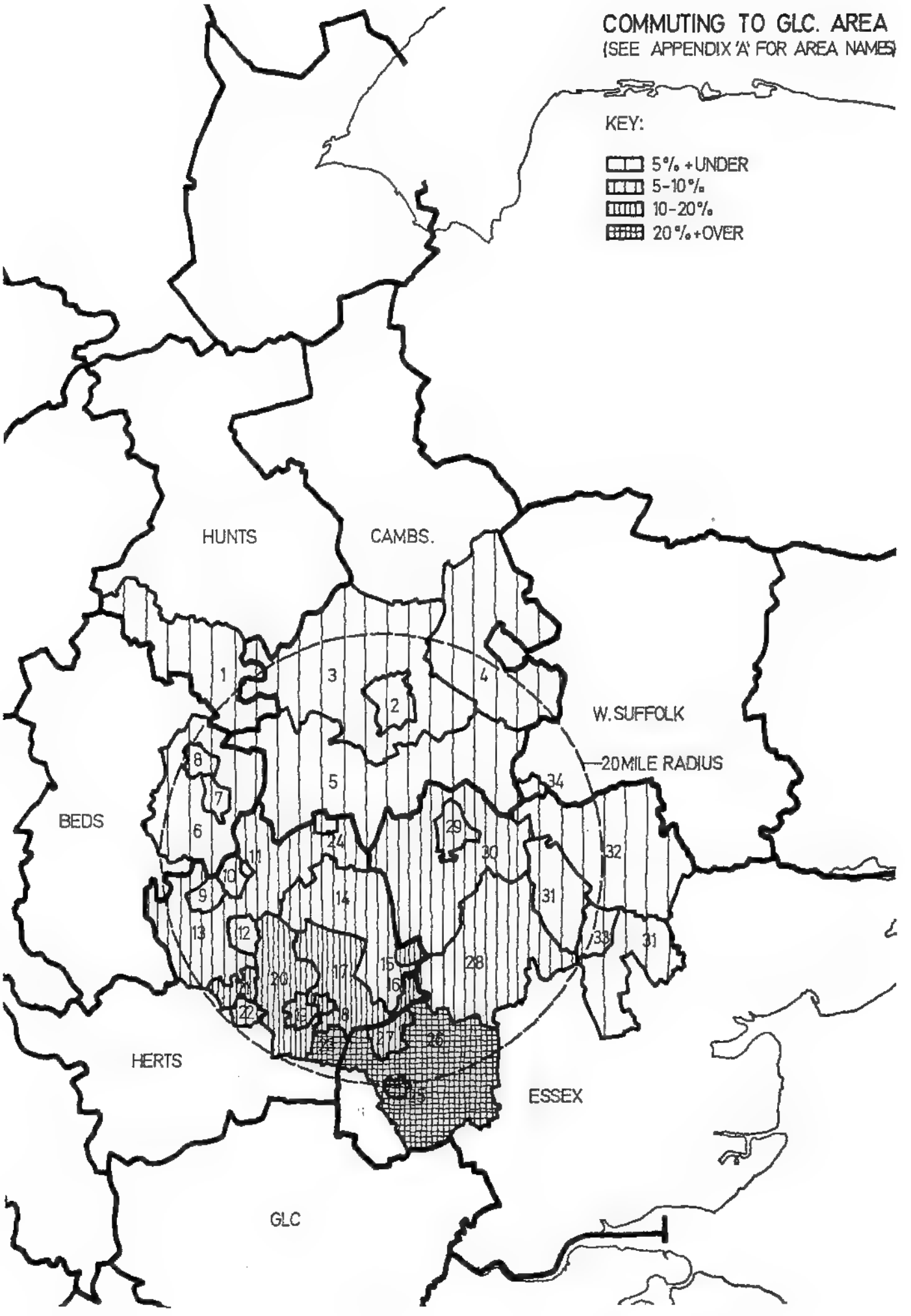
Printed image digitised by the University of Southampton Library Digitisation Unit



Landscape: areas of great landscape, scientific and historic value. (*Mr. J. E. Y. Hawkes, National Farmers' Union*)

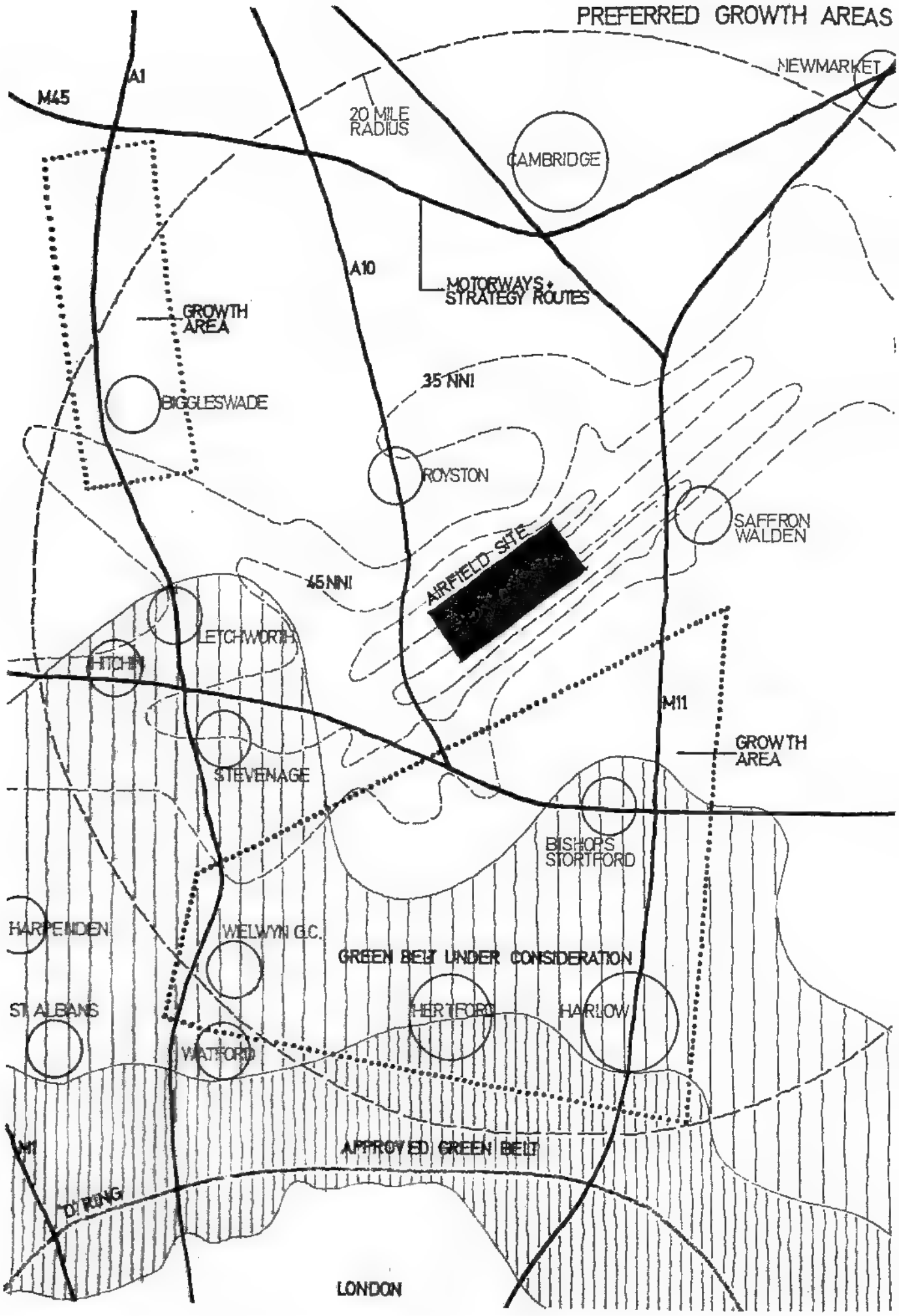
Facing p. 673

Printed image digitised by the University of Southampton Library Digitisation Unit



Commuting to the GLC area. (*Mr. J. E. Y. Hawkes, National Farmers' Union*)

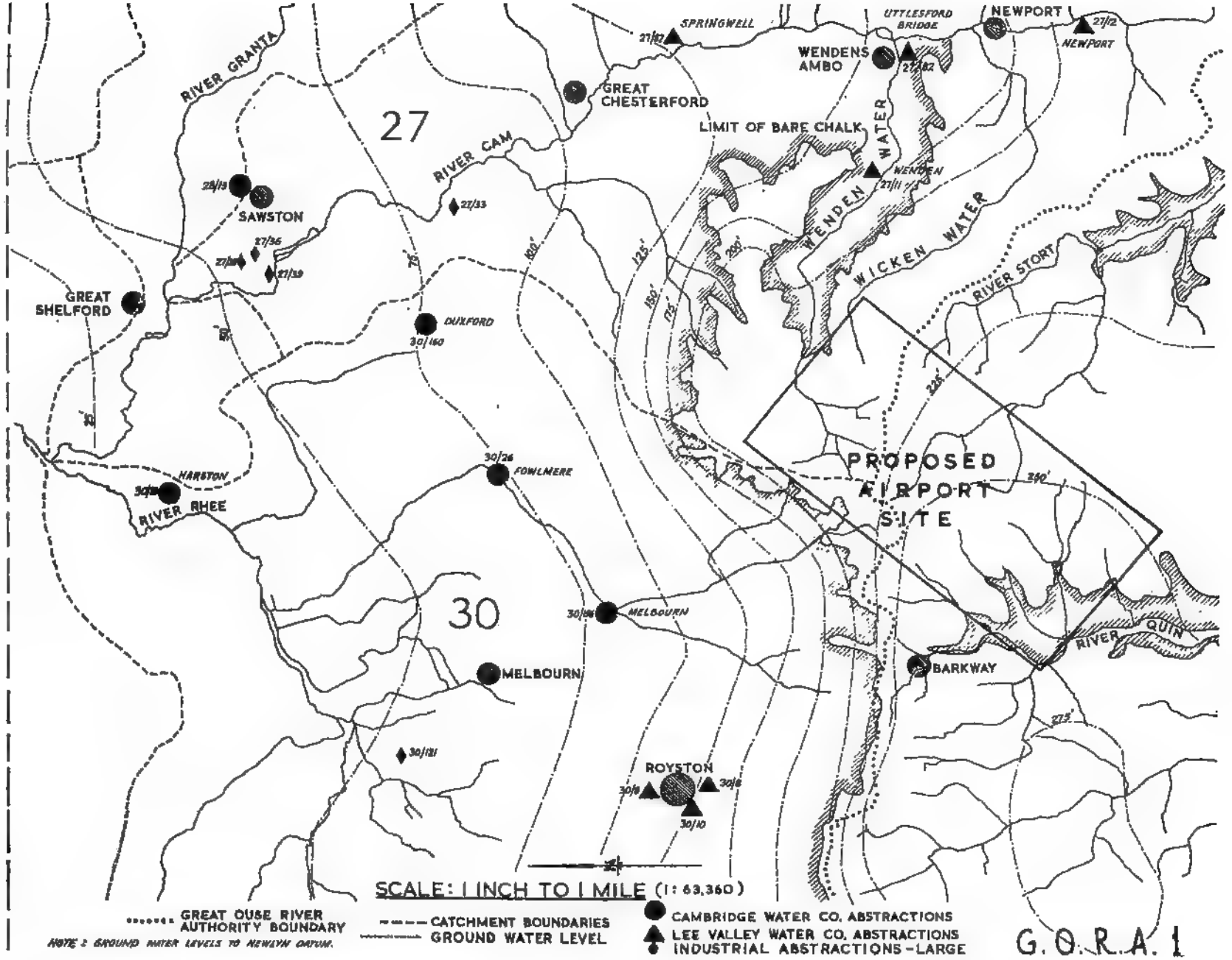
Printed image digitised by the University of Southampton Library Digitisation Unit



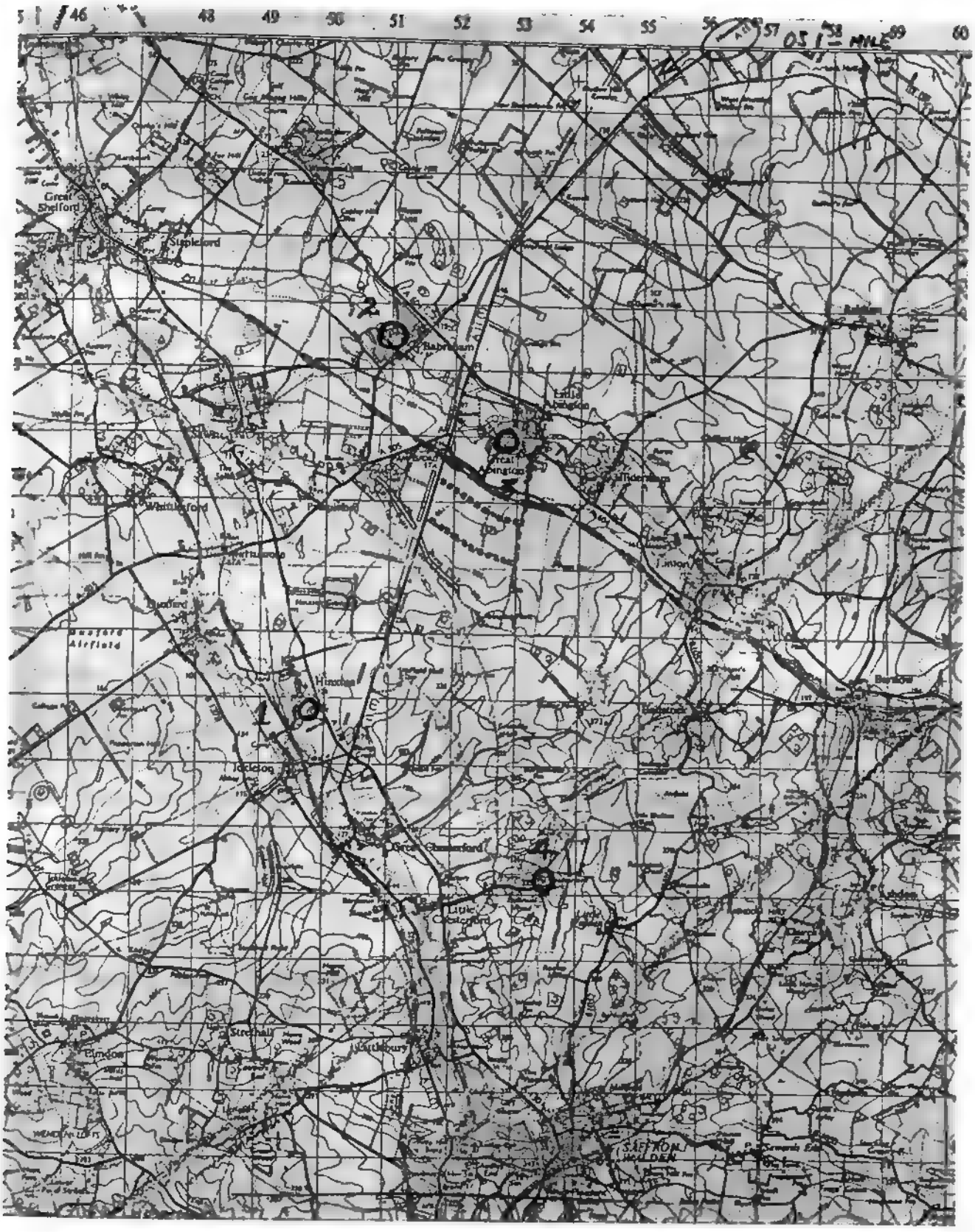
Preferred growth areas. (*Mr. J. E. Y. Hawkes, National Farmers' Union*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



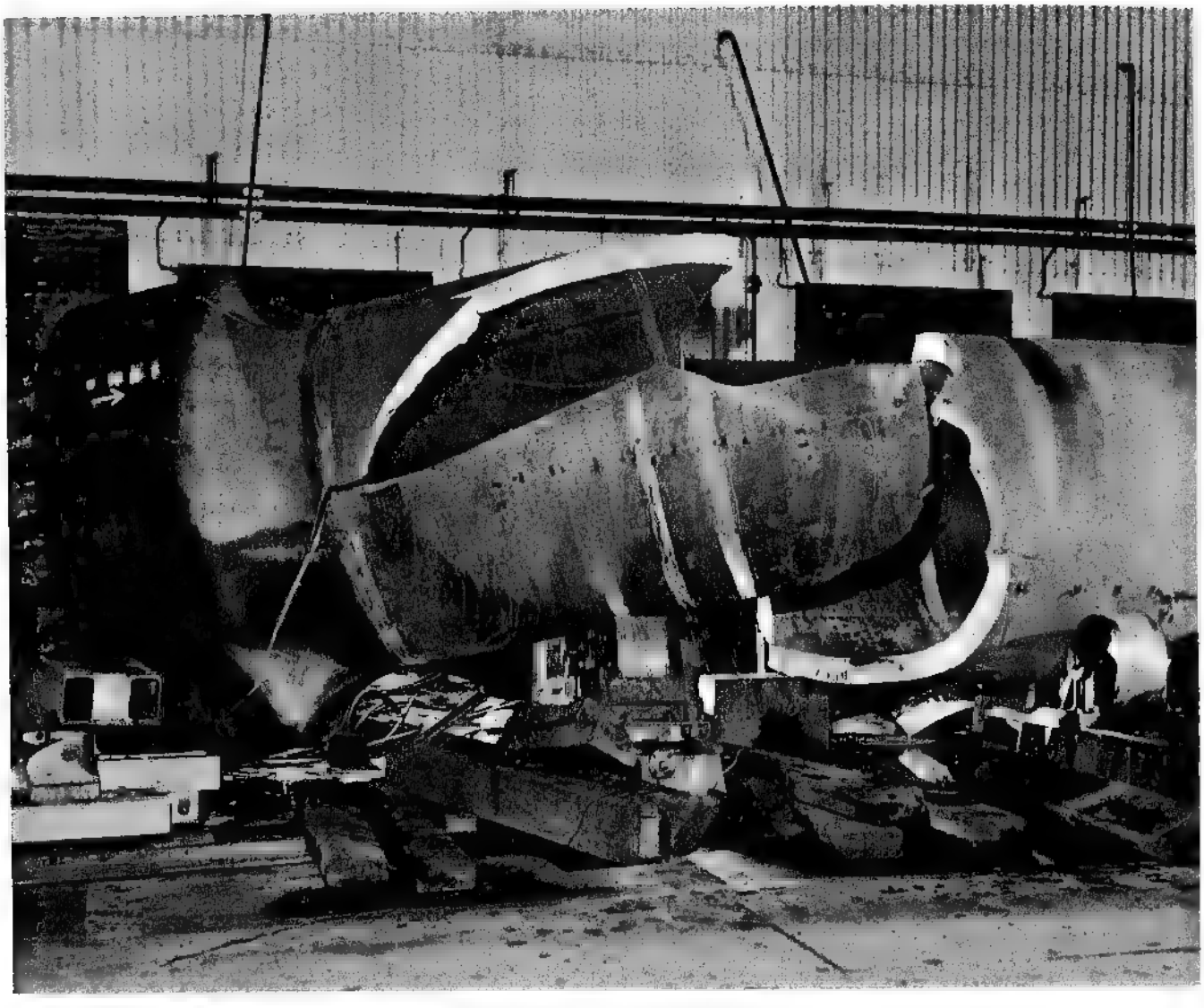
G.O.R.A. 1. Catchment boundaries, rivers, geological formations, groundwater contours and licensed sources.
(*Great Ouse River Authority*)



Sites of the four research stations affected. (*Messrs. Sharpe, Pritchard & Co.*)

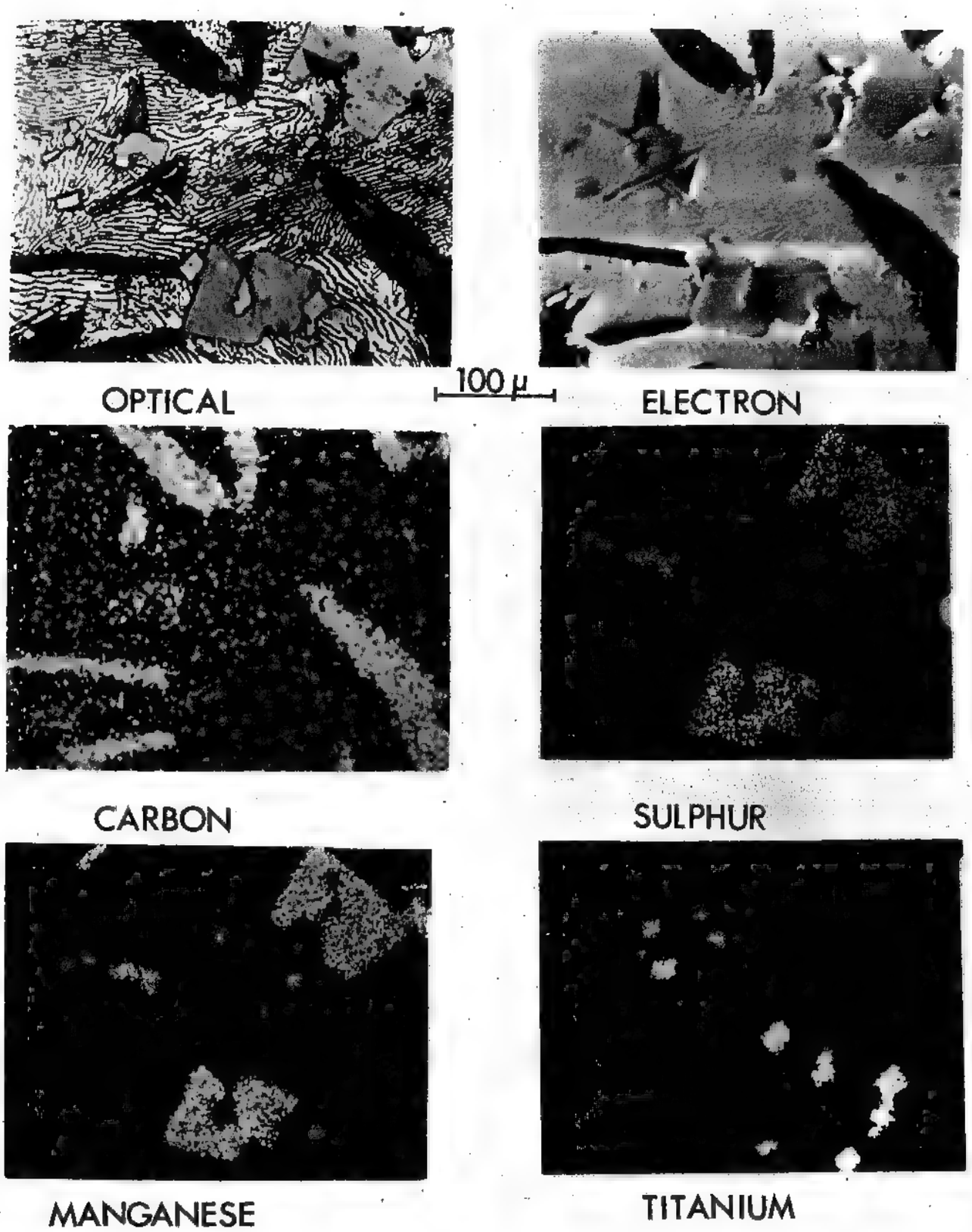
Facing p. 768

Printed image digitised by the University of Southampton Library Digitisation Unit



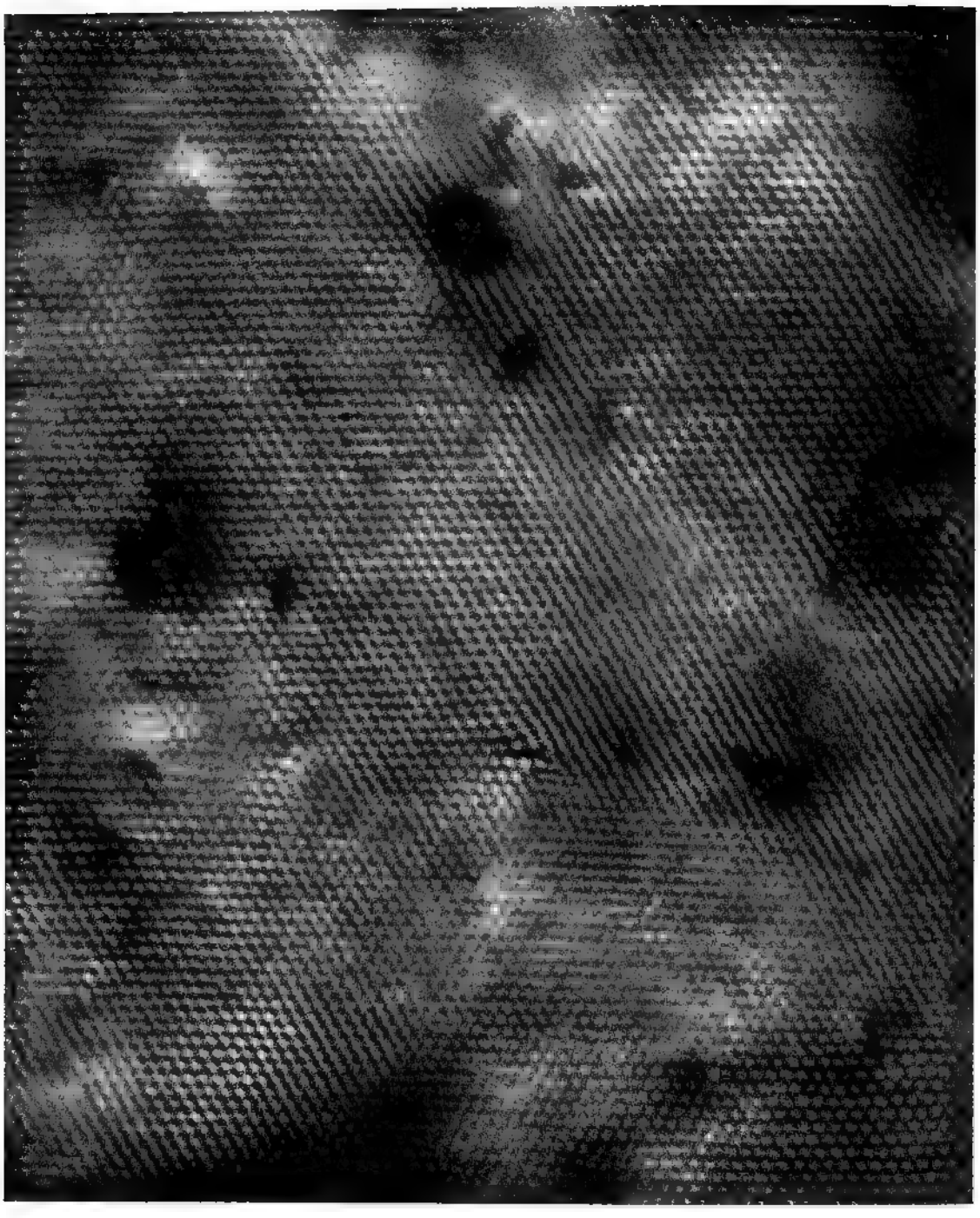
Failure of ammonia converter, Billingham, 1965. (*Welding Institute*)

Printed image digitised by the University of Southampton Library Digitisation Unit



TIRL 2. Distribution of different chemical elements in a cast iron sample. (*Tube Investments Ltd.*)

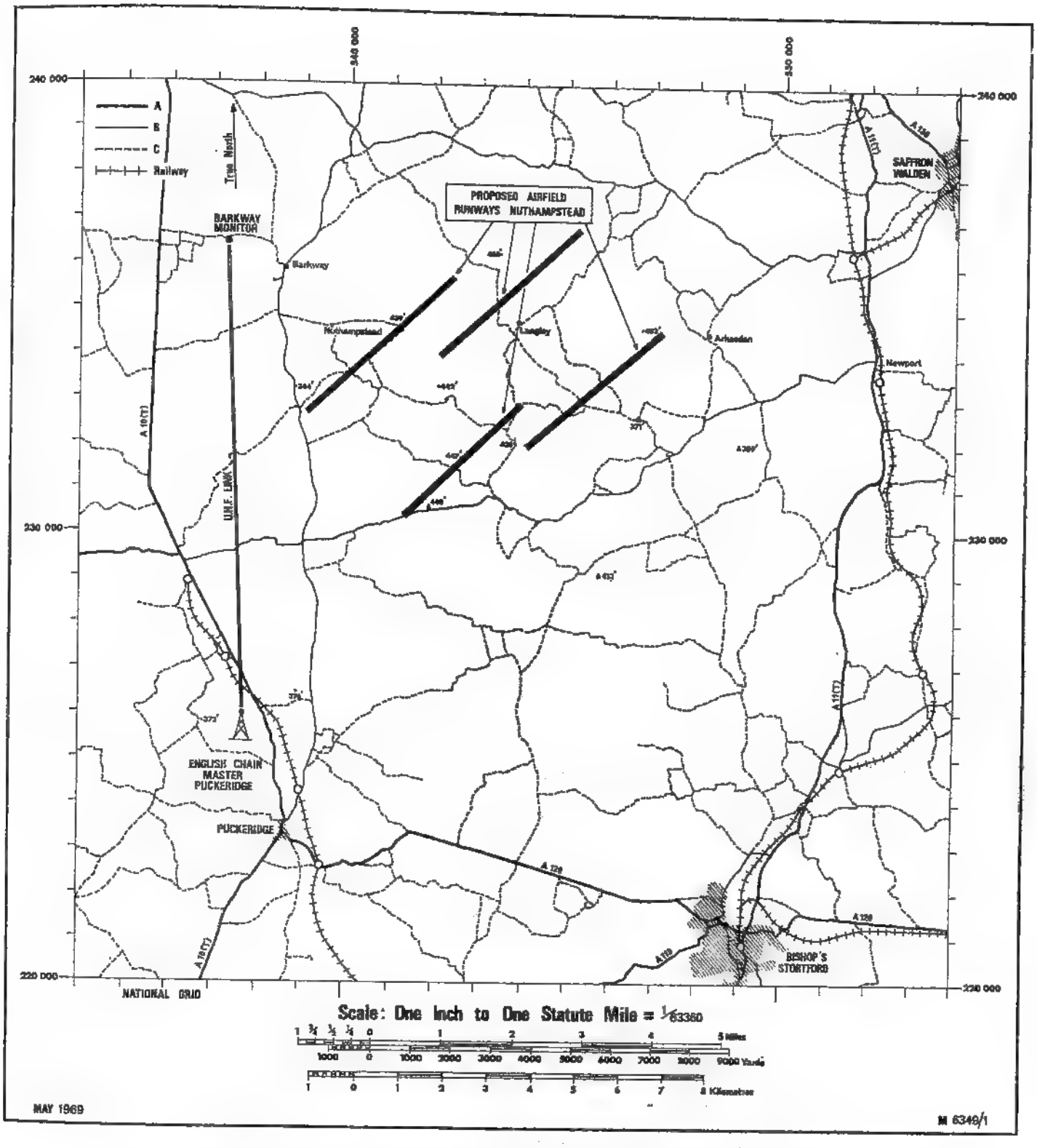
Printed image digitised by the University of Southampton Library Digitisation Unit



TIRL 3. Periodical atomic structure in a thin bi-metal film. (*Tube Investments Ltd.*)

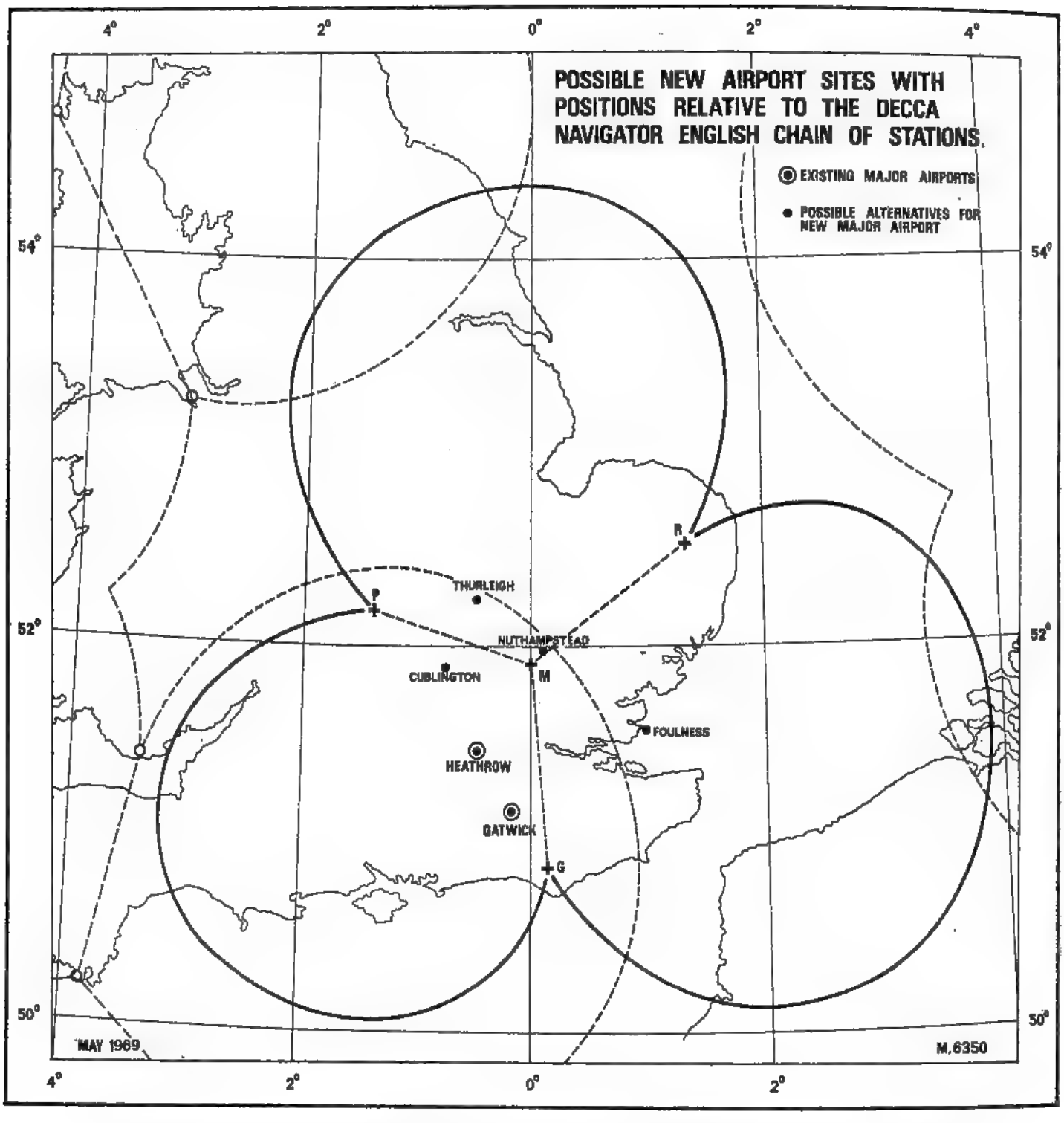
Facing p. 769

Printed image digitised by the University of Southampton Library Digitisation Unit



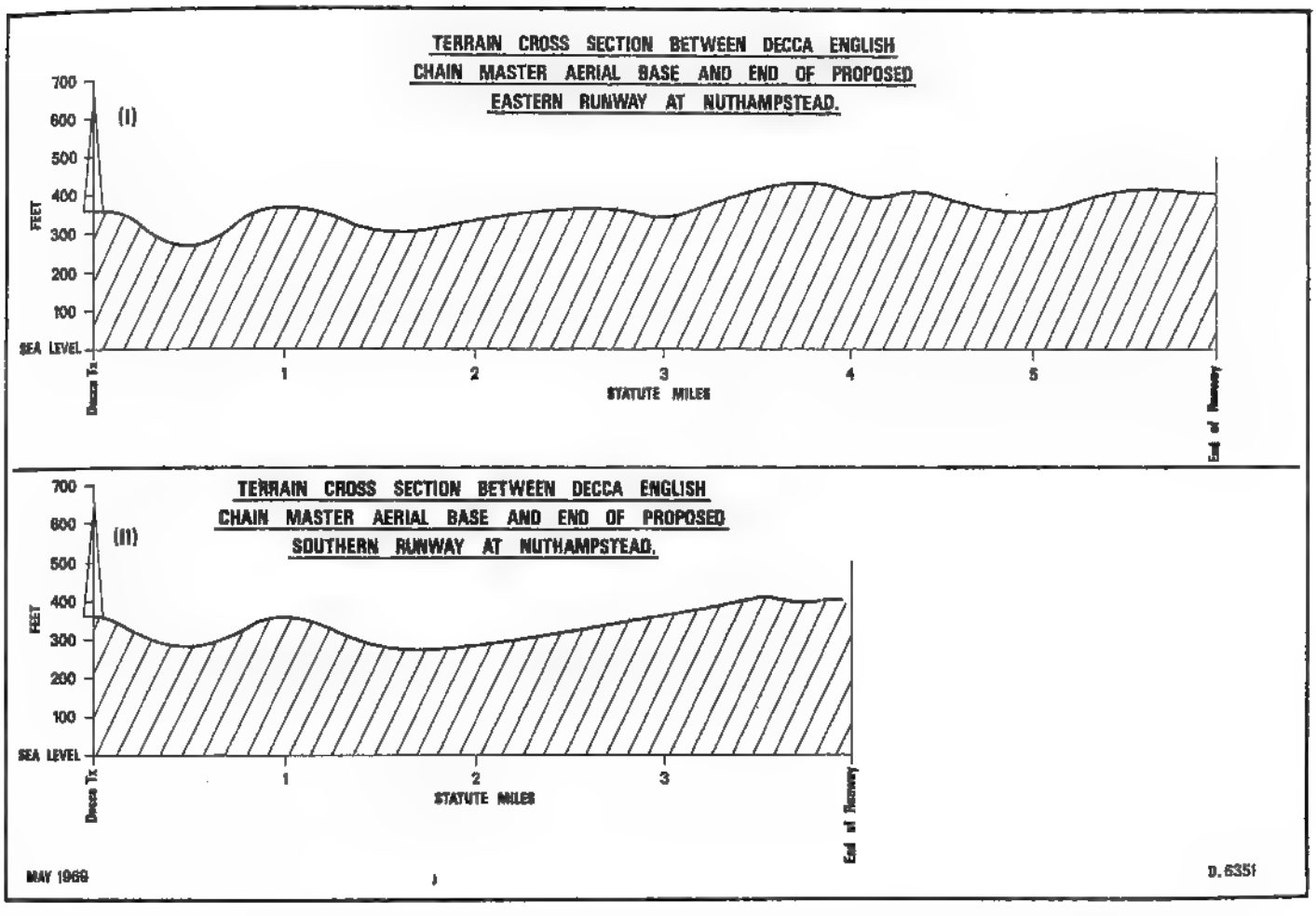
M 6349. Position of the master transmitting station, English Decca chain. (*Decca Navigator Co. Ltd.*)

Printed image digitised by the University of Southampton Library Digitisation Unit



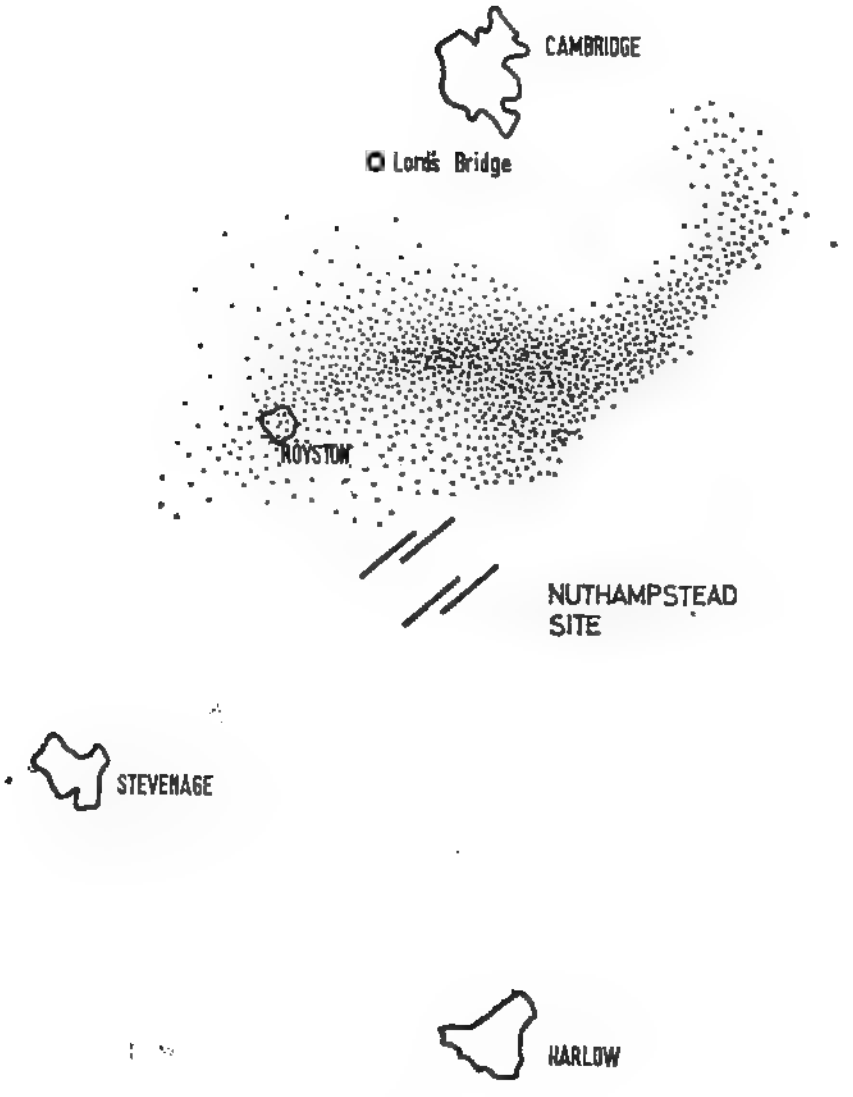
M 6350. Possible new airport sites relative to the Decca Navigator English chain of stations.
(*Decca Navigator Co. Ltd.*)

Printed image digitised by the University of Southampton Library Digitisation Unit



M 6351. Terrain cross-sections between Puckeridge and the proposed runway ends. (*Decca Navigator Co. Ltd.*)

Printed image digitised by the University of Southampton Library Digitisation Unit



POSSIBLE AIRCRAFT NOISE RISK AREAS IN THE VICINITY OF CAMBRIDGE

scale 5miles to 1inch | drawing no. WA-1 | revision no.

date May 1969

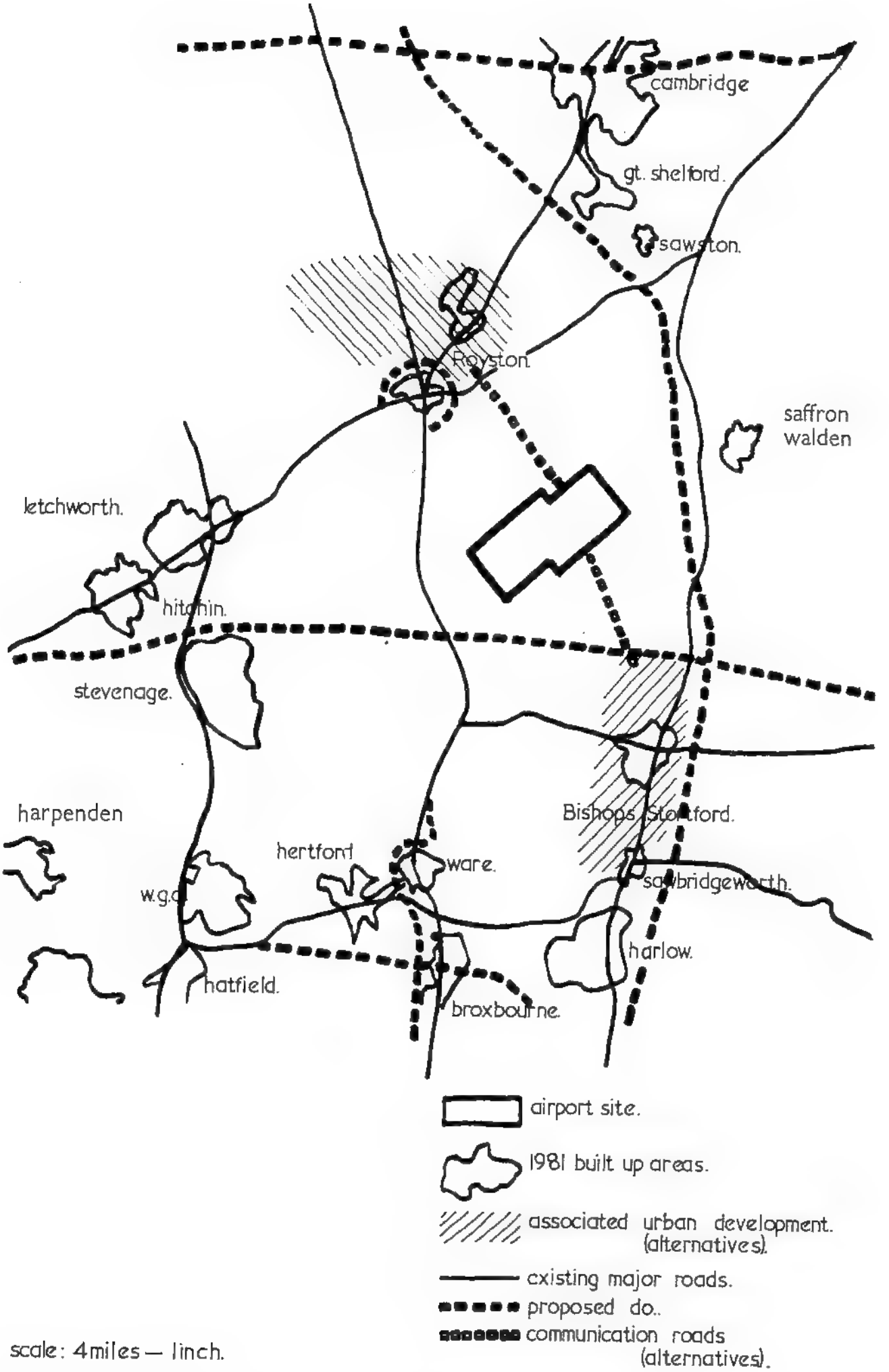
Bickerdike, Allen, Rich & Partners

16 New End, London NW3 01-435 9068/9

SizeA4

Possible aircraft noise areas in the vicinity of Cambridge. (*Mr. W. A. Allen, University of Cambridge*)

Printed image digitised by the University of Southampton Library Digitisation Unit



Urbanisation map. (*Royal Institute of British Architects*)

Facing p. 816

Printed image digitised by the University of Southampton Library Digitisation Unit

National communications pattern. (*Royal Institute of British Architects*)

Printed image digitised by the University of Southampton Library Digitisation Unit

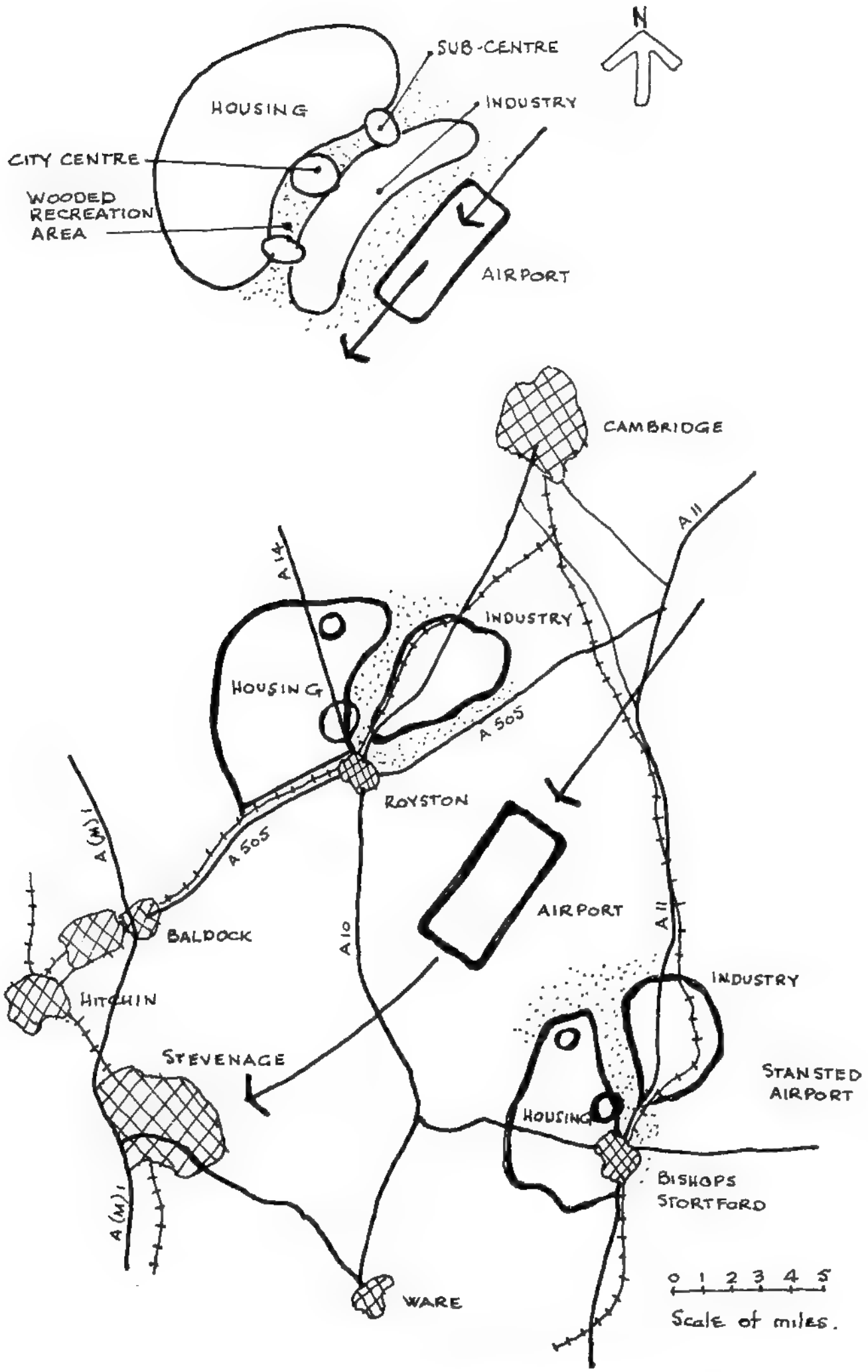
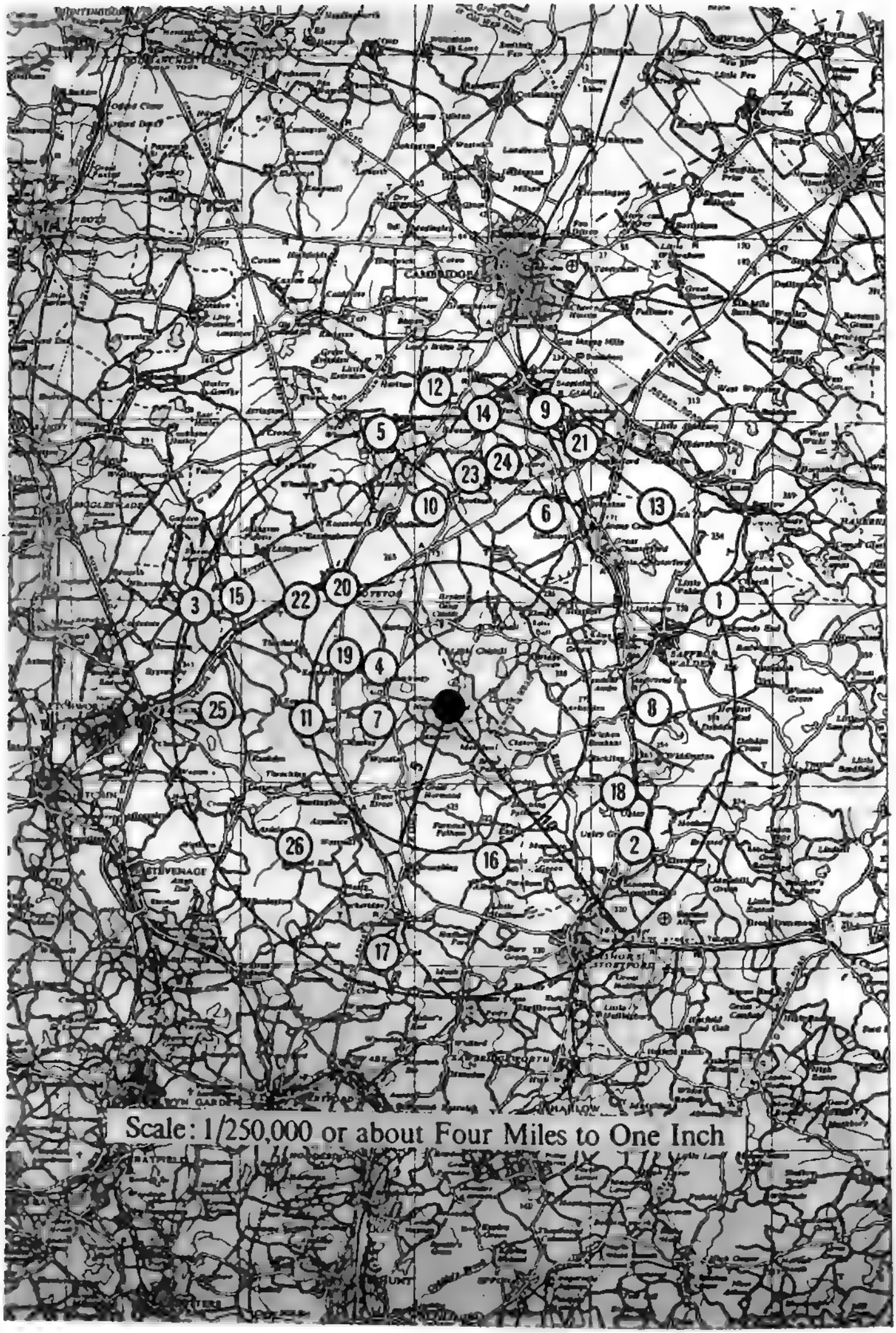


Fig. 4. Planning principles. (*Royal Institute of British Architects*)

Printed image digitised by the University of Southampton Library Digitisation Unit



Sites of special scientific interest. (*Nature Conservancy*)

Facing p. 817

Printed image digitised by the University of Southampton Library Digitisation Unit

Site Information for Stage II Local Hearings

2. Nuthampstead

1. Introduction

The information set out below is intended to give a broad indication of what would be involved if the third London airport were to be located at Nuthampstead. At this early stage of the Commission's work it is not possible to give final detailed plans for an airport at this site or for the surface access arrangements which would be required. The material under the various headings should, however, enable local implications of an airport at Nuthampstead to be assessed and should provide a suitable basis for objections, comments and representations at the Stage II local hearing.*

2. As the Commission's work progresses and in the light of the evidence of the Stage II hearings, it will be possible to prepare more detailed plans. These will be available for the Stage V hearings.

3. The base maps used to illustrate this material are the latest published by the Ordnance Survey. They do not show the most recent developments.

2. Airport Layout

4. The Commission recognises that there is no single airport layout which is the best possible for all the sites. Each site has to be carefully studied to establish factors, such as terrain and local geological conditions, so that the best layout at that particular site can be obtained. Detailed studies have not yet been carried out at Nuthampstead or any of the other short listed sites. Nevertheless, the Commission recognises the need for providing the public with some indication of the likely size and shape of a four-runway airport.

5. The layout shown at plan CTLA/1 illustrates an arrangement which would be acceptable both to the National Air Traffic Control Services and to the British Airports Authority. An airport of this design could be constructed at Nuthampstead. It is emphasised that it is not the only possible configuration, but the basic runway separation distances which control the amount of land required are unlikely to be much less than is shown. The total land take of an airport at Nuthampstead with this layout would be approximately 7,500 acres (including the areas shown as "optional") but the possibility of a larger land take being required cannot be excluded.

3. Runway Alignment

6. The preferred runway alignment is 50 degrees east of north (grid). This is shown on the NNI (Noise and Number Index) contour plans CTLA/2/2 and CTLA/2/3. The alignment differs from that indicated by the shaded rectangle on plan CTLA/5 (Short List Sites). This preferred alignment provides a better balance of the following important factors: noise disturbance, existing facilities and amenities, air traffic to other civil airports, air traffic patterns, military aviation, meteorological conditions and terrain. The Commission recognises that further changes to this preferred alignment may subsequently be justified.

* Appendix A for procedure and programme.

4. Airport Site

7. The area proposed embraces the old airfield at Nuthampstead. The terrain imposes practical limitations on the location of the site. It is bounded to the northwest and northeast by falling ground and to the southwest by the valley of the River Quin.

8. The site is currently used primarily for agriculture.

9. The area is predominantly boulder clay overlying the chalk bed rock. Construction should present no serious problems.

5. Noise and Disturbance

10. On the basis of the Registrar General's Annual Estimates of Population for 1968, it is estimated that about 1,000 people currently reside in the area likely to be covered by the site.

11. Estimates have been made of the probable NNI* contours for the airport at the full capacity of two runways and again at the full capacity of four runways.

12. Contours down to the 40 NNI level are shown on plans CTLA/2/2 and CTLA/2/3. Attention is drawn to the fact that these contours are of necessity approximate, and that they can give only a general indication of the areas likely to be affected. It is especially difficult to estimate the number of aircraft likely to be using particular flight paths in the four-runway case (some thirty years in the future) and the best way in which these flight paths can be routed to minimise the impact of noise on urban areas.

13. The reliability of the Noise and Number Index has been questioned. This is a matter which can be further investigated in due course. Separate night time NNI contours have not been prepared but, as the NNI is related to the number of aircraft movements and these are likely to be less at night than by day, it is a reasonable assumption at this stage that the night NNI contours will be less extensive than the day contours depicted. The contours relate to an average summer day—normally the busiest time of the year—with no special noise abatement procedures. It has been assumed in the NNI contours that noise certification regulations will be introduced and will lead to a reduction in the noise effect of aircraft by 10 NNI over the next 20 years.

14. The present population (based on the 1966 Census) affected by the different NNI contours are estimated to be:

Noise level	*NNI*	*2-runway*	*4-runway*
Intrusive	40–45	18,500	51,500
Intrusive/annoying	45–50	3,000	10,000
Annoying	50+	4,500	4,500

* See *Noise: Final Report of the Committee on the Problem of Noise* (Cmnd. 2056; HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

The Report of the Committee on the Problem of Noise reached the tentative conclusion that the critical range of disturbance was 50-60 NNI by day and 30-45 NNI by night.

15. The Commission is not publishing at this stage maps showing flight paths and stacking areas. Flight path maps will not give information about the levels of disturbance caused by aircraft in the vicinity of the airport. Such information is given by the NNI contour maps. It is not possible at this stage to indicate precisely where stacking areas might be located. However, they do not extend below 5,000 ft and the disturbance caused by aircraft held in stacks is most unlikely to reach the 40 NNI level.

6. Airport Employment

16. The introduction of a large international airport into an area is bound to create an inward movement of population. There will be those directly engaged on the airport ("primary employment"). There will be those engaged in manufacturing industry and commercial projects attracted specifically by the location of the airport ("secondary employment"). There will be those engaged in providing for the needs of the primary and secondary workers and their dependents ("service employment").

17. At this stage, the Commission's best estimate of the primary employment which the airport will generate at the full capacity of two runways is 45,000 and at the full capacity of four runways is 65,000. These figures depend on many factors, including the extent to which airlines will set up engineering facilities at the new airport. These levels of primary employment are unlikely to be reached before the mid-1980s and mid 1990s respectively. The accuracy of this forecast must depend on the date of inauguration of the airport and the subsequent build-up of traffic. The estimates are based on an analysis of employment and air traffic at Heathrow.

18. The Commission expects to receive valuable evidence on the issue of resulting urbanisation at the local hearing.

7. Surface Access

19. The total annual number of passengers using the airport when two runways are running at full capacity is likely to be about 45 million. When four runways are running at full capacity it could be over 100 million. The forecasts are tentative and are put forward to give some indication of the scale of the surface access problem.

20. The Ministry of Transport and British Rail are not yet in a position to provide definite plans for this level of traffic but it is thought desirable to provide some indication of the possibilities for use at the local hearing. It is envisaged that new high standard dual carriageway links would be needed to M11 for London traffic and to A1 for Midlands and Northern traffic. At a later stage further links will be required. Rail facilities to a London terminal combining existing lines and new links will be needed from an early date.

APPENDIX A

Arrangements for Stage II Hearing on Nuthampstead

Scope of Stage II Hearings

The main purpose of the Stage II hearings is to provide an opportunity for the Commission to be informed as early as possible of all the local implications which it should take into account in its further work on the short list sites. At the hearings the Commission will not be advancing proposals for an airport at the particular site in question but, on the assumption that an airport might be located there, will be asking for objections, comments and representations on the local consequences. The Stage II hearings are not intended to afford an opportunity for making comparisons between the site in question and other sites. Objections, comments and representations must, therefore, be confined to the site proposal in question. The opportunity for comparisons between the short listed sites will arise at Stage V.

2. The Stage II hearings are not ordinary planning inquiries. There will be nobody in the position of applicant for planning consent. Mr. A. J. Hunt, who is a Principal Planning Inspector and a member of the Commission, will preside. He will already be familiar with the main issues involved and will not be required to decide between any conflicting views put forward. It will be for the Commission as a whole to evaluate the evidence given after the Inspector has reported to it.

Procedure for the Stage II Hearings

3. The Commission will publish material well in advance relating to each site. This material should be sufficient to enable those concerned to appreciate the local implications of what is proposed.

4. Interested parties must apply to the Commission in writing for leave to be heard or represented at the hearings. All applications must be accompanied by a brief statement of the nature of the evidence which it is desired to give. Written applications will so far as possible be dealt with by the Commission without oral hearings but if the Commission requires any applicant to present his application orally he will be asked to attend a meeting for the purpose. Those given leave will later be invited to attend a private meeting to discuss what are the main issues to be covered and how the proceedings should best be conducted.

5. The Commission intends to ensure that the best use is made of the time available for the local hearings. Those given leave to appear or be represented must produce their statements, proofs and all other relevant documents well in advance of the hearing so that they can be made available to other interested parties before the hearing begins. This will largely avoid the need for

Printed image digitised by the University of Southampton Library Digitisation Unit

examination in chief. The Commission asks that representative organisations or groups will, so far as possible, put forward a common view so that repetition of similar views and unnecessary cross-examination can be avoided.

6. In general the Inspector will have complete discretion and control over the proceedings. He will be entitled to withold permission to call any witness whose evidence appears likely to be irrelevant or repetitive. There will be no appearance at the hearings on behalf of the Commission but any party given leave to appear or be represented may at the Inspector's discretion be allowed to cross-examine any witness called to the extent that such cross-examination is relevant to the issues before him.

7. The Inspector will before the hearing circulate to all concerned a programme of appearances and so far as possible agree this with them.

8. The hearings will be in public. A complete shorthand note will be taken. Copies of the transcript will be available for purchase from the shorthand writers, Messrs. Cherer & Co., 34, Essex Street, Strand, London WC2.

9. The Inspector will also have regard to any relevant written objections, comments and representations on the local consequences submitted by those not seeking leave to appear or be represented at the hearing. Such written submissions should reach the Secretary not later than Friday 23 May 1969.

Time Table for the Stage II Hearing on Nuthampstead

10. The following timetable shows the proposed timing of the various phases of the procedure for the local hearing on Nuthampstead.

Nuthampstead

(*a*) Commission material published .	1 April
(*b*) Applications for leave to appear or be represented by	18 April
(*c*) Date of hearing of applications (if required)	25 April
(*d*) Meeting to discuss procedure . .	28 April
(*e*) Statements, proofs and other documents (including written submissions) to be received not later than . .	23 May
(*f*) Start of hearing	9 June

Applications

11. The Commission is now ready to receive applications for leave to appear or be represented at the hearing on Nuthampstead. These should reach the Secretary at Templar House, 81-87 High Holborn, London WC1 not later than Friday 18 April 1969. The hearing will start at 10 a.m. on Monday 9 June 1969 at a place to be announced.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 1

Mr. F. A. Sharman
Mr. G. I. W. Dunfold
Mr. L. C. Kitching
Mr. B. H. Mellor
Mr. W. D. Peters
Mr. N. Fleming
Mr. E. E. L. Owens
Mr. D. E. Tanton
(*Essex, Hertfordshire, Cambridge and Isle of Ely County Councils*)

Mr. C. K. Cole
Mr. S. McArdle
(*Luton County Borough Council*)

Cambridge City Council

Royston Urban District Council

Mr. H. C. Beddington
Mr. J. G. Eve
(*Mr. H. C. Beddington*)

Oral evidence was taken from these witnesses on Day One, Monday 9 June 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the County Councils of Cambridgeshire and Isle of Ely, Essex and Hertfordshire

SUBMITTED BY MR. F. A. SHARMAN*

1.1. I am a Chartered Engineer, a Bachelor of Science in the University of London, a Fellow of the Institution of Civil Engineers, and a Member of the Institution of Highway Engineers.

1.2. I have practised as a civil engineer since 1940, and for twenty-three years I have been with Sir William Halcrow and Partners. This is a firm of Consulting Engineers employing some 350 qualified engineers, and having major responsibility in such projects as the proposed Channel Tunnel, the Victoria Line, and large scale construction projects in many parts of the world. I am an Associate of this firm.

1.3. I have been responsible among other works for the design of three airport runways and an airport terminal building, as well as for road systems, two motorways and a number of bridges. I am a member of the Executive Committee, and Honorary Secretary of the Regional Studies Association, an organisation devoted to the co-ordination of physical and economic planning on a regional scale. I was responsible for preparing a report on the location of the Third London Airport by Sir William Halcrow and Partners for the Essex County Council, and subsequently, have been responsible for all work carried out by the firm for Essex County Council in connection with the location of the Third Airport, including giving evidence at the Public Inquiry on the proposal to develop Stansted as the Third London Airport, and the preparation of the Second Submission to the Commission on behalf of the Essex and Hertfordshire County Councils. I have also prepared and given evidence at the Public Inquiry on a proposal to extend one of the runways at Southend Airport and at the Public Inquiry on a proposal to extend Rhoose Airport.

1.4. I have been asked by the Counties of Essex, Hertfordshire and Cambridgeshire and Isle of Ely to submit technical evidence relating to the local effects of siting the Third London Airport at Nuthampstead.

1.5. In order to visualise the total impact of the airport on the surrounding area, up to and including the time when it is operating at full capacity with four runways, it is necessary to form a picture of the physical developments most likely to accompany the project, and the movements of passengers, population and industry which will be promoted. In assembling data for a comprehensive cost and benefit comparison between the alternative sites, the Counties' consultants are attempting to identify the broad planning and design necessities within which policies for the optimum utilisation of each would have to be worked out. Where this work sheds some light on the range of local effects to be anticipated, it may be helpful at the present Inquiry, and relevant results are offered in this present submission.

2. Regional planning

2.1. The development of the third airport is one of many new activities which will provide investment and employment opportunities for the growing population of south-east England over the next two or three decades. If the airport does not come to Nuthampstead, the planning policies of the Counties concerned would not provide for a change in the predominantly rural character of the area. The massive and rapid development necessities imposed by the project would represent a radical alteration in the environment, compared with a situation in which additional development, providing for an appropriate share of regional growth, could be confined to limited extensions of existing settlements, phased and located in accordance with local intentions.

2.2. Not only will the airport immediately become a growing traffic focus, requiring extensive road and rail construction in addition to the airport and associated urban development works, but also the investment must be on so massive a scale that airport interests would always preponderate in the compromises reached between these and the local restraints. Any other forms of development accepted in the area are likely to be more flexible and responsive to existing influences, both in themselves and in the additional communications required.

2.3. For these reasons, which are reflected in the attitudes adopted by the local Planning Authorities affected, a decision to use the Nuthampstead site would represent an assertion that national and regional advantages are sufficiently well established to justify the over-riding of local opposition. But such advantages must themselves be examined in the local context.

2.4. The position of Nuthampstead in the region would result in an advantageous road journey time (compared with time by a rail link) for a fairly large proportion of air travellers. Many will choose the quickest journey, and for these, private cars will be the principal mode. There will be an intensified demand for hotel and motel accommodation, filling stations, road side catering and other services for a considerable radius around the airport.

2.5. The theoretical regional advantage which may be claimed for Nuthampstead (in common with all the short-listed sites) is that the intensified activity which the airport will promote will provide "counter-magnet"

* See also p. 831.

Printed image digitised by the University of Southampton Library Digitisation Unit

employment opportunities at a suitable distance from London, and so help in solving the problem of co-ordinating a desired general distribution of population with that of industry. The inland sites can be supposed to spread the benefits of major "counter-magnets" over the surrounding areas in a way which the estuary sites could not, though in the case of Nuthampstead this would be at the cost of abandoning intentions to leave certain rural areas undisturbed. The retention of such rural areas is a feature accepted in all regional planning policies. This point will be elaborated in Mr. Kitching's evidence.*

2.6. The validity of the "advantage" described in the previous paragraph needs careful testing in the site comparison exercises, but it is reasonable to assume that if Nuthampstead is chosen, the airport will have been accepted as one of the "counter-magnets", and in its area of influence, national and regional policies will eventually be obliged to promote growth centred on the "airport towns", industries and communications. The logic of scale economies in infrastructure, provision of community facilities, and communications is likely to override any earlier policy decisions to restrict the effect in deference to local resistance, just as the interests of the airport development itself will preponderate in its immediately adjacent area.

3. The timing of decisions, construction and development

3.1. It is exceptionally difficult to foresee exactly when the different phases of the project are likely to be implemented partly because of the growth of air traffic itself, which is so greatly dependent on national and international economic trends, and partly because decisions on the major investment stages may not be made in a time sequence which will allow the technical requirements to be met as they arise. However, as argued in evidence previously submitted, it is considered that the first runway should become operational between 1976 and 1981.

3.2. The engineering works required at Nuthampstead are very substantial, as will be demonstrated later in this evidence, and complete possession of at least two-thirds of the site within the perimeter fence, and of the right-of-way for the principal road and rail links, will be needed as soon as possible after a decision to adopt the location. Procedures for acquisition, for the resettlement and re-employment of displaced residents, and for compensation will have to be carried out on the assumption of the earliest requirement for airport operation which can be visualised at the time of decision. The requirement may arise by 1976: the most economical rate of construction would probably allow at least four years for site preparation, terminal buildings and rail and road connections, so that either the acquisition procedures must be completed in eighteen months or less, or the contracts for construction will require a construction speed which will involve additional cost.

3.3. A substantial part of the labour force required for construction, preparation and initial operation will require newly created temporary or permanent housing, with all services and communications, in the immediate airport area, or within 10 to 15 miles of it. The build-up of staff and labour requirements subsequently is described in Mr. Kitching's evidence. The initial planning decisions will necessarily be made under considerable pressure of time: later stages will need continuous adjustment to keep in step with air traffic demand, but it can reasonably be predicted that large-scale construction will be virtually continuous on the airport site for at least ten or fifteen years, and that infrastructure and building operations in the associated urban development will follow suit.

3.4. The Commission's NNI maps indicate a very significant difference in the location of noise nuisance between the two-runway and the four-runway situation. If this turns out to be unavoidable the timing of this change-over will assume considerable significance for the people who are to be relieved from or subjected to certain noise levels, and it is reasonable to ask that programmes of intention should be announced as far as possible in advance of events.

4. Airport layout considerations

4.1. It must be accepted that in selecting the site and the runway orientation, the Commission has made some balance between construction costs and environmental effects. It is clear that the minimisation of the imposition of noise on built-up areas has been a major consideration and that a site requiring massive soil shifting and high construction costs has been accepted for this and other reasons. We have not attempted comparisons with any slightly adjusted layouts because there is no reason to believe that in this particular locality any improvement on the Commission's choice could be discovered except by detailed design based on full surveys and soil investigations.

4.2. The site is extraordinarily hilly for so large an airport, and the quantities of soil and chalk which will require to be shifted are formidable. Chalk is mentioned separately because it is inherently more difficult and expensive to excavate and to compact as fill than the clays, silts, sands and gravels ordinarily encountered in surface levelling operations. Full site investigation data is not available to us, but reconnaissance and existing mapping have permitted an estimate to be made of the total volume of material to be moved: this amounts to some 120 million cubic yards. This quantity is derived from contours at 25 ft intervals on the 2½ inch to 1 mile Ordnance Survey maps, and relates to the preparation of the four-runway airport site as proposed by the Commission, with runway and other slopes kept within limits laid down in the appropriate international manuals. It seems reasonable, from the little sub-surface data at present available, to expect that over half of the 120 million cu. yd to be dealt with would be chalk. It may be relevant to add that a similar estimate made with the runway alignment indicated on the Commission's first suggestion gave a total of material to be moved of about 110 million cu. yd so that it seems that the order of magnitude of the earth and chalk-moving task will not be changed by any adjustments made in the detailed design stage.

4.3. Of the total volume of levelling work, some 35 per cent (or 42 million cu. yd) would probably require

* p. 616.

Printed image digitised by the University of Southampton Library Digitisation Unit

completion for the first stage of construction, i.e. for the minimum works allowing the operation of one runway and the associated terminal facilities.

4.4. It is difficult to be sure of this figure without elaborate programming, but it is reasonable to assume that any plausible construction programme would have to allow for soil and chalk shifting at a rate of something like 15 million cu. yd per year. For comparison, the total earthworks handled in the eighteen-month construction period for the principal works spread along the 74 miles of the M1 Motorway contracts was 14½ million cu. yd. One must therefore visualise a massive concentration of earthmoving plant, equipment and labour, on the site itself starting as soon as possession of the area is granted to the contractors, and continuing, possibly with some intervals of lower output, for ten years or more. Nothing on this scale has been attempted in this country before: the nearest analogy is with a major dam site such as the Mangla dam in Pakistan, where 140 million cu. yd were shifted in 6½ years. Whilst mechanisation is taken to its limit on works of this magnitude, and the largest units of plant are used, the effects cannot be confined within the site perimeter, and the labour and supervisory force involved and requiring accommodation on or near the site is considerable.

4.5. Superimposed on the earthmoving effort, the construction of runway pavings, taxiways, aprons, airport buildings and equipment will involve the flow of large quantities of materials from all parts of the country to the site. The largest bulk item will be sand and gravel for concrete and asphalt: it is estimated that before the completion of the first (one-runway) stage (possibly 1976), some 1¼ million cu. yd of aggregates will have been brought to the site. Eventual total requirements of aggregate are likely to total about 3·8 million cu. yd. For likely extensive peak rates of use, one must visualise about 300 15-ton trucks per working day arriving at the site from gravel pits, in addition to cement, bitumen, steelwork and other miscellaneous building items which will arrive by road from all quarters. The sources of the required aggregates have not yet been assessed, but it seems probable that the demand will result in new pits being opened up wherever haul distances to the site make the operation potentially economic. The usual conflict between the preservation of amenity and the cost of alternative sources will arise, but unless large supplies are discovered on the site itself, a significant increase in the rate of exploitation of gravel pits over a large area is to be anticipated. The requirements of the associated urban development areas will also increase the strain on local resources of material. It is desirable that a reasonably detailed estimate of the total call on these supplies, and of the most probable sources (and the area of land to be disturbed in each case) should be made when estimates are drawn up for the final decision on airport siting.

4.6. The scale of effort and the speed of working needed are certainly not beyond the capability of the construction industry of this country, but they are such as to represent a substantial diversion of resources from highway and similar large-scale public works.

4.7. Furthermore, the erection of housing for airport employees and the associated additional population, with all the necessary services and communications, will be taking place very rapidly in the areas allotted, simultaneously with airport construction peak effort, and road and rail link construction. The housing can be considered as part of the national programme from a resources point of view: if it were not near Nuthampstead, it would be needed somewhere else. However, all the operations mentioned in this section will to some extent be drawing on the same area's resources over a long period: the effect of this concentration must be a cumulative change in the supply and demand balance and in average haulage distances. There is bound to be strain on the local road network, and general disturbance for a wide area around the site and the housing areas for the prolonged periods during which large-scale building operations are in progress.

5. Services and utilities

5.1. *Water*

5.1.1. The airport demand requirement is expected initially to be between 0·7 and 1·5 million gallons per day and to rise to an estimated 6 million gallons per day at full development, perhaps in the year 1990.

5.1.2. Present resources available to the Lee Valley Water Co., which is the water authority for the area of the airport and proposed new urban settlements, would be adequate for the initial development demand. These include the existing supply from the Great Ouse Authority's scheme at Grafham Water which is piped at the moment past Welwyn Garden City into south Hertfordshire, and the underground supplies in the vicinity of Saffron Walden. The Water Company has planned to extend the former by pipeline to a distribution point near Bishop's Stortford as the normal demand warrants in the future, and this extension can be brought forward for initial urban airport development of the area, and will realise an expected supply of some 5·5 m.g.d. by 1975. The Saffron Walden supplies are planned for distribution in the near future to Great Dunmow and surrounding areas, and these are estimated to show a surplus of 2·5 m.g.d. in 1975.

5.1.3. Immediate requirements for the airport development are therefore relatively easily assured, but full stage development, particularly of the urban areas, will necessitate augmentation of the supplies from other sources. These would include a large allocation of Grafham Water supply by increasing the present storage capacity, or by introducing the second stage of the Ely/Ouse scheme. This would increase the yield at Great Stampford by a further 50 m.g.d. for distribution over the relatively short distance to the airport and urban areas. Another possibility is the bringing forward of the proposal to take Thames water from the Sunnymead intake, which is at present planned to supply 10 m.g.d. to the Water Company by 1985.

5.2. *Sewage and waste disposal and surface water drainage*

5.2.1. The disposal of sewage and industrial waste generated by the establishment of a four-runway international airport and its associated urban developments at Nuthampstead (or indeed at any of the inland sites) would necessitate a co-ordinated regional sewage

Printed image digitised by the University of Southampton Library Digitisation Unit

scheme constructed stage by stage with the phases of the airport. The cost of such a scheme would be high, in relation to existing authority plans, and should not be allowed to fall on people who would receive no consequent benefit, but, in comparison with the other capital and running costs of the project, the expenditure would not be a very significant factor.

5.2.2. There are, however, particular features of the Nuthampstead site which demand special care in planning and design, and justify a request for specific assurances to safeguard the position. The levelling operations, followed by the rendering effectively impervious of a large proportion of the airport area, will completely change run-off characteristics both in total quantity and in flow direction. There will be a risk that oils and other spilt or discarded contaminators will be washed off the area into watercourses, or reach the sub-surface water reserves near the site. The principal authorities concerned (the Lee Conservancy Catchment Board and the Great Ouse River Authority) are alive to these risks, and will no doubt be seeking to obtain all the necessary undertakings to ensure that flood risk downstream of the development is not increased, that erosion from newly-exposed earthworks does not cause silting of channels, and that contamination of supplies is prevented. One cannot doubt that suitable arrangements of balancing reservoirs, oil traps, soakaways and water control works generally can be devised so that existing interests are preserved, but clearly the necessary expenditure must be allowed for, and full and continuous consultation with the responsible water and drainage authorities will be essential from an early stage of planning. One condition believed to be essential is that drainage southwards from the airport area should not enter the river Lee, directly or through any tributary, upstream of New Gauge.

5.3. *Fuel*

5.3.1. Aircraft fuel could be transported to Nuthampstead either by pipeline or by road tanker. The construction of the former would involve some disturbance along its route, but ultimately would not have a great effect on local interests, and tankers would be expected to keep to the special motorway links without generally or significantly affecting the local road network. The preferred method should be established as early as possible, and the costs and effects allowed for in more detailed assessments of the project.

5.4. *Electrical power*

5.4.1. The airport demand requirement is estimated to grow from about 5 to 10 MVA (Mega Volt Amperes) in 1976 to around 80 MVA by 1990, whilst urban supply requirements by the end of the initial development period in 1981 would be of the order of 50 MVA for the Royston/Shepreth area and 40 MVA for the development area to the south-east of the airport which will be referred to in the evidence of the County planning witnesses.

5.4.2. The supply system would be developed in several stages to meet this growth. Routing of overhead lines, and underground cables, and their costs, are dependent on appropriate consents and wayleaves. The routes of the existing Wymondley/Pelham 132 kV double circuit overhead line and the adjacent Central Electricity Generating Board's 400 kV line are in close proximity to the southern end of the runway, and would require to be re-routed in overhead extensions or taken underground over this area.

5.4.3. In the first stages, provision would be made for 132/33 kV transformers and a 33 kV busbar at the existing Pelham 400/132 kV Supergrid substation, which would cater for the combined load requirements of the airport and the northern part of the development to the south-east of the airport. One pair of 33 kV underground cables would be adequate to meet the initial load and security requirements at the airport, and these would be eventually duplicated to cater for the final stages of development.

5.4.4. Predicted expansion of the long term requirements of the development to the south-east of the airport would necessitate two additional 33/11 kV substations, together with an 11 kV infeed from the existing Bishop's Stortford 132/33 kV substation after the installation of local 33/11 kV transformers.

5.4.5. The proposed Royston/Shepreth urban area would ultimately require an infeed from two 132/33 kV substations at full development. Irrespective of any urban development connected with the airport, there is a need to establish one of these substations in the Royston area within the foreseeable future. Adequate supply capacity would be available from this point to cater for first stage requirements by establishing a local 33/11 kV substation and one in the Shepreth/Melbourn area. Final stage development would inevitably involve 11 kV system reinforcement in the Fowlmere area with a 33 kV infeed based on Royston Grid. Development further afield in the western and northern parts of the region would rely ultimately on a 132 kV infeed probably derived from the bulk supply point at Little Barford. Transformation to 33 kV and possibly 11 kV would be undertaken at a new grid substation, with additional 33/11 kV substations commissioned in the Whaddow and Shepreth outskirts as development proceeds.

6. Surface transport

6.1. *General*

6.1.1. Proposed road and rail connections between the Nuthampstead site and London are described below. Both links would need to be operating at the opening of the airport, and the capacity of each will require to be developed in line with air traffic growth and the choice travellers will make between road and rail.

6.1.2. On one simple basis of prediction, 60 per cent of passengers would use "semi-fast" rail for the trip between London and the airport, against 40 per cent who would go by road, at the opening one-runway stage. The rail percentage would increase to 80 per cent by 1981, when an Advanced Passenger Train system would come into operation and two runways would be operating. These figures assume that third airport passengers would be drawn from all zones in the United Kingdom, and would choose the quickest mode of transport to reach the airport from their starting points.

Printed image digitised by the University of Southampton Library Digitisation Unit

6.1.3. A more complicated allocation has been made presuming that passengers will go to Heathrow or to Gatwick if their journeys there are quicker than the journey to Nuthampstead, (up to the limits when Heathrow and Gatwick respectively are committed to their capacity limits). This analysis gives considerably less rail passengers, and only reaches 60 per cent by rail when APT becomes operational; an event presumed to be economical at the two-runway stage (possibly in 1981).

6.2. *Roads*

6.2.1. According to the most recently adopted criteria, the M11 London to Cambridge motorway would have been designed to dual two-lane standard, with provision for a third lane on each carriageway in 1985, if no third airport traffic had been allowed for on it. In fact, a decision was made that it should be dual three-lane from the start, and this has led to the claim that a "bonus" exists in the form of spare capacity which would be unused for some years if the third airport traffic did not use the M11 route.

6.2.2. The traffic forecasts mentioned above do not include the effect of the proposed link from the M11 from Stump Cross to join the A1 near Huntingdon. Clearly this could considerably increase the non-airport traffic load, and reduce the "spare" capacity and hence the period during which the M11 would be adequate for airport traffic.

6.2.3. There are in fact so many imponderables in the modal split, traffic allocation and hypothetical "no-airport" calculations, that it can become most misleading to attribute bonus or penalty to any route. In attempting to show how the airport is likely to affect the road system, it seems better to make the best estimation one can of road traffic requirements stage by stage, to assume that extra road space for extra airport traffic will be provided ahead of demand, and to debit the cost of each traffic lane or part of a traffic lane which the airport traffic is likely to make necessary against the project. If the necessary provision is not made, and if all traffic on the routes affected is slowed by congestion, the economy of both the region and the airport will be penalised by the time lost.

6.2.4. Regional Strategy Proposals for the area include an east–west motorway cross-route from the M1 north of Luton to Harwich, which passes near Westmill on the A10 and crosses the M11 east of Bishop's Stortford. (See drawing No. FAS/2.)*

6.2.5. First stage development of the airport would necessitate the immediate construction of a connection to the M11 from the south-west airport boundary to Westmill and thence via the cross-route motorway to Bishop's Stortford. An additional link would eventually be necessary, either from Quendon to Meesdon or from Strethall to the north-east airport boundary. These alternatives are indicated as "M11 link" and shown as dashed lines on FAS/2.

6.2.6. At full development of the airport it is estimated that airport generated traffic would require the use of a dual three-lane motorway for passengers and freight. Provision of the additional dual two-lanes would best be served by developing an entirely new route to the airport, whilst continuing to utilise the one lane reserved on the M11, rather than trying to increase capacity on the M11 to a required dual five-lane. Even if the latter proved to be less expensive, it would not be an entirely satisfactory solution to the problem.

6.2.7. The new route could follow the line of the proposed Radial Route 6 from the motorway "box" to the "D ring" (see plan No. FAS/2). Beyond the D ring it could either follow the northward continuation shown in full line on the east side of the Lee Valley as far as a notional inter-section with the North Orbital road, or it could follow a more easterly arc bypassing Waltham Abbey and swinging round to Hertford Heath. This is shown on plan FAS/2 as a dashed line. In the first alternative, a section of the north orbital road between Roydon and Hertford Heath would connect the north extremity of the Radial Route 6 extension to Hertford Heath. In either case, from Hertford Heath a dual carriageway realignment of the A10, planned to bypass Hoddesdon and Ware, could be built to motorway standard, and carry the route via an interchange with the east–west route (A120) near Westmill to an approach road entering the airport from the south-west. The distance along this route would be 33 miles on the first alternative (2 miles shorter than the M11 route) and 34½ miles on the second alternative.

6.2.8. The principal areas for associated urban development, as explained in Mr. Kitching's evidence, and as indicated on map FAS/1,* are near Royston and near Bishop's Stortford respectively. The full line on FAS/2 running northwards from a point west of Sawbridgeworth, and passing the north-east airport boundary to Melbourn, represents a route which appears suitable as a collector for each settlement and as a connection with the airport, via an interchange with either of the M11 links. It would also connect the settlements with each other, and avoid the imposition of traffic loads caused by employee travel to and from the airport on to the M11.

6.2.9. The road system described above and indicated on drawings FAS/1 and FAS/2* is one which would provide for the principal traffic movements associated with the airport, and something on these lines would be essential if the existing through routes and local roads are not to be overloaded. But even if full provision is made for the main directions of additional flow, the considerable extra population and the change of predominant activity in the area is likely to raise the growth rate of movement on all the local roads greatly above the average for rural areas. This enhancement of local traffic increase could be expected to extend from Cambridge to Harlow, and from Stevenage to Stansted. The airport area itself would necessitate the diversion of some 4 miles of class B road, and some 5 miles of local roads.

6.3. *Rail*

6.3.1. The route to the airport for the "semi-fast" rail link, i.e. the system giving a conventional rolling

* opp. p. 672.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

stock service between King's Cross and Nuthampstead airport terminal, would depend upon the eventual choice of route for the Advanced Passenger Train described in section 6.3.5 below. The two alternatives would be along the Liverpool Street to Bishop's Stortford line or along the King's Cross to Hitchin line. Although only the influence of the parts of these routes within about 15 miles of the airport are strictly relevant to this Inquiry, the possibilities they offer cannot be understood in isolation, and the use made of existing tracks may influence the rail services available to residents in the airport area in the future. The whole rail links are therefore briefly described.

6.3.2. The route would follow the Hampstead, Tottenham, Barking line from St. Pancras on existing formation to Tottenham where it would join the Liverpool Street to Bishop's Stortford line. New passing loops would be necessary between Cheshunt and Broxbourne and between Harlow and Bishop's Stortford. Just north of Bishop's Stortford, new formation would take the route into the airport crossing over the River Stort, and up the Bourne valley passing to the west of Farnham and to the east of Furneux Pelham and entering the airport in cut and cover construction. Certain sections of this new formation would pass over hilly country and would require the maximum permitted gradient. The length of this route from St. Pancras to the airport is 42 miles. A possible alternative is for the spur to leave the Liverpool Street to Bishop's Stortford line just north of Sawbridgeworth crossing the A11, the A119, and the A120 east of Little Hadham and passing to the west of Furneux Pelham before entering the airport in cut and cover construction. This route is 1 mile shorter than the spur to the north of Bishop's Stortford and would require 13½ miles of new formation compared with 10 miles for the former route. The cost of the construction would be only marginally higher.

6.3.3. The route via Welwyn would follow the King's Cross to Hitchin line to the north of Welwyn and then continue on new formation south of Knebworth and either up the Beane Valley and north of Cottered, Throcking and Buntingford, or south of Benington and Buntingford, to the airport, in both cases in cut and cover construction. The lengths of these routes are 39 miles and 37 miles respectively.

6.3.4. Either of these two routes would provide a frequent service of non-stop trains between its termini with a reliable journey time of between 48 and 50 minutes, and would have sufficient capacity to serve air passengers arriving and leaving the airport by rail, on the maximum air traffic growth assumption, until 1982. Existing rail services to the area would not be adversely affected. After this date, on any growth assumption at some stage the rail link would require exclusive use of tracks adopted for the Advanced Passenger Train (APT).

6.3.5. The Advanced Passenger Train, which appears well suited to provide a service for the fast line to the third airport, is being developed by British Rail at their Engineering Research Centre at Derby. It is confidently asserted that this system with special vehicle suspension will allow the trains to travel at 125 mph on tracks designed for 90 mph, and that a maximum speed of 150 mph can be attained. New formation, solely for the rail link to the third London airport and certain other APT traffic will be required as with the expected increase in passenger movements in the 1980s and 1990s headways (i.e. the time between one train and the next) of the order of 2 minutes will be necessary.

6.3.6. The APT tracks would follow either of the two alternatives referred to in section 6.3.1. The former route would use the existing line of the "semi-fast" route to South Tottenham which would be solely for the airport rail link. Between South Tottenham and Tottenham Hale major demolition would be required for the connection to the Liverpool Street to Bishop's Stortford line. The route to Bishop's Stortford would be on new formation alongside the existing track, with the spur into the airport from either just north of Sawbridgeworth or north of Bishop's Stortford. The length of the route from St. Pancras to the airport is 42 miles for the Bishop's Stortford spur and 41 miles for the Sawbridgeworth spur. The journey time would be approximately 28 minutes.

6.3.7. The alternative route would use the King's Cross to Hitchin line with a spur to the airport as with the "semi-fast" route north of Welwyn. The length of the route from St. Pancras to the airport is between 37 and 39 miles. The cost for two tracks solely for the rail link, requiring additional tracks into London and a new series of tunnels at Potters Bar would be considerably higher than the Bishop's Stortford route.

6.3.8. It is understood that the Advanced Passenger Train will be used on the King's Cross to Newcastle line and that this route will be one of the first to be adapted for these trains. If it is possible to combine the rail link to the airport with this service and use two of the four existing tracks solely for APTs then the cost of this route would be considerably reduced and be cheaper than the Bishop's Stortford route.

6.3.9. If the development of the rail link, and in particular the use of the APT system, can be shown to offer overall economies compared with road journeys to and from the airport, it will be in the national interest to invest in making the rail journey as attractive as possible, and to do this early in the life of the third airport. Such a policy would relieve the road situation, and reduce the number of additional traffic lanes and roadside facilities to be created on the highway routes described. For this reason, the correct assessment of the possibilities of rail development are a matter of concern to this Inquiry.

7. Conclusions

7.1. The Nuthampstead site, which appears at first sight to be well placed in relation to existing trunk roads and the planned route of M11, will in fact necessitate the construction of additional traffic lane capacity on one or more routes to London, and other substantial road construction in the area, if excessive congestion is to be avoided. This is in addition to the development of an efficient rail link between the airport and King's Cross. The traffic situation must be assessed in the context of predicted conditions from 1976 onwards.

Printed image digitised by the University of Southampton Library Digitisation Unit

The idea of a "bonus", in the form of unused spare road capacity, is entirely illusory.

7.2. The residential, service, commercial and industrial development associated with the establishment of the airport, even if kept to a minimum, would cause a major distortion in the intended distribution of population within the region, and would seriously conflict with the accepted concept of preserving the rural character of the vicinity.

7.3. Earth and chalk shifting on the site will be on a massive scale, and the large construction effort will cause disturbance over a wide area, for a period of many years.

7.4. Serious attention must be given to safeguarding the drainage and water supply situation, to prevent flooding, contamination of underground supplies, and the washing downstream of excavated material.

7.5. The anticipated effect of noise and disturbance from the airport on the adjacent area is described in other evidence: little can be done, by practicable design adjustments in this site area, to reduce such effects. One particularly important problem in this connection is the effect of the air traffic and the navigational systems on the unique Cambridge University radio telescope installation at Lords Bridge, and separate evidence is being submitted about this.*

7.6. The relevant departments of the Counties affected by the proposals have co-operated with each other and with their consultants in an effort to visualise a utilisation of the site which would minimise the undesired effects. The weight to be attached to the various factors is for assessment at later stages of the Commission's work, but it is clear that many aspects of the project conflict with local interests, and would require fuller investigation if their effect is to be taken into account. There is an inherent disadvantage of the site, in that it causes an incursion into a rural area which would otherwise be preserved. This may be considered as something more than a local objection, as it will affect the urban and rural structure of a significant part of the region for several decades to come.

---

* p. 790.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the County Councils of Cambridgeshire and Isle of Ely, Essex and Hertfordshire

SUBMITTED BY MR. G. I. W. DUNFORD*

I am the Air Traffic Services Superintendent of International Aeradio Limited and have held this post since 1964. I have been in Air Traffic Control for the last seventeen years, initially in the Royal Air Force, before joining I.A.L. in 1955. My service with the Company up to my present post has been as an Air Traffic Control Officer at airports and Air Traffic Control Centres, as an A.T.C. Instructor in the I.A.L. School and as the Assistant Air Traffic Services Manager. In addition to being responsible for the A.T.C. operations of the Company, I am also engaged on Air Traffic and Operational consultancy tasks and have recently completed two such tasks in connection with a twenty year development plan for two major international airports overseas, Nairobi and Singapore, both of which had problems in relation to nearby airports.

1. Unfortunately no actual wind recordings have been obtained for the proposed site and therefore I have been unable to calculate the optimum runway direction. The Commission's choice of (052° TRUE) (050° GRID) lies between the direction of the main runway at Stansted (043° TRUE), which is some 10 miles away, and that of the main runway direction at Luton which is (075° TRUE). This variance may be the result of local topographical effects. It would appear, however, that some degree of flexibility in the actual alignment of the runways is possible.

2. The position and elevation of the airport will introduce local meteorological conditions of low stratus. However, since the landing runways will be equipped with an Instrument Landing System (I.L.S.) presumably to at least Category II standards, these meteorological effects should not cause any appreciable interference to the landing rate. Also, by the time the airport is opened, take-off minima will be such that these weather conditions will not inhibit the movement rate.

3. Although the Commission, in paragraph 15,† has not published details of the Holding Areas to serve the airport, the routes from these Areas onto Final Approach or the Departure Routes with their connections to the National Airways system, these factors nevertheless will have a considerable bearing on the effect of Nuthampstead on existing aerodromes. Using the standard criteria for calculating Holding Areas and taking into consideration the forecast that some 75 per cent of all landings and take-offs will be made to the south-west, thus requiring these Holding Areas to be sited in positions favouring approaches from the north-east, I have been able to reach the following conclusions.

3.1. The Holding Area serving the southern runways cannot be sited in the optimum position without interference with the existing Heathrow Holding Area at Ongar, and Airway RED ONE; it must therefore be positioned farther eastward. The facility could be sited in the Wethersfield area. Such a site would meet the preferential approach requirements and would keep the intermediate approach track as short as possible but it would require that aircraft are held at the minimum level of 6,000 ft.

3.2. The Holding Area for the northerly runways could be sited at the optimum position, with the facility in the Biggleswade area and a minimum holding level of 8,000 ft.

These Holding Areas, the probable departure routes and the Controlled Airspace which will be required to protect them will, I believe, have the following effects on the aerodromes listed below.

4. Stansted

4.1. It will be difficult to locate a separate holding area for Stansted and thus a sustained Instrument Flight Rules (IFR) rate for Stansted could not be achieved.

Use of either the Nuthampstead holding facility or the Ongar holding facility for traffic into Stansted would be unacceptable, as this would affect the traffic rates into Nuthampstead and Heathrow respectively.

4.2. The departure routes from Nuthampstead for traffic to the East would pass very close to Stansted and such traffic would be at reasonably low levels. Similarly, the approach paths from the southerly holding area would also pass close to Stansted.

The conclusion reached is that Stansted would only be capable of accepting training aircraft and General Aviation aircraft with separate routings within the Control Zone and the consequent altitude restrictions.

5. Luton

5.1. It would be impossible to locate a separate holding area for Luton and therefore a sustained IFR rate could not be maintained. This is one of the penalties at present borne by Luton and it does inhibit its future growth. Random use of either the Nuthampstead or Heathrow (Garston) holding areas would be possible but would affect the capacity of those two airports and such a system is therefore not considered feasible.

5.2. The westerly departure routes from Nuthampstead following take-off to the south-west will pass

* See also p. 833.

† *Site information for Stage II local hearings. 2. Nuthampstead.* (HMSO; 6s.) Reproduced at p. 601.

Printed image digitised by the University of Southampton Library Digitisation Unit

close to Luton and will necessarily impose severe altitude restrictions on traffic approaching to land on Runway 26 at Luton. So much so that it will not be possible to make a standard instrument approach to that runway and thus the effective use of the airfield will be severely curtailed.

5.3. Departures from Luton from Runway 08 going to the south will be subject to severe altitude restrictions due to the approach paths to Nuthampstead. This situation will arise less frequently than that foreseen in paragraph 5.2 due to the predominance of traffic taking-off and landing to the south-west.

5.4. The only type of traffic which could accept the altitude restrictions and operating restrictions put forward in the foregoing paragraphs would be General Aviation Traffic.

6. **Other aerodromes**

6.1. The Controlled Airspace mentioned in paragraph 3.2 above will have a restrictive effect on at least six military aerodromes in the area, such that the type of operations carried out may have to be altered to accommodate the altitude restrictions which will be necessary. These airfields are Alconbury, Oakington, Stradishall, Wattisham, Wethersfield and Wyton. Bassingbourne would also be affected but this is scheduled to close before a Third London Airport becomes operational.

7. **Air traffic control**

7.1. I believe that serious problems will arise between the traffic flow on Airway Amber 1 and the traffic departing from Nuthampstead to join this Airway unless a system of parallel airways is instituted, each with a uni-directional flow. The result of such a system would be to increase, by a considerable amount, the area of Controlled Airspace required and this in turn would have effects on a number of military aerodromes in Oxfordshire, Warwickshire and Gloucestershire.

7.2. It would appear from the NNI contours that the Board of Trade may be considering the establishment of an additional airway, to the north of the existing airway, GREEN ONE to the west of London, joining the existing airway to the west of Bristol. Such an airway would relieve the pressure on GREEN ONE and would also obviate the necessity for traffic to and from the west to Nuthampstead to fly through the London Terminal Control Area with the consequent increase in traffic in that already congested airspace.

To establish such an airway would, however, impose further restrictions to military aerodromes in Oxfordshire and Gloucestershire.

7.3. The position of Nuthampstead and its associated Controlled Airspace in relation to the London Terminal Control Area will, I believe, impose considerable burdens on the A.T.C. system within the London TMA with the possible effect of reducing the flow rates to the airports, which in turn will reduce their ability to fulfill their forecast capacity.

8. **Lords Bridge radio telescope**

8.1. The Cambridge University Radio Telescope at Lords Bridge is extremely sensitive to radio interference both from ground radiated signals and from airborne radiation. If the airport was sited at Nuthampstead there could be interference from the Radar systems and the Instrument Landing Systems. Dependent upon the location of the northern holding area, there could be interference from the VHF Omni Range (VOR) used as the holding facility and from the aircraft approaching to land from that facility which will fly in proximity to Lords Bridge.

9. **Conclusion**

The establishment of the Third London Airport at Nuthampstead will, I believe, impose penalties on the National A.T.C. system and will also have widespread effects on other aerodromes.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the County Councils of Cambridgeshire and the Isle of Ely, Essex and Hertfordshire

SUBMITTED BY MR. L. C. KITCHING*

I am a Member of the Order of the British Empire, a Chartered Town Planner and a Chartered Municipal Engineer. I was for eight years a Member of the Council of the Town Planning Institute and I am a Past Chairman of its South-East of England Branch. I have had 36 years experience in the practice of Town and Country Planning and I hold the appointment of County Planning Officer of Hertfordshire.

The scale of the proposals

1.1. The Commission has short listed Nuthampstead as one of the sites for further consideration. It lies across the Hertfordshire–Essex border, immediately south of the common boundary with Cambridge. The percentage of the site in each County is approximately Hertfordshire 55 per cent and Essex 45 per cent. It is about 38 miles north of the centre of London by road. The Commission has stated that by the mid-1990s the airport would give direct employment to 65,000 workers and may handle 100 million passengers a year. I estimate that associated urban development would be required for about 384,000 people by the end of the century, and I will later produce evidence to support this.

County policies

1.2. Hertfordshire County Council has always accepted its role in the Outer Metropolitan Area. The County has accommodated an outward movement of some 400,000 population since the war, nearly doubling its size, including four New Towns and several LCC/GLC out-county estates. Many major new and improved roads of national and regional importance traverse the County. This new growth has been handled in such a way that the essential physical and historical character of Hertfordshire as a County of individual towns set in a rural background has been conserved and towns and villages have retained clearly their separate identities.

1.3. Nevertheless, the Hertfordshire County Council has appreciated for some time that a stage is being reached when the County cannot continue to absorb new development from outside its boundaries without the whole character of the towns and countryside of Hertfordshire being transformed. There is no doubt at all that the impact of the airport, and its associated housing requirements—which are on the scale of a city the size of Bristol—with the associated noise and traffic pressures, would completely destroy this character which it has been the desire of the Local Planning Authority, with full support from successive Governments, to conserve. This desire is reflected in the Hertfordshire County Development Plan which provides for development in the towns and New Towns but includes strong Green Belt and rural area policies designed to prevent the suburbanisation of the countryside.

For many years, in the face of a persistent shortage of labour and in spite of population growth, a policy has been followed of restricting the use of new industrial land to relocating badly sited industry and to the reasonable expansion of firms already established in the County, in order to limit population growth in conformity with the County Development Plan.

1.4. Essex County Council has pursued a broadly similar policy in the north-west part of Essex. Cambridgeshire and Isle of Ely County Council have been particularly concerned to limit the development of new employment generators in and around Cambridge in order to avoid growth of a scale which would harm the historic character and environmental qualities of the City.

Regional studies

1.5. *The South-East Study*,* published by the Ministry of Housing and Local Government in 1964 was the first of several regional plans having a bearing on the Nuthampstead proposal. It examined the housing and land use problems of accommodating a further 3½ million population (resulting from natural increase and immigration) by 1981. The Study suggested three major new cities in the areas of Southampton/Portsmouth (250,000), Bletchley and Newbury (150,000 each). Major expansions were proposed at Ashford, Ipswich, Northampton, Swindon and Stansted. Many of these are now either under way or in an advanced planning stage. Stansted (which from a regional planning point of view presents an airport site with almost identical regional planning problems to Nuthampstead) was selected for a major expansion to a population of 100,000. Unlike the other major expansion areas the proposal was not based on an existing medium sized town. The proposal was solely related to the proposition that, "If the Government should decide to establish a third international airport at Stansted the employment directly and indirectly generated would provide the initial impetus for a new town in the general area". At that time the airport was seen as a much smaller two runway project, involving associated urbanisation of 100,000, only a quarter of the figure now being considered. Development on this new scale would be a major departure from the

* See also p. 833.

* HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

proposals of the Study and, presumably, would affect the viability of its other proposals with which it would compete for finance, constructional resources and population.

1.6. In the White Paper on *South-East England* (Cmnd. 2308,* paras. 20 and 21) which accompanied the Study, the Government emphasised that they would not permit any extension of the built-up area of London and that the approved Green Belt should be strengthened by the addition of hundreds of square miles of open country. High quality agricultural land should not be taken where a practical alternative existed.

1.7. Two Economic Planning Regions now comprise the area of the South-East Study and both have made reports which are relevant.

1.8. In 1967 the South-East Economic Planning Council published its *Strategy for the South-East*.† The Council were faced with the Government's choice of Stansted at a late stage in their work. Para. 37 on page 10 of their Report, again referring to the two-runway scheme, is relevant:

> The Government's announcement that the Third London Airport is to be located at Stansted in Essex would present major difficulties in the light of our strategy proposals. The site at Stansted lies to the east of M11 and in one of the green sectors. The new airport is likely to provide direct employment for over 20,000 people eventually. A substantial influx of population to the area, probably about 100,000, would need to be accommodated over a period, and we must make adequate provision for the industrial and commercial enterprises that need to be located in the vicinity of such a major airport. As the White Paper (*The Third London Airport*‡—Cmnd. 3259) indicated, there are strong objections to Stansted on regional planning grounds; and the implementation of the decision would require major planning studies to be carried out, in which the Council should participate, in order to mitigate the adverse effects on the areas as far as possible.

Both the Stansted and the Nuthampsted sites appear to be within one of their "Green Sectors" or Country Zones defined in para. 33 on page 9, which refers as follows to these areas between the radial sectors of building development proposed by the Council:

> We attach equal importance to the positive planning of the green sectors which cover the remainder of the region outside the London conurbation. These areas form "buffers" between the major and minor sectors and include very wide areas of countryside with varying degrees of importance in terms of agricultural value, natural beauty, or landscape value; but they include also many smaller but growing towns and villages. In these areas, we clearly could not suggest a total prohibition on all development since existing towns and villages will grow; but our objective is to prevent by stronger planning discipline any further major urban or industrial expansions in these green sectors.

1.9. Para. 159 on page 43 defines the Economic Planning Council's proposals for Country Zones, as follows:

> A Country Zone would be land which is primarily rural in character. It would include agricultural and horticultural land, forests, woodlands, common land, areas of landscape value, rivers and coast, together with existing country towns, villages and other developments related to rural activities. The intention would be to protect the rural economy and its characteristics; to safeguard high value agricultural land; to confine development to rural activities and to resist the incursion of urban development. The new country zones would inevitably contain a large resident population in existing towns, villages and other settlements; and there will have to be some allowance for their essential growth. But urban encroachments would be discouraged and expansion schemes would be channelled into the areas selected for growth.

The Council emphasised that there were certain areas where the Country Zone principle should be applied immediately and made specific reference to the broad areas of countryside in north Hertfordshire and north Essex (para. 160 on page 43):

> It will be impossible to apply these new criteria over the whole area at once and in the meantime, while this change in planning policy is being adopted, there is an urgent need to earmark particular areas for priority attention, where the country zone principle should be applied immediately. Many of these are already designated as Areas of Outstanding Natural Beauty, and our Strategy Map presents a diagrammatic picture of the areas that merit first attention. In selecting these we hoped to illustrate the role that a Country Zone can play in preserving broad areas of countryside between the sectors, e.g. in north Hertfordshire and north Essex, and in providing rural separation between urban developments in sectors.

A third London Airport at Nuthampstead, especially on the scale now contemplated, would be completely against the South-East Economic Planning Council's recommended policy.

1.10. In 1968, the East Anglian Economic Planning Council published *East Anglia—A Study*.* The Study provided for an increase in population from 1·6 million to just over 2 million by the end of 1981 rising to 2·75 million by the end of the century. The Economic Planning Council proposed a strategy based on four city regions (Norwich, Ipswich, Peterborough and Cambridge) plus the planned expansion of various smaller towns throughout the region. The Council made it clear that the employment basis in the smaller towns was delicately balanced and that it was not easy to attract new industry; consequently it recommended (in para. 193) that, with the exception of Norwich and Thetford, there should be no expansion of the existing overspill programme. It would appear that a new employment magnet situated on the southern boundary

* HMSO; 8d.
† HMSO; 15s. ‡ HMSO; 3s.

* HMSO; 40s.

Printed image digitised by the University of Southampton Library Digitisation Unit

of the Economic Planning Region would alter the basis of the plan for the strategic siting of major and minor growth points. The Cambridge area is already growing faster than the other three proposed city regions and is recognised by the Study as subject to pressure for further growth within existing conditions.

The Study also pointed out "that the construction of the M11 from London will add to the pressures for growth which would be increased if ultimately Stansted were chosen as the Third London Airport". This argument must apply with greater force to a four-runway airport at Nuthampstead. At the same time the Economic Planning Council confirmed the general opinion of the landscape value of the area. Para. 113 of the Study states:

> Other countryside of a high scenic quality includes a tract running through the southern part of the counties of Cambridgeshire and the Isle of Ely and the Suffolks (continuous with areas south of the regional boundary in Bedfordshire, Hertfordshire and Essex).

1.11. The remaining bodies concerned with regional planning in the south-east are:

(1) *The Standing Conference for London and South-East Regional Planning*

In their publication *The South-East: A Framework for Regional Planning* (LRP. 1180—July 1968)* the Conference said in para. 115 on page 31:

> We next consider the region's coast and countryside. We have said earlier that one of our prime objectives is to seek a positive policy for the whole urban and rural landscape of the region, rather than one aimed only at safeguarding individual beauty spots or preventing the spread of particular urban areas. Further we see the need to plan for the coast and countryside on the basis of their resources—for agriculture, forestry, amenity and recreation—and not as areas simply left over from urban development. These resources must and can be nurtured in the development of the region. In Chapter 6 we presented maps showing agricultural significance, wooded areas, landscape quality and population distribution. The accompanying notes gave a regional description of these elements. We see advantages in the concept of landscape/agricultural reserves comprising predominantly rural areas of considerable extent in which the objective would be maintenance of the scale of the countryside, of agriculture and of attractive landscapes over the remaining extensive tracts of land which are still sparsely populated and relatively free from urban intrusion. Our work on this concept continues.
> Reference to figs. 18 and 20 suggests that these reserves would be drawn so as to include areas such as North Essex, North Hertfordshire, the Chilterns, the Berkshire and Hampshire Downs, the North and South Downs, and much of the Weald and the New Forest.

(2) *The East Anglia Consultative Committee*, who published in February of this year *East Anglia—A Regional Appraisal*

Map E in this appraisal shows those areas of landscape value and other features for conservation, including a large part of southern Cambridgeshire, contiguous with north Hertfordshire and north-west Essex.

Para. 6.01 explains that the conservation policies shown "have been agreed between the eight Planning Authorities as desirable".

Para. 8.07 states, "In order to maintain the special character of East Anglia, extensive areas (some of which extend into adjoining regions) should be defined, within which the rural environment should be paramount." These areas are defined in Map J and include most of southern Cambridgeshire.

In the section dealing with Communications, the East Anglia Consultative Committee say (para. 8.13) that:

> Airport development within the region should be on a scale to meet regional rather than national needs, but a Third London Airport, if sited north or east of London, would assist in generating the growth of activities necessary for the fullest success of the Peterborough and Ipswich expansions, and if well related to north-south communications would also benefit the more distant growth points in East Anglia.

The Consultative Committee have not had the opportunity of formally considering the Commission's short-listed sites. They are awaiting a report from their Planning Panel at their next meeting on the 23rd May.

1.12. Following the Stansted Inquiry the Government published a White Paper in May 1967 (Cmnd. 3259) on the *Third London Airport*. This White Paper accepted that Stansted (and by inference Nuthampstead) was not a suitable site on regional planning grounds. In para. 67 it was stated:

> In the Government's view the strongest of the objections to Stansted is on regional planning grounds. The Inspector points out in his report that the airport would attract a considerable increase in population which would have to be housed and serviced. He thought that if full value was to be obtained from the cost of creating a new major traffic focus suitable industries would also have to be accommodated. He concluded that the whole character of a large tract of land—at present predominantly rural and agricultural—would be completely altered and that on the evidence submitted to him development of this kind in this area would be bad regional planning.

1.13. It will be seen, therefore, that all the regional reports are singularly unanimous in their wish to see the countryside in the vicinity of Nuthampstead protected against all forms of building development.

The planning requirements for a third London airport

1.14. Ideally in siting a major international airport in the South-East Region, one would seek a site with the following characteristics:

* Available from the Standing Conference on London and South-East Regional Planning, 26 Old Queen Street, London S.W.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

(a) *Communications*
Good existing, proposed or potential road and rail connections to London and to the remainder of the country, including its other airports.

(b) *Airport noise*
Where the number of properties within the 55+ NNI contours were so few that they could reasonably be purchased; and where the population affected by noise nuisance beyond this contour was minimal.

(c) *Population growth*
Access within, say 10–15 miles, to a large town or towns with capacity for expansion or to a new town in course of development, which could accommodate the supporting population for the airport and benefit from the new sources of employment which it would introduce.

(d) *Labour costs*
An area with surplus labour, where wage rates would not be forced up by the need to compete with expanding local industry and/or commuting to London.

(e) *Amenities and agriculture*
Not affecting land of high agricultural, recreational or amenity value.

(f) *Services*
Where main services could be provided at low cost.

Dealing with each of these considerations separately:

1.15. *Communications*

Nuthampstead is within 5 miles of the proposed M11 motorway, construction of which is planned to commence in mid-1971, and the A10 all-purpose trunk road which it is hoped will be improved to dual-carriageway standards during the 1970s. The only improvement currently programmed for the A10 north of Ware is the Puckeridge By-Pass which has a target start date for construction of December 1970. Both these roads were either designed or are to be improved to deal with existing traffic conditions and would presumably need considerable enlargement to cope with the airport traffic as well. Separate evidence will be given by Mr. Sharman on the need for an additional motorway from London to the airport commencing on the line of Radial Route 6, thence continuing to the east of the River Lee as far as the proposed North Orbital Road. The route would then turn west to follow the line of the North Orbital Road to its junction with the A10 (M) near Hoddesdon. From this point it would follow the A10 (M) northward to its junction near Westmill with the East-West Road. It would then turn into the airport. Mr. Sharman* will also deal with the additional roads connecting the airport with M11 and with the two areas proposed for new urban development.

1.16. *Aircraft noise*

The NNI Contours† issued by the Commission for the two- and four-runway situation differ not only in quantity but also in the direction of the assumed flight paths. Figures for the population affected within the various NNIs are given below. Two sets of figures are given, the first based on the 1966 census population the the second on the 1981 projected population, who could be affected by noise if no amendments are made to existing proposals as a result of siting an airport at Nuthampstead.

(a) *Two runways*

(i) 1966 CENSUS POPULATION

Within 55+ NNI contours	1,950
Within 45–55 NNI contours	11,750
Within 35–45 NNI contours	102,000
Total	115,700

(ii) 1981 PROJECTED POPULATION

Within 55+ NNI contours	1,950
Within 45–55 NNI contours	15,850
Within 35–45 NNI contours	152,200
Total	170,000

(b) *Four runways*

(i) 1966 CENSUS POPULATION

Within 55+ NNI contours	2,000
Within 45–55 NNI contours	21,000
Within 35–45 NNI contours	238,550
Total	261,550

(ii) 1981 PROJECTED POPULATION

Within 55+ NNI contours	2,100
Within 45–55 NNI contours	32,450
Within 35–45 NNI contours	382,350
Total	416,900

It will be seen that the number of persons affected will increase considerably between 1966 and 1981 and one might ask whether this further development should not be stopped within the noise areas. In my view, this would not be practicable since there is already a considerable impetus of development in the towns affected, arising from their own industrial pressures and due to their position in the Outer Metropolitan Area. The coming of the airport would further accentuate these pressures. In these circumstances I doubt whether it would be possible to curtail development within 35–45 NNI contours, although possibly sound-proofing of new property might be required.

The figures given above do not include the population of the South Cambridgeshire Urban Area referred to in para. 3.3 for housing the airport population. In fact, it would be desirable to amend the routing of the take-off paths in this vicinity to keep the 35 NNI Contours away from the development area.

In 1968 the number of people affected by noise from Luton Airport was as follows:

55+ NNI contours	Nil
45–55 NNI contours	50
35–45 NNI contours	3,300
Total	3,350

* p. 831.
† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

It is known that the scheduled traffic for 1969 is considerably higher than that for 1968 with a very much higher proportion of jets.

There is also noise nuisance from the present Stansted Airport but it has not been possible to quantify the population affected because of the difficulty of defining NNI Contours where there is so much training flying and such rapid airline growth.

If as the result of the siting of the Third London Airport at Nuthampstead these airports are closed, these would be local advantages to be set against the numbers affected by noise from Nuthampstead.

1.17. *Population growth*

There is no large town with sufficient spare housing capacity within daily travelling distance, nor is any new town at present proposed to be built adjacent to the airport site. The ultimate population required to support the airport and its associated industry and offices, is estimated at 384,000. The disturbing effect of this may be gauged from the fact that it is equivalent to more than one-third the existing population of either Essex or Hertfordshire, larger than the total existing population of Cambridgeshire and the Isle of Ely or about as large as Bristol.

1.18. *Amenities and agriculture*

Nuthampstead lies in the centre of an area of high agricultural and landscape quality which all the regional proposals decribed above, and also the County plans, have sought to keep as a green wedge running from the Chiltern ridge, south of Cambridge, through north-east Hertfordshire and north-west Essex to join with Epping Forest, the Broxbourne Woods Special Scenic Area and the Lee Valley Park, which form the southern apex (and which carry this exceptional break in the ring of bricks and mortar right into London).

1.19. The site and its surroundings are in areas shown as of Great Landscape Value in each of the three County Development Plans (Cambridgeshire, Essex and Hertfordshire). The airport, with its associated urban development, would destroy this concept. The site and the whole area surrounding is within agricultural land of Grade 2 in the Ministry of Agriculture and Fisheries Classification (this being land having only minor limitations on its agricultural use). (See plan LK. 2.)*

1.20. *Labour costs*

Hertfordshire and the parts of adjoining Counties are within an area traditionally short of labour. Hence wage rates are likely to be high because of competition with local industry and the draw of commuters to London.

1.21. *Services*

The proposed airport and the possible locations for associated urbanisation, are remote from major sources of water supply and, except possibly in the Bishop's Stortford area, from streams or rivers of sufficient capacity to provide adequate dilution for large quantities of sewage effluent. Separate evidence will be given by Mr. Sharman on this aspect.

1.22. *Nuthampstead appears to fail on all these tests except part of (a) in so far as it is within 5 miles of the proposed M11.*

Benefits

1.23. To set against these massive disadvantages there would be some gains elsewhere if the coming of the airport curtailed the development, or caused the closure of Luton and Stansted Airports which cause a degree of noise-nuisance locally. The residential development of Bishop's Stortford to the east and south-east has hitherto been inhibited by noise from Stansted.

1.24. The aspects referred to in paras. 1.14 to 1.21 above are dealt with in more detail later.

2. **Employment**

Introduction

2.1. The projected airport, wherever its location, will generate a large amount of employment both directly and indirectly. This would be located within or adjacent to the Airport and also in association with the supporting urban development.

2.2. In order to assess the likely total demand for land space, by reason of such urban development, the following procedure has been followed:

First, the Commission has estimated the level of employment on the Airport at a date when full development has taken place.

Secondly, a figure for the ancillary employment connected directly with the Airport but not necessarily located within the confines of the perimeter fence has been deduced. Examples of such employment would be occupations in hotels, catering industry, car hire firms etc. Then as it is anticipated that the Airport will tend to attract manufacturing industry and office development, a figure has been included to take account of this.

Thirdly, the service employment always generated by reason of primary employment has been examined.

Finally, the total employment has been converted into the likely resultant population.

2.3. The report by the Commission giving the short list of sites selected for further detailed study, introduced terminology to describe the various types of employment which might be generated by reason of the Airport. To avoid confusion the calculations used in the Hertfordshire and Essex Submission No. 2 have been converted to equate with the terminology used in the Commission's report.

2.4. "*Primary employment*" therefore means employment directly connected with the Airport. "*Secondary employment*" means those engaged either in manufacturing industry or commercial projects attracted specifically by the location of the Airport. "*Service employment*" means those engaged in providing for the needs of primary and secondary workers and their dependants.

2.5. After calculating the employment requirements generated by the airport, a deduction has been made for workers likely to transfer from Stansted and Luton.

* between pp. 624 and 625.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.6. *Demand: primary employment*

The Commission have given, as their "best estimate", a figure of 65,000 employees for primary employment in the four-runway airport and this figure is used in subsequent calculations in this part of the evidence. They give an intermediate figure of 45,000 required by the mid-1980s for the full operation of two runways.

2.7. *Assumptions as to secondary employment*

This is made up of two elements—(a) those ancillary uses which form an integral part of the Airport services but which may occur outside, but closely adjacent to the perimeter of the projected Airport and (b) those industries and offices attracted either directly by the services offered at the Airport or by reason of the labour pool created by the new large urban complex.

2.8. The first element has been estimated for Heathrow as being between 3,500 and 5,000 employees (Freeman, Fox, Wilbur Smith and Partners' Heathrow Study, 1966). In other words between 9 per cent and 13 per cent of the total primary employment at that time. Similar services will be required near any International Airport and therefore a figure of 10 per cent has been assumed for this purpose. Therefore, for the first element of secondary employment there would be 6,500 jobs.

2.9. The second element of attracted offices and manufacturing industry is more difficult to quantify since there is no direct Heathrow evidence to compare with it. However, the Airport is likely to be a strong attraction for industrial development and, indeed, it would be desirable to have some alternative forms of employment. It is also submitted that to maximise the economic benefits of an International Airport, a location where future industrial growth would not be inhibited would be desirable.

2.10. The only figures available for this element of secondary employment are based on American experience at various Airports in the United States of America and indicate variables of between 10,000 and 70,000 employees ("Economic Effect of a New Major Airport", Hammer & Company Associates, April 1961). A further consideration is that air freight is playing an increasingly important part in trading activities and this factor might attract certain industries. In the evidence given by Mr. D. Jennings-Smith, County Planning Officer of Essex, at the Foulness Inquiry, a figure of 15,000 employees was taken. At Nuthampstead, for the reasons I have given and will further elaborate later, there are strong amenity and food production reasons for limiting severely the land to be taken from agriculture. Hence a figure of 7,000 employees only has been adopted in this category.

2.11. The employment position is quite different in this case from that obtaining near Foulness because of the considerable industrial employment and the competition for labour in east Hertfordshire, south Cambridgeshire and west Essex. There is also likely to be a large element commuting to employment in London. I have therefore based my calculations on local statistics which take these factors into account. I have assumed that the Airport and associated secondary workers together form the basic employment for the new urban areas just as manufacturing industry offers the basic employment in Hertfordshire and west Essex. Then I have applied to this figure the current ratio of total workers to workers in manufacturing industry in Hertfordshire to obtain the total employment (including services) and have then calculated the resultant total population (again on the basis of the present position in Hertfordshire) as follows:

(a) *Basic employment*

Primary airport employment (Commission figure)	65,000 workers
Secondary airport employment (assumption—para. 2.8 above)	6,500 workers
Secondary employment in attracted industry (assumption—para. 2.10 above)	7,000 workers
	78,500
Deduct workers likely to transfer from Stansted and Luton Airports on their closure, say	2,000
Total new basic employment	76,500

(b) *Total employment (including services)*

From the 1966 Census the Hertfordshire ratio of workers in basic (manufacturing) employment to total workers is 1 in 2·18. The total employment will therefore be:

$$76{,}500 \times 2{\cdot}18 = 166{,}770$$

(c) *Total population required*

In 1966 the population of Hertfordshire was 852,000 and the total number of employees was 373,000, a ratio of 2·3 to 1. Hence the total population represented by 166,770 workers is: $166{,}770 \times 2{\cdot}3 = 383{,}600$

2.12. *Supply*

The employment position in *Hertfordshire* is one of expanding industry, with a large export element, mainly of the following types: Mechanical Engineering and Electrical Goods (including Electronics); Vehicles (including Aircraft); Printing, Publishing, Paper Manufacture; Chemicals.

2.13. Since the war there has been a continuous labour shortage as evidenced by the following figures:

	Persons unemployed		*Vacancies on offer at Employment Exchanges*	
Year	*Male*	*Female*	*Male*	*Female*
March 1960	1130	489	3872	2884
March 1965	1318	378	5688	3541
March 1968	3093	481	2583	2019
March 1969	3696	476	4226	2243

The employment study recently completed in Hertfordshire indicates that by 1981 the population will, on present trends, have expanded to about 1,095,000 but that the growth of existing industry is likely to call for a population of 1,180,000 if its labour requirements are to be fully met.

2.14. The employment position in *Southern Cambridgeshire* and *West Essex* has been as follows:

Printed image digitised by the University of Southampton Library Digitisation Unit

Year	Persons unemployed Male	Persons unemployed Female	Vacancies on offer at Employment Exchanges Male	Vacancies on offer at Employment Exchanges Female
SOUTHERN CAMBRIDGESHIRE				
March 1960	276	126	578	291
March 1965	284	72	804	689
March 1968	650	128	847	601
March 1969	691	117	595	532
WEST ESSEX				
March 1960	259	130	289	185
March 1965	243	99	862	366
March 1968	694	141	409	244
March 1969	838	118	460	328

A recent study by the Ministry of Housing and Local Government's Working Group on the Size of Cambridge indicated that the growth of existing employment in the Cambridge area (with the present policy of restraint) would call for a further *additional* population of 38,000 in the area by 1981.

2.15. In addition, the *Greater London Development Plan* forecasts a continuing loss of population from London leading to increased commuting to London from the Outer Metropolitan Area, including Hertfordshire and west Essex.

2.16. It is clear, therefore, that there is no large pool of labour existing in the locality from which the Airport might draw and that this situation is certainly not likely to improve.

2.17. *Competition with current overspill development commitments*

In view of the fact that planned new towns and town expansion schemes are already in hand to cope with the expansion of population in the south-east up to the mid-1980s, as suggested in the *South-East Study*,* it would appear that either of these developments must be curtailed or populations must be drawn into the south-east from elsewhere if the population associated with the new Airport is to be built up at the required rate. The latter step would be in direct contravention of the national policy of halting the drift of population into the south-east. There would also be competition for available financial and constructional resources.

3. Housing requirements

3.1. The total housing requirements resulting from the full development of the airport have been broadly calculated above at 384,000 persons.

3.2. It seems to me that the manner of housing of airport workers at Nuthampstead must largely be determined by the following factors:

(a) The first factor is the daily commuting distance which it is reasonable to expect the bulk of the airport workers, who will not be highly paid, to travel. At Heathrow it is understood that 75 per cent live within 12 miles and 50 per cent within 7 miles. (Thesis by Peter Smith in Ministry of Housing and Local Government Library.) It would appear that at Nuthampstead it would be reasonable to aim at the majority of the workers being housed within 10 miles and the remainder within 20 miles of the site, on the assumption that road connections would be improved to modern standards.

(b) The second factor is the housing capacity remaining in the existing towns after 1975. It is clear that the first flush of population in the period 1975–78 (estimated at 40,000–50,000; please see graph L.K.5) will need to be housed in the existing towns since it is unlikely that any new town could accept population much before 1978. The supply position after 1974 (see Appendix 2 for details) is likely to be:

	Within 10 miles radius from airport (persons)	*Within 10–20 miles from airport* (persons)
Population capacity in the expansion of existing towns and villages (i.e. in *new* houses)	39,000	108,000
Population capacity arising from the 5% annual turnover of existing houses taken for a period of 4 years	11,000	75,000
	50,000	183,000

Clearly the accommodation over 10 miles distant will be less attractive. In addition airport workers will have to compete for houses with local workers and London commuters. An assumption has therfore been made that airport workers will, in fact, take 40 per cent of the dwellings available within 10 miles and 20 per cent of those available over 10 miles.

$$50{,}000 \times 40\% = 20{,}000$$
$$183{,}000 \times 20\% = 36{,}600$$

In addition there could be extensions to Harlow New Town and elsewhere in Essex which could be entirely reserved for airport workers,

Housing	20,000
Total population to be housed in existing towns and villages	76,600

i.e. about 76,600 of the population dependent on the airport could be expected to find accommodation within existing communities. Appendix 2 shows that about 36,000 of these could be housed before 1981. (Rather less than the initial requirement of 40–50,000 given above.) No allowance has been made for drawing back London commuters to work in the airport, as in the evidence for Foulness, since in this case the numbers are likely to be insignificant.

(c) The third factor to be considered seems to be whether the 307,400 people remaining, after deducting the 76,600 to be housed in existing towns, should be housed in one new town or two.

For all practical purposes there can only be two areas of search, one on either side of the main axis of the airport and within 10–12 miles of its centre. Other sites will either be excessively

* HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

affected by aircraft noise or will be too distant. There appear to be substantial arguments in favour of two sites rather than one, as follows:

(i) Speed of construction—approx. 7,900 houses per annum will need to be built for each of the first 15 years, of which 6,600 will be in the new urban areas. I doubt whether it is possible to achieve this on one site. Two locations would spread the access problem to quite different approach routes (A10 and A11): would reduce congestion on the building sites; would simplify the problem of providing main services (especially main drainage outfalls); and widen the area from which labour could be recruited.

(ii) Two smaller towns would be much easier to locate than one larger town in this part of the country where towns are so closely spaced.

(iii) The peak hour journey to work loading on the roads between the residential areas and the airport would be greatly eased in the completed development.

(d) The fourth factor is that the sites need to be as far from London as possible to reduce the competition from commuters for houses and train services.

(e) The fifth is that development should not be sited in the Chiltern Area of high Landscape and Agricultural Value.

3.3. With these points in mind I put forward two areas of search (see plan LK. 3)* solely in reply to the Commission's request for evidence on the effect of the urbanisation resulting from the Airport. I cannot enphasise too strongly that such development would be completely contrary to the policies of the three Local Planning Authorities affected and that I put forward these concepts of the form an enforced change of policy might take for the purpose of illustrating the inevitable and damaging effect of siting the airport at Nuthampstead.

The areas of search are:

(i) In south Cambridgeshire, immediately to the north of Royston to Kneesworth, Litlington, including Bassingbourn aerodrome (understood to be going out of use) and thence mainly east of the A14 to include Whaddon, Meldreth, Melbourn and then south to the A505. Physically this site has development potential and could take between 200,000 and 230,000 persons in addition to the 6,000 already allowed within the town of Royston. It would be desirable to amend the take-off routings to keep the 35 and 40 NNI contours away from this development area.

(ii) From the remainder the 76,600 to be housed in the existing towns has been deducted leaving 78,000 to 108,000 persons.

This second population group can only be sited on the opposite side of the NE/SW axis of the airport's NNI contours. The plan shows an area of search in the Stansted Mountfitchet–Bishop's Stortford–Harlow district which could contain a new population ranging from 78,000 to 108,000 depending upon the size of the south Cambridgeshire area. In practice this would probably take the form of a series of linked communities. This development would of course be in addition to the expansion of 6,000 at Bishop's Stortford and 20,000 at Harlow already allowed for in para. 3.2(b) and Appendix 2, so that the total new airport-connected development in this area, including Harlow, would be between 104,000 and 134,000.

Being nearer London this area would be attractive to commuters which would be a disadvantage. The area is one of good agricultural land and no little amenity.

The distances from the centre of the airport to the centre of the two areas of search would be, by the roads proposed on Mr. Sharman's plan:*

1. Area north of Royston	12 miles
2. Area around Bishop's Stortford	12½ miles

3.4. It should be emphasised that this is merely a personal assessment following an exchange of views with the Planning Officers of Cambridgeshire and Essex and is untested. The tentative locations for the twin towns are put forward entirely in answer to the Commission's request in para. 18 of their publication† and are not in any way to be regarded as proposals of the County Councils concerned. In my view development of the two sites would have the effect of urbanising this fine remaining tract of agricultural countryside and of changing the whole character of the region. I would regard the development of either area as quite disastrous.

This aspect, the need to house the airport population largely on what are now "green field" sites, must be a serious disadvantage of the Nuthampstead proposals. A total of 40,000 acres or about 62½ sq. miles of land would be needed for the airport and the housing of its associated population. New road and rail links to the airport would be required from both sites (separate evidence will be given on this by Mr. Sharman) and these will of course take more land.

4. Amenity considerations

4.1. North East Hertfordshire, North West Essex and South Cambridgeshire consists of attractive rolling countryside. The pattern is one of ancient and tightly knit villages and hamlets set in well cultivated high quality farmland.

4.2. All three local planning authorities recognise the area's scenic qualities by indicating it as an area of Great Landscape Value on their County Maps. In connection with its studies for the South-East Joint Planning Team (and before the Nuthampstead site had been short-listed by the Commission) Hertfordshire County Council proposed an extension of the area of Great Landscape Value in the Nuthampstead area and southwards towards Hertford and Much

* between pp. 624 and 625.

* opp. p. 676.

† *Site Information for Stage II Local Hearings. 2. Nuthampstead.* (HMSO; 6s.) Reproduced at p. 602.

Printed image digitised by the University of Southampton Library Digitisation Unit

Hadham in the Rib and Ash Valleys. (Please see plan LK. 2.)

4.3. A considerable number of Conservation Areas designated or proposed under the Civic Amenities Act lie within areas where aircraft noise would be intrusive or worse. (Please see Plan LK. 1.*) These areas are (within four-runway contours):

HERTFORDSHIRE	
Villages	*Within N.N.I.*
Great Hormead	60+
Buntingford	50–55+
Westmill	50–55+
Cottered	45–50
Wallington	45–50
Rushden	45–50
Braughing	40–45
Ippolitts	40–45
Gosmore	40–45
Lilley	40–45
Preston	40–45
Barkway	40–45
Town	
Stevenage (old town)	40–45
ESSEX	
Villages	
Arkesden	45–55
Audley End	45–55
Great Chesterford	40–45
Littlebury	40–45
Town	
Saffron Walden (town centre)	40–45
CAMBRIDGESHIRE	
Villages	
Linton (proposed)	45–50
Bartlow (under consideration)	40–45
West Wratting	40–45

The peace and quiet of these settlements, which is as much part of their character as their history and architecture, would be shattered. Within the 35–40 NNI contours there are a further 26 Conservation Areas. Outside the N.N.I. lines but within the 20 mile radius likely to be generally affected by the airport are a further 76 Conservation Areas, designated or proposed. The total number of Conservation Areas designated or proposed within a 20 mile circle is therefore 123.

4.4 There are no Conservation Areas within the proposed site of the airport but a number of listed buildings and ancient monuments would be razed:

Statutory list	9
Provisional list	49
Grade A church	1
Grade B churches	2
Ancient monuments	6

(See Appendix 1 for detailed breakdown, which also gives the listed buildings immediately adjoining the site, some of which may also have to be demolished.)

4.5. As I have said earlier, the area is part of a valuable area of open countryside, with important agricultural, landscape and recreational functions. Noise above the 50 NNI level would affect considerable areas of high landscape value around the airport site. These areas which are suited for passive recreation such as walking or picnicking, would also be visually affected by the airport (see plan LK. 2). The noise and visual intrusion would affect scenic drives along the B1368 (above which the runways would stand on a high embankment), and in the Barkway, Barley and Therfield areas. There are important footpaths along the Ash and Rib valleys from Hertford and Ware to Royston. Both routes would be severed by the airfield and would be devalued by the impact of the airport and aircraft noise.

4.6. The amenity considerations cannot be limited to the area of the proposed airport site. The sites north of Royston and near Bishop's Stortford which have for the purposes of this exercise been put forward tentatively for two new urban areas, would involve the loss of much land of more than average landscape value. The road links between the airport and its associated development and the road and rail links to London must in themselves be considered major developments. Even with careful landscaping this communications network will certainly damage the scenery and other characteristics of the countryside through which it passes. Such noted villages as Westmill, Braughing, the Hadhams, the Pelhams, the Hormeads, Cottered and Benington could be badly affected.

4.7. A particular recreational activity which could be curtailed by aircraft movements from the airport is gliding. The Hertfordshire planning authority has received representations from the London Gliding Club at Dunstable on this point.

5. Land use

5.1. The proposed site is in an area of undulating chalk hills which continue the Chilterns (from south Bedfordshire) through north Hertfordshire, north Essex and south Cambridgeshire towards Newmarket. The site itself has a general level of 400–450 ft, rising in its north corner to over 475 ft. It is deeply intersected by valleys fanning out in the quadrant from the south-west to the south-east, the levels in these valleys drop to below 325 ft where they leave the airport site. (See plan LK.4.*)

5.2. The geology of the site is chalk capped by drifts of boulder clay with gravel and some alluvium in the Quin and Stort valleys. On the sloping hillside the chalk is very near the surface and this is clearly visible at Anstey where the chalk is dug for agricultural purposes. The chalky boulder clay gives a deep workable, mainly fine textured and medium drained soil, particularly suitable for arable cultivation.

5.3. Within the airport site are the villages of Anstey, Meesden, Langley and a major part of the village of Great Hormead. A number of small hamlets are also included covering a total population of about 1,000. The village of Brent Pelham is situated just off the site at the south-west end of the eastern runway.

* facing p. 624

* between pp. 624 and 625.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.4. The general area is one of fairly sparse rural settlement and arable farmland in the second highest class of agricultural land (i.e. Good General Purpose Farmland—Class 2a) as classified by the Land Utilisation Survey of Great Britain. It is only excelled by the rich loams of the Lea Valley and other outstanding market garden areas. The main crops are wheat and barley, sugar beet and potatoes. There are sheep within the Essex part of the site towards Chrishall, and some cattle, but crops are the major interest and these are of considerable economic value. This aspect will be dealt with in more detail by Mr. Tanton.*

5.5. The land is not allocated for building on the development plans of any of the three planning authorities and the policy is to limit development to that essential for agricultural needs. (Hertfordshire and Essex County Councils have recently supported Cambridgeshire and Isle of Ely County Council at a public inquiry into the refusal of planning permission for the development of a new village of 10,000 population at Great Chishill, immediately to the north of the proposed airport site; the Minister's decision is awaited).

5.6. The southern corner of the proposed site is crossed east to west by parallel 400 kV and 132 kV high voltage overhead electricity lines. These were carefully sited and any new alignment is likely to be of greater damage to the amenities. About 3 miles to the south-west of the site, and immediately in line with one of the proposed runways is a 325-ft aerial mast. This is the master station of the Decca Navigation English Chain and serves aircraft and shipping within a radius of about 250 miles. A 360-ft Ministry of Defence mast is located at Reed approximately 2 miles from the north-west flank boundary of the site.

6. Noise balance sheet

As detailed earlier in my evidence there would be some benefit to be gained by those people living in the vicinity of Stansted and Luton Airports from the point of view of noise if these airports are closed.

7. Conclusion

7.1. I consider that the establishment of the Third London Airport at Nuthampstead in the centre of the regional green wedge advocated by all the Regional and County Planning Authorities would completely change the character of central and east Hertfordshire, west Essex and south Cambridgeshire; would destroy land of high agricultural value and would remove the attraction of an area which is now easily available to the weekend motorist and walker from London and nearby towns for recreational purposes.

7.2. There is a ring of towns closely encircling the 40 NNI contour, all of which must be adversely affected by pressures resulting from either the two-runway scheme or the four-runway scheme, the areas of incidence being different. Towns outside the county such as Luton and Dunstable in Bedfordshire, Cambridge, and Saffron Walden in Essex, will also be adversely affected to a greater or lesser degree and so will a considerable rural population. On the other hand there would be some reduction in noise for residents in the vicinity of Luton and Stansted if the airports there are closed. The communications necessary for the airport will intensify the effect of the radial routes from London to the Midlands and the North which, with their recent or proposed improvements, already affect the amenities of the counties concerned.

7.3. The sites put forward for two urban areas are both in districts of high agricultural value and no little amenity. They would undoubtedly change completely the character of the engulfed towns of Bishop's Stortford, Stansted Mountfitchet in the one case and the adjoining town of Royston in the other. It is difficult to assess what the effect of the south Cambridgeshire New Town would be on Cambridge itself. Mr. Mellor deals with this point in more detail in his evidence.* The airport with its associated urban development will take 40,000 eares (62½ square miles) of high quality agricultural land in areas of Great Landscape Value. The road and rail communications will add to this acreage.

7.4. Bringing the airport into an area where there is expanding industry and a shortage of labour means that the airport will have to compete in salary and wage levels with local industry and with commuting to London.

7.5. The rate of growth required from the two new towns is such that there will be great practical difficulties in its achievement, certainly in the early stages of their development. The Nuthampstead site suffers from not having within 10 miles a large concentration of population which could be drawn upon in the early stages, or a new town already under construction. It would seem that to build two additional new towns commencing in the late 1970s could seriously prejudice the present programme of new towns and town expansion schemes already adopted, such as Milton Keynes, Northampton, Peterborough, Wellingborough, Ipswich and Swindon, with which they would compete for population, finance and constructional resources.

7.6. It is not intended at this Inquiry to compare Nuthampstead with the other sites but for the reasons set out in this evidence and briefly summarised above, the Nuthampstead site would be nothing short of disaster to east Hertfordshire, south Cambridgeshire and west Essex and its adverse effects would extend into Bedfordshire and west Suffolk.

7.7. Plan LK. 2 illustrates the position of the site in the midst of an unspoilt rural area classified as of Great Landscape Value and high quality agricultural land. Plan LK. 1 shows, by the number of Conservation Areas, that the quality of the buildings in town and village is much above average.

Plan LK. 3 shows how the airport, with its associated urban areas, major roads and new railway connections, would completely transform this charming and valuable

* p. 645.

* p. 630.

Printed image digitised by the University of Southampton Library Digitisation Unit

rural "lung" which all the regional and county plans have sought to conserve. The overlays showing the NNI contours illustrate how, over and above all this, the heart of the area would be racked by noise.

7.8. These, in my view, would be the regional and local consequences of siting the Third London Airport at Nuthampstead and I do not think that they could be described as other than a disaster.

APPENDIX 1

List of buildings of special architectural or historic interest

Buildings within area of proposed airport

PARISH OF ANSTEY: STATUTORY LISTED BUILDINGS

Grade

A Church of St. George
II Lychgate at entrance to Church of St. George
II Anstey Hall
Anstey House

PARISH OF ANSTEY: PROVISIONALLY LISTED BUILDINGS

III Hillside

Daws End

III Cottage on north side formerly Bell Inn
III Cottage opposite the former Bell Inn
II Cottage north-west of the former Bell Inn

The Knoll

III Cottage opposite the Chequers Public House
III The Manse

Pains End

III Cottage block on south side

Silver Street

III 2 cottages

Snow End

III Essex Cottage and 2 others
III "Snowden" and adjacent cottages

General

III Bury Farm
III "Northend"
II The Rectory
III Outbuilding and cottage north of Rectory

PARISH OF MEESDEN: STATUTORY LISTED BUILDINGS

B Church of St. Mary
II The Rectory

PARISH OF MEESDEN: PROVISIONALLY LISTED BUILDINGS

Lower Green

III Cottage north side
III 2 cottages on south side

Meesden Green

III Farmhouse south-west of School
III Barn at Farmhouse south-west of School
III Farmhouse south of the Fox Public House
III Barn at Farmhouse south of the Fox Public House

General

III Westley Farmhouse

PARISH OF BRENT PELHAM: PROVISIONALLY LISTED BUILDINGS

III Cole Green Farmhouse
III Cottage at Blackhall

PARISH OF HORMEAD: STATUTORY LISTED BUILDINGS

II The Brick House
II Great Hormead Hall
II Dovecote at Hormead Hall

PARISH OF HORMEAD: PROVISIONALLY LISTED BUILDINGS

III Hillside Cottage
III Bury Lodge

PARISH OF CLAVERING: STATUTORY LISTED BUILDING

II Thurrocks

PARISH OF CLAVERING: PROVISIONALLY LISTED BUILDINGS

III Butt's Green Farmhouse
III Cottage south of Butt's Green Farm
III Brocking Croft and Brocking Cottage
III Further Ford Farmhouse
III Rattels
III Outhouse south of Thurrocks
III Barn at Thurrocks

PARISH OF LANGLEY: STATUTORY LISTED BUILDINGS

II Langley Hall
B Church of St. John the Evangelist

PARISH OF LANGLEY: PROVISIONALLY LISTED BUILDINGS

III Cottage south of Churchyard
III Cottage opposite the Black Bull Inn
III Potterells
III Cottage north of School
III Row of cottages north of Robin Hood Inn

PARISH OF NUTHAMPSTEAD: PROVISIONALLY LISTED BUILDINGS

III Cottage west of Scales Cottage
III Scales Cottage

Printed image digitised by the University of Southampton Library Digitisation Unit

Buildings immediately surrounding site of proposed airport

PARISH OF WYDDIAL: STATUTORY LISTED BUILDINGS

Grade

B Church of St. Giles
II Wyddial Hall
II Wyddial Bury
II Beauchamps Farmhouse

PARISH OF WYDDIAL: PROVISONALLY LISTED BUILDINGS

III Barn at Wyddial Bury
III Cottage south south-east of the Rectory
III Cottage opposite above cottage
III Home Farmhouse

PARISH OF HORMEAD: STATUTORY LISTED BUILDINGS

B Church of St. Nicholas
II Great Hormead Bury

Village Street of Great Hormead

II The Cottage
II Westons
II "The Three Tuns" Public House
II Judds
II Milburns
II Dane Farmhouse
II Bury Farm House
II St. Ann's Cottage
II Barn at Little Meadows
II The Old Rectory
II Great Hormead Dane
II The Glebe
Smock Mill
Post Mill

Hare Street

Old Swan Cottage
II Hare Street House
Oak Cottage
II Gateway to Hare Street House

Little Hormead

B Church of St. Mary
Balons Farmhouse

PARISH OF HORMEAD: PROVISIONALLY LISTED BUILDINGS

Village Street of Great Hormead

III Snow White
III Detlow Cottage
III Barn at Judds
III Cottage west of Hall House
III Hall House
III Hormead Post Office
III Cottage north of St. Ann's Cottage
III Home Cottage
III Little Meadows

Conduit Lane

III Cottage on south side

Horseshoe Lane

III Cottage, formerly the Three Horseshoes Public House
III Cottage, opposite the War Memorial
III Cottage opposite the Parish Church

Hare Street

II No. 1
II No. 2
III Cottage block at the corner of the Buntingford Road, formerly the Bell Public House
III House opposite Hare Street House
III Bradbury House
III Lodge at southern entrance to Bradbury House
III Cottage block south of Old Tudor Cottage
II Old Tudor Cottage
III "Timbers" and "Shangles"
III Post Office and adjoining tenement
III Cottage block adjoining the Post Office on north
III Hare Street Cottage
III Outbuilding north of Hare Street House
III House north of Gardeners Cottage and opposite the lodge to Bradbury House.

Little Hormead

III Little Hormead Bury

PARISH OF BRENT PELHAM: STATUTORY LISTED BUILDINGS

I Brent Pelham Hall
B Church of St. Mary
II Stocks and Whipping Post by Churchyard

PARISH OF BRENT PELHAM: PROVISIONALLY LISTED BUILDINGS

III Black Horse Public House
II The Bury
III Barns at the Bury
II Cottage south-west of the church
III Cottage north-west of School
III Cottage north of the Black Horse Public House
III Cottage in fork of roads to Anstey and Meesden
III Cottage south of Village Hall

PARISH OF NUTHAMPSTEAD: PROVISIONALLY LISTED BUILDINGS

III Bury Cottage
III 2 cottages east of Bury Cottage
III Bury Farm House
III Ashcroft
III Rose Cottage
III White Farm House
III 2 cottages east of Whites Farm
III Cottages south of Little Cokenach
III Little Cokenach

Ancient monuments within site of proposed airport

1. Moat round Great Hormead Hall
2. Anstey Castle and Moat
3. Moat at Pains End
4. Hale Hill Moat
5. Moat at Hale Farm
6. Chamberlain's Moat, Brent Pelham

Printed image digitised by the University of Southampton Library Digitisation Unit

Ancient monuments immediately surrounding site of proposed airport

1. Moat round Mutfords
2. Moat round Stonebury
3. Bummers Hill (Round Barrow)
4. Beauchamps Moat, Wyddial

APPENDIX 2

Housing capacity calculations

1. The basis of these calculations is the assumption that of the potentially available accommodation within 10 miles of the proposed site 40 per cent will be taken up by persons associated directly or indirectly with the airport (20 per cent commuting out: 40 per cent working locally: 40 per cent working for airport). Between 10 and 20 miles a figure of 20 per cent is assumed; (20 per cent commuting out: 60 per cent working locally: 20 per cent working for airport); beyond that distance the number seeking accommodation is likely to be negligible (c.f. approximately 25 per cent of Hertfordshire's resident workers commute to jobs outside the County).

2.(a) Turnover of existing dwellings

On the basis of present plans the population within 20 miles of the airport will be about 430,000 by 1974. Assuming 3 persons per dwelling this represents about 143,300 houses. About 18,300 of these will be within 10 miles of the site. Taking the average annual turnover at 5 per cent of all existing dwellings 20 per cent of the total stock would be on the market during the initial four years of the airport operation.

Within 10 miles there would be:

18,300 × 20% = 3,660 dwellings
3,660 × 3 = 10,980 say 11,000 persons

Within 10–20 miles there would be:

125,000 × 20% = 25,000 dwellings
25,000 × 3 = 75,000 persons

2.(b) New development 1974–1981

Between 1974 and 1981 the balance of new residential development contained in approved and review development plans will be potentially available for accommodating population associated with the airport.

The figures, in terms of population, are as follows:

HERTFORDSHIRE

0–10 miles		*10–20 miles*	
Baldock	2,000	Hertford	1,500
Royston	6,000	Hitchin	3,000
Bishop's Stortford	6,000	Letchworth	5,000
		Ware	1,500
		Stevenage	10,000
	14,000 persons	Welwyn G.C.	4,000
		Hoddesdon	4,000
		Hatfield	2,000
			31,000 persons

ESSEX

0–10 miles		*10–20 miles*	
Saffron Walden R.D.	1,000	Dunmow R.D.	300
Saffron Walden M.B.	500	Braintree R.D.	500
	1,500 persons		800 persons

CAMBRIDGESHIRE

0–10 miles		*10–20 miles*	
S. Cambs R.D.	1,600 persons	Cambridge City, Chesterton R.D.	11,000 persons

BEDFORDSHIRE

From data supplied by Bedfordshire County Council it is estimated that there will be capacity for a population within the 10–20 mile ring of 5,000.

Total Accommodation in new development 1974–1981.

0–10 miles	17,100 persons
10–20 miles	47,800 persons

2.(c) Guess-estimate: 1981 to 1996/2000

HERTFORDSHIRE

0–10 miles		*10–20 miles*	
Baldock	1,000 persons	Stevenage	20,000
		Hitchen	5,000
		Letchworth	6,000
		Villages	7,000
			38,000 persons

ESSEX

0–10 miles		*10–20 miles*	
Saffron Walden Villages	5,000	Villages	4,000
	1,000	Harlow	(20,000)*
	6,000 persons		4,000 persons

CAMBRIDGESHIRE

0–10 miles		*10–20 miles*	
S. Cambs R.D	15,000 persons	Cambridge City, Chesterton R.D.	18,000 persons

Total accommodation in anticipated development 1981–1996/2000:

0–10 miles	22,000 persons
10–20 miles	60,000 persons

plus an additional 20,000 at Harlow.

* The Harlow figure would be an ad hoc expansion to meet airport needs—therefore this figure will be taken at 100 per cent.

Printed image digitised by the University of Southampton Library Digitisation Unit

3. Overall Contribution

1974–1981

Turnover (1974–78) (2(a))
0–10 miles (11,000 × 40%) = 4,400
10–20 miles (75,000 × 20%) = 15,000

19,400 persons

Capacity in planned development (2(b))
0–10 miles (17,100 × 40%) = 6,840
10–20 miles (47,800 × 20%) = 9,560

16,400 persons

Total capacity 1974–1981 = 35,800 persons

Post 1981–1996/2000

Capacity in anticipated allocations
0–10 miles (22,000 × 40%) = 8,800
10–20 miles (60,000 × 20%) = 12,000

20,800 persons

+Harlow (20,000 × 100%) = 20,000

Total 1981–1996/2000 = 40,800 persons

Total contribution 1974–1996/2000
= 35,800 + 40,800 = 76,600 persons

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the County Councils of Cambridgeshire and Isle of Ely, Essex and Hertfordshire

SUBMITTED BY MR. B. H. MELLOR*

I am the County Planning Officer of Cambridgeshire and Isle of Ely. I hold the Diploma in Town Planning of the London Polytechnic and I am an Associate Member of the Town Planning Institute.

1.1. The purpose of my evidence is threefold. First, I wish to record my agreement in all essential respects with Mr. Kitching's statement† of the position and his conclusions.

1.2. In paragraph 3.2(b) of Mr. Kitching's evidence it is estimated that 76,000 persons could be absorbed in the turnover of existing houses and in areas already planned for future development. I agree that because of the urgency of the demand this capacity may be used for airport population initially. However, conditions of housing shortage and labour shortage in the Cambridge area already exist and if part of the present housing allocations are absorbed in this way, then probably at a later stage additional land will need to be made available in replacement.

1.3. As to the suggested areas for new town development, I should make it clear that I agree with the physical possibility of accommodating some 200,000 persons in south Cambridgeshire, immediately north of Royston, although this is not to imply that I find such a possibility at all desirable.

2.1. Secondly, as representative of the Cambridgeshire and Isle of Ely County Council, I have to draw the attention of the Commission to those parish councils in the County who look to my Authority to present their objections on the proposal to site the Third London Airport at Nuthampstead—see Appendix I.

3.1. Thirdly, I wish to refer, in somewhat greater detail than Mr. Kitching, to the effect of siting a major airport at Nuthampstead and its associated urban development, on Cambridgeshire and its (Approved) Development Plan.

3.2. The basis of the Development Plan since the early 1950s has been to prevent the runaway growth of the City of Cambridge, so safeguarding its character as a University City of great historical interest and charm, and to disperse jobs and people about the County in and around the larger villages where adequate provision of facilities could best be made. As a corollary to this the policy is to conserve the environmental qualities of the countryside, to protect the interests of agriculture, and to safeguard high quality agricultural land.

3.3. Since the amalgamation of the Counties of Cambridge and the Isle of Ely in 1965, the overall development pressures indicate a situation of serious imbalance. The southern area of the County, including Cambridge, is growing rapidly in terms of both employment and population and there is a persistent labour shortage. Conversely, the area north of Cambridge, including the former Isle of Ely, is suffering from a lack of employment opportunities, rising unemployment and an outward migration of population. In these circumstances the general emphasis of the Development Plan Review, which has been approved by the County Council and submitted to the Minister, is on the promotion of development in the northern part of the County and the control or, where appropriate, restraint of development in the south.

3.4. If the Third London Airport and its associated urban development were to be sited on the southern boundary of my County, the effect would be to aggravate this economic imbalance and nullify the past and proposed efforts to ameliorate it.

3.5. At the present time the development potential of an area of 7–8 miles radius of Cambridge, known as the Cambridge Study Area, is being examined by the Working Group on the Size of Cambridge (who are dealing with employment and land availability). The Technical Committee (Transportation), which was set up to co-ordinate the various Authorities and the Consultants who are carrying out a Land Use/Transportation Study in the Study Area, is also studying the implications of further growth.

4.1. The City of Cambridge may suffer from the effects of a new town based on Royston, in a curious way. In the first decade of development, when houses will be in short supply and service facilities lacking in the new development, Cambridge, only 9 miles away, will be a magnet, attracting not only more tourists, due to the proximity of the airport, but a large new population within its hinterland, to the already seriously congested central area. It will also be subject to near irresistible pressure for peripheral residential development. Such a new demand on the fabric of the historical centre would inevitably lead to changes, which might irreparably damage the quality of the City. By the end of the century, however, a major new town in south-west Cambridgeshire would, in the matter of service provisions, have caught up with and overtaken Cambridge City which, after a short period of maximum activity, could then begin to decline, both as a service centre in a well defined hinterland and as a regional focus. In summary, it could reasonably be said that neither feverish commercial activity nor a decline in

* See also p. 839.
† p. 616.

Printed image digitised by the University of Southampton Library Digitisation Unit

function or status will bring much benefit to an historic town.

5.1. The major singularity of Cambridge is its University. I have already made the point of its historical and aesthetic contribution to the City, and must now mention the possible effect of the airport proposal on its work.

5.2. The University operate one of the most important radio telescopes in the world at Lord's Bridge, 5 miles south-west of Cambridge and are about to embark on the construction of a further, more powerful telescope there. The University will be presenting evidence* on the effect of the Third London Airport proposal to this Inquiry, but I would stress that in order to safeguard the Radio Astronomy Observatory from undue radio interference, the County Council has a policy of restricting growth in certain of the villages surrounding the Observatory and consults with the University on development applications of different types within various distances of the telescope.

5.3. The Review of the Cambridge Study Area is also examining, in particular, the question of science based industry with University links.

5.4. Of special interest in the area south of Cambridge are a number of research establishments and firms who may encounter particular difficulties in the way of noise disturbance, vibration, and competition for labour if an airport were sited at Nuthampstead, and they are jointly presenting evidence to this Inquiry.

Conclusions

6.1. It is clear to me that, if Nuthampstead were developed as the Third London Airport, Cambridgeshire and Isle of Ely would be affected in the following ways:

(i) a large tract of valuable countryside would be urbanised, together with the villages of Bassingbourn, Kneesworth, Litlington, Abington Pigotts, Wendy, Whaddon, Shepreth, Meldreth and Melbourn, and perhaps Barrington and Orwell;
(ii) a number of pleasant villages and the countryside in between them would be subject to considerable noise nuisance;
(iii) the character of Cambridge, and that of other smaller settlements, would undergo substantial changes, and
(iv) the economic imbalance of the County would be further aggravated.

6.2. Thus, it is my opinion that, although certain undeniable advantages in economic growth and accessibility would accrue to southern Cambridgeshire, if Nuthampstead is chosen as the site of London's Third Airport; the disadvantages of changing the long-standing policies for conservation of landscape amenity, historic towns and villages and high quality agricultural land in this area, and which cannot be replaced elsewhere, justify the rejection of such a proposal in local, regional and national terms.

* p. 790.

APPENDIX 1

List of Parishes in Cambridgeshire and Isle of Ely who object to siting of Third London Airport at Nuthampstead

Great Shelford	Stow-cum-Quy	Barton	Oakington
Sawston	Great and Little Chishill	Histon	Swavesey
Caxton	Childerley	Fen Ditton	Horseheath
Cottenham	Croxton	Wood Ditton	Isleham
Bourn	Eltisley	Bottisham	Brinkley
Fulbourn	Girton	Wicken	Swaffham Bulbeck
Great Wilbraham	Harlton	Lode	Burrough Green
Harston	Impington	Tadlow	Duxford
Landbeach	Little Shelford	Whittlesford	West Wickham
Madingley	Newton	Balsham	Fowlmere
Papworth Everard	Papworth St. Agnes	Linton	Great and Little Abington
Stapleford	Toft	Foxton	Coton

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the County Councils of Cambridgeshire and Isle of Ely, Essex and Hertfordshire

SUBMITTED BY MR. W. D. PETERS*

I am a Chartered Town Planner, a Member of the Town Planning Institute and hold the Diploma in Town Planning London University. I have had twenty-one years experience in the practice of Town and Country Planning, the last six years of which have been spent in the County of Essex. I hold the appointment of Assistant County Planner to the Essex County Council.

1. Introduction

1.1. The main evidence of a Town Planning nature on behalf of the three County Councils at this Inquiry is being given by Mr. L. C. Kitching† County Planning Officer, Hertfordshire County Council, and the intention of this proof of evidence is to supplement and add detail to that submission in so far as the Administrative County of Essex is concerned.

1.2. It is not intended to deal in detail with the matters of regional planning, employment benefits, and housing requirements, which have been covered by Mr. Kitching.

1.3. The following comments, which have conditioned the academic exercise that has been carried out to indicate possible areas of urbanisation, need to be made. In calculating the total employment, and therefore, population demand of the Nuthampstead site, it has been assumed in accordance with County Council policy, that any development which is not absolutely essential to the Airport would be strongly resisted. Therefore, in the calculations only half of the potential secondary employment of an industrial and commercial nature which might be attracted to the Airport has been included.

1.4. This resistance is based on local and regional planning grounds. It has always been intended to keep this part of Essex as a rural and landscape area and consonant with this policy inessential development would be resisted on planning grounds.

1.5. When considering the implications of urbanisation that would follow from an International Airport at Nuthampstead, the technical officers of the three County Councils investigated an area within a 20 mile radius of the site and first took as an absolute constraint the area within the 40 NNI line as shown on the Commission's map (CTLA 2/3).‡ A plot was then made of the constraints relating to: (a) Areas of high landscape value, (b) Green Belt, (c) Conservation villages, and (d) High quality agricultural land. Consideration was also given to the fact that this area of Essex which consists of small towns and villages mainly having considerable historic character, set in an undulating landscape is not one where extensive development would either naturally or happily take place. For very good reasons it has formed a natural green area between existing and potential development areas in all the regional plans that have been made over the last few years.

1.6. The sum total of all these constraints taken together means that there is no area within the 20 mile radius (certainly not within Essex area) which would be acceptable from a planning point of view for substantial growth. However, as it is a requirement of the Commission for Local Authorities to give the implications of urbanisation on each site, whether this be good or bad, so that a comparative estimate can be made, the exercise was continued. The method used, therefore, involved a "least injurious concept" and it must be stressed that the indications of possible urbanisation mentioned in this proof are (a) undesirable in themselves, and (b) represent a professional view only. They are nothing more than an academic exercise which is untested. No consultations have been carried out with various authorities concerned and they should by no means be considered as proposals by the County Council.

2. Form of Urbanisation

2.1. As will be seen from Mr. Kitching's proof of evidence the least injurious concept would seem to be a major development to the north-west of the Airport with a more limited development to the south-east together with the build-up of some other towns and villages within the area.

2.2. The minor but still large expansion shown to the south-east of the Airport could take the form of linked settlements between Harlow, to the south, and Stansted Mountfitchet to the north. I have considered for this purpose that the proposed M11 which runs northwards on the east side of Harlow, Sawbridgeworth and Bishops Stortford would be a constraint and that urbanisation should not go across it. The western edge of this possible area of urbanisation would be in the Hertfordshire area and is a matter for comment by Mr. Kitching.

2.3. As far as Essex is concerned, the area would contain the Stort Valley. It would mean some new urban areas additional to Harlow New Town which has been deliberately planned with a particular town form. It could involve the major village of Little Hallingbury and various other small settlements between the River Stort and the suggested line of the M11. The one feature which might be in its favour is that it could add to the social cohesion of the area. At the present time Bishops

* See also p. 840.
† p. 616.
‡ See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Stortford is a mainly middle-class commuter town, whereas the New Town of Harlow is largely occupied by persons in Corporation rented accommodation with a large proportion working in industry. Such a development could produce a variety of housing and opportunity which might add to the future of the area.

2.4. In addition to this considerable expansion between Bishops Stortford and Harlow, expansion north of Bishops Stortford to include Stansted Mountfitchet and the villages of Manuden and Farnham would be likely. It has also been considered likely that the Essex area would absorb some additional 10,000 population by the end of the century into the County, by reason of the Airport. It would probably be necessary to accept an addition to the Saffron Walden Borough and to certain key villages within the north-west part of Essex. This latter development would be particularly unfortunate if it happened quickly in view of the historic character of the villages. Any sudden addition to the Saffron Walden Borough could only add to the already considerable congestion in the historic core of that town.

2.5. For these reasons I join Mr. Kitching in stating that I find the potential results of urbanisation which might come by reason of the Airport most undesirable and confirm that they would be completely in conflict with existing County Planning policies in Essex.

3. Noise and nuisance

3.1. The main evidence on this matter will be given by Mr. Fleming* on behalf of the County Councils.

4. Amenity

4.1. Much of the countryside to the south and east of Nuthampstead within the Essex area is shown in the Review County Development Plan as being of Great Landscape Value (this is indicated on Mr. Kitching's plan LK2).† There are several small parts within this area designated under Section 19 and Section 23 of the National Parks and Access to the Countryside Act, 1949.

4.2. Within the 20 mile radius of the Airport there are a large number of areas which either have been or are in the course of being designated as Conservation Areas. These are Saffron Walden, Thaxted, Newport, Great Chesterford, Littlebury, Audley End (Saffron Walden), Arkesden, Clavering, Manuden, Stansted Mountfitchet, Henham, Great Sampford, Finchingfield, Steeple Bumpstead, Birdbrook, Great Bardfield, Stebbing, Great Dunmow, Felsted, High Roding, Hatfield Broad Oak, and Matching Green.

4.3. There are many reasons why it has been decided that these settlements should have Conservation Areas. Those in the northern part of the 20 mile area are still largely dependant on local agriculture, and were prosperous up to the end of the 18th century, but have remained static until very recently, thus many buildings of 15th–18th century origin have survived relatively intact. This is borne out by the large proportion of buildings included on the Statutory and Supplementary Lists of buildings of architectural and historic interest published by the Ministry of Housing and Local Government. Of special mention is Audley End House, about one mile west of Saffron Walden, which was the largest mansion built in the Jacobean era (Pevsner), and although only part of it remains, it is one of the finest examples of that period's architecture in the country.

5. Land use

5.1. *The Airport Site*

The site proposed by the Commission for a four-runway airport at Nuthampstead is partly in Essex with its boundary running through Roast Green, Clavering, to the eastern corner about ½ mile to the west of the village of Arkesden, and then north-westward through Duddenhoe End to the northern corner at Chiswick Hall, Langley and thence south-westward through Langley Hall Park back into Hertfordshire.

5.2. The farmland is mainly arable, producing cereal crops; the soil, although of rather a clay nature being derived from glacial boulder clay, is classified by the Ministry of Agriculture as being Grade 2 land and produces good crops. This part of the evidence will be covered more fully by the Agricultural Consultant, Mr. Tanton.* Within the site is part of a wood near Upper Pond Street which has a confirmed Tree Preservation Order and also High Wood, north of Langley village which is owned by the Forestry Commission. Langley village itself has a Tree Planting scheme carried out in accordance with Section 89 of the National Parks and Access to the Countryside Act, 1949.

5.3. The main settlements in Essex which would be affected by the Airport site are Langley Upper and Lower Greens and Duddenhoe End, which, although not within the Airport site, would be right at the end of the runways thus making living intolerable. The other smaller settlements within the proposed site are Clodmore Hill, Arkesden Parish and Further Ford End, Roast Green and Bird Green in Clavering Parish. Within these settlements mentioned above there are 14 buildings on the Ministry of Housing and Local Government's Statutory and Supplementary Lists of buildings of Architectural and Historic importance which would have to be demolished if the Third London Airport were to be located at Nuthampstead. Three of these are on the Statutory List (one is an ecclesiastical building); Thurrocks, a 16th century moated farmhouse near Clavering, Langley Hall, a 17th century timber-framed farmhouse and Langley Parish Church of St. John the Evangelist, part of which dates from the 12th century. The 11 buildings on the supplementary list are mostly 17th and 18th century cottages which have retained their character.

5.4. On the Review County Development Plan, which has not yet been approved by the Minister of Housing and Local Government, both the northern and eastern corners are shown as being of Great Landscape Value, the rest remaining without notation.

5.5. *The Airport Employment Area*

Most of the area within 20 miles of the airport was covered by a deposit of glacial boulder clay. To the

* p. 635.
† between pp. 624 and 625.

* p. 645.

Printed image digitised by the University of Southampton Library Digitisation Unit

north of Saffron Walden much of this deposit has been eroded away, exposing the underlying chalk strata, and is now only present on the crests of the chalk ridges. To the south of Saffron Walden the underlying rock is exposed in the major river valleys. In consequence the countryside to the north of Saffron Walden has sharper relief and is scenically more spectacular than the gentle, rolling country to the south of the town.

5.6. The London–Cambridge railway line, which goes through Bishops Stortford and Audley End (which is Saffron Walden's station now the branch line to the town is closed), is the only rail link from North West Essex to London. The main road link at present is the A11, which runs between London and Great Yarmouth. The projected route of the M11 follows the A11 quite closely and at its closest is about 6 miles to the east of the airport site.

5.7. The only east-west road link of any importance is the A120, Puckeridge–Bishops Stortford–Colchester road, which is about 9 miles south of the proposed airport site.

5.8. This road is intended to be supplemented by the proposed A120(M) a road of high quality leading from Harwich via Colchester and Bishops Stortford to Luton. In regional terms this follows the line of the A120 although for this particular portion may possibly follow the line of the railway.

5.9. In general the scale and pattern of settlement in North West Essex is similar to that which existed in the pre-industrial era. The villages which are of Saxon origin, generally have a nucleated form and are mostly situated in the river valleys. Saffron Walden with a population of 10,000 is the only town of importance in north-west Essex. It is a market town which serves the whole of the surrounding rural area. As a consequence the town centre is much larger and offers a wider range of services than one would expect from a town of this size. The town has grown considerably since the war, largely as the result of new industry coming to the town. The Review Development Plan for Saffron Walden, which is at present awaiting the approval of the Minister of Housing and Local Government, envisages that this expansion will continue up to 1981, when the population will be 14,000.

5.10. The influence of London is somewhat stronger in the southern part of the catchment area. Many of the small towns and villages in Essex near Bishops Stortford, Stansted Mountfitchet, Elsenham, Great Dunmow, Takely and Great and Little Hallingbury have experienced considerable growth in the last decade largely due to the influx of London commuters into the area, taking advantage of the improved services on the London–Bishops Stortford–Cambridge railway line.

5.11. Harlow New Town, which is about 18 miles south of the proposed airport site, is the main town in western Essex with a population of about 68,000. In response to the Minister of Housing and Local Government's request, Harlow Development Corporation examined the possibility of expanding Harlow beyond the original planned population of 80,000. They found that expansion to 124,000 was feasible. A decision by the Minister of Housing and Local Government on this further expansion was deferred.

5.12. *Development Plan proposals*

The Essex Review County Development Plan proposes only limited growth in Saffron Walden and Dunmow Rural Districts, illustrating the policy of positive protection which the plan is designed to achieve in the area. It is also proposed that the Metropolitan Green Belt should be extended as far north as Stansted Mountfitchet.

6. Conclusion

6.1. I consider that the establishment of a Third London Airport on the Nuthampstead site would be contrary to good regional planning and cannot envisage a satisfactory form of urbanisation which would be acceptable on planning grounds in the area.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the County Councils of Cambridgeshire and Isle of Ely, Essex and Hertfordshire

SUBMITTED BY MR. N. FLEMING*

I am a Master of Arts of the University of Cambridge, Acoustical Consultant to the Greater London Council, a Director of the Acoustical Investigation and Research Organisation Ltd., and a member of the Sub-Committee on Aircraft Noise of the British Standards Institution. I was formerly Head of the Acoustics Section of the National Physical Laboratory.

1. I have been asked to examine the noise situation which would arise if the Third London Airport were to be located on the Nuthampstead site short-listed by the Commission.

2. I have considered the probable distribution of noise around the airport from two aspects, (a) the long-term exposure to noise, which is expressed as the Noise and Number Index (NNI), and (b) the noisiness of individual movements, which is expressed as the Perceived Noise Level in decibels (PNdB), together with the frequency of occurrence of such movements. The former is used for asserting the average annoyance which is caused to people living in the area; the latter quantities are more relevant when considering the degree of interference which may occur with the intelligibility of speech, and in particular with oral teaching in schools in the vicinity.

3. The Noise and Number Index, as a method of quantifying the long-term exposure to aircraft noise, was devised by the Wilson Committee on the Problem of Noise† as the best means of correlating the annoyance experienced by people living around London (Heathrow) Airport (determined by means of a social survey carried out by the Central Office of Information with the physical characteristics of the noise to which they were exposed. It is a composite figure which takes account of the noisiness of individual flights which exceed a certain noise level, and the average daily number of such flights.

4. On the scale which was devised, the values of the Noise and Number Index corresponding to different degrees of annoyance, as determined by the average answers to the question "Does aircraft noise bother you very much, moderately, a little, or not at all" are: "very much"—60, "moderately"—43, "a little"—31, "not at all"—7 (Wilson Report, Figure 2, page 208). The Committee concluded, not solely from the answers to this question, that "exposure to aircraft noise reaches an unreasonable level in the range 50 to 60 NNI" (page 211), or that "the maximum acceptable level lies in the region between 50 and 60 NNI" (page 75). These criteria refer to disturbance during the day time. For the night time the Committee reached the very tentative conclusion that for a corresponding degree of annoyance the NNI figures would be 15 to 20 lower.

5. The *Site Information* given by the Commission for Nuthampstead includes two maps,* numbered 2/2 and 2/3 showing the NNI contours at intervals of 5 from 60 down to 40 NNI, for the airport with two runways and with four runways respectively, and I accept these contours as applicable to the particular types and numbers of aircraft, and the flight paths which have been assumed.

6. Maps NF1* and NF2* show the Commission's contours at 55 and 45 NNI, and my extension down to 35 NNI, for the two runway and four runway airports respectively. I prefer to use these contours in considering noise nuisance, rather than those adopted by the Commission in paragraph 14 of the Site Information, for several reasons. Firstly, I believe that a lower limit of 35 NNI rather than 40 NNI should be considered. This is the level at which, according to Figures 3 to 8 of the Wilson Report the presence of the airport begins to be felt. I introduce it not primarily because it is a level which need cause serious concern during the day time, but rather because it is relevant to conditions by night. Little is known about the relation between annoyance and NNI for night-time operations, though, as stated earlier, the Wilson Committee, arguing from somewhat indirect evidence, reached the "very tentative" conclusion that a reduction of 15 to 20 NNI was necessary to avoid increase of annoyance. In paragraph 13 of the Site Information it is remarked that, because aircraft movements are likely to be less by night than by day, the night contours will be less extensive than the day contours. It is unlikely, however, that the reduction in the number of movements would be so great as to completely off-set the increase of annoyance. It would, indeed, need a reduction to one tenth to one twentieth of the day-time movements to reduce the NNI values by 15 to 20. I believe, therefore, that it is desirable to take account of contours some 10 NNI lower when considering night-time annoyance. Secondly, I prefer to use 55 NNI as an upper limit, since this is about the value above which the Wilson Committee considered that noise exposure becomes "unreasonable" or "unacceptable". If the Commission's upper figure of 50 NNI is adopted, the region within it includes both areas where the noise exposure is "unacceptable", and also areas where the exposure, though high, may not be regarded

* See also p. 840.

† *Noise: the Final Report of the Committee on the Problem of Noise.* Cmnd. 2056 (HMSO; 19s. 6d.)

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

as "unacceptable". Thirdly, in view of the variability of the reaction of different people to noise, I believe that it is sufficient to consider areas between contours spaced 10 NNI apart, rather than to attempt a finer division of the degrees of annoyance. For the contours adopted in Maps NF1 and NF2 the corresponding degrees of annoyance in the terms of the Wilson Report are:

Within the 55 NNI contour—"unreasonable" or "unacceptable"
Between the 55 NNI and 45 NNI contours—from "unreasonable" down to "moderately annoying"
Between the 45 NNI and 35 NNI contours—from "moderately annoying" down to "a little annoying"

An estimate of the population in each of these areas has been made by Mr. Kitching and is included in his evidence.*

7. Some amelioration of the noise condition might be brought about by modifications to the flight paths on which the Commission's Map 2/3, or my Map NF2, are based. For example, if aircraft taking off to the south-west and turning west could delay the turn so as to bring the flight path to the south of Luton (as is the case envisaged for the two-runway airport), considerable benefit would accrue to Luton, particularly as regards noise at night.

8. The effect which the siting of the Third London Airport at Nuthampstead might have on the operation of Luton and Stansted Airports must also be considered from the point of view of noise. If their traffic should be restricted, or if the airports should be completely closed, there would be a noise benefit to people now living within their noise areas and to schools now affected by their noise. I have made estimates of the NNI contours for Luton for the year 1968, and from these the population in the various regions has been assessed by Mr. Kitching who gives the figures in his evidence. If complete closure of Luton Airport were to result from the presence of the Third London Airport at Nuthampstead, subtraction of these figures from the corresponding figures for the airport at Nuthampstead would be needed in assessing the net number of people affected by noise. I have not been able to make similar estimates for Stansted, but the number of people affected here is likely to be less than at Luton.

9. I now turn to the question of interference by noise with the intelligibility of speech. This is of particular importance in schools where interruption of oral teaching may occur, and may be particularly serious when radio or television lessons are used, and a pause or repetition is not possible. Interruption of speech communication is best assessed from the noisiness of individual aircraft movements. This is expressed by the Peak Perceived Noise Level in decibels (abbreviated PNdB), that is, the maximum level to which the noise rises as the aircraft approaches and recedes.

10. Perceived Noise Level is a magnitude based on subjective judgements of the comparative noisiness of noises of different character. An increase of 10 PNdB corresponds approximately to doubling the noisiness, and conversely a decrease of 10 PNdB corresponds approximately to halving the noisiness. An appreciation of the magnitude of the sensation corresponding to any value of Perceived Noise Level can only be gained by experience. Table NF3, which gives the perceived Noise Level for individual motor vehicles and continuous traffic, may serve as a guide.

TABLE NF3

Examples of Perceived Noise Level Values

	PNdB
Heavy Commercial Vehicles, 30 mph at 25 ft	90 to 100
Private Cars, 30 mph at 25 ft	83 to 90
Mean level beside trunk road with heavy traffic	90
Mean level in side road, 20 to 50 yd from trunk road	80

11. In data on the interference of noise with speech communication, the noise level is usually quoted in terms of another quantity termed Sound Level A (abbreviated dBA). There is no unique relation between dBA and PNdB, but for the noise of jet aircraft the latter is on the average about 15 dB higher than the former. The Wilson Report recommends that a noise level of 55 dBA should not be exceeded in educational institutions if interference with speech is to be avoided, (paragraph 119). This corresponds to approximately 70 PNdB, so that at a Peak Perceived Noise Level of 75 PNdB, and above, when the level may rise above 70 PNdB for 15 seconds or more, interruptions will begin to be serious.

12. The figure of 75 PNdB refers to the noise inside the classroom. With open windows this is normally about 10 PNdB lower than the noise outside; with closed windows and ordinary single glazing the level inside is usually about 20 PNdB less than that outside; with permanently closed windows and heavy single glazing 25 PNdB may be achieved; and with good, permanently closed double windows the difference between outside and inside may be about 40 PNdB. Consequently the Peak Perceived Noise Levels outside a school, which should not be exceeded if interruption of oral teaching is to be avoided, are approximately:

85 PNdB with open windows
95 PNdB with closed windows and single glazing
100 PNdB with permanently closed windows and heavy single glazing
115 PNdB with good, permanently closed, double windows.

In the last three cases some form of air conditioning would be necessary.

13. I have made calculations of the average number per day of noise incidents to be expected at schools in the vicinity of the airport. In Table NF4 I indicate when the number of incidents may be expected to exceed 30 per day (about 4 in a peak hour) in each of the ranges 85 to 94, 95 to 99, 100 to 114 and 115 PNdB and above. The first three ranges correspond to those where successively (1) closed windows with ordinary single glazing, (2) closed windows with heavy single glazing, (3) permanently closed good double windows, will be needed. If the number exceeds 30 above 115 PNdB no

* p. 616.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE NF4

Noise incidents at schools

School	2-runway airport (before noise certification of aircraft)				4-runway airport (after noise certification of aircraft)			
	Incidents in range of peak PNdB				*Incidents in range of peak PNdB*			
	85–94	*95–99*	*100–114*	*115 and above*	*85–94*	*95–99*	*100–114*	*115 and above*
HERTFORDSHIRE								
Schools in Welwyn	×							
Schools in Welwyn Garden City	×							
Stevenage College of Further Education	×				×			
Mid Herts College of Further Education	×							
Westmill J.M.I.	+	×	×			× +	× +	
Anstey J.M.I.	Inside airport boundary							
Stapleford J.M.I.	×							
Watton-at-Stone J.M.I.	×	×						
Tewin, Cowper Endowed J.M.I.	×							
Little Munden J.M.I.	×	×			+			
High Cross, Puller Memorial J.M.I.	×							
Puckeridge J.M.I.	×				×			
Standon Endowed J.M.I.	×				×			
Weathampstead J.M.I.	×							
Weathampstead Secondary	×							
Schools in Harpenden	×							
Digswell, St. Johns J.M.I.	×							
Woolmer Green J.M.I.	×	×						
Schools in Stevenage	×				×			
Ardley J.M.I.	×							
Aston, St. Mary's J.M.I.	×				× +			
Bennington J.M.I.	×	×						
Datchworth J.M.I.	×	×			+			
Knebworth J.M.I.	×	×			+			
Walkern J.M.I.	×				×	×		
Buntingford Secondary	×	×	×		× +	×	×	
Braughing Rural Senior	×				×			
Braughing J.M.I.	×				×			
Buntingford J.M.I.	×	×	×		× +	×	×	
Cottered J.M.I.	×				×	×		
Hormead J.M.I.		×	×	× +		×	×	+
Weston J.M.I.	×				×			
Schools in Baldock	×				×			
Codicote J.M.I.	×	×						
Kimpton J.M.I.	×							
Breachwood Green J.M.I.	×							
St. Paul's Walden J.M.I.	×							
St. Ippolyts J.M.I.					×			
Ley Green J.M.I.					×			
Offley Endowed J.M.I.					×			
Cockernhoe J.M.I.					×			
Preston J.M.I.					×			
Sandon J.M.I.					×			
Wymondley J.M.I.					×			
Lilley J.M.I.					×			
Gravely J.M.I.					×			
ESSEX								
Ashdown County Primary					×			
Newport County Primary					+			
Newport Grammar					+			
Schools in Saffron Walden					× +			
Clavering County Primary					+			
Great Chesterford C. of E. Primary	× +	× +	+		×			
Elmdon C. of E. Primary	+	+	+		+	+	+	
Langley C. of E. Primary	Within airport boundary							
Chrishall C. of E. Primary	+							
Wicken Bonhunt Residential Youth Centre					+			
CAMBRIDGESHIRE								
Fowlmere C.	+	+			+			
Foxton C.	+							
Thriplow C.E.	+	+			+			

× *Signifies more than 30 on day of movements to south-west (about 4 days in 5)*
\+ *Signifies more than 30 on day of movements to north-east (about 1 day in 5)*

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE NF4 (Cont.)

Noise incidents at schools

School	2-runway airport (before noise certification of aircraft)				4-runway airport (after noise certification of aircraft)			
	Incidents in range of peak PNdB				*Incidents in range of peak PNdB*			
	85–94	*95–99*	*100–114*	*115 and above*	*85–94*	*95–99*	*100–114*	*115 and above*
CAMBRIDGESHIRE (Cont.)								
Duxford C.E.	+	+			+			
Whittlesford C.E.	+							
Linton Village College	×				×			
Linton C.E.	×				×			
Balsham C.	×				×			
West Wratting C.E.	×				×			
West Wickham C.E.	×				×			
Melbourn C.	+				+			
Melbourn Village College	+				+			
Weston Colville C.E.	×				×			
Horseheath C.E.	×				×			
Special School (Spastics), Meldreth	+				+			
SUFFOLK								
Schools in Haverhill					×			
BEDFORDSHIRE								
Stopfold	×				×			
Astwick	×				×			
Arlesey	×				×			
Henlow	×				×			
Schools in northern part of Luton					×			

× *Signifies more than 30 on day of movements to south-west (about 4 days in 5)*
\+ *Signifies more than 30 on day of movements to north-east (about 1 day in 5)*

normal form of construction is likely to be adequate. Days of movements to the south-west and to the north-east are considered separately. This Table will be considered by Dr. Owen in his evidence.*

14. In the case of hospitals no criteria have been laid down for maximum permissible noise, but it is obvious that they need special consideration. Something better than can be tolerated by the well individual is desirable for the hospital patient, and the speech interference criterion must also be met, so that interruption should not occur in a doctor's examination of patients. I have made the same calculations, therefore, for hospitals as for schools, but in Table NF5 I give the actual number of incidents to be expected in the different ranges, and I include also the noise and number index at each site. The sites worst affected are the Danesbury Convalescent Home, Welwyn, where for the two-runway airport some 10 incidents per day may exceed 95 PNdB, and hospitals in the neighbourhood of Stevenage, and the General Hospital, Saffron Walden, where for the four-runway airport some 100 to 200 incidents in the range 85 to 94 PNdB may be expected on most days.

15. In the south of Cambridgeshire and north Essex there are a number of research institutions which are particularly concerned about the noise which may arise from a Third London Airport at Nuthampstead. I have made similar estimates for these as for the hospitals, and I give these in Table NF6, which will be referred to by a later witness.

* p. 640.

TABLE NF 5

Noise at hospitals

1. Day of movements to south-west (about 4 days in 5).

Hospital	2-runway airport (before noise certification of aircraft)			4-runway airport (after noise certification of aircraft)		
	No. of incidents in range of peak PNdB			*No. of incidents in range of peak PNdB*		
	85–94	*95–99*	*NNI*	*85–94*	*95–99*	*NNI*
A	40	—	34	20	—	34
B	20	—	32	10	—	32
C	10	—	< 30	10	—	33
D	—	—	< 30	20	—	34
E	—	—	—	20	—	35
F	—	—	—	70	—	37
G	—	—	—	80	—	38
H	—	—	—	190	—	46
I	30	—	37	—	—	—
J	50	—	39	—	—	30
K	80	10	43	—	—	32
L	30	—	33	—	—	—
M	50	—	35	120	—	40
N	—	—	—	150	—	45
O	—	—	—	40	—	38

2. Day of movements to north-east (about 1 day in 5). The only hospitals affected are N and O where the number of incidents in the range 85 to 94 PNdB is likely to be 150 and 70 respectively.

A Letchworth Hospital
B St. Catherine's Nursing Home, Letchworth
C Rosehill Hospital, Letchworth
D North Hertfordshire Hospital, Hitchin
E Lister Hospital, Hitchin

Printed image digitised by the University of Southampton Library Digitisation Unit

F Pine Hill Hospital, Hitchin
G Benslow Nursing Home, Hitchin
H Lister Hospital, Stevenage (under construction)
I Memorial Hospital, Harpendon
J O.V.M. Hospital, Welwyn
K Danesbury Convalescent Home, Welwyn
L Cottage Hospital, Welwyn Garden City
M Home Hospital for Women, Stevenage
N General Hospital, Saffron Walden
O St. James's Hospital, Saffron Walden

TABLE NF6

Noise incidents at Research Establishments in Cambridgeshire and North Essex

Ref. No.	2-runway airport (before noise certification of aircraft)			4-runway airport (after noise certification of aircraft)		
	No. of incidents in range of peak PNdB		*NNI*	*No. of incidents in range of peak PNdB*		*NNI*
	85–94	*95–99*		*85–94*	*95–99*	
1. Day of movements to south-west (about 4 days in 5)						
1	130	—	40	130	—	44
2	—	—	44	—	—	37
3	—	—	37	—	—	35
4	—	—	30	—	—	< 30
5	—	—	30	—	—	30
2. Day of movements to north-east (about 1 day in 5)						
1	—	—	40	50	—	44
2	130	30	44	200	—	37
3	130	20	37	200	—	35
4	30	—	30	—	—	< 30
5	—	—	30	—	—	30

1 Fisons, Great Chesterford
2 Tube Investment Research Laboratories, Hinxton
3 C.I.B.A., Duxford
4 Agricultural Research Council, Babraham
5 Welding Institute, Abington

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the County Councils of Essex, Hertfordshire and Cambridgeshire and the Isle of Ely

SUBMITTED BY DR. E. E. L. OWENS*

I am a Bachelor of Arts and a Doctor of Philosophy of the University of London, and hold the Teacher's Certificate of that University. I have taught for ten years in primary and secondary schools and have ten years of experience of educational administration. I am the Deputy Education Officer for the County Council of Hertfordshire.

1. The Hertfordshire County Council has been seriously concerned at the possible effects of recent proposals which would result in greatly increased activity by aircraft in or near the counties and made representations at the Inquiry set up by the Minister of Housing and Local Government in 1965, and also to the Commission in October 1968 (in collaboration with the County Council of Essex), with regard to the proposal to site a third London Airport at Stansted. The three County Councils are particularly concerned about the possible effect of such proposals on educational activities of all kinds.

2. The serious effects upon schools in the area of Heathrow of noise from aircraft were shown clearly by references in the Wilson Report† (para. 259) to enquiries made by Her Majesty's Inspector of Schools. One Inspector, for example, while doubting whether it was possible to prove what effect the frequent interruptions have on children's attainments drew attention to a school where the standards of work were in many ways below average, although the staff were certainly not below average in teaching ability. On one occasion when the Inspector visited this school, the half hour assembly had been interrupted ten times, and on the following day it had to be abandoned.

3. A very great deal of the work of a school depends upon hearing. There is, for example, increased emphasis in many schools upon spoken English—indeed such work is now included in syllabuses for public examinations. Foreign languages are more and more taught, at least in the vital early stages, by oral methods, and primary school children commonly begin the learning of French as it is natural for a child to learn a language, by hearing, repetition and conversation. There is a very great deal of work of this kind which must inevitably be made very much more difficult by intrusive noise.

4. For this reason careful estimates have been made of the work that could be done to schools to alleviate so far as may be the worst effects of noise from aircraft operating in the vicinity of Nuthampstead.

5. There are, of course, significant differences, so far as concerns the number of schools affected, between the two-runway and the four-runway proposals for Nuthampstead. It is, therefore, necessary to present separately the evidence as to the likely effect on schools and the cost of remedial measures which would be required, first for the two-runway proposal and then additionally for further schools affected by the four-runway proposal.

6. The method which has been used to assess the extent of noise interference at schools and estimate the cost of the remedial work required is exactly the same as that given in the evidence of Mr. J. A. Springett,* Deputy Chief Education Officer for Essex County Council, at the Foulness Stage II Inquiry. It is briefly summarised for convenience:

6.1. Mr. Fleming† (in his evidence) has provided information about the frequency and intensity of noise interruptions at each school site within the vicinity of the airport.

6.2. At those schools where the outside noise intensity reaches or exceeds 85 PNdB and the number of such noise incidents reaches 30 in a 12-hour period, i.e. 4 per peak hour, it has been assumed that remedial work must be undertaken.

6.3. I am advised that there are broadly three alternative specifications which would be applied to increase the sound insulation properties of school buildings, giving respectively a sound reduction of 20 dBA, 25 dBA and 40 dBA. Schedule EO I summarises the work involved in each specification and gives details of the estimated cost in terms of square feet of area of accommodation. To these figures 12 per cent must be added to cover architect's and other professional fees. It should be noted that all three treatments involve protection of the glazed areas of the outer shell of the building. This produces educational limitations which are considered elsewhere in this proof of evidence.

6.4. In order to estimate the cost of achieving a satisfactory reduction in noise levels at those schools where the number of speech interruptions reaches 30 in a 12-hour period, the following criteria have been applied:

Outside noise intensity	*Reduction treatment*
85– 94 PNdB	20 dBA
95– 99 PNdB	25 dBA
100–115 PNdB	40 dBA

* See also p. 841.
† Cmnd. 2056 (HMSO, 19s. 6d.)

* (CTLA Papers and Proceedings, vol. III).
† p. 635.

Printed image digitised by the University of Southampton Library Digitisation Unit

The cost of treating affected schools has then been calculated by use of the specifications referred to in paragraph 6.3 above, and described in Schedule EO.1.

7. In Schedule EO.II I set out a list of schools where I am advised the outside noise intensity will reach or exceed 85 PNdB for a minimum of 30 interruptions in a 12-hour period relating to a two-runway airport. Similar information for additional schools affected by a four-runway airport is given in Schedule EO.III. Some schools in Luton, south-east Bedfordshire and in Haverhill in West Suffolk are included in these Schedules. Information about these schools has been supplied to me by the Chief Education Officers of these Authorities and Mr. Fleming's investigations have included school sites likely to be affected in these areas. It will be seen that for the two-runway proposal 2 Colleges and 135 schools, housing 32,347 children will be affected to such an extent as to require protective treatment. For a four-runway proposal a further 64 schools and 21,573 pupils would be affected. Extensions to some of the schools listed in Schedules EO.II and EO.III are either included in known building programmes or are submitted for future programmes. In addition some new schools are to be built before 1974 in areas where sound proofing will be required. Details are given in Schedule EO.IV. The cost of this sound proofing work has been included in the estimates given in paragraph 8 below.

8. The cost of sound insulation work to schools for the two-runway proposal is estimated at £6·34 m. The cost of similar work for additional sites affected under the four-runway proposal is estimated at £3·62 m. making a total for such work of £9·96 m. A breakdown of these costs between the affected Authorities is given as part of Schedule EO.IV.

9. Mr. Kitching in his evidence* has stated that the first flush of population needed for the airport will have to be housed in existing towns. Stevenage, Harpenden and Welwyn Garden City are included among those towns which could accept new population under current development plans but since existing schools in these three towns will require sound proofing it follows that new schools built to serve the additional population will also require treatment. On the assumption that the existing development plans for these towns will go forward, additional schools (over and above those listed in Schedules EO.II, EO.III and EO.IV) providing accommodation for a minimum 21 form entry of primary pupils and 25 form entry of secondary pupils will be required in Stevenage, Welwyn Garden City and Harpenden. The extra cost of insulating these schools against speech interruption is estimated at £1·27 m.

10. I have been informed by the West Suffolk County Council that the population of Haverhill which was 10,700 in 1968 will rise to 30,000 by 1981 under the current development plan. New schools to be built in Haverhill to house the increased child population will require sound-proofing treatment if a four-runway airport is established at Nuthampstead. In my view the additional cost of protecting these new schools would not be less than £450,000.

11. There is a further point which ought to be made here. If the establishment of an international airport at Nuthampstead has the effect of curtailing flying from Luton Airport and from Stansted, this might bring benefit to a small number of schools situated in the vicinity of these airports. I am not able to estimate the extent of this benefit but I know that as far as Hertfordshire is concerned the only school which lies within the 35 NNI contours which Mr. Fleming has calculated for Luton Airport for 1968 is a village primary school housing 59 children. It is hoped to submit evidence on this aspect of the proposal at a later stage. I am, however, advised that the incidental benefit so derived is likely to be very small indeed as compared with the very severe and wide reaching effect of the Nuthampstead proposal itself.

12.1 The remedial measures envisaged in order to reduce noise within school buildings to a tolerable level require all activities to be carried on with doors and windows closed. Such a requirement would carry great disadvantages. It is common practice for schools, especially primary schools, in suitable weather to extend their activities outside the classroom, particularly to the grounds of the schools for purposes such as nature study, measuring and calculating in the early stages of mathematical and scientific studies, and informal dramatic work, and schools are designed so that areas outside the classroom can effectively become part of the working space of the class. Work of this kind would inevitably be very much impaired and at times made impossible in areas where the amount of noise from aircraft is of a level and frequency which would require remedial work on the school buildings. To this extent, remedial work, however sophisticated and costly is a makeshift arrangement which must reduce the facilities even of a well endowed school to a second rate standard.

12.2. I have visited a number of schools in close proximity to Heathrow Airport, and talked to teachers in them. One of these schools was designed and built with a view to the reduction of noise. This school was in many ways less attractive and less convenient than a normal school would have been. The double sets of heavy doors, for example, necessitated much closer supervision of small children entering and leaving the school. I also found that in comparison with the usual pattern of modern primary schools it had greatly reduced window area. In the hall, for example, all the windows were at high level, and it was not possible to see outside. The Hertfordshire County Council have not built a school hall like this for at least fifty years.

12.3. Whatever modification is made to the buildings, frequent and loud interruptions from noise have a serious effect on what is done outside the school. The Headmaster of a primary school near Heathrow Airport has written to me as follows:

> Work outside is badly affected. Practical mathematics, gardening, games, P.E., swimming all suffer. Coaching becomes rather difficult and sometimes the teaching of swimming in our outdoor pool

* p. 616.

Printed image digitised by the University of Southampton Library Digitisation Unit

is almost impossible. I feel exhausted after twenty minutes spent teaching swimming on a "bad" day.

There is always the danger of a teacher's voice being lost in the screech of jets at some important stage of a games or swimming lesson. This could lead to an accident.

13.1. There are, however, innumerable occasions in a school when even a single interruption by reasons of noise can have disproportionately serious effect. An atmosphere of worship in assembly when a prayer is being said or a reading given by pupil or teacher, the impact of the climax of a dramatic presentation, the thread of an explanation in an elaborate mathematical calculation can all be lost with a serious interruption, and it is not always easy or possible to retrieve the situation fully.

13.2. This is illustrated in a letter which I have received from the Headmaster of a secondary school affected by noise from aircraft. He writes:

> In English, History, etc. real interest depends so often on the creation of an atmosphere, whether by the teacher, or through the use of audio-visual aids. Pupils can virtually become a part of the scene or story with the involvement that implies, but atmosphere in a classroom is not easy to create and is very easily destroyed.

14. Ever increasing use is being made in schools of radio and television programmes, film, close circuit television and the like. Interruptions to radio and television programmes cannot be made good unless perhaps by means of costly and cumbersome technical devices but in the use of such media it is unreasonable to be involved in going over the ground again and an interruption is not only likely to impair concentration and enjoyment momentarily but may cause great damage to the lesson as a whole. Disturbances of this kind can be expected, if a third London Airport is built at Nuthampstead, at schools which, though affected by noise from aircraft, do not fall fully within the category mentioned in para. 7 above and so not receiving remedial treatment. There are, for example, over and above the schools at which remedial work is envisaged a further 72 schools within the 40 NNI contour or about 2 miles from it and in these schools a further 13,548 pupils may be affected.

Schedule EO I

Sound insulation work at schools: abridged statement of work required

	Degree of Sound Insulation		
System Built Schools	40 dB	25 dB	20 dB
Protection of outer shell			
Changing opening windows to fixed glazing			×
Heavy glass and fixed glazing		×	
Double glazing walkway and duct	×		
Fixing inner glazing for double glazing	×		
Treatment of non glazed wall area and fascias	×	×	(×)
Closing of roof light and compensation by artificial light	×	×	(×)
Heating and ventilation			
Powered ventilation (fans, ducts and controls)	×	×	×
External motorised louvre blinds	×	×	×
Internal modification			
Sound absorbent ceilings	×	×	(×)
Door treatment	×	×	(×)
Pre-1914 Heavy Construction			
Protection of outer shell			
Changing to fixed glazing with medium glass			×
Changing to fixed glazing with heavy glass		×	
Double windows	×		
External doors	×	×	×
Floor insulation	×		
Ceilings	×	×	×
Heating and ventilation			
Heating and Air equipment	×	×	×
External motorised louvre blinds	×	×	×
Internal work			
Sound Absorbents	×	×	×
Doors	×	×	×

× indicates work is required for degree of sound insulation indicated.

(×) indicates work may be required for degree of sound insulation indicated.

Costs in shillings of work set out above per square foot of floor area in examples worked

	40 dB	25 dB	20 dB
Post-1945 system building	89–90	50–52	39
Pre-1914 heavy construction	93	70	66
Consultants' interpolated cost for post-1914 Traditional type of building	90	55	40
New schools to be built	60	43/6	35

The foregoing figures do not include professional fees but do include (for all except new schools not yet built) an element of 18% for:

(a) Alterations to drainage, paths, gardening and other incidentals consequential on the works indicated.

(b) Probable unpopularity of this form of work, especially under likely employment conditions in vicinity of airport and restriction on access to school buildings in term time.

(c) Capitalisation of additional running and maintenance costs.

Schedule EO II

Schools affected by noise to an extent which requires protective work to be undertaken: two-runway operation

Schools existing or under construction	*Roll—January 1969*
Hertfordshire	
Welwyn, Oaklands J.M.I.	179
Welwyn, St. Mary's Infants	183
Welwyn, St. Mary's J.M.	245
Welwyn, Tenterfield Nursery	50
Welwyn Garden City, Sir Frederic Osborn	1,031
Welwyn Garden City, Monks Walk Secondary	923
Welwyn Garden City, Mater Dei R.C. Girls' Secondary	426
Welwyn Garden City Day Special	100
Welwyn Garden City, Holwell J.M.I.	272
Welwyn Garden City, Applecroft J.M.	428
Welwyn Garden City, Parkway Infants	234
Welwyn Garden City, Moatwood J.M.I.	348
Welwyn Garden City, Templewood J.M.I.	296
Welwyn Garden City, Harwood J.M.	322
Welwyn Garden City, Maran Infants	202
Welwyn Garden City, Rosedale J.M.I.	208
Welwyn Garden City, Homerswood J.M.I.	310

Printed image digitised by the University of Southampton Library Digitisation Unit

	Roll—January 1969
Welwyn Garden City, The Rowans J.M.	232
Welwyn Garden City, Nutfield Infants	183
Welwyn Garden City, Holy Family R.C.J.M.I.	262
Welwyn Garden City, Panshanger J.M.I.	139
Mid Herts College of Further Education, Welwyn Garden City	—
Stevenage College of Further Education	—
Stevenage, Lodge Farm J.M.	421
Stevenage, Lodge Farm Infants	308
Stevenage, Burydale J.M.	274
Stevenage, Bedwell Nursery Class	30
Stevenage, Shephall Green Infants	176
Stevenage, Ashtree J.M.	370
Stevenage, Ashtree Infants	239
Stevenage, Pin Green J.M.	281
Stevenage, Pin Green Infants	179
Stevenage, Blessed Margaret Clitherow R.C. J.M.I.	252
Stevenage, Mossbury East J.M.	—
Stevenage, Trotts Hill North J.M.	—
Stevenage, Peartree Way Nursery Class	50
Stevenage, Chells Nursery Class	37
Stevenage, Pin Green Nursery Class	35
Stevenage, Girls' Grammar	535
Stevenage, Nobel Grammar	711
Stevenage, Fairlands	—
Stevenage, Heathcote Secondary	622
Stevenage, Barnwell Secondary	599
Stevenage, Shephalbury Secondary	574
Stevenage, Collenswood Secondary	574
Stevenage, Chells Secondary	557
Stevenage, Bedwell Secondary	534
Stevenage, St. Nicholas J.M.I.	278
Stevenage, Fairlands J.M.	327
Stevenage, Fairlands Infants	138
Stevenage, Broom Barns J.M.	300
Stevenage, Broom Barns Infants	166
Stevenage, Bedwell J.M.	255
Stevenage, Bedwell Infants	167
Stevenage, Roebuck J.M.	410
Stevenage, Roebuck Infants	258
Stevenage, Peartree Spring J.M.	462
Stevenage, Peartree Spring Infants	284
Stevenage, Longmeadow J.M.	374
Stevenage, Longmeadow Infants	231
Stevenage, Bandley Hill J.M.	326
Stevenage, Bandley Hill Infants	273
Stevenage, Camps Hill J.M.	408
Stevenage, Camps Hill Infants	281
Stevenage, Blessed John Southworth R.C. J.M.	300
Stevenage, Blessed John Southworth R.C. Infants	188
Baldock, The Knights Templar Secondary	384
Baldock, St. Mary's J.M.	404
Baldock, St. Mary's Infants	218
Baldock, Weston Way Nursery	56
Baldock, Brandles Close Special	116
Westmill J.M.I.	41
Stapleford J.M.I.	79
Watton at Stone J.M.I.	172
Twein, Cowper Endowed J.M.I.	144
Little Munden J.M.I.	79
High Cross, Puller Memorial J.M.I.	63
Puckeridge R.C. J.M.I.	128
Standon Endowed J.M.I.	151
Wheathampstead Secondary	353
Wheathampstead J.M.I.	303
Harpenden, St. George's Grammar	446
Harpenden, Manland Secondary	359
Harpenden, Roundwood Park Secondary	471
Harpenden, St. Nicholas J.M.I.	147
Harpenden, Batford J.M.	285
Harpenden, Batford Infants	183
Harpenden, Roundwood J.M.I.	404
Harpenden, The Grove J.M.	351
Harpenden, The Grove Infants	238
Harpenden, Wood End J.M.I.	320
Harpenden, St. Dominic's R.C. J.M.I.	286
Harpenden, Crabtree J.M.	260
Harpenden, Highfield Nursery	38
Harpenden, Batford Nursery	63
Ardeley J.M.I.	49
Aston, St. Mary's J.M.I.	90
Benington J.M.I.	76
Datchworth J.M.I.	110
Knebworth J.M.I.	351
Walkern J.M.I.	77
Buntingford Secondary	243
Braughing Rural Senior	—
Braughing J.M.I.	—
Digswell St. John's J.M.I.	113
Woolmer Green J.M.I.	98
Buntingford J.M.I.	74
Cottered J.M.I.	272
Hormead J.M.I.	66
Weston J.M.I.	71
Codicote J.M.I.	178
Kimpton J.M.I.	220
Breachwood Green J.M.I.	63
St. Paul's Walden J.M.I.	116
Essex	
Elmdon C. of E. (Aided) Primary	39
Great Chesterford C. of E. (Aided) Primary	67
Christhall C. of E. (Controlled) Primary	46
Cambridgeshire	
Fowlmere Primary	64
Foxton Primary	69
Thiplow C.E. Primary	41
Duxford C.E. Primary	361
Whittlesford C.E. Primary	104
Linton Village College	261
Linton C.E. Primary	239
Balsham Primary	86
West Wratting C.E. Primary	36
West Wickham C.E. Primary	29
Melbourn Primary	298
Melbourn Village College	370
Weston Colville C.E. Primary	77
Horseheath C.E. Primary	40
Meldreth Special (Spastics)	—
Bedfordshire	
Arlesey, Etonbury Secondary	564
Arlesey Infants	219
Arlesey Junior	161
Henlow Camp, Derwent Primary	284
Henlow (Controlled) Infants	57
Henlow (Controlled) Junior	84
Stotfold Junior Boys	154
Stotfold Controlled Junior Girls & Infants	357

Schedule EO III

Additional schools which will require protective work under four-runway operation

Hertfordshire	
St. Ippolyt's J.M.I.	107
Ley Green J.M.I.	25
Offley Endowed J.M.I.	79
Cockernhoe Endowed J.M.I.	55
Preston J.M.I.	46
Sandon J.M.I.	98
Wymondley J.M.I.	86
Lilley J.M.I.	47
Stevenage, Alleynes Boys' Grammar	598
Stevenage, St. Angela's R.C. Girls' Secondary	90
Stevenage, Barclays Secondary	621
Stevenage, St. Michael's R.C. Boys' Secondary	460

Printed image digitised by the University of Southampton Library Digitisation Unit

	Roll—January 1969
Stevenage, Almond Hill J.M.	259
Stevenage, Letchmore Infants'	140
Stevenage, Moss Bury J.M.	309
Stevenage, Moss Bury Infants'	238
Stevenage, Pope Pius XII R.C. J.M.I.	182
Stevenage, Trotts Hill J.M.	86
Stevenage, Trotts Hill Infants	162
Stevenage, Martins Wood J.M.	34
Stevenage, Martins Wood Infants'	48
Stevenage, Longfield Special School	106
Graveley J.M.I.	33
ESSEX	
Ashdon County Primary	93
Newport County Primary	127
Newport Grammar	434
Saffron Walden R.A. Butler County Junior	381
Saffron Walden R.A. Butler County Infants'	265
Saffron Walden R.A. Butler (East Street Annexe)	
Saffron Walden St. Mary's C. of E. (Aided Primary)	285
Saffron Walden County High	1,085
Clavering County Primary	84
Saffron Walden College of Education	400
Saffron Walden Friends School	380
Wicken Bonhunt Residential Youth Centre	30
WEST SUFFOLK	
Haverhill The Cangle Primary	824
Haverhill Place Farm Primary	314
Haverhill Clements Primary	321
Haverhill Burton End Primary	321
Haverhill Secondary	607
LUTON	
Putteridge Bury College of Education	300
Putteridge Junior	219
Putteridge Infants	204
Stopsley Junior	418
Stopsley Infants'	280
Bushmead Junior	213
Bushmead Infants'	186
Stopsley High	1,245
Luton Sixth Form College	495
Sacred Heart Junior	390
Sacred Heart Infants'	297
Icknield High	1,084
Icknield Primary	439
William Austin Primary	760
Barnfield	323
Denbigh Primary	683
Waulud Primary	137
St. Joseph's Primary	935
Norton Road Primary	323
Warden Hill Primary	451
Meads Infants'	346
Lealands High	569
Cheynes Infants	481
Sundon Park (new) Junior	671
Cardinal Newman High	264

A. Extensions and new schools to be built before 1975 in areas where sound insulation will be required

	Estimated Roll
Stevenage, Pin Green Special	100
Stevenage, Mossbury (East) Infants	240
Stevenage, Trotts Hill (North) Infants	240
Standon Middle (completion)	280
Welwyn Garden City, Panshanger II J.M.I.	280
Wheathampstead (Dykes) J.M.I.	280
Harpenden, St. George's Secondary (extensions)	300 addl.
Harpenden, Manland Secondary (extensions)	300 addl.
Harpenden, Roundwood Park (extensions)	300 addl.
Harpenden, Wood End J.M.	320
Harpenden, Crabtree Infants	240
Harpenden, St. Dominics R.C. Infants	240
Buntingford, S.W. First School	200
Baldock, Providence R.C. J.M.I.	280
Baldock, J.M.I.	280
Whittlesford, C.E. replacement	280
Haverhill, New Middle School	460 (instalment of school for 600)
Haverhill, Second New Middle School	460 (instalment of school for 600)
Luton, Cardinal Newman High (extensions)	—
Luton, Barnfield (extensions)	—
Putteridgebury, College of Education (extensions)	—

B. Breakdown of sound proofing costs

	£
Hertfordshire	6,413,000
Essex (including Friends School and College at Saffron Walden)	677,000
Cambridgeshire	558,000
Bedfordshire	225,000
West Suffolk	287,000
Luton	1,806,000
Total	£9,966,000

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the County Councils of Essex, Hertfordshire, Cambridge and the Isle of Ely

SUBMITTED BY MR. D. E. TANTON*

I am a Fellow of the Royal Institution of Chartered Surveyors, a Fellow of the Chartered Auctioneers' and Estate Agents' Institute, a member of the Central Association of Agricultural Valuers, and a member and Past President of the Essex Agricultural Valuers' Association.

I have been resident in South East Essex for 42 years, and in practice as an agricultural valuer and surveyor for 35 years. Since 1943 I have been sole principal, and later senior partner, of the firm of Offin Rumsey & Hilliard (formerly, until October 1968 Offin & Rumsey) and throughout those 26 years I have been fully engaged in valuations and surveys of agricultural land throughout the County of Essex and adjoining Counties.

1. The proposed airport site

1.1. *Environment: General*

The overall plan issued by the Roskill Commission,† indicating four possible sites on a scale of 4 miles to the inch, shows the Nuthampstead site as a rectangle approximately 5 miles in length and 2½ miles in width, enclosing an area of nearly 8,500 acres. The accompanying Provisional Airport Plan, drawing No. CTLA.1,† indicates a total length of 27,000 ft and a greatest width of 13,700 ft, but with small rectangles excluded on the S.W. and N.E. sides which would form the projection of the outside runways. There is no clear indication as to whether these areas would be acquired, and as obviously they would be subject to maximum interference, I have for the purpose of this report, dealt with the full area of nearly 8,500 acres indicated on the original location plan.

1.2. So far as the general description of the site is concerned, I cannot do better than to quote the descriptoin already given by Mr. L. C. Kitching in his evidence. "The proposed site is in an area of undulating chalk hills which continue the Chilterns through North Hertfordshire, North Essex and South Cambridgeshire towards Newmarket. The site itself has a general level of 400–450 ft, rising in its N. corner to over 475 ft. It is deeply intersected by valleys fanning out in the quadrant from S.W. to S.E., levels in the valleys dropping in places to below 325 ft." (Mr. Kitching's Plan LK4.)‡

1.3. The factual information set out in Mr. Kitching's paragraphs 5.2, 5.3 and 5.4§ are beyond question and I need do no more than to accept them as a fair general assessment, and to proceed with a more detailed analysis of the agricultural importance of the whole area.

1.4. The recently published Ministry of Agriculture *Plan of Agricultural Land Classification** indicates that practically the whole of the site lies within Grade 2 classification, land with only minor limitations to agricultural use. The only exclusions from this grade are in respect of woodlands, developed areas and very limited areas in the River Valleys, mainly the Quin, which are subject to some degree of flooding. The total area can be divided into the following categories:

Grade 2 land	7,320 acres
Grade 3 land	50 acres
Woodlands	620 acres
Developed areas	350 acres
Existing Roads	160 acres
Total	8,500 acres

This analysis has been produced from my own detailed inspection of the whole site.

1.5. I am indebted to the National Farmers' Union County and Local Secretaries for detailed referencing of the occupation of the farms which would be affected by the Airport site.

Farms affected are mostly of fairly large size, and, of the 39 farming enterprises affected by the site, the average size of farm is 370 acres. A few of these farms are in quite small units, 50 to 100 acres, whilst there are some enterprises in the vicinity, partly affected by the Airport site, extending up to 2,000 acres. Thirty-two of the farmers affected are owner-occupiers, and 7 are tenants. Of these, 15 farmers would lose all their land and 8 would lose over half of their land.

The livestock population of the area concerned is given as follows:

12 farmers keep 493 beef cattle
3 farmers keep 243 dairy cows
16 farmers keep 8,016 pigs
3 farmers keep 460 ewes
10 farmers have 10,084 head of poultry.

This referencing would of course be subject to some variation if the originally designated airport site should be amended.

1.6. I have made a very careful inspection of the agricultural land included in the proposed Airport site,

* See also p. 842.
† See attached wallet of maps and diagrams.
‡ between pp. 624 and 625.
§ pp. 624-625.

* Available from MAFF Publications Dept., Government Buildings, Tolcarne Drive, Pinner, Middlesex.

Printed image digitised by the University of Southampton Library Digitisation Unit

which, as indicated above, has a total area of approximately 7,370 acres. As already indicated, the whole site is undulating country, for the most part gentle slopes, but with steeper slopes in places, particularly in the north-east and around Anstey in the south-west. The whole area is based on the chalk hill sub-soil, with, generally, a deep boulder clay top-soil; only on the steepest slopes and highest levels does the top-soil become thinner with general evidence of chalk sub-soil. The greater part has an adequate depth of high grade top-soil in a very high category of production. Arable farming is generally in preponderance, and permanent pastures are mainly confined to the low lying valley areas, and to an area between Meesdon and Brent Pelham where the soil is rather heavier and where dairy farming is carried on. Generally speaking, the land is in large open enclosures, facilitating modern methods of cultivation. Only in the more steeply sloping areas, notably in the north-east corner and around Anstey, are the fields generally of very much smaller size. In a few places there is evidence of some gravel deposits but there is little evidence of any substantial workings; chalk has been excavated for agricultural purposes (though not generally needed in this environment). In a few places there is an overlying deposit of high grade alluvial character.

Although the area is pleasantly timbered, the woodlands and spinneys do not impinge unduly on the arable farming, and considerable areas of woodland have been or are being cleared and the land restored to arable culture.

Practically the whole of the wartime Nuthampstead airfield has been cleared of concrete and obstructions, and is being reclaimed to full agricultural production; only a small private grass airstrip is now in use for flying purposes.

The principal crops produced on the arable land are wheat, barley, beans, sugar beet, and potatoes. There is a limited acreage of brassicas and peas, and silage crops are grown on the stock farms to a limited extent. Of the root crops, a large part is sugar beet, which goes to Felsted for processing. My own observations, and careful enquiry throughout the area, indicate average yields of wheat of up to 2 tons per acre, barley 35 cwt per acre, sugar beet 15–18 tons per acre and potatoes 10–15 tons per acre. These yields are very much higher than the national average.

The chalk sub-soil generally eliminates the need for applications of chalk, and with the undulating terrain, assists land drainage; these factors together with the average large size of fields, contribute to a sound agricultural economy. Fixed equipment has been brought up to modern requirements on most farms, and a high degree of mechanisation has been adopted. A large amount of flint on the surface, arising from the chalk sub-soil, has led to the adoption of a very high proportion of crawler tractors and appropriate large scale tackle.

My detailed inspection leads me to the conclusion that the proposed Airport site fully justifies its inclusion in Grade 2 of the Ministry of Agriculture Land Classification Map, and this is an area of very high agricultural production, substantially above the national average.

1.7. My analysis shows a total of 620 acres of woodland, after allowing for recent clearances. Of this area, Scales Park (220 acres) and High Wood (121 acres) are under Forestry Commission Control and some part of Scales Park is currently being re-planted by the Commission. The remaining 279 acres are privately owned and are mostly very small lots appearing fairly well over the whole area. Some of these are quite well managed and some re-planting is taking place, but quite a number of small spinneys are purely casual, and, whilst adding to the amenity of the countryside, are of little commercial interest.

1.8. My analysis shows an area of approximately 350 acres of development. This refers to the villages and hamlets within the proposed Airport area which would be completely eliminated by the Airport construction, but does not allow for similar rural development outside the perimeter, which might be threatened with extinguishment.

1.9. Mr. L. C. Kitching, in paragraph 5.1 of his evidence, refers to the fact that the proposed site is deeply intersected by valleys fanning out in quadrant form from the south-west to the south-east. The levelling of the Airport site would, of course, fill in these valleys, and it would be essential for full provision to be made for the adequate drainage of all the lands outside the Airport area where the natural outfalls would have been destroyed. The land adjoining the lower reaches of the River Stort is already subject to extensive flooding at times of heavy rainfall; the upper reaches of the River Stort run right through the proposed site, and a rapid run off of rain from the Airport area might give rise to serious flooding problems in the lower reaches.

1.10. It has been stated above that 15 farmers would lose all their land; in the case of owner-occupiers, it is assumed that their compensation would enable them to replace their farms in other districts, though undoubtedly they would be forced to move a considerable distance away in order to acquire available farms. Tenant farmers would be in a very much worse position, as opportunities of renting farms in these days are few and far between, and the present scale of compensation to dispossessed farmer tenants is totally inadequate to enable them to contemplate the purchase of a farm unless they have very substantial outside reserves.

The arbitrary definition of an area of 8,500 acres for acquisition inevitably poses very serious problems of fragmentation; 8 farmers are likely to lose over half of their land, and quite a considerable number, varying with the precise siting of the Airport perimeter, would lose substantial areas; and it is possible that farmsteads outside the actual perimeter would become untenable. A farmer fully equipped and properly staffed to a given acreage would be put in a very difficult position, on losing some part of his acreage, by possible redundancy of buildings, equipment and staff or alternatively by losing valuable fixed equipment, and the economic balance of many holdings could be seriously disrupted by a part acquisition.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. **Housing and ancillary development**

2.1. Mr. L. C. Kitching, in his evidence, has dealt in detail with the probable requirements of land for housing and ancillary development which would be needed in connection with the Nuthampstead project. He has made it clear that his observations are not a planning proposal by the County Councils of Hertfordshire, Essex and Cambridgeshire; having regard to the various limitations set out in his evidence, the areas specified by him are regarded only as "areas of search", and I must therefore confine my report to a factual assessment of the agricultural aspect of the two areas which he has scheduled as being the only possible, though thoroughly undesirable, locations for housing and ancillary development which would meet the estimated needs of the proposed Airport.

The two areas of search specified by Mr. Kitching are:

(1) In South Cambridgeshire, immediately to the north of Royston, to Litlington, including Bassingbourn Aerodrome (understood to be going out of use) and thence mainly east to A14, to include Kneesworth, Whaddon, Meldreth, Melbourn and then south to A505.
(2) The Stansted Mountfitchet–Bishops Stortford–Harlow District.

My report on these two areas follows:

2.2. *Stage 1 development*

It is indicated that the bulk of the additional population in the early years would have to be housed within the existing communities, partly within 10 miles of the proposed Airport, and partly within the 10–20 mile belt. This housing would mainly be provided by new residential development contained in approved and reviewed development plans. This development, it is anticipated, would be achieved by additional development as set out in appendix 2 of Mr. Kitching's report; as it is entirely contained in present proposals, it does not entail further loss of agricultural land. In some instances the land now scheduled is only on the fringe of agricultural occupation, or is in situations where fullest production cannot be achieved, but undoubtedly quite considerable areas of land, in full production at present, would be involved.

2.3. *Stage 2 development*

The development required in Stage 2, as outlined by Mr. Kitching, involves an entirely new incursion into existing agricultural belts for very extensive development on New Town Lines; Mr. Kitching has given his reasons for including two areas of search in order to achieve the total area of land required, and I deal with these separately in 2.4 and 2.5 following:

2.4. The first area of search specified by Mr. Kitching and indicated by shading on his Plan LK3* has a total area of approximately 17,000 acres, of which something like 2,000 acres are in present development, and about 1,000 acres in Bassingbourn airfield. The whole area lies within the County of Cambridge, and, with the exception of existing villages and hamlets and the Airforce establishment at Bassingbourn, is a sparsely populated rural area. The overall picture is of typical Cambridgeshire countryside, gently undulating, within contours varying from 50 ft to 175 ft. There is a limited amount of amenity timber, but no woodland of any size, and the greater part of the land is in arable cultivation. Limited areas, particularly in the valley of the River Cam and its tributaries, fall within Grade 3 of the Ministry of Agriculture Land Classification Plan, but the greater part of the land, some 85 per cent, is in Grade 2 and, in my opinion, much of it is high up in this grade. The main formation is on chalk sub-soil with a deep friable boulder clay soil, in places with an overlay of high grade alluvial soil. It is only in the valley areas referred to that there is any evidence of heavier soil and drainage problems.

Taken as a whole, the area indicated is of very uniform agricultural character, with mainly very big open fields and farmed in large arable units. Fixed equipment has generally been brought up to modern requirements and practically the whole of the land is farmed to the highest standards. The principal crops are wheat, barley, beans, peas, sugar beet and potatoes, with some considerable areas of market garden crops, particularly on the alluvial soils. The very large acreage of sugar beet and potatoes is indicative of exceptionally well drained, fertile and productive soil, and I would estimate cropping returns on average quite as high as on the proposed Airport site referred to in paragraph 1.6, very much above National average. There are considerable areas of orchard, mainly apples, in the Meldreth and Melbourn areas. Some of these are well managed, but some, particularly in the river valleys and on land difficult to drain, are of a poor standard. There are indications of flooding in the river valleys on quite small areas of land, particularly in the Meldreth and Shepreth areas.

Very little horticultural cultivation is to be seen in this area, and does not form a major feature of the agricultural industry.

In my opinion, the whole of this area constitutes one of the finest belts of uniform good quality land in this part of the Country; it is almost all farmed to a very high standard and I consider it to be one of the best food producing areas in the Northern Home Counties.

The ultimate land requirement of a Third London Airport at Nuthampstead is so great that there is little prospect of displaced farmers being able to re-establish themselves on an economic level in this part of the Country.

Bassingbourn aerodrome is expected to be closed. It occupies at present some 1,000 acres, of which a very small area on the fringe is in agricultural occupation, but the greater part is runways and mown grass. A considerable amount of personnel housing is included in the area, but presumably the whole of the open area could be available for urban development.

2.5. The second area of search specified by Mr. Kitching, the Stansted Mountfitchet–Bishops Stortford–Harlow district, also indicated by blue shading on Mr. Kitchings plan LK3. Very roughly this area is about 40 per cent in the County of Essex and about 60 per cent in the County of Hertfordshire. The total area indicated is approximately 15,000 acres, of which

* between pp. 624 and 625.

Printed image digitised by the University of Southampton Library Digitisation Unit

about 11,000 acres are in agricultural occupation, 800 acres in woodlands and 3,200 acres in existing development. The area is based mainly on the market town at Bishops Stortford, but includes quite extensive existing development at Stansted Mountfitchet; it extends the town of Sawbridgeworth in a northerly and westerly direction but, with the exception of a few other small districts of population, the area generally is open farm land with a comparatively sparse rural population. The countryside is mainly gently undulating, mostly varying between the 200 ft and 300 ft contours but at slightly lower levels in the valley of the River Stort and its tributaries. The River Stort flows through the site from north to south nearly midway in an east–west direction. On the Ministry of Agriculture Land Classification Map, a little more than half the agricultural land falls within Grade 2, being the major part of the land on the west side, with smaller patches appearing within the eastern and northern boundaries, and this part of the land corresponds approximately with the more open and level districts at good elevation. The remainder of the agricultural land falls within Grade 3, land with moderate limitation as to agricultural use; this area forms a spine up through the middle of the designated area, mainly following the valley of the River Stort in the south, and spreading out towards the north in a Y formation again following, very largely, the valleys of the River Stort and Stansted Brook. The town of Bishops Stortford lies midway between the two main areas of Grade 3 land. Immediately north of Sawbridgeworth there is a small area of Grade 4 land right in the Valley of the River Stort, and this section is very obviously subject to flooding and drainage problems.

Practically the whole of the Grade 2 land is on a chalk formation with deep friable boulder clay top-soil, and generally a very high standard of farming is maintained with good fixed equipment. Fields generally are of very good size and farming is in fairly large units. Crops mainly are corn, beans, and sugar beet with some evidence of dairy farming, with which is connected silage crops. There is a considerable acreage of potatoes in various parts of the Grade 2 land, particularly in the south-east part of the area.

The Grade 3 land at the northern end of the area is more steeply sloping, resulting in smaller fields and quite considerable milk and beef production on the lower lying grazing areas. The Grade 3 land south of Bishops Stortford, and embracing a small area of Grade 4, although very well above sea level, is all rather seriously influenced by the Stort Valley where flooding and serious drainage problems render much of this land unfit for arable cultivation and stock farming is very much in evidence.

The area includes one important horticultural enterprise at Stansted Mountfitchet, and a large nursery enterprise west of Sawbridgeworth, in addition to some small horticultural enterprises, where a very high production per acre is achieved.

2.6. Mr. Kitching, in paragraph 3.3 has visualised this area as being capable of development as a series of linked communities, the total area of search being possibly somewhat in excess of requirement. In this way it is possible that some of the best agricultural land might not have to be included, particularly, perhaps, a wedge in the south-west part of the area where agricultural production is very high.

Although this area of search is not uniformly of the high grade described in the Airport and Royston areas, it is nevertheless a district of efficient and productive farming, and the displacement of farmers, both owner-occupiers and tenants, over so wide an area, would result in the same problems as in the other areas reported.

Mr. W. D. Peters, Assistant Planner to Essex County Council, in paragraph 2.4 of his evidence,* mentions a possible further area of search in the context of a Third London Airport at Nuthampstead, as a further development on the south-west side of Harlow New Town. This might extend up to something like 1,000 acres, some of which is fringe land not in full agricultural occupation; the general agricultural classification of this area would be Grade 3, or medium. Mr. Peters has pointed out that further development in this direction has hitherto been resisted on planning grounds.

2.7. *Land drainage*

The Royston area of search is intersected by the River Cam and its tributaries, and the Bishops Stortford area of search is intersected by the River Stort and its tributaries. The land in the valleys of these rivers is already subject to flooding, to a greater or less degree, and this problem extends generally beyond the limits of the land designated, particularly in the lower reaches of the rivers. There is no doubt that a very large scale urbanisation of the areas would result in an enormous acceleration of the run-off of storm water from roofs and roads, probably greatly in excess of the present capacity of the rivers. Very extensive work would be required over an extremely wide area to cope with this problem.

2.8. *Forests and woods*

The Royston area of search contains no forests, and a small quantity of casual woods and spinneys, which undoubtedly would be desirable to retain for amenity purposes.

The Bishops Stortford area of search includes some 800 acres of woods, forests and spinneys. The larger areas are mainly woodlands under good management, both conifers and hard woods; the smaller areas being largely casual woods, small spinneys and shelter belts. These contribute largely to the amenities of the area, and do not impinge unduly on the agricultural efficiency of the surrounding lands.

Hatfield Forest, an area of some 1,000 acres, owned by the National Trust, lying about one mile to the east of the designated area, forms an outstanding amenity for recreational purposes to the district.

2.9. *Severance and fragmentation*

The problems of severance and fragmentation related to urbanisation are perhaps less drastic than in the case of the Airport site, where a rectangle of about 8,500 acres has to be imposed arbitrarily regardless of farm boundaries. Careful detailed planning of an area

* p. 632.

Printed image digitised by the University of Southampton Library Digitisation Unit

of urbanisation can be more readily woven into the farm pattern, thereby reducing the fragmentation of farms and avoiding, to some extent, the reduction of existing holdings below the economic level, though it does of course involve the complete elimination of the agricultural interest of the holdings included in the urbanisation. The more serious aspect of severance and fragmentation, related to urbanisation, is in the provision of road and rail accesses which would be required to link the new areas of development, both to the proposed Airport and also to existing and proposed major roads.

3. **Road links**

3.1. It is difficult to produce an exact assessment of the impact of the necessary road links on the agricultural interest, at a stage where these are only indicated diagrammatically, but the main pattern appears to be that the links to London and the North will be based on the present proposals in regard to the motorway M11 to the east, and the trunk road A10 to the west. The proposed line of the motorway M11 has been published, and it has been stated that this will be constructed as a dual three-lane road. If this provides adequate capacity on this side of the Airport, no additional land would be required, but if this had to be extended to dual five-lane, this might add some 350 acres to the land requirement. Certain improvements to the A10 are at present contemplated, but the full requirement for serving the Airport would undoubtedly involve very large scale improvements to this road, possibly involving the acquisition of something approaching 600 acres. In both these cases, additional severance would be less where roads exist or are already planned, than in the case of new roads constructed over open land.

3.2. Mr. Sharman also refers in his evidence* to a new radial route RR6, which would link with A10 at Hoddesdon, and which could entail the acquisition of some 500 acres of land and involves very serious problems of severance.

3.3 The re-routing of A120, a new M11 link, and other new links might involve the construction of some 30 miles of new roads, probably of motorway standard, mainly over open land, and would involve the acquisition of anything up to 900 acres of land. All these links would be over open farm land and would involve very serious problems of severance and fragmentation.

The greater part of these road links, particularly the more northern ones, run through open countryside, mainly in Grade 2 in the land classification map, but some parts in Grade 3. The southern part of the improvement of A10, and the proposed radial route 6, follow closely the Lee Valley, an area very largely devoted to horticulture, where a very much higher production would be disrupted.

4. **Rail links**

4.1. The siting of rail links in connection with this project is subject to very much more detailed study. It appears that new formation over open country, varying from 10 to 20 miles in length would be required, in addition to very extensive improvement to existing tracks, either on the Liverpool Street–Bishops Stortford route, or on the Kings Cross–Hitchin route. The new formation might require something between 200 and 400 acres of agricultural land, mainly in Grade 2, with very serious problems of severance. It is difficult to estimate the requirement for the improvement of an existing line, in one case for about 30 miles and in the other case for about 35 miles, but this might require between 300 and 500 acres of land, mostly in Grade 2 or Grade 3, but impinging on the Lee Valley land of much higher production if the Liverpool Street–Bishops Stortford route were adopted.

5. **Influence of noise on livestock husbandry**

5.1. It is now generally admitted that the adverse effects of noise on livestock husbandry are only important in areas of maximum and sudden noise. Quite a considerable quantity of dairy and beef cattle, and smaller livestock, are at present kept on farms around the perimeter of the proposed Airport site, particularly on the more steeply undulating areas to the north-east and south-west, within the proposed flight paths, and it seems probable that some disruption of these enterprises would ensue. This problem seems to be inseparable from the consideration of an inland site.

6. **Pollution and turbulence**

6.1. Little factual evidence is available in regard to damage to agriculture by pollution and turbulence. It seems probable that these factors may have an adverse effect on agricultural production, particularly under the flight paths beyond the boundaries of the Airport.

7. **Conclusion**

7.1. In my opinion, the proposed siting of the Airport at Nuthampstead, with the housing and ancillary development which must follow, would impose a loss to agriculture of the highest order, in fact, as serious as could be found in any location within the required distance from London.

* p. 608.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Luton County Borough Council

SUBMITTED BY MR. C. K. COLE*

1. I am the Director of Luton Airport and I have held this appointment since August, 1964. For two years prior to that date I was Deputy Airport Commandant at Luton and I have had previous experience at international airports overseas as Airport Commandant at Lagos and Freetown and prior to that as an Air Traffic Control Officer at Kano and Lagos from 1948. I qualified as a pilot in the Royal Air Force in 1942.

2. The Luton Borough Council took the decision to establish a Municipal Airport in 1934 and the site was acquired in 1936. The Airport was first licensed in April 1938 and was officially opened by the Secretary of State for Air, Sir Kingsley Wood, on 16 July 1938. During the 1939/45 War, the Airport was used by the Royal Air Force for training purposes and several factories connected with the aircraft industry were established in buildings erected within the site.

Since the War there has been a continuous and increasing use of the Airport by Civil Airlines.

3. The Airport lies to the east of Luton and is less than 3 miles from the M1 Motorway. The projected construction of Luton's Eastern Bypass, which is in the Ministry of Transport's Preparation Programme and will be in effect an extension of the existing Motorway Spur Road, will provide a shorter and quicker direct road connection between the Airport and the Motorway. The Airport is approximately 32 miles by road from Central London and is quickly accessible from the Midlands and North London as well as being in the centre of a considerable population within a radius of 20 miles estimated at 4,000,000.

4. Since the construction of a concrete runway in 1960 and the completion of the M1 Motorway, there has been a remarkable increase in commercial traffic at the Airport as shown by the following numbers of passengers arriving at and departing from the Airport:

1961		9,539
1962		43,417
1963		137,297
1964		174,545
1965		213,111
1966		362,581
1967		419,117
1968		707,815
1969	(estimated)	1,400,000

5. The number of aircraft movements has also increased very considerably in the same period as is shown by the following figures:

	Total Movements	*Commercial Air Transport Movements*
1961	30,086	580
1962	27,668	1,258
1963	30,894	3,153
1964	36,937	4,248
1965	30,714	3,895
1966	41,120	6,033
1967	42,769	7,839
1968	48,065	9,566
1969 (estimated)	56,000	15,000

6. To cope with the increased and increasing traffic the Corporation have greatly extended the available facilities including the construction of a runway, taxiways, aprons, car parks, hangars, roads, fire station and terminal buildings and have also installed radio, direction finding and radar equipment in addition to runway and approach lighting. The installation of an Instrument Landing System has been completed this year.

7. The total capital expenditure incurred or in hand at the Airport exceeds £4,000,000. The estimated gross revenue of the Airport in the financial year 1969/70 is £900,000 and this will produce an estimated net surplus of £193,025 after making full provision for all expenditure (including annual loan repayments and interest).

8. The principal aircraft operators at Luton Airport include the following:

Autair International Airways Ltd. (a subsidiary of Court Line Ltd.)
Britannia Airways Ltd. (a subsidiary of Thomson Travel Holdings Ltd.)
Monarch Airlines Limited (a subsidiary of Cosmos Tours)
Dan-Air Services Ltd.
Channel Airways Ltd.
British Midland Airways Ltd.

The first four are associated with major inclusive tours organisers such as Clarksons, Sky Tours, Cosmos Tours, Everyman, Lunn-Poly and with several other tour operators. The Aviation Division of Sir Robert McAlpine & Sons Ltd. provide charter, hangarage and maintenance facilities for a substantial number of executive aircraft. Other operators based at Luton include Autair Helicopter Services Limited and Luton Flying Club Limited.

The aircraft operators are not only engaged in inclusive tour traffic but also undertake trooping and other charter passenger traffic as well as freight.

Many other operators regularly make use of Luton

* See also p. 846.

Printed image digitised by the University of Southampton Library Digitisation Unit

on ad hoc charter and for reasons of weather diversions.

9. It is evident that Luton Airport, by reason of its road and rail communications, is very conveniently situated for the Inclusive Holiday Tour traffic. It not only caters for local traffic of this type generated within a radius of 20 or 30 miles, but also serves the North and Midlands and the Greater London area from which passengers come by coach or private cars. It is estimated that 20 per cent of all traffic of this type in the United Kingdom is handled at Luton Airport, which makes a valuable and probably indispensable contribution to the airport facilities of London and the South-east and affords relief to Heathrow and Gatwick which are said to be approaching saturation point. Still greater relief to Heathrow could be obtained by transferring to Luton some internal scheduled services between London and the North and North-west.

10. The Airport is open for traffic seven days a week, twenty-four hours a day, and the Air Traffic Control service is continuously manned. The Inclusive Tour traffic has been largely seasonal in character from March to October inclusive which creates considerable peak demands on all airport facilities, but the season is now being extended and there is a tendency for a greater number of winter holidays to be arranged. The principal routes of the Inclusive Tour traffic are to Europe and the Mediterranean, although it is also contemplated that in the near future some of the operators will be desirous of arranging longer distance holiday flights to such places as the Bahamas, West Indies and Africa necessitating the use of longer range equipment.

11. A plan has been prepared and is attached to this Proof of Evidence (marked CKCI)* showing the existing national airways system and the principal routes taken to and from such airways by commercial aircraft landing at and taking off from Luton Airport.

The majority of commercial aircraft to and from Luton Airport travel to the south and therefore join the national airways system at either Beacon Hill or Brookmans Park. If the Third London Airport was located at Nuthampstead considerable congestion would arise in the already overloaded airways, and would result in severe restrictions on commercial traffic movements to and from Luton Airport.

*12. In addition to Inclusive Tour, Charter, and Executive Aircraft operations, there are several scheduled services emanating from Luton. British Midland Airways Limited run scheduled services to Jersey, Guernsey, Dublin and Belfast. Channel Airways operate a bus-stop service between Southend and Aberdeen with intermediate stops at Luton, Leeds/Bradford, Tees-side, Newcastle and Edinburgh.

13. The amount of Air Freight Traffic at Luton Airport, which in 1968 was 893,766 kilos and for 1969 is estimated to increase by about 50 per cent is not at present large, but it has considerable potential in this respect. Luton is well placed to serve North London thus avoiding a good deal of cross-London surface transport and there is much industry and commerce within a radius of 20 miles.

* See attached wallet of maps and diagrams.

14. The present Intermediate Terminal Building which was designed for a Standard Busy Rate of 500 passengers per hour came into use in May 1966. It was estimated that it would suffice for five years, but the growth of traffic has been such that at peak times, particularly when these coincide with delayed flights, the building is seriously overloaded. The Council have recently decided to undertake an interim extension of the Terminal Building which will be brought into use in the 1969 Summer season and which will cater for a Standard Busy Rate of 1,000 passengers per hour. Having regard to the prospects for continued growth in traffic, at the rate of approximately 30 per cent per annum, it is apparent that many other facilities at the Airport will be inadequate to meet the demand and the Corporation have been considering further permanent extensions of some magnitude including the possible construction of an additional runway 10,000 ft in length. No decision on the wider question has yet been made, but the Corporation have commissioned Sir Frederick Snow and Partners to investigate and report on the several factors which influence the planning of, and determine the need for, the future expansion of Luton Airport. A copy of their Terms of Reference is attached to this Proof of Evidence (marked C.K.C.2). It is expected that their report will be available by the end of May 1969. The Corporation have also retained Dr. E. J. Richards, Vice-Chancellor of Loughborough University and his associate, Mr. C. S. Waters, to advise them and Sir Frederick Snow and Partners on questions of aircraft noise which may arise in connection with the Airport.

15. Although the Corporation do not contemplate the establishment at Luton of an Airport of the size and character now under consideration by the Commission, the Corporation consider that if the Third London Airport was located at Nuthampstead there would be a very considerable adverse effect upon Luton Airport. It is therefore urged that, in submitting any recommendations or observations with regard to the location of the Third London Airport at Nuthampstead, due account should be taken of the existence of Luton Airport, the considerable contribution it is at present making to airport facilities in the London and South-eastern area, its potential for further expansion, the need to ensure that it can continue to operate effectively, and the very considerable capital expenditure which has been or is being incurred with the full approval of the Central Government.

C.K.C.2

County Borough of Luton

Luton Airport Development

Terms of Reference to Sir Frederick Snow and Partners, Airport Planning Consultants.

1. To investigate and report upon the several factors which influence the planning of and determine the need for the future expansion of the airport.

2. The scope of the investigation shall include but not be limited to the following factors:

Printed image digitised by the University of Southampton Library Digitisation Unit

(a) aircraft and passenger movements
(b) cargo traffic
(c) general aviation
(d) aircraft maintenance
(e) surface access to the airport
(f) navigational and telecommunications aids
(g) meteorological conditions
(h) air traffic control and safety requirements.

3. To advise the Council on the requirements for topographical and obstruction surveys and soil investigations and to make arrangements for authorised surveys to be carried out.

4. To act on behalf of the Council in discussions with the appropriate Government Departments and other Authorities responsible for and concerned with aviation matters.

5. To consult with the utilities authorities concerning the capacity of the main electrical, water and soil water services.

6. To consult with Dr. Richards, who will be appointed by the Council, on the problems associated with aircraft noise caused by the airport.

7. To appoint and employ, in agreement with the Council, such specialist consultants as may be necessary to assist the investigation.

8. To prepare an outline plan showing the future development of the airport and the method by which phased expansion could be achieved.

9. To prepare estimates of cost of the work and economic analyses of the effect of the development of the airport.

10. To investigate the economic consequences of a possible decision to ban night flying between the hours of 11 p.m. and 6 a.m.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Luton County Borough Council

SUBMITTED BY MR. S. MCARDLE*

1. I am the Deputy Planning Officer for the County Borough of Luton and I have held this post since January 1969. Prior to that date I was the Assistant Borough Planning Officer. My qualifications are B.Sc. (Econ.) and I am a Chartered Surveyor.

2. The establishment of a Third London Airport at Nuthampstead is opposed on three main grounds:

(a) The effect on Luton Airport.
(b) The increase of aircraft noise within the County Borough.
(c) The consequences of the supply of labour available to the town's industry in an area where the supply of labour is already a major problem.

3. **Luton Airport**

The Proof of Evidence submitted by the Airport Director† indicates the contribution which Luton Airport makes to the airport facilities of London and the South-east and the extent of the Inclusive Holiday Tour traffic which is handled at the Airport. It also gives details of the present air traffic and passenger movements and the operators at the Airport.

In addition, Luton Airport also performs an increasingly valuable function in helping to diversify the economy of the County Borough. Luton is very heavily dependent upon manufacturing industry (62·7 per cent of employment in Luton Employment Exchange Area in 1966), and within this sector the dominant employer is the motor vehicle industry (47 per cent of employment in manufacturing industry in 1966). This contrasts sharply with the situation in the South-east Standard Region where, in 1966, 65·9 per cent of employment was in service industry, 32·5 per cent in manufacturing industry and 1·6 per cent in agriculture and extractive industries.

The service industry sector is the weaker of the major partners in Luton's economy, and even if Luton Airport is allowed to expand as market pressures dictate, service industry's share of employment in 1981 in the Luton Employment Exchange Area is only expected to be 41·5 per cent as against 36·6 per cent in 1966. If the location of the Third London Airport at Nuthampstead imposed restrictions upon Luton Airport to the extent that operators no longer found it economical or beneficial to operate from Luton, service industry's share of employment would decline to 35 per cent. In such an event the dependence of the County Borough on manufacturing industry would be further increased.

4. **Aircraft Noise**

(i) A plan (marked S.M.1)‡ is attached hereto indicating the NNI contours down to 35 NNI for Nuthampstead and Luton Airport. Noise does not simply stop at the 40 NNI contour, and between the 35 NNI and 40 NNI contours there is still a problem of intrusion from noise. In addition, demands for environmental standards are likely to rise as the standard of living rises, and it is probable that increasingly people will be less prepared to tolerate aircraft noise. Therefore, the 35 NNI contour as interpolated by Hertfordshire County Council's consultant on noise has been used as a means of comparing the situation at Nuthampstead with the noise created at present by operations at Luton Airport.

(ii) About 1,000 people at present in the County Borough live within the 40 NNI contour for a Nuthampstead Airport with four runways, and this figure is unlikely to change by 1981. Approximately 83,000 people live between the 35 NNI and 40 NNI contours at present, and this number is likely to grow to 120,000 by 1981.

(iii) By 1981, there will be one primary school with 420 pupils and one secondary school with 1,050 pupils within the 40 NNI contour for Nuthampstead and 31 primary schools with approximately 15,800 pupils and 15 secondary schools with approximately 16,100 pupils between the 35 NNI and 40 NNI contours. The Nuthampstead proposal will also affect one existing hospital (400 beds), and one site reserved for a proposed hospital (600 beds) between the 35 NNI and 40 NNI contours. A plan (marked S.M.2)* is attached hereto indicating the existing schools and hospitals and the proposed schools and hospital referred to in this Proof of Evidence.

(iv) About 6,500 people live within the 40 NNI contour for Luton Airport for the 1969 season and a further 9,000 people live between the 35 NNI and 40 NNI contours. There is one primary school with 420 pupils and one secondary school with 1,200 pupils within the 40 NNI contour, and three primary schools with 840 pupils between the 35 and 40 NNI contours. In addition, there is one small hospital with 60 bed spaces between the 35 NNI and 40 NNI contours.

(v) NNI contours for the future for Luton Airport cannot be given at present because, as has already been indicated, the expansion of the Airport is currently being studied by consultants. It is unlikely, however, that any further development will make the noise problem significantly worse within the County Borough.

(vi) The effect of Luton Airport and Nuthampstead can be summarised as follows:

* See also p. 846. † p. 651.
‡ See attached wallet of maps and diagrams.

*Available for inspection, by arrangement, at the Planning Office, Luton County Borough Council.

Printed image digitised by the University of Southampton Library Digitisation Unit

	Nuthampstead 1981		*Luton 1969*	
	40 NNI	*35–40 NNI*	*40 NNI*	*35–40 NNI*
Population	1,000	120,000	6,500	9,000
Primary Schools	420	15,800	420	840
Secondary Schools	1,050	16,100	1,200	—
Hospital Bed Spaces	—	1,000	—	60

It is clearly evident from the above table that the Nuthampstead proposal would make aircraft noise conditions within the County Borough much worse. If, in the long term, it is decided that, as a result of the South-east Joint Planning Study and the South Bedfordshire Sub-Regional Study (both of which are currently being undertaken), development in the Luton area should be expanded, the noise problem as a result of a Nuthampstead Airport would be intensified. Similarly any development to the east outside the County Borough Boundary would be even more affected by noise problems.

5. **Labour Supply**

(i) Employment at Luton Airport has grown rapidly as the following table indicates:

1962	170
1963	366
1964	509
1965	626
1966	909
1967	Not available
1968	1,637
1969 (estimate)	2,000
1971 (estimate)	3,000

If Luton Airport continues to expand, a labour force of 6,000 by 1976 would probably be a conservative estimate. If Luton Airport was to close, or because of restrictions placed upon commercial movements light aircraft only were able to use the Airport the majority of these employees who are skilled personnel would probably transfer to Nuthampstead or to other London Airports over a period of time. Thus the County Borough would as already indicated lose much-needed labour and an important diversifying element.

(ii) It has been calculated that, within Luton Employment Exchange Area, there will be a labour supply shortfall of 12,000 by 1981, if the existing balance of daily inward to daily outward work movements remains constant. In an area of competition for a scarce supply of labour, it is unlikely that Luton will be able to increase significantly its amount of inward work movement.

Already, by 1966, 25·6 per cent of Luton's daytime workforce was resident outside the County Borough. It can be seen, therefore that the loss of the majority of the 6,000 workers in service industry would be a setback to Luton's chances of achieving the desirable balance between the various types of industry and would increase the anticipated labour supply shortfall.

(iii) This direct loss of airport employees would not be the only impact upon labour supply in Luton of the establishment of a Third London Airport at Nuthampstead. Nuthampstead would prove to be a major generator of employment in industries related to the airport and in service industry, and this would further increase competition for labour in areas where it is a scarce resource. It is difficult to calculate the number of "off-site" jobs that would be generated by a four-runway airport employing 65,000 persons "on-site", but it could be of the order of 150,000. This figure emerges from making a small allowance of 10 per cent of "on-site" employment for such organisations as hotels and car-hire firms, making a conservative assumption of 15,000 jobs in manufacturing industry and applying a multiplier of 2·5 for service industry (based upon Heathrow experience).

(iv) An employment magnet of the size of the Third London Airport will clearly have a major impact on the labour supply position in the area. Luton, approximately 20 miles from Nuthampstead, would have good road communications with it if the "strategy" route shown in *Roads for the Future* (HMSO 1969), from M1 just north of Luton to Harwich via Stevenage and Colchester and passing close to Nuthampstead, were to be constructed. This would facilitate the loss of labour from Luton.

(v) It seems clear, therefore, that the establishment of a Third London Airport at Nuthampstead could seriously weaken Luton's economy which is geared to such exporting industries as motor vehicles, engineering and electrical goods, chemicals and clothing.

As an example of the wide-ranging distribution patterns of Luton's industry, only 8 out of nearly 90 manufacturing units with an employment register larger than 50 persons supply over 60 per cent of their output to other local industry. As a whole, 43 per cent of the British motor vehicle industry's products were exported in 1968 (Central Statistical Office *Monthly Digest of Statistics*,* April 1969), and Vauxhall Motors put the export figure from their Luton and Dunstable works combined at 35 per cent for the same year. Clearly, it is not in the national interest that the growth of such industries should be retarded.

It is contended, therefore, that the establishment of a Third London Airport at Nuthampstead could cause damage to the economy of Luton by curtailing significantly its available supply of labour, and thereby holding back the growth of industries which, in the national interest, should be allowed to expand.

* HMSO.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Cambridge City Council*

The Guildhall
Cambridge
CB2 3QJ

27th May 1969

The Secretary
Commission on the Third London Airport
Templar House
81–87 High Holbourn
London W.C.1

Dear Sir,

Third London Airport

This letter is in amplification of my letter of 16th April 1969† in which the City Council registered their opposition to the siting of a Third London Airport at Nuthampstead on the grounds that it would be likely to prejudice living and working conditions in Cambridge.

Since that date the City Council have been advised in more detail as to the levels of noise which may be expected in the area around Nuthampstead based on the present assumed flight paths and have noted that no NNI contour above 40 would pass through any part of the City of Cambridge. They further note, however, that if the NNI contours are extrapolated below the factor of 40 a contour of 35 NNI would pass just beyond Whittlesford which is only 4½ miles distant from the boundary of Cambridge.

This leads the Council to believe that the City would be affected by *some* disturbance from flying aircraft even on the present assumptions and that only a minor deviation from the present assumed flight paths or in other factors on which present assessments are based could inflict upon Cambridge a level of noise which would seriously impair living and working conditions in the City. The special character of Cambridge and of the activities carried on there, both in University establishments and others, need no emphasis. They are undoubtedly more susceptible to the ill-effects of flying aircraft than would be the case in the average town. The adverse effects would be felt:

(a) in terms of the day-to-day living and working conditions of its inhabitants, including the large University population resident in the City;

(b) in the hindrance of scientific and industrial research carried on in the City;

(c) in the discouragement of the growth of new science-based industry which ought to be a vital feature of the future development of Cambridge; and

(d) in interference with the special environment associated with the historic buildings of the City and in possible future damage to their fabric.

On the above grounds, the City Council wish to object to the siting of a Third London Airport at Nuthampstead because of their real apprehension that the unique character of Cambridge would be endangered by the possibility of flying aircraft in substantial numbers.

Yours faithfully,

JOHN ELVEN

Town Clerk

---

* See also p. 847.

† Application for leave to appear.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Royston Urban District Council

SUBMITTED BY MR. D. J. WALKER*

I am the Clerk of the Royston Urban District Council.

1.1. The Royston Urban District Council, at a Special Meeting held on the 8th April, 1969, passed resolutions opposing the siting of the Third London Airport at Nuthampstead on the following grounds:

1.2. **Urbanisation**

The introduction into the area of North Herts. of a large increase in population would result in a demand for a considerable industrial and residential expansion of Royston far in excess of that which the Council feel is desirable, having regard to their policy of encouraging growth that is steady and controlled rather than explosive.

1.3. **Character of the town**

The high density development that would result from the airport is in direct contrast to the semi-rural type of development by which new residents are now being attracted to Royston.

1.4. **Loss of amenities**

An airport at Nuthampstead would occupy a large area of the most attractive countryside lying within easy pedestrian reach of Royston, while the noise would make an even larger area of that countryside unfit for enjoyment by people living in the tightly packed urban area.

1.5. **Communications**

Road communications in this area are quite inadequate to carry the tremendous volume of traffic generated by workers and ancillary trades at the airport. Royston itself already has traffic problems, which would be rendered even more difficult to solve.

1.6. **Noise**

Although Royston itself would apparently be little affected by noise, the Council feel they must demonstrate their solidarity with such places as Buntingford, where a number of Royston residents earn their living, and with the many villages in the worst-affected area, whose inhabitants have for many years contributed to the development of our town as a shopping centre.

1.7. I would emphasise that the Council made this decision only after full consideration of all the factors, including the information published by the Commission on Nuthampstead on 1st April, 1969,† and that it was not a decision taken immediately the Short List of Sites was announced by the Commission on the Third London Airport.

Amplification of the Grounds of Opposition

2.1. This brief statement is made in amplification of the Council's resolutions.

2.2. Most of the views of the Council have already been dealt with generally by the Hertfordshire County Council, and I would emphasise that there is no disagreement between the County Council and the District Council on their opposition and grounds of opposition to the proposed airport. Nevertheless, the Council consider that as they are the closest Urban Authority to the proposed site, they should make their views known separately to the Commission.

2.3. **Urbanisation**

The ultimate size of Royston has been a matter of considerable discussion between the Royston Urban District Council and the Hertfordshire County Council for many years. The most recent action taken by the Hertfordshire County Council was the publication of the Royston Appraisal, which has been accepted by the Royston Urban District Council as a basis for the future development of Royston.

2.4. The proposals contained in the Royston Appraisal are for an ultimate population of 16,000 to 19,000 with associated industry. The increase of the population to this figure is in line with the policy of the Council to continue the present trend of steady growth as a small market town.

2.5. **Character of the town**

Royston has, for centuries, been a small market town surrounded by a mainly agricultural area. The present population is 7,000 and the character of the town, whilst it has changed in recent years by the introduction of a certain amount of industry, is still that of a market town which relies very largely for its existence on a surrounding network of villages. It serves a shopping population of between 20,000 and 25,000, including the population of Royston.

2.6. Recent developments are of a medium to high-class residential type, and new residents are attracted to Royston by the semi-rural character of the area. The Council are firmly of the opinion that there would be a resultant urbanisation of the surrounding area if the airport was established at Nuthampstead, and this would completely destroy the character of the town as it now exists, and be to the detriment of its present inhabitants.

---

* See also p. 847.

† *Site Information for Stage II Local hearings. 2. Nuthampstead.* Reproduced at p. 601. (HMSO; 6s.).

Printed image digitised by the University of Southampton Library Digitisation Unit

2.7. **Amenities**

One of the main attractions of Royston is its easy access to open countryside, with which it is surrounded. The establishment of an airport at Nuthampstead and the associated housing development would result in a loss of almost the whole of the open countryside around Royston, and the present inhabitants would suffer a considerable loss of amenity.

2.8. **Communications**

The existing road pattern in Royston is quite inadequate to meet the present traffic conditions. At weekends a considerable volume of traffic uses the A505 Baldock to Newmarket Road, and heavy congestion is caused at the road junction in the Town Centre, particularly at weekends.

2.9. Whilst proposals are in the County Plan for a Royston Bypass, the Council consider that the increased volume of traffic as a result of the airport, would not only nullify the effect of the bypass, but would result in considerably more congestion in Royston by traffic entering and leaving the town.

2.10. The internal road pattern of Royston is completely inadequate to cater for an increased volume of traffic.

2.11. **Noise**

From the Commission's NNI Contour plan, Royston is probably in a favourable situation with regard to noise, being well outside the 40 NNI contour, although from the plan produced by the Hertfordshire County Council,* it appears that the 35 NNI contour would affect approximately 50 per cent of the town. Nevertheless, the Council feel they must object on the grounds of noise as it will affect Royston residents who are employed within the worst affected areas, and the fact that for many years the inhabitants of the villages worst affected have contributed to the development of Royston as a shopping centre.

3.1. **Conclusion**

The Council consider that the establishment of the Third London Airport at Nuthampstead would completely destroy the present character and amenities of Royston, and it would be completely to the detriment of the inhabitants both of Royston and the surrounding areas.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. H. C. Beddington*

1. I own and myself farm Anstey Hall Farm, near Buntingford, which extends to about 695 acres. Should Nuthampstead be chosen as the site for the construction of the third London airport, I am concerned that I shall suffer personal and financial hardship.

2. Upon the basis of drawing number CTLA 5† contained in the folder to the *Site Information*‡ pamphlet on Nuthampstead, the area required for the Nuthampstead site includes some three-quarters of my farm land (about 500 acres) together with the entire village of Anstey in which my home, Anstey Hall, is situated. The land remaining (about 195 acres) cannot, from my point of view, be regarded as a viable farming proposition. Furthermore, all the farm buildings including the house and the farm cottages are situated on the 500 acres. It is clear therefore that the farm which is my means of livelihood and my home is faced with the prospect of annihilation.

3. Within a few years of demobilisation from active service in the 1939–45 war, I decided to live and farm in Anstey which is in that part of Hertfordshire where I have lived for almost my whole life. Anstey Hall Farm was particularly attractive to me by reason of the quality of the soil, the fact that it is well roaded, that the fields are of convenient shape and size and, for an area within 35 miles of London and 15 miles of Cambridge, it is uniquely rural.

4. When I took the farm over, 20 years ago, the previous owner had during the four years of his occupancy spent much on drainage and on land improvement. Little, however, had been spent upon the cottages, house and buildings which were in a very bad state of repair. In the expectation that this would be my home and work for the rest of my life, I have carried out a programme of modernising the house, buildings and cottages in order to increase efficiency and production and provide good living and working conditions for my employees.

5. The programme of capital expenditure is now nearing completion and I should in normal circumstances be expecting to recoup this over the years to my retirement. If the Nuthampstead site is adopted, this expenditure (a summary of which I produce—HCB I) will have been largely wasted. I shall then probably give up farming in England and my working life in this country will have been terminated by the destruction of what I have tried to build up.

6. Anstey Hall is scheduled as a Grade 2 building on the Statutory List and the Hertfordshire County Council tell me that it is described as follows:

> 17th Century or earlier origin to front block which has original central chimney stack with four octagonal shafts; considerable alterations and extensions in the 18th and 19th Centuries. The South East front has three window range of double lining sashes with glazing bars; the central upper window a small oval. The entrance is now on the North East side which has similar 18th century features. The North East block is entirely red brick. The Roofs are mostly of slates hipped at the South West end of the front Block. (HCB IA).

The house probably contains material taken from Anstey Castle (See below). I have spent money in renovating the house and I produce letters dated 12th June (HCB II) and 21st July 1967 (HCB III) from the Ministry of Housing and Local Government confirming that the building was correctly listed.

7. Anstey Castle which is situated in the grounds of the Hall is certainly of Norman origin and may have been the site of a place of strength during the Heptarchy. It is believed to have been destroyed at the close of the 14th Century or some date thereafter. The earth works and the moat have remained ever since, and are a source of continued interest to antiquarians and archaeologists. The site has been scheduled as an ancient monument since 1923. The ownership of Anstey Manor can be traced to Saxon times and receives mention in the Domesday Book. I produce extracts from Salmon's *History of Hertfordshire** (1728) (HCB IV) Cussan's *History of Hertfordshire** (1870) (HCB V) and Anstey *A Hertfordshire Parish* (1929) (HCB VI) in support of these statements; also an extract from the *Inventory of the Historical Monuments of Hertfordshire* published by the Royal Commission on Historical Monuments (1910) (HCB VII).*

8. Anstey Hall together with the Church adjoining cottages and Castle Mound form an architectural group of great interest and charm. The farm and the surrounding countryside are of great natural beauty and of considerable agricultural value, such that the community surely can ill afford to lose. I appreciate that far wider considerations than those which I have mentioned will dictate whether the Third London Airport should be sited here. For my part, however, it will mean the loss of my home and my livelihood which I have spent so many years building up and I ask that these factors—albeit narrow—be taken into consideration by the Commission.

9. I produce photographs† (Anstey Hall I–IX).

---

* See also p. 848.

† See attached wallet of maps and diagrams.

‡ *Site information for Stage II local hearings. 2. Nuthampstead.* Reproduced at p. 602. (HMSO; 6s.).

* Not reproduced. Available for inspection, by arrangement, at the offices of the Commission.

† Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

ANNEX HCB I

Approximate breakdown of capital expenditure on farm buildings and cottages over the past 20 years

Grain-handling & storage plant (new installation)

1957/58 comprising cleaner, dresser and drier (6 tons per hour) with banks of 2 pre-storage silos and 10 storage silos.

1964/65 a floor grain-store (with movable partition walls) and 1965/66 a nest of grain-bins (with movable partitions); all completely automatic. Total storage capacity of plant approx. 1,000 tons. Cost includes access roads and hard standings £26,455

(An Improvement Grant of £1,895 was received in respect of the floor store and bins.)

Potato store (conversion of existing Cowshed)

1958 capable of holding 600 tons of potatoes and having forced air ventilation, fumigation plant and
1961 heater-banks.
Cost includes
1959 completely re-roofing £3,783

(An Improvement Grant of £1,072 was received in respect of the building.)

1959/62 **Carpenter's Workshop, small-tool store, baler house & garage for two combine harvesters** (conversion of part of existing cattle-yard and stalls) £1,080

The garage also serves as an overflow store for potatoes.

Piggeries (conversion of remainder of existing cattle-yard and stalls and of existing pig-yards)

1966 to date, continuing work on this project. To date accommodation has been completed and is in use for 500 pigs (giving an annual turnover of 1,200) housing a further 450 pigs is nearing completion, with work on a third similar stage just started. An annual turnover of some 3,500 pigs is planned for with the possibility of planning still further.

The installation provides insulated and ventilated housing for the pigs in pens of 30–50, with natural effluent extraction into a deep tank and adjoining pump-house.

Already installed and in use is a food storage, measuring, mixing and distribution plant, completely automated.

The cost to date, including the plant and hard-standing around the building is £28,600
(Partly estimated for 1968/69.)

1965 Reinforced concreting of **farmyard & access road** to piggeries and potato store £1,316

(An Improvement Grant of £438 was received for this.)

1959 **Bull-box & yard** (new building) £353

Cottages

All existing cottages on the farm have been completely renovated and provided with all modern conveniences, including the addition of bathrooms and kitchens, provision of a third bedroom and additional cupboards, etc. at the following costs:

1959 **Hillside**	£3,735
1954/55 **Rose cottage** (including—1965–66—a garage)	£2,056
1950/51 **Anstey Hall farm cottages** (including—1966–67—detached paired garage)	£3,777*
1956/57 **Snow End cottages** (single cottage converted into a double)	£3,908
1952/54 **New Barns cottages**	£3,714*
*(Partly estimated)	£78,777

Printed image digitised by the University of Southampton Library Digitisation Unit

ANNEX HCB IA

Ministry of Housing and Local Government
Whitehall, London SW1

22nd May 1969

Messrs. Trower, Still and Keeling
5 New Square
Lincolns Inn
W.C.2

For the attention of Mr. Walsh

Dear Sir,

Buildings of Architectural or Historic Interest
Anstey Hall, Anstey

As promised in a recent telephone conversation I am sending you details of Anstey Hall, which is including in the list of buildings of special architectural or historic interest in the Braughing rural district because of its architecture.

"17th Century or earlier origin to front block which has original central chimney stack with 4 octagonal shafts. Considerable alterations and extensions in the 18th and 19th centuries and some modern work. The south-east front has 3 window range of double sashes with glazing bars, the central upper window a small oval. The north-west block is in early 19th century red brick. The roofs are mostly of slates, hipped at the south-west end of the front block."

Yours faithfully,

(Miss) M. WADDELOVE

Printed image digitised by the University of Southampton Library Digitisation Unit

ANNEX HCB II

Ministry of Housing and Local Government
Whitehall, London SW1

12th June 1967

H. C. Beddington, Esq.
Anstey Hall Farm
Buntingford
Herts.

Dear Sir,

Buildings of Special Architectural or Historic Interest

I refer to your letter dated 18th May 1967 regarding the listing of Anstey Hall as a building of the above category.

I have obtained the following observations from the Investigator who carried out the survey of the area. The interest of this building is chiefly in its main block which dates from the seventeenth century or earlier, and has an original central chimney stack. There were eighteenth and nineteenth century, and later, alterations. The survey for the Braughing Rural District was done before 1960, so subsequent alterations have not been seen, but those mentioned (in your letter) do not concern the chief elevation and it is doubtful if they would make any difference to our assessment. However the area is to be re-surveyed at a later date and the building evaluated again.

In addition to the foregoing observations I am passing on also a leaflet which I think you will find interesting and instructive. It explains the purpose, method and effects of listing and will, I hope, dispel any doubts you may still have on the question of the inclusion of your house. However, should you require further information please do not hesitate to contact me again.

Yours faithfully,

J. McWHINNIE

Printed image digitised by the University of Southampton Library Digitisation Unit

ANNEX HCB III

Ministry of Housing and Local Government
Whitehall, London SW1

21st July 1967

H. C. Beddington, Esq.
Anstey Hall Farm
Buntingford
Herts.

Dear Sir,

Buildings of Special Architectural or Historic Interest

I refer to your letter dated 30th June regarding the listing of your house, Anstey Hall Farm, Buntingford, and thank you for sending the photographs which show the house before and after renovation: as requested I enclose these with this letter.

The response of the Investigator is as follows:

"The photographs show without any doubt that this building is correctly listed. Its essential features remain and the alterations and renovations have been carried out in an excellent manner, keeping the character of the house."

May I now deal with your comment, made towards the end of your letter, that the Act "places the financial onus of preservation entirely on the owner concerned." This is not entirely true and although naturally the owner of a listed property has the same responsibility for its upkeep as the owner of any other building existing planning legislation makes no stipulation as to maintenance of listed buildings, and owners cannot be asked to spend money on repairs or maintenance. There are powers, in fact held by this Ministry and also local authorities, whereby grants can be made to assist in renovation or restoration and I now give this information, in case it may be helpful.

The Minister has the power to make grants for the repair and maintenance of buildings of outstanding historic or architectural interest. The standard for a building to qualify as outstanding for this purpose is much higher than that for inclusion in a list of buildings of special architectural or historic interest. Broadly speaking, to be outstanding a building must have some claim to be of national importance whereas a large proportion of listed buildings are of only local value. If you should wish to apply for such a grant you should write to the Secretary, The Historic Buildings Council for England, Sanctuary Buildings, Great Smith Street, London, S.W.1.

Local authorities have power to make grants and loans for the repair and maintenance of buildings of architectural or historic interest under the Local Authorities (Historic Buildings) Act 1962. You may therefore wish to write to the Hertfordshire County Council and the Braughing Rural District Council.

As the building is a dwelling, the provisions of the Housing Acts may also be of interest to you. The above-mentioned Rural District Council has power to make loans for the repair and improvement of housing accommodation and to make grants for improvements (not repairs) in certain circumstances.

I do hope that what I have said above will re-assure you as to the question of the listing of your property.

Yours faithfully,

J. MCWHINNIE

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. H. C. Beddington

SUBMITTED BY MR. J. G. EVE*

1. My name is James George Eve and I am a Senior Partner in the firm of Alfred Savill, Curtis & Henson, Chartered Surveyors of 63 Lincoln's Inn Fields, London, W.C.2. I have been a Partner in this firm for the last thirty-four years.

2. I am a Master of Arts of the University of Cambridge, a Fellow of the Royal Institution of Chartered Surveyors, a Fellow of the Chartered Auctioneers and Estate Agents Institute and a Member of the Central Association of Agricultural Valuers. I have been a Vice-Chairman of the Estate Management Committee of the Essex Agricultural Executive Committee. I am a Member of the Lord Chancellor's panel of Agricultural Arbitrators.

3. For the whole of my professional life of thirty-nine years, I have been actively engaged in the management, sale, purchase and valuation of landed estates in many parts of England, Wales and Scotland and more recently in Western Australia, on behalf of private owners, trustees, Statutory undertakers and Universities. I have also advised and acted for farm tenants in negotiations with their Landlords.

4. I have inspected Anstey Hall Farm on behalf of Mr. H. C. Beddington so that I can advise him as to the agricultural value and importance of his holding and the effect which a Third London Airport at Nuthampstead would have on the farm.

5. I produce a plan (JGE)† to the scale of 6 inches to 1 mile showing in blue the area of Anstey Hall Farm, some 695 acres, and hatched in red the proposed area of about 500 acres to be incorporated within the limits of the new airport.

6. Anstey Hall Farm is situated about a mile east of the B1368 Hauxton to Puckeridge Road and about one and a half miles south of Nuthampstead. The house and farm buildings lie in the village of Anstey which is extremely attractive and unspoilt. The surrounding countryside which is some of the most picturesque in Hertfordshire, is scheduled to the north, between Nuthampstead and Royston, as an area of great scenic beauty, and is zoned as a "white" area under the Town and County Planning Acts. The land itself rises and falls in gentle undulations ranging from between about 300 ft to 400 ft above sea level.

7. The farm area as stated above includes two sets of farm buildings and a very attractive farm house dating back to the 17th century (map reference 405329). The owner occupier, Mr. Beddington, lives in the house which has eight bedrooms and three bathrooms. Downstairs are three reception rooms with a large kitchen and a small dinette leading off it, a farm office and cloakrooms. It is heated by oil and has main water, electricity and calor gas. The house is grade II on the statutory list of scheduled buildings.

8. The garden is particularly attractive as it has been landscaped on the site of the old Anstey Castle, which is scheduled as an ancient monument, and is encircled by a moat that is partly dried up. There is also a small kitchen garden and greenhouse and a fruit garden at the front of the house.

9. There is room for seven cars. Over one garage is a small two-roomed flat which is modernised and decorated with a fully equipped kitchen and bathroom. There is another flint and clay tiled garage with various small outbuildings attached to it. The three remaining garages are slate roofed lean-to buildings of corrugated iron, together with two flint and slate roofed loose boxes and tack rooms. Including the flat, there are ten cottages on the holding, all of which are fully modernised. One of these, Hillside Cottage, is a scheduled building of grade III on the Provisional List of Scheduled Buildings. Mr. Beddington has planning permission for two more cottages and hopes to get permission for a third.

10. The farm buildings at Anstey Hall are comprised of the following: A brick and lath barn, a large brick and asbestos roofed potato shed, insulated, capable of holding 500 tons together with two brick and flint asbestos roofed lean-to's—two small slate roofed chicken houses—one 3-bay brick and asbestos open-fronted shed—a range of brick cement rendered slate roofed workshop and stores and bailer shed—a 2-bay corrugated iron and corrugated asbestos implement shed—a large two bay corrugated iron and corrugated asbestos combine shed which is wood framed and has sliding doors—a brick and slate tiled milling and mixing plant which has a sufficient output to cater for Mr. Beddington's proposed increase in his pig stock—a brick and slate barn store with a concrete floor; a brick and slate roofed pig fattening house holding 500 pigs, internally insulated with a breeze block extension. Near to the milling plant there are two large concentrate bins and two bulk corn store bins of 30 ton and 37 ton capacity.

A new building for heavy hogs is in the process of being built of breeze blocks and asbestos roof. The work is all being done with estate labour. All the yards are concreted.

11. At New Barns Farm there are the following buildings: A large brick and asbestos corn drier with

* See also p. 848.

† See attached wallet of maps and diagram. (Not reproduced in colour).

Printed image digitised by the University of Southampton Library Digitisation Unit

bins capable of holding 500 tons, and a corrugated iron and corrugated asbestos on-floor grain store, capable of holding 500 tons. All the yarding is concreted. A nine bay range of corrugated iron steel framed implement sheds; a large brick flint and corrugated asbestos fertiliser store with a concrete floor—a range of old-fashioned loose boxes, stable and cattle yards. The farm buildings are served with main water, and electric light and power.

12. The land is of easy working good quality boulder clay overlying free chalk which gives it a good free draining base thus making the soil warmer than the heavier types of clay and marl. This variety of soil, however, is prone to leaching if it is not adequately limed and cultivated to avoid clodding. Mr. Beddington's land appeared to be in good heart, free from leaching and well drained. Some of the chalk is capable of being worked commercially. The land all has gentle slopes.

13. The fields are mostly large and well set out, and all are well drained and ditched with most of the hedges removed. On the northern boundary is Northey wood about 37 acres mostly of underwood. There is an excellent system of roads serving all parts of the farm.

14. The main live stock enterprise is pigs, of which there are about 550 at present. To be successful, a modern pig fattening enterprise must be large and Mr. Beddington is at present building a new piggery with a view to an expansion of 3,500 per annum. He already has the milling plant facilities large enough to cope with the extra feeding requirements.

15. All the land is owner occupied, except for about an acre, which Mr. Beddington lets off for £3 a year. The tithe has been redeemed and the shooting is in hand. Mr. Beddington also owns half the village school playground which he hopes to dispose of to the Hertfordshire C.C.

16. He has been farming Anstey Hall Farm for the past twenty years and has expended a considerable sum on the house and farm buildings. In all over £65,000 has been spent in the last twenty years on capital improvements, including substantial sums on the farmhouse. He will not have a chance of recouping fully the benefits of this expenditure if the farm is purchased compulsorily, because immediately a capital investment becomes operative, the advantages will be reflected in increased returns. While most of the capital improvements will be beneficial for many years, the cost would normally be written off over periods of up to twenty years. Therefore, in an instance such as this, he will be losing a number of years of capital reclamation as well as the enjoyment of increased returns.

17. There is an electricity wayleave across the farm and a 400 kV pylon line runs along the southern boundary of the farm, but there are no pylons actually on Mr. Beddington's land.

18. The effects of the possibility of an airport at Nuthampstead have already begun to dislocate life in this area. Labour is becoming upset and when recently Mr. Beddington advertised for a Tractor Driver, he had only two replies, one of whom was highly suitable and would have taken the job were it not for the threat of the airport.

19. The Roskill Report on *Site Information for Stage II* of the Local Hearings concerning Nuthampstead* shows that if the land as proposed was purchased compulsorily, Mr. Beddington would be left with a small area which would be quite uneconomical to farm as a single unit. He himself is now over 50, and, should he lose his farm, it would be very difficult for him to re-establish himself elsewhere and build up as an efficient unit as he has now, which is undoubtedly one of the best farms in Hertfordshire. It is his wish to remain on the farm for the remainder of his life.

20. A farm of this calibre and size, is precisely the sort of farm that the country cannot afford to lose. It is situated in an area of high cultivation in a region containing some of the most productive land in the South-east. The more that large useful areas of predominantly arable land are split up by banks of urbanisation, the more the farming pattern of the area is forced to change. Land not directly affected, as in this instance for the building of a new airport, is inevitably affected as a result and is continually subjected to upsets such as pylon lines, gas, water and sewer wayleaves, new motorways and town development. Whilst it might seem at first sight that the land is a good choice for an airport site being under populated, however, because of the value of the land as agricultural land being so high, and the pattern of farming in the area so well established, in large economical units a new airport would not only take up a good deal of very valuable arable land but also disrupt the equilibrium of a good deal more.

21. In modern farming, it is essential that the economies of large scale production are employed to get the most return for the least amount of expenditure. It is only possible to economise in this way on a large scale holding. Hedges have been removed and ditches dug to convert the fields into large manageable areas that can be tackled quickly and efficiently with modern machinery. This particular farm has naturally large sloping fields ideal for modern machinery and is of an acreage large enough to justify expensive equipment for grain handling and storage and the pig unit which on a small farm would cost out at far more per ton and per pig. The holding is compact in shape, extremely well roaded and is served by two sets of farm buildings which contain modern equipment. The farm's overhead costs are therefore kept down due to the ease of management.

In summary, the farm could be described as something of a model farm as far as ease of management, general layout and the combination of enterprises are concerned. If, as would seem to be this Government's policy, we should enter the Common Market, this is exactly the sort of competitive and efficient farm that would be needed to hold its own.

---

* (HMSO; 6s.) Reproduced at p. 601.

Printed image digitised by the University of Southampton Library Digitisation Unit

22. According to the best interpretation of the plan* attached to the Roskill Report, if the Airport is sited at Nuthampstead, it is proposed to acquire about 500 acres of Mr. Beddington's land. This will leave a unit of approximately 195 acres with no house and no buildings. The fields here are naturally split into rather awkward shapes owing to the course of the River Quin. The soil is however more alluvial and lighter. As earlier stated, a unit of this size is not of itself economical because the economies of large scale production would not apply, and the cost of putting up new buildings and a new house, added to the fact that the land would march with the airport boundary, would be an entirely unrealistic expenditure when it is compared with the possible returns a holding of that size would be capable of producing. The remaining land could either be annexed to an adjoining holding or be taken with the rest of the farm if the airport is built at Nuthampstead.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 2

Mr. G. Berry
Mr. L. G. Vincent
Mr. J. Blair
(*Stevenage Development Corporation*)

Mr. D. Robertson
Mr. M. Y. Watson
Mr. T. J. Nardecchia
Mr. T. Sapsed
Mrs. E. I. Cranwell
Mr. L. F. Revell
Capt. T. H. Luckock
Mr. E. F. Wisbey
(*Nuthampstead Preservation Association*)

Mr. J. E. Y. Hawkes
Mr. D. B. Wallace
Mr. R. Trigg
Mr. H. C. Balfour
(*National Farmers' Union*)

Country Landowners' Association

Mr. J. L. Logue

Oral evidence was taken from these witnesses on Day Two, Tuesday 10 June 1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Stevenage Development Corporation

SUBMITTED BY MR. G. BERRY

I am Geoffrey Berry. I am a Bachelor of Science of the University of Manchester and a Member of the Institution of Mechanical Engineers. I have been in work on acoustics and problems of noise control for the past twenty years. For seven of these years I was responsible for the noise control work of the National Engineering Laboratory at East Kilbride and for the past seven years I have been Managing Director af the Acoustical Investigation and Research Organisation Limited. I am a member of four committees of the British Standards Institution and am Chairman of the Building Acoustics and Measurement and Rating of Noise from Machines Committees. I am a member of the Aeronautical and Civil Engineering Committee of the Science Research Council.

1. In preparing evidence for this hearing I have kept three main considerations in mind:

(a) that I am required primarily to comment on the effect of the location of the airport at Nuthampstead on the noise experienced in Stevenage.
(b) that the findings of the Committee on the Problem of Noise (1963)* probably represent the most widely accepted basis for judging the effect of aircraft noise at the present time.
(c) that the Report† of an International Conference on the Reduction of Noise and Disturbance caused by Civil Aircraft (published HMSO 1967) probably presents the best overall picture of likely future trends in aircraft noise.

2. Without access to the appropriate detailed information it is necessary to accept, as a basis for comment, the NNI contours published by the Commission as drawings numbered CTLA 2/2‡ and CTLA 2/3‡ for the two-runway and four-runway airports respectively.

This acceptance is subject to three reservations as follows:

(a) it is difficult to accept unreservedly the assumption that noise certification regulations will be introduced and that these will lead to a reduction in the noise effect of aircraft by 10 NNI over the next twenty years (even with the recognition of the added sub-sentence "that half this reduction will be off-set by growth in aircraft weight").
(b) it is necessary to consider lower NNI contours, especially the 35 NNI contour, and I have estimated the position of the 35 NNI contours for the two-runway and four-runway airports, by extrapolation from the Commission's publication and have shown these in relation to Stevenage itself in the maps numbered 1*, 2*, 3† and 4†.
(c) in accepting as a basis for comment, the published contours and implied flight paths it is necessary to bear in mind the Commission's statement (paragraph 12) that these only give an indication of the areas likely to be affected. This means that while the contours for a four-runway airport may not, in the event, be centred on Stevenage the contours for a two-runway airport may not partially avoid it.

We are only able to assume that it is likely but not certain that the four-runway contours would centre on Stevenage and possible but unlikely that the two-runway contours would do so.

3. Taking the published contours as a basis for assessing the general reaction of the community to noise we must first consider the significance of the various NNI levels. The Wilson Report‡ (para. 302) reached the tentative conclusion that "the maximum acceptable level lies in the region between 50 and 60 NNI by day" and that (para. 304) "the same degree of annoyance is produced at night at a NNI which is 15–20 NNI lower than the corresponding NNI during the day. (In other words, the critical stage, which is 50–60 NNI by day, is 30–45 NNI by night)".

The best published evidence is that of the Social Survey in the Vicinity of London (Heathrow) Airport and presented as Appendix XI of the Wilson Report. The statistical average response to the question "Does the noise of aircraft bother you very much, moderately, a little, not at all ?" produced the result shown in figure 2 of page 208 (The left hand scale of rating being related to the solid line on the graph.)
This places the *average* annoyance rating as:

Very much	at	60 NNI
Moderately	at	44 NNI
Little	at	32 NNI
Not at all	at	7 NNI

On this basis the ranges covered by the various degrees of annoyance may be said to be as follows:

Very much	over	52 NNI
Moderately		38–52 NNI
Little		20–38 NNI
Not at all	below	20 NNI

These are day time figures and the corresponding figures for night-time would be 15–20 NNI less.

* *Noise: final report.* (Cmnd. 2056) (HMSO; 19s. 6d.).
† Aircraft Noise (HMSO; 8s. 6d.).
‡ See attached wallet of maps and diagrams.

* Between pp. 672 and 673.
† See attached wallet of maps and diagrams.
‡ Cmnd. 2056.

Printed image digitised by the University of Southampton Library Digitisation Unit

4. These are ratings derived from a reasonably large scale social survey around Heathrow. We cannot be sure that the results of this survey would be appropriate to Stevenage some fifteen years later, i.e. by the time of the completion of the airport.

There is, at the very least, some reason to suspect that the corresponding criteria would occur at lower NNI values as a result of the different ambient noise conditions in the two situations. Stevenage as a new town, has been specifically designed with regard to amenity and this results, amongst other things, in a lower ambient noise level than is enjoyed in comparatively random (or natural) development as around Heathrow. The principal through roads and the railway, as well as the industrial areas, are quite clearly divorced from the greater part of the residential areas. It is suggested that the gradings of the previous paragraph do not overestimate the degree of annoyance ("bother" in the terms of the Social survey question) which exposure to noise at various NNI levels is likely to cause in Stevenage. If anything, the ratings may be up to 5 NNI too high. It is certainly suggested that the rating of paragraph 14 of the Commission's publication is not appropriate since it suggests that the exposure would become annoying at 50 NNI. It would be more appropriate to say that at this level the exposure would become intolerable.

The graphs shown as figures 4, 5, 6, 7 and 8 of the Wilson Report (pages 212 and 214) make it quite clear that serious annoyance occurs well below the 50 NNI level and that the range of 38–52 NNI where the answer to the surveys question was "moderately" does represent a serious degree of nuisance. This may be as low as 33–47 NNI for Stevenage.

The question of night time operations is also one which has a bearing on the results of any social survey. The original survey asked questions, the answers to which are related to the *day-time* NNI levels. Thus in figure 3A 50 per cent of people were disturbed in sleep (wakened up) at 40 NNI, as measured by day.

It is quite clear that if the proportion of night flying increases the day-time NNI level would be lower for similar disturbance and, therefore, the response to the general question of degree of annoyance would occur at lower day-time NNI levels.

Since the time of the original social survey there has been some increase in night flying and there is continuing pressure for further increases in night flying. This means that, in the absence of any published NNI contours for night-time we must again consider that the social survey's findings for response to day-time NNI levels is likely to be over generous rather than unduly severe.

5. It is not possible to discuss very seriously the assumption in the NNI contours "that noise certification regulations . . . over the next twenty years . . . growth in aircraft weight" since it is not clear as to what this assumption really is. In order to comment quite fairly on the contours it is desirable that, at some future stage, a clearer exposition of the assumptions underlying their preparation is made. It is possible, however, to say that it would be hazardous to base any forecasts on such an assumption.

The manufacturers of aircraft and especially of aircraft engines are very conscious of the importance of the problem of noise and the development of engines with high by-pass ratio is likely to introduce a favourable step in the function of noise output in relation to engine power. There is no reason, however, to believe that engine powers will not continue to rise and that the favourable "step" will not be climbed once again.

With regard to the possibility of a reduction of disturbance from aircraft noise in the future the report of the International Conference is very guarded and throughout this publication a number of very pertinent reservations and observations are made (see e.g. page 62 paras. 4 and 5; page 72 para. 2; pages 78–9 paras. 2.2–2.6 and page 53).

At this stage one can merely suggest that, in its publication, the Commission may have laid itself open to a charge of unreasonable optimism and that the contours for the four-runway airport might be at least 5 NNI too low at each step.

Certainly the relationship between the NNI contours for the two-runway and four-runway airports bear little relationship to the increases in the contours estimated over a nine-year period in figure 1 and figure 2 inserted between pages 218 and 219 of the Wilson Report.

6. Taking the published NNI contours and my own estimate of the location of the 35 NNI line and applying them to Stevenage the numbers of people exposed to the different levels are as shown in Table GB/1. The population figures shown are those for the existing population, as at 30th September 1968, for the estimated population at 1975 and for the population on completion of the programme under the existing Stevenage Master Plan, 1966.

The Stevenage Development Corporation is specifically charged by the Minister of Housing and Local Government with the implementation of this plan.

The Table also shows the numbers of dwellings involved at each stage.

Arising out of the table there are four points which I would particularly wish to draw to the attention of the Commission:

(i) for the four-runway airport the whole of the present and planned population of Stevenage would fall within the 35 NNI contour, 70 per cent of the planned population would fall within the 40 NNI contour and 30 per cent of the planned population would fall within the 45 NNI contour

(ii) the figures for the two-runway airport are much lower but, even so, 30 per cent of the existing population would fall within the 35 NNI contour

(iii) a realignment of the two-runway airport flight paths could produce population figures exposed to various NNI levels which would be as severe as those for the four-runway airport.

(iv) in the event of a four-runway airport, of the present population alone 12,500 people would be exposed to noise levels of 45–50 NNI whereas the table of paragraph 14 of the Commission's publication lists only 10,000 for the whole of the

Printed image digitised by the University of Southampton Library Digitisation Unit

area influenced by the airport as being affected by these contours.

The final point above is not intended as a criticism of the published table which is clearly stated as being based on the 1966 Census. This may account for the discrepancy. This final point, however, taken with the other three leads to the inevitable conclusion that, as far as noise is concerned, the position of Stevenage is of outstanding importance.

Stevenage is the principal centre of population in the area to the immediate south-west of the possible site at Nuthampstead and constitutes the major centre in a string of populated areas distributed along the Great North Road. It follows that any re-routing of flight paths which was advantageous to Stevenage would result in detriment to the other populated areas.

For this reason the Nuthampstead site must, on grounds of noise, be classed as an intrinsically bad site. A good site for a major airport in this country would be one with comparatively few inhabitants, preferably in widely spaced centres, in the arc from south to west of the runways.

The question remains as to how much weight should be attached to the nuisance caused by the noise.

7. On the basis of the published contours and the Wilson Report it must be expected that, at least 73,000 people (70 per cent of the planned population) would be subject to noise which would "bother them moderately" and that, as the social survey showed, the degree of nuisance would be very real and significant in terms of day-to-day life and happiness. If the reservations and arguments which I have previously outlined are to be taken into account this statement can only be described as the most moderate which can be made in the circumstances.

There are very real grounds for arguing that the people listed as being exposed to 45 NNI and over may, in fact, be exposed to 50 NNI and over and that these conditions would result in intolerable conditions.

This would mean that special sound insulating measures would prove necessary in 9,200 dwellings at an estimated total cost in the range of £2·5 m. to £4·0 m., for Stevenage alone. It is not really possible for me to put in financial terms the cost of the loss of amenity to the population of the town but, even at some quite arbitrary low figure such as £10 p.a. per person this would represent a capital sum of the order of £10·5 m. for Stevenage alone.

8. Turning from loss of general amenity to special problems, it is necessary to use a different approach when considering the effect of noise on schools. In this case the passage of an aircraft at a high level of noise may cause a breakdown in the teaching process and the loss of effective teaching time may be out of all proportion to the actual duration of the noise. Once the attention of the class is broken it is necessary to recapture this attention. It is generally agreed that a level of noise of 55 dBA or over will cause such a break, this level occurring in the classroom. Where the school relies on natural ventilation the sound insulation of the facade with the windows open even a little, will not be more than 10 dB (Wilson Report Para. 122). This means that the maximum external level which can not be expected to disturb the tuition process is 65 dBA.

There is not a simple relationship between the general unit (dBA) and the particular unit (PNdB) used especially to assess the noise of an individual aircraft but an average figure would suggest that 13 should be added to the dBA value to estimate the PNdB value. Thus the maximum noise due to aircraft which could reasonably be said not to be likely to break the teaching process would be about 78 PNdB.

I have made measurements of noise near Fifield, at a distance of approximately 10 miles from the runways at Heathrow and observed a range of levels from 81 to 98 PNdB for aircraft passing overhead. Since a line drawn at a 10 mile radius from the end of the runways at Nuthampstead divides Stevenage quite clearly, it must be assumed that this order of level would be experienced in the town, assuming aircraft no noisier than those of the present day. A single occurrence in the course of a day could clearly be tolerated and it can be argued that even a single occurrence in the course of a teaching period could be tolerated. If, however, the number of occurrences rises to 2 or 3 per hour, or 24–36 in a 12-hour period then it would undoubtedly prove necessary to keep the windows closed in order to prevent a severe disruption in the operation of the school.

Exposure to a noise of 78 PNdB, 24 to 36 times a day, would result in a very low NNI rating of 19 to 21 NNI. Recognising that the 78 PNdB is the highest level which is unlikely to cause disruption, I suggest that 88 PNdB is the highest level which could not be said to be likely to cause disruption. Exposure to noise at 88 PNdB for 24 to 36 times a day would result in a rating of 30 NNI (29 to 31). I have no detailed information of the number of aircraft movements envisaged but it is quite evident that these will be well over 100 per day as far as Stevenage is concerned and that all the schools of Stevenage will suffer disturbance from the four-runway airport and that those within the 35 NNI contour for the two-runway airport must expect to suffer disturbance.

I have prepared table GB/2 which shows the number of schools and teaching spaces under the full development plan and at 30th September 1968. The total number of pupils to be expected in the schools on completion of the plan will be of the order of 16,500 and this will represent about one-third of the pupils affected in Hertfordshire. This again reflects the importance of Stevenage New Town in the complete picture.

Schools in Stevenage are the responsibility of the Hertfordshire County Council so that the Development Corporation would not be directly responsible for the necessary protective measures. The Corporation's obligation to its inhabitants would require it to urge such protective measures. At an approximate cost of £2,500 per teaching area, this would involve a total cost of the order of £2 m.

The essential measures would consist of the provision of mechanical ventilation and air-conditioning, together with the modification of all windows to fixed single heavy glazing. It is necessary to point out that very simple ventilation techniques which may be appropriate in domestic conditions and such as are outlined in Appendix XIII of the Wilson Report, are not adequate in classrooms.

Printed image digitised by the University of Southampton Library Digitisation Unit

9. The necessary provision of additional sound insulation will extend to other premises where continued speech communication is important, for example to council chambers, courts, churches and to the extensive office accommodation throughout the town. I am not able, at this stage, to estimate the cost of these additional measures.

10. To summarise it is suggested to the Commission that the location of the airport at Nuthampstead would seriously detract from amenity in Stevenage, due to noise exposure, and that extensive remedial work would prove necessary.

Furthermore any gain to Stevenage, by re-routing could only be gained at the expense of its neighbours.

It is argued that Nuthampstead is basically an unfavourable site because of the string of populated areas which encompasses it to the south and west.

TABLE GB/1

Population and dwellings within published NNI contours at Stevenage

	2-RUNWAY AIRPORT			4-RUNWAY AIRPORT		
	Over 45 NNI	*Over 40 NNI*	*Over 35 NNI*	*Over 45 NNI*	*Over 40 NNI*	*Over 35 NNI*
As at 30th September 1968						
Population	—	2,700	33,500	12,500	41,700	62,000
*(Dwellings) (approx.)	—	770	9,600	3,600	11,900	17,700
Estimated for 1975						
Population	—	2,700	34,000	20,400	51,600	80,000
(Dwellings)	—	770	9,750	5,830	14,700	22,800
At full development of plan						
Population	—	5,700	46,700	32,100	72,600	105,000
(Dwellings)	—	1,650	13,300	9,200	20,750	30,000

* Number of dwelling units based on assumption of 3·5 persons per dwelling unit.

TABLE GB/2

Schools in Stevenage subject to severe disturbance by aircraft noise

	2-runway	4-runway
Existing schools	18	38
Total schools in plan	24	52
Total teaching spaces	336	788

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Stevenage Development Corporation

SUBMITTED BY MR. L. G. VINCENT*

1. I am planning consultant to the Stevenage Development Corporation and have been associated with the new town for the last twenty years. I was responsible for preparing the 1955 and 1966 Master Plans for the New Town from which has flowed, under my direction, the bulk of the development. In addition, I have been responsible for a number of new and expanded town projects and am, therefore, experienced in land-use and environmental problems engendered by large-scale planning proposals and community developments.

2. **Planning background**

Stevenage was designated as the first new town under the New Towns Act of 1946 and its first Master Plan was approved in 1950. What was, at that time, a small market town of about 6,000 with historic attachments from Roman times, has become; in 1969, a thriving community of 62,000 persons, and is increasing at a net rate of about 3,000 persons per annum.

3. The "raison d'etre" for the establishment of new towns—the necessity to combat "overspill" from congested urban areas as well as accommodating an estimated 40 per cent population increase—continues to the present day. Because of the increase in population and industry in the south-east region and the need to meet housing needs of the metropolitan area, the Ministry of Housing and Local Government requested the Stevenage Development Corporation, in 1962, to prepare plans for expansion beyond the original target of 60,000. I therefore examined the feasibility of expansion to 150,000 persons and concluded that, within the terms of reference, about 140,000 persons could be accommodated in the expanded town with the addition of land to the west of the A1(M). The Minister determined that there should be no expansion west of the motorway but designated an additional 100 acres to the north-east of the then existing designated area.

4. In 1965, the Development Corporation prepared a new Master Plan with the following terms of reference from the Ministry:

> *to accommodate within the expanded designated area as large a population, including as many Londoners as possible, as would be compatible with good planning and with densities comparable to those already achieved.*

5. Accordingly, the Master Plan, 1966, recommends a population of 105,000 by 1995 and this plan was subsequently approved by the Minister in June, 1967, after a public inquiry. I produce a copy of the plan and report.† The Development Corporation are now working to this new plan and have committed large-scale housing, central area and industrial projects to the ground to meet future planned requirements.

6. It was the expressed intention of the Government that the new towns should be "self-contained and balanced communities for working and living". With this goal in mind, and for the purposes of estimating the effect which the third London Airport would have on Stevenage, the planning principles and policies of the Master Plan, 1966 must be considered.

7. **Housing**

The bulk of the residential areas of Stevenage are nearing completion except for the penultimate phase to increase the population to 80,000 by 1975. At this stage, there will be approximately 23,000 dwellings which will be increased to about 30,000 by the end of the plan period, i.e. 1995. This assumes, of course, that no further expansion of Stevenage is envisaged in the meantime. An expansion to 150,000 population would bring the number of dwellings in the town to approximately 50,000. All the residential areas have been planned on a basis which ensures high standards of environment at an average density of 50 persons per acre.

8. **Employment and industry**

The industrial areas of Stevenage have been planned to allow for segregation from residential areas while still permitting easy access between home and work. Fifteen per cent of the Stevenage working population only are employed outside the town but more than double this number come into Stevenage to work. Ultimately, it is envisaged (within present targets) that about 54,000 persons will be employed in the town. There is, at present, a programme of expansion for existing industries and for new projects for which large-scale engineering works are in hand. In addition, there is a large expansion of service industry in connection with the extension of the central area and for the provision of shops, offices, public buildings, etc., as well as educational, welfare and other social services.

9. **Shopping and service trade requirements**

The town centre of Stevenage today provides a major focus for the town's population as well as for a number of people from nearby towns and villages within a 6 to 8 mile radius. Generally, it acts as a regional centre for North Hertfordshire. Future expansion will see an extension to the shopping precinct and greater provision for parking as well as more offices, municipal buildings, extension of the College, law courts, entertainment, cultural and recreational buildings, and other similar uses.

* See also p. 857.

† Not reprinted. Available from Stevenage Development Corporation.

Printed image digitised by the University of Southampton Library Digitisation Unit

10. It is expected that at the end of the plan period in 1995, the regional draw, estimated at 31,000 combined with the town population of 105,000 will make a total of 136,000 and the necessary additional floorspace has, therefore, been provided for. The population in this regional area will be about 165,000 and if towns within a 10-mile radius are added as being within its sphere of influence, the figure will be about 226,000.

11. Education

There are 40 schools in existence in Stevenage, with 15 more provided for by the end of the plan period. In addition, there is, in the central area, a College of Further Education which has recently been expanded and has a programme of further expansion. I understand that evidence will be given on behalf of the Hertfordshire County Council relating to the number and situation of schools in the affected areas, including Stevenage, and the probable consequential works and expense which would be involved if an airport were to be sited at Nuthampstead.

12. Effect of Nuthampstead as third London airport site

It has been estimated that the creation of such a major airport will necessitate the primary employment of 45,000 persons by 1975 and probably about 65,000 by 1995, which, together with secondary employment, envisages that the total population including dependents, could grow to about 400,000 as the airport develops. The construction of a new town or possibly two would appear to be one solution to meet these requirements but this immediately poses a number of problems. Stevenage is more than aware that the creation of a new town is a long and extremely involved process and that even with the benefit of past experience time is needed to plan and get major works going. To this must be added the problem of scarcity of constructional labour which is endemic in the region and which must be overcome before actual construction can begin or be completed. Since the inception of Stevenage New Town, there has been a chronic shortage of constructional and more particularly, building workers in the area. In addition, the presently proposed development of new towns at Ipswich, Peterborough, Milton Keynes and Northampton, together with proposed expansion of the existing towns of Luton and Bedford, would exacerbate this problem to a degree which may make it impossible to keep within a modest programme of works in the region. There is bound to be considerable delay but an immediate need for housing within a 10 to 20 mile radius of Nuthampstead would quickly develop. Stevenage is, at present, only 17 miles by road from Nuthampstead and this would be decreased when the proposed east–west motorway, linking Luton with Harwich and intended to pass through the northern parts of the designated area of Stevenage, is completed. As an already well-established community with a high quality of services, it is believed that a large number of persons employed at Nuthampstead would seek accommodation in Stevenage. This would create a need for housing which cannot be met under present programmes without displacing persons for whom this new town was intended. This could well be so even if one or two new towns are created; if they are not, the problem will obviously be more acute.

13. It is estimated that a substantial proportion of the population connected with the airport would endeavour to find housing accommodation within easy commuting distance of the airport. Particularly in the early years of development would this be so, when the attraction of settled towns is much greater than the social upheaval to be experienced in new communities in the formative stage. The welfare, educational, cultural, social and entertainment facilities always lag behind in large new developments and the new towns' experience shows it takes about twenty years for a community to begin to settle down. It will take at least another generation beyond that to show a normal pattern of settlement. The pressures, therefore, on existing towns, in spite of an intention to build a new one for the airport, will be very marked and could cause extreme difficulties, not least to Stevenage where a carefully planned programme of development is at its peak and to which heavy commitments have been made in the years ahead. The second generation of the new town must be housed and this commitment is a prior consideration in the long-term programme, mainly covering the period 1975 to 1995.

14. Effect on employment

The employers of Stevenage, particularly in the industrial area, do not find it easy to obtain all the labour they need, and therefore rely heavily on the housing programme of the Development Corporation which induces immigration. Should Nuthampstead be chosen as the third London airport site, competition for labour could have grave effects on Stevenage in two ways.

15. Firstly, it could cause enormous problems and have economic repercussions on the town itself if a severe labour shortage occurred, particularly if the wage level were higher than in Stevenage. Employees for the new town's expansion proposals are taken care of by induced immigration from the London region and elsewhere and continuing prosperity will depend on further employees coming from the second generation of the early settlers. This is all part of a carefully planned exercise and a major upset in the process could be disastrous to the town.

16. Secondly, the move by workers to live in Stevenage but work in Nuthampstead would destroy the original concept of self-containment which has been one of the goals of the new town and would negate the Industrial Selection Scheme under which Development Corporation houses are mainly allocated to persons required for the new town's industries and services. The latter has been strong Government policy since the inception of the new towns.

17. As previously mentioned, an increased strain will be brought to bear upon residential areas by new employees wishing to live in Stevenage but to work at the airport site.

18. Effect on traffic and transportation

Were an airport to be built at Nuthampstead, the probability is that the proposed east–west motorway and A1(M) would carry a considerable volume of traffic

Printed image digitised by the University of Southampton Library Digitisation Unit

between the airport and London areas westward. Such major transportation routes are largely a regional consideration. However, commuter traffic from Stevenage to the east–west motorway and A1(M) would overload the internal road system, particularly as the orientation of principal roads is primarily for internal use. A different directional emphasis could cause an adverse situation in the residential areas.

19. **Amenity, noise and nuisance considerations**

The effect which noise and disturbance would have upon Stevenage is clearly demonstrated by Mr. Berry.* The effect on a carefully planned environment could be nothing less than disastrous.

---

* p. 849.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Stevenage Industrial Employers Group

SUBMITTED BY MR. J. BLAIR*

I am John Blair. I am a Bachelor of Arts of the University of London. I am Personnel Manager of the British Aircraft Corporation Guided Weapons Division, Stevenage, and have been concerned with personnel management at Stevenage since 1960. The Employers Group represents thirty companies in Stevenage employing a total of about 20,000 persons. The majority of persons engaged in primary employment with the companies consists of skilled and semi-skilled workers.

At the present time the companies have export orders for over £100,000,000.

I am Chairman of a committee set up by the Employers Group to investigate on its behalf the problems of availability of labour in Stevenage. The committee is concerned at the present shortage of suitable skilled and semi-skilled workers in the town and the surrounding area.

If an airport were to be established at Nuthampstead, which is within 17 miles of Stevenage, and likely to become more accessible by road, it would make an already difficult labour situation considerably worse, particularly as a substantial proportion of the workers in Stevenage are engaged in electronic and aero-space industries, and would, therefore, be qualified for aircraft engineering and maintenance work.

In addition, the establishment of such an airport could give rise to further difficulties by causing a competitive wages spiral.

* See also p. 859.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Nuthampstead Preservation Association

SUBMITTED BY MR. D. ROBERTSON*

1. I give evidence as Chairman of the Nuthampstead Preservation Association. I am a Machinery Merchant and Poultry Farmer by occupation. I am also Chairman of the Barkway Parish Council and Rural District Councillor for Nuthampstead, Barkway and Reed.

2. Directly it was announced that Nuthampstead had been nominated by the Commission as one of the short-listed sites for the third London Airport there was immediate and spontaneous reaction in the locality against the proposal.

3. A series of informal meetings attended by people of all walks of life took place in the locality and a caretaker Committee was appointed with a view to forming the Nuthampstead Preservation Association if it became clear that this was the wish of the majority of those living in the area.

4. A Public Meeting was accordingly held at Barkway Village Hall on the 17th March 1969. Despite exceedingly bad weather over a thousand attended. Both the Hall and a nearby overflow building were crowded, many having to stand whilst others had perforce to remain outside. By an overwhelming majority this meeting passed a resolution that the siting of a third London Airport at Nuthampstead should be resisted by all legitimate means.

5. The Meeting appointed a Council consisting of a representative from each village or association in the area which at that early stage had indicated their intention to be associated with the formation of the Nuthampstead Preservation Association and its aims. Since then many others have done the same.

6. I attach, marked "D.R.1.", a list of the villages which have asked the Association to represent them and which are affiliated to the Association. "D.R.1." also provides the name and address of each village's representative on the Association's Council.

7. The first meeting of the Council was held on the 23rd March when Officers were elected and Regulations of the Association approved. Attached hereto is a copy of the Regulations marked "D.R.2."† At subsequent meetings executive Committees were appointed in accordance with the Regulations.

8. In the meantime many villages and hamlets had held their own meetings and it became clear that opinion was overwhelmingly against an airport. We accordingly consulted Solicitors and Counsel and on their advice made contact with the National Farmers Union and the County Councils. Having in mind that the Commission wished to avoid repetition, we agreed that the responsibility for presenting the major agricultural case should be left to the N.F.U. Similarly, we decided to avoid duplicating the County Councils' general town planning case at both local and "county regional" levels.

9. We understood that the Commission particularly wished to gauge the effect of an Airport on the locality and ascertain the reaction of local opinion. We decided that the best way of finding this out would be to distribute a questionnaire to as many villages in the area as time permitted. This was done and attached hereto, marked "D.R.3.", is a copy of the questionnaire.

10. At the beginning of it are some notes provided for the guidance of the village representatives, followed by the first part consisting of questions which sought *factual information*. We worded the questions as shortly as possible hoping that this would be of assistance to those who collected the information.

11. The object of the second part of the questionnaire was to ascertain *reactions* and *local opinion* in as comprehensive and fair a way as possible. We, therefore, decided that over as wide an area as we felt we could tackle, each householder should be asked to say whether he was FOR or AGAINST the siting of an airport at Nuthampstead. Accordingly, we prepared a form (reproduced at p. 77).

12. The Association appreciated that in the country area we were covering there would be some who, by their nature, would be disinclined to sign any form. There would be others who were away from home or, for one reason or another, would not return their forms for the reasons given by Mr. Watson in his evidence. Nevertheless, we hoped that this method would provide a much more accurate picture of the local reaction of the 93 villages which supplied this information than would be possible by the circulation of petition forms.

13. In fact in the early stages we did arrange for ordinary type petition forms to be printed. We did not, however, proceed with these once it had been decided to test the reactions and local opinion by means of the FOR or AGAINST poll.

14. The Association could have proceeded with having petition forms distributed in the towns and extra large villages where the time available made a door to door poll impracticable. Rightly or wrongly, however, we thought that, although we could have collected a great many signatures, they would not have been of any real value to the Commission. Moreover, many town Councils had by now come out against the proposed siting at Nuthampstead and, in many cases, asked the joint County Councils to represent them. For these reasons, and particularly because it would have been impossible for us to have checked the accuracy of

* See also p. 866.

† Available for inspection by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

petition forms, we believe that the decision we reached was correct.

15. The only places which asked for the questionnaire but did not complete the FOR or AGAINST part of it were the towns or large villages of Royston, Great Shelford, Knebworth, Manuden and Much Hadham. The reasons they did not do so were those I have given. They were, however, able to complete their factual returns which will be put in by Mr. Watson in his evidence along with those of the other villages.

16. The remaining sheets of the questionnaire ("D.R.3.") are, I think, self explanatory. They include an analysis sheet which was supplied to each village representative who in most, but not all, cases was also its member on the Association's Council. They also include some additional and more detailed questions for the villages which would disappear altogether, or were immediately adjacent to the perimeter of the Airport. (Later, when the Commission's booklet showed a re-alignment of the runways, some additional villages were asked to supply this information.)

17. The answers to the different parts of the questionnaire were gathered together by the Association and analysed by a team under the Chairmanship of Mr. Watson* who will give evidence thereof. His analysis was then passed to Mr. T. J. Nardecchia† who will give a local "town and country" planning appraisal of the result in his evidence.

18. The overwhelming result of the FOR or AGAINST opinion poll completely bears out the view of my Association that the vast majority of people of all walks of life in the Nuthampstead area are solidly and firmly against the siting of an Airport there.

19. We have tried to avoid publicity stunts but tremendous and spontaneous enthusiasm has been shown. Money has been raised in every village—sometimes in most ingenious ways. Well over 3,000 people have already contributed, in addition to the hundreds who are supporting village fund raising efforts. All this so that they may be adequately represented at this Hearing. The number grows daily—a fact not in the least surprising bearing in mind the comparatively short space of time which has elapsed since the announcement of the short-listed sites. We are still receiving new offers of help from villages who are only now realising what the impact in the area would be.

20. In conclusion, I believe it my responsibility as the Association's Chairman to make a final point. It is one I had not perhaps fully appreciated myself at the outset and which I believe the Commission should know. In this essentially rural countryside events have proved that there is a tremendously strong local village community spirit. Without exception each village is quite horrified that a way of life, going back for many generations, could be lost for ever.

D.R.1

Affiliated villages

Village/hamlet	*Representative*
Abington, Gt.	M. I. Hannah 10 Magna Close, Gt. Abington
Abington, Lt.	P. F. V. Ward 29 Cambridge Road, Lt. Abington
Abington Piggotts	L. Sale The Darby & Joan, Abington Piggotts
Albury	Mrs. M. L. Ayres Patmore Cottage, Albury
Amwell, Lt.	J. C. Walker 39 Mount Pleasant, Hertford Heath, Hertford
Anstey	H. C. Beddington Anstey Hall
Ardeley	E. Howard Carter Ardeley Bury, Ardeley, Nr. Stevenage
Arkesden	M. Cardozo Thatches, Arkesden
Arrington	E. Ablett Pump Hall, Arrington
Ashdon	Miss A. M. L. Collins Skye Cottage, Ashdon, Saffron Walden
Ashwell	C. Fordham Odsey, Ashwell
Aspenden	C. Berry Rose Cottage, Aspenden
Babraham	R. W. Ash 14 The Close, Babraham
Balsham	Mrs. A. S. Ford Balsham Place, Balsham
Barkway	D. Scott Cokenach Estate, Barkway
Barley	J. F. Easton The Old Hall, Barley
Barrington	B. R. Dabner 49 Glebe Road, Barrington
Benington	R. H. Bott Benington Lordship, Benington
Berden	C. D. Serby The Old Kings Head, Berden, Saffron Walden
Braughing	C. K. M. Aubyn Larks Hill, Braughing
Brent Pelham	Capt. C. G. E. Barclay Brent Pelham
Buckland	Mr. Scrivens Rectory Close, Buckland (with Chipping)
Buntingford	S. G. R. Howlett 85 High Street, Buntingford
Bygrave	D. W. Brims Moat House, Bygrave
Castle Camps	Mrs. L. M. Hill 4 Claydon Close, Castle Camps, Cambridge
Carlton	M. D. Crichton Hillview Cottage, Carlton, Nr. Newmarket
Chesterford, Gt.	W. H. Hamilton Manor Farm, Gt. Chesterford
Chesterford, Lt.	G. Greaves Lt. Chesterford Manor, Lt. Chesterford.
Chishill	M. Y. Watson The Old Vicarage, Gt. Chishill
Chrishall	S. M. Cooper Sivsi, Chrishall
Clavering	S. Cooke Deers, Clavering
Clothall	A. L. Moore Glebe House, Clothall, Baldock
Codicote	P. D. Boyer 5 Bury Lane, Codicote
Cottered	Mrs. B. J. Thrussell Westcott, Cottered (with Throcking)

* p. 682.

† p. 685.

Printed image digitised by the University of Southampton Library Digitisation Unit

Village/hamlet	*Representative*
Datchworth	N. C. Pearmain Bury Farm, Datchworth
Debden	R. A. S. Short 54 Frambury Lane, Newport, Saffron Walden
Duddenhoe End	D. E. Kirkland Duddenhoe End
Duxford	W. P. Abbiss The Grove, Duxford
Elmdon	C. M. MacDonald Bakers Stores, Elmdon J. W. Mawson The Hoops, Elmdon
Farnham	Mrs. F. Prime Earlsbury, Farnham
Fowlmere	N. Stewart Moss Cottage, Fowlmere
Foxton	J. E. Jennings 35 Hill Field, Foxton
Graveley	G. K. Buckler Greta Bank, Graveley, Stevenage
Great Munden	G. D. Wentworth Stanley Great Munden House, Gt. Munden, Ware
Guilden Morden	F. H. Kirby Cold Harbour Farm, Ashwell
Hadham, Lt.	G. E. Starling Hall Farm, Lt. Hadham
Hadstock	R. Low Chestnut House, Hadstock, Cambs.
Hatley St. George	M. Hooten Sandy, Beds.
Hempstead	J. Power Long Corner, Hempstead, Saffron Walden
Heydon	L. G. Sleven Hill Cottage, Heydon
High Wych	R. G. Pugsley Andor, Allens Green, Sawbridgeworth
Hildersham	A. P. Blair The Watermill, Hildersham, Cambs.
Hinxton	J. L. Greig The Old Chapel, Hinxton, Cambs.
Hinxworth	J. Sheldrick Middle Farm, Hinxworth
Hormead, Gt.	N. Moon Old Rectory, Gt. Hormead
Horseheath	F. J. Salmon 8 Andley Way, Horseheath, Cambs.
Ickleton	Ian Craighead Paddock Cottage, Ickleton
Kelshall	E. Ward Manor Farm, Kelshall
Kingston	R. Crow "Tranquil", Kingston, Cambs.
Knebworth	G. Dumelow 4 Stockers Dell, Knebworth
Langley Cross	D. M. O. Jones Davies Langley Cross, Nr. Hitchin
Langley Lower Green	C. A. Cooper Potterells, Langley Lower Green, Saffron Walden
Lilley	I. Rutherford Venton Green Acres, Lilley, Hitchin
Linton	R. S. Titmarsh 29 High Street, Linton
Littlebury	J. Forsythe Ranch House, Littlebury, Saffron Walden
Little Munden	Mrs. A. Bolton Yew Tree Cottage, Green End, Dane End, near Ware (with Dane End)
Litlington	J. Bennett Trenance, Church Street, Litlington
Manuden	Dr. N. Albon Old Bakery, Manuden, Bishop's Stortford
Meesden	A. W. Berriff The Beehive, Meesden, Buntingford
Melbourn	M. Wilson Glencoe, Orchard Road, Melbourn
Meldreth	P. W. Powles The Court, Meldreth
Much Hadham	J. Prior Bucklers Hall, Much Hadham
Newport	E. K. Evans The Old Vicarage, High Street, Newport, Essex
Nuthampstead	E. J. Welch The Bury, Nuthampstead
Offley	Mrs. Hiner Shenley Cottage, Offley Mill, Hitchin
Orwell	C. D. Bullen Oakdene, Orwell
Pampisford	A. J. Nightingale New House, South Terrace, Sawston
Pelham, Furneux	L. E. Pigg Patient End Farm, Furneux Pelham, Buntingford
Pelham, Stocking	D. F. Fielding Stocking Pelham Hall, Buntingford
Preston	Mrs. J. Cooke The Hollies, Kings Walden Road, Preston, Hitchin
Radwell	Mr. Thompson Radwell House, Radwell, Baldock
Reed	W. G. Sedgwick Rough Queenbury, Reed
Rickling	C. N. Stokes Apple Tree Cottage, Rickling, Saffron Walden
Rushden	M. Peers Graves Southern Green House, Rushden, Buntingford
Sacombe	A. A. Borlace Sacombe Hill, Hertford
Sampford, Gt.	Mrs. E. M. Watts Penfield, Gt. Sampford, Saffron Walden Mrs. J. DeFraine Sparepenny Lane, Gt. Sampford, Saffron Walden
Sandon	Sir K. Butt Wheat Hill, Sandon, Buntingford
Sawston	H. B. Andrews 40 Cambridge Road, Sawston, Cambs.
Shelford, Gt.	G. A. Lewis 9 Woodlands Road, Gt. Shelford, Cambs.
Shepreth	M. Black The Mill House, Shepreth, Cambs.

Printed image digitised by the University of Southampton Library Digitisation Unit

Village/hamlet	*Representative*
STANSTED	Mrs. G. B. Shelley Glen Helen, Birchanger, Bishop's Stortford
STEEPLE MORDEN	Alan J. Day Muriel Cottage, Hay Street, Steeple Morden
STOTFOLD	R. Baines 13 Alexander Road, Stotfold, Hitchin, Herts.
STANDON	A. G. Glass 5 Stanelow Crescent, Standon, Ware
TEWIN	P. Y. Briggs Seven Pines, Margery Lane, Tewin, Welwyn, Herts.
THERFIELD	R. B. Tyler Nine Elms, Therfield
THRIPLOW	Mrs. M. Shaw Gowards House, Thriplow, Royston, Herts.
WALLINGTON	R. Roughley Barn Cottage, Wallington, Baldock
WARESIDE	R. W. Chappell Goffs Oak P.O., Waltham Cross, Herts.
	T. E. Godley Red Lion, Wareside, Ware, Herts.
WATTON AT STONE	Mrs. S. T. Allen 51C High Street, Watton at Stone, Hertford
WENDONS AMBO	G. S. Hayward The Outspan, Wendons Ambo, Saffron Walden
WENDY	S. Bath Wendy, Royston
WESTMILL	R. P. McMullen Westmill Bury, Buntingford
WESTON	P. Cherry Weston Manor, Nr. Hitchin
WEST WICKHAM	Mr. Breckland 6 Maypole Croft, West Wickham, Cambs.
WHADDON	J. Law Whaddon, Cambs.
WHITTLESFORD	R. P. Newman 2 Farm Rise, Whittlesford
WICKEN BONHUNT	Lord Monteagle Buck House, Wicken Bonhunt, Newport, Saffron Walden
WIDDINGTON	D. G. Pelley Swaynes Hall, Widdington, Saffron Walden
WIDFORD	J. W. End Thatchview, Widford, Ware, Herts.
WIMBISH	Miss M. B. McQueen Rowney Corner Farm, Wimbish, Saffron Walden
WIMPOLE	F. C. Prime Newlyn Cottage, Cambridge Road, Wimpole, Royston
WYDDIAL	A. M. Boyd Carpenter Wyddial Hall, Buntingford

D.R.3

Nuthampstead Preservation Association

To all members of Council of the Association

Please read these notes carefully. They are very important. To enable our Lawyers to be in a position to present our case adequately at the Nuthampstead Hearing IT IS ESSENTIAL that the action required in connection with the attached questionnaire is carried out in every respect.

NOTES

1. We shall be calling evidence at the local Hearing which starts on June 9th. We are in close touch with the County Councils and the N.F.U. who will also be calling evidence. The Commission are reluctant to receive duplicated evidence. We shall therefore decide with the County Councils and the N.F.U. which organisations call what evidence.

2. It is, however, already clear that it falls to us to provide the Commission at the local Hearing with detailed information on two main heads:

(a) Factual information relating to the localities affected.

(b) Reactions and local opinion.

3. Since the locality which would be affected if a large airport came in our midst would cover a considerable area, the task of collecting this information is a major one.

4. This is particularly so since the timetable laid down by the Commission is a very tight one. Although the Hearing does not start until June 9th, all the paper work has to be handed in to the Commission before that. Moreover, all the information which we are asking you to supply will have to be broken down, quantified and analysed before it can be submitted.

5. Please arrange for the questionnaire to be answered concisely (and legibly!) following the exact form set out. Only by everyone completing the forms in the same way can the analysis be properly prepared.

6. It is, therefore, ESSENTIAL that you should complete and return the questionnaire which is attached NOT LATER THAN 18th APRIL. If you can possibly do your "homework" and return your questionnaire sooner than that it will be a tremendous help. The questionnaire should be returned in the stamped addressed envelope provided, to *Mr. J. L. Puddock, Manor House, Royston, Herts.*

7. The questionnaire does not include matters which relate to agriculture. This is because the N.F.U. are supplying farmers with a separate questionnaire of their own.

8. In completing the questionnaire please include in all sections information covering hamlets and isolated houses whose occupants are on the Register of Electors for your town/village.

9. Another important point. In your house to house visitation you may well come across some householders/businessmen/shopkeepers who feel very strongly that an airport would be a disaster for them personally and/or for their locality. If so, they are to be encouraged not to appear in person at the Hearing. (They might not be allowed to do so anyway because the Inspector is entitled to reject repetitive evidence). There is, however, no reason at all why they should not write to the Commission themselves setting out quite shortly and concisely their point of view. They should, however, (and this is important) add a sentence to the end of their letter saying that they will not be appearing in person but will be represented at the hearing by the Nuthampstead Preservation Association. Such letters should be sent to the Secretary, Commission on the Third

Printed image digitised by the University of Southampton Library Digitisation Unit

London Airport, Templar House, 81/87 High Holborn, London, W.C.1.

10. In so far as you possibly can, please try to resolve any difficulties in completing the questionnaire but if you are in dire trouble, please make contact with one of the under-named.

Thank you, and please remember that deadline for the questionnaire to reach the Association's Secretary is *18th April.*

D. ROBERTSON,
Chairman

J. L. PUDDOCK
Secretary

Nuthampstead Preservation Association

QUESTIONNAIRE

For the town/village of .....

including hamlet(s) of .....

As explained in the accompanying notes, this questionnaire is divided into two distinct parts.

PART I—FACTUAL INFORMATION

(a) *Population*
- (i) Number of dwellings
- (ii) Population on electoral roll
- (iii) Total population
- (iv) Approximate number of retired persons compared with total population

(b) *Schools*
- (i) Number of each type of school (Junior, Secondary Modern, Grammar etc.)
- (ii) Approximate age of school buildings

(c) *Churches*
Number of each denomination with approximate age of the building

(d) *Shops*
(Give number of classes of shops, e.g. two butcher's shops, one baker's)

(e) *Businesses*
(Give number of classes of business, e.g. two accountants, one blacksmith's, one hairdresser's, two garages. *N.B.* Do not include farms)

(f) *Village Amenities*
(List these in detail including both outdoor and indoor activities)

(i) *Outdoor*
(e.g. one cricket ground, two football fields, village green, Point to Point racecourse nearby —in fact anything of an amenity/recreational nature)

(ii) *Indoor*
(List both buildings, e.g. Village Hall, and also indoor activities, e.g. Women's Institute)

(g) *Factual Information* relevant to proposed Airport but not covered above.

March 1969

Barkway
Royston
Herts.

Nuthampstead Preservation Association

THE THIRD LONDON AIRPORT

The Commission on the Third London Airport, under the Chairmanship of the Hon. Mr. Justice Roskill, has announced that it will hold a Hearing commencing on the 9th June next (details to be announced later) for the purpose of obtaining information of all the local implications which it should take into account in its further work. At this Hearing the Commission will not be advancing proposals for an airport at Nuthampstead but will be asking for objections, comments and representations on the local consequences on the assumption that an airport might be located here.

To assist the Commission in their work the Preservation Association wishes to place before it a factual expression of the opinion of the inhabitants of the area likely to be directly affected if an airport is located at Nuthampstead. Your co-operation in completing the attached short questionnaire will be much appreciated, and the questionnaire will be collected by a representative of your local committee within the next 7 days. The Commission have asked that all statements and other documents to be examined by them must be in their hands by the 23rd May, and as your answers will need to be carefully analysed, and a full statement prepared by the Association, it is essential that all replies be in our hands **not later than 18th April.**

D. ROBERTSON,
Chairman
Nuthampstead Preservation Association

1. Name .....

2. Number in family — Adults....., Children of school age or under.....

3. Address .....

4. Occupation.....

5. I am for/against* the Third London Airport being located at Nuthampstead.

Signed.....*Date*.....

N.B. This form should be signed by the householder.

***Please strike out the answer which does not apply.**

PART II—ANALYSIS OF REACTIONS AND LOCAL OPINION

Total number of houses to which forms delivered
Total number of forms completed and returned herewith
Number showing FOR
Number showing AGAINST

Signed .....

In what capacity .....

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Nuthampstead Preservation Association

SUBMITTED BY MR. M. Y. WATSON*

1. I am a retired Civil Servant, having been in the Civil Service all my working life. I was a Senior Administrative Officer prior to retirement.

2. At the request of the Nuthampstead Preservation Association, of which I am a member, I led a team which collated the returns of the questionnaires referred to by Mr. Robertson in his evidence.

3. General Information

By the time my analysis had to be completed 97 returns were received covering in all 160 places. These were nearly all villages or small towns within a radius of 15 miles of Nuthampstead. They ranged in size from Royston, with a population of some 7,000 to hamlets containing less than 20.

4. Section A ("Factual Information") of the questionnaire was returned by all places. Several of them, however, decided not to attempt, or did not complete in time, Section B ("Local Opinion"). These last, namely Gt. Shelford, Knebworth, Manuden, Much Hadham and Royston are in what I have referred to as Group III explained below. The total population of these places is approximately 17,000. It is important, therefore, that this figure should be deducted from the total population of the area before any comparison is made with the Opinion Poll. The largest place to carry out a house to house poll was Sawston with a population of 4,200.

5. The returns were sorted into three groups: Group I—all places within the NNI 55 contour. Group II—all places within the NNI 40/55 contour. Group III—all places outside the NNI 40 contour. It was not always easy to determine between Groups I and II owing to the small scale of the Noise Contour Map issued by the Commission. In isolated cases, therefore, I may have listed a village in the wrong noise Contour Group.

6. List of Returns

Attached hereto (marked "M.Y.W.1") is a list of the places covered by the returns which came to me, together with a list of the hamlets covered by villages (marked "M.Y.W.2"). This list does not correspond exactly with the list of villages affiliated to the Association as submitted by Mr. Robertson in his evidence. The reason is that some of the affiliated villages came onto the scene so late, or were so far away from Nuthampstead, that they decided not to complete the questionnaire.

The originals of returned questionnaire forms from each village have been retained by me and can be produced to the Commission if so desired.

7. The Statistics

The returns were entered on a Master Analysis Form, a copy of which is attached hereto (marked "M.Y.W.3").* The original is bulky but can be produced.

8. Column headings of the Analysis Form were devised to follow, so far as possible, the questions put to the village representatives and are in the same order. If the headings are anywhere obscure the questionnaire itself should explain them.

9. A summary of the statistics obtained by the three different NNI Groups mentioned above and by grand totals is attached hereto (marked "M.Y.W.4").

10. The remainder of my evidence is a classification of the returns, but first I would emphasise that, in my view, the **factual information** revealed by the returns gives an indication, not so much of precise statistics, but rather serves as a very fair guide of the order of magnitude of the effect on the locality. I say this because:

(a) Owing to shortness of time, the wording of the questionnaire was prepared without the help of statistical or other experts and

(b) For the same reason, the only way in which the Association could obtain the information sought in the questionnaire, was to make use of the services of local volunteers rather than professionals.

11. **Factual Information** (Columns 1 to 16 of M.Y.W.3)

Columns 1 to 4 (Population)

The figures for dwellings and electoral roll are, I think, practically accurate. Perhaps 2½ per cent to 5 per cent of dwellings would be unoccupied. The total population figures may be too low; some returns used figures from the last census (1961) in default of any other source. Some places, especially where industry has been developed, have grown considerably since then and allowance may not have been made for this.

The figures in Column 4 relate to the approximate number of retired persons compared with total population. In the main, villages appeared to find it difficult to obtain this information accurately. In a few cases no attempt was made at all.

Columns 5 to 8 (Schools)

The figures supplied should be accurate. The Master Analysis records the date of building by an "O" and an "N" for Old and New respectively.

Columns 9 to 11 (Churches)

These should be accurate. The heading for Column 11 means historical monument and includes all buildings over 150 years old. It should be noted that there

* See also p. 867.

* Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

are no less than 12 of these in Group I and 21 in Group II.

Columns 12 and 13 (Shops and Businesses)

These figures give a general guide to the number of shops and businesses in the area, but it was difficult for village representatives to decide the difference between a shop and a business. Moreover, no account could be taken of size or pay roll. So far as the Analysis is concerned, the one-man business of a cobbler and a large garage both count as one.

Columns 14 and 15 (Amenities)

There was considerable variation in the type of activity included by villages. I think, therefore, that these statistics serve only as a general guide.

12. **Local Opinion**

Columns 17 to 21

In all the smaller villages and hamlets, and particularly in Groups I and II, virtually all households seem to have been visited and supplied with the FOR/AGAINST Forms. In a few places, however, it is apparent that some representatives either came too late on the scene to be able to complete their visitation, while others decided not to carry it out for the reasons mentioned by Mr. Robertson in his evidence.

13. A comparison of Column 1 (total number of dwellings) and Column 17 (number of householders to which FOR/AGAINST Forms delivered) shows that coverage in Group 1 was 100 per cent, in Group II 96 per cent, and in Group III 64 per cent.

14. The Poll, taking Column 18 (FOR/AGAINST Forms returned) as a percentage of Column 17 (Forms delivered) shows 90 per cent in Group I, 77 per cent in Group II and 75 per cent in Group III.

15. The recorded vote was *against* the airport by over 95 per cent in Group I, over 94 per cent in Group II and 90 per cent in Group III. *The overall figure was 92 per cent.*

16. Column 21 (No opinion) gives very variable results. It is in every case a balancing figure being the difference between Column 17 (Forms delivered) and the sum of Columns 19 and 20 (FOR or AGAINST). It includes the following categories which there is no means of distinguishing numerically:

Away from home
Form not collected
Form not returned
Genuinely did not know
Preferred not to say
The sort of comment of "If it comes it comes"

This column certainly includes some who were in favour of an airport but lacked the courage to say so in the face of majority opinion. It certainly also includes a number (quite possibly a larger number) who, through negligence or some other cause, failed to record their opposition.

17. In no case have Petition forms been used as substitute for voting papers.

18. **Additional Information in respect of Group I Villages** (Columns 27 to 37).

These figures are derived entirely from the returns which account for slight inconsistences, for example, between Column 1 (total number of dwellings covered) and Columns 22 to 26 (sub division of dwellings) which anyhow exclude flats and caravans.

19. The entries in Columns 35 to 37 (employment) are in some cases questionable since they almost certainly include people who work outside the village in question. Moreover, difficulties were again experienced by village representatives regarding the definition of the word "business". These columns do, however, give a good general guide.

20. **Remarks Column**

This column was chiefly used by me in explaining entries in Column 16 which I have referred to as "Sites". Details of the antiquities and other general matters referred to in the Remarks Column will be found, sometimes in great detail, in the individual returns. There seemed to be no point in totalling Column 16 and this has not, therefore, been done.

M.Y.W.1

List of places covered by the returns

GROUP I (NNI 55 +)

Anstey	Hormeads, Gt. & Lt.	Nuthampstead
Arkesden	Langley Greens	Westmill
Brent Pelham	Littlebury, Strethall & Littlebury Green	Wyddial
Clavering		
Duddenhoe End	Meesden	

GROUP II (NNI 40 TO 55)

Ardeley	Chesterford, Little	Linton
Aspenden	Clothall	Radwell
Barkway	Cottered	Rushden
Braughing	Elmdon	Sandon
Buntingford	Fowlmere	Wallington
Bygrave	Graveley	Wareside
Chesterford, Great	Hadstock	Weston

GROUP III (NNI 40 –)

Abington, Gt. & Lt.	Hatley St. George	Pelham, Stocking
Abington Piggotts	Hempstead	Preston
Albury	Heydon	Reed
Arrington	High Wych	Rickling & Quendon
Ashdon	Hildersham	Royston
Ashwell	Hinxworth	Sampford, Great
Babraham	Hinxton	Sawston
Balsham	Ickleton	Shelford, Great
Barley	Kelshall	Shepreth
Berden	Kingston	Steeple Morden
Benington	Knebworth	Tewin
Buckland & Chipping	Little Hadham	Therfield
Chishill, Gt. & Lt.	Lilley	Thriplow
Codicote	Litlington	Watton at Stone
Chrishall	Manuden	Wendens Ambo
Dane End	Melbourn	West Wickham
Datchworth	Meldreth	Whaddon
Duxford	Much Hadham	Wicken Bonhunt
Farnham	Newport	Widdington
Foxton	Orwell	Widford
Guilden Morden	Pampisford	Whittlesford
	Pelham, Furneux	

Note: For Hamlets see supplementary list (M.Y.W.2.)

Printed image digitised by the University of Southampton Library Digitisation Unit

M.Y.W.2

List of places covered by other returns

Hamlet	*Covered by*
Allens Green	High Wych
Babbs Green	Wareside
Bartlow	Linton
Birds Green	Clavering
Bragbury	Datchworth
Braughing Friars	Braughing
Bridgefoot	Gt. Chishill
Building End	Chrishall
Burnham Green	Datchworth
Bury Green	Lt. Hadham
Chisfield	Graveley
Chrishall Grange	Chrishall
Cromer	Ardeley
Dassells	Braughing
Deer Green	Clavering
Farnham Green	Farnham
Flint Cross	Melbourn
Forn End	Clavering
Friends Green	Weston
Frog End	Shepreth
Further Ford End	Clavering
Green End	Dane End
Green End	Sandon
Green Tye	Much Hadham
Halls Green	Weston
Hamels	Braughing
Hare Street	Gt. Hormead
Haultwick	Dane End
Hazel End	Farnham
Hooks Cross	Datchworth
Kettle Green	Much Hadham
Little London	Berden
Luffenhall	Clothall
Maggotts End	Manuden
Mallows Green	Manuden
Malton	Meldreth
Meesdenbury	Meesden
Mill End	Sandon
Nup End	Codicote
Odsey	Guilden Morden
Perry Green	Much Hadham
Roast Green	Clavering
Rodhill	Sandon
Shaftonhoe End	Barley
Smith End	Barley
Starlings Green	Clavering
Streetly End	West Wickham
Sticklings Green	Clavering
Throcking	Cottered
Trimms Green	High Wych
Warrens Green	Weston
Washall Green	Brent Pelham
Wendens Loft	Duddenhoe End
Westland Green	Lt. Hadham
Wood End	Ardeley
Wimpole	Arrington

M.Y.W.4

Summary of statistics

Column	*Population*	*Group I*	*Group II*	*Group III*	*Total*
	POPULATION				
1– 4	Dwellings	1,417	4,664	20,268	26,349
	Electoral roll	2,318	9,214	40,125	51,657
	Total population	3,758	13,604	57,377	74,739
	Retired	349	1,436	5,190	6,975
	SCHOOLS				
5– 8	Junior	6	15	52	73
	Secondary Modern		2	5	7
	Grammar			1	1
	Other	1	1	10	12
	CHURCHES				
9–11	Church of England	14	23	73	110
	Other	8	13	56	77
	Historical monuments	12	21	61	94
12	SHOPS	25	98	351	474
13	BUSINESSES	82	164	543	789
14 & 15	AMENITIES				
	Outdoor	33	65	220	318
	Indoor	71	159	546	776
	LOCAL OPINION				
16–21	Households asked	1,417	4,483	12,816	18,716
	Households answered	1,254	3,490	9,797	14,541
	Yes	57	191	968	1,216
	No	1,176	3,278	8,783	13,237
	No opinion given	184	1,014	3,065	4,263

Column	*Population*	
	TYPE OF HOUSE	
22–25	Farm	108
	Private	541
	Cottage	346
	Council	223
	CHILDREN	
26–29	Of school age	610
	None or retired	620
	At local school	240
	School elsewhere	404
	REMOVAL CHOICE	
30–32	Council in town	48
	Council in country	312
	Other	780
	EMPLOYMENT	
33–37	In village	633
	Elsewhere	826
	In agriculture	363
	business	421
	professions	108

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Nuthampstead Preservation Association

SUBMITTED BY MR. T. J. NARDECCHIA*

Mr. Nardecchia will prove:

1. THAT I am a Bachelor of Science holding the degree in Estate Management of the University of London, a Fellow of the Royal Institution of Chartered Surveyors and a Fellow of the Chartered Auctioneers' and Estate Agents' Institute.

2. THAT I am one of the Senior Partners of Montagu Evans & Son of 11 Kingsway, London, W.C.2 and of Edinburgh. I have had over thirty years experience in my profession and became a Partner in 1946 since which date I have been the Partner responsible for the Valuation and Town Planning Departments of the Firm.

3. THAT I have had a wide experience in dealing with town planning matters throughout the British Isles and have acted in respect of such matters on behalf of many public and local authorities including the Nottinghamshire County Council, the Derbyshire County Council, the County Borough of West Bromwich, the Metropolitan Boroughs of Edmonton, Tottenham and Wood Green, the Borough of Wembley and the London Borough of Barking. In addition I have acted on behalf of many public and local authorities on compensation matters such as on behalf of the Greater London Council and the Borough of Swindon. Also I have acted for many leading commercial, industrial and property companies concerned with large development schemes including comprehensive development area schemes. Some of these have comprised substantial new development in the countryside, e.g. the Ford Engineering Research Centre on 350 acres at Basildon.

I have also had experience in dealing with planning and compensation matters arising from the construction of motorways such as the M4 and the proposed M23.

I have had no previous experience in dealing with a major airport.

4. THAT I produce herewith Plan TN.1† showing the general area of Nuthampstead which lies in a wholly rural area bounded to the west by the line of the A10, to the east by the A11, to the north by the A505 and the south by the A120. This area lies partly within the County of Hertford, partly within the County of Essex and partly within the County of Cambridge. The topography of this area is that of a rolling and undulating countryside, mainly in arable and mixed farming use with small woodlands. There is little urban settlement, the communities living in villages, hamlets and farmsteads. The largest town in the area lies at the south east corner of the quadrilateral formed by the "A" class roads, namely Bishops Stortford. The surrounding area is one of considerable landscape value and the rural characteristics of this area extend beyond the line of the A10 to the west as far as the line of the A1, where the towns of Letchworth, Stevenage and Welwyn are situated. The rural characteristics of the area stretch also far beyond the A11 to the east, the nearest industrial towns of any size being Colchester and Ipswich. To the north, the rural character of the area also extends a substantial distance, the nearest large town being the City of Cambridge and some miles to the south is found the new town of Harlow and the outskirts of the London conurbation.

5. THAT it has always been the policy of each of the county planning authorities to treat this area as one predominantly to be devoted to agricultural uses. No large scale development has ever been proposed for this area of land which is strategically situated to the north of London and which consists in the main of productive agricultural land (mainly classified Grade 2). The development proposals for this region generally have been linked with the chain of towns served by the A1 although there are proposals to expand various towns some distance to the east of the area such as Haverhill but the amount of development proposed in these areas is comparatively modest.

6. THAT consequently there is no economic infrastructure conveniently located to the Nuthampstead area which could form a base upon which to construct a major development such as a third London airport. In other words:

(a) there is no local pool of skilled or other labour from which to draw for the purpose of construction works;
(b) there are no communications with London or with other parts of the country which would be satisfactory for the purpose of construction of a major airport; and
(c) there is no provision of public services by way of water, gas, electricity or main sewerage that could serve as a reasonable nucleus for development on this scale.

It follows, therefore, that in considering the possibility of Nuthampstead as a location for the Third London Airport it is inevitable that new roads and new services must be brought into the area from some considerable distance together with new accommodation to house the large team of construction workers that would be needed during the course of development. The site, to all intents and purposes, has no natural advantages to facilitate large scale construction. The absence of these factors affects not only the question of

* See also p. 867.

† Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

cost but also the question of the timing of the construction.

7. THAT as recognised by paragraph 4 of the Commission's booklet on *Site Information*,* the terrain of the area imposes practical limitations on the location of the site by virtue of the falling ground levels to the north-west and to the north-east and by the valley of the River Quin to the south-west and to the west. Whilst no doubt it will prove possible to design an airport within the limitations of tolerance of levels normally expected for airport design and referred to specifically in the submission of the British Airports Authority it appears likely that there will be design problems in connection with major construction on this site due in particular to variations in level across the airport site as well as to the changes in level along the main axes of the runways. The site does not allow for any great margin for alternative designs because there is only a minimum expanse of reasonably level ground. There is no natural wide expanse of level ground which is normally sought after as a basic necessity in the choice of an airport site. It is inevitable that considerable earth moving will be necessary in order physically to construct an airport and this will, of course, add considerably to the cost of construction.

8. THAT Nuthampstead was in use during the War as a military aerodrome but its use for flying purposes has been discontinued for many years, except that a short grass runway is still maintained for use by one light aircraft. There are, however, no servicing facilities at the air strip. The land occupied by the military airfield has, at great expense and with enormous labour, been converted back to productive farmland. A proposal to site a new airport here would, of course, undo the years of labour and of heavy capital expenditure involved in removing the war time aerodrome. It is perhaps a measure of the importance of this land as agricultural land that farmers have been prepared to come forward to undertake work of such magnitude to restore the land to productive agricultural use. There are examples in the British Isles of military airfields which still lie derelict because the expense and labour of restoring them to agricultural use has not seemed worthwhile.

9. THAT the establishment of a major airport at Nuthampstead will radically transform the present rural countryside by virtue of the following factors:

(a) The works of airport construction involving 7,000 to 8,000 acres of agricultural land with its consequent effect on farming and farm holdings in the immediate area.

(b) The attraction of the large population needed to work in the airport which will give rise to a demand for very substantial areas of land to be allocated for housing such employees together with the provision of schools, shops, entertainments and other amenities required for such urban communities.

(c) The establishment of service industries dependent on the airport and necessary for its operation requiring allocations of land for such purposes together with the further housing required for the employees of such industries.

(d) Further industrial development of a general character but especially those requiring international communications which will be attracted, to the area by virtue of the facilities of the airport. These will require land for factories and for the requisite housing needs of employees.

(e) The development of new roads and railways to create the essential communications to serve the airport complex itself and for connecting that complex with the new or expanded towns required to be built to house the population required for the operation of the airport and the population attracted to the area for employment reasons. Vast new communications will also be required to connect the airport with the main centres of population in the country from which passenger and freight traffic will be derived for the airport, e.g. London, Birmingham, Manchester, etc.

(f) The construction of many miles of public utility services will be necessary, e.g. gas, electricity, water and sewerage together with the concomitant transformer stations, pylons, sewage works, gas holders, etc.

(g) The effect on a substantial surrounding area of land by noise nuisance and the general interference anticipated to be caused by the prospective use of the airport and its traffic. This will have the effect of blighting a most substantial area estimated at over 220,000 acres within which it is not possible to locate the new urban development attracted by the airport. The area referred to above is calculated from the maps prepared by the Hertfordshire County Council and the Cambridgeshire County Council showing the extent of the 35 NNI contour.

(h) The effect of this vast area of airport construction, the new towns, the communications and the noise nuisance from aircraft will have a depreciating effect upon the agricultural industry throughout the whole of this area. Damage to it will be caused partly by the physical presence of the airport and partly by the proximity of large urban populations.

(i) There will be further indirect effects on matters of general amenity such as the effect of such large scale development upon natural wild life. The use that can be made of land remaining in agriculture and the amenities of the villages will be affected not only by the noise nuisance from traffic in the air but also by the vast increase to be expected in traffic on the ground. Such factors are likely to cause a general depreciating effect upon the amenities and use of the countryside areas left lying between the new urban locations and the airport.

10. THAT the estimates of primary employment given by the Commission in paragraphs 16 and 17 of the Nuthampstead booklet, namely a figure of 45,000 persons at the full capacity of two runways and 65,000 persons at the full capacity of four runways gives an

* HMSO; 6s. Reproduced at p. 601.

Printed image digitised by the University of Southampton Library Digitisation Unit

approximate indication of the total population likely to derive economic support directly and indirectly from the airport. On the basis of experience gained from employment factors in new and expanded towns such as Bracknell and Basingstoke, and also from experience gained at Heathrow, the total population to be catered for on the basis of such primary employment at the airport will be approximately between 225,000 and 280,000 persons on the basis of a two-runway airport. This figure will grow to a total population of between 325,000 and 400,000 persons approximately when the full establishment of four runways is in operation.

The population of the present rural area is comparatively small and virtually the whole of the population needed to service the new development comprising both the airport and the new industries and townships to be created will have to be imported into the area. Consequently, the indigenous population of the area, even if they remain, will be swamped by an overwhelming influx of strangers, mainly from urban areas.

11. THAT the social consequences of this enormous influx of additional population into this area will undoubtedly be to change the character and the way of life of the present agricultural and rural communities. Quite apart from the destruction of villages and farms needed for the physical layout of the airport, the new towns and the new roads and services, the remaining villages will be subjected to considerable pressure for new development, particularly by executives, and properties as they fall vacant are likely to be bought up by airport and other urban employees who prefer to live in the countryside rather than in the new towns and who will consequently become commuters. Thus, even villages which are relatively unaffected by noise or the physical impact of the new development are likely to change their character and population, and the influx is likely to be on such a scale that the new residents will not be able to be absorbed into the present life of the villages but will tend to alter and change such life.

12. THAT the provision of plentiful employment at the airport and in the new towns at substantial wages and salaries is likely to attract some farm workers away from the agricultural industry and into factory and office employment. There is, at present, no surplus of agricultural labour and consequently the effect may well be to reduce productivity from farms or, alternatively, to push their operating costs up substantially. In either case, the stability of the agricultural industry in this area will be affected which, again, is likely to have far reaching social and economic consequences.

13. THAT with regard to the question of surface communications it is readily apparent that the existing "A" class roads which are at present used for communication between London and Nuthampstead are grossly inadequate and are, in fact, overloaded at the present time. Both the A10 and the A11 are narrow roads, overtaxed at the moment by existing traffic. The secondary roads of the area are narrow country roads which would be of no value for the purpose of serving the airport or as links with any major new roads. The Ministry of Transport proposes to construct the M11 in the near future which will pass within a few miles of the site at Nuthampstead and it is to be anticipated that the construction of the new motorway will, itself, throw a much greater burden of traffic on the A10 and the A11 than they at present carry and heavy traffic will also use the narrow secondary roads. If, during the period of construction of the M11, the vast construction works of an airport at the Nuthampstead site were also undertaken, the local traffic conditions for a number of years might well prove to be quite chaotic.

14. THAT it is apparent that quite apart from the construction of the new M11 motorway, the new towns required for housing airport employees and the associated industries and populations that an airport will bring will themselves require new major roads for communications with the airport and with the pattern of major highways serving other parts of the country. This will accordingly accentuate the great problem of traffic movement likely to be experienced until the works of new road construction are completed.

15. THAT a further communications difficulty affecting the locality is likely to arise from the probability that once the airport is established and in reasonably full operation at a two-runway stage it seems likely, on the basis of evidence already adduced, that the surface traffic to and from the airport will absorb the whole capacity of at least one motorway, thus making it necessary for a further motorway to be constructed through the locality to serve the original purposes of the M11.

16. THAT the combination of all these factors indicates that much agricultural land will be needed to be taken for new roads and communications with consequential effects on the severance of farm holdings and the demolition of buildings. This will affect the structure of the rural and agricultural way of life of this locality.

17. THAT it is probable that the Third London Airport will attract an increasing volume of traffic in freight and that modern developments in the field of containerisation are bringing about a need for very large vehicles to handle the surface movement of such freight. Thus the growth of traffic generated by the airport is likely to embrace large and increasing numbers of heavy goods vehicles as well as airport coaches, private cars, taxis and service vehicles using the airport. The growth of industry associated with the new towns will also give rise to a large permanent increase in the volume of heavy industrial traffic on the roads in addition to the commuter travel of employees.

That, in any event, Nuthampstead is badly located in regard to manufacturing centres likely to wish to take advantage of air freight facilities as there is no large industrial complex which has easy communications to this area. Consequently, any large volume of heavy freight traffic would have an impact on road conditions over a much wider area than the immediate locality.

18. THAT by virtue of the very pleasant nature of the rural countryside and the attractive appearance of the many small villages of the area, this part of north Hertfordshire, north-east Essex and south Cambridgeshire has, for many years, been a favourite area for Londoners to visit, particularly at the weekends. Many

Printed image digitised by the University of Southampton Library Digitisation Unit

cycling clubs from north London use the area as well as family motorists seeking a quiet pleasant drive in the countryside. The change in the whole character of this area that would be occasioned by the new towns and the airport with their associated traffic is consequently likely to deprive very large numbers from one of their favourite areas of countryside for recreation purposes such as picnicking, walks in the country, cycling etc.

19. THAT with regard to the question of noise, the local effects of the airport scheme will spread far beyond the immediate boundaries of the area. The 35 NNI contour for a four-runway airport includes the towns of Knebworth, Stevenage, Hitchin and Baldock which had a total population as at mid-1968 of 97,000. In addition, parts of Luton, Letchworth and Dunstable fall within such contour and it is thought probable that out of the total population of these towns some 106,000 approximately fall within the contour line. On the east side the contour line extends to include Haverhill and Saffron Walden which by reference to the same date had a population of 20,500. Thus, in addition to the rural population living in the small towns and villages of the area there is likely to be an urban population of 223,500 in total affected by a level of noise at night time sufficient to have a noticeable effect upon their amenities.

20. THAT the establishment of an airport at Nuthampstead would thus create the need for the construction of new towns to house an additional population which might well reach a total of 400,000 persons within 25 to 30 years' time. The establishment and future industrial growth of such new town areas would constitute a major change in the regional and economic planning policies for this area. The degree of disturbance in the locality would be such as radically to transform the character of the area.

In the immediate area about nine villages might have to be demolished to make way for the airport itself comprising the following:

Anstey
Brent Pelham
Chrishall
Little Chishill
Duddenhoe End
Great Hormead
Langley
Meesden and
Nuthampstead

In addition to these villages others in the immediate vicinity are likely to be so seriously affected by noise as to make it probable that they will be virtually unhabitable comprising:

Arkesden
Clavering
Little Hormead
Littlebury Green
Littlebury
Strethall
Westmill
Wyddial

In addition to these villages and a number of smaller settlements there is the small town of Buntingford together with twenty other villages that will be very seriously affected by noise as they lie between the 40 and 55 NNI contour lines. Whilst individual evidence will be given as to one or two of such villages I wish to emphasise that the whole area is one of great charm and high landscape value and is dotted with small villages, many of which have long histories and are often occupied by the descendants of families who have lived in this area for centuries. The villages tend to have magnificent churches dating from the twelfth and thirteenth centuries and contain many examples of charming English domestic architecture, some of which are listed as buildings of architectural or historic importance. Many other buildings are entered upon the supplementary list. The whole area is one which gives pleasure to thousands of visitors who come to the area in the summer months and forms part of the living fabric of the English countryside for the resident population. The area, as a whole, is simple and unspoilt and many of the villages are the subject of special planning control. It is understood that the County Planning Authorities propose to schedule a large number of these villages as Conservation Areas under the Civic Amenities Act 1967 to protect and enhance the character of such villages. Many of the villages in the area of the airport also fall within areas of great landscape value as shown on the Approved Development Plans of Hertfordshire, Essex and Cambridgeshire. Such areas comprise broadly the land stretching north of the village of Barkway and stretching eastwards to include Great Chishill, Little Chishill, Chrishall, Duddenhoe, Wendens Ambo, Arkesden, Clavering and Rickling. Consequently, it is plain that if the Third London Airport is sited in the Nuthampstead area it will be necessary to sacrifice a most attractive countryside and to cause a drastic change in the way of life of the people who live in it, or to dispossess them entirely from their family homes.

21. THAT the whole area is particularly rich in buildings of outstanding architectural and historic interest. I produce herewith Exhibit TN.3.* being a schedule of all buildings and groups of buildings included within the Minister's list of Buildings of Architectural and Historic Interest, both in Grade I and in Grade II and also the buildings on the Provisional List, i.e. Grade III in respect of all villages falling within the NNI Contour of 40 and above. The schedule also includes all buildings on the Statutory List in respect of villages outside the NNI Contour of 40.

There are 33 villages likely to fall within the NNI Contour 40 and above and these villages contain approximately 850 buildings or groups of buildings on the Statutory List or on the Provisional List. This is an indication of the high proportion of the total number of buildings which have been found worthy of special mention architecturally and they do, of course, contribute substantially to the amenities of this area.

My general impression of the villages is that they are well kept, many of the buildings being newly thatched or painted. The roadside verges are often kept cut and are planted with flowers, showing that the residents

* Not reproduced. Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

take pride in the appearance of their homes and villages. Consequently the listed buildings appear generally in good repair and are enhanced by the village settings which themselves are often of great character and charm.

In the 17 villages likely to be demolished or very seriously affected there are about 300 buildings on the list, 104 entries being Grades I and II and about 200 entries on the Provisional List. It will be appreciated that over a considerably greater area many other scheduled buildings may be damaged by vibration or their settings basically altered by the new development and traffic which an airport will bring. The use of others, such as the churches, may well be seriously affected by noise from aircraft.

22. THAT the Nuthampstead Preservation Society felt it would be of assistance to the Commission to organise a poll to be representative of the views of all sections of the resident population living in the areas affiliated to the Association and shown on Plan TN.2.* These areas comprise a total of 160 settlements mainly comprising villages and hamlets but also including some small towns such as Royston. Evidence as to the poll will be given by Mr. Martin Watson who was the leader of the team collating the information and the poll of local opinion but I would like to comment on the results of this investigation as follows:

(a) The villages were divided into three groups by reference to the NNI contour level. Group 1 contains 12 villages or groups of villages in the area of NNI 55 and above. Group 2 contains 21 villages lying between NNI contours 40 and 55. Group 3 contains 64 villages and small towns lying outside NNI contour 40 and thus least exposed to direct noise nuisance.

(b) The total number of dwellings covered by the returns is 26,349 containing a total population of 74,739 persons. Of such population 51,657 are adults and appear on the Electoral Rolls. Of such total adult population approximately 7,000 are estimated to be retired persons. The area contains 73 junior schools, 7 secondary modern schools, one grammar school and 12 other schools. There are 110 Church of England churches, 77 other churches, 474 shops and 789 businesses. There are also many churches and other buildings listed as of architectural and historic interest.

23. THAT the groupings include certain small towns such as Royston in the time available it was not practicable to carry out a comprehensive door to door coverage of the views of the inhabitants and it has not proved possible to visit the dwellings in all the areas. However, out of the total of 26,349 dwellings, 18,716 were visited. These comprise all the dwellings in each village and hamlet covered by the survey. No opinion for or against the coming of an airport was expressed by 4,263 of the 18,716 households visited but there were 14,541 replies. This is a response to the poll of over 77 per cent which, in my opinion, is an astonishingly high return to a poll conducted by a voluntary society with no official standing over so wide an area and embracing such a large number of households.

Allowance must, of course, be made for unoccupied houses and persons away from home so that the numbers who fall into the category of "don't know" or unwilling to answer are less than 23 per cent. A response of 77 per cent demonstrates very clearly the enormous and widespread public interest in the scheme.

What is perhaps even more impressive is that of the 14,541 replies, 13,237 households voted against the establishment of an airport at Nuthampstead. This is a proportion of approximately 92 per cent of all replies given against the airport proposal. The average household size of the area is approximately 2·8 persons per household and consequently those households voting against the proposal for an airport represent over 37,000 people whereas those voting for the proposal to establish an airport represent about 3,400 persons. These figures demonstrate conclusively an overwhelming desire on the part of the locality that an airport should not be established at Nuthampstead.

24. THAT in arriving at conclusions drawn from this poll it must be remembered that out of the 23 per cent of dwellings visited where no expression of opinion was given some households may have lacked the courage to say they were in favour of an airport in view of the apparent overwhelming body of local opinion against an airport. A much larger proportion of the "don't knows" will, however, have been from persons of all walks of life, unwilling to commit themselves to a definite view in the absence of further and better particulars as to what an airport would involve. The poll form sent out is, of course, available for examination by the Commission and, in my opinion and experience, it is a soberly and conservatively worded form of questionnaire and free from improper influences in the wording employed. I regard the returns as being of particular value to assist the Commission in its work by giving an accurate expression of the opinion of the resident population.

25. THAT if the returns from the three groups of villages are compared it will be observed that there was a coverage of 100 per cent in Group 1 areas, a coverage of 96 per cent in Group 2 areas, and a coverage of 64 per cent in the Group 3 areas. As might well be imagined, those most likely to be severely affected by the noise of an airport have responded fully and the recorded vote against an airport is 95 per cent in the case of the Group 1 areas. The vote is over 94 per cent in Group 2 areas and 90 per cent in the Group 3 areas, giving an overall figure of 92 per cent against the airport proposal. What is perhaps the most significant factor to be distilled from this analysis is that in the areas outside the 40 NNI contour, persons were so concerned as to the effect of an airport on the locality generally even though they, themselves, might not be greatly affected by noise, that of the 64 per cent of the households which were visited and who voted, some 90 per cent of them voted against the airport. Thus the Commission can be in no doubt as to the views of the

* Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

resident population. In my opinion, the poll has been taken with great care and its results are of great significance. This poll has covered every social and economic class in the areas visited and represents the views of the whole cross section of each community. The scale of the results leaves no room for the suspicion that the poll might represent only the views of a sectional interest. The results must, in my view, be interpreted as a united expression of majority views by the community.

26. THAT it would clearly cause great hardship to many thousands of people whose whole way of life would be changed if the airport came to Nuthampstead. In many cases it would mean that families would have to sever ties and roots which had been developed over centuries and in many cases a wholly different way of life would have to be adopted, namely an urban life instead of a rural life. The physical works of airport construction and new road construction would completely destroy many fine buildings, and even the villages which remained would have their life seriously affected by virtue of the transformation of this area from a quiet rural area to the heart of a large industrial and airport complex. The damage that would be caused is all the more to be regretted because the area is undoubtedly one of high amenity and landscape value. The farms and houses are keenly sought after by those who prefer to live their lives in a peaceful countryside and there are no derelict buildings or farms in the area. The village organisations are active in countryside pursuits and it is plain from the voting in the poll that the population strongly wish to preserve their own way of life and not to suffer the cataclysmic upheaval that an airport would bring. In assessing the advantages and disadvantages of this site for an airport, great weight must be given to the human and social factors involved as well as the economic and other factors.

27. THAT, in conclusion, I am of opinion that there are very substantial local disadvantages which militate against the choice of the Nuthampstead area as a location for the site of a major airport, as follows:

(a) The locality consists of productive agricultural land, well settled by small communities living in villages and farmsteads and it would be a great loss to lose the area from its existing uses.
(b) There is no economic infra-structure on which to base major development.
(c) The site has no adequate communications at present.
(d) The site is physically unsuitable requiring extensive levelling works to be undertaken.
(e) The effect of the airport would radically transform wide areas of countryside having regard to the new towns, communications and services needed, the noise from aircraft and the great increase in surface traffic.
(f) The overwhelming majority view of the residents expressed from the poll shows that local opinion is firmly against the proposal, there being 92 per cent of the recorded votes against the scheme.
(g) Great hardship would be caused to many thousands of persons whose whole way of life would be destroyed by the project with serious social and family consequences.
(h) A large area of pleasant countryside of high landscape value would no longer be available for recreation by the many thousands from the London conurbations who now visit it regularly.
(i) Many fine buildings of architectural and historic merit would be destroyed or would be likely to be seriously affected and the tradition and history of this area of countryside would be abruptly terminated.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Nuthampstead Preservation Association

SUBMITTED BY MR. T. SAPSED*

1. My family and I have lived all our lives in the Nuthampstead area and will continue to do so unless uprooted by the coming of an airport. We are but typical of many others.

Family History

2. I am aged 52 and a tenant farmer as was my father before me. I was two years old when my father became tenant of High Hall Farm, Anstey, a mixed farm of 500 acres owned by Baron Dimsdale, the grandfather of the present Baron whose son is now my landlord.

3. My father also became tenant of North End Farm (130 acres) owned by Baron Dimsdale and in addition he farmed 66 acres of glebe land.

4. These farms are within the area which would be taken over for an airport. The glebe land is on the boundary of the perimeter.

5. As soon as I was old enough I worked for my father on the farm. When he died in 1946, Baron Dimsdale granted me and my uncle the tenancy of the two farms. I also farm the glebe land.

6. I married in 1944. My wife had lived in Barkway all her life. Both her parents are still alive. Her father is a retired local builder aged 81 and her mother is 79. We have four children, Peter 24, Leslie 22, Helen 19, and Jane 14.

7. Peter has grown up in farming. He has been to an Agricultural College and is a great help to me in running the farms. In time I am hopeful that he will come into partnership with me and become my co-tenant.

8. Leslie is employed by a large firm of farm machinery manufacturers and developers in Ipswich. He lives in lodgings there, coming home each week-end. Helen is a secretary with a firm of estate agents in this area, and Jane is at a comprehensive school at Royston.

9. My uncle is 78 and still helps on the farms. He lives at High Hall Farm with my sister who housekeeps for him.

The Farms

10. I feel justly proud of our farms. They are heavy land farms and I believe that an inspection would reveal them to be as good as can be found anywhere. The produce is sold to local merchants.

11. I pay a rent of only £3. 6s. 0d. per acre to my landlord. This is very low. The reason is that labour for repairs and improvements is hard to come by in the neighbourhood so, by arrangement with him, I frequently carry out repairs and improvements to the farms, for example, drainage, at my expense instead of his.

12. Besides my son, and some seasonal casual labour, I have five regular farm workers who all live locally. Four of them are married and are all against the coming of an airport. The fifth, a single man, is a good worker like the others. He is aged 21 and would like the Airport to come here.

The Future

13. *If I am not deposed*

I can look forward to the future with confidence. Like other tenant farmers in the area, I earn a reasonably good living and this should go on. Moreover, and perhaps this is my most important consideration, I can look forward with confidence to the future security of my wife and our children with their families.

14. *If I am deposed*

If, however, the airport comes to Nuthampstead, the future is a bleak one not only for me personally but for the remainder of my family.

15. I have no other trade save farming. If deposed my chances of obtaining the tenancy of another farm are virtually nil. It is well known that vacancies for farm tenants are, to say the least, very few and far between. The chances of a man of over 50 obtaining a tenancy are very remote. There would be no chance at all of this happening in my own home area.

16. Thus instead of being able to carry on with the job for which I am trained and feel I am doing well for at least the next twenty years, I should find myself looking either for a smallholding or a farm manager's job somewhere else in the country, wherever I was lucky enough to find one. My elder son Peter and I would not have sufficient capital to acquire a farm of our own.

17. Peter would find himself similarly placed. Instead of coming into partnership and gradually taking over from me, he would have to look for another job himself wherever he could find one.

18. My second son Leslie would, I feel sure, stick to his present job at Ipswich, but would undoubtedly have to live there permanently in lodgings if my wife and I had to move further afield.

19. Both my daughters would probably come with us to wherever we have to move. This would, however, mean that they would be uprooted from their jobs and friendships in this area.

20. If would be heartbreaking for my wife and me to have to move away from our home, from everything we have built up over the years and a life-time's circle of friends. In fact everything that we and our parents have worked for over the years would be lost and the future for our children and their children seriously jeopardized. This in addition to the complete break up of our family circle.

21. I do not put these matters forward in any emotional sense. What I have to say is factual and could be repeated in substance in the cases of many other local families.

* See also p. 868.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Nuthampstead Preservation Association

SUBMITTED BY MRS. E. I. CRANWELL*

1. I am aged 59 and live with my husband at the above address which is in fact in Essex although the postal address is Herts. We own our own house.

2. I was born in the nearby village of Clavering where I lived with both my parents until I married. In 1928 I started teaching at the local Primary School in Chrishall. Apart from one break I have been a school teacher ever since. I am now at the Barkway Village School.

3. I married in 1935. My husband is a native of Chrishall and so we made our permanent home there. He is, and always has been, a wheelwright by occupation. His father and mine lived locally and were both employed in agriculture.

4. We have a son and a daughter. They are both married and living in the area with young families. My son is a one-man builder/carpenter and my son-in-law a local heating engineer and plumber. As in the case of my husband, there is more than enough work to keep them busy.

5. Depending upon the exact alignment of the runways and the precise position of the airport, it seems that Chrishall may not disappear entirely. On the other hand it is perfectly clear that life as we have known it could not possibly continue. I presume the school would go and our whole way of life would be completely disrupted.

6. It is certain that both my husband, who is 58, and I would have to leave Chrishall. A wheelwright's is a very specialised occupation; he must have his place of business and live in an agricultural area. The coming of an airport here would mean the disappearance of the bulk of the agricultural land, and we should, therefore, have to move right away. There would no longer be work for him here. Where we should go I do not know because it would be difficult or impossible to start up again elsewhere. Perhaps even more important, it would be heart-breaking to have to leave our home and all our friends who would themselves be split up.

7. What our children and their families would do I cannot say. I do not think they really know themselves. What is certain is that their present way of life and assured future would radically change. They are strongly opposed to the coming of an airport. It would mean the complete break up of our family unit.

8. There are many other reasons why an airport at Nuthampstead would be a disaster. I am very concerned for the loss of the many beautiful and historic buildings in our area which could never be replaced. For example, in my own village of Chrishall there are a number of quite lovely thatched cottages some of which have been modernised. We have an inn and a barn which go back to Plantagenet times. There are buildings which were erected within every decade of the Tudor period along with others in the Jacobean and later periods. Besides the loss of these irreplaceable buildings, there is a character and an atmosphere which I consider to be a sacred heritage. I believe it to be the plain and bounden duty of my generation to see that these treasures are handed on to future generations.

9. Then there are the old people who would be in a particularly parlous state. Again I would take our village as an example, although it is but typical of others. In it, there are people in their 60's, 70's, 80's and even 90's. All of them, particularly the really elderly, are desperately worried about their future. Some live in their own homes and cottages for which they have saved and worked all their lives. Others are living in rented cottages and would have nowhere at all to go if uprooted. It is to be presumed that all the State could do would be to offer them Council Houses elsewhere. From their point of view that would be little short of disaster. To be uprooted and moved to new surroundings away from life among friends is almost the worst thing that can happen to the aged. They are not the vocal side of the community but this is how they feel.

10. If the village could in some way be lifted up as by a magic carpet and placed elsewhere it would not perhaps be so serious. But to disrupt and spread abroad such a close knit community to all points of the compass should, in my view, be resisted at all costs.

11. Lest it be thought that I exaggerate when I speak of our village heritage I would, by way of example, say that there are many families living in Chrishall today who have descended from a line resident in the village for many generations. Perhaps the most striking illustration is the family of Pitches. The present Mr. Wilfred Pitche, who lives at Crawley End, Chrishall, not only has two uncles and an aunt living in Chrishall, but his family can be traced back to the 14th Century when the name was spelt Petche. We have a Village history book called the "Chrishall Story" compiled from authentic Church records and Pipe records (manuscripts tucked inside clay pipes for safe keeping). It is at present in my custody and I quote from it:

> . . . It must be remembered that a "Petche" was amongst the marauders who raided Elmdon in 1309. . . . There were Millers, Brands and Ives here, as far back as the 1600's, and the next Century sees the Mancers . . . Days . . . Rogers, (sometimes spelt Rodgers) Clarks (without the "e") Lovedays

* See also p. 868.

Printed image digitised by the University of Southampton Library Digitisation Unit

and Flacks. The Cranwells do not put in an appearance before 1812, and the first record of a Drury is not until 1870. . . .

All the names mentioned in this extract are to be found in families living in the village today.

12. Many of these families have inter-married during the past two hundred years and now form a substantial part of the village population today. For example, Mrs. Nellie Clarke, who is over 90 (and who was a Flack before marriage) has two daughters and a son living in Clavering. She also has a grandson, a great grandson and a great-great grand-daughter living here. In addition, three separate families of Cranwell go back four generations and there are well over twenty local families going back three generations.

13. I am, therefore, utterly opposed at the break up of the village which is but typical of so many others in the area. I do not doubt that there are many other factors which have to be taken into account in deciding where an airport should go. The prime consideration must, however, surely be that people do matter more than planes. The breaking up of families, the loss of our heritage and the effect on the elderly are surely matters of supreme importance when the balance is weighed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Nuthampstead Preservation Association

SUBMITTED BY MR. L. F. REVELL*

1. I am aged 39, married and have a son nearly three years old. My parents and grandparents were all natives of Langley and my brother, who lives with my mother (my father is not alive), also works on the land. My sisters have married local men.

2. I have spent nearly all my working life in farm work and am a member of the National Union of Agricultural Workers.

3. Until last month I had been employed by Mr. John Paterson of Grange Farm, Langley for 14 years. I would still be with him as a farm worker save for the fact that he had intended to dispose of the farm a few months ago. I believe, however, that because of the threat of an airport he was forced to stay on for the time being. Because of the uncertainty surrounding the future of the farm I left Mr. Paterson early in May.

4. I am now on trial as a representative in the locality. How I shall get on I do not know, but may well return to farming again if my present job does not work out. In any case I do not intend to work out of the area.

5. As soon as I heard that an airport might come to Nuthampstead I felt very strongly that this would be a disaster. I, therefore, wrote to the Commission setting out my strong views. This letter was sent on or about 12th April and was written entirely of my own accord and without any discussion whatever with anybody attached to the Nuthampstead Preservation Association or their Solicitors.

6. I can do no better than attach a typed copy of this letter "L.F.R.1.". It exactly sets out my views.

7. In particular I feel very upset at the thought of the older folk—and there are a lot of them in our area—having to move away from their homes.

* See also p. 869.

L.F.R.1.

Dear Sir,

I am horrified at the idea of the Third London Airport being sited at Nuthampstead with the complete destruction of the many little villages with their beautiful Churches.

I have lived in Langley all my life, and I feel sure that the shock of *having* to leave their homes together with the knowledge that a Bulldozer will be pushing through the graves of their loved ones would be too much for some of the older village folk to bear. It would simply be a case of *Murder* by the state. I have talked to a number of Pilots and they say no Inland area would put up with the noise of the latest Jets, and that take-off should be over the sea.

I would like to point out that I am only a Farmworker, and it is not only the rich Land-owners that are opposed to the airport, the workers of the area, are more united than I have ever known them, in their opposition to the building of an airport at Nuthampstead. I have travelled over a considerable part of England, and I am sure that this area is well worth preserving as it is. In the area can be found a number of what I think are rare plants including what *we* call the Cuckoo Orchid and *very* occasionally a Butterfly Orchid. I am unable to be represented myself but wish to be represented through the Nuthampstead Preservation Association, who I will help in every way I can.

Yours Sincerely,

L. F. REVELL

(*Parish Councillor*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Nuthampstead Preservation Association

SUBMITTED BY CAPT. T. H. LUCKOCK*

1. I am one of the joint owners of Hormead Hall Farm at Great Hormead and in such capacity I have submitted written representations to the Commission with the other joint owners of the farm.

2. In order to avoid unnecessary duplication, I should like these representations to be read in conjunction with this proof of evidence and for ease of reference I attach a typed copy hereto marked "T.H.L.1.".

3. I am strongly opposed to the siting of an airport at Nuthampstead on two main grounds. The first is that Hormead Hall Farm, save for some 20 acres, lies within the perimeter of the suggested Airport and would thus cease to exist.

4. The farm is essentially a family concern. My father and brother farm it as tenants, but it is owned by my two sisters, my brother and me, having each been given a quarter share by our parents. My share was to a large extent my birthright and my strong personal objection to the Airport is, therefore, partly on purely financial grounds.

5. But my primary concern is that I should be terribly upset to see the break up of my father's home (my mother is no longer alive) and everything for which he has worked over a good many years. When he took over the farm in 1948 or thereabouts it was in a very run-down condition. Since then not only has a great deal of money gone into the farm but he, and more recently my brother too, have worked on it extremely hard. Much has been planned and much achieved as is well demonstrated by the information in "T.H.L.1.".

6. The second part of my personal objection to an Airport is that living at Great Chesterford my wife, three young children and I would find ourselves just beyond and practically in line with the runways at the other (north eastern) end of the perimeter. Our house seems to be somewhere within the 50 Noise Contour and we would certainly have to move. To continue to live in such a situation would be unbearable to us after the peace and quiet of the countryside.

7. I am 35 years of age and a stockbroker by profession following 8 years in the Army as a Regular soldier. On leaving the Army I lived for a while in London but found myself yearning for the country where I was brought up. Therefore, in 1962 my wife and I purchased our present home. Since then we have lived there happily with our three children and, airport apart, this will be our settled and permanent home. We are near enough to Great Hormead to be in close touch with my relations there and the farm, without being right on top of them. I want nothing more than to be able to bring my children up not only in the country but in my own countryside.

* See also p. 870.

T.H.L.1.

Hormead Hall, Great Hormead,
Buntingford, Hertfordshire

Joint Owners: Thomas H. Luckock
Mrs. Joanna S. Holder
Andrew M. Luckock
Mrs. Margaret A. de Courcy Ireland
} Referred to as "T. H. Luckock & Others"

Tenant Farmers: Richard H. Luckock
Andrew M. Luckock
} Farming in Partnership as "R. H. Luckock & Partner" and resident.

Representations

It appears that all or most of Hormead Hall farm would be taken into the area proposed for Nuthampstead Airport, and that our house and 7 cottages would be uninhabitable, if left standing at all, being at the immediate South-west end of a runway.

Accordingly we have arranged to be represented by the Nuthampstead Preservation Association generally, by The National Farmers' Union on the agricultural side, and by the Central Land Owners' Association on the ownership points.

By these representations it is desired to put forward the special position at Hormead Hall, without seeking to duplicate evidence or particularly to be heard at the public enquiry.

1. A Family Farm

(a) These representations are made on behalf of all the above by Richard H. Luckock, widower, father of the others. This farm was purchased in 1945 and since then it has been the family home, and with one son farming

Printed image digitised by the University of Southampton Library Digitisation Unit

the farm, and with the experience of full time work on it, and now aged 32, the family would expect their home base to continue, and it is a very homely place and united family, and there are six grandchildren.

(b) The five men employed on the farm have worked on it for most of their lives. For this two of them received long service medals from Princess Alexandra at The Royal Show in 1968 for service on the farm for 44 and 40 years. Another has worked 35 years, and the other two 20 years each on the farm.

(c) My son sees them at 7 a.m. every morning, and we both work seven days a week on the farm ourselves, having no other occupation.

2. The Farm

Buildings and Roads	12 acres	
Permanent Pasture	25 acres	
Arable and Lays	323 acres	Total 360 acres

(a) It may well be one of the best farms in Hertfordshire, but when we took it on in 1945 the buildings were dilapidated and the land unproductive, since few livestock had been kept, and some fields in the 1930's had been left derelict, so that the War Agricultural Committee had been much concerned with this farm.

In the first three years our corn sales were only (including subsidy):

1945/46	£1491 13s. 3d.
1946/47	£2850 0s. 0d.
1947/48	£2350 0s. 0d.

When we threshed the outgoers last crop of wheat the yield was only 450 cwt from 35½ acres.

(b) Yet this is a good farm of which there is about 100 acres of loam land on an easy slope to the River Quin, even land that will grow malting barley, and farmed as arable with kale folded for the sheep, good land for any root crop.

(c) The rest of the farm is heavy land, chalky boulder clay; it now grows wheat very well, and one year we had 45 cwt average from 110 acres (only a moderate dressing of artificial fertiliser). The aim on the farm is to grow 200 acres of grain a year with the rest of the heavy land in leys with bare and bastard fallows as necessary.

All this heavy land (250 acres of it) we have mole drained very thoroughly over the period of 23 years, and the ditches have been improved and maintained, and the drain outlets are still clear.

(d) The farm has been kept free of weeds, and even couch and wild oats are exceptionally scarce.

(e) More livestock are kept than is usual, and including breeding herds of cattle, sheep and pigs. 26 beef cows, 200 ewes, and 15 pedigree sows; with all progeny carried on to finish. Most female pigs are sold for breeding.

In 1959 an isolated case of foot and mouth disease occurred on the farm, and all stock were slaughtered: 72 cattle, 124 sheep, 197 pigs.

(f) Now the farm produces annually about:

Fat cattle	£2,000
Sheep and wool	£2,700
Pigs	£4,000
Corn and Seeds	£9,000

(g) We therefore believe that this is a very good farm in a very productive state:
the arable land drained, manured and weed free,
the livestock healthy and well cared for,
soundly worked on a steadily improving system by a strong team.

3. The Farm House

Hormead Hall, the manor house of Redeswill, is of timber frame and plastered walls and tiled roof, probably late 16th or early 17th century.

The fine brick chimney stacks have separate octagonal shafts with moulded capitals and bases.

A room in the main wing contains an original fireplace with a four-centred moulded stone arch, and another room contains original oak panelling.

Recently repaired the dovecote and moat are considerable features.

In view of the close proximity to one of the proposed first runways it seems that it would be impossible to sound proof a house of this structure, and that the effect of vibration would be disastrous. So that a small Tudor house of great charm and interest would be flattened, and something quite irreplaceable lost for ever.

4. The Farm Cottages

There are seven farm cottages, brick built, modernised 3-bedroom cottages, with bath, W.C. and hot water systems, main electricity and sewerage, all provided in recent years.

The slate roof cottages were built in 1913, and we built the thatched pair in 1947.

Five are occupied by employees and one by the village schoolmaster.

Printed image digitised by the University of Southampton Library Digitisation Unit

5. **Town and Country Planning**

(a) According to The Hertfordshire County Planning Office records: Hormead Hall and the Dovecote are statutory listed buildings, Grade II. The Moat is described as an ancient monument.

(b) Under The Hertfordshire County Council Development Plan the policy for Rural areas beyond the green belt has been to retain and protect the existing rural character; in villages other than Buntingford, Standon, Puckeridge and Watton-at-Stone, strictly limited to infilling within the main part of the settlement.

(c) The building of an Airport at Nuthampstead would completely alter the character of the area, with great loss of good quality agricultural land.

(d) It would be completely at variance with planning policy for the district for the last 20 years, in which it has been virtually impossible to build anywhere outside the tightly drawn villages.

(e) For the local inhabitants this seems a disaster. From a wider aspect this part of North Hertfordshire forms a particularly unspoilt stretch of rural agricultural country which provides not only valuable agricultural produce but is a recreational amenity area for a large number of persons from North London.

(f) For the Luckock family at Hormead Hall it would be a complete reversal of planning policy on which we have relied.

6. **Conclusion**

As Owners and Farmers we desire to make plain that something much more than hardship (one can think of no word for it) would be involved if we were turned out of our farm and home.

We have farmed it as well as we can, have fully financed it and taken little money out, devoting the income to improving the land and buildings; particularly in the long term interest we have kept a large number of livestock to less profit than we might have had.

For 23 years we have worked hard at it for very long hours.

Planning policy for the district in general has appeared to be settled for farming here. Parliament has given (since the 1923 Agricultural Holdings Act) security to tenant farmers; how much more does farming need that overall ability to look ahead for which this great change would be the very negation.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Nuthampstead Preservation Association

SUBMITTED BY MR. E. F. WISBEY*

1. I am 64 years old and live with my wife at the above address. Both of us, like our parents before us, were brought up in or around Arkesden.

2. For the last 5 years I have worked for the Essex County Council as a road man. Before then I was employed in farm work for nearly 40 years.

3. My wife and I own our cottage where we have lived since the early 1930s. We have just spent a considerable part of our savings on improvements to it—money which we should never get back if we are obliged to leave.

4. I shall be retiring within a few years. I have spent the greater part of my life in hard manual labour and feel that I have a right to be allowed to retire in my own village and cottage in peace and quiet. There are very many others who feel just as I do.

* See also p. 870.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

Survey of affected farmers in Hertfordshire, Cambridgeshire and Essex

1. Scope of the survey

Questionnaires were sent out to 525 N.F.U. members by Hertfordshire County Branch, 750 by Cambridgeshire, and 126 by Essex. (We should explain that Cambridgeshire County Branch covers the Saffron Walden local branch area.) This distribution covered farmers in an area of some 10 to 15 miles' radius from the centre of the proposed airport at Nuthampstead. This wide circulation was considered necessary because in the absence of precise information we wished to obtain the views of farmers who are likely to be affected not only by the airport itself, but by the noise nuisance, which in the first place we had to assess approximately by reference to the noise contours given for Foulness, and by the housing and ancillary developments, all of which would follow if Nuthampstead were to be chosen as the site for the Third London Airport.

Our membership lists contain, however, a number of "secondary" members, such as farmers' sons, retired farmers, and others connected with the industry but not actually farming; such people were, nevertheless, given the opportunity of expressing their views. Some of these did so; others replied that they did not feel entitled to express formal objection. Similarly some full farming members who are not in the immediate vicinity of the proposed airport have said that they did not feel entitled to make formal objection, even though realising that they might be indirectly affected.

We have, however, only analysed the results received from full farming members in an area limited to a 10-mile radius around the proposed site. Hertfordshire sent to 254 full farming N.F.U. members within this limit. Cambridgeshire sent to 516 such members. And Essex sent 60 to farmers within this 10-mile limit.

2. Replies to the questionnaire

Hertfordshire received 100 completed forms from full farming members in the 10-mile radius, Cambridgeshire 107, and Essex 26. Acreage information was also obtained regarding 3 non-members in the airport site area, making a grand total of 236 farmers about whom we have factual information.

Three non-members were not eligible to ask the N.F.U. to represent them, but of the remainder, 33 specifically asked for this.

None of those replying were in favour of the airport proposal, and only one, for personal reasons, would change his opposition to it if compensation were more adequate.

Twenty-one said that they were willing to pay a levy if necessary to assist the N.F.U. in fighting the proposal.

This is a predominantly arable farming area, and yields of 2 tons of wheat to the acre, and 35 cwts of barley are commonly mentioned in the replies. Up to as high as 18 tons per acre for sugar beet is mentioned, and 10 to 15 tons per acre for potatoes. "Other crops" include brussels sprouts, peas and beans. Hay is widely made in the area. There are also two parcels of woodland amounting to approximately 300 acres.

Thirty-five of the farmers grow cereals, 2 are grassland only, 1 is a market-gardener, and 1 grows willows.

In the farming enterprises affected by the site area the following livestock is kept:

12 farmers keep 493 beef cattle.
3 farmers keep 243 dairy cows.
16 farmers keep 8,016 pigs.
3 farmers keep 460 ewes.
10 farmers have 10,084 head of poultry.

Twenty-eight farmers employ 114 full-time workers and have 80 farm cottages amongst them.

The 25 who were willing to reply to the question state that in the past ten years there has been an aggregate Capital investment of £722,350.

Twenty-three state that they have sons or relatives whom they hope will follow them in their farms.

(b) *The 10-mile radius*

Taking the 10-mile radius from the centre of the Nuthampstead site, and *excluding* the figures for the airport site itself as given in 3(a) above, we have the following sample figures to present:

197 farmers record an acreage of 72,364 acres. These farms range from over 2,000 acres down to single figures, but the average acreage of those replying is 367·3 acres.

In our sample, 52,859 acres are farmed by 172 owner-occupiers, and 19,505 acres are farmed by 95 tenants, but this includes 70 owner-occupiers who are also tenants of some of the land referred to.

This represents a farming acreage of 86,749 acres.

63,170 acres are farmed by 204 owner-occupiers, and 23,579 acres are farmed by 113 tenants, but 81 of these are owner-occupiers who also farm some tenanted land. 30 members are tenants only, farming a total of 7,885 acres.

Of all the members who replied, NONE were in favour of Nuthampstead for the Third London Airport.

Some members who made it clear that they objected to the proposal in principle did not wish to appear at the Inquiry, and this may have caused some confusion, resulting in only 177 expressing objection whereas 210 said that they wished to be represented by the National Farmers' Union at the Inquiry. 147 felt so strongly about the proposal that they stated their willingness to pay a levy to defray the cost of the

Printed image digitised by the University of Southampton Library Digitisation Unit

N.F.U. putting the agricultural case at the Inquiry. (Many have already contributed to the Nuthampstead Preservation Association).

Only 9 gave answers that implied that adequate compensation would overcome their fundamental objection to the loss of land to themselves or to agriculture generally.

3. **Description of farming**

The following facts emerge from our Survey.

(a) *The airport site*

In an airport site based on the plans published with the Commission's Site Information for Nuthampstead, there are 39 farmers or farming enterprises who would lose all or part of their land.

The total acreages farmed by these 39 enterprises, both inside *and* outside the site area, is 14,385 acres.

10,311 acres are farmed by 32 owner-occupiers, 11 of whom also farm 2,153 acres of tenanted land in the vicinity.

Tenant farmers affected by the airport site number 7, and farm 1,921 acres.

The average size of a farm in the area is seen to be just under 370 acres.

In the potential site area there are:

15 farmers who would lose all of their land.
8 farmers who would lose over half their land.
26 farmers who would lose varying proportions of their land, consisting of from 5 to 300 acres.

Corn crops yield up to 2 tons per acre for wheat and 35 cwts for barley, 15 tons per acre is common for sugar beet, and 12 tons widely given for potato yields per acre. A few of the larger farmers grow vegetable crops in a big way for the London markets.

In our replies:

71 farmers keep 4,400 beef cattle.
35 farmers keep 2,239 dairy cows.
75 farmers keep 26,946 pigs.
14 farmers keep 5,496 sheep.
52 farmers keep 238,929 hens and turkeys.

129 farmers who replied to the question state that they spent an aggregate of £2,851,400 on capital investment over the last ten years, and this includes buildings, fixed equipment, machinery and, in some cases, stock.

131 members state that they have sons or relatives to follow in their farming footsteps.

Seven of those who replied were horticulturalists, of whom 5 grow fruit on a large scale (orchards total 299 acres) and 2 of whom have 32,147 sq. ft of glass between them producing lettuce, cucumbers, tomatoes, celery and carrots.

4. **Reasons for objection**

In our questionnaire, and at many farmers' meetings in recent weeks, we have invited our members to give their views on the Nuthampstead proposal, and their objections to it may be briefly summarised as follows.

With one accord farmers deplore the taking of good agricultural land for development. Apart from obvious self-interest, farmers appreciate better than most how scarce, precious, and irreplaceable is land. They strongly hold the view that only the poorest land, or better still non-agricultural land should be taken for development if this country is to survive in times of financial crisis or national emergency. The off-shore site is therefore strongly favoured.

Apart from the 7,500 acres required for the airport itself, we know only too well in this part of the country of the widespread demands which would be made on our land to provide housing, and following this all the services required by the new population which will operate the airport—roads, rubbish tips, sewerage plants, reservoirs, and so forth. We believe that farmers within up to 20 miles of the airport are very vulnerable in this respect. We particularly wish to point out that there is no pool of spare labour in the area, and virtually all the new population will require new housing and services. And in the interim the labour situation will be chaotic.

Farmers also have bitter experience of the effect on farming of having a large population close by—trespass damage, rubbish dumping, vandalism, roaming dogs, fire risks, to mention just a few—and the whole character of the area would be changed.

The serious nuisance of aircraft noise is very much with us at this moment owing to the build-up of night flights by jet aircraft at Luton airport; the effect of a Third London Airport with even bigger jets landing and taking off almost continuously is quite unbearable.

We would also particularly draw the attention of the Commission to the problem of land drainage and run-off. Three rivers rise in the Nuthampstead area. Drainage was a constant problem when Nuthampstead was a comparatively small air base during the war. Furthermore, these tributaries to the River Lea are already prone to serious flooding, and we would submit that from the cost/benefit point of view heavy expenditure will be needed on river works to overcome this problem. Large areas of good land would undoubtedly be required for flood-water reservoirs.

In their replies farmers have also stressed the amenity aspect of the area as it is at present. From Hertford to Cambridge and from Baldock to Saffron Walden is one of the few remaining rural and unspoilt areas to the north of London, a fact obviously appreciated by urban dwellers; a Green Belt such as this has advantages to farmer and urban dweller alike, and a number of farmers urge in their replies that this amenity should be preserved.

These points will be dealt with in much more detail in other parts of the evidence, but we mention them here because they are views expressed by farmers themselves in the course of our various surveys.

5. **Compensation**

The level of compensation for loss of land or disturbance is obviously relevant; but it is also relevant to mention again that despite the fact that the majority replying to the questionnaire were owner-occupiers, none of them considered that even handsome compensation made up for having one's farm taken for development or for the undesirable principle of taking good land out of food production. Many also point out that if their property and their livelihood is forcibly taken from them, compensation well above current standards

Printed image digitised by the University of Southampton Library Digitisation Unit

is necessary to enable them to find new farms without being seriously out of pocket. Our policy has always been that if the community must take a man's land and livelihood the community must be prepared to pay. Even greater hardship applies in the case of the tenant farmer whose compensation is still hopelessly inadequate in such circumstances as these, and the chances of finding another tenancy are slender indeed.

6. Conclusions

The area which would be over-run by the proposed airport site is an exceptionally valuable one from the farming point of view. The land itself is of high quality, and has recently been classified in the Ministry's Agricultural Land Service survey as mainly Grade II. But more than this, it is particularly well farmed. It is, first of all, very open country, with little woodland, wasteland or natural obstruction; consequently field sizes are large and can be farmed more efficiently than land which is broken up by woods and spinneys, hills and valleys, and there is the minimum breeding ground for pests.

Although there are both large and small farms in the area, the average acreage of those immediately affected is high. With this goes high farming, and we would claim that the area is exceptionally well-farmed by any standards. These farms are highly mechanised and a great deal of personal capital has been sunk into improving and equipping the farm buildings, grain handling plant, and suchlike.

The site is also in the centre of the first really rural area north of London, having no large towns within 12 miles, and apart from the amenity that this "breathing space" gives to Londoners and the town-dwellers of south Hertfordshire, it does mean less interference with agriculture than our less fortunate members experience in the more built-up part of the area. All these valuable assets would be swept away if Nuthampstead is chosen for the Third London Airport.

Apart from the site area, the land and standard of farming in the 10-mile radius from it, which forms the other part of our survey, is also high. Although it includes patches of Grade III land, these large farms on the Hertfordshire–Cambridgeshire–Essex border are so large, well-equipped and well-farmed that it is a very highly productive and favoured area. There is frequent mention of corn yields of 2 tons per acre, 14 to 16 and even 18 tons of sugar beet to the acre and 12 to 15 tons to the acre for potatoes. Also on the open land in the area many farmers grow crops such as brussels sprouts, and the more specialist horticulturalists grow peas and beans. The proximity to London markets is an essential feature of these enterprises.

Throughout the area generally the standard of the small farm as well as the large is high, they are well-equipped and well-stocked, producing milk, beef, pigs and poultry as our figures show. We believe that this high standard is partly made possible by the fact that here we have an unspoilt rural area yet one which is within easy reach of a big consumer market. It is well-served by many types of marketing outlet.

If Nuthampstead becomes the Third London Airport these advantages will disappear. Every town and village would tend to expand, and this, together with new services required would turn the area into a built-up one, with all the interference to agriculture that goes with this, quite apart from the actual loss of food-producing land.

If, on the other hand, the airport-servicing population is to be catered for in one New Town, this must presumably be within 10 to 15 miles of the airport, and therefore inevitably another large demand, estimated at up to 25,000 acres, will be made upon some of this country's most valuable food-producing land.

It is not our policy to try to oppose essential development, still less to try to push it off on to another set of N.F.U. members. Our policy always has been to ask that the authorities should first of all seek to use non-productive, non-agricultural land, such as heathland. In the case of an airport there is the unique opportunity of being able to use no land at all by constructing it off-shore, and although we understand that comparisons are not permitted at the Stage II hearings, we must record that many of our members, both within and outside our survey area, consider that an off-shore site should be selected for the Third London Airport.

Nuthampstead proposal—members in the site area

Name and address	*Affected (approx.)*	*Total farmed*	*Owned*	*Tenanted*
HERTS N.F.U.				
Capt. C. G. E. Barclay, Brent Pelham Hall.	450	1960	1581	379
H. T. Baron, Brickhouse Farm, Gt. Hormead.	100	376	256	120
A. B. Barker, Bulls Farm, Nuthampstead.	320	420	313	107
H. C. Beddington, Anstey Hall.	520	695	695	
E. E. Bradford, Rectory Farm, Meesden.	80	98	98	
J. V. George, Manor Farm, Meesden.	184	184		184
E. S. Handley, Essex Cottage, Anstey.	22	22	22	
Alex Hodge Ltd., Wyddial Bury.	10	500	500	
C. A. House, Anstey Bury.	235	235		235
J. R. How, Down Hall, Brent Pelham.	50	370		370
R. A. Johnson, Alswick Hall, Buntingford. (Land at Anstey)	275	860	860	
W. L. Johnson, The Hall Farm, Anstey.	24	24	24	
R. H. Luckock, Gt. Hormead Hall.	140	360		360

Printed image digitised by the University of Southampton Library Digitisation Unit

Name and address	*Affected (approx.)*	*Total farmed*	*Owned*	*Tenanted*
Trustees, Meesdenbury Farm, Meesden Bury.	276	276	276	
A. & T. Sapsed, High Hall Farm, Anstey.	500	624	4	620
W. Weir, Bury Farm, Gt. Hormead.	150	412	390	22
J. Welch, Bury Farm, Nuthampstead.	310	562		562
CAMBS. N.F.U.				
W. J. Bates, Gipsy Corner Farm, Lt. Chishill.	300	700	110	590
W. Brand, Building End, Chrishall.	30	300	300	
P. de Beer, Chiswick Hall, Chrishall.	135	270	270	
B. H. Duke, Hope Farm, Wenden Lofts.	5	289	289	
D. L. Chapman, Newlands, Arkesden.	12	170		170
A. S. Clarke, Langley Lawn, Langley Lower Green.	300	300	300	
E. G. Funston, Bower Farm, Langley.	174	174	24	150
A. George, Langley Hall.	366	366	340	26
P. G. Goddard, Cosh Farm, Duddenhoe End.	131	131	131	
W. G. Foster, Duddenhoe End Farm.	50	120	120	
W. H. & E. F. Fox, New Farm, Langley.	159	159	153	6
S. J. F. Jennings, Clavering Farm, Clavering.	230	280	280	
J. Logue, Rockells Farm, Duddenhoe End.	70	541	540	1
R. J. Paterson, The Grange, Langley.	301	301	301	
H. Rowe, Curles Manor, Clavering.	50	590	590	
ESSEX N.F.U.				
C. W. Abrahams & Sons, Thurrocks Farm, Clavering.	210	615	483	132
P. D. Barnes, Bradgates, Lower Green, Langley.	15	15	15	
L. A. Copeland, Brices Farm, Clavering.	74	74	74	
R. W. Watson, Chardwell, Arkesden.	130	248	248	
NON-MEMBERS				
B. E. Copeland, Brocking Farm, Clavering.	39	39	39	
Parker Bros., Anstey.	40	40		40
E. J. Wiseman & Sons, The Hall, Chishill.	50	685	685	
	6,517	14,385	10,311	4,074
LARGE WOODLANDS				
Dimsdale	175			
Debenham	125			

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

Planning Evidence

SUBMITTED BY MR. J. E. Y. HAWKES*

1. I am a partner in the firm of Hancock, Hawkes Architects/Planners of Hampstead, London. I have been asked by the National Farmers' Union to examine the effect that the establishment of the Third London Airport at Nuthampstead would have on future urbanisation and land requirements in the area.

Existing settlement characteristics

2. The existing settlement pattern around Nuthampstead is relatively unaffected by London. It is an area of high landscape and historic value and consists of small market towns (Bishop's Stortford, Saffron Walden, Royston) and predominantly agricultural villages to which these market towns act as service centres.

3. An analysis of the 1966 Sample Census shows that in the sub-region, defined by a radius of approximately 20 miles from the centre of the Nuthampstead airport site, the population was about 800,000. Details of this and of workplace location are set out in Appendix A.* The only settlements over 50,000 are Cambridge M.B. (98,130); Harlow U.D. (67,930) and Stevenage U.D. (56,240).

4. Further analysis shows that the major focuses of employment were:

	Total workforce
(i) Cambridge M.B.	55,480
(ii) Baldock/Letchworth/Hitchin U.D.	35,620
(iii) Harlow U.D.	30,250
(iv) Stevenage U.D.	29,000
(v) Welwyn G.C.	22,980
(vi) Hertford M.B./Hoddesdon U.D.	19,360

All these centres were either net importers of workers or close to an import/export balance, as indicated by Column B of the appendix. Secondary focuses were Saffron Walden M.B., Bishops Stortford U.D., Biggleswade U.D., Haverhill U.D. and Braintree and Bocking U.D.

5. The analysis shows a strong localisation of employment attraction. For example the significant sphere of influence of Cambridge M.B. extends no further south than South Cambs. R.D.; the influence of the Letchworth, Baldock, Hitchin grouping is confined largely to the rural districts of Hitchin and Biggleswade which surround it, plus Stevenage (1,450 attracted employees); Stevenage itself provides over 70 per cent of its workforce of 29,000 from within its own boundaries, drawing the remainder largely from adjoining administrative areas within the sub-region. Similarly, on a very much smaller scale, Braintree and Bocking U.D. to the east of the sub-region supplies 73 per cent of its own workforce of 10,000, drawing the remainder from the adjoining rural areas. In summary, the average journey to work within the sub-region is short.

6. The only exception to this pattern is the pull exerted by the Greater London Council area. However, this is comparatively small except in the southern fringe of the region. It is at its strongest in Epping U.D. and Epping and Ongar R.D. where 34 per cent and 30 per cent of the employed residents work in Greater London, but this proportion reduced rapidly immediately to the north of this area (Bishop's Stortford U.D. 17 per cent, Saffron Walden M.B. 6 per cent, Stevenage U.D. 3 per cent and Royston U.D. 0 per cent).

7. The sub-region as a whole is fairly self-contained particularly in the northern area. The draw of London is less than might be expected and significantly less in relation to the New Towns.

Regional influence on local urbanisation

8. In order to examine the size and form of local urbanisation associated with the airport at Nuthampstead it is essential to examine the broader strategic urbanisation pattern at regional level.

9. The development of the airport and association uses is likely to be the largest single catalyst for growth in the south-east in the next quarter century and the opportunity should be taken to help restructure the settlement pattern at regional scale. The development associated with the airport should therefore be considered, not only in terms of local form, but on how the local form can best be devised to complement the regional pattern (which may itself be affected by the airport location). It is therefore necessary to consider the possible regional structure before considering the siting of urbanisation locally.

10. The airport site lies on the borders of the south-east and East-Anglian Economic Planning Council regions, in a relatively sparsely populated area some 25 miles north of the Greater London boundary and some 15 miles south of Cambridge.

11. The *Strategy for the South East* 1967* envisaged an increase in the population of the south-east region from 16·8m (Greater London, 8m) to 19m by 1981 (Greater London, 8m) and by natural increase alone to 23m by 2000. (About 500,000 might be accommo-

* See also p. 873.

* HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

dated in schemes outside the region by 1981). More recent estimates are less and the G.L.C. in its Draft Strategy Plan (March 1969) foresees a decline to 7·3m by 1981.

12. The East Anglian Council in *East Anglia—A Study** (1968) estimated that the region's population would increase from 1·6m to 2m by 1981, including planned overspill schemes and by a further ½m between 1981 and 2001 due to natural increase.

13. The two regions' population is thus expected to increase by about 7 million by the turn of the century. If the airport generated growth reaches the upper limit of 800,000 set out later in my evidence, it will account for over one tenth of future growth in the area and equal the existing population in the sub-region 20 miles around the airport. It would also be a third greater than the total population so far housed in all the new towns. This emphasises the scale of urbanisation that may be required and the importance of the correct regional location. I have therefore examined future proposals for the south-east and East Anglian regions.

14. An essential part of current planning thought is the creation of growth zones—in areas that are already urbanised or on transportation axes. This has the advantage of avoiding sprawl into agricultural or recreational areas; it takes advantage of the existing basic infrastructure; and helps the restructuring and improvement of the existing fabric. Complementary to this is the conservation of rural areas as country zones.

15. A major dilemma in the siting of an airport in an inland site is that the airport and noise zone should be in a sparsely populated area, whereas the associated urbanisation should be in a growth area.

The south-east region

16. The South-East Economic Planning Council's *Strategy for the South-East* (1967) concludes that a long-term strategy should be based on the concentration of the population increase in a series of radial growth sectors separated by country zones. They propose a minor growth sector to the north of London along the A1 and King's Cross–Peterborough railway; a major sector of growth along the A12 to Ipswich and that between the A1 and A12 a wide sector should be preserved as open countryside. More specifically they propose that "Parts of the sector, embracing the attractive villages on the Essex/Suffolk borders should be designated as a country zone" (para. 42), and later paragraph 160 refers to "preserving broad areas of countryside between these sectors (of growth) e.g. in north Hertfordshire and north Essex".

17. The report draws attention to the Government's announcement that the third London airport was to be located at Stansted, which would present major difficulties in the light of their strategy proposals and would require major planning studies "in order to mitigate the adverse affects on the area as far as possible" (para. 37).

18. The absence of any potential major growth points in the Nuthampstead area and its value as an agricultural and recreational zone was recognised by the South-East Economic Planning Council's inclusion of the area around the proposed airport site in a "main country zone". I believe that the essence of this strategy is rational even though it might possibly be modified as a result of the present study by the South-East Joint Planning Team.

19. The sector between the A1 and A12 had previously been included as a Landscape/Agricultural reserve in all the alternative growth proposals prepared by the Standing Conference on London and South East Regional Planning in July 1967. (Plates 1, 2, 3, 4—Agenda No. 8).*

20. Furthermore, the Hertfordshire County Council and Essex County Council's Development Plans and policies for conservation are based on maintaining the areas of high landscape value and historic interest in the Nuthampstead area to the north of the counties and on strengthening the Green Belt policies around the Metropolitan area.

21. An extension to the Green Belt, some 5 to 8 miles in width on the north and north-east of London, has been formally submitted to the Minister of Housing and Local Government. This extension would encompass, *inter alia*, Bishops' Stortford, Stevenage and Letchworth. Although this was included in the 1965 Review of the Hertfordshire Development Plan, some modification has subsequently been proposed, and formal approval of the extension has been postponed pending further inquiries. I understand, however, that the County Councils of Essex and Hertfordshire are continuing to operate green belt policies in the area of the proposed extension.

22. Both regional strategies and local planning policies have consistently been based on the positive conservation of the rural qualities of north Hertfordshire and north-west Essex and that (apart from reference to the possible need to accommodate Stansted airport growth) all proposals for the area to the south have been based on limiting further growth. It is clear that existing strategies for the south-east give no guide to the future form of urbanisation in Nuthampstead area. However, policies to the north of the airport site in Cambridgeshire and the East Anglian region are more complex. It is therefore necessary to examine them in some detail.

The East Anglian region

23. The East Anglian Economic Planning Council's *East Anglia—A Study* (1968) estimates that the regions population will increase by 27 per cent by 1981 and in paras. 17 and 18 draws attention to the large scale of this increase:

> . . . an increase which is large in absolute terms and is proportionately by far the largest to be absorbed by any region. (27 per cent compared with 11 per cent for England and Wales.)
>
> 18. This very large increase in population is to be

* HMSO; 40s.

* Available from the Standing Conference, 26 Old Queen Street, London S.W.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

imposed on a region which is in a number of critical respects, not well prepared to receive it.

It then lists *inter alia:* the poor communications system; services below the national level; the scattered distribution of population; the limited industrial base; the need to conserve agriculture, the rural and historic amenity, and the great natural interest and beauty of the area.

24. Later in para. 63 the Council recommended that:

> no further proposals for increasing the overspill programme should be approved, with the two exceptions of Norwich (30,000) and Thetford (moderate extension).

25. The report considers the South-East Economic Planning Council's proposals for growth sectors, insofar as they effect East Anglia and conclude that the growth sector along the A1 to Peterborough should be encouraged (para. 119). They are less certain about extension of the Ipswich corridor and after examining a number of alternative ideas for the future of the region they draw the initial conclusion that four city regions exist in East Anglia in meaningful physical and economic planning terms (Peterborough, Cambridge, Norwich and Ipswich); that these should form the basis of the regional strategy and that future decisions should be considered within the framework of the individual city regions (paras. 132a and 133).

26. The report defines the "*Cambridge subdivision*" as the area centred around Cambridge between the fenlands to the north and the chalk uplands to the south and extending from St. Neots in the west to Mildenhall in the east. This area is broadly the area within which urbanisation north of Nuthampstead would take if the airport was constructed. The report draws attention to the potential of Cambridge as a nucleus for growth but emphasises the obstacles to this approach:

> the immediate problems of labour shortage, because population and housing growth have not kept pace with the growth in demand for labour; and the physical planning difficulties of preserving the architectural and historical environment. (para. 154.) It continues that despite the current planning policies of severe restriction on industrial growth and on new shops and offices, employment opportunities have grown substantially in the area—these pressures for growth are a clear sign of the attractiveness and economic advantages of the city to industry and commerce. (para. 155.)

27. Later the report mentions the studies currently being undertaken on Cambridge but concludes that, "Looked at in the *regional context*, the Council considers that East Anglia cannot afford to disregard natural growth points and that in each city region, the city should be strengthened; in the case of Cambridge . . . this appears practicable without damaging the . . . University and other historic areas of the city . . ." (para. 100). However, no specific population or proposals are mentioned.

28. Bearing in mind the Council's earlier concern that the region was not well prepared to receive the major population growth envisaged; its rejection of a growth band from Ipswich through Cambridge to Northampton because it would further tilt the economic balance of the region to the south and south-west (para. 122) and its recommendations that no further overspill schemes should be approved (para. 63); it would appear that the Council's proposals for growth at Cambridge would be limited to gradual consolidation of the city as the city regional centre (possibly by accommodating its own natural growth rather than this being dispersed in the region) as opposed to a complete reversal of past policies for the City by the introduction of major planned growth.

29. Earlier in 1964 *The South-East Study* had drawn attention to the problems of expanding Cambridge: "There are clearly some towns in the south-east which, though otherwise attractive, already have problems to which it would be unwise to add by means of a forced growth scheme. Oxford, Cambridge and Brighton are three examples" (para. 13 page 67).

30. Not only is the main part of the sub-region within 20 miles north of the airport site within the County of Cambridge, but the City itself is central to this area. (The southern boundary of the County runs almost due east-west source four miles north of the airport from Royston to Haverhill.)

Cambridge Development Plan:

31. Past policies for Cambridge are clearly set out in the recently published Cambridgeshire and Isle of Ely County Council's "*Development Plan Review, 1968—Report of Survey*"*

> . . . in the Development Plan submitted in 1952 . . . The major decision was to reduce the rate at which the City was growing, and to try and stabilise its population at about 100,000. It was 86,000 in 1948. This decision was made for reasons which transcended purely local considerations. The future of Cambridge as an historic University town was a national concern and it was believed that the preservation of its unique character and qualities would be possible only if large scale growth could be avoided. (para. 1.06.)
>
> In 1961, proposals for the First Review of the Town Map were submitted to the Minister . . . the only amendment to the basic policy was the incorporation of more precise control over the expansion of employment. In particular the limitations on industrial development were extended to embrace certain office and business uses. This Review was approved by the Minister in 1965. (para. 1.13.)

32. The policies approved by the Minister in 1965 included that:

> To reduce the rate at which the City is growing and stabilise the population within the Town Map area at not more than about 100,000 persons. (para. 1.24.)

33. In 1965 the Ministry of Housing set up a joint working party to consider the control of employment

* Cambridgeshire and Isle of Ely; 25s.

Printed image digitised by the University of Southampton Library Digitisation Unit

and the scale and distribution of further growth. The final report has not yet been completed. The 1968 review therefore excludes proposals for the Cambridge Study Area, which covers the whole of Cambridge Employment Exchange area, extending from Huntingdon and Peterborough in the west to Essex in the south. However, it is anticipated that the population in the Study Area will increase from 162,000 (1966) to 200,000 by 1981.

34. Despite restriction on development and the maintenance of a Green Belt (approved in principle 1957) drawn closely around the City, Cambridge and the villages to the south have been subject to rapid growth. Almost the whole of the *employment growth* within the City over the last 15 years has been due to natural increase and the growth in institutional population. A substantial part of the increase in the sub-region to the south has been due to a significant increase in local industrial and research establishments. There has been a substantial increase in manufacturing industry, which accounts for 40 per cent of the total growth. "Nearly all the major industries in the Cambridge area are in the category of 'growth industries', particularly radio and electronics, scientific instruments and chemicals, and the increase has been almost wholly due to expansion of established industries. Very few new firms have been introduced since 1951 . . ." (para. 6.10). Since 1956 total employment in the Cambridge area has increased by an average of more than 1,200 jobs per year and there is little evidence that the demand is falling off. The adjoining employment areas to the south (in the Royston, Nuthampstead, Saffron Walden areas) have in general a structure fairly typical of smaller market towns, with a high proportion of employment in agriculture.

35. In Cambridge and in all the market town areas to the south of the County, the number of vacancies greatly exceed the numbers of unemployed. Thus it may be concluded that the whole of this area is one of general labour shortage.

36. The most recent *population projections* (September 1967) of natural change between 1966 and 1981 indicate a growth of 14,000 in the Cambridge Study Area, but if current migration trends continue this would be much greater. On the other hand the population in the northern part of the County (the Fenland area) is likely to decline. The report allows for some 13,000 increase in the south of the County outside the Study Area between 1966 and 1981

37. The report concludes that in the southern area of the County:

> The main planning problems will therefore be to control growth and to direct it to appropriate locations rather than in anyway to induce growth. (para. 6.48.)

Conversely in the north of the County:

"the Planning Authority must . . . find positive means of attracting new employment in the area." Para. 6.51 continues, "The situation at Ely is also very serious, but in this case accessibility to Cambridge makes it more suitable as a location for overspill from the Cambridge area."

38. The report also emphasises the importance of *conserving the best historic and architectural buildings, towns and villages and rural landscape areas* in the County. There is a noticeable concentration of these in the south of the county, a factor that must play an important part in considering future growth in the Cambridge/Royston area.

39. Of the 3,471 *listed buildings* in the County 2,705 are in the City and three southern rural districts. South Cambridgeshire R.D. has 919, more than in Cambridge itself (787). The report refers to the importance of the villages in the south of the County in para. 16.13:

> It is significant that the lists contain some 2,200 houses of which about 1,900 are in the country areas outside Cambridge. The specially attractive character of many villages in South Cambridgeshire R.D. is indicated by the fact that they have 700 listed houses alone.

40. Of perhaps more importance than the number of buildings is the age and grade of buildings. Analysis shows that nearly half of the listed buildings in South Cambridgeshire R.D. are earlier than 1700 (445) and that they form over one third of all buildings of this age in the county including Cambridge (1,188).

41. Similarly the most attractive landscape in the county is to the east, south and west of Cambridge. The review plan indicates areas of *special landscape value*. Of the 157 acres in the county (excluding the Cambridge Study area) 98 are in south-east or south-west Cambridgeshire (covering the rolling chalk downs from Royston to Newmarket and parts of the Cam valley). The report states that the policies in these areas will include—*inter alia*: The protection of the landscape and the old traditional buildings and village character, and the safeguarding of agriculture. The East Anglia Economic Planning Council also include south Cambridgeshire in an area of High Scenic Quality (East Anglia, para. 113).

42. The County Review report refers to the radial growth sectors and the proposed country zone of north-east Hertfordshire and north-west Essex in the *Strategy for the South-East** and concludes, "The logical extension of this strategy implies that there would be no appreciable growth in this County" (para. 3.15).

Conclusions on regional structure:

43. It is perfectly apparent that the problems of future growth in the Cambridge area are immense. There is certainly latent potential for expansion of the "growth industries" and in research, but on the other hand the unique quality of Cambridge as a historic university town together with the landscape, historic buildings and settlement patterns of the south of the county, requires restriction of growth in the immediate sub-region particularly to the south. I believe that the policy of restriction must be continued and the pressure diverted to local growth areas to the north or to the main north-south growth sector along the A1. I refer later to the problems of further rapid planned growth in the vicinity of Cambridge and Royston and amplify my reasons for rejecting this approach.

* HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

44. My conclusion is that the broad country zone proposed in the South-East Strategy should extend northwards of the proposed airport site to include the sub-region around Cambridge.

45. This conclusion means that the necessary urbanisation of the airport if it were sited at Nuthampstead would not complement regional strategies. Later I examine possible locations for the airport urbanisation and the advantages and disadvantages that different sites would have. Before this it is important to establish as far as possible the scale of population and urbanisation that might be generated by the airport. It is essential to do this as different scales of urbanisation could require different locations. My belief is that the best location is one that would allow sufficient growth to take full advantage of any economic benefits that may result from the establishment of the airport. To locate development where a restrictive policy is necessary cannot be the best solution (see above problem of Cambridge itself). Its use as a positive catalyst must be preferable.

Employment demand and resultant population

46. In projecting employment generation due to the establishment of the airport I have adopted a method of high and low estimates providing a possible range of total employment and population. I consider this more realistic than attempting to predict a single fairly specific total. The advantages of considering a range is firstly that it draws attention to the scale of demand that might arise without restriction and secondly it allows for areas of possible urbanisation to be selected which would allow for the maximum economic utilisation of the airport.

47. I have examined the projections made by the County Planning Officer of Hertfordshire and others on the likely employment demand, the resultant support population and how this can be met by existing resources, and have the following observations to make:

EMPLOYMENT:

48. *Primary Employment* (directly connected with the airport):
The Commission has given as their "best estimate" a figure of 65,000 for four runways. I consider this to be a reasonable assumption, but the Heathrow employment is estimated to rise to 62,000 by 1981 for a two-runway airport and should some activities be transferred from Heathrow to Nuthampstead at a later date, total employment could rise to the upper estimates of 85,000.

Range: 65,000 to 85,000

49. *Secondary Employment* (engaged in manufacturing industry or commercial projects attracted specifically by the airport):

(i) *Those forming an integral part of airport services:* The estimate of 6,500 based on Heathrow experience appears reasonable.
Range: 6,500

(ii) *Attracted industry and offices:*
This is by far the biggest variable in the employment projection not only in itself but because of its cumulative effect on service employment. American experience indicates a range from 10,000 to 70,000 jobs. I believe that the demand is likely to vary considerably according to the relationship of a particular airport site to regional/national communications and employment centres; although demand can be channelled by central government, regional and local planning policies and the design of transport interchange facilities giving access to the airport. I have set out below a number of points which lead me to the conclusion that it would be wise to allow for a high level of attracted employment:

(a) *International airport:* the airport is to be an international airport and will be in competition with other European airports such as Paris and the Scandinavian Airport at Saltholm opening in the early 1970s. I believe that in the interests of obtaining international economic benefits, certain national or regional policies may have to be modified. There would be enormous disadvantages in restricting international development pressures.

(b) This view is reinforced by the Government's reply to the first report of the S.E.E.P.C. *A Strategy for the South East* in which two significant points are made in relation to the government's control of development:

(i) para. 19, iii—"The Board of Trade, in administering the I.D.C. controls already regard an applicant's contribution to exports as a major factor to be taken into account."

(ii) para. 23, iii—"The importance of retaining London's role as an international business centre would be taken into account in considering proposals from overseas organisations seeking to establish headquarters or branches in London."

It is therefore possible that international economic considerations would have preference over regional planning considerations in decisions affecting international trading.

(c) *Air freight:* International air freight services, facilities and exports from the United Kingdom have increased rapidly during the past decade. Export shipments by air increased in value from £219m in 1961 (6 per cent total exports) to £483m in 1966 (9·6 per cent total exports). In 1963 some 136,000 tons of freight were handled at Heathrow and facilities are planned for 1 million tons by 1980. It is well known that in terms of values of exports Heathrow is already the third biggest "port" in the country. There is no evidence that this trend will not continue or that it will not influence future industrial and commercial location as sea, rail and road facilities have in the past.

(d) *Proximity of industry:* Studies on the relation of industry in north-west London to Heathrow

Printed image digitised by the University of Southampton Library Digitisation Unit

suggest that there is some interlinkage between the airport and industrial location in the area. However, Heathrow is not a good example since there have been restrictive industrial policies in the area since it was established as London's airport—and in some ways it could be taken as an example of what might result from a policy of restricting associated industrial growth. In the United States the development of Airport Industrial Parks has increased rapidly in the last decade and a report published by the Federal Aviation Agency in 1965 reports that there were currently some 200 industrial sites in various stages of development. The report specifically draws attention to the advantages of direct access to the airport, and the ability to provide rapid delivery. The proposed Saltholm international airport has an industrial area within the island site.

(e) Apart from freight considerations there are advantages in industrial location for salesmen and visiting foreign businessmen connected with the industry, particularly in the case of an international organisation. Similarly businesses such as exporting agencies, headquarters of international or export orientated companies, the prestige offices could be attracted by an airport location. The Commission state that the number of passengers using the airport at full capacity could be over 100 million. No estimate is given of the percentage that might be on business but this will be considerable. It would be reasonable to assume that any commercial/office concern with international interests and without ties elsewhere would be attracted by the vicinity of an airport provided labour resources were available locally. The high male employment in the airport could result in a pool of female employees suitable for supporting major office employment in the area.

(f) Although no research has been done to enable specific figures to be established, reports referring to the third London airport consistently emphasise the advantages of industrial location near the airport and the need to maximise the economic potential of the airport.

(g) *Social balance:* A completely different but possibly equally important reason for allowing and encouraging associated industrial growth is the need to achieve a reasonably balanced social community. A new town developed solely for airport workers would be a "one industry" town such as the mining and railway towns of the last century. It might suffer from lack of diversification due to the absence of a wide choice of jobs for the workers (or their children in the future) narrow educational and technical training facilities, dangers of redundancy of particular skills at any time and possible major redundance in the long term. The new development should be based on a broad enough employment base to provide a reasonable choice of work and to enable it to diversify if necessary in the future.

50. In considering the possible range of employment in attracted offices and industry it should be remembered that 7,000 people could well be employed by a single enterprise. I consider then, on balance, that there would be a considerably greater demand for jobs than the 7,000 quoted, although the application of the most stringent restrictions on location and development could conceivably restrict the employment opportunities to that number.

The possible *range for secondary employment therefore could be between 16,500 and 76,500 employees*

51. The range for primary and secondary employment is therefore:

Primary (Airport)	65,000 to 85,000
Secondary (Airport)	16,500 to 76,500
Secondary (Associated)	
	81, 500 to 161,500

From these figures should be deducted 2,000 employees, at present based at Stansted, but who might be associated with the new airport at Nuthampstead.

Range: 79,500 to 159,500

52. *Service Employment:*

I take an employment multiplier* of 2·18 for calculating service employment. The possible range for service employment is therefore:

(65,000 − 2,000 + 16,500 = 79,500) = 94,000 employees to
(85,000 − 2,000 + 76,500 = 159,500) = 188,000 employees.

53. *Total Employment Range:*

This gives a total local employment range of:

(65,000 − 2,000 + 6,500 + 10,000 + 94,000) = 173,500 employees to
(85,000 − 2,000 + 6,500 + 70,000 + 188,000) = 347,500 employees.

Range: 173,500 to 347,500

54. *Population and Housing Requirements:*

Using the multiplier of 2·3 on the employed population (i.e., 43·5 per cent of the population to be employed), the total population to be accommodated would be between 400,000 and 800,000. The County Council has estimated that about 78,000 people could be accommodated in infill schemes and small expansions of existing settlements. The additional demand is thus for housing for some 320,000 to 720,000 persons.

55. *Land Requirements:*

Excluding the airport site itself and regional communications, I consider that a town density of 17 persons per acre could be achieved by careful planning (excluding the main regional communication links). This would require development of between 18,800 and 42,300 acres to house the attracted population. However, the density of development will depend to some extent on the location of urbanisation and the

* For comparative purposes I use the multipliers used by the Hertfordshire County Planning Officer.

Printed image digitised by the University of Southampton Library Digitisation Unit

current policies on density in the surrounding region. For instance, in the Cambridge area densities of up to 12 dwelling/acre are considered appropriate in urban areas and larger villages, but generally densities lower than maximum are required in smaller villages. Such policies would tend to reduce the overall town density of any development north of the airport. Development to the south of the airport might be to slightly higher net densities but on the other hand a major recreational area, or "country park" might also be necessary. (Should the overall density be decreased to 15 persons per acre the land requirement would be between 21,300 and 48,000 acres.)

56. Further land would also be needed to improve major regional routes additional to the M11, for improved rail communications and such ancillary uses such as water storage.

Urbanisation areas

57. The ultimate need for urbanisation will depend on many factors and on achieving a balance between demand and correct planning strategies. Although the demand may be in the lower half of the 19,000 to 42,000 acre range, if control is exercised to ensure that, in general, only uses directly associated with the airport develop in the area, the form of urbanisation should be such that it can be extended to maximise the benefits of economic pressures for development.

58. The extent of the noise zone to east and west means that urbanisation must take place to the north-west or south-east of the airport—broadly speaking in the Cambridge or Bishop's Stortford areas. I have dealt with these separately below although the resulting urbanisation could be a combination of development in both areas. The Hertfordshire County Planning Officer has suggested such a combination with a new town north of Royston for 200,000–230,000 and limited settlements in the Stansted–Harlow area for 78,000–108,000 persons.

Northern urbanisation:

59. The regional strategy proposals for the South-East and East Anglia (in so far as they have been developed) do not anticipate major urbanisation of the scale required in the area in which the airfield lies. There is therefore no rationale for urbanisation north of the airport except for the growth along the A1 between Stevenage and Peterborough suggested in the South-East Strategy, but this is 20 miles from the airport site and partly within the 35 NNI contour.

60. However, proposals in the recent Green Paper *Roads for the Future** for improving the existing communications in the Cambridge area would provide reasonable regional access. These are:

(i) *north-south*, development of the A1, the construction of the M11, and

(ii) *east-west*, the development of the A45 as a Midlands–East Anglian route and the construction of a new road from the M1 north of London via Stevenage, Bishop's Stortford to Ipswich. Further strengthening of the links to London might be required.

61. In the event of major growth being required north of the airport, there are a number of alternative possibilities: a new town at Royston; the expansion of Cambridge; growth on the A1 sector; scattered expansion of existing settlements from Biggleswade to Newmarket; or the development of a growth sector from Ipswich via Cambridge to Northampton as suggested by the Economic Planning Council.

62. Bearing in mind the need to conserve areas of historic and architectural interest and areas of landscape value and yet to provide the main development within 10–20 miles of the airport the development of a new town in the valley north of Royston appears to be on balance the most logical solution. However, I have serious reservations on any major development north of the airport for the following reasons:

(i) Any major development in the area would of necessity be close to Cambridge and must therefore be interrelated to the future of the City and its sub-region. The problem of Cambridge's own growth should have priority if development is to take place in this area at all.

(ii) The area has a labour shortage and development of an airport town would open the door for further population growth for Cambridge industries. The new town would therefore inevitably need to be larger than that required for airport workers. (Restriction to airport workers would not be possible.)

(iii) The resulting combination of an airport and Cambridge "overspill" town would certainly generate immense pressure for further growth in the sub-region.

(iv) Initial growth would be difficult at a new town and considerable greater growth than anticipated might take place in adjoining towns such as Cambridge before the new town got under way.

(v) In the early years the new town would depend very heavily on Cambridge for social and commercial facilities. These facilities having expanded in Cambridge, it might be difficult to transfer them to the new town and this, in any case, could leave a serious vacuum in Cambridge at a later date.

(vi) The development of a town of ¼ million population only a few miles from Cambridge (Study Area population 162,000 increasing to about 200,000) would create a duality in the regional hierarchy of shopping and other facilities.

(vii) It would introduce massive urbanisation into the area of landscape and historic conservation, of good agriculture, together with the undoubted peripheral pressures for development in the surrounding areas.

(viii) Cambridge is a national asset for tourism and major commercial development pressures would seriously prejudice this.

* HMSO; 10s.

Printed image digitised by the University of Southampton Library Digitisation Unit

(ix) Although it could be said that the problems of Cambridge growth might be overcome by overspilling to the new town, this itself would increase the size of the new town and could prejudice the efforts to stimulate employment in the northern part of the county and surrounding areas and create imbalance in East Anglia.

(x) The new town if restricted to airport users would be a one industry town with all the social problems which might be anticipated.

(xi) It would create a major growth sector from London to Cambridge—this sector would in effect be a cul-de-sac terminating at Cambridge, further development northwards being limited by the Fens.

(xii) The area available for development is limited. This could restrict full advantage being taken of the airport if it became a major economic development catalyst.

63. I am of the opinion that no major development should take place in the south Cambridgeshire area. Limited development might be encouraged on the A1 axis but because of its distance from the airport it would be unlikely to contribute substantially to airport needs. The principal development for the airport must therefore be to the south.

Southern urbanisation:

64. Major urbanisation to the south is also contrary to all currently suggested growth strategies; however, the S.E.E.P.C. suggested the examination of growth along the M11 between Bishop's Stortford and Harlow for the support population of the then proposed Stansted airport (it drew attention to the disadvantages of this as referred to in para. 8 above).

65. The A1 growth lies to the west and could provide for population growth if it were nearer and not affected by the proposed noise area, but the A12 Ipswich growth sector lies some 25 miles to the south-east. There is therefore no rationale for development.

66. Present east-west communications are poor; but a proposed E-W strategy route runs through Bishop's Stortford, and to the south communications would be improved by the D ring running through Waltham Abbey (giving access also to London docks and the "Channel"). North-south routes will be improved by the construction of the M11 and the development of the A1 (M) and A10. The planned communication system, the prosperity of the new towns and industry in the area are evidence that without restriction this would be an advantageous growth area. The larger and more widely diffused existing population would help to provide a wider employment and social base than might be possible if a new self-contained airport town was developed north of the airport.

67. Apart from being in the country zone, the area to the south of the airport is of limited landscape value (being semi-urbanised) between the green belt and the major areas of landscape value in north-west Essex and north Hertfordshire. It is, however, pleasant countryside of general recreational value with the valleys designated as of landscape value. The importance of the area as a recreational and country zone round Greater London is recognised in the proposal for extending the Green Belt northwards to Letchworth and Bishop's Stortford. However, there are fewer settlements suggested for conservation to the south of the airport than in the airport site itself or to the north, and most of these are within major urban areas.

68. In the event of major growth being required to the south of the airport site there are a number of possibilities:

(i) A major new development on the M11 axis around Bishop's Stortford/Harlow. Substantial development to the east of the M11 would be undesirable on agricultural and amenity grounds.

(ii) A diffuse growth of existing settlements within a reasonable distance of the airport. (These might be linked in a linear form from Hatfield and Welwyn to Bishop's Stortford and Harlow.)

(iii) Linear growth from London on the axis of the Lee Valley between the M11 and A10.

(iv) If the airport were realigned, development could take place in the area between Stevenage and Bishop's Stortford which is of noticeably lower agricultural value and landscape interest.

69. Although I consider on balance that major urbanisation would be preferable to the south rather than to the north of the airport I consider that it would seriously prejudice the future planning of the Metropolitan area and it would certainly require radical recasting of all present thoughts on regional strategy. I set out below my main reasons for reaching this conclusion:

(i) Major development in the green sector between the A1 and A12 growth sectors is contrary to current regional planning thought and unless considered as an alternative to growth along the A1 or A12 would probably result in the general extension of the Metropolitan urban area towards the north-east. Even if planned as a compact new town it would be likely to involve growth in a wider ring of existing towns in the area creating a wide growth zone adjacent to Greater London.

(ii) It would introduce a massive urbanisation into an area which policies have consistently stated should be conserved as a country area. Growth in this area for 500,000–600,000 would require fairly continuous urbanisation between the approved Green Belt line, the A1 and the M11 and result in a complete change in the character of the area and in effect the complete loss of the Green Belt in this sector. I do not consider that spreading development into the rural areas east of the M11 would be justified in any event.

Conclusion

70. From a regional planning point of view urbanisation either to the north or to the south of the airport site would be undesirable, but on balance for the

Printed image digitised by the University of Southampton Library Digitisation Unit

reasons given above, I consider that the proposals for urbanisation to the south are preferable. With southern urbanisation links to London would be short, new routes would terminate at the airport and the airport and noise zone would itself act as a barrier to further northwards growth into the areas of high landscape and agricultural value (left remaining after the development of the airport in the Cambridge area).

71. Wherever the airport is sited it will create a growth zone and if the economic advantages of the airport are to be developed to the full this will mean development on a much larger scale than in any new town or planned expansion that has taken place so far.

72. I believe that the establishment of such a growth point north of the airport at Cambridge, some 50 miles from London would have disastrous consequences and extend a new urbanisation zone from London to the Fens through some of the most attractive land in south-east England and through the largest area of consistently good agricultural land in England.

73. I also consider that restriction of development to the south of the airport, although less damaging, would seriously prejudice the future of the Metropolitan area unless radical changes were made in the existing settlement pattern and future strategies for regional development.

74. Apart from the damage caused to areas of high agricultural, landscape and historic value by the airport itself and the noise zone, I believe the consequent urbanisation of the only available areas would be most undesirable. For these reasons I have serious reservations on Nuthampstead as a suitable site for the establishment of the third London airport.

APPENDIX A.

Employment location: 1966 sample census

		Population	*B*(%)	*C*(%)	*D*(%)	*E*
	BEDS:					
6	Biggleswade RD	30,440	70·6	49	1	14,150
7	Biggleswade UD	8,740	121·6	73	—	4,080
8	Sandy UD	4,840	88·9	66	—	2,190
	CAMBS:					
2	Cambridge MB	98,130	132·5	87	1	42,330
3	Chesterton RD	48,750	65·8	50	—	21,630
4	Newmarket RD	22,044	58·3	54	—	10,150
5	South Cambridgeshire RD	33,445	81·2	63	2	14,370
	ESSEX:					
25	Epping and Ongar RD	40,320	50·2	41	30	18,400
26	Epping UD	10,830	68·8	45	34	5,220
27	Harlow UD	67,930	99·2	79	10	30,470
28	Dunmow RD	22,390	64·2	58	8	10,160
29	Saffron Walden MB	9,480	97·6	75	6	4,430
30	Saffron Walden RD	19,420	72·9	59	8	8,690
31	Braintree RD	23,500	81·4	56	4	10,480
32	Halstead RD	18,200	79·0	68	3	7,670
33	Braintree and Bocking UD	22,310	98·8	72	3	10,150
	HERTS:					
9	Hitchin UD	25,610	97·0	55	3	12,780
10	Letchworth UD	27,150	151·8	81	2	13,490
11	Baldock UD	6,420	80·5	45	—	3,540
12	Stevenage UD	56,240	112·0	85	3	26,140
13	Hitchin RD	23,040	50·7	40	5	10,830
14	Braughing RD	9,830	62·1	53	9	4,470
15	Bishop's Stortford UD	20,750	94·0	58	17	8,760
16	Sawbridgeworth UD	5,460	76·8	40	16	2,490
17	Ware RD	11,600	70·7	45	10	5,440
18	Ware UD	13,740	79·3	49	14	6,810
19	Hertford MB	18,530	129·5	68	12	8,940
20	Hertford RD	10,320	46·7	36	12	4,940
21	Welwyn RD	7,170	58·2	33	10	3,680
22	Welwyn Garden City UD	38,820	122·2	77	6	18,910
23	Hoddesdon UD	20,500	78·1	48	23	9,930
24	Royston UD	6,490	100·0	68	—	3,350
	HUNTS:					
1	St. Neots RD	7,610	76·8	58	—	3,460
	W. SUFFOLK:					
34	Haverhill UD	8,870	127·3	84	1	4,000

B = Employment in local authority area expressed as percentage of residents of area in employment.
C = Percentage of residents of the local authority area in employment working within the local authority area.
D = Percentage of residents of the local authority area in employment working within the G.L.D. administrative area.
E = Resident working population.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

Agricultural Evidence

SUBMITTED BY MR. D. B. WALLACE*

1. Name: D. B. Wallace, M.A.

Present Position: Gilbey Lecturer in the History and Economics of Agriculture in the University of Cambridge

Other Qualifications: 1951–1963 Farm Management Liaison Officer, Farm Economics Branch, School of Agriculture, University of Cambridge.

Instructed by National Farmers' Union County Branches of the area affected to prepare evidence of the agricultural value of the area.

2. Introduction

The effect of the proposed development is considered under two headings, the impact on local agriculture and the consequent reaction on national agricultural needs.

3. Description of the area

The site lies in the north-east corner of the area designated in the Land Utilisation Survey as the East Hertfordshire Plateau. The soil in this area consists of drift deposits overlying chalk. To the immediate north, in the valley of the Cam, the soil is fairly thin, and contains considerable amounts of chalk, while the amount of deposit increases steadily towards the south of the site, until boulder clay predominates.

In the past, this has meant that the northern fringe was left as poor heathland, resulting in few settlements and very large farms, even by East Anglian standards, while on the boulder clay, somewhat smaller farms were more common and villages of the nucleated pattern grew up. But modern agricultural methods have meant that the differences between these districts are far less marked than before, and the whole area is farmed to a high level of arable cropping, relying on cereals and root crops.

4. Agriculture in the area

Agriculturally the area can be divided into three rough zones; a band running through the site area on the axis proposed for the runways, and parallel bands extending to the north and south of the site area. A brief physical and economic description of each follows. The bulk of the economic information is derived from part of the Farm Management Survey carried out by the Farm Economics Branch, School of Agriculture, University of Cambridge, and relates to the harvest years 1966 and 1967. (A harvest year refers to crops harvested in the summer of the designated year, i.e. we are just ending the harvest year 1968.) This data is summarised in Table 1 below.

(a) *The Site Area*

The soil is mainly boulder clay, and this means that both cash root crops, potatoes commonly and sugar beet more rarely, and wheat form important proportions of the cropping of the farms.

A typical farm pattern is perhaps 70 per cent cereals of which one-third would be in wheat, with an acreage of potatoes forming part of the balance. Few farms have much livestock apart from pigs. Amongst the farms believed to be directly affected by the site, 39 in all, some physical data is available on 35, provided by replies to a questionnaire sent out by the local N.F.U. Branch Secretary. All but one grow cereals, with yields in the region of 35 cwt per acre on average, 10 grow potatoes, only one grows sugar beet; 12 keep beef cattle, only 3 keep dairy cows, but 17 keep pigs. Therefore the pattern is one of predominantly corn farms, with a big minority growing one high value cash crop, and pigs or beef providing such livestock as are kept, but nine farms have no livestock at all.

(b) *The North Zone*

This area is of a slightly lighter soil type, containing more chalk, shading off to the chalk valley around Royston. Modern agricultural methods have brought this into intensive arable use, but relatively few farms will grow much potatoes, and barley will usually be even more predominant in the cereal break, which may itself amount to more than 80 per cent of the total arable acreage. Livestock, apart from pigs, are relatively scarcer than in the Site Zone.

(c) *The South Zone*

The soil is heavier than further north, containing more boulder clay, and moving on to London clay in the south of the area. While cereals are still the predominant part of the cereal break, wheat becomes increasingly important, and livestock, especially dairy cattle, are a bigger part of the farm economy. The heavier land means more grassland than further north.

5. Economic returns

TABLE I

Table of gross margins and size of farms

	Average gross margin per annum £	*Average size of farm* acres
North Zone	35·1	410
Site Zone	40·3	410
South Zone	39·3	405

(Note: Gross Margin equals Gross Output per acre less Direct Costs, e.g. seeds, fertiliser, concentrate feeds, etc.)

* See also p. 874.

Printed image digitised by the University of Southampton Library Digitisation Unit

6. Impact of the Airport on Local Agriculture

1. *The Site.* According to the Roskill Report,* some 7,500 acres will be required for the site, without reference to approach works etc. If we assume that this is all land affected immediately at the site, and ignore the truncating effect on some farms, then this figure means that there will be a direct loss of some *£300,000* per annum of net agricultural production.

2. *Support Services.* To this must be added the effect of the support services. Again according to the Roskill Report, some 65,000 workers will be required by the mid-1990s and even 45,000 by the mid-1980s. Nuthampstead is a "green-field" site, the only towns of any size are Royston 5 miles to the north, and Bishop's Stortford 7 miles to the south. Neither will be able to supply more than a very small fraction of either the housing or labour and services required, so that a new town will have to be constructed. The impact of this on the agriculture will be even more serious than the site itself.

A range of land requirements for these services has been estimated in the planning evidence of the National Farmers' Union, varying from 20,000 to 50,000 acres under different assumptions. Taking this range, then if the town is placed to the *north*, with greater problems of communication with London, the impact will be the loss of between £700,000 to £1,750,000 Gross Margin annually, or a total of £1,000,000 to £2,050,000 with the site. (It is stressed that this is the Gross Margin, not the Gross Output, which would be higher of course, and takes into account the cost of variable inputs to achieve the production.)

If the town were placed to the south, the equivalent losses would be a range between £785,000 to £1,965,000, totalling £1,085,000 to £2,265,000 with the site.

7. Possible savings

If agriculture ceased on 50,000 acres, there would be some factors of production which would become available for alternative uses. But this is more apparent than real. By using Gross Margins, much of the working capital has been taken into account already, and charged against output before Gross Margins are calculated. Therefore any crediting of the release of this amount would be directly offset by increasing the value of the Output lost by the same amount. Much of the fixed capital, buildings, roads, ditches, etc. would have no opportunity cost and the same applies to much of the machinery, which is specialist to agriculture. There really only remains the farm labour and the managerial expertise of the farmers themselves. The former would probably find employment within the new airport and the ancillary services, so that this would be a definite gain, though a small one, for the number of workers involved is very small, the farms being large extensive arable farms. In the site area the labour density works out at one man per 90 acres, so that if this rate is taken for the whole 50,000 acres, under 450 persons become available, a drop in the ocean of the number required.

As for the farmers, being mainly large operators, they have good managerial skills, but whether they could be easily re-employed in non-agricultural occupations is another question, and in any case the number is even more insignificant. Therefore the conclusion is that there is really no gain of any substance to offset the lost value of the agricultural production of the area involved.

8. National aspects

So far comment has been limited to the local impact of the proposed airport and its ancillary services. But the loss of agricultural production should be placed also in the national context. At present there are plans for a controlled expansion of agricultural production, to reduce the national import bill. By far the biggest proportion of the production of this area comes from arable crops, which apart from fuel, and a small amount of fertiliser, makes virtually no demand upon imports, and successfully competes with foreign production. Elimination of land under arable crops would have a directly proportionate effect on the balance of trade, which is the reverse of what is required at the moment. Indeed, present indications are that the importance of import substitution, and therefore of production which not only saves imports directly, but makes virtually no demands upon imported factors, will increase. Therefore this large area of efficient arable production is very important to the national economy.

9. Conclusion

In my opinion, as a result of this investigation, I consider the land in the area affected to be amongst the best of the arable farming districts in the Eastern Counties, apart of course from the Fens and Silts. The general level of farming is well above average for the region.

---

* *Site Information for Stage II Local Hearings. 2 Nuthampstead.* (HMSO; 6s.). Reproduced at p. 601.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

SUBMITTED BY MR. R. TRIGG*

1. I am a Fellow of the Royal Institution of Chartered Surveyors, a Fellow of the Chartered Auctioneers and Estate Agents' Institute, a Past President of the Central Association of Agricultural Valuers' and a member and past president of both the Herts. and Essex Agricultural Valuers' Associations. I have resided in north-west Essex and east Herts. since schooldays and have practised as an agricultural valuer and surveyor for fifty years. I became a partner in my firm (G. E. Sworder & Sons) in 1929 and my practice has engaged me in agricultural valuations and property sales and management in a wide area of East Herts., Essex and south Cambs. and in particular the areas to which this hearing relates.

2. I have been instructed by the Herts., Essex and Cambridge County Branches, National Farmers' Union, to prepare evidence on matters relative to Valuation of Agricultural Holdings and allied matters.

3. I have recently made an inspection of farms indicated on the plans submitted to me by the National Farmers' Union as immediately affected by the proposal or adjacent thereto. Evidence has been tendered by the National Farmers' Union showing the numbers of farms affected, their tenure, areas, land utilisation, classification and potential. I have examined a coloured 2½ inch Scale Ordnance Survey Map supplied to me by the National Farmers' Union indicating the various holdings in the Site Area and I produce a copy.†

4. Evidence has been submitted by County Council Planning Witness, Mr. L. C. Kitching (para. 1.13(e))‡ concerning the "siting requirements" for an Airport which ideally should be a site not affecting land of high agricultural, recreational or amenity value. In my submission the Nuthampstead area is one which has all these characteristics. A reason invariably given in support of a planning refusal by local Planning Authority in this vicinity is . . . "the site is within a rural area . . . where it is the policy . . . that new development not essentially required for Agricultural or other genuinely rural purposes should be confined to well-defined compact communities in the interests of rural amenity . . . " In fact the whole site area is almost exclusively devoted to Agriculture or enterprises allied thereto such as intensive poultry, mushroom farm, chalk quarry, agricultural and other contracting.

5. Mr. John Hawkes,§ the Planning Witness for the National Farmers' Union, has also referred both to the extent of ancillary development and its effect upon the agricultural nature of the area.

6. In dealing with the Agricultural aspect considerable stress has already been laid on the nature of the soil type, boulder clay overlying chalk, the potential high yielding crops and to land drainage.

I have read the evidence prepared for the County Council by Mr. Donald Tanton,* and I accept and adopt that evidence.

7. My predecessor in my firm pointed out to me from the B1368 many years before the war the slopes towards the River Quin as being "some of the best land in Hertfordshire". Since then I have had opportunities of observing the bringing into a high state of fertility the heavier lands further east, i.e. to the east of Anstey and Nuthampstead in particular.

8. During the war land was drained and reclaimed under the supervision of the Agricultural Committees including such areas as Roughway Wood North (see extract from 6 inch 1924 O.S. edn. attached).† This I personally surveyed in advance of the works. Powerful tractors and ploughs up to 8 furrows work this land today. In this same area the remainder of the wood, south below the word "Roughway" on map is also under the plough so also the nearby Clavering Park Wood and Ash Pightle adjoining same.

9. Thus the heavier lands within the whole Site Area present no problems for future farming provided proper attention is given to drainage, and where these lands merge with the easier moving areas within the same holdings, alternative cropping becomes available.

10. The main crops are wheat, barley, oats, beans and some leys, potatoes and sugar beet. To test the relative productivity potential and value over the whole Site Area I have made enquiries relating to wheat yields, which I consider a fair general guide. I have taken the harvest of 1967.

11. I have referred to June 4th Returns to Ministry for total acreage on each holding investigated and to Wheat Deficiency Payment Vouchers for yield quantities over a cross-section roughly west to east. The figures are as follows: 37·7, 34·7, 29·1, 38·0, 35·0, 38·6, 39·9.

12. Averages make no allowance for individual late-sown or damaged crops so there may well be individual field yields of and over 40 cwt where averages are shown to be rather under.

13. From information obtained I have reason to believe it can be shown that land reclaimed from the old Airfield and runways and adjacent scrub area is now capable of producing a wheat crop well up to or above

* See also p. 871.

† Available for inspection, by arrangement, at the offices of the Commission.

‡ p. 617.

§ p. 706.

* p. 842.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

average. This magnificent transformation, mostly the work of one owner-occupier, has taken years of arduous work and with skilled and expensive draining schemes. Any prospect of undoing such a masterly achievement must be viewed with deep concern. The keen enterprise of other agriculturalists, in the immediate surrounds, is evident from the many promising crops and the fact that these are no longer studded with unsightly dispersal sites and buildings.

14. From my farm inspection I submit the following evidence on land drainage. Deep ditches as consistent with the requirements of the type of land in question, receiving outlets from normal mole drainage systems and occasionally from old 2 inch pipe land drains still found to be running. These ditches discharge large volumes of water scouring the sides and bottoms of the streams and rivers into which they flow. As I have already mentioned it is essential for the drainage systems to be fully maintained and whenever necessary to be renewed. The shape and contours of areas between ditches vary so much that it is not possible to give basic cost figures. These might vary from £10 per acre to £20 per acre after allowing Ministry grant, 50 per cent. On the old airfield the costs were higher.

15. The National Farmers' Union has brought evidence to show that the average size of holdings in the affected area is 370 acres or thereabouts. I have, however, noted smaller holdings under 200 acres, including "family holdings" farmed by fathers, sons and brothers to whom great hardship will apply. Likewise there are tenants of C.C. smallholdings. Predominantly the whole area concerned comprises arable crops. This coupled with the average size of the holdings has entailed considerable investment in fixed equipment, specialised for the handling, drying and storage of grain, with modern or modernised buildings. Many old buildings which blend with the other amenities of the countryside have been adapted for storage of implements and fertilisers, workshops, etc. Some modern buildings have been erected and adapted for intensive stock farming.

16. In Appendix No. 1, I give evidence of Sales of Farms comparable by Auction within the area or a 10 mile radius.

Press comments confirm my views on Market trends which are also indicated by the figures. Following the recession in mid 1965, prices have continued to rise.

I submit that throughout the area proposed for the airport site and adjacent land affected, the freehold vacant possession value of these farms is amongst the highest in the country (excluding classification grade I fen land) and basically is in excess of £325 per acre.

17. There are, of course, individual factors which would tend to affect prices. In particular the Farm Houses, some of which have extremely attractive characteristics, and cottages which have been modernised. Main water and main electricity are connected almost without exception and most of the farms have 3-phase supply.

Other aspects of Valuation are referred to later.

18. **Severance and fragmentation**

Fragmentation of holdings to a greater or lesser degree is inevitable around an inland site and reference to the plan* submitted of holdings in the Nuthampstead area together with the schedule† submitted of the likely areas to be lost to agriculture against that to be retained shows that this is of a very serious nature.

At a time when Government and agricultural policy looks for increased efficiency and productivity and better economy in the industry the livelihood of affected farmers is at stake by fragmentation. Encouragement is given by way of grant in certain circumstances to increase the Unit size of farms.

Many of the areas which comprise the holdings indicated on the plan have been the subject of a unit-size increase either by land purchase on the open market when opportunity has arisen or from Estate Management adjustments between landlord and tenant.

In some cases this has enabled the establishment of specialised enterprises, e.g. dairy/beef/pig units (as well as grain installations referred to earlier) at one or more of the homesteads within the total unit. Such establishments are geared to the general economy of the total holding and any Unit break-up by severance brings considerable loss of invested capital and an intolerable burden on the part remaining and possible loss of livelihood (see appendix No. 2).

Capital Expenditure on fixed equipment in the last three years on two of the units (and quite apart from large sums invested in earlier years), amounted to £9,854 and £20,987 respectively.

19. **Rehabilitation**

The National Farmers' Union has brought evidence to show the number of farmers likely to be totally displaced and those which will lose major or varying proportions. (This is apart from the further substantial number of holdings which would in time be taken for ancillary development.)

I have indicated that a number of the smaller units are family concerns but this equally applies to some of the larger ones. There are perhaps two or three families born and bred on the land deriving livelihood from their respective units (see appendix No. 2), with considerable amount of personal capital invested for their livelihood and who know no other trade.

They and their neighbours will appear on the market seeking farms elsewhere—many of them at the same time (assuming that development of the greater part of the site area will be done in the early stages) and possibly on a rising market resulting from the greater demand and the ever decreasing area of land available for agriculture.

With such competition it is unlikely that the dispossessed farmer will necessarily find the type of land he is accustomed to, fully equipped to the needs of the particular husbandry, and be able to finance the purchase of a unit of such size as he had hitherto.

Farms to let are exceedingly scarce and far below the requirements of the existing demand. From an analysis of the farms advertised to be let in the

* Available for inspection, by arrangement, at the offices of the Commission.

† Appendix 2.

Printed image digitised by the University of Southampton Library Digitisation Unit

Farmer & Stockbreeder during the twelve months ended May 1969 indicates:

(i)	23 West Country
(ii)	20 Southern Counties
(iii)	24 East Anglia, East Midlands & Lincs.
(iv)	14 West Midlands
(v)	16 Elsewhere
Total	97

Of the area likely to interest farmers from Nuthampstead (iii), only seven out of the twenty four are over the average acreage of the Nuthampstead farms (one in Herts.). There were five others in Herts. and Essex ranging from 55 to 190 acres.

20. Compensations and valuations

In spite of the Agriculture (Miscellaneous Provisions) Act 1968, in my opinion it will be found difficult to assess many losses in terms of cash, even if they can be brought within the present provisions relating to Compensation.

For example, Agricultural Mortgages:

(i) Existing borrowers at low and advantageous interest rates will be unable to transfer such loans to new holdings and will compete on the market for loans at much higher rates of borrowing.

(ii) Existing borrowers who have life endowment policies, coupled with their mortgage loans, again at low interest rates may well suffer disadvantageous surrender values upon compulsory acquisition with no prospects of transferring to a new holding.

(iii) With the recent monetary difficulties and consequent sharp rise in interest rates (Agricultural Mortgage Corporation 10¼ per cent) existing borrowers at low rates have a very distinct advantage and the taking of a new loan at such high rates is equivalent to a rental value out of proportion to the economic viability of the holding.

Tenants who have invested capital in fixed equipment on their holdings with or without the landlords' formal consent have continued to pay rent at old rates accordingly.

Dispossession of part or whole unit resulting in the break up of family unit business.

Dispossession where:

1. Two or more tenants hold as joint tenants on a yearly tenancy.
2. Individual members of family units live in farm houses of tenanted holdings likely to be severed and requisitioned.
3. The like when the tenancy includes two or more members of the Unit as tenants.

Loss of Potato Acreage Quota attached to the land,

Loss of Sugar beet contract.

On moving to a new holding adaption with capital expenditure may be necessary at a time when interest rates are high and Ministry Grants for the provision of fixed equipment have been reduced.

Also on moving to a new holding it may be two to three years before one can farm it to produce the best results during which period there may be loss of livelihood.

21. Access routes and services:

In addition to fragmentation of holdings around the proposed site, severance must also be considered from aspects of access, services, etc.

Witnesses have been called to give evidence concerning road links. These links have been dealt with by County Council's witness, Mr. D. E. Tanton (para. 3.1* et seq.) in some detail and the large additional area of land likely to be required has been indicated.

So much depends on the nature of interference with individual holdings and the proportions of total cost per mile or per acre when apportioned between accommodation works on the one hand and compensation payable on the other, it would not be possible to suggest any basic figure which dispossessed farms might expect by way of compensation.

However, on examining three separate consecutive lengths of 5 miles each along the proposed route for the M11 passing through similar terrain I find an average of 11 Holdings affected in each of those 5 miles.

In addition to road and rail links there may be further disturbance and severance resulting from provision of services, surface water disposals and possible re-routing of two high voltage over-head power lines (at present crossing the southern corner of the proposed Site).

22. If Nuthampstead becomes London's third Airport the areas I have referred to will be but the beginning of further vast incursions into existing agricultural land within the counties with the many farms thereon. In his evidence Mr. Kitching makes reference to some 17,300 acres plus 14,700 acres (p. 20 para. 3.3(i) (ii))† also Mr. Tanton (p. 8 para. 2.4 and p. 10 para. 2.5).‡ I refer also to the evidence prepared by Mr. John Hawkes,§ Planning Consultant for the National Farmers' Union, to the effect that the required development might be between 20,000 and 50,000 acres.

23. In my opinion the standard of farming is so good and the quality of the land in the area is so high it should not be taken for National Airport Development unless it can be demonstrated beyond doubt that the National interest cannot otherwise be served.

---

* p. 649.
† p. 623.
‡ p. 647.
§ p. 703.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX NO. 1

Farms reported sold by auction

Date	*County*	*Parish*	*Name*	*Acres*	*Price per acre*
1965					
Feby.	Herts.	Anstey*	The Bury	235	£308
March	Essex	Streathall	The Hall	429	£296
July	Essex	Clavering*	World's End	157	£249
1966					
July	Essex	Henham	Green End	230	£256
Oct.	Cambs.	Therfield	Holborn Farm	133	£278
1967					
July	Essex	Rickling	The Hall	491	£336
Sept.	Cambs.	Chishill	North Hall	336	£310
1968					
June	Essex	Langley*	Rockells	240	£395
Sept.	Cambs.	Fowlmere	Dotterels	287	£306
	Herts.	Cottered	Broadfield Hall	378	£310
Oct.	Herts.	Anstey*	Bandons and Coltsfoot	452	£312

* Within the Nuthampsted "Site" Area.

APPENDIX NO. 2

The incidence of fragmentation and severance of units

Effects on the following specified holdings

Unit	*Total area*	*Approx. affected area*	*Approx. adjacent area retained*
A	420 One holding, part tenanted	300 land	100 acres with house and buildings and grain plant for 400 acres
B	562 Two holdings, both tenanted	310 land	252 with house and buildings and grain plant for 500 acres
C	700 (110 owned, remainder tenanted) "four families business"	300 Land and 3 farmhouses and homesteads	400 with 1 farm house and 1 inferior homestead, intensive pig housing. Grain plant for 700 acres.
D	617 (132 tenanted) "four families business"	320 with two major homesteads. Intensive pig housing and grain plant for 600 acres	297 with 2 (inferior) homesteads
E	620 tenanted	500 with house and homestead (and grain plant for 600 acres)	120 with minor house and minor homestead
F	1,960 (Owner occupied)	450 comprising one mixed arable unit with modern dairy	The balance with grain plant for the whole

Other holdings: 6 May be left with land and no homesteads

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

Drainage Evidence

SUBMITTED BY MR. H. C. BALFOUR*

1. I am a Member of the Institution of Civil Engineers, a Member of the Royal Society of Health, a Member of the Institution of Public Health Engineers, and Associate Member of the Institution of Water Pollution Control. I am a Member of Council of the Institution of Civil Engineers and also a member of their Hydraulics and Public Health Board.

2. I am a Partner in the firm of D. Balfour and Sons who over the past eighty years have been engaged in schemes of water supply, surface water drainage, sewerage and sewage disposal.

3. My firm have acted as Consulting Engineers to many of the local authorities in close proximity to the proposed airfield, including the Braughing Rural District Council, Saffron Walden Rural District Council, Royston Urban District Council, Stevenage Development Corporation and the Middle Lee Regional Drainage Committee. My firm has been concerned, since the last world war, with schemes for Barkway, Buntingford, Hare Street, Great and Little Hormead, Braughing, Much and Little Hadham, Widford and Wareside, Furneaux Pelham, Manuden, Stansted Mountfitchet, Henham, Elsenham and Ugley, Quendon and Rickling, Newport, Great and Little Chesterford and Royston.

4. The National Farmers Union are concerned that the proposals could have a detrimental effect on the interests of their members by reason of the large additional volume of rain water which will have to be discharged to the water-courses from the runways and Airport buildings. They are also concerned at the possibility of pollution of the water-courses from oils and chemicals discharged with the surface water and the discharge of sewage effluents resulting from the large number of staff employed and by passengers in transit.

5. The area selected is remote from any major water-course and lies in the catchment areas of the Great Ouse River Authority and the Lee Conservancy Catchment Board. The northern portion of the area is drained to the Wicken Water and the Wenden Water which in turn drain to the River Cam and thence to the River Great Ouse. The central and southern part of the area drains to the Rivers Quin, Ash and Stort, all of which flow southwards to the River Lee near Ware and Hoddesdon. Flooding occurs from time to time in the valleys of the above water-courses.

6. The proposed site is largely boulder clay overlying chalk. The chalk outcrops just to the north of the area and in the valley of the River Quin. I anticipate that the clayey nature of the subsoil will cause a high rate of run-off for those areas which are not used for runways, buildings, etc.

7. I have calculated the volume of surface water run-off from the site as it exists at present and estimate a maximum rate of run-off of 1,750 cu. ft per sec (cusecs) and a maximum daily flow of about 250 million gallons per day (m.g.d.) based on a storm likely to occur once in 20 years. The maximum rate of run-off to be expected from the airport site will be about 3,750 cusecs and a maximum daily flow of about 400 m.g.d. based on similar storm intensities.

8. The existing system of streams and rivers are quite unable to accept such high rates of flow and I consider that provision must be made to restrict the flow to the existing water-courses to rates not in excess of those experienced at present. This could be ensured by the provision of storage lagoons to provide retention for flows over and above those occurring at present. In my opinion it would be necessary to provide a storage capacity of about 150 million gallons. Assuming lagoons with an average depth of 10 ft would occupy an area of about 50 acres.

9. In addition the surrounding streams will be required to deal with substantially increased volumes of flow and the proposals should include for improving on the stream systems as far downstream as Braughing, Bishop's Stortford and Wendens Ambo.

10. I consider that the siting of an airport at Nuthampstead will increase the risk of pollution of the streams and ditches and the National Farmers' Union will wish to be assured that all precautions are taken to prevent oil and special chemicals, such as those used for fire fighting, de-icing runways, cleaning down aircraft, from being accidentally discharged into surrounding rivers.

11. The discharge and treatment of sewage is of particular importance since I would expect the flow to be treated at one disposal works. Thus all the foul sewage effluent would be discharged into one water-course. This will result in a very high proportion of effluent to the volume of natural river water, necessitating a very high standard of treatment.

12. From the figures given in the Commission's booklet* I estimate that a sewage treatment works

* See also p. 873.

* *Site Information for Stage II Local Hearings. 2. Nuthampstead.* (HMSO; 6s.). Reproduced at p. 601.

Printed image digitised by the University of Southampton Library Digitisation Unit

will be required to deal with a dry weather flow of about 4 m.g.d. If a proportion of sewage effluent to natural river water of 1 : 8 had been available a treatment works could have been constructed on about 15 to 20 acres. In view of the size of the streams in the area it will be necessary to have additional treatment plant requiring more land and probably a long length of effluent outfall pipe to discharge the flow into the river where increased dilution is available.

13. In considering the total costs of the Airport, the Commission have presumably made some allowance for the costs of dealing with surface water and sewage disposal. I estimate that having regard to the special problems of disposal of stormwater and sewage effluents in this locality the additional costs involved may be of the order of £1 million–£2 million.

14. I am anxious to direct the Commission's attention to the magnitude of the problem, the high capital costs involved and to the large areas of land that would be required.

15. In considering this matter it must not be forgotten that my remarks have been confined only to the airport site. The question of surface water and pollution from the new development in the surrounding areas, to staff and service the airport community, has not been dealt with. This problem could well cause similar difficulties to the proposed airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union

Views of representative farmers

1. Submitted by Mr. A. S. Clark

My name is A. S. Clark, and I live at Langley Lawn, Langley Lower Green, Near Saffron Walden, Essex.

I wish to protest most strongly at the proposal for siting the third London Airport at Nuthampstead for the following reasons:

1. I farm Langley Lawn comprising 297 acres which I purchased in 1957. My farm would be completely taken if the Third London Airport should come to Nuthampstead.

2. I started Agricultural contracting in 1947 on my return from serving with the armed forces. In 1949 I then rented 57 acres of land near my home at Bishop's Stortford. In 1953 I purchased 36 acres a mile away. I continued farming and contracting until 1957 when I sold the land I owned and purchased Langley Lawn. On seeing the new farm I realised, though the farm was very run down, with the experience I had gained that I could turn it into a viable unit. The farm was a great challenge and over the last 12 years I have turned it into a first-class farm. A feat which previous owners had thought impossible. Having ploughed all the profits and more capital into the farm's improvement I anticipated that I should now receive a just return.

3. In 1958 I purchased part of the old Wartime Airfield which was originally part of the farm. It took two years of hard work removing concrete, draining and cultivating the land to bring it back into production. Even now there remains concrete and stones which have to be removed every year by hand.

4. My system of farming is a low cost, low labour one using as much machinery as capital will allow. I have with the help and approval of National Agricultural Advisory Service streamlined my farming practice into a purely cereal–beans rotation. This is because of the heavy nature of the soil and the absence of any local labour to deal with any other type of cropping. I have by using this system increased production by at least 30 per cent.

5. The possibility of finding another farm which will be capable of supporting this system is very remote. If I have to move it will mean that I shall have to re-organise my farming method and persevere for a further 5 years to get back into the position I am in today.

6. My capital investment in the farm over and above the original purchase price is more than £20,000. Made up of £11,000 for House and buildings and £9,000 for drainage, removal of hedges and ditches and 8 acres of wood which has been brought into full production.

7. My one worker aged 51 lives in my farm cottage which I built in 1958 at a cost of £2,000. He is extremely upset at the prospect of losing his job and his home where he hoped to stay until his retirement.

8. Both my sons, aged 14 and 12 years, wish to farm and their education has been directed to this end. The possibility of owning another farm of this calibre for them will be impossible should we be forced to move.

9. My own prospects are grim having ploughed all my money back into the farm over 12 years. Having streamlined my farming to suit this particular farm how can I now move and start the whole thing again?

10. No compensation could possibly reimburse me for the worry, time and hard work that I have invested in this farm over the last 12 years.

Printed image digitised by the University of Southampton Library Digitisation Unit

N.F.U. QUESTIONNAIRE

sent to those who would in some way be affected
by the siting of the Third London Airport at
NUTHAMPSTEAD

1. NAME ..... *A. S. CLARK* .....
2. ADDRESS ..... *Langley Lawn, Langley Lower Green.* .....
   ..... *Nr. SAFFRON WALDEN. Essex.* .....
3. Do you wish to object to the Commission on the Third London Airport at one of the public inquiries? ..... *YES*
4. Would you wish the National Farmer's Union to represent you? ..... *YES*
5. Would your attitude be different if the effect on your land were:—
   a. The total loss of your land by reason of the airport's being sited on it? ..... *NO*
   b. The partial loss of your land by reason of the aiport's being sited on it? ..... *NO*
   c. The effect of noise only? ..... *NO*
   d. The effect of the construction of new roads only? ..... *NO*
   e. The increased traffic on the roads? ..... *NO*
   f. The likely increase of numbers of people visiting the countryside? ..... *NO*
   g. The siting of industry in the area? ..... *NO*
   h. The siting of housing in the area? ..... *NO*
   i. Any other effects you anticipate .....
   .....
6. How would you gauge the effect on your farming of the various factors listed above? .....
   ..... *Catastrophic* .....
7. How important would you consider agriculture to be in the siting of an airport? What criteria ought, in your opinion, to be followed? ..... *First consideration* .....
   ..... *If it is possible to put the Airport out to sea* .....
8. Do you consider that the airport should be sited:
   a. on an inland site? ..... *NO*
   b. on a coastal site? ..... *YES*
   c. near existing development? ..... *NO*
   d. in as remote an area as possible? ..... *NO*
9. How would you feel at the prospect that if your representations were successful, it might involve other farmers in the same trouble? ..... *Good arable land should not be taken* .....
10. How would your attitude be affected if compensation was adequate and what would you consider as an adequate figure per acre for your land? ..... *Reluctant* .....
    ..... *£500 per Acre* .....
11. If the Union supplies all the costs of legal representation, and does all the administrative work in relation to the preparation of any case at an inquiry, are you prepared to contribute on an acreage levy basis to the cost of any experts required? ..... *YES*
12. Would you be prepared to come for interviews at some central place? ..... *YES*

Would you also please fill in the attached form of information about your holding, and return it together with this form to your N.F.U. COUNTY OFFICE.

Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT—NUTHAMPSTEAD
N.F.U. QUESTIONNAIRE—CONTINUED

NAME ..... *A. S. CLARK* .....

ADDRESS: ..... *Langley Lawn. Langley Lower Green.* .....
..... *Nr. Saffron Walden. Essex.* .....

ACRES: a. Total number ..... *300* .....
b. Number of acres owned ..... *300* .....
c. Number of acres tenanted ..... —— .....

CROPPING:	YIELD PER ACRE
Straw crops *297*	..... *40 cwt* .....
Sugar beet	.....
Potatoes	.....
Kale	.....
Others	.....
Mowing	.....
Hay	.....
Silage	.....

LIVESTOCK: Store/beef .....
Milking cows .....
Pigs .....
Ewes .....
Lambs .....

POULTRY: TOTAL .....
a. Laying .....
b. Others .....

Number of Workers: ..... *1* ..... Number of Service Cottages ..... *1* .....

CAPITAL INVESTED IN FARM OVER LAST 10 YEARS: *£10,000*

ANY PLANNING PERMISSION GRANTED OR REFUSED ..... —— .....
..... —— .....

FUTURE PLANS FOR FARMING: .....
.....

SPECIAL REMARKS: e.g. How long have you been farming in the area? ..... *12 years*
How much longer do you propose to farm? ..... *Until turned out* .....
Have you any relations etc. to take over the farm on your retirement? .....
..... *2 sons* .....
.....

Printed image digitised by the University of Southampton Library Digitisation Unit

2. Submitted by Mr. W. H. Darling

I am W. H. Darling, of Greys, Royston, Hertfordshire.

My late father bought this land in 1932, and apart from military service and further education at Cambridge and in Scotland, this has been my permanent home. I became Manager in 1952, Partner in 1960 and today own half the farm and am tenant on the remainder.

The farm, which adjoins Thirfield Heath on which I have grazing rights, extends to some 500 acres of mostly light chalky soil with some boulder clay outcrops. I employ three men, and grow about:

100 acres wheat
200 acres barley
20 acres oats
20 acres Seeds (Clover or Ryegrass)
40 acres beans.

The remainder is in grass leys which carry 30 beef cows and calves, and 200 ewes with their lambs which are fattened off the grass. The single or double suckled calves are in-wintered and fattened on home-grown cereals, beans and hay, while beef cows live on by-products of seeds (clover or ryegrass), barley, straw and hay. A fair quantity of muck is returned to the land each year.

My farming policy has always been to try and maintain a balance between livestock and arable. Increased costs of labour and machinery led me to abandon sugar-beet and potatoes, and turn to ley farming as a break from cereals. I am convinced that this farming policy is not only historically right for this type of land, but also leaves greater flexibility in either expanding cereals or livestock should the market merit a change of emphasis.

In recent years I have spent a great deal of money on fencing, planting shelter-belts and erecting new covered yards to mitigate the effects of cold winter and spring on the livestock.

The cattle yards, which are mostly empty by February/March, then house the ewes for lambing and are subsequently used for fattening bought in store pigs—of which I sold over 700 last year.

I see no justification for current advice to abandon beef or sheep in favour of high cost intensive cropping. Indeed after last years disastrous harvest in this area (in no small measure due to over-cropping) I was still able to grow 2 tons of wheat per acre after a ley, while my farm costings through F.E.B. at Cambridge showed a gross margin from cattle/sheep of £7 per acre higher than from cereal acreage.

Can ley farming still be justified?

Where trespass by a more mobile and indifferent town population can be contained, there is every sign that there is a long overdue comeback on the way.

1. In spite of all the research on plant breeding, additional use of sprays, fertilisers and better farm machinery, yields have shown little improvement in this area for ten years. Cereal diseases are more prevalent than ever before.
2. Over cropping has reduced humus level in the soil, leading to difficulties in obtaining satisfactory tilth on heavier soils or land "blow" and erosion on lighter soils.
3. Better drainage on upland farms, together with the removal of hedges, trees, etc., for arable farming, allows quicker run off causing water-logged land downstream. While greater amounts of nitrogenous fertilisers are required to satisfy the now impoverished soil, the quick run-off is leading to serious river pollution by excess nitrates de-oxygenating the water.

There is therefore a need to return to ley farming and greater intensification could lead to Zero grazing rather than abandoning the system. Increased costs and inflated land values may well in the future force livestock husbandry to be concentrated indoors—away from rigours of weather and interference from the public and their uncontrolled dogs. Nevertheless livestock farming in U.K. will be of greater significance in the future as costs rise, because it will be easier to import cheap cereals grown on the extensive plains of North America or Australia than import frozen meat. Indeed have we not witnessed how rapidly low cost barley monoculture has changed to high cost production in but a few years?

But the demand for fresh home killed meat over the cheaper frozen imported remains, in spite of the housewife's rising costs and tighter money.

Effect on farming should Nuthampstead be developed

1. Immediate loss of thousands of acres of good farming land during development of airport and new towns.
2. Increased population will have effect of raising cost of land and labour, making it extremely difficult to adopt any balanced type of farming.
3. The effect of aircraft noise and air pollution by unburnt fuel, could well make livestock husbandry impossible.
4. "Instant Development" of the area would bring many undesirable citizens into the neighbourhood, with increasing amount of hooliganism, trespass and rubbish dumping.
5. The last area of open country surrounding London would be lost. Many farmers have been encouraged to develop their holdings on the long term understanding that the reports on South-East Study would be implemented and that the area would never be allowed to become "developed".

Printed image digitised by the University of Southampton Library Digitisation Unit

6. Lastly, the quality of life would become immeasurably the poorer for everyone living in the south-east, and an area still widely accepted as being rich in flora and fauna would be irrevocably destroyed.

Few farmers, if any, enter farming without the thought that they will devote the rest of their lives in that profession. The planting of thousands of trees on their holdings has been done on the assumption that farming will still be feasible a hundred years hence. Thus although I would not wish an airport on to any other area, I can only say it would be a disaster of the greatest magnitude to turn north Herts into an industrial complex which would follow as a result of any proposed development at Nuthampstead. No amount of compensation—however generous it may seem to those outside farming—would be adequate to one who had made it a life work building up soil fertility to its present state, after decades of neglect and depression.

Farming has a major place in the economy as an import saver in this industrial country. In spite of sage words from industrial economists, devaluation or vague hopes from the Department of Employment and Productivity there is still no sign that the pious hopes of a substantial trade surplus will be fulfilled in the near future. A sound Agricultural Policy based on livestock would do much to increase the inherent wealth of the nation—and this will ultimately depend upon saving good agricultural land from the developers.

Printed image digitised by the University of Southampton Library Digitisation Unit

N.F.U. QUESTIONNAIRE

sent to those who would in some way be affected
by the siting of the Third London Airport at
NUTHAMPSTEAD.

1. NAME ..... *W. H. DARLING.*
2. ADDRESS ..... *GREYS*
   ..... *ROYSTON. Herts.*
3. Do you wish to object to the Commission on the Third London Airport at one of the public inquiries?
   ..... *Not in person*
4. Would you wish the National Farmer's Union to represent you? ..... *YES*
5. Would your attitude be different if the effect on your land were:—
   a. The total loss of your land by reason of the airport's being sited on it? ..... *NO*
   b. The partial loss of your land by reason of the airport's being sited on it? ..... *NO*
   c. The effect of noise only? ..... *NO*
   d. The effect of the construction of new roads only? ..... *NO*
   e. The increased traffic on the roads? ..... *NO*
   f. The likely increase of numbers of people visiting the countryside? ..... *NO*
   g. The siting of industry in the area? ..... *NO*
   h. The siting of housing in the area? ..... *NO*
   i. Any other effects you anticipate .....
6. How would you gauge the effect on your farming of the various factors listed above?
   ..... *Unbearable*
7. How important would you consider agriculture to be in the siting of an airport? What criteria ought, in your opinion, to be followed? ..... *Good agricultural land should be the last to be developed in this way.*
8. Do you consider that the airport should be sited:—
   a. on an inland site? ..... *NO*
   b. on a coastal site? ..... *YES*
   c. near existing development? ..... *NO*
   d. in as remote an area as possible? ..... *YES*
9. How would you feel at the prospect that if your representations were successful, it might involve other farmers in the same trouble? ..... *To be sympathetic to other people's worry is to lose the case before its begun—so "Hard Luck".*
10. How would your attitude be affected if compensation was adequate and what would you consider as an adequate figure per acre for your land? ..... *I would sell up at £500, but monetary value not applicable to peace and quiet.*
11. If the Union supplies all the costs of legal representation, and does all the administrative work in relation to the preparation of any case at an inquiry, are you prepared to contribute on an acreage levy basis to the cost of any experts required? ..... *Yes, up to £1 acre.*
12. Would you be prepared to come for interviews at some central place? ..... *YES*

Would you also please fill in the attached form of information about your holding, and return it together with this form to your N.F.U. COUNTY OFFICE.

Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT—NUTHAMPSTEAD
N.F.U. QUESTIONNAIRE—CONTINUED

NAME ..... *W. H. DARLING.*

ADDRESS: ..... *GREYS*
..... *ROYSTON. Herts.*

ACRES: a. Total number *481*
b. Number of acres owned *481*
c. Number of acres tenanted ..... —

CROPPING:	YIELD PER ACRE
Straw crops	*40 cwt. +*
Sugar beet	—
Potatoes	—
Kale	—
Others	—
Mowing, Hay, Silage	*1 cow per ac. or 4 ewes per acre.*

LIVESTOCK: Store/beef ..... *30 cows/calves.*
Milking cows ..... —
Pigs *700*
Ewes *200*
Lambs *350*

POULTRY: TOTAL *3000*
a. Laying ..... —
b. Others ..... —

Number of Workers: ..... *3* ..... Number of Service Cottages *3*

CAPITAL INVESTED IN FARM OVER LAST 10 YEARS: *£40,000*

ANY PLANNING PERMISSION GRANTED OR REFUSED ..... *NO*

FUTURE PLANS FOR FARMING: ..... *Arable + intensive beef/sheep.*

SPECIAL REMARKS: e.g. How long have you been farming in the area? ..... *30 years*
How much longer do you propose to farm? ..... *30 years?*
Have you any relations etc. to take over the farm on your retirement?
..... *Not at present*

Printed image digitised by the University of Southampton Library Digitisation Unit

3. Submitted by Mr. E. J. Welch

My name is Ernest John Welch, of Bury Farm, Nuthampstead, Barkway, near Royston, Hertfordshire.

I have always been a farmer and during my life I have farmed at Bury Farm, for 35 years; this farm is part of the Scales Park Estate, and prior to that period I farmed at Home Farm Meesden, also part of the Scales Park Estate, with my father; this farm was jointly farmed and has been rented for 50 years.

My farming began in Meesden with my father 50 years ago at the end of the 1914–18 war when food was very short. The farm was then mainly arable, with the work being done with horses. Heavy cultivations were done by steam contractors, using steam engines, which were very difficult to get. Our first tractor was actually purchased in 1927 and with the extra power this supplied we were able to get more efficient and up-to-date with the work. This largely enabled us to survive the depression which made so many farmers bankrupt, among others, during the late 1920's and early 30's.

In 1935 I was offered Bury Farm, to farm on my own account; this farm was partly run down and also had had foot and mouth disease, being a dairy farm. We then continued working both farms separately but shared our knowledge and equipment until 1942 when parts of both farms were requisitioned for the United States Air Force Quarters and also Prisoner of War Camps.

Conditions then became very difficult with the labour situation, equipment, and rationing, both for humans and stock.

Our land which was taken for living quarters was dispersed over a large part of the farms, for enemy bombing reasons, and the whole farm being in a barbed wire ring fence complete with sentries, therefore everyone from our workers to the householders had to have USA passes to get in or out. This situation of course made movements very difficult, particularly as they imposed a one-way system for their many vehicles and our slow moving farm machinery was caught in with them.

Having the living quarters, mess-room and the like, situated on our farms was probably worse than having the airfield itself, as the quarters were connected with main drainage, water, electricity, telephone etc., mostly placed underground, and therefore ruining our land drainage system completely.

Professor H. G. Sanders, M.A., Ph.D., the then Executive Officer of the Hertfordshire War Agricultural Executive Committee, insisted that as food was so short and our shipping losses so serious we must crop every inch of land that was available to us, including right up to the sides of hut sites, much to the annoyance of the Americans, they being used to having a surplus of land.

We struggled on under these conditions, only to find that our drainage problems were increasing with the extra water being turned into our ditches and our existing drains having been severed by their services, all their heavy equipment, and the poor maintenance of inadequate ditches etc.

After the war, when the land was de-requisitioned, we were able to claim some of the areas back in 1948. The U.S. Air Force actually left in 1946 but conditions remained much the same with the R.A.F. keeping the main runways for bomb storage.

My father retired in 1948 and both farms were then farmed by me as one unit. I purchased a second combine and also erected a modern grain storage with driers, conveyors, weighers and corn bins to hold the whole of the saleable crops to enable me to market them in a more orderly manner, rather than having to sell them all at harvest time.

The concrete areas and the hutments were gradually removed by Contractors leaving whole areas waterlogged and with the structure of the soil absolutely ruined. (We are still finding obstacles, even after such a long period, i.e. manholes, being found by a wet patch appearing, or by implements being caught and broken by pieces of concrete etc.).

The whole area taken has now been handed back and has been back in cultivation for 10 years, although with some of the land not grant aided for drainage because of being subject to compensation claims for the Landlord.

The farms have been successfully farmed as one unit making up to 500 acres of arable, cropped mainly with wheat, barley and sugar beet and the unploughable pastures being used to fatten beef, which is then graded at a local market.

I have now been joined by my son, who has finished his apprenticeship with Rank, Hovis and McDougal at their Throws Experimental Farm, Near Dunmow, and having also attended Oaklands Agricultural College, St. Albans, where he completed the Course and obtained a N.C.A. and the College Certificate for Agriculture, with a 1st class pass.

Over the last 50 years with the Scales Park Estate we have always experienced very good relations with the landlord, also with our neighbours, employees, some with over 25 years service, and the merchants etc., also with the local Trading Groups of which I am a member. These are among the many things in farming life that cannot be compensated or removed to another area. Particularly as anyway the compensation for tenant farmers is very low and also there is a considerable lapse of time before they actually receive any money.

Also tenants will find the compensation will not pay the ingoings of another holding even if they are lucky enough to obtain the offer of one.

The proposed area takes all but approximately 50 acres of my existing farms and there will certainly be no future under these conditions if the Airport comes to this area. I also consider I shall be too old to venture further and that means that my son Ian will probably be

Printed image digitised by the University of Southampton Library Digitisation Unit

in a position of not being able to even become a tenant in his own right under the existing conditions of private business taking all the farms that come up to tender at what is an entirely uneconomic rental. This kind of situation seems completely wrong when Agriculture is becoming increasingly short of workers, particularly skilled ones, and those who are capable of producing something worthwhile both very efficiently and cheaply. For example, wheat in 1958 was sold for 30/9d. per cwt. and 7½d. a loaf and in 1969 wheat is 29/- per cwt. and bread 1/9d. a loaf.

This farm is increasing in efficiency every year, particularly in the way of drainage, where the equivalent of the rent is spent each year on drainage and maintenance. Drainage is most essential in this area of deep boulder clay and we are now specialising in having our own draining equipment, and under all circumstances the land must be kept well drained to produce good crops.

This could be increasingly needed in the future, as having seen two periods of near starvation in 1918 and 1942 and with agricultural land being taken at the current rate this can again happen without a war; this people may find hard to believe but could turn out to be true.

Printed image digitised by the University of Southampton Library Digitisation Unit

N.F.U. QUESTIONNAIRE

sent to those who would in some way be affected
by the siting of the Third London Airport at
NUTHAMPSTEAD

1. NAME ..... *JOHN WELCH & SON*
2. ADDRESS ..... *BURY FARM, NUTHAMPSTEAD, ROYSTON. HERTS.*
3. Do you wish to object to the Commission on the Third London Airport at one of the public inquiries? ..... *Not personally*
4. Would you wish the National Farmer's Union to represent you? ..... *YES*
5. Would your attitude be different if the effect on your land were:—
   a. The total loss of your land by reason of the airport's being sited on it? ..... *It already does mean almost total loss if Airport is sited here.*
   b. The partial loss of your land by reason of the airport's being sited on it? ..... *I consider this worse than total loss*
   c. The effect of noise only? ..... *Still a bad effect on farming.*
   d. The effect of the construction of new roads only? ..... *Not so bad*
   e. The increased traffic on the roads? ..... *Probably inevitable anyway.*
   f. The likely increase of numbers of people visiting the countryside? ..... *Also inevitable in the future.*
   g. The siting of industry in the area? ..... *Waste of good land.*
   h. The siting of housing in the area? ..... *Waste of good land.*
   i. Any other effects you anticipate .....
6. How would you gauge the effect on your farming of the various factors listed above? ..... *The loss of our land would mean our probable departure from farming.*
7. How important would you consider agriculture to be in the siting of an airport? What criteria ought, in your opinion, to be followed? ..... *Most important, there is so much loss of land through development, an airport should be sited on undeveloped land if at all possible.*
8. Do you consider that the airport should be sited:—
   a. on an inland site? ..... *NO*
   b. on a coastal site? ..... *YES*
   c. near existing development? ..... *IF POSSIBLE*
   d. in as remote an area as possible? ..... *YES*
9. How would you feel at the prospect that if your representations were successful, it might involve other farmers in the same trouble? ..... *Must try to get airport where agriculture is least affected.*
10. How would your attitude be affected if compensation was adequate and what would you consider as an adequate figure per acre for your land? ..... *No compensation could really be adequate as we are tenant farmers.*
11. If the Union supplies all the costs of legal representation, and does all the administrative work in relation to the preparation of any case at an inquiry, are you prepared to contribute on an acreage levy basis to the cost of any experts required? ..... *If the cost is kept in proportion. YES*
12. Would you be prepared to come for interviews at some central place? ..... *YES*

Would you also please fill in the attached form of information about your holding, and return it together with this form to your N.F.U. COUNTY OFFICE.

Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT—NUTHAMPSTEAD
N.F.U. QUESTIONNAIRE—CONTINUED

NAME ..... *JOHN WELCH & SON* .....

ADDRESS: ..... *BURY FARM, NUTHAMPSTEAD* .....
..... *ROYSTON, HERTS.* .....

ACRES: a. Total number ..... *562* .....
b. Number of acres owned ..... *—* .....
c. Number of acres tenanted ..... *562* .....

CROPPING:		*Total*	*YIELD PER ACRE*
Straw crops	*Barley Wheat*	*367 acres*	*32 cwts.....39 cwts. (1967)*
Sugar beet		*25 acres*	*13 tons.....12 cwts.*
Potatoes		*NIL*	—
Kale		*NIL*	—
Others	*Beans, Mustard.*	*68 acres*	*34 cwts.....9 cwts.*
Perm Grass		*47 acres*	—
Hay		*10 acres*	*30 cwts.*
Silage		*45 acres*	*40 cwts.*

LIVESTOCK: Store/beef ..... *75 head*
Milking cows ..... *NIL*
Pigs ..... *NIL*
Ewes ..... *NIL*
Lambs ..... *NIL*

N.B. Beef includes the foundation of a pedigree poll Hereford Herd.

POULTRY: TOTAL ..... *NIL* .....
a. Laying .....
b. Others .....

Number of Workers: ..... *3* ..... Number of Service Cottages ..... *3* .....

CAPITAL INVESTED IN FARM OVER LAST 10 YEARS: ..... *Approx. £8,000, by Landlord.* .....

ANY PLANNING PERMISSION GRANTED OR REFUSED ..... *None* .....
.....

FUTURE PLANS FOR FARMING: ..... *To intensify our regular arable rotation on the farms.* .....

SPECIAL REMARKS: e.g. How long have you been farming in the area? ..... *35 years* .....
How much longer do you propose to farm? ..... *As long as possible* .....
Have you any relations etc. to take over the farm on your retirement? ..... *Yes. One son now in partnership with myself having passed N.C.A. etc.* .....
.....

Printed image digitised by the University of Southampton Library Digitisation Unit

4. Submitted by Mr. A. Q. Hitchcock

I am Arnold Quinney Hitchcock, of The Hall, Clavering, Saffron Walden, Essex—a farmer.

I have been farming in partnership with my father since 1961 and from 1958 until 1961 I was Manager to him. After National Service in the Army I went up to Cambridge in 1955 to read Agriculture, taking my B.A. in 1958 and M.A. in 1963. I was born and bred at Church End Farm, Rickling, of which farm I am now the owner-occupier, and I moved to Clavering when I was married in 1959.

I am farming mainly on the basis of an arable rotation, a total of 1,384 acres, the principle crops being wheat, barley, potatoes, oats and beans, with a small ewe flock. In the immediate future I am proposing to introduce once again a grass break into the rotation and to increase the flock size from 100 to about 350. I concentrate my efforts on producing high quality out-put particularly milling and seed wheat and King Edward potatoes for the London Market. The value of the gross out-put per acre over the last three years has been approximately £54 per acre. There is an annual depreciation on machinery and fixed equipment of £7,500 per year and a re-investment per annum of between £2,500 and £3,000.

I object to the proposed siting of the proposed Third London Airport at Nuthampstead, the edge of which Airport at its nearest point would only be 1¼ miles from the land I am farming, for the following reasons:

Development: Any land taken for development will lead to a reduction in the size of my business with a consequent rise in unit costs because of the impossibility of being able to obtain any additional land in the area. This likely development, which must include the taking of land for a new town, roads, and other forms of access to the Airport, provision of services, and reservoirs, must lead to severance of my land, fragmentation of the holding and the constant erosion of my livelihood over many future years. Additionally, the noise problem is going to create difficulties in keeping livestock as the area of the farm falls within the 50/60 NNI contour, as well as the problems that it is going to create for my family and my employees. With further regard to the keeping of livestock, the inevitable trespassing that must take place with the influx of a large population to the area will make the fencing and general security of livestock enterprises almost impossible.

I have already referred to the difficulties of obtaining additional land and as I am already the tenant of part of the land I farm, the low level of tenant compensation on land taken for development will mean that it is impossible for me to finance the additional purchase of land to replace the land I may lose.

I have lived in this area all my life and have tremendous regard for the beauty and peace of this part of Essex and have done over the years a great deal to maintain village life in its present form through my connections with the village Cricket Clubs, British Legion, and Village Hall Council of Management. We have in this area one of the few remaining parts of England relatively close to London which remains unspoilt. The prospect of urbanisation stretching from London to Harlow and now through Bishops Stortford to Mauden and Clavering appals me. Additionally, the pressure on my employees is going to be very great in two respects. First, they are all born and bred country people and while they will obviously have a marked reluctance to move if this proposed development takes place, the pressures on them will be enormous. Second, from my own point of view the very high wages that are likely to be offered to the very highly skilled tractor driver to drive bulldozers and other earth moving equipment will be very great and I doubt whether I shall either be able to retain and obtain at anything like reasonable wage levels the labour I require to maintain my present system of farming.

Printed image digitised by the University of Southampton Library Digitisation Unit

N.F.U. QUESTIONNAIRE

sent to those who would in some way be affected
by the siting of the Third London Airport at
NUTHAMPSTEAD.

1. NAME ..... *TINNEY & HITCHCOCK.*
2. ADDRESS ..... *THE HALL, CLAVERING. SAFFRON WALDEN, ESSEX.*
3. Do you wish to object to the Commission on the Third London Airport at one of the public inquiries? ..... *YES*
4. Would you wish the National Farmer's Union to represent you? ..... *YES*
5. Would your attitude be different if the effect on your land were:—
   a. The total loss of your land by reason of the airport's being sited on it? ..... *NO*
   b. The partial loss of your land by reason of the airport's being sited on it? ..... *NO*
   c. The effect of noise only? ..... *NO*
   d. The effect of the construction of new roads only? ..... *YES—Possibly.*
   e. The increased traffic on the roads? ..... *YES—BUT DEPENDS ON ROAD CAPACITY*
   f. The likely increase of numbers of people visiting the countryside? ..... *YES—BECAUSE LAND IN MY VIEW IS A NATIONAL ASSET AND ONE HAS TO FALL IN LINE BROADLY WITH COUNTRYSIDE ACTS ETC.*
   g. The siting of industry in the area? ..... *NO*
   h. The siting of housing in the area? ..... *NO—IF THIS MEANS A LARGE POPULATION INCREASE*
   i. Any other effects you anticipate ..... *i. PRESSURE ON LABOUR. ii. RESERVOIR DEVELOPMENT. iii. COST OF REPLACING STANSTED AIRPORT TRAINING FACILITIES ETC.*
6. How would you gauge the effect on your farming of the various factors listed above? ..... *INTOLERABLE*
7. How important would you consider agriculture to be in the siting of an airport? What criteria ought, in your opinion, to be followed? ..... *LAND USE PRIMARILY, FOLLOWED BY PRODUCTION DIFFICULTIES e.g. NOISE WITH LIVESTOCK, FRAGMENTATION PROBLEMS WHERE PART HOLDING DEVELOPED, LOSS OF NAT. AGRIC. PRODUCT.*
8. Do you consider that the airport should be sited:—
   a. on an inland site? ..... —
   b. on a coastal site? ..... *YES*
   c. near existing development? ..... —
   d. in as remote an area as possible? ..... —
9. How would you feel at the prospect that if your representations were successful, it might involve other farmers in the same trouble? ..... *ON A COASTAL SITE THIS WOULD BE MINIMAL*
10. How would your attitude be affected if compensation was adequate and what would you consider as an adequate figure per acre for your land? ..... *SEVEN YEARS RENT AND £500 PER ACRE WHERE OWNER OCCUPIED.*
11. If the Union supplies all the costs of legal representation, and does all the administrative work in relation to the preparation of any case at an inquiry, are you prepared to contribute on an acreage levy basis to the cost of any experts required? ..... *YES*
12. Would you be prepared to come for interviews at some central place? ..... *YES*

Would you also please fill in the attached form of information about your holding, and return it together with this form to your N.F.U. COUNTY OFFICE.

Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT—NUTHAMPSTEAD
N.F.U. QUESTIONNAIRE—CONTINUED

NAME ..... *TINNEY & HITCHCOCK* .....

ADDRESS: ..... *THE HALL, CLAVERING, SAFFRON WALDEN. ESSEX.* .....

ACRES: a. Total number..... *1284* .....
b. Number of acres owned..... *438* .....
c. Number of acres tenanted..... *846* .....

CROPPING:	YIELD PER ACRE
Straw crops	*40 cwt.*
Sugar beet	—
Potatoes	*12 tons*
Kale	—
Others..... *BEANS*	*30 cwt.*
Mowing..... *CLOVER SEED*	*4 cwt.*
Hay	*40 cwt.*
Silage	—

LIVESTOCK: Store/beef ..... —
Milking cows ..... —
Pigs ..... —
Ewes *116*
Lambs *180*

POULTRY: TOTAL ..... —
a. Laying ..... —
b. Others ..... —

Number of Workers:..... *19* ..... Number of Service Cottages..... *13* .....

CAPITAL INVESTED IN FARM OVER LAST 10 YEARS:..... *£180,000*: .....

ANY PLANNING PERMISSION GRANTED OR REFUSED..... *GRANTED—FIVE APPLICATIONS IN LAST 10 YEARS.* .....

FUTURE PLANS FOR FARMING:..... *STAY PUT AND EXPAND WHEN POSSIBLE.* .....

SPECIAL REMARKS: e.g. How long have you been farming in the area?..... *36 YEARS* .....
How much longer do you propose to farm?..... *UNTIL PARTNERSHIP DISSOLVED.* .....
Have you any relations etc. to take over the farm on your retirement? ..... *YES*

Printed image digitised by the University of Southampton Library Digitisation Unit

5. Submitted by Mr. G. P. Harding

We farm as G. P. Harding & Son, Limited, at Chrishall Grange, Heydon, Royston, Hertfordshire, and have done so since September 29th, 1940, as tenant farmers, of 1,232 acres.

On October 10th 1968 we purchased Dottrell Hall Farm—287 acres. This adjoins almost Chrishall Grange making a total acreage farmed of 1,519 acres.

We farm on a 3½-course rotation; viz., sugar beet followed by wheat or barley as a first straw crop, followed by barley or mixed corn for the second straw crop, and occasionally for a third white straw crop we grow barley or oats. This is our rotation for our red soils over chalk.

For our chalk soils our rotation is first beans (either winter or spring beans) followed by wheat as the first white straw. The second year we plant barley and on small acreage we grow a third white straw, either barley, oats or mixed corn.

We run a fattening herd of pigs which we sell as Heavy Hogs to Messrs. T. Wall & Son, our through-put is 1,200 to 1,400 per year. These pigs are fed on our own barley and mixed corn with some of our own beans to make up some of the protein, for the rest of the protein we buy fish meal. Our Store Pigs are bought from local farmers at 9–10 weeks old.

We grow 200 acres of Sugar Beet annually. This is most necessary for the maintenance of fertility on our light soils.

We purchase some 120 tons of sugar beet pulp. This is used as feed, for our beef cow suckling herd, which runs some 60 acres of permanent pasture. Of this 18 acres are small paddocks around the farmstead and 42½ acres of pasture which was derelict when we took the farm in 1940.

This land is much too hilly to cultivate as arable. We had a piped supply of water taken to it, at considerable expense in 1951.

The calves are yarded their first winter, grazed the second year and sold fat the following spring. Total head of cattle 120–130.

If the third airport is sited at Nuthampstead situated about 2 miles N.E. of the square the problems I foresee are:

(A) Shortage of labour
(B) Fragmentation
(C) Trespass
(D) Noise

I put them in this order of priority, but perhaps both A and B should come joint first.

A. Shortage of labour

We are now losing labour at 1 to 2 men per year. We have many factories within 10 miles: Fisons Pest Control at Harston. CIBA at Duxford. Spicers paper works, Simplex and Moores Leather factories at Sawston. Acro at Saffron Walden and factories at Royston and Cambridge.

We have only 3 of our staff under 30 years of age. Our labour force is fully occupied all the year round and is essential for harvesting our 200 acres of sugar beet, which is a high labour crop. We average 14 to 15 tons of beet per acre, some 3,000 tons. These have to be carted to Felstead, 27 miles away. This is stored to await delivery on our concrete pads. There is no surplus of labour in the area now and if labour goes off to the airport we would be unable to grow sugar beet and without sugar beet as a break crop our rotation would go and yields of cereals would drop very considerably.

B. Fragmentation

By this I mean the bisection or trisection of the farm by roads to the airport and the essential supplies of water, electricity and gas.

It would be impractible to cart our crops across main roads, i.e. the corn to the farmyard and sugar beet to our concrete pads, which we have dotted about the farm; also electric light poles across our land would make all cultivatings more difficult, especially so row-crop work.

C. Trespass

With the influx of some 200,000 people this is sure to be a major problem. With people leaving our gates open and letting our cattle and pigs stray. There would be many dogs to chase and frighten our livestock. Another major problem would be damage to our expensive equipment, tractors and combines etc., by broken bottles, beds, prams and other litter thrown into our corn fields.

D. Noise

This is to some extent an unkown factor. One must presume that airplanes will get bigger, more powerful and much more noisy. This is bound to effect my breeding herd of beef cattle.

To me, the peace of the countryside, the song of the birds in the morning, the nightingale at night, these and the many other things we enjoy at Chrishall Grange will go unheard for evermore.

Finally, the loss of any portion of my land would be a great hardship as it would be bound to put the farm out of balance and if bisected by a motorway, the land could be divorced from the buildings and access could be most difficult if not impossible.

Having bought the 287 acres last year at a high cost per acre the holding could not stand any increase in costs.

Printed image digitised by the University of Southampton Library Digitisation Unit

N.F.U. QUESTIONNAIRE

sent to those who would in some way be affected
by the siting of the Third London Airport at
NUTHAMPSTEAD

1. NAME ..... *G. P. Harding & Son Ltd.* .....
2. ADDRESS ..... *Chrishall Grange.* .....
   ..... *Heydon. ROYSTON. Herts.* .....
3. Do you wish to object to the Commission on the Third London Airport at one of the public inquiries?
   ..... *Yes if necessary.* .....
4. Would you wish the National Farmer's Union to represent you? ..... *Yes please.* .....
5. Would your attitude be different if the effect on your land were:—
   a. The total loss of your land by reason of the airport's being sited on it? ..... *NO*
   b. The partial loss of your land by reason of the airport's being sited on it? ..... *definitely much more so.*
   c. The effect of noise only? ..... *NO*
   d. The effect of the construction of new roads only? ..... *NO*
   e. The increased traffic on the roads? ..... *NO*
   f. The likely increase of numbers of people visiting the countryside? ..... *NO*
   g. The siting of industry in the area? ..... *NO*
   h. The siting of housing in the area? ..... *NO*
   i. Any other effects you anticipate ..... *No sleep. No peace, no television and ulcers.* .....
6. How would you gauge the effect on your farming of the various factors listed above? ..... *extremely difficult—would have to cut out my Cattle enterprise.* .....
7. How important would you consider agriculture to be in the siting of an airport? What criteria ought, in your opinion, to be followed? ..... *Top priority. Pick a position where land had a low agricultural value.* .....
8. Do you consider that the airport should be sited:—
   a. on an inland site? ..... *No*
   b. on a coastal site? ..... *Yes*
   c. near existing development? ..... *maybe*
   d. in as remote an area as possible? ..... *No, but a site must be in easy reach of London.* .....
9. How would you feel at the prospect that if your representations were successful, it might involve other farmers in the same trouble? ..... *That it should affect the minimum number of people and take the minimum amount of agricultural land.* .....
10. How would your attitude be affected if compensation was adequate and what would you consider as an adequate figure per acre for your land? ..... *Tomorrow. Price. That what I would need to start again.* .....
11. If the Union supplies all the costs of legal representation, and does all the administrative work in relation to the preparation of any case at an inquiry, are you prepared to contribute on an acreage levy basis to the cost of any experts required? ..... *Yes*
    .....
12. Would you be prepared to come for interviews at some central place? ..... *Yes*

Would you please fill in the attached form of information about your holding, and return it together with this form to your N.F.U. COUNTY OFFICE.

Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT—NUTHAMPSTEAD
N.F.U. QUESTIONNAIRE—CONTINUED

NAME ..... *G. P. Harding & Son Ltd.*

ADDRESS: ..... *Chrishall Grange*

..... *Heydon. Royston. Herts.*

ACRES: a. Total number *1520*

b. Number of acres owned *288*

c. Number of acres tenanted *1232*

CROPPING:		YIELD PER ACRE
Straw crops	*1044*	*30 cwts.*
Sugar beet	*206*	*14 tons.*
Potatoes	*NIL*	—
Beans	*169*	*23 cwts.*
Fallow	*29*	—
Mowing	*10*	*1 ton*
Grazing	*62*	—
Silage	—	—

LIVESTOCK: Store/beef *120*

Milking cows ..... *NIL*

Pigs *680*

Ewes ..... —

Lambs ..... —

POULTRY: TOTAL *800*

a. Laying *16*

b. Others ..... —

Number of Workers: ..... *15* ..... Number of Service Cottages *14*

CAPITAL INVESTED IN FARM OVER LAST 10 YEARS: .....

ANY PLANNING PERMISSION GRANTED OR REFUSED ..... *NO*

FUTURE PLANS FOR FARMING: ..... *as I always have, it's my life.*

SPECIAL REMARKS: e.g. How long have you been farming in the area? ..... *30 years.*

How much longer do you propose to farm? ..... *15 years*

Have you any relations etc. to take over the farm on your retirement? ..... *Yes, two sons.*

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Country Landowners' Association

SUBMITTED BY BRIGADIER J. R. FISHBOURNE*

1. The Country Landowners' Association represents owners of agricultural land in England and Wales. The Association's members own the vast majority of privately owned agricultural land and woodlands in England and Wales, as well as other rural lands.

Members affected

2. The Cambridgeshire, Essex and Hertfordshire Branches of the Association are strongly opposed to the Third London Airport being sited in the vicinity of Nuthampstead. The Association has consulted its members within a radius of about 15 miles from the proposed airport site as shown on the Commission's plan CTLA 2/3, and no member has indicated support for the proposal. Within the 15 miles radius the Association has the following membership:

Cambridgeshire	88 members owning a total of 25,440 acres
Essex	58 members owning a total of 29,028 acres
Hertfordshire	127 members owning a total of 37,660 acres
Total	273 members owning a total of 92,128 acres

Appended hereto is an one-inch-to-the-mile map marked CLA 2† on which I have marked by the letter "M" where members own land at and nearby the proposed site (mainly within a 10 miles radius) and beneath each "M" I have placed a figure indicating the acreage owned in each case. I have also included the NNI contours as shown on the Commission's plan CTLA 2/3,‡ and the 10 miles radius from the centre of the proposed site.

The area affected

3. The area likely to be affected by the land-take for the airport, by associated urbanisation, by noise nuisance and other disturbance associated with a major airport sited at Nuthampstead is largely agricultural land of high quality. The proposed site is also set in a delightful part of rural England which is much loved by those who live, work and visit there.

Agriculture and preservation of agricultural land

4. The Association draws the Commission's attention to the evidence submitted by the Association dated 8th November 1968§ at Stage I of the Commission's work, in which the need to conserve good agricultural land in the national interest is emphasised, and the many adverse effects of siting the airport on or adjacent to farmland are set out. These considerations apply in full to this proposed site. It is understood that the Commission will receive full evidence as to the quality of the land, the production of the land and the standard of farming from the Ministry of Agriculture and from other objectors. As requested by the Commission the Association will not repeat this evidence, but whilst so refraining, the Association wishes to emphasise the high quality of the land concerned, and the detriment that would be occasioned by any serious interference with farming in this area, or by taking this land out of production, coupled with the displacement of farmers and their families and the loss to agriculture of farm workers.

Long term investment in agricultural improvements

5. With the object of indicating to the Commission the extent of long-term improvements of agricultural land in the locality, the Association has sought details of investment in new buildings, improvement of buildings, drainage schemes, farm roads and other improvements undertaken during the last ten years. For the same reasons as I indicated at the Foulness hearing a complete picture cannot be given. I have analysed the details given by our members to date being 49 in number with land closest to the proposed site. The gross capital investment by the 49 landowners are as follows:

Buildings	£922,570
Drainage	£110,840
Roads and miscellaneous	£75,340
Total	£1,108,750

The average investment per property by these 49 landowners is therefore £22,627. (This is an understatement as some recent improvements and uncompleted improvements have not been included). I am unable to show the amount of public money invested by way of grant-aid, but I understand the Ministry of Agriculture will be giving some figures at Stage III.

Pedigree herds

6. Some notable herds of cattle, sheep and pigs are kept close by the proposed site. Eleven of the 49 landowners referred to in para. 5 have drawn my attention to their valuable herds, and some have exported stock. Others have tenants with valuable herds.

Noise nuisance

7. Members in the area are most concerned about the noise nuisance that would be caused by the proposed

* See also p. 878.

† Available for inspection, by arrangement, at the Country Landowners' Association, 7 Swallow Street, London, W.1.

‡ See attached wallet of maps and diagrams.

§ See CTLA. Papers and Proceedings, Vol. II. *Stage I: Public Hearings. Part II Other written evidence.* (HMSO; 17s. 6d.) p. 46.

Printed image digitised by the University of Southampton Library Digitisation Unit

airport. It is also felt that properties in the area would lose value because of noise nuisance without (in the absence of new legislation) compensation being payable to the owners.

Land drainage and water supplies

8. The Commission is referred to the Association's Stage I evidence dated 8th November 1968 as to the need to ensure water supply for an airport and ancillary development without detriment to other water users—especially farmers; and the need to ensure that effective channelling of storm water can be achieved. These two points are pertinent to this proposed site. It is notorious that water demands in the south-east are rising and at a more rapid rate than in other parts of the country. At the same time the south-east is the driest part of the country.

Woodlands

9. A feature of many of the rural properties in the area are the woodlands. Seventeen of the 49 landowners referred to in para. 5 have referred to their woodlands and forestry interests. The Association is anxious that these should be safeguarded.

Minerals

10. Members are anxious that the winning of minerals should not be prejudiced, and we have been referred to deposits of sand at Widdington, near Saffron Walden, gravel at Audley End, and chalk at Buntingford. Coprolites near Royston have also been mentioned.

Amenities

11. The area is rich in places and buildings of historic and architectural interest, and villages of beauty and character. The Association urges the preservation of the amenities of the area, and is in close touch with the Nuthampstead Preservation Association on this score. Members have referred to the following:

(a) **Buildings**

The 49 members mentioned in para. 5 have referred specifically to 42 listed buildings on their properties, and in addition a number have stated that they have "several" without specifying the number. They have drawn special attention to the following:

Langley Hall and Langley Church—listed buildings within the proposed airport site.
Site of Norman Castle, tithe barns and Church Cottage at Elmdon—adjacent to proposed airport site.
350-year-old barn at Hyde Hall, Buntingford—ancient monument.
Wickham Hall, Bishops Stortford.
The Old Rectory at Royston.
15th Century Tithe Barn at Priors Hall, Widdington.
Anstey Castle; Anstey Hall and St. George's Church, Buntingford—the 12th Century Church is unique.
Hormead Hall, moat and dovecote at Great Hormead—a Tudor house within the proposed airport site.
Roman Villa at Litlington.
Great Munden Church—only known example remaining of Roman pudding-stone.
Audley End House and Village.
Brent Pelham Estate—Hall and other listed buildings; Roman and pre-roman features, Shonks Moat and moated sites at Chamberlains—within or adjacent to proposed airport site.

(b) *SSSIs, AONBs etc.*

The proposed site for the airport is within a proposed area of great landscape value, and much of the surrounding country is either designated or proposed as Areas of Outstanding Natural Beauty or Sites of Special Scientific Interest. There are also dozens of conservation areas within a short distance of the proposed airport site.

(c) *Radwell Mill, Baldock*

Lake with wild fowl open to the public.

(d) *Country roads*

Most of the roads in the vicinity of the site are narrow winding and attractive. They are at present unsuitable for heavy traffic, and major road works would spoil the nature of the countryside.

Cambridge University

12. I understand that the University is preparing a separate objection and Colleges which are members of this Association will be represented by the University. The Association is anxious that the interests of these Colleges are safeguarded, but refrains from duplicating the University's case.

Sporting rights

13. A feature of many properties in the area is the sporting rights. There are a number of valuable shoots (some syndicated), which provide recreation for many. If land over which shooting takes place is taken for development the shoots will of course be broken up, the amenity will be lost and the owner will lose a valuable asset. The Puckeridge Hunt at Brent Pelham could not continue were the airport to be sited in the locality, because (among other reasons) the land would cease to be "hunting country" and hounds could not be allowed to run freely. The Puckeridge is an old established pack connected with the Barclay family for many years. The Hunt is a popular amenity having 225 riding members and 756 hunt supporters. It provides employment not only for the hunt's own employees but also for saddle-makers, blacksmiths and other trades in the neighbourhood concerned with horses and hounds.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. J. L. Logue

I am J. L. Logue of Coopers End Farm, Duddenhoe End, Saffron Walden, Essex. I farm 540 acres of land known as Coopers End Farm and Rockells Farm, both at Duddenhoe End, Near Saffron Walden. So far as I can judge from the information published by the Commission the whole or virtually the whole of my land would need to be acquired for the site of the Airport proposed by the Commission at Nuthampstead.

The land is farmed purely on an arable basis. I have no stock but the land is extremely versatile and would support almost any description of farming. I began farming here in 1956 when I acquired 90 acres and have gradually added to this over the years. All my capital has gone back into the farm and I live on the farm. The buildings include two period tithe barns, a very large corn store and a large dutch barn, numerous out-buildings, cart sheds, etc.

I have spent much money clearing hedges and ditches in order to make viable units for modern machinery and have carried out considerable reclamation of scrub land and draining of wet areas. I think I can claim to have carried out far more ditching than normal and in the last 12 months have carried out more than 300 chains of ditch work. Much of the land is very heavy and needs constant attention to drainage. It is largely for this reason that my equipment includes 1 large crawler tractor and 3 wheeled tractors of 50 horse power or over. Last year I completed the purchase of Rockells Farm and with it acquired the farm house. I have made this house habitable at some cost and put on the market my present house just before the announcement of the Commissions choice of sites. A purchaser who was about to sign a contract has now withdrawn so that it is fair to say that I have already suffered damage as a result of the Commissions proposals.

The work force with which I farm the land consists of 2 men working full-time and 2 working part-time. I am able to put the heavy plant to use on a contract hire basis at times when they are not needed on the farm.

It would be extremely difficult for me to replace this holding as a unit. On taking over a new farm one spends 2 to 3 years learning its idiosyncrasies. I know this area now extremely well in the sense that I have a good idea based on experience of when is the best time to sow crops in particular fields and what sort of yields I can expect given particular forms of treatment. This kind of knowledge is built up over the years and results in a particular holding being used to its greatest potential. This is one of the factors which is not reflected in compensation because on moving to a new farm it takes some years to bring it up to its full potential and there is, therefore, a loss of income during this period.

I am very much concerned as a matter of principle with the loss of good agricultural land involved in the Commissions choice of a site at Nuthampstead. Quite apart from the actual loss of land to me there will in my view be a substantial lowering of standards of farming over a very wide area. I know from my own observations of farming elsewhere in the country that farms on the fringes of large urban areas have considerable problems with dumping of rubbish, the fluctuations in the supply of labour and increased difficulty in moving farm machinery about on roads which are more heavily trafficked than would otherwise be the case.

I am prepared to amplify my views about disturbance and noise but mention them no further here in view of my opinion that the whole of my land would in any event have to be acquired. If any of it was not actually required it would be in the direct flight path and I consider that life there as it is at present lived would become impossible.

To summarise therefore I wish to object to the Commissions proposals on the grounds that:

(1) compensation could not reflect the true extent of loss,
(2) there would be a loss of fine agricultural land, and
(3) the proposals would result in an inescapable lowering of the amenities of the area.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 3

Mr. H. van Oosterom
Mr. H. Clay
(*Great Ouse River Authority*)

Reverend L. Morris

Dr. K. H. Jones
Dr. G. F. Edson
(*Chesterford Park Research Station*)

Dr. R. Weck
(*The Welding Institute*)

Dr. R. D. Keynes
(*Institute of Animal Physiology*)

Dr. D. W. Pashley
(*Tube Investments Ltd.*)

Mrs. N. W. Tyrrell
(*The Hertfordshire Society*)

Mr. H. G. Hawker
(*The Decca Navigator Company Ltd.*)

Mrs. Shirley Williams, *M.P.*

Oral evidence was taken from these witnesses on
Day Three, Wednesday 11 June 1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Great Ouse River Authority

SUBMITTED BY MR. H. VAN OOSTEROM*

NOTE: *In reading this statement reference should be made to plan G.O.R.A. 1,† on which have been shown the catchment boundaries, rivers, geological formations, groundwater contours and licensed sources referred to in the text.*

Hydrology and geology

1. Approximately 31 per cent of the area of the site indicated in the Commission's published material is located within the Great Ouse River Authority's area. Part of it drains to the River Ouse via Wicken Water, Wenden Water and the River Cam (sub-catchment No. 27) and the remainder via an unnamed tributary passing through Fowlmere and the River Rhee (sub-catchment No. 30).

2. The surface of the relevant parts of these two sub-catchments consists mainly of the Lower Chalk, the Middle Chalk, the Upper Chalk, and of the Boulder Clay, on which the site itself is located.

3. The average annual rainfall of sub-catchments Nos. 27 and 30 is of the order of 23·2 in. (589 mm). The average combined run-off is 5·2 in. (132 mm). It is estimated that only 16 per cent of the latter total is direct run-off, and that the remaining 84 per cent reaches these rivers indirectly, after first infiltrating into the Chalk.

4. The infiltration into this formation takes place mainly in the areas where it is exposed on the surface, and also, but to a minor extent, through the Boulder Clay. Additionally, water draining off this formation as surface run-off infiltrates through the beds of the respective streams within a short distance downstream of the points at which they reach the bare Chalk. These watercourses are therefore dry under normal conditions, and carry a visible flow only under exceptionally wet conditions. The water finally re-emerges through springs and stream beds in the valleys of the Rivers Cam and Rhee.

5. From the groundwater contours shown on plan G.O.R.A. 1† it will be seen that the highest groundwater levels occur about 3 miles (5 km) to the South of the surface watershed. In effect the groundwater basins of the Rivers Cam and Rhee extend under the whole of the site. It therefore follows that a discharge of sewage effluent or of polluted surface water to the Rivers Quin and Stort on the Lee Conservancy Catchment Board's side of the site boundary would be open to the same objections as those already given in the Authority's Pollution Prevention Officer's statement in respect of discharges to the water courses draining the site on the Great Ouse side of the watershed.

Land drainage

6. It is understood from the information supplied by the Commission's officers that the site surface water drainage system is to be designed for a storm having a frequency of occurrence of once in two years, and that the maximum rate of run-off under design conditions from the site as a whole will be of the order of 2,000 cusecs (57 m^3/s). Assuming this rate is directly proportional to the site area, it is deduced that the maximum rate of run-off to Great Ouse river system will be of the order of 620 cusecs (18 m^3/s).

7. The aggregate bankfull capacities at the site boundaries of the three existing drainage channels is of the order of 500 cusecs (14 m^3/s). However, it must not be inferred that a once in two years storm run-off from the existing catchments would necessarily require the whole of these combined capacities. The effect of the site run-off, in terms of increased flooding, is thus likely to be more serious than is immediately apparent from the excess of this run-off over the channel capacities.

8. In order to protect land and built up areas downstream of the site from this risk, it will be necessary to provide means for controlling the discharge to these streams to a maximum rate acceptable to the Authority. Additionally it may be necessary to carry out agreed improvements to these watercourses for some distance downstream of the respective outlets. Consideration should also be given to the possibility of disposing of at least part of the run-off by re-charge into the underlying Chalk.

9. Similar problems may arise from the disposal of surface water from the urbanisation likely to be associated with the airport development, but in the absence of information about the areas in which this will be located, no detailed comment can be given at this stage.

10. It is anticipated that in neither case there will be insuperable difficulties in devising an acceptable solution to the surface water drainage problem. It is essential however that there should be early consultations between the Commission's staff and the Engineer of the Authority, or between the respective county planning officers and the Authority's Engineer, as appropriate, to ensure that the basic design criteria as well as the drainage works shall be mutually agreed in detail in advance of construction.

Water resources

11. The major underground sources in the area over and through which the site drainage water would have

---

* See also p. 885.
† opp. p. 744.

Printed image digitised by the University of Southampton Library Digitisation Unit

to pass are shown on plan G.O.R.A. 1. The licensed daily and annual abstraction rates are listed in Appendix 1.

12. The site is situated within the Lee Valley Water Company's supply area. The urbanisation areas may be located partly within the same company's area, but also in those of the Cambridge Water Company and the Bedfordshire Water Board.

13. The Water Resources Board and the respective River Authorities are currently planning the development of the additional water resources needed in South-east England up to the end of the present century. No serious problem is foreseen in making available to the respective water undertakings the additional sources they would need for meeting the airport demand and the needs of the additional population referred to in the Commission's published material.

14. A local difficulty may occur in the Cambridge Water Company's supply area if a large new demand arises from urbanisation at an early stage in the airport development. The underground supplies in their area are virtually exhausted, and the Authority is planning to meet their future needs from the relatively undeveloped river basins to the north-east of Cambridge. An experimental investigation into the proposed method of resource development is now in progress, but definite conclusions on its feasibility and cost may not be available until 1972 or thereabouts. It is therefore essential that the Authority be notified at the earliest possible stage of the incidence and timing of the urbanisation demand, to enable the resource development to be re-planned and accelerated as required.

Appendix A

Licence No.	*Name*	*Source*	*G.P.D.*	*(l/sec)*	*M.G.A.*	*($m^3 \times 10^6$)*
	Public Water Supplies					
30/7	Lee Valley Water Co.	Ashwell	60,000	3·16	18·25	0·08
30/8	Lee Valley	Royston	600,000	31·6	219·0	1·00
30/10	Lee Valley	Royston	750,000	39·5	273·75	1·24
30/26	Cambridge Water Co.	Fowlmere	915,240	48·2	334·0	1·52
30/27	Cambridge Water Co.	Croydon	550,000	28·9	160·0	0·73
30/28	Cambridge Water Co.	Harston	60,000	3·16	20·0	0·09
30/156	Cambridge Water Co.	Melbourn	3,500,000	184	1,095·0	4·98
30/160	Cambridge Water Co.	Duxford Aerodrome	360,000	18·9	131·0	0·60
27/10	Lee Valley	Ugley	250,000	13·2	91·25	0·41
27/11	Lee Valley	Wenden Ambo	1,000,000	52·6	365·0	1·66
27/12	Lee Valley	Newport	500,000	26·3	109·5	0·50
27/13	Lee Valley	Debden Rd.	768,000	40·4	273·75	1·24
27/82	Lee Valley	Springwell	3,000,000	158	1,098·0	4·99
		Uttlesford	3,000,000	158	1,098·0	4·99
28/13	Cambridge Water Co.	Sawston	336,000	17·7	120·0	0·55
	Industrial					
30/121	Atlas Stone	Meldreth	432,000	22·7	151·2	0·69
27/35	Spicers	Sawston	210,000	11·0	51·5	0·23
27/36	Wiggins Teape	Sawston	290,000	15·3	100·0	0·45
27/39	Towgood	Sawston	1,500,000	78·9	463·0	2·10
27/33	C.I.B.A.	Duxford	4,008,000	211	1,078·5	4·90

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Great Ouse River Authority

SUBMITTED BY MR. H. CLAY*

1. I have inspected the proposed site of the Third London Airport at Nuthampstead and have studied the information published for the Stage II Local Hearing.

2. Two sources of water pollution have been considered, namely the surface water drainage from the site and the sewage effluent from the primary airport population and the urbanisation which may extend to an area within a radius of 20 miles from the airport.

3. As far as the question of pollution by surface water is concerned my experience, confined mainly to R.A.F. and U.S.A.F. Air Bases in the Great Ouse Basin, suggests that pollution of surface streams or ground water may occur due to one or other of the following causes:

(a) The over-filling of tanks used for storage of liquid fuels and other oils, and leakage from oil pipelines.
(b) Spillages during re-fuelling of aircraft, and the venting of fuel by aircraft on landing or on take-off.
(c) The washing of aircraft, using detergents, resulting in waste waters containing emulsified oils.
(d) The use of chemicals in fire-fighting exercises and de-icing of runways.

4. Provided the Airport Authority, in consultation with the River Authority, adopted appropriate precautionary measures the pollution risks from surface water could be reduced to a minimum. These measures would include the bunding of oil storage tanks, ducting of pipelines where necessary, the inclusion of oil intercepting tanks of suitable design and adequate capacity on all surface water drains, and the connection of surface water from certain areas to the foul sewers.

5. Figures have been given by the Civil Engineer to the Airport Commission indicating an increase in the daily sewage flow from 1·62 million gallons in the period between 1975 and 1980 to an ultimate of 4·05 million gallons corresponding with a population of 65,000 with the airport at its full capacity of four runways.

6. The sewage from the primary airport population could be treated at a sewage works of a local authority in the urbanisation area or at a separate works on the airport site. In each case the point of discharge of the effluent would have to be carefully investigated and the works designed for an effluent of high standard.

7. In my opinion the tributary streams carrying the run-off from the boulder clay in the Chishill areas would not be suitable for the reception of the sewage effluent. These streams feed a tributary of the River Rhee which flows through Fowlmere, and is normally dry in its middle reaches, except after heavy rain. The underground sources of the Cambridge Water Company in the chalk at Melbourn and Fowlmere are situated close to the watercourse. The discharge of sewage effluent to this stream would involve a risk of pollution of these two sources of domestic water supply. These dangers could be avoided if effluent was piped direct to the River Rhee. This river is stocked regularly with trout, and the effluent would need to be of a high standard of quality.

8. Alternatively the sewage effluent could be discharged into the upper Cam Catchment. Part of the airport site drains to Wicken Water and Wenden Water, which carry the run-off from the boulder clay on to the chalk. The new borehole of the Lee Valley Water Company is close to the River Cam at its confluence with Wenden Water at Uttlesford Bridge, Wendens Ambo. The Wenden Water also runs close to the Water Company's existing chalk source at the Wendens. The Lee Valley Water Company have also sunk a new borehole near the River Cam at Springwell Farm, Little Chesterford. Pumping tests carried out by the Water Company at Springwell indicated that the chalk was fissured, and for this reason the Water Company recently objected to a proposed site for sewage disposal works for Saffron Walden one-quarter of a mile upstream.

9. Risk of pollution of the aforementioned chalk sources of the Lee Valley Water Company would be removed if the sewage effluent from the airport were discharged direct to the River Cam at a point downstream of Springwell Farm, Little Chesterford.

10. The River Cam downstream of Chesterford is regularly stocked with trout and the effluent discharge would need to be of a high standard of quality.

11. In the absence of information regarding the disposition of the urbanisation population, it is only possible to comment on the pollution aspect of the disposal of sewage effluent in general terms. An ultimate population of the order of 400,000 would generate about 32 million gallons a day of sewage effluent. Urbanisation in the Great Ouse Catchment could result in the future volumes of sewage effluent greatly exceeding those anticipated for the development already planned.

12. Urbanisation in the Ivel Catchment resulting in substantial further increased discharges of sewage effluent to the River Ouse could present the Great Ouse Water Authority with further water treatment problems and involve the Authority in additional costs.

* See also p. 885.

Printed image digitised by the University of Southampton Library Digitisation Unit

In future the amount of sewage effluent may be so large as to necessitate the augmentation of river flows with high class dilution water.

13. Similarly, urbanisation in the Cam Catchment area and the effects of the sewage effluent on water quality would need to be carefully examined, bearing in mind particularly the importance of maintaining adequate levels of dissolved oxygen throughout the Ely Ouse System, and of ensuring that the water abstracted from the Ely Ouse at Denver Sluice and diverted to Essex rivers for augmenting local water supplies continue to be of acceptable quality.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Rev. F. L. Morris*

Introduction

This statement is presented by the Reverend F. L. Morris, Vicar of Great Hormead, Rector of Little Hormead, Rector of Wyddial and Rural Dean of Buntingford in the Diocese of St. Albans on behalf of the clergy of the Deanery of Buntingford and some other clergy of the Church of England and the Roman Catholic Church.

The evidence has been provided by clergy from parishes in and around the proposed Nuthampstead Airport Site—the area falling roughly into a rectangle made by the towns of Letchworth, Great Shelford, Haverhill and Hertford: and also from the publication of the Commission on the Third London Airport, *Site Information for Stage II Local Hearings. 2. Nuthampstead.*†

My task is to show what, in my opinion, and in the opinion of many other clergy, will be the effect upon the Church in the area. Since in the word "Church" is contained a whole complex of component parts, it follows that the evidence will be far ranging.

In the first instance, the Church is the People of God, and it is to serve the needs of the people that there has grown up over the centuries, a whole range of activities and institutions which make up the work and life of the Church. Worship, prayer, education, healing, social work, fellowship, all these things are there.

At the centre of the Church's work in each place is the Parish Church, the home of the Family of God in each town and village. Each one is a living illustration of the development of English Ecclesiastical Architecture. Yet they are not just show places, or convenient examples for the benefit of architectural students. They have been the spiritual homes of generations of Christian folk of high and low degree. In their monuments and memorial slabs, their brasses and stained glass, their wood-carving and plaster-work they are showcases of local and national history—and yet they are not like museums, because they are places "in which prayer is wont to be made".

In these buildings, generations of Hertfordshire and Essex and Cambridgeshire folk have been baptised and married and finally have been brought for the Church's last rites to be offered for them. And people have come week-in week-out to pray, alone and with others, to sing praises to God and to receive the Bread of Life at the Altar of God. And in some of the buildings listed in this statement, or in earlier buildings on the same sites, this has been going on for over a thousand years.

But the Church is people and so I must deal with people as well as buildings—people made desperately unhappy at the threat of eviction from their homes, homes in which many have lived all their lives, and other homes acquired after long years' toil, now enjoyed in peaceful retirement in the country. People threatened by intolerable and hellish noise, by the cutting of motor-ways and railway lines near their homes, or by the building of factories, warehouses and offices where before was field and farm, wood and stream.

From the earliest days of its history the Church, especially in this land has been at the forefront of Education. It was not until 1870 that the State began to provide schools and even today many of the schools in the country are still Church Schools. The threat made by the proposed airport to all education is great and Church Schools share in the danger.

The evidence that I beg leave to submit is divided into several sections as follows:

A summary of all the parishes within the area mentioned above, divided into groups according to the NNI levels shown in the Site Information.

An assessment of the effect on Church life under the headings of worship, education, Church fellowship, family life and hardship.

There will follow a section on the architectural and historical value of some of the churches which would be most severely affected by the proposed airport.

A note about possible pastoral re-organisation which would be caused by the closing of some churches, and by the movement of population in and out of the area.

Then a digest of the information provided by many parishes which will be affected in greater or lesser degree.

SECTION 2

List of parishes affected by the proposed airport

(a) **Churches within the airport boundary**—will be demolished.

1. St. George, Anstey.
2. Nuthampstead Mission Church (Parish of Barkway).
3. Langley.
4. Little Chishill.
5. St. Mary, Meesden.
6. Mission Church, Duddenhoe End (Parish of Elmdon).

(b) **Churches immediately at the end of runways**—NNI 60 plus—will be useless.

1. St. Nicholas, Great Hormead (much of parish within boundary).
2. St. Mary, Little Hormead.
3. St. Giles, Wyddial.
4. St. Mary, Brent Pelham (Part of parish within boundary).

* See also p. 885.

† HMSO; 6s. Reproduced at p. 601.

Printed image digitised by the University of Southampton Library Digitisation Unit

5. Elmdon.
6. St. Hugh, R.C. Chapel of Ease, Hare Street.

(c) **Churches within NNI 50 plus area**—will be very seriously affected. It will not be possible to soundproof effectively all these churches.

1. St. Peter, Buntingford.
2. St. Richard, R.C. Parish Church, Buntingford.
3. St. Mary, Aspenden.
4. St. Mary, Westmill.
5. St. Lawrence, Ardeley.
6. Holy Trinity, Throcking.
7. Littlebury.
8. Strethall.
9. Little Chesterford.

(d) **Churches between 45 and 50 NNI**—very seriously affected, sound proofing will not be easy.

1. St. John Baptist, Cottered.
2. St. Mary, Walkern.
3. St. Ippolyts, Nr. Hitchin.
4. St. Mary, Wallington.
5. St. Mary, Knebworth.
6. All Saints, Datchworth.
7. St. Peter, Bennington.
8. Bartlow.
9. Linton.
10. Great Chesterford.
11. Hadstock.
12. St. Michael, Woolmer Green.
13. Arkesden.

(e) **Churches between 40 and 45 NNI**—will need sound proofing.

1. St. Andrew & St. Mary, Watton-at-Stone.
2. St. Mary, Welwyn.
3. St. Lawrence, Ayot St. Lawrence.
4. St. Giles, Codicote.
5. Sts. Peter and Paul, Kimpton.
6. St. Mary, Aston.
7. St. Margaret, Bygrave.
8. All Saints, Sandon.
9. St. Mary, Braughing.
10. Holy Trinity, Weston.
11. St. Mary, Clothall.
12. St. Mary, Great Wymondley.
13. St. Mary, Graveley.
14. St. Mary Magdalene, Offley.
15. St. Peter, Lilley.
16. St. Mary, Stotfold.
17. Fowlmere.
18. Haverhill.
19. Saffron Walden.
20. Wendens Ambo.
21. Stevenage (part of the parish).

(f) **Churches in area below 40 NNI,** affected by airport, in various ways.

1. St. Mary Magdalene, Barkway.
2. St. Mary, Reed.
3. St. Andrew, Buckland.
4. St. Margaret, Barley.
5. All Saints, Little Munden.
6. St. Nicholas, Great Munden.
7. St. Mary, Ashwell.
8. St. Mary, Therfield.
9. St. Faith, Kelshall.
10. St. John Baptist, Royston.
11. St. Mary the Virgin, Furneux Pelham.
12. St. Mary, Stocking Pelham.
13. St. Cecelia, Little Hadham.
14. St. Andrew, Much Hadham.
15. St. Mary, Standon.
16. St. John Evangelist, High Cross.
17. St. Mary, Thundridge.
18. St. Catherine, Sacombe.
19. Great Chishill.
20. Heydon.
21. Melbourn.
22. Thriplow.
23. Duxford.
24. Newport.
25. Wicken Bonhunt.
26. Manuden.
27. St. Edmund of Canterbury, R.C., Old Hall Green.
28. St. Thomas of Canterbury, R.C., Puckeridge.
29. R.C. Chapel at ease, Furneux Pelham.

SECTION 3

Assessment of effect on Church life

(a) **Worship in the churches**

If the Third London Airport is sited at Nuthampstead there can, of course, be no argument about the effects on Church life of those parishes which fall into section 2(a) above. They will disappear beneath the concrete of the runways and the airport buildings, churches, houses, schools, church halls, all will vanish and the people will leave the district.

The churches and parishes in section 2(b), all of which are situated at the ends of the runways are no better placed. The villages will not be fit for human habitation, so that simultaneously with the churches becoming useless due to noise and vibration, the people will leave the villages. One imagines that these areas will be used for industry, much of which will be placed around the airport, though it would seem that there will always be an element of risk in these districts from aircraft which have (a) failed to unstick at take-off, or (b) have overshot the runway on landing.

With regard to the parishes in section 2(c), which are all in the NNI 50+ areas, the problem is also very serious. I do not know how effective sound-proofing techniques can be in centuries old, very lofty buildings with no roof cavities and very large expanses of glass, stained or otherwise. I beg leave to doubt if many, or indeed any, of the churches in this group can in fact, be made sufficiently silent inside for worship.

When we come to section 2(d) and 2(e), which fall within the contours of NNI 45–50 and 40–45 respectively, we are in an area where no doubt some sound-proofing will be possible, so that some improvement can be effected and services could be held, even though it seems clear that there would be some interference of greater or lesser degree. I am still rather worried about churches in these contours, and wonder how effective such sound-proofing will really be, and how costly the operation will prove.

Printed image digitised by the University of Southampton Library Digitisation Unit

Section 2(f) contains many churches which, though they fall outside the lowest contour of NNI 40 shown on the Commission's maps, will never-the-less find that their services will be interrupted by noise and vibration. Gone for ever will be the quiet countryside for many of them, they will be assaulted by the noise of aircraft and road traffic, for it is in these outer areas where there will be much building of factories, storage depots, houses, and there will be road and rail links needed which will cut through the countryside and the towns and villages.

There will, of course be people still living in many of the sections mentioned. There will be growth of population in some districts, and where the people are, there the Church will remain to minister to them. Inevitably, however, sooner or later, through destruction, impossibility of hearing, movement away of population, and the change of residential and agricultural communities into industrial areas, many of the churches listed above will have to close.

(b) **Religious education**

In the field of education the effects of the proposed airport will be severe. I cannot, indeed may not, speak for State Schools and I have little knowledge of schools in the dioceses of Chelmsford and Ely, but in the Diocese of St. Albans there will be many Church Schools where education will be interfered with to such an extent that serious consideration will have to be given to the possibility of closing a number of schools.

I list some of the schools worst affected below:

Langley	J.M.I. C of E Aided School (within the airport site)
Great Hormead	NNI 60+ J.M.I. C of E Aided School will certainly have to be closed because of its proximity to the runway. Much of the village is within the airport perimeter, and the rest of the village may well have to be evacuated.
Buntingford	All within 50+ and some 55/60 NNI. J.M.I. C of E Controlled School. Comprehensive Middle School, C of E Controlled. Now building, due for completion 1970. St. Francis, part residential school for mentally handicapped boys. Roman Catholic.
Westmill	NNI 50+ J.M.I. C of E Controlled.
Ardeley	NNI 50+ J.M.I. C of E Aided School.
Elmdon	NNI 45/50 J.M.I. C of E Aided School.
Cottered	NNI 45/50 J.M.I. C of E Controlled School.
St. Ippolyts, nr. Hitchin	NNI 45/50 J.M.I. C of E Aided School.
Bennington	NNI 45/50 J.M.I. C of E Controlled School.
Datchworth	NNI 45/50 J.M.I. C of E Aided School.
Woolmer Green	NNI 45/50 J.M.I. C of E Aided School.
Welwyn	NNI 40/45 J.M. C of E Aided School. Infants C of E Aided School.
Aston	NNI 40/45 J.M.I. C of E Aided School.
Weston	NNI 40/45 J.M.I. C of E Controlled School.
Graveley	NNI 40/45 J.M.I. C of E Controlled School.
Offley	NNI 40/45 J.M.I. C of E Aided School.
Lilley	NNI 40/45 J.M.I. C of E Aided School.
Stotfold	NNI 40/45 G.I. C of E Controlled School.
Stevenage	NNI 40/45 J.M.I. C of E Aided School.

Many other schools will also be affected due to being situated on flight paths, under stacking areas, traffic problems, industrial growth, etc.

Barkway	J.M.I. C of E Aided School.
Barley	J.M.I. C of E Controlled School.
Little Munden	J.M.I. C of E Controlled School.
Great Munden	J.M.I. C of E Controlled School
Thundridge	J.M.I. C of E Controlled School.
High Cross	J.M.I. C of E Aided School.
Furneux Pelham	J.M.I. C of E Controlled School.
Much Hadham	J.M.I. C of E Aided School.
Standon	J.M.I. C of E Endowed School.
Puckeridge	J.M.I. R.C. Aided School.

In addition to the formal education given through the Church Schools, there will certainly be much disturbance of less formal and more specifically Christian education given in Sunday Schools and Confirmation Classes, and in Study and Discussion Groups.

(c) **Church fellowship**

Christian Fellowship manifests itself in many ways in addition to the fellowship of worship in the Churches. All parishes have some forms of organisations designed to foster Church Fellowship. These are to be found in the Church of England Mens' Society; the Mothers' Union, Church Youth Fellowships (now generally run for the benefit of all young people in the district and not only for Church Members), Clubs, Bible Study Groups, Discussion Groups, Missionary Working Parties, Prayer Groups, Church Social Groups, Women's Bright Hour, and many Religious Guilds and Fellowships, such as the Guild of Servants of the Sanctuary, Fellowship of Catholic Priests, the Church Union, Guild of All Souls, Confraternity of the Blessed Sacrament, etc.

There are also in most, if not all parishes many gatherings and organisations of a social nature which will be badly affected and restricted by noise and vibration.

(d) **Effect on family life—hardships—mental illness**

It might be argued, perhaps, that this is not specifically a church problem, but rather a general one. I have included it because I believe that a priest is ordained to minister to the sick as well as to the whole, and the Church has a responsibility to care for the minds and souls and bodies of the faithful, and it would seem to be unarguable that the pressure of modern society is responsible in a large measure for many of the bodily ills of men, as well as for the increasing number of mentally sick people which is a feature of our age.

The responsibility for dealing with much of the distress caused by mental illness of all kinds falls upon the clergy, and both patients and their families need the help and comfort of the Church.

Even before the Commission has pronounced its verdict upon one of the four sites, or the Government has announced where the airport is to go, there has been very much distress caused by the uncertainty which faces a great many people in the area. Elderly people, who have moved to this district from the cities and towns to find peace in their declining years; many people who are prepared to face a journey to work in London or one of the large towns nearby each day, so that they can have the benefits of the countryside each evening and at week-ends; all have been faced with the prospect of having their homes demolished, or else made unbearable by the intolerable noise of low-flying aircraft.

There is also a real fear among some people of the possibility of air crashes in the vicinity of the runways.

Printed image digitised by the University of Southampton Library Digitisation Unit

Another aspect of the proposed airport which has aroused distress, and which has been mentioned to me by several people, is the question of what is to happen to the remains of their relatives and friends which lie in those churchyards which will come within the airport boundary.

Many of those who are putting a brave face on these matters, and who are trying to convince themselves and others that all will be well in the end, are laying the foundations for spiritual and psychological distress in the future. There is already a great deal of unhappiness and fear of the future especially among older people in those villages which will be affected.

This insecurity can already be observed especially in those areas just outside the proposed airfield perimeter. This is due to the fact that although it is obvious that people displaced completely will receive proper compensation, it is by no means clear what sort of compensation will be paid to those who though left outside the airport area will yet have to suffer, or be displaced by noise, inconvenience, and a complete change in the environment in which they chose to live before the airport was proposed.

Section 4

An assessment of the architectural and historical value of some of the churches most affected by the proposed airport

Within the immediate area of the proposed airport there is a wealth of wonderful churches of tremendous architectural and historical significance.

I shall not weary the Commission with a detailed list of all the churches affected, but will confine myself to some 11 churches which are most severely threatened.

1. St. George, Anstey

This is one of the finest churches in Hertfordshire, certainly the finest in the deanery of Buntingford. It is architecturally very interesting, and is extremely impressive. It is one of the few cruciform churches in the county, with a fine central tower resting upon Norman arches. The transepts and the chancel both date from the 13th century, and there are 13th century lancet windows. The clerestory was added in the 15th century as was the needle spire. The font is Norman and there are 15th–16th century chancel stalls with misericords. There is a fine lychgate of 15th century, with one bay turned into a lock-up.

This church is in the middle of the airport site, and would presumably have to be demolished.

2. St. Mary, Meesden

A small, but delightful village church. The nave dates from the 12th century, the short transepts were added in the 13th century, and rebuilt in the 19th. The chancel is *c.* 1300, and the pretty timber bellcote with its shingled spire is 19th century. The special architectural feature of the church, however, is the south porch, built entirely of brick, probably built about 1530 (cf. Wyddial). The two-light windows and the much moulded doorway are of brick, and so are the diagonal buttresses and the crenellation with the angle turrets.

In the chancel there is a whole series of early 14th century tiles in dark green and yellow with circles, quatrefoils, etc. There is a fine monument to Robert Yonge 1626, with a bust in a circular niche.

3. St. Nicholas, Great Hormead

There has been a church on this site since Saxon times, the present building showing evidence of many periods.

The nave is *c.* 1300, and has three bays with octagonal piers. The shorter arcade bays were probably added in the later 14th century. The tower with diagonal buttresses was added between the late 14th and late 15th centuries. There is a Norman font, and several fine monuments. The church was much restored in the 19th century.

4. St. Mary, Little Hormead

This church was built about 1140, and is one of the most interesting small Norman churches in the country. The nave is Norman, and very simple, there is an original, small, deeply splayed round-headed window in the north wall. The chancel is Early English, the chancel arch reflects the mouldings of the north doorway. The south lancet windows are original. The roof is of the late Middle Ages, with rough tie beams in the nave, with diagonal wind-braces in the chancel.

The north doors of 12th century ironwork on oak, with two large interlaced quatrefoil patterns with borders of scrolls and trails. This is one of the most important examples of early ironwork, still *in situ* in the country.

The south doorway is Norman, much simpler than the north doorway, the font is of the early 14th century. There is a wooden campanile containing two bells both from the 13th–14th century. There is a fine carved, painted and gilded royal arms of Charles II, 1660.

5. St. Lawrence, Ardeley

There is an unbuttressed tower with a spike of the 14th century, the nave is of the 13th century, the chancel arch and south arcade are later, probably of the 14th century. The nave roof is 15th century with bosses and angel brackets. The very fine rood loft with painted figures and canopy was added in 1928. The font is probably 14th century. There are several fine brasses in the church, and some good memorials, notably to Mary Markham 1673, and Sir Henry Chauncy, the Historian, 1703.

6. St. Mary, Aspenden

This church was cemented and much restored in 1873 (by *Sir A. Blomfield*). The interior is mostly Perpendicular, in the chancel there are lancets windows of 13th century. The south aisle is mid-14th century. The south chancel chapel is the most interesting part of the church. It was remodelled in 1622. It opens to the chancel in two bays with the usual octagonal piers, but the arches are now made semi-circular, with applied strapwork decoration. The roofs are 15th century in the nave, south chapel and south aisle. The south porch was built *c.* 1525 and is quite lavish.

There are several fine 16th and 17th century monuments, and some interesting wall brasses.

Printed image digitised by the University of Southampton Library Digitisation Unit

7. **St. Peter, Buntingford**

This is an architecturally very remarkable church, in that it is one of the earliest brick-built churches in the country. Built between 1614 and 1626 as a Puritan chapel-at-ease to Layston Church, it is on the Greek cross plan, to which a porch and apse were added in 1899. There is an interetsing brass plate of the 17th century showing the church and its congregation in those days.

8. **St. Mary, Brent Pelham**

Mainly mid-14th century, apart from a 15th century tower, with diagonal buttresses and a Hertfordshire spike. In 1861 was added the south porch and some windows were renewed. The north and south windows in the chancel are original 14th century. There is some fine 14th century tracery from an old door fixed on to a later door. Interesting memorials, especially to Piers Shonks, a noted dragon slayer of 1068, with a carved dragon, breathing out fire on the black marble top, together with the symbols of the four Evangelists. There is a fine brass of 1625–27 and a very fine modern memorial to Squire Barclay.

9. **St. Giles, Wyddial**

The nave is Perpendicular *c.* 1450, much restored. The special and great interest of the church is the N. aisle and N. chancel chapel of St. George. These are both built of brick and were built by *George Canon* in 1532. The piers of the three-bay arcade, together with the arches and the three-light windows are all of brick—a significant sign of the Tudor age. The north chapel has screens at the north and west of elaborate early 17th century design, and there is another screen across the tower opening of the same date.

The windows in the north aisle contain eight panels of scenes from the Passion of our Lord. These are Flemish of the early 16th century. There is a fine 19th century window in the south chancel. There are many fine memorials in the church representing all periods from 1621 to the present day. There are several 16th century brasses, some of them with palimpsests of earlier date on the reverse.

10. **St. Mary, Westmill**

There are traces of Anglo-Saxon work in the south-east corner of the nave. An arcade of two great arches was added in the 12th century when the north aisle was built, the chancel arch is 15th century, and the tower with its diagonal buttresses and Hertfordshire spike was added *c.* 1500. There is some good 15th and 16th century woodwork in the chancel, and a good peal of bells including one of 14th century by *William Rofforde.*

11. **Holy Trinity, Throcking**

The most interesting part of this church is the tower of the 13th century, flint-built and unbuttressed below, with two deeply splayed lancet windows, but completed in brick, with roundheaded windows, a corbelled-out stair-turret, and a parapet (originally with pinnacles) in 1660. The remainder of the church is Perpendicular. The font is of the same period as the nave and chancel, *c.* 1450. The pews and choir stalls are of the 17th century, nicely carved. There are two black floor slabs with unusually fine coats of arms, 1670 and 1752. There is a memorial to Robert Elwes by *Rysbrack*, one of the two most distinguished sculptors of his day. The memorial to Hester Elwes is by *Nollekens* 1770.

SECTION 5

Pastoral re-organisation

(a) **Movement of population—out**

It would seem to be certain that many people would move away from the parishes which would be most seriously affected by the proposed airport. Some would be displaced by the compulsory purchase and demolition of their homes, some because of intolerable noise, some through loss of the amenities of the countryside.

So far as one can judge from the maps and plans so far published by the Commission, it would seem that some eleven parishes would disappear, and another nine might be so stripped of parishioners as to need considerable re-organisation.

No doubt in addition to the requirements of the airport authority, much more disturbance will be caused over a much wider area by the need for new road and rail links, and by the coming to the area of much new industry connected with the airport.

(b) **Movement of population—in**

The labour force of the airport is estimated by the Commission to be 45,000 by the mid-1980's, and 65,000 by the mid-1990's. There will also be an unknown though probably very large number of people brought in by the ancillary industries which will grow up around the airport. This enormous growth of population will have to be housed in some district near enough to be convenient for the workers, and yet far enough away, and in an advantageous position with regard to aircraft noise. Various estimates have been produced, and it would appear that a new town of 300,000–400,000 will be required.

All these people will have to be provided with churches, church schools, halls, parsonage houses and clergy to minister to them.

It would be quite impossible, and probably very misleading to attempt to cost this exercise. So much depends on where the New Town will be, and how it will be laid out. Upon the style and layout of the town will depend to a large extent the sort of church organisation which is recommended.

It might be that such a New Town would be designated as an area of Ecumenical Experiment. Many supporters of the movement towards "churches without walls" would want to encourage the growth of house churches. Certainly the whole task would have to be approached with regard to the new Pastoral Measure.

All I can say at this stage is that the Church would have to face the task of providing for the care of souls of the people who are brought into the area, and this would inevitably be very expensive in terms of men and money.

Printed image digitised by the University of Southampton Library Digitisation Unit

Details of some of the parishes which will be affected by the proposed airport, submitted by the incumbents

1. **St. George, Anstey.** *Rector: The Revd. T. Howell Evans*

This parish lies completely within the proposed airport area.

Details of the church are given under Section 4. There 56 acres of Glebe land which provides part of the stipend of the Incumbent. The population is *c.* 250 made up of 48·5 per cent agricultural, 17 per cent commuters and 34·5 per cent residential or retired. There are 78 names on the electoral roll, with 25 communicants. There is a good Children's Church with 28 members.

Twenty-four per cent of the total population of Anstey live alone, there is a very high proportion of old age pensioners, and over 60 per cent of the parishioners have lived in the parish all their lives or over thirty years.

2. **Langley.** *Rector: The Revd. George Davidson*

The Parish of Langley is wholly within the area designated for the airport in the Report of April 1st.

The Church is mediaeval nave and tower, with some Norman work. It has a Tudor chancel in brick, and is in good condition. There is a church hall used by both church and village for all local events. There is a church school, with a teacher's house attached.

There are 26 acres of Glebe land which provide part of the Incumbent's stipend.

The population is mixed agricultural, artisan and professional. Population 250. Church Electoral roll 52.

3. **Clavering**

This parish is held in plurality with Langley.

The designated easterly runway cuts through the western side of this parish, and about 1½ miles from the main centre of population and the church.

The church is a large flint church of 14th century, of great interest and architectural beauty.

There would be very severe noise effect here, the April 1st plan shows the NNI contour 40 passing right behind the church and main centre of population (NNI contours are very close together here). The lofty "East-Anglian" type of church with clerestory would be very susceptible to the effects of noise and vibration.

The parish is made up of mixed artisan, agricultural, professional and retired persons. Population 1,050 with 164 on the Church Electoral Roll. There is a flourishing church life here with good attendance for Sunday worship, and the usual parish organisations. It is difficult to see how these will continue so near to the "intolerable" noise level line.

4. **Little Chishill.** *Rector: The Revd. H. J. Croft*

This parish is held in plurality with Great Chishill and Heydon. Little Chishill falls within the designated airport area, and would have to be demolished. The total population of the three parishes is about 425. There would be much hardship and disturbance if the airport is sited at Nuthampstead.

5. **St. Mary Meesden.** *Rector: The Revd. R. Howell Evans*

This parish falls within the designated airport area. Details of the church are given under Section 4. There are 6 acres of Glebe land, providing part of the Rector's stipend. This is a small village of only 135 persons, mixed agricultural 34 per cent, commuting locally 46 per cent, and residential or retired 20 per cent. It is a stable population, out of 43 households 27 are occupied by persons born in or near Meesden.

6. **St. Mary, Brent Pelham.** *Vicar: The Revd. T. Howell Evans*

Half of the parish falls within the designated area of the airport, the remainder on the south side is within the 60 NNI belt. For a description of the church see Section 4.

The population is 165, 57 names are on the Church Electoral Roll. Of 55 households: 19 are concerned with agriculture, 13 are commuters, 18 old age pensioners or single persons, 7 residential.

The church here is active, and there is a flourishing interdenominational group, "Meeting Point", which has done much to further ecumenical relations in the deanery.

7. **St. Nicholas, Great Hormead, with St. Mary, Little Hormead.** *Rector: The Revd. F. L. Morris*

This is a united benefice, working as one parish. For descriptions of the two churches, see Section 4.

There is a mixed population of new and old families. Some of the village people can trace their ancestry back to the beginning of the church registers in 1538. Others, fairly new here, commute to London and other near-by towns. There are 230 households in the parish, the Church Electoral Roll contains 155 names. Easter Communicants 100–110. Fifty per cent of the working population are engaged in business, trade or manufacturing, 35 per cent work in agriculture and 15 per cent in the professions. There is a large regular attendance each Sunday in the churches, and there are the usual organisations as follows, Mothers' Union, Senior and Junior Youth Fellowships, Old People's Fellowship, Choir and Altar Servers. Recently the Church has been used for the presentation of concerts and plays.

There is a Church School, a Junior Mixed and Infants' School of Voluntary Aided Status. The school has recently been modernised at a cost of £20,000. It is run on modern progressive lines, with an "open-plan" lay out and with integrated teaching. Educationalists from many parts of the country have visited Great Hormead to see the work being done here.

There are about 200 acres of Glebe lands, providing the major part of the Incumbent's stipend.

A great part of the parish falls within the airport boundary, as proposed, and the remainder of the parish would become intolerable to live in, being in the 60+ NNI contour.

Much restoration work on both churches has been carried out in the past few years, amounting to £5,817. Work has now had to stop, pending a decision on the siting of the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

8. **St. Giles, Wyddial.** *Rector: The Revd. F. L. Morris*

Held in plurality with the Hormeads. The church building is described in Section 4. Although one of the smallest parishes in the diocese, Wyddial is by no means moribund. The population is *c.* 90 and there are 30 names on the Electoral Roll. During the past ten years this small parish has raised over £2,500 for restoration work on the church. The parish shares the organisations and school at Great Hormead.

It seems that by the time the fourth runway is working, if the airport is sited here, Wyddial will fall in the 60+ NNI area, and would thus become unsuitable for a residential area. The Church would thus have to close.

9. **Elmdon, Strethall and Duddenhoe End.** *Vicar: The Revd. F. Dufton*

Elmdon (population 250) would be 2,000 yards from the end of the runway, NNI 60. Strethall church, which is a Saxon gem would also be in line with the end of the runway, though 2 miles further away. The NNI level would be 50+. Duddenhoe End with its hamlet church would disappear within the airport boundaries. It is certain also that Elmdon C of E Aided J.M.I. School would have to close.

10. **St. Peter, Buntingford.** *Vicar: The Revd. K. H. Blythe*

There is a description of the church in Section 4. This is a town which it is planned will grow to 5,000 population in the 1970's. It is difficult to see what will happen here now, for the whole of the town falls within the 50 NNI contour, parts of it within the 55 NNI line and part within the 60 NNI line.

There is a church school of over 300 pupils, and a new Church controlled Middle Comprehensive School is planned which would probably have to go elsewhere.

The population is mainly commuters and factory workers; there is a flourishing parochial life here with Men's and Women's groups, youth organisation, Bible study group, all of which would suffer extinction if the airport is built at Nuthampstead.

11. **St. Mary, Aspenden.** *Rector: The Revd. K. H. Blythe*

See Section 4 for details of the church building.

Held in plurality with Buntingford. Shares the same organisations as that parish, its problems are the same.

12. **St. Mary, Westmill.** *Rector: The Revd. G. Hart*

Mostly residential, population 250. Electoral roll 104. There is a description of the church in Section 4. NNI 50+.

13. **St. Lawrence, Ardeley.** *Vicar: The Revd. M. P. Thomas*

See Section 4 for details of the church building. The parish will fall in the 50+ NNI belt, and will be quite altered by the airport if it comes.

Population *c.* 400 a mixed community. This is a very lively parish with a thriving church life. There is a good Church School, a parish hall in constant use by both church and village. The Vicarage is a fine old house built in 1608 for that purpose. There are all the usual parochial organisations, and the church is regularly used for concerts of music and for plays, being a real community centre in the best possible sense.

14. **St. John Baptist, Cottered with Holy Trinity, Throcking.** *Rector: The Revd. J. J. Stratton*

Cottered Church is a 14th century building, with a fine mediaeval mural, and late Decorated Gothic windows. There is a Church School with Controlled status. A new parsonage house 1967. A mixed village of about 450. There will be obvious disturbance here with the NNI level at 45–50.

Throcking Church is described in Section 4, and falls within the 50+ contour. A small parish which will probably be affected by pastoral re-organisation. The church would probably have to be closed for worship.

15. **Great Chesterford.** *Vicar: The Revd. J. W. Ellis*

The church is partly 13th century with later additions and some restoration. There are some good 13th century beam carvings in the roof of the south aisle. There are Roman stones set in the walls. The tower is not strong enough for the six bells to be pealed—what will be the effect of aircraft noise and vibration? NNI level 45–50.

There is a Church School of Aided status, there is a school Eucharist each week. Population *c.* 1,100. Church Electoral Roll 183, Easter Communicants 120. Sunday School, Youth club, Scouts, Brownies, Churchwomen's Fellowship, Discussion Group.

16. **St. Ippolyts, St. Ippolyts.** *Vicar: The Revd. E. Quin*

The church dates back to 1087, and is a good illustration of the growth of a typical village church. The population is *c.* 1,700. There are 420 on the Electoral Roll and the average number of Communicants each Sunday is 60. There are the usual Church organisations which will be affected by noise. NNI level here will be 45–50.

17. **St. Mary, Knebworth.** *Rector: The Revd. P. C. Rumsey*

There are two churches: St. Mary 10th century, St. Martin 1916. The church hall is used for Sunday School, Youth Clubs, Confirmation Classes, and for many social activities. The population is *c.* 4,000. There are 380 names on the Church Electoral Roll. Seventy to eighty communicants each Sunday, Easter Communicants 180. There are the usual organisations, also Guild of Health meditation groups. All meet either weekly or fortnightly.

Services would be seriously affected. Noise would necessitate stopping. There would be much interference with prayer groups and silent meditation groups.

This is already an area with fairly high tensions, these would be accentuated. Men working in high pressure jobs would come home to more noise. There is an old people's Home in the village which would be severely affected. NNI level 45–50.

18. **All Saints, Datchworth.** *Rector: The Revd. J. C. Tross*

The nave is 12th century, the remainder of the church mostly 15th century. The church, with its tower and steeple stands on the highest ground for many miles

Printed image digitised by the University of Southampton Library Digitisation Unit

around, which would expose it to danger from low flying aircraft and from noise and vibration. NNI level 45–50. There is a Church School of Aided status. The population is 1,450, Church Electoral Roll 225, Easter Communicants 163. There are Discussion groups, Youth clubs, and other organisations. There will be constant interruption of services and meetings due to noise.

19. **St. Peter, Bennington, with St. Mary, Aston.** *Rector: Canon R. J. Davies*

Bennington Church is 13th–14th century, a fine church, £6,000 spent on restoration work during the past four years. The population is 750. Church Electoral Roll 130, about 40–45 communicants each Sunday. Usual Parish activities. NNI 45–50.

Aston Church is largely 14th century in sound condition. Population 520. Electoral Roll 70. Easter Communicants 60. Mixed population, most work in Stevenage. There is a Church School of Aided status. NNI 40–45.

20. **Linton, Cambs.**

Thirteenth-century church. A good Church Hall used by School, C of E Aided—270 pupils. Population 2,500. Electoral roll 200. 125–175 Communicants each Sunday. There are the usual parish organisations, with a meeting each evening.

Half the population are buying their own houses. NNI 45–50.

21. **Arkesden and Wicken Bonhunt, Essex.** *Vicar: The Revd. J. Barnes*

Arkesden is one mile from the end of one of the proposed runways. The Church has a deal of Norman work, but is largely a Victorian restoration. There are some good mediaeval monuments. The population is 258. Electoral Roll 49. Easter Communicants 94. It is difficult to see how this parish could survive so near to the runways. The NNI levels are very close together here and range between 45–55.

Wicken Bonhunt is further away and falls outside the NNI contour lines. The church is 13th century, with a Norman font and several interesting monuments. The Church Hall was restored in 1968 at a cost of £400.

This is a small village of 150 population with 56 on the Church Electoral Roll. There are 25 Easter Communicants. It is anticipated that Wicken would grow, and that the church would be inadequate for the increase in population. Probably the Vicar would have to move from Arkesden and a new parsonage house built.

22. **St. Mary, Braughing.** *Vicar: The Revd. F. Fraser*

This is a fine church, the chancel is 1220. The nave 1446–1490 Perpendicular. There is a church hall used for all village activities. 3 acres of glebe.

The population, a mixture of artisan, commuters and agricultural workers is *c.* 1500. There are 200 on the Church Electoral Roll, and 100 communicants. There are the usual organisations, Mothers' Union, Youth Fellowship, Scouts, Cubs, Guides, Brownies. There would be considerable interference to church services and community activities. NNI 40–45.

23. **Seven churches in Stevenage.** *Rector: Canon S. P. Hutton*

The population of Stevenage is *c.* 60,000. There are 1,500 names on the Electoral Roll. One of the churches is 12th century, one 16th century, and the rest are all modern 20th century. The only effect upon the church in Stevenage would be from noise. The NNI levels vary, but are mostly 40–45.

24. **St. Mary Magdalene, Barkway with St. Mary, Reed and St. Andrew, Buckland: Also Nuthampstead Mission Church.** *Rector: P. D. Kingston*

Barkway Church is 1086 with additions. The largest church in the deanery of Buntingford in fine condition. There is a Church School. The population of the village is *c.* 600.

Buckland Church is 1348, in unspoiled condition. At present £2,500 is being spent on repairs. The population is *c.* 300.

Reed Church *c.* 980–1000. Of particular architectural interest. In good condition, but the tower could be badly affected by vibration. The population is *c.* 150.

Nuthampstead has a Mission Church in sound condition. This church and village are right in the middle of the airport. The population is *c.* 100.

Barkway parish has 200 acres of glebe which will fall into the airport area, also a large dutch barn.

There are all the usual parochial organisations, Mothers' Union, Youth Fellowships, Scouts, Guides, Brownies and Cubs.

The effect on the parishes will undoubtedly be the same as on other parishes as near to the proposed airport. Long term effects on the mental health of the people, i.e. in nervous disorders will obviously show themselves in due time, but it is impossible to evaluate them honestly at present. The effect on closely related villages which for centuries have lived in comparative peace will manifest itself as surely as it will in the wild-life of the area.

25. **St. Margaret, Barley.** *Rector: The Revd. A. S. Lockett*

Eleventh century with 13th century additions, also Victorian Chancel and Sanctuary by *Butterfield.* Fourteenth-century stained glass, 1626 Charles I pulpit and 1621 brass. The church is at present undergoing restoration work at a cost of £3,000. There is danger from vibration to the flint and rubble-filled walls, some of which are not in good condition. The population of Barley is 550. One hundred and three on the Electoral Roll, about 35 weekly communicants. There are the usual parochial organisations.

26. **All Saints, Little Munden.** *Rector: The Revd. A. Bennett*

The nave and chancel are 11th century, the aisle and tower 14–15th century. This is one of the six Hertfordshire churches containing visible Saxon work. There are some fine 14–15th century effigy tombs. There is a church school. The parish consists of four small villages, scheduled for further development. Population *c.* 800.

Apart from noise and possible increase of population of a type that would upset the balance of a predomin-

Printed image digitised by the University of Southampton Library Digitisation Unit

antly rural parish the effect of the airport would not be great. The Church School would undoubtedly be affected, aircraft noise already disturbs lessons.

27. **St. John the Baptist, Royston.** *Vicar: The Revd. A. E. Devonshire*

The Church dates from 1162, and is in sound condition. There is an old vicarage, some parts being 400 years old. The population is 7,000. The effects of vastly increased road traffic, growth of population and growing industry, will, it is felt, completely change the character of this parish.

28. **St. Mary the Virgin, Furneux Pelham with St. Mary, Stocking Pelham.** *Rector: The Revd. S. A. Snelling*

Furneux Pelham Church has an early 15th century nave with some 13th century work in the sanctuary. There is some good stained glass by *Burne-Jones* and *Morris*. In sound condition, except that it is not safe to ring the bells. What will be the effects of aircraft vibration—i.e. 2 miles from the runways? There is a small church hall used for all church and village activities. The Church School takes children from a very wide area. Population 400, Electoral Roll 92.

Stocking Pelham Church is mid-14th century in fairly sound condition. The population is 134. Electoral Roll 34.

The working population of the two villages is made up of agricultural and brewery workers, plus commuters and residential.

These parishes, only 2 miles from the proposed airport will be affected by noise and traffic. The whole nature of the villages would be changed.

29. **Fowlmere and Thriplow, Cambs.** *Rector: The Revd. A. Ivor Davies*

Both churches date from 13th century and are fine cruciform churches. There is a Church School (Aided) in Thriplow. The combined population is *c.* 900. There are flourishing branches of the Mothers' Union, Youth Fellowship, Mens' Discussion Group, Girl Guides.

There is bound to be some disruption of services and meetings due to noise. NNI 40. Possibly this will be the area of much new buildings.

30. **St. Cecilia, Little Hadham.** *Rector: The Revd. R. V. Hodgson*

The church is mainly to be dated *c.* 1400. The pulpit and screen are both worthy of remark. Population consists of 75 per cent commuters, etc., and 25 per cent agricultural workers, and numbers about 900. The average number of communicants each week is 60.

There are the usual parish organisations. Quite a large proportion of the people in the parish are retired, who have moved to Little Hadham and have bought houses for their retirements, these people will be particularly bothered by the proposed airport, but many will not be able to move.

31. **Farnham, Essex.** *Rector: The Revd. J. C. W. White*

Church dated 1859 in good condition. Population 350 mixed types. One hundred and fifty on the Church Electoral Roll. About 50 communicants each week.

There are many parochial activities, and it is thought that they will be badly affected by aircraft noise, and increase in traffic.

32. **Wimbish with Thunderley, Essex.** *Vicar: The Revd. W. P. Witcutt*

The Church dates from the 12th century and contains many items of interest, including a famous monumental brass of 1347. There is a Church hall used for Sunday school and village activities. The parish is made up of a series of hamlets with a population of *c.* 1,000. The people are agricultural and artisan, with some RAF personnel and commuters.

Services in the church and Parish organisations would obviously be affected, there would probably also be much growth which would change the nature of the district.

33. **The Roman Catholic Parish of S. Richard, Buntingford.** *Parish Priest: The Revd. P. Smyth*

The church was built in the early part of the century, and is in good condition, a scheme to repair the tower costing £3,000 is in hand. The same objections put forward by the Anglican parish priest apply. Intolerable noise—NNI 50–60.

There is also a chapel of St. Hugh at Hare Street, which is adjacent to the residence of the Cardinal Archbishop of Westminster. This is a complex of buildings, Chapel, house, cottages all part of a Trust set up to provide a quiet country retreat for the Archbishops of Westminster in perpetuity. All of this is only about 500–600 yards from the end of the runway in a direct line. It would inevitably become useless.

An envisaged Church school building programme would have to be abandoned.

34. **The Roman Catholic Parish of Old Hall Green.** *Parish Priest: The Revd. R. E. D. Johnson*

The Church of St. Edmund of Canterbury at Old Hall Green was built in 1912, and is in good condition. The Church of St. Thomas of Canterbury at Puckeridge is also good, but it is only a temporary building of wood and asbestos. There is also a chapel in the roof of a barn at Furneux Pelham.

There is a Church School of Aided status at Puckeridge. The Catholic population is estimated at 620. Activities of the Church consist of the daily and Sunday Masses. Confirmation and first Communion classes, Guild meetings, and meetings of various parochial organisations. There are also many social, musical and other recreational activities.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Messrs. Sharpe, Pritchard & Co.*

REPRESENTING: THE WELDING INSTITUTE; INSTITUTE OF ANIMAL PHYSIOLOGY, TUBE INVESTMENTS LTD., and CHESTERFORD PARK RESEARCH STATION

The Secretary
Commission on the Third London Airport
Templar House
81–87 High Holborn
London, W.C.1

The Proof of Dr. Jones which relates to noise is applicable to all four of our clients.

The map† indicates the sites of each of the research stations concerned, site 1 being the site of the Central Research Laboratories of Tube Investments Limited at Hinxton Hall, site 2 being the site of the Agricultural Research Council's Institute, site 3 being the site of the Welding Institute's Research Laboratory at Abington Hall and site 4 being the site of the Chesterford Park Research Station of Fisons Limited.

We are, Sir,

Your obedient Servants,

SHARPE & CO.

---

* p. 887, 889, 890, 891.
† between pp. 768 and 769.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Chesterford Park Research Station

SUBMITTED BY DR. K. H. JONES*

My evidence is presented as a consideration of the effect which intermittent noise produced by aircraft could have on the work of staff at a Research Station currently located in a quiet rural setting.

The material presented is not a result of personal experimentation, but is the result of searching through technical sources of information available to me.

It is accepted that noise may cause annoyance, influence health, both physical and mental, and interfere with communication (Wilson Report, 1963, HMSO Cmnd. 2056). It may also have detrimental effects on both work output and efficiency (Hinchcliffe, 1958).

Much experimental work has been performed on the effect of noise on individuals, though most experimenters have used noise levels in the range 90–100 dBA because these produce definite responses. Reference will be made to these reports on the understanding (accepted by the Wilson Committee on Noise, 1963, HMSO Cmnd. 2056) that noise levels below 90 dBA may also exert untoward effects on individuals.

For convenience the likely effects of noise will be considered under the headings of annoyance, effects on health, working efficiency, speech communication and recruitment of personnel.

1. Annoyance

1.1. The most general reaction to noise is that of annoyance, which in turn may be manifest by changes in emotion. This is an individual reaction influenced by personality, general mental health, environment, associations already present in the mind, and circumstance. It may be relatively easy to annoy a sensitive subject engaged in difficult mental work.

2. Effects on health

2.1. The state of a man's physical and mental health is not without influence upon his work, particularly if he is engaged in an intellectually demanding job such as scientific research. For this reason, mention must be made of the effect of noise on general health.

2.2. The problem of noise induced deafness is, of course, outwith the bounds of this discussion. Apart from this, physical health may be interfered with by interruption in normal sleep patterns or by inducing tension states. It is physiological fact that in order to maintain a consistent output in the presence of additional stress, more effort or energy must be expended. It might be expected, therefore, that men working in a noisy environment will "fatigue" more readily than those working in a quiet environment, a fact confirmed by Carpenter (1958).

2.3. There is no evidence to date to suggest that noise causes mental illness, though the annoyance it causes may precipitate mental illness in those predisposed to it. A man's mental attitude to his work, however, is bound to be affected under conditions of annoyance and increased fatigue, plus or minus sleep deprivation, particularly if the work is of a creative or intellectually demanding rather than of a manual nature.

3. Effects on working efficiency

3.1. Noise has long been known to interfere with working efficiency. Weston and Adams (1932) showed that efficiency in a weaving mill could be substantially increased by a 10 per cent reduction in the noise level. Since then, numerous investigators have confirmed these findings in differing circumstances.

3.2. Broadbent and Little (1960), have shown that noise can cause impairment in speed of action, and that the addition of noise to a series of reaction tests increases the liability to error with an increase in the number of incorrect replies. Such an impairment in speed of action, together with an increased liability to error, could be extremely important, and a most unwelcome change in scientific staff at any level. Furthermore, Hockey (1969) has described how the adverse effect of noise is greater when subjects are motivated or encouraged to perform well.

3.3. Practising scientists are faced with rapidly changing situations demanding the use of continuous logic which involves what is called "shifting" rather than "sustained" attention. Such involvement is a requirement of senior scientists in industry, where decisions must be made rapidly on a large number of important but varied topics. Important in this respect is the work of Gerison (1957), who concluded that noise affected "shifting" attention more severely than "sustained" attention, indicating that senior scientific workers may be the most susceptible to noise.

3.4. Furthermore, the senior, more highly paid scientists are usually older men, whose intellectual maturity makes them less tolerant and more vulnerable to the effects of noise. It may be well at this stage to remind ourselves of the intermittent nature of the noise intrusion and of the work of Frisby (1954), Broadbent (1957) and Woodhead (1959), which indicated that intermittent noise has a more serious effect on work efficiency, particularly on decision making, than continuous noise. These observations were confirmed by Morgan (1961), who showed that the efficiency of letter coding was decreased when noise was turned on and off, but normal in between these acts. It is postulated, therefore, that transient

* See also p. 890.

Printed image digitised by the University of Southampton Library Digitisation Unit

disturbances occurring at crucial moments during the making of important decisions could cause considerable disruption. Each of the above-mentioned effects is likely to be more acute when the intruding noise has some significant interpretation (e.g. incompletely heard conversation or the approach of aircraft), than it is when the noise is of a non-meaningful nature.

3.5. Responsible and motivated scientists must, by the very nature of their jobs, be attentive, alert and intellectually active throughout the day. That is to say, they must be at an optimal arousal level which equates with optimal performance. Important in this respect is the optimum arousal concept of Broadbent and Carpenter. This implies that there is an optimal level of arousal for efficient performance, as indicated by point 1 on the graph shown below, where relative efficiency for a task is plotted against state of arousal for the individual performing the task. The optimum performance E_1 corresponds with an optimum arousal A_1. If the arousal level is below this (e.g. A_3) performance is sluggish (E_3), whereas if arousal is above optimum (A_2) performance is inefficient (E_2).

3.6. An example of the practical application of this concept is the playing of suitably chosen "music while you work" in factory production units, to increase arousal and thereby increase efficiency of production.

3.7. A practical example of increasing arousal to a point beyond that compatible with optimum efficiency is the misguided practice of taking drugs, including amphetamines, to increase work output or driving capacity. It is accepted medical fact that these substances increase arousal sometimes to the point of aggitation, at which working or driving efficiency is considerably impaired.

3.8. In a research environment incentive, whatever its nature, probably serves to bring arousal up to this optimum level so that any additional stimulus, including noise, increases arousal beyond the level for efficient function. Hence, although noise may improve performance when arousal is too low for a task, it impairs performance when arousal is already optimal or too high.

3.9. Hence, if scientists are working at optimal arousal, noise interference, by adding to arousal, will cause a deterioration in their work efficiency.

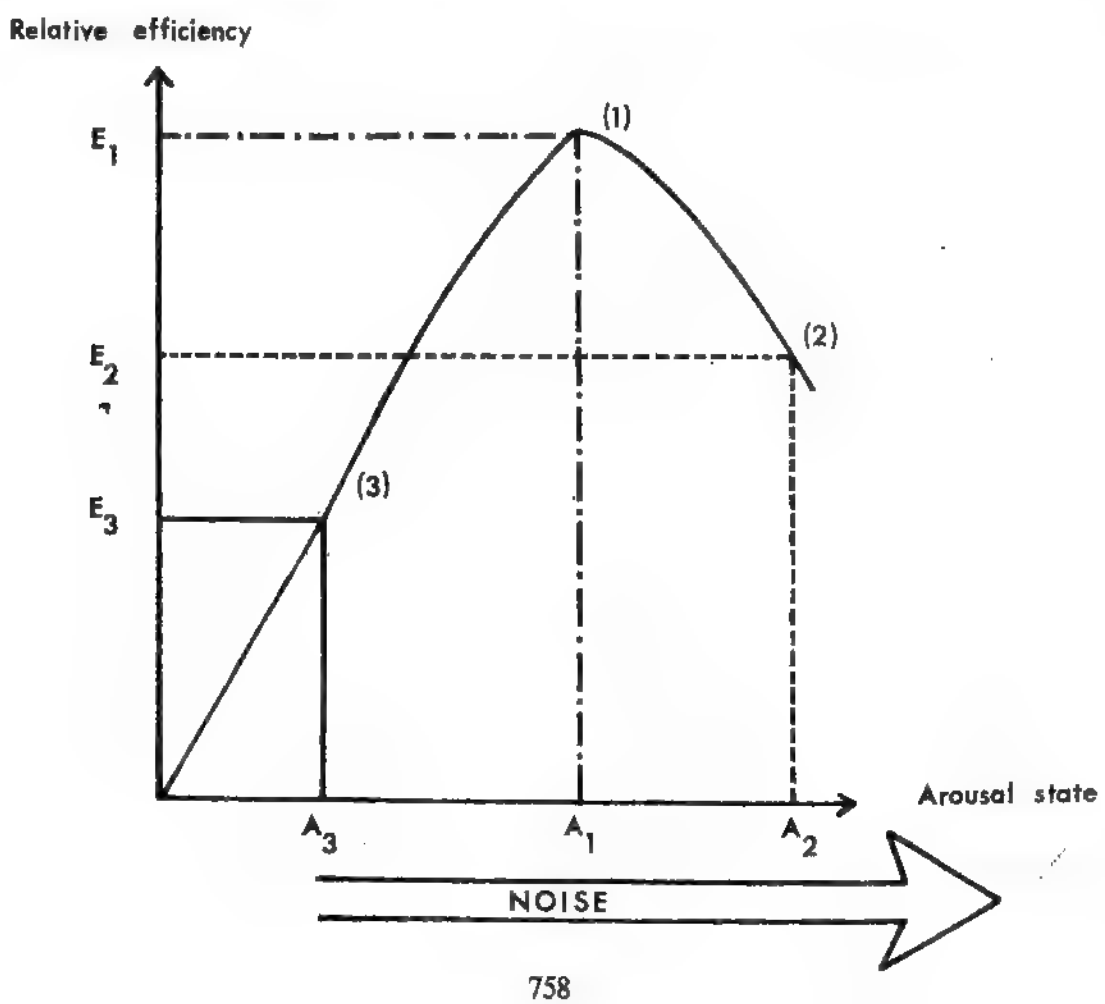
4. Effect on communication

4.1. Work output is most sensitive to noise when it is dependent upon speech communication, disruption of which may occur at relatively low noise levels. Such interference with speech could have serious effects on the necessary flow of scientific information, on business efficiency and on education.

4.2. Interference with speech communication is caused by background noise increasing the hearing threshold, and may be referred to in terms of speech interference levels expressed in decibels. Maximum speech interference levels have been laid down for various environments, e.g. offices, and may be used for predicting the usability of telephones under noisy conditions, as shown in the following table.

Noise rating level, dBA	*Quality of telephone communication*
50 or less	Satisfactory
60	Slightly difficult
70	Difficult
75 or more	Unsatisfactory

(International Organisation for Standardisation, 1963)



Printed image digitised by the University of Southampton Library Digitisation Unit

4.3. There can be little doubt that a significant number of "noise incidents" will occur in the 75+ category if a major international airport were to be built at Nuthampstead.

4.4. Similar criteria have been established for predicting the intelligibility of direct speech communication in noisy surroundings, and are indicated below.

Noise level, dBA	*Max. distance (metres) at which normal speech is intelligible*	*Max. distance (metres) at which "shouting" is intelligible*
40	7	14
45	4	8
50	2·2	4·5
55	1·3	2·5
60	0·7	1·4
65	0·4	0·8

(International Organisation for Standardisation, 1963)

Let us now consider how interference with speech communication could affect the efficiency of this Research Station.

4.5. The development of any new compound is a 4–5 year process, and is dependent upon rapid and accurate communication of fact between scientists. Such communication is seldom a simple Yes/No communication, but often involves lengthy discussion. This will undoubtedly suffer if only from the interference of noise with speech communication, exclusive of its effect on the ability and efficiency of the scientists participating.

4.6. An important feature of an industrial research station is the efficient planning and co-ordination effected by its senior staff, which necessitates frequent meetings of a large number of staff, the distance between individuals varying from 1 to 10 metres. For the meeting to be intelligible to all present, the noise interference, according to data already discussed, must be below 40 dBA. This will not be so if a major international airport is sited in the vicinity. Apart from these major meetings, many similar but smaller meetings are necessary throughout departments and between staff of different departments in circumstances varying from committee rooms to laboratories. These, likewise, could be seriously affected.

4.7. In addition to the investigation of scientific fact and principle, any research station has an obligation to train its staff, and for this purpose relies heavily upon normal speech communication. If this responsibility could be discharged in a single sound-proofed room, all could be well, but training must occur in many and varied circumstances from laboratories to lecture theatres. For this reason alone, research stations must be considered as sensitive to noise as schools. There is evidence already, from the Wilson report, that education is being seriously affected in schools close to aircraft flight paths, and a statement is made that the *upper* limit of noise to be tolerated in educational institutions, committee rooms, etc., should be 55 dBA.

5. Effect on recruitment of personnel

There are likely to be at least 5 categories of personnel involved:

(1) those who accept the situation because they have financial or other pressing reasons for doing so. These are likely to be least affected.
(2) those who cannot tolerate it and move away, i.e. staff lost to the Research Station.
(3) those who are affected, annoyed, but not so severely as to move away.
(4) those who, despite being severely affected, are compelled to accept it for social, domestic, financial or other reasons.
(5) those who, knowing of the hazard, never move into the area.

Work output is likely to be most severely affected under circumstances 3 and 4, though recruitment of personnel is likely to be severely affected by circumstances 2 and 5.

6. Summary

6.1. Noise interference caused by the siting of an international airport at Nuthampstead could have considerable influence on the efficient working of a research station such as that at Chesterford Park.

6.2. The likely effects include interference with the working efficiency of scientists, particularly senior staff, and interference with speech communication, which in turn may adversely effect the necessary transmission of scientific information, business efficiency, and education.

6.3. The possibility of an effect on recruitment of personnel cannot be considered as unimportant.

References

Broadbent, D. E., (1957). *Ergonomics* 1, 21–29.

Broadbent, D. E. and Little, E. A. J. (1960). *Occup. Psychol.*, 34, 133.

Carpenter, A. (1958). *Am. Occup. Hyg.*, 1, 42–55.

Frisby (1954). In: *Industrial Medicine and Hygiene* (edited by Merewether), Butterworths, London.

Hinchcliffe, R., (1958). *Am. Occup. Hyg.*, 1, 55–68.

Hockey, R., (1969). *New Scientist*. May 1st, pp. 244–246.

International Organisation for Standardisation (1963). Draft Secretariat proposal for noise rating with respect to conservation of hearing, speech communication and annoyance [150/TC 43 (Secretariat 194) 314].

Morgan, J. J. B., (1916), *Arch. Psychol.*, no. 35.

Weston, H. C., and Adams, S., (1962). "Two studies on the psychological effects of noise. II The effects of noise on the performance of weavers." In: Twelfth Annual Report of the Industrial Health Research Board, London, H.M. Stationery Office (Report no. 65).

Wilson Committee on Noise, 1963, HMSO Cmnd. 2056.

Woodhead, N. M., (1959). *Journal of the Acoustical Society of America*, 31, 1329–1331.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Chesterford Park Research Station

SUBMITTED BY DR. E. F. EDSON*

I. Fisons Ltd. concern with Nuthampstead

Fisons Limited is a major British commercial organisation engaged in the production and sale of fertilisers, pesticides and pharmaceuticals.

Its pesticide interests, both national and international, are centred on its "Cambridge Division", with a headquarters at Harston (2 miles S. of Cambridge) and its Research and Development Station at Chesterford Park, 3 miles N. of Saffron Walden, Essex.

Chesterford Park Research Station's exact location is O.S. Sheet 148, grid reference 535423. It is an assembly of laboratory and ancillary buildings covering about 3 acres, surrounded by a 250 acre estate (150 acres cultivated, the rest wooded). Its height above sea level is approximately 350 feet.

This Research Station lies 6 miles from the N.E. end of the proposed Nuthampstead airport runways, directly on the axis of the proposed runway alignment, and therefore beneath the presumed flight paths to the N.E. Between the end of the runways and Chesterford Park, the ground falls to the valley of the River Cam (150 feet) and then rises again rapidly.

II. Fisons' Chesterford Park Research Station

Chesterford Park was acquired for its present research purpose in 1952. It offered a quiet rural location conveniently near to this Company's commercial headquarters, to the University of Cambridge, and centrally within some of the most important agricultural land areas in Britain. The estate and existing mansion were part of the estate of the Inchcape family.

During the seventeen years from 1952 to the present date, Pest Control Limited, then Fisons Limited by acquisition in 1954, have continued a planned build-up of this Research Station, which has just come, in 1969, to near-finalisation and completion of the overall plan. Five major separate laboratory buildings have been built behind the existing mansion, and the roads and grounds improved and maintained so as to present an aesthetically satisfying environment and location for advanced scientific research (see aerial photograph appended).

The total staff at the Research Station is now 260, of whom 70 are graduates or of graduate status, 90 are technical assistants with qualifications beyond "O" levels, and 100 are ancillaries providing the necessary laboratory, supportive, maintenance or "domestic" services.

The Research and Development revenue budget for the financial year July 1969–70 is £620,000, to cover all the research projects and tasks undertaken at or by the establishment.

III. Pesticide research at Chesterford Park

The nature of the scientific and technological work carried out by this Research Station has as its objectives the bringing forward of new chemical pesticides needed by man to ensure his food-supplies and the public health, in Britain and overseas.

This involves many scientific disciplines and types of technical activity, best summarised by listing the major scientific departments which exist, their size, and function:

Department	*Function*
Chemistry	To invent completely new pesticidal chemicals
Biological Screening	To test new chemicals for biological activity
Biochemistry	To seek new biochemical mechanisms to attack by chemistry
Formulation	To provide usable forms of invented chemicals
Botany	To test the best chemicals as herbicides
Mycology	To test the best chemicals as fungicides and bactericides
Zoology	To test the best chemicals as insecticides
Animal Health	To test the best chemicals for veterinary purposes
Toxicology	To study in animals the toxicity of pesticides
Residue Safety	To develop and use micro-analytical tests for food safety
Metabolism	To measure the breakdown of chemicals in plant, animal and soil, thus giving information relevant to their safety
Equipment	To devise spray-gear to apply chemicals properly
Information	To collect and disseminate information on pesticides
Education	To teach and train staff and visitors in pesticide science
Development	To extend research findings into field practice

These departments are all sequentially involved in work on each and every promising chemical. As with most such chemico-biological work there is a very high eventual failure rate among the 1,000 or so new chemicals made each year. These are both important points. The staff concerned must be very highly motivated, very closely integrated by committees and technical discussions, very accurately communicative to visitors from commercial departments, and to external visitors (of whom about 1,500 visit the Research Station each year in search of information and advice).

In summary, therefore, Chesterford Park is a large, costly, highly technical and complex establishment,

* See also p. 890.

Printed image digitised by the University of Southampton Library Digitisation Unit

at which many scientific groups of different disciplines must work as one integrated team to achieve success in a form of chemico-biological research demanding high standards of personal ability, facilities, sustained effort, management and of external environment.

IV. Present environmental noise levels

At the present time, and for the past eight or so years, the environment noise levels at Chesterford Park have been exemplary. On a normal working day there is just enough background noise from our own personnel, equipment, and transport to produce the stimulus of work being obviously in progress, with the occasional extra stimulus, a few times a day, by some special transport or working task.

We are under normal circumstances not distractedly aware of the aircraft operations at present from Stansted Airport (10 miles S.), Cambridge Airport (9 miles N.) or of the main line railway (1½ miles S.E.). The environmental noise levels, as most features of the Chesterford Park location, are exemplary for sustained, integrated scientific motivation.

V. Estimated noise levels from Nuthampstead operations

Estimates of the changing situation which would follow the adoption of Nuthampstead as the third London Airport site can only be made from the information given in the Roskill Commission booklet *Site Information. 2. Nuthampstead*,* the Final Report of the Wilson Committee on the Problem of Noise (Cmnd. 2056, 1963), and extrapolation made from these by Consultants with experience in such matters. It is appreciated that the NNI contours in the Commission's booklet are described as "probable"; much more information would be required on matters including precise runway alignments before any firm judgement could be given on the likely effect at Chesterford Park.

Diag. CTLA2/2 in the Nuthampstead site information report indicates NNI of 45–50 at Chesterford Park during the two-runway stage of Nuthampstead, with a dense nearby concentration of the NNI contours, so that a mere ½ mile N., the NNI value is shown as over 55.

Diag. CTLA2/3, at the four-runway stage, shows an NNI value of 50, with a second separate 45–50 band lying about 1 mile S. That is, the Research Station is trapped between two noise belts of over 45 NNI, about 1 mile apart.

According to the Appendix XI of the Wilson Report on Noise, NNI values of 45–50 had the following effects on people living near Heathrow Airport:

Fig. 2 Average opinion: moderate to very much annoyance. (Farnborough opinion: Annoying.)

Fig. 3A Forty-five per cent people had disturbed rest or relaxation (or were kept from going to sleep). Sixty per cent were startled (or if asleep, were woken up).

Fig. 3B Seventy per cent people had conversation interference. Seventy per cent people were aware of house vibrations.

Fig. 4 At 48 NNI, 37 per cent people wished to change their living conditions.

Fig. 6 At 45 NNI, 50 per cent people regarded their area as poor or very poor because of noise.

Fig. 7 Increase from NNI 40 to NNI 50, resulted in an increase from 23 per cent to 44 per cent of people liking their area "less now than in the past".

Fig. 8 Similarly, an increase of from 6 per cent to 12 per cent in people wanting to move "to get away from aircraft noise".

It follows that either at the two- or four-runway stage similar reactions may be expected from those working at Chesterford Park, perhaps exacerbated because of the degree of concentration which their work demands.

VI. The impact of high noise levels on research workers

These estimated noise ratings can now be extrapolated in terms of their effect on the staff and therefore scientific productivity of this Research Station. (It should perhaps first be pointed out that the working week here is of five days, week-end duties being normally only brief maintenance routines. Secondly, it is estimated that although only 3 staff are housed at the Research Station, one-quarter of the staff live in local towns or particularly villages within the extensive pool of adventitious noise to be expected from such an airport, i.e. within NNI 20 or higher.)

We have concluded as follows from the estimated possible noise levels at this Research Station and from our knowledge of the research tasks and their requirements of the staff:

(1) Aircraft noise loud enough to prevent or impoverish dissertation, discussions or conversation will occur to differing degrees of frequency every working day. Each such interference will last for approximately half a minute.

(2) Continuity of thought and discussion will thereby be irregularly, but disruptively interfered with. In addition to this interference, it may be necessary to spend a little further time recapitulating the point at which the interruption occurred.

(3) Senior staff and team leaders, who must take responsibility and plan actions for the achievement of technical progress, are the most likely to suffer from these noise interruptions. They are, by selection, very highly motivated and "aroused" people. For such persons, any additional serious external stress can be expected to cause marked adverse reactions.

(4) The inevitable continuity of the airport noise problem, for hours, days, weeks, years, will induce in some a cumulative and progressive loss of personal effectiveness, by annoyance or fatigue. This effect can be expected to spread to their junior staff.

* *Site Information for Stage II Local Hearings. 2. Nuthampstead.* (HMSO; 6s.) Reproduced at p. 601.

Printed image digitised by the University of Southampton Library Digitisation Unit

(5) Noise-distraction could lead to occasional serious errors of thought, or communication, instruction, or decision. It will induce states of doubt.
(6) The more critically important the task, the more susceptible to attack by intrusive noise.
(7) Although some people may come to tolerate some components of this aircraft noise, this can only be partial, not complete. The really key staff are the least likely to develop this adaptation spontaneously.
(8) The present tranquillity of the Chesterford Park research environment after normal working hours, and at week-ends, has been widely used by key staff for some of their major tasks. This valuable concession will disappear completely.

It is extremely difficult to know whether all these predicted effects will arise in whole, or in part, or not at all. Similar situations elsewhere have not as yet been widely studied nor reported. Nevertheless, the above specific predictions can be made on the basis of the review presented as a separate proof of evidence, prepared by Dr. K. H. Jones, Head of Medical/Toxicology Department, at this Research Station.

In addition, the existence of such an expected environment of noise could logically be expected to have certain other adverse consequences on the human component of the Research Station.

(1) Most highly proficient scientists, or younger men with such high potential, have many possible employers available to them. Whereas in the past our "atmosphere" and environment gave us a high attraction, that will apidly disappear. The expected consequence is difficulty in competitive recruiting, at all levels, and a decline in the average professional potential of key staff.
(2) Many existing staff, perhaps 30, will wish to change their private housing location, involving material expense to them, and inevitably concessionary moves by ourselves as employers.
(3) The reduction to be expected in NNI and PNdB from combined double glazing and artificial ventilation cannot be expected to do more than make a partial reduction in the intrusiveness of and distraction by aircraft noise. The operation of working chemistry and biological laboratories, and their adjacent offices, as a form of "sealed box", could only be regarded as a minor and limited step of nuisance mitigation.

VII. Factors other than noise

Turning now to factors other than the effect of noise on the staff of the Research Station, it is felt unlikely that severe effects will be due to vibration from aircraft in flight overhead. Suitable physical or mechanical procedures may be expected to prevent that problem. Secondly, our work with experimental and farm animals is not expected to be significantly interfered with, although we cannot at present be sure of this. Thirdly, we do not anticipate any special administrative difficulties from the proximity of such a large new industrial organisation as the airport, nor from its housing, recruitment, alternative employment or road/rail access requirements.

VIII. The options available, and their costs

The only assessment which can be made on the information presently available, and summarised in this statement, is that the pesticide research activities of Fisons Limited at Chesterford Park Research Station may have to be closed down, and an equivalent establishment created and operated elsewhere by the mid-1970's, with a minimum break in research continuity. Estimates of the cost of this step, largely based on expenditure already incurred at Chesterford Park, are as follows, although the short time permitted has not allowed these figures to be fully verified:

	£
Purchase of land (minimum 150 acres/£500 per acre)	75,000
Construction of equivalent laboratories, offices and ancillary building	1,000,000
Construction of roads, experimental grounds, and external services	50,000
Cost of financing movement of 50 households (there are 86 married male staff employed in 1969)	30,000
Loss of one-year's research contribution by change (including staff replacements)	500,000
Replacement of irremovable fittings	30,000
	£1,685,000

An experimental alternative would be to attempt to reduce NNI and PNdB in the working environment by the "sealed box" technique of double glazing and mechanical ventilation. Presuming that the need for this would be only in half the laboratories and offices, the sum involved is estimated as £45,000. This estimated figure for 1973 cost is not incompatible with estimates made in Appendix XIII of the Wilson Report* on Noise (at 1963 prices). As stated earlier, such modifications could only be palliative, and partially effective.

A third alternative, mentioned only for completion of the analysis of options, would be to accept without any planned preventive action, the effects of Nuthampstead aircraft noise. A financial estimate of such negative approach is almost impossible except as an "order of magnitude" assumption. If this assumption were that overall research efficiency and productivity were to be reduced by say 10 per cent, then an additional £66,000 annual revenue expenditure could be needed on a present revenue budget of £600,000. If it were a 20 per cent lost productivity, the extra revenue needed would be over £100,000 per annum. These three estimates do provide some indication of the annual potential cost to Fisons Limited of the establishment within a few miles of an international airport. But it is a matter of doubt whether such extra staffing could ever achieve the objective in mind.

IX. The position as seen by Fisons Limited

If the present proposal for Nuthampstead is made into a recommendation, and adopted, it is our considered view that the Research Station will be so beset by noise that it will no longer be capable of operation as intended.

* Cmnd. 2056 (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

In consequence, Fisons Limited would have to decide on either the creation of a similar establishment elsewhere, or withdrawing from pesticide research and development. This particular activity is and will remain a major component of Fisons Limited corporate policy. Thus, the financing of construction of a whole new Research Station must be foreseen, as a direct consequence of the creation of Nuthampstead Airport.

APPENDIX I.† Aerial Photograph, Chesterford Park Research Station (April 19th, 1969).

† Not reproduced.

APPENDIX II

Fisons Contribution to the Pesticide Industry

In the U.K. pesticide industry Fisons are regarded, technically and commercially, as one of the leading firms, especially in the farming and amateur garden markets. Even on a world scale we can compare favourably with the pesticide interests of much bigger chemical companies. The establishment, over the last twenty years, of subsidiaries in various parts of Africa, India, Canada and Australia, and recently in U.S.A. and European countries ensures an international outlook in our research and commercial activities.

Research work at Chesterford Park was started by Pest Control Limited, and enormously expanded after the company became part of Fisons Limited. Pest Control Limited was founded in 1939, as a company of spraying contractors, with the idea of bringing the benefits of scientific research to the practical farmer. New discoveries were swiftly put into practice, and the company was in at the beginning of the enormous development of selective weedkillers for use in crops. The company also pioneered the use of systemic insecticides which were absorbed into the sap of plants and controlled sucking insects to a degree never possible before.

Following up this success led to research on the chemistry of the organo-phosphorus insecticides and to important scientific contributions on their mode of action and their subsequent breakdown into harmless substances. Study of the toxicology of pesticides began in 1948, and in 1950 a residue analysis laboratory was established to work out methods of determining how soon after spraying a crop would be safe for consumption. The combined expertise from these two disciplines has enabled Chesterford Park to have a profound influence on the safe use of pesticides at home and abroad.

In 1953, when the company became Fisons Pest Control Limited, the laboratory and field testing facilities continued to expand at Chesterford Park and the scientific reputation of the station led to the offer of many licences by United States and European pesticide companies seeking skilled development of their products in the U.K. and British Commonwealth. In this way Chesterford Park Research Station has made very important contributions to crop productivity by the successful introduction of a whole range of selective herbicides for controlling weeds in cereals, sugar beet, brassicas and kale, potatoes, peas and beans. Insecticides and fungicides have also been introduced.

About 1960 we began to expand our organic chemistry team in order to synthesise more and more new chemical compounds in the search for new and patentable pesticides which, unlike licensed products, we could develop for a world-wide market. To complement this expansion there has grown up a large biological screening department where highly sophisticated laboratory techniques are used to sort out which of the thousands of new compounds are worth the great expense of field testing under practical conditions.

When we find a promising new pesticide of our own, such as Lovozal, an acaricide, which is now being test marketed, or when we take a licensed product for development, there are also field reserach teams based on Chesterford Park who carry out intensive field testing under normal farming conditions. At the same time similar field testing under different climatic conditions is done by research units established in East Africa, South Africa and France. Recently we have set up a complementary organisation to cover screening and further testing on possible products for veterinary and animal health use.

Over the years, Chesterford Park has achieved a high international reputation from its scientific and technical publications (over 450 papers have been contributed to the scientific press) and also from the personal contacts made by the staff with Government, Universities and other official bodies in many countries.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of The Welding Institute

SUBMITTED BY DR. R. WECK*

1. Organisation

The Welding Institute is a co-operative Government grant-aided non-profit-making Research Centre unique in the Western World and of International repute.

In addition to the co-operative Research programme concerning all aspects of welding, design, materials, etc. and serving the British metal producing and fabricating industries, chemical, petro-chemical and oil and other plant users, The Welding Institute provides an essential service, and carries out research for, British Industry and Government Departments and overseas Industries and the Governments of USA and Australia.

Of the 160 industries listed in the Standard Industrial Classifications issued by the Statistical Office services are provided by the Institute to companies in over 80 of these categories.

The ever widening application of welding to the newer materials and more complex structures, atomic power, high speed flight and other advancing technologies have increased the research effort at this Institute from a few thousand pounds annually in 1945 to over one million pounds per annum at present.

Research and development carried out by the Welding Institute is of direct concern and importance to virtually all metal consuming industries in this country, twelve hundred companies and organisations are affiliated as Research Members and fifty overseas organisations are similarly affiliated. The Welding Institute holds a high reputation in all industrialised countries in the world.

2. Location

The Welding Institute's building complex including its laboratories have been deliberately located in quiet rural surroundings at Abington approximately 8 miles south-east of Cambridge. A staff of 400 is employed at the Research Station with a planned growth to between 450 and 500 in the next few years.

There is approximately 120,000 square feet of modern laboratory space including a Conference Centre and lecture hall with a seating capacity for 250 people and residential accommodation for 50 people built in 1967 at a cost of £100,000.

3. The effect of noise interference on the work of The Welding Institute

Work at the Institute premises at Abington may be sub-divided into Welding research and the communication of information and the Appendix 1 to this document sets out in detail the operation of the various Departments.

From the evidence so far seen related to the short listing of the Nuthampstead site for the third London Airport it is apparent that the work of The Welding Institute's Research Station would be severely affected both by noise and vibration if that site was ultimately developed as an Airport.

This kind of interference would clearly disrupt speech communication with Industry including telephone conversations and with visitors to the establishment who number some 7,000 per annum.

Concentration of mental effort required in research would be interrupted and the use of delicate scientific instruments and apparatus could be rendered difficult or impossible.

Several of the delicate instruments, for example the electron microscopes, stereoscan microscope and electron micro probe analyser have been installed in the laboratories on specially designed foundations to prevent vibrations being transmitted from other parts of the building, but these precautions will be quite ineffective against serious airborne vibrations.

The CO_2 continuous power output laser equipment now installed in the laboratories is unique in this country and is also sensitive to vibrations. It has been found that a displacement of one thousandth of an inch or a rotation of one three-hundredth of a degree would so affect this equipment which has a tube length of approximately 40 feet that it would become inoperative. The equipment is at present situated in a building separated from heavy equipment which might upset the delicate balance of this equipment.

Equally The Welding Institute is gravely concerned with the vital aspects of communication. Stemming from research the growth of exploitable knowledge in welding technology has begun to outstrip conventional means of communication perhaps as long as ten years ago. As a result, industrial usage of advanced knowledge was lacking with serious economic consequences.

To put the matter briefly the conclusion formed by The Welding Institute after detailed and prolonged examination of the problem was that it was essential to inaugurate training and educational activities at the Research station. As a result a Conference Centre, training facilities and residential accommodation for fifty people was created at Abington.

An educational and training programme has now been instituted and this is to be greatly extended from 1969/70 under the direction of the two specialists schools—The School of Welding Technology and The School of Applied Non-Destructive Testing. Each school is recognised as a national base for advanced technical training catering for the needs of a wide range of industrial staff and craftsman operators to senior technical management. An annual intake of

* See also p. 887.

Printed image digitised by the University of Southampton Library Digitisation Unit

600 trainees is planned. Continuation of such training and the continued organisation of conferences, research seminars and other meetings at Abington together with The Welding Institute's research activities would appear to be particularly vulnerable to the development of an airport at Nuthampstead. Summarising noise interference from the close proximity of aircraft would adversely affect the taking of written and oral and practical examinations by trainees and course members, teaching on The Welding Institute's courses, lectures, seminars and conferences, conversations, instructions and telephone communications throughout the establishment. (See Para. 119, Wilson Report,* which refers to the effect of noise in schools.)

An indication of the cost involved if the Research Establishment had to move from the area

Moving the laboratories and staff would involve the break-up of Research Teams which have been built up over the past twenty years and it is almost impossible to place a value on the loss of "know how" and expertise involved and what the cost of this might be not only to The Institute but to Industry and the nation as a whole.

Interruption or cessation of the activities of The Institute would also incur an incalculable national loss.

However, some attempt has been made to assess the obvious costs involved if the Establishment had to move from the area.

The cost of the freehold land and buildings and plant and machinery in the balance sheet at 31/12/68 amounted to 1¼ million pounds (approximately). As some of the building and land was acquired over twenty years ago the value must be approaching 1½ million.

In addition to this a substantial proportion of plant and machinery has been acquired or manufactured and the cost written out of the books. It would seem, therefore, that the value of the assets at present-day market prices would be something approaching two million pounds.

Obviously if the Establishment had to move there would be some residual value in the plant and buildings which could be sold but it is difficult to say at this stage who would wish to purchase them and what they would be willing to pay. The problems in setting up a new Establishment and the loss of productivity will also involve The Welding Institute in additional costs and it is estimated that including interest charges and staff recruitment costs, a sum approaching three million pounds less the amount recovered on the existing buildings, and plant, would be required to enable The Welding Institute to carry on its research work in another area.

The time-factor and disruption which would be involved in such a move can be categorised thus:

(a) The building up of the expertise of the new research teams would take several years.

(b) There would be a disruption of the continued flow of vital information required day by day to maintain industrial progress over a wide field, from the electronics industry to shipbuilding.

(c) There is always a danger that the lack of timely information and advice based on the results of painstaking research could lead to a calamitous failure of some welded structure, especially where advanced operating conditions (such as temperature or pressure) require the use of new alloys and new fabrication processes. An example of what can happen is the failure in 1965 of an ammonia converter* (fortunately on test) at Billingham; whilst nobody was hurt, the consequential losses to ICI have been estimated to exceed £1,000,000.

Operations

Work at Abington may be sub-divided into welding research and the communication of information. Research may be divided into five main sections:

Research

(i) *Process operation and control*

This is the department working on the frontiers of welding process development and friction, electron beam, MIG, TIG, Metal Inert Gas-shield Welding and laser welding are a few of the examples of the areas in which the section is active.

(ii) *Process applications*

The problems in using existing processes occur on an ever growing scale as technical and economic demands on welding fabrications increase. This department is concerned with finding solutions to these problems and also with investigations to extend the applications of processes, for example, plasma arc, electro-slag and CO_2 welding.

As an example of these matters, Electroslag Welding is a process originally developed in the Soviet Union in which a joint is effected between two edges of steel plates which can be of very considerable thickness, say up to 7 in. thick, by melting in an enclosed groove a filler material either in the form of a wire or any other form under the cover of a liquid bath of slag, by an electric current introduced into the bath producing heating by electric resistance.

The process has considerable potential application in many different industries such as shipbuilding. Its advantages are primarily economic, but the process can also be operated by unskilled personnel and its application can go some way towards solving the problem of skilled and experienced welders, of which there is a countrywide shortage.

One of the problems retarding its application is the difficulty in producing welds of sufficiently good mechanical properties to make these acceptable to inspection authorities such as the Board of Trade, Lloyds Register of Shipping, Insurance companies and other supervisory bodies. These difficulties can be overcome by further research and development work and have in fact been overcome to some extent so that today the process is used far more widely in British Industry than it was when it was first introduced

* Cmnd 2056 (HMSO; 19s. 6d.)

* See illustration between pp. 768 and 769.

Printed image digitised by the University of Southampton Library Digitisation Unit

approximately ten years ago; but a great deal of work needs to be done. Very considerable economic advantages could arise from its use in the shipbuilding industry for welding, by automatic means, the vertical joints in the side shell and the bulkheads of large ships such as mammoth tankers.

Recently, the Institute completed the development of a special machine using this process for application to shipbuilding, which is now on trial in shipyards, but further work on this machine requires to be done, and further work is required also in relation to other heavy constructions such as pressure vessels for the oil and chemical industries where at present the applications of the process are limited, although it is economically advantageous.

(iii) *Engineering*

Some of the more important design and strength problems created by the use of welding are investigated in the Engineering department and these include fatigue and brittle fracture among the most significant and much research has been done in these two areas.

The Welding Institute has made many national and international contributions to knowledge in these fields (see Appendix 2* and 3†) and is making a particular effort to evaluate the influence of defects on service performance. In the field of brittle fracture work on fracture mechanics has produced a number of important improvements in understanding, work on high strength steels has contributed knowledge on the risk of fracture in these metals.

(iv) *Metallurgy*

Research in this section is concentrated on five broad topics:

the study of weld metals
welding of structural steels
welding of high temperature steels
welding of non-ferrous meterials, and the
study of corrosion problems of welded joints.

The effectiveness of a metallurgical department depends critically on the availability of advanced instruments for investigating microstructure and in this The Welding Institute is particularly fortunate in having at its disposal two electron microscopes, one stereoscan microscope and an electron probe microanalyser. The Chemical Department provides the usual services in respect of the chemical analysis of parent and weld metals and the analysis of gases in metals; it also conducts research in this field and a number of new analytical techniques have been developed which are now adopted internationally (see Appendix 2). In addition the staff of the department take part in projects such as research on porosity formation and the influence of metallographic structure on hydrogen diffusion and cracking.

(v) *Operational sciences*

This section carries out investigations into the problems associated with work measurement, standard costing and optimising techniques for welding and the ancillary production operations. Standard data on the production rates of characteristics of processes are being collected and published by means of which cost data may be readily obtained by industry.

* p. 163.

† Not reproduced. List of papers by members of staff published during 1968. Available fron The Welding Institute.

Appendix 1

Communication of information

One of the most important aspects of The Welding Institute's work is the communication of information to its members and in some cases to industry at large. This information may be derived from the work of research or from industrial experience and the main channels of communicating this information are through the following activities:

(i) *Education and training*

Perhaps one of the most effective means of communication is through carefully planned training courses covering defined areas of welding technology and practice and by means of the School of Welding Technology, industry is able to keep up to date over a wide range of subjects.

The current prospectus (see Appendix 4*) lists twenty-five courses on nineteen different topics including management, shipbuilding, design, pulsed arc welding, CO_2 welding, defects in welds and electron beam welding. The courses range in standard from technicians up to post-graduate and in duration from two days to six weeks. Most of the courses are residential at Abington, some of them are held as joint ventures with the Imperial College of Science and Technology: also The Welding Institute provides instruction as a part of the regular curriculum for undergraduates in metallurgy and engineering from Imperial College, Queen Mary College, University College and Manchester University.

This is the only establishment in the country in a position to offer such courses, and there is no alternative organisation which can offer instruction in this field.

The Welding Institute is also very active in the field of non-destructive testing and in association with The Non-Destructive Testing Society of Great Britain operates the School of Applied Non-Destructive Testing.

The techniques of Non-Destructive inspection as applied to welded containers are vital to ensure the safety of the public against failure—some examples where such techniques must be applied are welded Railway lines, rolling stock, also containers of Toxic or dangerous liquids or gases under pressure (e.g. steam boilers) and vessels used in the oil, chemical and atomic power industries.

SANDT runs courses for Inspection personnel in interpretation of the results of these techniques: the techniques include the use of X-rays and ultrasonics.

* Not reproduced. Available from The Welding Institute.

Printed image digitised by the University of Southampton Library Digitisation Unit

These courses are attended by employees of many Government Departments, Classification and Insurance Societies and public and private industry. The 1969/70 programme will incorporate courses for ultrasonic operators and a steady growth is planned over the next few years. The anticipated number of students for the coming year is 300.

In addition to SANDT courses The Welding Industry will shortly bring into operation a qualification and certification scheme for inspection and NDT personnel. This scheme involves the taking of written practical and oral examinations.

A unique feature of both training schools is the immediate proximity of the research laboratories and the consequent availability of a wide range of equipment and the expertise of the research staff.

(ii) *Conferences*

The Welding Institute arranges a series of conferences each year.

The proceedings of major conferences are published as special issues of the journal Metal Construction and attract papers from experts from all over the world.

Liaison conferences for Research Members and research seminars are also held in the Conference Centre at Abington.

(iii) *Information and Library*

A stock of the principal books and periodicals from all parts of the world covering welding and the allied technologies is maintained in the Library at Abington. The majority of the publications are available on free loan to members and bibliographies on specific topics such as electron beam welding, CO_2 welding, are produced from time to time. The Library is, however, used by the staff and by students attending courses at Abington. The Information section handles a large number of enquiries by post, telephone and personal application and is currently working with the Library in developing improved methods of information storage and retrieval.

(iv) *Publications*

A wide field of books, periodicals and leaflets is available ranging from reference books such as *CO_2 Shielding Consumable Electrode Arc Welding* to reports on the conferences which are arranged to study specialised aspects of welding. In addition reprints are available of many of the articles written by members of staff which have been published in the Technical Press throughout the world. Also available are *Automatic Welding* and *Welding Production* which consists entirely of translations from the two corresponding Russian Journals.

(v) *Films*

The Welding Institute film unit is continually engaged in making films chiefly about developments arising from Research projects and about particular aspects of services to members. One of these films, Welding by Friction, recently gained an award of merit at the 1968 BISFA Film Festival.

APPENDIX 2

Patents and royalties

The Welding Institute has made many National and International contributions to knowledge and has developed many new techniques and processes.

The Institute has been granted Letters Patent in the United Kingdom and in many countries overseas for ideas and inventions which have been developed in the laboratories.

There are now over 60 Patents registered in the name of The Welding Institute and Licensing Agreements have been negotiated with a number of United Kingdom and Overseas Companies to exploit them.

An example of this is the series of Welding Institute Patents on Pulsed Arc Welding, licensed to Airco of the USA which has resulted in a Royalty income in US dollars amounting to £17,500 to date.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Institute of Animal Physiology

SUBMITTED BY DR. R. D. KEYNES*

I am the Director of the Agricultural Research Council's Institute of Animal Physiology, Babraham, which is 7 miles south-east of Cambridge. The Institute was set up some twenty years ago under the aegis of the Agricultural Research Council and is one of the largest of that Council's 46 Institutes. The A.R.C. in its turn is one of the five Research Councils responsible to the Department of Education and Science for the funding of a wide field of research in the natural and social sciences. Its funds are provided from the Treasury.

The Institute at Babraham concentrates on fundamental long term research on the physiology and chemistry of farm animals, particularly cows, sheep, goats and pigs. The purpose of our operations is to provide the essential knowledge upon which sound practice in animal husbandry must be based. I illustrate some of the lines into which we are conducting research: We are investigating questions of lactation, behaviour, mechanisms of reproduction, nutrition and the special ways in which ruminants can digest plant material, control of mineral metabolism, and functioning of the nervous system. To the extent that any advancement of knowledge of animal physiology is directly relevant to human physiology, the work being done here is also of some importance in human medicine. In addition we are providing quite extensive facilities for experiments in surgery by Professor R. Y. Calne, Professor of Surgery, Cambridge University, who is conducting experiments on transplantation of livers, kidneys and hearts in pigs.

The work carried out here is performed on animals both conscious and unconscious. In the case of the former, it often takes the form of long experiments on animals confined in pens in specially designed and quiet laboratories and in such experiments any kind of disturbance is almost invariably disruptive to the results. The experiments on unconscious animals consists partly of acute experiments on anaesthetised animals, and partly of the application of a wide variety of physiological, biophysical and biochemical techniques to isolated tissues and tissue extracts.

We are also proposing, with the assistance of a telemetry system at the moment under development at Aldermaston, to carry out extensive experiments on the behaviour of animals in the open air, as an extension of work already done with less advanced equipment that we built ourselves. It will be appreciated that any form of disturbance of these animals must be minimised in order to derive valid information in the shortest time from the use of our staff and facilities. These behavioural problems are of considerable scientific and practical importance and it would be a great pity if the chief line of experimentation available to us was to gauge the reaction of our animals to various incidents of noise.

We now employ 50 scientific officers and a supporting staff of 223. There are also 34 visiting scientists from countries all over the world, working here for periods up to a year, and a number of postgraduate students working for Ph.D. degrees at Cambridge University. The results of the work of this team is chiefly to be seen in the papers that have been published, well over a thousand in number, which are circulated not only in the U.K. but throughout the world and have been of service in furthering the knowledge of both veterinary medicine and agricultural animal husbandry practices.

Our annual budget for 1968/9 was £540,000.

As is the case with all highly trained scientific personnel, those who work at this Institute require to apply a high degree of concentration to the processes with which they are involved. These processes include:

(a) conducting highly exacting operations and dissections in the laboratory with microscopic and other techniques;
(b) complicated surgical operations;
(c) chemical analysis using delicate and sophisticated analytical techniques;
(d) computer analysis of results both in graphical and digital forms;
(e) the preparation of scientific papers.

I have no reason to believe that the efficiency of the staff here, or the speed and accuracy of the results that they produce, would be any less affected by interruptions from noise than would be the work of any other scientific personnel engaged in techniques which place a similar demand on the intellect.

Since one of the most important aspects of our work is to investigate behavioural and physiological reactions in conscious animals both in the field and in the laboratory it seems probable that frequent disturbances from aircraft noise would be highly deleterious to our work. If a major airport were established at Nuthampstead, it would certainly be necessary to consider whether this Institute could continue to fulfil its functions on this site—a site which was originally chosen for the very reasons that it provides a peaceful and quiet environment. Moreover, it would be highly unsatisfactory to attempt to separate some of our functions relating to the animals themselves from the analysis of the results which we have obtained, and it might therefore prove necessary to consider moving the whole Institute to another place. If such an eventuality were to occur the cost involved might be in the region of

* See also p. 890.

Printed image digitised by the University of Southampton Library Digitisation Unit

£1½ million for laboratory buildings. In addition there would have to be an adequate acreage of land and a central administrative building which might cost up to £¼ million. There are at the Institute at Babraham about 50 houses which are required for key personnel who must be in the immediate vicinity of the animals for whom they are responsible, and these would have to be replaced on any alternative site. There is the additional problem, that the scientific team has been built up in this locality and it by no means follows that they would all be prepared or able to move to another site; whether or not they did so, the loss of efficiency and results over the period of the move would be of some significance.

On the credit side it would no doubt be possible to find some purchaser for the property at Babraham, but on the hypothesis that we should have had to move because of the noise, I do not consider that the market among scientific users would be a very good one.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Tube Investments Ltd.

SUBMITTED BY DR. D. W. PASHLEY*

I am the Laboratory Director of the Central Research Laboratories of Tube Investments Limited which are sited at Hinxton Hall, which is about 5 miles from the north-east end of the runways of the proposed Nuthampstead site for the Third London Airport. An aerial photograph of the establishment, marked TIRL 1,† is attached.

The Laboratories, which were founded in 1954, stand in about 50 acres of ground, and consist of the following buildings:

(1) The original Hinxton Hall which has been converted for use by the Laboratory Administration as well as for certain technical services (e.g. photography and glass blowing) and a limited amount of laboratory activity;
(2) A staff canteen which connects Hinxton Hall with
(3) A modern laboratory block (erected in 1958);
(4) A separate smaller building for heavy metallurgical services (e.g. casting, mechanical testing etc.);
(5) An older building converted for use as a machine workshop;
(6) Several other small buildings for special purposes.

The work carried out by the Research Laboratories is financed entirely by Tube Investments Limited, and gives direct technical support to the Tube Investments Group of Companies, which are organised into the following Divisions:

(i) Steel Tube
(ii) Engineering and General
(iii) Aluminium
(iv) Cycles
(v) Machine Tools
(iv) Electrical
(vii) Radiation Limited.

About seventy companies are members of the Group. The total sales value of goods exported from the United Kingdom by Tube Investments and its subsidiaries amounts to about £33 m. per annum.

The staff of the Laboratories consists of forty-five to fifty graduates and Ph.D's, supported by about sixty other technically qualified personnel. Other support staff bring the total up to about one-hundred and eighty. The annual budget for running the Laboratories is about £400,000.

The work of the Laboratories embraces metallurgy, physics and engineering, and includes long range basic research as well as applied research and problem-solving in relation to current technical problems encountered by the member companies. The basic research carried out has resulted in a high international scientific reputation for the Laboratories, particularly in the development of advanced electron optical techniques and their application to physical metallurgy. The more applied research has made vital contributions to the technical advancement of the Group, and has helped to improve the efficiency of various production processes.

Foremost amongst the reasons for selecting Hinxton as the site for the Laboratories was the desire to be close to a major university at Cambridge to promote valuable working relationships between industrial scientific and engineering research workers, in quiet and peaceful surroundings which would be conducive to the uninterrupted mental concentration required for effective research activities. The proximity to Cambridge University has proved to be of considerable value by providing the opportunity for the research staff to maintain close liaison with the latest developments in academic research, and several kinds of direct collaborative work, of benefit to both the University and the Tube Investments Research Laboratories, have taken place.

An example of collaboration which has made an important contribution to technological progress can be found in the development of the electron probe scanning X-ray microanalyser. The instrument originated from the work carried out by a research student in the Cavendish Laboratory of the University of Cambridge. These Laboratories took an immediate interest in the instrument, and produced a properly engineered user instrument with the full co-operation of the research student and his supervisor who acted as consultants. Many important applications of the instrument were demonstrated at Hinxton, and its success resulted in an agreement whereby the Cambridge Instrument Company produced the instrument commercially. The instrument built at Hinxton was used virtually without modification as the production prototype, and as a result of the work carried out by the Tube Investments Research Laboratories a commercial version of the microanalyser (trade name "Microscan") was made available to industry within two years of its origins in the Cavendish Laboratory. More than eighty of the instruments have been sold at approximately £20,000 each and are now in use both in the UK and in various foreign countries including the USA, USSR, Germany, Holland, Sweden and Norway.

The instrument provides detailed information about the distribution of chemical elements in a solid surface

* See also p. 889.
† Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

on an extremely fine scale. The attached photograph, marked TIRL 2,* shows the way in which the various constituents of a cast iron sample can be revealed by this instrument. The field of view in these photographs is only one-hundredth of an inch across. This kind of information is of enormous value, for example, in assessing the way in which segregation of impurity elements leads to defects (e.g. cracks) during metal working processes, and the application of the instrument to the solution of various technical problems encountered in steel tube-making processes has resulted in important improvements in the efficiency of the processes. Its potential as a diagnostic tool for exploring complex situations has led to its extensive use in the metals industry for "trouble shooting" applications.

It is deduced, from the published information, that the work of the Laboratories would be subjected to considerable disturbance from noise if the Third London Airport were sited at Nuthampstead. The noise would be particularly serious when weather conditions demand that aircraft take off towards the north-east, as is expected to occur about one day in five on average. The main serious effects of the expected levels of noise on the activities of the Laboratories would be as follows:

(a) Repeated periods of intense noise would result in lack of mental concentration, both during important pure mental activities and whilst careful measurements and observations are being made with experimental apparatus. A great deal of work involves examining various metallurgical specimens by optical microscopy and various electron optical instruments (e.g. electron microscopes and electron probe microanalysers). In order to obtain the maximum information with good efficiency and without error, it is necessary that the observer is able to give his undivided attention to the problem without any distraction.

(b) Rapid progress in scientific research is dependent upon the stimulation provided by mutual discussion between research workers, and the big steps forward are often set in motion as a result of such discussion. Complete concentration on the problem is extremely important, and repeated distraction from noisy aircraft is likely to reduce the efficiency with which new ideas are produced, and hence retard progress.

(c) Much of the work of the Laboratories is progressed by more formal meetings and discussions, often involving personnel from other parts of Tube Investments. It is often essential for these meetings to be held at Hinxton, in order to allow the results of the research work to be seen at first hand. Aircraft noise would seriously interfere with these discussions.

(d) In all, several hundred visitors are received each year, and scientific discussions with these would be made difficult by severe aircraft noise.

(e) Regular seminars or lectures are given by the Hinxton research staff, who talk about their work mainly to other members of the research staff, and also sometimes to visiting scientists. These take place in the lecture hall, which is in the main laboratory block. Frequent interruptions from noisy aircraft would make the delivery and reception of these talks very difficult, in a situation where a high degree of mental concentration is demanded of both speaker and audience.

The airborne sound waves from low flying aircraft, especially those in the lower frequency ranges, will cause building vibration which is liable to interfere with the high mechanical stability required of some of the sensitive scientific equipment in the Laboratories. The most sensitive equipment in general use is electron optical, and because samples are examined at very high magnifications and high resolution, very small vibrations of the specimen lead to severe loss in image quality. The Tube Investments Research Laboratories have gained a high international scientific reputation for their work on high resolution electron microscopy; resolutions of well below 10 Ångstrom units (less than 10^{-7} inches) are achieved, and this requires the amplitude of specimen vibration to be less than one-ten-millionth of an inch.

The practical significance of the problem can be understood in the following way. The samples of metals, or other solids, which are examined in the electron microscope are very thin foils of about one-eighth of an inch diameter or less, and the microscope is focused on an area of only one-hundred-thousandth of an inch in diameter, or even less. At the magnifications which are used, the complete specimen would have a size about equal to that of the City of Cambridge, whilst the region being examined would be no more than 2 or 3 feet in diameter. Thus it is easy to see why a very minute vibration of the sample will blur the clarity of the image so that the details of the structure under examination cannot be discerned. A photograph, marked TIRL 3,* is attached showing the periodic atomic structure in a bi-metal film, revealed by high resolution electron microscopy.

Although vibrations are normally damped as a result of careful mounting of the instruments, it is normally required that the amplitude of vertical vibration of the surface (e.g. the floor) on which the instrument is mounted should be no more than about one-ten-thousandth of an inch at frequencies in the range 5–15 cycles/second. Special, possibly expensive, precautions would need to be taken to deal with the problem of floor vibrations caused by low flying aircraft, and no guarantee of complete success can be given.

Other instruments, such as sensitive galvanometers and balances, would also be liable to suffer from the same levels of vibration.

If the Third London Airport were sited at Nuthampstead it would be essential for certain precautions to be taken in order to reduce the seriousness of some of the effects of noise. All windows would need to be double glazed, and to ensure adequate ventilation an effective air-conditioning system would need to be installed. It

* between pp. 768 and 769

* opp. p. 769.

Printed image digitised by the University of Southampton Library Digitisation Unit

is estimated that this would involve expenditure of about £150,000.

Tube Investments would be very reluctant to move the Laboratories because of the advantage of proximity to Cambridge. If conditions forced the need for a move, the cost involved would be considerable. The cost of providing an alternative site with the required buildings would be likely to be in the range £600,000 to £1 m. A most serious consequence of such a move would be the severe difficulties involved in retaining and employing in a new location many staff with very special skills which are peculiar to the particular needs of the Tube Investments Research Laboratories. For various personal reasons it is likely that a majority of the existing staff would be unwilling to move to a new site, so that many new staff would need to be recruited. The present staff has been built up over a period of years, and there would inevitably be a delay of at least two years before suitable replacements could be found. Thus there would be a very serious disruption to the work of the Laboratories, amounting to a loss of "production" of two years or more. The direct financial impact of this would be of the order of £1 m. The financial consequences in relation to the productivity of some of the companies of Tube Investments Limited could well be very much greater, since vital technical assistance would be severely interrupted.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Hertfordshire Society

SUBMITTED BY MRS. N. W. TYRRELL*

I am the Secretary of the Hertfordshire Society, which position I have held for five years. Before that I was Assistant Secretary for a further five years. The Society was founded in 1935 and incorporates the Hertfordshire Branch of the Council for the Preservation of Rural England. The first two of the Society's objects are:

(a) to promote the preservation and improvement of the amenities and character of the County for the benefit of the public generally and especially inhabitants of the County,

(b) . . . to promote the protection and preservation of lands, buildings and scenery of beauty or historic or local interest within the County.

I set out in Appendix I† a list of the Officers and Executive Committee of the Society and in addition to them there are 1,179 individual members and 106 business firms, 35 Affiliated Societies, 34 Local Authorities and 17 Parish Councils who support the Society with annual subscriptions.

At the meeting of the Executive Committee on the 6th May, 1969, a Sub-Committee was set up to handle the Society's objection to the proposal to site the Third London Airport at Nuthampstead and I am authorised by the Sub-Committee to give this evidence to the Commission.

My evidence will be an attempt to crystallise the amenity value of the area which would be immediately affected by the site of the proposed Nuthampstead airport, either as being within the actual boundaries of the airport itself or as being so close to the airport that those who live there or pass by it would be substantially affected by the sight of, or the noise from, the airport and the aeroplanes using it, or both. The Hertfordshire Society would almost certainly have comments which it would wish to make upon the further effects on amenity which would derive from the road and rail links, and those very substantial areas of land which would be needed for development, such as housing, service facilities and industry, ancillary to the airport itself. The Society would also be concerned if the sources of sand and aggregates needed to build the airport were to be sought within Hertfordshire, since mineral working can also cause a substantial detriment to amenity.

I believe, however, that in order to present evidence upon the amenity value of any area it is necessary to attempt to be specific and to describe in some detail those things from which amenity is to be discerned. I am concerned to analyse why an area has an amenity value, and I am not able to carry out such an exercise in relation to the ancillary matters mentioned above (important though they are) without some more accurate information about the precise confines of the sites to be used. The area about which I propose to speak has also been chosen on the assumption that Stansted airport would not develop any further than has already occurred; if that were to happen, consideration would have to be given to the amenity effects on, probably, yet further areas of the County. I will, therefore, describe the important features of a number of villages and hamlets. These all lie in an area which has either already been approved by the Minister of Housing and Local Government as being of landscape value in the County Development Plan; or is proposed by the County Council for inclusion in that category in a report issued before it was known that Nuthampstead was to be included in the short list of sites for the Third London Airport. These facts indicate to me that responsible authorities, able to assess the amenity aspect from a wide viewpoint, have accepted that this area has amenity value. Additionally, the lists of buildings of architectural or historical interest, and the conservation areas now proposed under the Civic Amenities Act 1968 in a number of the villages to which I refer, show that disinterested experts have found value in these buildings or groups of buildings in their settings. Amenity is for people to enjoy and appreciate: those who now appreciate the attraction of this area include not only the people who live and work there, but also people who come from the neighbouring and rapidly growing towns of Hertfordshire, and from London itself. By car on the roads or by foot on the footpaths, these people are increasingly seeking to spend some of their leisure time in this part of Hertfordshire, accessible as it is to their homes. I also believe that the work done by bodies such as the Royal Commission on Historical Monuments, and more recently those architects, antiquarians and historians who, in order to comply with the directions of Parliament in the Town and Country Planning Act 1947, have prepared the statutory and supplementary lists of buildings of architectural or historical interest, has had a wider purpose than merely to compile academic catalogues. It has been an attempt to make public authorities and the public at large aware of the treasures which have survived, and to foster a positive interest in and a care for the conservation of the best of our heritage.

In recent times Hertfordshire has become prey to large artificial increases of population by the creation of new towns and garden cities within its boundaries. The district in which the proposed airport site at Nuthampstead lies is perhaps the only substantially agricultural portion of the County remaining. If this were to be destroyed by an airport, with its additional

* See also p. 894.
† p. 779.

Printed image digitised by the University of Southampton Library Digitisation Unit

increase of population, it would in our opinion virtually finish Hertfordshire as a rural County.

The immediate area contains villages of considerable antiquity and charm. They are also rich in local history and tradition. I anticipate it will assist the Commission to have short details of all the villages (which are underlined in red on Plan H.S.1.*) closely concerned. In addition to the Hertfordshire villages named below, many villages in Essex are closely affected, but are outside the aegis of my Society. However, no doubt due attention will be called to them and in particular to Arkesden which, in my view, is extremely attractive.

In addition to Essex, developments ancillary to the airport will adversely affect a much wider area and in particular, the possible proposal to put a new town north of Royston will not only use up extremely valuable agricultural land, but could surely affect, for example, the beautiful Wimpole Hall and estate, the park of which was landscaped by Capability Brown and contains a splendid 3 mile avenue of trees. The present owner is bequeathing the property, together with the contents of the house, some of which have been there since the place was built, to the National Trust who are prepared to accept the gift with an endowment.

Further, another possible proposal to extend Bishop's Stortford to cater for the increased population as a result of the airport would have a serious impact upon the beautiful countryside between there and Much Hadham, which has long been regarded by County policy as an area worthy of strictest planning safeguards.

Anstey

Charles Lamb said

> And I shall muse on thee, slow journeying on
> To the green plains of pleasant Hertfordshire

about this village which is now so closely affected by the proposed airport. This is a pleasant village on the River Quin, which is the feeder of the River Rib.

The site of the Norman stronghold is marked by a moated mound in the grounds of Anstey Hall, and it is recorded that Henry VIII gave Anstey Castle successively to each of his first three wives.

The Church is of Norman origin and the village was the birthplace of Thomas Campion (1543–1619) the doctor, poet and composer. The lych gate and cage was was used as a village prison.

Much of the Church dates back to Henry III, though a Church was on the site in Saxon times. The Reformation bell invokes St. George, to whom the Church is dedicated. The tower is in the centre, making the Church cruciform—very rare in villages and certainly in Hertfordshire.

During the Restoration a phial was found buried in the south wall. This was thought to be a reliquary, one of only five found in England, buried at the time of the Reformation. The contents were analysed and found to be human blood.

Canon Davys once said about this Church: "We have here a miniature Minster, perfect in its people's nave and aisles, its chapels in the transepts, and its ancient choir". The font is of an unusual design and is possibly of the 12th century.

In the grounds of Anstey Castle are the remains of three moats and another is near Bandons at Paynes End, north of the Church. There is also another moat south-west of the rectory, surrounded by trees with a tumulus in the centre. The Commissioners on Ancient Monuments reported it "Specially worthy of preservation" and it was scheduled as of national importance in 1926.

This is a most historic village. One of its fascinations is the story of the Anstey Fiddler, which is well set out in W. B. Gerish's account which I précis:

> In Anstey parish, by the side of the high road which leads to Barley, is an ancient chalk-pit, one face of which has been so long disused that no man living can say when chalk was last dug therefrom. On the eastern face of the pit, now hidden by earth and rubbish, one is told, the sometime entrance to a subterranean passage existed. About this once open cavern at Anstey a fearsome tale is woven in connection with the untimely fate of the local fiddler.
>
> It would appear that at the time in question the cave possessed a very unenviable repute. It had never been entered by even the boldest, and the general belief was that anyone venturing therein would never emerge alive. It was supposed to communicate with the Castle by a long and almost straight passage leading into the "dungeons" of that "adulterine" fortress, although if such a passage does exist it is doubtless merely a way of escape for the beleaguered garrison. The spot, although more generally known as Cave Gate (and as such marked on the Ordnance Map), had a more sinister appellation assigned to it by certain bolder spirits, who averred that it was one of the entrances to the abode of His Satanic Majesty.
>
> One evening in the early autumn, after work for the day was over, the labourers were spending the hour or so before retiring for the night in their accustomed manner at "The Chequers", enjoying the twilight rest, the home-brewed, and the music from "Blind George's" fiddle. After a while the conversation turned, as it had often turned before, upon the subject of the cave, and while there were two or three who "didn't believe there was nothin' in't", the majority agreed 'twas a place to be avoided by anyone who was not a saint. This implication was rather resented by Blind George, whose morals were by no means of the best, and who being by this time considerably the worse for his frequent libations during the day, had become both quarrelsome and pot-valiant. Throwing his fiddle on the bench he swore that, blind as he was, accompanied by none, and with only his dog and fiddle, he would venture that very night to the uttermost end of the passage.
>
> Arriving at what is now a field, but was then open land in which the chalk-pit is situated, the crowd hesitated on the margin, but the fiddler pushed his way past them, and dragging his dog with him descended the side. He shouted out to the people to follow him above ground to the other end, guided by the sound of his fiddle. Stumbling across the fallen chalk and rubbish he disappeared in the black

* Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

darkness of the cave, dragging with him, in spite of its whines and cries, his poor little cur. The men and women, boys and girls, rushed back to the road and listened intently for the sound of the fiddle, and in a few seconds a low weird strain came from beneath their very feet. With bated breath and scarce a whisper they followed the sound across the stubble and ploughed land until they were nearly half-way to the castle hill, frowning gloomily in the distance. Then, all at once, the fiddling ceased, stopping with a shrill squeak which some likened to a dying scream. For several minutes they listened in intense silence; then with one accord ran back across the fields to the pit brink. There again all was still, but after a few moments gazing into the blackness, a faint noise was heard from the direction of the cave which, becoming more and more distinct, suddenly revealed itself to be the fiddler's dog, tailless and with every atom of its hair singed off. On seeing the crowd, with a howl it dashed up the opposite side of the pit and disappeared in the darkness, never more, like its master, to be beheld by mortal eyes. But with this apparition the villagers had had enough of horrors, and without waiting for any further developments, they ran helter-skelter for their homes.

Aspenden

This delightful village has many historic associations and the eminent historian, Macauley, was educated in the village school.

The Church contains the mark of most centuries since the 11th century, and is of very considerable architectural interest. The "S" chancel chapel opens in to the chancel through an arcade of two bays with octagonal piers and semi-circular arches with strapwork decoration. This arcade, built by Sir Ralph Freeman, a former Lord Mayor of London, is a particularly rare example of that type of architecture. There are several tombs of interest.

The Lushington family lived for many generations at the Hall, a 19th century house with 17th century panelling.

A special feature of this village is the picturesque village green, providing shady trees and a beautifully kept cricket green. This amenity attracts in excess of sixty cars, mainly from North London, during fine summer Saturdays and Sundays.

Barkway

This village was of considerable importance in coaching days, a fact which is commemorated by the number of fine inns in the main street.

Berg Cottage (1687) is National Trust Property.

The Church is mediaeval, with a 13th century chancel and 15th century nave and aisles. There is a certain amount of mediaeval glass and a number of very fine monuments.

The village contains a splendid number of beeches and chestnuts. Here, too, signs of Roman occupation were discovered, particularly near Periwinkle Hill where a Roman statue of Mars was found. This is now in the British Museum. This village is very remote and quiet, and, despite the heavy traffic which goes through it, it is virtually unspoilt.

The manorial history of Barkway is long and complicated. Newsells, now the home of Sir Humphrey de Trafford, during the Middle Ages belonged to the de Scales, whose name is perpetuated in Scales Park, which is just past Nuthampstead. This was purchased in 1759 by Thomas Dimsdale of Hertford Priory, a celebrated physician who was made a Baron when he vaccinated Empress Catherine II of Russia against smallpox. He once went out shooting with the Empress, who shot nine moor fowl: "I shot four". His direct descendant, Baron Dimsdale, M.C., lives in the village.

Another important and beautiful building at Barkway is Cokenach, but this village is outstandingly rich in buildings of architectural importance.

A conservation area is proposed.

Barley

This village, as one looks up the hill, contains a gloriously unexpected and essentially English view. The hunt in full cry, carved in wood, spans the road on a beam from the 300-year-old inn, The Fox and Hounds.

In the village there is a wooden lock-up and a smithy where good iron work is still being done.

The Church is fundamentally Norman with considerably later additions.

This small village has the distinction that two Rectors of Barley have become Archbishops of Canterbury—William Warham who crowned Henry VIII and Thomas Herring.

The village is one of the oldest in Hertfordshire. There has been a permanent Settlement here since at least 100 years before the birth of Christ. Part of the Parish extends into the proposed runway area, and two of its ancient Manor houses—Mincinbury and Abbotsbury—will become uninhabitable. Both these Manors came into existence before the Conquest, the former already belonging to the Convent of Chatteris at that time.

It is understood that there is a family who live in the village who are reliably believed to have lived on the same copyhold property for 1,000 years and this is not untypical of the district.

Braughing

This village is exceptionally valuable both historically and architecturally. It has a great number of ancient buildings.

The Roman road, Stane Street, passes through the parish and to the west across Ermine Street. There was a Roman Settlement to the south-west of the village, and many remains have been found.

Although the population of this village has increased over the past years its charm has not decreased.

It is recorded that the Church bells rang out the news of the success of the Armada. The Church has a 13th century chancel, and the remainder is early 15th century with elaborate details and emoluments.

The village has two 15th century half-timbered buildings called The Gatehouse and The Brown Bear, which are of considerable interest with their mediaeval architecture.

Braughing Bury has tall Tudor chimney stacks,

Printed image digitised by the University of Southampton Library Digitisation Unit

panelling and plaster work, and fragments of an earlier 15th century building.

Upp Hall is a brick-built mansion dating back to 1600, with a superb tithe barn which housed Cromwell's horse during the Civil War. It is a building of immense architectural distinction.

Dassels, which is close to Braughing, has two very fine Tudor Manor houses, which are half-timbered.

This contains a conservation area.

Brent Pelham

This village, in a remote area, was originally part of a very heavily wooded countryside. A Roman road from Braughing to Great Chesterford ran close to Brent Pelham and Meesden Churches. Roman/British remains have been found and some are still visible at the Hall.

Brent Pelham means Burnt Pelham, thought to be from a fire at the time of Henry I.

The present Church dates from the mid-14th century and there must have been an earlier building as the Bishop of London gave the benefice to the Treasurer of St. Paul's. Remains of importance at the Church are the stocks and the lych gate, the 14th century south door and the tomb of Piers Shonks, who is celebrated in legend. The legend is that he lived at Shonks Moat and killed a dragon and defied another. One of the dragons lived at Barkway, and Barkway used to pay a quit rent for Shonks' service. The devil did not like having his dragons treated like this and swore to have Piers Shonks' soul if he was buried in the Church or outside. On his death bed he was in despair; he took his bow and arrow and said he would be buried where the arrow fell. It went about a mile and stuck in the wall of the Church and there he was buried: neither within nor without.

In 1861 during the restoration of the Church the Tomb was opened to make room for the organ chambers. In it were found the bones of a man who must have been 7 feet tall. Each of the Churchwardens took a knuckle bone. From that moment luck deserted all of them. Just before the tomb was finally closed one put his bone back. The same night the other disappeared. Some swore that if you could look it is back with the other.

Chauncey says Shonks was buried in 1087.

Brent Pelham Hall is an ancient and most attractive house dating from the 14th century. It has since 1865 been the home of the Barclays, and the Puckeridge fox hounds have been there since that time. This Hunt, whose territory includes the proposed airport, dates from about 1725, and one of the more notable Masters was Sampson Hanbury (1826 to 1832) who lived at Poles, near Ware.

Buntingford

This is a small market town, the first reference to which is found in the Pipe Rolls of "21 Edward III" (1348)", when it was granted a market and one fair.

It is situated near the source of the River Rib, which is an old East Anglian word for watercress.

It is of interest to note that Buntingford is so situated that it has no longitude for it is precisely on the meridian of Greenwich. The High Street bears traces of many forms of architecture. It is an old market town and was at one time an important coaching stop.

In the restored 15th century Church just outside is a somewhat ironic motto for our case: "Meddle not with those who are given to change".

The town clock is over 500 years old.

The Church of St. Peter was built in the early 17th century as a Chapel-of-Ease.

This contains a conservation area.

Cottered

This village possesses one of the oldest houses in the County, The Lordship, which is over 500 years old. It still has many of the original doorways and stands in a moated enclosure. In the reign of Edward the Confessor this village formed part of the demesne of the lands of St. Peter of Winchester.

The Church originates from the 14th century.

The Roman road, Stane Street, traverses the Parish, its course marked by Back Lane.

The country surrounding the village is of an agricultural nature, which is still the principal occupation of the residents.

The village is centred around a green.

Trollope's grandfather was the rector here, and the rural character of the community and the rhythm of the countryside has not changed greatly since those days.

This contains a conservation area.

Furneaux Pelham

This village is typical of this area of Hertfordshire.

The Church of St. Mary has a tower containing six bells and is of considerable interest architecturally with its variety of mediaeval detail, particularly the three sedilia, the piscinae in the chancel with its moulded jambs, pointed arch and label and quatrefoiled bowl of the 13th century; a rare Easter sepulchre in the north chancel and an octagonal marble font of the 13th century. The glass is also of outstanding quality for the period. In addition to the architectural interest of this Church there are many interesting tombs and brasses. The clock announces that "Time flies—Mind your Business".

The Hall is a splendid example of Elizabethan architecture with later additions, and stands in a spacious park.

The general atmosphere of this attractive village is old-world.

The Pelhams were granted to the Bishop of London by a Saxon king. He in turn passed it to the Treasurer of St. Paul's Cathedral for the support of the brewery which supplied the clerics with beer: there is still a firm of local brewers in Furneaux Pelham today—Rayment & Company.

The Manor House was in the possession of the de Furneaux family until 1312. The tomb of Simon de Furneaux is in the Church.

The Yew Tree Inn, now called the Chantry House, is of very ancient origin and was the house of the Chantry priest. It was converted to an Inn on the Dissolution.

A tax for the upkeep of the Church was imposed as early as 1252 and in 1294 the parson, Robert de

Printed image digitised by the University of Southampton Library Digitisation Unit

Frayton, subscribed a tenth of his income to support a Crusade.

In addition to the architectural interest of the Church it was used by Pilgrims, for this English village stands on the old Pilgrim Way to the Shrine of Our Lady of Walsingham in Norfolk.

Great and Little Hormead

It is believed that the ancient Church is the oldest in the County and was built by the Danes.

It is understood that the ironwork on the door of the Church is one of the very few remaining examples of 12th century wrought iron work, and is therefore of considerable interest to antiquaries.

These villages are completely rural and have many houses of considerable antiquity.

Hormead Hall is a moated 16th century house and from 1694 it was held by Abraham and Isaac Houblon, leading London merchants, many times mentioned with appreciation by Pepys, and whose brother, Sir John Houblon, was the first Governor of the Bank of England.

Monsignor Hugh Benson, the novelist who died in 1914, lived at Hare Street House in the parish, which in 1957 became the country residence of the Cardinal Archbishop of Westminster.

The most interesting house in the village is possibly Brick House. The present structure dates from 1579 and is fortress-like with Dutch-type gables. It has been beautifully restored by its present owner, but falls in one of the proposed runways of Nuthampstead airport. It is claimed to be unique.

It is interesting to note that this village was placed second in my Society's competition for the best-kept village in the County, the winner on that occasion being Therfield which is also in considerable jeopardy should the airport come.

Almost the whole of Great Hormead is a conservation area.

Meesden

This is an extremely remote village just north of Brent Pelham.

The Church of St. Mary in the village has a 12th century nave, 13th century transept and an early 14th century chancel. The Church is of the greatest architectural interest, and in particular its 14th century green-and-yellow decorated tiles in the chancel are famous.

The population of this village is very small and the people have lived here generation after generation, living "on the land".

These Hertfordshire villages keep themselves to themselves and find their own interests. They contain the kind of people with whom Charles Lamb talked and drank to get the inmost knowledge of their characters, and which progress and increased communications have failed to destroy as they have done elsewhere.

The Roman road runs across the village.

There is a village charity here which was founded under the Will of Edward Young, Dean of Exeter, which was proved in 1663.

Stocking Pelham

The village is a small scattered one, delightfully rural with various thatched and half-timbered cottages dating from the late 16th and 17th century.

The Cock is an attractive thatched inn of considerable antiquity, much frequented on summer evenings and week-ends by visitors from urban areas.

The old Vicarage stood on an early moat site.

The Church has a notable feature in a moat and an early 15th century bell. It stands in open countryside.

Westmill

This has been described as one of the most beautiful villages in Hertfordshire. In fact, there are some who consider it amongst the most beautiful in England. It is ideally situated in a valley, and it is beautifully kept up by its 96 households, 27 of which are scheduled and some of which have been bought by Societies for the express purpose of protection.

Again, this village has a beautiful Church tracing back to Saxon times and where, incidentally, the last English highwayman is buried. The Church is one of only two parish Churches (Reed is the other) which can show the characteristic Saxon "long-and-short" stone quoins at their angles. The bells are of considerable antiquity, one being dated 1350. The chancel seats are carved and are early 16th century.

The population of the village is only 286, but most of the inhabitants have lived here all their lives, as did their forefathers before them. The village is so sited as to be virtually untenable if the airport comes to Nuthampstead.

The village wears an air of remoteness. Within a mile lies Cherry's Green, where Charles Lamb lived in a cottage called Button Snap. This was preserved by the Royal Society of Arts and has now been purchased by the Charles Lamb Society with the intention of converting it into a Lamb Museum.

The village contains Roman relics, but the emphasis is on rural life, practically unchanged over the centuries. The architect, Humphrey Pakington, writing some ten years ago, picked out Westmill as the most beautiful village of its kind in England. He wrote:

> The place has an air of quiet contentment which is altogether delightful. The buildings are set mainly round a small informal green where two roads meet . . . A fine red-brick Georgian house at the top of the slope, the Westmill Stores with its Jane Austen bow window to one side, the village pump, and at the bottom a delightful row of rough-cast and brown-tiled cottages.

It is often said that the English village is the most perfect social unit in the world, and Westmill is frequently quoted as an example of this.

The village is a conservation area.

Wyddial

This village has attractive buildings and a thatched cottage with a Jacobean wall painting.

Wyddial Hall is an 18th century whitewashed mansion resting on an old site.

The Church of St. Giles was built in 1532. It is a perpendicular building and was restored in the 19th century. It contains some notable brasses.

Printed image digitised by the University of Southampton Library Digitisation Unit

With its small population this village shows very little sign of development and is situated in a wonderfully rural corner of Hertfordshire.

Third London Airport—Nuthampstead

I have picked out some of the most interesting features of the villages and settlements with which I am concerned. I have illustrated the value of the buildings, the connections with people who have taken an important place in history and a little of the folk lore which underlies every ancient inhabited settlement. There is much more that could be said and a visit to any of these villages will bring to life at least visually some of the details that I have described; it will add an appreciation of the setting which no words can describe on paper. These villages, however, lie in an area of open and unspoilt countryside which is becoming an increasingly rare feature in the Home Counties. Two of those who have recently attempted an appreciation of the area as a whole have said:

> Only in recent years has Industry formed an appreciable factor in the life of this County. Agriculture still ranks as virtually the largest single occupation, claiming rather more than half the total acreage of Hertfordshire. For this reason, the tiny villages among the fields have, so far, retained their rural characteristics. For the most part, they are unchanged. If Charles Lamb could see them today, perhaps he would be more than surprised to find that though his walks were not so quiet, many of the landmarks and indeed some of the cottages are still there, breathing the quietude that belongs to old age.
>
> That which it has which makes it unique and the others haven't got, is to have preserved the traditional character of rural England so astonishingly unchanged. It is hardly an exaggeration to say that the pattern of land use and habitation established by Anglo-Saxon thegns and Norman overlords still shapes the scene in North-east Hertfordshire, and to me this is the supreme attribute of the area.

The fact that village and countryside together can find a valid place in weighing the various facets of the public interest relevant to a project such as the Third London Airport is illustrated by the conclusions and recommendations of the Inspector who heard the Inquiry into the proposed expansion of the Stevenage New Town in 1965. At that Inquiry my Society put forward an amenity objection relating to the effect that those proposals would have on a large area of North-west Hertfordshire. We claimed that this area was of value in itself and had its role to play in the proper planning of a much wider area, and we attempted, as I am doing today, to specify the aspects of amenity which would be affected.

Paragraph 370 of the Inspector's report reads as follows:

> It must be recognised that if the draft order were to be confirmed in relation to the westward expansion, the area of countryside lying between Luton and the other towns in the Lee Valley and the north Hertfordshire towns would be materially diminished and its character affected. The question is what purpose is this area of countryside likely to serve in the future. It seems unlikely that it can be preserved in precisely the way that the present defenders hope; but if, as one assumes, open country readily accessible to towns has a value to those towns, then this piece of countryside, of distinctive and charming character, would be of particular value, and care should be taken not to impair that value. In my opinion, the proposed expansion would impair its value. It is not a sufficient justification for doing so to say that the area would be spoilt in any event by the expected increase of motor traffic generally.

And in paragraph 388 the Inspector began his recommendations (which were accepted by the Minister) as follows:

> The weightiest objections to the draft order are, first, that an expansion of Stevenage on the west side of the motorway might produce a town lacking in unity, and secondly, that the attractive countryside between Stevenage, Luton and Welwyn Garden City would be adversely affected as a place of recreation by building in the A600 valley.

The distinction and charm of North-east Hertfordshire may wear a slightly different character. I think, however, that its own assets allow me to claim for it the same right to be considered as of importance to the County and to a larger part of the South-east of England. The impact of the airport at Nuthampstead would be this:

(1) In the middle of this expanse of land whose character has remained virtually unchanged for so long there would be placed a major modern airport with all its attendant noise, bustle and interruptions. It can not be that any of the area would retain anything of the character it now possesses.

(2) I attach as Appendix II* a plan, with explanatory comments, showing footpaths and bridleways not shown definitely to exist in this area. Not only those obliterated by the airport itself, but others further afield would, in my opinion, cease to serve any useful function for those who wish to find peace in the countryside.

(3) Of the villages that I have mentioned Anstey and Meesden would be obliterated. Great Hormead would be within the 60 NNI contour, Buntingford and Westmill within the 50–55, while the rest would be affected to a greater or lesser extent by the noise.

(4) Although I have no authority to speak for the Essex branch of the C.P.R.E., it appears to me that similar points could be made about a number of important settlements across the County boundary to the north-east.

(5) Apart from the radical change in the countryside as a whole, the effect on valuable buildings must be considered: I give as Appendix III† lists of these, with introductory comments. Situated as they would be, I fear that there will be less interest

* Available for inspection, by arrangement, at the offices of the Commission.

† p. 780.

Printed image digitised by the University of Southampton Library Digitisation Unit

taken in their care and upkeep, nor can many of these buildings, whether great or small, be adapted to minimise the effects of noise, since their construction often is of timber, lath and plaster, and little soundproofing of structures of this sort is possible.

(6) Although it is probably true that once an Airport is established property in the vicinity will continue to be lived in and the nearby settlements will not therefore be abandoned, there is another effect of such a development which would be felt over a far more extensive area of this countryside. Experience at expanded and new towns shows that by no means all of those whose place of work lies in them are content to live in houses in those towns themselves. Instead, they seek to live in the smaller villages roundabout and the pressure for development becomes very great. If it is accepted that the immediate area round the airport would be radically changed, it is also my view that this alteration would extend its tentacles to produce a different, but I think equally regrettable, change in the appearance and way of life of many villages and hamlets in north-east Hertfordshire, north-west Essex and south Cambridgeshire.

APPENDIX I

The Hertfordshire Society

President:

Major-General Sir George Burns, K.C.V.O., C.B., D.S.O., O.B.E., M.C. (Lord Lieutenant)

Vice-Presidents:

The Marquess of Salisbury, K.G., P.C., D.L.
The Earl of Euston, F.S.A.
The Earl of Verulam, D.L.
The Viscount Cranborne
The Viscount Davidson, P.C., G.C.V.O., C.H., C.B.
The Viscountess Davidson, D.B.E.
The Viscount Knutsford
The Lord Balniel, M.P.
The Rt. Rev. The Lord Bishop of St. Albans
The Lord Aldenham
The Lady Brocket
The Lord Cobbold, P.C.
The Lord Croft
The Lord Lloyd, M.B.E., D.L.
The Lord Netherthorpe, LL.D.
The Rt. Hon. R. Maudling, P.C., M.P.
The Rt. Hon. Sir Derek Walker-Smith, Bt., P.C., Q.C., M.P.
The Rt. Hon. Iain MacLeod, P.C., M.P.
The Hon. Lady Bowes Lyon
Sir William Cooper, Bt.
Sir Thomas Halsey, Bt., D.S.O., D.L.
Sir Humphrey de Trafford, Bt., M.C., D.L.
Admiral Sir Alexander Bingley, G.C.B., O.B.E.
Sir Norman Kipping, G.C.M.G., K.B.E.
Sir John Cockram
Major The Hon. Baron Dimsdale, M.C., D.L.
J. H. Allason, Esq., O.B.E., M.P.
County Alderman C. C. Barker, LL.B., J.P.
Dr. O. Dansie, M.B.B.S.
E. H. Doubleday, Esq., O.B.E., P.P.T.P.I., F.R.I.C.S.
W. M. L. Escombe, Esq., C.B.E., D.S.O.
F. W. Farey-Jones, Esq.
V. H. Goodhew, Esq., M.P.
Peter Hughes, Esq.
H. J. Joel, Esq.
G. J. M. Longden, Esq., M.B.E., M.P.
Brigadier J. A. Longmore, C.B., C.B.E., T.D., D.L.
Mr. R. J. McNeill Love, M.S., F.R.C.S.
Neville Moon, Esq., C.B.E., D.L.
Raphael Tuck, Esq., M.P.
Brigadier J. T. de H. Vaizey, C.E.
Mrs. S. Williams, M.P.

Chairman:

Major The Hon. Baron Dimsdale, M.C., D.L.

Vice-Chairman:

The Earl of Euston, F.S.A.

Honorary Treasurer:

John F. Buxton, Esq., T.D.

Honorary Legal Adviser:

Nigel Longmore, Esq.

Honorary Auditors:

Tansley Witt & Co.

Bankers:

Barclays Bank Limited, Bishop's Stortford

Secretary:

Mrs. Edward J. Tyrrell,
Campden Cottage,
Much Hadham,
Hertfordshire.
Tel.: Much Hadham 2267

Assistant to Secretary:

Miss Carolan Tyrrell

Printed image digitised by the University of Southampton Library Digitisation Unit

Executive Committee:

Major The Hon. Baron Dimsdale, M.C., D.L.
The Earl of Euston, F.S.A.
G. W. Dale, Esq., A.R.I.B.A., A.I.A.S.
Major Peter Pryor
V. Goodhew, Esq., M.P.
Mrs. H. C. Boddington
Simon Bowes Lyon, Esq.
Julian Byng, Esq.
C. P. Hill, Esq., C.B., C.B.E.
Nigel Longmore, Esq. (Herts. Assoc. of Borough & District Councils)
E. F. A. Birtwistle, Esq.
John F. Buxton, Esq., T.D.
G. A. J. Mathers, Esq., A.R.I.B.A.
C. J. K. Fordham, Esq., M.A., F.R.I.C.S., F.L.A.S.
G. Moodey, Esq.
Neville Moon, Esq., C.B.E., D.L.
D. S. R. Overton, Esq. (Hertfordshire County Council)
C. W. Allison, Esq., B.Sc.(Econ.) (Herts. Assoc. of Parish Councils)
E. Mascall, Esq., F.C.C.S. (Herts. Assoc. of R.D. Councils)

Finance & General Purposes Committee:

Major The Hon. Baron Dimsdale, M.C., D.L.
C. P. Hill, Esq., C.B., C.B.E.
John F. Buxton, Esq., T.D.
E. F. A. Birtwistle, Esq.
Mrs. H. C. Boddington

Cases Committee:

Major The Hon. Baron Dimsdale, M.C., D.L.
G. W. Dale, Esq., A.R.I.B.A., A.I.A.S.
Nigel Longmore, Esq.
G. A. J. Mathers, Esq., A.R.I.B.A.
Mrs. H. C. Boddington
G. Moodey, Esq.

APPENDIX II

I have attempted to transfer on to a series of sheets of the Hertfordshire County Council definition footpath map an outline of the boundaries of the airport itself. This outline is derived from the runways marked on the Drawings No. CTLA 2/3 combined with the airport layout (adapted to fit those runways) shown on Drawing No. CTLA 1, both annexed to the Commission's *Site Information for Stage II Local Hearings, Nuthampstead.** This plan† covers only the Hertfordshire section of the airport.

* HMSO; 6s. Reproduced at p. ix.
† Available for inspection, by arrangement, at the offices of the Commission.

APPENDIX III

The Ministry of Housing and Local Government has recently published a booklet called *Protecting our Historic Buildings: a guide to the legislation.* This explains, among other things, the Lists and how they were compiled. I quote from p. 2:

How the buildings are chosen

The principles of selection for these lists were originally drawn up by an expert committee of architects, antiquaries and historians, and are still followed.

All buildings built before 1700 which survive in anything like their original condition are listed.

Most buildings of 1700 to 1840 are listed, though selection is necessary.

Between 1840 and 1914 only buildings of definite quality and character are listed, and the selection is designed to include the principal works of the principal architects.

A start is now being made on listing selected buildings of 1914 to 1939.

In choosing buildings, particular attention is paid to:

Special value within certain types, either for architectural or planning reasons or as illustrating social and economic history (for instance, industrial buildings, railway stations, schools, hospitals, theatres, town halls, markets, exchanges, almshouses, prisons, lock-ups, mills).

Technological innovation or virtuosity (for instance cast iron, prefabrication, or the early use of concrete).

Association with well-known characters or events.

Group value, especially as examples of town planning (for instance squares, terraces or model villages).

I now produce the Statutory and Provisional (or Supplementary) Lists for the parishes to which my evidence refers,* to which I have added in some cases the features which have made the respective buildings notable, together with a few comments. I also produce a summary of numbers of buildings on each list in these parishes.

* Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Listed buildings

Village	*Statutory*	*Provisional*
Anstey	4	20
Aspenden	7	10
Barley	12	45
Barkway	40	45
Buntingford	53	54
Braughing	36	30
Brent Pelham	7	12
Furneaux Pelham	7	21
Stocking Pelham	1	7
Hormead (parish)	25	36
Meesden	2	7
Westmill	22	16
Wyddial	5	5
Cottered	11	12

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Decca Navigator Company Limited*

247 Burlington Road
New Malden
Surrey

22nd May 1969

The Secretary
Commission on the Third London Airport
Templar House
81–87 High Holborn
London WC1

Dear Sir,

We shall be grateful if you will draw the attention of the Commission to the contents of this letter and its attachments.

Our primary concern at the moment is the possible disturbance the choice of the new London Airport at Nuthampstead might have upon the Decca Navigator System. We attach hereto a letter dated 15th April, 1969, we have written to the County Planning Officer of the Hertfordshire County Council which gives the general background to our anxiety in connection with this choice of airport site. We also append hereto in triplicate our Drawings Nos. M 6349/1, M 6350 and D 6351.

Drawing M 6349/1 shows the position of the Master Transmitting Station of the English Decca Chain and the Controlling Monitor receiving station near Barkway to the North, in relation to what we understand to be the proposed runways of the Nuthampstead aerodrome. It will be noted that both our stations are fairly close to runway extensions on the one hand, or are likely to be close to airfield installations such as marker beacons, etc. on the other.

Drawing M 6350 shows the position of all the London aerodromes relative to the stations of this English Chain, the principal coverage area of which is indicated by the heavy contour on this map. It will be seen that Nuthampstead falls closer to one of our stations than any other of the sites.

Drawing D 6351 shows terrain cross-sections between the main transmitting mast at Puckeridge and the nearer ends of the Eastern and Southern runways proposed for Nuthampstead. From this we feel the Commission will be able to decide whether the top of the mast, rising to nearly 700 ft above sea-level and some 300 ft to 400 ft above the general level of the land between it and the ends of the runways, will be regarded by the airport authorities as an obstruction risk to aircraft taking off and landing.

We shall be pleased to give the Commission any other information in our possession which it may need to assess the implications of the juxtaposition of the Decca Station to the Nuthampstead airport site.

We should like to conclude this first submission on this subject by emphasising the point we have made to the County Planning Officer, that were it to be necessary to move the Decca Station (and we cannot at present judge whether it would be necessary or not) this could be a costly operation, and would anyway require considerable preparation with new charts and computed co-ordinates issued to the many thousands of the System's users before the new Master Station comes on to the air, which must take place at the same instant as the old station closes down in order to maintain continuity of service. If, however, the Puckeridge Station does not have to be shifted, we may be concerned with airport installations such as power lines, communications systems, marker beacons, etc.

With compliments,

Yours faithfully,

THE DECCA NAVIGATOR COMPANY LIMITED

H. G. HAWKER

Director

---

* See also p. 897.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Decca Navigator Company Limited

247 Burlington Road
New Malden
Surrey

15th April, 1969

The County Planning Officer
Hertfordshire County Council
County Planning Department
County Hall, Hertford, Herts.

Dear Sir,

Thank you for your letter ADR/SS167.01/8 of the 1st April, 1969, about the effect of the possible London Airport site at Nuthampstead on the Puckeridge aerial mast.

Puckeridge is the master station of the South-eastern British Decca chain. This chain is operated by this Company under the auspices of the Board of Trade. It works in conjunction with slave transmitting stations at Shotesham, near Norwich, Wormleighton, near Banbury and East Hoathley, near Lewes, and provides marine and air navigational cover over the South-east of England, the Southern half of the North Sea, the Straits of Dover and the English Channel. This is the main marine radio navigation system used by several thousand ships; it is also used by a large number of aircraft. Any interruption to the chain's transmissions would have serious effects on all these activities. The precise nature of these effects would require elaboration in considerable detail and would certainly require comment by the Ministry of Defence (Royal Navy) and the Board of Trade.

A very preliminary examination indicates that the mast probably would not quite infringe the standard obstacle clearance limits of the new airport; nevertheless we think it is likely on general aviation safety grounds, that there would be strong pressure for this mast to be moved from its present position. Moreover, from this Company's point of view (which we believe would be endorsed by the Ministry of Defence and the Board of Trade) the risk of destruction of the mast as a result of an aircraft accident would be materially increased. Such an event would involve the chain being off the air for a long time which would be quite unacceptable, to all concerned.

If the station were to be moved, it would be necessary to prepare its replacement (and perhaps the re-orientation of at least one of its slave stations to maintain good geometry of the chain) in its new position well in advance of the close down of Puckeridge so that continuity of service would be ensured. The present day costs of building a transmitting station of this nature are estimated to be approximately £250,000. This is exclusive of the costs of new charting and related matters.

Any change on the position of the chain stations would necessitate the scrapping and re-issuing of many thousands of Admiralty charts and aviation charts. This would involve an extensive recompution and re-printing programme that would be both lengthy and costly. The individual owners of these charts might expect a free issue of replacements.

The activities of the fishing industry in the waters referred to above are largely based on Decca and this involves the meticulous build-up over many years of positional information in Decca co-ordinates of wrecks, foul ground and good fishing areas; it is no exaggeration to say that a trawler skipper's book of Decca co-ordinates is one of his most valued possessions. To translate these positions, which exist in their thousands, to the co-ordinates of a revised chain is a major computer exercise and one which involves a significant loss of accuracy. It is certain that there will be major resistance from the fishing industry to any change in the geometry of this chain. There is a similar dependence on this chain of a number of survey-type activities within its coverage.

To sum up,

(a) It seems unlikely that the mast could remain if the airport scheme goes ahead at Nuthampstead. To move the station will involve re-providing it in advance at a cost of some £250,000; it might also be necessary to move one or more of the slaves at a similar cost.

(b) A large volume of charts will have to be scrapped and re-provided. This will be a lengthy and complex experience. Users would expect a free issue of new charts.

(c) The fishing industry would object to any change to the existing chain because of loss of accuracy in their accumulated lists of Decca position. The computation of these co-ordinates of a new chain would be a laborious and costly exercise, and would still risk some loss of accuracy.

The Ministry of Defence (Royal Navy) and the Board of Trade would wish to be consulted on any changes to the existing chain.

Meanwhile, we have applied to the Roskill Commission to be directly represented at the appropriate stage of their enquiry.

With compliments,
Yours faithfully,
H. G. Hawker

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mrs. Shirley Williams, M.P.*

Introduction

I would like to thank the Roskill Commission for allowing me to submit personal evidence to the Inquiry into the possibility of a site for the third London Airport at Nuthampstead, Hertfordshire, on the north-east border of my constituency.

I have approached all the local authorities in my constituency, Stevenage Urban District Council, Hitchin Urban District Council, Letchworth Urban District Council, Baldock Urban District Council, Royston Urban District Council and Hitchin Rural District Council, to inquire what is their view of a third London Airport at Nuthampstead. All of them are opposed to the proposal. I set out below some of the reasons for this local opposition in north Hertfordshire.

Planning issues

The Committee has said that it will pay particular attention to general planning issues, such as population, employment, probable future growth, noise, amenity, effect on agriculture and on existing property. I would like to make a few remarks under each of these headings.

Planning

The first report of the South-East Economic Planning Council, *A Strategy for the South East* (HMSO, 1967), indicated the development of a major sector along the line of the main electrified railways to the Midlands and the M1, including some areas east of this towards Bedford, and as far as the A6 trunk road from London (para. 41). It went on to say:

> It will be necessary to guard against coalescence with another study area, the Hitchin and south-east Bedfordshire area . . .

It continued:

> The area of the north-east Hertfordshire new towns, (Hatfield/Welwyn/Stevenage) has been subject to some of the greatest pressures in the whole region since 1950, and any proposal for expansion here would have to be very carefully looked at: but just to the north, the Hitchin/south-east Bedfordshire area shall be studied as a possible growth area. It is important that the countryside be preserved between the areas of urban growth in the major and minor sectors.

In the next paragraph, the Report says:

> Between the A1 to the north of London and A12 to the north-east, a very wide sector would be preserved as open countryside, except in the vicinity of the airport at Stansted.

It is in this very area, between the A1 and A12, that Nuthampstead is situated.

Population

In its publication entitled *Site Information for Stage 2 Local Hearings** the Commission points out that a large international airport is bound to create an inward movement of population. The Commission then goes on to estimate that primary employment generated by a two runway airport would be 45,000, and by a four-runway airport, 65,000. This would imply, on the assumption of an average family size of 3·5 members (ref: Min. of Hg. & L.G.) that from 150,000 to 225,000 additional residents would have to be housed within 20 to 30 miles of the airport, and have the other essential services such as schools, hospitals, and health services provided for them. The Commission points out that the build-up of population generated by the airport would take place (for two runways) up to the mid-1980s, and (for four runways) to the mid-1990s.

The Commission will be aware that Hertfordshire has sustained one of the largest proportional expansions of population since the war of any County in Britain. It contains four new towns (Welwyn Garden City, Hatfield, Hemel Hempstead and Stevenage) as well as other fast expanding towns, such as Letchworth, which is an Expanding Town under the Town Development Act by agreement with the Greater London Council. The expansion of population as a result of movement from outside the County—mainly from London—still continues, quite apart from the high rates of natural growth owing to the well-known tendency for birth rates to be high in New Towns during the stages of rapid expansion.

May I list the estimated population figures and population projections for the main towns of my constituency, all of which are within 20 miles of the proposed new airport at Nuthampstead. I have restricted myself to relatively firm projections, based on plans already made and approved. The Commission will note that the figures would obviously increase again by the mid-1980s, when it is estimated that primary employment for a two-runway airport would be approaching its full complement.

	1969	*1970*	*1975*	*1980*
Stevenage	62,000	68,000	80,000	85,000
Letchworth	29,000		37,500*	42,500†
Hitchin	26,920		30,000	32,000
Baldock	6,750		9,160*	10,000†
Royston	7,300	15,000*	17,000	19,000
Rural District	24,240		30,000	32,500

*1973 estimate. †1981 estimate.

The Commission will note that the estimated total population of my constituency, North Hertfordshire, alone, is 221,000 in 1980/81, an increase of 42 per cent over the 1969 figure. I suspect—though I cannot prove—that this is one of the highest rates of growth of any area within 50 miles of London. I hope that the Com-

* See also p. 899.

* (HMSO; 6s.). Reproduced at p. ix.

Printed image digitised by the University of Southampton Library Digitisation Unit

mission will consider *not only relative size of population as based on the 1966 Census* (which bears out how very much larger the population likely to be affected by the airport is in the Nuthampstead case than in the other two cases on which information has so far been given) but also *the relative rates of growth of population in the next ten to fifteen years*, the period in which the airport itself will be developed.

Summary:

I would suggest to the Commission that pressure arising from existing population growth in north Hertfordshire is so severe—on land, on school-building, on health and welfare services, on proper planning of amenities and rural areas—that an additional population of up to 200,000 could only be absorbed with the greatest difficulty. Hertfordshire has already absorbed tens of thousands of Londoners as a result of the New Towns policy, and rightly so, in my opinion. A third London Airport might well mean intolerable congestion, and the end of the whole enlightened policy of creating New Towns as self-contained communities within a rural and unspoiled setting.

Employment:

This argument would, of course, be weak if there was a great deal of surplus manpower to be absorbed into employment. If the local area around the airport could meet some of the additional demand for jobs generated by it, the need to bring new workers—and new families—into the area would be correspondingly reduced.

Far from being an area of job scarcity, north Hertfordshire has consistently had an unemployment percentage well below the national average, and which has, in the last ten years, rarely approached even half the national level. I have confirmed the latest figures (May 12th) for unemployment in north Hertfordshire. They are:

Letchworth area (also covers Baldock)	94 men	14 women
Hitchin area	155 „	31 „
Stevenage area	284 „	51 „
Royston area	61 „	25 „
This gives an average of	1%	
National average:	2·3%	
South East average:	1·4%	

In a recent P.E.P. Broadsheet, *London's New Towns* (P.E.P., April 1969), Ray Thomas points out that Stevenage has a ratio of employment to residents in employment of 112 in 1966—the highest of all New Towns except Bracknell and Welwyn Garden City. He says that Stevenage, like Crawley and Welwyn Garden City "have continued as employment centres" (p. 396).

Nor is this the whole of the story. North Hertfordshire is an area of rapidly growing firms, many of them started since the war, and with a high proportion of science-based, advanced technological industry. The largest employer in Stevenage is the British Aircraft Corporation (Guided Missiles Division); another of our largest employers is International Computers Limited, based at Letchworth and Stevenage. Other substantial companies with local plants are Borg-Warner (motor transmissions), Bowaters, Kodaks, and Hawker-Siddeley Dynamics Ltd. A number of these firms are recruiting workers at the present time for their rapidly expanding businesses. One of the main difficulties local employers have to contend with is a shortage of skilled and semi-skilled men and women,* and a relatively high rate of turnover in consequence. Much of their output is exported.

Summary:

The third London Airport will generate 45,000, rising to 65,000 jobs, apart from secondary employment. Its impact on an area of full employment, with fast-growing firms, might be to curtail their growth, owing to severe problems of recruitment. The export potential of these firms is very considerable. On employment grounds, the third London Airport should go to an area of very high demand for workers.

Noise

In the Commission's *Site Information for Stage 2 Local Hearings: Nuthampstead*, the Commission estimates the population likely to be affected by intrusive noise as 18,500 for a two-runway airport, and 51,500 for a four-runway airport, based on the 1966 census figures. The figures do, of course, very much understate the number of people who will be affected by the time the airport is constructed in the late 1970s or early 1980s, as pointed out above. So rapid has been the growth of population in north Hertfordshire that the 1966 Ordnance Survey maps showing the noise and number index for a four-runway airport at Nuthampstead, show both Shephall and Broadwater as villages separated from Stevenage by open country. In fact, both are now neighbourhoods of Stevenage.

The map also suggests that Stevenage is considerably smaller than either Letchworth or Hitchin; it is in fact twice as large. Anyone relying on the map might be forgiven for thinking that the area covered is only lightly populated, with a few small towns. I appreciate that the Commission itself has pointed out that the maps do not show the most recent developments.

The noise and number index contours show that the 40–45 NNI line takes in the greater part of Stevenage, the eastern edges of Baldock, Buntingford and a large part of Saffron Walden. I have indicated before how quickly the populations of Stevenage, and proportionately of Baldock, are expected to grow. Stevenage is planned to reach a population of 105,000 by the mid or late 1980s.

Summary:

I would, therefore, respectfully submit to the Commission that a population approaching twice the size of the figure quoted in *Site Information for Stage 2 Hearings: Nuthampstead* is likely to be within the 40 NNI contour line by the mid-1980s, the date most germane to consideration of the effect of disturbance from air traffic using the third London Airport. I note, as the Commission says, that the preferred runway alignment is 50 degrees east of north, as shown on the NNI contour plans CTLA/2/2† and CTLA/2/3,† and differs from CTLA/5† (*Short List Sites*). In the introduction to its document on Short List sites, the Com-

---

* There has been some temporary unemployment in the building trades which is likely to be absorbed in the further expansion of Stevenage—it amounts at the present time to under a hundred men.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

mission explained that Stansted had not been included on the short list, while Nuthampstead had been so included, because, "In the Commission's view, of the possible sites in that area, Nuthampstead offers most advantage over Stansted, *particularly in respect of noise* and of air traffic control compatibility with Heathrow" (my italics). In its subsequent document on Site Information for Nuthampstead, the Commission says, of the altered alignment of runways, "This preferred alignment provides a better balance of the following important factors: noise disturbance, existing facilities and amenities, air traffic to other civil airports, air traffic patterns, military aviation, meterological conditions and terrain."

While I would not wish to question the Commission's judgement of the *balance* of factors, I would suggest that the new preferred alignment, engulfing a large part of Stevenage within the 40 NNI contour, does appear to make the *single* factor of noise disturbance (in terms of the number of people subjected to intrusive noise) very much more serious. The same is true of the next highest, 45 NNI contour, showing the intrusive/annoying noise disturbance area, which on the new alignment appears to affect about a quarter of the expanded Stevenage area. I might add, in relation to noise disturbance, that children and elderly people may be particularly upset by loud noise. Stevenage, like other growing New Towns, has a higher proportion of young people under 18 than the average for the south-east as a whole, and this pattern is likely to take some time to disappear because of the current peak levels of first marriages—the consequence of the high proportion of small children in the neighbourhoods developed in the 1950s.

Amenity and effect on agriculture

The Commission will be hearing expert advice on these matters, and I will not attempt to repeat what will be better said by others. Suffice it to say that the land in and around Nuthampstead is of high arable quality, and that as well as good grain-growing soils, it contains several small areas of considerable natural beauty. I would restrain any subjective comments to a single opinion that the villages of north and north-east Hertfordshire are perhaps the most charming within so close a radius of London, contain many fine and attractive buildings and groups of buildings, and have been effectively protected from spoliation by the County's determined and sensible planning policies. I do not by any means always see eye to eye with County Hall, but in this respect they have managed to preserve much of Hertfordshire's heritage despite the pressures of population movement and population growth.

I would like to draw the Commission's attention to one factor of some significance, though the old-fashioned might not think of it as an amenity. Perhaps it comes more fittingly under the definition of existing property. Cambridge University maintains, and is expanding, one of the world's outstanding scientific projects, the radio-astronomy complex at Lord's Bridge, south Cambridgeshire. The radiotelescopes at present installed there cost some £2½ millions, and the University intends to build further installations. The site was, I believe, chosen because it was free of electrical interference. The effect a third London Airport would have on this project, in which Britain can claim to lead the world, would be, I should imagine, disastrous; though, again, other and much more qualified witnesses will be able to give details on the matter.

Finally, may I raise one issue the Commission does not list among its subjects of particular concern. This is the social infrastructure on which a new town, or a major expansion of existing towns, would have to rest. North Hertfordshire, largely developed since the war, is fortunate in having a largely modern social infrastructure—new schools, new roads, new residential homes for the old and the handicapped. But just *because* the infrastructure is modern, and has been planned for an estimated population given in my figures above, it is in some ways harder to reconstruct, to build anew, on the basis of entirely recast population estimates. A substantial—indeed massive—inrush of population can be a boon to an area with an obsolete infrastructure. It has been, in this sense, a boon to the parents and children who were original residents of towns such as Stevenage and Letchworth. But to an area with a modern infrastructure, further massive expansion involves either scrapping relatively new buildings, or else just planning piecemeal for haphazard extensions. The best example is the new hospital, now being built at Cory's Mill, Stevenage, which will not be large enough to deal on its own with all the hospital cases in the district even when it is completed. The effect of a further expansion of population, at least until such time as another new hospital were to be constructed, would create a critical situation.

On these grounds, and others to be raised by other witnesses, I would suggest to the Commission that Nuthampstead would be a peculiarly unsuitable site for a third London Airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

Day 4

Professor Sir Leslie Martin
Professor Sir Martin Ryle
Mr. W. A. Allen
(*Cambridge University*)

Dr. A. W. F. Edwards
(*Cambridge University Gliding Club*)

College of Aeronautics Gliding Club

Premier Travel Ltd.

Mr. R. A. Adams
Mr. R. Dreschfield
Mr. P. W. Macfarlane
(*Council for the Preservation of Rural England*)

Nature Conservancy

Mr. G. Berry
(*Stevenage Development Corporation*)

Oral evidence was taken from these witnesses on
Day Four, Tuesday 17 June 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Professor Sir Leslie Martin

I am Professor of Architecture in the University of Cambridge, and I wish to submit for consideration at the Nuthampstead enquiry the following written evidence.

1. There seems to be some general agreement that a major international airport will carry with it a working population of from 40,000 to 65,000 people who must be accommodated reasonably near the airport. These along with their dependents, could produce an increased population of over 100,000. There is plenty of evidence from the U.S.A. to show that several types of industry find the vicinity of a major airport desirable. Hotels, offices garaging will group themselves in the area.

2. A major international airport will in fact make certain the development of a major new town of perhaps 200,000 to 250,000 or more. This will then in turn affect the road and transport systems by which it is served.

3. What is being proposed at Nuthampstead, or on any other proposed site, is not just an airport but a major residential and industrial expansion which cannot be isolated from the general problem of the future development of south-east England.

4. I will leave for more expert evidence the whole question of the effect of the siting of an airport at Nuthampstead on Cambridge and the Cambridge area. In passing however, I wish to make three points.

(a) In connection with noise I would like to say that no major town, least of all Cambridge with so much oral instruction and so many sensitive research instruments, should be subjected to the noise hazards within range of a major airfield, and that with increasing supersonic flights and air movement there is a major obligation to look for a site where nuisance can be minimised to the greatest extent.

(b) I agree with the evidence to be given that a new development of this magnitude in the Nuthampstead area might put pressure on the development of Cambridge in the immediate future which may in the long run be seen to be redundant as the airport generates its own new town. I think that this argument is valid and that it has serious implications.

(c) I think that there can be no doubt that landscape and villages in what remains largely a pleasant rural area will be changed and that that change will be extensive.

5. All these arguments are in my view legitimate and worthy of the most careful consideration. But the principal weight of argument must rest on the fact that any proposal of this kind represents a major redistribution of population and industry and it cannot be isolated from the more general planning issues in this part of England.

6. So far as Nuthampstead is concerned we have the evidence of the South-East Economic Council who in their *Strategy for the South-East** (para. 37 p. 10) stated that there were strong objections on planning grounds to any airport at Stansted. The objections must be equally strong at Nuthampstead which is only 10 miles away.

7. The South-East Economic Council are in my view right when they say that the implications require major planning studies. A new airport site for London must be related to a considered plan for a region: and so far as Nuthampstead is concerned that does not exist.

8. The remainder of my statement may be considered outside the terms of reference of this local enquiry but I consider it important that the points should be made. They are:

(a) An airfield on the sea coast must offer enormous safeguards in relation to the increasing noise levels and volume of traffic which must be associated with a major international airport.

(b) Evidence will without doubt be given elsewhere that there is one site, the Maplin Sands Site (Foulness) within 50 miles of London which meets this primary requirement. Nuthampstead is 36 miles from London.

(c) In contrast to the South-East Economic Council's objection to the Stansted–Nuthampstead area, we have evidence of their positive support for an increase of population in the area of Essex that might be associated with an airport at Foulness.

(d) There is some argument in favour of associating an airport with a new Port development. Something of this kind in south-east Essex would attract population and industry into an area where little chance of development exists and where there is ample space for it.

(e) The siting of a new airport and all its attendant and related facilities might form a major contribution to the problems of planning in south-east England. It would certainly provide an opportunity for this country to demonstrate that the technical and social problems involved can be tackled with some forethought for future developments and without damage to areas and amenities which once destroyed cannot be replaced.

---

* HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Professor Sir Martin Ryle*

I am Professor of Radio Astronomy and Director of the Radio Astronomy Observatory at Lord's Bridge, which is owned and operated by the University of Cambridge. In 1945 I started the research in radio astronomy at Cambridge and have been concerned with its development here ever since. From 1939–45 I was concerned with the design of radar equipment for the R.A.F. and with the operation of radar, radio-navigation and communication systems.

1. The aims of radio astronomy and its importance in Britain

1.1. Astronomy is both an exploration of the Universe and an extension of our physics laboratories by providing conditions which we cannot reproduce on earth. During the last few years some of the most important discoveries in the whole field of scientific research have been made in astronomy and many of these have been due to observations made with radio telescopes.

A radio telescope comprises a large aerial system connected to a very sensitive receiver, and it is used to detect, and measure the weak radio signals of natural origin. The measurements may be used to obtain more information about bodies which are already known (such as the Sun and Moon) or to locate hitherto unknown sources in the Universe and to ascertain their nature.

Our radio telescopes at Lord's Bridge have been used in a very wide range of investigations and perhaps I may mention some of the more important aspects of radio astronomy which we have pursued, and some of the practical benefits of radio astronomical research.

1.2. The study of the atmosphere and surface conditions of the Moon have direct relevance to space exploration. Cambridge observations provided information on the nature of the lunar surface and the first definite evidence on the lunar atmosphere long before the first lunar landings. The extension of such observations to the atmosphere of the planets may prove equally important. Again, our knowledge of the interplanetary gas probably owes as much to radio observations made from the surface of the earth as it does to space probes.

1.3. In the discovery and investigation of sources within our own Milky Way system, particularly those resulting from supernovae (or exploding stars), radio telescopes can provide us with information on problems of importance to fundamental physics. In these sources processes occur which cannot be reproduced by even the most advanced man-made machines. For instance, the containment of high energy particles (the great problem in utilising thermo-nuclear energy) seems to be achieved in these natural sources. Radio astronomical techniques offer the possibility of understanding the physical processes involved.

1.4. Radio astronomical observations led to the discovery of quasars in 1962 and their existence has posed a problem for the scientific world which still remains unsolved. Quasars, the nearest of which is 1,500 million light years distant, are compact bodies which give out huge amounts of energy in the radio and optical spectrum so that they are conspicuous objects even at such great distances. The very large amounts of energy involved are so great that the well understood nuclear processes may not be adequate to account for them. The study of these objects is one of our main programmes of work.

1.5. Pulsars were discovered at the Radio Astronomy Observatory at Cambridge in November 1967. The interest and activity which the discovery aroused throughout the world has now confirmed the original suggestion that they are neutron stars. These are stars reaching the endpoint of their evolution and having densities so large that a teaspoonful would weigh 10 million tons. The possibility of investigating matter at such densities, far beyond those achievable on Earth, is of great importance for physical theory.

1.6. The most powerful radio telescopes can detect objects many times more distant than can be seen with the largest optical telescopes. The interest of such observations lies in the fact that the radiation from a very distant source has taken so long to reach us that we see that part of the universe as it was at an early stage in its development. We can in effect look back in time for some thousands of millions of years. The Cambridge One-mile radio telescope, which can reach further than any other instrument in the world, can explore the history of the universe back to a time when it was perhaps only one-tenth of its present age.

1.7. On the engineering side, many developments of radio telescopes and low-noise amplifiers have been taken over for satellite communications systems. The automatic control of the most modern radio telescopes and the methods of automatic data handling are similar to the advanced methods which may find application in such fields as automatic machine-tool control.

1.8. Perhaps the most important practical contribution our work makes to the national scene is the training of scientists—not only for supplying the ever-increasing needs in the fields of space research and space communication, but in the many fields of electronics, automation and automatic computing where this country stands in urgent need. For example, five of our past students are now working in the Marconi Company Ltd. and are mainly concerned with communication satellite ground stations.

* See also p. 909.

Printed image digitised by the University of Southampton Library Digitisation Unit

1.9. The Science Research Council has shown its appreciation of the importance of astronomy for the nation by giving it especial support in Britain over the last few years. In optical astronomy the 98-inch Isaac Newton Telescope and the planned 150-inch Anglo Australian telescope are conspicuous results of this policy. In radio astronomy the continuing support for the observatories at Cambridge and at Jodrell Bank and the plans for large new radio telescopes at these observatories has allowed the growth of teams which have produced results of a quantity and importance greater than that of any other country including the U.S.A. and Russia. There are few fields today where this can be said.

I append to this Statement a document marked M.R.1.* and entitled "Note by the Science Research Council on support of Radio Astronomy" which was prepared by Mr. J. F. Hosie of the Council. I also append the following:

(i) Report of the Committee appointed by the Lord President of the Council under the chairmanship of Lord Fleck 1961–1964 on Radio Astronomy (marked M.R.2)†
(ii) Report of the Science Research Council for the year 1967–68 (marked M.R.3)‡ and I direct the Commission's attention to page 11 thereof, and
(iii) Document entitled *Astronomy, Space and Radio Board's Review* marked M.R.4.§

2. The radio astronomy observatory at Cambridge and its development.

2.1. *The development of radio astronomy in Cambridge*

The first radio astronomical observations at Cambridge were made in 1946 on a site on the western outskirts of the city. Expansion of the work led to the construction in 1953 of the world's first radio telescope over an acre in size. In 1956, because of the rising levels of interference, the observatory was moved to the present site at Lord's Bridge and a number of large telescopes have been constructed there. The most powerful of them, the One-mile Radio Telescope, was completed in 1964 with a grant of £550,000 from the Science Research Council. The total capital investment in the Observatory is about £900,000. In February 1969 the Science Research Council announced a grant of £2·1 million for the construction of a yet more powerful telescope on the Lord's Bridge site. Survey work on the site is already in progress and civil engineering work is due to begin on 2nd June 1969.

2.2. *The total staff of the Observatory* now numbers 69 of whom 14 are University Teaching and Technical Officers, 5 are senior research workers and 19 are research students.

2.3. *The important advances in radio astronomy made at Cambridge* have included:

(a) The first measurement of accurate positions of the brightest radio sources leading to their identification with optical objects.
(b) The first maps of the distribution of radio emission over the Sun.
(c) The first radio telescope having a collecting area of over 1 acre. With this telescope a survey of the radio sources in the whole of the northern sky was undertaken which is still the standard reference list throughout the world.
(d) Discovery of the scattering of radio waves by the outer atmosphere of the Sun and also by the gas in interplanetary space.
(e) Discovery of the excess numbers of faint radio sources which gave the first positive evidence in favour of the evolutionary cosmological theories.
(f) The first detailed mapping of the structure of radio sources.
(g) The detection of the faintest radio sources some 100 times weaker than those detected at any other observatory.
(h) The discovery of pulsars.

These astronomical advances have resulted from the development of new observational techniques particularly in the design and construction of radio telescopes employing the principles of interferometry, aerial synthesis using moveable telescopes and aerial synthesis using the rotation of the Earth. The telescopes now in use at Lord's Bridge enable radio maps to be made of weak sources with much higher resolution of detail than has been attained elsewhere and are able to detect sources much weaker than those detected at any other observatory.

The special techniques used to achieve these results involve observations lasting for periods up to four months and can be affected by levels of interference lower than those acceptable for the telescopes at Jodrell Bank.

The important position in radio astronomy that Cambridge now holds internationally has been made possible not only through the development of ideas and their realisation in engineering terms but also to an important degree by the acquiring of a good observatory site and the protection of the radio telescopes from radio and electrical interference.

3. The siting of a radio astronomy observatory

The requirements for the site of a radio astronomy observatory for the large radio telescopes now in use and under development are:

3.1. *Proximity to the University.* Many of the staff are University teaching officers who have obligations for undergraduate teaching, which necessarily takes place in the University, and also for postgraduate teaching. The research students must be able to attend lecture courses given in the University. To make these requirements compatible with the observational work in radio astronomy, the observatory must be sited within 50 miles of Cambridge.

3.2. *Large flat site.* To allow the construction of large telescopes without introducing major earth moving problems the variations in level must not be more than about 10-ft.

---

* p. 796.
† HMSO; 4s. 6d.
‡ HMSO; 7s. 6d.
§ Available from the Science Research Council.

Printed image digitised by the University of Southampton Library Digitisation Unit

3.3. *Stable subsoil*—so that construction of telescope foundations without settlement of more than $\frac{1}{16}$ inch may be economically feasible.

3.4. *Freedom from man-made interference.* The observations are not easy; the signals are extremely weak (equivalent for instance to those that would be received from a transmitter situated on the moon with a power of 1/1000 of a watt (one millionth of the power of a normal ship's transmitter).

The importance of radio astronomy is recognised internationally by the International Telecommunications Union which allocates frequency bands specifically for use in radio astronomy. In this country the G.P.O. has the responsibility for keeping these frequencies clear from radio interference from harmonic and other spurious radiation which may be unintentionally radiated from radio transmitters and radio frequency heating apparatus and also from electrical interference which can be generated by electrical machinery of many kinds. This responsibility involves careful arrangement of the frequencies allocated to transmitters in the neighbourhood of the Observatory. The distance at which any particular equipment may produce serious inference depends very much on the type of equipment being used. But from a consideration of the number and power of different sources of interference we concluded that a satisfactory site should have the following qualifications:

(a) It should be at least 15 miles from large centres of industrial activity. It will, of course, be appreciated that Lord's Bridge is only 5 miles from Cambridge. Serious radio interference has been experienced at the Observatory due to equipment in Cambridge on a number of occasions but the problems of identification and control of the interfering sources are not insuperable because of the small degree of industrial activity in Cambridge.
(b) It should be 10 miles from very high voltage electric grid lines and 5 miles from electric railways.
(c) It should include natural screening arising from local topography if possible.
(d) It should be in an area having no local industrial activity and little expected increase in residential development in the neighbouring villages.
(e) It should be at least 1 mile from a major road carrying heavy traffic.

4. Choice of the Lord's Bridge site

4.1. *The original observatory site* on the western outskirts of Cambridge, which had been used from 1946, was by 1955 no longer suitable for the most accurate observational work due both to the increased electrical interference levels from domestic and industrial apparatus in Cambridge and to the increased sensitivity of the receivers. Serious interference had been experienced from electrical machinery and fluorescent lighting in the immediate vicinity of the telescopes and also from radio frequency glueing machinery and other radio frequency installations at greater distances. For the construction of the large new telescope proposed at that time, a new observatory site was essential.

4.2. *The choice of the Lord's Bridge site* was the result of an investigation of 3,000 square miles of East Anglia and included detailed investigation of many disused airfields, areas of heathland and other poor farmland. Of the many sites considered only two fulfilled the conditions laid down in section 3 above. The first was situated in the Breckland close to Thetford. The physical attributes of the site were ideal and there was at that time little industrial activity in Thetford, although this activity has now greatly increased. The sole disadvantage of this site at the time was the likelihood of interference from radio transmissions associated with military activity in the area. In particular, the proximity of the air bases at Lakenheath and Mildenhall and the associated problems of the radio interference from ground based and airborne equipment made this site unacceptable.

The second alternative was the Lord's Bridge site. It lies about 5 miles S.W. of Cambridge, covers 200 acres and is level to within 10-ft. The land is agriculturally poor and provides stable foundations. The original survey showed that Lord's Bridge had at this time effectively no industrial activity in its neighbourhood and lay within the scheduled Green Belt area; it also enjoyed the screen of the Barrington Hills for sources to the south. In order to define the problem of protecting the radio observatory we prepared documents for the County Planning Officer specifying the types of development which would be harmful to our work. Most of these requirements did not appear to conflict with the development. planned for the area. For instance (a) the installation of transmitters within 10 miles only occurs after consultation with the G.P.O. who are well aware of the problems involved, (b) the siting of a new dense center of population within 5 miles of the observatory was regarded as a serious hazard but no such development was planned (c) major growths of the villages within about 2 miles could likewise cause difficulties but in the county plan all these villages have defined envelopes, (d) the distance from Cambridge was sufficient for no serious interference to be anticipated from most industrial activities. In particular the small scale activities of Cambridge airport were not expected to cause interference and have not done so. The only interference experienced from Cambridge has been from industrial users employing radio frequency equipment which can cause serious interference at distances of several miles.

4.3. Our experience over the last 12 years has shown that the Lord's Bridge site is an excellent one. The freedom from interference has been maintained throughout this period by diligent application of the methods of obtaining protection from interference outlined in section 5. The only very serious sources of interference have been due to radio frequency equipment in Cambridge and to unauthorised transmissions from aircraft.

4.4. *Long-term plans for radio astronomy in Cambridge.* The Radio Astronomy Planning Committee under the Chairmanship of Lord Fleck investigated the future of radio astronomy in Great Britain and in their Report published in 1965* recommended that

* HMSO; 4s. 6d.

Printed image digitised by the University of Southampton Library Digitisation Unit

work in this subject should be concentrated at the Universities of Cambridge and Manchester and that, if funds were available, further large telescopes should be built at each of these Universities.

With these recommendations in view, further consideration was given at this time to the long term protection from electrical interference of the observatory at Lord's Bridge and to the alternative of a search for a site which could be guaranteed long term protection. An Inter-Departmental Working Party set up by the Ministry of Housing and Local Government after discussions with the staff of the observatory presented the results of their investigation of the overall problem in a *Report on the protection of Lord's Bridge Radio Astronomy Observatory against radio and electrical interference* (August 1968). A preliminary search made for an alternative site did not reveal any areas which had specific advantages over that at Lord's Bridge. It was concluded that if the existing methods for protection of the observatory from electrical interference were fully used the continuance of radio astronomy on the existing site would be the best solution.

In 1967 a proposal was put to the Science Research Council for the construction of a 5 km radio telescope at Cambridge, being a development of the principles used so successfully in the existing One-mile radio telescope. In February 1969 the Science Research Council announced the award of a grant for £2·1 million for the construction of this telescope at Cambridge and the instrument is now under construction at Lord's Bridge.

5. The protection of the radio telescopes from electrical interference

5.1. *The design of the telescopes.* Considerable care is taken in the design of the instrument to reduce their sensitivity to man-made radiation. In the One-mile radio telescope the sensitivity to interference is about one millionth of that to celestial sources. It is unlikely that this figure can be improved significantly.

5.2. *Siting of radio transmitters.* In this country the G.P.O. has the responsibility for licensing transmitters, allocating frequencies for their use and for ensuring that these transmissions do not interfere with other services. The G.P.O. has co-operated closely with the radio astronomy observatory in choosing the frequencies and siting of such transmitters so that no interference with the observations should occur. A large increase in the number of transmitters required in the area of the observatory would make the problem of suitable allocation of frequencies much more difficult and perhaps impossible.

5.3. *The Wireless Telegraphy Act.* The provisions of this Act specify the maximum harmonic and spurious radiation which can be radiated by transmitters on frequencies other than those allocated to them and upper limits on the levels of electrical interference which can be radiated by electrical apparatus of many kinds. The detailed consideration of these limits in relation to the radio astronomy observatory is presented in a G.P.O. report contained in the Inter-Departmental Working Party Report mentioned earlier. We note here that the legal limits provide adequate protection for many kinds of domestic and industrial equipment except in the close vicinity of the observatory but:

(a) some types of equipment are not covered by legislation,
(b) some frequency bands used in radio astronomy are not covered by legislation.

I would like to deal with both (a) and (b) above in some detail, but I understand that the Commission would prefer that this should be done in the course of the Stage III evidence.

5.4. *Co-operation with local users of electrical equipment.* Local users of electrical equipment (most of whom in our experience have proved co-operative), can be advised on the suppression and screening of their installations. In some cases additional expense is involved in making modifications and the Observatory has been prepared to meet these costs. The possibility of carrying out this advisory function evidently depends on there being only a small number of cases requring attention each year.

5.5. *Control of new developments through the County Planning Authority.* The Radio Astronomy Observatory have enjoyed the very close co-operation of the County Planning Authority over a number of years and this has proved to be a most valuable method of maintaining the protection of the observatory from interference. The present situation is that no residential development is planned for the neighbourhood outside the existing village envelopes and the observatory is consulted over any new commercial or industrial planning application within an agreed area. The staff of the observatory are then able to discover what types of electrical installations, if any, are envisaged and to advise on what equipment would give virtually no interference. There are perhaps two or three applications per year for which such advice is needed.

Recent discussions with the Planning Authority concerning the Cambridge Western Bypass have resulted in agreement to take account of the position of the observatory in determining its route, to screen the road for part of its length and to site service stations at some distance from the observatory.

6. The effect on the observatory at Lord's Bridge of the siting of the third London airport at Nuthampstead

6.1. In the absence of any detailed plans it is impossible to make an exact assessment of the problems of radio and electrical interference likely to be experienced if the Third London Airport were sited at Nuthampstead but it is possible to make a preliminary assessment of those factors likely to cause serious interference. The effects of the equipment directly associated with the airport and those related to the town will be considered separately.

6.2. *The important sources of interference associated with the airport* are:

(a) Direct radiation from ground equipment at and near the airport.
(b) Transmissions from the ground scattered by

Printed image digitised by the University of Southampton Library Digitisation Unit

aircraft, particularly those flying close to the transmitter or to the observatory.

(c) Radiation from transmitters installed in aircraft.

(a) *Direct radiation from ground equipment*

It must be assumed that any major airport would involve the installation of effectively all radio and radar aids now in use and that additional more sophisticated devices would almost certainly be added in the future. Existing equipment at Heathrow airport which I have examined includes:

(i) Surveillance radars which operate within a frequency band immediately adjacent to a radio astronomy frequency band which will be used extensively for cosmological observations with the One-mile telescope.

(ii) Airfield Control radars which operate with very high power in bands close to another radio astronomy band.

The details of this equipment can be presented more appropriately at Stage III of this Enquiry. It is difficult to give accurate assessments of these radars as sources of interference since it is widely recognised that spurious radiation from radars varies from one equipment to another and may vary with time. We note here, however, that if equipment of similar type, which just met the internationally accepted standards for spurious radiation, were installed at Nuthampstead, then the level of interference at Lord's Bridge would make it impossible to carry on observations on two frequency bands allocated to radio astronomy.

In addition, frequency allocations have already been provided for new systems which, we understand from discussions with National Air Traffic Control Services, are under consideration but have not yet been developed. One of the bands allocated for this purpose does however lie immediately adjacent to the most important radio astronomy band which would be used for the new 5 km radio telescope.

In allocating frequencies for existing airport radars, the G.P.O. has taken account of the requirements at Lord's Bridge. In the far more extensive installations which will be necessary at a major airport, it is unlikely that this would be possible owing both to the number of different radar installations involved and the fact that the frequency allocations must fit in with international requirements. This same problem would arise in the event of new approach or landing systems being installed; the type and frequency of the systems would have to be determined internationally.

In addition to equipment installed immediately adjacent to the runways, other transmitters (e.g. surveillance radars, I.L.S. and V.O.R. beacons, storm detection radar, etc.) might be installed at some distance from the airfield. The actual location would depend on the alignment of the runways and on local geography, in the case of the beacons they might be spaced 15 miles or more from the airport especially if any changes were made to the Airways.

In the analysis of the problems of interference with radio astronomy the G.P.O. report (forming part of the *Report of the Inter-Departmental Working Party on the Protection of Lord's Bridge Radio Astronomy Observatory against radio and electrical interference*, prepared by the Ministry of Housing and Local Government), the figures derived show that high power transmitters close to the observatory are acceptable only by very special allocation of the operating frequencies so as to avoid adjacent channel and harmonic interference in the radio astronomy bands. As indicated above, this procedure seems quite impracticable in relation to the needs of a modern airport at a distance of 15 miles.

(b) *Transmissions from the ground scattered by aircraft*

The problem of radio waves scattered from aircraft, especially those flying in the immediate vicinity of the observatory, involves the same frequency allocation problems as (a) above. The situation becomes very acute if approach paths or stacking areas are situated within 10 miles of the observatory.

(c) *Radiation from transmitters installed in aircraft*

Radio and radar equipment installed in aircraft gets more comprehensive every year; VHF and UHF R.T. equipment, radio and radar altimeters, Doppler navigators, S.S.R. and weather radars are already widely installed and it is likely that further equipment operating on higher frequencies will come into operation for various instrument landing systems. Considerable trouble has already been experienced due to the harmonics from VHF transmitters and from radar altimeters. Unlike the operation of aircraft from existing airfields around the observatory, a major airport would involve aircraft of predominantly foreign nationality and effective control of spurious radiations from the installed radio equipment is therefore much more difficult to achieve. Observations at Lord's Bridge over the past 12 years have shown that the level of interference at the observatory from airways Red 1 and Amber 2 is normally below the acceptable maximum. Serious interference has been experienced from one equipment, a radio altimeter installed in Boeing 707 aircraft. When the source of interference was eventually traced and identified, negotiations were opened resulting in the publication of an Aeronautical Information Circular (see Appendix M.R.5.*) by the Board of Trade requesting aircraft of all nationalities to switch off those particular types of radio altimeter whilst in United Kingdom airspace. In this particular case the level of spurious radiation given out by the altimeter was far in excess of the internationally recognised limits but the problems of detection, identification and control are such that the interference was experienced for a period of over a year before it was brought under control. Aircraft flying 5–10 miles from the observatory are likely to cause an unacceptable level of interference from time to time. With the density of aircraft involved in an approach path or stacking area around a major airport, this interference is likely to be very serious.

6.3. *The sources of interference associated with the development of a new town.* The interference levels at the Observatory at Lord's Bridge from a new town associated with an airport at Nuthampstead would

* No. 82/1966. Available free from Board of Trade, Aeronautical Information Service, Tolcarne Drive, Pinner, Middlesex.

Printed image digitised by the University of Southampton Library Digitisation Unit

depend on its exact siting. One proposed site, from information we have received through the Cambridgeshire County Planning Authority, extends north from Royston to the line of hills at Orwell. The following comments are related specifically to that site although the same main categories of sources of interference would need consideration for any other site.

Radio interference may arise from the radiation of unwanted signals from radio equipment (e.g. harmonics of transmitters and from domestic television receivers) or from electrical machinery, both industrial and domestic. The most serious sources are likely to be:

(a) *Radio Transmitters*

Any new major development will involve additional broadcasting and communication systems. In addition to local radio etc., there is an increasing demand for radio communication systems by police and other emergency services and by private mobile users such as taxis, contractors etc. In addition, UHF and microwave links are increasingly used for telemetry purposes—for example by the Water and Gas Boards for monitoring their supply systems.

At present the number of such services in use around Cambridge is comparatively small and the G.P.O. who are responsible for the licensing of these services, have been able to ensure the protection of Lord's Bridge both by determining the locations of the transmitters and by careful selection of the frequencies allocated for each service. The building of a major new town would involve a very large increase in the number of such services. It will no longer be possible to choose the sites and operating frequencies of such services in a way which can provide the protection which is at present possible because of the greatly increased number of such services which must be able to operate without mutual interference.

(b) *Housing*

An increase in the population by approximately 200,000 within 5 miles of the observatory will produce a predictable amount of radiation due to domestic electrical and radio equipment (refrigerators, vacuum cleaners, television and radio receivers, etc.) The radio interference from domestic equipment in such a new town would be very similar to that from Cambridge at the present time, the larger population of the new town being offset by the greater protection from radio interference offered by the line of hills immediately to the south of Lord's Bridge.

This problem has already been considered in relation to the development of Comberton and other villages adjacent to the observatory where it was shown that the present population in the neighbourhood of Lord's Bridge was comparatively close to the maximum tolerable. I here refer the Commission to Appendix M.R.6.* which is a document entitled *Electrical interference from domestic electrical equipment in the neighbourhood of the Mullard Radio Astronomy Observatory, Lord's Bridge* dated 10th December 1968. This document was prepared by the Cavendish Laboratory, Cambridge. The radiation from domestic electrical and radio equipment in these villages is more important at Lord's Bridge than radiation from similar equipment in Cambridge. Thus it is likely that the development of a new town would not change this situation directly. But the pressure for building in the neighbouring villages resulting from this development might be much greater than at present and would be potentially a very serious threat to the work of the observatory.

The figures derived from present measurements can unfortunately only be taken as a lower limit of what is likely to occur due to the progressive introduction of new devices. Microwave cookers for example, will probably represent a major source of radio interference due to their crude design resulting from the present lack of adequate legislation controlling their design and use.

(c) *Industry*

It is inevitable that a major airport will attract industry and that much of this industry will be concerned with the activities of aircraft operation. Part of this activity is associated with the manufacture and servicing of radar, radio navigation and telecommunication equipment associated with the airport and the aircraft using it, and part to the fact that industries associated with these activities develop subsidiary operations in the radio and electronics field. Industrial and medical radio frequency heaters and industrial microwave heaters are typical examples of such developments.

In addition, proximity to a major airport is an important asset to subsidiaries of foreign electronic companies and agents importing such equipment. A visual examination of the area around Heathrow appears to indicate that there is an aggregation of such firms in the area.

For these reasons the number and activities of industries operating in the new town will be about the worst that one could find from the point of view of the operation of a radio astronomy observatory. The very much smaller scale activities of such firms in and around Cambridge at the present time has already caused difficulties at Lord's Bridge far more severe than the operation of licensed radio services; they have only eventually been minimised after detailed arrangements with the organisations responsible.

(d) *Motor Transport*

Motor vehicles cause electrical interference from their ignition system and generators; police cars and service vehicles equipped with radio telephones can cause severe interference when they are close to the radio telescopes, whatever their operating frequency because of the very large signal strength produced. The A603 runs immediately adjacent to the boundaries of the present observatory site and in fact runs through the centre of the site of the new 5 km radio telescope. The present density of traffic is not sufficient for either of the difficulties mentioned above to be serious. A major town at Royston would produce an extremely large increase of traffic density by commuters and because the A603 would provide the main access to the northern motorways.

This type of interference was discussed at length

* p. 194.

Printed image digitised by the University of Southampton Library Digitisation Unit

with the County Surveyor in connection with the Western Bypass. As a result of these discussions the route of the Bypass was modified and it was agreed that the most important section would be run in a cutting with tree and shrub planting to provide a measure of electrical screening. The A603 which would almost certainly carry a far heavier density of traffic than the bypass under present circumstances, runs considerably closer to the centre of the observatory.

7. Consequences for radio astronomy at Cambridge of the establishment of the third London airport at Nuthampstead.

7.1. *Effects on the existing Observatory at Lord's Bridge.* It seems certain that the development of the Third London Airport at Nuthampstead would result in a level of radio interference at Lord's Bridge which would make it impossible to carry on the work of the Observatory. The number of potential sources of interference is very large including ground equipment at the airport, transmissions from the ground scattered by aircraft, transmitters installed in aircraft, radio transmitters in the new town for many essential services, domestic electrical equipment, industrial equipment, especially in connection with the electronic industry, and increased motor traffic in the vicinity of the observatory.

I have, therefore, concluded that if an airport is sited at Nuthampstead the Observatory would have no alternative but to move.

7.2. *The possibility of finding an alternative site for the observatory.* As discussed in section 4, consideration was given at earlier dates to the possibilities of alternative sites for the observatory. In the searches made, no sites were found which were as good as the present one at Lord's Bridge. If it were possible to find another site a long-term guarantee of protection of the site from interference would be essential.

7.3. *Practical problems of moving the observatory to another site.* Before the technical difficulties of moving the telescopes and other equipment could be faced, a large number of other problems would first need solution in addition to the location of a technically satisfactory site, negotiations with owners for purchase of the land, with the Planning Authority to obtain agreement concerning permitted development in the surrounding area, with the public utility undertakings concerning developments in power supplies and drainage. During the period of the move the present staff would be wholly occupied with administering the change. It seems probable that the time required for the completion of the work would be four years from the time that the decision to move was taken. The cost of such a move would depend very much on the nature of the new site and whether new telescopes were erected or the existing ones moved but it seems certain that this cost would be in excess of £3 million.

7.4. *The effects on the observatory of the loss of four years.* The international reputation of the radio astronomy observatory at Cambridge has been built on the speed with which technical innovations in the design of instruments have been brought to fruition. The present radio telescope at Lord's Bridge has greater resolution and sensitivity than any other in the world and the 5 km telescope will further extend this lead. But the rate of development of radio astronomy in many countries is such that over a span of four years our existing lead would vanish and our equipment would be overtaken by new telescopes in other countries.

The first results of this would be that Britain would lose its pre-eminent place in the world in radio astronomy which it has held for over twenty years. It would be impossible to regain this position after a gap of four years.

During the time of transfer of the observatory to a new site the staff would be unable to engage in astronomical research and many might wish to leave so that their work might continue unhindered elsewhere. The research team built up over the last 20 years would be dispersed and many might leave Britain.

At present the Radio Astronomy Observatory at Lord's Bridge is an important centre for the training of research scientists. Radio astronomy in Britain is given particular support by the Science Research Council since the techniques involved provide an excellent training for scientists entering many branches of industry. During and after the move of its facilities to another site radio astronomy at Cambridge would cease to be the important centre for this training that it now is.

APPENDIX M.R.1

Note by the Science Research Council on Support for Radio Astronomy

The Science Research Council (S.R.C.) is one of five autonomous Research Councils acting under the aegis of the Secretary of State for Education and Science from whose Department the Council receives its funds as annual Grants in Aid. The S.R.C. was established on 1st April 1965 by Royal Charter and within the scope of the Science and Technology Act 1965 as part of the reorganisation of Government support of civil scientific research.

Under the Act and Charter the objects for which the S.R.C. was established were, in brief:

to carry out, encourage and support research and development in science and technology;

to provide and operate equipment and other facilities for common use in research and development in science and technology by universities, technical colleges and other institutions or persons engaged in research;

to make grants for postgraduate instruction in science and technology and to disseminate knowledge concerning science and technology.

To help them to discharge their responsibilities the Council set up three Boards each with its own Staff

Printed image digitised by the University of Southampton Library Digitisation Unit

Division. Of these one Board deals with astronomy, space research and radio research—the Astronomy, Space and Radio Board; Mr. J. F. Hosie is Director of the A.S.R. Division.

The S.R.C.'s Grant in Aid for the current financial year is about £46 m of which just over £11 m has been allocated to the A.S.R. Board. Of this allocation astronomy (excluding that part done from space vehicles) accounts for rather more than £2 m of which some £600,000 is for radio astronomy. The allocations from S.R.C. resources to astronomy as a whole and to radio astronomy in particular are increasing from year to year.

Before the S.R.C. was created, the Department of Scientific and Industrial Research and other bodies had made possible the building up in the U.K. of two university centres of excellence in radio astronomy, at Manchester University (Jodrell Bank) and at Cambridge University (Lord's Bridge).

At the end of 1961 the Lord President of the Council, then the Minister responsible, set up an *ad hoc* Radio Astronomy Planning Committee under the chairmanship of the late Lord Fleck. That Committee's Report, published in 1965,* described the early developments in radio astronomy and recorded that, "At least until 1950, by far the major part of the advances occurred in three British groups" (the two University groups already mentioned and the Royal Radar Establishment, Malvern). Bringing its survey up to the early 1950s the Committee then recorded that, "Radio astronomy is a field of science in which the U.K. has achieved a leading, if not pre-eminent place." . . . "The U.K. therefore finds itself in a leading position in a new field of science." . . . "The policy should be to afford the subject such support as will clearly maintain and if possible enhance the present outstanding level of research achievement."

The Committee recommended, *inter alia*, that no more than the existing two centres of radio astronomy should be created and that these two should be assured of adequate research support and adequate facilities for the teams at these two centres with also assurance of the provision of new radio telescopes on a reasonable scale, by 1972 if required.

The S.R.C. publishes Annual Reports and those for 1965–66, 1966–67 and 1967–68 have all recorded the acceptance by the Council of the recommendations of the Fleck Committee. It has been stated that the Council was continuing the policy of support for radio astronomy research at Cambridge and Manchester Universities and that basic design studies for the new telescopes were being planned and then undertaken. In particular, in its 1967–68 Annual Report,† the S.R.C. recorded that, "In supporting University research the Council will intensify and extend its existing policy of selectivity with priority for astronomy. . . ." The portion of the 1967–68 Report dealing with radio astronomy is to be found at page 11. The S.R.C. announced in February 1969 the approval of the large new radio telescope recommended for Cambridge in the Fleck Report. This three mile radio telescope is estimated to cost just over £2 m. Work has begun and construction should be completed in just under three years.

The Fleck Report noted that ". . . the subject affords a good training ground for physicists, and the by-products of the research in the form of radio telescopes of advanced design may influence satellite telecommunication work. The Post Office installation at Goonhilly Down is, in fact, based on designs prepared for the Mk. II telescope at Jodrell Bank."

A Special Review by the A.S.R. Board of the S.R.C., published in 1968, recorded: ". . . The best means of helping to meet national needs lies in providing a steady supply of postgraduate students trained in techniques which have a direct relevance to the needs of modern research and development. The radio astronomy schools have good records of providing to Government and industry people who are trained in a variety of modern techniques. . . ."

The S.R.C. supports the view that the best teaching occurs where the teachers are themselves actively engaged in research of high intellectual quality. This is acknowledged to be true of radio astronomy. It is therefore S.R.C. policy that the excellent Cambridge and Manchester radio astronomy centres should continue to both teach and do research. This is only possible if the Observatories are reasonably close to the Universities. So far as Cambridge is concerned, a study of possible alternative sites showed nowhere better than Lord's Bridge within the acceptable distance of 50 miles from the University.

The Fleck Committee Report contained the following paragraph about the possibility of electrical interference:

> 6.4. Use of the existing and planned radio telescopes at R.R.E. Malvern, Jodrell Bank and Cambridge could be severely restricted by local electrical interference unless adequate areas are scheduled for radio astronomy and all reasonable steps taken, in consultation with the Planning Authorities, to facilitate the present work and to safeguard its future development. The Committee would therefore warmly welcome the continued co-operation of the appropriate Planning Authorities in safeguarding this work because they regard it as of national scientific moment.
>
> Looking ahead to the next generation of radio telescopes, the Committee realizes that the future of radio astronomy in this country could be seriously prejudiced by interference. It therefore recommends that every effort be made urgently to improve the protection of frequencies specially for this science. Some of these frequencies should be in the part of the spectrum which will shortly be considered for the use of space research and communications.

It is gladly acknowledged that the Local Planning Authorities have co-operated in keeping interference at Lord's Bridge within acceptable limits. Preservation of suitable conditions is vital to the continuation of the Observatory which is of pre-eminent world status, represents a large investment of public funds, past and now committed, and plays an important role in teaching and in training manpower very suitable to the needs of advanced science based industries.

* HMSO; 4s. 6d.
† HMSO; 7s. 6d.

Printed image digitised by the University of Southampton Library Digitisation Unit

Electrical interference from domestic electrical equipment in the neighbourhood of the Mullard Radio Astronomy Observatory, Lord's Bridge*

A recent and authoritative survey of the problem of radio interference from a wide range of sources has been made by the G.P.O. and the results are contained in a report to the Inter-Departmental Working Party on the protection of Lord's Bridge Radio Astronomy Observatory against radio and electrical interference. This G.P.O. report has been used as the basis of the following discussion together with experience gained at the Mullard Radio Astronomy Observatory over the last few years. It will be made clear at each stage which evidence is being used.

Among the potential sources of interference discussed by the G.P.O., two kinds are associated with domestic users.

(i) Low power electric motors.
(ii) Television receivers.

To assess the importance of electrical interference from these sources, three factors must be known:

(a) *The tolerable level of the interfering signal at the telescope.* This can be accurately specified for a particular telescope and a table of values appropriate to the Lord's Bridge Observatory was submitted to the G.P.O. by Professor Sir Martin Ryle.
(b) *The legal limits to the electrical interference* which may be produced by electrical devices. In their assessment the G.P.O. included both existing legal limits and ones which are hoped to be introduced in the foreseeable future.
(c) *The preparation of radio waves over the ground.* The G.P.O. have wide experience in this field and this was incorporated in their report. Measurements made by the M.R.A.O. are more restricted but do refer specifically to the area around the observatory at Lord's Bridge.

With these factors established it is then possible to calculate the distance at which one source of interference, which just meets the legal requirements, would provide a just tolerable interfering signal at the telescope.

The two likely sources of domestic interference, low-power electric motors and T.V. receivers, are now discussed separately.

Low power electric motors

The G.P.O. report shows that the minimum safe distance for one motor which just meets the legal requirements is 260 metres. The law of decrease of radio intensity with distance given by the G.P.O. leads to the result that at a distance of 2·5 km (the approximate distance of the villages of Harlton, Haslingfield, Barton and Comberton from the centre of the observatory at Lord's Bridge) 2,500 motors would be required to give the same level of interference. Experience gained at the M.R.A.O. from experiments performed in Harlton, Haslingfield and Barton suggests that this number is between 2,000 and 3,000, in good agreement with the independent estimate made by the G.P.O. When new, some motors may reach higher standards than the legal limits but after use it is certain, from our experience, that some equipment will not meet the legal requirements. Under these circumstances the number of 2,500 motors at 2·5 km seems the best value which can be obtained.

Low power electric motors are employed in a wide variety of domestic equipment—e.g.

Refrigerators
Central Heating equipment
Vacuum cleaners
Dish washers
Washing machines
Hair dryers
Electric razors
Electrical tools

It is evident that in a typical houshold there will be 1–2 motors in use for a considerable part of each day. Taking an average of 3·0 persons per household, a good value for the area round Lord's Bridge, we may therefore assume 0·5 electric motors per person throughout the area. We note that this number is very likely to increase over the years as the application of electrical equipment becomes more widespread.

This figure leads directly to a safe upper limit for the population at a distance of 2·5 km of 5,000.

T.V. receivers

The legal limits for radiation from T.V. receivers are much less severe than for electric motors and a single T.V. receiver radiating just within the legal limit would have a minimum safe distance of 1·3 km. Only a very few receivers at a distance of 2·5 km would be needed to surpass the tolerable level of interference. Fortunately there is only a very small probability of any particular T.V. receiver causing interference in the frequency bands used for radio astronomy. The seriousness of the problem is therefore difficult to assess quantitatively. What is certain is that if a T.V. receiver does cause interference then the problem of tracing it increases directly with the number of houses in the neighbourhood.

The population in the neighbourhood of Lord's Bridge

From the foregoing discussion it is clear that it is the total population within a given distance which must be considered rather than population of a particular village. Due to the steep fall in intensity of radio interference with distance, the only villages which are important, in relation to interference from domestic equipment are Haslingfield, Harlton, Little Eversden, Comberton and Barton.

The population in these villages at the 1961 census and the population growth estimated or proposed by the planning authority for the period 1962–81 was as follows:

* Now named Lord's Bridge Observatory.

Printed image digitised by the University of Southampton Library Digitisation Unit

	1961	*Growth 1961–81*
Haslingfield	855	570
Harlton	285	no figures
Little Eversden	295	no figures
Comberton	812	1200
Barton	788	160
Total	3055	+ 1930

These figures suggest that the maximum safe population of 5,000 in the neighbouring villages determined from consideration of the interference from electric motors would be reached by 1981. A comparatively large growth of Comberton is consistent with the protection needed for the observatory at Lord's Bridge but only if the population of the other neighbouring villages do not increase above the estimated values. If they do then a large development at Comberton could provide a serious threat to the work of the Observatory.

Supplementary evidence from Sir Martin Ryle

The following table indicates the protection from interference given to the one-mile radio telescope at Cambridge by the Barrington Hill.

The protection given by the Hill is expressed as a factor by which an interfering signal is reduced in the presence of the Hill compared with the value it would have if propagation from the source to the telescope was over flat ground.

Frequency of operation of telescope	*Interfering source located in*		
	Orwell	*Royston*	*Nuthampstead*
5 GHz	×1000	×40	×4
400 MHz	×200	×3	×1·5

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of The University of Cambridge

SUBMITTED BY MR. W. A. ALLEN*

I am a Bachelor of Architecture, a Fellow of the Royal Institute of British Architects, and a member of its Council. In the field of acoustics I am a vice-president of The British Acoustical Society and a member of the Advisory Board of The Institute of Sound and Vibration at Southampton University. I practice as a partner in the firm of Bickerdike, Allen, Rich & Partners, architects, town planners and technology consultants. I was retained by The County Councils of Hertfordshire and Essex, in connection with their Stansted studies, to advise on methods of protection and the consequent costs for schools and I provided the data on these matters to which Dr. E. E. L. Owens refers in his evidence.†

I now represent the University of Cambridge in respect of certain risks that may arise from the development of Nuthampstead airport.

Evaluation of general risk of noise.

1.0. I will consider first the general risk of noise.

2.0. I understand that there is not yet available a map of the take-off, holding and landing pattern to be expected if the Nuthampstead site is developed. In its place I have considered what the consequences for Cambridge might be if a pattern similar to that which was proposed for Stansted were to eventuate.

No concern with NNI contours

3.0. It may assist clarity if I indicate at the outset that I am not concerned with NNI contours at present. The Noise and Number Index was developed as a technique to give some sort of approximate evaluation to the conscious and long-term feelings of annoyance that many people have about aircraft noise in their daily life. For this purpose it is useful, though it is to be hoped that it will soon have a more adequate foundation. Education and research on the other hand and especially at university level, involve processes with a quite different order of sensitivity to noise and Cambridge University has additionally some particular problems which I shall bring to your notice.

Proximity of the area within which schools need protection

4.0. I would like to begin with a reference to work on noise and the related and more familiar problem of schools. As part of the Stansted study, and in association with Mr. Fleming, I was able to demarcate on a map zones where three different levels of protection would be required for schools. The lowest such level was where aircraft movements would be expected to generate noise levels in the range 55–59 dBA four times in an average peak hour inside a typical classroom relying upon windows being open for ventilation. It had been agreed with the Education Officers of the two County Councils that at this point it would become appropriate to have the protection of closed windows and forced ventilation to avoid undue interference with teaching, and this standard remained the norm when higher expected noise levels required higher levels of protection. I will return later to the relevance of school classroom standards for university conditions. Obviously they are related, but are not necessarily the same.

5.0. In the absence of more adequate information I have considered what might be the risk for Cambridge, supposing that a pattern of operations similar to what was anticipated for Stansted were developed around the Nuthampstead site. I have drawn a map, WA-1,* which approximately represents the situation. I have tried to avoid any suggestion of exactness, since exactness is not appropriate at the present stage when so much is supposition, and therefore I have represented by a diminishing density of dots the area in which, judging by the Stansted analysis, one might have expected to have to give schools the lowest standard of protection.

6.0. On this evidence it will be seen that Cambridge might hope to find itself in a relatively quiet pocket between a zone of considerable noise running on a north-east, south-west alignment on the eastern side of the city and another running east and west on the south side. The latter is the closer but both are close enough to be of interest to the University.

7.0. Mr. Fleming in his evidence, notes that there are quite a few schools in Cambridgeshire which would need protection, and these lie in areas where I would expect to find them on the basis of this map.

Noise risks summarised

8.0. All this of course is based upon the possibility that the operational pattern of Nuthampstead might resemble that at Stansted, which may not prove to be the case. However, in the absence of more complete information it is sufficient to cause me to make two points; *first*, that the University apparently could be in an area very sensitive to changes in the operational pattern or alignment of an airport developed at Nuthampstead, and therefore might find itself subjected to noise if these were made without consideration of its problems *and second*, that the apparent risk is sufficient to justify stating in further detail the problems the

* See also p. 914.

† p. 640.

* opp. p. 800.

Printed image digitised by the University of Southampton Library Digitisation Unit

University can foresee if it had to protect itself against noise from Nuthampstead. I will now develop the latter.

Didactic teaching

9.0. A considerable part of the University teaching is didactic, in the form of lectures to bodies of students ranging in numbers from groups comparable in sizes to school classes up to audiences of several hundreds in large lecture halls.

Ordinary classes

10.0. Acoustically there is no evident difference between the school class and the university class of similar size. A noise incident can interrupt communication and rapport, disturb the momentum of a lecture, and break the lecturer's train of thought in the one as readily as in the other. It might be more disturbing in a university than in a school because of the different academic level, but probably not greatly so.

Need for further research

11.0. It is a matter for great regret, however, that the research basis for classroom standards is not yet thorough, and I am glad to know that the Building Research Station has begun a suitable programme of work.

12.0. What has just been said concerns relatively small rooms where the audience is no more than about 20 ft away from the lecturer. In large lecture theatres the distance will often be 60 ft or more, and the conditions for hearing will often be correspondingly poorer. In my view, and pending the results of research, the upper limit of intruding noise should be 5 dBA below that of the smaller rooms, i.e. 50 dBA. The acceptable rate of interruptions probably could be the same.

13.0. While loudspeaker systems might be expected to overcome this kind of difficulty, many lecturers find them inhibiting and will not use them.

Libraries

14.0. I turn now to libraries. It is common knowledge that much university work has to be done in a library and the tutorial arrangement prevailing at Cambridge makes students exceptionally dependent on this type of resource. As a result there are libraries in each college, in addition to the central University Library, and the college libraries are generally large enough to meet many student needs up to or beyond Part I studies, i.e. the first two years. Several libraries have collections distinguished in other ways which make them necessary resources for advanced scholarship. In addition there are numerous department libraries. Quietness is an established requirement in all these places and in my view it would be appropriate to protect them at least to the criterion of four incidents at 50 dBA in an average peak hour.

Research problems

15.0. Research presents other types of difficulty. It has not been possible in the time available to review more than one or two fields of study, but they will serve as examples.

16.0. The studies examined were physiological and psychological. The experimentation deals with live humans and animals and much of it is extremely refined, for example dealing with aspects of the nervous system. Specialised animal breeding is carried out, and in pregnancy the animals are often exceptionally sensitive to noise, as also they are in post-operational conditions. Some of the work is normally carried out in closed laboratories where the exclusion of noise would present no new difficulty, but other work is tied directly to the teaching and cannot be so protected. Some of the animal housing is in roof pens and there is special pasturage outside the city to the north-east.

17.0. In general the advent of unusual noise carries the risk that the accuracy of experimental responses and data will suffer some general deterioration, and this of course is unacceptable. At the same time, protection would sometimes be difficult or impracticable. No general standards can be laid down and such protective measures as could be taken would have to be devised case by case.

Teaching laboratories

18.0. There are numerous teaching laboratories in the University, quite a few of which occupy the top stories of buildings in order to have natural roof lighting. Typically they are large rooms. It is customary to combine student experimental work in them with incidental talks and demonstrations. The conditions are such that I would recommend the University to adopt the criteria put forward for its large lecture halls.

Chapels

19.0. Religious services form a significant part of the College and University life. Here the problem of incoming noise is not so much an interruption of communication as an intrusion upon contemplation. Protection of the buildings concerned would present severe problems.

Rooms for music

20.0. The musical life of Cambridge is full and active and in several respects famous. It forms an important part of the attraction of the University for many of its staff and students. It takes place in all sorts of halls and they would require the benefit of protection at least similar to that given for lecturing in large rooms.

Chapel glass

21.0. This brings me to the question of vibration and glass. The windows of King's Chapel form a national treasure and other glass in Cambridge is important. The risk to glass from noise and vibration is the subject of research by the Institute of Sound and Vibration at Southampton University, on a contract from the Royal Aircraft Establishment, but no firm view has yet been reached. The aircraft noise from Nuthampstead which in my view could be expected in Cambridge is unlikely to present risks very different from those of organ music, but the fact must be registered for the University that a risk exists which the

Printed image digitised by the University of Southampton Library Digitisation Unit

University must evaluate when relevant research results are available.

22.0. Generally speaking the protective measures needed for almost all of these circumstances require the abandonment of open windows for ventilation and the use of artificial or forced methods.

Quiet courts and precincts

23.0. I turn now to consider environmental conditions more generally. It is a feature of the University that its development is characteristically that of precincts and courts. Many of these are bounded by streets which have been noisy, probably since medieval times, but within the courts and precincts there has been preserved a remarkable quietness. Even the growth of modern traffic has generated no noise that seriously breaks this peace. The University throughout its history has sought to protect its students and their teachers by this form of planning and to a remarkable extent has succeeded. It contributes in a major way to the overall attraction of the University as a place in which to live and work.

24.0. The courts and precincts protect only against street noise however. They are totally exposed to these new sources in the sky, and the exceptionally low level of background noise in them would make the new intrusions all the more evident and disturbing. In my view we are concerned here, not with a conventional situation such as might be meaningfully interpreted in terms of NNI contours, but with one which should be evaluated on its own terms in the sense indicated. These courts, gardens, and precincts are a unique feature of the University, and one against which no protective measures can be taken except to keep noise sources in the sky at a reasonable distance.

25.0. A possible risk for example might be from the aircraft holding area, which may generate insufficient noise levels to result in the individual incidents which are the background to NNI data, but which might perhaps produce long, unpleasant periods of droning.

26.0. All in all it would clearly be reasonable to say of the University and Colleges that by the nature of their work, the people involved in it, and the character of their environment, they form an organisation of significantly higher sensitivity to noise than the schools to which so much attention has been devoted, and that together they justify a correspondingly heightened consideration.

The costs of protective measures

27.0. Although the University hopefully will not be called upon to take protective measures, it will be as well to indicate what order of costs might be involved, assuming that it was affected only to the point of needing the lowest standard of protection for ordinary sizes of class.

28.0. From the work I and the County Officers did as part of the Stansted studies we concluded that it would cost 39/– per sq. ft of school to treat post-war system-built buildings, and 66/– for pre-1914 traditionally heavy construction. The University buildings, new and old, are of heavy construction, very similar in some ways to the pre-1914 schools, but architecturally one would have great difficulty in handling some of the protective measures, especially the forced ventilation, in the relatively simple manner often found possible for the Schools. In the circumstances I would set the cost of treatment slightly above 66/–, say 70/–. In new buildings the additional cost was estimated at 35/– per sq. ft.

29.0. This would chiefly cover changing to fixed glazing, protecting or removing roof lights, improving artificial lighting, protecting the rooms against excessive heat gain, or introducing cooling and some areas of sound absorbent, as well as the forced ventilation.

30.0. These costs apply to the buildings overall, not simply to the areas treated. They do not include professional fees, which would aggregate to about 12 per cent.

Areas involved

31.0. The University as such has roughly 2·4 million sq. ft of buildings used for teaching purposes. The colleges have about 100,000 sq. ft, mostly lecture rooms and chapels, excluding of course the residential space. The total is therefore of the order of 2·5 million sq. ft of building for teaching purposes.

32.0. Roughly 25 per cent of this space is offices, and of course there are large areas for circulation, washrooms, etc., but in these respects the University buildings do not differ as greatly from the schools as might at first be supposed. I think that if one cut down the University areas by as much as 25 per cent, this would be an adequate allowance for differences from schools.

Global cost

33.0. This would leave about 1·8 million sq. ft, which, at 70/– sq. ft, would cost about £6·25m to treat.

34.0. It was not possible in the limited time available before the submission of this statement to refine this computation, but it will perhaps be sufficient at this stage to leave it as what it is, a very rough figure, but probably of the right order.

Difficulty of doing the work

35.0. It is right to note additionally that there would be severe logistic difficulties in carrying through such a programme. The available building resources in the area would be under great pressure at the same time to do similar work on schools and many other public and private buildings, and it is a very unpopular type of work with builders. It would be even less attractive because of the very great amount of new work which would be in the market for them due to the growth of population.

36.0. Even if it could be done, the University would then face a long period of building activity in buildings which are fully occupied and being used for purposes which it would be difficult to transfer temporarily. Nor is it possible to suppose it could be done in vacation times only; apart from the impracticability of this in terms of the load on the building industry, it would not be practicable to stop many of the researches.

Printed image digitised by the University of Southampton Library Digitisation Unit

A summary; the risk to the quality of Cambridge

In sum, it is not only the functioning of the University which would be affected if noise from Nuthampstead operations were to become pervasive, but the quality of its environment as a whole as a place in which to live and work. One has to consider what are the features of a place which has drawn together continuously through the centuries the quality of personnel who have worked there and made it famous.

To a very large extent it is the fact that it is one of the world's most interesting and beautiful related groups of buildings. It is compact without a sense of overcrowding. It is in the midst of a busy city yet it offers the peace and quiet which can contribute so much to the pleasure and quality of life. But if aircraft noise were to become general in the University, irreparable damage would be done to its attractions both for work and leisure, and hence to its capacity to attract the highest quality of teaching staff and students. And if this were to diminish, the University as a whole would subside to a lower level of quality. This is not something which should be put at risk.

Other risks to the University

38.0. I have been asked by the University to comment additionally upon any other repercussions of the development of Nuthampstead which might seem to affect it.

Intensification of Traffic

39.0. Obviously there is the risk of intensified City traffic and Cambridge is already sensitive in this respect. At the regional level it is surrounded by large and expanding communities between which cross-traffic can be expected to increase and affect the district. At the local level the development of the inner and outer necklaces of villages will add to the pressures. The airport could not avoid being a further cause of intensification despite the special roads accompanying the airport's establishment, to which Mr. Kitching* and Mr. Sharman† refer in their evidence.

* p. 616.
† p. 607.

Danger of deteriorating environment

40.0. Unfortunately no definitive intentions about the new road pattern have yet been declared, but the University has a direct interest in what might be proposed. A substantial intensification of Cambridge traffic would result in a corresponding growth in the general noisiness of the environment; there would be additional pollution and vibration and personal danger, and a general increase in the difficulty of getting between home and work. In respect of the University's capacity to continue to attract the highest quality of minds it is inseparable from the City, with which it intermingles and which provides the general context of University life. The University could not contemplate with equanimity therefore the development of a civic environment which became repulsive in place of its present attractions.

41.0. There are other aspects which would also have their impact upon the University.

Housing

42.0. There is especially housing. This is already scarce, and the University personnel would obviously encounter fresh competition from airport staff. They would probably wish generally to migrate northward, away from noise risks, so that the academic work which so many do at home could continue unimpeded. This would tend to reduce the area acceptable for their needs.

Service personnel

43.0. At the same time the competition for the kinds of service and laboratory personnel which the University needs and which is already scarce would become increasingly severe not only due to the immense airport needs but because of additional industries developed in its wake.

44.0. All in all, although no doubt minor benefits would accrue to the University, chiefly access to a convenient airport, the disadvantages it would suffer from the development of Nuthampstead as an airport are extremely serious.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Cambridge University Gliding Club

SUBMITTED BY DR. A. W. F. EDWARDS*

The Cambridge University Gliding Club objects to the Third London Airport being sited at Nuthampstead for reasons which are set out below. They are preceded by a statement of the history, purposes, and present activities of the Club.

History

The Cambridge University Gliding Club was founded in 1935, and, apart from the war years, has been active ever since. In 1952 a parent body, the Cambridge University Gliding Trust Limited, was incorporated under the Companies Act, its principal object being, "To promote, assist and encourage gliding, soaring and aerial navigation in all its forms in the University of Cambridge." Since the war the Club has accepted members from outside the University in the belief that an open membership was also in the best interest of University members. This policy has been extremely successful, and the Club is often quoted as an example of town-and-gown co-operation. Today the annual turnover of the Club is about £5,000; it has 200 members, of whom about 40 are members of the University.

The Club is renowned in the gliding world for two main reasons: first, because of its enterprise and initiative, particularly in connexion with its expeditions to new launching sites in mountainous parts of Britain, and secondly, because of the many Cambridge pilots who, on leaving the University, have joined other clubs and exerted a strong influence on their administration and instructional methods.

The Club, being open to all, has benefited from Ministry of Education grants towards some of its equipment. A number of private gliders operate with the Club, and the total cross-country mileage in a year is usually between 3,000 and 4,000 miles. In addition to members' flying, some 50 people attend the Club's weekly summer courses each year.

The Club has two principal objections to the siting of the Third London Airport at Nuthampstead, both involving airspace. First, it appears to the Club that an airport at Nuthampstead would be likely to cause its flying to stop altogether, and hence cause the closing of the Club. Secondly, even if Club flying were to be permitted, the airspace restrictions would in all probability be so severe that our operations would suffer greatly. These objections are explained more fully below.

1. **Probable effect of the Nuthampstead Control Zone**

The Commission has not published maps showing flight paths and stacking areas. Our objections are therefore based on the assumption that a Nuthampstead Control Zone equal in shape and size to the London Control Zone, and similarly oriented with respect to the runways, would be set up. In view of the size of the Manchester Control Zone, which greatly exceeds London's, this assumption is likely to err on the side of optimism.

Such a Control Zone would include the Club's two sites, at Cambridge Airport (soaring and advanced training) and Duxford Aerodrome (elementary training). Duxford, of which the Club has just taken the lease, is less than 5 miles from the proposed Nuthampstead boundary. The Club intends to build up Duxford as its only site, since its activities at Cambridge Airport are severely restricted, particularly in the winter.

We consider it unlikely that we should be allowed to operate from Duxford at all. Since we cannot hope to confine our activities to Cambridge Airport (even supposing it were excluded from the Control Zone), we should have to close the Club, or seek a fresh site to the north of Cambridge. But in view of the likely airspace restrictions outside the Control Zone, it is doubtful whether it would be worthwhile making a fresh start.

2. **Probable effect of associated airspace restrictions**

Were the Club to establish a new site to the north of Cambridge, outside the Control Zone, it would be likely to be within the Terminal Control Area. It could only be outside it if it were too far from Cambridge for weekday undergraduate flying.

In the absence of hills around Cambridge, the Club depends for its soaring on thermals and cloud-flying. These activities would be so severely limited in a Terminal Control Area that we doubt whether there would be sufficient prospect of good gliding to make the establishment of a new site worthwhile.

* See also p. 916.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the College of Aeronautics Gliding Club*

The effect of the siting of the third London airport at Nuthampstead, Cublington or Thurleigh on gliding

The three sites named are considered together because the controlled airspace requirements for the new airport are not known in detail and, therefore, two situations relative to controlled airspace are considered:

(1) Cranfield being situated inside a control zone.
(2) Cranfield being situated a short distance from a control zone, under controlled airspace at low level.

It is almost certain that (1) will apply if the airport is sited at either Cublington or Thurleigh and unlikely to apply if it is sited at Nuthampstead, unless a control zone as large as that at Manchester is eventually required. It is equally almost certain that (2) will apply if Nuthampstead is chosen.

It is perhaps relevant at this stage to consider the removal of the Clubs to another site.

Unlike most clubs, only half the members are drawn from the general public, the remainder are College students and staff. Considerable assistance is given to the club by the College so that inexpensive on-the-spot training facilities are available to resident students. Three of the aircraft, including the two training two-seaters, the use of the airfield and hangarage are provided by the College.

One other club machine and several syndicate-owned aircraft are also operated by the club, the cost of operation and maintenance being borne by the club. No professional staff are employed.

Many of the students would be unable to spare the time or the money to travel to another site (thereby nullifying a *raison d'être* of the clubs), and all the facilities provided by the College would be lost to the club, along with many of the members, whose travelling distances would become excessive. The situation would thus become that of a few enthusiasts facing the near impossible task of finding and financing a new site with new training aircraft.

Thus we conclude that removal of the club to another site is not possible and that the provision of alternative gliding facilities in the area is an extremely remote possibility.

1. Cranfield being sited inside a control zone

1.1. It is almost certain that gliding from Cranfield would be prohibited.

1.2.1. All flying would be under the control of the air traffic services of the airport. Although gliders are amenable to control in the sense that the pilot may avoid certain areas, they are not amenable to outside control directing them to fly at given heights and bearings and their low flying speed makes it impossible for them to vacate an area quickly. Under these circumstances it is unlikely that glider flying would be permitted within the zone.

1.2. It is possible that a dispensation would be given to gliders provided they were confined to a small area of the zone and did not exceed a stated altitude. This would probably be 1,000 to 1,500 ft. Modern training methods utilise aero-tows to 2,000 ft for much of the flying; at Cranfield the remainder of the launches are by motor-tow giving heights between 1,000 and 1,500 ft. The club's statistics over the last three years show that on average there are 2,000 launches per year of which an increasing proportion is by aero-tows. In 1969 this proportion has already reached 60 per cent of launches. Whilst the bulk of training can be carried out (albeit inefficiently) from launch heights of 1,000 ft it is unsafe to initiate some exercises from this height and it would therefore be impossible to train safe pilots with this limitation.

Soaring and soaring instruction would of course be ruled out and no clubs can exist for long on training alone without being permitted to indulge in recreational and competitive flying.

2. Cranfield being situated a short distance from a control zone, under controlled airspace at a low level

2.1. With the existing regulations, the degree of restriction would depend on the type of controlled airspace. Airways are permanent IFR, control areas are not. Since, as previously stated, gliders are not amenable to outside control, they are normally barred from entering airspace which is permanent IFR. However, at this time there is a dispensation allowing gliders to cross airways in VMC but it should be noted that gaining height by circling is not allowed and that in any controlled airspace the maximum operating height is effectively limited to 1,000 ft below cloud base in order to stay in VMC.

2.2. If the controlled airspace is an airway, this will place a ceiling on operations at its lower limit. If this is 1,500 ft amsl the restrictions will be as in 1.3 (Cranfield is 362 ft amsl). If the lower limit is 2,500 ft amsl, normal training could continue but soaring would be impossible. Aerobatic flying would also be severely restricted since inexperienced pilots are not normally allowed to initiate manoeuvres below 2,500 ft above ground.

At 3,500 ft amsl some restricted soaring would be possible, but the critical early stages of a cross-country flight would be difficult for a beginner since this would probably allow him less than 10 minutes to find a second usable thermal. (Beginners are normally told to forsake soaring and transfer all their attention to

* See also p. 917.

Printed image digitised by the University of Southampton Library Digitisation Unit

the landing phase when they descend to 1,000 ft above ground away from home.)

2.3. If the controlled airspace is a terminal control area, the upper limit for soaring under existing regulations would be 1,000 ft below cloudbase. On many days this would be as severe as the airway case. It should be noted that the lowest grade of international certificate requires a climb to approximately 5,000 ft above ground. This is not a high level qualification, over 2,300 have been issued in this country and it is a normal qualification for entry into competitions.

2.4. The existence of a large control zone with its attendant low level airways, a short distance from Cranfield, would severely restrict cross-country flying.

In conclusion, we feel that even if the club could continue operations in the restricted manner described, we would feel continually threatened. Experience has shown that the demand for controlled airspace is always increasing and that the restrictions applied to it become greater.

We are very pessimistic about the future of the club should the Third London Airport be built at any of the sites mentioned.

Appendix

The sport of gliding in Britain

Gliding is a sport of great depth which attracts to it people from all walks of life. It is not a spectator sport. Apart from the legal requirement that no one below the age of 16 years may fly solo, there are no age limits, many of its adherents carrying on beyond the age of 60. The ground activities on the flying field provide healthy exercise for the average member, yet there is room for many physically disabled people. Gliding demands team-work on the ground and self-reliance in the air; the knowledge that his safety depends on his own decision, in common with many other sports, adds spice to the pilot's environment.

The flying activities in which the average glider pilot may indulge can be divided into four categories, local soaring, cross-country flying, competition flying and aerobatics.

While "local soaring" the pilot does not deliberately put himself out of gliding range of his base, but with modern gliders this can mean that the pilot has an area of more than 2,000 square miles to roam in.

When the pilot flies cross-country, he may be aiming to reach a particular destination, or to fly a course around turning points to arrive back home, or just trying to go as far as he can. He may be trying to better his own previous performance, taking weather conditions into account, he may be trying to qualify for an internationally recognised badge, he may be trying to break a speed record, or he may just be out to enjoy himself. His skill in flying the glider and his judgement of the weather conditions, together with a little luck, will decide whether he finishes his task or has to land in a field. His boundaries are the coast and although he seldom climbs above 10,000 ft, the height record for this country is over 30,000 ft.

Competition flying is just an extension of cross-country flying, where the pilot is pitting his skill against other pilots flying the same task on the same day. Very often handicapping and complicated scoring systems are used in order that the winner shall be the best pilot and not just the luckiest, or the man with the most expensive glider.

The retrieving crew, too, can help their pilot towards success, it takes skill and judgement to take the trailer to the right place at the right time, and making sure that the pilot gets sufficient sleep between tasks is not the least of their responsibilities.

Most experienced pilots occasionally indulge in aerobatics, if only to "burn off" spare height at the end of a soaring flight. The aerobatics demand skill and concentration and certainly demonstrate the pilot's ability to handle his aircraft.

Compare local soaring with fresh water sailing, competition flying with motor rallying, aerobatics with water-skiing, all with the view of the mountaineer thrown in for good measure. Yet gliding is not a rich man's sport, there are many pilots who spend less than £100 a year on their flying.

Gliding in this country is exceptionally free from legal restriction. The controlling body, the British Gliding Association, made up from representatives from the separate clubs, has created its own aircraft inspection system, issues its own Certificates of Airworthiness and its own flying regulations which are adhered to by the movement because they come from within and are believed to be in the interests of the movement.

The Association was even responsible for the glider design requirements which were readily accepted by the Air Registration Board. This lack of interference by the State is due in past to the high calibre of the people leading the movement, gliding attracts such people, perhaps even breeds such people.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Premier Travel Ltd.*

Transport and Communications

Premier Travel Limited is responsible for the operation of Bus Services in Nuthampstead and adjacent villages, including Anstey, Barkway, Brent Pelham and Meesden.

The Company was formed in 1936 and, in 1945, took over the business of Mr. F. E. Weeden, Chrishall. In 1947 the Company acquired the omnibus undertaking of Messrs. Drayton Bros. Barley, and have, since, provided services in Nuthampstead and other north Herts. villages.

The fleet strength at late May 1969 is 51 vehicles—11 Double-Deck 'Buses, 11 Saloon 'Buses, 29 coaches. Chrishall Depot is 6 miles from Nuthampstead (The Woodman) and is the headquarters of the Traffic and Engineering Departments and operates local services in south Cambs., north Essex and north Herts., as well as many of the Company's Express Coach Services.

Present pattern of 'bus traffic—north Herts.

The pattern of travel has changed materially over the years, due to the influence of several factors, including:

(a) A fall in the number of agricultural workers, and in some villages, a decline in population.
(b) An increase in the number of women in employment.
(c) The advent of television.
(d) The increased use of personal transport.

Enclosure 1, annexed

Shows passenger journeys and service mileage in 1951, 1961 and 1967 on Services 26 and 27 and on coach service 28 (withdrawn in 1964) in 1951 and 1961.

Enclosure 2, annexed†

Is the current stage service timetable and relative revision leaflets, which includes services 26 and 27.

Local services in north Herts. (and much of the adjacent area) are heavily unremunerative being extensively cross subsidised by other workings of the Company.

Services with other airports

Premier Travel Limited, in some cases jointly with other Operators, provide Express Coach Services, to and from the following Airports: Birmingham (Elmdon), Blackpool (Squires Gate), Cambridge, London (Heathrow), Stansted, Southend.

Express Services—north Herts. and adjacent areas

Premier Travel Limited provide express services between Bishop's Stortford, Buntingford, Royston and Saffron Walden and many places in Britain, some jointly with other Operators.

*Enclosure 3, annexed**

Covers the current timetables for these Express Services.

General comments

Being engaged in a Service Industry, the Company prefers to express no opinion for or against Nuthampstead as the site for the third London Airport. Should Nuthampstead be selected by the Commission it is the view of the Company that it could satisfactorily provide very extensive passenger transport services, including road/rail feeder services, in which latter field it has substantial experience on Service 59, Audley End Station–Haverhill, to match traffic requirements.

It would expect to consult with other passenger transport undertakings, including British Rail (through the Premier Travel and British Rail Co-ordinating Committee) in determining patterns of operation.

ENCLOSURE 1

Traffic Statistics Nuthampstead: Area Services

Service 26: Royston–Nuthampstead–Bishop's Stortford

Year	*Passengers Carried*	*Mileage Operated*
1951	85,329	53,124
1961	35,522	22,409
1967	22,317	18,935

Service 27: Little Hadham–Nuthampstead–Cambridge (Barkway Cambridge from 1967)

Year	*Passengers Carried*	*Mileage Operated*
1951	32,188	39,753
1961	14,452	11,144
1967	5,343	5,147

Service 28: Newton–Nuthampstead–London (King's Cross)

Year	*Passengers Carried*	*Mileage Operated*
1951	4,537	9,853
1961	848	4,512

Service discontinued in 1964.

* See also p. 917.
† Not reproduced.

* Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Royal Institute of British Architects, Eastern Region*

This study is produced by a subcommittee of the Eastern Region of the Royal Institute of British Architects. The Eastern Region comprises 2,100 architects of whom 1,270 reside in Hertfordshire, Cambridgeshire and west Essex. Many of our members live and work in the immediate area affected by the proposed site at Nuthampstead.

Introduction

It is clear from the brief given to the Commission that only local implications of the siting of the Third London Airport at Nuthampstead can be considered at the Stage II hearings. It is also clear that many local problems will be affected by the Regional, National and International factors inevitably associated with this project. We have assumed, in this brief study, that the Third London Airport will be situated as shown in plan CTLA 2/3† and have tried to assess the results on the locality. In this context it is essential to stress the size of the project not only in terms of Airport Activity, but more important, in terms of surface transport and urbanisation.

As far as noise is concerned many other interested parties will comment on the problems. We feel it only necessary to underline the problems resulting from the convergence of the 40 and possibly 45 NNI contours caused by aircraft from both the Third London Airport and the existing and growing Luton Municipal Airport over the expanding Stevenage New Town. It is also worth enquiring into the future of Stansted, itself an expanding airport in the vicinity.

Transport and communications

1.1. *General*

It must be assumed that, in spite of the location of the proposed Nuthampstead site some miles from London, the principal object of the airport is to serve air transport to and from London. It is also assumed that certain routes will use the airport as a junction or changing point for other home and continental routes, and as a terminal for inter-city domestic services.

Under the heading of transport one is considering the following:

(a) Transport of personnel and staff between the airport and the principal residential area adjoining the airport.
(b) Transport of freight to and from the airport from various places of origin within Britain.
(c) Transport of passengers to and from London.
(d) Transport of passengers to and from the airport from other destinations.
(e) Possible links to sea ports.

1.2. *Residential traffic*

Since one major objection to the siting of the airport airses from the noise generated it would seem desirable to locate the residential area directly associated with the airport well away from the noise nuisance.

The location of the airport town, if to the north-west where it could be shielded by the natural protection of an escarpment to the south, would be Royston at about 6 miles distance or, if to the south-east, Stansted Mountfitchet or Bishop's Stortford at about 6–7 miles distance.

Since personnel would no doubt be travelling to and from the airport over 24 hours, there would be an average movement when full development is reached, in the region of 3,000 persons per hour in each direction; this might represent a movement of up to 20,000 per hour in each direction at peak times. In terms of bus transport this would represent more than 300 buses per hour in each direction at peak times, requiring considerable staffing. The road system required for this traffic would need to be to substantial standards and it would have to extend throughout the airport area to cover a reasonable distribution of staff, both to the central buildings and to the maintenance areas. A road link between the town and the airport would be necessary in any case, but a fast automated rail link specifically for airport purposes, available to airport staff without charge, would be justified in terms of saving in time and would make possible the remote siting of the residential area.

1.3. *Freight transport*

According to the Government's *South-East Study*,* the transport of goods by air is increasing at the rate of nearly 20 per cent per annum and Heathrow is now Britain's third port of entry for freight. The advantages of air transport could easily be frustrated and enormous congestion created if adequate transport facilities to and from the major manufacturing centres are not provided.

With proposals for the new M11 provided linking London via Bishop's Stortford to the A1 at Huntingdon together with the proposed south-west link Harwich via Buntingford to Luton and M1, and Harwich via Cambridge to Northampton M1, the site would be reasonably served for freight transport to the north and south and to the sea port of Harwich. However, these roads have, presumably, been proposed without consideration for the load which would emanate from a new airport, i.e. with existing needs only in mind, and clearly design factors would have to be revised to cope with further major use. Similarly the road link to the London docks and to the South Thames area via the Dartford Tunnel would need improvement if the Kent area is to be adequately served.

Rail transport for freight via Bishop's Stortford may provide a suitable link to East Anglia and to London

* See also p. 918.
† See attached wallet of maps and diagrams.

* HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

but for a Midlands rail link an extension of the Royston–Hitchin line would provide the best route.

The increased use of containers for all forms of transport emphasises the desirability for improving the rail links.

1.4. *Passenger transport*

The transport of passengers presents perhaps the major problem associated with the airport. It is stated that fully developed some 2,000,000 passengers per week may be handled (presumably about 1,000,000 each way) the larger proportion travelling to and from London.

If it is assumed that private and public road transport would be used between the capital and the airport, as appears now to be the case at Heathrow, one cannot envisage that any existing or at present proposed road links would cope with the movement of 140,000 passengers per day in each direction, and, assuming only half travelled by car and others by coach, a motorway of not less than six lanes would be needed for this service only. If one adds to this the possibility that the majority of travellers will be transported by relatives or friends one would have to almost double the number of journeys taken, thus producing a twelve lane highway; and this takes no account of the inevitable peaks in daily use of the airport (averaged over 24 hours) or holiday traffic. The route for such a highway into the capital would present enormous problems but we consider it should be an exclusive one for airport purposes. Perhaps the easiest route—at least up to the North Circular Road—would be roughly parallel with the present A10 though the impact on this relatively agricultural tongue would be enormous.

The possibility of rail transport for passengers must be considered the more likely if existing routes are proposed, two alternatives are available—Liverpool Street/Saffron Walden and King's Cross/Royston, with a third alternative if the now-discontinued line to Buntingford is re-opened. However, the volume of traffic at 6,000 passengers per hour in each direction over 24 hours would entail full capacity on a 10-minute service for an "underground" type vehicle.

From this it is clear that new thinking in relation to the whole aspect of passenger movement has to be adopted and segregation from normal road and rail services has to be achieved. We consider, therefore, that except for passengers travelling from centres other than London, the capital must be considered the terminal; for instance, St. Pancras or Marylebone Stations providing, say, an upper track level or levels with direct routes by monorail or similar vehicle direct to the tarmac. It is considered possible that the whole car interior with passengers could slide or plug into the plane shell without anyone leaving a seat. The adoption of such a system might considerably reduce the cost of terminal airport buildings and, to some extent, the need for such a large supporting labour force.

Urbanisation

2.1. *General considerations*

We consider that the airport city should be sited and planned to reduce as far as possible the effects of noise generated at the airport.

To achieve this the following principles should be followed:

(a) Siting of the City to one side of the main approach flight paths and runways.
(b) Reasonable distance, say up to 5 miles, between the City and the airport with fast travel links for airport employees.
(c) Siting of industrial and city centre as buffer between residential and airport where possible.
(d) Maximum use to be made of belts of tree planting and soft landscaping to mop up sound.
(e) Housing generally to be medium-density, low rise development not more than 4-storeys high.
(f) Special consideration to be given to design of housing to reduce effects of intensive noise.

These general principles are shown on figure 4.*

2.2. *Siting considerations at Nuthampstead*

The proposed airport site is situated on a ridge of ground 450 ft high, bounded by the A10 to the west, A505 to the north and A11 to the east. Precluding the areas of extension on the north-east—south-west axis from the airport as being within the main noise concentration zone, the areas for possible development as the new city are either to be north-west or south-east of the ridge.

We consider that advantage should be taken of the ground contours of the area by selecting a site, or sites, at a lower elevation to the airport itself to assist in noise screening. In this respect two areas recommended themselves, and in accordance with the principles set down in item 2.1, are illustrated in figure 4.

2.3. *Royston area*

The area to the north and north-west of Royston towards the Barrington ridge, and embracing the upper reaches of the River Rhee, is from 5 to 10 miles and 300 ft below the level of the airport site. Although these are existing road and rail links to London and elsewhere, these would need to be expanded and augmented to cater for the great increase in traffic generated by the city and airport. In this respect, the area suffers to some extent from being off the main streams of development as envisaged in *A Strategy for the South-East.*†

The industrial area would be sited to the north-east of Royston, east of the railway and A10, with the city centre and residential area to the west.

2.4. *Bishop's Stortford*

The area immediately to the north and west of Bishop's Stortford including Ugley Green, 6 to 8 miles from and generally 150 ft lower than the airport site. Existing road and rail links to London are similar to the Royston site, but of course shorter, and the proximity of the proposed line of the M11 to the east is an obvious advantage.

A city so sited could serve a dual role if Stansted is to be retained as an airport in its own right in addition to Nuthampstead, and the creation of an industrial area on the main rail link to the north in the area of Ugley Green could serve both airports.

---

* between pp. 816 and 817.
† HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.5. *Recreation*

Both of the suggested city sites would be sited within one of the green wedges recommended in *A Strategy for the South East** and the inhabitants would have immediate access to the surrounding countryside. There would be easy access to the recreational facilities offered by East Anglia.

An airport city of this size would create its own recreational activities but the draw to London offered by the necessary fast communications links for the airport, will always be present with some counter attraction from academic Cambridge to the north.

Conclusion

Whilst we have aimed to limit ourselves to the sort of comments asked for in the *Site Information** publication, we feel we would be failing in our duty as a group of professional people who, by their training and practice are constantly involved in the wider implications of planning decisions, if we did not emphasise two factors as strongly as possible. Firstly, that the scale of this project is enormous and surpasses in scale any single planning proposal in this Region for the last twenty-five years; and, secondly, that the siting of an airport at Nuthampstead would completely defeat the carefully considered proposals of the South East Economic Planning Council in their *Strategy for the South East*.

* HMSO; 15s.

* Reproduced at p. 601.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Council for the Preservation of Rural England*

SUBMITTED BY MR. R. A. ADAMS

I live at 28 Cambridge Road, Ely.

I am an Associate of the Royal Institute of British Architects and am a Registered and Chartered Architect. I am Principal of Messrs. D. A. Adams Associates, Architects and Surveyors, of Ely, Cambridgeshire, and am also Senior Partner in Building Design International of Copenhagen.

I am Hon. Secretary of the Cambridgeshire and Isle of Ely Branch of the Council for the Preservation of Rural England.

The C.P.R.E. as a national body, having considered the merits of the four airport sites short-listed by the Roskill Commission, has concluded that on amenity and social grounds there are overwhelming advantages in choosing an offshore site. Not only does this mean that by the construction of an airport land is not lost but gained, but the land area affected by noise can be at least halved through the use of flight paths over the sea, and other attendant disadvantages are also greatly reduced.

In the Commission's short list, the only offshore site is that at Foulness, and the C.P.R.E. has accordingly decided to support the choice of Foulness and to express outright objection to the three inland sites.

In this view the Cambridgeshire and Isle of Ely and the Essex Branches of the Council concur. So does the Hertfordshire Society, which is constitutionally the Hertfordshire Branch of the C.P.R.E. and is separately represented at this hearing.†

The suggested site at Nuthampstead is situated partly in Essex and partly in Hertfordshire, but a large area of Cambridgeshire would also be affected. So far as Hertfordshire is concerned, the C.P.R.E. agrees with the views expressed by the Hertfordshire Society. As regards the effects of the airport on the countryside and villages of north-west Essex, evidence will, if necessary, be given by a representative of the C.P.R.E. Essex Branch.

My evidence is concerned with the affected part of Cambridgeshire, and in particular with the historic features and attractions of its villages.

Twenty-nine Cambridgeshire villages are within a 10-mile radius of the Nuthampstead site and a further seven are beyond this limit but within the 40–45 Noise and Number Index contour. Five villages are inside the 45–50 contour and eight are inside the 40–45 contour.

The C.P.R.E. is anxious that the noise factor should be considered by the Commission in relation not only to populous built-up areas but also to villages and to the open countryside whose quietude forms one of their main delights to both residents and visitors.

Most of the villages in southern Cambridgeshire have ancient histories, many dating back to prehistoric times. The architectural and archaeological value of the area is of great importance and is a source of pleasure, education and relaxation for many thousands each year. The villages are predominantly residential and it is the policy of the local planning authority to control development so that their natural features and characteristics are not destroyed. This policy has been largely successful.

The C.P.R.E. Cambridgeshire and Isle of Ely Branch wish the Commission to be fully aware of the natural beauty and historic character of this area which, in their view, will be disastrously affected by the use of the Nuthampstead site as the Third London Airport. The principal historic features of the thirty-six villages are now set out, commencing with those which lie to the immediate north of the proposed site and will therefore be most seriously affected.

Linton is one of the larger villages affected by the flight path of the proposed airfield. The River Granta runs through the mile-long village which has more fine houses than perhaps any other place in the area. The half-timbered Guildhall, the village inn and the many thatched properties combine with the more modern buildings to form a delightful village. A Saxon cemetery has been exhumed nearby. St. Mary's Church is a large flint and stone building of the XVth century.

Ickleton. Here the ancient Britons brought their Icknield Way across the river Cam and great monoliths were fashioned by the Romans. Here the Normans built a nunnery of which a few remains are left. St. Mary's Church is a rare example of Saxon and Norman features.

Castle Camps lies at the pointed corner of the county, flanked on three sides by Essex. Aubrey De Vere, the first Earl of Oxford, built his castle here as a defence against invaders in the 13th century. Now only the great moat, with overhanging trees, is left as a reminder of its story. The 15th-century church stands against the moat.

Little and Great Chishill are two hill-top villages set in the open southern edge of the plain of Cambridgeshire, immediately north of the proposed airfield site. The prairie-like countryside invades the village and its 14th century church and 1819 Post Mill.

Duxford is the first of the seven villages which lie within the 40–45 NNI contour. It is a charming village with two fine Norman churches and a 13th-century chapel of St. John's Hospital. The 17th-century village inn is now carefully restored.

* See also p. 918.

† p. 773.

Printed image digitised by the University of Southampton Library Digitisation Unit

Fowlmere has now neither fowl nor mere, which left when the marsh was drained as part of Rennie's scheme, but the ring of round moats have survived from untold centuries built by prehistoric men. Here is the Chequers Inn, built in the 17th century, which served as a shelter for Samuel Pepys, and situated near the round moats is the fine flint church with a lofty central needle spire and many fine medieval fittings.

Thriplow is another village situated near the ancient Icknield Way which links Salisbury Plain with the area of the Wash. Fine groups of ancient barrows can be seen on Thriplow Heath. The village houses cluster round the green but the 17th-century church is set on a hill outside the village, which in 1647 became famous as one of the important places in the struggle between the Long Parliament and the Army.

Bartlow is another village within the 40–45 NNI contour. This village takes its name from the hills nearby in Essex and the local tumulus was the last resting place for British chieftains. Four of the seven steep-sided burial mounds are still well preserved; the largest is 40 ft high and 145 ft in diameter. All seven have been excavated and have produced splendid samples of bronzes, enamels and glassware. St. Mary's Church has a circular Norman tower, which is a rarity in Cambridgeshire.

Horse Heath is another village founded by the Romans. Horse Heath Hall is a house of classical proportions and was built for the Alington family. All Saints Parish Church is a decorated and perpendicular Gothic church with many fine fittings and embellishments.

West Wratting is another village in the direct line of the flight path and is a typical Cambridgeshire village with thatched cottages and a fine 14th-century church. An invitation on the west-side gate against the church says, "Let all enjoy; Let none destroy".

Weston Colville is sheltered by fine woods and its 14th-century church is set amongst chestnuts. Here are a fine 15th-century cross with kneeling stone, ancient coffin lids and a sun-dial which has counted the hours since the Great Plague.

West Wickham stands against the Suffolk border and has a delightful simple church of flint and pebble.

Shudy Camps is the last of the seven villages which lie within the 40 NNI contour. This is a delightful residential village founded in prehistoric times and its curious name may have come from the now vanished earthworks raised when the village did battle for its survival. Here stand the round house of a post windmill and the fine front of Marmaduke Dayrell's house built in 1702. St. Mary's Church is a pleasant 13th-century Parish church with monuments and paintings which tell the history of the village.

Heydon is another village set high in the chalk hills, with thatched cottages and a pond. Its medieval church hides in the trees, with one vast chestnut which has a spread of 18 yd in diameter. Here are traces of a defensive dyke which extended 3 miles towards Fowlmere and a track-way called Green Road which still leads to Royston was trodden by men before the Romans came to the village.

Litlington church records a message written in Latin four hundred years ago on a window, reporting the departure of Francis Drake for his journey round the world. Thousands of years before that date many adventurers from overseas had settled in Litlington. Romans and Normans came to this village, and the Romans built a fine villa which was excavated in 1936.

Melbourn stands astride the A10 and has a reputation of independence and courage throughout its history. There are many old moated houses and a fine 13th- and 16th-century church. Nearby are a group of bronze age barrows along the line of the Icknield Way and a Saxon cemetery which is still under investigation.

Hinxton. The story of this village starts at about 1080, and from that time come the font in the church and a blocked doorway in the nave. The rest of the church and village is mainly 14th and 15th century. There are many thatched cottages standing in a row, with a stream which winds lazily through the village and the nearby fields. There is a fine timbered house with an overhanging upper storey at the entrance to the village.

Bassingbourn. The Church of St. Peter and St. Paul has an oak porch which is an unusual feature in Cambridgeshire. The nearby Kneesworth Hall was built for Viscount Knutsford, known as the Prince of Beggars for his work for the London hospitals. A delightful Cambridgeshire village.

Shepreth is a collection of cottages scattered at random amongst the trees. The village dates back to Domesday time and has a small green and a neat Norman Church. Many stone age implements have been found nearby and the site may once have been a lake settlement.

Meldreth is another bronze age village which produces hoards of axes, spears and swords. The Norman Parish church has a number of valuable relics.

Great Abington. The River Granta flows through the heart of this village and nearby is the overgrown Roman road and the still older Brent Ditch which bronze age men dug as a defence. The church is 15th century built in flint and pebble.

Little Abington is really rather grander than its nearby namesake and has a fine collection of thatched houses on the corner of the main street, many carefully restored during recent years. Its Norman church has many fine 13th century enrichments.

Pampisford is another very attractive village further along the Brent Ditch which shows itself in Pampisford Hall Park. The village has a fine Norman church with a tiny spire.

Whittlesford contains the ruins of the hospital of St. John which for seven centuries welcomed travellers through the village. Historically it is a village of great holiness, where men of the iron age buried their dead on Chronicle Hill with great reverence and ceremony. The River Granta appears in this village again and on the bridge was once a hermit's cell. The lovely Norman

Printed image digitised by the University of Southampton Library Digitisation Unit

church tells its own history in paintings set in oak panels. There is a fine half-timbered Guildhall at the main crossroads.

Foxton has many lovely cottages and houses and a 13th-century church with a delicate east window.

Newton. It is recorded that one summer day in 1746 a fire burnt down most of the original village and roasted the apples as they hung on the trees. Today it has 18th-century cottages at the crossroads, handsome farmhouses and a great house in Georgian style. The little cruciform church is of the 14th century, with transept arches and a font from earlier periods.

Sawston is a village which typifies all of the villages in the southern part of Cambridgeshire. Firmly linked with the past, having been established in the 14th century, it has a very real connection with the future. The fine Manor House was a refuge for Mary Tudor, and the church which stands by the house has an impressive exterior and an interesting collection of memorial brasses within. The educational idea born at Sawston, in our time, is proving to be one of the most potent factors in the transformation of the countryside. The conviction behind the movement started here is that the English heart beats best in its villages and that the people should be encouraged to stay there. The Director of Education for Cambridgeshire gave practical shape to this idea in the formation of a college for training children in rural life and work. The college was opened in 1930 by the Prince of Wales. There are acres of playing fields about each college, and indoors and out the buildings are delightful.

Hildersham is situated on the River Bourn with a windmill and a fine flint and pebble 13th-century church. It was the home of the 13th-century painter Matthew Paris. There are two oak carvings of rare value in the church.

Babraham is situated in the wooded valley of the River Granta near the Gog Magog Hills. It has a lovely village green and memorial. The church is mainly 15th century but has a good deal of Saxon masonry in its walls. High box pews can be seen in the church.

Stapleford is close by the old Roman road. The fortress of Wandersbury Camp, 1,000 ft across, has yielded coins of Nero and British Kings. Although the church is mainly 13th century, the foundations are possibly Saxon.

Little Shelford. There are many fine houses in this village, which has rare Saxon and Norman carvings in stone work in the church.

Hauxton is a village of great antiquity with remains of an iron age settlement. It was a river crossing point for the Romans. Hauxton Hall is a large handsome 19th-century house. Here is a Norman church with a rare painting of Thomas Beckett.

Harston was a Roman settlement and many remarkable finds have been made in recent excavations. Here is a beautiful Tudor Manor House standing by the embattled church and windmill. Harston House is a massive red brick building.

Whaddon is the last but not the least of the thirty-six villages whose environment is threatened by the development of the Nuthampstead site. Here the flint and pebble Parish Church of St. Mary dates from 13th century and exhibits many features of great interest to archaeologists.

The information which I have given provides an introduction to the history of the area; inevitably many points of interest and importance have been omitted for the sake of brevity.

In the view of the C.P.R.E. the construction of an airport at Nuthampstead would destroy the amenities which these communities enjoy and make life in the whole area far less attractive and in some cases virtually untenable.

Undoubtedly in the new circumstances the expense of modernisation and upkeep of the older properties would be less worthwhile and the thread of continuity which the villages represent and which has stretched through the ages would be broken.

Extensive earth movement would be required to form the airport site and any estimate of cost for the constructional work should in our view be subject to careful scrutiny. It is estimated that the volume of earth which would have to be moved would be equivalent to a column of earth, the area of Trafalgar Square and more than 2 miles high.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Council for the Preservation of Rural England*

SUBMITTED BY MR. R. DRESCHFIELD

I live at 15 Bridge Street, Writtle, Chelmsford, Essex.

I am a retired Colonial Attorney-General.

I am Secretary of the Essex Branch of the Council for the Preservation of Rural England and am authorised to give evidence on behalf of the C.P.R.E. as a national body and of its Essex Branch.

I am also Secretary of the Community Council of Essex, the Essex Association of Parish Councils and the Friends of Essex Churches, all of which agree with the views of the C.P.R.E. as expressed at this hearing.

The C.P.R.E. has the advantage of having many members with considerable experience in town and country planning and has availed itself of their advice in considering the Third London Airport problem. The C.P.R.E. has concluded that on town and country planning and agricultural grounds the siting of the Airport at Nuthampstead would be a grave mistake. I would wish, however, at this stage to leave the objections on these grounds to those with greater technical knowledge on these subjects. I will, therefore, confine myself to those objections that arise mainly from the amenity point of view.

I refer to Chapter nine of the Report named *A Strategy for the South-East*† and to the map attached showing the various zones. This chapter deals with amenity and recreation. It will be noted that the Site is largely within a proposed "country zone" and certainly wholly within an area which is either a "country zone" or a green sector. We would wish to adopt the arguments set out in paragraphs 159, 160 and 161 of the Report as the first ground for our objection to the development of the Site as an International Airport. They state:

> A Country Zone would be land which is primarily rural in character. It would include agricultural and horticultural land, forests, woodlands, common land, areas of landscape value, rivers and coast, together with existing country towns, villages, and other developments related to rural activities. The intention would be to protect the rural economy and its characteristics; to safeguard high value agricultural land; to confine development to rural activities and to resist the incursion of urban development. The new country zones would inevitably contain a large resident population in existing towns, villages, and other settlements; and there will have to be some allowance for their essential growth. But urban encroachments would be discouraged and expansion schemes would be channelled into the areas selected for growth.
>
> It will be impossible to apply these new criteria over the whole area at once and in the meantime, while this change in planning policy is being adopted, there is an urgent need to earmark particular areas for priority attention, where the country zone principle should be applied immediately. Many of these are already designated as Areas of Outstanding Natural Beauty, and our Strategy Map presents a diagrammatic picture of the areas that merit first attention. In selecting these we hoped to illustrate the role that a country zone can play in preserving broad areas of countryside between the sectors, e.g. in north Hertfordshire and north Essex, and in providing rural separation between urban developments in sectors, e.g. the Hampshire Downs and the Kent Weald. Other country zone areas, such as the Berkshire Downs, are ones which seem to merit protection in any future strategy for the region.
>
> These are the obvious areas. Bearing in mind the role of the country zone in creating stricter development control, these country zones should, ultimately, extend to include wider parts of the region coloured pale green on the map; but the process of extending the areas and introducing new planning policies (and indeed the endorsement of the areas we have selected for priority) must be discussed and agreed with the local authorities concerned. Among the criteria we have in mind which will govern this are the pressures of development on the area concerned, the aesthetic quality of the countryside, and the recreational and general amenity needs of the local population. We shall be elaborating these principles with the Government and with local planning authorities, and discussing how these ideas might be incorporated into county development plans.

A study of the map to the north of London reveals that beyond the Green Belt there is an urban and suburban sprawl the influence of which is not really left behind until Harlow is passed. Further to the east the city lights reach to Brentwood, whilst due east there is little countryside between London and Southend. The promised growth of the towns of Basildon, Chelmsford, Harlow, Bishop's Stortford and even Saffron Walden will make the rural areas between them little more than Green Belts between urban areas. Taking into account the growth of the towns alongside the A1 and the M1 it becomes apparent that the area comprising north-east Hertfordshire, north Essex and south Cambridgeshire and Suffolk must be kept free from major industrial development and from the type of development that goes hand in hand with an international airport.

To look at the picture another way, at present the 12 mile gap between Saffron Walden and Royston is

* See also p. 918.

† HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

open countryside; if the airport is placed at Nuthampstead industrial, commercial and suburban development will bring these towns together and the area will become closely linked by a network of improved roads with Letchworth, Stevenage, Hertford, Harlow and Bishop's Stortford. The result will be that a valuable amenity and recreational area to the north of London will cease to exist as such and will become urbanised.

Turning to the immediate effects on Essex, they will be disastrous to the north-east of the County. The ancient market town of Saffron Walden will not only be made unbearable by reason of noise but also its whole character will be changed. The great house of Audley End may be so affected by aircraft noise that it will cease to attract visitors and vibration from the aeroplanes may well threaten the fabric of the house. The villages of Langley and Chrishall will cease to exist whilst Clavering, Rickling, Wicken Bonhunt, Arkesden, Wendens Ambo, Littlebury, Strethall, Elmdon and the Chesterfords will not only be too noisy for normal life but will become shoddy outposts of ancillary airport development. None of these villages are of great historical or architectural importance; each has however its own character, its own charm, and all are typical English villages picturing the history of the English countryside. Their destruction as country villages will be the loss of an amenity that England can ill afford to lose. One's thoughts must of necessity turn from this area of green fields to the Maplin Sands which have so much to gain and so little to lose by the construction on them of an international airport and the industrial development and all the paraphernalia that will go with it. To build on the Sands will create wealth; to build at Nuthampstead will destroy the fundamental richness of the English soil putting in its place an industrial complex quite unsuited to the environment.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Council for the Preservation of Rural England*

SUBMITTED BY MR. P. W. MACFARLANE

1. I am a member of the Town Planning Institute, a Fellow of the Royal Institution of Chartered Surveyors and a holder of the Institution's Special Diploma in Town Planning.

2. My firm is Minoprio, Spenceley and Macfarlane, Town Planning Consultants, of 83 Pall Mall, London, S.W.1. I have specialised in town planning for over thirty years, both in this country and abroad.

3. I have inspected the Nuthampstead site and the immediately surrounding area. In my opinion its development as the Third London Airport would seriously prejudice rural amenity and constitute an undesirable intrusion into an area of unspoilt countryside.

4. The site is located within one of the most important green wedges linking up with the Metropolitan Green Belt and radiating out from the Greater London area in a northerly and north-easterly direction up to north-east Hertfordshire and into Cambridgeshire and Essex and thence into West Suffolk. This area constitutes an outstandingly important rural zone of regional significance to London and, indeed, to the whole of the South-East Planning Region. In the South-East Economic Planning Council's Report *A Strategy for the South-East*,† Nuthampstead is in the area proposed as one of the Main Country Zones, comprising land which is primarily rural in character, where the intention is to protect the rural economy and confine development to rural activities and to resist the incursion of urban development.

5. The broad segment of countryside which would be affected by Nuthampstead has as its boundary two very important trunk roads: on the west A1, the Great North Road, along which there are located a number of expanding towns, including Welwyn, Stevenage, Hitchin and Letchworth, and on the north-east A12, the Yarmouth Road which runs through Chelmsford and Colchester. At the base of this segment of countryside, on the edge of the Metropolitan Green Belt, there are the two major new towns of Harlow and Basildon.

6. The countryside within this segment retains a degree of rural remoteness and peace and quietness which is exceptional for an area so near to London. This, I think, arises from the fact that it is traversed or penetrated by few major roads and by only one important railway line. There are no large towns, and those within this rural sector are small and compact and are typical country towns and villages servicing the surrounding countryside. The industrial revolution and its more recent counterpart, the era of light industry, have passed this area by, and there is very little sign of change.

7. This is, in my opinion, as it should be. The present pattern of rural land use may be largely fortuitous, but it must be accounted a happy accident that as yet such a large tract of land on the north-east side of London has managed to retain its deep rural characteristics. Only now are we really coming to realise the value to the community of these open areas. It is a fundamental element of regional planning that such a rural sector as the one with which we are concerned should be retained—accepting, as one must, that, by contrast, there are other areas which are less rural, where the claims of urban development would take precedence over countryside considerations.

8. The scale and intensity of development which would follow the airport would cause devastation and disruption to the present rural community over a wide area. Nuthampstead is located on a plateau of high ground, and whilst a considerable amount of levelling would be required in relation to the south-east and south-west part of the site, the effect of this elevation would be to make the airport buildings, which would be on a vast scale, visible from a considerable distance. There would also be a blaze of light. The noise contours indicate that not only would such charming country towns as Saffron Walden and numerous smaller settlements suffer disastrously, but noise would also be a detrimental factor as far west as the populous and expanding new town of Stevenage.

9. Immense volumes of traffic would be generated. The present road system round Nuthampstead comprises numerous meandering country lanes, along which every so often are located little sleepy villages ribboning the roads. Even accepting that most of the airport traffic would be canalised into a selected number of new major roads I think it inevitable that additional traffic would find its way through a number of these villages, much to their detriment.

10. A number of small villages would disappear altogether, being on the site of the airport. A string of others, principally parallel to the south-eastern boundary along and near road B1038, such as Clavering and Arkesden, would be so seriously affected by noise that continued residence in them might well be found to be beyond reasonable human endurance. The particular characteristics of the villages in this part of Hertfordshire, Cambridgeshire and Essex are dealt with by other witnesses and I do not propose to go over the ground again.

11. I assume that total employment, both direct and indirect, associated with an airport at Nuthampstead

* See also p. 918.
† HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

would require a supporting population of up to 250,000, living, in the main, within say, 10–15 miles. None of the existing nearby centres, such as Bishop's Stortford, Saffron Walden, Thaxted and Royston, are suitable for expansion of this order. Indeed, this would completely destroy their present characteristics of small closely knit country towns. A major new town would be required, which would have to be located somewhere within the rural sector, probably to the south or south-east of Nuthampstead bringing large scale urbanisation, including much development of an industrial or semi-industrial nature. In addition, the presence of Nuthampstead would inevitably stimulate development in agricultural villages over a wide area and in the chain of urban centres which form a semi-circle round the airport site to the west and south at a distance of about 15 miles. These include Letchworth, Hitchin, Stevenage, Welwyn and Hatfield, Hertford, Ware, Harlow and Bishop's Stortford. The result could well be a conglomeration of urbanisation extending for some 40 miles through these town areas.

12. To sum up, Nuthampstead, as London's third airport with its consequential development, would cause devastation and disruption of rural life over a very wide area and mortally impair a regional rural sector of south-east England which so far has retained a unique sense of rural remoteness for an area so near London. I look upon the countryside round Nuthampstead as constituting a bridge between the sophisticated emparked lush areas of north-east Hertfordshire, the lovely farmlands of Essex and West Suffolk and the rolling chalk uplands and contrasting fen lands of Cambridgeshire. This is an entity which should not be broken.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Nature Conservancy*

1. Introduction

The Nature Conservancy was established by Royal Charter in 1949 to provide scientific advice on the conservation of the natural flora and fauna of Great Britain; to establish, maintain and manage Nature Reserves in Great Britain, including the maintenance of physical features of scientific interest, and to organise and develop the research and scientific services related thereto. Further powers have been conferred upon the Conservancy in various statutes, notably Part III of the National Parks and Access to the Countryside Act, 1949.

Following the establishment of the Natural Environment Research Council on 1st June, 1965, and by virtue of Section 3(3) of the Science and Technology Act, 1965, these functions have been formally transferred to the Council. As a Charter Constituent body of the Council, the Conservancy continues to exercise these functions on behalf of the Council.

The attached report has been prepared by the Conservancy to provide information on the scientific interest of the Nuthampstead area and the implications for nature conservation of the proposed development of the area for use as an airport.

2. Review of areas of scientific importance

As new knowledge becomes available, the relative scientific importance of particular sites has been kept under review and a major comparative survey of important sites is at present being carried out by the Conservancy on a Great Britain basis. Sites within the area under consideration have provisionally been classified as follows:

Grade I	Site of international or Great Britain importance;
Grade II	Sites which are either of equivalent status or only slightly less important;
Grade III	Sites of high regional importance, rated as high quality Sites of Special Scientific Interest, but not of comparable quality to those in Grade II or I.

Sites within a 10 mile radius of the site of the proposed airport, which would qualify for inclusion in any of the above Grades are referred to in 4 below, together with relevant Grading.

3. General description of the Nuthampstead area

The proposed site at Nuthampstead embraces the existing airfield. The soil of the area is boulder-clay overlaying chalk. The surrounding region is bounded to the north by the Chiltern escarpment and, to the west, south and east, by agricultural land.

Although the proposed airport site is mostly agricultural farmland, the surrounding area exhibits a variety of different habitats. There are several small woods which are of considerable botanical interest, Scales Park Wood, Beeches Wood, New England Wood and Great Hormead Park Wood, the westernmost British locality for the oxlip (Primula elatior). The woods are also of some ornithological interest.

There are three main types of natural grassland in the Nuthampstead area, Calcareous Grasslands occurring in the Chilterns, notably at Therfield Heath, wet acid heath merging with bog, now very rare in Hertfordshire, occurring at Biggin Moor and ancient wet meadows at the moor and Green End.

The area maintains considerable botanical interest. The farmland covering most of the area is typical of that found in most of Hertfordshire, with scattered hedgerows and copses and supporting a wide variety of birds and mammals.

The ornithological content of the area is largely that to be expected of any area of agricultural land, although the area contains an unusually large number of wood pigeons. The River Quin is a major migratory route of wading birds and there is some migration of gulls from the Lea Valley into the Valleys of the Rivers Rib, Ash and Quin.

4. Sites of special scientific interest*

Acting under powers conferred by Section 23 of the National Parks and Access to the Countryside Act, 1949, the Nature Conservancy has notified the local planning authorities concerned of the following Sites of Special Scientific Interest within a 10-mile radius of the site of the proposed airport:

Site	*Grading*
1. Hales Wood (National Nature Reserve)	I
2. Alsa Wood	III
3. Ashwell Springs	III
4. Barkway Chalk Pit	III
5. Barrington Pit	II
6. Bartlow Gravel Pit	III
7. Biggin Moor	III
8. Debden Water	III
9. Dernford Fen	III
10. Fowlmere Watercress Beds	II
11. Green End	II
12. Haslingfield Pit	III
13. Hildersham Wood	III
14. Maggots' Hill	III
15. Morden Grange Plantation	III
16. Patmore Heath	II
17. Plashes Wood	II
18. Quendon Wood	III
19. Reed Chalk Pit	III
20. Royston Erratic	III
21. Sawston Hall	III
22. Therfield Heath	I
23. Thriplow Meadows	II
24. Thriplow Peat Holes	III
25. Wallington Chalk Pit	III
26. Watering-place Green	III

* See also p. 919.

* See opp. p. 817.

Printed image digitised by the University of Southampton Library Digitisation Unit

The map attached* to this Report indicates the location of the above sites in relation to the proposed airport site.

Additional sites are at present being considered for notification on account of their scientific merit and for inclusion in the forthcoming revisions of the county schedules of sites.

5. **Conclusions**

The direct effect of a major airport on the conservation interest of the area would appear to be minimal. Ancillary development such as road and rail access, housing accommodation and recreational facilities and increased public pressure generally would in all probability lead to the loss or reduce the scientific merit of some of the sites listed above.

In the event of a decision being taken to construct on this site and when the pattern of ancillary development is available, detailed consideration should be given to possible means of safeguarding the more important of these sites.

* opp. p. 811.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of The Stevenage Development Corporation

SUPPLEMENTARY DATA BY MR. G. BERRY*

Ambient Noise levels in Stevenage New Town and in Residential Areas in the Region of London (Heathrow) Airport

These measurements were carried out, in accordance with my instructions in order to provide data to allow an examination of the proposition at the head of page 4† of my earlier proof, namely:

"Stevenage as a new town, has been specifically designed with regard to amenity and this results, amongst other things, in a lower ambient noise level than is enjoyed in comparatively random (or natural) development as around Heathrow."

Measurements were made at Stevenage at points within the town selected by the Consultant Planner of the Development Corporation as typifying the various planning designs employed in the town. The points are listed in the attached Table GB/3 and are also shown on the Plan GB/3‡ attached. Measurements were first made between 09.15 hr and 10.30 hr on the 12th June 1969, to provide a day-time ambient and between 22.30 hr and 23.15 hr to provide a night-time ambient level.

Measurements were also made at points in the area under the influence of Heathrow Airport, in the general area shown in the maps of the Wilson Report* as Slough, Upton, Langley, and Datchet. Positions were chosen in quiet residential areas, out of sight of main roads or other roads carrying heavy traffic and an attempt was made to choose points which in general might be described as similar to those selected in Stevenage. Measurements were made between 14.30 hr and 15.30 hr to provide a day-time ambient on 12th June and again between 00.30 hr and 02.15 hr on 13th June to provide a night-time ambient.

In both cases the measurement made was of the "mean minimum ambient" as defined in Note 1 of Clause 4.2 of B.S. 4142:1967. This value is also described as a typical low value ignoring occasional extraneous sounds, so that nearby intermittent noises, due to children, passing cars, aircraft overhead are ignored as far as possible. At all measurement points there was little or no wind. The measured values are listed in Table GB/3 and GB/4 attached.

The results suggest that the ambient noise level is lower at Stevenage than in the environs of Heathrow by the order of 5 dBA and there is, therefore, some support for the basic statement. It is recognised that a much larger social survey may be required to confirm the fundamental proposition that a lower ambient level results in greater sensitivity to aircraft noise.

* See also p. 315.
† p. 66.
‡ Available for inspection by arrangement at The Stevenage Development Corporation.

* Cmnd. 2056 (HMSO; 19s. 6d.)

TABLE GB/3

Ambient noise levels in Stevenage New Town

Measurement position	*Type of area*	*Main source of noise (if any)*	*Daytime level dBA*	*Night-time level dBA*
1. Off Grace Way	Residential		39	39
2. Off Wisden Road	Residential		41	37
3. Off Meredith Road	Park	Distant earth moving equipment	48	38
4. Off Newton Road	Residential		46	36
5. Austen Paths	Residential (Rear Courts)		42	28
6. Off Wigram Road	Residential		46	39
7. Off Park Close	Residential		38	33
8. Off Broad Oak Way	Residential and School	School children playing	48	39
9. Off Whomerley Road	Residential	Tractor operating	46	37
10. Off Linkways East	Residential		45	34
		Range	38–48	28–39
		Average:	44	36

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE GB/4

Ambient noise levels in the environs of Heathrow

Measurement position	*Type of area*	*Daytime level* *Main source of noise (if any)*	*dBA*	*Night-time level dBA*
1. South Datchet	Residential		48	39
2. Keel Drive, Chippenham	Residential		48	41
3. Darvils Lane, Chalvey	Residential and School	School children	54	43
4. Clarton Road, East Slough	Residential		45	40
5. Lascelles Road, Upton	Residential		50	43
6. Turner Road, Langley	Residential	Trains	48	42
7. Castleview Road, Upton	Residential		45	40
8. Lichfield Road, Harton	Residential		53	43
		Range:	45–54	39–43
		Average:	49	41

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Representations

Representations were also submitted by the following who did not appear, or did not seek leave to appear and are available for inspection, by arrangement, at the Commission's offices

Mr. K. Allsop
Mr. S. Alper
Anstey Parish Council

Arkesden Parish Council
Arkesden Women's Institute
Mr. M. Ashby
Aspenden Parish Council

Babraham Parish Council
Mr. A. Baird
Mr. G. V. Baker
Balsham Parish Council
Balsham Women's Institute
Mr. C. G. E. Barclay
Barkway Parish Council
Mr. F. H. Barrel
Mr. L. Barters
W. J. Bates & Sons
Miss V. C. Bearman
Mr. R. E. Beddington
Bedfordshire Old Peoples Welfare Council
Mr. & Mrs. E. Bennett
Dr. G. C. L. Bertram
Biggleswade Rural District Council
Miss P. Biggs
Bishop's Stortford Urban District Council
Col. R. V. Blott
Mr. R. W. H. de Boulay
Braughing Parish Council
Mr. & Mrs. G. Butler

Cambridge Civic Society
Cambridge Preservation Society
Cambridge Water Company
Mr. R. Carter
Mr. P. Chalkley
Chrishall Parish Council
Chrishall Preservation Association
Clare Rural District Council
Clavering Parish Council
Mr. A. Clayton
Mr. L. E. Coleman
Miss L. Corner
Mr. J. C. Crane
Mrs. K. F. Crossman
Mr. R. Crow
Mrs. D. E. Cunnel

Mr. W. H. Darling
Baron Dimsdale
Mrs. D. Dixon

Mr. S. S. Donald
Mr. E. J. Douglas
Mrs. B. Driver
Mr. L. A. Drury
Duxford Parish Council

Eastern Federation of Amenity Societies
Mr. E. E. Edwards
Mr. A. R. Ellis
Mr. & Mrs. B. E. Erith
Essex Residents (Petition)
Miss D. H. Evans

Mr. H. W. Fauvre Walker
Mr. & Mrs. R. J. Franklin
Mr. S. French
Mrs. S. French
Mr. W. Fordham
Furneux Pelham Parish Council

Gibson Women's Institute
Mr. & Mrs. P. Groves
Great Abington Parish Council
Mr. A. S. Greenwood

Hadham Hall School
Mr. W. S. Hales
Mr. & Mrs. J. Hands
Harlow Urban District Council
Harlton Women's Institute
Mrs. J. M. Harrison
Mr. G. E. Hawthorn
Mrs. G. E. Hawthorn
Mrs. E. M. Hayes
Mr. & Mrs. B. Haylock
Mr. J. W. F. Hindcliffe
Hitchin Association for the Control of Aircraft Noise
Mr. E. Hollett
Mrs. P. M. Holyoake
Homerton College Cambridge
Miss D. M. Hooper
Hormead Parish Council
Hormead Women's Institute
Miss A. M. Huskinson

Ickleton Parish Council
Ickleton Women's Institute

Capt. J. James
Mrs. G. Jones
Mr. J. A. Jones

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. D. A. W. Kay
Mrs. A. M. Kelly
Mr. P. G. Ketteridge
Mr. F. K. Kidd
Mr. D. E. Kiddy

Miss M. Lambert
Langley Women's Institute
Mrs. F. Lawdon
Mr. A. W. Lawson
Mr. J. K. Lee
Lee Conservancy Catchment Board
Linton Action Group Nuthampstead Preservation Association
Litlington Parish Council
Little Hadham Branch Nuthampstead Preservation Association
Little Hadham Parish Council
Little Walden Women's Institute
Mr. R. Loveday
Miss C. M. Lowe
Mr. R. H. Luckock
Lucy Cavendish College Cambridge

Mr. E. S. McCombie
Dr. M. G. Macdonald Smith
Mr. I. P. McMullen
Mr. & Mrs. R. P. McMullen
Maldon Rural District Council
Mr. N. W. Marriot
Miss E. Maughan
Mrs. M. E. Maughan
Mr. J. E. F. Mawer
Meridan Women's Institute
Methodist Church Bishop's Stortford Circuit
Mid-Bedfordshire Constituency Liberal Association
Mr. J. H. N. Molesworth

Mr. F. D. Newton
Mr. & Mrs. J. F. Nicholls
Mr. E. D. Nightingale
Nuthampstead Parish Meeting

"The Occupier" Ashford House
Mr. D. H. Oliver
Mr. E. N. C. Oliver

Pampisford Parish Council
Mr. R. J. Paterson
Mr. S. Paterson
Mr. R. Payne
Mrs. E. M. Phillips
Major & Mrs. C. R. Philipson
Mrs. M. J. Pickering
Pye of Cambridge Ltd.
Mr. P. Pym

Mrs. A. Revell
Mr. L. F. Revell
Mr. C. Rhodes
Mr. T. S. Riches
Mr. D. R. Robertson
MR. C. H. W. Root
Mr. P. A. Rosenthal
Mr. M. Rowland
Miss B. Rowland
Royston & District Chamber of Commerce

St. Albans Rural District Council
Borough of Saffron Walden
Saffron Walden College
Sandon Parish Council
Mr. R. W. Schoop
Mr. B. W. Shepherd
Mr. J. D. Skinner
Smith, Kline & French Laboratories Ltd.
Mr. I. J. Spencer Thomas
Mr. H. C. Stacey
Stansted Parish Council
Steeple Morden Parish Council
Mr. D. Stinson
Mr. A. A. M. Stripp
Mr. & Mrs. Sweatman

Mr. E. R. Taylor
Miss J. I. Teak
Tewin Parish Council
Mr. R. S. Titmarsh
Arthur Tucker & Spearmans Ltd.
Mr. A. R. Tucker
Mrs. M. C. Tucker
Miss P. Turner

United Cambridge Hospitals

Sir F. Vallat
Mr. A. Vandome
Mr. P. F. Vowles

Walkeron Parish Council
Mr. D. B. Wardle
Mr. & Mrs. C. B. Watson
Watton-at-Stone Parish Council
Welwyn Rural District Council
West Suffolk County Council
West Wickham Parish Council
Mr. J. C. Wilkerson
Mr. A. C. Wilson
Mr. J. C. Wilson
Mr. & Mrs. T. Winterbottom
Wicken Bonhunt & Clavering Women's Institute
Wymondley Parish Council

Youth Hostels Association

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

MONDAY 9 JUNE 1969

THE TOWN HALL, ROYSTON, HERTS.

Before MR. A. J. HUNT

Oral evidence was taken from:

Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils
(*Mr. G. I. W. Dunford, Mr. L. C. Kitching, Mr. B. H. Mellor, Mr. W. D. Peters, Mrs. N. Fleming, Dr. E. E. L. Owens, and Mr. D. E. Tanton*)

Bedfordshire County Council, Dunstable County Council, Ampthill Rural District Council, Biggleswade Rural District Council and Sandy Urban District Council
(*Mr. M. Connell*)

Luton County Borough Council
(*Mr. C. K. Cole and Mr. S. McArdle*)

Cambridge City Council
(*Mr. J. Elven*)

Royston Urban District Council
(*Mr. D. J. Walker*)

Mr. H. C. Beddington
(*Mr. J. G. Eve*)

Stevenage Development Corporation
(*Mr. G. Berry*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Good morning, on a very beautiful morning in Royston. This is a Stage II Local Hearing to enable representations to be made to the Commission on the Third London Airport, concerning the assumption that the Airport might be located on land in the vicinity of Nuthampstead.

In seeking a venue for this hearing, the Commission thought it right to look for accommodation which would be most convenient for those who will be most affected. We are, therefore, extremely grateful to the Royston Urban District Council for the use of this refurbished Town Hall, and also for all the assistance given in making the arrangements, for all those who will attend.

I am sorry there will be some overcrowding in the initial stages, but this may diminish as the days go on. For those who may not be familiar with the scope and purpose of a Stage II Hearing within the over-all task of the Commission, a Statement has been published,* and copies are available in the hall. Shortly, these hearings occur at an early stage in the Commission's programme; their purpose is to ensure that the Commission is made aware of all the local implications they should take into account. All material submitted at this stage will be most carefully considered in subsequent and more detailed work upon each of the four short-listed sites.

As a result of pre-hearing procedures, a total of 63 authorities and other parties were given leave to be heard. Those wishing to be heard can do so in an agreed order, commencing with the first tier authorities. That agreed order, and our best estimate of a timetable, has been circulated, and copies of the document are available. The timetable has been based to some extent upon experience gained at a similar Foulness hearing, but of course will almost certainly have to be varied to some extent, depending upon the rate of progress. The morning sessions will commence at 10 a.m. and continue until shortly before 1. The afternoon sessions will commence at 2.15 and end about half past 4. A verbatim report is being taken, and in passing, closure at about 4.30 is essential in order that the transcript may be ready for the following day.

As to procedure, all parties have now circulated their statements, proofs of evidence, and similar documents. I believe in fact there are four maps still to come from the Nuthampstead Preservation Society, but they will be here, if they are not here already. All documents have been copied and circulated to all other parties having leave to appear. Accordingly, documents should be taken as read, and the need for examination in chief should be largely eliminated.

As all matters raised at this hearing will be subjected to rigorous examination during later Stages of the Commission's work, that is at Stages III, IV and V, I believe it would be most useful if cross-examination is directed towards defining and crystallising issues, rather than resolving them at this Stage. It will, I am sure, be in all our interests if unnecessary repetition is avoided. As a member of the Commission which has been studying the problem for a year, I have some knowledge of what is involved. I have spent many days travelling round the Nuthampstead area, so I should be reasonably conversant with matters raised during this hearing here.

Certain parties, in all about 80 in number, have relied upon written submissions at Stage II. I would like to stress and emphasise that these will be taken fully into account, both at this stage and during the subsequent consideration by the Commission. Copies of the written submissions are available in the hall for inspection by those interested.

At the hearing I am supported by the Deputy Secretary of the Commission, Mr. Atherton, who is sitting at a table in the front of the hall, and also by a small staff. They will be pleased to answer and advise about questions of any documents, about the timetable, or other minor procedural matters. If there are any major procedural points which are puzzling people, I will endeavour to answer them now.

Before calling upon the representative of the Joint Councils, that is the County Councils of Cambridgeshire and the Isle of Ely, Essex and Hertfordshire, to present their representations, are there any major procedural points which I can try and resolve now?

There is just one final point of detail. We wish, of course, that the transcript should be a complete and accurate record of proceedings, and to assist in this objective, would each speaker please identify himself or herself when speaking for the first time, and where appropriate, give the name of the interest they represent, and then for greater accuracy there are small printed forms available which, if filled in and placed in the green box resting in front of Mr. Atherton, will be incorporated in the transcript, and will ensure it is accurate. If there are no questions and no problems, I will call upon the County Councils of Cambridgeshire and Isle of Ely, Essex and Hertfordshire to present their representations, Mr. Douglas Frank.

Mr. Frank My name is Douglas Frank, Queen's Counsel. I appear with my learned friend Mr. David Keene for the County Councils of Cambridgeshire and the Isle of Ely, Essex and Hertfordshire and for the following second tier authorities: Chesterton Rural District Council; Newmarket Rural District Council; South Cambridgeshire Rural District Council; Saffron Walden Borough Council; Saffron Walden Rural District Council; Hemel Hempstead Borough Council; Baldock Urban District Council; Bishop's Stortford Urban District Council; Hitchin Urban District Council; Hoddesdon Urban District Council; Letchworth Urban District Council; Sawbridgeworth Urban District Council; Stevenage Urban District Council; Ware Urban District Council; Welwyn Garden City Urban District Council; Braughing Rural District Council; Hertford Rural District Council; Hitchin Rural District Council; St. Albans Rural District Council; Ware Rural District Council; Welwyn Rural District Council; Hertfordshire Association of Parish Councils and Letchworth Garden City Corporation.

* *Site information for Stage II Local Hearings. 2. Nuthampstead* (HMSO; 6s.). Reproduced at p. 601.

Printed image digitised by the University of Southampton Library Digitisation Unit

Sir, it might first be useful if I say what interests the County Councils and the second tier authorities have in this matter. The airport inevitably would result in a major growth of housing, shops, offices and industry plus a demand for schools, roads and other public services. It is therefore a major concern to the County Councils and the second tier authorities as authorities responsible for town and country planning and for the provision of major public services, and of course noise is of concern to the County Councils and local authorities as representing the public. Of course it is of particular concern also to the County Councils as local education authorities—the cost of sound-proofing is very high indeed and it can only be apparent indeed as you will have seen from the evidence. The cost of sound-proofing of schools will be of the order of £10 million and that is not a guess, it is a scientific calculated estimate. So the local authorities are deeply concerned in this matter and it goes without saying that they are all strongly opposed to the siting of a major airport at Nuthampstead.

During the course of the Foulness Inquiry I took a day off to visit this area in company with Mr. Kitching and Mr. Manson. We did about 100 miles in that day. It was a magnificent sunny day. The landscape was unbelievably fine. It is an area which I did not know very well and when I came back after that day I could only conclude at first that the possibility of Nuthampstead being a third London airport can only be regarded as a sick joke, but of course the Commission do not make jokes and there must be something outside the scope of the inquiries at this stage which has persuaded the Committee to put Nuthampstead on the short list. The local objections in themselves are so formidable as in my submission to be overwhelming and therefore there must be other matters which we shall hear about in later stages.

Indeed, Nuthampstead is objectionable as a site for a major airport on other grounds relevant to this inquiry and those grounds can broadly come under three headings: regional and local planning, under which heading I include such things as conservation of the landscape and countryside; secondly, noise, and third agriculture.

You will recall that when the Chairman of your Commission wrote to the President of the Board of Trade setting out the short-listed sites, in paragraph 6 of that letter he said: "The necessary detailed investigation will form an important part of the next stages of the work. The Commission looks forward to the assistance which it will obtain from evidence of a local character to be given at the public local hearings into all four short-listed sites."* The County Councils are anxious to take advantage of the opportunity of giving evidence of a local and regional character in relation to town and country planning and we welcome the indication that the Commission has a particularly open mind on these sites. The evidence shows—and it is all set out in detail in Mr. Kitching's† evidence—that every major body concerned with planning oppose the siting of a major growth point in this area, and that the effect of an airport would be repugnant and irreconcilable to accepted policies and the effect on landscape, amenity and agriculture can only be described as catastrophic. I hope by now that everybody has read the proof of evidence of the County Planner Mr. Sharman* and it is unnecessary for me to go into great detail on the damage which would be done to this area. Much of it as can be seen from that map up there is areas designated or proposed to be designated as areas of great landscape value. Nearly all of it is attractive countryside. Included in it are many conservation areas, that is conservation areas designated or proposed to be designated under the Civic Amenities Act, and a number of villages and hamlets actually lie within the boundary of the airport site. It is no exaggeration to say that that landscape, those conservation areas and many villages and hamlets of outstanding character will be ruined. More than that, of course, the siting of a four-runway airport in all involves the urbanisation of something like 62½ square miles of land.

I can turn again for a moment to the associated urban development. The site itself one would think is unsuitable for an airport. It is exceptionally hilly and as Mr. Sharman has pointed out it would take ten to fifteen years of large-scale construction involving very heavy cost, the movement of something of the order of 120 million cubic yards of soil about half of which is chalk with all the difficulties that go with that chalk, or to put it another way it means moving about 50 million cubic yards per year for over ten years. Nothing like this has ever been attempted before and it will involve a mass of machinery and the ruination of the landscape. In addition to that, something of the order of 3 nearly 4 million cubic yards of sand and gravel will be required and that in itself means that the area—perhaps a large area—will be subjected to the movement of up to 300 15-ton trucks a day. In addition to that there will be the vehicles required to move other materials such as cement, steel and timber. So, although we look at an airport on a long term basis, it can be seen that the construction itself will extend over a long time and will involve disruption not only of this area, but of other areas as well in the employment of these vehicles. The site of an airport is by no means the only problem: as you will have seen from Mr. Kitching's evidence* it is calculated that this airport would attract in all a population of nearly 384,000, because one is concerned not only with the number of people who will work on the airport, but their families and the services which are needed to provide for them, and that is about the figure.

The Commission have asked the local planning authorities to assist them in suggesting where that urbanisation, as it is called, should take place, and the three county councils concerned here have sought and been anxious to assist the Commission, and have put forward proposals based on three suggestions. My instructions are to emphasise that these proposals are put forward, because they are the least unsatisfactory.

* Reproduced in Papers and Proceedings, Vol. III.
† p. 616.

* p. 616.

Printed image digitised by the University of Southampton Library Digitisation Unit

They make the best, we think, of a very bad situation, and the county councils are completely opposed to them, and they are opposed to all the established policies of the county council; we think that they would be repugnant to every planning principle, but if the airport is to come to Nuthampstead, then that is our suggestion for the siting of the urban areas.

Later I will describe generally the additional effect on agriculture of the associated urban development: it is sufficient to say at this moment, that we would, by the associated urban development, be taking still larger areas of attractive countryside into an alien use, and very large areas of land.

As I have pointed out, the proposals for growth, of any major growth, of this sub-region, if I may call it that, is alien to the policies and pronouncements of the bodies who are concerned officially and unofficially with town and country planning in this particular region. Indeed, one can see from the Government White Paper on Stansted* that it is the Government's view that Stansted was objectional on regional planning grounds. In paragraph 67 it was said that:

> In the Government's view the strongest of the objections to Stansted is on regional planning grounds. The inspector points out in his report that the airport would attract a considerable increase in population which would have to be housed and serviced. He thought that if full value was to be obtained from the cost of creating a new major traffic focus suitable industries would also have to be accommodated. He concluded that the whole character of a large tract of land—at present predominantly rural—would be completely altered and that on the evidence submitted to him development of this kind in this area would be bad regional planning.

Although the Government did not accept a great deal of what the Inspector had said, following the Stansted Inquiry, they accepted that.

Now, at Stansted at that time we were dealing only with a two-runway airport, and I think it was postulated that would attract a population of 100,000, which is a little more than a quarter of the population we are talking about to be expected at Nuthampstead. Stansted is only 9 miles from Nuthampstead, and if Stansted is objectionable on regional planning grounds for a two-runway airport and 100,000 population then Nuthampstead is at least twice as objectionable on regional planning grounds.

Your Minister has recently acknowledged the landscape value of this area in a decision dated the 2nd June 1969, on an appeal by Span Development against a refusal of permission for the creation of a new community of about 10,000 persons at Great Chishill, in South Cambridgeshire. In the course of the decision letter one finds the report of the Inspector in which it is said:

> Nevertheless, how ever well designed and executed the proposed village might be, there was clearly a danger that when seen from more distant viewpoints the individual character of its buildings would be indistinguishable and would coalesce into an urban conglomeration of a prominent site in a tract of open, undulating country of unrivalled attractiveness, and value in this generally flat landscape. The effect of the development on Great Chishill, Barley, Haydon and, possibly, on some of the other charming villages which formed an intrinsic part of the character of this pleasant rural area, would be catastrophic, the nearer ones in all probability being completely overwhelmed.

If that is true, how much truer would that be for a major airport attracting 384,000 persons. Not only do we find in the county council's own population and development plans large areas which it is intended shall be preserved, such as areas of great landscape value and conservation areas, we find similar proposals in many other documents, and particularly *A Strategy for the South East.** In all published documents on regional county planning, an airport at Nuthampstead would be wholly repugnant.

Now, sir, if I may turn to the next matter, which is that of noise, because noise is concerned, and does concern very large numbers of people, and experience with other airports, such as Heathrow, fully confirm the apprehension that people have. I suppose by now most people know of the commonly accepted method of measuring noise nuisance is by reference to contours based on the Noise and Number Index, which we abbreviate to NNI Contours. They are based on the degree of noisiness to be expected and the frequency of that noisiness, that is the test which has been adopted by the Commission as we see from paragraph 5 of the Site Information. In sub-paragraph 14 it will be seen the Commission assesses noise nuisance in this way; they say: "The present population (based on the 1966 Census) affected by the different NNI contours are estimated to be: Intrusive Noise Level, NNI 40–45, with a four-runway airport (I ignore the two-runway airport because we must assume that there is going to be a four-runway airport, in my submission), 51,500 people, intrusive/annoying noise level, that is 45–50 NNI, 10,000 people". Then they call annoying 50 +, 4,500 people. With great respect that 50 + annoying does not tell the whole story because on the 50 + you get the range of noise which is unbearable, not merely annoying.

Mr. Fleming's approach is slightly different; he, as one can see from the map there† extends his contours down to 35 NNI, and he does so for one important reason, at any rate, because so far as one can tell nuisance at night by noise occurs or begins to occur at about the 35 NNI contour, and so he drops it down to that figure. He does not accept the Commission's view that a reduction of movement would offset the annoyance; he thinks that the scale of the reduction would not be sufficient to have any significant effect.

* *Third London Airport* (Cmnd. 3259) (HMSO; 3s.).

* HMSO; 15s.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

I may say that Mr. Fleming is perfectly consistent in his approach: only last week he was giving evidence at Southampton in favour of an airport, and although it was to the advantage of his then clients to minimise the noise nuisance at that Inquiry he took his contours down to 35. I am sure it need hardly be said a man of Mr. Fleming's standing would not do otherwise than attempt to be fair and consistent, and, of course, he did the same in the Foulness Inquiry. At the other end of the scale he takes his contours up to 55, 55 +, and he does this for a most compelling reason, one would think: namely it was at this point that the noise level becomes unacceptable or intolerable.

Having produced those contours, Mr. Kitching and others have assessed the population who would be affected by noise nuisance, and assuming—it is all set out in more detail in his proof—four runways, taking the 1966 population, over a quarter of a million people would suffer noise nuisance in varying degrees, and by 1981 that quarter million will have become 400,000. It may be said: well, if it is decided to site the airport at Nuthampstead, then one ought not to permit any further growth within the noise nuisance contours. As Mr. Kitching has pointed out, that would be an impracticable course. What we have to look at, and I hope you will think it is not looking too far ahead to look at 1981, we have to look at the stark fact that if the airport is sited at Nuthampstead, something of the order of 400,000 people are going to be subjected to this noise nuisance, and we further hope that the Commission will regard that stage of affairs as wholly unacceptable.

The noise problem does not end with the effect on the general population, because one must also consider the effect on schools. The NNI is not appropriate to this noise nuisance at schools because one is concerned there with the interruption of speech communication, and to find out whether that occurs sufficiently often as to be a serious disadvantage in the school. The noise interruption there is measured by perceived noise decibels, PNdB. Mr. Fleming deals with that again, and Dr. Owens* shows that approximately 240 schools will be affected to an extent that sound-proofing would be required, and that the cost of that sound-proofing would be almost £10 m. As I have said, that is not a guess, it is a reasonable estimate. But, of course, even sound-proofing is only a palliative; it does not overcome the nuisance which would be caused to carrying on activities outdoors, nor does it overcome the great inconvenience of having to carry on activities indoors with windows closed.

At the end of his proof of evidence, Dr. Owens sets out the various schools and the number of children in them;† unless my arithmetic is wrong, there will be 63,000 children in schools where the noise effect is such that sound-proofing is required. If anybody likes to spend the rest of the day checking by 63,000, I shall be delighted. Additionally, as you will see from the evidence, 15 hospitals will be affected, and so will a number of Research Institutions, some of which are separately represented at this Inquiry. So, Sir, the effect of a Third Airport at Nuthampstead on a large number of people would be very severe indeed by reason of noise nuisance, if nothing else.

I turn to agriculture. Almost the whole of the airport site as shown yellow on that map, and that is a reproduction I think from the Commission's own map, in fact over 7,000 acres of it is Grade 2 in the Ministry of Agriculture's classification, and Grade 2, as you will know, means that the land is almost the best quality agricultural land, and indeed it produces yields much higher than the national average. The siting of the airport here will affect some 39 farms, 15 farmers will lose all their land, 8 farmers will lose over half their land, and other farms will become untenable because of fragmentation—and, of course, that is not the end of the sad story.

You then have to see the effect of the associated urban development. As you know, there are two new areas, that is to say so far undeveloped areas, proposed by the planning authority; I refer to the Stage 2 and Stage 3 of the urbanisation. The Stage 2 urbanisation is just north of this town, and it is all in Cambridgeshire. It includes 40,000 acres of land in agricultural production, and 85 per cent of it is Grade 2 land, and high grade Grade 2 land at that. Indeed, it has been described as one of the finest areas of agricultural land in this part of the country, and is farmed to a high standard, and produces fine arable and market garden crops.

Stage 3 urbanisation is in the Stansted Mountfitchet area; 40 per cent of that is in Essex and 60 per cent in Hertfordshire, and it includes 11,000 acres in agricultural production, of which about 50 per cent is Grade 2 land, and 50 per cent is Grade 3 land. Apart from those two major developments, there will also be a loss and a considerable, but at the moment immeasurable loss in the Stage 1 development. There will be further loss of agricultural land in the provision of roads and railways which it is not very easy to estimate at the moment. It can fairly be said that there will be a loss of agricultural land of approximately 40,000 acres, and nearly all of it of high quality agricultural land. There will be the fragmentation of farms, and also there will be land drainage problems, and in truth, as Mr. Tanton has said, this proposal for siting the airport at Nuthampstead would constitute a disaster to agriculture.

They are the two main headings; I have not attempted to do any more than sketch out the more important matters which appear from the evidence, because it seemed rather pointless to me and also a waste of a lot of your time and that of other people, in going through what everybody has already read, or it is hoped they will have already read in the proofs of evidence. As I have said, the County Councils are very strongly opposed to the airport being sited at Nuthampstead. It is a marvellous tract of country, and if an airport were sited there, it may well be that our descendants would regard it as a monument to the callous materialism of this age, and we hope that you will find these local objections so powerful and persuasive that whatever may transpire to be the other advantages, they cannot possibly be

* p. 640.
† p. 642.

Printed image digitised by the University of Southampton Library Digitisation Unit

sufficiently strong to outweigh these objections. You may find it, and others may find it useful, if I let you know what the various witnesses will be that I am going to call. Mr. Sharman will deal with Regional Planning, the timing of the proposal, what the construction would involve. Mr. Dunford, who I am going to call next, because he is unable to be here tomorrow, will deal with air traffic control conflicts; then Mr. Kitching, the County Planning Officer of Hertfordshire, will deal in detail with County policies and the policies of other bodies, concerning town and country planning. He will deal with the estimates of the population within the NNI contours, and of course, he will explain the areas of great landscape value, the conservation areas, and so on. Mr. Mellor of Cambridgeshire will say what he considers will be the effect on Cambridge; Mr. Peters similarly from Essex on Saffron Walden; Mr. Fleming will speak as to the NNI contours, the noise effect on schools, and other institutions; and Mr. Owens will also deal with schools. Mr. Tanton will give the agricultural evidence. I propose, therefore, to call Mr. Sharman first.

MR. FREDERICK ANDREW SHARMAN *called**

Examined by Mr. Frank

2793 I will introduce Mr. Sharman, and then tender him for cross-examination. You are Frederick Andrew Sharman; you are a Chartered Engineer, a Bachelor of Science in the University of London, a Fellow of the Institution of Civil Engineers, and a Member of the Institution of Highway Engineers. You have practised as a civil engineer since 1940, and for 23 years you have been with Sir William Halcrow and Partners, a firm of consulting engineers employing some 350 qualified engineers, and having major responsibility in such projects as the proposed Channel Tunnel, the Victoria Line, and large scale construction projects in many parts of the world; you are an Associate of that firm. You have been responsible among other works for the design of three airport runways and an airport terminal building, as well as for road systems, two motorways and a number of bridges. You are a member of the Executive Committee, and Honorary Secretary of the Regional Studies Association, an organisation devoted to the co-ordination of physical and economic planning on a regional scale. You were, I think, responsible for preparing a report on the location of the Third London Airport by Sir William Halcrow and Partners for the Essex County Council, and subsequently, have been responsible for all work carried out by the firm for Essex County Council in connection with the location of the Third Airport, including giving evidence at the Public Inquiry on the proposal to develop Stansted as the Third London Airport, and the preparation of the Second Submission† to the Commission on behalf of the Essex and Hertfordshire County Councils. You have also prepared and given evidence at the Public Inquiry on a proposal to extend one of the runways at Southend Airport, and at the Public Inquiry on a proposal to extend Rhoose Airport. You have been asked by the Counties of Essex, Hertfordshire and Cambridgeshire and Isle of Ely to submit technical evidence relating to the local effects of siting the Third London Airport at Nuthampstead? — Yes.

Mr. Frank I have nothing additional to ask Mr. Sharman.

Inspector Are there any questions to Mr. Sharman from First Tier Authorities concerning his circulated proof of evidence? Are there any questions from other local authorities? I will pass on to the various associations and institutions, etc.

Cross-examined by Mr. Robert Lymbery, Q.C. (Stevenage Development Corporation)

2794 My name is Lymbery, Queen's Counsel, appearing for the Stevenage Development Corporation. There are just two matters, if I may, concerning the rail link from the proposed airport to the King's Cross line. First, Mr. Sharman, it is a little difficult to be precise on the ground as to where this line runs, having regard to the thickness of the line on the map,* but could I have your confirmation that the line would miss this Stevenage designated area to the south-east; in some maps it shows as if it will just clip it. — It is intended to find the route in detail for that rail link which would cause the minimum of interference with the Stevenage area, but the line shown in the evidence is only a diagrammatic and notional one, and is not related in sufficient detail for me to indicate any more precisely than has been done by the thick line where it is at present thought that such a line will be found.

2795 There is just one other matter affecting that link which does not in fact affect Stevenage, but I would welcome your views. The line is shown to come in ultimately to the main line at about Woolmer Green? — Yes.

2796 Is it right that from King's Cross, this of course is the main line northwards to Edinburgh, and serving much of the Midlands and the North Country in between? — Yes, that is so.

2797 Carrying express passenger and local passenger traffic, express freight and goods? — Yes.

2798 This is a very busy line? — Yes, it is.

2799 Is it right that from King's Cross to well into the North, certainly north of Peterborough, if not beyond, the line is principally four-track line? — It is so.

2800 Is it right that there is a bottleneck, and I should welcome your views on this, I think it has been regarded as a serious bottleneck over the viaduct which lies between Welwyn Garden City and Welwyn North Stations, and also the two tunnels about a thousand yards in length which lie to the north of Welwyn North

* See also p. 607.

† Available for inspection, by arrangement, at the County Council Offices, Chelmsford and Hertford.

* opp. p. 672.

Printed image digitised by the University of Southampton Library Digitisation Unit

Station which can accommodate only two-track? — This is perfectly correct, and one must allow, in envisaging full development of this rail link, for considerable expenditure in ensuring that there is no decrease in the facilities now available, either on main line or on the local services.

2801 I think at the present stage it is regarded as something of a problem, if one has an additional branch line serving the airport, this would add certainly to a very severe problem as it exists at present? — I think it should be made clear that the Advanced Passenger Train system would involve the exclusive possession of a track, so that the intention to use the existing route is simply to take advantage of such spare land as exists along the route, and to minimise severance problems, but in the ultimate development of the Advanced Passenger Train system, there would be no common use of tracks, though there might be in intermediate stages. All this would have to be planned out with due regard to the maintenance of existing facilities.

2802 At any rate, in the area I have referred to, it would certainly seem two tunnels and another viaduct if you were going on that particular line, it would involve a great deal of expenditure? — Estimates for this work are in fact being prepared for Stage III of the Inquiry, but they are not relevant today.

Inspector Are there any other questions from other Institutions?

Cross-examined by Mr. Neville Wallace (National Farmers' Union)

2803 The name is Neville Wallace, and I appear for the National Farmers' Union. I would just like to ask two very quick questions on your proof of evidence at page 8, under para. 5.1.3, where you are referring to water supply. Have you any idea what would be the cost of the water supply to be provided for an airport at Nuthampstead? — I have no estimate development supply cost; it would have to be a quantity phased out year by year, and on a long term provision basis, and of course, it would have to be compared with the arrangements which are being made in any case to supply this area, and to supply other parts of the South East Region if it were to be relevant in a comparison between one site and another. It is an extremely difficult thing to calculate fairly and usefully what the differential cost is.

2804 But specifically in relation to Nuthampstead the answer would appear to be No? — This is so.

2805 I have a similar point in relation to para. 5.2.1. You refer there to Sewage and Waste Disposal and Surface Water Drainage. You say midway down that paragraph: "The cost of such a scheme would be high". Have you attempted to produce a range of cost to justify that statement? — Not actual figures. It is quite easy to see by inspection what is in any event in the catchment areas, that this statement is a reasonable piece of engineering judgment, but the work of actually detailing the scheme—and it is, of course, irresponsible to talk about actual figures of cost until some design details have been put down—that work is a fairly long exercise which can only properly be carried out by the water authorities.

2806 You would not care to venture an opinion as to how high is "high"?

Inspector I am not sure your replies are being transmitted, Mr. Sharman. — I am sorry. Yes, the answer there is that the costs will have to be estimated as best one can in Stage III of the Commission's work, and attempts will be made to do this, but at the present, anyway, I certainly have not got figures that I can produce to substantiate the statement. I can only say it is a piece of engineering judgment at the present stage.

Inspector Any other questions to Mr. Sharman?

Cross-examined by Mr. Michael Gregory (Country Landowners' Association)

2807 Mr. Sharman, I want to ask you something on page 6* of your evidence where you are dealing with a "massive concentration of earthmoving plant, equipment and labour, on the site itself." The present roads around the proposed site for the airport are at present unsuitable for heavy traffic? — Yes.

2808 But you are suggesting that there will inevitably have to be links with the M11 and the M1? — Yes.

2809 What I would like to ask you first is: wouldn't the earthmoving construction work have to start before these links could be completed? — I am sure the programming will have to allow for the major earthmoving at as early a moment as possible because the programme is so extensive. The equipment itself or the major earthmoving will of course operate within the perimeter of the site and not perhaps place very much strain on the inadequate local network of roads, but it is the supply items that will test this and one envisages a programme which would bring in the links to the major motorways and the trunk road network at an early stage. This would necessitate as I said in the evidence some pretty quick decisions and some very difficult decisions which would have serious effects on the landowners in the area.

2810 I am very much obliged. You mentioned that 300 15-ton trucks a day will eventually be needed, but this is for the disposal of earth and waste, is it not? — No, sir, that figure was calculated for the supply of sand and gravel during the construction days for the runways and buildings and that of course related only to sand and gravel, perhaps the most bulky of the supply items.

2811 That is one of them. Can you break it up a bit further? What plant and supplies are likely to be needed, say, before the links are made? — I should imagine that it will be possible to form some sort of link with the motorway before a serious requirement for building materials has arisen on the site.

---

* p. 610.

Printed image digitised by the University of Southampton Library Digitisation Unit

2812 *Inspector* Any other questions to Mr. Sharman? No other questions to Mr. Sharman. I have just one minor point of information, Mr. Sharman, it is your paragraph 5.2.2. You refer at the bottom to "drainage southwards from the airport area should not enter the River Lee, directly or through any tributary, upstream of New Gauge." Could you tell me where New Gauge is in relation to some settlement? — I am not sure of the answer to that one, but I will supply it to you.

Inspector I have no more questions.

(*The witness withdrew*)

MR. GEORGE IAN WILLIAM DUNFORD, *called**

Examined by Mr. Keene

2813 You are George Ian William Dunford and you are the Air Traffic Services Superintendent of International Aeradio Limited and have held that post since 1964. You have been in Air Traffic Control for the last seventeen years, initially in the Royal Air Force, before joining I.A.L. in 1955. Your service with the Company up to your present post has been as an Air Traffic Control Officer at airports and Air Traffic Control Centres, as an A.T.C. instructor in the I.A.L. School and as the Assistant Air Traffic Services Manager. In addition to being responsible for the A.T.C. operations of the Company, you are also engaged on Air Traffic and Operational consultancy tasks and have recently completed two such tasks in connection with a twenty-year development plan for two major international airports overseas, Nairobi and Singapore, both of which had problems in relation to nearby airports? — That is correct.

Mr. Keene There is nothing further I want to ask you, Mr. Dunford, and I will tender you for cross-examination.

2814 *Inspector* Any questions to Mr. Dunford from the first tier authorities? Any questions from other local authorities? Any questions from other institutions, associations and what have you? Any questions at all? In that case I will ask you one. 3.3.1. at the bottom of page 2. I am still lacking some understanding of this very complex air traffic position. You refer to a holding area? — Yes. This was introduced on the 2nd May. There are now four holding areas, one at Garston, one at Ongar, one at Biggin Hill and one at Epsom.

2815 The one at Ongar is used when Garston is full, is that the position? — The idea is that they use both of them, in fact.

Inspector I have no further questions.

(*The witness withdrew*)

* See also p. 614.

MR. LAURENCE CHARLES KITCHING *called**

Examined by Mr. Frank

2816 You are Laurence Charles Kitching, Member of the Order of the British Empire, a Chartered Town Planner and a Chartered Municipal Engineer. You were for eight years a Member of the Council of the Town Planning Institute and you are a Past Chairman of its South-East of England Branch. You have had 36 years experience in the practice of Town and Country Planning and hold the appointment of County Planning Officer of Hertfordshire. There are one or two other matters which are outside your proof. I referred this morning earlier on to the Minister's decision on the Great Chishill Scheme. Have you got a copy of that for the Inspector? — I have.

2817 Mr. Kitching, I think you want to make some amendment to the plans which are exhibited with your proof of evidence? — Yes. The Plan LK 3† in regard to the roads mentioned by Mr. Sharman is not quite the same as Mr. Sharman's plan which was prepared a little later. To LK 3 one needs to add the roads coming out of the airport to the south-east to join the A10 where it crosses the proposed east/west route. I will show this on the big plan. *This* point here. The only other difference is that I have shown the M11 continuing in a north-westerly direction to the west of Cambridge to join the A1. This is one of the proposals in the Ministry of Transport Green Book‡ which has recently come out.

2818 I think since your proof of evidence was circulated there has been a meeting of the East Anglian Consultative Committee? — Yes.

2819 And was it resolved by them on the 23rd May that: "The Airport Commission be informed that it is the unanimous view of the Committee that the right site for an international airport of the future is on the sea coast and that as Foulness is the only one of the proposed sites to fulfil this requirement it is therefore the Committee's view that this is the best location for the airport"? — So I am informed.

2820 Is that Consultative Committee concerned with this area at all? — With East Anglia.

2821 With Nuthampstead and the area which will be affected? — Yes. To the north it is particularly concerned with the urbanisation area in South Cambridgeshire.

2822 I think you have seen the proof of evidence of Mr. Hawkes§ who is giving evidence for the National Farmers' Union in which he deals with associated urban development. Would you like to make some general observations on his proposals there? — Yes, if I could just make a few brief observations. I think Mr. Hawkes is rather over-concerned with the Cambridgeshire area almost to the exclusion of the area to the south which he suggests for development. The area to

* See also p. 616.
† between pp. 624 and 625.
‡ *Roads for the future* (HMSO; 10s.).
§ p. 703.

Printed image digitised by the University of Southampton Library Digitisation Unit

the south as far as I can plot his proposals contains 20·9 per cent of the area to the south which consists of already existing areas scheduled as of great landscape value or areas proposed to be scheduled as of great landscape value, 37 per cent is high grade agricultural land Grade 2, equal to the land in Cambridgeshire according to the Ministry of Agriculture map, and 9·8 per cent is built up. So that 67·7 per cent of the entire area is covered in one of these ways and a large part of the remainder comes within the 35 NNI contour area. His statement in paragraph 6.7 that there are more conservation areas to the north than to the south is scarcely correct. If one looks at the comparative areas for development which I have suggested and which he has suggested I think you will find that there are considerably more in the area to the south. In the area to the south there are five towns in the British Council of Archaeology's list of the 300 most important towns from the conservation point of view in England, Scotland and Wales, these are Hertford, Ware, Saffron Walden, Newport and Thaxted, so I do not think there is any question of unfavourable differentiation in quality either in the landscape or in the character of the towns to the south as against the north of the airport.

Mr. Hawkes adopts as the lower end of his population scale the figure which I have quoted and goes on to suggest a range rather more than doubling this figure and bases this on the assumption that national and other constraints on developments will be removed. Now I am quite prepared to accept that my estimate is probably at the lower end of the scale. It may be increased but I personally doubt whether national constraints such as the Board of Trade IDC and office development permits will be removed. As Mr. Hawkes himself points out they have not been removed in the case of Heathrow and another example in the area and I would agree that the population may go higher, I have suggested, rather than lower.

The towns to the south which he proposes for urbanisation have already in most cases doubled their size since the war. In the view of local planning authorities they probably have been overbuilt already, certainly the additions which I propose in the 76,000 population I am proposing in the existing towns would take them up to that limit. There are many constraints on each town against further development, we need not go into these in detail. In suggesting building in this green wedge I have suggested building as far out in the wedge as possible from London. Mr. Hawkes is suggesting building close in to London, nearer the apex of the wedge. This I would suggest is the very area where Londoners benefit from the countryside most and which is most valuable to be retained. He also produced a ring of bricks and mortar starting somewhere in the Watford area and spreading on the outer edge of the green belt to Bishop's Stortford and beyond. The Metropolitan Green Belt would be subject to pressures of building and trespass from both sides and one wonders what agricultural amenity value it would continue to have. Some of his residential areas, for instance Hatfield, would be 25·4 miles from the centre of the airport, Hoddesdon 19·8 miles, Welwyn Garden City 23 miles. These I suggest are too far for the majority of the airport workers to travel.

Mr. Wallace I wonder if I might intervene at this point. I must say that I find it extremely——

Inspector We are in trouble here because you are not being heard downstairs at all. I think we must soldier on.

Mr. Wallace I am surprised that my friend Mr. Frank is not putting these questions to Mr. Hawkes himself and I am considerably embarrassed because Mr. Kitching is giving his evidence at some length and I will be unable to cross-examine him on it. I would like to suggest that this might be brought out in cross-examination of Mr. Hawkes or alternatively if Mr. Hawkes will give an assurance having read the transcript Mr. Kitching will be available for cross-examination on Thursday when we are giving our evidence.

Mr. Frank I don't know about that. My friend will have an opportunity of putting these matters.

Mr. Wallace I had no notice whatsoever of this evidence. I think Mr. Frank could have told us the lines on which he was going to introduce new evidence and highly critical evidence.

Mr. Frank We did not know until three days ago.

Inspector May I make this point which I think is very relevant, that no one at Stage II is going to suggest that the form of urban development suggested by Mr. Kitching himself or your witness, will in fact be that which would occur if Nuthampstead became the airport site. I think both your witness's assumptions and those of Mr. Kitching must be put forward as quite initial assumptions to help the Commission. I would have thought that the kind of thing that is being said would help the Commission and I really cannot see how you are greatly embarrassed at this stage by not cross-examining on them.

Mr. Wallace If I can tell you why I am embarrassed. We are equally concerned to assist your Commission as are the County Councils. We want to be sure that the Commission is acting upon the best advice. What I am saying is that we have both produced assumptions. The County Councils equally take the view that our assumptions are not as justified as their own and we might clearly take a contrary view, and in order to assist you with the best advice I would have thought we would have the same possibilities.

Inspector I think the solution is quite simple. If you hear what has been put to Mr. Kitching and read the transcript and in due course put the points to your witness any further debate on which of the two urbanisation solutions would be the best is quite clearly a matter to be pursued at Stage III.

Mr. Wallace I will accept that, but may I place on record that it would have been more helpful if we had had more notice.

Inspector It is too early to resolve this issue, it is too early and too difficult.

Printed image digitised by the University of Southampton Library Digitisation Unit

2823 *Witness* Only one other point I wanted to make and that is I think Mr. Hawkes own plan shows how he would be moving the development into the London commuter belt.

2824 *Mr. Frank* I was going to ask you. You do not make these observations just for the sake of being critical of Mr. Hawkes but you would not want the Commission to think that all Mr. Hawkes' proposals are acceptable to you? — No.

2825 You are not criticising just because you disagree with him? — Certainly not, no. I think in fact the differences in the two viewpoints bring out many of the difficulties which the Commission will need to consider.

Inspector We have of course firms of consultants actively pursuing the same sort of problems. Any questions from first tier authorities to Mr. Kitching? Any other questions from local authorities to Mr. Kitching? Any questions from the institutions and other bodies?

Cross-examined by Mr. Lymbery
(Stevenage Development Corporation)

2826 Mr. Kitching, I want to ask you about page 21* and Appendix 2 of your proof in which you are considering the question of the supply position for airport population after 1974. I would like to make it quite clear what the figures are lest there be any misapprehension. Is it right that you are saying that 1975 to 1981 a figure of 2,000 could be expected in Stevenage, that is to say 20 per cent of 10,000? — 20 per cent, yes.

2827 And that the figure for the years 1981 to 2000 are 6,000 being 20 per cent of 30,000? — 20 per cent of 20,000.

2828 Yes, but then you have added. — If you add the two together, yes.

2829 You are saying that a total population up to the year 2000 of 6,000 could be expected in Stevenage? — I think it would probably have to be.

2830 This is exactly it, when you say "could" this must have a qualification, must it not? — Yes. I think Stevenage probably will not want it in that it has got its own expanding industry which can absorb all the population that Stevenage is likely to be able to provide, but if this airport is imposed upon us I think Stevenage together with all the other towns which will similarly suffer will have to make their contribution.

2831 When you use the word "could" you mean could only at the expense of industry and the planned development that Stevenage itself is suffering? — Exactly.

2832 There is another point arising out of that. Is it to your knowledge and from your experience that there is a shortage of building and constructional labour which is endemic in this particular area? — That is so, yes, and has been since its existence.

2833 And of course this is in places like Stevenage which are developing and in other towns which are in the vicinity such as Bedford and even further afield? — Yes.

2834 And also there is a shortage of skilled and semi-skilled labour, certainly in the Stevenage area and I suggest in the region as a whole? — Yes.

2835 And so it is quite clear, again looking at it from the planning point of view, and the point of view of employment that an airport at Nuthampstead would effect very seriously the position of industries in Stevenage, and particularly those in the aircraft or electronics field, of which there are a number. — Yes, that could well be so; yes.

2836 Yes, this could well be so. Thank you. You refer in certain passages, I think, 11, 13, and 31, of your proof, to the advantage which would accrue to some people on the closing of the Luton Airport, should the Nuthampstead Airport come into existence. It is right, is it not, that if one considers the 35 NNI contours on this plan, it is plain that a number of people who suffer from Luton Airport noise at the moment would come within the 35 Nuthampstead contour? — Yes, I think that is so. There is evidence to be given by Mr. Fleming on this.

2837 At any rate, it is not a net gain, if Luton closes, by any means. — It is not a net gain, no; a net loss, I think you will find.

2838 Well, what I mean is that those people who are affected by Luton will not necessarily be unaffected by Nuthampstead? — I quite agree.

2839 Quite a lot will come within? — Yes.

2840 You refer again to a ring of bricks and mortar going from Watford to Saffron Walden. There is equally the possibility of one extending the other way if you come up through Welwyn Garden City, Stevenage, Letchworth, and Walden, does it not? — Yes, but really more space between.

2841 Is it right at the moment there has been rigorous planning control which has stopped what I might call by the use of the ugly word "conurbation", which is really a growth, a complete growth between Hatfield and Baldock; there has been rigorous control to avoid that. — Yes, there is very strict control.

2842 If you go by road from Hatfield to Baldock, you go through Welwyn Garden City, Welwyn, Woolmer Green, Knebworth and this brings you into Stevenage. — Yes.

2843 You are virtually in a populated, if not built up, area all the way? — Yes, there is a string of old towns and villages which has grown a little, but which were there before pre-planning days, and the real gaps between the old towns are to one side of the A1. Go off the A1 and you have wide gaps.

* p. 628.

Printed image digitised by the University of Southampton Library Digitisation Unit

2844 This is still between Stevenage and Hitchin; you don't get very far from a house when you go on that journey. — That is so and, indeed, you have got a new station being built on the CEGB Grid.

2845 The point is if you get a substantial increased population in this area there will be a danger of that ring of bricks and mortar. — Yes.

2846 This is a very real danger. — Yes.

Cross-examined by Mr. Wallace
(National Farmers' Union)

2847 I was not intending to cross-examine you on your evidence, but I shall have to do so now by virtue of your remarks made at the end of your proof of evidence. May I just ask you first of all: have you in fact read Mr. Hawkes' proof?* — Yes, I have.

2848 Yes. — Very late on Friday.

2849 I see. You have it before you? — Yes.

2850 I wonder if you would turn to the last page of that proof. May I read you paragraph 74 which is the final paragraph:

> Apart from the damage caused to areas of high agricultural, landscape and historic value by the airport itself and the noise zone, I believe the consequent urbanisation of the only available areas would be most undesirable. For these reasons I have serious reservations on Nuthampstead as a suitable site for the establishment of the third London airport.

Would you agree with that conclusion? — Entirely.

2851 I believe that you expressed concern about Mr. Hawkes' view on development south of the airport, is that correct? — I was a little concerned at some of his statements, particularly on the scenic and agricultural values of the land, the conservation areas, and so on, in comparison between amenity values and agricultural values on the two sites.

2852 May I refer you to paragraph 69 of Mr. Hawkes' proof of evidence, which I would like to read:

> Although I consider on balance that major urbanisation would be preferable to the south rather than to the north of the airport I consider that it would seriously prejudice the future planning of the Metropolitan area and it would certainly require radical recasting of all present thoughts on regional strategy. I set out below my main reasons for reaching this conclusion:
>
> (i) Major development in the green sector between the A1 and A12 growth sectors is contrary to current regional planning thought and unless considered as an alternative to growth along the A1 or A12 would probably result in the general extension of the Metropolitan urban area towards the north-east. Even if planned as a compact new town it would be likely to involve growth in a wider ring of existing towns in the area creating a wide growth zone adjacent to Greater London.
>
> (ii) It would introduce a massive urbanisation into an area which policies have consistently stated should be conserved as a country area. Growth in this area for 500–600,000 would require fairly continuous urbanisation between the approved green belt line, the A1 and the M11 and result in a complete change in the character of the area and effect the complete loss of the Green Belt in this sector. I do not consider that spreading development into the rural areas east of the M11 would be justified in any event.

Do you take that as serious approval of development to the south of the airport? — No.

2853 May I refer you also to paragraph 73, where it is stated:

> I also consider that restriction of development to the south of the airport, although less damaging, would seriously prejudice the future of the Metropolitan area unless radical changes were made in the existing settlement pattern and future strategies for regional development.

Would you accept that? — Yes.

2854 May I refer you to 72? He says:

> I believe that the establishment of such a growth point north of the airport at Cambridge, some 50 miles from London would have disastrous consequences and extend a new urbanisation zone from London to the Fens through some of the most attractive land in south-east England and through the largest area of consistently good agricultural land in England.

Would you accept that? — I said it would have disastrous consequences, in my evidence.

2855 That also accords with what I believe you said the East Anglian Economic Council have just said? — Yes.

2856 Am I correct, that according to your council's views the urbanisation effect would be felt first north of the airport itself at Stage II in the Royston area? — I have not said that, no.

2857 Is that the view of your council or not? — No, it has not been discussed by them at all.

2858 What is the significance in referring to Stage II and Stage III development? — I think you must ask Mr. Sharman that. I have not suggested it. In fact the point of going in favour of two instead of one is that only by having two centres of development would there be any possibility of achieving the target of houses in the time required. I personally would envisage both developments going on at once; I think they would have to.

---

* p. 703.

Printed image digitised by the University of Southampton Library Digitisation Unit

2859 This seems to be somewhat different from what I understood from Mr. Sharman's evidence,* but leaving that aside, on the assumption that the northern development would prove to be totally against all planning policies and planning sense, would you not consider that the whole project would fall to the ground thereby? — I think it falls to the ground anyway, but I don't know whether I can hang it on that one single consideration when there are so many.

2860 I am asking you to wipe out the Royston New Town area, which leaves you merely the area for urbanisation in the Stansted Mountfitchet area, and I am asking you whether that makes sense to you, for a population as envisaged. — The area shown on this map is, of course, quite insufficient. Obviously, if you knocked out Royston area you have to replace it somewhere.

2861 Presumably your council would take the view it would be very difficult if you put that population anywhere else in the area to make sense? — It would be most undesirable.

2862 Would you accept Mr. Hawkes' view that if Royston were to go the Nuthampstead project would virtually be impossible — When I say "Royston were to go", I mean, existing down to the proposed urbanisation round it. — I think some development in the area of comparable size, if there were no development of consequence north of the site, I think it would be impracticable to develop quickly enough to accomplish the working population required on the various stages of an airport, the growth for the first fifteen years is colossal.

2863 Your council is putting this forward, they say, with great reluctance, that is so, isn't it? — Yes.

2864 Would you consider on reflection, Mr. Kitching, that your views and Mr. Hawkes' do not differ quite as much as you perhaps thought originally? — We do not differ in principles; I think we only differ in our figures for the reasons I stated, and for the reasons I stated I think Mr. Hawkes has given insufficient weight to amenity and agricultural and other factors to the south of the airport, as against to the north of the airport. These are the only differences. They are differences, as I said, which are bound to come out, and are bound to be discussed by the Commission at some stage.

2865 Now, I am sorry to press this point, but we are here to assist the Commission: what would you like to see added or what do you think has been omitted in paragraphs 69 and 73 of Mr. Hawkes' proof of evidence, where you think he has not considered the points you made? — Well, it is very difficult to pick these out on the spur of the moment, but you have referred to the areas in which we agree, and not to the areas in which we do not agree, and——

2866 Yes, but can I put it like this: I accept in relation to detail there may be differences of opinion. What I am anxious to ensure or find out is whether so far as the broad principles are concerned you have any major points of disagreement with Mr. Hawkes's evidence? — In broad principle, no, and in so far as he calculates the possibility of a higher population figure resulting from the airport, of course it makes it look worse.

2867 Yes. You have referred to the population figures, so might I just briefly touch upon them before I sit down—this is in paragraph 17 of your proof of evidence. You refer in dealing with basic employment to the Commission figure in relation to Primary Airport Employment and that of Secondary Airport Employment, and Secondary Employment in attracted industry—you refer to these as both assumptions. — Yes.

2868 And you honestly consider that only a figure of 13,500 workers are going to be attracted by these two causes? — Well, the 6,500, the first figure, is based on the percentages at Heathrow as near a factual calculation I can arrive at with the means at my disposal. The second one here we quite deliberately took the view that because of the high agricultural and high scenic value of this area it would be wrong to allow unfettered development for industrial purposes, and we, therefore, assumed that not only would the normal Board of Trade controls apply as regards IDCs and pushing industry to development areas, and so on, but also there would be strong local, county or regional policies to protect agricultural land and scenic areas, and my figures are based on those assumptions. They may be wrong, if so, as Mr. Hawkes has pointed out, the position will be much worse.

2869 Yes, and those are pretty big assumptions to make, aren't they, that you might be able to keep control? — Well, the Board of Trade has kept control in regard to Heathrow and the Green Belt and other areas now. In Hertford we kept a very strong Green Belt and Rural Areas control.

2870 Yes. Supposing a major international company were to ask for permission to build a factory in an area which you wanted to restrict, and presented the Board of Trade with the view that if they were not put in a place where they wanted they would go to Brussels—would you think the Board of Trade would be likely to continue its restrictive policies in those circumstances? — Whether the Board of Trade did or did not, I think the County Council would certainly refuse planning permission, but whether it was upheld on appeal remains to be seen. This has happened before and we have won on appeal.

2871 I am glad to hear you say this has happened before. Whether you have been successful in winning on appeal would you agree appeals are not always successful? — Quite.

2872 So if in fact that was the position, the situation would be worse than you have assumed? — It would well be, yes.

Inspector Any other questions to Mr. Kitching? Mr. Gregory.

* p. 607.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. Gregory
(Country Landowners' Association)

2873 I am Michael Gregory of the Country Landowners' Association. Mr. Kitching, I would like you to first clear up a little more this question of the houses which you say will be necessary in existing towns to cope with the airport personnel and their families etc., dealt with in part 3 of your evidence; but first of all a question of definition: on your map the land described as high quality agricultural land, that means land of Grade 2 classification, doesn't it? — Yes, Grade 2.

2874 I don't think there is any Grade 1, it does not include any Grade 3, however good its quality? — No, these were the areas which we were advised by the Agricultural Land Commission as of national Grade 2.

2875 Thank you. Top of page 22 of your proof:* "In addition there could be extensions to Harlow New Town and elsewhere in Essex which could be entirely reserved for airport workers, . . ." and if I understand this right—please tell me if I am wrong—I think your assumption is something like 76,600 of the new population would have to be accommodated in existing towns? — Well, in existing communities, towns or villages, but mostly towns, I agree.

2876 Apart from Harlow New Town, does that envisage that there would be expansion of any of the existing towns? Let us not talk about villages, expansion of any of the other existing towns? — Yes. If you turn to the Appendix, Appendix 2, you see how this would work out. To begin with we took new development 1974–1981. Now, here we assume what is likely in our view to be left of the development areas in the existing County Development Plan, and up to 1981 on plans—well, they do not go up to 1981, and further proposals which have taken place.

2877 Well, can I be sure we are looking at the right thing, this is L.K.2, is it—— — I am looking at the Appendix, No. 2, page 2 of the Appendix.

2878 Yes, I am sorry. Thank you. — That sets out the further development in two stages, as from 1974–1981, and then over the page 2c, a guess-estimate from 1981 to 1996/2,000—this is no more than a guess and it would in most cases involve some addition to the present perimeters of development. These areas have not been planned in any way or discussed in any way.

2879 I appreciate the impossible position you are in, but the position then is that you envisage that there will have to be expansion of Stevenage, Hitchin, and Letchworth—is that not so? — Yes. Stevenage, I think, comes within the 105,000, which they already have in view for the ultimate population; the others would involve some expansion of present perimeters of development.

2880 Yes. The Minister has already turned down a proposal to expand Stevenage further than its present designated area? — Yes.

2881 He added 100 acres to the proposal or put it up, and no more. And, of course, Hitchin, Stevenage, and Letchworth are on top of each other already? — I am not saying it is desirable.

Mr. Gregory Thank you.

2882 *Inspector* Any other questions to Mr. Kitching? If not I have one or two points, Mr. Kitching. Page 7, this question of the East Anglia Consultative Committee. I trespass here with some diffidence, because it is getting very regional as well as local, but I am interested in paragraph 8.13 as quoted, and it reads:

> Airport development within the region should be on a scale to meet regional rather than national needs, but a Third London Airport, if sited north or east of London, would assist in generating the growth of activities necessary for the fullest success of the Peterborough and Ipswich expansions, and if well related to north–south communications would also benefit the more distant growth points in East Anglia.

Reading that, it appears to be a sort of muted invitation to come to the north-east—would I be wrong there? — Well, you do see, sir, that they went on to consider this on the 23rd May, and Mr. Frank read out the resolution which they passed on the 23rd May, but this is outside my county; if you want to pursue it in detail then you should put it to Mr. Mellor.

2883 It is really outside the scope of this inquiry also. — Mr. Mellor will be following me, also, from Cambridge.

2884 I have page 22,* and immediately preceding (c) you say:

> No allowance has been made for drawing back London Commuters to work in the airport, as in the evidence for Foulness, since in this case the numbers are likely to be insignificant.

Could you elaborate a little more on that point? — My recollection is that in the Foulness evidence it was suggested that some of the people who were at present commuting to London daily from Southend would be drawn back to work in the airport. Now, in this case we have no large towns such as Southend where a large number of commuters go to London, so the numbers to be drawn back are practically nil, with the exception of possible places like Bishop's Stortford where those who commute to London are very largely executive class and unlikely to come back. On the other hand, there is the feeling that if the airport were built and high speed railways and new roads were built in to London then those commuters would be attracted by those communications, those who commuterise to London.

2885 Thank you. Page 24, 3.3 sub-paragraph (1):

> In South Cambridgeshire, immediately to the north of Royston to Kneesworth, Litlington, including Bassingbourn aerodrome (understood to be going

* p. 622.

* p. 622.

Printed image digitised by the University of Southampton Library Digitisation Unit

out of use) and thence mainly east of the A14 to include Whaddon, Meldreth, Melbourn and then south to the A505. Physically this site has developed potential and could take between 200,000 and 230,000 persons in addition to the 6,000 already allowed within the town of Royston.

Do you know what the overall density you had in mind when making that assumption? — Either 12, or 12·5.

2886 Bearing on this point, I take entirely the evidence you have given, that both the area north of Royston and the thickening up of Bishop's Stortford area are undesirable, but is it not feasible or would it not be feasible to move some of the present development north of Royston into the Bishop's Stortford area, between Bishop's Stortford and the 35 NNI contour to the south-east of the airport? — Indeed, that is so.

2887 Yes, where the electricity station is. My suggestion is just as a hypothesis to reduce the Royston block, as it were, by transferring some part of it into the area of Bishop's Stortford; have you considered the possibility? — I have. In the first place this area has a high percentage of high landscape value area, and the land is shown as such in the Development Plan, in so far as it is an already existing high landscape area—there is also some quite good agricultural land in these parts.

This is the noise zone, the 35 NNI line, and we have the other difficulties of the new roads which will cut through this area, and the new railway services, and so it will be an area of good landscape value, but it will be cut by roads and railways. Apart from that, it is nearer to London's commuter belt, and it would be a great deal more competitive for houses from London commuters—you could not keep them out. This is one of the difficulties we find in trying to reserve houses in Hertfordshire for local industry; the London commuter can pay more, and he takes the house more often than not. The area I referred to is largely in Hertfordshire, the remainder would be in Essex, and you might care to put the question to Mr. Peters, so far as Essex is concerned.

2888 The reason I put the question is that it has been suggested that a new town of this size north of Royston would be in competition with Cambridge. It would overload the Cambridge shopping facilities in the early stage and might be too powerful a rival later on—it is outside your broad bias. — I agree, this would be so, but it think it is even more so in a smaller town in the south in that they would be overloaded in the initial stages—it is small in comparison.

Inspector Yes.

2889 One last point, Mr. Kitching, the appeal decision at Great Chishill, the 608 acres of land; was the application made with the consent of the landowner, do you know? — This again is in Cambridgeshire.

Inspector I will ask the question in due course of the Cambridgeshire Planning Officer. I have no more questions.

Re-examined by Mr. Frank

2890 Just before you leave, can we be clear about this. I was responsible for referring to the three stages of associated urban development. I did not intend to imply that one follows the other; that is not so. You do not intend that one follows the other? — My own view is that the first stage, the first flush, as I called it, would have to go into the existing towns, because the new towns would not be built in time, therefore that is a clear first stage, but so far as the two other schemes of new urbanisation are concerned, I believe in order to build the estimated number of houses required, 7,000 houses a year would be required, I believe you need to have two distinct centres.

2891 It has been said or suggested that these are proposals of the respective County Councils; that is not so, is it? — Not so at all, no. They are entirely the views of the Planning Officers concerned.

2892 If you have really got to provide this urbanisation, this is the way the County Planning Officers suggest it has got to be done? — This is our answer to the question asked of us by the Commission.

2893 As between you and Mr. Hawkes, the issue is: which is the greater sense? — Yes.

(*The witness withdrew*)

MR. BRIAN HAGUE MELLOR *called**

Examined by Mr. Keene

2894 Mr. Mellor, you are Brian Hague Mellor; you are the County Planning Officer of Cambridgeshire and Isle of Ely; you hold the Diploma in Town Planning of the London Polytechnic and you are an Associate Member of the Town Planning Institute? — That is correct.

2895 *Inspector* Are there any questions by First Tier Authorities to Mr. Mellor? Any questions by Local Authorities to Mr. Mellor? Any questions by other associations to Mr. Mellor? Is there not even one question to Mr. Mellor? In that case I must put it to Mr. Mellor: with regard to your paragraph 3.05 could you just inform me a little about the status of this Working Group on the Size of Cambridge? — Yes, they were the Group commenced some years ago with the full agreement of the Ministry of Housing and Local Government, who throughout were the organisers and full secretariat of the Group. It consists of representatives of the City Council Officers, the County Council Officers, and the University Officers, which has power to co-opt from time to time members from Government Departments, and other Local Authorities concerned, and it seems logical to re-examine the area of the defined Study with a view to the application of past planning policy and to see to what extent ultimately there is a need for a change in policy.

2896 Turning to the question of the Great Chishill decision, was that application made with the consent

* p. 630.

Printed image digitised by the University of Southampton Library Digitisation Unit

of the owner of this 608 acres of land? — Yes, it was; the applicants had an option to purchase from the owner.

Inspector Thank you very much; I have no more questions.

(*The witness withdrew*)

MR. WALTER DENIS PETERS *called**

Examined by Mr. Frank

2897 You are a Chartered Town Planner, a Member of the Town Planning Institute, you hold the Diploma in Town Planning of London University. You have had 21 years experience in the practice of Town and Country Planning, the last six years of which have been spent in the County of Essex; you hold the appointment of Assistant County Planner to the Essex County Council? — That is correct.

Inspector Any questions by the First Tier Authorities to Mr. Peters? Any questions by other Local Authorities? Any other questions to Mr. Peters? I do not think even I have a question for you, Mr. Peters; I have no questions.

(*The witness withdrew*)

MR. NORMAN FLEMING *called*†

Examined by Mr. Frank

2898 You are a Master of Arts of the University of Cambridge, Acoustical Consultant to the Greater London Council, a Director of the Acoustical Investigation and Research Organisation Ltd., and a member of the Sub-Committee on Aircraft Noise of the British Standards Institution; you were formerly Head of the Acoustics Section of the National Physical Laboratory? — That is correct.

2899 Just in case nobody else asks you any questions, I am going to ask you one. Can we have a look at your contours for the moment.‡ We will have a look at some of the towns which you think will be affected by noise nuisance. Will you take the 35 NNI. Do we see that we start with Royston? — Yes.

2900 Part of Royston will be affected. Then we go on —and the whole of Baldock? — Yes.

2901 Well over half of Letchworth? — Yes.

2902 Most of Hitchin? — Yes.

2903 The whole of Stevenage? — Yes.

2904 And practically the whole of Saffron Walden? — Yes.

2905 As well as numerous villages and hamlets additionally? — Yes.

Inspector Are there any questions by First Tier Authorities? Any local authorities? Any other questions?

Cross-examined by Mr. Lymbery
(*Stevenage Development Corporation*)

2906 Mr. Fleming, may I refer to paragraph 5 of your proof, page 2. You say that you accept the NNI contours as applicable to the particular types and numbers of aircraft and the flight paths which have been assumed. — Yes.

2907 It is right, is it not, that there have in fact been two assumptions by the Commission. One is that there will be a reduction in the noise effect of aircraft by 10 NNI over the next twenty years? — That has been qualified, I think—yes.

Inspector Yes, I think I had better come clean here, Mr. Lymbery. In this Nuthampstead description of the assumption, that is again not quite accurate. The correct assumption as now published in the Thurleigh document is that the reduction of 10 NNI will be due to certification, but an increase of 5 NNI due to the increased weight of aircraft. I think I am right.

2908 *Mr. Lymbery* I do not know whether that accords with your own professional view about the matter, but you are acquainted, are you, with the report of the International Conference which was held in November 1966* on the problem of noise certification regulations and the reduction of noise? — Yes.

2909 I think it is right to say, without referring to that document, at the moment, that there was no great optimism that much reduction would be gained in the future; the great thing to achieve was to maintain noise at its present level rather than increase with the increase in the power of engines? — I think there was optimism that the noise of individual aircraft would not increase so that with the growth of numbers, the NNI would not increase, the annoyance of aircraft would come down as the numbers went up.

2910 Even if one accepts the reduction of 5 NNI over the next twenty years, this is perhaps optimistic rather than pessimistic, that is to say one is going to be fortunate probably to get a reduction of 5 over the next twenty years? — I think it is a reasonable estimate.

2911 I accept that, because it was the reduction of 10 I was anxious about. Of course, again I think it was pointed out at that Conference that noise certification regulations would be applicable only to those planes and prototypes which would be developed after the regulations came into force, because of the provisions of the Chicago Convention? — Yes.

2912 So that in fact when and if those regulations do come into force, they will still not affect anything of which there is a prototype at that stage? — No, that is true.

* See also p. 632.
† See also p. 635.
‡ See attached wallet of maps and diagrams.

* *Aircraft Noise: Report of the International Conference on the reduction of noise and disturbance caused by civil aircraft.* (HMSO; 8s.).

Printed image digitised by the University of Southampton Library Digitisation Unit

2913 So we still get the jumbo jets, the Concordes and the Boeings, and so on, which we know today? — Yes.

2914 There is another point: the Commission at paragraph 14 of their Nuthampstead proposal* describe the noise level by reference to the NNI figure Intrusive: 40–45, Intrusive/annoying: 45–50, Annoying: 50 plus. I do not know whether this accords with your view, but is that right having regard to the Farnborough experiment and to the social survey carried out at Heathrow, and referred to in the Wilson Report,† that in fact annoyance does in fact begin at substantially lower than 45? — Yes, there are various degrees of annoyance.

2915 It may be a question of description rather than anything else? — Yes, I think I describe in my evidence just what the Wilson Committee did say.

2916 I do not know whether you have had the opportunity of considering the evidence of Mr. Berry,‡ who is an acoustics expert who will be called on behalf of Stevenage Corporation? — No, I did not see that amongst the proofs that I had.

2917 I think I need not ask you questions upon that; do you know Mr. Berry? — I do.

2918 It may be that from your knowledge of him, you and he would not be very far apart in the various views you express, I suppose? — I would not expect we should be.

Inspector Any other questions? If there are no other questions of Mr. Fleming, I have no questions.

Mr. Lymbery I wonder if I might ask one point in clarification: Having regard to what you just said about NNI and the assumption relating to the NNI figures, the contours, as one understands it on the NNI maps for Nuthampstead assume a reduction of 10 NNI over the next twenty years——

Inspector May I make this quite clear. What the contours do in fact reflect is this. This is what it should have said in the Nuthampstead document. "It has been assumed in the NNI contours that noise certification regulations will be introduced and will lead to a reduction in the noise effect of aircraft by 10 NNI over the next twenty years, but that half this reduction will be off-set by growth in aircraft weight." Both the Foulness and the Nuthampstead contours were in fact calculated on that assumption, but the written material for both Foulness and Nuthampstead were slightly inaccurate in not including the last half sentence.

2920 *Mr. Lymbery* In fact the contour maps do relate to the amended statement?

Inspector They do indeed. The contours for all four sites are on precisely the same assumptions. Cublington and Thurleigh are correctly described in the descriptive material; Foulness and Nuthampstead are not.

2921 *Mr. Lymbery* So we cannot step up each contour by 5 on this one.

Inspector No.

(*The witness withdrew*)

DR. ERNEST EDWIN LEGARD OWENS *called**

Examined by Mr. Keene

2922 You are Ernest Edwin Legard Owens, you are a Bachelor of Arts, and a Doctor of Philosophy of the University of London, and do you hold the Teacher's Certificate of that University? — Yes.

2923 You have taught for ten years in primary and secondary schools, and have ten years experience of educational administration, and you are the Deputy Education Officer for the County Council of Hertfordshire? — That is true, Sir.

2924 Your evidence deals with the effect of noise upon schools? — Yes, it does.

Inspector Any questions by First Tier Authorities? Any questions by other Local Authorities? Any questions by others?

Cross-examined by Mr. Lymbery
(*Stevenage Development Corporation*)

2925 Dr. Owens, your appendix sets out a number of schools which will be affected. I think these relate only to local authority schools, but do not include independent schools at all? — Yes, this is true.

2926 There are a large number of private schools in the vicinity which would be affected, but you have not taken these into consideration? — No, I have not been able to take all those into account.

Cross-examined by Mr. Gregory
(*Country Landowners' Association*)

2927 You have done some costings of the expense that you estimate would need to be incurred to do works of insulation and ventilation in certain schools; I wonder if you could tell me this, because I do not know the answer, but on whom does the cost of that work fall, when it is done for schools? — The schools belong to the local authorities, and the cost would fall upon them. I would hope, Sir, that they would have some assistance from elsewhere in meeting that cost.

2928 But if they had some grant aid, it would not be 100 per cent grant aid, presumably? — It is a matter of presumption. We do not know; it is not a thing that has been decided, but it would be very unfair if it fell upon the local authorities.

2929 It would be very unfair on the local ratepayers if they did not want the airport, and had to pay for sound insulation and ventilation? — This is very true.

---

* *Site Information for Stage II Local Hearings. 2. Nuthampstead.* (HMSO; 5s.). Reproduced at p. 601.

† Cmnd. 2056 (HMSO; 19s. 6d.).

‡ p. 669.

* See also p. 640.

Printed image digitised by the University of Southampton Library Digitisation Unit

2930 I think it is clear from both your evidence and the evidence of the Stevenage Development Corporation that of the schools likely to be affected, most of them are already built? — Yes, most of them are already built. We do mention also others, such as appear at townships in Hertfordshire which will be built in the next few years.

2931 As far as you know, would I be right in thinking that it would be a more expensive matter to do the insulation and ventilation work to existing premises than if this was planned for with new premises before they were built? — The costings are in fact given on the table in one of the Appendices at the end of Schedule EO 1; an indication is given there.

2932 I did not know that answered my question. Are not these costings for existing buildings? — No, the last portion of the end of Schedule EO 1 gives the figure for new schools to be built.

2933 I am obliged; I am sorry to waste your time on that. I did not spot that. It does indeed show it is cheaper. — These are the figures.

2934 I am wondering whether I understood them. I do not usually understand figures. There is this one other thing I do not think you have dealt with, and that is the disturbance by noise to people who study at home. Of course, this is a very important part of education, both at school level, and for I believe what are called mature students, is that not so? — Yes, I would agree. I do not have carefully worked out figures for this purpose, but in general I would agree entirely.

Mr. Gregory I am obliged.

Inspector Are there any other questions to Dr. Owens? I have no questions.

(*The witness withdrew*)

MR. DONALD ERIC TANTON *called**

Examined by Mr. Frank

2935 You are Donald Eric Tanton; you are a Fellow of the Royal Institution of Chartered Surveyors, a Fellow of the Chartered Auctioneers' and Estate Agents' Institute, a member of the Central Association of Agricultural Valuers, and a member and Past President of the Essex Agricultural Valuers' Association. You have lived in South East Essex for forty-two years, and in practice as an agricultural valuer and surveyor for thirty-five years. Since 1943 you have been sole principal, and later senior partner, of the firm of Offin Rumsey and Hilliard, and throughout those twenty-six years you have been fully engaged in valuations and surveys of agricultural land throughout the County of Essex and adjoining Counties? — That is so.

2936 I just want to ask you about one matter. You refer in your proof of evidence to the Ministry of Agriculture *Classification of Land* according to Grades. It is a fairly new thing, I think, is it not? — Yes; fortunately in this area the Plan is now published. It is in stages, and this is one of the areas which has been dealt with, and I have the Plan* before me.

2937 It may be thought that something second class is third rate, if I may put it that way. In fact second grade land is very top grade land, almost. — Second grade land, I would say, is almost the most important category of food producing land in the country. There is a very limited amount of first grade land in the country, restricted to very specific areas. There is a very considerable amount of Grade 2 land, land with very minor agricultural limitations, and that is probably the biggest source of arable food production in the country, the Category 2 land.

2938 It must not be thought that Grade 2 land is other than very good land indeed? — Grade 2 land is extremely good, easily worked, and highly productive land.

Inspector Are there any questions from First Tier Authorities to Mr. Tanton? Other local authorities? Other bodies?

Cross-examined by Mr. Wallace
(*National Farmers' Union*)

2939 Just one or two points for the National Farmers' Union. Is it correct that when you were preparing this proof, you liaised very closely with the National Farmers' Union to ensure that the agricultural evidence was agreed as between them? — That is a fact. I had a preliminary conference, and then prepared my draft report, and then that was read by the local officers of the National Farmers' Union and by their surveyor, Mr. Trigg, who will be giving evidence on their behalf; although we produced our proofs of evidence entirely separately they do dovetail in together entirely. There is no confliction.

2939A Are you aware that Mr. Trigg, who is going to give evidence for the National Farmers' Union, specifically adopts your evidence? — Yes, I have read his proof of evidence,† and he specifically adopts it, and they are reciprocal.

2940 Just to make sure you have already answered this question, I put it to you specifically, have you read Mr. Trigg's evidence? — I have.

2941 Is there anything in that which you would find objectionable or inaccurate in your opinion? — Nothing whatever. I adopt the whole of Mr. Trigg's evidence as being factual and correct in the same way as he has adopted mine. It is more detailed in regard to certain aspects of the matter; they are completely complementary.

Inspector Are there any other questions to Mr. Tanton?

* See also p. 645.

* Available from Ministry of Agriculture, Fisheries & Food, Publications Department, Government Buildings, Tolcarne Drive, Pinner, Middx.

† p. 714.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. Gregory (Country Landowners' Association)

2942 Could I just take a little further what Mr. Frank was asking you about the classification of the land and that is about Grade 3 land. Isn't it right that Grade 3 land can be as highly productive as Grade 2 land but it is less versatile? — Yes. There are of course five grades in the Ministry classification. Grade 2 is land with almost unlimited versatility, very, very minor limitations. Grade 3 tends to be rather more restricted in its crop potential and less suitable for root crops and certainly less suitable for market gardening crops but still extremely productive for corn and legume producing. Land Grade 3 is still extremely useful agricultural land and very much in demand. Grade 2 is the bulk of the best land in the country. There is a limited amount in the grade higher category of Grade 1 but Grade 2 is the better and Grade 3 is a good average of the agricultural land in the country.

2943 There is just one thing on paragraph 2.6 of your evidence on page 11.* You refer to Mr. Kitching's suggestion for the development of the Bishop's Stortford area as another in the link of communities and you point out that this might mean that some farming could be carried on between the links between them. Is it not so that farming between large communities is extremely difficult because of interference? — The question of trespass and interference of course does crop up in the vicinity of any large scale development. This is present with us around all the large scale developments in this country and the more the development increases the greater interference and trespass become serious factors in agriculture and agricultural land wedged in between built over conurbations would of course be in a rather precarious position.

2944 Are you aware that in Stevenage New Town a farm was let within the New Town and the original designation? You know about this? — No, it is not within my knowledge.

Cross-examined by Mr. Charles Fay (for Mr. H. C. Beddington)

2945 Mr. Tanton, I want to ask you about matters arising out of paragraph 5 on page 15† of your proof about the influence of noise on animals. Mr. Beddington owns land a good deal of which seems to come within the optional area between two of the runways and some land right outside the site altogether. Looking at the plan with the NNI contours shown on it it seems that land is crossed by the 55 index line in that position. Would you expect there to be a serious effect upon pig farming from noise due to the airport? — Little factual information has been published, but I would expect 55 NNI to be serious interference with almost any form of livestock farming. I think in the 35–40 it may not be serious but in the 55 the intensity and suddenness in the 55 area where you get noise approaching very quickly and suddenly I would expect this to have quite a serious effect. But I think little actual investigation has yet taken place on this subject. There are experiments going on now on this very subject but I think no information has yet been published. But 55 is obviously a danger level for almost any form of livestock.

2946 And the danger takes the form of exciting the pigs, making them get up instead of lying down and fattening themselves? — Whether in time they would get used to it or not I do not know, but of course the life span of fattening pigs is comparatively short, four or five months, perhaps six months, and whether they would get inured to the sudden noise is an open question, but I think it would be quite serious disturbance particularly when they are first brought into the environment of the noise.

2947 Would it be feasible to insulate the buildings against sound to meet this problem? — Physically possible, economically quite impossible, I would say.

2948 *Inspector* Any other questions to Mr. Tanton? I have two points, the first one is a very minor one on your paragraph 6.1. You refer to factual evidence concerning damage by pollution and turbulence. In what sense do you mean turbulence? — Actually I am not a technician on this, but living very near Southend Airport one has seen the effects of take-off and airstream, slipstream noise when the aircraft is quite close to the ground. I have seen rose trees blown out of the ground, but whether the perimeter of an airport would take all the rush of air I would not like to say.

2949 The second point, a little wider. You heard me ask Mr. Kitching these questions about transferring some of the northern Royston blob into the area north of the Bishop's Stortford proposed development, in that area between the Bishop's Stortford area and the 35 NNI contour, and the point has been made, of course, about the high landscape value of some of this land which I know about. What is your view on that proposition of transferring some of that population from the Royston area into the area north of Bishop's Stortford? — In this type of countryside, sir, the high landscape value goes very largely with the high agricultural value, the rolling hills, the large fields, the open countryside, and in this case we have again mainly Category 2 land, that is high producing land, land capable of root crops as well as corn crops and we should be almost entirely on Category 2 land if we transferred the development from Royston here into this area. Agriculturally no change in the situation.

Mr. Frank Thank you, Mr. Tanton, and that is the last of my witnesses, sir.

(The witness withdrew)

Inspector This brings a situation I feared. What we did was to give ample time because obviously we had a very long case on paper and we did not know how much examination there would be. So I have a problem. I have either to try and reconstruct this afternoon's

* p. 648.
* p. 649.

Printed image digitised by the University of Southampton Library Digitisation Unit

programme or declare a half holiday. I do not know how to tackle the matter. The next on the list are Bedford County Council, who I presume will have very little to say, Luton County Borough Council, the City of Cambridge and Royston Urban Distict Council. Now, could we just have a ten minutes pause and discuss it with those authorities, whether they would prefer to continue with their cases this afternoon or defer to the programme and take them tomorrow. Let us try and establish it now. Bedford?

Mr. Connell I would not be handicapped in any way by being taken here and now because all I have to say is to express our support for the case put forward on behalf of Cambridgeshire, Essex and the Isle of Ely.

Inspector Luton County Borough Council?

Mr. Cowan. It would suit us to be heard today. We will be very short.

Inspector I think what we will do is to formally dispose of Bedford and then we will hold Luton until first thing this afternoon.

Mr. Michael Connell Michael Connell, Counsel for the Bedfordshire County Council and also for the Dunstable Borough Council and various other local rural district councils. We do not propose to give any independent evidence at this stage. Insofar as the officers of that County Council have been able they have I think assisted in some degree with the preparation of the case that has already been put forward by my learned friend Mr. Frank this morning and we merely wish to associate ourselves wholeheartedly with that case.

Inspector Thank you, Mr. Connell. Can you give a list of all the parishes etc. that you represent?

Mr. Connell Would you rather I gave that list or dictated it now?

Inspector Dictate it as you wish.

Mr. Connell Sir, in fact in addition to the Bedfordshire County Council I represent the Ampthill Rural District Council, the Biggleswade Rural District Council, Dunstable Borough Council, the Luton Rural District Council and the Sandy Urban District Council.

Inspector We will adjourn now until 2.15 and then deal with Luton County Borough Council, the City of Cambridge and Royston Urban District Council.

(*Adjourned for a short time*)

Inspector There are one or two points before we resume this afternoon. I did say this morning that we had received 80 written representations. The figure should have been 180 and in fact the latest figure to hand is 186. I do recognise that these representations, mainly objections, are under the wing as it were of the very comprehensive submission by the Nuthampstead Preservation Association.

Secondly, at the end of the session we would like those who are appearing on later days and who are present today to stay behind for a short while to assist in trying to reconstruct our shattered programme.

Thirdly, I shall be hearing Mr. Beddington's case later on if there is time because he has witness trouble and also the witness for the Stevenage Development Corporation. Mr. Frank has asked to recall Mr. Kitching to deal with one point.

Mr. Boaks Before we start may I make one small representation. I ask to be heard here today. My name is not on the list but I would like to be heard for roughly ten minutes, if it can be managed this afternoon.

Inspector What is your interest?

Mr. Boaks I am appearing here in my adopted capacity as the Minister of Air and Road Public Safety.

Inspector Have you been given leave?

Mr. Boaks I asked for leave to be heard and to put these matters at the hearing where they can be placed on record and people can cross-examine me.

Inspector Have you been granted leave?

Mr. Boaks I have not had a reply to my letter.

Inspector Then I am not able to hear you unless you can show me later during the hearing that you have a bona fide local interest.

Mr. Boaks It must be a local interest?

Inspector It must be a local interest, yes.

Mr. Boaks Public safety is always a local interest.

Inspector You have not been granted permission to be heard and I will talk to you after the session maybe to establish what your interest is, but the correct procedure is that you must apply to the Commission in due time for permission to be heard.

Mr. Boaks That was done and I have the receipt of posting at home but not here, but I have a copy of the letter.

Inspector Have you a copy of the letter granting you leave to be heard?

Mr. Boaks Asking to be heard and to expose in this hall the points I wish to make.

Inspector I am not going to hear you out of turn, I will see you after the session.

Mr. Frank I may also remind you that there was a question we were going to put to Mr. Mellor about the East Anglian Consultative Committee.

MR. LAURENCE CHARLES KITCHING *recalled*

Further examined by Mr. Frank

2950 You were asked this morning a question by the Inspector about the urbanisation in the Bishop's Stortford area, Stansted Mountfitchet area and there is something you want to add to your answer. — Yes, sir. In my evidence one of the reasons I give for proposing two towns instead of one is the question of peak traffic loading of workers in the airport between the residential areas and the airport itself. This will

Printed image digitised by the University of Southampton Library Digitisation Unit

be extremely high. We have experience in Hertfordshire of what happens in new towns where the industrial area is completely to one side of the residential areas. Stevenage is a case in point and at the peak morning and evening flows great congestion arises due to this flow from residential to industrial areas. In the case of an airport it seems to me that the flows will have to be very large indeed. In the case of the plan there it would probably call for a dual three-lane carriageway at least to the northern area and a dual two-lane to the south. If there were one town I think it is too close together and would create difficulty at both ends, not so much on the road as in the junction and dispersal points at each end.

Cross-examined by Mr. Stable
(University of Cambridge)

2951 I was only provided with a copy of Mr. Kitching's evidence at lunchtime and I have now had an opportunity of looking at the map annexed to the proof.* I wonder if Mr. Kitching for the benefit of the tribunal could indicate how this dotted line representing the proposed new roads is drawn and from where it comes. — The roads shown on my plan are really the roads described by Mr. Sharman in his evidence. Which roads do you particularly refer to?

2952 I have in mind the one that goes on the right hand side of the plan, it is marked with brown dots. I am not sure that it corresponds exactly with that. It goes up I believe to join the A1. — This is the line of the M11 and the continuation is the line shown on the Ministry of Transport Green Book† which joins the A1 further up.

MR. BRIAN HAGUE MELLOR *recalled*

2953 *Inspector* Mr. Mellor, may I just ask this question, as I did raise it with Mr. Kitching, it is page 7‡ of Mr. Kitching's proof; I did say I was in some doubt about raising it because it goes very near the regional as against strictly local issues, but the passage reads:

> Airport development within the region should be on a scale to meet regional rather than national needs, but a Third London Airport, if sited north or east of London, would assist in generating the growth of activities necessary for the fullest success of the Peterborough and Ipswich expansions, and if well related to north–south communications would also benefit the more distant growth points in East Anglia.

It merely seemed to me that passage in isolation seemed almost, as I say, a mild invitation to consider siting the airport in an area north or east of London. — I think the pertinent aspects of this paragraph are concerned with regional rather than national needs, let alone international needs, and secondly the view of the committee was the siting of such a regional airport would be acceptable provided it were to be related to the proposals for Peterborough or Ipswich, both of which being planned expansions—does that help you?

Inspector Yes, thank you very much.

Mr. Frank I have a copy of the inspector's report in the Great Chishill Inquiry.

Inspector Thank you. (*Handed*)

MR. COWAN *called**
(Luton Borough Council)

Mr. Cowan My name is Cowan, I am the Town Clerk of Luton, and I appear to state my council's objections to the proposals to establish a third London Airport at Nuthampstead, for two main reasons. The first is as the owners and operators of Luton Airport—full details of which are given in the evidence of the Airport Director:† it is appreciated by my council that detailed evidence as to the effect of the establishment of the third London Airport at any of the sites short listed by the Commission is appropriate for Stage III of the Commission's programme, but my council are justifiably concerned that the commission should be made fully aware at the relevant Stage II Hearings in respect of the inland sites of the existence of and present level of operations at Luton Airport. Suffice it for me to say here that the Airport Director's evidence demonstrates that the airport is a highly successful municipal enterprise, and that growth of traffic in recent years has been phenomenal. The level of operations is such that it is clear that the airport is making a substantial contribution to the pattern of international air traffic in this country. It will be noted that growth of business has been such that the council have commissioned a report which will be received shortly upon the receipt of which they will consider what proposals should be recommended for further development of the airport.

The second reason for my council's concern is in their capacity as local planning authority concerned with the environment and development of a prosperous and expanding town with many important industries which play a major part in the export market, and those are of great importance to the national economy. The effect of the establishment of a third London Airport at Nuthampstead on the environment and planning of the county borough falls under two main heads.

The first being the question of noise nuisance, and the second the effect on the labour situation. The Deputy Planning Officer's evidence‡ outlines the Council's case in this respect and I would only wish to mention two important aspects. First the question of noise—we have had considerable experience on the effect of degrees of noise on the community and I should emphasise at this stage that the present level of noise nuisance which emanates from the operations

* between pp. 624 and 625.
† *Roads for the Future* (HMSO; 10s.).
‡ p. 618.

* See pp. 650–654.
† See also p. 650.
‡ p. 653.

Printed image digitised by the University of Southampton Library Digitisation Unit

at Luton Airport is minimal compared with the effect of a modern international airport of the size contemplated by the Commission.

Although it was not mentioned specifically, nevertheless it will not have escaped your notice that in tracing round the 35 NNI contour and showing the effect on substantial towns, Mr. Fleming for the County Council did not, of course, mention Luton, which is on approximately where the figure of 35 is on the left hand side of the map,* and you will have evidence in detail on the effect of the area of Luton of that.

With regard to the labour situation, it has been my council's desire for many years, to secure a more satisfactory balance of industry in the county borough, and the growing activities of the airport have gone some way to redress the imbalance which has existed between general industry and service industry. The effect of the reduction of employment at the airport, and the consequent move of skilled personnel to work at the third London airport at Nuthampstead, would have a serious effect, by the reduction of service industry, and would be harmful to the economy of the town.

We have had an opportunity to read the evidence submitted by the county council, and I would adopt and support their arguments against the establishment of the Third London Airport at Nuthampstead in so far as they are appropriate to a Stage II Hearing.

I will now call Mr. Cole, the Airport Director.

MR. CHARLES KENNETH COLE *called*†

Examined by Mr. Cowan

2954 Is your name Charles Kenneth Cole? — Yes.

2955 Are you the Director of Luton Airport, and have you held that appointment since 1964? — Yes, that is so.

2956 For two years prior to that date were you Deputy Airport Commandant at Luton? — Yes.

2957 Have you had previous experience at international airports overseas, as Airport Commandant at Lagos, and Freetown, and prior to that as an Air Traffic Control Officer at Kano and Lagos from 1948? — Yes.

2958 Are you qualified as a pilot, and were you so qualified in 1942 in the Royal Air Force? — Yes.

Mr. Cowan I have no further questions.

Inspector Any questions of Mr. Cole from what I may term the Joint County Councils? Any other First Tier Planning Authority? Any questions from Local Authorities or other bodies? Mr. Boaks, no—you are not allowed. You have not had permission to be heard at this Inquiry yet.

Mr. Boaks Can the witness be recalled later?

Inspector Maybe—we will see.

Mr. Boaks I want to get at him.

2959 *Inspector* I am not hearing you now. Any other questions from other bodies? Mr. Coles, as a matter of interest to me and my own information, are there one or two runways at Luton Airport? — There is one surfaced runway, and two grass runways.

2960 The main surfaced one is the one that runs east to west? — Yes, that is correct.

2960A Is it right there is a proposal to have that one extended? — No, not yet, sir; there are no definite proposals, no.

2961 I was staying in Stevenage when looking round this area, and the planes were coming in to land over Stevenage—is that right? — This is normal on the extended line of the centre runway, it is more over Stevenage.

Inspector Thank you.

(*The witness withdrew*)

Mr. Cowan Now Mr. McArdle.

MR. SYDNEY MCARDLE *called**

Examined by Mr. Cowan

2962 Is your full name Sydney McArdle? — Yes.

2963 Are you the Deputy Planning Officer for the County Borough of Luton, and have you held that post since January 1969? — Yes, I have, sir.

2964 Did you hold the position of Assistant Borough Planning Officer prior to that date? — Yes.

2965 Are you qualified as a Bachelor of Science (Economics), and are you a Chartered Surveyor? — That is correct.

2966 There is one point I would like to ask you on your evidence, Mr. McArdle: where you refer to, page 2,† aircraft noise, is that evidence based on the assumption of four runways? — Yes.

Inspector Any questions from the Joint County Councils? From any other First Tier Authority? From any Local Authority? From any other body? I have no questions myself.—Thank you.

Mr. Cowan Thank you, sir. That concludes the submission by the Luton County Borough Council.

Mr. Lymbery Could I just ask one question.

Inspector Second thoughts—All right, yes.

Cross-examined by Mr. Lymbery
(*Stevenage Development Corporation*)

2967 You have said aircraft taking off and landing at Luton at the moment on the east–west runway do, of

* See attached wallet of maps and diagrams.
† See also p. 650.

* See also p. 653.
† p. 653.

Printed image digitised by the University of Southampton Library Digitisation Unit

course, pass over Stevenage itself—that is right? — I did not, sir.

Inspector It was the previous witness, the Airport Manager.

2968 *Mr. Lymbery* Is that so? Do you know? — Yes, it is.

2969 *Mr. Lymbery* I think Stevenage at the moment is, of course, outside the 35 NNI contour for Luton airport. — I think that is correct.

2976 Do you know there have been substantial popular objections to the noise from Luton? — Yes, I do.

Mr. Lymbery That is so. Thank you.

Inspector I have no questions of Mr. McArdle.

Mr. Cowan Neither have, I sir.

Inspector Thank you.

(*The witness withdrew*)

Inspector I believe it is Cambridge's case.

MR. JOHN ELVEN *called*†

(*City of Cambridge*)

Mr. Elven My name is Elven, Town Clerk of the City of Cambridge, and I believe I can emulate the brevity of my colleagues in the first division; I can do this this afternoon despite the expectation that it would be tomorrow, because it was not in any case my intention to call any witnesses. Indeed, I did not want to add anything by way of addition to what was contained in the written statement that you have already had submitted on behalf of my Council.

I should, I think, be able to explain the reason why the City of Cambridge is not amongst the list of authorities for which Mr. Frank is instructed and which he read out to you this morning, and it is because we in the City of Cambridge did not take the same attitude as those whom you are calling the Joint County Councils on any of the three bases of their objection. Our own objection from the City of Cambridge relates wholly to noise and, as you will have heard this morning, in that connection the Joint Counties did not in fact refer strictly to the City of Cambridge at all.

So far as regional and sub-regional policies are concerned we do differ even from the County Councils, and as far as agriculture is concerned, happily we are not directly implicated.

If I may deal with simply the noise point, the fact is we have no faith in the black line, marked 35. After all, as I understand it it cloaks a number of different assumptions about several variable factors. We have had reference this morning already to engine noise due to aircraft weight, and clearly it also involves an assumption as to the number of flights and directions of flight paths, the length of time the aircraft are in holding areas and, perhaps most important of all, it involves a factor as well, the criterion of the acceptability of aircraft noise or, conversely, the degree of annoyance which it occasions.

Now, sir, if any one of these assumptions proves to be wrong by even a small factor this, in my submission, could change entirely the picture which you have of the map on the platform, and it might very easily bring the whole of Cambridge within the area adversely affected by the noise of aircraft coming to or going from an airport at Nuthampstead. I hope it is unnecessary to lay any great stress on the seriousness of that possibility viewed through the eyes of the representatives of the City of Cambridge, but perhaps I might just at minimum point out this is a city whose population is over 100,000 as compared to the figure of 250,000 which Mr. Frank mentioned this morning as the 1966 population within the 35 contour as there shown, and point out secondly that, of course, the predominant occupation and activities in Cambridge are those of its ancient and yet progressive universities; thirdly, the international reputation of the city is based on its unique character and atmosphere; lastly, of its industrial activities a very substantial part is concerned with matters within the scientific and technological fields, and these are enough reasons, I suggest, to emphasise why this City is very concerned at the prospect of degrees of noise impinging upon it. Their objection, therefore, is merely based on the apprehension that if only a small error has been made in some of the assumptions and forecasts which are reflected by the contours then, sir, a unique city might find itself irretrievably desecrated, and the only certain way of removing that risk will be to exclude Nuthampstead when the stage of your Commission's work at which comparative evaluations are made is reached.

If there are any questions on what I have said, sir, I am afraid I am the only one to answer them.

Inspector I would not dare to ask any questions. Your points obviously will be taken into account in the further stages of the Commission's work.

Mr. Elven Thank you very much, sir.

MR. D. J. WALKER *called**

(*Royston Urban District Council*)

Mr. Walker My name is Walker, and I am the Clerk to the Royston Urban District Council. Perhaps I may say that we are in agreement with the case put forward by the County Council, being the closest Urban Authority to the airport. I have very little to add, possibly on paragraph 1.6† you appreciate this was a resolution passed by the council on the evidence of the Commission itself. Of course the 35 NNI contour does go through the centre of Royston's area, so they are rather more affected by noise than on the Commission's proposal. I will answer any questions if you like, sir.

* Inadvertently, question numbers 2971–2976 not allocated.
† See also p. 655.

* See also p. 656.
† p. 656.

Printed image digitised by the University of Southampton Library Digitisation Unit

2977 *Inspector* Mr. Walker, I was just mildly interested in your paragraph 2.3 in which you say "The ultimate size of Royston has been a matter of considerable discussion between the Royston Urban District Council and the Hertfordshire County Council for many years", do I take it you want to go bigger and they want to keep you small? — That is the general idea, sir, but not to 250,000.

2978* *Inspector* That is too big? — Yes.

Inspector Thank you.

Inspector Mr. H. C. Beddington?

MR. H. C. BEDDINGTON *called*†

Mr. Fay My name is Charles Fay, counsel, and I appear on behalf of Mr. Beddington. This is the personal objection of the man who stands to be dispossessed if the proposal to put the airport at Nuthampstead goes forward. He would be dispossessed of his farm land. Mr. Beddington has a farm there of 695 acres of which something of the order of 500 acres are actually in the yellow area shown on the plan up on the stage. That will leave him with 195 acres with none of the farm buildings left. The remaining land to him will be extremely uneconomic as a farming unit and will suffer from disturbance in various forms. Mr. Beddington has formed some preliminary views, and if the project goes forward he will probably have to give up farming in England. He has had the farm for twenty years; he has built it up, has put in a considerable expenditure which is detailed in the appendix to his proof, and has been expecting to recoup that expenditure over the remaining years of his life.

On rather wider grounds there is also the objection on the grounds of loss of good agricultural land which ought to remain in agricultural use. Also the buildings are of historic and architectural interest in Anstey. Anstey Hall, occupied by Mr. Beddington himself, is a listed building, listed in Grade II, and also in the grounds is Anstey Castle, the remains of which go back to the days of the Heptarchy, and is within the schedule of Ancient Monuments. Those three heads really compose the objection.

I will ask Mr. Beddington to give his evidence first.

MR. H. C. BEDDINGTON

Examined by Mr. Fay

2988 What is your full name? — H. C. Beddington.

2989 Do you own and yourself farm Anstey Hall Farm? — I do.

Mr. Fay I have no further questions.

Inspector Any questions of Mr. Beddington from the Joint Councils? Any questions from the First Tier Authorities? Local authorities? Any other bodies? Mr. Beddington there are no questions for you. I have read your proof. Thank you very much.

(*The witness withdrew*)

Mr. Fay Secondly I call Mr. James George Eve.

MR. JAMES GEORGE EVE *called**

Examined by Mr. Fay

2990 Are you James George Eve? — I am.

2991 Are you a senior partner in the firm of Alfred Savill, Curtis and Henson, Chartered Surveyors of 63 Lincoln's Inn Fields, London W.C.2? — Yes.

2992 Have you been a partner in that firm for the last thirty-four years? — Yes.

2993 Are you a Master of Arts of the University of Cambridge? — Yes.

2994 Are you a Fellow of the Royal Institution of Chartered Surveyors? — Yes.

2995 And a fellow of the Chartered Auctioneers and Estate Agents Institute? — Yes.

2996 Are you a Member of the Central Association of Agricultural Valuers? — Yes.

2997 Have you been a Vice Chairman of the Estate Management Committee of the Essex Agricultural Executive Committee? — Yes.

2998 Are you a Member of the Lord Chancellor's panel of Agricultural Arbitrators? — Yes.

2999 Have you for the whole of your professional life of thirty-nine years been actively engaged in the management, sale, purchase and valuation of landed estates in many parts of England, Wales and Scotland and more recently in Western Australia, on behalf of private owners, trustees, Statutory Undertakers, and Universities? — Yes.

3000 Have you also advised and acted for farm tenants in negotiations with their Landlords? — I have.

Mr. Fay I have no further supplemental questions.

Inspector Any questions by the Joint Councils? Other First Tier Authorities? Local authorities? Any other questions from other bodies? I cannot oblige you, Mr. Eve. I have read your proof with great interest. Thank you very much.

Mr. Fay That concludes my case.

Inspector Thank you, Mr. Fay. I think we might now deal with the case of the Stevenage Development Corporation as a whole, if it is convenient.

Mr. Lymbery There is one witness I have not got coming until tomorrow, so perhaps it may be convenient if I call my acoustics expert today and perhaps produce my case tomorrow, but I am entirely in your hands, sir.

* Inadvertently, question numbers 2979–2987 not allocated.
† See also p. 658 and p. 663.

* See also p. 663.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector I am in your hands too, because I have to be here for the duration, so it is entirely up to you.

Mr. Lymbery May I then call my acoustics expert now and present my case tomorrow?

Inspector Certainly.

MR. GEOFFREY BERRY *called**

Examined by Mr. Lymbery

3001 Is your name Geoffrey Berry? — Yes.

3002 Are you a Bachelor of Science of the University of Manchester and a Member of the Institution of Mechanical Engineers? — Yes.

3003 Have you been engaged in work on acoustics and problems of noise control for the past twenty years? — Yes.

3004 For seven years were you responsible for noise control work of the National Engineering Laboratory at East Kilbride, and for the past seven years have you been Managing Director of the Acoustical Investigation and Research Organsiation Limited? — Yes.

3005 Are you a member of four committees of the British Standards Institution and are you Chairman of the Building Acoustics and Measurement and Rating of Noise from Machines Committees? — Yes.

3006 And a member of the Aeronautical and Civil Engineering Committee of the Science Research Council? — Yes.

3007 Your proof has been submitted to the Commission and I believe circulated. I do not know whether there are any additional points you will want to raise, save perhaps this: First of all, how optimistically do you personally regard the probability of reduction by 5 NNI over the next twenty years? — I do not think I am quite as optimistic as the publication of the Commission appears to be. I have taken full account of the added half sentence, I took account in my proof actually, but I have considerable reservations which arise first of all because of my knowledge of the difficulty of achieving international agreement on anything, especially something quite so difficult as that of control of noise from aircraft, where there is a tremendous conflict between the social requirements of peace and quiet, and the economic requirements of running an airline and running aircraft, and also because of my general experience in the field of noise, which is that whenever one, with the very best of efforts makes a good estimate of what is likely to happen in the field of noise control, one is usually disappointed, and I have come across very few cases where people have been agreeably surprised to find out that noise has turned out to be less than their expectations.

3008 I think you have carefully considered the Stationery Office publication on *Aircraft Noise*, which was the report of the International Conference held in November, 1966?* — Yes.

3009 I think you have considered the reports of the various Committees which are contained in that publication? — Yes, I have.

3010 There are, I think, specific passages to which you do refer in your proof? — Yes.

3011 Which perhaps I need not take time to go through in detail with you. Does it appear to you there is any optimism of a reduction in that report? — I think it offers the proper degree of optimism, but there are a great many passages which suggest one should be guarded in one's optimism.

3012 You have heard the evidence of Mr. Fleming. I think you had an opportunity of considering his proof of evidence?† — Yes, I have.

3013 Broadly do your views coincide with his on such matters as sound-proofing of schools? — Yes, I have read Mr. Fleming's proof, and I agree with everything he puts in it; I would personally simply go a little further.

3014 One has to consider not only schools, of which there are already 40 in Stevenage and 15 more building, but at the moment 16,000 children; but also problems concerning Courts, Council Chambers, possibly churches, and so on? — Yes.

3015 Again this is not, if I may respectfully say so, intended as any criticism of the Report of the Commission at all, but in their description of the effect on people of the various NNI numbers, that is to say the description that 40 to 45 noise level will be intrusive, and 45 to 50 intrusive/annoying, 50 + annoying, do you yourself, having considered the Farnborough experiment and the five surveys, and from your own knowledge, quite agree with that particular description? — No, not really. I think the description of the publication with respect does tend to minimise the problem.

3016 For example, if one looks at figure 2 of the Wilson Report‡ at page 208, I think this shows that in fact so far as the Farnborough experiments go, that the figure becomes annoying from 33 upwards? — Yes.

3017 33 to 44 annoying, 44 to 56 very annoying? — Yes.

3018 If one looks at the Social Survey, a little annoyance, 20 to 38, moderate annoyance 38 to 52, very much 52 over? — Yes.

3019 I believe Mr. Fleming considers that the 35 NNI contour is of particular significance for night life considerations; do you yourself regard that as, as far as you would go, or as of particular significance even in day time? — I think it is of some significance in day time, but what particularly concerns me are the

* See also p. 669.

* HMSO; 8s.
† p. 635.
‡ Cmnd. 2056 (HMSO; 19s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

various assumptions, for example that the proportion of night time flying over the period we have to look ahead to is likely to remain much the same as it was at the time of the initial social survey in the early 1960s, because if the proportion of night time flying increases, then we are perhaps certainly going to have to consider that annoyance may arise at day time levels considerably lower than they did at the time of the social survey. I do not know whether I have managed to make that clear.

3020 One other matter: the social survey was carried out, the one in the Wilson Report, in the Heathrow area? — Yes.

3021 I do not know whether that has any significance having regard to the ambient noise level which one might note in the country or the planned town as opposed to an unplanned town? — I think it is possible that in a planned town such as Stevenage, where a determined effort has been made to segregate residential areas from through traffic routes, and from the industrial areas, that perhaps Stevenage might well be more sensitive to disturbance than a town which has developed, I put it as "at random"—not quite at random, but it has not been specifically planned with a view to amenity.

3022 There is just one other matter too, with regard to noise certification regulations. It does, I think, appear from the publication to which I have already referred that action would rapidly be required because I think it is Regulation 41 of the Chicago Convention which gives protection to existing aircraft or prototypes, is that so? — Yes.

3023 So supposing the regulations were to come into effect in, say, five or ten years' time, of course they would only apply to planes of which there were not yet prototypes, so far as one can see at the moment? — Yes.

3024 I do not know whether there is anything you yourself would wish to add to your proof before you are open to cross-examination; is there anything you wish to add? — No, I do not think so.

Inspector Have the Joint Councils any questions?

Mr. Frank No, sir.

Inspector Any other First Tier Authority? Any local authority? Any other body or person—no questions?

3025 *Inspector* Just one point, Mr. Berry: I think it was mainly dealt with in reply to a question by your Counsel. It occurs at the top of page 4* of your proof, and it concerns this question as to the extent to which NNI numbers, or the effect of them, depend upon ambient noise conditions. Do you happen to know, or have any figures as to what the ambient noise would be in a residential area in, say, Stevenage? — No, I do not.

3026 It is just your own supposition that it would clearly be lower than in, say, the vicinity of Heathrow? — It is more than a supposition in that I have lived in a couple of New Towns, and I now no longer live in a New Town, and when I moved to a non New Town, I was at first quite surprised by the difference in general traffic level in the residential area in which I now live, and this is purely a personal view.

Inspector Thank you, Mr. Berry, I have no more questions.

(*The witness withdrew*)

Inspector That is as far as I can get on what I might term the scheduled programme as amended. I have a note which says it seem that the Nuthampstead Preservation Association, the National Farmers' Union and the Country Landowners' Association could come tomorrow instead of when scheduled; is that so?

Mr. Wise That is right, Sir, for the Nuthampstead Preservation Association. We are ready to appear tomorrow.

Inspector The National Farmers' Union?

Mr. Wallace We said we would be here on Tuesday afternoon, if that appeared to be convenient to everybody.

Inspector Not tomorrow morning?

Mr. Wallace It is a question of getting witnesses together. I anticipate you will probably have tomorrow morning taken up with the other objectors.

Inspector The Country Landowners' Association?

Mr. Gregory Yes, sir, we can manage tomorrow.

Inspector I think I had best not hear any more representations today, unless there are people who have been given leave to be heard, and who desperately want to be dealt with today, because I really want to get down to reconstructing our programme to give as much satisfaction as is possible. This may not be possible. We want to try and make it as painless as possible.

Mr. Lymbery If, rather than waste an hour this afternoon, you would like to fill it in, I am certainly able to open the case for Stevenage, and say what I wish to say, and call one further witness. The only thing is that I would have just one witness left for tomorrow morning. If you would like to fill in the time this afternoon, I am certainly able to do so.

Inspector Mr. Lymbery, thank you for the offer; I think it would be best served if we had a session now to reconstruct our programme, and see where we are going to; if there is no individual who has been given leave to be heard who wishes desperately to be heard today, I am going to adjourn the hearing for today, in order that we may have a session on reprogramming. In that case, the hearing is adjourned until 10 o'clock tomorrow morning.

* p. 670.

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes on Proceedings

TUESDAY 10 JUNE 1969

THE TOWN HALL, ROYSTON, HERTS.

Before MR. A. J. HUNT

Oral evidence was taken from:

Stevenage Development Corporation

(*Mr. L. G. Vincent, and Mr. J. Blair*)

Nuthampstead Preservation Association

(*Mr. D. Robertson, Mr. M. Y. Watson, Mr. T. S. Nardecchia, Mr. T. Sapsed, Mrs. E. I. Cranwell, Mr. L. F. Revell, Capt. T. H. Luckock, Mr. E. F. Wisbey, Miss O. Cook, Mr. E. J. Welch, Mr. H. C. Balfour, Mr. J. E. Y. Hawkes, Mr. D. B. Wallace*)

National Farmers' Union

(*Mr. R. Trigg*)

Country Landowners' Association

(*Brigadier J. R. Fishbourne*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Before commencing today's proceedings may I just refer to the amended time-table, copies of which have been distributed. For today's programme we have the Stevenage Development Corporation, then the Nuthampstead Preservation Association (representing also the Westhill Parish Council), then the National Farmers' Union (Hertfordshire and Essex Branches) (also representing Mr. G. D. Wentworth Stanley of Great Munden Farm, Dane End), and finally the Country Landowners' Association.

Tomorrow, on Wednesday 11th June, we have the Great Ouse River Authority, The Reverend Leo Morris, Rural Dean of Buntingford, on behalf of the Deanery of Buntingford, Messrs. Sharpe, Pritchard & Co. representing The Welding Institute, The Agricultural Research Council, Tube Investments Ltd. and the Chesterford Park Research Station. At some convenient time after 12 noon Mrs. Shirley Williams, M.P., Member of Parliament for Hitchin, then the Hertfordshire Society, the Decca Navigator Co. Ltd. and the Cambridge Civic Society.

That means that Thursday's programme is cancelled and we hope to conclude with one more day on Tuesday 17th June and in the time-table circulated there are lists of that day's appearances.

MR. R. LYMBERY* *called*

Stevenage Development Corporation

Mr. Lymbery If you please, sir. I appear for the Stevenage Development Corporation together with my learned friend Mr. Colin Colston. I propose to call Mr. Vincent, who is the Planning Consultant to the Corporation and has been associated with the new town for twenty years and also Mr. Blair who is a representative of the Stevenage Industrial Employers Group. Through your indulgence I was able to call Mr. Berry the expert in acoustics yesterday afternoon.

Before calling my two witnesses I should be glad of the opportunity of addressing you upon the case for the Corporation. Stevenage is a new town and was designated as the first new town under the New Towns Act 1946 and the first master plan was approved in 1950. There have been two further master plans, one in 1955, and one in 1966, the latter being approved by the Minister in June 1967. The Corporation have committed large scale projects to the ground for the implementation of that plan. A copy of the plan† has been submitted to the Commission but these were an expensive publication so it has not been possible to provide enough to go round, but there are copies available in the hall for inspection should anybody require to do so.

What is Stevenage? It is an area which covers now 6,256 acres. The present population amounts to 62,500 with a planned increase to 80,000 in 1975 and 105,000 in 1995 on full development. The dwellings now number approximately 17,700 with a planned increase to 22,800 in 1975 and approximately 30,000 in 1995.

Schools: there are at present 41 *in situ* with a College of Further Education, and a further 14 are planned to be built and used by 1995. There are at present something in the order of 16,500 school children in Stevenage alone.

There is new industry in great variety; some of the industry, in fact a substantial part, connected with the aircraft and electronics industry. There is a substantial labour force now exceeding 17,000, the majority, or at any rate a substantial part of that labour force constituting skilled or semi-skilled labour, draughtsmen, engineers and so on. The industry, of course, caters for the home market and also for exports, and the current export orders are well over £100m in value.

In regard to services, if one may loosely describe them as "services", there is a number of churches, a hospital nearing completion with 500 beds for the first stage, ultimately planned for 800 beds, a Court House, Council Chamber, a number of hotels, shops, supermarkets, offices and so on, the majority of the shops, supermarkets and offices being sited in pedestrian shopping precincts.

There is a good internal road system which is presently and is designed to be orientated to the envisaged development of the New Town. In short, Stevenage is a bustling, busy, thriving New Town community, and the emphasis, I think, should be on the word "community". It does take time to develop a community from a hotch-potch of immigrants into a virgin town, and after twenty years this is now being achieved. It is being achieved in a manner which accords with the expressed intentions of successive Governments that New Towns should be self-contained, and balanced, communities for working and living, and indeed, a very high proportion of population live, work, shop and seek their recreation in the town.

I have said this because in this exercise, I submit that Stevenage is not without significance, and one may wonder whether perhaps the significance of this town may have not been fully appreciated by the Commission. If I may respectfully say so, I do not in any way say this by way of criticism of the Commission, but some may be forgiven, perhaps, for wondering whether the full importance of Stevenage had been appreciated, perhaps for two reasons. First of all, we must consider we are dealing with a problem which is going to arise perhaps from 1975 to 1995 in terms of constructing and bringing into operation an Airport. One wonders, some have wondered, why the 1966 census figures were taken in para. 14 of the Commission's *Site Information.** I mention this because if one totals the number of people above 40 NNI for a

* See also p. 669.

† Available for inspection, by arrangement, at The Stevenage Development Corporation Offices.

* *Site Information for Stage II Local Hearings. 2. Nuthampstead* (HMSO; 6s.) Reproduced at p. 601.

Printed image digitised by the University of Southampton Library Digitisation Unit

four-runway airport, one finds there are 66,000 in all 51,500 plus 10,000 plus 4,500. In actual fact, by the time the four-runway airport becomes fully operational, this figure will be equalled, if not exceeded, by Stevenage alone, because in 1975 there will be 51,600 above the 40 NNI level, and by 1995 72,600 above that level, and indeed above the 35 NNI level, which some may believe would be a more acceptable figure to take, there would be 80,000 above that level in 1975, and 105,000 in 1995, that is to say, the total population of Stevenage.

The second matter which caused one a little concern as to whether the development of Stevenage had been fully appreciated, was the fact that the maps which were contained in the site information booklet do appear to indicate Stevenage as it was, that is to say old Stevenage with a population of about 6,000 or 7,000 inhabitants, and does not accord any relation to what is there at all.

Inspector I must tell you we did know this. This was the current available 1-inch map.

Mr. Lymbery I am obliged. I mention this because one or two people did rather raise their eyebrows, and of course, the whole purpose of this Stage II inquiry is to ensure that all the local facts are brought to the attention of the Commission. I respectfully venture to suggest that when the Commission comes to consider the whole of the evidence, including that called on behalf of Stevenage, a great volume of information will have come to light which might never have been dreamed of, let alone analysed, and that when it is carefully and completely sifted, it will lead to only one conclusion, and that is that the proposed site at Nuthampstead would be quite inapt, and inappropriate, for a major airport.

Having said that, there are three principal factors upon which Stevenage base their objection. The first is planning; the second is the effect on employment, and the third is nuisance, noise nuisance to the community as a whole having regard to the NNI contours, noise in particular circumstances such as schools and so on with which one is concerned from the point of view of PNdB. Added to that there is an important factor, loss of amenity generally, and a fifth factor which perhaps I could mention in passing, danger. Of course, the existence of risk from aircraft dropping out of the sky is very low indeed, but in the possible event of such a disaster, of course, it would be a disaster of very great magnitude indeed if this occurred out of the sky above Stevenage; I shall not mention that factor any more.

To take the first one, planning, Stevenage entirely agrees with Mr. Kitching, the County Planning Officer, and others, have expressed, the views they have expressed as to the effect of the Nuthampstead airport on the region as a whole, and I would not wish to recapitulate in that respect.

What is a matter of very real concern to Stevenage itself is that the coming of the airport will inevitably create a major and substantial imbalance, and virtually destroy the goal of the balanced community which is already in the process of being achieved. Stevenage now is about 17 road miles from the site, but with the coming of the east-west Motorway, it will be about 10 easy miles from that site. If one new airport town or two new airport towns were constructed during the course of the construction of those towns and of the airport itself, inevitably a substantial number of people would look to Stevenage for accommodation. After construction of the airport and the New Town or New Towns, inevitably some may wish to seek or remain in accommodation at Stevenage. If no new airport or towns were contemplated, the position would be infinitely worsened. What concerns us is this, as Mr. Kitching has said on page 21* and Appendix 2† of his evidence that there is potentially available accommodation in Stevenage from 1974 to 1981 for 2,000 inhabitants, airport employees, that is to say 20 per cent of 10,000. The figure for 1981 to 1996 is a further 4,000 being 20 per cent of 20,000, making 6,000 in all. One anxiety is this, of course, that in taking 20 per cent, Mr. Kitching has put Stevenage under the 10–20 mile bracket rather than within the 10 mile area but, of course, with a big east-west motor link there would be a danger that Stevenage may fall within rather than without that 10 mile area, and the figure he takes for within 10 miles is 40 per cent, so there can be the danger of that 6,000 becoming 12,000. I mention this because his evidence in this respect has been interpreted by others—Dr. Owens at page 4‡ of his evidence, and Mr. Hawkes the National Farmers' Union at para. 54§—as meaning that Stevenage could accept this substantial population without qualification. For instance, Mr. Owen says that Stevenage and Welwyn Garden City are included among those towns which could accept new population under current development plans. That is why I asked Mr. Kitching yesterday questions on this matter and he agreed such increase in population under current development plans could only be at the expense of the envisaged development at Stevenage. I emphasise this is so because it is clear that there would be a substantial population, a commuter population, coming to the new town for which the new town was never designed or intended, and it would destroy the original and present concept of self-containment.

Secondly, there would be a serious effect on existing industry. There would be a loss of skilled and semi-skilled labour to the airport industries and a loss when such labour is already in short supply in the area. As you will see from the evidence of Mrs. Williams,‖ the Member of Parliament, the present unemployment figure for Stevenage is 1 per cent, whereas the south-east averages 1·4, and the national average is 2·3. There is this shortage of skilled and semi-skilled workers in Stevenage where, as I have already said, there are aircraft and electronic industries, and their

* p. 622.
† p. 628.
‡ p. 641.
§ p. 711.
‖ p. 784.

Printed image digitised by the University of Southampton Library Digitisation Unit

position would be substantially jeopardised by this competition for labour in an already tight labour market.

The third point is this, by the same token there would be a detrimental effect on the attraction of further industry to Stevenage. And again, one asks how would those 6,000 or 12,000 people travel between Stevenage and the airport? We know there would be the motorway, but they would create an internal problem, and this would involve a necessity of reorientation of the internal road system in the town which is not orientated to carry that amount of traffic. So much for the objection on planning grounds—I have tried to keep the matter as precise as I can.

There is secondly the objection on the ground of employment—I have already dealt with the question of skilled and semi-skilled labour; there is also the question and problem of the building and constructional labour, shortage of which is endemic in this region, certainly in North Hertfordshire and beyond. If such labour is required for building new towns, a new airport, and extending other towns, it seems that those others which already have a designed and planned extension would find great difficulty in obtaining the necessary labour force, and perhaps even the constructional equipment generally to carry on with the existing towns. Mr. Blair will be able to tell you, Sir, of the probable adverse effects, certainly in so far as skilled and semi-skilled labour, which would be concerned in relation to industry in Stevenage.

Passing from that I come to the third main objection, that being one of noise. It has been assumed by the Commission that Noise Certification Regulations will be introduced and will lead to a reduction in the noise effect of aircraft by, at first 10, and now I accept, 5 NNI over the next twenty years. There are two sub-headings here: the first is that such regulations would in fact be introduced and, secondly, that the regulations would lead to a reduction by 5–10 NNI. In making an assumption in any exercise, and particularly, in our respectful submission, in an exercise of great importance such as this, one ought only to do so on the basis of what now appears as a probability, and I venture to suggest a strong probability for the future. One cannot properly do so on the basis of mere hope or possibility or intention. As to the introduction of such regulations, most informed opinion, as I understand it, is that this ought in due course to be introduced so that certain permitted noise maxima should not be exceeded. This is a hope and a very commendable one, but the question is, will it be realised? If so, when, in terms of probability? International agreements are notoriously difficult to negotiate, and there are, of course, many factors concerned not only that concerning the health and happiness of people who suffer from noise, there are the operational costs, international prestige, and numerous matters which are taken into account when these agreements are in the course of negotiation. Even if the regulations are introduced over the next 20 years, where do we find any basis for an assumption that such regulations will lead to a reduction of noise effect by 5 NNI during that period? Looked at in terms of probability, I submit this is at least an optimistic forecast, when one looks at published date. As far as one knows perhaps one of the best informed pieces of published evidence on the state of world knowledge in this respect is that of the international conference* held on the 19th November, 1966, the report of which was published by Her Majesty's Stationery Office in 1967, which I will not refer to in any great detail, but there are three fairly short passages which I would like to read if I may—you remember that under the Chairmanship of Mr. Roy Mason, the then Minister of State for the Board of Trade, there were six sub-committees, each dealing with specific problems relating to noise and control of noise by aircraft. Committee No. 1 dealt with the development and production of quieter aircraft and engines, and it is perhaps relevant to note this part of their report, page 62 of that publication, where they say:

> But with increase in aircraft size some of these techniques will now be used to avoid the increase in noise level which would normally accompany this trend. Furthermore the design changes aimed at noise reduction are likely to involve some penalties in operating costs. The magnitude of the penalty for a given noise reduction was considered in one of the papers presented to us, but it cannot yet be assessed with certainty. What is certain is that in the competitive world of air transport an individual operator cannot afford to pay any significant penalty in quieter aircraft unless his competitors do the same. For this reason there is general support in Committee No. 1 for the view, that, in order to make worthwhile progress, it will be necessary by a process of certification of new aircraft to ensure that these conform to improved noise standards. . . .
>
> There are, however three reservations which the committee wishes to make. The first concerns subsonic transport aircraft; these require very large engine powers and cannot use the low exhaust velocities appropriate to subsonic aircraft. . . . The second concerns existing aircraft, the substantial improvement of which is bound to be more difficult than in the case of new designs and which is bound to introduce economic penalties on a greater and perhaps prohibitive scale.

Committee No. 3 deals with the question of operation of noise abatement procedure, and at page 72 they say:

> The Committee was of the opinion that operational procedures had made a significant contribution to noise abatement. They felt that these procedures would continue to play a part in the reduction of noise nuisance and that further studies were valuable from the point of view of making this contribution more effective. However, it was felt that with the present aircraft and ground and airborne equipment

* *Aircraft Noise: Report of International Conference on the Reduction of Noise and Disturbance Caused by Civil Aircraft.* (HMSO, 1967, 8s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

> no very significant further reduction in noise by way of operational procedures was likely to occur since these had in many cases, reached the limits possible without degradation of safety. The committee considered that it was in the field of quieter aircraft and compatible land usage and runway sitings, especially at new airports, that the biggest contribution would have to be made.

Well, sir, one wonders whether one does gain very much optimism from the reports of those two committees and, of course, there is this further matter on which I touched in questions, the matter of conventions. One knows these conventions change, but this was referred to by Mr. Binajai, President of the Council of the International Civil Aviation Organisation, page 53 of the report, where he says:

> . . . the inclusion of noise is a factor in the certification of an aircraft is the direct concern of ICAO. . . .

Then he presses for early introduction of these regulations, and yet they have not yet occurred three years after. He says:

> Once the time is mature for ICAO's action then we shall have to proceed rapidly because of the protection given by Article 41 of the Chicago Convention to existing aircraft or prototypes.

That means that the longer the delay in introducing these regulations, the more aircraft and more prototypes would be outside their ambit, or so it would appear.

In so far as Stevenage Development Corporation's objection refers to noise, it is pursued on two bases: one, the overall nuisance to a large number of people, having regard to the NNI contour. Secondly, the interference of specific activities such as teaching in schools, hearings in court, meetings in Council Chambers, and so on and so forth.

There is one matter upon which I should like to comment, and that is a description of the effect of various NNI contours contained in the Commission *Site Information*, at paragraph 14, page 2: the level 40–45, described as intrusive; 45–50 intrusive/annoying; 50+ annoying. If one considers the Wilson Report,* and the diagram at page 208, at figure 2, one finds the results of the Farnborough Experimental Scale set out, and also is set out the social survey scale set out for Heathrow. If those are carefully analysed one finds the following: Farnborough, we find that 56+ is unbearable; 44–56 very annoying; 33–44 annoying; 20–33 intrusive. Of course, those figures at the right hand of the scale are average figures, and one must, therefore, take the bracket each side of the average. One finds that "intrusive" 20 to 33 and "annoying" 33 to 44. If one takes the social survey scale on the left hand side one finds "very much" 52 plus, "moderate annoyance" 38 to 42 and "little annoyance" 20 to 38. So perhaps one may be forgiven for suggesting that at any rate at a level of 35 a fair measure of annoyance is going to be caused to those who live within that contour. There was one small piece of evidence yesterday of some interest which may give support to this. You may remember that a witness from Luton conceded that Stevenage lies outside the 35 NNI contour for Luton Airport and yet as he conceded there is a strong body of public opinion in Stevenage and elsewhere and a strong resentment of the noise which even below 35 NNI does make difficulties in the noise it creates. Perhaps one would be safer in an exercise of this nature in assuming that the limit of 35 is the proper figure to take and 35 upwards is going to cause a real measure of annoyance whether one describes it as moderate or high. Accepting the assumptions made by the Commission in 1975 over 45 NNI affecting 20,400 residents, 5,800 houses and 12 schools; in 1995 over 45 NNI 32,000 residents, 9,200 houses, 17 schools. If one takes the 35 NNI figure as being more appropriate one finds in 1975 80,000 inhabitants in Stevenage, in 1995 105,000, that is to say the whole lot, population, schools, hospitals, offices and all.

Sir, perhaps one cannot pass without noticing the distinction which common law draws between the people who have annoyance imposed upon them and people who move to the nuisance. Here clearly if there was an airport at Nuthampstead the nuisance would be brought to the people who are in Stevenage. Of course it is often said that there are populations in the vicinity of airports, but these are substantially people who have moved to the airports themselves weighing on the one hand the disadvantages of living there against the other advantages of good employment in the vicinity and of course they have made their election.

Sir, with regard to the second aspect of the objection on the basis of noise and the effect upon particular activities one must find that there will be a serious effect on some 40 or more schools, offices and a variety of buildings which would have to be sound-proofed at a great cost of course in terms of money but also one would think in terms of human health and happiness. People learning, working, conferring and so on in Stevenage would have to do in sound-proofed boxes of buildings cut off from the outside world except for some common ventilation system which would have to be installed.

One has got very great sympathy with what can only be described as the cri de coeur of the gentleman who completed the questionnaire from the National Farmers' Union,* it does appear in one of the documents which has been filed, and his answer to the question: "Any other effects you anticipate?"; the answer is: "No sleep. No peace, no television and ulcers." One can readily understand what he said—in fact, having had some personal experience of Luton Airport at lower than 35 NNI, perhaps I might also be permitted to add traumatic memories as well. It would be small consolation to that gentleman to join those who were living or rather existing in what

---

* Cmnd. 2056. (HMSO; 19s. 6d.)

* p. 735.

Printed image digitised by the University of Southampton Library Digitisation Unit

had been designed as Stevenage New Town but which had become a 20th century community of supra terranean troglodytes.

Finally, there is the general amenity. Sir, we all know that the coming of Stevenage New Town into North Hertfordshire has been resented by many concerned with the beauty and amenity of its countryside and this is understandable, but the people are there, the town is contained just as other towns and villages have been contained by stringent county planning control. Those people in Stevenage enjoy the countryside around them and the amenity it affords. They do not wish any more than others in the county or in this part of the county to become involved in a large urban sprawl which would take it from Hatfield or further in the south up to possibly Royston and Cambridge in the north. It seems that such an urban sprawl could not be prevented if the airport came to Nuthampstead. I say this because with an additional 400,000 people or thereabouts in the vicinity with the extension of existing towns with the additional one or two large new airport towns, a network of motorways and roads and railways and 100 million people passing through this particular area per annum it is inevitable that the region in the end would become an awful conurbation and that its whole character would be destroyed, and pressures would be such that the most stringent control would not prevent such a result.

In conclusion may I say this and I am sure that the Commission appreciate this, that we are concerned with people, that is why an airport is required somewhere anyway to serve people, and what we have to do is to look and see where the proper balance of interest lies. I would invite you, Sir, and the Commission in considering the evidence given at this inquiry as a whole and also the evidence given on behalf of Stevenage Development Corporation in particular to say that the balance is clearly against siting the airport at Nuthampstead. I repeat that on grounds which I have mentioned—that is to say planning, employment, amenity and indeed health—in my submission the site would be inappropriate at Nuthampstead and I would invite you, Sir, and the Commission, to advise Her Majesty's Government accordingly. Having said that may I now call my evidence. First of all, Mr. Vincent.

MR. LEONARD GRANGE VINCENT* *called*

Examined by Mr. Lymbery

3027 Are you Leonard Grange Vincent? — I am.

3028 Are you a Commander of the British Empire, a Fellow of the Royal Institute of British Architects, a Member of the Town Planning Institute, and are you a member of the firm of Raymond Gorbing and Partners, Architects and Planning Consultants of Stevenage and London? — That is so.

3029 Your proof has been submitted to the Commission but there are just one or two matters I would like to ask you about myself before asking you whether there are any additions you wish to make. It may be that the Inspector has noticed a discrepancy in the figures for the number of schools given by Mr. Berry on the one hand, you on the other and the County Education Officer on the other. The County Education Officer puts the figure at I think 57 now and you put it at 39. I believe you are concerned with the actual school buildings and he is concerned with a different matter, the educational standpoint. Where you have a mixed infants and primary school have you called this one school because they are the same building combined but of course two separate schools? Is that right? — That is right. I think the slight difference is that we have junior and infant schools on the same site also, but I think the County have got two. There is no real difference in significance.

3030 And there is one difference between you and Mr. Berry, I think, a proposed one has been brought into operation very recently indeed? — That is so.

3031 I think in fact looking at paragraph 11 of your proof of evidence you give in fact 41, I think 39 being what one might call county schools and 2 private— Yes.

3032 Totalling 41 in all? — Yes.

3033 I think 13 more to be added by the end of the plan period? — That is correct.

3034 There is another point I should like to ask you with regard to paragraph 18 of your proof on the question of transportation. Have you any further observation to make in relation to the internal road network in the event of the airport coming to Nuthampstead? — Yes. I think to some extent I have played this down in my proof of evidence. Having seen this map* the County Council produced I am very apprehensive of the situation as far as commuting is concerned. The orientation of principal roads in Stevenage are east-west and this may serve the planning of the industrial areas of the town but if there was a large commuter traffic it would tend to be north-south. Stevenage has not been designed for this purpose and there will be absolute chaos internally.

Inspector Can you hear in the gallery? (*Cries of "No".*)

Witness The situation in Stevenage is this, that the primary road network has been designed in an east-west directional flow because the town is planned with its industries on the east and west sides of the town. If there was a heavy commuter traffic out of the town this would reverse it to a north-south flow for which the primary network has not been designed and as such I could see real traffic chaos in the town. If major works were to be undertaken in a town of this size it would be very difficult.

3035 *Mr. Lymbery* I don't know whether you have any further comment on the evidence which was given

* See also p. 673.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

by Mr. Kitching yesterday as to the availability of houses for commuters to the airport? — This is a very worrying factor, but one is really saying in this context a minimum of 2,000 houses would be required, it could be 4,000. The town has been deliberately planned so that after the 80,000 population has been achieved the houses then built are for the natural expansion of the town—after all, people don't stop getting born after 80,000, they go on being born for a long time to come and these people grow up and have got to be housed. The provision in the plan up to the end of the plan period is that so many thousands of houses will have to be constructed to house the natural increase in the town. Now if this is taken away from them in any way—and I would think 2,000 was a minimum, it could be 4,000—it could be catastrophic. If this is done then I think Stevenage itself and this area would find great difficulty in housing the natural increase in population.

3036 I don't know whether you have any other point that you have in mind having regard to the evidence which has been given by way of modification of what you said in your proof? — There were two points I would like to comment on, one is communications. Since I have seen this plan—we had not seen this plan before evidence was submitted—I am still more apprehensive about the commuting pattern. I said in my evidence* about 17 miles from Stevenage to Nuthampstead and I was assuming that it would go to the Stevenage junction to the A1, along the new east–west motorway towards Bishops Stortford thereabouts and up into Nuthampstead, but I see there has been a road link introduced from the south-west end of the site into this east–west motorway. Now there is a proposed junction from Stevenage on the east–west motorway 2 miles to the east of Coreys Mill. This has the effect of reducing the between mileage 2 miles into Nuthampstead site, assuming we go 2 miles into Nuthampstead site but only being 10 miles from the Stevenage junction in fact it is only 8 miles to the edge of the Nuthampstead site with this new spur road in. It is this one *here*. My evidence had assumed previously that it was going to go round somewhere like this, but with the introduction of this road the whole of this distance is saved. So this junction of Stevenage is about here, this proposed junction, and you can see how close it is there and up into the Nuthampstead site. It is 8 miles in between, 10 miles if you go 2 miles into the site.

The other point I would like to make is Mr. Kitching's evidence on the problem of the construction of two new towns. I would like to emphasise I agree entirely with what he said but I think the situation is worse than is probably realised. We have in this area proposals to build this region—Northampton, Ipswich, Peterborough, Stevenage extensions to Letchworth, Luton and Bedford. We are talking about a minimum of 18,000 dwellings a year plus ancillary works on top of that, you have got to put the labour for the airport. I would say in my experience of new town construction since the war this is actually a physical impossibility. I don't know how it is possible to do this without stopping all the works on the other projects, that is my opinion and firm opinion.

Cross-examined by Mr. Keene

3037 Mr. Vincent, do I gather from those last remarks that in fact you would not favour putting all the associated urban development into one large area as distinct from the two smaller ones? — Yes, I think I agree with that one.

3038 *Inspector* I was not exactly sure of the reply. You are against one, in favour of two, do I get that quite clear? — I think there is a choice of lesser evils. I would say in my experience two smaller towns will have less impact in the rural area than one very large one.

3039 *Mr. Keene* On the question of distances, Mr. Kitching as you know has put Stevenage into the 10 to 20 miles category from the airport. Your distances that you have just given us a few moments ago are from what you call the Stevenage junction a couple of miles out of Stevenage, is that right? — Yes.

3040 You would not quarrel with our calculation that the centre distance even as the proverbial crow flies between Stevenage and the airport site is something like 12·3 miles? — No, I would not quarrel with that, I was quarrelling with my own evidence where I said I thought it was 17 miles.

Inspector Any other first tier authorities? Any questions from local authorities? Any questions from others?

Cross-examined by Mr. Gregory
(Country Landowners' Association)

3041 Mr. Vincent, I believe although you are a consultant you have a very good knowledge of Stevenage New Town and I was wondering if you could tell me about the farm that was originally planned to be within the designated area of the original new town, if I remember rightly it was called Fairlands Farm? — That is correct, yes.

3042 When Stevenage was originally designated wasn't it planned that Fairlands Farm would stay in agricultural use and be in that way an asset of the new town? — Yes, that is correct. The idea was it should be an open lung within the built-up area.

3043 It is suggested that the lower urbanisation in the Bishops Stortford area might have areas of good agricultural land left in agricultural use in between the developed area, but taking an analogy with Fairlands Farm in Stevenage in fact isn't it right that that has been a failure from the agricultural point of view at least? — Yes, that is perfectly correct.

3044 This is of course because of interference with farming from the people living in the towns who are not familiar with country ways? — I suppose it is trying

* p. 673.

Printed image digitised by the University of Southampton Library Digitisation Unit

to put a farm within a built-up area, it just doesn't work.

3045* There is just one other thing I would like to ask you about the lot of Stevenage in being asked to accommodate airport population. As your learned Counsel has already pointed out Stevenage was the first new town, wasn't it? — Yes.

3047 And there was a master plan and that was done to accommodate something like 60,000 persons? — 60,000, yes.

3048 Later on the Development Corporation were asked to consider increasing the population up to something like 80 to 100,000 persons and for that purpose the Development Corporation proposed, did they not, that the boundaries of the designation area should be substantially extended? — Yes, but not on the figures that you have given. This was for a population of 150,000.

I stand corrected.

Inspector This is all in the evidence, Mr. Gregory, is it not?

3049 *Mr. Gregory* Yes, it is, I am sorry, that is in paragraph 7 of your evidence. What happened in fact was that the Development Corporation were told not to extend their boundaries say by 100 acres but to make a new plan within the existing designated area to take another 40,000 or more people, is that not right? — Not strictly so. 100 acres was added to the designated area on the north-east side and the Corporation were asked to get as many people as practicably possible commensurate with good density in the area. There wasn't a target figure.

3050 You have in fact planned to take another 40 or 45,000 persons? — Yes, taking it to a population of 105,000 in the ultimate.

3051 Of course Stevenage New Town as originally conceived was already planned and built? — Sorry, could you repeat that? I am not quite sure what you are meaning.

3052 My meaning is this, that at the time when the Development Corporation took it upon themselves to increase their ultimate planned population— — Could I interject, it wasn't the Development Corporation, it was the Government through the Ministry of Housing.

3053 I appreciate the Development Corporation did not want to do it the Government's way, but when you set about doing so wasn't the original planned new town already built? — No, it was not built, it was planned. The population was still then lower than the first conceived population of 60,000, but we hadn't reached that 60,000 by then.

3054 This meant a change of plan within the existing designated area? — Yes, as indeed as plans have over a long period of time.

3055 And this is for the new town purposes taking London overspill? — Partly and to take care of the natural increase which was not appreciated in 1946 and 1950 when the first plans were made.

3056 And to achieve such a thing there has to be very careful phasing, has there not, of intake with industry? — Yes, this is carefully phased.

3057 If the Development Corporation were asked to take a population for a new purpose on top of what was already planned for the intake from London and natural increase of course that plan, the original plan, must suffer, must it not? — The original plan was thoroughly investigated to see whether it was possible or not, as indeed was done recently in 1966, compared with the original plan.

3058 *Inspector* Any other questions? I have only one point, Mr. Vincent, I think in opening Counsel mentioned that the enlarged designated area was now 6,250 acres. A figure was given, I think it was 6,250 — 6,256.

3059 6,250 surely, wasn't it? — 6,256.

3060 6,256. I won't worry about the odd six. That is intended to accommodate 105,000? — Population.

3061 I have done some quick arithmetic and that gives approximately 16 persons per acre over the whole of the designated area. Am I about right there? — Yes, if you use the gross figure, but bearing in mind the whole of the designated area is not in this.

3062 I appreciate this. I note you are working to 15 persons to the acre net. — Yes, but you are right on the gross figure.

Re-examined by Mr. Lymbery

3063 I wonder if I might ask one question in re-examination: you have been asked by a gentleman just now about the possibility of taking further immigrants into Stevenage. Can you tell the Inspector, please, when the planned immigration for Stevenage ceases? — Yes, the planned immigration should cease about 1975, when the population has reached 85,000.

3064 How do you account for the additional population till 1995 and the houses which you require for them? — The additional population is made up by the natural increase from the original population.

3065 It goes to something over 30,000, just over 1,000 a year? — Yes, the natural increase goes at the rate of 1,200 persons a year.

(*The witness withdrew*)

MR. JOHN BLAIR* *called*

Examined by Mr. Lymbery

3066 I am told I have not been speaking loud enough: this machine takes getting used to. Mr. Blair, are you

* Inadvertently, question number 3046 was not allocated.

* See also p. 676.

Printed image digitised by the University of Southampton Library Digitisation Unit

John Blair, you are a Bachelor of Arts of the University of London; you are Personnel Manager of the British Aircraft Corporation Guided Weapons Division, Stevenage, and have been concerned with personnel management at Stevenage since 1960? — That is correct.

3067 I think the Employers Group in Stevenage represents 33 companies does it not? — Yes, it does.

3068 Employing a total of about 17,000 employees? — Yes.

3069 I think your further calculations show 17,000, not 20,000 at the present time? — Yes, we have been able to get this into a bit more detail since we originally prepared the evidence.

3070 How do you break down the 17,000 into technicians, skilled and semi-skilled, and into others, including draughtsmen, engineers, administrative, and so on?—There are about 6,000 skilled workers and technicians included in the 17,000, plus the semi-skilled; and 11,000 others which include clerical, technical workers, administrative staff and so on, which includes draughtsmen, engineers and technicians.

3071 You do refer to exports: "At the present time the companies have export orders for over £100m." Is it right that approximately 30 per cent of the Employers Group businesss in Stevenage is involved in exports? — Yes, that is correct.

3072 I think you have not got an exact figure for exports, because it is near on £100m for your own Company alone? — That is true.

3073 So the total figure may well be in excess of that? — Yes, indeed it may.

3074 I think you are in fact the Chairman of the Committee set up by the Employers' Group to investigate on its behalf the problems of availability of labour in Stevenage. Was that Group set up having regard to the proposed inquiry, or was it for reasons quiet disassociated with the Inquiry? — It had no connection whatsoever with the proposed new Airport at Nuthampstead. It was set up because the employers were very concerned that they were not able to attract sufficient labour into the area. As you have already brought out, they are dependent on recruiting labour from outside the area in order to meet our needs, and we are finding that it is becoming increasingly difficult.

3075 I think, as near as you can get at the moment, is there a shortage of about 700 skilled and semi-skilled workers? — Yes, and about 300 other workers, making a total shortage at the present time of about 1,000.

3076 What effect do you envisage of an airport coming to Nuthampstead with its associated industry there, and in the New Towns which it may bring with it, having regard to the requirement there is now for skilled people for aircraft work? — We are already employing people who would be attracted to work at the airport. Out of the 17,000 employees there are 10,000 in firms that are concerned with electronics, about 10,000 connected with this type of work. Out of this, 2,000 of them are skilled workers. Those together with the engineers and administrative and technical staff, would be attracted by the rate of pay appropriate to work at the airport, and we would either have to recruit others, or we would find ourselves having to compete with the airport by putting up our wage rates.

3077 I do not know whether your Committee has envisaged any advantage at all which would result from the airport, to the companies which you represent? — The only advantage we can see will be, of course, improved international communications on our doorstep, but this is a relatively minor factor. We have already access to Luton Airport, and London Airport is not very far away. We are not dependent on international connections for business.

Inspector Any questions by the Joint County Councils?

Mr. Keene No questions.

Inspector Any other first tier authorities—other local authorities? Any other bodies?

Mr. Gregory I think this is rather unusual, but I have been asked by a local authority whose representative is not here to ask a question. I wonder if I might, on his behalf?

Inspector Certainly.

Cross-examined by Mr. Gregory
on behalf of the Country Landowners' Association

3078 Mr. Blair, as I understood your evidence, when I was trying to listen to two people at the same time, you are saying that the total numbers employed within the Employers' Group is now estimated at 17,000, not 20,000? — That is right.

3079 Of course, the Employers' Group does not include all the Companies in the industrial areas of Stevenage. Are you able to say what the total employment, including the companies who are not within the Employers' Group, would be? — The Employers' Group represents a very substantial total, I think it is about 55 per cent of the employed population of Stevenage. The rest are presumably employed in shopkeeping, schools, and so on and so forth, so I think that you can take it that this is the majority of the employed persons in Stevenage on the industrial side.

3080 That is the best help you could give in my question? — The numbers of firms that are not members of the Industrial Employers' Group are very small, therefore the number of employed persons not covered by the Industrial Employers' Group are probably insignificant.

Inspector Any other questions?

Printed image digitised by the University of Southampton Library Digitisation Unit

3081 More for information than anything else, the last sentence of your proof, apart from the supply and demand position, would the wage structure of an airport be higher than that at Stevenage? I appreciate there is a problem concerning supply and demand with a greater number of employers. Is it anything more than the supply and demand position? — Yes, I think this is likely; obviously I cannot say exactly what the wage structure at an airport would be, but we have some evidence that this would be higher than are currently paid at Stevenage, in that my own company and that of Hawker/Siddeley, whom I represent as part of the Employers Group, have establishments within 20 miles of Heathrow, and they are paying something like £5 a week on average more than we are paying here at Stevenage.

3082 That is Weybridge compared with Heathrow? — No, the rates, in order to be competitive with London Airport, at Weybridge and Kingston need to be about £5 a week more than we are paying at Stevenage. I think this gives some pointer to the difference in wage rates caused by the airport.

Inspector Thank you, Mr. Blair. (*The witness withdrew.*)

Mr. Lymbery That concludes my evidence, save for two things. You remember yesterday when Mr. Berry was giving evidence, you asked him questions at the conclusion concerning the ambient noise level at Stevenage. I was unable to get hold of him at the conclusion of the hearing because he had to go straight away off to Guernsey to give evidence at an inquiry over there. What I was wondering, when he comes back tomorrow, was whether I might get him, if it is going to be a helpful exercise, for him to take ambient noise level readings at various points in Stevenage, and then submit them to you by way of addendum to his proof?

Inspector Yes; I would not wish him to take too much trouble on this account, but this question of the noise level is, I think, of some significance, and if we had some idea of two or three points in residential areas, etc. in Stevenage, I think it would be useful. I suggest this could be submitted to the Commission, if necessary, as part of this evidence, or otherwise as part of the Stage III submissions, which you will no doubt be considering.

Mr. Lymbery I am obliged; I shall have that done. That concludes our case.

Inspector The Nuthampstead Preservation Association.

MR. N. WISE *called*

Nuthampstead Preservation Society

Mr. Wise My name is Norman Wise of Counsel, and I have the great honour and privilege to be the totally unfitted representative of Nuthampstead Preservation Association. When I say I am totally unfitted, I mean that with complete sincerity, because it is my belief that the Association holds a unique position at this Inquiry, and in your Commission's consideration of whether or not an airport should come to Nuthampstead, for this reason, that the Association speaks for the people. We are not very clever people; we have none of this sophisticated expertise that you have already heard from innumerable professional witnesses who have appeared before you, and for that reason, we are mindful of the Commission's explicit instructions that they want to know what are the local implications they should take into account in their further work on the short-listed sites. They want to know at this Inquiry what would be the local consequences of an airport coming to Nuthampstead.

Although to some extent, as you will see from our proofs of evidence,* we have submitted to you some rather beastly and arid factual information, a great deal of arithmetical information for the purpose of what is my principal case, I find that totally unsatisfying, and it is my duty and concern to try to inject into those arid details, Sir, some of the feeling which I am instructed is what the Commission wants to know about.

We have been mindful throughout of your Commission's instructions, and I touched on them already, as to what will be the local consequences of the airport coming to Nuthampstead. Also your Commission have been explicit that they want to avoid duplication, and I think we have done that for the greater part of our case. Thirdly, they want to know what are the views of the people. Numerous stories have been conveyed to me—how accurate or otherwise I do not know—that an opinion or view has been expressed, whether by the Commission or on behalf of the Commission I do not know, that somehow or other the views of the people were not getting through to the Commission.

It is perfectly right that to some extent it has been suppressed at Nuthampstead—suppressed is not the right word—but you will see from Mr. Robertson's† evidence that when a certain circular was addressed to the representatives of no less than 97 villages and hamlets, they were asked to rely upon the Association, and not to bother the Commission with an enormous number of individual representations, and not to turn up here separately to present their case. I could call many thousands of witnesses, and that is a simple statement of fact. That is the strength of the Association. But you have asked for this not to be done, and we have impressed this upon our supporters. They, with the most astounding loyalty, have accepted this from us, relying upon this, Sir, that today the Association would at long last express itself. You will see from Mr. Robertson's evidence, he being the Chairman of the Association, that the Association came into existence in quite spontaneous form, in that entirely spontaneous meetings were arranged at a variety of

* p. 677–698.
† p. 677.

Printed image digitised by the University of Southampton Library Digitisation Unit

places in the area affected, without any organisation at all, but stemming from those meetings the Association was formed, and it now represents no less than 113 villages and hamlets; they are listed in an exhibit to Mr. Robertson's evidence.

I impress that number upon you with the utmost earnestness—no less than 113 villages and hamlets now speak through my totally unfitted voice.

There are one or two further matters that I would like to get out of the way before getting to the substance of what the Association want to say. This also I believe has been the subject of informal comment, whether by or on behalf of the Commission I am not entirely sure, that little or nothing has been heard of the Nuthampstead Association, and that is right, too. We have not been to the National Press; we have not been to the BBC. We have not been anywhere. We have had some local news in our local papers. We have done no more than that. We have, as my instructing solicitor tells me, played our hand close to our chest for the time being. We have not hired the Dagenham Girl Pipers Band to parade outside this building; no doubt it would have made you very angry if we had done so. We have gone about things in a different way.

The County case is one that we support without any reservation at all. It is prepared with immense expertise, with great professional knowledge and experience, and it is the kind of case that we, of course, could not begin to mount. It is the kind of case that you are not expecting to hear from me today, I am sure. But what the Association has done, has been to carry out a canvass of all the villages and hamlets that might be affected by the airport, and that canvass has been done in no less than 97 villages and hamlets. There was a vote taken as a consequence of the door-to-door canvass, and there was also an immense amount of factual information obtained. Mr. Watson has presented his evidence* on the analysis of that factual information, and I wish to submit the bare bones of it to you quite simply.

I think it would be more suitable if I dealt with the factual information after dealing with the Association's poll. The poll was taken from a door-to-door canvass in 97 villages and hamlets, but in the event we learn that of those villages and hamlets, 4 propose either to pursue their own course before you, or to appear under the umbrella of the County Councils. Of the 97 villages and hamlets, no less than 93 voted, and of the total number of households represented, no less than 77 per cent did exercise their vote. Of that 77 per cent no less than 92 per cent voted against the airport proposal. If you refer to Mr. Nardecchia's evidence† at para. 23, you will see there he summarises the consequence of this. All dwellings in the 97 villages were visited, that is to say, a total of 18,716—I have got that wrong. Out of 26,349 dwellings in the 97 villages and hamlets, 18,716 were visited, and they do in fact comprise all the dwellings in the villages and hamlets, that is to say, including the handful of small towns which decided to appear under the umbrella of the County Councils. It is of that number that no less than 77 per cent did exercise their vote, and of that 77 per cent no less than 92 per cent voted against the airport.

Since then, we have done the arithmetic again; we have made a mistake; in fact it is not 92 per cent, it is 91·4. I do not suppose that marginal difference will make any serious effect upon our case.

Inspector The proof actually says 94 per cent, Mr. Wise; it is 77 per cent in Group 2. This is para. 14 of Mr. Watson's proof, and in Group 2, 94 per cent were against the Airport, but whether it is 91 or 94, I take your point.

Mr. Wise I am sorry, the 92 per cent is in fact the average per cent of the three groups, which you will remember we divided the villages into, that is to say, Group 1 inside the 50 NNI; Group 2, between the 45 and 50 NNIs, and Group 3, outside; but as I say, in fact it is 91·4 and not 92.

If you look at page 13 of Mr. Watson's evidence, in paragraph 15 you will see the overall figure was 92 per cent. Mr. Nardecchia is a town planning consultant of some eminence, and I invite your attention to what he says in para. 23, at the top of page 28 of his evidence. "This," he says, "is a response to the poll of over 77 per cent which, in my opinion, is an astonishingly high return to a poll conducted by a voluntary society with no official standing over so wide an area and embracing such a large number of households." Of course, he goes on to explain, here he is relying upon Mr. Watson's analysis of the poll. "Allowance must, of course, be made for unoccupied houses and persons away from home so that the numbers who fall into the category of 'don't know' or unwilling to answer are less than 23 per cent. A response of 77 per cent demonstrates very clearly the enormous and widespread public interest in the scheme."

In para. 24 we thought it right to tell you this, and I shall cross-reference this to Mr. Watson's evidence as well: "In arriving at conclusions drawn from this poll it must be remembered that out of the 23 per cent of dwellings visited where no expression of opinion was given some households may have lacked the courage to say they were in favour of an airport in view of the apparent overwhelming body of local opinion against an airport."

We do not shut our eyes to that fact. The vote was exercised by the head of the household. There may be a young son or daughter, a member of that family, who may well have been in support of the airport. Evidence is given by Mr. Sapsed,* a local farmer, and I propose to ask him about this, that he has a farm worker who appears to be in support of the airport. It would be dishonest of us to gloss over this without drawing it to your attention. There must be some people who would like an airport at Nuthampstead. I invite you to note this, that they are not so strong, apparently, to have formed themselves into an organised body; they have not asked to appear before you. Numerically

* p. 682.
† p. 685.

* p. 691.

Printed image digitised by the University of Southampton Library Digitisation Unit

how many they amount to, we do not know. We have tried to find out but failed. At our innumerable meetings, Mr. Robertson will tell you he has invited people to speak up if they have anything to say in support of the airport and nobody has done so. As far as we are aware, and I think we exercise a fair judgment in this matter, we believe there to be very few people in support. I cannot assist you any further as to that.

Mr. Watson in fact does refer to this on page 13 of his evidence,* where he says, referring to column 21 of the enormous table you have in front of you: "Column 21 (no opinion) gives very variable results." —in some cases away from home, in some cases form not collected, form not returned, in some cases people genuinely did not know, some preferred not to say, and some made the sort of comment, "Well, if it comes, it comes." "This column certainly includes some who were in favour of an airport but lacked the courage to say so in the face of majority opinion." I have been a little concerned not to labour this point before you, but I am not going to have it said or thought against the Association that there has been any suppression of views different from our own, and certainly it is not our case that there is 100 per cent support against the airport. I do not think I can assist you any further as to the minority. That was the result of the poll. As I say, it is an arithmetical matter. Mr. Robertson will tell you, or it is mentioned in his evidence, something of the quite astonishingly original events, fund raising events, that have been held throughout almost every village and hamlet of the 97 to raise funds to enable the Association to get an organisation prepared to come to this Inquiry. The support is both original and unflagging, It is also completely loyal, and that accounts, as I have said already, for the patience of everybody in waiting for today when at long last their story is to be told to you.

The whole of this factual information having been assembled it was then considered with great care by the Council of the Association; it was passed to Mr. Nardecchia, and he was asked to draw the local town planning, so to speak, conclusions, which it appeared to him arose from knowing of this immense amount of information about the area, and I invite you to note this, that nobody else has submitted this information. Mr. Watson's enormous schedule sets out the numbers of dwellings by various categories, details of: schools, churches, shops, and other businesses, details of population—an extraordinary census of local facilities and amenities which nobody else, certainly in respect of Nuthampstead area has attempted, and from all that information Mr. Nardecchia as a professional expert draws the realistic, so to speak, conclusions that appear in his evidence.†

Nevertheless, when this was reviewed by the Association's Council, it all seemed totally inadequate in view of the repeated requests from the Commission that they wanted to know what the ordinary person felt about an airport here, and we were confronted with the task of conveying to you, somehow or other, the true feelings of people since they were not merging from these bare and analytical details that you got in the earlier proofs of evidence. We are gratified to hear, sir, that you have visited the area on many occasions. If only we had known, we would have come out to meet you and shown you truly what the area is like.

No doubt, sir, you have been through most if not all of these beautiful villages and, no doubt, sir, you have been in some of the churches; without any doubt at all, sir you have coveted many of the small houses and cottages you have seen about. No doubt you derived great pleasure from the beautifully kept gardens that you saw on every hand. That is really what the association want to tell you about, and it seems an extraordinary difficult task to get this case home to the Commission. I am quite inadequate to present that kind of case to you, sir, but it then became known to us that Miss Olive Cook lives in this locality and, no doubt, you know Miss Cook: she was the author in fact of a book on the Stansted Airport Proposal—I do not know whether you are reaching your hand out to pick it up; that is not it, sir, that is the work on Anstey,* and Miss Cook was asked to write for us, if she could, a historical and sociological survey on the area. She had ten days. I may say that when the suggestion was made to Miss Cook she fell over herself with eagerness, and said: "Why did not you ask me before? The whole time I have been wanting to do something to help." Sir, as I have said, she just had ten days. It was impossible to carry out a survey of the entire area, and in the event it was decided to select one typical village, and it so happened the village was Anstey. It might have been almost any one of over 96, but it did happen to be Anstey, and fortunately it was a village that Miss Cook knew. She spent, I believe, about seven days on research, and so on; I am given to understand that she began dictating at an early hour in the morning of Whit Monday, and it was delivered to me in my Chambers at 11.30 on Tuesday morning. I understand she had not stopped working hardly in the intervening period. You see what the essay is; it describes, to begin with, the setting of the whole of this area. It then treats on Anstey in great detail, and it then endeavours to convey to you, sir, some sense of the people who live here. My respectful submission is this: Mr. Frank used a pointed expression when he referred to a sick joke in contemplating the prospect of an airport coming to Nuthampstead. I find it difficult, sir, and I make this as a serious observation, I find it almost difficult to believe the Commission could be serious about this proposal. I am led to the conclusion, which Mr. Frank appeared to have in his mind, that there must be some special reason which points the Commision's finger at this particular area. It is an area of quite unusual beauty. It is an area that has been by-passed by the 20th century, except in so far as the day to day

* p. 683.
† p. 685.

* Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

amenities of electricity, water and main sewage, though not always main sewage, are concerned, but we are left on one side by the A10 and the A11, and this area survives in very much the form that it has continued certainly for very many generations and, in some respects, for many centuries, and it was Miss Cook's task to try to convey this impression to you. I, with the utmost earnestness ask that the Commission read this at their leisure, perhaps, but certainly slowly, and with great care, since it is not an attempt to thrust mechanical detail in front of you, sir, but it is an attempt to say to you what we understand you want to know, and that is: what is the nature, the character, and the quality of this area. And what it is, sir, and I propose to be blunt about this; what it is your Commission will destroy if in the event you decide to recommend to the Government to place the airport at Nuthampstead. Sir, I must speak with some passion on this point. We have no choice. We have no vote. The decision is not ours. We cannot elect. The decision is your Commission's. We are in your hands, and the burden of this decision is squarely upon the Commission, the decision to make the recommendation to the Government that the airport should come here. All that we can do, sir, is arrive at this inquiry and hope that we can impress upon you something of our feelings on this prospect. I invite your attention, particularly, to the photographs which are at the end of Miss Cook's essay. They are taken in fact by the husband, Mr. Smith. They were taken on my explicit instructions; although Mr. Frank said that when he made his 100-mile tour of the area he did so upon a beautiful day, my explicit instructions were that these photographs should not be taken on a glorious sunny day, they should be taken on any day that happened to come along, and if there were clouds and rain the photographs should be taken on that day, because there are plenty of clouds and there is a great deal of rain in this locality. The photographs are not contrived. Mr. Smith is a photographer of some integrity: several photographs that might have created that impression were discarded; they were, if not snap-shots, at any rate photographs taken by that quick appreciation of the eye which the natural photographer has. The photographs of the various people who live in the area, sir, were not posed, but were taken with one or two exceptions—clearly Mr. Chappel, the old man sitting with the model hurdy-gurdy behind him and his wife lying on a sofa, of course that was posed, and there are two other ladies also photographed in their sitting rooms. Mr. Sapsed and his family are photographed in the sitting room, but other than those photographs, they were taken, as I say, as quick snap-shots in an attempt to capture the character of the individual. They begin with a series of photographs taken from the edge of the area, looking into the site. No doubt you have seen views of that kind. Sir, that is what your Commission would propose to destroy if you decide to recommend to the Government to put the airport at Nuthampstead.

There are, in my submission, photographs of cottages and other features in Anstey, several photographs of that glorious church they have.* Sir, I ask you to impress upon your colleagues on the Commission to study those photographs with the greatest possible care because, again, sir, that is what you are going to destroy if you recommend the Government to install an airport at Nuthampstead. The true implications of this proposal are something that in so far as lies within my ability at this inquiry I am determined shall be in no doubt at all in the Commission's mind.

There is a countryside of great antiquity and history. There are farms and farmsteads. There are villages and hamlets which exist today as they have either in their present day form or certainly on their present day site for many centuries, and we invite your attention to two maps which are inserted in the pocket at the rear to this part of our evidence. You are not going to knock down a few cottages and an occasional church here and there. What your Commission will propose if they opt in favour of this site is the destruction of the countryside; the destruction of innumerable communities; the destruction of churches, villages, cottages, homesteads, and the breaking up of innumerable families that have lived and worked in this area for almost countless generations.

There is some arithmetic that I would like to bring home to you. The land to be taken, as you know, will be between 7,000 and 10,000 acres for the airport alone. Further consequences are as follows: 9 villages will be destroyed, and they are listed in Mr. Nardecchia's evidence; 9 villages will have to be demolished with their churches, and their church yards, with their cottages and every single feature of them.

Sir, I am not being naïve in doing this, but I must draw your attention to the picture of Mr. Johnson, whose forebears for many generations are buried in the church yard at Anstey. This is a photograph—no doubt you have seen it—he is an old man. You may wish to meet him. I may say I met every one of the people referred to in this matter because I was determined to do so, and you see what he says: he is profoundly shocked by the possible threat to his native place and, above all, to the church—"40 of my ancestors lie in that church", he said. "If they are all put under concrete how will they get out on the Day of Judgment? What is more, how shall I get in?" He is not a silly old fool. He is a very genuine character, and that is the passion of these people, quite inadequately now, I fear, emerging through my voice.

The 9 villages will include Anstey, and will include Anstey's church and church yard, and will include Mr. Johnson's ancestors, and Mr. Chappel's ancestors as well. He also is shown seated inside his cottage.

I suppose somebody could propose the disgusting alternative of digging up these ancient bones and transporting them elsewhere. Somebody could propose that. I don't know what the proposals would be, but the feeling of these ordinary people is one of revolt at the prospect of the villages in which they and their

* Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

families and ancestors have lived, in some cases, for centuries, and in nearly all cases for many generations, being destroyed in such a repulsive manner as would be involved here.

Sir, that is what your Commission would propose, if you recommend the Government to put the airport at Nuthampstead. The 9 villages contain a total population of—the booklet says 1,000, but on a count of the parishes, the population is 2,046. I am not sure that figure emerges anywhere in the evidence you have got, but, of course, the parishes do include areas that will not actually go under the concrete, so to speak. Outside those 9 villages there will be 8 villages so seriously affected as to be in our estimation virtually uninhabitable, and they have a total population of 2,741. Those 17 villages, 9 to be destroyed and 8 to be rendered virtually uninhabitable, contain a total of 300 listed buildings, and of those 300 listed buildings no less than 104 are in Grade I and Grade II of the Ministry's list. That also is what your Commission would propose to destroy if they recommend the Government to provide an airport at Nuthampstead. The population of something like 4,000 altogether, that is the population of the 9 and the population of the 8 is virtually meaningless unless you know this and understand this, sir. The latter pages of Olive Cook's essay inform us that when people marry they marry a girl either in their own village or in the next door village about 5 miles away, and they either go and live in that village with the girl they marry or they bring her home to the village they already live in. It is right, sir, that there has been a tight community throughout this general area for very many generations, and this emerges from the evidence of one or two of the local people whose statements of evidence are at the back of the folder that you have got. That accounts, of course for the family community that there is throughout the area, so that when I say the effect of destroying 9 villages and badly affecting 8 more will be to upset the population of about 4,000, it is totally inadequate to say it to you in those terms, but what would result would be the uprooting of innumerable branches of the same family throughout the area, the same family that has existed there for many generations.

You can put that to the test by looking at the tombstones in the church yards, by examining the parish registers, and looking at the present day electoral rolls: you will find this link throughout many generations, and in many cases centuries. Miss Cook deals with that in her essay.

Sir, it is my submission that all this terribly clever professional evidence which has been put up to you by the County Councils and other numerous bodies is utterly meaningless, and I question its worth, confronted with the case which I am now presenting to you on behalf of the Association. We say this: You cannot do this, you cannot destroy villages. You cannot demolish old churches and other buildings. You cannot break up families in this way, you just cannot do it, and the passion which these ordinary people feel in this matter, sir, shows that it is just totally unnecessary to do so. That is a Stage V case and I do not propose to enlarge upon it now, but that is the feeling of these local people. There is no need to come to us. You can go somewhere else where none of these fearful consequences will arise at all.

Of course, somebody, no doubt, will carry out what I believe is called a Cost Benefit Exercise, and no doubt somebody will go through the vulgar business of counting up the pounds shillings and pence to see what the difference is. My case on behalf of this association is that that is no more than the merest insignificant detail. It does not matter. We say this, sir: you cannot destroy this area, but, sir, that is what you and your colleagues would be doing—I repeat, we are impotent, we can do nothing in this situation; the agony of decision, and it may well be an agony, is yours, and your Commission's. I am endeavouring to be as brutally frank and blunt as I can now that we have this opportunity to address you, to show you exactly what you would be proposing if you embarked upon this intention.

Outside the 17 villages that I have mentioned, and inside the 40 NNI, no less than 33 villages, that is including the 9 and 8 I have already mentioned, will be affected inside the 40 NNI. I know there are different views as to which is the correct contour, but working upon whether it be the 40 or 35 NNI, we have taken the highest figure, the 40; inside that area, inside those villages there are no less than 17,462 people living, that is to say, assuming that the 9 and 8 villages I mentioned had a population of about 4,000, a further 13,462, something of that kind will be affected by noise of that noise level. Inside that area there are no less than 850 listed buildings, buildings which may or may not fall into decay if it be found these particular villages fall into disuse; these are the further consequences of installing an airport at Nuthampstead. Numerous farms will be destroyed, or will be split and that, of course, is the National Farmers' Union's case, and is no part of my case. Those appear to be the brutal consequences; 7,000 to 8,000 acres of land taken, villages to be destroyed, others to be so badly affected as to be uninhabitable, others to be badly affected by noise, extensive population uprooted, and the population, as I say, which consists for a great part of tightly knit family units that have been here for many many generations, and the farms that will be lost as well.

Now, sir, as if that were enough, of course that is only the beginning. In place of all that there will be a modern airport, and one only has to look at Heathrow to see what a modern airport looks like. That is what will be put here in this area in place of what will have been destroyed. In addition, sir, there will be innumerable roads constructed and some indication of that is given on that plan,* carving up what is left of the countryside, on there where the M11 and M1, and A1 are, and elsewhere. In addition, no doubt, railway links will be necessary too, further dissecting what is left of this countryside.

Finally, sir, an enormous population of something like 400,000 will be injected into the area, into two

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

substantially new towns. The destruction, therefore, extends very much further than that small area that I describe to you. The consequence of this whole complex will be such that the quality of the landscape, the quality of the countryside will be gone completely. In addition there will come this airport, and the area will be swamped, its present day indigenous local population will be entirely swamped by something of the order of 400,000 people, new-comers. It is impossible to absorb that number of people into the locality, into the existing population. The new population coming in not merely into a new town, but by way of senior executives, and so on, wanting to buy cottages in the villages and small houses elsewhere in the area, but the consequences will be such that the existing population will be entirely submerged and over a vast area there will be a map of life totally different from and totally alien to what goes on at the present time. Those are the consequences, and they are consequences which the association approach with complete abhorrence, and their feelings, as I say, is accentuated by the simple view of theirs, that it is grossly and grotesquely unnecessary for the Commission to make any such proposal since there is another ready-made site which gives rise to none of these appalling consequences.

I will now call my witnesses, sir, and since I have certain supplementary questions to ask them I would like them to sit at the table; firstly Mr. Robertson.

MR. DONALD ROBERTSON* *called*

Examined by Mr. Wise

3083 Is your name Donald Robertson? — Yes.

3084 And you live at a house called Ash Grove, Barkway near Royston? — Yes.

3085 Are you the Chairman of the Nuthampstead Preservation Association? — Yes.

3086 Are you a machinery merchant and poultry farmer by occupation? — Yes.

3087 And are you also Chairman of the Barkway Parish Council and a member of the Rural District Council for Nuthampstead, Barkway and Reed? — I am the representative for those three.

3088 I beg your pardon. Is it right that you have attended almost every public meeting that has been held throughout the area? — A great number of them.

3089 I want you to help the Inspector on this question of the impartiality of the poll. Tell the Inspector what you can as to the efforts that have been made to persuade people in favour of the airport to speak up in support of it? — Well, first of all dealing with the question of the poll, we did decide, of course, that we would set out more or less the Commission's own wording on the form that was sent to every householder. At one stage we did think it would be a good idea in the towns to have a petition signed but we realised that this would be of little real value to the Commission because anybody might sign it and I have heard of people being asked after they have signed that type of petition what they have signed for and they very often haven't known. So it was decided to go for the factual information where people would be making quite clear whether they were for or against an airport.

3090 That deals with the question of the poll, but can you help the Inspector at all on this question of people who might be in support of the airport? — Yes. In my own particular village of Barkway I felt that as Chairman of the Parish Council I had a particular responsibility and before our annual parish meeting, which was after the announcement of Nuthampstead as one of the short-listed sites, I went round to see four people who I had been told were in favour of the airport and asked them if they would particularly come to this annual parish meeting and put forward to the meeting their point of view because I realised that the meeting, knowing that I had by that time been made Chairman of the Nuthampstead Preservation Association, might feel I was biased. I offered to give these people every facility and make sure that they had a fair hearing and nobody would make fun of them at all and in fact as far as possible I would help them in every way, but despite this they said they would think about this and not one of them came to the meeting. At other public meetings I have attended only on one or two isolated occasions have I heard anybody ever say anything in favour of having a third London airport at Nuthampstead.

Mr. Wise I have no more questions, sir.

Mr. Keene No questions.

3091 *Inspector* Other first tier authorities? Local authorities? Any other bodies? Mr. Robertson, I have no questions to ask you but before you leave the witness-box I feel I must congratulate both you and your Association for the quite superb presentation of this evidence. In paragraph 20 of your statement you refer to this question of the strength of the community spirit in the area. Mr. Wise was at some pains and I think was quite successful in getting this across, but I think it emerges quite clearly both from the documents and from what has been said at this inquiry. The hearing is specifically to discover local implications and of course at many of the stages other factors of the airport choice will be discussed, but as far as local implications are concerned I think what you have done has been quite admirable, the more so perhaps because it is so restrained about matters which quite properly the strongest feelings must exist. I think on behalf of the Commission, the Chairman, I must thank you and your Association for this presentation. — Thank you very much indeed, Mr. Hunt.

(*The witness withdrew*)

* See also p. 677.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. MARTIN YORKE WATSON* *called*

Examined by Mr. Wise

3092 Mr. Watson, is your name Martin Yorke Watson and do you live at The Old Vicarage, 7 May Street, Great Chishill. Are you a retired Civil Servant and were you a Civil Servant all your working life and were you a Senior Administrative Officer prior to your retirement? — That is right.

3093 And were you asked by the Nuthampstead Preservation Association—you are a member of that, of course—to lead a team to collate and analyse all the returns of the questionnaires which Mr. Robertson has referred to in his evidence? — That is correct, yes.

3094 And you I believe expressed little or no opinion in your evidence at all, you were concerned simply with the factual analysis? — I regarded it simply as my job to put the figures together as objectively as possible.

3095 There is one matter I would like you to explain and that is on your chart M.Y.W.3.† In line 64 there is a note in the remarks column I think that you want to amend. — Yes. The remarks column contains a note that a certain petition's signatures were included in the figures in the columns. My evidence says, quite correctly, that the petition's figures were disregarded and not used at all. This remarks column note therefore seems to be at variance with that statement. What in fact happened was that we did in the beginning include some of the petition figures where the voting forms were not available. We later cut them out and so this note in the margin here is really misleading.

Mr. Wise It is quite irrelevant because you have taken account of it already.

Mr. Keene No thank you, sir.

Inspector Other first tier authorities? Local authorities? Any other bodies? Mr. Watson, I have no questions except to congratulate you also on another part.

(*The witness withdrew*)

MR. TITO JACQUES NARDECCHIA‡ *called*

Examined by Mr. Wise

3096 Is your name Tito Jacques Nardecchia, are you a Bachelor of Science holding the degree in Estate Management of the London University, a Fellow of the Royal Institution of Chartered Surveyors and a Fellow of the Chartered Auctioneers' and Estate Agents' Institute? — I am.

3097 Are you one of the senior partners of Montagu Evans & Son of Kingsway, London and also of Edinburgh. Have you had over thirty years experience in your profession and did you become a partner in 1946 since which date you have been the partner responsible for the Valuation and Town Planning Departments of that firm? — That is so.

3098 And then you set out in paragraph 3 of your evidence a potted version of part of the extensive experience you have had in dealing with town planning matters throughout the British Isles and have you acted in respect of such matters on behalf of innumerable local authorities including Nottinghamshire County Council, the Derbyshire County Council, the County Borough of West Bromwich, the Metropolitan Boroughs of Edmonton, Tottenham and Wood Green, the Borough of Wembley and the London Borough of Barking? — Yes.

3099 In addition have you acted on behalf of many public and local authorities on compensation matters such as on behalf of the Greater London Council and the Borough of Swindon? — Yes.

3100 Have you also acted for many leading commercial, industrial and property companies concerned with large development schemes including comprehensive development area schemes and some of those have comprised substantial new development in the countryside, for example the Ford Engineering Research Centre on 350 acres at Basildon? — Yes.

3101 Have you also had experience in dealing with planning and compensation matters arising from the construction of motorways such as the M4 and the M23? — The proposed M23.

3102 And so as not to pile on the agony too much in fact you have had no previous experience in dealing with a major airport? — That is so, yes.

Cross-examined by Mr. Keene

3103 Only one thing, Mr. Nardecchia. It has been suggested in the past on some occasions that the opposition in north-west Essex and in Hertfordshire to the siting of an airport there is primarily a middle-class occupation and you, I gather, have seen all the evidence that has been produced by the members of the Association. I wonder if you have any comment upon that? — Yes, my comment is this, that the poll which has been taken by the Nuthampstead Preservation Association quite clearly covers every single possible class and section of the community and to my mind the results of the poll show a united majority opinion from every possible section of the entire community in this area and it is not a class matter or a sectional interest matter at all.

Inspector Any other first tier authority? Any other local authorities? Any other body? I have no questions, Mr. Nardecchia.

Re-examined by Mr. Wise

3104 Before you go I am not sure whether that was cross-examination but at any rate could you elucidate

* See also p. 682.
† Not reproduced.
‡ See also p. 685.

Printed image digitised by the University of Southampton Library Digitisation Unit

this perhaps for Mr. Hunt. Is it right that one characteristic of this area is that there isn't a large number of enormous mansion houses? — That is so. The basic form of the development is the farmstead and the homestead and the cottage. There are not a large number of very large houses and there is certainly no, as it were, stockbroker commuter belt type of property.

3105 That is the next thing I was going to ask you. Of course, reference is made in your evidence and Mr. Watson's evidence to the number of retired people in the area, but what sort of retired people are they? — They are people who have been living in this area and who have now reached the age where they are retired.

3106 Of course, Mr. Watson is an exception to that, isn't he? — Well, Mr. Watson himself is a Civil Servant and Civil Servants are posted to all parts of the country, but possibly he has links with this part of Essex.

(*The witness withdrew*)

MR. THOMAS SAPSED* *called*

Examined by Mr. Wise

3107 Is your name Thomas Sapsed and do you live at North End Farm, Anstey? — It is.

3108 Is it right that your family and you have lived all your lives in the Nuthampstead area and is it right that you will continue to do so unless you are uprooted by the coming of the airport? — That is true, yes.

3109 Is it right from your knowledge of your neighbours and friends that you and your family are typical of innumerable others? — Yes, I think it is typical of the whole community.

3110 Are you fifty-two years old and are you a tenant farmer? — I am.

3112† And are tenant farmers unusual in this area? — I think in the region of the airport it would be true to say there are very few.

3113 But your father was a tenant farmer before you, is that right? — That is correct, yes.

3114 And in fact you were two years old only when he became the tenant of High Hall Farm, Anstey. Was that a mixed farm of 500 acres owned by Baron Dimsdale, the grandfather of the present Baron? — That is true. When he took it over it wasn't 500 acres, it kept being added to.

3115 And was your father also the tenant of North End Farm of 130 acres also owned by Baron Dimsdale and also a further 66 acres of glebe land? — That is right.

3116 And you worked for your father when you were old enough, did you? — That is true. I started work when I was fourteen.

3117 And when your father died in 1946 did Baron Dimsdale grant you and your uncle the tenancy of the two farms? — He did.

3118 And you also farm the glebe land? — That is correct.

3119 When you got married is it right you married a girl who lived in Barkway? — I did.

3120 And was I right when I said to Mr. Hunt that that is what commonly happens in these villages, that people do not go very far to find a wife? — I think that is correct.

3121 Perhaps the girls are attractive, is that right? — I don't know whether that is the reason or whether they haven't got time to go further.

3122 In paragraph 12* you say that beside your son and some seasonal casual labour you have five regular farm workers who all live locally? — That is correct.

3123 Four of them are married and they are all against the coming of an airport? — That is so.

3124 But you say you have got a single man—you say he is a good worker, is that right? — He is a good worker, yes.

3125 Is he twenty-one? — He is twenty-two, I told you his wrong age.

3126 But is it right he also says he would like the airport to come? — Yes, he says he would like it for the simple reason he thinks that it would give the younger generation much more opportunities.

3127 Do you know of anybody else who holds that opinion? — No, I do not, really. I have never had anybody come forward and make that statement, anyway.

Mr. Keene No questions.

Inspector Are there any questions at all to Mr. Sapsed? I have no questions.

(*The witness withdrew*)

MRS. EMILY IRENE CRANWELL* *called*

Examined by Mr. Wise

3128 Are you Mrs. Emily Irene Cranwell? — Yes.

3129 And do you live at Faerie Cottage, Chrishall, Royston? — I do.

3130 Are you fifty-nine? — I am.

3131 That is very frank of you, and do you live with your husband at that address, that is in fact in Essex although the postal address is in Hertfordshire? — Yes.

3132 And you own your own house? — Yes.

3133 Were you born in Clavering? — I was.

* See also p. 691.

† Inadvertently, question number 3111 was not allocated.

* See also p. 692.

Printed image digitised by the University of Southampton Library Digitisation Unit

3134 That is a village quite nearby? — About 7 miles.

3135 And did you live with your parents until you got married? — Yes.

3136 In 1928 did you start teaching at the local primary school in Chrishall? — Yes. May I go back? I lived in Chrishall while I was teaching in Chrishall.

Inspector I wonder if you would speak into that horrible thing.

Witness One little correction. I lived with my parents in Chrishall during the time I was teaching at school there prior to marriage.

3137 *Mr. Wise* But it was in 1928 you started teaching at the primary school at Chrishall? — Yes.

3138 And have you been a schoolteacher ever since apart from one break? — There was a break, yes.

3139 And are you now teaching at the Barkway Village School? — I am.

3140 You got married I think in 1935? — Yes.

3141 Is your husband also a native of Chrishall? — Yes.

3142 And you made your permanent home there? — Yes, we did.

3143 And it is still there now, of course? — Yes.

3144 What was his occupation? — My husband was a wheelwright.

3145 Is he still a wheelwright? — Yes.

3146 And where did his father and your father live? — My father lived in Clavering, my husband's father lived in Chrishall, he was born in Chrishall and several of his previous generation were born there.

3147 And have you any children? — I have two.

3148 They are son and daughter, I believe, is that right? — Yes.

3149 Are they both married? — They are both married and both living in the village.

3150 In the village? — In the village.

3151 What does your son do? — My son is a carpenter.

3152 And your son-in-law? — My son-in-law is a plumber and heating engineer.

3153 And they both work locally, is that right? — Yes.

3154 And is there enough work locally to keep them occupied? — Yes.

3155 There is one small correction I have to put right to your evidence, that is on page 41.* At the top of page 41 you refer to Mrs. Nellie Clarke, who is over ninety? — Yes.

3156 And she was a Flack before she got married and she has two daughters and a son living not in Clavering which is said there but Chrishall? — Yes. That was obviously a typing error, it is in Chrishall?

Mr. Keene No questions.

Inspector Any questions to Mrs. Cranwell? I have no questions. Thank you for coming.

(*The witness withdrew*)

MR. LESLIE FRANCIS REVELL* *called*

Examined by Mr. Wise

3157 Is your name Leslie Francis Revell and do you live at No. 1 Grange Farm Cottages, Langley? — Yes.

3158 Are you thirty-nine years old? — Yes.

3159 Are you married and have you got a son nearly three years old? — Yes.

3160 Were you, your parents and also your grandparents all natives of Langley? — Yes, as far back as I can remember.

3161 And does your brother live with your mother? — Yes.

3162 Your father is not alive now? — No.

3163 And does he also work on the land? — My brother does, yes.

3164 How many sisters have you got? — Three.

3165 They have all married local men? — Two of them have married local men, the other one is married to a man who originally came from Somerset and he has lived in the area over twenty years.

3166 And lives in the area now? — Yes.

3167 Have you spent nearly all your working life in farm work? — Up to three weeks ago.

3168 Are you a member of the National Union of Agricultural Workers? — Yes, I am.

3169 Is it right that previously you were employed by Mr. John Paterson of Grange Farm but you have left him now? — Yes.

3170 Why is that? — Well, Mr. Paterson was going to sell his farm. This airport business blew up, there was uncertainty about employment and I didn't go to another farm because I took the opportunity of trying another job.

3171 And you have landed a job and you are staying with them? — I am not really certain yet, I have just started with them.

3172 Have you any intention of leaving the area? — No, none at all.

3173 You wrote a letter to the Commission, isn't that right? — That is true.

3174 And you attach that to your evidence. I will not read the whole of what you say in it but I want to

* p. 693.

* See also p. 694.

Printed image digitised by the University of Southampton Library Digitisation Unit

remind you of something you said: "I would like to point out that I am only a farm worker and it is not only the rich landowners that are opposed to the airport, the workers of the area are more united than I have even known them in their opposition to the building of an airport at Nuthampstead." Can you say something to the Inspector about that? — Yes, this is perfectly true. Before I came here there was another farm worker said: "Mind you say the right things at the Inquiry, we don't want this." Practically everyone in the area, all my friends, are against it and we don't want an airport in this area. It could possibly have money benefits but we would rather do without extra money and have the area as we have it now, as we like it.

Mr. Keene No questions.

(*The witness withdrew*)

MR. THOMAS LUCKOCK* *called*

Examined by Mr. Wise

3175 Is your name Thomas Luckock? — Yes.

3176 And do you live at Reed House, Great Chesterford, Saffron Walden? — That is right.

3177 And are you one of the joint owners of Hormead Hall Farm at Great Hormead and have you in that capacity submitted written representations to the Commission? — Yes, I have.

3178 And you attach those to your proof of evidence, is that right? — Yes.

3179 Can you just say in a sentence or two, Mr. Luckock, what your views are? — My views I think on this are that as a family we have all lived in this area for most of our lives and we regard it as our home. From my evidence you will see that I live at Great Chesterford and my father and brother live at Great Hormead, both of which would be affected enormously. If the airport came to this area it would totally uproot and upheave the whole family and therefore I don't want it to come.

Inspector Any questions to Mr. Luckock? I have no questions. Thank you very much.

(*The witness withdrew*)

MR. ERNEST FREDERICK WISBEY† *called*

Examined by Mr. Wise

3180 Is your name Ernest Frederick Wisbey? — That is correct.

3181 Are you sixty-four? — That is correct, within a few days.

3182 Do you live with your wife at Box Tree Cottage, Arkesden? — That is correct.

3183 Were you brought up in or around Arkesden? — Yes.

3184 Were the parents of you and your wife brought up in and around Arkesden? — Yes.

3185 For the last five years have you worked for Essex County Council as a roadman, and were you employed as a farm worker before that for nearly forty years? — That is correct.

3186 Have you owned your cottage with your wife since the early 1930s? — That is correct.

3187 Have you just spent a lot of your savings on improving it, and of course you are afraid you will not get your money back? — That is correct.

3188 Will you be retiring within a few years? — If I can afford it, next year.

3189 What do you want to do then? — I hope to live in a little peace and quiet.

Inspector Any questions to Mr. Wisbey? Thank you, Mr. Wisbey.

(*The witness withdrew*)

MISS OLIVE COOK* *called*

Examined by Mr. Wise

3190 Miss Cook, you probably do not like me asking these questions, but I must do so. Were you born in Cambridge and did you read Modern Languages at Newnham; were you formerly Supervisor of Publications at the National Gallery? — I was.

3191 From 1952 until 1954 were you English representative of the Carnegie Institute? — I was.

3192 Have you written a number of works, including *English Cottages and Farmhouses*, *Movement in Two Dimensions*, *The Wonders of Italy* and *The English House through Seven Centuries*? — I have.

3193 Is it right you are married to Mr. Edwin Smith, who is a notable photographer, and did he illustrate all those works for you? — I am and he did.

3194 Miss Cook, can I ask you this: does it really matter if this countryside is destroyed by an airport? — I am surprised that you should ask me that question, Mr. Wise, after your speech. I think it matters most tremendously, and not just locally. I am only supposed to speak about local questions now, but why it matters to me is because I think environment is one of the most important questions of the day. We have settled most of our social problems; most people are now well educated; most people have enough to eat; most people are well dressed. Environment is the most important question, and the siting of the airport has a very great impact on this. I hope

* See also p. 695.
† See also p. 698.

* See also p. 268.

Printed image digitised by the University of Southampton Library Digitisation Unit

very much that the Commission will bear this in mind. The whole future of our country now depends on the solving of this question of environment.

Inspector Any questions to Miss Cook?

By the Inspector

3195 I have just one question which I put with some trepidation, Miss Cook. You may have heard reference during this Inquiry to the future investigation of a thing called Cost Benefit Studies. Have you any comment to make on the evaluation of an environment in terms of cost—a polite one? — I think that this should really be a long term thing; the question of cost should be considered in relation to the future. It should not be a short term decision, if cost is the determining factor.

Inspector Thank you, Miss Cook; I have no more questions.

(*The witness withdrew*)

Mr. Wise Sir, that concludes my evidence, and my case.

Inspector Thank you, Mr. Wise. I do appreciate only too well that the number of witnesses you called was limited on my behalf, and that you could call a great many more to illustrate the kind of point that these last witnesses have made. Thank you very much.

Mr. Wise Many thousands in fact, sir.

MR. NEVILLE WALLACE *called*

National Farmers' Union

Inspector The National Farmers Union. You are looking very pained, Mr. Wallace; are you in no position to start?

Mr. Wallace Why I was looking pained, which I was doing unconsciously, I am afraid—certainly I was pained in the opposite sense—is simply because my case clearly is going to last longer than the time intervening between now and lunch. Also, as you may recall from Foulness, if I may mention that place at this Inquiry, I prefer, if possible, to make my closing submission after I have called my evidence, and not before, as has been the practice at this Inquiry. I have some of my witnesses here. I have the valuer, our local valuer, and I have our farmers available, but because we had to rearrange our timetable at very short notice, my other expert witnesses are not arriving until 2.15.

Inspector Mr. Wallace, I think I can meet your difficulty. As to addressing me, of course do so afterwards by all means. What I am anxious to do is not to squeeze you and Mr. Gregory for time this afternoon, in view of the need of the shorthandwriters that we finish roughly about 4.30, so if we could have your witnesses first, or as many of them as you have, before lunch, then we can proceed from that basis.

Mr. Wallace In that case, if I may call Mr. Trigg, whose proof of evidence is No. NFU 4.N. May I say again I hope everybody has seen our evidence; there was some difficulty about it from the Commission's point of view, and if anybody has not, they are available.

Inspector I think one or two of the proofs of the NFU were circulated a little late, but there would have been sufficient time now for people to have read them.

MR. R. TRIGG* *called*

Examined by Mr. Wallace

3196 Is your name Mr. R. Trigg? — That is correct.

3197 Are you a Fellow of the Royal Institution of Chartered Surveyors, a Fellow of the Chartered Auctioneers' and Estate Agents' Institute, a Past President of the Central Association of Agricultural Valuers' and a member and past president of both the Herts. and Essex Agricultural Valuers' Association; have you resided in north-west Essex and east Herts. since school days, and have you practised as an agricultural valuer and surveyor for fifty years? — Yes.

3198 Did you become a partner in your firm, G. E. Sworder & Sons, in 1929, and has your practice engaged you in agricultural valuations and property sales and management in a wide area of east Herts., Essex and south Cambridgeshire and in particular the areas to which this hearing relates? — That is so.

3199 I believe you want to make two amendments to your proof of evidence. The first one, I believe, is on page 4, is it not, of the proof of evidence? — Yes, on page 4, para. 11, the fourth line. It now reads: "The figures are as follows: 37.7 34.7 29.1 38. 36." —that is the figure I wish to correct, please, to 35.

3200 Instead of 36, which is the only "36" in that line, you want to substitute 35? — Thank you.

3201 I believe you want to clarify—I do not believe you want to change it—a point you made in para. 14 of your proof of evidence, at the top of page 5, is that not so? — I would like to correct my proof there by explaining that at the bottom of para. 14, I commence referring to the cost of land drainage: "The shape and contours of areas between ditches vary so much that it is not possible to give basic cost figures. These might vary from £10 per acre to £20 per acre". I would like to add, please, after that: "after allowing Ministry grant, 50 per cent". Those figures that I quote are the net cost to the farmer after Ministry grant.

3202 So it could be up to, say £40 per acre for drainage? — Indeed, I have one copy of a statement here relating to a scheme which works out at £42 per acre.

* See also p. 714.

Printed image digitised by the University of Southampton Library Digitisation Unit

3203 And I think it would be right, would it not, to point out that there has been considerable Ministry of Agriculture investment in this particular area, is that not correct? — Indeed it is so.

Mr. Wallace I have no further questions, Sir.

Inspector No questions from the Joint Councils? From the first tier authorities? From local authorities? From any other body? Mr. Trigg, I have read your proof and I have no questions on it, thank you.

3204 *Mr. Wallace* I ought perhaps to put this to you formally, and I forgot: you in fact read Mr. Tanton's proof of evidence* for the County Council, did you not? — I did do so.

3205 Would it be correct to say you find yourself in complete agreement with that? — That is so, yes.

(*The witness withdrew*).

Mr. Wallace I think it would be best if I now referred to document NFU 6.N† which is the views of the affected farmers. I will ask first of all Mr. Welch to go into the witness box.

MR. ERNEST JOHN WELCH‡ *called*

Examined by Mr. Wallace

3206 Is your name Ernest John Welch? — Yes.

3207 Do you farm at Bury Farm, Nuthampstead, Barkway, near Royston, and have you always been a farmer, and have you farmed at this particular farm for thirty-five years? — That is right.

3208 You took up two enormous documents with you at my request. I wonder if you would kindly show them to the Inspector just briefly, and before you do so, explain to the Inquiry what they are? — The record of drainage carried out on the two farms, Meesden and Bury Farm, in the last twenty years or so.

3209 I wonder if you would show them to the Inspector so he can see something of the comprehensive nature of them? — Yes.

(*The witness explained the documents to the Inspector*).

3210 In connection with drainage, which you have just shown the records of in relation to your farm to the Inspector, I believe you have certain opinions as to the suitability of the Nuthampstead site; would you care to express those? — The views that I have got on the Nuthampstead site, that we experienced in wartime, the flooding due to the runways, the ditches were not adequate to take the water. You get a terrific run-off. With our farm drainage, of course, you get a controlled run-off.

3211 Do you anticipate that the problems would be of the same order if the airport were to come here? — On a site which is ten times the area, it would be ten times greater.

3212 I believe on that farm certain research has been done in relation to water underground, is that correct? — That is correct.

3213 Would you care to tell the Inspector briefly something about that? — It was done by Dr. Forbes for Cambridgeshire, because he was convinced that the water rises in the hills of Nuthampstead from which he gathers his water from the borehole at Nuneham's Folly.

3214 *Inspector* Where is Nuneham's Folly? — Down on the Cambridge border. To get to this flow, he measured three wells in the Nuthampstead area, ours being a borehole, and at a certain depth he got this water flow giving this extra 1½ million gallons which he wanted.

3215 *Mr. Wallace* I think Mr. Forbes came from the Cambridge Water Board, did he not? — That is correct.

3216 I think what the National Farmers' Union would ask the Commission to do is to check with Mr. Forbes or the Cambridge Water Board whether this evidence would be of assistance in determining the suitability of this site. Are there any other points you would like to bring to the attention of the Inspector which are not contained in your proof? — No, I do not think so.

3217 *Inspector* Any questions to Mr. Welch? These books you have represent a battle of some number of long years, do they, these drainage records? — 1940 to the present date.

Inspector I think, Mr. Wallace, that is a very convenient time to allow people to go and get lunch.

(*Adjourned until 2.15 p.m.*)

Inspector Mr. Wallace.

Mr. Wallace May it please you, sir, just before lunch I had called the first of my farming witnesses and, sir, what I think might be the greatest assistance to you and to this inquiry would be if I were to call the other four collectively, and not call them individually, that is to say, if you or any of the other objectors particularly want to question a particular farmer I will call him, but otherwise I anticipate they may walk on the platform and walk off again.

Inspector This could happen, Mr. Wallace. Yes, I agree. The four farmers are: Mr. A. S. Clark,* Mr. Hitchcock,† Mr. W. H. Darling,‡ and G. P. Harding§ and sons. Are there any questions concerning the submissions of either Mr. Darling, Mr. Clark, Mr. Hitchcock, or Messrs G. P. Harding? I have read the proofs with interest, Mr. Wallace, and I have no questions. Thank you.

Mr. Wallace In that case might I call Mr. Balfour to give evidence on drainage.

---

* p. 645.
† p. 720.
‡ See also p. 727.

* See also p. 720.
† See also p. 731.
‡ See also p. 723.
§ See also p. 734.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. HUGH CRAWFORD BALFOUR *called*

Examined by Mr. Wallace

3218 Your name is Hugh Crawford Balfour? — Yes.

3219 You are a Member of the Institution of Civil Engineers, a Member of the Royal Society of Health, a Member of the Institution of Public Health Engineers, and an Associate Member of the Institution of Water Pollution Control. You are a member of the Council of the Institution of Civil Engineers, and also a member of their Hydraulics and Public Health Board. — I am, yes.

3220 And a partner in the firm of D. Balfour and Sons, who over the past eighty years have been engaged in schemes of water drainage, sewerage and sewage disposal? — I am.

3221 In fact has your firm acted as Consulting Engineers to many of the local authorities in close proximity to the proposed airfield, including the Braughing Rural District Council, Saffron Walden Rural District Council, Royston Urban District Council, Stevenage Development Corporation and the Middle Lee Regional Drainage Committee and has your firm also been concerned since the last war with schemes for Barkway, Buntingford, Hare Street, Great and Little Hormead, Braughing, Much and Little Hadham, Widford and Wareside, Furneaux Pelham, Manuden, Stansted Mountfitchet, Henham, Elsenham and Ugley, Quendon and Rickling, Newport, Great and Little Chesterford and Royston? — Yes, sir.

3222 There are just two points I want you to answer to the Inspector, if you would—the first is: is it correct that in your instructions from the National Farmers' Union you were asked to under-estimate rather than to over estimate costs? — Yes.

3223 The other point I wish to put to you, Mr. Balfour, is this: I see you took a period of twenty years as a prudent period for which to make provision, is that in your opinion the correct one, because I notice the River Authority, for example, take a much lower figure. — I consider it to be the correct one, sir.

3224 Would you like to amplify why you think that? — As far as the surrounding streams and rivers are concerned the capacity of the suggested balancing tank or lagoon, whatever you like to call it, is very fundamental, and I would suggest it would be very short-sighted to design it for storms occurring less frequently than once in twenty years.

3225 More frequent. — Yes.

3226 Can I just put this to you: supposing the lagoon were to be insufficient in size for the once in twenty years storm, this would be likely to have a very prejudicial effect downstream, would it not? — It could cause flooding downstream

3227 I believe you have given a figure for lagooning and such works, could you just refresh our memory as to what that figure is? — I suggest the lagoon should have a capacity of about 150 million gallons.

3228 And together with the sewage works how much land in acreage would you expect that to take? — The lagoon would take about 50 acres with an extra 20 or 25 for a sewage works.

Mr. Wallace I have no further questions.

3229 *Inspector* Any questions to Mr. Balfour? I have no questions, Mr. Balfour. By way of passing comment on your paragraph 13,* you refer to the cost of dealing with surface water and sewage disposal; this as we all know is part of the Stage III exercise, and no doubt we shall be hearing from you and or the Farmers' Union on this point during Stage III, that is the actual cost of the exercise. — Yes.

Inspector Thank you.

(*The witness withdrew*)

Mr. Wallace I propose now to call Mr. J. E. Y. Hawkes.

MR. J. E. Y. HAWKES† *called*

Examined by Mr. Wallace

3330‡ Are you Mr. J. E. Y. Hawkes?† — Yes.

3331 Are you an Associate of the Royal Institute of British Architecture, an Associate Member of the Town and Country Planning Institute? — Yes.

3332 Are you a Member of the firm of Hancock, Hawkes, Architects/Planners? — Yes, I am.

3333 A partner, I should have said. — Yes.

3334 I just want to ask you one or two points, Mr. Hawkes, before I offer you for cross-examination. In your opinion would it be desirable for all the ancillary development associated with an airport at Nuthampstead to be sited south of the airport site? — Certainly not.

3335 Did you specifically suggest, for example, that Stevenage might grow by some particular amount? — No.

3336 It was you who indicated a general growth area, did you not? — Yes, indeed.

3337 And if I might be somewhat provocative, you are, of course, a consultant and not subject to any particular local or regional planning interest, are you not? — That is true.

Mr. Wallace I have no further questions.

Inspector Joint County Councils.

Mr. Keene I have some questions.

Cross-examined by Mr. Keene

3338 Mr. Hawkes, quite what the last question and answer were meant to do, as between the relevant parts of your evidence and the County Planner's, I am not quite sure. Perhaps we can pass on from that.

---

* p. 719

† See also p. 703

‡ Inadvertently, question nos. 3230–3329 were not allocated.

Printed image digitised by the University of Southampton Library Digitisation Unit

You have taken in your evidence a range of figures for employment, especially secondary employment, which goes, of course, very much higher than those figures assumed by Mr. Kitching in his evidence* — Yes.

3339 You go on then, of course, to draw a number of conclusions in your evidence, and basically you suggest that it was a planning nonsense to suggest siting an airport at Nuthampstead, is that a fair way of putting it? — In effect.

3340 I am abbreviating it and putting it in very much the layman's language, of course. If it should turn out that Mr. Kitching's assumptions are the more accurate ones and indeed the lower end of your scale was to be preferred to the higher end of your scale, would the various conclusions you have made and the objections you personally have to the siting of the airport at Nuthampstead still hold good? — This would still hold good; the estimate I have given is a low and a high, and obviously one must establish development in the form where it is flexible.

3341 I suggest it is a question of degree as to how much worse it would be with that much population.— Yes.

3342 I think the other thing I want to ask you about is where associated urban development should be sited, you and Mr. Kitching, I think, are really in complete agreement: it is highly undesirable there should be any large scale urban development in this part of the country at all. — That is true.

3343 You both start from the same premise — Absolutely.

3344 You make a number of submissions in your proof that I do not want to take you through in detail, about the relative imports of areas north and south of the airport site; perhaps I can put it in a quick way like this: You have seen plans LK1 and LK2,† of course, the plans attached to Mr. Kitching's proof, showing conservation areas, areas of high landscape value, and very high quality agricultural land, and so on? — Yes.

3345 They are largely combined in the large coloured map behind you? — Yes.

3346 Do you accept in broad terms, at any rate, the various details and factual information as contained in those two plans? — Yes, indeed.

3347 And so we and the Commission can decide, should it become necessary, as to the relative imports and different imports of development in these areas?— Yes.

Inspector Any other questions from other local authorities? From any other bodies?

Cross-examined by Mr. Lymbery

(Stevenage Development Corporation)

3348 Just one thing, if I may, Mr. Hawkes. Paragraph 54 of your proof, in which you say: "The County Council has estimated that about 78,000 people could be accommodated in infill schemes and small expansions of existing settlements". — Yes.

3349 I think that relates to Mr. Kitching's evidence, that is to say the County Planning Officer's evidence, at page 22* of his proof where he says: "Total population to be housed in existing towns and villages—76,600" —is that right? — That is right.

3350 You are referring to that estimate of the County Council and not to anything we have not heard of? — That estimate yes.

3351 You accept the word "could" means "could at the expense of existing development and existing plans", and not otherwise? — Yes.

Inspector Any other questions? The subject of urbanisation is, of course, one which we will pursue further at Stage III and I think both from Mr. Kitching's evidence and Mr. Hawkes the Commission has, as it were, the message, thank you Mr. Hawkes.

(The witness withdrew)

Mr. Wallace I wish to call next Mr. David Wallace of Cambridge University, and (for his protection rather than mine) he is no relation of mine.

Mr. David B. Wallace† called

Examined by Mr. Wallace

3352 Are you Mr. D. B. Wallace? — Yes, I am.

3353 You hold the degree of Master of Arts? — Yes.

3354 Is your present position that of Gilbey Lecturer in the History and Economics of Agriculture in the University of Cambridge? — That is correct.

3355 And from 1951 to 1963 you were Farm Management Liaison Officer, Farm Economics Branch, School of Agriculture, University of Cambridge? — Yes, that is correct.

Mr. Wallace I have no further questions.

Inspector Any other local authority, any questions? Any other questions from any other body? I have no questions. Thank you.

(The witness withdrew)

Mr. Wallace May it please you, sir, that concludes my evidence, and unless you have any other points perhaps I might turn to my submissions.

I appear, as you know, on behalf of the National Farmers' Union, and the hundreds of its members who stand to lose their land or otherwise to be seriously prejudiced in their farming should the third London airport be sited at Nuthampstead. There are just two preliminary points that I should like to make, if I may, in relation to representations. If you look at the

* p. 616.
† between pp. 624 and 625.

* p. 622.
† See also p. 712.

Printed image digitised by the University of Southampton Library Digitisation Unit

latest programme and this represents what has appeared on all previous documents, you will see that it has referred to the National Farmers' Union (Hertfordshire and Essex Branches). I would like to place it on record that the Cambridge County Branch has always been and still is associated with this objection.

The other point which I did write to you about—I don't know whether you saw my letter—was in relation to Mr. G. D. Wentworth-Stanley, who appears on the list as having special representation by the National Farmers' Union. I take it probably Mr. Wentworth-Stanley wrote to you saying the NFU was dealing with the agricultural case, but I just want to make it clear I am not speaking in any particular way in relation to him, and he is, of course, included in our overall objections.

Two other preliminary points, if I may. The first is that we have welcomed close co-operation with the Nuthampstead Preservation Association, and we are very pleased with their case, and we hope, as they have relied upon us for agriculture, they will be equally pleased with ours.

Also, sir, may I say that we welcome the evidence given by Mr. Donald Tanton,* for the County Councils, with which we agree in every respect.

Now, sir, my task this afternoon is not to repeat the evidence which has already been circulated and which has been the subject of cross-examination just now. What I want to do, sir, is to try and draw together the various arguments that we have put forward and to try to show the conclusions at which these arguments are directed. In taking this line I appreciate that I shall not make quite the impassioned speech which perhaps some of our members might wish me to make, and the fact I do not do so is not because I would not or could not but largely because the case as was feared in relation to Nuthampstead is such that further rhetoric in my view is not called for.

Now, sir, the National Farmers' Union, as you know, set itself three aims in relation to agriculture and particular sites. The first was to provide your Commission with factual information relating to agriculture on all the four sites. Secondly, to try and suggest how the Commission might weigh agriculture correctly. Thirdly, to ensure in so far as information runs that agriculture is the main factor in a final choice of a site. We are providing factual information about Nuthampstead in the same way as for all the four other sites, but Nuthampstead is, in fact, unique to the NFU in respect of the four sites for this reason: that the Union is already committed to the view that Nuthampstead should not be and, indeed, must not be the site of the third London airport. Perhaps, sir, you will allow me to explain why that is.

Now, sir, this is a somewhat delicate subject, but despite the delicacy, I hope I shall be able to treat the matter clearly, and may I say it is also despite what your Commission has already said about the rejection of Stansted as a site of the third London Airport, because so far as the National Farmers' Union is concerned Nuthampstead is simply Stansted by another name, and, sir, I would like to refer to paragraph 88 of the Inspector's report at the Stansted Inquiry,* and to quote one or two extracts from it and compare them with Nuthampstead. In his Summary of my submissions at Stansted, Mr. Blake said this: "Mr. Wallace said from the point of view of agricultural productivity a worse site could not have been chosen". Sir, what we are saying is that the Nuthampstead site is so closely connected with Stansted that those words will apply to Nuthampstead, and, therefore, the Nuthampstead site is one of which it may be said that a worse site could not have been chosen from the point of view of agricultural productivity. Nevertheless, there are differences in relation to Stansted and to Nuthampstead; in respect of an airport taking farm land at Stansted the proposal is that Stansted should go for housing and for urban uses.

Now, I have no brief to speak for the general inhabitants of that area, but to farmers it makes little difference whether their land is taken by reason of an airport or by reason of housing. At Stansted, again quoting from paragraph 88, there were five headings within the suggested boundary of the airport, and a total of 1,020 acres of farm land—that was because the Stansted Airport site is in regular use as an airport site. Here, sir, as we know, the land take will be 7,500 acres plus. Sir, in the Stansted Inquiry we were at pains to point out the effect of the ancillary development and, if I may say so, one of my witnesses at that inquiry, a Colonel Judd who appeared on behalf of the Country Landowners' Association, spoke of the possibility of a new town of 150,000, and was, if I may say so, somewhat criticised by Sir Milner Holland for the Ministry of Aviation. Here the Ministry has in mind a possibility of 390,000 people, and our view is that it might be greater than that. As you will have seen from Mr. Wallace's† evidence in relation to agriculture the suggestion is that perhaps the farms and land at Nuthampstead are even better than those at Stansted.

Inspector We have supplied no figure of 390,000, as you well know, Mr. Wallace.

Mr. Wallace This was a figure which I have heard quoted as the figure the Commission have put to the County Councils, as the sort of figure they would be thinking about. This is incorrect?

Inspector Yes.

Mr. Wallace In that case I withdraw it, but it has certainly been mentioned.

Inspector We have relied on other prognostications at this stage.

Mr. Wallace In that case I am glad, quite happy to withdraw that, but I have fairly reliable authority that this is what was being said.

* p. 645.

* Ministry of Housing and Local Government. *Report of the Inquiry into the Local Objections to the Proposed Development of Land at Stansted as the Third London Airport.* (HMSO; 5s. 6d.)

† p. 712.

Printed image digitised by the University of Southampton Library Digitisation Unit

Now, sir, what we are saying is this, that if Stansted was wrong, and if the nation was outraged by the use of Stansted, then here on sheer statistics, it is at least three times as wrong, and should cause us three times as much shocked outrage.

There is another point we would seek to make and draw your attention to, in relation to the question of Nuthampstead and Stansted. We know that Stansted is already operating as an Airport. We know there has been a new terminal building opened there very recently. You may or may not be interested to know that we wrote recently to the Board of Trade to ask for an assurance that in the event of Nuthampstead being chosen as a site for the Third London Airport, Stansted airport would be closed down. The Board of Trade were able to give no such assurance. Again we have not put forward any evidence on technical aeronautical matters, but it has been suggested, and it is my duty to mention it here, that Stansted might in fact be used in conjunction with the Nuthampstead Airport.

Inspector Mr. Wallace, we are dealing with the strict assumption that the third London Airport would be at Nuthampstead, and although Stansted may be very similar it is several miles away.

Mr. Wallace Well, sir, I feel it my duty to continue just to develop this argument, if I may. I am not going on very much longer, but I would be failing in my duty if I did not put these very real fears to you on behalf of the farmers.

Inspector I am prepared to hear them, Mr. Wallace, so long as they fall within the ambit of local implications concerning the Nuthampstead Site.

Mr. Wallace Yes, sir. Well, in my respectful submission, sir, if there were a possibility of Stansted being used in conjunction with Nuthampstead, and in view of the fact Stansted is only 8 or 9 miles away, I hope you will accept is of a local interest, certainly it has been mentioned in relation to the ancillary development which has been considered to be of local interest so far at this inquiry.

I do not need to labour this point too much more, sir, all I want to bring to your attention is this: that your Commission clearly is thinking only of an airport as a possibility at Nuthampstead, but we say to recommend Nuthampstead, and were there to be a possibility that that could be used in conjunction with Stansted, the effect would be very much greater, because the ancillary development would have to be moved further out. Sir, I can assure you this is a very real fear in the minds of many farmers. You are already familiar with the real fear that Stansted might be the third London Airport as a back door, and certainly we are not going to labour that here, but it is indicative of the concern in this area about the future of Stansted.

May I go through the evidence and try and draw one or two conclusions from it?

Inspector Yes.

Mr. Wallace I hope that as a result of questions put to Mr. Hawkes any suggestion that the NFU or, indeed, Mr. Hawkes, is in favour of development south of Nuthampstead has been shattered. The fact remains, sir, that for whatever reason a large part of the ancillary development has been pushed into Cambridge.

I do not wish to repeat Mr. Hawkes' evidence,* except to say this, that on all counts it appears to us that a new town at Royston would be bad planning, and the same would apply at any conurbation on the Royston–Cambridge axis, and what we say further to that is this, sir: that if Royston or the Royston–Cambridge axis is out then really the whole Nuthampstead proposal falls to the ground unless you completely re-thought your current planning policies to the south. I believe that a similar point may well have been in your mind when you were asking whether development from Royston might be moved north of the Bishops Stortford area up to the 35 NNI contour. Sir, we would oppose as a Union any suggestion of massive urbanisation to the south of Nuthampstead as such.

There was a general point about planning that I should perhaps mention to you at this point, that is that this is something like a pebble in a pond, when you put or if you put an airport and ancillary development here the planning waves are bound to extend further outwards and in this case they will be bound to ripple across to East Anglia where we have a particular concern that the rich tracts of agricultural land should not be disturbed.

In passing one might refer to the Burns Committee just to say that while we welcome the fact that your Commission and the Burns Committee are working together it does make our task a little bit more difficult to try to forecast the attitude of agriculture locally not knowing Dr. Burns' strategy.

In relation to the agricultural evidence and the valuation evidence I think that speaks for itself and I am delighted that Mr. J. G. Eve† for Mr. Beddington took a similar view. There is no doubt whatsoever that this is first-class agricultural land and there are different ways of trying to determine whether land is of good agricultural value. It might be the intrinsic value of the soil, it could be the farm structure and the availability of markets, or it could be the investment which has been put into the area to ensure a good return. By all these the Nuthampstead site comes out first as first-class agricultural land and first-class farming. I am happy to say that while we as a Union have serious doubts about the agricultural land classification map‡ of the Ministry, happily we are here in agreement entirely with its conclusion.

Perhaps I ought to mention that in dealing with the subject of farming we must not overlook the fact that there is a considerable amount of horticulture in this

---

* p. 703.

† p. 663.

‡ Agricultural land classification map. Available from Ministry of Agriculture, Fisheries and Food, Publications Department, Government Buildings, Tolcarne Drive, Pinner, Middlesex.

Printed image digitised by the University of Southampton Library Digitisation Unit

area and sometimes one tends to forget horticulture in dealing with the general matter of agriculture.

We called Mr. Balfour* to give evidence on drainage and to the agricultural community it is of the greatest importance and we wish to direct your Commission's attention both to the problems of drainage and also to the costs involved. A point which came out in Mr. Welch's evidence† is this, that the Government at least wearing one hat as the Ministry of Agriculture have poured a great deal of money into this area in the form of grants, and it would seem a waste of public money if that was to go by the board. The phrase which we hear time and again in relation to drainage in these projects is that there are "no insuperable problems", but the questions which still remain are who is going to pay the money required for the problems to be overcome, and secondly, to what standards are those drainage operations to be done? The fear of the farmers in this connection might be summarised like this: that they will have to accept an airport, that the run-off and the pollution will not be sufficiently catered for, that there will be resultant flooding causing damage to their agricultural operations and that they might themselves have to pay for the costs of improving drainage along the main river. Whether or not these fears are justified in this connection there is no doubt that elsewhere where we have been given assurances that no drainage or run-off problems will arise nevertheless they have arisen. Even the question of the lagoon and the sewage works according to Mr. Balfour's evidence would require something of the order of 75 acres, which is quite a substantial amount of farming land.

Now, sir, may I just turn to one document which has not been mentioned so far, which was NFU 1 N.‡ You had five examples which were put forward and open to cross-examination should that be required by any other objector and you will see that of the total number of enquiry forms sent out 236 farmers replied within a 10 mile radius of the area, and I venture to suggest that is a fairly substantial number of farmers to be involved.

Inspector The Cambridgeshire member was remiss —20 per cent, am I right there?

Mr. Wallace If I might just take instructions on that, I have my Cambridge secretary sitting behind me.

Inspector It is on the first page of the proof.

Mr. Wallace I think there are two answers to that, sir. The first is that the 750 questionnaires sent out covered a much wider area than the 10 mile radius and if you take a 10 mile radius area it is a very much higher percentage. The second point, sir, I am glad you raised this, is that had the Cambridgeshire members seen what was proposed for Cambridge at this Inquiry I think their response would have been very much higher. One of the difficulties as you know we face in preparing evidence is that in advance of an inquiry we have no idea what is going to be proposed by the planning authorities.

Inspector I appreciate that, yes.

Mr. Wallace I suffer from the same difficulty that my friend Mr. Wise suffered from I think this morning and that is how can you convey in words to an inquiry of this kind the real hardship and suffering which is going to be experienced by farmers in this area should this airport come. I know your Commission is well aware of the problems that they face in getting comparable farms elsewhere, the viability of new farms or all farms which are left fragmented, in particular problems which I have put to your Commission elsewhere in relation to tenants and owner occupiers. Sir, no compensation is likely to be adequate for these farmers here and if you look at the questionnaire you will see that only nine out of those to whom questionnaires were sent expressed the view that were compensation substantial they might be quite happy to get out and start elsewhere—only nine.

Sir, reference has been made to the Great Chishill proposal. I am not here to comment on that except to say that I hope your Commission will not gain the impression from that that all farmers in this area would be willing sellers under similar circumstances and we would direct the Commission's attention to the previous history of this particular project should they wish to get the real and accurate picture. Fragmentation and trespass, all these things trip off the tongue, but the harsh realities which are going to arise cannot be covered by them.

I think particularly, sir, this site has a point when we realise that it has been reclaimed from a previous airport, and when one listens to the farmers and hears how they have sweated to make this land in good heart again the prospect that it might be taken again and put back under concrete is quiet impossible for them to imagine or to conceive.

Sir, I only have one other remark to make and it is this. With Stansted I made the comment that while man does not live by bread alone without it he would not live at all. Sir, we ask your Commission, we plead with your Commission and we urge your Commission whatever word you care to use that the Commission will not be so concerned with material considerations that they overlook the possibility that future generations of this country and also this part of the country may starve in a paradise of concrete and material affluence.

Inspector May I also thank you and your organisation both for the manner of presentation of your case and also for the mass of valuable information that you have made available for the Commission. Thank you very much.

MR. MICHAEL GREGORY *called*

Country Landowners' Association

Mr. Gregory May it please you, sir. Michael Gregory, Assistant Legal Adviser of the Country

* p. 718.
† p. 727.
‡ p. 699.

Printed image digitised by the University of Southampton Library Digitisation Unit

Landowners' Association. I think it would be convenient if I first tendered Brigadier Fishbourne and then made my submission.

BRIGADIER J. R. FISHBOURNE* *called*

Examined by Mr. Gregory

3356 Are you Brigadier J. R. Fishbourne, C.B.E., D.L.? — Yes.

3357 Regional Secretary for Essex of the Country Landowners' Association? — That is correct. In fact I am Regional Secretary for Essex and the two Suffolks but because Essex has two of these inquiries on the plate and Hertfordshire was also involved I was asked to co-ordinate the CLA interests in Nuthampstead as well as Foulness.

3358 I believe you are also on the Council of the Nuthampstead Preservation Association? — I am.

3359 There are just two things in your proof that I would like you to deal with. Paragraph 5 sets out a summary of the investment in agricultural improvements by 49 landowners. Since then, I understand Captain Jeremy James has asked not to be represented at this hearing but to have his figures put before the Commission and I believe a letter† has been written by his agent to the Commission.

Inspector If you say so I am sure it has, but it has not reached me personally at this stage.

3360 *Mr. Gregory* Have you got a note of the expenditure on long term improvements on that estate, which is at Julians, Buntingford? — No, because those figures were sent direct I think to the Inspector and we did not get a copy.

3361 The property is Julians Estate, Buntingford, and is the investment there over the last five years been £50,000 gross, that is before grants on buildings, and £5,000 to £10,000 on drainage? The answer is yes. — I am sorry.

3362 There is just one correction on the last page of your proof in this list of buildings. There is one there "Roman Villa at Litlington". In fact, it is of course the site of a Roman villa? — That is correct, we didn't want to be misconstrued on that.

Inspector It isn't very likely.

Mr. Gregory I have no further questions for this witness.

Inspector Any other first tier authority? Any local authority? Any other body? I have no questions.

(*The witness withdrew*)

Mr. Gregory If it please you I should like to make a fairly short submission on behalf of the Country Landowners' Association. May I first say how very much assisted the Association has been by the first-class representation by the Nuthampstead Preservation Association and the National Farmers' Union whose cases the CLA will adopt, sir.

We well appreciate the Commission's concern that supporters of the proposal to bring the airport to Nuthampstead should not be terrorised into silence in any way and I can assure you that the CLA has done what it could to ensure that this would not happen. It is only fair to say that in the investigations we have made of our members we have treated this very much as a fact finding exercise rather than an opinion finding one, but not one member of the Country Landowners' Association has indicated any kind of support for the airport at Nuthampstead and we certainly know of none that there are.

Indeed, landowners who believe that they might, or are convinced that they would financially benefit from such an enterprise coming to this area, are bitterly opposed to it, and of course, they have every reason to be. As has been pointed out so eloquently this morning, what is at stake here is not something that can be valued in pounds, shillings and pence. It is very much a case of countryside that is treasured by those who own it, occupy it, and work it. I think those are the people who can be proud that they and their forebears and their predecessors have conserved here a pearl of great price, which is beyond any value, but which there is almost a universal pride that it should be preserved, because we have seen from the planning evidence that practically every acre that might be vulnerable to be taken for development is either land of very high agricultural value, or of high landscape value, or both—and mostly both.

At the risk of seeming not to press our case with the passion that our members feel, and obviously would like me to do so, I must short-cut it by following the desire of your Commission, and by saying that as far as the agricultural evidence is concerned, we adopt in full the very well prepared and carefully investigated evidence of the National Farmers' Union and from the Council. But I would like to say this, that if the airport were to be sited in this area, this would not be looked upon as just a local aberration. In my opinion, national sanity would be called in question.

The Country Landowners' Association in the Stage I evidence* which was submitted last year set out in some detail the reasons why we call for the preservation of the best agricultural land in this country. This is an area where we have the best agricultural land, as we have already heard. But although it has been my lot to appear at innumerable public inquiries in an effort, with other objectors such as the NFU, to preserve agricultural land, never in my recollection has so compelling a case been put forward along those lines, and never has the time been such that a compelling case could be made to preserve the land in question, not only because of the extent of it, and of the value of

* See also p. 737.

† Available for inspection, by arrangement, at the offices of the Commission.

* Reprinted in Commission on the Third London Airport. *Papers & Proceedings. Volume II. Stage I Public Hearings: Part 2 Other written evidence.* (HMSO; 17s. 6d.) p. 46.

Printed image digitised by the University of Southampton Library Digitisation Unit

it, but because at this time, it is a time when the country has a balance of payments problem which is quite critical; it is a time when we import half our food from other countries. It is a time when the Registrar General has estimated that by the end of this century, we in this country will have another 14 million mouths to feed. It is a time when half the world is underfed, and when we are importing food into an agricultural land. Above, all, it is a time when the National Economic Development Council has made a recommendation that the expansion programme for agriculture should be tightened, and increased, and continued for an open-ended period, and the Government has called for this to be done; the agricultural industry have accepted the challenge. But at the same time, while they are accepting the challenge, they feel that the ground is being cut away from under their feet by so many of these major schemes, which are taking away the best land.

Of course, we thank heavens that this is a case where a Commission such as yours has been set up, and which is so meticulously weighing in the balance not only the cost analysis, but also every other factor, and will take into account the productive land that would be lost in perpetuity—and not only the land, but what goes with it—the farmers who will be lost, because it is our experience that every time farmers are displaced, some of them never farm again, and this must be, while there is a shortage of land to be farmed, for the number of farmers who want to carry on their lives in the agricultural industry.

We have heard this morning from the farm workers who made it so apparent how easy it is for workers on the land to be attracted away to other industries when there is a magnet such as this airport would be.

Sir, the matter on which the Country Landowners' Association has endeavoured to give what help it could is to draw to the attention of the Commission the private and public money invested in agriculture in this area which would be wasted, that is, it would be lost, because the land will be taken for another purpose.

In the evidence of Brigadier Fishbourne, we have seen an analysis of the return of 49 landowners—this is para. 5—in which has been set out the investment over the last ten years of these landowners in buildings, drainage and roads, and miscellaneous improvements which amount to over £1m. But what is, of course, more of a guide is that this comes to an average of £22,627 for each property involved. Can I just say that these are by no means selected returns; these are the returns that members of our Association sent in to us. Of course, they are not representative, but what has happened, of course, is that we were faced, as everybody in this area has been faced before the Inquiry papers were sent out, of not knowing what was involved, and, of course, these returns came in before it was known where it was going to be suggested that urbanisation would take place. But the returns that came in, of course, were those nearest to the airport site, and these 49 landowners are those who were nearest to the site in the original papers provided by your Commission.

We have heard from the preservationists, and will from those who are to follow hereafter, this area is very rich in buildings and places of historical and architectural interest, and I do not want to take that any further, except to say this, that one shudders to think of the cool nerve that could obliterate those ancient monuments and listed buildings on the proposed airport site itself. One feels that must be something like holding a precious Ming vase whose value is beyond assessment, and dashing it on the stone floor.

Sir, although the evidence given by the Nuthampstead Preservation Association* and the Hertfordshire Society† and others could hardly be fuller or more valuable, as we have seen, I think, it still does not go far enough, because in the Bishops Stortford area, for example, I believe the Commission is still short of information about what is involved if that urbanisation were to take place as regards amenities. Maybe that is a matter upon which further evidence would be needed at a later stage.

As the Commission is aware, one of the factors which the Country Landowners' Association is most concerned about is the effect of the run-off, and how it is going to be drained away, and whether water supplies are going to be made available without detriment to water users. There is evidence about this, and I must not repeat it, but I would emphasise this, which I believe has not been said, and that is the very great value to agricultural production of irrigation, which makes it so essential that the water should be available for farmers. And also this, which I do not think has been gone into, in the later stages of your Commission's work, a cost analysis will have to be done, and that will include the cost of dealing with the run-off into a river, the Great Ouse, eventually, which runs to the sea through land many miles of which is below sea level. The Ouse is banked, as I expect you know, for many miles above the level of the surrounding land. What the cost will be of works to the Ouse to enable it to take this run-off, I do not know. But what we do know is that the cost of that is likely to fall upon the local people, and the cost will fall on the local people through their rates, on people who essentially are not asking for an airport to come here, who are opposing it, and who by and large will suffer from it, and not benefit.

Sir, this would seem to me a most serious injustice, and the same applies entirely for the cost of supplying water, however it is to be done. It applies partly in the case of land drainage works, because although grant aid is available under the Land Drainage Act, it is, of course, by no means a 100 per cent grant. One notices also the conspicuous absence of evidence from the Lee River Authority. I understand that the watershed is such that a very large part of this run-off will have to be coped with by them. No doubt evidence will have to be obtained from them in due course. Another factor which will have to be taken into

* pp. 677–698.
† p. 773.

Printed image digitised by the University of Southampton Library Digitisation Unit

account in the cost/benefit analysis is what is going to happen to the electricity power lines. The 400 kVa line runs across the proposed site, and will either have to be put underground, which presumably it will not be, or redirected. What the cost of that is, no doubt the Commission would have to investigate at another stage. I mention these points because they are obviously points which the CLA will not be able to give any assistance to the Commission on, on Stage III and IV, but we mentioned them to make sure they are not overlooked.

On the question of noise, here again it is not for me to repeat the evidence that has been given, and which is something so much uppermost in the minds of the people who will have to bear it; that much has been said about it. But there are these factors which I would like to draw attention to, because in my view they are not completely covered, and that is, in the first place, I think the most worrying thing about noise from the landowning point of view is the non-compensatable aspect of this nuisance. This is so particularly in an area where value is put on the tranquillity of the rural countryside. One knows how, near Heathrow, properties have fallen in value because of the proximity of the airport, and the building up of it, and no compensation of any kind is available.

Inspector What does one know about this, Mr. Gregory? Do you know?

Mr. Gregory What, sir?

Inspector About loss of values at Heathrow.

Mr. Gregory One knows that property values have fallen without compensation.

Inspector If you have evidence on this, the Commission will be most interested.

Mr. Gregory Yes, sir, if we can help on this.

Inspector Thank you.

Mr. Gregory What my call is to the Commission here would be to recommend that no injustice is done in this way; I do not think anybody has any idea of the legislation or under what procedures any airport would be dealt with, should it come here or elsewhere. One does not know whether there will be a new Act with new compensation laws, or what. This, of course, is something which is so uppermost in the minds of our members that they want me to draw attention to it.

Sir, on this question of the population affected by the noise nuisance index in paras. 13 and 14* of the *Site Information* the Commission has brought out, some comments have been made about this. Sir, with the greatest respect to the Commission, and certainly in no critical way, I think it is only right to point out what is given in the table at para. 14 is a situation, of course, which will never come about. It is calculated on the assumption that the noise nuisance index will be adjusted following certification, which may or may not happen, but it is also based on the present population of the area, in an area where there are expanding towns in the noise nuisance contours, in particular Stevenage, and what of course would be very much more helpful would an an analysis, if comparisons are to be made elsewhere, in respect of Nuthampstead of what the estimated population would be in the area with or without the 5 NNI reduction. Mr. Berry points out in his evidence* for the Stevenage Development Corporation that within the 45 to 50 bracket the total for four runway is put down at 10,000, whereas Stevenage itself will have no less than 12,500.

Inspector These points were made very well by Mr. Lymbery on behalf of the Stevenage Development Corporation, Mr. Gregory.

Mr. Gregory I do apologise for repeating them. I was not intending to repeat any argument, but can I in my own defence say that it was extremely difficult to hear Mr. Lymbery this morning, because of that particular microphone he was using, and I did miss parts of his submissions.

Inspector He did use proofs to give several figures of the numbers that would be affected by the 35, 45 contours at all later stages.

Mr. Gregory Thank you for drawing that to my attention. Undoubtedly Mr. Lymbery made the point very much better than I ever could. Of course, any site that causes a noise nuisance to a New Town must be a bad site, because of the matters brought out in Mr. Lymbery's case.

On the question of communications, something has arisen. Of course, in an area where there is so much valuable land from the agricultural point of view, there is bound to be a swallowing up of good land if new communications are made, particularly of motorway calibre, but also it appears from Mr. Sharman's evidence† that there is going to be a local access problem in the early stages, because of the very poor road system around the present airport site, which is unsuitable for heavy traffic. Mr. Sharman, of course, proposed a link with M11, but before Mr. Sharman's link would be usable, the M11 must be in operation, which it by no means is; it is a proposal at the moment.

I am trying to short-cut this very much, because so much as been said so well, if I may say so, by the Nuthampstead Preservation Association, but on top of all the objections which have been put forward, there is always this very overriding one of the hardship which arises from displacement and interference for the owners and occupiers in the area. A number of my members have asked me to bring to your attention their cases, who have put in evidence in writing, and who are not separately represented here. If I might just draw your attention to these, may I say that I am not bringing out these cases because they are cases of more hardship than anybody else's, although they are all cases of very severe hardship, but they are those upon which the Commission has details, because

* Reproduced at p. 601.

* p. 669.
† p. 607.

Printed image digitised by the University of Southampton Library Digitisation Unit

details have been sent in in writing, In the first place, the Luckock Family case, Hormead Hall Farm. Mr. Luckock this morning gave evidence as* one of the family tenants. This is property within the proposed site of the airport in the south-western part—there is 360 acres, and as you have heard it is the family home of the Luckock family, and you heard what disaster Mr. Luckock would consider it to be if his family were so broken up. But, in the written statement† which has been sent in by him it is also pointed out that on the farm there are five workers all of whom have had long service in the same farm, two of them have awards for being continuously there for over forty years, and none of them for less than twenty. Of course, this is a highly productive farm, and some of the very best land and with valuable breeding herds of cattle, sheep and pigs. One can only look upon it as a great tragedy for this family if all that were to be lost, which it would have to be if that were the site of the airport and, as we know from the Preservationists' evidence, the house is a tower house, the moat is an ancient monument, and there is a listed dovecote and seven cottages.

The CLA support this case, as it must do any case of anybody who is going to have their land wiped away in that manner.

May I also draw your attention to Baron Dimsdale's case of Scales Park, and Meesden and Bury Farm. Here again written evidence‡ has been sent in without asking for representation and this again is property in the southern part of the site, nearly all of which would be lost if the airport were to come here. Scales Park is some 1,600 acres, and this is farmed by tenant farmers, two of whom we have seen here today and, of course, Baron Dimsdale is most concerned for the loss of these farmers who would lose their livelihood and would have to buy farms elsewhere, if it were possible, which it might very well not be if they were displaced. During the war it was an air base, it has since been cleared away, as you have seen from the evidence of the National Farmers' Union. A great deal of expenditure has been poured into the reclamation of this farm to bring it up to its present day very high standard. The same applies to Missenden and Bury Farm, 276 acres, which again shows the typical pattern of pouring money into improvements on a long term basis.

The CLA also supports the case of Mr. J. L. Logue of Coopers End Farm, Duddenhoe End, Saffron Walden—he is separately represented so I think it would be unseemingly if I said something as his case has not yet come up, but he is N4. 26* in the Commission's list, with 54 acres, and the CLA of course support his objections.

There is also very interesting evidence there of the blighting effect already upon his farm, that the very proposal of an airport coming here, and we see how the sale of the house which he has improved fell through when the proposal came up.

Since submitting our evidence we have been asked to draw your attention to Captain Jeremy James's case,† which I understand you have not yet seen; this was sent to the Commission, and it is Julians Estate, Buntingford. This is an estate down to the west of the proposed site, near Buntingford. This is a place where the gardens have been open to charity with great success because it is such a beautiful property, some 1,315 acres, and here, of course, it is right within the contour "intolerable noise nuisance", and we hear, as I put to Brigadier Fishbourne, the very heavy investment in the last five years in this farm, £50,000 alone on building, and £5,000 to £10,000 on drainage. It really would be another great crime if that very beautiful property were to be destroyed.

I am also asked to support the case of Mr. Beddington,‡ who we heard yesterday (No. 23 in your list, I think) Anstey Hall Farm, Buntingford. You heard how this historic property would be wiped off the slate. Anstey, sir, of which you have had the very fullest evidence—

Inspector I really do take note of the evidence put before me, I listen very carefully, and I read very carefully the evidence tendered by Mr. Beddington.

Mr. Gregory Yes. I am simply saying, of course, the Country Landowners' Association has been asked to give their fullest support to it.

Just finally, sir, these are chalk lands, chalk soil, which you heard from the agricultural witnesses was so suitable for high agricultural production, and as you heard from Mr. Sharman, so unsuitable for the unprecedented levelling exercise which would need to be carried out on this particular site, and as the very gates of the parish church look across these large and highly economical farm units they shout out their admonition, as we see from the evidence. Buntingford's inscription says: "Meddle not with those who are given to change", and West Wratting's says: "Let all enjoy, let none destroy".

Inspector Thank you Mr. Gregory. That, I think, concludes our programme for today. We adjourn now until tomorrow morning at ten o'clock.

(*Adjourned until ten o'clock tomorrow morning*)

---

* Q. 3179.

† p. 695.

‡ Not reprinted but available for inspection, by arrangement, at the offices of the Commission.

* p. 739.

† Available for inspection, by arrangement, at the offices of the Commission.

‡ p. 658.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

WEDNESDAY 11 JUNE 1969

THE TOWN HALL, ROYSTON, HERTS.

Before MR. A. J. HUNT

Oral evidence was taken from:

Great Ouse River Authority
(*Mr. H. van Oosterom, Mr. H. Clay*)

Rev. L. Morris

Welding Institute
(*Mr. M. A. Allflat*)

Tube Investment Ltd.
(*Dr. A. W. Pashley*)

Institute of Animal Physiology
(*Dr. G. D. Greville*)

Chesterford Park Research Station
(*Dr. E. F. Edson*)

Hertfordshire Society
(*Mrs. N. W. Tyrrell*)

Decca Navigator Co. Ltd.
(*Lord Colville*)

Mrs. Shirley Williams, MP

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Good morning once again. The first to be heard today are the Great Ouse River Authority and they have sent a letter just mentioning that on their plan G.O.R.A.1* Wicken Water has been labelled in error as Wicken Part.

MR. J. BISSETT *called*

(*Great Ouse River Authority*)

Mr. Bissett I appear on behalf of the Great Ouse River Authority, sir. The Authority's witnesses are Dr. Clay, the Pollution Prevention Officer and Mr. H. van Oosterom, the Deputy Engineer, and they are present. I have nothing more to say, sir.

Inspector And your name?

Mr. Bissett My name is John Bissett.

Inspector I should imagine there are some questions to the Great Ouse River Authority's witnesses, am I right? Am I not right? I must hastily check through and see if I have any questions. I have two questions, first the Deputy Engineer.

MR. H. VAN OOSTEROM† *called*

Questioned by the Inspector

3363 This concerns paragraph 7 of your proof and you mention earlier in paragraph 6 that the local ditches have a maximum rate of run-off of 620 cusecs—no, I am sorry, that the maximum rate of run-off would be 620 cusecs. In paragraph 7 it says that the capacity of the three existing drainage channels is of the order of 500 cusecs and it then goes on: "However, it must not be inferred that a once in two years storm run-off from the existing catchments would necessarily require the whole of these combined capacities." It seems to imply this to my amateur eye that 620 cusecs can go into 500 cusecs, or have I misread this paragraph? — I don't think you have misread it, sir, but what I am trying to say here is that the run-off as estimated from the figures made available by the Commission's engineer is already in excess of that which the existing channels can take.

3364 So the inference should be that the two years storm run-off would overfill these ditches, that is the point? — Yes, but to go on from there, if I may, what I am trying to say in paragraph 7 is that we do not necessarily accept that a once in two years storm would be the correct storm on which to maintain a land drainage channel after the airport has been completed. We think that we would expect a design to be worked out for a storm of rather less frequency and of greater intensity. This is something that we hope to discuss with your engineers at Stage III. We are thinking that it may be necessary to go so far as to go for a once in twenty years storm.

3365 *Inspector* Thank you. There was one more point on your Appendix A—again I am not very well up in water matters, but I see that the industrial users, for example Spicers Sawston, and CIBA at Duxford are fairly heavy users of water. Is any of this water returned into the system? — Certainly, sir, but in a condition not quite as good as when it was abstracted.

Inspector Thank you very much. Now a question for the Pollution Prevention Officer.

(*The witness withdrew*)

MR. H. CLAY* *called*

3366 *Inspector* Paragraph 8 mentions that the Water Company recently objected to a proposed site for sewage disposal works for Saffron Walden one quarter of a mile upstream of a new bore hole. Was this objection successful? — Yes, sir, on account of the objections which were made by the Lee Valley Water Company, the council did not proceed any further with this proposal to locate a sewage works about half a mile upstream of the new bore hole.

Inspector Thank you very much. Are there any more questions of any kind to the witness? Thank you very much.

(*The witness withdrew*)

THE REVEREND LEO MORRIS† *called*

Inspector I have read your document with great interest.

Rev. Morris Thank you. I am Frank Leo Morris, Vicar of Great Hormead, Rector of Little Hormead, Rector of Wyddial and Rural Dean of Buntingford in the Diocese of St. Albans, and I appear on my own behalf and on behalf of some other clergy of the Church of England and the Roman Catholic Church.

I think it right I should declare my own special interest in this matter because my own house, my three parish churches, my Church School and the homes of many of my friends and parishioners will be swallowed up in the proposed Nuthampstead Airport. I have, therefore, very strong personal objections to the proposal.

Having got that out of the way, I can now speak as a representative of the Church in the district. It has been said, sir, that it is no part of the Church's business to object to the siting of the airport in this area, nor indeed anywhere else. It has been said that to try to stop the airport coming here in order to plant it firmly on some other poor citizen's doorstep is a most unchristian act. Let me say at this point that my objections to at

* opp. p. 744.
† See also p. 743.

* See also p. 745.
† See also p. 747.

Printed image digitised by the University of Southampton Library Digitisation Unit

least two of the other recommended sites would be just as strong, though perhaps not quite so personal as they are to this site.

It is self-evident that wherever the airport is sited there will be far-reaching and important problems which must be considered and dealt with by the Church in that place.

Wherever the airport eventually finds itself, sir, the officials of the Church, both cleric and lay will be required to preside at the obsequies of the dead parishes and to superintend the birth service of the new ones. No doubt this latter task will be intensely interesting and rewarding work which will, perhaps, go some way towards alleviating the tragedy of the former. Whatever the decision of the Government eventually the Church will have to play its part. I think my task at this stage is to try and show what I believe will be the effect of siting the airport at Nuthampstead on the Church and on Church life and Church people, and indicate at least a part of the appalling costs.

May I underline these one or two points which I have made in my written statement:

Nine parish churches and three chapels-at-ease would inevitably be closed by the airport. Six because they fall within the boundary of the airport as shown on the Commission's maps, and six because they are so close to, and in direct line with, the designated runways.

It may be, sir, that I have been unduly optimistic in this figure of twelve churches inevitably destined for destruction. Some people think that I have. Certainly another nine churches are between the 50–60 NNI contour lines, another thirteen between 45–50 NNI, and a further twenty between 40 and 45 NNI. At another conservative estimate another twenty-nine parishes, though below the 40 line, will be affected in greater or lesser degree.

I read a letter yesterday from an Incumbent whose Church is in the vicinity of Heathrow airport, and it is his opinion that it is quite impossible to adequately soundproof an ancient church, you have to start afresh, you can soundproof a new building, but it is impossible almost to soundproof an old one.

Amongst these seventy-one churches there are some great treasures of English ecclesiastical architecture, some possessing unique features. In these churches you will find bells and brasses, monuments, and murals, silver and sculpture, windows and woodcarvings of incalculable historical and architectural value, not only to the villages and townships where they are to be found but to the nation.

But there is something yet more important in and around these ancient buildings. Those buildings were provided through the love and faith of our forbears. They didn't just appear on the scene, they were built with the money and the sweat and the artistry of our ancestors. They have been lovingly maintained and beautified by our forbears, and they are still maintained in that same way by our people today. In those churches you can see, and in church registers, on the walls and monuments, you can see the history of England. You can see the development of art and architecture, warts and all. Above all you can see the living evidence of the faith of our fathers. Each of these churches is a home of the family of God in that place and has been so for, in some cases, over a thousand years, and each one is a trust which we must fight to preserve.

Reference was made yesterday by the learned Counsel for the Nuthampstead Preservation Society to the old man in Anstey who looked at Anstey Churchyard, where forty of his forbears lie, and who wondered how when it is covered with cement how they would get out on the Day of Judgment, and how he would get in himself, and we laughed at that, but on reflection we find it strangely poignant.

A word about education specifically about Church schools. The whole problem of education in the region of an international airport is a large one, and it has been dealt with much more fully and competently than I can do, by Dr. Owens* in his evidence on behalf of the Joint County Councils.

However, it is perhaps not sufficiently recognised, Sir, that the Church has been active in education—indeed for centuries was almost the only source of education—since the dawn of the Christian Era. In this country for nearly 1,500 years the Church has been providing teachers and schools. The State, however, has yet to celebrate its first centenary, for it was not until 1870 that the State began to provide schools. This is high-lighted when we realise that out of the more than 200 schools listed by Dr. Owens, over 60 are Church schools, originally provided wholly or in large part by the Church, and since improved, supported and partly maintained by the prayers and the interest and the money of Church people.

It would be impossible, I think, and I have not attempted it, to make an evaluation of what would be required of the Church to deal with the shift in population which will inevitably occur even before the airport is completed. New towns will have to go somewhere when the argument is over, there will be significant growth of population in many existing towns and villages; some perhaps—certainly—will disappear. Very complex problems of pastoral reorganisation will present themselves on diocesan, deanery and parochial levels.

The deployment of the clergy, redundant churches, new churches, new church schools, halls, parsonages, all coming at a time when the Church is deeply involved in the reorganisation of its government, its pastoral ministry, and the future uses of its resources in men, buildings and money.

I have emphasised in my written evidence that the Church is people. What will be the effect of the airport on the people alive now and yet to be born in that vast area which will be involved in the exercise? In this field, I am most grateful to the Nuthampstead Preservation Association for its Counsel, for what they have said about this matter, and I associate myself with them whole-heartedly.

Inspector Is the Rev. Morris being heard in the Gallery ("Yes").

---

* p. 640.

Printed image digitised by the University of Southampton Library Digitisation Unit

Rev. Leo Morris I believe that the most important factors which the Commission will have to consider when it makes its cost/benefit analysis are not financial, nor engineering, nor logistical, nor even aeronautical, but personal.

Finally, may I be allowed to correct a statement in in my written evidence on page 23,* at the top of the page. In the first paragraph there I have said that the restoration work on Great Hormead Church has been stopped, pending a decision by the Commission. I have to tell you now that since that evidence was submitted, this Parish has decided to put in hand further repair work on the roof of the nave, amounting to nearly £2,500.

This may be considered as an act of faith, or perhaps as a gamble, or even as a vote of confidence in the good sense and sound judgment which we anticipate the Commission will display when presenting its recommendation to Her Majesty's Government.

My written evidence is in your hands, sir; I shall be glad to answer any questions that you may have.

Inspector Are there any questions to the Rev. Morris?

Cross-examined by Mr. Lymbery (Stevenage Development Corporation)

3367 Mr. Morris, may I ask you one or two questions on behalf of the Stevenage Development Corporation. I am looking at your appendix, Section 2, "List of Parishes affected by the proposed airport". You have referred to these churches in your evidence this morning, "churches between 45 and 50 NNI" at sub-para. (d). There is no mention of Stevenage, I think, in that sub-paragraph? — 40 and 45, I have got them down; I think since I have sent this in, I have discovered that there are more churches in fact in danger, as it were, in Stevenage than would at first sight appear.

3368 If I could just draw this to your attention, because it has come out in evidence earlier in the inquiry, it would appear from the NNI contours that roughly a third of Stevenage would be within the 35 to 40 NNI contour; one-third within the 40 to 45 contour; and one-third in the 45 to 50. I have not got the precise number of churches in Stevenage of all denominations, but would you agree, including Catholic, Church of England and other denominations, there is something in the region of 20 or 25 Churches? — I would.

Inspector Any other questions?

By the Inspector

3369 I have just one point, Rev. Morris, that is on page 18.† You have also touched upon this in your supplementary speech. It refers to this question of the various estimates that have been produced of additional population, from which it would appear that a new town of 300,000 to 400,000 will be required. The point I want to put to you is this, that the existence of these 300,000 or 400,000 persons in 1995, or whenever it will be, will not be the responsibility of the Third London Airport, as it were. — Quite.

3370 These will be there anyway, so is it not likely that if the Church have got to cope with this additional population should Nuthampstead not be selected, they would have to cope with that same population in some other part of the country? — No, sir, not in the same way, because the growth of population is normally a natural affair; towns grow, villages grow, populations increase—it is quite possible for the Church in that fashion to cope with this growth of population, but to put down in an area which is perhaps covered by a small village, or two or three villages, an enormous increased population, then there quite obviously will have to be a tremendous expenditure of men and money to provide Churches of all denominations for those people.

Inspector I take your point. In planning jargon, this is referred to as making use of existing infrastructure. Any other questions? Thank you very much.

(*The witness withdrew*)

Representations by Messrs. Sharpe, Pritchard & Co., *representing: The Welding Institute, The Agricultural Research Council, Tube Investments Ltd., Chesterford Park Research Station.*

Lord Colville If you please, my name is Lord Colville of Counsel; I am here to represent these four Institutions.

Inspector Lord Colville, it may help a little if I say that when I was visiting the area, I did venture to trespass by driving into each of these four establishments, so that I have seen both the new buildings, and their environment, although, of course, I have no knowledge of the very specialised activities that go on inside those buildings.

Lord Colville I am sorry to hear that, because we attempted to set that out in our proofs.

Inspector I have read them, but have not seen them, obviously.

Lord Colville I have witnesses here from three of the institutions, and one from the fourth who is on his way. I do not know which order you would like them taken in. I have got Mr. Allflatt here, who is Secretary of the Welding Institute, which is first on the list; would you like me to call him?

Mr. Michael Anthony Allflatt* *called*

Examined by Lord Colville

3371 You are Michael Anthony Allflatt? — Yes.

3372 You are the Secretary of the Welding Institute? — I am.

* p. 752.
† p. 751.

* See also p. 764.

Printed image digitised by the University of Southampton Library Digitisation Unit

3373 Dr. Weck, who prepared the proof of evidence, cannot be here today, is that right? — That is so.

3374 But I think you are capable of answering any questions that there may be on the material in his proof of evidence, and the various appendices, photographs, and so on? — Yes.

Lord Colville I have nothing that I wish to add in chief through Mr. Allflatt, Sir, but I will tender him for any questions.

Cross-examined by Mr. Keene (Joint County Councils)

3375 I am just trying to pinpoint the exact position of the Institute in relation to the noise and number index, if indeed that is a relevant test for as sensitive an organisation as yours. I understand it lies just to the north of Great Abington? — No, I think it would be to the south-west of Great Abington.

Lord Colville Mr. Keene, I can give you a map, if you would like, to show you where all these Institutions are.

Mr. Keene I think I have seen the map my friend has. I am trying now to locate them on the Noise and Number Index map prepared by Mr. Fleming.*

Inspector Could your technical people identify it on the large scale map?

Lord Colville I do not think there is any difficulty in Mr. Allflatt doing so, if you look north-east of Saffron Walden. — I can find it, but I cannot reach it. It is just about *there*.

Inspector Surely not?

Mr. Keene I think you are a little out. — It is *there*.

Inspector It is about 3 miles east of Sawston.

3376 *Mr. Keene* I do not know whether you have seen the evidence put in by the Joint County Councils? — Yes, I have.

3377 You can probably see that in fact the Institute is very close to the 35 NNI? — Yes.

3378 I do not know whether you take the view that NNI are any sort of a test for the sort of work carried on by the Institute? It is, of course, a test produced to deal with the general noise and nuisance in the community. — I think probably it is difficult to speak for the people that work in the Institute who hear sudden noise.

Inspector Could you speak right into the microphone. — It would probably distract their attention, with part of the work that goes on there, that people have to sit down and concentrate very much on the work that they are doing, so I do not know that the NNI contours would be all that significant. The very fact that they work in a quiet rural area in peaceful surroundings, and if this does come the noise from these aircraft would, I am sure, distract them in their work.

Inspector Is Mr. Allflatt being heard?

3379 *Mr. Keene* I wonder if, in your view, the situation of the Institute is comparable to the sort of regime one has in schools? — This is very much so, and in fact we have quite a large educational programme going on and building up at the moment, and we run courses, seminars and this sort of thing, bringing people in from outside to the Institute.

3380 It was Mr. Fleming's evidence* on behalf of the Joint County Councils that when you are dealing with the interruption of speech communication and so on, PNdB is possibly a better test of that kind of disturbance than NNI; I gather you would probably agree with that from what you have been saying. — Yes, that would be so.

Inspector Any other questions to Mr. Allflatt?

By the Inspector

3381 I have just two on the proof, Mr. Allflatt. The first one is largely a matter of interest. You refer to having a staff of 400 persons now, with a planned growth to between 450 and 500 in the next few years. Where do these people mainly live? — Either in Cambridge or in the little villages around.

3382 In paragraph 3 you refer at two places to the possible effect of aircraft vibration, noise and vibration, on delicate instruments, and you actually specify the type of instrument, including this thing I have never heard of, the carbon dioxide continuous power output laser equipment. As background to this question, when the Commission was considering possible sites for the Third London Airport, the picture was conveyed to us that a good deal of military flying is and will continue to take place generally in the south-east corner of England, in this area we are talking of, and that much of the flying in the area would be random flying by military aircraft, practice flights, and so on. Have you had experience at your institution of random low flying aircraft at all? — Yes, we had experience of this last year when they were making "The Battle of Britain" film at Duxford, but these were World War II planes and one cannot compare these with four engined continental airliners that make a lot more noise.

3383 You have never experienced any trouble so far from low flying modern military aircraft with some noise and vibration creating capacity? — Not that vibration, no.

Lord Colville I have nothing further to ask Mr. Allflatt, simply to thank him very much for coming.

(The witness withdrew)

* See attached wallet of maps and diagrams.

* p. 840.

Printed image digitised by the University of Southampton Library Digitisation Unit

Lord Colville The witness Dr. Greville from the Agricultural Research Council's Institute has not yet arrived so perhaps I could call Dr. Pashley of Tube Investments Limited next.

DR. DONALD WILLIAM PASHLEY* *called*

Examined by Lord Colville

3384 Doctor, you are Donald William Pashley, you are a Doctor of Philosophy, a Bachelor of Science and have many other qualifications, Fellow of the Royal Society, and you have written the proof on behalf of Tube Investments at Hinxton? — That is correct.

3385 I do not again, sir, want to add anything in the way of a further question except that I would just like Dr. Pashley to explain two photographs, TIRL2† and TIRL3‡ because it may be that the full implications of these are not entirely clear from the proof. Could you just explain these a little bit more. I know they are referred to in the proof but would you look at TIRL2 first which is the electron probe microanalyser photograph of a piece of cast iron. — TIRL2 is put in as a demonstration of the type of work which is carried out at our research laboratories and is put in as evidence of the fruits of direct collaboration between ourselves and Cambridge University. It is a demonstration of the application of an instrument called an electron probe scanner microanalyser which was developed in direct collaboration with the University. It shows a typical use of the instrument, in this case the application to the examination of the surface of a piece of cast iron and it shows on a very fine scale the distribution of different elements in the surfaces of the specimen, this is different chemical elements. The evidence that one obtains from an instrument of this kind is of extremely great value in various fields, particularly in allowing one to determine on this very fine scale the way elements are distributed in relation to imperfections and various flaws which can occur in metals during their manipulation and treatment in manufacturing processes.

3386 It may be that if there was a crack in this particular piece of metal the elements making up the material at that particular point could have a relevance to the cause of the defect? — This is very much so, yes.

3387 So it is useful to know along the line of the crack which of the elements are present among the total mixture obtaining in the alloy or whatever it is you are analysing? — Certainly, yes.

3388 Turn to TIRL3. This is the photograph the magnification, is it not, there if you had a specimen of an eighth of an inch in diameter and you imagine that was the City of Cambridge the microscope would be looking at something which on the ground in Cambridge would be two or three feet across? — This is so, this would be the effective size of the total image that one photographs in the first instance. In fact, the actual photograph which is included is only a small part of that, it is only a few inches in dimension. The total photograph from that selected was in fact 2 or 3 ft across.

3389 So out of the 2 or 3 ft of Cambridge, if I may take that analogy, this is a very small part of it which is being examined under the microscope? — Yes, indeed. One is trying to examine very small areas even in this photograph, so one is interested in structures on the scale of 10,000th of an inch or something of that order.

3390 Could you just tell the Inspector what the purpose of this photograph was, what was being analysed and why? — In this particular photograph one is examining a piece of metal at extremely high magnification in order to try and obtain detailed information about the atomic structure of the metal. This is shown up by the periodic arrangement of dots which is visible on the photograph and one is particularly concerned in this case at locating the imperfections or irregularities which are present in the periodic arrangement. It is these irregularities which are of importance in relation to the properties of the metal and that is why we are trying to examine them and get information about them.

3391 So those dots if they are not atoms themselves are at any rate groups of atoms, are they? — That is so, yes.

3392 I wonder if you could help the Inspector with this. You are fairly close to the Duxford aerodrome and it may be as you are particularly sensitive to vibration with some of these very delicate instruments you could help on past experience with military aircraft and vibration from them. Has it happened and if so what has been the effect? — We have in the past been very aware of these aircraft in Duxford in the sense that the noise is disturbing, but it is extremely difficult to gain direct evidence of the effect of these on vibration of instruments and hence the operation of these instruments, because it would take a lot of detailed evidence on direct correlation between the quality of photographs and the positions of aircraft, and as you can imagine the exposures for these photographs are only a few seconds and unless one deliberately sets out to directly correlate photographs taken when an aircraft is overhead and when one is not overhead one could not obtain this evidence. We have never deliberately set out to establish this. If we are concerned about any form of interference with our instruments we deliberately avoid taking photographs when we are aware that there is some disturbing influence in existence.

3393 Hitherto, then, have there been substantial periods when you have had to refrain from taking photographs for this reason or has the over-flying by military aircraft been fairly infrequent? — It has indeed been fairly infrequent.

3394 And has it consisted, at any rate partly, of jets? — Not that I am aware of. I believe at least "The Battle of Britain" was on piston aircraft. There were

* See also p. 770.
† between pp. 768 and 769
‡ between pp. 768 and 769

Printed image digitised by the University of Southampton Library Digitisation Unit

some military jets from Duxford which I believe was closed down for this purpose some five or seven years ago.

3395 *Inspector* Any other questions of Dr. Pashley? Any other parties wish to put questions to Dr. Pashley? Dr. Pashley, just pursuing this question of vibration a little further, as I understand the matter, as a pure photographic novice, quite clearly when you are enlarging to this scale even the very minutest vibration would be a difficulty. How about having traffic on the A130, is that too slight to worry you? — We are not aware of any problems from the traffic on the A130. We can hear this traffic inside the building occasionally but not very often. I can give no direct evidence that we have the effect of vibration on our instruments.

Lord Colville Thank you very much, Dr. Pashley.

(*The witness withdrew*)

Lord Colville Sir, I would next call Dr. Greville who is Deputy Director of the A.R.C. Brabaham, who has come instead of Dr. Keynes who I am afraid cannot be here today, but he is fully conversant with the material.

DR. GYDE DRUMMOND GREVILLE* *called*

Examined by Lord Colville

Witness I must apologise for the absence of Dr. Keynes, but he is abroad.

3396 *Lord Colville* You are Gyde Drummond Greville? — Yes.

3397 Master of Arts, Doctor of Philosophy and a Fellow of the Royal Institute of Chemistry? — Yes.

3398 And do you, in addition to being able to answer questions on the proof prepared by Dr. Keynes, give the Inspector the last four Biennial Reports† of the Agricultural Research Council's Institute at Brabaham.

Inspector If you would just drop them on the table there.

Lord Colville I would like to refer to them very briefly when I am addressing you in a moment so I thought it was convenient that you should have them. You can answer any questions that anyone may have about this proof of evidence, can you not? — I will endeavour to do so.

Inspector Any questions to Dr. Greville? I must disappoint you because I have read Dr. Keynes' proof and I have no questions upon it. Thank you very much.

Lord Colville Thank you, Dr. Greville.

(*The witness withdrew*)

MR. ERIC FRANCIS EDSON* *called*

Examined by Lord Colville

3399 You are Eric Francis Edson? — I am.

3400 You are a different sort of doctor, Master of Science, Bachelor of Medicine, Bachelor of Surgery, is that right? — That is right.

3401 And you have prepared a proof of evidence on behalf of Fisons Cambridge Division in connection with their Chesterford Park establishment? — I have.

3402 Can I just ask you this. It is one of your team, Dr. Jones,† who has also prepared a general proof of evidence about the effect of noise? — That is correct.

3403 He, sir, I am afraid could not come today either because of change in dates, but I don't know whether there is anything you can do to help on his proof of evidence if people want to ask questions? — I will try to do so, and Dr. Jones and I did this in collaboration.

Lord Colville If it would be convenient it might be possible for any questions on Dr. Jones's proof to be asked of Dr. Edson as well. I have nothing further to add to the evidence of those two doctors.

Inspector Are there any questions concerning the proofs of evidence of Dr. Edson and Dr. Jones which relates to the general evidence on noise on all four institutions? No questions. Dr. Edson, I have no questions.

(*The witness withdrew*)

Lord Colville Well, sir, it falls to me to address you. If it would assist you in due course to weigh up the importance of the work being done by these four institutions we would be very glad to invite you to look at the lecture halls and the laboratories and the various items of equipment which have been referred to in the evidence.

Inspector Thank you, Lord Colville. I may take advantage of this invitation, but I think almost certainly members of the Commission's research staff would certainly wish to do so in order to see what is really involved in interference with the institutions.

Lord Colville It would only be a matter of getting in touch with those whose names you now have at the top of the proofs of evidence. I don't think that there can be any doubt from the evidence that has been taken as read that these are four very significant research establishments. I hope I shall not trespass on your time, I will not take a lot of time and I will not say anything that has been put in the proofs, but I would just like to pull together the case for these four and try to turn it into a rather more complete picture.

You will see that all four of the institutions chose the sites where they now are because they were in quiet rural areas. Three of them, that is to say all except the Welding Institute, although as you will hear a number of their staff do live in Cambridge, the other three at

* See also p. 768.
† Available from HMSO.

* See also p. 760.
† p. 757.

Printed image digitised by the University of Southampton Library Digitisation Unit

any rate specifically chose these sites because they were within close reach of the University of Cambridge and the science based industries there. Dr. Pashley has explained one of the examples of actual fruition of this sort of idea of co-operation between the University and the research institute with which he deals, that of course is the photograph* of the metal broken down into its component parts.

So far as the Agricultural Research Council's institution at Brabaham is concerned, you will have noted Professor Calne's experiments that were carried out there, of very great medical importance in fact, as I understand it, and also the use that is made of that institution's facilities and laboratories by post-graduate studies at Cambridge.

So far as Fisons are concerned, their commercial headquarters are in Cambridge and they do have close links with the University in relation to much of the work that they do.

Sir, I have not got the exact figure for the Welding Institute, but there must be over 250 highly skilled scientists employed at these four research stations and a total staff of over 1,150 including the very distinguished scientists. Sir, their combined budget over the last year quoted altogether is £2·5m, which is quite a substantial sum in terms of science. If they all had to move—"if" of course is very much in point—if they did the estimates that have been made of the replacement cost is in the region of £7m for all four of them, less, of course, the residual value of the sites that they left behind, but then one wonders if they had to move for the sake of noise what great use there would be in the laboratories that will be left behind for that very reason, at any rate to any other scientific user. That does not take into account the loss of efficiency, the break-up of the team, the length of time it will take to get an operation going somewhere else. I don't know whether you saw the picture of the ammonia vessel† in the Welding Institute's proof, but if you don't have a continuous flow of highly up to date and accurate scientific advice from an institution of that sort—and this is the only one in the country—then the use of advanced techniques are not wholly safe because there may be circumstances set up—new temperatures, new pressures, things of that sort—which can cause failures even in well tried techniques, and one of the things that the Welding Institute will be particularly concerned about will be the loss of day to day advice that it gives to industry over any period during which it was having to move and set up elsewhere and perhaps find new staff.

Now I have of course read all the other proofs of evidence that have been put into this stage of the Commission's hearings on the Nuthampstead site and I think there is a number of points which emerge from them in addition to the proofs of evidence and in supplement to them. Perhaps I could just very briefly deal with those.

In these four research institutes set where they are there are I think two-fold dangers at least in the long run in relation to the recruitment of their staff. First of all, as I understand it, one of the sorts of secondary industry which might very well come with an airport in one or other of the large striped blue areas on that map* or elsewhere would very likely to be science based and there would therefore be a considerable increase even in the present competition in recruiting staff for the four research institutes. The other thing of course that would be relevant in recruiting is this, that if you have quieter areas for science based industry, either in Cambridge or in one of the two new suggested urban areas, any noise trouble at any of the four research establishments that I represent would be one of the factors no doubt which the potential staff might take into account when deciding which job they would take. This would be a disadvantage naturally to the institutes at the end of the runways as opposed to the institutes at either side of them. On the other hand, if one had any of the research institutes decide that on account of noise they had to move of course it would be very much a matter of timing, but there would also be a danger or could be a danger from the science based secondary industry if it happened to be setting up or had already arrived at that juncture. You have been told already in the proofs of evidence that it does not follow that the complete staffs—the team working at each institute—would go to the new site. They have their homes and so on in the area and they might not wish to move.The presence of alternative employers in those new urban areas might tempt them even more to stay, and therefore on this terribly important side of the teams' working at all of these research establishments the airport, and particularly its attendant secondary industry, does hold out substantial dangers for them.

Now all four of the institutions are particularly susceptible to noise interference and I was very glad to hear my learned friend Mr. Keene asking a few questions about this. I need not ask you to look at this, but I can give you the references very quickly. If Mr. Allen† giving evidence for the University of Cambridge is worried about didactic teaching, that is paragraph 9 of his proof, if he is worried about libraries, that is paragraph 14, and he is worried about research, which is paragraphs 15 and 16, then, sir, I think that all those worries are the more relevant to the four research establishments with which I am dealing. Teaching goes on particularly of course at the Welding Institute where they have got a large conference hall, but in every case there is an enormous amount of conversation and other sorts of communication between scientists, both those who are residents there all the time and also between them and visitors, which is particularly susceptible to interruption by noise.

Sir, the Welding Institute at Abington has got a library which is used by those both on the staff and those who come for residential courses and therefore want to look up the material when they are on the site,

* between pp. 768 and 769.
† between pp. 768 and 769.

* opp. p. 800 (not reproduced in colour).
† p. 800.

Printed image digitised by the University of Southampton Library Digitisation Unit

and there can be no doubt that the research, both pure and applied, is carried on at all of the four establishments. Sir, Mr. Berry in his evidence for the Stevenage Corporation* refers in paragraph 8 to the question of teaching and Dr. Owens for the County Councils† does the same. Sir, we would say what they say in their proofs of evidence is also relevant to the Commission.

I would just like to go into a little more detail about the effect on these sort of operations. I would very much support what has been said I think already by my learned friend Mr. Frank for the County Councils, at any rate implied by Mr. Keene just now, that noise and number indices are not the most suitable method of measuring the likely interference from noise on these sort of establishments, and PNdB is a very much more reliable method of dealing with it. Although it may be of great importance in general I would ask you to consider in this particular case the decibel readings more particularly. The meetings and discussions on scientific matters and the concentration required by the staff in their difficult projects are of course common to all the four institutions, but would you particularly please consider the appendix attached to Dr. Weck's proof for the Welding Institute‡ which shows the range of the courses which are held in the conference and lecture hall which has been built at Abington, which is quite a large building as you can see from the notice from the outside, and the number of people who Dr. Weck tells you in his proof go there. That is a fairly full scale lecturing activity involving a number of people in a large building, and of course it is therefore very similar to a university or school excepting that the subject matter is highly advanced and probably for all I know extremely difficult and I certainly would not understand it. If you would be so good as to look at the four Biennial Reports of the Institution of Brabaham there are colloquia heard there. These are the numbers of them: there were 71 of them in 1962–63, there were 100 in 1964–65 and there were 34 in 1966–67. You can find this in fact in the book, but you will find that the people who visited on those occasions and indeed on others are of the highest distinction in the academic world. A great number of them come from overseas, from various parts of the world both in the western and in the eastern world. You will find lists of visitors which I will not particularly draw to your attention but they are on the whole at the front of the book. Those colloquia are also of great scientific importance and they are in the nature of symposia where everybody must be able to hear what everybody else is saying.

It is at this point that I think it is worthwhile putting together what Dr. Jones says in his proof with what some of the other witnesses have said in the evidence that has been given to the inquiry. Sir, Dr. Jones on page 4§ of his proof sets out the decibel readings on the "A" Scale which has been calculated. I think this is a World Health Organisation publication, at any rate it is the International Organisation for Standardisation of 1963 and you will see in his paragraph 4 the noise levels in dBA at which normally speech is intelligible for the distances quoted and a further distance at which you can hear if the lecturer is shouting.

Mr. Berry in his proof*—and this is page 9, paragraph 8, sets out decibel readings at the site 10 miles from Heathrow, in fact Fifield, and I think 10 miles easily covers all four of the institutes with which I am dealing. At that point he got readings between 81 and 98 PNdB, and, as I understand it, from Mr. Fleming's evidence†—this is paragraphs 11 and 12, you reduce that by 10 with a building with open windows; 20 with closed windows and single glazing; and 40 with double glazing and permanently closed windows and air conditioning. So, you get, if you do a 13 reduction from PNdB, you get dBA. It is not Mr. Fleming's one, but I gather many people do accept 13 as being the correct one, you will get those Mr Berry PNdB figures translated in this way into a dBA, according to what you do to the building. For the PNdB outside which I presume to be 81–98, you get the figure inside that with open windows of 58–75; with closed windows and single glazing 48–65; and with full double glazing 28–45. So you have got to compare that with the maximum of 55 dBA, which the Wilson Report‡ recommends inside schools. But, if you look at that then in relation to what Dr. Jones says, even supposing that you did double glazing and take the maximum effort to avoid the sound getting in, you will have dBA readings in the 45, up to 45, and that can make maximum speech unintelligible beyond 4 metres, which is I suppose about 11 ft. So that you would have interruption in quite a small room, if the International Organisation for Standardisation is right.

As I understand the problem of noise, although a lot of it comes in through the windows, equally quite an amount comes in from other parts of the structure, and particularly the roof, and I would hope when you look at—or when some member of your Commission comes to look at the laboratories they would consider how far it would be possible to prevent noise of this sort getting in, even if you have double glazing and air conditioning and the other things that go with it. Unsatisfactory though those might well be in themselves.

Sir, if, of course, you did not have that, if you had simply to shut the windows and carry on as best you could inside then, according to Dr. Jones's proof the thing would be coming down to a very short distance indeed between the speaker and his audience over which the voice at normal levels could be heard during the type of interruption that is likely to occur.

This, I think, does tie up very well with what Mr. Fleming said in his proof of evidence. He says something about it in the text, but of the greatest value to me, I think, in this context is his Table NF 6, which is at

* p. 671.
† p. 640.
‡ p. 766.
§ p. 758.

* p. 671.
† p. 636.
‡ Cmnd. 2056 (HMSO; 19s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

the end of his proof, and there he deals in a range of peak PNdB readings, which I assume are outside, which fall within the range 85–94. Therefore, pretty similar to what Mr. Berry for the Stevenage Corporation said he would measure at Heathrow. So you will see there the number of incidents that Mr. Fleming reckons will affect the five research institutes because he has taken C.I.B.A., but all my four are from a typical test when the movements are to the south-west or the north-east. But, sir, one of the things I have learned, and I am sure you know well about this sort of calculation is that if you are talking in terms of PNdB, you have a range from which you can work and you can then discover what would be the effect on any given number of movements inside a building under any particular given conditions that you choose to adopt as a hypothesis but, of course, the effect of these sort of things does not come out clearly, on the NNI contour map. As I understand it, if you have a comparatively low average PNdB figure then even a fairly large number of aircraft movements, which produce that average, results in a fairly low NNI reading, and it is not, therefore, wholly relevant when one is dealing with facts for that reason and, in fact, Mr. Fleming, you see, produces for these institutions a range for a two-runway and a four-runway airport of NNI readings between 30–44, which you might not think on that method of calculation was very significant. I hope, sir, you will not take that view, and I hope that you will also consider this, and this is the application of such common sense I have to the problem, and I hope this is not completely misguided. When aircraft are taking off, particularly modern jets, they go up very quickly and gain altitude in a fairly short time. Therefore, the range of incidents that Mr. Fleming has taken into account may well be—and of course which have been averaged to produce his NNI readings—that range may not have assumed a tremendous take-off noise to the north-east, because no doubt amongst his calculations would have been the fact a number of occasions when aircraft take off to the north-east when the prevailing wind is likely to be less than when they take off to the north-west, and I have no doubt the Commission's own NNI contours were based on that as well. But, when aircraft are landing they come in much lower than when they are taking off at any particular point of the ground as far away as this from the airport, and the noise aircraft make on landing is not, at any rate, with the aircraft I have seen significantly different at, say 1,000 ft in height from the ordinary noise they make when taking off. Now, if aircraft are going predominantly to land into a prevailing wind which is to the south-west, then predominantly they will come in from the north-east and, therefore, the ones which are on the whole lower but just as noisy will pass lower over these four research institutes than would be the case if the aircraft were mainly taking off in that direction. So the Commission will know, because these things are, I know, produced by the manufacturers of aircraft and by the Board of Trade, there is a noise level that is emitted by a certain aircraft at a certain distance before it touches down, but I would be very glad if the Commission would particularly take into account that factor, the noise at that sort of distance for aircraft, jets and, for all I know, turbo-props still are landing, so as to get the sort of range of noise that would be likely to be experienced there, and not just take an average, which is what is done for NNI's and, of course, the number of movements to the south-west—this is looking at the Table NF 6 of Mr. Fleming's proof; I do not know whether that is aircraft taking off or whether it is of the movements, because if it is I find it a little strange to understand how there are so few movements in this vicinity if, as I believe is the case, on the whole aircraft have to line themselves up on the runways of a airport of this sort at a considerable distance before they actually begin to approach the tarmac or the concrete runway at all. Indeed, they have to fly in, particularly if landing on instruments, from very much further away on a straight course than applies when they are taking off, and it is this landing problem that seems particularly relevant to the matter when one is taking account of the number of times when interruptions would occur to the teaching, and the conferences and the researches at the institutions.

Inspector There will be much more information on this aspect, Lord Colville, at Stage III.

Lord Colville I entirely appreciate this, sir, I am simply commenting on what Mr. Fleming said, and I am drawing your attention to what I believe to be the significant points.

Inspector Yes.

Lord Colville In relation to really the NNI contours, which not only would we say are not the best method of judging, but when you get down to the figure of 30–35 can be made up of a large number of not so high but still very annoying PNdB readings.

Inspector NNI contours are given for what is termed the average summer's day and, of course, this in itself is the description, really what is an average summer's day. There are problems here, but I take note of your point.

Lord Colville I fully appreciate the difficulties in the NNI contours, it is a terribly difficult operation, but it is really this, if you have a bad day substantially every one is landing straight over one or other of these institutions, and then you simply cannot carry on lectures at all that day, or research is made virtually impossible and, therefore, averages, which is what I know these things have to be based on, are awfully dangerous in trying to describe the effect upon the—well, particularly the work of research institutions of this sort. It is in that context, of course, that I take particular note of what was said in the minutes of the Commission's meeting on the 28th April last, paragraph 10,* that runway alignments are not things to which the Commission is at the moment committed. I fully understand that and, of course, this is why it is not

* Minutes of meeting held to discuss procedure for Nuthampstead Local Hearing.

Printed image digitised by the University of Southampton Library Digitisation Unit

possible for me to be very precise about what would be the readings for any of the particular institutions, and it may be unhelpful, but I am afraid it can't be done unless one knows exactly where the runways are going to be. All the figures are given of the Commission's own alignment, but if they should be altered then the effect on, for instance, Abington, and the little bit outside, north of the 35 NNI, if it is relevant at all, could be completely changed, and I know you take that into account.

The problem of vibrations, which are relevant only, I think, to the Tube Investment Laboratories and the Welding Institute, are, of course, very difficult, but you heard from Dr. Pashley there is not any evidence, we tried to get evidence from the people at Farnborough, and they have not been able to produce anything helpful, but again the criteria are set out in the proofs and as I understand it these noises in the lower frequencies are likely to cause trouble, and it may be the Commission at some stage in this Inquiry will be able to find out the range of frequencies emitted by various aircraft which exist or may be contemplated, the engines of them, and it would be then possible more accurately to gauge whether this is likely to transmit itself through the structure so as to cause difficulty. But I would emphasise the tolerances of these instruments, the ones that produce the photograph TIRL3.* It is perfectly obvious if you vibrate this specimen at all over any period the photograph cannot be taken and, as for the laser at Abington—well you saw the tolerances for that. This again is not so much a matter of instant photographs, this is a thing which goes on operating over a period, as I understand it, and it would not necessarily be possible to choose a period during which you knew there were not going to be any aircraft coming, and these are very delicate instruments indeed, or two sets of them, because I think there is more than one in the case of the micro analyser.

I have, sir, in the course of this short speech tried to amplify the particular references which are made to our institutions by Mr. Fleming in his paragraph 15, the table I referred you to, and Mr. Mellor† for the Cambridge and Isle of Ely County Council in his paragraph 5.4, and might I just finally explain a little bit of the work of the Agricultural Research Station by going back to those four booklets. At the end of each of them appears the publications which have been produced by the staff during each period, that is the last pages. There are reams of it, all matters of a high degree of difficulty, I would think, in the scientific world, and you will note from Dr. Keynes's‡ proof these are not only used in this country, but there are a few other things in it actually—as I say, not only in this country, but they go abroad too. The overseas visitors in addition appear at the beginning of the 1962–63, 1964–65, 1966–67 reports, pages 9–10, 6–8, and 6–10 respectively, and you see who those people were and where they came from. You will see the lines of experiment which are clearly very advanced set out in each report in the main body.

Finally, sir, since I have attempted throughout to illustrate, at any rate partly for your interest and the interest of the Commission, and also to try and bring this to life, the actual work that has been done, I wondered if you would like to see a picture of a sheep with this radio-telemetry clamped on it, because if you look at 1964–65 report, you find page 48—There are some plates in the middle, after page 48, and it is the second page of plates, plate No. 3; there should be a picture of a sheep there with this telemetry mast on its back and it is being measured for various reactions, rather like the spacemen in their capsules going round the moon. This is the sort of work that is done there, and if you or your colleagues want to see scientific details they will find all these experiments and descriptions of the work in those reports.

I do not think there is anything else I can help you with at this stage, sir, unless I have failed to make anything plain, or anything has occurred to you from what I have said.

Inspector I think not. There must clearly be continuing collaboration between these associations and our Research staff in the stages to come.

Lord Colville It is only a matter of the Commission's Secretariat getting in touch with us, if there is anything —I do not know whether this is in order, but if there is further information at any stage which any members of your Commission should want, once again they have only to ask for it, and if they have got any information, for instance, about vibrations which they would like examined in relation to specific equipment at these institutions, one or other of them, then that would certainly be done as well.

Inspector Thank you very much.

Lord Colville I am very much obliged, sir.

Inspector Mrs. Shirley Williams MP is next but I am not expecting her till after 12 o'clock—am I right? She is not here. In that case, Lord Colville, I think you represent The Hertfordshire Society.

Representation for the Hertfordshire Society (*Hertfordshire Branch of the Council for the Preservation of Rural England*)

Lord Colville Sir, as you have said, I would like now to represent the Hertford Society, and I am going to call, if I may, Mrs. Tyrrell, whose proof of evidence with various maps and appendices have, I know, been circulated both to you and other members of the public present.

Mrs. Norah Winifred Tyrrell* *called*

Examined by Lord Colville

3404 Are you Norah Winifred Tyrrell? — I am, yes.

* between pp. 768 and 769.
† p. 631.
‡ p. 768.

* See also p. 773.

Printed image digitised by the University of Southampton Library Digitisation Unit

3405 And you are the Secretary of the Hertfordshire Society, and you have prepared this large proof of evidence. — Yes.

3406 Various other people, I see, have listed appendices of the buildings of architectural and historic importance not only in the Hertfordshire bit with which we are concerned but in Essex and Cambridgeshire as well, but I think yours is the only proof which gives, at any rate, some of the particular reasons why those buildings have been listed, at any rate, according to your researches. — I believe that is so, yes.

3407 So that the Inspector, at any rate, may find it interesting, there are some of the descriptions and the points of interest in relation to the Hertfordshire villages. — Yes.

3408 There is nothing else I want to ask you on your proof, but since it was written there is, of course, new information which has been published by the County Councils, which is very easily seen on the map on the wall,* and I wondered whether you would be able to give, at any rate, a brief opinion about so much of that as falls within Hertfordshire, and I am particularly concerned with the urban development around Bishop's Stortford. First of all, there is an area which is hatched in blue on that plan. — Yes.

3409 *Lord Colville* I hope this is right, sir, but I think you were interested in the possibility if one was not going to have the other site to the north of Royston for this purpose—the possibility of putting a larger population between the east of the striped blue area around Bishop's Stortford, and north-west as far as the 35 NNI contour.

Inspector That is quite right.

3410 *Lord Colville* I would very much like you to very briefly give an opinion as to, first of all, what villages and areas would be affected by either of these proposals and, secondly, what you think of the value of those villages and the landscape which would be affected. Would you first of all deal with the striped area on that plan around Bishop's Stortford: what villages would in fact be affected there? — As it exists there?

3411 Yes, at the moment, sticking to the blue hatched area alone, both north and south of Bishop's Stortford, if you like. — Well, I would imagine that this comes across the open agricultural country round Thorley, Perry, Green, Green Tie, Much Hadham, which is open agricultural land, completely unspoiled, and of fair landscape value, the areas within that existing hatched area there.

3412 Is that the same to the south of Bishop's Stortford in its character, generally, to the area to the north? — The south, yes, much the same would apply, pleasing open countryside, quite unspoiled.

3413 And to which, of course, fairly strict planning — Oh, yes, indeed.

3414 —doctrines would be applied? — Yes, but it is not of such high landscape value as some of the other areas.

3415 No. Now, supposing that the inspector's possible suggestion was to be considered, of expanding that hatched area north-west about as far as the 35 NNI contour; would you say something about—first of all, what areas would be affected. — Well, this, of course, in my submission, would have a disastrous effect upon an area of countryside which is of tremendous landscape value, the villages of Much Hadham, Little Hadham, Furneux Pelham, Stocking Pelham, which have been listed in my proof of evidence as being of great value, all completely rural unspoiled areas with little or no development, quite untouched and of very great landscape value in my opinion.

3416 I do not know whether they are in the category of having been annotated as of great landscape value in the proof plan, or whether they are part of the proposed addition? — They are part of the County Council's proposed addition as being of high landscape value.

3417 Then, of course, the other thing that is apparent is that although not all of those lines, red and blue would be necessarily implemented, that area would be likely to be crossed by a number of lines of communications. — Yes. Including railway and roads, the proposed lines of railway and roads. I think one can fairly say this particular part of Hertfordshire, if that was done, would be utterly ruined.

3418 I do not know whether you have any comment to make on the proposal which is in fact on that plan, to extend Bishop's Stortford to the south, towards the direction of Harlow? — I think that this would constitute a very undesirable conurbation of development, stretching, as you say, north of Bishop's Stortford right down to Harlow, and adjacent to this very high amenity value area that we have been talking about.

3419 Including places, as you say, like Much Hadham? — Yes, indeed, which is regarded of course, as being one of Hertfordshire's most beautiful villages, and the whole of which is a conservation area.

Inspector Any questions to Mrs. Tyrrell? Mrs. Tyrrell, I have no questions, but I and also the Commission are most grateful for your very comprehensive work on the Hertfordshire side of the boundary. It supplements what has already been done by the Preservation Association, and since at Stage III the Commission's staff will be undertaking a very thorough examination of the amenity aspect, this is of the greatest use to them. Thank you very much indeed. — Thank you, Sir.

(*The witness withdrew*)

Lord Colville I am very glad indeed that you have found the evidence of value; we tried very hard to make it as concise, and yet bring in any details that we thought would be necessary.

Inspector It is quite invaluable, Lord Colville, in our future work.

Lord Colville I must say I am exceedingly glad to hear that. Sir, the element which has, of course, not been brought out in the proofs, which I will not attempt

* between pp. 624 and 625.

Printed image digitised by the University of Southampton Library Digitisation Unit

to labour, but which does tie up with various other people's evidence, is the way in which that detailed information prepared, of course, only for the Hertfordshire bit, and of very small radius, because we thought it was not much use going too far afield, but the way in which it does tie up with first of all what Mr. Adams of the CPRE, Cambridgeshire Branch has told you in his proof* about the villages in South Cambridgeshire, and also his information, although in slightly less detail, given by Mr. Dreschfield of the Essex Branch of the CPRE,† and you will, of course, no doubt be reading all these three together.

Inspector Yes.

Lord Colville So as to form a picture. Unfortunately the County boundaries may be very difficult for any one of these branches to give you a comprehensive view.

Inspector I have observed that the country does not change too much over the County boundary.

Lord Colville Indeed, that is the defect of my case, that I cannot pursue the work of investigation we have tried to carry out in Hertfordshire over the boundary, but we would wish you to look for similar points in the villages in Essex and South Cambridgeshire to those we have enumerated in Hertfordshire. I cannot emphasise too greatly the evidence that has been brought out by the County Councils and by Mr. Nardecchia,‡ first of all on the Regional Planning aspect, the role that this part of the north-east of Hertfordshire and the other two Counties concerned play in not only the South-East Economic Planning Council, but also the East Anglia Economic Planning Council's planners' ideas for this area as a whole, and the emphasis which the South Eastern Economic Planning Council put upon North Hertfordshire by its specifically citing it as one of the country zones, whereas it did not, of course, by any means specify all the others.

I am also encouraged by what Mr. Nardecchia says in his proof in paras. 18 and 20; he also has found, giving evidence for the Preservation Association, that this area is much visited by people from London, and from the Hertfordshire towns, it supports what we thought was the case, and the thing we left out was the cyclists. But he deals with those, and they can now, as you remember, go along bridle ways, as long as they get off if there is any conflict between them and a horse, under the Town and Country Planning Act 1968.

Inspector That legalised what has been done for many years.

Lord Colville There was a great deal of dispute who gave way. It is now in the law. I think on Monday you were given the Ministry of Housing and Local Government's decision, and the Inspector's report into the Span development appeal and refusal at Great Chishill. There is no doubt that this is stop-press confirmation of the role that the Minister ascribes to this particular part of the County, which happens to be in Cambridgeshire, but as you say, there is no appreciable difference.

I would like therefore to underline that if I might, at any rate so far as its role in its existing state is relevant. I think, however, I ought to say a little bit more about the County Council's evidence on the associated urban developments, noting, of course, that the County Councils are opposed to such a thing, but nevertheless, it is a matter that the Commission has asked to be dealt with. I did get Mrs. Tyrrell to answer a few questions about the Bishop's Stortford area. Apart from what her views are on the value of that countryside, and of the villages in it, I would ask you again to remember that it is not just the area which is in fact to be taken over for development, whether for houses or industry, or offices, or whatever it is that is important, all the experience—and other proofs of evidence I think confirm this—that one can derive from New Towns and expanded towns is that the pressure also spreads out into the surrounding villages, because lots of the people want to go and live in the existing village, or settlement, or hamlet. They prefer the sort of house that they can find there if they are lucky and can afford it, and there is always pressure for new ones to be built. If you are considering the possibility of an extension of that south-eastern urban area, will you also take into account the consequential effect on villages that would not themselves be inside it, but would be the more affected the bigger the town you have to the south-east of the airport; I think this is very important.*

Those areas, of course, have been chosen, both the north-western and the south-eastern areas, just because they would not suffer so much from noise as would any area to the south-west or the north-east. The sum total of the airport itself with its area of very high noise adjacent to it, and either a New Town on either side, or alternatively a very large one to the south-east together with the associated roads and railway lines—though I appreciate some of the roads would come anyway—is going to leave, in the view of the Hertfordshire Society, very little left of north-east Hertfordshire, and certainly we would say nothing which is in any way comparable, either to what is there at present, or even suitable for the sort of recreational use, in the broadest possible sense, that it is being put to at the moment. You can see how little there would be physically unaffected, and we would think that the pure spread of the combination of developments which go with the airport, as well as the airport itself, would have an absolutely overwhelming effect upon this part of the country.

There is also this. I know that those lines for communications are diagrammatic, and that not more than one, perhaps, of the railway lines to Bishop's Stortford would be built, and not more than one going over towards Stevenage. Perhaps you would have one or the other; I do not know, but it is a most unfortunate coincidence. If you look at the village of Westmill, that is going to be hit pretty hard by noise, but it also seems to be the point at which practically every road and railway which has been suggested is going to converge.

---

* p. 811.
† p. 814.
‡ p. 685.

Printed image digitised by the University of Southampton Library Digitisation Unit

You have got the Motorway from Luton to Harwich; you have the improved A10; you have got one of the railway lines, and you have got the spur leading off from A10 to the Airport. You have no doubt seen Westmill; you can appreciate why it is highly thought of. If there is a village perhaps which requires particular attention, you may think that it is Westmill, and the idea that it will be ringed or surrounded by those sort of major communication links really is one for which those at any rate who care for places like Westmill suffer some dismay. One does realise it would not necessarily come in exactly that point. When you have got as much in the way of communication links as is involved in this sort of development, you are bound to have these convergences of roads and enormous intersections, and the actual area they take up, how high they are above the ground, and that sort of thing, all has a substantial effect on the landscape, or what is left of it, and we would ask you not to forget that particular aspect. It is quite easy to work out how many acres are required, and this has been done in some of the proofs of evidence, for any original scheme for a road or for a railway line, or for the addition of further tracks to an existing railway line, but that does not really give you any idea of the effect that the building of those roads or railways would have over the whole length of them. One cannot do more than speculate about this, because one does not know the exact lines, and that is why there is no particular evidence we have been able to give, but again I would emphasise that to you.

The other thing that I would like to do, if I may, and I hope you will allow me to do this: I have thought that the reference on page 3 of Mrs. Tyrrell's proof* about the effect of the other proposed New Town, largely in Cambridgeshire, on Wyddial Hall, might have been amplified by somebody else. There is a brief reference in the documents before you to Audley End, on the other side, south west of Saffron Walden, but nobody seems to have done anything more to amplify the case about Wimpole Hall. I have got here—I am not going to read these out now, but I would like to hand them in if I may—three copies of *Country Life*, which contain three sections of an extremely learned article by Mr. Christopher Hussey on this house, which sets out its historic value, its connections with people like Lord Hardwicke, the Lord Chancellor, and Dukes of Newcastle, and various other distinguished people, and the architecture of Fullcroft, Gibbs, and perhaps in the case of one particular, Sir John Soane. This house has been offered, and I think provisionally accepted by the National Trust with an endowment, and it would in due course, therefore, become a national property. I do not think the National Trust accept houses unless they are fairly notable. I will give you these in a moment; I would like you to look at one plan, if I may hand that up at this moment. (*Plan and magazines handed up*). I just say in passing I have put the page numbers which are relevant in each of the three *Country Life* issues on the front. But this plan is relevant for this reason. You will if you compare that with—it is easier to see on LK3,* I will leave you to identify it in due course—Wimpole Hall itself is north of the hatched blue area, although one knows that there are wide variations in the evidence that has been presented about the number of people who would come, as I understand it that area is again only diagrammatic, and it represents what the County Council estimate would be the number of people involved in an urban area, it does not follow it would be that size, it might be bigger or smaller.

Inspector To be absolutely precise, the County Council officers, at this stage.

Lord Colville The County Council officers, I appreciate that. I appreciate it is not anything more than an officers' recommendation. But one of the great features of Wimpole Hall is this prodigious avenue which you see runs due south from the front of the house, which is incidentally all covered by a Tree Preservation Order. Across that avenue you will see there runs a spur road from the A10 leading up to Orwell and Cambridge, and the avenue continues south across that until finally it reaches on a diagonal, the A10 itself. A considerable proportion of that avenue is actually within the blue area, and since this avenue is one of the main features of the landscaping of this House and its park, then one would fear for the continued preservation of those trees—I do not know whether it can be done or not. One would also have the House looking straight down into the middle of a large urban area, and this avenue connecting straight into it. Of course, one must not make too much of these things. The effect on Audley End has been mentioned elsewhere; it relates to noise and vibration, but as you have not been otherwise told about this particular house, I thought that you ought to have the details of it as one of the factors which would have to be weighed in the selection of the site for an urban community to go with the airport.

Again, unless there is anything else on which we can help you, I do not think there is anything further I want to say on behalf of the Hertfordshire Society at Stage II.

Inspector Thank you very much, Lord Colville, and also to the Society again for all their work in this submission. I am only left with the Decca Navigator Co. Ltd., and in due course, Mrs. Shirley Williams; the Cambridge Civic Society having withdrawn, relying upon the written representations.

(*Adjourned for a short time*)

Representation of the Decca Navigator Co. Ltd.†

Lord Colville I don't think I will need to hold you up very long on this. I am afraid I have not been able to produce any witnesses from that company today, but it may well be that the most satisfactory thing to do would be as you have already suggested with the four research institutes that I mentioned earlier, that if there are questions of a technical nature which your Commission would like to have answered they could get in

* p. 777.

* between pp. 624 and 625.

† See also p. 782.

Printed image digitised by the University of Southampton Library Digitisation Unit

touch direct with the company and there will be no difficulty of course about giving any information which is required so long, of course, as Decca Navigation can do it, but they will certainly do everything they can to assist.

Inspector I had one or two questions of general interest to ask any witness from the Decca Company, but the thing that emerges I think is that the extent to which the existing Decca system operated from Puckeridge or based at Puckeridge and the third London airport based at Nuthampstead could co-exist must obviously be a case for detailed discussions between the Company's experts and the Commission's research experts, and I will certainly ensure that those discussions are held during Stage III, Stage IV and Stage V.

Lord Colville I am very grateful to you, sir, I think this will probably be best. I would think that the two crucial questions are the height of the mast (and that I can tell you a little bit about in relation to safety regulations) and also any questions of interference by frequencies on aircraft radio, radar and that sort of thing.

Sir, if I could just expand on the two letters which Decca have in fact sent to you, the Puckeridge mast is one of a number in this country and ties in with a complete coverage of practically the whole of Western Europe on a map* that I have given to you, and I have written in relation to each of the master stations beside it who it is who runs them.

I should say this, that the equipment is all Decca equipment. It has been sold to the Swedes, the Norwegians, the French, the Spanish and the Danes, but some of those governments operate it themselves, notably the Scandinavian ones and the Spanish, the big French system is run by Eurocontrol and the United Kingdom ones are run by Decca themselves, and you will see that the navigational coverage by these beacons does extend right up the sea coast of the whole of Western Europe except South Portugal and Spain which runs off the end. It is used extensively by shipping and particularly by fishing fleets who do a great deal of their fishing by the co-ordinates from various signals that they receive from these transmissions. It is also used by aircraft, I believe.

So far as the British part of it is concerned, the whole system is approved and operated under standards which are the subject of formal agreement with the Board of Trade, agreement as to for instance continuity in the accuracy of transmissions, and I have no doubt that the foreign stations if they are not operated by governments of the countries concerned are also guaranteed in this way.

The points that I would like to amplify on the statement that has been made are really these. There was a letter written by Mr. Hawker† on the 15th April 1969 and on the second page of that in his summing-up he gives the price for moving the Puckeridge Station, if that was necessary. I understand that what would happen would be this, that if they had to move it they would move the whole thing because it is no use trying to resite it a short way away, they would find some site that was very well clear of the airport, about 20 or 25 miles away. The question of where is a matter of topography so it ties in with the stations which are fed from the master control at Puckeridge and depending upon where they could get a site and various difficulties like land acquisition and objections from people who do not like masts in their neighbourhood, depending upon where they in fact would be able to find a site would depend on the question of whether they would resite any of the slave stations. Each resiting whether the master station or the slave station would cost a quarter of a million pounds, for each one resited. Mr. Hawker then does deal in sub-paragraph (b) with the charts which would have to be scrapped, re-computed and re-issued. Nobody knows of course who would pay for this. These are used very extensively not only by Government, by the Navy, by all the fishing fleets, by aircraft and numerous other people as well, but no doubt somebody would have to pay for it and the best estimate that they can give is that the cost of this exercise would be in terms of tens of thousands of pounds, not as much as the resiting of the station, but a substantial sum anyway.

The technical details that I am able to give you about the mast are these: that on the runway alignments in CTLA 2/3, which is the four-runway site map,* the mast juts within the approach funnel for the two southern runways calculated in accordance with the ICAO standards. In relation to the glide path which would have to be adopted under the ICAO regulations the situation is this. The international organisation lays down a 2½ degree glide path to the point—I think it is 600 ft—beyond the threshold of the runway, and they then require 0·6 of the height that is produced by the projection of that 2½ per cent degree line to be the minimum at which they would expect aircraft on the worst possible approach to be clear of objects; 100 ft below that is then laid down as an extra safety measure so that 100 ft below this at any stage where the 2½ degree line falls on the land and its contours the mast on this would be 150 ft below that 100 ft, so it would be well clear of the obstacle range which is laid down by the ICAO and it would not intrude into what is called the OCS, the obstacle clearance slip I think it is.

The difficulty of course about it so far as Decca are concerned is this: they would have to risk or they would have to assess the risk of whether or not they could leave that mast there. There have been accidents and there was the unfortunate Afghanistan airliner not long ago which came down too early. Apart from the terrible disaster which would occur if aircraft were to hit this mast the result of putting it out of action would of course be to immobilise part of the chain of navigation systems on that map which is served from Puckeridge. I do not think that anybody could say at this stage whether or not the risk would be an acceptable one to take, but that is the sort of way in which this problem

* opp. p. 782.
† p. 783.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

arises, you would have to take that chance of an aircraft coming in too low below the ordinary clearance required and having an accident in that way.

The other problem which is a highly technical one is the frequencies on which the signals from Puckeridge to the other slave stations are operated and whether there will be any interference or not on radar or navigational aids which exist at the moment or might come in in the future. I gather there are VHF links but the frequencies of these I do not know at the moment.

I would make this final point. This is not perhaps a matter for Stage II but because it is of general relevance I was instructed to make it in this connection and I will do so very briefly. Of course, if that mast was or had to be moved as I understand the position and particularly Section 10 of the 1965 Act it would be the use of the aerodrome, the airplanes taking off and landing, rather than the construction of the aerodrome which would cause it to be moved and therefore no compensation would be payable under the existing legislation so far as I can see to Decca Navigation and this must apply to tens of thousands of other organisations and people who would be affected by aircraft noise. It may be something on which the Commission will give a recommendation, I don't know, it may be something upon which legislation will be introduced, I don't know.

Inspector This has been urged upon the Commission as you say by other interests who are in the same position.

Lord Colville There it is. As I understand it under the present law if it was to go Decca would have to pay for it themselves and precisely the same applies to my other firms who you heard this morning. I simply leave that point with you, but apart from that I don't think I can give you any more information and I would suggest we do as you yourself suggested and get in touch directly with Decca.

Inspector Thank you, Lord Colville, I am quite sure it is the best way of dealing with this particular problem.

MRS. SHIRLEY WILLIAMS, MP* *called*

Mrs. Williams I would like if I may to add a few points to the written evidence that I have submitted to the Commission and which the Commission was kind enough to accept, sir, before answering any points you may wish to raise.

First, with regard to the question of planning with which you have already dealt in listening to Hertfordshire County Council, I really only want to add that the Stansted evidence seems appropriate to the question of Nuthampstead on that point.

With regard to population you have already had the evidence of the Hertfordshire County Council that the population has virtually doubled in the last ten years and in the next ten years it is going to increase even more. I think you have more up to date figures and in my constituency it is 42 per cent up, that is an increase of 42 per cent in the eleven areas included, sir.

May I add one or two extra points. I have made the general point that the employment figure at the moment is running at an average of 1 per cent. This is relatively high for Hertfordshire, we are more likely to have a figure of 0·8 per cent in this area, but I might add that since I submitted this to the Commission it has been announced that British Aircraft Corporation at Stevenage is looking for many hundreds more employees amounting to as many as a thousand to take care of their new order from Libya, and Borg-Warners at Letchworth who make transmissions for motor cars for export has also announced its intention to expand considerably and thus we have of course difficulty in getting labour.

May I thirdly add that I.C.T. (International Computers and Tabulators) are also recruiting a scheme for extra labour, and this labour is likely to be skilled, except in the case of Borg-Warner where some is likely to be semi-skilled.

May I add to the point I made to the question of aircraft noise one small point which may be of some interest. I notice in the Hertfordshire County Council's evidence the number of people within the 35–45 NNI contour lines who are affected by noise from Luton airport has been estimated to be 3,350. This compares with the figure of 170,000 within the 35 and upwards NNI by 1981 with a two-runway airport at Nuthampstead, and 416,900 with a four-runway. I wonder if I may give you some indication of the kind of feeling that there is, when a local Member of Parliament gets 3,350 people who presumably suffer from some form of noise and disturbance as a result of Luton's airport—nearly a third, that is to say about 1,000 people have signed already a petition to me, and one must allow for the fact a lot of these do not live in my constituency. One hundred and fifty letters have been received, and I have attended two meetings both of which were private meetings seating 100 people, simply arising from disturbance from Luton airport. So, you appreciate, having 170,000 people writing to me is to say the least of it terrifying and on the same basis I estimate I receive some 3,500 letters in the course of three months—

Inspector Very busy.

Mrs. Williams The figures I gave for Luton are figures over the last three months only.

Might I also add a note or two simply to the points that have been made in a good deal of the evidence which I have read concerning the position of various research institutions. I am, of course, as you appreciate, here in my capacity as Constituent Member of Parliament only, but it might just be worth reminding the Commission that within the area affected by vibration and noise there are in addition to the laboratory such people as Business Research at Baldock which does

* See also p. 784.

Printed image digitised by the University of Southampton Library Digitisation Unit

advance work for the Admiralty, amongst other things, with extremely delicate instruments, including gyroscopes; this would be in an area of heavy noise. The Water Pollution Laboratory at Stevenage, and perhaps the most significantly affected, the Furniture Industry Research Association Research Headquarters, also at Stevenage. These are just an example of the larger establishments, but there may be other smaller private ones which I have not been able yet to take cognisance of.

Could I finally mention one last point. May I stress this is entirely in my capacity as an outside observer and not because my Ministerial responsibility includes the Scientific Research Council, but I would like strongly to support the evidence given to you on behalf of the Radio-telescopic Units at Lords Bridge.* There is no doubt that in the field of radio astronomy this country is far ahead of the world, and a four year disruption of their work might be vital to that lead.

Inspector Thank you. Are these any other questions of Mrs. Williams concerning her statement or her speech this morning? I have no questions. Thank you, Mrs. Williams.

That, as far as I can see concludes my programme for today unless I am corrected from the body of the hall. I am not to be corrected, so we adjourn until 10 o'clock on Tuesday morning next. We have Commission business in the intervening period. Thank you.

(*Adjourned until Tuesday morning at 10 a.m.*)

* p. 789.

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

TUESDAY 17 JUNE 1969

THE TOWN HALL, ROYSTON, HERTS

Before MR. A. J. HUNT

Oral evidence was taken from:

Cambridge University
(*Sir Martin Ryle and Mr. W. A. Allen*)

Cambridge University Gliding Club
(*Dr. W. F. Edwards*)

College of Aeronautics Gliding Club
(*Mr. D. W. McQue*)

Premier Travel Ltd.
(*Mr. E. A. Lainson*)

Royal Institute of British Architects
(*Mr. A. W. White*)

Council for the Preservation of Rural England
(*Mr. R. Body*)

Nature Conservancy
(*Mr. M. V. Labern*)

Stevenage Development Corporation
(*Mr. G. Berry*)

Mr. R. H. F. Parker

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector I think it is time to resume the hearing. There are one or two alterations to what I think will be the final day's programme. Mr. J. L. Logue, of Coopers End Farm, Duddenhoe End, Saffron Walden has indicated that he no longer wishes to appear. We will, of course, take his written statement* into account.

Secondly, the Stevenage Development Corporation have very kindly gone to the trouble of taking some recordings of ambient noise levels in Stevenage New Town, and also in the vicinity of Heathrow; their witness on this subject will be available to deal with that point later in the day.†

Thirdly, I have been approached by Mr. R. H. Parker‡ of 33 The Mier, Melbourne who has indicated he wishes to submit some evidence in support of the airport assumptions. I have decided to hear Mr. Parker, and he has submitted a statement this morning which we will copy as soon as possible and distribute as soon as possible. I will hear Mr. Parker at the end of these proceedings.

MR. F. LAYFIELD *called*

(*Cambridge University*)

Mr. Layfield My name is Frank Layfield, Queen's Counsel. I appear with my learned friend Mr. Trustram Eve on behalf of the University of Cambridge and the Cambridge Colleges Committee: those are Numbers 5 and 45 in the official list respectively. When your Chairman wrote to the President of the Board of Trade on the 24th February 1969 he included, as you know, in paragraph 6, the observation that, "The Commission looks forward to the assistance which it will obtain from evidence of a local character to be given at the public local hearings into all four short-listed sites".§ The University and the Colleges wish to put before you matters of a local character, and they have sought leave, and obtained that leave, to do so. But, in asking the Commission to consider the representations which they make to you today, they ask them to observe that while these representations are local in character in the sense, I think and hope, in which the Commission meant it and as your Chairman meant it in his letter to the President of the Board of Trade, those same matters are in some sense very important both from a national and to some extent an international point of view as well.

You will recall that when Mr. Mellor gave evidence and presented a proof of evidence¶ to you, in paragraph 5.01 of his printed proof of evidence he put this as his first statement: "The major singularity of Cambridge is its University." I hope Mr. Mellor will not think me guilty of any discourtesy to him if I endeavour to translate that planning phase into somewhat common place terms. As I understand that phrase he meant, and certainly we wish you to take the view, that the University is outstanding in the city and in its surroundings: among other things, because of the immense contribution it has made over the years to the academic, architectural, social, cultural and other aspects of the life both of the City and of the County, and this contribution in these and other fields have, of course, been recognised throughout the nation. For centuries past, since a time long before any body or organisation was formed who has or is likely to give evidence before you or before the Commission, long before that the University of Cambridge and its colleges have been intimately concerned with the care for what is now so euphoniously called "the environment". I hope you will think, and the other members of the Commission will think, that the result of that care over many centuries is very evident in Cambridge. In more recent times since the advent of land planning and similar forms of control in a legislative form have appeared the County, the City, the University, and the colleges have been constantly and energetically concerned, and I hope you will find effectively concerned as well, to see that the City and its surroundings remain a place in which it is a pleasure to work and live. There can be, and I hope you will think it right to say, very few places remaining in this country today where that can be said with such assurance that it is correct.

As you will know yourself, sir, and no doubt other members of the Commission will be aware, the County, City and University and Colleges have not always been at one on the details of how that care should be carried into effect, and have from time to time even not agreed about the methods, but I think they will agree, and I hope the Commission will accept that all these bodies have always agreed upon the aims, sir, which should be pursued in and around Cambridge, that they have always, and I hope and think the word "always" is correct, they have always been supported in that aim by the Minister of Housing and Local Government. There have, as you know, been many arguments about the way in which this environment should be protected, but so far it has been protected successfully with the support of the Minister. All those authorities, the County, the City, the University and the Colleges now all find that everything they have sought for and achieved in this University and City over centuries is now in a most real sense seriously at risk. It is not surprising in those circumstances, sir, I suggest, that they are all unanimous in expressing grave concern at the possibility of a Third London Airport being established in Nuthampstead.

Noting the wishes of the Commission, and recognising, I hope, that to repeat unnecessarily points already made to you does not give them any greater clarity or, I imagine, force, I do not intend to repeat the case put forward by what has come to be known as the Joint County Councils. We gratefully adopt what has been said on their behalf and, in particular, I want expressly to adopt what Mr. Douglas Frank on

* p. 733.
† p. 919.
‡ p. 920.
§ *Short list of Sites and Site Information for Stage II local hearings 1. Foulness (off-shore)* (HMSO; 6s.) p. 601.
¶ p. 630.

Printed image digitised by the University of Southampton Library Digitisation Unit

behalf of the Joint County Councils and his witnesses have to say. You will very long ago have appreciated a good deal of what they have to say must necessarily be the view of the University as well, and also the views expressed by Mr. Elven on behalf of the City of Cambridge. Nevertheless there is always the risk in any circles that mere adoption may seem weak support. We earnestly hope and sincerely believe that the Commission will recognise the emphatic support which the University gives to the case presented to you by the Counties and the City when I limit myself to saying I adopt their case.

Inspector I give that undertaking, Mr. Layfield.

Mr. Layfield I am most grateful, sir. I also wish to say I hope you and your colleagues will have in mind Lord Colville's remarks on susceptibility to noise in special concerns and in special places which are to be found set out on Day 3, pages 22C to 31D*—again I will not repeat those remarks, if I may I shall adopt all that is incorporated therein by reference. I shall therefore try to avoid repetition so far as possible and I am sure you will appreciate that I cannot wholly avoid reference to matters which have been canvassed before, but I shall keep them to the absolute minimum. Where I do touch on points that have been raised before it is because the University and the colleges consider those points have special reference to their interests in this matter.

Sir, may I begin their case by saying that the university and colleges well understand the magnitude, the complexity and the difficulties of the very formidable task which the Commission has to deal with. We fully appreciate the need for a third London airport and of its importance to the life and future of the nation. They recognise the need—indeed the duty—of the Commission in pursuance of that undoubtedly very onerous and complicated task to measure all those factors which are capable of any reasonable form of measurement and to estimate the costs involved in every aspect where costs can be measured. Indeed, as you will hear in a moment, that is among the things we shall ask you to deal with on our behalf as well as others. But they also hope and believe and they do put it forward as a point of the utmost importance that the Commission will never lose sight at any point in time of the fact that many things of high value in a civilised nation's balance sheet cannot possibly be measured. I know that it is easy to say that. I know it is easier as well for many who hear it to say: "Oh, but of course", in answer to that observation. It is, however, I suggest a melancholy fact that the post-war history of events in this country shows that very little regard has so far been paid to those considerations which are not so readily measured.

I mentioned that fact at the opening because you and your colleagues may think it was not accidental that when the President of the Board of Trade was making a statement in the House of Commons on the 20th May 1968 in which he announced the formation of your Commission he had this to say in column 33: "I shall direct the attention of the Commission to the following matters which are of special relevance to its inquiry: general planning issues, including population and employment growth, noise, amenity, and to the effect on agriculture and existing property; aviation issues, including air traffic control and safety; surface access; defence issues; and cost, including the need for cost/benefit analyses." You I know are more than familiar with those words, but I suggest it is by no means accidental that the President of the Board of Trade placed first in those the issues less susceptible of measurement including those of noise, amenity and general planning issues. This is perhaps a reflection of the growing awareness that these issues less easy to measure are of very great importance.

In our submission, sir, it is hardly possible to raise in more acute form the value to be placed upon the amenity than those raised by the combined objections of the university, city and colleges as indeed the evidence will show, now and I hope in the future, and I shall ask you to consider those aspects that concern the university in particular.

I imagine that you and your colleagues will accept as a truism that the university has always relied for much of the quality which it undoubtedly possesses, and will continue to rely if permitted to do so, upon the nature of its setting and its surroundings, and when I say its setting I mean of course the whole complex of buildings and establishments which I want to refer to in a little more detail later on which together make up the university and its immediate environs. Sir Winston Churchill once said: "We make our buildings and our buildings make us." Sir, as so often he embraced in one short phrase a sentiment of wide importance and significance. I take him to mean in that not only the buildings themselves but the whole of their setting. Sir, in Cambridge it is not only the beauty, attraction and convenience of the buildings themselves but the tranquillity and absence of disturbance and bustle, the avoidance of intrusive traffic and disturbance and the general harmony of the place which is of paramount importance to the university and those concerned with it, and which gives a very great deal of its unique quality to the town.

If I may at that point turn aside for a moment to a technical point but one of great importance and that is why I mention it here, the area has been free to date by modern English standards of electrical and electronic interference. All these essential qualities—and I hope you will think they are essential qualities—are placed at risk by the Nuthampstead proposal, in particular by three special aspects, and I put them in this form merely for purpose of analysis because they are, of course, to some extent overlapping and interrelated. First of all, it is certain—and I choose the word "certain" advisedly—it is certain in one most important aspect that the harm which the establishment of a third London Airport at Nuthampstead would do would be irreparable and grave. Secondly, it is extremely likely that very serious consequences would flow in respect of other aspects of life in the university. Thirdly, and additional to those first two points, there

* pp. 891–894.

Printed image digitised by the University of Southampton Library Digitisation Unit

is an important element of risk to everything that remains after those first two points have been exhausted.

I want if I may to comment briefly on each of those three particular aspects and I place them in that order merely in order of likelihood of harm occurring. I began those three by saying that there is one matter in which it is certain that in one most important aspect harm both irreparable and grave would come from the acceptance of a third London airport at Nuthampstead. Sir, that concerns as you know the Lord's Bridge telescope. Since the Second World War Cambridge under the leadership of Sir Martin Ryle in this respect has already a leading place in the world. That is a phrase easy to say but in this case literally true in regard to radio astronomy. The present Lord's Bridge telescope about which you will hear a little more later on has a greater resolution and sensitivity than any other in the world. A new telescope, secondly, on which work has now already begun, will extend that lead even further. Thirdly, numerous important scientific advances have been made as a consequence of the work done there. Eight of the most outstanding contributions—and it is only eight of the most outstanding—are noted in Professor Sir Martin Ryle's proof. They are of such importance that I would like to refer briefly to them. They appear on page 5 and 6* of his proof and he there notes that the most important advances in radio astronomy made at Cambridge have included: firstly, the first measurement of accurate positions of the brightest radio sources leading to their identification with optical objects; secondly, the first maps of the distribution of radio emission over the sun; thirdly, the first radio telescope having a collecting area of over one acre. With this telescope a survey of the radio sources in the whole of the northern sky was undertaken which is still the standard reference list throughout the world; fourthly, discovery of the scattering of radio waves by the outer atmosphere of the sun and also by the gas in interplanetary space; fifthly, discovery of the excess numbers of faint radio sources which gave the first positive evidence in favour of the evolutionary cosmological theories; sixthly, the first detailed mapping of the structure of radio sources; seventhly, the detection of the faintest radio sources some 100 times weaker than those detected at any other observatory; and, lastly, the discovery of pulsars. Sir, that you may think is a formidable list of achievements for any institution anywhere in the world with so short a history in point of time as that of the Lord's Bridge telescope and those associated with it. As Sir Martin has pointed out, this work here is some four years ahead of the rest of the world and it should not be supposed that these achievements are limited to the field of pure knowledge. As Sir Martin points out, the work of the telescope and its team is of the greatest practical importance to the country apart from its enormous contribution in the field of knowledge, and in particular you will note he has drawn your attention to its special importance and contribution in the training of scientists. Those are, I suggest, a formidable catalogue of achievements and qualities.

The dangers to that work created by the possibility of the adoption of the Nuthampstead site for the third London airport are six-fold and they all stem from the creation of sources of electronic interference. First of all, a plethora of possible and likely sources of interference—indeed in many cases one may say certain sources of interference—from the airport itself, that is the actual operation of the airport, the devices on the airport and those in aircraft approaching and leaving the airport. Those are dealt with by Sir Martin on page 14* of his proof. Secondly, those matters relating to the establishment of a new town in view of the services involved, the necessary electronic and electrical radio aspects of services there. Thirdly, the enormous increase in domestic sources of interference which that proposal would necessarily create in the form of a new town. Fourthly, as we think (and I shall return to this point briefly a little later), the inevitable growth in the villages around Cambridge at present very seriously restricted. Fifthly, the undoubted industrial growth and industrial growth of a special kind, namely that associated with airport and airport activities. Lastly, the inevitable traffic increase which must go with the whole of those proposals taken together.

Those factors will undoubtedly destroy the Lord's Bridge telescope as a workable entity. The only question on which there can be any doubt whatsoever is could the telescope and its staff, its team, its associated equipment, be successfully moved, and the operative word of course is "successfully". No one doubts that physically it will be very difficult and costly but could it be successfully? There are four reasons principally why in the view of the university that could not be done. First of all, may I emphasise the cost. Cost of course is not the main obstacle, it is an important one and we recognise that provided the necessary arrangements are made and provided the money was in fact, as distinct from theory, forthcoming in a bill the nation must face compared with some the cost would be a relatively small one, but nevertheless the money has to be found and the persons capable of doing the work. Secondly, there is inevitably very great difficulty in finding another suitable site because as you will see Sir Martin sets out not only in this memorandum but others the difficulty of finding this site in the first place, and certainly I think you and your colleagues will agree the situation has become no easier to find interference free sites in the ensuing years since this telescope was initiated. Thirdly, it will be inevitably extremely difficult to secure adequate protection and adequate confidence of protection in another site. Fourthly, and most important of all, this is why I stress the word "successfully" moved, the disruption of the work involved. It is not as I am sure you will appreciate what one might call a contractor's job, it is not just a question of rooting up a telescope and plonking it down somewhere else, because the

* p. 791.

* p. 793.

Printed image digitised by the University of Southampton Library Digitisation Unit

design and organisation of the telescope is something with which the team are undoubtedly concerned, and they cannot at the same time devote their work to progress and advance in the present field while designing and supervising the removal, erection and all the matters that go with the establishment of a new telescope elsewhere.

So for these reasons taken together the university has come to the view that there is no doubt whatever on present evidence that the disruption of the Lord's Bridge telescope would be a disastrous blow at the work being done there and that it could not successfully be moved. By that I mean that consideration of the facts available to us leads to the opinion that it is not possible to move the telescope and maintain the undoubted world pre-eminence and lead which the work presently enjoys. So it is in our submission correct to say that the adoption of the Nuthampstead site for a third London airport would destroy one of the very few realms where Great Britain still leads the world. For this reason alone a decision by the Commission to adopt Nuthampstead when its reivew is complete would be a very grave one.

The matter does not, however, by any means end there and I turn now to the university in general if I may under the second heading which I mentioned, namely the likelihood of general disturbance risks. This might be a convenient moment to mention briefly the maps displayed and if I may indicate first of all what they are. On your right is a 2½-inch map* showing the City of Cambridge and its environs, the area of the Lord's Bridge telescope and the land lying to the south, south-east and south-west. That is there because of course as you know the 2½-inch map has the contours and if any question of landfalls arises it is there for reference purposes. It shows (I hope in unembroidered form) the city, its nature and its size. Secondly, comes the map in the centre* which shows the lands occupied by the university for university and college purposes, that is to say those that are important to this exercise. I would like to take a moment there to comment on that. You will see in the centre of the map, the right centre, the central ring of colleges and university buildings clustered around the Cam in the old City of Cambridge. Then, sir, travelling outwards you will see the site first of all to the top left about eleven o'clock of that ring of college sites, of new colleges, and then the green line, that is the approximate alignment of the western relief road. In between that and the next green line you will see three large areas coloured pink, approximately speaking those are the university farm and two large areas to the south used for scientific purposes. Then comes another green line and that is the amended—and I ask you to note amended because it is important for the Lord's Bridge telescope—the amended line of the proposed western by-pass. You will notice just in passing how it swings well to the east of the telescope site and then to the left of that green line showing the alignment of the amended proposed western by-pass. Then at the top you will see two pink sites which are sites basically for scientific observation. Then to the extreme bottom right hand corner you will see coloured pink the site of the Lord's Bridge telescope and its immediate environs in roughly triangular form. On the north is a long red line. I think I am right in saying—Sir Martin will correct me if I am wrong—that red line shows the approximate alignment of the new 5-kilometre radio telescope. That I hope shows first of all the general siting of the university developments in and around Cambridge and secondly the relation of the Lord's Bridge telescope site to the land and the city generally.

Turning to the left is a more complicated map* and that attempts to analyse what one might call the inner ring. I mention these now because these are of considerable importance in evaluating the question of susceptibility to noise. It is easy to talk about university science sites, university laboratories, college chapels and the like, it is I suggest only when one sees them spread out on a map that one realises what a very highly vulnerable area this is. We shall ask you and your colleagues to look most carefully at that map when considering the university's objection to the Nuthampstead site. If I may indicate the contents of the key very briefly, because they give at any rate a bird's eye view straight away of what is at risk here, first of all coloured red are the university science sites. Secondly, coloured blue, are the university art sites, and left in the standard grey notation are the colleges. They stand out we hope sufficiently clearly to see fairly readily where they are. They have been described as the inner ring of colleges and they do group themselves around the Cam with one or two exceptions fairly regularly. Then next come the individual sites against that general background: firstly coloured in gold (no doubt significantly), are the laboratory sites—perhaps it is the philosophers touch-stone. Then coloured in orange dots are the college chapels; then coloured in green and in some ways most important of all, are the libraries because of their particular and continuing importance.

Incidentally, I should point out one site is a case where the notation is correct but can be a little misleading; if you look at the extreme left of that plan you see a large curiously shaped blue area with a little tiny green dot in the middle: that, strictly speaking is an art site, but the whole site is university. Then coloured in red, the rectangles, are University lecture rooms.

I am reminded I have omitted one, the solid green is administration. I do not pretend that is a thorough or effective connotation, but I hope it gives a general idea subject to later examination in detail.

It is against that background that we invite your Commission to say there is an extremely high likelihood that to use the Nuthampstead Site would lead to the general disappearance of a most important area, and here I would like to emphasise at the outset I am not speaking about the airport as such; it is not suggested the airport in this site as an airport would be relevant to this particular factor if it were taken alone, but as you

*Available for inspection, by arrangement, at the offices of the Commission.

*Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

and your colleagues will know one has also to have a mind to the massive town growth that must necessarily go with it. I say "town growth" because I intentionally wish to avoid the bland and soothing terms represented by phrases like "urbanisation", "urban environment", and matters of that kind which seem innocuous when presented sometimes in that form. What we have to envisage (and here the Universities adopt the Counties' evidence), what we have to envisage are arrangements to house something like 380,000 people not at present housed in this area. That is an enormous project by anybody's standards, and in some ways it is the most important aspect of this whole proposal because it brings with it enormous and significant changes, in the manner which the County have elaborated, I think, at length; I think I am right in saying that Mr. Kitching compared that growth to something of a town such as the size of Bristol. I realise it is not proposed, and not likely to be put in one, but the advent of a town of this size in East Anglia has only to be envisaged to see what a very serious matter it is. Mr. Kitching made it clear, and I think Mr. Mellor adopted his view it was likely something of the order of 76,000 people would be housed in existing towns and villages—that is a pretty massive project in itself; something of the order of another 100,000 people in Stansted area, and something of the order of 200,000 in the Royston–Shipworth Area—I say of the order of 200,000 because from the point of view of the Universities' submission it would not really matter if only one half that number were accommodated because if this proposal proceeds in anything like its envisaged form you would have to envisage a town nearly twice the size of Cambridge and its immediate environment within 9 miles. Even if that were 100 per cent inaccurate you would still have to envisage a town equal to the size of Cambridge only 9 miles away; whichever it turns out to be, or any variant of the 200,000 that is a massive proposal, and it is, I respectfully submit, inconceivable that anybody could think of that as other than enormously disruptive to the whole local community. As far as I know and as far as the University knows, it is a proposal wholly without precedent. I hope you will not find it surprising in those circumstances that the University views this aspect with deep concern first of all because to them it would represent the total reversal, and I really mean reversal, of all post-war planning policies for the area.

Normally private individuals and private groups of individuals are only concerned with planning policies in a somewhat limited sense, but the University and its colleges have been intimately concerned and deeply concerned and active at all stages in the formation of post-war land planning policy in this area; there is no matter of any consequence which has gone on in or around Cambridge which does not involve the closest consideration of planning issues involved by the University or the colleges or both of them, so that to say total reversion would be a very serious matter, in this case—it has not been an easy matter, as I am sure you know yourself only too well to maintain effective policies to keep this city and university in a condition in which everybody can enjoy it has been a strenuous and demanding exercise during every week since the war. To that general reversal one has to add the specific matter that it is, we respectfully submit, inevitable there will be a substantial increase in villages around Cambridge. It is quite out of the question to imagine it could be controlled at anything like its present level, and once you come on to development of this scale it probably would not be any longer desirable to. The effect of putting down a town twice the size of Cambridge within 9 miles would both be extremely serious for the life and future of Cambridge and the Universities. In particular I invite your attention to the fact it is likely to be worse in its effect in the early stages because with a town of say 200,000, in the early stages when there are inadequate services, social and cultural facilities in a town only 9 miles away, one can see what an enormous magnet it would be for traffic, shopping, cultural and social facilities, houses and all the rest of it—I need not enumerate them because I am sure they are clearly in your mind, but I do draw attention to the fact that in the early stages there would be this problem for this reason. Your colleagues might well say if the growth is going to be fairly slow there will be time to assimilate these facilities and observe them, but when you observe, as you undoubtedly must, that the major problems would come early on in the programme, that is the time when it is most difficult to assimilate them or deal with them readily. So, for those reasons, which as I say I hope I need not detail, I am sure you are well aware of them, clearly the effect on the life of this city and the workings of this city would be enormous. I am sure there is no doubt in your mind, but it is right I should put it specifically, that it is likely as far as the University is concerned it would be wholly unwelcomed. I do not say that just as an observation which any objector is bound to make to you, but you may think it is very well rooted in history, at any rate since the 1947 Act* was passed, the universities, colleges, city and county, have striven to prevent unnecessary growth. To repeat, growth—too much disturbance, too much traffic, and when they say such a danger is unwelcome, I hope you will feel it is well rooted in their actions, and attitudes in the past, which have of course been constantly and consistently supported by the Minister of Housing.

It would, I suggest, be wrong to leave this point without reminding you, if I may, of the observations made by Mr. Sharman that are to be found in paragraphs 2.2 to 2.6† of his proof of evidence; if I may just advert to them briefly, he says here the investment must be of so massive a scale that airport interest would always preponderate in the compromise reached between this and local restraint, and he takes that a little further in the next page, page 3 in paragraph 2.6 of his proof; he takes it in somewhat more jargon terms, but I think the effect is the same: "The logic of scale economies in infrastructure, provision of community facilities, and communications is likely to override any earlier policy decisions to restrict the

* Town and Country Planning Act 1947 (Ch. 51).
† p. 607.

Printed image digitised by the University of Southampton Library Digitisation Unit

effect in deference to local resistance, just as the interests of the airport development itself will preponderate in its immediate adjacent area." I do not know what the figure is here, sir, but it looks on the present showing as though it could be in the bracket of £500m to £700m. If it is anything like that magnitude, and after all, to build a city of 380,000 might swallow up most of that large amount, then I suggest it is clear that Mr. Sharman's point is absolutely right on both those aspects, that when you have envisaged as a notion that amount of money and, of course, you appreciate when you have envisaged it against the expressed opposition of the local interest in the first place (because in order to do so you must decide to override those interests to some extent), when you decide to spend £500m plus, then it is clear Mr. Sharman's two observations there are very well founded: they would override and preponderate, and up to a point, once the decision was taken that would be both inevitable and perhaps right once you determine to take such a serious step. I suggest any assessment of the effect on the future of a university of the Nuthampstead proposal which ignores those two observations by Mr. Sharman would be bound to be stigmatised as wholly unrealistic; the needs and wishes of one of the nation's, and probably the world's greatest universities would inevitably be of such limited weight in that context that they could in no way match the weight of importance of contribution which they could and do make to the nation's future. It would be a wholly disproportionate equation and one very much to the detriment of the nation's interest.

I mention Mr. Sharman's evidence on that point because in my respectful submission the consideration which he mentioned in those two paragraphs may be one of the most important single points made to the Commission anywhere.

I turn, thirdly, sir, to the element of risk remaining when those first two points have been dealt with. I hope you will think it is true to say that points which are obvious are often overlooked and more frequently undervalued. All those with any pretentions to knowledge or understanding when reminded much of the university's work requires quietness, and I am sure, of course, the Commission will not be so unthinking in its approach when they come to consider the question of noise from the airport, which is the third matter I wish you to consider. I hope they will recognise Mr. Allen's point specifically when he emphasises in his evidence, and I use his words: "quietness is an established requirement". The layout and design of the colleges, their position in relation to the town, the manner in which their rooms are used and themselves designed, their relationship to one another, their architecture, and the general layout of the university as a whole all echo the rule which is found here for centuries, that quietness is an essential requirement. I am sure the Commission will remind itself as often as is necessary that for academic work, for research and experimental work—and we can see for example how important that will be, if any reminder be needed, and heaven knows in this country we should not need much reminding of it: for religious example, and other studies and activities, for all these matters quietness is of great importance. But, to look at it geographically on the map which supports Mr. Allen's evidence, I hope that gives the local and topographical significance of what he says. In short, sir, as Mr. Allen points out, this university is a place which is highly susceptible to noise. We realise that the Commission may well point in their own minds to the NNI contours, and may I say we realise the great care that has been given to the preparation of the diagram *which the commission has produced; we realise and recognise that has a value as a general guide on the maps in that context generally, but what we invite the commission to have in mind when applying it to this very special case is that those contours are necessarily based upon highly dependent assumptions, quite small changes can have big effects, especially in this particular area, I say "particularly in this case" because I am sure the Commission know the diagram by heart. You will recall the University of Cambridge together with the City is cradled in two arms, at the north in the diagram what I might call the Melbourne Arm and the western Colville Arm. The University may think it is likely to be cradled in the arms of Medusa, but very slight changes can be critical. Secondly it must be treated with reasonable caution, much remains unsettled at this stage, among many other things the holding areas, the what I might call "hovering areas" as well may be of crucial importance to the university. Thirdly, I am sure the commission will accept, these contours are not all of themselves for the measurement of special places like a university, and you will remember Lord Colville had a good deal to say about that, and I do not propose to go over the ground in detail again. Against that background I hope you think it right the university apart from appreciating the gravity of the risk has also thought it right in that risky situation to consider the cost of soundproofing wherever it is possible within the university buildings, and particularly the ones marked on the map that seemed reasonable and feasible. Of course, if the risk should unfortunately eventuate, as you will hear the sum of money in the order of six and a quarter million pounds is the likely sum involved, but I want to add to that. Quite apart from that, the remedies would necessarily be highly destructive of the best aspects of university life, even if you had them done you would still have to be highly destructive of these aspects, especially when in the context of noise you realise to have reached this point itself, coupled with the effects which the prospect of some 200,000 people 9 miles away would also have shown its accumulative effect in that sense—I do not mean the noise is accumulative, but we get the general dispersal of it, the presence of it. I stress those aspects of noise, they among the risks are the ones that fall less in the order of reality at the moment, for not only is Cambridge a university and has a special case, but for the additional reasons which the architecture and layout of Cambridge point out in a very sharp form. I

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

hope it is true to say that post-war planning in particular has done much to encourage the precinct idea. I suggest it has arisen and been fostered because of the desirability to find somewhere where it is not so noisy and to try and preserve what was not thought necessary to preserve in the same degree in the past. The fact that the universities and colleges always placed emphasis on that gives added importance to this particular instance, and I suggest nowhere could you find the importance and value and development of the ideas behind the precinct idea more emphatically displayed than in Cambridge University. It would, I think, be an extreme irony of modern planning if in that place where the maximum thought and skill had been deployed in developing a precinct project, which in its terms had the greatest planning thought given, you should come to destroy it.

If I may summarise the three most important points we make, and I say "most important" because I am sure it will be appreciated in bearing in mind all that has gone before from the combined objections the three main and important points can be summarised in this way: First of all in order of likelihood of occurrence, first comes the fact, and I say it is a fact, that Nuthampstead would have electric effects, radio effects, which would destroy one of the finest post-war achievements of this country today, that unless there were some quite irremedial reason that would squander post-war intellectual heritage. Secondly, Nuthampstead would require accommodation for about 380,000 people of which something around 200,000 are likely to be sited very close to the present city and university. The effect of that aspect alone could have devastating effects on Cambridge, and on everything that the Minister of Housing, the County, City, University, and Colleges have laboured so long to achieve and maintain. I pause there to say you will recall from your own knowledge that there have been a number of important and extremely difficult disputes about the planning of Cambridge since the war, including places like Lion Yard. Ministers' letters of decision have been absolutely consistent in these matters in one respect, the importance of preserving free of traffic if at all possible the historic centre of Cambridge. Many have been disappointed in their proposals in pursuit of that objective, there have been many lengthy arguments, much money and time consumed in ensuring that protection is maintained. If those letters were read by someone who learned that Nuthampstead had finally been adopted as the site of the third London airport they could, I respectfully suggest, only assume that the British had become a people to whom the most civilised aspects of life could be sacrificed for matters of less importance. I say that because if there were no alternative to Nuthampstead the matter might be different, but so long as there is any reasonable alternative it would be a disastrous decision, it would show a wholly false scale of values, and particularly to this must be added the very real risk (though not yet apparent on the NNI drawing to us), the real risk of added aircraft noise. I say "added" because it would be added to the electric difficulties, radio difficulties, and general disturbances caused by a very large town near at hand. Nobody (and I especially include the Commission in this, I imagine they would agree), no one could be reasonably confident that Cambridge would not be endangered by a very small variation in the pattern of the aircraft movements, the runways and matters of that kind, holding areas, and those small variations in development could wholly change the noise pattern and disruptive effect in regard to this area in particular, because it clearly does stand to reason in this area in particular because it is manifest that it is an area particularly susceptible to noise. I would invite the Commission to say the risks are far too serious to be adopted here unless there were absolutely no alternative whatsoever of any kind.

Finally, sir, I respectfully ask the Commission at this early stage, and we well appreciate it is yet an early stage even though you have had more than a year's work, to have two things particularly in their mind when considering the particular objection put forward by this University and the colleges. First of all, sir, I ask them to consider most carefully the risks enumerated and their very special importance to the University of Cambridge, and in so doing, if I may respectfully ask them to have in mind, although it is really of the local character in the sense I think the chairman meant it in his letter on your behalf to the President of the Board of Trade, although they are local in that sense, they have national and international aspects of considerable historical importance.

Secondly, sir, I would respectfully invite them to say in their considerations, and in their final choice, that they will not allow these things that can be readily measured to dominate those that are less easy to measure but which may be of as great or greater importance and value to the nation's future than those that are more readily measured.

Now, sir, if I may I will call the evidence which we wish to present to you. First of all I will call Sir Martin Ryle.

SIR MARTIN RYLE* *called*

Examined by Mr. Layfield

3420 Sir Martin, your names are Martin Ryle. You are I think a Fellow of the Royal Society, Master of Arts, Oxford University, Honorary Doctor of Science to the University of Strathclyde, Holder of the Hughes Medal of the Royal Society, Holder of the Gold Medal of the Royal Astronomic Society, Holder of the Henry Draper Medal of the National Academy of Science, I think you hold the present appointment of Professor of Radio Astronomy in the University of Cambridge and you are I think a Director of the University. In addition I think you are about to be presented as Honorary Doctor of Science at the University of Oxford? — Yes.

3421 Sir Martin, you have already submitted your proof of evidence but there are one or two matters

* See also p. 790.

Printed image digitised by the University of Southampton Library Digitisation Unit

on which I wish your assistance about in connection with the proof. Could I ask you to turn first of all to paragraph 2.1 of your proof of evidence. There you tell the Commission that a yet more powerful telescope is about to be built on the Lord's Bridge site? — Yes, sir. The new telescope which we call the 5-kilometre radio telescope has eight parabolic dishes which are situated along a 5-kilometre line running roughly east and west.

3422 There is a map* behind you and it has a red line shown on it just north of your site. Just glance at it and tell us broadly speaking whether that shows for present purposes the alignment of the 5-kilometre telescope. — Yes. I should point out where the limits of the instrument will be, about here to about here. (*Indicating.*)

3423 I think next you were going to tell us about those reflectors, having told us there were eight of them. — Yes. Four of them are fixed, spread out along this line. Four more will be movable on a special rail track which runs on the edge of this line.

3424 Roughly speaking on the red line? — Yes.

3425 Have I correctly understood your map and the alignment of it, the site runs along part of a disused railway line? — Yes.

3426 What frequencies are you going to be operating on? — It is designed to operate on four of the internationally allocated frequencies in the range of 1400 MHz to 10 GHz, but the main programme of work will be confined to two of those bands on 2·7 and 2·5 GHz.

3427 It may be important to know what the time aspect will be once the operation of the telescope commences. Could you give us some indication of the way in which it will operate — The instrument is in fact operating exactly the same way as the present one does, and the principle of operation requires continuous 12 hour periods of observation of the same piece of sky, in some cases on 16 succeeding days, with the movable dishes in different places. The signals derived over this period of time are fed into a producer to produce the actual map of the area. Perhaps I could point out here that with this type of observation breaks in the continuity of the observation that might be caused by interference would normally require the complete day's observations to be repeated.

3428 So your period of operations has got to be a trouble free period to be effective? — Yes.

3429 Perhaps that might be a convenient moment to say what the purpose of the exercise is, in short compass. — Well, the new instrument is designed to produce radio maps of higher resolution showing finer detail of cosmic radio sources of many kinds.

3430 What sort of degree have you in mind? — It is perhaps convenient to compare it with what our own eye sees and we can express the detail which we see an object whether far or near in terms of angular measurement. In the case of the human eye it is about 60 seconds apart and the first radio telescope to achieve a better resolution than the human eye was in fact the 1-mile telescope which has a resolution of just over 20 seconds, that is you can see the structure three times finer than our own eye can. The new 5-kilometre telescope is designed to have a resolution of about 1 second, so it is some 20 times better in angular measurement and is in fact similar in detail to what you can achieve with the best optical telescope situated on the ground.

3431 Will there be a particular aim in mind for this new telescope? — Its prime purpose is to make detailed maps of the quasars and radio galaxies and many other sources such as supernova remnants with the objects of explaining the physical mechanisms which are taking place within them.

3432 You heard me a little earlier on say that there was a substantial lead in radio astronomical work with your telescope and the team who work it. What will be the position with this new radio telescope? — Well, there have been plans—rather preliminary plans —proposed in various parts of the world for instruments comparable in performance with that of the new 5-kilometre telescope, but none of these have got very far and to my knowledge none of them has in fact received funds. It therefore seems fairly certain that the 5-kilometre telescope will lead in the particular field which I have discussed for at least three years and quite likely longer. It might be worth adding that there are instruments being built now which will have a performance comparable to our 1-mile telescope, but none of these has yet been completed so already we have had some five years advance in the operation of an instrument of this size.

3433 Now may we turn next to paragraph 2.2 and 3.1 where you talk about the staff of the observatory and proximity to the university. It might be helpful I think if you were to indicate the sort of responsibilities which the staff of the observatory have in regard to the university which will give us some idea, at any rate in technical terms, of their links with the university. — The staff have to undertake various types of teaching, the normal undergraduate teaching in physics, giving lectures in physics; secondly, they have to be responsible for the practical teaching of undergraduate physics students and also in practical classes; then, thirdly, they have to supervise the work including the giving of lectures for our postgraduate students in radio astronomy, people who have their first degree and generally working for a Ph.D. degree, and giving lectures for those students is also part of their work. Then finally there is the less formal supervision of work of undergraduates again in physics.

3434 How many of the staff teach in that manner or teach in part or wholly in that manner? — We have seven university teaching officers and staff of the university and typically during term time each one of these would give something like three undergraduate lectures a week, and there is thirteen of these take

*Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

place on three different days. They would give perhaps 4 hours per week in an undergraduate practical class, this may be in one long session in one day or it may be two separate days of the week, and they would typically give 6 hours a week to less formal undergraduate supervision where you have classes of two or three. In fact, because of the crowded time-table which the science undergraduates have, these supervision sessions will nearly always have to be distributed over perhaps two or three days in the week. Finally, they will be taking part in one lecture a week in post-graduate work on radio astronomy.

3435 You said that applied to seven of your staff, do we have to have others in mind? — There are other staff members of the observatory who are more senior technical officers and the like who are more concerned with the operation of the telescope and who themselves take part in various types of courses in electronics and the supervision type of operation, but it varies a lot from individual to individual.

3436 That is the general pattern? — Yes.

3437 What about research students? — Research students have also in fact some teaching responsibilities apart from their own research because we have to rely on them for both demonstration work in the undergraduate physics classes and in this supervision work which plays such an important part in the Cambridge method of teaching. Normally a research student would take part in perhaps 4 hours a week of demonstrating in a practical class and 2 hours a week supervising undergraduates, and both these activities are regarded as an important part of their training as a research scientist, but of course they are also being educated and apart from the actual work at the observatory and the analyses and thinking about the results they obtain at the observatory they have to attend lectures in astronomy and radio astronomy and techniques involved. There are, for example, this year, an average of four lectures a week in regular courses of this kind together with about two less formal seminars, given often by visiting astronomers from abroad. Students would not necessarily be expected to attend all of these, but he would typically attend perhaps four of these sessions every week.

3438 A little earlier on you emphasised the period might be on separate days. This I think brings us to the point of physically what is the nexus between the laboratory side and the university from the point of view of teaching? — Yes. Of course the teaching must of necessity take place in the university because the same student might have to attend a lecture in chemistry or something following. The post-graduate teaching could be arranged so that the lectures on radio astronomy could take place at a remote observatory, but this is not in fact feasible because many of our lectures are attended by research students in optical scientific studies who would therefore have to travel out to the observatory to attend these lectures and also because many of the post-graduate lectures which we want them to go to in advanced astronomy are in Cambridge and it would therefore be impossible to work in the same sort of way as takes place in some observatories where research students stay for periods of several days or weeks at the observatory and then come in and do their teaching. This just does not work in practice.

3439 In terms of time distance of travelling for the staff coming to teach or taking part in demonstrations what do you put as the likely maximum time distance in travel from the university? — It is in fact very difficult to avoid having to be present at Cambridge. You could be away from Cambridge for one day if you arrange your course very carefully, which may or may not be practical. Frequently one has to be in Cambridge every day and we have adopted a maximum distance of 50 miles, which is feasible but only just, to take half the day.

3440 That is a travel of 1½ hours each way, something of that order? — Yes.

3441 Now may we move on to paragraph 3.4(c) in your proof. You are talking in this group of passages about freedom from man-made interference and in 3.4(c) when talking about the qualities which a site must have to be satisfactory you say it should include natural screening arising from local topography if possible. I was wondering if you would indicate what in fact that means in effective terms. — Yes. The point is a hill can provide useful screening from interfering sources on the other side. It is difficult to specify a figure for this because it depends on many things—the height of the telescope above the ground, the height of the source of interference above the ground and the shape of the hill as well as the frequency on which the telescope operates and the distance from the source of interference or the height at which the ridge of the hill occurs. I thought it was useful to in fact consider a special case because this is one which we have considered in great detail in the past together with the protection of the 1-mile telescope by the Barrington Hill to the south of it.

3442 Are they apparent on the 2½-inch plan* to your left or are they off that? — The observatory site is roughly where my pencil lies. The 1-mile telescope is about there and Barrington Hill's 2½ ft contours run like this.

3443 I think you choose that because that gives us some illustration of the general matters involved? — Indeed, and it was in fact one of the points which we were looking for in choosing that site in that it had this very important protection from the south where the Barrington Hill lies. Therefore we have done various calculations on this particular situation and in the case of the 1-mile telescope where the receiving point is about 90 ft above ground level compared with the Barrington Hill rise in height of about 150 ft and a distance of about 1½ miles from the telescope what we have done is to compute the protection given by the hill as a factor by which the interfering signal has been reduced compared with if the hill was not there. I

*Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

have in fact some numbers which have been worked out in this particular situation for signals arising from various possible sites, one at Orwell, one at Royston and one at Nuthampstead.

Mr. Layfield We have a short table*: it is a very small document which illustrates this point, and it might be better to hand in that table rather than follow it in the air.

Inspector Yes, it might be as well to do that.

3444 *Mr. Layfield* Could you perhaps summarise what the table shows? — It discusses two situations on different operating frequencies, one at 5 GHz, one at 400 MHz. On the 5 GHz the protection provided by the Hill for the sources immediately the other side in the position of Orwell is a factor of 1,000, in Nuthampstead only a factor of 4.

3445 Just pausing there, Orwell is shown on the 2½-inch map, first of all, is it not? — Orwell is here. (*Indicating.*)

3446 And it is perhaps also worth bearing in mind that somewhere in that area is the north-eastern corner of the possible new town? — Yes, so we understand.

3447 You are talking about an interfering source actually located in Orwell, not anywhere south? — Yes.

3448 That is the first one. Secondly? — At Royston the protection is only a factor of 40 compared with 1,000 because its screening is less effective for a source that gets further away. If you are behind a hill you get this higher protection.

3449 Is this because the waves have to bend back? — It has to bend through a higher angle.

3450 And Nuthampstead would give you a factor there? — Of only 4 because Nuthampstead is right on the edge of the high land and the screening is very small.

3451 Now then you turn to the second frequency. — The difficulty is that the waves bend round corners more, they do not follow a simple line of sight path, and the figures there are for a reduction of 200 for Orwell, 3 for Royston and very little, only about 1½, for sources at Nuthampstead.

3452 There is a marked difference between Royston and Nuthampstead, is there anything to observe in particular there about that sharp change between Royston and Nuthampstead? — This mainly arises because Royston is fairly low lying.

3453 I think you looked in this connection at Stansted to see what screening effect you had there. — At Stansted the calculation is more complicated because we have to deal with two separate hill lines and this gets rather more difficult to compute because of the simple models one uses which are not quite applicable, but it is probably greater than a hundred in the screening.

3454 You can compare that with 4 on the Nuthampstead site in the first line of the table?* — Yes.

3455 Now may we turn to paragraph 4.2. In dealing with the choice of the Lord's Bridge site towards the end of the first paragraph there on page 9 you say in ruling out the site situated close to Thetford that in particular the proximity of the air bases at Lakenheath and Mildenhall were such it made it unacceptable. Could you just add a comment on the effect in your view of those two air bases? — Yes. This particular site was at a place called Berners Heath and it is situated only seven miles from Mildenhall and 5 miles from Lakenheath. These distances compared with distances from the Lord's Bridge site of 23 and 27 miles respectively. The site at Berners Heath was in fact very good in a number of ways which I need not go into in detail now, but we were so concerned by the dangers of being so close to Mildenhall and Lakenheath air bases that we thought this was a risk we could not take and this was one of the reasons why we turned to the site at Lord's Bridge. For reasons of security one cannot discuss the details of equipment installed at these bases, but it is likely that interference would have arisen both from radar and telecommunication systems. One of course could make the point here that there are particular difficulties associated with military bases in that the equipment may be changed without prior warning to us and indeed information concerning it may be difficult to obtain at all; and, secondly, that the equipment may well change from time to time without any details becoming available. In the case of Mildenhall and Lakenheath there is an added complication in that they are used by United States aircraft and in some cases the G.P.O. who otherwise would be able to inform us may not in fact have information about the equipment on the ground or that being flown in the aircraft.

3456 It is right to bear in mind that when considering whether there were in fact any alternatives, all other questions apart the presence of military air bases in any area produces an area around it in which it will be impossible to find a suitable alternative site? — Yes, that is true.

3457 May we turn next please to paragraph 4.3 of your proof of evidence where you indicate that experience over the last twelve years has shown that the Lord's Bridge site is an excellent one. There is one matter on which I want your assistance there and that is how does the site relate to the nearest airway at the present time? — It is very favourably placed. In fact, there are three nearest airways. Our Red I whose centre lines is 28 miles from Lord's Bridge at its nearest point; the 39 which is of course lower density and has a central line 22 miles from Lord's Bridge at its nearest point, and Amber II which comes within 27 miles of Lord's Bridge.

3458 May I turn now to paragraph 6.3(c) which appears on page 795 where you talk about a major airport will attract industry and activities around it.

* p. 799.

* p. 799.

Printed image digitised by the University of Southampton Library Digitisation Unit

I would just like your assistance on one point and that is in relation to Stansted. How far is Lord's Bridge from Stansted and what trouble have you or would you be likely to have from interference from that quarter? — Well, Stansted is 22 miles from Lord's Bridge. We have had no interference at all from Stansted, but Stansted at the present has no radar. It has a landing system which is on a frequency which would not be expected to cause trouble and it has VHF in the air and on the ground.

3459 And in addition there are two lines of hills which I think you indicated a moment or two ago as well as the 22 physical miles as such? — Yes. The path is very much better than Nuthampstead and if you have the calculation we have made taking account of likely types of frequency you would not expect us to be able to detect interference.

3460 Of course the position might be very different if Stansted became a major airport? — Yes. The most serious problems might then arise from the radar which would have to be installed.

3461 Can you compare that with Nuthampstead in terms of distance and topography? — Nuthampstead is only 12 miles from Lord's Bridge and it is unfortunately situated on the top of the northern edge running through Royston and we therefore have only this one single screening effect of the Barrington Hills but unfortunately the screening they provide in the terms of Nuthampstead is much worse.

3462 Lastly I would like you to turn to paragraph 7.1 on page 22 and in this context I would like you if you would to say a word about artificial screening. You have been talking about the effect of screening of natural hills and the effect of height, could you turn for a moment to artificial screening and tell us whether it can be done and what sort of issues are involved? — In principle one could make an artificial screen either by earth moving and making a hill or by the construction of some high metallic screening wall. To be effective it must be both high and situated close to the telescope because this gives the largest bending angle which the radio waves would have to take, but of course for practical reasons you cannot have the screen near the telescope and similarly it would not be welcome if it was close to the airport. If in fact we were to obtain a screening factor of perhaps 100 at the highest frequency, say 5 GHz, the screen would have to be perhaps 50 ft higher than the telescope for places quite near, or say 150 ft higher, if it were placed at the edge of an airport which is probably technically unmanageable anyway. But for lower frequencies you have to increase the factor by about 3 because—

3463 Because of increased bending factor? — Yes. Well, clearly you cannot build this sort of thing immediately next to the airport. If they were close the telescope would be perhaps some 250 ft high, and would have to be built of a material if it were not earth of a wire mesh or something which must either be solid, so to say, a mesh not larger than a quarter of an inch square because otherwise radio waves would go through and, of course, the structure would be very considerable apart from its great height it would have to be of a length comparable with the instrument we are talking about, a 1-mile telescope, which we were considering earlier, would have to be used.

3464 The sort of screen for anywhere near the telescope would be something of the order of 250 ft high by about ½ mile in length? — Yes, it would have to be.

Inspector It would not be possible.

3465 *Mr. Layfield* No. I do not think the planning officer would be in a hurry to approve that. I do not think you have had an opportunity to consider what the cost would be of any sort of screen of that kind? — We did not think it worth while computing.

3466 Before we turn to the question of moving the observatory, while I am on 6.3, can we turn to 6.3(d), is there anything you want to add in the light of what you have heard since this proof was drafted about the alignment of roads in the Lord's Bridge site area?— We have been very much concerned with major road developments, and it was because of discussions with the planning officer that the siting of the western by-pass was diverted in the way it has been. Perhaps I can illustrate it on the map.*

3467 Yes, please. — This curve was introduced here so it would remove the traffic interference it produced up to this distance from the end of the new telescope. (*Indicating on the map.*)

3468 So it is in fact well clear of the western end of the new telescope? — Yes—The eastern end.

3469 I am sorry, I always get it wrong. I'm most grateful to you. Lastly, Sir Martin, can I ask you to deal with the cost of moving the observatory all other matters apart? — Yes. I think I should say that we will for the moment assume that there is an alternative site, but this is by no means certain. We gave in the document the lower minimum of about £3m.

3470 It is at the end of paragraph 7.3 on page 23. — Yes. This was based on present day costs, and the assumption we should be building a duplicate 5-km telescope at the new site. We said this was essential for two reasons: firstly that if one were to dismantle the 5-km telescope and move it it would mean there would be a three year break, and inevitably all our advance work, which as the document makes clear, would almost certainly destroy the group in its present form—quite a lot of the staff I suspect would feel it better to carry on doing radio astronomy elsewhere rather then spend three years on engineering activities. It further more does not save very much money because a large amount of the cost is in dismantling and re-erecting instruments, and the breakdown of £3m was roughly a telescope, this would probably cost about £2½m, the actual instrument, as it were; that would be rather more than the cost that it would cost now because the site is on more virgin land whereas we had this very fortunate coincidence of this rail track running

*Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

in exactly the right direction. We had to put down a figure of £200,000 for all the various services, providing power rods and all these things, and £300,000 for the extra buildings which would be required at a remote site, accommodation where people could stay who are observing, the necessary resident staff, engineers who have to live on the site, canteens and libraries, which would be essential for a site that is a distance from base.

3471 That figure, you say, relates to the 5-km telescope removal? — Yes, this would be as it were a first bill, but inevitably one would have to move other instruments as well; the 1-mile telescope would certainly have to be moved. Other instruments would have to be built; they are of a construction that some of them—well one would have to start again anyway, and this would add a further sum to what I have mentioned. There would also of course be a very considerable increase in running costs and there would have to be additional staff out there.

3472 It would have to be an independent site as distinct from a dependent site? — Yes. It would also not include what could be an even larger sum of money because in effect one has got to ensure that there is available money for compensation which might arise for owners of land in the neighbourhood who would be prevented from doing what they would otherwise be able to do. We have made no attempt to derive a figure for this, but it must not be forgotten.

Mr. Layfield Those were the only questions I wished to ask Sir Martin.

3473 *Inspector* Any questions to Sir Martin from the Joint County Councils? Any questions at all? Sir Martin, as you are well aware the Commission and its staff will be in touch with you over the ensuing months over this question of costs and details. There are one or two points I would like to put that puzzle me. The 5-km telescope being constructed across road A603, is the inference there that roads due to the sheer volume of traffic or to any particular types of traffic—what is the criteria for the standard of interference that is or is not acceptable? — It is largely and very much directly volume of traffic. A portion of this is the ignition interference from petrol engines, but much of it is also the troubles which arise from radio mobile equipment in police, breakdown and other services which do increase materially on motorways compared with normal roads, and it was this which we were concerned mainly about in getting the western by-pass moved. A further worry is that the A603 would become to a comparable level with a motorway in traffic capacity.

3574 You find the existing A603 no existing source of danger? — No, I would not say no existing source of danger, but you get brief interference from time to time with mobile radio equipment, mainly, but it is not of a duration and frequency which causes us serious trouble.

3475 Would this infrequent interference not affect your observation period? — It depends how long it is and also on the type of observation; the things which last less than 2 or 3 minutes can often be overcome.

3476 One more point. I was reading the local paper overnight, and I see the Royston–Cambridge railway line is to be electrified, is that correct? — We have heard this is a possibility; the distance of that, I think, is quiet satisfactory though, the separation of that.

3477 You mention 5 miles in 3.4(b) of your proof, is that the final distance you have in mind for an electrified line? — Yes, this is based on not terribly precise information, but we have figures available from Jodrell Bank where they have had a great trouble from the electric railway which runs very close to their telescope; they have been able to get British Rail to modify certain parts of the suspension system which has made it very much better. If it really was a trouble we could do the same here, but the distance is very much greater than in the case of Jodrell Bank.

3478 I think you will find it is much less than 5 miles. — Yes, it is, that is why we have to take these precautions which have been done at Jodrell.

3479 We have had representations from Decca at Puckeridge, they cause you no problems? — No, not to my knowledge. I cannot recall what station—is it an ordinary Decca? — Ordinary. Well, whether it is ordinary or not is more than I know; it is part of their system. — Decca gives us no problems at all, because the frequency is very low, and they have no harmonic—I think there could be trouble, but the ordinary Decca channels cause no trouble.

3480 Nor from the Post Office or whatever installation between Baldock and Royston. — That is only receiving.

Inspector Thank you.

Mr. Layfield Thank you, Sir Martin.

(*The witness withdrew*)

MR. W. A. ALLEN* *called*

Examined by Mr. Trustram Eve

3481 Mr. Allen, you are a Bachelor of Architecture, a Fellow of the Royal Institute of British Architects, and a member of its Council. In the field of acoustics you are a vice-president of the British Acoustical Society and a member of the Advisory Board of the Institute of Sound and Vibration at Southampton University. Do you practice as a partner in the firm of Bickerdike, Allen, Rich and Partners, architects, town planners and technology consultants, and were you retained by the County Councils of Hertfordshire and Essex in connection with their Stansted studies to advise on methods of protection and the consequent costs for schools and did you provide the data on these matters to which Dr. Owens refers in his evidence? — Yes.

---

* See also p. 800.

Printed image digitised by the University of Southampton Library Digitisation Unit

3482 Mr. Allen, may I ask you to look at page 4 of your evidence, paragraph 5, where you refer to the map which you have drawn called WA-1,* that was not sent attached to your proof but maps are available, and I ask for one to be made available to the Inspector.

Inspector I have got a copy, and I noted this error.

Mr. Trustram Eve You have had a copy in time to alter it before the inquiry, sir?

Inspector Yes.

3483 *Mr. Trustram Eve* I am not asking you Mr. Allen to elaborate on that then. All I would ask you to look at is page 4, however, at paragraph 8, where you give the hearing "Noise risks summarised", and you say that you are led to make two points, first that the university apparently could be in an area very sensitive to changes in the operational pattern or alignment of an airport developed at Nuthampstead, and therefore might find itself subjected to noise if these were made without consideration of its problems. That is to say, of course, the university problems, as I understand it, consequent on pattern risk is sufficient to justify, is it not, studying in further detail the problems the university can foresee if it had to protect itself from noise from Nuthampstead. Could you enlarge a little on what you have in mind here? — Well, as Mr. Layfield pointed out, the University and town of Cambridge lie between two areas of aircraft activity, take-off, and landing, and any modification, I think, of take-off and landing patterns, or holding patterns, of which we know very little at the moment, I think, in the area immediately to the north of the Nuthampstead site could affect Cambridge materially if they were not considered in relation to university problems. I would like, if I may, to make one addition to my proof of evidence, if that is permitted—can I expand my remarks on it?

3484 *Inspector* Certainly. — It seems to me that as airports develop, looking at Heathrow, Gatwick, the American airports, and many others, that in successive stages, as they approach the saturation of the utilisation of their present resources they lack the further means of increasing the efficiency of the utilisation of the airport, and what is predicted at any one time by "saturation" in use of an airport sometimes is shown not to be saturation if new methods are developed. The pressures to improve utilisation are, of course, always present, and I think over the years one sees an anticipated development in utilisation and congestion around airports. That is one thing. The other that occurs to me is this: while much of the operation of the major international airports at present is timed to take place during the day, the frequency at peaks in the morning and evening, the introduction of new aircraft, supersonic and airbuses, and so on, and other new types of aircraft which may well be projected in the future and lead to very considerable economic demands for principal use at quiet times in day hours, in order to keep them in use, and this could lead to very considerable pressures for extension into night-time usage which would very considerably alter the pattern of disturbance or the area of disturbance.

3485 *Mr. Trustram Eve* On the first point you mention, the efficient use of the estate which the airport would represent when provided here, have you in mind the point which Mr. Sharman made in paragraphs 22 and 26 of his evidence, which Mr. Layfield referred to in the course of his opening about the preponderance of airport influence once it became established here? — I think the evidence on operation of previous airports, I know both in America and in this country, is that that argument usually wins, not always on the first round, but on usually the second or third, and that is the experience. I think in the case of Nuthampstead, if there were to be declared a sort of protected air space for Cambridge I think this slow erosion would be indicated.

Inspector Thank you. The Joint County Councils?

Cross-examined by Mr. Keene

3486 The people who I represent are Mr. Allen's former clients, and I hope for that reason there is not going to be very much difference between us. Can you look at your paragraph 4 of your proof. At the bottom you refer to noise levels in the range of 55–59 dBA, and you go on over the page to talk about an agreement on this figure with the Education Officers of Essex and Herts. That, as you point out, is the noise level inside a classroom which should not be exceeded, the peak noise level? — Yes.

3487 Of course, it has always been the basis on which you and the County Councils have worked: that really means something like a peak of 70 dBA outside the classroom which should not be exceeded even with shut windows. — That is so.

3488 So in effect since those are the criteria Mr. Fleming has used in his tables, and since you have been working on very much the same standards for Nuthampstead, I think, as he— — Mr. Fleming and I collaborated for the studies, which we made in connection with Stansted, and we utilised the same data, I have ascertained from Mr. Fleming subsequently that only slight modification of that data has been used, and I have no reason to suggest a difference between us.

3489 And, indeed, as one would expect, your plan WA-1, which does put into effect this criteria for Nuthampstead, broadly correspond, I think, with Mr. Fleming's tables for schools in his 35 NNI, does it not? — That is so. The areas go slightly outside his 35 NNI as to the schools which he identified as requiring protection.

And looking at your map WA-1, we can see in effect

* opp. p. 800.

Printed image digitised by the University of Southampton Library Digitisation Unit

that these schools themselves are some few miles away from Cambridge itself. In effect what you are saying, as I understand the matter on page 4* of your proof is that there are dangers to Cambridge first of all which could result from possible changes in additional pattern of airport runway alignments, and so on? — That is true.

That is one of the first main points you are making? — Yes. I think Mr. Fleming says in his evidence he assumes in fact the desirability of bending now the take-off pattern slightly to the south-west in order to avoid Cambridge.

You are not criticising Mr. Fleming's criterion or his NNI as such? — No.

Finally, very much on the same point, on paragraph 24 of your proof, page 9, if you look at your third sentence, you say: "In my view we are concerned here, not with a conventional situation such as might be meaningfully interpreted in terms of NNI contours, but with one which should be evaluated on its own terms in the sense indicated". If I understand what you are saying there, you are not suggesting that Mr. Fleming has taken the wrong NNI contours, but NNI as a method is not really applicable to a quiet university city? — I think Mr. Fleming has defined very accurately the meaning which is to be attached to the NNI lines and of the basis upon which they rest. I think that we are lacking, however, improved evidence about accuracy of NNI computations, but they do apply to what he says broadly speaking to the experience of the day in respect of air sounds at the prospect of an airport in the vicinity and sounds of disturbance, the general annoyance which builds up over a time in that respect. I would like to suggest the circumstances in the quiet courts of a university are not identical with those which are experienced by normal population at large in relation to their television, and so on, which is what the NNI broadly relate to.

3490 I think you do confirm what I think: you are criticising the NNI as a method so far as Cambridge is concerned; you are not criticising those used by Mr. Fleming? — I don't think NNIs should be asked to represent more than they do in fact represent.

3491 I am sure we do not want to depart from that particular statement, it is something everyone would agree with. — Yes.

Re-examined by Mr. Layfield

3492 May I just ask one small point. So far as I understand the schedule attached to Mr. Owen's proof of evidence when read with the plans Mr. Kitching produces, his schedule EOII shows the nearest affected schools to the university to be Foxton Primary and Weston Colville C.E. Primary. — I think that is correct.

Mr. Keene: I would certainly agree with that for the County Councils.

(*The witness withdrew*)

Mr. Layfield Unless we can assist you any further, sir, that is all the evidence we wish to call.

Inspector Thank you very much, Mr. Layfield. I need not add, I think, or perhaps I should add, that of course the Commission will be in close touch with the University during Stage III and thereon in.

Mr. Layfield We are extremely grateful for the Commission making arrangements to enable consultations to proceed, and indeed the programming officer for fitting us in very conveniently.

Inspector Thank you, Mr. Layfield.

DR. W. F. EDWARDS* *called*

Cambridge University Gliding Club

Dr. Edwards Thank you, sir.

3493 *Inspector* Do you wish to add to your statement?

Dr. Edwards Yes, I would like to do so.

3494 *Inspector* Give your name and position, please.

Dr. Edwards My name is Doctor W. F. Edwards, I am a Fellow of Gonville and Caius College. I am a Master of Arts, a Doctor of Philosophy at the University, and I am a Member of the University Gliding Club. We sought leave to appear independently of the University for two reasons. First because we have a substantial non-university membership to the club which is entirely open. Secondly because our concern is in a matter which is not primarily a concern of the university and colleges. It is the question of air space. However, in the preliminary meetings to discuss procedure, in the minutes of that meeting, we read that complex technical matters such as aircraft control would not be appropriate for the Stage II hearings.

Inspector The word is "debated"; they are much too complex to be debated at this stage.

Dr. Edwards I take it I may amplify our concern about the air space restriction to which we would be restricted?

Inspector I would prefer you to allude to that without getting too deeply involved, because it can be followed deeply at Stage III. If you warn us we will take note.

Dr. Edwards As in the statement I submitted it is our feeling that very probably the activities of the Cambridge University Gliding Club would have to cease completely if the third London airport were to be sited at Nuthampstead, but we have in the absence of details of the limit of air space restrictions based our argument on the extent of the control shown at the present Heathrow London Airport. We would like to say that if the control of air space situation round Nuthampstead should that become the third London

* p. 800.

* See also p. 804.

Printed image digitised by the University of Southampton Library Digitisation Unit

airport were far more favourable towards gliding clubs than is the case round the present airports in the country, particularly London, Gatwick, and Manchester, then the force of our objection would be considerably reduced, and we would like to emphasise that the extent of control of air space round some of our airports is in our view (and I know I speak for the gliding movement as a whole here) far in excess of the reasonable requirements. I think it would be out of place for me to amplify what our view is of reasonable requirements for control of air space, but certainly were it possible to obtain an assurance that the extent of controlled air space round Nuthampstead would be reduced in comparison with the controlled air space round other airports then our objections would not be as absolute as I have indicated in my statement. I wish to submit to you a map* showing the present sites of the University Gliding Club which is in fact the map which was the appendix to the *Site Information for the Stage II Local Hearings* on which I have superimposed not only the sites which the University Gliding Club uses, but also the control zones of an equal area of equal orientation to the proposed runways as the control zones and both sites referred to in my statement which are used for the Gliding Club lie within that zone.

Inspector Are there any questions of Dr. Edwards? I well understand your position, you have made it clear and my advice is to get in touch during Stage III on this problem of air space and control zone or possible control zone. Thank you.

Mr. D. W. McQue† *called*

College of Aeronautics Gliding Club

Mr. McHugh I am David McHugh, Senior Technical Officer, Chairman of the College of Aeronautics Gliding Club. I have little to add to what Dr. Edwards said. We are some greater distance from Nuthampstead than he is but we have in our statement stated that we would be similarly affected by the air space restrictions. That would be inevitable, and the only thing I would like to mention particularly is that he has been rather optimistic, I feel, with his thinking that we will get one the size of London airport. If we get one the size of Manchester's control zone we are completely finished as well. I think that is about all I have to say, sir.

Inspector Thank you. Any questions? The same applies, Stage III.

Mr. E. A. Lainson‡ *called*

Premier Travel Limited, Cambridge

3495 *Inspector* Please give your name and your position for the purpose of the transcript.

Mr. Lainson My name is Edward Arthur Lainson, Master of Arts, Member of the Institute of Transport, Managing Director of Premier Travel Limited. We would like briefly to amplify the remarks which we made in our proof to the Commission, with your consent. We are neither for nor against Nuthampstead as an airport. We are a service industry and our task is relating to the movement of people. To some degree we are affected by all the four sites which have been short listed, but more especially that of Nuthampstead. The present position in north Hertfordshire is briefly this, that traffic has fallen very substantially in the past twenty years due, we say, to the decline in the number of agricultural workers and a decline in population. We have taken figures from the 1951 and 1961 censuses in Nuthampstead and the adjacent villages and in the case of Anstey there is a fall of 9·8 per cent in population, in Barkway 11·1 per cent, in the case of Brent Pelham 16·8 per cent, in the case of Meesden 3·6 per cent, in Nuthampstead itself 7·7 per cent, and the average figure for the five villages is a decline of 10·5 per cent. A sample census was taken nationally in 1966 but no information has been published regarding these five villages and presumably one will not get any further figures until the next census in 1971. It is rather surprising when you think of an area in the 35–40 mile radius from London to think there should have been a physical decline in population of 10·5 per cent in that period of ten years. It is certainly not a national characteristic.

We have tabled traffic loading figures for the years 1951, 1961 and 1967 on the services running in the Nuthampstead area and on the service from Nuthampstead to King's Cross which was withdrawn due to the lack of traffic in 1964 where we point out, of course, we are concerned with the operations to other airports including Birmingham.

3496 *Inspector* Mr. Lainson, as far as the Commission is concerned surely your points are two in number: first of all that you are neutral on the question of Nuthampstead being selected, and secondly if it is selected you can provide services?

Mr. Lainson Yes. We are very well placed to provide services on an extensive basis because we have the existing resources which are highly utilised immediately adjacent in the area. We also have no staff problems, most of our staff are good people, they are very long service and we could and would cope with a large increase in traffic if this airport were sited at Nuthampstead. In the case of the other sites, we are—

Inspector That is another day.

Mr. Lainson Yes. That is all I have to say.

Inspector First tier? Any other questions to Mr Lainson?

3497 *Mr. Beddington* I gave evidence on the first day, am I in order to ask a question? I would like to ask Mr. Lainson where he got his figures for the fall in population from, it seems to me they are highly debatable.

* Available for inspection, by arrangement, at the offices of the Commission.

† See also p. 805. ‡ See also p. 807.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. Lainson In the national censuses of 1951 and 1961. They were obtained by the Secretary of the Company at Cambridge. This is published information, of course.

3498 *Mr. Beddington* It would seem that they are now nearly nine years out of date.

Mr. Lainson The census is taken every ten years.

MR. A. W. WHITE* *called*

(Royal Institute of British Architects)

Mr. White My name is Albert Walter White. I have a Diploma in Architecture, Diploma in Town Planning, Fellow of the Royal Institute of British Architects, an Associate Member of the Town Planning Institute. I am the Chairman of the Eastern Region of the R.I.B.A. and it is in that capacity that I appear here today. We have presented to you a report which is as a result of a sub-committee's work and in that we have not endeavoured to be for or against the airport at this site, we have endeavoured as architects and environmentalists to draw attention to the points which we consider should be taken into account if the airport were sited in this position. That is all I wish to say, sir.

Inspector Thank you, Mr. White. Are there any questions to Mr. White? If there are no questions I have none. I have read your statement or the statement of your Institute. Thank you very much.

MR. R. BODY† *called*

(Council for the Preservation of Rural England)

Mr. Body My name is Richard Body of Counsel and I am appearing for the Council for the Preservation of Rural England. As you know, the Hertfordshire Society is constitutionally speaking the Hertfordshire Branch of the C.P.R.E. and you have already heard the evidence of Mrs. Tyrrell.‡ May I say straight away that the C.P.R.E. adopts every syllable of what she has said already and in particular we do share the concern that she expressed when I think questioned by you, sir, about the possibility of the development being in the Bishop's Stortford area rather than north of Royston. May I say with reference to that that from an amenity point of view we would regard any development there as being quite disastrous. In the first place it would swallow up an area which in the next review of the County Development Plan is going to be designated as an area of high landscape value. In that area are a number of villages all attractively named—Little Hadham and Much Hadham and so on which would fall within the area of a new town or just on its borders and all those villages are of a very high amenity value and quite a substantial part of it is going to be designated conservation areas.

The evidence that I propose to put before you, sir, is therefore not going to be restricted to Hertfordshire because as I say we adopt what Mrs. Tyrrell said so far as her villages are concerned, but we have Mr. Adams,* who is the Secretary of the Cambridgeshire and Ely Branch of the C.P.R.E., Mr. Dreschfield† who is Secretary of the Essex Branch, and thirdly Mr. Macfarlane‡ who is the Vice-President of the Council and his proof. Those refer you to a number of general planning considerations and I have to confess that Mr. Macfarlane, who I have just been reminded is on the Executive Council, not the Vice-President, is unfortunately not here, but you have his proof and I would ask you to give particular weight to the arguments that he does express in that proof.

Inspector I am quite certain that what Mr. Macfarlane says will not be challenged.

Mr. Body Then I say no more than that about it. It is the submission of the C.P.R.E. that this area is wholly incompatible with any kind of contacts which would embrace not only an airport, not only the industry that would be attracted to that airport but also the huge urban development that would be inevitable. Although it is not the concern of this Council to speak of the practicalities there is one comparison which I would put before you which you may find as horrific as I did when I first heard it, that the massive movement of earth that would be involved would be the the equivalent of the size of Trafalgar Square 2 miles high. Now that comparison does indeed given one some inkling of the scars that will be caused across the countryside and in the context of amenity I would invite the Commission to give some weight to that comparison and no doubt bear in mind that scars of that order would take many years to overcome.

It is the submission of the Council that the terrifying problem is not so much where the airport itself is to be sited but where the accompanying population of some 300,000 could be placed. Clearly one cannot give any precise estimate—and the Commission has already received even on this evidence varying estimates of 100,000 and 384,000—as to what that population may be, but whatever the estimate they cannot be absorbed into this part of England without a total loss of amenity and transformation of this part of the Home Counties, which is perhaps the last within this radius of London that has the tranquillity and high degree of amenity which it is fortunate enough to possess.

Every planning document has spoken highly of the merit of this area and the need to conserve it. One cannot reconcile its conservation with the urban sprawl that will come with whether it be 100,000 or 384,000 people, and if I must resurrect a saying of Victorian times the sight is too awful to contemplate.

That is the outline of the case the C.P.R.E. put before

* See also p. 808.
† See also pp. 811–817.
‡ p. 773.

* p. 811.
† p. 814.
‡ p. 816.

Printed image digitised by the University of Southampton Library Digitisation Unit

the Commission. As I say, there are three witnesses and first of all I would like to call Mr. Adams. His proof is before you. Perhaps it might be convenient if he were to give his evidence from here.

Inspector I was going to suggest this, that may I ask the hearing whether anybody wishes to ask questions concerning the evidence as circulated of Mr. Adams, Mr. Dreschfield or Mr. Macfarlane who is actually not here? Are there any questions concerning the proofs submitted by the witnesses for the C.P.R.E.? (*No response.*) Is that any help to you, Mr. Body?

Mr. Body They can be taken as read and I need not call them.

Inspector I think so.

Mr. Body Just one point that I did overlook and that is that when this inquiry began the outcome of the Great Chisell Inquiry had not been made public, but no doubt you are now fully aware of the conclusions and the arguments used by the Inspector on that occasion.

Inspector I have now read the Inspector's report and seen the Minister's Decision.

Mr. Body I am most grateful. May I particularly draw your attention to paragraph 3 and 4 which of course refer to the prospect of having a mere bagatelle of 10,000 people coming to South Cambridgeshire, and obviously those arguments apply *afortiori* to anything that is not less than ten times that number.

Mr. M. V. Labern* *called*

(*Nature Conservancy*)

Mr. Labern My name is Michael Vincent Labern, Bachelor of Science and Deputy Regional Officer to the south-east of England. I have nothing really to add to our proof, sir, except I regret to point out an error on page 5 which I feel we must put right before you submit this to the Commission. We give a list of sites of special scientific interest on page 5 of our proof and of these seven are not in fact yet formally notified to the County Council. If I could just read these out to you, sir: Ashwell Springs, No. 3, Biggin Moor, No. 7, Green End, No. 11, Patmore Heath, No. 16, Plashes Wood, No. 17, Wallington Chalk Pit, No. 25, and Watering-place Green, No. 26. I should point out that these sites will be notified in the near future, it is just a question of sorting out some of the ownerships which is causing delay at this particular point. Other than that I have nothing to add.

Inspector What is No. 20, Royston Erratic?

3499 *Mr. Labern* Royston Erratic is a large erratic boulder of possible Mill Stone Grit situated outside a public convenience in Royston.

Inspector I have noted that with great interest. Are there any questions concerning the statement on behalf of the Nature Conservancy? Thank you very much. There is this brief proof* from the Stevenage Development Corporation concerning ambient noise in Stevenage New Town as compared with the Heathrow area. Are there any questions concerning that?'

Mr. Layfield I don't think we have seen that. I wonder if we may see a copy.

Inspector In that case Mr. Berry had better just come into the box and deal with the matter just briefly, please.

Mr. Geoffrey Berry *recalled*

(*Stevenage Development Corporation*)

Questioned by the Inspector

3500 Would you mind just dealing with this point which I raised earlier in the hearing, please? — Yes, sir. In the initial proof† which I submitted on one page, page 4 I think it was, I suggested that Stevenage as a new town had been specifically designed with regard to amenity and that this resulted amongst other things in a lower ambient noise level than in regions which had been subject to fairly natural development and you did ask me if I had any evidence or whether I was just putting this forward as a proposal. I had to admit that I had no evidence and as a result I was instructed by Stevenage to make some measurements within Stevenage and within comparable areas in the general environs of Heathrow. This I did. I arranged for measurements to be made at ten points in Stevenage and at a number of points around Heathrow in the areas shown in the map of the Wilson Report‡ and described as Slough, Upney, and so on. These were residential areas and our findings were that there is in fact an indication that the ambient for Stevenage may well be about five or below that around Heathrow in residential areas of similar character.

Inspector Are there any questions concerning the two schedules or the evidence?

Mr. Keene Possibly, sir, I could work out the answer to this myself if I were to spend long enough at it, but perhaps it might be faster to ask the witness a question on it.

Cross-examined by Mr. Keene

3501 I notice you leave out of course occasional extraneous sounds such as children, passing cars, aircraft overhead. I am just wondering if you could tell us in language certainly that laymen and lawyers can understand what really the difference was in the sources of noise between Stevenage and the areas around Heathrow. — The difference is essentially due to the distances to principal roads and to secondary

* See also p. 818.

* p. 820.
† p. 664.
‡ Comd. 2056 (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

roads which carry a great deal of traffic. As you probably know, in the area around Heathrow there are a great many roads which carry traffic, not only the main roads but intersecting roads, which occur with distressing frequency. This means in this sort of area quite apart from anything that is happening within one's own household there is a general background of noise which emanates over a very wide area. This is the sort of thing that makes cities noisier than the country even when there is not much activity around.

Inspector Any other questions? Thank you very much for your further evidence.

MR. R. H. F. PARKER *called*

Inspector We have had your statement typed, as you see, and copies are being circulated but they will not yet have been read, so would you care to read very slowly through your statement, please.

Mr. Parker First, I would draw the attention of the Commission to the figures that have been stated by the Nuthampstead Preservation Association and press.

The affected area would be 240 schools, 40,000 acres of land, 17 villages, 65,000 workers and a new town of 400,000 people would be required. The airport would take fifteen years. These figures are very much enlarged and out of perspective. London Airport covers 2,718 acres of land 2·1 miles square. If the new site at Nuthampstead made 3 miles square, that is half as large again as London Airport.

Three miles square taken from the centre of the airfield at Nuthampstead. That is 1½ miles from the centre in each direction, would not reach within ¾ mile from Barkway, and the boundary of Langley in the opposite direction. That would give a 2¼-mile runway. There is not a school or church or A road or B road in that area of the proposed site.

Easy access to A1, M1, A10, A505, fast train service from Ware, Royston, Saffron Walden. I have been to London Airport and asked the workers where they lived, and they told me they lived many miles from the airport. A new town of 65,000 workers is absolutely out of all proportion.

The Association mention that it would take fifteen years to build the new site. M1 took just over five years and it covers 15,500 acres of land, which had to be redeveloped with new bridges and roads. I have seen by the posters, etc. the village of Melbourn would be affected. As the crow flies we are 15 miles from Nuthampstead and 20 miles from Cambridge. I have never seen reports of our Queen being disturbed at Windsor or the Palace, which is only 5 and 14 miles from the airport. The airport is only a few miles from the Oval, Twickenham, Wembley, Kew, Wimbledon, Ascot, Greenwich Observatory, not anyway a nuisance.

I have not seen any report of the Concorde noise to the inhabitants at the small town of Fairford, in the heart of the Cotswolds, which is only a stone's throw from the airfield. In fact, reports are coming to press that the noise of the Concorde is not any greater than the Boeing 707. By the time the airport is ready the noise may be much reduced. I trust that the Commission will realise the few people that will be affected. I lost a home and a business through the progress of a new school in 1951, but I was not so lucky as these people, losing their land. They will get market value compensation, I did not, as that law only came into being in 1957.

I speak for 650 workers who have been made redundant at Bassingbourn, aircraft maintenance men; 200 workers in a factory at Royston which has moved to Crawley. The airport at Nuthampstead would be a godsend to these men, for two-thirds come from the Anglian area where work is very limited.

The site at Nuthampstead would in my opinion and that of many other people be a boon for trades and workpeople.

I sympathise with the people that will lose their land and homes, but you cannot stop progress in any shape or form if we are to survive, not us, but our children.

I have not collected from anyone for the working man's point of view to be heard. I thank you, Inspector, for giving me the time and opportunity of speaking.

Inspector Any questions from the Joint County Councils?

Mr. Keene No, thank you, sir.

Inspector Any questions from other first tier authorities? Any questions from other local authorities? Any questions to Mr. Parker from any other persons?

Thank you, Mr. Parker. I have no questions. Thank you for coming.

That, I think, completes the list of those wishing to be heard at this hearing. I hope I am right. Apparently I am, yes. I feel that I should not close the proceedings without again thanking all those who came along to make their views known in an entirely restrained and dignified manner in regard to what is quite clearly an extremely contentious subject. I very much wish my visit to Royston could have been a more pleasant errand, but as a member of the Commission I can only repeat that the detail, material, and views we have collected will be considered most carefully in the stages which lie ahead. As to the unusual brevity of the proceedings I realise only too well that this reflects the great unanimity of thought about the assumption that has been put forward before you.

Finally, I would like to thank once again the Urban District Council of Royston, and that also applies to the Clerk, and members of the staff, who have managed to fit this hearing in at the same time as holding I think a very successful "Royston" Week. To all of you, thank you very much.

Printed image digitised by the University of Southampton Library Digitisation Unit

List of appearances

Mr. W. A. Allen
(*Cambridge University*)

Mr. M. A. Allflat
(*Welding Institute*)

Mr. H. C. Balfour
(*National Farmers' Union*)

Mr. H. C. Beddington

Mr. G. Berry
(*Stevanage Development Corporation*)

Mr. J. Bissett
(*Great Ouse River Authority*)

Mr. J. Blair
(*Stevenage Development Corporation*)

Mr. R. Body
(*Council for the Preservation of Rural England*)

Mr. H. Clay
(*Great Ouse River Authority*)

Mr. C. K. Cole
(*Luton County Borough Council*)

Mr. C. Colston
(*Stevenage Development Corporation*)

Lord Colville
(*Decca Navigator Co. Ltd; Hertfordshire Society and Messrs. Sharpe, Pritchard & Co. representing The Welding Institute, The Agricultural Research Council, Tube Investments Ltd; Chesterford Park Research Station*)

Mr. M. Connell
(*Bedfordshire County Council, Dunstable County Council, Ampthill Rural District Council, Biggleswade Rural District Council and Sandy Urban District Council*)

Miss O. Cook
(*Nuthampstead Preservation Association*)

Mr. Cowan
(*Luton Borough Council*)

Mrs. E. I. Cranwell
(*Nuthampstead Preservation Association*)

Mr. G. I. W. Dunford
(*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*)

Dr. E. F. Edson
(*Chesterford Park Research Station*)

Dr. W. F. Edwards
(*Cambridge University Gliding Club*)

Mr. J. Elven
(*Cambridge City Council*)

Mr. J. G. Eve
(*Mr. H. C. Beddington*)

Mr. T. Eve
(*Cambridge University*)

Mr. D. Frank
(*County Councils of Cambridgeshire and the Isle of Ely, Essex and Hertfordshire; Chesterton Rural District Council; Newmarket Rural District Council; South Cambridgeshire Rural District Council; Saffron Walden Borough Council; Saffron Walden Rural District Council; Hemel Hempstead Borough Council; Baldock Urban District Council; Bishop's Stortford Urban District Council; Hitchin Urban District Council; Hoddesdon Urban District Council; Letchworth Urban District Council; Sawbridgeworth Urban District Council; Stevenage Urban District Council; Ware Urban District Council; Welwyn Garden City Urban District Council; Braughing Rural District Council; Hertford Rural District Council; Hitchin Rural District Council; St. Albans Rural District Council; Ware Rural District Council; Welwyn Rural District Council; Hertfordshire Association of Parish Councils and Letchworth Garden City Corporation*)

Brigadier J. R. Fishbourne
(*Country Landowners' Association*)

Mr. N. Fleming
(*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*)

Mr. M. Gregory
(*Country Landowners' Association*)

Dr. G. D. Greville
(*Institute of Animal Physiology*)

Mr. J. E. Y. Hawkes
(*National Farmers' Union*)

Mr. D. Keene
(*County Councils of Cambridgeshire and the Isle of Ely, Essex and Hertfordshire; Chesterton Rural District Council; Newmarket Rural District Council; South Cambridgeshire Rural District Council; Saffron Walden Borough Council; Saffron Walden Rural District Council; Hemel Hempstead Borough Council; Baldock Urban District Council; Bishop's Stortford Urban District Council; Hitchin Urban District Council; Hoddesdon Urban District Council; Letchworth Urban District Council; Sawbridgeworth Urban District Council; Stevenage Urban District Council; Ware Urban District Council; Welwyn Garden City Urban District Council; Braughing Rural District Council; Hertford Rural District Council; Hitchin Rural District Council; St. Albans Rural District Council; Ware Rural District Council; Welwyn Rural District Council; Hertfordshire Association of Parish Councils and Letchworth Garden City Corporation*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. L. C. Kitching
(*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*)

Mr. M. V. Labern
(*Nature Conservancy*)

Mr. E. A. Lainson
(*Premier Travel Ltd.*)

Mr. F. Layfield
(*University of Cambridge and the Cambridge Colleges Committee*)

Capt. T. H. Luckock
(*Nuthampstead Preservation Association*)

Mr. R. Lymberry, Q.C.
(*appeared for the Stevenage Development Corporation*)

Mr. S. McArdle
(*Luton County Borough Council*)

Mr. D. W. McQue
(*College of Aeronautics Gliding Club*)

Mr. B. H. Mellor
(*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*)

Rev. L. Morris

Mr. T. S. Nardecchia
(*Nuthampstead Preservation Association*)

Mr. E. E. L. Owens
(*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*)

Mr. R. H. F. Parker

Dr. A. W. Pashley
(*Tube Investments Ltd.*)

Mr. W. D. Peters
(*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*)

Mr. L. F. Revell
(*Nuthampstead Preservation Association*)

Mr. D. Robertson
(*Nuthampstead Preservation Association*)

Sir Martin Ryle
(*Cambridge University*)

Mr. T. Sapsed
(*Nuthampstead Preservation Association*)

Mr. F. A. Sharman
(*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*)

Mr. D. E. Tanton
(*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*)

Mr. R. Trigg
(*National Farmers' Union*)

Mrs. N. W. Tyrrell
(*Hertfordshire Society*)

Mr. H. van Oosterom
(*Great Ouse River Authority*)

Mr. L. G. Vincent
(*Stevenage Development Corporation*)

Mr. D. J. Walker
(*Royston Urban District Council*)

Mr. D. B. Wallace
(*National Farmers' Union*)

Mr. N. Wallace
(*National Farmers' Union*)

Mr. M. Y. Watson
(*Nuthampstead Preservation Association*)

Mr. E. J. Welch
(*National Farmers' Union*)

Mr. A. W. White
(*Royal Institute of British Architects*)

Mrs. Shirley Williams, M.P.

Mr. E. F. Wisbey
(*Nuthampstead Preservation Society*)

Mr. N. Wise
(*Nuthampstead Preservation Society*)

Printed in England for Her Majesty's Stationery Office
by McCorquodale and Co. Ltd., London

HM 2665 Dd 147336 K16 12/69 Mc.C. 3309

922
UNIVERSITY LIBRARY
OP
9 MR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

OP. 1100. 120. 139

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings
Volume IV

Stage II: Local Hearings
Nuthampstead

LONDON
HER MAJESTY'S STATIONERY OFFICE
1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Commission on the Third London Airport

Members of the Commission

The Hon. Mr. Justice Roskill	(*Chairman*)
Professor Colin Buchanan	Professor of Transport, Imperial College of Science and Technology
Mr. A. Goldstein	Partner in R. Travers Morgan and Partners, Consulting Engineers
Mr. A. J. Hunt	Principle Planning Inspector, Ministry of Housing and Local Government
Professor David Keith-Lucas	Professor of Aircraft Design, the College of Aeronautics, Cranfield
Mr. Arthur Knight	Finance Director, Courtaulds Ltd.
Professor A. A. Walters	Cassel Professor of Economics in the University of London

---

Mr. J. Caines	(*Secretary*)
Mr. F. P. Thompson	(*Director of Research*)

The Commission on the Third London Airport
Templar House
81-87 High Holborn
London WC1

Tel: 01-242 0161

SBN 11 510158 6

Note
Pages 529–600 not used.

Printed image digitised by the University of Southampton Library Digitisation Unit

Preface

The Stage II Local Hearings are being published as volumes III to VI of the Papers and Proceedings as follows:

volume III	Foulness (off-shore)
volume IV	Nuthampstead
volume V	Cublington (Wing)
volume VI	Thurleigh

For the convenience of users the text and the drawings of the four *Site Information* booklets (previously published separately) and of the additional site information issued for the Thurleigh Hearing will be included in each part. The page numbers of the four volumes will run consecutively so that they may, if desired, be bound up together. As the four volumes that form Stage II are being printed concurrently, it has been necessary to allocate to each part a block of page numbers that will not overlap with the other volumes. Consequently there will be gaps in the pagination between one volume and the next. These pages will be indicated thus: pages: 273–300 not used. The question numbers in the oral evidence will also run continuously. After the issue of the final volume a separate index to all the Stage II volumes will be published.

This volume contains the record of the proceedings of the Commission's Stage II public hearings in June 1969 on the local implications of the Nuthampstead site. The oral evidence and the written proofs of evidence on which this was based are reproduced in full.

Some of those who were given leave to appear decided subsequently not to present their evidence in person at the hearings. The written proofs of the evidence which they submitted therefore fell to be considered together with other written representations. These proofs and the written representations are not reproduced in full. A list of the names of those concerned is given on page 823. Copies of all these submissions are available for inspection by arrangement at the Commission's offices.

The oral evidence is taken from the transcripts of the hearings. Such amendments to the transcripts as were notified have been incorporated.

The original maps and diagrams submitted to the Commission were not necessarily drawn with further reproduction in mind. Unavoidably, therefore, their consequent reproduction is not of a uniformly high standard.

Printed image digitised by the University of Southampton Library Digitisation Unit

Contents

	Page
Site information for Stage II Local Hearings, 2. Nuthampstead	601
Arrangements for Stage II Hearing on Nuthampstead	602

WRITTEN EVIDENCE

Day 1

Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils:
- Evidence of Mr. F. A. Sharman . . . 607
- Evidence of Mr. G. I. W. Dunford . . . 614
- Evidence of Mr. L. C. Kitching . . . 616
- Evidence of Mr. B. H. Mellor . . . 630
- Evidence of Mr. W. D. Peters . . . 632
- Evidence of Mr. N. Fleming . . . 635
- Evidence of Dr. E. E. L. Owens . . . 640
- Evidence of Mr. D. E. Tanton . . . 645

Luton County Borough Council:
- Evidence of Mr. C. K. Cole . . . 650
- Evidence of Mr. S. McArdle . . . 653

Cambridge City Council . . . 655

Royston Urban District Council . . . 656

Mr. H. C. Beddington . . . 658
- Evidence of Mr. J. G. Eve . . . 663

Day 2

Stevenage Development Corporation:
- Evidence of Mr. G. Berry . . . 669
- Evidence of Mr. L. G. Vincent . . . 673
- Evidence of Mr. J. Blair . . . 676

Nuthampstead Preservation Association:
- Evidence of Mr. D. Robertson . . . 677
- Evidence of Mr. M. Y. Watson . . . 682
- Evidence of Mr. T. J. Nardecchia . . . 685
- Evidence of Mr. T. Sapsed . . . 691
- Evidence of Mrs. E. I. Cranwell . . . 692
- Evidence of Mr. L. F. Revell . . . 694
- Evidence of Capt. T. H. Luckock . . . 695
- Evidence of Mr. E. F. Wisbey . . . 698

National Farmers' Union:
- Survey of affected farmers in Hertfordshire, Cambridgeshire and Essex . . . 699
- Planning evidence: Mr. J. E. Y. Hawkes . . . 703
- Agricultural evidence: Mr. D. B. Wallace . . . 712
- Evidence of Mr. R. Trigg . . . 714
- Drainage evidence: Mr. H. C. Balfour . . . 718
- Views of representative farmers . . . 720

Country Landowners' Association . . . 737

Mr. J. L. Logue . . . 739

Day 3

Great Ouse River Authority:
- Evidence of Mr. H. van Oosterom . . . 743
- Evidence of Mr. H. Clay . . . 745

Reverend L. Morris . . . 747

Printed image digitised by the University of Southampton Library Digitisation Unit

Chesterford Park Research Station: *Page*
Evidence of Dr. K. H. Jones 757
Evidence of Dr. G. F. Edson 760
The Welding Institute:
Evidence of Dr. R. Weck 764
Institute of Animal Physiology:
Evidence of Dr. R. D. Keynes. 768
Tube Investments Ltd.:
Evidence of Dr. D. W. Pashley 770
The Hertfordshire Society:
Evidence of Mrs. N. W. Tyrrell 773
The Decca Navigator Company Ltd.:
Evidence of Mr. H. G. Hawker 782
Mrs. Shirley Williams, MP 784

Day 4

Cambridge University:
Evidence of Professor Sir Leslie Martin 789
Evidence of Professor Sir Martin Ryle 790
Evidence of Mr. W. A. Allen 800
Cambridge University Gliding Club:
Evidence of Dr. A. W. F. Edwards 804
College of Aeronautics Gliding Club 805
Premier Travel Ltd. 807
Royal Institute of British Architects, Eastern Region 808
Council for the Preservation of Rural England:
Evidence of Mr. R. A. Adams. 811
Evidence of Mr. R. Dreschfield 814
Evidence of Mr. P. W. Macfarlane 816
Nature Conservancy 818
Stevenage Development Corporation:
Evidence of Mr. G. Berry 820

Written representations 823

ORAL EVIDENCE

Day 1

Mr. F. A. Sharman (*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) . . . 831
Mr. G. I. W. Dunford (*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) . . 833
Mr. L. C. Kitching (*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) . . . 833
Mr. B. H. Mellor (*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) . . . 839
Mr. W. D. Peters (*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) . . . 840
Mr. N. Fleming (*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) 840
Dr. E. E. L. Owens (*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) . . . 841
Mr. D. E. Tanton (*Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) . . . 842
Mr. M. Connell (*Bedfordshire County Council, Dunstable County Council, Ampthill Rural District Council, Biggleswade Rural District Council and Sandy Urban District Council*) 844
Mr. C. K. Cole (*Luton County Borough Council*) 846
Mr. S. McArdle (*Luton County Borough Council*) 846
Mr. J. Elven (*Cambridge City Council*) 847
Mr. D. J. Walker (*Royston Urban District Council*) 847

Printed image digitised by the University of Southampton Library Digitisation Unit

Page

Mr. H. C. Beddington 848
Mr. J. G. Eve (*Mr. H. C. Beddington*) 848
Mr. G. Berry (*Stevenage Development Corporation*) 849

Day 2

Mr. L. G. Vincent (*Stevenage Development Corporation*) 857
Mr. J. Blair (*Stevenage Development Corporation*) 859
Mr. D. Robertson (*Nuthampstead Preservation Association*) 866
Mr. M. Y. Watson (*Nuthampstead Preservation Association*) 867
Mr. T. S. Nardecchia (*Nuthampstead Preservation Association*) 867
Mr. T. Sapsed (*Nuthampstead Preservation Association*) 868
Mrs. E. I. Cranwell (*Nuthampstead Preservation Association*) 868
Mr. L. F. Revell (*Nuthampstead Preservation Association*) 869
Capt. T. H. Luckock (*Nuthampstead Preservation Association*) 870
Mr. E. F. Wisbey (*Nuthampstead Preservation Association*) 870
Miss O. Cook (*Nuthampstead Preservation Association*) 870
Mr. R. Trigg (*National Farmers' Union*) 871
Mr. E. J. Welch (*National Farmers' Union*) 872
Mr. H. C. Balfour (*National Farmers' Union*) 873
Mr. J. E. Y. Hawkes (*National Farmers' Union*) 873
Mr. D. B. Wallace (*National Farmers' Union*) 874
Brigadier J. R. Fishbourne (*County Landowners' Association*) 878

Day 3

Mr. H. van Oosterom (*Great Ouse River Authority*) 885
Mr. H. Clay (*Great Ouse River Authority*) 885
Rev. L. Morris 885
Mr. M. A. Allflat (*Welding Institute*) 887
Dr. A. W. Pashley (*Tube Investments Ltd.*) 889
Dr. G. D. Greville (*Institute of Animal Physiology*) 890
Dr. E. F. Edson (*Chesterford Park Research Station*) 890
Mrs. N. W. Tyrrell (*Hertfordshire Society*) 894
Lord Colville (*Decca Navigator Co. Ltd.*) 897
Mrs. Shirley Williams, MP 899

Day 4

Sir Martin Ryle (*Cambridge University*) 909
Mr. W. A. Allen (*Cambridge University*) 914
Dr. W. F. Edwards (*Cambridge University Gliding Club*) 916
Mr. D. W. McQue (*College of Aeronautics Gliding Club*) 917
Mr. E. A. Lainson (*Premier Travel Ltd.*) 917
Mr. A. W. White (*Royal Institute of British Architects*) 918
Mr. R. Body (*Council for the Preservation of Rural England*) 918
Mr. M. V. Labern (*Nature Conservancy*) 919
Mr. G. Berry (*Stevenage Development Corporation*) 919
Mr. R. H. F. Parker 920

Printed image digitised by the University of Southampton Library Digitisation Unit

ILLUSTRATIONS contained in the volume

facing pages

Day 1

FAS 2. Surface access links. (*Mr. F. A. Sharman, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) 672

LK 1. General plan. (*Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) 624

LK 2. Agriculture, amenity and recreation. (*Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) 624/5

LK 3(a). Existing and suggested urbanisation and communications: 4-runway airport. (*Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) 624/5

LK 3(b). Existing and suggested urbanisation and communications: 2-runway airport. (*Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) 624/5

LK 4. Contour plan of airport site. (*Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) 624/5

LK 5. Assumed growth of employment and population. (*Mr. L. C. Kitching, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*) 625

Day 2

Stevenage: population and NNI contours. (*Mr. G. Berry, Stevenage Development Corporation*) 672/3

Stevenage: schools, hospitals and NNI contours. (*Mr. G. Berry, Stevenage Development Corporation*) 672/3

Landscape: areas of great landscape, scientific and historic value. (*Mr. J. E. Y. Hawkes, National Farmers' Union*) 673

Commuting to the GLC area. (*Mr. J. E. Y. Hawkes, National Farmers' Union*) 704

Preferred growth areas. (*Mr. J. E. Y. Hawkes, National Farmers' Union*) 705

Day 3

GORA 1. Catchment boundaries, rivers, geological formations, groundwater contours and licensed sources. (*Great Ouse River Authority*) 744

Sites of the four research stations affected. (*Messrs. Sharpe, Pritchard & Co.*) 768

Failure of ammonia converter, Billingham, 1965. (*Welding Institute*) 768/9

TIRL 2. Distribution of different chemical elements in a cast iron sample. (*Tube Investments Ltd.*) 768/9

TIRL 3. Periodical atomic structure in a thin bi-metal film. (*Tube Investments Ltd.*) 769

M 6349. Position of the master transmitting station, English Decca chain. (*Decca Navigator Co. Ltd.*) 782

M 6350. Possible new airport sites relative to the Decca Navigator English chain of stations. (*Decca Navigator Co. Ltd.*) 782/3

M 6351. Terrain cross-sections between Puckeridge and the proposed runway ends. (*Decca Navigator Co. Ltd.*) 782/3

Day 4

Possible aircraft noise risk areas in the vicinity of Cambridge. (*Mr. W. A. Allen, University of Cambridge*) 800

Urbanisation map. (*Royal Institute of British Architects*) 816

National communications pattern. (*Royal Institute of British Architects*) 816/7

Fig. 4. Planning principles. (*Royal Institute of British Architects*) 816/7

Sites of special scientific interest. (*Nature Conservancy*) 817

Printed image digitised by the University of Southampton Library Digitisation Unit

ILLUSTRATIONS in attached wallet

Short list sites. (CTLA/5) (*Commission on the Third London Airport*)

Provisional airport plan. (CTLA/1) (*Commission on the Third London Airport*)

Noise and Number Index: 2-runway airport. (CTLA/2/2) (*Commission on the Third London Airport*)

Noise and Number Index: 4-runway airport. (CTLA/2/3) (*Commission on the Third London Airport*)

Day 1

FAS 1. Surface access links. (*Mr. F. A. Sharman, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*)

NF 1. NNI contours at 2-runway stage of development. (*Mr. N. Fleming, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*)

NF 2. NNI contours at 4-runway stage of development. (*Mr. N. Fleming, Essex, Hertfordshire, Cambridgeshire and Isle of Ely County Councils*)

CKC 1. Luton airport flight corridors. (*Mr. C. K. Cole, Luton County Borough Council*)

SM 1. Noise contours for Nuthampstead and Luton. (*Mr. S. McArdle, Luton County Borough Council*)

Anstey Hall Farm. (*Mr. J. G. Eve, for Mr. H. C. Beddington*)

Day 2

Nuthampstead: NNI: 2-runway airport. (*Mr. G. Berry, Stevenage Development Corporation*)

Nuthampstead: NNI: 4-runway airport. (*Mr. G. Berry, Stevenage Development Corporation*)

Roughway Wood. (*Mr. R. Trigg, National Farmers' Union*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

by

Essex County Council (*Mr. F. A. Sharman, and Mr. D. Jennings Smith*)
Basildon Urban District Council
Benfleet Urban District Council
Rayleigh Urban District Council

Witnesses were examined on this evidence
on Day One, Monday 5 May 1969
see pages 267-298

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Essex County Council

SUBMITTED BY MR. F. A. SHARMAN* †

1.1. I am a Chartered Engineer, a Bachelor of Science in the University of London, a Fellow of the Institution of Civil Engineers, and Member of the Institution of Highway Engineers.

1.2. I have practised as a civil engineer since 1940, and for twenty-three years I have been with Sir William Halcrow and Partners. This is a firm of Consulting Engineers employing some 350 qualified engineers, and having major responsibility in such projects as the proposed Channel Tunnel, the Victoria Line, and large scale construction projects in many parts of the world. I am an Associate of this firm.

1.3. I have been responsible among other works for the design of three airport runways and an airport terminal building, as well as for road systems, two motorways and a number of bridges. I am a member of the Executive Committee, and Honorary Secretary of the Regional Studies Association, an organisation devoted to the co-ordination of physical and economic planning on a regional scale. I was responsible for preparing a report on the location of the Third London airport by Sir William Halcrow and Partners for the Essex County Council and subsequently have been responsible for all work carried out by the firm for Essex County Council in connection with the location of the third airport, including giving evidence at the Public Inquiry on the proposal to develop Stansted as the third London airport,‡ and the preparation of the Second Submission to the Commission.§ I have also prepared and given evidence at the Public Inquiry on a proposal to extend one of the runways at Southend airport and at the Public Inquiry on a proposal to extend Rhoose airport.

1.4. I have been asked by the counties of Essex, Hertfordshire and Cambridgeshire to submit technical evidence relating to the local effects of siting the third London airport at Foulness.

1.5. Much of the investigation which my firm has done on this site is primarily concerned with comparisons between it and alternative locations, and is therefore not relevant at this stage. We have, however, of necessity tried to envisage optimum, possible, and probable layouts, taking into consideration the need to minimise noise and other objectionable effects on present and future residents in the area, along with the realization of development opportunities, and the over-riding need that the airport should function efficiently in all its roles. The precise positioning of the runways, the location of the associated development, the routes of road and rail links to London, and the road and public transport network between the airport, the airport employees' houses, and the associated service and other industries, are all matters which directly affect the impact of the proposal. Although none of these questions can be finally determined without much more detailed planning and design, it is felt that it will assist this Inquiry to indicate the choices which appear to remain open in various versions of the Foulness development included in the Commission's short list, and their consequential effects on the area concerned.

2. **Regional planning**

2.1. Considerations of regional planning are only relevant in the present context to the extent that they may influence the nature of the scheme and its rate of development. The establishment of additional industry and the growth of population in the Southend–Basildon–Foulness area does not conflict with any planning goals accepted by the major planning authorities concerned. It may reasonably be assumed therefore (since alternative expansion centres in the south-east are intended to provide balanced locations for inevitable growth of population rather than rival stimulants to such growth) that neither the pace nor the extent of development which might follow a decision to put the airport at Foulness would have to be restricted on regional or local planning grounds. This is important in itself, and justifies a prediction that ultimately it may be expected that something like three hundred thousand additional people would become established between the Crouch and Thames estuaries, eastwards of Basildon.

2.2. The extent of the airport's catchment, which is being studied on a regional basis, is significant in its influence on whether passengers will arive at the site by rail or road. Preliminary results of the study suggest that at first 26 per cent will find road quicker, while 74 per cent would choose rail if the most rapid journey is the criterion. On the assumption that the rail link is improved when it becomes profitable to pay for the full APT* standard, this proportion will quickly change in favour of rail, until at full development some 82 per cent of all who travel between central London and the airport will find rail quickest. The result of this prediction is discussed later in connection with surface link effects.

2.3. The other regional factor which should be considered is the effect, if any, of the proposed airport on the likelihood of major port facilities being added at

---

* See also the evidence of the Action Committee Against Foulness, p.137

† See also p. 273

‡ Stansted airport inquiry, 6-23 December 1965 and 5 January-11 February 1966. Minutes of proceedings of a public local enquiry. (W. B. Gurney & Sons, 39 Victoria Street, London SW1.)

§Essex and Hertfordshire County Councils. Statement on the proposed sites. October 1968. (Available for inspection at the County Council Offices, Hertford and Chelmsford.)

* Advanced Passenger Train (see paragraph 6.3.3.).

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness. The present inquiry is not concerned at all with the port decision per se, but if it were established that significant national advantage would accrue from the combination, those who are affected locally would be justified in regarding the airport as increasing the probability that they might have to deal with a port also, and their reaction to the airport would be accordingly influenced. It therefore seems pertinent to say that although air/sea transfer would probably be insignificant, there are considerable potential advantages in the sharing of rail and road distribution systems, since airport surface movements show well-marked peaks, which port traffic could be deliberately phased to avoid, giving a high utilisation of these expensive facilities. This is true, even though the airport links are primarily designed for rapid passenger transit to London, while the port requirement is for medium-speed connections to the road and rail network generally: there would be common use of the major lengths of the new and improved facilities, and airport freight traffic would have somewhat similar distribution requirement patterns to those needed for the port. Also there could be some advantage in the increased scale of certain common associated service and promoted industries. This is not to say that such hypothetical advantages would be decisive in fixing port location, but merely that, if other factors were evenly balanced, they might do so.

3. Timing of decisions, construction and development

3.1. These are matters of much concern to people affected, and certain aspects deserve comment from the technical and planning view points.

3.2. The following is a summary of chapter I of the Essex and Hertfordshire Second Submission to the Commission, giving reasons for estimating that the third airport is most unlikely to be a national necessity before 1976. Should lower air traffic growth rates be experienced, the need might be delayed by several years after that. This is illustrated on drawing FAS/1.*

> The forecasts of air traffic and available runway capacity discussed indicate that a third London airport will almost certainly be essential by 1981 on present knowledge, and using the highest assumptions of traffic growth, Heathrow and Gatwick might be becoming overloaded at peak times as early as 1976. Planning should be based on the need to provide in one way or another for a possible requirement for additional international airport capacity by that time, but this "overspill" date should be recalculated year by year. On the one hand the avoidance of the seriously damaging overcrowding delays such as New York airport experienced in 1968 is worth much effort: equally, premature decisions on siting and the expenditure of large capital sums in advance of corresponding benefits must be avoided. The optimum timing for each stage of relieving Heathrow/Gatwick either by temporary use of existing airports or by the opening of the third airport deserves careful analysis with a comprehensive balance sheet of costs and benefits covering all the years for which reliable forecasting is possible. The need would not arise before 1976 at the earliest and even if delays in the decision-making process delay the start of physical work so that the first runway at any of these sites could not be in operation until 1977 or 1978 the resulting strain on the capacity of London's facilities as a whole would not be intolerable.

3.3. Whether these views are accepted or not, preparations for the development would have to be started immediately after a decision to adopt Foulness. It may be hoped that layout design work will have continued in the interim, and that the right balance between reclamation costs and the avoidance of noise infliction will be ready. At this site, over the land areas, we are dealing only with lower levels of noise nuisance—imposed on thinly populated areas, but with some schools and hospitals requiring consideration in the built-up zones nearby. Small adjustments in the layout which may be necessitated as a result of the hydraulic model tests will not have any appreciable effect on areas already built up or required for new housing, though the effect on the NNI contour shapes could be quite large. Such effect as there may be can be countered by slight variations in the take-off flight paths.

3.4. There can be little doubt that the project will involve the establishment of a motorway and fast rail link on some such route as is indicated between the northern limit of the Southend built-up area and the Crouch, as well as the road extension from the north-east extremity of Southend to the airport. The technical criteria for this route will be much the same, however many motorway lanes and whatever form of track and stock are chosen, but the motorway on this route may or may not also serve as a collector for airport employees.

3.5. The location of the new housing and industry is for future decision and is dealt with by Mr. Jennings Smith in his evidence.*

4. Airport layout considerations

4.1. The Commission has drawn a presumed runway layout and the resulting NNI contours,† but has indicated that studies still to be undertaken may result in some modification.

4.2. Of the four principal factors affecting layout, only two, the noise effect, and the coastal waters situation, have a bearing on local objections. The other two, i.e. the construction cost, and the useability (wind and ATC) have an important influence on benefits and costs, and hence on the feasibility of the project and the comparison with other sites, but do not influence the local situation directly. It must, however, be pointed out that the process of dredging and placing the large quantities of sand required to raise the level of the airport area to a safe elevation is a very simple one and does not place any untoward strain on the reserves of the civil engineering construction industry which can concentrate its knowledge and capacity on the access roads and railway and manoeuvring areas of the airport itself.

* p. 9.

* p. 10.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.). Reproduced at p. xv. See also attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

4.3. Hydraulic model studies of the effect of the proposed reclamation for the off-shore airport on the regime of the coastal channels and estuary approaches are essential. There is no reason to suppose that reclamation of the areas required for the runways as positioned by the Commission would set up massive unacceptable changes in the silting and erosion patterns, such that shipping and coast protection would suffer. On the other hand, no responsible engineer would care to draw up detailed designs for the reclaimed area and the sources from which the fill should be dredged, without being guided by observations on such a model. It is possible that small shifts of position will be shown to result in disproportionate savings or extra costs, because parts of the perimeter may be protected from or exposed to higher-velocity tidal currents. It is also conceivable that the model might reveal that going beyond a certain point in off-shore reclamation becomes very expensive, so that an economically acceptable solution would be as close in-shore as possible—perhaps something like the "Shore" scheme indicated in the Second Submission.

4.4. Mr. Fleming, the noise expert who will give evidence later,* and Mr. Dunford of International Aeradio Ltd., who will also give evidence on possible flight paths and other air traffic matters,† have produced NNI contours for the four-runway situation, which is applicable to any plausible Foulness location for the Commission's runway layout. It is a simple matter to move a tracing of these contours about, so that the runways fit on to various possible extents of reclamation, and the consequent areas within the NNI levels can be seen.

4.5. Obviously one seeks to spare any habitations from even the 35 NNI level, but equally it would be possible to pay too high a price for doing so. It would be wrong to spend large amounts of the nation's money to prevent disturbance which is either less than any reasonable person can be expected to put up with as one of the ordinary hazards of living in this century, or which could be justly and completely compensated for at a lower cost. So, in anticipating the possible layout variations which may have to be considered, it is of importance to gauge just how much it is worth to twist or shift the airport in order to clear any particular area. On the basis that the 35 NNI line is as far as we need go in this avoidance procedure, it will be seen that a wide choice of position remains open, with a very small number of people living in areas rated at 35 to 45 NNI, and nobody at all at higher levels than that.

4.6. In fact, from a position wholly on Foulness Island, to the most seaward of the off-shore proposals, an alignment can be chosen for each position such that only a few settled areas are within the 35 NNI contour. All these optima are also acceptable from the point of view of useability (minimum excessive cross-wind component) and air traffic control. Some might produce objections from different quarters than others, but the total of valid objection, expressed as degree of disturbance times numbers affected, would be low and comparable in each case. These variations have in fact been studied and it has been found that the alignment and position suggested by the Commission appears to be the optimum from the noise and ATC points of view though the model tests may point out the necessity for some slight alteration. However flight paths different from those apparently adopted by the Commission will be suggested, with resulting improvements in the noise pattern.

4.7. With three other "noise" witnesses at the original Stansted inquiry, I agreed a schedule of expected noise incidents at a number of schools within one mile of the 45 NNI line at Stansted. Mr. Fleming has done a similar, but up-dated, exercise for Foulness, in relation to schools. This gives a good idea of the degree of noise exposure that may occur in the built-up area when air traffic has built up to the maximum level foreseen as possible. Generally, where maximum noise comes from aircraft still near the airport, one gets, just outside the 35 NNI contour, a large number of noises which can be heard, but not at an intrusive level, whereas further away, the conditions are more likely to be caused by a few aircraft which have fanned out from the main tracks and cause a relatively louder noise. In both cases, on the Wilson report* criterion, there would be less people giving aircraft noise as a reason for moving away from the area, than people who would move away to a better climate or for other reasons. Hence, from a layout point of view, I would consider it satisfactory to confine manipulations to the minimisation of habitations within the 35 NNI contour, with appropriate higher weightings against any exposure to higher levels than this.

5. Services and utilities (see map FAS/2†)

5.1. *Electricity*

5.1.1. The airport demand requirement is estimated to grow from about 5 to 10 MVA (Mega Volt Amperes) in 1976 to around 80 MVA by 1990.

5.1.2. The supply system would be developed in several stages to meet this growth. Routing of overhead lines, and underground cables, and their costs are dependent on appropriate consents and wayleaves. This is particularly true of the costing of the submarine cable crossing that will be required across the River Crouch.

5.1.3. In the first stages supply will be metered at 33 kV from the Fleet Hall 132/33 kV substation via composite overhead/underground 132 kV circuits operating initially at 33 kV. This system would be able to meet a demand of up to 30 MW. A maximum demand exceeding 30 MW would involve uprating the above circuits to their design figure of 132 kV, installing two 60 MVA 132/33 kV transformers at Foulness and making appropriate overhead line connections at Fleet Hall. A load demand of up to 45 MVA could thus be catered for by this predominately overhead double circuit route from Rayleigh grid. To provide for 80 MVA demand two additional circuits from Bradwell power station would be required direct to the Foulness substation via a submarine cable crossing the River Crouch. With Bradwell and Rayleigh grid substations

* p. 30.
† p. 27.

* *Noise: Final Report.* (Cmnd. 2056; HMSO, 19s. 6d.)
† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

closely associated with Rayleigh 400/132 kV substation, the system would have sufficient security. The question of meeting the demand for the airport's associated urban area poses a problem that the Eastern Electricity Board are unable to answer without reference to the Central Generating Board. An answer to these queries is being sought but until details are received no specific scheme can be described.

5.2. *Water supply*

5.2.1. The existing and at present proposed water supply schemes for the Southend-on-Sea region would be inadequate for the demand that would be made on it from the establishment of a new major urban area in the vicinity of Rayleigh and Hawkwell. A new supply scheme would be required that would be an extension of the present Ely/Ouse scheme. The Ely/Ouse-Essex scheme is being developed in two stages, the first of which is under way and will be providing an increased yield from the Abberton and Hanningfield reservoirs of approximately 24 MGD. This is sufficient for present needs and future foreseeable requirements up to 1978. It is proposed to introduce stage two of the scheme by 1978. The actual scheme, still under investigation, is dependent on either the availability of sufficient ground water or an increased storage capacity for the area by the construction of a new reservoir at Great Bradley, or a combination of both. Total yield by the instigation of this scheme should be increased by a further 50 MGD. The authorities are reasonably optimistic that the stage two development investigation will reveal the practical feasibility of the scheme and if so foresee no difficulty in meeting any demand made on water supply by the new urban areas and airport, except that it may require the scheme to be brought forward in time. In detail water could be drawn off the River Blackwater at Langford and pumped to an underground storage reservoir site at Althorne on the north bank of the River Crouch. From here distribution could be established to both the urban areas on the south bank of the Crouch and the airport itself.

5.3. *Sewage and waste disposal*

5.3.1. The airport, being adjacent to the coast, affords the opportunity of dealing with sewage in an efficient manner after only initial screening. The screened waste water can be pumped without further treatment into the Thames Estuary. The length of outfall necessary to avoid risk of the effluent being washed on to the nearby shoreline must be determined by current flow investigations which should be carried out during the hydraulic model testing phases. Storm water run-off can be effectively dealt with by collection and direct drainage into the sea through outfalls controlled by tidal flaps as a precaution against flooding by storm surges.

5.3.2. A much higher degree of treatment will be required for the waste water from the associated urban areas. Each area of urbanisation should have its own treatment plant adjacent to the River Crouch which will receive the treated effluent. To avoid pollution of the river a separate system of sewers should be laid and trade waste should be led into the foul water sewers after initial or specialised treatment at their place of origin, before being treated at the central plant. Storm water can be collected from convenient areas and in the separate system be transported directly without treatment to the River Crouch.

5.4. *Fuel*

5.4.1. British Petroleum can foresee no major problem in the pumping of aviation fuel to the Foulness site. Pipelines could feasibly be laid either from Shellhaven or the Isle of Grain. Costs for these schemes can be provided by British Petroleum (British Pipeline Association) and they are also prepared to provide comparative fuel costs at the alternative airport sites. It is envisaged that the line from Shellhaven will follow the coast line feeding a tank farm within the airport boundary. The costs of this line are expected to be less than a similar pipe line from the Isle of Grain due to the crossing of the main shipping channel that is necessary in the latter scheme. Alternatively, the fuel could be supplied by coastal tankers direct to a jetty at the airport and from there pumped to nearby storage tanks.

6. Surface transport

6.1. *General*

6.1.1. For the effective functioning of a third London airport at Foulness, it is considered that the absolute minimum new surface transport facility required when the first runway first comes into service will be a "semi-fast" rail link system between a town terminal to be created at St. Pancras/King's Cross, and the airport terminal building. This would give a travel time between the termini of 59 minutes. At the same time, and also as a minimum, the already-intended improvements on the A127 between Gallow's Corner and Southend should be elaborated and completed, and the link between Southend and the airport should be built to dual three-lane motorway standard.

6.1.2. It will always be quicker and cheaper to travel from London to Foulness by rail than by road. Using a zone-by-zone analysis of potential journey times from all United Kingdom air journey origins to Foulness, and assuming that third airport passengers decide on a rail or road journey to the airport purely according to which mode is quicker, even the 59-minute King's Cross/airport rail journey would attract 74 per cent of passengers compared with 26 per cent by road at 30 mph average, at the start of one-runway operations (assumed to be 1976). On this basis, the improved A127 would have adequate capacity until about 1980, by which time non-airport traffic growth would in any case justify the construction of a motorway to Brentwood on the route of Radial Route 7. This would be extended to Foulness, bypassing Southend to the north, as indicated on plan No. FAS/3.*

6.1.3. It is estimated that by 1981, air passenger traffic will require and justify the bringing into service of a rapid rail link service between King's Cross and the airport, using the Advanced Passenger Train system on improved and separated track along existing rail routes as far as Thorpe Bay, and thence along the new motorway route to Foulness. This can offer a 32-minute journey time, and will further bias the "modal split" toward the choice of rail rather than road.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

6.1.4. It is at least arguable that the best use of national resources would be achieved by encouraging the fullest use of the rail link. With increasing car ownership, the convenience of starting an air journey by car will affect an increasing proportion of travellers. But if at the rail terminal all worries about baggage transfer, time of arrival, short and long term garaging, meeting and parting arrangements and information on delays or diversions can be solved as effectively as they would be at the airport itself, few travellers would opt for the hazards and extra expense of longer independent road journeys.

6.1.5. It remains true however that the airport must have good road communications, and apart from departing and arriving air passengers, a very substantial volume of road traffic will require access from the motorway system, and particularly from the London ring roads, in addition to the large number of airport employees who will travel every day by car. Careful predictions of the future build-up of road and rail movement will have to follow a decision on the siting of the airport and the capacity and nature of the London terminal. For this present Inquiry, it is sufficient to say that the road and rail developments described in the following sections contain sufficient facilities for all foreseen expansions of the third London airport at Foulness, and that the expected predominance of rail travel will permit road capacity to be constructed in advance of need. It would seem reasonable that some assurance should be given to the responsible authorities that the additional airport traffic would be provided for in such stages as to minimise any load on sections subject to congestion by other traffic.

6.2. *Roads*

6.2.1. The first stage, to establish road communications with the site, would have to be the construction of a new road from the eastern end of the A127 near Prittlewell Priory, the north-east extremity of Southend, to the site. The Middleway Creek would be bridged, but at New England and Shelford Creeks, filling with culvert reliefs would be adequate. The final section to the airport terminal would involve tunnels under the west runways. This road would form a necessary permanent link with Southend, but even when the A127 has been improved, the capacity of this route to handle London to airport traffic would be limited.

6.2.2. The line shown for the main motorway and rail connection to the airport, from the west, passing clear of Southend, or some variation of this line, is bound to be the main feature in the layout as far as through-service road and rail intrusion is concerned. Whether the new settlements along the Crouch, and the existing built-up areas to the south, should be connected to this route at interchanges, or should rely on separate parallel roads joining at the airport perimeter, depends on much study of the possible programmes, layouts, modal splits for passengers and employees, and the economics of construction. The total number of traffic lanes required along this route, and hence the width to be reserved, is a matter for urgent study. These decisions will not critically affect the general principles and overall impact of the project: given that the main route must be developed, and that the extra population must be housed in roughly the pattern suggested, it will be clear in broad terms how the local interests are likely to be affected.

6.2.3. It may be asked whether the severance effects of the new road/rail route could be eliminated by resorting to overhead construction for both modes. This would involve very heavy extra costs, and over the length of route (east from the Basildon area) concerned in this Inquiry, appears quite unjustified. The number of bridge connections across the joint route is of course a matter for detailed design.

6.2.4. It will be a matter of concern that the A127, which is even now overloaded on some sections at peak periods, might become seriously congested if it had to carry airport-generated traffic during construction and pending the completion of Radial Route 7 and its extension to Foulness. Improvements to the A127 are already planned, but it is feasible to upgrade these improvements so as to provide dual 36 ft carriageways with limited access from Gallows Corner to the airport link road. Since the 1980 predicted non-airport traffic (one-way peak) on this route is 4,600 pcus per hour, the up-grading can be well justified in any event. For comparison, on the present tentative modal split calculation, air passengers approaching the airport by car would by 1980 have grown to produce only 475 pcus per hour. While total airport road traffic (other than local employees') will be greater than this, it is visualised that road planning and development of South-East Essex could ensure, without unacceptable cost or social disruption, that capacity is kept ahead of demand if the airport complex is established at Foulness.

6.3. *Rail*

6.3.1. The "semi-fast" rail link referred to in section 6.1.1. of this evidence (and which was also described in the Second Submission to the Commission) would use a route following the Hampstead line from St. Pancras on existing formation to Tottenham and Barking, where it would join the Fenchurch Street/Shoeburyness line (on existing track) to a half mile east of Thorpe Bay. New passing loops would be necessary between Pitsea and Benfleet, and between Westcliff-on-Sea and Southend Central. Thence it would be on new formation into the airport, in cutting to pass under the A13 and the Great Wakering/Shoeburyness road, turning parallel to the coastline, passing over the Middleway to Havengore Island, and then descending to enter the airport area in cut-and-cover tunnel.

6.3.2. Such a link would provide a frequent service of non-stop trains between its termini, with a reliable journey time of 59 minutes, and would have sufficient capacity to serve air passengers approaching and leaving the airport by rail, on the maximum air traffic growth assumption, until 1981. Existing rail services to the area would not be adversely affected, and would eventually benefit. After that, or any growth assumption at some stage, the rail link would require exclusive use of tracks adapted for the Advanced Passenger Train (APT).

6.3.3. The Advanced Passenger Train, which appears well suited to provide a service for the fast link to the third airport is being developed by British Rail at their

Printed image digitised by the University of Southampton Library Digitisation Unit

Engineering Research Centre at Derby. It is confidently asserted that this system could be operational by the middle 1970s. The special suspension system will allow the trains to travel at 125 mph on tracks designed for 90 mph, and maximum speeds of 150 mph can be attained. New formation, solely for the rail link to the third airport, will be required for the Advanced Passenger Train as with the expected increase in passenger movements in the 1980s and 1990s headways of two minutes or less will be necessary.

6.3.4. The APT tracks could follow the "semi-fast" route from St. Pancras to Pitsea. Some realignment would be necessary, if the full speed capability of the vehicles is to be exploited: where the route is shared with the Fenchurch Street/Pitsea line, new formation alongside existing track would have to be created, and existing stations would need extensive modifications.

6.3.5. From Pitsea, it would be possible either to lay new track alongside the "semi-fast" route tracks, or to cross the A13 at Bowers Gifford in cutting and to bridge over the A127 at the Wickford/Rayleigh railway to join the motorway route, which could be followed all the way to the airport.

6.3.6. If the "semi-fast" route were followed, new formation would have to be made alongside the Shoeburyness line, using spare British Rail land and bridges, originally provided for two extra tracks. Substantial modifications would be needed to eight existing stations and the section of the line near Southend High Street. The length of this route, from St. Pancras to the airport, is 53½ miles.

6.3.7. The comparison of these two routes shows that on economical, distance and journey time bases, the route passing through Southend is £4-£5 million cheaper, 3½ miles shorter and 1½ minutes quicker. However the modification to existing stations and the High Street at Southend coupled with the disturbances of high speed trains through densely populated areas may offset part of these advantages. The route north of Southend requires 22 miles of new formation, 11 miles of which will be alongside the motorway. The first 5 miles of this latter section is over hilly ground and provision may be required for the rail link to ascend and descend at a different gradient to the motorway by using retaining wall construction. However the maximum level difference is unlikely to be more than 5-10 ft. For the remaining 6 miles the ground is mainly level and no such construction would be required. The route north of Southend does not make use of the new construction from Thorpe Bay to Havengore Island but this access should be kept for commuters from Southend and for freight. The cost of this section is between £1½-£2 million.

7. **Summary and conclusions**

7.1. If Foulness is the chosen location for the third London airport, the adjacent areas will suffer very little from the adverse effects of noise, unwanted development, loss of amenity and usable land, and severance or displacement by new roads and railways. The layouts of approach roads and railways and of associated development areas present few physical planning dilemmas, so that adequate warning to affected occupiers, and, where appropriate, compensation arrangements, should be relatively easy to provide satisfactorily.

7.2. It is my opinion that, provided the project is planned on a sufficiently far-sighted scale, the construction of the third London airport at Foulness could meet the relevant air traffic needs of the next twenty years and more, and at the same time could fit in with rational development planning such as would bring national and local advantages justifying the investment involved.

SUPPLEMENTARY EVIDENCE BY F. A. SHARMAN

A. **Provision of sand and gravel supplies for airport construction**

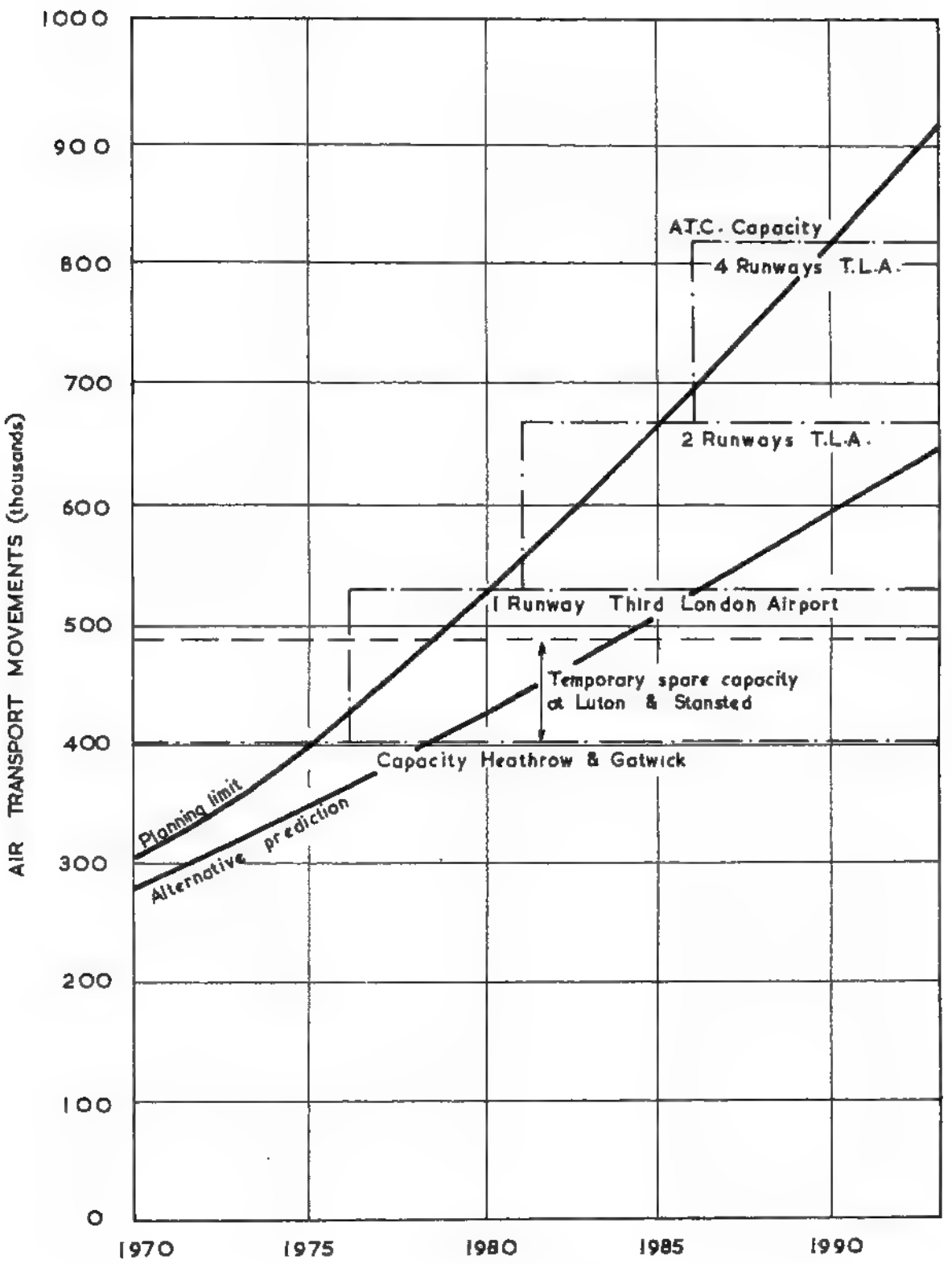
A.1. It has been estimated that the volume of approximately 1¼ million cu. yds. of aggregates for concrete and asphalt will be required in the first phase of construction of the airport to produce one runway with associated taxiways, hard standings, terminal buildings and other associated construction works necessary for the initial operation of the airport. For the final development the required volume of aggregates would total over 3½ million cu. yds.

A.2. If this very large quantity of material had to be found from inland sources, it would constitute a considerable strain of present and potential supplies in the area and it would give rise to a large volume of road traffic between the various sources and the airport area.

A.3. On present evidence it is reasonable to expect that a large proportion, if not the whole, of the requirement can be met by dredging marine deposits of sand and gravel from off-shore areas near the area of reclamation, so that the approach roads and resources would not be subject to this strain. It may well prove economic to use the same marine sources of supply for providing aggregates required in constructing the associated urban development.

A.4. During the construction period it must be expected that a large amount of building material and equipment will have to be transported to the site, but the possibility of supplying the principal bulk of material by barge direct to the area will greatly ameliorate the effect of this traffic on the local road system. Heavy materials required for sea-wall construction including cement supplies will almost certainly be most economically provided by sea and it is desirable that during the early planning stages of the project an assessment should be made to ensure the maximum utilisation of sea transport both in the interests of economy and to reduce the disturbance to the existing areas.

Printed image digitised by the University of Southampton Library Digitisation Unit



FAS 1. Stage development of third London airport. (*Mr. F. A. Sharman, Essex County Council*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Essex County Council

SUBMITTED BY MR. D. JENNINGS SMITH*†

I am a Chartered Town Planner and a Chartered Architect and have had 20 years' experience in the practice of Town and Country Planning. I hold the appointment of County Planner for Essex County Council.

1. Regional considerations

1.1. One of the most vital considerations in locating the third London airport is its implications for the South East Region as a whole.

1.2. This inquiry is, of course, concerned with "local implications" and this part of my evidence will therefore be limited to a brief comment on the connection between these local factors and regional planning.

1.3. The prime function of the airport itself will be as a transport junction to connect the London area to the rest of the world. It will augment the work of the two existing London airports. One of its main demands will be for good surface transport links to the London area. In itself, the transport function of the airport will have certain limited economic effects on the area immediately surrounding it, local population will have easier access by road to the airport than if it was situated elsewhere in the region, and local industries will benefit from the proximity of freight export facilities.

1.4. The consequences of the airport location, as an employer and a generator of economic growth of all sorts, is detailed elsewhere in my evidence. It is perhaps this aspect that has the greatest implications for regional planning.

1.5. Documents produced by the various public bodies concerned have made forecasts of future employment and population in the South-East, based on a continuation of existing trends. The total growth in employment is naturally a combination of expansion in some fields and contraction in others. A very high proportion will be accounted for by expansion in the transport employment sector and all forms of service employment. Of this, the Third London Airport and its associated service employment will in turn form a large part. From 1976 to 1996 the population estimated in Section 3 to be associated with the airport will form 12 per cent of the total population growth in the whole of the South-East as estimated by the Economic Planning Council. Thus in the Region as a whole, the airport's impact on employment is part of trends already anticipated. The important new factor is that this will concentrate a large part of the region's growth in one area.

1.6. Published documents on the South-East Region generally agree that new development should be concentrated in parts of the region; that these should be associated with the parts already developed, and that South Essex should be one of them. This is true whether the growth areas are seen as "corridors" (e.g. by the South-East Economic Planning Council in *A Strategy for the South-East** August 1967) or as separate concentrations (e.g. by the Standing Conference for London and South-East Regional Planning in *The South-East—a Framework for Regional Planning*† July 1968). Even 'new' towns such as Milton Keynes are seen as parts of specific areas of growth based largely on established settlements. Conversely existing large agricultural areas are proposed to remain open in order to preserve their agricultural and recreational contributions, and to clarify the function of town and country to the benefit of both.

1.7. It is not a question of nostalgia for existing patterns, but is a well founded approach. Here I merely propose to summarise its basis as illustrated in South Essex. Detailed consideration of other aspects are mentioned in other parts of my evidence.

1.8. The advantages to be gained from basing expansion on an already largely urbanised area come mainly from the contributions made by the existing structure and the new development to each other. These contributions cover the whole field of physical, economic and social facilities—housing, schools, shops, swimming pools, hospitals, entertainment, etc.

1.9. The contribution from the existing area relates particularly to the saving in the initial costs involved in locating development on a virgin site.

1.10. Most services required by a new community can only be fully used when a certain level of population has been reached, in many cases quite a high one. This creates the well-known dilemma of whether to incur a very high capital cost before it is needed, or to allow the first residents either to live without the facilities or to get into the habit of travelling elsewhere for them. In any area like South Essex, which has a large existing population, a whole range of economic and social facilities is already present. Extension or intensification of their use can cater for the new residents for some considerable time. Major new provision can then be programmed to ensure a continuous spread of investment. This is particularly true of services such as public utilities.

1.11. The new population will in turn make a contribution to the old. Any area where development has already taken place over a long time has some anachronisms in its structure. In South Essex this has created a rather diffuse pattern, and many parts do not belong to

* See also Evidence of Action Committee against Foulness p.137. † See also p. 283.

* HMSO, 15s.

† (LRP 1180). Available from the Standing Conference on London and South-East Regional Planning, 26 Old Queen Street, London, SW1.

Printed image digitised by the University of Southampton Library Digitisation Unit

any specific physical and social unit. The growth created by the airport presents an opportunity for a re-structuring of the area. Finally, the existing and the new development together would raise the population of South Essex over a threshold from which a whole new range of economic and social facilities could eventually be provided, such as perhaps, a teaching hospital, university, theatre, operatic and ballet companies. The benefits would thus be far greater than the sum of what could be enjoyed by the old and the new if they were not together. The investment required, especially in the beginning, would be less.

1.12. I consider therefore that the policy of concentrating new development into an existing urbanised pattern is soundly based, and that from a regional planning point of view, South-East Essex would be an appropriate area in which to locate new development. It is of course axiomatic that the airport itself should be located, as a large employer of labour, as near to the urban complex as possible but sited so that noise disturbance does not affect the inhabitants.

1.13. With the probability in mind that large scale expansion may well be proposed for South Essex in the future the County Council approved in 1967 a land use/transportation study of this area in co-operation with Southend-on-Sea County Borough Council, and the first results (testing the 1968 situation) will be available by December 1969, and the results of the test of the 1981 development plans by May 1970.

1.14. Finally it is important from a regional planning point of view that in locating a major employment generator an area for the associated urbanisation should be chosen that would be appropriate for growth in any event.

2. Employment benefits

2.1. The proposed airport, wherever its location, will generate a large amount of employment both directly and indirectly. This would be located within or adjacent to the airport and also in association with the supporting urban development.

2.2. In order to assess the likely total demand for land space, by reason of such urban development, the following method has been used:

Firstly, attempts have been made to ascertain the level of employment on the airport at a date when full development has taken place. *Secondly,* a figure for the ancillary employment connected directly with the airport but not necessarily located within the confines of the perimeter fence has been deduced. Examples of such employment would be occupations in hotels, catering industry, car hire firms, etc. Then as it is anticipated that the airport will tend to attract manufacturing industry and office development, a figure has been included to take account of this. *Thirdly,* the service employment always generated by reason of primary employment has been examined. *Finally,* the total employment has been converted into the likely resultant population.

2.3. The report by the Commission giving the short list of sites selected for further detailed study,* introduced terminology to describe the various types of employment which might be generated by reason of the airport. To avoid confusion the calculations used in the Hertfordshire and Essex Submission No. 2* have been converted to equate with the terminology used in the Commission's report.

2.4. "Primary employment" therefore means employment directly connnected with the airport. "Secondary employment" means those engaged either in manufacturing industry or commercial projects attracted specifically by the location of the airport. "Service employment" means those engaged in providing for the needs of primary and secondary workers and their dependants.

2.5. After calculating the employment requirements generated by the airport, an assessment has been made of the likely contribution that would be made by the location of the airport near an existing urban complex—in this case the area of South-East Essex including Southend.

2.6. This "contribution element" can be very considerable and therefore the resulting saving in costs of the infra-structure would be substantial.

Demand

(a) *Primary Employment—65,000 jobs*

2.7. The primary employment at Heathrow in 1966 was 37,000 persons, and in 1968 was 42,000 persons. It is anticipated by the British Airports Authority that employment at the airport will grow to 51,000 workers by 1971 and 62,000 workers by 1981. This is for a two-runway airport.

2.8. Other researches detailed in Submission No. 2 by the Essex and Hertfordshire Councils indicate that the likely range for primary employment for a new four-runway international airport was somewhere between a low estimate of 58,000 persons and a high estimate of 84,000 persons.

2.9. The Commission themselves have given, as their "best estimate", a figure of 65,000 employees for primary employment and this figure is used in subsequent calculations in this part of the evidence.

2.10. It is necessary also to estimate the likely proportion of male employees in primary employment as the calculation of resultant population will depend upon this factor. For this purpose an assumption of male employment of 80 per cent of the total has been used as far as primary employment is concerned. This is based on a proportion of male workers at Heathrow at the time of a survey carried out in 1966 (78 per cent).

(b) *Secondary Employment—21,500 jobs*

2.11. This is made up of two elements—(a) those ancillary uses which form an integral part of the Airport services but which may occur outside, but closely adjacent to the perimeter of the projected airport, and (b) those industries and offices attracted either directly by the services offered at the airport or by reason of the labour pool created by the new large urban complex.

---

* *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. xi.

* Statement on the proposed Sites. Oct. 1968 (Available for inspection at the County Council Offices, Hertford and Chelmsford.)

Printed image digitised by the University of Southampton Library Digitisation Unit

2.12. The first element has been estimated for Heathrow as being between 3,500 and 5,000 employees (in 1966). In other words between 9 per cent and 13 per cent of the total primary employment at that time. Similar services will be required near any international airport and therefore a figure of 10 per cent has been assumed for this purpose. Therefore, for the first element of secondary employment there would be 6,500 jobs.

2.13. The second element of attracted offices and manufacturing industry is more difficult to quantify as there is no direct Heathrow evidence to compare with it. However, it appears likely that the airport is to be a strong attraction for industrial development. Both the South-East Economic Council and the Standing Conference on London and South-East Regional Planning support this view in their submission* to the Commission. It is also submitted that to maximise the economic benefits of an international airport, a location where future industrial growth would not be inhibited would be desirable. South-East Essex has this advantage.

2.14. The only figures available for this element of secondary employment are based on American experience at various airports in the United States of America and indicate variables of between 10,000 and 70,000 employees. A further consideration is that air freight is playing an increasingly important part in trading activities and this factor might attract certain industries. However, a conservative figure of 15,000 employees has been taken. As the bias is assumed to be mainly male employment at the airport it is assumed that the type of industry likely to be attracted may well be largely female-employing. Thus a male employment ratio has been assumed of 50 per cent (rather than the 70 per cent male ratio usual for manufacturing industry). For this second element of secondary employment the calculation therefore is 15,000 jobs making a total for secondary employment of *21,500* jobs.

(c) *Service Employment*

2.15. By "service employment" is meant all those ancillary services such as schools, shops, laundries, garages and so on needed to support any given population. The method of calculating this includes service workers who meet the needs of the persons in primary and secondary employment and their families, and also the needs of the service workers themselves and those of their families. The number of service workers for any given situation depends on factors such as the average earnings of the primary and secondary workers, and the place of residence in relation to place of work. However, the number of service workers needed can be approximately calculated by means of an employment multiplier expressing the various ratios of employment. These vary within the various sub-regions of the South-East of England between 2.0 and 2.5. The preponderance being at the higher end of the range. The comparable figure for Heathrow is 2.66 and for the fourth New York airport is 2.44. I have assumed an eventual ratio when full development of the airport has taken place of 2.5. During the build up of the airport and because the development of service employment tends to lag behind other forms of employment, a multiplier increasing from 1.5 to 2.5 would be appropriate.

2.16. It would not be reasonable to assume however that all of the service workers will be locally employed or housed, and a proportion will be located elsewhere in the region. Therefore 20 per cent has been deducted for this reason.

2.17. The male : female ratio in service employment has been taken as the usual 50 per cent.

2.18. Using the methods previously detailed, the following can be calculated:

Total employment at end-date (taken to be 1996):

	Totals	*Males (%)*	*Males*	
Primary	65,000	80	52,000	
Secondary	21,500	50	10,750	
	86,500			62,750
2.5 multiplier = 216,250; therefore service workers = 129,750 less 20% i.e. 26,000 regionally located	103,750	50	65,000 less 13,000	52,000
Total employment	190,250			114,750

Supply

Contribution that South Essex could make to Airport Employment

2.19. Owing to the particular nature of the Southend and South Essex areas and because of the considerable population which already resides there a calculation has been made that some 25,000 jobs could be counted against total requirements by persons who either at present reside in Southend and South Essex, or who could be accommodated in the existing stock of dwellings. Such a contribution which could be made within the early years of the life of the airport is invaluable as infra-structure costs represent a very important element of the total costs involved.

2.20. The basis for this assumption of *25,000* jobs is as follows:

2.21. (a) *Unemployment in the Southend Employment Exchange Area, say 1,200*

The Southend Employment Exchange area covers the whole of Southend-on-Sea and most of the Rochford Rural District. In the exchange area, there are 1,300 persons unemployed in summer, including those probably unemployable. In winter, the total number of unemployed may rise to about 2,700 dependant upon weather conditions, some of the increase being due to laid off building construction workers. The airport would, however, provide some 1,200 additional workers from this source available for work on the new Airport itself.

2.22. (b) *Reversal of Commuter Flow, say 6,750*

From the workplace tables of the 1961 Census it has been found that 19,190 male workers commuted from the sector under consideration towards the west probably to London. Taking the *rate* of population increase expected in the development plan as the possible rate of

* Reprinted in: Commission on the Third London Airport *Papers and Proceedings, vol. 1.* (HMSO; £4 10s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

increase in commuters, it is estimated that a total of some 25,000 male workers will commute towards London by 1976 from within a 10-mile radius of Foulness.

2.23. It seems reasonable to assume that at least 20 per cent of these workers would be attracted by office and other employment available at a large airport. Thus about 5,000 workers could be available from this source.

2.24. Outside the 10-mile radius but within the 20 miles limit from Foulness the 1961 Census indicated that some 8,400 male workers commuted from Canvey Island and Basildon Urban District to London, Kent, Middlesex, Surrey and the Metropolitan area of Essex. Taking the anticipated rate of population increase in the area a comparable rate of increase in commuting would mean there might be 17,500 commuters by 1976. An Airport nearby offering employment could be attractive to some workers and it has been assumed that 10 per cent of the male commuters (1,750 male workers) could be attracted to the airport from this area.

2.25. (c) *Transfer of Workers at present at Southend Airport 2,000 Male Workers*

It has been assumed for the purpose of this calculation that if a new airport is built at Foulness that the Southend airport would either be closed or so reduced as to employ little labour. If this assumption is incorrect then this amount of "contribution" should be deducted.

2.26. (a) + (b) + (c) totals 9,950 primary and secondary workers. Therefore using 2.5 multiplier this is about 25,000 total workers contribution. This contribution to the total employment requirement can be made before 1981 during the early critical years of the airport build-up because:

(i) the airport workers at Southend airport are there already
(ii) the unemployment figures relate to the current position, and
(iii) the reversed commuter flow calculation only assumes the number of workers likely to be commuting from the area in 1976.

3. Housing Requirements

Introduction

3.1. It is obvious that the large employment generated by an international airport will in turn require considerable urban expansion. It also follows from the previous argument used in this evidence that the amount of new urban development will depend on the ability of any area to make a "contribution" towards such needs from the existing stock of hourses and other services. The siting of an airport near to an area already substantially developed will produce a "bonus" in this direction as explained in a subsequent part of my evidence. This "bonus" occurs in the Foulness area and it seems likely that existing facilities and services are likely to suffice until about 1981. This represents a considerable saving not only in terms of money but also in capital resources in the early years of the airport development when other costs such as those for initial construction purposes are likely to be very heavy.

3.2. *Scale of Associated Urban Development–392,000 persons*

The total employment within the 20 mile catchment area calculated in the "employment benefits" section of this evidence shows that some 190,000 jobs are likely to be created, and of these over 114,750 would be male employees. It has also been assumed that a family multiplier of 3.42 would be appropriate as representing the ratio of male employees to total population. Therefore the population generated by the airport is likely to be about 392,000 by 1996 the date assumed for completion and full operation. Figure 1* shows the likely position for interim periods.

3.3. At 1981 113,000 population will be required of which some 105,000 persons will need to be accommodated within 20 miles of the site. All of these persons could be accommodated in South Essex by 1981 without additional resources being used, other than those necessary to meet the present development plan targets.

3.4. *Possible Absorption by Southend and South Essex Areas–106,000 person (see figure 2†)*

The calculations take account of the present situation, assuming present development plan targets and existing building rates up to 1981.

3.5. The catchment area is divided into 2 parts, that under 10 miles from the possible airport site and that between 10 and 20 miles from it. The items included are:

3.6. *Use of Existing Resources–23,450 persons*

(a) Southend airport–2,000 male employees.

On the assumption that these workers were all resident within the 20 miles radius and that their families were already receiving the support of service workers this is the equivalent of some 10,250 persons.

3.7. (b) The housing stock within the Southend County Borough had in 1966 a higher proportion of "over 65 years of age" households (23.8 per cent) than was common in the Administrative County of Essex (15.7 per cent). It is anticipated that if an international airport were built at Foulness there would be pressure for housing accommodation and that younger workers with families would tend to replace the "over 65" households bringing the proportion nearer to that of the Administrative County. Assuming that half of all "over 65" households in excess of the County average would be replaced by airport workers, then accommodation for some 2,350 households would be available. At an occupancy of 3 persons per dwelling some 7,050 persons could be accommodated (Service workers are *not* counted in this instance as the character of households would be different).

3.8. (c) Local Unemployment–Southend Exchange area.

It is assumed that some 1,200 of the persons unemployed could be attracted to work at the airport. The families of these persons are already in the area and have the appropriate service workers in support; therefore this is the equivalent of 6,150 persons.

---

* p. 18.
† p. 19.

Printed image digitised by the University of Southampton Library Digitisation Unit

Other absorption requiring no new houses in the area—60,890 persons

3.9. (a) *Commuter Drawback*

(i) As previously explained in the section on "employment benefits" some 5,000 workers within 10 miles might well reverse-commute to work at the airport. Such persons and their families are already serviced and this is the equivalent of 25,650 persons.

3.10. (ii) Within the 10-20 mile radius a further 1,750 workers who at present commute to London might become available for work locally and on the same basis this is the equivalent to a further 9,000 persons.

3.11. (b) *Turnover of Dwellings Existing at 1976 (airport opening)*

(i) Within that part of the catchment area 10 miles from the site there was in 1966 a housing stock of 92,000 dwellings. This stock will rise by 1975 to 101,000 dwellings. The annual rate of turnover of houses in the area at present is 5 per cent and if only one-fifth of these vacated houses were occupied by airport workers then some 5,000 families could be accommodated between 1976 and 1981. Because the occupiers of these houses would be already serviced on the basis previously used this is the equivalent of 22,700 persons.

3.12. (ii) In addition, within the 10-20 mile radius there are a further 15,370 dwellings (excluding Basildon New Town). On the same basis this is the equivalent of 3,540 persons.

3.13. Thus without any additional building or the provision of further services between 1976 and 1981 some *85,000* persons can be counted as accommodated.

Development plan allocations—21,520 persons

3.14. (a) *Essex Development Plan*

With an assumed airport opening date of 1976 there is likely to be within the 20 miles catchment area of the airport site some 410 acres of land allocated for development in current development plans but still undeveloped. Assuming that 20 per cent of this would be available for airport workers then 2,720 persons could be accommodated.

3.15. (b) *Southend County Borough*

The Minister has recently published his approved modifications to the first Review of the Southend Development Plan but has made no change in the ultimate population suggested by that plan. That plan proposes an increase of 37,000 people in the development plan period up to 1981, although in practice since the 1961 Census the population of Southend has little changed. It would therefore seem that such a stimulus as a large employment generator will be desirable for Southend to achieve the population envisaged in the Review Plan. An international airport would cause demand for accommodation in Southend and it has been assumed that 40 per cent of the estimated population growth would be taken up by persons directly or indirectly working in the area by reason of the airport. If this is the case then 14,800 persons could be accommodated within the Southend-on-Sea County Borough.

3.16. (c) *Basildon New Town*

All of the designated area of the New Town of Basildon is beyond 10 miles from the airport but within 20 miles. The revised master plan recently commended by the Minister allows for an ultimate population of 140,000. By 1976 the plan allows the population to grow to about 103,600 persons and by 1981 to 110,600 persons. Thus there will be an increase of some 7,000 persons in the period up to 1981 and there would seem no reason why most of this increase could not be assumed to be for persons whose employment was caused either directly or indirectly by the Airport, much of it in local industry with airport associations—say 4,000.

3.17. There would in fact be further capacity in the Basildon commended plan of about 14,700 persons after 1981.

3.18. *Conclusion*

Therefore from the total demand of 392,000 people by 1996 a deduction of at least 105,000 people can be made as a local contribution before 1981 leaving 287,000 people to be accommodated thereafter. As Basildon has a further capacity within their commended plan of 14,700 persons after 1981 this leaves about 272,000 persons to be accommodated. At a town density of 15 persons per acre gross about 18,000 acres will be required.

3.19. *Urbanisation Density*

The existing town density in Southend is between 16 and 17 persons per acre gross. New Town densities are generally in the region of 12.5 persons per acre gross. Taking into account the large area for employment that will be located at the airport, and that much of the infra-structure such as town centre development, technical colleges and hospitals already exist, it seems appropriate that a gross figure in the region of 15 persons per acre gross should be used.

3.20. *Urbanisation—Town Form*

The physical features of the area are described more fully in that part of my evidence dealing with "land use". Broadly the existing urban form is a pattern of settlements along the north bank of the Thames from Shoeburyness at the eastern-most part, through Thorpe Bay, Southend itself, Westcliff-on-Sea, Leigh-on-Sea. These now form part of the County Borough of Southend. They are followed by Hadleigh, Thundersley and South Benfleet in Essex, and if this pattern was extended in a broad arc northwards and then westwards again, along the south bank of the River Crouch this would link up the towns of Rayleigh, Hockley and Hullbridge through to the village of Canewdon, and by a process of infilling and extension would form a satisfactory and convenient urban complex to contain the extra 270,000 persons required. It would take full advantage of the amenity and recreational facilities of riverside frontages and would leave an agricultural "heart" in the centre of the complex. There would thus be formed a series of settlements each with their own characteristics and shopping and commercial centres, connected to the main urban centre of Southend-on-Sea, which itself is capable of considerable extension and expansion to form the city centre for this full urban

Printed image digitised by the University of Southampton Library Digitisation Unit

complex of what would eventually be some 600,000 persons.

3.21. Each settlement would contain its own light industrial areas, providing employment for the mainly female based new industries that would be attracted to the area. This in my opinion would be preferable to one or two large industrial centres causing traffic problems of tidal flow. The agricultural "heart" of this complex contains Grade 1 agricultural land, and is amongst the most productive in the county and indeed the country. This urbanisation form would therefore protect this national asset. The noise zones predicting the NNI contours for Foulness airport are expected to affect this heartland area. It would be preferable if the airport layout could be so designed to avoid noise in this area, particularly around Shoeburyness, as this would allow for further limited expansion from Southend in an easterly direction. If this however is not practicable the urban form proposed is still viable.

3.22. Other forms of urbanisation are of course possible. A simple peripheral expansion of Southend has been considered. This would be more economical in terms of services and work journeys but would cause difficulties in view of the projected NNI contours and moreover would obsorb first class agricultural land. It would also be possible to conceive of a consolidation of development between Southend and Basildon in the form of a large elongated city with communication roads to the north and to the south into London. However, Basildon has already been planned specifically with a target population in mind, and the result of such amalgamation would cause considerable problems so far as traffic networks are concerned and there would be a duality of function as between Southend town centre and Basildon. It would also be largely an inland city and opportunities of using the rivers as residential amenity features would be lost.

3.23. Various other forms of urbanisation have been considered such as a new city in the Dengie peninsula but in my view the one now suggested in the light of present information is probably the best.

3.24. It is perhaps necessary to point out that this suggested form is put forward at the present time as nothing more than an academic exercise and is untested. No consultations have been carried out with the various authorities concerned, and it should be by no means considered as a proposal by the County Council. It is no more than a suggestion indicating a possible solution to the problem of accommodating an extra 270,000 people in this part of Essex.

4. Noise and nuisance considerations

4.1. The use of the Noise and Number Index (NNI) is as described by Mr. Fleming in his evidence.*

4.2. The population within each NNI contour has been calculated by counting the number of dwellings which fall within them and multiplying the total by an occupancy rate of 3 per dwelling. This calculation has been done for the NNI contours (a) for a four-runway airport on Maplin Sands as in Submission No. 2, (b) for the NNI contours published by the Commission for an airport on this site, and (c) for the possible adjustment of the contours as suggested by Essex County Council consultants. Evidence as to the effect of noise on schools is being given separately. Only one hospital is affected which is at Shoeburyness.

NNI contour range	*Population affected*		
	(a)	(b)	(c)
35-45	25,400	52,400	43,800
45-55	30	6,870	0
Greater than 55	0	0	0

4.3. *Southend airport*

The numbers of persons at present affected by noise due to the operation of Southend Airport are as follows:

35-45	24,000
45-55	6,000
Greater than 55	330

Should this airport close or its operations be reduced this would form a "bonus" so far as noise disturbance is concerned.

5. Amenity considerations

Scenic Background

5.1. The island of Foulness, together with the surrounding five islands and the coast of the Dengie peninsula to the north are relatively flat, treeless, with a quality of remoteness and solitude. The isolated nature of the Dengie coastline makes it attractive to a small number of people seeking solitude. The rivers Crouch and Roach are considerable amenity features and are used for sailing. The north bank of the Crouch and a large part of the Dengie peninsula are defined as areas of high landscape value.

Impact on the Traditional Sea-front Recreational Area of Southend

5.2. The greater part of the traditional sea-front areas within Southend-on-Sea County Borough would be relatively unaffected by the third London airport on Foulness. Aircraft noise along the sea front would probably be much lower than the high ambient noise level of the sea-front caused by traffic and the various amusement activities. The only beach in Southend which would be affected is that at Shoeburyness. This beach, which is less than a mile long, is, however, an intensively used one and amenities enjoyed here would probably be adversely affected by aircraft noise.

5.3. The only other beach likely to be affected is that just to the east of Great Wakering within the administrative county of Essex. This is only moderately used and has few of the accompanying facilities which Southend provides.

The Impact of the Foulness Off-shore Site on other Recreational Pursuits in the Area

5.4. The River Crouch and the creeks and inlets in the peninsula between this river and the River Thames are popular areas for yachtsmen. There are about 2,500 craft, according to a recent survey,* kept along both the River Crouch and the north bank of the River Thames.

* p. 30.

* In *The Coasts of East Anglia.* (HMSO; 25s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

The main centre on the former river is Burnham-on-Crouch where about 900 craft are moored, and on the latter, Leigh-on-Sea, where there are 1,300 moorings. At present sailing near to Foulness Island and Maplin Sands is severely restricted by a Ministry of Defence Prohibited Zone.

5.5. If the third London airport were built on Maplin Sands, sailing in the areas seaward from the Crouch would be improved by the release of these waters from prohibitive control. There would, of course, be aircraft noise in these areas but this would probably be acceptable by the persons who were sailing in exchange for unrestricted sailing at the mouth of the Crouch.

5.6. Sailing at the mouth of the Thames would be similarly affected by noise but only one clubhouse, the small Shoeburyness Sailing Club, would be within the area where noise may cause annoyance.

5.7. The Maplin Sands area is of interest to naturalists. Evidence on this aspect and nature conservancy generally will be given by Dr. Schaefer.*

6. Land use

Topography and Relief

6.1. Maplin Sands and Foulness Sands are both entirely within the intertidal zone, and are covered to a depth of about one fathom at normal high tide. They are completely uncovered at low tide, and measure 10 miles along the long axis, which runs in a south-west-north easterly direction, and they are between 3 and 4 miles wide. The sands are at present used as a recovery ground for missiles fired from the Ministry of Defence firing range on Foulness Island. There is a shell bank at Foulness Point at the extreme north-eastern end of the island which is used as a breeding ground by sea birds.

Existing Pattern of Land Use of the Adjoining Area

6.2. Foulness Island and the five islands which border it to the south and west, which are separated from it by tidal creeks, have little relief except for the numerous dykes which dissect them. The agricultural qualities of the area are described by Mr. Tanton in his evidence.† The area to the west of Foulness comprises a peninsula of land between the River Crouch and the Thames estuary. The land bordering the rivers, including Foulness Island and the small islands which surround it described above, is low lying, but there is a gravel ridge running through the middle of the peninsula. This ridge runs from Rochford, where it is about 60 ft above the surrounding area, through Hawkwell and Hockley to Rayleigh, Thundersley and South Benfleet. Generally it is about 200 ft higher than the surrounding land.

Communications from South-East Essex to London

6.3. There are two main line railways, one from Shoebury through Southend, Benfleet and Basildon to Fenchurch Street Station, and the other from Southend via Billericay and Shenfield to Liverpool Street Station. There are two principal east-west roads which traverse south Essex, the A127 and the A13. The principal north-south route in the catchment area is the A130, which joins the A127 just to the west of Rayleigh.

6.4. In general the settlement of the area has avoided the higher quality agricultural land, in particular the very high quality land to the north-east of Southend. Conversely the poorer clay land to the west of Rochford has tended to go out of agricultural use into more urban uses, either to housing or the intermediate category which is known as "plotlands". To the west of the area of very high quality agricultural land, lie the small towns of Rochford, Hockley, Hawkwell, Hullbridge, Rayleigh, Thundersley, New Thundersley, Hadleigh and South Benfleet. This area has experienced rapid growth in the past eight years. The increase in population is in contrast to the previous decade 1951-1961 when the population increase was relatively small. The difference may partly be explained by the electrification of the railway lines in 1961-2, thus making the area more attractive to London commuters.

6.5. There are three villages within this area, Crays Hill, Battlesbridge and Rawreth, which are mainly within the semi-urbanised "plotland" areas.

6.6. Southend, conversely, experienced a fairly rapid growth between 1951 and 1961, but since that date the population has been nearly static (the population increase between 1961 and 1966 was just over 1,000). It is quite probable that this is related to the rapid growth of the nearby small towns which are slightly closer to London.

6.7. In the agricultural area there are two villages, Great Wakering and Canewdon, but otherwise it is sparsely populated. The other towns within the catchment area, Canvey and Wickford have also experienced fairly rapid growth of population in the last eight years, and this followed fairly rapid growth in the previous decade.

6.8. Basildon New Town is being developed by the Development Corporation and therefore comparisons are not really valid. This process will presumably continue to the end of the century now that the revised Master Plan has been commended by the Minister.

Proposals of Existing Development Plans

6.9. The airport hinterland is covered by three development plans, Essex County Council Review Plan, the Southend Review Development Plan and the revised Master Plan for Basildon New Town.

6.10. The Review of the Southend Development Plan envisages the development of Southend into a regional office centre, and sufficient land was allocated for residential purposes to enable an increase of 37,000 population to take place. The Minister of Housing and Local Government has deleted some 270 acres but has not changed the target population.

6.11. The Essex Review County Development Plan is based on the retention of good agricultural land and the encouragement of residential development in the small towns to the west of Rochford. Much of this development will be on "plotland" areas already lost to agriculture. Despite the recent increase in population there is still considerable potential for further development in this area.

* p. 49.

† p. 41.

Printed image digitised by the University of Southampton Library Digitisation Unit

6.12. The Basildon Master Plan provides for the continued growth of the town up to the end of the century, when the population will be 140,000.

Likely Development of Commerce and Industry: Pattern of Present Trends

6.13. The present industrial structure of the small towns in South Essex is one of relatively small scale manufacturing and service industry. There has been little industrial growth in these towns in the last 8 years and the increase in the working population may be accounted for mainly by the rise in commuting during this period. Commercially these towns have little significance and the shops and offices serve local needs only.

6.14. Southend also has a number of small light manufacturing and service firms, many of the latter being engaged in traditional seaside recreation activities. Much of the seaside employment is seasonal, which accounts for the number of unemployed people in Southend in winter. Industry, like that in adjoining towns, has not expanded very much in the last decade. This may partly be explained by the Government's policy regarding the granting of Industrial Development Certificates in south-east England. Commercially Southend retains importance as a seaside resort and its shopping centre is the most important in south Essex. This centre is at present undergoing expansion as part of the Southend Town Centre scheme. In the last decade Southend has become a major office centre as a result of the Government's policy for the planned dispersal of offices from central London and the efforts of the Southend Corporation.

6.15. Industry in Basildon New Town is generally modern and on a larger scale than the rest of south Essex. Considerable expansion of this industrial base is envisaged in the revised Master Plan.

7. **Conclusion**

7.1. I consider that the establishment of the third London airport adjacent to the urbanised areas of South-East Essex is sound from a regional planning point of view. Locating a major centre of employment like the third London airport close to an existing urban complex which is likely to expand in any event is, in my view, sound physical and economic planning.

7.2. The South Essex area would meet some of the immediate employment needs, and could provide accommodation and services for a significant number of new workers who would come to live in the area.

7.3. It it is appropriate to use Professor C. Buchanan's figure of £3,000 per head for infrastructure costs (houses, roads, schools, sewage works, etc.) for a new town, which he used in *The South Hampshire Study,** then the contribution in terms of capital saving that this area could make because of the existing employment and housing availability would be of the order of £255,000,000.

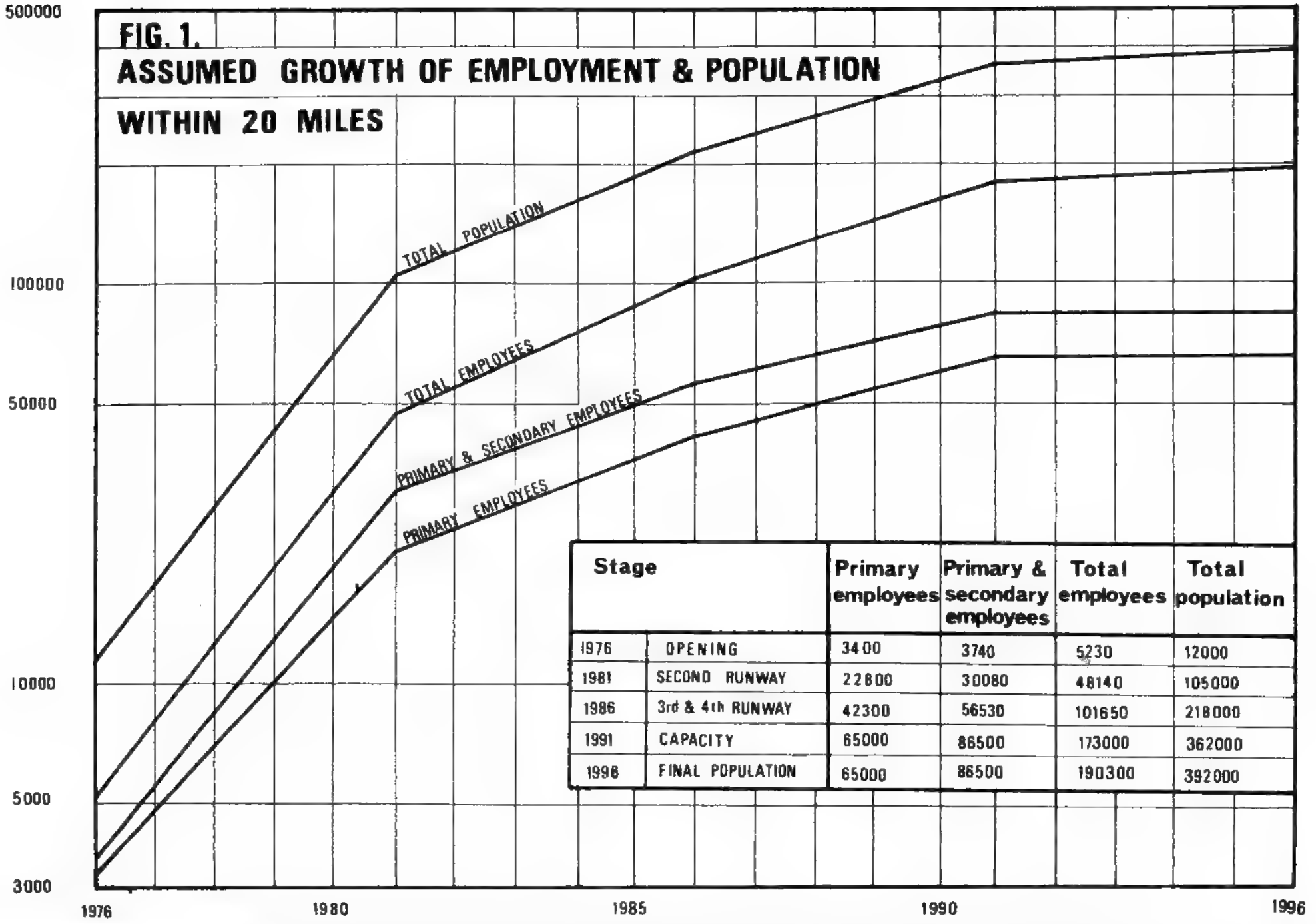
7.4. Finally, with reference to the problem of noise nuisance to residents in this area, it would appear that more people are affected by noise nuisance at present above 45 NNI from aircraft using Southend Airport than could be affected by a four-runway airport at Foulness when it is fully operational. Between 35 and 45 NNI there would be 19,800 more people affected by noise than at present.

---

* *South Hampshire Study.* (HMSO). Comprises *Report on the Feasibility of Major Urban Growth* (50s.) and two *Supplementary Volumes* (70s. each).

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



Stage		Primary employees	Primary & secondary employees	Total employees	Total population
1976	OPENING	3400	3740	5230	12000
1981	SECOND RUNWAY	22800	30080	48140	105000
1986	3rd & 4th RUNWAY	42300	56530	101650	218000
1991	CAPACITY	65000	86500	173000	362000
1996	FINAL POPULATION	65000	86500	190300	392000

Fig. 1. Assumed growth of employment and population within 20 miles. (*Mr. D. Jennings Smith, Essex County Council*)

Printed image digitised by the University of Southampton Library Digitisation Unit

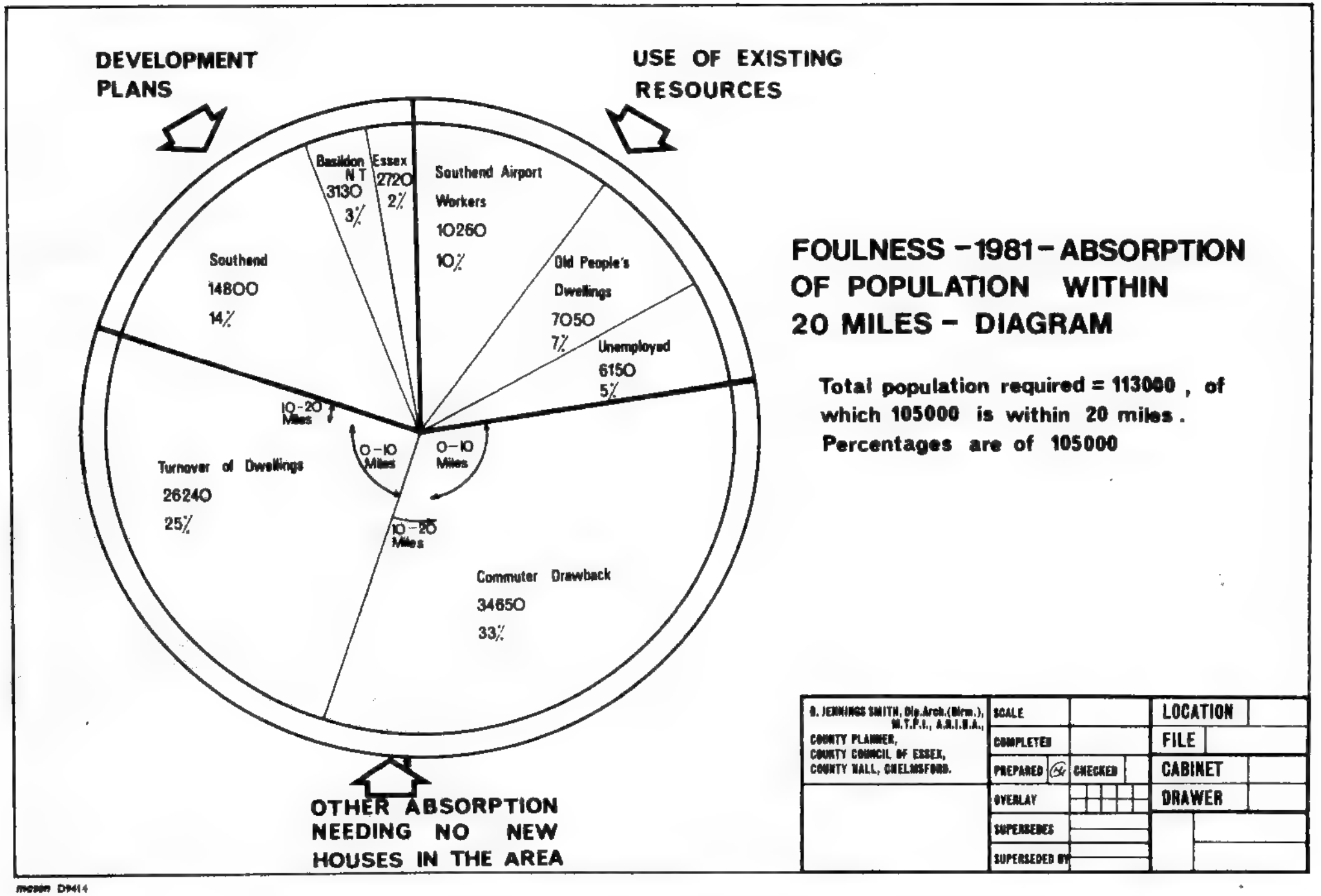
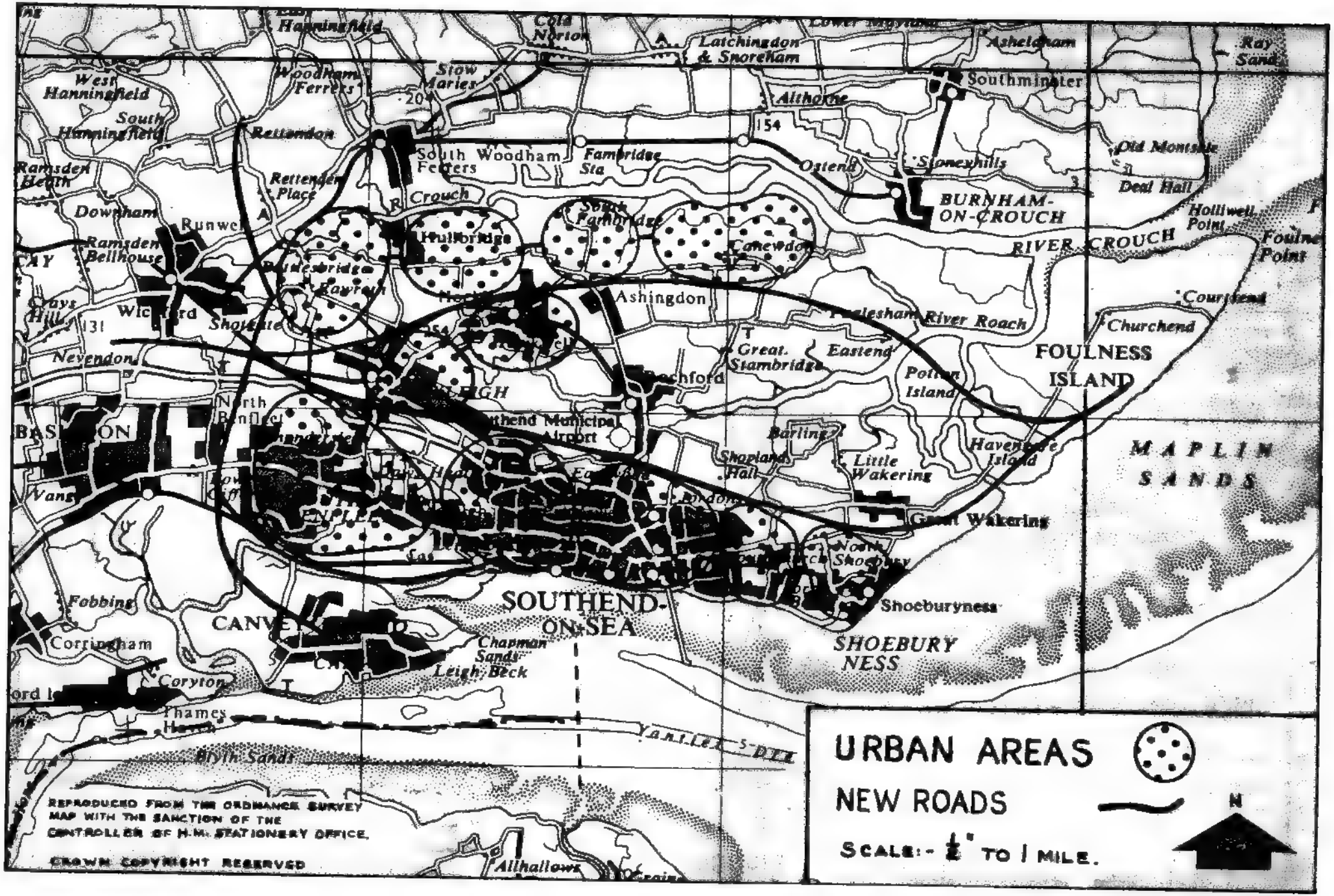


Fig. 2. Foulness, 1981, absorption of population within 20 miles. (*Mr. D. Jennings Smith, Essex County Council*)

Printed image digitised by the University of Southampton Library Digitisation Unit



Urban areas: new roads. (*Mr. D. Jennings Smith, Essex County Council*)

THE FOLLOWING THREE AUTHORITIES WERE REPRESENTED AT THE HEARING BUT DID NOT GIVE ORAL EVIDENCE

Evidence of Basildon Urban District Council*

COUNCIL OFFICES
FODDERWICK
BASILDON
ESSEX

The Secretary
Commission on the Third London Airport
Templar House
81-87 High Holborn
London WC1

16th April, 1969

Dear Sir,

STAGE II HEARING—FOULNESS (OFF-SHORE)

In reference to my letter of the 21st March 1969 and your reply of the 24th March 1969 my Council have given further consideration to the Commission's publication *Short List of Sites and Site Information for Stage II Local Hearings 1. Foulness (off-shore),** and I have also had the advantage of attending the private meeting at Templar House on the 1st April.

My Council have had particular regard to the question of duplication of evidence, the point having been emphasised at the private meeting, and have decided accordingly to request the Essex County Council to appear at the Hearing and present my Council's case in respect of those matters upon which the two authorities find themselves on common ground.

The Council note that the Commission are not advancing proposals for an airport to be located at Foulness, but are asking at this stage for objections, commments and representations on the assumption that an airport might be located there. On this basis the District Council probably go further than the County Council who appear to take the view that the off-shore site at Foulness is only one of a number of possible sites, whereas my Council fully support the location of the third London airport at Foulness (off-shore) and urge that it be located there.

Insofar as the joint representations are concerned, the County Council have agreed that their evidence will broadly meet the following points upon which my Council are anxious that representations should be made at the hearing:

(a) That in the allocation of any additional land to meet housing and associated needs arising from the provision of an airport having considerable employment potential, full weight be given to the importance of preserving those areas of green belt land which are worth preserving.
(b) That suitable assurances are given that adequate water supplies will be made available to meet the needs of SE Essex to the extent that additional population requires to be catered for.
(c) That the attendant increases in population and industry, and the provision of surface communications are properly planned without detriment to social consequences and amenities.

Apart from the above matters which are pertinent to the Stage II Hearing, my Council would wish it to be noted that they would expect to be fully consulted on any matter which may concern their district, and be given the opportunity at the appropriate time to make further representations in respect of the following specific matters:

(d) That care should be taken in the ultimate development of the residential areas referred to at (a) above that programming ensures that the provision of schools and open space takes place at the same time as the houses are provided.
(e) That adequate and satisfactory new road and rail links between London and the airport should be provided prior to the airport coming into operation, and any necessary additional links should be made available as and when required to meet the demand as the airport is developed.
(f) That adequate financial provision should be made from sources other then local authority general rate funds to meet the additional expenditure involved.

Yours faithfully,

DAVID H. TAYLOR

Town Manager

---

* See also p. 267. † (HMSO; 6s.) Reproduced at p. xi.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Benfleet Urban District Council*

COUNCIL OFFICES
THUNDERSLEY
BENFLEET
ESSEX

15th April, 1969

The Secretary
The Commission on the Third London Airport
Templar House
81-87 High Holborn
London WC1

Dear Sir,

THE COMMISSION ON THE THIRD LONDON AIRPORT.
STAGE 2 LOCAL HEARINGS (1) FOULNESS (OFF-SHORE)

I refer to my letter of the 12th March last in which I applied on behalf of the Benfleet Urban District Council for leave to appear or be represented at the Stage II Local Hearing on the above proposals and to the private meeting to discuss the procedure to be adopted held at Templar House on the 1st April and have to make the following representations on behalf of the Council:

(1) The siting of the airport, the runway alignment, the routing of aircraft and the disposition of aircraft awaiting landing should be designed to reduce to an absolute minimum the effect of noise over land and particularly the Urban District of Benfleet.
(2) The new communications required, road, rail or of more advanced type should be sited and constructed so as to cause minimum inconvenience to residents and minimum injury to amenity.
(3) There would be an imperative need for financial assistance to be made available to smaller local authorities such as Benfleet to enable them adequately to deal with the problems of urbanisation, at least pending the receipt of the increased rate income which it is expected would eventually arise from the more intensive development of the district.
(4) The Council approve and adopt the contents of the letter dated the 28th March last addressed to the Chairman of the Commission by Mr. Bernard Braine, the Member of Parliament for South-East Essex.

The Council will be represented at the Hearing by Counsel instructed by the Clerk of the Essex County Council, to whom a copy of this letter has today been addressed.

Yours faithfully,
A. R. NEIGHBOUR
Clerk of the Council

---

* See also p. 267.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Rayleigh Urban District Council*

COUNCIL OFFICES
RAYLEIGH
ESSEX

The Secretary
Commission on the Third London Airport
Templar House
81-87 High Holborn
London WC1

15th April, 1969

Sir,

PROPOSED THIRD LONDON AIRPORT–
FOULNESS (OFF–SHORE)

Under cover of my letter of 25th March 1969 I sent you a statement of the Council's decisions with respect to the suggested siting of the third London airport at Foulness. A copy of such statement (which has been slightly amended at item (c)) is appended hereto for ease of reference. I am now instructed to inform you that items (a) to (h) of that statement will be the subject of joint representations to be made at the Inquiry on 5th May 1969 by counsel instructed by the Essex County Council.

My Council have further instructed me to submit the following written representations on items (i) and (j).

1. The district

The Urban District of Rayleigh comprises an area of 5,709 acres some 10 miles to the west of the proposed airport site. Its southern and eastern areas are mainly built up whilst its northern part (the Rawreth Ward) is predominantly rural in character. It has a population of 25,610 according to the Registrar General's estimate for June, 1968, and a Rateable Value of £1,019,793 at 1st April 1969. It has a busy shopping centre and two small industrial estates.

2. Assistance for public services

The growth of the Urban District from a population of 9,500 in 1953 to the present estimated 26,000 has resulted in a demand for essential public services at a very much more rapid rate than normal and this has imposed what the Council consider to be a heavy burden upon the local ratepayers. Undoubtedly the siting of the airport will create an influx of population as stated at paragraph 14 of the *Site Information for the Stage II Local Hearing*† into the Foulness site. The Council believe that a large proportion of these persons will wish to live in the Rayleigh Area. Having had experience of a large influx of population over a comparatively short period, and being aware of the financial problems involved in attempting to provide essential services, the Council feel that such an influx over a very brief period as would happen with the creation of the airport would place a burden on the ratepayers of the Urban District far greater than anything they have previously experienced.

They consider that as this is a national project it is reasonable to expect assistance from central funds towards capital expenditure which will have to be incurred on essential public services prior to increased rate income arising so that the local ratepayer is not prejudiced.

3. The deepwater terminal

Proposals being under consideration for a major seaport scheme on the Maplin Sands, the Council are of opinion it is essential that the Airport should be considered at all stages in conjunction with, and not in isolation from, this deepwater terminal project. Co-ordinated planning at the outset is deemed vital to ensure integration of services and to avoid duplications involving possible greater expenditure of public money.

4. Conclusion

The Council believe that the points they raise in this submission are essentially matters which must be considered even at this very early stage; that they are of great importance to the local authorities likely to be involved with the population influx and to the Urban District of Rayleigh in particular which could well be called upon to cater for a large population of that influx.

I am, Sir,

Your Obedient Servant,

G. E. FITZGERALD

Clerk of the Council

---

* See also p. 267.

† *Short list of Sites and Site Information for Stage II Local Hearings. I. Foulness (off-shore).* (HMSO; 6s.). Reproduced at p. xi.

Printed image digitised by the University of Southampton Library Digitisation Unit

Urban District Council of Rayleigh

PROPOSED THIRD LONDON AIRPORT—FOULNESS (OFF-SHORE):
STATEMENT OF COUNCIL'S DECISIONS

(a) That this Council, whilst having major reservations as to the effect such siting will have on the surrounding areas, do not oppose the possible siting of the third London airport at Foulness (off-shore).

(b) That the desirability of re-locating the proposed runways in order to minimise the effect of noise over populated areas be considered.

(c) That this Council regards it as essential that stringent safeguards be obtained to ensure that no stacking of aircraft or the flight path of aircraft is permitted overland in such position as to cause nuisance or annoyance to built up areas.

(d) That the routing of aircraft on take off and landing and the disposition of aircraft awaiting landing shall be such as will cause the minimum effects from noise and possible danger.

(e) That further evidence be obtained as to the effect of the extension of side-slip noise (such as is reported in the Concorde test trials) before the siting of runways is finally determined.

(f) The airport be constructed in such manner that the addition of further runways can only take place without detriment to (c) above.

(g) Particular attention shall be paid to the location of residential and other land uses in order to conserve agricultural land and make the maximum use of re-claimed, derelict and partially developed land, rather than major expansion of existing conurbations in order that the further coalescence of existing towns may be prevented.

(h) The fullest consideration is given to the siting of new road and rail links so as not to inconvenience or cause annoyance to residents of urban areas and also to the most advantageous method of construction to conserve agricultural and urban land, such road and rail links to be provided prior to the airport coming into operation.

(i) That consideration be given to the granting of financial assistance from central funds in the early stages to meet capital expenditure needed to be incurred on essential public services before increased rate income arises.

(j) That the Council considers it essential that the airport is considered at all stages in conjunction with, and not in isolation from, the proposed deep-water terminal.

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

by

Essex County Council (*Mr. G. I. W. Dunford and Mr. N. Fleming*)
Mr. Bernard Braine, MP
Essex County Council (*Mr. J. A. Springett and Mr. D. E. Tanton*)
Chatham Borough Council

Witnesses were examined on this evidence
on Day Two, Tuesday 6 May 1969
see pages 301-337.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Essex County Council

SUBMITTED BY MR. G. I. W. DUNFORD*†

I am the Air Traffic Services Superintendent of International Aeradio Limited and have held this post since 1964. I have been in air traffic control for the last seventeen years, initially in the Royal Air Force, before joining IAL in 1955. My service with the company up to my present post has been as an Air Traffic Control Officer at airports and air traffic control centres, as an ATC instructor in the IAL school and as the Assistant Air Traffic Services Manager. In addition to being responsible for the ATC operations of the company, I am also engaged on air traffic and operational consultancy tasks and have recently completed two such tasks in connection with a twenty year development plan for two major international airports overseas, Nairobi and Singapore, both of which had problems in relation to nearby airports.

1. **Operational aspects**

1.1. A study of the plans of a proposed Foulness airport contained in the Commission's publication (drawing CTLA 1/2 and 1/3‡) shows some important differences from the plans put forward in the Essex and Hertfordshire County Council's Submission No. 2 dated October 1968.§ These differences lie in runway alignment, runway configuration and departure routings and I propose to examine these points in turn.

1.2. No records exist of wind speed and direction at the exact site proposed but a study of the statistics for Shoeburyness, sufficiently adjacent to be meaningful, shows that a number of runway alignments could be permitted and still meet the International Civil Aviation Organisation (ICAO) criterion of 95 per cent usability. The calculations to support this statement have been made on the basis of a 20 knot cross-wind component. It is appreciated that ICAO cites both 13 knots and 20 knots as relevant figures, the former relating to the smaller type of aircraft, e.g. the DC3, the higher figure to four-engined jet aircraft. As the airport is planned to come into operation during the middle 1970s, and as aviation technology is constantly improving the cross-wind capability of aircraft, it is considered reasonable to use 20 knots as the basic figure. Ninety five per cent usability could be achieved with runway alignments from north through north east to east.

1.3. It can therefore be stated that within the parameters given above, the runway alignment for Foulness can be principally determined by topographical and routing requirements.

1.4. The alignment given on the Commission's plans is 042°/222° TRUE whilst that given in the Essex and Hertfordshire Submission is 035°/215° TRUE. This latter alignment does keep the initial sections of the southerly departure routes farther away from Southend but brings the approach paths from the north nearer to Clacton than the Commission's alignment. Investigations show that approximately 75 per cent of all landings will take place to the south and therefore there will be a consistent flow of traffic from the holding patterns onto these approach paths. It is sensible therefore to take this factor into account and to ensure that Clacton remains clear of these flight paths. The general alignment given by the Commission does therefore appear to be the most suitable with possibly minor corrections of not more than 5 degrees to cater for topographical considerations. This alignment and the routes emanating from it are shown at figure GD1.* In taking this alignment it has also been found that the position chosen by the Commission is the optimum with respect to the land available and surface access routes. Some slight re-adjustment is however possible, a maximum of one nautical mile north or south of the position shown.

1.5. Reference to figure 4.1. in Submission No. 2 of the Essex and Hertfordshire County Councils will show two pairs of parallel runways disposed about a central complex and with the threshold of each pair staggered from the other by 3,100 ft. This design was used by the Board of Trade in their evidence at the inquiry into Stansted.† The Commission's layout, CTLA number 1, shows a similar general concept but with the staggering of opposite pairs by a distance of 10,000 ft. The effect of the increased stagger proposed by the Commission is evident on the departure routes and the associated noise contours, where it can be seen that these are elongated. The relative advantages of staggered thresholds of the type suggested by the Commission over those proposed in Submission Number 2 lie mainly in the greater segregations of approaches from departures and in the ability to move aircraft on the ground without interference to the other runways.

1.6. It is very important when assessing the NNI contours to ensure that the correct ratio of traffic is taken for each route. The Board of Trade divide the traffic on each route into three categories, supersonic

* See also the evidence of the Action Committee Against Foulness, p. 137.

† See also p. 301.

‡ See: Commission on the Third London Airport *Short List of Sites and Site Information for Stage II Local Hearings. I. Foulness (off-shore).* (HMSO; 6s.). Reproduced at p. xi.

§ Available for inspection at the County Council Offices at Chelmsford and Hertford.

* See attached wallet of maps and diagrams.

† Stansted airport inquiry, 6-23 December and 5 January-11 February 1966. Minutes of proceedings of a public local inquiry. (W. B. Gurney & Sons, 39 Victoria Street, London SW1).

Printed image digitised by the University of Southampton Library Digitisation Unit

transport (SST), large jet and medium jet. Whilst this is obviously a satisfactory method of achieving a general breakdown, I believe that a closer examination of the type of flights being undertaken on each route must be made if the NNI contours are to present an accurate description. An example of this can be seen in the breakdown of traffic using the routing onto Airway Red 1 eastbound. For this route a mixture of large and medium jets has been forecast, and based on the standard flight profiles for these types of aircraft the NNI contours have been produced. Closer examination of the flights reveals, however, that the majority of the large jets will only be undertaking relatively short flights to the airports in Northern Europe and Scandinavia. For such flights, they will be comparatively lightly loaded, the amount of fuel carried will be considerably less than maximum, and therefore their climb performance and thus flight profile will not be standard. They will climb more quickly with the consequent reduction in noise. How much reduction can be expected I am not able to say; Mr. Fleming is better qualified to speak on this matter. But it will have some effect and whenever, as in this case, attempts are made to judge the effects of aircraft noise and decisions on routes are to be made as the result of these judgements, I believe we must be careful to consider every factor.

1.7. Returning to the route mentioned previously, that which joins Red 1 eastbound, it will be seen from the Commission's drawing CTLA 1/3 that this produces the large "thumb" like NNI contours to the north of Southend.

1.8. For this route, in our Submission No. 2 we showed a climb straight ahead to four nautical miles, followed by a right turn to enable the climb to be continued over the Thames Estuary. At a position abeam Southend a further right turn could be made onto a track to intercept the proposed re-aligned Red 1 to the west of Ipswich. It is calculated that the aircraft would cross the coast to the west of Southend at between 5,000 and 6,000 ft. this position being some 15 nautical miles from the end of the runway. Comparison between this route and that shown on the Commission drawings would indicate that the additional route mileage involved would be approximately 12½ nautical miles.

1.9. In 1962 the Board of Trade published the results of a survey of the traffic using London Heathrow and London Gatwick Airports. From this survey it was found that 12 per cent of the total departing traffic from both of these airports used the route Red 1 to the east. Whilst this is not conclusive with respect to the third London airport and bearing in mind that it has been planned for an omni-directional flow rather than a preferential one, it does indicate the volume of traffic which it can be expected will require to route this way.

1.10. The procedure to climb straight ahead after take-off is more acceptable to airline pilots than a radical turn onto a new route within two miles of take-off, as proposed by the Commission. If, however, it is felt that the turn must be made shortly after take-off, I would suggest that in order to keep the noise contour away from the built-up area around Shoeburyness and the northern suburbs of Southend, the turn be made over the Middle Marker for an Instrument Landing System (ILS) serving the runway in the opposite direction. Such a procedure will keep the track well north of the areas mentioned; precedent for this can be found in the existing procedures in use at London Heathrow Airport. This does of course presuppose that a system of marker beacons will be installed. If this does not happen then I would presume that Distance Measuring Equipment (DME) would be co-located with the glide path and this could equally well be used in determining the turning point. This alternative routing is also shown at figure GD1.

1.11. The routes to the south, following take-off in a southerly direction, could be re-aligned to keep them farther away from the built up areas around Sheerness. This would be of substantial benefit if the uni-directional flow of traffic on Amber 2 from France could be reversed with that of Amber 1. However this reversal would require negotiation with the French authorities and may not therefore be possible. Once again the type of traffic operating on these routes should be taken into consideration for although it forms the highest percentage in terms of number of aircraft, the aircraft themselves are, in the main, on relatively short-hauls and therefore could climb at a greater rate.

1.12. In our Submission Number 2 we did propose re-alignment of some of the existing airways and the establishment of a new airway to the west to relieve the pressure of Green 1. The exact alignments and dimensions of the airways to cater for the third London airport and the forecast increase in traffic will not be known for some time to come. This factor together with the effect of the airspace required for London Heathrow may require some slight alterations to be made to the routings shown, but I believe that they reflect the basic route structure which will be ultimately selected.

2. **Effect on Southend**

2.1. Severe altitude restrictions would be imposed on traffic using Southend airport due to the proximity of the Foulness northern holding pattern, the approach paths from this pattern to the runways and the departure routings particularly to the south and west. It would be extremely difficult to locate a holding area to serve Southend airport and therefore a sustained Instrument Flight Rules (IFR) rate could not be maintained. Weighing these factors together it would appear that commercial operations would not be economically feasible but that general aviation traffic could operate on a free route basis with altitude restrictions. Precedent for this type of system can be found at Denham airport which is situated within the London Heathrow control zone.

3. **Military restrictions**

3.1. The holding areas, approach and departure paths for an airport at Foulness will not require the closure of any military airfields. Some restrictions may be imposed in terms of available airspace but these need not be prohibitive.

Printed image digitised by the University of Southampton Library Digitisation Unit

4. Approaches and departures

4.1. Using a system of runways on the alignment shown the most critical stages of flight, namely final approach and initial departure, will be carried out over water. In comparison with approaches and departures over land there will be the least possible risk of injury or damage to third parties as the result of an aircraft crashing. Additionally, with no obstacles or high terrain in the approach areas, the Obstacle Clearance Limits for the landing aids installed can be at the minimum and a similar benefit will be found in the departure areas where the aircraft may climb with the greatest safety margins.

4.2. In the event of an aircraft ditching into the sea during these phases of the flight, the hazard of explosion and subsequent fire is much reduced over that of a crash on land. A recent event at San Francisco with a DC8 resulted in the minimum loss of life and the subsequent recovery of the aircraft, neither of which would have been possible had the crash occurred on land.

5. Conclusion

From my examinations of all of the factors involved, I believe that the establishment of the third London airport at Foulness would be entirely acceptable from an air traffic control aspect.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Essex County Council

SUBMITTED BY MR. N. FLEMING*†

I am a Master of Arts of the University of Cambridge, Acoustical Consultant to the Greater London Council, a Director of the Acoustical Investigation and Research Organisation Limited, and a member of the Sub-Committee on Aircraft Noise of the British Standards Institution. I was formerly Head of the Acoustics Section of the National Physical Laboratory.

1. I have been asked to examine the noise situation which would arise if the third London airport were to be located on the Foulness (off-shore) site short listed by the Commission.

2. I have considered the probable distribution of noise around the airport from two aspects, (a) the long term exposure to noise, which is expressed as the Noise and Number Index (NNI), and (b) the noisiness of individual movements, which is expressed as the Perceived Noise Level in decibels (PNdB), together with the frequency of occurrence of such movements. The former is used for assessing the average annoyance which is caused to people living in the area; the latter quantities are more relevant when considering the degree of interference which may occur with the intelligibility of speech, and in particular with oral teaching in schools in the vicinity.

3. The Noise and Number Index, as a method of quantifying the long term exposure to aircraft noise, was devised by the Wilson Committee on the Problem of Noise as the best means of correlating the annoyance experienced by people living around London Heathrow Airport (determined by means of a social survey carried out by the Central Office of Information) with the physical characteristics of the noise to which they were exposed. It is a composite figure which takes account of the noisiness of individual flights which exceed a certain noise level, and the average daily number of such flights.

4. On the scale which was devised, the values of the Noise and Number Index corresponding to different degrees of annoyance, as determined by the average answers to the question "Does aircraft noise bother you very much, moderately, a little, or not at all" are: "very much"–60, "moderately"–43, "a little"–31, "not at all"–7 (Wilson report,‡ figure 2, page 208). The Committee concluded, not solely from the answers to this question, that "exposure to aircraft noise reaches an unreasonable level in the range 50 to 60 NNI" (page 211), or that "the maximum acceptable level lies in the region between 50 and 60 NNI" (page 75). These criteria refer to disturbance during the day time. For the night time the Committee reached the very tentative conclusion that for a corresponding degree of annoyance the NNI figures would be 15 to 20 lower.

5. The site information given by the Commission for Foulness* includes two maps, numbered 1/2 and 1/3 showing the NNI contours at intervals of 5 from 60 down to 40 NNI, for the airport with two runways and with four runways respectively, and I accept these contours as applicable to the particular types and numbers of aircraft, and the flight paths which have been assumed. I have considered principally the ultimate stage, that is the four-runway airport, because this shows rather worse conditions than the two-runway airport. This is so in spite of the fact that it has been assumed that, by the time the four-runway airport is fully operative, noise certification of aircraft will have come into force, and the noise of any aircraft will have been limited to a level some 10 PNdB lower than the noisiest of present day aircraft.

6. Map NF1† shows the Commission's contours at 55 and 45 NNI, and my extension down to 35 NNI. I prefer to use these contours in considering noise nuisance, rather than those adopted by the Commission in paragraph 13 of the *Site Information*, for several reasons. Firstly, I believe that a lower limit of 35 NNI rather than 40 NNI should be considered. This is the level at which, according to figures 3 to 8 of the Wilson report the presence of the airport begins to be felt. I introduce it not primarily because it is a level which need cause serious concern during the day time, but rather because it is relevant to conditions by night. Little is known about the relation between annoyance and NNI for night-time operations, though, as stated earlier, the Wilson Committee, agreeing from somewhat indirect evidence, reached the "very tentative" conclusion that a reduction of 15 to 20 NNI was necessary to avoid increase of annoyance. In paragraph 12 of the *Site Information* it is remarked that, because aircraft movements are likely to be less by night than by day, the night contours will be less extensive than the day contours. It is unlikely, however, that the reduction in the number of movements would be so great as to completely off-set the increase of annoyance. It would, indeed, need a reduction to one tenth to a twentieth of the day-time movements to reduce the NNI values by 15 to 20. I believe, therefore, that it is desirable to take account of contours some 10 NNI lower when considering night-time annoyance. Secondly, I prefer to use 55 NNI as an upper limit, since this is about the value above

* See also the evidence of the Action Committee Against Foulness, p. 137.

† See also p. 313.

‡*Noise: Final Report.* (Cmnd 2056; HMSO; 19s. 6d.).

**Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO, 6s.). Reproduced at p. xi.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

which the Wilson Committee considered that noise exposure becomes "unreasonable" or "unacceptable". If the Commission's upper figure of 50 NNI is adopted, the region within it includes both areas where the noise exposure is "unacceptable", and also areas where the exposure, though high, may not be regarded as "unacceptable". Thirdly, in view of the variability of the reaction of different people to noise, I believe that it is sufficient to consider areas between contours spaced 10 NNI apart, rather than to attempt a finer devision of the degrees of annoyance. For the contours adopted in map NF1, the corresponding degrees of annoyance in the terms of the Wilson report are:

within the 55 NNI contour—"unreasonable" or "unacceptable"
between the 55 NNI and 45 NNI contours—from "unreasonable" down to "moderately annoying"
between the 45 NNI and 35 NNI contours—from "moderately annoying" down to "a little annoying"

An estimate of the population in each of these areas has been made by Mr. Jennings Smith, and is included in his evidence.

7. Some amelioration of the noise condition might be brought about by modifications to the flight paths on which the Commission's map 1/3, or my map NF1, are based. Mr. Dunford, in his evidence,* has indicated alternative routings which would eliminate the large "thumb" in the contours to the north-east of Southend. I have estimated the contours which would result from his proposals, and these are shown by the dashed lines on map NF1. The corresponding change in the population affected by the different noise exposure regions has been estimated by Mr. Jennings Smith and is included in his evidence.†

8. The effect which the siting of the third London airport at Foulness might have on the operation of Southend airport must also be considered from the point of view of noise. If its traffic should be restricted, or if the airport should be completely closed, there would be a noise benefit to people now living within its noise area, and to schools now affected by its noise. At the Inquiry in 1966 into the proposal to extend the runway at Southend, Noise and Number Index contours for the conditions then existing were agreed between the two parties. The air transport traffic at the airport, which is responsible for the greater part of the noise, has since diminished by about one third. I have made the necessary modifications to the NNI contours for this reduction in numbers, and the resulting contours, at 55, 45 and 35 NNI are included in map NF1. The population in the various regions has been reassessed by Mr. Jennings Smith and the figures are given in his evidence. If complete closure of Southend airport were to result from the presence of the third London airport at Foulness, subtraction of these figures from the corresponding figures for the airport at Foulness would give the net number of people affected by noise. Clearly, if the use of Southend airport was increased from its present level to its former level or beyond, the number of people affected by its noise would be greater, and the benefit resulting from its closure would be greater.

9. I now turn to the question of interference by noise with the intelligibility of speech. This is of particular importance in schools where interruption of oral teaching may occur, and may be particularly serious when radio or television lessons are used, and a pause or repetition is not possible. Interruption of speech communication is best assessed from the noisiness of individual aircraft movements. This is expressed by the Peak Perceived Noise Level in decibels (abbreviated PNdB), that is, the maximum level to which the noise rises as the aircraft approaches and recedes.

10. Perceived Noise Level is a magnitude based on subjective judgements of the comparative noisiness of noises of different character. An increase of 10 PNdB corresponds approximately to doubling the noisiness, and conversely a decrease of 10 PNdB corresponds approximately to halving the noisiness. An appreciation of the magnitude of the sensation corresponding to any value of Perceived Noise Level can only be gained by experience. Table NF2,* which gives the Perceived Noise Level for individual motor vehicles and continuous traffic, may serve as a guide.

11. In data on the interference of noise with speech communication, the noise level is usually quoted in terms of another quantity termed Sound Level A (abreviated dBA). There is no unique relation between dBA and PNdB, but for the noise of jet aircraft the latter is on the average about 15 dB higher than the former. The Wilson report recommends that a noise level of 55 dBA should not be exceeded in educational institutions if interference with speech is to be avoided (para. 119). This corresponds to approximately 70 PNdB, so that at a Peak Perceived Noise Level of 75 PNdB, and above, when the level may rise above 70 PNdB for 15 seconds or more, interruptions will begin to be serious.

12. The figure of 75 PNdB refers to the noise inside the classroom. With open windows this is normally about 10 PNdB lower than the noise outside; with closed windows and single glazing the level inside is usually about 20 PNdB less than that outside; and with good, permanently closed double windows the difference between inside and outside may be about 40 PNdB. Consequently the Peak Perceived Noise Levels outside a school, which should not be exceeded if interruption of oral teaching is to be avoided, are approximately:

85 PNdB with open windows,
95 PNdB with closed windows and single glazing,
115 PNdB with good, permanently closed, double windows.

In the last two cases some form of air conditioning would be necessary.

13. I have made calculations of the average number per day of noise incidents to be expected at schools in the vicinity of the airport. These are given in table NF3,† where the numbers are given separately for the ranges 85 to 94 PNdB and 95 to 104 PNdB. There are no incidents above this range. Only those schools where the total number of incidents exceeding 85 PNdB is more than 30 per day, corresponding to about four in a peak

* p. 27. † p. 10.

* p. 32.
† p. 32.

Printed image digitised by the University of Southampton Library Digitisation Unit

hour, are included. This table will be considered by Mr. Springett* in his evidence. I have not made the corresponding calculations for the noise conditions resulting from the modified routings suggested earlier, but clearly those schools near the "thumb" in the Commission's contours would benefit considerably.

14. In the case of hospitals no criteria have been laid down for maximum permissible noise, but it is obvious that they need special consideration. Something better than can be tolerated by the well individual is desirable for the hospital patient, and the speech interference criterion must also be met so the interruptions should not occur in a doctor's examination of patients. I have made the same calculations for hospitals, therefore, as for schools. There are given in table NF4,† where I have included also an estimate of the Noise and Number Index at the site concerned. Only the Shoebury hospital is seriously affected by noise, and conditions here would be somewhat improved by the modification to the routings suggested earlier.

TABLE NF2

Examples of Perceived Noise Level values

	PNdB
Heavy commercial vehicles, 30 mph at 25 feet	90 to 100
Private cars, 30 mph at 25 feet	83 to 90
Mean level beside trunk road with heavy traffic	90
Mean level in side road 20 to 50 yd. from trunk road	80

TABLE NF3

Noise incidents at schools in Essex and in Southend

1. DAY OF MOVEMENTS TO SOUTH-WEST (about three days in four)

School	2-runway airport (before noise certification of aircraft)		4-runway airport (after noise certification of aircraft)	
	No. of incidents in range of peak PNdB		No. of incidents in range of PNdB	
	85–94	95–104	85–94	95–104
ADMINISTRATIVE COUNTY OF ESSEX				
2 Gt. Wakering Primary (old)	40	60	160	30
3 Gt. Wakering Primary (new)	20	80	180	30
4 Barling Magna Primary	80	20	180	10
5 Paglesham Primary	70	–	60	–
6 Stambridge Primary	70	10	100	–
7 Canewdon Primary	70	10	110	–
8 Sutton Primary	50	–	<30	–
9 Doggetts Primary	50	–	<30	–
10 Rocheway Youth Centre	50	–	<30	–
11 The King Edmund Secondary	40	–	<30	–
18 Rochford Primary	40	–	<30	–
COUNTY BOROUGH OF SOUTHEND-ON-SEA				
A Hinguar Primary	80	30	140	–
B Richmond Primary	100	10	80	–
C Shoeburyness High	100	10	90	–
D Thorpedene Primary	100	10	100	–
E New Primary (not yet opened)	80	40	160	10
F Dowsett High	70	–	30	–
G Southend High	80	–	40	–
H Thorpe Primary	40	–	<30	–
I Hamsted Primary	60	–	<30	–
J St. Nicholas ESN	80	–	<30	–
K Temple Sutton Primary	40	–	<30	–
L Cecil Jones High	40	–	<30	–

2. DAY OF MOVEMENTS TO NORTH-EAST (about one day in four)
No aircraft are likely to exceed 85 PNdB at any of the schools.

Noise incidents at schools in Kent

School	2-runway airport (before noise certification of aircraft)		4-runway airport (after noise certification of aircraft)	
	Incidents in range of peak PNdB		Incidents in range of peak PNdB	
	85–94	over 94	85–94	over 94
SECONDARY				
Jefferson Boys			×	+
Jefferson Girls			×	+
Sheerness Technical High Boys	×		×	+
Sheerness Technical High Girls				+

* p. 36. † p. 33.

Printed image digitised by the University of Southampton Library Digitisation Unit

Table NF3—*continued*

School	2-runway airport (before noise certification of aircraft)		4-runway airport (after noise certification of aircraft)	
	Incidents in range of peak PNdB 85–94	over 94	Incidents in range of peak PNdB 85–94	over 94
PRIMARY				
Iwade				
Queenborough (Junior)			x	+
Queenborough (Infant)			x	+
Blue Town	x	+	x	+
Mile Town	x		x	+
Richmond			x	+
Rose Street	x	+	x	+
St. Edward R. C.	x	+	x	+
St. Georges C. E.	x		x	+
West Minster	x		x	+
Minster in Sheppey				
Halway House				+
St. James C. E. Isle of Grain	x	+		+

x more than 30 incidents on day of movements to south-west (about three days in four)
+ more than 30 incidents on day of movements to north-east (about one day in four)

TABLE NF4

Noise at hospitals

1. DAY OF MOVEMENTS TO SOUTH-WEST (about three days in four)

Hospital	2-runway airport (before noise certification of aircraft)			4-runway airport (after noise certification of aircraft)		
	No. of incidents in range of peak PNdB 85–94	95–104	NNI	No. of incidents in range of peak PNdB 85–94	95–104	NNI
Rochford General	40	–	34	10	–	34
Southend-on-Sea General	10	–	30	–	–	30
Victoria, Southend-on-Sea	30	–	30	10	–	32
Shoebury	80	30	42	140	–	45

2. DAY OF MOVEMENTS TO NORTH-EAST (about one day in four)

No aircraft are likely to exceed 85 PNdB at any of the hospitals

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of
Mr. Bernard Braine* (MP for South-East Essex)

1. My constituency of South-East Essex covers the Rochford Rural District, which includes Foulness Island, and the three Urban Districts of Canvey Island, Benfleet and Rayleigh, all of which are within a distance of about 17 miles of the suggested site for the third London airport. The total population of the constituency is about 134,000.

2. As the local Member I have received a great many representations from local authorities, voluntary organisations and individuals regarding the proposal to site the airport at Foulness. Some of these representations have been in favour, some have been opposed, but all have been concerned with the need for safeguards in respect of basic rights, safety and the preservation of amenities.

3. **The location of the proposed airport**

(a) The Commission's *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore)*† refers in para. 7, p. 7, to the possibility of the airport being sited not only on the Maplin Sands on wholly reclaimed land but also "partly on Foulness Island and partly on reclaimed land". The maps accompanying the document (drgs. CTLA nos. 1/2 and 1/3) indicate a site solely on land reclaimed from the sea.

(b) In all public discussion of the matter so far a distinct impression has been given that an airport at Foulness has a great advantage over all inland sites since it would be built wholly on land reclaimed from the sea and would, therefore, involve no loss of good agricultural land and little disturbance to people. This is misleading, for it seems from the Commission's own preliminary thoughts on the subject that this may not now be the case. In this connection the Commission appear to have been influenced by the Essex and Hertfordshire County Councils in their Submission No. 2 "Statement on Proposed Sites"‡ which recommends consideration of not only the two alternatives mentioned above but also of a site wholly on Foulness Island.

(c) Since over 300,000 people live between the Thames and the Crouch, immediately to the west of Foulness and are bound to be affected by the airport's operations there should be no question of bringing the site either partly or wholly inland. Indeed, like the Rochford Rural District, I consider that the airport should be located further to the north-east than is shown in drgs. nos. CTLA 1/2 and 1/3. This would considerably reduce any loss of amenity that a large, modern airport is bound to cause to population in its vicinity. I understand that siting the airport to the north-east would be technically feasible.

4. **The effect upon amenities**

(a) So many assumptions are made in para. 12, p. 7, of the Commission's *Short List of Sites* about likely noise and disturbance that it is impossible for the layman to judge the effect of the proposal. Presumably the Noise and Number Index contours shown on drgs. nos. CTLA 1/2 and 1/3 are based on a forecast of the likely effect of the new types of aircraft such as the Concorde, likely to be in service and the volume of traffic to be expected when the airport is operating. I observe, however, that the Commission accepts that the reliability of the NNI method of assessing the nuisance has been questioned but "this is a matter which can be further investigated in due course." I understand that an investigation carried out in the vicinity of Heathrow airport is expected to give a much more reliable index of noise and disturbance than is available at the moment. I would hope, therefore, that the results of this investigation are made available to the Commission before they come to any firm conclusion.

(b) The point is of importance because it is again being assumed all too readily by some people that an airport built on land reclaimed from the sea would ensure that aircraft will fly in and fly out over the sea, thus reducing noise and disturbance to the large population in the Thames estuary to the bare minimum. Admittedly the Commission make it plain in para. 13 of their document that contrary to what the advocates of the proposal are saying, many thousands of people will suffer from some noise and disturbance by both day and night. On the other hand, no detailed flight paths or holding areas are shown on the maps accompanying the document although it must be obvious that aircraft taking off to the south west and destined for the Atlantic routes will take a right hand turn and pass over South-East Essex on their journey to the main western air corridors. Similarly, although one holding area may be to the east of the airport over the sea, it seems likely that another would be to the west over the Thames estuary and the most crowded part of my constituency. Indeed, on present evidence it seems likely that the whole community living within a 20-mile radius of the airport—and I emphasise once again that there are 300,000 people living between the Thames and the Crouch—will suffer some nuisance from aircraft noise by both day and night.

(c) If it is the position, as I have been informed, that it is not possible for the Commission to indicate precisely where the flight paths and holding areas will be, then if they decide to recommend Foulness as the most suitable site I must seek an assurance that a safeguard will be provided in advance for the very considerable population who may be affected. Since there is unlikely to be any guarantee that even if the Commission were

---

* See also p. 321.

† HMSO, 6s. Reproduced at p. xv.

‡ Available for inspection at the County Council Offices, Chelmsford and Hertford.

Printed image digitised by the University of Southampton Library Digitisation Unit

given details of flight paths and holding procedures now the appropriate authorities would not change them once an airport is established, I would ask the Commission to make a firm recommendation to the Government that there should be legislative safeguards against any subsequent changes being made in the use of air space which could be detrimental to the interests of the considerable population in the area.

(d) According to present information it is clear that an airport on the Maplin Sands would make life intolerable for the small resident population on Foulness Island itself and it is likely that most of them would have to be evacuated. It has been represented to me that for many of the residents, especially the older workers, the upheaval is likely to shatter their way of life. It is imperative in my view that the full social consequences of establishing an airport on the Maplin Sands or anywhere else, should be taken into account. I would ask, therefore, if the Commission decide to recommend Foulness, that they point out to the Government the need not merely for adequate rehousing for displaced population, but for generous compensation and special provision in regard to employment for older workers.

(e) The establishment of a major airport at Foulness and the economic growth that this will stimulate will mean bringing into the area an additional population which has been variously estimated from 80,000 to well over 200,000. Whatever the figure, the impact on our existing community in regard to housing and transportation and social services will be very considerable. The population of my constituency has more than doubled in the last 15 years and it has been our experience that services have always lagged behind the provision of homes. Thus it follows that if great strain is not to be imposed upon the existing services, the full planning implications of any large increase in numbers must, therefore, be studied in advance and it will become necessary for the local authorities to have increased financial assistance from central funds well before any large scale immigration into the area so that necessary capital expenditure can be met before increased rate income becomes available. In the event of the Commission recommending Foulness, I hope that this point is drawn to the attention of the Government.

5. **The effect on tidal and surge behaviour**

(a) My constituency is particularly sensitive to the question of flooding. We suffered grievously in the east coast flood disaster in 1953 and there was serious loss of life on Canvey Island. Despite the severity of the flooding at that time, experts told us that the conditions we experienced, although unusual, were not the worst that could happen. We are particularly concerned, therefore, with the effect that large scale dredging of sands and alteration in the configuration of the coastline may have upon tidal and surge behaviour. Although our river and sea defences have been strengthened since 1953 there are two related factors which may affect the situation and which, in my judgment, ought to be taken into account before coming to any conclusion about siting an airport on the Maplin Sands.

(b) The Commission will be aware of the proposal to erect a Thames Tidal Flood Barrier in order to protect London from flooding. *First*, according to where that barrier is sited (and no decision on this has yet been taken) it may be necessary to raise the river wall defences for all the communities below the structure. *Secondly*, there is a slow but steady increase in the level of tides due to the sinking of the whole east coast. All this is being carefully studied by the relevant authorities and Canvey Island Urban District Council is being kept in the picture. But although a model of the Thames from Teddington to Southend has been constructed at the Hydraulics Research Station of the Ministry of Technology no model exists for the area further to the east. Thus, facilities do not yet exist for testing the combined effect of the proposed Thames Barrier and the large-scale dredging of sands in the estuary which the airport must involve. I am, in fact, advised that there would be some effect and it is imperative, therefore, for the safety of my Canvey Island constituents as well as that of other Thameside communities, that this is studied and taken fully into account before any decision is taken to recommend the Foulness project, and certainly before any work starts. The River Crouch represents a smaller but similar problem and the communities living along its banks also have the right to some assurance that any change in the configuration of the coastline will not so influence tidal behaviour as to affect them adversely.

(c) There is one final consideration that reinforces the suggestion made in paragraph 3 (c) above about siting the airport on the Maplin Sands further to the north-east. Off Sheerness and near the possible flight paths across the estuary lies the wreck of the s.s. *Richard Montgomery* with an estimated 1,445 tons of TNT in its holds. Because of the serious hazard that this wreck presents not merely to Sheerness, where an explosion would have devastating consequences, but also to the other Thameside communities, I have repeatedly questioned the relevant authorities over the last five years in order to ensure that the utmost care is taken not to interfere with the wreck, assuming of course, that its cargo could not safely be removed. The Government have admitted that a serious hazard exists. As recently as 13th December 1967 their spokesman told the House of Commons that the matter had been carefully reviewed and ". . . all our expert advice agrees that salvage would involve a greater risk of explosion and, of course, it would put the lives of the salvage team in danger and create a hazard to the surrounding population." Your attention may be drawn by objectors to the Foulness project to the danger of aircraft movements causing vibrations which might trigger off an explosion. I have no evidence that this could happen, although an aircraft coming down into the sea near the wreck might well cause an appalling disaster. I understand, however, that it was suggested recently that those who expect to build the airport might remove the wreck. Accordingly I asked a Parliamentary question whether any further recommendations had been made to the Government by explosive experts since the advice tendered to them in 1967. The reply I received was that no such recommendations had been made. Clearly if it is decided to site the airport at Foulness the runways should be angled so as to make it quite impossible for flight movements to affect this wreck.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Essex County Council

SUBMITTED BY MR. J. A. SPRINGETT*†

I am a Master of Arts of the University of Cambridge and hold the Teaching Diploma awarded by the Education Department of that University. I am Deputy Chief Education Officer for the County Council of Essex. I have taught for some five years in schools and in army technical courses in radio communications and have some twenty-one years of experience in educational administration.

1. Members of the Education Committee of the Essex County Council have in recent years given serious consideration to the problems created by separate proposals to establish a new airport and to extend the use of an existing airport within the county. Their concern has been both for the existing schools and educational institutions which will be affected by aircraft noise and the impact of such proposals on school building programmes which have been put in hand in the areas concerned to provide for the increasing number of children therein. The consideration of these problems led the Committee to prepare factual evidence relating to the Stansted problem in an effort to give an objective assessment of the noise problem involved, and, in connection with a recent proposed extension to runways at Southend airport, to raise formal objection to this proposal which was ultimately disapproved, partly on the basis of the evidence so provided. I undertook the necessary studies and I gave evidence at the Southend Inquiry.

2. There can be no doubt that the interruption of teaching in the vicinity of an airport can be a serious problem. In considering this matter in relation to the earlier proposals to which I have referred, I have collected evidence from various sources, to which I will refer, of the serious effects that such interruptions will have on the education of the pupils. I have visited schools in the vicinity of London airport to examine the extent to which teaching is involved. I am satisfied that once the noise level within a classroom at which speech communication is interfered with is reached, the effort on teaching, particularly in oral lessons, is most marked. There is evidence in the Wilson‡ report which quotes from the views of HM Inspectors as to the nature of the interference (paragraph 259). The report refers to oral lessons coming to a halt and morning assembly being interrupted and at least on one occasion being abandoned. I have similar evidence from schools in Windsor in Berkshire where noise levels in the open at ground level of about 100 PNdB are frequently experienced with jet aircraft on flight paths from Heathrow. The Headmaster of Dedworth Green County Junior School, Smiths Lane, Windsor, reported "when aircraft pass overhead, as they frequently do, there is nothing that a teacher can do but stop teaching. This is obviously very detrimental not only from the point of view of concentration being lost. The children are distracted and the whole 'flow' of the lesson lost. If this happens several times during a lesson, as it sometimes does, then the lesson can be almost a complete waste of time. When I take Assembly with the whole school first thing in the morning, I frequently have to stop our service as it is impossible to compete against the noise of passing aircraft and there is nothing we can do but stand and wait for the noise to pass before picking up the threads again". The Headmaster of Trevelyan Secondary School, Clarence Road, Windsor, stated "Fog brings its blessings in this area as all noise from above ceases and peace and quiet reigns. With a clearance, however, pandemonium returns and we once again suffer from rattling window panes and vibrating eardrums". The Headmaster of Oakfield Junior School, Imperial Road, Windsor, stated "When conditions are adverse, the lessons are frequently interrupted and as an aircraft approaches and the noise reaches a crescendo, the lesson stops as speech is inaudible; there is a wait as the noise diminishes and one has to judge when to recommence talking. The interruption is particularly annoying in broadcast lessons or music as in the former the words are lost; in the latter the song or piece of music is ruined and a fresh start has to be made. During such an occasion as Assembly an unnatural break is caused, often destroying the whole atmosphere."

3. I personally witnessed a typical example of such an interruption at the Church of England School at Stanwell in March of 1967; a young child, who was reading aloud to the class, had to cease reading as the aircraft approached and the whole lesson had to be stopped and re-started, in this case about 30 seconds later. There was a very strong blustery wind on this day and under different weather conditions I am told by the teachers that the interruption would be substantially longer.

4. I consider that such interruptions are serious in any form of oral lesson for any subject in the curriculum: they are particularly serious in lessons related to drama and English literature where atmosphere must be built up and the children should experience the excitement and emotion which the teacher is attempting to evoke. Such a lesson would be seriously handicapped by any interruption and I would say that two or more interruptions in a lesson would render such a lesson ineffective. Broadcasts and television play an increasingly important part in the school curriculum and the use of these media is obviously impossible when interruptions cause the sound to be inaudible. The use of new

* See also the evidence of the Action Committee Against Foulness, p.137. † See also p. 327.

‡ *Noise: Final Report.* (Cmnd. 2056; HMSO, 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

developments such as pre-recorded tapes in language teaching and new developments in the use of closed circuit television will also be inhibited. Other oral lessons would be severely handicapped—the extent would depend upon the frequency of the noise experience, but if this were to occur more than, say, twice in a 35-minute teaching period, this would be likely to have a significant effect on the efficacy of the teaching in school and the children's ability to learn.

5. The approach which I have used to assess the extent of this problem created by any proposal, and the order of cost of such measures as may be practicable to ameliorate these difficulties, is as follows:

6. First, I have taken the information which Mr. Fleming has provided in his evidence as to the number of times during the day on which noise incidents, which could give rise to an interruption of speech communication in the schools, is likely to be experienced at each school site within the vicinity of the airport. This information also classifies these incidents according to the intensity of the noise. Whenever the number of such noise incidents reaches about four per hour at peak periods which I have taken to be expected when the number is about 32 or more per 12-hour day some work will be necessary in the interests of sound insulation, though I should like to emphasise that any work of this nature will make the school to some extent a less satisfactory environment for teaching purposes. I am advised that there are broadly three alternative specifications for the sound insulation of schools: all involve some protection of the outer shell of the building, so that it will no longer be possible to open windows to admit fresh air: all consequently involve artificial ventilation systems, and all involve other internal modifications such as sound absorbent ceilings, etc. I set out at schedule JAS 1 a summary of the work which is involved and the degree of sound insulation which may be expected. This first and cheapest form of treatment involves changing the open windows to fixed glazing, which I am advised will produce a 20 dB reduction in noise inside as compared with outside the building. I am also advised that on the basis of sample schools that have been carefully costed, the work is likely to cost from about 66s. to about 40s. per square foot according to the type of building, to which must be added architects' and other professional fees, of say, 12 per cent.

7. The second specification, which involves the fixed glazing of windows with special heavy glass will, I am advised, produce a 25 dB reduction in noise level inside as compared with outside and the cost per square foot on the sample schools taken varies from about 70s. to about 50s. according to the type of construction plus professional fees.

8. The third method involves the provision of double windows in the case of old pre-1914 buildings of heavy construction, or the provision, with later types of building, of a complete new outer shell with its own windows encasing the existing school. This I am advised will produce a sound insulation of the order of 40 dB inside as compared with outside at a cost of about 93s. to 90s. per square foot of floor area, plus fees according to the type of construction.

9. It is to be noted that the cost of building new schools at the present time to normal standards works out at about 110s. per square foot and these sound insulation measures, therefore, will cost anything from about 85 per cent to about 35 per cent of the complete cost of building the school to normal standards, according to the type of construction which has to be treated and the degree of sound insulation required.

10. I give on schedule JAS 2 a list of schools in Essex or in Southend likely to be affected by the Foulness Sands airport. I have been unable to include Kent schools in this schedule or to take them into account in preparing the cost estimates as I have not been supplied by the Kent Authority with the factual information which I requested for this purpose in letters dated 23 January and 17 March. The area of Kent affected is, however, very small and I believe that only a very few schools are located in this area. The Kent County Council have stated that there are two secondary and five primary schools within the 40 NNI contour for a four-runway airport and that there are a further two small secondary schools and ten primary schools in the "30-40 NNI" band. I do not know what line Kent have taken as the 30 NNI contour, nor do I know the whereabouts of the ten primary schools referred to, but from the *Education Year Book* published by the Association of Education Committees, I believe that the two secondary schools in the "30-40 NNI" band must be at Sittingbourne, some six miles from the 40 NNI contour. I would expect the ten primary schools also to be in this general area. Mr. Fleming has already given in his evidence figures for the number and intensity of the noise incidents likely to be encountered at these schools and I have applied the criteria set out above to estimate the cost of providing sound insulation, with a view to ensuring that the number of speech interruptions experienced within these buildings will not exceed about 30 in a twelve-hour period, i.e. four per peak hour. I estimate that the overall cost, would be of the order of £1.6 million on the basis of the two-runway airport (before noise certification of aircraft) or £700,000 on the basis of the four-runway airport (after noise certification). I would wish to make the point, however, that if this work is done and is as effective as I am advised it is likely to be, conditions for teaching within classrooms should be tolerable though not ideal. Outdoor teaching and activities will, however, be interfered with to a greater or lesser extent, according to the nature of the tuition involved, and I would not regard a school, however well sound-insulated in this way, as a teaching environment which was as satisfactory as a school free from these difficulties.

11. There is one further point which needs to be said and that is that if the proposal to provide a new airport at Foulness involves the closure of or reduction in activity at the Southend airport, this is a factor which is going to bring substantial relief to a considerable number of Essex and Southend schools which are already affected or are likely in the near future to be affected by noise from aircraft using the Southend Airport. I give in schedule JAS 3 a list of the Essex and Southend schools which are within or very near the 35 NNI contour for the 1966 air traffic using Southend airport. Mr. Fleming

Printed image digitised by the University of Southampton Library Digitisation Unit

SCHEDULE JAS 1

Sound insulation work at schools

Abridged statement of work required

System built schools	*Degree of Sound Insulation* 40 dB	25 dB	20 dB
PROTECTION OF OUTER SHELL			
Changing opening windows to fixed glazing	x	x	x
Heavy glass and fixed glazing		x	
Double glazing walkway and duct	x		
Fixed inner glazing for double glazing	x		
Treatment of non glazed wall area and facias	x	x	(x)
Closing of roof light and compensation by artificial light	x	x	(x)
HEATING AND VENTILATION			
Powered ventilation (fans, ducts and controls)	x	x	x
External motorized louvre blinds	x	x	x
INTERNAL MODIFICATION			
Sound absorbent ceilings	x	x	(x)
Door treatment	x	x	(x)
Pre-1914 heavy construction			
PROTECTION OF OUTER SHELL			
Changing to fixed glazing with medium glass			x
Changing to fixed glazing with heavy glass		x	
Double windows	x		
External doors	x	x	x
Floor insulation	x		
Ceilings	x	x	x
HEATING AND VENTILATION			
Heating and Air equipment	x	x	x
External motorized louvre blinds	x	x	x
INTERNAL WORK			
Sound absorbents	x	x	x
Doors	x	x	x

x indicates work is required for degree of sound insulation indicated

(x) indicates work may be required for degree of sound insulation indicated

Costs in shillings of work set out above per square foot of floor area in examples worked

	40 dB	*25 dB*	*20 dB*
Post-1945 system building	89-90	50-52	39
Pre-1914 heavy construction	93	70	66
Consultants' interpolated cost for post-1914 Traditional type of building	90	55	40

The foregoing figures do not include professional fees but do include an element of 18 per cent for:

(a) Alterations to drainage, paths, gardening and other incidentals consequential on the works indicated.

(b) Probable unpopularity of this form of work, especially under likely employment conditions in vicinity of airport and restriction on access to school buildings in term time.

(c) Capitalisation of additional running and maintenance costs.

SCHEDULE JAS 2

Essex and Southend schools likely to be affected by Foulness Sands airport

Two-runway airport (before noise certification of aircraft)

PRIMARY		ROLL
New school in course of erection	–	
Great Wakering (old school)	487	
Great Wakering (new school)		
Barling Magna	140	
Hinguar (Shoeburyness)	296	
Paglesham	37	
Stambridge	95	
Canewdon Endowed	131	
Richmond	474	
Thorpedene	540	
Thorpe	828	
Hamstel	734	
Temple Sutton	745	
Sutton	142	
Doggetts	163	
Rochford	188	5000
SECONDARY		
Shoeburyness High	576	
Dowsett High	600	
Southend High	700	
Cecil Jones High (Opens Sept. 1969)		
King Edmund, Rochford	961	
		2837
St. Nicholas ESN	70	70
Rocheway Youth Centre	–	–
Total		7907

Four-runway airport (after noise certification of aircraft)

PRIMARY		ROLL
New school in course of erection	–	
Great Wakering (old school)	487	
Great Wakering (new school)		
Barling Magna	140	
Hinguar (Shoeburyness)	296	
Paglesham	37	
Stambridge	95	
Canewdon Endowed	131	
Richmond	474	
Thorpedene	540	
		2200
SECONDARY		
Shoeburyness High	576	
Dowsett High	600	
Southend High	700	
		1876
Total		4076

Printed image digitised by the University of Southampton Library Digitisation Unit

SCHEDULE JAS 2—*continued*

Kent schools likely to be affected by Foulness Sands airport

Two-runway airport (before noise certification of aircraft)

PRIMARY
Mile Town (Delamark Road)
Rose Street
St. Edwards RC (Hope Street)
St. George's CofE
West Minster (St. George's Avenue)
St. James' CofE (Isle of Grain)
Blue Town (Chapel Street)

SECONDARY
Sheerness Technical High (boys)

Four-runway airport (after noise certification of aircraft)

PRIMARY
Queenborough (Junior)
Queenborough (Infants)
Mile Town
Richmond (Nursery Close)
Rose Street
St. Edward's RC
St. George's CofE
West Minster
Halfway House
St. James' CofE
Blue Town

SECONDARY
Jefferson Boys
Jefferson Girls
Sheerness Technical High (boys)
Sheerness Technical High (girls)

Other schools not mentioned above within Kent 30 NNI contour which are unlikely to be affected by either two- or four-runway airport:

Iwade County Primary
Minister-in-Sheppey County Primary

SCHEDULE JAS 3

Schools within or near the 35 NNI contour for Southend airport (1966 traffic)

	Approx. roll
PRIMARY SCHOOLS	
Rochford	188
Stambridge	95
Paglesham	37
Sutton	142
Blenheim	796
Eastwood	379
Prince Avenue	552
Earls Hall	735
Leigh	541
West Leigh	880
Our Lady of Lourdes	290
SECONDARY SCHOOLS	
Eastwood High	1107
Westcliff High	1700
Belfairs High	1562
SPECIAL	
St. Christopher ESN	120
Total	9124

has provided the same information relating to the number and intensity of noise incidents likely to be experienced at these schools per peak hour as a result of aircraft using this airport at the present time*, that is allowing for about a 33⅓ per cent decrease in traffic in the last two years. I have estimated the cost of providing sound insulation to these schools, in accordance with the criteria which I have already outlined, and I estimate that the overall cost of this treatment, which would be necessary eventually if Southend airport continues to function on its present runways, will be of the order of £1.9 million. I suggest that in assessing long-term cost, this figure should be deducted from that which I have given for the cost of insulating schools in the vicinity of Foulness. It will be seen that, the saving in respect of schools affected by Southend airport is likely to exceed the cost involved in connection with schools affected by Foulness. My comparisons do not take account of possible increases in the use of Southend airport in the future beyond the figures quoted either by more extensive use of existing runways or otherwise.

Addendum to paragraph 10

Since I submitted my proof of evidence, the Kent County Council have made known the 30 NNI contour to which they had worked, and I have also obtained information from other sources about Kent schools referred to in appendix I of Mr. Deakin's proof of evidence.† I wish to withdraw any suggestion that any of these schools are situated as far afield as Sittingbourne. I append a list [added to table JAS 2] of the seventeen Kent schools which I know to be within the Kent 30 NNI contour. Mr. Fleming has provided me with the estimated frequency and level of noise incidents likely to be expected at the locations of these schools and I have indicated those schools which, on the criteria that I have set out in my proof of evidence, would require sound

* p. 32. (table NF3) † p. 86.

Printed image digitised by the University of Southampton Library Digitisation Unit

insulation measures in the case of the two-runway and the four-runway airport. I have not sufficient information to deduce the cost of these sound insulation measures on the same basis as I have used for the Southend and Essex schools, but from the information I have as to the size of the secondary schools and average size of the primary schools, I would expect the cost to be about £100,000 for the two-runway airport and £450,000 for the four-runway airport. These figures exclude any allowance for the Broadway Technical High School for Boys and three of the primary schools, which appear to be in such substandard buildings and on such restricted sites that their future life as school buildings is likely to be very limited. If these costs are added to those I have given in paragraph 10 for Essex and Southend schools, the overall estimated cost of soundproofing measures would be about £1.7 million for the two-runway airport before noise certification and £1.15 million for the four-runway airport after noise certification.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Essex County Council

SUBMITTED BY MR. D. E. TANTON*†

I am a Fellow of the Royal Institution of Chartered Surveyors, a Fellow of the Chartered Auctioneers' and Estate Agents' Institute, a member of the Central Association of Agricultural Valuers, and a member and Past President of the Essex Agricultural Valuers' Association.

I have been resident in south-east Essex for 42 years, and in practice as an agricultural valuer and surveyor for 35 years. Since 1943 I have been sole principal, and later senior partner, of the firm of Offin Rumsey & Hilliard (formerly, until October 1968 Offin & Rumsey) and throughout those 26 years I have been fully engaged in valuations and surveys of agricultural land throughout the County of Essex and adjoining Counties.

1. Environment—General

The *Short List of Sites*‡ published by the Commission refers, in regard to Foulness, to the off-shore site only, but I am instructed to refer also to the alternative Shore site which might have to be taken into consideration.

Foulness Island forms the north-eastern unit of a group of estuary islands, lying between the River Crouch and the North Sea. The south-east coast of Foulness is fringed by the Maplin and Foulness Sands, a shelf of sand averaging three miles wide from north-west to south-east and some ten miles long from north-east to south-west. These sands are entirely covered by the sea at high tide, and it is within this area that the reclamation site is being considered. Until acquisition of Foulness Island by the War Department, the only access to the island other than by sea, was the Broomway over the sands from Wakering Stairs, at low tide, a distance of some three miles to the nearest point of access.

2. Ministry of Defence Area

The siting of the third London airport at Foulness, in either of the possible sites, would entail the complete elimination of the Ministry of Defence Ballistic Experimental Establishment, and, so far as can be ascertained, the total areas owned by the Ministry of Defence for this purpose, excluding saltings, are as follows:

	acres
(a) Foulness Island	6,700
(b) New England Island	290
(c) Havengore Island	550
(d) Potton Island	880
(e) Wakering and Shoebury Main Land	550
	8,970

The above total does not take account of the main Garrison installation at Shoebury, but only of that part of the land that I believe to be connected with the Experimental Ranges.

3. Agricultural Occupation

The areas of Ministry of Defence land at present in agricultural occupation are as follows:

	acres
(a) Foulness Island:	
Normal agricultural tenancies	3,565
Restricted grazing occupation	613
(b) New England Island:	
Restricted grazing occupation	61
(c) Havengore Island:	
Restricted grazing occupation	457
(d) Potton Island:	
Normal agricultural tenancy	708
(e) Mainland:	
Normal agricultural tenancies	129
Restricted grazing occupation	41
	5,574

The remainder of the area is occupied exclusively by Ministry of Defence installations and roads.

4. Agricultural conditions

(a) *Foulness Island*

The whole of this island is basically sound agricultural land, practically the whole being suitable for arable cultivation. The island is completely flat, in no place reaching the 25-ft contour, and is protected by a sea wall maintained by the Ministry of Defence. Drainage is by a series of primary and secondary ditches, the former maintained by the Ministry of Defence. The land is mainly a deep alluvial soil of medium texture and high productivity, requiring very little under draining, but tending to heavier clay conditions on the south-west fringe and north-west.

The Ministry of Agriculture classification of Foulness Island shows approximately:

	acres
Very good land	4,000
Medium land	2,700
	6,700

Ministry of Defence exclusive occupation includes something like 1,200 acres of the very good land and 1,300 acres of the medium land, the greater part of which might revert to agricultural occupation if the Ministry installations were closed and cleared.

The farming of arable is restricted by the operations of the Ministry of Defence, which impose "under-cover" conditions on certain parts of the island at short notice.

* See also the evidence of the Action Committee Against Foulness, p. 137.

† See also p. 330.

‡ *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off shore).* (HMSO, 6s.) Reproduced at p. xiv.

Printed image digitised by the University of Southampton Library Digitisation Unit

The island is remote, with restricted access, and these factors, combined with the primary purposes of the Ballistic Experimental Ranges, have resulted in a definite limitation of the farming scope on the island. The provision of fixed equipment on the farms has also been limited by the Ministry of Defence policy, and, therefore, for many years past, the full productive potential of the farms has been restricted. The whole of the land is, however, extremely well farmed and productive within these limitations.

The main arable crops at present grown are a rotation of cereals, legumes and seeds, but the land, if freed of all restriction and fully equipped, is suitable for more intensive rotations including root crops.

The grazing area, mainly in the AWRE Range, is rich feeding pasture, but restricted against intensive management by the Ministry of Defence regulations. Stock has to be removed into small pounds periodically, thereby seriously reducing the head of stock that can be maintained. The whole of this area, if unrestricted, could be used as highly intensive grazing or as productive arable.

(b) *New England Island*

The same grazing restrictions apply as in (a) above. Much of the island is irregular and rilled, and little is suitable, without extensive reclamation works, for arable cultivation, but much of the island could be very much more intensively grazed if unrestricted. Although included in the Ministry of Agriculture classification of medium land, I consider this area might well be classed as "poor".

(c) *Havengore Island*

This island is basically similar in character to Foulness, with a deep alluvial soil, and a large part has a history of arable cultivation, though it is all now in grass and subject to strict limitation. If unrestricted, the greater part of the island is capable of good normal arable cultivation of high productivity, although almost entirely lacking in fixed equipment. This island is shown in the Ministry of Agriculture category of "medium," but if unrestricted and provided with adequate fixed equipment, I consider it would be worthy of category "good".

(d) *Potton Island*

The whole island was in arable cultivation in 1954, when acquired by the War Department, and the greater part remains tenanted and cultivated as arable. This island again is a deep alluvial soil of medium texture and high productivity. Fixed equipment is limited and has not been brought up to modern standards. This island is in the Ministry of Agriculture category of medium land; if unrestricted and equipped, it could possibly mark higher as "good".

(e) *Mainland*

The small areas in agricultural occupation are spare land lying between Ministry installations; the soil is similar to Havengore Island, though somewhat heavier in parts, and, if unrestricted, is capable of arable cultivation of good productivity. There is very little agricultural fixed equipment. Almost all of this land falls properly into the Ministry of Agriculture category of medium land.

5. **Ministry of Defence installations**

If either of the Foulness alternatives were adopted, it is assumed that the whole of the Ministry of Defence installations, with the possible exception of Shoebury garrison, would be eliminated and primarily a large area of land would be released from their occupation. It is impossible at this stage to assess the possibility of demolition and clearance of Ministry of Defence installations on this land; but, assuming clearance of the greater part of their works, and restoration of the land to agricultural occupation, the land balance appears to be as follows:

	acres
(a) Off shore site: total Ministry ownership	8,970
Area in agricultural occupation	5,574
Gross	3,396
Deduct for existing roads, unreclaimable installations and new road and rail accesses, say	396
Net restoration to agricultural occupation	3,000

Additional benefit to agriculture would derive from the lifting of restrictions at present imposed by the Ministry of Defence.

	acres
(b) Shore site:	
Net restoration to agriculture as above	3,000
Less area required for airport construction	2,420
Net restoration to agriculture in this case	580

The same additional benefits would apply in this case but it is to be noted that the area of land included in this designation is mainly the better quality of working land.

In either of the above cases provision of considerable fixed equipment would be necessary to bring the remaining land into full agricultural production.

6. **Land which would be acquired for the airport site**

(a) *Off shore site*

In this case no part of the agricultural land would be acquired for the airport site other than for road and rail links. It may be thought that the greater part of the land dealt with in this report would be regarded as a "noise buffer" and would therefore remain in agricultural occupation. It is thought that the intrusive noise sector would be little detriment to farming occupation, but undesirable for any form of new intensive development. It appears possible, therefore, that this siting might result in an addition to agricultural occupation in the immediate environment of some 3,000 acres.

(b) *Shore site*

In this case, 2,420 acres of agricultural land would be acquired in addition to road and rail links and possibly some 150 acres at the north-east tip of the island would be sterilised. As already stated, this includes some of the best land on the island.

This project would necessitate the re-alignment of the remaining holdings on the island but would not entail ultimate serious loss of agricultural land outside the airport area.

Printed image digitised by the University of Southampton Library Digitisation Unit

With this scheme, the noise contours would intrude more over the adjoining lands and would increase the necessity for provision of undeveloped "noise buffer" area. This siting might therefore result in an addition to agricultural occupation in the immediate environment of some 580 acres.

7. Housing and ancillary development

7.1 *Programme*

At a conference with the Chief Planning Officer to Essex County Council on 28th March 1969, it was stated that a provisional programme for operations is likely to be as follows:

1976—first runway becomes operational.
1981—second runway becomes operational.
1981—1996 third and fourth runways constructed and become operational.

7.2 *Housing and Ancillary Development*

STAGE I (TO 1981)

It is anticipated that no additional agricultural land will be scheduled for housing and ancillary development at this stage. The factors leading to this conclusion have been dealt with by the County Planner for Essex.

STAGE II (TO 1996)

The estimate of land requirement for housing and ancillary development during the period 1981 to 1996 is approximately 18,000 acres, and that the total additional population generated by the airport, when fully operational, would be between 400,000 and 500,000 persons.

The allocation of approximately 28 square miles of land within the required distance limt would absorb a very large part of the present agricultural occupation of this area, after leaving a reasonable "noise buffer", and the exact plotting of an urbanisation project of this magnitude would require very extensive research. A rough indication of proposals has been given, showing urbanisation extending widely over the whole of these districts, but leaving an area of some 15 square miles on the eastern fringe of the urbanised area, in addition to the Estuary islands, in agricultural occupation. The greater part of the 15 square mile belt is high grade agricultural land, but includes existing development of Rochford Town and several small villages.

The land outside the agriculturally reserved area, which is at present being considered for the siting of housing, etc., is, apart from existing major developments, not generally of very high quality. The largest single category is poor, with a further very considerable area of very poor, including bushed or plotted lands. It would be desirable to the Essex Planning Authority to preserve, as far as possible, the best agricultural lands, though there must inevitably be some wastage in this category in order to achieve an economic and practical layout.

7.3 *Urbanisation*

I have been given by the Essex County Planner an approximate indication of what he considers could be the area of urbanisation, which includes practically the whole of the Borough of Southend-on-Sea and the Urban Districts of Rayleigh and Benfleet, together with a large part of the Rural District of Rochford. This area excludes the whole of the estuary islands, which are entirely dependant on sea wall protection, together with the wide belt of about 15 square miles of high grade agricultural land previously referred to. In this way it has been possible to exclude most of the best agricultural land from development, and concentrate on land in the lower agricultural grades; and also to exclude the low-lying islands where constant sea-wall protection is needed against the possibility of flooding.

By transposing this proposed urbanisation area on to a larger scale map, I have been able to produce an approximate analysis of the total area enclosed by the proposed Urban fence as follows:

			acres
(a)	Developed land, including Southend, Rayleigh, Benfleet and various villages		15,500
(b)	Agricultural land:		
	Very good	900	
	Good	2,100	
	Medium	3,650	
	Poor	4,800	
	Very poor	2,550	
	Marsh	1,500	15,500
(c)	Woodlands and waste		1,700
	Total area enclosed		32,700

The area of 15,500 acres shown in (a) above includes the whole of the intensively developed urban areas of Southend, Benfleet and Rayleigh, but also includes a considerable amount of land in the fringes of these urban areas and some more isolated areas, where development is not completed, and considerable in-filling and plot development can be anticipated. It seems likely that all of these included areas will be fully developed within Stage I and will provide the main supply of land for this purpose.

7.4. *Development Area*

My estimate of areas available for Stage II development, in the site at present provisionally provided, anounts under (b) and (c) above to 17,200 acres. It would probably be desirable to preserve some of the woodlands within this area for amenity purposes, and some part of the marshland, particularly fringing the River Crouch, would probably be unsuitable for residential development, but these areas could undoubtedly be utilised for the provision of open spaces and other essential elements in a major development project.

7.5. *Horticultural Holdings*

Within the agricultural area scheduled above are numerous horticultural units of high productivity, including some acres of glass and mushroom houses. These would eventually be absorbed into the general development, but are perhaps more easily replaced beyond the urban limits, as acreage is very much more restricted and soil formation is less important than on normal agricultural holdings. In the time available, it is impossible to include a detailed survey of these, but, owing to their limited acreage, some of these might continue in production for some period beyond the commencement of Stage II development.

Printed image digitised by the University of Southampton Library Digitisation Unit

7.6. *Southend Airport*

If the final decision as to the siting of the Third London airport should be in favour of Foulness, this might eventually lead to the closing of Southend airport. In my assessment of developed areas in 7.3 above, some 250 acres, land at present occupied by the airport, would be released and could be added to the area available for development. Although originally agricultural land mainly in the very good category, it has long ago passed out of agricultural occupation, and its siting appears to dictate housing development.

8. **Severance and fragmentation**

On the actual airport sites, these considerations are minimal. The off-shore site involves no severance or fragmentation except for comparatively short lengths of road and rail access; the shore site cuts off parts of farms and involves re-planning of units, but with little consequential loss of land except for road and rail access.

9. **Influence of noise on livestock husbandry**

These effects are probably not very serious in either project.

The intrusive annoying contour of 50 NNI covers one dairy herd at Great Wakering; the contours between 40 and 50 NNI, intrusive to intrusive/annoying, include several important dairy herds. These observations are taken from the NNI index relating to a four-runway airport on the off shore project issued by the Commission.

10. **Effect of pollution and turbulence**

These factors, which might affect an inland site, can be ignored on the off shore site at Foulness and would be minimal on the shore site.

11. **Road links**

Stage I

It appears at this stage that road link will be effected by an improvement of the London/Southend arterial road A127, to three-lane dual trunk road standard, with a new link of similar standard from Foulness to the Eastern end of A127.

It is estimated that the improvement to the existing A127 as it affects agricultural land would require acquisition of about 150 acres of land, with comparatively little additional severance.

In addition, there is the new link from Foulness, about eight miles long. It is difficult at this stage to be precise until the exact point of juncture is planned, but it is possible that some 200 acres of land might be required for this purpose. Nearly four miles, involving 100 acres of land, and bridging over the intervening creeks, would traverse present Ministry of Defence lands, and severance problems would be absorbed in agricultural re-development. The remaining four miles, involving 100 acres of land, seems likely to pass through very high-grade market garden land, and to involve very serious problems of severance and fragmentation of farms. The first four miles are over medium category land, and the second four miles are over very good category land.

Stage II

It is not clear yet at what stage it would be necessary to construct a completely new three-lane dual motor way from Foulness to the London Box, a distance of about 39 miles, almost all a new route through agricultural land, but I assume this would be towards the end of Stage I or at the commencement of Stage II. This is estimated to require approximately 1,000 acres of land, and to involve very serious problems of severance, injurious affection and fragmentation to existing holdings. Practically the whole of the land affected by this route is in medium category.

12. **Rail link**

Stage I

It appears that, at Stage I, the rail link will be achieved by the improvement of the present Shoebury to Fenchurch line with an ultimate link to King's Cross. There is an existing single-line on to Foulness, which would be brought up to full standard; and extensive improvement and widening would be required along the whole track. The extension of the Foulness track to Shoebury would involve land at present in Ministry of Defence occupation, and would be absorbed in agricultural rehabilitation of this area. From Shoebury to Fenchurch Street it is probable that some 250 acres of agricultural land would be required, but severance of existing holdings would not be very serious, as the existing line has already accounted for major problems of severance. Agricultural crossings would have to be closed, and under- or over-passes provided where essential.

Stage II

A secondary rail link from Foulness, by-passing existing centres to the north, and joining the existing Southend Fenchurch line at Pitsea is proposed. This route would be about 18 miles long, and for approximately 10 miles would run parallel with the new motor way. East of this it would traverse a new route across Havengore and Potton Islands, and at the west end a new route over agricultural land in the parishes of North Benfleet and Bowers Gifford. This would probably require approximately 220 acres of land of which approximately 100 acres, forming the east section, would be in good category, and 120 acres forming the western section in medium land. A further important factor of severance would occur where the new rail link does not run parallel with the new motor way.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Chatham Borough Council *

1. The *site information*† issued by the Commission upon the Foulness (off shore) site indicates that the precise position cannot yet be determined and that the NNI contours drawn for the site shown on plans CTLA/1/2 and 1/3 are only approximate.

2. Although the Borough of Chatham lies outside the 40 NNI contour as drawn on the plans CTLA/1/2 and 1/3 the possibility remains that this town could be affected by noise to the 40 NNI level and it is suggested that noise nuisance below the 40 NNI would cause serious disturbance particularly at night.

3. It is noted that the 30 NNI contour has not been drawn on the plans received. Furthermore it has not been possible to obtain accurate information upon the area likely to be within a 30 NNI contour but it is fairly clear that disturbance is suffered by people within such an area. Reports of areas having a level of 30 NNI indicate that 40 per cent of the residents complain of being woken at night by aircraft noise; 43 per cent complain of house vibration and 59 per cent complain about interference to television pictures.

4. It would appear that more information upon the noise and disturbance likely to arise from an airport at Foulness will be available for later stages of the Commission's hearings and it is requested that any information obtained by the Commission be made available to this Council as quickly as possible.

5. In the light of the information at present available this Council must express its deep concern that consideration is being given to a site for an airport in such a position that the residents of this town and our visitors will be subjected to disturbance by noise.

6. The Commission will be aware of the difficulties likely to be experienced by schools, hospitals and other places and the Council has in mind not only the discomforts likely to be experienced in homes in the town but also in offices and other buildings and, for example, in the town's very fine concert hall.

7. The Council would like more information and an assurance that noise disturbance will not be caused to Chatham preferably by siting the airport elsewhere or, at least, further away from the town or by arranging flight paths so that the line of take off and landing does not pass over the Medway towns.

8. There have been some reports of smoke nuisance arising from airports in the future. It may not be easy to predict how aircraft and airports are going to develop in years to come and what nuisances may come from them but this Council is anxious to see that the residents of this Borough, many of whom may never wish to travel by air, are not going to be subjected to discomfort and annoyance throughout their daily lives, and when they could be enjoying quiet nights, by an airport giving no particular benefits to this community.

9. The Council wishes to reserve the right to submit more detailed evidence at later stages of the Commission's Hearings.

* See also p. 319.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off shore).* (HMSO, 6s.) Reproduced at p. xiv.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

by

Essex County Council (*Dr. G. W. Schaefer*)
Southend-on-Sea County Borough Council (*Mr. N. Harris, Mr. T. B. Hill and Mr. R. F. Lloyd Jones*)
Kent County Council (*Mr. W. H. Deakin*)
Rochford Rural District Council (*Mr. G. A. Knowles*)
Mr. J. S. Orchard (personal capacity)

Witnesses were examined on this evidence
on Day Three, Wednesday 7 May 1969
see pages 341-377

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Essex County Council

SUBMITTED BY DR. G. W. SCHAEFER*

1.1. I am Professorial Research Fellow of the Biophysics Research Unit, at the University of Technology, Loughborough, Leics.; a Doctor of Philosophy in Mathematical Physics of the University of Birmingham; a director of research for thirteen years in the fields of atomic reactor physics, collisions of atoms, aerodynamics of bird flight and gas turbines, vibration failures of axial compressors and radar identification of migrant birds and insects with application to the measurement of migration density; and a keen amateur field ornithologist for twenty-five years.

1.2. I have been asked by Essex County Council to submit technical evidence relating to the possible hazard of birds to aircraft at the proposed airport site at Foulness. An off-shore four-runway site is assumed in the evidence.

1.3. The extreme variability and adaptability of birds make it impossible to be more than semi-quantitative in any predictions about the future hazard at the proposed site. In addition, it has not been possible in the time available to complete research into the large body of widely-scattered unpublished statistical data on bird strikes, nor to make additional observations on bird populations near Heathrow and the Maplin Sands. I have tried to be as precise and factual as the data to hand and my ability allow. The present evidence should be considered as an interim statement. The results of future investigations could be reported at a later stage of the Commission's work.

1.4. I shall give a brief account of the general features of the bird hazard problem, including information about the position at Heathrow. I shall discuss the available data on the numbers and behaviour of the important hazard species at Heathrow and the Maplin Sands. I then try to estimate the effects on number and behaviour of an airport on the Maplins. By comparison of bird movements at Heathrow with those estimated for Foulness airport, and with a knowledge of the strike frequency at Heathrow, I predict a strike frequency for Foulness. The standard methods for reducing bird hazard are reviewed, and some possible future trends noted. I conclude with a few remarks about the conservation of some displaced bird species.

2. General Features of the Bird Hazard Problem

2.1. (a) *Migration and local movements.* Bird movements are generally of two types: local movements with a diurnal or tidal rhythm representing food gathering and roosting, or migration. The number of local movements will depend critically on the location of the airport site, while migration in SE England is known to be on a broad front in general* and thus more or less independent of airport site. Bird strike probability will have therefore a rather constant background level due to migration, with a site-dependent addition due to local movements. A comparison of the frequency, duration and density of the migration of heavier birds, as measured on radar by me and by Eastwood* with corresponding data for the local movements of heavier species obtained visually at Heathrow† and the Maplin Sands‡, shows that for these two sites the migration background is at most a tenth of the importance of the local movements, and will be neglected in this evidence when considering bird strike frequency at these sites. However it is necessary to consider migrants when assessing the very rare dangerous situations (see 2.5).

(b) *Height of movements.* One-third of migrants travel above 2,500 ft, while only a few per cent fly higher than 7,000 ft. The height of local movements varies considerably with species. For example, gulls generally move at heights between a few hundred and about 1,500 ft, wild fowl and waders from ground level to about 500 ft, and starlings up to about 1,000 ft. Aircraft holding zones are well above local movements. On days with soarable air gulls may reach several thousand feet.

2.2. Hazard area

Canadian reports show that about "four out of five birds strikes on civilian aircraft occur at or near airports, while the fifth is likely to take place during approach or climb out"§. Strike reports for BEA in 1968 show that, out of 73 reports of the locality of the strike, 68 were during landing and take-off, the remaining five being in onward flight.‖ These statements support the conclusion that the main "hazard area" (strictly speaking a volume) may be considered as the glide path, the runway, the climb-out path, with the runway as the chief hazard area. The glide path has an angle of about three degrees. Using the heights given in 2.1, gulls may be a strike hazard on the glide path out to five miles from the runway, while with lower flying local birds such as

* See also p. 341.

* Eastwood, E. *Radar Ornithology.* (Methuen, 1967.)

† Sage, B. L. *The Winter Population of Gulls in the London Area.* London Bird Report. (London Natural History Society; 1969.)

‡ Rudge, P. "The Birds of the Foulness and Maplin Sands" in *Third London Airport–a preliminary statement of the scientific interest of 3 Essex sites being considered for this airport* (The Nature Conservancy; 1968.)

§ Lewis, H. F. (ed.) Bulletin Number 5. Associate Committee on Bird Hazards to Aircraft. (National Research Council, Canada; June 1967.)

‖ Brown J. G. W. *Summary of Bird Strikes: January 1–December 31 1968* Technical Memo. (Aerodrome Services, British European Airways; (1969.)

Printed image digitised by the University of Southampton Library Digitisation Unit

wildfowl and waders the hazard may extend out to about two miles. On climb-out with long-haul jets, the corresponding figures would be about two miles beyond the end of the runway for gulls, and approximately the end of the runway for wildfowl and waders, while for short-haul aircraft the corresponding distance for gulls would be about one mile. Some distinction exists in the statistics indicating that the strike rate on landing is greater than that on take-off: BEA in 1966 experienced 96 per cent more strikes on landing than on take-off. New Zealand airlines in 1965-66 recorded 33 per cent more incidents on take-off as compared to landing*; a high proportion of bird bodies found on the runway at Heathrow are at the approach end.†

2.3. **Frequency of bird strike**

(a) *General.* I define a bird strike as an occasion when an aircraft is struck by one or more birds. An aircraft movement is either a takeoff or a landing. I shall quote bird strike frequency as the number of strikes per 1,000 aircraft movements. The frequency will depend upon the numbers of birds of various species within the "hazard area", the duration of time they spend within the area, their flight behaviour, the relation of their flight paths to the runway, the height at which they occur in the "hazard area," their reaction to approaching aircraft, and so on. The frequency will also depend upon a number of aircraft parameters, such as aircraft effective frontal area and the distance travelled by the aircraft below the hazard ceiling for the various species.

(b) Table 1 shows a variety of strike data taken from a number of reports. The New Zealand values have been reduced by a factor of two-thirds to allow for the "near misses" included originally. In judging these data, it should be remembered that reporting standards vary.

(i) It may be seen that bird strike frequencies for various airlines are rather similar in magnitude, probably because they are an average over a variety of airports. The frequency may depend on the type of aircraft in service as well as the part of the world being served. In fact, there appears to be a positive correlation between the frequency and the average size of aircraft employed.

(ii) Midway Atoll, while not a commercial airport, has been included to indicate the frequency in a severe situation.

(iii) The commercial airports show a wide variety of strike frequencies.

(iv) By comparing Heathrow with other airports served by BEA, I conclude that the strike frequency at Heathrow is not unusual, but near the BEA average figure.

(v) For a given airport larger types of aircraft appear to have a higher strike frequency, as evidenced by the entries for BEA and BOAC at Heathrow.

(vi) The final entry shows the frequency of strikes which produced dead birds on the runways at Heathrow. This must be an absolute minimum frequency for Heathrow for the period, and falls nicely between the BOAC and BEA Heathrow values.

* Caithness, T. A., Williams, M. J., Bull, R. M. "Birds and Aircraft: a problem on some New Zealand airfields." *Proc. N.Z. Ecol. Society*, 14 (1967).

† Private communication, British Airports Authority.

TABLE 1
Bird Strike Data

	Number of strikes/yr.	*Number of movements*	*Strike frequency (per 1,000 movements)*	*Ref. (see notes below)*
AIRLINES				
BEA 1968 (28 airfields)	83	330,500	.25	1
BOAC 1967	96	126,000	.76	2
Air Canada 1966	147	340,000	.44	3
Canadian Pacific 1965 (23,620 hrs)	8	15,000 (est)	.53	3
AIRPORTS				
Midway Is. 1958-64	300-400		37	4
BEA at Edinburgh 1968	6	8,720	.69	1
BEA at Manchester 1968	4	17,348	.23	1
BEA at Glasgow 1968	4	20,038	.20	1
BEA at Berlin 1968	6	30,482	.20	1
BEA at Belfast 1968	4	12,416	.32	1
BEA at Heathrow 1968	18	89,900	.20	1
BOAC at Heathrow 1967	19	18,000 (est.)	1.0	2
New Zealand (1965-66) (several)			0.1 (average) 3.4 (max.)	5
Auckland 1966		14,000 (est.)		6
– landbirds	17		1.22	
– waders	2		.14	
– gulls	5		.36	
– unknowns	4		.28	
Total	28		2.0	
Heathrow Sept. 1968-March 1969				
– strikes producing dead birds on runways	84 (pro rata)	247,416	.34	7
– gulls only	77 (pro rata)		.31	7

Printed image digitised by the University of Southampton Library Digitisation Unit

NOTE: References are to the last column of tables 1 and 2.

1. Brown, J. G. W. *Summary of Bird Strikes, January 1--December 31, 1968.*
2. Gulliver J. R. *1967 Bird Strikes Statistics.* Technical Note EE.E.1/7.409/TG3. (British Overseas Airways Corporation; 1969.)
3. Lewis, H. F. (ed.). Bulletin number 5. Associate Committee on Bird Hazards to Aircraft.
4. Fisher, H. I. "Airplane–Albatross Collisions on Midway Atoll." *Condor,* 68, 229-242.
5. Caithness, T. A., Williams, M. J., Bull, R. M. "Birds and Aircraft: a problem on some New Zealand airfields."
6. Saul, E. K. "Birds and Aircraft: a problem at Auckland's new international airport."
7. Private communication. British Airports Authority. 1969.
8. Gulliver, J. R. In *The Problems of Birds as Pests,* ed. Murton, R. K. and Wright E. N. (page 42). (Academic Press, 1969.)

2.4. Damage statistics

Not all strikes cause damage, I shall discuss the relationship between strikes and damage.

(a) *Frequency.* The following table gives the number of strikes resulting in damage and the total number of strikes per year for two airlines operating different types of aircraft.

TABLE 2

Airline	*Year*	*Strikes with damage*	*Total strikes*	*Fraction damaged*	*Ref. (see above)*
BOAC	1966	13	97	0.13	8
BOAC	1967	7	96	0.07	2
BEA	1968	24	83	0.29	1
		34	276	0.12	

It is apparent that the larger aircraft of BOAC are less liable to damaging strikes than the generally smaller aircraft of BEA. The average fraction for strikes producing damage is approximately 12 per cent.

That the frequency of damage may be dependent on aircraft type is emphasised by a BOAC report* that engine damage frequency was 10.2 per cent of strike frequency for 1967 for Boeing 707s compared with 0.0 per cent for VC 10s in the same period giving an average for the BOAC fleet of 7.3 per cent.

(b) *General considerations.* The damage resulting from a collision will depend upon:

(i) the mass of the bird struck,
(ii) the multiplicity of the strike, which may be taken as proportional to the density of the flock involved,
(iii) the speed of the aircraft, and
(iv) the vulnerability of the area struck.

Items (iii) and (iv) may be considered independent of airfield site. It has been found experimentally that damage to airframes and windscreens is proportional to the mass of bird and the cube of aircraft speed.†

2.5. Danger to life and limb

(a) *In the "Hazard Area".* The Air Registration Board requires that windscreens and engines be safe against birds of up to 4 lb weight at the maximum airspeeds of aircraft flying below 8,000 ft; and therefore safe within the "hazard area" for birds under 4 lb. (The British species not covered by this limit, but liable to be encountered, are geese and swans.) Thus the danger associated with a collision in the "hazard area" is expected to be appreciable only when:

(i) one of these very heavy birds hits a vital part of the airframe, such as a windscreen or control surface,
(ii) a multiple strike by a number of moderately heavy birds, such as wildfowl or gulls, or a very large number of smaller birds like starlings, results in a significant loss of power in several engines simultaneously, or
(iii) a number of moderately heavy birds strike a vital part(s) simultaneously.

The degree of danger is clearly dependent on the site of the airfield. I believe that item (ii) is the most probable in SE England, because of the greater probability of encountering dense flocks of gulls, starlings, etc., rather than a goose or a swan, although the latter ought not to be neglected when remedial measures are being considered.

There has been only one major disaster identified as due to a bird strike in the "hazard area". This was an Electra which met a dense flock of starlings after take-off at Boston, USA, 1960, resulting in the loss of 62 lives.* A noteworthy example of a high risk situation occurred at Edinburgh when a Vanguard collided with a concentration of gulls after take-off, resulting in the loss of two engines while a third became critical: 125 dead gulls were subsequently found.

(b) *Outside the "Hazard Area".* Here the danger is largely independent of airport site. The factors producing strike danger are different, largely due to the increased airspeed. Bird migrants become the most important hazard, but the frequency of strike is low.

There is apparently but a single case of a major disaster, from a proven strike to a Viscount which collided with a migrating whistling swan at 6,000 ft over Maryland, USA, breaking off the port side of the tail plane, and killing 17 persons. The recent Viscount disaster over the Irish Sea at high altitude has been suspected to have been due to a collision with a migrating swan.

(c) *General.* There have been a few other cases of personal injury and loss of life on civilian aircraft. For the sake of comparison, strike disasters are at most a few per cent of all air disasters. The meagre data indicate that about a half of the disasters caused by bird strikes occur near an airport, and thus depend on the particular site.

2.6. Hazard species

(a) On a world-wide basis the great majority of bird strikes are due to gulls.† On an international enquiry, gulls accounted for 79 of 142 strikes reported.‡ During

* Gulliver, J. R. *1967 Bird Strikes Statistics.*
† McNaughton, I. L In *The Problems of Birds as Pests,* p. 43.

* Stables, E. R., New N. D. "Birds and Aircraft: the problems." In *The Problems of Birds as Pests,* pages 3-16.
† Wright E. N. "Birds and Aircraft: the problems". In *The Problems of Birds and Pests, p. 113.*
‡ Lewis, H. F.

Printed image digitised by the University of Southampton Library Digitisation Unit

five months of the past year BEA strike reports show that 18 out of 27 identified species were gulls.

(b) "In Britain about a dozen species constitute the major hazard, and of these the black-headed, common and herring gulls, lapwing, wood pigeon and rook are most frequently encountered. Jackdaws, oyster-catchers, golden plover and starlings may be especially troublesome at particular airfields."*

(c) At Heathrow gulls are the pre-eminent problem, and accounted for 51 out of 56 strikes producing dead birds on the runways between September 1968 and March 1969; this is 91 per cent. Important among other species are lapwing and starling. In 1968 two near misses of flying mute swans were reported by pilots.

3. Estimation of Hazard at Foulness

3.1. **Introduction.** The estimation of the hazard at the proposed Foulness airport is made by a comparison with the Heathrow situation. In 2.1 above it was established that the hazard at these two sites is largely due to local bird movements, rather than to migration. I assume that aircraft parameters will be the same at the two sites. Therefore the bird strike frequency at Foulness may be estimated by comparing the corresponding local bird movements only, and by then applying the measured strike frequencies at Heathrow given in table 1.

3.2. **Local bird movement at Heathrow**

Heathrow has its own special environmental features which influence the local bird movements. These features include a number of large London reservoirs situated on an arc from the south-west to the south-east the nearest of which comes within a mile of the airfield, a sewage works on the western perimeter between the ends of the runways, rubbish tips one or two miles to the north, the river Colne flowing from the north down the western side at a distance of one mile, the river Thames coming from the WNW to the reservoir area, and a number of local canals, ponds, small rivers and meadows. These features attract a very large population of birds, particularly in the winter months. I now deal in turn with each of the main hazard species in terms of their number and their movements.

(a) *Gulls.* A recent midwinter census has been made of the gulls in the area near Heathrow and the results have been analysed by Sage.* It was found that 400,000 gulls roosted on the reservoirs referred to above in January 1969 while some 40,000 roosted on the two reservoirs (Staines, King George VI) less than two miles to the south-west of Heathrow in December 1968 and January 1969. It is with the latter group of gulls that I am concerned, since most of those that roost on the more distant reservoirs fan out on their daily flights in directions away from the airfield. Visual observations were made on the direction of the evening flight lines to the Staines and King George VI reservoirs. The London Bird Report stated "The main approach, however, would seem to be from the NNE down the west side of Heathrow airport along the line of the Colne." "On January 17 1969 T. Brough counted 10,000 large gulls at the Sipson Road rubbish tip (about one mile to the north of the airfield). The first gulls to depart from this gathering were followed and traced down the west side of the airport to Staines reservoir." Quite large movements of up to 100 per minute were also reported from the large rubbish tips at West Drayton about two miles to the north. "The only morning flight line reported was to the NNE over the West Drayton rubbish tips"*. An official responsible for collecting the dead birds from the runways at Heathrow states that the gulls "come over the airfields in droves at dawn, flying to the north and towards London."† The inference seems inevitable that the majority of the 40,000 gulls of these two reservoirs fly twice daily directly across the "hazard area" at Heathrow in mid-winter. For the purposes of later calculations I assume a conservative figure of 25,000 gulls associated with the "hazard area".

I know of no equivalent census figures for spring, summer or autumn.

However, the general pattern of gull migration in SE England is‡:

(i) the bulk of winter visitors emigrate to breeding grounds in March,
(ii) a good number, especially birds in their first year, remain for the summer months,
(iii) a very large passage and immigration occurs in September–October,
(iv) a large population of visitors remain for the winter.

On the basis of this pattern I would expect that, relative to the 25,000 or so gulls established above as associated with the "hazard area" in mid-winter, there would be a few thousand in spring-summer, a rapid rise in September-October to a few times the mid-winter value, followed by a decline to the mid-winter value. The number of strikes producing dead gulls at Heathrow from August 1968 to March 1969 is "very low" in August, 15 for September, and an average of 6 for the six months October to March§ which agrees well with the above pattern. It is interesting to note that month strike frequencies reported by BEA for 1968‖ have a similar pattern, with a large peak for September, and in addition a secondary smaller peak for July comprised mainly of starlings, lapwings and gulls.

In conclusion I shall take 18,000 as the average population throughout the year of gulls associated with Heathrow "hazard area" being 25,000 for 5 months; 3,000 for 6 months; and 70,000 for 1 month. The latter figure is estimated from the ratio of strikes in September to mid-winter in the above statistics.

(b) *Lapwings.* This species was involved in 4 of 56 runway strikes at Heathrow in the period September 1968 to March 1969. This is a widely distributed species in south-east England both as a breeder and winter visitor, and migrates on a broad front to and from

* Sage, B.

* Sage, B.
† Private communication, British Airports Authority.
‡ *The Handbook of British Birds.* (Witherby, London; 1944.)
§ Private communication. British Airports Authority, 1969.
‖ Brown, J. G. W.

Printed image digitised by the University of Southampton Library Digitisation Unit

northern Europe. The average population of this species associated with the "hazard area" is smaller than that of the gulls, and being lighter in weight, is a secondary hazard.

(c) *Starlings.* Flocks of this species were involved in a few strikes at Heathrow in the past two years. The risk is probably greatest in the vicinity of the large winter roosts. A large roost occurs in Windsor Great Park, and recently a roost has formed at Perry Oaks sewage works on the western perimeter of the airport between the runways! I know of no census of numbers associated with the hazard area. This is a potentially dangerous species, sometimes feeding on the airfield grasslands.

(d) *Ducks.* The larger species could be dangerous. Four to eight thousand occur on reservoirs and water areas in winter within several miles of the airport.* Some of the species, such as mallard and widgeon have daily roosting and grazing flights.

(e) *Mute swans.* This is a highly dangerous species, weighing up to 20 lb. It is widely distributed. Fortunately, it is not a frequent flier. A few score birds are to be found within several miles of the airfield.* It is alarming that two near misses of small flights (2 and 12 birds) were reported by pilots in 1968.

(f) *Geese and large waders.* Local numbers and hazard are probably negligible. These species have special importance at Foulness.

3.3. Local bird movements at the Maplin Sands

The area considered here is the sand banks some three miles wide at low tide, running SW-NE for about eight miles from the Black Grounds north of Shoeburyness to Foulness Point. To the SE is the North Sea. To the NW the area is bounded mainly by Foulness Island and Havengore Island consisting largely of waterways and farmland. The shore and sand banks are feeding and roosting grounds for a considerable population of birds. The species likely to be the main hazard in the area are the same as those at Heathrow, with the important addition of the Brent geese and the large waders. Each species is now considered in terms of their number and their movements. The census data are those of Rudge, reported in a Nature Conservancy review 1968† with additional observations in the winter of 1968-69.‡

(a) *Gulls.* The pattern of population changes conforms to the pattern discussed in 3.2 (i)-(iv) above in respect of south-east England. The numbers roosting in the area are approximately as follows: October-March, 15-20,000; summer period, 2-3,000; mid-September to mid-October 180,000. The monthly average is approximately 24,000, being 18,000 for five months; 3,000 for six months; 180,000 for one month. The bulk of these gulls fly inland at dawn for twenty of more miles to feed in Essex, or across the Thames into Kent. They arrive back at dusk at heights up to 1,500 ft on a broad front from inland Essex, with a lesser number arriving over water from the Kent coast.

(b) *Lapwings.* The description in 3.2b applies here also. Migrant flocks arriving from North Sea generally pass over the coast but may be forced by bad weather to land at the coast, when there will be short periods of population build-up on the Sands. As at Heathrow, this species is expected to be a secondary hazard.

(c) *Starlings.* There is a large winter roost on Foulness Island. Migrants pass over the sands.

(d) *Duck.* The main hazard species on the Sands are: mallard–2,000; widgeon–1,700; shelduck–200; with a total of 3,900. There is also a smaller number of wildfowl on the waterways inland. Mallard occur mainly on the foreshore, and fly frequently along the coast and inland at all states of the tide, usually at low altitudes. Widgeon fly little in the day, but fly inland at night at heights up to several hundred feet.

(e) *Mute swans.* About 100 are resident on Foulness Island. Although they fly seldom, they are highly dangerous if hit in flight, and their reduction must be considered.

(f) *Brent geese.* This is a passage migrant and winter visitor, mainly from November until March, with a population of 5,000-10,000 in the area. Their movements are governed by the tide. They feed on specialised foods such as Zostera grass close to the seawall in local areas along the whole NW side of the Sands. They form flocks on the tideline or at sea when not feeding, and are gradually forced by the tide towards Foulness Point and Dengie, being joined by smaller groups from Sheppey at this time. Reverse movements occur as the tide falls. Flight is at heights up to 200 ft. They are easily put up by passing aircraft, but generally resettle. They are heavy, dangerous birds, and being numerous, present a considerable risk.

(g) *Large waders.* These are mainly winter visitors. The more numerous small waders are probably of little hazard because of their small weights. The more hazardous species are: curlew–8,000; oystercatcher–4,000; bar-tailed godwit–1,500; making a total of 13,500. They are governed by the tides. They frequent the sands and foreshore at low tide, and fly along the coast or inland as the tide rises. Large concentrations occur near Foulness Point and Havengore at high tide. They are not easily put up by aircraft, unless these are low flying. Their flights are at heights up to several hundred feet.

3.4. An estimation of future local bird movements at Foulness airport and a comparison with Heathrow

3.41. *General.* In order to arrive at the position of being able to make a realistic comparison of the local bird movements at Heathrow and at the proposed Foulness airport I must now consider the effects, on the present local bird movements at the Maplin Sands, of substituting the airport for a portion of the sand banks. I understand that the airport will be surrounded on three sides by permanent water, and that this water will extend about a mile and a half beyond the ends of the airport to the SW and the NE of the original sandbanks, only the SW end of the Maplin Sands off Shoeburyness and the NE portion of the Foulness Sands will remain with their mud-sand ecology unchanged. The substituted

---

* Atkinson-Willers, G. L. (ed.) *Wildfowl in Great Britain.* The Wildfowl Trust. (HMSO; 1963.)

† Rudge, P. "The Birds of the Foulness and Maplin Sands." In *Third London Airport.*

‡ Rudge, P. Private communication, 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

habitat will be essentially airfield grassland and standing water. It is difficult to judge precisely the effects this habitat transformation will have, but I believe the following predictions substantially represent the alterations in the local bird movements.

3.42. (a) *Gulls.* I now consider the three phases of their daily movements: night roosting, the flights into and away from the night roost, and the daylight feeding movements.

(i) The distinguishing feature of the present situation at the Maplins is that the gulls use the area as a safe open roosting terminus at the end of their daily flights from inland. While the new grassland environment will have attractions as a roost, it will be constantly disturbed by aircraft and by the standard bird scaring techniques in use at the time, and I also believe it will be less attractive than the natural coastal roosting grounds to the north and southwest. This indicates that the present broad front movements from Essex at dusk will become two streams directed to the north and the south of the airport. The northerly stream is unlikely to converge on the new *offshore tidal* island of the Foulness Sands, under the approach paths to the airport, but rather to converge on the Dengie coast. The southerly stream is likely to converge on the mud-sand area off Shoeburyness and/or the north Kent coast. The question then is what residual proportion of the population will roost on the airfield. This may depend on the weather and time of year. I know of only two comparisons which help give a lead. (1) At inland Heathrow airport, bird patrol officials tell me that a few hundred to a few thousand gulls roost on the airfield at night, depending on weather and season. When compared with the 18,000 or so average population associated with the "hazard area", these represent from 1 to 10 per cent. The vast majority choose the large nearby reservoirs, at least in winter. (2) Auckland airport has a situation somewhat similar to Foulness, with a portion of the airfield reclaimed from coastal mud flats. An artificial roost has been created on the shore about a mile from the airfield, where 80-90 per cent of all sea birds, including gulls, roost at high tide. No figure is given for the proportion of the residual birds choosing the airfield in preference to the remaining coastline.

In the Heathrow case, reservoirs are much more attractive than airfield, at least in winter; while at Auckland, an artificial roost has superior attractiveness. I believe that at Foulness the natural coastal areas adjoining the new airport will have similar relative attractiveness, although it may have to be increased by artificial roosts (see 4.3). I conclude that Foulness and Heathrow will have similar percentages of the total gull populations associated with their "hazard areas" remaining to roost at night on the airfield.

(ii) Flights to and from a roost may overfly the "hazard area" and so constitute risk to aircraft in flight. At Heathrow the entire associated population of gulls overfly. At Foulness the flights are expected to divide into the two streams towards the north (Dengie) and south, (Shoeburyness) so that they converge on areas (1) a few miles distant from the centre of the "hazard area" and (2) somewhat short of the flight paths, as may be seen by inspection of drawing No. GD1. (See evidence of G. I. W. Dunford on behalf of the Essex County Council.*) Therefore I expect the overfly risk portion of the gull hazard to be small at Foulness, and considerably less than at Heathrow.

(iii) Gulls may spend some daylight hours resting or feeding on the airfield. I believe the vast majority of the Maplin birds will continue to seek food inland as at present. Those that do feed nearby are most likely to use the natural coast for resting. I consider that the daytime population resting on the runways will therefore be small. This assumes that there is a high standard of airport hygiene in operation (see 4.2). By contrast, there is a very real hazard at Heathrow from birds resting near the runways during the day. Their presence there appears to result from the abundant food sources at nearby rubbish tips (10,000 gulls at one tip alone in mid-winter; see 3.2a) and the scarcity of nearby attractive resting areas. I conclude that the gull hazard at Foulness during daylight hours will be significantly smaller than at Heathrow.

(iv) *Comparative gull hazard—summary.* The average population associated with the "hazard area" at Foulness is estimated to be slightly larger than at Heathrow (3.2a, 3.3a). About the same proportion I consider will roost at night (3.42a(i)). These birds create a hazard as they move towards the runways in the latter part of the night. However, the relative risk at Foulness should be less because, unlike Heathrow, aircraft movements will occur throughout the night, giving the gulls less opportunity of establishing themselves on the runways. Secondly, I anticipate that there will be less overfly of the "hazard area" at Foulness (3.42a(ii)). Finally, I believe there will be a smaller population of daytime resting birds, so long as a satisfactory standard of airport hygiene is maintained (3.42a(iii)). Therefore I conclude that the overall effect will be that Foulness will have a gull hazard similar to that at Heathrow at present. A special effort at Foulness may well be required, however, in September-October to deal with the larger gull passage at that time.

(b) *Lapwings.* This widely distributed breeder and winter visitor will probably appear on the airport at a similar density to that at Heathrow, except that on its broad front migrations over the North Sea it may occasionally be grounded at the coastline (including Foulness), when meeting adverse weather, instead of passing over the coastline as is usual. On the whole, I conclude that lapwings will be an important secondary hazard on a scale similar to that at Heathrow.

(c) *Starlings.* The airfield will be attractive to feeding flocks, as at Heathrow. A large winter roost(s) may continue to form on Foulness Island, but such a roost(s) cannot be as close to the flight paths as roosts sometimes are at Heathrow. On the other hand, the broad front migration across the North Sea, which normally will have similar effects at most sites is SE England, may in certain adverse weathers be grounded at the coast and cause temporarily an increased hazard at Foulness. On the whole, I conclude that this species will be an

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

important secondary hazard at Foulness by probably on a smaller scale to that at Heathrow.

(d) *Ducks.* The airport and the standing water at each end will deprive the duck of some eight miles of coastal feeding grounds. They will be forced to move to Dengie, Blackwater, north Kent marshes, etc. This may cause some reduction in numbers, but the main effect in the present context is that the duck population will be largely transferred to beyond the hazard area. There may be some overflying of the airport but this is likely to be small because of the great size and geographical situation of the airport. Some visitation to the airfield for grazing is likely. I conclude that Heathrow and Foulness will have similar numbers of duck, with similar types of movements and distributed over areas of similar size giving rise to a hazard of tertiary importance in both cases.

(e) *Mute swans.* There are comparable numbers at comparable distances from the two sites. Although they are not frequent fliers, they are highly dangerous. Reduction of the population should be considered. They are not a rare species.

(f) *Brent geese.* The new airport and water surrounds will take away virtually all of their traditional food supplies on the Maplins. This together with the airport disturbance, are most likely to drive the entire Maplin winter population completely away from the Maplins. If this does not happen naturally, they must be persuaded to move from the area because of their large numbers and heavy weight. Every effort should be made to conserve the population elsewhere.

(g) *Large waders.* Like the duck, these will lose eight miles of feeding and roosting coastline, and will be forced to move to other coastal areas. These are most likely to be beyond the "hazard area". The large size of the airport will discourage direct overflying movements along the coast taking place probably outside the airport perimeter. If hazardous high tide roosts persist, the birds should be tempted to artificial roosts nearby as has been found successful at Auckland airport.* There may be a small amount of residual roosting on the airfield but these species are fairly amenable to scaring techniques. On the whole, the hazard from this group of species is likely to be of tertiary importance.

3.5. Comparison of hazard at Foulness with hazard at Heathrow—summary

Assuming aircraft parameters and movements to be similar at the two sites, the relative hazard can be assessed on the basis of the number and habits of various species associated with the hazard areas of the two sites. Assuming a number of conditions to be satisfied I have estimated these local bird movements, which I now summarize. Gulls are of prime importance in strike frequency. I have predicted in 3.4 above that the gull hazard is very similar at the two sites. I find the hazard to be similar also for the species of secondary importance which occur at both sites. Of the special hazard species at Foulness, the geese will leave, I believe, and the large waders are likely to be of tertiary importance. The net result is that the two sites are likely to have comparable hazard when averaged over a year. Table 1 shows that Heathrow has a normal strike frequency when compared to a number of airports, and therefore I predict that Foulness will not be exceptionally hazardous.

* Saul, E. K.

3.6. Estimated strike frequency at Foulness

I have argued that the strike frequency at Foulness is likely to be comparable to that at Heathrow. For the latter, we have from table 1: (strikes per 1,000 movements) BEA strike reports 1968, 0.20; BOAC strike reports 1967, 1.0; strikes resulting in dead birds on runways 1968-69, 0.34. The last figure must be an overall minimum. An approximate average over all airlines using Heathrow is probably near to 0.5, and this is the figure I believe will approximately obtain for Foulness airport.

3.7. Possibility of danger to life and limb at Foulness

Danger to life and limb has been discussed at some length in general terms in 2.5. It would appear from the analysis given in this evidence that Foulness will not be a site of special hazard. Although the risk to life and limb from bird strikes has been very low, every effort should be made to reduce the risk further.

4. Reducing the Hazard: a Brief Synopsis of Present Methods and Some Future Trends

4.1. Bird scaring on airfields

Excellent reviews of this subject have been given by Brough* and Saul†. The methods being used at present include:

(i) the broadcasting of amplified tape-recorded bird distress calls near to resting birds, which is not very effective on large airfields, even when reinforced by
(ii) pyrotechnics, such as shell-crackers;
(iii) the displaying of bird corpses, which shows hopeful signs of being very effective;
(iv) wader deflection. Patrols along the reclaimed perimeter of a coastal airport fire shots across the paths of waders attempting to overfly the airfield. The waders are readily diverted around the sea wall semi-permanently.

I believe that the use of laser beams by bird scaring patrols could be a more effective method, especially at considerable ranges. Low power harmless beams, flashing at appropriate frequencies, could be tried in conjunction with distress calls, and a flock could be held in focus as it flew for considerable distances. Alternatively, should occasional killing be necessary for reinforcing other scaring methods, a higher power laser beam would be much more effective and practical than guns, and need be no more dangerous. It would be difficult for a flock to resettle just out of range of a laser beam. Experiments to test these ideas would be easy to perform, and the final equipment would not be very expensive.

* Brough T. "Recent Developments in Bird Scaring on Airfields." In *The Problems of Birds as Pests*, pages 29-38.
† Saul E. K.

Printed image digitised by the University of Southampton Library Digitisation Unit

4.2. **Creating an unattractive airport habitat**

Excellent reviews of this subject have been published by Wright* and Saul†. Some of the methods being used at present are:

(i) elimination of all shelter for birds;
(ii) elimination of open bare areas and pools, attractive to gulls, ducks and waders;
(iii) elimination of food sources, such as land under cultivation, rubbish tips, open sewage works, dumping of fish offal, effluents, etc., within miles of the site.

Considerable research efforts are being made at present to find the best form of grass cover. Longer grass with small seed yield is favoured, especially in conjunction with modern pesticides. The effectiveness of the taller grass seems to result from the insecurity it gives to resting seabirds. The result may be to concentrate these birds onto the runways, but at least they should then be easily reached by the patrols.

4.3. **Creating attractive habitat outside hazard area**

It is of the greatest importance to minimise the number of resting and roosting gulls, duck and large waders on the airfield. I have explained above that I believe that the sand banks to the north at Dengie, the south-west at Shoeburyness and the north Kent coast will attract the majority of the birds, but I recommend strongly that the use of artificial roosts be seriously considered, to provide a maximum of attraction to these three off-site areas. Needless to say, food would not be provided, only shelter and security. A variety of forms might be considered; bare areas with moats, sterile grasslands or lakes, for example. These refuges would go a long way towards satisfying the requirements for the conservation of duck and waders at the same time. A high-tide roost provided near Auckland airport has been quite successful. The area of this refuge is 6 acres, and the cost of construction about £15,000. The three refuges I would recommend would be on a larger scale, but the costs would be but a small fraction of the damage repairs during the first decade of airport use. The investment should be considerd as economic safety insurance. Further research would be required for the design of effective refuges, but the time-scale should be adequate. These refuges are not concerned with the conservation issues over the Brent geese and the little terns.

4.4. **Radar**

The uses of radar in helping to reduce bird hazard are several.

(i) The radar "broom" for paralysing birds in flight by irradiating them with radar microwaves is being studied in Canada. While I do not doubt that the effect exists at short range, I do not believe the method will be practical at the required distances, either at airports or on aircraft. I have tracked individual birds at ranges as close as a few hundred yards with medium power radar, and I have found no detectable effect in their wingbeat pattern.

(ii) The widely used method of employing conventional radar screens for monitoring (and forecasting) bird movements cannot be effective, I believe, because it is generally impossible to differentiate the hazardous heavy birds and dense flocks from the more numerous less hazardous birds on the radar screen; and in those few cases when it is possible, specialist interpreters are required. A migration of small passerines may blanket the screen, and yet there may be little hazard to commercial aircraft movements.

(iii) The Airport Surface Movements Indicator radar at Heathrow can show large birds roosting on the runways, and is thus a vital link with bird patrol measures. This type of radar is expected to be part of Foulness airport equipment.

(iv) I believe that special purpose inexpensive radar for monitoring movements of hazardous bird groups within the "hazard area" automatically will be available in the next few years. If Air Traffic Control were provided with information of hazardous birds approaching flight paths, I understand that there is no reason why this should not be acted upon, unless the interruption were so frequent that a considerable backlog of flights was created.

4.5. **Aircraft protection**

Substantial improvements are continually being made in strengthening the airframe and minimising damage and loss of power in the jet engines.

5. Conservation of Birds

5.1. The Nature Conservancy* has drawn attention particularly to two species of national or international importance which are likely to be adversely affected by the construction of the airport at Foulness: the Brent geese and the little terns.

5.2. Little terns have a small but nationally significant colony on a shell bank near Foulness Point. These banks are permanently above high water level. They will lie outside the reclaimed airport area (drawing no. FAS3—see evidence of F. A. Sharman on behalf of the Essex County Council†) by about half a mile, and may well be outside the area of standing water on the north-east side of the airport. The banks will not be under flight paths, but will be some half mile to the west of the in shore runway approach path. The birds are small and fly low. If the birds remain where they are, I feel certain they will not produce a hazard. There is no consensus of opinion as to whether the birds will remain during construction and after flights begin. If it is necessary to resite the colony, this could be accomplished by literally moving the shell bank to a suitable nearby site, possibly on Dengie, at a relatively small cost.

5.3. **Brent geese**

The numbers and habits of these internationally important winter visitors to the Maplins have been

* Wright, E. N. Modification of the Habitat as Means of Bird Control. In *The Problems of Birds as Pests*, pages 29-38.
† Saul, E. K.

* *Third London Airport* (1968).
† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

discussed in 3.3f, and the expected effects of the airport on their distribution discussed in 3.42f. The virtual elimination of their normal feeding grounds on the Maplins and the continual disturbance from construction and aircraft are most likely to drive the wintering flocks away from the remaining Maplins. If they do not leave under these conditions, they should be encouraged to do so because their large numbers and heavy weight create a potential severe hazard.

I feel everyone would want to have these magnificent creatures conserved. It is thought by some (*for example) that there will be little opportunity for displaced geese to find alternative feeding grounds in south-east England, and that their numbers will therefore decrease.

(This view is based on the assumption that the geese will eat only their preferred sea plants. I am not an expert ecologist, but I believe there is not sufficient knowledge to state that it is unlikely the geese will turn to another food spectrum under the circumstances). It has come to my attention that there is one site with an increasing supply of their preferred food, and that this site is already attracting some of the Maplin geese. I believe that an early decision to create a refuge at this site, or at any other suitable site, using the best techniques of modern conservation research, would have a reasonable prospect of saving a good portion of the population. The necessary expenditure would be but a fraction of the expected aircraft damage costs arising from bird strikes in the first decade or two.

5.4. **Wildfowl and waders**

These species will be deprived of feeding grounds and open habitat (see 3.42d,g). In the interests of air safety I suggested in 4.3 that these species be provided with (two or three) attractive roosting refuges outside the "hazard area", and I argued that this should be regarded as economic safety insurance. Here again efforts to reduce bird hazard can be harmonised with conservation interests.

* The Nature Conservancy. *Third London Airport.*

6. Concluding Remarks

6.1. I have estimated that the bird strike frequency at Foulness is likely to be comparable to that at Heathrow, which has a normal strike frequency compared to a number of airports. Therefore I find no reason to suppose that Foulness is not a suitable site for an airport from the bird hazard point of view.

6.2. However, special problems are associated with the expected bird movements at Foulness airport. The potentially dangerous flocks of wintering Brent geese are expected to leave the area, but if they do not do so of their own accord, they must be encouraged to do so. The large passage of gulls through south-east England for about a month in the autumn may produce a slightly greater nuisance on the Foulness airfield than on some other airfields, but I find no reason to suppose that a somewhat greater effort by the airport patrols for this period, or the use of the best techniques offered by habitat management, radar and other devices in operation by the time the airport is opened, could not cancel out this extra hazard.

6.3. I believe that it is worth making an effort to reduce the bird hazard at an airport to the minimum, and that the best way is to incorporate an "anti-bird-strike plan" into the design plans of the airport from the outset. If Foulness is chosen for the site, research into local bird behaviour and movements, airport ecology, scaring devices and bird refuge design should be undertaken in the next few years so that the findings may influence the development of the airport at the earliest possible stages.

SUPPLEMENT

1. Radar evidence

In section 3.2 of my evidence, dealing with the local gull movements at Heathrow, I assessed the number of birds associated with the hazard area by referring to the visual observations of gulls as reported by Sage. I did not refer to the simultaneous radar observations of bird movements made on the ACR 6 approach radar at Heathrow, reported by Bourne* and also summarised and discussed in the report by Sage. I did not refer to the radar results because these flights were well within the visual range of the ground observers, who could also be certain of the species involved. Radar observations are difficult to quantify, and I believe this is especially true for the type of radar employed in this case, because of the necessity for approach radar to use a Moving Target Indicator (MTI) circuit to eliminate echoes from slow moving or stationary targets, such as buildings and trees within the first few miles. As a result, bird targets having progressively slower speeds in the radial direction are eliminated progressively from the radar screen, with virtually complete suppression below a few knots radial speed (data for ACR 6 obtained from Board of Trade). This means that birds flying in a "wedge" of angles about a tangential path are eliminated. With a headwind, this angle for slow fliers like gulls would be quite large, with a tailwind, small. Since the radar concerned is in the centre of Heathrow, gulls flying *across* the east-west runways in a roughly north-south direction up or down the Colne valley would be virtually eliminated, but least with a strong tailwind, and this was the general nature of the results. Birds flying *away* from the airport, on the other hand, would be relatively emphasised. Without careful interpretation the conclusion might easily be reached that gulls and other birds do not often overfly the runways and flight paths. In addition, gulls and other species sometimes, but not always, fly higher with a tailwind, and may thus be more visible on the radar screen. This effect was assumed to account for the lack of gull echoes on the screen on some of the occasions

* Bourne, Dr. W. R. P., B.T.O. News, no. 33. (British Trust for Ornithology, 1969.)

Printed image digitised by the University of Southampton Library Digitisation Unit

reported, but it should be recalled that the ACR 6, like many approach radars, cover adequately to below about 1° elevation, and the gulls should be visible for a mile or two at least on almost all occasions, if not eliminated by the MTI.

2. **Brent geese**

I am not an expert on the conservation of wildfowl. The time given to me to prepare my evidence in section 5.3 did not allow me to gather much information about the Brent geese, and I was forced to use the incomplete data to hand. I have been able recently to consider the subject further, and would like to rewrite paragraph three of section 5.3, and to add a few remarks. The best information on the status of this species and the research in progress should be obtained from organisations like the Nature Conservancy and the Wildfowl Trust.

It is quite plausible that the winter number of these geese is governed largely at the present time by the availability of certain specialised sea grasses. The large-scale reduction of these grasses by natural causes in the 1930s was followed by a 75 per cent reduction in the winter goose numbers. On that occasion at least, the geese did not turn significantly to an alternative food spectrum. Records show that during the past 15 years the British winter population has been increasing on average, probably due to an increase in the sea grasses, and there is no mathematical reason to expect that this trend will not continue. If the 6,000 or so Maplin geese were to disappear from lack of sea grasses as a result of reclaiming the airport area, it would take some 10 to 15 years, at the present rate of increase, to regain the present British population.

How many of the 6,000 geese will survive is a difficult question. It is thought that some 10 per cent will be able to obtain food and protection in the refuge on the Swale provided by the Kent Trust for Nature Conservation. (This is the site mentioned in the third paragraph of section 5.3). The sea grasses at the Black Grounds on the Maplins may not be reclaimed, and may continue to provide for some fifth or more of the population, provided that new sea currents do not create an unstable substratum, and the airport disturbance is not too great. These latter birds would feed at a mile or two from the nearest flight path, and may not in fact be found to be a severe hzard, although I have recommended that they ought to be encouraged to leave.

I believe the best hope for conserving the geese is to discover how to increase the sea grasses elsewhere, and to create local refuges. Research should be started immediately on the main problem of how to create the correct stable substratum. Possibly a thorough investigation of the existing feeding sites would reveal the necessary information. The large reclaiming operations on the Maplins might well provide an excellent opportunity for movements of the necessary materials, including the existing rhizomes. The necessary expenditure is likely to be but a fraction of the expected aircraft damage costs arising from bird strikes in the first decade or two.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Southend-on-Sea County Borough Council

SUBMITTED BY MR. N. HARRIS*

1. I am a Bachelor of Science. I am an Alderman of the Southend-on-Sea County Borough Council. I am the elected leader of the majority party in the Council and so leader of the Council. I have served continuously since first being elected to the Council in 1950 and became an Alderman in 1961. I have served on most of the committees of the Council and serve on several now, and in recent years have been particularly interested in transport matters. I am Chairman of the Council's Transport Committee. I have for several years been Chairman of the Federation of Municipal Passenger Transport Employers and Chairman (alternate) of both the National Joint Industrial Council for Road Passenger Transport Industry, and the National Joint Council for Craftsmen for that industry. I am the immediate past President of the Municipal Passenger Transport Association.

2. I am a member of the South-East Economic Planning Council and have just been asked to serve a further term on that body. I was appointed a member of the Road Transport Industry Training Board when it was set up.

3. In private life I am Chairman and Managing Director of a group of engineering companies. I am a member of the Eastern Regional Council of the Confederation of British Industries and a member of the CBI Industrial Planning Committee for the South-East. I also hold a private pilot's licence.

4. In relation to the proposed siting of the Third London Airport at Foulness (Off-Shore) the Council passed the following resolution at its meeting on Thursday, 27 March 1969:

"**2189. Commission on the Third London Airport**

The Town Clerk reported the receipt of the Commission's published information on the short list of sites for the Third London Airport for the purposes of Stages II and III of the Commission's work, which had immediately been circulated to all Members of the Council. The Stage II public hearings will commence with consideration of the Foulness/Maplin Sands site on May 5th. The Town Clerk outlined the steps he had taken with the Council's advisers to obtain leave to be represented at the hearing, which would consider, on the assumption that the Airport was located on this site, what were the objections and other local consequences. It was not intended to discuss the comparative merits of the short list sites, a proceeding which will take place at Stage V.

The Town Clerk also recalled the interest of the Council in Thames Estuary Development Company Limited, which had recently been created to inquire into the practical possibility of recovering a portion of the Maplin Sands as a port and a possible site for the Third London Airport with its consequential economic viability.

Resolved: That the Council would welcome a proposal to establish the Third London Airport on the Foulness/Maplin Sands site, subject to being satisfied:

(a) That the Airport would not cause intrusive noise over the area of the County Borough.

(b) That the increase in population and industry, and road and rail access could be properly planned to the satisfaction of the local planning authorities without detrimental social consequences or interference with amenity.

(c) That adequate provision is made to finance the additional expenditure resulting from the development from sources other than the local rate fund.

(d) That satisfactory terms, both financial and practical, are proposed to mitigate the effects of the development on the Council's Airport Undertaking, and all the interests associated with it."

5. I think it is clear from that resolution that the Council are anxious to play a constructive role if the Government should decide to site the airport on the Maplin Sands. However, over-riding all other considerations the Council will resist the scheme to the utmost if it is likely to generate a noise problem for our townspeople. It would be unthinkable for me either personally or on behalf of the Council to support any scheme which inflicted a noise nuisance on the town.

6. The Council must, of course, insist in addition to their reservation regarding noise nuisance upon there being adequate safeguards for the existing population, and feel it essential that the planning of the project and associated urbanisation should not be permitted in advance of the provisions of necessary services. The project must be properly planned and not allowed to take place piece-meal in a haphazard fashion.

7. There are already considerable assets available in Southend in the form of our post-war commercial and industrial developments capable of immediate utilisation and further expansion. Additionally, should the Ministry of Defence relinquish their holdings at Shoeburyness a substantial area would immediately be available for housing, commercial, industrial and amenity developments.

8. Due to the change in holiday habits in recent years, the former predominant character of Southend as a holiday resort has also had to change. While there are

* See also p. 357.

Printed image digitised by the University of Southampton Library Digitisation Unit

still an enormous number of day trippers to the town mainly at weekends, the resort economy has declined and it has been necessary to achieve a balance by a diversification of industrial and commerical activity. A modern town centre is being built with a number of new shopping complexes. 751,000 square feet of new offices have been erected and outline permission granted for a further 500,000 square feet, and over 145 acres of new industrial estates are in being. This is a change welcomed by the residents and of immense economic importance to the town, and I believe the new airport could enhance this aspect of the town's development as well as providing employment for some of the many people who live in the town but work elsewhere—a figure approaching 25,000. A third London airport at Maplin Sands may require the closure of Southend's municipal airport; nevertheless, the important contribution to local employment and prosperity generated by the international air traffic, both passenger and freight, originating from our airport, would continue in the same area and to a much greater extent.

9. I believe that a project of this nature ought not lightly to be passed by, and that the people of the area are ready to meet its challenge. If, therefore, near Southend the third London Airport is constructed on reclaimed land it will provide a stimulus to growth and prosperity for the area for the future. My Council feels that subject to the safeguards mentioned above the project should be welcomed, and is ready to participate in any machinery devised to ensure the proper planning of the scheme.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Southend-on-Sea County Borough Council

SUBMITTED BY MR. T. B. HILL*

1. I am the Borough Engineer, Surveyor and Town Planning Officer of the County Borough of Southend-on-Sea, an office I have held since March 1955. From 1951 to 1955 I was Deputy Borough Engineer, Surveyor and Town Planning Officer. I am a Fellow of the Institution of Civil Engineers, a Fellow of the Institution of Municipal Engineers and an Associate Member of the Institution of Water Engineers.

2. **Introduction**

I wish to make my representations in two parts:

(a) A description of the present position in the County Borough of Southend-on-Sea, together with the future proposals for the town up to 1981 which are included in the Review of the Development Plan. The Minister of Housing and Local Government has yet to confirm the Review proposals but his modifications have been published.

(b) The effects of the siting of an international airport at Foulness on the town and its future.

(A) The County Borough of Southend-on-Sea 1969 and the Development Plan Proposals to 1981

3. The County Borough of Southend-on-Sea is situated on the north side of the estuary of the River Thames, in the extreme south-east of the County of Essex. This part of the county consists of a peninsula about 17 miles long and 7 miles wide between the River Thames on the south and the River Crouch on the north. At the east, where the rivers approach the North Sea, the land is flat and low-lying and intersected by creeks and tributaries of which the most important is the small River Roach; towards the west the land rises gradually to a horseshoe of low hills running through Ashingdon, Hockley, Rayleigh and Thundersley to the western part of the Borough at Leigh.

4. The River Thames has always formed a barrier to traffic southward into Kent. The nearest river crossing is the Dartford-Purfleet road tunnel, some 24 miles to the west; the next nearest is the Woolwich ferry, distant 33 miles; and the second land crossing is the Blackwall tunnel, distance 34 miles. Severed from the south and restricted on the north, the area became and remained agricultural until the nineteenth century AD, with no towns in it of any importance. Even now the whole of the landward communications between this district and the remainder of England—three main roads and two railway lines—pass through the narrow neck of the peninsula.

5. The borough was incorporated in 1892 and extended in 1897, 1913 and 1933 to incorporate the districts of Southchurch, Leigh-on-Sea and Shoeburyness respectively. The amalgamation of these districts, each with its small centre of activity; the geographical position and the rapid speculative growth after the first world war, formed the "grid-iron" framework which has developed into the pleasant, modern and progressive town with a population of 166,750. It is now the twentyfourth largest county borough in England and the largest "seaside" town with an estimated influx of 8,000,000 annual holiday visitors, mostly for the day.

Plan no. 1 shows the town in its regional setting*

6. Southend, some 8 miles long and 2½ miles wide, occupies an area of 10,284 acres; has a fairly high gross density and takes a "linear city" form. There are a number of unique features, including for example:

(i) Nine railway stations have come into existence in the borough because many people commute to London. It is revealed by the 1966 census that 24,550 of the working population of about 73,700 leave the county borough every day, 11,000 journeying to Central London.

(ii) Five well established district shopping centres have developed along the long axis of the town as a result of the amalgamation of various districts which form the present county borough.

(iii) The industrial estates are well spread over the long east/west axis and on the northern boundary. There is, therefore, no concentration of industry in the town centre.

(iv) The town is a "terminal" for road and rail traffic. Two main railways serve the county borough and there are also two main traffic routes, the A13 (the old London road) and the A127 (the Southend arterial road). Being of recent development, the town's streets are relatively commodius and there are excellent car parking facilities.

(v) With an area of 10,284 acres, the town is now well built up with an overall density of 16 persons/acre.

(vi) Southend is a regional shopping centre for a population of about 300,000.

(vii) The seafront to the Thames is a very attractive recreational and amenity area. Off-shore sports and sailing facilities are very well supported.

Basically the town is an excellent example of planned dispersal of traffic generating land uses.

* See also p. 359.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Plan no. 2 shows the present town and the existing built-up area at 1969*

7. I would now comment on the various features which make up the present town and on the expected growth which can be anticipated up to 1981 presuming that the Foulness Airport or the "new seaport" projects do not proceed, i.e. the basis on which the Development Plan Review was prepared.

Plan no.3*—the review town map refers

Housing

8. Since its formation, the county borough has always grown as a result of inward migration, natural growth being negative or negligible, indicating the larger than average population of elderly or retired people resident in the town. (The number of people over 65 is 18.5 per cent of the total.)

10. Between 1951 and 1961, the civilian population increased by an annual average of 1,400 and, due to negative natural change, this reflected an influx of 1,500 people each year. To house this increase, over 800 houses a year were required—it being estimated that two-fifths of the dwellings built were for the accommodation of migrants and three-fifths to meet local demand—the general spreading out of the people resulting in a lower occupancy rate.

TABLE 1

Rate of House Building – Southend County Borough

Year	Private	Local authority	Total
Average 1950-54	330.6	446.4	777
Average 1955-59	736.2	173.6	909.8
Average 1960-64	652.8	190.6	843.4
1965	544	128	672
1966	497	567	1064
1967	354	273	627
1968	521	107	628

Source: Borough Engineer's Department

It will be noted that there is a slowing down in the growth of the town during the last few years.

10. For very many years there has been a most "mobile" population in Southend which is reflected in the property market where there is a constant turnover of the existing house stock. This can be seen from the large number of official enquiries under the Land Charges Act passing through my department. During 1967-68, there were 5,650, a high proportion of the total number of 66,398 hereditaments in the Borough. Of the 5,650, about three-quarters could be expected to be domestic properties changing hands.

11. As a result of the Review of the Development Plan, there are 470 acres zoned for residential development and yet to be built on. The population is expected to increase to 201,000 within the borough boundary at some time after 1981, when it is now expected to reach 185,000. There is a degree of redevelopment at high density taking place and due allowance has been made for this in the above figures and there is a considerable trend towards the conversion of house properties into flats. There are very few unfit properties in the town.

Industry

12. As previously mentioned, a light type of industrial development is well spread out throughout the town and is principally situated on the northern boundary. Over the last few years, the Council have successfully developed estates at Progress Road, Stock Road and at Shoeburyness. To allow for future growth, the present industrial area of 145 acres in 1969 is expected to increase to 243 acres by 1981. Mention should also be made here of the industrial zone of 67 acres at the municipal airport. This area is in the Essex County Council area but adjoins the borough boundary and is contiguous to the land zoned within the borough for industrial use to the north of Eastwoodbury Lane.

13. The table below sets out the number of people living in and employed in the Southend Ministry of Labour and Social Security area, which includes some 59 per cent of the Rochford Rural District Council. It also includes a number of people commuting to work in Southend-on-Sea.

TABLE 2

Employment – Southend-on-Sea

Year	Total	Males	Females	Extractive	Manufacturing	Services
1960	52,606	30,630	21,976	888	16,053	35,665
1961	51,349	30,303	21,046	842	15,395	35,112
1962	55,159	31,620	23,539	818	17,166	37,175
1963	55,183	31,767	23,416	720	17,286	37,177
1964	57,117	32,403	24,714	746	18,021	38,350
1965	57,994	32,662	25,332	660	16,937	40,397
1966	58,182	32,520	25,662	587	17,068	40,527
1967	55,536	31,648	23,888	571	15,184	39,781

Source: Department of Employment and Productivity, Employment Records II

14. The 1966 census disclosed that 24,550 residents living in the Borough worked outside it, 11,000 commuting to Central London. To set against this, there was an influx of 11,750 workers living outside the Borough who came to work in Southend and this latter figure can be expected to increase as office construction continues in accordance with the expansion programme planned. This planned expansion of office work, referred to in para. 15 is fully supported by the Standing Conference on London and South East Regional Planning as a main part of the policy of decentralising office work from London.

Commerce

15. The beginning of the first part of the new Civic Centre in 1960 was followed by the rapid construction of a commercial centre on the west side of Victoria Avenue and there has also been considerable office development in the town centre within the Inner Ring Road.

* Available for inspection at the County Borough Council offices, Southend-on-Sea.

Printed image digitised by the University of Southampton Library Digitisation Unit

16. The Planning Authority have given outline permission for the building of 1,388,000 sq ft of offices, 751,000 sq ft have been completed and accommodate about 6,700 people. A number of firms have moved out of London to Southend and HM Customs and Excise are now established here in force.

17. If many more offices are to come to the town in the future (and there is a great potential), they can be sited conveniently near the shopping centre of the town and on the western leg of the Inner Ring Road. Provision can also be made at Hamlet Court Road, Westcliff, and at The Broadway, Leigh-on-Sea, in both cases adjacent to district shopping centres. Such siting would avoid traffic congestion generated by the over provision of office space in any particular area.

18. Although there are welcome signs that industry and commerce are on the increase in the town, Southend has a tendency to be a pocket of unemployment in a generally prosperous area; thus the number of unemployed as a percentage of the insured population is high, even allowing for the over large number of retired people. Again, the number of vacancies for employment notified in Southend-on-Sea is less than the number in Chelmsford or Grays.

TABLE 3

Number of Unemployed as Percentage of Insured Population

Town	Aug. 66	Nov. 66	Aug. 67	Nov. 67	Aug. 68	Nov. 68	Feb. 69
Bedford	0.7	1.7	1.4	1.5	1.4	1.3	1.4
Cambridge	0.5	0.7	0.9	0.8	0.8	0.7	0.9
Chelmsford	0.6	0.8	1.0	1.1	1.5	1.9	1.8
Ipswich	1.0	1.6	2.1	2.1	2.0	2.1	2.7
Norwich	1.8	2.1	2.0	2.2	2.1	1.9	2.2
Southend	1.9	3.8	3.8	4.5	2.9	3.0	3.2
Greater London	0.7	1.2	1.5	1.6	1.5	1.4	1.5
Basildon	2.3	2.9	3.4	3.9	*	*	*
Colchester	1.1	1.9	2.0	2.2	2.4	2.3	2.5

* Not available

Source: Department of Employment and Productivity

Appendix 1 indicates the numbers of workers listed by trade or profession and Appendix 2 gives details of residence and workplace.

Minerals

19. The only mineral of any importance in Southend-on-Sea is brickearth and the number of companies concerned in marketing stock bricks has shrunk to one. An appropriate reservation of 54 acres for continued brickearth extraction has been made in the development plan. There are now no sand and gravel working in the County Borough and it seems unlikely that there will be any in future.

Agriculture

20. There has been a gradual erosion of agricultural land for building purposes over very many years and the remaining land now farmed amounts to about 1,550 acres. This includes the Essex County Council's smallholdings north of Prince Avenue. Most of the agricultural land left in the town is on the northern boundary.

Communications

(i) *Roads*

TABLE 4

Road Mileage Statistics

Road	1952	Dec. 1962	June 1967	April 1969
Trunk Roads	Nil	Nil	Nil	Nil
Classified Roads:				
Class I	14.51	14.52	16.93	14.60
Class II	7.88	8.89	7.88	7.79
Class III	18.90	21.38	22.98	22.88
Unclassified Roads	137.89	171.94	182.50	185.37
Totals	179.18	216.73	230.29	230.64

16.93 miles are designated as Principal Roads (Class I—13.70, Class II—0.52, Class III—2.71).

Source: Borough Engineer's Department

21. Mention has already been made of road communications from the town to the west and a considerable amount of information is now available as a result of the preparation of the Traffic and Transport Plan called for by Ministry of Transport Circular 1/68.

22. In July 1964, my department co-operated with the Ministry of Transport and the Essex County Council in producing the *South East Essex Traffic Survey*,* a copy of which I now produce. This information will be supplemented very shortly by the results of the current transportation study being carried out in collaboration with the Essex County Planner and the Essex County Surveyor and covering the north banks of the Thames as far west as the Greater London Council area.

23. Plan no. 4† shows the 1969 main road network and indicates thereon traffic flows in vehicles per 16-hour day averaged over a 5-day week. It will be noted that the daily traffic into and out of the town averages 81,650 vehicles on four roads. Of this total, the London/Southend arterial road, A127, averages 33,500 and the old London road from Grays to Southend, A13, 23,000 vehicles per day. It is also relevant to mention peak daily flows on these two roads—A127, 46,000, and A13, 30,000, vehicles respectively.

* Copies available, price £1 1s., from the County Borough Council offices, Southend-on-Sea.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

24. Plan no. 5* shows to a larger scale the traffic arrangements existing in the central area of the town, including the pedestrian precinct in the High Street. Vehicular and pedestrian flows in the central area are shown on Plan 6.*

25. Plan no. 7† shows anticipated changes in the town's road network by 1975 and all the major proposals incorporated are included in the Ministry of Transport's Preparation Pool. The main central area changes by 1975 are indicated on plans 8* and 9* and show the extension of the pedestrian precinct in the High Street, the traffic interchange now being constructed at Victoria Circus and the increased provision of car parks.

26. The changes contemplated form the first stage of the environmental areas and primary and district distribution road network agreed with both the Ministry of Transport and the Ministry of Housing and Local Government at officer level. They also conform with the development plan proposals to 1981.

27. Additional major changes expected between 1975 and 1981 include:

(i) The construction of a new traffic route to the town centre in the form of an urban expressway along the western seafront (the Road to the West). It is proposed that this road, terminating at the western Inner Ring Road, should be on land reclaimed from the Thames and owned by the Council and that its level should be below that of the present esplanade to enhance amenity. It would connect with the Canvey Spur at South Benfleet and permit the "down-pointing" of the A13 London Road from a primary to a district distributor.

(ii) The A127 will be upgraded to urban motorway standards and widened to dual 3-lane carriageways over part of its length.

(Note: Eventually, with the two expressways mentioned above and about 1/1½ miles apart, it will be seen that a relatively short journey on an ordinary road will enable all motorists to reach a specifically designed and adequate fast route. The present alignment of the A13 could then be looked upon as a "water shed" for traffic purposes, people living north of A13 going northwards to the A127 to leave the town and people living south of the A13 proceeding southwards to the new seafront expressway.)

(iii) The completion of the western section of the Inner Ring Road.

(iv) The construction of an improved principal traffic route from the Ring Road to the A127 via London Road and Hobleythick Lane.

(v) A further extension of the traffic-free precinct area in the town centre to give a total of 33 acres. This will be in the form of five linked pedestrian precincts.

28. The total estimated cost of all the road works to give full mobility is estimated at about £16m. at 1968 prices, a figure thought to be fairly cheap for the benefits to be received.

Plan no. 10* shows the ultimate road network

(ii) *Car Parking*

29. The Council's car parking policy programme is very well advanced and, on average, one off-street car park has been opened every six weeks over the last three years. There are now 12,500 spaces in the town, 3,000 of them in the central area and shortly to be increased to 3,650 by the completion of the Hammerson car park (Victoria Circus) in August next. (Plan no. 5* refers.)

30. A central area car parking target of 10,000 spaces has been set for 1981 and envisages a number of multi-storey car parks being built. Indeed, the first multi-storey car park at Farringdon Place was opened last year and was constructed with the aid of £80,000 given by developers in the area. The second Corporation multi-storey car park will commence in Baxter Avenue almost immediately.

Plan no. 9* shows the parking arrangements anticipated in 1975

(iii) *Airport*

31. Now forming one of the town's major industries, the airport, adjoining the borough boundary but mostly within the Essex County Council's area, requires specific mention. As a source of employment alone it is of great value to the town. About 2,000 persons are employed in the winter months, the figure rising to 2,300 in the summer. The introduction into the town of technical work of this nature and extent has been most welcome and acts in some part as a counter to the ageing population trend which now exists.

32. The three grass runways were replaced in 1955-56 by two hard runways, constructed by a method of soil stabilisation with cement, which is conveniently appropriate to the type of brickearth in this area. The principal runway, 06/24 is 5,265 ft long, the hard strip being 120 ft wide; runway 15/33 is 3,712 ft long, with a 90 ft hard strip. There is land available for further hangarage and factories on the western industrial area and sites have been reserved near the railway on the eastern boundary for a new terminal building and station.

33. The town is receiving good publicity from the airport and the facilities it affords are most useful to residents and visitors. The use by British Air Ferries of the Carvair (as successor to the Bristol Freighter) has opened up freight services to Belgium, France and Holland. As will be seen from the table on page 65, the airport plays a good part in the country's export and import traffic.

(iv) *Railways*

34. The electrification of the former London, Tilbury and Southend Railway between Fenchurch Street and Shoeburyness, together with the electrification of

* Available for inspection at the County Borough Council offices, Southend-on-Sea.

† See attached wallet of maps and diagrams.

* Available for inspection at the County Borough Council offices, Southend-on-Sea.

Printed image digitised by the University of Southampton Library Digitisation Unit

the Southend/Liverpool Street line in 1957, means that the railways are able to provide faster trains of much greater frequency. Even during off-peak times there are per hour three direct trains to Fenchurch Street from Southend Central and one via Tilbury and three from Southend Victoria to Liverpool Street. Moreover, British Railways are attracting internal east/west traffic within the Borough, i.e. between the seven stations on the Fenchurch Street/Shoeburyness line. This results from the frequency of service and the fares structure which is competitive with other means of transport.

35. Mention has previously been made in paragraph 14 about the large number of people commuting from Southend to Central London and from the outlying districts into Southend.

(a) Primary schools 43
(b) Secondary schools 17
(c) Special schools 4
(d) College of Technology (i) Victoria Circus
(ii) London Road
(iii) Civic Centre
(e) Further education centres 6

The number of students on the roll of the primary and special schools was 14,258 on 29 March 1968 and the number at secondary schools in September 1967–10,703. In March 1968 706 full-time students attended the College of Technology and 6,576 part-time students were enrolled, consisting of 2,762 day and 3,814 evening.

TABLE 5

Total Aircraft Movements and Freight excluding Flying School and Joy Flights

Year	Movements	Passengers	Freight (tons)
1951 (calendar)	4,045	10,365	170
1959/60 (April 1st to March 31st)	27,969	223,499	32,947
1961/62 "	39,638	488,241	54,413
1962/63 "	40,677	550,863	65,652
1963/64 "	38,197	476,746	70,868
1964/65 "	36,436	539,641	71,069
1965/66 "	34,011	599,068	66,571
1966/67 "	37,118	623,976	68,306
1967/68 "	35,275	686,333	53,800
1968/69 "	42,439	501,575	49,272

Source: Airport Committee Minutes

Government departments

36. The continued use of Shoebury barracks, where the Thames joins the North Sea, has, to an extent, isolated old Shoeburyness from the rest of the town, and some 1½ miles of fine beach between Rampart Street and Ness Road are closed to the public. The Council would hope to see the release of the beaches to public use and that ultimately the WD barracks will disappear. To the north of the barracks, some 40 acres of former Ministry of Supply land has been made available at Rampart Street for car parking, as a camping and caravan centre, and public open space.

37. In Central Southend, Government support for the office area on the west side of Victoria Avenue has resulted in the building of:

1. A seven-storey office for the Ministry of Social Security
2. A ten-storey office for the Telephone Manager.
3. A sixteen-storey office providing 180,000 sq ft for HM Customs and Excise and including a computer centre.

Local government and social services

38. (i) *Education*

The Council, as Education Authority, have provided 22 new schools in recent years and in 1967-68 operate the following establishments:

39. There are also 19 non-local authority schools and colleges in the town. During 1967-68, 2,135 students (1,051 boys and 1,084 girls) left secondary schools to continue full-time further education or to employment.

40. Opportunities for employment of school leavers fluctuated during the year but, in general, well-qualified school leavers had little difficulty in finding career opportunities of their choice at any time. On the other hand, the difficulties experienced by less able school leavers and those who had not achieved satisfactory standards in their examination work were more noticeable. The Youth Employment Bureau was notified of fewer vacancies of an unskilled nature and consequently for most of the year there were unemployed young people who had little to offer to employers. The Bureau placed 1,886 young people in employment but there were only 183 vacancies in hand on 30th September compared with 241 at the same time last year. There was a considerable increase in the work of National Insurance, and the total benefits and allowances paid to unemployed boys and girls totalled £4,656 compared with £1,545 in 1966-67.

41. The development plan makes provision for the continued expansion of the education services up to 1981 to allow for the continued expansion of the town.

(ii) *Local Government Services*

42. During the last 15 years, there has been extensive modernisation of all the local government services in

Printed image digitised by the University of Southampton Library Digitisation Unit

Southend. The fine modern local government offices and Council Chamber at the Civic Centre, as well as the following new buildings, have all been designed under the direction of the Borough Architect, Mr. P. F. Burridge, OBE, FRIBA:

Police headquarters, Court house, College of Technology } Civic Centre, Victoria Avenue
Central fire station—Sutton Road
Leigh fire station—Blenheim Chase
Branch libraries at Westcliff and Kent Elm Corner
Cliffs Pavilion, Westcliff
3 Police substations—Eastwood, Shoeburyness, Elmer Approach
Indoor swimming pool, Warrior Square
Extension to crematorium, Sutton Road
3 clinics
6 old persons' homes
New bus garage, London Road
New maintenance depot, public transport, Tunbridge Avenue
New cleansing central depot, Eastern Avenue
Junior Training Centre, Southchurch Road
Unit factories, Progress Road
Airport buildings, municipal airport

In addition, the outside sections of the Borough Engineer's department have been collected together and accommodated in a new central depot at the Main Drainage Works, Prittlewell.

43. Further developments planned include a new central health centre with accommodation for ancillary health activities, additional district health centres and old persons' homes, a new central library and a senior training centre.

(iii) *Hospital Services*

44. The Rochford Hundred is principally served by two main hospitals under the control of the Southend-on-Sea Hospital Management Committee. They are situated at Rochford and at Prittlewell Chase, Southend.

45. At the beginning of the last war, the local authority of Southend-on-Sea carried out a major extension at Rochford and, since the National Health Act, the Regional Hospital Board have continued to modernise and expand the premises. The buildings are now modern and commodious and recent additions include new operating facilities.

46. The General Hospital in Prittlewell Chase was opened in 1932 and is currently being expanded and redeveloped to form a major unit in the North East Metropolitan Hospital Board's programme of modernisation which looks to 1975 population.

47. There are smaller hospitals at Westcliff, Kings Road and Shoeburyness.

Shopping areas

48. Mention has already been made of the shopping centres situated along the long east/west axis of the town. Starting in the west, there are:

The Broadway, Leigh-on-Sea,
Hamlet Court Road, Westcliff-on-Sea,
High Street, Southend-on-Sea,
The Broadway, Thorpe Bay,
West Road, Shoeburyness.

There are, in addition, very many groups of shops throughout the length of A13, London and Southchurch Roads, and the town map, plan no. 3*, shows the shopping areas in blue colour.

49. I now produce the informal town centre map, plan no. 11,* showing diagrammatically the proposals for the central shopping district in the High Street, Southend-on-Sea, and a copy of an explanatory booklet* describing the principles adopted therein. The map indicates 130 acres of land within the Inner Ring Road and shows the High Street converted into five linked pedestrian precincts—a pedestrian area of 33 acres.

50. The High Street forms the continuation of Victoria Avenue, A127, south of its junction with the London Road, A13. Running in a north/south direction, it extends from Victoria Station to Pier Hill and the sea at its southern end. Central Station is about mid-way between these two points.

51. There has been a great deal of redevelopment in the shopping centre over the last seven years since Amendment No. 1 of the Development Plan was approved in 1962.

52. Last year, the northern section of the Ring Road was completed to its final width—the present dual two-lane carriageways will eventually be widened to dual three-lane carriageways with underpasses provided below the roundabouts.

53. The first part of the pedestrian precinct, between London Road and Warrior Square, has already been completed and welcomed by shoppers and shopkeepers alike. It is believed to be the first precinct in England to be formed from a busy classified road which used to carry 18,000 vehicles in a 16-hour day! Extensions to the precinct will follow in a southerly direction next year as far as Whitegate Road and a northerly extension into Precinct No. 2 will be possible in about two years' time on the completion of the Hammerson development and traffic interchange at Victoria Circus.

54. Special mention should be made of the Hammerson Victoria Circus scheme being constructed now in partnership with the Council at a cost of £6½m. This is believed to be the largest shopping development and traffic interchange now building in the country and comprises 84 shops, a departmental store, supermarket, banqueting hall and 64,000 sq ft of offices with associated car parking for 660. Shopping is on three floors with mechanical aids to vertical pedestrian movement and the whole complex is connected to Victoria Station by a pedestrian bridge with fourteen shops on its frontage and built over the Ring Road. There is a bus station in the basement and another in Milton Street for cross town services, whilst pedestrian access is readily available to and from the nearby Eastern National bus terminal in London Road.

* Available for inspection at the County Borough Council offices, Southend-on-Sea.

Printed image digitised by the University of Southampton Library Digitisation Unit

55. In recent years, there have been many private redevelopments of shops in the High Street area, including Keddies, Victoria Hotel site, two Hammerson schemes, Laing's central station, Marks and Spencer and British Home Stores extensions, Dixon's extension into Queens Hall and new shops for Tesco and Sainsbury.

56. The value of the shop premises in the High Street is very high for Southend is already the regional shopping centre for a population estimated in 1961 to be 261,000, now estimated to be 300,000. (Source: Lichfield Report on Shopping.) The number is expected to increase to 325,000 by 1981. This shopping area is readily reached by bus, rail or motor car—it is a thriving community, rapidly expanding and capable of much further development if necessary.

57. The district shopping centres are also expected to expand for convenience shopping and a full survey of shopping facilities in Southend-on-Sea is available in the report of Nathaniel Lichfield & Associates, January 1965, which I now put in as evidence.

Recreation and open spaces

58. As the largest "seaside" town in the country and with 8,000,000 visitors each year, the town can be expected to have pleasant parks and open spaces. At present there are some 700 acres and these are being extended annually. There are excellent sports grounds; two golf courses in the borough and a third proposed below Leigh Cliffs; and two courses just outside the town at Boyce Hill and at Rochford. There is Council support for Essex County Council in the establishment of a regional park on the western boundary of the town and incorporating the Hadleigh Castle area of Benfleet.

59. By virtue of the surrounding sea and rivers, the town is a yachting centre with 1,900 moorings on the foreshore, 400 at Two Tree Island west of Leigh, and six very active yacht clubs also supporting a large number of dinghy sailors. The Council hope to see additional facilities for sailing by 1981, including a marina and the reclamation of a considerable area of the foreshore—for example, the 55 acres between Leigh and Chalkwell, which will provide space for a road and additional amenity and open space.

60. The hotel industry in the town has declined since the last war, an experience not only seen in Southend-on-Sea. There remains, however, a live theatre, a substantial entertainments industry, particularly on the Golden Mile between the famous Pier and the Kursaal. A new feature, the Cliffs Pavilion at Westcliff, was completed by the Corporation in 1963 and provides excellent accommodation for summer shows, dancing, exhibitions and conferences. Every effort is being made by the Council to improve recreational, sports and holiday facilities for visitors and residents alike and this policy can be expected to continue.

Public utilities

(i) *Water*

61. Most of the town and the surrounding district is supplied by water from the Southend Waterworks Company. This Company has most capably increased its resources to keep pace with the rapid development of the district. Water resources to south-east Essex are now to be augmented by the Ely Ouse Scheme being constructed at the present time by the Essex River Authority. It is obvious that if a large airport were constructed at Foulness, there would have to be further major works to supply it but this does not seem to present undue difficulties—certainly in the initial stages.

(ii) *Electricity*

62. The town is served by the Eastern Electricity Board and the supply from the grid at Rayleigh is taken through four overhead lines. Two new 132 kV grid lines have been connected to a new grid substation adjoining the London Road Station. The original supply has been augmented by two 33 kV lines from the Southend Grid Switching Station in Sutton Road, Rochford, to the Thorpe Bay transformer station. Part of the former Leigh Generating Station in Leigh Road is now in use as a transformer station. A site for a new grid substation has been agreed north of Prince Avenue. Much other reinforcement work carried out in recent years to augment the distribution system within the town has resulted in the undertaking being up to date and efficient in supply.

(iii) *Gas*

63. The town is shortly to be converted to the natural gas supply and major changes have been made in the distribution network. New holders have been provided at Eastwood and at Shoeburyness and linked to the main gas works at Eastern Esplanade by new mains. New trunk mains have been brought in from the gas terminal at Canvey to Eastwood and Southend-on-Sea and, in the east, a new "ring main" high pressure supply has been brought from Chigwell/Romford via Fambridge to Shoeburyness.

64. At present, the town's supply at peak times is augmented by the production of gas from oil at the Eastern Esplanade but this production is anticipated to cease with the arrival of "natural" gas. The supply and distribution system is now excellent as a result of recent works.

(iv) *Drainage*

65. All Southend and parts of Benfleet Urban District drain to the Council's works at Eastern Avenue. After screening, grit removal and primary settlement, the resulting effluent is discharged through two pipes to the Thames—a 60 inch diameter pipe discharging about a mile off the foreshore at Thorpe Bay and a 33 inch diameter pipe discharging off the pierhead. Solids produced in the settlement tank are digested to produce sludge gas which is used on the works for heating, for generating electricity and the surplus is piped to the Civic Centre where it provides heat for the hot water supply. Digested sludge is disposed of very economically by trenching into the ground at the Barling Sludge Farm, some 5 miles north-east of the Works at Eastern Avenue and situated on the south bank of the River Roach.

66. By agreement with the Port of London Authority, no additional secondary treatment need be considered before 1981 or until the population of

Printed image digitised by the University of Southampton Library Digitisation Unit

Southend-on-Sea exceeds 201,000, providing always that the effluent discharged to the Thames is to an agreed standard of suspended solids. Substantial reconstruction of the primary settlement tanks at the works is now nearing completion and they will then be capable of accepting the 1981 population of the drainage area.

67. Most of the town is drained on the partially separate system and all new development is entirely separate. The policy to remove surface water from foul sewers has been pursued by the Council for very many years and this will continue. New foul and surface water drainage systems covering the redeveloping town centre were completed two years ago and provided a new trunk sewer to Prittlewell and a new discharge to the Thames at Hartington Road.

68. There is at present some difficulty in discharging through the effluent pipes all the liquid arriving at the Works when high tide coincides with heavy rainfall. The height of the tide, of course, affects the capacity of the outfalls and this emphasizes the need to continue the policy of reducing the amount of storm water reaching the Eastern Avenue Works. The importance of this can be seen when it is appreciated that the present average dry weather flow of 8 million gallons a day increases to over 64 millions in times of storm. Following the flooding which occurred in the town on the 15th September last during intense rain, negotiations are now in hand with the Essex River Authority to divert Prittle Brook to the Thames via a tunnel and this scheme presents the opportunity to reduce the flow to the Prittlewell treatment works in times of storm by about 20 to 25 per cent. This would obviate any difficulty at the Works in times of storm.

69. It should be mentioned that much of the sewage in the town has to be pumped to Prittlewell, particularly from the districts in the east—Shoeburyness, Thorpe Bay and parts of Southchurch. If there is to be a new main drainage works to serve an airport at Foulness, it might be advisable to consider rerouting part of this pumped sewage to this new works as a very long-term project. The present works are able to cope efficiently and economically (because of the lack of secondary treatment) with the anticipated increased population within Southend and Benfleet and there would also be some spare capacity over and above the estimated populations draining to the works in 1981.

(B) The Effects on the County Borough of the Siting of an International Airport on the Maplin Sands

70. The Council have resolved to support the construction of an airport at Foulness/Maplin Sands, subject to certain qualifications. The appropriate Minute approved by the Council on the 27th March 1969 is 2189. If this site is finally selected for the third London airport, it will bring further pressure for early development in the town and a general quickening of the tempo of construction. I will try to deal with the matter in the same order as the previous part of this evidence, which has described the town as existing and shown the proposals included in the Development Plan Review up to 1981.

Regional setting

71. After many years as a "terminal" town, there would be a further destination for road and rail traffic in the east; through traffic would be introduced into the town for the first time; there would be much more housing and industrial development on the north bank of the Thames, with possible industrial development to the east, as well as to the west of the town. Ultimately, if the area is to have an increased population of 400-500,000, then the town could become a counter-magnet to London with the need for greatly increased services. Certainly there would be much pressure for improved north and south road connections, as well as improved connections by motorway to London. By the turn of the century, if the airport growth materialises, I would expect there to be a bridge or a tunnel over the Thames to Kent, perhaps in the vicinity of Canvey Island, and there would be a need for improved road communications to the North and to the Midlands via Chelmsford, possibly requiring a revision of the Route Strategy proposals affecting Essex and indicated in the 1969 Green Paper—*Roads for the Future: a new inter-urban plan.**

72. In the short term, the town is in a position to play a major part in the initial developments which would follow from the choice of the site, but as the undeveloped area within the borough boundary is now restricted, the long term housing solution would have to be found within the area now administered by the Essex County Council. However, in the longer term, the town would have a large role in connection with shopping, industry, commerce and leisure activities.

Housing

73. It has previously been mentioned that the rate of building in the town has dropped over the last few years and, with the airport site selected, this rate could be expected to increase again. The development plan provides for an additional population of 34,000 by 1981. When the Minister, in publishing his modifications to the Development Plan Review, deleted the proposal for residential development on 400 acres north of Shoebury Road (RP 13), without reducing the target population, it was anticipated that a replacement site of about the same area a little to the west and north of the new extension of Eastern Avenue from Hamstel Road to Bournes Green would have to be made available. Indeed, I understand that an application for the development of this site is likely to be lodged by the objectors to the development of RP 13. It seems, therefore, that there is no difficulty in accommodating the first 34,000 additional population. With the advent of the airport, it may be considered that RP 13 should be reinstated, in which case a further population of 16,000 could be accommodated within the borough boundary by 1981, making a total of 50,000. By agreement with the Essex County Council, more land may be released for development immediately north of the town's northern boundary if this was desirable.

74. Mention has already been made of the rapid turnover of the existing stock of houses in the County

* HMSO; 10s.

Printed image digitised by the University of Southampton Library Digitisation Unit

Borough and many people coming to work at the airport would find accommodation in the existing property—a continuation of a trend which has existed for many years. There would also be an increase in the tendency to pull down existing properties and replace them with flats or smaller accommodation at a higher density.

75. A rapid expansion in hotel accommodation could be anticipated and would be welcomed by the Council who are currently trying to encourage this type of development and have sites available in the town centre and on the seafront.

76. If there were to be a very rapid increase in housing accommodation within the Borough, the Council would welcome financial assistance with the provision of the necessary extra services at an earlier date than expected; such items as increased surface water sewer capacity; new roads connected with housing development; district distributor roads serving new housing areas; additional street lighting, etc.

Industry and commerce

(i) *Industry*

77. As the airport became operational, it would revolutionise the industrial position in the town and bring well paid technical employment into the area. School leavers would find employment in eastern Essex without the need to travel to London.

78. The land zoned for industry in the Development Plan, 243 acres, could be expected to be taken up quite quickly and it may well be that some of this industry would spread over to the industrial site at the present municipal airport, which, in turn, could I believe play a large part in the transport pattern of the area, whilst the new site was being developed. If the municipal airport eventually had to close down because of the Foulness proposal, perhaps part of the site could be redeveloped for industry and/or housing.

79. For many years a large force of building workers has traditionally worked outside the boundaries of this town and the construction of the new airport would absorb this labour and much more. The employment prospects following from the establishment of the third London airport would be welcomed in the town.

(ii) *Commerce*

80. The present town planning permissions for office developments in the central area of Southend could be expected to be taken up more quickly if the airport is to be developed and, as mentioned earlier, there are many more sites which would be appropriate to further office building for those firms who like to have their department in the area where an international airport is situated.

81. It would seem that there is no doubt that the town could provide industrial and commercial sites during the initial stages of the development of the airport and, indeed, it is apparent that there would also be space for medium term proposals.

Shopping

82. The town has an advanced and far reaching programme for the development of the central area of the town, which is already an important shopping centre. Within the Ring Road, there is ample space for flexibility and additional facilities, particularly for the provision of departmental stores and "durable" shopping facilities. The informal town centre map, plan no. 11, would form the basis on which further expansion would be provided and which the Council would encourage.

Agriculture

83. The small amount of agricultural land which will be left in the county borough after the development plan proposals are completed in 1981 could, I believe, only be affected if Southend airport were closed when it would be possible, if thought appropriate, to develop some or all of the Essex County Council smallholdings on the land north of Prince Avenue. This area is now sterilised for development by the Public Safety Zone and the approach to the main runway at the present Southend municipal airport and, on the closure of that airport, this safety requirement would be removed.

Communications

(i) *Roads*

84. Paragraph 18 of the Commission's note on the short list of sites mentions that ultimately a new pattern of highways leading to the site will be necessary. I would wholeheartedly agree and obviously the people of the town and the Council would not expect through traffic to the airport at Foulness to pass through the town for very long.

85. I have given details of the existing roads in the county borough, together with some details of the present traffic flows and their anticipated increase and I have itemised the road improvements proposed to accommodate the growth of the town up to 1981.

86. It seems obvious that the initial connection with the Maplin Sands site would be via the Southend Arterial Road and Prince Avenue, A127, as far as its intersection with Victoria Avenue and Manners Way at Cuckoo Corner. An appropriate route to the east would appear to be via Priory Crescent, Eastern Avenue to Bournes Green, Shoebury Road, Poynters Lane to Cupid's Corner at the junction, Poynters Lane/Sutton Road, Great Wakering—A, B, C, D, E, F, G, H, J, K, L on plan 4.*

87. Plan no. 7* shows major proposals on the A127 included in the Ministry of Transport's Preparation Pool of Schemes. Starting at the western end, the schemes proposed include:

(i) A new roundabout with underpass at the intersection Progress Road/The Fairway—estimated total cost £440,000 (B).

(ii) Surface roundabout at the junction Eastwood Road North (C) and the junctions Southbourne Grove, Westbourne Grove—£187,000 (D). It is anticipated that when the Eastwood Road North roundabout is constructed that Rayleigh Road would be diverted to join the Arterial Road at this roundabout, permitting the removal of the traffic signals at the present intersection—Arterial Road/Prince Avenue/Rayleigh Road/Bridgewater Drive.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

88. The suggested route to Foulness outlined above connects again with the principal road network at Bournes Green (J) where further works to the A13 eastwards of Bournes Green are included in the Minister's Preparation Pool and scheduled to start this year. They include (1) Bournes Green bypass, dual carriageways—£80,000, (2) provision of dual carriagways Talgrave Cottage to Parsons Corner—£92,000 (K on Plan 4).

89. Last year, a new road outside the built-up area was constructed as a single carriagway and as an extension of Eastern Avenue from the north end of Hamstel Road to Bournes Green (H-J). At that time, sufficient land was purchased to enable a future dual carriageway to be constructed to the north and the work was carried out with one of the transitional grants of the Ministry of Transport just before third-class road improvement grants ceased.

90. If then this route is acceptable as a preliminary route to the new airport, it seems to me that the following additional works would be required in the borough:

(i) The provision of dual 3-lane carriageways to the Arterial Road/Prince Avenue as far as Southbourne Grove (A-D). There is sufficient land within the existing road boundaries to permit this, subject to the abandonment of cycle tracks.

(ii) Consideration for the need of an underpass at (a) Cuckoo Corner (the intersection Prince Avenue/Priory Crescent/Victoria Avenue/Manners Way—F), (b) Arterial Road/Eastwood Roundabout—C, (c) an overpass Westbourne Grove/Southbourne Grove/Prince Avenue Roundabout—D, and (d) improved capacity at the intersection Rochford Road/Hobleythick Lane/Prince Avenue signals (E).

(iii) The provision of dual carriagways—Priory Crescent (F-G).

(iv) The construction of the second carriagway to Eastern Avenue extension from Hamstel Road to Bournes Green (H-J).

(v) Poynters Lane should be improved to dual carriageway status from Parsons Corner to Cupid's Corner (K-L).

(vi) Improved facilities for pedestrians to cross over or under the route.

(vii) It would seem also that the provision of dual 3-lane carriageways on the A127 would have to be brought forward but these will be needed anyway.

91. Many of the road improvements outlined above, whilst being immediately required for the construction of the airport, would finally serve as the route from Southend-on-Sea to the airport when the ultimate main road pattern from the airport to London was constructed to the north. Any capital expenditure then would not be abortive but the Council would expect the whole of the route from Prince Avenue to the borough boundary in the east to receive principal road classification and that the necessary grants and loans be readily available at an early date.

92. I would anticipate that during the construction of the airport the main and immediate requirement would be for the access to the site of the labour force required. Presumably much of the material required for the building would be delivered to the site by sea.

(ii) *Car Parking*

93. The construction of the third London Airport at Foulness would only have an indirect effect on the Council's car parking programme which would have to be augmented if the population in the Rochford Hundred was very materially increased. There could be available sufficient sites in the central area for a further increase over and above 10,000 spaces at 1981 if this is found to be necessary and the car parking accommodation now available at the offices in Victoria Avenue forms a very suitable reservoir to bring in on peak Saturday shopping days when most of the offices are closed.

(iii) *Airport*

94. I understand the Corporation's consultant, Mr. Lloyd Jones, will be giving evidence on the effects of a possible third London airport at Foulness on the present Southend-on-Sea municipal airport and, accordingly, I will not comment other than to draw attention to the factual analysis attached to my evidence as Appendix 3 which would have to be taken into account in the event of the closure of the municipal airport at Rochford. Appendix 4 is a schedule of leases and tenancies at the municipal airport.

Plans nos. 12 and 13 refer

(iv) *Railways*

95. The site information for the Stage II hearing provided by the Commission mentions in paragraph 19 that it will be necessary to extend the Fenchurch Street/Shoeburyness railway to the new site in the initial stages of development and that ultimately a new rail link from a London terminal will be required. The military already have a single line railway to Potton Island and presumably a small increase in capacity could be achieved initially by a duplication approximately on this alignment. There are level crossings in Shoeburyness High Street and Blackgate Road. The number of trains on the W.D. line are very few at the present time and if the frequency of the service were increased, there would be need for better crossing facilities to reduce inconvenience caused to vehicular traffic by reason of the closing of the crossing gates.

96. A much better railway routing to Havengore Island could be achieved by the construction of a new line from Jubilee Bridge, east of Thorpe Bay Station, and running across open land north of Elm Road, Shoebury. The land is zoned for residential development and in the east is currently being developed by the Council and by private enterprise. If this route is to be seriously considered, some urgent decisions in respect of the housing development are required.

97. There is spare capacity available on the Fenchurch/Shoeburyness railway line, particularly at off-peak times, and presumably the introduction of a service to the airport would improve speeds throughout the day and particularly at peak times.

98. Before the introduction of electric signalling some years ago, British Railways were purchasing land

Printed image digitised by the University of Southampton Library Digitisation Unit

for the duplication of the track through the Borough and they still hold a considerable amount of land purchased for this purpose. If this scheme was revived with a view to running an express service through the town, and at very high speeds, then to reduce railway noise and inconvenience to residents, it would seem necessary to use long lengths of welded rail. Various bridges would be affected by proposals to duplicate the track and early consultation would be essential.

Government departments

99. One of the advantages of the establishment of the airport at Maplin Sands would be the disappearance of the restricted area at Shoeburyness and the Council would hope to see the release of the beaches between Rampart Street and Ness Road for the use of the public.

100. It is not known whether any more government offices would be required in the town but sites are available if this became necessary.

Local government and the social services

(i) *Education*

101. A major problem to be considered in connection with an airport at Foulness is noise as affecting schools in the county borough and the Council's evidence in this respect will be given by their consultant, Mr. Lloyd Jones.

102. The further expansion of the county borough beyond the population envisaged in 1982 would bring with it a need for further extension of the facilities for further education so that teaching could be given in a more varied syllabus. If there is to be a very large expansion of population within the Rochford Hundred, it could be that eventually university facilities would be required—these would perforce be outside the present borough boundary.

(ii) *Local Government Services*

102. The new Civic Centre and the building for the various services provided since the last war form an excellent basis on which to build for further expansion. It would seem that in the first few years little additional accommodation would have to be provided by the Council for the public services other than those already planned and mentioned in paragraph 43.

(iii) *Social Services: Hospitals*

103. In view of the recent improvements at Southend General and Rochford General Hospitals, there seems little need to contemplate further expenditure in this field for at least some years to come.

Shopping

104. The incidence of an airport at Foulness would not materially affect the shopping provision in the centre of Southend for a number of years. However, if ultimately an expansion of shopping facilities is required, it will be seen that there is ample space for an extension eastwards or westwards of the five linked pedestrian precincts in the High Street area.

105. Should there be new centres of population in the surrounding areas to Southend, it is likely that they would each support a district shopping centre for convenience goods depending on the larger stores in central Southend for durable shopping—an extension of the present pattern.

Recreation and open spaces

106. There are expanding facilities for recreation and open spaces which make the town a pleasant place in which to live. The immediate expansion following the establishment of the airport could well be catered for and, in view of the tremendous number of visitors who find recreational outlets in the town (more than the number which visit the whole of the rest of the Essex coastline), it will be seen that there is ample flexibility and that no special provision other than those contemplated would be required.

107. It would, in the Council's opinion, be essential that no vehicular traffic to an airport at Foulness passed along the Southend seafront or that there was loss of amenity due to the smell of spent aviation fuel.

Holiday development

108. I have already mentioned that the town would welcome an increase in the number of hotels available and the use in connection with the airport would link in and be complementary to the development of the town as a conference centre.

Public utilities

(a) *Water, Electricity and Gas*

109. No doubt the Commission would wish to consult the appropriate statutory undertakers about the need to augment supplies for the new airport but initially, during the first years of its existence, there seems to be little difficulty.

(b) *Drainage*

110. It is presumed that a new airport on the Maplin Sands would have its own main drainage works and discharge to the North Sea. The additional population to be accommodated within the county borough could be drained to the present main drainage works at Prittlewell without difficulty but, as mentioned in paragraph 69, if there were to be a new works at an airport, it may well be that some of the eastern districts of Southend should be drained to it at a later date as a matter of good economic planning.

111. There is little industrial effluent produced in Southend-on-Sea and if large chemical and distillation plants are established in the vicinity of the airport, special consideration would have to be given if it was necessary to provide secondary treatment to neutralise them.

112. Whilst there is now no secondary treatment provided to the town's sewage, consideration could be given to provision of this treatment if it were desired to re-use the effluent after treatment for industrial purposes.

Printed image digitised by the University of Southampton Library Digitisation Unit

SUPPLEMENTAL EVIDENCE

Persons Resident in Southend County Borough affected by NNI contours

(a) *Contours on plan CTLA 1/3 as extended on Essex plan no. NFI*

NNI	Estimated existing population ('66 Census)	Additional population proposed in development plan
35–45	27,519	4,950 (110 acres)
45 +	2,237	11,250 (250 acres)
	29,856	16,200

(b) *Contours shown by dotted lines on Essex plan no. NFI*

NNI	Estimated existing population ('66 Census)	Additional population proposed in development plan
35–45	14,528	16,200 (360 acres)
45 +	nil	nil
	14,528	

NOTE: If the NNI spur over Shoebury is removed it would appear that nearly all the persons shown under (b) as living between the 35-45 NNI contours would in fact be within the 35-40 NNI contours. These figures are all based upon the assumption that the airport runways are sited as shown in CTLA 1/3. If any shift north or east, or any alteration in the angle of the runways is possible, the figures will be further reduced.

APPENDIX 1

Workplace Movement by Occupation

Southend-on-Sea C.B.

Occupation Orders	Resident and working in the area	Working in the area but resident outside	Resident in the area but working outside
I. Farmers, foresters, fishermen	47	14	4
II. Miners and quarrymen	2	–	1
III. Gas, coke and chemicals makers	5	–	9
IV. Glass and ceramic makers	3	–	5
V. Furnace, forge, foundry, rolling mill workers	4	1	3
VI. Electrical and electronic workers	1,84	78	56
VII. Engineering and allied trade workers n.e.c.	3,54	1,20	2,58
VIII. Woodworkers	1,19	34	49
IX. Leather workers	32	5	3
X. Textile workers	9	1	–
XI. Clothing workers	1,27	41	39
XII. Food, drink and tobacco workers	84	10	18
XIII. Paper and printing workers	55	22	35
XIV. Makers of other products	1,47	34	21
XV. Construction workers	1,46	30	55
XVI. Painters and decorators	79	7	19
XVII. Drivers of stationary engines, cranes, etc.	24	9	24
XVIII. Labourers n.e.c.	1,49	37	84
XIX. Transport and communications workers	2,89	79	1,32
XX. Warehousemen, storekeepers, packers, bottlers	1,34	26	46
XXI. Clerical workers	7,38	2,60	7,18
XXII. Sales workers	8,16	1,17	2,20
XXIII. Service, sport and recreation workers	7,65	77	1,10
XXIV. Administrators and managers	1,32	64	2,01
XXV. Professional, technical workers, artists	4,02	1,02	3,37
XXVI. Armed forces (British and foreign)	63	6	1
XXVII. Inadequately described occupations	10	1	7
All	49,19	11,75	24,55

Source: Census 1966

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 2

Areas of Residence and Workplace in Combination

1961

SOUTHEND-ON-SEA C.B.

	Males	Females
(i) Residents economically active	47,72	22,69
(ii) Residents in the area but working elsewhere: viz: in	13,04	4,15
Essex	8,98	1,39
East Ham C.B.	7	1
West Ham C.B.	62	4
Barking M.B.	24	1
Basildon U.D.	61	14
Benfleet U.D.	74	20
Brentwood U.D.	13	3
Canvey Island U.D.	7	1
Chelmsford M.B.	27	–
Chigwell U.D.	5	1
Dagenham M.B.	88	3
Hornchurch U.D.	17	2
Ilford M.B.	13	2
Rayleigh U.D.	57	16
Romford M.B.	27	1
Thurrock U.D.	2,03	10
Walthamstow M.B.	6	–
Braintree R.D.	8	–
Chelmsford R.D.	4	2
Maldon R.D.	8	–
Rochford R.D.	1,75	55
New Town (included above) Basildon	92	18
Kent	4	1
Lancashire	5	–
London	8,39	2,69
City of London	4,04	1,73
Bermondsey Met.B.	6	–
Bethnal Green Met.B.	8	–
Finsbury Met.B.	34	10
Hackney Met.B.	11	1
Hammersmith Met.B.	4	2
Holborn Met.B.	53	8
Islington Met.B.	16	7
Kensington Met.B.	5	1
Lambeth Met.B.	12	2
Paddington Met.B.	7	1
Poplar Met.B.	11	2
St. Marylebone Met.B.	20	11
St. Pancras Met.B.	31	6
Shoreditch Met.B.	21	–
Southwark Met.B.	15	3
Stepney Met.B.	57	14
Wandsworth Met.B.	5	–
Westminster Met.B.	1,06	25
Middlesex	22	3
Surrey	7	–
Other parts of England and Wales	29	3

1966

SOUTHEND-ON-SEA C.B.

	Males	Females
Residents in employment	47,29	28,45
Area of workplace		
Southend-on-Sea C.B.	28,03	21,16
Elsewhere	19,26	5,29
Essex	8,66	2,05
Basildon U.D.	1,82	36
Benfleet U.D.	97	41
Brentwood U.D.	21	2
Canvey Island U.D.	16	3
Chelmsford M.B.	30	–
Rayleigh U.D.	82	25
Thurrock U.D.	1,77	3
Chelmsford R.D.	6	2
Rochford R.D.	2,44	91
Greater London	10,25	3,17
City of London	3,51	2,06
Barking L.B.	84	4
Barnet L.B.	6	1
Camden L.B.	65	14
Hackney L.B.	23	3
Hammersmith L.B.	7	–
Haringey L.B.	6	–
Havering L.B.	33	1
Islington L.B.	65	20
Kensington and Chelsea L.B.	7	–
Lambeth L.B.	8	5
Newham L.B.	49	4
Rebridge L.B.	21	4
Southwark L.B.	27	1
Tower Hamlets L.B.	65	7
Waltham Forest L.B.	7	–
Westminster L.B.	1,35	43
Kent	4	1
Warwickshire	3	2
Other parts of Great Britain	28	4
Total working population	35,52	25,42
Area of residence		
Southend-on-Sea C.D.	28,03	21,16
Elsewhere	7,49	4,26
Essex	3,72	4,03
Basildon U.D.	54	23
Benfleet U.D.	1,46	97
Brentwood U.D.	5	1
Canvey Island U.D.	32	20
Rayleigh U.D.	94	89
Thurrock U.D.	13	5
Chelmsford R.D.	8	2
Maldon R.D.	2,93	1,82
Rochford R.D.	2,99	1,81

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 2—*continued*

	1961	
(iii) Working in the area but resident elsewhere: viz: in	6,31	3,17
Essex	5,92	3,10
Basildon U.D.	60	18
Benfleet U.D.	1,48	93
Canvey Island U.D.	30	10
Hornchurch U.D.	9	1
Leyton M.B.	5	1
Rayleigh U.D.	62	47
Thurrock U.D.	4	5
Chelmsford R.D.	6	1
Rochford R.D.	2,54	1,30
New Town (included above) Basildon	34	14
Hampshire	4	1
London	10	2
Other parts of England and Wales	25	4

	1966	
Area of residence—continued		
Greater London	45	13
Havering L.B.	13	3
Redbridge L.B.	5	–
Waltham Forest L.B.	6	1
Kent	3	2
Other parts of Great Britain	29	8

Source: Census 1966

APPENDIX 3

This appendix shows the capital and revenue position at the Southend Airport up to 31st March 1969 and it has been prepared by the Borough Treasurer from figures in the public accounts

Part I—Capital Statement

Capital Outlay at 31 March 1968	
Land and accommodation works– (Land, access roads, car parks, drainage, petrol farm, western area layout etc.)	383,502
Buildings– (Admin., hangars, control tower, car ferry, eastern boundary etc.)	390,150
Runways, Aprons and taxiways– (Including perimeter tracks)	320,560
Airport equipment– (Floodlights, apron equipment, freight handling, passenger stops etc.)	28,319
Electrical and communications installations– (Radio, radar, electrical mains, lighting, telephone exchange etc.)	95,115
Vehicles (Refuellers, fire and water tenders, ambulance, van, bus, land rover etc.)	46,612
Catering facilities (Restaurant and grill improvements, equipment etc.)	55,807
	£1,320,065

Outstanding debt at 31st March 1968	
Consolidated Loans Fund	581,877
Capital (1953 Act) Fund	29,821
	£611,698

Other Assets at 31st March 1968	
Cash Investment and Stocks	592,171
less current liabilities	94,914
	£497,257

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 3

Part 2—Revenue Statement

Southend-on-Sea Municipal Airport Revenue Account

	1960-61	*1961-62*	*1962-63*	*1963-64*	*1964-65*	*1965-66*	*1966-67*	*1967-68*
INCOME								
Movements (note i)	183,005	207,074	262,347	248,578	261,046	286,971	300,254	278,096
Fuel handling revenues	68,210	66,386	72,671	61,304	64,931	87,645	95,675	104,938
Rents	20,296	20,235	27,692	34,062	43,469	42,950	44,960	15,781
Car parking revenue	2,950	2,975	8,076	8,885	12,937	15,413	19,410	25,055
Catering surplus (note ii)	–	–	Dr. 2,967	4,370	10,171	10,639	8,316	11,987
Appropriation A/c interest earnings	–	–	–	527	812	3,127	7,127	7,479
Other income	37,760	40,506	40,991	41,784	45,851	49,335	46,808	37,287
Total Income	312,131	337,176	408,810	399,510	439,217	496,080	522,550	510,623
EXPENDITURE								
Management and general expenses (net)	49,610	60,283	64,902	67,939	67,882	67,576	82,299	86,668
Control and Operation—								
Air traffic control staff, etc., salaries	17,704	18,971	22,934	25,152	28,887	33,418	37,344	38,697
Fuel, fire, freight, security, etc., wages	74,754	85,945	79,527	80,864	80,196	85,733	95,720	100,478
Maintenance—buildings and grounds	20,219	17,559	23,724	28,585	26,028	25,105	32,342	36,675
—vehicles and equipment	18,274	18,474	25,550	24,337	26,489	25,733	25,794	25,172
Special (non-recurrent) revenue items	8,219	5,247	5,035	4,656	–	250	4,807	5,991
Other revenue expenses	2,032	2,481	3,470	1,897	5,604	3,509	257	204
Air Centre and Flying School (note iii)	657	Cr. 1,294	1,956	2,588	–	–	–	–
Debt charges	54,427	58,437	72,824	83,002	91,718	90,936	91,612	101,595
	245,896	266,103	299,922	319,020	326,804	332,260	360,165	395,480
Surplus	66,235	71,073	108,888	80,490	112,413	163,820	152,375	115,143
APPLICATION OF SURPLUS								
Taxation (note iv)	18,559	27,298	59,791	42,867	60,000	25,000	–	–
Transfer in aid of rates	2,131	5,000	20,000	9,892	16,802	108,368	80,000	70,000
Available for transfer in aid of rates	–	–	–	–	–	–	39,714	8,543
	20,690	32,298	79,791	52,759	76,802	133,368	119,714	78,543
Contributions—to Renewal and Repairs A/c	23,959	23,088	21,803	22,037	22,669	27,330	27,604	28,742
—to General Reserve	15,027	5,971	3,210	–	–	–	–	–
—financing capital expenditure	6,559	9,716	4,084	5,694	12,942	3,122	5,057	7,858
	66,235	71,073	108,888	80,490	112,413	163,820	152,375	115,143

Notes

(i) Including passenger service charges until discontinued on 1st January 1965.
(ii) Operated by the Corporation with effect from 1st October 1962.
(iii) Flying school disbanded on 31st January 1964.
(iv) Taxation recouped to the General Rate Fund in the general tax set-off—i.e. ultimately used in aid of rates.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 4

Municipal Airport County Borough of Southend-on-Sea

Plan Ref. No.	*Lessee/Tenant/Licensee Location*	*Use*	*Term*	*Rent (excl.) per annum*	*Rent Review*	*Remarks*
				£		
B1	Air Registration Board Car Ferry Unit Room 3	Office	14 years (break at 7) 1.1.67 to 31.3.80	728	Rising to £819 on 1.4.70 and £910 on 1.4.70	728 sq. ft. at 20s., 22s. 6d. and 25s.
A2	Air Training Corps (1312 Squadron Site for hut	–	Yearly	10	–	
A3	Allport Shipping Co. Ltd. Office Block 'C'	Office	6 monthly	165	–	
B4	Alltransport Ltd. Car Ferry Unit Room 10	Office	21 years 1.4.63 to 31.3.84	133	Rising to £149 12s. 6d. on 1.4.70 and £166 5s. 0d. on 1.4.77	Notice to terminate dated 26.2.69 133 sq. ft.
B5	Automobile Association Ltd. Car Ferry Unit	Office	21 years' fixed term with break at 14 years	120	Rising to £135 on 1.4.70 and £150 on 1.4.77	120 sq. ft.
B6	Aviation Traders (Eng.) Ltd. BUAF Reception Area	Reception hall and offices	21 years from 18.7.63. Fixed term	1,079	–	Capital expenditure—nil
A7	Aviation Traders (Eng.) Ltd. (Terminal Travel), Hangar site, Western Boundary. 2 acres	Erection of hangar for aircraft repairs	23 years from 5.2.63. Fixed term	1,280	–	£640 per acre. R.V. £3,722
A8	Aviation Traders (Eng.) Ltd. Storage site on Western Boundary	Storage, dismantling repair, etc. of aircraft	29.9.65 from year to year	236		6 months' notice at any time
A9	Aviation Traders (Eng.) Ltd. Accommodation in Block 'J'	Store	Monthly	£303 2s. 6d.		485 sq. ft.
A10	Aviation Traders (Eng.) Ltd. Factory, hangar, etc.	Factory and maintenance area	99 years. 1.4.57 to 31.3.2056. Fixed term	1,750	Rising to £2,000 in 1972	£50,000 in premiums payable £10,000 at beginning of each of the first 5 years. R.V. £30,600
A11	Aviation Traders (Eng.) Ltd. Warners Bridge Car Park	Parking	1.3.68 to 28.2.73	2,100	–	–? Airport or car parking income
A12	Aviation Traders (Eng.) Ltd. Old Administration Block	Office	Yearly. 6 months' notice	£244 10s. 0d.	–	652 sq. ft.
B13	Barclays Bank Ltd.					
	Central Passenger Hall	Bureau and counter	Yearly. 6 months' notice	£186 17s. 6d.	–	299 sq. ft.
	North Passenger Hall	Banking proposed	Yearly. 6 months' notice	£41 5s. 0d.		66 sq. ft.
	North Passenger Hall	Banking proposed	Yearly. 6 months' notice	£18 15s. 0d.		30 sq. ft.
B14	Baxter Hoare and Co. Ltd. Car Ferry Unit, 2nd floor, Room 7	Office	21 years. 1.5.63 to 31.3.84	366	Rising to £411 15s. 0d. on 1.4.70 and £457 10s. 0d. on 1.4.77.	366 sq. ft.
A15	J. J. Benson Aircraft Interior Furnishing Ltd. Block 'J'	Office	Yearly—6 months' notice	£223 15s. 0d.	–	358 sq. ft.
A16	J. J. Benson Aircraft Interior Furnishing Ltd. Block 'J'	Workshop	Yearly—6 months' notice	378	–	1008 sq. ft.
A17	J. J. Benson Aircraft Internal Furnishing Ltd.	Office and workshop	Yearly—6 months' notice	£428 2s. 6d.		685 sq. ft.
A18	B.K.S. Engineering Ltd. Area 3.4 acres and buildings	Manufacture, maintenance repair, etc., of aircraft	99 years from 1.10.63	2,724		Hangar purchased by B.K.S. for £25,000 on instalments and interest of Bank Rate + 1%. R.V. £3,850

Printed image digitised by the University of Southampton Library Digitisation Unit

Plan Ref. No.	*Lessee/Tenant/Licensee Location*	*Use*	*Term*	*Rent (excl.) per annum £*	*Rent Review*	*Remarks*
A19	B.K.S. Engineering Ltd. Site for radio workshop	Workshop	Yearly—6 months' notice	100	–	–
A20	B.K.S. Engineering Ltd. Site for office	Office	Yearly—3 months' notice	285	–	1,710 sq. ft.
A21	British Air Ferries Ltd. New Export Shed	Bonded store and export freight	Yearly—6 months' notice	600	–	2,400 sq. ft. R.V. £380
B21	British Air Ferries Ltd. Car Ferry Unit	Office	From 1.11.67. Temporary letting on quarterly basis, subject to 1 month's notice	324	–	324 sq. ft.
A22	British Air Ferries Ltd. Old Export Freight Shed	Bonded store, freight shed, workshop and stores	Yearly—6 months' notice	400		1,600 sq. ft. R.V. £266
B23	British United Air Ferries Ltd. Car Ferry Unit, 1st and 2nd floor	Office, canteen and crew room	21 years	5,774	Rising to £6,495 15s. 0d. on 1.4.70 and to £7,217 10s. on 1.4.77	5,774 sq. ft
B24	British United Air Ferries Ltd. Site for aerial on roof	Aerial	Monthly	1	–	–
B25	British United Air Ferries Ltd. Terminal Building	Bureau and counter	Yearly—6 months' notice	£213 2s. 6d.	–	341 sq. ft.
A26	British United Air Ferries Ltd. Site for huts on hardstanding	Hut and stores	Yearly—subject to 4 weeks' notice	100	–	600 sq. ft.
A27	Channel Air Bridge Ltd. (B.U.A.F.) Freight Shed No. 1	Bonded store	Yearly. 1 month's notice	£480 12s. 6d.	–	769 sq. ft.
A28	British United Air Ferries Ltd. Car park and filling station. 0.365 acre	Filling station and car park	7 years from 1.4.67.	£200 + ½d. gallon delivered	–	Letting subject to 6 months' notice by Corporation if area or part area required
B29	British Transport Commission South Passenger Hall	Bureau and office	Yearly—6 months' notice	£79 6s. 0d.	–	104 sq. ft.
B30	Cee Dee Airport Services Car Ferry Unit Room 4	Office	21 years. Fixed term	£250	Rising to £281 5s. 0d. on 1.4.70 and £312 10s. 0d. on 1.4.77	250 sq. ft.
B31	Channel Airways Ltd. Terminal Building (Central Hall)	Reception area and counter	Yearly—6 months' notice	£851 17s. 6d.	–	1,363 sq. ft.
A32	Channel Airways Ltd. Link Trainer Hut Site	Link trainer	Yearly—6 months' notice	75	–	450 sq. ft.
B33	Channel Airways Ltd. Block 'D'	Office	Yearly—6 months' notice	£691 5s. 0d.	–	1,106 sq. ft.
A34	Channel Airways Ltd. Hangar and office adj. to Flarepath Restaurant	Office and store	Yearly—3 months' notice	£563 10s. 0d.	–	1,906 sq. ft.
A35	Channel Airways Ltd. Bonded store building	Bonded store	Yearly—6 months' notice	300	–	480 sq. ft.
A36	Channel Airways (East Anglian Flying Services) Ltd. Western Boundary Site 2½ acres.	Maintenance of aircraft	23 years from 12.6.61	£1,250	Rising to £1,900 in 1971	Interest payments due on £900 and £650 at bank rate plus 1½% R.V. £4,725
A37	Channel Airways (East Anglian Flying Services) Ltd. Aircraft parking area 13,000 sq. ft.	Parking for aircraft	Yearly. 6 months' notice or 1 week by default.	£877 17s. 6d.		

Printed image digitised by the University of Southampton Library Digitisation Unit

Plan Ref. No.	*Lessee/Tenant/Licensee Location*	*Use*	*Term*	*Rent (excl.) per annum* £	*Rent Review*	*Remarks*
B38	Channel Airways (East Anglian Flying Services) Ltd. North Passenger Hall	Bureau and office	Yearly—6 months' notice.	225		360 sq. ft.
A39	Channel Airways (East Anglian Flying Services) Ltd. Old Administration Block	Office	Yearly—6 months' notice	£242 12s. 6d.	–	647 sq. ft.
B40	Channel Airways (East Anglian Flying Services) Ltd. (Ex. Overseas Building)	Office	Yearly—6 months' notice	735	–	1,176 sq. ft.
B41	Channel Airways (East Anglian Flying Services) Ltd. Central Passenger Hall	Bureau and office	Yearly—6 months' notice	£293 15s. 0d.	–	470 sq. ft.
A42	Channel Airways Ltd.	Operations use and stores with hard-standing	From 17.1.68 on an annual tenancy	553	–	Consolidation of three tenancies previously let to Tradair Ltd. Area 3,318 sq. ft. R.V. £1,138
B43	Clarkair (International) Terminal Building (North Hall)	Office	Yearly—6 months' notice	£76 5s. 0d.	–	100 sq. ft. Re-let to Av-Air 1.10.68
A44	Clarkson Booker Ltd. (Clarkair International) Old Admin. Block	Office	Yearly—6 months' notice	£133 2s. 6d.		213 sq. ft. Notice received and expires on 31.7.69
B45	Co-operative Wholesale Society Ltd. Centre Passenger Hall	Counter	6 months—6 months' notice	£33 13s. 6d.	–	176 sq. ft.
B46	D.A.C. Air Services Ltd. Car Ferry Unit Room 8	Office	21 years 20.5.63 to 31.3.84	201	Rising to £226 2s. 6d. on 1.4.70 and to £251 5s. 0d. on 1.4.77	201 sq. ft.
A47	Decca Navigator Co. Ltd. Office and workshop	Office and workshop	6 months—6 months' notice	£363 15s. 0d.	–	582 sq. ft.
B48	Eastern National.Omnibus Co. Passenger Hall South	Counter and office	Yearly—6 months' notice	55	–	88 sq. ft.
B49	Eurofreight Ltd. Car Ferry Unit Room 14.	Office	21 years	414	Rising to £465 15s. 0d. on 1.4.70 and to £517 10s. 0d on 1.4.77	414 sq. ft.
A50	Executive Flying Services Ltd. Ex Flying School	Hangar and office	3 years 1.4.69 to 31.3.72	£1,848 15s. 0d.	Rising to £2,142 10s. 0d. after provision of toilet accomm.	6,220 sq. ft. hangar 1,175 sq. ft. office
B51	Alfred Goodrich, Terminal Building	Gentlemen's hairdressing saloon	years expiring 1.3.71	£350	–	–
A52	Industrial Precision Equipment Ltd., Western Area	Factory and offices	23 years from 1.4.64	768		1.2 acres. £640 per acre. R.V. £1,375
B53	L.E.P. Air Services Ltd. Ex Continental Block 'C'	Offices Office	Yearly—6 months' notice Yearly—6 months' notice	£396 5s. 0d. £290		564 sq. ft. 464 sq. ft.
B54	W. H. Martin Ltd. Car Ferry Unit (Room 6)	Office	21 years (breaks at 7 and 14 years) 6.5.63 to 31.3.84	252	Rising to £283 10s. 0d. on 1.4.70 and £315 on 1.4.77	252 sq. ft.
B55	N.A.T. Transport Ltd. Car Ferry Unit (Room 9)	Office	21 years (breaks at 7 and 14 years) 22.4.63 to 31.3.84	256	Rising to £288 on 1.4.70 and £320 on 1.4.77	256 sq. ft.
B56	Thomas Meadows & Co. Ltd. Ex Continental Block 'C'	Office	Yearly—6 months' notice	£222 10s. 0d.		356 sq. ft.
B57	Receiver for the Metropolitan Police. Car Ferry Unit	Office	14.8.63 to 31.3.70	£256 10s. 0d.		228 sq. ft.

Printed image digitised by the University of Southampton Library Digitisation Unit

Plan Ref. No.	*Lessee/Tenant/Licensee Location*	*Use*	*Term*	*Rent (excl.) per annum*	*Rent Review*	*Remarks*
A58	Ministry of Public Building and Works Waterguard, Immigration, Car Ferry Unit, etc.	Office, etc.	Various	Total £4,799 11s. 4d. (see attached schedule)	On accommodation in Car Ferry Unit	2 small areas let inclusive. Additional charges for heating, lighting and cleaning
B59	Mory & Co. Ltd. Car Ferry Unit Room 13	Office	21 years from 1.4.63 to 31.3.84	413	Rising to £464 12s. 6d. on 1.4.70 and £516 5s. 0d. on 1.4.77	413 sq. ft.
B60	Riviera Holidays Ltd. Centre Passenger Hall	Bureau	3 years to 3.3.70	£115 18s. 0d.		152 sq. ft.
B61	Royal Automobile Club, Car Ferry Unit	Office	21 years 18.7.63 to 31.3.84	104	Rising to £117 on 1.4.70 and £130 on 1.4.77	104 sq. ft.
B62	St. Christopher Industries (1948) Ltd. Terminal Building	Office and shop	Yearly	100		132 sq. ft.
B63	W. H. Smith & Son Ltd. Kiosks in North Passenger Hall	Kiosk	5 years expiring 31.3.69	10% of gross receipts (after purchase tax) or £650, whichever is the greater	—	—
A64	W.H.S. Advertising Ltd. Terminal Building	Advertising	5 years from 1.9.67	70% of gross revenue with a minimum of £800		Approx. 50 advertising panels
B65	Southend Air Taxis Ltd. Terminal Building	Office and bureau	14.10.68 to 31.3.70 6 months' notice	£147 18s. 6d.		194 sq. ft.
A66	Airport Club (Flarepath Restaurant)	Airport club	14.5.63 onwards, subject to 28 days' notice by Corporation	£500 (i.e. £41 13s. 4d. monthly) plus proportion of takings		Plus 7½% reducing to 5% and 2½% on sales of beer, wines, spirits, etc. See tenancy agreement for calculations of rentals
A67	Southend Light Aviation Centre Ltd. Nissen Hut	Office, club room, etc.	1.7.68 to 30.6.70	£5	—	—
B68	Tartan Arrow (Continental) Ltd. Terminal Building	Office and bureau	1.2.68 to 31.3.69 thereafter 6 months' notice	£50 6s. 6d.	—	66 sq. ft.
B69	Telecars (Hire) Ltd. Terminal Building	Office and bureau	1.7.68 to 31.10.70	£152 10s. 0d.		200 sq. ft.
B70	Telecars (Hire) Ltd.	Chauffeur-driven private car hire service	3 years from 1.11.67 to 31.10.70	£1,058		Inclusive
A71	Telephone Manager	Nominal charge for lighting in telephone kiosk	From 1.4.51	£1 1s. 3d.		
A72	Tradair Ltd. Western Area 2½ acres	Site for hangar for aircraft maintenance	23 years from 29.9.60	£1,250	Rising to £1,900 on 29.9.70	Plus interest on £900 and £650. See document for details. Interest at current bank rate + 1½%. R.V. £4,250

Plan Ref. No.	*Lessee/Tenant/Licensee Location*	*Use*	*Term*	*Rent (excl.) per annum*	*Rent Review*	*Remarks*
A73	Watson & Scull Ltd. Site for temporary office	Office	3 calendar monthly tenancies	£180		Original area enlarged 3 times. There are 4 separate lettings totalling the rent of £180 p.a. R.V. £492
B74	W. R. Williams & Co. (Freight) Ltd. Ex Continental Block 'C'	Office	Yearly—6 months' notice	£221 5s. 0d.	—	354 sq. ft.
B75	World Transport Agency Ltd. Car Ferry Unit Rooms 11 and 12	Office	21 years (option at 14 years)	770	Rising to £866 5s. 0d. on 1.4.70 and £962 10s. 0d. on 1.4.77	770 sq. ft. R.V. £467
A76	World Transport Agency Ltd. Site of office accommodation	Office	3 calendar monthly tenancy	£68 6s. 8d.		Two lettings (Site £50, Extension £18 6s. 8d). 410 sq. ft. (300 and 110)
	Geo. Askew of Duckhurst Hill. Grass cutting contractor	—	3 years' contract from May 1967	£275	—	

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Southend Airport: Schedule of Holdings

Ref. no. on plan	*File no.*	*Use*	*Cat.*	*Area sq ft*	*Rent per annum*	*Heating area*	*Lighting area*	*Cleaning area*	*Date from which rent paid*	*Remarks*
M.P.B.W. 1	4L/1187/35	Landing	C	1,688	£1,973 4s. 2d. excl.	1,688	1,688	1,688	1.1.67	Rent for new Landing Offices payable from 22.8.66, for new Waterguard and Immigration from 1.1.67
		Waterguard	C	1,247		1,173	1,173	1,173		
		Immigration	C	331		331	331	331		
M.P.B.W. 2	4L/1187/36	Land	B	674	Nil	674	674	674		
		Waterguard	B	265		265	265	265		
		Immigration	B	287		287	287	287		
M.P.B.W. 3	4L/1187/37	C.I.O.	C	178	£286 7s. 6d. excl.	178	178	178	25.12.64	
		Immigration	C	178		178	178	178		
		Rest Room	C	118		118	118	118		
M.P.B.W. 5	4L/1187/31	Long Room	C	1,565	£586 17s. 6d. excl.	–	–	1,565	25.12.65	Rent increased from £430 7s. 6d. p.a. w.e.f. 25.12.65
M.P.B.W. 5A	4L/1187/31	Long Room	C	213	£133 2s. 6d. excl.	–	–	213	20.4.64	
M.P.B.W. 6	4L/1187/32	Car Ferry Unit								
		Landing	C	503	£1,702 0s. 0d. (first 7 years)	503	503	503	24.4.63	
		Waterguard	C	1,163	£1,943 0s. 0d. (second 7 years)	1,163	1,163	1,163	1.4.70	
		Watchers	C	262	£2,184 0s. 0d. (third 7 years) exclusive	262	262	262	1.4.77	
M.P.B.W. 7	4L/1187/37/1	C. & E. Stationery	C	50	£30 4s. 2d. exclusive	50	50	50	1.4.65	
M.P.B.W. 8	4L/1187/33	C.O.I.	C	52	£39 13s. 0d. exclusive	52	52	52	11.10.65	
M.P.B.W. 9	4L/1187/33/1	C.O.I.	C	30	£18 2s. 6d. inclusive	–	–	–	1.6.62	Facilities in Main Terminal Building for interviews
		C.O.I.	C	30	£30 0s. 0d. inclusive	–	–	–	6.6.62	Facilities in Car Ferry Unit for interviews
					£4,799 11s. 4d.					

NOTE: *Heating Charges*—To 31.3.65—6,235 sq ft at 1s. 8d. = £519 18s. 8d. From 1.4.65—6,285 sq ft at 2s. 4d. = £733 5s. 0d. From 11.10.65—6,337 sq ft at 2s. 4d. = £739 6s. 4d. From 22.8.66—6,924 sq ft at 2s. 4d. = £807 16s. 0d. From 1.1.67—6,922 sq ft at 2s. 4d. = £807 11s. 4d.

Lighting Charges—To 31.3.65—6,235 sq ft at 3½d. = £90 18s. 6d. From 1.4.65—6,285 sq ft at 5d. = £130 18s. 9d. From 11.10.65—6,337 sq ft at 5d. = £132 0s. 5d. From 22.8.66—6,924 sq ft at 5d. = £144 5s. 0d. From 1.1.67—6,922 sq ft at 5d. = £144 4s. 2d.

Heating and Lighting Charges are subject to periodic review.

Col. 1 references refer to number on Plans Nos. 1574 dated July 1964, 84A dated 25.12.64, and 818A dated February 1967, also New Customs Offices 1st floor plan. In respect of car ferry, lease plans apply.

Col. 4 Category 'B' is accommodation used solely by Government staffs and originally provided free under the provisions of the Harbour, Docks and Piers Clauses Act, 1847, but which is now subject to service charges.

Category 'C' is accommodation provided after 30th June 1959 on normal negotiated tenancies or leases.

(Received with Ministry of Public Building and Works letter dated 4th December 1967)

Evidence of Southend-on-Sea County Borough Council

SUBMITTED BY MR. R. F. LLOYD JONES*

1. I am a Master of Arts, Fellow of the Institute of Civil Engineers, and an Associate Fellow of the Royal Aeronautical Society. I am senior partner in Norman and Dawbarn, Architects, Consulting Engineers and Town Planners.

2. I have been associated with aviation since 1934 and have been personally concerned with a number of airport projects in the United Kingdom and abroad. These include the international airports at Rangoon, Accra, Fiji, Malta, Jamaica, Nassau and, in this country, Birmingham, Leeds/Bradford, Devon County Council and Southend-on-Sea Corporation. We also acted for the Ministry of Aviation in preparing a preliminary technical layout of the proposed airport at Stansted.

3. In my evidence I propose to deal with two aspects of the situation of the third London airport at Foulness (off-shore) as they affect the County Borough of Southend-on-Sea, namely, noise disturbance and Southend municipal airport.

Preamble

4. Before dealing with specific matters referred to, there are two items of information furnished by the Commission which have a general bearing on the specific matters that have to be considered. The first is the statement made in paragraph 17 on page 8,† that "The total annual number of passengers using the airport when two runways are running at full capacity is likely to be about 45 million. When four runways are running at full capacity it could be over 100 million." These are very large numbers and it would be desirable to know on what the estimates are based. For comparison, it may be mentioned that in 1967 Heathrow handled about 12½ million passengers and that the British Airports Authority expect that the airport will reach its capacity by 1974 when the number of passengers will have doubled. On present estimates, therefore, the capacity of Heathrow appears to be about 25 million passengers annually. When two pairs of runways are in operation at the third London airport it should be able to handle more aircraft movements than at Heathrow, but it is doubtful if it could handle more than twice the number; so it can only be presumed that the very large number of passenger movements envisaged at the third London airport is based on the increased capacity of future aircraft. If this is a valid assumption, on the same argument the capacity of Heathrow and Gatwick will also be greater than present estimates and the three London airports between them might possibly handle over 150 million passengers annually. This may perhaps be the ultimate capacity of the airports, but it would be desirable to have some guidance as to the probability of this volume of traffic occurring. It would represent an annual expenditure on air fares of perhaps £2,500 million annually and even if only part was spent by British travellers, it is a large sum in relation to the area served by the airports.

5. It would be helpful to present considerations if as realistic an assessment as possible of the build up of traffic over the next 20 or 30 years were available.

6. The second reference is to the statement by the Commission in paragraph 15 on page 8, that "The Commission's best estimate of the primary employment which the airport will generate at the full capacity of two runways is 45,000 and at the full capacity of four runways is 65,000". This compares with the estimate of 10,000 made by the Ministry of Aviation and given in evidence at the Stansted Inquiry.* Admittedly, the Ministry's estimate related to 1984-5 when 13 million passengers would be handled annually, and it assumed that no airline would undertake maintenance of their fleet or establish their base facilities at the airport. As the total secondary employment and service employment is likely to be roughly related to the primary employment, and together represent the inward movement of population, it would be helpful to know the basis of the Commission's estimate and how the population will build up over the years.

Noise disturbance

7. I believe that the Borough Council should seek early information about the assumptions adopted in relation to assesssing the NNI contours, the flight path pattern proposed, and the planning of runway alignment and situation. The proposals in the Commission's brief paper seem to involve the routing of aircraft flights over built-up parts of the borough. I appreciate that the present proposals are a hypothesis for this Inquiry and that a final proposal for this site might involve a very different situation, nevertheless the present scheme adopted involves very serious disturbance in the residential development in the eastern parts of the borough and outside, which could, in my opinion, be largely avoided.

8. In general, the siting, planning and orientation of the runways and all other planning and operational procedures should be such as to ensure that at no time will any part of the County Borough of Southend be subject to an excessive level of disturbance. If this is to be achieved it will be essential to avoid aircraft of any

* See also p. 364.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off shore).* (HMSO, 6s.). Reproduced in this volume, see p. xvi.

* Stansted airport inquiry, 6-23 December and 5 January-11 February 1966. Minutes of proceedings of a public local inquiry. (W. B. Gurney & Sons, 39 Victoria Street, London SW1).

Printed image digitised by the University of Southampton Library Digitisation Unit

type flying over the area and flight paths assumed by the Commission which pass over Shoeburyness and the adjacent areas should be reconsidered. In addition the flight paths to the south-west of the airport should be a sufficient distance from the shore line opposite Shoeburyness and from the north bank of the Thames to ensure that this level of disturbance is not exceeded having regard to any procedures, such as biasing take-offs to the north-east and other noise abatement measures, that may be adopted.

9. In assessing the likely noise level, consideration must be given to the possibility that there will be less attenuation of sound when the aircraft are flying over water than would normally be the case over land. It is uncertain whether any investigations have been made into this question, but it is common experience that sound generated at low level carries over water to a greater extent than over land. Although the difference between attenuation over land and water will be less when the aircraft fly high enough for the attenuation to be less of a consideration, it is possible this may be an important factor when aircraft on their approach pass Shoeburyness. It should be fully investigated when calculating the peak noise levels.

10. The Commission has furnished drawing no. CTLA 1/2 showing NNI contours when two runways are operating to capacity and drawing no. CTLA 1/3 showing the NNI contours when four runways are operating to capacity.

11. The Commission appear to have assumed that take-offs would not be biased to the north-east and the contours show that the majority of take-offs are to the south-west. They have indicated a very high proportion of aircraft taking off to the south-west turning right shortly after take-off over Shoeburyness and east of Southend and Rochford. Although on the plan the NNI varying from 50 to 40 all occur mainly over open country, in fact there is an appreciable development both in Shoeburyness and in areas to the north, particularly Great Wakering and Little Wakering. There is little doubt that if the take-off procedures assumed by the Commission were adopted, very serious disturbance must occur in Shoeburyness and appreciable disturbance would occur over the eastern parts of Southend and over Rochford. Moreover, any further residential development in the areas east of Southend and Rochford would probably be ruled out due to the disturbance created over the area.

12. It is assumed that the aircraft which turn right over Shoeburyness are those which would ultimately be flying to the west, the north and possibly to the east and turn on to a north-easterly course after take-off to join the air routes, possibly at Braintree. The particular pattern indicated has no doubt been arrived at in order to reduce the flying distance between the airport and the point at which aircraft would join the air route. It would seem, however, essential that the aircraft should be directed to fly up the Thames Estuary, preferably along the south shore over Cliffe before turning northward west of Canvey and Basildon. If this route was followed, the aircraft would have travelled 20 miles from the end of the runway before turning northwards and would have reached a height which should mitigate disturbance of the areas over which they would be flying after they turn inland.

13. The Commission have assumed staggered runways, which has meant that the south-west end of the runways are about four miles from Shoeburyness. It is still somewhat uncertain whether the runway layout, as shown by the Commission, represents the final answer but it would be desirable if the whole airport was sited further to the north-east. This would reduce the noise level at Shoeburyness, assuming that west-bound aircraft follow the estuary.

14. If the runways are built in the position and in the direction shown on the Commission's plans, but if aircraft did not turn over Shoeburyness, then it seems still likely that when the NNI contours are eventually calculated the level of disturbance along the foreshore at Shoeburyness might reach 50. If, however, flight paths could be moved about a mile further seaward the NNI at Shoeburyness foreshore might then be below 40. These figures, however, take no account of such factors as wind and cloud which can appreciably effect the level of noise. An off-shore wind will reduce the noise level and conversely easterly winds will increase it. The further eastwards, therefore, flight paths are situated reduces the likelihood of serious disturbance at Shoeburyness.

15. This change in the distance of the flight paths could be achieved either by leaving the runways in their present orientation but moving them away from the present shore line, or leaving the runways in their present position but changing their orientation to a more north-south direction; or by a combination of the two. The first course would involve increasing the amount of reclaimed land and one would have to justify the increased cost. Here, of course, the relationship of the airport to the proposed port development would be relevant as the combined development might justify reclaiming as much land as physically possible. There are two objections to altering the direction of the runways. Firstly, the runways would be moved further away from the direction of the prevailing south-west winds; secondly, the approach paths to the north-east would be over Clacton, Frinton and Walton. Clacton would be about 15 miles from the runways and the disturbance would not be serious, but the change in direction would increase the disturbance compared with the present orientation.

16. It should be emphasised once more that the validity of the computation of NNI depends on the validity of the assumptions on which the computation is based. The Commission state that the NNI's shown by them have been calculated when the runways are at full capacity. This presumably means at full capacity during peak conditions. This still requires some estimate between peak capacity movement rate and the average movement rate "for an average summer day". As they have given no date when it is expected that the capacity of the runways will be achieved, it can only be presumed that this will not happen for a number of years; so that their computation of NNI must assume the types of aircraft, the proportion of each type, and the respective noise level produced by them for the types of aircraft not yet in operation. Even the best assessment must be

Printed image digitised by the University of Southampton Library Digitisation Unit

subject to some uncertainty under these circumstances. It is also noted that the Commission make the following remark in paragraph 12 on page 7, "It has been assumed in the NNI contours that noise certification regulations will be introduced that will lead to reduction in noise effect in aircraft by 10 NNI over the next 20 years". It is difficult to be sure what this statement means, but probably what is intended is that because of noise certification, the NNI over the next 20 years will be 10 less than they would be had certification not been instituted. If this is correct, it does not mean that the disturbance will decrease over the next 20 years. In fact, this would be very improbable. Although certification will set an upper noise limit, the limit varies for individual aircraft type, mainly in relation to size. The average size of aircraft will increase, the peak noise level will, on average, be greater in the future than it is now, despite the limitation of noise generated by future aircraft types. This higher level of noise, together with the increase in the aircraft movements, would result in some increase in disturbance.

17. It is not clear in paragraph 13 on page 7 of the Commission's document whether the descriptions given under "Noise Level" relate in any way to the NNI numbers set out in the same table. It is noticed that the terms used in the column "noise level" are those used to describe people's opinions when subjected to certain noise levels. They do not appear accurately to decribe the average opinion on degree of annoyance which relate to NNI as determined from the social survey at Heathrow (paras. 20-23 of Appendix 11 of Cmnd. 2056 refer*).

18. Further information which would be required before we could comment on the validity of the NNI would include:

(a) The types of aircraft and the proportion of types and their respective peak noise level characteristics.
(b) The frequency of aircraft movement for each type and in each direction.
(c) The number of and the noise generated by supersonic aircraft, VTOL and STOL aircraft.
(d) The assumptions, if any, in regard to biasing the direction of take-off.

19. It may be noted that very little is at present known of the noise characteristics of the Concorde and, of course, there is no information regarding future SST types. It has been suggested, however, that because of the power of the engines, the use of after-burners, and the attitude of the aircraft both on take-off and landing, the Concorde will be noisy in the vicinity of the airport.

20. No indication is given by the Commission regarding the holding areas. When four runways are in use, a holding area will be required to the south-west of the airport, but it would be unlikely to be in the vicinity of Southend. The holding areas should not cause serious disturbance but it should be confirmed that none would be sited near to Southend.

21. One other matter should be mentioned. It would appear possible that in the future helicopters, or a type of STOL aircraft, may be used between the three London airports, and possibly between the airports and city and town centres. Such aircraft would not follow the routes of conventional aircraft and it would be important that they should not be flown over Southend or other built-up areas. In addition hovercraft may be used between the airport and points up the Thames, but they should keep reasonably clear of the shore.

22. To sum up, it is emphasised that it is very difficult to assess the validity of NNI calculated for some remote future date. The particular uncertainties relate to the noise level produced by future aircraft, many of which will be large and have powerful engines, and in particular there is very little information available at the present time regarding the noise level produced by supersonic aircraft. At best, the NNI will only give an approximate indication of where the greatest disturbance is likely to arise. As regards the proposal submitted by the Commission, it is clearly undesirable that aircraft should be routed over Shoeburyness and the eastern parts of Southend. How extensive the disturbance would be as a result of routing the aircraft in this fashion is difficult to say, but it is obvious that some serious disturbance must occur. If this proposed routing could be altered so that aircraft flew up the south side of the Thames Estuary, there would be much less likelihood of serious disturbance in Shoeburyness and Southend. Even so, the noise would be noticeable in Southend but would probably not be seriously disturbing. If, therefore, the airport is to be established on the Maplin Sands, the Corporation would insist that aircraft be routed both at the outset and in the future clear of the areas within the County Borough. This will apply not only to types now in operation, but any future types that may be developed.

Southend airport

23. If the third London airport is established on the Maplin Sands, severe restrictions would be imposed on the continued use of Southend airport. The Southend Air Traffic Control would cease to exist and such flying as might be permitted would be subject to the control at the new airport. The difficulties of integrating flight procedures at both airports would almost certainly prohibit commercial flying from Southend. It would be for the Board of Trade and possibly the British Airports Authority to decide whether any flying could take place and, if so, under what circumstances. But it may reasonably be assumed that at best occasional movements in connections with aircraft repair and maintenance, and possibly some private flying, would be the limit of what would be permitted. No flying at night or under bad visibility would be possible.

24. Even if this limited amount of flying was possible, the function of the airport would be completely changed. The cost of its operation would then be little more than maintaining runways and landing area, but even so would probably exceed the revenue. The justification for continuing the airport would be the indirect advantage arising from the commercial activities and the desire to provide an amenity for private flyers.

* *Noise: Final Report* of the Committee on the Problem of Noise. (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

25. The more likely outcome would be the closure of the airport. In that event the Corporation would be concerned to be compensated for the loss incurred. I anticipate that the write-off values of the fixed assets would be virtually nil except for any buildings that could be sold or leased for alternative use. The question might furthermore arise as to the reduction in the site value due to the need to remove pavements and other constructions before the area could be put to alternative use. In the event of closure the question of redundancy of key personnel would also arise and there are I believe approximately 150 officers and manual workers directly employed by the Corporation. Consideration might have to be given to the possibility of transfer arrangements for these officers to the new airport as part of some compensating arrangement.

26. The Corporation will also be liable for compensation to its tenants and others in contractual relationship when their agreements are terminated and other factual evidence of these will be given. The airport could continue in operation up to the time the third London airport is opened and during that time the present level of activity would probably be maintained and the airport may have a role to play during the construction phases of the new airport. During that time, which could be between 7 and 10 years, the airport will have to be maintained and costs incurred to provide the essentials for safe operation. This may conceivably raise issues in regard to what should properly be spent but, in doubtful cases, this could probably be resolved in agreement with the Board of Trade and with whatever authority will ultimately be responsible for compensating the Corporation.

Further information

27. It will however be evident from the foregoing that before one can comment in more detail regarding the effect that the new airport would have on Southend and generally on the Southend airport, much more information will be required than has so far been supplied by the Commission. The further particulars that are required can be summarised as follows:

(1) The basis of the estimates of future passenger traffic.
(2) The basis of the NNI computation including any relevant information from abroad in relation to the effect of aircraft noise over water.
(3) Reconsideration of routing the flight paths south-west of the airport.
(4) Reconsideration of biasing take-offs to the north-east and of noise abatement procedures.
(5) Information regarding the position of holding areas.
(6) Further information on the planning of the airport and in particular the position and orientation of the runways.
(7) Information as to whether flying could continue at the Southend airport and, if so, what restrictions would be imposed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Kent County Council

SUBMITTED BY MR. W. H. DEAKIN*

1. I am the Deputy County Planning Officer of the Kent County Council. I am a Master of Arts, and a Member of the Town Planning Institute and I have been practising town and country planning for about twenty years.

2. My evidence is concerned with the possible effects upon Kent of establishing a major international airport at Foulness, and apart from one other matter, is concerned with the effects of noise. The attitude of the Kent County Council can be summarised as one of not opposing the Foulness proposal, but of presenting to the Commission the possible effects of noise, and perhaps at a later stage suggestions to reduce the impact upon Kent to a minimum.

3. The Commission has indicated that it wishes to learn at this stage what effect the Foulness proposal would have on local authorities' development plans, but that it does not wish to deter authorities represented at this Inquiry from proposing any alterations or modifications to the noise contours or the runway alignments, if they feel able to do so, to minimise noise disturbance in specific areas. I hope to show that it would be in the interests of development planning in Kent to do so, but the County Council does not feel able to make such suggestions, and its expert advisers cannot suggest how it might be done, nor are they able to test the accuracy of the noise contours published, without knowing the basis upon which they have been drawn. To do so in ignorance of their basis could well result in proposals being made which were unacceptable operationally, or which would create fresh noise problems in other places, perhaps outside Kent. The County Council felt that this question is one that should properly be considered at Stage II, and asked the Commission to make available the information in time. The Commission has not felt able to do so, and the County Council does not intend to press the point at this stage, but it welcomes the Commission's assurance that the more detailed studies of the noise contour and air traffic control aspects will be made available before Stage V, and hopes that the Commission will be prepared to discuss these matters with the County Council when material is available.

4. This evidence, therefore, concerns itself only with the effects of the noise contours published by the Commission, together with a tentative 30 NNI contour added upon the advice of the County Council's consultant on noise, shown on plans nos. 5† and 6‡ handed in.

5. The first matter of prime importance is the County Council's proposal for major growth on the Isle of Sheppey. The Medway Estuary has considerable potential for port development and associated industry, and at Sheppey, and the eastern end of the Isle of Grain there are deep water facilities capable of taking large vessels, which I understand are not to be found elsewhere on the south-east coast until Southampton is reached. These circumstances have led the County Council to foster interest in port development there, and it is now engaged upon a study of the possibilities for the estuary in that connection.

6. Moreover, the view has long been held by the County Council that, following the closure of the naval dockyard at Sheerness, some stimulated influx of employment and population was desirable. The Island, despite some physical difficulties caused by coast protection and drainage problems, offers considerable attractions for development; there are the excellent deep water facilities for major port development, both there and on the adjoining mainland at Burntwick Island, and plenty of land, free from agricultural or landscape objection, suitable for residential and industrial development. This is a view which now commends itself to both the Ministry of Housing and Local Government and to the South-East Economic Planning Council. The County Council in collaboration with the Queenborough-in-Sheppey Borough Council and the Greater London Council has carried out a planning study of the possibility of an assisted expansion scheme, and the Greater London Council is willing to carry out, at the least, a project under the Town Development Act for 3,000 dwellings, or about 10,500 population. If that limited scheme of development were to proceed the area to be developed would almost certainly be at Sheppey Court Marches, which falls largely within the 40 NNI contour on the four-runway scheme. In my view noise considerations would rule out that possibility if the published noise contours obtained.

7. The planning study, however, raised the question whether a much larger expansion scheme would not be preferable to a limited scheme, both financially and in terms of its chances of success, and therefore examined three possible levels of population growth viz: increases of 10,500; 21,000; or 50,000 population. The County Council's view is that the largest of the three figures, which would produce a town having a population of about 80,000 in about 15 years' time, is preferable. The Borough Council and the Greater London Council remain uncommitted, the Borough Council preferring at present a much lower figure, and the three Councils are now jointly engaged in a financial study to determine the optimum level of growth.

8. I hand in a plan (plan 1*) showing in summary the preliminary suggestions for development by an increase

* See also p. 370.
† p. 91. ‡ p. 92.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

of 50,000 in population, that is, the largest of the three possible schemes. A report on the planning study is about to be published by the County Council and will be made available to the Commission. It will be appreciated from what I have said that this represents only a tentative suggestion, and has not been approved by any of the local authorities concerned. I produce it to show the areas which might fall to be developed on the Island if the various factors that have to be considered prove favourable, and I have marked on it the noise contours to show how such a scheme of development might be affected. Some of the land is affected by the 40 NNI contour in the four-runway scheme, but not in the two-runway scheme. Although most of the area lies outside the possible land of "intrusive" noise I think it fair to suggest that all of it would be affected in some degree by noise, and it seems to me that, if the airport were to be built at Foulness, the County Council and the other authorities concerned would be bound to question whether they could responsibly locate a new town in such circumstances. It might be that the prospects for the scheme, which has a place in the regional planning strategy of the Ministry of Housing and Local Government and the South-East Economic Planning Council, would be so seriously prejudiced as to force its abandonment. A scheme of this nature ought to take place, both in the interests of the area, and those of the south-east generally, and also to enable the economic potential of the area to be realised. The Foulness project, I submit, ought not to be the cause of its abandonment, and, if the airport is to be at Foulness, every effort should be made to recast the pattern of noise so as to enable Sheppey to develop.

9. The areas in Kent within the noise contours, including the approximate 30 NNI contour, are confined to parts of the Isle of Sheppey, the Isle of Grain, and part of the mainland to the south of the Medway Estuary and the Swale. The physical nature of those areas has been described in detail in the County Planning Officer's report *The Search for a site for a Third London Airport. Part I: Background Information concerning Sheppey and Cliffe** (the Yellow Book). That report has been submitted to the Commission, and there is no need for me to repeat its contents.

10. The main existing residential areas affected by the noise contours shown in the Commission's report, plus the provisional 30 NNI contours added by the County Council, are at Sheerness, Queenborough, and Minister on the Isle of Sheppey. I hand in a table† showing the approximate numbers of people now living in the areas between each of the contours, distinguishing between the two and four-runway schemes. This shows that, of the 10,200 population indicated in paragraph 13, on page 7 of the Commission's report‡ as being in areas likely to be within the 40+ NNI contour with a two-runway scheme, 1,600 live in Kent. With a four-runway scheme, of the total of 26,500 people so affected, more than a quarter (7,700) live in Kent. All of these Kent residents would be in the areas subjected to noise described as "intrusive".

11. Within the approximate 30 NNI contour there would be 14,400 Kent residents in the two-runway scheme, and 22,200 in the four-runway project.

12. The Sheerness-Queenborough-Minister area, however, is the subject of a town map, approved by the Minister of Housing and Local Government in 1964, which provides for population growth from about 24,000 in 1960 to almost 42,000 by 1978. I have referred in paragraphs 5-8 to further proposals for substantial growth that are now under consideration. Apart from the exising population in the areas likely to be affected by noise, therefore, there are areas allocated for residential development that would also be affected. With a two-runway scheme at Foulness these areas could accommodate about 100 population in the 40+ NNI contour area, and with the four-runway scheme the numbers would be about 9,900. A further 6,400 and 4,800 respectively would lie within the 30 NNI contour. I hand in a copy of the approved town map (plan 2) with the Commission's noise contours, plus the 30 NNI contour, superimposed.†

13. If the development of a major airport at Foulness proceeds, the County Council would have to consider what restrictions it might have to impose in areas likely to be seriously affected by noise. In that connection, the County Council has adopted, in respect of the small area of Kent affected, certain policies based on those put in force by the Surrey County Council after an expert study of the problem there, to control and restrict development in the areas adversely affected by noise from Gatwick airport. The relevant Surrey County Council policy can be summarised as follows:

> *In Zone 3 (40 NNI day contour, night contour not available)*
> No major development, but 'infilling' dwellings permitted without sound insulation.

14. The result of applying this policy to the areas worst affected in Kent would be to rule out all major residential and ancillary development, but to accept residential infilling without sound insulation; the erection of schools would be undesirable, but might be accepted with noise insulation. Hospitals, churches, etc., would be generally undesirable there, but would have to be examined on their merits. Offices could be permitted, but some insulation would be desirable.

15. The position as to areas within the 30 NNI day contour is more difficult to assess on information at present available. It is my view, based on advice from the County Council's noise consultant, that the County Council as Local Planning Authority would have to consider seriously whether it would be right to permit major residential development, with schools and ancillary development, in areas so affected. If such development could be permitted, it would have to be considered whether sound insulation should be made obligatory.

16. In my view the County Council would be obliged to adopt policies similar to those in force in Surrey to

* Available (price 25s.) or for inspection by arrangement at the County Planning Department, County Hall, Maidstone, Kent.

† Appendix 1.

‡ *Short List of Sites and Site Information for Stage II Local Hearings. 1 Foulness (off shore).* (HMSO, 6s.). (Reproduced at p. xv.).

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

control and restrict development in areas within the 40 NNI day contour, and possibly within the 30 NNI night contour, but the question of night contours requires examination. It is also possible that the 30 NNI day contour would necessitate a re-examination of plans for major development. I have indicated in paragraph 12 the losses of residential land this might entail.

17. Existing schools affected by the 40 NNI contour are as follows:

With a two-runway scheme no school is affected.
With a four-runway scheme, two secondary schools, with 1,401 pupils are affected, and three primary schools, with 596 pupils.

18. Outside the present noise contours no attempt has been made on present information to judge the noise consequences, but some general observations about the areas beyond the contours may be helpful at this stage.

19. Along the north coast of the Isle of Sheppey, particularly between Warden Point and Leysdown-on-Sea, there are a number of holiday caravan and chalet sites, with about 3,900 caravans and 3,500 chalets, which it has been estimated in the peak summer period attract some 25,000 visitors. Anxiety has been expressed locally about the adverse effect noise might have on this holiday trade.

20. Virutally the whole of the southern marches and coast of the Island, and the opposite bank of the Swale on the mainland are designated as areas of Special Scientific Interest. There is another such area on the north coast to the west of Warden Point and one on the Isle of Grain, all shown on the map handed in (plan 3*). Those areas, and other undeveloped stretches of coast on the Island are subject to strict coastal preservation policies imposed by the County Council. These coasts and the marches have a particular quality of isolation and quiet not to be found elsewhere in Kent, and there can be no doubt, I suggest, that whatever the precise location of the noise contours may be, that quality would be very seriously impaired. It is difficult to judge, I suggest, how much reliance can be placed upon the NNI concept as a measure of disturbance in such areas, where background noise is almost totally absent.

21. To the west of the Isle of Sheppey, across the Medway Estuary, lies the Isle of Grain. At its eastern end, which is affected by the 40 NNI contour in both the two and four-runway schemes, is the British Petroleum Oil Refinery and a power station, the village of Grain, and, a little to the north, a caravan camp and holiday centre established by the Strood Rural District Council. These are all shown on the County Map I have handed in (plan 4†). Numbers of residents on the Isle of Grain within the noise contours are included in the figures I have already given. I should perhaps mention for the information of the Commission that the oil refinery has a group of chimneys, the highest of which is 300 ft, and a flare stack of 250 ft, and that the generating station has a chimney 650 ft high. Another chimney 850 ft high is planned by the Central Electricity Generating Board to the east of the refinery.

22. The physical characteristics of the mainland to the south of Sheppey and Grain are described in the County Planning Officer's report on the search for an airport site in North Kent, and I will not repeat them here. The main features of interest in relation to an airport at Foulness are that the coastline is principally remote and quiet marshland, with a considerable potential for recreation, and already forming a popular area for yachtsmen. To the east lie the holiday resorts and residential towns of Herne Bay and Whitstable. To the south of the coast lies the first-class agricultural land of the North Kent fruit belt, and the towns of Sittingbourne and Faversham. Beyond that are the North Downs, a designated area of outstanding natural beauty, and an important recreation area. To the south-west of the extended line of the runways, and about twenty miles from their threshold, lie the Medway towns, with a present population of about 212,000, and where expansion to 266,000 is in progress, and some eight miles beyond this Maidstone and its environs with a present population of about 121,000 and where sizeable growth to about 154,000 is projected.

23. I am unable at this moment to offer any judgement as to how all these districts and towns outside the noise contours may be affected, but undoubtedly there will be some noise. The County Council's concern would be to be able to make representations to the Commission, if necessary, regarding such matters as runway alignment, take-off paths and operating procedures after take-off, to ensure that the noise effects are reduced to a minimum, so that the quality of life in the settlements in Kent is not unduly impaired, but without ignoring any consequential disadvantages to places in Essex and Suffolk. This is of particular importance in the towns where major growth is in progress, such as Medway towns, Sittingbourne and Maidstone, or where major growth is desirable as on the Isle of Sheppey, and sensible planning would be seriously prejudiced if noise ultimately proved to be an inhibiting influence upon new development in those places.

24. Kent has more buildings listed as being of architectural or historic interest than any other county outside Greater London, about 13,000 in all. The one-inch map handed in (plan 3) shows only those within the noise contours. These buildings form an important part of the fabric of the many attractive small towns and villages in the county, and the County Council has been at pains to encourage their conservation and preservation, largely by assisting private owners to do so. This policy depends upon a sufficient interest being established and maintained among people with the means and inclination to purchase such buildings and restore and preserve them. Faversham is a prime example of a town where this policy has been pursued with marked success. It is not suggested that aircraft noise would damage such buildings structurally, but there is a danger that in areas subjected to continuous noise, even well outside the areas of "intrusive" noise, prospective purchasers might be less willing to invest care and money in listed buildings, and the prospects for preservation thus be

* p. 93.

† Kent Development Plan (1967 revision) County map. Not reproduced. Available for inspection at the County Council Offices, Maidstone, Kent.

Printed image digitised by the University of Southampton Library Digitisation Unit

prejudiced. This consideration will therefore influence the County Council in its approach to the noise question. If is appreciated that this consideration will probably apply to any area affected by the proposed airport, but towns like Faversham, which does not appear to be unduly affected by the published proposals, should be protected from noise on this score.

25. It will be evident from what I have said that the County Council does not at this stage oppose the selection of Foulness as an airport site. It lies outside Kent, and the County Council takes the view that it can properly concern itself only with any consequences that might flow from its selection that directly affect Kent. Because of the need to have additional information, however, the County Council wishes at this stage to reserve the right to alter its representations, perhaps in the direction of greater opposition to the proposal, if upon examination of such further information, or if the noise contours are altered to Kent's disadvantage, that course seems necessary.

26. I have referred to the County Council's wish to have further information, so as to test whether a different alignment of runways, or particular procedures as to take-off paths and flight instructions could reduce the noise impact upon parts of Kent. It is not known at present whether the noise contours supplied represent an actual situation or some theoretical average situation perhaps less detrimental than actual conditions which obtained for most of the time would be. For example, it may be that the noise contours published by the Commission represent an average of south-westerly take-offs for, say, 80 per cent of the time, and north-easterly take-offs for 20 per cent. The County Council wishes to see what noise contours would be produced during the period of south-westerly take-offs, that is, the normal situation for Kent. It would also want to examine the effects on Kent of landings from the south-west towards the north-east, that is the 20 per cent situation. It is having work done to ascertain this. The County Council hopes that there will be an opportunity to test these and other related questions in good time before Stage V is reached.

27. It may be that the Commission will recommend Foulness as the third London airport site, subject to certain understandings about flight paths, take-off procedures and so on. If Her Majesty's Government adopted those recommendations, I assume that the building of an airport at Foulness, under present practice, would be undertaken under planning permission granted by a Special Development Order. The Commission may be prepared to consider whether it should not advise that, whatever form is ultimately adopted for the grant of permission for the construction of the airport, and for any subsequent extension or enlargement of it, provision should be made not only for consultation to take place with the local authorities affected, including Kent County Council, but for reference to the appropriate Minister or Ministers to be obligatory in the event of there being sustained objection by any such authority.

28. As a next stage in that line of thought, it may be equally important that once the airport is built it should be operated, as regards flying procedures and practices, to have regard to any recommendations that may have been made at the permission stage concerning operating procedures designed to avoid or reduce noise. The airport operating authority might need to adopt new procedures and practices in the course of time, perhaps to reflect the advent of a new type of aircraft, or to enable increased traffic to be handled. I appreciate that restrictive procedures can materially reduce the traffic capacity of an airport, and I do not suggest that restrictions be introduced unless they are shown to be essential. As in the case of control over design and layout, the Commission may perhaps consider whether it would not be proper to advise that Ministerial control over operating practice should provide for consultation with the local authorities affected by any changes in practice proposed.

29. My evidence has been concerned so far wholly with the question of noise, but there is one last, and different, matter to which I should like to refer. The surface communications to an airport at Foulness will be of direct concern to Kent if inadequate roads north of the Thames between the airport and London caused road traffic to cross the Thames in substantial quantities and make use of the road system in Kent and south-east London to reach London, or to bypass it to the south. I understand that the estimates made by the Ministry of Transport of the amounts of traffic likely to divert across the Thames show that the quantities involved would not be of any real significance. If those estimates proved to be too low, however, the flows would have a more serious impact on Kent, and the Commission is asked to bear that in mind. It does seem likely, however, that in any event the present Thames crossing at the Dartford tunnel will be a major feature in any road system to serve Foulness, and might even become the "Piccadilly Circus" of such a system. This would make it even more important to complete duplication of the Dartford tunnel (which is estimated to take four to five years) before the airport opens, as the present single tunnel is frequently saturated with traffic during the peak summer months, and also to construct the South Orbital Road from the Dartford tunnel around the south of London. It is hoped therefore that the County Council and highway authorities concerned will be allowed to carry out that work in good time.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX I

Noise Effects on Kent of the Commission's Proposals

	Two-Runway Scheme		Four-Runway Scheme	
	(a) 40-45 NNI	(b) 30-40 NNI	(c) 40-45 NNI	(d) 30-40 NNI
1. Existing population (1966 Census)	1,600	14,400	7,700	22,200
2. Population increase proposed in town map	100	6,400	9,900	4,800
3. Secondary schools	–	3 (1,710 pupils)	2 (1,401 pupils)	2 (574 pupils)
4. Primary schools	–	7 (1,657 pupils)	3 (596 pupils)	10 (2,838 pupils)
5. Hospitals	–	–	–	1 (114 beds)

APPENDIX II

List of Documents Submitted

Plan 1.* Sheppey expansion study (50,000 additional population scheme).

Plan 2.* Approved town map for Queenborough, Sheerness and Vicinity, with noise contours added.

Plan 3.† Nature Conservancy areas, and sites within noise contours of ancient monuments and listed buildings.

Plan 4.‡ County map, Kent Development Plan (1967 revision) and written statement, submitted to the Minister of Housing and Local Government in 1968.

Plan 5.§ Roskill Commission noise contours, 2-runway proposal, plus 30 NNI contour added by the Kent County Council.

Plan 6.‖ Roskill Commission noise contours, 4-runway proposal, plus 30 NNI contour added by the Kent County Council.

---

* See attached wallet of maps and diagrams.

† p. 93.

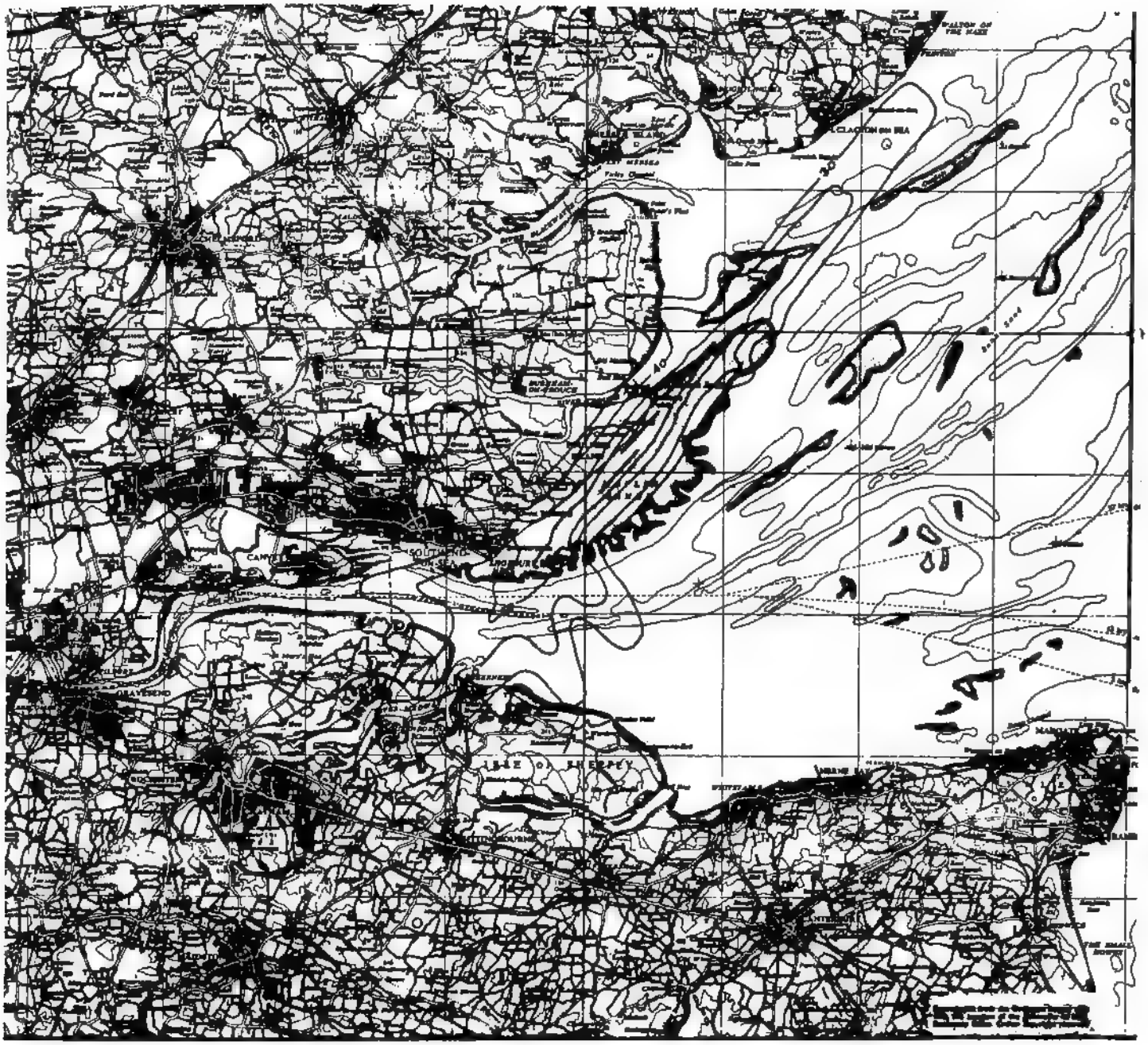
‡ The county map and written statement (referred to as plan 4) is not circulated with this proof, but copies may be inspected at, or purchased from the County Planning Department, County Hall, Maidstone—Price 30s. for the county map, and 2s. 6d. for the written statement plus 4s. 6d. postage and packing.

§ p. 91.

‖ p. 92.

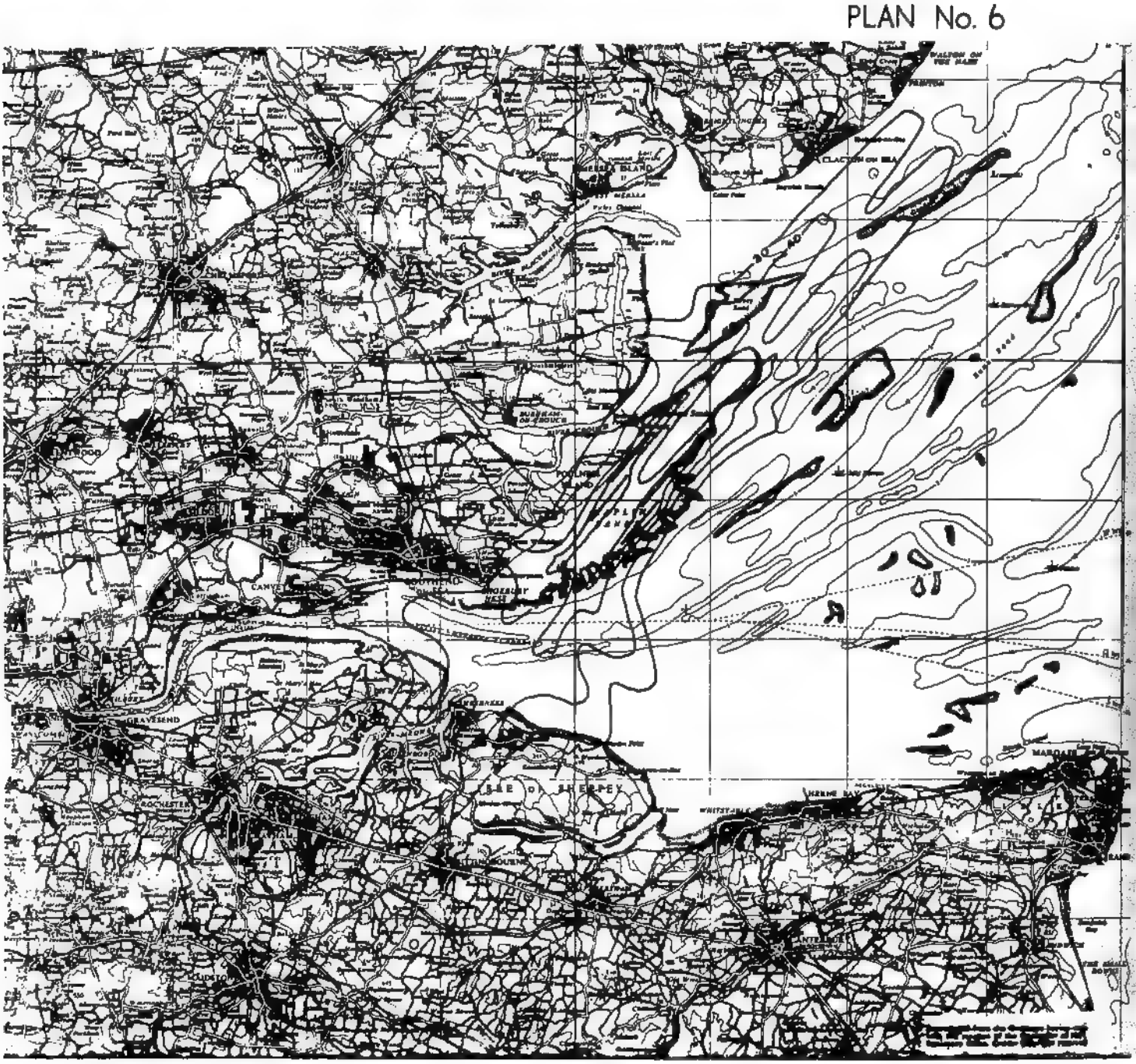
Printed image digitised by the University of Southampton Library Digitisation Unit

PLAN No. 5



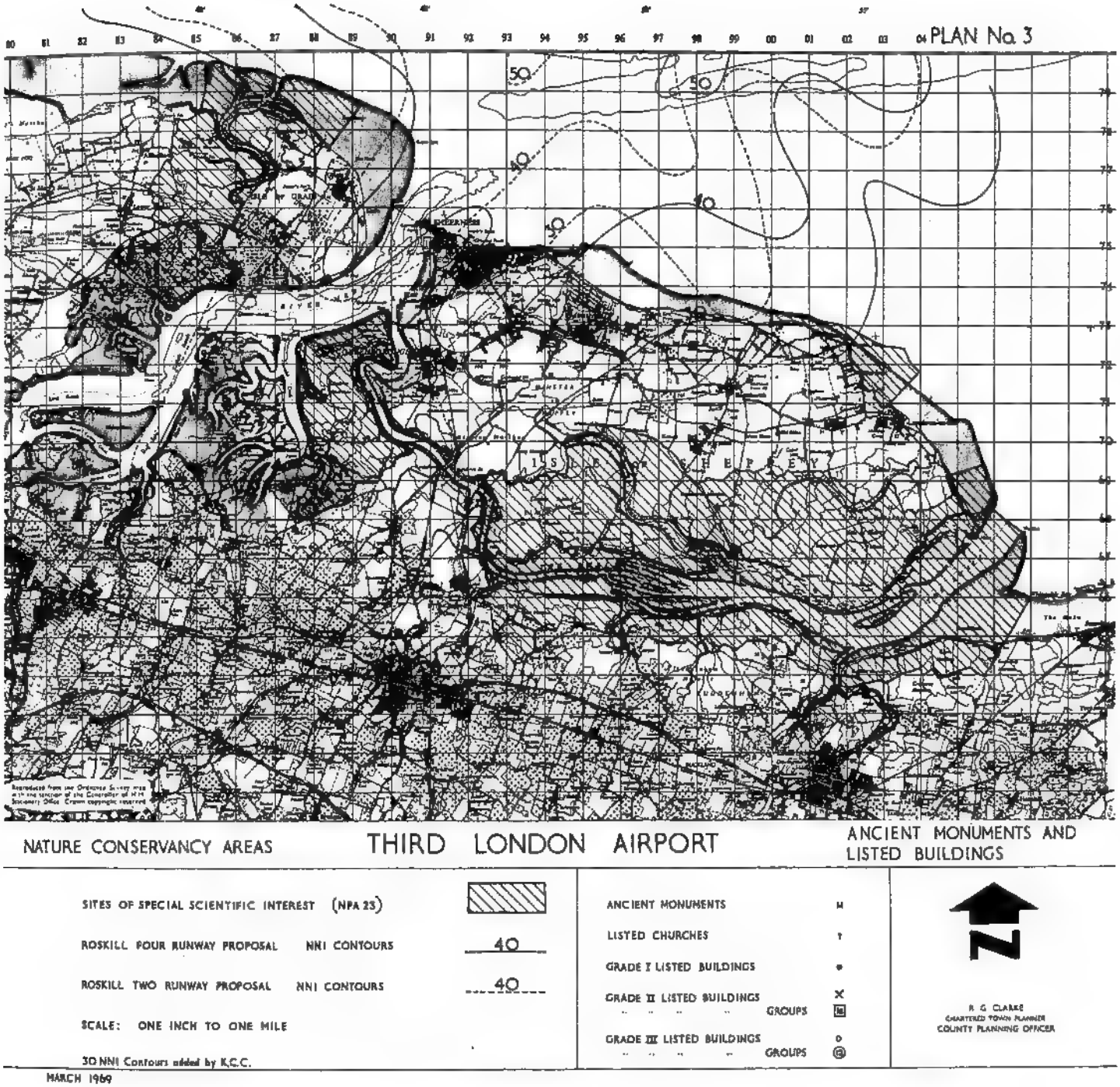
Plan 5. Roskill 2-runway proposal. *(Kent County Council)*

Printed image digitised by the University of Southampton Library Digitisation Unit



Plan 6. Roskill 4-runway proposal. *(Kent County Council)*

Printed image digitised by the University of Southampton Library Digitisation Unit



Plan 3. Nature Conservancy areas, ancient monuments and listed buildings. *(Kent County Council)*

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Rochford Rural District Council*

SUBMITTED BY MR. G. A. KNOWLES

On present information the Rural District Council propose to call no witnesses, relying upon the presentation of this Statement by their Clerk and upon any cross-examination of him that may be required. If the need should arise, however, the Council ask to be afforded an opportunity of calling a witness to deal with any of the points made in this Statement.

The Rochford Rural District Council feel they are likely to be affected by the siting of the third London airport on the Foulness off-shore site to a greater degree than any other Local Authority because:

(a) The site under consideration lies wholly within the boundaries of their district.
(b) The noise effects are likely to affect a greater percentage of their area than others.
(c) The effects of new lines of communication are likely to be more severely felt than elsewhere.
(d) The population increase arising from the project could be most severely felt within the Rural District boundaries.

The Commission will be aware of the boundaries of the Rural District which at present contain 36,220 acres and a population estimated to be 38,910 in mid-1968. It will also be appreciated that the wholly rural character of the Rural District has undergone some rapid change since 1945, as a result of which the western portion of the Rural District has become urbanised. Nevertheless, the eastern portion has retained its rural character and comprises, on the whole, very good quality agricultural land. It has a flat, open and rural appearance with the limited means of communication to be expected—no railway and Class III roads of relatively narrow width. It is estimated that the population within this eastern portion of the Rural District is distributed as follows:

Parish	*Area (acres)*	*Estimated population at 10 October 1968*
Canewdon	6,845	1,020
Paglesham	1,687	260
Stambridge	2,202	510
Sutton	1,520	140
Barling Magna	2,747	1,260
Great Wakering	3,314	3,660
Foulness	7,235	250
TOTAL		7,100

The population in the western portion of the Rural District is distributed as follows:

Parish	*Area (acres)*	*Estimated population at 10 October 1968*
Rochford	2,988	7,050
Ashingdon	2,503	2,750
Hawkwell	1,408	8,140
Hockley	1,578	7,310
Hullbridge	2,193	5,600
TOTAL		30,850

The majority of the working population is employed outside the Rural District, a large proportion commuting by rail to London via the Rochford, Hockley and Rayleigh railway stations.

The Commission will not be unaware of the existence of the Southend airport which lies within the Rural District boundaries at Rochford and will appreciate that a large percentage of the Rural District's inhabitants already have first-hand experience of the difficulties caused by aircraft noise, although on a much smaller scale than may be expected from the project now envisaged.

The Rural District Council have attempted to restrict their consideration of this matter to the confines laid down and, without embarking upon a comparison with other possible sites for the Airport, have attempted to deal only with the important effects they feel would need special consideration so far as the Rural District is concerned, assuming a decision had already been taken to locate the Airport at Foulness. Like others, the Council have found some difficulty in envisaging all the effects which might arise due to the limited amount of factual information available and the relatively short time in which the Council Members have been able to digest what is available. Nevertheless, the Council have provisionally indicated their support in principle to the project provided the arrangements for carrying it into effect can be so arranged as to cause the minimum adverse effect upon the Rural District. The particular points the Council wish to raise are as follows:

Effects from aircraft noise

On the Commission's noise contours the 7,100 population in the rural portion of the district will be largely affected by noise and the flight path will pass in close proximity to the eastern part of the urbanised portion containing 30,850 people.

The Council ask the Commission to look at the noise aspect from the standpoint that high regard should be

* See also p. 373.

Printed image digitised by the University of Southampton Library Digitisation Unit

paid to the well-being of the people who will suffer from noise and to off-set against this the costs and inconveniences which would be necessary to achieve a reduction in noise. The Council feel that the minimum noise effects upon population can best be achieved by siting the runways as far as possible away from the people who are already in residence and they strongly urge the Commission to advise location of the runways at the outer edge of the Maplin/Foulness Sands as shown on the attached sketch plan with runway alignment so arranged within the confines of efficient and safe operation as to reduce the noise effects to the minimum. In putting forward this view, the Council appreciate that its implementation could involve a substantial increase in the amount and cost of necessary land reclamation works which, in turn, could marginally increase the time when the airport could be brought into operation. They urge the Commission, however, to undertake a full and searching investigation into this suggestion which, they feel, could well reveal the following advantages in addition to the reduction of noise for residents:

(a) The provision of substantial areas of reclaimed land between the airport and the existing mainland which could be used for the location of industrial and other uses needing to be located close to the airport terminal.
(b) The availability of some surplus reclaimed land to be held in reserve against possible needs for future expansion.
(c) The possibilities of locating other uses such as docks and/or a recreational boating marina on reclaimed land to the south in such a position as to avoid interference with or from aircraft operating from the new runway.
(d) Greatly improved safety margins to existing residential areas in the event of aircraft crashes arising on take-off or landing.

Apart from the location and alignment of the runways the Council consider the other important factor affecting the level of noise experienced by residents will be the noise created by airborne aircraft—following take-off, awaiting landing and on the landing approach. The ideal arrangement from the district's point of view would be to provide for all take-off and landing paths to be wholly over the North Sea, and, although the Council appreciate that the ultimate pattern adopted will be largely governed by technical considerations related to the safety and operational needs of the aircraft and the limitations imposed by existing air corridors, etc., they suggest that the Commission's terms of reference are wide enough to permit them to recommend a change in the existing structure of the latter. With this in mind the Council urges the Commission to make every effort to ensure that all aircraft movements at low altitude over and around the airport site are directed over the North Sea and, in addition, to consider locating the "stacking" and "holding" areas over the sea.

If, after very careful consideration, the Commission are forced to the conclusion that such a suggestion is not practical, the Council urge them to arrange in such a manner that, where aircraft must cross the land after take-off or prior to landing, they do so at the maximum possible height, and that their lower-level flying takes place over the sea or the Thames estuary. For instance, the Commission's published noise contours envisage aircraft turning at the south-western end of the runways onto a north-western heading over the Shoeburyness, Great Wakering, Barling Magna, Paglesham and Canewdon areas. The Council feel the noise created by such a line would be avoided if the point of turn were to be displaced further south into the Thames.

The Council consider the existing residents are the people whose interests must be safeguarded. Incoming residents can be safeguarded by ensuring that the new accommodation provided for them is not situated in an area where noise will be a problem, but the unfortunate existing resident will have no choice. He will have the noise thrust upon him and he will be left with a choice of staying where he is until the noise deprives him of his reason or moving out at considerable personal inconvenience. The Council would regard this as a serious aspect if there were only a few such cases likely to arise but on the scale envisaged they regard it as an intolerable burden of prospective human misery which more than justifies additional cost. From the noise aspect the Council are saying, if you must put your howling dog in out front garden please point it the other way.

Apart from the effects of noise on residential properties, the Council also draw attention to the existence of the general hospital located in the centre of the Rochford town. Here, perhaps more than anywhere, noise can create special problems and, although it is some distance away from Foulness, the hospital should be regarded as an institution calling for special attention to ensure that noise has the minimum effect upon its activities.

Development associated with the airport

The Council feel that the full effects of an airport at Foulness will not be apparent until some clearer indication is available as to the total volume of additional population which it may be expected to generate and the localities where this population is to be established. On a broad basis, however, they feel it would be wrong both from the local and national aspects to establish the airport on reclaimed land on grounds of avoiding the use of good agricultural land for the purpose, only to use good agricultural land upon which to site the residential and other development generated by the airport.

The eastern part of the Rural District, that is the portion which lies to the east of Rochford, is largely comprised of good agricultural land. The Council therefore urge the Commission to ensure that residential and other uses generated by the airport make the minimum inroads onto good agricultural land and that they are in fact directed towards consolidation of the existing developed and partially-developed areas, the poor quality and derelict lands and in such a manner as will cause the least possible disturbance or inconvenience to existing residents.

Communications

Assuming there is a need for additional lines of communication in an east to west direction both by road

Printed image digitised by the University of Southampton Library Digitisation Unit

and rail, the Council consider that the approximate lines to be followed should be established before any attempt is made to designate the development areas and that in establishing the approximate lines all efforts should be made to cause the minimum detriment to existing residents and amenities. It is submitted that the main points to be considered are the demolition of properties to make way for roads and a railway, the effects of traffic noise on adjacent properties, the severance of communities, disturbance of agricultural holdings and the effects upon visual amenities. Here again, the Council contend that there is good justification for reducing the adverse effects upon existing residents to the utmost.

Apart from the provision of new lines of communication to serve the airport, however, it is submitted that a great deal of thought must be given to the communications which will be needed to serve the vastly increased resident populations. It is suggested that the Commission should assure themselves that it will be possible to achieve a situation where affirmative answers can be given to the following questions:

1. Will the population living in the tongue of land between the rivers Thames and Crouch be able to travel safely and quickly to and from Foulness?
2. Will that same population be able to travel safely and quickly to and from London?

The Council appreciate that their suggestion for locating the airport further to the east would increase travelling distances to and from the Airport. They submit, however, that with the improved lines of communication, expected speeds of travel will be such as to make this factor of little disadvantage.

The Council also ask the Commission to consider the possibilities of providing a more direct access from the airport to the north and south of the Country by possibly constructing barrages and roads across the rivers Crouch and Thames.

Tidal effects

The Council have fears that any reclamation of the Maplin and Foulness Sands will cause the high tide level in the river Thames and Crouch to increase to an extent which will give rise to flooding and, in the light of their experiences during the 1953 East Coast floods, urge the Commission to thoroughly satisfy themselves either that such fears are groundless or that adequate coastal and river protection works will be undertaken and completed before reclamation is commenced. The Council suggest that the Commission's investigations should be based upon the worst possible tidal conditions that may be expected, including the circumstance of abnormal tidal surges such as was encountered in 1953.

Public water supply

Although virtually surrounded by water the south-eastern corner of Essex is frequently referred to as waterless Essex because of the low rainfall and the flat nature of the land. Public water supplies to serve the area are largely imported from areas to the north and west and, although steps are being taken by the water supply Undertakers to augment supplies, limitations have in the past tended to restrict the rate of growth in the area. The District Council feel that adequate assurances should be obtained from the Undertakers and the Water Resources Board as to the availability of sufficient water to serve the airport and its associated developments.

Boating/fishing

From within the boundaries of the Rural District recreational boating activities are generated and a certain amount of river and sea fishing for profit and recreation takes place. So far as fishing is concerned the Council have no detailed information to offer but feel the interest should be safeguarded. Boating activities are, however, a fairly substantial factor and, with the growth of leisure time and personal income, are a growing factor. It is assumed that this growth will increase proportionate to the increase of population. Much of the recreational boating comprises sailing on the rivers Crouch and Roach, extending into the Crouch and Thames estuaries. Because of the public demand and the need for fostering such recreational activities the Council urge the Commission to ensure that the facilities are safeguarded to the fullest possible extent.

Existing deficiencies in public services

The Council draw the Commission's attention to the undoubted fact that there are some substantial deficiencies in the public services throughout the Rural District which were originally created by the uncontrolled and sporadic development which took place prior to 1939, which were emphasised by the rapid rate of development since then and which have been difficult to wholly remedy due to the stringent national financial restrictions. The main deficiencies are:

1. Sewage, in respect of which current schemes estimated to cost £2,500,000 are receiving government support and which should be substantially overcome in the next five years.
2. Unmade streets, there being some 14 miles of these within the existing development areas and which, at the present rate of progress permitted by financial restrictions (some £80 to £100,000 per annum), will not be dealt with for some 12 years.
3. Public open spaces, in respect of which the Council's plans over the next five years could meet the overall needs of the existing residents if loan consents to the extent of £750,000 were authorised.

It is expected that the Rural District Council's efforts would be substantially committed to projects associated with the airport if the airport did proceed and the Council take the view that if such is to be the case they must be able, prior to the date when such commitment arises, to substantially satisfy the backlog of current demands. They feel this factor to be both relevant and vital to the viability of the airport project so far as the Rural District Council's participation is concerned, and they ask the Commission to take it into account in their consideration.

Printed image digitised by the University of Southampton Library Digitisation Unit

Financial assistance

In view of the magnitude of the project, the Council foresee the need for them to incur heavy capital commitments on such items as sewage disposal, refuse disposal and recreational facilities in the early stages before a sufficient build up of rate income to meet the costs. They foresee that such circumstances could produce an undue burden for several years upon the existing ratepayers, the length of the period depending upon the rate at which development takes place. They consider such a burden would be unjustifiable in equity because the existing residents would in fact be called upon to suffer the inconveniences of the airport and to pay for them at the same time. The Council therefore urge the Commission to consider advising the government to make arrangements for the provision of temporary financial relief.

The Council thank the Commission for the facilities they have been afforded, trust the views now put forward will be helpful and urge their adoption in full.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. J. S. Orchard*

I, Joseph Stuart Orchard, of 121 Greensward Lane, Hockley, Essex, Trustee Savings Bank Branch Manager, an Ashingdon Parish Councillor, a member of the Rochford Hundred Amenities Society, the Rochford Hundred Historical Society and the Society for the Protection of Ancient Buildings do hereby state the following:

1. I left Tottenham, London, approximately 7 years ago to take up residence in Hockley specifically to escape the ever-increasing noise of London. Hockley was chosen from many areas because of its peaceful rural attraction and a place where my family could enjoy a completely open and noise-free area after each day's work and at week-ends, also a place where ultimately retirement could be spent in peace and quietness. Further, Hockley was chosen because I work in Shoreditch, a very busy and noisy traffic junction, which is very convenient to Liverpool Street station, the terminal for the Hockley and district trains.

It is, therefore, only natural that I find myself utterly resentful of the idea that Foulness should be considered for the third London airport and of my fervent desire to oppose the suggestion in the strongest possible way because of this and the following.

2. **Transformation of Rural District**

It is said that wherever the third London airport goes a city must go with it and in the case of Foulness where if the Island was developed industrially, other development, including residential, could well reach back as far as Ashingdon, Canewdon, Hockley, Hullbridge, Rayleigh and other areas adjacent. In fact the whole of this area could well result in a high density urbanisation which would mean the complete confiscation of our beloved and up to now jealously guarded Green Belt. Also there is a suggestion that a new road and monorail system on stilts would straddle the full breadth of the Rural District from Hockley and Hullbridge through Ashingdon, Canewdon and Paglesham to Foulness which would complete the rape of some of the most beautiful areas of the Rural District.

3. **Moral aspects**

With reference to the aforementioned, it is surely morally wrong to suddenly enforce such shameful impositions upon the residents of these rural parts who have planned to live in areas renowned for peacefulness and beauty. Many have lived in the Rural District for long periods and have already been the victims of a severe and badly planned change, others have moved to these parts to spend a happy retirement in peace and quietness whilst a vast majority of the rest are making such plans and are commuting to the extent of 70 miles or so per day as a considered well worth sacrifice to this end. In these circumstances I ask where is the justice in the consideration by the Commission to include Foulness on their short list of sites.

4. **Stacking areas**

Further apart from the injustices already mentioned, noise and possibility of damage to property would probably have to be continually endured if the stacking areas were planned or forced inland. It is known that had Stansted been chosen the stacking areas would have stretched from Hertfordshire to well into Suffolk so it is safe to assume that the stacking area for Foulness could not possibly be fully over the sea, in any case in bad weather at sea, the stacking area could well be forced fully inland covering the Rural District of Rochford, Southend District and possibly Rayleigh Urban District. This would result in constant noise and screams of the giant Concorde and Jumbo Jets, causing fear to the aged and nervous and loss of much sleep to many residents within the stacking areas. Also there would be the deep concern to all ratepayers of the possibility of damage to property and listed buildings by vibration from these jets.

5. **Hazard by birds**

Birds, some rare, are a fixture at Foulness and it would take a lot to dislodge them, if at all, for ornithologists tell us that birds are remarkably unperturbed by the noise of aircraft. In these circumstances, if Foulness is chosen as the third London airport these birds must be a hazard to low flying aircraft and vertical take-off planes and the local populous have every good reason to be concerned when studying facts. Apparently a small bird of 4 lb striking an aircraft travelling at 600 mph is equivalent to a car travelling at 25 mph colliding with a stationary plane and the impact at take-off of a blow from one of these birds on one of the big carbon fibre-reinforced fan blades for Rolls RB 211 engine would roughly equal a blow of two tons. In the case of vertical take-off aircraft these planes are very vulnerable below 6,000 ft when loss of engine power could be catastrophic by birds being sucked into the intake system.

In these parts of Essex it is not unusual to see flocks of starlings in the evenings which to me is a grim reminder of that dreadful air disaster over Boston in 1960 when a flock of starlings crippled three engines of an Electra, resulting in the death of 72 people.

It is a concern to know that bird strikes cost the RAF about £1 million per year and that the Royal Canadian Air Force ran up a bill of $11.5 million with the loss of seven F.104 Star fighters—A consequence of low level operations at high speed over the vast lakes of Canada and it seems that wherever planes operate near or over sea and lakes there is undeniable evidence of bird strikes and the strong possibility of serious mishap.

* See also 375.

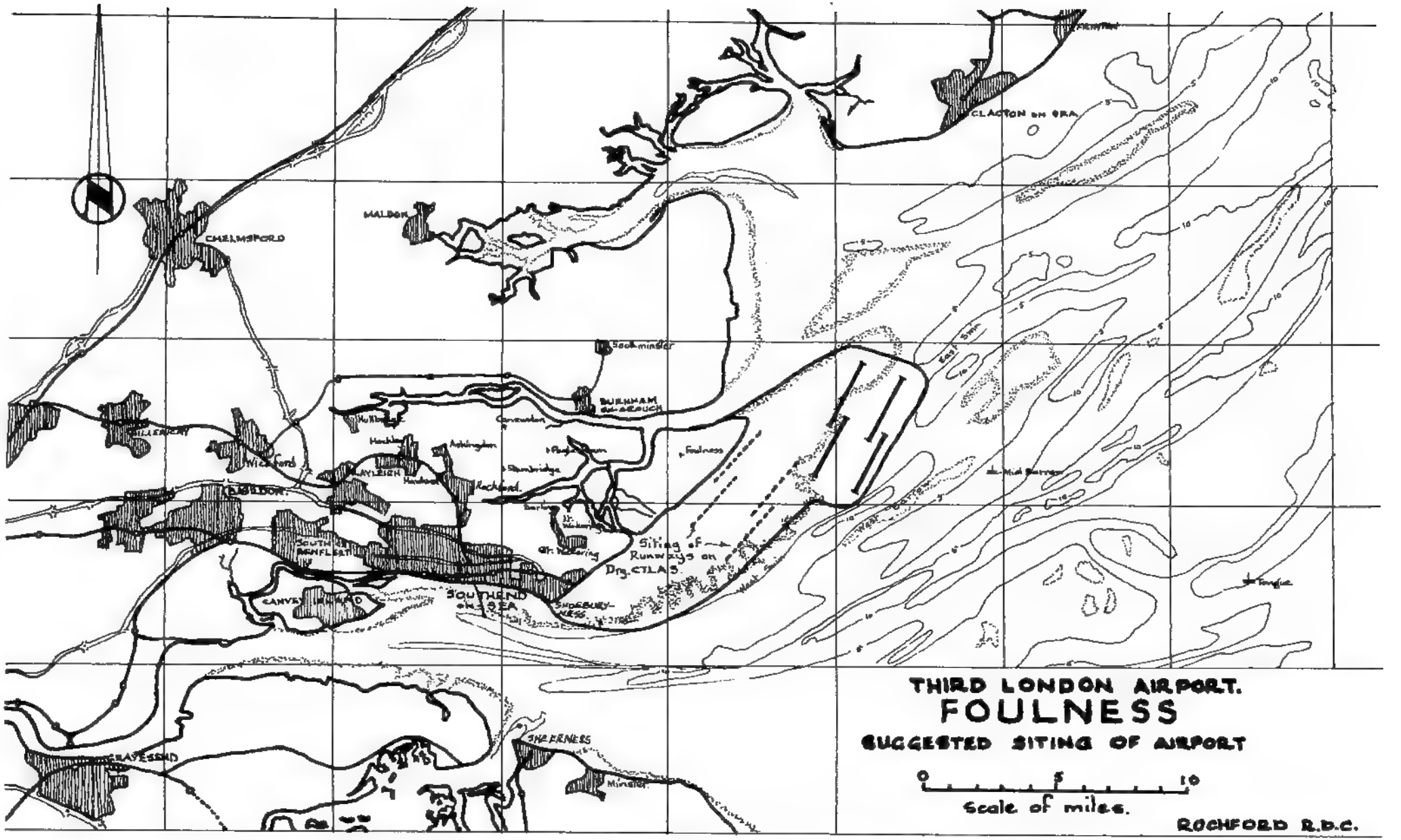
Printed image digitised by the University of Southampton Library Digitisation Unit

In the case of Foulness it is known that huge flocks of birds surge inland to the extent of 25 miles daily over a broad swathe returning to Foulness in the evening and taking this into consideration together with the flying habits of small flocks and individual birds makes the idea of Foulness as an airport very, very frightening indeed especially in view of the fact that planes would be going over at the possible rate of one every 40 seconds.

It is because of the aforementioned that I wish to re-iterate my earlier statement of utter resentment of the idea of Foulness being the site of London's third airport and it is with much respect to the Chairman of the Commission on the Third London Airport that I must stress to him my determination to oppose the idea and do all in my power to resist the establishment of London's third airport at Foulness.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



Foulness: suggested siting of airport. *(Rochford Rural District Council)*

Written Evidence

by

Ashingdon Parish Council
Barling Magna Parish Council
Canewdon Parish Council
Foulness Island Parish Council
Paglesham and Barling Parish Councils
Rochford Parish Council
Tendring Rural District Council
Witham Urban District Council
Essex River Authority (*Mr. E. L. Snell, and Mr. H. Fish*)
Basildon Development Corporation
Maldon Borough Council
Rochester City Council
Strood Rural District Council
Foulness Island Residents' Committee
St. Clements Ward Municipal Electors' Association
Mr. R. Newbery
Action Committee against Foulness
Clacton Urban District Council

Witnesses were examined on this evidence
on Day Four, Monday 12 May 1969
see pages 381-408

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Ashingdon Parish Council*

SUBMITTED BY MR. J. S. ORCHARD

Councillor J. S. Orchard has been appointed to represent this Council at the Stage II Local Hearing and to make known its observations concerning the effects of London's third airport being located at Foulness:

That on the following grounds Ashingdon Parish Council object to the proposals:

1. The existing services are considerably in arrears of requirements, notably SW sewerage and foul sewerage and estate roads. Large estates have been built over rural sewerage systems and extensive plot development without the provision of made roads. The County and Rural Councils are beginning to respond to the public outcry largely voiced through the Parish Council and schemes to make up side roads are proceeding slowly. Schemes to provide sewerage and works to the value of about 1½ million pounds are prepared and the backing of the Ministry is assured in correspondence held by the Parish Council through the local MP with Lord Kennet. Ashingdon itself is engaged in a determined effort to secure inclusion of schemes to serve an estate and rural settlements which have existed without sewers for over forty years.

If a project the size of Foulness is started the labour force and contractors on whom we will ultimately depend for the execution of schemes of urgent public works are undoubtedly going to be diverted to the lucrative work which will become available on the airport site.

At the same time, pressure on existing inadequate services is only likely to increase. What real and reliable safeguards can possibly be made to prevent a serious dislocation of the programmes of public works planned by local government?

2. Schools and health services are in sight of reaching a balance with the requirements of the existing population but the problem of suitable sites is still serious. We have an example in the comprehensive school which serves our parish which is now locked in by residential development and which has insufficient sports pitches. The advent of an airport scheme of the scale suggested will undoubtedly increase pressure on available land and overload health services.

3. Agriculture. The threat to large units and small units of highly developed agricultural production ideally located on very good land, bearing high yields of maincrops and nursery products, must be recognised. Assurances that only so many acres will be required and that communication by road and rail will be with minimum interference to agriculture are not accepted, as the real effects of a successful scheme have not been completely calculated. The farms in particular have been developing joint action to increase efficiency and lines of communication to the airport running straight across farmland run counter to the efficient amalgamation of farms, will disturb the essential residential settlements and will sterilise a considerable acreage permanently.

4. The location of an airport of the projected size and capacity so near a high density area such as Southend concerns the Council on moral grounds, as although we cannot represent the views of Southend people there would seem to be a major planning issue involved. The peaceful and restful atmosphere usually associated with a seaside resort would hardly seem likely to be possible with a busy major airport so nearby. The problems associated with the operation of supersonic and subsonic passenger and cargo aircraft, are not yet fully understood and it would seem advisable that the location of an airport to handle this generation of aircraft should be well clear of dense areas of population.

5. Maps published locally show that this area will be considerably affected by noise and this is causing great concern.

---

* See also p. 381.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Barling Magna Parish Council*

I, John Peter George Smith, Chartered Surveyor of Barling House, Barling Magna, will say:

I am Chairman of Barling Magna Parish Council.

On obtaining the report issued by your Commission on the 4th March, I called a Parish Meeting on the 16th March to discuss the proposals outlined and obtain any authority concerning this.

This meeting was heavily attended, the matter widely discussed and the proposition put to the Parish Assembly that they vote as to whether the airport is wanted or not. This was proposed by Mr. Pidgeon and seconded by Mr. Bridge. I pointed out that only electors might vote and the proposition was lost by 7 votes for and 82 against. There were 9 abstentions.

I was accordingly authorised by the meeting to take all necessary action to make representations to oppose the project. In this direction it was agreed that the parish would co-operate with the village of Paglesham, which lies immediately to the north.

As many aspects of objection from the parishes are identical and you indicated at your meeting on the 1st April at Templar House that you wished to avoid repetition, I wish to endorse, support and identify with my parish the representations made by Councillor Derek Wood, the Chairman of Paglesham Parish Council.

I will, therefore, within this first part of my evidence confine myself only to aspects which are more detrimental to this village than Paglesham.

In order that the Commission may have knowledge of this community, I submit a report "our village--Barling Magna", which the Clerk of the Council prepared in March 1963 (Appendix A). Since then there have, of course, been some changes; e.g. there has been an increase in horticulture, a thriving firm of rose growers, mainly for export, has established itself, sand and gravel extraction has been increased and a ready-mix concrete factory has been introduced.

The grounds of objection are those of Paglesham Parish Council but the following have particular emphasis to Barling Magna.

From your Commission plans CTLA 1, 2 and 3 you will observe that the NNI index includes the bulk of the village in contours 45/50 which as you point out has been based on an assumption of a reduction of 10 NNI over the next 20 years. The present day noise level would, therefore, be 55/60. In view of your estimates indicated in paragraph 17 of *Site Information*,† it is clear that the level of annoyance will be continual so it is obvious that no planning authority would permit development for residential purposes in this area.

I must, therefore, give prudent consideration to the affects on the viability of this village. In this I must use my imagination logically just as your Commission has done with particular reference to the contents of page 8.

The effects must be:

It will not be possible to continue education in the area. Schools must close. I would point out that Rochford RDC long before the introduction of a jet aeroplane to Southend municipal airport, were forced to close a large modern school which was situated to the east of the main runway, and, of course, the project under consideration is of far greater magnitude than Southend municipal airport. I have said that education must stop. I do not mean just schools. It would not be possible for children to do homework or students to study. Parents will have to leave for their childrens' sake.

Communal life will end. How could preachers preach or conduct services, how could any public, private or social meeting take place in an area of continous obtrusive noise.

Driven within the confines of their homes the inhabitants could not enjoy watching television, for apart from sound intrusion the visual interference will prevent this.

In such an environment the Parish will cease to be a viable unit and depopulate.

The prospect before us, therefore, is extinction.

This extinction, of course, will not be immediate; nevertheless it will be continual and inevitable.

In place of this community will be the motorways and monorail, the warehouses and service industry envisaged in your report, vide paragraphs 14, 18 and 19.

During the rundown of the village I would point out the interference with life's enjoyment that will occur.

1. It appears your Commission are bearing in mind that the majority of traffic will be to and from the air lane running over Clacton/Braintree (Red 1) so aircraft will be either rising or descending, turning into or from the runways over the village.

As a former RAF pilot I do not speak with any authority on present-day flying, but I recall that the most dangerous time of flight was always considered to be immediately after take off at full power and certainly turning does not increase safety. The next most dangerous period is in the approach. I do not profess to be an expert, but I am sure your analysis of aircraft accidents/disasters will bear this out. I am trying not be a Cassandra--but on these grounds alone Barling Magna will not be for those of nervous disposition.

2. If the inhabitants do not achieve Godliness by fate crashing on the village, they certainly will not achieve cleanliness, as the fall out of exhaust fumes will filthy all surfaces and pollute the air.

3. I will not be repetitive, as no doubt the National Farmers Union will remind you of the high fertility of our primary industries of Agriculture and Horticulture which will be lost. Before concluding the first part of my

---

* See also p. 111.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.). See p. xvi.

Printed image digitised by the University of Southampton Library Digitisation Unit

evidence I would point out that during the inevitable rundown of the community there is another particularly sad aspect.

4. Under existing legislation there appears no grounds for any compensation for the very real material detriment which will occur to every householder, land and property owner. I hope, as fervently as your Commission hopes that there will be reduction in noise effect of aircraft, that legislation will be introduced for compensation for material detriment from a proposal such as this. Could not Betterment levy be used to give "Worsement Benefit" and save the loss of value which to most is the biggest financial stake they hold—their hearth and home.

Your Commission have I understand heard evidence earlier from Mr. Bryan Anstey, BSc, FRICS, FAI, FIAS, FRVA (see Appendix B) on noise at airports when he submitted extracts from his three articles:

1. Noise zones and numbers,
2. The effect upon land values,
3. The social cost of noise,

published in the *Architect and Building News* between 1st January-13th February 1969, and I believe these corroborate my contentions.

I now wish to pass to the second part of my evidence and in this my comments do not relate exclusively to my village for I wish to examine the project in relation to this peninsula, and in this respect I would draw your attention to paragraph 7 of the Chairman's letter of the 24th February to the President of the Board of Trade. I maintain that on the criteria of Town and Country planning alone, Foulness should not have been included on the short list of sites.

If you consider this ultra vires I reserve the right to present this at stage III and IV, but I consider this aspect bears a relationship to the parish inasmuch that the bulk of the inhabitants uprooted will probably look within the area for resettlement.

May I, therefore, digress to give you an indication of my personal knowledge and relationship to the area in order that you may assess the quality of my evidence.

Apart from education and war service I have lived and worked most of my life in the area. As stated I am a Chartered Surveyor and as such have been in private practice, public service and estates officer of Basildon New Town.

The opinion I intend to express is in the nature of a syllogism, that is, factors drawing to a logical conclusion, as in a similar manner are the conclusions on page 8 of your report.

Briefly my contention is that:

1. This proposal is in relation to a peninsula bounded by water on three sides, whilst to the west is the buffer of Basildon New Town. The object of the latter is "to create a self-contained and self-sufficient community". (Basildon Development Corporation booklet* [Appendix C].)

The proposal itself will within the peninsula sterilise large areas by noise, motorways and mono/duo railways.

The area available for urbanisation is limited and contained within a roughly rectilinear area.

2. The proposal will bring to the area a huge influx of population to an already heavily populated area.

3. The area of land available for this is inadequate without

(a) creating a disastrous lowering of Town Planning standards;
(b) creating an unbalanced community by preventing other projects. This could be the case if, for example, it were wished to introduce a deep water port (and this has been mentioned) but, no doubt, you will already have objections from this quarter;
(c) generally the area is unsuitable as the consequent lack of amenities within a constricted environment will cause the lowering of standards for the large populace involved.

I cannot in the short time available for preparing this proof, check and double-check my facts, therefore, I ask leave to produce and enlarge on my conlusions at the later stages, requesting the Commission to let me have information from and the reports of the town planning consultants you have appointed.

In conclusion, it was reported in the *Sunday Times* of the 6th April of an individual who was prepared to spend £250,000 on evidence in favour of this Foulness site, so that he would not be affected by the noise at his home near the Thurleigh site. This proof of evidence may appear inept and clumsy, but it is prepared because of my high regard for the good people I have the honour to represent and not for the purpose of fouling someone else's nest. I would remind you, Mr. Inspector, of your Chairman, Mr. Justice Roskill's words at the meeting at Templar House which you heard. He said it had been suggested that he was on the side of finance and he vehemently stated that "When the choice lies between money and people, I choose people every time".

APPENDIX A

Barling Magna 1963

Parish Council

Chairman:

J. P. G. Smith, Esq., ARICS, ARVA
Chartered Surveyor
Barling House
Barling Magna, Essex

Members:

Mr. W. J. Rodwell *Vice-Chairman*
Mr. W. T. Cornwell
Mr. S. W. Groves
Mr. W. S. Taylor
Mr. H. D. Trenear
Mr. G. W. R. Snow
Miss E. F. Bentall
Mr. E. W. Mumford

* Available from Basildon Development Corporation, Essex.

Printed image digitised by the University of Southampton Library Digitisation Unit

Vicar:

The Reverend T. Hartley
The Vicarage
Little Wakering
Essex

Head Master:

Mr. A. Learmond
The School House
Barling Magna
Essex

Clerk of the Council:

Mr. E. J. Bancroft
Chartered Secretary and Accountant

Acknowledgements:

F. G. Emmison, Esq., FSA, FRHistS
County Archivist
Essex County Council, Essex Record Office
The County Hall
Chelmsford, Essex

S. C. Harris, Esq., FRVA, FCCS
Clerk of the Council
Rochford RDC
Council Offices
Rochford
Essex

(who offered material for these notes)

Our Village—Barling Magna

Barling Magna lies approximately 4 miles north-east of the County Borough of Southend-on-Sea and has an area of 2,747 acres. The village comprises the old separate parishes of Little Wakering and Barling, now separate wards of the combined parish, these wards in turn cover additionally the areas of creek and march land eastwards to Potton Island, northwards to the line of the river Roach, and westwards to include Stonebridge and Barrow Hall. Southwards the boundary of the Little Wakering Ward adjoins the rapidly expanding parish of Great Wakering, with which Barling Magna is so closely linked in development proposals.

The Parish Council meets quarterly and consists of nine councillors: five elected by Little Wakering Ward and four by Barling Ward. The current Minute book records the first meeting in 1894, there is however, an earlier Minute book in existence; there are periods when the Council lapsed, or failed to meet. It is now concerned mainly with street lighting, but a recent venture has been the erection of the village's first bus shelter.

The following statistics are recorded:

Year	*Population*	*Rate in the £*
		s. d.
1950-1	987	17 10
1953-4	924	23 5
1955-6	921	22 9
1958-9	1,024	17 7
1960-1	1,097	18 9
1061-2	1,203	21 2

It will be seen from the last four population recordings above that development is now in full swing but reference to the development plan will indicate that this is unlikely, without a policy change, to rise above 1,500.

Prior to the last world war the parish was primarily agricultural in character. Post-war house building has exerted its pressure and resulted in the sharp adjustment of ratio between homes for land workers and dormitory development to provide for the large numbers who live in the area and work elsewhere. There has been a contraction of farm labour to the experimental ranges and laboratories of Foulness Island, to the light industrial and commercial activities of Shoeburyness and Southend. There are a valiant few commuters to Basildon New Town and to London, and adjoining district areas.

The village is blessed with all services; water, electricity, gas, telephone and in the main, drainage connections. The main drainage farm of nearby Southend lies within the northern boundary of the parish but problems do remain concerning the full connection to this service of certain remote sections of the village where difficult levels exist. These will be overcome when development takes place and the booster pumping station is provided. Cleansing, health, education, library and highway services are provided by the Essex County Council, and the Rochford Rural District Council as appropriate.

The parish has two churches, Little Wakering, St. Mary's, and Barling, All Saints (later described), two chapels, one Methodist and one Gospel Mission, each supporting a strong following. There is a church hall of useful size and the enthusiastic and very active local branch of the Womens' Institute have provided a meeting hall at the Weir Pond Corner.

The village school now caters for primary pupils (with a roll of nearly 100, 1962-3.) Secondary education follows at Great Wakering or alternatively for pupils successfully graded at either the Southend or Rayleigh Grammar Schools. The school building was erected in 1877 and was attended by three pupils. It is a three classroom block with playing field adjoining and is scheduled for closing and demolition. The new primary school site is located near St. Mary's church and if one is permitted to assume, it seems that some adjustment of school attendence areas might then take place to relieve the developed areas of Coronation Close which adjoin the parish and currently are served by the Great Wakering School. The new school is intended to provide 120 junior and infants places.

Barling Magna is served by an hourly bus service linking with Southend-on-Sea. Buses to and from Great Wakering, Shoeburyness and Foulness Island pass the southern boundary of the parish and are made use of by residents in this area.

The nearest railway station is Shoeburyness which is the terminus of the old LMS London, Tilbury and Shoeburyness line (electrified 1961-2). Alternatively Southend Victoria Station serves the old LNER line to London (Liverpool Street) connecting with stations to Burnham and Southminster from Wickford and the East Coast and North-East Counties from Shenfield.

The parish roads are now barely suitable for the work they do and conditions are aggravated by the sand and gravel pit lorries and the lorries of the developing builders. The Council is actively pursuing this problem.

Printed image digitised by the University of Southampton Library Digitisation Unit

A glance at the village map will show the long lengths of roads to be lit and there are now 25 bracket and pole-type electric lanterns spaced throughout. This is far less than the Council would wish, but this already tops £100 per annum for maintenance and current supply, a cruel burden and a formidable task to light about 5-6 miles of country road from a rateable developed frontage of about 2 miles.

The village is well served by general stores: actually within its boundaries there are five, plus a parade of four or five shops which include a drapers, electrical, radio and television store and a chemist. The post office is well situated and there are three telephone kiosks suitably spaced.

Licenced refreshment is provided by the Castle Inn, and the Stonebridge off-licence, part of a general store. Television reception in the village is good.

Opposite St. Mary's Church, extending 2½ acres, and reached by an unmade access lane is the parish meadow. Prior to the war this was the ground of the village football team and the scene of occasions of fetes, fairs, sports and the like. The management has been handed to the Rural District Council and it now conforms to the pattern of a rural recreation ground with swings and such for the younger children. There are no village allotments controlled by the parish but there is a thriving allotments society. Large gardens and the availability of good allotment land make unnecessary the provision of allotments by the parish Council. There are thriving committees for the welfare of the old folk.

The future

As an appendix to these notes there is attached a copy of the development plan, now approved and adopted. The primary object of the plan is to preserve the first-class agricultural land in which the village is set and to this end residential development expansion is restricted to a determined maximum. Areas to be developed are shown edged in red. Beyond these limits of extension the Green Belt is to be preserved.

The development plan further envisages that whatever development is allowed to proceed will be appropriate in character, siting, material, design and quality of building, and that amenities will be protected. Regarding highways, the plan recommends that no major road redevelopment schemes are immediately necessary. However, some minor works to obtain increased visibility at road junctions would seem to be desirable and will be carried out as part of the annual general works of road improvements. Unfortunately the area contains few groups of trees or individual trees in the street scene which contribute to the amenities, but the County Council within its powers may remedy this.

Industrial or commercial expansion is not envisaged. The proximity of Southend precludes the need for the rural community to be self-supporting.

The land

The land of the two villages is very low-lying, composed of sand and clay with fertile regions. Most of the land is only just above sea level, and is dominated by the two creeks and the marshes. This is the dryest part of land from the point of view of rainfall which is extremely low. The land is badly exposed to the east winds.

The farming land is divided equally into three main groups:

Pasture (one-third)	Seed crops (one-third)	Root crops (one-third)
(Approx.)	(Approx.)	(Approx.)
Cows 99%	Wheat 50%	Potatoes 50%
Pigs 1%	Barley 25%	Turnips, Mangolds, Sweddes 50%
No sheep	Oats 25%	

Other Vegetables

Cabbages	Brussel sprouts
Cauliflowers	Beans
Peas	Kale

In market gardening, lettuces, radishes, tomatoes, etc., are grown by a few smallholders.

The work of the people who farm is concerned with these crops. Although horses are now very rarely used in ploughing still they are sometimes seen. Tractors are commonplace. Fishing is carried on, although this work is mostly for cockles, oysters and other shellfish in the creeks. From the sand-pits (two have been dug near the two creeks) it is estimated that 70 lorries go to and fro each day.

The villages have still much old-fashioned beauty and charm and customs.

History

Of prehistoric times in the two villages nothing is known, but life must have been present in this region for fossils and bones and pottery have been dug up in the Barling Creek sand-pit and now may be seen in Prittlewell Priory Museum in Southend-on-Sea.

The Romans never lived here, perhaps because it was too marshy, but they had towns all around the region at such places as Shoeburyness and Chelmsford.

The first signs and foundations of Barling and Little Wakering were at the arrival of the conquesting Saxons in about 500 AD. The Chief, Wacer, built a settlement for his families here and the place was therefore, called Wachelinga (meaning Settlement of the people of Wacer) or Wacheringa and later Wakering. Another Saxon Chief, Berela by name, built a separate settlement here, also, which was called Berlingham (meaning Settlement of the people of Berela) and it was later changed to Barling.

There does not seem to be any existing record of what happened to the settlements but it is almost certain that the two villages grew from a simple stockade out to the countryside round-about; and the few families that had lived in the simple log huts turned into hundreds.

Under the Norman kings, no one was allowed to kill or hunt in the Royal Forest without permission (anyone doing so and found out was usually later found maimed or disfigured or more often killed because they were

Printed image digitised by the University of Southampton Library Digitisation Unit

poaching). But the villagers were allowed to do this because their area was from time immemorial beyond the Royal Forest. A very lucky stand-by to the poor peasant whose life depended on the few pence he could earn by selling his crops or working.

When the villages were under the Feudal System the Lord of the Manor probably lived in Little Wakering Hall, directing both villages at the same time.

Every village had its mill which was kept busy enough grinding the lord's, and the villagers', wheat into flour, and Barling and Little Wakering were no exception. The old windmill at Barling has now gone but one may still see the mill's mound and the miller's cottage that remain. Remaining too, are the village stocks that have probably seen many a wrong doer. They now stand peacefully at rest—in Little Wakering Church.

The people of the two villages thrived upon the land and most of them were farmers. But a small part of the population (which gradually increased) were sailors, mostly fishermen.

The villages grew and soon Barling earned its second name of Magna. For Magna means "Great" in Latin and soon the village became a town and "Great Barling". The creeks for the two villages were more than useful—for into them sailed merchant vessels, as well as humble fishing boats. The businessmen came in their ships to buy and collect the wool, sheep-hides and leather, for which Essex was famous. Most of the wool was bought by Flemish merchants and taken back to their homes in France to be woven into the famous cloth of Flanders.

With the increasing trade, sailors increased, many with their own boats. Then the trade grew less, sailors grew less, and Barling shrunk to a shadow of its thriving self.

Time passed on. In the sixteenth century some craft were left and from that time onwards, to the late eighteenth century, smuggling was common to the knowledge of all; although of course not all took part. Legend tells of smugglers passages in the villages but none are known to exist now.

Although the villages have declined from their former positions there is still a hardcore of village stock, as evidenced by surnames and family relationships of inter-marriage and with this spirit survives a pride in the fine agricultural land; the back-of-the-beyond atmosphere occasioned by the wild creeks and marshes and the pleasantness of the situation and climate. Until the last world war a foreign face could live amongst the villagers for a quarter of a century and still be a foreign outsider.

Little Wakering church

This fine, old church, consecrated to St. Mary the Virgin, was completed in 1416 AD by John-de-Wakering to commemorate the victory of Agincourt in which he had fought. However, he only built the tower of the church, the remainder being twelfth-century and fourteenth-century work, and the foundations before the twelfth century. The white stone to build the church was brought from Caen in Normandy. The tower offers a fine view of the countryside around. Murals were painted on the splays of the north window of the chancel which may still be seen today. The three bells were cast and added in 1707 and the village stocks may be seen inside the church. Among the many visitors to the church was George III who came in 1769.

Barling church

Of Barling church very little of its history is known and the date of its building is uncertain, but it is definitely as old as Little Wakering church. The church, consecrated to All Saints, was and still is the parish church of Barling, although only one Minister now serves both. It has many ancient stone coffin lids and a twelfth-century font. The church suffered under the civil war of Charles I as is shown by the broken figures of two statues and the writing that has been erased crudely from the font.

Legends

The legend of "Baker's" grave

There was once a baker who was driven to hang himself on a tree, although no one knows why. It is said that on a windy night, if you pass that way, you can hear feet clacking together as if he still hangs there and that if you have the courage to run around the stump of the tree one hundred times, the baker will appear, his back to the tree, kneading his dough. So far as is known, he hasn't been seen yet!

The legend of the Devil's post

There is a post in the lane beside Little Wakering church called the Devil's post. If you run around it one hundred times at midnight the Devil is supposed to pop out! He hasn't done any popping recently—perhaps because no one has done the necessary running.

The similarity in the legends of the 100 times around the tree, post, might suggest a common origin.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Canewdon Parish Council*

20th March 1969

The Commission Secretary
Commission on the Third London Airport
Templar House
81-87 High Holborn
London WC1

Dear Sir,

Re: Proposed Foulness Site of Third London Airport

I thank you for your letter of 18th instant granting leave for my parish to appear or be represented at the Stage II hearing in connection with the above.

At the Annual Parish Meeting last night this matter was discussed and the majority were generally in favour of the proposed site of Foulness, with the following qualifications:

1. The effect of noise on the parish, the major populated part of which is within the NNI contour 40, which will be considerable. The cost of sound-proofing all existing properties.
2. The effect and impact of a new system of communications on the parish.
3. The change in nature of the parish from rural to urban or semi-industrial.
4. The effect on flooding in the area which any alteration in tidal flow might have.

Yours faithfully,

J. M. SHEPHARD
Clerk

---

* See also p. 385.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Foulness Island Parish Council*

1. The proposed siting of the airport on the Maplin Sands will bring the whole of Foulness Island within the limits of an intolerable noise nuisance. Indeed all those advocating that the airport should be on the Maplin Sands say that the reason for this is that only 200 people will be affected. In short, the establishment of the airport will mean the evacuation of the Island's population.

2. Their homes are owned by the Ministry of Defence, and if the Ministry sells as a result of the siting, the residents, most of whom have lived on Foulness Island all their lives will have to look elsewhere for accommodation.

3. The majority of the inhabitants are employed by the Ministry of Defence or on local Farms owned by the Ministry and in consequence will lose their livelihoods.

4. Foulness is an island, although only separated from the mainland by a narrow strip of water, but because of this, has over the years become a very much closed community and for the residents to have to move would result in a major upheaval to their way of living.

* See also p. 386.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Paglesham and Barling Parish Councils*

Paglesham is a village (population 344) situated on the banks of the river Roach and Paglesham Creek, an off-shoot of the river. It is in two parts, East End and Church End, separated by some 1½ miles of rich agricultural land. Church End has a thirteenth century church, a Queen Anne Manor house (Church Hall), an interesting row of eighteenth century cottages, and a timbered house (lately modernised in appropriate style) "Finches & Maules", and a timbered public house "The Punchbowl", some 300 years old. East End contains many houses of eighteenth century origin and an inn, "The Plough & Sail", the basic fabric of which is four centuries old. It has a flourishing boat building yard, a yacht club, a thriving oyster industry, and a small fishing industry. Farming, of land ranked amongst the best in the UK, is its other main industry, though many of its inhabitants work either at the wharf and timber yard of Messrs. Bambergers Ltd. at Wallasea, in Southend, or commute to London.

Barling Magna† is a village opposite to Paglesham on the south bank of the river Roach, west of Potton Creek, situated in highly fertile agricultural land. Its church, built of Kentish ragstone, with much of the original Norman structure intact, is mainly of the Perpendicular period. Some lovely fifteenth century, Tudor, Jacobean and Regency manor and farm houses grace its buildings. Its population is 1,225.

Our problems are common, should an airport be built at Foulness. Our rural character would disappear, as we shall later show, and we would become an urban or industrial area, instead of the rich agricultural one which we still remain. The way of life, conditions, and amenities of our people would be entirely changed.

Necessarily our case is phrased in general terms. Lack of time, because of the short notice, precludes detailed and expert corroboration, and we reserve the right to provide these at the later stages of the inquiry.

Noise

1. *Aircraft Taking-off and Landing*

We are some five miles from the projected off-shore site, 2 or 3 miles nearer should the site be changed to one on Foulness Island. We are within the 40-45 NNI contour shown on the plan submitted by the Commission. The land being entirely flat, interlaced with rivers, streams and ditches, the noise nuisance would be at its greatest. With no physical or man-made barriers our peace will be entirely wrecked and planes will dominate our waking and sleeping hours. We are concerned, and will prove in the later stages, that the noise nuisance will be intolerable. As for 70 to 75 per cent of the year the movement of air is from south to north, so will 70 to 75 per cent of the aircraft take-off in a south-westerly direction, thus increasing the noise nuisance, and largely contradicting the point that, being off-shore, most aircraft movements will be over the sea. Furthermore, it has been already established that the peculiar nature of a coastal site leads to strange patterns of sound effect, partly due to temperature inversion. Explosions at Potton etc. have, in certain conditions, caused windows to be shattered in Clacton—information on this can be obtained from AWRE.

2. *Maintenance Areas*

No information is available as to their situation, but no airport can exist without them. They are a terribly important source of perpetual noise, and, at Foulness, because of physical characteristics, would adversely affect thousands of human beings.

3. *Runway Alignments*

This is very much undetermined, yet final information on this is essential, as the closer the alignment is to the East-West the greater the area affected by intrusive noise, and the more devastating its effect upon a greater number of people. Whether the site is off-shore, partly on or off-shore, wholly on-shore, and the distance the runways might be east of the shore itself, are matters of vital concern.

4. *Flight Paths and Air Traffic Patterns*

No official lay-out can yet be obtained, but we have consulted expert opinion (who, being publicly employed must remain anonymous, though their data can be confirmed). A plan showing stacking areas, flight paths, etc., is attached as Appendix B.

Very little has been published about the likely air traffic patterns for an airport at Foulness. This could be due to the fact that an examination of this aspect shows that Foulness comes out badly in comparison with the other proposed sites.

A look at the air traffic pattern map, Appendix B, shows that the claim that all stacking of aircraft, and approaches and departures will be over the sea is not true.

In fact only 23 per cent of traffic approaching on Airways Red 1 and Blue 29 will have direct approach over the sea, and, for departing aircraft, only the 12 per cent using Red 1 will depart without crossing land. In fact the percentages would, in practice, probably be less than this, because the traffic using these airways is mainly short haul inter-European, which will wish to use existing airports nearer London where short City-Airport links are essential.

On the other hand, the long haul transatlantic traffic, which will form the bulk of the supersonic and jumbo jet operations, use the Airways Amber 1 and Green 1, and to get to Foulness this traffic will have to fly the full

* See also p. 386
† See also p. 104.

Printed image digitised by the University of Southampton Library Digitisation Unit

width of the country, and will have to use a stacking area to the north-west of Foulness, in the vicinity of Chelmsford.

Due to the prevailing winds most landings would be made from Clacton, and take-offs would be towards Southend. Heavily loaded transatlantic airliners proceeding to Airways Amber 1 and Green 1 would use the inland side runway, and would have to turn right after take-off to avoid the aircraft using the seaward side runway, which would be used for traffic departing on to the Dover and Seaford Beacons. This would bring departing traffic out over the heavily populated area on the north side of the Thames.

It is obvious that any airport intended primarily for supersonic and jumbo jets, such as that at Foulness, should be sited to the west or north of London. This will give the shortest possible period over land, and, as a bonus, would be much better placed for the centres of population. Less travelling on the ground means better economics, and less total noise. If one takes ground and air traffic together there is no doubt that an airport at Foulness gives the worst possible combination.

Air traffic patterns can, of course, be changed, but this can only be done by international agreement, and any change would, no doubt, only mean pushing the problem on to someone else. In this respect it is interesting to note that an airport at Foulness handling mainly large transatlantic aircraft, with the existing airports at Heathrow and Gatwick, Luton, etc., continuing to handle the shorter haul European traffic, would involve over-lapping of the services, which, apart from being hazardous, would entail a much more complicated system, and would entail flight level separation, which would mean that aircraft departing from some of the airports would, after take-off, have to remain at lower altitudes until clear of higher level traffic leaving other airports. This would, of course, make for greater noise levels, and this could occur in areas not immediately affected by the airports themselves.

This subject is complex, and certainly deserves much greater investigation that those who advocate the placing of this airport, on the doorstep of hundreds of thousands of people, have given it.

For the above reasons we claim that figures quoted for Foulness as to the population likely to be affected by the intrusive noise nuisance are grossly underestimated. Because of the flat ground, water, temperature inversion and allied causes, the area Clacton, Witham, Chelmsford, Southend, and Margate will be affected to a significant extent. Closer at hand the population figure seriously affected by noise would be in the region of 300,000 (see plan Appendix C). On the larger estimate this figure would be doubled.

Urbanisation

It is estimated that there will be primary employment for 65,000 at the new airport. This is employment directly caused, and does not take into consideration ancillary employment inseparable from such an increase—those necessary for the service industries, recreation and other amenities. Inevitably this will result in an increase in population of some 250,000 added to the existing 300,000 already living in the Essex area. Housing for this number—who would have to be housed in close proximity to the airport due not least to the inescapable fact that such an airport works 7 days a week, 24 hours a day, 365 days per year—would result either in the creation of a New Town, or substantial increases in the size of existing towns and villages in the peninsula Benfleet-Rayleigh-Southend. Together with the necessary new communication links (new road and rail systems), little or no agricultural land will remain, and our rural area must be destroyed. Not only will our traditional ways of life end, but even those that remain will exist only in the shade of vast urban projects.

Problems of compensation will be immense, not only to those whose existing houses will be destroyed, present livelihoods eliminated, but also to those who will be forced to look out over a vast communication network, instead of peaceful fields and marshland. Quite literally our present way of life will end. Furthermore, present high class suburban settlements such as, for example, Thorpe Bay, Leigh, parts of Rochford and Hockley, will find themselves surrounded by a widely different type of housing estate.

At this point some reference must be made to the widely canvassed schemes publicised recently by commercially interested consortia in the combination of an Airport and Dock complex. Though outside the terms of reference of the Commission, the problem is one as far as we are concerned. One could act as a magnet for the other, and it could be argued that two imperfect schemes could be combined to make a good one. Should this happen, then the degree of urbanisation would, at least, be doubled, and to this would have to be added the areas of warehousing, hydro-carbon oil installations, container areas (empty containers occupy as much space as full ones) inseparable from such a complex. When aircraft servicing and maintenance areas are added, it is no exaggeration to say that the entire peninsula east of Rayleigh-Benfleet would be covered by bricks, mortar, railway lines, and warehouses. It is a frightening prospect missing from the other sites.

Communication

Existing links—the A127 and the rail links Southend-Liverpool Street, Southend-Fenchurch Street, would be inadequate. The Liverpool Street line is inadequate for its present traffic, the Fenchurch Street line might cope for a short time, but, in the not too long run, entirely new systems would have to be built.

As it can be assumed that for each mile of motorway 30 acreas of land are consumed (and to this should be added that used for rail links and sidings), the additional consumption of land due to the remoteness of Foulness would be very great.

Furthermore, one of the disadvantages of this peninsular site is that all communications will have to run east-west, and cannot fan out to the north or south (because of the Thames to the south, and the Crouch to the north) without highly expensive bridging or tunnelling. This also concentrates the area through which the new roads and railways must pass.

Printed image digitised by the University of Southampton Library Digitisation Unit

Agriculture

Foulness Island is not a derelict island of waste scrub land, but one of the most fertile areas in the country, of which something in the region of 3,500 acres is first-class arable land of high productivity, and a further 1,100 acres of first class grazing land. This is apart from the production of beef and lamb from the grazing on areas which surround developments used for other purposes, which amounts to some 2,000 acres. This land would be taken for development of industries allied to the airport, should the Maplin Sands project be forthcoming.

This peninsula rates in the top 4 per cent of agricultural land in the country. The quality of this land can be measured by the number of dairy farms which there are in this area. If an imaginary line is taken 20 miles to the west there are probably no more than a dozen or so. Farmers do not have stock farms on land which is capable of producing high income crops such as potatoes, market garden crops of all types, and peas, both for vining and processing. These are the types of crops which are being produced on large acreages by farmers who rank second to none in the country.

One has only to recall the terrible floods of January 1953, when the islands of Foulness, Havengore, Potton, New England, Wallasea and Canvey were flooded for weeks with loss of life and stock. These thousands of acres today are producing some of the strongest cereal crops in the British Isles. A catastrophe such as these floods could happen again were tidal flows to be altered. The Government in 1953 gave 60 to 75 per cent grants for land drainage in order to rehabilitate these areas, showing their prime agricultural value. If the Maplin Sands are developed some 12,000 acres will, in the course of time be required for industry, and a reputed population of some extra half a million people. It is inevitable that the areas mentioned will have to go. To grant aid for the drainage of vast areas, and then to cover them up with concrete would be a shameful waste of public money.

In 1968 the Ministry of Housing and Local Government, at a public enquiry, refused Southend Borough Council permission to designate a further 500 acres of the most fertile land situated at Southchurch and Great Wakering for residential development. An airport at Foulness would swallow up this land with the rest.

Access to the airport would sever farms with new motorways, monorails and railways. Other projected sites lie close to newly modernised transport systems.

Although the farming industry is not held in very high esteem at the moment, it must not be forgotten that "Wars and rumours of Wars never cease", and it is to the farmers that Governments turn in time of war. We should retain the land with the greatest output as an insurance.

Rural pursuits

Local Industries

At Paglesham we still have a flourishing oyster fishing industry. After much sacrifice and hard work it is now recovering from the disaster of the 1953 floods. This could well be killed by the airport.

Fishing

An off-shore fishing industry is also being re-created from Paglesham by local fishermen. Combined with white-weeding, it is increasing in value. This would also be affected.

Boat Building

There is a boat building yard at Paglesham providing local employment in building, maintenance and servicing the local yacht club. This too would be affected.

One of the features of this area, vide the writings of Wentworth Day, Bensusan, etc., is the bird and wild life. Others more expert will provide details, but we would make the point that, as aircraft are inimical to bird life, so are the larger sea and wading birds to aircraft. Crashes have recently been caused by birds either striking or being sucked into the tubines of large jet aircraft.

Planning

There is a chronic water shortage in South-East Essex.

We are very concerned lest this should reach dangerous limits during the airport development. It could only be cured by massive capital development and new sources of supply. The local resources would be quite inadequate.

Physically the area is unsuited to a massive building project. This winter has shown how close to the surface is the water table. Construction, drainage and routine maintenance would present problems of such a fundamental nature that we are convinced that they are being minimised by various consortia anxious to "sell" the project. These reasons are inimical to the national interest.

Natural hazards

The memory of the disaster of the 1953 floods is too close for this not to be hanging over us like the sword of Damocles. The effect on the risk of flooding due to the construction of a large artificial island off the Thames estuary must be investigated so thoroughly that risk is eliminated. We who live at sea level will not be given a second chance should experts err on the side of optimism. NO RISK MUST BE TAKEN.

The effect of the airport on tidal flows also gives cause for concern. As well as the rivers Roach, Crouch and their attendant creeks, the flow of the tide up the Thames could be so changed as to affect the security of Southend, Canvey Island, and even Thames-side London itself.

General amenity

Others will stress the effect of a major airport on yachting and wildfowling. We are working in conjunction with the yachtsmen of Burnham-on-Crouch, and also those of the Paglesham yacht club, by stating that the pleasure of yachting is removed by the incessant noise of jet aircraft.

Only those with a true feeling for a distinctive countryside with its own atmosphere, history, tradition and unique beauty can fully realise the loss of true amenity that we shall suffer. A feeling of regard, for example, for the Cotswolds, the Pennines, Snowdonia

Printed image digitised by the University of Southampton Library Digitisation Unit

and the Lake District, will help one to appreciate the unique beauty of the Essex marshlands, of the Dengie Hundred, of Mersea, of Paglesham. Here conditions of calm, light, a sense of space, and community with true natural beauty are conjoined in a way not experienced anywhere else in this country. This priceless heritage will be lost under the ceiling of noisy and noisome jet aircraft, and the peace of those perceptive enough to appreciate it destroyed permanently.

APPENDIX A

Photographs of notable buildings in Paglesham*

1. **Church End**
   a. St. Peter's Church Tower
   b. St. Peter's Church
   c. Church Hall
   d. Punchbowl Public House, cottages and Church
   e. Finches & Maules
   f. Lambourne Hall
2. **East End**
   a. Cupola House
   b. South Hall
   c. Stannetts
   d. The Chase
   e. Plough & Sail Public House
   f. Yachts and Fishing Boats on river Roach
3. **View of typical local house**

* Not reproduced. Available for inspection, by arrangment, at the Commission's offices.

APPENDIX C

Population figures*

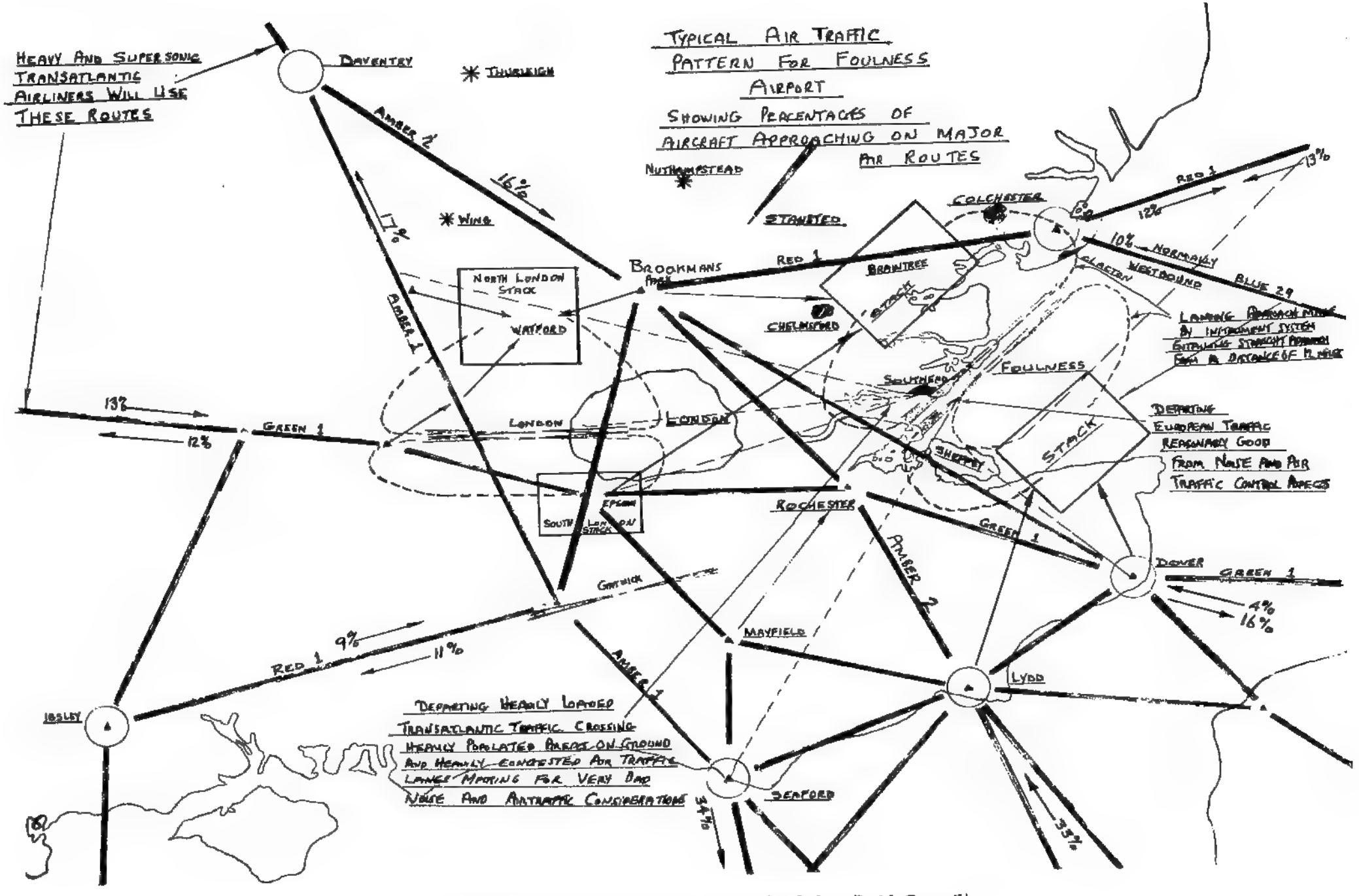
(from the latest local government sources)

Southend County Borough:	180,000
Rochford Rural District:	38,140
Rayleigh Urban District:	26,610
Benfleet Urban District:	45,000
Burnham Rural District:	4,450
	294,200

* This does not include the population of North Kent within the area of intrusive noise nuisance.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



Typical air traffic pattern for Foulness airport. *(Paglesham Parish Council)*

Evidence of Rochford Parish Council*

The Secretary
Roskill Commission
Templar House
81-87 High Holborn
London WC1

Dear Sir,

Proposed airport—Foulness

My Council met on 19th March, 1969, and instructed me to inform you that they agree, in principle, to the establishment of an airport at an off-shore site at Foulness, but with the following reservations:

(1) **Noise**
- (a) Runways should be as far away from the mainland as possible.
- (b) Stacking should take place over the sea.
- (c) No east/west runway should be built.
- (d) When planes take off in south-west direction they should not turn inland.
- (e) In order to get a better idea of the noise effect, simulated runs of jet aircraft should be made in varying wind conditions.
- (f) Full consideration should be given to the people who would be specially affected by the noise annoyance, especially old age pensioners.

(2) **Amenities and facilities**
Amenities and facilities should be planned and provided before the influx of population.

(3) **Co-operation**
All authorities, including Parish Councils, should be given more advanced notice of forthcoming action.

My Council also ask that they be represented at the hearing on 5th May, 1969.

Yours faithfully,

(Mrs.) M. D. PARKER

---

* See also p. 389.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Tendring Rural District Council*

To The Secretary
Commission on the Third London Airport
Templar House
81-87 High Holborn
London WC1

Sir,

Short List of Sites: Stage II Local Hearings: Foulness (off-shore)

1. **Relationship of Tendring to Foulness**

The Tendring Rural District Council are the local authority for the major part in area of the peninsula in north-east Essex which lies between the rivers Colne and Stour and to the east of Colchester, and which includes also the Borough of Harwich and the Urban Districts of Brightlingsea, Clacton-on-Sea, Frinton and Walton and Wivenhoe. The population of the Tendring Council's district is just under 30,000, with 24 villages the area being 66,000 acres. The southern portion is within 20 miles of the Foulness site.

2. **Evidence to the Commission at Stage I**

When the Council were invited at Stage I to put forward a general view on the main considerations to be borne in mind in the selection of the site for the third London airport, they said they favoured a coastal site with runways so constructed that aircraft could enter and leave the airport from over the sea thus creating as little noise as possible. An inland site they thought, would have the great disadvantage of not only creating far more nuisance from noise, but would also mean the taking of good agricultural land.

3. **View on the Foulness site in principle**

The Council consequently have no objection in principle to the siting of the airport at Foulness (off-shore).

4. **Alignment of runways**

They do, however, wish to make representations about the alignment of runways. They have considered the *Site Information for Stage II Local Hearings*† as recently published by the Commission. They have particularly studied the NNI contour plans CTLA/1/2 and CTLA/1/3 and consider the suggested alignment of the runways as shown on the contour plans to be satisfactory.

But the Council have noted what the Commission say in paragraph 3 (on Runway Alignment) "that changes to this particular alignment may be justified as a result of further work and evidence".

The Council therefore particularly request the Commission to bear in mind that any proposal to vary the runway alignment could adversely affect the peninsula to the north described in paragraph 1 of this statement.

Any alignment of runways with a greater north/south bearing would have the effect of moving the contours of noise more closely towards the peninsula and in particular towards Clacton-on-Sea and the following villages within the Tendring Council's district which lie within the southern part of the peninsula:

	Population estimate for 1969
St. Osyth	2,470
Little Clacton	2,410
Thorrington	780
Great Bentley	1,700
Thorpe-le-Soken	1,750
Weeley	1,490

My Council accordingly request that these considerations should be duly studied by the Commission, appreciating that noise from aircraft would be far more intrusive in a rural area than in a bustling urban area.

---

* See also p. 391.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

5. **Stacking aircraft before landing**

The principal argument in favour of a coastal site is the opportunity afforded for aircraft to land and to take off over the sea.

There is, however, the consideration of stacking which necessarily takes place particularly at times of great aircraft activity. The stacking of aircraft must take place over the sea if the full advantage of a coastal site is to be obtained.

Such a matter is possibly not within the Commission's direct terms of reference but the Council do request that should the Commission's recommendation favour the Foulness Site, then they would include in their recommendations to the Government that legislation should be enacted to ensure that the stacking area is over the sea.

Yours faithfully,

E. A. AUSTERBERRY

Clerk of the Council

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Witham Urban District Council*

The Council in their deliberations on this matter could see no strong objections to the off-shore site for the third London airport, in fact such a proposal would appear to add to the prosperity of Essex with the minimum of noise interference to the population as a whole.

It was felt that the Commission, if they finally decide on this position, should give considerable thought to the communications provided to serve the airport and such thought should extend beyond the boundaries of the Southend-on-Sea/Foulness peninsula. Undoubtedly whilst the airport is being developed principally for London, its prosperity in the future could depend on the ever increasing rise in freight traffic, a high proportion of which will undoubtedly be fed into the airport by road transport. It is felt by the Council there would be disadvantages, if only traffic routes to London were improved, to accommodate this traffic. It is probable that high proportions of such traffic could well wish to reach the airport from East Anglia and the East Midlands, and adequate provision should be made for a major route in the vicinity of or to the east of the present A130. It appears vital that mingling of feeder road traffic from the Motorway network with the London traffic should be avoided except in the immediate vicinity of the airport and a route planned on the lines suggested would avoid this congestion. Whilst possibly the present A130 and A120 has spare capacity outside of the towns, it is unlikely to be capable of accommodating any material increase and a new route would be by far the best way of dealing with the problem.

As a final observation, the Council consider that the holding patterns for aircraft operating under delayed landing instruction should be carefully sited so as to cause the minimum of disturbance to the built up areas of Maldon, Witham, Colchester and Chelmsford. If it is within the bounds of operating procedure it would undoubtedly help if the minimum holding height was 10,000 ft. Witham being sited more or less on the centre line of route Red 1, we are familiar with the continual passage of aircraft overhead, at 10,000 ft and above their nuisance value is very small.

---

* See also p. 393.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Essex River Authority

SUBMITTED BY MR. E. L. SNELL*

I am a Fellow of the Institution of Civil Engineers and a Member of the Institution of Water Engineers and have been Engineer to the Essex River Authority since its constitution in 1965. I was previously Engineer to the Essex River Board from its constitution in 1952 and prior to that Engineer to the Essex River Catchment Board from 1946.

So far as my Department is concerned, the matters to be considered in connection with the third London airport fall broadly under three heads:

(1) The effect on coastal regime
(2) The effect on the surrounding area
(3) The effect on future water demands.

1. The effect on coastal régime

Tidal and foreshore conditions around the coast have been following certain trends for many years and the River Authority, with its responsibility for tidal defences and land drainage of the low-lying industrial, urban and agricultural land in the coastal belt, has designed its works in accordance with these trends.

The Authority would have to be satisfied on the following matters:

(a) That the proposed works would not alter the tidal régime so as to cause scouring of the foreshore or the shifting of tidal channels, which would involve the Authority in heavy expenditure on protective works.
It should be practicable to carry out these protective works and the River Authority could be satisfied by an undertaking by the Airport Authority to meet the cost.

(b) That the airport works would not cause the deposits of silt around the coast or in the estuaries, either arising from 1(a) above, or as a direct result of the airport works. The effect of such silting might be to affect adversely existing gravity drainage arrangements. It would be practicable to deal with such adverse effect either by the piping of outfalls or the provision of pumps, and provided a workable agreement were given to meet the cost of such works the Authority should be satisfied.

(c) That the works would not have an adverse effect on tidal surges along the coast or in the estuaries, including the River Thames.

2. The effect on the surrounding areas

A firm of architects, Messrs. Llewelyn-Davies Weeks, Forestier-Walker and Bor, has been retained by the Commission to advise on the urbanisation implications on an airport located at Foulness covering an area south-east of a line Basildon, Chelmsford, Maldon. They have in turn appointed Messrs. Binnie and Partners and Messrs. Ove Arup as consulting engineers on drainage and sewerage problems and foundation problems respectively.

I have had discussions with Messrs. Binnie and Partners on surface water drainage problems which would arise from any large urban developments, and pointed out to them the areas where difficulties already exist. They have also been given information on these areas which are at risk of tidal flooding.

Messrs. Ove Arup have asked if we can assist with preliminary information on foundation and ground conditions, particularly in the coastal belt, and I have agreed to do so.

3. Water supply

I have discussed this question with the Engineer to the Southend Waterworks Company, and whilst there is not sufficient information available on the rate of increase in demand which would arise from the airport and associated development, it appears that this might reach a figure of 25 million gallons a day by 1995.

All that can be said at this stage is that the indications are that Stage II of the Ely Ouse Scheme for bringing in water from the area of the Great Ouse River Authority to the north, at present envisaged for completion in 1977-78, might have to be brought forward by two to three years to meet the demand.

The type of industry likely to come into the area is not known, but it is possible that some of the demand might be met by a further scheme for re-use of sewage effluent similar to that proposed at Riverside Works, Dagenham.

* See also p. 393.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Essex River Authority*

SUBMITTED BY MR. H. FISH

I am a Bachelor of Science of the University of Leeds, a Fellow of the Royal Institute of Chemistry, a Fellow of the Institute of Water Pollution Control and a Fellow of the Institution of Public Health Engineers. I have been River Conservator of the Essex River Authority since its constitution in 1965, and prior to this I was Pollution and Fisheries Inspector of the Essex River Board from its constitution in 1952.

There are three aspects of the proposed airport at Foulness, and associated development, relevant to surface water quality, namely:

(1) Factors relating to sewerage and sewage disposal
(2) Surface water disposal arrangements
(3) The possibilities created for new re-use of effluents as a water conservation measure.

In respect of sewerage and sewage disposal, the outlets for disposal of effluents fall into three groups, namely, the freshwater streams draining to the Chelmer upstream of Langford Waterworks intake, the Thames, Blackwater, Roach and Crouch estuaries and the connecting minor streams, and the sea off Foulness and the Dengie peninsula.

The Authority could not accept any new and large volumes of sewage effluent discharged to the Chelmer catchment upstream of Langford until sewage treatment technology advances considerably beyond its present form. New discharges of sewage effluent, in excess of present development potential, to the minor streams draining to the Thames, Blackwater, Crouch and Roach estuaries would also be unacceptable. Additional substantial discharges to the three estuaries other than the Thames would only be acceptable where the discharges were made close to the sea, and where either the discharges were made on ebb-tides only or the discharges were rendered of low bacterial content for the protection of shell fisheries. The pollution control position in the Thames estuary is not a matter of concern to the Authority, but it is presumed that the Port of London Authority would not favour any large new discharge except in a locality east of Southend.

It thus seems that the only acceptable location for the making of large new discharges of effluent would be along the coast between Bradwell-on-Sea and Thorpe Bay. Along this stretch of coast the discharge of settled sewage via long sea-outfalls might be acceptable, otherwise effluents of the 30/20 standard would be required at points removed from any amenity beach or other place frequented by the public.

Bearing in mind the current inadequacy of most existing sewage works in the south-east of the county, it would seem essential that a decision to develop the third airport at Foulness, with its concomitant new surrounding development, should be accompanied by a decision to provide a regional sewerage and sewage disposal scheme discharging to the sea somewhere between Bradwell and Thorpe Bay. Such a scheme, draining the area lying between the Blackwater estuary and the Thames estuary and east of the eastern watershed of the Chelmer catchment, could commence with the sewerage and sewage disposal of the airport itself and its immediate environs and extend in subsequent years over the whole region, initially taking new excess flows from existing sewage works and eventually permitting abandonment of most existing works.

It is considered that without provision of a regional sewerage scheme of this kind, under the control of a Regional Sewerage Board, the already unsatisfactory, inadequate, and fragmented arrangements for sewerage and sewage disposal in the region would become chaotic.

As regards the surface water disposal position, the only difficulty likely to arise would be in respect of the run-off from the airport and its associated industrial complex. Here, it would be essential that all run-off should be given efficient treatment for oil-removal and subsequently discharged to sea. The discharge of such run-off, even after treatment for oil-removal, to any watercourse passing through built-up, or agricultural, areas would be most undesirable. The disposal of surface water run-off from new residential development associated with the airport could follow any appropriate route without markedly affecting the water quality position.

In respect of the possibilities of reclaiming sewage effluent for industrial water re-use, the development of a regional sewerage scheme would favour the development of a second-class water supply scheme to serve the airport and associated concentrations.

* See also pp. 393-396.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Basildon Development Corporation*

The Corporation have carefully considered the information set out in the Third London Airport's Commission's Report dated the 4th March, 1969, together with the facts and opinions expressed in the various statements and consultants' reports relating to the Foulness site. It appears that there are five points upon which the Corporation may usefully make representation and these are set out below:

1. **Noise and disturbance**

On the basis of information published to date it is unlikely that any appreciable noise or disturbance to the New Town residents will arise. The Corporation would, however, like to reserve the right to make further representations if later evidence reveals a less favourable situation. If, for example, it became evident that New Town residents would be disturbed by noise and vibration unless additional work to their housing, such as double glazing, were to be undertaken, then the Corporation would expect the Government to make an appropriate grant in respect of the costs of these works.

2. **Regional road and rail communications**

Obviously an airport at Foulness would, from the commencement of its construction, generate an enormous volume of traffic. Some reports have suggested that the A127, which runs through the northern part of the New Town Designated Area, should be extended to link with the airport. The Commission's statement in paragraph 18 gives rise to considerable concern. The statement says that "It is envisaged that at the outset the site would have to be connected to Southend by a road adequate to carry both the long distance traffic to and from Southend and other parts of the country, and the local traffic to and from Southend". Traffic channelled into Southend in this way must inevitably use either the A13 or the A127 to reach London, or to distribute to other parts of the country. Both these roads pass through the Designated Area. The A127 passes through the northern part of the town and is a dual two lane carriageway. It is vital to the economy of the New Town since Basildon's Industrial Areas have been deliberately placed for convenient access on to the A127 as all the New Town industries rely exclusively on road transport. The road is not to motorway standards and is clearly inadequate to cope with even the present volume of traffic using it. Scope for improvement of this road is limited and it could not cope adequately and safely with airport traffic in addition to the ever increasing load of regional traffic which is anticipated regardless of the airport proposals.

The A13 at present passes through the built-up area of the New Town, but work is in hand to provide a two lane dual carriageway diversion skirting the southern boundaries of the town. This should be in operation by 1972. The Authorities concerned have schemes for improvement of this road, both east and west of the New Town, but again the designs for these improvements have been based on present regional traffic forecasts, and would not adequately provide for airport traffic.

The Southend to Fenchurch Street railway bisects the New Town. Although there is some excess capacity on this line, it is thought unlikely that this could meet the needs of an international airport if the line were extended to Foulness. If there is any proposal to double the existing railway tracks through the New Town, the Corporation would want to give careful consideration to this in detail since development adjoining the railway would be affected.

In view of the foregoing the Corporation emphasise that major regional road and rail construction must be undertaken at the earliest possible stage so that new routes from Foulness to London, independent of the existing regional routes, are available before the airport is in operation, and if possible, before major construction work on the airport is commenced. The Corporation would want to be consulted regarding the proposed alignments or improvements to regional routes.

3. **Public supply services**

As far as can be ascertained at this stage it is unlikely that public supply services to the New Town will be prejudiced by increased demands from the airport. In particular, water supply has been a constant problem in this area, but the Southend Waterworks Company have written to the Corporation to say that although detailed requirements for a possible Third London Airport at Foulness are not yet known, it is not anticipated or intended that the additional water demand will adversely affect the supplies already allocated to the development of Basildon New Town.

4. **Housing and programme of development**

The Corporation's terms of reference are primarily to provide housing and industrial accommodation for London's overspill. The present New Town population is some 77,000 and it is planned to grow to 134,000 by about the year 2001. The Corporation's revised Master Plan was founded on the thesis that the New Town would provide land for its natural increase up to the turn of the century. In this respect New Town development was independent of the County Development Plan.

The airport would have an enormous impact on regional land use and this might lead to the need to vary the Corporation's terms of reference so that the New Town could contribute to the regional pattern of growth.

The nature of the proposals for Foulness and the

* See also p. 400.

Printed image digitised by the University of Southampton Library Digitisation Unit

physical conditions of the site suggest that if it proceeds, it will be at full speed and on a very large scale. Demand for residential, industrial and commercial land in easy reach of Foulness may rise sharply and outpace short-term provision. Basildon is well situated to meet such demands in the 1970's and has the organisation established to undertake large scale development. The later demands for second and subsequent generation housing would have to be met by balanced and comprehensive development beyond the Designated Area boundary. It might even be necessary for entirely new terms of reference to be given to the Corporation making Foulness and not London the Corporation's primary housing duty.

Within this changed regional situation there might be some advantage, particularly financial advantage, to the New Town in accelerating the present planning rate of development. It must be borne in mind, however, that the competing demands for engineering and building workers (and possibly certain materials) which will arise when airport construction commence would hamper progress unless positive arrangements are made to overcome the problem.

5. **Regional land use**

The large-scale and rapid urbanisation of the region which must inevitably follow the creation of an international airport and perhaps also a seaport, demands early and positive planning (backed by effective financial and administrative machinery) of regional open spaces, countryside and recreational areas including the foreshore and rivers. At present this area of Essex consists of urban areas within broad acres of farmland and open space.

The establishment of an international airport and seaport might in effect extend the present Thameside built-up area to cover most of the land south of the River Crouch. In this context the forward selection and planning of open spaces and a positive attitude to the conservation of such natural countryside and marshlands as remain is of vital importance.

Conclusion

All the above factors point to the necessity of the preparation of a regional plan at the earliest opportunity if the Foulness site is selected. Such a plan should, among other things, recognise the New Town's ability to accommodate immediately the industries, offices and housing associated with the airport during the initial phases of construction and operation and indicate the long term role which a New Town must play in the growth of the region. Such a regional plan must obviously also include a comprehensive network of surface transport routes to meet the needs of the airport, seaport and the region and propose an effective policy as regards all aspects of open space and recreation.

The Corporation would wish to participate in the preparation of any such regional plan.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Maldon Borough Council*

Town Clerk's Office
Maldon
Essex

24th April, 1969

The Secretary
Commission on the Third London Airport
Templar House
81-87 High Holborn
London WC1

Dear Sir,

Foulness Airport

My Council has instructed me to add to the representations already submitted that they consider that no part of the cost of providing the airport, or of incidental services such as new roads, schools, etc., should fall upon the ratepayers as such of the County of Essex.

I would add that subject to the representations made in this and my previous letter, my Council take the view that, subject to adequate safeguards to minimise any nuisance from noise, Foulness may well be the least objectionable site of those so far suggested.

My Council wish me to attend the Inquiry in order that I may briefly reiterate their views, but as the Municipal Election will be held on 8th May I cannot be away from my office on 5th-8th May, and I would be glad to know whether I can arrange to attend the hearing on some subsequent date.

Yours Faithfully,

K. C. ROBERTSON

Town Clerk

---

* See also p. 403.

Representations by Maldon Borough Council

The Council take the view that, if a third London airport has to be provided, an offshore site, such as Foulness, would probably cause less disturbance than a site located inland, where a substantial degree of disturbance would be caused to surrounding residential areas, even though the site of such an airport might itself be, now, sparsely inhabited.

The Council would, however, be strongly opposed to any proposal to locate a "stacking zone" or to align flight paths in such a way that planes would be stacked, or would fly, anywhere in the vicinity of Maldon.

The Council's concern is based on the following facts:

1. The population of Maldon, now about 13,000, is expected to increase to 18,000 by 1981.
2. The resident population is supplemented during the Spring and Summer months by anything up to about 14,000 visitors on any particular day.
3. It is believed that the proportion of elderly residents is relatively high, about one-fifth of the population being over 65 years of age.
4. The local establishments include a general hospital of 174 beds, a blind home providing accommodation for 45 residents and an old people's hostel for 60 residents provided by the County Welfare Department; by 1976 there will be another similar old people's hostel and the Borough Council will have provided another hostel for 15 residents, in addition to their general housing provision for elderly persons.
5. Maldon and the Blackwater Estuary provide an important recreational area for visitors from all parts of Essex.
6. There are 1,200 holiday caravan sites in the Borough, and within the next two years it is anticipated that there will, also, be 360 holiday chalets.
7. The Council has provided a number of recreational facilities, including swimming and boating pools at their Marine Parade and Recreation Ground where there is car parking space for some 2,000 cars and 50 coaches.

Printed image digitised by the University of Southampton Library Digitisation Unit

8. There are 10 sailing clubs in the Borough area, and several more in the lower reaches of the Blackwater Estuary, and there are probably about 1,500 pleasure craft using the Estuary. Several of the few remaining sailing barges are based on Maldon, and there is a regatta and a sailing barge match in July of each year.
9. There are 23 local businesses which are believed to be wholly, or substantially, dependent on visitors, apart from hotels, etc., offering accommodation.
10. The Council derives an annual income of approximately £17,000—equivalent to a rate of 8½d.—from the recreation facilities in the area, and a further income of £7,200—equivalent to a 3½d. rate—from rates on business premises wholly, or substantially, dependent on the recreational trade. If this income were to be lost, or substantially reduced, because visitors were discouraged from visiting Maldon by aircraft noise, the loss of income would mean that the Council would no longer be able to maintain some of the amenities which can now be provided for the joint use of residents and visitors; apart from this, it is emphasised that, in the opinion of the Council no sanction should be given to any aircraft use which would adversely affect the extensive use now made of the area for public recreational purposes.

Apart from the foregoing matters, the Council wish to make the point that, if the third London airport has to be provided in the Essex area, it is considered that no part of any additional expenditure on providing new roads or other public services should fall on Maldon, or, indeed, any Essex ratepayers.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Rochester City Council*

1. The Rochester City Council has a total acreage, in terms of land and water, of 4,505 acres and it serves a resident population of over 55 thousand persons, according to the figures of the Registrar General in 1967.

2. The City of Rochester lies some 25 direct miles from the proposed Foulness (off-shore) site; Rochester is expanding as not only a busy port on the river Medway but also a complex of varied industry and to meet this expansion more residential development is being carried out each year by the Rochester City Council and the private developer alike. That part of Rochester known as Strood, on the north-west side of the river, in particular has seen an intensive attempt over recent years to meet this great need for additional housing.

3. The City of Rochester also is a tourist attraction, with its fine Norman castle and keep, its beautiful cathedral and precincts, and its several Tudor buildings and other places of interest associated with past monarchs and Charles Dickens; the Council is most anxious that the peace and enjoyment of its many visitors each year is not disturbed.

4. The Commission will doubtless be aware of the existence to the south of the City of an airport which, surrounded by several large industrial concerns, such as Elliott Automation Limited and Thorn AEI, is used primarily for executive flights and the activities of a local flying club; in the future, an increase in these executive flights and an introduction of light cargo flights could be envisaged.

5. From the plans, numbered CTLA 1/2 and CTLA 1/3, prepared by the Commission, the City of Rochester is outside the contour drawn thereon representing 40 NNI. The Commission, in its *Site Information on Stage II Hearings--Part 1, Foulness (off-shore)*†—admits that these contours are of necessity approximations only and are intended to give an indication only as to the areas likely to be affected by noise. The Rochester City Council in receiving a copy of the Commission's report on Foulness (off-shore) site naturally is concerned over the fact that, at this stage in the proceedings, detailed information is not available on the question of noise and disturbance and the exact positioning of the airport and its envisaged size to enable its submissions to the Commission to be more precise; its submissions, therefore, must be limited to the extent of the information available at the present time.

6. It behoves the Rochester City Council to express its great concern over the possible effects of siting the third London airport at Foulness since it must protect the interest and well-being of the day-to-day life of its citizens and also the comfort of its visitors. Noise is very much a problem of modern living but its intensification and aggravation by aircraft should be prevented if at all possible. It is difficult at this stage to say to what degree the City of Rochester and its inhabitants are to be affected by noise but obviously the noise nuisance created by an airport, should it be sited at Foulness, will steadily worsen with the growth of air-traffic and the advent of the ever increasing size of aircraft; if the flight paths are to be over the Medway Towns themselves, the effect will be even more devastating. It is with this in mind that the Rochester City Council is concerned to protect the well-being of its inhabitants, and to ensure that no disturbance by noise will be caused to its schools, hospitals, offices and residents, the latter particularly at night.

7. The Rochester City Council wish to safeguard its inhabitants also from nuisance from all other sources--e.g. smoke, smell, fumes--which may result from the siting of an airport at Foulness.

8. The Rochester City Council require an assurance from the Commission that, if Foulness (off-shore) is chosen at the conclusion of its deliberations as the site for the third London airport, the City of Rochester and its inhabitants will not suffer from any disturbance of nuisance by noise and that the flight paths will be arranged in such a way that the lines of landing and take off will not pass over or hard by the Medway Towns.

9. The Rochester City Council wish to be kept informed fully of all further developments in this matter and to receive all fresh technical data, particularly as to affects by noise, when available; the Council will be pleased to supply additional information or assist the Commission in any way that it can, if so requested.

10. Finally, the Rochester City Council wishes to reserve the right to submit more detailed evidence in the future if circumstances show that such an action is necessary in the interests of the City of Rochester.

* See also p. 404.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.).

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Strood Rural District Council

The District Council has authorised me to make a general written statement to the Stage II Hearing convened by the Commission for the 5th May, 1969, setting out the views of the Council on the Foulness (off-shore) site on the information at present available.

Situated on the south-western side of the Thames Estuary the Council have at the present time an open mind on the Foulness proposal and it will be appreciated that until the Commission is able to make available detailed studies of noise contours and on the traffic control they are unable to make any positive views on the proposal. From the information available it appears that the rural district will only be affected by possible noise nuisance emanating from the proposal, and it is noted that detailed studies of noise contours, etc., particularly as they will affect the North Kent coast will be available for consideration at Stage III and IV Hearings.

The County Council, as Local Planning Authority, is I understand submitting evidence to the Stage II Hearing and I would state that the District Council agrees in broad principle to the evidence being given by the County Council. However, I would at this time like to bring the attention of the Commission to the various settlements, etc., in that part of the rural district, known as the Hoo peninsula, which could, it would appear, be adversely affected by noise nuisance from the Foulness proposal. In this connection I enclose a 2 in. plan of the rural district indicating the main residential, industrial and holiday, etc., settlements of the Hoo peninsula as follows:

Main residential settlements

No. on plan

1. Hoo—population over 9,000 and expanding.
2. Frindsbury Extra—population over 6,000 and expanding.
3. Cliffe—population 3,000.
4. High Halstow—population 1,100 (possible expansion).
5. Stoke—population 932.
6. Allhallows—population 655 (possible expansion).
7. Grain—population 1,100 and expanding.

Industrial, holiday and caravan sites

Letter on plan

A. Hoo Marina Residential Caravan Site (600+ caravans).
B. Kingsnorth Power Station (nearing completion).
C. BP Oil Refinery and other undertakings.
D. Grain Power Station (site acquired by Central Electricity Generating Board but work not commenced).
E. Allhallows—Pilky Residential Caravan Site (250+ caravans).
F. Strood Rural District Council's Holiday Recreation Centre, Allhallows, which includes 900+ caravans and proposals to erect 300 chalets. In addition it should be noted that during peak periods, holidays/weekends, thousands visit the recreation centre principally from the S.E. London Area. On the information at present available it would appear that the proximity of the 40 NNI contours indicated on Drg. No. CTLA 1/3 could have an adverse effect on the Council's Holiday Estate at Allhallows.

The parallel red lines on the plan indicate a designated nature reserve and I would add that the majority of the coastline of the peninsula on the Thames is considered to be of high scientific value by the Local Planning Authority.

Finally, I would agree particularly with the remarks made by the County Council with regard to the Isle of Grain industrial complex and it will be interesting to note the effect of the existing and proposed tall chimneys on the flight path of aircraft which might use Foulness.

*See also p. 404.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Foulness Island Residents' Committee*

The residents of Foulness Island wish to submit the following for your information and consideration to enable you to obtain a full and comprehensive understanding of the problems which must be considered and overcome concerning the siting of an international airport on or near Foulness Island. Although this statement, for convenience' sake, is presented under different headings, it must be considered as an entity.

We propose to deal first with the geological structure of the area:

The whole of the south-east of England is subsiding and tidal waters no longer stop at London Bridge as in Roman days but extend as far as Teddington Lock. The hamlet called Milton, once situated on the Southend foreshore, was lost to the slowly-rising sea. In 1327 the tenants reported the loss of 40 acres of arable land following a disastrous flood. It is also a fact that there was once a town known as Orwell, now assumed to be somewhere under the sea off Harwich. Geologists are agreed that the whole of the lower flood-plain of the Thames, of which Foulness is but a part, is steadily being overtaken by the sea. There is some debate as to the rate at which this movement is progressing, but the fact is undisputed. It would seem that the rate is now accelerating, as the national geodetic surveys of the 1850s and 1960s show that Harwich in the north of Essex has subsided or the water has risen 12 in., whereas the total amount of subsidence in the last 2,000 years has been only approximately 15 ft.†

For evidence of a more local nature, levels taken from the drawings prepared for the Essex Estuary Reclamation Scheme of 1851 by two eminent engineers, Sir John Rennie and George Remington, show that high water, ordinary spring tides, rose to a level of 8 ft 4 in. below the sea wall at Fisherman's Head, one of the access points on Foulness. A survey conducted in 1969 indicates that, despite an increase in the height of the sea walls of some 4 ft at least since that time, high water, ordinary spring tides, was only 9 ft 9 in. below the top of the present wall. The wall, we know, was increased after the floods of 1953 by some 4 ft, and allowing for this increase we can determine that the level of the water has risen or the island has subsided by some 2½ ft since 1851.

The island is composed of alluvial material and a section cut at Churchend, the highest part of the island, showed 2 ft of mould resting on 2½ ft of clay and, below that, sand, all below 5 ft being waterlogged.‡ "At Old Hall, London Clay was found 77 ft below the surface" indicating a layer of sand some 70-73 ft in depth resting on a base of London Clay.

A paper in the *Journal of the Institute of Navigation** states that the whole of the sands in the Thames Estuary may be considered unconsolidated and they are continually moving. As the island is situated on one of the Thames sandbanks one would expect evidence of these movements. One example of this may be seen in the Church steeple which is approximately 22 in. out of plumb, even though considerable sums of money have been spent in an effort to arrest its movement. The church was constructed in 1850 to incorporate a steeple for which the Elder Brethren of Trinity House donated £50 towards the cost of its erection as a permanent landmark on this low-lying coast.

The creeks between Foulness, New England and Havengore Islands have been subject to continual change, as they contain between 30 ft and 40 ft of mud.† There seems good reason to suppose that the creeks themselves are of recent origin, as the maps of Saxton (1576) and Han Woutneel (1602) show that Foulness, as its name implies, was a projecting headland. The maps of John Speed (1610), Jan Janson (1636 and 1646) and Ogilby and Morgan (1678) all show the creeks in varying positions, and it would seem that in the late sixteenth century a great tide or series of tides changed Foulness from a headland into an island.

In view of the subsidence and instability of the island and the area surrounding it, we feel that it would be most unwise to site an airport there.

The next point we wish to bring to your attention is the direct result of the geological changes already described. The major effect has been floods, the first of which in recorded history occurred in AD 31, when the Romans had to abandon their coastal station and withdraw to the settlement at Shoeburyness, then known as Essobiria.‡ The Dark Ages unfortunately have left us no records of inundations until we have a brief mention in the Anglo-Saxon Chronicle which states that in 1099 on the Festival of St. Martin (early November) "the seaflood sprung up to such a height and did so much harm as no man remembered that it ever did before".

The next readily-available mention of such a disaster is in the work of Matthew Paris, writing of the events of his own day, and he recorded that on the 12th November 1236 and for 8 days following the whole of the East Coast suffered yet another flood in which one town alone lost over 100 dead. Throughout the thirteenth and fourteenth centuries are recorded many great storms with grave effects on the east and south-east coasts, and these storms were so serious that instructions were given to two royal commissioners towards the end of the

* See also p. 405.

† Steers, *The Coastline of England and Wales*, p. 400.

‡ loc. cit., p. 393.

* "The changing navigation routes of the Thames Estuary". The Institute of Navigation, IV, 1957, pp. 357-370.

† *The Coastline of England and Wales*, p. 394.

‡ H. A. Blencowe, *The Story of the Garrison, Shoeburyness*, 1915.

Printed image digitised by the University of Southampton Library Digitisation Unit

thirteenth century to raise the walls by 4 ft higher than they formerly were and to make them of a thickness answerable to that height.

Throughout the rest of the Middle Ages there are continual references to the sea defences being strengthened and raised, and yet, in spite of all this expense and labour, floods continued to occur, until finally, in 1532, an Act of Henry VIII* was passed, dealing with the problem of sea defence. This act was made permanent in 1549 by Edward VI.† Both these acts set up the standard form of commission and the machinery for maintaining defences. However, the cost of maintainance was ever-mounting, and we read that in 1552 the Patron of Foulness Church was forced to sell the Church bells, weighing some 800 lb., to obtain the necessary money to repair the damage caused by the flood of the previous year.

Flooding on the East Coast continued throughout the seventeenth century and in the *Gentleman's Magazine* for February 1736 we read "the little isles of Candy (Canvey) and Fowlnesse on the coast of Essex were quite under water, not a hoof was saved thereon, and the inhabitants were taken from the upper parts of their houses into boats". So damaging was this flood that as late as 1741 the Privy Council granted a charitable "brief" which raised the unusually large sum of £3,666 to help alleviate the distress caused by this catastrophe.

The Commission of Sewers for Foulness was set up at the beginning of the nineteenth century and it continued its work until 1916 when the island was purchased by the Secretary for War. One may read in its minute books of its continual work in repairing, maintaining and raising the walls of the island. Needless to say, however, floods continued to occur, notably the one of November 29th, 1897; in which the eastern sea walls of the island were breached and the water was stopped only by the old counter-wall, the water having covered approximately a third of the island.

From the year of 1897, high tides have continued to cause flooding and destruction on the east coast, notably in 1928, and then in 1953 there was a flood even more disastrous than has ever been previously recorded. This flood and its effects have been fully chronicled by Hilda Grieve in her book, *The Great Tide.*

In the last hundred years, the levels of the highest previous tide have been exceeded with increasing frequency. The following are the records of the tidal gauge at Southend, all converted to heights above ordnance datum:

November 1897	13.6 ft.
January 1928	13.6 ft.
February 1938	13.7 ft.
March 1949	13.8 ft.
January 1953	15.4 ft.

In the year of 1954 the report of the Departmental Committee on Coastal Flooding‡ stated: "The cost of affording protection against the worst possibilities would be colossal and we have ruled out any idea of being able to recommend measures designed to secure complete protection against every conceivable tide and surge".

We would like to bring to your attention the fact that both Bridgemarsh Island and the land flooded when the wall at Fambridge was breached have yet to be reclaimed. In fact this indicates the ever-increasing pressures on the Essex sea defences.

In his book, James Bird states: "Forty square miles of the lower Thames marshes are the natural flood-plain of the Thames. The word flood-plain must be interpreted literally, for while the embanking restricts the lateral development of a tide it increases the height of tides including of course the highest tide. These will inevitably spill over into parts of the flood-plain".*

We feel, gentlemen, that any construction on the Sands must lead to the restriction of the lateral development of a tide and therefore will increase its height to the detriment of all existing sea defences. We hope that you have seen from the history of the last 2,000 years that no matter how great the expenditure on defence, a flood is inevitable. We feel therefore that this area should be left entirely as it stands.

Although as you have heard this area has and will continue to suffer from floods, the soil is of such richness that it has always produced crops above the national average in yield, even within a few years of inundation.

The current national average yield for wheat† is 30.5 cwt per acre. One of the farms on the island has consistently returned a crop average in excess of this, and the figures for 1967-68 harvest are close on two tons an acre, which is almost a third above average. The current national yield for barley is 28.2 cwt per acre, and for the 1967-68 harvest the farm already mentioned produced an average yield well above this figure. Apart from the wheat and barley already mentioned, Foulness land produces excellent crops of beans, peas and mustard, the latter having been grown on there since before 1554.‡ From the pastures come quantities of beef and mutton and, needless to say, wool.

Not only is Foulness agriculturally outstanding for quantity but also for quality, and this is reflected in a fair share of the prizes at agricultural shows. The mustard crop has consistently drawn letters of commendation from a well-known mustard firm. Some of the prizes won in recent years are as follows:

At County level:

a gold medal for milling wheat—1958-59; in 1966 prizes for feeding beans, tic beans, millable oats, feeding barley and milling wheat;

in 1967 prizes for malting barley, feeding beans, millable oats and milling wheat;

Southern Area (competition run by the *Farmer's Weekly*):

* 23 Henry VIII, c. 5.

† 3 & 4 Edward VI, c. 8.

‡ Cmd. 9163, 1954.

* James Bird, BA, PhD, *Geography of the Port of London*, 1957.

† Ministry of Agriculture, Fisheries and Food. *Agricultural Statistics 1966/1967: England and Wales.* HMSO.

‡ *Essex Review*, vol. 36, pp. 168-169.

Printed image digitised by the University of Southampton Library Digitisation Unit

prizes for bread wheat (1962) and biscuit wheat (1958);

And at International level:

prizes for wheat in the Royal Winter Fair in 1958 at Toronto.

The facts already quoted, although impressive in themselves, are but a continuation of the outstanding history of the area in the production of foodstuffs. At the beginning of the nineteenth century, Arthur Young, Secretary to the Board of Agriculture, regarded Foulness Island as the richest soil in the county of Essex; this bears out what was said a hundred years earlier: "The hundreds of Rochford and Dengie are the most fertile districts".*

In *Strategy for the South-East*† we read that the area is part of one designated as a country zone and in the definition of this it is stated that one of the intentions of having such zones is "to safeguard high value agricultural land".

It has been said that the Maplin and Foulness Sands are static wastes. We must protest at this uninformed statement and lay before you evidence that the sands are in constant motion and that they play an important part in the production of the nation's food.

For the purpose of this statement the Foulness, Maplin and Shoeburyness Sands are considered to be one unit which extends from Shoebury Ness to the Whitaker Channel. These sands appear on the surface to be composed of areas of shell and sand, and areas of sand and silt. The sands near the saltings of the islands of Havengore, New England and Foulness have a higher proportion of silt and this area is known as the black grounds. Beyond the black grounds the areas of sand and silt are to be found running in broad strips parallel with the shore line of the islands. Between the areas of sand and silt may be found the low ridges of sand and shell. These alternating areas or bands of sand and silt, and sand and shell occur until the channel known as the West Swin is reached. The term swin means to the islanders a large channel in which there is water at any state of the tide. The areas on the sands which are composed of sand and silt may also carry water in a shallow channel and this is known as a "swat".

If the map of John Warburton, published in 1726, is examined, it will be seen that a long swin is marked running from New England Creek in a north-easterly direction, to discharge itself in the Whitaker Channel. At first glance this swin seems to have taken a curious and lengthy course but to a person familiar with the structure of the sands it is a reasonable piece of typography, as there is at the moment of writing (April 1969) a long swat running along the course of this old swin. We date this statement because a spring tide backed by a gale is expected to change the whole of the present surface formation.

A study of the effects of the wind and tide on the West Swin and surrounding sands is worthy of mention at this point. The latest charts published at the Admiralty and charts published some five years previously have been compared and they show that about 235 million tons of sand have been eroded and redeposited. We wish therefore to bring to your attention the fact that the sands are not static, and can be and are moved by a combination of wind and tide.

There is one further phenomenon which has been noted concerning the sands and that is the amazing speed at which an object can be "swallowed". This may be simply demonstrated by placing a sample of the saturated sand in a container and placing a small weight on the surface. If the whole assembly is subjected to light but continuous vibration, a film of water gathers on the surface and the weight slowly subsides below the surface of the sand. On the sands themselves the tidal water will rapidly scour a hole around an object until the object subsides into the hole which is then filled by the tide with sand.

There are numerous wrecks on the sands or, to be exact, contained within the sands, as very little can be seen of these wrecks. Sometimes a wreck will remain below the surface of the sand for months and then a gale will aid the tide and uncover some part of it. The wreck will disappear again as the tide scours another hole for it, and then re-covers it with sand, as has been mentioned.

An interesting example of the loss of a permanent structure is that concerning the destruction of the Maplin Lighthouse. In the *Times* of Thursday, August 27th, 1931, we read a report that the lighthouse is unsafe and that the keeper left on the Tuesday of that week. "The lighthouse was built in 1838 and a new superstructure was built between 1875 and 1885. The lighthouse was built on piles screwed into the sand and owing to the movement of the sand some of the piles have been uncovered. The movement was caused by the different currents which have always had a certain altering effect. The structure is not considered to be quite safe and so it has been abandoned. Only investigation can decide whether it will be abandoned permanently." In fact it fell over and was washed away the following year, thus bearing out their fears of instability. Note that in this paragraph in *The Times,* it was implied that there has always been this problem of movement of the sands in this area, and this is borne out by a passage from the *Daily Mail* quoted in the *Essex Review** "The shifting surface of these sands offering no ground for the erection of masonry, the famous Maplin Light has been built upon an enormous erection of piles".

The sands have always been under-estimated by strangers and this is why the parish registers record the burials of so many unkowns whose bodies were found on the sands after the tide had ebbed.

There are numerous unexploded bombs and shells lying on or below the surface of the sands, the vast majority just below, and this fact should be noted before consideration of any proposed engineering work on the sands.

These sands may seem to the unfamiliar eye a desolate waste but on examination we find that they

* Griggs, *General View of the Agriculture of the County of Essex*, 1794.

† HMSO. 1967.

* *Essex Review,* vol. IX, 1900.

Printed image digitised by the University of Southampton Library Digitisation Unit

support a vast quantity of marine life, in particular the common cockle (*Cardium edule*). This small nutritious shellfish inhabits most of the surface of these sands, reaching in places over a million to the acre. In fact these sands supply the nation with approximately two-thirds of the annual cockle harvest.

To pick up a point already mentioned under the heading of floods, we beg leave to point out that the total amount of water which will be deflected by a structure one mile long placed on the sands at right angles to the tidal flow is approximately 14 million tons; a similar quantity will also be deflected by the ebbing tide. The effect of deflecting this water must be to produce a heavy scouring effect along the face of the new structure and it will undoubtedly affect the existing tidal balance; furthermore there are grave fears that scale model tests will not provide an accurate answer concerning the possible effects of tidal surges on runways, buildings, communications and existing land and property.

We come now to the matter of meteorological conditions. The area is subject to both fog and mist, and to discover the amount of fog a year we have examined the log of the Mid Barrow lightship, which lays 8 nautical miles ESE from Foulness Point. We have tabulated the total number of hours in the years 1963-1968 when there was fog, and we find that during these years the lightship sounded its fog signal as follows:

December 20 1962–December 19 1963:471 hours
December 20 1963–January 13 1965: 765½ hours
January 14 1965–January 12 1966: 372 hours
January 13 1966–January 11 1967: 439½ hours
January 12 1967–January 10 1968: 363¼ hours
January 11 1968–December 12 1968: 481½ hours

The yearly average of hours when there was fog is 482 hours, or equivalent to nearly three weeks of continual fog. As you may appreciate, the above hours are the minimum of fog-hours, as the crew members of the lightship have to endure the fog signal which is extremely loud.

A ground mist is a common occurrence on the island but unfortunately we have no exact records of the amount of time when there are these mists. We can however assure you that the mists form with amazing suddenness–one can be standing in brilliant sunshine and within a matter of minutes one is completely shrouded in mist. A more detailed examination of the log of the lightship will show that, as one would expect, fog tends to occur more frequently during the winter months, and by this we mean from October to about mid-May but the ground mist of which we have spoken tends to occur during summer, in particular, and since in no year that we have examined was June free from fog either, we beg leave to point out that the area is likely to be subject to fog or mist at any time of the year.

Our wind references have been taken from the log of the same ship for the year 1963, not for any particular reason but merely for the sake of convenience, since this year is probably as typical as any other. We have taken the strongest force of wind which was recorded for each day, avoiding the first and last entries of each day, to avoid over-lapping of daily records. The results we have reduced to yearly percentages and find that, correct to one decimal place, percentages of wind are as follows:

N: 3.5%	NNE: 2.2%	NE: 10.9%
ENE: 3.5%	E: 12.6%	ESE:1%
SE: 9%	SSE: 3.3%	S: 7.9%
SSW: 4.1%	SW: 17.8%	WSW: 4.4%
W: 5.7%	WNW: 2.4%	NW: 9.5%
NNW:1%	2 days wind variable.	

The average wind force for the year was 3-4, Beaufort scale. As would be expected, the strongest winds on the whole blew in winter, from an easterly direction, also to be expected. This would mean that the strongest winds would be blowing directly across the runways of the proposed airport.

While it is correct to say that the prevailing wind is south-west, we wish to point out that it is not as prevalent as some would have us believe.

The next point with which we wish to deal is that of noise. It is fortunate that as regards the sea area around Foulness–the outer Thames Estuary and the adjacent part of the North Sea–two men once recorded the effects of noise emitted in the area which could contain both airport and stacking zone. The two men were the authors of diaries which have become world-famous as accurate records of their life and times. The noise-source was the two meetings of the Dutch and English fleets in 1666. Although it may well be argued that there is no comparison between the roar of a "jumbo jet" and a seventeenth century warship, we beg to differ and think it well worth recording the incredible distance the sounds of those engagements travelled. First, the diary of Samuel Pepys, at a time when he was in London. To quote from this diary for the 2nd of June that year: "Several do averr they heard the guns all yesterday in the afternoon". When he was at Greenwich that day, he says "There we could hear the guns from the fleet most plainly". These guns were heard again, for on the 4th of that month he writes: "We all Friday and Saturday and yesterday did hear everywhere most plainly the guns go off", and he speaks again of the "hearing of the guns this morning". On the 1st of June 1666, John Evelyn at Deptford speaks of "being in my garden at 6 o'clock in the evening and hearing the great guns go thick off", and on the 3rd he says "I slipped home, the guns still roaring very fiercely".

Although it may be argued that this was a freak atmospheric occasion, we wish to refer you to the second battle recorded that year, some seven weeks later. On July 25th Pepys says that there did "come people out of the Parke, telling us that the guns are heard plain" and as if that were not enough, again he says "there the guns were plain to be heard".

These battles ranged over the whole of the outer Thames Estuary and adjacent North Sea, the distances from London being between 70 and 100 statute miles.

During World War II the Allied attacks on the Channel Ports were distinctly heard at Foulness, and at West Hanningfield were heard the anti-aircraft guns on Foulness, 20 miles away.

Printed image digitised by the University of Southampton Library Digitisation Unit

Today the area can still produce examples of sound transmission. Here are listed some of the sounds which have been heard on a still day: Church bells in Burnham; this is some 5 miles from Courtsend, Foulness, and the bells are quite clear;

Brent geese on the Sands can be heard in Courtsend, admittedly only faintly but they can be heard; distance about 2 miles;

Trains arriving and departing Burnham station; this is always clearly to be heard at the Quay Loading which is about 3½ miles from Burnham Station, but this sound can be heard in Courtsend on a summer's evening (5 miles);

Band playing in Burnham; tunes heard clearly in Courtsend 5 miles away;

Fireworks at a fête in Southminster heard very clearly and the laughter of the crowd quite distinctly; distance some 5½ miles;

Motorbikes racing around on Dengie Marshes—distance 2 miles;

A man's motorbike could be plainly heard all the way from Churchend, Foulness, to his home in Wakering 5 miles away;

Propellor aircraft testing the engines at Rochford as well as the noise of take-off—8½ miles:

Rochford fire siren—8 miles;

Yachtsmen in private conversation on a yacht as far as ½ a mile distant; each syllable could be heard clearly.

These noises were heard while the listeners were out of doors. The noises which have been heard not only outside but inside behind closed doors are as follows:

Shoeburyness artillery, some 7 miles away; this is audible even when there is a light breeze in the opposite direction;

Shoeburyness fire siren—7 miles;

The gun at the Royal Corinthian Yacht Club, Burnham—4½ miles;

The Mid Barrow lightship—11 miles;

Ship sirens in the West Swin woke people up in March of this year—some 5 miles distant;

Of particular interest—the roar of the BAC 111 was quite audible on take-off; in fact it was very noisy—8½ miles distant.

Having listed the noises which we can hear we have prepared the enclosed map which we would consider to be the affected areas of Essex and Kent, assuming it to be a late afternoon on a still summer's day and that Boeing 747's, known as jumbo jets, are taking off from an airport with two runways aligned at 40 degrees east of north (grid).

We appreciate the calculation of the complexities of sound is for the expert, but, as stated in F. G. Richardson's book on sound, the effects of wind will shift the contours in realignment with the wind and only long tests in the area can give the true result. However, the following list indicates the areas where there will be an increase in the intensity of sound because of the direction of the wind (over and above what is indicated on the map):

Clacton area: 21.9% of the year;
Colchester area: 15.3% of the year;
Maldon area: 9% of the year;
Rochford and Rayleigh area: 17.1% of the year;
Southend and Shoeburyness area: 27% of the year;
Sheerness and Sheppy area: 16.6% of the year;
The rest of the north Kent Coast, east of Sheppey, for 14% of the year.

Under a general heading of Local Factors, we have several points which may appear to be disjointed, but we beg you to consider them as a whole.

Firstly, water supply: "The amount of water available for consumption in Central and South Essex generally is limited".* Therefore we feel that it would be unwise to situate anywhere in Essex an airport and its associated industry and housing without a careful reconsideration of the availability of further water supplies.

Sewerage and pollution: It is abvious that the proposed influx of population will demand a new sewer system and we fear this will lead to further pollution of the Crouch and Blackwater Estuaries in which the vast majority of the country's oysters are produced.

Communications: It is clear that a completely new road and rail system will be required and on this we cannot comment until definite plans are published, but wherever the system is situated, it must result in a loss of excellent agricultural land. As the present system of communications stands, "the railway lines to Essex (from London) are heavily used and capacity can only be substantially increased at a high cost".†

Navigation rights: What provision will be made for the maintainance of the right-of-way of coastal traffic through the River Roach and Havengore Creek?

What effect will the aircraft noise and vibrations have on the oldest Saxon church in Essex—St. Peter's-on-the-wall, Bradwell?

We feel it would be most unwise to site an international airport in close proximity to Bradwell Nuclear Power Station. The effect of an aircraft crashing there could easily be tragic for the whole of Essex.

In April 1969 the population of Foulness and Havengore Islands was 241. Of these, there are 128 males and 113 females. 44 are aged 16 and under, 163 are between 17 and 64, and 34 are aged 65 and over. Of the working population, 36% are in the agricultural industry, 39% work for the government in various ways, and 25% are employed in other industries. The population of Foulness is almost unique in the south-east of England in that the vast majority of the inhabitants are a closely-related family. This can be seen on examination of the Parish Registers, most of the families having resided on the island for generations. For example, the oldest extant family is that of Cripps, to whom are related almost all the other families in varying degrees. If an airport were

* County of Essex Development Plan. First Review. 1964.

† *Strategy for the South-East.* HMSO. 1967.

Printed image digitised by the University of Southampton Library Digitisation Unit

to be situated in this area, it would lead to the destruction of this closely-knit community. We feel that it would be a tragedy to break up a family whose tenor of life has continued almost undisturbed for centuries. Once destroyed, this feeling of unity can never be recreated. This is merely a plea against the airport on the ground of humanity, but nevertheless a very valid plea, when so many members of the fourth estate have posed the question "people or money"?

Compensation: No matter which site is selected, we feel that just and adequate compensation must be paid to those who lose their homes and their livelihood. Although it has been stated in the press that the residents of Foulness Island are merely tenants and therefore entitled to very little compensation, we feel that the reverse is the case, as families who have resided there for generations will lose their homes, their livelihoods and their fishing and wildfowling rights. We feel therefore that for the purposes of compensation the islanders should be considered most sympathically and should be given adequate compensation to enable them to re-establish themselves in similar surroundings and occupations.

To summarise this statement, we have shown this area to be geologically unsound, not only in its structure but also in its subsidence; we have shown that it has suffered and will continue to suffer unpredictable floods; we have shown that the area is so productive in agriculture and fishery that its destruction would be unforgivable. In view of this and the other disadvantages we have mentioned, we feel that this area should be left as it is, to continue in a way of life for which it is so well suited.

Bibliography:

The Great Tide: Hilda Grieve

The Story of the Garrison, Shoeburyness: H. A. Blencowe

The Coastline of England and Wales: Steers

The Geography of the Port of London: James Bird

General View of the Agriculture of the County of Essex: Griggs

The Diaries of Samuel Pepys and John Evelyn

Sound: E. G. Richardson

Light and Sound for Engineers: R. C. Stanley

Cambridge Modern History: vol V

Foulness Parish Registers

Essex Naturalist

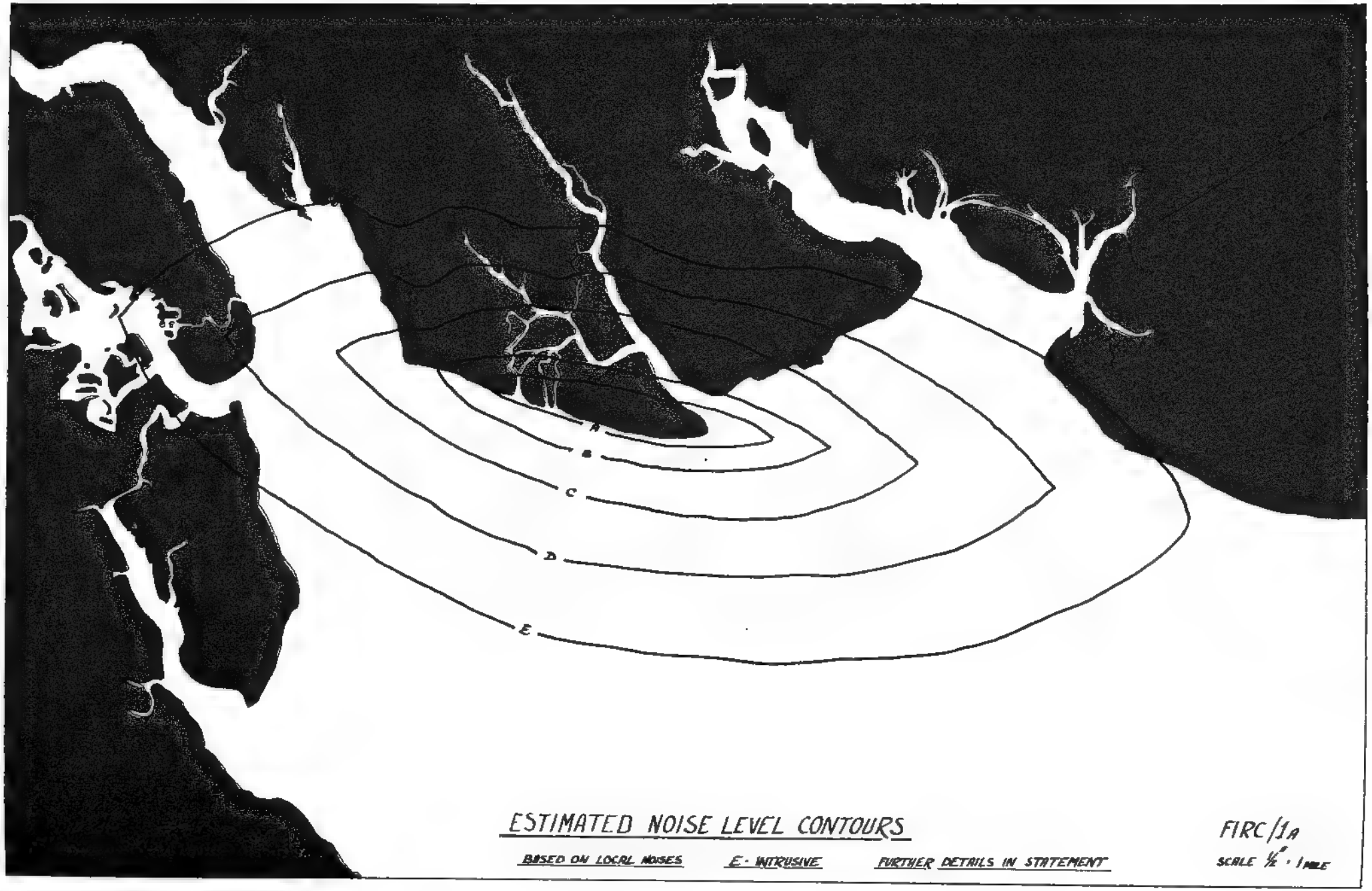
Essex Review

Documents in Essex Record Office

Publications of Her Majesty's Stationery Office including: Commission on the Third London Airport. *Short List of Sites and Site Information for Stage II Local Hearings: 1. Foulness (off-shore).*

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



Noise level contour. *(Foulness Island Resident's Committee)*

Evidence of St. Clement's Ward Municipal Electors' Association

Southend-on-Sea County Borough*

SUBMITTED BY MR. R. M. BLACKALL

This Association welcomes the opportunity to comment and respectfully directs the attention of the Commission to the following features of this project which give rise to concern:

Noise

We are disturbed at the vagueness of the noise level evidence and that the contour maps have been prepared on the assumption that aircraft noise levels will be reduced by as much as 10 NNI by the operative date of the airport. We ask for an assurance that the noise level arising from the types of aircraft envisaged will not be such as to cause annoyance to the residents of Leigh.

Road access

The main trunk road A13 is already overburdened, particularly on the mile long stretch running through St. Clement's Ward, which acts as a funnel for all traffic approaching Southend from the Dartford tunnel, Canvey Island, Benfleet and Basildon. Both during construction of the airport and afterwards, the A13 will attract commercial vehicles of all types, the volume of which will quickly lead to chaos on this approach to Southend and beyond.

We therefore ask the Commission to place road access to Southend and the airport for priority consideration second only to noise. We suggest that feasibility route plans are called for without delay and the residents made fully aware of the implications of this aspect. A main access road running along the foreshore—the town's main amenity—would not be acceptable to the members of this Association.

* See also p. 405

Rail access

The travel facilities between Leigh and London, of particular importance to Leigh residents working in London, must not be allowed to deteriorate to give priority to air travellers. It seems imperative that a new and direct rail link between Foulness and London—avoiding existing termini—be built and operative before the airport is opened. May we be assured that this will be the case?

Water

The Southend Waterworks Co. barely meets demand in a hot summer after a dry winter and its charges are the third highest in the country. A massive increase in population in this, the driest part of the UK must be greeted with concern.

Sewage

The disposal of untreated sewage into the sea will be the subject of strong protests; and the tipping of rubbish on the Leigh Marshes could be accepted only if the Ministry of Health's recommendations were strictly adhered to.

Electricity

The airport and associated developments will require a great deal of electrical energy. Southeast Essex is already grossly overpopulated with pylons. We suggest that the Foulness/Maplin Sands area be the site of a new power station capable of supplying the complex with power and that it incorporate a large installation for preparing fresh water from the abundant sea water.

The Association hopes that their submission will be of assistance to the Commission and that it will be given full and earnest consideration.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. R. Newbery*

8, Hillcrest Road
Southend on Sea
Essex

2nd April 1969

The Chairman
Commission on the third London Airport
Templar House
81-87 High Holborn WC1

Dear Sir,

Objection to third airport at Foulness

Following my attendance at the private meeting on procedure to be adopted at the stage II Foulness site.

I was gratified at the lucid statement by Mr. Justice Roskill of the Commission's work and that the ordinary individual objector like myself whose views would be considered as well as the self-interested big guns like the Essex County Council, The Southend Borough Council, The Port of London Authority and the Developers who are prepared to finance the project.

The chairman's patient listening to my plaint I sincerely appreciate and his hope that I would repeat my statement at the hearing at Southend Civic Centre on May 5th under the Chairmanship of Mr. A. J. Hunt.

In view of this and by virtue of your permission to appear at stage II hearing.

I wish to state that I object to the Foulness Site because it will utterly spoil the present amenities of Southend.

Its noise will have a harmful effect on the old, the sick and the children in the area, particularly in the schools.

Personally, it will destroy my aim of a pleasant and peaceful retirement.

In order that I may be available for the hearing I propose to have a week of my leave from May 5th onwards.

Conforming with the agreed procedure required to assist the Inspector, I should think, ten minutes to a quarter of an hour would be quite sufficient for me to state my case, including any time for cross-examination.

Yours faithfully,

R. NEWBERY

---

* See also p. 407.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Action Committee against Foulness

Mr. A. J. Hunt
Principal Planning Inspector
Commission on The Third London Airport
Civic Centre
Southend-on-Sea

Dear Sir,

1. The ad hoc Committee which, under the title "Action Committee Against Foulness", has formed for the purpose of grouping local objectors to the Foulness (off-shore) airport site, desires to give notice that it does not intend to present oral evidence, or to cross-examine, at the Stage II Hearing commencing on Monday, 5th May 1969. Notice of such intention was verbally given to Miss Wall in the Commission's Office on Friday, 2nd May 1969.

2. It is desired to confirm, as already notified to the Commission's office, that the Shoeburyness Residents Association* will not be giving oral evidence, or conducting any cross-examinations, at the Hearing. The Residents Association is now, for the purpose of all Hearings of the Commission, merged with and represented by this Action Committee.

3. The Committee does intend to give evidence at all later Hearings.

4. The Committee, having now had the opportunity to study the statements of evidence submitted by other parties for the Stage II Hearing, does however wish to make observations on certain points arising from these other statements and begs leave for permission to present these points in the form of additions to the original Statement of Case already submitted to the Commission.

5. If this permission is granted, the additions will be presented in numbered parts, each part dealing with a specific statement of evidence. Because of the shortness of time since receipt of some of the statements it has not proved possible to prepare the additions to the case in one document, but each part will be delivered to the Hearing at least one day prior to the day on which the evidence concerned is to be presented at the Hearing. Part 1 of the additions to the Case, which deals with points arising from the evidence to be presented on behalf of the County Council of Essex, is enclosed with this letter of intention.

6. The Committee wishes respectfully to draw the attention of the Inspector to the fact that the Committee is the only formed group for the presentation of objections by the ordinary residents in the County Borough area. If permission to present the points the Committee now wishes to make, in the form of additions to the Statement of Case, cannot be granted, the Committee, for the protection of those whom it represents, must necessarily reserve its right to give oral evidence and to cross-examine, as and when the Committee is able to arrange for a representative to be in attendance for this purpose.

I am, Sir,

Yours faithfully,

S. COLGAN
Chairman, Ad Hoc Committee
10 Leigh Road, Leigh-on-Sea

---

* See also p. 407.

Action Committee Against Foulness
Statement of Case

Introduction

1. The Action Committee Against Foulness was formed with the principal object of stating the case for objectors to the Foulness (off-shore) site who are resident in Shoeburyness and Thorpe Bay. Since the date of formation of the Committee other groups have formed, one of which, the Shoeburyness Residents' Association, is now fully merged, identified and represented by this Action Committee, as has been reported by the Residents' Association to the Secretary of the Commission.

Environmental

2. The areas of Shoeburyness and Thorpe Bay are the nearest heavily populated areas to the proposed airport site. With the exception of a small trading estate in Shoe-

Printed image digitised by the University of Southampton Library Digitisation Unit

buryness the areas are entirely residential with a combined population of 67,000.

3. Fine sandy beaches with safe bathing are provided in East Shoebury, South Shoebury, and along the whole of the foreshore bordering Thorpe Bay. It is an extremely popular area for small boat sailing.

4. The attractions of the present environment--quiet, residential, with excellent amenities--put a high price on house values, which change hands at a price comparable to, indeed in many cases higher than, the values attracting to properties in any of the most highly favoured residential areas in the whole country.

5. The impact of an international airport in the area, and particularly if it is sited as suggested could be the case in the Report by the Commission, will quite put an end to the enjoyment of the quiet life and amenities now available to residents in the area.

The noise factor

6. In default of any information concerning precise sitings for the runways measurements of distances can only be near approximations, but whether the runways are sited wholly off-shore (as shown in drawings CTLA 1/2 and 1/3)* or partly off-shore and partly onshore, the whole of Shoeburyness will be contained within a five mile radius of the airport, and the whole of Thorpe Bay within a six mile radius.

7. Shoeburyness will be within the 45-50 NNI contour and Thorpe Bay will be within the 40-45 NNI contour (drawings CTLA 1/2 and 1/3). The cost of providing sound proofing for schools, public and private buildings will be heavy.

8. The land being entirely flat, the nuisance will be at its greatest. Beyond this, however, there is concern for the assumption taken by the Commission that noise certification regulations will be introduced and will lead to a reduction in the noise effect of aircraft by 10 NNI over the next 20 years. It must be observed that this is entirely contrary to the publicly expressed view of the Chairman of the Airport Authority. In addition there is concern that the Commission should have changed the noise level value relevant to a given NNI number as compared to the findings of the Science Social Survey conducted at Farnborough in 1963. The Farnborough Survey gives NNI number 40-45 a noise level of "annoying" whereas the Commission has given this same NNI number a noise level of "intrusive".

9. At this Stage II Hearing we do not intend to submit detailed calculations of noise contours relevant to an airport sited in the manner suggested in para. 7, page 7, of the Report. Indeed, for the many reasons of which the Hearing will be aware, such as the peculiar and inherent complexities of the calculations, and the time available, it would be physically impossible to do so. We do however submit now that the noise contour maps CTLA 1/2 and 1/3 are unrealistic and over-optimistic, for the following reasons:

a. The assumption that there will be a deduction of 10 NNI over the next 20 years is not valid.
b. If the assumption is discounted the whole of Shoeburyness and Thorpe Bay will be in the "annoying" noise level zone.
c. Noise contour calculations as applied to inland airport sites cannot be directly applied to an estuary-sited airport. The reflection and refraction of sound resulting from the unique meteorological conditions of the estuary, e.g. varying air temperatures over land and sea, must be taken into account.
d. The combination of estuary and low hinterland will provide nothing to attenuate the sound waves.

10. There are other factors concerning airport noise that have not yet been considered but which are extremely relevant to the case of an airport sited in a densely populated area:

a. *Maintenance Area.* No information is available as to the location of this area, but it is an area from which constant and perpetual noise must be expected.
b. *Runway Alignment.* Precise information on this is essential. Whether the siting is to be wholly off-shore or partly off-shore and partly onshore, and the distance of the runways from the shore, are matters of vital concern. Furthermore, the closer the alignment is to the east-west the greater the area affected by intrusive noise and the worse the effect upon a greater number of people.
c. *Flight Paths.* No official information has been obtainable relevant to an airport sited at Foulness, but there are sound reasons to believe that if the present internationally agreed flight paths are maintained the stacking zone will be north-west of Foulness in the area of Chelmsford. Because of prevailing wind conditions it would seem highly probable that most planes coming in to land will have to do so from Clacton, and that planes taking off will have to do so towards Southend before turning in a westerly direction to join the existing international flight path.

11. For the reasons stated in paras. 9 and 10 above we submit that the figures quoted in the Report as to the population likely to be affected by intrusive noise are serious under-estimates, and that the areas Clacton-Witham-Chelmsford and Margate will be seriously affected in addition to the area of the County Borough of Southend, which alone has a population in excess of 166,000.

Communications

12. It is well known that the existing road links with London--the A13 and the A127--and the existing rail links--Shoeburyness, Fenchurch Street and Southend--Liverpool Street are quite inadequate to cope with the additional airport traffic. The road links and the Southend-Liverpool Street rail link are inadequate for present traffic, and although it is possible that the Shoeburyness--Fenchurch Street line could take some increase in traffic it would scarcely be enough to make an impression on the requirement, and then only to the dis-

* *See attached wallet of maps and diagrams.*

Printed image digitised by the University of Southampton Library Digitisation Unit

comfort and disadvantage of the present day commuter traffic.

13. The existing road links can help not at all, and it will surely be essential to provide new road links before the airport could become operational. Indeed, the movement of the site construction traffic alone would be an embarrassment on the existing road links. Each mile of a motorway consumes 30 acres of land and the total consumption of land for the road links will be very great indeed. To this consumption must be added the requirement for additional rail links. The existing green belt area will be entirely overwhelmed.

14. It is the peculiar disadvantage of the Foulness site that all communications will have to run east-west, because of the Thames to the south and the Crouch to the north. This concentrates the area through which the new links must flow, and this disadvantage can only be obviated by expensive bridging or tunnelling. At a price all things are obtainable, but it is sombre to reflect that twenty years after the requirement was first known the Piccadilly Underground line has yet to be extended two miles to Heathrow.

15. Although outside the terms of reference of the Commission mention must be made of the widely publicised schemes of various business consortia for an airport and docks complex at Foulness, a development in which Southend Corporation has an interest through the recently formed "Thames Estuary Development Co. Ltd." In view of the size and weight of the teams playing in this league, one of which, Southend Corporation, has the advantage of being permanently at home, with the certainty of a bye clear through to the final at Stage V, there seems very little reason to doubt that if an airport comes a docks will follow, and it would therefore be quite unrealistic to consider new communication links for airport in isolation of the massive requirements for docks and industrial growth.

16. The question as to how the flow of the present-day commuter traffic, both rail and road, could be maintained prior to the provision of new links both regional and local, poses a serious problem.

Urbanisation

17. It has been stated that there will be primary employment for 65,000 at the airport. This is directly caused employment and does not take into account employment in the ancillary service industries. This will bring a population increase of something to the order of 250,000. Housing for this number would result either in the creation of a new town, or in substantial increases in the size of existing towns and villages. The effect of this on educational, medical and hospital services in the local area, already stretched nearly to excess, will need careful study.

18. Housing, new communication links, spreading industrial and trading estates, will submerge the green belt and virtually all agricultural land, and will convert the peninsular Southend-Benfleet-Rayleigh into a vast urban area.

19. On the question of agricultural land it is to be observed that contrary to widely held belief Foulness Island has a rich fertile soil providing a yield above the national average. Four thousand acres are under intensive agricultural production and a further two thousand acres provide grazing for beef and lamb stock.

20. The effect of this urbanisation on existing water supplies must be considered. South Essex is a deficiency zone, and the future water deficiencies in the area to the nearest 5 mgd (million gallons per day) have been estimated at 35 mgd by 1971, 90 mgd by 1981, 175 mgd by 2001 (Reference--Water Resources Board. *The South East Study*, HMSO, 1964).

21. It is not known whether any of the far-reaching remedial projects recommended in the Study are in process of implementation, but they will in any event be inadequate. The Study took into account the increase in demand resulting from the natural increase in resident population, but not the huge increase in demand resulting from the vast projects now envisaged. It is fair to mention this in its purely local aspect, because existing residents in the area already pay dearly for their water, and the cost of projects to increase the supply by bringing in water from sources outside is enormous.

Land reclamation and flooding and tidal flows

22. It will be known that the area of the Estuary can be subject to serious flooding, the most recent case on disaster scale being in 1953. What increase in this danger may be created by the existence of a large artificial island in the Estuary, and what changes there might be in the tidal flows of the rivers Thames, Crouch and Roach, can only be investigated by experts on the subject armed with all records and with every scientific resource at their disposal. In this context attention may be drawn to the article "Foulness. Some geological implications" by Dr. J. T. Greensmith and Dr. E. V. Tucker of the Department of Geology, Queen Mary's College, University of London, published in the *Civil Engineering and Public Works Review*, May 1968. This article, which might fairly be held to put doubts on the feasibility of the scheme at all, recommends certain methods of acquiring the essential information needed, and concludes "Unless these preliminary exploratory procedures are put in hand there can be no doubt that environmental consequences may follow affecting large tracts of the coast line and having a major impact on communities fringing the Thames Estuary".

Wild bird life

23. The mud flats provide the winter feeding ground for hundreds of thousands of wild fowl and wading birds that come from all countries of north-west Europe as well as western Siberia. In the spring these birds return to breed in the countries from whence they come and so what happens to them is of vital concern to conservationists and the wildlife authorities in those countries, and developments such as proposed at Foulness raise international anxieties. The Brent goose is a special case; up to the 1930s the species numbered about 250,000, now only 30,000, of which something like one-third winter off Foulness. They do so because their food, a species of eel grass, is provided in sufficient quantity to support them. It is believed that the loss of this feeding

Printed image digitised by the University of Southampton Library Digitisation Unit

ground may mean the decline of the species to extinction.

24. There is no evidence that these species of wild fowl, waders and Brent goose, will go elsewhere, indeed to the contrary. There is the parallel case on the Tees estuary in County Durham, when ICI were granted planning permission to reclaim the mud flats that sustained a teeming bird life in winter. Now there are only gulls, and no evidence that the numbers of birds have increased in other winter habitats.

25. It is not suggested that the preservation of wild fowl will be held a persuasive argument against developments on the mud flats, but the hazards of these birds to aircraft is for consideration.

Conclusion

26. For the reasons stated under the separate headings above it is submitted that an airport sited as suggested in the Report of the Commission will totally and adversely affect the environment and way of life of all residents in Shoeburyness and Thorpe Bay, and there are sound reasons to fear that these changed conditions could prove unbearable. The principle that a modern airport should be sited off-shore has general acceptance, and by its title alone, the "Foulness (off-shore) site" has gained teeming adherents who take no pause to reflect, or who may have no desire to reflect, that because of the densely populated hinterland the Foulness (off-shore) site in operation could prove "off-shore" in name alone.

27. Finally, the indulgence of the Hearing is requested for the failure to attach to this Statement copies of the references quoted in paras. 20 and 22 above. It is hoped that it will be appreciated that preparations for this Hearing have been no little aggravated by shortness both of time and of funds. The Committee has no source of inquiry or of information readily available to it, and by day its members are engaged in their own business occupations, none of which, unfortunately has anything at all to do with land reclamation or airports.

APPENDIX

Observations on Statements of Evidence Submitted on behalf of the County Council of Essex

A. Evidence of Mr. N. Fleming, MA*

1. Para. 5 of statement of evidence

The assumption is taken that before the runways come into operation noise certification will have limited the noise of any aircraft to a level some 10 PNdB lower than the noisiest of present day aircraft. This is contrary to the expressed opinion of the chairman of the British Airport Authority.

2. General observations

(a) It is observed that all of Mr. Fleming's noise contour calculations are based on off-shore runways. It is stated in paragraph 7 of the Report of the Commission that the airport could be sited partly on Foulness Island.

(b) Mr. Fleming has accepted a lower limit of 35 NNI rather than 40 NNI, thus conforming with the findings of the Wilson report. The area likely to be affected within a 30 NNI contour, which is so important for consideration of the noise nuisance at night, is not shown. Attention may here be drawn to the submission of the Borough of Chatham which refers to reports that 40 per cent of the residents in the 30 NNI contour complain of being woken at night by aircraft noise; 43 per cent complain of house vibration and 59 per cent complain about interference to television pictures.

It is safe to estimate that at least half of the population of the County Borough of Southend will be in the 30 NNI contour.

(c) On the question of the noise effect on schools, it is not easy to understand why, in his table NF3, Dowsett High School is given 10 less incidents per day in the 85-94 range of peak PNdB than Southend High School for Girls which is 500 yards further away from the airport.

(d) It is submitted that the noise calculations are relevant only to an inland site and that the calculations are under-estimated in relation to an estuary site.

Reply by Mr. N. Fleming

1. The assumption is that noise certification will have been introduced by the time the four-runway airport is fully operative. I am here simply restating in slightly different words the assumption which I understand has been made by the Commission in preparing the NNI contours in plan CTLA 1/3. This is stated in the last sentence of para. 12 of the *Site Information,** as qualified verbally by the Inspector and by the addition which has been made in the *Site Information* for Cublington.†

2. (a) The NNI contours I have considered are for the airport situated as in the Commission's plans CTLA 1/2 and 1/3. If the siting or orientation of the runways were modified the NNI contours would need to be modified accordingly.

(b) The reference in the submission of the Borough of Chatham‡ appears to be to figures 3A and 3B, page 210, of the Wilson report.§ In considering this it is necessary

* p. 30.

* *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO, 6s.) Reproduced at p. xv.

† *Site information for Stage II Local Hearings. 3. Cublington (Wing).* (HMSO, 6s.)

‡ p. 45.

§ *Noise: Final Report.* (Cmnd. 2056; HMSO, 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

to look also at figure 4, page 212. This indicates that, at 30 NNI, only about 10 per cent of the people questioned mentioned aircraft noise as one of the things they disliked about local living conditions. It seems to me hardly conceivable that if 40 per cent of the population were regularly wakened by aircraft noise only 10 per cent would mention it as one of the things they disliked. I have not been able to refer back to the report of the Central Office of Information on which these figures are based. Possible explanations, however, are (1) that the captions to figures 3A and 3B should be read as "Percentage of people who said they were disturbed, who reported various types of disturbance", and (2) that the responses to the questions on the various types of disturbance need qualification in respect of how often.

(c) The criticism is justified. The difference is only of the order of accuracy of these calculations, but on re-examination it would be more consistent if the numbers for these two schools were reversed. In both cases the numbers are sufficiently high for sound insulation treatment to be needed, and Mr. Springett's evidence on this is consequently not affected.

(d) Most of the aircraft affecting the schools are flying over land, but those flying up the estuary are at a sufficient altitude for any difference between the transmission of sound over water and over land to be negligible.

B. Evidence of Mr. J. A. Springett, M.A.*

(a) It is stated that the cost of sound insulation for schools affected by noise from an airport sited at Foulness will be more than off-set by the savings in costs that would otherwise have to be expended in the future on the insulation of schools now affected by Southend airport. Whither the future of Southend airport should an airport to be sited at Foulness is not known but it is desired to observe, whilst it is not desired to question Mr. Springett's overall calculations, that seven primary and three secondary schools in the County Borough area of Southend are at present affected by noise from Southend airport, all of them in or near the 35 NNI contour for that airport. An airport at Foulness will affect nine primary (one in course of building) and four secondary schools, the latter including Dowsett High School, Southend High School for girls and the Cecil Jones High School (opening as a comprehensive school in September 1969), all in or near the 35 NNI contour, and Shoeburyness High School (scheduled, after extensive additional building now proceeding, to open as a comprehensive school in 1970), near the 50 NNI contour. Two primary schools will also be near the 50 NNI contour.

(b) It is also to be mentioned that Bournes Green Primary School, which is in the 40 NNI contour, is omitted from Mr. Springett's Schedule JAS II, and that two independent schools, Thorpe Hall and Eton House, will also require insulation.

(c) If the assumption of a 10 NNI deduction for noise certification is finally held not to be valid, or, of course, if any runways are sited on Foulness Island, a large number of schools now assumed to be outside 30 incidents per day in the 85-94 range of peak DNdB would require insulation.

(d) Outdoor classes, a feature of primary school teaching, will probably have to cease altogether in the schools listed as requiring sound insulation.

Reply by Mr. J. A. Springett

(a) (i) It is not true to say that the schools affected by noise from Southend airport are in or near the 35 NNI contour for that airport. One secondary and two primary schools are in the 40/45 band and one special school and one primary school are in the 40/50 band.

(ii) With regard to the Foulness proposal it is not true that Shoeburyness High School is near the 50 NNI contour: the map reference given to me by Southend is 926852 which is virtually on the Commission's 40 NNI contour. It is true there are two primary schools almost on the 50 NNI contour—one of them is Great Wakering Old School, which I have discounted in my calculations because it has a limited life. My references are to the four-runway proposal.

(b) I accept that I omitted the Bournes Green Primary School, Southend, which is about on the 40 NNI contour from my list. (I had some information which I had taken to mean that this school was not yet built but it appears that it is the second half of the school which is not yet built.) There are about 200 children on roll at this school. The additional cost of sound insulation work is about £24,000. This would not affect the general conclusions of my evidence. I did not include independent schools in my tables. Figures could be added to my tables but will not be numerically significant. The important point will be to see that any information produced about other airport sites is comparable. My understanding is that Hertfordshire, for example, will include only major independent schools in their tables. There are no major independent schools in this case.

(c) This is really a commentary on Fleming's evidence. In any case, I do not feel that I have understated the problems.

(d) This is an overstatement which I could not accept. Outdoor classes may be very difficult, as they are likely to be held in the summer term, in the schools most severely affected, but I should very much doubt if they would have to cease altogether especially in the schools less severely affected. Much would depend on the nature of the classes and the subject being taught.

C. Evidence of Mr. D. E. Tanton*

1. **Para. 1—Environment**

The south-east coast of Foulness—proposed off-shore site—is fringed by the Maplin Sands only. Foulness Sands are north and east of the Island. This point is raised, as the public may otherwise conclude that the proposed airport would be sited on Foulness Sands, which are considerably further away from heavily populated areas, in which case different considerations would apply.

2. **Paras. 5(a) and 6(a)**

These sub-paragraphs pre-suppose that all installations—less road and rail accesses—would be sited off-

*p. 36

*p. 41.

Printed image digitised by the University of Southampton Library Digitisation Unit

shore and that Foulness Island would revert to agricultural use. It must be pointed out that:

(a) this would require a much larger and costlier reclamation of land than that proposed by the Commission,

(b) that local ratepayers have been led to expect that the sale or leasing of the land on Foulness Island to private speculators would bring in very large sums of money to pay for the capital costs required.

3. **Paras. 5(b) and 6(b)—Shore site**

(a) These sub-paragraphs seek to prove that there will be a net *gain* of agricultural land if a two-runway airport is sited on Foulness Island.

(b) The case is based on an area of 2,420 acres only being allotted for the construction of the airport.

(c) The final figure (580 acres) takes no account of the 150 acres in the NE tip of the Island which, Mr. Tanton states, may possibly be sterilised, nor do his figures include the villages of Churchend and Courtsend which are located on the Island.

(d) The Committee wishes to draw the attention of the hearing to the fact that the area of reclaimed land proposed by the Commission is greater than 2,450 acres and that, in addition to this area, a very large acreage will be required for ancillary services essential to the airport, e.g. hangars, manoeuvring areas, car parks, railway terminus, warehouses, reception/departure areas, Customs, duty-free areas, restaurants, control, fire and rescue services, etc. Nor does it allow for the extra 1,500 yards of ground at each end of the runways for the necessary control equipment. The Committee suggests that a fully operational two-runway airport sited on-shore will sterilise over 5,000 acres of land in the *immediate vicinity*.

4. **Para. 7—Housing and ancillary development**

(a) This section is based on two main assumptions:

(i) that the first runway is not required to be operational until 1976

(ii) that no additional agricultural land will be required for development before 1981.

(b) With regard to (a) (i) above, the Committee wishes to draw attention to the publicised statements of Mr. P. Masefield, Chairman of the British Airport Authority, that there is a four minute average delay per flight at Heathrow now, which doubles every five years and that by 1974, Heathrow will be saturated. (B.B.C. Panorama Programme of Monday, 10 March 1969 refers.)

(c) The statements in (a) (ii) above obviously depend on the accuracy of (a) (i). Further comments on this point are raised in our statement E. on the evidence of the County Planner for Essex County Council.

5. **Para. 10—Effect of pollution and turbulence**

(a) To state that pollution can be ignored on an off-shore site and would be minimal on the shore site, whilst agreeing they might affect an inland site, is regarded by the Committee as a contradiction in terms.

(b) The Commission's proposed off-shore site and take-off flight paths to the SW (estimated at over 70 per cent of traffic), will cause a noticeable element of air pollution in the heavily populated areas of Shoeburyness and Thorpe Bay.

(c) The proposed on-shore site and flight paths would, except under favourable wind conditions, cause air pollution to be entirely over land, embracing not only the present populated areas but also part of those proposed by the Council for housing development in the later stages.

6. **Para. 12. Rail link—Stage 2**

The Committee wishes to point out that it is proposed that the secondary rail link from Pitsea to Foulness would traverse a route across Potton and Havengore Islands to Foulness, entailing the bridging of the River Roach, the Middleway, New England and Shelford Creeks.

Additionally due to the exceptionally low-lying nature of the land, all road and rail links on these islands—as with Airport runways and hard standings—will necessarily have to be raised some height above the present ground level to counteract the ever-present danger of flooding.

Reply by Mr. D. E. Tanton

1. **Para. 1**

My evidence refers to the offshore site and the shore site at Foulness, as designated by the Roskill Commission. I state that it is within the area of the Maplin and Foulness Sands that the reclamation site is being considered. Your observation is therefore irrelevant.

2. **Paras. 5(a) and 6(a)**

(a) The airport lay-out plan issued by the Roskill Commission indicates areas for facilities within the reclaimed area. No additional servicing areas have been indicated to me.

(b) I do not know who has led local ratepayers to expect that the sale or leasing of land on Foulness Island to private speculators would bring in very large sums of money to pay for the capital costs required. Foulness is owned by the Ministry of Defence, and presumably they would be entitled to any profit which arose, not the ratepayers.

3. **Paras. 5(b) and 6(b)—Shore site**

(a), (b) and (c) If the shore site should be adopted, its exact boundaries will be the subject of considerable research. On figures of requirement at present available, it seems likely that some 580 acres of the island may be returned to agriculture. If the north-east tip of the island should be sterilised as a result, some 150 acres would be deducted from this figure. The area occupied by the villages of Churchend and Courtsend have already been allowed for in my calculations.

(d) The requirement of land for the installation is not within the scope of my evidence, which is based on information supplied to me by other Essex County Council witnesses.

Printed image digitised by the University of Southampton Library Digitisation Unit

4. **Para. 7—Housing and ancillary development**

These questions should be directed to other witnesses who have given evidence in regard to engineering, airport control and planning aspects of the enquiry.

5. **Para. 10—Effect of pollution and turbulence**

(a) I re-affirm my evidence in regard to pollution and turbulence so far as they relate to agriculture.

(b) and (c) I am not a town-planning witness.

6. **Para. 12. Rail link—Stage 2**

I am not an engineering consultant.

D. Evidence of Mr. F. A. Sharman*

1. **Para. 2.1: Regional planning**

(a) The location of a major international airport in SE Essex must inevitably attract population from other counties, including the under-developed areas. This is directly contrary to the overall planning strategy of stopping the drain of population from these areas to the South-East Region.

(b) The industrialisation and urbanization of the area will necessarily impinge on the already eroded Green Belt within Essex. (See statement by Southend-on-Sea County Borough Council.)

2. **Para. 2.2**

(a) The assumption that, at first, 74 per cent of the passengers would travel by rail and that this would increase to 82 per cent at full development, is not borne out by the experiences at other major UK airports. In particular, at Heathrow, the comparatively short extension to the London Transport rail system to the airport has not been carried out as it is not regarded as an economical proposition where an alternative road link exists.

(b) Reliance on a railway link for 82m. of the projected 100m. passengers per year would mean the total disruption of airport traffic should the link be taken out of action for any reason, e.g. accidents, power failures or industrial action.

3. **Para. 2.3**

The suggestion that road and rail links proposed for the airport could be utilized in "off-peak" hours for traffic to and from a major port is highly debatable. The Commission's estimate of airport passenger traffic is such that the proposed links will be stretched to their limits and delays which would occur through attempting to share facilities would undoubtably build up—on occasions—to unacceptable proportions which would render both airport and docks inoperative and damage the economy of the nation as a whole.

4. **Para. 3: Timing of decisions, construction and development**

This paragraph is again based on Heathrow and Gatwick being overloaded at peak times by 1976 at the earliest, with an extension to 1978 if this is convenient for construction timings.

As pointed out in para. 7 (b) of our Additional Statement "C", this is directly contrary to the stated view of Mr. Peter Masefield, the BAA Chairman, that 1974 is the critical date.

5. **Para. 3.3**

Contrary to the statements in this sub-paragraph, the Commission's planned NNI contours, reinforced by the statement of the Chief Education Officer for Essex County Council, show that a high level of noise nuisance will be imposed upon a heavily populated area and that adjustments to the layout which may be necessary would increase the effect over the whole area of Southend.

6. **Para. 4.2**

a. It must be pointed out that, contrary to the opinion given in this sub-paragraph, a Dutch Engineer connected with land reclamation publicly stated on a television programme on Friday, 2nd May, 1969, that the preparatory study for reclamation of an off-shore site would require approximately two years and that the reclamation could take a further four years.

b. Should the reclamation be contracted to experienced Dutch engineering firms, the greater percentage of the reclamation costs will have to be paid in foreign currency.

c. The construction problem must be further complicated by the large numbers of unexploded live shells fired into the dredging areas during the century that the Proof and Experimental Establishment has been using the area as a firing range. Numbers of these shells have been exposed on the sands near East Beach within the last ten years and have been destroyed in situ.

7. **Para. 4.5**

The Committee wishes to dispute, with all the power at its command, the statement that a very small number of people live within the 35 NNI line (from which level Mr. Sharman would seek to spare any habitation). The Commission itself estimates that 19,500 people live within the 40 contour line, whilst Mr. Jennings Smith (on behalf of Essex C.C.) calculates a population of 30,360 within the 35-45 NNI contour lines. These figures are based on a 4-runway airport entirely offshore. This siting is accepted by Mr. Sharman as the optimum from the noise and ATC points of view. The Commission state their figures have been reduced by 10 NNI to allow for expected future reductions in aircraft noise.

Should the airport be sited on Foulness Island and the NNI figures be up-graded to their original level, the population within the 45 NNI line will, on this basis, embrace over 36,000 people, whilst the 35 NNI line will include a population of approx. 150,000.

8. **Para. 5.3.1**

The Commission estimate that the airport may eventually handle over ¼ million passengers per day. To pump the associated sewage direct into the tidal Thames Estuary after only initial screening may well affect local amenities and be a health hazard. The Committee feel that, to protect the interests of the local community, this problem will need much deeper investigation than that proposed by Mr. Sharman.

9. **Para. 6.2.4**

The Committee feel that Mr. Sharman has seriously understated the problem of road access to the airport. It

* p. 3.

Printed image digitised by the University of Southampton Library Digitisation Unit

is agreed that the A127 is now overloaded at peak periods and will almost certainly become severely congested during the airport construction period and pending the completion of Radial Route 7 and its extension to Foulness. The Committee suggests that airport construction could not begin in earnest before the proposed improvements are completed, thus delaying the project, and that the congestion, combined with the suggested limited access to the A127 would cause serious dislocation and nuisance to those local inhabitants who use the A127 for local journeys or commuting.

10. **Paras. 6.3.1 and 6.3.2**

a. The proposed use—until 1981—of the existing Fenchurch St./Shoeburyness line (improved by loops, etc.) to provide a frequent service of non-stop trains with a reliable time of 59 mins. over a quoted distance of more than 50 miles for over 70 per cent of the airport traffic, is foreseen as causing dislocation of present local and commuter train services.

b. As the airport will be a national project and any delay in passage will be unacceptable, it is inevitable that airport traffic must at all times have priority over regional and local passenger traffic and—in view of the large numbers of people commuting from the area to London—the consequent delays and holdups would seriously affect the local population.

11. **Para. 6.3.3**

The estimate that Advanced Passenger Trains will eventually travel with headway of two minutes or less, implies that very large areas at each terminus will have to be allotted for passengers to enter and alight from trains. No mention is made of this within the Essex C.C. plans as stated to the Hearing.

12. **Para. 6.3.7**

As costing will, at later stages, be raised, the Committee request that the last sentence of this sub-para. be clarified to show which "section" of the proposed APT track can be built for £1½-£2m.

13. **Paras. 7.1 and 7.2**

In view of the above comments, the Committee feel that the summary in sub-para. 7.1 is not based on sound conclusions and would therefore submit to the Commission that the opinion stated by Mr. Sharman in sub-para. 7.2 is not acceptable.

Reply by Mr. F. A. Sharman

Observation 1 relating to Para. 2.1—Regional Planning

(a) The airport and its associated activities should be regarded as a natural and necessary development of the national and international transportation system, and as producing employment opportunities within the changing and diversifying pattern of the south-east region to which the traffic will be attracted. The question of whether attempts should be made to divert part of this traffic to other regions is a debatable one and is outside the scope of the present Inquiry, which takes as its starting point the requirement to provide for an anticipated increase in air traffic in the London airport complex. It seems likely that some at least of the traffic, if it were frustrated by insufficient capacity from coming to a London airport, would use the facilities provided in neighbouring countries.

(b) The impact of industrialisation and urbanisation associated with the Foulness site affects only the areas which are regarded by the local planning authorities as being suitable for such development and capable of reconciliation with their green belt policy, in which a high regard is paid to the necessity of preserving adequate and suitably placed open areas.

Observation 2 relating to Para. 2.2

(a) It is not to be expected that any existing United Kingdom airport would exhibit surface transport modal splits in any way comparable with the situation anticipated at Foulness. In no present case is there a rail service between a town terminal and an airport giving the fast and frequent service which would be essential and practicable for the King's Cross to Foulness link. It is not claimed that the percentages quoted are more than a first estimate of those for whom the different modes would offer the most rapid surface journeys. A more refined analysis, including the effects of journeys to Heathrow and Gatwick, has produced a lower percentage of rail preference on a time basis, but against this the rail journey is expected to be cheaper and the choice of travellers could be influenced by this factor. The fact that the rail extension to Heathrow has not yet been constructed in spite of increasingly congested conditions on the M4 motorway in no way indicates that a rail link to the much more distant site at Foulness would be undesirable or uneconomic. Calculations already submitted to the Commission in the Essex and Hertfordshire County Councils' Submission No. 2 indicate that a rail link to any of the likely third airport sites would be a very satisfactory investment.

(b) It is true that any mass travel facility is vulnerable to disruption by accident or strike action. Conventional railways have a long and good record of reliability in this respect compared with any alternative means of transport.

Observation 3 relating to Para. 2.3

It is not considered that there is any doubt at all that an advantage exists in the possibility of use of the common road and rail system by sea-port and airport traffic. The extent of this advantage is indeed debatable and would justify detailed study if the sea-port possibility were within the scope of the present Inquiry. The suggestion that joint use would constitute a hazard because congestion might occur at peak times is merely a statement of the obvious fact that if insufficient provision is made, overloading will result. I can see no reason why it would be more difficult to estimate and provide for joint use facilities than for separate ones.

Observation 4 relating to Para. 3—Timing of Decisions, Construction and Development

The reasons for assuming that Heathrow and Gatwick would be able to cope with air traffic at least until 1976 were given in the Submission No. 2 to the Commission already referred to, and are indicated on drawing no. FAS/1 attached to my Foulness evidence.

Printed image digitised by the University of Southampton Library Digitisation Unit

Observation 5 relating to Para. 3.3

In my view a "high level of noise nuisance" cannot reasonably be said to apply to areas subjected to less than 45 NNI. I am not the noise witness, but this seems to me a reasonable interpretation of the Wilson report* and of Mr. Fleming's evidence. I would suggest that it is quite misleading to say that "a high level of noise nuisance will be imposed upon a heavily populated area".

Observation 6 relating to Para. 4.2—Airport Layout Considerations

(a) No opinion about the time required for reclamation studies and construction were given in this sub-paragraph and the observation appears irrelevant. Regarding the quotation from a television programme, I believe that the speed of reclamation work by dredging can be regulated over a wide range by the amount of plant employed, and if the necessity for a more rapid programme than the one quoted can be established, it would within limits be possible to acheive it.

(b) The question of foreign currency use involved in the employment of foreign contractors seems only remotely relevant to the present Inquiry, but if British construction resources are committed to the limit of the capacity at which they are economic there would appear to be little disadvantage in some degree of European participation.

(c) The problem of unexploded shells no doubt exists, and an estimate of the provision required to deal with it clearly ought to be obtained in an early stage of project planning.

Observation 7 relating to Para. 4.5

It is entirely understandable that the Action Committee should dispute the statement that the number of people within the 35 NNI contour is "very small". The statement is true only in the context of the attempt to find a site for a busy international airport, but this is the context in which the evidence is given. Compared with the number of people affected by all major airports near cities or inland in inhabited areas, the numbers are indeed small and the degree of annoyance is relatively slight. The question of the alleged reduction by 10 NNI has already been the subject of statements by Mr. Fleming and by the Inspector, and the calculation of people living within the notional 45 NNI line is not valid.

Observation 8 relating to Para. 5.3.1—Services and Utilities

It is agreed that deeper investigation will be needed before detailed schemes for sewage disposal from the airport are drawn up. I was however careful to say that the coastal situation "affords the opportunity" of dealing with the sewage in the way described, and it is clearly envisaged in the sub-paragraph mentioned that screened, untreated sewage would only be discharged into the sea if tests indicated that this could be done without any health or amenity hazard and more economically than by any other system.

Observation 9 relating to Para. 6.2.4—Surface Transport

It is a fact that if for any combination of reasons the rail link carries a lesser proportion of travellers than my evidence suggests and if the growth of traffic other than that directly generated by passengers greatly exceeds present estimates, it would be essential to provide new capacity—probably on the route of Radial Route 7 and its extension—at an early stage in order to avoid congestion that would be detrimental to local communities. I cannot agree, however, that airport construction would have to be delayed until the proposed improvements have been completed or that it would ever be impracticable to keep the highway capacity of the airport links ahead of demand provided that this is accepted as a necessary condition in planning the airport project as a whole.

Observation 10 relating to Paras. 6.3.1 and 6.3.2

(a) The proposals are considered practicable by experienced senior managers of British Rail and it is certainly not necessary that they should be accompanied by any dislocation of any present local and commuter train services. In fact the general upgrading and capital expenditure along the line would give the opportunity of improvement of such services.

(b) The priority necessarily given to non-stop traffic would have to be reconciled in planning and scheduling with the equally important aim of preserving and increasing existing local facilities.

Observation 11 relating to Para. 6.3.3

It is agreed that the terminal arrangements for frequent APT services would have to be elaborate and would occupy very large areas. This was not mentioned as it is in no way relevant to the present Inquiry.

Observation 12 relating to Para. 6.3.7

The only object of quoting any costs in this sub-paragraph was to give this Inquiry some idea of the factors which might influence the choice between the two possible routes described. The cost of between £1½ and £2 million mentioned in the last sentence of para. 6.3.7 relates to the "new construction" from Thorpe Bay to Havengore Island described in the preceding sentence. If the northerly route for APT is adopted after a period of "semi-fast" operation via the southern route, this section of line (Thorpe Bay to Havengore Island) would not be used for the airport to London air passenger service, but, as suggested, might be retained as a freight and local access link between the airport area and Southend.

Observation 13, Paras. 7.1 and 7.2—Conclusions

The observations of the Action Committee taken along with the replies given above do not seem to give any grounds for changing the conclusions reached in this section.

E. Evidence of Mr. D. Jennings Smith*

1. Para. 1.3

As is stated by Mr. Jennings in paras. 6.13 and 6.14, there are few local industries of note. Consequently, the

* *Noise: Final Report* (Cmnd. 2056; HMSO, 19s. 6d.)

* p. 10.

Printed image digitised by the University of Southampton Library Digitisation Unit

proximity of freight export facilities—some of which are already available at Southend airport and Tilbury—is not of any great local advantage.

2. **Para. 1.5**

Although the forecast population associated with the airport may only form 12 per cent of the presently estimated total population growth in the whole of the South-East, that estimate does not include the extra population which will be attracted to the region solely on account of the airport.

3. **Para. 1.10**

(a) The important existing economic and social facilities and services of the area are already stretched to near limit and are not capable of "intensification" of use.

(b) It is certain that the present hospital facilities would not be capable of catering for any growth in population and at the same time handle casualties from a 500-passenger aircraft should an accident occur.

4. **Para. 2.2**

The anticipation that the airport will attract manufacturing industries is not borne out by experience at Heathrow (see para. 2.1.3 of Mr. Jennings Smith's statement) and is in contradiction of his suggested urbanisation town form—see his para. 3.3.1.

5. **Paras. 2.22 and 2.24**

The assumption that 6,750 commuters would "reverse-flow" to work at the airport is considered extremely doubtful, as the majority of commuters travel (mainly to London) from choice and a large percentage have, in fact, moved to this area for the advantages of living in a pleasant coastal area whilst working in London.

6. **Para. 3.1**

As stated in para. 3 above, the Committee feel that the supposition that existing facilities and services could suffice until 1981 is not valid, and any plan based on this assumption would lead to heavy overcrowding of facilities to the detriment of the present and future population.

7. **Para. 3.3**

As the present Development Plan targets take no account of even the suggested 105,000 population increase, it appears that there is little likelihood of this number being accommodated by 1981 without additional resources being used.

8. **Para. 3.7 (b)**

The suggestion that 2,350 "over 65 years of age" households will be "pressurised" from the area poses the problem of their re-location. To leave them to move and to find alternative accommodation without any assistance or recompense would be repugnant to the general public.

9. **Para. 3.13**

The suggestion that 85,000 persons associated with the airport can be counted as accommodated without additional building or the provision of further services, relies on so many assumptions that the Committee cannot consider it valid.

10. **Para. 3.15**

No evidence is produced to justify the statement that "in practice since the 1961 Census the population of Southend has little changed". This is open to doubt as the evidence to be given by Southend-on-Sea CBC states that approximately 5,000 new houses have been built in this period.

11. **Paras. 3.19 to 3.24: Urbanisation and town form**

As para. 3.24 states that the suggested form is nothing more than an academic exercise and is untested, it is not considered worthy of comment or criticism at this stage.

12. **Para. 4.2**

(a) The bald statement that only one hospital (Shoeburyness) is "affected" by noise does not agree with Mr. Fleming's evidence—given in table NF4 of his statement—that four hospitals will suffer noise nuisance.

13. **Para. 5.5**

It should be pointed out that as far as is known:

(a) There is no prohibition on entry and access to the Crouch.

(b) Prohibitive control is only exerted for limited periods of the day and does not extend over weekends or Bank Holidays.

14. **Para. 5.6**

It must be pointed out that Thorpe Bay Yacht Club and Thorpe Bay Golf Course lie within the 35 NNI contour line as defined by Mr. Fleming.

15. **Para. 6.1**

Reference to any nautical charts will show the absurdity of the statement that Maplin Sands and Foulness Sands are "covered to a depth of about one fathom at normal high tide" as stated by Mr. Jennings Smith, and cannot but cast doubt on the validity of other evidence in this statement and the conclusions drawn therefrom.

16. **Para 6.7**

Whilst the definition of a "village" may be open to individual interpretation, the inhabitants of Paglesham, Little Wakering, Barling and Churchend—amongst whom are many supporters of this Committee—certainly consider their villages to be worthy of the description and object to the statement that there are only two villages (Great Wakering and Canewdon) within the area in which they are sited.

17. **Para. 7.3**

If Professor C. Buchanan's figure of £3,000 per head for infrastructure costs can be quoted for figures of "savings", it can also be quoted for costs. Allowing for the 85,000 people "saved" by Mr. Jennings Smith's calculations, the remainder of the total population

Printed image digitised by the University of Southampton Library Digitisation Unit

growth forecast in figure 1 of his statement (392,000 less 85,000 = 307,000) will require a capital expenditure of £921,000,000 by 1996. On Mr. Jennings Smith's assumption that only 26,000 of the 307,000 will be catered for by 1981, this leaves a balance of over £850,000,000 to be expended between 1981-96, which is an average annual expenditure of over £50,000,000.

18. **Para. 7.4**

The Committee is unable to verify Mr. Jennings Smith's comparative statement of populations affected by Southend airport and the proposed Foulness airport. However, his figures for Foulness are based on certain assumptions which are implicit in the Commission's proposals and which may not prove applicable.

ADDENDUM

May I please draw attention to the incorrect conclusions drawn by Mr. Jennings Smith from his amendment to para. 4.2 to his statement of evidence which was issued at today's hearing.

The correct conclusions are:

		Population affected by		
NNI contour range		Foulness	Southend	Difference
	35-45	52,400	24,000	28,400
above	45	6,870	6,330	440

Total number of *additional* people affected by an airport at Foulness 28,840

Therefore, even according to Mr. Jennings Smith's own estimation a total of 59,270 people will be affected by noise down to the 35 NNI contour.

Reply by Mr. D. Jennings Smith

Para. 1.3

This and the next paragraph summarise the local economic effects of the airport wherever it is located.

Para. 1.5

The forecast population growth for the South-East *does* include population associated with the airport. The forecasts are based on a continuation of the existing trends in the region; these already include the growth of airports.

Para. 1.10

It is the first residents that are discussed in this paragraph. It would be easier and cheaper for some of the services needed to be provided by gradual extension of existing provision than to have to embark on major new schemes in all fields in the early years. Many commercial services such as shops, cinemas and theatres are able immediately to cater for increased demand.

The main point of this section (paras. 1.8 to 1.11) is that in the long run, a new population of the numbers envisaged would eventually allow the provision of new services, to benefit both the existing and new population, which the existing population alone could not support.

Para. 2.2

The lack of "direct Heathrow evidence" (para. 2.13) refers to relative absence of research into the question and not to an absence of industry. The main work on Heathrow is an unpublished thesis by Peter Smith (for MPhil. at LSE). This indicates that much industry in the Slough and Brentford area now makes great use of air freighting facilities and relies on its close proximity to the airport. But this evidence is not sufficiently "direct" for use here because it is not quantified.

As mentioned in para. 2.14 work on American airports also indicates the attraction of an airport for industry (the figures of 10-70,000 employees relating to existing airports are from pages 141-2 of Hammer & Co.'s *Economic Effects of a New Major Airport, New Jersey*, 1961). The urbanisation form suggested includes industrial and recreational facilities as well as residential.

Paras. 2.22 and 2.24

Most commuters travel to London not because they enjoy travelling as such but because London has a wider range of jobs, with higher wages, than can be found in South Essex. If the airport with its associated development came to South Essex a much larger choice of work would be available and this, together with the shorter journey, would undoubtedly attract some of those now travelling to work elsewhere. The time, money and energy thus saved on travel would be a positive benefit.

Paras. 3.1 and 3.3

The "absorption" of population up to 1981 relates to dwellings and/or people already existing or planned for. Thus no more services would be required than those provided for in existing plans.

Para. 3.7

This is a statistical exercise. What is assumed is that fewer new separate households will be established over a period of time by retired people. The economic and social conditions that have encouraged this to happen in the area in the past are likely to change. There is no question of existing householders being "pressurised".

Para. 3.13

Any plan or forecast has to be based on assumptions about the future. This does not mean that the attempt to make such a plan is not "valid". The justification for the figures given are contained in the evidence and I believe if anything they are on the conservative side.

Para. 3.15

The increase in *population* of Southend County Borough between the 1961 and 1966 Censuses was only 1,657 people (about 1 per cent) and in my view justifies the statement that during this period the population has "little changed".

Paras. 3.19 to 3.24

No comment.

Para. 4.2

This paragraph is about the NNI contours "as described by Mr. Fleming" which relate to 35 NNI and

Printed image digitised by the University of Southampton Library Digitisation Unit

above. Mr. Fleming's table NF4 shows that only the Shoebury hospital is affected by noise above 35 NNI.

Para. 5.5

This paragraph clearly relates to restrictions "seaward from the Crouch".

Para. 5.6

The Commission defines noise over 45 NNI as "annoying". These clubs are outside this contour.

Para. 6.1

The evidence describes the depth as "about 1 fathom" and is intended as a general indication of conditions.

Para. 6.2

I accept that there are other smaller settlements in the area than those named.

Para. 7.3

The point made is simply that there will be a very great saving in cost if the airport is located near an existing urbanised area instead of in a mainly rural area.

Para. 7.4

Above 45 NNI the existing Southend airport affects 6,330 persons (see para. 4.3). In accordance with the contours calculated by Mr. Fleming for Foulness four-runway airport based on flight paths as amended by Mr. Dunford, there would be virtually no population within the 45 contour and upwards.

F. Evidence of Mr. G. I. W. Dunford*

1. **Para. 1.7**

(a) The Committee is not in possession of any evidence relating to the numbers and routings of plane flight paths which have produced the large "thumb"-like NNI contours to the north of Southend on the Commission's drawing CTLA 1/3. Following a study, it concluded tentatively that the majority of aircraft, apart from those routing on to airway Green One Eastbound, were likely to turn right as soon as is acceptable after take-off.

(b) If this is so, then Mr. Dunford's statement that the forecast 12 per cent of aircraft joining Red One Eastbound produced the "thumb" is misleading.

2. **Para. 1.8**

Any proposals to change the flight take-off path so that aircraft fly around the Thames Estuary and cross North over Thames Haven, Canvey, Benfleet and Leigh, will alter NNI contours considerably and would obviously have some effect on large numbers of people outside the range of those closely affected by the plans at present proposed by the Commission. These would require further detailed study and deserve maximum publicity.

3. **Para. 1.10**

Any proposal to turn aircraft taking off as close to the runways as is suggested by Mr. Dunford must be studied carefully, with fully laden supersonic and "jumbo" jets in mind.

4. **Para. 2.1**

It is of interest to note that Mr. Dunford considers that Southend airport could continue to operate on a limited basis if the third London airport was established at Foulness. If the airport did continue, then the employment, housing and development plans suggested by the Essex County Council Planner would require drastic revision.

5. **Paras. 4.1 and 4.2**

The statement that final approach and initial departure will be carried out over water, thus increasing safety, must be qualified in view of the fact that both Foulness Sands and Maplin Sands are exposed at low tide and in the case of the runways close to the shore-line, there will be no appreciable depth of water for approx. 50 per cent of the time.

In fact, the changing levels of depth of water on these very critical stages of flight, will add to the hazards and costs of the scheme, as arrangements will have to be made to deal with crashes in the water, on exposed sand and also at intermediate stages of tide when neither normal water-borne craft nor land vehicles will be able to travel over the differing depths of water.

Reply by Mr. G. I. W. Dunford

1. **1.7.A**

The "thumb-like" contour was produced by traffic departing to join Airway Red 1 to the east and west, Airway Amber 1 to the north-west and also Green 1 to the west. The remainder of the traffic, and incidentally a high proportion of the total, would route out to the south to join Green 1 eastbound and Amber 1 to the continent.

2. **1.7.B**

This statement is difficult to relate to my evidence, what I think is overlooked is that I said that if a turn soon after take-off had to be introduced only that traffic routing to join Red 1 eastbound would use it—this gives the figure of 12 per cent.

1.8

No comment.

3. **1.10.**

The traffic referred to in "B" above would not normally be of these types, however, there is no reason to suppose that these types of aircraft could not carry out this procedure.

4. No comment. For Mr. Jennings Smith to answer.

5. As I said in evidence, I believe that the reclamation necessary to build the airport would change this and that there would be water on the approaches at all times. The question of crash rescue from a mixed sea/sand surface does of course lend itself to the use of hovercraft and could therefore mean that rescue operations would be far more efficient.

* p. 27.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Clacton Urban District Council*

1. Geographical relationship and size

The Urban District of Clacton is situated within an area of the County of Essex which is commonly referred to as the Harwich peninsula. This lies between the rivers Colne and Stour and to the east of Colchester. The Urban District has an area of 6,807 acres and is bounded on the north-east by the Urban District of Frinton and Walton, on the north by the parish of Little Clacton and on the west by the parish of St. Osyth: these two parishes forming part of the Tendring Rural District, and on the south-east by the North Sea. The Registrar General's estimate of the population of the Urban District in June 1968 is 35,130.

The distance from the end of the most northerly of the runways on the suggested Foulness (off-shore) site to the nearest point within the Urban District is approximately 12¾ miles.

2. General views on the siting of the third London airport

Whilst the Council do not have very strong views on the matter, they are generally of the opinion that an inland site for the third London airport should not be supported on the grounds that—

(a) there would be considerable nuisance to the inhabitants of the area by reason of noise and general disturbance arising from aircraft movements, and

(b) that a very large loss of good agricultural land would be involved.

They feel that the effect of these two main disadvantages would be reduced if a coastal site were selected and that, in particular, an off-shore site with the runways so aligned as to enable aircraft both to approach and leave from over the sea, would cause even less disturbance and nuisance from noise.

3. Specific views on the Foulness (off-shore) site

As the Foulness (off-shore) site satisfies these general considerations, the Council have, in principle, no objection to it. They are, however, deeply concerned about the alignment of the runways.

The probable NNI contours for the airport at the full capacity of two runways and four runways based on a runway alignment of 40° east of north (grid) as shown on plans CTLA 1/2 and CTLA 1/3 accompanying the recently published *Site Information** have been carefully studied and, in relation to the Urban District of Clacton, are considered to be acceptable. It is observed, however, that in para. 6 of the published *Site Information* under the heading "Runway Alignment", it is stated that "the Commission recognises that changes to this particular alignment may be justified as a result of further work and evidence".

On the present alignment, the shortest distance between the Urban District boundary and the 40 NNI contour is only 2 miles. If, therefore, the present angle of 40° east of north were to be reduced by even a comparatively minor amount so that the alignment would be more nearly north/south, not only would a part of the Urban District lie within the 40 NNI contour, but almost certainly—particularly with very much larger aircraft likely then to be in service—the flight paths would be directly over the centre of the town. The Council accordingly would strongly resist any proposal to re-align the runways on a more north/south axis.

4. Stacking of aircraft

Whilst the principal advantage of an off-shore site is undoubtedly the opportunity it affords to secure that aircraft movements are, in general, over the sea rather than over the land, it also offers the possibility of arranging for aircraft, at times of great activity, to be stacked over the sea and thus eliminate the possibility of noise nuisance. Whilst this is possibly not a matter which can be dealt with by the Commission at this stage, the Council urge most strongly that, if the Foulness (off-shore) site should eventually be adopted for development as the third London airport, the government should be pressed to require, by legislation if necessary, that all stacking areas for the airport are sited over the sea and at such distance from the coast as to ensure that nuisance from noise cannot arise.

Town Hall
Clacton-on-Sea
17th April 1969

* See also p. 390.

* *See attached wallet of maps and diagrams.*

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

by

Thorpe West Residents Association
Port of London Authority
Royal Burnham Yacht Club
Leigh-on-Sea Shellfish Merchants' Association
Mr. J. H. Bryant
Mr. F. G. Williams
Southend-on-Sea and District Chamber of Trade and Industry
Working Mens Club and Institute Union Ltd.
Sheppey Group (*Mr. R. J. Patrick, Mrs. M. Boston, Capt. P. Wilks, Mr. W. L. Newman, and Mr. B. F. Hawkes*)
Amalgamated Union of Engineering and Foundry Workers

Witnesses were examined on this evidence
on Day Five, Tuesday 13 May 1969
see pages 411-450

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Thorpe West Residents' Association*

The Secretary
The Roskill Commission
Templar House
81-87 High Holborn
London W.C.1

Sir,

The following resolution of the committee of this Association was carried at a meeting held on Monday, 10 March 1969 and I am instructed to notify you accordingly:

"On behalf of the objectors in this area the committee of the Thorpe (West) Residents Association is unable to accept the arguments advanced in favour of building an airport in the Foulness/Maplin Sands area.

The committee gives notice that they propose to lodge objections before the Roskill Commission under the following headings:

(a) Noise Interference Level
(b) Loss on Rural Green Belt
(c) Short-term lack of Transport Facilities
(d) Overcrowding of Housing, School and Hospital Facilities
(e) Land Reclamation—Effect on Tides
(f) Change in character of Southend and S.E. Essex
(g) Limitation of Water Supply

In amplification of the headings enumerated above we would make the following brief comments:

(a) Noise interference level

As mentioned in the Commission's *Short List of Sites*† the reliability of the NNI index has been questioned. The index shewn in the plans published by the Commission is not acceptable as it now stands and the pattern can surely only worsen due to the anticipated heavier aircraft that must be expected to use the third London airport in the future.

It must be borne in mind that the County Borough of Southend-on-Sea is a heavily populated area and noise disturbance will be regarded as intolerable by a large number of people.

(b) Loss of rural green belt

Such an airport will necessitate large-scale development in an area which is, at present, largely devoted to agriculture and horticulture.

These industries have given the County Borough a pleasant hinterland and development of this land would deprive the large urban population of a very necessary amenity and would result in a total loss of "green belt" for many miles.

(c) Lack of transport facilities

The estimated working population of the Borough is in the region of 70,000 and of these some 20,000 commute to London. The railways are already running at maximum capacity during peak hours and it is difficult to see how they could cope with the additional traffic generated by the airport. For this reason the statement on page 8, para. 19, of the Commission *Site Report* is unacceptable even as an interim measure.

Similar criteria apply to vehicular traffic on the roads and the problem there will become earlier more apparent due to the traffic used in the construction of a site of this size.

(d) Overcrowding of local facilities

The rapid influx of a new residential population will put an intolerable strain on the housing, health and educational facilities of the area which are already considerably overburdened. It is not felt that the development of these services will keep pace with the needs of the increasing population.

(e) Tides and land reclamation

Flooding from the sea has not been unknown to this area in the past and residents in the localities which have been affected are now particularly concerned that little research seems to have been carried out on the tidal effects of a large scale reclamation of land in the Thames Estuary.

---

* See also p. 411.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. xv.

Printed image digitised by the University of Southampton Library Digitisation Unit

(f) **Change in the character of Southend and south east Essex**

The County Borough is a residential area in which many people have come to reside in order to enjoy the amenities of a quiet and healthy environment in such a popular coastal resort.

The close proximity of a major airport and the associated development can only result in a complete, and detrimental, change in the character of the area.

(g) **Limitation of water supply**

In the past planning permission for development has been restricted due to a lack of adequate water supply. The cost of bringing water for existing requirements is so great that the water rate is among the highest in the country. We are at a loss to understand how such a large scale development can be contemplated in such circumstances.

For the foregoing reasons the committee of this Association hereby makes formal application for leave to appear or be represented at the Stage 2 Hearing of the Commission's enquiry on the Foulness site.

Yours faithfully,

P. H. G. MACEY

Chairman, Thorpe (West) Residents Association

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Port of London Authority*

Noel Nahum Beryl Ordman, BSc, CEng., FICE, employed by the Port of London Authority as Director of Planning and Management Services, will say:

The PLA are the conservancy and navigation authority for the Thames and the Thames estuary and were established to administer, preserve and improve the Port of London. They have statutory powers and duties relating to conservancy, the control of works and for the protection and control of navigation in the River and the estuary.

The limits of the Port Authority are defined in the Port of London Act 1968 Schedule I and extend down both sides of the Thames at mean high water level to the seaward limit but do not include waters which are not for the time being within UK territorial waters. I submit a map† which shows the PLA seaward limit and the present limits of UK territorial waters.

2. The Port of London Act 1968 prohibits the construction of works and the dredging and removal of material from the bed and banks of the Thames within PLA limits without a licence from the PLA and this requirement would apply to the reclamation of the Maplin Sands. A licence issued by the PLA authorises interference with the public right of navigation.

3. Before granting a works licence or not resisting an application to Parliament for express statutory authorisation for works at the Maplin Sands, the Authority must be satisfied that the proposed works will not have a deleterious effect on the regime of the Estuary or interfere with navigation. These matters will need detailed examination, probably involving the construction of an hydraulic model. This examination is in hand and evidence will be available for the Stage III study. Subject to further examination, however, the Authority consider that the reclamation can be carried out in a way which will be acceptable and that the operation of a major airport would be unlikely to interfere with the public right of navigation.

4. Abundant suitable material for reclamation could be obtained by dredging in the Estuary so as to deepen the navigational channels. This has led to the view that the reclamation of the Maplin Sands could provide an area of land suitable and adequate not only for a major airport but also a deep-water port and an industrial complex. As the Port Authority we see a need for deep-water port facilities in the Thames Estuary within the next few years and such facilities should logically be accompanied by an associated industrial development. It would be in the national interest for a development of this nature to proceed.

5. The association of the third London airport with a deep-water port and an industrial complex obviously creates an entirely different cost/benefit balance than would obtain if the airport were considered on its own. This arises not only from the fact that the material for reclamation can be dredged so as to deepen the channels (themselves a valuable benefit) but also because the comprehensive development envisaged would enhance the benefits to be derived from expenditure on road and rail links to the site and on other services.

6. A comprehensive development of this nature requires a major planning effort. In order to carry out this planning, the PLA, have joined with Southend Corporation, John Howard & Company Limited, John Mowlem & Company Limited, and London & Thames Haven Oil Wharves Limited in a consortium known as the Thames Estuary Development Company Limited.

* See also p. 419.

† Not reprinted. Copies available from the Director of Engineering, Port of London Authority, Trinity Square, London E.C.3.

Evidence of the Royal Burnham Yacht Club*

In principle the Royal Burnham Yacht Club is not in opposition to the siting of the airport at Foulness provided the following points are met:

1. The effect of reclaiming 8,000 acres of the Maplin Sands to be carefully studied to ensure that it will not be detrimental to the existing navigable channels and approaches to the River Crouch.

2. In siting the deepwater and unloading facilities on the north and west shore of Foulness Island, the restriction of navigable waters be kept to a minimum.

3. Any necessary approach bridges over the River Crouch or River Roach be sited as far as possible upstream to allow maximum navigable waters.

G. C. PADDISON

Secretary

* See also p. 422.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Leigh-on-Sea Shellfish Merchants' Association*

The members of the Association are engaged in the gathering of cockles in the Thames Estuary. The main source of supply is on the Maplin Sands itself and this is, in fact, the only reliable source of supply in the area. Cockle-gathering takes place 12 months of the year and is a local industry centred at Leigh-on-Sea.

Should the proposed airport be built at Foulness the Maplin Sands would be destroyed, thus killing a local industry which has been in operation for at least 150 years, if not longer.

Due to the recent introduction of mechanisation an increased turnover is obtained by employing the same number of people.

The present demand for cockles is so great that the supply from this country is unable to meet the demand and importation from abroad is necessary. Should these grounds be destroyed, imports would rise steeply as Leigh-on-Sea is the main cockling area in Great Britain holding many advantages including its proximity to London and the Billingsgate fish market.

The proposed siting of the airport would destroy a complete way of life for many people and the cockles are, in fact, a local attraction, having a nation-wide fame. This would probably have some effect on tourism in the area and on trade in general resulting from the people attracted by the cockles.

The general effect would be loss of employment for people, the loss of usefulness of boats and their resulting sale at a loss, the loss of usefulness of the mechanised equipment and the resulting difficulty of sale and all the general losses involved in an upheaval of this nature.

Details of boats owned by the members of the Association, statements of the finance involved, periods of service, etc., follow.

STATEMENT OF MR. E. F. DENCH AND MR. A. J. DENCH

We Edmund Francis Dench and Arthur John Dench carry on business as Dench Brothers (formerly A. J. Dench & Sons.

We have been engaged in cockling for 50 years. The firm was founded in 1918. We have one boat the value of which is estimated at £5,000. We hope to instal mechanisation in April 1969. We employ two men.

STATEMENT OF MR. E. A. M. OSBORNE AND MR. H. D. H. OSBORNE

We Eric Alfred Mayne Osborne and Horace David Herbert Osborne carry on business as C. & A. Osborne.

We have been engaged in cockling for 38-40 years. The firm was founded in 1931. We have one boat the value of which is estimated at £7,500. We installed mechanisation in April 1969. We employ six men.

STATEMENT OF MR. A. V. MEDDLE AND MR. S. G. MEDDLE

We, A. V. Meddle and S. G. Meddle carry on business as S. Meddle & Sons, Number 2 Cockle Shed.

We have been engaged in cockling for 30 years. The firm was founded in 1870 approximately. We have five boats the value of which is estimated at £10,000. We installed mechanisation in 1967. We employ 3 men.

STATEMENT OF MR. G. MEDDLE AND MR. H. J. MEDDLE

We, George Meddle and Herbert John Meddle carry on business as W. Meddle & Sons.

We have been engaged in cockling for 100 years. The firm was founded in 1879. We have one boat the value of which is estimated at £10,000. We hope to instal mechanisation in 1969. We employ 4 men.

STATEMENT OF MR. J. D. KNAPP

I am a fisherman based on Leigh-on-Sea and am self-employed, working alone for the most part, although at week-ends I do enlist the help of Brian Olley of 45 Bournemouth Park Road, Southend-on-Sea, and Malcolm Westmorland of 41 Stromness Road, Southend-on-Sea, on a part-time basis.

I have worked in this area as a fisherman all my working life, which is some eighteen years.

One of my main fishing grounds is the Maplin Sands in the area shown with horizontal hatching on the accompanying plan.*

During the summer months (mainly April to October) this is an area rich in fishing and is, in fact, my only source during these months. It is a feeding area for bass, mackerel, skate, tope, spur-dog fish and dog-fish. The bass and the mackerel feed on the white-bait found in the shallows on the edge of the sands and the skate feed on the cockles in the sands.

If the proposed airport is built on the Maplin Sands it will destroy the main feeding areas for these fish and thus deprive me of my livelihood. It is apparent that any radical alteration in the nature of the area will affect the

* See also p. 426.

* Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

feeding habits of the fish, particularly since it is proposed to dredge certain sand to the last of the Maplin Sands thus avoiding any possibility of new shallows where the fish would congregate, assuming their food to be there.

Apart from capital loss involved from the necessity to move to a new area in order to carry on fishing, the loss of this area would involve me in a [loss of] . . . income.

If I did not move to another area I would have to seek alternative employment in the vicinity which would almost certainly cause a reduction in income unless I were to undergo a specialised course of training in some other sphere, since I have worked as a fisherman all my working life and would require training for any other employment.

My boat is valued at £4,000, the sale of which would involve a considerable loss.

STATEMENT OF MR. F. L. JORDAN AND MR. J. LORD

We, Frederick Leonard Jordan and James Lord of 117 Pall Mall, Leigh-on-Sea, carry on business as Seafern Products.

We buy all raw material from Oceanfern, the use for which is mainly for Aquafern in Aquaria, but seafern is also sold. The only other centre is Germany. We export all over the world.

We also buy the processed article from Oceanfern. Our main export markets are:

USA	France
Italy	Switzerland
Canada	

80 per cent of our trade is in exports.

Aquafern is used for breeding tropical fish and we sell this all over this country as well as the exports.

STATEMENT OF MR. H. D. FORD, MR. G. A. FORD AND MR. S. T. FORD

We, Henry Daniel Ford, George Alfred Ford and Stephen Tony Ford carry on business as Leigh-Moss at 16 High Street, Leigh-on-Sea, Essex.

We have been engaged in the gathering of sea-moss and fishing for the past twenty years.

We gather Whiteweed on the edge of the Maplin Sands where we also fish, mainly for sole and plaice.

Whiteweed is processed by us and sold mainly in this country. It is used for decoration.

We have two boats, one operated by G. A. Ford and one by S. T. Ford. We fish and gather the moss and then process it ourselves.

It is necessary to use special machinery for the processing:

Galvanised tank
Two spin driers—value £25 each
Wringer—value £15
Racks—value £20
A spin drier only lasts one year.

The Maplin Sands area is the only area where one can rely on there being weed every year. the other side of the river (Ouse and Cant) is unreliable and one cannot be certain that the weed will grow in the same area two years running.

Boats valued at £2,000 and £1,500 respectively.

Whiteweed is gathered by used of dredges which are triangular rakes with teeth along the bottom. Cost of re-teething—£4 10s. 0d. Cost new—£7.

We need at least six or seven re-teethings per year and very often lose dredges by catching on weeds, etc.

STATEMENT OF MR. R. S. BROWN

I, Raymond Seymour Brown of 43-47 Leigh Hill, Leigh-on-Sea, Essex carry on business as Oceanfern Products Company and am engaged in collecting, processing and exportation of Whiteweed.

I own a boat myself valued at £900 and I also purchase Whiteweed from the following:

Leigh-Moss
Douglas Emery, Leigh Hill, Leigh-on-Sea
Anthony Wood, High Street, Leigh-on-Sea
Denis Brown, Pall Mall, Leigh-on-Sea.

My own collections and those from the above-named are approximately equal with approximately one-fifth of my supply being gathered by myself and one-fifth from each of the suppliers above mentioned, although Leigh-Moss is my main supplier.

The main area of collection is one the edge of the Maplin Sands and collection is by the use of rakes. I confirm the statement of Messrs. Ford insofar as it affects me.

My entire product is exported, mainly to the United States and Canada, where it is used for indoor horticulture decoration.

This year I am going on a sales campaign to the United States and I hope that this will increase my turnover.

If the Maplin Sands area is denied to me my business will probably be destroyed thus preventing me from carrying on a very profitable business which I have built up over the course of six years and losing a growing export market to this country which will probably be taken over by Germany.

Printed image digitised by the University of Southampton Library Digitisation Unit

BAXTER & SON LIMITED
Wholesale Fish Merchants

15-16 Billingsgate
London EC3

16th April 1969

Messrs. John R. C. Thatcher & Co
Victoria Chambers
44-46 Broadway
Leigh-on-Sea
Essex

Dear Sirs,

In reply to your letter concerning the proposed new Airport at Foulness and the effect this project would have on the cockle fishing in the area we can confirm that at certain times of the year the available supply of cockles in this country is insufficient to meet the demand and that additional quantities are imported from Holland.

Yours faithfully,

For and on Behalf,
Baxter & Son Ltd.,

W. BAXTER

Managing Director

R. BLOOMFIELD
Shellfish Merchants & Fish Salesmen
34 Fish Street Hill
London EC3

17th April, 1969

Dear Sirs,

Re: Proposed Airport–Foulness,

Please refer your No. DJS/JHT/K dated the 14th April and are glad to confirm that the present supply of cockles in this country, in fact, is insufficient and in consequence there is need for importation.

Yours faithfully,

S. S. RAKKAR

Secretary.

M/S John R. C. Thatcher & Co.
Leigh-on-Sea

Printed image digitised by the University of Southampton Library Digitisation Unit

L. HART

Wholesale Live and Jellied Eels and Shellfish

Office: Room 24
13 Lovat Lane
Billingsgate EC3
'Phone MANsion House 2163

Messrs. J. R. C. Thatcher & Co.
Leigh on Sea

Dear Sirs,

Re: Proposed Airport–Foulness

In reply to your letter of 14th April 1969. We would confirm that is our experience over a great many years that the supply of cockles produced in this country is insufficient to satisfy the demand and consequently there is always a need to import them to supplement the home production.

Yours faithfully

L. HART

H. J. PLUMB LTD.

Fish Salesmen

7-8-9 Billingsgate Buildings
London EC3

18 April 1969

Messrs. John R. C. Thatcher & Co.
44-6 Broadway
Leigh on Sea, Essex

Dear Sirs,

We thank you for your letter of the 14th instant, and in reply we can confirm that the present supply of cockles in this country is, in fact, insufficient and that in consequence there is need for importation.

Yours faithfully,

A. P. BONNER

Director.

Printed image digitised by the University of Southampton Library Digitisation Unit

C. WOMBWELL
Shellfish Merchants

31 Billingsgate Buildings,
Billingsgate
London EC3

17th April 1969

Dear Sirs,

Re: Proposed Airport–Foulness

Please refer your No. DIS/JHT/K dated the 14th April and are glad to confirm that the present supply of cockles in this country is, in fact, insufficient and in consequence there is a need for importation.

Yours faithfully,

S. S. RAKKAR

Secretary.

M/S John R. C. Thatcher & Co.
Leigh-on-Sea.

STATEMENT OF THE MINISTRY OF AGRICULTURE, FISHERIES AND FOOD

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
Whitehall Place, London SW1

16th April 1969

Dear Sir,

Third London Airport–Foulness Site

Further to your telephone calls regarding the effect of the siting of the Third London Airport at Foulness, I am forwarding as requested the official statistics etc. which will give some idea of the importance of the cockle industry which operates from Leigh-on-Sea.

In 1968 the total United Kingdom landings of cockles were 261,374 cwt and the value £182,215; of this the landings at Leigh-on-Sea accounted for 66,777 cwts. valued at £46,307. You will see from this that approximately 25 per cent of cockles by weight and value landed in this country are in fact from the Thames Estuary. The value in the Ministry's statistics in fact represents the amount of earnings by the gatherings of cockles and the gross value to the merchants who operate at Leigh-on-Sea must be much higher than this. This information is not available to the Ministry but I would certainly think that it is around £70,000-£75,000.

You also asked me if we imported any cockles. The answer to this is yes. Large quantities are imported from the continent for processing. Unfortunately there are no separate statistics as the Customs and Excise Department only shows shellfish under one heading. But I can confirm that the amounts imported are indeed very substantial.

The statistics quoted above have not yet been published but they will be appearing in this Ministry's Statistical Tables for 1968 in due course and I can confirm that they are absolutely accurate.

Yours faithfully,

W. R. T. MCGUINESS

John R. C. Thatcher, Esq.
Solicitor
44 Broadway
Leigh-on-Sea

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Mr. J. H. Bryant*

To The Hon. Mr. Justice Roskill
Commission on Third London Airport
Templar House, 81-87 High Holborn
London WC1

Dear Sir,

16th April, 1969

Foulness

My application to appear before the Commission is directed to the clarification of the significance of the noise and number contour map which has been published by the Commission, to whom I would put the following questions:

I Are the contours specific to Foulness? or can they be superimposed on maps of the alternate sites?

II Are they based on a constant flight path? e.g. say, from south to north?

III Are they based on a straight path of approach?

IV Have the "prevailing winds" been taken into consideration in compiling the contours?

V What is the assumed height of aircraft at southern extremity of outermost contour, i.e. over Sheerness?

VI Are the contours related in any way to the terrain?

VII On what grounds has Southend town centre been left out of the area of the "50" contour?

Thus, if the apex of the extension of this contour in a north westerly direction to Canewdon is joined to the apex of the westerly extension south of the town by a straight line practically the whole of Southend falls within the area where the noise level is classed as intrusive and annoying.

VIII Has the Commission seen any factual noise level contours which may have been obtained from readings of noise recording instruments in the vicinity of London Airport?

I am,

Gentleman,

Your Obedient Servant,

J. H. BRYANT

---

* See also p. 429.

J. H. Bryant,
42 Linton Road,
Shoeburyness,
Essex.

Submission to Roskill Commissioners

I John H. Bryant of 42 Linton Road, Shoeburyness, Civil Servant retired, have been resident in Southend-on-Sea since 1938, and of Shoeburyness in particular, since 1962.

From the inception of the idea of establishing an Airport on reclaimed land off Foulness I have with full knowledge of the difficulties and hazards involved, been in favour of the project as:

(a) Such a site must offer minimal nuisance from noise.
(b) There would be no loss of agricultural land to the Airport site (there might be an actual gain of grazing land).
(c) It would very probably bring great prosperity to South-East Essex.

Holding these views, and finding intense local opposition, based primarily on the noise nuisance factor, and not fully understanding the NNI contours myself.

I made submission to the Roskill Commission in the form of eight questions relating to the contours.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Southend-on-Sea and District Chamber of Trade and Industry*

This committee, which may be unique in its constitution, has been set up by the Southend Trades Council, representing the whole of the Trade Union movement in Southend and District, and the Southend-on-Sea and District Chamber of Trade and Industry, being one of the largest Chambers of Trade in the Country, and representing some 800 members in trade, professions and industry in Southend and District.

The committee was reconstituted some two years ago, with a view to looking into the proposals for developments at Maplin sands, the reclamation of land from the sea there, and the construction of a deep water harbour, and subsequently we also looked into the possibilities of the building of London's Third Airport on such reclaimed land.

We studied in detail the Europoort developments in Holland, and we produced a four page report, which was at the time (August 1967) circulated to all members of the Southend Borough Council, to all members of the Essex County Council, to members of Parliament immediately interested, to the National and to the Local Press. (A copy of this report is attached).

This Committee has given the proposed developments at Maplin Sands close and careful study over the past two years, and come to the unanimous conclusion that seen in relation to one another, the development of a deep water harbour and London's third airport in the same area, represents the best possible solution, economically, employment wise, and perhaps most important of all, because the noise nuisance at a site reclaimed from the sea, will affect a lesser proportion of the population than any other proposed airport site.

We would like to give the following statement to the Roskill Commission:

1. **Situation**

It should be said at once that in our deliberations we have studied only the plan submitted to the Commission by Bernard L. Clark & Partners. These would appear more detailed, and show a better proposed siting of the airport than any of the plans submitted by various consortia, and by the Roskill Commission itself, in that the airport is situated several miles out to sea from Foulness Island, and therefore the major objection to the airport itself will be reduced. Runway alignments are such that all incoming and outgoing flights will take place entirely over the sea, and departing aircraft will be in a position to turn eastwards before crossing the Kent Coast, thereby minimising nuisance in the Sheppey and Faversham areas.

2. **Runway alignments**

These as proposed in Bernard L. Clark & Partners' proposals are reported to be of a standard satisfactory to all airline operators. Prevailing winds being south-westerly, as confirmed in several enquiries held in connection with Southend Municipal Airport's various developments, the runway alignments in the plans submitted by this firm of Consultant Engineers, would appear ideal.

3. **Employment**

This area was said by Mr. Carr, the opposition's spokesman on labour relations in the House of Commons, to be "grey". That indicates a rate of unemployment higher than the national average. In addition it is only right to remind the Inspector that some 20,000 commuters are leaving Southend by train each day seeking their employment in London, and a very large number are employed on industrial estates at Rayleigh, Basildon, Thundersley, Chelmsford, and of course at the Ford Works at Dagenham. There is therefore employable labour in the Southend area for the immediate foreseeable future, and we feel that it will not be a question of a large influx of extra labour immediately. We consider that both the proposed airport and the deep sea harbour will be "low employment undertakings", and we do not think that the large air corporations will remove their service establishments from Heathrow in the very near future, as the cost of such removal will be considerable, and must be a gradual operation over several decades.

4. **Trade**

Southend is a fast developing light industrial and commercial centre, already a number of national firms have taken premises in the town, but there has always been, is and appears that there will remain a lack of interest in the encouragement of heavier types of industry to the area.

As a town, we produce £5,000,000 rates from private households, and only £500,000 from industry. This indicates a wrongly balanced rate income, and keeps the rate for private householders at an unfortunate high level. Larger rate income from trading undertakings and industry would alleviate the rate burden on the private householder.

The arrival in this area of industry ancillary to the airport and deep sea harbour projects, would rectify this imbalance, and produce an income whereby the town could provide better amenities for an increasing population. The amenities provided in this town have not been greatly improved in the last 30 years.

5. **Proximity to London**

It has been said that the Maplin Sands project leaves the airport too far from London. This expression is only a matter of terminology. The future will see means of transport twice as fast as the transport we now have.

For the immediate future, there is already a rail link straight into Foulness on the Fenchurch Street line. There are the A13 much improved highway into the town, there is also the dual carriage way A127, which at reasonable cost can be extended to full motorway standard, indeed plans to this purpose are already on the drawing boards with the divisional road engineer.

* See also p. 431.

Printed image digitised by the University of Southampton Library Digitisation Unit

For the latter part of the century, and following build up over the next decades of traffic, there are the proposed elevated road and rail system on three levels, the lowest of which will be at about 40 to 60 ft above ground, constructed of precast concrete sections and taking a minimum of valuable agricultural land, obviating costly legal tangles in connection with the appropriation of land, and allowing farming to continue underneath the road system, which will then not eat into the countryside as is the case with modern motorways.

One can foresee a rail system on par with that at present operating in Japan, with trains running at 130 mph, taking passengers into Central London in less than 25 minutes. This is as fast as airport-City Centre links anywhere in the world at present.

6. **Airport and sea port combined**

We see the proposed development as a combination of airport and seaport. It is appreciated that the Roskill Commission's terms of reference are so restricted that they exclude consideration of the seaport proposals.

The economical advantages of building both, and at the same time, are however, so considerable that we in this area must look upon the ideal solution as being one where both docks and airport can be constructed together.

By following Bernard L. Clark & Partners' proposals, the site for the airport will be some 14 to 16 miles from the centre of Southend, so far away that aircraft will hardly be seen on approach or take-off, and reducing the noise nuisance to a minimum, even under unfortunate wind conditions (i.e. easterly). The airport and the seaport would be complementary to one another, particularly since airfreight is increasing considerably, and one could foresee a free port in this area handling transit and re-exports, all within the same confined area. These free ports could have a high earning potential for the country. Its proximity to Europe might once again bring us into the reckoning so far as an international port system is concerned, a position which London is fast losing to Rotterdam, as published statistics will show.

7. **Amenities**

An increased population influx to this area, will necessitate improvements in amenities available in the town, and already the local authority have published intended plans for improvements to the whole of the seafront, the building of a marine village at Leigh-on-Sea, the possibilities of improving sailing and swimming facilities and provide these for 24 hours per day, there are new areas shown in the development plan for public open spaces, and parks, and it seems that the local authority have the future very much in mind when they consider the amenities of the town.

The developments that would follow the decision to place both the third airport and the deep seaport at Maplin Sands would be so vast, that it would be absolutely necessary to plan from the outset, the whole environmental circumstances. One would consider it necessary to develop industrially close to the airport and the harbour, with a gradual change to residential development via cultural, sports, and amenities developments. The Dutch example is one that we should follow, they do not apparently lay a brick before they have considered where they can plant a certain number of trees, and lay out public open spaces.

One must avoid the difficulties which have been caused in certain new towns, which have almost become ghost towns before they are shown on the map, and where public amenities are sadly lacking.

8. **Industrial developments**

This matter has been touched upon before in this statement, but it requires further elucidation.

If examples from the Continent can again be taken, it seems clear that industry moving into these vast developments are of a low employment nature, i.e. they employ a relatively small number of men and women, compared with the size of the industries, and the area occupied. One can think in terms of oil refineries, vehicle assembly works, chemical and plastics industry, export and re-export undertakings, and many others.

As such, although an intensive industrial development can be foreseen one should not in our opinion expect the figures quoted in the Roskill Commission's report to be valid in this century.

One must consider that London Airport at Heathrow will continue to develop and take a vast proportion of the travellers into and out of this coutry, that Gatwick will also continue to develop, and that Stansted will not be closed. Developments at Luton are going ahead at pace, and therefore it is unlikely that the aircraft maintenance industry will move all its facilities to Maplins, which we think will become essentially a transit airport. The staff thus required will be customs and excise officials, catering staff, airport operating personell, and in the dock area, highly skilled dock employees operating sophisticated, automatically controlled loading and unloading equipment.

The ancillary industries will be of an equally low employment nature, with other higher employment industries perhaps taking up new sites in the towns adjoining Southend, Rayleigh, Rochford, Wickford, Benfleet, Canvey Island, and even Basildon.

For an underemployed "grey" area, these prospects are viewed with some considerable expectation in this town, particularly by our Trade Union members, who have long strived for adequate employment for local workmen in this locality.

9. **National prestige**

It seems obvious that the new supersonic and jumbo jet types of aircraft due to come into service in the next ten years, will be uneconomical to operate over short distances. Therefore one can visualise that the aircraft operators will not wish to use them on a bus stop type of service through Europe, and the likelihood is that these large and fast aircraft will make only one or two stops in Europe, say London and Rome, or Paris and Athens, as they pass through Europe on the circumnavigational trips of the world. It is also likely that in future it may be illegal to operate supersonic aircraft at supersonic speeds over inhabited areas, and therefore a coastal site as proposed at Maplins will be the only possible operational airport for such aircraft.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Southend-on-Sea and District Chamber of Trade and Industry*

This committee, which may be unique in its constitution, has been set up by the Southend Trades Council, representing the whole of the Trade Union movement in Southend and District, and the Southend-on-Sea and District Chamber of Trade and Industry, being one of the largest Chambers of Trade in the Country, and representing some 800 members in trade, professions and industry in Southend and District.

The committee was reconstituted some two years ago, with a view to looking into the proposals for developments at Maplin sands, the reclamation of land from the sea there, and the construction of a deep water harbour, and subsequently we also looked into the possibilities of the building of London's Third Airport on such reclaimed land.

We studied in detail the Europoort developments in Holland, and we produced a four page report, which was at the time (August 1967) circulated to all members of the Southend Borough Council, to all members of the Essex County Council, to members of Parliament immediately interested, to the National and to the Local Press. (A copy of this report is attached).

This Committee has given the proposed developments at Maplin Sands close and careful study over the past two years, and come to the unanimous conclusion that seen in relation to one another, the development of a deep water harbour and London's third airport in the same area, represents the best possible solution, economically, employment wise, and perhaps most important of all, because the noise nuisance at a site reclaimed from the sea, will affect a lesser proportion of the population than any other proposed airport site.

We would like to give the following statement to the Roskill Commission:

1. **Situation**

It should be said at once that in our deliberations we have studied only the plan submitted to the Commission by Bernard L. Clark & Partners. These would appear more detailed, and show a better proposed siting of the airport than any of the plans submitted by various consortia, and by the Roskill Commission itself, in that the airport is situated several miles out to sea from Foulness Island, and therefore the major objection to the airport itself will be reduced. Runway alignments are such that all incoming and outgoing flights will take place entirely over the sea, and departing aircraft will be in a position to turn eastwards before crossing the Kent Coast, thereby minimising nuisance in the Sheppey and Faversham areas.

2. **Runway alignments**

These as proposed in Bernard L. Clark & Partners' proposals are reported to be of a standard satisfactory to all airline operators. Prevailing winds being south-westerly, as confirmed in several enquiries held in connection with Southend Municipal Airport's various developments, the runway alignments in the plans submitted by this firm of Consultant Engineers, would appear ideal.

3. **Employment**

This area was said by Mr. Carr, the opposition's spokesman on labour relations in the House of Commons, to be "grey". That indicates a rate of unemployment higher than the national average. In addition it is only right to remind the Inspector that some 20,000 commuters are leaving Southend by train each day seeking their employment in London, and a very large number are employed on industrial estates at Rayleigh, Basildon, Thundersley, Chelmsford, and of course at the Ford Works at Dagenham. There is therefore employable labour in the Southend area for the immediate foreseeable future, and we feel that it will not be a question of a large influx of extra labour immediately. We consider that both the proposed airport and the deep sea harbour will be "low employment undertakings", and we do not think that the large air corporations will remove their service establishments from Heathrow in the very near future, as the cost of such removal will be considerable, and must be a gradual operation over several decades.

4. **Trade**

Southend is a fast developing light industrial and commercial centre, already a number of national firms have taken premises in the town, but there has always been, is and appears that there will remain a lack of interest in the encouragement of heavier types of industry to the area.

As a town, we produce £5,000,000 rates from private households, and only £500,000 from industry. This indicates a wrongly balanced rate income, and keeps the rate for private householders at an unfortunate high level. Larger rate income from trading undertakings and industry would alleviate the rate burden on the private householder.

The arrival in this area of industry ancillary to the airport and deep sea harbour projects, would rectify this imbalance, and produce an income whereby the town could provide better amenities for an increasing population. The amenities provided in this town have not been greatly improved in the last 30 years.

5. **Proximity to London**

It has been said that the Maplin Sands project leaves the airport too far from London. This expression is only a matter of terminology. The future will see means of transport twice as fast as the transport we now have.

For the immediate future, there is already a rail link straight into Foulness on the Fenchurch Street line. There are the A13 much improved highway into the town, there is also the dual carriage way A127, which at reasonable cost can be extended to full motorway standard, indeed plans to this purpose are already on the drawing boards with the divisional road engineer.

* See also p. 431.

Printed image digitised by the University of Southampton Library Digitisation Unit

For the latter part of the century, and following build up over the next decades of traffic, there are the proposed elevated road and rail system on three levels, the lowest of which will be at about 40 to 60 ft above ground, constructed of precast concrete sections and taking a minimum of valuable agricultural land, obviating costly legal tangles in connection with the appropriation of land, and allowing farming to continue underneath the road system, which will then not eat into the countryside as is the case with modern motorways.

One can foresee a rail system on par with that at present operating in Japan, with trains running at 130 mph, taking passengers into Central London in less than 25 minutes. This is as fast as airport-City Centre links anywhere in the world at present.

6. **Airport and sea port combined**

We see the proposed development as a combination of airport and seaport. It is appreciated that the Roskill Commission's terms of reference are so restricted that they exclude consideration of the seaport proposals.

The economical advantages of building both, and at the same time, are however, so considerable that we in this area must look upon the ideal solution as being one where both docks and airport can be constructed together.

By following Bernard L. Clark & Partners' proposals, the site for the airport will be some 14 to 16 miles from the centre of Southend, so far away that aircraft will hardly be seen on approach or take-off, and reducing the noise nuisance to a minimum, even under unfortunate wind conditions (i.e. easterly). The airport and the seaport would be complementary to one another, particularly since airfreight is increasing considerably, and one could foresee a free port in this area handling transit and re-exports, all within the same confined area. These free ports could have a high earning potential for the country. Its proximity to Europe might once again bring us into the reckoning so far as an international port system is concerned, a position which London is fast losing to Rotterdam, as published statistics will show.

7. **Amenities**

An increased population influx to this area, will necessitate improvements in amenities available in the town, and already the local authority have published intended plans for improvements to the whole of the seafront, the building of a marine village at Leigh-on-Sea, the possibilities of improving sailing and swimming facilities and provide these for 24 hours per day, there are new areas shown in the development plan for public open spaces, and parks, and it seems that the local authority have the future very much in mind when they consider the amenities of the town.

The developments that would follow the decision to place both the third airport and the deep seaport at Maplin Sands would be so vast, that it would be absolutely necessary to plan from the outset, the whole environmental circumstances. One would consider it necessary to develop industrially close to the airport and the harbour, with a gradual change to residential development via cultural, sports, and amenities developments. The Dutch example is one that we should follow, they do not apparently lay a brick before they have considered where they can plant a certain number of trees, and lay out public open spaces.

One must avoid the difficulties which have been caused in certain new towns, which have almost become ghost towns before they are shown on the map, and where public amenities are sadly lacking.

8. **Industrial developments**

This matter has been touched upon before in this statement, but it requires further elucidation.

If examples from the Continent can again be taken, it seems clear that industry moving into these vast developments are of a low employment nature, i.e. they employ a relatively small number of men and women, compared with the size of the industries, and the area occupied. One can think in terms of oil refineries, vehicle assembly works, chemical and plastics industry, export and re-export undertakings, and many others.

As such, although an intensive industrial development can be foreseen one should not in our opinion expect the figures quoted in the Roskill Commission's report to be valid in this century.

One must consider that London Airport at Heathrow will continue to develop and take a vast proportion of the travellers into and out of this coutry, that Gatwick will also continue to develop, and that Stansted will not be closed. Developments at Luton are going ahead at pace, and therefore it is unlikely that the aircraft maintenance industry will move all its facilities to Maplins, which we think will become essentially a transit airport. The staff thus required will be customs and excise officials, catering staff, airport operating personell, and in the dock area, highly skilled dock employees operating sophisticated, automatically controlled loading and unloading equipment.

The ancillary industries will be of an equally low employment nature, with other higher employment industries perhaps taking up new sites in the towns adjoining Southend, Rayleigh, Rochford, Wickford, Benfleet, Canvey Island, and even Basildon.

For an underemployed "grey" area, these prospects are viewed with some considerable expectation in this town, particularly by our Trade Union members, who have long strived for adequate employment for local workmen in this locality.

9. **National prestige**

It seems obvious that the new supersonic and jumbo jet types of aircraft due to come into service in the next ten years, will be uneconomical to operate over short distances. Therefore one can visualise that the aircraft operators will not wish to use them on a bus stop type of service through Europe, and the likelihood is that these large and fast aircraft will make only one or two stops in Europe, say London and Rome, or Paris and Athens, as they pass through Europe on the circumnavigational trips of the world. It is also likely that in future it may be illegal to operate supersonic aircraft at supersonic speeds over inhabited areas, and therefore a coastal site as proposed at Maplins will be the only possible operational airport for such aircraft.

Printed image digitised by the University of Southampton Library Digitisation Unit

Such an airport will thus become a transit airport for small bus-stop type of aircraft operating shorthaul traffic, and the income by way of landing fees alone will be considerable, not to mention passenger embarkation fees.

An airport at Maplin could thus become the most important transcontinental airport in Europe, and the economical advantages must be considerable.

Conclusion

This committee having studied the implications of the proposed developments at Maplin Sands, have arrived at the conclusion that Southend-on-Sea in every possible way will gain considerably from the siting of the airport at Maplins.

However, in reaching this conclusion, we wish to reiterate, that a condition of the acceptance of the plans as suggested, must be that Bernard L. Clark & Partners' scheme be adopted, because this leaves the airport site a sufficiently great distance away from inhabited areas, to make the noise factor relatively unimportant, seen in relation to the overall advantages to be gained.

APPENDIX

A report of a study carried out by the Joint Action Committee of the Southend Trades Council and the Southend Chamber of Trade on the Europoort developments in Holland, and how these could affect the South-East of Essex in particular, and the United Kingdom in general if similar developments were carried out at Maplin Sands, and the hinterland behind

A detailed study of the Europoort developments over the last ten years has confirmed that there are few industrial developments anywhere in the world so wide in their implications, and so far reaching in their consequences for the economic growth of a country. The Dutch, and in this case that means the people of Rotterdam, because this is essentially a Municipal Development, have had the courage of their convictions, and have in a decade built a port suitable for the year 2000 and beyond.

In a period when London, known at some time in the distant past, as the leading seaport in the world, is declining in importance year by year, Rotterdam's Europoort has increased in importance and capacity manifold, and Europoort is today, without doubt, the most modern, up to date and busiest port in the world. Yet the people of Rotterdam are not complacent, they are not satisfied with the fact that their port today handles with ease the biggest ships afloat, they look to the future, and are at present dredging the North Sea approaches to their port, and the river itself, so that ships of 250,000 tons can be accommodated.

So far as the handling of oil cargoes are concerned, private interests have invested £141 mill. in the ten years that have passed since the first steps were taken to build this port, and companies like Shell Nederland, Esso Nederland, Gulf Oil, British Petroleum, Chevron (Caltex) and others are preparing plans for further expansion of their capacities, with larger refineries, new factories to be built to house a vastly increasing chemical industry which has followed in the wake of the oil.

Pipelines from the refineries string out in all directions for hundreds of miles into the country behind Rotterdam, into Holland itself, to Western Germany, to Belgium and Northern France, an area already known as the most intensely developed industrial area in Europe, second only to the vast industrial centres in the USA.

Oil then is already a factor to be reckoned with in Europoort, and makes up for over 50 per cent of the total cargo discharged in the port, but Rotterdam's leading men, under their determined Bergomaster Thomassen, are poised also to catch the future growth of container transportation, and to this end their links across Europe have already established contact in Italy, to which they dispatch by express container trains cargoes unloaded in Rotterdam.

Present-day container ships are of a tonnage of approximately 17,000, but ships of double this size are on the stocks, and on the order books, and container routes linking Gothenburg, Hamburg, Bremen and Rotterdam (note *not* London) with New York, Baltimore and Norfolk were started some years ago, and it is significant that Cunard have joined with Swedish Dutch and French interests to develop this very important means of freighting.

It has been established from recent experience that these container ships can turn round at Rotterdam in 24 hours, a fantastic improvement on the turn round time in conventional ports, but then a container port is a vastly different concept of port facility to those we know from the past. First and foremost it should be said that no old port or dock can be "converted" to a Container Port. An effort has been made at Tilbury, but it can only be a feeble effort, because inadequate land and water is available.

A container port requires vast quaysides, for the handling of the containers and the sorting and storing of them, warehousing as it is now known will become less and less important, for the containers will be on their way by road or rail without having to be stored for any length of time on the dock side. Rotterdam expect to handle 20 mill. tons of containerised cargo this year, more than the total of all cargo handled only a few years ago.

A ship does not earn its owners or charterers anything whilst it is laid up in a port, quick turnrounds will become the order of the day, and within a couple of decades it is expected that the vast majority of all cargo shipments will be containerised, perhaps 85 to 90 per cent of the total.

The Dutch have seen this possibility and have developed near Europoort a special container port, with modern lifting devices, ample handling and stacking facilities, and what is equally important modern road and rail connections right into the heart of dockland.

Rotterdam's position at the mouth of the River Rhine is obviously a geographical asset which the Dutch have used to its fullest advantage. Cargoes are transhipped from ocean going liners to barges, for shipment into the heart of Europe, even as far as Switzerland.

There is now talk of importing ore, from as far afield as Australia. The new larger ore carriers make this an economic proposition, and in the Ruhr they can do with

Printed image digitised by the University of Southampton Library Digitisation Unit

vast quantities year by year. The ores can be transhipped into barges and smaller vessels in Rotterdam and be sent into the heart of industrial Europe. Rotterdam will in this case take much trade from Antwerp, because there are not the same possibilities for expansion in Antwerp to take the large vessels which are now coming into service.

But they have even more modern methods of "transhipment" of ore in mind. It can be ground to a fine slurry in Rotterdam and piped to the industrial centres, much as oil is piped now.

It is perfectly clear that the people of Rotterdam have their eyes set squarely on the major proportion of all freight and cargo handled in Europe. Already the largest port in the world, they are not satisfied, but are setting themselves new and greater targets, and no one can predict today what the future will bring. Already a previous high estimate of 170 mill. tons of cargo per annum by 1970 has been superseded by a new estimate of 200 mill. tons. There has been an increase from 83 mill. tons in 1960 to 140 mill. tons in 1967.

Not only do they, however, cater for oil tankers, ore carriers or container ships, facilities are being developed for cruise liners, hovercraft, hydrofoils and ferries of all kinds, including the roll-on roll-off ferries already in service across the Channel.

To the people of Rotterdam the almost complete destruction of their harbours in the last war, may indeed have been a blessing in disguise.

The whole of this development has been to the seaward side of Rotterdam, towards the mouth of the river, and reaching as far as Hook of Holland. Where the river is being dredged to accomodate the 250,000 tonners of the future, the dredged sands are being placed strategically in reclamation areas, where industrial development is going ahead at pace. The rateable value has increased beyond one's wildest dreams, and to quote the *Financial Times*:

> "For every acre of land turned into an industrial site in the port area we can guarantee £45,000 worth of added production value each year, and the State will get at least 25 per cent of this in tax."

Holland is the most densely populated of the European countries, and concern is being shown about overdevelopment of this area. On the other hand there are good arguments in favour of further expansion, particularly into reclamation areas, where tens of thousands of acres are being added to the country year by year, and where industrial development is possible.

Both trends of thought are being eagerly discussed in Rotterdam and throughout Holland, and no doubt the Dutch, businesslike as they are, will find a solution that will add to their already considerable wealth.

Three hundred different shipping lines use the port for general cargo shipments totalling 13,000 sailings per annum. In the 12 months period to December 1967 30,000 ships in all called at Rotterdam.

The development has been absolutely free of labour disputes, in fact there has not been a single strike in Rotterdam's harbours since the end of the war.

Europoort covers and area of 15,000 acres at present, of which 5,000 acres are waterways, the remaining 10,000 acres are available for development.

I.C.I. have a vast expansion programme within the port area, and this highlights the importance which the Dutch have been putting on a varied industrial development programme, so that the whole area shall not become hit on a future occasion when there may be a recession in a particular kind of trade.

It was interesting to note that the presence of military installations and establishments on the south bank of the river did not stop the people of Rotterdam in furthering this project.

Conclusion

Where then does this leave us here in the south-east corner of Essex, where so much has been said, and so little done, about our own facilities, and about the proposed development of Maplin Sands in a similar way.

First of all, let us agree that the land is available, and so are the sands which can be reclaimed.

Let us also agree that we have in our midst some of the finest naval architects and some of the world's leading development contracting firms, with experience of port, harbour, and indeed airport development from all corners of the globe.

They are all men of integrity and know-how, who have already convinced many of us that here, to the east of Southend-on-Sea, lies some of the wealth that was previously concentrated in the London docks.

Let us also agree that the decline of London docks will continue, it is an established fact that the docks are old fashioned, some indeed have been closed, larger ships of the size that are now coming into service cannot even enter the river, let alone the docks.

Let us also agree that the time wasting procedure of waiting for high tide before ships can enter the docks, is something of the past, and is something that owners and charterers cannot afford, and leads to unnecessary increases in cost of transportation.

Let us also agree that with the advent of container ships we must too preserve our own future, and that of those who come after us, start to build container ports now. We must stop *thinking* about building them, and start *building*.

The greatest calamity that could overtake this country would surely be to find all our raw materials, all our imported food stuffs, all our oil, having to be transhipped into smaller vessels in Rotterdam for onward shipment to the U.K.

We cannot, obviously, ever again hope to compete with Rotterdam as the world's leading seaport. No matter which way we look at it, a port on the Maplin Sands will only be a port essentially for the 60 mill. or so population on these islands, whereas Rotterdam will be the central port of the whole of the Central European Community adding up to perhaps 200 million people. Even so there is much to be gained by going in now, and much to be lost by continuing to play the waiting game.

Printed image digitised by the University of Southampton Library Digitisation Unit

In this report we have purposely disregarded the suggested development of parts of the Maplin Sands area as London's third major airport. It is understood that an enquiry is to be held into the siting of this airport, and that the final conclusion of the enquiry may not be known for some two or three years. Even then it is by no means certain that Maplin Sands will be chosen as the ultimate ideal site.

Irrespective of whether London's third airport is to be sited at Maplin Sands, and this committee feels that there are many good reasons why it should be, we feel that the development of the port facilities *must be given priority*, if we are not to continue a decline into becoming a second-class nation, dependent upon our neighbours across the Channel for our future needs.

We urge the Essex County Council and the Southend Borough Council who have set up a committee to discuss the future development of the South-East of Essex, to seriously consider the economic implications of the development of modern port facilities, to the whole of the region, and members of this Joint Committee would be pleased to have the opportunity to serve on the committee set up by the two local authorities.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Working Men's Club and Institute Union Ltd.*

The Working Men's Club and Institute Union Limited, whose registered office is situate at 251-256 Upper Street, London N1, is a society registered under the Industrial & Provident Societies Acts 1965-1968. The Union was founded in 1862 and is a Union of Working Men's and Social Clubs, the objects of such clubs being to afford to members the means of social intercourse, mutual helpfulness, mental and moral im provement and rational recreation.

The Union is neutral in matters of politics and religion and open for membership to any bona fide members' club. It is supported and governed by such clubs as are members. The present membership of the Union is 3,924 clubs and the total membership of such clubs is upwards of 3,000,000 persons.

One of the activities of the Union is to provide convalescence for clubmen recovering from illness or accident and the Union has at present Convalescent Homes at Pegwell Bay, Ramsgate, Kent; at Saltburn on the north-east coast of Yorkshire; at Grange-over-Sands in Lancashire; and at Langland Bay on the Mumbles coast in South Wales.

The Union's Convalescent Home at Pegwell Bay was acquired in 1894 and has been in continuous use (except for a period during the Second World War when it was used by the military authorities) since August 1894.

When the proposal to construct the hoverport at Pegwell Bay was first proposed, the Union objected to such proposal. The main ground for the objection was that the peace for which the convalescent home is known throughout the country would be irrevocably lost due to noise from the proposed hovercraft and in his conclusions the Minister's Inspector stated that the only point to cause concern during the noise test was at the Pegwell Convalescent Home were the noise level was higher than elsewhere. Thus it will be seen that the Union's concern was well founded.

When the Union returned to Pegwell after the Second World War some nuisance by noise was experienced from aircraft using the Manston airfield which is in close proximity to the Convalescent Home. After meetings with the Officer Commanding the station, orders were given that the flight paths of aircraft using the station should be so sited as to cause the minimum of nuisance to the residents at the home.

The Union, having given the matter of the continued use of the Pegwell Home careful consideration, decided that in the interests of Convalescent clubmen, a new home should be constructed on the Kent coast and after visiting many sites the Union ultimately purchased some four acres of land in Reading Street, Broadstairs St. Peters (as shewn on the plan attached hereto*) at a cost of £41,500. The property was purchased at auction in October 1967 and the completion of the purchase took place in January 1968. A convalescent home to house approximately 80-100 clubmen has been designed by the Union's architects and the contract for the construction of the new home, at a cost in excess of £250,000, was signed in February last, and construction commenced on the 1st March.

Many factors were taken into account in reaching the decision to acquire the land at Broadstairs and among these was the factor that the surrounding countryside had recently been designated as an area of special scenic amenity and further that there was little likelihood of disturbance to convalescents from excessive noise.

As will be realised the project of building a new convalescent home at Broadstairs is a major project for the Union and such project was entered into solely to provide the necessary convalescence for clubmen. Residents attending the convalescent home are not required to make any contribution, the clubs of which they are a member are required to make a contribution towards the cost of providing the convalescences, the balance being provided from Union funds.

While, of course, the Union fully appreciates the necessity for a third London airport, they are deeply concerned that the peace and tranquillity of the new site at Broadstairs will be disturbed by aircraft noise especially from transcontinental jet aircraft such as will use the proposed airport not only during the approach to and the leaving therefrom, but also during "stacking" of aircraft while awaiting landing instructions, and it is felt that such a high noise level as is bound to occur will not be conducive to good convalescence.

* See also p. 434.

* Not reproduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Sheppey Group

SUBMITTED BY MR. R. J. PATRICK*

1. I am an Honours Bachelor of Science in Physics and an Associate of the Institute of Physics. I am a Senior Systems Engineer for Elliott Flight Automation Limited at Rochester where I have worked for just under five years. My work primarily is in research and development of Automatic Test Equipment for military aircraft avionics. I am a member of the Sittingbourne and Milton Urban District Council.

2. I have read the Roskill Commission's *Site Information*† and have, at the request of the Sheppey Group, made a study of the Wilson Committee report,‡ the report of the Stansted Public Enquiry and various other proposals put forward for the third London airport. I have not dealt before specifically with the drawing of noise and number index contours but my training and experience enable me to correlate the available information and have enabled me to draw up such lines. At the request of the Sheppey Group I have drawn up two plans marked RJP 1§ and RJP 2‖ with the noise and number index contour lines marked thereon as accurately as has been possible. The plans are primarily based on the contour lines drawn by the experts to the Roskill Commission and contained in the *Site Information*, and an assumption has been made that as far as they go they are as accurate as possible a representation of the operational arrangements at a Foulness airport. In extending these lines I should make it clear that there has been no other operational information available to me. My lines are drawn, however, by comparison with the position as it was at Heathrow in 1967 as indicated by the Board of Trade plan¶ which I also produce. For the purposes of the contour lines on my plans, I measured the distances between the noise contours on the Board of Trade plan and using the Roskill noise contours for Foulness starting from their 40 NNI contour I have extended those contour lines on my plan by a similar distance to that shown on the Board of Trade plan.

3. I have also seen the contour lines drawn on the plan produced by Professor Richards' Associate for the Kent County Council and these I understand are drawn on a mathematical progression basis although it is also understood that in drawing this plan there was again no operational information available. The lines on that plan show the most optimistically conceivable position of the lower NNI contours. They make the assumption that there would be a reduction of 10 in the noise and number index due to noise certification; an assumption also made in the Commission's contour lines. My own contour lines in plan RJP 1 also make this assumption while those in plan RJP 2 do not. Even allowing for this assumption the lines drawn on the Kent County Council plan, although theoretically possible, are not supported from a practical point of view by the evidence of the Heathrow lines shown on the Board of Trade plan.

4. In addition, in drawing these plans, I have assumed that the stacking areas would be located just north of Margate in the Thames Estuary and over the area in the region of Chelmsford and Maldon in Essex. The Essex and Hertfordshire County Councils proposals for an airport at Foulness show a stacking area over Margate. There seems to be no reason why this should not be moved north over the sea thereby removing one source of potential complaint. My assumption in respect of the Chelmsford/Maldon area is based on the proposals made by the Essex and Hertfordshire County Councils, and it appears to be the most suitable place for the north-western stack, being approximately perpendicular to the proposed runways and a convenient distance from the airport.

5. So far as flight paths are concerned, the Roskill Commission contour lines seem to be based on the flight paths as shown by the proposals of the two County Councils. I have, in extending these lines, for the lower contours, assumed that the flight paths will be those suggested by the County Councils.

6. As a result of the location of the stacking areas the aircraft on three tracks, the positions of which are marked L1, L2 and L3 are assumed to fly lower than might otherwise be the case to avoid interference with aircraft flying from the stacks to the end of the glide-paths, meaning in effect that these aircraft will have to fly lower than usual. I have assumed that the stacking areas will extend from 5,000 ft upwards. The aircraft at L1 passing underneath planes coming from the stack will be at approximately 3,000 ft to 3,500 ft, those at L2 will be between 4,000 ft and 4,500 ft because they are nearer to the stacking area and those at L3 will be between 2,000 ft and 2,500 ft because they are nearer the runway and hence aircraft from the stacking area will be coming down closer to the height at which they latch on the glide-slope beam.

7. It is to be observed from the contour lines on the Board of Trade plan that as the index diminishes not only do the areas between two contours increase, but the separation of the contours increases because, for various reasons, the rate of climb of aircraft leaving the airport may be reduced and aircraft coming in to land, when leaving the stacking area, have to descend by only 2,000 ft up to the end of the glide-slope and in doing so

* See also p. 440.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off shore).* (HMSO; 6s.) Reproduced at p. xv.

‡ Cmnd. 2056, (HMSO; 19s. 6d.) § p. 173. ‖ p. 174.

¶ Reproduced in CTLA, Papers and Proceedings, vol 1, (HMSO; £4 10s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

cover a greater length of ground than in their final approach when they descend 3,000 ft—hence the contour lines cover a much wider area.

8. So far as the assumed reduction of 10 NNI, made by the Roskill Commission, is concerned, I feel that the correct and most realistic approach is to provide evidence on the basis of the circumstances and data presently available and not on hopes for the future which may be too optimistic. In drawing my contour lines on plan RJP 2, therefore, I have ignored the 10 NNI reduction for the following reasons:

(a) Firstly the airport will be in operation in 1975, that is to say within six years, and all four runways are likely to be required before 1985—so for at least 14 years there will be an airport operational without a reduction of 10 NNI.

(b) The International Conference called by the Board of Trade in connection with "The Reduction of Noise and Disturbance caused by Civil Aircraft" in November 1966,* would make no prognostication as to the reductions which could be expected over the years as a result of the various methods of improving engine design. They did point out that some of the methods were already being exploited just to keep the newer larger aircraft as quiet as current equipment would allow despite greater power. For this reason the assumption of a reduction of 10 NNI is, in my opinion, too optimistic.

(c) The only estimate of 10 NNI reduction within 20 years appears to be a hope that as much as that might be achieved which was expressed by Mr. J. P. W. Mallalieu in the Houses of Parliament (Hansard, Standing Committee G, 13th June 1968, c. 201). He certainly gave no guarantee that this could be achieved.

(d) In any case the two-runway airport is likely to have been superseded by 1989 when the full 10 NNI reduction might be achieved. Thus at least for the 2-runway airport this assumption should not be made.

9. In addition it is understood that the Commission did not extend the contour lines to less than 40 NNI because of the difficulty of drawing lower contour lines with any degree of accuracy. In order to provide the Commission with local consequences of an airport at Foulness, I have attempted to show where the lower contour lines might arise to show the areas which might be affected. Although the exact position of my contour lines might not be correct, I believe it is a reasonable guide as to the number of people likely to lie within those contours even if a particular location is not accurately defined.

10. In the view of the Sheppey Group it was important to show the other areas affected by the lower contour lines because of the following reasons:

(a) The only singularity about 40 NNI in the Wilson Committee Report is that at Heathrow it happens to be the level above which more people consider the area poor or very poor because of noise than because of any other single reason. For this to be true at any other site all other circumstances taken into account by the Wilson Committee would have to be comparable. The circumstances considered include entertainment and shopping facilities and particularly background noise. Reference might be made on this point to the Wilson report—Appendix 11, figure 6, page 213. The percentage of people who complained that noise made their locality poor or very poor diminished relatively slowly with decreasing NNI contours.

(b) In our view it is also important to go beyond this contour since the highest population of Kent affected by noise will be below the 40 NNI contour and although the nuisance may not be as intrusive, there will still be considerable intrusion but without any financial compensation which would be much more likely to be available in areas within the 40 NNI contour.

(c) As there are unlikely to be any persons employed at the airport resident in Kent, a greater proportion of people are likely to complain than at Heathrow where a great number of those affected by noise have a greater tolerance than the general population through having employment which is either directly or indirectly dependent on the airport.

(d) One of the supposed advantages of Foulness is the possible freedom from restrictions on night flying. The critical NNI levels are lower at night than in the daytime, and it has been assumed in the past that the smaller number of planes flying at night counterbalances this. 30 NNI is considered critical at night by the Wilson Committee. For the 30 NNI night-time contour to lie within the 40 NNI daytime contour the frequency of night movements would need to be less than one-quarter of the frequency of daytime movements. If this restriction on night flying is not applied, the lower NNI contours become much more significant because of their effect during the night.

11. I have described at some length the methods and assumptions used in, and have stated the reasons for drawing the contour lines. These plans have been used as a basis for estimating the local consequences and the number of Kentish people which would be affected between the specified contour lines is dealt with in Mrs. Boston's Statement.*

12. I have also made a study of the frequently stated hypothesis that an advantage of having the airport at Foulness is that take-offs and landings would initially be over the sea; and that therefore there would be a significant improvement in the safety of the operations around the airport.

The factual basis of my study is the annual jet aircraft accident statistics published in the magazine *Flight*.†

* Report of conference published as *Aircraft Noise*. (HMSO; 8s.)

* p. 175.

† January 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

The Appendix to this Statement contains a table summarising the history of accidents to jet aircraft up to the middle of December 1968, which was the last date considered in the 1968 statistics. In dealing with crashes on the land I have ignored those accidents on the runway of the airport in which there were no fatalities since these are irrelevant to the comparison. However, if these had been included, the figures in columns I, J and L of the Appendix would have been significantly lower. It will be seen from the figures in row 1 that a higher percentage of occupants of aircraft were not rescued when crashes were into the sea than was the case when they were onto land.

Dealing only with accidents in the near environs of the Airport the figures in row 3 show that a slightly smaller percentage of occupants of aircraft which crashed into the sea were killed than was the case when crashes were onto the land. However this was disproportionately affected by a single accident on the 5th November 1967 when an aircraft overshot the runway during an aborted take-off when only one of the 127 occupants was killed. This was atypical because the aircraft was only just in the sea—the wheels still being on terra firma.

The number of accidents into the sea is probably too small to draw firm conclusions from the statistics that crashes into the sea are more dangerous than those onto land. However they do not give any indication that the opposite hypothesis is true.

13. At the present time there is no public authority which is responsible or equipped for the rescue of persons in passenger aircraft accidents at sea or in the Thames Estuary, as are the Coast Guards in the United States of America. Suitable provision would have to be made for this and should be taken into account in the cost/benefit analysis of the Foulness site for the third London airport.

APPENDIX

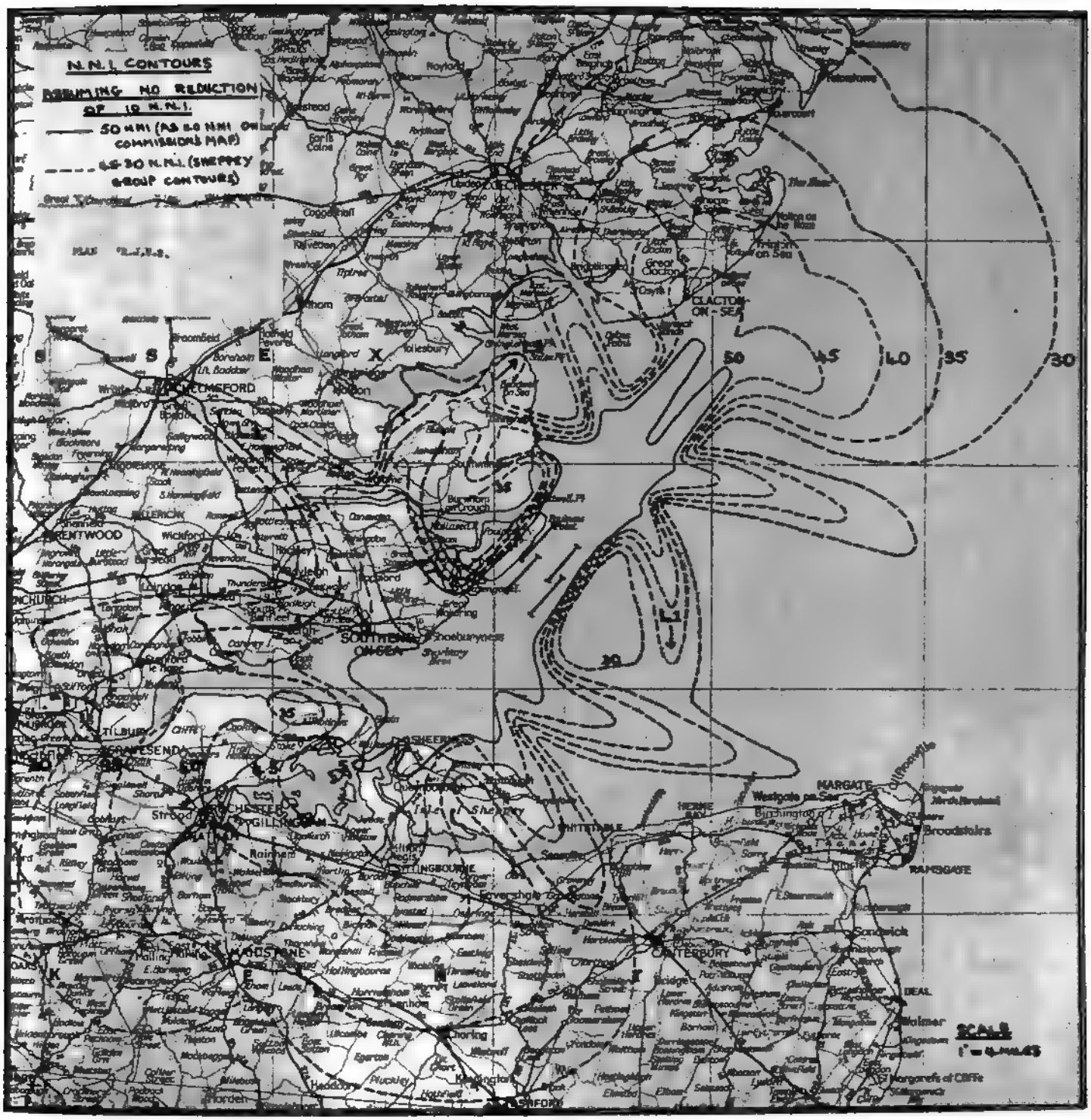
Statistics relating to aircraft crashes

(Based on information extracted from "Flight")

	Number of occupants in aircraft involved		Number of those occupants killed		Percentage of occupants killed		Number of accidents		Number of fatalities per incident		Number of fatalities on ground	Number of fatalities in aircraft and on ground
TOTAL						(I)				(J)		(L)
1. 1966-1968 (1)	696	2,497	570	1,575	82%	63%	14	61	40	25	8	26
2. 1959-1968 (2)			935	3,117			23	93	40	33.5	8	33.6
WITHIN AIRPORT VICINITY												
3. 1966-1968 (3)	274	2,057	148	1,136	54%	55.2	6	47	24.7	24.2	7	24.3
APPROACHING AND TAKING-OFF ONLY												
4. 1966-1968	147	1,410	147	760	100	53.9	5	33	29.4	23.0	7	23.2

Figures underlined for crashes in sea.

Printed image digitised by the University of Southampton Library Digitisation Unit



NNI contours assuming 10 NNI reduction. *(Mr. R. J. Patrick, Sheppey Group)*

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

NNI contours assuming no reduction of 10 NNI. *(Mr. R. J. Patrick, Sheppey Group)*

Evidence of the Sheppey Group

SUBMITTED BY MRS. M. BOSTON*

Margaret Boston of 3 Manwood Close, Sittingbourne, Kent, will say:

1. I am a bachelor of Commerce and Economics, University of Melbourne, and a Market Research Consultant. I am a member of the Executive Committee of the Sheppey Group and member of its Technical Committee. The constitution of the Sheppey Group defines its principal object as "To co-ordinate opposition to proposals for the construction of an international airport on the Isle of Sheppey or other places adversely affecting Kent" (Clause 2a). I am authorised by the Group to make this statement on their behalf.

2. The Sheppey Group is a voluntary association of approximately 1,000 members, chaired by two Members of Parliament of different parties, and is non-political. Appendix 1 to this Statement contains details of the membership of the Group and it will be noted that in addition to certain local authorities the Group represents a considerable number of voluntary associations within Kent.

3. Although the Group was constituted to co-ordinate opposition to proposals for the construction of an international airport at places adversely affecting Kent, the Group wishes to make it clear that at this stage and until all the evidence assembled by the Commission is available they wish to confine themselves to the presentation of local information which for one reason or another cannot be included or may not have been included by other bodies making representations to the Commission.

4. In providing the following information the Sheppey Group have included information relating to areas in Kent which they believe to be "at risk" of being adversely affected by the siting of a third London airport in the Foulness/Maplin Sands area, and this includes places which might be affected with different airport locations, runway alignments, flight paths.

5. (a) **Resident population**

Information about the resident population "at risk" from aircraft noise is is provided in Appendix 2 to this statment and in map MB1.† Map MB1 shows Mr. Patrick's contour lines superimposed on a map taken from *The Search for a Site for a Third London Airport* (Kent County Council), with each dot representing 100 people. Table A shows the resident population according to 1966 sample census within each contour line, and was calculated from map MB1 by counting the dots and consulting the key to this map. Table B† shows the most recent population figure for various local authority areas, and table C† the number of schools and hospitals within Mr. Patrick's 40+ NNI contour lines (assuming there is no 10 NNI reduction).

(b) **Elderly people**

The Wilson report* suggests that elderly people are particularly likely to be affected by noise. The 1961 Census shows that the percentage of people aged 65 and over was higher in Kent (13.2 per cent) than was the average for England and Wales (12.0 per cent). The percentage was higher again within the Borough of Queenborough-in-Sheppey (14.5 per cent). Two other nearby areas had very high proportions of elderly people and are popular areas for retirement—Herne Bay (28.4 per cent) and Whitstable (23.8 per cent).

6. (a) **Projected population**

The North Kent coastal area lies in one of the "Corridors of Growth" proposed by the South-East Economic Planning Council as referred to in the publication and this proposal is at present under consideration. Whether or not this proposal is adopted, there can be little doubt that the projected populations envisaged in town map proposals (see table D, Appendix II) will be easily achieved, indeed in many areas the too rapid expansion of population is being held back for planning reasons. The whole area is certainly one where there will be a large increase in population by the time a third London airport is fully operational.

(b) In addition to the town map proposals there are discussions taking place on the possibility of a town development scheme on the Isle of Sheppey. We are not elaborating on this, as details are included in the evidence being submitted by the Kent County Council.

7. **Holiday population**

In addition to the resident population the North Kent coast has a large influx of holiday makers and day-trippers during the summer months. The importance and size of the holiday trade in the area is dealt with later in this Statement but in assessing the population likely to be affected by noise the Commission will no doubt take into account this additional population. Its importance is illustrated by the fact that during the holiday season the residential population of the Isle of Sheppey just about doubles, and at any one time there are some 30,000 holiday makers on the island, with, at peak periods, a further 10,000 day-trippers.

8. (a) **Zonal restrictions on development**

A planning policy has been agreed between the Kent County Council and the Surrey County Council in relation to development in areas likely to be affected by aircraft noise from Gatwick airport. These zones are equated to the expected NNI contours when the airport reaches full operational capacity, and the general effect of the planning policy is as follows:

* See also p. 444.

† See attached wallet of maps and diagrams.

* Cmnd. 2056. (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Zone 1 (60+ NNI by day; 45+ NNI by night). Complete ban on residential development, certain restricted industrial development.

Zone 2 (50-60 NNI by day; 35-45 NNI by night). Major housing development will be refused, but some infilling allowed with adequate noise insulation. Schools undesirable but will be accepted if adequately insulated. Hospitals and churches undesirable.

Zone 3 (40-50 NNI by day; no NNI limit by night specified). Major housing development will be refused, but some infilling allowed with some relaxation of the sound insulation requirements.

(b) We would expect a similar planning policy to be adopted by the Kent County Council for areas likely to be affected by noise from a third London airport. If so then the Commission's own NNI contours for a 4-runway airport show that the undeveloped area bounded by Sheerness, Queenborough and Halfway on the Isle of Sheppey falls within the 40+ NNI contour, and it is this area which is earmarked for major residential development under the present Queenborough, Sheerness and vicinity town map. On the basis of a zonal restrictions policy, the town map for the area would have to be completely revised, and, indeed, it seems unlikely that any expansion at all could take place near Sheerness in respect of major housing development.

(c) We are also concerned at the very large area of Kent affected by these restrictions if it transpires that the Sheppey Group contours (based on the proved contour lines at Heathrow) are correct. Such restrictions would seriously disturb existing policies approved and proposed for the development of these areas.

(d) We are also concerned that if, as seems likely, the proportion of night flights were higher at Foulness airport than at Gatwick, then the night-time NNI levels could become crucial in defining the zones, and the specified relationship between daytime and night-time NNI levels might no longer hold good. With a smaller differential between daytime and night-time NNI levels then the definition of the zones may need to be altered, with a consequent extension of the size of the areas covered by the zones.

9. **Property values**

It is not possible, the Group understand, to provide any evidence in relation to the diminution or increase of property values resulting from the effects of aircraft noise. The Group, however, wish to point out that if values are adversely affected by noise (as seems likely), such adverse effect would not, in Kent, be compensated for by an increased demand for housing resulting from the operation of the airport itself. Present home owners in North Kent would, therefore, suffer from the adverse effects on house prices of noise, with none of the compensating pressures due to persons working at the Airport wanting accommodation.

10. (a) **Road access**

The Group wishes to be assured that the question of road access through Kent to and from a third London airport at Foulness for people travelling from the south and wishing to avoid London will be carefully considered by the Commission in deciding on its recommendation. At the moment access to Foulness and to the south-eastern part of Essex from Kent is through the Dartford tunnel. This is now approaching capacity and is estimated to do so by 1972. Despite pressure from the Kent and Essex County Councils the Ministry of Transport have so far refused permission for a second tunnel and it appears likely that a second tunnel will not be available before the 1980s (at an estimated cost of at least £13m.). If additional airport traffic were to be added to the existing normal traffic through the Dartford tunnel this would impose a serious burden on existing private and commercial users who are already delayed by bottle-necks at the tunnel at peak hours. The need for additional road access to Foulness from Kent needs to be examined and we recognise that such additional access need not necessarily take the form (or be restricted to) a Second Dartford tunnel. At least part of the cost of such additional access would need to be added to the cost of locating the third London airport at Foulness. There is already considerable over-crowding of the existing roads from the south of England to the south-eastern part of Essex through Kent (avoiding London). There are no immediate proposals for major road schemes and access roads to the Thames crossing point will be additional factor to be taken into account in the cost/benefit analysis that would usefully serve this area.

11. (a) **The holiday trade**

The north coast of Kent has a long history as a holiday area, being a coastal area relatively close to London and accessible by rail and by the new M2 and Dartford tunnel. The holiday trade is an important element in the local economy and is also a welcome source of employment for many local people, particularly women, during the holiday season. The North Kent coast has a major role to play as one of the lungs of London, providing comparatively inexpensive holidays or days at the sea for many Londoners, many of whom come back to the area time and time again. We are concerned lest the holiday trade should be affected by aircraft noise, and although we are unable to produce evidence that it would be, it seems a reasonable deduction that many holiday makers will prefer not to spend their holidays in areas under flight paths for a third London airport. Much of their time is spent outdoors, where aircraft noise is more noticeable, and much of the accommodation is in seaside bungalows and chalets or caravans, with very little insulation against noise, particularly in summer with open windows.

(b) Appendix 3 to this Statement treats the holiday trade in the area in greater detail and was largely prepared by the Queenborough-in-Sheppey Council. The map marked MB 2* shows:

(i) The peak use of beaches (compiled by the National Parks Commission August 1966, published in *The Coasts of Kent and Sussex,* HMSO).

(ii) The main urban holiday resorts.

(iii) The main holiday camp, caravan and camping areas.

(iv) Sailing facilities.

* p. 183.

Printed image digitised by the University of Southampton Library Digitisation Unit

(ii), (iii) and (iv) are taken from two documents published by the Kent County Council (*The Search for a Site for a Third London Airport*–Part 1, 1968, map 6, and *Expansion at Ashford,* 1967, map 10). The map shows the wide spread of beaches along the North Kent coast from Allhallows in the west to the Thanet resorts in the east. The urban holiday resorts stretch eastwards from Herne Bay to the Thanet resorts, and the holiday camp and caravan areas stretch from the western end of Herne Bay westwards through Seasalter, along the Sheppey coast from Leysdown-on-Sea through Warden and Minster-in-Sheppey to Sheerness, and there is a further area near Allhallows. Some of the probable flight paths pass very close to most of the main holiday camp and caravan areas, and the urban resorts lie under possible flight paths coming from an easterly stacking area to land from the south-west.

12. (a) **Other recreational facilities and amenities**

Of the 136 miles of coastline in Kent, 69 miles are already built up, and the Kent Development Plan contains policies designed to protect the remainder from unnecessary development. To this end the undeveloped coastal areas have been classified into different categories. Map MB 3* taken from the Kent Development Plan (1967 revision) shows that extensive areas along the North Kent coast come under these preservation policies. There is a concentration around the north coast area in the Strood RDC, the Isle of Sheppey and Swale Estuary of Category A coastline, with high amenity and scientific value.

Map MB 4† shows two aspects of the quieter type of amenity:

(b) (i) Areas of scientific interest (taken from two Kent County Council publications–*The Search for a Site for a Third London Airport,* Part 1, 1968, map 6, and *Expansion as Ashford,* 1967, map 5).

(ii) The recently designated Kent Downs Area of Outstanding Natural Beauty (taken from a map published by the Ministry of Housing and Local Government).

13. **Local hazards to aircraft**

The Group wishes to draw the attention of the Commission to the existence of two possible hazards in the North Kent area. Concern has been expressed about these locally, and although the Group does not wish to exaggerate their importance we feel it is right that they should be brought to the attention of the Commission so that they are fully acquainted with the facts.

13. (a) *The s.s. "Richard Montgomery"*

The history and story of the wreck of the ammunition ship, s.s. *Richard Montgomery,* is contained in Appendix 4 to this Statement and map MB 5‡ shows its location. It is hoped that, in addition to obtaining further information about the potential danger of this wreck if an aircraft crashed on or near it, the Commission will investigate the possibility that, whilst the 1,445 tons of ammunition still remaining in the wreck is unaffected by vibration from the large ships passing nearby, it may be affected by sonic vibration from aircraft.

(b) *Oil refineries and power stations*

There is a tall chimney 650 ft high at the Kingsnorth generating station, south of Hoo on the north bank of the Medway, and we understand a further chimney, 859 ft high may be built at a new generating station east of Grain. The Grain Oil Refinery has a group of chimneys 300 ft high. The Kingsnorth area is close to a possible flight path for aircraft coming from a north-westerly stacking area towards the lining-up point for landings from the south-west, whilst the Grain area is close to the take/off/landing paths for aircraft using the two north-westerly runways on the Commission's Map.

The Group recognises that in normal circumstances, aircraft should be sufficiently high for the chimneys to present no hazard to the aircraft themselves, but concern has been expressed at the potentially dangerous results if an aircraft were to crash into a complex of oil refineries and power stations.

14. (a) **Flooding and coastal erosion**

The Group is also concerned at the possible effects on the Kent Coast of tidal changes resulting from reclamation of land at Maplin Sands for an airport. (These fears were not alleviated in any way by a letter from Dr. J. E. Prentice, Department of Geology, King's College, University of London, published in *Official Architecture and Planning,* April 1968. This letter is included as Appendix 5 to this Statement.)

(b) Large areas of the north coast of Kent are extremely susceptible to flooding because of their low-lying nature, and this includes most of the marsh land stretching along the coastline from Gravesend to Seasalter, including both sides of the Swale Estuary. Much of this marsh land is drained and defended by sea-walls, and additional defences were provided after the 1953 surge-tide floods. Because of the length of coast involved and the difficulty of building high walls on soft foundations it would be an expensive undertaking to increase the flood protection if land reclamation at Maplin Sands made this necessary.

At Minster and Warden on Sheppey (and eastwards from Whitstable) the erosion from the sea is aggravated by erosion due to inadequacy of land drainage, and earth slips are a constant problem.

Appendix 6 to this Statement includes information collected by the Queenborough-in-Sheppey Council on areas susceptible to flooding and erosion, and the Group trusts that the Commission will bear these areas in mind when assessing the likely effects of land reclamation at Maplin Sands.

Airports in Kent

There are two airports in North Kent–RAF Manston and Rochester City airport, RAF Manston is used during the summer months for commercial charter flights and Rochester is used by a flying club and for general aviation. Both are already subject to flight restrictions. In the absence of air control information it is not possible to assess the extent to which they might be affected, but further restrictions could affect their future use or expansion.

* p. 184.
† p. 185.
‡ p. 186.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX I

Details of the Sheppey Group

1. Members of the Sheppey Group include local authorities, voluntary organisations and individual members. The total number of members is approaching 1,000 and is growing.

2. **Local authorities.** Twenty local authorities in Kent have appointed official representatives to the Group or appointed observers. This includes six who have made financial contributions. A further twelve local authorities have asked to be kept informed of the activities of the Group.

3. Four local authorities have specifically stated that they wish to be associated with the Sheppey Group in their representations. They are:

The Borough of Queenborough-in-Sheppey.
The Urban District of Herne Bay.
The Urban District of Sittingbourne and Milton.
The Urban District of Whitstable.

The exact terms in which their support is given is shown in the attached extracts from letters.

4. **Voluntary organisations.** The Group is supported by 57 voluntary organisations, 21 of which have made financial contributions. Most are local branches in the North Kent area, but some are area or county organisations or federations. The interests they represent include amenity societies and ratepayers and residents associations, welfare and social groups, educational groups, natural history societies, sporting interests, Trades Council, Chambers of Trade and Industry and other commercial interests.

5. **Individual members.** Nearly all the individual members of the Sheppey Group come from Kent, and the great majority from the Northern half stretching from Gravesend to the Thanet towns and as far South as Maidstone and Canterbury. Within this area the membership is strongest along the coastal stretch from the Medway Towns to Herne Bay, including Rochester, Chatham, Gillingham, Sittingbourne, the Isle of Sheppey, Faversham and Herne Bay.

6. The Office bearers and Executive Committee include representatives from local authorities and voluntary organisations as well as individual members, and come from a good cross-section of the areas covered by the overall membership.

Extracts from letters

(i) Extract from a letter from the Town Clerk of the Borough of Queenborough-in-Sheppey to the Hon. Secretary of the Sheppey Group. Dated the 14th March, 1969.

"Thank you for your letter of 8th March, 1969. I duly submitted your memorandum to the General Purposes Committee at their meeting on Tuesday last when they decided to join with your Group in presenting evidence to the Commission at the site hearing for the above proposal" (i.e. Foulness (offshore) Airport).

(ii) Extracts from a letter from the Clerk of the Herne Bay Urban District Council to the Hon. Secretary of the Sheppey Group. Dated 19th March, 1969.

"I submitted a report on this (i.e. third London airport) to a meeting of my Council held last evening. I also told the Members of the proposals of the Kent County Council to put in a protective application to appear before the Roskill Commission and to investigate the technical evidence . . .

"The Council finally instructed me to tell you that it will support the objection the Sheppey Group is making, but that it must reserve the right to withdraw this support in the event of technical evidence being forthcoming which leads the Council to another conclusion."

(iii) Extract from a letter from the Clerk of the Sittingbourne and Milton Urban District Council to the Hon. Secretary of the Sheppey Group. Dated 13th March, 1969.

"Further to my letter of the 10th March, I have to inform you that when my Members considered this matter at a meeting earlier this week, it was decided that any representations which the Council might wish to make should be made through the Sheppey Group."

(iv) Extract from a letter from the Clerk of the Whitstable Urban District Council to the Hon. Secretary of the Sheppey Group. Dated 12th March, 1969.

Printed image digitised by the University of Southampton Library Digitisation Unit

WHITSTABLE URBAN DISTRICT COUNCIL

The Castle, Whitstable, Kent
Whitstable 2233

12th March, 1969

A. Percival, Esq.
Secretary
The Sheppey Group
42 Newton Road
Faversham
Kent

Dear Sir,

Third London Airport

With reference to your letter of the 8th March, 1969, and in particular to the fourth paragraph therein, the Whitstable Urban District Council will wish its objections to the siting of a Third London airport at Foulness to be submitted to the Commission by the Sheppey Group in conjunction with any other objections which the Group might receive from other local authorities.

This Council's objection is based on the obvious noise nuisance which would be bound to affect the whole of north east Kent in relation to both take-off, approach and possible stacking areas. As you are no doubt aware, the north east Kent area relies to a great extent for its economic survival on the holiday trade and the effect of noise nuisance in this area, i.e. from Ramsgate to Sheppey, could have a disastrous effect on the livelihood of many of the residents of the area.

Many thousands of foreign holidaymakers visit Kent each year and any falling off of this trade could have a serious effect on the holiday resorts and, of course, on the Cathedral City of Canterbury.

The Commission should be requested to give the most serious consideration to the detrimental effect to both residents and holidaymakers in the area of east Kent if the flight paths from Foulness mean that aircraft will cross the Kent coast. This Council could only support the siting of a Third London Airport at Foulness if suitable ways and means could be found to eliminate the otherwise unavoidable and intolerable noise nuisance if the flight paths are to cross over the Kent Coast.

The Council are particularly concerned at the possibility of a stacking area over Thanet which would be bound to have a detrimental effect on the highly concentrated holiday area between Whitstable and Ramsgate.

Another important factor which it is considered ought to be taken into account by the Commission is the increased amount of traffic which would use the Dartford Tunnel. It is envisaged that a considerable amount of traffic within the area of South East England would use use the tunnel to reach the airport at Foulness. This could result in the tunnel becoming totally inadequate with considerable traffic congestion and delays occurring on the approach to the tunnel in Kent.

I should be most grateful if you would include the above views in the objection which you are submitting and in any submissions you are to make at the Hearing.

Yours faithfully,

M. YOUNG

Clerk of the Council

TABLE A

APPENDIX II

Resident Population within Mr. Patrick's contour lines (in hundreds)

Assuming 10 NNI reduction	40+	35-40	30-35		
Assuming no 10 NNI reduction	50+	45-50	40-45	35-40	30-35
	'00	*'00*	*'00*	*'00*	*'00*
Bridge Blean RD					52
Chatham MB			212	318	
Dartford RD					82
East Ashford RD					51
Faversham MB				136	2
Gillingham MB			686	95	
Gravesend MB				30	522
Hollingbourne RD				79	69
Maidstone MB				82	565
Maidstone RD					128

	'00	*'00*	*'00*	*'00*	*'00*
Malling RD				134	305
Northfleet UD					230
Queenborough-in-Sheppey MB	77	144	55	14	8
Rochester MB			18	517	
Sittingbourne and Milton UD		64	201		
Strood		11	170	147	71
Swale RD		8	138	44	34
Swanscombe UD					3
West Ashford RD				2	53
Whitstable UD				10	15
Total	77	227	1,480	1,608	2,190
Cumulative Total	77	304	1,784	3,392	5,582

Calculated from map MB1 and the key to map MB1

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE B

The most recent population figures for various local authorities

Local authority	*1966 sample census*	*Registrar General's estimated population 30.6.68*
Canterbury CB	31,250	32,790
Broadstairs and St. Peters UD	18,810	20,450
Chatham MB	52,980	54,660
Faversham MB	13,750	14,370
Gillingham MB	78,060	88,370
Gravesend MB	55,200	55,160
Herne Bay UD	24,350	24,450
Maidstone MB	64,660	66,650
Margate MB	48,470	49,210
Northfleet UD	24,610	25,090
Queenborough-in-Sheppey MB	29,800	28,630
Ramsgate MB	39,080	39,220
Rochester MB	53,450	55,760
Sittingbourne and Milton UD	26,450	29,910
Swanscombe UD	8,980	9,400
Whitstable UD	21,950	23,120
Bridge Blean RD	24,250	25,800
Dartford RD	60,030	63,450
East Ashford RD	11,400*	11,970
Eastry RD	24,110	24,210
Hollingbourne RD	19,140	19,740
Maidstone RD	24,340	27,080
Malling RD	49,580	52,620
Strood RD	36,380	42,630
Swale RD	22,030	22,890
West Ashford RD	11,530*	13,100

* Registrar General's estimate, 30.6.66.

Note: The areas specified in this table include those outside Mr. Patrick's contour lines, but which might be affected by different airport locations, runway alignment or flight paths.

TABLE C

Hospital and schools within Mr. Patrick's contour lines

Assuming 10 NNI reductions	40	35-40	30-35
Assuming no NNI reductions	50	45-50	40-45
Hospitals	–	1	7
Colleges	–	–	2
Special Schools	–	–	1
Training Centre (mentally handicapped)	–	–	1
Grammar Schools	–	–	4
Secondary Schools, Technical high Schools	2	2	20
Primary Schools, Juniors, Infants	3	11	72

TABLE D

Proposed Population Figures

The following are some of the proposed population figures envisaged in the 1967 revision of the Kent development plan. Some of the relevant town maps are being examined or revised, and these figures should be taken as indicative of the scale of growth envisaged over the next 10-15 years.

Canterbury CB	50,000
Faversham	18,750
Herne Bay and Whitstable	56,000
Maidstone and vicinity	137,000
Medway towns (Rochester, Chatham, Gillingham, Strood)	234,500
Sittingbourne, Milton and vicinity	37,420
* Queenborough, Sheerness and vicinity	41,000

* Excluding any major town development scheme.

APPENDIX III

Holiday trade

1. There is very little factual evidence available about the size and importance of the North Kent coastal holiday trade. For instance in May 1966 a "Regional Coastal Conference" covering the Kent and Sussex coast was held (*The Coasts of Kent and Sussex*, HMSO, 1967) and at this Conference the Kent County Council were not able to produce evidence on the size of the holiday trade nor to make an assessment of the capacity of various types of coastal facility to accommodate visitors.

2. Two local authorities have, however, provided us with estimates of the number of visitors to their own areas, but both stress that these are only estimates. Queenborough-in-Sheppey Council have estimated that the holiday camps on the Isle of Sheppey have a maximum capacity of 21,200 resident visitors (1,200 in Sheerness, 20,000 elsewhere). In addition to these resident visitors, day visitors account for another 5,000-10,000, depending on the time of the year and climatic conditions. The Whitstable Urban District Council have estimated that Whitstable accommodates an extra 5,000 people at the height of the season.

3. The holiday season extends from March-October, with an August peak. Much of the holiday camp accommodation is closed in winter but the urban resorts still cater for resident visitors although in much smaller numbers. However, the area is popular with day visitors throughout the year and the Kent County Council have said that "it is increasingly apparent that the seasonality of recreation demands on the Kent coast is diminishing".

4. We have not been able to obtain factual evidence on which to assess the importance of the holiday trade in the local economy, nor its importance as a source of employment. (The Kent Economic Activity Report from the 1966 sample census does not show the main holiday areas separately.) Queenborough-in-Sheppey Council say that "the importance of the tourist industry on the island's economy is not known, but the income from rates on the camps, not to mention the retail business which derive a proportion of their trade from visitors, must be considerable".

5. Map MB 2* shows the exact location of the holiday camp areas on the Isle of Sheppey.

* p. 183

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX IV

History of s.s. "Richard Montgomery"

1. The s.s. *Richard Montgomery* is an American Liberty ship which grounded on the Nore Sands about 1¾ miles off Sheerness on 20th August, 1944. (Her exact position is shown on Map MB 5.*) She was carrying a cargo of unfused ammunition, which was partially unloaded, but it is estimated that there are still about 1,445 tons of TNT on board.

2. In 1952 explosives experts considered the whole problem of removing either the ammunition or the wreck, and came to the conclusion that it was safer not to disturb them.

3. Following local pressure and sensational press reports, a working party was set up in the autumn of 1964 to re-examine the problem. The working party included representatives from the Ministry of Defence, the Ministry of Transport, the Port of London Authority, the Medway Conservance Board and the Home Office. On the recommendation of the working party navy divers carried out a survey of the wreck during 1965.

4. The divers found that the two halves of the wreck had stuck bodily in the mud. They also found that heavy silting in the holds had probably engulfed the remainder of the cargo.

5. The considered view of the Ministry of Defence experts was that "the risk of explosion was slowly getting less" and the working party concluded that the best and safest course was to leave the wreck alone and that the "spontaneous and complete detonation of the ammunition remaining in the wreck was improbable".

6. In October 1967 the Secretary of State for Defence said that "in the unlikely event of a (complete) detonation occurring there would, over a radius of two miles, be structural damage including some cracking of secure walls and some collapse of insecure ones. Outside this radius minor damage would occur".

7. In December 1967 the Secretary of State for Defence said that a further re-assessment had been completed, which took into account a report from the United States Army authorities as well as advice from the Ministry's own experts. The United States report concluded that the cargo could be salvaged, but all the Ministry's expert advice agreed that salvage would involve a greater risk of explosion than leaving the wreck alone.

8. Full details of the condition of the wreck and the ammunition, and the potential danger it poses, have not been made public, but should be obtainable from official sources. In March 1968 the Board of Trade took over responsibility for general questions concerning the wreck.

9. There is a long history of local concern about the potential danger of the wreck, and over the years the matter has been raised in Parliament on numerous occasions and meetings have been held between local councils and responsible authorities. (Ref.: Hansard—18.3.65, Vol. 708, Col. 321; 24.11.65, Vol. 721, Col. 489-90; 25.10.67, Vol. 751, Col. 487; 13.12.67, Vol. 756, Col. 423-5; 13.12.67, Vol. 756, Col. 144-5.)

10. Since 1964 there have been at least three occasions when official action has been taken to prevent the wreck being interfered with—one when two skin-divers announced their intention of investigating it, another when a company claimed to have authorisation from the U.S. authorities to salvage it, and the latest when some students threatened to blow it up. On this latest occasion, even though it was clear it was a hoax, navy divers were brought from Portsmouth to check the wreck.

11. Safety measures at present in force are designed to warn shipping of the wreck, and to prevent unauthorised interference with it. They include:

(i) The wreck is marked on the charts and there is a "foul area" of 750 ft radius around it.
(ii) Two lighted buoys and an automatic fog signal.
(iii) The Medway Conservancy Board keep a constant radar check on it, and it is checked daily by their river patrol launch.
(iv) Warning notices on the wreck itself.
(v) Anyone who boards or tries to board the wreck becomes liable to prosecution, and the police have power to remove them, by force if necessary.

12. The local population are well aware of the potential danger and all the incidents mentioned in para. 10 were reported to the authorities by members of the public at a very early stage. The possible danger if aircraft crashed onto or near the wreck has been spontaneously raised by questioners at public meetings on a Sheppey airport, and in letters to the Sheppey Group. The suggestion has also been made that the explosives might be detonated by sonic vibration from aircraft.

* p. 186.

APPENDIX V

Copy of letter from Dr. J. E. Prentice

Published in "Official Architecture and Planning" April 1968

As a geologist and sedimentologist, I am not a frequent reader of your journal. My attention has been drawn, however, to the articles and correspondence relating to the third London airport (OAP, January and March), and I am concerned by the lack of appreciation of the sedimentological problems involved. The science

Printed image digitised by the University of Southampton Library Digitisation Unit

is still young, though rapidly advancing, and we are not as yet able to give clear-cut answers to many of these problems; but at least we can be aware of their magnitude.

The Foulness site proposes to build up 9,000 acres of the Maplin Sands to some 22 ft above low water mark. At present both the rising and falling tides carry a considerable volume of water across this area; this will be perforce directed wholly along the adjacent west Swin channel. The exact consequence of this is difficult to predict; it would certainly lead to an increased mobility of the existing sediment in this area, and this could result in sediment being swept down towards Sea Reach and thence out to the Oaze and the new Knock John Channel. It would be rash to say that this would or would not happen: but it is a clear possibility. Another possible effect is the southward shift of the West Barrow Sand, again having far-reaching consequences.

The authors of the Foulness reports assume that ample filling material is available, and that the process of its removal from the estuary must improve navigation facilities. I would question both those assumptions. Some dredged material is always available from the inner estuary, and an onshore site would be most welcome. But it would not be available in large quantities at any one time, and as it normally contains much "fluid mud", rapid compaction could not be assured. Excavated material from the Port of London's new Mucking Development would be more suitable. I do not know the quantities likely to be available, but I doubt if they would be anything more than a small proportion of requirement. Recourse would have to be made to the abundant fine sand of the outer estuary. It would be unwise to assume, however, that it could be taken from any part of the estuary without upsetting the delicate balance in which the present bank-and-channel system is held, and equally unwise to claim that it would produce a permanent improvement of the navigational channels. If the West Swin and its inward shoals could be converted by the scheme into a new deep-water approach this would be an important argument for the Foulness scheme but careful and prolonged study would need to be made before it could be demonstrated that this is desirable economics or feasible.

I am less concerned that the removal of this sand from the estuary would increase the risk of storm-surge flooding in London. The quantity of fill involved is of the order of 150 million cubic yards; the total quantity of mobile sand in the estuary has been estimated at 40,000 million cubic yards. These figures are so disparate as to make the suggestion seem at least unlikely.

I am also concerned with the possible foundation conditions at the Foulness site. Since this is a prohibited area my own research team has not been able to carry out any investigations, but I suspect that there is here only a relatively thin veneer of sand overlying reworked London Clay. This latter would be very mobile and the super-imposition of the large load both of fill and other constructions could lead to disastrous sub-surface movement. This is a naturally occurring phenomenon, for example in the Mississippi Delta where mobile mud has been squeezed away from the shoreline with the production of offshore "mud-lumps".

This is not to say that the alternative Sheppey site is free from problems. The proposition would involve construction on marine alluvium containing, as far as our information goes, substantial quantities of peat. This is of course by no means an ideal airport foundation. It is, however, fair to say that at least the problems at Sheppey can be more readily investigated and the solutions to them lie well within the field of established engineering practice. Whilst one is attracted by the imaginative and far-reaching proposals of Foulness, there are many problems which would need thorough investigation before it could be acceptable as a site for the third London Airport.

Dr. J. E. Prentice
Department of Geology
University of London King's College
Strand WC2

APPENDIX VI

1. Map MB 6* shows the coastal areas along the North Kent coast which are subject to flooding or waterlogging. (Taken from *Development at Ashford,* Kent County Council, 1967.) Most of this area is low lying marsh-land, and much of it was inundated in the 1953 surge floods.

2. Map QB 1† shows in detail the areas on the Isle of Sheppey which were inundated in these floods—and it can be seen that it includes much of the urban areas of Sheerness and Queenborough. It should be noted that a similar area was flooded by a similar surge tide in the 1890s, but we do not know the exact areas.

3. Map QB 1 also shows the north coastal area on the Isle of Sheppey liable to erosion. The extent to which erosion is a problem is illustrated by Queenborough-in-Sheppey Council's statement (April 1969) that "measurements on the cliff carried out early this year showed that the cliff edge has encroached approximately 20 feet in the vicinity of Merryman's Hill, Minster since 1963".

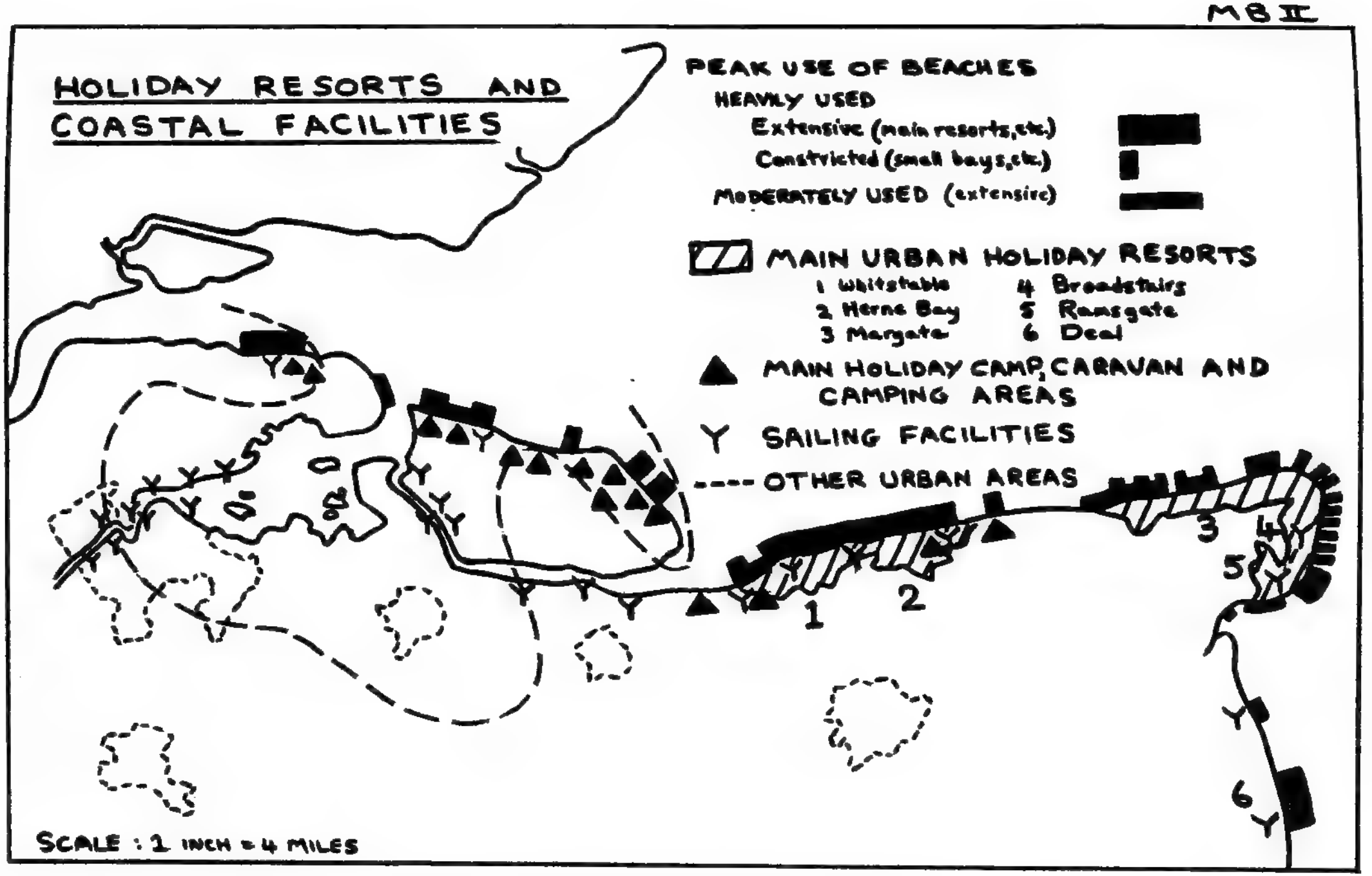
Taken together with the areas liable to flooding it can be seen that nearly the whole of the coast of the Isle of Sheppey is "at risk" from possible adverse effects resulting from changes in tidal flow and surge tide patterns.

* p. 187.

† Available for inspection by arrangement at the offices of the Queenborough-in-Sheppey Borough Council.

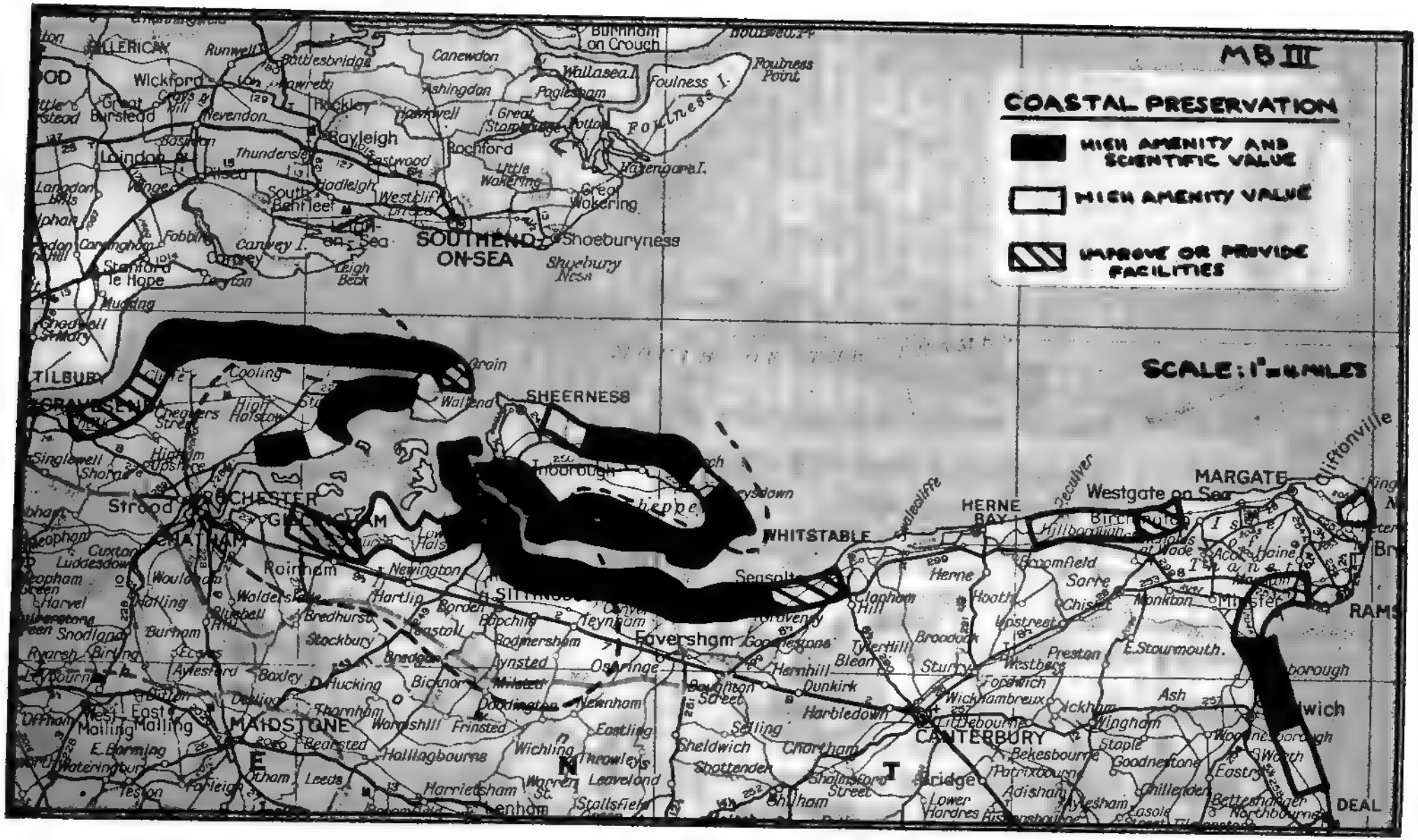
Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



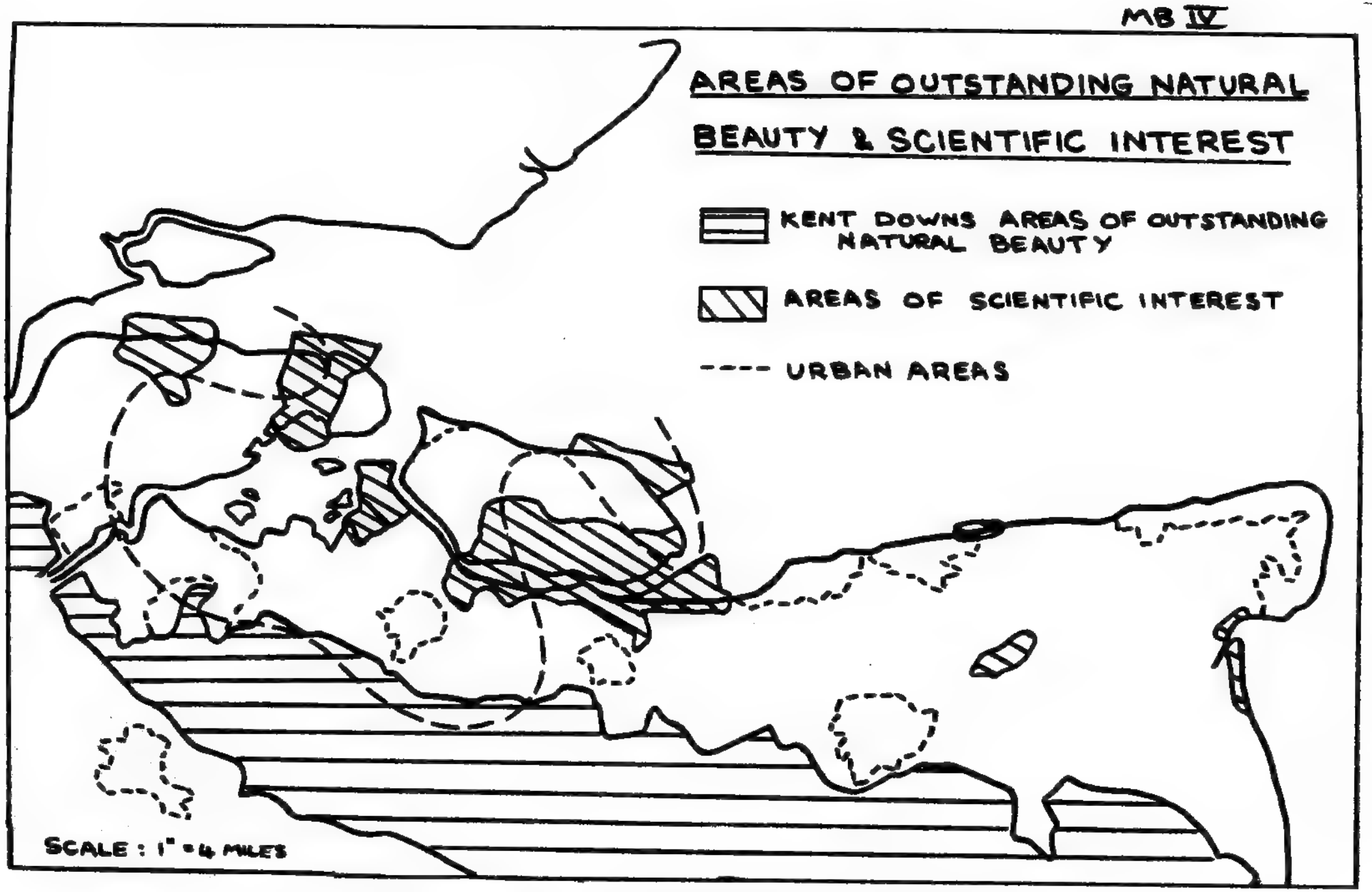
MB 2. Holiday resorts and coastal facilities. *(Mrs. M. Boston, Sheppey Group)*

Printed image digitised by the University of Southampton Library Digitisation Unit



MB 3. Coastal preservation. *(Mrs. M. Boston, Sheppey Group)*

Printed image digitised by the University of Southampton Library Digitisation Unit

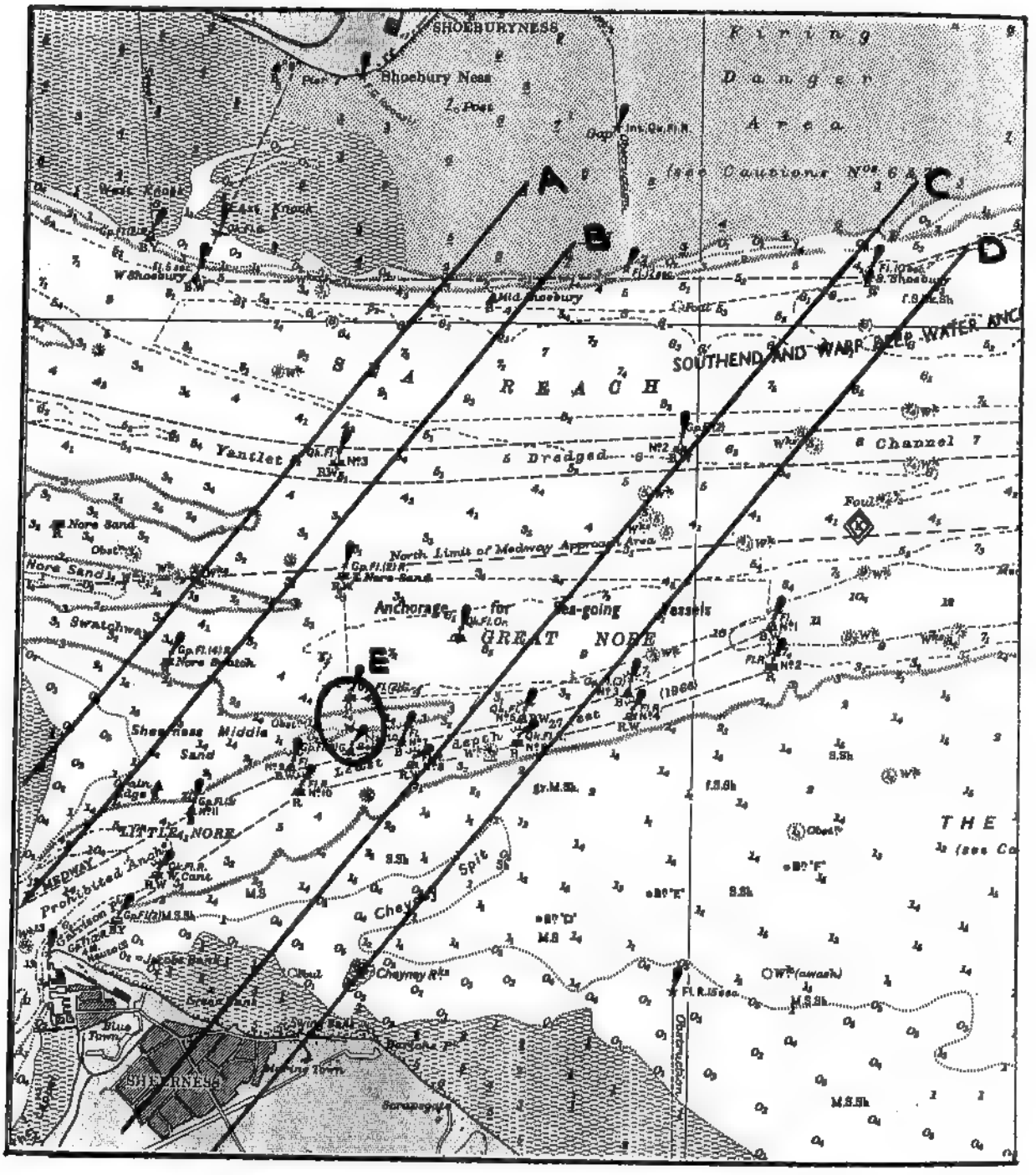


MB 4. Areas of outstanding natural beauty and scientific interest. *(Mrs. M. Boston, Sheppey Group)*

MBV

WRECK OF S.S. 'RICHARD MONTGOMERY'

LINES A, B, C, & D ARE EXTENSIONS OF THE FOUR RUNWAYS. THE WRECK OF THE 'RICHARD MONTGOMERY' LIES MIDWAY BETWEEN THE FLIGHTPATHS FOR B & D, THE TWO SOUTHERLY RUNWAYS. THE WRECK IS RINGED (E).

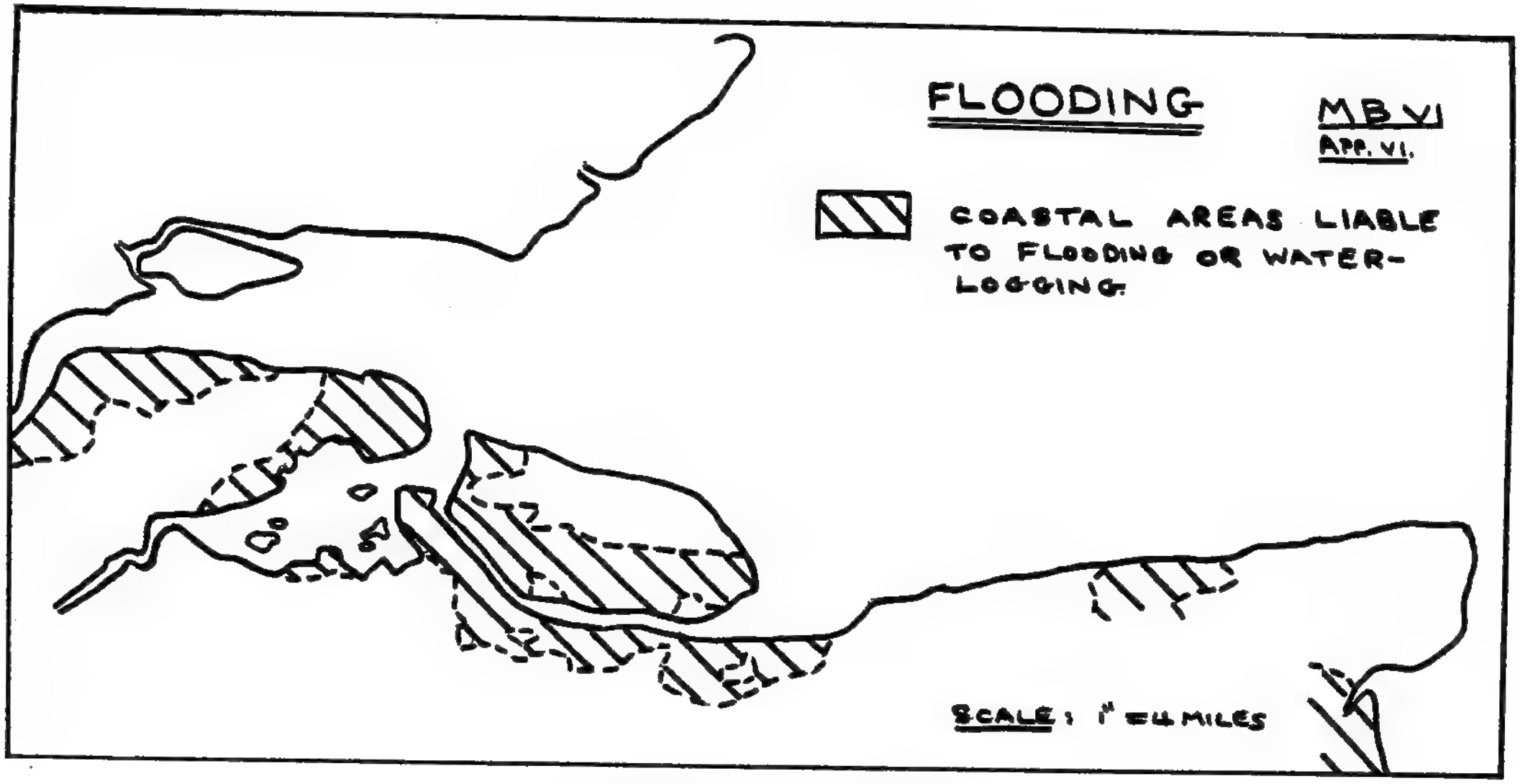


COPIED FROM ADMIRALTY CHART, 1607 - THAMES ESTUARY, SOUTHERN PART (1967). SCALE 1:50,000.

MB 5. Wreck of s.s. "Richard Montgomery". *(Mrs. M. Boston, Sheppey Group)*

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



MB 6. Flooding. *(Mrs. M. Boston, Sheppey Group)*

Evidence of the Sheppey Group

SUBMITTED BY CAPT. P. WILKS*

Peter Wilks of Coleshall, Iwade, near Sittingbourne, Kent will say on behalf of the Sheppey Group as follows:

1. I am a Master Mariner, First Class Pilot licensed by Trinity House piloting in the Medway and Thames for thirteen years and prior to that have been engaged as a navigating officer in British cargo liners for a period of fifteen years. I am a member of the Queenborough-in-Sheppey Borough Council.

2. I have read the site information provided by the Roskill Commission in regard to proposals to place a third London airport at the Maplin Sands off Foulness and have read a considerable amount of literature in regard thereto. I am aware of the proposals to encase the Maplin Sands and to raise the level for the purposes of an airport above sea and flooding level.

3. I, in conjunction with several of my colleagues are extremely concerned at the way in which such proposal might affect the tidal streams within the Thames Estuary. The sand and shingle banks are constantly changing and the depths of the shipping channels between them are kept under continuous surveillance by the Hydrographic Departments of the Port of London Authority and the Admiralty. The Knock John Channel, the Yantlet Channel and the entrances to the North and South Edinburgh Channels are re-surveyed every six weeks, while the Edinburgh Channels themselves are completely re-surveyed every three months. Other channels are checked at intervals of six months. The effect of a diversion of the tidal stream such as would be created by an Atlantic wall is unknown but could have the effect of closing a main approach channel or at least reducing the depth in the channels to an extent that the movement of large deep laden ships bound for the Thames and Medway would be severely restricted. Expensive dredging might be necessary to keep the channels open, while the possible serious consequences relating to flooding off the North Kent coast should also be borne in mind.

4. The Port of London Authority will or has no doubt submitted evidence in connection with the importance of the shipping use made of the Thames. So far as the Medway is concerned which is equally likely to be affected, tankers travelling to and from the Kent Oil Refinery, Isle of Grain, carried over twenty-four million tons of crude oil and oil products backwards and forwards last year. In 1968 the Medway was used by more than one thousand tankers of over three thousand tons gross, approximately two hundred and thirty-three of these had draughts between 35 and 41 ft. The effect of movement creating a silt and reducing the depth of a shipping channel even by one foot would make a very considerable difference to the use that is now being put to the Medway.

5. In addition we are deeply concerned with regard to the smaller ships and tankers that have to use the Medway. The depth of the Medway approach channel is shown as 26 ft on the Admiralty chart which I now produce. Even ships of 28 to 30 ft draught or 29 to 35 ft draught of which there were 284 and 603 respectively in 1968 would be affected by any lessening in depth of the Medway Channel as they too are dependent on the tides for access and egress to the Medway Ports.

6. I understand that the Port of London Authority has joined in the consortium to enquire into a seaport as well as an Airport at Maplin Sands but the results of their enquiries showing the likely effect of a deflection of the tidal stream by a model to test the effect of the reclamation will not be known until eighteen months hence. No doubt the Commission, although a seaport is outside their terms of reference will await the result of these enquiries before making a recommendation, as, of course, this reclamation will not only be required for a seaport but also for the third London airport. The serious consequences of deflecting the tidal streams cannot be estimated.

7. Finally I would mention that the erection of radio beacons within the Estuary required to be established for the alignment of aircraft landing on the runway, will be an increased danger to shipping in the Thames Estuary and would themselves be vulnerable to damage, particularly in foggy weather.

*See also p. 447.

Evidence of the Sheppey Group

SUBMITTED BY MR. W. L. NEWMAN

Wallace Leycester Newman of 32 Martindown Road, Whitstable, Kent, will say:

1. I am a Senior Executive Telecommunications Engineer for the General Post Office and at present my duties relate to underground cable maintenance and maintenance of television systems for various civil services and hitherto I was responsible for the London television network switching centre. I am a member of the Sheppey Group.

2. There are already many complaints from residents along the North Kent coast of poor television reception including complaints about interference from aircraft. Concern has been expressed locally at the possibility of a further worsening of reception if the third London airport were to be sited at Foulness, with flight paths coming over Kent. An examination of the present radio and television reception conditions in the area suggest that, taken as a whole, the area is particularly vulnerable to interference and the effects on the area from a

Printed image digitised by the University of Southampton Library Digitisation Unit

Foulness airport would be greater in this respect than would be expected simply from the size of the population.

3. Broadcast reception both sound and vision can be affected by aircraft movements particularly if the flight path is over or near the receiving position. The degree of interference varies due to a number of factors, among them, aircraft height, distance of aircraft, direction, strength and frequency of transmission of the station being received, orientation of aerial, etc.

4. The signal strength will vary due to multi path reception caused by aircraft and this is apparent as varying loudness in the case of sound broadcast and flutter of the picture in the case of vision in extreme cases, picture "lock" being lost.

5. Reception of vision broadcast in parts of North Kent is already subject to interference due to weak signals being received from the various transmitting stations which serve the area. The broadcast authorities define the various signals strength as follows:

(a) *Primary Service Area:* where most viewers—unless they are situated in a particularly unfortunate position—should have a constantly satisfactory service.

(b) *Secondary Service Area:* where a substantial proportion of viewers should have a satisfactory service, but in a few unfavourably situated places reception may be poor.

(c) *Fringe Area:* where reception should be secured in many locations although this service may be subject to some interference from time to time. Some viewers living in favourable positions outside the fringe areas may also receive satisfactory service.

6. The following list is an appreciation of the general reception conditions over North Kent from the Isle of Thanet to the Medway, most of which falls in either the Secondary or Fringe Areas.

Service	*Transmitting station*	*Service area category*
BBC 1	Crystal Palace	Fringe
BBC 1	Dover	Secondary
BBC 2	Crystal Palace	Fringe
BBC 2	Dover	S/F
BBC 2	Sudbury (Suffolk)	F/S
ITA London	Croydon	F
ITA Southern	Dover	Mainly S
ITA Anglia	Mendlesham	F
ITA Colour	Croydon	*Outside service area Western section
ITA Colour	Dover	outside service area Eastern Section, satisfactory

* Except for the northern half of Sheppey which should receive adequate signal strength.

7. At the present time the BBC advise viewers in North Kent who complain of poor reception of BBC 2 programmes to tune into the Sudbury transmissions. UHF transmission as radiated by the station is not normally affected to the same degree as VHF but if Foulness is utilised as an airport this will be the worst possible direction from which to attempt to receive programmes as the bearing of the aerial will be towards the source of interference.

8. If, as is likely, the 405-line transmissions radiated from the Crystal Palace and Croydon transmitters are discontinued, due to a general change to 625-line standards, reception for a large number of viewers in the Medway towns is likely to be adversely affected. This will affect those people whose houses are in valleys with the aerial screened in the "shadow" of the hill resulting in poor signal strength and making the receivers more susceptible to interference from outside sources.

Evidence of the Sheppey Group

SUBMITTED BY MR. B. F. HAWKES

Brian Frederick Hawkes of 55 The Street, Newnham, Sittingbourne, Kent, will say:

1. I am an Area Representative for the Kentish Swale and Sheppey for the Kent Trust for Nature Conservation. I am a Council Member of the organisation and a member of the Administrative Committee. I am warden of the two nature reserves in the Swale, Shellness on the Isle of Sheppey, and Castle Coote on the mainland side of the Swale. I am also a member of the Kent Ornithological Society and Rochester and District Natural History Society. For 20 years I have been familiar with the Isle of Sheppey and its wild life. I am a member of the Sheppey Group and have been asked by them to give this proof on their behalf.

2. The International Union for the Conservation of Nature and Natural Resources (IUCN) lists the North Kent marshes of which the Swale forms the most important part as a wet-land site of international importance—only 16 such sites in the whole of Britain are placed in this category and in Europe, only 200. The IUCN is an independent body whose membership comprises Government Departments and International Organisations and it enjoys the support of and consultative status with such United Nations Agencies as FAO and UNESCO.

3. The North Kent marshes is the stopping off and feeding place for birds on migration from the north to the south, and vice versa. There is, as far as we can see, nowhere else to replace the Swale for this purpose. The winter of 1968-69 for example, had the second largest flock of geese anywhere reported.

4. So far as the effect of noise on bird life is concerned, it is impossible to say what effect an airport of some twelve miles away from the north coast of Kent would have on the natural resources of the Kent marshes, but all the evidence indicates that the birds

Printed image digitised by the University of Southampton Library Digitisation Unit

need large areas of tidal mud which the Swale has and that the whole general area must be one of reasonable quiet with as little disturbance as possible and the general view is that in the long run there will be a gradual decline.

For example—in the Swale when the helicopter from Manston used to come over it twice a week, the birds were immediately disturbed and flew into the air. However, it is accepted that the helicopter flies comparatively low and makes a more immediate sound than the jumbo-jets of the future will which will be at a far higher level over this area. It is also accepted, and there is evidence to the effect, that bird life may get used to the constant noise of the aircraft. This is, however, a factor which should certainly be taken into account.

5. The number of birds which will be affected and which will be in the immediate vicinity will be considerably higher at Foulness than are at Heathrow. Evidence will be given by other bodies in relation to the number and importance of the birds which will be affected in Essex. So far as Kent is concerned the Commission is referred to the figures given by the nature conservancy contained in the first Appendix to this Statement and it will be seen that in 1968 the total number of birds in the Swale and Sheppey area were 33,399.

6. **Bird strikes**

I have, at the request of the Sheppey Group made a study of the effect of bird strikes in connection with other off-shore airports in other countries. I sent letters to the governments of New Zealand, the United States of America, France, Canada and Australia in relation to this problem and received replies from the first four. The publications which were forwarded to me and to which I would refer the Commission is contained in the second Appendix to this Statement.

7. The general conclusion to be drawn from these documents is that the problem of bird strike is far more serious than it is usually considered. The problem rarely receives publicity because it is so bad for the airlines.

It is to be hoped, however, that the same mistake as was made at Auckland and Napier in New Zealand in building an airport near or in the middle of a large population of birds will not be repeated at Foulness. It appears that far from scaring the birds off, an airport near the sea is an attraction as many birds will use an airport for feeding, resting and even nesting.

8. Once the problem has arisen it appears that it is extremely unlikely that it can be solved by the killing of the birds because of the enormous scale involved.

9. It is true that bird strike is a minimal cause of accidents but the consequences of a strike are nevertheless costly. For example on take-off an engine may be damaged by a strike—the pilot has to immediately return to base for an engine change, re-routing passengers and baggage on another aircraft. He must jettison fuel aggravating the pollution risks and make an emergency landing with attendent risks. The inconvenience and costs to the airline must be serious quite apart from the cost of a replacement engine in the region of £70,000 (p.7 of *Bird Control* by Solman).

One airline according to the same author published a figure of a loss of £1,000,000 worth of mechanical damage each year through bird strike.

The chances of a songbird strike during migrating movements are (according to Field Note 30—see Appendix 2) one in twenty on a DC8 take-off; the chances of a goose strike very much lower—one in one-million but the consequences are more serious.

10. So far as Swale and Sheppey is concerned, then with something over 33,000 birds only 12 miles away from the airport, there will be a considerable increase in the risk of bird strike. Geese fly at about 2,000-7,000 ft; ducks up to 5,000 ft; starlings and blackbirds up to 1,000 ft and songbirds up to 8,000 ft. It is within these heights that aircraft over the north of Kent will be flying.

11. In the future aircraft are likely to be more vulnerable than less, due to the larger air intake.

12. **Pollution**

The feeding areas of these birds could be affected, some seriously by pollution of the air and water. The emission of partly burnt fuel when landing and taking-off would be considerable at a third London airport. Pollution would also take place in stacking zones by emission from the aircraft.

Pollution would also occur from runway drainage into the Thames Estuary and this may affect the food of the birds.

At the moment it appears that no documents have been published on this subject but some are in preparation. Some work has been done on the pollution zone around Gatwick which is a relatively small airport. Evidence is beginning to accumulate that there is a serious degree of pollution locally there and also in the stacking zones nearby but so far, no definite results are available. The problem is a long term one. The factory zones of Salford to the north and Crawley New Town to the south also produce effects which are not easy to disentangle.

Sheppey is already affected by some pollution from

(a) Grain refinery.
(b) Queenborough factories.
(c) Kemsley mills.

The effects can be traced as far as Eastchurch, while the country south of the M2 and Thanet Way as far as Seasalter is unaffected so far.

There is also some field evidence from Hamburg airport that has been collected by a person who has not yet published. London airport (Heathrow) would provide the best parallel. There are certainly official data on the emission of partly burnt fuel over this area, but how accessible these documents are is not known.

13. Finally there is the question of the educational aspects from practical instruction in respect of the nature conservancy which must not be under-estimated. Also there is a considerable amount of scientific study made of the Kent marshes by the British Trust for Ornithology and other organisations which cannot be ruled out.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX I

Wildfowl and waders in the Swale/Sheppey area

Species	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*
Mallard	1,000	822	1,000	2,053	3,000	2,000
Teal	1,200	1,000	300	600	400	300
Widgeon	5,000	3,000	400	1,800	6,000	3,400
Pintail	110	100	200	116	80	25
Shoveler	250	200	80	250	600	100
Pochard	255	250	50	116	100	81
Common scoter	200	60	1,200	120	300	36
Shelduck	2,500	2,000	800	800	700	5,000?
White-fronted goose	515	550	350	230	640	500
Brent goose	120	160	140	160	500	182
Oystercatcher	2,200	2,000	1,800	1,800	3,000	1,000
Lapwing	1,000	1,800	72	250	1,000	3,500
Ringed plover	400	54	150	100	300	25
Grey plover	1,000	400	1,000	100	80	1,000
Golden plover	1,600	2,000	1,000	1,000	2,000	3,300
Turnstone	400	120	200	100	300	100
Curlew	2,535	*	2,100	2,500	3,500	3,000
Black-tailed godwit	400	250	225	240	200	550
Bar-tailed godwit	500	750	500	400	1,000	300
Knot	7,000	10,000	5,000	10,000	5,000	7,000
Dunlin	6,700	5,000	5,000	5,000	5,000	2,000
TOTALS	34,885	30,516	21,567	27,735	33,700	33,399

Figures are maximum single counts in each year.

*** Indicates species present but no figures available.**

APPENDIX II

International publications relating to bird strike

1. *BTO News*, number 27, March 1968.
2. *BTO News*, number 35, February 1969.
3. "Birds and Aircraft: A Problem at Auckland's New International Airport". Reprinted from the *Journal of the Royal Aeronautical Society*, vol. 71, no. 677, May 1967.
4. *A Bird Warning System for Aircraft in Flight.* (Canadian Wild Life Service.)
5. Field Note—No. 30 (CM4-S.17-2). Ottawa, Canada.
6. *Bird Control and Air Safety* by V. E. F. Solman. (Canadian Wild Life Service.)
7. *Birds and Aircraft. A Problem on some New Zealand Airfields.* (New Zealand Wild Life Service.)
8. Memorandum on a Symposium held at Nice (France). *"The Problem of Birds at Airfields".*
9. *Journal of Wild Life Management* (USA), vol. 32, no. 2, April 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Amalgamated Union of Engineering and Foundry Workers

The Roskill Commission Secretary
81-87 High Holborn
London WC1

Sir,

The Southend-on-Sea District Committee of the above Union, register their objection to the proposals to set up an airport at Foulness on the grounds that no proposals are submitted to compensate the employees of the UKAEA Foulness and the adjacent government establishments of Foulness and Shoeburyness totalling approx. 1,000 for loss of office and hardship involved.

The case for consideration relating to AWRE Foulness

Total employees: 480
Total industrials: 276

The UKAEA, a public authority, pay wages and offer conditions, i.e. wages, sick benefits, superannuation, holidays, etc., at a standard higher than any government establishments and better than most of outside industry in the UK.

The average length of service is in excess of 12 years, many having adapted their skills to meet the needs of a new industry, the change would create hardship and loss of incomes to many.

The authority, a model employer, employs disabled workers in excess of the statutory requirements, closure would mean very real hardship to most.

The authority has an enlightened apprenticeship scheme contributing to the local port of skilled personnel, closure would create hardship as no alternative training exists.

During the interim period immediately following the closure of the Establishments a serious employment problem would exist for the displaced employees.

The authority has 58 protected established employees at Foulness, with closure of the surrounding government establishments this would create problems of transfer not normally contemplated and not covered by the Industrial Handbook, therefore the commission is respectfully requested to note this fact, therefore until the commission outlines their proposals to safeguard the interests of the employees, i.e. provision of suitable alternative employment, financial assistance and compensation for loss of office, this District Committee of the AEF objects to the proposals.

Yours sincerely,
L. SMOOTHY

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

by

Noise Abatement Society
Professor J. P. Quilliam

Witnesses were examined on this evidence
on Day Six, Wednesday 14 May 1969
see pages 453-463

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Noise Abatement Society*

In November 1967 a document called *The Third London Airport* was prepared for the Noise Abatement Society by their Consultants. This exhaustive document made a survey of the proposed third London airport sites, and concluded that Foulness off shore was the best site for the airport. It was later presented by the Noise Abatement Society to every member of the House of Commons and to a large number of the members of the Lords.

Many aspects were covered which will not need to be enlarged upon; the main headings under which consideration was made are as follows:

(a) Airport movement
(b) Passenger flow and growth rate
(c) Air passenger percentage increased both international and world wide
(d) Typical airport layouts
(e) The limits as to distance and possible location
(f) Airport activity
(g) Rapid transit
(h) Air traffic control
(i) Noise
(j) National communications
(k) Regional factors

In particular reference to Foulness a suitable layout was prepared, environment and suitability, engineering problems, air traffic control suitability, noise consideration, accessibility of services were all compared, and a broad economic analysis with costs and benefits was given much thought.

The Noise Abatement Society is concerned, as its title clearly indicates, with the reduction of noise in all fields, especially when related to human environment. In the case of the site of London's third airport, the Society's main concern is to see that it is located where it can create the least noise nuisance. The Society realises, however, that other factors have to be borne in mind in making the various considerations. It has, therefore, directed its consultants to look at all these other factors and to advise the Society which location is likely to be the most acceptable, from all points of view. This the consultants have done and they report to the Society as follows.

(a) Foulness off shore site can be reclaimed and be of sufficient area to accommodate a large airport suitable for London's immediate and long term requirements and can provide the required air movements. Adequate dredging plant exists to have sufficient land reclaimed for the completion of the first two runways within two years of commissioning.

(b) An analysis of meteorological records show that the varying weather conditions at Foulness are not worse than any other probable site and in nearly all instances can show an improvement over the other sites.

(c) The site of the airport on reclaimed land means that cultivated land is not required, although it is accepted that some of the cultivated land adjacent to the Maplin Sands will need to be taken for access roads and other requirements of similar character. The reclaimed land permits the runways to be constructed on the most favourable axis, i.e. north/east and south/west. With flight paths in this direction, take off and landings can be made over large areas of the sea and the Thames Estuary and not inhabited areas lying to the north/west of the airport.

(d) The area off shore at Foulness suitable for recovery purposes is larger by far than any land area required for the present third London airport.

If, at some later date, the airport needs to be expanded, then there is sufficient area on which to do this without disturbance to people or other adjoining land uses.

It has been suggested that a deep water port and docks might be part of the total complex and, although we are now only concerned with the third London airport, when the time comes the total land mass recovered, inclusive of Southend to the Estuary of the river Crouch, must be given *total* regional planning considerations.

(e) A comparison as to people, buildings, hospitals and schools made in 1967 showed that some 11,500 people live within a radius of five miles of Foulness and 80,000 within a ten mile radius. This represents some 3,900 households in the five mile radius and 26,700 households in a ten mile radius. There are thirty-eight class I and II buildings of architectural merit within the five miles radius and 91 within the ten mile radius.

On the supplementary list of architectural buildings there were sixty in the five-mile radius and one hundred and forty-eight in the ten-mile radius. There is one hospital within five miles and two within the ten-mile radius. There are twelve schools in the small radius and twenty-two schools in the larger radius. It is thought that all these conditions are better than can be shown in any other location.

(f) The recovery of large areas of wasteland as required off-shore at Foulness does pose a large engineering problem. However, it is a problem which has been met and dealt with before, not only in this country but in many countries abroad, notably in Holland. Engineers within the consulting group advising the Society have considered this problem and find there to be no difficulties.

(g) The consultants working for the Society do not claim to be expert in the field of air traffic control. They did, however, during the course of their research and the preparation of the 1967 report, study air traffic control charts and have informal discussions with a number of interested authorities on the subject and it would appear

* See also p. 453.

Printed image digitised by the University of Southampton Library Digitisation Unit

that Foulness could satisfy air traffic control requirements at an acceptable noise level.

It must be obvious to all concerned that any airport sited so that its approach and take-off points are mainly over large areas of the sea or river estuaries is likely to cause considerable less noise nuisance to people.

In the case of Foulness, the whole of the north through east to south areas are either the North Sea or the Thames Estuary. The land mass and population lie to the west and north/west although the Isle of Sheppey and the north coast of Kent lie eight to ten miles to the south.

The nearest concentration of population to the proposed airport site is at Shoeburyness; this is the only major concentration likely to be affected by the noise and number index contours created by a four runway airport. The drawing No. CTLA 1/3 provided by the Commission on the third London airport shows Southend to be almost entirely clear of the forty contour.

In relation to the noise nuisance factor it should be remembered that most inland sites would make it necessary to restrict night flying, whereas with due care it should be possible for round the clock operations to be carried on at Foulness. If this is found to be the case, then the economic advantages are considerable.

Although it may be obvious, it is worth setting down now, that any new residential areas either as growth to existing towns and communities or as entirely new towns should be provided at least eight miles away from the airport, and further away if at all possible, otherwise the very same problems that exist at London airport where residential areas either existed or were allowed to develop near the airport, will be created yet again.

In our view to avoid the noise nuisance to residential areas, the towns and villages of Billericay, Wickford, Rayleigh, Basildon and Southend (western extremity) would, if expanded by some 20 per cent, provide all the domestic requirements of personnel based on or associated with the airport.

(h) Accessibility. In this matter nearly all possible sites for the third London airport will need proper access by road and rail. Some sites are located near to motorways and main line railways and others are not. Foulness is not particularly well served by either road or rail although the normal rail link to Southend is of reasonable standard.

There is no doubt whatsoever, in the minds of the Society's consultants, that, whatever site is finally chosen, a rapid transit link is going to prove absolutely essential. Vehicles capable of carrying large numbers of air travellers at speeds in excess of 150 miles an hour will have to be provided along with normal road and rail links—this is vital. No major airport attached to a capital city and being fifty miles distance from it can hope to be regarded as a success if it is based on today's modes of transport that can be severely restricted by adverse weather conditions or traffic congestion or both. A major airport built to provide service for the next twenty-five to fifty years must be serviced as far as the passengers are concerned with transport specially designed to secure safe, speedy, efficient travel.

The Government is already experimenting with several Rapid Transit systems to provide a 20-minute link up between airport and central London. One of these must be brought into operation at the earliest possible date.

Helicopter Feeder Services. Inland these would cause intolerable noise nuisance, but siting the airport at Foulness would permit their use, provided they flew far enough out to sea to avoid creating noise nuisance to coastal resorts.

(i) The consultants to the Noise Abatement Society considered the regional planning problems of locating the airport at Foulness. As stated before, it is their considered opinion that the population associated with an airport of this kind will number something in excess of 100,000 people and these people will have to be housed in areas well away from the airport.

As to industry associated with the airport—there should be enough land area available after the requirements of the airport have been satisfied to accommodate all the industrial uses necessary.

All the industrial provision in and around the Foulness airport could be done with little real loss of agricultural land.

(j) As far as is known, all services, gas, water, electricity etc., can be provided without difficulty. Inasmuch as it is necessary to have oil and other fuels available for the aircraft and machines associated with the airport, there are refineries only some twenty miles away and it should be possible to pipe fuels to the airport without difficulty.

(k) Economic viability, etc. In the Society's opinion, the considerations that have to be applied in the matter of economics and viability should cover all fields and not consider only those matters to which pounds, shillings and pence can be easily applied. Socio-economic factors must be brought into the calculations and even if, in the end, Foulness is shown to be a site that will require more money to be spent on it than another site, but in all other respects it is the best site for the airport, then Foulness should be chosen.

Considering all aspects of air travel, the amount of money that Foulness might cost over and above another site can only be very small when the total cost of air fields, airport buildings, the aircraft that use them and the number of passengers travelling and passing through them are considered. Having said this, the elementary financial exercise carried out by the Society's consultants leads them to believe that, by comparison and bearing in mind the side issues and benefits that will arise, the development of Foulness will cost only marginally more than any other site.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Professor J. P. Quilliam*

I beg leave to place the following submission before the Commission outlining the implications of the siting of a third London airport at Foulness to those using the river Roach, the river Crouch and its estuary and the adjacent coastal waters for traditional and recreational purposes, and the reasons for our view, most strongly held, that the airport should not be sited at Foulness.

Introduction

The broad waters of the river Roach are navigable for about 10 miles at high tide to vessels drawing 8 ft of water from its mouth in the river Crouch to Stambridge Mill on the outskirts of Rochford. At low tide, such vessels can proceed as far as Paglesham Pool which is about 5 miles from the mouth of the river Roach. Shallow draft vessels can circumnavigate Potton Island and may enter the Thames Estuary via Havengore Creek and by a short passage across the Maplin Sands thus saving the lengthy journey down the river Roach, along the river Crouch seaward to the Whitaker Beacon and then a long south-west passage skirting the edge of the Maplin Sands into the Thames Estuary.

New England Creek and Shelford Creek (which isolates Foulness Island from the mainland) cannot now be navigated owing to causeways or bridges. Landing on Potton and Foulness Islands is forbidden to the general public.

Foulness Island forms the eastern bank of the lower river Roach and the southern shore of the river Crouch Estuary. Thus users of these waterways may expect to experience to the full the noise and disturbance from the proposed airport, the low flying aircraft and the effects of the proposed industrialisation and housing on both banks of the river Roach.

The main access to the river Roach is at the Hard at the foot of Water Lane, Eastend, Paglesham beside the ancient boatyard with its great Shed. Formerly, Thames barges were built, launched or drawn up on the Hard for refitting here. Today, it is the site of a thriving and progressively expanding local boat-building industry where traditional skills are applied to the construction of glass fibre yachts which find a ready market both at home and abroad. This yard provides full maintenance facilities for boats of all classes with winter storage ashore or in mud berths on the saltings. These facilities are becoming increasingly rare.

Some one hundred moorings are now in use at Paglesham compared with about twenty-five before the last war and upwards of 500 persons use boats from Paglesham apart from many visitors from other parts by water. From the deepwater moorings, yachts and boats may sail in spacious sheltered waters down the river Roach and into the river Crouch, *at all states of the tide*, a feature *unique* to the river Crouch below Fambridge and to the river Roach.

Subsidiary accesses to the river Roach are at Stambridge Mill, Paglesham Pool, Wakering and Barling. There are two other busy shipyards with deepwater and mud moorings and with adjacent active bases for professional fishermen.

Oyster dredgermen operate from Eastend, Paglesham, long famed for the quality of its oysters.

Oyster dredgermen and other professional fishermen offer their craft at weekends and on holidays for pleasure fishing parties. Between fifty and one hundred persons embark at Paglesham Hard alone on Saturdays and Sundays for these regular fishing expeditions in the river Roach and the Crouch estuary throughout the year.

The sea walls are frequented by adults and children on fine days for they provide a pleasant walk with country and river views, together with opportunities to observe in tranquil surroundings bird life in its natural habitat in these Essex creeks which are a haven for rare species both resident and migratory. Fishermen cast their lines from many places on the sea wall from Stambridge to the Crouch estuary and also from moored skiffs mid-stream.

Comments

The river Roach and the surrounding countryside form a recreational amenity of an unusually high and varied quality. It is difficult, if not impossible, north of the Thames so close to the Metropolis to match this peaceful, unspoilt Green Belt river and country offering such a wide variety of unsophisticated open-air recreational facilities.

As the decades pass, the public will have increasing leisure time for recreation. The tranquil waters of the river Roach and of the river Crouch could provide for these opportunities. It is a matter of grave public concern that such amenities should be jealously preserved and safeguarded from encroachment by airports, industry and housing in all parts of the UK, and *especially* in the densely-populated south-east.

The issue of siting a third London airport at Foulness is beset with problems which do not arise with the other three proposed sites. These problems stem from the heavily-publicised plans by at least two financial and civil contracting consortia (with whom one of which Southend Corporation is understood to be firmly aligned). In addition to an airport, these plans envisage far-reaching seaport, industrial and housing developments. While these may fall outside the strict terms of reference of the Roskill Commission nevertheless they have an intimate bearing on Foulness site as suggested by the Commission.

* See also p. 459.

Printed image digitised by the University of Southampton Library Digitisation Unit

It is perhaps no understatement to say that, in return for the construction of the third airport at Foulness, the consortia would be given materially a carte-blanche to convert the Green Belt land in this ancient kingdom of Canute north of Southend-on-Sea into an industrial conurbation which might add some 400,000 persons (workers and dependants) to the existing population of 160,000 of the Borough of Southend.

We hold with the utmost sincerity that such industrial urbanisation in the south-east of England runs counter to the public interest at a time when unemployment and under-utilisation of existing industrial potential in the northern areas of the UK call for urgent measures to channel industrial developments into these depressed and deserving areas and not into the overcrowded south-east of England.

The siting of an airport exclusively on the Maplin Sands might disturb the surrounding land and river area less than would an airport partly or exclusively sited on Foulness Island. We contend that, while the present intentions might be to construct an airport exclusively on the Maplin Sands, the difficulties of construction may become so great as to make reclaiming the Maplin Sands impractical. In these circumstances, the pressures to use Foulness Island may mount to such proportions that, as a matter of expediency, the contractor would be allowed to use Foulness Island for the runways in a manner not envisaged in the original proposal of the Commission. We hold that such a situation is far from a remote possibility because the Maplin Sands have formed an artillery test-firing range for some half a century and must contain many unexploded shells. Doubts exist as to whether test borings in this area can form an entirely reliable guide to the geology of the whole of the terrain underlying the Maplin Sands or Foulness Island. The subsidences in the newly-laid sewage system at Eastend, Paglesham add credance to these doubts.

We therefore have examined the impact of a Foulness airport on the river Roach amenities from the standpoint of a site exclusively on the Maplin Sands and alternatively of a site upon Foulness Island together with the implications of the industrial, port and urban developments outlined by the two main consortia for we consider these three factors are so intimately interrelated as to defy separation.

Conclusions

The siting of an airport on the Maplin Sands or on Foulness Island will shatter the peaceful enjoyment of the recreational facilities of the river Roach and its environs whether on the water, on the banks or observing wild-bird life.

Noise will be the major intrusive factor. While quieter aircraft engines are forecast for future aircraft, history would not lead us to expect fulfillment of this prognostication. Concorde aircraft are reported to have a noise pattern unlike that of airplanes in current use. The Concorde produces noise from abeam and this appears to spread widely on each side of this supersonic aircraft giving noise intensities for ten to twenty miles sufficient to wake the average sleeper. It appears therefore that noise will not only affect the river Roach users but those who live and work in the whole Southend peninsula who might number 200,000 souls today.

The profitability of an airport, like that of any other commercial enterprise, turns on the volume of its use. Thus one consortium suggests that 300 aircraft take-offs or landings would occur in each sixteen hours, namely, one about every 90 seconds. There is an implication that there might be a period of eight hours without flying during each twenty-four hours. We do not accept that commercial and prestige pressures will allow the proposed third London airport to be unused for one-third of each and every day.

Low-flying aircraft approaching or leaving the runways are grossly disturbing to those below. The slip-streams might make management of small sailing craft difficult, or even dangerous, with take-offs or landings low over the rivers Roach and Crouch.

Industrialisation of the banks of the river Roach would be expected to pollute water and air to the detriment of the oyster, fish and mankind. A walk, boating or fishing in these rivers would no longer be in the fresh sea-breeze as at present enjoyed but in a polluted industrial atmosphere reminiscent of the East End of London or of industrial areas of Southampton. Oyster dredging and fishing would decline and probably become impossible.

The plans of one consortium indicate that the river Roach would be filled in leaving perhaps a mile of water at its exit into the river Crouch. Plans of this nature would deny the use of the river Roach for any purpose.

Access to the airport would require new roads and railways. Should these be constructed as elevated multi-tier highways, rail and monorail facilities, the "motor way" roar would disturb the surrounding river and countryside users as well as others living within several miles on either side of this route into London. Noise from the M1 motorway which is not an elevated highway, spreads widely in Hertfordshire. Elevation adds to the diffusion of noise which can only be reduced by sinking such travel links in cuttings or tunnels but drainage would then become a major obstacle in this area in which the subsoil has been alleged to be inadequate to support the weight of the Power Station now constructed at Bradwell, Essex. Further, overhead, multi-tier constructions would destroy the vastness of the open views and impair or prevent the river navigation by sailing craft unless raised 40 or more feet above the spring tide high water level.

The tidal flows in the rivers Roach and Crouch are derived from the tidal stream sweeping southwards and down the east coast of England. A substantial mass of this water can now flow safely over the Maplin Sands which are largely submerged at about half tide. Should extensive land reclamation be carried out to the north-west of Foulness, this tidal escape would be diminished and two situations could arise.

Firstly, disastrous flooding might occur as in 1953 when a particularly high tide and a high wind summated to raise the water level in the rivers Roach and Crouch to such an extent that it flowed over the sea wall. The

Printed image digitised by the University of Southampton Library Digitisation Unit

wall has subsequently been built up and so far appears to be equal to most adverse conditions. Aggravation of the effects of high tides associated with high winds by diminishing the escape of water over the Maplin Sands could overwhelm the existing sea defences again. There have been three serious floods in the lifetime of one senior resident at Paglesham.

Secondly, changes in tidal flow patterns soon modify the form of existing sandbanks and channels as witnessed by the changes in the Ray Sands channel and Swin Spitway associated with the Buxey Sandbank over the last 50 years. Constructional intervention on the Maplin Sands would be expected to produce much greater changes in east coast channels in the area than the shifting of channels referred to above and wrought by natural forces during the last half century.

While models of the Thames Estuary and coastal waterways with artificial tides might give some indication of the changes in pattern of sandbanks and of channels, such experimental situations cannot mimic fully the complex interaction of natural forces closely enough to give great confidence in predictions arising from such experiments.

On April 15th 1969, Mr. T. A. L. Paton of Sir Alexander Gibb & Partners addressed the Parliamentary and Scientific Committee on "Flood Studies and Flood Prevention". He contended that Britain is likely to have more severe flooding in many areas in the future. He based his view on the climatic changes which have been noted recently in the UK. The large-scale circulation of the atmosphere during the last 10 years has a pattern which was maintained for many years before the end of the nineteenth century. There has been a sharp change to weather conditions as they existed before the milder climate of the early part of this century. The decline in the prevalence of the westerly (warm) airstreams over the UK has produced a variability in weather conditions and in rainfall. This type of rapid deterioration in weather conditions has been noted at 200 year intervals in the middle of the fourteenth, sixteenth, eighteenth and, now, the twentieth centuries. Mr. Paton stresses that particular attention should be paid to effective early flood warning, flood protection and management of flood waters and damage by a coordinated governmental agency rather than leave these matters to multiple government departments.

We further contend that construction of air- or seaports as envisaged by the Commission and the consortia might well convert the rivers Roach and Crouch from a recreational Mecca navigable at all states of the tides to silted creeks so common to other parts of the east coast such as the River Blackwater and its drying creeks above Osea Island at low tide. Thus there may be an erosion or even an abolition of the unique recreational value for which the rivers Roach and Crouch are now widely renowned.

There has been no indication from the Commission, nor from the consortia seeking to develop this Green Belt area, that they will safeguard in any way the navigability of these waterways, for instance by keeping channels open by perpetual dredging in the river Crouch, river Roach and their environs and maintaining the link via Havengore to the Thames Estuary for small craft.

We consider that only strict safeguards of this nature could hope to maintain the waterways.

In conclusion, I state with great emphasis, based upon a petition signed by those using and knowing these waterways, that we consider Foulness is not the site for the third London airport particularly as vertical take-off and landing is expected to render "long-runway" airports obsolete in a decade or less.

While it is no part of the reference to suggest an alternative site, we do respectfully commend to the Commission that a mid-channel island on the Goodwin Sand Banks should be considered as a site for the third London airport with a tunnel link to the Channel Tunnel Interchange Point on the mainland at which rapid rail and road communications will exist to link the proposed third airport with London, the rest of the United Kingdom and Europe.

Note

(1) I append a letter from Mr. J. A. Coote, the authority on the navigation of the east coast waterways and the author of *East Coast Rivers*, the handbook used by those who make passages in these waters. Mr. J. A. Coote holds that:

> "... Even if sailing will still be possible after the creation of an airport at Foulness, it cannot be pretended that the kind of recreation that would remain would be worthwhile for the thousands of yachtsmen who have come to value these waters for peace and quiet they can still find when they are afloat...."

(2) The Commission has received a submission from the joint Committee representing the yachting interests at Burnham-on-Crouch. We request the Commission to note that we strongly support the views expressed by this Joint Committee for we too use the facilities and participate in the yachting activities at Burnham and Wallasea.

Printed image digitised by the University of Southampton Library Digitisation Unit

JACK H. COOTE, FRPS, FBKS
The Towans, Hall Road, Rochford, Essex

9th April, 1969

Professor J. P. Quilliam
Dept. of Pharmacology
The Medical College of St. Bartholomew's Hospital
Charterhouse Square
London EC1

Dear Professor Quilliam,

You have asked me for my opinion on the effects of siting London's third airport on Foulness.

As you know, small-craft sailing, particularly cruising in the rivers and creeks of the Thames Estuary, began on the Crouch and the Roach about eighty years ago, and has been increasing in popularity ever since.

It seems to me that even if it is argued that sailing will still be possible after the creation of an airport at Foulness, it cannot be pretended that the kind of recreation that would remain would be worthwhile for the thousands of yachtsmen who have come to value these waters for the peace and quiet they can still find there when they are afloat.

For many of us quiet is an essential part of sailing, else why would we always try to pick-up our moorings without starting our engines.

Yours sincerely,
JACK H. COOTE

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

by

National Farmers Union (*Mr. J. E. Y. Hawkes*)
Country Landowners Association (*Brigadier J. R. Fishbourne, and Mr. G. D. Hooper*)
Council for the Preservation of Rural England
Nature Conservancy
Royal Society for the Protection of Birds
University of Kent
Ornithological Societies and Interests

Witnesses were examined on this evidence
on Day Seven, Thursday 15 May 1969
see pages 467-492

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the National Farmers' Union*

Survey of Affected Farmers

1. Scope of the Inquiry

Questionnaires were sent out to 686 members of the NFU within the following area:

The western boundary of the area is roughly a line drawn from Maldon through Brentwood to Romford; the southern boundary is Greater London and the Thames, and the eastern boundary is the sea.

It was thought right to circularise all these members so that every farmer who might conceivably be affected might be allowed an opportunity to comment on the Foulness proposals.

2. Replies to the questionnaire

Of the 686 farmers and growers who were circularised, 144 replied. Twenty-five of these simply wrote to say that as they did not consider that they would be in any way affected, they saw no reason to complete the questionnaire. The questionnaire was completed, therefore, by 119 members. As indicated in para. 1, the NFU circularised members over a greater area than would be likely to be affected by the third London airport, so that one would expect that there would be a high percentage of farmers and growers who would not reply. In the light of the evidence which is given below, a further reason why questionnaires were not returned may well be that agricultural opposition in certain areas to the Foulness proposal is either limited or non-existent.

The 119 members who filled in the questionnaire farm in all a total of 34,713 acres of land. Of these, owner-occupiers farm 19,571 acres and tenant farmers 15,142 acres. These totals include 35 members growing horticultural crops on 1,336 acres of land.

3. Description of farming

The following facts emerge from the questionnaires:

I. The average size of farms excluding horticultural is just under 400 acres. This is well above the national average.

II. This is predominantly an arable farming area, the bulk of the 34,713 acres being devoted to cereal crops, potatoes, peas, beans and sugar beet. The average yields are good, and exceptionally so in the extremely fertile area around Rochford.

III. While chiefly an arable area, livestock farming is also much in evidence. For example—

4,033 beef cattle are kept on 44 farms.
2,192 dairy cows on 27 farms.
11,229 pigs on 29 farms.
397,287 poultry kept on 39 farms.
1,723 ewes and progeny on 5 farms.

IIIa. The 119 farms from which information has been obtained employed in all 520 agricultural workers. Of these, 377 are housed in service dwellings.

IV. The area is also important for its horticultural crops. These are mainly concentrated within 5 miles radius of Rochford, and supply both local markets and London markets. The majority of growers are owner-occupiers. The main crops include:

Tomatoes	Vegetables	Flowers
Cucumbers	Mushrooms	Bedding plants
Fruit		

V. The questionnaire asked how much capital had been invested by members in their farms over the last 10 years: 41 members, farming 7,022 acres declined to give this information; 78 farmers, farming 27,711 acres attempted to answer the question, but it was clear that there was some confusion about what was actually required in answer to this question. What can be said is that these 78 farmers have invested not less than £1,690,900 in capital during the last 10 years, though the actual figure is likely to be higher.

4. Farmers' views on the suitability of Foulness as the third London airport

1. The opinions and attitudes of members seem to depend to some extent upon the situation of their farms in relation to Foulness. For example, many farmers whose farms lie north of the river Crouch tend to assume that they will not be affected by an airport sited on land reclaimed from Maplin Sands. Members situated south of the river Crouch are much more concerned, and the nearer they are to the Maplin Sands, the greater the proportion of objectors there becomes, though it is to be noted that even within 5 miles of Maplin Sands, the number of farmers objecting is only slightly more than the number of farmers who are satisfied that the Maplin Sands is the right place for the airport. As the figures below indicate, outside the 5-mile radius, the majority of the farming community do not object to the Foulness proposals.

II. The figures may be given as follows:

	Farmers who wish to object	Farmers who do not wish to object
1. North of river Crouch	6 (4,037 acres)	11 (3,555 acres)
2. South of river Crouch		
(a) 5 miles from Maplin Sands	16 (10,230 acres)	13 (1,901 acres)
(b) 5-10 miles from Maplin Sands	11 (1,899 acres)	18 (3,119 acres)

* See also p. 467.

Printed image digitised by the University of Southampton Library Digitisation Unit

	Farmers who wish to object	Farmers who do not wish to object
(c) 10-15 miles from Maplin Sands	2 (347 acres)	8 (3,401 acres)
(d) Over 15 miles from Maplin Sands	6 (1,180 acres)	28 (5,044 acres)
TOTAL	41 (17,693 acres)	78 (17,020 acres)

III. It will be seen from the above figures that farmers with small acreages tend not to wish to object. This may bear some relation to the horticultural replies which have been received. Twenty-five growers farming 949 acres did not wish to object, whilst 10 growers farming 387 acres did wish to object. Growers of horticultural crops gave their reasons for not wishing to object as:

(a) Many growers supply local needs and foresee the prospect of better trade with the higher population in the area.

(b) By reason of substantial urbanisation of many parts of the area already, compensation is likely to be at a much higher level than that for agricultural or horticultural value only, and most of the growers are owner-occupiers rather than tenants.

(c) Because the size of unit is smaller, in the event of land being taken for non-agricultural purposes, the whole of the agricultural unit will be taken. It is a real fear among many farmers that they will be left with part of the farm or horticultural unit which will be uneconomic to continue in agricultural or horticultural production.

(d) So far as smaller farmers are concerned, they tend to echo the reasons above.

IV. *N.B.* It is very important to note that many members qualified their answers in two ways:

(a) First, that they were referring to an airport on reclaimed land only and not to an airport partly on reclaimed land and partly on Foulness Island.

(b) Since the Commission has been able to give no clear indication of the extent and form of ancillary development, members have to some extent been forced to give their views in the light of their own views as to what might be involved. There are other qualifications, e.g. some non-objectors take this view because they feel that such developments as are likely will not occur during the remainder of their business lives, and 3 farmers, farming 60 acres, did not wish to object because they will be retiring during the next two years.

5. **Reasons for not objecting**

Most farmers who do not wish to object, hold strong views which are made abundantly clear from their replies. Some of these hold strong views about the problem of noise and feel that a coastal site is the only sensible answer; others feel that a site reclaimed from Maplin Sands would use less agricultural land than any other site and therefore wish to positively support the proposal for Foulness (off-shore).

6. **Chief reasons for objecting to the airport**

Those farmers who do wish to raise objections give a wide variety of reasons. Logically, with the Foulness (off-shore) site, no one mentions the taking of land for the airport itself, and very few mention noise as a reason for objecting (with the important exception of two very large poultry farmers, who are worried about the effect of noise on their birds).

The possibility of *losing land* for industry or housing is mentioned by most of those who object. Even more farmers mention the prospect of *farms being severed* by new roads, railways, pipelines and pylons. The possibility of a *labour shortage* and a *rise in the cost of labour,* coupled with land loss and/or severance leading to less efficient units with higher costs, was also mentioned. The possibility of difficulties with *water supplies* was quoted by a number of farmers; charges for water are already high in Essex. *Litter* left lying about and trespass by a much increased population, and a high risk of fire were both mentioned by a few farmers.

The most frequently mentioned reasons were possible loss of land, severance of farms and possible increased labour costs.

7. **Compensation**

Most farmers mentioned compensation. By and large, owner-occupiers tended to assume that land for any non-agricultural purpose acquired in south-east Essex would be paid for at a rate which would be either development value or somewhere between agricultural value and development value. If this assumption proved wrong, many would change the views they have expressed. Others expressed themselves as content with a generous agricultural value plus the full cost of finding, buying and settling into a new farm.

Tenant farmers expressed real and sincere fears about compensation. From the replies received, it is clear that the most worried people are the tenant farmers. Their main fear is that they will receive only 5 or 6 years' rent as compensation for disturbance; another tenancy would be almost impossible to find and 5 or 6 years' rent is a totally inadequate basis on which to start buying an alternative farm. Such farmers would face almost total loss of livelihood and their reactions are those of anyone faced with such a prospect. Compensation is only payable on actual dispossession, which may bear no relationship to the time when another farm becomes available.

8. It is significant that many of the farms within this area have been in the same family for several generations and no less than 93 have replied that they have sons or other relatives who would want one day to take over the farm.

9. **Conclusion**

It is clear from farmers living in the area that if ancillary development were to be concentrated within the Southend, South Benfleet, Basildon axis, and the

Printed image digitised by the University of Southampton Library Digitisation Unit

Southend, Rayleigh, Wickford axis, there would be little agricultural opposition to the Foulness proposal. Agricultural opposition would also be minimal if ancillary development were to take place in an area bounded to the north by the railway line from Wickford to South Ferrers to Burnham-on-Crouch, and on the south by the railway line running from Wickford to Rayleigh to Rochford and to Southend, and on the east by a line roughly drawn between Rochford and Burnham-on-Crouch. Were there to be any major developments outside these areas, agricultural opposition would be very strong indeed. The land outside the areas acceptable for ancillary development is of high agricultural value and is farmed efficiently.

N.B. Should the Commission find it helpful to examine these questionnaires at any stage, they are available, but the cost of typing them out or of photocopying them all is too prohibitive for them to be appended to this document.

Views of Representative Farmers

SUBMITTED BY MR. W. R. COTTIS OF H. COTTIS & SON OF LAMBOURNE HALL, CANEWDON, ROCHFORD, ESSEX

1. I am a past Chairman of the Rochford Branch of the National Farmers' Union and a present member of the County Executive of the Essex National Farmers' Union. I am a Commissioner of Taxes, Chairman of the Southern District Agricultural Advisory Committee of the Essex Agricultural Executive Committee and Vice-Chairman of the Governors of the King Edmund Comprehensive School.

2. One of the major problems concerning tenant farmers in this peninsula is the amount of land which will be taken for ancillary development allied to the proposed airport. Equally important too, is the placing of access routes.

3. The land in this peninsula falls into varying categories. The land adjoining Foulness Island is almost comparable to fen land. Also it is very intensively farmed with market garden crops and potatoes. The farther west one travels from Foulness Island, so the variation in crops decreases. Most of the farms then fall into the category of "cereal farms".

4. It is the latter which are of paramount importance. For this reason, it is vitally necessary to have a large area of farm land, to be remunerative and to justify the enormous capital expenditure, which a tenant farmer invests into agricultural machinery, corn drying equipment, tractors, drainage, etc.

5. The business of farming (for it is no longer a way of life) must of necessity be compared with any other industry in this country, i.e. expansion, for the purpose of reducing overheads. This expansion has taken place in the past decade, not only with tenant farmers but also with owner occupiers.

6. Since 1962 I have taken over the tenancies of three small owner occupied farms comprising of 113 acres, 108 acres and 84 acres respectively and one larger farm of 330 acres. All of the owners however have alternative business interests.

However as a tenant farmer the addition of 635 acres only necessitated two extra men, two combines and two tractors, whereas, except for the 84-acre farm, the other three each had combines, large tractors, etc. Hence my point about the spread of overheads in relation to the economics of farming.

7. As an industry we have quite recently been told by the Minister of Agriculture, that he requires from farmers a very big increase in the acreage of wheat. Yet if the airport is placed on the Maplin Sands in my opinion some 12,000 acres will in the course of time be required for ancillary developments. There appears to be no alternative but to take this acreage from land adjoining the Maplin Sands, which is one of the most productive wheat growing areas in eastern England. I feel sure that if this were not so, then the Government of the day in 1953 would not have so readily given 75 per cent drainage grants to occupiers of those vast areas which were flooded when the sea walls broke in January of that year.

8. In relating the proposed airport to my own position as a tenant farmer, I am of the opinion that it will have a devastating effect upon my business, for several reasons.

(a) Since the death of my father in June 1962, I have increased the turnover of the business by nearly $66\frac{2}{3}$ per cent.

This increase has been due to the acquisition of the increased acreage, mentioned earlier and by building up a pig enterprise, turning out some 4,000 pork pigs per year.

The business showed a small loss for the year ending March 1962 and it is only by ploughing back all of the profits, have I been able to turn this loss into a reasonable profit. This, therefore, confirms my earlier statement that it is vitally necessary to have a large acreage as a cereal farmer, for it to be a worthwhile venture.

(b) In order to expand the business even further I have availed myself of agricultural business consultants, at some considerable expense, so that I can take my son into the farming business in the very near future. He is now studying at an agricultural college. The reason for further expansion is to combat the ever-increasing costs, which we as farmers have to meet, with little or no compensation in the way of increased prices for the commodities which we produce.

(c) I am given to understand that the new access

Printed image digitised by the University of Southampton Library Digitisation Unit

motorway will, if it takes the route as shown on present plans, cut one farm in half at Paglesham, and another in half at Rawreth. This must of necessity entail the taking of several acres, but worse, it will make the practical side (movement of tractors, combines, etc.) extremely difficult. If this route is taken, there is but very little compensation for me as a tenant, if any, and I gather that the landlords will only receive agricultural value for the land taken for this purpose.

(d) I assume that where the motorway is placed so almost automatically industry will be developed near it. This therefore could mean that there is some possibility of me losing a vast amount of land which I now farm as a tenant. In other words, my business as a farmer could cease. Assuming that this would be the case, I question the opportunities of starting another enterprise of my size anywhere. Bearing in mind the demand for farms and their exorbitant cost at the moment. I also am of the opinion that to find an opportunity to rent the same area which I do at the moment could be almost hopeless. Also, of course, this applies to all tenant farmers who would lose their livelihood should the airport come this way.

(e) Further, another point which I consider to be of fundamental importance is the value of our dead stock, should we be forced to sell out because of development. In my opinion, the realisation price of machinery when sold cannot earn the same money if the realisation price in terms of £ s. d. is invested elsewhere. If a farmer for instance buys a new combine harvester for £3,500, its written down value after one year is 58 per cent less than the purchase price (58 per cent = 30 per cent Investment Allowance = 28 per cent depreciation). The possible selling price if forcibly sold up would be around £2,800. So the farmer would lose, financially, because the life of the machine, if used properly, could be seven years. Alternatively, if the realisation price of older machinery is above its written down value, then the farmer would be subject to taxation on the book profit.

(f) The farm where I live, "Lambourne Hall", Canewdon, has been in the ownership of my family since 1924 and I am the fourth generation. If I am unfortunate enough to lose it and the land which I rent, what hope is there for my son to become a farmer. I would say hardly any.

9. Finally, I would question whether the consortia have as their main interest the benefit of developing the Maplin Sands from the national point of view or for their personal profit. In any case, why should these people say we will develop the south bank of the Crouch, (which affects me) and deprive me and other farmers of their livelihood? Why should these people deprive me of a business which I have built up in a lifetime and one of which I am proud and see other farmers and myself dispossessed because of their interests?

THIRD LONDON AIRPORT–MAPLIN SANDS
N.F.U. QUESTIONAIRE–CONTINUED

NAME W. R. Cottis Trading as H. Cottis & Son.

ADDRESS Lambourne Hall, Canewdon, Rochford, Essex.

ACRES:
a. Total Number 1360
b. Number of acres owned None
c. Number of acres tenanted 1360

CROPPING:	ACRES	YIELD PER ACRE
Straw crops	989	35 cwts
Sugar Beet		
Potatoes		
Peas and Beans	348	30 cwts Beans : 25 cwts Peas
All Other Crops	20 clover	1-3 cwts for seed
Grass (Permanent or temporary)	3	

HORTICULTURAL:	£
Area of glass	
crops	

Printed image digitised by the University of Southampton Library Digitisation Unit

LIVESTOCK:

Store/beef .....
Milking cows .....
Pigs 1160
Sheep .....

POULTRY: TOTAL .....
a. Laying .....
b. Others .....

Number of workers ..... 13 ..... Number of service cottages ..... 10 .....

CAPITAL INVESTED IN FARM OVER LAST 10 YEARS:

a. Buildings .....
b. Drainage .....
c. Machinery ..... £74,000 .....
d. Other .....

ANY PLANNING PERMISSION GRANTED OR REFUSED:

	Granted	*Refused*
a. For Farm Buildings	Yes to the landlords	
b. For Residential or Industrial Development		
c. Other		

FUTURE PLANS FOR FARMING:

I have recently engaged Farm Services & Computers Ltd for a complete reappraisal of the farm. I have already invested money in reorganising on their recommendation to increase the output of these farms by some £20,000 per year.

SPECIAL REMARKS:

e.g. How long have you been farming in the area? I am the 5th generation
How much longer do you propose to farm? As long as I can
Have you any relations, etc., to take over the farm on your retirement?
My son who is 19 years old, is now at Essex Institute of Agriculture. He is strong, keen and ambitious and will be working with me as from July 18th 1969. Hence the expansion programme mentioned in the preceding question.

SUBMITTED BY MR. ISAAC FRANK BURROUGHS OF RUGWOOD FARM, FOULNESS, ESSEX

1. I am a parish councillor of Foulness Island. I have farmed here for 23 years together with four of my brothers.

2. I disapprove of the third London airport being sited on the Maplin Sands because there is a doubt in my mind that it will actually be on the Sands. In my opinion it will more probably be situated on Foulness Island.

3. I am a tenant of the Ministry of Defence, farming 750 of the 5,000 acres comprising the Island which, in my opinion, compares favourably with the finest agricultural land in the country.

4. After the 1953 floods, which devastated the area (and could happen again), they returned to the Island at the first opportunity--back to their homes. The Islanders then set about the task of cleaning and clearing and by sheer hard work the Island returned to normal in a far quicker time than had been anticipated by the experts. Everyone attacked the problem with vigour and worked together to get "their Island" back into production once more. It would be a disaster for them to be turned out of their homes for good.

5. If the airport came here thousands of acres of highly productive farm land, both on Foulness and in the surrounding areas, would be wasted. This area is acknowledged to have the finest agricultural soil in the country. If we must have a large airport surely there are other areas where the land is of no agricultural value. With the millions of starving people in the world today and the increase of population over the next few years surely every effort should be made to retain our food production at all costs.

Printed image digitised by the University of Southampton Library Digitisation Unit

THIRD LONDON AIRPORT—MAPLIN SANDS
N.F.U. QUESTIONAIRE—CONTINUED

NAME ..... Isaac Frank Burroughs .....

ADDRESS ..... Ringwood Farm, Foulness, Essex. .....

.....

ACRES: a. Total Number ..... 753 .....
b. Number of acres owned ..... None .....
c. Number of acres tenanted ..... 753 .....

CROPPING:	ACRES	YIELD PER ACRE
Straw crops	570, including beans	1½ tons
Potatoes	1	8 tons
Peas and Beans	1	30 bushels
Grass	112	2 tons

LIVESTOCK:
Pigs ..... 15 .....

POULTRY:
a. Laying ..... 300 .....

Number of workers..... 7 ..... Number of service cottages ..... 5 .....

CAPITAL INVESTED IN FARM OVER LAST 10 YEARS
a. Buildings .....
b. Drainage .....
c. Machinery ..... £15,000 .....
d. Other .....

FUTURE PLANS FOR FARMING: ..... As high a production as possible. .....

SPECIAL REMARKS:
e.g. How long have you been farming in the area?
How much longer do you propose to farm?
Have you any relations, etc., to take over the farm on your retirement?
I have farmed in the area for 23 years and shall continue for as long as possible. As I have ..... three sons, all of whom love farming, they will follow on when I retire. .....
.....

SUBMITTED BY MR. W. A. SQUIRES OF A. W. SQUIRES LTD., OF DOGGETTS, ROCHFORD, ESSEX

1. I hold a certificate in agriculture; I have been Chairman of the South Essex Agricultural Executive Committee from the middle of the war until recently; I have been a past Chairman of the Rochford Branch of the National Farmers' Union and I am a member of the County Executive of the Essex National Farmers' Union.

2. **Past history**

My father, although of a long-standing farming family, had, owing to bad times at the turn of the century, to start farming in a very humble way as a tenant of a small farm.

Conditions for him combined with hard work improved so that by 1908 he was able to hire more land and by 1917 when our present farm came on the market he was able, with help from the AMC, to buy Doggetts.

In 1921 another farm adjoining, of 450 or so acres, was bought with help from the same source.

Since then some land has been sold in 1936 and a sand pit worked. After the last war some more land adjoining was bought and some 250 acres occupied as tenants.

My father and mother have lived at Doggetts since 1917 and after their deaths I, my wife and family have lived here and I think the general set-up is a commercial success as well as being a very pleasant family home.

3. After these years of work and planning we should be very loathe to be dispossessed and especially so if we were "phased-out" over a longish period, say anything in excess of five years.

By this possibility long (as we foresee) term of dispossession the large amount of capital necessary to get reinstated elsewhere would not be immediately available, we presume, so it would be a difficult period for my sons to

Printed image digitised by the University of Southampton Library Digitisation Unit

get re-established elsewhere when there would be a number of similar farmers to ourselves chasing a very limited number of good, well-equipped farms similar to our own that may come on the market, and with what kind of available capital to spend we do not know of course.

4. The kind of compensation must be mindful of the loss of amenities, loss of income whilst in search of another property, extra cost of labour in competition with development, and loss of value as a farm if retained in a Green Belt by being overun by children and dogs if surrounded by development. And last but by no means least is compensation in proper relation to the value of the land to the developers.

5. Notwithstanding all that I have said I still cannot divorce my conscience from the fact that I think nationally a coastal site is the right place for a very busy airport such as is envisaged, as the "stacking" operation can be carried out over the water and so relieve the population of a considerable amount of noise.

THIRD LONDON AIRPORT—MAPLIN SANDS
N.F.U. QUESTIONAIRE—CONTINUED

NAME ..... W. A. Squires of A. W. Squires Ltd. .....

ADDRESS ..... Doggetts, Rochford, Essex. .....

ACRES: a. Total Number ..... 980 + ... (997 in total one block.)
b. Number of acres owned ..... 766 .....
c. Number of acres tenanted ..... 214 .....

CROPPING:	ACRES	YIELD PER ACRE
Straw crops	620 approx.	2 tons
Sugar Beet	40 "	17 "
Potatoes	60 "	14 "
Peas and Beans	100 "	1½ "
All other Crops	25 "	1 "
	Root crops for seed.	
Grass	135	

LIVESTOCK: Store/beef ..... 200 fat cattle throughput per year .....
Pigs ..... 10 sows + pork pigs .....

Number of workers ..... 12 ..... Number of service cottages ..... 22 .....

CAPITAL INVESTED IN FARM OVER LAST 10 YEARS:

a. Buildings ..... £30,000 + ...
b. Drainage ..... £7,000 approx. .....
c. Machinery ..... £20,000 + ...
d. Other .....

ANY PLANNING PERMISSION GRANTED OR REFUSED:

	Granted	*Refused*
a. For Farm Buildings	Yes	
b. For Residential Development	(Farmhouse) Yes	
c. Other	White land zone on 18 acres	Yes

FUTURE PLANS FOR FARMING: ..... No great change envisaged .....

SPECIAL REMARKS:

e.g. How long have you been farming in the area?
How much longer do you propose to farm?
Have you any relations, etc., to take over the farm on your retirement?

..... I have farmed for 52 years in Rochford and intend to continue for as long as possible. I have three sons who could take over on my retirement. .....

Printed image digitised by the University of Southampton Library Digitisation Unit

SUBMITTED BY MR. P. G. PHILPOT OF A. H. PHILPOT & SONS (FARMS) LTD., OF PHILPOT HOUSE, RAYLEIGH, ESSEX

1. I am a past Chairman of the Rochford Agricultural Executive Committee and the Southern District Committee of the Agricultural Executive Committee.

2. My views on the subject of a Foulness airport are as follows:

(a) The more land that can be reclaimed from the sea, the less existing farm land is lost to building.

(b) In this context the damming of the creeks east of the Maplin Sands would result in a land gain as well as more security against flooding by the sea for many thousands of acres and, also, a possible freshwater reservoir.

(c) The need for vastly increased housing for those working at the airport need not be as greedy for agricultural land as some would suggest. In the Southend-on-Sea area approximately 3,000 houses change hands each year. If one-third of these were bought by airport workers from other areas, 1,000 workers a year could be catered for with no extra building. The civil and domestic services are already available, so there is no large tail behind every airport worker so housed.

(d) The north Kent coast is less than 15 miles from the Maplin Sands; if hovercraft or similar ferry service was possible, then, once again, the need for a "new" town is reduced.

(e) The Ministry of Agriculture has something like 2,500 acres in south-east Essex. This was "plotland" before the last war and is now farmed by their tenants. Almost all this land is very poor and split into many small fields between houses, but, as it is in the Green Belt, all attempts by the Ministry to get houses built on their land have failed.

(f) If the airport comes to the Maplin Sands, then all improvements to roads, etc., must be part of the overall plan and not done as a series of minor normal improvements. I have in mind that the A127, Southend arterial road, must not be made up to motorway standard without "motorway" consideration being given to farmers inconvenienced by the change of character of the road.

(g) Therefore I feel that any suggestion that a new town is inevitable if the airport comes to our area should be strongly resisted.

(h) The existing Green Belt plotland south of the Crouch and east of the A128 could, if released, house an enormous number of people with little impact on viable farms.

THIRD LONDON AIRPORT–MAPLIN SANDS
N.F.U. QUESTIONAIRE–CONTINUED

NAME ..... A. H. Philpot & Sons (Farms) Ltd. .....

ADDRESS ..... Dollymans Farm, ...
..... Wickford .....

ACRES: a. Total Number ..... 2,558 .....
b. Number of acres owned ..... 1,458 .....
c. Number of acres tenanted ..... 1,100 .....

CROPPING:	ACRES	YIELD PER ACRE
Straw crops	1,100	35 Cwt
Sugar Beet		
Potatoes	100	12 tons
Peas and Beans	720	2¼ tons; 1¼ tons
All Other Crops		
Grass	638	
(Rough, Permanent or temporary)		

HORTICULTURAL:	£
Area of glass	
crops	

LIVESTOCK: Store/beef ..... 200 .....
Milking cows ..... 140 .....
Pigs ..... (Sows) 80 .....
Sheep ..... (Ewes) 350 .....

Printed image digitised by the University of Southampton Library Digitisation Unit

POULTRY: TOTAL .....
a. Laying .....
b. Others .....

Number of workers ..... Number of service cottages.....

CAPITAL INVESTED IN FARM OVER LAST 10 YEARS:
a. Buildings .....>75,000.....
b. Drainage .....>10,000.....
c. Machinery .....>50,000.....
d. Other .....

ANY PLANNING PERMISSION GRANTED OR REFUSED:

	Granted	*Refused*
a. For Farm Buildings	numerous	NIL
b. For Residential or Industrial Development	4 houses	NIL
c. Other	2 industrial buildings	NIL

FUTURE PLANS FOR FARMING: .....Hold on, not expansion.....

SPECIAL REMARKS:
e.g. How long have you been farming in the area? .....34 yrs.....
How much longer do you propose to farm? .....As long as possible.....
Have you any relations, etc., to take over the farm on your retirement?
.....Yes.....

Evidence of the National Farmers' Union

Planning Evidence

SUBMITTED BY MR. J. E. Y. HAWKES*

1. I am a partner in the firm of Hancock, Hawkes, Architects/Planners, of Hampstead, London. I have been asked by the National Farmers' Union to examine the effect that the establishment of the third London airport at Foulness would have on future urbanisation and land requirements in the area, with particular reference to the outline suggestions for urbanisation prepared by the Essex County Council.

2. **Regional influence on local urbanisation**

In order to consider the size and form of local urbanisation associated with the airport at Foulness it is essential to examine the broader strategic urbanisation pattern at regional/sub-regional level. There are two main reasons:

3. A. *Strategic Form*

The development of the airport and associated uses is likely to be the largest single catalyst for growth in the south-east in the next quarter century. The opportunity should be taken to help restructure the settlement pattern at regional scale. The development associated with the airport should therefore be considered, not only in terms of local form, but on how the local form can best be devised to complement the regional pattern (which may itself be affected by the airport location). It is therefore necessary to consider the possible regional structure before considering the siting of urbanisation locally.

4. An essential part of current planning thought is the creation of growth zones—in areas that are already urbanised or on transportation axes. This has the advantage of avoiding sprawl into agricultural or recreational areas: it takes advantage of the existing basic infrastructure; and helps the restructuring and improvement of the existing fabric.

5. The existing settlement pattern and communications in the Foulness hinterland radiate from London and form part of the linear east-west axis of urbanisation along the Thames and its Estuary. The South-East Economic Planning Council's *A Strategy for the South-East** suggests the possibility of a growth sector along the A127 from London to Southend and similar proposals have been indicated in other reports. It is logical

* See also p. 467.

* HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

for the Foulness urbanisation to take place along this sector as part of the linear east-west Thames side communications and settlement pattern of the London region. I believe that development on this line is rational even though the strategy for the South-East may be modified as a result of the present study by the South-East Joint Planning Team.

6. Therefore, on the basis of broad strategy, I consider that urbanisation in the event of an airport at Foulness should take place on a linear form generally on the line of the A127 extending eastwards north of Southend to Foulness. It should be planned as an integral part of the London conurbation. Development should be severely restricted to this linear urban corridor. Any possible pressures for sprawling development in the sub-region to the north/north-west of Foulness and the Crouch should be resisted—such development would certainly prejudice the general amenity of the area from an agricultural and recreational standpoint and would almost inevitably lead to transportation problems.

7. B. *Settlement Size*

There are particularly strong employment linkages between the Essex Thames-side area and the London conurbation. The 1966 sample census shows that 22 per cent of all residents in employment in the Southend area (Southend CB, Canvey Island UD, Benfleet UD, Rayleigh UD, and Rochford RD) commuted to the London conurbation—a total of 28,500 daily journeys. The total daily commuter trips to the conurbation from the whole of Thames-side Essex (Southend area plus Billericay and Wickford, Basildon, Brentwood UD and Thurrock UD) was 61,800 or 24 per cent of the employed population, i.e. nearly one-quarter of the employed residents travel to London compared with one-sixth for the rest of the Outer Metropolitan Area. There are numerous secondary commuting movements within the sub-region. The whole presents a complicated pattern overlaid by the predominant westwards movement to London.

8. The 1966 Census also indicates, as would be expected, a large employment imbalance. In the Southend area there were 37,800 fewer employed in the area than there were residents in employment. The deficit in the rest of the Thames-side area brings the total imbalance to 42,500 jobs.

9. It is clear that the support population to the airport and the generation of associated uses will be closely interlinked with existing employment and commuting patterns. A linear communications based growth as suggested in para. 6 will tend to increase interaction between London and Southend and this will be stimulated by the airport itself. Because of the "closeness" of Foulness to the London conurbation there are likely to be peculiar interactions and changes in the settlement and employment pattern, when compared with a similar airport development in an area of different existing settlement pattern and commuting structure. I believe this will have a marked effect on the demands for additional labour and population and hence the area required for urbanisation in the vicinity of the airport.

10. **Employment demand and resultant population***

The County Council have made a comprehensive analysis of the likely employment demand, the resultant support population and how this can be partially met by existing resources. I have examined this in detail and have the following observations:

11. *Employment*

(a) *Primary Employment*

(directly connected with airport):

The County Council accepts the figure of 65,000 for four runways. I consider this a reasonable assumption, but the Heathrow employment is estimated to rise to 62,000 by 1981 for a two-runway airport and should some activities be transferred from Heathrow to Foulness total employment could rise to the upper estimates of 85,000.

(b) *Secondary Employment*

(engaged in manufacturing industry or commercial projects attracted specifically by the airport):

(i) *Those forming an integral part of airport services:* The County Council's estimate of 6,500 appears reasonable.

(ii) *Attracted Industry and Offices:* This is by far the biggest variable in the employment projection because of its cumulative effect on service employment. American experience indicates a range from 10,000 to 70,000+† jobs and the County Council have taken a "conservative" figure of 15,000. I believe the demand is likely to vary considerably according to the relationship of a particular airport site to regional/national communications and employment centres; although on the other hand demand can be channelled by regional and local planning policies and by the design of transport interchange facilities giving access to the airport. Two particular factors could influence the demand at Foulness:

(1) The establishment of a major port in conjunction with the airport would lead to additional industrial and associated storage facilities.

(2) There could be a gradual changeover in the existing industrial pattern of the London-Southend corridor towards airport orientated industry. Existing facilities and employment could therefore reduce the need to develop new industrial/employment areas.

I consider, on balance, that there could well be a considerably greater demand than 15,000.

The possible *range for secondary employment therefore appears to be between 16,000-76,000 employees.*

(c) *Service Employment*

I accept the employment multiplier of 2.5 for calculating service employment and that 20 per cent could be expected to be provided outside the local area for urbanisation. However since service employment is directly related to primary and secondary employment

*For convenience I have used the same conversion factors as the County Planning Officer.

†Port of New York Authority.

Printed image digitised by the University of Southampton Library Digitisation Unit

the total could be in excess of the County Council's estimate.

The possible range for service employment is:

(65,000 + 16,000 = 81,000) = 121,500 employees
(85,000 + 76,000 = 161,000) = 241 employees

Deducting 20 per cent for the region gives a *range of 97,200 to 193,200 in service employment.*

(d) *Total Employment*

This gives a total local employment range of:

(65,000 + 6,500 + 10,000 + 97,200)
= 178,700 (108,850 male)
(85,000 + 6,500 + 70,000 + 193,200)
= 354,700 (216,850 male)

12. *Labour Supply*

The County Council estimate that 25,000 jobs could be filled by those who already live in the area or could be accommodated in the existing housing stock. I feel that this might well be more because of a higher drawback or even reversal in the commuter flow. This is because the centre of gravity of the new urban area will be considerably nearer to the existing commuter areas than the airport itself. New industry and service employment will therefore be close to a larger commuting population and could even attract labour from the conurbation fringe.

13. *Population and Housing Requirements*

Using the family multiplier of 3.42 on male employees (assumed range of 109,000 to 217,000) the population would be between 373,000 and 742,000. Deducting from this the County Council's estimate of existing capacity (85,000 persons; which may be greater if there is a larger commuter drawback or reversal) and Development Plan Capacity (36,000 persons) the additional demand is for 252,000-621,000 persons.

14. *Land Requirements*

Excluding the airport site I consider a town density of 17 persons per acre could be achieved by careful planning (excluding the main regional communication links). This would require a development area of between 14,800 and 36,500 acres. However, a major recreational area or "country park" might also be necessary—this might be sited along the Crouch. In addition there would be demand for space elsewhere in the region for the 20 per cent service employees, replacement for the commuter drawback and those in existing houses who move out of the area. Further land demands in the region will result from associated developments such as water storage.

15. The County Council estimate that some 1,670 acres will also be required for new and improved London airport road and rail routes. Further land will undoubtedly also be needed to improve other major routes.

16. *Local Urbanisation*

The ultimate need for urbanisation will depend on many factors and on achieving a balance between demand and correct planning strategies. I consider that the likely need will probably be in the lower half of the 15,000 to 36,000-acre range, provided that careful control is exercised to ensure that in general only uses associated with the airport develop in the area.

17. I agree with the general location and form suggested by the County Council in their outline proposals and that the area indicated would accommodate some 270,000 persons. I consider that a line from Canewdon to Southend should form the eastern limit of development and that a narrower green zone could be left to the north of Southend. Should the demand for land be greater than anticipated by the Council, I consider that sufficient additional land could be found in the Basildon-London growth corridor without serious detriment to the existing settlement pattern. Further growth along the London-Southend sector would reinforce the existing linear pattern and, provided urbanisation is planned carefully and comprehensively, would create a well serviced and pleasant environment. At the same time no growth should be allowed north of the Crouch Estuary which should be conserved as a green zone.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Country Landowners' Association

SUBMITTED BY BRIGADIER J. R. FISHBOURNE*

Proof of Evidence of Brigadier J. R. Fishbourne, CBE, DL, of Countess Cross House, Colne Engaine, Colchester, Essex, Regional Secretary of the Country Landowners' Association for the Counties of Essex and Suffolk.

1. The Country Landowners' Association represents owners of agricultural land in England and Wales, and its members own the vast majority of privately owned agricultural land and woodland in England and Wales, as well as other rural lands. The Association has investigated the likely effect upon its members' interests locally in the event of the third London airport being sited in the vicinity of Foulness. The following is the best information we have been able to produce in the time available.

2. **CLA members affected**

As shown on the plan CLA2 appended hereto†:

(a) In the peninsula between the Maplin Sands and River Crouch the Association has 24 members in 12 parishes, owning in total in excess of 14,000 acres.

(b) In the Dengie peninsula the Association has 35 members in 10 parishes owning 13,500 acres.

(c) In 11 further parishes north of Southend and west of the Dengie peninsula the Association has 41 members owning 8,000 acres.

Individual members are divided in their views, some favouring Foulness as the site for the airport and others being against. There are also some "don't knows".

3. **Quality of agricultural land**

The Association has prepared a schedule showing parish by parish the agricultural grading and nature of farm land in the locality. This is not appended hereto because it is understood that other parties will provide this evidence, but the schedule can be produced if required.

The schedule shows a substantial quantity of high quality land. The Association calls for the preservation of good agricultural land as far as possible, for the reasons set out in its evidence submitted at Stage 1 of the Commission's work. Should the airport be sited at Foulness the Association urges the following measures for the preservation of good land:

4. **Means of preserving good agricultural land**

(a) *Unproductive or waste land* should be taken for development, wherever possible, in preference to productive land.

(b) *The fullest use should be made of the Maplin Sands* both for siting the airport itself and also ancillary development.

(c) *The Dengie peninsula should not be used for development.* The quality of land and standard of farming in the Dengie Hundred is high. The River Crouch could and should be used as a northern barrier to on-shore development, in which case the river can also be expected to afford protection from interference with farming in the Dengie Hundred by trespass, dumping, etc., as referred to in para. 6 of the Association's Stage 1 evidence.

(d) *New road and rail links.* The saving of agricultural land by reclaiming the Maplin Sands could be offset by ill-considered routing of transport links. The Association urges a careful study of possible routing with a view to the preservation of good land and the least interference with farming. The Association also urges a study with a view to routing any necessary new road and rail links on the same land one above the other, thereby saving land, reducing disturbance to owners and occupiers, and making land acquisition quicker, less costly and less complex by reason of one route only being acquired for the two links.

5. **Long-term investment in agricultural improvements**

With the object of indicating to the Commission the extent of improvement of agricultural land in the locality, the Association has tried to ascertain the amount of private and public money spent on long-term improvements which still have value. A complete picture cannot be given because full information has not at present been obtained. Some of the information has been given to the Association in confidence, and in some instances the amount of grant-aid is not known to us. The available figures indicate however, that a considerable investment of private and public money in long-term farm improvements has taken place in the area which might be considered vulnerable to development should Foulness be the airport site.

The figures we have to date are as follows:

	1. Improvements (not drainage) gross	2. Land drainage gross	3. Grants
(a) Rochford Hundred (6 members)	£144,552	£20,084	£39,060
(b) Dengie Hundred (3 members)	£167,104	£253,104	Not given
Totals:	£311,656	£273,188	

* See also p. 474.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

The improvements in column 1 include the erection and improvement of farmhouses in two instances at least, and also grain and potato stores, farm yards, barns, farm workers' cottages, general purpose buildings, pig houses, sow yards, installation of electricity, milking parlours, farm road tarmac-ing, cattle sheds and Butler corn storage bins.

It can be assumed that most of the improvements in the Dengie Hundred were grant-aided at the rate of 30 per cent for column 1, and 50 per cent for column 2 (though grants of 75 per cent may have been given in some instances, as was the case with some of the Rochford drainage schemes). All the land concerned is within 15 miles of the airport site as shown on plan CTLA 1/3.*

Most of the improvements were carried out within the last 10 years, but a few earlier improvements which still have value are included.

6. **Water supplies and land drainage**

The Association is concerned that should the airport be sited at Foulness there would be adequate water supplies without depriving the farming community of water. It is also concerned that drainage of land will not be adversely affected. It is understood the Essex River Authority will be giving evidence on these issues. In the past there has been considerable flooding of land in the locality, and disastrous floods in 1953 and in earlier years through the centuries. It is suggested (and the Association hopes to put forward other evidence on this score) that the damming of creeks as a result of reclaiming the Maplin Sands for the airport would be a flood protection measure, and would enable the reclamation of a large acreage of marshes and saltings. It would also enable the dammed creeks and rivers, which at present bear salt water to be "reservoirs" of fresh water.

7. **Minerals**

There are deposits of gravel in the Dengie peninsula, some of which are marked on the Essex Development Plan as intended for working. There are also deposits of sand, gravel and brickearth in the area of Rochford and the Wakerings. The Association is not at present ready to indicate what deposits are in commercial quantities, but urges that the winning of valuable minerals should not be prejudiced by development connected with the airport if it is to be sited at Foulness. This is a further reason for keeping the Dengie Hundred free from airport development.

8. **Noise nuisance**

If the airport is to be sited at Foulness the Association urges that it be so sited as to cause the least noise nuisance to persons, livestock and poultry on-shore both in Essex and Kent. A number of members are concerned about possible noise nuisance, and Messrs. B. R. & L. H. Symes raise 100,000 turkeys per annum at Tillingham for which excessive noise would be detrimental.

It is further urged that every consideration be given to placing stacking areas over the sea.

9. **Fisheries**

It is hoped the Ministry of Agriculture, Fisheries and Food, will give fuller evidence on this score. The Ministry has research laboratories at Burnham, but it is understood they are a small part of their Lowestoft organisation. It is believed that oyster fisheries in the area have declined markedly in recent years, but that inshore fishing for fish other than shellfish has increased.

10. **Amenities**

The Association supports objectors who wish to preserve as far as possible certain amenities of the area. Members have referred to the following:

(a) **Buildings:**

Bradwell Lodge, a Regency building of historical and architectural interest;

Othona, Saxon chapel of St. Peter's on the wall, to which there is an annual diocesan pilgrimage;

St. Michael's Church, Latchingdon, eleventh century;

Lambourne Hall, Canewdon, scheduled as an ancient monument;

West Hall, Paglesham, believed to be of historical and architectural interest.

(b) **Boating and yachting.** Several members are concerned that the boating amenities on the Crouch and Blackwater estuaries should not be lost or spoiled.

(c) **Areas of great landscape or scientific value.** There are several such areas in the locality designed on the County Development Plan. Much of the Dengie peninsula is so designated, which is a further reason for keeping the Dengie peninsula in particular, free from airport development.

(d) **Observatories.** *Bradwell Bird Observatory.* A coastal site for the study of bird migration, and for ringing.

Curry Farm, Southminster—a member, Mr. A. J. Dewick, operates at this farm a mercury vapour light-trap for recording numbers of resident and migratory lepidoptera.

11. **Difficulties for farmers**

Our member, Mr. William Bentall, has 750 acres at Great Wakering, of which he farms 550 acres. He is the third generation of his family to farm there. Appended hereto and marked CLA3 is a copy letter from Mr. Bentall to this Association in which he sets out his reasons for opposing the siting of the airport in the area, and which he wishes us to bring to the Commission's notice. It is thought that the views he expresses would be shared by other farmers who oppose siting the airport at Foulness.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Copy of letter from
Mr. William Bentall
Little Wakering Wick
Great Wakering, Essex

22nd March 1969

Dear Sir,

In reply to your letter reference 36D concerning third London airport—Foulness. As there are not yet any specific plans for the project, it is difficult to say exactly how I, as a tenant farmer, on my father's estate, of which I am a Trustee, would be affected. From both points of view however, I am very much against siting the airport in this area.

From my experience, built-up areas and agriculture do not go very well together. Should the airport and docks, etc., develop as proposed, I imagine it would be very difficult to farm as one would like, owing to the competition for labour, and the inevitable tremendous increase in trespass by people who do not understand, and have no love for the countryside.

Further, as the geographical layout of the area is bounded by the Thames to the south and sea to the east, everything and everybody pertaining to the airport and docks would have to pass through one-quarter of the circumference of the site, thus increasing congestion by four times what it would be if sited inland. Moreover to introduce, as has been suggested, a further 400,000 people into this segment—which already has a heavy population, would leave very little countryside and farmland at all.

As you must know the land to the east of Southend, between the Crouch and the Thames, has a reputation for being some of the most fertile in England, land which once buried beneath tarmac, bricks and mortar, could never again be a weapon to help fight starvation, as it has been twice in the last sixty years.

Yours sincerely,

WILLIAM BENTALL

Evidence of the Country Landowners' Association

SUBMITTED BY MR. G. D. S. HOOPER*

1. I am a farmer aged 52 years and I have lived at North Fambridge since 1924. I farm with my partners some 230 acres of mixed farming. In addition I own 250 acres of tidal marshes which were lost to agriculture in the great flood of 1897, and I own a further 42 acres of farm land which is let to an adjacent farmer. I am a Parish Councillor and represent my village on the Maldon Rural District Council, serving on Committees which deal with Planning and Housing, and am Vice-Chairman of the Committee concerned with byelaws for the River Crouch and River Blackwater. I have an intimate knowledge of the local countryside and wild life. My private interests are the protection and preservation of wild birds and of the countryside. I am a Life Member of the Royal Society for the Protection of Birds and a Founder Member of the Essex Bird Watching and Preservation Society. I am also a member of the Country Landowners' Association.

2. I am in favour of the third London airport being sited on the Maplin Sands for the reasons which appear below.

3. **Reclamation of land**

The reclamation of the Maplin Sands from the sea for the airport, coupled with the creation of a deep water marine port would be a fine project. Not only would it enable the airport to be built on reclaimed land instead of productive land, but in my estimation at least 1,000 acres of tidal marshes and saltings would also be recaptured by damming the River Crouch at Creeksea and the creeks. In my estimation also it would do away with the need for some 30 miles of existing sea walls, as well as other sea defences. The dam itself would be less than one mile.

4. **Bird life**

I have studied the bird life and wild life in the locality of Foulness, and I have reared and released many hundreds of mallard and pheasants at North Fambridge with great success. With the help of Dr. Jeffrey Harrison, the well-known ornithologist and Scientific Adviser to the Wildfowlers Association of Great Britain and Ireland, I am now specialising in the rearing of Canada geese and greylag geese. The anxieties expressed concerning the loss of bird life are unjustified. There is ample scope in the area for the protection and conservation of the birds at present located at and visiting Foulness. Should the Maplin Sands be reclaimed for the airport, bird life would soon take leave of the freshwater conditions and adapt themselves to other nesting and feeding grounds which would be readily available to them. Provided certain areas in this corner of Essex are conserved for

* See also p. 476.

Printed image digitised by the University of Southampton Library Digitisation Unit

agriculture and bird life, no harm would be done to the bird life.

5. Brent geese, which some people are worried about, at present find their food on the River Blackwater and River Colne and would continue to do so. My observations from Foulness of the geese when gun firing is in progress from the Shoeburyness range is that the geese fly north to the Blackwater and Colne.

6. I see no real difficulty in inducing terns, which nest in the shellbanks, or other birds which breed at Foulness, to nest elsewhere. Wild life will adapt itself to new conditions if given the chance.

7. **Water supply**

Valuable farm land could be saved elsewhere by using the River Crouch as a reservoir to contain the freshwater required for the growth of population. The Crouch could be dammed and dredged and the dredgings used for filling low areas of land adjacent to the river.

8. **Yachting and fishing**

I am a keen yachtsman and have moorings on the River Crouch. The damming of the Crouch referred to above would provide yachtsmen with water at all times so that they would not have to wait for tides as at present. It would also provide freshwater fishing for anglers, and would attract ducks and other wild life. Indeed if this took place I would make over part of my farm as a wildfowl reserve similar to Slimbridge on the Severn.

9. **Noise**

I feel that noise will not affect residents on shore as much as some believe. From my observations of aircraft leaving Southend airport I have noticed that once they pass over the water the sound of their engines is completely muffled.

10. **Southend airport**

The closing of Southend airport as a result of siting the third London airport on the Maplin Sands would have advantages. It would remove a nuisance, and fears of disaster, for people living and working in and around the built-up areas near the present airport. It would also release a valuable and profitable site of over 400 acres for development, thus saving agricultural land and benefiting the Southend Corporation.

11. **Access links**

I see no insuperable barrier to new access links either westwards or northwards from Foulness, and no doubt a hovercraft service could be established from an airport on the Maplins. For example, hovercraft could reach Clacton-on-Sea, 15 miles or less from the airport, in as many minutes.

ADDENDUM

23rd May 1969

The Secretary
Commission on the Third London Airport
Templar House
81-87 High Holborn
WC1

Dear Sir,

Third London Airport—Foulness Site

During the course of the hearing into the Foulness site, I suggested that a study of the question of damming the River Crouch as suggested in paragraphs 3 and 7 of the evidence of Mr. G. D. S. Hooper (CLA4) was merited. This was a suggestion raised by a number of members. Since the evidence of the CLA was prepared, however, our Essex Branch has had the opportunity to go into this question, and has now concluded that such a study would not be justified. We accordingly withdraw the suggestion.

Yours faithfully,

M. A. GREGORY

Assistant Legal Adviser

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Council for the Preservation of Rural England*

Ralph Dreschfield will say:

I live at 15 Bridge Street, Writtle, Chelmsford, Essex.

I am a retired Colonial Attorney-General.

I am Secretary of the Essex Branch of the Council for the Preservation of Rural England and am authorised to give evidence on behalf of the CPRE as a national body and of its Essex Branch.

I am also Secretary of the Community Council of Essex, the Essex Association of Parish Councils and the Friends of Essex Churches, all of which agree with the views of the CPRE as expressed at this hearing.

The CPRE has the advantage of having many members with considerable experience in town and country planning and has availed itself of their advice in considering the third London airport problem in general, the merits of the four sites short-listed by the Roskill Commission and the Foulness proposal in particular.

The CPRE has concluded that on amenity and social grounds there are overwhelming advantages in choosing an off-shore site. Not only does this mean that by the construction of an airport land is not lost but gained, but the land area affected by noise can be at least halved through the use of flight paths over the sea, and other attendant disadvantages are also greatly reduced.

In the Commission's short list, the only off-shore site is that at Foulness, and this is accordingly the site which the CPRE prefers.

We wish, however, to draw attention to the following factors which in our view the Commission ought to take into account when making its recommendations:

1. **Noise**

We appreciate that the importance of the noise factor is a matter of which the Commission are already fully seized, and here the only general point we would stress is that it needs to be considered in relation not only to populous built-up areas but also to villages and to the open countryside whose quietude forms one of their main delights to both residents and visitors.

On the plans enclosed with the published *Site Information*† on Foulness, the runways are in the opinion of the CPRE sited too near the coast, and we recommend that they should, if practicable, be moved further east and north. This would appreciably reduce the noise levels applicable to the Essex coast and would also reduce or even eliminate the incidence of the 40 NNI contour on the north coast of Kent.

The practical possibility of so resiting the runways is a matter on which the CPRE is taking expert advice and to which we may wish to refer further at the hearing.

2. **Development**

The published figures suggest that, on the basis of a four-runway airport, the total number of people needing houses within easy reach of the airport will be not much less than 250,000. The siting of these houses, and of the commercial and industrial development necessarily connected, directly or indirectly, with the airport, is a matter of crucial importance to the planning of an area extending far beyond that of the airport itself.

It is essential that in the location of this development, land of high agricultural and scenic value should be avoided, and that places of antiquity and character should not be industrialised or swamped with new building. We mention in particular the attractive old town of Rochford and the small villages of Paglesham and Canewdon—two of the most beautiful in the county.

The necessary development should in the opinion of the CPRE be carried out, first, on the site of the existing Southend airport, and secondly, in the area of relatively low agricultural and amenity value lying between Battlesbridge and a line drawn well clear of Canewdon on the west.

3. **Dengie Hundred and Wallasey Island**

An airport at Foulness would inevitably involve huge encroachment on undeveloped areas of rural Essex, and this makes it all the more important to provide effectively for the protection of what remains. The CPRE therefore urges that there should be full provision for substantial open space between the airport and the main urban development associated with it, and for maintenance of unspoilt open country within easy reach.

The proximity of Essex to London makes it a county which is both highly vulnerable and of great recreational importance to the eastern parts of London, and the development of an airport would call for special protective measures. This applies particularly to the Dengie Hundred, lying between the Blackwater and the Crouch, and also to Wallasey Island, between the Crouch and the Roach. Both comprise farmland of outstanding quality, and the whole area provides for a wide range of recreation including sailing and other water sports, walking and riding, and bird-watching.

We accordingly recommend that, in the Bill by which we presume an airport at Foulness would be promoted, some special provision should be made for the protection of the Dengie Hundred and Wallasey Island from all forms of development except such as would normally be allowed in a designated Green Belt.

---

* See also p. 481.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. xv.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Nature Conservancy*

Introduction

1. The Nature Conservancy was established by Royal Charter in 1949 to provide scientific advice on the conservation and control of the natural flora and fauna of Great Britain; to establish, maintain and manage Nature Reserves in Great Britain, including the maintenance of physical features of scientific interest, and to organise and develop the research and scientific services related thereto. Further powers have been conferred upon the Conservancy in various statutes, notably Part III of the National Parks and Access to the Countryside Act 1949.

2. Following the establishment of the Natural Environment Research Council on 1st June 1965, and by virtue of Section 3 (3) of the Science and Technology Act 1965, these functions have been formally transferred to the Council. As a Charter Constituent body of the Council, the Conservancy continues to exercise these functions on behalf of the Council.

3. The attached report has been prepared by the Conservancy to provide information on the scientific interest of the Foulness area and the implications for nature conservation of the proposed development of the area for use as an airport.

4. A list of Proposed Nature Reserves was included as Appendix 6 to the Report of the Wildlife Conservation Special Committee (Cmd. 7122). In this, reference is made to the desirability of including a typical Essex saltmarsh in the National Nature Reserve series. In 1954, however, the Conservancy decided that the recommended site (Horsey Island, near Walton-on-the-Naze) was no longer suitable for establishment as a Nature Reserve, and the proposal to establish a National Nature Reserve on the Essex coast was deferred.

5. Acting under powers conferred upon the Conservancy by Section 23 of the National Parks and Access to the Countryside Act, the Essex County Council has been officially notified that the following coastal sites in the area are of special scientific interest:

Name of site	*N.G.R.*
Foulness Point	TR(61)050954
Benfleet and Hadleigh Marshes (including Leigh Marsh)	TQ(51)810855
Bradwell Cockle Spit	TM(62)025095
Bridgemarsh Island	TQ(51)895967
Brightlingsea Oyster Beds	TM(62)099165
Colne Estuary Saltings	TM(62)045179
Colne Point	TM(62)100130
Gore Saltings	TL(52)925084
Hamford Water Saltings (including Horsey Island and the Naze)	TM(62)235260
North Fambridge Marshes	TQ(51)843970
Tillingham Marshes (Dengie)	TM(62)033025
Tollesbury Wick and Old Hall Marshes	TL(52)982118

6. Foulness Point is scheduled as a site of special scientific interest because the large expanse of saltmarsh, sand and mudflats is a typical example of this habitat, which provides nesting, feeding and roosting grounds for large numbers of birds. In particular, the area is the nesting site for the largest colony of little terns in Essex, and the winter feeding ground for dark bellied Brent geese. The cockleshell bank near the Point is also a feature of considerable physiographic interest.

Review of areas of scientific importance

7. As new knowledge becomes available, the relative scientific importance of particular sites has been kept under review and a major comparative survey of important sites is at present being carried out by the Conservancy on a Great Britain basis. Specialist habitat teams have provisionally classified sites as follows:

Grade I Sites of international or Great Britain importance.

Grade II Sites which are either of equivalent status or only slightly less important.

Grade III Sites of high regional importance, rated as high quality sites of special scientific interest, but not of comparable quality to those in Grade II.

8. In this classification, the Maplin Sands and Foulness Marshes are together included as a Grade I site. Other coastal sites in Essex which appear on the provisional list include the following:

Grade II Hamford Water/The Naze/and the Dovercourt area

Grade III (a) Dengie Flats and Marshes
(b) The Blackwater and Colne estuaries
(c) Colne Point and St. Osyth Marsh

General description of the Foulness area

9. The area consists of flat coastal marshland, the highest point on the island being only 11 ft above OD. Most of Foulness Island consists of arable land and grazing marsh dissected by numerous drainage dykes, and surrounded by a seawall. There are three small coppices, but otherwise the arable areas have little habitat diversity for wildlife. The marshes of the island (350 acres) contain some 220 species of flowering plants, including some species of local distribution. The whole Island was flooded by sea water in 1963 and can, therefore, be classified as a relict coastal marsh.

10. The main scientific interest of the area lies in the marine mudflat ecosystem of the offshore salt marshes, sand and mudflats, where botanical and physiographical features are important but the ornithological interest is the outstanding feature.

11. The narrow fringe of saltmarsh outside the seawall widens to a maximum depth of about two hundred yards at Foulness Point. There is a well-developed

* See also p. 484.

Printed image digitised by the University of Southampton Library Digitisation Unit

cockleshell bank at the Point, about one thousand yards long and one hundred yards wide. Much of this bank lies above the level of mean high water, ordinary spring tides.

12. Beyond the salt marsh and shell bank is an extensive area of inter-tidal flats known as the Maplin Sands. The landward margin of these consists of a band of mudflats, some 300-400 yards wide, but the remaining area is predominantly sandy. At low tide over fifty square miles of sandflats are exposed. The Maplin Sands (22,500 acres) form one of the three largest sand/silt flats in Great Britain, carrying the biggest continuous populations of the eel grass, *Zostera noltii*, in Great Britain, together with what is probably the largest surviving population in Britain of the cord grass *Spartina maritima*. This habitat supports large numbers of wildfowl and waders, including about 20 per cent of the world population of the dark bellied Brent goose, which use the area as a wintering ground.

Bird life of the Foulness area*

(a) *Introduction*

13. For the purpose of this report, two aspects should be considered:

(a) The nature conservation interest (para. 14 et seq.).

(b) The implications for bird strike hazard. A separate report relating to this problem was submitted by the Conservancy in January, 1969 at the request of the Board of Trade. A copy is attached as Annex 1. The Conservancy is not the competent body to assess the extent of the hazard, but the ornithological details in these papers suggest that it could be serious and that the matter should be investigated.

14. The Maplin Sands form part of an extensive complex of inter-tidal sand and mudflats associated with the mouth of the Thames estuary. Appendices A and B enumerate the more important species of wildfowl and waders which occur at different sites within the estuary. These figures are based on the pooled census records made by experienced observers and represent estimates of the maximum numbers thought to frequent the different sites. Owing to the difficulties involved in counting birds in such a large area, these numbers are almost certainly exceeded especially during hard weather when temporary immigration from the continent occurs.

15. It will be seen from Appendices A and B that the distribution of wildfowl and waders within the Estuary is not uniform. The Maplin Sands, together with the Blackwater estuary, the Dengie Flats and The Swale have above-average numbers of birds, mainly because of the local abundance of food. The Maplin Sands are made additionally attractive because of their very large size and the general lack of disturbance.

*Since the Maplin Sands are used by the Ministry of Defence as an experimental firing range, public access is strictly controlled. About twenty permits are issued each year to ornithologists and many of the data derived from information kindly made available to Conservancy staff by these permit holders.

16. The birds frequenting Foulness Island and the Maplin Sands can be broadly classified as follows:

(a) Non-breeding species which pass through the area on passage migration or use it for over-wintering. In September and October and again in March and April, tens of thousands of migratory birds pause in the area for a few days in order to feed and rest. Most over-wintering species arrive in September and October and stay until March, but considerable local movement within the Estuary also occurs, especially during hard weather, and some species, e.g. lapwing arrive as early as July.

(b) Species which use the area primarily as a roost (see para. 43).

(c) Species which breed on Foulness Island and the cockleshell spit off the Point (see paras. 44 and 45).

17. Birds which make use of the Maplin Sands as a stopping place during long distance passage migration include:

Ringed plover	Sanderling
Grey plover	Curlew
Turnstone	Redshank
Whimbrel	Dunlin
Bar-tailed godwit	Lesser black-backed gull
Knot	Terns

18. Species which over-winter in the Foulness area include those breeding near the Arctic Circle and migrating to the milder west coast of Europe in winter. Local movements, partially dependent on the weather but variable in character continue until the birds depart again for their nesting grounds in the north. The main species involved are:

Curlew	Lapwing
Redshank	Golden plover
Dunlin	Greater black-backed gull
Various wildfowl,	Herring gull
especially Brent geese	Black-headed gull
Oystercatcher	Common gull

19. Although each of the species listed in paras. 17 and 18 has its own pattern of behaviour there is a general movement down to the exposed sand and mudflats at each ebb tide followed by a retreat to roosting sites at or about high water as the tide returns. Some species flight from the inter-tidal flats onto Foulness Island itself, while others fly to reservoirs and farmland further inland (see map 2*).

20. Irregular movements also occur, but these usually seem to be caused by disturbance. This induces birds which are feeding, roosting, or on their regular flight lines to move elsewhere in search of quiet. Birds so disturbed may fly several miles, and if disturbance is continued over a wide area they will continue to fly back and forth until they find refuge.

21. Appendix C summarises the information available about the usual size of flocks in the Thames estuary, the weight of the different species and their

* p. 228.

Printed image digitised by the University of Southampton Library Digitisation Unit

usual height in flight. Appendix D portrays diagrammatically the seasonal fluctuations in numbers which occur.

(b) *Wildfowl*

22. The Maplin Sands form a wintering ground for about 6,000 dark bellied Brent geese. These birds feed mainly on eel grass and a green alga *Enteromorpha*, which occurs most abundantly on the muddy inter-tidal areas near the seaward margin of Foulness Island. Here, in certain favoured areas such as The Black Grounds, Havengore Head and between Fisherman's Head and the Point, flocks of between 400 and 2,000 birds frequently occur. In the early winter the birds tend to spend a relatively short time feeding near the Island and spend most of the day on the tide-line or on the sea. Later in the winter when less eel grass is available the birds often feed throughout the period that the grass is exposed by the tide.

23. As the tide rises the Brent geese move towards the sea wall, usually walking but occasionally "leap-frogging". A few birds will swim in on the tide. When only a small amount of mud remains, the geese tend to fly along the tideline. In general, the direction of flight is along the advancing edge of the water, those birds to the north-east of Havengore Head going towards the Point, while those to the south-west fly towards the Stairs. However, there is a considerable amount of bi-directional movement especially in the region of Havengore and some geese, often 1,000 or so, may ride out the tide. As numbers increase north of Fisherman's Head, many birds move temporarily across the Crouch estuary to Dengie, a tendency that is most marked in the Spring. A few birds fly along the River Crouch but seldom progress beyond Crouch Corner. Frequently as high tide approaches, flocks of 100 to 200 geese arrive from the direction of Sheppey and join the birds near Foulness Point. The reverse movements occur as the tide falls, usually after an interval of three to four hours.

24. Brent geese usually fly at a height of between 50 ft and 200 ft. However, in strong adverse winds they are more reluctant to take wing and fly at a much lower altitude.

25. Brent geese are easily disturbed by aircraft. If an aeroplane approaches, the geese will rise en masse and fly, usually at 200 ft to 400 ft away from the disturbance. If the aeroplane passes directly overhead the direction of movement is random and the flock will often break into several parties. When the disturbance has passed the birds will usually return to the general area from whence they took off, but at high tide they may move away towards Dengie. When the firing ranges are inactive at weekends, aircraft often fly over the Foulness area at altitudes varying from a few hundred to 2,000 ft. Such aircraft invariably put up the geese.

26. Brent geese will usually allow people to approach within about 1,000 yards before flying off to another feeding area.

27. Widgeon are present from October to March, with maximum numbers of about 2,500. Although a flock of at least 950 was once seen flying across the Island, the species flies little during the daytime. In the evening, however, widgeon frequently fly inland over the Point and Havengore to unknown sites, possibly to Abberton and Hanningfield reservoirs. If widgeon do fly during daylight, they may rise to 500 ft.

28. Mallard, often in flocks of about 100, are widely distributed over both the inter-tidal flats and the Island during the winter. In the summer up to 2,000 are found on Havengore. Their flight pattern is varied and unpredictable and does not seem to be related to the state of the tide.

29. The common scoter is usually present in small numbers near the sea wall but a raft of 3,500 was once observed in mid-summer a few miles east of Foulness Point. Owing to its habit of feeding well out to sea, wildfowl counts probably do not indicate the real status of this species. This species always flies close to the water.

(c) *Waders*

30. It will be seen from Appendix B that the Maplin Sands form a wintering ground for many thousands of waders. As the tide rises, these birds congregate into large flocks, particularly at Foulness Point and Havengore. During high spring tides large numbers flight over the sea wall and alight on fields at Havengore, Landwick and, to a lesser extent, Foulness. These flocks continually rise from the ground, wheel round and settle again; they return to the inter-tidal flats as the tide ebbs.

31. Waders are readily disturbed by humans but not by aircraft unless very low flying. In general, waders will not travel far when flushed.

32. Knot and dunlin fly in flocks of 50 to 1,000 at a height of between 10 and 250 ft. Although both species are more numerous from October to March, they are present throughout the year.

33. Oystercatchers tend to fly in flocks of 50 to 200, but at high tide the birds usually congregate into one massive flock. Oystercatchers fly at a similar height to dunlin, but are frequently further from the sea wall, usually up to a mile. Some birds fly over to Foulness from Sheppey.

34. The Maplin Sands form the main wintering site in Essex for bar-tailed godwit. Flocks usually contain less than 100 birds, but they tend to fly higher and further off-shore than other waders. They are frequently accompanied by curlews.

35. Sanderling have similar flight habits to dunlin. Flocks of 400 to 500 birds are frequently present, particularly in August. The Maplin Sands hold the largest number of this species in Essex.

36. Redshank, ringed plover, turnstone and grey plover occur on the Maplin Sands in small flocks of 100 to 400; they are often mixed with other species. There are no accurate total counts of these species, but redshank and ringed plover are present throughout the year.

37. Golden plover differ from the other waders in that they frequent grazing marshland on the Island. Maximum numbers occur in the early spring when up to 2,000 birds are recorded, mainly near Churchend and

Printed image digitised by the University of Southampton Library Digitisation Unit

East Newlands. Small numbers are present during the winter.

38. Lapwing are present on the Island throughout the year and flocks of 50 to 100 frequently arrive from the east in the late summer and autumn, and during hard weather.

(d) *Gulls*

39. Appendix E summarises the results of monthly gull counts made in the Foulness area between June 1968 and January 1969. It will be seen that the numbers fluctuate considerably during the season. Only a few hundred birds are present in the early summer, but numbers rise to at least 200,000 in the autumn. In mid-winter there is a population of about 3,000 but this often increases considerably if there is hard weather on the Continent.

40. In mid to late summer, flocks of up to 1,000 birds, mainly black-headed gulls, soar in thermals over the Island. They are believed to be hawking for insects.

41. In the late summer, flocks of gulls flight onto stubble fields on the Island and the mainland, especially at high tides. These flocks usually consist of a single species, but herring gulls and common gulls often intermix. The flocks contain from a few hundred to three thousand (individuals), and the birds usually return to roost on the Maplin Sands, often several miles out. The movement between feeding grounds and roosting site, continues throughout the winter, but numbers attain a peak of up to 26,000 birds in September.

42. The movements of these feeding and roosting gulls is markedly governed by the tide (see map 2). On the flood tide gulls move at low altitude onto the island from the adjacent Sands, whilst others pass over the Point, flying in a northerly direction. Reverse movements occur on the ebb. In general, flight activity reaches a peak between one and three hours before and after high tide. Counts in late September, 1968, showed that about 3,000 birds per hour passed the Point and 4,800 per hour flew along the River Crouch, while smaller numbers flew over the Island itself.

43. Much larger numbers of gulls feed inland during the day and return at dusk to roost on the Sands (see map 3). Such birds pass over the Island in small flocks, or as individuals, the larger species at about 1,500 ft and the smaller ones usually at less than 1,000 ft. Those coming across Dengie Marsh turn south-east over Hilliwell and cross the River Crouch to roost on the Sands three to four miles offshore. Counts of these gulls going to roost made during the last hour of daylight, over a seven-mile front gave the following figures:

14.9.68	90,000
28.9.68	180,000
20.10.68	72,000
24.11.68	8,000
4.1.69	3,000

The reverse movement occurs at dawn but is concentrated into about 45 minutes.

(e) *Nesting species*

44. Finches, thrushes and other passerine species nest in considerable numbers on Foulness Island, especially in the wooded areas, and black-headed gulls, ringed plover, redshank, capwing, mallard, shelduck and moorhen breed on the fields, dyke margins and sea wall. In addition, a few pairs of shoveler, common tern and oystercatcher usually occur.

45. Two nesting species are of special local interest: the short-eared owl and little tern. Three pairs of short-eared owl regularly nest on the Island, usually successfully; there is only one other known breeding site in Essex. Little terns nest on the cockleshell bank at Foulness Point. Numbers fluctuate between 40 and 100 pairs each year: the mean for the past twelve years being 63 pairs. Breeding success depends largely upon the weather and the amount of human disturbance. The numbers fledged per year vary from about 20 to over 100 and the birds occupy the site from about late April to August.

The effect on wildlife conservation of using the Foulness area for a third London airport

46. The Maplin Sands form one of the largest areas of estuarine flats in Europe. This habitat is of great scientific interest because of the complexity and richness of its associated flora and invertebrate fauna and the wide range of fish and bird life which derive their nourishment therefrom.

47. The estuarine habitat is rapidly becoming one of the most restricted in Europe as development schemes proliferate. The only other areas of inter-tidal flats in the North Sea of comparable scientific interest and size to those associated with the Thames estuary are the Wash and the Dutch Waddensee. Both these sites are under consideration for impoundment.

48. The development of all or part of the Maplin Sands would reduce still further the extent of this wildlife habitat. It seems likely that the development would affect the deposition of sediments in the area. This might lead to the establishment of new areas of sand or mudflats. To a limited extent these might compensate for the loss of similar habitats. It is, however, impossible at this stage to predict the extent to which this might take place or the potential scientific value of such areas.

49. The relative seclusion, large size and abundance of food makes the Maplin Sands particularly attractive to migratory birds. The area is of special importance because it forms the wintering ground for about 20 per cent of the world population of the dark bellied Brent goose.

50. These geese breed in Artic Russia and winter exclusively round the shores of north-west Europe. During the 1930s their staple food plant, *Zostera*, was almost eliminated by disease over a wide area and they suffered a severe decline in numbers, to about 15-20,000. Complete protection has been afforded in Russia, Finland, Sweden, the Netherlands, Belgium, Great Britain and France. In consequence the population has increased slowly to 30,000. More than half these winter in Britain. Of these, two-thirds (10,000) are found off the coast of Essex, no less than 6,000 being on the Maplin Sands.

Printed image digitised by the University of Southampton Library Digitisation Unit

51. The main attraction of the Maplin Sands to Brent Geese is the abundance of *Zostera* and *Enteromorpha* near the Foulness Island sea wall. The destruction of this feeding ground, and the disturbance caused by low-flying aircraft would drive away the geese. This would be a notable set-back in the international effort for the conservation of this species. It is not thought that sufficient areas of suitable habitat and food supplies are left elsewhere to accommodate the displaced birds.

52. The Maplin Sands form an important wintering ground for many other species of wildfowl and waders, and serve as a "staging post" where waders such as knot and bar-tailed godwit can feed and rest before resuming their long-distance migration. The increased disturbance and destruction of habitat caused by the construction of an airport would probably result in a reduction in the numbers of waders and wildfowl frequenting the Maplin Sands. However, the area is so large that it would continue to support tens of thousands of these birds unless reclamation of the entire area was carried out. Even then it is believed that the area would remain attractive to gulls. This point is relevant to those concerned with the assessment of the bird strike problem.

53. The construction of an airport would destroy the Foulness Point site of special scientific interest. This area is scheduled, partly because of its physiographic interest, and partly because up to 7 per cent of the total British population of about 1,600 pairs of little terns breed here. The status of this species is already threatened owing to increased disturbance at its nesting sites, and the loss of the Foulness colony would cause a further decline in numbers.

54. The development of Foulness Island would result in the loss of its marshland vegetation. At present, this forms the main stronghold in Britain for two species, namely *Zostera noltii* and *Spartina maritima*, together with various other species now uncommon in south-east England.

55. The development of a third London airport at Foulness would lead to the development of other areas near the Essex coast for housing, industry, etc. This might cause the loss, or reduce the scientific interest, of some of the other sites listed in paras. 5 and 8. The liklihood of this would be increased if the construction of an airport at Foulness was associated with the development of port facilities. In this connection, it is noted that the proposals made by the Thames Aeroport Group envisage the construction of a new town covering two sites of special scientific interest, namely Bridgemarsh Island and the North Fambridge Marshes.

APPENDIX A

Estimated numbers of wildfowl at various sites in the Thames Estuary*

	Colne	*Blackwater*	*Dengie*	*Foulness*	*Leigh Marsh and Canvey Point*	*Sheppey*	*Medway*	*Cliffe*
Dark-bellied Brent goose	900	2,300	700	7,000	1,250	–	250	–
White-fronted goose	–	–	–	–	–	400	–	800
Widgeon	–	–	600	2,500	1,000	2,500	3,500	1,750
Mallard	500	600	1,100	2,000	–	1,500	800	800
Common scoter	–	–	–	4,000	–	–	–	–
Shelduck	400	2,000	–	200	150	600	1,000	2,250
Totals	1,800	4,900	2,400	15,700	2,400	5,000	6,550	5,600

Notes (1) Where no numbers are given, information is not available.
(2) Smaller numbers of other species occur.

* The figures represent peak numbers recorded within the period September-March in recent years: they are almost certainly under-estimates.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX B

Estimated numbers of waders at various sites in the Thames Estuary*

	Colne	*Blackwater*	*Dengie*	*Bradwell*	*Foulness*	*Leigh Marsh and Canvey Point*	*Mouth of River Thames*	*Swale*	*Medway*
Oystercatcher	300	300			3,000	–	–	2,500	–
Ringed plover	←			3,500		→	–	–	500
Grey plover	–	–	1,000	–	–	–	500	5,000	5,000
Turnstone	1,000	1,000	1,000	1,500	–	–	–	–	–
Curlew	3,000	3,000	–	–	3,000	–	6,000	2,500	1,000
Black-tailed godwit	←			1,000		→	–	–	–
Bar-tailed godwit	–	–	–	–	1,500	–	–	1,000	–
Redshank	←			1,000		→	300	–	500
Knot	–	1,000	–	–	10,000	–	1,000	10,000	–
Dunlin	–	10,000	20,000	–	10,000	–	4,000	5,000	1,000

Notes (1) Where no numbers are given, information is not available.
(2) Smaller numbers of other species also occur.

*** The figures represent peak numbers recorded within the period September-March in recent years: they are almost certainly under-estimates.**

APPENDIX C

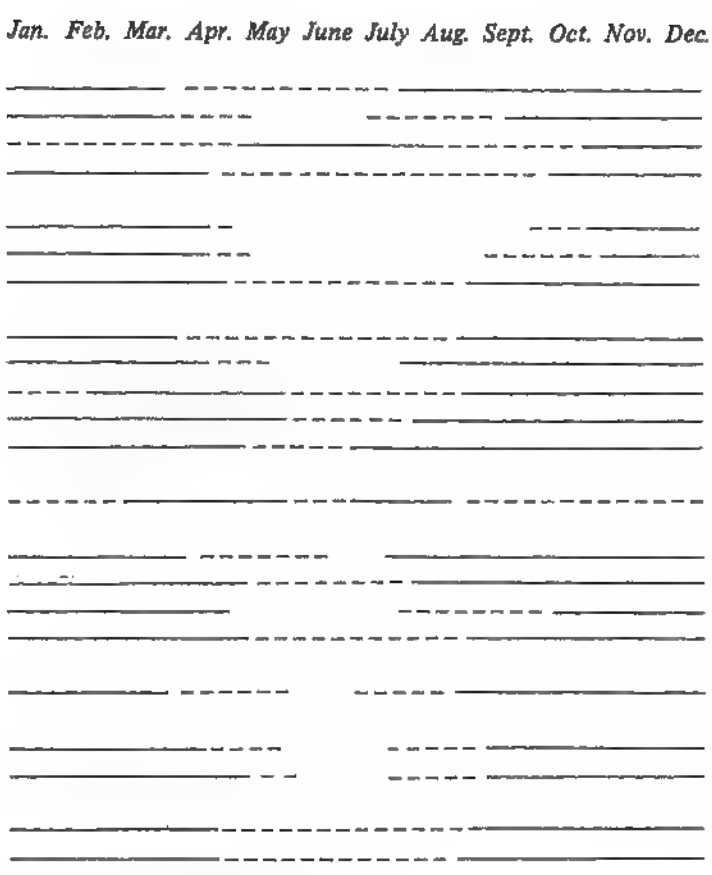
General information about the more important bird species in the Thames Estuary

Species	*Usual maximum size of flocks*	*Weight of birds*	*Usual maximum height of flight (in feet)*
Mallard	1,000		
Widgeon	1,000		500
Common scoter	500		50
Shelduck	500		
White-fronted goose	100	7½ lb	
Brent goose	500	2½ lb	400
Oystercatcher	1,000		
Lapwing	3,000		
Ringed plover	200		
Grey plover	1,000		
Golden plover	2,000		
Turnstone	1,500		
Curlew	3,000		
Black-tailed godwit	300		
Bar-tailed godwit	500		400
Redshank	1,000		
Knot	10,000		250
Dunlin	10,000		250
Great black-backed gull	1,000	3¼ lb	1,500
Lesser black-backed gull	500		
Herring gull	5,000		1,000
Common gull	5,000		1,000
Black-headed gull	3,000	½ lb	1,000
Starling	100,000		500

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX D

Birds of the Foulness area—seasonal fluctuations in numbers



Key: ____ maximum numbers during this period
– – – small numbers increasing or decreasing
Blank very few or none

APPENDIX E

Gull numbers in the Foulness area: June 1968 to January 1969

	June	*July*	*August*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Jan.*
Herring gull	500	6,400	10,000	164,000	87,000	18,000	8,000	10,000
Common gull	300		6,000					
Lesser black-backed gull	100	800	2,000	15,000				
Greater black-backed gull	–	–	–	6,000				
Black-headed gull	400	800	2,000	20,000				

Note: During February to March numbers drop rapidly. A count in April 1969, revealed 700, mainly black headed gulls.

ANNEX I

Ecology of birds in the Thames Estuary in relation to bird strike problems

1. This note is concerned with the ecology of birds in the Thames estuary as it affects the problem of bird strikes and especially with gulls, waders and wildfowl which, because of their habit of living in flocks, are particularly important. In this note, unless otherwise indicated, the Essex coast as far north as the Colne, including Foulness, and the whole of the north coast of Kent, including Sheppey, are included within the terms "Thames estuary". A later paper will deal with the scientific and conservation merits of this area.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. South-east England is crossed by many complex bird movements because this part of Britain both constitutes, and lies between, the summering and wintering areas of a wide range of species. Some birds stay temporarily in the area while others remain throughout the winter.

3. In the late summer and autumn, enormous numbers of birds of species likely to be a bird strike hazard, migrate from their summering areas, which extend from Greenland to east Siberia and southwards to central Asia, moving south and west through western Europe to their winter quarters from the British Isles to Africa. A reverse movement occurs in spring. In autumn many cross the North Sea south-west from Scandinavia and west from Holland and the Thames estuary is one of the few places where the shore and water birds can halt, rest and find good feeding grounds. Some stay in the estuary throughout the winter but may move on in adverse weather conditions, returning as the weather improves, whilst in a similar fashion during spells of hard weather on the Continent even more birds may move into the area.

4. The real significance of the Thames estuary (as opposed to other coastal areas) lies in the fact that for a major part of every day, many square miles of mud-flats are exposed. These provide a valuable and permanent source of food for birds and are unlikely to be affected by development on the shore itself. The main movements of these birds include:

(a) Daily movements between feeding areas and roosts at dusk and dawn. In September, in the Foulness area, these movements can be of the order of 180,000 birds passing over in a period of 45 minutes.
(b) Movements from the mud-flats to and from inland feeding and roosting sites on flood and ebb tides.
(c) Coasting movements close in-shore from one feeding site to another and which cross projecting areas of land such as Foulness Island.
(d) Migratory movements over the whole area, some of which are concentrated along the shore.
(e) Movements following disturbance by aircraft, bird watchers, boats, wildfowlers, etc.

These movements may be of considerable magnitude and of unpredictable height and direction.

5. Numbers are only known for parts of the Thames estuary, including estimates for north Kent and more accurate counts for Foulness Island in Essex. Consideration must be given to the whole population of the Thames estuary (see para. 6) but it is instructive to compare the figures for winter numbers at Foulness in particular with the maxima for another broadly similar estuary where birds have caused a continuing problem at an international airport, Manukau Harbour, near Auckland, New Zealand.

	North Kent	Foulness	Manukau Auckland NZ
Gulls	80,000	14–200,000	6,000
Waders	40–90,000	50,000	26,000
Ducks	20–60,000	5,000	250
Geese and swans	1,000–2,000	5,000	2,000

Approximately 9,000 black-headed gulls breed through the summer in north Kent, there being a total of 18,000 of this species by the end of the breeding season.

The approximate average weights of these birds are:

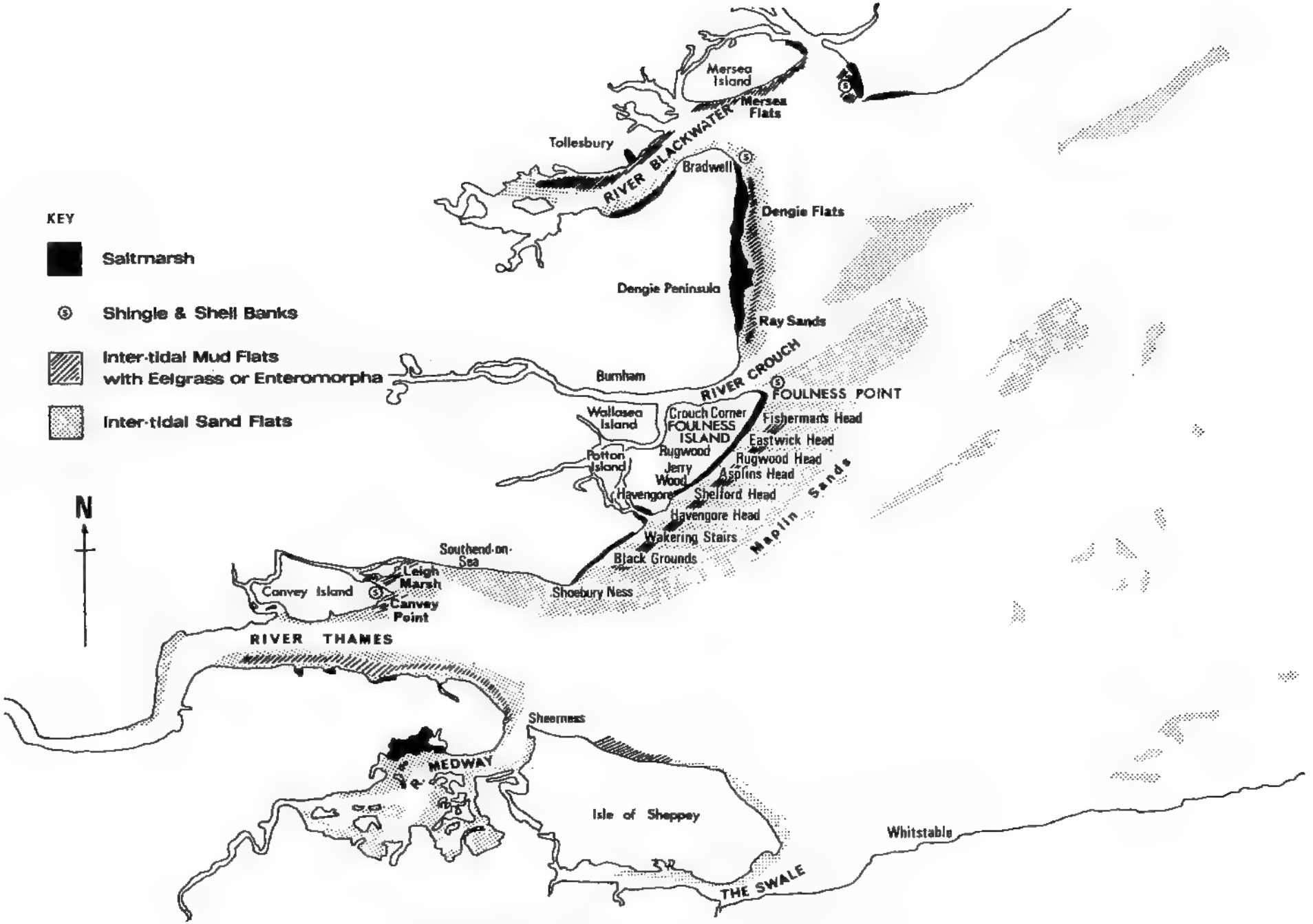
White-fronted and Brent geese	2½–7½ lb
Ducks	1–3 lb
Waders	2 oz–1¾ lb
Gulls	½ lb–3¼ lb

6. Any changes in local geography associated with the construction of an airport seem unlikely to cause an important reduction in the vast number of birds frequenting the Thames estuary as a whole, although they might cause a change in their local feeding or roosting movements. Some species, such as gulls, may find improved feeding and roosting facilities there and in surrounding conurbations, and gather in larger numbers than before.

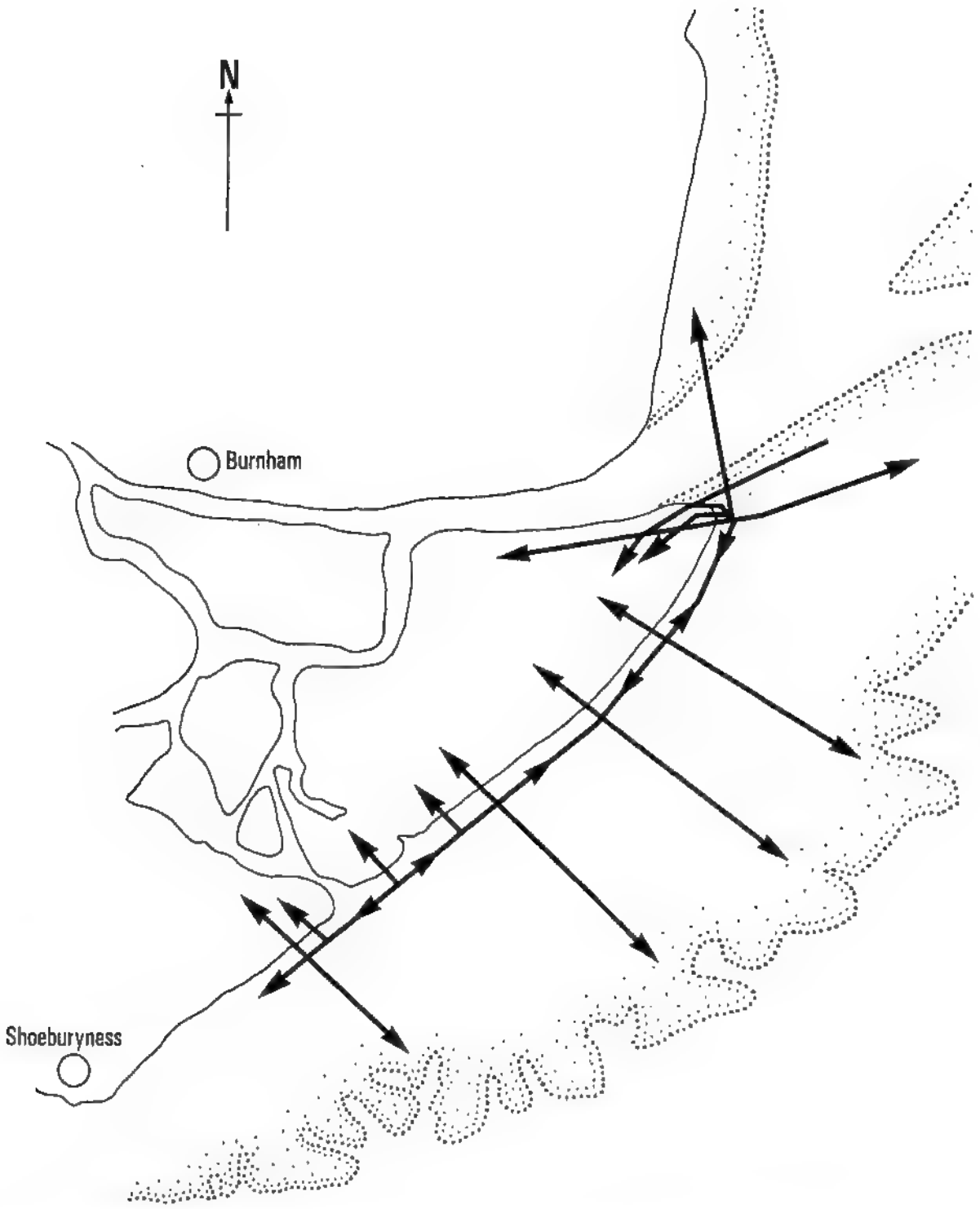
If an airport were constructed in the Thames estuary the area which would thus cease to be available for use by birds for feeding and roosting would be very small, relative to the vast area of the Thames estuary as a whole. The remaining areas would continue to provide the right conditions for birds, which would still use them, and migration from Europe and Asia would still continue. The management of the habitat specifically to destroy these conditions would not be a practical proposition.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

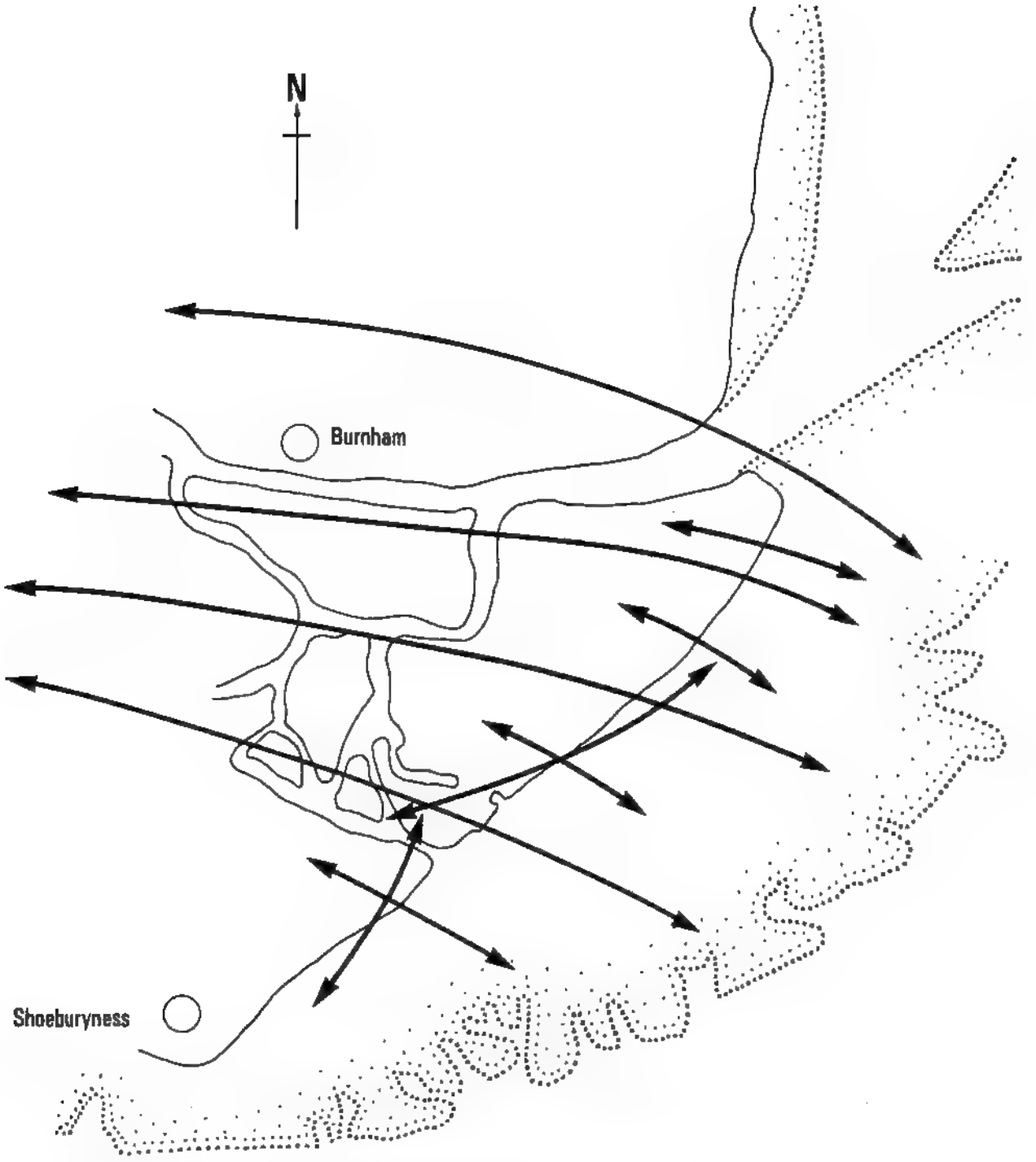


Map 1. Wild-life habitats in the Thames Estuary. *(Nature Conservancy)*



Map 2. Movement of wildfowl, waders and gulls in relation to the tide. *(Nature Conservancy)*

Printed image digitised by the University of Southampton Library Digitisation Unit



Map 3. Movement of wildfowl and gulls between their feeding and roosting sites. *(Nature Conservancy)*

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Royal Society for the Protection of Birds

SUBMITTED BY DR. W. R. P. BOURNE

1. General

It was originally proposed to restrict evidence presented to this hearing to matters directly relating to Foulness, which we regard as an unique site not easily comparable with any other; but since comparisons have been made with the situation elsewhere, and especially at Heathrow, it may be useful to place some information on work at this place on record as well. A considerable body of other information is still being held for the Stage III hearings specifically devoted to the bird-strike problem for aircraft.

2. Investigations at Heathrow

During the summer of 1968 the British Trust for Ornithology was consulted by the Bird Impact Research and Development Committee of the Ministry of Technology over the increasing problem presented by birds to aircraft. After due consideration it was decided that the Trust could best assist them by encouraging local ornithologists to collect relevant information, and that it would probably be most useful to start in the region where the country's largest airport is situated close to the largest available reservoir of ornithological talent, at Heathrow. I therefore carried out some preliminary surveys of the vicinity in the early autumn, after which it was agreed to mount a combined survey into the most important local hazard, the gulls, during the winter, including a repetition of a census of London gulls by the London Natural History Society with more attention to their flightlines than in the past, combined with a survey of movements in the immediate vicinity of Heathrow by members of the Ministry of Agriculture, Fisheries and Food Infestation Control Unit and myself. In the event since time was limited and I had previous experience of radar in general and at Heathrow I carried out the observations with radar while the other workers made the observations in the field and we found we agreed well over the interpretation of our results. Unfortunately they were misunderstood by the organiser of the London Natural History Society enquiry in a first draft of his report circulated for comment which has been quoted elsewhere before it could be corrected.

3. Radar

My discussion of this especially in relation to Foulness is limited by the fact that my main experience is with RAF radar and is covered by the Official Secrets Act, but certain points are of general application. The fact that the appearance of a bird on radar is influenced by the direction in which it is heading and flying and by the use or otherwise of a moving trace indicator (which can be switched off) is of course well-known to informed workers in the field, and may be one of the more important considerations affecting the use of short-ranged radars of the type used for quantitative work. With the more powerful long-range ground-controlled approach and distant early warning radars other factors such as the configuration of the local horizon and the extent to which it cuts out the view of low-flying birds are much more important. In consequence these radars are not a very useful tool for quantitative estimating but used with discretion they still provide invaluable information on the pattern of local bird movements for the planning of surveys on the ground, and with a proper understanding of the distribution of birds in a locality also a valuable indication of the way in which they behave under different conditions. The ACR 6 radar used at Heathrow has antennae situated at the west end of the runways, near the main centre of gull concentration in the area (and not in the centre as has been suggested, which invalidates some previous arguments about the nature of the view it will give) and proved invaluable for observing bird movements in that vicinity.

4. Radar observations at Heathrow

Observations with radar at Heathrow were started with a trial survey on 22nd August 1968, which was followed up by investigations in the field over the next six weeks to ensure that the bird movements detected were thoroughly understood. The main movements ultimately identified were as follows:

(i) A local roosting movement of starlings in the late afternoon assembling from an area of about ten miles radius to roost in the centre of Windsor Great Park. Since Heathrow lay on the periphery of this "roost parish" the movement took the birds away from the airport so that they presented no hazard to aircraft there.

(ii) A local roosting movement of gulls shortly-before sunset assembling from an area larger than could be seen with the radar (and probably up to twenty or thirty miles in radius according to observations during the winter) to the King George VI and Staines reservoirs (which appear to form one unit) south-west of Heathrow and the Queen Mary reservoir to the south. The birds to the east of Heathrow went to the Queen Mary reservoir, but they are comparatively few in numbers and widely scattered while the reservoir appears to receive its main population from the south, so they presented comparatively little hazard to aircraft. A very good view was obtained with radar to the south-west, and it could be seen that most of the birds going to the Staines group of reservoirs arrived from between west and north, but mainly along the Thames valley from the north-west, and also presented

Printed image digitised by the University of Southampton Library Digitisation Unit

little hazard to aircraft; however, late in the movement some half-dozen bird flocks appeared in the region of garbage tips immediately north of Heathrow and flew south-west to the King George VI reservoir across its western approaches, so these in particular were marked down for further study.

(iii) An immigation of a number of flocks of birds from an area of fields, gravel pits and the new Wraysbury reservoir still under construction to the west on to Heathrow airfield after dark, identified as involving flocks of lapwings the following evening although the large number known to gather in the area disbanded soon afterwards. Some of these birds flew through the aircraft departure paths and nearly collided with departing aircraft, and these birds deserve study in future years.

(iv) Occasional erratic movements of targets around the reservoirs and gravel pits to the south and west which never came near the airport, and which seem likely to involve flocks of waterbirds which appear to present little hazard to aircraft at Heathrow.

(v) Occasional scattered targets crossing the whole area at a considerable height in directions between south and west which seem likely to have been passing migrants crossing the area on a broad front so that they present no greater hazard to aircraft around Heathrow than anywhere else.

The radar observations were repeated once at dawn and twice at dusk during the gull censuses on 15th December and 12th January, by which time the gull movements had greatly increased, swamping all others, although they remained essentially similar in character to those seen in August, and details of these observations will be published with the report on the gull census in due course.

5. Observations on gulls

Gulls began wintering in London shortly after the passage of the local bird protection acts in the early 1880s, and by the 1930s one of the earliest-established and largest of the western roosts on the Queen Mary Reservoir had been observed to hold 4,000 birds in August and usually about 25,000, exceptionally rising to 45,000, from November to March, with birds flighting up to at least 22 miles into Surrey to feed (P. A. D. Hollom quoted in the *Handbook of British Birds*, ed. H. F. Witherby *et al.*, 1941). The situation after the war is not directly comparable because a number of new reservoirs were being opened which attracted some of these birds, but censuses since then have yielded the following figures for gulls roosting in the Heathrow area and on all London reservoirs as a whole (table 1).

It will be noted that gull numbers have been increasing steadily in the London area in recent years, as indeed they have been in the country at large (R. A. O. Hickling, *Bird Study*, 14, 104-113), and that in 1968-1969 the main arrival continued into the winter, the numbers increasing by over a third between mid December and mid January. Numbers then remain high into March, after which they rapidly decline again.

TABLE 1

Gull numbers around Heathrow and in London as a whole

Date	*Queen Mary reservoir*	*Staines and King George VI reservoir*	*All London*
Jan. 1953	17,500	7,000	85,850 +
Dec. 1963	24,000	11,760	170,939*
Dec. 1968	30,000	28,220	239,745
Jan. 1969	75,000	42,600	396,086

* Taking the lower of two conflicting counts of 50,000 and 200,000 for the Queen Elizabeth II reservoir outside the Heathrow area.

6. The species and feeding areas of gulls using the Staines group of reservoirs

I carried out a series of counts of gulls visiting the Staines group of reservoirs and approaching them along different flylines in the early autumn, and first the direction of arrival and then the proportion of birds of different species present were recorded again by Mr. T. Brough and a number of assistants during the mid-winter surveys. The following results were obtained:

TABLE 2

Direction of origin and species composition of gulls approaching the King George VI reservoir

Species	*Aug.-Sept. 1968*	*Dec. 1968*	*Jan. 1969*
Black-headed gull	50%		55%
Common gull	15%		7%
Herring gull	7%		31%
Lesser black-backed gull	26%		6%
Greater black-backed gull	2%		1%
From: West	hundreds	17,000*	some
From: North-west	4,500	8,500	most
From: North	370	4,500	some
Total on the reservoirs:	6,500	29,220	42,600

* Includes birds probably originating to the north-west as well.

Scattered flocks also arrived on the Staines reservoir from other directions as well, including that of Heathrow airport, but no large streams. Many of the birds arriving at the King George VI reservoir from the west and north-west also passed on to Staines, and probably some birds to the Queen Mary reservoir as well, and these birds presumably include many of the very large number visible with radar arriving over Windsor Great Park from the direction of Reading, along the Thames from the direction of Windsor, and over Slough from the direction of the Chilterns.

7. Observations of gulls visiting rubbish tips north of Heathrow

In the early autumn it seemed likely that a limited number of gulls including many birds of the larger species feeding on rubbish tips immediately north of

Printed image digitised by the University of Southampton Library Digitisation Unit

Heathrow airport and flighting to roost at the Staines group of reservoirs over the airport or around its western approaches might present a special hazard to aircraft, so I carried out a series of observations on them, which I reported to the airport authorities and the Board of Trade. These observations were later continued by Mr. T. Brough and assistants from the Ministry of Agriculture Fisheries and Food Infestation Control Unit, who supplied so many records for the London Natural History Society gull survey that it was erroneously concluded that this movement was the main one in the area. The observations are summarised in table 3, from which it will be seen that this movement normally only involved a few hundred birds, and at the time of the maximum gull abundance in midwinter a few thousand, with one exceptional record of 10,000 birds in mid-January (Mr. Brough and I made a series of other casual observations at this time of which we made no proper notes which never otherwise indicated so many birds.)

The birds normally roosted on the dumps when they were not feeding, so that they did not constitute a hazard to aircraft then, and they were watched flighting to roost on the Staines group of reservoirs at different places along their path on a number of occasions. Sometimes they flew across the airfield when they usually passed well above the aircraft on the runways, though once early in the autumn birds put up prematurely from one dump settled on a disused runway on the airfield instead of continuing to Staines. On other occasions they joined the stream of birds feeding up the Colne Valley to the north flighting to roost down the western border of Heathrow airfield, when it could be seen that they usually flew below and beyond the flight-path of departing aircraft, and in general they presented less hazard to aircraft than might be expected, though of course the presence of garbage tips luring gulls from the Staines group of reservoirs north of Heathrow airport seems undesirable.

8. Bird-strike hazards on Heathrow airfield

Observations with radar and in the field suggest that most of the birds presenting a hazard to aircraft in the Heathrow area such as the gulls and starlings do not normally come into collision with the aircraft because their flight-paths are different, so that the main hazard is presented by birds actually feeding on the airfield. The number and location of birds picked up dead on the Heathrow runways for identification by the MAFF Infestation Control Unit by the foreman in charge, Mr. Nuth, reported together with his comments by Dr. Schaefer to this enquiry (his sections 2.2, 2.3, pages 4,

TABLE 3

Observations of gulls between Staines and tips north of Heathrow airport

Date	*Time*	*Place*	*Direction*	*Species and comments*	*Observer*
27.8.68	2015-2045	4	SSW, SW	370 large gulls mainly SSW (a few SW) down line of Colne to King George VI reservoir west of Heathrow.	W. R. P. B.
30.8.68	2015-2045	4	SSW	24 large gulls in formations as above.	W. R. P. B.
31.8.68	1905	1	–	*ca.* 150 gulls, mainly BH with about 25 H and LBB feeding on Stockwell Rd. tip.	W. R. P. B.
	2005-2015		SSW	440 gulls arrived down line of Colne at north end King George VI reservoir. None arrived across airport.	W. R. P. B.
4.9.68	1820	2	S	200 BH and 100 LBB gulls flushed from Sipson Rd. tip, set out across airport, settled on disused runway half-way across.	W. R. P. B.
	1900-1930	5,4	SW, SSW	SW small parties of tens of gulls leaving airport for Staines reservoir, hundreds coming SSW down west side airport.	W. R. P. B.
5.9.68	1840	2	–	100 gulls on Sipson Rd. tip, and small numbers scattered all over airport feeding.	W. R. P. B.
13.9.68	1825	1	SW	25 gulls on Stockwell Rd. tip, a few others flying over to SW	W. R. P. B.
25.9.68	1100	2,1	–	500 gulls on Sipson Rd. tip, mainly LBB, under 100 H, some BH: under 20 on second.	T. B.
7.10.68	1130-1500	2	–	Up to 600 gulls at once on Sipson Rd. tip, ratio 2 LBB: 2H: 1 BH.	N. J. W.
9.10.68	1730-1830	2	SSW	As above; also 750 gulls SSW 1730-1815 at up to 500 ft; ratio 2 BH: 1 H: 1 LBB.	N. J. W.
14.10.68	0545-1805	2	NNE/SSW	*c.* 700 BH, H and LBB gulls NNE 0657-0830, up to 600 during day, 1,500 gulls SSW 1630-1805	N. J. W.
15.10.68	0645-1800	1	NNE/SSW	400 mixed gulls NNE 0700-0900, up to 600 at Stockwell Rd. tip during day, at least 450 SSW 1600-1800, ratio 2 BH: 1 H: 1 LBB.	N. J. W.
9.1.69	1430-1815	2	–	Some thousands of gulls present at Sipson Rd. tip, not counted.	T. B.
12.1.69	1300	1,2	–	2,000-3,000 gulls present on tips, not counted.	W. R. P. B.
17.1.69	Late p.m.	1,2	SSW	Some 10,000 gulls on the two tips, about 80% BH. First birds to depart followed down west side of airport to Staines reservoir.	N. J. W.
22.1.69	1615-1705	2,1, 4,5,4	SW, S-SSW	2,000 gulls on Sipson Rd. tip, none on Stockwell Rd. but some hundreds passing over SW in steady flight. 450+ mixed gulls passing S to SSW down west side airport in small flocks 1645-1650, and 500 going S to SSW at Stanwell at 1700-1705, but mainly to west.	T. B.
24.1.69	1100	2,1	–	Some hundreds of gulls present on tips.	T. B., N. J. W.
10.4.69	1715	2,1	–	No gulls on tips.	N. J. W.
17.4.69	1000	2,1	–	No gulls on tips.	T. B.

Observers: W. R. P. Bourne (who also saw hundreds or a few thousands of gulls on the tips several times during the winter without keeping notes), T. Brough, N. J. Western.

Printed image digitised by the University of Southampton Library Digitisation Unit

15)* support this. They provide an interesting contrast to the birds observed in the field, since the greatest number of bodies were found in September, and at the approach (presumably eastern) end of the runways, whereas the greatest number of the main hazard species, the gulls, is not seen until much later in the year at the western (usual departure) end of the runways. It seems likely that the large number of gulls Mr. Nuth reported flighting over at dawn was in fact no greater than can be seen anywhere then, since I looked out from the control tower when the dispersal could be seen occurring with radar and saw no unusual numbers; and in fact that the average bird-strike incidence reported by the airlines at Heathrow is due to the occurrence of an average number of birds for an inland site feeding on the airport there, while the exceptional number of other birds occurring in the district avoid the airport entirely.

9. **Comparisons with Foulness.**

Foulness is unique, not only as a nature reserve but as an airport site, in lying in the centre of a large complex of estuaries suppporting exceptional numbers of migrant and resident birds. It does not seem easily comparable with any other British site, but since it is apparently considered necessary to make comparisons, the following ones seem apt.

(i) I only saw a few hundred gulls in the immediate vicinity of Heathrow in September, at the season when gulls appear to present the greatest hazard on airfields because they are particularly prone to sit about on open spaces; but if we ignore this, and assume that not merely these few hundred but all the gulls roosting on the Staines group of reservoirs to the number of about 6,500 frequent Heathrow then, there are still nearly twenty times as many, some 180,000, regularly flighting over and liable to settle on Foulness at this season. Even in midwinter, when the number of gulls is more nearly equal in the two areas, it is still observable that in point of fact around Heathrow the gulls tend to congregate off the airfield, around the local reservoirs or rubbish dumps, rather than on it, whereas it seems likely that at all seasons gulls feeding or roosting on tidal mud-flats in the Thames estuary will be liable to gather on any airport built at Foulness at high tide and in bad weather.

(ii) Lapwings and starlings have been quoted as two other recognised hazards to aircraft likely to occur in an approximately equal density at both Heathrow and any Foulness airport. The tens of thousands of large and small waders occurring in the Thames estuary show similar physical and behavioural characteristics to lapwings and starlings, and are liable to settle on any Foulness airport or flight over its approaches in ways quite unknown at Heathrow.

(iii) During many days exploration of the vicinity of Heathrow and some twenty hours observation of the radar there I only saw waterfowl approach the airfield once, when a large target presumably formed by swans seen passing overhead with radar inspired great respect in the air traffic controllers, one of whom informed me that it was his normal practice to warn aircraft to avoid such phenomena. It seems likely that they would be seen much more frequently over any airport constructed at Foulness, to the extent that if precautions were taken to avoid them this might render the airfield unusable for long periods.

10. **The need for more research**

It appears to me that there are a number of factors likely to lead to increased bird-strike hazards around Foulness which cannot be adequately assessed in the light of existing experience, including much from other airfields besides Heathrow which we will make available to the Stage III enquiry. These include:

(i) The tendency of birds from the estuary to settle on or fly over the airfield and its approaches at high tide and in bad weather.

(ii) The tendency of migrants following the British coast, or those which have been following the Dutch coast in autumn which leave it at the mouth of the Scheldt, to occur in increased numbers in the Foulness area.

(iii) The tendency of gulls in particular which have been feeding inland to settle on any airport near Foulness on the way to, or as an alternative to, roosts in the Thames estuary.

(iv) The precise pattern of movement under different circumstances of all the birds likely to visit the Foulness area, including in particular the heights at which they are liable to fly, for which there appear at present to be few or no accurate measurements.

Such research would be liable to require observations over a whole annual cycle to test the extent of seasonal variation in behaviour even if it were started immediately, and probably for at least a second year if any facts revealed required detailed study. It might then still be impossible to predict how the construction of an airport might modify the situation revealed.

* p. 49.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the University of Kent at Canterbury*

The University has noted that Foulness has been short-listed by the Commission as a possible site for the third London airport and wishes to make the following statement to the Commission concerning this.

The University of Kent at Canterbury is situated on high ground to the north of the City of Canterbury, being approximately 1½ miles from the City centre. It is approximately 21 miles from Foulness.

The noise level due to aircraft at the present time is negligible and causes no disturbance to the effective working of the University. The evidence so far published concerning an airport at Foulness indicates that the noise levels in this part of Kent would not arise to an intolerable extent. Yet while there remains uncertainty as to the frequency of flight operations from such an airport, the noise levels of new types of aircraft that would use it and the pattern of air traffic control, the University is bound to reserve its position. The University thinks that, should the noise from aircraft over Canterbury as a result of the new airport rise above 30 NNI (as defined in the Wilson report Cmnd 2056, HMSO, 1963) by day or by night, its work and the study of its students might be disrupted.

* See also p. 490.

Printed image digitised by the University of Southampton Library Digitisation Unit

Collected Evidence of Ornithological Societies and Interests

Sir,

This statement of evidence represents the considered views of the organisations listed below and is issued with their full support and approval. Brief details of these organisations are given in Appendix I.

International bodies
International Council for Bird Preservation
International Wildfowl Research Bureau

National bodies
Army Bird Watching Society
British Trust for Ornithology
The Royal Society for the Protection of Birds
The Seabird Group
The Wildfowlers' Association of Great Britain and Ireland
The Wildfowl Trust

Local bodies
Essex Bird Watching and Preservation Society
Essex Joint Council of Wildfowling Clubs
Essex Naturalists' Trust
Foulness Wildfowl Counting and Birdwatching Group
South Essex Natural History Society

We wish to object to the proposal that the third London airport might be sited at Foulness (off shore). Our case will be introduced by Peter Conder,* Director of the Royal Society for the Protection of Birds, and will be based on two main issues:

That one-fifth of the world population of the dark-bellied Brent goose winter at Foulness.

That large numbers of waders and other birds use the mud-flats and marshes at Foulness in winter and at times of migration.

In addition we shall hope to assist the Inquiry by presenting preliminary evidence on the possible hazards from bird-strikes.

Peter Conder will have with him the following expert witnesses who will deal individually with the three items above:

Peter Scott, CBE, DSC, LLD, Hon. Director of the Wildfowl Trust

Dr. Peter Rudge,† Hon. Secretary of the Foulness Wildfowl and Wader Counting Group.

Dr. W. R. P. Bourne, Hon. Secretary of the Seabird Group and Chairman of the Populations and Surveys Committee of the British Trust for Ornithology.

1. **General introduction**

We would first refer to the very full statement of evidence submitted by the Nature Conservancy and would wish to adopt it as a basis for our own evidence. We would especially draw attention to the fact that the very important review of existing and proposed National Nature Reserves which has been carried out by teams of specialist experts in many scientific disciplines will be recommending Foulness and Maplin Sands as a Class I site.

The Foulness area is also included in one of the Category A sites in the *List of European and North African Wetlands of International Importance* published by the International Union for the Conservation of Nature and Natural Resources (Headquarters—Morges, Switzerland).

There is a widespread feeling that mud-flats and saltings represent a form of 'waste land' of little or no value to anyone or anything. We shall hope to show briefly that this is very far from the truth and that much of our inter-tidal habitat represents a vital wildlife resource and that certain groups of birds rely on it almost entirely during a considerable portion of the year.

In many parts of the world Man has created new agricultural and industrial land from the sea and some of the most fertile land in Great Britain has been provided in this way. In the past the rate of reclamation has been relatively slow and natural accretion around our coasts has sometimes replaced what has been lost.

Now recent technological developments are bringing about a sudden and startling increase in the rate at which this land is being taken and many people are concerned for the future of the wildlife it supports. In the general area of the North Sea there are a number of major schemes either under way or being planned. We would refer especially to barrage schemes being investigated at Morecambe Bay and the Wash, the proposed further port development on Tees-side and the large-scale reclamation schemes in Holland. There are, as you will be aware, many other such schemes and should the third London airport come to Foulness, it and its possibly associated developments will mean that a further large section of this habitat will disappear.

From the ornithological point of view undoubtedly the most serious effect would be on the very limited world population of the dark-bellied Brent goose.

2. **Dark-bellied Brent goose in relation to the Essex estuaries and particularly Foulness**

The dark-bellied Brent is a race of goose nesting in the high arctic of Russia, mainly in Western Täimyr, and wintering on the estuaries of north-west Europe. Unlike other species of wintering geese that feed inland, the Brent has very restricted habitat preferences, feeding below high water mark almost exclusively on two plants growing on mud-flats, *Zostera* and *Enteromorpha*

* See also p. 485. † See also p. 488.

Printed image digitised by the University of Southampton Library Digitisation Unit

Formerly this goose was quite numerous but, following depletion of its preferred food plant, *Zostera*, by disease in the 1930s, the population declined very sharply by at least three-quarters. As a result, international efforts were made after the war to conserve it and complete protection has been enforced in countries in which it breeds, migrates through or winters, namely the USSR, Finland, Sweden, the Netherlands, Belgium, Great Britain and France. Its total (i.e. world) population, as measured by co-ordinated international censuses, has slowly rebuilt from about 15-20,000 to around 30,000 at the present time. The slow rate of increase is undoubtedly due in part to the harsh climatic conditions on its breeding grounds, which result in nearly complete failures to raise young in many years (7 out of the last 15). The increasing scarcity of suitable wintering grounds may also be a limiting factor.

More than half the present population winters in estuaries on the east and south coasts of England and our international responsibility to ensure the continuation of the race is thus paramount. Of those wintering in England two-thirds (10,000) are found off the coast of Essex and no less than, 6,000 of these on the Foulness Sands (up to 8,500 if the whole Foulness-Crouch area is considered). These sands carry the biggest continous population of the preferred food plant, *Zostera*, in Great Britain.

The elimination of the Foulness Sands area would thus remove the feeding grounds of a fifth of the world's population. There is good evidence that food supplies in the other Essex estuaries are already being fully exploited by the present Brent population. More distant estuaries in which Brent already winter in smaller numbers, in Norfolk, Kent, Sussex, Hampshire and Devon are also unlikely to support many more than they do now. They are also by no means safe from industrial and recreational development. Across the Channel the Waddensee is likely to be reclaimed and in any case cannot support geese in the coldest months. The future of the only other main wintering area, the Gulf of Morbihan in France, is likewise insecure.

It must therefore be concluded that placing the third London airport on Foulness Sands will directly lead to a significant reduction in the world population of a threatened race of geese and so counteract long-term international efforts towards its conservation.

(Appendix II to this evidence lists the most important sources of information on this species and gives some indication of the international concern for its future as do the letters, given in Appendix III, from acknowledged international experts in this field.)

3. Foulness as a habitat for other birds

(a) *General Considerations.* Extremely large numbers of shore and water birds which breed in the far north and inland in Europe and Asia disperse south and west when local conditions deteriorate and the day length during which they can feed is reduced. Some remain for the winter in western Europe, often moving between one area and another, while many more rest there for varying periods on migration to and from wintering areas in southern Europe and Africa. Some indication of the nature of these movements can be seen from table I in Appendix IV, which shows the countries where Dunlin, a very common species of wader, ringed in Britain, were recovered. In the past there was doubtless ample habitat for these birds in western Europe, but with the progressive reclamation of marshes and mudflats over the centuries, the area available has become increasingly reduced so that they gather on that which remains, often in very large numbers and at a very high density. On long migrations birds require to rest and feed and a chain of suitable marshes may be vital.

Most of these birds are highly specialised feeders which remain in dense flocks on and around the marshes and mudflats, moving back and forth according to the state of the tide, the time of day and the extent to which they are disturbed by Man. Gulls have become more adapted to civilisation and now feed largely on farmland and around built-up areas often 20-30 miles inland returning to the coast or inland waters to roost at night.

(b) *The Numbers Visiting Foulness.* Information available from people who have access to count wildfowl suggests that the Foulness area alone, in addition to the Brent geese, supports a minimum of 5,000 duck in winter, 50,000 waders of varying sizes during both the periods of migration with somewhat smaller numbers in winter, and over 200,000 gulls on autumn passage falling to around 10,000 in mid-winter.

Table 2 and 3 in Appendix IV give the most up-to-date information on the numbers of waders and gulls at Foulness. It should be pointed out that Foulness is only a part of a complex system of estuaries and marshes on the Essex coast which together form the third most important site for wintering waders in Great Britain. The birds present at any one time are only a fraction of the total populations of north-west Europe liable to pass through the Foulness area at some time during the year. It has been estimated that at least a million gulls winter in Britain, when very much larger numbers will have passed on south.

(c) *Effect of Airport.* It is extremely difficult to predict what effect the reclamation of a part of the Maplin Sands would have on these birds apart from the Brent geese. Many factors are involved including the physiographic effects of large-scale reclamation on the surrounding area and the amount of further reclamation which might follow the building of an airport.

The loss of a substantial portion of the area will certainly reduce the amount of food available and, taking into account the many other similar developments, it seems likely that world populations of some species of waders will be affected in the long-term.

(d) *The Breeding Little Terns.* The colony of little terns breeding on the shell spit at Foulness is one of the largest in Great Britain. A recent survey showed that the population of this species now numbers about 1,600 pairs, of which some 6 per cent nest at Foulness. Because, in this country, it nests almost exlusively on the shore it is under very considerable pressure from the ever increasing numbers of holiday-makers. The present proposals would certainly destroy the whole Foulness colony.

Printed image digitised by the University of Southampton Library Digitisation Unit

4. The bird strike hazard at Foulness

(a) *Local Movements of Birds in the Thames Estuary Area.* The area of the Thames Estuary from the North Foreland to the Naze forms a vast funnel facing north-east in the path of birds migrating south-west in autumn. When these are anxious to rest and feed, they are liable to turn and follow the coast when they come to it until they find suitable resting-places on the marshes and mud-flats at either side of the mouth of the estuary. They often move out to feed and roost on the exposed mud-flats at low tide, and return to rest on the shore and open areas behind it when the tide rises. They may also move for considerable distances up and down the coast between good roosting and feeding areas, while between 30 per cent and 90 per cent of the gulls fly inland to feed during the day. Many thousands of waders are know to roost at high tide behind the coast at Foulness, and indeed several thousand lapwing and golden plover spend all their time there, while it has been estimated that 180,000 gulls fly inland over the island in September and 8,000 in midwinter, at very variable altitudes up to 1,500 ft or more when the birds are soaring in thermals (see table 3 Appendix IV).

The Foulness area is therefore likely to be subject to the following bird movements:

1. Large movements of gulls inland at dawn returning to roost on the offshore sandbanks or on the sea at dusk varying in size with the season and character with the weather.
2. Considerable movements of waders and other shore and water birds coming in to roost behind the coast at high tide.
3. Erratic movements up and down the coast of passing migrants and of birds moving between roosting and feeding grounds in the Crouch, Blackwater and Colne estuaries to the north and the main Thames estuary and north Kent marshes to the south according to the tide, weather, state of the feeding grounds and amount of disturbance in each area.

Many of these birds move in dense flocks and the larger gulls weigh two to four pounds each. The most abundant waders, the knot, weigh about one-fifth of a pound each and flocks of several thousand are not uncommon. The flocks may carry out evolutions in close formation, during which they rise to considerable heights when entering and leaving both the high tide and nocturnal roosts. They are liable to occur both over Foulness island and up and down the coast in the flight approach paths to any airport in the vicinity.

(b) *Known Effects of Bird-Strikes on Aircraft.* Birds have presented a hazard to aircraft since the latter became fast, the damage on impact being proportional to the speed of the colliding bodies, and since the introduction of jet engines which are liable to suffer severe and expensive damage from the ingestion of birds. There have been a number of cases of loss of the aircraft or fatalities to pilots through collisions between birds and smaller (particularly military) aircraft. Larger civil aircraft frequently suffer damage to windscreens or engines, but losses are rare since they commonly have two pilots and several engines. However, an Electra was lost with 62 lives when it collided with a flock of starlings at Boston airport in October 1960, and a Viscount with 17 lives when it collided with swans over Maryland in 1962. A Vanguard was very nearly lost when it collided with a flock of gulls at Turnhouse airport in the same year. The flocks of birds found in a high density around Foulness are similar in character to those responsible for these incidents.

The extent of damage and delay caused to aircraft without total loss appears to be very substantial. It is reported that Air Canada formerly had 6.18 bird-strikes causing damage per 100,000 aircraft movements which was reduced to a minimum of 4.18 strikes by energetic bird control methods on airfields. British airlines are reported to have about 5 strikes causing damage in 100,000 movements. In Canada individual strikes have caused engine damage estimated at $200,000 and $150,000 while bird-strikes are reported to cost an average of £6,500 each in Britain. BOAC is said to have sustained a million pounds' engine damage in five years. Something over two-thirds of this damage occurs in the immediate vicinity of airfields. When all bird-strikes and not just those causing damage are taken into account, the figures are higher. In New Zealand, where most of the sites are coastal, there is an average of 30 strikes per 100,000 movements with 1,000 per 100,000 at some sites. At the US Air Force base on Midway, where there are 300-400 strikes per year, fortunately few of them with much damage, the figures are considerably higher still. In Canada, maximum efforts at bird control only reduced the incidence of bird-strikes by a quarter. It follows that the choice of airport sites may be the biggest single factor influencing the incidence of bird-strikes as a whole. The equally large numbers of gulls near Heathrow do not form a major hazard as their principal flight lines lie away from the airfield, up the river valleys, and do not pass close to it.

(c) *Likely Effects of Developments at Foulness on Local Bird-Strike Hazards.* At the present time it seems probable that Foulness poses as high a risk to aircraft from bird-strikes as anywhere in the British Isles. Reclamation of the Maplin Sands would reduce the area of feeding grounds for shorebirds in the immediate vicinity and it seems possible that some of the wildfowl and the roosting gulls might move to marshes to the north and south. However, many birds would doubtless still commute up and down the coast between these areas straight over runways sticking out to sea, and gulls coming to roost would probably still pass overhead to roost on offshore sandbanks or on the sea.

Since we are dealing with large fluctuating, migratory populations, there seems little possibility of significantly reducing the total number of birds present or of educating individual birds to alter their behaviour in the area. The gull population in Great Britain has been increasing considerably in recent years and urban development around the airport would probably greatly increase the number remaining in the area over the winter. There is no reason to suppose that the upward population trend will not continue and the number of gulls in the London area increased by 50 per cent in the years 1953-1964.

Both the gulls and shorebirds would probably be

Printed image digitised by the University of Southampton Library Digitisation Unit

more inclined to settle on open reclaimed land extending out to sea than they do at present on Foulness. Bird-scaring methods might provide temporary relief by removing birds from the runways, but they would not prevent flocks from flying across them.

Further and more detailed evidence will be presented to the Stage III investigations.

On behalf of the organisations listed

DAVID LEA

Deputy Director

The Royal Society for the Protection of Birds

18th April 1969

APPENDIX I

Brief details of the organisations concerned

The International Council for Bird Preservation was founded in 1922 of 60 member countries each having a National Section composed of the leading ornithological, scientific, sporting and other organisations of the country concerned. The primary interest of the ICBP is the preservation of migratory birds, which is of vital importance to the various National Sections of the organisation.

The International Wildfowl Research Bureau exists to stimulate and co-ordinate research on wildfowl throughout the world but with particular reference to Europe and North Africa. It has official delegates from 23 countries and correspondents in many more. Its main activities are carried out by Working Groups, with chairman in the Netherlands, Great Britain, France and West Germany. It is financed by international funds.

The Army Bird-Watching Society has about 200 members and as its title indicates is a society intended for army personnel interested in ornithology.

The British Trust for Ornithology is primarily concerned with organising and carrying out research into the populations and movements of British birds. Its 4,000 members actively assist in these enquiries and the Trust publishes a quarterly journal *Bird Study*. It is supported by membership subscriptions and grants from the Natural Environment Research Council.

The Seabird Group is a small group of specialists sponsored by the major national ornithological societies. It organises research into seabird populations, their movements and the factors affecting them.

The Royal Society for the Protection of Birds has over 40,000 members. It manages bird reserves covering some 30,000 acres, runs the Young Ornithologists' Club with over 20,000 members and is active in the protection of rare birds and the enforcement of the Protection of Birds Acts.

The Wildfowlers' Association of Great Britain and Ireland (WAGBI founded in 1908) is the largest organisation of its kind outside of North America. Its work is concerned entirely with sporting shooting, practical conservation, and legal protection. It comprises in excess of 20,000 members, 210 affiliated organisations, and 18 Regional or Area Joint Councils. Its main work is in respect of wildfowl, and their habitat.

The Wildfowl Trust exists to carry out research on wildfowl in captivity and in the wild state and to ensure their conservation by applying the results of that research, by education and by the breeding of threatened species in captivity. It has 8,000 members and its two collections of living wildfowl are visited by over 200,000 people annually. It publishes an annual *Wildfowl*. It is supported by subscriptions, donations and entrance fees; its research programme receives substantial grants from the National Environment Research Council.

The Essex Bird-Watching and Preservation Society is the senior ornithological society in the county. Founded in 1949 it has a membership of over 700 and publishes an annual Bird Report. It promotes educational activities and assists physically and financially conservation in the County.

The Essex Joint Council of Wildfowling Clubs co-ordinates the activities of clubs in the county and represents them on matters affecting their interests.

The Essex Naturalists' Trust is pledged to conserve all forms of wildlife in the county. It manages 16 nature reserves, educates the public about nature conservation and opposes development likely to seriously endanger wildlife. It has a membership of 1,700.

The Foulness Wildfowl Counting and Bird-Watching Group consists of people with a special interest in the birds of Foulness who have obtained special permission to visit the area.

The South Essex Natural History Society aims to foster an interest locally in all branches of natural history. It has a membership of about 200, some of whom are acknowledged experts in their field, and has an active junior section.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX II

Sources of information about the status of the Brent goose

Atkinson-Willes, G. L. & Matthews, G. V. T. 1960. The past status of the Brent Goose. *Brit. Birds* 53:352-357.

Burton, P. J. K. 1961. The Brent Goose and its food supply in Essex. *Wildfowl Trust Ann. Rep.* 12:104-112.

Burton, P. J. K. and Boyd, H. 1964. The present status of the Brent Goose in Europe. *Proc. 1st European Mtg. on Wildfowl Conservation, St. Andrew,* 73-75

Butcher, R. W. 1934. Report on the present condition of Eel Grass on the coasts of England. *J. Cons. Int. Explor. Mer.* 9:49-65.

Fog, M. 1967. An invesigation on the Brent Goose (*Branta bernicla*) in Denmark. *Danish Rev. Game Biol.* 5:3-40.

Mörzer Bruyns, M. F. and Timmerman, A. 1968: Over het voorkomen van der Rotgans (*Branta bernicla bernicla*) in Nederland. *Limosa* 4:90-106.

Ogilvie, M. A. 1968. *The Brent Goose.* Nature Conservancy document WC/M/68/50.

Ranwell, D. S. and Downing, B. M. 1959. Brent Goose winter feeding pattern and Zostera resources at Scolt Head Island, Norfolk. *Anim. Behaviour* 7:42-56.

Salomonsen, F. 1958. The present status of the Brent Goose (*Branta bernicla*) in Western Europe. *Vidensk. Medd. Dansk. Naturh. Foren.* 120:43-80.

Uspenski, S. M. 1960. The Brent Goose in the Soviet Union. *Wildfowl Trust Ann. Rep.* 11:80-93.

Voisin, C. 1968. Les Bernaches *Branta b. bernicla* du Golfe du Morbihan. *L'Oiseau* 38:150-174, 225-248.

And original data provided to the Wildfowl Trust by the Essex Bird Watching and Preservation Society's Wildfowl counts.

APPENDIX III

Letters concerning the future of the Brent Goose at Foulness

LETTER I

Game Biology Station
Kalö, Rönde
Denmark

April 1st, 1969

Director IWRB
Dr. Geoffrey Matthews
Slimbridge, GL2 7BX
England

The Danish Game Biology Station being deeply involved in research on *Branta bernicla* has with great satisfaction remarked that the population of *Branta bernicla bernicla* is again slowly increasing after a long period of decrease.

A contributory cause to the increase in the recent years may probably be the steps taken by a number of countries to regulate the shooting. The regulation of shooting will, however, be of no use if reclamation and disturbance by man is continuing in the resting and wintering ground for the *Branta bernicla* which is so very fastidious.

Learning that plans are prepared in England for reclamation of the areas near Foulness Island, Essex, where 20 per cent of the total world population of *Branta bernicla bernicla* are wintering, the Danish Game Biology Station considers it extremely doubtful that these birds will be able to find new habitats if these plans are realised.

The Danish Game Biology Station points out that the situation is dangerous for the dark-bellied brent geese, and we strongly urge that the IWRB takes all possible steps for keeping this internationally important locality in a state suitable for *Branta bernicla bernicla.*

Yours sincerely

H. M. THAMDRUP
Professor, Dr. Phil.
Leader of the Danish
Game Biology Station

METTE FOG
Cand. Mag.

Printed image digitised by the University of Southampton Library Digitisation Unit

LETTER II

International Wildfowl Research Bureau
Bureau International de Recherchie sur la Sauvagine
Netherlands Section and Goose Working Group
c/o State Institute for Nature Conservation Research (RIVON)
Laan van Beek en Royen 40-41
Zeist Holland

3rd April 1969

Director
International Wildfowl Research Bureau
Slimbridge GL2 7BX
England

I have got information that there is a proposal to site the third London airport off Foulness Island, Essex, on land to be reclaimed from the existing mud flats.

These mud flats are of great importance to the dark-bellied Brent goose (*Branta bernicla*).

Especially because this area is the feeding habitat of one-fifth of the world population of these species.

In the near future this area will be still more important for the Brent geese when the most important haunts in the south-western part of the Netherlands will be lost owing to the delta works.

I hope that there will be an alternative solution for an airport which will be less harmful concerning Nature Conservation.

The Coordinator of the Goose Working Group of the International Wildfowl Research Bureau

M. F. MÖRZER BRUYNS

LETTER III
(*Translation*)

Zoology, Mammals & Birds Department
National Museum of Natural History
55, rue de Buffen
75-Paris V^{e} France

10th April 1969

The Director
IWRB
Slimbridge GL2 7BX
England

It is with surprise and consternation that I learnt of the news of a proposal to construct an airfield at Foulness Island. This wintering area, by far the most important for Brent geese (*Branta b. bernicla*) will be faced with destruction. The Brent goose is strictly dependant on the vast sea-grass areas which dry out at low tide in the bays and estuaries of Western Europe. If these zones disappear, the Brent goose will disappear with them. Since the last war all Western European countries, including Russia, have done their utmost to protect the Brent geese whose numbers diminished by at least three-quarters during the Zostera disease (1930). Since then, the Zostera beds have recovered very slowly but at present they still cover less extensive zones than before. In the Gulf of Morbihan, where the mud that was no longer stabilised by the sea-grass has been partially swept away into the sea, oysterbeds have become predominant. The total protection of Brent geese has permitted the population to increase from 15,000 to 30,000 individuals. Why such a modest increment? It seems that two possible factors are responsible.

Very severe climatic conditions in the region where they spent the summer (mainly Western Täïmyr) frequently prevent the birds from breeding, so quite often they have no young at all. For a species with such an irregular reproductive rate to survive, the individuals must be numerous so that they can ensure the continuation of the species during the bad years.

It seems that the wintering areas are already too small and form a limiting factor during the good years when the young birds are numerous. The study that we have been doing in the Gulf of Morbihan shows that the sea-grass

Printed image digitised by the University of Southampton Library Digitisation Unit

of the Gulf can only nourish 5,000 Brent geese in the best circumstances. It seems that the situation is similar in the other wintering areas.

It is for this reason that a decrease of wintering zones is disastrous for the species.

We are facing an irreparable disaster that may well even lead indirectly to the total disappearance of this splended bird. I am, however, convinced, knowing the concern of the English for nature protection, that the new London Airport will be constructed on some other site.

C. VOISIN
Assistant of the National Museum of Natural History

LETTER IV

Station Biologique de la Tour du Valat
Le Sambuc
Bouche du Rhone
France

11th December 1968

The Director
The Nature Conservancy
19 Belgrave Square
London SW1

Foulness Sands, Essex

I understand that an official enquiry is under way in Great Britain concerning the site of a third London airport and that the Foulness Sands are one of the places under consideration.

I know that you are aware that up to 7,000 of the dark-bellied Brent geese winter in virtual sanctuary in this area, and that if these were displaced they would have difficulty in finding other suitable areas, in view of their specialised feeding habits. I would like to stress the international concern with your problem since the numbers quoted above represent about 25 per cent of the known *world* population of this goose. It is one whose conservation this agency has been urging over the past fifteen years. Many of the countries through which these birds pass have restricted, or abolished shooting of this goose. Your country has set a fine example in this respect. I very much hope therefore that it will be possible to avoid the destruction of one of its main refuge areas.

I would be greatly obliged if you would bring this matter to the attention of the Board conducting the Enquiry.

(Sgd.) LUC HOFFMANN
Honorary Director IWRB

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX IV

The movements and numbers of some of the birds at Foulness

Table I: Recoveries of British ringed dunlin

This table shows the number of dunlin which, having being ringed in Britain, were recovered abroad. The third column gives the number of birds recorded in each country which were ringed in the Thames area.

Site of recovery	*Number recovered*	
	British	*Thames*
Africa	10	2
Portugal	19	1
Spain	12	2
France	110	14
Benelux	4	1
Germany	15	7
Denmark	17	6
Norway	1	1
Iceland	2	1
Sweden	73	41
Finland	11	4
Poland	4	3
Baltic States	1	0
U.S.S.R.	13	11

Table II: The numbers of waders at Foulness

Species	*Numbers*	*Period*
Dunlin	10,000	August–May
Knot	15,000	July–May
Curlew	8,000	August–May
Bar-tailed godwit	1,500	August–April
Oystercatcher	4,500	August–May
Sanderling	500+	August–May
Redshank/grey plover/turnstone	5,000	August–May
Ringed plover	1,000	throughout year
Golden plover	2,000	August–April

Table III: The numbers of gulls at Foulness

	June	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Jan.*
Herring	500	6,400	10,000	164,000	87,000	18,000	8,000	10,000
Common	300		6,000					
Lesser black-backed	100	800	2,000	15,000				
Great black-backed	–	–	–	6,000				
Black-headed	400	800	2,000	20,000				
Total	1,300	8,000	20,000	205,000				

Note: During February and March the numbers drop rapidly and a count in April revealed 700, mainly black-headed Gulls. This is equivalent to the approximate breeding population of this species at Foulness.

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Evidence

by

Thames Estuary Development Company Ltd.
Royal Institute of British Architects, Eastern Region
Councillor M. King
Thames Aeroport Group (*and Mr. D. Thornton*)
Bernard Clark and Partners

Witnesses were examined on this evidence
on Day Eight, Monday 19 May 1969
see pages 493-526

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Thames Estuary Development Company Ltd.

1. The Thames Estuary Development Company, Ltd. is a company set up for the purpose of the planning and the development of land by reclamation in the Thames Estuary. Its members are the Port of London Authority, Southend Corporation, John Howard & Company, Ltd., London and Thames Haven Oil Wharves, Ltd. and John Mowlem & Co., Ltd.

2. The Company has proposed the reclamation of Maplin Sands to form the site for the third London airport. It has initiated and is now in the process of carrying out studies into the various matters arising out of this proposal and the consequences of siting the airport and a deep-water port in this area.

3. One of the most important matters is the amount of noise in the locality. In this connection it is noted that the Commission has included in the *Short List of Sites and Site Information for Stage II Local Hearing** two plans: drawings nos. CTLA 1/2 and CTLA 1/3 indicating NNI contours for a two-runway and four-runway airport respectively. We agree that it is possible that these results would be obtained if the airport was designed and sited as shown on these drawings. But realising the great importance of subjecting the minimum number of people to the smallest possible inconvenience from noise the company has already made a very detailed examination of the possibilities of improvement and is continuing this examination.

4. These studies have not yet been completed but we are able even at this stage to indicate what may be practicable by slightly altering the location of the runways and altering the manner in which aircraft are routed after take-off and before landing, and we attach a drawing† (ref. TED 8B) which shows significant improvements in the pattern of noise contours shown in CTLA 1/3 applicable, as an example, to a four-runway airport operating to capacity. It will be seen that if this solution were chosen, the 40 NNI contour not only passes Shoeburyness well out to sea, but also similarly falls short of Sheerness. There is almost no intrusion of even this contour over dry land.

5. We are also making detailed investigations into the communications from the airport to the locality and to the rest of the country. We have proposed that a deep water port and possibly, associated industrial development, including a deep-water oil terminal, be located in conjunction with the airport and if these proposals are accepted a more advantageous cost-benefit balance will be involved in expenditure on road and rail links and on reclamation costs.

6. Similar detailed studies are being made into all possible relevant aspects of a wide range of other consequences to the locality if the airport were sited at Foulness. These include the effect on birds and marine life. A survey is being carried out to examine how best the amenities of the area can be maintained and indeed improved, as for example, in the field of yachting (where the provision of a marina would be possible) and other leisure activities. A hydrological survey is also being carried out to make sure that the effects on the estuary are not in any way adverse.

7. In making all these studies at this early stage, and by retaining a flexible approach to each aspect, we are confident that careful planning of all aspects of the matter will minimise any adverse consequences to the locality and enable the fullest advantage to be taken of the position if the airport were to be sited in the area.

* HMSO; 6s. Reproduced at p. xv. † p. 247.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Royal Institute of British Architects, Eastern Region

Introduction

We have taken as our starting point the first report by the South-East Economic Planning Council entitled *A Strategy for the South-East** because, amongst other things, it represents the broadest authoritative guide to future developments of the region, which includes the four chosen sites for the third London airport. This report points out most forcibly that the development of this region can only be considered in the context of Europe.

> "We also wish to emphasise the vital place of the industry and commerce of the region in the healthy economic future of the country. The south-east contributes about one-third of the country's visible exports; and the City, with its essential national and international services in the field of finance, insurance and shipping, accounts for a large part of the country's foreign exchange earnings on invisible exports, estimated at some £150-200 million per year. . . . the region is strategically placed in relation to major European growth areas and, if the country enters the Common Market, the importance of the region for the nation's prosperity will be enhanced."

Our figure 2† shows this European situation and indicates the vital position that Foulness would take in relation to the north-east European industrial areas. The map also clearly shows how a failure to develop to the full the potential of Foulness as a major communication centre would lead to the exploitation of the situation by another centre such as Rotterdam and Europort. It cannot be too strongly emphasised that the scale of the project is enormous both in terms of passengers handled, freight and finally urbanisation. It is clear to us that the scale of thinking and planning required is larger than we are accustomed to in this country, and that, unless we raise our sights to include at this stage all the potential technical aides, the results will be not only fatal in terms of economics and trade, but also tragic in terms of human lives and environment.

Whilst not being experts in air transportation itself, we have drawn on expertise sufficiently to state that the problem of the third London airport must be considered in descending scale from the international to the national, to the regional and, finally, to the local level. We have already touched on the international scale. In national terms the problems are related mostly to communications and transport patterns although the growth of population in this part of the south-east certainly has not been envisaged in terms of countering the drift to the south-east.

It is at regional level that we are most concerned because we ourselves are a regional organisation acutely interested in the development of the region (fig. 1). It is clear that a project the size of the third London airport situated at Foulness would invalidate a large part of the Strategic Plan set out in the South-East Economic Planning Council's report; it is clear also that the piece-meal planning proposals put forward by such bodies are bound to be abortive when major factors are omitted from consideration. The fact that the Strategy Plan contains five major growth points and fails to mention a third London airport and its attendant city as a sixth undermines the whole basis of the report.

We have divided our evidence into two sections, firstly transport and communications, and secondly urbanisation; and we have tried to work within the brief clearly stated by Mr. Justice Roskill that evidence should be based on the assumption, in this hearing, that the airport will be built at Foulness. We are not attempting to draw comparisons with the other sites nor are we putting forward pros and cons. It is inevitable, however, that certain difficulties peculiar to Foulness will be referred to.

1.0. Transport and communications

1.1. *General Considerations*

It must be assumed that, in spite of the locations of the proposed Foulness site some miles from London, the principal object of the airport is to serve air transport to and from London. It is also assumed that certain routes will use the airport as a junction or changing point for other home and continental routes, and as a terminal for inter-city domestic services.

Under the heading of transport one is considering the following:

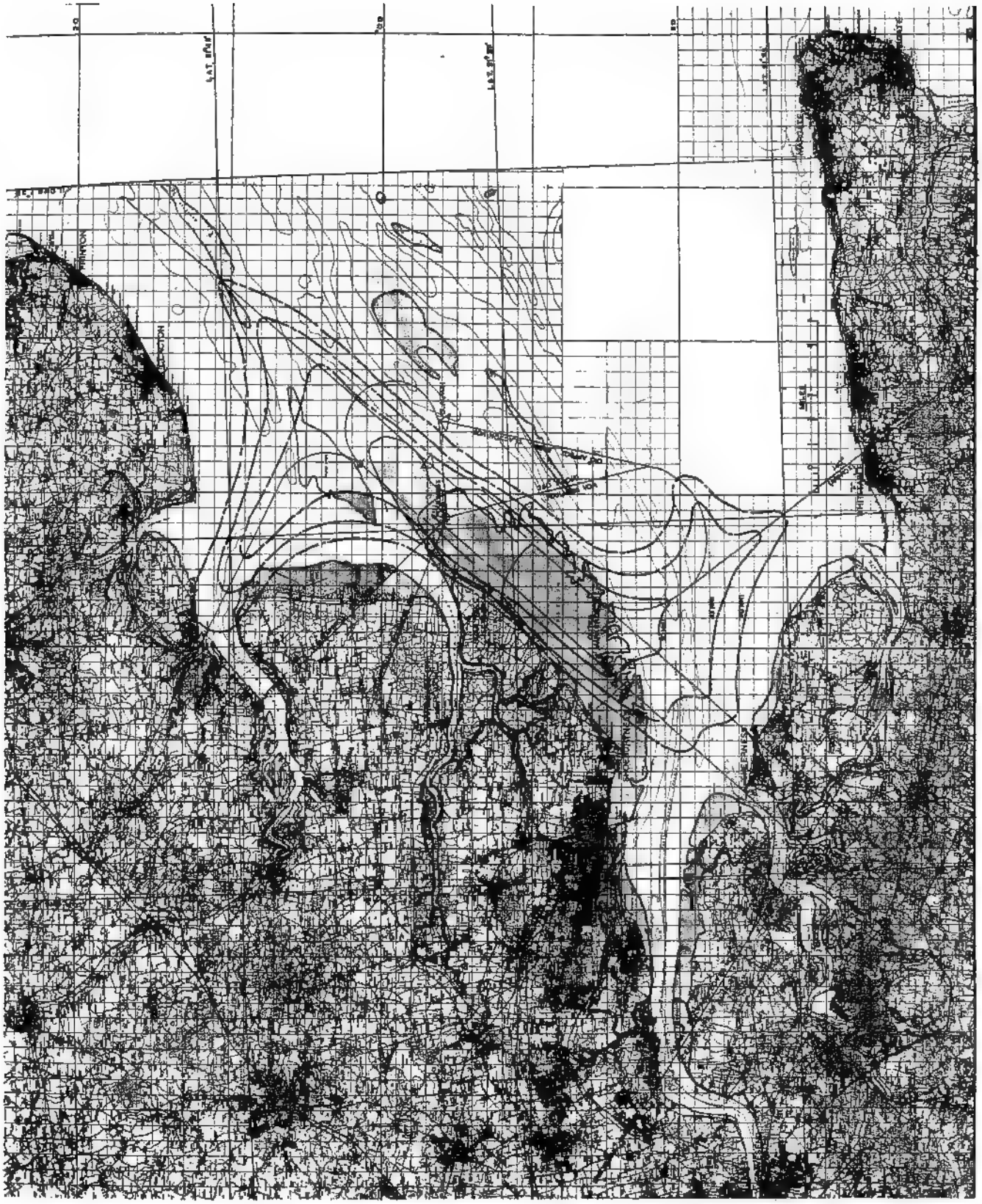
(a) Transport of personnel and staff between the airport and the principal residential area adjoining the airport.
(b) Transport of freight to and from the airport from various places of origin within Britain.
(c) Transport of passengers to and from London.
(d) Transport of passengers to and from the airport from other destinations.
(e) Possible links to seaports.

1.2. *Residential Traffic*

Since the major objection to the site of an airport seems to be the noise emanating from its function, it would seem desirable to locate the residential area beyond the range of noise nuisance area. It could be assumed, therefore, that the nearest point of any major residential area to the airport might be five to six miles. Since personnel would no doubt be travelling to and from the airport over 24 hours, there would be an average movement, when full development is reached, in the region of 3,000 persons per hour in each direction; this might represent a movement of up to 20,000 per

* HMSO; 15s. † p. 19.

Printed image digitised by the University of Southampton Library Digitisation Unit



TED 8B. NNI contours—take off and landing. *(Thames Estuary Development Company)*

Printed image digitised by the University of Southampton Library Digitisation Unit

hour in each direction at peak times. In terms of bus transport this would represent more than 300 buses per hour in each direction at peak times, requiring considerable staffing. The road system required for this traffic would need to be to substantial standards and it would have to extend throughout the airport area to cover a reasonable distribution of staff, both to the central buildings and to the maintenance areas. A road link between the town and the airport would be necessary in any case, but a fast automated rail link specifically for airport purposes, available to airport staff without charge, would be justified in terms of saving in time and would make possible the remote siting of the residential area.

1.3. *Freight Transport*

According to the Government's *South-East Study*,* the transport of goods by air is increasing at the rate of nearly 20 per cent per annum and Heathrow is now Britain's third port of entry for freight. The advantages of air transport could easily be frustrated and enormous congestion created if adequate transport facilities to and from the major manufacturing centres are not provided.

The volume of road transport traffic can only be assessed, but with increasing use and the experience of the already fully used M1, a motorway link of not less than six lanes would be needed from the airport to the Toddington or Aspley Guise junctions linking with the A6, A1, A10, A11, A12.

The further improvement of the A127 together with the completion of the second lane of the Dartford tunnel and its approaches, particularly to the north, are urgently called for if the airport is to service the Kent area to any extent.

Transport by rail is provided at present by little more than a minor suburban line.

Presumably any proposed freight service will need to be funnelled through London for distribution to the midlands and north and some major rail link to cover freight purposes is essential.

The increasing use of container services for air, land, rail and sea transport makes the proximity of a sea port advantageous. It must however be emphasised that the problems arising from such a combined project can only exacerbate the situation and any provision made for airport transport may have to be doubled to serve the extra traffic arising. It is quite clear that the Foulness site for an airport cannot be considered by itself and ought to be linked with a study of the whole commercial potential of this area of Essex as indicated in the south-east study.

1.4. *Passenger Transport*

The transport of passengers presents perhaps the major problem. It is stated that fully developed, in the region of 2,000,000 persons per week (1,000,000 each way) will be using the airport, the large proportion no doubt travelling direct from the capital. If it is assumed that road transport would be used between the capital and the airport to move about 140,000 people per day in each direction, one cannot envisage anything less than a six-lane urban motorway to cope exclusively with the airport traffic, if, as at present appears to be the case, the large majority of passengers travel by car. Added to this number one must assume that a fair proportion of travellers will be met at, or taken to, the airport which may raise the numbers actually using the airport by some 50 per cent or more. Not only this, but a car taking a passenger to the airport will probably return thus doubling the number of journeys made by vehicles in relation to passengers carried.

Further account must be taken of holidays and weekends when traffic might be well above average and the fact that an airport is a "resort" for many pleasure motorists, and proximity to Southend and possibly a sea terminal, might be a great attraction. It must also be considered that a fast motor route, if available to general traffic, will attract that traffic so that account must be taken of normal traffic flow to a resort like Southend, which creates a problem in itself.

It therefore seems inconceivable that normal service routes can be made adequate for general as well as specific airport purposes, and it seems essential in considering any airport related to London to provide exclusive fast routes into the capital. It is clear that some traffic may have to be carried on road or rail routes particularly where towns of origin are not in line with London; but for major passenger transport, a London terminal—for instance St. Pancras or Marylebone Station—providing, say, an upper track level or levels with direct routes by monorail, or similar vehicle, direct to the tarmac is clearly necessary. It is conceivable that the whole car interior with passengers could slide or plug into the plane shell without anyone leaving a seat.

It is certain that the adoption of such a system might considerably reduce the cost of terminal airport buildings and the need for such a large supporting labour force.

2.0. **Urbanisation**

2.1. *General Considerations*

We consider that from the start certain basic principles must be adopted in planning any city designed for servicing a major international airport in the latter half of the twentieth century. It has been accepted that the city will have a population of at least 250,000 and this estimate is likely to increase. The first consideration must be noise reduction, and by this we do not mean only double glazing of bedroom windows. It is generally accepted now that trees and natural vegetation provide not only the best noise barrier at ground level when planted in the manner of wind breaks, but also they provide the most effective absorber of noise from taking off and landing aircraft: in this context we must be prepared for not only supersonic aircraft but more important for "jumbo jets". We can therefore establish the following pattern:

(a) The placing of a thickly wooded area between the new city and the airport. These trees should preferably be conifers as these are both quick growing and effective all through the year.

* HMSO; 15s.

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) The planning of the city on what can be described best as garden-city principles adapted to the twentieth and twenty-first century. There should be generously planted areas, again preferably of conifers, to mop up as much sound as possible.
(c) The placing of most of the housing at the side of the city furthest from the airport. Industry and main shopping can be placed between housing and the airport to act again as a buffer zone.
(d) The elimination, as far as possible, of sound reflecting surfaces, such as car parks. These can be planned underground, beneath parks, play areas and other recreation spaces.

Figure 4* shows the principles and their application to the Foulness site.

2.2. *Housing*

We have not shown housing in detail but a type of housing development based on the following principles must be incorporated:

(a) Most of the housing to be medium density low-rise, say 40-60 persons per acre, and not more than four storeys high.
(b) Inward-looking and patio-type dwellings to be used, rather than the more conventional outward-looking houses with front and rear gardens. Grassed and treed patios will help to aborb sound, contain it in small areas and prevent it spreading to neighbouring dwellings.
(c) All flat roofs to be grassed and partly planted with shrubs and small trees in pots and tubs.
(d) All bedrooms to be double glazed.

Variations within the general framework will of course be possible and desirable but the fatal English propensity to lose sight of the fundamental principles must not be allowed to occur.

Further, it is essential that urbanisation of this scale should be under the control of a single authority. It is appreciated that the noise level from a four-runway airport will inevitably be intrusive but double glazing is not the solution and will not contribute any noticeable effect on the improvement of the environment. The source of the noise must be controlled, e.g. by stacking over the sea.

2.3. *Industry*

Our figure 4 shows the desirable position for industrial development. It is agreed that industry which is not related to the airport should not be encouraged to come to the industrial area. There will be many industries tempted to the airport due to the convenience of air freight and, whilst natural economic forces will certainly operate, it would be inadvisable for an unplanned industrial expansion to occur for this reason only. There is evidence that there is a considerable job shortage in Southend and the neighbouring towns. The airport will provide relief to this problem and, to this extent, will be welcomed in the area.

2.4. *Recreation*

An increase of population to this extent in this area will aggravate a problem already clear to those involved in the recreational use of the countryside. The River Crouch supports a sailing population which is already finding it difficult to provide itself with adequate facilities. East Anglia as a whole provides recreational facilities for a large population from the Midlands and the Metropolis. It is therefore vital that resources such as the River Crouch should not be ruined. Our figure 4 shows how a city development could reduce the impact of a large urban population on this amenity by firstly establishing a park following the line of the River Roach, and secondly by retaining the Crouch as a sailing area altered, but not blighted, by the town development alongside. This is one of the problems where the skill of the planner and architect can best be used.

In conclusion, we see our function in giving evidence at this stage as the antithesis of that of Cato the Elder, who continually reminded the Roman Senate that Carthage must be destroyed. We should like to remind the public that, in this case it is not just the building of an airport, but the creation of "Air City" which is the problem. Our evidence is designed to give some slight clue to the scale that this city will have to take.

* p. 252.

Printed image digitised by the University of Southampton Library Digitisation Unit

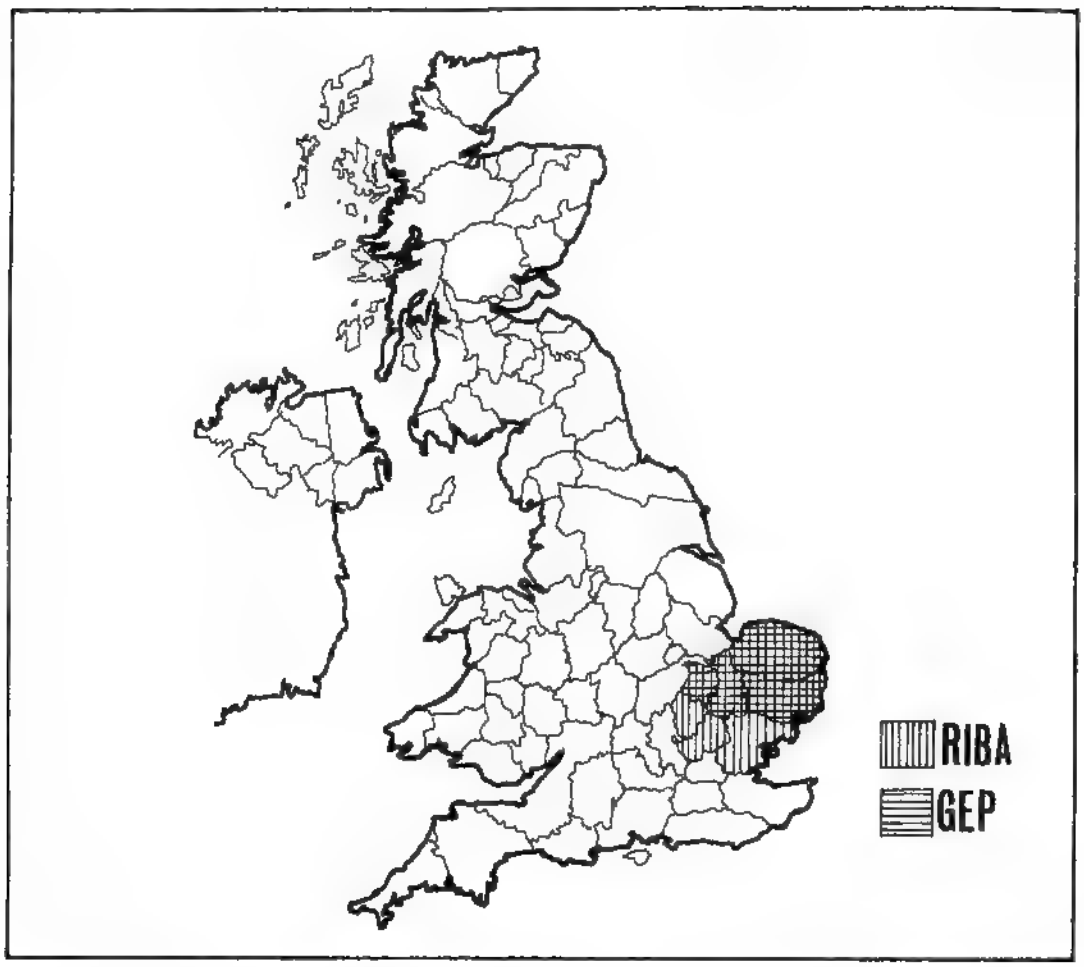


Fig. 1. RIBA and government economic planning regions. *(Royal Institute of British Architects)*

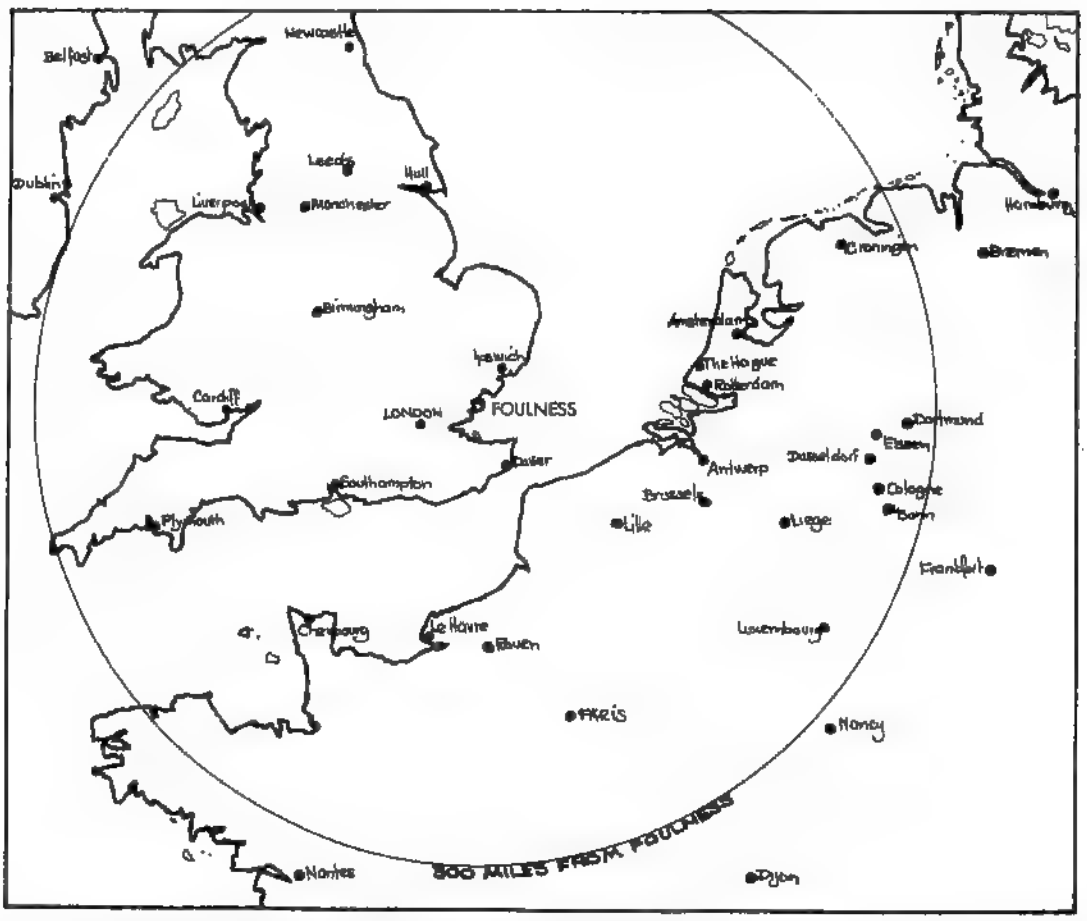


Fig. 2. The South-East in relation to major European centres. *(Royal Institute of British Architects)*

Printed image digitised by the University of Southampton Library Digitisation Unit

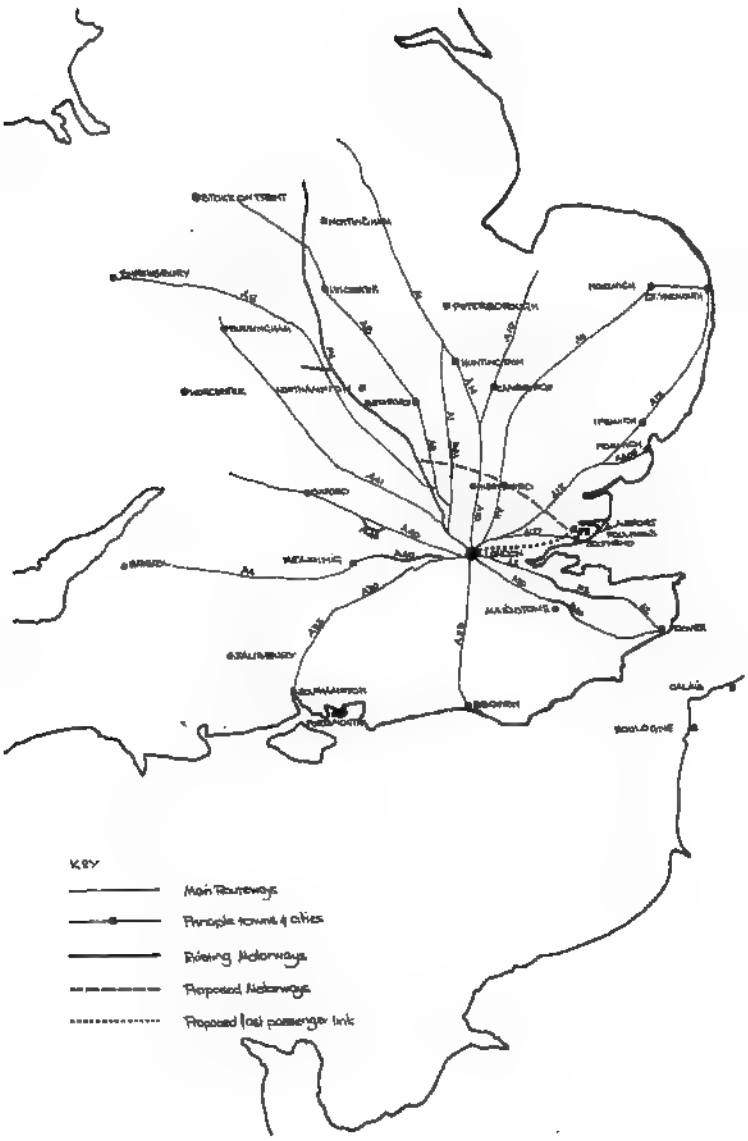


Fig. 3. National communications pattern. *(Royal Institute of British Architects)*

Printed image digitised by the University of Southampton Library Digitisation Unit

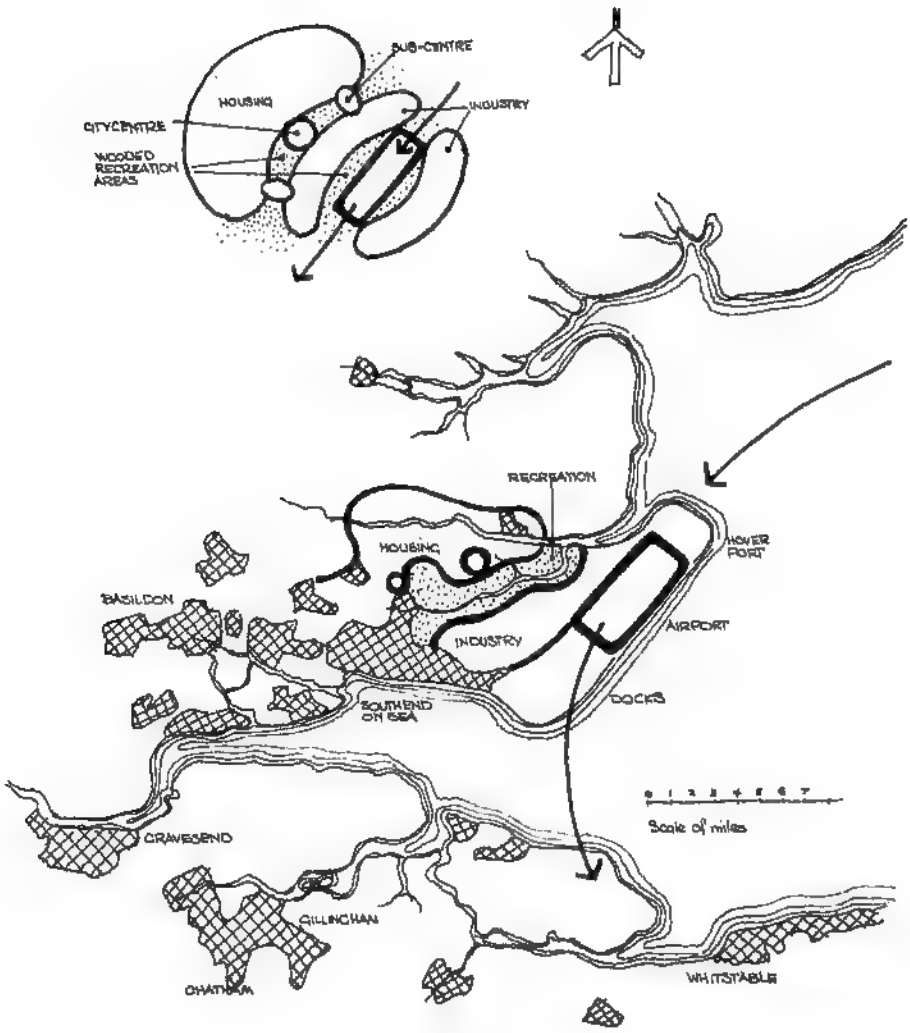


Fig. 4. Application of planning principles to Foulness. *(Royal Institute of British Architects)*

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Councillor Michael King*

1. (a) I am a Councillor of the Southend-on-Sea County Borough Council, a position I have held, with short breaks, for eight years. I was trained as a pilot during National Service in the RAF, and now hold a senior executive position with a major firm in the building industry. My spare time interest for many years was aviation matters, and I have held world and British records for model aircraft.

(b) During my service on the Council I have taken special interest in aviation matters, and have served as Vice-Chairman of the Airport Committee.

(c) I wish to give evidence concerning particular aspects of the proposal to site London airport III at Foulness, namely:

2. **Noise**

This is naturally the first consideration of local people, and will probably weigh heavily with the Commissioners. One must comment, however, that the designation of the airport as "London's Third" is surely a mistake—by any standards the traffic envisaged would make it Great Britain's First.

(a) *NNI Levels*

(i) The contours shown in the plans accompanying the Commission's statement,† are based on the fashionable NNI level, but is this the only level upon which noise and nuisance should be judged? A continuous background noise of, say, 85 PNdB, is far less disturbing than an occasional, unheralded 80 PNdB.

(ii) The effect on individuals varies widely. Persons affected by the operations from Southend airport in the Leigh area, (where noise levels are from 90-100 PNdB—Scheme 1, Plan A, Norman and Dawburn Report on Noise Mitigation to Southend Council 7/1961), can affect genuine terror, or complete calm. One aircraft taking off at night will create more disturbance than many such operations during the day.

(iii) The only way to satisfactorily check the position that might pertain at Foulness would be to obtain the assistance of the RAE Farnborough to overfly Foulness along the line of the runways with the Vulcan powered by a single Olympus 593—four of which power the Concorde. This operation could be carried out under different conditions with on and off shore winds, low cloud cover etc., and with the aircraft following the flight pattern up the estuary turning starboard over Hadleigh (as on plan GD1‡ of the Essex County Council evidence). Such an exercise, the cost of which would not be high considering the cost of the theoretical evidence already submitted, would do more to place *evidence* rather than views and opinions before your Commission, and would make clear to the residents the noise level they could anticipate. The reaction, or lack of it, would give your Commission a far better indication of the attitude of the residents than any resolution from the County Borough Council of Southend-on-Sea, or views expressed by myself.

(iv) Inter-airport traffic, consisting of large helicopters or other VTOL aircraft would link Foulness with Heathrow, Gatwick and possibly other airports. These aircraft would operate under the lanes of the main traffic, and would fly in a straight line from airport to airport. Notoriously noisy, helicopters would add considerably to the noise level in built up areas, and are not included in the NNI charts. Being situated on a peninsula it is likely that greater inter-airport and feeder traffic would be required, although there is no evidence on this matter, Foulness being the first such international airport to be planned.

(b) *Cross Winds*

(i) The maximum cross-wind component for the new "jumbo jets" and the Concorde are not as yet available, but the limiting factor for many other aircraft that would use the airport is 15-20 knots. (ICAO criteria is 20 knots.)

(ii) With a 20-knot wind blowing from 135 degrees the noise contours would vary considerably from those shown in the Commission's evidence.

(iii) A wind from 135 degrees in excess of 25 knots, by no means an unusual phenomenon, would presumably result in the airport being closed. Commercial pressures being what they are, strong measures would be required *in advance* of the airport being sited at Foulness, to make it impossible for a 135/325 runway to be constructed in the future.

(c) *Airport Siting*

(i) The removal of the airport in a north-easterly direction would bring considerable benefit to the Shoeburyness area, and would enable aircraft to climb higher before reaching Sheerness, Canvey or Hadleigh.

3. **Development**

(a) *Housing*

(i) Most people who have moved into the peninsula between the Crouch and the Thames have done so to escape the urban sprawl of London. They have chosen, perhaps for economic reasons, between the facilities offered by the County Borough, and the relative peace of small estates at Hockley, Hawkwell or Wakering.

(ii) The proposal to increase the size of the County Borough to 600,000 people will bring in its train many of the features that people moved to the area to escape from.

* See also p. 515.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.). Reproduced at p. xv.

‡ See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) *Ancillary Services*

(i) It has been stated that existing schools, hospitals, entertainments, roads, etc., give a pool that will enable development to be carried out at a lower cost. I believe this to be a fallacy. All re-planning will have to be done in the confines of existing development, instead of a virgin area: e.g. roads will have to skirt existing developments. Present facilities in the Borough are scarely adequate to cover the present needs: there is certainly no reservoir of spare hospitals or schools. One can be facetious and say that the only amenity in the Borough that might profit from an airport at Foulness is the Cliffs Pavilion—notorious for its substantial annual loss!

4. Communications

(a) Roads into the peninsula are three: London Road (A13), Arterial Road (A127) and Chelmsford/Battlesbridge Road (A130). All carry heavy commuter traffic from 7.30 to 9.00 a.m. and 5.30 to 7.00 p.m. The widening of A127 to three lanes would almost double its capacity, but leave the airport traffic little space during commuter periods in 1975.

(b) Rail services are similar, and no humane spare capacity is available at rush hours.

(c) The use of hovercraft has been proposed. Once again the ancillary noise of these machines could add considerably to the over-all increase in noise levels in the sea-front areas of the Borough.

5. Effect on the fishing industry

(a) Concern has been expressed by the Leigh-on-Sea fisherman* regarding the obliteration of cockle beds, and white weed ground, and by Mr. J. Knapp* on the effect on fish.

(b) The fishing industry at Leigh-on-Sea provides the character of that area—one of the most popular with residents and visitors alike. Quite apart from the disastrous effects on the individual fisherman, the character of Leigh would change and yet another distinctive area would be sacrificed.

6. Southend-on-Sea Council position

The Council in Southend is very efficiently run on rigid party lines by the major parties. Little freedom of action is given on major issues, and it has been admitted that the "whips" were on when Minute 2189 relating to Foulness was discussed on 27th March 1969.

The entire "debate" took less than 25 minutes on a matter the Commissioners will appreciate will have the greatest possible effect on the County Borough. The resolution passed (to "welcome" the airport subject to various provisos—see Southend evidence, page 1)† is *not* the opinion of the burgesses of the County Borough, but of a strong party caucus. Without wishing to put myself forward as the "spokesman of the people" I believe that a more correct view of the residents in the Borough is that they would not object to the scheme (subject always to the provisos).

---

* p. 156.
† p. 59.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Thames Aeroport Group*

1. Urbanisation problems

This is a brief account of some of the urbanisation problems associated with our Foulness proposals. Work on them is still proceeding and possibly we will have slightly different views by the end of July. We hope in any case to be able to present a lot more detail by that date.

2. The Commission has estimated that a two-runway airport will provide primary employment for 45,000 people, while a four-runway airport would employ 65,000. The amount of service employment generated by this primary employment will depend on many factors and especially on the income structure of the primary work force. We are hoping to produce estimates based on an income analysis, but until then we may approximate by using a service multiplier of 1.3, this is based on the ratio of employment in construction and services to employment in manufacturing in the whole of the UK, excluding the south-east (because of its heavy service bias) indicating service employments of approximately 58,000 and 84,000 respectively. Thus the totals of primary and associated service employment may be placed at very approximately 100,000 and 150,000 according to the number of runways. These figures would imply total populations of about 210,000 and 315,000 respectively, on the assumption that the ratio of employment to total population would be the same as the present national average. This is without taking account of secondary employment in attracted industry and commercial projects. It is also an estimate that is based on the proposed airport, rather than on an air-seaport development.

3. We believe that the level of secondary employment will in the end depend on policy rather than on demand. In the unlikely event of demand being low it can be stimulated, as is now being done in development areas. If—and this is much more likely to be the case—it is high then planning controls will set the upper limit. But for purposes of illustration we need a figure and we may take it at about one-third of the primary employment. This too, will generate service employment, and calculators along the lines of para. 2 would bring the total population generated directly or indirectly by the airport to 280,000 in the two-runway case and 420,000 in the four-runway case.

4. We must emphasise that these calculators are to establish order of magnitude in broad terms.

5. We are advocating an air-seaport. This will imply a larger direct employment, and a larger growth of service and attracted industries. At present the Port of London employs about 24,000 people. If Foulness is developed as a modern highly mechanical port and Tilbury continues to exist then the direct employment at Foulness may be roughly about 10,000 people. Calculators along the above lines would indicate a population of roughly 50,000.

6. Thus, a four-runway airport and seaport would eventually imply a population of about 470,000 say half a million for roundness. It would also mean a total of about 230,000 jobs. But we have to appreciate that this is looking ahead to 1996, by when the total population of the United Kingdom is estimated by the Registrar General to be about 12,000,000 higher than now.

7. It would be wrong to assume that if this plan does not go ahead then no population increase would occur.

The South-East Economic Planning Council and other bodies have argued that south Essex should be one of the areas in which the increasing population of the south-east region should be concentrated. Our proposal is a means of giving employment and a sound growth point to that concentration.

8. We should also keep in mind that some of the half million people whom we have mentioned are already there, many of them now commuting to London, and many of them still in school. We hope to do more refined calculations about these matters, but at the moment we are content to suggest that perhaps 25,000 jobs may be filled by people already there—implying a supported population of about 50,000. It may well be more than this.

9. In the diagram* we have illustrated our main physical proposals in very broad terms. They are a sketch of the sort of thing we have in mind. It is interesting that, although we have been working quite independently our ideas are very similar to those put forward by the County Council.

10. We feel, with the County Council, that the existence of employment and housing potential in Southend would enable the project to get off to a good start in a way that would reduce urbanisation costs in the early years. To a lesser extent, the same is true of Basildon.

11. Our broad plans for the area are so similar that in broad terms we are prepared to adopt the evidence and examination of Mr. Jennings Smith,† but there are one or two further points to be made.

12. One concerns land areas. The area of land needed to accommodate possibly another 450,000 people and to provide for their needs is not simply a matter of arithmetic. It is also a matter of design. One may take 15 persons per acre as a gross figure, implying some 30,000 acres as an urban area. But it would not necessarily mean lowering standards to achieve sizeable reductions in this total area. It is here that careful design may pay off.

13. There is no point in raising now any of the small and necessarily very tentative differences, or in dwelling

* See also p. 258.

* p. 257.

† p. 10.

Printed image digitised by the University of Southampton Library Digitisation Unit

upon those whose urbanisation implications are unimportant, but we must mention one that may have important consequences. We have shifted the airport just a little to the north-east of the approximate site indicated by the Commission. This lifts the 45 NNI contour clear of the Shoebury area.

14. We feel too that it is important to keep in mind that the Noise and Number Index underestimates the importance of night flights. With the growing size and cost of aeroplanes there must eventually come a demand from their owners that the capital that they represent be utilised more efficiently and this will lead to a greater proportion of night flights.

This means that night noise will become of greater importance. Add to this the fact that long distance flights from east or west are likely to increase and that if the clock-time in the other country is one of the determining features of the time of the flight, then it may be necessary for more planes to leave or to arrive during the hours of darkness.

We should also remember that the noise number index contours cannot at this stage be taken to indicate more than the broad patterns of the noise associated with fairly smooth flying. Almost certainly stacking of aeroplanes will occasionally cause wide variations in the index contours. Winds may have similar effects. This means that if a new town is built fairly close to the airport then on some days there may be negligible noise but on other days it may be very serious. For these reasons we are inclined to favour putting residential development some miles away from the airport, and to put some light industry and other employment in the same areas. The fact that our proposal is to build an airport in reclaimed land helps us to do this. It also means that existing towns will be less affected than they would be if the airport were on existing land, and especially if it were on an inland site. Our proposal is to put new urban development a distance of perhaps eight miles from the airport. We think that if we are to make an error over these matters it is better to make an error that can in time be rectified by letting the town grow closer to the airport, rather than by building now so close that in ten years time things really become uncomfortable. The fact that at other airports, such as Heathrow the primary employees now live close to the airport is not a reason for planning in the same way.

15. Work on the more precise location and broad designs of the associated town is now proceeding. The location and design must obviously go together, so that local features and landscaping considerations may be given adequate attention. This requires a fairly detailed knowledge of the area concerned. It will also be necessary to study such matters as drainage and the provision of services.

16. It is also necessary to look at the timing of the various parts of the urban investment. The Dutch have done a certain amount of work on this. Its importance has been demonstrated in this country where in Dawley New Town industrialists were sometimes unwilling to go to the town because they argued that although the houses and factories were there waiting for them, the town did not yet possess sufficient recreational and other amenities for the key workers to be attracted there.

Fortunately we already have a basic infrastructure in this area but it may still be advisable in the early or middle years to subsidise uneconomic amenities, even to the extent of building cinemas and other recreational facilities very much in excess of existing demand. We will also have to think carefully about the age-distribution of the incoming population and the implications of this for future house-building programmes. Obviously the same factor will affect such things as school buildings programmes and so on. It is most important that we do not rely on broad averages of so many houses per capita or something of that sort. We are doing work along these lines.

17. In the end, of course, there must be some form of cost/benefit study which can only sensibly be undertaken on the basis of a comparison between this proposal and some other proposal. We are doing a certain amount of work aimed at evaluating some of the costs and benefits of our proposals; but inevitably many of the social costs and most benefits can be evaluated only within fairly wide ranges. And some will require very wide ranges.

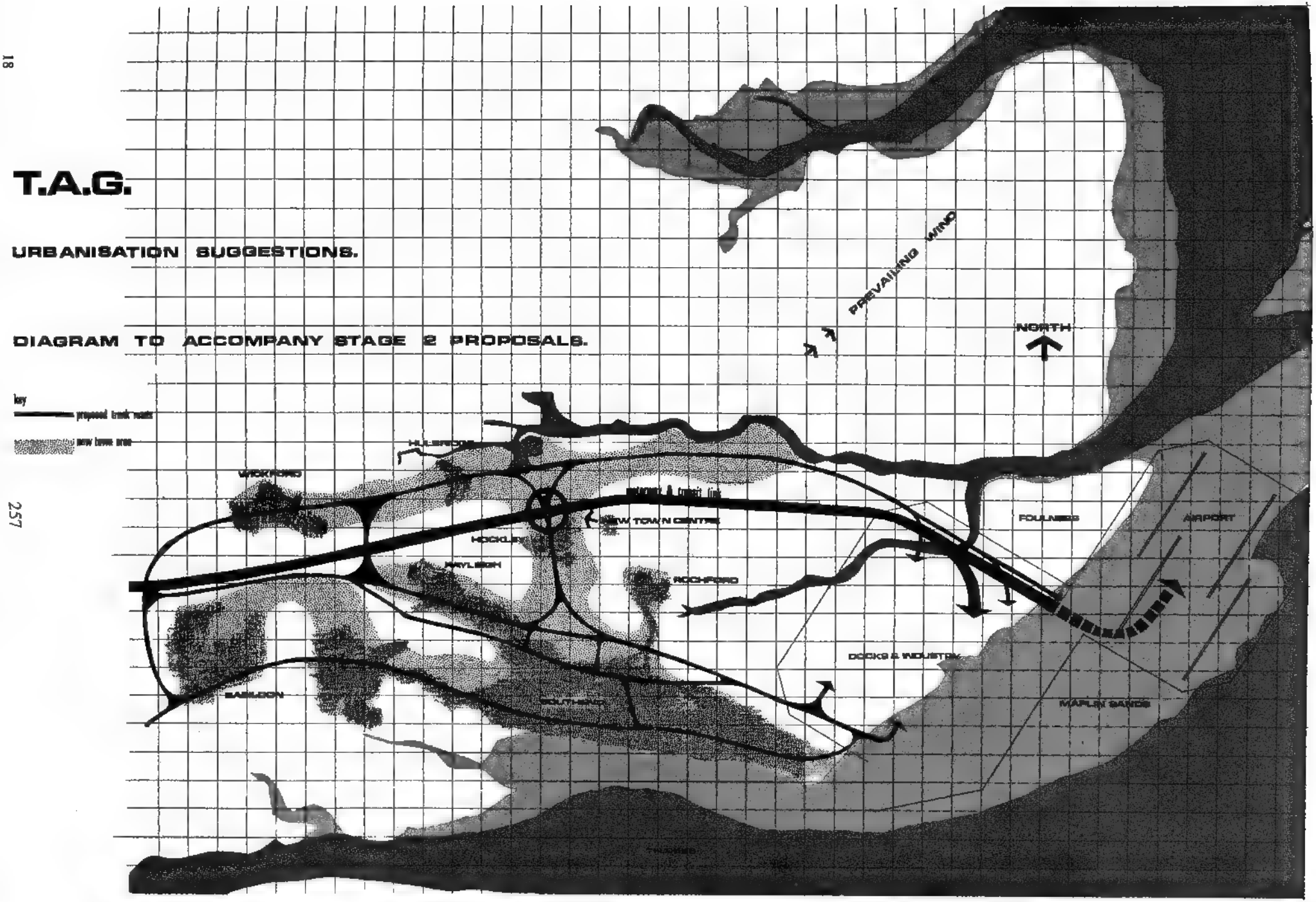
18. But it is important to keep in mind the other side of our proposal—that there be a joint air/seaport. From the urbanisation point of view this has three main implications. First of all the direct employment of the port will be larger than if it were simply an airport. Associated industry is also likely to employ more people. All of this means that indirect employment is also, likely to be larger. The area will consequently have to be larger than the urban areas. The industry associated with the airport and seaport will wish to be associated with the *port* rather than with the *place where the people live* provided that these people can be taken to and from their place of work reasonably efficiently. For this reason it will be necessary to have really efficient transportation between the town and the port, and we are to submit proposals along these lines.

19. A consequence of the town being bigger is that it can be better. The town will be able to support more activities and a wider range of choice than a smaller town could. This means, too, that in many ways some of the urban investment can be done more efficiently. Finally, the existence of the larger town, and the larger industrial and transportation complex, should enable ground transportation links between the town and the complex, and between both of these and London and other parts of the country to be achieved more efficiently.

20. There are urbanisation effects of another kind in the areas from which population is drawn. We believe that, except in places of planned population decline, the result will be a slower growth of other areas rather than a decline. The houses will be built in the area we are considering rather than elsewhere.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



Urbanisation suggestions. *(Thames Aeroport Group)*

Evidence of the Thames Aeroport Group

SUBMITTED BY MR. D. THORNTON*

David Thornton, Managing Director-designate of the Thames Aeroport Group, has been a Member of the Greater London Council, serving on all those Committees of the Council which deal with major planning and development; he will say:

1. The Thames Aeroport Group is being formed as a limited liability company to pursue the planning development of the Foulness Peninsula.

2. The Group is being promoted by companies in the civil engineering, construction and other allied fields. Consultants to the Group include eminent specialists in town planning, engineering and urban economy.

3. Evidence has already been submitted by the Group to the Commission in the form of a planning report entitled "Second Stage Proposals". To assist other interests represented at this inquiry I list below the outline of our proposals extracted from our planning report (pages 3-4).

3.1. The airfield of the new London airport should be located on land reclaimed from the sea on the Maplin Sands to the east of Foulness Island on the Essex coast.

3.2. The four runways should be aligned northeast-southwest in pairs separated by 6,000 ft, and staggered by half a mile, to allow aircraft to come in and take off over the water, well clear of inhabited land.

3.3. The first stage of reclamation should create an area of land approximately four miles square (further reclamation at a later stage would be possible).

3.4. Airport employees and their dependents should be housed partly in the expanded borough of Southend-on-Sea, and partly in a new town, separate from Southend, located on rising ground along the south bank of the River Crouch, in the neighbourhood of Canewdon.

3.5. Access to the airport from London should be provided by rail (a) along the Fenchurch Street-Southend line from a new city terminal at St. Katharine's Dock having a cross-Thames connection with the Southern Region network at London Bridge; (b) from Liverpool Street Station via the Billericay-Rayleigh line on which British Rail's Stratford Freight Terminus is situated, with connection there—from to the north and west; (c) by road via a new motorway joining the North Orbital D Ring in the vicinity of Havering and thus connnected with the Dartford tunnel; (d) by a new direct rapid transit system.

3.6. The St. Katharine's Dock air terminal should be connected with the Metropolitan and District lines of London Transport and with the proposed Fleet line, the first stage of which is to be promoted in a Private Bill this session.

3.7. The dredging operation to provide the sand for the land reclamation at Maplin Sands should at the same time form a deepwater port in the vicinity of the new airfield; and that an associated industrial estate with access to docks and airfield should be laid out on adjoining land.

4. At the present time studies are being carried out into the many facets of our proposals and those results relevant to the Commission's work will be made available to the Commission at the appropriate time.

5. The Group is carrying out its work in strict commercial terms, it being our firm belief that the proposals we have put forward can be carried out on a commercial basis.

6. My Group, whilst wishing to be as helpful as possible to the Commission are not able to put forward any detailed design proposals at this time. Our planning brief is the outline for future discussion with local interests and potential users.

7. The Commission will have heard much evidence at this enquiry from local opposition to the possible siting of London's third airport on Maplin Sands. It will be for the Commission to decide on the strength of these objections as a local matter—it will also be for the Commission to decide whether or not Foulness is the best site, in the national interest, to recommend to the government.

8. The Commission has made it clear that it is no part of its terms of reference to consider the case for a "Europort" type of development. Nevertheless the Commission will not be unaware of considerable pressure for the establishment of such a development, at Foulness—and indeed the Commission may feel that it must take such a development possibility into account when it considers cost/benefit analysis and the likely impact of massive development in the area on the local population.

9. It is the view of my Group that this inquiry can be of only limited value in that it cannot hear evidence concerning additional development as outlined both in our proposals and those of the other site promoters. Accordingly we would strongly urge the Commission to seek the permission of the President of the Board of Trade to extend its terms of reference to include consideration of the proposals outlined by my Group and other site promoters.

* See also p. 255.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of Bernard Clark & Partners*

Land reclamation including land use

Our proposals are for the airport to be constructed on land reclaimed from the sea. The Maplin and Foulness Sands off the coast of Essex is entirely suitable for that purpose. The location of the Sands is shown on drawings nos. 1 and 2. This very large area of sand is uncovered at low water and indeed was used as a testing range for artillery. The fact that these sands do appear above water level at low tide is extremely important as the alterations in the hydraulic conditions of the Thames Estuary after the Maplin Sands have been raised sufficiently high to produce the permanent dry land necessary for the airport would not be so great as if the land was being reclaimed from deep water. Very little water flows over the area covered by the proposed airport and does not have much effect on the Thames generally.

The time and cost of the airport depends on whether it is established near to Foulness Island with no provision for a dock system as shown on drawing no. 1,† or alternatively established on reclaimed land sufficiently far off Foulness Island to provide for the dock system proposed as shown on drawing no. 2.†

This second alternative provides a much greater area of land, between the airport proper and the main land for industrial purposes.

With regard to cost, the first scheme, on drawing no. 1 would of course be the least as this requires the minimum amount of sand filling. But this would prevent the possibility of constructing the dock system, which we consider would be regrettable.

The second scheme, that shown on drawing no. 2 requires more dredging and sand fill as it covers some areas of deeper water, but it would at the same time, provide a much greater area for industrial development, move the runways much further away from the main land and, provide for the construction of the future dock system.

The third scheme proposes the reclamation of the whole area required for the airport and dock system, an area of 50 square miles or 32,000 acres. On this scheme much of the sand required would be obtained directly from the dredging of the waterways.

Proposal for a dock system

In proposing Foulness as the site of the third London airport, the further suggestion is made that the land reclaimed from the sea for this purpose should be enlarged sufficiently to accommodate a dock system capable of meeting the demands of navigation of the future and allowing the British Industrialist to take his full share in the world markets now rapidly being denied to him, simply because his foreign competitor is planning marine process and assembly plants in the newly created hinterland adjacent to the new dock systems now in an advanced stage of construction.

Air traffic control

Foulness does provide the opportunity and facility for stacking over the North Sea, rather than overland, as is the case with Heathrow and other inland airports.

Operational considerations

As it is obviously desirable for London's third airport to be entirely expandable to sizes beyond those possible at either Heathrow or Gatwick, a reclamation area unaffected by land problems is offered to be of unlimited advantage.

Experience of aircraft failures approaching and taking off over water proves there is every chance of saving most of the occupants whereas similar occurrences over land have shown likelihood of 100 per cent fatalities.

Noise nuisance consideration

One of the many advantages in a choice of Foulness for the third London airport is that being on reclaimed tidal sand flats from the human point of view noise is eliminated which is the main nuisance associated with major airports. As this aspect will not diminish in respect to aircraft of the future, such ideal conditions existing in nature is fortuitous.

There is no population whatever on the approach lanes as these are entirely over the sea and miles away from the nearest town.

	Illustration 1 Site 1 *miles*	Illustration 2 Site 2 *miles*
Shoeburyness	7	12
Southend	10	15

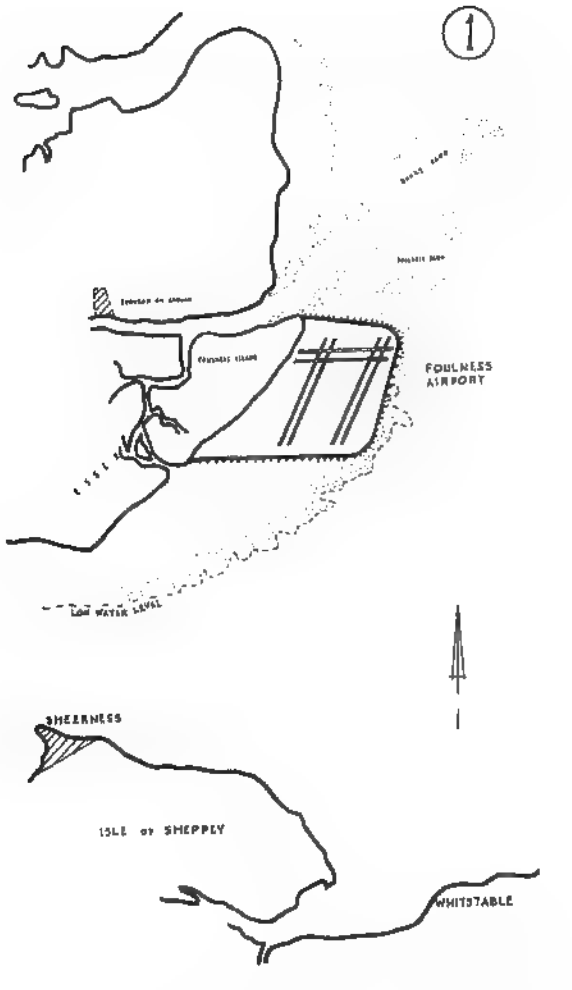
and no town would be nearer the noise pattern at nuisance level, than 9 miles at any moment of its flight path.

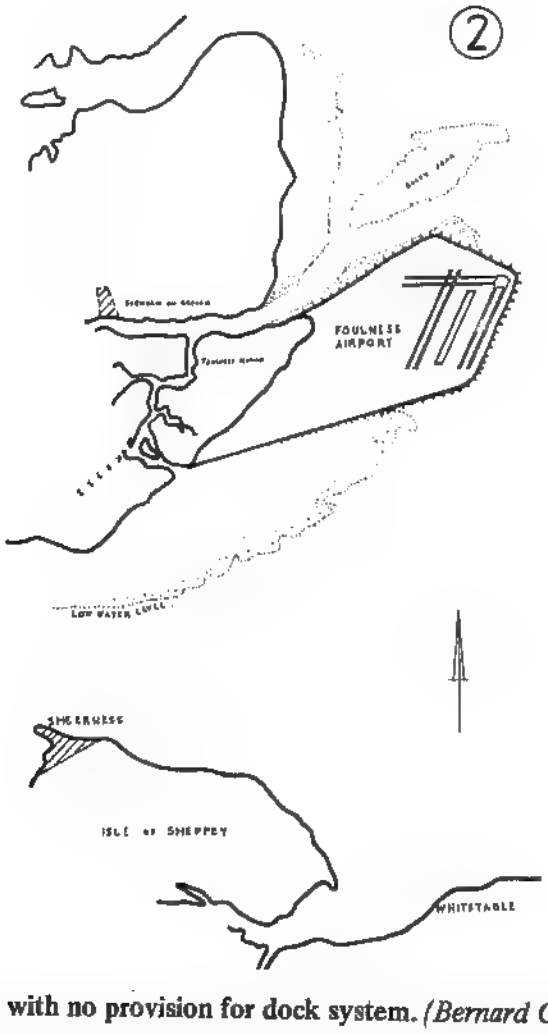
Effects on defence installations

Regarding the Island, provided mode of communication and utility crossing is found, army research work could continue. Such decision of affect is a Ministry of Defence decision whether understanding may be reached for unity alongside an airport and dock industrial complex.

* See also p. 519. † p. 260.

Printed image digitised by the University of Southampton Library Digitisation Unit





1. Possible airport site with no provision for dock system. *(Bernard Clark & Partners)*

2. Possible airport site with provision for dock system. *(Bernard Clark & Partners)*

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Representations without Application for Leave to Appear

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written Representations Without Application for Leave to Appear were Received from the Following:

Mr. E. H. Adcock
Mr. M. A. Adcock
Mr. D. J. Astell
Mr. J. M. Barney
Mr. E. H. Benson
Messrs. Birkbeck, Julius, Coburn and Broad
Mr. K. B. Board
Mr. C. C. Brett
Mr. V. T. Brown
Burnham-on-Crouch Urban District Council
Burnham, River Crouch and Seaward Approaches Protection Association
Miss V. A. Burroughs
Mr. F. H. Burtan
Miss G. and Miss D. R. Crofts
Mr. E. J. Dempsey
Mr. L. Dobson
Mr. L. Edwards
Epping Urban District Council
Mr. D. E. Everett
Miss W. Everett
Mr. R. Finbow
Mr. J. L. Finding
Mr. P. P. Fox
Miss C. Gallehawk
Mr. M. Galley
Mr. K. S. Gee
Miss C. E. George
Gillingham Borough Council
Mr. P. Goodingham
Miss K. M. Green
Mr. J. Guthrie
Mr. A. J. Humby
Mr. C. A. J. Hurst
International Wildfowl Research Bureau
Mr. W. J. Irven
Miss V. Joyce
Mr. J. Maxwell James
Mr. D. R. M. James
Mr. F. J. Long
Miss B. A. Lovell
Mr. G. M. Lynch
Sir Stephen McAdden
Mr. C. McDonald
Mrs. M. E. Martin
Mr. C. L. Maundrell
Mersea Island Society
Mr. R. D. Miller
Mr. R. D. Moate
Mr. B. L. Norris
Miss E. E. Peach
Mr. A. J. Peatson
Mr. A. E. Popham
Mr. B. Popham
Mr. L. H. J. Protheroe
The Ramblers' Association
Mr. A. R. Rainbow
Mr. E. Robinson
Mr. G. E. Rye
Rochford Hundred Amenities Association
Sea-Fern Products Co.
Mr. E. D. Seymour
Mr. A. Smith
South-East Essex Constituency Labour Party
Mr. I. Straight
Mr. L. E. Streak
Mr. F. Strowlger
Southend Waterworks Company
Mr. P. G. Taint
J. R. C. Thatcher & Co.
Mr. H. R. Tutt
Mr. J. E. M. Vose
Miss N. Watts
Mr. L. V. A. Wilkinson
Messrs. E. P. and C. A. Williams
Mr. T. J. Willshere
Mr. P. G. Wilson
Wivenhoe Society
Mr. N. D. Woodhead
Mr. L. R. Worthington
The Youth Hostels' Association

These may be inspected, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

MONDAY 5 MAY 1969

THE CIVIC CENTRE
SOUTHEND-ON-SEA, ESSEX

Before A. J. Hunt, Esq.

Oral evidence taken from:

Essex County Council (*Mr. F. A. Sharman and Mr. D. Jennings Smith*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector This is a Stage II Local Hearing to enable representations to be made to the Commission on the Third London Airport, concerning the assumption that the airport might be located on the Maplin Sands, eastward of Foulness, near to this hall. At the outset I must thank the Southend County Borough Council for the use of this magnificent hall. Overflow arrangements are available on the floor below, but it does not seem that they will be needed.

For anyone who may not be familiar with the scope and purpose of a Stage II Hearing, within the overall task of the Commission, a statement has been published and copies are available in the hall. Shortly, the Stage II Hearings occur at an early stage in the Commission's programme. Their purpose is to ensure that the Commission is made aware of all the local implications which should be taken into account. All material submitted at Stage II will be carefully considered in subsequent and more detailed work upon the four short-listed sites. As a result of procedures laid down by the Commission, a total of 76 authorities and other parties have been given leave to be heard. Those wishing to appear will do so in an agreed order commencing with the First Tier Local Authorities. That agreed order, in our present estimate of a timetable, has been circulated and copies of this document are displayed in the hall. Of course, depending on the progress we make, it seems almost certain that the timetable will be varied: either some people will be put forward or pushed back as the case may be. The morning sessions will commence at 10 and continue until about 1 o'clock; the afternoon sessions will be between 2.30 and approximately 5 p.m.

As to procedure—most parties have submitted their statements, proofs of evidence, and similar documents. These have been copied and circulated to all other parties having leave to appear; for this reason, documents should be taken as read and examination in chief should be mainly eliminated. Since all matters raised at this Hearing will be subjected to rigorous scrutiny during the later stages of the Commission's work, it may well be that cross-examination should be mainly directed towards defining rather than resolving certain relevant issues.

It will, I am sure, be in all our interests if unnecessary repetition is avoided. As a member of the Commission which has been studying the problem for almost one year, I have some slight knowledge of all the issues which are involved. Certain parties—in all, about 73 of them—have been content to rely upon written submissions at this stage. These, I must emphasise, will be fully considered. Copies of them are available for inspection by those who are appearing. I regret that some parties who have been given leave to appear have not yet submitted their documents, and I hope that those in that category will remedy that omission very soon.

I shall be supported at the Hearing by a small staff headed by Mr. Atherton on my left, who is the Deputy Secretary of the Commission; they will be pleased to give advice about documents, about the timetable, and about any minor procedural or other aspects of the Hearing. If there are any major procedural questions which require resolution, I shall endeavour to do so now before calling upon the Essex County Council to present their representations. Are there any major procedural difficulties or questions which anyone would like to ask?

Mr. *Ogden* One matter I would like to raise . . .

Inspector As a transcript is being prepared, may I ask you, and all who speak, to give your name first?

Mr. *Ogden* Michael Ogden . . . Do you require us to make an opening speech and a closing speech, or neither, both, or each?

Inspector I am prepared to leave this to your discretion. I think the essence of the matter is that this is an exploratory Hearing—we want to collect information. I would suggest that you speak either at the beginning, or at the close, but not both. As long as you make your point, we will be happy.

Mr. *Meddle* You remarked that the airport was going to be sited east of Foulness—have you got any idea where the east of Foulness is?

Inspector The plans of the Commission's assumptions have been published now for six weeks—have you seen them?

Mr. *Meddle* Yes. They are south of Foulness, not east of Foulness.

Inspector Where they are shown on the plan is where the airport . . .

Mr. *Meddle* So you will alter your suggestion—that it is east?

Inspector If it pleases you, yes.

Mr. *Frank* My name is Douglas Frank, and I am Queen's Counsel and I appear with my learned friend Mr. David Keene for the Essex County Council and the Urban District Councils of Basildon,* Canvey Island, Benfleet† and Rayleigh‡; and I am also asked to associate with the case for my clients the County Councils of Buckinghamshire, Hertfordshire and Cambridge and the Isle of Ely.

Sir, this, as we all know, is the first of five public local Inquiries forming stages in what is perhaps the most thorough investigation into a town planning project of unparallelled consequence. Wherever the airport is sited, its effect will be felt directly and indirectly by millions of people. But, Sir, it is important to bear in mind the task of the Commission and the parties to this Inquiry. As I see it, the function of the Commission is firstly to assimilate and analyse every relevant fact, and secondly by assessing and weighing the facts, to reach a conclusion. I emphasise, and I repeat the word "facts", because clearly there are some people who think that the result will be influenced by political pressure or propaganda, and so engage in expensive activities, unnecessary activities, undesirable activities in a democracy, having

* See also p. 21.
† See also p. 22.
‡ See also p. 23.

Printed image digitised by the University of Southampton Library Digitisation Unit

regard to the status of your Commission, which cannot possibly affect the result.

Contrary to what has been said by somebody who ought to know better, the Commission is concerned with people—whereas the gentleman concerned thought fit to say that it is concerned with accounts and not people. It is no part of my clients' case to repudiate that statement on behalf of the Commission, but as we here see it—and I am sure, as most people who have been concerned in any way with the work of the Commission must be sure—that statement has no justification whatsoever and should not be made. The Commission is concerned with people, not organisations which are able to raise large sums of money and to be presided over by well-known names. The Commission is concerned also with a less vocal minority of people who may be willing, anxious, to have an airport, even though it may mean putting up with some noise and other disturbance in order to get a better paid job; and the Commission will concern itself no doubt with the views of those people just as much as it will with those who are able to have these expensive organisations.

However, it seems to me whatever propaganda and money will influence, the result has been brought about that by the consequences of the Stansted fiasco an assumption has got abroad, I think largely fostered by television and the press, that the enormous pressure, propaganda, and political activity engaged in over Stansted, achieved the exclusion of Stansted from the Commission's short list. Let me say one thing about that.

In truth, the opposition to the Stansted proposal was led not by local preservationists but by the Essex County Council, and I am hoping that one day somebody will realise that some recognition is due to the Essex County Council and their officers of the fact that by their activity the government of the day have avoided making one of the most monumental blunders of modern times, but all the way through the position of the Essex County Council has been that the siting of the third London airport should be determined on facts and after a thorough investigation and only, they say, after that investigation has been carried out, if the decision was Stansted, then so be it, all would accept it. But, so far as the Commission is concerned, their decision to exclude Stansted from the short list was based on facts, and had nothing at all to do with political pressure.

It seems an extraordinary thing to me that responsible organisations can think that a body composed of men such as compose the Commission could possibly be in the slightest way influenced by propaganda, by car stickers, by television interviews, and all the rest of it. Their decision, there can be no doubt at all, was based on fact, and the function of the county councils, and the local authorities I represent at this Inquiry is to assist the Commission to ascertain facts. I am not here to contend that Foulness is the right place for the third London airport, that is not my job; it is not the county council's job. Sir, it is the job of your Commission, and my task here is to demonstrate that, in so far as there is any site suitable for a major airport in Southern England, Foulness appears to be suitable.

But, it must be remembered and emphasised, as it has been by the Commission, in this Inquiry at this stage we are looking only at Foulness, and we are not making any comparison whatsoever with any other short-listed or other site. Essex County Council and those authorities associated with it have always taken the view that it should take a positive role, that is that it should not merely object to a particular site like Stansted, but rather it should be as helpful as it can be, and we agree with the President of the Board of Trade, who has said this is one of the most important investment and planning decisions which the nation must take, and as long ago as 1965, in fact, the Essex County Council suggested Foulness as a possible site for the third London airport, but they were really blocked from making any sort of whorthwhile investigation on security grounds, the Ministry of Defence having said quite clearly that there could be no third London airport at Foulness because of the firing ranges.

However, since then, detail studies were made by the County Council and their consultants, and that resulted in their Stage I submission which included Foulness. They saw in it a sound solution, if "solution" is the right word, involving major planning opportunities for the area and economic advantages to the nation, and so that is why Foulness among others was put forward in the submissions of the County Council, and that is the only one of their proposals which has survived Stage I.

Sir, I had thought how best I could help you and the Inquiry in opening this matter. I am sure neither you nor those present would find it in any way congenial for me to go through in detail the evidence which you and many other people have already read. On the other hand, we must be alive to the fact that there is a large public out here, outside and, indeed, in the South-East who will not be interested in the details, but who will be interested in the conclusions. I therefore, propose with your permission to go through a number of the major factors which we see as relevant here from a local point of view and, as it were, highlight the conclusions and say why they are relevant without going through the detailed evidence.

The first matter which I propose to touch upon is regional planning. In the context of this Inquiry the regional planning is relevant in that we have to see whether the airport and all that goes with it—and we must all know that we are not concerned merely with an airport; but we are concerned with a tremendous amount of ancillary development—whether that would be compatible with the regional policies as known and published for the South-East. In that context, we assume, I know, there can be differences in actual numbers here, between the Commission and what my clients assess it at, and what other people assess the figure at. But, whatever it is whichever figure is right, we are still left with the fact that we have got a very large employment figure. We estimate that the airport itself will ultimately employ about 65,000 people. That, one would think, cannot be an extravagant estimate. We know how much

Printed image digitised by the University of Southampton Library Digitisation Unit

Heathrow employs; I think it is 42,000 people, and that traffic to Heathrow is going to double within the next five years, that Heathrow's two-runway airport will have four runways. So, that figure of 65,000 would seem perhaps at any rate to be a conservative estimate but, of course, one does not stop with the number of people you employ in considering all the ancillary development for which one has to provide. We are taking into account jobs, professions: teachers and the families of teachers; solicitors; accountants, and everybody else who go with a population—lawyers, yes I include lawyers. We think that will result in a population of getting on for 400,000. That figure may be open to debate, I am sure it is open to debate, because I think Professor Buchanan has talked about a figure of something in the order of a quarter of a million. I think in that context he was only emphasising that tremendous provision has to be made, and I do not think he was intending to commit himself to that figure. Certainly we think it is more than a quarter of a million, and may be getting on for 400,000. If you are going to have a population of that order you have got to provide it with houses, schools, shops, and so on, to serve it, and so one will have drastic alterations in the character of the area for a considerable radius, at least within ten miles of the site.

Now, sir, we recognise all that, and we find that that ancillary development can be achieved in accordance with accepted planning policies, and conversely without unacceptable injury to known planning objectives. For example, one planning objective which every body knows about is the preservation so far as is possible of the countryside, and of agricultural land. It is a matter which certainly the government regarded as important following the Stansted Inquiry when they said under the heading of "Regional Planning", in the White Paper*: "In the Government's view the strongest of the objections to Stansted is on regional planning grounds. The inspector points out in his report that the airport would attract a considerable increase in population which would have to be housed and serviced. He thought that if full value was to be obtained from the cost of creating a new major traffic focus suitable industries would also have to be accommodated. He concluded that the whole character of a large tract of land—at present predominantly rural and agricultural—would be completely altered and that on the evidence submitted to him development of this kind in this area would be bad regional planning". That is, clearly the damage to agricultural and rural community, something of the utmost importance and where one sites the airport one wants to avoid that state of affairs if possible.

In the published plans, *South-East Study*,† and the reports of the Economic Council‡ and so on, South-East Essex is recognised as a growth area, and hence the provision of housing, transport, and the ancillary services would be in accordance with the established policies. But, more than that, and we see this as one of the great qualities of the Foulness proposal, there is an existing infrastructure, that is to say, we already have a large conurbation, if I can be permitted to use that word, in which one already has a large stock of houses, but one has schools, technical colleges, places of entertainment, and so on. More will be said or has been said about this in evidence but the saving in the cost of providing for the airport by having this existing infrastructure is enormous; we calculate this of the order of £255 million, most of which will be up to the period ending in 1981. That is to say, by having an existing infrastructure we save £255 million, which would have to be spent if one had a third London airport in a place where there was no existing town like Southend-on-Sea.

It has sometimes been said that one of the disadvantages of Foulness would be the cost of roads and railways. Sir, that of course is a matter which will be considered at greater length at Stage V, but when considering the cost (if there is an additional cost of roads and railways related to Foulness) one must offset against that additional cost this enormous saving by virtue of the existing infrastructure. So, sir, we say that a proposal to site an airport at Foulness would accord with existing regional planning policies. We have shown on a plan which is now up there and which no doubt you have seen the existing development in the area.

The next question perhaps is whether from an engineering point of view it is practicable to reclaim the Maplin Sands and convert them into an airport. Sir, for the purpose of this inquiry I am assuming the Commission's offshore site. It may seem that to convert and take such an enormous area out of the sea and make it into an airport would be a tremendous task. It would be a big task but in fact as an engineering operation the process of dredging the sea and raising the level of the site to a safe area is a simple one, and of course it is the sort of thing which is being carried out and which has been carried out in other countries. It presents no particular problems to the engineer at all and as the Port of London Authority have pointed out in their representation in dredging the sea in this way one might well have a bonus insofar as there is a potential benefit to be derived from deepening the channels of the estuary.

I do not mention cost of the construction because I assume that that cannot be a matter which should be dealt with at this inquiry because cost is meaningless unless one is making comparisons with the other sites once one starts with the premise that you have got to have a third London airport. So cost cannot be of any relevance at this stage and we do not propose to deal with it and do not. I gather that you agree we are right in that assumption.

Not only is the construction a simple engineering operation but it could be carried out within the time necessary, that is to say we think that the airport could be constructed by the time that the third London airport is required. Sir, I know there is a difference of opinion on this question of timing. Mr. Masefield has expressed himself in very strong terms, I think he said last year or the year before it was essential that work

* The Third London Airport. (Cmnd. 3259). (HMSO, 3s.)
† *The South-East Study 1961-1981.* (HMSO, 15s.)
‡ *A Strategy for the South-East.* (HMSO, 15s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

started that year at Stansted for the construction of a third London airport. Clearly the Government do not share his view of the urgency. Mr. Sharman as you know has dealt with this matter. We take a more optimistic view than the BAA and we justify it with facts and figures. But in any event we think that the provision of an airport at Foulness could be made within the time required.

In considering construction I suppose one might point out what is already known and obvious, that by constructing the airport at Foulness the Shoeburyness firing range will have to go. We make no bones about that at all. We have referred to this question in our second submission. In that we drew attention to a speech of Lord Beswick in the House of Lords when referring to the Foulness proposal, and he said*: "To this again has to be added the cost of replacing this controversial Shoeburyness firing range. I am bound to say in speaking for myself that I have never treated this one very seriously, though I have no doubt at all it will cost a great deal to move it to some other ground." Though Lord Beswick would say speaking for himself he was also the Government spokesman and it would be fair to assume in my submission that that statement was not made off the cuff and was made after consultation with the department concerned. So at any rate one can say that the Government view has been expressed that the removal of the Shoeburyness range is not to be treated very seriously. I think the report of the Inspector at Stansted referred to the range as being an anachronism. If the Ministry of Defence consider in this day it is still necessary to have shell proving ground and therefore they have to provide elsewhere of course that is a factor which will have to be taken into account when we come to the cost benefit analysis, but it is perhaps significant when considering this site off Foulness in my submission and in considering the firing range that an airport at Foulness would not require the closure of any military airfields. I cannot say more about that now because we cannot say what may be in some of the other short-listed sites, I know not, so that is a statement of fact which may and must be taken into account when considering firing range.

Now, sir, perhaps I can turn to the aspect of this and indeed all airport proposals which causes the greatest concern to the public, that is noise. Indeed, the experience at Heathrow and elsewhere justified up to the hilt the apprehensions of the people. I do not want to be misunderstood—when we come to look at the facts and the evidence related to noise it is right to point out that wherever the airport is sited someone is bound to suffer from noise nuisance. When one comes to look at the numbers of people one is not dismissing as irrelevant those other people who are going to suffer noise nuisance. Unfortunately as things are (and as things are likely to be so far as we can see ahead) noise nuisance from airports is inevitable and in consequence the people have got to suffer for it, and the only way really we can look at an airport and to discuss its qualities is by seeing how many people are going to suffer from that nuisance and the smaller the number the better. But that does not mean to say that we have no sympathy for those, comparatively few though they may be, who are going to be the sufferers. All we can hope is that everything possible will be done to mitigate their suffering by double glazing or by such other steps as may be practicable.

Sir, there is only, so far as we know, one recognised method of assessing noise nuisance and whatever may be its shortcomings we have to rely on it. That method of course is by the ascertainment of the noise and number index. That formula is based on a social survey carried out on behalf of the Wilson Committee* and is ascertained by quantifying the noise in frequency of aircraft being expected at the airport. That is a method the Commission have adopted, it is a method that we have adopted, and we do not know of any other method. We are aware that some people are critical of it. As the Commission have pointed out in one of their published documents,† the range of any noise and number index between 50 and 60 is an unreasonable amount of noise; between 45 and 55 the noise is moderately annoying, and then we have to do something about the noise at night. This is where I think we all run into some difficulty because the report of the Wilson Committee is not all that helpful on this question, and that is not being critical of the Committee. The Commission in their NNI map‡ have gone down to only 40 NNI. We think that the effect of night flying may be rather more of a nuisance than that and therefore we have dropped to 35 or extended our contours to 35. Others—for example Kent County Council—have extended it to 30. However, sir, I suppose at some time when the Commission have heard all the Stage II inquiries and the evidence which follows it they might be in a position to form a firmer conclusion than is possible at the moment. But Mr. Fleming who has advised the Essex County Council has taken the view that probably 35 is right. I do not think he can be dogmatic, I do not think anybody can be be dogmatic, but of course he has taken 35 and he will be open to cross-examination as to his reason. So in the map which is on your right‡ sir, we have shown NNI contours down to 35. These contour maps are important because having read the representations and proofs of evidence which have been submitted to the Commission it is abundantly clear that some people have quite unnecessary apprehensions of the effects of noise of the airport of Foulness, some people who on any recognised footing will not suffer any noise nuisance. I hope those who have not studied and seen the NNI contours and who are apprehensive about the noise will take the opportunity of looking at that map which is displayed.

* Parliamentary Debates (Hansard). House of Lords Official Report. 11 December 1967, col. 994.

* *Noise: the final report.* (Cmnd. 2056). (HMSO; 19s. 6d.)

† *Short List of Sites and Site Information for Stage II Local hearings. 1. Foulness (off-shore).* (HMSO, 6s.) Reproduced at p. xv.

‡ See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

As you will see from a look at that map up there, we have produced a rather different result from the Commission's NNI contour map, and the main reason is that we have found out that by an alteration of the flight paths we have been able to reduce quite substantially the number of people likely to be affected by noise. We have been enabled to do that with what we consider to be acceptable additional mileage for aircraft that is quite small but by requiring aircraft to travel a few more miles which we think is within acceptable limits we have been able to produce a more satisfactory result in terms of noise. Mr. Dunford will tell you about the alterations of the flight paths* and he will be open to be cross-examined about it. We shall come again to Mr. Fleming on the result of the NNIs† and Mr. Jennings Smith, the County Planning Officer, will be able to tell you that the number of people (or who has done so) who have been affected.‡

You will know that there is an existing airport at Southend, which is something of a noise nuisance—a considerable noise nuisance. It is common ground, and Southend Borough Council accept this, that if the third London airport is sited at Foulness, then Southend airport will have to close. So, in considering the number of people—schools and hospitals—which are affected or would be affected by an airport at Foulness, one has to deduct the present sufferance which results from Southend airport. It is not only people in their houses who are affected by noise, but also, for example, schools; and it is not really appropriate to apply the NNI test to schools. The effect of an airport on schools is that every time an aircraft passes over, if it is low enough, the class, the teaching, has to be interrupted; and if that is serious enough to have an effect on the school, then either the school has to close down or double glazing or something has to be provided in order to lessen the noise—although double glazing can never in itself be a satisfactory answer, because double glazing is only satisfactory if the windows are kept closed. The effect on schools is a serious matter, and we do not wish to underestimate it; and so, in our evidence, we have dealt with the number of schools which will be affected, with measures which will have to be taken, and of course we have also at the same time set out the present effect of Southend airport on schools. So much for schools.

Quite a number of the representations and objections you have had—and incidentally, may I say in passing, Sir, that I heard on the BBC this morning that there were about 80 objections to Foulness. In fact, as you said before, there have been 76 representations, of which a considerable proportion are not objections at all but are in favour of the airport being at Foulness.

As to recreation: two beaches would be affected by noise. Firstly, Shoeburyness, which is intensively used, and undoubtedly the airport there would have an adverse affect on that. There is another beach east of Great Wakering, which is only moderately used, and that will be affected. Some well-known areas would be affected by noise, but against that the present prohibited areas—those areas prohibited by the Ministry of Defence for sailing purposes—would be released. You have had representations from two yacht clubs: the Burnham-on-Crouch Joint Clubs oppose, but the Royal Burnham Yacht Club do not oppose, but there is opposition—and we have a proof from Professor Quilliam, but the area about which he complains, or expresses concern, is well clear of any likely nuisance from noise—and that is why I invite those who have not seen the NNI maps to have a good look at them. Finally, on noise, you may think it significant that the Noise Abatement Society support the Foulness proposition.

So, Sir, I turn from noise to another matter of very great importance indeed. It is what I would call, I think, "urbanisation"—another rather ugly word must be introduced into our planning vocabulary. What we mean by urbanisation is the provision of housing and all that goes with it, like schools and places of entertainment for the people who work at the airport and their families, and for those who serve in one way or another as teachers, shopkeepers, and the like for those families. I said that the figure may be up to about 400,000; the figure we have estimated is 392,000—I am sure it will not be exactly that—of which provision must be made by 1981 for 113,000 people. Of those 113,000 people, 105,000 can be absorbed—I do not like to use the word "absorb" in relation to people—can be housed without exceeding the present development plan targets, and of which 85,000 can be accommodated without any additional building because of the stock of existing houses and the turnover of them and so on.

So we are left with the task of finding housing in areas so far not allocated for housing, the difference between 392,000 and 105,000. On the plan which is at the moment covered up over there,* you will see the existing built up areas, developed areas, in this part of the country. Then the question arises, where would we put this additional population? and I invite your attention to this matter. What we are concerned with today is of course to house that additional population without damge to countryside or other places of importance, and with as little damage to agriculture as possible. We do not pretend that our proposal here is necessarily the final answer—after all, we have had very little time in which to carry out this exercise; but this at any rate will serve for illustration. The area around Rochford, which is white, between Southend and Canewdon, is very good agricultural land, and it should be preserved if at all possible. The scheme that we have shown there just does that—preserves most of that very good agricultural land. At the same time, we have a series of settlements on the south bank of the River Crouch. The River Crouch lies, as one can see, above the northern lot of settlements there, above Canewdon and the other places there; and so we have that series of settlements south of the Crouch and really connected to Southend, and at the same time we have the additional development areas like Southend

* p. 301.
† p. 313.
‡ p. 283.

* p. 19.

Printed image digitised by the University of Southampton Library Digitisation Unit

further expanding. We think at this point of time that this programme is a good solution to the problem, because we house the people, not without injury to agriculture, but with minimal effect on agriculture and with minimal injury to amenity and making full use of existing and planned investment in services, education, entertainment, and so on. And, as I have said, it is estimated that the existing services with houses, schools, and so on, representing a capital saving of about £255 million and that will be mainly in the early years of the airport. So there is the proposal for urbanisation.

Now, Sir, I turn to agriculture. It must be clear that if an offshore site is chosen, no agricultural land for the airport itself would be lost. Indeed, on the contrary, the effect of an offshore site would be to release land at present sterilised by the Ministry of Defence regulations and so in that respect there would be an addition of 3,000 acres of agriculture. But as against that, the urbanisation proposals as shown there would deduct about 15,500 acres, of which about half is in the range of medium to good land, and the other half in the range from poor to bad. And, of course, in addition land would have to be taken for road and rail links. That is some of the factual evidence on agriculture. I draw your attention to the fact that—I cannot remember the exact number, but a considerable proportion, of the members of the NFU are not opposed to an airport at Foulness. So there are the facts on land itself.

But, in considering agriculture—and I put this under the heading of agriculture, because it is something in which the Ministry of Agriculture, Fisheries and Food are interested—we find, first of all, the cockle beds. As far as I am aware, the cockle beds would be lost. I do not want to in any way play down the calamity that that would be for the people who earn their living gathering the cockles. It is there, and it is something which will be set against Foulness when one comes to the cost-benefit analysis and we add up the pros and cons. One thing against Foulness is the loss of the cockle beds, and the same applies to the loss of the White Weed. There it is, and I cannot say anything more about that other than to acknowledge it.

I leave cockles, and turn now to birds. Birds have to be considered under two headings—one being the effect on safety and the other, as it were, under the heading of nature conservation. A good deal has been made of the possible hazard to aircraft of birds at Foulness. I at any rate have heard quite a bit about it on the BBC and read quite a bit about it in the *Times*, and one must therefore take it seriously. The County Council engaged the services of Dr. Schaefer, who is an expert in these matters; you will have seen his Proof of Evidence,* which is quite a long Proof of Evidence, but all I am concerned to do at this stage is to point out the conclusion that he has reached—namely, that bird strikes would not be a special hazard at Foulness, and the risk of accident from bird strike is comparable to that at Heathrow. Any risk to human life must be taken seriously, and one must endeavour to eliminate it. Just as we know that practically any development—in particular housing and so on—causes an additional traffic hazard, so we must do our best to minimise or eliminate it. There are a number of methods employed at airports all over the world which suffer from this problem, and those, or some of them, would have to be employed here; but more than that it is a subject on which much research has been carried out at the present time, and it is reasonable to hope that some sophisticated method, perhaps a more satisfactory method, will be forthcoming in time.

One would expect that in this age, this scientific age, that scientists could provide for us a rather more efficient and sophisticated way of scaring birds other than by the use of firearms, but in considering the bird hazard you and your colleagues will not overlook that whatever that hazard may be there is a great bonus in Foulness in terms of air safety and safety on the ground, indeed by reason of the fact that flights will take off and land over water.

Now, this aspect of the Foulness proposal is of course of tremendous importance, not only in relation to throwing most of your noise over the sea, but also because of landing and take-off. It has a great safety advantage not only to passengers in the aircraft, but, of course, to the population on the ground. I recall that one of the objectors referred to an accident at Bolton caused by birds where a number of people were killed. I am sure that is absolutely true, but it is really of no great assistance to you or anybody else unless one at the same time can assess how many people on the ground and in the air are going to be safer by taking off and landing over the sea. I can remind you of two accidents within the last year, I think in this country in which aircraft have landed in towns or at any rate on property on the ground. Fortunately the casualty figures were not high. But, on a long-term statistical basis, where you have an airport surrounded by a built-up area, it is inevitable that there will be a large number of casualties, sometimes, maybe only in one accident resulting from the fact that the aircraft take off and land not over the sea. So, I ask you, sir, to take account and attach particular importance to that aspect of safety.

As I have said, birds are not only raised on safety grounds; there are very strong objections that have been voiced as very strong objections on naturalistic grounds. Here again let me say without any equivocation that an airport on Foulness would eliminate the present feeding grounds of a number of species of birds which ought to be preserved. That is a factor which you will put into the scales at a later stage, but, sir, we hope (although we know we are going to be challenged on this), and Professor Schaefer is pretty confident about it, that those species can be preserved by providing refuges and feeding grounds elsewhere. This perhaps, may be certainly, said to matter to the various organisations, particularly to the Royal Society for the Protection of Birds. I draw their attention to the fact that Dr. Schaefer will during the course of this inquiry be tendered for cross-examination, and I invite them to test the evidence

* p. 49.

Printed image digitised by the University of Southampton Library Digitisation Unit

in that way. Of course, when their witnesses give their evidence I shall hope to test that, and in the result, perhaps, you Sir, and all of us will leave the inquiry with a clearer mind on the strength of the "bird hazard" objection, and of the "protection of birds" objection.

Sir, I have, I think, covered the major issues except for transport, but there is not a great deal that I need say about surface transport; I think it is obvious. We believe the airport as situated will require its own railway line and it will require its own motorway. The existing transport systems anyway could not possibly accommodate the traffic to be expected. What we propose is a separate railway line, mainly alongside the existing lines, with an extension out to Foulness which would go to King's Cross. Without being in any way over-optimistic, we can see that within a very short time now we shall be having trains at 125 miles per hour. We are asked at this Inquiry not to go beyond the immediate area of surface transport, and so I do not do so. I just say this: our proposal generally is alongside the existing lines. A new motorway will have to be constructed, three lanes each way, which will go to London. The line of that motorway—we have something in mind but, of course, that cannot be definite; one has to know what can and will be provided. The cost in terms of money, and in the loss of agricultural land is something which has got to be put into the scales when we come to the Stage V Inquiry.

I find it difficult at this stage to really address you on the objections and proofs of evidence, quite apart from the fact some of them I only received as late as Saturday and some I have not received at all, and clearly in that time I have not had an opportunity of examining all of them, and it may be that I shall have to ask leave at a later stage to have an opportunity of addressing you on them. I notice, though, that an expression of fear is to be seen on flooding. Mr. Sharman is confident that there is no risk of flooding, but he said no responsible engineer would embark on a project of this kind without making absolutely certain about it.

The Port of London Authority are presently engaged in testing that situation, and they will not be able to help us at this Inquiry about it; it is an experiment by use of a model which takes the best part of a year to give a result. All I can do, therefore, is to say the Port of London Authority are making sure about this; their conclusions will be available in, I think, not more than a year. Clearly the Commission are not going to recommend an airport which is going to be a cause of flooding.

I hope sir, that I have covered the major matters, and I hope I have highlighted the points that my clients seek to make at this Inquiry. Now it will perhaps be convenient for me to tender my witnesses for cross-examination.

Inspector Yes. It may help if we had a note of them and the subjects they will cover for the benefit of those who have not received proofs.

Mr. *Frank* Mr. F. A. Sharman will deal with regional planning, the timing of decisions, construction and development, with airport lay-out considerations, services and utilities, water supply, sewage and waste disposal, fuel, surface transport, roads and rail. Mr. D. Jennings Smith, who is the County Planner, will touch on regional considerations, employment benefits, employment demand, housing requirements, urbanisation, and he will give the numbers of persons who live within the various NNI contours; he will deal with amenity considerations, the likely development of commerce and industry and his conclusions. Mr. Dunford deals entirely with air traffic and control, and the siting of runways, the alignment of runways. Mr. Fleming is the acoustics expert. Mr. Springett is the Deputy County Education Officer, and he will deal with the effect of aircraft noise on schools, then give the number of schools affected in the various ways, not only in Essex, but also in Kent; the sort of action which can be taken to lessen noise effect and the cost. Mr. Tanton's evidence is directed solely to agricultural matters. Dr. Schaefer is directed entirely to birds. That completes the list.

Inspector I have a fairly easy task here just listening. Is it the general wish of persons participating that we have a ten-minute break at this time of the morning, or would you prefer we should go straight through?

Mr. *Frank* A ten-minute break is always more helpful.

Inspector I think ten minutes would enable us to concentrate later on.

(*a short adjournment*)

Mr. *Frank* Mr. Sharman is already in the box and I will introduce him and ask one or two supplementary matters.

MR. FREDERICK ANDREW SHARMAN* called

examined by Mr. Frank

1 You are Frederick Andrew Sharman. You are a Chartered Engineer, a Bachelor of Science in the University of London, a Fellow of the Institution of Civil Engineers and a Member of the Institution of Highways. You have practised as a civil engineer since 1940, and for twenty-three years you have been with Sir William Halcrow & Partners. This is a firm of Consulting Engineers employing some 350 qualified engineers and having major responsibility in such projects as the proposed Channel tunnel, the Victoria Line and large-scale construction projects in many parts of the world. You are an Associate of this firm.

You have been responsible among other works for the design of three airport runways and an airport terminal building, as well as for road systems, two motorways and a number of bridges. You are a member of the Executive Committee, and Honorary Secretary of the Regional Studies Association, an organisation devoted to the co-ordination of physical and economic planning on a regional scale. You were responsible for preparing a

* See also p. 3.

Printed image digitised by the University of Southampton Library Digitisation Unit

report on the location of the third London airport by Sir William Halcrow & Partners for the Essex County Council and subsequently have been responsible for all work carried out by the firm for Essex County Council in connection with the location of the third airport, including giving evidence at the Public Inquiry on the proposal to develop Stansted as the third London airport, and the preparation of the Second Submission to the Commission*. You have also prepared and given evidence at the Public Inquiry on a proposal to extend one of the runways at Southend Airport and at the Public Inquiry on a proposal to extend Rhoose Airport.

You have been asked by the Counties of Essex, Hertfordshire and Cambridgeshire to submit technical evidence relating to the siting of the third London airport. Mr. Sharman, before you are cross-examined can I first ask you to deal with some questions which have been raised about flooding. In my opening address I referred to the PLA model which is really mainly directed to the estuary generally, but I am reminded that some of the local objectors expressed concern about flooding of the airport site itself and places in its vicinity. Would you mind dealing with those two problems, if problems they be. First of all of flooding of the airport site. — (*Mr. Sharman*) It is of course essential that an airport built offshore on this site should be raised to a sufficient level and protected by a sufficiently robust sea wall to ensure that the very expensive installations and runways are adequately safe against all possible combinations of tide level, North Sea surges and inland flooding. The model which is to be constructed I believe by the Thames Estuary Development Company with the assistance of the Port of London Authority would naturally assist very much in determining the correct levels and the necessary degree of protection and it should also indicate the effect of this construction on the water levels to be expected during extreme conditions along the estuaries, both the Thames and the Crouch, as far as its effect on the existing residents and on the proposed residents of extended urban development. It is clear that they would be more safe than these areas are at present from the effects to be anticipated from any breach of the sea wall to the east and it is also true that these areas would require the strengthening and heightening of the sea defences along the sea-wall frontage of the estuaries.

2 Is that an advantage or disadvantage? As at present we know it has been said, of course, that this area has been subjected to very serious flooding from time to time; the sea-wall is an advantage in that respect. — The additional development to be expected will justify a far greater expenditure on sea defence than has been practicable up to now, consequently the inhabitants would be expected to benefit as a whole by this development.

3 Would there be any risk of subsidence? That is another matter that has been raised. — The planning for the actual reclamation will of course involve an estimate of the settlement effects of the fill and of any soil under the fill, but the Commission has already carried out borings offshore to dispose of the possibility that the whole project was not feasible because of some peculiar geological difficulty and that difficulty has been disposed of satisfactorily. The question of subsidence is merely an engineering matter of making sufficient provision in design construction for ensuring that compaction is correct and that such long-term settlements taking place, as there must be, are allowed for so that the final levels are perfectly safe.

4 It is purely an engineering exercise. At Stansted you said* in some parts of the world you had laid airports on tooth paste? — I did make that statement, that is true. The site is a good deal less unfavourable than the Arabian Gulf where that exercise was carried out, and the analogy with the Dutch reclamation projects which can be seen and have now been in existence for many years allow one to have considerable confidence in the possibility of this reclamation being without serious difficulty.

5 Perhaps I can now turn to another matter, Mr. Sharman. It is a fact, is it not, a well-known fact, that there is a great scarcity of sand and gravel in this country and particularly in the south-east? — I have prepared a supplement.†

6 A supplement to your evidence is in the process of being printed so that there is a sufficient number of copies of it available for whoever wants it? — It should be here this afternoon, yes.

7 Subject to the Inspector's view, it is quite short, perhaps it would be well if you read it now. — If I may. "It has been estimated that the volume of approximately 1¼ million cubic yards of aggregates for concrete and asphalt will be required in the first phase of construction of the airport to produce one runway with associated taxiways, hard standings, terminal buildings and other associated construction works necessary for the initial operation of the airport. For the final development the required volume of aggregates would total over 3½ million cubic yards.

If this very large quantity of material had to be found from inland sources, it would constitute a considerable strain on present and potential supplies in the area and it would give rise to a large volume of road traffic between the various sources and the airport area.

On present evidence it is reasonable to expect that a large proportion, if not the whole, of the requirement can be met by dredging marine deposits of sand and gravel from offshore areas near the area of reclamation, so that the approach roads and resources would not be subject to this strain. It may well prove economic to use

* Essex and Hertfordshire County Councils. Submission no. 2: statement on the proposed sites. October 1968. (Available for inspection at the County Council Offices, Chelmsford and Hertford.)

* Stansted airport inquiry, 6-23 December 1965 and 5 January-11 February 1966. Minutes of proceedings of a public local inquiry. (W. B. Gurney & Sons, 39 Victoria St., London SW1.)

† p. 8.

Printed image digitised by the University of Southampton Library Digitisation Unit

the same marine sources of supply for providing aggregates required in constructing the associated urban development.

During the construction period it must be expected that a large amount of building material and equipment will have to be transported to the site, but the possibility of supplying the principal bulk of material by barge direct to the area will greatly ameliorate the effect of this traffic on the local road system. Heavy materials required for sea-wall construction, including cement supplies, will almost certainly be most economically provided by sea and it is desirable that during the early planning stages of the project an assessment should be made to ensure the maximum utilisation of sea transport both in the interests of economy and to reduce the disturbance to the existing areas."

Inspector On the question of cross-examination – there is some problem, as you must all realise, because there are roughly 70 separate parties who have a right to do so. As I said earlier, I very much hope that all repetition will be avoided; and what I intend to do is to start and run down the list of the Order of Appearances, not mentioning each person by name, but giving an opportunity for any person in that group to ask questions of this witness.

Cross-examined by Mr. Knowles (Rochford Rural District Council)

8 I have two points, Sir. Firstly, a question about the electricity supply – I feel that Mr. Sharman may have misled the Inquiry here. Mr. Sharman, you have mentioned the source of supply at Bradwell. – I have.

Inspector Can you identify the paragraph, please?

9 Mr. *Knowles* Paragraph 5.1.3,* Sir. (*to the witness*) Are you satisfied, Mr. Sharman, that Bradwell has the capacity to supply the needs of the airport and associated development? – I was so advised by the Eastern Electricity Board.

10 Are you aware that the present guaranteed net output of the Bradwell Station is 300,000 kilowatts? – Yes; but you would note that 80 MVA is the ultimate requirement, and that by that time we can presume that the Electricty Board has squared up its statement to me with its future plan.

11 I am not quite with you – are you suggesting that the Central Electricity Board are proposing to provide additional supplies there? – I can only presume that their plans do include the provision of additional supplies, or they would hardly have made this statement.

12 Also in connection with electricity: have you considered the effect on amenity of the overhead lines in the rural areas adjoining the River Crouch that would be affected by overhead supplies? Are you suggesting overhead supplies? – Those are, of course, the most economic means of joining the supply to the consumer, but at this stage I do not think one can avoid the battle of just how these transmission lines will end up – this is usually the source of considerable controversy, as you know.

13 I raise this point, Sir, because you do not appear to be receiving evidence from the Central Electricity Generating Board – (*Inspector*) Silence may be consent from the Board, Mr. Knowles. They may think there are no problems there – I do not know.

14 Mr. *Knowles* The residents of the rural districts do not want to wind up . . . – On this question the facts speak for themselves. Obviously overhead lines are a little difficult–I appreciate that point.

15 Mr. *Knowles* (*to the witness*) And in paragraph 5.3.1,* the question of sewage disposal – you mention the question of screen effluent without treatment being passed direct to the tidal waters. – Yes.

16 Is this not contrary to the present trend of national policy? – Well, the present trend is certainly towards full treatment of this sewage, but this is something I am sure which must be considered in relation to the hydraulic model and the economies of the possible disposition of treatment plans.

17 Before you gave the evidence, do you not think you are being a little too hopeful of the economic implications of the cost of sewage disposal? – Well, I think it would be premature to say that it is going to be essential to treat the sewage. There is undoubtedly the advantage of this site with sewage disposal into the sea possible, and the degree of that advantage will depend on the acceptance or the regulation of the way sewage is allowed to be disposed of. I am not saying in my evidence that this site and the effect of this site must be judged in relation to untreated sewage being passed into the sea.

Cross-examined by Mr. Wood (Paglesham Parish Council)

18 Can we get it quite clear exactly which site we are referring to? I think this is essential in all stages of this Inquiry. Are you referring to the Buxey Sand site, with runways immediately offshore? Foulness?. – Yes, indeed. My evidence relates to Buxey, yes.

19 And your evidence would not be relevant to a site further out to sea, or one wholly on shore? – It would not have been proper to extend the present Inquiry to the question of whether the site chosen by the Commission could be improved or not.

20 I raise this point because of the ambiguity in the terms of reference of the Roskill Commission, who refer to the possibility of the site being offshore, or partly on- and offshore, or entirely on shore, and showing a site 8 to 12 miles further out to sea from the mainland of Foulness. You raise the point that with that reclaimed land it would be essential to have additional expenditure on sea defences–you accept that and therefore it would be necessary to include this additional expense in the total cost of the scheme? – I am sure it must be done.

* p. 5.

* p. 6.

Printed image digitised by the University of Southampton Library Digitisation Unit

21 Yes. If I may go through your case in detail, quoting paragraphs–2.1, your reference there to regional planning.* Presumably that is the planning envisaged by the Essex County Council. It does not have a reference to the National Planning Model with reference to the South-East Inland Development Plan.† – No, I am afraid I cannot agree with that. The remarks in my evidence do relate to the South-East Regional Plan.

22 My understanding of that plan was that it was designed to curtail the inflow of excessive numbers of new people into South-East England and not to encourage it–would you agree that that is a fair assumption? – Not quite. The plan certainly envisaged the natural growth of the region and the continued operation of all transport modes in the region, and that carries with it the implication that if a third airport is required in the region, enhanced activity must be expected.

23 You would define this as a natural growth and not an unnatural growth? – Certainly. I think that transportation in its most efficient form is part of the structure, the development, of transport in the country.

24 I must disagree with you; I think this is an unnatural concentration. In 2.3, the point is raised should there be a dock complex that it would be possible to phase–for example, the transportation of the containers and the like at times when the transport system was not being used by the airport. Do you really think it is possible, in view of the speed of turn round required by container ships? – Yes, because highly sophisticated methods can exert some measure of control and coordination on the rail system.

25 Would you envisage the possibility of encouraging the dockers to work at night rather than during the day so that the aircraft workers could work during the day hours? – I think that would be an over-simplification . . .

26 I think your idea of dovetailing is an oversimplification. In 3.4,‡ you refer to the motorway also serving as a collector for airport employees. Is this usual for a major network to be available for local traffic?–isn't it rather unusual to deny locals the opportunity of using it and would you envisage, for example, many crossings and junctions to take traffic from, for example, from Wickford, from Hullbridge, onto the fast service to get into the airport? – I must agree with your general statement. This is an unusual situation in that the airport is the end of the road. We are not throwing additional traffic onto part of a network, we are throwing it onto something which is all leading to one place; but at the same time the status of the road between the urban areas and the airport has not reached the point yet where we could say that this is the sensible solution rather than the alternative of running a separate road at some stage from the estate urban development into the airport. It is quite possible that it should be desirable to keep these two extremes of traffic when other vehicles start coming up to the entry of the airport.

27 It is not desirable, but a more likely effect? – I would not like to pre-judge the outcome.

28 On page 6–at 4.2*–you make a reference here to the fact that the actual operation–the building of the airport–in an offshore position is a very simple one. Presumably you mean technically, not physically? – I am not quite sure what the distinction is there–it is straightforward, it is something with many precedents. It has organisational problems, but the technical problems are well within the range of established procedures.

29 I would refer you to a television programme–the source from which we get much of our education nowadays–where a Dutch engineer–and I think you will agree that the Dutch are very expert in these matters–was quoted as saying that the Foulness scheme would present major technical difficulties and that the estimate of time and cost to the British engineers for this scheme was wildly inaccurate and tended to minimise where it should have maximised the difficulties. – I did not see the programme in question. I certainly would not wish to push aside the magnitude of the engineering operations involved.

30 I think you would be wise not to do so, Sir. 5.2.1,† under "water Supply"–you are aware that we are regarded as being the driest part of Britain, particularly Shoebury and Foulness. Are you absolutely satisfied that an addition of half a million people to the population would not raise difficulties of water supplies which may not prove insuperable? – I was indeed advised by the water authorities most concerned that they would not regard the difficulties as insuperable. The difficulties will involve a diversion of other sources of supply in addition to the ones now available. The confidence has been expressed by all the suppliers concerned that this is something which they can face without undue dismay.

31 It seems to be a great degree of optimism, both from the electricity and the water suppliers. We have had in the last two or three years a series of rejections of planning approvals in this area because of the possibility of water shortage–surely you are aware of that? – I am, but one must judge this project in terms of scale; when one envisages the development as a whole it seems quite unrealistic to say that the technology of this country would be baffled by the problems of either electricity or water, given the programme of need which can be foreseen many years in advance.

32 I am sure you are right; but would you accept that a major capital project would be involved, and that this would add to the fundamental cost of the scheme? – It is extremely difficult to isolate the additional cost, caused by developments in one part of the country rather than another from the point of view of services. I think it is something which everyone finds extremely difficult to do, because you have to compare a situation in which the people who are going to live in this area with quite hypothetical situation when they live somewhere else. Wherever they are, they will need more water.

* p. 3. † *A Strategy for the South-East.* (HMSO; 15s.)
‡ p. 4.

* p. 4.
† p. 6.

Printed image digitised by the University of Southampton Library Digitisation Unit

33 That is so; but one of the physical characteristics of this scheme is that it is concentrated in a narrow peninsula, 17 miles long by 7 miles wide I think the proportions are, and then the problems are more acute because of the concentration—would you accept that?—and possibly more easily identifiable because of the concentration. — Yes. The comparison is still not easy to identify, but there are certain problems and certain advantages in the concentration.

34 Page 14—it is 6.3.2*—you say that existing rail services would not be adversely affected and would eventually benefit. Do you really accept this, in view of the fact that the two main lines in existence now to this area serve a commuter traffic, and thus during certain peak traffic periods—three hours in the morning and in the evening—are operating in fact to their present peak? — Yes, I accept this. I know it well; but the whole argument on this rail link rests on the assumption that an adequate capital would be made available for developing this link and that it could be done in such a way that it would not adversely affect and would eventually benefit the existing services. We have, in our submission to the Commission, indicated ways—this is merely hypothetical—various ways in which this can be done, and again I must refer to the scale and the operation. Whereas we know that rail improvements have been troubled by lack of capital availability, the scale of the proposed link is such that the line would undoubtedly be profitable, and investment in it would be profitable and the increased speed and comfort which would have to be provided to make the airport work would have some follow-up which would benefit the local area.

35 But because of these peak conditions this improvement would have to take place over the whole length of the line between Southend and London, would it not? The whole of the 55 miles? — We have envisaged the rail link being developed in two stages: first, what we call the semi-fast stage when the existing line is improved and fast non-stop airport trains are interleaved with the existing use of the line; and the second stage which comes into operation notionally in 1981 when a separate track to the airport would be allocated and, of course, the improvement to the first line would be inherited by the existing traffic.

36 You do not envisage the dove-tailing of passenger traffic as you do the carriage of goods so that passengers would be waiting at the terminus of Foulness for the two periods of three hours while commuter traffic was cleared? — This is no part of our concept.

Cross-examined by Mr. Orchard (Ashingdon Parish Council)

37 I was particularly interested in the supplemental part that concerned, I believe it was 3½ million tons of hardcore to be transported to Foulness, and I am very concerned about the rapidly deteriorating surface of the Essex roads today. I would like to have your assurance that something will be done to offset further damage to these Essex county roads. — If I may I would like to clarify the point—I read that statement rather quickly, but the whole point of it was this amount of aggregate not hardcore concrete and asphalt aggregate, which would be required in construction, would not be expected to have to travel over these roads at all, but could be brought in from marine sources. The construction traffic from the airport would be considerable, but the vast bulk of material could be expected to come from the sea.

Cross-examined by Mr. Peter Smith

38 I have not had an opportunity of examining your additional evidence on the sand. There was just one point that struck me. Of course, you are dealing with sand which is contaminated with salt; I presume the arrangements you have for dealing with the deliquescence would be by using salt gravel and sand. — Marine sources of sand and gravel are very widely used in concrete construction, and the problem of deliquescence is one which is fairly controllable with established techniques.

39 Dealing with additional items, on point 5.3.2* of your evidence you say that the urban areas south of the Crouch would be receiving the treated effluent—that is of course rather in contradiction to the Essex River Authority's evidence,† in fact with the sewers going out to sea to the east of Foulness, and this, of course would increase your capital costs considerably. You would have to take out your sewage to the east, is this not so? — That is a question of whether you have full treatment, and discharge it into the Crouch or whether it is more economic to go out to sea with a less degree of treatment, and I don't think any of us has done sufficient exercise to determine the answer to it.

40 But the Essex River Authority suggests there should be a regional sewage authority, so I presume that this would be an additional item which would have to be included in your capital costs, if they are taken to the east.

41 *Inspector* Do you wish to reply to that point? — No, I don't think so, no.

42 Mr. *Peter Smith* Then in 6.2.3,‡ you refer to the severance effects of the new road/rail link, and my learned friend here was referring to the fact that whether you will have to permit local traffic. I assume though that local traffic would be cut to the minimum. Would you not agree that in fact this would be creating yet another peninsula, in fact you would be dividing the peninsula into two again. — This entirely depends on the amount of bridging or underpassing that you do, and it would be most undesirable to cut off those Crouch settlements from access to the agricultural land lying to the south, so I am quite sure that in designing a

* p. 7.

* p. 6.
† p. 120.
‡ p. 7.

Printed image digitised by the University of Southampton Library Digitisation Unit

sufficient number of access points one should include cross roads and for easy access to the railway as well. This would be a great ribbon of transport arching through there and it will need access on a generous scale I should say.

43 I don't know whether I am now intruding on Mr. Jennings Smith's evidence, but I think you will agree he envisages this as Southend being the sort of centre city, centre of the urbanisation. Therefore, unless your villages on the south side of the Crouch have these north-south links they will be divorced in fact from the centre? — I am sure in the connections infrastructure of this whole area this area will have to be fundamentally in the design of it, but the drawing there* is not a developed urban design layout, as I am sure you will appreciate.

44 It does include industry — It is an indication merely of the areas which are being settled.

45 Mr. Frank referred to a capital saving of £255 million, but do you not agree that all these north-south links are going to make considerable inroads into this scheme? — I don't see anything in the layout which would lead me to believe the infrastructure costs of the new development would be higher than normal. Some sort of build-up is necessary in all new development of this kind, and this layout at first glance I would say, you might agree, is quite a compact and favourable one, including as it does the sort of park land and amenity area. I really would not think the costs of the roads and communications would put the average cost per household up above the average for new town development.

46 You said a word there, you said "amenity area". Is this how you envisage the uncoloured area between the red blobs? — That is how I envisage it, but Mr. Jennings Smith will be much more eloquent on the subject than I.

47 You appreciate this is farm land owned by the farming community, private land which is not public park, or are you envisaging public parks? — Certainly, but nevertheless it is open space.

Inspector Are there any more local authorities? Are there any of the associations and other bodies that come next who want to ask questions?

Cross-examined by Mr. Blake-Orr (St. Clements Ward)

48 I have three small points, paragraph 5.3, page 9,‡ the disposal of sewage we are fairly happy about; the other authorities are more concerned about this than we, but no mention is made of rubbish, not the stuff that can be easily dumped in the sea. At present there is a very large proportion of rubbish from south-east Essex which is deposited on the Lea marshes. This development seems to us to indicate this area would be swamped with rubbish. Can you tell us where it would be disposed or how? — It is something that I must confess we have not studied. We have not anticipated that there would be any special problem in finding areas for disposal, but I think possibly the detailed layout of the reclamation may indicate some directions of solution here.

49 Turning to bricks, or something like this—I see it has been done elsewhere. Section 6, "Transport problems".* Two points: we have roads: the A13, the London road (I don't know if you know it), it is hardly mentioned here. I take it that the use of this road for traffic going to the airport is to be discouraged; it is going to be encouraged to use the A127 the arterial road, and new motorway, and the A13 left as a local road? — I think the proposed improvement plan will naturally have this effect, that traffic will find it considerably more advantageous to use the improved condition of the A127 until additional capacities are provided.

50 The last point is on section 6.3,† the advanced passenger train, and services on the line from Barking to Thorpe Bay. Were these plans made with the advice of British Rail or are they the county's plans? — British Rail were co-operative in discussing the possibilities. I would not like to commit them to being identified with this particular development, but we have had advice; the proposition stands on its own merits as a physically feasible one which, shall I say, responsible members of the staff of British Rail do regard as a sensible possibility.

51 It is surprising no mention has been made of the little line that comes from Shenfield to Southend Victoria, to the north of the town here; it seems a spur line up to Foulness from there would be easily made. You already have one on the other side. — This was studied, but the proposal is thought to be the most likely detailed design to prove best.

Cross-examined by Mr. P. Arnold (Foulness Island Residents' Committee)

52 You suggested marine sand for use on your port construction. What is the normal procedure for removing silt and salt from the modern sand? — Well, normally when sand and gravel is dredged it is pumped and the methods of pumping determine the particle size that is delivered to the stock piles and, of course, it is pumped very wet, and when it drains off most of the salt goes with the water.

53 One small point. How and where do you propose to unload the barges? — This is part of the detailed construction programme for the scheme which is certainly nowhere near settled.

Cross-examined by Mr. Hugh Bennett (Leigh-on-Sea Shallow Fish Merchants' Ass.)

54 I am particularly interested in paragraph 4.2 reported on page 6,‡ in particular the second, third and fourth lines of the first paragraph on that page. I don't know whether you can answer this question, but can you tell me approximately what height above water level the airport would have to be raised? — I am speaking

* See attached wallet of maps and diagrams.
† p. 6.

* p. 6. † p. 7. ‡ p. 4.

Printed image digitised by the University of Southampton Library Digitisation Unit

subject, of course, to the results of the model test which must be carefully studied before final conclusion is reached, but the level of plus 13 is the first shot that has been made at the average level. Of course, the levels will vary, and the sea wall will require considerable elevation above that as protection against wave action.

55 I see. Would you agree with me that if the airport is built there and by building a sea wall to protect the airport, that the shallows—and by "shallows" I mean the depth of water about 25 fathoms just on the edge of the Maplin Sands—would you agree those shallows would be destroyed? — Well, there will obviously be a considerable area around the perimeter where the slope from the sea wall back down to the sea bed will cover up areas which are of the depths you suggest and will alter those depths.

56 And will it indeed alter the present sea bed that is there at the moment? — Clearly the whole area covered by fill will be radically changed.

57 In the construction of the sea wall, does the sea wall slope down away out to the sea, is that how it is done? — Depth to sea wall—there is a shallow slope.

Cross-examined by Mr. Gregory (Country Landowner's Association)

58 I wonder if you can help me on one point, it is in paragraph 6.2.3* of your proof. You raise the question only to shoot it down of constructing the rail and road links or part of them overhead in order to save interference, presumably, with agricultural land. The Country Landowners' Association† has suggested that the motorway and road link should follow the same route as far as possible with this object, but do you think it unrealistic to suggest that the rail link should be above the motorway, using the same line, in the part of the route we should suggest they should go together. — Yes, I think that way they could go together. The only advantage of raising the rail that would be obtained would be if the whole affair were raised. It is no good having the rail raised if the severance has already taken place because the road is not raised. Consequently, you would have to compare the saving in terms of amenities, land-take, between a very extensive structure where road and rail were elevated, with the width of occupation of rail running down the central strip of the motorway and the extra land-take for such an arrangement is comparatively small.

59 Of course it depends on the length and I am afraid I have not quite understood how long that is between London and the proposed airport. — It is really the length you see on the right-hand map there, the dotted line diverting the left-hand area of the map. It is this broad arc which runs round just south of the Crouch, that is the length which in our scheme we envisage running together.

60 *Inspector* Those provisions are very provisional? — Indeed, sir, yes.

61 Mr. *Gregory* I don't know to what extent you have gone into the links with London beyond that area shown on the map. I am not sure whether we are supposed to go into it at this inquiry.

Inspector I think quite frankly we are wasting our time because the subject of the exact routing and where the motorway must be and the entire complex should be studied at Stage III.

Cross-examined by Mr. N. G. Wallace

62 I would just like your amplification of one or two points. In paragraph 5.2.1* dealing with water supply, the suggestion in that paragraph would appear to be that the only source of supply water you have in mind is the Ely/Ouse scheme, is that in fact correct? — From the figures it would appear this will be adequate.

63 Supposing there are difficulties about Stage II of the Ely/Ouse scheme—and you may or may not be aware of the position from people affected by it—if the second stage is not feasible do you have any other sources of water supply in mind? — No, I cannot point to any specific alternative, but from consultations we have had with the relevant authorities it suggests that they are not at least very apprehensive they are going to run out of the water concerned.

64 In fact, if the Ely/Ouse scheme did not come off the whole of this airport project could be in jeopardy? — I really cannot conceive that a project of this magnitude would be jeopardised by an inability to supply water from one part of this country to another.

65 Can you tell me also just how much water you anticipate this airport will require? — The figures I have are given in the evidence.

66 You refer to a figure of 50 million gallons per day in one and also 24 million gallons a day. — I believe, sir, that it is given on the statement in Submission No. 2 and I am sorry if you have not had an opportunity to look at it there.

67 Is it possible for you just to give us a figure? — I should hesitate to do so without actually turning it up. I have it now. The estimate is that the initial demand of the airport will be between 0.7 and 1.5 million gallons per day and then as traffic at the airport grows the consumption will increase and between 1985 and 1990 we expect it will be in the region of 6 million gallons per day.

68 *Inspector* I presume urbanisation is the biggest consumer, surely, or will be the biggest consumer? — Yes, indeed. Was that included in your question?

Mr. *Gregory* I was asking you as an airport expert, but the Inspector has made another point.

Inspector I am sorry.

Mr. *Gregory* That was not intended as a criticism, that was intended as a statement that I will not need to pursue the statement any further.

---

* p. 7. † p. 214.

* p. 6.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. James Miskin (Burnham-on-Crouch Joint Clubs and Burnham-on-Crouch Urban District Council)

69 I represent principally the interests of those who sail in little boats and yachts from the clubs in the Crouch and we are very anxious to discover as early as we can what impact if any on their activities an airport here will produce, that is the purpose of the questions I want to ask you. Could you turn to page 6 of your statement of evidence where in paragraph 4.3* you talk of the importance of hydraulic model studies to show what the impact of the proposed reclamation will be in reference to sea bed and tidal impact and so on. How soon approximately can we expect to receive the results of those studies? — Well, I can only say that I understand that the Thames Estuary Company are instigating these studies with great urgency because they feel that unless a sufficient weight of certainty is given to these proposals before the Commission reports their proposals would be seriously in hazard. I believe myself from what I know of hydraulic investigations that at least a year is required before any reasonable results could be obtained, even then I think that this would hardly be a complete report on the whole situation.

70 Arising out of that answer may I just learn this from you. The work of reclamation though simple to an experienced engineer must involve massive dredging works, must it not? — Yes, the scale of the problem is a very large one.

71 I understand that that may be added to by substantial dredging for aggregate materials, sand and gravel? — On the scale of this it is small, 3 million, whereas the other is tens of millions.

72 Can you at this moment of time give my clients any idea at all from whence the sand and gravel is likely to be dredged? — I should hate to be at all specific. Clearly the resource will be as close as can be reconciled with the maintenance of the channels and with the erosion and deepening patterns along the coast.

73 By when will my clients know the chief topographical areas of the proposed dredging? — I am afraid that is a very difficult question because it lies partly in the hands I suppose of the developers themselves and partly in the hands of the Commission.

Inspector Exactly.

74 Mr. *Miskin* You cannot help me? — I personally would not be so bold.

Cross-examined by Mr. Braine (Member of Parliament for South-East Essex)

75 I want to refer to paragraph 4.3,* page 6, of your evidence. I am interested to know why you think it improper not to make any comment or to give any consideration to a site other than the offshore one in view of the fact that the site information document issued by the Commission, paragraph 4, refers to the possibility not merely of an airport completely offshore but one partly offshore and partly on Foulness, and you no doubt will be aware from having read the proofs of evidence quite a number of people locally consider that there is a possible further alternative further offshore than is at present envisaged in the site information document. The question I want to put to you is: have you given any consideration at all to the possible effect of any alternatives to the offshore site? — We have indeed given considerable thought to this question and in our second submission to the Commission which you may have seen we did examine and indeed draw noise index patterns for three alternative locations for the Foulness site when we faced the task of providing evidence for this present inquiry. It seemed really best in view of what the Commission desired to discover to paint as clear a picture as we could of the effects of the site, which the Commission itself had chosen, and when we compared these effects with those of the other possibilities we examined they were not so different as to vitiate the application of results of this inquiry to any adjustments that may ultimately be made on detailed design.

76 I think you have misunderstood me because I wasn't referring to the noise effects, I specifically referred to paragraph 4.3 where you are discussing the question of the effect of reclamation upon tidal behaviour, I am solely concerned with that. — These things link up. The difficulty is in envisaging the optimum position of the airport before you have the hydraulic model test results this is one of the constraints on choice and the other is noise, and in trying to strike the right balance here between one factor which can be foreseen and one factor in which you are waiting for detailed results we thought it best to be guided on this occasion by the necessarily more complete investigations that the Commission have been carrying out.

77 But I am very anxious to keep to the point about the effects of any large-scale dredging of sands may have upon the configuration and any change of configuration the choice may have upon tidal and surge behaviour. May I ask you: are you aware yourself of the deep anxiety that has been expressed for many years now, notably since the 1953 flood disaster, by the Thames-side communities about flooding? Are you aware of that? — I am indeed.

78 My recollection is that in your answer to learned Counsel this morning your reference to protection against flooding were limited to the areas adjacent to Foulness. Am I correct? — Not entirely, I did also refer to the need for extending additional protection to cover the whole of the developed area.

79 May I put it in another way. Were you bearing in mind the effect that large-scale dredging of sands in the mouth of the Thames estuary will have upon communities up the river—Canvey Island, for example—areas high upriver? Did you have that in mind? — Yes. I am sorry if I appeared previously to be evading your point. The whole object of the hydraulic investigation is to study all the possible effects which the construction

* p. 5.

Printed image digitised by the University of Southampton Library Digitisation Unit

would have and the dredging of course is bound to affect the actual water levels experienced during extreme floods and surges, but all these matters must surely await the outcome of the model investigation.

80 You are pinning your faith, are you not, on a model investigation carried out by one of the developers; am I right? — This is the only model investigation which I know certainly about to be carried out.

81 Are you aware of the proposal for a Thames flood barrier? — Indeed.

82 Are you aware that no decision has yet been taken as to where that flood barrier is to be sited? — Yes.

83 Are you aware as to where the flood barrier is sited some alteration in the flood defences of the communities alongside the Thames—some adjustments to those flood defences—will have to be made irrespective of anything that happens on the Maplin Sands? — Certainly this is true.

84 Therefore would you agree that we have a major factor here affecting judgment on which for some time to come there can be no decision, namely where the siting of the Thames flood barrier is to take place? — Yes, I agree there will be no decision on that, but I cannot accept that this would inhibit a decision resulting from the studies of the effects of the airport.

85 What I would really like to put to you on this—I don't wish to detain the inquiry but I think this is an important one—having considered the whole problem in such detail, having come to the conclusion that you do on this subject, do you think it is really proper that a matter touching upon the safety of the Thames-side communities should be left to a hydraulic study to be carried out by one of the developers? Would you not think it is a more proper subject for investigation by, say, a Government hydraulic establishment? — I am quite sure that the developers' intention is to have a study carried out by leading hydraulic research establishments in existence, but as far as responsibility goes, as you have raised this point, I haven't the slightest doubt that at the right stage the people responsible for the safety of the communities will clearly have to have the chance of judging whether the proposals that may be put up, whoever puts them up, are adequate from this point of view, but the point I seek to establish here is that from an engineering point of view the decision should be available early enough to allow for adequate estimates to be prepared which will include the necessary safety measures.

86 May I just briefly, sir, refer to your conclusions in paragraph 7.1.* where you say that "If Foulness is the chosen location for the third London airport, the adjacent areas will suffer very little from the adverse effects of noise". I am sure you agree that is a pretty sweeping statement and learned Counsel this morning went out of his way to make it clear that—if I may quote him—noise is inevitable and some people will suffer. Now the question I want to put to you is this: you have, I take it, had the opportunity of studying the evidence submitted in conjunction with yours by Mr. Springett* on behalf of the County Council; how do you reconcile your statement about the small effect of noise with Mr. Springett's very clear evidence that large numbers of schools in south-east Essex in the County Borough will be affected, ten of them incidentally in my constituency, and that even if sound-proofing is carried out conditions in those schools will be far from satisfactory, outdoor activities will have to be limited? In order to put the question to you in a way which expresses my doubt and anxiety about the apparent conflict in the evidence produced before us, can you say in what way do you think the nuisance caused to schoolchildren and the teachers by the noise which will emanate from this proposal would differ from the nuisance caused to ordinary residents, elderly people, sick people confined in their houses, people who are used to gardening and so forth?

Mr. *Frank* Mr. Braine, if you wouldn't mind me interrupting, you are asking the question of the wrong witness. If you ask Mr. Fleming about it he will be able to answer it.

Inspector I think the point is that Mr. Sharman has in fact referred to those.

87 Mr. *Braine* With great respect, sir, I am very satisfied with Mr. Springett's evidence, I think it is an extremely well written statement, but I am concerned with the statement here in Mr. Sharman's evidence: "If Foulness is the chosen location for the third London airport, the adjacent areas will suffer very little from the adverse effects of noise". I want Mr. Sharman to justify that remark and perhaps he will now do so. — I am perfectly willing if you will permit me to justify the statement I made here. The whole of this inquiry is being held in the context that a third London airport is necessary and in that context it is most strikingly true to say that Foulness imposes a much smaller area of noise nuisance on land areas than any alternative. We are not of course allowed to talk of alternatives today but this is what is in the back of the mind when we talk about the inevitably small amount of imposition of noise caused by the site. As Counsel has said, you will get much more information—balanced information—from Mr. Fleming about the actual effects of noise and from Mr. Springett on schools than I can possibly give you, but I am not at all ashamed of the statement I have made in the context I have made it. This does not mean I am unfeeling about the noise imposed on small areas of land on which the NNI contours fall.

88 But are you seriously saying—I do not want to press the point, because this is very largely a matter of . . .

Inspector I think the other witnesses will speak to this, because I think their qualifications . . . very little here is used by Mr. Sharman, but both Mr. Jennings Smith and another witness actually quantified this, so I think your point is very well taken.

Mr. *Braine* I shall let it rest on that, Sir.

* p. 8.

* p. 36.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. A. H. Purchase

89 The question I would like to ask Mr. Sharman—we do understand that this is the offshore site that we are studying at the moment?—I think the offshore site is defined by a boundary of low water—that is reclaimed land off the Maplin, Foulness area. The question I want to ask is, do you consider there is any greater difficulty?—it is not difficult to do with modern plant and equipment—within that particular boundary of low water brings with it engineering difficulties . . . in other words, the site can be moved one way or the other within that periphery? — Yes, that is a true statement.

90 And you feel—with a view to the development of a large airport which may well be an industrial airport with industrial and other business following naturally—but that is a question for Mr. Jennings Smith . . . — That is more his province.

91 But broadly you feel that my statement is probably correct—that industry and business will follow a large international airport, and needing land in which to develop it? — Yes, there is a tendency for this to happen. The extent to which it happens is difficult to quantify, but obviously if it were inhibited altogether, there would be some loss of efficiency.

Re-Examined by Mr. Frank

92 Mr. Sharman, it was put to you that your evidence is directed to an entirely offshore site. Of course, the short-listed site is the offshore site, is it not?—that is, short-listed by the Commission? — Yes.

93 If you were thinking in terms of, say, partly on- and partly offshore site, your evidence would be equally relevant to an onshore site? — Most of the evidence is entirely applicable to a site—we call it the "sand" site in our second submission—with one runway on the foreshore of the island.

94 Or, indeed, applicable to a wholly onshore site? — Most of it is, yes.

95 Mr. Sharman, can I ask you something about the engineering operations which were put to you? You are not saying that this is not a very big engineering operation in scale, to reclaim the sands? — Of course it is a very large operation indeed.

96 What you are saying is that there is nothing exceptional about it so far as engineering sense and so on are concerned. — That is so—there are precedents.

97 And you, for example—would you feel any great difficulty about undertaking such a task? — I am afraid this has been made to sound as if it has been cheerfully dismissed as "all in a day's work". This is in fact a project which would require an enormous degree of planning, a very high degree of technical mobilisation, and a big diversion of the country's resources; and it would be absurd to pretend otherwise. The only point made in this connection is that there is, to my mind, virtually no risk that any problem will emerge during construction which would certainly alter the assessment that we have been able to make of its feasibility.

98 Would it be right to say that the factors you have just referred to—diversion of resources and so on—would take place wherever you built an airport, to a greater or lesser extent? — Yes. This site, of course, has the big advantage that it is not competing for the same kind of plant that you require for inland work.

99 "Does not compete for the same kind of plant" on marine sand and gravel—is it not a fact that marine gravel is extensively used in London, East London, and the South Coast towns? — Indeed; all over the world.

100 Vast operations go on for the haul, and special towns like Plymouth, for example, and the Essex Downs . . . — Yes.

101 So there is nothing new about this at all? — Nothing at all.

102 On the other hand, there is a great scarcity of sand and gravel generally in the South-East, particularly those places which are easily accessible in the South Coast, which result in a concentration where very large areas are good agricultural land? — This is a constant source of dispute and public inquiry.

103 One subject with which the Inspectors are no doubt very familiar. As to the place where that sand and gravel will be abstracted from the sea—that will probably become a matter for the developers—if it would cause them to lose taking it from one place, then they have to go to another. — Yes.

104 But there can be no doubt, can there, that it is in the sea at a place where it can be abstracted without any dangers to navigation or otherwise? — The sources have not yet been fully explored, but, as I said, I think it is reasonable to have confidence that they can be found in places which will be economic to use for those purposes.

105 And indeed large quantities of sand and gravel are being brought up from the sea to places in Essex and London. — That is the case.

106 Now, I think it was being suggested that because the model test was being undertaken by the developers that the results might be suspect—can I ask you about that? Among those responsible for financing these model tests was the Port of London Authority included? — Yes.

107 And indeed two highly responsible other companies were there—very well known and responsible organisations—and I think the Southend corporation? — The Southend corporation.

108 Do you know who is going to carry out the test? — I am not sure whether the choice has yet been made, but I understand that it lay between four possibilities, all of which I should refer to, as a consultant, as entirely beyond reproach from the point of view of technical competence and objectivity.

109 And would the National Physical Laboratory have some say? — They could well be brought into the discussion.

110 And I think the cost of carrying out these tests is in about the order of a quarter of a million pounds? —

Printed image digitised by the University of Southampton Library Digitisation Unit

Estimates of cost for that sort of work are necessarily uncertain, but that is certainly the order of magnitude which I would expect.

111 Finally—on noise. You were cross-examined on your conclusion. Mr. Sharman, you have been concerned with airports and proposed airports in a number of places in this country and abroad, and when you talk about the adverse affects of noise, presumably you are talking comparatively. — Of course this is a comparison. We are not concerned with a situation where there are no aircraft, but with real life, where aircraft have to go somewhere.

112 As you say—under that assumption, there must be a third airport somewhere. — Indeed.

113 You are not seeking to contradict the statement which I made in opening—that there are a number of people who will suffer? — Of course not.

Inspector I have no questions: thank you.

(*The witness withdrew*)

(*Lunch adjournment*)

MR. JENNINGS SMITH* called

examined by Mr. Frank

114 Mr. Jennings Smith, your full name is Douglas Jennings Smith. You are a Chartered Town Planner, and a Chartered Architect, and you have had 20 years' experience in the practice of Town and Country Planning. You hold the appointment of County Planner for Essex County Council? — That is right.

115 Before we proceed to cross-examination, you have an important alteration to make to your proof of evidence which I hope has been circulated. If we turn to page 2, paragraph 1.5, about two-thirds of the way down, there is a sentence which starts: "From 1976 to 1996 the population estimated in section 2 . . . " that should be "section 3". that is a minor error. The important one occurs in paragraph 4.2. At the end of the paragraph, 4.2, there is a table, the columns headed "NNI contour range", and "population affected", coming along the first line, 35-45, under column (a) you will see the figure 11,300. Will you please alter that to 25,400. Then under column (b) you will see the figure 30,360. Will you please alter that to 52,400. Column (c) you see 22,600; that should read 43,800. Going bleow to contour range 45-55 under column (a) for 100 substitute 30; for 6,310 substitute 6,870, and under column (c) 200 should be nil. Then turn to paragraph 7.4. This paragraph should now read: "Finally, with reference to the problem of noise nuisance to residents in this area, it would appear that more people are affected by noise nuisance at present above 45 NNI was from aircraft using Southend airport than could be affected by a four-runway airport at Foulness when it is fully operational. Between 35 and 45 NNI there would be 19,800 more people affected by noise than at present".

Cross-examined by Mr. Michael Ogden (County Borough of Southend-on-Sea)

116 Mr. Jennings Smith, you probably appreciate that the Borough Council of course, probably like you, does not at this moment know the precise basis upon which the NNI contours were calculated. If one looks either at the wall map that is partially covered, the extreme left hand one, or alternatively if one looks at the map* which forms part of Mr. Fleming's evidence, drawing NF1, where one sees the same noise contours, if you will perhaps turn up that one for the moment, Mr. Jennings Smith. Ignore for present purposes, please, the contours which relate to the present Southend airport, and concentrate on the ones in relation to the proposed Foulness airport. One sees for a start, does one not, that it is coloured green, in fact on the wall chart there is a spur or hump which projects from near the southern most part of the contours over Shoebury? — That is right.

117 Again one does not know, of course, how that comes about, but one suspects, I imagine you have suspected that it reflects the line of flight of aeroplanes which have taken off in a south-western direction might take after take-off, some of them? — That is right.

118 Of course, if in fact one could get rid of that thumb or spur sticking out cross country over Shoebury, for example, by getting the aeroplanes to fly up the Thames Estuary, from the town planning point of view that would be eminently desirable, would not it? — That rather depends on the total of those people affected; the more one can get rid of noise from these houses and affecting people, obviously, the better.

119 In other words, if one can get those contours in on the Estuary rather than over the populated land so much the better, of course, other considerations being equal. — From a planning point of view.

120 Yes. Leave that point aside. Equally it is right, is it not, that assuming other factors do not render it unsatisfactory, if one may shift the runways further away from the shore line it is desirable too, because it also removes the contours to the east. — From the noise point of view.

121 Exactly. I repeat, other things being equal. — Yes.

122 From a planning point of view then, other things being equal that too would be a satisfactory course to pursue. — Yes. It removes the actual employment, of course, further from the people in the area, but apart from that, yes.

123 Yes. That is something we will have to look into, obviously, at Stage V, and doubtless the Commission is looking into it now, and one cannot go into that usefully at this stage, useful and interesting though it may be. In general terms from the planning point of view,

* See also p. 10.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

obviously, and I repeat all other things being equal, the more one can remove the larger contours away from the populated areas the better. – Yes.

Cross-examined by Mr. Martin White (Assistant County Clerk, Kent CC)

124 I want to turn to page 21 of your proof of evidence and look at paragraph 4.2,* as amended in the correction which has now been circulated; you now substitute new figures for the population affected. These are in fact very substantial amendments, aren't they, from the original ones in paragraph 4.2? – Yes.

125 Did these figures include the population affected in Kent? – Yes, they do, so far as we have been able to ascertain them.

126 I take it they relate only to existing population? – Yes, they do.

127 If you were to take into account such part of the population as you have suggested to be sited on the pink sites† on that map there to the left of the Inspector, how would that affect your figures in, say, column (b)? – So far as this area is concerned very little, if at all, because most of the urbanised areas are outside the NNI contours.

128 Have you worked out what population is inside the NNI contours? – No, because it is diagrammatic representation and there has been no attempt at developing it in any sort of detail.

129 Isn't it really vital when you are suggesting the site of new population to be generated by the airport to consider whether or not it would be affected by noise contours? – Yes, certainly, but so far as this is concerned, the proposed urbanisation does in fact take into account, so far as one can, the noise contours without defining any specific area in detail.

130 Would you have any qualms about putting new population within 45-55 contour limits? – Yes, one would try and avoid it.

131 How about the 35-45? – One would try and avoid that, but it is not quite so important as the higher ranges.

132 Does it mean a certain part of your urbanisation as shown on the map is dependent on the noise alteration contours as suggested . . . – Only to a limited extent, to only a limited extent.

133 You are not able to put a figure on that? – No.

Cross-examined by Mr. Knowles (Rochford Rural District Council)

134 Paragraph dealing with Basildon New Town,‡ you are relying on space being provided in the New Town to accommodate some 4,000 people prior to 1981 and some 14,700 people post 1981, arising directly from the location of the airport on this site. – Arising directly or indirectly.

135 Arising directly or indirectly. – Yes.

136 Do you not consider such a proposal would alter the status of New Town Development Corporation? – Yes, to some extent, yes, it would.

137 Do you consider it is justifiable? – Yes, I do.

138 Is it justifiable nationally? Is there any national thinking at the moment that the status of New Town Development Corporation should be changed? – I think there is, to some extent, a feeling that perhaps developing an urban area or New Town or new city in a self-sufficient sort of way whereby as one gets, for instance at Basildon commuters travelling through Basildon from Southend, is perhaps not necessarily a good thing. It could be, in fact I am sure one can't conceive or plan a town in isolation, it can only be planned in the context of region or sub-region.

139 Is not the main purpose of the New Town to relieve the London overcrowding? – This is one of the reasons why it was set up.

140 What other reasons were there? – In the case of Basildon the particular area considered was one which could do with some tidying up so it worked in rather well.

141 Wasn't it the intention that the incoming population was restricted entirely to London? – Yes, as far as incoming population was concerned.

142 Are your calculations on the assumption an additional 19,000 will come from London? – Not necessarily.

143 You are contemplating a radical change in the purpose of the New Town? – I am assuming this is what is likely to happen.

144 On what evidence do you base that assumption? – On the evidence that says the New Town or new city of large urbanised population like this will probably have to change; it brings a completely new factor into play.

145 You are contemplating a New Town itself taking some additional population but none of the other parts of the Basildon Urban District which are equi-distant from the airport town? – I am assuming, trying to be as realistic as possible that Basildon New Town will play its part in so far as new population coming in is concerned, bearing in mind they don't necessarily have to work on the airport; the secondary industry that is mentioned in my evidence indicates this is the sort of thing that will be associated with an airport or any large counter-magnet that will be introduced, it does not necessarily have to be directly associated with an airport; it could be a secondary industry.

146 You are satisfied such a thing would place no undue burden on the internal road communications, the local road access to and from the airport over such a distance? – We are not talking about Basildon now.

* p. 15.
† p. 20.
‡ p. 14.

Printed image digitised by the University of Southampton Library Digitisation Unit

147 Yes. — As far as Basildon is concerned it is planned to take a population of 140,000, something like this, so I assume it has been taken care of.

148 But the population is not intended to gravitate towards Foulness. — This planed population is intended basically to go backwards and forwards within its own area, and the fact that some of them will go to Foulness just as some of them now go to London should not affect the situation.

149 Your paragraph 3.20* concerning the urbanisation. I appreciate these are your own preliminary ideas of how the population would be dealt with, but they are not in any shape or form a firm proposal as has been said? — By no means.

150 But in the form in which you have presented them, what effects would your proposal have upon the use of agricultural land in the communities lying between Rochford on the airport side, and Great Wakering, Canewdon, Barling, and in fact the northern part of Hullbridge and South Fambridge areas? — So far as recorded on the plan† to the Inspector's left, so far as the areas shown in the pink colour, and, of course, it is diagrammatic, whatever the change obviously this would be urbanised. So far as the remainder is concerned basically it is conceived as a "C" link around that particular area and will protect from urbanisation some of the best agricultural land in the county if not in the country. This is not to say there will not be some side effects, obviously, but so far as farming is concerned basically it would remain open farm land.

151 There will be some effects on the land? — Not physical effect, no, but there will be side effects because obviously there will be a greater demand for labour and labour may well go up in value.

152 Perhaps I am not making myself clear. For instance, you are proposing urbanisation of Canewdon, acquiring of good quality agricultural land at Canewdon? — I am suggesting rather than proposing that this particular form of urbanisation of the Canewdon area could form part of the urban structure, this is true, and there is of course good agricultural land and good land all round there, but this is an attempt to preserve the best.

153 Some comment has been made earlier, perhaps you might better answer this, the question of the location of your proposed new road and rail links in relation to the northern urban areas and the planning reasons that you used to separate those four northern urban areas from the main town centre of Southend, from their hub. — Perhaps I should explain that the concept here is it could easily have been drawn as one solid pink mass with two communication lines going across it, but it seemed to me to put the idea forward in a clearer way to indicate that the development could be in the form of linked urban settlements, not necessarily one urban mass, so therefore these links running through could have connections to each of these communities as well as across it. I have not attempted to work this out or develop it any more than that. The basic concept is a form of "C" extending from Southend in a westerly direction and then going northwards and then along the south bank of the Crouch, and one form this could take is a form of interlinked settlements.

154 What reasons have you used for not locating new road and rail links to the north of the development area entirely? — I see no advantage in putting them to the north. In fact, one of the advantages of this form of urbanisation is that the communities to the north—or south of the Crouch rather—could have a river frontage or amenity open space of river and rather attractive view across the Crouch whereas if you had a link through there of road and rail this would cut them off, in otherwords, it would be more expensive to take it round to the north as well, it seemed better to leave it like that.

155 There is cost and some amenity. You appreciate that in the new proposed routing as you say there will be loss of amenity for the new residents and existing residents by reason of noise from the road and rail links? — Yes, there always is from these sort of links. It depends how the new urban areas are planned, of course. One these days tends to develop things in a way that there is a barrier from noisy motorways and railways.

156 Your Council have a policy for the protection of the estuarian and coastal area along the south bank of the River Crouch? — That is right.

157 How far upstream to the Crouch does the policy extend and to approximately what width? — Most of this area shown there is within the coastal protection area.

158 So that development on the lines you are suggesting would mean abandoning that policy so far as the south bank of the Crouch is concerned? — Indeed, yes.

159 Except for some amenity? — This brings a completely new factor in.

160 It also means abandoning to some extent your policy? — In this part of the county it would, yes.

161 What effect would you consider that the development on the south bank of the Crouch would have from the point of view of outlook for persons and land to the north of the Crouch? — It need not be particularly bad. I do not envisage development right up to the bank of the river. For instance, the areas shown there include urban parks and that sort of thing, and therefore I would imagine that in developing this particular concept one would have an area of open space along the south bank of the Crouch, in fact, and then the urban development behind that and therefore any view from the Crouch would not be particularly disruptive.

162 Your areas for development, particularly in the eastern areas, they have been drawn on the assumption that noise contours similar to those suggested by the county will apply rather than those suggested by the Commission? — No, either. It would obviously be better if the contours suggested by the county applied

* p. 14.
† p. 20.

Printed image digitised by the University of Southampton Library Digitisation Unit

because fewer people at Shoeburyness would be affected, but that land basically where what was referred to as the thumb sticks up is empty anyway, has no development proposed in it, or very little.

163 Whether or not the Commission's contours apply or the County Council's a large part of Shoeburyness will in fact be within the 35 to 45 contours? — Yes.

164 And yet you are still suggesting increased development in the area? — No, not at all.

165 Your easternmost southern block must be in the wrong place, then? — What is intended there is simply to show the existing situation extended and Southend is shown there and Southend is pretty well built up. It is intended to simply show the extension of the existing urban pattern.

166 More population? — Oh, yes, not in Shoeburyness, an extension in a westerly direction.

167 But surely at the moment the northern half of the southern easternmost block is more less wholly undeveloped? — The area in Shoeburyness that is undeveloped and is within the NNI contour of any significance I would not propose should be developed.

168 The area of Canewdon of the Commission's contours are largely within the 35 to 45 region?

Inspector On the Commission's contours they do not go below 40 by inference.

169 Mr. *Knowles* By inference? — (*Mr. Jennings Smith*) Yes. Some of the 35 to 45 contours would affect a corner of the Canewdon area, probably. I think this is acceptable as a very small part of the whole.

170 Why do you regard it as acceptable to deliberately put people into a noisy place? — Because I don't think a 35 NNI contour is particularly a noisy place. It is not very attractive maybe for some people, but bearing in mind quite a lot of people will be airport workers this question depends on the sensitivity of people. It was based on a social survey and no doubt you can ask Mr. Fleming on this, but I would not have thought a 35 NNI contour was one that one can use as a basic constraint against development.

171 You are suggesting that the development of these communities should incorporate their own self-contained light industrial sites? — Not necessarily, but I am not sure of the word self-contained. I have assumed that these communities would have within them some light industry on the assumption again that there will be a female labour force available and therefore it will be attractive to industry who use mainly female labour, and rather than have it in one chunk somewhere in the area I think the small light industry would be better scattered around in these communities than concentrated in one area.

172 I cannot find that you have made any suggestion where the main industry should be located. — Well, the main industry is the airport of 65,000 people.

173 The industries that go with an airport which are substantial? — This is a secondary industry. It is awfully difficult to quantify them, but so far as the secondary industry is concerned no one knows how much or how many are coming in. We have made an attempt to quantify it but there is no reason whatsoever for suggesting it seemed to me a specific area where they should go. Some of them may well be in Basildon, some of them may well be in Southend, some of them maybe in areas I have shown, but I would rather from a planning point of view do this than to have one main industrial centre somewhere with the problems that it brings, tidal flow of traffic going backwards and forwards across town centres and so on, I would rather disperse it.

174 You realise that implies that people living in the easternmost areas will not only suffer noise from aircraft, they will suffer noise and disturbance from industry? — As I said, light industry can be located without affecting the amenities of the residential area.

175 If reclaimed land were available on the airport site would you advocate the location of industry there associated with the airport? — If it was and one could prove it was directly associated and needed to be there for its operation I would have thought this was probably all right.

176 You have given us some amended calculations of the numbers of people who are likely to be affected by noise. I am not quite clear, are they numbers of people now living in the area who would be affected or are you suggesting these are people who would be affected by reason of your proposal? — No, living in the area.

177 You say the number is negligible so far as Shoebury and Canewdon are concerned, but have you any calculations on the basis that if your developed area is as suggested how many additional people would be affected? — No, because I have not worked out the development areas in any more than a generalised diagrammatic way.

178 Do you not consider that a vital matter which it seems to me particularly to avoid the areas where the noise is going to be in producing a scheme or a plan for the urbanisation of this area?

Inspector I think this finite planning must be the responsibility of the planning authority either now or in the future, so at this stage it must surely be difficult to talk in terms of finite plans for development.

179 Mr. *Knowles* We are concerned mostly to see that the noise from the airport is going to affect the minimum number of people and they have had far too many experiences of airy-fairy promises being given but circumstances change when development takes place.

Inspector I appreciate this entirely. I am just wondering whether it is possible at this early stage to expect finite development proposals on which an authority can say that definitely so much population will go here and so much there. I think what the witness is saying is that this is an idea.

180 Mr. *Knowles* I should like him to go further and say that it will not be put within the noise contours.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector You must try that.

Mr. *Knowles* I think Mr. Jennings Smith has given a fairly clear indication that most serious consideration will be given before an additional population is put into these areas.

Cross-examined by Mr. Wood

181 Could I ask Mr. Jennings Smith the fundamental question about his plans: what are they based on, what site does he base his plans on? — On the offshore site.

182 Would you define that more precisely? — Well, I was going to go on to say the offshore site or for that matter the site partly on shore and partly offshore. I am concerned with the urbanisation and I have simply taken the NNI contours for the offshore site as shown in the Commission's report.*

183 Would you accept that where it is on an associated site your NNI contours would have to be radically revised? — They would certainly have to be revised, yes.

184 Revised considerably? — Yes. I am no expert on this.

185 Neither am I, but one would have thought this was so. Entirely on shore for a vast section of Southend, for example, would be included in the 35 NNI contour; would you accept that? — I would assume so.

186 And would you further accept this, that any reference to the adjustment of contours is bound to have ancillary effects that might not yet be made clear, for example—and I can particularise—that the further north/south the runway alignment becomes the more does Clacton become affected?

187 Mr. *Frank* I don't want to cut short anybody's cross-examination but this is the wrong witness.

Inspector I am not entirely sure. I think what the witness is saying is that if this did happen what would be the consquences in the planning sense.

Mr. *Frank* I thought he was asking what was the effect on Clacton and we will have to get Mr. Dunford and Mr. Fleming to say what the effect on Clacton would be and that would mean fresh contours and Mr. Jennings Smith could only count up the number of people.

188 Mr. *Wood* Would Mr. Jennings Smith accept it is not good planning to put new population growth within an area of intrusive noise nuisance? — One would certainly try to avoid this.

189 So if I may anticipate other evidence, would you regard this as good planning, to include a population growth in a site by Shoebury, an area of 36,000, an area within the 40 NNI contour, as good planning? — I wasn't aware that anyone suggested this.

190 I think if you read the Southend-on-Sea Corporation's submission you will see this is part of it. — One would attempt to not put people where there is going to be intrusive noise.

191 And would you accept the validity of Mr. Springett's evidence, for example, that even if as you say—although I wouldn't accept 35 NNI does not represent over-intrusion upon the ordinary lives of people yet from the point of view of education this would be undesirable? — I understand this to be true, yes.

192 And would you accept it as such? — Yes, when an expert tells me this is so I am prepared to accept it.

193 On this we are on common ground. If we can go through in detail your evidence, on page 1, 1.3,* you do refer to "The prime function of the airport itself will be as a transport junction to connect the London area to the rest of the world." Would you accept this is only part of the function of this airport? — I would have thought this was its prime function.

194 Prime but not sole? — Sorry, prime function, yes.

195 Would you regard it as being designed to serve other areas of Britain as well as London? — Yes.

196 And would you not really regard this as the major international airport in the South of England? — One of the three London airports.

197 In spite of the fact that it is a plan to attract half a million extra people and provide employment directly for a working population of between 65,000 and 75,000 people? — No, with respect I don't think it is planned to attract people, the thing is the people will come in order to support the airport or for other reasons.

198 The thing is very difficult for a layman like myself. The number of people directly employed on the airport will be, quoting the Essex County Council, somewhere between 58,000 and 81,000 people and, accepting the Commission's view, 65,000. This must be an international as opposed to a London airport? — It is certainly an international airport, yes.

199 This site, then, becomes of relevance to the whole of the South and Midlands of Britain, not just to the London area? — Oh, primarily it is a London area problem and a London area. The fact is that connecting London with the rest of the world means that it brings the other people nearer to London.

200 But it can well be a major airport for the Midlands as well? — I would have thought not.

Mr. *Frank* I think this is not quite . . .

Mr. *Wood* Very well—clearly this is the point where we are stuck. We would be absolutely delighted to go into this question, but you would rule it out of order immediately, Sir . . .

Inspector I did not want—I was merely allowing cross-examination on the statement of what the prime function of the airport would be, not the extent to which this airport might attract other travellers from other parts of the United Kingdom, and I think this can be left to Stage III.

* *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.). Reproduced at p. xv.

* p. 10.

Printed image digitised by the University of Southampton Library Digitisation Unit

201 Mr. *Wood* I apologise, Sir. (*to the witness*) 1.10*—there is a reference here to the infrastructure of the area—the large economic and social facilities already here, and the suggestion has been made that the existing facilities in this area could cope with the developments, or a large proportion of them. Are you meaning to infer there that the number of hospitals, schools, and that sort of service that we have in this area is excessive to the present population? — No, I am not.

202 So really this sort of infrastructure at this moment is only sufficient to cope with the present population? — No, I am not saying that either. The situation is, infrastructure means everything; and whereas some hospitals and schools may be overcrowded, others may not be. The fact is that there is an infrastructure—there are shops, schools, hospitals and so forth, and usually there is an infrastructure which is capable of expanding in some directions and being built upon.

203 The point I am making is that the hospitals and schools in this area could not cope with the sort of increased population that you envisage, and entirely new facilities must come with the population expansion—would you accept that? — Yes, of course.

204 We thus pass on to 1.11, where you paint some optimistic picture. It seems to me, as to the potential developer, would you for example regard the close proximity of a major international airport as a proper environment for such things as a teaching hospital, university, theatre, operatic and ballet companies? — London of course is in proximity to Heathrow airport, and it has teaching hospitals and theatres. The point I am trying to make is that when a town or a city expands to a certain size it is able to attract and support much larger institutions than a town of a smaller size can—this is the threshold I am referring to.

205 But it is a very noisy thing. — I would not have thought so, no.

206 Then we pass on to 3.19.† You envisage a concentration of population within the new areas of 15 persons per acre—would you regard that as the normal concentration? — I do not think there is a normal concentration. It varies so enormously throughout the country, and 15 seems to me to be a realistic density in ordinary life—bearing in mind that Southend is between 16 and 17 . . . not particularly low, but because the major employer is the airport, and because there are recreational facilities quite near, 15 persons per acre—town density—seems to me about right.

207 And, as there will be in later evidence a suggestion that the population should be between 40-60 per acre, would you regard that as unrealistic? — If we are talking of a town density, yes, 40-60 is unrealistic.

208 Page 14‡—there is a fundamental point here that I would like to establish. This reference to a bonus—that if for example you could establish that 30,000 people are going to be adversely affected by an airport at Foulness, whereas at at the moment 10,000 are likewise affected at Southend—there seems to be an attempt made to establish that you only lost the amenity for 20,000. Would you regard that as reasonable? Don't you think that it is the final number of people affected that are important, or the off-saving from the present airport is irrelevant? — No, I would have thought that it was very relevant. But I do agree in detail. The number of people affected is the thing that matters, and of course the number of people who are affected by a considerable amount of noise. The different degrees of noise are important too.

209 Then it is the total number that is important, and not this equation one to the other. All you are doing is traversing the nuisance from one area to another—it is the total number of human beings that this Inquiry is concerned with. — Yes, I would accept that it is the total numbers that matter, yes.

210 6.1* is the next, which is a point of information. There is a reference made to Maplin Sands being covered to about one fathom at normal high tide—I am sure that that is a vast under-estimate. Can you support, that in any way? — No. This is an estimate—the best estimate I have. It may be a bit more, it may be a bit less.

211 I am assured, not by that particular expert but by others, that if you doubled that estimate it is closer to the truth. Would that surprise you? — It would surprise me, but I am no expert either. This is information that I have got from estimation myself.

212 Just on the point of accuracy—at 6.7† you refer—and I trust that your other facts are better based than this—"In the agricultural area there are two villages, Great Wakering and Canewdon . . ." I assure you that there are three others that must be added to that. I put the village of Paglesham, the large village of Barling, and I put the medium sized village of Eastend to add to that list—and, of course, there is Little Wakering as well as Wakering. We ignore Foulness, of course. So there are at least three others. 6.14‡—a point there—"Southend has become a major office centre as a result of the Government's policy for the planned dispersal of offices from central London . . ." Would you regard it as reasonable planning to bring what is anyone's definition of a noise nuisance close to such an area and such a development? — So far as the noise contours are concerned, these do not affect the Southend commerical area at all.

213 What if the airport were sited fully onshore? — It is not within my terms of reference, or, as far as I know, the Commission's.

214 I must draw your attention to the paragraph in the Commission's report which suggests that a wholly onshore site is a possibility.

Inspector "Partly".

Mr. *Wood* Yes, Sir. If I may also recall to your memory the words that Mr. Justice Roskill addressed to us at Templar House, where said—and I believe I am

* p. 10. † p. 14. ‡ p. 13.

* p. 16.
† p. 16.
‡ p. 17.

Printed image digitised by the University of Southampton Library Digitisation Unit

quoting almost exactly—that as a result of this Inquiry it would be the area of Foulness that would be accepted as the possible site of three and not any actual site—not any actual runway alignment.

Inspector I have to agree that he did say that; but it does not alter the fact that the witness is speaking about the Roskill Commission.

215 Mr. *Wood* I rest content, Sir. (*to the witness*) Where would the maintenance areas of the airport be? — I have no idea.

216 Is not his important? — Within the airport site; but I have no idea.

217 I believe this to be of fundamental importance, particularly to the noise nuisance. You have given no consideration as to where the maintenance areas in this airport would be? — I have assumed that these would be within the airport perimeter fence.

Inspector Just to be fair—I think this must be a decision for the airport authority at some later date. No one has received guidance on this—I must make that point.

Mr. *Frank* Mr. Sharman looked into this maintenance area, and it would be between the two runways—but it is ultimately a matter for the authority.

Inspector One does appreciate that this is of importance to you, Mr. Wood.

218 Mr. *Wood* One other point in passing—you are aware that there is a suggestion that this scheme might be allied to the creation of the dock complex. Would you, as a planner, agree that it is not sensible to plan a dock complex immediately adjacent to an area which disseminates noise at a level which most of us would define as intolerable? — No.

219 Would you plan to put the dock complex adjacent to it? — It would seem to me that if one has a large airport and if there are sound technological reasons for putting a seaport there as well, I should think, from a planning point of view, that this would not be of great significance.

220 I would not like your job of persuading the Unions to accept that!

Cross-examined by Mr. Orchard (Ashingdon Parish Council)

221 We were told this morning that 85,000 people could be housed immediately—I would like to know whether you agree with that? — Somewhere in the region of that figure—I am not sure of the actual . . .

Inspector I think we must get this straight. I think the period was "by 1981", if I remember correctly.

Mr. *Frank* "Without further building", Sir.

222 Mr. *Orchard* So the Council was not saying, Sir, that there was a number which was available at this present time—on a point of information?

223 *Inspector* You are seeking to establish whether this witness can illustrate the 85,000?

224 Mr. *Orchard* yes. (*Mr. Jennings Smith*) — This, I think is indicated on the diagram—page 14 in my proof of evidence*—which indicates not that there are necessarily houses available now, but that by the opening of the airport at any rate there would be a fairly sizeable labour force available, and also a number of houses that could be made available for various reasons. Some are workers already at Southend airport, others have to do with people already unemployed. A number of people who now commute to London may well get jobs in the airport.

225 And—it seems a pity—many would leave the area? — I would have assumed that it would be more of an attraction than otherwise.

226 And, judging by this map† over here, you can see by the scale that there is very little breathing space between these urbanisations, and I would say, in view of what Mr. Knowles said earlier on, that he knows that certain parts are fully urbanised already—so we feel that there is very little breathing space between those red spaces on the map. Would you feel that in time it would be a mass urbanisation in this area? — No. I think I ought to perhaps explain again that the pink areas on the diagram are not intended to be anything more than diagrammatic, and within those pink areas there would be parks and open spaces. That is why a density of 15 has been taken, and there is no intention of it being one solid mass of housing.

227 I do not wish to be disrespectful, Mr. Jennings Smith, but are you mildy concerned about the people who commute from these areas to London, many thousands, 70 miles a day, and return each evening for peace and quietness and to enjoy the wooded countryside and the green belt? In planning a mass urbanisation, have you any mild concern for the people in these areas? — All I am trying to do is to say, if an airport comes to Foulness that is a form of urbanisation, the most acceptable form that we can think of.

228 *Inspector* One moment—the words "green belt" have been used on two occasions. This is not a statutory green belt—it is merely open countryside. — No, Sir—it is a proposed extension of the Metropolitan green belt.

229 Mr. *Orchard* You see, we are concerned about the retired people as well, because they have given up a lot to be living in this type of atmosphere, and we are concerned, as Parish Councils, for the moral issue involved in this case.

Inspector Mr. Orchard, I think you can explain your views on this in due course. Can you restrain your points to questions to this technical witness?

Mr. *Orchard* All I am trying to say is that we are trying to save people who wanted to live in this quiet place from mass urbanisation, which we think will come with this Foulness airport.

Inspector I think you may appreciate it, Mr. Orchard—but can you put it in the form of a question to the witness?

---

* p. 13.
† p. 20.

Printed image digitised by the University of Southampton Library Digitisation Unit

230 Mr. *Orchard* All I can say is, has Mr. Jennings Smith considered all these points in formulating these ideas? — Yes, indeed.

Cross-examined by Mr. Peter Smith (Barling Magna Parish Council)

231 At 1.12* of your evidence, in which you say that you consider that the policy of concentrating new development into an existing urbanised pattern is soundly based—you are aware of course, having been County Planning Officer for some time, that you have refused development in a number of these areas such as Hockley and so forth, because the services have gone up? — The County Planning Committee have indeed refused some development.

232 So this development would mean creating a good deal of problems in the way of providing services—new roads, new amenities? I notice further on in your evidence, in 3.13,† in fact, you say—"Without any additional building or the provision of further services between 1976 and 1981 some 85,000 persons can be counted as accommodated". But this really lies counter, doesn't it? Obviously when you are going to create dual carriageways, if you look out the window there you see dual carriageways created by removal of dwelling and persons—do you stand by that figure, that in fact 85,000 people can still be accommodated? — Can be counted as accommodated.

233 Now, I know this is something which is not supposed to be said, but it has been said already because I see that in fact the tidal flows, etc., are being prepared by a Thames Estuary development board or something, which includes the provision of a deep water port. If I read their evidence aright. So, I presume your calculations are on the basis of also not only reclaiming the Maplin Sands for an airport but for a deep-water port. Have you any idea, should such a port be provided here, of the additional population which this would involve as well as what we have already? — No. I have no calculations on this. I can only say I have considered this possibility, and I don't think the additional population involved in a seaport would be very great at all with the modern methods of handling goods with containerisation and so on. I don't believe this would mean very much in the way of additional population.

234 You don't think so? — I don't think so.

235 But you don't know. I mean, Southampton has a population of about 212,000—am I right? — I will take that from you.

236 So really, if you are less, say, than half Southampton, we have another 100,000 coming in—right? — No, that I am afraid is not the way one would calculate this sort of problem.

237 But it is a deep water port for large liners and passengers, so really your estimates are based purely on the airport basis, and take no account of any other form of development? — That is right.

238, That is right? — That is right.

239 Of course, really, if this is the case, you are not getting a more balanced population, are you, because you are predominantly getting your population coming in the area . . .

Inspector Was that a question?

240 *P. Smith* Do you agree your population on this basis of the airport coming here would in fact make an unbalanced community, because predominantly the community within this area will be primarily involved in the airport? — It all depends what you mean by balance: social balance, economic balance, industrial diversification—it depends what one means by "balance".

241 Now, can we turn to your pink map*, which I believe, if I read your evidence aright, you have your arc here, with your agricultural heart, I think is your term, and you put your city here, shall we say, at Southend. — Broadly that is right.

242 You weigh up the pros and cons, should these go to Basildon or Southend . . . — No.

243 And you think it should generally go to Southend. How do your people in the top of your arc get to Southend to enjoy the amenities and facilities? — Well, this thing has not been planned in detail, but there would be a road.

244 Yes, but you see earlier you said there would be no physical intrusion into the heart area. — Yes, there are roads there now, and I would not have regarded them as physical intrusions; one has to get about, and it seems to me a perfectly reasonable thing to have a road going across from the northern most part a local road to the Southend area.

245 Do you not agree that the provision of a motorway and a six lane carriageway in fact forms a division, a very real division between communities? — It could be. I am not sure if you are specifically saying a six lane motorway between communities could be a division—it depends on many factors. One would not deliberately . . .

246 Well, Los Angeles, this has happened there, hasn't it? Los Angeles. — Yes, but this land there . . .

247 It cuts up your community life. — Yes. It is difficult to compare Los Angeles, I think, with the problem here.

248 Look at our map† here we have these confined within a peninsula where you have the road on the north, the north sea on the east, and the Thames on the south, and you have your boundary. Now, in turn you have split it into another peninsula because you have got your communities to the north of the motorway and roadway, so you are not really creating an urban area you are divorcing it from your centre. — The alternative would be to put a motorway through the middle and it seems to me better to put it on the edge.

* p. 11. † p. 14.

* p. 20.
† p. 20.

Printed image digitised by the University of Southampton Library Digitisation Unit

249 It is better in fact, but really your planning is being dictated by circumstances, not by planning, isn't it, in order to preserve that heart there you are just having to create a crescent round. — Planning is always dictated by circumstances, there is a circumstance of having a central part covered with noise, and the fact this is high quality agricultural land; these are circumstances one has to take into account.

250 Now, as you are responsible for Essex County Council, what would you consider the prospects of the authority within the 45 noise contours as shown up there? What will happen if it is within an agricultural area? — It is very difficult to forecast. If it is in a noisy area, and a pleasant place to live in, apart from that, I think quite a number of airport workers would want to buy houses there.

251 Would you permit housing development there? — Probably not.

252 But would you say that even if you did that the necessary fact of making arrangements for sound-proofing and any costs . . . — Yes, certainly.

253 Let me take, for example, somebody who is there and wants an extension, would you for instance make it a requirement this extension is sound-proofed? — I am not sure—an extension. If somebody wants to build a new house, and there is a very good reason why they should then one might have some sort of requirement—I am not in a position to say at the present time.

254 Very well. Now, you have a village community there in an entire area in which there is going to be no new development or the existing development will run down, and there will be no community activity, will there? — I didn't say this.

255 Well, will there be any community activity? — I don't know, but it seems to me that judging by experience, houses, even if they are in a fairly noisy area, if they are near to an airport tend to be bought by people who work in the airport. That is only my experience. I can't peer into the future to see what sort of community it would be.

256 But candidly, when you have a village which is a vital community in which there is village life, village goings on. Do you think that they would be tied up because of the noise? — I think the character of the village would change.

257 The village. You would not permit, for instance, your schools to continue in their own village like that, would you? — If there are children to be educated I imagine the education authority would wish to have schools there.

258 Yes, but when you say "education", it does not stop at four o'clock; children have to learn, we all have to learn outside school hours. Education is not necessarily in a sound proof school. It is in an unsound proof existing building. Do you think this wouldn't have a detrimental effect on the community? — Yes, of course, this is a community in a noisy area, of course it would have a detrimental effect.

Cross-examined by Mr. R. B. Smith (Rochford Parish Council, Vice-Chairman)

259 I am not going to ask you to debate on the characters of our village. I think in fact we have all seen characters of a village today. What I would like to refer to you first is the item 3, paragraph 18 of your written evidence*, the ultimate sentence of which reads: "At a town density of 15 persons per acre gross about 18,000 acres will be required". You are talking here about land for further domestic development at Basildon New Town. Can you tell me, sir, this proposed 18,000 acres, is this currently scheduled as residential development or an industrial area or farm land, or what? — Oh, this is 18,000 acres more land at present not allocated for development.

260 For anything at all. — For anything at all.

261 It is being farmed or just left fallow. — Well, it is not developed. Some is farm, some is unploughed lands, perhaps.

262 I see. If I may now just refer to item 6, paragraph 15†, where you say "Industry in Basildon New Town is generally modern and on a larger scale than the rest of south Essex. Considerable expansion of this industrial base is envisaged in the revised Master Plan". This expansion would be, of course, in addition to those 18,000 acres of further residential development? — No, this is the industrial area at Basildon that is already allocated and shown in their new Master Plan. This is not additional.

Inspector Any more local authorities? Then we move to the various institutions and so on. Any questions?

Cross-examined by Mr. Arnold (Foulness Island Residents' Committee)

263 The road to the north, the one that swerves right round. I assume you consider that to be the best route? — Something on those lines, yes; it has not been surveyed accurately.

264 Thank you. I only query it, as you pass over the River Roach you cross the Middleway with yet another bridge, and if I may say so, I think this is a very curious route, as I have seen the area. Do you not think it would be better to move that roadway further north so that with one series of bridges you can span the river at what we call "White House Corner", but it is where the right angle is, thereby giving just one series of bridges instead of four? — I am giving planning evidence, and so far as the planning of this area is concerned this is equally acceptable, it seems to me, but I am only talking on the planning issues, not on the road issues, or cost issues, for which there is another witness.

265 Therefore, it is possible this road line will not be absolutely followed. It may go a mile to the north or a mile to the south? — These are only possibilities.

---

* p. 14.
† p. 17.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Frank* We would agree with this in principle; we think it is a good idea in principle, whether it can be put into practice we can't decide on at this stage.

Inspector I think it must be obvious the alignment of this road is tentative and would depend upon the usual careful surveys to determine minimum costs. I think this is obvious.

Mr. *Arnold* Thank you.

Inspector Any other questions or what have you?

Cross-examined by Mr. Miskin (Burnham on Crouch Joint Clubs)

266 I think I must fall into the category of the "what have yous". You remember I am principally the yacht clubs. May I ask you this: the provision made as a tentative proposal, not detailed in any way, is a provision for 18,000 acres of hitherto undeveloped land? — That is right.

267 And you arrive at that 18,000 acres by applying a head per acre figure of 15 to an estimated population explosion for whom new houses must be provided at the figure of 272,000? — That is correct.

268 And if in fact that figure, 272,000, is appreciably too small you will have to make provision for appreciably more than 18,000 acres? — That is so.

269 And if you were to have to make provision for more than 18,000 acres I take it you would not from a planning point of view wish to bite into the top grade agricultural land which lies at the moment within the lobster's claw, is that right? — That is true.

270 So that if it can be demonstrated that on each occasion that you have taken a figure it has been taken from the bottom end of the prospective bracket—do you understand me—and that one ought to be anticipating a greater demand, we should in that situation ask the question: "Where do we do it?" I want to ask you about that.

Can you help to tell me what the quality of the agricultural land to the north of the River Crouch is in comparison with the land at present within the lobster's claw? — Only in the most general way, there is another witness who can give more expert evidence than I. I only understand it to be inferior, comparatively.

271 I will get more detail from him about the respective qualities. May we assume for the purpose of my question that if you had to make a choice between the land within the lobster's claw and that to the north of the river, dealing solely in terms of agricultural land, if that to the north is inferior than upon that basis you would choose the land to the north? — That is not the basis one chooses.

272 That is not the only consideration? — By no means.

273 There are also all sorts of planning considerations, one of which is not to permit urbanisation to straggle? — That is right.

274 And if that be an overwhelming consideration would we anticipate the claw being infilled? — It is possible.

275 Have you considered it? — Yes.

276 Having considered it, assuming for the moment a greater demand than you have allowed for in your figures, where do you see that demand probably being satisfied? — So far as possible within the claw area but outside the extremely bad noise area and possibly investigation into the possibility of development on Wallasea Island. I know the problems there but it may be these could be overcome. If it is significantly more than that then I think one would have to think again completely about the whole matter because I am most certain that whatever else happened one should not cross the Crouch and start development in the Dengie peninsula.

277 Would you just now help me in this way. If the red blobs* forming the lobster's claw, two lumps of sugar in the middle, that represents 18,000 acres approximately, how much additional acreage remains within the lobsters's claw when you exclude that part of it which will on any view of the noise number index fall within an area where nobody but a complete idiot would permit residential development? — I have not got that calculation, I am afraid.

278 No idea. Is it your experience that where you purposely create urban development you will get a powerful demand for peripheral development of units as it were of a more isolated type and more expensive property? — Yes, this generally follows.

279 You get, for instance, management wanting to live to some extent a rather more isolated life than that provided by the limits of urban development itself? — This does happen in certain communities. It need not necessarily happen, but it does.

280 That is real life, isn't it, you get those who are richer than others and others more eccentric than others putting a pressure on. With your years and years of experience do you anticipate that in the long-term future the local council will really be able to resist a measure of domestic infiltration to the north of the river? — I think very largely it will for the reason that you have got to build a bridge before it becomes possible to develop the villages in the Dengie peninsula in association with Foulness. It is a question of a bridge and as long as a bridge isn't built I would think it could be protected.

281 I entirely agree and accept that. I am going to ask you about the bridge next. Just approaching it on a purely commonsense basis for the moment do you anticipate that it is at all real if there is an airport here that we should think that there will be no road bridge over that river within the next twenty years? — I think it is reasonable to assume that there doesn't have to be a bridge. It all depends on how strong the planning policy is.

---

* p. 20.

Printed image digitised by the University of Southampton Library Digitisation Unit

282 But of course planning policy must to some extent represent and give way to pressure if the pressure of public demand is sufficiently great, mustn't it, you get overwhelmed by events to some extent? — Sometimes possibly.

283 If you anticipate as we all are at the moment that there is a third London airport roughly where we envisage, you understand, it may be a possibility, however remote, that there is a deep water port in association. Do you really anticipate that the Council over a term of years will effectively resist a pressure for a road bridge over the river so those living to the north can get down to the airport if they wish? — I think that is a very similar problem to that of development around a town with a green belt. Once a green belt is put down if there is a positive policy and as long as there is a positive policy not to allow development in a particular area it is effective. It is very difficult to see why one should build bridges or roads to that particular area. I would think it is reasonable to assume this.

284 At the moment there is no road bridge down the entire length of the Crouch, is there? — No, there is not.

285 May we just momentarily look at one or two of the figures you have used in order to arrive at the demand you at present anticipate. If you go to page 7, do you see paragraph 2.9?* — Yes.

286 "The Commission themselves have given, as their 'best estimate', a figure of 65,000 employees for primary employment and this figure is used in subsequent calculations in this part of the evidence". — Yes.

287 Was that an act of blind devotion for the Commission? Did you feel obliged to take that figure? — No.

288 May we go back to figures. "The primary employment at Heathrow in 1966 was 37,000 persons, and in 1968 was 42,000 persons It is anticipated by the BAA that employment at the airport will grow to 51,000 workers by 1971 and 62,000 workers by 1981". Those are the figures you have received from BAA? — That is right.

289 They are for only a two-runway airport? — Yes.

290 I assume that a four-runway airport will employ more people than a two-runway one? — I assume so.

291 And then go on: "Other researches detailed in Submission No. 2 by the Essex and Hertfordshire Councils indicate that the likely range for primary employment for a new four-runway international airport was somewhere between a low estimate of 58,000 persons and a high estimate of 84,000 persons". Those are the two extremes? — Yes.

292 Do you think it would have been more sensible to take the mid-figure between those two extremes or not? — No.

293 Then we have got this difference. You take the Commission's figure of 65,000, a half-way figure would be 71,000? — Yes.

294 And there we get the first difference between figures, for what they are worth. I think you then go on to deal with the question of secondary employment, that is the heading (b), and you take 21½ thousand jobs? — Yes.

295 And if you go to 2.1.2 you say: "The first element has been estimated for Heathrow as being between 3,500 and 5,000 employees (in 1966). In other words between 9 per cent and 13 per cent of the total primary employment". Do you follow that? — Yes.

296 I want to know this from you. You then adopt the figure of 10 per cent and say this has been assumed? — That is right.

297 Why not the half-way figure of 11 per cent? — All these figures are capable of adjustment one way or the other, they are all estimates, and the best we can do is to make another estimate.

298 Again I am entirely aware of that, but my clients you understand are concerned lest the urbanisation in fact is so extreme that it has a far greater impact upon the open country to the north of the Crouch than at present anticipated. I think you are saying you could well have taken 11 per cent? — Yes.

299 I want to know why you took 10 per cent, it is not in the middle of the two extremes. Why was it? — A good round figure.

300 Now let us go on a little bit to the next page 2.1.4: "The only figures available for this element of secondary employment are based on American experience at various airports in the United States of America and indicate variables of between 10,000 and 70,000 employees". — Yes.

301 My clients wish to inquire into the validity of those comparable figures. Will we find the information in fact in Submission No. 2? — These figures have all been obtained from a book called *The Economic Effects of the New Major Airport in New Jersey* in 1961 by Hammer & Company associates.*

302 Having set out these variables of 10,000 to 70,000 you go on: "A further consideration is that air freight is playing an increasingly important part in trading activities and this factor might attract certain industries. However, a conservative figure of 15,000 employees has been taken". That is 5,000 above the bottom analogous figure and many thousands below the top analogous figure—just a good round figure? — No. So far as the third London airport and secondary industry is concerned I think one has to take into account that we are in the South-East, that there is a Government policy with regard to industry particularly in the South-East, that by and large if industry wishes to settle here it will have to have a jolly good reason for doing so, that by and large Industrial Development Certificates have to be obtained and the policy for many years now has been to try and steer industry into development areas and so on. So therefore it seems to me that any industry that wants to

* p. 11.

*Prepared for the Port of New York Authority.

Printed image digitised by the University of Southampton Library Digitisation Unit

come here will have to make out a jolly good case for associating itself with the airport or in this particular part of the world and therefore it was right to take the conservative estimate.

303 Very well, I understand that. Now would you go to page 10, you see 2.16*. You have been talking about service workers and you apply, if I may say so, an obviously fair multiplier of 2.5 to your working in order to arrive at the number of service workers who it must be anticipated must be required to service it? — Yes.

304 And then you go on to discuss that and say: "It would not be reasonable to assume however that all of the service workers will be locally employed or housed, and a proportion will be located elsewhere in the region. Therefore 20 per cent has been deducted for this reason". A good round figure or have you got some sort of basis upon which to work? — The multiplier varies between 1.5 and 2.5 and it was the best estimate. It was a value judgment and the best one could obtain in order to get some reasonable idea of what the figure was likely to be.

305 Don't think it is a criticism, this is your guess? — I would call it a value-judgment.

306 We may want to get a value-judgment from someone else if you had based it on something other than your value-judgment. We again look at your mathematics. Do you see primary 65,000? — Where are we?

307 2.18, primary 65,000? — Yes.

308 The half-way figure would be 71,000, you can take that from me, and the secondary figure of 21½ thousand if you had taken a middle figure would read 37,100 and on top of those you then have the service additions and so on. Have you at any time worked out yourself the sort of acreages which would be required if instead of taking the lower round figures on each occasion you had taken the middle figure? — No, not specifically. One can make these figures very much more or considerably less. These seemed to be about right.

309 Seemed to you about right? — Yes.

310 Have you in relation to the noise aspect liaised fairly closely with I think it is Mr. Fleming? — Yes.

311 Over what period of time? — Since the first thoughts of a London airport arose.

312 And roughly from your point of view and that of your liaison with Mr. Fleming when was that? — About four years ago, I think.

313 And you were liasing together because a third London airport was anticipated. Did you yourself and Mr. Fleming contemplate its possible location here, is that one of the possibilities you and he had in mind? — One of the possibilities that all of us had in mind.

314 Paragraph 4.2.† The number of people affected by the various contours under (a) 11,300 has been changed and improved to 23,400 and that is a 33⅓ change. Was the 11,300 a value-judgment or a guess? — No, it was a mistake.

Inspector It is 25,400.

315 Mr. *Miskin* I have written 23, I am very grateful. Can I take it then that the 30,360 was a mistake as well? — Yes, all these figures were.

316 Your mistakes? — My mistakes, yes.

317 How did that come about? — Misinterpretation of contours and various lines had been changed and refined.

318 I only want to know. Then do you think having made those mistakes your value-judgments in regard to other figures might be not very reliable? — I don't think there is any connection.

319 Have you had in mind, informing your judgment in regard to noise and its impact on residents, any difference between the generator of noise at Heathrow in the areas up to the present, and the type of machinery which we anticipate may be generated noise at the third London airport in the future? — I do not think I am qualified to answer that. This is the question of evaluating noise and how it affects people, and I do not really feel that I am competent to answer.

320 I did not ask you that. I asked whether you and Mr. Fleming considered that. — No—Mr. Fleming has come to me and I have simply counted . . .

321 That is what I wanted to know. He supplies the expert information and you apply it on the ground and got it wrong. — That is right.

Cross-examined by Mr. Gregory (Country Landowners' Association)

322 Mr. Miskin, I did not want to interupt the cross-examination, but I did not hear what you said the density was for Southend. — Town density, of between 16—17 per acre, gross, I think.

323 Do you happen to know what the density is for the Darleston New Town area? — I do not have that fact. I know that new towns are generally in the 12 persons per acre category.

324 I have forgotten what it is, but would you be able to produce that figure later in the Inquiry, for Basildon? I fancy that is smaller than Southend.

Mr. *Frank* It is just as easy for Mr. Gregory to get it as for Mr. Jennings Smith.

325 Mr. *Gregory* I would have thought Mr. Jennings Smith would have it at his finger tips, but if Mr. Frank would rather I found it, I shall. (*to the witness*) It is of course important that urbanisation should be planned at a density which does not produce bad environmental density, but at the same time does not take too much land. — That is right.

326 Particularly in an area like this, where there is a good deal of very good agricultural land. — I agree.

327 I suggest to you that 15 persons per acre as a gross density is pretty modest. — I thought it was about right.

328 Just looking at your pink blobs*—I appreciate that this is diagrammatic, but in fact if you were to

* p. 12. † p. 15.

* p. 20.

Printed image digitised by the University of Southampton Library Digitisation Unit

include the built up area between Rochford–I am afraid I cannot quite see the names, but it is between Southend, Rochford and Hockley, I think–there is a good deal of development between those, is there not, shown on the plan behind you? – Yes, there is scattered development, yes.

329 Would you agree that the farming in the area there would be likely to be subjected to a good deal of interference if other urbanisation had taken place? – I think all farming would be subject to a degree of more interference than they are now, yes.

330 I take it you would agree that if possible the urbanisation should not be allowed to spread into the Dengie penisula? – I think it is good from a planning point of view that it should not be allowed to spread there.

Cross-examined by Mr. Purchase

331 I know that the Essex County Council put in a number of sites to the Commission–at Foulness there were three; on the island, half and half, and entirely reclaimed–this morning, and I have also heard that Essex County Council happened some years back on the possibility of an airport in the south east. That is, for the third London airport; and at the time consultants made a recommendation, or they gave a report, on the Foulness Island site, and recommended Sheppey, I think–is that what has been mentioned this morning?–It was in earlier reports. The recommendation now is for "all reclamation"–the off-shore site–as distinct from previous discussions or thoughts on the island. – My evidence relates to the assumption that the airport will be off-shore.

332 So Essex now feel that they have made their mind up, it should be off-shore? – No. My evidence relates to that . . .

Inspector I think what Mr. Jennings Smith said earlier was, his evidence was related to what is shown on the plan.

333 Mr. *Purchase* Yes, but I did note that there was earlier consultation with engineers on the subject of airports some years ago. Mr. Jennings Smith, if it was established that Britain needs . . . and this is a tender subject, I know, but I have to raise it because of what I want to bring up later on . . . a deep-water channel was an advantage to Britain, and it could be proved economically that it was there and that development could take place coincidentally, Sheppey, with a large area of reclamation–particularly in view of the fact that it is a deep-water area and part of the sands–the area would be used to reclaim the land because you were channelling a deep water port so you were reclaiming a large area of land from Maplin itself . . . you could dig channels in a considerable quantity which adds to the economies of the construction of the port. The question I want to ask is: if this was established that the channel was to advantage, would not you consider it detrimental from a planning point of view? – It would be necessary to see the plans in some detail, but in principle, not necessarily.

334 You earlier said that you would like to see industrial spread and development in conjunction with the airport. – The sort of industry that I have assumed in my evidence would be mainly female employees, and I would rather see this light industry in the communities themselves, where women perhaps might get to it rather more easily than they do in one big chunk, with the problems of tidal flows of traffic. It seems to me that it would be better to have it located in the residential areas, as it would be light female based employment.

335 But you can visualise that the expansion does take place, industry will expand–the international airport which may at some stage have maintenance problems which would in themselves bring in forms of manufacture. In addition to that, there is expansion on air freight, which requires a certain amount of industrial . . . particularly now with all export . . . so there is likelihood of need for land that is expandable and I suggest that expansion from reclamation is beneficial to the nation as distinct from having it spread over the island or spread inland. The airport is going to encourage business and industry, whether it be directly manufactured . . . there may be sound-proofed hotels. – Yes, I have taken this in my evidence as secondary employment.

336 And what the future brings . . . in other words, I am asking whether you think that if economy brings–with the reclamation of further land indicated off the shore–it can be usefully utilised from a planning point of view . . . – I am sorry–I am not clear as to what the question is.

Inspector I think it is: if there is a strong economic demand for specialised industries on the reclaimed site, what would be your view about that?–is that correct?

337 Mr. *Purchase* What I say is, when I brought in the subject of the pressure of the low water spring tide mark and the airport site within there . . . I am suggesting that if the airport is further sited from that of the Roskill Commission to permit development to take place adjoining the airport–from a planning point of view is that detrimental?

338 *Inspector* The question is that, if the airport site were further off shore, leaving reclaimed land between the airport site and where Foulness Island now is, could that land be used for industry?

339 Mr. *Purchase* With planning approval–yes. – This all depends–yes, it could be. It depends where the flight paths are, where the noise is. The form of development–just because land is reclaimed from the sea does not automatically mean that it could be used for industry. It has to be seen in the shape of an overall scheme.

340 The overall scheme I have in mind is that all the complex that has been published by our office, which sets out the development of other parts . . . containing the possibility of the expansion to take place and bringing the liability of economy through dredging for sand for a deepwater channel does not mean–which is not the airport on its own. The question I was asking was, from your planning point of view, would you just

Printed image digitised by the University of Southampton Library Digitisation Unit

simply have to take into consideration, once it was known that this would be a possibility—in other words, your planning would widen the extent, to expand on its greater development. — This would have to be taken into consideration.

341 *Inspector* I have just one point of clarification on paragraph 5.3*—it is the classes of access to Great Wakering beach. Where does the public get access to that beach? — Down a footpath, I believe, Sir.

342 *Inspector* I have been along this road, and was stopped by the Defence Guard and the red flag—do they go through there somewhere? — I confess I have never been on this beach myself.

343 *Inspector* Does anyone know? — (*A Gentleman*) You can get down by the iron fence with the red flag on it—if you go through Great Wakering, you can get down the stairs.

344 *Inspector* What abour cars? — (*A Gentleman*) You can take the car, but you must not go onto Foulness Island.

Inspector Thank you very much.

Re-examined by Mr. Frank

345 Can we emphasise that these proposals are diagrammatic and tentative? — Yes. They are one solution. There are many solutions possible; this is one which I believe is as good as any other.

346 And they do not purport to show exact boundaries, or anything like exact boundaries, of your settlements? — No, they do not.

347 You were cross-examined on your urbanisation figure; and after all, as you have said, all you could do is to use your judgment. But at least this much can be said, can it not, that the figure of ultimate population which you think would be attracted by the airport is very considerably in excess of that which Professor Buchanan makes at one of the Stage I Inquiries† — That is so.

348 Let us see what that figure is. It is not quite twice as much, but getting on for twice as much—it is nearly 400,000, as against Professor Buchanan's quarter of a million. I agree that Professor Buchanan was not intending to put forward any sort of estimate, but was giving some idea of the scale of the project. What Mr. Miskin was doing was expressing—and, I think, other people too—expressing an apprehension that you may not have made sufficient allowance in your calculation, and in consequence development spread into the Dengie peninsula. — I should think that it would be most undesirable.

349 And if, as a result of further studies, it was found that you had made insufficient allowance, then you would have to make provision for accommodating the excess population elsewhere or by invoking higher densities? — I think there is still scope for a fair amount of expansion still between the Crouch and the Thames, still without going into noise effect areas, for a considerable increase in population over and above that which I have already indicated.

350 You were asked about the noise at Canewdon. I have had a look at Mr. Fleming's contours*, and it seems to me that although, if one takes what has been referred to as part of your lobster claw—I have Mr. Fleming to thank for that description—take your red blob, which you emphasise is diagrammatic, that is affected only by the 35-45 NNI contour, and really that is on the edge of the 35 end rather than the 45 end. — That is so.

351 And your red blobs don't represent 100 per cent housing, they represent schools, and they represent local industry, and service industry, garages, laundries, and so on. — And parks and open space.

352 And parks. — Yes.

353 All of which are going to be provided in each of these settlement areas? — Yes.

354 Would it be sensible as a matter of town planning to avoid putting near the noisier parts of your area houses and schools and the like? But rather to put your industry and service industry and parks and things which are not so affected by noise—is that the sort of planning exercise you would expect to carry out? — Good sound principle, yes.

355 You have been asked some questions about Basildon. As I understand it towns like Basildon, Harlow, Stevenage, all the south-eastern new towns, are they accommodating the overspill and growth of the south-east of England including the growth of London? — It is mainly London, yes.

356 Mainly London. London comprising a pretty large area. — Yes.

357 Now, the south-east is going to grow by whatever the pundits' estimate over the years to come and such industry in the airport as situated at Foulness, that part of that growth, that is a large part of that growth will come to Foulness or wherever the third airport is situated. — That is correct.

358 Does one of the industries or elements which will absorb, give employment to the growing population and the overspill from London, does that apply wherever the airport is situated. — Yes, I take this to be so.

359 In that context, would you say or would you not think that Basildon would be fulfilling its appointed function if it accommodates persons employed directly or indirectly as a result of an airport? — Yes, I think this is its function.

360 There is, therefore, no inconsistency whatsoever between the new town policy and having the airport at Foulness? — Not in that context, no.

361 And indeed, as the Inspector will have seen, the New Town Corporation have made their representation

* p. 15.

† Commission on the Third London Airport. *Papers and Proceedings Vol. I. Stage I: Public Hearings. Part I, Written and Oral Evidence: 1 November–6 December 1968.* (HMSO, £4. 10s. 0d.) page 61.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

and they don't raise any objection, do they? On the contrary they are willing and obedient to the situation? — Yes, I believe so.

362 Now, I want to ask about the green belt. As the Inspector has pointed out, this is not a statutory green belt in the sense it has not been approved by the Minister. Does this proposed green belt extend from the town map boundary of Chelmsford right the way through to the town map boundary of Southend itself, sweeping across all villages and settlements in between? — Yes.

363 Is the reason why it has done that because Southend and Chelmsford in particular have their objective population figures down to a twenty year period and have brought their town maps down to where their population has to be accommodated in the industry and services and so on to be provided, have drawn that and said: "Right, have made that provision, the rest we want to keep undisturbed and so we have put it in green belt", is that the policy? — Well, it has been the policy of the County Council to prevent the sprawl of towns and villages and keep them as compact as possible within their target populations.

364 So the two things go together. You make them compact and you draw in your boundaries for the rejected population, and you want development to take place where you have drawn it within the town maps and not sprawling out into the countryside joining up one settlement with another? — That is so.

365 All of the well known physical things relating to a green belt? And, of course, we see, do we not, the green belt principle shown on your proposed development, here. We see areas separating your settlements, we see an area between each of these, between Canewdon and the one to the left and to the south between Orkwell and Rayleigh and so on. That is the deliberate policy, to give a settlement its own personality. — It is part of the concept, yes.

366 Tell me if I am very wrong about this. This is the sort of concept which is being put into practice, for example in Milton Keynes, of one new city to comprise of a number of different settlements with their own shops, and so on. — It is certainly a well known concept. I am not sure that Milton Keynes is specifically in that category.

367 Very well, let us have it: a well known planning concept. — Yes.

368 It would be quite wrong to assume that people in Canewdon or Hawkwell and so on will have to go into Southend for their shopping or their garage? — That is right.

369 Or even the cinema. — Quite right.

370 But Southend will be the city centre where one will probably find the large stores, the theatres, the concert hall, probably or technical colleges and teaching hospitals, and so on; it would be the focal point of 600,000 people. — That is as I see it.

371 One or two questions which have been put to you, it seems to me that some people have not understood how you obtain a value from your existing infrastructure. I think this is a matter you deal with in paragraph 3.6* onwards in your proof of evidence. Can I try through you to explain it in more simple terms or rather in other terms, how you got this balance. — Yes.

372 When you have any new settlement, whether it be a housing estate, a new town or whatever it may be, the cost of providing that house is not merely the cost of the land or building the house. — That is right.

373 The cost of providing that house, to that cost must be added the cost of providing electricity, perhaps gas, sewage, water, schools and refuse disposal, every local government and every service, is that right? — That is so.

374 And roads, of course; and that has been assessed, I think, again by Professor Buchanan when he was engaged in the South Hampshire Study at about £3,000 per head? — That is so; various figures have been used: £2,500–£3,000, yes.

375 And that is how you arrive at your saving in investment. Let us go on and see. £3,000 per head? — Yes.

376 Let us see how that can be relevant here. Contrary to what other questioners thought you didn't say that there was a sufficient number of empty houses in Southend at the present time to accommodate the increased population? — No.

377 What you have said is that no new building will be required. In paragraph 3.15† you say in your proof: "Thus without any additional building or the provision of further services between 1976 and 1981 some 85,000 persons can be counted as accommodated". Now you have earlier given one reason why that happens. One obvious reason which you mentioned is every year a considerable proportion of existing houses come into the market, is that right? — Yes.

378 And you have said a certain proportion of those will be bought by and occupied by people who will be at the airport? — Yes.

379 That is the sort of way the thing works? — That is right.

380 3.11 I am told is the turnover. You said that it was in what you call the catchment area 10 miles from the site that there was in 1966 a housing stock of 92,000 dwellings and this stock will rise by 1975 to 101,000 dwellings. The annual rate of turnover of houses in the area at present is 5 per cent and if only one-fifth of these vacated houses were occupied by airport workers then some 5,000 families could be accommodated between 1976 and 1981. So that you look at that as an example. There you have provision for 5,000 families without any new building and without having to provide the services you have already mentioned? — That is correct.

381 The turnover of dwellings is not the only factor, but that is one single factor how you get this? — That is one factor.

---

*p.13.

†p. 14.

Printed image digitised by the University of Southampton Library Digitisation Unit

382 Now I would like to turn to page 21* of your proof of evidence. The Chairman of the Commission has acknowledged you were rather tied for time in the preparation of evidence for this inquiry. – Yes, indeed.

383 And before you could carry out this count you had to wait for the NNI contours from Mr. Fleming and you also not only had to make the count within Essex and Southend but also in Kent? – Yes, we had to do the best we could.

394 And in doing that those helping you made mistakes? – That is true.

385 And if we can just look at the figures as amended,† and we look at the NNI contour range of 45 up we see that at the moment 6,000 people are at present within the 45 to 55 NNI count as a result of Southend's airport? – Yes.

386 If Southend closes down and the airport is located on Foulness that number 6,000 is reduced to nil? – That is right.

387 So it shall be in everybody's mind that in taking that contour, looking at the seriousness of it, 45 to 55 upwards, the number of people affected is reduced from 6,000 to nil and therefore if the airport is so sited then nobody is going to be within the serious noise nuisance range, is that correct? – That is correct.

388 Mr. Jennings Smith, this is not a guess, it is not a judgment, this is actually a count within the particular area concerned that is factual? – Given the boundaries these are the facts as we count them.

Inspector I think it is not worthwhile introducing another witness this evening, so I will adjourn the hearing.

(*Adjourned until 10 o'clock tomorrow morning*)

* p. 15. † p. 15. (para 4.2)

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

Tuesday 6 May 1969

THE CIVIC CENTRE
SOUTHEND-ON-SEA, ESSEX

Before A. J. Hunt, Esq.

Oral evidence taken from:

Essex County Council (*Mr. G. I. W. Dunford, Mr. N. Fleming*)
Mr. B. Braine, MP
Essex County Council (*Mr. J. A. Springett, and Mr. D. E. Tanton*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

389 Mr. *Frank* Before my next witness can I just make one or two corrections. Somewhere between here and Broadcasting House some reports got lost. The value of the infrastructure we put not at quarter of a million, but £255,000,000. That of course is a very tentative figure but I thought I would put that one right. Another figure which has gone wrong I fancy is the peak population figure. The ultimate population figure which will be attracted by the airport is of the order of 400,000.

There is one other matter about the Thames Estuary Development Company. I had thought I had made quite clear in my re-examination of Mr. Sharman or Mr. Jennings Smith, I can't remember which, that certainly so far as we are concerned we are absolutely satisfied beyond any doubt whatsoever that that company is making its investigation in an entirely objective and neutral way and there is no question of them in any way bending evidence in any investigation.

390 Mr. *Hughes* I wonder if I may develop that? My name is Ivor Hughes and I represent the Thames Estuary Development Company. Could I say that the Thames Estuary Development Company will be giving evidence later in this hearing at which anyone who has questions to ask on this point we will be pleased to answer.

Inspector I am sure you will.

MR. GEORGE IAN WILLIAM DUNFORD,* called

examined by Mr. Keene

391 You are George Ian William Dunford and you are the Air Traffic Services Superintendent of International Aeradio Limited. You have held that post since 1964. You have been in Air Traffic Control for the last 17 years, initially in the Royal Air Force, before joining IAL in 1955. Your service with the Company up to your present position has been as an Air Traffic Control Officer at airports and Air Traffic Control Centres, as an ATC instructor in the IAL school and as the Assistant Air Traffic Services Manager. In addition to being responsible for the ATC operations of the Company, you are also engaged on air traffic and operational consultancy tasks and have recently completed two such tasks in connection with a twenty-year development plan for two major international airports overseas, Nairobi and Singapore, both of which had problems in relation to nearby airports. Well, sir, there is nothing I need ask Mr. Dunford in examination-in-chief in addition to that which appears in his proof and I tender him for cross-examination.

392 *Inspector* Before cross-examination, Mr. Dunford, can you enlighten me on your paragraph 1.10. I am a little puzzled over the term referred to: "over the Middle Marker for an ILS system", in relation to your map GD1.† Can you either explain or indicate on the larger map where this would be? — It is probably easier to explain. The Middle Marker is situate at approximately half a nautical mile from the threshold of the landing runway. What I am suggesting in 1.10 is that aircraft departing from that runway in the opposite direction can make the turn over this marker beacon or turn half a nautical mile from the end of the runway.

393 You say: "This alternative routing is also shown on figure GD1", but I can't find it here. — In fact it is not. I am sorry. It was shown originally but I think you will find it in part of Mr. Fleming's estimate shown in dotted contours.*

Inspector Thank you; it was merely so that I did not did not get lost in your cross-examination.

Cross-Examined by Mr. Ogden

394 Mr. Dunford, perhaps you will first of all help us about one matter that I see has been raised in some of the papers that have been put forward, namely the question of the fog. So far as the aircraft expected to use the Foulness airport commercially, is this a problem with which the Commission has got to worry about? — No, I don't believe it is. The airport will obviously be equipped with instrument landing systems. The present development of instrument landing systems are such that London airport is equipped with what is termed as Category II system, and using this system aircraft can come down to fairly low limits. There is under development a Category III system, the popular term is "Blind Landing System", whereby aircraft can land in zero visibility conditions, and I would imagine this airport will be equipped with at least Category II Instrument Landing Systems, if not Category III.

395 I would like to turn to the question of the NNI contours and the siting of the runways, in so far as your traffic control is affected by any alterations. Let me say at once that the Southend Borough Council agrees with what is proposed by you and other Essex witnesses about the desirability of routing aircraft over the Thames Estuary, so as to avoid the spur that one sees over Shoebury. Of course, one of the advantages, as we saw yesterday of eliminating that spur would be to reduce very significantly the number of people affected by noise, would it not? — Yes indeed.

396 No doubt that was one of the principal reasons that you had in mind when you considered the matter? — It was certainly one of the reasons, yes.

397 And another, as I understand it, being safety in the sense that it is more desirable so far as pilots are concerned if possible to climb straight rather than turn immediately. — Yes, indeed. In fact your second point was my primary consideration; the first point a secondary one.

398 I guessed that was so. Let us consider whether one can improve still further on that situation. Obviously, if one moves the runways further to the east, that still further reduces the noise effect upon people in the

* See also p. 27.

† See attached wallet of maps and diagrams.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

neighbourhood–I appreciate noise is not your speciality, but let us approach it in this way. If in fact the runways can be moved further to the east it is right, is not it, that that poses no air traffic control problems? – This is true, providing we keep it within the context of the Maplin Sands, moving it any reasonable distance to the east would pose no problems.

399 I am sorry–I perhaps ought to have made it plain that naturally I am referring throughout my cross-examination to runways on the Maplin Sands. If one moves the runways east, that of course reduces the noise, and in fact it moves the contours naturally further to the east. Another thing that can be done–and we will deal in a moment with doing it in conjunction with the first point I have mentioned–let us consider it on its own first of all–another thing that can be done is to remove the runways further north, in a general north direction. Is it right that that too poses no air traffic control problems? – Yes, it is correct.

400 The third possibility–and again, consider it on its own for the moment–is leaving the runways where they are, but tilting the access to a more north-south direction. Do you follow me? – Yes, indeed.

401 Is it right that that too poses no air traffic control problems? – I do not believe that it poses any air traffic control problems. I can see one or two other problems, though.

402 That is why I put it in very precise terms. Let us just look at the fact of possible combinations of those three things. If one looks at the Commission's own NNI 4-runway plan–CTLA 1/3*–it looks as if–and it will require of course at a later stage considering the accuracy of those contours and of the premises on which they are based–it looks as if it may be possible to achieve the result whereby Essex and Kent are both spared the 40 NNI contour. Let us just see how it functions. Of course, if one moves the runways further to the east, that of course tends to relieve the Foulness-Shoebury area so far as noise is concerned. It does not affect Clacton–perhaps very marginally–it does not affect the Sheerness area, except perhaps very marginally. – Yes.

403 If one moves the runways in a northerly direction, that of course also, once one eliminates the spur of noise, relieves the Sheerness area to a certain extent, and undoubtedly assists the Kent coast around Sheerness. It does not bring the 40 contour over Clacton, although undoubtedly Clacton–naturally, the further you move the runways north–would be affected by any lesser contour lines than 40. Of course, if one combines those two, namely moving them more to the east and to the north, in other words a general north-easterly direction, that certainly helps the Shoebury-Foulness area, also the Sheerness area, and does little harm to Clacton. – Yes, I would agree with that.

404 And if one, from an air traffic control point of view, if one moves them north-east, that as a combination poses no air traffic control problems, does it? – None at all.

405 Naturally, we will have to consider–and doubtless Stage V will be the time to do it–matters such as cost and things of that nature. So far as tilting the access of the runways is concerned, obviously, if you combine that with shifting the runways north-easterly, there is a very limited amount of tilt that one can do without bringing the 40 contour over Clacton. But subject to that, from an air traffic control point of view, if the runways can be manoeuvred both as to access and positioning on the Maplin Sands, in such a way that no one is within the 40 contour line, that poses no air traffic control problems. – That is true. In my evidence I did make the point about usability of the runways, and we obviously must aim for achieving the maximum usability over the 95 per cent figure that I have quoted; but I did also say that there was a fair amount of ability to swing the runway between due north and due east in fact.

406 Just one matter, perhaps, Mr. Dunford. Have you at this stage applied your mind to the routes which inter-airport planes might be expected to take–especially the VTOL and the STOL.1s? – I have considered the problem–not in any great detail, I must confess. But my initial considerations were that the shortest distance between the Foulness site and London Heathrow would in fact be along the Thames Estuary.

407 Of course, it is obviously a very important consideration, is it not?–both from the point of view of air traffic control and also the NNI contour? – Yes, that is true. But I believe that inter-airport aeroplanes–or helicopters, whatever may be used–will be given discreet routings away from the main traffic routings, and this also would obviously have to be carefully planned.

408 That was the sole point at this stage that I wished to make.

Cross-examined by Mr. Martin White (Kent County Council)

409 As I understand it, you are suggesting an alteration in departure routings which will have the effect of cutting out that green thumb from the contour lines that are shown on the plan* behind you? – That is so.

410 In suggesting this variation on the Commission's proposals, have you had access to the data in the Commission's possession? – Not at all.

411 Can you really, in confidence, suggest variations on the Commission's plan, when you do not know the assumptions on which the Commission's plan is based? – Yes, I believe I can, because the air traffic system of the United Kingdom and the adjoining countries is uniform. The general flow of traffic from the United Kingdom to those systems is also uniform, and I believe that on that basis I can make these assumptions.

* *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. xv.

* NF1 (see attached wallet of maps and diagrams).

Printed image digitised by the University of Southampton Library Digitisation Unit

412 Yet, looking at the data which you yourself gave—turn, for instance, to paragraph 1.9* on page 5 of your Proof—you refer to a survey published in 1962. Isn't 1962 rather ancient history in air traffic terms? — I agree entirely. This is why I have said, whilst this is not conclusive with respect to the third London airport, it does indicate the volume of traffic. It does require to be read in this way. I do not see any vast change in the volume of traffic routing to the various countries of the world.

413 One factor will be what the airlines decide to do, won't it? — What the airlines decide to do, or what they are asked to do, yes.

414 Have you consulted the airlines at all? — No, not at this stage.

415 For instance, BEA, the dominant user in this country—isn't is rather important to know to what extent they are going to use a site at Foulness? — I think one must make certain assumptions that if Foulness is taken as the third London airport, and if it is the wish of the government of the time that it is used to its maximum, then BEA will probably be told to go and use the third London airport.

416 There are at the moment a very large amount of imponderables in making these assumptions. — There are indeed; and we are looking so far ahead that one must make some basic stands and work on those.

Cross-examined by Mr. Wood (Paglesham Parish Council)

417 Could I ask the witness whether fog, in the future, will still be regarded as a hazard? or whether it can be eliminated from contemplation? — There are methods of dispersing fog—fairly costly methods at the present time. But there is no technological reason why these methods should not become more efficient and cheaper to use. On the other hand, instrument landing systems and systems for guiding aircraft on the ground are being developed now, and will be developing constantly; and I do not believe that fog, as such, will be a major consideration in this airport.

418 But it still would be a consideration? — It would be a consideration certainly, and that is why I would imagine they would instal instrument landing systems.

419 There is a point under 1.2† of your submission, where you say that "no records exist of wind speed and direction at the exact site proposed but a study of the statistics for Shoeburyness, sufficiently adjacent to be meaningful . . ." I believe it is true that there are no statistics available for weather conditions at Foulness. — I have not seen any weather conditions for Foulness.

420 I am assured by many that that is so; and would you expect that there could well be a change in weather conditions between those at Shoebury and those at Foulness? — I am not a meteorologist, but I would have thought that the very close distance between the two would not have induced any appreciable change.

421 But it is a possibility? — I should imagine so.

422 The locals all tell us that there are considerable variations between one and the other. You suggested that it would be possible, from the air traffic control point of view, to tilt the runways north-south, in effect. — To a more northerly and southerly axis, yes.

423 Would you anticipate that the more north-south it is, the greater the danger is that an east-west runway would become necessary? — No. I did say in my evidence that with a north-south runway you could still achieve the figure of 95 per cent usability, and I would think it would be an uneconomic possibility to put the east-west runway in for the 5 per cent factor.

424 Would it be a tenable proposition that the more north-east the direction of the runway, the less utilisation you would get from the airport? — No, it is not necessarily so. As you come to a further east-west direction also, then the usability factor falls of. In fact, the alignment given on the Commission's maps CTLA 1/3 achieves the highest utilisation factor.

425 In fact, though, your report is based upon the site as suggested by the Roskill Commission—immediately offshore, and with runways generally speaking in a north-east direction? — Yes, it is.

426 And modification to your report would be necessary should there be any alteration in site or in runway alignment? — Slight modifications, yes.

427 Minor—but there would be alterations required? — Yes, I agree.

428 Thank you. On 1.8,* I think that is the next point on which I would like to ask you a question, you refer to this rerouting that you suggest, and you suggest that the additional flight distance for aircraft using that new alignment would be 12½ nautical miles. — I think you will know that I said "approximately".

429 Give or take half a mile or so? — It is very difficult to estimate that, because it does depend on the siting of the holding pattern and also the alignment of the airway which at present runs over Clacton. But I believe that this figure is a fair presumption.

430 But it would add, in fact, to the flight distances? — Yes, it would, on certain aircraft.

431 And thus the operating costs? — If you take it on a direct mileage basis, yes.

432 Don't miles relate to time, and is not cost related to the time the aircraft is in the air? — Yes, that is true; but air traffic control can of course hold an aircraft in the air due to congestion, and this can cost more than additional mileage.

433 But the operating companies would regard this as adding something to their operating costs? — Yes; but if they could achieve their optimum flight plan by

* p. 28.
† p. 27.

* p. 28.

Printed image digitised by the University of Southampton Library Digitisation Unit

routing along a slightly devious route, I think they would think that acceptable.

434 But if this site is located unfavourably, this would be another ingredient, and increase the unfavorability with which they regard this site? — Yes.

435 You would accept that? — Yes.

436 Your new Red 2, I notice, leads—in order to get the aircraft to join Red 1—perhaps over what you have proposed as one of the new development areas, South Benfleet and Thundersley. — Yes.

437 How high would that be across the coast? — Between five and six thousand feet.

438 It would still create a nuisance at that height—it is less than a mile up . . . — 6,000 feet is a nautical mile up, I think.

439 But they would still be a nuisance . . .

Mr. *Keene* I think you will get this information from the next witness.

440 Mr. *Wood* Would you agree that it is rather—to quote from Lewis Carroll, "the further off from England the nearer 'tis to France"—do you accept that the route would be from the middle of the Thames to the south bank, or the north bank? — The precise location of the route that I have shown has not of course been worked out, but I would expect that the routing would be towards the middle. The predominant amount of traffic on that route in fact would be turning up to the northwards and going up to the centre, and some would also be continuing over London airport itself and going out to the coast.

441 And would this be right: it will be into the coast routes when a north-east direction happens to be used for take-offs? — No, the routing would not be that far out. In fact the aircraft would join the final approach at approximately 12 miles out on the final approach.

442 12 miles out from where? — From the runway.

443 In which direction? — To the south-east.

444 It would bring them well over Kent for the approach run into the airport? — I don't think it would bring them over Kent. I am not suggesting any change to the approach routings from those shown on the Commission's map.

445 So far as the type of traffic you refer to in 1.11* is concerned, you suggest, don't you, that the major type of traffic using the new airport would be comparatively short distance European routes? — No, I don't suggest that at all. I am saying that on Amber 2 in fact going down to France this is so, but I am not suggesting that all the aircraft using the airport are high performance aircraft.

446 The present Heathrow would be likely to attract the short distance European routes because it is closer to London and that Foulness would be likely to attract the heavier longer distance and those bigger jets because the distance in time and the time and distance factor is not so important coming in from Foulness to London? Would you agree with that? — No, I am afraid I cannot necessarily agree with that because I am not an expert on airline economics. I don't think it is necessarily true because Heathrow is near London that all the short-haul aircraft will go into there.

447 The percentage of Jumbo jets and Concordes using Foulness is likely to be higher than that using Heathrow? — That is a very difficult question to answer because obviously they will attempt to achieve maximum utilisation of all three London airports, not just one in particular.

448 In 2.1* you envisage the possibility of the continuation of Southend airport, don't you? — Yes, I say that it can be considered.

449 It would be suitable to continue to use the present Southend airport for the present car ferry service or services and still have an airport at Foulness? — Theoretically it is possible. I think it would pose some complications to air traffic control which they would not like.

450 But not insuperable ones? — Not insuperable, but complications.

451 It would be possible in this case it would affect any possible bonus from the closing down of the airport? — I am only assuming the car ferries and the types of aircraft they are using at the present time, and by the time the new airport is open it is highly unlikely they would still be operating.

452 Under 4.1† great force has been put on these safety factors for taking on and off and landing over sea. Would you as an air traffic control officer accept that air traffic is the safest form of public transport at the moment? — As an air traffic control officer and as a professional man I would try and make it the safest, but I can't quote statistics on this.

453 I believe statistically it is so, would you accept that? — I would accept that.

454 Would you also accept that for a considerable portion of the day because of the tide the Maplin Sands and the Foulness sands are in fact dry land because there is no water on them? — That is the situation which pertains at present, but as I understand it from the plans for developing the airport by the time they have taken away the sand and the gravel in fact it will probably be covered by water most of the time.

455 I understood from some of the planners that if they took the sand away what they would put in its place would be a docks complex; from an air traffic control point of view would that be a desirable thing? — The dock complex as I understand it will go to the south where the preponderance of approaches is small but of course the preponderance in take-offs is large. Providing the obstacle clearance surface regulations were not infringed in any way I can see no problem.

* p. 28.

* p. 28.
† p. 29.

Printed image digitised by the University of Southampton Library Digitisation Unit

456 No problems from the air traffic point of view? – No.

457 Obviously from a safety point of view a 350,000 ton tanker discharging crude oil within half a mile of the end of the runway is not desirable? – From a safety point of view this may be so.

458 One further point. At the present moment I can find no reference or no clear indication as to where you envisage the stacking areas for this proposed airport would be, can you tell me where you envisage them being put? – Yes. The original work for this was done in our Submission No. 2* and I think you will see that one stacking area is reasonably near to Wethersfield and the other is near to Manston.

459 Could you re-define that in terms of towns and not airports? I am sure the Commission knows but the other people may not know where Wethersfield or Manston is as regards towns. In the Chelmsford/Benchley area on the one hand? – Yes, and Manston is more on the coast, of course, it is the Herne Bay/Margate area.

460 Would there be difficulties from the air traffic point of view of putting stacking areas out in the middle of the North Sea? – There are two problems here; one is that to achieve the maximum capacity of the airport you should have discreet holding patterns serving each landing runway. If you put two out in the North Sea then you have a long track into one of the runways, not such a long track for the other one. The other problem here is also the question of how to define this holding area. The holding areas which we have talked of in this paper are defined by ground-based navigational aids and the aircraft actually flies over the aid. If we put it out to sea unless we were about to site something of a ground-based navigational aid on some form of stable platform the only other way in which we could achieve these holding patterns would be by the intersection of two bearings from other ground-based navigational aids, and this is not an ideal situation. One other problem which exists is that the eastern half of England is reasonably near to Europe from an air traffic control point of view and we would possibly have difficulty in finding sufficient air space within the United Kingdom's own confines to put these two holding patterns.

461 So it is true to say that you as an air traffic expert say that the holding patterns would be in mid- to north-east Essex and on the north-east Kent coast? – These are the optimum positions for the holding patterns to serve this airport and to achieve its maximum capacity.

Cross-examined by Mr. Orchard

462 I think Cllr. Wood has stolen all the thunder, I was going to ask certain questions about stacking. There are two points that are not quite clear. I suppose that you have been looking well into the next century with regard to the stacking areas of this airport, Mr. Dunford? – Yes.

463 Could you tell me when the airport commences how many tiers there will be? If it was a two-tier system what would be the lower height and the top ceiling height? – I presume when you talk about two tiers these are the levels in the holding patterns?

464 Yes. – I think I should make one thing clear at the start. Air traffic control officers don't like putting aircraft into holding patterns, we only have to do this in order to adjust the sequence on to the landing runway and if this sequence can be achieved much further out, which is what we would be far happier to see, then we would not necessarily have to put aircraft into holding patterns.

465 But when we were talking at Stansted according to *The Times* stacking areas, or holding areas as you call them, stretch from well into Hertford to Wickham Market in Suffolk. Is this correct? – Yes. I didn't see *The Times* feature on this one. I think there are two points here. There is the holding pattern which is the path which we lay down and hope that the aircraft will fly along, but there is a holding area which is an air space which we must protect from other aircraft because the aircraft that are in the holding pattern can in fact be at any time anywhere within that holding area, and taking your point about the levels, in our Submission No. 2 we did say that the minimum holding level in this pattern over Essex would be 8,000 ft.

466 Just one . . . – No, this is the minimum level; the upper level will depend on many other factors, but when you consider we can hold aircraft at 1,000 ft intervals we can get a tremendous number of aircraft into the holding pattern. We would not like to do this.

467 You feel there would be probably two or three tiers looking well into the next century in this airport? – I am sorry. I don't understand your reference to tiers.

468 With the increase of traffic on this airport, is it likely there will be two or three tiers in the stacking areas? – At any one time?

469 Yes. – This is a possibility, but as I say, we will try and achieve the sequence much further out, and systems which are being developed at the present time would enable us to do this.

470 *Inspector* I am not quite understanding that question. When you mean "tiers"—do you mean there will be more than one aircraft in the stacking area at the same time or more than one system of aircraft? I did not quite get it?

471 Mr. *Orchard* Probably the expert will explain to you, sir, what "tier" systems are in stacking areas. – We don't use the expression "tier" systems, but I think I take your point. You mean there would be one aircraft at 8,000 ft, one at 9,000 ft, and one at 10,000 ft.

472 *Inspector* This is the normal procedure; they are stacked vertically; this is the normal procedure. – Yes.

* Essex and Hertfordshire County Councils. Submission No. 2, Statement on proposed sites. October 1968. Available for inspection at County Council Offices, Chelmsford and Hertford.

Printed image digitised by the University of Southampton Library Digitisation Unit

473 Mr. *Orchard* What I am trying to establish is: looking well into the next century, with these aircraft and tier systems, they are going to increase the noise—that is what I am trying to get at.

474 *Inspector* Are you trying to establish how many aircraft there might be at any one time at 8,000, 9,000, and 10,000 or 11,000 ft?

Mr. *Orchard* I would like to know this.

475 *Inspector* The maximum number in any one stack. — This is an extremely difficult question to answer. I can't honestly say what is the maximum number we would have in a pattern.

476 Mr. *Orchard* No, but this is going to build up over this area the noise with the tier system, and possibly build up over many years; is this not correct? — I can't speak of noise. I can only speak about the number of aircraft we might get in this pattern, and as I say there are systems in development which will enable us to achieve the sequencing.

477 I would have thought it was obvious there is going to be noise if there is going to be more tiers in the stacking area. — But I have not said there will be more tiers in the stacking areas. What I have said is that we use holding patterns to achieve a sequence with the landing runway so we can space aircraft at set distances one from another. The only reason we have to use holding systems is because aircraft are accepted in the national air traffic control on an ad hoc basis from other air traffic control systems, so we have to accept what we are given, the separations we are given of these aircraft, the number of aircraft at any one time, at the present time, but there are developments which are available now which will enable us to take aircraft into a much more regularised basis so we can separate the sequences, we can keep aircraft at set distances further away from the airport, so we do not have to use the aircraft holding systems as we are using them now.

478 This is taken into consideration with the Concorde and the jumbo jets? — The jumbo jets make no difference, nor does the supersonic, because they both operate as normal commercial jet aircraft.

Cross-examined by Mr. Knowles (Rochford Rural District Council)

479 I only have one question—You show the flight path for take-off on your plan GD1* as travelling westward up the Thames Estuary, and then breaking off to the north-west. — Yes.

480 What reasons are there why that path should not be directed to the east, over the sea, turning a complete circle to get back on to the westerly heading, when the aircraft can achieve a greater height? — I am not sure I truly understand the question, but I can see one immediate problem here is that you are assuming that all your aircraft which want to go that way in fact will be taking off from the eastern-most runway, because if you do you will have some aircraft crossing over the paths of aircraft which are taking off from that eastern runway and going to the southwest. If you look at GD1* you will see aircraft departing from the easternmost runway will go down to the south-west and turn out to the south-east.

481 Is that an insuperable problem, that aircraft bound to the west should not be directed to take off on the easternmost runway? — It is not an insuperable problem, no, but it does cause some additional air traffic control complexities. This is merely one method. I have shown here in fact of getting over that—well, not getting over the problem, but achieving the maximum capacity of the airport with the minimum of complex to air traffic control.

482 Assuming it was decided to direct all west-bound traffic on the eastern runway; what other problems would there be to takeoffs being directed over the sea to the east? — One problem I can see is that if you take off to the west and turn back over the airport, going to . . .

483 *Inspector* Take off to the east. — Take off to the east, and turn back to go westwards, you are routing all aircraft which want to go to the west or north-west all in the same way initially, and thus restricting to a certain extent the capacity of the airport, but it depends very much where the radar system for the airport is situated, because you may well be directing them back into an area of radar cover which is very suspect.

484 Mr. *Knowles* I am afraid I don't quite follow that, perhaps I am dense. — If we have a radar system sited on the airport, radar can't see above itself, and therefore, if you bring aircraft back over the top of the airport you are going to lose them for a certain percentage of time in an area of no cover of that radar.

485 Surely, you can overcome that by directing them to the north of the airport rather than directly overhead? — You are assuming that they do a vast circle round the airport and go back to the west.

486 Yes. — This is a possibility, but it is not good air traffic practice.

487 By the time they get to the north of the airport you would expect them to be at a height sufficient not to interfere with landing aircraft. — You would have to ensure that they were at a height sufficient not to interfere with the landing aircraft; this would mean they would have to be at least 4,000 ft.

488 You would not expect such an arrangement to be upset by present established flightways, air corridors? — The only problem that I can see on that one in fact is that we have an airway coming from Belgium to the present reporting point at Clacton which comes up and would in fact run very close to the route you are suggesting, and this is a one-way airway from Belgium.

* See attached wallet of maps and diagrams.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. R. B. Smith (Rochford Parish Council)

489 When you were replying to Councillor Wood about stacking over the sea, you mentioned the difficulty of having some kind of identification point. Is that really such a traffic difficulty? We can have ships, we can have fixed platforms; isn't it possible to have fixed identification points over the sea? — Yes, I imagine it is. It must be a stable platform, of course but as I said, you would need two such points; and the siting of two such points, the holding area is a very large piece of air space, would be extremely difficult, I believe.

490 But it is not insuperable. — No, it would, of course, infringe on these airways, the airway which I just mentioned in fact. It is not insuperable to actually site a navigational aid on a stable platform.

Inspector Any other local authority? Any other authorities and institutions? Any site promoter?

Cross-examined by Mr. Purchase

491 Continuing on the last questioner's point, how far apart would the two location points approximately have to be? 10 miles? 50 miles? — Approximately 20 miles apart. I can't say exactly because it depends on the axis of the holding pattern, the holding areas, but I am talking about an irregular shape.

492 We are talking about the aerial estuary up to Harwich, across the same lighthouse; we are talking about distances of roughly a regular triangle of 50 miles or thereabouts—would that be the type of pattern? Does the airport form one of the apexes? — Yes. We would need that amount of air space.

493 I understand that you recognise two forms of approach: one termed a "mono", and the other I am not sure what it is called. We have two methods, one of which is in your evidence, which indicates it would need to be a mono movement—aircraft, that is, flying taking place in the one direction. — This is runway utilisation you are talking about now.

494 This is approach and departure. — Yes, this is using one runway purely for approaches and one runway purely for departures.

495 Yes. — Two runways for approach and two runways for departure.

496 Your movement taking place in one direction, whether it is departure or—which I understand is meant. — All movements must take place in one direction anyway, this is the way the wind is blowing.

497 I took the trouble the other day to go and see a Board of Trade representative who was at the inquiry earlier when Mr. Justice Roskill sat, and I did understand that was the way they were looking upon this. It is probably not decided. I was very interested when I saw this plan of yours falling into line, that is the first one GD1,* and it was rather thinking on the lines of the movement which you show directly westwards, because it would pick up with that of Heathrow, and the general movement pattern of the country, and you extended it and gave more information on the town map, but this one* on my desk today brings in this other word—I can't remember the other form, "Duo"—whatever-it-is; it is because north and south is the answer to what you have just given me, it would be on the wind. — The answer is that on GD1, we have shown the situation which would exist if the wind was blowing from the south-west, which it does for the majority of occasions. The other chart I believe you are referring to, you will find it is shown for approaches and departures to the south-west, and approaches and departures to the north-east. If I had shown that I would have had to produce another GD2 or a GD2 rather.

498 Do you feel in your thoughts the line shown directly west, as distinct from this on this other plan I am referring to, which is beginning to verge up into the north-west direction across Canvey, I suppose—In other words, movement from the south-west—proceeding up the Thames as distinct from one of slightly north up over the country—I am only interested purely because I can see two lines of thought in my researches. — I think if you refer to my paragraph 1.12, I make note there that in our Submission No. 2 we did propose some amendments to the existing UK airway system.

499 I see, it is a proposal. Thank you very much indeed. You see no difficulty from the air traffic control point of view, as I read your document, of siting Foulness over the sea. Do you see any difficulty if the strips of the estuary were sited further to the east? In other words, utilising more the tidal flats and not hugging the shore? If you have seen the Bernard Clark scheme you would know what I mean; it is further to the north-east. — No. As I said to the first questioner, I can see no real traffic control problems.

500 That is what we discussed in my question about location out to sea. — The question of the holding areas this only emphasises that—it may move them slightly further apart, but I should stress from an air traffic control point of view, having two holding areas serving these parallel runways sited on the same side is a bit awkward.

501 I don't quite follow. — Well, I did say originally that the optimum position for holding patterns to serve this runway configuration and achieve the maximum capacity is to have them at right angles to the airport itself.

502 I see. My last question is, assuming an airport was relocated over on to the site that has not yet been described by the Roskill Commission, that would be looked upon in greater favour by Air Traffic Control Officers in respect of any further over-development likely to take place to the south-west i.e. a port or what-have-you: in other words, the air strips would be pointing directly over the sea and not likely to fly over new installations. — There are air traffic control safe-

* See attached wallet of maps and diagrams.

* GD1 (see attached wallet of maps and diagrams).

Printed image digitised by the University of Southampton Library Digitisation Unit

guards which would have to be insisted upon from the point of view of cranes, etc., so they did not infringe the obstacle requirement.

503 You would restrict any development taking place to the south-west under statutory control lights and height of buildings; you would have control over what is built in direction of take off of the aircraft? — If these restrictions were not imposed it would have the effect of increasing the difficulty of approach to the airport, and it might have the effect of infringing the take-off climb surfaces which would not be allowed, so in some way there would be infringement, yes.

504 Somewhat undesirable, if you can avoid it. — They would not be undesirable from an air traffic control point of view, they might from anybody or building, yes.

Cross-examined by Mr. Hughes (Thames Estuary Development Company)

505 The present proposals for runway locations in flight paths shown on the Commission drawings are, of course, the hypothesis for this inquiry only, and as I understand your evidence it is your opinion that by slightly altering the location of the runways and altering the manner in which aircraft are routed, after take-off and before landing, it is possible to reduce substantially the number of people affected by noise; I think you give an example of modification in your plan GD1,* which Mr. Fleming uses for his map NFI,* to show the noise contours. In principle your evidence accords with that of the Thames Estuary Development Company which creates another system of modification and shown on their map TED 8B,† which was circulated this morning. I don't think this is the stage to compare the merits of the plan, but do you agree there is more than one way of ameliorating the noise contours by modifying runway location and flight paths other than shown on your plan? — Yes.

506 You have been asked about fog conditions at Foulness. Do you think that when, say, 8,000 acres of the flats have been reclaimed and other developmental work carried out at Foulness, the risk of fog would be likely to lessen rather than worsen in temperature? — Theoretically it should lessen, but it is a well known fact that wherever you build an airport, you have the worst fog conditions that you can find.

507 Would not the effect of increasing the land, or estuary, in fact reduce the risk of fog? — It should reduce the risk of sea fog, but not the other type of fog.

Cross-examined by Mr. Miskin (Burnham on Crouch Joint Clubs)

508 Sir, my clients sail in little boats and know nothing about aeroplanes at all, so I want some help from you, if you would be so kind. First of all: the make-up of the aircraft which will be likely, in all probability, to be using the third London airport when built is likely to be different from the make-up of the aircraft at present using London's Heathrow airport—do you agree with that? — No, I would not agree at all.

509 Let us consider it. First of all, we have just triumphantly built, together with the French, the vast supersonic Concorde, have we not? — Yes.

510 And that seems likely, if successful, to be followed up by further Concordes? — Yes.

511 The Americans have been considering a similar project, and the Russians have already produced one, though on a smaller scale. — Yes.

512 Do you think that there is a likelihood that in the future Concordes and similar supersonic aircraft are likely to be using the third London airport? wherever it is? — Yes.

513 And at the moment is Heathrow being adapted to take jumbo jets? — Yes. They can also take the Concorde, of course, and it will do so.

514 No doubt; and that means that it is envisaged that in the future jumbo jets will be using our airports? — Yes.

515 Which include the third London airport. — Yes.

516 At the moment, do you have any experience as a traffic control officer in the operation of jumbo jets or the Concorde? — No, but as I did say earlier, there will be no problems. Let us separate the two—with jumbo jets . . .

517 So far as traffic control is concerned? — Yes, as far as traffic control is concerned.

518 If you would go to your paragraph 1.8*—you say that it is calculated that the aircraft would cross the coast west of Southend at between 5,000 and 6,000 ft, that position being some 15 nautical miles from the end of the runway. — Yes.

519 Does the upward flight path of the aeroplane vary to some extent between the particular type of craft with which one is dealing? — Yes, between the particular figuration, yes.

520 It varies between the type of aircraft to begin with? — It could do, yes.

521 And if you have two aircraft of the same type, one with less people but able to climb more rapidly, some better equipped to climb . . . — Given a non-restricted climb, yes.

522 And over the sea . . . — I am talking about an unrestricted air traffic control, which is not affected by sea or land.

523 And with uninhibited speed of climb. — It can do.

524 So there are a vast number of operations which may control the rate of climb and the speed of climb. — Not a vast number. There are variations.

* See attached wallet of maps and diagrams.

† p. 247.

* p. 28.

Printed image digitised by the University of Southampton Library Digitisation Unit

525 A vast number to me. It would not be possible, of course, for you in any way to indicate at what time any particular aircraft would be likely to reach the 5,000, 6,000 ft mark? — I am sorry—I do not understand the reference to the time.

526 15 nautical miles roughly—you have aircraft crossing the coast at these heights, but they may have reached that height earlier . . . — Possibly.

527 Your broad view is that it takes that mileage to reach that height?—in general terms? — Yes.

528 And some aircraft will reach that height later, and others earlier? — No—I have taken here the types of aircraft which will be using this route, and I think that that is the average.

529 And if we reverse the situation, and imagine the wind in the other direction, and the aircraft taking off towards the north, then again we must anticipate 15 nautical miles with aircraft starting at zero and reaching 5,000, 6,000 ft? — Yes.

530 Is that the sort of situation? — Yes.

531 In the early period of travel, the aircraft is on the ground initially and it gradually goes up; the aircraft has a slipstream and the area behind can be affected by that slipstream when it is at ground level? — There are some published figures for this, in fact; I have not got them.

532 But they can be made available? — They could be, yes.

533 You cannot tell me? — Not at this moment. I cannot tell you the exact dimensions.

534 If the Commission thought it right to enquire, you could make it available? — Yes.

535 My sailors wonder to what extent they may be affected by the early stages of take-off of heavy and vast jet aeroplanes. You don't know; but you think you may be able to help us? — Yes.

536 *Inspector* If they were to go to the sailing lakes west of London airport they may learn something—there are aircraft taking off right over them all the time there.

Mr. *Miskin* I am sure that that is the one thing that none of them would contemplate for a single moment!

Cross-examined by Mrs. M. Boston (The Sheppey Group, Kent)

537 Mr. Dunford, there are three very simple factual questions I would like to ask you. Looking at the maps on the wall, in reference to the new proposed flight path along the Thames Estuary, I think in answer to earlier questioning you said that the flight path would probably come down the middle of the Thames Estuary—in fact, looking at plan GD1* and at the maps of the NNI there,† it is quite clear that the NNI maps were drawn up with a flight path very much nearer to the Kent coast, than the Essex coast. Is there in fact any technical difficulty in seeing that flight path slightly further north, so we have it on a tit-for-tat basis? — Technically, no.

538 The other two questions I would like to ask are relating to the holding pattern areas: the one holding pattern area which I understand should be over the area of Margate and Broadstairs. There are technical reasons, as you have explained, why it is better to have the holding pattern area over the land than over the sea; so, assuming that it remained in that area, the broad Thanet town area, can you confirm that, in order for the aircraft to latch onto the glider path on the approach from the south-west, they will in fact have to fly pretty well parallel with the Kent coast in order to latch onto that glide path? — You need to intersect the requisite glide path between 15 and 12 miles out from the end of the runway, and it will be directed to that point by a radar control. If we have the controlling pattern we have suggested, it will take off a fair proportion of that time over the sea.

539 For instance, from the holding area, they would fly parallel to about Whitstable or Herne Bay, and then go inland? — Somewhere of that order.

540 So, in fact, if the holding area were moved out to the North Sea, and it has become technically possible to do this, where would you estimate that we cross the Kent coast? — I do not estimate that we would. I think we must remember here that the percentage of approaches to the north-east is only about a quarter of what it is in the other directions.

541 But from that holding area, at one in four then, on average, they won't in fact have to go down to the south-west, to land from the south-west, and in order to get to that holding area to the point in the south-west, where they line up, they won't have to pass over the Kent coast? — Yes, but they would be fairly high at this stage.

542 Somewhere between—what? — It depends on the lower level of the holding area; but let us assume that they come out from the lower level. We suggested that that was 6,000; they would join the extended centre line of the runway at 3,000 ft.

543 So it may be about, as it were, between those two? — Yes, you could say that.

544 Somewhere about the Whitstable-Herne Bay area? — Without looking at it in detail, roughly—yes, this could be so.

545 And when they do come in over the Kent coast—how far inland would you expect them to circle? in order to line up? — This is, arriving from the South coast?

546 Yes. — In fact, they should be leaving the holding pattern and flying almost due west; and once they have crossed the coast at Herne Bay, out-bound, they would go back into Kent again.

547 But they are in Kent. — If they are going from the holding area to join the extended centre line. They leave the holding area, which is over the land, and then they cross out over the Kent coast to intercept the extended centre line.

* See attached wallet of maps and diagrams.

† NF1 (see wallet).

Printed image digitised by the University of Southampton Library Digitisation Unit

548 But from Whitstable they will in fact have to fly over the Kent mainland. — No, I do not think so.

Inspector They are 12 miles or 15 miles from the extended centre line.

Mrs. *Boston* It in fact comes to the marshes south of the Swale, it would be between the Isle of Sheppey in Kent and the mainland . . .

549 *Inspector* So, if this is so, the aircraft would come over Kent? — Just very shortly, possibly, without measuring it exactly . . .

550 Mrs. *Boston* I have measured it accurately, in fact. The actual joining-up point where they must be in line is over the marshes just there on the map, with the big pink mark on it.

551 *Inspector* So the point of your question is, the aircraft would have to come across the coast at Whitstabel and you want to know the path . . . Mrs. *Boston*: Yes–I think it would probably come over Faversham and Sittingbourne.

552 Mr. *Dunford* I don't think that they will in fact go down as far as Sittingbourne and Faversham. Twelve nautical miles is the point that we aim at. We can accept they go down to about 10 nautical miles and I don't think in fact 12 nautical miles will mean they go down as far as Sittingbourne or Faversham.

Inspector Any other questions?

Cross-examined by Mr. King

553 I wonder if the witness could give us an indication of his experience of major airports which are sited on a peninsula, whether there is any other example of such a configuration of a major airport? — Yes, I can think of one instantly, Bahrain in the Persian Gulf in fact is situated on a peninsula just like this.

554 That is servicing how many people? — I have no idea. It is an international airport, in fact on one of the main trunk routes.

555 That is in fact an in and out airport as opposed to an airport servicing a large community? — If you mean it is an airport which is largely transit traffic, I would agree with you.

556 Would you anticipate not having actual experience of this that an airport servicing a large community as this is intended so to do is likely to have a considerably larger number of what used to be feeder liners and now apparently called inter-airport traffic than is normally the case? — Inter-airport traffic of course in this context means traffic between the third London airport and the existing Heathrow and the existing Gatwick. Airport or inter-line type traffic or feeder line type traffic is not the same thing.

557 Is it not possible that you will get a lot of people coming in from Castle Donnington, from Luton, from Gatwick, from Hurn, all coming into this one airport which I submit is likely to be London's no. one and not London's no. three? — There is a possibility of that, yes.

558 When this was brought up with you before you said this traffic would be discreetly routed. I wonder whether you could tell us in any way how you envisage that this route with a larger than normal amount of either feeder line traffic or inter-airport traffic would be discreetly routed? — I am afraid you are quoting me out of context. What I was talking about originally in fact were VTOL type aircraft between the third London airport and Heathrow and Gatwick. I was not talking about aircraft feeding this airport from Castle Donnington, Hurn and the other airports that you mentioned. These would be more the conventional style of aircraft. I was talking specifically about VTOL short-haul aircraft.

559 Let us talk about fixed-wing aircraft landing in the normal way. How will they be re-routed? — By the normal air traffic control system.

560 You would anticipate them following the same routes? — Yes.

561 You would not anticipate them in any way being discreetly routed, as you put it? — No. They are a different type of aircraft than the others completely.

562 If we go back to the others, this is the inter-airport traffic, how do you anticipate routing this, under the flight paths of the other aircraft? — Certainly the type of vehicle that we were thinking of then, the economics of operating it demands that it be operated at low level, the shortest distance between two points being a straight line, and if we can do this without going too high it is obviously then the fastest method of getting from A to B. They would certainly be routed at reasonably low level.

563 We are talking about large helicopters? — I would include large helicopters and also aircraft which could operate off very short runway lengths.

564 Such aircraft as the Fairey Rotodyne? — It was years ago.

565 And these are noisy aircraft? — The Fairey Rotodyne was a fairly noisy aircraft.

566 We are talking about aircraft we don't know? — I don't think so because there are large helicopters in scheduled public service today and there is no reason why these could not be used for interconnection between these airports.

567 On 2.1* on the effect of Southend airport you cited Denham as an example of the sort of airport which is operating close to Heathrow. Would you agree that Denham is in fact a flying club airfield? — No, I would not agree that it is a flying club completely. There are flying clubs but there are operations into and out of Denham which are not connected with the clubs, Gregory Air Services, for example.

568 Commercial operations? — Yes.

569 Some executive type aircraft? — Well, when you say executive aircraft use it, these range from small two-engine light aircraft at Denham, in fact.

* p. 28.

Printed image digitised by the University of Southampton Library Digitisation Unit

570 You see, in answer to an earlier question you gave the impression that it was possible that Southend airport would remain a commercial airport, but in your evidence it would appear to me that you are suggesting it cannot. — I am not prepared to put the term "commercial" to the test. It very much depends what the airport authorities want from the airport. If it is merely used as a flying club it gains some revenue from it. This may be a commercial proposition, I don't know.

571 Just one other thing. Would it be fair comment to say that air traffic control take a pretty poor view of any noise abatement procedures? — I cannot speak for the pilots—I had better not speak for the pilots, it introduces complications to air traffic control.

572 Would you anticipate that there would be any noise abatement procedures necessary at Foulness? — No.

573 Would you anticipate that there would be any limitations on the night operations at Foulness? — Not if the proposals which we put forward were followed, no.

574 Do you anticipate that something like the Concorde will be operating from Foulness always taking off with its full re-heat? — I can't say that it will always take off with full re-heat. No-one has operated the aircraft properly in that respect.

575 In fact, the contours relevant to the Concorde could not at this present moment be drawn because we don't know whether it will be operating or not? — There is always a bonus with this type of aircraft, of course, they do climb much faster than existing transport jets; they get off the ground and into flight more quickly.

576 We have had in your evidence and had today a lot of talk about the airway system. Would you not agree with me that the placing of a major airport of this description in this position is quite likely to lead to a complete change in the accepted airway system over this part of the country? — No.

577 Why? — Because as I have said the air traffic control system could accept traffic from this airport on its present layout.

578 But is it possible that this could take place? — I think it was a planned change.

579 But nonetheless it did radically change the lines of the airways? — It changed the routings within the terminal control area, it did not change the airways themselves.

Cross-examined by Mr. Purchase

580 Would you agree with the statement: "Experience of aircraft failures approaching and taking off over water proves there is every chance of saving most of the occupants whereas similar occurrences over land have shown likelihood of large fatalities"? — I think you say experience of aircraft failures?

581 Failures, yes, or crashes. — Certainly there are some published statistics which show the number of people that have been rescued from aircraft which have landed over water and there are also statistics of people rescued from aircraft who have landed short or have crashed on take-off and of course if these are compared then you can draw some conclusions from them, but of course you must be careful here to note that there are far more airports that have approaches over land than they do over water, but generally speaking I would agree with you, it is safer to land over water than it is to land over the soil.

582 One other statement: "As it is obviously desirable for the London third airport to be entirely expandable to sizes beyond those possible at either Heathrow or Gatwick the reclamation area unaffected by land problems is offered to be an unlimited advantage". Would you agree there, that expansion is a great advantage from the operational considerations knowing they are not going to have much opposition around if they wish to expand this within the method of control? — From a commonsense point of view, yes, I would agree.

Cross-examined by Mr. Bryant

583 I would like to ask how often these holding areas at London airport are used, are they used daily or can the traffic flow be brought in without using the holding areas? — I did say earlier the existing air traffic control system has to accept aircraft from other air traffic systems at their discretion so we get peaking and these are what the holding areas are used for. Certainly there are times the holding areas are used but at other times the aircraft are brought direct on to the approach.

584 Are these used once a week or daily? — They are used every day.

585 So that the holding area for Foulness would be used and you anticipate would be used daily? — No, I hope that we would not have to use them daily. As I said earlier, we do not like using them and if these other systems I mentioned, in fact, have been introduced before then, then there may not be any need to use them other than on an infrequent basis.

586 *Inspector* One point, Mr. Dunford. The existing holding areas at Heathrow, they are 5,000 feet up? — Yes.

587 Why were Essex and Kent favoured with 8,000 feet holding areas as against 5,000 for Heathrow? — It is a function of track miles from the holding patterns to the point where you intercept the glide path and localiser. In fact they are held lower at London at the present time. I think they could be raised.

588 It is a function of track patterns, not of capacity? — As I said earlier we have the ability to hold them at 1,000 ft intervals. If you start off at 8,000 ft and go all the way up to the normal operating levels of aircraft—26,000-30,000 ft—we can have a tremendous capacity.

589 At a certain height you start separating them? — It is above 29,000 ft, but if we get to the point where we were holding that many aircraft in a pattern, we would be in great difficulty.

Printed image digitised by the University of Southampton Library Digitisation Unit

Re-examined by Mr. Keene

590 This must be right as a matter of mathematics: the stacking areas you are suggesting to serve the third London airport at Foulness are some 2-3 thousand feet higher than the existing stacking areas for Heathrow? — This is so.

591 And you know insofar as there is any noise nuisance to reflect Mr. Fleming has reflected it in his noise contours? — Yes.

592 You said in answer to one of your questioners that the positions you suggested for the stacking areas are the optimum positions for them. Do I understand that these are not the only possible positions? — This is true, yes.

593 One can vary to a certain degree? — Yes, indeed.

594 You were asked right at the beginning of your evidence by the Inspector in fact that you have not in fact shown on the chart GD1 which is the route from the west runway taking off to the south-west and for a very tight turn to go up towards the north, north-west and north-east. Is that in fact very much a second track as far as you are concerned, taking the route out on the airstrip? — Yes. I should say I would only consider that route in fact for the small percentage of traffic which would be going out to the east, to Scandinavia, not for all of the traffic going out from the north-west and to the north-west.

595 It was I thought suggested to you that you had been a little presumptuous in daring to suggest amendments to the Commission's routes as they appear to have been brought. The main amendment that you have suggested is of course this straight ahead route along the estuary? — Yes, indeed.

596 Is there very much doubt about where that particular traffic is going? — None whatsoever.

597 The imponderables that you agree exist such as the future intentions of BEA, do you imagine those imponderables applying solely to the Commission's experts who have been working on this? — I am sure much more so than myself.

598 We are all having to do a certain amount of prediction in trying to forecast noise contours and so on? — Very much so.

599 You were asked about the way in which this route you suggested crosses the South Essex coast and goes off, I think, near South Benfleet; is this something which as far as you know, Mr. Fleming has taken into account in his NNI contours?* — Yes.

600 So if there is any noise nuisance you will see it on his plan? — Yes.

601 On a plan, you agree, it is possible to have car ferries from Southend, but there were, I think, grave practical difficulties—I think that is the tenor of your evidence. I see in your evidence in paragraph 2.1† you refer to general aviation traffic. What do you mean by that? — Light aircraft and small aircraft of the twin engine type, not commercially scheduled operations necessarily. I did make the point about the car ferries—my answer to the car ferry question was based on the existing types of aircraft, and I don't believe, or I seriously doubt, they would be operating by the time the third London airport is opened.

602 A number of suggestions were put to you on behalf of the Rochford Rural District Council, about possible alternative routes for take-off, including some that came back and circled the airport. Do I understand the main function of traffic control to be to ensure that operations are carried out in the maximum possible conditions of safety? — Yes, safe, expeditious, and orderly flow of aircraft.

603 I am obliged for the full definition. And anything that adds complications is regrettable, and undesirable? — Yes.

604 Would the suggested route of circling across the airport add complication to the system and design of the airport? — I believe it would.

605 I think it would probably also add mileage and expense, if you were circling right out to the east and back and across? — Yes, taking Mr. Wood's definition of it, yes.

606 You were asked by Mr. King, I think it was, about inter-airport services and connections; is there in fact a helicopter service which is operated from Heathrow to Battersea, I think following roughly the line of the Thames? — There is no scheduled helicopter service, but this is the normal route for helicopters from Battersea to Heathrow. In fact the helicopter lanes are right down alongside the Thames, and alongside the M4 and sparsely populated areas.

607 That means it is pretty close to being directly underneath the approach path of Heathrow? — In fact Battersea heliport is directly under the approach to one of Heathrow's runways.

608 This operates satisfactorily from the ATC point of view? — Yes.

609 In so far as the noise table is concerned about joining the flight paths when approaches are being made from the south-west and north-east, that again no doubt is reflected on Mr. Fleming's noise maps, is it? — Yes.

610 One last thing. You agreed with a lot of suggestions put to you by my learned friend, Mr. Ogden, appearing for Southend, as to what can be done about shifting the alignment and the position of the runways from an air traffic control point of view. Do I gather from that you consider this site of Foulness to be a good site from an air traffic control stand point? — Yes, I do.

Inspector I think we will have a short ten minutes adjournment before the next witness.

(A short adjournment)

Mr. *Frank* May I call Mr. Fleming.

* NF1 (see wallet).

† p. 28.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. NORMAN FLEMING,* called

examined by Mr. Frank

611 You are Norman Fleming. You are a Master of Arts of the University of Cambridge? — Yes.

612 Acoustical Consultant to the Greater London Council? — Yes.

613 A Director of the Acoustical Investigation and Research Organisation Limited? — Yes.

614 And a member of the Sub-Committee on Aircraft Noise of the British Standards Institution? — Yes.

615 You were formerly Head of the Acoustics Section of the National Physical Laboratory? —Yes. There is an addition sir, to my written evidence which I think should be mentioned.

616 Is there? — Since the evidence was completed, sir, I have been given the names and sites of a number of schools in Kent, and I have carried out assessments of the noise incidents likely to occur at those schools, and an addendum to my table NF3 has, I think, been circulated. I should perhaps explain that it is in a slightly different form from the table NF3. I have not attempted to calculate the actual number of incidents, but I have indicated only when that number is likely to exceed 30 in an average day. Also the range of PNdB numbers has been slightly changed. The tables circulated—no, it does not really matter on the tables circulated because there are none over 94; it does not come in.

617 *Inspector* I think for the Commission I should point out that in the Foulness study material it was stated that the noise, the NNI contours, the NNI numbers had been calculated on the basis that certificates might reduce levels by 10 PNdB in due course. In the Cublington† material we have slightly added to this explanation by saying it has been assumed in the NNI contours that noise certificate regulations will be introduced that will lead to a reduction in the noise effective aircraft by 10 NNI over the next twenty years—and this is the important sentence: But that half this reduction will be off-set by growth in aircraft weight. Now, although that last sub-sentence was omitted from the Foulness material, nevertheless the NNI contours did take into account the same consideration, half the reduction will be offset by aircraft weight.

618 Mr. *Frank* I am obliged to you for mentioning that, sir, but, now I would like Mr. Fleming to comment on that. At the time when these contours were prepared, we assumed that the Commission would take the view there would be a reduction of 10 as a result of certificates. In what way have your contours been influenced by the Commission's statement? — Not influenced at all, sir, because we had assumed that the contours as drawn for the four-runway airport would have taken correct account of what is expected from noise certification, and that is that although the noisier aircraft will be reduced by about 10 PNdB, owing to the fact that smaller ones will disappear and be replaced by bigger ones, the average reduction will not be so great, and in out Submission No. 2, I think I did at that time say I thought the difference would be about four or five only.

Cross-examined by Mr. Ogden

619 There is very little I need ask you, Mr. Fleming. Quite plainly, if one can so adjust the positioning of the runways so as to move if possible the 40 contours off both the Essex and Kent coasts, so much the better for everyone. — So far as noise is concerned, yes.

Cross-examined by Mr. White (Kent County Council)

620 I wonder if you can clarify some confusion in my own mind regarding paragraph 6* of your proof of evidence, there seems to be some difference between your own view and that of the Wilson Committee† relating to night levels of noise annoyance where you state that the Wilson Committee considered there should be a lowering of the criterion of 15 to 20 NNI, and you suggest 10 instead. — No. I have not suggested 10. What I have said is that there will be some reduction because of fewer aircraft during the night, but it would require the reduction of down to one-tenth to one-twentieth of the traffic for it to get its full reduction of 15 to 20. I don't think there will be such a great reduction of traffic during the night, but it would be reasonable to consider 10 NNI lower in the night time.

621 The Wilson Committee's report, of course, was based on a survey at Heathrow some seven or eight years ago — Yes.

622 Is it true to say in those last seven or eight years the number of night flights at Heathrow has increased very greatly? — I think not very greatly because they have been limited.

623 Do you agree there is an increasing trend towards night flights? — I think they would like to have more night flights, yes.

624 Do you agree there will be a much higher proportion of night flights at a third London airport at, say, Foulness, when operational, than there were in Heathrow in 1961? — I am not really competent to answer that question. I can say that if there is a great deal more night flying well then the NNI difference between night and day will not be so great.

625 You also agree that the Wilson Committee's criteria as to how aircraft noise affects others were deduced near Heathrow Airport? — Yes.

626 Do you agree there may be a difference in people's attitudes at an airport in the vicinity of an airport off the Essex coast? — To a certain extent I think it is possible, but we require really many more social surveys carried out under different circumstances before we can determine that, and we still await the

* See also p. 30 (amendment incorporated.)

†*Site Information for Stage II Local Hearings. 3. Cublington (Wing).* (HMSO; 6s.)

*p. 30.

†Cmnd 2056 (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

results of social surveys carried out in this country and the USA.

627 But is it reasonable to assume that there is in fact less background noise in many of the areas which would be affected by aircraft noise round Foulness than there is round Heathrow? — It is reasonable to assume that, yes.

Cross-examined by Mr. Wood

628 Can I ask a question, Dr. Fleming, on tidying up the evidence given yesterday by Mr. Jennings Smith; I asked it of him because it is wrong, the NNI, and I think he provided figures on which the contours were based—I can't quite work out the arithmetic in the amendment that we were given yesterday afternoon, paragraph 4.2.* For the figures 34-45 these contours were amended to 52,400, and (c) to 43,800. Throughout the whole of this inquiry the dating point, as it were, has been the Commission's proposal as to the site; therefore, any comparison to be drawn later should be under (b) of that column, according to my reasoning, and not involve the figures under (c). If you accept that, paragraph 7.4, the last sentence is incorrect. The sentence which reads: "Between 34-45 NNIthere would be 19,800 more people affected by noise than at present", that comparison has been made with (c) which is an inspired estimate by the Essex County Council, and has nothing to do with Roskill, and the figure according to my arithmetic should be 28,400.

Mr. *Frank* That gentleman is under a misapprehension; there is nothing about an inspired estimate here. It is a factual count of the number of people in a population within those contours which has been taken from them by counting, and there is no inspiration about it at all.

629 Mr. *Wood* But if I may say, on the position of the runway layout envisaged by the Essex County Council, and not based on an off-shore site such as we are talking about in this present inquiry—So long as the point is taken that on one basis an extra 9,000 people are involved; you would accept that, surely?

Mr. *Frank* No . . .

630 *Inspector* I think what is being said is that within the contours, as defined in (a) (b) and (c), counts were taken of the number of dwellings, and on an assumed occupancy rate of three persons per dwelling these figures emerged.

631 Mr. *Wood* Yes, but on the assumption of a site as envisaged by the Essex County Council, and not an off-shore site as envisaged by . . .

632 Mr. *Frank* Shall I correct this, sir or will you? There is clearly a fundamental misapprehension. We continue with exactly the same site, the only alteration between the proposals we show and those shown by the Commission is alignment of runways.

Mr. *Wood* So we are not comparing like with like.

Mr. *Frank* Alteration is quite right . . .

Inspector I must confess I can see no possible shadow of doubt about what this means to say. I am a little lost on the point you are making.

633 Mr. *Wood* We have so many proposals before us, and throughout this inquiry we have been trying to show whether all the reports are based upon the four-runway alignment immediately off-shore at Foulness.

634 *Inspector* Go to paragraph 4.2* (a) is for a four-runway airport, as in Submission No. 2. That was not the submission no. 2 in the Essex first submission to the Commission. The second one which is for the Roskill proposal as published. The third one is Roskill amended by the alteration to flight path, but ignored the sore thumb—am I right about that?

Mr. *Frank* Yes.

635 Mr. *Wood* So we are not comparing like with like. There are two figures where they are possible to insert in that last sentence, 19,800, if you accept the elimination of the thumb; a figure of 28,400 if the thumb can't be eliminated and remains.

Inspector Yes.

636 Mr. *Wood* So long as that point is accepted, because there are 9,000 extra human beings affected by it.

Mr. *Frank* That is right.

Mr. *Wood* Thank you sir. Can I ask as a complete laymen as to how accurate are these NNI ratings, plus or minus, or what sort of percentage errors are envisaged? — I think that is rather a question for the Roskill Commission because I have accepted the contours they have got, and simply extended them down to 35 NNI, and we don't know the actual basis upon which the contours given by the Roskill Commission have been calculated.

638 But the lines are blurred. There is not a definite fence. — In any calculation of this kind one has to make assumptions as to the number of aircraft and types of aircraft and so on. The calculation can be carried out accurately; the question is how accurate are the assumptions made on the number of aircraft and types, and so on.

639 They fall, as in a planner's figures, within a bracket. — Yes, I would not say that one could be certain that on this point you will get 35 NNI and not 34, but then it does not really matter because you would not notice the difference, I think, between 35 and 34.

640 If you are counting houses, can you say that count can be inaccurate? — Yes, it could. It should be a rough round figure.

641 I believe this figure, the information from which this NNI rating was obtained for a survey carried out in the immediate area of London airport? — Yes.

642 How relevant would the information so obtained be to the completely different physical characteristics of

* p. 15.

* p. 15.

Printed image digitised by the University of Southampton Library Digitisation Unit

the area round Foulness? — To a large extent it will be relevant. Where you are living in a built-up area, and there must be a large number, even though they are only villages, you get a certain amount of traffic noise and so on, and I think the findings round Heathrow would be relevant to those circumstances; to what extent they are relevant to the quiet countryside nobody can say, and we need more social surveys, under such conditions, before we can find out, but there are certain effects of noise which are the same whether you are in the town or in the quiet countryside. If the noise is sufficiently loud to be well above the background then it is just as annoying in town as in the quiet countryside. If the noise is sufficient to cause interference with speech it is purely the level of the noise, and not the level of the background which matters.

643 But there are certain basic physical differences between the Foulness site and the area alignment around London airport. Do you accept that flat land and a flat expanse of water make a more ideal medium for the wide spread dissemination of noise and noise nuisance than the more undulating and built up area around London airport? — In so far as you are talking about the noise from an aircraft on the ground I agree with that; but once the aircraft has got up to a reasonable altitude the flatness of the land—whether it is flat land or water—does not matter.

644 I must accept that. There is one further physical phenonema in this area, which our scientists working around Foulness assure me is raised temperature inversion and its effect on sound—I wonder if you can explain it to me simply? I believe in fact that this results in a much wider dissemination of noise and tends to concentrate its effects. To quote an example—there are three establishments at Foulness involving firing and explosions, and they have at times to be halted because in the past windows have actually been shattered at Clacton when this phenomenon of temperature inversion is warping and twisting the conditions. Could you give us . . .? — Yes. These are very occasional phenomena. Normally the temperature falls as one goes upwards from the ground, and in temperature inversion conditions you can come to a place where the temperature rises again, and since sound travels more rapidly in warm air than in cold air, that temperature inversion tends to move the sound down again. It is usually found only with explosion sounds. You may get no noise heard, say, at five miles away, but it may come down again at ten miles away. But I do not think it is at all applicable to aircraft, because this is a temperature inversion very high up in the atmosphere.

645 I am chary to disagree with you; but once again, basing my opinion on scientists working in that area, I thought that the height where this phenomena occurs can be as low as 6,000 ft; and they take it seriously enough to have, based on the north of the Crouch, vans which are in communication with the establishments, warning them when these conditions are in existence, and they cease firing. — It is possible that you get it at lower levels, yes; and the sound comes down at shorter distances; but again I do not think it is applicable to the sort of noise you get from aeroplanes.

646 Not even operating at low height? — I should think, if it did occur, it would be of such infrequent occurrence that you could not take any account of it.

647 Because your standards have diminished the NNI figures between 10 and 15, assuming that certain things may happen to aircraft engines in 20 years' time, would it not have been a safe assumption that consideration should be given to this effect of temperature inversion on that sort of aircraft? — The NNI contours are for average conditions, and I would expect that if anything of this nature does occur, it would be so infrequent that it would not affect the average.

648 It depends what the average is. — If you get anything very infrequent, it won't affect the average.

649 A few other points: I have not seen drawn anywhere what the night-time NNI contours would be. Do you know if any are in existence? — I do not think the Commission have issued any. It depends entirely on what is the number of night flights, the types of aircraft which will operate at night, and the routes which they will follow. It is always possible, when you have got fewer aircraft operating, as you would expect to have, at night, that you might be able to make some alterations in routing, in usage of the runway, which could reduce noise at night.

650 But it would be a safe assumption to draw, that the NNI contours for night would occupy a certainly larger area than those we have been shown on all the plans that are available to us? — I think it would certainly be larger, yes.

651 Likely to have more? — The NNI contours would come in closer, but you ought to take account of the NNI contours out to a wider area. You should take account of lower numbers.

652 So more human beings would be affected by the re-alignment of the contour? — I have suggested that at the 35 NNI contour at night would be roughly equivalent to the 45 contour. It is difficult to explain. The daytime 35 contour would at night-time have the same sort of nuisance as the 45 day-time contour.

653 With reference to this question of the use of London airport three for night flying—it would be safe to assume, would it not, that as this airport is likely to deal with the long distance airlines, unless we can persuade other countries to operate their airports at night so ours can be open only during the day, that we must fit in with the convenience of other countries and so it is likely that this airport will be open for 24 hours a day? — It is not a question I am competent to answer, I think.

654 But that would be a safe assumption, would it not? — I do not know. I have not studied traffic figures over the years and what does happen about it.

655 And would you accept that noise certification—the lack of any attempt at noise certification—at the Foulness site would be one of the attractions of the site

Printed image digitised by the University of Southampton Library Digitisation Unit

to airline operators? — Noise certification is not concerned with the particular site. It is concerned with aircraft. The idea is that aircraft should not be certified, not permitted to fly, unless they comply with certain noise limitations, and that would apply to aircraft and not to particular airports.

656 But operating routines vary, don't they?—from airport to airport, and strictly related to the siting of that airport? — Certainly, but that is not the concern of noise certification, which is to reduce the noise.

Inspector The point you are making is operational constraints because of noise considerations?

657 Mr. *Wood* Yes. One further reference, on page 3*—you make, as so many people do, a reference to the bonus likely to be incurred by the closing down or inhibition of operations from Southend airport. Now, one speaker yesterday, if I remember rightly, managed to equate 10,000 people being saved the nuisance—with 10,800 being given a nuisance at Foulness, he was reported as saying that no one would be given any nuisance at Foulness.† Accepting, just for the point of argument, the fact that this bonus is an important point, there is an overlap between the NNI contours of the present Southend airport and the thumb, if the airport comes to Foulness. Have the people still living where the two areas coincide to be excluded from the number of people who might be put to use as a bonus factor if Southend airport is taken into consideration, or is the calculation using these? — No, I do not think it is using those . . .

Inspector This must be a counting question.

Mr. *Wood* So long as an answer can be given . . .

Mr. *Frank* This was in Mr. Jennings Smith's proof of evidence. It should have been put to him—he is not here today.

658 *Inspector* Could he be asked whether the double figure has been given on this?

Mr. *Frank* It is obvious that it has not been.

Mr. *Wood* I am afraid that I cannot accept that.

659 *Inspector* Would you be happy to get the answer in due course as a matter of counting?

660 Perfectly. We have had so many amendments to figures. Mr. Fleming, this is the last point: has any consideration been given to the dissemination of noise from the road and rail links which will be built from the airport to areas west? — Not by me, no.

661 Would you accept that, if the road and rail link is put above ground—raised, in other words—in some schemes it could be 40-50 ft above ground level—that the noise nuisance level will be significant from the links? — The noise from a road on a viaduct is certainly greater than if it were in a cutting.

Cross-examined by representative of Rochford Parish Council

662 I have just one question: with regard to the 35 NNI that lies close to the coast on the front at Southend. Do you agree that it could be possible that this 35 line could be increased? — It is equally possible that it could come the other way. This is a sort of average, the best estimate we could make.

663 Do you agree that a lot of evidence has been given already based on assumptions and guesswork? — Assumptions: but I would not call it guesswork.

664 Would you agree that there is a considerable side effect from the Concorde aircraft? — It is accepted, and I do not know that any real measurements have been made yet, that the Concorde will produce more noise to the side than present aircraft. It in fact will produce more noise than present aircraft, but it will be confined to the side because it will climb more rapidly and get to greater altitudes and will not be any greater below the flight line.

665 And this could possibly be the same with future aircraft, bigger aircraft? — No, I do not think so. The Concorde is in a class of its own—a supersonic aircraft.

666 But we are going to get Concorde at this new airport. — I should expect so, yes.

667 So therefore, looking at the font of Southend—the Southend Council do in actual fact encourage many many thousands of visitors each year, and if there is a possibility—you say that between 45 NNI and 35 NNI contours, moderate, going down to a little annoying—if there is going to be a lot of side effect on Concorde, and the Southend Council do in actual fact encourage many many thousands of people to come into their areas each year—is this going to be annoying to visitors and damaging to Southend as a holiday resort? — If the aircraft are flying down the middle of the Thames Estuary, I accept that the Concorde would be the one who would give the most noise; but that is presumably taken into account in calculating the Commission's contours—the others would be less, in order to give that value of NNI along the Southend coast.

668 So you do agree that when these aircraft take off, should they take off from Foulness, with the heavy side effect noise it could increase the NNI from 35 to 45 plus for the residents on the beaches of Southend? — No—that is not what I said. I said that I expected that the characteristics of the Concorde noise would have been taken into account in calculating the Commission's contours at 35 or 40 NNI—they only went to 40. The Concorde to the side perhaps would be the predominant noise, the others would be correspondingly less. On the average, your noise would be correspondingly low—you would get a few numbers of high noise and a large number of low noise.

669 But at the moment there is no guarantee for the people coming to Southend for holiday purposes? — I do not understand what you mean.

* p. 17.
† p. 288.

Printed image digitised by the University of Southampton Library Digitisation Unit

670 There is no guarantee of the 35 line NNI contour? — I do not think anyone can be certain at the present stage on what routing will ultimately be followed.

671 But there is a high possibility it will be increased? — No, I do not think so. I think the whole possibility is that better routing will be found by degrees.

Cross-examined by Mr. Peter Smith (Barling Magna Parish Council)

672 The Wilson report,* as you said in your evidence, forms the basis of your evidence. This was published in 1963, but I notice in reading it a lot of the research took place in 1961. — Yes.

673 Would you say that from Heathrow, Gatwick, where it is related to, there has been no change in the type of usage of aircraft? The proportions, say, of jet aircraft to piston engines—have there been certain changes? — I think the proportion of jet aircraft will have increased, yes.

674 And do you think that will have any relationship on the NNI levels which were proposed in 1961? I would think they would now be different. — That is a very difficult question to answer. There has been another social survey carried out in 1967, and we are awaiting the results of that social survey; and I expect that it will be consulted before the Commission has to give its decision; and we will have perhaps a better knowledge of how accurately we can achieve the NNI value.

675 So really you must admit that these NNI figures have a dubious basis? — The best basis we have at the present time.

676 In fact, the Commission says "It has been assumed in the NNI contours that noise certification regulations will be introduced and will lead to a reduction in the noise effect of aircraft by 10 NNI over the next 20 years", and thus assumes a reduction.

677 *Inspector* Mr. Smith, were you here directly after the break?

Mr. *Smith* No, Sir.

Inspector I did explain that the Commission's statement in the Foulness report on this matter was not quite comprehensive, and we have corrected ourselves in the Cublington material by adding the sentence "but that half this reduction"—that is the 10 per cent reduction—"will be offset by growth in aircraft weight". So the correct quotation is: "the assumption will be reduction in noise effect by 10 NNI, but that half the reduction will be offset by growth in aircraft weight." That is the correct assumption upon which the Foulness NNI maps were drawn. We have put ourselves right for Cublington.

678 Mr. *Smith* Noise certification regulations. These are the actual three words that I have been wanting to mention. Perhaps you can enlighten me on this: these noise certification regulations, are they of an international nature? — They are still under discussion. It is hoped that they will be of an international nature and indeed they wouldn't be of much value if they weren't of an international nature. But it was agreed at a London conference* about two years ago—I forget the exact date—that the different countries, mainly the countries building aircraft and aircraft engines, would agree on limits to aircraft noise and that is what is meant by noise certification, that aircraft should not be certified to operate unless they could confine themselves to certain noise limits.

679 This would require then to be really effective an international agreement? — Yes, quite.

680 A very difficult thing to anticipate? — No, I don't think so in this case, I think all the countries concerned with aircraft are anxious to reduce aircraft noise.

681 This interests me because you go on with the Wilson report. I think if you look at page 66: "An American airline have calculated"—and this is in 1961—"their additional operating costs due to the use of suppressors on Boeing 707s is about £43,000 per aircraft per annum." What would you say that the present day cost would be? Let us take £43,000 in 1961. What would your estimate per aircraft per annum be? — I am sorry, I have no idea, I can't answer that question, but I think that your point is that it would cost a lot to reduce aircraft noise and I would agree with that but I think it is going to be forced upon the aircraft operators to do just that.

682 But aircraft operators will obviously try and resist it? — I don't know how much resistance there is.

683 Economic resistance. — There is this operation afoot to certify aircraft as regards noise just as they have to be certified as regards safety before they are permitted to operate.

684 In fact whilst we are on the international question, hasn't there been trouble in fact with a Russian jet not being permitted to use Heathrow airport? Am I right or wrong? — I can't say. I believe I recollect something in the papers but I don't know.

685 So international agreements are very nice but they are difficult to implement? — Russia was present at that London conference.

686 Let us say, for example, a number of countries using this airport reduce their noise levels so they can use our airports but there are a number of other countries which do not comply with this international agreement proposed. They will not be permitted to use the airport. Would you agree? — If an international agreement is brought in, the aircraft will not be certified to operate unless they can conform to these limits.

687 So if one of these countries is a large user, let us say it is the American Boeing here, and they say: "We

* Cmnd. 2056. (HMSO; 19s. 6d.)

* *Aircraft Noise: report of an international conference on the reduction of noise and disturbance caused by civil aircraft.* (HMSO; 8s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

are not going to enter into this international agreement" they won't use this airport? – I think this international agreement will come about. There are only really three countries who are concerned, the USA, the United Kingdom and France who are large makers of aircraft and aircraft engines.

688 Not the Russians? – To a certain extent, yes, but we don't operate many Russian aircraft, I think.

689 You don't allow them? – They would probably have to come into line if this certification does become operative.

690 This is rather interesting because you could then have other countries than the ones you mentioned producing aircraft which do not comply and then they won't use this airport at all? – No, they would not be permitted to use the airport.

691 So what it boils down to is that there is a possibility that a lot of our custom that we are anticipating here might well have to be turned away? – I don't think so, no.

692 It would be very unfortunate to bring in 400,000 people and find that there isn't any custom for them, it would make them redundant, wouldn't it? – I don't think the United Kingdom is likely to put on a restriction unless there is international agreement.

693 So really this airport is largely dependent upon the possibility of getting an international agreement? – I don't think the airport is dependent upon it at all.

694 You mentioned that you felt that 35 NNI was an acceptable noise level? – A not unreasonable level.

695 The survey carried out on page 210 of the report* at 35 NNI: 45 per cent of the people say it woke them up. – That is figure 3(a) on page 210. I think one has to be very careful how one interprets that and I think one should look at figure 4 of the next page where at 35 NNI, of the number of people questioned about aircraft noise and other things affecting local living conditions which were disliked, 20 per cent of the people said they disliked aircraft noise. Well, I think if 45 per cent were regularly awakened surely they would have disliked aircraft noise and there is an inconsistency here I think which has to be explained somehow. My feeling is–and I have not been able to check this just recently by going back to the original reports–but I think that the percentage of people disturbed (this is figure 3(a)) for various types of disturbance, means that of the people who said they were disturbed by aircraft these are the percentages who mentioned specific types of disturbance. Then again I think you have got to look back at the actual questions asked about "Were you awakened? Was it regularly?" or did they say: "Do you recollect some occasion on which you were awakened?" There is this discrepancy between figure 3(a) and figure 4 that I think has got to be taken into account. We can't just accept figure 3(a) just as it stands without looking further into it.

696 In your proof here you mention noise incidents at schools, (table NF3).* Why haven't you included independent schools? – I am sorry if I have omitted schools which should be included. The schools which I have included are the ones which were given to me by the Essex Education Authority.

697 In fact there are independent schools and you accept that? – I can take your word for it. I don't know.

698 I am of course concerned with no. 4. In fact you might be able to help me a little about this. Barling Magna Primary. The number of incidents in range of peak decibel periods 80. That is the highest, isn't it, on the two-runway basis? – Well, it is not quite the highest, I think, Great Wakering Primary is worse, it has the same total number but it is 80 in the upper and 20 in the lower, so Great Wakering Primary presumably is in the same category.

699 I think again as you referred to the Wilson report† it is rather a poor lookout for education. Now with this airport there will be, I presume, maintenance areas. Have you taken these into account? – I have made no specific assessments of the noise from maintenance areas but they are likely to be considerably less than from the noise of aircraft taking off. In maintenance areas steps can be taken to muffle aircraft noise, indeed at Heathrow jet mufflers are used when engines are run for maintenance purposes.

Cross-examined by Mr. Blake-Orr

700 These contours we have here, are these produced for conditions of no wind? – Yes, they are average conditions.

701 So assuming a wind from a westerly point the contours would be shifted somewhat to the east? – To the east, yes. The noise is likely to be less, yes.

702 So when the wind is on-shore in fact the aircraft will not be taking off to the north-east? – It makes little difference when the aircraft is up in the air. The wind has the greatest effect on noise when the source is on the ground.

703 I am a meteorologist and only partially affected with acoustics in the open air. You are talking about inversions being mainly at high level; in fact a common inversion is from the surface so aircraft noise being reflected along the ground most frequently when an aircraft is on the runway. The frequency counts of other levels I think can be of interest to the Commission. I know at Shoeburyness an acoustical forecast is done as routine first in the morning and again in the middle of the day, there are some experts there who will be able to tell you all about the frequency of inversions at various heights and how to calculate the effects on distance and I was wondering whether any attempt had been made at estimating the equivalent NNI effect of having an artillery range at Shoeburyness. Those who live a long way

* Wilson report.

* p. 32.

Printed image digitised by the University of Southampton Library Digitisation Unit

from Shoeburyness have had their beds shaken and windows rattled from explosions 15 miles away. When I worked there it was pretty shattering, I think.

Mr. *Frank* Is a question coming at the end of this?

Mr. *Blake-Orr* I was passing information as well as asking questions.

Inspector You must not do that, you can pass your information later on, you see.

Cross-examined by Mr. Miskin

704 There are just one or two small things I would like to know from you. In order to arrive at the numbers of people who are likely materially to be affected by noise we have had the advantage of being provided by the Commission itself with its NNI contours and in fact you applied those contours, adding to them the 35? — Yes.

705 And I understand from you when in adding them you have not had an opportunity to inquire into the validity of the suppositions or premises that the Commission itself has used in arriving at its contours? — No, that is correct.

706 And therefore insofar as they give assistance to people like my clients who are much troubled by the advent of noise you merely see from the basis of those contours and others what the impact of those contours is likely to be? — That is so.

707 May I just ask you this. It may well be—it amounts almost to a certainty—that none of us will have an opportunity to cross-examine the Commission itself, do you follow? — I don't know.

708 For the purpose of your application with any degree of enthusiasm of the contours one of the assumptions you have made is that the Commission has assumed for the future the advent of the Concorde? — Yes.

709 Because it would be inelegant not to do so? — Quite.

710 Have there been so far as you know any published sound tests with regard to the Concorde in flight? — I don't think so, no.

711 So that insofar as the Commission has sought to apply the Concorde as a future propagator of noise you have no reason to think that they have based that anticipation on published results of tests? — I think they will have based it upon perhaps not freely published results, but results to which they have access of the noise to be expected from the type of engines which the Concorde is using.

712 And to some extent when the Commission applying initially the 10 per cent reduction which we hoped would be imposed by international agreement and then re-add in a 5 per cent for future increase in aircraft weight that, of course, is a value-judgement? — Yes.

713 Of course, value-judgments can sometimes be wrong as well as right? — I don't think this one can, there is not much room for much margin of error.

714 It might be wrong one way or the other? — Yes.

715 I don't know whether you have had an opportunity yet of looking at the submission which has been furnished to the Commission by the Borough of Chatham?* Have you had a look at that? — I think I have seen it. I don't know whether I have it here.

716 Don't trouble to look for it, the material sentence reads thus: "Reports on areas having a level of 30 NNI indicate that 40 per cent of the residents complain of being woken up at night by aircraft noise; 43 per cent complain of house vibration; and 59 per cent complain about interference with television pictures." Do you recollect that sentence? — Yes, I do.

717 I don't suppose you have got at this moment of time any notion of what areas are being referred to? — I think that they are simply quoting the Wilson report*; it is the figures we were talking about.

718 3(a). — Yes. 3(a) they are quoting.

719 I see. I want to know this from you. You appreciate that those of us who have been cross-examining you are as ignorant in this field of expertise as our clients, and therefore we want to know more. Would it be possible for you to check and confirm the accuracy of the Kent County Council's 30 NNI contour? — There is considerable difficulty in extrapolating as far as 30 NNI. I have attempted to do it for 35 NNI, but I should feel more and more loathe to try and go further and further out.

720 Why is that? — Because there are uncertainties in the way sound is transmitted through the air, there are different factors which affect the assessment of sound through the air. People have already been talking about lapse rates, and things of that kind; and humidity also is a factor; the further out we go the more difficult it is to be accurate.

721 Yes, but bearing all those tolerances in mind, you can arrive at the approximate contour. — I have looked at the Kent 30 contour, and I don't think they have put it too far out.

722 Indeed, does that mean, speaking for yourself and making due allowances for all the tolerances you have spoken of, you might yourself have put it even further out? — I possibly would have.

723 If it was felt useful—and that is something for the Commission to determine—would you be prepared to place your own 30 contour lines on . . . — No, as I have said, I don't feel one can really go much beyond the 35; there are other points which come in. One of the points is the NNI only takes account of noise that is above 80 PNdB, and once it gets below that the NNI ignores it. It is very difficult when noises get below 80 PNdB, it is very difficult in trying to estimate them.

724 You don't feel you can give a valuable alternative to the Kent County Council's 30 contour? — No. I think that they have made a reasonable estimate; I don't think it is too far out.

---

* p. 45.

Printed image digitised by the University of Southampton Library Digitisation Unit

725 We are left with this, those of us who entertain a genuine fear and concern about noise at the 30 level want to know how many of us will be disaffected by it; we would have to invite the planning officers to look at the Kent County Council 30 contour line and produce the figures from that. You could not assist further? — I don't think I could, no.

726 I understand from you we might get some further assistance with regard to the real validity of the Wilson approach when the '67 social survey has its figures published? — I hope so, yes.

727 When do you anticipate publication? — I believe it is expected some time this year at any rate.

728 This year? — Yes.

729 Do you know whether it is a Heathrow survey? — It was a survey round Heathrow, yes.

730 Do you know one way or another whether anybody has conducted a similar survey in some other urban area? — No, I don't know, but there have been many conducted, some six surveys in the USA, which again have not been published. Whether they will include rural areas or not I don't know.

731 Are they likely to be published this year as far as you know? — Yes, I think so. Some of them have already been carried out.

732 I ask that question for this reason, that impact of noise to some extent depends upon the extent of noise you currently have to endure, does it not? — To some extent, yes.

733 And, of course save for those who live and work in the heart of urban areas here, the others don't have to entertain much noise at the moment; we know that. — I am sorry, I didn't get the import.

734 Those in non-urban areas which are likely to be affected by for instance the 30 contour line don't have to endure much noise at all. — Probably not, no.

Cross-examined by Mr. Purchase

735 Joining the site in question are shipping channels within which are navigational aids, whistles, sirens, and there would be an effect on the human audibility, if that is the right word, of one listening for a sound when being disturbed. So far we have been arguing about somebody affected and not disturbed by sound. But, if one is concentrating upon listening for a sound, as a navigator has to do, and will continue to have to do, what effect is that likely to have on shipmasters, and navigators, particularly those at low levels? — The noise could interfere with the audibility of another sound, certainly. I don't know the particular circumstances to which you are referring.

736 I am concerned with when one is listening, and there is need for it; when they are concentrating and listening for navigational aid, and sometimes there is an aircraft taking off or revving up close by, which it would be, well within these contours which we are discussing; is it likely to disturb to the extent of creating less perception? — I think it would affect the hearing of the navigational aid, yes.

Mr. *Purchase* I follow. The question had not been raised, and it might be of concern to others in that field. Thank you.

Re-examined by Mr. Frank

737 Can we just go back to the history of the NNI before the Inquiry. It is right, isn't it, that in the County Council's Second Submission there were, I think, a series of NNIs for the various airports? — Yes.

738 Including the proposal for the four-runway airport which we are talking about here. — Yes, substantially.

739 You in fact drew NNIs for that purpose. — Yes.

740 Was that followed by the Commission's own publication on NNI? Have you compared your original NNI contours with the figure of 8.2 in the second submission and the Commission's? — I have roughly, and obviously on the Commission's assumption, as to flight paths, they are different from those which we assumed for the contours in the Submission No. 2.

741 But in fact it looks to me—tell me if I am wrong about this—that they are very similar; there is a figure 8.2 in those of the Commission. — Yes, roughly similar.

742 Of course, all that has happened now is that you have adopted the Commission's contours, taken them down to 35, and you have put—taken the flight paths. — Yes, I have taken the figures which were assumed in the Submission No. 2 as regards numbers and types of aircraft and distributed them, as it were, amongst the flight paths which the Commission's contours reveal so as to give practically the same contours.

743 It is a fair assumption, isn't it, that the Commission and those advising the Commission, and presumably the Board of Trade, on this matter, would take into account such aeroplanes as Concorde and air buses, and so on? — I should expect them to. Yes.

744 There is only one other matter I want to ask you about. This was referred to as a "quiet rural area". The idea it could not really make comparison with Heathrow, and the social survey carried out there. Of course, Heathrow is said to be an urban area; what we are proposing to do is bring noise to a quiet rural area. Can we concentrate on Heathrow for a moment, because part of it is urban. Is it true to say that the population who are affected by noise from Heathrow are not in urban areas? — No, I don't think it is true to say that. The extent of the area affected by noise round Heathrow covers quite a lot of rural areas.

745 Including quite a lot of green belt land? — Not? I am not familiar with the green belt.

746 Then I will give that evidence for you, Mr. Fleming. Now, let us have a look at this area as being a quiet rural area. So far as Southend is concerned we have a thriving bustling County Borough. — Yes.

747 And the rural area abuts on to the County Borough. — Yes.

Printed image digitised by the University of Southampton Library Digitisation Unit

748 Moreover, that rural area is presently affected by the activities at Southend airport. — Yes.

749 And by the firing range. — Yes.

750 Would you think, you can't fairly make a comparison between Heathrow and this area on the quality of noise? — I think one is justified in assuming that the comparison can be made. But, as I said, I think also that more and more evidence needs to be accumulated and is being accumulated.

751 The position today is you are making use, as indeed are the Commission, of the only tools which are available to you? — That is so.

752 And it is to be hoped that perhaps before we get to Stage V we shall have something which we can regard as being more precise? — Yes.

753 At the moment we are using the same yard-stick for all the short listed sites because that is the only one that can be used? — That is so.

Inspector I have no questions. This is a very convenient time to adjourn for lunch. We will return at 2.30.

(*A short adjournment*)

754 *Inspector* By agreement of the relevant parties, Mr. Bernard Braine, MP for South-East Essex, is being taken at this stage, having regard to his many other commitments. His statement is no. 79* in our sheaf of documents. Mr. Braine, do you wish to add in any way to your statement, or enlarge upon it in any way?

Mr. *Braine* Well, Mr. Hunt, I would like to say something which may be of assistance to the Inquiry. And may I begin by expressing thanks to you for making it possible for me to make my appearance now rather than later in order that there should be no conflict with my Parliamentary duties? It is very good of you, and of the planning authorities who have agreed to this; and I appreciate it very much. Secondly, I would like to make it plain that it is no part of my purpose, as I think my Proof of Evidence shows, but I would like to make it plain now, to advocate or oppose the proposal to site the third London airport at Foulness; therefore I agree with the Learned Counsel who appears for the Essex County Council that, since there must be a third London airport, the decision as to where it is sited should be based on the facts after a thorough investigation. I have of course, over many months, taken soundings of my constituents, and by and large I think it is their view that the decision should be based on what is considered best for the national interest, however difficult it may be to arrive at that decision. But I would hasten to add that in every instance where I have been talking to local authorities, to authorised bodies, or to individual citizens, there are very important reservations, and there are of course also important minorities who are opposed to the airport whose views, I feel sure, the Inquiry will take into account.

Now, Sir, it is my purpose therefore, if I may, to ask specifically this afternoon for certain safeguards and assurances for my constituents, and indeed all those who dwell within the peninsula between the Thames and the Crouch should the Commission decide to recommend Foulness—and in this I might add that I have the full support of the four County District Councils in my constituency. My main argument has been set out in the Proof of Evidence, and I do not propose to go over that in detail; but, with respect, Sir, some things have already been said at the Inquiry, which have emphasised the need for safeguards and assurances to be given in advance, since it will be manifestly useless pressing for these once the airport is established. By then however powerful an advocate the constituency might then have returned to Parliament, he will probably be quite powerless to do anything about the matter.

There are three sensitive areas. There is first the question of noise. There is secondly the possibility of certain effects of tidal and surge behaviour on flooding, and there is thirdly general planning implications, all of which are dealt with in my Proof of Evidence, and on which I would like to comment very briefly now.

On noise, there appears to be some uncertainty and conflict of views. I think it is generally agreed that the NNI method of assessing the nuisance is not wholly satisfactory, but of course that is the only one that we have. It is the only one which the Commission can rely on at the moment; at an early stage, Mr. Hunt, I did in fact enquire of the Commission if they would have before them the results of the 1967 investigation into the effect of aircraft disturbance on the community living around Heathrow airport, 1967. Mr. Justice Roskill replied that he hoped that the results of that investigation would be in the hands of the Commission before they came to any decision. To make quite sure about that, and in order to help the Commission, I put down a Parliamentary question to the President of the Board of Trade on 30th April, to ask him when he expected to receive this report which was begun in 1967, and whether that report would be made available to the public. The Under Secretary of State replied, saying that "the amount of work involved in this important sociological study is proving greater than foreseen, and I regret the full results will not be available for some time. We intend to publish a report." This is not the proper place, I think, for me to reflect on how astonishing it is that something of such vital concern as the third London airport, which has for so many months past been a matter of urgency, has been so long delayed; and I still do not know what "the results not being available for some time" means in terms of time, and it may well be that this is a reflection of the extreme difficulty in arriving at any satisfactory assessment of noise. I trust that the Commission will insist on having this report before they come to any firm conclusions: and, of course, what is needed for this Inquiry will also be needed at your Inquiries into the other three sites.

We are not without experience in this part of the world about noise nuisance by aircraft, and my constit-

* p. 34.

Printed image digitised by the University of Southampton Library Digitisation Unit

uents have complained bitterly over the years about the municipal airport. Some relief will be felt by its removal, should the Foulness airport be established; but I am bound to say that I was not impressed yesterday by the conclusion reached by the first witness for the Essex County Council that the adjacent areas to Foulness will suffer very little from noise. This, I thought, had to be challenged, and I challenged it now, because it was quite clear from the Proof of Evidence* submitted by Mr. Springett—which, I think, is quite one of the most valuable documents placed before this Inquiry, extremely well written and very clear and very convincing—that teaching in large numbers of schools in this area is going to be adversely affected—ten of the schools, I think I am correct in saying this, are in my constituency—and that intensive soundproofing will have to be undertaken. On the basis of the present proposals before us, if teaching is not to be adversely affected—and even then the outdoor activities in these schools will be somewhat curtailed. Now, Sir, I reject utterly the suggestion that a different criteria should be applied where schools are concerned to the rest of the population. South-east Essex is the home of many thousands of people who come down here to make a new life in these surroundings. There are hospitals; there is a very good hospital in Rochford, which is bound to be affected. There are nursing homes; there are large numbers of old people. And if teaching suffers from aircraft noise, so, obviously, will the peace of mind of the residents in the affected areas. Now, that leads me, Mr. Hunt, precisely to the question of where the airport is to be sited in the vicinity of Foulness. This, it seems to me, is a crucial decision that your Commission will have to take. Obviously, the further away the runways are from the residential population, the better, the less nuisance will be caused.

I think it was said yesterday by Mr. Sharman that it would not be proper for him to consider the implications of any site other than the off-shore one envisaged by the Commission. With respect, I think that he is quite wrong about this. This hearing surely is concerned with the expression of local views, with requests that everything possible should be done to reduce interference with amenity to the minimum, and, as I sought to show yesterday—and I did this quite spontaneously, I think, when this statement was made, I felt that the point had to be made clear to the Inquiry—I am certain that you took the point straight away, Mr. Hunt, and it was quite unnecessary for me then to pursue it. The Commission, in its own *Site Information*, makes it plain that there is a possibility of considering a partially off-shore site, a partially on-shore site; but it follows that, if the Commission's mind is open on this subject, it would also be open to the possibility of a third alternative—a site still further away from the built up areas, which would go a long way to remove the kind of objections I have mentioned on the subject of noise—and other objections I could raise as well. It is my considered view—and that, if I may say so, of the regional Rural District Council and a large number of my constituents—that there is a third alternative which ought to be considered seriously, a site further to the north east which would effectively reduce the noise nuisance.

Closely connected with the question of noise is the question of flight paths and holding areas. Obviously, considerable numbers of aircraft are going to use this great new airport, if it is established at Foulness. Those of us who travel about the world know that there is already considerable congestion in all the world's largest airports, both on the ground and in the air at the present moment, and even if weather conditions are ideal at Foulness, some aircraft at certain times are compelled to be stacked. Will these be over sea, in which case there will be no objection? or will they be over land? and if over land, where? As far as I can gather, nobody—and certainly not the Commission—is able to answer these questions now, and yet they are crucial as far as the interests of my constituents are concerned, and we have therefore to take a great deal on trust.

I want to take this opportunity of saying that I thought that perhaps unwittingly an erroneous impression was given by developers, interested parties, and by the advocates of the project, and by commentators in the press and on the radio, from the very beginning, that all aircraft movement, if Foulness is chosen, will be over the sea, coming in and taking off; and the only living characters to be disturbed are large flocks of birds. This is manifest absurdity, and already it is quite clear that aircraft destined to fly to the west and to the Atlantic will have to take off, take a sharp turn to the right, travel up the river, and then somewhere else—we are not clear where yet—but somewhere probably just west of Canvey Island, or over Canvey, or east to Basildon, where it will take a sharp turn to the right and proceed to the north. Sir, this brings massive aircraft movements well over the most crowded parts of my constiuency—at least there is a danger of it—and it is imperative, in my view, that if Foulness is recommended by the Commission, then they should obtain details of the flight paths and stacking procedures, and the recommendation that they make to the government should include proposals that there will be legislation to safeguard against sudden changes, bearing in mind the population effect.

Now, the second point—the possible effect of large scale dredging of sand at the mouth of the estuary and configuration of the shoreline. This is in my Proof of Evidence, but I do not apologise for repeating this now, because it is what 134,000 constituents of mine expect me to say. I cannot emphasise too strongly the sensitivity of my constituents—particularly those who live in Canvey Island and Benfleet, as well as those along the Crouch, and the sensitivity of the local authorities. In 1953 we were the area worst affected by the East Coast flood disaster; we lost lives in Canvey Island. Since then, I have asked in the House of Commons about the question of river and sea defences, and the general security and safety of my people. There will be some effect on my area—what it is no-one can say—and there

* p. 36.

Printed image digitised by the University of Southampton Library Digitisation Unit

will certainly be some effect for the Thames as a result of the installation of the Thames Tidal Overflow Barrier. A decision has been taken as to where this is to go; nobody can tell me at the moment what the effect will be; the nearer the barrier comes to Canvey Island, the greater the effect will be. But obviously any combination of increased effect as a result of the installation of the Thames Flood Barrier and the removal of huge quantities of sand and gravel at the mouth of the Thames Estuary must be considered.

According to the evidence given yesterday that I heard—and I apologise for not being here to hear it all—I understand that it is hoped that one of the consortia interested in developing the airport are preparing at great expense their own model. I would be the last to cast any aspersions on the members of the consortia—they are all highly reputable people or organisations—or the technical skill that they obviously will retain; but I am bound to ask whether the Commission will have, not only their conclusions, within a year, but those of the authorities responsible for the Thames Flood Barrier. I think it was Mr. Sharman yesterday who spoke about the improvement of the defences of the area immediately adjacent to where the airport will go on the Maplin Sands, and I think he gave a very clear engineer's answer to the problem, and I was quite happy about that. He was referring to the Foulness area, of course, not, as far as I understood, to the densely populated areas up river, and I did not gather that he could give any conclusive opinion as to the effects as far as they were concerned. Obviously. Obviously it is impossible even for the most technical expert again to give such an opinion. I make no complaint about that; but it seems imperative that no risks be taken with the safety of the Thamesside community, and I do not think that the Commission would wish to not take that point fully into account.

I turn lastly to the planning implications. It is very easy for planners, sitting in offices with maps in front of them and coloured pencils, to put blobs on a map and say, as I heard yesterday, "the airport will have 65,000 jobs and will lead to an increase of population of possibly 400,000 and all this can be accommodated in the peninsula between the Thames and the Crouch". I have no doubt that you could accommodate, if you chose to do so, two or three million people in the area. The question is, what sort of living conditions would they enjoy? There are already 300,000 people living in the area. My own constituency has more than doubled in population in the last fifteen years, and I am bound to tell you, Mr. Hunt, that it has been a struggle to get the various authorities, the central government and the Essex County Council, whose evidence we listened to yesterday, to provide us with the essential services. These have always lagged behind the building of houses and the arrival of people—I am not talking particularly of anyone here. This is a fact of life. This is what happens in any part of the country, and I would have thought that in general the Essex County Council have done rather well, particularly in the provision of schools; but it is a fact that in this time services generally have tended to lag behind. Now in the last year or two we have been catching up and the whole situation is very much better than it was. It follows, therefore, that if there is to be an absorption of so large an additional population—and it is not for me to say that it cannot be done, I am sure if there is a will the solutions will be found, there is no future for our country unless we do—it follows that there will be a great strain on the existing services. The population, the people I represent, the local authorities, they all agree that then very considerable resources will have to be pumped in and assured in advance to the local authorities.

The mere fact a great point was made, Mr. Hunt, about the existing superstructure, you have already got schools and roads and sewage systems in this area and the assumption is, therefore, that rapid development would be an easy task. Well, those of us who know the area will know there will be very considerable strain and it must not be assumed that established places like Benfleet can be expanded much further, they have expanded all too rapidly already, and now the local authorities are just about on top of the job and life is becoming more reasonable for them. I say it is bad planning to think in terms of further expansion which would turn the whole area of Shoeburyness at one end to Basildon New Town at the other into one vast conurbation. I trust therefore the Commission will pay special regard to the planning problems which the airport would create.

In particular and finally I would like to make a very special plea for the very small community of Foulness Island who are bound to be adversely affected by this proposal if it goes through. I was disgusted with the BBC who featured a programme in which protesters were listened to and when they came to the protesters at Foulness we heard the sound of gulls. This is the assumption that has been made all along, that you don't have to worry about the human factor in regard to the siting of an airport off Foulness. I know it is pretty clear that the Commission is not going to take that view, but there is a small tightly knit community on Foulness Island, people who have been born there generation after generation, a tightly knit community who work hard on the land. Now they are entitled in my view to very special consideration. Life will be quite intolerable for most of them if indeed an airport is established adjacent to them and I would ask specially—and these are my last words—that the Commission should in its recommendations, if it decides on the Foulness site, say that there should be generous provision for the resettlement, retraining of the Foulness Islanders and, where necessary, adequate compensation.

Inspector Any questions?

Mr. *Frank* I am not going to put any questions for these reasons. The Commission laid down the rules of procedure, one of which was that Proofs of Evidence to be given were to be delivered to the Commission by I think it was the 18th or 19th April, although they did say they were allowed some latitude. I first saw the Proof of Mr. Braine 25 minutes ago when I came back

Printed image digitised by the University of Southampton Library Digitisation Unit

from lunch. Not only have I had no possible opportunity to consider that Proof of Evidence but of course we have had 25 minutes of oral evidence given in addition and I must say the last ten minutes of it was really largely emotive political speech. Even more than that, Mr. Braine I appreciate had very good reason for not being here yesterday afternoon and this morning. Had he been he would have known that many of the matters he has raised were dealt with by my witnesses and he would have had the opportunity of cross-examining them. So all I can say is to ask your permission to make such observations as I may later.

Mr. *Braine* Mr. Hunt, may I be permitted to make a comment? I am sorry that learned Counsel does not wish to cross-examine me, but he is entitled to an explanation. I think I was probably the first person to make representations to the Commission, certainly one of the earliest, but I wrote to Mr. Justice Roskill asking for answers to a great many questions which I put in subsequently in my proof of evidence. This letter was sent at a very early stage, having been one of those who protested at the shortness of time in which interested bodies in my constituency had to submit evidence. Having done that I then wrote to Mr. Justice Roskill putting some of the more serious points that I thought ought to be considered and reserving my right to appear before the Commission if I didn't get a completely satisfactory answer. I received an exceedingly courteous and prompt answer from him and as a result I was then able to say I wasn't happy about all the answers and therefore I reserved my right to appear. That is the explanation, but I was one of those who had protested on behalf of my constituency and on behalf of the local authorities in my constituency at the shortness of time allowed representative bodies and myself for preparing evidence for this inquiry. Therefore I do not really think there can be any blame cast on me because my statement arrived somewhat late in the day, but if it arrived late in the day I cannot see why learned Counsel should object to my filling out some of the details. He has at least now had an opportunity of hearing what he has not so far bothered to read.

Inspector The point was made that it would very much help the work of this inquiry if everybody knew what everybody else was going to say in advance and quite clearly this is so. I think enough has been said on this particular point. Are there any other persons who wish to ask Mr. Braine any questions on his statement?

Cross-examined by Mr. Wood

756 In a non-emotive atmosphere if I could ask one or two questions to confirm this question of the infrastructure, to confirm the chronic shortage in the area proposed for this radical development, the provision of sewage, is it not true that a scheme involving capital expenditure in excess of £2 million is awaiting loan consent presented by the Rochford Rural District Council to bring the urbanised part of the rural area up to reasonable standards as regards sewage, and I mention the word Hullbridge to you. Is it not true that there is a chronic shortage of water in this area? Have you not been continually approached about the shortage of transport facilities in the area and are you entirely satisfied that the educational facilities in this area are more than just barely adequate? — Well, I think it is generally true to say that services certainly in the Rochford Rural District have lagged behind the growth of population, that efforts are now being made to remedy this, but of course it could also be argued that any development such as the airport could bring considerable benefits to the area if the whole thing was properly planned on a comprehensive scale. So all I am arguing is that the facts of the situation should be recognised. The area concerned does not have a very generous provision of services at the moment. If huge additional population is to be pumped into it there will have to be a massive investment in services and all I am asking is that the full implications of this should be understood by the Commission before they make any decision.

Cross-examined by Mr. Orchard

757 Unlike the learned QC, Mr. Hunt, I thank Mr. Braine for enlarging on his own evidence. There is just one thing I would like to get put right, it is on page 2* where you say, Mr. Braine, "I consider that the airport should be located further to the north-east than is shown in drawings nos." so and so. That does not mean to say that you agree that the airport should be at Foulness? — No. I don't think it falls to me to say whether in my opinion there should be an airport there or not. It does fall to me to say that if the Commission decide that there should be an airport there for the reasons I have given in my evidence it should be as far away from the residential area as possible. Since I understand it is technically feasible for the runways to be sited further out I would strongly recommend that the Commission give serious consideration to this.

Cross-examined by Mr. Bryant

758 Do I understand that you are contending that 300,000 people will be affected by the noise nuisance? — No, I am not in a position to say that the whole 300,000 people would be affected by noise although, of course, a substantial number of my constituents in Leigh and Westcliff are affected by noise already from the Southend municipal airport. What I am saying is that there is bound to be some noise nuisance—indeed, this was admitted by Learned Counsel Mr. Frank yesterday, he said that many people were bound to suffer from the effect of noise, and it is quite clear from the evidence of Mr. Springett that there will be considerable disturbance in certain areas. So I am not saying the whole 300,000 people would be affected. As I think you know we are all differently affected by noise—if you are elderly, if you are sick, if you are frail, if you are nervy, if you have difficulty in sleeping at night you are more likely to be

* p. 34.

Printed image digitised by the University of Southampton Library Digitisation Unit

affected by noise than certain other people, so it is a very difficult thing to assess. All I am asking, therefore, is that the airport should be sited, if it is to come at all, in such a position that it reduces the noise nuisance to people to the absolute minimum.

759 Can I put to you that the argument you have used would be equally applicable to any of the other three sites . . .

Inspector Mr. Bryant, you are getting on dangerous ground on comparisons between this site and Cublington and so on.

760 Mr. *Bryant* I was trying to get the value of the argument.

Inspector Mr. Braine made it perfectly clear that the 300,000 was the population within his area, he made no reference to the proportion of that number affected by noise. Do you wish to pursue the point any further?

Mr. *Bryant* Well, no. I was thinking if you were using the large figure it is a sort of contradiction of figures put forward by the Commission.

Inspector There is no such thing. The figure of 300,000 Mr. Braine will confirm is the number of people who exist in this area between the Crouch and the Thames at the moment.

Cross-examined by Mr. Body

762 Mr. Braine, in the last few years you have obviously taken many soundings from individuals and also every organisation I suppose in south-east Essex? — Yes.

763 Would it be fair to say that the general view is support for the airport in Foulness with the reservations that you have made? — I think that would be the general view, but I have yet to hear somebody say it's a jolly good idea, but I think you know this reservation or that.

764 Now I want to ask you about your Proof of Evidence, page 4,* and may I say I don't share the criticism that has been made, it took me five minutes flat to read it and I found it digestible, but on page 4 of your Proof of Evidence you speak of "The population of my constituency has more than doubled in the last 15 years and it has been our experience that services have always lagged behind the provision of homes." In your experience and basing what judgment you can on your experience would you say that if the secondary development that would be occasioned by an airport were to take place roughly west of Canewdon the strain on local services would be less than if it were spread over the whole area? — I think the answer to that is yes because there is existing development in that area to the west and I hope that between the airport and the built-up areas there would be a very substantial area of amenity land and good agricultural land left alone as a sort of lung, so there seems to be some merit in what you are suggesting.

765 You would have fewer fears, would you, if the development was west of that line? — Subject to the qualification that I made a moment ago and that is the very substantial built-up areas of Benfleet Urban District and Rayleigh. I think I am correctly reflecting the views of those two communities. I would hesitate to argue about Rochdale Rural District because that is a much more scattered area, but if you take the area from Hockley southwards, Rayleigh, Benfleet, you have an almost continuous conurbation. Those are areas which could only extend much by moving into our very limited green belt and I think I would be vastly opposed to any further extension of the Benfleet and Rayleigh areas.

Cross-examined by Mr. Hughes

766 Mr. Braine, of course you are right to raise the points that you have done and the sort of things that the Commission must take into account for the purposes of this inquiry so they have note of them, but to give an answer to many of these points there must be some investigation in depth and this is the sort of thing as I think you know that the Thames Estuary Development Company are doing. I don't think you were here this morning when Mr. Dunford gave his evidence but there was a plan put in evidence there, a plan prepared by the Thames Estuary Development Company,* showing an adjustment of the runway alignments which would lead to an improvement in noise effects. Did you see that? — No, but if you say this I accept it, of course.

767 That is the sort of work that the Thames Estuary Development Company are doing and if you feel they are not doing their work in sufficient depth I hope you will arrange to cross-examine them when they give their evidence later in this inquiry. Did you know that the PLA have a statutory duty to control work in the Thames Estuary in order to protect the public? — You are asking me if I am aware of that. Most certainly I have a high regard for the work of the PLA although perhaps I may be permitted to say here that the PLA are not a wholly disinterested party in this connection since they are also interested not merely in the development of the estuary but they are interested in the development of docks, and although that is outside this inquiry it would obviously be a great convenience to dig sand and gravel out of one place which is destined for docks and to put it somewhere else which is designed for an airport. Those of us who are only interested at the moment, as the Commission is I understand at the moment, in the airport might wish to separate the two issues, so though I have no doubt whatsoever as to the thoroughness and the depth of the inquiry I would not be happy to rely solely on its outcome, that is why I suggested and I suggest again now that the ultimate decision will have to be taken by government on a basis of considered views of its own hydraulic establishment.

768 But Parliament has seen fit to charge the Port of London Authority with protecting the public in relation to any development which would have a hydrological effect. The Port of London Authority have a statutory duty to look into these things and take no risk at all. I

* p. 35.

Printed image digitised by the University of Southampton Library Digitisation Unit

hope you are not suggesting that they are derogating from this statutory duty.

769 *Inspector* Can I intervene. I think we are going a little from the point. The Roskill Commission has a duty to investigate the siting of the third London airport in virtually all its respects. The point about hydrological consequences of the Thames has been very well made on a number of occasions. We are very well aware of it in any case. I make this point: we are well aware of it, and from the Commission's point of view we will investigate it thoroughly. — May I add one thing in reply to the last question. The questioner could not have heard me. I have twice said I have a complete and indeed high regard for the Port of London Authority, so there is no question at all as to the thoroughness with which they would carry out their statutory undertakings.

Inspector There is simply no object in pursuing what the motives of an authority can be. We all know what authorities will do, and there is just no point in questioning it any more.

Cross-examined By Mr. Purchase

770 Mr. Braine, yesterday I established the contour with the technical witness, Mr. Sharman of Essex County Council, of the tidal flats, with the low water springs, and I believe that is what you were referring to earlier, because I think you were present at the time, when you said it is technically possible the airport could be sited further away from the land and, therefore, within such a contour you would like to see it sited further away, as has been shown by Mr. Bernard Clark's scheme; that would be an improvement, in your opinion? — Emphatically, and if I may say so I think this is also the view of the Rochford Rural District in whose area, of course, the airport would be constructed.

Inspector Thank you Mr. Braine.

(*The witness withdrew*)

771 Mr. *Ogden* Perhaps before we proceed, there is one procedural matter I should mention. When I got back from lunch I found a great heap of paper sitting before me, which had just arrived, and amongst it was a letter dated the 5th May from the Action Committee against Foulness.* In the course of which they said that it was hoped that a part of the evidence would be presented each day dealing with evidence given by other people. Each part, it said, would be delivered to the hearing at least one day prior to the day on which the evidence concerned is to be presented at the hearing. Since in fact half the Essex evidence to which the documents from the Action Committe against Foulness related has been given since that document arrived, and since Foulness is scheduled to give its evidence at ten o'clock tomorrow morning, I hope this letter means precisely what it says, and that before I leave this hall this afternoon, whatever document it is intended to put in even at this late hour will in fact reach my hands, because I will not be speaking in equitable terms if it emerges in the middle of our evidence.

Inspector Who is here from them?

Mr. *Franks* I was going to raise a rather similar matter. I have had a bundle of stuff immediately after lunch, presumably not only from the Action Committee against Foulness, but also the Sheppey Group, amongst others, who, if they have not had leave to submit proofs out of time, will doubtless have it given to them by you, sir. But I am concerned like my learned friend with the Action Committee against Foulness. I do not want to stand in their way at all, and they ought to be given every reasonable help, but it will not do after a witness has given evidence and been cross-examined and gone away that we should have matters put in submissions to you which should have been put to the witness in cross-examination. I will have to ask your leave to re-call Mr. Sharman and Mr. Fleming to deal with points raised by the Sheppey Group which they want to put in cross-examination and not in the form of documents in this way.

Inspector Is there anybody here on behalf of the Action Committee against Foulness? There is no reason at all why somebody from your organisation should not put any questions they wish to a witness. They need not feel any fear or inhibition over this. It is much better to do this and get an answer from the actual person than submit an endless series of documents that will merely drown this inquiry in a sea of documents, because if you do this everybody has a right to do it, and the situation will become intolerable. Can you draw this to the attention of your organisation? I think all the matters raised at this hearing will be dealt with later or at least will be investigated at Stages III and IV of the Commission's work. If you feel strongly on things that arise, it may be best to write a careful letter in connection with Stage III, but it is not really reasonable to drown us each day with a whole bunch of separate documents. The whole machinery would simply fall to pieces if we had from all the parties here (there are about 70 of them) fresh documents each day.

Mr. *Frank* I hope I can be most helpful to you, sir, and the Action Committe if I take these long letters—there are a large number of questions raised here, but I think problably I can best be helpful by putting questions to Mr. Sharman and Mr. Fleming—I am in your hands on this.

Inspector I have in mind this, Mr. Frank and Mr. Ogden, that the planning authorities, I think, the "first tier" planning authorities have a somewhat special position in this matter in that they will at the end of the day be responsible for the whole of the planning ancillary to the airport. They will be the statutory authorities to the planning ancillary to the airport. It did occur to me over the course of the whole inquiry that certain points may arise, as Mr. Braine has raised certain points, which could not be dealt with in your opening, and it may be you would like the opportunity at the end of the inquiry to sort out any points that have arisen during it, and whether you would prefer . . .

* p. 137.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Frank* I am grateful for that, sir, and my friend is too. Mr. Sharman and Mr. Fleming are very busy men, and they are not only concerned with this particular short listed site, but others too. I am anxious to get them released as quickly as possible and, of course, concerned with other stages as well. What I would suggest is that—I don't know whether you have seen the first questions and the points made on Mr. Sharman's Proof of Evidence; there are quite a lot of them which ought to be dealt with by him, not only for your assistance but the Commission's assistance.

Inspector I am not too certain about this. I explained before, as I see it the essential purpose of this hearing is to ascertain in the case of Foulness what the nature of the implications are going to be, and all the points that are made, whether answered by Mr. Sharman or not, will be followed up by the Commission, and will be subject to further scrutiny at Stage IV. So whether it is really worth while trying to deal with all these separate points that arise, I am a little dubious.

Mr. *Frank* I only make this suggestion for this reason, as I said, in my opening, I feel sure the Commission would certainly wish that minority interests, however small, ought to be heard and I mean truly heard, even though they are not professionally represented. If the Action Committee feel reluctant about it, and are not being properly heard, that is to say, of course Mr. Sharman has not dealt with this important addition—there may be a feeling there that it has not been properly dealt with, but I make this suggestion to be helpful to the minority groups.

Inspector I appreciate this. My suggestion was not that your witnesses should remain during the rest of the hearing, but that they might reappear on one day at the end of the hearing to mop up any points you feel ought to be mopped up.

Mr. *Ogden* I am very conscious of the fact if we are not careful by the time we reach Stage V you will not be able to see my head above the top of documents, but I also bear in mind that unlike an ordinary planning inquiry, this is not the end of the day by any manner of means, and authorities are going to have to do a vast amount of work not merely as a result of this local inquiry but as a result of the other three. Furthermore, as a result of information made available by the Action Committee—I am obliged to you for your offer, but may I say here and now I do think it unlikely we would want to accept it, because I suspect it is going to be far more helpful to the Commission if rather than getting our evidence in dribs and drabs, so to speak, after one has considered everything that has been said here and at the other inquiries, then one puts forward such modified and provisional views as one thinks might be helpful.

Mr. *Frank* I accept your offer, sir.

Inspector Very well. In that case we will proceed with Mr. Springett.

MR. JACK ALLAN SPRINGETT* called

examined by Mr. Frank

772 You are Jack Allan Springett. You are a Master of Arts of the University of Cambridge and hold the Teaching Diploma awarded by the Education Department of that University? — Yes.

773 You are Deputy Chief Education Officer for the County Council of Essex, and you have taught for some five years in schools and in Army technical courses in radio communications and have some twenty-one years' of experience in educational administration. — Yes.

774 There is an addendum to page 5 we first have to look at. When this Proof of Evidence was prepared you had to do the best you could without the co-operation of the Kent County Council on these matters. — That's so.

775 And since then I think you have seen the Kent findings and you have to amend. — Yes. I have added in the figures relation to the Kent schools to the best of my knowledge.

776 I am not sure whether it has gone in. — It has been circulated round this half.

777 The other matter is an addendum to paragraph 10. — This summarizes—this goes with the other table and summarizes the overall facts.†

778 Yes, just two documents. — Yes.

Mr. *Ogden* No questions.

Inspector Kent County Council? No. The local authorities. Mr. Wood, you are usually opening bat.

Cross-examined by Mr. Wood

779 Thank you. I wonder if Mr. Springett would help me on page 2, where he refers to comments of the headmasters at Windsor. Would you be able to tell me what NNI contour covers the Windsor area? — The schools concerned in this area on the 1967 NNI contour for Heathrow are about between 40-45 NNI level.

780 About the 40s. — Yes. I would, however, think I should say that as I have said in my evidence, I am not advised that the NNI contour is the best method of measure of the sort of difficulties that schools are likely to encounter.

781 Would you as an expert in things educational regard the proximity of a major airport to any form of education as being undesirable? — Yes.

782 And at best the steps that you suggest to ameliorate the conditions are: if you can do without them so much the better? — Where the school is affected in the way I described I have said in my evidence, yes; the result of taking these steps is not a wholly satisfactory solution, it is second best.

---

* See also p. 36.

† p. 39.

Printed image digitised by the University of Southampton Library Digitisation Unit

783 Particularly with the childish—that does not apply to children, of course—enthusiasm, of aeroplane identification, even one aircraft in the vicinity per hour is likely to prove a disruptive influence on education. — The heads and teachers of schools that I visited tell me this kind of enthusiasm pretty soon wears off, and is not a factor.

784 Does it. Well, I still take car registration numbers. — Well, the instances I have observed, I can only say, while, as I said in my evidence, teaching had to stop the children did not show any great interest in what was going on overhead.

785 But even after all these highly intensive and physical changes, the effect on schools, the educational environment is unpleasant? — Yes.

786 And oral teaching is difficult. — Yes.

787 Any out of door activity is inhibited, to say the least. — Very affected, yes.

788 And you would not like to send one of your own children to one of these schools? — I think a school that was so badly affected, I certainly would not; it would depend on other factors. Most accept this fact of a certain measure of noise in the case of primary schools has to be off-set against difficulties of travelling and so forth.

789 Further more, you would take the point that the environment which throws up these complications to schools is likely to inhibit proper application to homework, and to any form of study outside the ordinary hours of the school? — I think that was extending this more than I should care to. I don't think it would stop the application to study; we are mainly concerned here with difficulties of speech and communication. I think for proper study of homework, it is quite likely that youngsters like adults would adjust to it, but the broad point I agree with, yes, as regards tuition.

790 In your experience do they adjust as readily as adults? — I do not think I am qualified to say this.

791 It would be a safe inference to say no? — I would not know.

792 That they don't. Generally speaking, with exactly the same sort of haste I would want to make as to the adverse effect on education of a major airport, just on a purely factual basis, if I can draw your attention to schedule JAS 3,* the last page of your submission, you give a list of schools there which are within or near the 35 NNI contour. I take it because of lack of time, which has affected you as it has all of us, you do not pretend that list is entirely inclusive? — I am not . . .

793 I am now leading up to the fact there are many schools missing from it. — I am not aware of many omissions from that, so far as maintained schools are concerned. Omissions—Yes, I think this is a list based on figures provided by Mr. Fleming at the time of the Southend Inquiry as to schools which were affected by noise instances. If you think there is a school omitted it may be they have no incidents of noise on Mr. Fleming's tables, or I should be prepared to explain why it is omitted.

794 Yes. I am assured—I cannot speak from personal experience—that the Burns Green Primary School, which would be within that 35 contour, has been omitted. — This can be checked . . .

795 This is purely a question of fact, but it is best, I think, to have the proper count; and you will admit that this covers only maintained schools and exludes any reference to any independent schools in the area? — It does.

796 But you would not advocate the exclusion of independent schools? — I think that all children are important, and that in the overall picture independent schools should properly be included. It was a question of meeting the deadline for the submission of evidence. It is not a big picture from the point of view of percentage to numbers of children, and this can be balanced too in the case of my schedule JAS 2. I have made some enquiries—I think there are only two Southend private schools which are likely to be affected which are in the area.

797 But you would be prepared—so that it is factually correct—to add this to the list? — Certainly, yes.

Cross-examined by Mr. Smith (Rochford Parish Council)

798 We have one school in Rochford where teaching was becoming nearly impossible, and it took a number of years for a replacement school to be built. Can we be assured that, if the airport is coming to Foulness, that thought will be given in advance to this? We know that NNI indexes and so on have been tested, and certain assumptions interpolated and so on; may we be given that assurance, that thought will be given in advance to the amount of soundproofing to be done, so that children won't suffer for years while the work is being put in hand? — I think I can say that while this issue remains unresolved, the local authorities concerned—and I am sure I can speak for Southend as well—would look very circumspectly at any proposals for the erection of new schools in areas affected badly by noise. I do not know that this is germane to the Inquiry; but I can certainly give that assurance—I cannot say more than that.

Cross-examined by Mr. Orchard (Ashingdon Parish Council)

799 Just one small point: with regard to the schools and building facilities. We already have a comprehensive school in the Ashingdon area that has inadequate sports facilities anyway—they may have to go well away from the school to get to football pitches and what-have-you. With regard to the possibility of this airport coming to Foulness, and with the flush-back of further development, what is intended for the schools in the area? — Well, may I make this point?—that the difficulties to which you refer do not really arise through the sort of

*p. 39.

Printed image digitised by the University of Southampton Library Digitisation Unit

considerations that are the subject of this Inquiry. They arise because of changes of development plans arising from changes of county council and government policies. I would make the general point that where there is a large invasion of capital spending resulting from a development of this kind, if this is agreed, then planning of new educational facilities would be enormously facilitated by the elasticity, by the scope which the necessary scale of capital expenditure enables, so I would not be worried about this.

800 But you are in fact concerned with the future of these schools? — Yes.

801 And you cannot give me a better answer?—or could you give me any guarantees as to what is going to happen with an increased development? — I am not quite clear what question I am being asked—you mentioned one particular school . . .

802 But if you look at several schools, they are crammed for space within the schools. I gave you this one as an example of where two schools are converging with a concrete playground in between and very little green space, and they have to go abroad for football pitches. There are one or two instances in the area of this cramming. We are concerned, when we get this further flush-back of residential development, what is going to happen. We want some guarantees. — I think I have put the point just now. If there is additional population, there will have to be new schools, and new schools will require new sites. I do not think that the position of existing schools which are already planned, so far as the surroundings of Southend are concerned . . . in the very near future a complex of seven first class comprehensive schools . . . I do not think they will be affected one way or the other. They are problems which we have to resolve separately.

803 I would have thought that we would have to be re-housed in order first. I would have thought that probably something could be done about this before this major thing came about. — I do not follow the question, I am afraid.

Cross-examined by Mr. Bryant

804 Windsor has been brought up. Windsor is approximately six miles west of the east-west runway of Heathrow, and that is the most popular runway, it is practically always in use at Heathrow. That is established, is it?

Inspector Perhaps Mr. Springett is not . . .

Mr. *Springett* I am not qualified, Sir; but it sounds reasonable.

805 Mr. *Bryant* Would you then take a point six miles to the north-east of the proposed runway at Foulness—you would have about six miles from Clacton, at sea, and I do not think there are any schools there. — Yes.

806 And if you were landing the other way, you would be at least two miles north of Sheerness, and I doubt if there are any schools there. So the comparison with Windsor does not really have any effect on this Foulness area, does it? — I think what I have sought to do is to make it abundantly clear that where you do get noise interference it can be a very serious matter, I then tried to quantify in how many schools this is likely to occur, and it is for the Commission to assess the importance of this.

807 Please do not think that I am criticising . . . the point is this: that the fact that people have suffered, that Windsor and Slough have suffered because you have an inland airport, and Windsor and Slough are roughly six miles to the west of the favourite take-off runway at the London airport, therefore they get all the noise; whereas now, with this proposition, the noise will be distributed over the North Sea or in the estuary. — Schools in Hillingdon, for example, to the north of Heathrow airport, get a very considerable amount of noise.

808 Actually, would you say that the noise band of this airport in line with the runway is no more than four miles wide—two miles on either side of the runway? — I do not think I am qualified to answer. My job is to take the information of the noise given me and try to summarise the educational effects of that. I think it is fair enough to say that the general—shall I say the area of search—the area in which you will find this trouble—is roughly cigar shaped.

809 And taking into consideration turning away from flight fall, a small dumb-bell shape would be a more accurate description. — Possibly.

810 Like a dog biscuit. — It certainly seems so at Heathrow.

Inspector Would it help you that we are watching very carefully the contours at Heathrow, and we will watch it very closely both here and elsewhere?

Cross-examined by Mr. Purchase

811 Mr. Springett, I take it that your main concern is for the education of this area, and therefore anything that alleviates or improves the condition is to your desire, your liking? — If it alleviates what?

812 Anything that will ease it and alleviate it? — Yes.

813 Therefore, if the airport is sited further away than is shown in the Commission's document, which results in six miles benefit from the schools, wherever they be on the map, it would be to your advantage? — Yes, anything that would reduce the noise would be to advantage.

814 And that is your present concern? — Yes.

Cross-examined by Mr. Michael King

815 The last page of your proof,* Sir, quotes 1966, Southend airport, in arriving at the 35 NNI contour, and I believe you said in answer to an earlier question that those were the figures quoted at an earlier inquiry into the extension of the runway at Southend? — Yes.

* p. 39.

Printed image digitised by the University of Southampton Library Digitisation Unit

816 At that time, was there such a thing as an NNI contour? — Yes.

817 It was in fact quoted as a 35 NNI contour, at that inquiry? — Yes—maps were submitted, I have them here.

818 Not at a decibel level? — Maps of NNI contour were submitted and also tables of PNdB frequencies produced to Mr. Fleming.

819 Are you quite happy that the figures, such figures as you have quoted here, tie up satisfactorily with the figures on page 21* of the evidence of Mr. Jennings Smith? He is quoting the number of persons at present affected by noise from Southend airport. — I do not think there is a direct connection between my evidence and Mr. Jennings Smith. He is concerned with the population between general contours, and I am concerned with particular locations for which Mr. Jennings Smith provided information which leads me to understand that there is liable to be interference with speech.

820 And you are starting with a different basis? — In so far as my schedule of schools in relation to Foulness airport is concerned, this is based on the estimates that Mr. Fleming has given, based on the Commission's contours extended by Mr. Fleming in the way he has described.

821 I am sorry—perhaps I am leading you improperly, or not leading you . . . you are citing this effect on Southend as a bonus which will be gained if Southend is closed and Foulness opened? — Yes.

822 The schools illustrated on your JAS 3 are not 1968 figures but 1966 figures? — The figures that Mr. Fleming gave me were those existing 1966 figures, and he adjusted them for changes in airport traffic in the last two or three years, and they were properly adjusted before I made the table.

Inspector It does say, 1966 traffic.

823 Mr. *Springett* Yes, I am sorry. The words in brackets on the heading refer to the 35 NNI contour. They were schools within the NNI contour as drawn from the 1966 traffic, but in my evidence I think I do say that the tables of frequencies that I used in order to work out the costings were adjusted on Mr. Flemings' advice to take account of the reduction of traffic since the last Inquiry. I am sorry—it is not quite clear. I also say in my evidence that I am advised that the present NNI contours are about three less than the 1966 ones, but I suppose, in that sense, one could have consulted this list of schools . . .

824 Mr. *King* I am afraid I do not quite understand. This is the 1966 ratio on table JAS 3, but all the figures in your evidence are related to those figures, up-dated to 1968? — Yes.

Mr. *Frank* I have no re-examination.

Inspector And I have no questions. Thank you.

(*The witness withdrew*)

MR. D. E. TANTON called*

examined by Mr. Frank

825 You are Donald Eric Tanton, and a Fellow of the Royal Institution of Chartered Surveyors, a Fellow of the Chartered Auctioneeers' and Estate Agents' Institute, a member of the Central Association of Agricultural Valuers, and a member and Past President of the Essex Agricultural Valuers' Association. You have been resident in south east Essex for 42 years, and in practice as an agricultural valuer and surveyor for 35 years. Since 1943 you have been sole principal, and later senior partner, of the firm of Offin Rumsey & Hilliard (formerly, until October 1968 Offin & Rumsey), and throughout those 26 years you have been fully engaged in valuations and surveys of agricultural land throughout the County of Essex and adjoining Counties. — That is so.

826 I do not think there is any amendment to your Proof of Evidence? — No, Sir,

Inspector I think, as this is agricultural, it may be best if the National Farmers' Union batted first here. You may deal with points and save other people asking the same questions.

Cross-examined by Mr. Wallace (National Farmers Union)

827 Mr. Tanton, I believe it is correct that in producing your Proof of Evidence you have been in consultation with the local NFU? — Yes, in fact I have been in consultation with the NFU in national, county and local spheres.

828 Sir, perhaps in view of the comments that have gone before, I ought to say that we have not yet formally written to the Roskill Commission to say we are relating to your evidence; but perhaps we could say that now, at this stage—that we are relating to your evidence as far as agriculture is concerned.

829 *Inspector* As far as this site is concerned?

830 Mr. *Wallace* As far as agriculture in this site is concerned, yes, and we are producing other evidence and therefore my questions are primarily amplification rather than in derogation. Mr. Tanton, in paragraph 1 of your proof of evidence you refer to the fact that your instructions included not only the matter of the off-shore site but also to the alternative shore site? — Yes.

831 From the point of view of the effect on agriculture which of those two proposals would be likely to cause less damage to agriculture? — Unquestionably the off-shore site.

832 Now may I pass on to paragraph 4† of your Proof of Evidence on page 3. You refer towards the end of the page to Ministry of Defence land. I know that you discuss this land later on in your proof. — Yes.

833 What I would like to ask you is simply this: do you consider that if the Ministry of Defence land were

* p. 15.

* See also p. 41. † p. 41.

Printed image digitised by the University of Southampton Library Digitisation Unit

to be made available for agriculture it would make good agricultural land? — Yes, unquestionably. There would be a certain amount of works to clear obstructions from the agricultural point of view, but we have many examples up and down the country of clearance of concrete and so on on airfields and the gradual restoration to full agricultural production land which had for a time gone out of agriculture.

834 What I am putting to you is this: that should the airport come to Foulness and land is taken elsewhere from agriculture this to some extent would be a bonus to agriculture? — Oh, yes, unquestionably.

835 May I turn to page 6 and paragraph 6* of your proof of evidence. You say there: "It may be thought that the greater part of the land dealt with in this report would be regarded as a 'noise buffer' and would therefore remain in agricultural occupation." Would you agree that agriculture is probably the best user of land adjacent to an airport? — Yes, I would.

836 And therefore by the same token the land which is immediately adjacent to the Maplin Sands, that is Foulness Island and the Paglesham area, would you accept that should best remain in agriculture? — Yes, I should think so.

837 Did your instructions include examination of the agricultural land north of the Crouch? — No, my instructions were to confine my report to the land south of the Crouch though I am, of course, in my general practice, familiar with the land to the north.

838 As part of our submission concerns the Crouch could I ask you if you could give us some general idea as to whether the land to the north of the Crouch is good agricultural land or poor? — I have before me the Ministry of Agriculture and Fisheries Land Quality Plan,† which is of course a very small scale plan and only regionally scheduled, but on this plan the Dengie peninsula, that is the land immediately north of the Crouch, falls mainly into two categories, very good or Class 1 land, or medium, Class 3 land. A more detailed investigation would divide it much more finely into first, second and third and possibly a very small proportion of fourth category land, but the land north of the Crouch is predominantly very good, Class 1.

839 *Inspector* While we are on this topic, is it broadly right that the Dengie marshes area is better land than land further west? — That is so. The fringe land of the Dengie marshes is reclaimed silt land which is a very high grade arable land, with modifications in places, but that is the general pattern.

840 And that is a Grade 1 area? — Yes, not entirely; there are some low lying marshes in places but there is an area of Grade 1 land near the east coast of the peninsula and another part of Grade 1 land running from Burnham right to the north tip of Bradwell-on-Sea with intervening very ordinary land.

841 Mr. *Wallace* May I turn now to page 7 of your Proof of Evidence and to paragraph 7.2* in particular. I am not quite sure what you mean by your paragraph in relation to Stage I to 1981 where you say: "It is anticipated that no additional agricultural land will be scheduled for housing and ancillary development at this stage." You are not saying that no agricultural land will be required but you are just saying that no further schedules will be made? — That is the instruction I have and that was brought out by Mr. Jennings Smith in his evidence that there is sufficient provision already made to cover up to 1981.

842 Unless the Inspector rules me out of order on this, may I ask you as a Valuer whether you would expect farmers within those areas up to 1981 to get agricultural value or above agricultural value for their land? — Am I free to answer that question, sir?

Inspector You can try, yes.

Witness At this stage where this land which it is anticipated will be scheduled for housing one would expect the owners to receive development value.

843 Mr. *Wallace* May I go on to Stage II up to 1996 and may I put an even more difficult question to you, I accept it is difficult, but would you expect farmers who will be affected by the 18,000 acres all to get development value or not? — I think it depends entirely on the procedure under which this development takes place. If in fact it takes place under new town development procedure they certainly would not get full development value, but we have seen so many changes in the basis of compensation for land over the last 20 years that it is a matter of pure crystal gazing to say what the basis will be from 1981 onwards.

Inspector A very fair answer, I think.

844 Mr. *Wallace* I would entirely accept that. With your permission I will just put one question and that is that if farmers have made up their minds about this airport on the assumption that they will all get full development value would you consider this to be somewhat unwise? — Yes, I should certainly not like to guarantee they will all receive full development value.

845 May I go on to page 9* and this is a continuation of paragraph 7.3. Sir, I don't know whether you would consider it helpful, I would personally consider it helpful, if you would agree to ask Mr. Tanton to point out very roughly where the land referred to in his schedule was situated. So far as I know there is no map attached to the schedule and it would be helpful if I could have it.

Inspector Purely for Commission purposes we shall of course find this out, but for the purpose of this hearing I think it would probably help if Mr. Tanton did point out roughly where it or describe roughly where they are.

Mr. *Wallace* I just wonder whether on the map behind, Mr. Tanton might point to it. (*The witness indicated*)

---

* p. 42.

† Available from MAFF Publications Department, Government Buildings, Tolcarne Drive, Pinner, Middlesex.

* p. 43.

Printed image digitised by the University of Southampton Library Digitisation Unit

846 *Inspector* Where does Wallasea come in this classification? – Wallasea I would put as good, just within the "good" category because it is extremely well developed and farmed. This is land which years ago one would have definitely called "medium", but it has been so well drained and improved that it is getting towards the "good" category. It is not a hard and fast category.

847 *Inspector* Does that meet your requirements?

848 Mr. *Wallace* If I can elucidate one or two points because I cannot fully see that map from here. Would, for example, Paglesham and Great Stambridge, Barling Magna and Little Wakering come within your "good" or "very good" areas? – Starting with Paglesham, "good" bordering on "very good". It is good class, 2-plus getting towards 1. Your next parish was?

849 I went down to East End and Great Stambridge. – Stambridge comes in here: "good", plus 2, "very good". "Very good" I would say most of it.

850 Then I went to Farley. – Nearly all first, "very good".

851 And generally eastwards from there up to Foulness Island? – Stopping short of the islands coming into this peninsula nearly all "very good". There is a little patch in the War Department land which is not. Foulness is very largely in the Ministry map categorised in the first, "very good", but they cannot be farmed in line with the "very good" areas of land which would be free and quite eligible as "very good".

852 Now I must take up with you one point you made and that is that the area shown on that map does not accord precisely with the areas which you were shown in order to produce this proof of evidence. Again, without wishing to go into minute details, to what extent does that map there differ from the instructions which you were given?

Inspector I am not sure you were here yesterday when it was made quite clear that these splodges on the map here can be no more than diagrammatic or schematic at this stage.

Mr. *Wallace* I accept that. If Mr. Tanton can say that it approximates very closely I will be quite content. – The plan on the wall was new to me when I came here yesterday. The line on my plan which was laid down by Mr. Jennings Smith, the County Planner, is approximately the same. I would say that the throat of the lobster's claw in the lower part, if I may use some nomenclature which came up yesterday, if you can see the sort of right-hand blodge inside the middle, my line goes down through that and goes right down a rather straighter line there, but diagrammatically I have taken it of course in very much greater detail off a 2½ inch plan and analysed it in detail.

854 It is a fairly minor distinction? – Yes, as a diagram I think that accords reasonably.

855 I am not sure whether you were here when Mr. Jennings Smith's evidence was subject to cross-examination? – Yes, I was.

856 You will recall then that some people suggested that maybe figures of farms had been underestimated that more land would be required elsewhere. From an agricultural point of view if that were the sole criteria, which I appreciate it is not, but from an agricultural point of view were there to be a need for more land to be taken where would you think the correct direction would be? – From a purely agricultural point of view only it would be a very great pity if any material part of these 15 square miles were included. Indeed, most of the developments which have taken place over the years on the outer fringes of Southend and the little town of Rochford and so on have been built mostly on the very fine agricultural land in the county, possibly in the country, and most of the land included within the lobster's claw is of that category. There are a few little patches where the environment might be streched but for the most part from the purely agricultural consideration one would rather go outside.

857 Yes, and if you were to go outside, would it not be correct, you would have virtually to go west? – Towards Basildon, yes, crossing of course the new arterial road.

858 Would you say that the land to the west of that claw is of the same or of a lower quality than the land within that claw? – For the most part very much lower quality; similar quality to Basildon, which was very properly placed on very ordinary land.

859 May I turn now to the subject of horticulture, which you mentioned round about the same place? – Yes.

860 Would you consider that horticulture might be able to continue irrespective of urbanisation? – Unless the land were definitely required urbanisation would not interfere with horticulture.

861 Yes, so that what I am seeking to say is this: the horticulturalist might not be so adversely affected as farmers? – I think that it is quite likely, most of them would continue in their present work until the point is reached, the point of saturation is reached when the development has to take over the land, and of course, some of them are doing enormous production on five acres.

862 This is what I had in mind: they are relatively small pieces of land? – Yes, they might continue almost to the last moment before take-over.

863 Paragraph 8,* you refer to severance and fragmentation; you are dealing with the actual airport sites only? – Yes.

864 I know you deal with roads later on? – Yes.

865 But you don't deal with that under the same heading as severance and fragmentation. Would you not agree that a road through this first class horticultural land to which you are referring would have very serious consequences indeed? – Unquestionably, of course, and a rail beside it; yes, it is quite a wide cut.

* p. 44.

Printed image digitised by the University of Southampton Library Digitisation Unit

866 Have you any idea how many acres per mile of these communications would be required? — The ordinary motorway standard, on fairly flat land, two lanes would, according to my calculation take somewhere about 25 acres per mile. If it were three lane it would take more, and if there were a railway alongside, again that pushes it up possibly to 50 acres per mile. They are very rough calculations, but other witnesses would be able to give a much more accurate assessment.

867 Of course, I just wanted to get the measure of it because you would agree, would you not, that a slice of 50 acres out of a farm would be a very serious agricultural problem. — Yes, it would be a serious loss of land, and a loss of access from one side of a farm to the other is in a way a worse factor than just a loss of land.

868 *Inspector* The basis of your question is 50 acres, you have a farm of either one or two miles long to give that loss of a farm to a motorway. — Yes, which we might find in this area.

869 Mr. *Wallace* I don't want to anticipate my evidence, but this is precisely the point I have in mind, and I suppose you as an agriculturalist would hope that when the final route of that road were to be decided, which I appreciate is not at Stage II, as much attention as possible should be given to the elimination of cutting farms in half? — That is most important, yes. Wherever —if there is any opportunity anyway of following the existing road pattern; of course, the severance has already been done, so that where the road is being, a big road, is being superimposed on a small one the severance is much less than if it is going through virgin land.

870 Yes. May I just ask you this point: there is a lot of cereals grown in an area which you describe as "very good" and "good". — Yes.

871 Would you accept that cereal farms by and large have to be much bigger in order to be viable? — Yes, they do, but the cereals grown in the very good land are normally on rotation, the market garden crops, potatoes, roots, and other similar crops. The very good land is not only for cereal growing.

872 What I was seeking to establish is this: if a man has a farm which is 1,000 acres or more and he loses, say 100 or 200 acres by roads, this may not appear proportionately such a big loss but from the point of view of farming economics it might be very significant? — If he is geared to 1,000 acres, and suddenly cuts down to 800 he has the equipment and everything else, the profit bearing operation of his farming may be lopped off.

873 Did it feature in your instructions what the production figures from this area might be, gross production or net production? — I have been into that subject, but I am instructed it is not a part of this particular stage of the inquiry, and it is, therefore, not in my proof of evidence.

Inspector We are seeking great detail, as you know, Mr. Wallace.

874 Mr. *Wallace* I will not press the point. May I ask you one or two other points briefly before I close. Supposing this airport were to come here, and supposing the ancillary development either on the scale envisaged there or may be even greater were to come about, how do you rate the chances in this area of farmers being able to replace their farms? — No possibility at all on the 18,000 acres or thereabouts, of replacing in this area. I mean, we have virtually a rectangle that is shown on there, very irregular, but it is going to be virtually filled with the urbanisation with the exception of 15 square miles of good quality arable land, and farmers who are displaced here have to go outside the Rochford Hundred to find replacement.

875 Yes, and when they have to go outside, the price which they have to pay for the size of farms available can be quite different from the ones to which they have been used? — Well, current prices for replacement of farms they possess are extremely high. Many feel above the economic value.

876 I see. What I am seeking to establish is this. Obviously, in the interest of the nation, if this comes, farmers must be displaced but it would be a severe hardship to them. — Undoubtedly, yes. Many of these farms have been in the same families for generations.

Inspector Mr. Gregory, you are of the allied interests, would you care to bat now without repeating the ground Mr. Wallace has probed.

Cross-examined by Mr. Gregory

877 I would like to adopt Mr. Wallace's cross-examination for the most part. There are just two matters, I wonder if you could help us: paragraph 9,* the influence of noise on livestock husbandry. — Yes.

878 Do you know whether research has been done into this which is at all helpful? — I am not aware of any research and there is a good deal of difference of opinion on this subject. I have had no evidence of serious effect of aircraft noise on livestock husbandry, but it certainly is the case that on the off-shore side at Foulness the matter does not arise because the noise is sufficiently dissipated before it gets to any livestock to be quite tolerable from the livestock point of view.

879 I see. — We have some experience of noise from Rochford airport, quite considerable, and I have no cases on record of any damage being done to livestock.

880 There is a certain concern about a farmer who raises turkeys at Tillingham. — Yes, I know the farm; East Hide Farm.

881 His turkeys would not be affected by the particular noise contours — I think Tillingham, if one has to take the average of the evidence that has been given, Tillingham would be in a very low NNI contour, and I don't think one would have any apprehension in regard to turkeys.

882 Presumably it would be within the 30-35 contour. On the present information I don't know where

* p. 44.

Printed image digitised by the University of Southampton Library Digitisation Unit

the NNI contours go any more than anybody else, but I should think it is bound to be within 35.

883 *Inspector* I think NF1* will help you most. — That is what I was looking for.

884 If it is any help, it is outside 35, according to the drawing NF1. Tillingham village is just outside the 35 contour. — Yes, and as the crow flies about 8 miles north, 8 miles from the side of the line of the runways. Living myself well within a 45 NNI of Rochford airport, I would consider this position would be a very quiet one, Tillingham.

885 Would you agree with the proposition, "Hands off Dengie"? — Yes, I think so. I am acting under instructions in that matter in not bringing Dengie into—my instructions from the county council planner are not to bring Dengie in, but I think we should be merely biting into another area of good land if we went across the river.

886 I think you are fairly familiar with the farms there; are the farms not very well equipped and very large sums have been spent on improvements? — Yes, an enormous amount of new equipment, and they are mostly very large farms with very modern types of farming and equipment. My own firm have carried out a tremendous lot of farm improvements in this area.

Inspector I am now going back to the local authorities. Mr. Wood?

Cross-examined by Mr. Wood

887 I was delighted to hear you agree the land around Paglesham was between good and very good. How do you regard the standard of farming in the Rochford area, equally comparable to the Dengie farming? — Yes, undoubtedly; first class in general.

888 Thank you. I can take a few points of detail here before making some general points: on page 6† you mention net restoration to agriculture, in this case 580 acres. I take it some of that 580 acres would in fact be covered by installations, defence installations at the moment? — Yes. But, I have made a reasonable deduction for obstructions which are not capable of removal.

889 But in fact that 580 acres would be land not farmed at the moment? — Yes. None of this 580 acres is farmed at the moment.

890 And it would be possible that 580 acres would remain fallow as so many of the old airport runways are in the rest of England at the moment. — It is possible that many of the runways have been very successfuly recovered.

891 You could not automatically say that 580 acres would come back into profitable production? — No, I have just said it is possible.

892 *Inspector* I suppose the point is a runway covering 580 acres is rather a large runway; are you suggesting land not covered by concrete . . .

893 Mr. *Wood* I am suggesting that land under concrete as big as a runway. The maintenance area of any complex—I think we must keep this in mind, it does not enter into your calculations at all? — Maintenance area for the airport?

894 Yes. — According to the information that was given to me for the purpose of this assessment, the bulk of the maintenance required on an airport is established within the airport perimeter fence, presumably in this case reclaimed land.

895 Yes, it is of course challengeable, but you have not made any allowance for maintenance areas, you accepted it as being with the confines of the four runway complex. — Yes.

896 Page 7.* I am sure you are aware many of the local authorities in this area are making a point on their conditional acceptance of Foulness as a site the fact that the necessary facilities, the necessary sewage works, and that sort of thing, should be installed before any major urbanisation takes place? Would you regard that as being desirable? — That question is quite outside my brief, in this case; but as in so far as I have an interest in the agricultural community I would feel that to be essential.

897 It might affect the consumption of acreages of land within the various stages. — I think all the necessary services and service areas are all included in the county planner's estimate of 18,000 acres required for this purpose, and sewage disposal would presumably make use of some of the land on the fringe of the river which is not suitable for housing development.

898 Could I suggest to you in this figure of 18,000 acres—I am quoting some farmer friends who checked and re-checked their figures: that 18,000 acres is an under-estimate, and that figure, if we accept a population of only 300,000 (keeping on the very conservative side), that figure of land so consumed by increased urbanisation, would be nearer 24,520.

Mr. *Frank* This is not the witness to give this answer.

899 *Inspector* You are asking the witness to express an opinion on the density of urban development. — That matter is dealt with by Mr. Jennings Smith whose instructions I have . . .

900 *Inspector* You cannot expect an agricultural witness to express an authoritative opinion on whether 12.5 or 15 persons per acre is a . . .

Mr. *Wood* But this has been worked on the density at Southend, which is 17 per acre.

Inspector The best thing is for your informants to defend this later on.

901 Mr. *Wood* Yes. On page 9,* you draw up the table of land in the various categories, but I am informed—would you agree with this—that some of the poor agricultural land which you define as "poor" is at this moment covered by horticultural activities. Would you accept for example there is greenhouse production

* See attached wallet of maps and diagrams. † p. 42.

* p. 43.

Printed image digitised by the University of Southampton Library Digitisation Unit

and mushrooms which can take place on poor agricultural land? – Yes.

902 To say some of this area is poor and would be taken up by urbanisation does not mean to say that highly productive acreage would not be taken in by urbanisation? – That is so, obviously in the horticultural areas, and the factory farming, mushroom houses and so on might be the last to go, but there would be a big production loss if they went.

903 Just to refer to an area of land as "poor" is just referring to the quality of land and not productivity of it. – The inherent quality of the land . . .

904 It is almost an Irishism, that you can have high productivity from poor land. – Whether it be horticultural or livestock is not dependent on the quality of the land.

905 You accept it applies to this area that some of the poor land is highly productive? – Yes. Some of our biggest horticultural installations are on land of certainly not even good corn growing category.

906 You spoke about severance, and suggested that these new communications systems should run over existing roads as far as possible? – If possible, yes.

907 One would agree with that; but you know the area as well as I do. Would you accept that the roads are highly circuitous and have many right-angled bends, and as such are scarcely ideal for siting a major communication system on them–as speed is the essence? – I quite agree that the road to Paglesham could not be converted into a motorway.

908 And to points west! So that severance is likely to be an acute problem, a serious problem? – Yes.

909 And you cannot have it, using the existing roads? – Only in some places.

910 I duly agree; and you would accept that the degree of behaviour and acute suffering to farmers varies in this sort of project as to whether they are tenant farmers or owner farmers? – Yes, it does.

911 My friends the NFU will be looking after their interests, but the tenant farmers will be likely to suffer acutely. At least owner farmers will be able to look forward to doing their farming on the beaches of the Bahamas. – Not necessarily, but the owner-occupier is going to be able to replace his farm. The tenant farmer is in considerable difficulty these days, and although the compensation has been slightly increased, it is still insufficient to enable him to buy a farm, and the renting of farms today is a very forlorn hope.

912 It would mean, for the majority of them, the complete loss of their livelihood. – It could be, if they were unfortunate and could not get a tenancy.

913 One final question; as an agricultural expert, would you regard the high degree of urbanisation as being a reasonable environment for high quality farming? – It has its drawbacks. We already suffer in this area from trespass on the fringe of development, and if the development converges into a smaller area, we have 15 square miles left. Interference and trespass will take place, but it is usually mainly on the fringe, and wherever that fringe occurs, the worst of the interference takes place.

914 I do not think our farmer friends would agree with you, and I would put it to you that farming in that sort of context–highly efficient farming would be so inhibited as to be very much restricted, and that the tendency of the public would be to regard that comparatively small area of rural England still left as just a large park into which they could go and do what they wished to do. – Well, farming still continues in the environment of big cities and towns. There is this problem of trespass, but the farming still continues, and produces food.

Cross-examined by Mr. Orchard (Ashingdon Parish Council)

915 Just one question; you mention on page 6,* the offshore site. In this case, no part of the agricultural land would be acquired for the airport site, other than road and rail links. Where do you get this opinion, may I ask?–is this your assumption? – I got it from the publication of the Roskill Commission.† The offshore site, which is sited on the sands, not agricultural land.

916 The question was asked with regard to maintenance of this airport, looking into the next century–don't you think that there is a possibility of Foulness being partially or fully industrialised? – That, I suggest, is a planner's question. But we are looking into the next century. We will undoubtedly need to continue using agricultural land somewhere, apart from urbanisation . . .

Inspector This is no question for this witness.

Mr. *Orchard* Then may I put another question to him?

Inspector If it is the right question–yes.

917 Mr. *Orchard* What would be your feelings if this land were taken for airport use? – Very regretful that land of the quality of Foulness Island should have to go to industrial or urbanisation use.

918 *Inspector* Which land are you talking about?

Mr. *Orchard* Foulness Island, Sir.

919 *Inspector* No part of the offshore site falls on Foulness Island.

Mr. *Orchard* No, but I am talking about the industry and industrial development on the island itself.

920 *Inspector* So you are positing, that if as a result of the airport industrial development took place at Foulness Island, what Mr. Tanton's reactions would be?

921 Mr. *Tanton* I would be very sorry, because the land at Foulness Island is part of that irreplaceable belt of silt land which is worth protecting. It would be unfortunate if that land had to go, but unquestionably in the next century land somewhere will have to go.

---

* p. 42. † Reproduced at p. xv.

Printed image digitised by the University of Southampton Library Digitisation Unit

922 *Inspector* It will be unfortunate if it happens at Foulness Island?

Mr. *Orchard* That is what we have to worry about, as residents. Thank you very much.

Cross-examined by Mr. Smith (Barling Magna Parish Council)

923 Just one question: when you talk about the unfortunate situation of severance, you are considering the road running east to west. In the earlier evidence given, Mr. Sharman and Mr. Jennings Smith were questioned by me—you see, your urban area, is divorced from the planned city centre at Southend and a suggestion was made that there should be a road link joining the two—Southend with Wallasea, Canewdon—which would of course sever us good farming land. Do you not think that this would be a very bad situation to arrive at? — You mentioned Wallasea—that is not within the development . . . the claw there . . .

924 Canewdon—the end of the claw. And undoubtedly a very much improved communication between Canewdon and the centre of Southend may be necessary—some would be based on existing roads, some would have to be new. — That is one of the inevitable factors if development is to come, and some land would go for it; but this of course is not in the nature of a three-lane motorway construction.

Cross-examined by Mr. Purchase

925 I refer now to the picture when it becomes necessary to communicate with other parts of the country including London. The road and rail link from an agricultural point of view is it preferable that this could be elevated?

926 *Inspector* Which road and rail link is this?

Mr. *Purchase* The link that there will be to communicate with London, the major one if and when it is required.

Inspector That is not a matter for this inquiry, this is outside of local implications.

927 Mr. *Purchase* If this road and rail link were to be elevated in the form of an overhead electricity line would that be preferable for the farming communities of the area? — That is a point to which I have not given any consideration, but I think it would be most undesirable to elevate road and rail links. The fantastic cost which would be incurred, a very small fraction of that could be better applied to under- or over-pass to connect up the severed farms and the offensive nature of an overhead road and rail on the countryside would be about a thousand times as bad as the present line of pylons.

928 I prefer not to discuss the subject of cost. I am asking whether you think it is less disturbance to farms? — An elevated road and rail would of course provide direct access underneath but from an engineering point of view I would have thought it would be simpler to have an under-pass—over-pass.

929 Assuming that as a proposition one would then have to rise to a gradual gradient to reach an elevated roadway and therefore on the plan of the siting of the airport as shown by the Commission would be rather difficult to achieve such a gradual gradient, and I suggest that the airport should be further away than has been put forward. That being so one would now have a picture of an airport some distance away from Foulness Island and a buffer area may develop for industry or other sources, and I am suggesting that at that stage not necessarily other residents but farmers and people who get their livelihood from Foulness could remain and possibly even the military may remain there providing they had no objection to an airport in their close vicinity.

930 *Inspector* Mr. Purchase, what is your question, please?

931 Mr. *Purchase* The question is this, that if the fact is established it was better from a farming point of view, an elevated roadway is suggested.

932 *Inspector* You want to know whether an elevated road and railway is better or worse from an agricultural point of view?

933 Mr. *Purchase* Yes. — My first reaction is one of aversion to an overhead railway. From a farming point of view . . .

934 *Inspector* He wants your view as an agricultural expert, not as an aesthetic expert. — There might be a slight economy of land by pushing the road up on stilts, on the other hand the dislocation in drainage and cultivation of land with an enormous number of pylons for the road to sit on would be a very serious interference with agriculture. I cannot think that an elevated road would be more advantageous to agriculture than a road on the level.

935 Mr. *Purchase* I am not discussing the number of pylons, I am saying it would be on pylons and what I am saying is an elevated roadway only occupying pylon space would that be a detriment to farming or would that be preferable to farming particularly in view of your earlier answers in relation to a ribbon that will be taken across the countryside? — It is possible that from the pure act of farming it would be less detrimental, though one foresees the problems of interference with drainage and that sort of thing.

936 I appreciate that. — It would take less land and would facilitate easy passage from one side of the farm to the other, but I am quite sure that there are considerations with which I am not dealing.

937 You do consider it is no disadvantage to farming? — From the purely farming angle there would probably be no disadvantage in putting the road up on stilts, the road and the rail, but I am quite sure there are other considerations which would come into this.

Inspector Any other questions of Mr. Tanton?

Mr. *Frank* No re-examination.

Inspector I have no questions.

(*The witness withdrew*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Frank* I am quite willing to call Dr. Schaefer but I apprehend that there is going to be quite long cross-examination of Dr. Schaefer.

Inspector I think possibly we will start afresh tomorrow on birds.

Mr. *Miskin* Before you do that, sir, you may recollect that I am instructed by the Burnham-on-Crouch Urban District Council as well as by several of the yacht clubs and Burnham-on-Crouch fall due tomorrow, whereas my other clients fall due on Wednesday, 21st May. Their interests are more in common and first of all I would invite you to say that Burnham's interests shall be represented on the Wednesday, 21st May, at the same time as the yacht clubs.

Inspector I am perfectly willing.

Mr. Miskin Very much obliged to you. The second application I have to make arises in this way. You will have noticed as will those others who have had time to read our statements that in the main both the Urban District Council and the yacht clubs say this: "We hate the thought of an airport. We are deeply troubled about the following possibilities", and I hope I have made it clear what those troubles are and how they cannot be further elaborated really successfully during this hearing. They are factual statements and so basically factual that I would not have expected anybody at this stage to have wanted to test those facts—the number of sailing boats we have on the river and that sort of thing, and accordingly those people, that is to say the Council itself and the sailing clubs, are not inclined of their own volition to be here any more. That is not a calculated insult to my learned friend who will be operating tomorrow, it is rather like going out to a good dinner and leaving before the brandy, but we do not want to spend more money than is necessary and I wonder whether it could be dealt with in this way. If anybody wants to test the statements made on behalf of either of my two clients perhaps they could inform my solicitors whose name appears in the programme and we will then ensure that the appropriate witness is here on the 21st to be asked questions, whereas if we hear nothing by the end of the 14th May, which is seven days before the 21st, perhaps we could then inform them we are not proposing to use further time.

Inspector That, I think, is perfectly sensible. One point I must make is that we programmed your authorities and your interest for May 21st. It may be a little earlier, but whatever date it may be, unless Mr. Miskin's solicitors hear to the contrary, he will not bother to bring witnesses to prove what he considers to be a mainly factual statement, so if that is understood we will leave it at that. All right.

Mr. *Miskin* I am very grateful.

Inspector We will adjourn until ten o'clock tomorrow morning.

Adjourned until tomorrow morning at 10 o'clock

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

WEDNESDAY 7 MAY 1969

THE CIVIC CENTRE
SOUTHEND-ON-SEA, ESSEX

Before A. J. Hunt, Esq.

Oral evidence taken from:

Essex County Council (*Dr. G. W. Schaefer*)
Southend-on-Sea County Borough Council (*Mr. N. Harris, Mr. T. B. Hill, and Mr. R. F. Lloyd-Jones*)
Kent County Council (*Mr. W. H. Deakin*)
Rochford Rural District Council (*Mr. G. A. Knowles*)
Mr. J. S. Orchard (personal capacity)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Orchard* A point of information: yesterday Mr. Douglas Frank, QC, was bitterly complaining about receiving late information, and we have a supplement to Mr. Schaefer's evidence this morning. I think it is a little unfair at this late hour to expect the first cross-examiners to absorb this before they speak.

Mr. *Keene* Can I say this about Dr. Schaefer's supplement: first of all it is a supplement to his proof which has been in for some little time now, a very substantial proof and a very slim supplement. Secondly, I am about to take Dr. Schaefer through that supplement orally this morning so everybody should have full time to assimilate what is contained in it.

Mr. *Orchard* I would like to add that this is the third day of the Inquiry . . .

Inspector Mr. Orchard, this problem of late evidence is a very difficult one. Most of it is coming from private small evidence, and I have done nothing to stop the submission of late evidence, of private evidence. I think the best thing is to avoid recrimination. This will be dealt with as Mr. Keene has said by going through the proof in the normal way, I might add.

Mr. *Orchard* I don't object, but I do object to other parties objecting . . .

Inspector Mr. Orchard, you have made your point in the first case.

Mr. *Keene* I will call Dr. Schaefer.

DR. GLEN WILLARD SCHAEFER* called

examined by Mr. Keene

938 Dr. Schaefer, are you Glen Willard Schaefer and a professorial Research Fellow of the Biophysics Research Unit, at the University of Technology, Loughborough, Leicester; a Doctor of Philosophy in Mathematical Physics of the University of Birmingham; a director of research for thirteen years in the field of atomic reactor physics, collisions of atoms, aerodynamics of bird flight and gas turbines, vibration failures of axial compresssors and radar identification of migrant birds and insects with application to the measurement of migration density; and a keen amateur field ornithologist for twenty-five years? — Yes.

939 You, of course, have been asked by Essex County Council to submit technical evidence relating to the possible hazard of birds to aircraft at the proposed airport site at Foulness? — Yes.

940 There is as we have just been told a supplement† to your evidence. Can I just deal first of all with the errata which appear at the end of it. I don't want to take you through this because some of them are typing errors but there are two, I think, which I need draw attention to. — Yes. There is one serious typing error, page 18,‡ near the bottom, and mathematically inclined people will have discovered it already. Four lines up from the bottom, the number 4,000 should read 24,000; it is one of the key figures on the paper.

941 Paragraph 3.3(a) — Approximately 4,000 should read approximately 24,000.

942 I think as you say it may be seen by anyone with a minimum of mathematical flair; it is a typing error, a counting error. — Yes.

943 Is there another? — There is one small one but it is of some importance, in table 1, page 7,* under the entry, "New Zealand airports", about two-thirds of the way down, under "Strike frequency", the typist has put .01 instead of .1; the "0" should not be there.

944 That should read ".1-3.4". — Yes, strictly average and maximum.

945 Yes, thank you. Now let us turn to the additional evidence that you have. You have made no mention in your main proof of any radar observations taken in the vicinity of Heathrow? — I have not.

946 But I think what you go on to say in the first part of this supplementary proof deals with that. Would you like to read the first part of your supplementary proof dealing with radar evidence. — The reason for doing this is that a good portion of my paper is based on comparing Heathrow evidence with what I expect to happen at Foulness, so on this radar evidence I did not put it in for the following reasons—I read it: *"Radar evidence.* In section 3.2 of my evidence, dealing with the local gull movements at Heathrow, I assessed the number of birds associated with the hazard area by referring to the visual observations of gulls as reported by Sage† (ref. p. 13). I did not refer to the simultaneous radar observations of bird movements made on the ACR 6 approach radar at Heathrow, reported by Bourne, and also summarised and discussed in the report by Sage. I did not refer to the radar results because these flights were well within the visual range of the ground observers, who could also be certain of the species involved. Radar observations are difficult to quantify, and I believe this is especially true for the type of radar employed in this case, because of the necessity for approach radar to use a Moving Target Indicator (MTI) circuit to eliminate echoes from slow moving or stationary targets, such as buildings and trees within the first few miles. As a result, bird targets having progressively slower speeds in the radial direction are eliminated progressively from the radar screen, with virtually complete suppression below a few knots radial speed (the data for which I obtained from the Board of Trade). This means that birds flying in a "wedge" of angles about a tangential path are eliminated. With a headwind, this angle for slow flyers like gulls would be quite large, with a tailwind, small. Since the radar concerned is in the centre of Heathrow, gulls flying *across* the east-west runways in a roughly north-south direction up or down

* See also p. 49.
† p. 57.
‡ p. 53.

* p. 50.

† Sage B. L. *The Winter Population of Gulls in the London Area.* London Bird Report. (London Natural History Society. 1969.)

Printed image digitised by the University of Southampton Library Digitisation Unit

the Colne valley would be virtually eliminated, but least with a strong tailwind, and this was the general nature of the results. Birds flying *away* from the airport, on the other hand, would be relatively emphasised. Without careful interpretation the conclusion might easily be reached that gulls and other birds do not often overfly the runways and flight paths. In addition, gulls and other species sometimes, but not always, fly higher with a tailwind, and may thus be more visible on the radar screen. This effect was assumed to account for the lack of gull echoes on the screen on some of the occasions reported, but it should be recalled that the ACR 6, like many approach radars, cover adequately to below about 1° elevation, and the gulls should be visible for a mile or two at least on almost all occasions, if not eliminated by the MTI.

947 Yes; and I think you also want to say a little more than you did in your main proof about the Brent geese and the observation of them? — Yes. This is self-explanatory, I think. I am not an expert on the conservation of wildfowl. The time given to me to prepare my evidence in section 5.3* did not allow me to gather much information about the Brent geese, and I was forced to use the incomplete data to hand. I have been able recently to consider the subject further, and would like to rewrite paragraph three of section 5.3, and to add a few remarks. The best information on the status of this species and the research in progress should be obtained from organisations like the Nature Conservancy and the Wildfowl Trust.

It is quite plausible that the winter number of these geese is governed largely at the present time by the availability of certain specialised sea grasses. The large-scale reduction of these grasses by natural causes in the 1930s was followed by a 75 per cent reduction in the winter goose numbers. On that occasion at least, the geese did not turn significantly to an alternative food spectrum. Records show that during the past 15 years the British winter population has been increasing on average, probably due to an increase in the sea grasses, but there is no mathamatical reason to expect that this trend will not continue. If the 6,000 or so Maplin geese were to disappear from lack of sea grasses as a result of reclaiming the airport area, it would take some 10 to 15 years, at the present rate of increase, to regain the present British population.

How many of the 6,000 geese will survive is a difficult question. It is thought that some 10 per cent will be able to obtain food and protection in the refuge on the Swale provided by the Kent Trust for Nature Conservation. (This is the site mentioned in paragraph three of section 5.3.) The sea grasses at the Black Grounds on the Maplins may not be reclaimed, and may continue to provide for some fifth or more of the population, provided that new sea currents do not create an unstable substratum, and the airport disturbance is not too great. These latter birds would feed at a mile or two from the nearest flight path, and may not in fact be found to be a severe hazard, although I have recommended that they ought to be encouraged to leave for bird hazard reasons.

I believe the best hope for conserving the geese is to discover how to increase the sea grasses elsewhere, and to create local refuges. Research should be started immediately on the main problem of how to create the correct stable substratum. Possibly a thorough investigation of the existing feeding sites would reveal the necessary information. The large reclaiming operations on the Maplins might well provide an excellent opportunity for movements of the necessary materials, including the existing rhizomes—and I apologise for a typing error in the Supplement in this word. The necessary expenditure is likely to be but a fraction of the expected aircraft damage costs arising from bird strikes in the first decade or two.

948 I must confess that I did not notice the mis-spelling of the word "rhyzome"! — I believe it is mis-spelt.

Mr. *Keene* I tender Mr. Schaefer for cross-examination.

Inspector I think it may help in this specialised field if we hear from the specialists first. Is the Nature Conservancy here? (*No answer*) The Royal Society for the Protection of Birds?

Mr. *Lea* Yes, Sir.

Cross-examined by Mr. David Lea (Royal Society for the Protection of Birds)

949 Mr. *Lea* I represent the Royal Society for the Protection of Birds, and a number of other voluntary organisations. If I may just ask one or two points on this supplementary statement which we have just received. In this you cast some doubt, I think, on the figures obtained from a study of bird movements on the Heathrow radar? — Would you repeat exactly the remark, please?—some doubt on the . . .?

950 Figures obtained by observations using the Heathrow radar? — I have seen no figures. I do not think there are any published.

951 But you refer to the conclusions drawn from a study of this radar. — Yes.

952 But if in fact the conclusions drawn from a study of this radar were in line with the observations made on the ground, you would be happier about this? — Yes.

953 Turning to your second part, on the Brent geese, you say that if the 6,000 or so geese were to disappear, it would take some 10-15 years at the present rate of increase to regain the present British population? — This is what I estimate from the graphs.

954 Is this not in fact dependent on the necessary food being available elsewhere? — Yes, it is.

955 And you do know what it is at the moment? — I am using the present trend on the graph, which presumably reflects a gradual rise in the amount of food available on the British scene.

* p. 56.

Printed image digitised by the University of Southampton Library Digitisation Unit

956 Are you also aware that at times there are about 10,000 of these geese using the Maplin Sands? — Yes, in passage.

957 And are you aware that the Wildfowl Trust consider that the Maplin Sands which are of course the most important site for Brent geese in Great Britain, probably have a vital role as a staging post for the population? — Yes, I am aware of that. I do not disagree with any of their evidence.*

958 But this would you not agree is a very important point when one is considering the removal of a very large proportion of the food available to the geese there? — It would also influence the passage of birds, yes.

959 If I may now turn to your main statement of evidence; you have obviously had a very considerable amount of experience of certain types of bird movements and I appreciate that you have only had a comparatively very short time to prepare your evidence, I wonder however if you could tell us how much practical experience you have had in the study of gull movements and other birds in relation to estuaries? — I have done no research on the subject. I have frequently observed these phenomena over 20 or 25 years, I suppose a number of weekends per year.

960 Have you been able to carry out any personal observations either at Heathrow or at Foulness or the Maplin Sands area? — Regarding gull movements I said earlier in my paper that I have not been able to do so. I take the evidence that is also used by the RSPB and the Nature Conservancy, published evidence or evidence in the press.

961 You do also use some other evidence. — Regarding gull movements I rely on the Heathrow case on that of Sage's report which is in common with any other submission to this inquiry, and in the case of Foulness I use data obtained from Rudge,† the same data. I would be willing to accept exactly the same figures as the Nature Conservancy and the RSPB on that matter.

962 Turning to the second page, section 1.4, I think this is the basis of your whole case and I thought we should be quite clear about this. — It outlines what I intend to do in the paper.

963 And you say that what you are trying to do is to obtain a comparison between the situation at Heathrow where the numbers of birds and their movements and bird strike frequencies are available? — Yes. I feel this is the best airport I can use for comparison, I believe it is necessary to compare with some airport where the situation from the bird angle is well known because it is virtually impossible to predict from the beginning what will be the situation at any particular airport on its own. A comparison is necessary, I believe.

964 Do you think it is necessary to be rather careful in doing this because of the very different nature, very different geographical situation of Heathrow and Foulness? — I have tried to take into account to the best of my ability the differences in geography, of tidal movements, directions of movements and so on at the two places. I know it is difficult but it is the best I can do, I feel.

965 Turning now to the third page, the last few lines of the first paragraph* on that page you state that apart from the very rare dangerous situations you ignore the migration background. Could you enlarge on this? — I ignore it in the calculations of the relative hazards because it is very approximately comparable at the two places, I believe, because of the broad front nature of migration on the whole. Where it is very different I refer to that later. Secondly, I ignore it because I believe as I say here the probability of striking birds that are actually on migration I estimate to be about a tenth at most of the probability of striking birds that are actually flying in local movements at either of these two sites.

966 You refer in a reference in fact at the bottom of this page to Dr. Eastwood's book *Radar Ornithology*?† — Yes.

967 Does he not in that book conclude that the study of radar and in fact visual observations in the south-east of England at least show that there is a tendency for many birds and a very striking tendency for some to follow the coast on migration? — We would have to refer to particular species in covering that. The birds more closely associated with the sea would have that tendency except for a few species which I believe do not matter. Is that sufficient? I would go into detail on any species you wish.

968 You were saying that the birds associated with the sea and therefore the seashore I would imagine do, of course, follow the coast? — No, I would not agree with that as a blanket statement, we will have to go into it species by species, but as a general statement there would be more tendency to be influenced by the coastline for birds associated with the sea. If you want me to make it more specific I could try to do so.

969 When you say ignoring the migration background, should you not take into account the fact that a large number of these birds or a population do in one time consist of constantly changing individuals especially at times of migration? — I believe I have taken into account the changing population for the species which I believe are the greatest hazard.

970 Including gulls? — Yes, I have in the case of gulls and again I would accept and have used in fact the same data as the RSPB† have given in their evidence on gulls and the same as the Nature Conservancy.‡

971 At Foulness? — At Foulness, yes.

972 We have not of course included any data on Heathrow? — No, but I believe we are on the same

---

* p. 235.

† "The Birds of the Foulness and Maplin Sands" (The Nature Conservancy's) *Third London Airport*. 1968.

* p. 49.

† (Methuen; 1967.)

† p. 230.

‡ p. 219.

Printed image digitised by the University of Southampton Library Digitisation Unit

ground there because we have a published report or an "in the press" report by Mr. Sage.

973 If we could turn now to page 6, at the very top of the paragraph numbered (iii)* "The commercial airports show a wide variety of strike frequencies." — Yes.

974 What would you consider as a bad example of an airport from this point of view? — From the table?

975 As you wish. — If one looks on page 7, table 1, under "Airports", leaving out Midway Island, which is rather bad though, and looking under the strike frequency column running down again being careful to deal with the same airlines so that one has the same types of aircraft, looking under BEA, for example, there are six entries there ranging from .20 to .69, a factor of 3½ approximately. Edinburgh appears to be considerably worse than Heathrow, for example, and one should bear in mind there has been a very near disaster at Edinburgh as far as I know, not at Heathrow. One could therefore say on the basis of this evidence that Edinburgh looks worse than the other places given for the same airline.

976 Would you like to comment on the apparantly bad figure at Auckland? — Under Auckland one sees a total of 2.0 which is particularly large compared to the others, but most of that two-thirds I think is from land birds of the area.

977 Could you repeat? — Two-thirds of that total, 1.22 out of the 2.0 shown in the paper there under Auckland is from land birds which have no relevance to Heathrow nor, I believe, Foulness. If one compares the gulls at Auckland .36 with the gulls at Heathrow, the last entry .31, they are very similar. What caused me to make that statement you referred to at the top of page 6, "The commercial airports show a wide variety of strike frequencies", derives a good deal from the New Zealand entry of 0.1 average up to 3.4 maximum, that is all the data I could collect in the few days I had at my disposal.

978 Would it be true to say that so far as the Auckland figures you have already down-graded because of the near misses? — I believe I have down-graded them as I say in my report by two-thirds which I derive mathematically and exactly from their own data. I believe it is therefore fair to do so.

979 If we could turn now to page 10,† the bottom paragraph of section 2.5(a)(ii),† am I correct in assuming that these are the categories of incident which you consider provide serious hazard? — (i), (ii) and (iii) are the ones I give and I believe I say on the next page: "I believe that item (ii) is the most probable in south-east England, because of the greater probability of encountering dense flocks of gulls, starlings, etc., rather than a single goose or a swan."

980 Would you agree that a dense flock of small waders such as the ones called knot should be placed in this category? — No, I do not, not particularly, but I would say it is a very low hazard rate even if it was struck compared to the ones I have included in my figures mainly because of the weight of the birds concerned.

981 Could I ask you to compare this with the incident you described in your paper where a crash was attributed to a flock of starlings? — Yes, but not with a modern jet, it was an old fashioned Electra, which is quite another matter and more or less out of existence now by comparison, and by the time the airport starts probably out of existence altogether.

982 You know I am sure these flocks of these small waders, they are very close, in fact? — Yes, but not that close to the dimensions of a jet engine, which is what we are dealing with, we're not striking the airframe but striking the engine in the paragraph you refer to, and jet engines are designed to take up to 48 at once and that paragraph says there must be three or more engines knocked off at once and I think the probability of having this happen is extremely small.

983 What about starlings? — This is in the same category, I should think; yes, it would be in the same category of jet engines which I believe will be in major operation at the time the airport opens.

984 You are of course aware that Foulness holds at times very large numbers of these small waders? — At the present time, yes.

985 At the present time. — And winter, yes.

986 The Essex coast as a whole is a very important site for all these? — Yes, the Thames Estuary in general from Kent up to north Essex is an important site for these waders at the present time.

987 If we could turn now to page 13, and first of all the reference* at the bottom of the page. — Yes.

988 I think as you have already said much of the data is taken from this paper, much of the data relating to Heathrow. — Yes, it has been listed in that paper, although I obtained it previously from the evidence involved.

989 Are you actually aware that this was an early draft of the paper? — It is essentially the final draft, but it is a draft, and I have Mr. Sage's word that it would be altered extremely little, as far as its numbers are concerned, between now and the time that appears in the journals involved.

990 Have you in fact questioned any of the observers who contributed? — Yes.

991 Would you name those you have questioned? — If you think it is relevant. I have questioned Mr. Sage, Mr. Brough, Mr. Wright mainly, and others. The latter two from the Ministry of Agriculture, Fisheries and Food.

992 I know Mr. Wright. — Yes.

993 Would it surprise you if I told you that the observers, including Mr. Wright, are unhappy at the

* p. 50.
† p. 51.

* Sage, B. L. *The Winter Population of Gulls in the London Area.*

Printed image digitised by the University of Southampton Library Digitisation Unit

interpretation which has been put on the data in this draft paper? — Which draft paper, Mr. Sage's?

994 Mr. Sage's. — That is a very broad statement which I could not comment on. Which particular data?

995 Perhaps if we could go through one or two of the data, I can elucidate this. — If you think it is relevant, yes.

996 At the bottom of page 13* you say: "It was found that 400,000 gulls roosted on the reservoirs referred to above". — That is a round figure.

997 A very round figure. — Yes.

998 And these reservoirs are referred to in the immediate above paragraph, situated from the south-west to the south-east. — Broadly speaking.

999 Is it not in fact the case this figure of 400,000 gulls refers to the total gull population in London? — I—not in London, but on the reservoirs mainly.

1000 Including the reservoirs in the whole of the London area, not just those within this arc. — It is true, but the bulk are within that arc. I don't care what you do with that 400,000, it is irrelevant to the calculation.

1001 Can you therefore just give us some indication of what proportions are outside this arc? — I don't think it is relevant, and I would find it difficult to do so. I am quite happy to put that at about 200,000, if it would make you happier. It is irrelevant, as you see in the next line, to the calculation; 400,000 is irrelevant.

1002 *Inspector* If it will help at all, the Commission is, of course, conducting its own enquiries into this matter, including the bird strike, and I have no doubt where there are these conflicting discrepancies they will be asking all the questions in due course during Stage III. I don't want to hinder you at all in your cross-examination, I merely record this will happen in any case.

1003 Mr. *Lea* Thank you very much. If we could turn over the page, to page 14, where you turn to the two reservoirs most directly relevant to Heathrow, King George VI and Staines reservoirs, and you quote a report that the gulls coming to these reservoirs were from the north and north-east. — This is the overall general conclusion of Mr. Sage's report; it is also confirmed by Mr. Brough.

1004 Would you be surprised to know that Mr. Brough has told me that the 30,000 gulls coming into the King George VI reservoirs, which you would accept, I think, is the bulk of the population on these two reservoirs, approach from between west and north, and that in fact 25,500 come in from between west and north-west, and 4,500 from the north? — It is probably irrelevant, but it may well be the case that he said . . .

1005 Why do you think it is irrelevant? — The last approach path is irrelevant; it is the earlier flightlines that are the important thing, where they intersect with the hazard areas of the airport.

1006 I am sorry; I didn't get your answer. Can you repeat it? — The approach path on the last, say, half a mile, the last visible half mile to the observers standing at these reservoirs is irrelevant in many ways. It is where those gulls have been earlier, especially if they have been associated with the hazard area, flight paths, etc., at Heathrow, and I quote from here that Mr. Brough counted 10,000 gulls at a particular rubbish tip a little to the north of the airport and followed the first few of those which passed down the western perimeter of the airport, and therefore definitely within the hazard area.

1007 There is a very great discrepancy on certain of these figures. I think perhaps I will leave any further cross-examination on your earlier . . .

Inspector I think the best course is to identify the differences in order that the Commission may quite certainly at a later stage try and resolve them.

1008 Mr. *Lea* You are aware, I imagine, that this Mr. Brough who is referred to is, of course, professionally involved in this sort of stage? — Yes, I believe so.

1009 Finally on this page 14, which we have probably spent enough time on, could you just identify for me the official who provided this information, or was this just sort of in a letter regarding London Airport at this stage? — Mr. Nuth provided it.

1010 Thank you. Turning to page 16 and the second paragraph,* am I correct in understanding that this figure of 70,000 for September has been calculated from other data not actually from observations? — I have stated earlier, that is on the top of page 15, that I know of no equivalent census figures for spring, summer, or autumn. I stated here the latter figure is the estimated calculation, if you wish, from the ratio strikes from September to mid winter in the above statistics; it may be far higher than that, of couse, or it could be lower.

1011 You are therefore not aware of observations which were made in September 1968 which showed there were about 6,000 gulls on the reservoirs and a few hundred which were considered by the observers to be newly arrived migrants sitting on the airport? — I think the birds on the reservoirs in autumn are irrelevant. They don't seem to be associated with reservoirs that early in the winter; they are birds of passage in September, and they come and go during a month or so, at that time; they don't seem to be associated with the reservoirs.

1012 Where are the 70,000, or whatever large figure you say that are not associated with the reservoirs? — It may well be, I would assume within let us say five miles of the airport in all directions, or any directions. All I know is that the airport officials tell me that there are vast numbers of heavy gulls in August and September, which arrive and then depart.

1013 Have you attempted to quantify this—I know it is difficult when you get these sort of statements on large numbers and so on? — Well, far more than in mid-winter, that is what I have been able to find.

* p. 52.

* p. 53.

Printed image digitised by the University of Southampton Library Digitisation Unit

1014 On the airport? – Associated with the runways, and the actual strikes go up in September associated with these birds on passage.

1015 On passage. – They may be on passage, and just use the airport for dropping off on, I don't know. I don't know whether they are using the rubbish tips or not. All I know is that strikes go up a lot higher in September, pretty generally throughout Europe, in fact in statistics in northern Europe relevant to mid-winter; that the birds are not associated with the reservoirs at that time; that the people responsible for patrolling the runways and clearing-off birds find a large number of large gulls–larger than in mid-winter in the autumn ratio. At the same time, of course, as it is occurring at Foulness.

1016 But you have not been able to . . . – Quantify it. I have taken the mid-winter value for the number of gulls and associated with Heathrow, and I have upped it two and a half times, which is what the statistics go up to, the few statistics I have, the strike statistics of about two and a half times higher in September than they are in winter, and that is the only evidence I have to go on; this is how I arrive at the number of about 70,000.

1017 Bearing in mind what I said earlier that the observers which we have discussed it with say there are a few hundred gulls sitting on the airport in this time. – In September?

1018 In September. – Yes, in the day time; most strikes don't occur in the day time, but we will leave that till later.

1019 Do you not think it is a little dangerous to assume that there is a similar relationship between the bird strike rate and the total numbers of birds present? – Yes.

1020 Throughout the year. – Yes, I could not prove to anyone there is a direct relationship; it is the basis I have to go on, and that is why I have used it. I have said at the beginning very strongly that it is essentially impossible to quantify the problem to hand, and I have done the best in my ability to do it.

1021 You are aware, I think, and we are agreed on these figures that in Foulness in September there are 180,000 migrant gulls? – I accept that figure, that is on the whole Maplin–well 8 miles of the coastal front of Maplin Sands; it was bigger than the airport area.

1022 Of course, but it does seem these September gulls have a different pattern behaviour? they are certainly migrant or a large proportion of them? – Yes, I think so; certainly in the case of the Maplin Sands they are, and I think the Heathrow ones are too.

1023 You say the Heathrow people you have spoken to there say that it is at that time that they appear on the runways and at the airport? – They get the heavier lesser black back gulls primarily coming there at that time, a special problem in September from the heavier ones.

1024 Thank you very much. Turning now to page 18, the final paragraph headed "Gulls",* on that page; we have now got the average figure correctly, 24,000? – Yes, I am sorry about that; it makes quite a difference.

1025 Are you happy with this way of averaging out what is an enormously fluctuating population? – For the purposes of comparison, roughly speaking, yes; otherwise I would have to go through month by month, and this would need another paper a few more pages long. I have only drawn rough calculations, but I have given the average in the paper for something simple–I know they fluctuate, there are many more in September than in winter on the Maplins and apparently it is the case also in Heathrow, but there are many more in mid-winter in Heathrow. I have only broken down the winter by approximately two sentences that are published here.

1026 If the figures which I have suggested for the September gull figures at Heathrow were correct, would it not mean that a comparison of the bird strike hazard in the area in the month of September would throw up a rather different calculation? – Yes, and would disagree with the striking statistics as well which I do refer to.

1027 It would disagree with the . . . – Radically with the strike frequency, being exceptionally high in September at Heathrow, if your figures were accepted.

1028 Unless there was a differnce in the behaviour of the gulls.–There could well be a difference, indeed, yes.

1029 At the bottom of page 18 are you aware how the figures supplied to you by David Rudge were obtained? – I think so; I had a lengthy conversation with him.

1030 And are you aware that he feels that these figures don't include the birds coming from Kent?–He feels that that number is a small fraction, I believe; at least I do believe that.

1031 You believe that it is a small fraction? – Yes. There would have to be an exceptionally large number, far greater than 180,000, to upset the comparison.

1032 If we could now turn to page 21, section 3.4.2. A(1),* which is slightly below the middle of the page–are you aware of the exact roosting behaviour of the gulls at Foulness?–I do not believe that any one is aware of the exact roosting behaviour of the gulls at Foulness.

1033 Are you aware of the broad picture of roosting behaviour? – Yes, I believe so.

1034 Could you enlarge on this? – No. I think it is given well enough in the RSPB and the Conservation paper, which I accept.

1035 Do you accept therefore that when the tide comes in, they roost on the water? – Some do.

1036 Some do? – Yes, depending on the weather.

1037 Depending on the weather? – Yes, indeed–many, many factors.

1038 Do you know what happens in rough weather? – No, not exactly. I can well imagine that some are

* p. 53.

Printed image digitised by the University of Southampton Library Digitisation Unit

driven onto the land areas nearby, if the winds were from the east and strong, they would roost on land.

1039 Do you know what happens in rough weather on the London reservoirs? – No, I do not.

1040 Would you accept it if I told you that they roost primarily on the banks in rough weather? – Yes, I would accept that.

1041 At the very bottom of this page, you suggest that what might happen–I realise it is no more than that, but what might happen is that the gulls would diverge or form into two streams. – As a very broad picture, yes.

1042 If . . . – Yes, as I have stated.

1043 Why have you made this . . . – I ask you–what is the alternative?

Inspector You are the expert there!

Mr. *Keene* I think it is a rhetorical question!

1044 Mr. *Lea* May I repeat my question? – Certainly.

1045 I would like to know what makes you think that this is what they do? – I think it is related to what they would–I won't use the word "want"–but whatever their behaviour would dictate at that time they are looking for a roosting site for the night that is secure. They are looking for presumably any additional food they can pick up as well. These are the birds that are returning from their day flights–is that right?

1046 That is as I understand it. – Just a moment please . . . yes, that is right. Those are two of the important features that they would be selecting out, I should think, and I have stated here that the airport would, I believe, be less attractive for those two reasons than the remainder of the sand areas or coastal areas to the north and south.

1047 Do you think that another possibility is that they will use the very large water areas which have been suggested might be left at each end of the airport site? – Yes, I believe that some of them will do so–in good weather, no doubt.

1048 Or perhaps in bad weather, as this may be more sheltered than the sea? – I do not believe that it will be any more sheltered than the very nearby sea at the present time. These are very large areas of water we are talking about, not little creeks.

1049 But they are intangible. – Yes, but miles is the dimension, not hundreds of yards.

1050 If we can turn to page 22–the bottom of the page, the very bottom–would you accept that if what we were discussing some while ago– that is, that if the people who have observed the gull movements are correct when they say that the entire associated population do not overfly Heathrow, it would tend to invalidate your conculsions about the relative hazards between Heathrow and Foulness?* – I have never assumed that entire associated populations overflew. The figure I took was about one half.

1051 Could I point out that you say–"At Heathrow the entire associated population of gulls overfly". – "Associated" . . . that means those who do cross the hazard area. They have to overfly because they are coming from–in my view, at least–from the rubbish tips and other places much further north. They cross the flight paths–quite distinct from the Maplin situation, I believe.

1052 But your comparison is based on the numbers of gulls at Heathrow given earlier. – Which are associated with the hazard area, yes; and all those–by definition, quite tautologically–across the flight paths.

1053 And if they did not cross the flight paths, if there was a population, perhaps, of this number which would be earlier (?) but did not in fact overfly in any large numbers, the airport or the immediate hazard area? – The immediate hazard area, as I have defined it, extends out for several miles at each end.

1054 But if it was not over the hazard area, then your conclusions would be different? – Yes, they would be different.

1055 Page 28–section 4.1*–I think this question is for the benefit . . . I am sure you and I both know the answer . . . could you very briefly say how much investigation has been made into bird-scaring techniques? – A lot.

1056 In a great number of countries? – Yes.

1057 Would you think that six or so countries would be . . . – Yes.

1058 Mr. Frank, in his opening address, suggested, I think, that the techniques which were used were still very primitive. He referred to fire crackers and so on. – Not as primitive as the word "fire cracker".

1059 I accept that; but they are still fairly simple? – I do not know what you mean by "simple".

1060 I was not sure what Mr. Frank meant. – No.

1061 But do you not feel that if the development of a really efficient bird-scaring system was as simple as I think Mr. Frank suggested, and as I think you tend to indicate, that this enormous amount of research in at least six countries would not have come up with some really good answer by now? – Scaring birds from airports is a difficult problem. I do not suggest that it is simple. I say in fact that it is not very effective on large airfields, even when reinforced by fireworks, if you wish. It is far from satisfactory on large airfields.

1062 And you refer to the possible use of laser beams. – I threw it out as a suggestion, as I have done before.

1063 Are you aware that the Canadian Associate Committee of Bird Hazards have rejected it as a possibility? – Yes, I believe they are misguided.

1064 Is it not true that laser beams are extremely narrow? – They can be made any width you wish, down to a narrow minimum given by physics–a very fine minimum.

* p. 54.

* p. 55.

Printed image digitised by the University of Southampton Library Digitisation Unit

1065 At page 31, the last sentence of the first paragraph,* you say, "If Air Traffic Control were provided with information of hazardous birds approaching flight paths, I understand that there is no reason why this should not be acted upon, unless the interruption were so frequent . . ." Do you feel that if there was a bigger potential hazard situation at an airport such as that at Foulness, that this could be a major factor in its efficiency on the air traffic control side, leaving aside its actual danger? — It would have to be, let us say, an order of magnitude, let us say, 10 times or more bigger at least before I believe it would cause too much interruption. Bigger than Heathrow—if I did not say that before—before it would cause too much interruption.

1066 Thank you. — That is a very general statement—it would have to be very large.

1061 I think I have one final question—if you can turn back, please, to page 30, at the top of the page, where you refer to the refuge which has been created at Auckland airport,* and you are suggesting that a similar thing can be useful at Foulness. — Yes a refuge or refuges—not necessarily similar to that one.

1068 You are aware, I imagine, that Auckland airport, while a coastal one, is inside the estuary, and is not out on the peninsula? — I said it was somewhat similar, I believe—it is not very similar.

Cross-examined by Mr. Knowles
(Rochford Rural District Council)

1069 From the hazard point of view, you will appreciate that we have been talking here of two possible routes for the aircraft after taking off—up the Thames Estuary, or up the thumb towards Canewdon. From the hazard point of view, is there any difference in either of these? — I do not believe there will be any significant difference.

1070 If it were intended to locate a controlled refuse tip adjacent to the runways in connection with land reclaimed—and by that I mean, tipping and covering the tip material on the same day, as it is tipped—would this create any significantly additional bird hazard? — If it is covered as efficiently as you suggest, I think that would be quite in order.

1071 Apart from the hazard point of view, the effect on the surrounding area which, as you will appreciate, is going to be built up—at present over the Rochford area at dawn we have large flights of starlings flying eastwards and in the evening coming back to presumably roost in the woodland areas to the west of Rochford. If you have observed Foulness—do these starlings in fact go to Foulness or to their marshes adjoining, and if the place where they are going to is taken away by the airport, are they going to descend on the agricultural land to the detriment of agriculture? — I do not believe that any significant fraction of them do come to the Maplin Sands at the moment.

1072 They are in fact feeding on the marshes? — They are not feeding on the coastal flats.

Cross-examined by Mr. Orchard
(Ashingdon Parish Council)

1073 Would you agree, Mr. Schaefer, that birds generally are remarkably unperturbed by noise? — Some species are.

1074 Those species at Foulness? — Some of the species at present on the Maplin Sands are pretty resistant to noise. Some are very sensitive to noise.

1075 And when you compare it with an airport like Heathrow, would it not have been better to have pre-judged it with a place like Midway Atoll, because Auckland is inside the estuary? — Yes—I agree that Auckland is not a very good place for comparison for a number of reasons. The Midway would have been even less suitable as a comparative airport, because of the behaviour and numbers of the particular species involved there. They are not easily scared away; their breeding cycle makes it virtually impossible to move them. They are quite different in behaviour from anything on the Maplin Sands.

1076 But there are some at Foulness that would be in the same category? — No . . . the albatross at Midway, you mean?

1077 Are there any birds? — No, not in that category.

1078 You mention on page 5,* at the bottom, "Midway Atoll, while not a commercial airport, has been included to indicate the frequency in a severe situation." Can you tell me how many bird strikes there were, that they average a year? — Yes—that is in table 1,* under "Midway"—300 to 400.

1079 That is with the USA, is it? — Well—the USA military aircraft in general.

1080 And turning to the reference by the last examiner with regard to laser beams, can you tell me whether laser beams are the same as microwave deterrent? — No, entirely different in their characteristics.

1081 And the laser beams have been turned down by the Canadian government; but it does seem that there is a lot of research on the possibility of getting this microwave deterrent through the Canadian government? — Yes, they are doing a lot of work.

1082 Do you know the effects on birds of this? — Yes, I think I am quite familiar with the research—I spent some time, some hours last week in fact, talking to the man concerned, the man in charge in Canada.

1083 Can you . . . — Given the right power levels, using short-wave radar, birds can be paralysed by the radiation within a matter of several seconds.

1084 And they can become greatly agitated? — Well, they are not stimulated at this high power level. They

* p. 56.

* p. 50.

Printed image digitised by the University of Southampton Library Digitisation Unit

are at the lower levels, but at the higher levels it would be closest, I think, to say semi-paralysed.

1085 And do they fall below, or rise above, the beam? – Experiments have not been carried out into this, but I think we can very safely deduce from the experimental results that a bird flying in such an intensity of beam as has been used in the experiments would be sufficiently paralysed to fall.

1086 It says here distinctly, that they rise as well. – Where are you quoting?

1087 I am quoting the Science Editor of the *Financial Times*. –Yes, I see. He may think so: I do not know.

1088 Well, the point is that if they do rise, and you cannot tell me . . .

1088 *Inspector* Dr. Schaefer says he does not think they rise.

1090 Dr. *Schaefer* I am advised from laboratory experiments, which are the only ones that have been performed to date, that the birds would in fact fall, if they were in the power levels: from the laboratory experiments, their wing muscles would be sufficiently paralysed. I think that they would either glide their way down or lose the use of their wings altogether and fall faster than a glide.

1091 Mr. *Orchard* But if you are not sure, there is a possibility that they could rise? – Yes, this could most definitely be put to the test; and in the first few seconds of experiencing such a beam, they may well try to escape from it–for example, by rising; but given a sufficient number of seconds in the beam, I would say that they would have to go downward.

1092 Would it therefore be a hazard to an airport such as the size that Foulness might become with so frequent landings and take-offs? Do you feel then in the circumstances that this could be a hazard? – A hazard to whom?

1093 To aircraft. – They are rising out of the way of the beam.

1094 These birds in that condition could they be a hazard to incoming and outgoing aircraft? – If they are so irradiated as they said on the runways or are we talking of aircraft with one of these beams on board aiming forward at birds in its path?

1095 Precisely. – The latter?

1096 Yes. – I have summarised what I think would happen if they stayed in the beam long enough, they would fall and become less of a hazard, but full tests must be done to show whether or not they possibly rise as well in the first few seconds to get out of the beam and therefore may or may not be an increased hazard. May I add that I do not believe this method will ever be practical, I do not believe anybody will ever see it put into operation.

Cross-examined by Mr. Gregory

1097 The Country Landowners' Association have put in some additional evidence by Mr. Hooper, a farmer and ornithologist, but I believe it has not yet been distributed.

Mr. *Keene* I think it has, sir, I think Dr. Schaefer probably has a copy in front of him.

1098 Mr. *Gregory* Have you had an opportunity to see it? – I have scanned it.

1099 I think Mr. Hooper is going to agree with you, he says there is ample scope in the area for the protection and conservation of the birds at present located at and visiting Foulness, and he also says that it is one of his ambitions at the farm which is at North Banbridge about 12 miles up the Crouch to have a nature reservation. He also suggests a method of converting some of the creeks and waterways into freshwater, non-tidal freshwater creeks. If I might just ask you concerning what you say on page 29, paragraph 4.3.* of your evidence where you suggest artificial roosts, are you able to indicate whether you would think a freshwater conservation area at North Banbridge would be outside the hazard area? – I am sorry, I don't know the area well enough to know where it is.

1100 Have you a 1 inch map? – No.

1101 *Inspector* You could probably explain, Mr. Gregory, on the map right behind Dr. Schaefer.

Witness It is very far outside the hazard area.

1102 Mr. *Gregory* I think it is 12 miles from the site suggested by the Commission? – Yes.

1103 I don't know if you are able, but would you consider that might be a roosting place or a reservation which would attract birds from the Foulness area? – Depending on what you put there. I think a fair amount of money would have to be spent to make it into such an attractive area. I don't know what you have in mind, but the country as it stands, even if it were given protection from other individuals encroaching on it, would not be sufficient, there would have to be a lot of research done and I believe it would be quite a sizeable undertaking in terms of earth shifting, lagoon making and other things of that sort.

1104 *Inspector* It is on the sort of break-through to the Crouch embankment you are talking about, the area concerned, North Banbridge?

1105 Mr. *Gregory* Yes, sir. Freshwater, of course, would be attractive to ducks? – Yes, some ducks.

1106 And other wild fowl. You were asked just now by Mr. Orchard about the birds being sensitive to noise; is it not true that waders are particularly nervous of noise? – I think it is easier to shift waders with the various loudspeaker methods employed than it is to shift some other hazard species.

1107 For example, curlew are very easily scared? – Maybe, I believe waders in general, but most of the waders anyway are susceptible to noise, yes.

1108 I don't know whether I missed something, but for my information at least on top of page 30* you refer

* p. 56.

Printed image digitised by the University of Southampton Library Digitisation Unit

to three refuges you would recommend; could tell me where those areas would be? — No, I can't recommend. I have covered it slightly elsewhere. I recommend they should be considered in the very near future. I could tell you whether or not any particular area were in the hazard area itself, but roughly speaking one would want to be as far away as the Dengie peninsula, if one kept to the coast at similar distances inland or areas down here or in North Kent not too far away but not too close either.

1109 You mentioned the Swale, did you not? Is that one of the areas? — I have mentioned the Swale as being a suitable area on the information I have for taking some 10 per cent of the present over-wintering population of the geese. They would not be very attractive—further attractive—to large numbers of the other wildfowl and waders.

1110 Then the Brent geese which the Nature Conservancy are so worried about. — Yes, it is the main concern of the Nature Conservancy.

1111 I think there is one thing for you on that, at the bottom of page 32* you say: "It has come to my attention that there is one site with an increasing supply of their preferred food". Does that still hold good? — Yes. In the supplement I spell that out. That was a very benighted statement in the last few hours of making this report. I have in the supplement asked that this last paragraph be removed and it now reads that that particular site (this is on page 37) was the Swale.

1112 That is the Swale? — Yes. I believe all or almost all Brent geese sites have increasing supplies of food, slowly increasing, not just the Swale, but I believe the Swale can accommodate some 10 per cent or so of the geese that would be displaced.

1113 There is just one other thing on the food for Brent geese. My witness Mr. Hooper is going to say that he has observed Brent geese feeding on other substances than *Zostera*, the kind of grass mentioned in the Nature Conservancy's evidence†; would that surprise you? — No, it is considered by most people that are very much involved to deal with specific foods they prefer, but some researches in the past of stomach content has revealed a wide range of other foods as well, but I am glad to hear he has any additional evidence on this point.

Cross-examined by Mrs. Boston

1114 I would like to apologise for the fact that Mr. Hawkes, who is the Warden of the Swale Nature Reserve, is not able to be here today because he is in fact bird watching in Spain at the moment, but there are one or two things that I would like to ask you about on his behalf. At page 20‡ of your evidence you mention the height at which Brent geese fly? — Yes.

1115 You mention 200 ft. I think you should check that. — This figure is intended—at least I believe does agree—with the Nature Conservancy figure and I have to accept it from the people who have observed these things much more than I have as being the main or the maximum heights or the average height, some sort of height of that sort, during the winter stay here. It is not the migration height which is thousands of feet or even 10,000.

1116 The other question I would like to ask is on page 18, I think it is paragraph 3.3 (b).* You do refer to the gulls which actually fly from the Maplin Sands down to the Kent coast. I am just wondering what flight path they would in fact take. — I don't know.

1117 Because what we are concerned about is if they take place up to 1,500 ft they could in fact be flying along the flight path from the Maplin Sands near Sheppey at heights at which aircraft would fly. I don't know whether you could find this out. — I believe that the birds moving to North Kent will provide extremely small hazard at the most because the vast majority of take-offs are in the south-west direction, that is the take-off end on the vast majority of occasions. The planes are rising rapidly within a mile of the end of the runway of the airport, the planes are already at 1,500 ft at least and also are about two miles from the land shore, the runway, so I believe that collision with gulls however many in that area will be extremely small.

1118 I accept the majority of take-offs being to the south-west, but 25 per cent in fact will be coming over it? — I will deal with that, then. At 1,500 ft—I have given in my evidence the planes on the glide path will be at approximately 5 miles out, so it is the last 5 miles coming in to the beginning of the landing runway that would be important in that case, and the first mile and a half to 2 miles I believe will have a very small population of gulls in the first place, but the North Kent coast is much more than 5 miles from the beginning of that runway and therefore I believe the North Kent birds or even birds in mid-estuary will virtually have no probability even at 1,500 ft of meeting aircraft even on the glide path.

Cross-examined by Mr. Purchase

1119 Dr. Schaefer, you have said that large modern aircraft are unlikely to suffer serious damage. Would you kindly tell me by weight or otherwise or what size of birds that will not affect the large modern aircraft? — Yes. I should correct your statement. I know we say that birds will not or probably will not cause severe damage, they certainly will. The bigger the modern aircraft my information shows the worse the cost from damage, which I have not included in the paper. But that is the fact, the statistical fact anyway, the damage cost can be very severe to modern large aircraft. I was referring previously in my statement to the fact that danger to people riding on board or anything else of the danger of losing three or more engines simultaneously is very remote on these large jets and could in my opinion only occur if you had a very dense flock of medium size or larger birds, that is being very general, of gull size or larger, ducks, geese, swans.

* p. 57. † p. 219.
‡ p. 53.

* p. 53.

Printed image digitised by the University of Southampton Library Digitisation Unit

1120 Are you suggesting that a small bird being taken into the intake of an aircraft is likely to damage the engine? — I would say that on the engines existing or will most probably exist let us say at the time the airport opens, engines of the 707 type or Trident type, there is very small risk of a single small bird causing severe damage, that is to say near the airport. Once they are in full flight at maximum speed a single small bird could do severe damage, this is a very small probability, but near the airport where they are flying at 150-200 miles per hour these engines already have to be safe from large loss of power due to up to 4 lb of birds going in at once, and that represents very many small birds, 20-100 small birds, that is already and this number is going up all the time, this safety factor of how many pounds of birds you can take in at once is steadily rising.

Re-examined by Mr. Keene

1121 Dr. Schaefer, I wouldn't want it to be thought that the Essex County Council have been distorting your evidence. You were told to keep out the figure of costs of damage because you were told it was not relevant at this stage? — Yes. I stand corrected.

1122 The conclusions which are expressed in your proof of evidence are as I think you say based upon observations actually carried out at Heathrow? — Yes, indeed.

1123 Indeed, you quote chapter and verse of these observations? — Yes.

1124 It was put to you that you would be happier if radar and visual observations coincided. In fact, there is a certain degree of conflict between the visual observation and the radar observation, is there not? — Only if taken literally. My supplement on the radar I think can explain easily any conflict that there might be.

1125 In effect, as I understand it, it is that the radar minimises the north/south movements of the birds crossing the hazard area to the west of Heathrow? — Yes, or on any other tangential track.

1126 By which you mean they are crossing at right angles or an angle similar to a right angle? — Yes. Gull speeds have a speed which is low for birds and you only need a slight head wind to virtually eliminate them from the screen.

Inspector I have no questions.

Mr. *Keene* That is all the evidence that will be put in on behalf of the Essex County Council.

(*Adjourned for a short time*)

Mr. *Ogden* My name is Michael Ogden, Queen's Counsel; I appear with my learned friend, Mr. Michael Wright, on behalf of the Southend Borough Council. It might be convenient to start off by stating how it appears to me one can begin to define the problem facing both the Commission and, in due course, the country, in so far as the Foulness site is concerned. If the Commission is correct in concluding that an airport at Foulness would be more expensive than one at one of the inland sites then the problem which faces both the Commission and, in due course, the nation, is going to be whether there would be benefits of amenity and safety from an airport at Foulness which outweigh the additional cost. Of course, when one comes to comparisons that will be the Stage V.

I do not want to say very much about safety. Just because one does not say very much about it, of course, does not mean to say it is unimportant. It is of the greatest possible importance. It is, of course, clear, and it is a melancholy fact which we have to face that wherever the new airport is to be, as night follows day, aircraft will sometimes crash coming in to land and when taking off, and it would be a grave misfortune if one closed one's eyes to that tragic but inevitable future result of putting an airport anywhere.

Of course, if one puts it on the Maplin Sands the result would be that there will be no such unfortunate inhabitants underneath such an aircraft to be killed or injured in the way that one has seen in some other accident cases. No more about safety than that.

Amenity is perhaps the primary purpose of this inquiry, and the material provided here, and in due course the further material that we will all undoubtedly get from the Commission will then provide one with the full information upon which one can proffer final conclusions. Southend contains the largest number of people who could be significantly affected by an airport on the Maplin Sands. As you know, sir, the Southend Borough Council would welcome the airport being at Foulness subject to being satisfied upon certain points which are set out on page 1* of Mr. Harris's evidence, and they can be summarised shortly as follows:

1. That there would not be an unacceptable amount of noise over the borough, and, of course, as is quite obvious, that is the paramount consideration.
2. That the necessary inland developments should proceed contemporaneously with the building of the airport, on a properly planned basis.
3. That there should be proper compensation for the Council and for the users of Southend airport arising from its closure or, alternatively, from restrictions upon the use for flying purposes of that airport.
4. That additional expenditure resulting from the development should not be a burden on the local rate fund, but should be financed from other sources.

As I said, the Southend Borough Council welcome the provision of an airport on the Maplin Sands subject to those points, and again I emphasise that the first one, that of noise is of course of paramount importance.

The Commission's NNI contour maps at the present time represent in the view of the Borough Council an amount of noise over the Borough which ought to be capable of very significant reduction. In the Com-

* p. 59.

Printed image digitised by the University of Southampton Library Digitisation Unit

mission's *Site Information** the critical range of disturbance by night, taken from the Wilson report,† is as you know put at 30-45. Might I just pause for one moment to say this: we all know that the Wilson Committee and the report that followed was really the first time to build a useful index relating to the problem of noise in so far as projects such as airports are concerned, and I confess to a little apprehension when from time to time there were echoes of the figures cited being considered as if they were accurate, as accurate as the measure of the standard inch. One is glad to know that there are in progress further investigations as a result of which one will be able to come to firmer conclusions about the NNI index and in due course we will suggest one or two aspects in which there should be other investigations, though I suspect the Commission already has them in mind. Reference to the Commission's code, CTLA 1/3,‡ as can readily be seen has, as most of us who have attended this inquiry know perfectly well shown that the 40-45 NNI contours pass over Shoeburyness. Furthermore, the Commission itself has estimated 19,500 people as being within the intrusive noise level. As the authors of the Wilson report themselves recognise, the attempts that they made to produce the NNI in some respects must be regarded as tentative. Indeed, the Commission itself has recognised that the reliability of the index has been questioned, and perhaps a very good example of the tentative nature of parts of the NNI can be seen from the fact that the Wilson Committee itself regarded the figures for night time as being very tentative.

In our view there are two additional and important factors to be considered: (1), the effect of aircraft noise over water, and (2), the noise effect of Concorde and similar aircraft, particularly bearing in mind that some of those aircraft will be larger than Concorde. As we all know, the NNI appeared as a result primarily of the Heathrow Survey, and it is our submission to the Commission that it is of enormous importance that at Stage V there should be available the results of tests to establish the effect of aircraft over water, and I suspect the Commission already has this well in mind.

I hope as I go through if I make suggestions of this kind the Commission will not think that I necessarily have come to the conclusion they did not occur to them, but it seems to me throughout that it is much better one should make suggestions whether or not one thinks they have already been considered by the Commission. If they have it in hand so much the better. Therefore, essentially when considering the Maplin site one must, in our submission, find out more about the effect of aircraft noise on water, over water, with a view to considering whether or not that results in any modification of the NNI contours.

The second point relating to Concorde and other SST aircraft is also obviously a matter of great importance. Presumably we are now getting fairly close to the stage at least in regard to the French Concorde at which the testing programme should soon enable one to make investigations in respect of Concorde in order to see whether it and other similar aircraft may distort the NNI pattern.

I do not know whether there are in hand investigations to consider whether the NNI contours, if taken straight from the Wilson report, have yet been modified to take account of any changes in respect of vertical take-off, or short take-off and landing aircraft: the VTOL, the STOL and in particular helicopters, in so far as there may have been significant alterations since that survey was carried out, and whether there will be projections to consider such further alterations as may be expected to occur in the future. I hope such investigations are under way, if not those two we would urge our considerations which the Commission may care to be thinking about before one reaches Stage V.

Perhaps a word in parenthesis about it. The Commission may or may not be aware there is now a form of airbus which operates to Southend airport, starting off, I believe, at Southampton, and calling in at a variety of airports as it goes up the country. I understand it is a successful venture. One can't help thinking that it is the kind of traffic use which is likely to increase significantly in the future, and that comes into consideration at a later stage as well as considering the primary significance in relation to NNI contours—I will revert to it later.

We consider that unless there are some very compelling reasons to the contrary a significant reduction in the amount of noise over the Borough can and should therefore be made, and that this can be done without imposing an unacceptable amount of noise on anyone else. I add the last part because of the things one finds in enquiries of this nature: that everyone's desire is to try and push something which they don't regard as being extremely attractive out of their own back yard, and never mind whether it lands in someone elses. We have adopted a more responsible attitude than that, and I hope that other people who follow will do the same.

First of all, then, the spur over Shoeburyness. What is the thinking behind it? I ask that as a question rhetorically, because of course at this stage one does not know, although equally it is possible to hazard some guesses, there is little point in doing so at this moment, and doubtless we will know before we reach Stage V. The pros and cons of that, so far as the Commission are concerned, with all available statistics, will be published, and we will then be able to see what the thinking behind it is. One assumes that it reflects aircraft movements of planes taking off towards the south-west and then immediately turning in a generally north-east, north-westerly direction. In the Borough Council's view, it is extremely important that this should not occur, and that the spur should be eliminated by requiring aircraft wishing to go in this general direction to turn initially up the Thames Estuary.

* *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off shore)* (HMSO; 6s.) Reproduced at p. xv.

† Cmnd. 2056. (HMSO; 19s. 6d.)

‡ See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

The effect of the elimination of the spur would appear to place th 45 NNI wholly offshore. Now, Sir, a small addendum* to Mr. Hill's proof of evidence was circulated yesterday afternoon, and it is a single sheet of paper setting out statistics of persons resident in the Southend County Borough affected by the NNI contour—I shall wait until the rustle of paper has subsided for a moment . . . one sees, looking at it, in (a), the contours on plan CTLA 1/3—in other words, the Roskill 4-runway layout as extended on the Essex plan NF.1,† which we know—one sees an enlarged map left up there by us deliberately on the wall, and one sees then, if one goes through this, how important the elimination of the spur is, because if one looks in the left hand column under the heading "NNI", one sees that if one merely looks at the Roskill plan as extended by the addition of the 35 NNI contour in the band 35-45, there are 27,519 people within that band (I ignore the column on the extreme right for the moment). One then sees that in the 45-plus band there are 2,237 people: that is existing population. That therefore is the number of actual persons, in fact, now resident in the County Borough affected by the 35-plus contour. If one looks down to (b), one then sees what the situation is if the spur is eliminated, and we have taken for convenience the dotted lines on the Essex plan NF.1as being accurate for this purpose. The 45-plus figure comes down from 2,237 to nil. The 34-45 bracket comes down from 27,519 to 14,528—a reduction of roughly 50 per cent. If one casts one's eye down to the note, the first part of it shows that if the NNI spur over Shoebury is removed, it would appear that nearly all the persons shown in (b) as living between the 35-45 NNI contours would in fact be within the 35-40 contours. In other words, although we have not made a precise calculation for the bracket 35-40 because it would have required drawing still one more line on the Roskill plan to get it in, in fact one sees that even of the fourteen and a half thousand people in the 35-45 bracket, nearly all of them come within the bracket of 35-40, and of course if the Roskill Commission interpretation of the Wilson report be accurate, and the right way of looking at it, so that one begins one's intrusive noise level at 40, if that at the end of the day proved to be the accurate way of looking at it, it means that the number of people resident in the County Borough who come into the Commission's calculations of significant noise nuisance will be negligible. I say again—and I emphasise yet once more—if the Wilson findings be accurate; because naturally this is one of the things we are extremely interested in and will want to go into in very great detail at a later stage.

It does not end there. If one looks now at the right hand column, one then sees that this is a column of additional population proposed in the development plan, and one there sees set out figures of population and acreage which is proposed. Now, Sir, quite obviously, if the airport comes to be built on the Maplin Sands, the butt of the spur is not eliminated. It would follow that the Borough Council would have to think very long and hard before embarking on those areas specified in the right-hand column, and equally of course, if the spur is not eliminated it may be—I do not know, it is premature to canvas the matter—that the Borough Council would need to reconsider the whole position. But at this stage, assuming the NNI to be accurate and the Commission's assumptions accurate, it follows that with the spur eliminated but with the runways remaining where they are, and on the same axis as shown in the Commission's plan one would now have a very small number of people in the band exceeding 40 NNI, and one would have something of the order of 14,000, perhaps a little more, in the 35-40 band. But, having eliminated the spur, the Borough Council advances the view that more can and should be done.

In this connection, it is obviously important to remember that the Commission itself recognises the critical range at night as being in the 30-45 NNI. Pausing for the moment, because one bandies these figures about, it is of course convenient if one can try and translate it in some way into practical terms. Like the man who attempted to read the definitions in the Wilson report and found that his School Certificate mathematics were hardly adequate, one can see the enormous difficulties of anyone reading or seeing in the newspapers, the difficulties of trying to translate it into practical terms. So far at any rate as persons living in the County Borough are concerned, they may find it of interest to look and consider the noise contours produced on the Essex plan NF.1 in respect of the existing Southend airport. You will see—before I go any further with this most important subject—that one does not carry that too far. It is a most rough and ready comparison and valid, we would consider, only for day-times; but in the most rough and ready and general terms, and subject to a lot of reservations, one can see where the 35 contour goes. Having looked at the map, one sees that the 35 contour seems to go down, crossing the railway between Rayleigh and Hockley Stations, and the 35 contour comes to a point considerably further in relation to that. That is, I repeat, a very very rough and ready . . . the nearest we come to getting some sort of idea. As I say, the Borough Council considers that once the spur is eliminated, attempts to reduce noise on the mainland should not end there. As you know from my cross-examination yesterday morning, we would consider that there are three possible approaches.

The first one, while the airways remain in their present position on the Commission's provisional plan, is to tilt the access of the runways to a more north-south axis. The second is to move the runways further out to sea, namely, going east. The third is to move them in a more northerly direction. Of course, having put those three separately, we also suggest that it is convenient to see all the possible combinations of any two or all three of them. I pause at this stage to make this point—which will, I think, be obvious from what I have already said—that the Borough Council is firmly opposed to the site not being offshore, and we consider it should be wholly offshore. From what I have already said, we are

* p. 61.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

suggesting that it should be moved further from the shore than is at present proposed.

It is convenient to see how our proposals would operate, and I am now looking again at CTLA 1/3—namely, the Commission's 4-runway NNI contour plan. You will appreciate, sir, that for the purpose of what I am now about to say, I am assuming that the spur has been eliminated so that the contours shown should be as altered on the Essex map NF1, shown by the dotted 35 contour and 45 contour line. One would then of course have to make for oneself an imaginary line along the line of the Commission's 40 NNI, going roughly, one supposes, from just above the "H" in Shoeburyness where it is shown in large capitals, running up to about the "I" of Foulness Island, where one sees the 40 contour line again. So one would imagine that the 40 contour roughly comes where I have indicated.

Now, what is the effect first of all of tilting the axis of the runways? One sees at once that if one is in fact pivoting one imagines the whole of the little contour lines forming a solid object, and pivoting them roughly where the runways are. The result of that is to move the more south-westerly part of it a little to the east—in other words, one tends to move the 40 contour line away from the Shoeburyness area. How would that affect anyone? Probably not making an enormous amount of difference down in Kent either way. It may mean that some rather different people were affected in Kent by the 40 contour, but otherwise not a great deal of difference. So far as Clacton is concerned, it might bring them within the 35 contour, but they would not suffer from the 40 contour. If one moves the runways east, that undoubtedly benefits the whole of the Foulness Island and Shoeburyness area considerably; a marginal benefit, I suppose, to Clacton; Kent probably not an enormous benefit.

If one moves the runways north, then of course one is moving them away from Sheerness, helping Kent. Clacton comes more into the 35 range. Merely moving it north will make some difference to Shoeburyness too.

We would submit that the most helpful approach is likely to be a combination of all three. Moving, for a start, the runways north-east to where they are now sited: if that is accepted, then of course it is clear that the amount of tilting of the axis of the runways that can be done is moderately limited because, of course, we would not want to bring Clacton into the 40 contour. But in any event, without going into any inordinate detail for present purposes, we do suggest that if one moves the runways about on the Maplin Sands and considers where one can put them to the north and east of where they are at present provisionally sited, and if either in conjunction with or as an alternative to such movement one considers some tilting of the axis of the runway, the end product of that—again assuming the elimination of the spur—the end product of that can be that the 40 contour line will be wholly offshore.

Now, if the Commission is right in approaching the matter upon the basis that these are the significant contours it follows that of course one has then got all the significant contours offshore, and none overland. That is why I said that one would, I hope, adopt the responsible approach, not merely seeking to shift any nuisance onto someone else. Here one is benefiting everyone—save possibly Clacton, which might find itself in the 35 contour, but there is going to be no one who is going to be put to the nuisance (such as it may be) of the 40 contour.

Well, Sir, so much for the noise. Let me reiterate that it is the consideration of paramount importance to the County Borough. Naturally we would all be looking with great interest, not merely at the evidence given at the Inquiries, but what is published by the Commission in due course.

Let me now turn to contemporaneous ancillary development. I hope it is fair to say that it is only necessary to travel from Southend Central Station to this building to appreciate that Southend has taken very active steps to modernise this town. If I may say so without offending all the other people listening, perhaps there are not many other long-established towns who have done as much in that regard.

Of couse, when one gets to Stage V as was pointed out on behalf of Essex this will have to be looked at because it does undoubtedly constitute a significant advantage in having the airport at the Maplin Sands.

Obviously examination of costs is not appropriate now, I merely limit myself to saying this, that one would have not merely the advantages of the modern offices that have been built and are being built, but also, of course, the advantage in respect of those for which planning permission has been or could be given. One has the advantage of the modern shopping facilities available; one has the advantage not merely of an existing working population but of an existing working population much of which in fact works outside the borough and therefore might possibly find it convenient to work rather nearer home if the opportunity were offered. It has too the advantage of the 2,000 existing aircraft/airport personnel in two respects: those now working at Southend airport, these 2,000, will not merely be available to work on an airport in the Maplin Sands or a good many of them, but of course as has already been pointed out they are already housed and not only are those 2,000 of them already housed but in terms of overall people to be housed of course it is a figure nearer 6,000 people already housed.

Sir, having said that we submit that with these advantages, many of them being present due to the forward looking attitude of the town and its inhabitants and indeed to the cost obviously of the local inhabitants, it would be intolerable if the method of development ancillary to the airport or indeed the cost inevitably generated by such ancillary development should in any way be to the detriment of the inhabitants of the Borough.

There are two aspects to it: (1) that consequential development should be properly planned (and I have very much in mind properly phased when I say that) and carried out contemporaneously with the construction of

Printed image digitised by the University of Southampton Library Digitisation Unit

the airport itself. The Commission has itself recognised that ultimately new road and rail links will be necessary too. We submit that it is essential that in respect of adequate road and rail links housing, office development and the ancillary development that has been mentioned in the written evidence is of the greatest importance, that this should be planned so that it does not lag behind the establishment of the airport itself. It is perhaps a point one almost blushes to mention because it is so elementary, I am sure it is one that one will have no difficulty in persuading the Commission about, I only mention it with emphasis because inevitably the Borough Council, rightly you may think, attaches great importance to it. (2) That the additional expenditure resulting from any of these developments should not be a burden on the local rate fund. It is inevitable if one puts a third London airport on the Maplin Sands there is going to be a certain amount of development which otherwise the local authorities would not have had to embark upon, and it would be quite wrong if they had to bear that burden. We hope that the Commission will readily accept that principle too.

Now what is the position of Southend airport? If one has the new airport on the Maplin Sands then inevitably the existence at all of Southend airport is going to have to be considered. It would doubtless mean the end of Southend airport for any significant amount of commercial flying and it might result in the airport having to be closed completely. As the Commission will know, the airport is owned by the Borough Council and indeed it represents a most successful venture financially by a local authority. Of course, it also represents a substantial capital investment both by the local authority and of course by some of the users. One need not refer to it at this moment, but Appendix 4* of Mr. Hill's evidence shows the large number of commercial users of the airport, a number of whom one can see by looking at the appendix have leases with a substantial period of time to run and who are involved in substantial capital investment. Again, one does not need to spell out this next point, it is obvious, that much of the write-off values of the fixed assets there would be negligible and the Borough Council hope that the Commission will readily accept the principle that compensation should be paid in respect of those losses. Indeed, when one comes to preparing the various cost benefit analyses that will have to be made before we reach Stage V we hope that that compensation and indeed the cost of development ancillary to the airport should not fall on local funds who figure in the cost analysis, because otherwise one would get distorted figures. One appreciates that the Commission will not want to descend into the dreary detail which as we know all too well results once one is in fact trying to fix upon precise figures, but, Sir, inevitably if it be right as in our submission it surely must be right, the first principle being accepted so that people should not suffer perhaps grave financial hardship, not only should those principles be accepted but allowance must be made for them in the Commission's cost benefit analyses.

* p. 76.

It is at this point I think convenient to mention the position of the Thames Estuary Development Company and any other proposal that may exist in respect of utilisation of other parts of the Maplin Sands. May I make this preliminary point. As has been made clear to the Commission the Borough Council has an interest in the Thames Estuary Development Company. May I start by pointing out because some people, it is quite obvious, have not appreciated this, the fact that this is not a development company, it is an investigating company, the Borough Council has an interest in it, you may think it is very wise and prudent it should take one. Having made that point, that what this Company is doing is making investigations, the Borough Council has considerd that the right approach to this problem is that the proposals advanced by TEDCO, if I may call it such, must be examined in their own right standing on the support of TEDCO and in no way being given support by the Borough Council for the purposes of this inquiry, in other words the Borough Council take the view that what it should be doing as the local authority and the local airport authority is to consider those functions and to leave the question of the TEDCO and any others to stand on their own feet.

Having made those preliminary points I must make this observation. It is quite apparent that there may be cost aspects when we get to Stage V which may be markedly different according to whether or not the Maplin Sands is to be reclaimed solely for purposes of a third London airport or whether it is also to be reclaimed for other purposes, for example it may be that shifting the runways in any particular direction might be effected by the cost factor to a significant extent, it might not, but if in any event the whole of the Maplin Sands site is to be developed and the whole of that land reclaimed obviously it may affect the cost picture so far as the siting of the runways is concerned.

Another factor that may have to be borne in mind is whether or not it is a relevant factor that if reclamation of the whole of the Maplin Sands is done with the use of private finance without calling upon local funds the extent to which that is a factor to be considered when one is considering the final choice of site.

I have made those very brief observations without going into the matter in any detail, of course, because it does seem to us that the Commission with respect should be considering the position of Maplin Sands not merely in isolation as a site of a third airport. It should in our submission approach the matter in several ways: (a) solely an airport; (b) the TEDCO project; (c) merely in general terms is it useful to reclaim the whole of the Maplin Sands using part for airport and part for other purposes. It follows that if that be accepted as in our submission it should one will have to have by Stage V one's cost/benefit analyses not confined to (a) but extended to (b) and (c), and if one does not I foresee that at Stage V the Commission will find itself embroiled in a great deal of discussion and argument, some of which may be obviated if one has got cost benefit analyses to cover these other points. Sir, there it is.

Printed image digitised by the University of Southampton Library Digitisation Unit

Those are the main factors which we are seeking to cover so far as this inquiry is concerned, and again because it is apparently so very readily misunderstood naturally the evidence gleaned here and at the other inquiries and published by your Commission will, of course, be considered very very carefully indeed in due course.

While Mr. Wright and I were applying our minds to the way in which we ought to seek to help you at this inquiry inevitably one reached a point at which it was obvious that further information would have to be forthcoming in due course. The Commission has made it very plain that further information would be necessary. We did consider that it would perhaps be helpful if we undertook the discipline—because it always is a discipline—of reducing a little of it into writing. What we have therefore done is to reduce to writing a number of questions the answers to which we think might enable us to be of most assistance to the Commission at Stage V. Many of the points are utterly obvious, it may well be that the Commission will have in mind every single one, if so no great harm we hope will be done except the labour on the unfortunate Commission of a little additional reading, but that I fear is a drop in the ocean and of course we have confined it to the subjects being considered by this inquiry, we have not gone on further, we did not think in general terms that would be helpful although one or two aspects touch upon it. Let me go to them:

1. What is the basis of the NNI computations?
2. What is the basis for the assumption that noise certification regulations will lead to a reduction by 10 NNI over 20 years subject to the point you made yesterday?
3. What information is available about the effect of aircraft noise over water?
4. What information is available about noise from Concorde and similar aircraft?
5. What assumptions if any are made as to biasing the direction of aircraft on landing or take off?
6. What are the arguments in favour of and against the NNI spur over Shoebury instead of aircraft being routed over the Thames Estuary?
7. What are the arguments against moving the runways as far to the north-east of the Maplin Sands as possible?
8. What are the arguments against altering the runway alignment to a more north/south axis, either alone or in conjuction with the factors mention in 7?
9. What proposals are envisaged for inter-airport routes including those for VTOC and STOC aircraft and what effect are such aircraft expected to have upon the NNI contours?
10. To what extent would reclamation and development of the whole of the Maplin Sands affect the cost of building an airport there?
11. If reclamation of the whole of Maplin Sands is carried out without recourse to public funds, to what extent is this a relevant consideration?
12. What is the planned extent of accessibility from the Midlands?
13. What in the long term is the anticipated distribution of (a) freight, and (b) passenger traffic between Heathrow, Gatwick, and Foulness?
14. What is the anticipated volume of inter-airport traffic in connection with (a) international flights, and (b) other air passenger movements?
15. What is the basis of the estimates of future passenger traffic?
16. What would be the proposed future of Southend airport for flying purposes, and upon what principles is it proposed that compensation would be paid arising from its closure or restrictions upon its use for flying?
17. Two questions posed by Mr. Lloyd-Jones in paragraph 18* of his evidence on page 29: (a) The types of aircraft and the proportion of types and their respective peak noise level characteristics. (b) The frequency of aircraft movement for each type and in each direction; (c) The number of and the noise generated by supersonic aircraft, VTOL and STOL aircraft. (d) has been dealt with already.

Now, Sir, those are merely a few brief questions to pose, some matters we thought it might be useful to know before one ever arrived at Stage V, and I hope neither you nor the other Members of the Commission will think Mr. Wright or I presumptuous in tendering them in, as we hope, the spirit of helpfulness.

That in fact concludes my opening statement, Sir. May I just say this: as you know there are three witnesses. First of all there is Mr. Harris, and he is a policy witness. I emphasise that because any cross-examination as to detail I hope can be kept for the following witnesses. One then has Mr. Hill; I have already referred to the addendum to his evidence. Mr. Lloyd-Jones will deal with noise, and there is one small alteration to be made to his evidence at page 30; if you would be good enough to turn to page 30, paragraph 21,† line 4, it reads at the moment: "Such aircraft would follow the routes of conventional aircraft." A very important "not" has been omitted. It should read: "Such aircraft would not follow the routes of conventional aircraft".

That concludes my opening address, Sir. Would you like me to call Mr. Harris now?

Inspector I think so.

---

* p. 84.
† p. 84.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. NORMAN HARRIS* called

Examined by Mr. Ogden

1127 Mr. Harris, you are a Bachelor of Science, an Alderman of the Southend-on-Sea Borough Council; the elected leader of the majority party in the Council and so leader of the Council. I think you have served continuously since first being elected to the Council in 1950 and became an Alderman in 1961. I think you have served on most of the committees of the Council and serve on several now, and in recent years have been particularly interested in transport matters. I think you are Chairman of the Council's Transport Committee. You have for several years been Chairman of the Federation of Municipal Passenger Transport Employers and Chairman (alternate) of both the National Joint Industrial Council for Road Passenger Transport Industry, and the National Joint Council for Craftsmen for that industry. Also you are the immediate past President of the Municipal Passenger Transport Association. Have I got them correct? — Yes.

1128 I think you are a Member of the South-East Economic Planning Council and you were appointed a Member of the Road Transport Industry Training Board when that was set up. In what little private life you would appear to have left over you are, I think, Chairman and Managing Director of a group of Engineering Companies, and a Member of the Eastern Regional Council of the Confederation of British Industries Industrial Planning Committee for the South-East, and in what time is then left you also hold a Private Pilot's Licence? — That is correct.

Inspector Essex County Council?

Mr. *Frank* No question.

Inspector Kent County Council? No questions. Any local authority? Mr. Wood.

Cross-examined by Mr. Wood

1129 Alderman Harris, just to be absolutely clear: what site had you in mind when you made your observations? Was it the offshore site as envisaged by the Roskill Commission with a four runway, or was it any other site? — The site as envisaged by the Roskill Commission certainly, but in fact equally no particular site. The stipulations in my observations regarding noise would apply to any site.

1130 But you would accept that certain sites are from the noise point of view more favourable to Southend than others? — I am not an expert on noise, and I must leave that sort of evidence to the experts.

1131 But you would accept that a fully on shore or partly onshore or offshore site for the airport would cause more noise to . . .

Mr. *Ogden* This is just what I feared and hoped would not in fact occur. There is an extremely well qualified noise expert that I am going to call after lunch. It seems a very great misfortune if these questions are not directed to him.

1132 Mr. *Wood* Well, I accept that point to a certain extent, but in Alderman Harris's evidence he does refer to the fact that his acceptance of the scheme is conditional, I think. He says, doesn't he, on behalf of the council in paragraph 5,* if I may draw your attention: ". . . on behalf of the Council to support any scheme which inflicted a noise nuisance on the town". It would be helpful to us to have from him what he would regard as a noise nuisance. — I am afraid that to decide upon a noise nuisance I must rely on our technical advisers. I am not qualified myself to decide this point.

1133 *Inspector* Surely, this is a statement of general Council policy, made on reading the Roskill document, which made it quite clear that here was the assumed decision for the site, but this might be varied subsequently. You cannot really expect Alderman Harris to be able to state in advance what the reactions of the Council might be—This is a general statement on what the Council generally think. Can you go beyond this?

1134 Mr. *Wood* Yes, I would hope to have got some sort of indication as to the possible Council attitude should certain alterations be made in the site. You see at the moment we have got a statement from the Southend Council that they are in support of this project, subject to certain conditions and certain reservations. It would be very helpful to those of us who are unreservedly opposed to the site to get some sort of indication as to whether Southend Council would go wholly for the site or wholly against it, if the airport is to be in a particular position.

1135 *Inspector* Counsel dealt with this in his Opening quite clearly, did he not, so do you want in general terms from this witness confirmation of that?

Mr. *Wood* Your reading is this present witness confirms that which Counsel said. I take it that we can accept it as . . .

Mr. *Ogden* Ask the witness if he does not agree with anything I have said.

1136 Mr. *Wood* I am certain he would confirm this. — I will confirm, sir, that I have said that the Council will resist the scheme—and I will add: and any other scheme—to the utmost if it is likely to generate a noise problem to our townspeople.

1137 And so that is not fully in accord with some of the statements you make in your evidence: for example, paragraph 7,* you suggest that additionally a substantial area would immediately be available for housing, commercial, industrial and amenity developments should the army installations evacuate Shoeburyness. On the evidence that we have Shoeburyness would be in an area of noise nuisance which to most of us would be unacceptable. Would you say that if that is so, in other words, if there is not a realignment of runways so that Shoeburyness and that area is brought outside an area of

* See also p. 59.

* p. 59.

Printed image digitised by the University of Southampton Library Digitisation Unit

maximum noise nuisance, you would admit that statement of yours needs basic reservations? – I make no further reservations than I have in my statement.

1138 You would accept that it would be a reasonable decision to put an additional 16,000, possibly, according to Mr. Hill your engineer up to 50,000, people within the area of noise which by all reasonable standards could be regarded as excessive? – I suppose anything is possible.

1139 I am asking what your reaction would be, not a generalised reply to that question, please. – I am not able to answer that question, and until I see a plan in which this frightful noise nuisance has been brought down on people's heads I can't reply any more fairly than that.

1140 But surely, you have read the Wilson report,* and you are aware the general standard is a 40 NNI contour within the area of noise nuisance? – Well, I happen for the last 20 years to have lived within 100 yards of a 45 NNI contour line on that map, and I have no intention of moving my home, my family has been brought up there, and I would not consider, personally, it to be an area of such grave nuisance.

1141 *Inspector* Mr. Wood, are you in any doubt that Southend would wish the spur eliminated?

Mr. *Wood* I would like a categorical statement they would go all the way out to get it.

1142 *Inspector* Supposing you ask straight out?

1143 Mr. *Wood* Would you take all maximum steps to eliminate the spur? – Of course.

1144 We have had a reference by Counsel to the tilting of the runway. Do you appreciate that if you tilt the runway, judging from the plan you have on the wall there, that by tilting the runway and looking at the 45 bulge there is still a notable bulge to the north-east, and by tilting the runway you might find that the whole of the Thorpe Bay and quite a considerable chunk of the eastern part of Southend would be included in the 45 NNI; so the tilt is very little, isn't it? – I am afraid that others far more equipped than I will speak on the noise problem. I am not prepared to answer this technical question because I don't know the answer.

1145 I am no technician; it is not a technical question. One only has to look behind you at the map on the wall to see the effect of tilt would be to bring that nose that juts to the north-east over to the south which must inveitably involve the greater area of Southend if it is tilted too much. Is not that a reasonable assumption? – If you say so.

1146 Thank you. There has been reference made to the position of Southend airport, and various attempts have been made to draw a bonus figure from a possible elimination of the airport. Can I ask you whether the traffic at Southend airport is increasing or decreasing at the moment? – At the moment, decreasing.

1147 Significantly? – Quite significantly.

1148 So that the element of bonus might well in fact disappear at the worst or at least become minimum at the best in the comparatively near future? – I have no crystal ball, but I would say the trend may go the other way equally as easily.

1149 Would you say that in the context of planning application to the extent the north-west, south-east runway having been reduced, and the conflicts of major diversion, particularly jet traffic away from the airport to other places, do you consider the present Southend airport in that context remains a viable commercial proposition? – Yes.

1150 You do? – Yes.

1151 In spite of the evidence of the considerable decrease in the volume of freight and aircraft movement? – I said, "Yes".

1152 Would you also accept that there is at the moment a significant night flying restriction on the existing Southend airport? – Yes.

1153 And in fact the surcharge of jet flying is such as almost to inhibit the use of that airport to jet aircraft? – That was its object.

1154 So once again, this bonus figure we have heard of becomes less attractive in the equation? – I suggest you would do better to ask whoever got the figure out rather than me. I am concerned with policy, not detailed work of taking examples.

1155 I am sure your knowledge is such as to be aware of this trend.

Inspector You want the best answer to your question, and this is a policy witness, and there are expert witnesses to follow.

Mr. *Wood* Yes.

Inspector Any other questions by local authorities? Any questions by other persons? Mr. Purchase you wish to speak.

Cross-examined by Mr. Purchase.

1156 Councillor Harris, I wish to refer to clause 4(c),* and 7, both of which refer to finance. Are you aware of the report by Bernard Clark concerning finance for development of the scheme? – No, I am not.

1157 Well, Counsel referred earlier on to development by private enterprise. Our report refers to development, that is a reclamation, which is the original suggestion, reclamation, by government, and I also ask you whether you are well aware of the foresightedness of Rotterdam which is a Council such as yourselves, and their foresightedness in the present production of Europe; most people know the great extent, by their own resources–in other words, the recommendation in our report . . .

Inspector Mr. Purchase, what is your question, please?

* Cmnd. 2056. (HMSO; 19s. 6d.)

* p. 59.

Printed image digitised by the University of Southampton Library Digitisation Unit

1158 Mr. *Purchase* My question is, Counsel has referred to private enterprise and others. I am simply saying what others, and that if the recommendation is not from public funds to develop by reclamation, and either by government or by Council, and that the actual construction of the airport . . .

Inspector That is not a question to put to the witness. What is the question?

1159 Mr. *Purchase* I ask whether Councillor Harris had read the report produced by Bernard Clark, and he said "No", and I wanted to enlighten him.

1160 *Inspector* What is the next question?

1161 Mr. *Purchase* My next question, if I can't get any answer from that . . .

1162 *Inspector* You got the answer that he had not read your report—That is right? — That is correct.

1163 Mr. *Purchase* My next question is . . . — No. I may have read reports from Bernard Clark and Partners, but I can't identify the particular report which is being referred to.

1164 It is in a report on the method that might be adopted, that is reclamation from public funds. — I don't think I have read that one.

1165 My next question is brought again by Councillor Harris's words, and that is that the Thames Development Company is an examining company, I think was the word used.

Inspector "Investigation" was the word used.

Mr. *Purchase* Investigation, but the title is Development Company; I just raise that.

1166 *Inspector* Is that a question?

1167 Mr. *Purchase* The question is . . .

Inspector You are making a statement. You can make a statement much later.

Mr. *Purchase* This is examining.

Inspector You are making a statement that that is the title of the company.

Mr. *Purchase* Yes.

Inspector Yes.

Mr. *Purchase* Thank you, that is all I wish to say.

Inspector Any other questions, please?

Mr. *Ogden* I have just one arising out of the answer given by Mr. Harris.

Re-examined by Mr. Ogden

1168 Just one question arising out of the answer given when you spoke of living close to a 45 NNI contour. I think it is one of the existing Southend airport NNI contours? — Yes.

Mr. *Ogden* I have no further questions.

(*The witness withdrew*)

Inspector Then we will adjourn until 2.30.

(*A short adjournment*).

Mr. *Ogden* This witness is Mr. Hill—page 3.

MR. TOM BRIAN HILL* called

Examined by Mr. Ogden

1169 Mr. Hill, you are the Borough Engineer, Surveyor and Town Planning Officer of the County Borough of Southend-on-Sea, an office which you have held since March 1955? — Yes.

1170 And prior to that, between 1951 and 1955, you were Deputy Borough Engineer, Surveyor, and Town Planning Officer? — I was.

1171 You are a Fellow of the Institution of Civil Engineers, a Fellow of the Institution of Municipal Engineers and an Associate Member of the Institution of Water Engineers? — Yes.

1172 There has been produced an addendum† to your proof of evidence, dealing with certain figures relating to persons resident in the County Borough affected by the NNI contours? — Yes.

1173 Just a couple of points about that: in the column relating to the additional population proposed in the development plan, would the decision whether or not to develop in those areas depend upon the final decisions as to aircraft flight paths and the consequential noise contours? — I think it must.

1174 And would that also apply to the paragraph of your evidence, dealing with housing and development—paragraph 73 and thereabouts? — Yes.

Cross-examined by Mr. Frank

1175 I just want to confirm the obvious with you, Mr. Hill. The addendum to your population figures relates, I think, to Southend Borough? — It does.

1176 And I take it there is nothing between us on the toal number of people affected within the various contours as they have been adjusted by the new flight paths? — No, I do not think there is any difference between us.

1177 There is no difference between us? — No.

Cross-examined by Mr. Wood
(*Paglesham Parish Council*)

1178 If I could put some technical points: first of all, can we establish the site that we are talking of? Your report is based upon the Roskill Commission 4-runway offshore site, with the alignment? — Yes, as set out in this document.

---

* See also p. 61.

† *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. 72.

Printed image digitised by the University of Southampton Library Digitisation Unit

1179 And would you accept that any variation from that in one direction or another would alter some of the calculations and some of the inferences you have drawn in your report? — Yes.

1180 For example, a combined onshore-offshore site would extend the noise nuisance in the Borough of Southend and the surrounding districts? — Well, it could.

1181 Just as a site further to the north-east would assist in taking these NNI contours further away from built up areas? — Yes. I think it is fair to say that every case would have to be considered on its merits.

1182 To come back to the question of tilt that I mentioned this morning; Even accepting the Essex County Council variation on the Roskill report, which is the lower of those two green ones, as I understand it, over your right-hand shoulder—the extent of the tilt is very limited before you come to that peculiar nose that still extends northwards . . . — I am sorry. If I have it right—if you take out the Essex thumb you lose the nose as well, and you are working on the dotted lines.

1183 So the nose is taken out to a considerable extent? — I thought that it was taken out altogether.

1184 I misunderstood—I do not understand these technical matters, I am afraid. So in fact the tilt would likely help the Borough of Southend? — I think so, yes.

1185 Although it would bring into the noise nuisance range people in and around the Walton and Clacton areas? — I do not know that I have followed exactly—it depends on the amount of the tilt. If we are talking marginally, I do not think it would. If you look at the Commission's* map, you can see that there can be a variation without bringing anyone in.

1186 So the ideal situation would be a site as far to the north as possible, and tilted so that the contours fall away from the coastline as much as possible?—we are on common ground on that? — Yes.

1187 If I can deal with your submission then—just some points that are not completely clear to me, as an ignorant man. On page 5†, and basing any assumptions that we draw on the facts that we have at our disposal at the moment—they are the Roskill Commission plans—you refer in paragraph 8 to the percentage of old people in this area. — Yes.

1188 Do you regard it as exceptionally high, or not? — Well, it is high as compared to an inland town; but it reflects the general tendency in the coastal resorts.

1189 I cannot resolve the discrepancy of the percentages between yourself and the Essex County Council. One would have thought that this was a factual report—Essex County Council suggest that 23.8 of over-65 people live in the Borough of Southend, whereas in fact you have a percentage of 18.5. — Well, it could be that they were basing their figures on a different census—ours were based on the 1966 census, that is all I know.

1190 There is a discrepancy there . . .

Mr. *Frank* Could I have a reference?

1191 Mr. *Wood* Yes—in the submission of Mr. Jennings Smith, at page 14, 3.7,* which reads "The housing stock within the Southend County Borough had in 1966 a higher proportion of 'over 65 years of age' households (23.8 per cent)" — I think that is households, not people—there is a slight difference

1192 I still do not understand what that means. If there is one person over 65 in the house, that is recorded . . . — I think you would have to ask Mr. Jennings Smith.

1193 But there is a discrepancy. — I think there is a difference. We are not talking about the same thing.

1194 A discrepancy like this offends one's sense of propriety . . .

Mr. *Wright* It is not a discrepancy.

1195 Mr. *Wood* Can we have in round terms what the population over 65 . . . I would say . . .

Inspector You can say what you like, Mr. Wood; what these people are saying is quite clear. He is talking about persons, not households.

1196 Mr. *Wood* The main point that I wish to establish is this: there are a considerable number of old people, and you would expect that these were the least mobile section of the population . . . — Yes?

1197 And because they are least mobile, more likely to be affected by airport noise and nuisance, or any sort of noise and nuisance. Would that be a fair assumption? — I do not know that I can follow the argument—it all depends on the personality of the person concerned.

1198 I would think that they were likely to be spending the bulk of their time indoors and not outside their houses, and not commuting: likely to be a section of the community more affected by local nuisance. I think that is a fair assumption—wouldn't you say so? — I don't know whether I can follow the logic of your argument. First of all, you assume that all old people are going to stay indoors. Most seem to play bowls in this town—I do not think I can follow the argument.

1199 Even so, I would have thought that their concentration on hitting the jack was likely to be slightly affected by a major jet aircraft passing over their heads! Would you accept that as a principle? — Yes.

1200 I just want to make the point that Southend is largely a holiday resort sort of area with people who are particularly sensitive to extraneous noise. — It is a pleasant place to live, yes.

1201 And you would wish that it would remain as pleasant a place to live? — I think the Council have made that perfectly clear, that they would wish it to remain a pleasant place.

* p. 62.

† See attached wallet of maps and diagrams.

* p. 13.

Printed image digitised by the University of Southampton Library Digitisation Unit

1202 So long as they try to safeguard that, we have no point of difference between us. — Quite.

Inspector You are making progress, Mr. Wood.

1203 Mr. *Wood* I am most gratified. On page 19 there seems to be rather a peculiar . . . I had better not mention "policy" to this witness! . . . in paragraph 73,* and once again basing our inferences on the evidence which we have, which is the Roskill site, you seem to envisage the possibility in RP 13 of extending the built up area in and around Shoebury to a considerable extent. — Providing the noise question can be dealt with—I think that is quite true.

1204 We are on common ground there, then. But on the Roskill contours, which is the only definitive thing that we have in front of us—the other could be interpreted as pie in the sky—you still would envisage a development in that area? would you, or not? — The position is this: that the development in the Shoeburyness area by the Southend Council is needed, and was agreed before the question of Roskill and his Inquiry was ever thought about; so indeed the Council themselves are developing 100 acres at Shoeburyness now.

1205 Yes; and these would be likely to be grievously affected were not your submissions as to variation of the runway site and runway alignment acceded to—you would accept that? — Yes.

1206 Furthermore, just on that point: I believe that in RP 13 you refer to . . . please refresh my memory . . . was that the area of land that was the subject of the Planning Inquiry between the Corporation and the appropriate Municipal? — This was the subject of an objection at the time, and the review of the development plan, yes. And indeed the Minister upheld the objection, and deleted RP 13; but he did not refuse the population target for the town. It follows from that, I think, that he expected either that RP 13 would be reinstated or an alternative area of land would be developed.

1207 An alternative area—this is important because you would agree that one of the reasons for the Minister's refusal of RP 13 was the high quality of the agricultural land? — I am quite sure of that myself.

1208 So that, were you to proceed with the development of RP 13, you would *per se* be taking into development some of the best agricultural land in the whole of the Rochford Hundred? — Yes.

1209 I am glad we are on largely common ground. Furthermore, on page 23,† you make some reference here about spare capacity upon the Fenchurch Street/Shoeburyness line. You would agree that this spare capacity is only apparent at off-peak times? — No, I would not. I take the reference from my attendance at the Standing Conference on London and the South-East Regional Planning, and there we have had the advantage of evidence and papers from British Railway planning representatives, and it is said that there is spare capacity on the Shoeburyness/Fenchurch Street line, but not on the Victoria Station/Liverpool Street line; and I have taken it from British Railways.

1210 That was not really the question I was wanting to ask. The question I was wanting to ask was, is this spare capacity available for the whole of the 24 hours, or is it inhibited by the rush hours by the commuter traffic that, on all the rest of the evidence, comes from Southend in great quantities to Fenchurch Street? — Well, relatively, compared with other commuter lines into London, there is capacity at peak times as well. Compared to, say, the Liverpool Street line.

1211 Yes, but that is by British Railways confession over-utilised at the present time. — Equally, British Railways would say there was capacity on this line, even at peak times.

1212 They do say that there is capacity on this line, even at peak times. And would you say that that capacity was there even during the weekends and public holidays, when the tripper traffic is at its height? — I must say that I have never travelled at peak tripper times. We have as many as 50,000 people arriving in Southend by rail on August Bank Holiday—we would have fairly crowded trains on that day. But whether you could not have other trains as well—I would think you could, of course. There could be other trains imposed into the railway timetable.

1213 Scarcely capable of dealing with the significant increase. The point is the provision of a new rail link to London, and that it would be a matter of urgency should an airport come, to the Foulness area. Would you accept that? — Well, everything is relative. I hope you do not think I am being difficult in answering this—the airport would itself be unlikely to be there until, say, 1975, so there could not be any urgency about a new rail link. There would be time to organise it.

1214 1975—I believe the appropriate authority is talking in terms of 1973. Further in your evidence, at 102,* you suggest development in the area, and possibly a new university and that sort of thing being created. Do you regard close proximity to a major airport as the ideal environment for such things as universities? — If it was affected by noise—obviously not.

1215 And would you also admit that from the point of view of education—education would be inhibited too by the close proximity of a major international airport? — In schools within these NNI contours which are critical, yes.

1216 And I wonder, as a man of your great technical expertise, whether you could in fact give some figure as to the likely cost, in your new development and so on, of insulating private dwellings, so that in fact, if you do not succeed in your re-alignment of both flight paths and runways and the like, for some sort of mitigation of noise nuisance that will become necessary—would you have that figure readily available? — No—I have given

* p. 68.
† p. 71.

* p. 71.

Printed image digitised by the University of Southampton Library Digitisation Unit

no thought to what it would cost, to insulate many houses. The Council's policy is that they would wish to consider individual cases.

1217 Would a figure of £2,000 per dwelling appear to you to be excessive? – Yes.

1218 I am assured by some experts that it is in fact an underestimate–you would regard it as excessive? – Yes.

1219 And finally, you have in paragraph 108* said–presumably the rest of your comments are relevant here–"the possibility of developing this town as a conference centre"–would you really think that this is the sort of activity–extra activity–likely to be directed to Southend with an international airport on your doorstep? – Yes.

1220 In spite of the . . . – There are many towns in the world that are holiday resorts and are in close proximity to an airport. I spent a week in December in Palma, in Majorca, and the airport is relatively close to Palma, but it was very pleasant there. Provided there is no noise nuisance, the answer must be "yes".

1221 I can only think it would be a relaxation and relief if at some of the conferences we go to we do not have to listen to many of the speeches!

Cross-examined by Mr. Orchard

1222 Do you agree, Mr. Hill, that the resort's holiday trade has declined in Southend? – The town is not as dependent on the holiday trade as it used to be.

1223 What do you mean by that, not dependent? – The economy of Southend is not as dependent on the holiday trade as it used to be before the last war. We now have a greater variety of work, we have offices and light industry which did not exist before.

1224 Are you worried about this? – I am very happy we have a variety of employment in the town.

1225 Are you worried about it? – The Council would wish to see the holiday industry encouraged. I am not particularly worried about the decline because I think we have managed to substitute other work for the work which has disappeared in the holiday trade. Not very many people spend a lengthy holiday in this town now in hotels. This is not unusual for England, it is happening in other resorts too.

1226 That doesn't concern you? – I am naturally concerned at everything that goes on in the town, but I don't quite know how to answer your question.

1227 I come from the Midlands and I know a lot of people from the Midlands come to Southend for a holiday. – Yes.

1228 And possibly they come from airports from the Midland, from Castle Donnington and elsewhere, and I know they enjoy it here, but it is little encouragement for me to pass on this kind of thing, that there is a decline and there isn't much concern about it. – I haven't said that. I have said I was concerned about everything that happened in this town. I wasn't quite sure what you were wanting me to say, what the answer to your question was.

1229 Well, all I want to know is whether you wish to encourage people to come to Southend for a holiday or not? – The answer to that is definitely yes and we are doing our best and I have put certain things in this proof which try to prove that point.

1230 The next question I would like to ask you is what is being done to recover this lost revenue? – What is being done by the Council to recover this lost revenue? We are trying very hard to encourage the building of a new hotel, the Council have of recent years provided a Cliffs Pavilion which is available for summer shows and for conferences. The Council are trying to encourage people to come to this town by every possible method open to them.

1231 And these wonderful new developments in Southend are being advertised in your guides, are they not? – Could I ask you what you mean by the wonderful new developments?

1232 Well, I think that the changes in Southend are remarkable. – Yes.

1233 A radical improvement? – Yes. You mean the office blocks and the shopping centre?

1234 I mean the change that has taken place and the change that is going to take place not only the shopping centres but the industrial sections as well. – I see, yes.

1235 Do you in fact use this in your guides to encourage people? – We have two sorts of guides, we have a holiday guide which I think does not make particular reference to industry but tries to outline the merits of the cliffs and things of that sort, but we also have another guide called *The Changing Face of Southend* which tries to sell this town as a commercial centre and as an industrial centre. So we have two sorts of guides and we try like a pretty woman to make the best of our features.

1236 So in actual fact there is probably going to be a bigger emphasis on the commercial side, the industrial side, than the holiday side? – No, I think both are going to be equally emphasised and perhaps the emphasis will move to the one which is most successful.

1237 A final point leading up to this. Is the fact that if we are going to encourage people into this resort of ours, are you doing all in your power to see that these people do not suffer in the future the acute noise nuisance on the front? – Well, personally I have tried, yes.

1238 Bearing in mind there might be severe side noise effect from the Concorde aircraft which use this airport? – I think the process the Council have followed and are following is trying to ensure that this does not happen as far as possible.

* p. 71.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. Mathieson

1239 In the evidence presented by Mr. Hill on roads he does mention improvement of the A127 Southend arterial road.

Inspector Could you quote the paragraph?

1240 Mr. *Mathieson* On page 20, from 84* onwards, I believe. There is also in the development plan for Southend, Mr. Hill, a proposal to bring into Southend at the Leigh end a feeder road from the Essex County Council? — Yes.

1241 Could you say in view of the evidence which was presented yesterday as to the loss of agricultural land which would be taken up by a new motorway through the county and the back of Southend? Could you say whether it would be a feasible possibility for this road to come into Southend from the west and could be taken stright into the new development proposed for Foulness on the reclaimed island on the foreshore and at Southend? — No, I don't think it is, The Council particularly resolved a little while ago that they would not proceed with the construction of a road along the sea front which, incidentally, terminates on the western boundary of the inner ring road, that they would not wish to have any part of that route constructed until the question of the airport at Foulness was resolved and the reason of course was that one would not wish to see heavy industrial traffic proceeding along the seafront or the foreshore of this town, this would destroy the amenities and this is one of the things the Council would set their face against, they would not wish a road along the seafront to this airport.

1242 They would not wish a road three-quarters of a mile off the seafront? — I hadn't thought of going three-quarters of a mile from the seafront but I think a similar policy would apply because if you do reclaim land three-quarters of a mile away from the seafront the shop window of this town would have moved three-quarters of a mile south-west and you would want it still to be very pleasant, not filled with industrial traffic.

Cross-examined by Mr. Blake-Orr

1243 Your last answers have partially resolved my problem. On page 9, paragraph 27,† about this new road, can I take it from your answers that this road would not be built if the airport was built? — No, I didn't say that, I didn't mean to infer that, I said the County Council would not wish to construct it until a decision on the airport had been reached and in particular, I think, the Council would be keen to see this new route to the north of the town as part of the plan for the airport. The Council decided a year ago that they would not proceed with this road for ten years and accordingly the emphasis on the road pattern of Southend for the next nine years, that is the improvement of the A127. In fact, the plan on the board there, I think it is plan no. 10,* shows the ultimate road pattern and it shows the route along the seafront by 1981, but not by 1975.

1244 This is not intended for holiday traffic? — It is intended not particularly for holiday traffic, it is necessary if there is no airport at Foulness to have a new route for Southend itself and the traffic problem in this town whilst peaking due to holiday traffic some week-ends is heavy anyway, with 80,000 vehicles a day crossing the borough boundary in the west, use of that traffic on one road, the A127, is already busy. By 1981 another road will be required before we have an airport, but it will terminate at the centre of Southend and in particular one would wish to see that in the summer season there was no through traffic on what is now the western esplanade.

1245 A point that puzzles me very much, it is proposed that this road its level should be below that of the present esplanade. Since the esplanade is only 3 or 4 ft above high-water mark I would like to know just where. — The easy answer to that is to say mud level, and just as parts of the town are below high water so would this road be below high water, there would be a sea wall keeping the water out.

1246 So we would have a large barrier formed between the cliffs and the seafront itself? — Yes. the Development Plan proposes that 55 acres of land should be reclaimed between Chalkwell and Leigh and within this 55 acres it would be protected by a sea wall and it would be possible to put a road at the present mud level.

1247 On page 16, paragraph 61,† the supply of water. You would envisage that there would be no difficulty, at least in the initial stages; can you confirm this? — There was shall I say until four years ago a difficulty about the water supply of Essex. I think it has in fact been solved by the Ely/Ouse scheme and this is confirmed by the Waterworks Company if needed. There is to be a large airport then there will have to be additional water supplies in there. I think there will have to be a reservoir somewhere in the Maldon area and a new main from that to the airport, but the Water Company envisages no difficulty.

1248 Page 23, paragraph 97, we have already had a question about this. I take it that the available capacity at peak hours on the Shoeburyness line means at present it is not standing room only, only other times, there are spare seats though, I assume that British Rail are probably expecting major flows on to the peak traffic? — Of course there will be more capacity than at peak time, I would agree, but I think relative to the other commuter lines to London there is capacity on the Fenchurch Street Line.

1249 But isn't it a fact that major peaks will arise with intercontinental traffic in the early morning and from the evening as flights are done at night so we could

* p. 69.
† p. 64.

* Available for inspection at the County Borough Council Offices, Southend-on-Sea.
† p. 67.

Printed image digitised by the University of Southampton Library Digitisation Unit

probably expect peak arrivals at the airport about the peak commuter times? — I am awfully sorry but I don't really know when an airport like Heathrow peaks.

1250 One last point, page 25,* "Public utilities." You mention drainage which includes sewage, it doesn't mention rubbish. The town plan no. 3† shows the present tipping completed and as public open space. Can you tell us where the new tip will be or is it going to be processed properly? — Personally I would hope as a ratepayer we are going to be able to continue to control tipping because it will cost something like fifteen times as much if we have to go for a destructor and of course since I came to Southend we have abandoned the destructor because of cost. I think a charge on the rates will be something like 8d. purely for refuse disposal if we have to have a new destructor, but there are a number of sites around Southend, low lying land, which can be reclaimed from the sea. I would hope to see a continuation of the policy of controlled tipping which brings land into use and reclaims it from the sea, so I think an extension of the present policy will follow. We have recently acquired a large area of land at Wakering for tipping.

1251 Are you aware that certain North London boroughs have co-operated and are disposing of their refuse at a profit? — I am sorry, but I don't believe it.

1252 *Inspector* Is this relevant to the third London airport?

1253 Mr. *Blake-Orr* I was wondering if we are going to have a conurbation in this part of the world we are going to at least double the population in the immediate vicinity, all going to have to dispose of refuse somewhere, somehow. I would have thought if plans were being made to co-ordinate this, to do it as profitably as possible, it would be much better than each town disposing of it locally. — If I could help on that, there is already a regional refuse programme at the moment because Rochford and Rayleigh and Benfleet dispose of their rubbish at our tip and indeed consultation between the various authorities is going on at the present time about an extension of this programme.

Mr. *Wright* Thank you very much.

(*The witness withdrew*)

MR. RICHARD FRANCIS LLOYD-JONES‡ called

Examined by Mr. Wright

1254 Mr. Lloyd-Jones, is your name Richard Francis Lloyd-Jones? — It is.

1255 I think you are a Master of Arts, Fellow of the Institute of Civil Engineers and an Associate Fellow of the Royal Aeronautical Society? — That is right.

1256 And the senior partner in Norman and Dawbarn, Architect, Consulting Engineers and Town Planners. I think you have been associated with aviation since 1934? — Yes.

1257 And I think you have been personally concerned in a number of airport projects both in this country and abroad. Do those include the international airports at Rangoon, Accra, Fiji, Malta, Jamaica, Nassau, and in this country Birmingham, Leeds/Bradford, Devon County Council and Southend-on-Sea Corporation? — That is correct.

1258 I think you also acted for the Ministry of Aviation in preparing a preliminary technical layout of what was the proposed airport at Stansted? — That is correct.

1259 Have you been asked by the Southend Borough Council to deal with two aspects of this matter of the third London airport insofar as it relates to the Borough, namely noise, disturbance and the effect upon Southend's present airport? — That is correct.

Inspector Before I invite questions I will just say that there is a list of I think 7 or 8 questions posed by Southend Corporation which should be brought to the attention of the Commission and obviously they will be investigated. They are based on the proof of evidence of Mr. Lloyd-Jones.

Mr. *Frank* In great contrast to the last time Mr. Lloyd-Jones was in the witness box when I was on the other side I have no questions.

Inspector Kent County Council? No. Local authorities? Mr. Wood.

Cross-examined by Mr. Wood

1260 Page 27, Mr. Lloyd-Jones, paragraph 9.* You suggest here that it is uncertain whether any investigations have been made into this question, that is aircraft flying over water, but it is a common experience that sound generation at low level carries over water to a greater extent than over land; that, of course, obviously you would accept? — Yes.

1261 A thing that disturbs one is whether and what sort of noise contours there would be of large aircraft, jet aircraft taking off to the south-westerly direction of Foulness and proceeding up the estuary. Are you entirely happy that there would be no noise nuisance along the front of Southend? — I do not think there would be any real nuisance along the front of Southend provided that the routing of the aircraft, aircraft routing was satisfactorily arranged. The reason why this point was raised in my proof was more the possible effect or the lack of attentuation really if noise was generated at the low level when the aircraft was over water. In other words when the aircraft is flying at fairly low level,

* p. 71.

† Available for inspection at The County Borough Council Offices, Southend-on-Sea.

‡ See also p. 82.

* p. 83.

Printed image digitised by the University of Southampton Library Digitisation Unit

whereas when it is doing that over land there is a certain amount of attenuation. It is a very variable quantity, depending on the objects on the land and the nature of the land. It occurred to me there might be a difference between what is experienced with an aircraft flying at low altitude over land and one flying over water at low altitude. I think this would come up more on the approaches from the south-west, the north-east, the aircraft passing offshore of Shoeburyness, and might be only five or six hundred feet high, and at that level the noise along the shoreline might be greater than one would normally expect, but I don't think there is any evidence one way or the other on this. I am suggesting that some experiments should be done to determine what the effect would be.

1262 Is it not generally accepted that water is a better disseminator of noise than land, particularly over flat water? — It is not so much—It does not attenuate the sound as much and it does not absorb the sound as much as certain objects on the land; trees and houses and vegetation on land tend to absorb the sound, which does not happen when sound is passing over water.

1263 Would you define the low level? — It is the angle, really, that is attended by someone hearing the sound between him and the aircraft. If that angle is very small so that sound is travelling virtually over the surface of either water or the ground, that I would call low level. But at what angle attentuation ceases to be critical I am afraid I do not quite know the answer.

1264 We could not get more precise? — I guess somewhere about 5 degrees.

1265 That varies according to the distance that you are away from the aircraft. — That is correct.

1266 Is 5,000 ft low level for a jumbo jet? — No, I don't think in this particular circumstance that would be. I think the aircraft would then be too high for this effect to have any significance.

1267 The fact that according to the revised plan jets would be passing over Canvey and point north at heights around four, five, six thousand feet, you would not regard that as low level or likely to disseminate a major sound nuisance? — I don't think it would make any difference; the fact that it was flying over water or land at that height, I think you get the same free sound transmitted.

1268 You are on all fours with the rest of the Southend Corporation witnesses when you say you vastly prefer a runway alignment and also a system of flight paths taking aircraft up the estuary and not taking them north-west and turning immediately after the end of the runway? — Oh yes, I think that there is no doubt at all that it would be very regrettable if it was concluded that it would be impossible to re-arrange the flight paths so that aircraft did not have to pass over Shoeburyness. I would personally have thought it was possible. That would not create a great—it would not be a great disadvantage in other respects. It was quite a feasible thing to do, but it is something which one hopes the Commission would bear in mind.

1269 "Regrettable" would be the understatement, would not it? — I think so, because the main virtue of this airport, I gather, is that it creates little disturbance, and this virtue is regarded as overriding other possible disadvantages, and if that is the case I think the most that you would do is try and ensure it did not disturb people.

1270 You are quite happy the additional mileage and addition on times of flight so necessary for aircraft being routed over the—and although that is not the most economical one, first of all it would not raise undue difficulties as to additional costs, and secondly invite retaliatory action on the part of foreign countries.

Mr. *Ogden* We kept off cost quite deliberately because we understood it was the thing to be considered at Stage V.

1271 *Inspector* I think this is a delicate question of how many flying miles you can load on to an aircraft and is better dealt with at Stage III. You have made your point beyond a peradventure, and the Commission are going to look into it, they are looking into it.

1272 Mr. *Wood* I will certainly remember that in future. Paragraph 15,* you would accept that any realignment, unless it is extremely careful, to the runways is likely to cause discomfort to, say, the land and area of Clacton, that is so? — I am sorry, I am not quite with you on this.

1273 Unless you are very careful in realigning the runway in the Southend area, you can cause nuisance to Clacton. — It might do—I mean, obviously the effect on other neighbouring areas, must be taken into account.

1274 Page 29,† others more technically blessed can develop this, I am sure; this question of noise certification. You will accept that noise certification, this means an airlines operators' additional costs and additional trouble—this will in fact prove to be impossible to enforce. — I don't go as far as that. It may have some effect on the cost of aeroplanes, to make things pay. I am now talking without any real facts, but I would imagine that any additional cost would not be prohibitive to the extent of preventing or discouraging people in any significant quantity from not travelling by air, and since an airline operator would not be subjected to the same conditions competitively the position would not be changed.

1275 I wonder if that would be so, if there was a choice between the sale of developed Concorde with a noise certification of a very high noise level, as it were and an inability to sell this expensive aircraft abroad, whether the standards would not be so high as to almost be useless? — I would not think that is at all likely, but I am speaking . . .

1276 It is like looking into a crystal ball, isn't it? — It is a bit early days.

---

* p. 83.
† p. 84.

Printed image digitised by the University of Southampton Library Digitisation Unit

1277 Paragraph 21,* we have already had reference to helicopters and vertical take-off and all the other refinements; you would envisage this type of aircraft, and the inter-airport communication system would have to avoid the ordinary established routes? – No, I think that what I was concerned about here was first, of course, it is a possibility that can't be overlooked, that some form of link between airports will be instituted some time in the future. If that happened we don't really know at this stage what routing they would have to follow. It is possible that shortly after take-off they would follow the Thames Estuary, any of those going westward, but I am drawing attention here to the fact that these aircraft are operated, if they are operated, then it would be necessary for them to be kept clear of built-up areas in the immediate vicinity of the towns.

1278 Would not it be inevitable for them to take them westwards because of the position of Foulness at the end of the peninsula, the way all your communications which have to go westwards, and thus would not the danger be that if there were a confusion of flight paths between the big international air routes and these smaller intimate air routes, they would have to be built up over built-up areas. – I don't think so. They could be flown in a south-westerly direction to the east of the take-off paths of conventional aeroplanes, and then swing in under the flight paths of the conventional aeroplanes up the Thames Estuary, and fly below them. I think this is possible. I don't think there is any problem here, but I do think the point wants bearing in mind that if there is any consideration of this type of aeroplane being flow then it should not be flown over built-up areas in the vicinity of the airport.

1279 Finally, your point in 27(4)† about the biasing of take-offs to the north-east, particularly; would you agree with the Air Traffic Control Expert produced by Essex County Council that in the main ability to route aircraft to the east is likely to be very inhibited by reason of the site at Foulness? The bulk of the aircraft will have to take off to the south-west, and swing to the west, and the easterly air route, would be that much more difficult. – I think that might be so.

1280 So the chances of routing aircraft to the north-east can at best be regarded as purely minimal in that 75 per cent of the aircraft . . . – I don't think I quite follow your question.

1281 What I am trying to establish is that in the main, aircraft using Foulness site will have to take off in a southerly south-westerly direction, 75 per cent of them; very few of them will be able to take off in a north-east or easterly direction.

1282 *Inspector* I wonder if it would help if you could just explain to me what precisely you mean by "Reconsideration of biasing take-offs to the north-east and of noise abatement procedures". – First of all, biasing under near calm conditions, that is optional of weather preference, as given to taking off to the south-west or north-east. . . .

1283 This is where there is the 5-mile wind? – Yes, it can in fact be increased beyond that to take up to 7-knot tail winds, but in certain circumstances, for instance for avoiding disturbing neighbourhoods there might be some justification in directing aeroplanes to continue flying in a certain direction right up to the point when the tail wind goes up to 7 knots.

1284 That is the point, taking off must increase the tail wind? – Yes; a very high proportion of aircraft keep to the direction which gives the least disturbance.

Inspector I want to be sure we are all on the same thing.

1285 Mr. *Wood* Thank you, but I understood from the Essex witnesses that taking an average, 75 per cent of aircraft using the airport would even allowing for this bias still have to take off in a southerly south-western direction. – Yes. I am surprised it is as high as that. I would have thought it would be . . .

Mr. *Frank* In fact it was not; there is no mention of bias; that was without the bias.

1286 Mr. *Wood* We would not have available figures, of course, how the bias would affect this? – No, I am afraid I have not got it.

Mr. *Wood* Obviously the Commission will go into this.

Inspector You have defined what speed of wind you are going to take off against. Any more local authorities?

Cross-examined by Mr. Orchard

1287 Just three small points. I would just like to ask Mr. Lloyd-Jones first of all, on page 27*, you say that you appreciate the present proposals are a hypothesis. You go on to talk about noise disturbances. Are they in your opinion largely to be avoided? What would be your guess if it could not be avoided? – I don't know quite what opinion you expect me to have, presumably the Commission would have very good reason . . .

1288 *Inspector* Mr. Orchard, I think really again the Southend Council have made it clear what their attitude would be, and this is a witness for Southend Council; they have made it clear, quite clear what their attitude would be if this noise could not be eliminated. They say they would have to reconsider their decision.

Mr. *Orchard* I hope that is so. That is all.

1289 *Inspector* You said that?

Mr. *Ogden* Yes, sir, and I repeat again, it is exactly what we are all here for, to find out what evidence can be gleaned from this inquiry, and the three other local inquiries, and the information that the Commission gives us. The Borough Corporation—I am sorry, I was about to put it too strongly. Of course the Borough Council is going to consider everything.

* p. 84.
† p. 85.

* p. 82.

Printed image digitised by the University of Southampton Library Digitisation Unit

1290 Mr. *Orchard* Thank you very much. Page 30, item 20,* you talk about the holding areas should not cause serious disturbance. I think probably Mr. Hunter will be checked against it, but once again you feel doubtful about this point. — I think this is one of the many things we want to look at and would like to have more information when the plans are more definite. Quite obviously there are various ways of arranging the flight pattern and this would affect the holding areas. I would not imagine there would be a holding area over Southend whatever the flight paths are, and so I would imagine that this is not a factor that would affect Southend Borough.

1291 Just one final point following that. If these runways were twisted, as suggested, and probably involving more nuisance to Clacton and Frinton, could it possibly—You don't mention the southern part, but could it possibly affect Leysdon-on-Sea to the east of the present contour lines on CTLA 1/3.† — It could affect Clacton.

1292 No. You mentioned Clacton, but if it were twisted in the way Counsel mentioned could it affect Leysdon-on-Sea?

1293 Mr. *Ogden* I am sorry to keep interrupting this gentleman, but I suggested nothing of the kind, and I don't know where Leysdon-on-Sea is. All I said was it will have a more north-south axis.

1294 *Inspector* I think the answer must be that it depends how much the bill is.

1295 Mr. *Orchard* Yes. I merely said so. I am asking a question.

Witness I am not sure where the place is.

Mr. *Ogden* It is just south of the present runway.

1296 *Inspector* It is the eastern end of Sheppey. — No, it would not be moved to that extent, I would not think.

Mr. *Orchard* Thank you very much.

Inspector Any other questions by local authorities? Mr. Smith.

Cross-examined by Mr. Peter Smith

(Barling Magna Parish Council)

1297 On page 29, paragraph 16,‡ "the noise certification"—it is difficult to be sure what this statement means. Curiously enough, I examined the previous expert, Mr. Fleming, yesterday, on this,§ and I elucidated information which it appears you would be aware of—have you seen the transcript? — No, I have not.

1298 That is unfortunate—I will have to put this in the form of a question, I suppose. It seems that the noise certification is to be by international agreement, by a number of international countries. They have got to agree this; they have not yet agreed it. There does not seem to be, that I am aware of, any sign of this process starting. It seems again, from Mr. Fleming's evidence, that countries which do not abide by these noise certification agreements would not be permitted to use this airport. From your recollection is this . . . I am now going to try and remember what the transcript said . . .

1299 *Inspector* You are trying to remember someone else's interpretation of the present position of a certification?

1300 Mr. *Smith* I am trying to help him answer the question. — What is the question?

1301 You say you are not sure what it means . . . — Well—I think I do understand what it means, and I hope the interpretation I have put there is in fact the correct one. Is it?

1302 The only thing is from the airport situation siting point of view. I put it to you that if there are a number of countries, a number of users of the airport, who would not be permitted to use the airport, would this not put the matter in jeopardy economically . . . Mr. Ogden, please do not object because I would mention the economic aspect . . .

1303 *Inspector* Mr. Lloyd-Jones, can you help Mr. Smith on the present situation regarding certification.

Mr. *Lloyd-Jones* Well, I think you are quite right—it is not anything like yet ratified. I think the United States of America and Great Britain have agreed that it is a very desirable thing, and they will do all they can to introduce it; and, as America introduces most of the aeroplanes, most countries will fall into line. I do not know what further information you want at this stage on this subject—you were interested possibly in banning certain aircraft from operating here because this would prejudice the use of the airport?

1304 Mr. *Smith* Yes. There has been an awful lot of talk about NNI contours, which again the Commission have reduced in anticipation of this hopeful international agreement. But it is very much pie in the sky—I quoted yesterday to Mr. Fleming that in 1961 . . .

1305 *Inspector* Mr. Smith, to intervene—can I help to this extent? that the reason for the Commission's full assumption, which is set out in the Cublington material*—the full assumption is that there will be a 10 per cent NNI decrease due to certification, and a 5 per cent corresponding increase due to increase in engine size; and that is the basis for those contours of the Commission. That is in the Cublington material, and the background for the assumption will be made clear during Stages III and IV. Will that help you?

Mr. *Smith* It helps me this far . . .

1306 *Inspector* I was wrong—reduced by 10 NNI due to noise certification, and increased by 5 due to engine size. But the full and correct statement is in the Cublington material, and the reason for the assumption

* p. 84.

† See attached wallet of maps and diagrams.

‡ p. 83.

§ p. 313.

* *Site Information for Stage II Local Hearings. 3. Cublington (Wing).* (HMSO; 6s.)

Printed image digitised by the University of Southampton Library Digitisation Unit

will be made clear, and I am sure investigated in very great detail, during Stages III and IV.

1307 Mr. *Smith* Can I just say this . . .

Inspector I am trying to be helpful.

1308 Mr. *Smith* Yes; thank you. I am just trying to put the picture right. This is something international . . . I mentioned to Mr. Fleming yesterday some figures which Boeing Aircraft Corporation produced in 1961 on the cost of noise reduction, which was 43,000 per annum per aircraft, and this was the cost—he could not tell me what the current cost was. But you see, this matter of noise reduction does seem to be something very expensive. There obviously going to be a good deal . . .

1309 *Inspector* Mr. Smith, you are going on a long time. Is the question that you fear that noise certification—that the economics of noise certification—may prevent it coming into effect, and therefore you won't get this reduction?

Mr. *Smith* Yes—you have put it in a nutshell.

1310 *Inspector* Would you like to comment on that, Mr. Lloyd-Jones?

Mr. *Lloyd-Jones* I do not know, of course; no one knows. But my opinion is that it will be introduced, and that the extra costs will be accepted, just as any increases have to be accepted.

Inspector Mr. Smith, you have expressed your conviction, and you will be able to get more information on this later on.

Mr. *Smith* Thank you very much.

Cross-examined by Mr. Bryant

1311 I would refer to Mr. Fleming. He referred to the angle of take-off—the direction of take-off—and he suggested that Mr. Dunford had said that the southwards direction of take-off was more or less mandatory at a fairly high level. I do not remember Mr. Dunford saying anything to that effect at all—he said that the usual take-off would be in the southwards direction.

Inspector That point has been made, Mr. Bryant, yes.

Cross-examined by Mr. J. A. Howard (Thames Estuary Development Company)

1312 Mr. Lloyd-Jones, my question relates to paragraph 7* of your evidence, when you express concern that the routing of aircraft flights from Foulness should cause as little disturbance to people as possible. Let me say at once that I do not quarrel with that, because this is a concern shared by the Thames Estuary Development Company, who also share your opinion that something should be done to remove that spur over Shoeburyness. Would you agree that Foulness is unique in that the absence of existing flight paths enables a completely flexible approach to be considered for routing aircraft? — I am sorry—I am not quite with you.

1313 I am asking whether the fact that there are no existing flight paths in this area enables a completely flexible approach to be made? — Yes, I think there is quite a degree of flexibility, yes.

Cross-examined by Mr. R. A. Mathieson

1314 Paragraph 4* in your evidence appears to pose a query on the figures given by the Roskill Commission, on the number of passengers to be carried at this new airport, estimated to be over a hundred million, and you go on, in a later paragraph, paragraph 6, to also appear to pose a query on the employees to be employed, first at the 2-runway airport and secondly at the 4-runway airport. This is something which will probably come forward at subsequent stages of the Inquiry; but could you at this stage eliminate some of the fears expressed in Southend and say whether you think these numbers are a great deal too high compared with present figures at Heathrow? — No. I cannot say that at all. I have not any figures. I would be very interested to have the background of any estimates, and I am sure the Corporation would, because many of the other aspects which affect the Corporation of course are tied up to both the forecast of passengers and the one of population.

1315 This is what I mean really, because these figures are being used a great deal by objectors to the plans for putting this airfield at Maplin Sands, and I do feel that if this particular item in the proof could be put right at an early date, it would obviate quite a few of the protests which are being made. You appear in your evidence to have some doubts as to the correctness of these figures, and in fact we are not given the year when these figures are expected to be reached. — No. I think that is the important factor—that one does not really know how far ahead these figures relate to.

Cross-examined by Mr. Purchase

1316 Page 28, paragraph 15†; I am particularly interested in what you said there, down to "reclaimed land and one would have to justify the increased cost", and it makes me put the question of whether you actually have seen our report, or know the Bernard Clark and Partners scheme for the reclamation? — I have not seen the report, but I do know something in outline of your proposal.

1317 You have a rough idea? — Yes.

1318 My next question is—in as much as you have studied the position of the airport, would you agree if I said that this would improve the situation as far as Clacton and Walton are concerned, by putting the aircraft out in a further easterly direction? — It would be an improvement.

1319 I know it does mean the situation for these towns would be improved. — If the runways were sited further eastwards?

* p. 82.

* p. 82.
† p. 83.

Printed image digitised by the University of Southampton Library Digitisation Unit

1320 Yes. — Yes.

1321 You say here none of this.

Inspector You can tell us this later on—can you restrict yourself to questions of the witness?

Mr. *Purchase* I raised that because this was a question with which he agreed that it was so.

Inspector He has agreed.

1322 Mr. *Purchase* Thank you. Am I correct in believing that your firm studied Foulness Island some years ago—1965, I think? — Yes, we did. We did a very brief examination of the place during the Stansted Inquiry. That was not the Maplin Sands—it was Foulness Island.

1323 And together with a number of other sites? — Yes.

Mr. *White* The Commission already has, of course, a written proof of evidence* in the name of Mr. William Henry Deakin. Mr. Deakin is here today to answer questions. Also here today are the Kent County Council consultants on noise and aviation respectively. I suggest that it might be helpful if questions were put to Mr. Deakin of a technical nature, that the consultants could answer in his stead.

Before I turn to Mr. Deakin, I would like to summarise very briefly the salient points of the Kent County Council representations. The County Council is concerned with the implications for Kent of the Foulness offshore proposal, and with the exception of certain possible transport implications; these are dealt with in paragraph 29†—that is the last paragraph of Mr. Deakin's proof of evidence. His evidence is concentrated solely on the effects of noise in Kent. The County Council is not at this stage at least opposing the Foulness proposal; but it is, of course, very concerned at the noise nuisance which might be caused to local people in Kent, and it is concerned to ensure that if the Foulness site is chosen, this nuisance should be reduced as much as possible without any consequential disadvantages to people in areas outside of Kent.

What Mr. Deakin has attempted to do in his proof of evidence is to provide a factual statement of the number of people, and also the number of schools and hospitals, in Kent which would be affected by the various levels of noise nuisance which have been postulated at this stage. Those figures are summarised in Appendix I‡ to Mr. Deakin's evidence. I will not go into the detail now, because they are there; but there are certain points which I wish to emphasise in relation to these calculations.

First, they are based on NNI contours provided by the Commission itself, plus a tentative 30 NNI contour projected by the Kent County Council onto the Commission's, to give higher contours. The Kent County Council are not claiming any particular magic for the 30 NNI contour, but it is felt that this is a more appropriate lower level to examine. It corresponds with the Wilson Committee's* view as to the lower limit for the critical range of disturbance at night, and the County Council's view is that night flights, with their increasing frequencies, are becoming of increasing importance. Also, the areas of the Kent Coast at least likely to be most affected by noise from the site at Foulness are for the most part comparatively quiet and free from other forms of noise disturbance, and they seem likely to be all the more sensitive to aircraft noise—certainly in comparison with the vicinity of Heathrow, which was the subject of the Wilson Committee's own survey.

I think I should stress, Sir, that this 30 NNI contour—which can be only tentative at this stage, of course—has not been chosen to show a dramatic worsening of the noise situation in Kent. We were, on the contrary, rather relieved when it was drawn, to see that its effect was more modest than might have been expected. But if, of course, it becomes necessary—and in our view it very probably will be—to re-cast the noise contours for Foulness at some later stage, either through the realignment or re-positioning of the runways, or through some change or some flaw in the assumptions on which the Commission's contours are based, or indeed to the opportunity to draw these tentative 30 contours more scientifically when these assumptions are known, then it may become of much greater importance and envelop a much larger population in Kent. You will see from the map that not far away from these contours, and in line with the runways, are some very large concentrations of population, such as the Medway towns, where the population is approaching the quarter million mark.

The second point is the need to take into account when assessing the noise effect on Kent, not only the existing population but also the proposals for future development at the northern tip of the Isle of Sheppey; unfortunately, it is this area of the island which will be most liable to aircraft noise from Foulness. This is a suitable area for new population. It is wanted on the Island, and you will see that the levels of additional population which are being considered are within the range of 10,500 to 50,000 new population. The latter figure—50,000—is the one favoured by the Kent County Council, but even taking the lowest figure of 10,500, this is of course a substantial amount and the Commission is asked to take into account that the choice of a site at Foulness would certainly inhibit and might well prohibit this development.

The third point about Mr. Deakin's evidence which I would like to stress is the lack of knowledge at this stage of the assumptions on which the Commission's noise contours have been drawn. Sir, the Commission's attention has already been drawn to this by the Kent County Council in writing and I just say this: that until the assumptions are known and detailed data are provided the Commission's contours cannot in the Kent County Council's opinion be tested and alternatives cannot be suggested with any confidence at all. Any attempt to do

* p. 86. † p. 90.
‡ p. 89.

* Cmnd. 2056. (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

so in the absence of the necessary data is in our opinion just groping in the dark. Certain such gropings have been attempted by some parties represented at this inquiry, one has, for instance, the claim from one which I find rather amazing, but as I understood it he agreed he did not know what the Commission knew but he was sure that he knew more than the Commission knew. The Kent County Council at least wishes to reserve its own position until the relevant information is provided in full. It may be that the publication of this information will reveal a worse condition for Kent. The County Council again urges the Commission to publish this information as early as possible so it can be examined and tested and the implications for Kent and other areas can be ascertained with greater confidence and if appropriate adjustments can be considered to runway alignments, flight routings etc. Southend Corporation have spoken at some length on this today and I would like to associate myself with the remarks then made and in particular with the specific questions for further information which they put to you.

There is one last point in Mr. Deakin's proof of evidence which I wish to emphasise, one I think of concern to all parties interested in noise effect in relation to any of the four short-listed sites. It is in paragraphs 27 and 28 of Mr. Deakin's proof where you will see that the Commission is asked to take the initiative in seeking to ensure in advance, whatever site may be chosen, that there is machinery for the local authorities to have at least a voice in respect of the development and operation of the airport so that local interests are safeguarded at any rate so far as is compatible with the viable operation of the airport.

Sir, that is a summary of the representations of the Kent County Council and I now tender Mr. Deakin for cross-examination.

MR. WILLIAM HENRY DEAKIN* called

Examined by Mr. White

1324 Mr. Deakin, your full name is William Henry Deakin, you are the Deputy County Planning Officer of the Kent County Council? — Yes.

1325 Your qualifications are Master of Arts, Member of the Town Planning Institute and have you been practising town and country planning for about twenty years? — Yes.

1326 Before you answer any questions that may be put to you, do you produce in Apppendix 1† to your proof a table of the number of population and institutions which will be affected by noise in Kent on the basis of the Commission's proposals? — Yes.

1327 There has at this inquiry been suggested variation in those proposals by the Essex County Council the effect of which would be to remove the population within the green area on that plan from the relevant noise contours with a consequential increase in the number of population in Kent which would be affected by the 35 NNI contour postulated by Essex. Have you been able to do an estimate of the number of population which would be affected if that proposal were feasible within the 35 NNI contour? — Yes, I have a rough estimate and it is not exactly on the same basis as Appendix 1 to my evidence because I have had to take the 35 NNI contour as being the lower datum, but accepting 35 NNI as the lower figure instead of 30 as in my evidence the position is as follows: that additional population in Kent would be affected within the pink area that was on the Essex plan pinned to the wall yesterday but not there today. The population would be on the Isle of Grain in Kent and it would be as follows: that existing population affected additionally would be 1,840, and looking then to the population increase that is allowed for in the present Kent Development Plan, that is between the 1966 census and in about 1980-81, there would be a further 1,134 population affected.

Cross-examined by Mr. Frank

1328 Mr. Deakin, you appreciate that the figures you have given are included in the figures which have been already quoted or given by Mr. Jennings Smith? — That is what I understood him to say yesterday.

1329 The Essex County Council provided you with a copy of the revised contours, that is to say the contours as revised in the light of the changed circumstances and asked you for the population figures in Kent, did they not? — Yes.

1330 And you provided them? — Yes.

1331 You have provided your contours down to the 35 NNI on the footing that the Wilson report* says you have got to have 15 less than the daytime? — Not only for that reason.

1332 That is the main reason. What is the other reason? — I would not go so far as to say that is the main reason, that is one of the reasons.

1333 Can you tell us what the other is? — Yes. For example, it seems to us at least possible that for a number of reasons the noise levels that are being assumed in the Commission's published contours may upon further examination and further investigation prove to be higher and in that case it seemed to us to be useful to put before the Commission at this stage of the inquiry the kind of population numbers who might be affected in such a wider area. A further reason would be that we feel that a number of areas of Kent that could be affected within what now appears to be the 30 NNI zone are of a particularly quiet nature in which it might well be significant, and I think I put it no stronger than that. It might well be significant to take account of noise levels lower than 40 NNI, as low perhaps as 30, perhaps even lower than 30.

* See also p. 86.
† p. 90.

* Cmnd. 2056. (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

1334 I am not quarrelling with that. It is all a matter of precaution and it may transpire later that 30 ought to go? — I think I could not go quiet so far as to say that this is purely precautionary, we feel there is significance in the 30 NNI contour even at this stage.

1335 Can you tell me how you arrived at your 30 NNI contour? Is that the daytime contour? — I have accepted the 30 NNI contour from the County Council's noise consultants.

1336 But it is the daytime contour, isn't it? — I think I must really suggest that you put that question to him.

1337 *Inspector* It is a question of fact so can we have this? It is the daytime?

Mr. *Waters* Yes, based on the same timing as the Roskill Commission, it is the daytime.

1338 *Inspector* An average summer day.

Mr. *Waters* As I read it the Roskill Commission's contours are based upon the summer day and the contours I drew are taken from the Roskill Commission's contours.

1339 Mr. *Frank* The answer is it is the average summer day and average summer night. Mr. Deakin, I appreciate that you have not come here to oppose as a planner, that is not the policy of your County Council? — Not so far as this stage of the inquiry is concerned.

1340 We can expect that later, can we? — I am not going so far as that, one hopes not.

1341 You are here to provide factual material. I take an interest in your development schedule, in particular Sheerness has been run down as a coastal dockyard. — I think, Mr. Frank, I ought really to leave you to say that.

1342 Of course the figure of 50,000 is the absolute maximum, isn't it, it is far higher than is contemplated by the Ministry at the present time? — The answer to the first part of your question is "No". It is not the absolute maximum, indeed it may well prove that physically the island could take more, it is certainly higher than the Ministry of Housing and Local Government has expressed any kind of favour for at the present time, but I know of no reason to suppose that the Ministry would necessarily frown upon a higher figure.

1343 Mr. Deakin, I don't know whether you have read your County Council's submission to the Commission,* have you? — Yes, I have.

1344 Of course, at that stage what you were seeking to do you were putting up a case for not having the third London airport at Sheppey? — Not really. The purpose of the submission at that time was to place before the Commission a certain amount of background information about North Kent generally. One chapter in particular which was in fact the letter that was sent to the Commission drew particularly to the Commission's attention a number of considerations. It is perfectly true that those considerations I think amounted to opposition, but the County Council was not opposing the Sheppey airport. There was no proposal at that time.

1345 Clearly your County Council was saying that Sheppey would be the wrong place? — The wrong location.

1346 And one of the grounds on which you rely for that was you could not accommodate the additional people that would be attracted by the third London airport? — Perhaps you could refer me to the page in question.

1347 Page 36.* You have given various reasons why that is so, lack of transport facilities is something that is emphasised all the way through in this report on page 36. — Yes. It has a present potential, I think that is still true.

1348 Of only about 50,000 additional people? — Yes. I took your first question to be referring to total potential and I was answering that in my view the total potential of the island is not necessarily restricted to 50,000.

1349 You do go on to say: "The necessary number" —(reading to the words)— "development here." As I understand it what you were there putting to the Commission was that it would be difficult indeed impossible to accommodate within a reasonable distance of the airport the population which the airport would generate, in particular you were saying you could only get about 50,000 on Sheppey? — Yes. If indeed you could get 50,000 with an airport on Sheppey, yes.

1350 Well, 50,000 and if you have an airport on Sheppey it might be less? — Indeed.

1351 And one of the matters which you stress all the way through here is the great difficulty of communications which Sheppey has and would have as a third London airport? — Yes.

1352 And presumably it suffers that disability in relation to any development that takes place on Sheppey? — Not in the same sense. The point that was being particularly stressed by the Kent County Council concerning communications in thinking about a third London airport on Sheppey was the total system of communications necessary between the island and thence to London and around London. We felt that the difficulties were even more acute at the London end of that network than at the Sheppey end. It is perfectly true that in thinking about a new town on Sheppey one has certain communication difficulties to solve, but they are nowhere near as great as the ones that are being discussed in this book concerning a third London airport there; in fact what they amount to is the need for a second road bridge across the Swale and a road link connecting that bridge between the town on the island and the trunk road network on the mainland.

* Kent County Council. *The Search for a Site for a Third London Airport Part 1 Background Information concerning Sheppey and Cliffe.* October 1968. Available for inspection at the County Council Offices, Maidstone.

* Kent County Council. *The Search for a Site for a Third London Airport Part 1 Background Information concerning Sheppey and Cliffe.* October 1968. Available for inspection at the County Council Offices, Maidstone.

Printed image digitised by the University of Southampton Library Digitisation Unit

1353 But you have communication difficulties anyway now at present on the railway? — For commuter passengers to London. There are no other real difficulties in Kent.

1354 The last thing I want to do is to turn this into an inquiry as to the expansion of Sheppey. Can I deal with it in this way: in summary what your evidence amounts to is this, that clearly if the airport is to be sited on the Maplin Sands then the expansion of Sheppey will have to be arranged accordingly, that is to say such expansion as takes place will have to be catered for away from any noise nuisance and would have to be limited as a result of that restricted location? — No, I don't think I can agree. I think if I may say so that is writing down the problem too much.

1355 I am sorry if I put it offensively, I apologise. — The position seems to me to be this, that if there is a third London airport at Foulness and if the noise consequences are no worse than they are shown to be on the Commission's own map then Kent County Council and the Greater London Council and the island authority will have to think very seriously whether they can go ahead with a major expansion scheme on the island at all. I put it no higher than that, I don't say at this stage they will have to abandon it but I think it is a possibility that one cannot rule out.

1356 You think the restriction may mean an amendment of the GLC overspill scheme of 20,000—is it? — Yes. I think for this reason, that if one goes for the expansion of substantially less than 50,000, let us say 10,000 or 20,000, ignoring the economic difficulties that this creates, in other words, that the scale of investment per head of population accommodated becomes much higher, but ignoring those figures it becomes necessary to site the reduced increase in population in close proximity to the existing town and its facilities, and this is the very area on the Commission's proposal that is worst affected by noise.

1357 As your Council has not yet taken up the position of opposition, can we from now on rely on their co-operation in agreeing factual matter for the future stages, as we go along, and working with Essex and Southend-on-Sea, in getting the best possible solution if the airport has to be at Maplin Sands? — As to factual information the answer is certainly "yes". To the extent that it is helpful to the Commission in our view and to the extent that it accords with the County Council's own responsibility. As to the achieving of the best result, certainly, and without qualification.

1358 One further question. What is the position of the GLC scheme at the present time? — It awaits the outcome of a financial appraisal of the three potential current levels of expansion, that is 10,000, 21,000 and 50,000, which is, of course, the pattern of the planning stage; there is as yet no outcome on the financial study, therefore the GLC are not proceeding at this moment.

1359 They are not interested as yet, but intending to go forward. — Yes.

1360 *Inspector* Are they taking part in the financial study? — They are not members of the working party, but they are in constant liaison with it, and studying a good deal of information on it.

1361 *Inspector* Why are they not part of it? — I think they felt most of the initial stages which were largely, such items as coast defence and land drainage and sewage, were matters largely for the Island Authority, to some extent for the County Authority and, I think, the GLC—I am really reading their mind. I think they felt it better to stay out.

Inspector Any other local authority?

Cross-examined by Mr. Wood

1362 Only two question: of the two choices that you have been canvassing this afternoon as to the air routes, which would the County Council of Kent favour, the Roskill recommendation or the Essex County Council re-routing up the estuary of the Thames? — I am not sure that I can give you a plain answer to that, because I think I would be wrong to give you a selfish answer which is that the green thumb does not hurt Kent, whereas the re-routing does cause some additional damage to Kent. I personally don't think the County Council would take that view for those reasons. I think I can say this, that the difference between the two is not significantly worse or better for Kent in either case and I don't think the County Council would want to express any preference—subject, of course, to what it has said in general about noise contours: that it wants to examine what the real noise levels are, and where the real noise contours will go.

1363 In one of the submissions, not any of those we have heard at the moment, there is the suggestion that one of the road links from the proposed site to London would pass under or through the Dartford tunnel, and connect with the roads from Kent to London. Would that be viewed with favour or disfavour by the County Council? — I take it you are referring to one of the development companies' ideas?

1364 Yes. — Well, if it is a new road that is being proposed to cross the Thames and into Kent then I don't think it would be really a matter of whether Kent County Council objected to this or not. I think there would be simply a practical difficulty of finding somewhere for the road to go; this is a difficulty we have found in Kent when we were examining the possibility of a Sheppey airport.

1365 It could well cause new problems to find a route in Kent. — That is my view.

Inspector Any other questions by Local Authorities? Any other questions?

Cross-examined by Mr. Mathieson

1366 In your evidence you have obviously taken the airport runway alignments as being those proposed in the Roskill Commission's report?* — Yes.

* *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. xv.

Printed image digitised by the University of Southampton Library Digitisation Unit

1367 We have heard earlier today evidence from Southend where they propose pushing the runways, or pushing the airport further out to sea on the Maplin Sands, and the realignment of the runways in the more north to south direction. Now, this would greatly improve on the NNI rating in your area which we are particularly concerned about, Gillingham, Rochester, Chatham area. Would you in fact as an authority support the proposals by Southend in keeping the airport itself further out to sea, and the runway alignment? — Could I ask, Mr. Mathieson, by keeping further out to sea, you are restricting your question to the easterly movement?

1368 North-easterly, as proposed by Southend earlier today. North-easterly, and realignment of the runways more north to south. — Can I answer you in this way: any movement in a north direction would clearly be beneficial to Kent. So far as the movement with an easterly component is concerned, and so far as swinging the axis of the runways nearer the north-south, I think if I may say so that Mr. Ogden put the matter very fairly this morning, that neither would make any real difference to Kent, as far as the 40 NNI contour is concerned, but I would just make this addition to what he said, that we would want to have a very careful look at what either or both those measures, that is a movement seawards, or the realignment nearer north-south, what effect it would have on the 35/50 contours. We have had no opportunity to do this.

Mr. *Mathieson* Thank you.

1369 *Inspector* Any more questions? Just one point, Mr. Deakin. Do I take it your Council's attitude in future will be, to put it this way: that people are people whether they are in Kent or Essex or Clacton, or Southend? — Yes. You can certainly. I am sure that you will find that the County Council will not wish to put forward proposals for alterations merely to benefit Kent if there is going to be some substantially worse affected people elsewhere.

Inspector Thank you.

Re-examined by Mr. White

1370 Just one point in re-examination, Mr. Deakin, on the question of the major expansion scheme for Sheppey, and transport facilities. It is a major expansion scheme for Sheppey obviously with a provision of local employment facilities to correspond with the new population. — Yes, it is a vital factor.

1371 In those circumstances, is it your view that the same transport communications between Sheppey, the mainland, and London, would be required for the expansion of population of say 50,000, as would be required in the event of a third London airport being situated at Sheppey? — No. In fact to accommodate a new town with its own employment on the island we envisage that a new road link between the M2 and the island incorporating a second road bridge is all that is required. To accommodate an airport, a third airport on the island, our feeling on the rather limited information is then it would be an area which would want a brand new road communication system between the island and London and the area around it, in other words an entire new motorway.

Mr. *White* Thank you.

(*The witness withdrew*)

Mr. *White* That is the case for Kent County Council.

Inspector Thank you. We now come to the Rochford Rural District Council.

Mr. *Knowles* I am not proposing to call any witness, and I would like to make a few comments on the written evidence submitted.

Inspector Yes.

Mr. *Ward* It would help us with all this mass of paper if the reference number of the various authorities is also given.

Inspector Yes. Reference no. 23.

MR. G. A. KNOWLES * called

Mr. *Knowles* My name is Knowles, Clerk to Rochford RDC. On the second page of my estimates for the information of the Commission I have given some attempt at an estimate of the populations within the existing parishes. I am tempted by precedent to submit amendments, because you will appreciate these are really guesses, that the census does not run down into parishes. You also appreciate that I don't want to involve myself in an argument with the Registrar General's figures, particularly bearing in mind to some extent my salary is dependent on the population of the District. I may mention, however, that perhaps I am self-deprecating to some extent. The estimates I have given here may be regarded as somewhat low; they can be some 10 per cent higher in each case. But, they are approximate indications of the number of people that might be affected.

Very largely, sir, the comments and observations submitted by Rochford Rural District Council have already been more amply covered by the evidence given by Essex County Council, and by Southend-on-Sea County Borough Council. Somewhat unusually the Southend-on-Sea County Borough Council gave greater support to the Rural District Council's evidence than the County. We find that on other matters we tend to go in different directions; we tend to be somewhat opposed to the Southend point of view, but although perhaps reflecting a better degree of co-operation between the authorities, it might reflect the attitude of the people who are more likely to be affected by living on the spot.

So far as the effects of noise are concerned you will see that the Rural District Council follow the line that they would like to see—they feel there are benefits if the airport can be taken further to the east and further to

* See also p. 94.

Printed image digitised by the University of Southampton Library Digitisation Unit

the north on to the Foulness Sands. They have not produced any detailed evidence for you; they merely put this forward for consideration by the Commission.

Inspector It will be investigated, I can assure you.

Mr. *Knowles* They have also made the point on the possibility of ensuring that landing and take-off should take place over the sea, and although it has become apparent from other evidence this will create some air traffic control difficulties, they ask the Commission to weigh those difficulties against the benefits that would be achieved in personal happiness.

Similarly on this question of stacking or holding of aircraft, if the Commission could seriously consider the possibilities of locating the stacking of aircraft over the sea. From the evidence it is apparent it is possible to mark these areas, and that would not cause any undue difficulties.

On the question of urbanisation that will result from the airport we appreciate that the Commission are themselves employing planning consultants to look into this question, in addition to the evidence that has already been submitted. One of the Rural District Council's fears is that the urbanisation will encroach too much upon the very good agricultural land in the rural district, and they feel that it is vital at the outset to get the very best possible estimate on the total ultimate population that will be attracted to the area, because, for instance the line suggested by the County Council for the location of the residential development,* the so-called "lobster's claw", if there is allocated or proved to be insufficient, the obvious place is, as someone said yesterday, to fill in the lobster's claw by development where the best agricultural land lays.

Similarly, Sir, the point made in cross-examination yesterday: can the Basildon New Town under its terms of reference take additional population connected or arising from the airport. We feel the Commission should satisfy itself this is going to be feasible before they blindly accept the assumption the New Town will be able to take some 20,000 people, because if the New Town can't take 20,000 people there is a good amount of good agricultural land to be taken elsewhere from rural districts to replace it.

The question of communications, we have made the point there which has been amply covered by other evidence. The only point that we have mentioned sir that does not seem to have been covered by evidence so far is the question of the possibilities of river crossings with the Crouch and or Thames to give greater, more commodious north-south access.

The Rural District Council hope that the Commission will look at these questions and try to establish definitely as early as possible whether or not one or more crossings is ultimately going to be needed, because the location of the crossing or the need for the crossing will have some major effect upon the ultimate layout of the development, we feel, and any such alteration could upset the development plans for the whole of the area again to the detriment of the agricultural interest.

The other points we have made, sir, have been amply covered without need for me taking up time on them.

Inspector Thank you. Any questions?

Cross-examined by Mr. Keene

1372 I want to make sure we are not losing the wood for the trees so far as your Council's position is concerned. Once one accepts the very natural concern which your Council feels over the matters you mentioned, and especially noise, it remains the case, of course, you are in favour of the airport being on Foulness? — Subject to satisfaction, yes.

1373 I hope I am wrong; I got the impression at one point from what you said that you thought the County Council had not shown particular concern about the people of Rochford. Was that a mistake on my part? — A mistake to the extent that Rochford feel the only real way in which you can ensure the minimum noise effect to existing residents is to move the runway itself further away than the Commission propose, and in the County Council's evidence there has been no suggestion of this.

1374 Surely, you are not suggesting it is the only way, for example, the provision of noise contour suggested by the County Council, the removal of the thumb must be of enormous benefit to the Rural District Council. — It is of enormous benefit, but it still leaves some parts of the Rural District affected by the 35 contour.

1375 I am quite satisfied with that answer. Thank you. Of course, so far as what the County Council has done is concerned, it was the County Council's opposition to the extension of the Southend runways that prevented an extension of noise over the Rural District from that particular source? — Yes. I think the County Council were supported by the Rural District Council.

Mr. *Keene* Just so we can get the record straight. I am much obliged.

Cross-examined by Mr. Wood

1376 Just one or two questions I would like to ask:. first of all, when you prepared your proof, were you aware of the Essex County Council proposals in detail? Had you seen, for example, the plan of radical urbanisation in the rural district area? — No, Sir.

1377 Had you done so, would you have materially changed your submission? — No, Sir.

1378 The fact that this throws overboard all our pre-conceived planning criteria would not have caused you to have objected? — No, Sir.

1379 Would you accept that this means a radical—not just a radical, a revolutionary change in the whole character of the Rural District Council? — The Rural District . . . there would be more Councillors, you mean?

1380 I am sorry—the rural district area. — Yes, for a large part of the district, there should be a radical change from the urbanisation.

* p. 20.

Printed image digitised by the University of Southampton Library Digitisation Unit

1381 Would it mean bringing into what is left of the Rochford Hundred something in the region of at least 200,000 extra people? — I have not been able to calculate, from the Council's diagrammatic development areas, how many extra people in the rural district area that would mean—I should not think 200,000.

1382 Neither have I been able to calculate, but it seems a fair assumption that 50 per cent of the development will take place in the wide area of undeveloped country left immediately adjacent to the airport. — Outside the rural district?

1383 No—within the rural district. — I have not got the Canvey plan, but from memory there were some seven or eight circular areas of approximately equal dimensions, and it was the Canewdon area, the South Frambridge area, the Hullbridge area, and the Hockley-Hawkwell area, within the rural district there was also the Benfleet area, and I think three areas within the County Borough.

1384 Yes, but it would be safe to assume a very considerable increase in population. It would completely swamp three areas in the rural district. — Yes—my opinion would be that it might well take the population of the rural district up to 100-150 thousand.

1385 I think this is a very conservative estimate. On your own statement, you would also admit that this means in fact the consummation of a considerable acreage of good agricultural land. — Yes—in Canewdon—well, the riverside belt area, yes.

1386 And you obviously would accept the expert evidence yesterday that even in some of the agricultural land classified as poor, the actual productivity of that land is very high because it is concentrated to market garden produce and (*inaudible*) — Yes.

1387 So it does not really give a fair picture to define this as poor land—a lot of it is highly productive. — I am not an agricultural expert, and you are merely repeating what was said yesterday, Sir.

1388 Turning to this question of infrastructure—on page 5* of your submission, you point out existing deficiencies in public services. You obviously accept that in the rural district we have an acute problem as regards sewage, we have an acute problem as regards unlaid streets, we have an acute problem as regards transport, and we have acute problems as regards education. — I have not mentioned education or transport in my evidence.

1389 But from your knowledge of the area, would you accept that as a reasonably fair definition? — I think you are trying to get me into trouble with the County Council Corporation!

1390 It may not be fair— I shall just state it categorically. Would you accept the point that the picture of infrastructure has been exaggerated, that we do in fact have an acute shortage of essential services? The picture that has been painted up to the present moment is rather more rosy than the actual one. We have not got a reserve bank of essential services from which we could draw some aspects for future development. — My representations were written firstly on the assumption that these deficiencies would have been rectified, or largely rectified, by larger communities; and that if there were now at this present time some doubt as to whether or not they would be rectified, to draw attention to the need for them to be rectified before we start new development.

1391 We could hope for a payment on account now to get the essential services, even if the . . .

Inspector I am sure, should it come, you will be asked in time!

1392 Mr. *Wood* Two further questions. You obviously are as concerned as we are in the area as to the potential dangers should this extra island be built to the east of Foulness, to floods and the effect on tidal flows? — Yes.

1393 You are fully aware of the very serious nature and the very serious fears in the area as to the possible repercussions? — Yes.

Inspector You are merely repeating what he says here. He says it quite clearly—and I can read.

1394 Mr. *Wood* I am sorry. And finally—what effect do you think there would be, if this development comes, on the local government structure in this area? Would Southend be likely to revert to the position it occupied a hundred years ago, as the south end of the development in the Rochford Hundred . . .

Inspector We are not qualified to answer that here!

MR. J. S. ORCHARD called

Inspector Mr. Orchard, you are appearing in two capacities—one as representative of the Parish Council of the Ashingdon Parish Council,* and secondly in your own capacity?†

Mr. *Orchard* That is correct, Sir, yes. Before I commence, Sir, I would, if I may, make a point of criticism about the Inquiry. The point of criticism is that at the private Inquiry on 1st April, the Roskill Commission, I made a point that certain people in high places in other sites were gunning for Foulness, and I also said that large bodies within our own camp were also gunning for Foulness; and at that point Mr. Douglas Frank rose to his feet and he said "if I was referring to the Essex County Council, then Essex County Council have not made up their minds", or words to that effect. That was the 1st of April, and evidence had to be submitted by the 18th; and I cannot help feeling that this has had a little effect on me personally at this Inquiry. I feel that in the minutes of the Roskill Commission private meeting had stated that the majority of people would be against these sites, but it does seem that most of our local authorities are for Foulness . . .

Inspector I do not quite see your complaint, Councillor Orchard. Your complaint against this hearing—this hearing is for the purpose of enabling people to explain the views which they were asked to put forward

* p. 96.

* See also p. 103.

† See also p. 98.

Printed image digitised by the University of Southampton Library Digitisation Unit

by April 18. I do not quite get your point of criticism as to this Inquiry . . .

Mr. *Orchard* I feel that in view of what was stated in the private meeting minutes that the majority of people will be against their own sites . . . may I finish?

Inspector Yes.

Mr. *Orchard* I feel that this particular Inquiry will be a different one from the others. That is what I am trying to say.

Inspector I am sure you may be right.

Mr. *Orchard* It seems a little unfair in this case—not the majority but the few who are objecting—it is just a point I wish to make.

Inspector Let me just get this clear. The Roskill Commission cannot itself determine how a decision to build an airport in a certain position will be received by the population in the area—we have to find that out.

Mr. *Orchard* That is correct.

Inspector So we have no jurisdiction over what people say. We are merely here to find out.

Mr. *Orchard* But it will be a different type of Inquiry here from the other places. With regard, sir, to the evidence of the Parish Council of Ashingdon—This, I assure you, was deliberated at great length, and I am going to waste time in reiterating certain points; but I assure you that it is the majority decision of the Council. Item 4 . . .

Inspector Would you rather deal with Ashingdon Parish Council separately?

Mr. *Orchard* Yes.

Inspector Can we deal with document 4, please? Councillor Orchard is appearing in two counts—one on behalf of the Ashingdon Parish Council, and one in a personal capacity. This is concerning a document for the Parish Council aspect. Are there any questions? (*no reply*)

Mr. *Orchard* With regard to the personal one—and I am very grateful for your co-operating on this particular point, because probably I shall not be able to make the 22nd May—

Mr. *Orchard* I am Joseph Stuart Orchard of 121 Greensward Lane, Hockley, Essex, Trustee Savings Bank Branch Manager, an Ashingdon Parish Councillor, a member of the Rochford Hundred Amenities Society, the Rochford Hundred Historical Society and the Society for the Protection of Ancient Buildings. Once again I do not wish to waste time reiterating any points. If there are any points that anyone wishes to ask I will be glad to answer the questions.

Cross-examined by Mr. Frank

1395 Mr. Orchard, I am sorry if I aroused your hostility, that was the last thing I wanted to do. Our intention was to be objective and a proper opportunity for wanting additional facts. If anybody wanted help from us in any way I would go out of my way to help them. That was the purpose of what I intended to say even if I didn't say it. You were expressing fear. — With respect you did say that Essex had at that time made up its mind.

1396 What I said was that Essex would be here to present facts and to be as objective as possible, as I said in my opening on Monday it was for the Commission to decide where the airport is to be. I am sorry to give the impression that I am trying to rush it on you or anybody else. Can I then turn to your proof of evidence and ask you about paragraph no. 2 about half way down that paragraph on the first page you say: "In fact the whole of this area could well result in a high density urbanisation which would mean the complete confiscation of our beloved and up to now jealously guarded Green Belt." Was that written before you had seen the very rough sketch proposals for urbanisation? — Yes, that would be so.

1397 You now know that every effort will be made to indeed preserve the best agricultural land and to preserve as much open space as it is possible to do? — But it was also said that it was not particularly clear on these areas of breathing space.

1398 The plan such as it was which has been introduced to the inquiry does show a wide belt of the best agricultural land on which it is not proposed to develop. — But was not particularly clear, that is why I still stand by the statement.

1399 Then on the next page you refer to stacking areas. You are aware that the stacking areas are at such a height as not to cause nuisance by noise? — Has this been determined?

1400 I have got the Cublington *Site Information**: "It is not possible at this stage to indicate precisely where the stacking areas might be located. However, they do not extend below 5,000 ft." Of course I appreciate you certainly had not seen that statement at the time.

Inspector If I may just explain, this was not in the Foulness material. Concern was expressed that we had not made a reference to the stacking areas and the Cublington material is to remedy that omission.

1401 Mr. *Frank* The Commission said that they are unlikely to be below 5,000 ft and probably will not be below 8,000 ft. — But you probably agree that if it is either at 5,000 or 8,000 there could be a possibility of another higher stacking area.

1402 That would be higher still? — Yes.

1403 Stacking areas mean that the lowest aeroplane is at 5,000 or 8,000 ft whatever it may be, any others are at least 1000 ft higher, are they not? — And probably could increase the noise.

1404 But that is not the view of the Commission. — Well, it is my view.

1405 *Inspector* The tentative view the Commission expressed in the Cublington material is that stacking

* *Site Information for Stage II Local Hearings. 2. Cublington* (Wing). (HMSO; 6s.) Reproduced at p. xv.

Printed image digitised by the University of Southampton Library Digitisation Unit

areas at 5,000 ft and above is unlikely to affect the 40 NNI contour, but that is a view of the Commission that can of course be changed subsequently. Does that assist you? — Yes, but until I am happy I will not alter any of this statement.

Inspector You are not being asked to alter it. Any other questions of Mr. Orchard? I think in view of the papers and so on this is a convenient time to adjourn. May I remind you we are not meeting tomorrow or Friday so we adjourn until next Monday at ten o'clock. We are running ahead of time so would some of Tuesday's appearances hold themselves in readiness to appear later on Monday.

Adjourned until Monday morning at 10.0.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

MONDAY 12 MAY 1969

THE CIVIC CENTRE
SOUTHEND-ON-SEA, ESSEX

Before A. J. Hunt, Esq.

Oral evidence taken from:

Ashington Parish Council (*Mr. J. S. Orchard*)
Barling Magna Parish Council (*Mr. J. P. G. Smith*)
Canewdon Parish Council (*Mr. G. A. Knowles*)
Foulness Island Parish Council and Paglesham Parish Council (*Mr. D. C. Wood*)
Rochford Parish Council (*Mr. W. G. Heard*)
Clacton Urban District Council (*Mr. C. H. Ransden*)
Tendring Rural District Council (*Mr. E. A. Austerberry*)
Witham Urban District Council (*Mr. F. Bowker*)
Essex River Authority (*Mr. G. L. Sturges, Mr. E. L. Snell, and Mr. K. Guiver*)
Basildon Development Corporation (*Mr. H. D. R. Bacon*)
Maldon Borough Council (*Mr. K. C. Robertson*)
Rochester City Council (*Mr. C. Whyman*)
Strood Rural District Council (*Mr. J. J. Lawrence*)
Foulness Island Residents' Committee and St. Clements' Ward Municipal Electors' Association, Southend-on-Sea (*Mr. P. A. Arnold*)
Mr. R. Newbery
Shoeburyness Action Committee (*Mrs. P. Kelly*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Mr. Orchard, I believe you have a little more to add on behalf of your Parish Council,* is that right?

Mr. *Orchard* That is so.

Mr. *Peter Smith* Mr. Inspector, I would like to draw your attention to a newspaper report which I have handed to you which really does reflect on the work of the Commission. It is to the effect that work has started on building these runways in Foulness. I am sure you would like to make some comment on this, for the sake of everyone concerned.

Inspector I have been handed this copy of the *News Review.* It contains the statement that "work on building the first runway for London's third airport was started off Foulness early yesterday, Tuesday". The publication being dated Wednesday, May 7th, 1969. It continues: "After only one day of the Roskill Commission Stage II hearings into this Site, Foulness already favourite has become a racing certainty". Up and down the country in the vicinity of the four stages short listed there are a large number of rumours of various kinds going round. This is one of them. Quite clearly the Commission has to investigate three other sites locally. We have Stages III, IV and V to deal with before they make a recommendation, some time late in 1970 or some time in 1971. It is only necessary for me to say that there is no truth at all in this suggestion.

Mr. Orchard, Ashingdon. Are you now appearing as yourself, or for Ashingdon Parish Council?

MR. ORCHARD recalled

Mr. *Orchard* Ashington Parish Council, sir. I am very sorry about this but I should have been in the witness box this morning, and naturally my Council could have asked me questions over the weekend.

Inspector The point, of course, is that Mr. Orchard's Council was brought forward on Wednesday instead of today, which is its proper turn in the queue.

Mr. *Orchard* Thank you very much. Mr. Hunt, the County Council's map on urbanisation† published in the *Southend Standard* and the relative reports in the *Southend Standard* and the *News Review* have given rise to much concern because it reveals the intention of the County Planning Authority, and Foulness became a reality. It shows much of the parish in the form of gardens would be swallowed up in development, also if a new road was built across the parish and electricity pylons to the airport, or development from the Rayleigh grid straddled the district, much additional land would become sterilised. It also follows that apart from severe loss in agricultural land the beauty and character of Ashingdon would be destroyed. The proposed urban units for Crouch-side conflict totally with the coastal protection policy of the Essex County Council, which has received the support of the Parish and District Councils. The recognised wisdom of preventing an almost unbroken waterside development round our coast. The Council includes a number of farmers and market gardeners, and they have informed the Chairman that investment of long standing concerning building improvements, amalgamations of farms, the purchasing of modern implements, geared to grubbing out hedges, increase yields, etc., are now showing their just reward.

My Council wishes me to express its very particular concern and shock at the County's intention, and wants you, Mr. Hunt, to make note of it. They are also extremely concerned regarding the turning of planes to the right after take-off, and the possibility of being subjected to continual noise in the parish as planes pass on their way out to the north.

That is the additional evidence, Mr. Hunt.

Inspector Yes, thank you.

Inspector Any questions from the Essex County Council? Any other questions to Mr. Orchard?

Mr. *Orchard* And now, Mr. Hunt, I would like to add to the criticism I made on Wednesday, and I would like to now lodge a formal objection, and this is my personal objection. I won't take up much of your time, sir, but there are a number of things which are worrying me, and I would like the Commission to know of them; And I intend, Sir, to give my details to the Minister of Housing and Local Government. The objections are: Number one that in view of Minute 8 in the Commission's private meeting, which states only this: that an actual or potential local interest in the site proposed might be permitted to appear, it does seem wrong to me that Mr. Douglas Frank, QC, represents Essex County Council in favour of Foulness, and also represents County Councils in Buckinghamshire and Hertfordshire, where two of the three other sites are situated; that in view of Minute 8 a certain Essex County Council witness made it clear to another Councillor and myself that he was going to Cublington the very next day after giving evidence here; that Minute 8 states that matters such as ATC would not be within the scope of the Hearing, so the evidence of Mr. G. R. W. Dunford on behalf of the Essex County Council should therefore be acceptable at Stage II of this Hearing; and four, that in view of Minute 9 of the Commission's private meeting which states "the Commission realised that the opposition to the airport proposals might be louder than those in support because of Essex County Council decision to support the Foulness project and because they represent many thousands of ratepayers", the Inquiry has become unfair and one-sided. And five, that it is bad enough for the Essex County Council to favour the Foulness project, but when their attitude becomes promotional surely a referendum is imperative; and six, by the action of the Essex County Council, it has made this Inquiry, and wrongly, a different type of Inquiry from those expected at the other three sites. I came here, sir, hoping to hear from elected and official representatives a much better reflection of the concern which has been expressed at many public meetings, and in letters to the press; and up to now I have been utterly disappointed. I trust these examples have not escaped your notice, Sir; they

* See also p. 103. † p. 20.

Printed image digitised by the University of Southampton Library Digitisation Unit

have incensed me to the point where I feel I can take no further part in this Inquiry. Thank you, sir.

Inspector Do you wish to say anything, Mr. Frank?

Mr. *Frank* I do indeed, sir. This is quite unfair, and Mr. Orchard knows it is unfair. I thought we had made our peace when we left on Wednesday. If Mr. Orchard had listened to me, or had looked at the transcript, he would have known that I am not appearing here for any County Council other than Essex, and I am appearing for some other second-tier local authorities, but for no other County Council. All I would remark was that Buckinghamshire and Hertfordshire, as well as Cambridgeshire, had asked to be associated, but I am not appearing for them. As for the point about Essex being promotional—Mr. Orchard may not like it, but the fact is that a large number of local authorities in Essex are in favour of Foulness, and I represent quite a few of them. As Essex has indeed made the submission as to Foulness, it was inevitable that in a sense I would be in the form of a promoter; but I hoped I had secured my way to be objective about it. All our evidence has been straightforward; we have not tried to hide the truth or gloss over it; and I cannot see why Mr. Orchard should take this hostile attitude towards me and the Inquiry.

Inspector Mr. Orchard, I do not think we need prolong this. Quite, quite shortly, I am here as the eyes and ears of the Commission, to see the area and to hear what local people have to say; what they have to say is their business, not mine. Their business. What I am quite adamant about is that they will be enabled to make their views known—you, and everyone else.

Mr. *Orchard* Just one point, sir. With regard to the thing being promotional—I think that Essex County Council are enthusiastic and apart from . . .

Inspector Mr. Orchard, whether it is promotional or not I and the Commission will judge, but views have been expressed . . .

Mr. *Orchard* I want to make one example. When the Kent County Council was in the box, certain remarks were made that seemed to me to make it promotional.

Inspector Thank you, Mr. Orchard. It is now the turn of Barling Magna Parish Council.

MR. J. P. G. SMITH* called

Inspector Mr. Smith, I have of course read your interesting document and all the attached papers. Have you anything to add?

Mr. *Smith* No. I am sure that anything than can be added can be amplified by way of questions.

Inspector Any questions to Mr. Smith concerning the submission of the Barling Magna Parish Council?—Essex?

Mr. *Frank* Thank you, sir—no.

Inspector Any other points concerning the evidence submitted by the Barling Magna Parish Council?

Cross-examined by Mr. Wood

1406 Mr. Smith, when you prepared your evidence, were you in possession of the more detailed facts shown in, for example, the Essex County Council submission? — No, sir.

1407 You prepared your case strictly within the terms of reference as you understood them of this Stage II Hearing? — Yes.

1408 And so you kept your observations within the context of the Stage II Hearing? — I did, indeed—those were my terms of reference.

1409 Purely on local aspects of the possible Foulness site? — Yes.

1410 Therefore, when Essex introduced, for example, this question of the infrastructure, which I understand is a possible saving in the cost of constructing the airport because of existing services, this came as a fresh point to you? — It did indeed, sir.

Inspector Mr. Wood—may I just intervene. At the private meeting, you recall, there was some discussion as to what might fairly be called "a local interest".

Mr. *Wood* Yes, sir.

Inspector I attempted to define that really it would be the area covered by urbanisation, or possible urbanisation; you remember that?

Mr. *Wood* Yes, I do. I will come to my question to you.

1411 That being so, did the figure of £255m. put forward as the possible saving surprise you, and do you agree with it? — It did surprise me; I disagree with it. In fact, this figure of £255m. was quoted by Mr. Frank; it was not in fact coming from his witnesses, so there was really no question of that figure being examined. I dispute this figure because . . .

Inspector Can you just stop there, Mr. Smith, because my recollection is that the £225m. is quite clearly Mr. Jennings Smith's 85,000 population, which could be absorbed without new building at a figure of £3,000 per person, which is the cost of brand-new structures given by Prof. Colin Buchanan in the Southampton study.* I think the arithmetic was quite clear in Mr. Jennings Smith's evidence, and was, therefore, I would have thought, open to cross-examination.

Mr. *Frank* And was of course made in para. 7(3)†; the actual figure appears.

Inspector I merely add, if it would save a lot of trouble, the Commission will be looking into the question of the cost of the infrastructure at Foulness and all the other sites in very great detail.

1412 Mr. *Wood* There is an aspect of this that is disturbing us; even *The Times* newspaper the next day

* See also p. 104.

* *South Hampshire Study*, (HMSO). Comprises *Report on the Feasibility of Major Urban Growth* (50s.) and two *Supplementary Volumes* (70s. each).

† p. 17.

Printed image digitised by the University of Southampton Library Digitisation Unit

had a headline which said "Saving if Foulness is chosen of £255m". I think the point we wish to establish is that this £255m. is not a sum that could fairly be put into the equation without taking into consideration such savings likely to occur at the other sites, and as such they are more pertinent to the later stages than Stage II.

Inspector The Commission are certainly looking into this matter at Stage III, and their material will be closely investigatable, if that is a proper word, at stages IV and V.

Mr. *Frank* I do not know why Mr. Wood wants to make his case through other witnesses instead of saying it himself. I agree with what Mr. Wood said. This is very largely a Stage III and V matter. It will be examined in depth on its own; it does not in fact mean very much . . .

Witness You agree this does not mean very much, this figure of £255m, because Foulness, in Mr. Justice Roskill's letter . . .

1413 *Inspector* Mr. Smith, can I intervene. Would it help if I say this, that if you cast doubts on this, the subject will be investigated in depth at Stages III and IV. Essex County Council made their statement, and they have been cross-examined. It is open to you and Mr. Wood subsequently to make your statements. — Yes.

1414 *Inspector* My feeling is that Stage II is not the proper kind of venue for a detailed discussion on how to cost infrastructure cost. This is a complex problem. — Precisely; this is why I am raising this particular point, sir, because what I feel is that if this figure is accepted . . .

1415 By whom? — Mr. Frank will be able to go to Stage III and say what I fear he is going to say: I raised this figure at Stage II, it has not been challenged.

1416 Stage II, I repeat, is exploratory, it is not decisive. — But . . .

1417 Mr. *Frank* May I help. If it is not challenged by Mr. Wood or somebody else at Stage III or at Stage V, it is certainly going to be challenged by the Commission. — Thank you for that assurance. It is an important point, because as I interpreted the Chairman's letter to the President of the Board of Trade, he says that Foulness is only included because there might be substantial, certain town and country planning criteria advantages, but that on the cost-benefit ratio it is the lowest, and this is based on a false premise, then mistakes airport to come here . . . to get a figure from which they can be shown that the cost-benefit figure is not the lowest, and this based on a false premise, then mistakes can be made.

Inspector If I give you my assurance, Mr. Smith, that you have made your point, and it will be taken into account, will that help you at all? — Thank, you, sir. I hope you take my point that it is a valid point.

Inspector Yes; you see, it is very difficult for me to draw the line where Stage II ends and Stage III begins; this is a very difficult matter. All I feel need be done at this Stage, Stage II, is to let the Commission know what attitude the feelings are on the specific difficult points, because at later Stages they will all be investigated in greater depth.

1419 Mr. *Wood* I think then the twins of Barling Magna and Paglesham are happy with that answer. Getting on to a detailed examination of Mr. Smith's evidence on page 2,* the paragraph which starts "From your Commission plans CTLA", the next sentence reads: "The present day noise level would, therefore, be 55/60 NNI" I appreciate you made this case in the absence of the more detailed information which has become available subsequently. Do you see any reason, in spite of that detailed evidence, to alter the figures quoted in that paragraph? — No, I do not see any reason. I would still like it to go by Mr. Faulkners' evidence, he is an authority, and I must accept it, but he did establish in my examination of him that it was based on the Wilson report† on *Noise* published in 1963, which in turn was based on evidence in 1961. There has been an awful lot of talk about NNI contours and that. This is an excellent report of 1963, but part of the make-up of the NNI calculations are based on the independent evidence of 60 people on three afternoons near Farnborough Air Display in 1961. Imagine an isosceles triangle upside down. In 1961 it was correct; at the top line of your triangle is what your Commission anticipate the amount will be in 1995. At least my figure of 55 to 60, being nearer the bottom, the nadir of the triangle, is more relevant at this time. My figure of 55 to 60 . . . I am no expert on acoustics, all I am saying is that here you are getting statistics which are built up, and built up on very very small beginnings, too. I think in all these things, statistics are, of course, vital, they are part of our daily life, and do not think I am denigrating statistics. All I say is that statistics must be very carefully examined, and all factors taken into consideration.

1420 On page 3,‡ you make some reference there to education, and in fact commit yourself to the statement: "I have said that education must stop", a very emphatic statement. Have you been reassured by the evidence provided in the person of Mr. Springett, by the Essex County, on the score of education? — No, sir; he said, and it is clear from the evidence, that schools can be soundproofed; after all, with sufficient expense, I suppose you can soundproof anything, but, you know, it goes much further than this. For one thing schools now, certainly Barling Magna Parish Council School, have a television which they use for educational programmes. There is the University of the Air. There will be interference with education. Not only will there be interference with education within this school; there will be also similar interference with education within the schools in the stacking areas. This I think ought to be borne in mind, that it is not just a matter of schools being affected within sound contours, but schools quite distant from this area which come within stacking areas.

1421 *Inspector* Planes interfere with schools. — Yes, and in relation to the television part of their

* p. 10.
† Cmnd. 2056. (HMSO; 19s. 6d.)
‡ p. 104.

Printed image digitised by the University of Southampton Library Digitisation Unit

education, which is becoming an increasing part of children's education.

1422 Mr. *Wood* The point that you are making also is that this interference is likely to occur not only within the area of the noise contours as shown here, but also, and we would like the Commission to investigate this, within the holding and stacking areas. — Indeed, that is quite true.

1423 You are a professionally qualified man, are not you? — I am.

1424 Could you give some indication as to how may of these professional qualifications were the result of study at school or University, or actually within your own home? — There are very few people who can become professionally qualified without extra-mural studies, studies in their own home, in their own peace and quiet, and you need peace and quiet for that. Mr. Springett said, when I mentioned the question of homework: there will not be the interference, because it does not involve oral communication. Apart from the fact that, as many of us here know, you need a certain amount of peace and quiet to study in your home . . . in fact when you are doing this studying now it is increasingly used . . . you use things like a tape recorder, and you play it back, so in fact you do need oral communications. It would have a very bad effect on education in my village altogether; in fact, education I consider must really cease.

1425 Now if we can turn to page 4 of your evidence, paragraph 4* of your evidence starts: "Under existing legislation" which deals, if I interpret it rightly, with the question of compensation, you mention "Could not Betterment levy be used to give 'Worsement benefit' ". What exactly had you in mind when you made that reference? — With respect, this is put clumsily, I do not want to start on a lecture of the Law of compensation, MacArthur *v.* Metropolitan Land, etc. Mr. Inspector, you are as well qualified, I put this point to you; please if you have any questions, perhaps . . .

1426 *Inspector* We fully appreciate the problem concerning injurious affection to people affected by an airport, right across the board from property owners to cockle fishers, white reed operators, and so on. We quite appreciate the problem. — With the rider, with no land taken and the communications also.

1427 Exactly. — You do.

1428 But, of course, it is our job to try and circumvent the third London airport . . . — I quite agree.

1429 Mr. *Wood* If we can pass to page 6 of your evidence, paragraph 2,* the second part, you say that the proposal will bring to the area a huge influx of population to an already heavily populated area. Did the figure of a possible increase of 400,000 disturb you? Would you agree with it or would you have any suggestions as to the alteration of? — Well, this, of course, is a vital figure; it is the hub of the whole build-up of planning. Now, I tried to make some estimates in fact I went to the Statistical Division of the Ministry of Employment and Productivity; they were very helpful, but in the end within the time they could not in that one visit help me. I felt in fact that the figure would probably be more than 400,000. Mr. James Smith worked out some figures here which I thought were very good workings out, but, of course it came out in cross-examination that they were inaccurate.

1430 *Inspector* May I just help again—I hope. The basis of this calculation must be the numbers employed at the new third London airport. — Quite.

Inspector The figures given are in our *Site Information** what has been termed in this Inquiry "a value-judgment". They are the best we can do at that stage. There will be and there is more work being done on this very difficult aspect. On top of that there are some quite involved assumptions as to what additional population will impose itself on top of this primary employment. We are doing those sums. They will all be available for examination at Stage III, Stage IV and Stage V. All that we are really asking at this stage is to have some idea of the depth of the problem. Quite clearly a detailed examination must come later. If that will help that is the position.

1431 Mr. *Wood* Thank you. (*to the witness*): Do you find that—I am sure—more than most helpful? — Indeed, sir. It is of course, but you do realise sir that it was found that when Mr. Jennings Smith was examined, for instance he used the bottom part of the first bracket figures—I would like to put the point that we must obviously allow for natural expansion as well on top, so really you will be inclined to go to your top part of your bracket in your analysis.

Inspector It is absolutely true, of course, that this increase of population will come on top of natural increase. This is absolutely true.

1432 Mr. *Wood* Thank you. Obviously, particularly from the point of view of your village this figure is of prime importance because with the increased population goes the increased consumption of the land. — Indeed.

1433 With its fundamental affect upon the environments and amenities. — Yes.

1434 If we can pass to 3(b),† still on page 6, the sub-paragraph which says, "creating an unbalanced community by preventing other projects". What exactly do you mean, and what other projects had you in mind? — Well, of course, there had been the suggestion, although it is outside the terms of reference of the Commission, of a deep water port, and this led me to ask Mr. Jennings Smith what population he would ascribe for such a feature, if it were incroporated. Of course, I got no satisfaction on that reply. He didn't know whether we might have an extra hundred, a thousand or two-hundred thousand.

* p. 105.

* *Short List of Sites and Site. Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. xv.

† p. 105.

Printed image digitised by the University of Southampton Library Digitisation Unit

1435 Is it solely the increase in population that disturbs you or any other aspects of this suggested scheme? — Well, you see, if you have such an additional population coming in from another scheme, then you will then have to look for other areas for this urban population to be settled in, and it throws out completely his planning scheme, his lobster's claw which we have; it must completely upset the basis of his planning.

1436 For example, if a dock scheme comes, such things as arise, into which the containers, the full containers into which they must go before they go to the container depot—Where would you envisage that sort of area, the warehousing area, the area covered by hydrocarbon or storage tanks—Where do you envisage that sort of area to be situated? — I think inevitably it must be on what Mr. Jennings Smith refers to as his "agricultural heart". I think this must make inroads to his planned agricultural heart.

1437 So that your fear is—I am sorry the lobster's claw* is not there, but if we can remember it . . .

Inspector I know exactly where the area is.

1438 Mr. *Wood* Yes, but in that area you would get no longer agricultural land but warehousing, storage depots, and so on, all the essential concomitant of a dock scheme? — That also, with respect, with additional lines of communications—You recall when I was questioning Mr. Sharman and Mr. Jennings Smith, I particularly referred to the severance caused by motorways and road links. Now, if you bring in a dock as well you are going to have an additional motor-way, additional severance links, you are in fact not splitting the peninsula into two or three but certainly into about five parts. In fact planning, really, flies out of the window, as has been certainly envisaged by Essex.

Mr. *Wood* I see. Thank you Mr. Smith, I think that is all I have to ask you. Thank you, sir.

Inspector Any more questions to Mr. Smith?

Cross-examined by Mr. Purchase

1439 Councillor Smith, are you and the people you represent aware that if the scheme prepared by the professional consultants and widely publicised—Bernard Clark and Partners—if that site were selected, that Barling would be as far away from the centre of the airport as Westminister is from London airport, or Barling is from Billericay? — I am not aware. I have not examined your scheme.

1440 I am asking whether you are aware of this scheme that has been published for the airport, if it were away from the shore as distinct from the Commissions's position of it adjoining the shore?

1441 *Inspector* He has said he has not examined the scheme—Is that right? — No, I have not examined his scheme.

1442 Mr. *Purchase* Then I make a statement, and that is: the fact that Barling would be as far away as Billericay, if that scheme was further divorced from the shore, was adopted. — Jolly good. I accept it if that is what you say.

Mr. *Purchase* That is even better.

Inspector Thank you, Mr. Smith. Does Canewdon Parish Council actually wish to appear in the witness box?

Mr. *Knowles* I have been asked to make a short statement on their behalf.

MR. KNOWLES called (*on behalf of Canewdon Parish Council*)*

Inspector Give your name for the benefit of the shorthand-writers.

Mr. *Knowles* G. A. Knowles, Clerk to the Rochford Rural District Council. The Canewdon Parish Council have had a little difficulty in arranging for their views to be presented orally, and they have asked me to forward their views at the inquiry on their behalf. Their views are set out in their letter* which is circulated, dated the 20th March, and which as you will see very briefly indicates a majority attitude of general support to the Commission's proposed siting, subject to four qualifications on matters, all of which I think have been already brought before you, Sir. But at a meeting held last week the Parish Council were able to consider the various written evidence that has been submitted by the other authorities and parties, and at that meeting they decided to associate themselves with the written views put forward by the Rochford RDC.

On their behalf I ask the Commission to accept the Rural District Council's written views as representing the views of Canewdon Parish Council.

I do not think I can just leave the matter there, Sir. I think their main concern is the effect of noise in the event of the Canewdon thumb or spur going in their direction, and you will appreciate that Canewdon has a population of somewhere in the region of 1,000 to 1,100 people, most of them located in the village centre of Canewdon. It is a large parish of 7,000 acres, almost.

Inspector I have been round the area quite extensively if that helps at all. — (Mr. *Knowles*) Yes, Sir. The 40 NNI contour, as you will know, covers the main part of their developed area. I think they are really drawing your attention especially to this in the hope that you will follow the line suggested by the RDC or by the County Council re-route the noise away from them.

Inspector This will certainly be investigated. — (Mr. *Knowles*) I think the only point that has not been exphasised to some extent which they make is the cost of sound-proofing of existing properties. I think really they are saying: If we are going to wind up with that number of aircraft going over Canewdon then very serious consideration might be given to the financial assistance

* p. 20.

* See also p. 109.

Printed image digitised by the University of Southampton Library Digitisation Unit

being afforded to sound-proof or for sound-proofing existing properties.

Inspector Thank you. Are you also able to answer any questions on behalf of Canewdon? — I think I am able to answer–I hope so.

Inspector Do you wish to? — Yes.

Inpsector Any questions? There are none. Thank you. I understand that Foulness Island Parish Council cannot appear this morning–is that right?

Mr. *Wood* I believe so. I am told their clerk was suddenly taken off to hospital, but one of two members of the Parish Council did ask me to make one or two remarks. They really are only a continuation of the basic points contained in their proof, but because they are brief they are no less weighty, and the main point they wish me to stress . . .

Inspector Mr. Wood, they can be put into some other slot in the time-table, if you wish it.

Mr. *Wood* I don't think it would be practicable.

Inspector In that case I think you might take your place because you are next anyway.

MR. WOOD called *(on behalf of Foulness Island Parish Council*)*

Inspector You are on behalf of Foulness Island. — (Mr. *Wood*) Yes. It is really to stress that their problems are quite peculiar, that they are a small self-contained and highly individual community, because of their site being surrounded by water in the past the connections with the mainland were attenuated. That has been increased by the separation inseparable from their connection with the Defence establishments, and this airport to be sited round Foulness means obviously that it is a complete end to their community in the way that no other community anywhere else will be as affected. They are an inlooking community; they will be uprooted. Their whole way of life, except those retaining tenuous connection with agricultural enterprises. This does mean the end of their life and livelihoods to them, and they have asked me to stress the point, and I do so with all the sincerity of which I am capable.

Inspector Thank you. I take it there will be no questions to Mr. Wood on the statement on behalf of the Foulness Island Parish Council. Now, Paglesham.

MR. WOOD recalled *(on behalf of Paglesham Parish Council†)*

Inspector Yes, Mr. Wood. (Mr. *Wood*) It would be quite churlish of me if I did not preface my remarks by saying how deeply appreciative I am of the help and courtesy that you have given to me during the course of this hearing, Sir. No objector to this scheme can reasonably complain, in my opinion, of lack of facilities for putting his point of view. I would like to stress that, Sir, and thank you for it. I include being a complete tyro in these sort of things. This is my first exprerience of this sort of inquiry, but I include also if I may refer to them so, the professional representatives of other bodies who, I am sure, have treated us with courtesy and consideration.

Inspector You are doing awfully well for a tyro, Mr. Wood. — (Mr. *Wood*) Thank you. That does not mean to say this is not an insurance policy to avoid questions later on.

Some additional points I would like to stress, if I may. If I can fairly summarise what I consider the evidence up-to-date, there are first tier local authorities. It seems to me those of Essex County Council, and they favour generally speaking that Foulness is the site for an airport, but would in fact prefer (although this is not completely conditional on their acceptance of the site), they would prefer to see the elimination of noise bulge which disturbs and disrupts so much of Thorpe Bay, Shoebury, and the country areas which I represent, including Canewdon. They furthermore have, and one was delighted so see this, in the main supported our contentions that flight paths must in the main be sited in the sourt-westerly direction. They do hope in fact that these flight paths can be sited so that they run up the estuary of the Thames and in the main turn to the north-west over the coast-line at Canvey. The preconceived ideas of so many people that it would be practicable for aircraft using Foulness as a site to take off to the east and thus take such nuisance as remains there over to the east and over the open sea seems to me to have been destroyed by the Essex case.

Furthermore, they have reinforced the point that has been made, that the stacking areas must, in order to conform to reasonable air traffic criteria, be based overland, and in answering a question they did envisage that one holding area would be in the area Chelmsford, Brentwood and Whitham, and the other one Margate, and possibly the fringe of Canterbury.

I believe those points are of fundamental importance, and may well in fact reflect and act upon the opinions too soon arrived at by too many bodies both public and private.

If I can also go on to define the attitude of the Southend Council, it is this: that although they said they are generally speaking in favour of Foulness as a site for the third London airport, they make their acceptance conditional, and those conditions are that is possible first of all for the site to be wholly offshore, and the further offshore the better—they would not support it were it onshore on the island of Foulness or even part only on- or offshore; furthermore, they would not support it were it not to be proved possible to re-route the flight paths from the aircraft up the estuary of the Thames. As regards Kent County Council, it seems that their attitude is that they are sitting on the fence at the moment until at subsequent stages in the Inquiry the validity or otherwise of the 30 NNI contour can be established, and if it can be established that within the 30 NNI there will be considerable nuisance to people

* See also p. 110.
† See also p. 111.

Printed image digitised by the University of Southampton Library Digitisation Unit

living within it, then their tacit acceptance could well turn to complete opposition. I believe that to be a fair summary of the attitude of the three first-tier local authorities.

As regards noise, in spite of the evidence of Dr. Fleming, I still find myself uneasy, even should the flight paths be capable of being re-routed, I feel that within the stacking areas, but particularly along the front of Southend, because of the height at which aircraft will be flying—they will only reach 5,000 ft, according to the experts, at the time they cross the coast at Canvey—that there may be considerable nuisance to people of Southend who live within the sea-side fronting the sea from Shoebury as far as Leigh.

If I can then come to another point—points were made as to the alleged bonus that could be obtained should the airport come at Foulness by closing down of the existing Southend airport. I think it was established in cross-examination that Southend airport as it stands now is a wasting asset, that without any interference from the project LAP 3 at Foulness, Southend airport will cease to exist as a significant commercial airport because of this; even if one accepts the validity of this bonus, the plus side of the bonus as regards Southend airport is at least decreasing and could well disappear. And in any case one does not accept this question of the bonus, because it is only transferring the same sort of nuisance from one area to another, and the figure that we and the Commission particularly must be interesting itself in is finally the figure of human beings affected by the site of LAP 3. The fact that you transfer the nuisance from one area to another is not the main point, if the assumption is that either a certain number of human beings is affected or another.

We have made the point about infrastructure, and I shall delete that part of my prepared spech which was to deal with it. I think it is much more pertinent to the later stages of the Inquiry, and if we have established that the headlines of *The Times* on Tuesday was a sensational misrepresentation . . .

Inspector No, no. I am only saying that I regard all newspaper headlines with some suspicion—even *The Times* sometimes. All I was saying was that all figures on the cost of infrastructure will be rigorously examined—that is the Commission's view.

Mr. *Wood* I full accept that, but the peculiar nature of this Inquiry is such that we have to consider it on two levels. One level gives us no cause for concern—one knows that the Commission will very thoroughly go through the various points made by either side, and I am quite prepared to accept their final verdict. Although I should regret it should Foulness be chosen, I have no desire to chain myself to the railings and set myself alight with paraffin in an orgy of self-immolation. The other is that we do have to satisfy—and I am sure this is very present in your mind—we do have to satisfy every local interest that every point they have in mind has been fully investigated. This can only be done by raising them at sometimes what seems to be intolerable length at this hearing.

As regards urbanisation, I am afraid our worst fears have been confirmed. It is far worse than we imagined it to be, and I believe the point we made, that the narrow peninsula must in fact disappear as a rural area. It will be dominated by a city which eventually must number in the region of 700,000, and will top the million mark in 15 or 20 years. And one final point—I would like to stress this residual fear as to the flooding dangers inseparable from a scheme designed to create an unnatural island—unnatural in every sense of the word—to the east of Foulness. And in doing this I would like in no way to impugne the interest and integrity of the Thames Estuary Development Company, but it seems to me that the problem has three aspects, and one doubts whether their figures will deal with these three aspects. They are these: you could have a scheme resulting in an airport alone, you could have a scheme resulting in an airport and dock complex, or you could have a scheme resulting in a dock complex alone. The figures for each of these three aspects should in fact be determined, and, with Bernard Braine, I doubt whether one of the interested parties is the best source on which to depend for these figures.

That is all, Sir; thank you.

Cross-examined by Mr. Frank

1443 I have just one general question to put to you, Mr. Wood. You referred to Essex as supporting the proposal for Foulness. You would agree that they do so in the context of the assumption that there must be a third London airport at one of the four short-listed sites? — Yes.

1444 Not that they are saying, "We are anxious to have an airport at Foulness, or anywhere", they are saying that this is one of the sites—a site which seems to qualify on the assumption that we have to have a third London airport? — Yes, I accept that.

1445 And another thing—you and other witnesses have been critical of the NNI contours which have been taken and the assumptions made as to schools. You would accept that if it is wrong not to go below 35 NNI for noise nuisance, or we ought to make more drastic assumptions in respect of schools, whatever are the correct assumptions, they will apply not only to Foulness but also to the other three listed sites? — Yes; but at none of the other sites is there a city as large as at this one.

1446 We must not discuss this point! — Very well.

Cross-examined Mr. Knowles

1447 Mr. Wood, some mention has been made previously regarding the fact that Paglesham is already within the 35 NNI contour for the Southend airport, and that therefore it would not suffer too great a disadvantage from noise from the Foulness airport—assuming that Southend airport is to close. I do not think you have been fully explicit in your evidence as to what you consider those effects might be. — I consider

Printed image digitised by the University of Southampton Library Digitisation Unit

that any comparison between the nuisance from Southend airport and LAP 3 to be invalid. It is like comparing an attack from a cat to an attack from a man-eating tiger—and it is about that in volume.

1448 One of the other, more serious, ways in which Paglesham could be affected is by the new lines of communication—the new road and rail links. Assuming that they are going to be constructed, do you think this is insurmountable—that they could by-pass Paglesham, to ensure that Paglesham village as such is not affected by the new lines of communication? — No, I think it is quite feasible; but it is only transferring the nuisance from one place to another, and my opposition to this scheme is not just based on the interests and concern of Paglesham, but on what I consider to be the widest aspects of the case.

1449 Views have been put before the Inquiry for avoiding the spread of intrusive noise to areas like Paglesham by altering the flight paths and by re-siting the runways. If noise could be eliminated to a large extent from Paglesham, and if it is possible to re-locate the lines of communication so that they do not directly affect Paglesham village, what other serious effects would you consider Paglesham would suffer if an airport were to be sited at Foulness? — First, I do not accept that it is possible to eliminate the noise nuisance from the air. The nuisance from the preparatory runs before take-off will inevitably create a level of noise nuisance which will be intolerable. The noise is only a part, and if anything a minor part, of our objection to this scheme; it is in fact the urbanisation, and all that goes with it, that makes us oppose this scheme. It means the disappearance of one small remaining area of rural England from the map.

1450 Despite Mr. Jennings Smith's evidence,* which did not show his urbanisation extending very far east of Canewdon? — Yes, particularly that of Mr. Jennings Smith, because one can envisage the area being regarded as, and having the environment of, a general park, and not a proper area of rural England, which it still is.

1451 A general park for the urbanisation? — Yes. Where else would the three-quarters of a million people go for their fresh air and exercise?

1452 According to Mr. Jennings Smith, they are supposed to go down to the river. — Where they can enjoy the smell of paraffin from the exhaust of jumbo jets and Concorde!

Cross-examined by Mr. P. Smith

1453 On page 2 of your evidence, item 1,† you mention the strange pattern of sound effect due to temperature inversion. You examined Mr. Fleming on this matter—were you satisfied with the answer you obtained? — No, and I do not like to appear as a Don Quixote tilting at windmills; but having heard the replies of Dr. Fleming I went back to the source of my information, from some of the scientists working locally, and they certainly are not satisfied as to his answers concerning this peculiar physical phenomena of temperature inversion. They are adamant that this is as relevant to aircraft as it is to explosions, and are full of forebodings as to its effect.

1454 You have in fact on a number of occasions asked witnesses as to the runway alignments. Have you been assured as to the final runway alignments? — No, because one is thus thrown back upon the remarks of Mr. Justic Roskill at the meeting at Templar House, which were to the effect that the area and only the area will be finally chosen, and that runway alignments and the like will be subject to later discussion. Obviously, if the runway alignment can be so altered that aircraft do not come over land until they come over land at Canvey, this is an improvement; but all it is is an amelioration of a poor condition.

1455, Are you satisfied then with the flight paths suggested by the Essex County Council and Southend—which are not, apparently, the Roskill Commission's flight paths? — They are an improvement, but only a marginal improvement.

1456 Now, on page 5* you say, "Inevitably this will result in an increase in population of some 250,000 added to the existing 300,000 already living in the Essex area". Do you wish to revise this figure? — Yes—by doubling it.

1457 Although it is outside the terms of reference, where do you think—again on this page there is a dock complex here—where do you consider the working force, and warehousing, will be situated in connection with the additional complex? — I think the work force must be sited within the area of urbanisation envisaged by Mr. Jennings Smith. The warehousing areas—and they are extensive if the dock is designed to operate the traffic that we are told to envisage it handling—must in fact be sited within the area of the lobster's claw—in other words, within the small area still left for agricultural development.

Inspector This is the second time this statement has been made, and I have not dealt with it before because again this would be a matter for investigation later; and in any case would ultimately be a decision of the planning authority. But surely there is an alternative on other reclaimed land?

Mr. *Wood* That would be possible, but I imagine extremely costly.

Inspector Well, I expect the promoters will be speaking on that later on.

Mr. *Wood* I hope that would be included, Sir, in the vital figures they are quoting, that they are going to produce.

Inspector Just to make the point clear: assuming that a necessity of this particular kind arose, requiring additional land for these facilities, certainly some reclaimed land would be an alternative to using other land.

* p. 10.
† p. 111.

* p. 112.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Wood* It would of itself, this could well introduce safety hazards, I imagine having hydrocarbon oil storage tanks in the immediate proximity to a major airport is not good planning from the airport point of view.

Inspector But this would be a matter for subsequent detailed layout of the whole complex, if it ever came? — (Mr. *Wood*) Yes, this is so.

1458 Mr. *Peter Smith* On page 6* you refer to this being a peninsula site; do you not agree that with this proposal there will be considerable severance to the existing communications pattern? — Completely. The fact that this is a peninsula site of itself creates difficulties; other sites, and we are not making a comparison at this stage, but at other sites they must have 360 degrees into which extra development can take place with much more capacity for dovetailing further development within existing development. Here it has to be concentrated; it has to be concentrated because, as I have said, there is the River Crouch to the north, and in submissions by other authorities, it is fairly clear that they will fight to the last farmer to prevent extension to the north of the River Crouch, so that the Dengie Hundred remains inviolate, and to the south you have the Thames, and to the east the North Sea.

1549 On page 8, are you satisfied with the vital statistics which are being apparently prepared by the Thames Estuary Development Corporation; would you be satisfied with them?

Inspector Concerning what, Mr. Smith, on page 8?

1460 Mr. *Peter Smith* "Natural hazards". Down the bottom there, and over the page on the matter of tidal flows. — No.

1461 From the rivers Roach and Crouch and their tidal creeks? — No, I am not satisfied. I think this is something that must be done by an independent body, not because I would wish to say that the Corporation would act in any other than a completely honest way, but the interpretation from the facts, and the way they are presented can vary so much, depending upon the degree of self-interest.

Inspector Any other questions?

Cross-examined by Mr. Bryant

1462 I find it hard to frame the question, but Councillor Wood has made several rather large assumptions which I do not think should go unchallenged with reference to this running down of the airport at Southend. It is true at the moment there has been a diminution of traffic at the airport, but there is no reason to expect that that will continue, we shall have a build-up here in the course of the next 12 months . . .

Inspector Would the question be this: does he agree that the present recession in Southend airport traffic is temporary? Would that be the question for him?

1464 Mr. *Bryant* Yes — The answer to the two questions is "No". The recession has been caused and flowed inevitably from the refusal to allow the airport to extend one of its runways to the northwest, a case, incidentally, fought by the Essex County Council against the Southend Council.

Inspector Any other questions? Mr. Wood, there is one point: you were expressing fear that the agricultural heart of the lobster's claw would be subjected to pressures from holiday makers and the population in the periphery; is there not now a certain pressure in that connection? In going round this area, I see many "polite" notices, "No Parking". Can you explain that? — Yes . . . at least, I will have a try. I quite agree with you that there is pressure, and any of us in local government, particularly over the question of foot paths, is only too well aware in fact of the pressure. It is because of this existing pressure that one imagines it is going to be accentuated if you treble the population of the area, because unfortunately city dwellers do tend to regard the country and the farmers as paid retainers, and treat their land and the crops grown on it in that context.

1466 Are East End and Church End on speaking terms? — I was afraid you might put your finger on what is an acutely embarrassing problem. Sometimes we speak; often we do not.

Mr. *Peter Smith* I own a farm in Church End; he lives in East End.

Inspector Thank you, Mr. Wood; if I may say so, you have put your case very well. — Thank you, Sir.

Inspector Rochford Parish Council.

MR W. G. HEARD called*

Mr. *Heard* My name is Heard; I am Chairman of Rochford Parish Council. Rochford has about 7,000 population, Our submission which is numbered 53, is brief, and so, Sir, will be my comments. Most of our points have been covered by evidence or by cross-examination of senior authorities. The only two points I wish to stress, because they have not been fully covered, are points 1 (e) and 1 (f).* Point 1 (e) we think is important, "In order to get a better idea of the noise effect, simulated runs of jet aircraft should be made in varying wind conditions". The NNI contours which we have seen have been based on very old surveys in other parts of the country, and merely superimposed on local maps. Mr. Fleming† said on day 2 that "to what extent findings round Heathrow are relevant to the quiet countryside, nobody can say, and we need more social surveys, under such conditions, before we can find out". He also said he agreed that for noise from aircraft on the ground, "flat land and a flat expanse of water make a more ideal medium for the widespread dissemination of noise and noise nuisance that the more undulating and built up area around London Airport". It is therefore our submission, we feel it is vital . . . and that word is

* p. 112.

* See also p. 116.

† p. 30.

Printed image digitised by the University of Southampton Library Digitisation Unit

correct, vital . . . that local surveys should be made long before an airport at Foulness offshore is in operation, of simulated landings, take-offs, and flight paths in varying wind conditions with observers in various localities. I hope nobody will think I am going to suggest that aircraft at the moment are going to land on the Maplin Sands, or on the water. We have, from flying displays at Southend airport, seen Lightning jets come down to within a hundred feet from the ground, and boost their engines in making, I believe the technical term is overshoots, but we think that only by such simulated runs can we really establish what the noise effect is going to be in this locality. Unless we know that, we cannot know what consideration we have got to give to soundproofing of homes, and of schools, existing ones, nor indeed, siting and soundproofing of new schools and new homes. My Council feels that waiting for D-Day is not sufficient, that this must be done in advance.

With regard to point 1 (f), "Full consideration should be given to the people who would be specially affected by the noise annoyance, especially old age pensioners". You have said that the Commission's job is not to fix compensation.

Inspector Yes, indeed; what I really said was that the Commission is not enjoined to consider the equity of the law of compensation, to make recommendations on that.

Mr. *Heard* We do hope that the Commission will recommend to the government of the day that they should not be niggardly in its treatment of those affected by this large and unusual project. Old age pensioners are mentioned because we have in this locality a reputation for longevity, and for people staying in the neighbourhood for the whole of their lives. Our hope is that the Commission will recommend that if such people are forced to move because of intolerable noise, that full consideration for resettlement will be given, whether they are house owners, or whether they are tenants. That, Sir, concludes my comments; I should be glad to answer any questions.

Inspector Thank you, Mr. Heard. Are there any questions?

Mr. Frank None.

Inspector Kent?

Mr. *Martin White* No, Sir.

Inspector Any other local authorities?

Cross-examined by Mr. Peter Smith

1467 If you are not satisfied with the reservations which you have made, will you be opposing the project? — May I just refresh myself on the letter. We agree in principle, but with the following reservations, the reservations being hopes that the reservations made here can be put into effect, and some of these reservations have already, I feel, been covered by evidence.

Cross-examined by Mr. Wood

1468 You say "covered by evidence". Some of them have been covered by evidence in a way to destroy them. You do refer, for example, in 1(b) to "stacking should take place over the sea". Are you aware that the evidence so far produced would suggest that this is not possible? — I would not go as far as that, Mr. Wood. I was present on that day, and I asked Mr. Dunford questions on this, and I was told that although there were difficulties about stacking over the sea, they were not insuperable. We have also been assured by the Inspector that any points made at the Inquiry will be taken into consideration by the Commission, so I do not consider the point has been shot down.

1469 It is an inference I do not share. One other point that you raised: no east-west runway should be built, and secondly the third point in (d), that when aircraft take off in a south-west direction, they should not turn inland. Surely you accept that on the balance of evidence so far produced, that they must turn inland, if only to use the Thames Estuary. — Mr. Wood, I think this letter was not completely correct in that. It should have read: "should not turn *directly* inland". We had at that time the Canewdon spur in mind. Since then there have been suggestions that the Canewdon spur would be avoided by routing up the Thames Estuary.

1470 But on those two points that one would have thought were basic to your argument, they are least doubtful, and on this interpretation impossible. Would this be likely to cause a reappraisal of your Council's policy? — That is not my opinion.

Inspector Are there any other questions? Thank you, Mr. Heard.

MR. C. H. RANSDEN called* (*Clacton Urban District Council*)

Mr. *Ransden* My name is Ransden, I am the Clerk of the Clacton Urban District Council. We have submitted our statement to you; copies have been circulated, but there are just a few points I would like to emphasise, particularly in view of the evidence which has so far been submitted. As you will see, we are not opposing this particular site as a site. What we are saying is that we do hope that when you come to the later stages, as we understood it, though it has now come out in evidence that we are dealing with it to some extent now on the question of runway alignment and stacking areas, you should at least have regard to the points we make. We do all appreciate it is the old story of the bus route shelters. Everybody wants a bus route shelter when it is raining, but no one wants it outside their house. We quite appreciate this question of runway alignment; we are looking at it from the point of view of Clacton. We ask that the runway alignment should be considered in detail, that the points we are making should be very carefully borne in mind. We do not

* See also p. 149.

Printed image digitised by the University of Southampton Library Digitisation Unit

necessarily accept that the evidence so far submitted shows that stacking over the sea is not possible; the point is that it might not be quite so practicable. If it is possible we ask that it should be practicable; we think that is an essential part of the Foulness site. This concludes the points I have to make, and I shall be pleased to answer questions.

Inspector Essex County Council? Kent County Council? Other local authorities? Other questions?

Cross-examined by Mr. Wood

1471 On the first page of your proof, you make a statement here that one of the reasons why you support generally the Foulness site as opposed to the others is the very large loss of good agricultural land that would be involved in the other sites. Would you not accept that from the evidence so far produced at this Inquiry, a very considerable loss of good agricultural land will result at this site? — I would accept that, and qualify it in this way, that wherever you put an airport, whether it be on land or off-shore, there will be some loss of agricultural land. The view we take is this, that there would be less land off-shore, because basically you are dealing with a one-sided arrangement.

1472 Surely that applies only to the actual airport site. If because you choose that site at a particular place you involve yourself, for example, in a greater concentration of urbanisation, so that in-filling becomes impossible, and secondly in an infinitely longer length of line of communication, with your final equation you find that the loss of agricultural land caused by the last two points exceeds the saving caused by being able to put the airport out to sea? — I accept that is a possibility; I do not necessarily agree, and my Council, that it would be so.

Inspector It is verging very perilously near the question of comparison with three other sites which will be investigated. I think the figures on this will probably emerge at some later date and be challenged.

1473 Mr. *Wood* This is the difficulty. So many of these organisations seem to me to be coming to a conclusion by making comparisons first and drawing their analogies secondly, and for this stage of the inquiry it would be better, more sensible, to have reversed the process. Of course, a point that one must make is that the balance of evidence so far produced would suggest that your hope as to stacking areas and flight paths, for example, the approach run to the airport if it is off-shore, off Foulness, must affect the Clacton area; would you accept that? — Yes, I will accept that. In fact, what I think I said in my little statement was that we are insisting that this should be part and parcel of our general acceptance. What I am saying is that looking at the site as a whole, we are not objecting to it. This as I understand is what we are required to say at this stage of the proceedings.

1474 Subject to these basic reservations. — If there are other matters which my Council feel, we reserve our right, as we have the right, to make our objections to that particular part of the proposal at that time.

1475 Would you admit that your attitude is very closely analogous to that of the Kent County Council, which is of sitting on the fence, with the possibility that unless these basic reservations are satisfied, you will fall off on the anti rather than the pro side? — No, Sir; that is not strictly true; we are not sitting on the fence, we have come down quite firmly on one side of the fence, and I think I have made that clear here today.

1476 But from premises that are challengeable, and may be incorrect? — So you say, Sir

Cross-examined by Mr. Arnold (Foulness Island Residents' Committee)

1477 I believe from Clacton you can see the Island, is that correct? — True, on a good day.

1478 Is it also true, as witnesses have stated to myself, that Shoeburyness artillery can be heard in Clacton? — That is true.

Inspector Any other questions? Thank you, Mr. Ransden; you will keep in touch at later stages on the matters you have raised. — Of course.

MR. E. A. AUSTERBERRY called* (*Tendring Rural District Council*)

Mr. *Austerberry* My name is Austerberry, I am Clerk of the Tendring Rural District Council. You have a proof of the statement which was sent to the Commission some weeks ago in front of you. You will have noticed that the views of my Council are almost identical with those of the Clacton Urban District Council, which have just been put forward to you by Mr. Ransden, their Clerk, so there is very little that I need add to that. I would just like to make two small additions to this statement, which is that made on para. 1 I do mention that the distance of the southern part of my Rural area to Foulness is some 20 miles. This really was a sort of a round figure as measured to virtually the central point of Foulness as such. But I would sort of bring the proposed airport somewhat nearer home by saying that, the distance as measured from the most northerly part of the runways as shown on the Commission's map† to the coast is about 12 miles. Then I would just refer to paragraph* 4 in which I set out the villages within my Rural District which being in the southern end may possibly be at risk. I mention that in addition to the populations of the villages as set out there, that some of the villages, particularly places of holiday resort; I think one can claim the population of that particular part of the Rural District would increase by some 12-14,000 people during the holiday season. Beyond that I don't think there is anything further I need add except to say it would be resolved in what Mr. Ransden has said, and my Council are associated at least with the

* See also p. 117.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

views of his Council, and I am here to be cross-examined on any points which appear before you.

Mr. *Wood* I must apologise for the constant repetition.

Inspector You are doing a fine job.

Cross-examined by Mr. Wood

1479 It is essential so that we can get the fresh information obtained in the course of this inquiry to discover whether this has caused a change of heart in enlightenment, and if we can go to the Tendring submission, *en passant*, do you accept the point about the loss of agricultural land and its equation? You do? — The point you made in cross-examination of Mr. Ransden. I think it is right to say it has been my Council's view, and as far as they are concerned this noise factor weighed particularly heavily with them. I mean, they were invited as everyone else was at Stage I to express a view on where the airport should be sited, and the view which they expressed at that time in July or August last year was that it should be preferably sited adjoining or on the coast because of the noise factor which they thought might be considerably reduced as against an inland site. It was this particular factor which weighed with them, more the question of agricultural land, knowing wherever the airport is sited presumably it will have to be supported by urbanisation and agricultural ground will have to be taken over if the airport is sited, be it on the coast or on the land

1480 The fact you ignore the urbanisation part of the problem was at least affected or might have been conditioned by the fact you have two major road barriers between yourself–you have the Crouch and the Blackwater, so you are virtually well protected, are you not? — My Council would take the view that wherever the airport is situated that there must be associated urbanisation with it.

1481 That is not the point I am making. The point I am making is that you have two major obstacles between you and any possibility of an overspill? — They do exist, they are physical features, yes.

1482 And they could well be fundamental to your support of the site. If we could go to paragraph 5, you say; "The principal argument in favour of a coastal site is the opportunity afforded for aircraft to land and to take off over the sea". You stand by that point? — Well, this is what we hope; we hope that these are practical considerations which can be actually given effect to should Foulness be chosen.

1483 It is a categorical statement as to the acceptance of it. Is your acceptance of it also unconditional? — My Council's view was clearly set forward in general terms, let us say, at paragraph 1, and accepting as learned Counsel for Essex County Council has said that third London airport is coming then my Council would say on the general criteria as it seems to them, although Foulness would be as acceptable to them on the general criteria as any other site, certainly preferable to an inland site.

1484 That is not the point I am making, and the point that is made in your submission: "Afforded for aircraft to land and to take off over the sea". Do you accept that that applies to the Foulness site? — These are practical considerations which I don't think my Council have been in a position to examine in detail.

1485 But are about . . . — Certainly they have been brought out at this Inquiry, and they are evidenced in the submissions that have been made by witnesses, particularly of the County Council, yes.

1486 And sincerely, you see, I hope you will take all these points back to your Council so they can re-examine their position, and in the light of it being established that it does not apply, possibly vary their approach to this problem. — As you said to Mr. Ransden himself, my Council would reserve the right to come back again at a later stage should it feel its interest is so dictated.

1487 The next paragraph in your submission you refer to the stacking areas. It has been inferred if not established, because you can establish nothing at this stage, that the stacking areas will not be over the sea, they will be over the land. Will this affect the attitude of your Council? — My Council would hope that if practicable the stacking areas would be over the sea in their entirety. This is what they would hope.

1488 But if it is not possible? — Well, I gather it has not been established at this stage.

1489 But if it is established would you tell us what the attitude of your Council would be? — My Council would reserve their attitude on that in the light of what a more detailed examination may prove, but my Council are of the opinion that in so far as the airport site would be on the coast then certainly there is a facility for a considerable amount of stacking, at least to take place over the sea which would otherwise not apply in the case of an inland site.

1490 But the expert witness produced by the Essex County Council did suggest in fact that was not likely to happen. I sincerely hope your Council will reconsider that aspect of the evidence. Will they? — You have made the point, Mr. Wood, and I will certainly see they do not lose sight of it.

1491 I must make these points because it seems so far that because of the time available, possibly many people, including your Council, have come to the opinion, have already predetermined the issue, without in fact having all the available evidence at their disposal, and I hope sincerely you will in fact re-assess and reconsider the problem. — The points you have made will certainly be borne in mind.

(*The witness withdrew*)

Inspector As the Maldon Borough Council is not here we will adjourn for ten minutes in order to try and reconstruct the remainder of this programme.

(*A short adjournment*)

Inspector To proceed, the Maldon Borough Council is not with us. Witham Urban District Council?

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. BOWKER called*

Inspector Will you give us your name for the record?

Mr. *Bowker* I am F. Bowker, Engineer to Witham Council.

Mr. *Wood* To help us would it be possible for us to have the reference number of Witham's case? I can't find it.

Inspector I think you will find that Witham Urban District Council is one of the naughty authorities that have not submitted written submissions. — I have submitted a very short written submission which presumably has not been circulated.

Inspector Can you make your statement quite slowly because other people are not aware of what you are going to say.

Mr. *Bowker* The Council in their deliberations on this matter could see no strong objections to the offshore site for the third London airport, in fact such a proposal would appear to add to the prosperity of Essex with the minimum of noise interference to the population as a whole.

It was felt that the Commission, if they finally decide on this position, should give considerable thought to the communications provided to serve the airport and such thought should extend beyond the boundaries of the Southend-on-Sea/Foulness peninsula. Undoubtedly whilst the airport is being developed principally for London, its prosperity in the future could depend on the ever-increasing rise in freight traffic, a high proportion of which would undoubtedly be fed into the airport by road transport. It is felt by the Council there would be advantages, if only traffic routes to London were improved, to accomodate this traffic. It is probable that high proportions of such traffic could well wish to reach the airport from East Anglia and the East Midlands, and adequate provision should be made for a major route in the vicinity of or to the east of the present A130. It appears vital that mingling of feeder road traffic from the motorway network with the London traffic should be avoided except in the immediate vicinity of the airport and a route planned on the lines suggested would avoid this congestion. Whilst possibly the present A130 and A120 have spare capacity outside of the towns, it is unlikely to be capable of accommodating any material increase and a new route would be by far the best way of dealing with the problem.

As a final observation the Council consider that the holding patterns for aircraft operating under delayed landing instruction should be carefully sited so as to cause the minimum of disturbance to the built-up areas of Maldon, Witham, Colchester and Chelmsford. If it is within the bounds of operating procedure it would undoubtedly help if the minimum holding height was 10,000 ft. Witham being sited more or less on the centre line of route Red 1, we are familiar with the continual passage of aircraft overhead, at 10,000 ft and above, their nuisance value is very small.

That is all I have to say, and those are all the observations we have to make.

Inspector Essex County Council, any questions? No. Kent? The local authorities? No.

Mr. *Wood* I am tempted, sir, but I have no questions.

Inspector Thank you.

(*The witness withdrew*)

Inspector The City of Rochester* and Strood Rural District Council† have indicated their submissions are written submissions. The Borough of Faversham—are they here? No. Essex River Authority?

Mr. *Sturgess* I am the Clerk of the Essex River Authority,‡ and I have two witnesses whose Proofs of Evidence have been circulated. I have little to add except to stress this: the emphasis which the River Authority places on the reimbursement of any additional financial expenditure which falls on the River Authority should the third London airport come to Foulness. In this regard, we are concerned with land drainage, sea defences, and especially with water supplies. Too many water supplies in Essex have to come from outside our area, and are therefore comparatively speaking expensive to procure; and for this service, and all other services, we would expect the airport authority, if Foulness be the choice, to ensure that no undue financial burden fell on our financial resources. Without further ado I shall put Mr. Snell, the Engineer to the Authority, in the box, who will be available to answer questions on his proof of evidence.

Mr. *Frank* Could I ask—before the evidence begins—could I ask what has happened to Clacton? I do not know if some arrangement has been made . . .

Inspector I am sure there has been an arrangement made. I am not aware of it, but my secretary will let you know in due course.

MR. E. L. SNELL called

1492 You are Edward Lionel Snell? — Yes.

1493 You are a Fellow of the Institution of Civil Engineers and a Member of the Institution of Water Engineers? — I am.

1494 And Engineer to the Essex River Authority since its constitution in 1965? — That is so.

1495 You were previously Engineer to the Essex River Board from its constitution in 1952 and prior to that Engineer to the Essex Rivers Catchment Board from 1946? — Yes.

1496 You are available to answer questions on your proof.

* See also p. 119.

* See also p. 126.
† See also p. 127.
‡ See also p. 120.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. Wood

1497 Here I am in some difficulty, in that we have gone too fast; my homework has not extended quite as far as one had hoped, so if the questions are more halting I hope you will forgive me. We did hear in evidence—I think it was Mr. Sharman—that if the airport is an offshore one, the necessity for the strengthing of the river defences from Foulness in the Crouch, and I believe he even intimated as far as Canvey—would you accept that a considerable strengthening of the existing river defences would be necessary if the offshore site is chosen? — I think that the defences would have to be strengthened, if modern experiments showed there would be some enhancement of the total storage level; but otherwise I do not see why it would be required.

1948 *Inspector* Just one point of clarification, Mr. Snell. Does your Authority's jurisdiction overlap the PLA area in any way? — Yes, we deal with the tidal defence on the north bank of the Thames from Newham and round the Essex coast, right up to the Stour Estuary, which of course rather incorporates the local authority defences, but we do not actually deal with the defences.

1499 *Inspector* Have you got responsibilities for sea defences in the PLA area? — Yes, we have.

1500 Mr. *Wood* At the moment, you have done no investigation yourself as to the possible consequences of an offshore airport site? — No, I have done no investigations. All I have done is to have a look at the rather nebulous proposals for the airport construction coming on the Maplin Sands, and seeing if there were some adverse effects on tide levels; if so, the Authority would have to consider strengthening the defences, raising them. I have also of course made the point that if the accomplishment of the airport were to alter some tidal channels, then the Authority would be involved in some very considerable additional expense in defending these against scour. If the alteration of the coastal configuration as a result of the airport works caused some change of tidal channels, caused some silting, then the Authority would be in considerable difficulty over much of its local drainage work, which is at the present time in a critical stage. Any change in the foreshore confines would mean that the Authority could be involved in additional expense—this could be a major matter.

1501 Would you agree that at this present time there were fundamental difficulties over the dispersal of flood waters—for example, in the area over Hullbridge and Ashington? — I do not see the relevance of this question—it means nothing.

1502 We are only just coping with the existing problem in this area, at this moment; and whenever there are barrages of heavy rain there are constant complaints of the acute human disturbance in those areas, and so you have no margin to play with. — I think this is so. These are perhaps slightly different things that we are talking about—I think you are talking about run-off from urban areas, and flow-off from urban areas arising from these barrages of rainfall, which is perhaps a different picture from that which I was trying to paint of the agricultural land draining by gravity through the sea walls, and any change in the level of the flood waters causing the Authority to pipe. The point you are now making, I think, is that any increase in waterproofing of the various catchments discharging to the various tidal channels, such as the Crouch, would increase the run-off and would tend to increase flooding. This is so; and I think that if there were a major urban development associated with the airport, then the Authority would be involved in very expensive works.

1503 If I may jog your memory—for example, is it not true that the urban development for the Basildon area caused, not so many years ago, flooding at Wickford for precisely the reason you have described just now? — This is so, and I suppose the Authority has spent several hundreds of thousands of pounds dealing with the draining works at Wickford; and in exactly the same way the Authority is spending nearly a million pounds at the present time in developing the drainage of developed urban areas which include Southend, Rochford, and further down.

1504 And would you envisage that the increased urbanisation would of itself create like problems and like expense? — This is undoubtedly so.

1505 Obviously, this is something the Commission will take into consideration. One final point: in your paragraph on water supply,* you quote a figure of 25 million gallons a day. I take it that that refers solely to the airport—that that would be the additional consumation of water? — No—this is a round figure. I do not think the actual figure—whether twenty or thirty gallons a day—is likely at this stage. It is a round figure of the sort of consumption which would arise from the airport and its associated urban development.

1506 And you, arriving at that figure, base your assumptions on what sort of urbanisation—the 400,000 additional that the Essex County Council envisage? — I took a figure of 400,000—it is simple arithmetic—four times the figure of a million gallons a day gives the answer—it is as simple as that.

Cross-examined by Mr. P. Smith

1507 Mr. Snell, I take it that you are answering on behalf of Mr. Fish? — No.

Mr. *Sturgess:* We have another witness to deal with sewage disposal.

Mr. *Smith:* I see—thank you.

Cross-examined by Mr. Knowles

1508 Mr. *Snell* You may be aware that the Rural District Council have suggested that the Commission look into the needs for providing additional north-south communications to serve the population who will come into this peninsula. We have asked the Commission to look at the possibility of providing barriers across the

* p. 120.

Printed image digitised by the University of Southampton Library Digitisation Unit

Crouch and/or Thames to serve as road links. If a barrier were to be put across the River Crouch, could you give some idea of what adverse effects could arise from your drainage point of view? Firstly, if the barrier were put to the east of the River Roach junction with the Crouch, and secondly, if it were put to the west of the junction? — I think it is impossible to answer a general question of this sort. Undoubtedly, if a barrage were put across the Crouch, either upstream or downstream of the Roach, this would have a serious effect on the regime of the whole of the Crouch estuary. The Authority would want to be satisfied that this did not mean serious silting up of these land drainage channels. I think it would make such a fundamental change in the estuary—both the Thames and the Crouch estuary—that this would have to be looked at by means of a model, which it is hoped to obtain; but so far as freshwater flooding from a barrage—it would mean that the whole of the low land lying upon the Crouch estuary would probably have to be pumped, which would involve a great deal of additional expenditure. I think that the upland drainage from places like Basildon, which in fact drains into the Crouch estuary there, would probably have enough storage in the Crouch after the barrier had been put across to stem the water during high tide, and let it out at low tide. But there would undoubtedly be major expense involved from a drastic alteration of the regime of the estuary to what it is at present.

1509 How far would these effects be ascertainable from the model that is proposed to be constructed? — I do not know. I shall have to wait and see on that. I think it is very difficult to answer that question.

1510 What I am trying to ascertain is: if the model is built, and it is not going to give you the answers to that sort of question, or the Commission—perhaps you could make sure that the model is different, or undertake some further investigations. — No, I think a model would give you a very good indication of what was likely to happen. I do not think the size of model practicable to make would give you the answer on a lot of comparatively minor matters, but I think, having got the broad outlook of what was likely to happen from the model . . . The Authority also has a very good record of what the existing conditions are . . . I think that from there onwards obviously the actual trend on the coast would have to be observed, and undoubtedly the Authority would be able to say to the airport Commission as a result of these works, "you have worsened this situation, and the cost to put this right is so much".

1541 The main additional expense, apart from the construction of a road and barrier, would be the fact of getting rid of what you call "the low land water". The tidelines would then be below the river level, and have to be pumped in. — If I can give you an illustration—a large part of Southend itself, Rochford, Hockley and Hawkwell, and all these areas, are drained to the Roach, and come out near Rochford. The lower part of that drainage system—if heavy rain and high run-off coincides with high tide—then a certain amount of flooding could occur in the Rochford area, and in the vicinity of the Echo Works—in Southend—as happened in 1968. If there were a marked change in the Roach estuary, which caused silting up or caused high tide levels, then the Authority in this particular case would be faced with higher expenditure. So far as the agricultural land is concerned, if you take the Dengie Peninsula to the north of the Crouch, there is 18 square miles of land there, first-class agricultural land, all of which is below high tide level, and almost all of it there is by gravity. If the effect of work on the Crouch or Roach estuary were to cause a change in the regime, and cause siltage, the whole of those channels might be blocked up—this would mean that the Authority would have to put in pumping stations at a big initial cost and annual running costs to deal with it. But the urban and rural are two rather simple things.

1512 I had imagined that if you fix the top of the barrier at high tide level it would have a natural . . . — The barrier would have a profound effect on the regime of the coast by this stage.

Cross-examined by Mr. Arnold

1513 As you know, for some five or six centuries we have been in paramount importance in sea defences, the majority of our island being below high-water mark. Could you just briefly give me an indication of the number of miles of sea defence that the Essex River Board maintain? — Somewhere about 300—I think it is 280.

1514 That is near enough. Of the six islands now in question, I believe you only maintain Rushley and Wallasea? — Yes—we used to deal with Potton and . . .

1515 But now they are under the military. Can you tell me, sir, approximately the datum level above Newlin of your particular sea defences in your area? — They vary. They are related to the 1953 tidal surge level, and the main walls, which are protecting the bigger areas, would be at a level of about 1800 Newlin—say, three feet above 50 ft surge line.

1516 The majority of all the works in Essex are earthworks, are they? — The majority, yes.

1517 Again tell me, sir—I know the answer but I feel we should put it forward—why the Bridgemarsh Island was never reclaimed? — It went to sea in 1897; the Authority some years ago in fact had a look at the possibilities of reclamation in Essex. Not so much as you would think—I am speaking off the cuff, but I think we said there was only about 3,000 acres in the whole of Essex which was economic to reclaim, and at Bridgemarsh Island it was not an economic proposition to consider reclaiming it.

1518 Concerning the economics of the matter—when does it become a viable proposition? — Well, I do not think you can answer this generally—it has to be an *ad hoc* decision, depending on which particular case. The most favourable ones we looked at were off the coast and the Dengie Peninsula . . . I would rather not . . . I cannot remember the actual figures. We were talking in terms of several hundreds of pounds per acre for the

Printed image digitised by the University of Southampton Library Digitisation Unit

reclamation work, apart from the agricultural work necessary afterwards.

1519 A much simpler scheme would be to recover all North and South Fambridge. – The Authority went into this in very considerable detail, spent quite a lot of money on this, and it was found quite uneconomic to try and do it.

1520 I do not know if Mr. Hunt will allow this; did you study the Binnie Report on the Wash scheme?* – Yes, I did.

1521 That was reduced to 1750? – I do not know.

Cross-examined by Mr. Purchase

1522 I see that you appointed consultants; are they to do a comprehensive survey at this stage, or preliminary? In view of the uncertainty of the airport being constructed here, is the survey of a preliminary nature or is the survey comprehensive? – I am sorry, I am not quite with you on this point.

1523 Are you having a survey from your consultants in great depth?

1524 *Inspector* What consultants are you talking about, Mr. Purchase?

1525 Mr. *Purchase* Consultants under paragraph 2.† – Could I explain this. My evidence is really much the same as I reported to my authority. I was referring, in reporting to my own authority, that I had had discussions with a consultant who had been appointed, I think, by the Airport Commission.

1526 *Inspector* It is quite clear in the paragraph, these consultants are acting on behalf of the planning consultants for the Airport Commission.

1527 Mr. *Purchase* With regard to paragraph 3,* "Water supply", do you at this stage know of any insurmountable problems to bringing forward the scheme for bringing in water from the Great Ouse River Authority by two or three years? – I do not see any insurmountable problems. The ground water survey which is being carried out at the moment by the Ouse River Authority has now in fact been brought forward by two or three years to 1971, and if the results are favourable, of course, this would give ample time to implement stage 2 of the scheme to meet the gradually growing demand from the airport and the associated development.

Inspector Any more questions? I have no questions.

Re-examined by Mr. Sturgess

1528 Two points of clarification: You say in your proof with regard to the interference, or the possible interference with the coastal regime, that the Authority would require to be satisfied on a number of points. What sort of evidence would you expect to be produced to your Authority for them to be so satisfied? – We have an excellent record of the conditions on the coast at the moment, and all our works on the coast have been designed with those in mind, and with our knowledge of the present trends on the coast. If there were a sudden change which caused the Authority to spend money, we would expect the Airport Authority to accept that there was a sudden change which must have arisen from the airport works, I think we would expect the Airport Authority to argue that this was a natural change.

1529 What investigations would you expect to put in hand before any final decision was taken on the location of the airport at Foulness, investigations into likely interference with the coastal regime? – My recommendation to the Authority would be that they should insist upon a model being done, and that this model should be done with the blessing, if I can use that word, of the Hydraulics Research Establishment.

1530 *Inspector* Can I follow that point up, Mr. Snell, what area would you expect this model to cover, from your point of view, anyway? – If I can say what I have already said to the Port of London Authority, speaking as the Port of London Authority here, I have said that we were concerned as to how we were to determine both the actual effect of the airport and the extent of such effect, and I have discussed with them how far the model which the Port of London Authority are talking about would in fact go. I have said we would be interested probably as far as Clacton in the north, and as far at least as Canvey Island in the Thames, and in my discussions, which were informal at this stage, I came to the conclusion that any model which the Port of London Authority did, would have to take into account obviously the approaches to the Thames from the navigation point of view, and this would be big enough to cover our concern as far as Clacton.

1531 Mr. *Sturgess* Finally, with regard to the land drainage problems that could arise, both the problems arising from surface water run off from urban areas, and also those arising from possible silting of your outfalls, would you regard them as insoluble? – Not insoluble; they would involve expenditure, obviously, but they are not insoluble, I would think.

(*The witness withdrew*)

Mr. *Sturgess* Mr. Kenneth Guiver, is my next witness on the proof of evidence submitted by the Authority; Mr. Hugh Fish was our River Conservator. Since the proof was prepared, Mr. Fish has left our employ. Mr. Guiver has been appointed to succeed him.

MR. KENNETH GUIVER called*

examined by Mr. Sturgess

1532 Your full name is Kenneth Guiver? – That is so.

* *Report on the water resources of the Great Ouse basin.* Ministry of Housing and Local Government, 1965.

† p. 120.

* See also p. 121.

Printed image digitised by the University of Southampton Library Digitisation Unit

1533 You are a Bachelor of Science of the University of London? — Yes.

1534 You are an Associate of the Royal Institute of Chemistry, a Member of the Institute of Water Pollution Control and a Member of the Institution of Public Health Engineers? — That is correct.

1535 You have been River Conservator to the Essex River Authority since 1st May of this year? — Yes.

1536 Prior to that, you were Deputy River Conservator from 1961? — Yes.

1537 I understand, Mr. Guiver, that you are prepared to answer questions on the proof originally submitted by Mr. Fish? — Yes.

Inspector Are there any questions from Essex County Council or Kent? Anyone else?

Cross-examined by Mr. Peter Smith

1538 On the first page of your evidence you say: "New discharges of sewage effluent, in excess of present development potential, to the minor streams draining to the Thames, Blackwater, Crouch and Roach estuaries would also be unacceptable". I questioned Mr. Sharman, unfortunately we have not got the plan of the lobster claw here,* where the effluent from the development which is proposed along the south bank of the Roach would be discharged, and in fact in his written statement, each area of urbanisation would have its own treatment plant adjacent to the River Crouch which will receive the treated effluent. I pointed out to him that in fact it was contrary to your evidence. Really it seems that your idea of the treating of such effluent should be a main trunk sewer going down the middle of the peninsula out to the east to the sea; am I correct in that? — This is correct. This is in terms of the very large volume arising from the whole development. If we are thinking in terms of 400,000 people, 20m. to 30m. gallons per day, then in terms of these volumes, this can only be treated, we feel, by direct discharge to the North Sea, and the minor streams which were mentioned in this paragraph here. In those we are thinking of—the freshwater streams draining to the tidal rivers Crouch and Roach, in other words, smaller development and smaller discharges arising from supporting population to the airport could possibly be made to the tidal estuaries Roach and Crouch further up landward of them, but as far as the whole development was concerned, a large major volume of 30m. gallons a day, this must, we feel, go out to sea to prevent any detrimental effect arising from the development.

1539 In fact you propose a regional sewage scheme which basically is a large trunk sewer in the middle of our peninsula going and discharging eastwards of the proposed airport? — Yes. This would probably take the sewage from existing Southend, possibly as well, and certainly in the Rochford RDC area, the works that are being constructed there, and take the whole lot out probably.

1540 In fact existing sewage schemes which are at present from the much smaller existing communities, and are in fact discharging into the north, and in these various directions, would have to be completely redesigned to come down to your middle regional trunk sewer? — It would probably be more economic in the long run so to do. I do not think that we would say that the works which are at present in existence will have to be abandoned immediately, but I would think that in the long run there would be a case for a regional sewage scheme to deal with the whole of the area going with the airport.

1541 An extremely large undertaking, I would suggest. — Yes. There are precedents for equally large works of 30m. gallons a day. It is not all that large, but it is large, yes.

Cross-examined by Mr. Knowles

1542 I am interested in the reasons why you are suggesting a new regional works. Is this evidence based on the assumption that most, if not all, of the estimated 400,000 additional population will come into this peninsula? — Yes, possibly some preliminary proposals did show some supporting development to the north of the Crouch on the Dengie peninsula, but certainly mainly in the Foulness peninsula and the Southend area.

1543 You have read the proof of evidence of Mr. Jennings Smith* showing the suggestion for the development areas, have you? — Yes.

1544 This is what is mysteriously being referred to as the lobster's claw, the development along the south bank of the Crouch? — Yes, I have not had time to read it all.

1545 It shows the development spread along the south bank of the Crouch from Canewdon to Battlesbridge, to Rayleigh, Benfleet, down to Southend in a semicircle. Are the rivers Crouch and Roach, the tidal rivers, in your opinion not large enough to take added effluent from the new sewage disposal facilities to serve this amount of population? — They are not capable of dealing with 30m. gallons a day.

1546 Some of it surely will go direct to the Thames via Southend's present disposal plant. — This is possible, but certainly the existing Southend works is not in a position, I believe, to take a great deal more. This is of more concern to the Port of London Authority insofar as they control the discharge to the Thames Estuary, but my understanding of it is that the outfalls from that works are not in a position to take a great deal more sewage discharge.

1547 Your suggestion is that a way to deal with this is to take a new large trunk sewer or sewers right across the district to the North Sea coast? — Yes.

1548 Are there not any other more economic ways of doing this? — While the development is taking place, there will obviously be development along the line of the

* p. 20.

* p. 10.

Printed image digitised by the University of Southampton Library Digitisation Unit

trunk sewer, and I would think the trunk sewer could initially be delineated in order for it to be most economically used as the whole of the airport and its supporting population builds up. Insofar as the tidal rivers cannot take 30m. gallons a day, you do thereafter have to think in terms of quite how are we going to deal with it, and the Authority would suggest that the trunk sewer discharging to the North Sea is the correct way of dealing with the problem.

1549 The 30m. gallons a day is your very least estimate of the effluent arising from a population of 400,000? – Yes.

1550 It does not take into account the effluent arising from the airport complex? – The 400,000 population, as I understood it, was airport plus supporting population.

1551 I am thinking of the maintenance and industrial uses and the conveniences for the people working at the airport, and the passengers.

1552 *Inspector* On this question, what we would have to arrive at would be 400,000 plus the existing population plus . . .

Mr. *Knowles* Yes, and I am saying the number arising from the passengers at the airport and people working at the airport.

1553 *Inspector* The figure would be larger than 400,000. – 500,000 population is still 40m. at 50 gallons a head a day. This is it, and I am saying there are 30m. a day, and although I said 400,000 population, that could equally well be 500,000 population at 50 gallons per head per day, or just over 50 gallons per head per day, 60.

1554 Assuming that amount, or something slightly less or something slightly more, were to go into the rivers Roach or Crouch, you are saying that they just will not take that amount without flooding? – Not without flooding; I am not concerned with flooding. As far as Mr. Snell would answer this, I would imagine that 30m. gallons per day would be neither here not there in terms of flooding into the estuaries as such. I am thinking in terms of the pollution side, and I think the amount, even if you achieved a fairly high standard of effluent for 30m. gallons, there would still be unsatisfactory conditions arising with regard to sewage effluent, possibly bacteria in the sewage effluent, particularly with regard to shell fisheries on the Roach and Crouch, and also growths arising from nutrients which are in the sewage effluents.

1555 On the question of the shellfish, was this an important factor in your thinking? – It is somebody's livelihood, and I understand that the turnover is sufficient for us to consider it very carefully in conjunction with the Ministry of Agriculture, Fisheries and Food.

1556 Are not the Ministry of Agriculture, Fisheries and Food largely the owners of these shellfish? – I do not think so, Sir.

1557 They have their oyster layings . . . – I do not know that the Ministry have any; I think they are all private layings; they may have some, but I know the experimental laboratory at Burnham on Crouch carries out work for private individuals virtually who are shellfish owners.

1558 Have you been able to do any estimates of the value of the oyster layings and other shellfish? – I do not know the values.

1559 Do you think they might be worth less than the cost of constructing the trunk sewer? – I really do not know; perhaps not, but they could well build up.

1560 Do you envisage that they will be continued if the airport and its associated development comes into this area, Mr. Guiver? – I would hope they would be.

1561 Would you not have some prospects on the lines that Councillor Wood was suggesting that the urban residents will regard them as the natural right to take these shellfish and interfere with their growth? – I am sorry, can I have that again?

1562 Might not there be some oyster poaching, if there is such a thing? – Well, I would not think so. I think these shellfish will need cleaning and people will not take the chance of poaching, as you call it.

1563 On the question of pollution by the effluent discharge–I use pollution in its widest sense–surely if the effluent were to be discharged upstream your authority would require it to be purified to the Royal Commission standards? – We would require it to be purified to better than the Royal Commission standards.

1564 How would you do that? – Probably by lagooning. We have such sewage disposal already discharging to the Crouch of low volume–100,000 gallons a day, which are put into very large areas which reduce the bacterial content by 90-95 per cent, even though that is still high.

1565 In view of the fact you at present are trying to force the Rochford Rural District Council to spend money doing this, where are the other ones? – I am prepared to answer that if you wish me to, Sir.

1566 *Inspector* Is it relevant to the Commission?

1567 Mr. *Knowles* Yes, it might be, how much it will cost to purify the sewage to sufficient standards to discharge it upstream as compared with the cost of discharging it to the North Sea. – We have such works in the Chelmsford Rural District Council's area.

1568 You would not seek to discharge this very highly purified effluent, you would still expect further pollution? – It depends on the volume. I am saying 30 million gallons a day, even treated to the high standards would still cause some possible difficulties. If you come down to a population in a large village or small town discharging possibly 2 million gallons a day somewhere higher up on either of these estuaries, perhaps up towards Battlesbridge on the Crouch, that is 2 million gallons a day treated to better than Royal Commission standards, which would be reasonable to be allowed without causing difficulties; but if you consider the lot together then no, it has got to go out towards the North Sea.

Printed image digitised by the University of Southampton Library Digitisation Unit

1569 As you know Rochford have their present main disposal or treatment works at Stambridge. — Yes.

1570 They are currently preparing proposals for a very great deal of enlargement works there. — Yes.

1571 Ignore the whole of the sewage from the developed area to be drawn to and treated at Stambridge without undue detriment? — No. I think it is too far in terms of 30 million gallons; it is too far up the estuary and too close to the shellfisheries, and the water is retained for too long a period before it is flushed away up to the North Sea.

1572 It is retained for too long a period? — Yes, in so far as you have a tidal sewage backwards and forwards, and you are discharging over the whole of the tidal cycle. I think it would be retained in the estuary too long before it got away finally to the North Sea, and there would be quite considerable alterations in the life and the biological status of the estuary due to the discharge of 30 million gallons.

1573 *Inspector* If the airport does come to Foulness I suppose the precise details of how the sewage could be collected and disposed of would be a matter that would be then dealt with between the relevant authorities, would it not?

Mr. *Knowles* It would, but if we were to be forced to follow Mr. Guiver's suggestion, with a very large trunk sewer stretching at least from Rochford as far as the outer edge of the airport, some ten miles, it is going to be a very expensive project. That is the point I am trying to make. It is far too expensive—or is there any cheaper way of doing this?

Inspector The point about this is I am rather dubious as to whether you will be able to resolve that rather difficult question within the context of this inquiry.

Mr. *Knowles* I am trying to draw it to your attention so that you may resolve it, Sir.

Inspector You have done that.

1574 Mr. *Knowles* The only other point, I think, Mr. Guiver, is the question of, if we get it to the North Sea coast—it has been suggested by a Kent Council Witness that it would be possible to discharge it, screened, but without purification. — Yes.

1575 Is there any other information you can give us at this stage, apart from the generalisation that it will depend upon the effects of this model we keep hearing about? — I would think that to discharge just on the far side of the airport, screened, crude sewage would not be advisable. I think it would have to be close to the coast, but it might be allowed depending on the length of the outfall. I think possibly while you are constructing your ten-mile cross country sewer you might also have to go out to a fairly long sea outfall or possibly put in settlement tanks before you allow the discharge of settled sewage as opposed to screened, crude sewage.

1576 What policy is your Authority following both locally and from the national point of view with the discharge of crude sewage to the sea? — Provided they go outside the limits which is a comparatively few yards off-shore we have persuaded the Council to put in full-scale biological treatment works in some cases, admittedly to their own advantage, as well as in terms of amenities of beaches, etc. Some councils have done this, settled sewage, as Southend does, before they put out settled sewage to the North Sea.

Cross-examined by Mr. Wood

1577 Three points to establish this question of poaching of oysters, and running the risk of schism between ourselves and the Sheppey Group. Are you aware there was a local war fought at the beginning of the nineteenth century between Whitstable oyster fishermen and Paglesham oyster fishermen which caused no little damage to the participants? — I didn't know that.

1578 It just shows oyster poaching is a present danger. I take it the reason why sewage could not be discharged into the existing rivers is the question of sewage being held because of tidal flow? — That is it, and its large volume.

1579 It does not mean the sewer would have to be larger than the existing rivers? — No.

1580 The last point, the burden of your evidence establishes the inadequacy of the existing sewage systems in the area—you accept that? — To deal with what, Sir?

1581 The present population. — At the moment the works as they exist are overloaded and require need of expansion.

1582 Yes. — But in terms of the airport coming, this is something quite separate. It has a direct bearing.

Mr. *Wood* It has a direct bearing on infrastructure.

Cross-examined by Mr. Arnold

1583 I do not know how best to put this question concerning oysters—in passing the Mersea, the Blackwater and the Crouch produces 95 per cent of the country's oysters—that is a round figure. I had to smile at the mention of poaching as my family was first arrested for this offence in 1410. That, however, is neither here nor there. I agree with your very clear statement that this outfall must be way out in the sea. I criticise nothing you have said. I know it is gruesome, but I mention it only in passing, that two men lost their lives at Margate and were washed up on the beach at Foulness some five weeks later, showing that there is a great clockwise circle of tidal current in the river mouth, and I do know, I know it is a curious thing, but to use as an example, a beer crate was washed up and down the river in a light easterly wind for days. So I agree with every word you said, that it is essential we push that sewage out as far as we can. Can you give me, just broadly, how far you think your outfall will extend off the coast? — I can't answer this. This would have to depend on flow tests carried out by the Water Pollution Research Laboratory or somebody like that. I can't say.

Printed image digitised by the University of Southampton Library Digitisation Unit

It depends on what depth of water there is at maximum; how much run there is, and what—it might be anything. I can't really say. It might be a few hundred yards, and it might be a couple of miles.

Inspector Any more questions?

Re-examined by Mr. Sturgess

1584 Getting away from shellfish, what other adverse affects of tidal considerations do you contemplate if large volumes of effluent are discharged? — There could be obviously sediments on the bed of the river. There would not be sufficient aeration—this is not probably as large a question as shellfish, but it is a possibility, particularly in the upper reaches of the river which discharges 30 million gallons a day. There could still be large sedimentation which could cause some deoxygenation.

1585 The oxygenation could affect the river in what way? — There could be the death of the fish. There could be smell nuisance arising, and undesirable conditions in general. Obviously nobody would wish to swim there, and there could be some affect on the boats, paint, that sort of thing, if something happened similar to the Thames as it has in the past.

Mr. *Sturgess* Thank you. That is the case of the Essex Water Authority.

Inspector Now Basildon Development Corporation. I might say for this afternoon we are likely to have only the Foulness Island Residents Committee, and the St. Clement's Ward Municipal Electors' Association, and I think one private individual. There may be one or two more. Chatham Council have intimated they wish to rely on their written statement.

MR. BACON called* (*Basildon Development Corporation*)

Inspector Let us have your name for the record. — (Mr. *Bacon*) I am H. D. R. Bacon. I am Senior Planner in the Department of Architectural Planning of Basildon Development Corporation. Do you wish for my qualifications? I hold the University of London Degree of Bachelor of Science and Estate Management, and I hold the University of London Diploma in Town Planning. I am an Associate of the Royal Institute of Chartered Surveyors. An Associate Member of Town Planning Institute, and an Associate of the Chartered Auctioneers and Estate Agents' Institute. The Commission will have received the Corporation's representations which were sent to you on the 14th April. I think in fact there is little I would wish to add except on two very minor points. May I just draw your attention to the fact that in the evidence of several other authorities it has been said that the ultimate population of the new town will be 140,000. This was a figure on the plan submitted to the Minister, but when he came to approve the plan in December 1967 he did delete two of the neighbourhoods which were proposed, and I think although the Minister was not specific in his decision it would be fairer to say the ultimate population was an assumption, and is 134,000 and, indeed, it is stated in paragraph 4 of our representations. The other minor point, Sir, some plans produced had indicated that the new road from the airport might join the A127 east of the town. I would draw your attention that under the subject of communications the Corporation have thought fit to say any new motorway for the airport should be independent of the existing road system, and we feel this is very important because the plan of the new town has been such that the industrial areas which provide most of our employment are sited with easy access on to the A127 which runs to our north boundary, and so in round figures the employment in the new town not only the industrial area but the new town as a whole is of the order of 30,000 people. By the turn of the century it will double and be approaching some 60,000 people. Some third of that working population are drawn from outside the new town designated area and presumably about a third of the new town residents commute outside, outwards. So from the point of view of commuting and serving the industry the A127 is the lifeline to us, and we would not want to see this clogged by airport traffic. Other than that I have no points to make and submit myself to cross-examination.

Cross-examined by Mr. Peter Smith

1586 In fact I should in fairness say that when I submitted my proof of evidence I submitted some evidence which was supplied to me by your Development Corporation and which you have . . . — Yes, I read that, Sir.

1587 . . . read, and I underline, of course, that it was to create a self-contained and self-sufficient community, and I was using as the basis of my argument here that you were acting as a buffer to the development which this airport envisaged. Now, do you agree that those were the objects of the Basildon Development Corporation, and that if in fact you join in with the proposed development associated with this airport you are going to be in breach of your original terms of reference? — The phrase, I think, which appeared in your evidence was that we were developing a self-contained town.

1588 *Inspector* Self-contained and self-sufficient community. — These were, I think, near the words of Sir Patrick Abercrombie in his *Greater London Plan* of 1944,* and was indeed the purpose of all the new towns developed shortly after the war, that they should be self-contained. We didn't have a specific instruction as such to be self-contained and, indeed, as I have just indicated with the greater personal mobility of people and with the greater specialisation of employment it has so turned out that people are commuting to the town and from the town, and so it is perhaps not valid now to say we are self-contained. We hope to offer the opportunities for people to work locally, but obviously we

* See also p. 122.

* (HMSO.)

Printed image digitised by the University of Southampton Library Digitisation Unit

cannot ensure that they do so. The brochure from which you quote actually was a brief reprint of a glossy brochure intended for lay visitors. I regret it has not been brought up-to-date, but certainly you are correct in saying this was part of the initial conception of the first new town, but has not worked out in that manner.

Inspector Before we begin: the Commission staff is trying very hard to re-cast this timetable in the best possible manner to suit the various parties. Copies of the latest version are being circulated, including those for tomorrow's programme. This morning I passed over the City of Rochester and Strood RDC, because I understood their representations to be written statements. I have been told that both Councils are represented here, and their representatives can answer questions if so required. So later in the afternoon I shall ask if there are any questions for Strood and Rochester—they are numbers 43 and 5. The remaining re-cast programme for this afternoon is—after Basildon will be Foulness Island Residents Committee, St. Clement's Ward Municipal Electors' Association, and Mr. Newbery, who is number 41.

Mr. *Wood* Sir—the Port of London Authority, who were due to appear on the 14th May, have disappeared into limbo.

Inspector I am told they are third tomorrow—no. 16. We are doing our best—we might make a mistake.

Mr. *Wood* Thank you, Sir.

Inspector Are there any other questions on the programme?

Mr. *Robertson* I was asked to attend at 2 p.m. today for the Maldon Borough Council.

Inspector I beg your pardon—you are on my programme for "during the day". May I take you after Basildon?

Mr. *Frank* There is one thing—I am just wondering—Wednesday looks as though it will be half an hour's work.

Inspector The unfortunate thing is this: we have two difficulties. One is that we do not want to bring people here for a very short duration, on the other hand certain people have committed themselves to come on this day from the original programme, and I think the over-riding consideration must be not to prevent people who want to say something from coming along. It is very difficult, and this is the best solution we can find so far.

Mr. *Frank* It is possible you may get some of these people in on Wednesday.

Inspector Again, it is a general request that this block should be taken as one block—the conservation and countryside block.

Mr. *Frank* It is possible that some of these people may be in on Wednesday.

Inspector Yes. There are a number of people with whom it is difficult to make contact. We will try and fill the programme up as we can.

1589 Mr. *Smith (to the witness)* Just a brief recap: we had established the object of the Basildon New Town Development Corporation, and that this was a self-contained and self-sufficient community that was to be created. Now in fact to this end, up to December 1968, I think you will agree with me because it is on your figures that your Development Corporation has spent £69,537,000? — I accept that figure, yes.

1590 Those were your figures, and in fact the total on new towns in England, the total which has been spent, is £453,239,000. In fact, Basildon Development Corporation—do you agree with me?—is so far the most expensive development corporation. — Yes, but of course we had a problem—that of rural slum clearance, which did not affect any of the other new towns.

1591 In fact, I do not expect you knew that I was one of the earlier members of staff of the Basildon Development Corporation? — Yes, I do know that.

1592 Curiously enough, I find a colleague here as well! Now, over a sixth of the new town development has been devoted to Basildon. When a new town was proposed and planned by Mr. Tweddle, who was the architect, the centre part of that new town—was it on an existing urban community? — The centre part of the new town?

1593 The town centre. — The town centre was not on an existing community. It was on the site of a few shacks.

1594 It was on the site of open fields, I can assure you—from personal experience. In fact, if in the cause of good planning it might well have been advisable to have centred your town centre in Laindon or Pitsea—would you agree with that? — Not in the circumstances, no. We are admittedly short of space at the town centre to meet central area needs, even for the population of 134,000; but the Commission have received a copy of our last plan report* and you will see in that that we do suggest that Pitsea and Laindon should be developed at a later date to cope with central area use which might otherwise have gone into the central area.

1595 You see, the County Planning Officer, Mr. Jennings Smith, in his proof on page 4 at 1.12,† says, "I consider therefore that the policy of concentrating new development into an existing urban pattern is soundly based". The new town is a new conception with modern architectural standards—do you not agree that that is the case, and that in fact this runs contrary to what has been said by the County Planning Officer? — I am sorry—I see no contradiction in this. Perhaps I do not understand your question. It is certainly a new town, it is certainly designed by present-day architects and planners. I am sorry, but I do not see the conflict.

1596 You see, the County Planning Officer is saying it is a good idea to put your new development into existing urban development — Yes.

* Copies can be obtained from, or inspected at, the offices of Development Corporation, Basildon.

† p. 11.

Printed image digitised by the University of Southampton Library Digitisation Unit

1597 But when the most recent new development took place within this area, it was not considered to be a good idea–in fact, they took open fields in the centre and they carried out their planning development from that basis. They did not try and impose it on existing urban development. – Yes. I think you are limiting your field by talking about "the town centre". The town centre comprises about 155 acres, out of a total designated area of 7,818 acres. The designated area boundary of New Town was quite clearly defined to include the shackland areas, which was the second half of our problem. Our terms of reference were two–to offer accommodation for London's overspill of population and industry, and secondly to clear that rural slum. So that within the 7,818 acres . . . I hope I am right in saying this, again I am open to be corrected if you think me wrong, because I am only talking from past knowledge of Basildon–I was not with the Development Corporation in 1951 . . . there were some 5,000 houses which were below housing standards, 78 miles of unmade road, and this presented the then Billericay and the Essex County Council with an enormous physical and financial problem, and it was in fact largely due to the initiative of the County and District Council in petitioning the then Minister of Town and Country Planning to create a new town there–it was largely through their initiative in petitioning in this way that the new town came into being, because they were worried by this problem.

1598 I think you have answered my question. Do you know what the gross density of the Development Corporation area is? – In gross terms, it is–forgive me if I do not attempt the arithmetic at the moment–the ultimate population is to be 134,000, and as I say the designated area is 7,818 acres . . .

Mr. *Smith* I think it is 14.

1599 *Inspector* Whatever the figure is, let us get this quite clear. Is all the land within the designated area to be developed? – It is to be for development, or for open space requirements–amenity, parkland, and so forth, associated with the new town residents. There is perhaps a marginal . . .

1600 Mr. *Frank* And the industrial areas? – That includes the industrial areas, the commercial areas, the parklands . . . some part of the parkland area will also serve a regional need, but I shall not attempt any split-down of them . . . it would be useless and wasteful of time.

1601 Mr. *Smith* Did you know that in fact the County Planning Officer of Essex really sets off on his premise with a gross urban density of 15–he is going below your standards. Do you know that? – Yes.

1602 That is on the basis of his academic layout–it lowers your standards. Do you realise that?

Inspector I suppose Mr. Bacon is responsible for the Basildon side of the business.

Cross-examined by Mr. Wood

1603 Just a few questions, supplementary to those answers that you have already given. Am I to understand that roughly speaking 8,000 acres are consumed for a population of 130,000? – That is so.

1604 Give or take? – Yes, in broad terms.

1605 So that, given your assessment–and, after all, the Essex County Council envisage industrial development as an ancillary development springing from the area, don't they? – Yes.

1606 So that industrialisation will take place within the proposed new urban areas? – Yes.

1607 In the same way, presumably as in the new town of Basildon? – Yes.

1608 If you accept this point, would you agree that speaking from memory the 19,000 acres envisaged as the proposed increase in urbanisation, or increase in population of 400,000 in this area, and accepting that always the figures of the Essex planner were taken on the lower programme, that from your basis this is a vast understatement and that in fact something in the region, if my arithmetic is reliable, of 30,000 . . .

Inspector Mr. Wood, I do not think you can ask this witness to act as your expert witness. He must deal with Basildon matters. I do not think you can ask him to comment on Essex County Council matters.

Mr. *Frank* More than that–if Mr. Jennings Smith's evidence is to be put to this witness–and I think he ought to have been cross-examined on this–it is better put correctly and not incorrectly.

Mr. *Wood* I cannot see where my questions have been inaccurate, and I would like to have asked this witness what he would have thought the acreage would be consumed by the 400,000 development.

Inspector I do not think this is a proper question, because this witness is appearing for Basildon, and I do not think it is right for Basildon to comment on policy matters of the Essex County Council.

1609 Mr. *Wood* I am sorry, Sir. (*to the witness*) My final point is this: I have understood from your remarks that you envisage that the A127 would be inadequate–it could not take any of the proposed new traffic from the airport, should it come to Foulness. – In the absence of figures I cannot be specific on this; but it is my underlying impression.

1610 I thought you were fairly specific when you said that at the moment, from Basildon, the A127 was the lifeline? – That is so.

1611 And you would be very disturbed if additional traffic were to be put onto it? – That is so.

1612 So you would accept the possibility that the A127 might not take the additional traffic, and a new roadway would be necessary to take it? – That is my view, yes.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. Bryant

1613 Mr. Bacon, I do not know whether you have stated some of the doubts that you have quoted for the Basildon Corporation figure, but would you agree that they go back to 1905? — Yes, certainly, for some.

1614 And in small parcels? — Yes.

1615 The district between Billericay in the north, Rayleigh, and Pitsea, was put up for sale in plots, way back in 1905. It was never seriously confirmed, but the place marked out in sort of cross scratches—a cottage here and a cottage there . . .

Inspector The question is . . .?

1616 Mr. *Bryant* Do you agree that those were the circumstances when Basildon Corporation took over? — Yes, although some part of the area you describe is outside our designated area.

1617 My point is that a great deal is being made of the fact that any proposition for developing this area is taking away agricultural land . . .

Inspector Mr. Bryant, you restrict yourself to questions at this stage; you may comment on these matters later, if you wish.

1618 Mr. *Bryant* Do you agree when the Basildon Corporation took over their area, that you could not by any means describe it as agricultural land, as land being used solely for agriculture? — With one or two exceptions, the land was not in use for agriculture.

Inspector Any more questions? Thank you, Mr. Bacon. Now Maldon Borough Council.

MR. KENNETH CHARLES ROBERTSON* called

Mr. *Robertson* Kenneth Charles Robertson, Town Clerk, Maldon. I sent a written statement to your officer setting out the reasons for my Council's representations in regard to the airport.

Inspector No. 69.

Mr. *Robertson* Is that the two-page document? I have not seen it amongst the copy documents. I understand you are taking these documents as read.

Inspector Yes.

Mr. *Robertson* I have nothing to add to that, unless you wish to ask for any clarification or amplification of the statements made there.

Inspector There may be one or two questions from the hall. Essex County Council? Kent . . . anybody else?

Cross-examined by Mr. Wood

1619 I reserve my position. There is a reference in your case to stacking areas. When you compiled your case, what stacking areas had you in mind? — There was a statement there might be a stacking area somewhere in the Maldon/Chelmsford area. It was that particular possibility with which my Council were concerned, because of the effect on the amenities of the area.

1620 You have read, or were you here while the evidence was given by the Essex County Council? — No, this is my first attendance.

1621 Are you aware that the probability, to say no more, is that there will be a stacking area in the area, not as far as Maldon, to be quite exact, but Chelmsford/Braintree, and possibly including Witham? — We have heard that suggestion.

1622 It is more than a suggestion; I think it is likely to be a fact.

1623 *Inspector* Mr. Wood, I do not think there is evidence to that effect, is there?

Mr. *Wood* I think there is.

1624 *Inspector* My recollection is that the witness said he thought it was probable, or they might have; surely this must be a matter for decision later when all the flight paths and so on are worked out in detail.

Mr. *Wood* It will be a question for decision later, but I think I can produce the type, Sir, to show this. When I asked the witness to identify Wethersfield into the actual area, he committed himself. There has been an error in the typescript, but he committed himself to an area Chelmsford/Braintree. I think the balance of probability is that it is going there.

Inspector If you put your question on that basis I am happy, but Mr. Dunsford is not the ATC.

Mr. *Wood* This is true, Sir. It is important, because so many authorities and people have based their case on what is fairly obviously to be a wrong premise.

Inspector As long as it is put on your assumption and not . . .

Mr. *Wood* With the greatest of pleasure. What would the reaction of your Council be?

Mr. *Frank* Since Mr. Wood is relying for this question on what is evidence from our side, perhaps you would be good enough to put it in full; that was on a minimum base of 8,000 ft for the stacking area.

Mr. *Wood* I accept that, but that also is challengeable in that Heathrow is 5,000. I am assured by some pilots for air routes that stacking at Heathrow has taken place from 2,000 ft.

Mr. *Frank* Either Mr. Wood wants my witnesses' evidence, or he does not; he cannot pick out the bits that suit him.

1625 Mr. *Wood* Naturally I must, as you would. Can we get back to the point? Would the attitude of your Council be affected were there to be a stacking area in that area? — I would think that the stacking area in the Chelmsford/Braintree area would still have to be close to Maldon and the Blackwater Estuary to be acceptable.

1626 Without wishing in any way to be offensive, to say that your evidence is entirely selfish, is it not this: how does this affect Maldon, and if it can be established

* See also p. 124.

Printed image digitised by the University of Southampton Library Digitisation Unit

that there are local factors which affect Maldon on the inference, the only inference to be drawn from your evidence, then in fact you must oppose it? — I do not think it is selfish in the sense we are thinking of Maldon only. We are thinking of the large number of people who use Maldon and the Estuary for recreational purposes. There are not many areas comparable with that conveniently accessible for people in Essex.

1627 How can you say that, when the whole of this area serves a tripper population in the summer, on the evidence of Southend to the extent of 8 million, and when Burnham and the area of Burnham and Mersea attract yachtsmen who come from all parts of the country, from the Midlands, London, and from that area to enjoy the peace and tranquillity of yachting? — Even Burnham and the Blackwater have not great reserves of space for recreation even now.

1628 They have to extend to the sea. — There are not so many other places in Essex where comparable facilities are available.

1629 This is precisely the point I am trying to make, and I hope in fact your Council are fully aware of the possible infringement of the amenities to have any airport on the doorstep. — Yes, we are.

Inspector Any other questions? I have no questions, thank you, Mr. Robertson. The City of Rochester, no. 43, and Strood Rural District Council, no. 5, are available to answer questions on their statements, if necessary.

Mr. *Keene* Has paper no. 5 gone round, Sir?

Inspector It should have done so; I have a copy. Is no. 5 available elsewhere?

Mr. *Wood* No, Sir; I have Rochester, but not Strood.

Mr. *Lawrence* My name is Lawrence from Strood; I have one or two spares, but not enough to go round the room.

Inspector Let us deal with Rochester first; are there any questions to put on the Rochester statement?

MR. C. WHYMAN* called

Cross-examined by Mr. Wood.

1630 When you compiled your evidence, was it in the light of the Roskill noise contours,† or did it have any relevance to the Kent County Council NNI contours?‡ — It was essentially on the Roskill report that was available at the time when this matter was discussed formally by the Rochester City Council.

Inspector Can we get the witness's name for the shorthand writer? — Whyman, C.; I am Solicitor to the Rochester City.

1631 Mr. *Wood* This being so, would you consider that you should modify your written statement in any material consideration in view of the fact that Kent states that 30 NNI, and it is, of course, subject to later investigation, might be a truer and more exact representation of noise intrusion? — In the submission that the Rochester City Council has made, it is stated that it is difficult at this stage to say to what degree the City of Rochester and its inhabitants are to be affected by noise, and indeed in the final paragraph we do reserve the right to submit more detailed evidence or to formulate a direct reaction to the proposal of Foulness as and when detailed information is available.

1632 So you may well find yourself in a position subsequently when more accurate information than 1961 figures become available, seriously to modify your position? — Indeed, this is the case as far as the City of Rochester is concerned, and I would say that this is the purpose of this stage of the Inquiry, to gather that information, and then make detailed decisions on the correct information as and when it is available. This is the line that the City of Rochester Council is taking.

Mr. *Wood* A highly prudent and highly constructive line, if I may suggest.

Inspector Any other questions? Thank you, Mr. Whyman. Since no. 5 is not going to be found very easily, it seems, I wonder whether whoever is responsible could come into the witness stand here, and go through the paragraphs quite shortly. This circulation of documents will be remedied, but not immediately.

MR. J. J. LAWRENCE* called

Mr. *Lawrence* I am Senior Administrative Assistant of the Strood Rural District Council. The statement at the present time before the Commission is essentially a general statement, which in general just describes the part of the area covered by the Strood Rural District Council, known as the Hoo Peninsula, it details settlements on the peninsula, particularly the main industrial, residential and holiday settlements. The Council reserves the right to comment at a later time when more information is available on noise contours and their effect, and the plan which is around the table, I understand, does indicate the main settlements on the peninsula.

Inspector You attitude is quite similar to that of Kent and of Rochester? — It is indeed, yes.

Inspector Any questions?

Cross-examined by Mr. Wood

1633 Only one small modification of the question I asked Rochester: they were based on the existing flight paths, or the proposed flight paths? — Yes.

1634 If the Essex County Council have their way and the flight paths are sent up the Thames Estuary also with

* See also p. 126.
† See attached wallet of maps and diagrams.
‡ pp. 91 and 92.

* See also p. 127.

Printed image digitised by the University of Southampton Library Digitisation Unit

the 30 NNI in consideration, what effect would this have upon your proposals? — I am not really able to say at this time. This would have to be considered again by the District Council. My own personal opinion is that they will probably object, but I cannot really tell you specifically at this time.

1635 But the revised flight paths are likely to cause complications to you rather than to take them away? — Yes.

Inspector We now are back on the programme: Foulness Island Residents' Committee, no. 33.

MR. P. A. ARNOLD* called

Inspector Mr. Arnold, I have read your submission; I have not yet been on the Isle of Foulness. We intend to remedy this omission while we are down here. Do you wish to add anything to the written statement? — No, Sir.

Mr. *Frank* I have read this submission with great interest. I hope it will not be taken as in any way derogatory if I do not cross-examine on it, but I do not think I have any particular questions on it, and nothing that has not already been canvassed or dealt with during the course of the Inquiry, or which will be reserved for subsequent stages.

Mr. *Wood* I would like to compliment Mr. Arnold upon his submission.

Inspector I agree with that.

Cross-examined by Mr. Wood

1636 If we wish to know any facts about Foulness, all of us know, I think, where to come; that they are reliable I am quite sure. I have just one or two questions on the submission. This is a sinking coastline, is it not, Mr. Arnold? — Yes, Mr. Wood. I do not know if everybody has received a copy of our amended paragraph, because as you appreciate, in the rush we had to question the islanders, and the mass of information . . . this is not an error, but something we cannot prove crept in. It is concerning the comparison of levels over the century between the 1860 geodetic survey conducted by the government, and one later carried on in 1921, with another yet in the beginning of the 1960s.

1637 *Inspector* What page is this? — Page 1. It begins: "For evidence of a more local nature . . ." We conclude the Island had sunk some 2½ ft. We can't prove it. I can if you wish go through why we chose this and why we decided to withdraw it, and why we can't prove it.

1638 Mr. Arnold, I don't think it would help too much. Any information on this point you might submit under the Stage III material, but I can tell you that the Commission has already commissioned trial borings of the island, and quite obviously we are very interested indeed in all the physical features which would affect any construction of an airport on the island; we would look into this quite clearly. — I think we can just say it is sinking and it is between one and two feet; it has sunk within the last century.

1639 Mr. *Wood* The basic point I would like to ask you about is this, whether the effect in your knowledge of the tides at Foulness is to erode the coast line, whereas in fact on the Dutch side the effect is to deposit the silt so scoured by the tides so that a comparison between one and the other is not strictly relevant? — No, it is not. The Dutch coast has a tidal change level of between high water and low water, 7 or 8 ft, and this coast a 17 ft tide is not an unknown thing at all. On the charts of which I have got a photostat, or part of it, the oldest chart I can lay hands on showed the islands of Havengore Creek which are non-existent now. I can remember the older men saying to me that the north shore of the island on the Crouch had shelf beaches, and one could walk to the low water edge but now you will have to struggle to avoid going over your knees. Bridge Marsh Island as was previously stated this morning was lost in 1897, and the scouring has taken place on the island and has deposited a tremendous amount of silt along the Crouch Shore. This eroding has been constant and one does not really notice it until one compares maps.

1640 Thank you. In a question asked you this morning, you seemed to suggest the tidal flows from your actual experience in the estuary tended in fact to be almost circular. This is important with reference to the evidence of the Essex River Board this morning of the disposal of largely untreated sewage out to sea. Would you from your local experience think there was some danger that sewage largely untreated so deposited could be washed back into the area of Foulness and in fact the area of the Thames and the Crouch? — Certainly, even more so on the Blackwater shores and Mersea Island, the Colne River, everything sweeps in this great circular motion from Margate, and in the great swing round across the Maplin Sands, and goes way up on the higher Essex shore, and the Mersea shore. I feel very sorry for those people if they get sewage because they certainly will unless it is well into the sea, and I mean well into the sea.

1641 A considerable distance? — A considerable distance.

1642 I notice you confirm in your evidence from your own personal experience that the agricultural yield at Foulness is extremely high? — It is true we are second to none.

1643 In quantity and quality? — In both, Sir.

1644 Have you got any direct evidence to support your claim about the quality? — The quality?

1645 Yes. — Oh, other than prizes, Sir, not particularly easily. I am merely adding in passing that the Rochford Hundred noted for its agricultural returns put up a challenge cup, admittedly only four years ago, but it has never been off the island yet.

1646 It would be true to suggest international awards recently have been won by farmers farming on Foulness?

* See also p. 128.

Printed image digitised by the University of Southampton Library Digitisation Unit

— Yes, there are two prizes which were won on the island at the Toronto Fair—this was in as everybody knows, Canada, the home of wheat growing in bulk and quality, and we were very pleased that we did succeed in obtaining two prizes that year.

1647 You do suggest—unfortunately your pages are not numbered . . .

Inspector They are numbered on the top right-hand corner.

1648 Mr. *Wood* I didn't know if it was my eyes or the print, but I could not see. You do suggest that objects on the sands at Maplin tend to become swallowed at amazing speed. — Yes.

1649 Have you any evidence in support of that?

Mr. *Frank* Yes, he gives it at page 6.*

1650 Mr. *Wood* I was afraid he had. — I will explain that if you wish. I have seen it happen. I thought this morning of the notable case of the disappearance and I mean disappearance or the loss of a yacht called the *Torren*. She was last seen laying at anchor in the swing, which is the navigable channel, and was asked by a passing fishing boat to accept a tow, and come in. They said: "No, we are all right. It is all right here, no trouble at all". They were never seen again, Sir. It was a big yacht. Curiously not a remnant of her structure was ever found, and she was a big timber ship. There should have been a mast or something but she disappeared, and she is one of many who have just disappeared. As to the wreckage on the sands themselves, they come up and come down. It is my personal opinion. There is a ship lying, or part of a ship, and if one didn't know what one was looking for one would assume that it was flatsand, and just a little ridge which outlines the edge of this ship. She sometimes appears and then sometimes disappears, but never more than three inches showing. It is a curious place, Sir. It is very hard for me to explain to a layman just the effect of these sands; they are a terrible place. They have been noted for centuries. As to the wreckage they lose in that swing—one has only got to look at an Admiralty chart to see the wreckage.

1651 From your evidence on page 8† I think it may be inferred reasonably that because of the peculiar local circumstances you yourself have little or no faith in the NNI contours. — I will be honest and I will say no: (a) because I don't really understand their purpose, and secondly I know the area so well, that when you hear the men talking half a mile away, and one has heard and can hear almost every day of the week aircraft taking off from Rochford, it seems curious to me that this contour shown should be so restricted. I have heard ships passing up the Edinburgh Channel, miles away, just the thump of engines. To me it is a fantastic area for sound. It is difficult to describe because one has never really taken conscious note of it. One just says: "Oh yes, that is the Mid Barrow Lightship", and it is the Mid Barrow Lightship.

1652 I did hear at secondhand this morning, but you at firsthand as a resident would be able to give more details on this suggestion, that the community of Foulness is a unique one, and that the human problems caused by disruption such as envisaged would be very great. I wonder if you could elaborate on that for us? — I will try.

Inspector I don't think he can do so more than he has in the text.

Mr. *Wood* I think he can; it is always useful to hear someone stating these things rather than reading about it. Some are more able to state problems than they are able to write.

Inspector This is very well put.

1653 Mr. *Wood* I quite agree. — Well, I will break it down very quickly; there are 44 family names on the island. There are one or two who are newcomers, like the school mistress, the postmaster, but of the families 72.6 per cent of them are related. It is a very involved and complex study which we are now busily involved in, that is including transcription of the whole of the parish registers, but it is a wonderful place because I can point at almost any man and say he is either a cousin, second cousin, or third cousin.

1654 *Inspector* Or vice versa. — Yes, and vice versa, and all know one another. It was famous for years that one could put down a pound note or a sovereign, in those days, and in the middle of the road, and no man would touch it. We are proud of that. We have no policemen; we have no requirements for such a creature.

1655 The oysters were different? — Yes, very much so. Mersea Island was always good for poaching and still is.

1656 Mr. *Wood* As I believe there was a score in a cricket match between Paglesham and Foulness—there is a great cause for doubt. So, it would be a complete destruction of a community? — In fact it would be the end; we are quite sure of it.

Inspector Any more questions?

Cross-examined by Mr. Bryant

1657 Can you tell me the reason for the closing of the Broomway to the public? — This is off the coast; it was in the late 1920s. It was not exactly closed; you can still pass along it if you wish.

1658 It is closed to the public. You can't go down the Fisherman's Head without a pass. — No, but once you have one you can travel along that way.

1659 You can? — Yes, such as it is.

1660 The Broomway has not settled much in these years. — That is not true.

1661 I went along the Broomway in 1907, and what I have seen of it since it has been closed, you can still go along with carts of about the diameter of wheels of . . . — That is not quite true.

1662 I will give you about two inches. — But what are you to gauge it against, Sir?

* p. 130 † p. 131.

Printed image digitised by the University of Southampton Library Digitisation Unit

1663 *Inspector* That is a very important question, Mr. Arnold. — What do you gauge, where is your datum? I have tried to find it; believe me, I have studied it.

1664 *Inspector* Any more questions? No. Just one point of detail. You differ somewhat on your cockle production from the Ministry of Agriculture; were you aware of that? — I thought you would ask, Sir.

1665 I have asked it. — What we said is not out of patriotism, or St. George of England, but we took the English Returns of 1964; the reason is because of the Welsh ports, who added periwinkles as a lump in with the cockles, and we could not break them down. The Maplin and Foulness Sands return about two-thirds of the nation—by nation: the English ports.

Inspector Thank you.

(*The witness withdrew*)

Inspector Is there anyone from St. Clements?*

Mr. *Blackall* I have nothing to add to my statement, unless there are any questions.

Inspector Are there any questions of Mr. Blackall concerning document no. 17? Any questions? No. No questions. Thank you.

MR. R. NEWBERY† called

1666 *Inspector* Do you wish to add in any way to your submission? — Well, Sir, having been here today, and listened to the various people's evidence . . .

1667 *Inspector* Would you speak into the microphone. — I am saying that having been here today and listened to the various people's evidence, I am more convinced than ever that Essex County Council gave *carte blanche* to the Commission to get on with it. Mr. Wood has amplified all sorts of problems that I have never dreamed of. I want to know—do I have to read my statement, Sir?

1668 No. Your statement has been circulated. You want to stand by it, that is all you need to say, is it? — Yes.

Inspector Any questions concerning document no. 41?

Mr. *Bryant* Can I ask an ancillary question?

Inspector I will come to you in a moment. Any local authorities? No. Now, Mr. Bryant.

Cross-examined by Mr. Bryant

1669 Are you the gentleman that circulated a proposal to collect £7,000 to fight this? — I was not.

1670 *Inspector* I am not concerned if he was either, Mr. Bryant. — I have complete confidence in the Roskill Commission's ability to sort the matter out.

1671 *Inspector* We will do our best to sort out the people who are . . . — Going to make a bit out of it and the people who are not.

Inspector I now come to the end of my official timetable for today. Are there any individuals I can squeeze in to save them coming back? The Residents' Association?

Mrs. *Kelly* I wonder if I might have the chance to say a few words to Mr. Frank?

Inspector No. You can talk to him later on.

Mrs. *Kelly* May I go to the witness box, because I think he was in some discomfort in the week.

Inspector Do you wish to make representations concerning the subject matter of this hearing about the local implications in siting the third London airport at Foulness?

Mr. *Frank* Perhaps I can remind you this lady is concerned with the Action Committee for Foulness, and she referred to my discomfort, as she called it, because she put in a paper followed by a witness proof. I shall be dealing with this matter in the Inquiry at a later stage. I am not making any complaint about it. Nor am I in the slightest bit discomforted.

Mrs. *Kelly* You would not like . . .

Inspector Come down to the witness box.

MRS. PEPITA KELLY* called

Inspector The point is, Mrs. Kelly, do you wish to make representations? On behalf of the Thorp . . .

Mrs. *Kelly* Shoebury Residents' Association—the Action Committee of the Shoebury Residents' Association, which is about 7,000 electors. We represent the South-East Essex Freshwater Angling Society, which has a membership of 210 here, and we also represent numerous other objectors to the Roskill Commission scheme. I must make that clear—it is the Roskill Commission scheme to which we are objecting. You may say that that is exactly the same as Southend Town Council is—I quite agree, but our members feel they have no connection whatsoever with any proposer or developer of this site.

Inspector What I want to get clear is this: you have put in a submission.*

Mrs. *Kelly* Yes, Sir.

Inspector What number is it?

Mrs. *Kelly* It is no. 58.

Mr. *Franks* The Action Committee is 58, Sir.

Inspector You did intimate earlier that you did not wish to appear—that is cancelled, and you are now appearing?

Mrs. *Kelly* Yes, because we did upset Mr. Frank so.

* See also p. 135.
† See also p. 136.
* See also p. 137.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector I think it is established that no one has upset anyone. You stand on these four pages, plus any observation you may wish to make?

Mrs. *Kelly* Yes. I cannot answer for the paper that was sent in, because I do not know much about this sort of thing. If Mr. Frank would like to question me on the original paper . . .

Inspector You have nothing to add on paper 58?

Mrs. *Kelly* No, we are quite happy with the information we have.

Inspector Are there any questions to Mrs. Kelly on paper 58?

Mr. *Frank* Well, Sir, I feel most . . . I was not aware that I expressed discomforture . . . I did say something about the documents being put in following our witnesses' evidence, but we are dealing with that and you have given me an opportunity of dealing with it at the end of the Inquiry—which I shall do—and all your questions, I assure you, will be answered at any rate to the best of our ability.

Mrs. *Kelly* Mr. Frank, could I say that our spokesman was nobbled at the starting post, if I may adopt racing terms—otherwise you would have more fun.

Inspector Who did the nobbling?

Mrs. *Kelly* I would rather not say! I am terribly sorry, Mr. Hunt . . .

Mr. *Frank* I can assure you that even if we had the dope, we would not know how to use it!

Mrs. *Kelly* I can assure you it was nothing to do with you.

Inspector Any questions to Mrs. Kelly about the observations of the Shoeburyness Action Committee—document 58?

Cross-examined by Mr. Wood

1672 Only a few questions, Sir. (*to the witness*) I am to understand that you are a last-minute volunteer, are you? – I am very much a last-minute volunteer.

1673 If not an oppressed woman, shall we say? And it is unfortunate that extraneous things made it impossible for your Committee to be represented in the way that it would have been had these things not been misrepresented? – Yes.

1674 That being so, all that I can now do is to say how grateful it is to find that one has such support. Could you tell the Commission how well based your support is—is it numerous? – Well, no. As I said, we do represent the Shoeburyness Association, which is 7,000 electors, and the South-East Essex Freshwater Angling Society, which is 210. We have numerous people in Thorpe Bay and as far west as Basildon who were a bit nervous about the situation here, and decided that perhaps they would like some independent representation.

1675 Would it be true to suggest that your influence is likely to be more felt in later stages of the Inquiry? – We hope so.

Mr. *Frank* I can assure Mr. Wood that Mrs. Kelly's influence has been felt at this stage of the Inquiry!

(*The witness withdrew*)

Inspector Are there any other individuals I can fit in now to save them coming on another day? (*No reply*) If not, I must reluctantly adjourn the Inquiry until 10 o'clock tomorrow morning, with the programme as shown on the amended timetable. Thank you very much.

(*Adjourned until 10 o'clock tomorrow morning*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

TUESDAY 13 MAY 1969

THE CIVIC CENTRE
SOUTHEND-ON-SEA, ESSEX

Before A. J. Hunt, Esq.

Oral evidence taken from:

Southend Ratepayers' Association and Thorpe West Residents' Association (*Mr. P. Macey*)
Port of London Authority (*Mr. N. N. B. Ordman*)
Royal Burnham Yacht Club (*Mr. F. Kemball*)
Leigh-on-Sea Shellfish Merchants' Association (*Mr. J. D. Knapp, Mr. R. F. Brown, and Mr. E. Osborne*)
Mr. J. H. Bryant
Mr. F. G. Williams
Southend-on-Sea Chamber of Trade and Industry (*Mr. R. A. Mathiesen*)
Working Men's Club and Institute Union Ltd. (*Mr. F. O. Morris*)
Tucker Browns Ltd. (*Mr. A. Cole*)
Sheppey Group (*Mr. R. J. Patrick, Mrs. M. Boston, and Capt. P. Wilks*)
Amalgamated Union of Engineering and Foundry Workers (*Mr. W. S. Kirkip*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Concerning today's programme, there are apparently no written statements concerning Number 38, the Southend-on-Sea Residents' and Ratepayers' Association, and Number 55, Tucker, Brown & Company Limited, but I will call first no. 38, Southend-on-Sea Residents' and Ratepayers' Association.

MR. PETER H. G. MACEY called

Inspector Please give your name and initials. — (Mr. *Macey*) Peter H. G. Macey. I am the Chairman of the Thorpe West Residents' Association. I am speaking here, Sir, with your permission both on behalf of the Southend combined Ratepayers' Association, and the Thorpe West Residents' Association,* which is no. 36. The two cases are fundamentally the same. It is not my intention to speak at great length before the Inquiry in the representations I have to make on behalf of the Residents and Ratepayers of Thorpe Bay. Others far more qualified than the Chairman of the Ratepayers' Association have already touched on the points listed by my Association.

You may recall, Sir, that my Association listed seven separate headings that the Commission might usefully investigate. Undoubtedly noise interference is the biggest single cause for concern amongst those whom I represent. The contours drawn on the plan† published by the Commission in the *Short List of Sites* have been questioned as has the reliability of the noise and number index itself; any variation on the siting of runways or any miscalculation of the contour lines can affect very considerably the lives of many people in the eastern parts of the County Borough.

I would ask the Commission to consider the many elderly people who have retired to Southend. I would ask too that they think of the hundreds of families with young children. In both these categories noise that might be regarded as barely intrusive to others is liable to become critically annoying.

If one gets down to basic facts it must surely be accepted that aircraft noise will never be welcomed in any area. It can cause very considerable discomfort and inconvenience and the attempts to minimise this problem are treated with some cynicism by many of my members. Even the suggestions of routing flights up and down the estuary itself will surely still cause considerable noise levels to be registered in most parts of Southend.

The town itself is a heavily populated area and I beg the Commission to bear this in mind when they come to evaluate the merits of each particular site.

My Association is also very concerned at the likely overcrowding of local facilities which would follow a clearance to build the third London airport off Foulness Island.

In particular I should mention the difficulties of the railways: the Fenchurch Street/Shoeburyness line is already running at maximum capacity during peak hours and for this reason a mere extension of that line into the airport, even as an interim measure, would cause very considerable discomfort and inconvenience to the 20,000-odd who daily commute to London.

As one who endures this form of torture I do assure you, Sir, that it requires very few more passengers on that line to make rush-hour travelling a nightmare.

Throughout the summer months the main roads into Southend bear very heavy traffic at the weekends and during the evenings. There is also considerable activity on the roads in connection with the industrial areas in Basildon New Town.

It seems to me that in the case of both road and rail, new communications networks will have to be laid out in advance of the operation of an airport at Foulness.

Other local facilities are considerably overburdened. The local hospital service is doing its very best to cope with the inflated population of the area. Many local people find it better . . . I am referring to out-patients . . . to travel to a London hospital for treatment already. Schools and housing, whilst normally adequate, are also not over-endowed locally, and I would hope that the Commission would feel that the development of these services should be at least kept ahead of any projected airport scheme which would necessarily vastly increase with the needs of a larger population.

Thorpe Ward of the County Borough of Southend has, like other areas, been troubled with flooding from the sea, and there is some apprehension of the effect that a large-scale reclamation of land in the estuary would have on low-lying parts of Essex. It seems that little positive research has been carried out by disinterested parties, and here again I am sure that the Commission will wish to satisfy itself in this direction.

My Association is also concerned at the possible loss of amenities and change in the character of the area that would follow the construction of an airport off Foulness. Southend is a pleasant residential area in which many people have come to reside in order to enjoy the amenities of a healthy coastal resort. The hinterland behind the town remains largely rural, and is regarded as one of the amenities of the area. The proposed airport will necessitate large-scale development, and we are concerned to see that this is properly controlled. There is some alarm that a concrete jungle could well develop in virtually the whole area bounded by the Crouch and the Thames westward as far as Rayleigh.

The limitations of water supply have been referred to by others, and I think that it is not necessary for me to go into that particular point.

Mr. Justice Roskill in his remarks to the preliminary meeting in London expressed a wish to test local opinion on the issue. I gather from the local press that one of our political organisations conducted a random poll in the High Street, and this resulted in a 75 per cent vote in favour of siting an airport at Foulness.

* See also p. 153.

† See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

It is, of course, difficult for a local organisation to test opinion, but my colleagues and I were very concerned to discover the depth of local opinion on this issue, and whether we had been representing members' views adequately in making objections before the Commission. To this end we conducted a poll of just under 200 residents and ratepayers in three roads of Thorpe Ward.

It appeared from this enquiry that 27 per cent were generally in favour of siting the airport at Foulness, 51 per cent were opposed, and 22 per cent did not know. This poll was conducted during April.

I make no claim for this poll; I am not an expert in that field, but the Commission will obviously be interested in the answers, and it is, in my opinion, an accurate reflection of the views of people living in Thorpe Bay.

The Combined Ratepayers' Associations of the Borough have endorsed the memorandum submitted to the Commission by Thorpe West Residents' Association,* and have further asked me to submit their view that the Municipal Airport at Southend should not become a liability to the ratepayers of the Borough as a result of the projected development at Foulness.

To sum up, Sir, there are many in the town who are opposed, *in toto,* to the Foulness scheme. There are others who are far from happy but would acquiesce subject to adequate safeguards. It is on behalf of these two groups that I have tried, briefly, to put a layman's point of view, and I am confident that the Commission will weigh the wishes of those I represent in the balance with all the other conflicting evidence put before them. Thank you, Sir.

Inspector Essex County Council?

Cross-examined by Mr. Keene

1676 I have only one point, and that is on the noise interference level. I am looking at paragraph A of your written submission, document 36. You will see where you say that the index is not acceptable, and the pattern can surely only worsen due to anticipated heavier aircraft that must be expected to use the third London airport in the future. — Yes.

1677 Was that written before you realised that there is an allowance made in those NNI contours for the increasing power of jet engines in the future? — I am not entirely satisfied that that allowance is accurate; that is the point.

1678 You are aware that there has been an allowance made? — So I am told, yes.

Inspector Any other local authority . . . Mr. Wood?

Cross-examined by Mr. Wood

1679 Just a few points: you make reference to a poll? — Yes.

1680 Could you tell me when this poll was taken . . . not yours? — The latter half of April.

1681 Not yours, the other one. — I am not qualified to speak for the Conservative Party at Southend, but this was early in the year, in January, I think.

1682 At a time when the local version of this airport was one out to sea, possibly 8 or 9 miles off the coast, and where everyone in the locality . . . not everyone, but most people in the locality . . . thought that aircraft would be taking off and landing over the sea, that the flight paths would be over the sea, and that the stacking areas would be over the sea; is that correct? — I agree entirely.

1683 So in fact it was taken with incorrect information, and on a challengeable premise? — I would agree that, too, yes.

1684 I think it is important to establish that. Are you aware of the proposals should the airport come, of increase in urbanisation in the area; you have seen the lobster's claw? — Yes.

1685 You are aware that Thorpe Bay is one of the sites chosen for increased urbanisation? — Very well aware, yes.

1686 Does it disturb you? — Considerably.

1687 Could you tell me why; is it true to say Thorpe Bay is the most desirable residential area in the Borough of Southend? — We really have to be careful here, Mr. Wood, or else many of my friends will not talk to me, but yes, I think this is fair comment, it is a desirable residential area, and the local residents would . . . it is difficult in a changing world, but they are probably more reactionary than most, and would like to leave things well alone inasmuch as they could do so.

1688 It might be true to say that this aspect of the problem would be more likely to affect them than noise? — It may well be, yes.

1689 Possibly even if jet engines can be made in the future which make no sound, and aircraft rerouted so they do not approach Southend, the members of Thorpe Bay would have great cause for concern? — This would be part of the loss of amenities I referred to, which is an all-embracing term; I agree with you.

Inspector Any other local authority? Any other questions? Now Port of London Authority, no 16.

MR. IVOR HUGHES called

(*Port of London Authority*)

Mr. *Ivor Hughes* I am the Solicitor of the Port of London Authority; I have one witness whose submission no. 16 has been circulated.* If I could raise one or two points before I submit him for cross-examination, the PLA's interest here is as the conservancy and navigation authority for the Thames, including the Thames Estuary

* p. 153.

* p. 155.

Printed image digitised by the University of Southampton Library Digitisation Unit

and as such the PLA are concerned with the effects on the regime of the Estuary which any works of reclamation and any dredging operations may have. You have already indicated that the Commission are very well aware of the point which I think has been made on a previous occasion concerning the hydrological consequences of any work in the Thames, and you have made it clear that the Commission will be investigating this thoroughly. The PLA are equally concerned on this matter, and they have detailed investigations in hand, and will help the Commission as far as it can as far as these detailed investigations progress. It has already been made clear also that the PLA has an interest in the Thames Estuary Development Company, which is investigating in depth the hydrological effect in the Estuary. The PLA are playing a prominent part in this investigation, it is right that they should do so, but they have not abrogated or derogated from their duties as the navigation authority, and along with those will be in a position to give an objective view of the effects on the Estuary. Our position is similar to that of the Southend Corporation; we are associated with TEDCO, but also recognise the need to stand apart from it, exercising our functions. The evidence we are putting before you today, Sir, is quite brief, and there are really two reasons for this. One is because, although we wish to indicate our interest, the detailed information on hydrological effects will be given later; and, secondly, we are conscious of the Committee's ruling that the Commission's terms of reference do not include the requirement to look into the question of a seaport at Foulness, with the possible exception of the cost aspect, at Stage V.

MR. N. N. B. ORDMAN called

Mr. *Hughes* Noel Nahum Beryl Ordman, you are B.Sc., C.Eng., F.I.C.E., and you are employed by the Port of London Authority as Director of Planning and Management Services? — I am.

Mr. *Hughes* I submit Mr. Ordman for cross-examination.

Cross-examined by Mr. P. Smith

1690 Perhaps you could give me some information. I want first to assess the control that you have within your territory—if I may so loosely describe it. Have you powers to control the size of a port that is established there? — Yes.

1691 You have powers to control the size of it—thank you. Have you powers to control the nature of that port? Perhaps I can put it . . . do you get my point on that? — If you are referring to its physical configuration—the answer is yes; and if you are referring to the nature of the operations that would be carried out in the port, I think the answer would be yes, also.

1692 What I am trying to get is, could you say, "this is a port from which no passenger traffic would be allowed"? — This is rather a legal point.

1693 It is a pertinent one.

Inspector I think Mr. Ordman's position is that he is an engineer, and does not want to trespass on policy matters.

Mr. *Hughes* The answer would be "yes". The Port of London Authority could control this, and also the Ministry of Transport could do so.

Inspector Somewhere along the line, there is control.

1694 Mr. *Smith* Somewhere along the line there is control. Similarly, would you have powers for controlling freight and particular types of freight?

Inspector Mr. Hughes, if you think this is your concern . . .

Mr. *Hughes* The answer is "yes". Anyone who builds anything in the Thames needs a licence of the Port of London Authority, and in the licence the Port of London Authority can impose conditions limiting the type of work that is done.

1695 Mr. *Smith* A licence—annually?

Mr. *Hughes* No—a licence for the erection. No one can build anything in the Thames without a licence for a structure. Conditions can be attached to the licence.

Inspector An annual licence for large capital expenditure would not be a very . . .!

1696 Mr. *Smith* If conditions change, can the conditions attached to the licence change?

Mr. *Hughes* Yes, there can be an application to change the conditions.

1697 Mr. *Smith* Have you powers to control the size, or, shall we say in layman's terms, say, the tonnage, size of vessels coming into a port in the Thames?

Inspector I think the reply might come from the most appropriate quarter.

Mr. *Hughes* A limit on the size of vessel going to a licenced property—yes, there could be a condition limiting the use of the premises to a vessel of a certain size. Within the port as a whole—any vessel which can get in has a legal right to use the port.

1698 Mr. *Smith* Again—are there any international regulations on these lines about particular size of vessels entering ports?—anything like that?

Mr. *Hughes* Not that I know of.

1699 Mr. *Smith* You have said that you can control the size of the port—I take it that this will be the number of berths. Would this be . . . I am sorry, I am a layman myself . . .

Mr. *Hughes* It is the whole configuration.

1700 *Inspector* Is not this the position—that either your Authority, or someone, has complete control over the whole establishment, form and operation of a dock complex?

Mr. *Hughes* The Port of London Authority has a certain amount of control; the Government and the Ministry of Transport have, for any form of large dock

Printed image digitised by the University of Southampton Library Digitisation Unit

development. The Board of Trade also have control for the protection of navigation.

1701 Mr *Smith* (*to the witness*) You have considered here—shall I say loosely—the situation of a seaport in connection with this inquiry. Can you tell me the number of people who would be primarily employed in connection with the project? – This is a matter which we are now studying in connection with the Thames Estuary Development Company. But if you would like an opinion at this time—a tentative opinion—the number of people would be counted in, perhaps, hundreds. This is the order of the number of people who might be employed in the port.

1702 And have you any idea of the number who might be employed in secondary employment relating to the port? – We have not yet made such an estimate, and it very much depends on what is meant by the secondary employment—whether this is an industrial complex, or those activities directly related to the handling of cargo; but if you like to have an example of the sort of thing that might happen: if there were at some future date refinery and petro-chemical complex developing within the environs of the port—Fawley Refinery and Petro-Chemical complex, which is the second largest in Europe—2,400 people.

1703 Are you thinking in terms of using this port for deposit of oil—oil refineries—supply for oil tankers? – Yes.

1704 And yet you already have just further downstream, port facilities at Canvey. – Yes. The idea we have in mind is that there would be an oil discharging terminal within the Maplin Sands Port area, and the oil would be fed to existing refineries by pipeline.

1705 But if in fact it was found that there was sufficient demand here, with the situation with berthing facilities and so on and so forth, it seems to me that what you anticipate is that this is going to be a port for oil tankers, generally speaking. – No. As I say, the planning of the port is now proceeding, and we are not in a position to say at this time what our final views are about what the port will look like. The Thames Estuary Development Company is doing the planning and we are associated with them in this, and at later stages in the Commission investigations, will be giving evidence of the sort of information that you are asking for.

1706 It is not strictly so . . . it could be, say, bulk freight. – The sort of thing that at this moment we consider as suitable for the deep-water port which we are planning, are oil, other bulk cargoes, and at some future date, very large container ships.

1707 Very large cargoes requiring storage areas? – Yes—I imagine that there would have to be some buffer storage.

1708 Then I presume that the employment in relation to this—it could be a very large area—you would regard as being part of the secondary employment? – No, I do not think so. I think they would be part of the port personnel, if you like. The numbers of people involved in looking after bulk storage facilities are very small.

1709 I am a layman—when I think of Port of London Authority I think, naturally, of Tilbury Docks and so on and so forth . . . – Can I help you on this? I think I know what you mean. You may be thinking in terms of Tilbury Docks, Royal Docks, where we have hundreds of thousands of dockers and other people employed. These docks—Tilbury, Royal Docks if you like—are engaged also with general cargo, a miscellaneous collection of bits and pieces and all sizes of packages and crates; and because of this they require quite a large number of dockers. But the sort of goods at the Maplin Sands development would be bulk cargoes of a very largely mechanised handling nature, requiring very few people. Let me give you a further example: the berths which would require the most people would be the container berths. A cargo of 5,000 tons discharged from a conventional ship would require something of the order of 120 dockers working on that ship, but a cargo of 10,000 tons from a container ship would require 13 or 14 dockers only, and this is the order of tonnage. The only general cargo as such that we would conceive of as being handled at the Maplin Sands would be this container type of cargo, and the rest would be bulk cargo.

1710 Yes. This would be within the terms of your licence, really—going back to the licence here. If circumstances changed, then the licence terms can be changed. You see, what I am thinking is this: a deep-water port—there could be pressure for this to be primarily a passenger port . . . I can see grounds for this. It would mean that from other deep-water ports passengers could avoid the London conurbation to get to the North Sea. – Yes.

1711 I know this is not what you have in mind, but I put it to you that if there were pressures there, is not this a possibility, that ultimately this could be the case? – I think it would be a very brave man who would rule it out as a possibility. Everything is possible. It is just we have not considered this a particularly suitable area for a passenger port, not at this stage do we plan to make such facilities available. What might happen in some years when, as you say, pressures might build up on these facilities to be provided, I would not care to say.

Cross-examined by Mr. Wood

1712 Just a few questions; if I can refer back to this question of licence. It would be easier to say, wouldn't it, that docks complex would not in fact be available unless the facilities were entirely specialised. For example, a hydrocarbon oil berth, geared to the discharge of hydrocarbon oils, that facility would be such as to become generally available, and the only inhibition that would be imposed would be first of all availability of equipment and secondly the permission of the types of goods that could be imported at this particular place that would be laid down in agreement with the Board of Trade by Her Majesty's Customs and Excise? – I think there would be two types of facilities. There would be one group which would be provided exclusively for the particular operator, and there would be another group

Printed image digitised by the University of Southampton Library Digitisation Unit

which would be, as you might call, a multi-user or common user facility which anyone might use.

1713 You say "exclusively", but this would be going counter to the general Port of London Authority practice, would it not? — No. We have a number of berths which are let exclusively for a particular operation.

1714 Except for periods of crisis when they become generally available so long as the actual terms imposed by the Customs and Excise governing the type of goods to be discharged, in fact, unless those terms are complied with. — I am not clear what answer you require of me.

1715 The point I am making is that in the Port of London Authority docks, although certain berths are made available exclusively generally speaking to the various lines in times of crisis, these wharves and berths are used generally. — I believe that is true, that in most of our agreements for berths leased for the exclusive use of operators there are clauses which permit of other users when the berths are not being used by the exclusive users, or lessees.

1716 Yes. — But I don't know that there is any particular custom of the port with regard to what happens in emergencies. I think we make *ad hoc* arrangements in agreements with everybody concerned.

1717 I assure you you do. The other point I would like to make is this: is this the first excursion into the airport business of the Port of London Authority? — I would not like to call it "an excursion into the airport business".

1718 If it is not, why are you here? — We see very considerable advantages in a development which includes both a major airport and seaport development, and we have been concerned to make this view known to the Commission, and also to indicate to the Commission that as a statutory authority concerned with the Thames then we have a concern with an airport which might find itself on the reclamation within the Thames, and those are the reasons why we are here.

1719 Might it be fair to hazard a guess that in the consortium the contractors are interested in the construction; the Thames Haven Oil Group are interested in the hydrocarbon oil side of it; the Southend Corporation are interested in the airport side of it, and the Port of London Authority would be interested in the residual part of the dock complex. — I would not like to state what the interests of the individual members of the Thames Estuary Development Corporation are; this is a matter for them, but the grouping, the coming together of these parties has really at this stage been a marriage of skills and knowledge.

1720 Not convenience? — Yes, and of convenience, because at this moment we are a planning company, and the different parties bring different types of expertise to the development of the plan.

1721 In your planning, as far as you have gone, could you give some indication as to juxtaposition of the airport in the dock complex? — No, I would not like to do that; it is too early; it is rather too early to do that.

1722 You could not even commit yourself as to whether the airport is in the north or the north-east of the proposed complex, and the discharging areas to the south and south-west? — No. But, I would say this, that wherever the airport might find itself on the Maplin Sands or in that area, and there are very special considerations which attach to the siting of the airport on which I have no expert opinion to voice, but wherever it might find itself it is my view it would also be possible to site a port.

1723 Could you go into slightly more detail as to the size of tankers you would envisage using that hydrocarbon oil part of this big dock complex? — Again this is rather too early because we are not sure at this moment how deep we can dredge these channels and maintain them. The top limit of draught and it is draught which is a consideration, of course, which is most crucial, the top limit of draught is that draught which will rule in the English Channel. We are concerned that other Continental ports are planning to receive the larger tankers that can navigate the English Channel, and there is a grave danger that if these tankers can go only to the Continental ports then the United Kingdom will become an off-shore island of North Europe, and will receive its cargo by trans-shipment with a cost of many shillings, possibly pounds, per ton, and we think it is extremely important that the Port of London should be able to take any ship which Rotterdam or Antwerp, or Dunkirk can take, and so we have got to see how far we can go in terms of depth, and this is one of the major parts of the investigation which is being carried out now.

1724 Would it be true to draw the inference that the present facilities at Canvey, Foulhaven, and Thames Haven can only cope with tankers up to a particular figure? I think it is in the region of 120,000-130,000 tons, isn't it, and that you envisage this dock complex, if it comes at Foulness, to be capable of handling the larger ones? — That is true.

1725 So that in fact it is a dock complex additional to those already established but still not fully utilised in the estuary of the Thames? — I think those berths are reasonably fully utilised. There is a limit on the level of utilisation of oil terminals for technical reasons which you might not want to hear, but as these things go they are pretty well utilised in fact, and you will also, I think, be aware that oil terminals are used not only for taking in the crude but also for exporting the product. This use will continue. Now, the operators of the existing terminals between Canvey Island and Mucking will, of course, be able to continue using them if they so desire, but they will also have in future if the Maplin development goes ahead, facility to draw their oil by pipeline from larger tankers than are berthed on their jetties.

1726 Yes, but the picture—and I hope this is a fair one—is of large tankers in excess of, say, 200,000 tons and upwards discharging their oil adjacent to an airport either into storage tanks adjacent to the tankers or for

Printed image digitised by the University of Southampton Library Digitisation Unit

that oil to be pumped into refineries at other places like Canvey, Corringdon, Foulhaven, and the like? – Well . . .

1727 Is that to be so? – The word "adjacent" is a relative word, and I don't know what you mean by "adjacent".

1728 Can we define it? Can I say, within ten miles? – Well, I don't know. The location of the discharge point of the terminal is something which has not yet been decided. It could, for example, take the form of an off-shore island well away from the airport, conceivably more than ten miles away from the airport, but this is something we have not yet decided on.

1729 If you have not decided on it yet, on what basis are you going to construct this model to test the danger of tidal flow, and flooding? – The model will test a large number of possible plans.

1730 Up to the very largest? – Oh yes; yes, it will test a large number of possibilities in terms of, first of all, configuration of the reclamation. This is its main purpose, in that we have got to be satisfied as the Port of London Authority that this reclamation will not have a deleterious effect on the rhythm of the Thames. Its second purpose is having regard to the optimum and shape of reclamation to see where port facilities might be located, having regard to where it is decided to put the airport. As I say, it will look into the location of an off-shore oil terminal, where this might meet the problems of the submarine pipelines, and so on, and it will examine the feasibility and cost of dredging very deep channels, and how far one can get up the estuary.

1731 I do understand that, but the point I would like to put to you is would you regard it as good planning to put a major airport and a major hydrocarbon oil installation, and use huge tankers of the size of 350,000-400,000-500,000 tons immediately adjacent one with the other?

1732 *Inspector* Your figures are for tonnages?

Mr. *Wood* Yes, not the numbers, Sir. – Yes, I think it might make very sensible planning.

1733 I disagree; one would have thought that it introduced a hazard and an awful hazard immediately on the doorstep of an international airport. – Well . . .

Inspector That is a disputation, not a question.

1734 Mr. *Wood* Yes, but one final point I would like to make about the size of these channels: I am sure you are aware there is a campaign (not led by me) already started to inhibit huge tankers of the size of 400,000-500,000 tons from approaching anywhere near the coastline of any civilised country–are you aware of that? – Yes, I am.

1735 You also are aware of the *Torrey Canyon,* aren't you? – Yes, certainly.

1736 Are you prepared then to run the risk of something of that kind happening on the doorstep or coast of Britain and the west coast of Europe? – I don't think I should even attempt to answer that question. The approach of very large tankers and their movements through narrow waters is not a matter for the Port of London Authority. Our job is, if there is a need for these tankers to be loaded and discharged in British waters, and in British ports, then we as the largest port in this county have got to be in a position to provide these facilities and if we do not there is a great danger that they will go to foreign ports with the results which I have described earlier. The matter of whether a tanker of this size should be allowed to steam up the Channel at all is hardly a matter for us; it is a matter for governments I suspect.

1737 I am very gratified to hear that too. Can we turn to the question of containers and container ships? This is the next big flow of traffic to expect to come to the Foulness port complex. – It is one of the types of traffic we are planning for.

1738 How do you reconcile this with the fact that the present Orsett Container Depot is completely underutilised at the moment. – The Orsett Depot is not yet completed and commisioned.

1739 I won't press you for the reasons for that, but it is not in full use or operation. – It is not in use at all.

1740 I am saying to receive . . .

Mr. *Hughes* I don't know whether this is taking us very far in regard to an airport, but I would remind you of Mr. Clement's letter, that the Commission's terms of reference did not look into the seaport requirements, but look to the question of an airport at Foulness. It seems to me Mr. Wood is examining the question whether a port is needed or not.

1741 Mr. *Wood* Two problems are so particularly interrelated, particularly in this cost basis. I think we must challenge this, if only *en passant.* If I have gone too far . . .

Inspector The proof says, "As the Port of London Authority we see a need for deep water facilities", so the introduction proves itself. On the other hand I feel, in fact I am quite certain, you have made your point; we know what is involved, and we know the difficulties of taking a view at a later stage of how possible port developments may affect possibly an airport development. I think you have introduced your caveat and that is enough at this stage.

Mr. *Wood* If I can trespass on your indulgence just once more.

Inspector We will leave the container port out of it for the moment, the one that is not working.

1742 Mr. *Wood* Yes. I ask whether the PLA have not had plans which I think were about to be concluded for the development of the Mucking Flat area, as a deep-sea terminal, to take the place of those installations in London Port which seem to be running down for a variety of reasons.

Inspector Where are they?

Printed image digitised by the University of Southampton Library Digitisation Unit

1743 Mr. *Wood* Roughly between Gorringham and Thames Haven—is that right? — They stretch for eight miles east of Tilbury Dock.

1744 They are on the map over there in red. — No, they are not. As a port authority we deem it part of our job to have a view about the development of all the riparian areas of the Thames where there is a possibility of getting reasonably deep water, and the area between Tilbury Docks and Shellhaven is one such area and, indeed, we have carried out certain hydrologic investigations to see if we can get deep water alongside. At the moment as you know there is not deep water alongside there. We find we can. We think it is essential for a port authority to be able to respond to enquiries as to availability of land adjacent to deep water, and this is why we do these investigations, but there is nothing inimicable between the possible development of the Mucking area and the Canvey Island area. The growth of the port over many years ahead will be such as to exploit both areas, particularly as you have hinted the trend is for the port to move seaward and for the up-river installations gradually to become obsolete.

1745 You used the words "growth of the Port"; is this strictly true; would it not be better to use the word "development", because is it not true that the London Port is not growing; if anything it is contracting? — No, it is not contracting. It is not growing as fast as we would like it to grow. We have to do something positive about that. You might call that positive development, if you like.

1746 I challenge you on whether it is growing or not; in fact as regards gross tonnage figures, unless some fiddle is done on hydrocarbon oil brought into this country, but on general merchandise I put it to you that London Port is by no means growing; it is contracting? — That depends on the period you take, Mr. Wood. The figures for this year are about the same as they were last year.

1747 The final point on this that I would put to you is that we are in danger of finding ourselves with a white elephant should you get your dock complex, because of this fact, that London Port is not growing, if we get this dock complex at Foulness? — The investigation which the Thames Estuary Development Co. is carrying out is not only an investigation into the physical factors, but also into the total economics of such development. I just would simply say that we in the Port of London Authority think that the Port of London must be developed in this sort of way to provide the sort of facility needed in competition with our Continental rivals. We cannot sit back and say: we may be contracting, therefore we do nothing about it. We observe the situation, and say: we have got to get out and be building, and this is precisely what we are doing.

1748 I am not so sure that your desire to resite a major part of London Port is not conditioned by your inability to control the labour force already employed within it . . .

Inspector Mr. Wood . . .

1749 Mr. *Wood* I have made my point! Could I come to more detailed questions about the effect, should the airport development come, on the area of your jurisdiction as an authority. Do I understand that the Port of London Authority control the sewage discharged into the Thames Estuary? — We have certain controls over what may be discharged.

1750 Am I right in saying that in the main the Borough of Southend on Sea discharge untreated effluent into the Estuary?

Mr. *Hughes* If I can help you, the legal position is that the PLA are not the pollution authority in the Foulness area; they are not the pollution authority in the Thames Estuary.

1751 Mr. *Wood* Do not they have some control over the quantity and nature of the effluent discharged by the Southend Council into the Estuary? I was given to understand that they do.

Mr. *Hughes* I am not sure of Southend, but they are certainly not the pollution authority in the Foulness area.

1752 Mr. *Wood* Would you be happy at the discharge immediately seawards of the dock complex of 30m. gallons of untreated sewage daily from the industrial complex suggested by the Essex planner as being the inevitable concomitant of the airport at Foulness?

Inspector You are postulating untreated, are you?

1753 Mr. *Wood* I gathered it was only going to be subjected to primary treatment, and certainly not properly treated. You could not take a glass of water immediately at the outflow, as you can do at some sewage stations.

Inspector There is a difference between black and white, as it were.

1754 Mr. *Wood* Yes, this would tend to be blacker than white. — You used the term 30m. gallons of sewage, which is a very small quantity of sewage in terms of what authorities have to handle, and you have got to consider it in the context of its mixability, and its dilution, the enormous volume of water into which it will be discharged. This is the sort of thing which has got to be examined with the greatest care by the several authorities, the Urban District Councils, the County Councils, and others who are concerned with these matters, and there are abundant trials to ensure that nuisances do not occur. In this sort of exercise the PLA will be concerned in, this is the sort of matter which the planners, Thames Estuary Development Co., will be looking at in concern with the authorities who are specifically concerned, and have statutory duties about these matters. I cannot go into detail as to whether I personally think 30m. gallons a day of raw sewage is a good thing or not.

1755 The picture I got yesterday from the Essex River Board was that there was a great threat of contamination because of this 30m. gallons of virtually untreated sewage being discharged into the sea at this place, that

Printed image digitised by the University of Southampton Library Digitisation Unit

there was great danger of interference with amenities and soiling the beaches, and fouling tidal ways in the immediate area of the Crouch and Thames, and this would concern you as an authority, I take it? — Yes, we would be very much concerned about this, and I think that this is a matter which we would, working with other people, attempt to avoid. This is a situation which we would attempt to avoid.

1756 By insisting upon the sewage being treated, being given secondary treatment? — I do not know to what extent we could insist on anything.

Inspector Mr. Wood, the witness has very rightly said he cannot deal with detail at this stage. I think he cannot do so.

Mr. *Wood* Thank you.

Inspector Any other questions?

Mr. *Newey* I am John Newey, and I represent the Sheppey Group.

Cross-examined by Mr. John Newey

1757 On the southern side of the Thames Estuary there is a large and important river called the Medway, is not there? — I believe so!

1758 In fact I think it is not subject, is it, to the control of the PLA? — No.

1759 It is subject to the control of the Medway Conservancy, is it not? — Yes.

1760 The investigations which you are setting in train at the present time to discover what would be the effect of converting into dry land part of the Maplin Sands area, does that set out to test what the effect would be upon the River Medway? — Yes.

1761 Is the Medway Conservancy taking part in the exercise? — Not directly, but we have had some discussions with officers of the Conservancy, and we will consult them as soon as the exercise gets to a situation where they might conceivably be involved.

1762 In fact the shipping using the Medway is such, is it not, as to make the Medway one of the major ports of the United Kingdom in its own right, is it not? — It is a considerable port, yes.

1763 I think the figure for tankers alone last year exceeded 1,000 did not it? — I dare say.

1764 I appreciate that the Medway is not under your control, but it is all really part of the same system of waterways, is it not, leading to the south-east of England? — Yes.

1765 From answers you gave to the last questioner, I gather that the airport and a new port for shipping could be as much as 10 miles apart? — They could be.

1766 In fact, I suppose really the airport and the shipping port could be quite separately developed? — Now you are pressing this just a little bit, and I am not sure . . . if I say yes, I am not sure what this means. One of the enormous advantages we see of some sort of juxtaposition between an airport and the seaport is that they would share, and therefore sensibly exploit, the very extensive land links which must inevitably be provided for the airport, if you like, and hence the degree of separation, geographical or physical, would have to have regard to this point, and I am reluctant to be pressed about the degree of separation, because these are planning matters which we have not gone into fully yet.

1767 Where you see an advantage lies in the fact that perhaps the same major road could serve both; is that the sort of situation you have in mind? — Yes, indeed.

1768 You did say, for instance, that we might have the new port development on the Mucking Sands; we might still see at the same time a new port development on the Maplin Sands; there could be various port developments, could there? — Yes.

1769 Is it not right that one of the points on this system of waterways where there is very deep water is in fact at Sheerness? — It depends what you mean by "very deep water". I think that the size of tanker, for example, that can be discharged at Sheerness, if a tanker were to go there, would be of the order of 60,000 deadweight tons. Ten years ago this was a very large tanker, but today it is a smallish seagoing tanker. These are matters of relativity and quantity. In our planning for the deep-water channels for the Maplin area, we would seek to go way beyond this order of magnitude.

1770 So far as the starting point is concerned, which provides the deeper water, Sheerness or Maplin Sands? — Maplin Sands at the moment, of course, does not provide deep water; it dries out, as you know.

1771 At any rate at Sheerness one would have a start that already one has deep water fit to take a tanker up to 60,000 tons? — No, as far as I know there are no, or practically no, facilities at Sheerness for the discharge of tankers. It is used as a general cargo port. One of the jetties has got no deep water.

1772 As far as freight is concerned, would there be any difficulty with regard to Sheerness as the site for the port? — I would not like to appear to be denigrating Sheerness or any part of the Medway, for which I have the highest regard and respect, but we in the PLA have always taken the view that the optimum side of our estuary for development is the north side, because of its excellent links to the industrial Midlands.

1773 *Inspector* Mr. Newey, the real purpose of this hearing is to investigate local implications of the airport at Maplin; I wonder to what extent a comparison between the possibilities of Sheerness and Maplin as a seaport is relevant.

Mr. *Newey* The reason for the questions is that one of the alleged attractions of an airport at Foulness is that it could be adjacent to a seaport. What I am endeavouring to do is to enter a caveat, was the expression used a moment ago, on behalf of the Isle of Sheppey that that might well provide the place for the seaport, and put the

Printed image digitised by the University of Southampton Library Digitisation Unit

airport on the other side of the river, if it were thought appropriate.

Mr. *Sturgess* I represent the Essex River Authority.

Cross-examined by Mr. Sturgess

1774 This question of the model, do I understand that this is no longer a probable model, but a certain model? — Yes.

1775 Can you tell us who is going to construct it? — The arrangements have not been finally made yet, but in all probability it will be the Hydraulics Research Station at . . . we are not quite certain if it will be at Wallingford, but it will be under their scientific control.

1776 How long is it anticipated it will take to construct? — To construct it?

1777 And evaluate the results. — Again this is not finalised yet; the Thames Estuary Development Co. is at the moment just going through the final programme. It is something like this: the first stage of the investigation, which is survey and a detailed desk study based on information we have already, should be completed in time to give the necessary advice to the Commission by the end of June of this year. By that time, the first of what will probably be two models will have started to be built, and the results of the first model experiment should again be available to the Commission, I hope, by the end of this year, and the target is November of this year. Then there will be a further stage which might take to the end of next year, but this will be a stage which will be more closely concerned with testing the feasibility and economics of the channels. By that time one will have already cleared all problems connected with the optimum shape of the reclamation, and the effect of the reclamation on the regime of the Estuary. This is a rough timing, as I say, it has not been finalised.

1778 Can you tell us what sort of area this model is going to cover? I think I should tell you that the Authority's engineer yesterday in cross-examination stated that he thought the area would be from Clacton in the north round to Canvey Island on the Thames in the south. What sort of area, comparing that, are you having gone into? — I think would tend to agree with that. It might even be a little bigger than that, but that is the sort of area.

1779 Who will be interpreting the results from the first model in November if such be the date, and at a later stage. What body will be responsible for the interpretation? — I think the broad primary responsibility will be the Hydraulics Research Station at Wallingford. Naturally, we in the PLA feel that we have certain powers of interpretation ourselves, and we will consult with Dr. Kluk, for example, of the Ministry of Defence, and any other authoritative person or body in the country, who we think can be helpful to produce an answer which everyone will accept.

1780 You will be looking at these results, not only as a partner in TEDCO, but as the body responsible for the Port of London? — Yes, we will have to be satisfied as the statutory authority.

1781 Would you also contemplate, in delineating these results and drawing conclusions, that the Essex River Authority might well be concerned in the effect on the regime? — Yes, I believe we have already had some discussions with the Authority, and we must have some more, when we have got something to talk about.

1782 So that we can look forward to consultation on the model as it progresses? — Certainly.

Mr. *Kemball* (*Royal Burnham Yacht Club*) Thank you, Sir, my question has now been put.

Cross-examined by Mr. Hugh Bennett

1783 I appear on behalf of the Leigh-on-Sea Shellfish Merchants' Association and a fisherman, Mr. J. D. Knapp, and three firms of whiteweeders. What I am primarily interested in is paragraph 4 of your statement. As I understood from Mr. Sharman, who was the Essex County Council's expert on this matter, the level of the Maplin Sands would have to be raised some 13 ft, in addition to which there would have to be built a sea wall. Obviously the material for this has got to come from somewhere, and presumably it is going to come from dredging channels, is that right? — That is the intention, yes.

1784 Presumably if enough material could not be supplied from the channels, it would come from various banks which we see on your map,* is that right, for instance the Barrow Sand or the Sunk Sand, something like that? — Not necessarily so.

1785 Have you done any research on which channels you propose to dredge? — We are examining four possible channels.

1786 Which channels are those? — Have you got a map in front of you?

1787 Yes, I have got your map. — I am afraid this is not a very good map. Mr. Hunt, I am in difficulties here, because I have not come prepared to answer questions in detail of this nature, and I have not brought the detailed charts which would enable me to answer this specific question.

1788 *Inspector* I do not think the questions can be answered in detail, because they must depend finally on the model, must not they? — Yes.

1789 *Inspector* Can you give any indication that would help Mr. Bennett?

1790 Mr. *Bennett* I can tell you what I am principally concerned about; I am principally concerned about the fishing grounds. I want to know what disruption of the Thames Estuary is going to take place by all your dredging operations; that is my point. I want you to help me on that. — You can see the fingers; this chart shows itself as, if you like, four fingers. By and large these are the lines which we are looking at, although they do not necessarily follow them precisely.

* Not reproduced. Copies available from the Director of Engineering, Port of London Authority, Trinity Square, London, E.C.3.

Printed image digitised by the University of Southampton Library Digitisation Unit

1791 Yes. – Nor are they the limit of the possibilities that we will look at.

1792 Would you agree that it would be possible to take material from these things I see . . . are they sand banks? – They are shoals, yes.

1793 Is that where material could come from for the reclamation on the Maplin Sands? – I think we would try, as far as possible, to obtain all the material for reclamation by dredging the channels themselves rather than the banks. But you will appreciate that as you deepen a channel, so you inevitably widen it and so you do encroach on the banks.

1794 We do not know exactly the exact layout of where the airport is going to be exactly; but would it be you intention to dredge the channel starting from the words "the wall" and then running north-east to the north-west of a bank called "West Barrow Sand"–would that be one of the channels you might dredge? – It might be.

1795 Can you tell us when you or the Thames Estuary Development Company would be in a position to give more detailed information as to what you are going to dredge? – Well, I would hope that by the end of this year we would be able to advise the Commission about this–if they wished to know; but further information, and firmer information, would have to wait a further year.

1796 Presumably–I know I am going onto the port again, I am sorry, Sir–presumably if there is going to be a port here and you are envisaging channels of 300,000 and upwards, perhaps, am I right in saying that the dredging operations in the Thames Estuary will have to be pretty extensive? – Yes.

1797 Will you be in a position to say at the end of the year how extensive they will be to accommodate these enormous tankers? – I think we would have a pretty good idea.

Cross-examined by Mr. Arnold (Foulness Island Residents Committee)

1798 This question of a port, Sir . . . I am sorry, Mr. Hunt, but there are one or two questions I would like to ask . . . Do you envisage it as not only a great oil port but as also a great container port? – I hope it will become a great container port.

1799 You hope it will become a great container port. Surely, Sir, the roads envisaged are not sufficient for this purpose? That is to say, there is no road envisaged for the North–how do you propose to move your freight to, say, Birmingham? – Well, this is a matter which the Development Company is examining as part of the total plan. You are quite right that one cannot think of the port without its landward links, and this is a matter which is being examined. I would just make the point again–it has been mentioned before–that provided the airport comes to Maplin Sands, then it seems extremely likely that the road access to the airport will be adequate to deal with the traffic.

1800 Not to the North. – You would link up with the various motorways as you came towards London–perhaps the GLC's proposed "D" link–and then into the proposed road system of the country generally . . .

1801 You did mention comparison with the ports on the coast of Europe–Rotterdam, and in a smaller way, Amsterdam. You mentioned that tankers will be restricted to the English Channel, and that the Port of London does not see this as an off-shore island: but surely, if you consider the ports off the south coast of England, we are foremost in comparison with the Dutch in that we have a 20-fathom line. Surely this is the place to put a deep-water port–not in the most shoaled river in all Europe? – The oil has got to go to somewhere where the customers want to buy it, and I imagine that off the north coast of Ireland or off the north-east coast of Scotland there is wonderful deep water, but there is no one there who wants the oil. The centre of construction of petroleum products is the south-east of London, and the transportation costs of products are a very important part of the total economy of the oil business. People will decide to locate their terminals, not where there happens to be deep water, but where deep water can be created at a reasonable price.

1802 I appreciate that, but I think . . .

Inspector Mr. Arnold–airport!

1803 Mr. *Arnold* Fair enough, Sir. This is in passing–many schemes have been proposed of this nature . . .

Inspector I think the merits of the port can be debated elsewhere, before they come back to us.

1804 Mr. *Arnold* Yes. It is so difficult to sort out . . . (*to the witness*) Do you propose a graving and a dry dock, Sir? – We will look into this.

1805 I see. Do you therefore propose that the docks themselves will have to have a dock basin? – I would not like to say what they will look like.

1806 You appreciate that we have a 17-ft range. – The figure I could debate, but I do not think it is relevant at this time. We are aware that there is a tidal range.

1807 Many comparisons have been made with the famous Dutch Europort–do you think that is fair? – I do not think fairness comes into it. It is a hard economic fact that our biggest rival is Amsterdam . . .

Inspector I am not going to have a debate on this.

1808 Mr. *Arnold* I am sorry . . . Actually the only thing that we can establish is that you perhaps could derive a large road system, and that you envisage this as a big container port. – I think that my answer . . . to make it as accurate as I can . . . is this: there is a strong case for a seaport at Maplin Sands, whether or not the third London airport comes there; but if the third London airport comes there, the two things together, in terms of land links and in many other ways, make a great deal of planning sense.

1809 Sir, in 1932 Canvey Island was taken over for the discharge of petrols because it was a long way away, or

Printed image digitised by the University of Southampton Library Digitisation Unit

was considered a long way away, from the City of London. Do you propose to discharge a similar sort of oil loading next to Southend-on-Sea? Does that no longer matter—the discharge of this sort of cargo near a residential area? — Well, of course it matters, and again this is a consideration which will have to be taken into account—and not only by ourselves, of course, but the Essex County Council, Southend, and all the planning authorities concerned will have not only a say, but a major say, in whether this can be allowed to happen; and if so, what precautions must be taken.

Inspector You still keep coming back to the merits of a port as a port. We are not concerned with that.

Mr. *Arnold* It is so difficult . . .

Inspector It is not for me, because this is an airport commission, not a port commission. We will have to take a view of the possibilities of the port later on, but not on the merits. Whether it could go there or not is not our responsibility. You have made your point.

Cross-examined by Mr. Mathieson

1810 Mr. *Mathieson* I also appear for the Southend Trades Council, which represents all the Trades Councils in Southend, and we are concerned with the earning potential of the reclaimed land, whether as a dock system or an airport or both . . .

Inspector Before we start to get too much detail—is this relevant?

Mr. *Mathieson* It is.

Inspector In what way?

1811 Mr. *Mathieson* Figures have been published which say that the earning potential revenue, per acre of reclaimed land industrially developed is £10,000 per acre per annum. We are talking in terms of reclaiming ten to fifteen thousand acres of land, which is an area half the size of Southend itself. The earning potential is adduced, and I think it is a factor which could be brought to the Commission's notice, and should be brought out quite decisively at this stage, because I cannot see that in any evidence which has been given so far has this particular factor been emphasised. (*to the witness*) Would you agree, Mr. Ordman, from studies that you have made from similar reclamations in other places that the earning potential revenue-wise is £10,000 per acre, and are there figures available to prove it? — I have no view, as representing the Port of London Authority, about the earning capacity of this land, and I am not aware of any figures or calculations that have been made in this area.

1812 Not in this area, no; but are you aware of comparable figures from other places of industrial development? — The only figures I know of are Dutch figures, but I do not think they are comparable.

1813 You don't think they can compare? — No. So far as I know, there are no published figures. The only ones available are an assessment of the return to the Dutch government in respect of the reclamations in the Europort area, and I do not think they are relevant to the particular problem.

1814 But do you think that you can assess the reclamation as having an earning potential of something approaching that type of figure? — I would not like to say anything about that particular figure at all. I have no information about it.

1815 These figures have been made available, and they are in fact . . .

Inspector The witness has made his position quite clear. You may have your opinion on this, and state it; but this witness has made his position quite clear.

1816 Mr. *Mathieson* One thing I would like to ask. When the Port of London Authority widened its area in recent years, had they at that time this particular reclamation in mind? — The main reason why we extended our area of jurisdiction was because we were concerned to have a degree of control over the dredging of the channels, but we were alert to the fact that some reclamation might prove to be desirable. We had not limited ourselves to this particular reclamation; the reclamation potential in the Thames is vastly greater than that of reclaiming the Maplin Sands.

1817 But you would agree, Mr. Ordman, that some of the work which you as an Authority have now set in hand with regard to the hydraulics including the building of this vast model is very similar to the work carried out by the GLC, so are you working in conjunction with the GLC, in view of this duplication? — We are working in conjunction with the GLC on the model that is being used to test the feasibility of the barrier for flood protection; the work that the Thames Estuary Development Company is doing in no way overlaps or conflicts with this work, but the Port of London Authority are a party to . . .

1818 Are you both in fact working on the same model? — No.

1819 This will cause the taxpayers a large amount of money. — Which model are you speaking of?

1820 The model you are going to construct of the whole of the Thames Estuary. — It has not cost the taxpayers anything. They have nothing to do with it; we do not have any subvention from taxes or rates.

1821 I am referring to the GLC model, which is covering exactly the same area. — No, it does not cover the same area. It is not built for the same purpose. The common information which is used in the design of the model is information available to everyone anyway; there is no overlap and no wastage.

Cross-examined by Mr. Purchase (Bernard Clark & Partners)

1822 I wish to return again to the question of models: paragraph 3, "probably involved in constructing the hydraulic model". I am not satisfied with the boundaries, and I do not think physical boundaries are the boundaries we are talking about. Are the boundaries defined by the tidal movements of the Thames Estuary, which I understand extend as far as the sunk light vessel in the north-east, and the Channel, including the various

Printed image digitised by the University of Southampton Library Digitisation Unit

estuaries of rivers—can you explain which boundaries within the tidal movements that you are considering? — The boundaries have not been precisely defined, and this is a very intricate technical question . . .

1823 I appreciate that. — . . . which I could not hope to make plain. By and large, the designers of the model have got to ensure that they inject into the model the precise factors which stem from the boundaries, in so far as these factors are relevant; and so they have to go sufficiently far out to ensure that the model precisely reflects the various influences generated within the North Sea, for example. They have got to ensure that they can interpret the effect of any work in the Thames, on the River Medway, and hence they must include the mouth of the Medway and likewise the Crouch. The way this is done is extremely complicated, and follows from their extensive field surveys. I think I can perhaps assure you that the model planners will err on the safe side and go further out than they might have to, if they feel there is a chance that these things could influence the behaviour of the model.

1824 Thank you—that helps me. In paragraph 4, "As the Port Authority we see a need for deep-water port facilities in the Thames Estuary within the next few years"—do you mean, next few years as from completion of your stages that you described earlier—could you say what you feel are "the next few years"? — I should say that we should have at least some of these facilities in use in something like five years, or slightly less, from this moment.

1825 One more question, which concerns the last paragraph of the comprehensive development plan—the consortium.* Earlier, in paragraph 5, you say ". . . derived from expenditure on road and rail links to the site and on other services". Do I take it that the study being done is by no means comprehensive, and may be extended to other spheres, including rail links to the site and other services? — Yes. The Thames Estuary Development Company will try to study every relevant aspect of the development.

(*The witness withdrew*)

Mr. *Keene* I did not want to interrupt cross-examination of this witness, but I am afraid Mr. Wood mis-stated the facts about the sewage—it has never been the case that my witness stated 30 million gallons of untreated sewage per day. So the figure of 30 million is derived from the Essex River Authority evidence yesterday, where it is a figure of 25 million—I suppose an increase of five million in 24 hours is neither here nor there. What in fact we said—Mr. Sharman said, not the County Planner, Mr. Sharman was saying the sewage from the airport itself might well go into the Thames or the North Sea, without any treatment other than screening, but he said so far as the sewage from the associated urban areas was concerned that will need a much higher degree of treatment and the figure of 25 million gallons was for both the airport and the associated development. So it is not 25 or 30 million gallons of untreated sewage at all.

* p. 155.

Inspector I know perfectly well should the airport come here the exact method of sewage will be debated at great length, and investigated by all sorts of people, expert people, including the Ministry of Housing and Local Government, and whatever scheme did eventually take place it would obviously be a fully approved one.

Mr. *Keene* I would not like that to be attributed to the Essex County Council.

Inspector We will adjourn for ten minutes.

(*A short adjournment*)

Inspector The Royal Burnham Yacht Club, no. 76.

MR. FRANK KEMBALL called

Mr. *Kemball* My name is Frank Kemball, representing the Royal Burnham Yacht Club, Burnham on Crouch, of which I am Vice-Commodore, I must apologise that I have no transcript of my evidence, having been called rather unexpectedly yesterday. The Royal Burnham Yacht Club was founded over 70 years ago and was awarded its royal title over 40 years ago; it thus has a long-standing interest in the navigation of waters in the area with which this inquiry is concerned. It has some 680 members, owning over 200 boats of various sizes, with a registered tonnage of approximately 2,300 tons. The members indulge in off-shore and passage racing, and cruising into and out of the River Crouch, and the adjacent rivers, as well as local racing and cruising in the rivers Crouch and Roach. The members of the Club take the view that on general grounds of national interest the proposed third airport should be at Foulness. Therefore, in principle, the Royal Burnham Yacht Club is not in opposition to the site of the airport at Foulness, provided (and I would like to emphasise this proviso), that the yachting amenities of the area are preserved, and that in particular the effect of reclaiming 8,000 acres of the Maplin Sands should be carefully studied to ensure that it will not be detrimental to the existing navigable channels in and approaching the River Crouch. Also, that in siting any deep water and unloading facilities both of a temporary and permanent nature, and especially on the north and west shores of the Foulness Island, the consequent restriction of navigable waters should be kept to a minimum.

Further, that there should also be no detriment wherever possible to the existing area of shallow waters in the River Crouch and in the estuary to the River Crouch, which waters are equally essential to the yachtsmen's enjoyment of their pursuits as are the deep-water channels.

Also that any necessary approach bridges for the road and rail routes which will be required and which may be over the River Crouch or the River Roach should be sited as far as possible up-stream to allow the maximum area of uninterrupted navigable water, and also that any such bridges should provide adequate height clearance to permit all vessels of a reasonable size to pass through them.

Printed image digitised by the University of Southampton Library Digitisation Unit

That concludes my case, Sir.

Inspector Any questions? Local authorities, any questions?

Cross-examined by Mr. Wood (Paglesham Parish Council)

1826 Just one question. You would accept, would you not, that you are in this case the odd man out of the Burnham yachting fraternity? The only one to give qualified approval? — We are the only one to give qualified approval, but I do not think that we are the odd man out in the sense that we and all the other yacht clubs on the River Crouch have a common interest of preserving our yachting activities. The only difference between us is that we feel that we can make these points without necessarily lodging a formal objection, and the other clubs appear to have chosen a different course, but this is purely a technical difference between us, and we are quite of common interest in this matter.

1827 A summary of what the other clubs did infer would have been to refer to you as the Ugly Ducklings? — That, if it was so inferred, I am sure, is a misunderstanding, because we are all working very closely. We have a Joint Clubs' Committee operating on the river which has the function of dealing with matters of navigation, and sailing generally of a common interest on the River Crouch and its approaches.

Inspector Any other questions? Mr. Arnold?

Cross-examined by Mr. Arnold (Foulness Island Residents' Association)

1828 Sir, you have made a statement about reclaiming 8,000 acres. I am just wondering where you get that information from. — I am sorry that I cannot answer that question specifically because the person who was to have given evidence on behalf of my club (which was originally scheduled for next week) is away and I can only present the transcript, but I believe it came from the Rochford report.

1829 I see. You have mentioned for the first time that the north-west shore might have a siting for deep water and unloading facilities. I believe you are the first one ever to have mentioned such a possibility. Where do you get your information from? — May I clarify this point, if I have been misunderstood. I did refer both to temporary and permanent facilities, and my club takes the view that there may well be temporary unloading facilities sited on the north-west shores of Foulness Island, in order to bring to Foulness Island some of the necessary construction materials. It is these facilities in particular which I was referring to on the north and west shore.

1830 Thank you. Are you aware, Sir, that activities of the Royal Burnham Yacht Club in relation to their starting and finishing gun are perfectly audible in three villages on the island? — I was not aware, but I can believe the sound of the guns carry quite a distance, yes, but may I just add that this occurs on Saturday afternoons for about 32 to 34 weeks of the year, and there on average about 30 guns.

Inspector They are not complaining; we are making the point about how sound carries in that area.

1831 Mr. *Arnold* Yes. We want to imply any noise on Foulness Island will carry and will be heard at Royal Burnham Yacht Club. — I may say that the Royal Burnham Yacht Club also hears the noise on Foulness Island.

Inspector Any other question?

MR. BENNETT called

(Leigh-on-Sea Shellfish Merchants' Association)*

Inspector Leigh-on-Sea Shellfish Merchants' Association and others, no. 13.

Mr. *Bennett* As I said before I represent the Leigh-on-Sea Shellfish Merchants' Association. I do not desire to make an opening statement; I would like to make a closing one. You have the statements that my instructing solicitors put in. What I propose to do is to call Mr. Knapp, a fisherman working from Leigh-on-Sea, to say what areas there are for him to fish on. I propose to call Mr. Brown to say very much the same thing, Mr. Brown representing the white weeders, and Mr. Osborne, representing the cocklers. First of all I will ask Mr. Knapp to go into the witness box. I have the map you handed up at the beginning.

Inspector Document 14. I have been handed a chart of the area for my own reference. It is perhaps too small to be seen by all, but I expect most of the local people have a good idea of what Mr. Knapp is going to say. Mr. Knapp is document 14.

MR. JOHN DAVID KNAPP* called

examined by Mr. Bennett

1832 Mr. Knapp, you are John David Knapp? — That is correct.

1833 You are a fisherman who is based on Leigh-on-Sea, is that correct? — That is correct.

1834 Is it right that between April and October of each year you work the shallows of the Maplin Sands almost exclusively to any other site? — That is correct, yes.

1835 And that three-quarters of your income comes from the fish that you catch off the Maplin Sands? — That is correct.

1836 What I want to deal briefly with, which is not in your statement, is just the various alternative sites that you could fish on, assuming that the Maplin Sands were destroyed as a fishing ground. Perhaps we can give Mr. Hunt some idea of how long it takes you to get to the Maplin Sands. How long does it take you to get from Leigh-on-Sea to the north-east Maplin spur . . . that you

* See also p. 156.

Printed image digitised by the University of Southampton Library Digitisation Unit

will find about half way up the Maplin Sands on the right. — My vessel is capable of 9 knots; that would take me about 2¾ hours.

1837 Apart from you fishing on Maplin Sands, why are there so many fish around in the shallows of Maplin Sands? — At this time of the year the fish will be coming into the shoal water to live and feed on the cockle living on the Maplin Sands, and the whitebait. The whitebait feed on plankton in the water, and the mackerel and the bass feed on the whitebait, and we feed on the bass and the mackerel.

1838 Can I just ask you if you could tell the Commission where there would be available sites for you to fish, and how productive those other sites would be. Perhaps you would like to do that by reference to the map, would you? — If we take the southern half of the Thames Estuary, that is the Herne Bay flats, that is Whitstable down to the Margate area, the Kentish flats on the chart, the only comparable place to East Maplin would be the piece of sand called Panson, the area of shoal water round the Panson. This is a distance of three hours' steaming time from Leigh-on-Sea, not such a convenient place to work with the prevailing direction of the wind, south-west, rather an exposed place in comparison with the Maplin Sands area, the north-east Maplin and the Maplin Spit in that bay which you have probably got on your chart.

1839 Can we just take that particular area which you are referring to; is that a very overfished part of the Kent coast? — Obviously the whole of the Thames Estuary is pretty well fished, but this part of the Estuary, you could say, is well over-fished, because of the trawlermen out of Whitstable, Margate, Ramsgate. They all centre around this shoal up on the north shore of the Kent or Isle of Thanet side around the sandbanks.

1840 Is it really a commercial proposition to fish the North Kent coast? — Not solely, to have that piece of ground to rely on, no.

1841 You like to have another section where you think you could possibly fish? — We do quite a bit in the middle of the estuary of the Ouse. This yields quite well at times, but it is not a commercial proposition all the year round, or all the summer, anyway. You have got to be able to work the three pieces of ground to get the revenue.

1842 What about the bit further to the north, what about the Barrow Sand and the Gunfleet Sand; are they fishing beds which would provide you with enough fish to make a living off? — The Barrow Sand does not yield a great deal at all. In comparison with the places I have mentioned, the Gunfleet is far too far for me to go; that would mean working out of Burnham.

1843 How long would it take you to get to Gunfleet from Leigh? — That is a good 5 hours' steaming time from Leigh.

1844 *Inspector* I am not quite following these times. Why 5 hours at 9 knots? — It is nearly half the distance again, is it not? Say 4½ hours.

1845 5 hours at 9 knots . . . do you go with the tide, or against? — That depends on the time you leave Leigh; it is better to work the tides and go with an ebb tide down the Estuary, but you cannot always do that; you sometimes have to punch the first hour of the flood, the last of the flood, to high water, and then carry the first part of the ebb away.

1846 Mr. *Bennett* Is it your opinion that really if the Maplin Sands were to go, that there would be no alternative site for you to fish on which would prove a commercial proposition? — As I have stated, I would lose a good 50 per cent of my livelihood if the Maplin Sands are reclaimed for this development.

1847 Is there anywhere else within easy distance of Leigh that you could fish off to recoup your losses if the Maplin Sands went? — Not from April till late September, October time; we would be right out of the picture altogether. During the winter months, yes.

Inspector Essex?

Mr. *Keene* It would be I think improper for me to ask you what you think the lawyers feed upon.

Inspector Any local authority questions to Mr. Knapp? Any other questions?

Cross-examined by Mr. P. Smith

1848 The point that you are going to lose a large part of your livelihood due to probably the authority's project, do you know any compensation which you might be entitled to for the loss of the fishing on these sands? — I do not.

1849 *Inspector* Any other questions? Mr. Knapp, just one point: are you the only fisherman from Leigh-on-Sea, or are you one of several, or one of many? — I am one of several.

1850 In about the same scale of business as you are? — Yes.

MR. RAYMOND SEYMOUR BROWN* called

examined by Mr. Bennett

1851 You are Raymond Seymour Brown? — I am.

1852 You live in Leigh-on-Sea? — Yes.

1853 You carry on business as Oceanfern Products Co.; is that right? — That is right.

1854 That company is engaged in the collecting, processing and exportation of a plant known as whiteweed, is that right? — That is correct.

1855 Just to help the Commission, where is the whiteweed found on the Maplin Sands? — Along the shallows all along the edge of the Maplin Sands.

1856 When you say "on the edge" does that stretch from Shoeburyness north-east right up the Maplin Sands until they finish? — Practically, yes, as far as the north-east buoy.

* See also p. 157.

Printed image digitised by the University of Southampton Library Digitisation Unit

1857 Is it also correct that you process the whiteweed so that it can be used for indoor horticultural decorations, is that right? — That is correct.

1858 What happens to the end product; is it sold in this country, or does it go abroad? — No, the end product in my case is sold entirely in the USA and Canada.

1859 Have you got with you a specimen of what you produce? — I have, yes (*same produced*). That is the finished article.

1860 That would be used to decorate the inside of a house, would it? — Yes, that is right.

1861 What other colours does that come in . . . I do not know whether anybody would like to purchase it? — It can be done in any colour, but it is sold mainly as green.

1862 I just want to deal with the question of where you work on the Maplin Sands. Have you got a map in front of you? — Yes.

1863 Do you work the whole area of the shallows of the Maplin Sands? — Yes, we work from the position of approximately the old boom that used to run out from Shoebury; from there we run right along the edge of the Maplin Sands to the North East Maplin.

1864 Assuming that the Maplin Sands are destroyed, is there anywhere else where you can go and gather whiteweed? — No, there is not anywhere else in the Thames Estuary, nor in the British Isles, for that matter. The Maplin Sands are unique in this respect; it is the only place where whiteweed grows.

1865 Perhaps I can come to that point, because it is a very important point. Is it not right about two years ago you went on a grand tour of the United Kingdom? — I did, yes.

1866 To most of the major seaports? — Yes.

1867 Even the minor ones? — Yes.

1868 Were you going to find out about the whiteweed industry there? — Well, I went to ask all the local fishermen in other fishing areas whether they had seen any, either in their fishing trawls, with their lobster pots anywhere, where they may have seen some, and where there may be some growing.

1869 What did you find? — Nobody knew anything about it; nobody had seen any, in fact the majority of them did not believe it was a seaweed.

1870 There is some mention in a pamphlet put out by the Ministry of Agriculture, Fisheries and Food,* in fact the Menai Straits can produce some whiteweed. Did you go there? — Yes, I went to Menai Straits, and apparently it was fished there in very small quantities in about 1952 or '3, I believe, but it was such a small amount that it did not make it worth while the fishermen getting it to market it, so I gather it died a natural death. Now there is no trace at all.

1871 *Inspector* Was this at the Beaumaris end? — No, in the Menai Straits, roughly in the centre of the Menai Straits.

1872 Mr. *Bennett* Is there anywhere else in the world to your knowledge where this whiteweed is produced? — Yes, there is some in Germany, exactly where I do not know, but the weed is not as good as ours, so they are not really serious competitors.

1873 What do they do with it in Germany? Do they export it? — They export it, yes.

1874 I believe in fact shortly you are going on a sales tour of the United States of America to boost your product? — I am, yes. I go on June 12th for five weeks.

Inspector Essex County Council.

Cross-examined by Mr. Keene

1875 You have probably seen this leaflet that the Ministry of Agriculture produced? — Yes.

1876 No doubt you have seen the statement there on page 2 which does tend to suggest that whiteweed is to be found generally in the Thames Estuary, is not that so? — It is to be found generally, yes, you can find it on different banks, but not in sufficient quantities to make it worth while gathering it.

1877 You have in fact prospected all the various banks, have you? — Yes.

1878 Does the firing on the Maplin Sands interfere in any way with this collection? — Not usually, no. We always work along the edge of the Maplin Sands, and I believe they keep their firing over the part that dries out at low water.

1879 You walk along the edges; is that by choice or perforce? — No, that is the only place where the whiteweed grows in sufficient quantities to make it worth while.

1880 If that part at any rate can be preserved in any way, that would help the whiteweed industry? — As long as the currents and the banks and the conditions remain the same as they are now . . . let me put it like that.

Inspector Any other questions to Mr. Brown?

Cross-examined by Mr. Wood

1881 On a point of general interest, what are the characteristics of whiteweed that makes it so much in demand for house decoration? — I believe it is the only natural fern which is comparatively everlasting.

1882 That is its main virtue, its main characteristic? — Yes.

1883 It is in a higher standard than the synthetic flowers and artificial foliage you can buy? — In the

* *The Whiteweed Industry* (Laboratory leaflet no. 8). Ministry of Agriculture, Fisheries and Food, 1955. Available from the Ministry's Fishery Laboratories at Lowestoft, Burnham and Conway.

* *The Whiteweed Industry.*

Printed image digitised by the University of Southampton Library Digitisation Unit

USA at any rate, it is used in conjunction with artificial flowers which they bring in from Japan, but they cannot bring in anything of this nature made of plastic, not so attractive, at any rate.

1884 It is quite unique? — It is unique, yes.

Cross-examined by Mr. Bryant

1885 In the event of this project going through, would there be a very great demand for small boats of your capacity to operate to the various dredging concerns that would be there? You have a very fine opening there on a day-to-day basis . . .

Inspector Do not make a statement to tell him . . . you ask a question.

Witness I do not think the boats that are used from Leigh-on-Sea, and Southend would be any use whatsoever to dredging boats, or people who run dredging concerns. They are probably quite well equipped with boats of their own.

Mr. *Bryant* I do not know; it is going to be a very large job; there will be plenty of room for . . .

Inspector Mr. Bryant, have you got a question?

Mr. *Bryant* Apparently he has answered it, no.

Inspector That is what I thought.

Cross-examined by Mr. P. Smith

1886 Perhaps this may help . . . the Leigh bawley is a unique type of craft, am I not right? — You are right.

1887 *Inspector* You operate a Leigh bawley, do you? — I do not operate a Leigh bawley myself, no, but I operate . . .

1888 *Inspector* You picked the wrong man there. The firing area, the shallows are actually inside the firing area, are they? — Yes, they are, but the firing never seems to reach that far, because quite often the coastal barges run up in the shallows.

1889 Do you have the permission of the military to creep along the shallows in their firing area? — Boats have been working there since the war.

1890 At whose risk? — There has never been anybody say you must not dredge there. Let me put it this way; on the charts there is a thin red line, but I do not think that the firing ever reaches that red line.

1891 If you were struck by one of their shells, would it be your responsibility or theirs? — That I would not know, I would not really like to say.

1892 How much would this piece of fern fetch, what sort of price? — At the moment, the latest figures I have got for the resale price in the USA, I saw one mail order catalogue with a piece like that catalogued at 89 cents, 7s.

1893 *Inspector* And where are your premises—are they in Leigh-on-Sea? — Leigh, yes.

Inspector I have been around most of the areas mentioned on several occasions before the Inquiry—as tomorrow is a bit short of people appearing, we are going out to Foulness and I would also like to go to Leigh, to see the actual premises, the weed industry and also the cockle and fishing industries.

Mr. *Bennett* I am very glad that you have suggested that, Sir; I was about to suggest it myself.

Inspector Tomorrow should be feasible. We shall make arrangements at some convenient time for myself and the Deputy Secretary to have a good look round.

(*The witness withdrew*)

MR. ERIC OSBORNE* called

1894 Mr. *Bennett* Mr. Osborne, do you carry on business with your brother, Horace Osborne? — Yes.

1895 And do you carry on business at Leigh-on-Sea? — Yes.

1896 How long have you been in the cockle industry? — 38 years, myself.

1897 Do you gather cockles from the whole of the Maplin Sands—is that right? — Yes, that is correct. It is where the cockles fall, actually. They do not move about—where they fall, they spend the rest of their life there.

1898 When we are talking about the Maplin Sands, we are talking about the whole of the Maplin Sands, not just the shoals at low tide? — No, we gather according to where the cockles fall, from high water to low water.

1899 Am I right in saying that the Maplin Sands are the only sands that the Leigh-on-Sea cockle industry goes to for cockles? — No, that is not exactly one hundred per cent true. Over a period of ten years, 90 per cent of our cockles come from the Maplin Sands.

1900 And would this be right—if the Maplin Sands were to be wholly destroyed, it would in effect put you and all the other cocklers completely out of business? — Yes, because we could not carry on between the time that the spat fell between the other places, which is not very often.

1901 Am I right in saying that the only other cockle bed of any commerical value is in Pegley, up near Margate? — No, that is too far away for us to work as a commercial proposition. Southend offshore is an alternative.

1902 And what percentage of your income does Southend offshore provide? — Southend offshore by itself—I must make this over a period of years, because when I first started in the industry as a boy it was 9 years before I knew what Southend shore looked like—the seaward side, working from there, so I dare say five, six, seven per cent, maybe over a period of time.

* See also p. 156.

Printed image digitised by the University of Southampton Library Digitisation Unit

1903 Five to six per cent of your income from that foreshore? – Yes.

1904 So if Maplin Sands were to go, the amount of cockles you would get from the Southend foreshore would not be enough to keep you.

Cross-examined by Mr. Arnold (Foulness Island Residents' Association)

1905 Mr. Osborne–in passing, are you a relative of the four Osbornes lost at Dunkirk? – I was.

1906 When you ground–and you do ground when you go to collect cockles–how much area do you cover to get your load? – Well . . .

1907 *Inspector* I am a novice on this–is this picking by hand? – We are in a period of change-over from working the low water, when water is gone, and working the high water with a White Fish Authority–continuous suction dredging, it is called.

1908 *Inspector* Is Mr. Arnold's question based on hand-picking?

1909 Mr. *Arnold* The traditional method–normally, you arrive there and you anchor and you are all over the side of the boat with rake and sieve and you begin work. What sort of area do you cover? – Within a hundred or two hundred yards of the boat.

1910 And it is sufficient to get your load? – Well, each turn–two baskets is called a turn–is carried to the boat. The further you work from the boat the longer you take, you have only about two and a half or three hours–you are using up time unnecessarily by working further away from the boat. Ideally, it is best to work within ten yards of the boat–it is not always possible.

1911 The cockles are plentiful? – Well, the proper thing is never to lay in the same place two days running–move on fifty or a hundred yards, and the next day you move on a little further.

1912 In all your years of experience, Mr. Osborne, you must have seen some strange things, along those sand edges. Have you noticed a movement, at any time? – There is a large movement of sand from here to here (*indicating*), especially the high sand, that is the seaward side of the Maplin, the south edge. That does move considerably from here to here (*indicating*).

Re-examined by Mr. Bennett

1913 Just one question I should have asked you, Mr. Osborne. At the moment, is it right that the vast majority of gathering cockles is done by hand? – As I say, we are in this period of changing over.

1914 But is it right that it is this year that you are changing over from hand picking to the suction dredge? – Yes, we are in the process of that at the moment.

1915 And this will increase your turnover in the sales of cockles enormously? – Yes.

1916 *Inspector* Just two points of interest–I see in the Ministry of Agriculture statistics that approximately 67,000 cwt of cockles are valued at £46,000. Do I really gather that a hundredweight of cockles is only worth about 15s.? – Those figures–are they the end product, or the cockles in the shell?

1917 *Inspector* I think it must be . . . "In 1968 the total United Kingdom landings of cockles were 271,374 cwt, and the value £182,000. Of these, the landings at Leigh-on-Sea accounted for 66,777 cwt valued at £46,000". They indicate that the value to the merchant may be higher. It seems an awful lot of work to pick a hundredweight of cockles for 15s. – There is an awful lot of work in the industry; but can I clarify a little this way?–that if a hundredweight of cockles in the shell came out of the boat, by the time it goes to the customer it is only 8 lb, out of a hundredweight of 112 lb.

1918 *Inspector* I see. And just one more point of general interest: it is said about the suction dredging that there is some risk of damaging the young cockles. Is there any fear that this may prejudice the industry over the years? – I think the Research Establishment at Burnham have this under constant review.

(*The witness withdrew*)

Mr. *Bennett* Sir, Mr. Douglas Frank in opening this Inquiry told you, Sir, that this Commission is concerned with people. He also said–and I think it is conceded by everyone–that the cockle beds and the whiteweed beds would be totally lost. He also said that he did not want to play down the calamity that would occur to the cockle gatherers and whiteweed gatherers, and I think even to Mr. Knapp. I think the calamity that will come upon these people should be played up. It is so obvious that it does not really need stating, that if the airport comes to the Maplin Sands the whole of the Maplin Sands will be destroyed as far as my clients are concerned. But, Sir, it is an obvious statement with a horrible twist to it: that the way of life of this community–for the whiteweed community, the cockle community and even the fishing community–is going to be completely destroyed. I do not think I am putting it too high when I say this–that you, Sir, and your colleagues on the Commission headed by Mr. Justice Roskill possess a power over my clients which at the moment no Criminal Judge in this country has–and that is quite simply this: that if you decide, Sir, that Maplin Sands should be used for the airport, you will in effect be passing a sentence of death on my clients–obviously not physical death but economic death, because there we will have the devotion to work that they have put into this, and their community spirit, going smash, and smashed irretrievably. And you must consider, if the airport comes and the Maplin Sands go, what are you going to leave behind? What debris are you going to leave behind amongst these people? You have seen them in the witness box. They are a very spirited, devoted set of people; but in many ways it is bound to have a tremendous effect on their zest for life, and it may be, Sir, that you will leave behind you a spiritless and even a deprived people, and even for some–for the aged–they may be totally hopeless, because they may not be able

Printed image digitised by the University of Southampton Library Digitisation Unit

to adapt to a different way of life. They have been in the cockling industry all their life, and it is those people, Sir, who are going to find it terribly difficult to adapt.

I think, Sir, I can claim this: that my case, amongst everybody else's here, is unique. If the airport comes to the Maplin Sands, it is going to be my clients who are going to be completely affected. It is perfectly true that the Foulness Island is going to be affected; it is perfectly true that the Royal Burnham Yacht Club is going to be affected; but nothing is going to be so devastating against anybody except my clients. You see, you can insulate people against noise; people can sail there; you can bring water and electricity to the airport—there are no problems there—but you cannot find an alternative cockle bed. You cannot find an alternative whiteweed bed, and it is going to be very difficult to find an alternative fishing site for Mr. Knapp. So when you and your colleagues come to consider this case, I want you to give very special consideration to these people, because it is their livelihood that is going, and amongst all the people who are represented here, in my submission, because their livelihood is going to go, they are the most important people to be considered.

Let us turn for a moment to see what each does. Mr. Knapp is a fisherman; he has been a fisherman for about 18 years; and he gathers 50 per cent or more of his income from fishing on the Maplin Sands, from May to October, in the shoals; and it is these shoals which will probably be destroyed. I think I cross-examined Mr. Sharman and he agreed that those shoals would be destroyed. It is very difficult to know where else he could fish, and indeed he gets such a large chunk of his income from the Maplin Sands that he does not think there will be any alternative site for him to go to.

As regards the whiteweed industry, this, as you heard Mr. Brown say, is really a unique industry. He farms the whiteweed from the shallows, brings it back and processes it; and on the Maplin Sands you find whiteweed of exceptional quality and in exceptional quantities. Nowhere in England is it farmed to such an extent as it is here, and I think indeed Mr. Brown said that he had been round the United Kingdom and found no comparable whiteweed industry anywhere in any circumstances.

Sir, perhaps I could just refer very briefly to the very helpful pamphlet* which has been put out by the Ministry of Agriculture. On page 1, the second paragraph, it says that in recent years demand has developed in the United States of America for processed whiteweed; it is sold there in bunches for decorative purposes. It seems that this trade not only seems to flourish, but is expanding rapidly. Sir, I do not think I need trouble you with anything else in the rest of the pamphlet; I would ask you to read it very carefully because it gives a very clear picture of the whiteweed industry as it is. But the whiteweed industry does not bring just a benefit to this area; it brings a benefit to the country. The firm of which Mr. Brown is a representative exports between 80 and 90 per cent of its products to the United States. The gross dollar return on that, in terms of the national economy, may not be very great, but nevertheless it is a very worthwhile contribution. The whiteweed is turned into a sea food product which is imported again mainly to the United States—curiously enough, to feed tropical fish; and there again that brings in a not inconsiderable dollar earning; another company gathers the whiteweed from the sands and sells it. The total turnover is not inconsiderable, and they bring back to this country a very valuable dollar earning. The prospect for these people, the whiteweeders, is that they would have nowhere else to go; there does not appear to be anywhere else in the United Kingdom where they could go, and there is certainly nowhere else in the Thames Estuary for them to go.

Sir, as regard the cockle industry—this is very much a family business. It goes back at least 150 years—some say it even goes back 600 years. It is a very close-knit community, a community down on the seashore of Leigh-on-Sea. When you walk down there, Sir, you will see the names of the Osbornes, of Maple, of Dennage, and of Emery; and I think I am right in saying those are very nearly household names in Leigh. These people have their roots in Leigh-on-Sea; they have lived all their lives there. They have spent most, if not all, of their lives, searching for cockles.

Sir, the operation of catching cockles as such starts at Leigh-on-Sea, and the small boats from the seashore go out on the Maplin Sands. I think it is right that I should remind you of this, that when these boats do go on the Maplin Sands they are often manned by elderly men, indeed, as they go out on the Maplin Sands they may think of the time 29 years ago when they undertook a dangerous journey to the shores of Dunkirk to bring back the stranded British Army, but this time when they go out to the sands they are not going to Dunkirk, and there are no soldiers on Dunkirk. They go to search for cockles. The point of bringing this in is simply this: that it is these men upon whom you can pass a sentence of death; it is these men who are hanging under the shadow of your sort. When they go to the Maplin Sands they bring back—well, you see the letter of the 16th April 1969, from the Ministry of Agriculture, Fisheries and Food*; you will see from that that the total landings of cockles in the United Kingdom is 261,374 cwt, of which the Leigh-on-Sea cocklers, whom I represent, bring back 66,777 cwt, or approximately 27 per cent of the cockles landed in the United Kingdom. Over and above that, of all the cockles landed in this country you will see from the letters from the Billingsgate Fish Market that even now this country still has to import cockles. So if the airport destroys the Maplin Sands, not only will you be destroying my clients' livelihood, you will also be putting a burden on the balance of payments of this country, because it is undoubtedly true that if 27 per cent of the total landings of cockles in this country are effectively eliminated then you must import that proportion from abroad.

As regards the cocklers, the scope for them in the

* *The Whiteweed Industry.*

* p. 160.

Printed image digitised by the University of Southampton Library Digitisation Unit

future is, if I may say so, almost unlimited; they are this year changing over from the old-time method of hand picking and they are going modern. They are going to get suction dredgers, and in this pamphlet* written by the White Fish Authority it says there on the third page, just above the picture, that the output per man hour using this new procedure was from 60 to 70 times greater than in handpicking. So, Sir, these men have the opportunity to expand; they have the opportunity to make a bigger contribution than they are making now to the economy of this country.

They stand in many ways at the cross-roads of the cockling industry; either the signal goes up and they are given the "Go ahead", or the signal comes down and they are exterminated. That choice lies with you.

I put my case before you, Sir. There is just one argument I would like to deal with because I think it will figure largely in the minds of the Commission. That is the very simple but insidious argument that the airport should be sited at Foulness because the least number of people are going to be hurt. I must concede that is true to a certain extent, but what you have got to consider, Sir, is exactly the sort of people that you are hurting, exactly the sort of people that you can put out of business for the rest of their lives. You see there is a great difference with these people compared to the Barley Barons of Stansted, and that is simply this: that the Barley Barons were people who brayed for long enough and loud enough to enable themselves to win. But these people, if I can put it like this, without being the least bit derogatory to them, compared to the Barley Barons are small people. They are people who have only come to light, if you like, on to the front of the national newspapers because the airport is coming or might come to Foulness. These people deserve special consideration.

You see, with the people at Stanstead, it was possible for them, if the airport had come there, to find other land to farm, other houses for them to live in, but these people—my clients—have nowhere else to go, and nobody at this inquiry has seriously disputed that. So, when you come to consider it, what I want you to do is to put Mr. Knapp, Mr. Brown and his wife, and Mr. Osborne, and his uncles at the top of your list, and I want you to think long and hard before you decide to exterminate their livelihood.

There is just one other thing that I want to put to you, and that is this. It has been noticeable throughout this inquiry that Essex County Council and the Southend Corporation, and I do not think I am putting it too highly, are rooting for this airport to come to Foulness. If the airport does come to Foulness then my clients may very well have to turn to Essex County Council, to the Southend Borough Corporation, and to their then Member of Parliament for help. I would like an assurance—I can't ask it from the Southend Borough Corporation because they are not here, but I can I think legitimately ask for my friend, Mr. Keene who represents Essex County Council, and I would like an assurance now from them that if the airport comes to Foulness that they and their colleages in Southend Borough Corporation will do everything in their power, anything that they can to alleviate the misery that my cleints are going to suffer.

Inspector Thank you.

Mr. *Keene* On that very last point, I have no doubt the Essex County Council would do this, though I have no authority to give such an assurance today.

Inspector Thank you.

Mr. *Bennett* All I can say in reply to that is that I hope the Essex County Council will make it known to the Borough Corporation and to anybody else that if the airport does come my clients will look to them not wholly but to a large extent for a very considerable amount of help. In my submission the Essex County Council and the Southend Borough Corporation should provide it, and if they do not then it is a damned indictment to their attitude towards this airport.

Mr. *Keene* All I want to add is that we are here at this inquiry as planning authority, and we have put forward views which we are entitled to put, and those views that we have put forward turn out to be favourable to siting the airport at Foulness. As far as compensation is concerned I suggest my clients of my learned friend should look to the British Airport Authority which will be those who will be operating this particular airport, and not the planning authority who have no direct financial interest in this airport at all.

Mr. *Bennett* There is only one thing I want to say on that. It has been notable throughout this inquiry that everyone who wants this airport to come to Foulness is quite happy it should come provided it is not at their expense, and what has just been said by my learned friend for Essex County Council . . .

Inspector Mr. Bennett, I understand this fully, about the law of compensation, so does the Commission. We know very well what is involved here.

Mr. *Bennett* Thank you.

Inspector Mr. Bryant, reference no. 51.

MR. J. H. BRYANT* called

Inspector Will you just give your name for the Record? — John H. Bryant.

1919 You have two statements: one a series of questions and you have abandoned that, and your second statement; do you wish to add to them in any way? — I would like to say the reason I made my submission was because of the basis of most of the objections which I heard were the sort of scrapings of the barrel to find some reason for objecting to it, because the objector really behind it objected to having the airport in this vicinity.

Continuous Delivery Dredge for Cockles. (Research and Development Bulletin No. 25/2), April 1969. Available from the White Fish Authority.

* See also p. 161.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Thank you. Any questions from Essex County Council?

Cross-examined by Mr. Keene

1920 I am glad to see you think the Essex County Council have been able to answer some of the questions posed, and I would say that I hope we shall continue to try and answer the sort of questions you pose, and we are indeed prepared to help anyone with information to the best of our ability whatever their views on the airport. — Yes.

Inspector Local authorities, any questions? No questions. Thank you, Mr. Bryant.

(*The witness withdrew*)

MR. F. G. WILLIAMS called

Mr. *Williams* My name is Fred Grainger Williams. I am a Chartered Municipal Treasurer, and I am Assistant Chief Accountant of the Gas Council. I am a member of the Royal Yachting Association, The Little Ship Club, and the Thorpe Bay Yacht Club. I am a past Hon. Secretary, and a Past Vice-Commodore of the Thorpe Bay Yacht Club. I have lived in Thorpe Bay for 30 years. I speak in a private capacity.

I would like to make three points:

Designation: The expression "Foulness (off shore)" is misleading. A site partly on Foulness Island (report* page 7, para. 7) is patently not off shore. "Offshore" means a short way out to sea. "Foreshore" means part of the shore between low-water mark and high-water mark. Thus Foulness (foreshore) would be a more accurate description of a site on the Maplin Sands, which uncovers at every tide.

Comment in the press, by Members of Parliament, and by objectors from the other three short-listed sites indicate the confusion caused by the word "offshore".

The use of the description "Foulness Island", although technically correct, might also be thought misleading. Foulness is no more an island than the Isle of Dogs or the Isle of Ely. At Havengore the channel separating Foulness from the mainland is the width of this Council Chamber.

My second point, Sir, the Report states that the outlined NNI contours are approximate and indicative only. Noise is a major factor affecting the siting of an airport and practical tests are essential. Authority should be sought for low-flying over each of the proposed sites—on the Maplin Sands and on Foulness Island. A series of simulated fully-loaded take-offs and approaches can then be undertaken by the major types of aircraft at present using Heathrow.

These simulated flights should take place from 6 o'clock a.m. Sunday to 6 a.m. on Monday on a sufficient number of weekends as to provide a fair sample of wind and weather conditions. This will give the residents (including the substantial number of those employed in London) and the Commission an opportunity of making personal judgments of the noise factor.

In this connection I would like to read a letter sent by me to Southend-on-Sea Town Clerk, and his reply:

> "The Council supports the Foulness site but requires an assurance (i.e. 'a formal guarantee') on the question of noise. Will you please be good enough to tell me from whom this assurance will be sought; what sanctions the Council considers itself able to incorporate in any agreement about noise; and whether, in the event of an assurance proving fallible, the Council envisages itself (particularly in view of the Civil Aviation Act 1948) as able to obtain an injunction under which a Foulness airport could be forced to cease operations?"

Mr. Glen replied:

> "Thank you for your letter of the 31st ultimo. Unfortunately the Council cannot seek an assurance in the form which you have in mind, for Parliament will be the ultimate authority which decides the siting of the third London airport.
>
> In these circumstances, there is really no answer to the other questions which you raise. Nevertheless, for the sake of clarity, I should say that the assurance, which the Council seeks, is not of the formal character which you have in mind".

That, I think, speaks for itself.

My last point is in fact: small craft bound from the Thames to the Crouch and to the east coast rivers and the estuaries to the north have for generations used the Havengore-Middleway-River Roach inland route. This right of way has been preserved when the earlier fords to the island of the archipelago have been replaced by bridges: a bascule-bridge at Havengore and a swing-bridge at Potton Creek. The alternative to the above route is a substantially longer and potentially more dangerous passage through the Swin and round the Whitaker Sand. Comparative distances from the Thorpe Bay Yacht Club to Burnham-on-Crouch are 12.4 sea miles via Havengore and 31.3 sea miles round the outside route via the Whitaker Beacon. It would appear doubtful if the proposed site could be reconciled with the retention of this inland route. Fixed bridges would need to give clearance to masts of 50-60 ft.

Inspector Thank you. Local authorities? Any questions?

Cross-examined by Mr. Wood (Paglesham)

1921 Mr. Williams, when you wrote this were you aware of the plans for urbanisation that the Council had in mind? — Yes, that is so.

1922 You have seen that lobster's claw? — Yes.

1923 You make no reference to it in your statement; I take it that this could be regarded as an additional

Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore). (HMSO; 6s.) Reproduced at p. xv.

Printed image digitised by the University of Southampton Library Digitisation Unit

objection to the scheme from your point of view? — It could. I was endeavouring to be brief.

Mr. *Wood* I see. Thank you.

Inspector Any other questions? Mr. Purchase?

Cross-examined by Mr. Purchase (Bernard Clark & Partners)

1924 Your first items under "Designation" were very knowledgable in the geography . . .

Inspector Mr. Purchase, we all know what we are talking about. I take the point here that we all know what we are talking about.

1925 Mr. *Purchase* Would you please define the boundary between Foulness and the Maplins; where it is the boundary between Maplin and Foulness I would assume part of the land uncovered by water is Foulness and the part covered by water is Maplin, but with a salting of this character an accurate narrowly drawn boundary would be very difficult. It depends on the state of the tide. (*No reply*)

Inspector We will adjourn until 2.30.

(*A short adjournment*)

Inspector The Southend-on-Sea and District Chamber of Trade and Industry, no 24; there are being circulated now certain appendices which were missing from the Sheppey submission.

MR. R. A. MATHIESEN called

(*Southend-on-Sea Chamber of Trade and Industry*)*

Mr. *Mathiesen* Mr. Chairman, may I first of all apologise for the fact that our written evidence appears somewhat "incognito". I did address the report to the Commission on the letter heading of the Joint *Ad Hoc* Committee set up to discuss the Maplin Sands project by the Chamber of Trade and the Trades Council in our town, but it appears that only the written evidence itself has been distributed to other witnesses, and could therefore only be checked back by studying the numbers allotted to each witness.

I am the immediate Past President of Southend-on-Sea and District Chamber of Trade and Industry, and in that capacity I was during the year when this report was completed, also Joint Chairman of the *Ad Hoc* Committee, with Mr. Jack Kitchen, the Chairman of the Southend Trades Council. I have the Trades Council's authority to speak for them also in this matter.

As a member of the Chamber of Trade, I am concerned that the Commission should bear in mind that following a shopping survey carried out some few years ago by that eminent authority on the subject, Prof. Lichfield, the local authority has laid up a plan for the expansion of shopping facilities in the town, catering for an estimated shopping population of 300,000 in the first instance. As a Chamber of Trade we supported these proposals, because for several years we have considered that with our proximity to the Continent, and the natural flow of population to this corner of England, shopping facilities would have to be provided for the ever-increasing population. There are several shopping centres strategically placed in parts of the town, from west to east, which lend themselves to intensive development along the same lines as the town centre, and already the town's development plan makes provision for improvements in these centres. In the immediate vicinity of Southend, there are a number of large urban and rural district councils, where the Chambers of Trade are busily considering expansion of shopping facilities, notably Canvey Island, Wickford, Rayleigh, Billericay and Rochford.

We believe, therefore, that as an area, we are already in a position where we can accommodate the additional influx that can be expected, if and when the third London airport is built at Maplin Sands.

On behalf of the professional members of Southend Chamber of Trade, I would say that the Council has had a policy of developing Southend as a commercial centre, and we are in a position also to accommodate a vast increase of organisations looking for office accommodation in the town. Some several hundred thousand square feet of such office accommodation is already available, and planning permission has been given for more, some already in the course of construction, and this development has the blessing of the Ministry of Housing and Local Government.

As regards industry, and I would remind you again, Sir, that our Chamber of Trade is known by the cumbersome full title of Southend-on-Sea and District Chamber of Trade and Industry, we have some 120 industrial members, spread over an area which extends well beyond Southend-on-Sea, because adjoining Chambers do not have a separate Industrial Section.

Our members are occupied over a very large scale of classes of light industry, but as we say in our evidence, Sir, we have not in this area in the past made room for the big boys, and this has meant that a very large proportion of the working class population of the town travel hundreds of miles per week, to and from their places of employment, in towns like Dagenham, Basildon, Rayleigh, Benfleet and Chelmsford. These are in addition to the 20,000 or so known commuters currently travelling by British Rail from the nine railway stations in our town, to find their employment in London. The vast majority of course work in offices in the City.

Speaking now on behalf of the trade union members of this joint committee, I would say that they are fully aware of the potential increase in opportunities that will arise should the third London airport be based at the Maplins.

You will see, Sir, from our evidence, that it is our confirmed opinion that the airport project and the dock development should proceed at pace, and at the same

* See also p. 164.

Printed image digitised by the University of Southampton Library Digitisation Unit

time, and we have it on no lesser authority than that of the Prime Minister, with whom we have had correspondence on the matter, that Her Majesty's Government is considering, and considering seriously, the plans put before it for this vast industrial complex.

As a Joint Committee we studied the proposals some considerable time ago, and we came to the conclusion that both sections of this Joint *Ad Hoc* Committee would benefit to a considerable degree, if these developments at Maplin were proceeded with, and at pace.

Having listened carefully to the evidence so far produced in this Council suite, already equipped, incidentally, to accommodate well over 100 Council members, and ready to take in the representatives of the increased population, we have no doubt that the town as a whole, and its population, will benefit considerably by the proposed developments.

I do not profess to be an expert on noise, and the NNI readings and the contours provided by various factions have done nothing to enlighten me. On the contrary, like the majority of the population of this town, I have been confused by the many interpretations put on the same figures. I did live, however, for 11 years in the funnel to the main runway at Southend Municipal Airport, so I do suggest I know something about noise. I have found, without a shadow of doubt, that the further I am away from the source of noise, the less it affects me. For that reason, I will recommend that the actual site for the airport should be in the far north-east corner of the Maplin Sands, so sensibly suggested in the plan submitted to the Commission by Clark & Partners.

Inspector Essex County Council.

Cross-examined by Mr. Keene

1926 Mr. Mathiesen, I may have missed this point when you were speaking a few moments ago; can you tell me what area Southend and District represents so far as trade union members of your organisation are concerned? — It represents an area this side of the Crouch, and as far as Basildon in the west.

1927 The whole of this peninsula? — The whole of this peninsula which is affected, yes.

1928 As I understand your evidence, you are essentially in favour of the third London airport at Foulness, subject, of course, to the caveat you enter on the question of noise? — Yes.

1929 You refer, I see, on the fourth page of your proof,* under the heading "Conclusion" . . . you see the passage you have underlined there? — Yes.

1930 You refer to the suggested Bernard Clark & Partners scheme, which is the one you see? — Yes.†

1931 Would I be right in thinking really that what you are primarily concerned about is noise, and what you want to see is this particular problem overcome, and if this concern can be met in some way, your position would remain broadly as you set out in this proof? — This is quite true. I think that until the noise contour was published by the Roskill Commission itself, and by subsequent proposals from the Consortium, there was not a lot of opposition in this town to the airport as such at all, but since the noise contours were published, there has been this gradual build-up of opposition essentially to the noise problem.

1932 I just want to make it quite clear that you are not wedded to the Bernard Clark & Partners scheme, to the exclusion of all else? — We are not wedded to any scheme. In fact the report which forms the appendix to our report here was completed at the time when the name Bernard Clark or Howard or any consortium meant nothing to us at all. We have delved into this over a period of almost two years now.

Inspector Kent? Other local authorities?

Cross-examined by Mr. Wood

1933 There is so much about your report that I disagree with, that it is difficult to phrase questions on it. Could we get our terms of reference quite clear to begin with. What site were you talking about when you put your submissions in? — When we put our submissions in, I make it perfectly clear in our evidence to the Commission that the only report that we have studied conclusively and at length is the one which has been submitted by the Clark Partnership.

1934 So in fact the site of the airport that really you had in mind when you wrote this submission was in fact a site at the extreme north-easterly section of the Maplin Sands? — Quite correct.

1935 Should it be possible for them to be reclaimed. — Quite correct.

1936 Would you seek to alter or modify in any way your submissions should in fact it be established that that site were impracticable, and one closer to the shore, or possibly a combination of an on and offshore site would have to be accepted? — I believe Mr. Wood and I, we have crossed swords on this on many other occasions in the last month or so. So far as the population of this town is concerned, I believe we have got to fight to get the siting of the airport as far offshore as is possible. I know as well as you do the limitations which the Roskill Commission has had in its terms of reference, in that it is only considering the airport. Nevertheless, I would say that as interested parties we should fight, and fight hard, to get the airport in a site situation where it will affect the least number of people in the town.

1937 It might in fact be necessary to cease generalising and become specific on this problem, and if I could, I would put this question to you: would you still support an airport and only an airport on the site as is envisaged as a possibility by the Roskill Commission, partly on and partly offshore? — No.

1938 Would you also support an airport that was just offshore? — If in the difference you are again referring

* p. 166.
† p. 259.

Printed image digitised by the University of Southampton Library Digitisation Unit

to the map which has been published by the Commission, I would have equally great objection to the entirely offshore site as I would have to the one where one runway is shown on shore and one off.

1939 And particularly so would you . . . do not let me put words into your mouth; I am trying to find your position . . . if in fact it were found to be impracticable to reroute the flight paths so that instead of resulting in that thumb, if it could not be possible to reroute the flight paths up the Thames, would you still be opposed? — I am not sufficiently much of an expert to say anything about flight paths, because if you have read my evidence, you will see that one of the suggestions we made as a Committee was that aircraft should not be routed over land at all; they should be routed over the sea. I understood from the evidence which has been submitted previously that these aircraft will have to join a set pattern of airways, which means they will fly over land somewhere between Chalkwell or Leigh or Hadleigh way. Again I would say the further offshore the airport is sited, and the more north/south the runways are aligned, the greater the possibility of people in this area and on the Kent Coast being alleviated of noise.

1940 Your approach to the problem is three-fold, is it not, whether there is an airport and a dock complex, or whether there should be just an airport, or whether there should be a dock complex. Of those three choices, which, if you had to make one, would you make? — Purely from a Chamber of Trade and trade union point of view, I would say that the one that is going to bring the greatest benefit to this area is the dock complex.

1941 If you had to make a choice between an airport and the dock complex, you would go for a dock complex? — If I had a choice, I would.

1942 Do you represent the whole of the trade union interests in this area, or are there fairly strong minority movements within the trade union movement against your proposal? — The Trades Council represents all trade unions in Southend, and there has been no opposition to this at all within the Trades Council.

1943 I think possibly later on this afternoon we shall establish that there are. — It could be.

1944 If I could come to various points of detail, deliberately, Sir, and avoiding questions on the appendix, it seems to me the comparisons with Holland are quite irrelevant, and I do not intend to question the witness—you may be relieved to hear that.

Inspector I think you are quite right.

Mr. *Wood* There are certain facts that you quote from certain points that you make that I would like now to challenge. For example, page 2,* in the paragraph which starts: "For the latter part of the century", you make a reference to including a minimum of valuable agricultural land that would be consumed. After you have heard the evidence so far, would you still maintain that point, that an airport, and I am speaking about this airport at Foulness, would not consume valuable agricultural land? — The evidence I have heard has not, in my opinion, included sufficient detail of the routing of roads across country for me to say one way or the other. What I do know is that in cases where high level roads have been built, they consume less agricultural land than a four lane highway on the flat land itself.

1945 You have heard that Mr. Tanton, the agricultural expert of Essex County Council, seemed in fact not to share your view. — Yes; I would say probably I do not share his view.

1946 And the amenity and general scenic attractions which would really militate against your support of a raised roadway and railway? — This very much depends on the eyes that see it. If I travel along the arterial road, and I see the electricity grid which is pulled across the countryside around Rayleigh, and the pylons and the cables, I do not think there is a lot to be said in favour of that sort of development. I believe if we are going to have development which is going to mean something in this country, then some of the amenity values will have to go.

1947 In a flat area, the more you raise in an excrescence, the worse it becomes, do you accept that? — Yes, at the same time I do not think the particular area we are talking about has all that scenic attraction.

1948 You must come and visit me one weekend. There is on the same page a reference to the establishment of a free port as opposed to the benefits of the present system which we operate in this country of free transhipment and transit of goods. I do not want to enter into a discussion on the relevant merits, but I think it is firmly established that a free port in this country is not on, and our present transhipment and transit arrangements are much more flexible; would you accept that? — No.

1949 We must disagree. — You must remember, Mr. Wood, I spent the great majority of my life on the Continent.

1950 That can possibly explain a lot, Mr. Mathieson. We know each other well enough not to be offensive. You do suggest, of course, on that same page under National Prestige . . . I would like to ask you, you do accept, do not you, that Concorde and jumbojets can still fly, as has been established by the Essex expert witness, that these supersonic planes and the big jets do still fly subsonic? — Yes.

1951 And they raise the same problems when they fly sub-sonic as the present aircraft do? — Yes, noise-wise . . . they do not make the boom we hear so much of.

1952 That is all I can find specifically to disagree with you on. — Thank you, you have been very kind to me.

Inspector Any more questions? I have no more questions.

* p. 165.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. Kirkip

1953 On behalf of the Amalgamated Union of Engineering and Foundry Workers, I would like to ask Mr. Mathiesen, he made reference to the fact that there had been no opposition from the trade unionists in the area, to the proposals. I would like to ask him what steps have been taken to find out the views of the trade unionists in the area, and were the branches circulated in any way, or have they discussed it arising from the Trades Council? — To that I can only answer that in our dealings with the Trades Council, we have a joint *ad hoc* committee, and that *ad hoc* committee represents all the trade unions in Southend, and within that Committee no objection has been raised. If any particular union has had objection to that development, then it has not been brought to the notice of the Trades Council to be brought up before this joint committee.

1954 As far as you are aware, there have been no discussions outside the Trades Council; you have no knowledge of any discussions taking place within the trade union movement outside the Trades Council? — I have no knowledge of any discussions within individual trade unions; I only have knowledge of the discussion which this joint committee has had, and so far as I am concerned, that Trades Council in Southend represents all the trade unions.

Cross-examined by Mr. Purchase

1955 From your report I believe Southend and District Trades Council believes this project in whatever form it eventually takes is of the greatest significance to this country? — There is no doubt in my mind and the Committee's mind that this is one of the greatest developments that can take place.

Inspector This is locally, of course.

1956 Mr. *Purchase* To this local area. — To this area, yes.

1957 To this local area? — To this particular area, yes.

1958 Therefore you believe the optimum reclamation is advisable—the maximum reclamation is advisable? — Yes, I would say that the land lends itself to reclamation, and if money is going to be spent on reclamation—yes, the larger the area that is reclaimed, the better.

1959 Thank you. Paragraph 6—I gather that your Council foresee a large increase in air freight? — Yes, I think statistics from the local airport prove this, and I think statistics generally prove that it is a fantastic increase on air freight.

1960 More than computerised, I think? — One would hope that that would be the case.

1961 Item 7—I refer to Essex evidence—Mr. Jennings Smith* gave prominence to dispersed development, and not tight infrastructure round the airport. You appear to believe that industrial expansion would follow, and it may be a desirable consequence? — I think that if the area reclaimed is as large as we think it could be, then industrial development could take place on the reclaimed area itself.

1962 And you appear to believe that the sooner a master plan is prepared for such a project, the better for its future thought and development? — Well, this is something that we feel that there has been a lot of talking about, and we are disturbed that it is going to be another three or four years before anything really happens on the land.

1963 I take it from paragraphs 3-8—that your Council sincerely believes that primary and secondary employment generated by the airport is beneficial in general to the Thames estuary, stretching back to Basildon. — We feel that the facilities are here—Basildon have said in their evidence that they have accepted, and we feel that all these small towns around Southend will benefit eventually by industrial development ancillary to the airport.

(*The witness withdrew*)

MR. F. O. MORRIS* called

(*Working Men's Club and Institute Union Ltd.*)

Mr. *F. O. Morris* I am the Assistant General Secretary of the Working Men's Club and Institute Union Limited.

Inspector Mr. Morris, your statement and the plan have been circulated—I think it is perfectly plain what your concern is. Do you wish to add at all to the document?

Mr. *Morris* If I may—just a few very short words. I want to make it clear in the first instance that we are not a trade union—we have no connection with the trade unions as such. We are an association of working men's and social clubs. It is often confused in people's minds because we have the word "union" in our title.

The next point is this: that the convalescence we give is such as might not be given under the Hospital Service. We give, as you see in the Proof, convalescence to persons, clubmen, who are recovering from illness or accident, and the great part of our service is the speed with which a person is admitted to a home—if a person was to make an application today he would be in the home next Wednesday. At the most, it is ten days before he is admitted from the date of his application. The cost of this convalescence is provided entirely by clubs and clubmen, as will be the cost of the new home at Broadstairs. There has never been application, and I hope there never will be, or an appeal, to the public for funds. This new home is replacing the one at Pegwell Bay; since the Pegwell home opened in 1894, we have had 71,971 people in that home. Now, since the announcement in the Press in March of this proposed airport at Foulness, I must have travelled approximately

* p. 10.

* See also p. 169.

Printed image digitised by the University of Southampton Library Digitisation Unit

3,250 miles through England, visiting many towns in the course of giving lectures. I visited places such as Leicester, Wigan, Doncaster, Oxford, and Manchester, and in each place I had concern from the Club officials and clubmen as to the effect that noise from the new airport might have on persons convalescing, in this new home, which will be opened, we hope, in July of next year.

That is all I wish to add, Sir.

Cross-examined by Mr. Keene (Essex County Council)

1964 I have only one point: you are concerned about the noise effect from the airport at Broadstairs? – Yes.

1965 Have you seen any of the NNI numbers? – I have, Sir. But what I am concerned about is the question–and I think it can possibly happen, from discussions I have had with professional people–the question of the stacking of aircraft; and furthermore we have had a very nasty experience of noise from the Hoverport being built at Pegwell Bay, where our present home is right on the seashore.

1966 The noise from the stacking area must depend on the height at which the lowest aircraft are operating? – I accept that, yes.

1967 You are really saying that you are anxious about the situation–you do not really know what it is going to be like but you want the Commission to bear it in mind. – We want the Commission to bear it in mind, and to be relieved from this problem as far as possible, in view of the amounts we are spending; it is possible that we may find that the home is not used, because it cannot be sold for general purposes.

1968 If in fact there was no noise at Broadstairs from a stacking area, you would be quite happy? – We would indeed, Sir.

Cross-examined by Mr. P. Smith (Barling Magna Parish Council)

1969 Your main concern, of course, is noise, and you are building this very expensive new home. Could the home not be soundproofed, if it was found necessary? – That would not achieve the object of convalescence, Sir, because the one thing we encourage convalescent ment to do is to be out in the grounds. In building the home, we are providing bowling greens, putting courses–we have already made arrangements for the golf course, for the men to use the pitch and putt course. At Pegwell they offered to soundproof the home, but we have to get them out into the good air of Kent and the sunshine, to prepare them for returning to their daily tasks as soon as possible. We do not want them to sit indoors–they can do that at home.

1970 I believe that this home which you are constructing out of virtually private funds–during the course of construction, due to the design, something rather exceptional happened? – Yes–I was telephoned a week or so ago by the architect, who was very happy. He had put in some artist's impressions and designs into the Royal Academy, and it had received a commendation, which he tells me is rather equal to receiving an Oscar in the film world.

Cross-examined by Mr. Wood (Paglesham Parish Council)

1971 You are concerned about the possible instrusion of noise because of the outdoor activities of your members; but we know in this particular latitude that we have quite a number of hours of darkness, and presumably your members would also want to look at the television? – Certainly.

1972 And I think the Commission would like to enquire into the possible interference and indeed disappearance of television sets if they found themselves in the centre of a holding area . . .

Inspector I am sure you have read the Sheppey submission!

1973 Mr. *Wood* Which one, Sir–the ones we have received this afternoon or those earlier? – We have provided for a television room, properly tiered down so that convalescent men can watch national sport and other programmes.

(*The witness withdrew*)

MR. A. COLE called

(*Tucker Browns Ltd.*)

Mr. *Cole* My name is Arthur Cole, and I am a Director of Tucker Browns, Burnham-on-Crouch. Tucker Browns are major employers of labour, and employ all skilled men.

Inspector You have not sent in your submission in time–would you therefore speak slowly, so we can understand you clearly?

Mr. *Cole* Tucker Browns' business is wholly concerned with building yachts. We are opposed to the airport being sited at Foulness on the grounds that the result would make Burnham an uncongenial place to live, and in driving away yachtsmen would damage the business of the yacht yard. The site of the proposed airport would result in urbanisation and industrialisation of Burnham and its neighbouring areas. We also do not know the full facts of the effects on the tidal regime–perhaps flooding caused to Burnham itself, and it will mean high water lines. Also, the moorings are already crowded to capacity; you could increase the rate of the streams, making moorings even harder to secure. We do not know what the dredging is going to do to the tidal flow in the area. Also, if they are going to bridge the River Crouch it may stop yachts and sailing. The beauty of Burnham is that you have low-lying areas, which make it absolutely ideal for yachting. If you are taking off and a jet takes off, I don't know what will happen to your yacht–you could do very well if you were racing,

Printed image digitised by the University of Southampton Library Digitisation Unit

with a puff like that behind you—no one knows what is going to happen. But I feel this will completely upset Burnham as far as the yachting is concerned.

Cross-examined by Mr. Keene (Essex County Council)

1974 Are you saying that you fear the industrialisation of the Dengie peninsula? — Yes.

1975 What do you base that on? — Well, I think Burnham is a very fine place at the moment—we have skilled men there, and industrialisation—we do not want to upset . . .

1976 I am not disputing that Burnham is a very nice place indeed. But on what do you base your suggestion? — That industry may be brought in and increase the population.

1977 I take it you did not hear the evidence given by the County Planning Officer of Essex? — No.

1978 That is rather a pity.

Cross-examined by Mr. Wood (Paglesham Parish Council)

1979 Just one or two things, Sir—I take it in fact that you charge a premium for yachts provided for the Royal Burnham Yacht Club? — Yes—I heard you say they were an ugly duckling!

Inspector That is one question that should not have been asked!

1980 Mr. *Wood* I am sorry, Sir. (*to the witness*) This would only be a restoration of an historical process, would it not?—I am given to understand that in the beginning of the nineteenth century, when the Paglesham oyster beds were extremely productive, that about a hundred people a day used to go over from Burnham to work in these oyster beds? — That is correct.

1981 And presumably your fear is that when the industrialisation in the Foulness airport came, there will be the same sort of attraction to people living in the area of Burnham to travel over for jobs? — That is so.

1982 This being so, would it be safe to infer that there would be a great demand that even the Essex County Council might not be able to resist, for the construction of a bridge across the Crouch to take these people? — That is what we are afraid of, yes.

1983 And if this were to happen, then you are definitely concerned that it would have a disastrous effect on the yachting in the Burnham area? — Yes, that is so.

1984 I share your worry, Sir.

Inspector Well, you should—you put the words into his mouth!

Cross-examined by Mr. P. Smith (Barling Magna Parish Council)

1985 There was just one point raised by Essex—you referred to the fact that you had not heard the Planning Officer's evidence. But I would remind you—I do not think it does console you at all—that he finishes off his evidence—I am looking for the exact words . . . he refers to it as "an academic exercise". So it is not evidence at all, anyway. In fact, I think he even said it was in the nature of a value judgment.

Cross-examined by Mr. Arnold (Foulness Island Residents' Committee)

1986 I want to make it clear, Sir—there is a ferry between Burnham and Wallasea Island. — Yes.

1987 There is means of access from Burnham to this side of the shore? — Yes.

1988 I just wanted to establish that it exists.

(*The witness withdrew*)

MR. NEWEY* called

(*The Sheppey Group*)

Mr. *Newey* May it please you—I did hear a note of disapproval from behind about the distribution of our literature, but may I say this: that we have in fact distributed five proofs. These proofs were in the hands of the Commission before last week, and I anticipate that everyone has had an opportunity to look at these proofs long before today. In addition, there are certain appendices to be circulated, and here I am afraid we are at fault. For various reasons we have been rather slow in putting them into the hands of the Commission. Some have been distributed this afternoon, some, I fear, have not been distributed even now . . .

Inspector I understand they should have been distributed, but I cannot be certain of what my staff are up to . . .

Mr. *Newey* Your staff is not to blame, Sir. On the other hand, we are largely dependent on volunteers to do our work, and you will appreciate, I am sure, Sir, the sort of situation which does arise.

The next matter I think I ought to mention by way of administrative preliminary—there are five proofs, there should be five witnesses. Unfortunately, I have only three of my witnesses today. Of the proofs which have been submitted, there is a proof by Mr. Patrick,* a proof by Mrs. Boston,† a proof by Captain Wilks‡—each of these is present; Mr. Hawkes,§ who is in fact a Warden of the Swale and Sheppey Nature Reserves, unhappily has had to go abroad in the course of his work, and will not be back this week. The other witness, Mr. Newman,‖ is a senior official of the Post Office and submitted a proof with the consent of the Post Office, but not on behalf of the Post Office, and he, alas, is in South Africa.

* See also p. 170.
† p. 175.
‡ p. 188.
§ p. 189.
‖ p. 188.

Printed image digitised by the University of Southampton Library Digitisation Unit

So, as to two of my witnesses, I am in the position that I cannot actually call them before you, and I think I shall have to ask you to regard their proofs as being written representations.

The next thing I ought to say is a word about the organisation for which I appear, because the term "The Sheppey Group" in itself does not necessarily indicate what sort of organisation it is. In fact it is a mixture; it has members of our local authorities, large and small, local authorities in Kent. It has amenity societies among its members, and certain societies which are not really amenity societies, but which are concerned with such things as local history. In addition there are a considerable number of private individuals who are members. So perhaps it is rather an unusual organisation in that it includes different authorities, private societies, and private individuals. "Membership" in these circumstances does not perhaps mean very much, but we have got something in the nature of a thousand members, all from Kent and nearly all from North Kent. At one stage we were tempted to prepare a plan which would indicate from what areas members came but because of the enormous amount of overlapping between societies and authorities and individuals we reluctantly came to the conclusion the plan would not serve any useful purpose.

First of all the appendices to Mrs. Boston's proof attempts some description of membership of society and group. I should perhaps say that among the local authorities who are members of the group there are four authorities who have asked particularly that their names should be mentioned, and one is the District Council of the Borough Council of Queenborough in Sheppey. I am sure you will be aware it is now the authority for the whole of the island of Sheppey. The old authorities which existed till last year having been amalgamated to form the Borough of Queenborough in Sheppey.

I am sure everyone would agree, as far as Kent is concerned, Sheppey is as much involved in this case as any locality or any part of the County, and Queenborough-in-Sheppey we represent today. There is also the urban district of Herne Bay that you will find a little further to the east along the north coast of Kent, that is in a westerly direction, and the urban district of Whitstable, and the urban district of Sittingbourne. Among the societies, the amenity societies, and I am not going to worry you with a list, I think I ought to mention they include the Rochester Society, the Faversham Society, and the Whitstable Society. So much for the composition of the group. It has no political affiliation whatsoever. In fact in order to underline that fact it has two Members of Parliament as its joint Chairmen: one in fact, the Conservative Member of Parliament for the Canterbury Division, which you appreciate covers quite a large area of the county, a very large constituency indeed, Mr. Crouch. The other joint Chairman is Mr. Boston, the Labour Member of Parliament for Faversham Division, which itself includes Sheppey, and does include a substantial area of the county. These two joint Chairmen work together in this matter, as they believe in the best interests of Kent.

Having said that about the group it is right I should next say why the group goes to the trouble of appearing at this inquiry applying for leave to appear and in fact appearing. Well, we do not oppose an airport at Foulness, equally we do not support an airport at Foulness. Obviously it must be primarily a matter for the people of Essex, whether they wish to have an airport there or not, but the view of all our membership is this, that in substance what Essex does is Essex's business, as long as it does not damage Kent, and so far as it damages Kent well we naturally do not like it; we don't approve it, and we would rather not have it. But if, for example, it were possible to realign flight paths, site the airport further to the north-east, or something of that sort so as to reduce interference with Kent to an absolute minimum well obviously the Sheppey Group would not be represented here today.

Sir, you did invite us in the Commission's statement to submit not just objections but comments and observations with regard to local consequences, and our membership, which is dependent mainly on voluntary labour, as I said, has tried to find information which it hopes will be of some value to you. We are aware that not all the information is of equal value, but if it helps in any way to draw attention to points which might not be taken by the Commission—obviously many points which we wish to ventilate are points which the Commission would perhaps think of without any assistance from us, but if we can help by drawing attention to particular points then we will feel we shall have served some sort of purpose at this inquiry. Such, at any rate, is our objective. We do not wish to repeat, at any rate not in this opening, what has been said by other voices from Kent—you have heard the evidence from Kent County Council for example, and Kent County Council laid a good deal of stress on its plans for a new town upon the Island of Sheppey roughly in the area away from the sea behind Sheerness and Queenborough. I understand that the plans and ideas of Kent County Council were in fact challenged by Essex County Council, so I can only say this: that we will not repeat the Kent County Council arguments, but certainly viewed from the eyes of the Borough of Queenborough and Sheppey some substantial development in the island does seem most desirable. In fact if a new population can be brought in and new industry it could rejuvenate and renew perhaps some of the buildings and stock which in that particular area could benefit from renewal. There was a naval dockyard which has closed down; in various ways new blood and the forming of a new town would be very desirable in Sheppey, and certainly in the borough of Queenborough they would be very sad indeed if as a result of building an airport in Essex the rejuvenation of the western part of Sheppey could not take place. It would be a very sad consequence of the Essex Development that a desirable Kent scheme should have to go by the board.

As to other matters we will try not to repeat anything which has been urged by the County Council, or indeed by other Kent voices such as Rochester, Chatham, and Gillingham, and while we agree whole-

Printed image digitised by the University of Southampton Library Digitisation Unit

heartedly with the apprehension of the University of Kent, again we will not say more about it.

Noise, however—we try to help in Kent with noise; Mr. Patrick the first one of my witnesses has in fact engaged in the aircraft industry; he will tell you quite frankly that prior to this case he has never had occasion to attempt to work out noise contours—I was going to say relatively few people have had to do so until a few years ago at any rate, but he has done his best and he has carried out two exercises which may be of some assistance. The first exercise he has done is this: he has taken the Commission's NNI index for 4-runway airport,* the plans which I am sure you are familiar with. He has then taken the Board of Trade plan for Heathrow† which was published in 1967, which again I expect you are familiar with—I have a copy of it here, and he has then applied to the contours shown upon the Commission's plan what would be the continuation if in fact Foulness's 4-runway airport were to correspond with Heathrow, and he has attempted then to draw in 35-30 NNI contours. The result of this exercise is shown upon the plan which is RJP1,‡ attached to his proof. If you in fact look at the contours as drawn upon that plan they have been reached in the way I have indicated. It may be that they will not be perfectly accurate, but on the other hand it may be that they will be as accurate as most. It is instructive, in my submission, also to look at these 35-30 contours as arrived at in the manner which I have indicated. You will see, of course, the Commission's 40 NNI contour goes through the greater part of Sheerness and in the event the most populated part of Sheppey.

The 35 contour would mean that practically everywhere else which is of any population size such as Queenborough would be within the 35 NNI. Also within the 35 NNI there is of course the area immediately adjacent to the mouth of the Medway, but it is when one comes down to 30 that a considerable number of places of some size are included, such as Sittingbourne, Rainham, and various villages, some of which are quite populous, which lie between Sittingbourne and the Medway towns. Medway towns then would be wholly within the 30 NNI. It is an attempt, it is an exercise, perhaps it is no more than an exercise; we hope it is a helpful one basing itself strictly on the Commission's contours and endeavouring to follow the principles of the Board of Trade plan for Heathrow.

The second exercise which was carried out by Mr. Patrick is one which, as we are now discovering, is to some extent based upon a misapprehension, because I am afraid we read quite literally a statement in the Commission's documents, and we thought that in fact a deduction of 10 NNI had been made, whereas in fact we now know it should have been 5 NNI. There has not been time to re-draw the plan so I must ask you to look at it drawn on the basis of 10 NNI. What in fact Mr. Patrick did was this: he assumed for the purposes of this exercise that the Commission's seeming optimism was not justified and that was a deduction of, as he thought, 10 NNI which should not be made. In any event, you may think whether we are dealing with 5 or 10 NNI there is considerable purpose in carrying out this exercise because the assumption in the Commission's statement is that regulations would be introduced within the 20-year period and so, of course, if there is a third London airport, no doubt everybody would hope that airport would be operational before the middle of the '70s. Twenty years from now at any rate, of course, would be 14 years, something of that order, and it would be something of a comfort to people in Medway towns if in five or ten or fifteen years' time there could be regulations in force which could reduce this dreadful noise overhead. No doubt it will be an element of comfort, but only an element of comfort. What they are likely to say in Kent is: "This dreadful noise overhead—we can't stand it". At any rate this exercise has been carried out and you will see the result of it on the plan which I hope you have with Mr. Patrick's proof.

I am not going in any way to concern Sheppey Group with what the effect of these contours are upon Essex, that is Essex's business, but what in fact this plan does is exactly the same as the previous one, except that, of course, the contours have been taken further out. There has been this 10 NNI addition. When one looks at this from a purely Kentish point of view the results are really quite frightening. I will refer to the actual numbers that appear on the plan though I have in mind that they ought to be five less in fact.

The 50 NNI as shown on the plan sweeps through the town of Sheerness again. The 45 NNI covers everywhere else practically that is populous in Sheppey. The 40 NNI includes half the Medway towns, Sittingbourne and those populous villages to which I referred before. Then coming down to the 35 NNI we find that Maidstone and a substantial area about Maidstone containing a substantial population would all be on or about the 35 NNI, would almost touch at any rate, and would include Gravesend and, indeed, Northfleet on the Thames side.

Those are exercises. We do not claim, Mr. Patrick would be the last to claim infallibility for them, they have been reached however by application of the various rules which I indicated to you and have been reached quite objectively. It may be that they are right, it may be they are wrong, but it is quite possible there is substance in this and therefore people in Kent, as far as noise is concerned at least, have some substantial ground for alarm. Of course, in Mr. Patrick's proof he does not give the increased population which would be affected by these various contours, but in the appendices to Mrs. Boston's proof (I think they have been distributed) you will find in fact the actual population figures; for instance (I hope you have them supplied to you in the same sort of order), Appendix MB2A consists of resident population in Mr. Patrick's contour lines in hundreds. One has to remember it is in hundreds, and there are the figures on the basis of hundreds.

The second of Mrs. Boston's appendices which gives the populations of local authorities, perhaps is not of

* See attached wallet of maps and diagrams.

† See CTLA Papers and Proceedings, vol. 1. (HMSO; £4 10s.)

‡ p. 173.

Printed image digitised by the University of Southampton Library Digitisation Unit

immediate moment, although it may be helpful to have these population figures to hand. The next one, which is MB2C, consists of the figures for hospitals, schools, special schools, training centres, grammar schools, secondary schools, and schools which would be within these various contour lines. All we have done in fact is to take the published material and to plot it. MB2D of Mrs. Boston's proof consists in fact of some increases in population if town maps are implemented; in other words that is no more than an expansion of MB2B. There it is, we have carried out these two noise exercises, and we ask you to bear them in mind, and if you think it is suitable, to carry out investigations on the basis of those noise exercises.

With regard to the people affected there is one small special point which we draw to your attention, and that is that the North Kent coast has a high proportion of retired people among its population, Queenborough and Sheppey, and certainly such places as Whitstable and Herne Bay, who are, one knows, in fact as a matter of common sense, but it is confirmed by the Wilson report,* particularly susceptible to noise. One matter which may be a valid point, it may be an invalid point, is the question of tolerance to noise. One appreciates one is dealing with the way people think and the way people feel. It has at any rate been suggested at times that, for example, people living near Heathrow may have a greater tolerance to noise if they can think to themselves: well, the airport may be a nuisance, but at least it is bringing my bread and butter, it is providing the customers for my shop, it is filling my school, or for example, providing somewhere my son Alfred can go and work when he achieves the age of 16, or something of that sort. If there is any substance in that, alas, there is no tolerance for Kent. It is only really when an airport, or something of that sort, is built on one side of an estuary that one can achieve the situation whereby the people on one side gain the economic benefits, and the people on the other side may or may not gain some of the noise disadvantages, but they will not gain any of the economic benefits. An inland site cannot produce this result.

It is literally true, in my submission, that Kent in fact is unlucky. If, for example, the noise in Sheerness is 40 NNI as the Commission's own map indicates, one may safely assume that houses in Sheerness will not sell perhaps readily, certainly not at as high a price as if they were in quieter areas. the same might be true of a house, in shall we say, somewhere towards the eastern end of Southend-on-Sea; there also people will be feeling that the house is less desirable because of noise, but on the other hand the house towards the east of Southend-on-Sea might well have a scarcity value. People working at the airport with increased population, this dreadful word "urbanisation", people coming into the area because of the airport want somewhere to live. That might well have the effect of keeping up the price of houses. As far as Kent is concerned, of course, nobody is going to live on Sheppey and work at Foulness airport. It just would not happen.

* Cmnd. 2056. (HMSO; 19s. 6d.)

So the unfortunate citizens of Sheerness and similar places would lose the value of their houses without any hope that there would be anything to act as a countervailing force. Sir, one feels very sorry; one has listened today, for instance, to the representations made on behalf of the fishermen and the like in Leigh-on-Sea who are liable to lose their livelihood if in fact the Maplin Sands are turned into dry land. I did actually notice I think Mr. Knapp, who is the fisherman, the only alternative place he could find apparently for fishing was off the Kent coast, which one noted in passing. In fact, however, one felt very sorry for them, but there would, none-the-less, be a considerable increase in employment opportunities on this side of the river. It may be having been a fisherman for many years, Mr. Knapp would not wish to start being an official at an airport, but none-the-less there would be employment opportunities far exceeding the employment which is driven out of existence.

In Kent on the other hand, the position may be quite different. To a degree, and it is very difficult to say to what degree, but one suspects to a very substantial degree the Island of Sheppey, for instance, is dependent upon the holiday trade, and the same is true of such places as All Hallows to the west of the Isle of Grain. Obviously it is true of Whitstable and Herne Bay; they might be said not to be so seriously affected. If in fact the holiday trade decays because of noise, then there will be a very serious effect upon the livelihoods of people in North Kent. Of course, the holiday trade should be looked at in perhaps another way, that is to say from the point of view of people who enjoy holidaying on the North Kent coast. If in fact you visit Sheppey . . . maybe you already know it?

Inspector I know Sheppey.

Mr. *Newey* . . . you will have seen mile after mile, in places, of caravans and chalets. You will not find the luxury hotels, they are not to be found there, but there are these chalets, there are the caravans, and each year thousands and thousands of people come, mainly from London, sometimes from further afield, very many with children, and they have the week or fortnight at the seaside. They are not the sort of people who, if they did not go to Sheppey, would go to the South of France, or somewhere like that. These holidays which are provided by the North Kent coast are in the main inexpensive holidays. The journey from London is short, and the accommodation, it must be admitted, is adequate, but it is not luxurious. When people are on holiday, they spend a great deal of their time out of doors; it is not just people who are convalescent, but anybody who is holidaying on the beach and places of that sort, noise could be very troublesome to them.

Furthermore, the chalets and the caravans are not designed to be resistant to noise, quite the reverse. They are pervious to any form of noise. Sir, we should be delighted to discover that these fears are without foundation, but you may think that at least the Sheppey Group and its members are justified in having these fears, that if in fact while there is a stacking area somewhere over the Isle of Thanet, the aircraft are flying

Printed image digitised by the University of Southampton Library Digitisation Unit

overhead regularly, the noise becomes intense in parts of Sheppey, people either having come, will not come again, or having been told, possibly in an exaggerated form, how bad the noise is north of Kent, will go elsewhere for their holidays.

It is bad for business, it is bad also, in my submission for the respective holidaymakers too. Not all visitors to North Kent stay; a large number of visitors come simply for the day, from London, almost entirely, of course. The Kent coast has a good deal to offer for the day visitor. Again I hope you have got them; among the appendices to Mrs. Boston's proof we have included certain plans. I will not take up your time now, but there is one plan, for instance, which shows the beaches in North Kent.* There is another plan which actually does show where various forms of accommodation are to be found, which beaches are an attraction to people from London.† In addition to people who want to come on the beach, Essex is not unique in having a yachting community; people yacht and mess about in boats, as *The Wind in the Willows* puts it, about the mouth of the Medway, and in the area of the Thames adjacent; they go up and down the Swale. There is as live a yachting community in Kent as there is in the county north of the Thames, and of course we have got the North Downs, and there are areas of salt flats which people can walk over, and they enjoy walking over. In fact, the day visitors must number many many thousands.

We have endeavoured to include some statistics, which we hope are right; they are mainly derived from the local authorities, but nobody really keeps account, of the precise number of visitors, but it must be the case that apart from the resident population, the number of staying visitors probably during the summer doubles that resident population in many parts of North Kent, and if day visitors are included, probably one has got half that many again.

I would submit that as a sort of lung for London, North Kent is entitled to special consideration. Londoners no doubt must have airports, but it is not unimportant that it should have lungs, places where people can go from the south for recreation.

Those are the main points which I think arise from the proofs of Mr. Patrick and Mrs. Boston. The other gentleman I am able to call, Captain Wilks, is in fact a river and sea pilot operating from Sheerness. You have seen their proofs. Really I think the prime value . . . I hope it is of value . . . of his evidence is this. You have heard fears for the Crouch, and for the northern area of the Thames. I ask you to appreciate, as I am sure you do, that similar fears can be felt for the Medway which has its Conservancy which has not, as far as I can see, been represented at this inquiry. Capt. Wilks and his fellow river pilots are very worried about what would be the effect on the Medway of the reclamation, as it is called . . . it is not strictly reclamation . . . the making dry of the Maplin Sands. The other representatives I would wish to make to you are the ones based on the two proofs for which I cannot call witnesses; Mr. Hawkes's proof deals with the bird situation in Kent. I think we were slightly sad to see that the Nature Conservancy and the Royal Society for the Protection of Birds in their proofs mentioned not at all the situation in Kent, but of course, there are massive concentrations of birds in Kent. If you have had an opportunity to look at Mr. Wilks's proof, you will see that at the western end of the Swale and again the eastern end of the Swale, there are nature reserves, that in fact they are considered to be of international significance, particularly the western one, and the North Kent Marshes is the stopping off and feeding place for birds on migration from north to south, and vice-versa. There seems to be nowhere else to replace the Swale for this purpose. In the winter of 1968-69 the western Swale had the largest flock of geese anywhere reported, and Mr. Hawkes goes on, and it may be this is similar evidence to that which you have received from other witnesses, and may receive from yet more, as to what is the effect of noise of bird life. But he does produce some very substantial figures for the volume of bird life. Then he goes on to speak about the bird strike, about which you have got evidence from other sources also, but something which I was looking forward to Mr. Hawkes being able to speak about personally was the problem of pollution, which is I think a new point. I made a mistake as to that, but again we ask the Commission to bear it in mind, because as you will see, Mr. Hawkes himself has had some experience of pollution, not from aircraft, but from other sources affecting birds, and obviously there must be some imperfectly consumed fuel exuded by aircraft. Mr. Newman . . . from an intervention of yours earlier it is obvious you have read his proof . . . there it is, he knows what he is talking about, because this is his life's work. It is one more point which the Commission might like to consider. It is not without importance. Perhaps people should not listen to their wireless sets and view their television sets, but they do, and they regard them as of some significance, and no doubt it would be sad if North Kent was a place where you could not obtain proper reception.

Those are the various points which we wish to make, with the exception of one more, communications. The Kent County Council mentioned the problems of the Dartford development. May I ask the Commission to bear in mind the problem of the roads leading to the Dartford development on the southern side, and how adequate or inadequate they are. Having said all that, I will call before you, if I may, Mr. Patrick.

MR. RICHARD JAMES PATRICK called

examined by Mr. Newey

1989 I think you are Richard James Patrick, are you not? — I am.

1990 In fact you live in Sittingbourne; you have got a Degree in Physics, and you are an Associate of the Institute of Physics? — That is correct.

* p. 183.
† p. 184.

Printed image digitised by the University of Southampton Library Digitisation Unit

1991 You are also the Senior Systems Engineer for Elliott Flight Automation Ltd. at Rochester? – That is correct.

1992 Your work is primarily concerned in research and development of automatic test equipment for military aircraft? – Yes.

1993 You are also in fact a member of the Sittingbourne Council. It is right to say that until you were asked to do so by the Sheppey Group, of which you are a member, you never had occasion to try and plot NNI contours? – Yes.

1994 At the instigation of the Group you have had a go, would be a fair way to put it? – Yes.

1995 You have carried out the two exercises which I described to the Inspector, and which it is unnecessary for me to ask you to go through again in detail? – Yes.

1996 I would just like you to spend one moment on a point which I am conscious that I have very inadequately touched upon: how did you, taking the Commission's plan, for a four-runway airport, and taking the Board of Trade plan for Heathrow, 1967, arrive at the result of your first exercise? – Firstly both exercises to a certain extent were based on the assumption that the Commission had made its own reduction, although it has relatively small effect on my map, I assume that the Commission had made that reduction, then what at present would have appeared to have been a 50 NNI compares with what was shown by the Commission as 40 NNI, would be expected to be approximately in the same position at the 45 NNI at Heathrow, because the number of aircraft movements out of the four-runway airport would be that much greater than the number of aircraft movements out of Heathrow, therefore I started at the 45 NNI contour, and comparing that with the 40 NNI contour drawn by the Commission, measured up the distances of separation between various contour lines. From this one could get an indication of the extent to which the rate of decrease of contours levelled out as aircraft got further away, or were further away from the airport. Having done that I considered the Commission contour lines, and in most respects these seemed to fit in with the Submission No. 2* made by the Essex County Council. There is one significant difference, but even that one can take into account, and plotted these separation of NNI contours on the flight paths that the Commission appears to have assumed were used. We had to make that assumption since the Commission did not tell us what flight paths they had assumed. Having established a number of points, I then made as good an estimate as I could of where the contours would go joining them up and making a number of check measurements to see these appeared to be on the whole comparable to what was happening at Heathrow in December 1967.

1997 Actually, how do your contours compare in fact with the ones to which you refer? – If we can consider RJP.1* at present, because it is easier to get that–my map RJP.1 shows a 35 contour, and the Essex County Council also produces a 35 NNI contour. In some respects my contour in fact lies closer to the airport, in other places it lies further out–we have here the two on top of each other. The major significant difference lies in the westerly of the two lobes on the south end of the airport, where the Essex County Council seem to have assumed that this would be significantly smaller than I have assumed. The Commission's map shows that that westerly lobe is somewhat smaller, and this means either that the number of aircraft using that lobe would be smaller than the number using the easterly runway, or the type of aircraft using that runway would be relatively quieter. However, there is one reason for assuming that it would not be lower–this fact that the plan is shown as for a busy summer day when the airport is fully used, and it is unlikely that the runway would be used differentially when it is at its peak. And the other factor is that the Commision's map, on the westerly lobe at the northern end, does not show the same reduction. The two lobes are concerned mainly with aircraft coming in for landing, rather than aircraft taking off, and it seems likely that the aircraft that would land on the westerly runway, landing towards the southwest, would also land on the easterly runway when landing towards the northeast and to this extent there is a difference; but they are largely comparable.

1998 As far as the Kent contours are concerned, I think in fact theirs are somewhat smaller than the contours you have arrived at? – They are considerably smaller. As I understand it–and I said this in my proof–the assumption that was made by the Kent County Council in the lack of any concrete information from the Commission was that the best thing to do was to make a straight logarithmic progression of where the runways would be . . .

1999 *Inspector* Could I intervene here? The question of NNI contours–the assumptions upon which they are based–has been discussed before at this hearing. I have just jotted down here that they are dependent upon the ultimate siting of the airport, the alignment of the runways, the number of planes, the type of planes, the distribution of the flight paths, and assumptions concerning noise certification. All the Commission has done in that booklet is to give the best ideal possible for the general information of the public. It is quite obvious that during Stages III, IV and V the whole of this field must be traversed in much greater detail, and all those concerned will have the opportunity of commenting upon the assumptions made, and consequently upon all the interests affected. All I ask is that from now on, not too much attention is paid to discussions on details between this NNI contour and that–it is serving no good purpose.

2000 Mr. *Newey* I appreciate that, Sir. I confess that my primary reason for asking Mr. Patrick is to satisfy

* Essex and Hertfordshire County Councils. Submission No. 2. Statement on proposed sites. October 1968. Available for inspection at the County Council Offices, Hertford and Chelmsford.

* p. 173.

Printed image digitised by the University of Southampton Library Digitisation Unit

you that he had not simply worked on the principle of thinking of a number–he has gone into it very thoroughly and done the best he can. (*to the witness*) Just one last question on NNI figures, Mr. Patrick–from your knowledge of the aircraft industry as much as anything, what do you think is the significance of a 30 NNI figure? – Well, the most important significance is the fact that it is the level that the Wilson Committee considered significant at night-time. We are particularly concerned with night-time movements, particularly since one of the major factors is the fact that supposedly there would be no restrictions on night-time movements because it is close to the sea, and thus the 30 NNI would be likely to lie outside the significant daytime contours, which is not the case generally at present airports because of restrictions on night flying.

2001 Thank you. I think the other part of your proof is the part which I have not commented upon–you have tried, basing yourself on statistics published in *Flight*,* to arrive at figures for statistics relating to air crashes? – That is right.

2002 And I think the primary purpose was to consider whether it is safer–if I may use that word!–to crash into the sea, or on land?

Inspector This is another matter upon which the Commission is now undertaking detailed investigations.

Cross-examined by Mr. Keene (Essex County Council)

2003 I hope you will understand, Sir, if I do not cross-examine Mr. Patrick on a number of things which I otherwise would have done! (*to the witness*) One or two points on your contours–because you have used the contour lines drawn by experts for the Roskill Commission–as you say–your 30 and 35 contours are of course assuming day-time traffic rather than night-time traffic? – Correct.

2004 And whether that assumption is valid or not, I am not going to cross swords with you now on such an assumption! Paragraph 6† of your proof, Mr. Patrick–you are talking there about really the ATC figures, to a certain extent? – That is correct.

2005 And you refer to your assumption–the stacking areas were extended from 5,000 ft upwards; and if that evidence of Mr. Dunford were to turn out to be accurate, that would largely alleviate the problems you are talking about there? – Yes.

2006 Paragraph 8–dealing with your assumed reduction of 10 NNI and bearing in mind the qualification you have indeed made, that you say you think it is most unrealistic not to base your hopes on a map which may prove to be unrealistic–would it not be equally foolish to leave out of account the possibility of such a reduction? – It would be, if there were any expert evidence on which to base that assumption. Apart from the statements in the Commission's information, the only assumption we have seen of a 10 NNI reduction is the statement that I referred to in sub-paragraph (c), which was certainly hedged around somewhat. It was not a definitive statement, and indeed the sub-committee of the international conference* called by the Board of Trade quite specifically stated that they were not prepared to give any estimate at all of what might or might not be achieved, because they did not believe there was sufficient available information on which to make such an estimate.

2007 But you would agree that this was really a question of the degree of probability of such an agreement being reached on certification, and obviously it is a reasonable probability which the Commission should take into account? – I accept that. On the other hand, I think we have seen no definite technical estimate. We have had some talk with a Professor at the University of Melbourne, who is involved in crystallography, and who was involved in the aircraft industry for a long time, who has recently been at conferences in this country; and he stated that the best estimate he had heard within the technical side of the industry was that they would be happy to maintain the present aircraft noise as aircraft got larger.

2008 Well, the Commission will make its own decision on this! I am not sure that I follow the first reason you give for doing this on your plan RJP.2.† You say, at 8 (a), "Firstly the airport will be in operation in 1975, that is to say within six years, and all four runways are likely to be required before 1985"–and you conclude, "so for at least 14 years there will be an airport operational without a reduction of 10 NNI". Of course your plan RJP.2 is based on a four-runway airport. – It is. I must admit that sub-paragraph (a) is not concerned solely with my plan RJP.2–for the purposes of time mainly we did not feel it practical to deal with the two-runway airport as well, for similar reasons to those given by your own consultant, because the four-runway airport is the worst case, we concentrated on the four-runway airport. On the other hand, as we read the Commission's statement,‡ we considered it extremely unsatisfactory because as far as we can see the two-runway airport would cease to be in existence before the full advantage of certification could be achieved. But what we are trying to do here is to persuade the Commission in their future work to show at least on the two-runway plan what the position is likely to be not taking into account this reduction, because I do not believe the reduction will be made while the two-runway airport is in existence.

2009 So you agree here that RJP.2 does not represent the situation for the 14 years you talk about there? Really only the period from 1985 to, let us say, 1989, if certification came in 20 years or so? – Yes.

2010 Can we then turn to page 5§ of your proof–what I understand you to be saying at the top of that

* January 1969.

† p. 170.

* See *Aircraft Noise: report of an International Conference on the Reduction of Noise and Disturbance caused by Civil Aircraft.* (HMSO; 8s.)

† p. 174.

‡ *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. xv.

§ p. 171.

Printed image digitised by the University of Southampton Library Digitisation Unit

page there really, is that social conditions vary between one area and another, and really that more social services need to be done in the short-listed areas? – That is correct.

2011 And I suppose it is possible that the criteria for intrusiveness can be reduced upwards rather than downwards as a result of that? – It is possible. Here we are not really concerned with intrusiveness in this particular mentioned appendix to the Wilson report.* They are concerned with people who have complained because the area is poor, or very poor because of various circumstances rather than the noise being intrusive, very intrusive, or the other categories.

2012 This is all part of intrusiveness, is it not? – It is related to it very closely.

2013 Your point being that you make there—are you saying in effect then that as a general principle at all of the short-listed sites the Commission ought really to show what NNI the large towns and cities in the neighbourhood come into, and extend them down like that? – We are certainly saying that although the worst nuisance is within the 40 NNI, there is nuisance suffered outside, and some sort of figure ought to be taken into account by the Commission as to the amount of annoyance to how many people there would be outside the 40 NNI—indeed, at all sites.

2014 Because that is where the large populations are—outside the NNI 40. – At least in this case, and certainly in the case of at least one of the other sites—we do not know what is happening to Thurleigh, anyway.

2015 It could be a number of the other sites, Mr. Patrick. As I read your reasons (a), (b) and (c) there, that you put forward for the adoption of a 30 NNI as your lowest NNI, those three reasons really suggest—they do not necessarily suggest 30? – No.

2016 Do I understand from what you say below what you said in your evidence in chief, that really the 30 NNI is introduced because of the night-time. – Yes.

2017 I am sure you would not want to make an unfair point—is it true that the Wilson report said that the 40 was the critical range for night-time? – This is so. On the other hand, it is comparable to the 50-60 rather than the 45 or 40, in the Wilson report.

2018 And you have presumably studied the social survey in the Wilson report? – Yes.

2019 It is the case, is it not, from that, that at 30 NNI if we are looking at the night-time conditions, that only some 11 or 12 per cent of people mentioned aircraft noise as a feature of their living conditions? – It is. I have not a copy of the report . . .

2020 I shall give you the reference—it is page 212, figure 5.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2021 Just three questions, Mr. Patrick. You compiled your figures on the basis of the Roskill Commission report, that flight paths cross Canewdon? – Yes.

2022 They would need some revision, if the proposal for re-routing was affected? – Yes.

2023 On safety—you obviously studied the question of safety on page 6* of your evidence. Would you, in view of your studies, accept it as quite proper practice to site a hydro-depot for major tankers in close proximity to a major airport? – As far as one can see, there have been no great calamities as a result of this. I would not choose to do this, given a completely free hand, but the information available does not show that as yet there has been any major calamity as a result of such a juxtaposition.

2024 Are there any other airports in such a juxtaposition? – I can think of none.

2025 Neither can I. Your last paragraph, where you talk in general terms about rescue operations—I imagine you are aware that there is concern in this area already on ordinary sea rescues with the elimination of the helicopters based at Canewdon? The Foulness site could be regarded as remote, and could in fact have certain natural obstacles to efficient rescue—such as, in fact (unless the whole of the Maplin Sands are recovered) areas which are half in and half out of water for a considerable part of the day. Would you regard those as presenting peculiar difficulties in the event of a rescue being necessary? – The areas in deep water are more likely to cause problems. But let me say that the concern about helicopters is also shared! The major problem, as I see it, is not only in the problem of rescuing from water, but the sheer scale that you need to evacuate, say, a jumbo jet, with at least three hundred people on board. You would need an awful lot of craft to handle that evacuation—it is a different sort of problem from that of emptying a yacht.

2026 You would need a resident hovercraft or a fleet of helicopters. – You would need considerable facilities.

Cross-examined by Mr. Mathiesen (Southend-on-Sea District Chamber of Trade and Industry)

2027 This dog-leg going into Kent, is this taken on the question that aircraft will only fly in Kent so that they will in fact join the air-lane, turning west up through the Thames Estuary. – Practically the whole construction of this dog-leg over Kent, as you describe it, comes from the aircraft that are coming in to land at the airport, when the wind conditions require that they go from southwards to the south-east. For that, we have a map on the wall here with two little purple stars on it, showing the 12 nautical mile positions from the end of the Roskill Commission's runways, which is the point at which the aircraft would have to come in, assuming that the practice was continued, that an instrument landing was required, and the aircraft that are causing the problems in this dog-leg are the aircraft coming over directly from their flight paths from their point of origin, or from the stacking areas, to enter the final approach in the approximate position of these two stars.

*Cmnd. 2056. (HMSO; 19s. 6d.)

* p. 171.

Printed image digitised by the University of Southampton Library Digitisation Unit

2028 *Inspector* We are talking on the hypothesis about where stacking areas are going to be?

Mr. *Mathiesen* Yes, I accept that. What I am concerned with is the extensive distribution and presentation of these contours which again gives the layman a false impression of the amount of noise which one is going to suffer.

Inspector What I was trying to say is that Sheppey have made their fears known to us but more will be known later about the exact nature of the assumptions on which the NNI contours will later be drawn.

2029 Mr. *Mathiesen* Can I ask the witness one final question. You know that out of Southend airport we have had in the last year, and up to a certain time ago, the One-Eleven operating on charter flights on behalf of Channel Airways. Would you say that particular aircraft has caused any significant noise in Kent? — The One-Eleven itself has not, or has not introduced any significant noise, although the Viscounts and the Vanguard flying out of Southend very frequently do. That is so, the frequency of flights—and the occasions when they do they have taken off to the west and come round—is at a considerably greater height than at Foulness, but generally the amount of noise is not anything like as significant as would be expected from an airport at Foulness. There is a particular qualification I must make which is in the Whitstable area where the aircraft are held down in order to come underneath one of the main flight paths into Heathrow, and artificially forced down, as I show them, artificially forced down flight paths L-1, L-2, L-3,* and in this particular case there is considerable concern—this is in the Chesterfield area because of the noise which has been experienced there.

2030 And without referring to NNI contours, but in language that laymen can understand, would you say in the Whitstable area on those occasions it is either intrusive or annoying? — I would not like to say, not having experienced it personally.

2031 You have not? — I have not experienced it personally.

Inspector Any other questions?

Cross-examined by Mr. Arnold (Foulness Island Residents' Association)

2032 Are you a native of Sittingbourne? — I have lived in Sittingbourne for six years.

2033 Have you ever heard of Shoeburyness artillery? — Not in Sittingbourne; it is heard considerably in Sheerness, but the hills of the Isle of Sheppey shield Sittingbourne itself.

Inspector I have no questions.

Mr. *Newey* I have no re-examination. Thank you, Mr. Patrick.

(*The witness withdrew*)

Mr. *Newey* I now call Mrs. Boston.

* p. 174.

MRS. MARGARET BOSTON* called

examined by Mr. Newey

2034 I think you are Margaret Boston, are you not? — Yes.

2035 And you live at 3 Manwood Close, Sittingbourne, Kent? — Yes.

2036 I think you are a Bachelor of Commerce and Economics, University of Melbourne, and Market Research Consultant? — Yes. I am.

2037 I think the Member of Parliament for Sittingbourne has the honour of being your husband, has he not? — Yes.

2038 And you are a member of the Executive Committee of the Sheppey Group, are you not? — I am.

2039 Mrs. Boston, you very kindly devoted a good many hours to collecting information, I think on a Market Research basis, have you not, which is set out in this proof?* — Yes.

2040 And the proof has been circulated. I think perhaps it speaks for itself in a sense. As far as the exhibits are concerned, if I can just ask you to introduce them, particularly as they have been distributed rather late: in fact there is an index at the front of your proof which may help people to find them, but Appendix MB 1 consists of details of the Sheppey Group with copy letters from the four authorities, who particularly asked for their names to be mentioned? — Yes.

2041 Then I think we have on MB 2, which I have already referred to, the figures of population and figures of schools and the like which would be affected if Mr. Patrick's contours are correct? — Yes.

2042 Then I think in fact you set out in MB 3 some material about the holiday trade? — Yes.

2043 Largely derived from the local authorities, I think? — Yes.

2044 Again everyone has had time to look at it, at any rate it speaks for itself. The holiday season, I perhaps should draw attention to, March to October with an August peak. That is the sort of seaside holiday which the husband, wife and children take. — Yes, it starts round about Easter.

2045 Yes. Now, in fact there are three plans which do help to illustrate the desirability of this area as a holiday area, are there not? One in fact is plan MB 2† which shows the peak use of beaches extensively used, constricted, moderately used; the Kent urban holiday resorts; Kent holiday caravan and camping sites or areas; sailing facilities, and other urban areas? — Yes.

2046 It speaks for itself. I think your next plan is MB 3 which deals with coastal preserves, and this is based upon Kent County Council document, high amenity, and scientific value, high amenity value, improve or provide facilities? — Yes. The actual shading has not

* See also p. 175.
† p. 183.

Printed image digitised by the University of Southampton Library Digitisation Unit

come out very well in the copying, but the section which looks a slightly milky-white, this is a very good section, has high amenity and scientific value, and you can see it includes the area to the south of Sheppey, the Swale Estuary between Sheppey and the Netherlands which is where Mr. Hawkes's bird resorts are.

2047 One sees it includes the northern part which people in Kent regard as the All Hallows area? — Yes.

2048 The next one shows areas of outstanding natural beauty and scientific interest; we are dealing mainly with the north areas and some of the more attractive saltings? — Yes. These are areas of scientific value as opposed to natural beauty. The horizontal lines to the south of the map are the Kent Downs, an area of outstanding natural beauty. This is the upland area; and the diagonal lines the areas of scientific interest, which are mostly marsh lands.

2049 I think I will take you back for one moment to your appendices* proper. We were going to in fact inform the Inspector about this, but I see from the proof somebody else has already informed him about the problem of the *Richard Montgomery,* the ship just off shore at Sheerness, and there is the plan which I think has been prepared, MB 5,† intended to link with the appendix referring to the *Richard Montgomery* showing how on present published documentation flight paths might extend over it? — Yes, the *Richard Montgomery* would be about mid-way between the direct flight paths.

2050 Mrs. Boston, so that perhaps the Inspector can appreciate why you mention this, I think it is right to say, we are not necessarily saying that there will necessarily be an explosion and the ship will blow up; what we are drawing attention to primarily is the fears of people in Sheerness? — Yes. I think these are very real fears. I tend to be the person who gets the telephone calls from members of the public when they hear rumours of people coming to board the *Richard Montgomery,* because I am the person who is at home, and I can assure you once a rumour gets around the phone is going very hot indeed.

2051 People have been told if it goes up in fact there will be damage to property throughout Sheerness, have they not? — Yes. The official estimate (and we give the Hansard reference in the appendix) is that there will be structural damage within the radius of two miles and cracking, I think within a wider radius, but we don't want to over-estimate this. The point we want to stress is that local people are concerned about it and that even if the scientific probability of such an event happening is very remote we do feel local people need to know it has been investigated, that they may be reassured to some extent, their worries are unfounded.

2052 I think Appendix V is in fact a copy of a letter by Dr. Prentice of the Department of Geology of King's College, London University? — Yes.

2053 And supplied to the group, and Dr. Prentice gave his permission for it being put forward though he was not minded to give evidence himself? — No; he offered, but it largely is superfluous because we have been assured by the Commission they are looking into the problem, but when we included it we did not know this and we thought we might have to persuade them it needed looking into.

2054 The other matter you refer to in your proof is, of course, the problem of coast protection on the northern side of Kent which I am sure has already been mentioned in this Inquiry. — Yes.

2055 That is why I did not mention it in opening, but it is a very real problem. — Yes, I think we are satisfied now the Commission are really looking at this problem, but again when we drew up these maps and appendices we did not know what the Commission's action was going to be on this, and I think if you look at the floods map . . .

2056 That is MB 6.* — Yes, you can see the very large area of the Isle of Sheppey which is liable to flooding, and we have in fact supplied the Commission with a very much larger scale map which has not been circulated because it is too big which shows during the 1953 floods there was heavy flooding in the urban areas as well as in fact in the marsh land including Sheerness and Queenborough, and Kent as has been mentioned earlier, but the Isle of Sheppey was flooded in 1897 when a similar surge tide arose in Essex.

2057 This is another reason for looking carefully at the effect of reclaiming the whole of the Maplin Sands? — Yes. Local people are worried about it.

2058 I think those are the most substantial matters in your proof in any event. — Yes.

Cross-examined by Mr. Keene (Essex County Council)

2059 Would I be right in thinking the majority of members of your group do not in fact come from Sheppey? Despite the name? — Yes. I would think so, yes.

2060 They don't come from Sheppey? — No.

2061 Would you mind telling me why you are called the Sheppey Group? — It happened almost accidentally, because we started originally as a small group of people who were rather concerned about efforts as it appeared to us to push the third London airport on to the Isle of Sheppey, and it was a small group of perhaps 30 people who decided we would keep an eye on this, and that is how it started. It simply became called "the Sheppey Group" because nobody could think of a better name; we would in fact have changed the name before now if anybody had been able to think of a better name, and also if in our situation we were not such—it is quite an involved business to in fact change our name.

2062 I had not realised you were so riddled with bureaucracy. In any event the group did not come into

* p. 178.
† p. 186.

* p. 187.

Printed image digitised by the University of Southampton Library Digitisation Unit

existence because of the upsurge of disapproval against the Foulness proposal? – No.

2063 On the second page of your proof, paragraph (b),* you say "The Wilson report suggests that elderly people are particularly likely to be affected by noise". Do you know what the reference is of that? – No, I don't off-hand, I am sorry.

2064 I am not going to make any great point on this, it is just I could not find the reference myself. – I am sorry—I will have a look for it afterwards.

2065 We can sort this out later. Lower down the page you talk about the projected population. I see from the table which you have as Appendix 2, table A, that in fact the population of Queenborough-in-Sheppey has declined over the period 1966-1968? – Actually this is because the 1966 census was a sample census. If you compare the mini figures, not these figures in 1966 sample census, with the figures in the full census in 1961, and the Registrar General's media estimates published that year you will find many inconsistencies on the population size. There is nothing particular about Queenborough and Sheppey on this. This happens largely because you are comparing a sample census with the margin of error of a full census.

2066 I am wondering in that case what value you think we can derive from that table of yours? – Well, I would say I was not putting it in in the hope that Essex would derive any value from it. I thought it might be helpful to the Roskill Commission.

2067 That is what I mean by "we". I was using an all embracing term. But it is the case, is not it, that the population on the Isle of Sheppey has been pretty static for some time? – Yes, in fact the population on Sheppey has declined, and this is one of the main reasons we are so concerned with the need for development in Sheppey, because without very much development and industrial residential expansion the Isle of Sheppey would decline still further.

2068 Perhaps an airport would have been a good idea. On your third page,* you say: "A planning policy has been agreed between the Kent County Council and the Surrey County Council in relation to development between areas likely to be affected by aircraft from Gatwick". – Yes.

2069 I think these planning policies do not apply to areas below 40 NNI by day or 35 NNI at night-time. – No.

2070 No. – It is not that. It is just there has been no NNI limit by night specified. The Board of Trade did not in fact, as I understand, supply the appropriate councils with the information necessary for them to determine what the night NNI contour would be round Gatwick which was equal to the 40 or 50 NNI by day. It is this absence of information.

2071 That may be the reason, but that is the policy, as I have stated it? – No, I would not agree with the way you phrase it.

2072 You think there are some areas where we do not quite know what the NNI is by night at Gatwick whereas that is used as a reason for refusing planning permission? – Yes, nobody knows what the NNI levels are around anywhere, since no night tests have been carried out. It has always been an estimate on somebody's behalf as to what the appropriate night-time level is in relation to the day-time level.

2073 You have not seen the night-time levels for Gatwick? – No.

2074 They in fact exist. – Are they in fact somebody's estimates, or are they in fact factual?

2075 As I understand they have been drawn up by the Board of Trade. – The Board of Trade were not prepared to draw up any night-time levels, equivalent to 40 to 45 NNI by day; why I do not know. But this is the reason why no night-time level is specified in Zone 3.

2076 Therefore it is applied as part of a planning reason for refusing planning permission? – That particular point I cannot answer. The only illustrations I have seen illustrating the actual zones refer to the combination of day and night. As far as I am aware, they do not consider them separately. If you have other evidence, they will be interested to see it.

2077 You have presumably derived that from this little booklet* showing the various zones applied by the two County Councils? – No.

2078 It does in fact show the policies applied by the two County Councils. Can we turn to page 5† of your proof, paragraph 11 (a): you say towards the end of that paragraph with regard to the holiday trade, that "Much of their time is spent outdoors, where aircraft noise is more noticeable". I would have tended to think very much the same thing as you appear to have thought. Did you know in fact the Wilson Committee came to the conclusion that that was not the case, but the reverse was true? – No, I did not, no.

2079 It is the case, and for your sake and everybody else's I will give you the reference; it appears at page 73, para. 293 of the Wilson report, and that is a summary of all the information which is contained in appendix 10; in fact what it amounts to . . . it is not a question, it is information . . . if you make a particular noise at a decibel level outside a house, it has much the same effect inside as outside on the people concerned, as far as intrusive noise is concerned. The attenuation of the noise due to the building has no effect on the intrusiveness of the noise. – Do you mean to say this would therefore imply that there is no insulation effect in being inside a house?

2080 Quite the opposite; according to the Wilson Committee there is an insulation effect, but people are more sensitive to noise when they are indoors than outdoors. – I cannot accept this, otherwise I do not see how Essex County Council can possibly recommend that

* p. 175.

* p. 30.
† p. 176.

Printed image digitised by the University of Southampton Library Digitisation Unit

the insulation of schools will be an adequate safeguard against interference to school lessons from aircraft noise.

2081 That depends upon the degree of insulation. — What I am suggesting is that the degree of insulation in chalets and bungalows is very much lower than the average.

2082 I do not think you and I can resolve whether the Wilson Committee were right. — I thank you for giving me that reference, but I do not accept it without further study.

2083 Would you turn to page 7* of your proof; you refer to flooding and coastal erosion with a cross-reference to the fifth appendix, the letter from Dr. Prentice. — Yes.

2084 He refers in his letter to the Foulness site proposal to build up 9,000 acres of the Maplin Sands 22 ft above low-water mark. Do you know where he got those figures from? — Yes, the Noise Abatement Society's† proposals put forward several months earlier.

2085 What he is worried about there, and what you are worried about so far as tidal effects, and the effects of flooding, is really exactly what the hydraulic model is intended to find out? — Yes, we very much hope so.

Cross-examined by Mr. Wood

2086 Dealing with the points, I must take up Mr. Keene on the point he made about outdoor activities, but in those days before structural changes inhibited my cricket, certainly extraneous noise had an effect upon my batsmanship, and certainly when putting at golf, I would not like a jet aircraft flying 1,000 feet above me. I understand that your problems in Kent are very similar to those that we have in Essex, in that your population of old people, whether you deal with them as households or individuals, is roughly 20 per cent; you have a large holiday floating population, therefore your problems can be compared with ours? — That type of problem, yes; there are problems you have that we are spared.

2087 Yes, urbanisation, being one of them. One question I would like to ask you: in cross-examination by, I believe my friend Mr. Smith with Mr. Fleming, he did raise a point in the Wilson report, I think page 210. The point he was making, and Mr. Fleming criticised him on, that there is an apparent discrepancy in those two tables which arose out of the fact that one table was based upon the percentage of people who are affected by aircraft noise, and the other table was based upon figures derived from that percentage of people who are affected by aircraft noise, and the inferences to be drawn from that degree of being affected. You as a social worker, and I believe you are, do you find any difficulty in reconciling those two tables and the inferences to be drawn from them? — I am not in fact a social worker, I am a market research consultant, and my professional job is in fact carrying out social surveys, not knocking on the door interviewing people, but discussing the problems, and planning the surveys, devising the questionnaire, putting them through the computer, and analysing the results, and writing a report at the end. Consequently, I am very familiar with the actual sort of work carried out in the social survey commissioned by the Wilson report. In fact since that particular witness had not in fact seen the departmental report, I have managed to get hold of it, and I have had a look at it, and his main worry seemed to be that table 3 (a) . . . his suggestion was that this was not in fact percentages of the total population, but percentages of the population who were annoyed by aircraft noise, because he could not in fact see how, for instance, at 30 NNI, 42 per cent of people were startled, but yet a very much lower percentage than this at that same contour level regarded themselves as annoyed by aircraft noise, and his suggestion was that the only way these two things could be reconciled was in fact that table 3 (a) and 3 (b) were based on this sub-group . . . not on the total population . . . of the people who were annoyed. I have in fact got hold of the actual volume.

2088 Would you like to read it out to us now? — I have looked at it, and there is no doubt at all that table 3 (a) is based on total population; that tables 5, 6, 7, etc., are also based on total population, and that the apparent discrepancy which he felt made these two types of table irreconcilable is, I think, that he did not understand the purpose behind the actual questions that were asked. I can elaborate on this, but the main point I want to make is that he was casting doubts on the validity of the figures which had been quoted from tables 3 (a) and 3 (b), and referring back to the original document, this is incorrect.

Mr. *Wood* I am grateful to know I can leave the interpretation of that to the Inspector.

Inspector Any other questions? I have no questions.

Re-examined by Mr. Newey

2089 I think the only question I want to ask on re-examination is: What is the reference to the document you have just been referring to? — What is it called . . .

2090 You sought out the original document—where would, for instance, the Commission find it, if it wished to refer to it? — From the Central Office of Information. It is headed, "The Social Survey *Aircraft Noise: Findings Around London Heathrow Airport. A Survey made in 1964 for the Wilson Committee on the Problem of Noise.* The Central Office of Information".

2091 Any number? — It is not numbered, but there is a number SS.337—I imagine that is their own reference to it.

(*The witness withdrew*)

CAPTAIN PETER WILKS called

2092 Mr. *Newey* You are Captain Peter Wilks? — I am.

* p. 177.

† Available from the Noise Abatement Society, 6 Old Bond St., London W1. (£3 3s. 0d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

2093 Of Coleshall, Iwade, near Sittingbourne, in Kent. You are a Master Mariner, First Class Pilot licensed by Trinity House piloting in the Medway and Thames for thirteen years? – That is correct.

2094 Prior to that, you have been engaged as a navigating officer in British cargo liners for a period of fifteen years? – I was.

2095 And you are now a member of the Queenborough-in-Sheppey Borough Council? – I am.

2096 Captain Wilks, in your evidence* you speak of the concern felt by yourself and by some of your colleagues concerning the proposal to cover the Maplin Sands with dry land, and its possible effect on tidal flow? – That is correct.

2097 And I think your particular concern is with regard to the Medway? – And all the approach channels from the Thames Estuary.

2098 You do provide in paragraph 4 of your evidence some statistics. I think you say, "Tankers travelling to and from the Kent Oil Refinery, Isle of Grain, carried over twenty-four million tons of crude oil and oil products backwards and forwards last year". – Yes.

2099 And you mention that in 1968 "more than one thousand tankers of over three thousand tons gross, approximately two and thirty-three of these had draughts between thirty-five and forty-one feet". – Yes.

Inspector These documents have been circulated for some time.

2100 Mr. *Newey* Yes. (*to the witness*) You are glad to hear that the Commission is looking into the question of these different channels, and I think you mention the problem of radio beacons, and in that connection you regard them as a navigational hazard. – I think there is a danger. I am not sure where they would be sited–I think there is a danger to shipping, and a degree of danger probably to the beacons themselves.

2101 At any rate, there is another point which exists, if the Commission has not already thought of it!

Cross-examined by Mr. Purchase (Bernard Clark & Partners)

2102 Are you aware that other members of your profession also using the Channel have read considerable literature on the subject, and arrived at different conclusions to your own? – I cannot speak for other members.

(*The witness withdrew*)

Mr. *Newey* I am sorry, Sir–without my other witnesses, there is nothing else I wish to add. That is the case for the Sheppey Group.

Inspector We are obliged for all the information you have given.

* p. 188.

MR. W. S. KIRKIP* called

(*Amalgamated Union of Engineering and Foundry Workers*)

Mr. *Kirkip* My name is William S. Kirkip, and I am Regional Officer, Amalgamated Union of Engineering and Foundry Workers. Sir, I listened this morning to some of the witnesses, and some of the statements made, and I heard the reference made to the fact that the Commission was concerned with people. I hope this is true, because the points I am going to raise concern in fact the livelihood of approximately 1,600 people. These are the workers who are employed by the Atomic Energy Authority and various government departments actually on Foulness and adjacent. The actual position, roughly, the approximate figures are as follows: at the AWRE, that is, the Atomic Energy establishment–480; at the Environmental Testing Centre, 100; the ARE on Potton Island, 200; the Ministry of Defence, 200; and the Proving and Experimental Establishment at Shoeburyness, roughly 600.

These are not recent developments. There have been establishments of one sort or another for many years, and in fact we have members who have been employed in some of these establishments for 20 years, and the fact remains that if the proposal goes through for an airport at Foulness, all of these departments will close down, and therefore there is the problem of 1,600 people roughly who will either have to be found alternative employment or be declared redundant.

Out of these 1,600, we are directly concerned as a union with approximately 400, and the majority of these are skilled craftsmen. It includes incidentally about 25 to 30 apprentices–and let me say that the Atomic Energy Authority has an extremely good apprenticeship scheme, training these craftsmen, and this of course raises the problem as to what is to happen to these youngsters who are being trained as craftsmen, if in fact the establishment is to close down; and I think, at this particular time, when all the emphasis is being put on the necessity for training, and particularly for training skilled craftsmen for the engineering industry, it would be a tragedy if in fact this scheme resulted in these particular apprentices not receiving the training to which they are entitled.

Now, among the 400 of our members there are a number employed by the Atomic Energy Authority who are established–58 in fact–and who therefore have a guarantee of employment in the sense that if the establishment closes down, then the Authority is under an obligation to find them suitable alternative work. The problem here is that there is no suitable alternative work in the area. If in fact the other establishments were remaining open, and it was only the Atomic Energy place that was closing, then there might be a possibility of transferring some of these workers to the other establishments; but as they all would be closing down, then the nearest alternative work for these individuals would be either at Hull or Aldermaston. By the very

* See also p. 192.

Printed image digitised by the University of Southampton Library Digitisation Unit

nature of the fact they are established, have been with the Authority over a number of years, these workers are all in their middle or late fifties, and I don't think it is reasonable, and I think you will agree it is not reasonable, to expect people who have a certain expectation anyway of a job until they retire to take up their roots and to transfer their home, etc. etc., one hundred miles and so on at that age.

The other alternative of course is that they would leave the employment of the Authority and seek other work in the area. Here, of course, there is again the question of their age, and secondly there is just not the work in the area for skilled craftsmen. Many of these are specialists, who have developed their skills as engineering craftsmen, developed their special skills in the work they carry out in this establishment, and there are certainly not facilities in the area. Speaking of the area I am thinking in terms of the area covered by our Southend District Committee, and I am assured by our District Secretary that there are no vacancies in the area which includes Basildon for this type of work. This would apply to a greater or lesser degree with all of the workers who are concerned, all of the 1,600.

A point has been made about future employment, if the airport comes here. Quite frankly I am not impressed by this. I don't share the optimistic view which apparently is held by the local Trades Council and the Chamber of Commerce, and I base this on our experience at Gatwick. I was the District Official for the AEF at Gatwick for many years prior to the establishment of the present Gatwick airport and remember it. I would say that so far as we are concerned—and I am speaking here of the engineering workers, because this is our responsibility—the opening, extending if you like (because there always was a Gatwick airfield) of Gatwick airport had no impact whatsoever on our position in the area as far as employment was concerned, with the exception of British United Airways, which is stationed at Gatwick, but which in any case was there prior to Gatwick airport developing; they were there as Airwork General Trading Company. With that exception, neither of the Corporations, BOAC didn't certainly employ any people at Gatwick on our engineering side; BEA probably employed half a dozen; the British Airport Authority employs probably about a dozen transport motor mechanics, and so on. Now, this is the explanation, so far as we are concerned, of the employment which resulted from the development of Gatwick airport, and therefore, you can appreciate when I say I am not impressed by this talk about the possibilities of employment and what it would mean, and so on . . .

Inspector That is all in addition to your written submission? — Yes.

Inspector I hope you will be as brief as possible. — Yes. I am practically finished. They are the main points which I wish to make in addition to the submission. We feel that a scheme which would in fact put 1,500 people on the labour market in this area is not a good one, and therefore we say it should be rejected on those grounds.

That is all I propose to say.

Mr. *Keene* No questions.

Inspector Any local authorities? Other persons?

Cross-examined by Mr. Mathieson (Southend District Chamber of Trade and Industry)

2103 You seem to have some doubt on the evidence that has been produced by the Trades Council and Chamber of Trade but I can assure you this was raised as unanimous decision on the part of that *ad hoc* committee set up to discuss this.

Inspector Are you putting a question or telling the witness something?

2104 Mr. *Mathiesen* No. I just want to establish that. I am concerned as you are, on the possible effect on employees on the island, but could you tell me how you are so certain that the AWRE, for example, will have to close down if all this development is on reclaimed land? I can only see the firing range will be the one that will have to be discontinued. — That is not my understanding. My understanding of the position is that in fact because of the situation all of them are closing down, or would be closing down. I understand, so far as the Shoeburyness place is concerned they are making enquiries at the moment with a view to seeing where else they can go, and the information which I have from our representative in the AWRE is that there is no question, that in fact it, along with the others, would close down if the airport were established.

2105 You also have seen the evidence that has been produced that it is not expected this airport will be in operation by 1970—until about 1974-75. You mention the bulk of your members being in the age group 50-60; by that time probably some of them would have reached the retiring age, so it will not worry them considerably. — It is possible that could happen, but I don't think that affects the principle with which we are concerned.

2106 *Inspector* I think the short answer to that one is that there are others coming along the line. Any more questions? Of the 1,580 you mentioned, how many are in your union, would you say? — Roughly 400.

2107 Now, the remaining 1,180, what kind of skills would they have? — Well, I would not really know, Sir; perhaps other unions . . .

2108 So you can only speak for these . . . — I don't know whether one of my colleagues could answer that one, Sir.

2109 You see I am really seeking to discover whether you are presenting the case for your 400 or the entire 1,580, the whole? — Yes, obviously I am representing the AEF, and our main concern is our members. We are concerned about the fact that 400 of our members and the majority of them skilled would be involved with this, but I am also making the point that much has been said about this particular proposal not involving many people, and here we have a situation where in fact 1,600 people are going to be involved in some way or another.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Yes. Any other questions? Thank you, Mr. Kirkip.

(*The witness withdrew*)

Inspector That concludes today's programme. I regret to say that tomorrow is very short; we have the Noise Abatement Society; Professor J. P. Quilliam, and Mr. G. W. Porter. The Deputy Secretary and myself are going to spend quite a lot of time tomorrow looking at one or two things in the area.

There is just one more point on Monday's programme. The Burnham Joint Clubs, and the Burnham Urban District Council, no. 44, were represented earlier by Mr. James Miskin. Now, he has said that having made the substance of his interest clear in the cross-examination, he does not wish to appear on Monday unless any party wishes particularly to cross-examine witnesses from Burnham Joint Clubs, and Burnham Urban District Council. Therefore, unless any party specifically asks to cross-examine or needs to cross-examine those two witnesses will not appear. If any party wishes to cross-examine them will they please let either myself or Mr. Atherton know. Numbers 29 and 44 are programmed for Monday. Very well, the Inquiry is adjourned until ten o'clock tomorrow morning.

(*Adjourned until 10 a.m. tomorrow morning*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

WEDNESDAY 14 MAY 1969

THE CIVIC CENTRE
SOUTHEND-ON-SEA, ESSEX

Before A. J. Hunt, Esq.

Oral evidence taken from:

Noise Abatement Society (*Mr. J. Connell*)
Mr. G. Cowling
Professor J. P. Quilliam
Mr. G. Porter

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector First of our short programme—the Noise Abatement Society.

MR. J. CONNELL called*

(*Noise Abatement Society*)

Mr. *J. Connell* I would just like to say a few brief words about the Noise Abatement Society, to emphasise that we are an entirely voluntary organisation, myself and all other officers giving our time; and that we receive no pecuniary benefit from whichever third airport is chosen. Our general aims are to eliminate all excessive or unnecessary noise from all sources, and, in cases where we cannot—as in the case of aircraft—to protect the public from its effects.

This is why we made a survey into the best place for a third London airport, and we searched the whole of the South-East and we found it to be Foulness. I would like to introduce the leaders of our planning consortium—they are Messrs. Covell, Matthews & Partners. I have Mr. Cowling himself—Mr. Geoffrey Cowling—who will give evidence or answer any question on the evidence.

MR. GEOFFREY COWLING called

Mr. *Cowling* My professional qualifications: I am a Chartered Town Planner and an Associated Partner of the firm Covell, Matthews & Partners, Architects and Planning Consultants.

Inspector And you are prepared to answer questions on this submission?

Mr. *Cowling* Yes, Sir. If I may, for the point of record, and to follow on the supplement—the original feasibility study—just repeat the main conclusions of the original report,† Sir. I think this may be useful at this stage, if you wish.

Inspector Well, up to a point, Mr. Cowling. This is concerned purely with local implications of the proposed airport.

Mr. *Cowling* That is true. The conclusions which I shall just quickly run through have in fact been altered, amended to delete all reference to other airports. These were the conclusions which were submitted with the original report, which was prepared towards the end of 1967—lots of things have happened since then, of course.

It cannot be better than that the suitability of Foulness as the location for London's third airport should necessarily be offset against each requirement as given in the 1963 Ministry of Aviation Inter-Departmental Report:‡

"(a) *Routing of air traffic.* It must be possible to provide an efficient air traffic route structure allowing the new airport to function to its full capacity without hindering the other two from doing the same".

On directional usability, Foulness will not affect either Heathrow or Gatwick, or vice-versa.

"(b) *Volume of air traffic on different routes around London.* The new airport should not be placed where, because of air routing difficulties, it could serve only routes generating a small proportion of London's traffic. Otherwise a fourth airport might be needed prematurely to take traffic overflowing from Heathrow and Gatwick and unable to use spare capacity at the third airport."

Foulness fully satisfies this requirement.

"(c) *Accessibility to central London by service transport.* Airport must have or be able to have convenient and speedy facilities for direct travel to and from central London."

Inspector None of these items are really matters which affect the local implications of the airport. These are comparative evaluations, are they not? — Hardly comparative. Rather essential needs of any new third airport.

Inspector This Hearing is concerned with the local implications that would arise on the assumption that a third airport is constructed. We don't necessarily say this might be good or bad, but the assumption is there: we just fall back on what are the local implications. — Yes, Sir. Under (f), "The Neighbourhood" the new airport should interfere as little as possible with agriculture, local industry, and the existing amenities of the neighbourhood.

In this regard Foulness is absolutely preferable.

"*Effects of aircraft noise:* the airport should be sited so as to disturb as few people as possible."

In this regard the claims of Foulness are at their strongest.

"*Nearness to centres of population:* so far as is consonant with the section above the airport should be near a centre of population large enough to supply the necessary labour and provide the airport employees with the advantages of community life, or it should be in an area where there is scope for new residential and industrial development on this scale."

In this regard Foulness is far better suited, Foulness and that part of east Essex life, and as such is well suited to accepting the expansion of development which an airport would promote.

I think those were the only local points which the conclusion covers.

Inspector Thank you. I am going to try and reverse the order of cross-examination this morning, starting with any other authorities, and coming back finally to Essex County Council, just by chance there are any new

* See also p. 195.

† Available from Noise Abatement Society, £3 3s. 0d.

‡ *Report of the Inter-Department Committee on the Third London Airport.* (HMSO; 7s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

items introduced by way of questions. May I start with any other local authorities?

Mr. *Wood* You have stolen half my thunder, Sir. It is nice to follow after Essex as they often provide ammunition which I can use in cross-questioning.

Inspector I think the position is that that has happened during the first half of the Inquiry, and the position should be reversed for the other half.

Cross-examined by Mr. Wood (Paglesham)

2110 You, Sir, have asked some of the questions I had intended. Mr. Cowling, I can't quite see how the Noise Abatement Society fit into this Local Inquiry. Can you give some indication as to your antecedents, and particularly as regards the locality of your activities? — Well, yes, Sir. The Noise Abatement Society is engaged in seeking to reduce any possible noise nuisance wherever and however it may be generated, and the fact that there is a third airport indicates that here is another source of possible noise nuisance. In this respect it is the Society's wish that an alternative or a suitable site be found which would raise the least objections from a noise nuisance point of view.

2111 Would it be fair to draw the assumption that the inspiration behind your movement tends to have been based on existing areas already affected, and the extension of that locality as a purely theoretical one, but an area as yet unblessed by such noise? — Yes, of course, this is true, and what other methods of comparison might we use in those circumstances when the airport in fact has not been built—this is very difficult, but it is the only way to compare like with like, and assume that the new development will be approximately the same as that we have now or possibly greater, an enlargement of what we have now.

2112 Could I ask you, has it been a purely theoretical investigation or are you well aware of the local conditions and local problems? — May I ask which local problems exactly?

2113 Let me ask you the specific question. Have you ever been on Foulness? — I have never been on Foulness.

2114 Do you know the Southend area? — I know Southend area, not intimately but well.

2115 It would be unjust to suggest your knowledge is superficial? — Well, perhaps so, yes.

2116 And possibly even more superficial is your knowledge of the Rochford Hundred? — True, yes.

2117 Have you been at this Inquiry at all, or is this your first day here? — This is my first day.

2118 Have you had a transcript so far of the evidence presented? — I have not had a transcript but I have been reading the reports in the press.

2119 Hard luck; but are you aware from the Roskill contours,* for example, that quite a considerable number of people would be affected by noise nuisance were the airport to come to Foulness, and has this in any way modified your attitude? — No. I don't think so, this was to be expected, but I must say at this stage that our advice and our workings on this have been brought up-to-date, as far as we can, but basically this survey was done in 1967 when perhaps these developments which you are now considering had not at that time been even thought about.

2120 Were you aware when you made your statement of evidence of the Essex plans to increase the quarter of a million population in this vicinity by a further 400,000? — No. In fact this is something that has only been raised during the course of this Inquiry; our previous enquiries did not raise this information at all.

2121 No, which might suggest they were of a rather superficial nature, but the three points you make here are that there was going to be little interference with agriculture, amenities, and if I can use the heading "urbanisation"—is that a fair representation of your initial statement? — Yes.

2122 Would you still accede to those observations: little interference with agriculture, and are you aware of the increased acreage that will be consumed because of the industrialisation and urbanisation inseparable from such a development as this? — Yes, but most of this is taking place on land which at the moment is unused land. There is a limited amount of agricultural land included.

2123 With deference I ask you to re-examine Essex's statement and see the figure of agricultural land they estimate (and this is challenged) is likely to be consumed, and then see whether you still support your case. The second one is the interference with amenities? — Yes.

2124 Would you still maintain that there will be little interference with the amenities of people, for example, living in Southend, if you have an increased population of nearly half a million on their doorstep? — I am a little at a loss to know exactly the legal standing of this additional half a million population that we are talking about now. This certainly is not in the development plan which has been provided. I understand that this is a suggestion that the area may be adapted to take this additional population, in which case this is a matter for the Ministry to weigh against the conclusions and the evidence which it is hearing at this Inquiry.

2125 This is so, but it is a suggestion put forward by the appropriate planning authority, but would you expect according to your point of view this would be against the planning standards? — I would say that . . .

2126 *Inspector* Mr. Wood, may I just get precisely clear what you are putting to him? What would be against the planning standards?

Mr. *Wood* The Essex proposal of the complete urbanisation of this vicinity.

2127 *Inspector* Well, if figures do matter it was 400,000 not half a million.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Wood* Yes, but taken from the bottom half of the bracket . . . I don't want my friend, Mr. Keene, once again to be able to challenge me, as it turns out incorrectly, about a figure I quoted yesterday.

2128 *Inspector* Right. Have you got the question? Well . . .

2129 Mr. *Wood* Put it in the lower figure, 400,000, only half a million sounds better early in the morning. — Yes. This requires further and considerable study, Sir. I cannot and I would not try to give an immediate answer to this problem, with even a day or two's notice, this is obviously something which has got to be looked at. But the position of Foulness and Maplin Sands are such that orientation of the runways and the position of the runways north or further north or further south of this can surely be arranged in such a way to have the absolute minimum effect on this new town, if in fact the new town goes ahead.

2130 *Inspector* I am not very sure that is the question that was put. Wasn't your question did the witness have any views on how an additional population of 400,000 would affect the existing amenities of the residents of Southend?

2131 Mr. *Wood* Precisely, Sir. — I am sorry, Sir. The effect of the new town on the existing residents of Southend, obviously this is going to increase the whole atmosphere of the area, make more possibilities and open up the whole, make better use of the infrastructure which is already there.

2132 Even if the new town is twice as large as the existing one? — If this is a question of County policy it is for the County to consider, surely.

2133 But surely a new town of that size is bound to dominate the existing settlement rather than the other way round? — I would say most certainly, yes.

2134 And it would be highly unlikely that the existing amenities and the infrastructure already in existence would be able to absorb such a huge increase? — I would agree with that.

2135 On page 3* of your evidence in the last paragraph, the paragraph which starts: "Although it may be obvious, it is worth setting down now, that any new residential areas" and so on, "should be provided at least eight miles away from the airport". That is a basis on which you stand? — Oh, yes.

2136 What if the reverse applies, isn't that also valid? Is it good planning to bring an airport within eight miles of an existing development? — This is the point, Sir, which comes first, the chicken or the egg, and does one proposal require an amendment as a result of another proposal which may have far-reaching and greater overriding considerations of a national and regional outlook. This was a generalisation done in 1967, as I say, when there were no envisaged developments of the nature which we are now discussing.

2137 I am not talking about new development. First of all, are you aware of the population of Southend-on-Sea, the number? What is the population of Southend-on-Sea? — About 150,000.

2138 It is nearer 160,000 plus. Furthermore, are you aware of the distance from the end of the proposed four-runway airport envisaged by the Roskill Commission? The distance from that runway to the centre of Southend is 7½ miles. — I accept that, but what I said earlier that at the moment we are talking about a semi-fluid area, if I can use that term, where the exact location of the new airport has not yet been fixed, and surely this is the sort of thing that can be looked at again to make sure that on the basis of new evidence that this is an approximate figure which we gave in 1967 does not require amendment or requires amendment. This is one of the detailed points which would have to be looked into.

2139 I would agree with the validity of your point that it is bad planning—in fact, it is stupid—to put a large new settlement within eight miles of an airport, but I would put to you that it is equally as stupid to put a large airport within eight miles of an existing settlement, surely it works both ways? — True, I accept that point, but I must counter it by saying that the airport is not located specifically and therefore it is capable of being adjusted, Sir.

2140 Yes, pigs might fly, may they not, or aircraft may fly faster? — Again this is possible, Sir.

2141 On page 4* you refer amongst other things to helicopter feeder services. I cannot quite understand that paragraph, you see, it seems to envisage all this going out to sea. Where do you imagine that the helicopters will come in to land, as presumably they have to some time? — Yes, Sir, but the basic point here was that most of the coastal airports could be quite easily linked by a helicopter service running over the sea.

2142 I may be dull but how can you get from Foulness to Heathrow, to Gatwick, to Luton, to Manchester, by sea? — I didn't say the inland ones, I said the coastal airports could be easily linked.

2143 Which airports had you in mind? — If I can just refer to our original documents on this, we did look into this point.

2144 I haven't had the good fortune to read your original documents, I am afraid. — There is a spare copy if you would like one.

2145 As far as I understand from my recollection of the siting of the existing international airports—and this is all we are concerned with really, airports of any size—as you go round the coast in a clockwise direction I can think of only one, take Shoreham as an example; you might say that Hurn is close to the coast, the Liverpool one, Prestwick, the one at Edinburgh, Turnhouse, there must be one at Inverness, and the other one I would think close to Newcastle, but all of these are minor airports. Your helicopter service would have to go

* p. 196.

* p. 196.

Printed image digitised by the University of Southampton Library Digitisation Unit

inland, that is the point I am making. — I agree it would have to go inland at certain points, but in fact you can link Edinburgh, Newcastle, Teeside and Hull, all of which are major employment growth areas at the moment.

2146 But you can't link Heathrow, Gatwick, Manchester? — I accept that point, but you can link Harwich, Yarmouth, Hunstanton, Margate, Dover, Lydd, Brighton, Portsmouth, Exeter, Plymouth and Land's End, Sir.

2147 I would think about 10 per cent are in fact approved for international traffic. — I would not know about that.

2148 I will leave that to the factual documents. I suggest that you would like to revise that figure under (i) of 100,000 extra people—"and these people will have to be housed in areas well away from the airport." The Essex planners would not agree with those figures by any means. Would you like to comment on that? — Well, this is a figure which is difficult to pinpoint, but bearing in mind the size of the airport I think probably it would be an increase on that figure, yes.

2149 The figure was in fact four times as much. — This was taken approximately from the Gatwick figures.

2150 I would suggest also that you might like at a later stage of this Inquiry to revise the inference drawn in the last paragraph on that page which starts: "All the industrial provision in and around the Foulness airport could be done with little real loss of agricultural land." That is furthermore a figure that if you examine the proof of evidence we have submitted I think you will want to revise. — Well, this is one of those things. As I say, the whole problem will be looked at again and all this evidence would have to come in. We have worked purely from the 1967 position which we were in at that time.

2151 Unfortunately this inquiry is being held in 1969 for a situation which might arise in late 1970-71. — I agree, yes.

2152 And on your last page you say: "As far as is known, all services, gas, water, electricity, etc., can be provided without difficulty." Once again I draw your attention to the evidence already submitted by people other than myself where the suggestion is that as far as water is concerned there is an acute shortage in this area and that a considerable capital project would have to be undertaken to provide the additional water supplies necessary for an airport at Foulness. — Well, I would need to be advised on that point.

2153 Well, I am sure you will find this to be the fact, but you will have an opportunity to re-examine the evidence. In your final paragraph you say: ". . . the elementary financial exercise carried out by the Society's consultants leads them to believe that, by comparison and bearing in mind the side issues and benefits that will arise, the development of Foulness will cost only marginally more than any other site." I put just the same criticisms, that it seems to have been based on an exercise which is already overtaken by events, and that you in the light of what you have heard will find great scope for alteration and possibly a radical change from your position. — Well, Sir, if we are engaged as consultants to design and locate the new Foulness airport I shall be only too pleased to do that. At the moment we are preparing and we did prepare a case on behalf of the Noise Abatement Society to prove the better points of Foulness as against an inland site, this was our pure remit at the time.

2154 I think the operative term there is "at the time"? — Exactly, yes.

Cross-examined by Mr. P. A. Arnold (Foulness Island Residents' Committee)

2155 Forgive me, but there are one or two questions I would like to ask. Firstly, I must agree with Mr. Wood and I would have expected the Noise Abatement Society to have concentrated more on page 2, paragraph 9, of the Roskill report,* and although it would be somewhat hopeless I would have thought they would have protested at any site anywhere.

Inspector Mr. Arnold, you aren't going very far into a question.

Mr. *Arnold* It is a long complex story.

Inspector Ah, yes, but that is what you mustn't do.

Mr. *Arnold* You are quite right, Sir. It goes back long before 1965 and as you say I must not bring it in.

Inspector If you will now restrict yourself to any questions you have.

2156 Mr. *Arnold* Yes, Sir. Page 1, the last paragraph, you say: "air traffic control suitability, noise consideration, accessibility of services were all compared". Was this compared with other possible sites, this comparison?

Inspector Which paragraph?

Mr. *Arnold* The last paragraph on the opening page, page 1.

Mr. *Cowling* Yes, I have the point, Sir. The point here, Sir, was that this was—the word "compared" there should really read "considered". There was no comparison with other sites in this particular case, Sir.

2157 Page 2†—and taken with 3(f), because they deal with the same thing, this recovery or reclamation—you have stated on page 3(f) "the recovery of large areas of waste land". How, precisely, Sir, have you defined this term "waste land"? — Well, this particular paragraph was referring to the land which is not used—sand banks in the main—which are under water at high tide. That was what we referred to as "waste land".

---

* *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. xv.

† p. 195.

Printed image digitised by the University of Southampton Library Digitisation Unit

2158 I see. I trust that you read everything and realised . . .

Inspector Mr. Arnold!

2159 Mr. *Arnold* Sorry, Sir. (*to the witness*) You have made a statement—page 3(g), second paragraph: "It must be obvious to all concerned". Why is it obvious, Sir? I know it is a stupid question to some, but it is worthy of an answer. — It is not a stupid question. The point here is the effect on people—the nuisance to people—must be less where there are fewer people, and if there is a site which is more detached from normal land which is capable of having houses on it—I am talking now about sandbanks—if there is an area of land detached from all normal housing sites, then surely this is the place to attempt to put an airport. This must be of less nuisance value than any site inland.

2160 On the face of it, Sir, I would agree; but this site is unique in many respects. (h), Sir, page 4—"the normal rail link to Southend"—the last line of that statement: which line do you have in mind? — I am sorry—would you give me that again?

2161 Page 4, paragraph (h), the last line.

Inspector I think it is the last sentence of the first paragraph.

2162 Mr. *Arnold* Yes—I am sorry. — Yes, I have the paragraph now, Sir—and your point again, please?

2163 You have stated "the normal rail link". Which rail link do you have in mind, Sir? — Well, there is not a link, I agree, directly out to the airport itself.

2164 I agree, but "to Southend"—you have stated—there are two rail links to Southend. Which one? — This was the one from Fenchurch Street that we were thinking of.

2165 I shall rest there; thank you, Sir.

Cross-examined by Mr. Purchase (Bernard Clark & Partners)

2166 I believe this document* was written recently, in 1967, this particular one? — The document which you have, Sir, was in fact prepared a short while ago, but it was based on information which was obtained from the original document produced towards the end of 1967.

2167 I refer to page 5(k), in particular the last words in the whole document, concerning costs. When this was written, did you then have in mind an airport alone or an airport and . . .

Inspector Mr. Purchase, this question is going straight out, because this is a comparative question.

Mr. *Purchase* Well, the question is marginally . . .

2168 *Inspector* Than any other site . . . is your question in relation to any other site in Foulness area, or any other site on the Roskill short list?

2169 Mr. *Purchase* In the Foulness area only. "It would cost marginally more than any other site". I am asking, when this sentence was written, was it in mind to have the Roskill airport alone, or the other things that you referred to earlier? — This was entirely and only for an airport.

2170 That is all I want—thank you very much.

Cross-examined by Mrs. M. Boston (The Sheppey Group)

2171 Are you aware that the contours for the four-runway airport produced by the Roskill Commission* in fact extend into Kent, and in particular overlap part of the Isle of Sheppey? — There is a map in the Report*—this is the one to which you are referring?

2172 Yes, that is the one to which I am referring. — I am aware that the 40 contour does in fact go into Sheerness on the four-runway airport.

2173 Good. Are you aware that Kent County Council have said at this Inquiry that it is highly probable that they would impose restrictions on major residential development in such an area—that is, an area within the 40 NNI day-time contour? — The Kent County Council can impose whatever restrictions they like on any development anywhere, if they so wish.

2174 The question was, "were you aware that they have stated at this Inquiry that they would probably do so". — Yes, I have heard that.

2175 Are you aware that the area on Sheppey included within the 40 contour on the Roskill map is the very area earmarked for major development as shown on the Queenborough and Sheerness vicinity town map—this was the one approved in 1964? — Yes.

2176 And are you aware that, quite apart from the normal development under the town map, there are discussions at a reasonably advanced stage at this moment on the possibility of a town development scheme—all under overspill, which is a colloquial term for it—and that the 40 contour comes right across the area under consideration for major residential development? — I am aware of all these points, yes.

2177 And can we be assured that the Noise Abatement Society will take this into account in future when they are assessing their opinion of Foulness as a site for the third London airport? — They will take it into account. They have taken it into account, so far as they have it in the back of their minds, and their interest is purely and solely to cause the least possible noise nuisance to the least number of people. This proposal which has recently come to the fore is one of those things which have not yet been fully considered, and it must be weighed against the national and regional requirements of the area. At the moment it is only a tentative scheme, I understand, and this is one of those things which will have to be looked at, and as I said earlier, the exact location—the exact fixation—of the airport and where it could be orientated has not been yet considered or decided, so all these things are still possible. But the

* p. 195.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise Abatement Society are saying that the Foulness site is least likely to cause any nuisance at the moment.

2178 Yes, I appreciate that. Thank you very much.

Cross-examined by Mr. Keene (Essex County Council)

2179 Mr. Cowling, it seems to me, looking at your proof, that in fact your organisation was aware, certainly at the time of writing this proof, that there was going to be new residential and industrial development connected with the third London airport, wherever it was sited. — Well, this we have inferred all the way along the line, that an airport itself will generate almost a new town to service it. But we did suggest at the time that the areas of Billericay and Basildon and Rayleigh could well be increased in order to cater for this new development—well outside of the zone where they are likely to be affected.

2180 That is really what I wanted to come to. You have put forward a criteria on page 3,* of eight miles for the location of this residential development—I wonder if you can tell me how you arrived at that? — I think this was just a reasonable figure, that derived from the effect of development generally, based on the knowledge that had been gained in Heathrow and elsewhere.

2181 Primarily to ensure that the new residential development is clear of the areas of intrusive noise? — This was the figure that we decided was the least, to get new development down there.

2182 Because of the noise factor? — Because of the noise, yes.

2183 That being so, would you not agree that one does not want to draw in a rather crude information—if I may say so—a circle of eight miles radius around the airport, but rather to plan your development by looking at the flight lines, and the direction in which the noise is in fact going to spread—and, of course, as we all know now, looking at the NNI contours? — Exactly—that was the point I was dealing with in the last answer, that the orientation of the airport and the areas of maximum intensity of noise can obviously be arranged in such a way that the effect will be minimal.

2184 I imagine you have seen the Essex County Council proposals for the site of urbanisation in this area? — I have, actually.

2185 Do you have any comment on those? — No. I expect that the whole thing would need to be looked at very carefully, and it is obviously something which cannot be dismissed in just a matter of a day or two.

2186 Would you not agree that the important thing is to see that the residential development is sited out of the areas of intrusive noise? — Yes, exactly.

2187 And that not all areas affected are exactly within that limit of eight miles, having regard to the siting of the airport and the runways? — Well, obviously. This is shown when you take the Ministry's NNI contours—you see the areas which are most likely to be affected.

2188 So at any rate we are quite clear that you are not suggesting that we draw a circle on the map of eight miles radius and stop any development in that? — No intention whatsoever.

2189 I am gratified to hear that, Mr. Cowling. You have referred a number of times to the fact that your evidence is based on your document produced in 1967. It is clear that in writing this proof you have looked at the information provided in this little booklet* produced by the Commission, because you have referred to the NNI index provided by the Commission? — Which we did not deal with in our report.

2190 And you have seen the figures produced by the Commission for the population they assume will be affected by the noise nuisance contours? — Yes, I have, yes.

2191 And is your attitude, as you expressed it today, one which takes into account the figures put forward by the Commission? — Yes; it is, I find, rather difficult to answer, Sir, because apparently the Commission had taken a specific radius from the centre of the proposed site.

2192 I am sorry—where are you taking this? — I am trying to assume—you think, 200 people currently residing, within five miles of the site . . .

2193 No, I think it is a different paragraph. Paragraph 13 on page 7. — Paragraph 13—I am sorry, yes. They have the 500 within the 50-plus NNI on the four-runway here . . .

2194 What I really want to know is: do those figures come as a tremendous shock to you, and suggest that your organisation ought to change its attitude towards Foulness? — No, I do not think so.

2195 Do they confirm more or less what you have thought all along? — Well, again, this is a question of where one sites—exactly sites—the new airport, as to how far east it is moved. These are all things which are at the moment pure conjecture.

2196 You would accept, in fact, that those figures can be improved . . .?

2197 *Inspector* I am rather confused—is your question that the witness is surprised at the extent of the 45 and 65 thousand . . .?

Mr. *Keene* Yes, Sir.

2198 *Inspector* Have you any comment to make on the Commission's figures of 45,000 and 65,000? — I am sorry, Sir, we are on page 15 now . . .

2199 Mr. *Keene* Paragraph 13, I was referring to. — Well, the 45,000 Sir—I am sorry, with respect, comes over the page.

* p. 196.

* *Short List of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. xv.

Printed image digitised by the University of Southampton Library Digitisation Unit

2200 You stay on paragraph 13 for the moment, Mr. Cowling. – I was not surprised by the figures–if this helps any–which the Ministry have put forward, Sir.

2201 Well, I think that is good enough for my purposes. Thank you.

Inspector Any questions?

Mr. *Blackall* Yes, Sir.

Inspector You are a little late.

Cross-examined by Mr. Blackall (St. Clement's Ward Municipal Electors' Association)

2202 The noise from associated motorway and railway links to the airport site could produce considerable noise, could it not? – I am not a noise expert, but I agree with you that this is likely.

2203 Could you compare the noise from, say, an elevated access to one at ground level, to one at below-ground level–say, in a cutting 12 ft deep? – I would not like to attempt to compare it–I am not professionally qualified to do so.

(*The witness withdrew*)

Inspector Has Professor Quilliam yet arrived?

Professor *Quilliam* I am Professor J. P. Quilliam, and I represent the interests of those who use the River Crouch and adjacent waters.

Inspector We have your statement,* Professor Quilliam; do you wish to add shortly to it in any way?

Professor *Quilliam* I would like to mention certain points, largely concerned with an attempt to estimate the numbers of persons who use the River Crouch. Firstly those winning a traditional livelihood, boat builders, oyster dredgermen, fishermen boat hirers. I think these represent a mildly growing rather than a diminishing group, and I put them at about 45 people.

Turning to those using it for recreational purposes, there are 100 moorings at Paglesham, and about 50 elsewhere, and on the basis of 5 persons per boat this would provide an opportunity for recreation, I estimate, for 750 persons.

Pleasure fishermen, I think, number about 500, and a sizeable number of cruising yachtsmen visit the River Roach, and I would suggest that they might number as many as 800 per annum, and visitors by land of about the same number.

Thus, if my arithmetic is correct, these sum to 2,895–say 3,000.

The River Crouch and Burnham are, of course, a Mecca second only to Cowes for British yachtsmen, and in the evidence it has been pointed out the town's population doubles during a summer sailing season, and I think a special point is that there is a turnover of people, so that it might be several times the 5,000 additional persons who use the River Crouch, and similarly there is a wide turnover of persons enjoying the Roach. I think there is a difference between the Crouch and the Burnham and the Roach. About half those using the River Roach are fishermen and others as opposed to yachtsmen, and amongst this group there are many working people who saved up for small boats. They are the sort of people that work on farms, deliver milk, and that sort of thing, and they combine very happily with school teachers, businessmen, and professional persons in other areas who enjoy the peace and tranquility of these quiet waters.

The second point I raise in my submission, Sir, concerns the 200-year weather cycle pattern. I don't know whether you have the report by Mr. T. A. L. Paton to the Parliamentary and Scientific Committee, his address on "Flood Studies and Flood Prevention", but I can provide a copy for the Commission if they so wish it, but I think it serves to underline the apprehension of this group of people using the River Roach that any building up of structures on the Maplin Sands is likely to bear very heavily on what will happen to the tides. Floods are very much in our minds, and this is an area in which the tides sweep down the east coast of England and meet those sweeping round the south coast, and so far the new defences have held, but what will happen if there are changes? We know from our experience in boats that there may be very marked changes in sand banks, channels, and depth of water.

The next point I would like to make is in connection with Foulness as the third airport; it appears to us to be beset with problems of a unique character which stem from the wishes of powerful consortia to develop on a mammoth scale docks, industry and housing. While I am quite sure that the motives of the finance companies and civil engineering contractors and local authorities are no doubt sincere, it does raise in our minds various problems. Such developments of course could represent a massive intrusion into the green belt. You cannot build a private house in this area or even put up a barn on your farm without planning permission.

If an airport on the Maplin Sands or Foulness Island proved impractical from the point of view of technical reasons and agreement had to be given to the massive dock and industrial conurbation, it is conceivable that we would be left with an industrial area perhaps along each bank of the River Roach with the docks and no airport. Other doubts have been expressed locally and on Foulness, and it is also reported the Dutch have wondered whether it is truly feasible, certainly within the time that is proposed, and within the limits of the volume of material that would have to be pumped in to reclaim.

Another point is that non-construction of an airport could arise, not only from technical difficulties, but it might become virtually unnecessary in remote Foulness. I refer to the situation when vertical take-off and landing techniques are applied to commercial airliners. I think none of us who work in London have any doubt that

* p. 197.

Printed image digitised by the University of Southampton Library Digitisation Unit

vertical landing and take-off is here, as we see from the newspapers and the *Daily Telegraph* Trans-Atlantic Race, and if development is passed from military to commercial aircraft at the same speed as currently, this might not be very distant.

One of the development plans published in the National Press shows the River Roach filled in, clearly amenities in this area are very vulnerable, when increasing major safeguarding of recreational areas is extremely important, and we believe a matter of deep public concern. We feel the implications of a Foulness airport to the users of the Roach; that, for instance, the airport on the Maplin Sands would destroy the quiet enjoyment of the rivers to a point when sailing and boating, and fishing would hardly be worth while. We think that if the airport were sited on Foulness Island the disturbance would be even greater, and if we were faced with an airport, plus a dock, plus an industrial area, then to the disturbance would be added air pollution and contamination of the water, so that a walk along the River Roach might be a choking experience reminiscent of walking along industrial river banks.

We too are concerned that such possible pollution would have serious effects on the oyster fishing and ordinary fishing which people are at pains to try and bring back to previous levels after some severe winters of a few years ago.

Inspector You have made these points in your written proof. — I have, Sir, and the point has been made by the submission of the letter of Mr. Coote who is an expert on navigational matters.

Inspector There is no need to duplicate your statement now. — Thank you. Well, on that point I am happy to close.

Inspector Local authorities? Your home ground, Mr. Wood.

Mr. *Wood* Yes, I must ask such a good supporter some questions.

Cross-examined by Mr. Wood (Paglesham)

2204 In your figures as to the number of people using the Roach so far as I am aware you do not include the number, the very welcome number that come to see us regularly from Burnham when the tide is right; you would need to increase that number considerably, would not you? — Yes. I tried, I think, to suggest that the number that I quoted would need to be augmented by a factor of 3, 4, or 5, to account for this turnover.

2205 I wish I had thought of the analogy before: three times as many taking advantage of our limited infrastructure, causing acute shortage of beer on Saturdays and Sundays in the local pubs. — Yes, you and I know about that.

2206 Yes.

Inspector We discovered your limited infrastructure last night, Mr. Wood.

2207 Mr. *Wood* Yes. In your proof, had you in mind when you wrote your proof the idea was to create a form of national park in the waters of the estuary of the Crouch and Blackwater? — Yes. Thank you for raising this point. It was one I was coming to, but you have raised it for me. I had that in mind, a national park involving the water and land adjacent to the Roach and the Crouch, and the other areas would be an excellent way of preserving these amenities for the increased leisure we are promised in the future years.

2208 Would I be right to draw the inference that the only reason why legislation has not been passed to achieve this was that the powers that be concerned with the amenities were such that were in no danger, not in jeopardy at any time? — I think this is an inference which can reasonably be drawn.

2209 On page 3 of your proof, and the fifth paragraph: "We hold with the utmost sincerity that such industrial urbanisation in the south-east of England . . ." The point you are making there is that in your opinion this plan runs counter to the national plan designed to inhibit the immigration of undue numbers of people into South-East England, particularly south-east Essex? — This was exactly the point we had in mind.

2210 And in your last paragraph on that page you draw doubts, I think quite justifiably, that if this scheme were to start and difficulties be encountered, that in order to avoid a colossal bill, there would be great modifications to the scheme, and even if it did start as an off-shore site, because of these difficulties you fear that the runways would be constructed on the shore—do I understand you correctly? — This is precisely what has given rise to some very great concern amongst myself and my colleagues.

2211 You might have had it in mind—such schemes as the Ground Nut Scheme, where all the experts were in favour but natural obstacles supervened and made their schemes impracticable? — We know this from the local drains, that there are surprises under the soil.

2212 I was about to come to our drains. On page 4, the sentence: "The substances in the newly-laid sewage system at Eastend, Paglesham add credence to these doubts". It might be useful to the Commission to hear from you the fundamental difficulties that that scheme did encounter. — Well, the proposal was to provide proper sewage disposal for Eastend, Paglesham, and many people in the locality that had lived there for many more years and knew it better than I raised doubts because of the fact that many parts had been filled in where they knew there was water and believed to be the equivalent of underground rivers. When the construction was started it was clear that the constructional problems far exceeded what I understood to be the estimates of the problems involved, and the system took several times the expected length of operations to complete it. Shortly after it was brought into use there was at least one subsidence that produced major problems close to one of our infrastructures.

Printed image digitised by the University of Southampton Library Digitisation Unit

2213 Thank you. On page 6, I need only draw your attention to—you have offered to provide copy of that report.* You are aware of the deep concern in the locality as to the dangers of flooding, should this scheme be proceeded with? — One of the things that has struck my mind about local people is their lively apprehension of this danger, and that their remembrance of where the waters ceased rising in 1953, and the fear it might be worse in the future.

2214 That is because of some domestic tragedies, something they are very conscious of? — Yes.

2215 Finally on page 7, I think you make the point that new communication systems envisaged, for example, in the Essex Plan will inhibit navigation to the northern stretches of the Roach, and you are concerned lest this development should also make impossible navigation to the south through Havengore into the Thames? — These are very real fears, and reading the statements and ideas put forward, not only bridges, but barrages are possibilities which would possibly be a further restriction on navigation.

2216 So that in your view it may well be that it would be impossible by water to leave Paglesham? — I think we might be a small inland lake in one eventuality.

Mr. *Wood* Thank you.

Inspector Any other local authorities?

Cross-examined by Mr. Purchase (Bernard Clark & Partners)

2217 Would you kindly inform me who the second financial civil contracting consortia is that you refer to in your third paragraph? The first one is quite plain, you mention the Southend Corporation. — I would like to seek your advice on this, Mr. Inspector, on the question of how to deal with attempting to reply to a question of this nature. I could reply if you should rule it appropriate in saying what I have read for instance in the National Papers.

Inspector I have not got the third paragraph referred to—which page is it?

Mr. *Purchase* Page 3.

Inspector How far down?

2218 Mr. *Purchase* The third . . . — The third paragraph, Sir, line 3.

2219 Part of the third and fourth lines: "Heavily publicised plans by at least two financial and civil contracting consortia".

Inspector Does it really matter? If so—why?

2220 Mr. *Purchase* If I may put it this way: a heavily publicised plan could at least refer to the firm of civil engineers whom I represent here this morning; our firm, Bernard Clark & Partners, are civil engineers, and not a consortia. That is all I wish to say on that. The fourth paragraph, I would like to understand what is meant by your words "Carte blanche", and how you presume that any firm, whether it is a consortia or otherwise would have *carte blanche* in a province of England. — The implication, Sir, there to me was that if there was to be development in what is green belt now, and which in some way would be permitted because of the requirements, then *carte blanche* perhaps can be taken to imply that there would be all the forms of development necessary to put in hand the scheme, and it would be *carte blanche* to the casual observer, perhaps, but I am sure the local authority would want to impose some of its ideas.

2221 I cannot envisage in England where one body of people would have *carte blanche*. On page 5* I just question the penultimate paragraph on that page: "The plans of one consortium indicate that the River Roach would be filled in". From my firm's point of view I question that does apply. The map does show the River Roach disappearing where the pen left the paper.

Inspector Was that meant to be a statement or a question?

Mr. *Purchase* That was a statement.

Inspector This is not the time for statements.

2222 Mr. *Purchase* At page 6, third paragraph on that page,* "Disastrous flooding might occur". Upon what have you based that or your mind in this sense? — I have, Sir, always regarded acts of God as things that might occur. I have attempted to adduce by referring to findings of Mr. Paton and his views the reasons which would lead me to believe that flooding—and I don't wish to be alarmist here—might be more likely in the next hundred years starting from the 1950s than it has been in the first half of this century.

2223 The penultimate paragraph: "While models of the Thames Estuary and coastal waterways with artificial tides might give some indication of the changes in pattern of sandbanks and channels, such experimental situations cannot mimic fully the complex interaction of natural forces". Could you please explain exactly what you mean by "mimic fully the complex interaction"? — This paragraph was formed to put forward the idea that whilst experimental work might yield results, particularly if it is on a small-scale trial of this nature, which would give an indication but would not give the complete answer to what would happen to the actual field of study.

Cross-examined by Mr. Keene (Essex County Council)

2224 I don't think, Professor Quilliam, the *Daily Mail* would thank you for attributing all their publicity to the *Daily Telegraph*. You have given some figures of the number of people who use the Roach for amenity purposes, can you tell us what that is based upon, have you done a count of the fishermen and so on? — I have often wondered how you could do a count of this. You

* "Flood Studies and Flood Prevention".

* p. 198.

Printed image digitised by the University of Southampton Library Digitisation Unit

can of course count the vehicles coming into Southend to make an estimate—and I use the word estimate and not a count. It is based on observation over the years as to the numbers of people involved; one, for instance, knows something of the traditional livelihood activities and can find that sort of answer; one can look at examples of boats at moorings and see how many persons use that, and one of the things that has impressed me about pleasure fishermen is the volume and the regularity with which they come. A large proportion of them are regulars, but we receive coachloads from as far afield as Nottingham, and my computation was meant to put a value on this, to give an approximation and an indication of what this usage might be.

2225 It is in fact a case based upon your experience and the time that you have spent in this area? — Yes, it is an estimate based on those findings.

2226 Perhaps we could compromise with a guess-estimate. On page 1 of your proof you say that the users of the River Roach and the River Crouch may expect to experience to the full the noise and disturbance from the proposed airport. I don't know whether you really meant to suggest that the noise there was going to be as bad as it is elsewhere in the neighbourhood? — I implied that they would be the people participating in recreation who would get as near this area as was possible, and that is what the word "full" meant there.

2227 I see; in other words those are the people who from a recreational standpoint would suffer most. You then go on in the same paragraph to refer to the proposed industrialisation and housing on both banks of the River Roach. Have you now had the opportunity to read the proposals of the Essex County Council? — Yes, I have read the submissions that have been passed to me and it is clear that there are authorities and persons who have a lively regard to this particular problem and any early ideas that might have been current that industrialisation was very likely to occur there. I think I have gained a feeling of some confidence that there are at least local authorities who would not accept this as a satisfactory solution.

2228 I am grateful to hear that, one of the persons in fact being the local planning authority for the area who would, I think you would accept, have considerable influence over what happens. What in fact you want to do is to see that the Roach and the Paglesham area are kept relatively free for leisure purposes? — Yes, this is our object. We wish to preserve the existing—and we regard them as unique—facilities.

2229 Just on the question of noise in those areas, you have probably had a chance to see the various noise nuisance index contours by now and probably have been able to see that in fact the Roach down as far as East End is completely outside the Commission's contours that they show on their map CTLA 1/3?* — Yes, Sir. I am of course deeply interested in this. I have looked at the NNI contours for Southend airport and I am aware of the type of aircraft and use made of Southend airport and my views and I think those of others of us that use the Roach are based on the thought that while the NNI contours would suggest a particular estimate of the disturbance we know full well what aircraft flying over would do, and noise contours do not stop, they gradually fade away like old soldiers, and over the water noise carries as you may well know from overhearing some of the remarks of yachtsmen which are not suitable for your ears.

2230 We would certainly agree that the noise doesn't suddenly stop, certainly not on the 40 NNI contour, in fact we put the 35 contour, but in fact that only just grazes the edge of East End and the Roach at this point. That doesn't give you any comfort at all, though? — No, Sir.

2231 *Inspector* The existing approach to Southend airport is more or less across Paglesham? — Yes, Sir, it seems to me that in some sense of the wind the aircraft fly in from the east over Paglesham towards the airport, so we do experience that.

Inspector Thank you very much for your contribution, Professor.

MR. G. PORTER called

Inspector Will you give your name and address? — Yes. My name is George Porter of 6, Picton Gardens, Rayleigh, Essex.

Inspector And you are the owner/occupier of that residential property? — Yes. Mr. Hunt, ladies and gentleman, I don't know whether I am not a good bit out of my depth at a hearing like this, but my only statements are how they would affect an ordinary person in this area and whether Mr. Hunt will accept this evidence.

Inspector I most certainly will, so carry on. — Thank you. Well, my fears are on the development problem and how it would affect the ordinary citizen already residing here. This is a district (I am talking now of Rayleigh) which has been rather hard hit by a sort of piecemeal development—every small corner of land is developed—and this has led to a run on all the services that the ordinary citizen takes almost for granted, and what I fear is that unless some sort of planning is done we shall have a further deterioration of these services. For instance, in Rayleigh if you want to get a tooth fixed up that is hurting you may have to spend, if it is very urgent, a whole day waiting for a dentist or if it is not particularly urgent he may give you an appointment four months hence. If you are lucky to have a good doctor so well and good, we have been fortunate, but if you want a change of doctor you would find it very hard to get on to another doctor's waiting list. If you want a minor operation or you have a spell of ill health you are faced with making appointments some months ahead in the local hospital, and if you have young children the chances are that if you live in the centre of Rayleigh you

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

will be sent to Love Lane School, and here we come back to local authorities, and your children will have to use lavatories that were considered primitive many years ago because of money restrictions. We have no public hall. We have few playing fields. We have no swimming pool. These are things that the ordinary citizen looks for and we are wondering if the growth that is coming should this airport come be so planned as to give us these facilities. We are wondering whose responsibility it is. We don't want any more piecemeal development. We are rather afraid that we shall become part of an urban sprawl stretching from West London to the sea which is developed hurriedly to provide workers' houses for the airport and for the ports and not enough thought given to the facilities for recreation, because we see all the countryside around us vanishing overnight.

We are wondering if this new road, this new motorway which is planned, will cut right through the small existing countryside that we have ready access to. We find because we have a family that we use the car and if you want to go anywhere else in England because of the restricted nature of this peninsular that it takes some hours. If you want to visit a relation in Clacton it looks quite near on the map, but it is a 2½ hours journey right round a 70-mile contour, and if you want to go to Brighton which looks quite near on the map, or fairly near, you have got to take three hours of roads. There doesn't seem to be the roads here for the ordinary citizen to get about on. Even in the centre of Rayleigh we find that we have got already a wait of up to twenty minutes to get across from Eastwood Road to Crown Hill to get out of Rayleigh, and we are wondering whether all the urban development that is supposed to be coming with the airport will make that problem very grave as far as we are concerned.

We are also concerned about airport noise and wondering how much the eastbound route which appears to turn over Canvey Island and come directly across Rayleigh, how much noise this is going to bring with it. These are queries we don't get from the press, we have no information on them locally, and we feel rather helpless as ordinary citizens. We would like to object—many of our neighbours would like to object—but we feel we are presented with a *fait accompli*. We don't know how to go about it.

Inspector You are doing very well on your behalf and on your neighbours' behalf. Is there anything more you have to add? — Well, those are the points I have to make. All our facilities seem to be over-strained already. The countryside that we came to Rayleigh to enjoy is vanishing. We are wondering whether it will be sort of infilling to provide a few more houses all the time and Rayleigh will be like Topsy "just grow" without the facilities, this is what is worrying us.

Inspector It may help you to some extent to know that the Commission has employed a former planner from the Essex County Council who lives in Rayleigh, so they are a little aware of the area's problems. Any questions to Mr. Porter.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2232 Just one very brief one. Mr. Porter has made eloquently all the points I have been trying to think of since the beginning of the Inquiry, but you don't accept the expert's assessment that it will be possible to dovetail 80,000 extra people in the existing amenities and still the people living here will be able to enjoy any amenity while this is happening? — I don't accept that at all, Sir, because I think you will be disturbing the character of the town and we just cannot absorb people to that extent in the time, we might over a longer period of time. We are a very friendly community in Rayleigh, but already what was a very friendly community where we all knew one another and the shopkeepers knew the people has become a small town of supermarkets. We feel that we are hardly digesting the people that have come in present growth.

2233 Is this because the expansion has been so rapid that existing amenities have been swamped? — Yes, it has been very rapid. We have not had new amenities to help cater for the people that have come.

Cross-examined by Mr. Keene (Essex County Council)

2234 Mr. Porter, the responsibility for most of the things you have mentioned would, of course, be the responsibility of my clients, the County Council; and can we say, on their behalf, that you have come here today to express the views you have on those points? Would you accept that whether these fears are justified or not really depends on how the planners do their job, and how the schools, hospitals, etc., are organised? — I shall accept that, Sir; but we have of course had the plea that there is not enough money to go round, and we would like to see them.

Mr. *Keene* I am obliged—thank you.

(*The witness withdrew*)

Inspector And that, I am afraid, concludes our short programme for today. I shall be going around to look at several areas near Foulness; and we will adjourn until ten tomorrow morning.

(*Adjourned until 10 a.m. tomorrow*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

THURSDAY 15 MAY 1969

THE CIVIC CENTRE
SOUTHEND-ON-SEA, ESSEX

Before A. J. Hunt, Esq.

Oral evidence taken from:

National Farmers' Union (*Mr. N. Wallace, Mr. J. Hawkes, Mr. W. R. Cottis, Mr. I. F. Burroughs, Mr. W. A. Squire, and Mr. P. G. Philpot*)
Country Landowners' Association (*Brigadier J. R. Fishbourne, and Mr. T. D. S. Hooper*)
Council for the Preservation of Rural England (*Mr. R. Dreschfield*)
Nature Conservancy (*Dr. M. George*)
Royal Society for the Protection of Birds (*Mr. P. Conder, Dr. G. Matthews, and Dr. P. Rudge*)
University of Kent (*Mr. P. Smith*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector The National Farmers' Union, no. 46? Mr. Wallace?

Mr. *Wallace* I am Neville Wallace, and I appear on behalf of the National Farmers' Union,* and of course of its affected members. Sir, with your permission I shall introduce my evidence first, and then make a closing statement afterwards; but I hope it would be right for me just to make one or two brief comments about my evidence in advance. Sir, as I am sure you can imagine, the National Farmers' Union has given considerable time and thought to the third London airport, and how to assist its members and the Roskill Commission best of all; and it has been decided that the pattern of the NFU evidence should be as follows, broadly speaking: first, that we should call a planning witness to deal with the question and the likely locality of ancillary development; secondly, that we should call an agricultural witness to comment on the value and the potential of the area as a whole; thirdly, that we should call a local valuer of high standing to talk from his personal knowledge of the area about the value and availability of holdings; fourthly, a water and drainage expert on the subject of run-off; and, fifthly, a survey of all our affected members and four representative farmers to be chosen as a representative of the whole.

I have gone into considerable detail for this reason: because at Foulness there are modifications to the general pattern, and I do not want it to be thought at any time that Foulness was treated less thoroughly or on a different basis from the other sites. So I shall make available in a moment Mr. J. Hawkes, NFU 3F—I might say that this was attached to a document NFU 2F, "Views of Representative Farmers",† and I suspect that some people did not realise that it was there and that it was separate from those views. We are not calling at Foulness on our own agricultural expert or local valuer, because in this case we are relying on the evidence of Mr. Donald Tanton‡ for the Essex County Council. There are two reasons for that, Sir—first, that Mr. Tanton is held in the highest estimation by members of the NFU; we are very satisfied with his evidence at Stansted and also here at Foulness; and secondly, it was to assist your Commission and save time—which I am sure are two very laudable motives from your point of view. We are not calling a drainage and run-off expert, simply because, in the context of this coast in general and this coastal site in particular, it was not thought to have any major difficulties. We have prepared, as you know, a "Survey of Farmers"—NFU 1F,§ and we have prepared the "Views of Representative Farmers". Sir, perhaps I might just say this: that the four representative farmers whose views we have put forward are not suggested to be agricultural experts—they are not expert witnesses in the usual sense, nor are we relying, as it were, on their evidence so far as our case is concerned. Therefore, sir, I do not propose to put each of the farmers into the witness box, but what I suggest to you, with your permission, is that I make them generally available, and if anyone wants to ask a particular farmer a particular point about his personal opinion, I shall be happy to have him come into the box.

So, with those opening remarks, I propose to make available Mr. John Hawkes, who is sitting in the witness-box, and deal briefly with his qualifications and experience.

MR. JOHN HAWKES called

2235 Mr. *Wallace* Is your name John Hawkes? — Yes.

2236 And are you an Associate Member of the Royal Institute of British Architecture and an Associate Member of the Town Planning Institute? — I am.

2237 And are you a partner in the firm of Hancock, Hawkes, architects/planners of Hampstead, London? — Yes.

2238 And I believe amongst other things your firm has been concerned with the new town of Peterborough? — Yes.

Mr. *Wallace* I am prepared to make him available for cross-examination.

Inspector I will start with the other local authorities and work back finally to Essex.

Mr. *Wood* Sir, I find myself in some difficulty in that I have literally five minutes ago only received the additional evidence put by the NFU. Fortunately I have skimmed through the cases and I am afraid in those circumstances there are some questions I would have wanted to ask of the individual farmers. This might have been resolved had one had an opportunity of studying their cases beforehand, but ten minutes' notice is to say the least to an unprofessional very short.

Inspector That is absolutely true. Why is this? I have had this for weeks.

Mr. *Wood* I am not alone in this. The only copy I have had is the copy 46, the general statement of case. I had heard of these others being in existence and did in fact try to get copies of them with complete lack of success.

Inspector Who from, Mr. Wood? It was the Commission's staff job to distribute these to the other interested parties. It seems as though there has been some failure in the Commission's distribution system.

Mr. *Wood* I think with your indulgence we might be able to cope with it.

Mr. *Smith* I did not get a copy either, Sir.

Inspector Have we a copy now?

Mr. *Wood* Literally when we arrived at our seats after a coffee we found them here, but you will forgive us if we ask each individual farmer to be in the witness-box.

* See also p. 203.
† p. 205.
‡ p. 41.
§ p. 203.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. Wood (Paglesham Parish Council)

2239 Mr. Hawkes, I am delighted to see that your figures of primary employment have gone to the upper part of the bracket, not the lower part of the bracket as the case of the Essex County Council expert witness. Have you got any reason for that? — I have taken a range in fact from a lower limit than the County Council to a very much higher limit, I think this is advisable. The development of an airport of this type is obviously a catalyst and one should allow to take the opportunity that any growth may stimulate in the future and not be in a position to resist it unnecessarily.

2240 You regard this as the more prudent course to take? — I think one should take these things into account, yes.

2241 If I may turn to page 4* of your evidence now, under land requirements, the figures that we have discussed during the course of this hearing, you say under land requirements: "This would require a development area of between 14,800 and 36,500 acres". Are you aware that the Essex figure was in the region of 19,000 acres? Would you be prepared to accept that or would you think that your top figure of 36,500 or the figure worked out of 26,000 additional acres might be closer to the final figure? — This I think is difficult to say. I do myself in fact say that the probable limit will be in the lower half of this range that I have given and I also suggest in fact that should the need for development be above that stated by the County Council this should go in the corridor between Southend, Basildon and London.

2242 One further point that has been made is this alleged saving of agricultural land through the bringing back into use for full agricultural purposes of that part of Foulness Island occupied by the defence establishment. Would you accept the fact that if it is found possible to move this range from one site to the other that all that you are doing is transferring the consumption of agricultural land from one spot of Britain to another and that this land-based installation will still require agricultural land on which to perform unless it ceases to exist altogether? — This is something that I cannot really speak about not knowing the situation. It is possible that it would go on to good agricultural land, it is possible it might go on to very low grade, it may not go anywhere else at all as you suggest.

2243 Unless it ceases to exist it will go on other agricultural land in another part of the country? — Probably, but not absolutely necessarily.

2244 Thank you. And in your plans what do you envisage to be the most easternmost area of urbanisation inseparable from the urbanisation associated with the airport? Do you agree with Essex County Council the easternmost incursion into the rural area would be Canewdon? — I would agree this: I would suggest the exact line is obviously a matter of detailed planning but it should certainly be put back as far as possible from the more rural and agricultural land to the east, and I would say Canewdon in the north is the very furthest on would want to go.

2245 You, furthermore, would agree it is unfortunate in the proof to refer to this as an academic exercise; it is an exercise which deals with the livelihood and conditions of the human beings in this area. — Yes.

Cross-examined by Mr. P. Smith (Barling Magna Parish Council)

2246 Mr. Wallace in his opening remarks said that they were not calling an expert witness dealing with drainage because in fact there were no apparent drainage difficulties, particularly in view of the evidence which we heard from the Essex River Authority, we consider that there are no drainage difficulties involved here, the rather low flat-lying land with a lot of problems . . .

Mr. *Wallace* If I may intervene, Mr. Smith is cross-examining myself rather than the planning witness. I would suggest it is not within his expertise and, if it assists, this was discussed with farmers, and it was considered, and that is why we called the witness.

Inspector Mr. Wallace is making his case now, Mr. Smith. Any other questions? Any questions from other institutions, associations, promoters?

Cross-examined by Mr. Keene (Essex County Council)

2247 I gather apart from your disagreement with us on Canewdon, you very broadly agree with the suggested location and urbanisation put forward by the County Council? — Yes.

2248 The only other thing I want to ask you about is your statement on page 3,* that you consider on balance it may well be a considerably greater demand than 15,000—this is under Secondary Employment? — Yes.

2249 Of course, it is a fact, is it not, that the national policy at present is restricting the growth in the south-east of England? — Yes.

2250 And as far as one can see this is going to be the policy for the foreseeable future? — Yes.

2251 Can you tell me whether that sort of policy was present in the cases of the American airports towards the upper end of the bracket that you quote there? — I doubt this very much.

2252 So one would want to make an allowance for that in deciding which end of the range one chose? — Yes, I think one has got to consider this not only in the national but the international circumstances that may come to bear on the situation.

2253 This is something to which national policy would, nonetheless, have regard and wish to control? — It is.

* p. 213.

* p. 212.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Keene* Thank you.

Inspector I have no questions.

Mr. *Wallace* I have no re-examination.

(*The witness withdrew*)

Mr. *Wallace* As it has been requested by Mr. Wood from Paglesham that we should put the farmers, whose representative views we have obtained, in the box, I am prepared to do so, but I just want to stress again they are not experts within the accepted sense.

MR. W. R. COTTIS called

2254 Mr. *Wallace* Are you W. R. Cottis? – Yes.

2255 And is your farming enterprise that of H. Cottis and Son, of Lambourne Hill, Canewdon, Rochford, Essex? – Yes.

2256 Are you a past Chairman of the Rochford Branch of the National Farmers' Union and a present member of the County Executive of the Essex National Farmers' Union? – Yes.

2257 And are you a Commissioner of Taxes? – Yes.

2258 And Chairman of the Southern District Agricultural Advisory Committee of the Essex Agricultural Executive Committee and Vice-Chairman of the Governors of the King Edmund Comprehensive School? – Yes.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2259 Mr. Cottis, on the second page of your case,* at (c), it is obvious that you are concerned about the effect on your farms of the new access motorways and railways? – Very much so, yes.

2260 Have you got any sort of facts to support what sort of severance, judging from the plans in existence now, you think that you might be subjected to? – In accordance with plans which I have seen printed in the press–I have two plans here–whether the Inspector would accept them, they are here–as to how the two farms would be affected by the motorways.

Inspector I am perfectly willing to look at them; but it must be subject to the proviso that the route of this road would be settled at a later stage–this must be very provisional. I fully appreciate the severance problem–the Commission full appreciates it; but nobody yet knows just where the road will go.

Mr. *Wood* Indeed, Sir; but it is always interesting to put flesh and bones on an academic exercise.

Inspector Provided it is the right flesh and blood!

Mr. *Wood* I am asking Mr. Cottis to put his flesh and blood.

Inspector I am quite willing to see the plan.

Mr. *Cottis* (*holding up a map and indicating*) This is how it would affect the farm at Paglesham, going through towards Canewdon–it would cut one farm in half. The two green strips represent the proposed road, in accordance with the Essex County Council plan. Secondly, the other farm at Rawreth would be cut in two diagonally–similarly with two green bands as shown on this map–and it would be almost impossible to farm with the type of fields on either side. Does that satisfy you?

2261 Mr. *Wood* Yes. Would you say that that sort of effect on your farm would seriously inhibit, or possibly ultimately compromise it? – Very much so.

2262 Your last paragraph is particularly interesting–could you elaborate that? Is the point that you make there, that you see a conflict of business interests, and you see no reason why one should become paramount over another? – Well, Sir, as Mr. Wallace said in his opening remarks, the farmers who have been asked to speak are not expert witnesses. But as a layman, I look at it in this light–here we have private enterprise who want to develop the Maplin Sands for the third London airport. We, as farmers, are equally in business as private individuals. It is quite possible, according to the airport plan which was originally on the board on the left there, that we could lose our livelihood for the sake of others; so therefore it is private enterprise fighting private enterprise, and I think it is a rather important point that we should have to give up our livelihood for the benefit of others. That is, assuming that it is private enterprise.

2263 You find yourself in the position almost of seeing the elimination of your way of life? – Yes–without any hesitation at all, it would come in the course of time.

2264 You are a tenant farmer? – Yes–which makes it worse.

2265 So would it be true to say that the compensation that you would get for the elimination of your way of life would make it impossible for you to restart in some other place? – Yes. Yes, without any hesitation.

2266 Because of the cost of purchasing another farm, and the inability of getting a tenancy in another part of the country? – Well, assuming it is even worse to find farms–as I have said in my Report–if one is a cereal farmer, because one must have a large acreage to spread the overheads.

Cross-examined by Mr. Smith (Barling Magna Parish Council)

2267 Just one point, Mr. Cottis: in your experience, have you heard, or had the opportunity of bidding for, the tenancy of comparable farms in this area–farms to let on a tenancy basis? – Only in one instance, Sir–it was a small parcel of land, not a farm as such.

* p. 205.

Printed image digitised by the University of Southampton Library Digitisation Unit

2268 Really, on your tenant's compensation, it would be very unlikely that you could find another farm to rent on an agricultural tenancy in this area? — I would not think it was possible in this area.

(*The witness withdrew*)

Mr. *Wallace* My second farming representative is Mr. Isaac Frank Burroughs.

MR. I. F. BURROUGHS called

2269 Mr. *Wallace* Is your name Isaac Frank Burroughs?* — Yes.

2270 And do you live at Ringwood Farm, Foulness, Essex? — A little correction—it should be Rugwood, not Ringwood.

2271 Are you a Parish Councillor of Foulness Island? — Yes.

2272 And have you farmed here for 23 years in all? — Yes.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2273 Just one question, Mr. Burroughs, that I would like to ask you. Generally speaking, your position is comparable with that of Mr. Cottis? — Yes.

2274 Are there any unusual features about your tenancy which makes the problem for you more acute even that it is for Mr. Cottis? — Well, in one way there is, because we are at the mercy of the War Department. We are tenants of them, and their decision to sell or let the land.

2275 Because of the degree of inconvenience and disturbance caused by the defence installation, your tenancy terms are different from what would normally be the case in other parts of the country? — Yes.

2276 And if the compensation were based upon the existing terms, you would be even more exposed than other normal tenants? — Yes.

2277 Is that a fair deduction? — That is right.

2278 And you are not unique amongst the farmers at Foulness and in the area because of these restrictions—there are others involved? — Yes.

Cross-examined by Mr. M. Gregory (Country Landowners' Association)

2279 Mr. Burroughs, do the Ministry of Defence pop off their guns frequently? — Yes, six days a week.

2280 Throughout the year, naturally? — They have several holidays, days, for Queen's Birthday, etc. Saturdays we get, because recruits come into the area to do their course of artillery. We get all the five days of the week—we can say six.

2281 *Inspector* Do they come much on a Saturday? — Not a lot. We get it sometimes in the evening, in the week, and now and again we get weekends, where they say they are using the Sands and using buzzing aeroplanes to fire at.

2282 *Inspector* But the great majority of their work is done on the five weekdays? — Yes.

(*The witness withdrew*)

Mr. *Wallace* Sir, the third representative farmer is Mr. W. A. Squire.

MR. W. A. SQUIRE called

Mr. *Wallace* Is your name W. A. Squire? — Yes.

Mr. *Wallace* Perhaps I ought to say, Sir, that on the document submitted* he is put down as "Squires", but in actual fact he is "Squire". (*to the witness*) Do you farm under A. W. Squire Limited, of Doggetts, Rochford, Essex? — Yes.

Mr. *Wallace* Do you hold a Certificate in Agriculture; have you been Chairman of the South Essex Agricultural Executive Committe from the middle of the war until recently; have you been a past Chairman of the Rochford Branch of the National Farmers' Union and are you a member of the County Executive of the Essex National Farmers' Union? — I am afraid, Sir, that that is not absolutely accurate. I have been a member of the Agricultural Executive Committee since the middle of the war, but I have not been Chairman of it at that time—I was Chairman of it from about 1950 onwards.

Mr. *Wallace* At any rate, you have been Chairman at some stage? — Yes, and I am a Deputy Member of the County Executive at the moment.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2283 I must apologise for causing the farmers such unaccustomed exercise, Sir! (*to the witness*) You are an owner-farmer?—you own the land that you farm, so you are in the third category? — Yes.

2284 Just one thing: paragraph 5† . . . it is so nice to see someone so concerned about the national interest! . . . there is a point there about the stacking operations. Have you been able to acquaint yourself with the evidence at this Inquiry so far, to date? — No—this is my second visit here. I was here yesterday morning for a little while. This stacking operation was referred to, and I think then it was referred to as taking place perhaps over Chelmsford; but we were given that the point of having a coastal airport would be the fact that they could stack over the water.

2285 Now that this has been established—not established, perhaps, but inferred, from very strong authority, no less than the Essex County Council, that this is not likely to happen—would like to revise your proof of

* See p. 207.

* p. 208.
† p. 209.

Printed image digitised by the University of Southampton Library Digitisation Unit

evidence in any material degree? – Yes, I definitely think I would, because that has been one of my pet thoughts all the time, that the noise would be minimised by having them stack over the sea, and the countryside and the Borough of Southend would not be afflicted by this noise.

2286 So that you–like many of us–are leaving this Inquiry a wiser and possibly a sadder man? – Yes, I think so too.

Cross-examined by Mr. P. Smith (Barling Magna Parish Council)

2287 Mr. Squire, in part 4 of your proof* you talk of compensation; and of course there are a lot of statutory provisions on compensation. We assume that these would be fair, but may I put it to you this way: farmers are bought out and paid fair compensation to restart somewhere else. Do you agree that if this is the case, and you find somewhere else, that in fact because of the increased demand, because of farmers being bought out like this, you might find your alternative site or farm that you are going to has in turn increased in price–in other words, what I am saying is, with the law of supply and demand, you are now, by going, increasing the demand on the market and therefore the price–do you appreciate that? – Yes, I appreciate that. I should not think there was the slightest doubt that there will be greater difficulty, as time goes on, in obtaining a comparable set-up to our own now.

Cross-examined by Mr. Keene (Essex County Council)

2288 The view which you put forward in paragraph 5 of your proof of evidence is based, as I understand it, on the belief that there would be relatively little noise nuisance caused by the Foulness site – It would affect less people, I would have thought, by having a coastal site. I have not said "Foulness" in one word of my evidence here–I have said "a coastal site", I made a specific point, trying to stress the fact that it would be better from a noise angle than an inland one.

2289 I am sorry!–I jumped to the conclusion that you meant Foulness. But that is the right way of assessing your view–that, providing relatively little noise nuisance can be achieved, you stick to the view expressed in paragraph 5? – I think so.

Mr. *Wallace* The only comment I wish to make, Sir, is that exercise is by no means unaccustomed, to farmers!–as suggested by my friend Mr. Wood! The last farming representative is Mr. P. G. Philpot.

MR. P. G. PHILPOT† called

Mr. *Wallace* Is your name P. G. Philpot? – Yes, it is.

Mr. *Wallace* And do you farm as A. H. Philpot and Sons (Farms) Ltd. of Philpot House, Rayleigh, Essex? – Yes, we do.

Mr. *Wallace* Are you a past Chairman of the Rochford Agricultural Executive Committee and the Southern District Committee of the Agricultural Executive Committee? – Yes, I am.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2290 You farm at Rayleigh? – Well, we farm quite a lot of different farms centred around Potton Island, which is next door to Foulness–barley lands between Wickford and Basildon.

2291 In the main, you concentrate your farming interest as to the west of Rayleigh? – By a little, yes.

2292 Some 17 miles from the site at Foulness? – Yes, we farm 900 acres within two miles.

2293 And that is out of a total acreage of 2,500 acres? – Yes.

2294 A third? – Yes.

2295 So two-thirds are are 17 miles from the site? – Yes.

2296 When did you write this submission?* – We were asked to give our views on the possibility of the airport coming to Foulness. We were not asked to look into the future as to what other people were thinking about, just our views, about a month ago, and obviously there were a lot of things one put in here that since that time have been altered by evidence from experts, because when one gives your views, you give views not as an expert.

2297 This is a point we have all been suffering from since this Stage II hearing was mooted, but it would be fair to say this, that you wrote this as most of us had to something in the region of six weeks ago? – Something like that, yes.

2298 And looking at it now in the light of the information that we have all of us obtained since then could I ask you are there any points of importance that you would now seriously wish to alter? – I would not.

2299 You wouldn't. You wouldn't for example wish to alter anything in (g) when you say: "Therefore I feel that any suggestion that a new town is inevitable if the airport comes to our area should be strongly resisted." – I think myself that is the case.

2300 So that when the Essex planner looking into his crystal ball suggests that 400,000 people are coming into the area to the east of Rayleigh you would find this a cause for opposing the site goes here, you have your new town and you would say it should be strongly resisted? – I am not a planning expert but as far as a farmer goes I know that I would like any new town to be strongly resisted, but that is natural.

* p. 209.
† See also p. 210.

* p. 210.

Printed image digitised by the University of Southampton Library Digitisation Unit

2301 I am gratified to hear that because here we have the planning expert telling us there will be a new town twice the size of the existing settlement in this area and I am delighted to hear that you would regard this as being something to resist strongly. – But I am no expert, obviously, that is self evident.

Mr. *Wood* Neither am I, we are on common ground here, but I hope we shall be on common ground in resisting it.

Mr. *Keene* It might be of comfort for you to know the Essex County Planning Officer did not say 400,000 people to the east of Rayleigh.

2302 *Inspector* Just one question on your 2,558 acres: does any of it include this type of land that has become in some places plot land? – No.

2303 It does not? – No, Sir.

(*The witness withdrew*)

Mr. *Wallace* That concludes our evidence and with your permission I would like to . . .

Mr. *Wood* Shall we be given no opportunity of questioning on the original document 46,* the only document we did receive until ten minutes ago before this document because there are some points I would like to ask questions on that.

Mr. *Wallace* I think the answer to that is no. Clearly we cannot call 145 farmers to justify their views. This was something which was the best we could do in the circumstances and quite honestly there is no other assistance we can render in that regard.

Mr. *Wood* Not the Secretary of the local branch of the NFU, for example?

Inspector Mr. Wood, I think I just leave it in this rather unusual type of inquiry that it must be for the National Farmers' Union to make their case in their own way.

Mr. *Wood* Would you then say if I could put to you now two important questions that I would have put had I been able to cross-examine on the general case?

Inspector You could do, but I don't know that it is going to help very much. What I would suggest is that this Stage II is as we all know a preliminary to Stages III and IV and I would suggest that you write to the Commission and express your concern at any points mentioned in this document which can then be considered by the Commission in the later stages. I think that would be the right way to do it.

Mr. *Wood* Yes, Sir. I will have to accept it.

Inspector Mr. Wallace?

Mr. Wallace Sir, my task in making this closing submission to you is to try to draw together all the points which have been put forward as a cohesive whole and I shall do my best not to repeat any of the evidence that has gone before.

Sir, it might be suggested–indeed, I believe it has been suggested–that the NFU is divided in its opinion in relation to the Foulness proposal. Sir, this would be borne out *prima facie* by the fact that 41 farmers which is a slight majority of acreage were against the proposal and 78 farmers which is a slight minority of acreage were not against the proposal. Sir, I think I would be failing in my duty if I did not say that we recognise that were you to take a further poll at this stage in the light of the evidence which has been put forward at this Inquiry you might find that the proportion and ratio changed somewhat. Clearly we had to do this in advance, clearly we had to do it in the absence of all the information we have now, and therefore I think what can be said of this figure is that it represented the views of the farmers freely given about four weeks to five weeks ago. I think you can judge the likelihood of any changes of that opinion from the four farmers who have been before you. Mr. Squire wished to revise his opinion somewhat, as far as I could see Mr. Philpot did not, but, Sir, what I am going to suggest is this, that any apparent division does not really exist or if it does it is not so fundamental as it might apear.

I would like to go through the points on which I think we are at one. I believe it right to say that all farmers would agree that it is proper that an airport should not be sited on good agricultural land and I cannot imagine any farmer in the Essex area would disagree with that. We have therefore to face that by putting the airport on the Maplin Sands no land would be lost to agriculture so far as the airport is concerned. But there is a corollary to this which follows logically and that is that all farmers in the Essex area would be adamant that an airport should not be sited either in whole or in part on Foulness Island itself. Clearly if you did that then all or most of the agricultural advantages which were said to accrue by a coastal site would disappear. Sir, Mr. Tanton made it quite clear to you that Foulness Island was good, well farmed agricultural land.

Secondly, I believe it right to say that all farmers in the Essex area would agree that massive development of the kind envisaged here should not be allowed to encroach upon unspoiled rich agricultural land. Sir, applied to this area again Mr. Tanton referred in his evidence* to 15 square miles of good agricultural land that is immediately adjacent and west to the Maplin Sands area and I believe you would find it true to say that all farmers would agree that that land is worth preserving and should not be allowed to be encroached upon by urban or other development. Conversely, you heard Mr. Tanton say that there was a lot of semi-urbanised land where agriculture would not be so drastically impaired.

Sir, farmers who have asked the NFU to object on their behalf may be and I believe should be rightly members of other protest organisations, but, Sir, to all those farmers to whom I have spoken who object the heart of the matter is that they wish to go on farming in this particular area. That is the root of the matter as far

* p. 203.

* p. 41.

Printed image digitised by the University of Southampton Library Digitisation Unit

as they are concerned. They are not primarily so concerned with the noise factors although that is an important fact, but it is primarily that they wish to continue farming undisturbed and again you have heard during the course of the evidence on behalf of the Essex County Council and Mr. Tanton in particular that it would be virtually impossible to replace any of the farms in this area. Mr. Cottis, whose evidence I believe was particularly helpful in this matter, could not be expected to have the same degree of good fortune as he has experienced here in obtaining land.

In our submission it is not only good planning but it also accords wholeheartedly with NFU policy that infilling with tidying up of existing conurbations should take place before new agricultural land is opened up and as you know we have referred to the fact that in certain areas we believe this could take place in Essex. It of course saves agricultural land but it also tends to have higher compensation values so that farmers can start up elsewhere. It tends to be of higher though not unreasonable density, it tends to reduce the incidence of trespass and it tends also to reduce the incidence of what for want of a better word I call new town blues, that is people coming into an area which has no existing facilities.

Another point on which I consider that all farmers would say they are agreed is this, that if in the national interest a site is found to be the right one then it must come, but that is different from saying that if it is in the regional or local interest it must come. Mr. Cottis made this point very strongly. You have here viable farms, vigorous private enterprises, and we must not allow them to be sacrificed simply so that others may make a reasonable living. Only if it is in the overriding national interest should these farms be prejudiced.

I believe that all farmers would again be agreed on this fact, that there are two major criteria to consider in deciding the effect upon agriculture, first the quality of the land and, secondly, the livelihood of the farmer concerned, and very often there is a tendency to overlook the livelihood of farmers and merely to look at the quality of the land. Where both the quality of the land and the wishes of the farmers are against development then there is a very strong objection to that site being taken and that again applies very strongly to the land Paglesham eastwards. Conversely, Sir, where the land is poorer and the farmers do not object then that in our submission is a good guide for development. That is why we reached the conclusion we did in paragraph 9* of the first document we put in and with your permission I will read once again so that it may be quite clear. What we said there was this: "It is clear from farmers living in the area that if ancillary development were to be concentrated within the Southend, South Benfleet, Basildon axis, and the Southend, Rayleigh, Wickford axis, there would be little agricultural opposition to the Foulness proposal. Agricultural opposition would also be minimal if ancillary development were to take place in an area bounded to the north by the railway line from Wickford to South Ferrers to Burnham-on-Crouch, and on the south by the railway line running from Wickford to Rayleigh to Rochford and to Southend, and on the east by a line roughly drawn between Rochford and Burnham-on-Crouch. Were there to be any major developments outside these areas, agricultural opposition would be very strong indeed. The land outside the areas acceptable for ancillary development is of high agricultural value and is farmed efficiently."

Now, Sir, we would like to suggest one other point which we feel is a good planning consideration and which might assist the Commission in dealing with this proposal, that of all users of land adjacent to an airport agriculture is probably the least affected. So, there is the problem of noise, we accept that, but it would appear from such research as we have been able to do that it is not so much of a problem to livestock when a civil airport is concerned. There is considerable damage caused by low-flying military aircraft seeking to evade radar traps. This has been investigated, and it would appear that livestock can get used to the noise of aircraft and airports. In any case here, as you know, the land is primarily in arable production, and therefore I think might be said not to pose a problem that livestock would to any great extent.

Farmers are also worried about the problem of kerosene fall-out. This is again a subject we cannot get very much information on, and we would like the Commission to investigate it, but it would appear there would be little problem there from this factor because the take-off and landing would be out to sea. We would ask you to note that noise does have a very marked effect on farm personnel, especially at busy harvest times, when the workers are working to full capacity and, of course, also when farm machinery is being used, because accidents might occur if people cannot hear shouts from other workers.

In asking that this 15 square miles of agricultural land should not be swallowed at all, we believe we are also asking what is in the best interests of the community at large. Notwithstanding all that has already been said at the beginning of this submission, I feel it my duty to say the matter does not dovetail quite so easily, and the issues are not quite so clear cut as they may appear to be. There are serious agricultural problems still remaining which it will be the duty of the Commission to assess and to consider, and it is my duty merely to point out what they are. They are three-fold, Sir: (1) the problem of water; (2) the problem of the motorway, and (3) the size and locality of ancillary development.

Now, Sir, if I may just deal with each of these very briefly—so far as water is concerned we have been led to understand that the supply would come from the Ely-Ouse Scheme. I am sure your Commission is aware on what may well have come out previously that there are two stages to the Ely-Ouse Scheme: the first being the taking of water which would otherwise run out to sea from the river; and the second, the taking of water from underground. Within those areas where water might be taken from underground there is considerable farming

* p. 204.

Printed image digitised by the University of Southampton Library Digitisation Unit

concern and opposition. There is no guarantee whatsoever that the second stage of the Ely-Ouse Scheme will proceed. I believe I am right in saying the County Council concerned has opposed and may still oppose that project. You may remember, Sir, I cross-examined Mr. Sharman on this, and I did get the strong impression that the Ely-Ouse Scheme was the only water scheme on which he was relying, and if you, therefore, take that away you might well feel that this whole project was not viable. But, even assuming that it was viable, we ask you to consider whether the costs of bringing that water across might not be too excessive. We know that this is a very very dry area. I myself appeared recently at an inquiry where the proposal was to charge 9s. 6d. per thousand gallons of water—that was in the Tendring Hundred Area. So, Sir, as to water, we suggest the Commission examine whether this will be able to happen, whether it is right to rely on it, and secondly to examine whether the cost may in fact be prohibitive.

Passing now to roads; again Mr. Purchase has dealt with this in more detail, so I will not repeat it at any great length, but Mr. Tanton suggested something like 50 acres per mile might be required. This will cause enormous hardships and problems to farmers, and it would be no light undertaking to imagine that that road could go through. If in the last resort this road does come, we would make this point and urgent plea that full discussions should take place with the affected farmers to cause the minimum amount of damage.

The third point, Sir, ancillary development, has been dealt with again in some detail. Sir, we suspect that the effect may be greater than that suggested by the Essex County Council, though we are not sure. If the effect is greater then we do point to the fact that we are dealing with a peninsula and a fairly small one at that. This was one of the arguments which we understand the Minister of Housing took into account in relation to the Ashford New Town proposal which was not proceeded with. Again, therefore, if the ancillary development is greater than expected it may be well that this peninsula could not avoid suffering it to a much greater extent than has been suggested. If that does occur, again, we believe that the development should take place westwards. There was, for example, little agricultural opposition to the Basildon New Town, and it may be that should be expanded before Canewdon.

There is only one further matter to which I wish to refer, Sir, in this submission, because we shall, of course, be coming back at Stages III, IV, and V, and that is on the question of compensation. We shall submit at Stage III our views on this subject and, therefore, I will not go into detail now except to say that we hope the Commission will not, have not, the idea that compensation will involve reinstatement, because in our experience, apart from a few favoured farmers who obtained development value compensation, nevertheless the reinstatement which we think is fair or which we think ought to be, and for which we are campaigning at the present time . . .

Inspector Mr. Wallace, compensation could never guarantee the replacement because of the point that has been made about shrinking land and increasing demand.

Mr. *Wallace* This precisely the case because: (a) land may not be available and (b) if it is you may well not be able to proceed with the old levels of viability.

Sir, I have one other point to make; this is purely administrative, and is: should your Commission at any time feel that a tour of the area or a meeting with the farmers may be helpful, we would be only too glad to arrange it if you or any members of your Commission desire it.

Inspector Thank you, Mr. Wallace.

MR. MICHAEL GREGORY called
(*Country Landowners' Association*)

Mr. *Gregory* I am Michael Gregory, Assistant Legal Adviser to the Country Landowners' Association. I think the most convenient course, if you agree, Sir, would be for me simply to tender my two witnesses, and then make a submission. I do not think any opening remarks are called for.

Could I first put the Regional Secretary for Essex County into the box.

BRIGADIER J. R. FISHBOURNE, CBE, DL,* called

examined by Mr. Gregory

Mr. *Gregory* You are Brigadier J. R. Fishbourne, CBE, DL, and you are the Regional Secretary of the Country Landowners' Association for the counties of Essex and Suffolk? — I am.

Mr. *Gregory* I tender Brigadier Fishbourne for questioning, Sir.

Inspector Local authorities?

Cross-examined by Mr. Wood (Paglesham Parish Council)

2304 When did you write this proof of evidence, Brigadier? — It was done about six weeks ago.

2305 Before the detailed facts we have had available became available? — That is so.

2306 I must congratulate you on behalf of the Dengie Hundred; I think you should call yourself the Dengie Hundred Protection Society. Coming to more detail: your figures of investment in paragraph 5, long-term investment—that table is incomplete, I take it? — That table is incomplete. I think that had we had a longer time in which to make our enquiries we could have got a considerably larger amount of figures. I think that the figures given do give some indication.

2307 The discrepancy between this table and that of the National Farmers' Union, possibly is explained by

* See also p. 214.

Printed image digitised by the University of Southampton Library Digitisation Unit

the fact that many farmers are not members of your association? — That is true. But many farmers are members of both.

2308 Yes. Then does it give a fair balance between the amount of the investment from private sources compared with the amount of investment from public sources, like drainage grants, improvement grants, and a considerable sum of money from public funds ploughed into the area arising out of the 1953 floods? — Yes.

2309 It is a fair reflection, is it? — Yes, I think so.

2310 Grants of only £39,000 for the Rochford Hundred. — Well, I think you are taking me into the questions of detail which I cannot answer because they are not covered by the questionnaire that I put to the people I sent it out to.

2311 So in fact these figures are quite incomplete? — They are incomplete as I think we pointed out.

2312 Thank you. On paragraph 6 you refer to water supplies and land drainage. There is one aspect of water supplies that I would like your comments on. Is it not true that modern methods of farming now use irrigation considerably? — Yes.

2313 Would you regard as a possible complication to that which increases the efficiency and yield, I believe, the considerable inhibition and possible restriction of water supplies, because water shortage is something endemic to this area? — I am not a farmer in this area, and I think that I should really require to know the exact requirement of individual farmers before I could really answer that question properly but, of course, if there were restrictions on irrigation it might affect certain farmers considerably.

2314 Would it surprise you to hear that a farmer friend of mine not farming in this locality in fact paid for the capital costs of irrigation system which he installed in one season because of the increased yield?

Inspector Yield of what?

2315 Mr. *Wood* Potatoes in this case. — It is possible.

2316 It is not only possible, it is a fact. Water supply has become of great interest. — It is of considerable interest.

2317 If we turn to paragraph 10*; you do not pretend this list of amenities is comprehensive? — No, these are simply instances of some of the amenities which have been referred to by individuals to whom I have asked questions in the areas.

2318 Noticeable omissions, the fact that there are only, according to this list, two buildings of interest, historical or architectural interest in the Rochford Hundred—would you accept this is a gross under-statement? — Oh yes, but these are only the main—these are the ones that members have referred to.

2319 Yes, it is a pity they didn't refer to a more comprehensive list and, of course, the same criticism applies under boating and yachting, doesn't it? You refer to only the Crouch and the Blackwater, and you ignore entirely the boating in the Roach and, of course, the Thames. — Oh yes, that is certainly there.

Cross-examined by Mr. Smith (Barling Magna Parish Council)

2320 Just one small point particularly as Mr. Bentall is one of my parishioners, and also a friend, on the appendix. Are you aware his family have been farming this area since 1818, although that particular farm is only a third generation, but in fact they are a very long and very well established farming family in this area? — Yes, I was aware they had been there for a long time.

Inspector Any other questions?

Cross-examined by Mr. Knowles (Rochford Rural District Council)

2321 In paragraph 3 of your evidence you refer to the schedule showing the quality of agricultural land in the area; can we take it that this largely accords with the evidence given by Mr. Tanton on behalf of the County, or is there any reason to enquire? — No, it would agree with what Mr. Tanton said.

Inspector Any questions? Essex County Council?

Mr. *Keene* No, Sir.

Inspector I have no questions.

Re-examined by Mr. Gregory

2322 Could I just ask you one thing before you go, arising from what Mr. Wood was saying; I would like it to be perfectly clear, he is saying there is a criticism about what had been listed among the amenities, and also he referred to the fact that no mention had been made to yachting in the Thames Estuary and Roach, etc. Are these items listed in paragraph 10 supposed to be a comprehensive list of the amenities our members are concerned about or are they simply a list of those which our members have expressly referred you to? — This is not a comprehensive list but were particular points that were referred to by members with whom we have been in communication.

Mr. *Gregory* Thank you very much, Brigadier Fishbourne.

(*The witness withdrew*)

Mr. *Gregory* Now Mr. Hooper. This is additional evidence, Sir, put in a little late. I do hope everybody has had it for a week or more.

Inspector Has anybody not got or seen copies of Mr. Hooper's evidence? We are lucky.

* p. 215.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. G. D. S. HOOPER* called

examined by Mr. Gregory

2323 Are you Mr. G. D. S. Hooper of Grooms Farm, North Fambridge, Essex? – I am, yes.

2324 Is North Fambridge on the north of the River Crouch? – Yes.

2325 About how many miles up the Crouch? – About–I suppose ten miles.

2326 Before I tender you for cross-examination I would like to ask your comments on one or two points to fill out your statement. In paragraph 3 you make suggestions about the damming the River Crouch, of which you say would have certain advantages, one of which is that it will save the need for the upkeeping of about 30 miles of existing sea walls. – That is so, yes

2327 Has the River Authority recently spent a large amount of money on sea walls near your farm? – Yes, to the tune of some £75,000.

2328 About how many miles of wall? – This would be the topping of the wall round Stow Creek, which is covering the area in which I live, and also it covers a part of the River Crouch, running up into Clements Green Creek.

2329 When was that work undertaken? – This work was done two years ago, and has been completed this last year, and already there is quite a section of it now beginning to slip into the river. This could endanger many hundreds of acres of land, should it be allowed to go on. This erosion has been taking place in this area for many years. I have lived on my farm for 45 years, and I have seen my own self the decay of much of the land along the River Crouch, the saltings which used to protect the sea walls–it is growing in intensity every year, and now will cost literally thousand of pounds in the foreseeable future to upkeep.

2330 Now, Mr. Hooper, you mentioned in paragraph 3 that you estimate that something like 1,000 acres of marshes and saltlands would be reclaimed if the Crouch area were dammed at Creeksea. A certain amount of land has been reclaimed from the marshes already, has it not, in your area? – No–no land at all has been reclaimed as yet. It has been talked about–it has been talked about and argued about for some considerable time.

2331 I am sorry–I think we are not on the same network. Isn't there some land which you have shown me–if I may give evidence for a moment, Sir!–which was formerly marshland at North Fambridge, which is now grazing land? – I am not with you. I am so sorry–the only land which is being maintained on the Crouch at all is land which has been walled over the years–well, centuries you might as well say. The only effect is that there is a thousand acres of land which has been lost to agriculture since 1897–the whole of Bridgemarsh Island, for argument's sake, was lost in 1926, during the time I was going to school.

2332 What I would like to ask you about–I should be cross-examining you!–is there not land in the Crouch basin which is real alluvial land, which is at present grazed? – Yes, certainly. There is a vast amount of land adjacent to the river, which is possibly amongst the finest marshes to be seen.

2333 It is very good land, and if those marshlands were reclaimed, in your opinion, what would the quality of it be? – I think it could still be even improved, and the point would be that if a dam could be instigated and put across the Crouch at Creeksea, those other further thousand acres could be reclaimed and would be quite useful land in a matter of a few years.

2334 If I might refer to what you say about birdlife in paragraph 5–you deal with Brent geese. – Yes, that is so.

2335 And you are an amateur ornithologist? – Well, I have spent the whole of my life in the interests of wild bird life and I am a founder member of the Essex Bird Watching and Preservation Society, also a life member of the Royal Society.

2336 This is all in your proof of evidence: what I was wanting was something additional. Have you seen Brent geese feeding on foods other than *Zostera* and *Enteromorpha*? – Yes, I have seen them grazing on the wheatfields during bad weather, and thriving, and doing very well on it. Also, on the grasslands in large numbers. Birds are adaptable to circumstances which prevail.

2337 In your experience, having lived in this area a very long time, were Brent geese, some time in the past, before they were protected birds, driven from their places by shotguns, where they are no longer now? – That has been the case in the past, of course; the Brent goose was pursued by the pin-gunners, both on the Blackwater and on the Crouch, in large numbers. These birds used to frequent these areas in very large numbers, and there was a time when they were shot, they were driven out, possibly they moved to the Maplin Sands area; but of later years, since the protection of the geese, the goose now is becoming tamer. It is now beginning to accept human beings, and they can be approached within some 50 yards without even flying off. It is amazing how the birds have altered their environment.

2338 And this is something which you know from your own experience? – This I have observed from my own experience, and it can be seen by anyone who wishes to take leave and visit certain areas.

2339 Thank you. I tender him now for cross-examination.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2340 I shall leave the birds to the bird specialists, Sir! Mr. Hooper, when you wrote your statement of evidence,* were you in possession of the facts that this Stage II Inquiry have brought to light, as to routing of

* See also p. 216.

* p. 216.

Printed image digitised by the University of Southampton Library Digitisation Unit

aircraft and the possibility of stacking overland? – No, this has all been drawn up quite recently, within the month, and I always understood that the stacking of aircraft would be over the North Sea.

2341 So that is a fresh fact that has come to light since you wrote your evidence? – Absolutely, yes.

2342 Further, would it be true to say that the extent of the proposed urbanisation–is that a surprise to you, or something that you bore in mind? – I felt that the development which would take place should such a scheme come off–I felt myself that it would be probably extremely well conducted by the County Council–I know from experience recently of their endeavours to keep the countryside unspoilt, in particular free from development; and I think the development would take place in selected sites where they would be least damaging to anyone.

2343 That was not the question I asked. I asked whether the extent of the urbanisation has come as a surprise. – Well, I understood that there would be only so many thousands of people–this Inquiry has seen the number quoted, I forget the exact number . . .

2344 So the answer is "yes", this surprises you? – Yes, it surprises me.

2345 In paragraph 9 of your submission, you make a reference to observations of aircraft leaving the Southend airport, and that the sound is muffled. Can you tell me where you made this observation? – From my own existing farm, and this is most noticeable.

2346 How wide is the water adjacent to your existing farm? – It is not the water where I live–it is the water near Foulness Point which I had in mind, which is 15 miles approximately as the crow flies.

2347 So you base this paragraph on data taken 15 miles from where it actually occurred? – Yes.

Cross-examined by Mr. P. Conder (Royal Society for the Protection of Birds)

2348 I would like to ask two questions, I think. I take it that the views that Mr. Hooper expressed with regard to the loss of bird life are your own views, and do not reflect those of the Wildlife Society, or its Scientific Director–you rather implied that he has helped you? – These are only my own personal views.

Cross-examined by Mr. I. Burroughs

2349 I would like to ask this witness, has he ever been out on the Foulness Sands, wildfowling? – Never.

2350 I have been there, and nothing can frighten those geese away. They used to be shot by the local lads, and they didn't go, and no guns can ever disturb . . .

Inspector You should not be speaking to me, Mr. Burroughs, but to Mr. Hooper; but is this a question?–does he agree with your statement?

Mr. *Burroughs* Does he agree with it? No, I don't agree with it.

Inspector Do you agree with that statement, Mr. Hooper?

Mr. *Hooper* Well, I think I would appreciate Mr. Burrough's information on the geese behaviour possibly, on Foulness, more than anyone's–knowing his love for shooting and all that applies to birdlife–I think his evidence, or his observations . . .

Mr. *Burroughs* You see, they have never gone over . . .

Inspector I think perhaps you two could have a chat about this afterwards.

Mr. *Hooper* The only thing I would say, in my observations . . . this has been applied entirely to the geese which visit our local area, and also from observations from the Brightlingsea-St. Osyth area, close to the Colne Sanctuary and the Essex Naturalist Trust.

(*The witness withdrew*)

Mr. *Gregory* Well, Sir, may I first say that the Country Landowners' Association has been very much assisted by the submission of Mr. Neville Wallace for the National Farmers' Union, which I adopt, and which spares me from having to deal again with the matters he dealt with. I should like to remind you that from our own evidence, although the Country Landowners' Association is opposed to the inland sites, its members in Essex and in this area are completely divided in their views about the desirability of having an airport in the Foulness area, and so we felt more than ever–and I think this is probably the wish of the Commission–that our job here was to treat this as much as possible as a fact-finding exercise, and try to assist the Commission as much as we could by putting forward the points that arose from the enquiries we have made from our members. I appreciate that some possibly implied criticism was made by Mr. Wood–I do not think it was strong at all–that the evidence that we have put forward is by no means comprehensive. I would be the first to say that, and I would be the first to admit that much of it is not particularly helpful, because it did not achieve as much as we hoped it would be able to achieve in the time available.

As far as our Country Landowners' Association Branch in Kent is concerned, there the Branch also is in favour of a coastal site; but it is known that agricultural land owners in Kent are concerned about the possibility of noise nuisance that might occur if the airport were sited on the Maplin Sands. But what I do feel is important here is that I think there may be farmers who are prepared to accept an airport in this area, and all that goes with it, and there may be farmers who have not made up their minds at all–which are quite a large number, I understand–because before this Inquiry started they did not appreciate or know what would be involved. One thing is beyond doubt, as the NFU evidence and Mr. Tanton's evidence have shown, that there is land in this area, of the very highest quality. By

Printed image digitised by the University of Southampton Library Digitisation Unit

that I mean, as high as anywhere in the country, and quite obviously that should be safeguarded, not only in the interests of the farmers, but also in the interests of the country.

Of course, by siting the airport on the Maplin Sands, there should be a saving of agricultural land compared with what might happen elsewhere, and so what is causing most concern to the land owners in this area is the effect of the ancillary development. But whatever the case, if the airport is sited in this area, quite obviously productive land will go out of production, and the land which is left for farming would have far more interference that it has at present. Land which is not interfered with at all would suffer interference in the ways that have been referred to before, and therefore, in the submission of the Country Landowners' Association, there are several safeguards which we feel should be given attention to. If the airport is going to be sited here, they should merit very serious consideration.

I think, foremost, that if the Maplin Sands are going to be used, the utmost use should be made of them, and we would certainly support the suggestion of the Southend Corporation and other objectors that the runways should be moved further north-east than in the Commission's own suggested plan; and also we would urge that as much ancillary development as possible that comes with the airport should be placed on the Maplin Sands in order to save taking productive land for that purpose.

Obviously, one cannot suggest what could be done in that way at this stage; but it is something to which we would ask the closest attention to be given. One knows, around Heathrow for instance, how the storage fuel tankers have come, and other ancillary industrial development, which one feels could be very well placed on the Maplin Sands if it were selected for the airport.

We would also, of course, support the Southend Corporation's suggestions for eliminating the noise bulge overland.

Brigadier Fishbourne has been congratulated this morning for being a protector of Dengie, and here I feel there is almost a universal concord from those giving evidence here to "keep hands off Dengie". I believe, in reading the evidence, that there was one site promoter who did suggest that Burnham-on-Crouch might be developed as a new town; apart from that—I may have missed something, but I do not think anyone else has suggested any development on Dengie—and there are three reasons for this. From the point of view of the Country Landowners' Association, if I may summarise them, they are these: in the first place, Mr. Tanton pointed out that it is not only an area of high-grade land, but it is an area of high-grade farming. You remember he told us, in cross-examination, that the most modern methods were employed by the farmers there. Secondly, Sir, it is of course in the interests of the naturalists, as they say in their evidence, that Dengie should remain unspoilt, and, as the sailors say, it is in their interests also that there should be no development north of the Crouch. One notices here that even the local authority at Burnham-on-Crouch is against any development to Burnham-on-Crouch. This I consider most significant because it certainly is my experience of quite a number of inquiries that the local authority concerned is always in favour of its own development, it is to every advantage normally for the local authority that its town should be expanded with the advantages that go with it as far as the local authority are concerned, and so I consider that most significant that Burnham-on-Crouch are saying, "We don't want to be expanded any further".

Thirdly, Sir, in my summary, I would draw your attention to the fact that the County Development Plan* marks a very considerable area of the Dengie Peninsula as land of great landscape value. Finally, Sir, possibly as important as anything, we would point out that the River Crouch would make a very effective barrier for the protection of neighbouring lands on the development, and as I am sure you are very aware this is a matter of the utmost importance because so often we have developments limited to a certain acreage in fact affecting a very much wider acreage by ancillary nuisances which unfortunately always stem from major developments. I am thinking of course particularly of the effect on the farming industry, how they do require protection not only from trespass but from the habit of dumping bedsteads in ditches, parking in places where cattle go and all the other nuisances that go with it. Quite obviously the River Crouch would make an ideal barrier to protect the neighbouring lands if there was to be no development north of the Crouch.

Sir, Brigadier Fishbourne was asked this morning about the schedule that the Country Landowners' Association had prepared about the quality of the land. This was done parish by parish based on official classifications and it has not been submitted simply on the principle that the clarity of the evidence is better than a clutter, but it is of course available if anyone wants to see it.

Inspector We shall get this through the usual channels, as you know.

Mr. *Gregory* I think the Ministry of Agriculture will provide it. Likewise, I think our attempt to indicate to the Commission something of the very large investment in the area in farm improvement schemes, of drainage schemes has been a failure, quite honestly, and from our experience here I don't think we are ever likely to be able to help the Commission fully on this possibly at any of your hearings because not only is it difficult to get out the figures but obviously some of the landowners want to treat them as confidential and it is not an easy matter to give a wide coverage to them, but I think what Mr. Tanton made quite clear was that this was an area where there had been a very great investment in farming not only on a short-term basis but on a long-term basis, and this of course must be protected as far as possible.

Sir, Mr. Neville Wallace mentioned the question of the road links and I don't want to say any more about it

* Can be inspected at County Hall, Chelmsford, Essex.

Printed image digitised by the University of Southampton Library Digitisation Unit

save this. I think the experts have made it perfectly clear that they do not think it a feasible proposition that road and rail links should be above ground, but what does appear to be a feasible proposition—certainly one which the CLA would invite study of—is the possibility of placing the new rail link that will be required not only on the same land as the motorway or along the same route as the motorway but if possible above it, thereby saving land. This might not be thought necessary if there is going to be disturbance of the land, but if it is found a considerable mileage is going to be taken up where the two can be routed together obviously there would be a large saving of land if the rail could be placed above the motorway.

Sir, I think you will probably be glad to hear that I do not propose to say anything at all about noise nuisance because I do feel this has been very well and adequately covered and will be by other objectors, but if I don't comment on the noise nuisance it is for that reason only. Of course noise nuisance concerns owners and occupiers of agricultural land as much as anybody, but quite honestly I don't think there is anything helpful I could possibly say about this in addition to the other evidence save that it can of course and has done in other places devalued property without the owner having any right whatsoever to compensation. This has happened near other London airports and in my submission is an injustice and one which one hopes would be rectified, although it is not of course in the ability of the Commission to do more than make a recommendation. On the question of noise affecting livestock one would hope that this is something that might be cleared up at Stage III of the Commission's inquiry.

The Country Landowners' Association thought it right to put forward Mr. Hooper because of his very constructive evidence and because it raises some issues which I think might have a very large bearing on the question of the impact of Foulness airport on this area. Mr. Hooper in my view is a man who can be of very great use in this kind of inquiry, being a man who not only has lived here nearly all his life but is a man who knows and loves the countryside and its human and wild life. He put forward a suggestion which on the face of it at least has many advantages and if I could put it this way I think it raises a *prima facie* case for further investigation and that is the question of damming the Crouch.

Inspector Is this for investigation by the Commission of the third London airport?

Mr. *Gregory* I would like guidance on this.

Inspector So would I.

Mr. *Gregory* Naturally the Country Landowners' Association would like to give any assistance it can, certainly Mr Hooper would love to give all the help he can.

Inspector I think that to err must be right on giving too much information rather than too little, and the Stage III remains in front of us.

Mr. *Gregory* I would hope that at Stage III a technical appraisal could be given of this and for these reasons: in the first place if Mr. Hooper is right that a thousand acres of rich silt land would be reclaimed that is a very considerable bonus of land which would arise from the placing of the airport here. I thought he showed me a place where you could see before and after reclamation, a place at North Banbridge alongside the road, where on one side of the road is marshland of no productive use whatsoever because the tide covers it and the otherside of the road protected by walls is good grazing land and it is a good place to go to because it indicates what might be if the land can be reclaimed. A thousand acres of this very rich grassland would indeed be a very considerable bonus to the farming industry in the area. But what is perhaps even more important is if the River Crouch by a barrier of that kind could be turned into a freshwater reservoir, that is a reservoir within its existing banks. We have heard and there is a lot more evidence to come about Essex being a dry county, possibly the driest in the country, but of course there is no shortage of water, what there is a shortage of is a shortage of captured water. The absurdity of flooding productive land to provide water can be avoided, of course, or ought to be, and I should have thought this was another reason that the damming of the Crouch merits a technical appraisal. We know that there are a number of reservoir schemes in the area under consideration, nobody knows whether they are going to go ahead or not. What is quite clear is that water is needed now and much more will be needed if the airport is sited in this area.

Another bonus here which is of great importance to the local community is by making that part of the Crouch non-tidal this would be a flood protection measure. This land in the area north and south of the Crouch has suffered castastrophic flooding from time to time throughout the centuries, the most recent of course we all remember so well because life was lost. This is still and must always be a fear and, as Mr. Hooper has told us this morning, nothwithstanding the work that has been done on the sea defences and the amount of money that has been spent on them it is a losing battle one can see in this area wherever one goes around the River Crouch and the other creeks.

Inspector I think you can leave the damming till later at Stage III. You have made it quite clear that the Association put forward the proposal, I think the merits can be left to Stage III.

Mr. *Gregory* I certainly don't want to waste your time, but I would like to be satisfied that I have satisfied you that technical appraisal should be made.

Inspector You have made your views quite clear to the Commission.

Mr. *Gregory* Might I just add this in summary, that in our view this should not damage the yachting interests. Many of our members in this area are yachtsmen vitally concerned from a recreational point of view with yachting because by making this a non-tidal water upriver from the barrier yachting would be available at

Printed image digitised by the University of Southampton Library Digitisation Unit

all times, but downriver there will still be access to the sea from the existing yachting clubs at Burnham-on-Crouch.

If I might refer to just one other matter about ancillary developments it is this, that we do hope that the ancillary development would be planned at a reasonable density. You will remember that when I asked Mr. Jennings Smith the County Planning Officer something about the density that the Basildon New Town Corporation were planning for I was told, rather tartly I thought, to find out for myself. Well, I have found out for myself that the density is 17 persons to the acre, this is the same as Southend.

Inspector I am not certain that was the exact figure given at the Basildon Inquiry, I think it was 16 point something.

Mr. *Gregory* Has any evidence been given in my absence?

Inspector Oh, yes.

Mr. *Gregory* I am not surprised, I am so sorry.

Inspector Could I put this point? At the end of the day the authority responsible for planning the area is not the Roskill Commission, it will be the planning authority, they will ultimately decide details of cubic density. We all know full well the greater the density the less the take of land, but these are the people at the end of the day who will have that responsibility.

Mr. *Gregory* Before the end of the day no doubt we will get at that.

Inspector They are always there.

Mr. *Gregory* Naturally the owners and occupiers of the countryside are concerned about the preservation of the amenities and we have attempted to bring to your attention certain amenities which our members have expressly asked for us to ensure would be protected, and no doubt you will have other evidence about that.

Inspector We shall obtain a complete list of those affected.

Mr. *Gregory* I am much obliged. Sir, I never thought I was going to come to this Inquiry to talk about birds, but here again many of our members in this area are in fact ornithologists, either professionally or as amateurs, and are as much concerned about the bird life as of course the preservation societies. What I would like to say about this is that we have not yet had an opportunity to hear their evidence, at least I hope it has not been heard in my absence, I don't think it is due on until after my case, but I do feel that a great bulk of evidence needs rather careful assimilation because my suggestion is that it might not amount to very much at all. One is naturally over-anxious about the things one treasures and the people who treasure wild life are naturally over-anxious about any scheme which might harm them. All I can say is that it does not need to be looked at to see whether it is a cry of wolf or whether there is something in it.

Inspector I am going to suggest later this morning that this difficult question of the number of birds in the area might be more appropriately considered in detail at Stages III and IV.

Mr. *Gregory* Could I say that the CLA does not and is not going to attempt to help you at all on the question of bird strikes, but as you have heard Mr. Hooper at least does not think the Brent goose is in danger. No one would want the Brent goose preserved more than he for the good reasons he gave in his evidence, and I do not think that any of the other evidence about birds suggests that we are going to lose any. Maybe the little tern will not have a shale bank to nest on in Foulness but I think one must look at the evidence to see whether this suggests that little terns will be lost.

Inspector That is why I suggest we look at this at Stages III and IV.

Mr. *Gregory* Then just in conclusion there is one thing I am a little puzzled about. The occupiers and users of the Foulness Island are largely the Ministry of Defence. They are conspicuous in their absence by their thundering silence.

Inspector The Ministry of Defence?

Mr. *Gregory* Yes.

Inspector It has been decided that defence is not an appropriate subject for Stage II.

Mr. *Gregory* Well, Sir, on this question might I just ask this: are the objectors here going to have an opportunity of knowing what the Ministry of Defence recommendations or suggestions are going to be and have an opportunity to comment on them?

Inspector Some time before Stage V I would certainly hope that all matters which are not subject to official secrets and secrecy considerations will be made available, yes.

Mr. *Gregory* I am much obliged because one appreciates if, for instance, they are going to suggest they are moving somewhere else certainly the Country Landowners' Association would want to know where they are suggesting and have an opportunity of saying something about it.

Inspector And so on *ad infinitum.*

Mr. *Gregory* I really think that I can take it no further than that and I am obliged to you for listening to me.

(*Short adjournment*)

MR. RICHARD BODY called

(*Council for the Preservation of Rural England*)

Mr. *Body,* My name is Richard Body, MP, I am instructed to appear for the Council for the Preservation of Rural England. I have one witness, and I will call him immediately, if I may, and address you afterwards.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. RALPH DRESCHFIELD* called

examined by Mr. Body

2351 Mr Dreschfield, do you live at 15 Bridge Street, Writtle, Chelmsford, Essex? — I do.

2352 Are you a retired Colonial Attorney-General? — I am.

2353 Commander of the Order of St. Michael and St. George, and at the present time are you the Secretary of the Essex Branch of the Council for the Preservation of Rural England? — Yes.

2354 Are you authorised to give evidence on behalf of the CPRE as a national body and of its Essex Branch? — I am.

2355 Are you further the Secretary of the Community Council of Essex, the Essex Association of Parish Councils, and the Friends of Essex Churches? — I am.

2356 Do those bodies agree with the views of the CPRE expressed in your proof of evidence?* — They do.

Inspector Any questions from local authorities?

Cross-examined by Mr. Smith (Barling Magna Parish Council)

2357 In your proof, three-quarters of the way down you say "In the Commission's short list, the only offshore site is that at Foulness, and this is accordingly the site which the CPRE prefers". With respect, do you not think that then your evidence should be submitted at Stage V? — I am not in a position to judge; if my evidence is not wanted I shall probably be told to go away.

Inspector Any other questions?

Cross-examined by Mr. Wood (Paglesham Parish Council)

2358 Mr. Dreschfield, did you consult any local members of the CPRE before putting in this proof of evidence? — I didn't consult them on this actual proof of evidence, but it has been considered by the local branch, and I should say on at least six occasions, and what is contained in this proof of evidence I know is their views as expressed at the various meetings we have had.

2359 When was the date of the last meeting of the local branch? — The date of the last meeting of the local branch was about three or four weeks ago.

2360 Would you agree that since then there has been considerable additional information available? — No, not in relation to this, what we say here.

2361 Can I draw your attention then to your third paragraph, the one that starts: "The CPRE has concluded that on amenity and social grounds there are overwhelming advantages in choosing an offshore site". — Yes.

2362 Where in fact you did make a valued judgement there; the last three lines: " . . . the use of flight paths over the sea, and other attendant disadvantages are also greatly reduced". Do you still maintain that in the light of the evidence produced at this Stage II hearing? — I have not heard all the evidence that was produced in relation to flight paths, but we relied on what we have read and heard, and I still stick by it, but if you could perhaps refer me to something which you think has been given in evidence which might change my view I will do my best to consider it.

2363 Yes. I think I can draw your attention in fact to that map* over on the right-hand side there, where you see the flight paths envisaged by the Roskill Commission; in fairness, they are not those that have been suggested by the County of Essex and agreed to by Southend, but are you aware of the reason for that thumb jutting out from Thorpe Bay to Canewdon? — The 45 . . .

2364 Yes. — I am aware of that; it is one of the reasons why we suggest that the airport should be further to the north and to the east.

2365 But taking the facts as they are, you see, as close to what they are, as a reasonable person would expect, do you accept that particular flight path is overland? — That is not a flight path, it is a noise path, isn't it?

2366 The noise is inseparable from flight paths, and that, in fact, is a flight path. — Well, I accept that is over land.

2367 That being so, don't you envisage some modification within your proof of evidence at all? — No.

2368 In spite of that new fact? — No, because the take-off and the landing is going to be over the sea, and that is the noisy part.

2369 What? — The taking-off and landing of jet aircraft is at the time when they make the most noise, and give the most trouble. All the evidence that I have heard is that the take-off and landing it is proposed should be over the sea and not over land, and those areas would be the turning areas and not take-off areas.

2370 You are at a disadvantage, in that you have not been here on the other days of this hearing? — I am yes.

2371 But I do suggest that you should refer to that proof of evidence, and then see whether your Council would in fact still maintain their position. — What my Council would maintain and maintain very strongly is that the runways should be pushed over to the north and the east, and the technical evidence which we have heard points to the fact that that would be perfectly practicable, if that was done, and then the flight paths—you would not get that finger.

2372 Can we get back to the facts and not fantasy? — I don't think this is fantasy, because I don't think the flight paths have been finally decided on in fact.

* See also p. 218.

* See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

2373 This is true, but the Commission has called on certain data that was produced, and the only data on which one can go, and I would ask you to agree with this, was that provided by the Roskill Commission. Do you or do you not accept the Roskill Commission site for the airport envisaged runways immediately adjacent to the shore of Foulness or in fact offshore, or even actually on the shore at Foulness—were you aware of that? — I was.

2374 We do make some progress. Turning back to your proof. Were the CPRE interested in the Enterprise Neptune? — Indeed, yes, very interested.

2375 That, correct me if I am wrong, envisaged a marine national park, did it not, in the estuary of the Crouch, some of the Roach, and extending up to the Blackwater? — I can't remember that. I remember that we have often said that there should be a national park in the area of the Blackwater.

2376 *Inspector* Mr. Wood, I am a little puzzled, you refer to the Enterprise Neptune. The Enterprise Neptune that I know of was the project by the National Trust to acquire undeveloped coastal land all round the country. Is yours a different Enterprise Neptune to mine? — No, I don't think so. I am referring to the local application of the Enterprise Neptune, the estuaries of the Crouch, Roach, and the Blackwater. This can be determined later, but my understanding is it was an attempt to make the equivalent of a national park in that area, but dealing with things maritime, as opposed to things . . .

2377 *Inspector* I hazard to cross swords with you, but I understand the Enterprise Neptune, as such, was the purchase by the National Trust from funds collected of undeveloped land all over the coast for normal National Trust preservation. — I think it had a further application, Sir, and I may be wrong; certainly I would not like to argue with you on the subject.

Inspector Under the National Parks is rather a different body . . .

2378 Mr. *Wood* If my interpretation is right, and this is a matter of fact, I would ask the Council for the Preservation of Rural England to observe whether they think a major airport on the edge of such a site is or is not conducive to the ordinary person's enjoyment of that site. — Well, you just told me just now not to go into the realms of fantasy. You are now asking me really to go into the realms of fantasy. If there was to be a National Park in the area which you said, and there was to be an international airport next to it, obviously it would not do the National Park any good, but I would still say it would be better to have an airport on Foulness than have it for instance at one of the other three sites which have been suggested by the Commission.

2379 It has been made abundantly clear from the County activities of the CPRE that the main reason for you suggesting Foulness is that one would avoid Stansted, this is perfectly understandable, and perfectly justifiable, but it is not the reason of this Inquiry.

2380 Mr. *Keene* Since Stansted is not even on the short list it is rather surprising as a suggestion.

2381 Mr. *Wood* Well . . .

2382 *Inspector* We are going further and further away. Can we try and limit the subject matter of the hearing to local implications?

2383 Mr. *Wood* It is difficult in this case to do that.

2384 *Inspector* Well, can I put it this way: the Commission will interpret this document in regard to implications, that is the evidence of Mr. Dreschfield, and if you do the same we are batting on the same wicket.

2385 Mr. *Wood* Yes. Finally, in your case you envisage the extension to the Crouch also? — Indeed, we consider that very important.

2386 We are progressing; you are even extending your interest into the Rochford Hundred area now, and I am gratified to see it. — Might I say this, that if the airport was to be fixed in Foulness we would fight a very strong battle to ensure the protection of Paglesham.

2387 We can do with any help we can get, but I don't know whether we would accept your offer. Can we pass on to the Wallasea Island. Had you been here for the first three days (I just mention this because it is a fact)—well, were you aware the Essex Valuer, Mr. Jennings Smith,* envisaged urbanisation would have to spread to one area which he quoted in answer to a question—I don't think Mr. Keene can correct me on a question of fact here—which was Wallasea Island. Were you aware of that? — What was he suggesting in regard to that?

2388 That should additional acreage be required for additional urbanisation to house possibly some 400,000 people which he envisaged coming into this area that Wallasea Island was in his opinion the place because it lay outside the area of maximum noise nuisance, the one area he envisaged as being ready and over-ripe for development. Were you aware of that? — I was not, and it would not be the only occasion on which I differed from Mr. Jennings Smith.

2389 I am delighted we are finding more common ground.

Inspector Any other questions?

Cross-examined by Mr. Keene (Essex County Council)

2390 Only a couple of small points. I understand from what you have been saying in answer to my friend, Mr. Wood, that your organisation made up its mind in the light of publicised information published by the Commission? — We did.

2391 Would I be right in thinking that any improvement in the noise contours, such as the County Council has tried to suggest, by an alteration of flight paths would really only confirm your organisation and the

* See p. 10.

Printed image digitised by the University of Southampton Library Digitisation Unit

Essex Association of Parish Councils', and so on in the attitude they expressed in their proof? – Yes, indeed.

Inspector Thank you.

(*The witness withdrew*)

Mr. *Body* I am most grateful. That is the evidence I put before you, Sir. May I now in the space of a very few minutes say something about the attitude of the CPRE and clear up a few misunderstandings, if only they come from Paglesham. It might be said that the CPRE have come off the fence rather prematurely: indeed, from the point of view of advocacy it might have been better for us to have bided our time and waited to a later stage, perhaps to Stage V, and come before the Commission and said: "We have listened throughout all the stages of the evidence, and all the arguments, and having done so we have now reached the conclusion that Foulness is the most suitable or, perhaps I should say, the least unsuitable of the sites". If that thought is in any one's mind, may I say, Sir, that the conclusion reached by the Council has not been reached merely on the publication of data recently. The CPRE is an organisation to which more than 70 organisations are affiliated, organisations that are concerned in varying degrees with planning matters as you know, Sir. Therefore, the Council is in a unique position to take advantage of the experience, skill and judgment of a whole host of experts in the field of Town and Country Planning, and it is right to say the CPRE have not considered this problem for months, but for years, and it is only after that length of time and having had the advantage of the opinions and judgments of many experts have they reached the conclusion that they have now, and decided that at this stage they should make it quite clear they are in favour of this site.

Perhaps I may say one word more about the advice we have received, and I hope I shall not be regarded as being out of order in mentioning this point, Sir, but we have had the advantage of one particular expert who, perhaps, you will see or hear at a later stage, somebody who has enormous experience of these problems, and I can say had he prepared a Development Plan for Foulness he would have produced something identical to what adorned that space behind you, Sir, at the outset of this Inquiry, and he would have reached that quite independently of the Essex County Council which does perhaps go to show there is some unanimity of view among the experts. I realise the Commission did look forward to hearing about planning criteria, but so many of the arguments, probably all the arguments have been adduced already, and I am well aware they are not going to be strengthened by my repetition now, and I am not going to try to repeat them.

But, having said that, there are four matters which I would quite shortly address to you now, Sir. The first is that the Council does flash a warning light over the Army ranges. It is true that perhaps for half a century this part of Essex is more than accustomed to these ranges; the ranges came along before most of the development, and this development has been fitted into the needs and disturbances of these ranges. If the airport comes here, one assumes that some other place must be found for these ranges, and the Council is therefore very concerned as to where that other place may be, and we are anxious that some other part of the United Kingdom might be chosen and, if chosen, it would be indeed a blemish upon that part of the English countryside. That is the first concern we have.

The other three matters I can speak of very speedily, because they are all referred to in Mr. Dreschfield's proof of evidence. On the matter of noise, we were enheartened to hear from Bernard Clark & Partners—and I believe that others share their view—that the site could be moved further east and north, and if that were done, it goes without saying that noise contours would be altered and very much to the benefit of Kent and perhaps one could go so far as to say that the amenities of Kent would not be impaired in any way, if the airport might be sited in that place.

Certainly the contours, as we now know, could be moved from that very delightful part of Essex which is marked green on that plan.

Secondly, so far as development and urbanisation—if I may use that horrid word which I regret to say has crept into your site information . . .

Inspector We are waiting for someone to invent a more salubrious word.

Mr. *Body* But I am afraid it is not going to be easy! We are honestly concerned about it, and I think there is a great deal of unanimity on this, that if the urbanisation can be first of all concentrated on the site of the Southend airport, and then over towards Ashingdon, and then over parts where the countryside will not be injured in the same way, then if that could be recommended by the Commission, it would be of enormous value. I am not going to repeat the arguments you have heard already, and no doubt you may hear again, about the high scenic value of Paglesham and thereabouts.

And third, Dengie Hundred and Wallasea Island. I would like to think that the Council for Preservation of Rural England were the first in to champion the value of Dengie Hundred; but we do attach considerable value to Wallasea Island. I do not know whether you have had a view of Wallasea Island, or visited it . . .

Inspector I have, yes.

Mr. *Body* Then I need not pursue the value of that.

Those, Sir, are the points I make, and I apologise if I have covered ground which is perhaps well worn already by the Commission. Certainly we do urge the Commission to make some recommendations, if Foulness is to be selected, and in particular we do take the view that some Act of Parliament will presumably be needed if the airport is to come here, and we would like to see inserted statutory provisions to safeguard this part of the countryside, because without such provisions we are concerned about the future expansion and development of this part of Essex.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Thank you, Mr. Body. The Nature Conservancy?

DR. M. GEORGE* called
(*Nature Conservancy*)

Dr. *George* My name is Martin George; I am a Doctor of Philosophy and a Bachelor of Science, and I am speaking on behalf of the Nature Conservancy as the Conservancy Regional Officer for East Anglia.

If I may, Sir, I would like to just say a few words in introducing the Conservancy's report, to explain what it is, before subjecting myself to cross-examination. I should like to explain, Sir, that this report is a statement about the Conservancy's interest in the Foulness area, and a summary of the information available about the bird life of the Maplin Sands. This information about the birds has been collected from a rather small number of people who have access to this area, and who have for some time past been carrying out observations on the numbers of birds frequenting this area. And lastly, Sir, the report contains an appraisal—an outlined appraisal—of the implications to wildlife conservation of having a third London airport on the Maplin Sands.

If I may say so, Sir, it will be noted from our report that the Conservancy has not attempted to predict the instance of bird strikes at an airport on the Maplin Sands: the Conservancy takes the view that this is a matter fror experts, who would presumably wish to use the statistics of bird numbers prepared by the Conservancy and included in our report.

And lastly, Sir, the Royal Society for the Protection of Birds, who will be following after me, have available several expert ornithologists, and it may well be best, Sir, if detailed questions on the ornithological data included in our report are passed on to these experts rather than to me, as I—an amateur ornithologist, although perhaps an expert Conservationist—would probably find it perhaps harder to answer such questions than they would.

Inspector Thank you. Before cross-examination of Dr. George, I would again like to make a point that has been made before, that it does seem to me that, through Dr. Schaefer† and through the written evidence submitted by the Nature Conservancy and by the Royal Society for the Protection of Birds,‡ that the issue has been made perfectly clear. There are a lot of birds of very many different species at Foulness. What I feel cannot be pursued properly at this type of Hearing is a detailed investigation of the implications. My suggestion would be that once the issue has been made clearly, and clearly established, that the best proposal is for the experts to get together during Stage III, and particularly Stage IV, to see how far they may agree on the implications and the residue of the disagreement would then be a subject for Stage V. On that basis, I would suggest that there is little more to do at this Hearing than merely to highlight the points made in these various submissions. Are there any questions to Dr. George?

Mr. *Gregory* I am sure you will stop me if I exceed the bounds of what you want done at this Inquiry, Sir . . .

Inspector Well—is my view sensible in the view of those participating?

Mr. *Keene* I am quite happy, Sir.

Mr. *Conder* And I.

Mr. *Gregory* Then I think I must confine myself to the issues . . .

Inspector May I make a very brief suggestion? Firstly—there are a lot of birds there. Secondly—there are the conservation aspects mentioned. Thirdly, there are bird strike considerations to be taken into account. There may be more; but if I say that these are fully accepted and realised by the Commission, and work will be carried out on these during Stages III and IV, the remaining point is: can you take the matter further.

Mr. *Gregory* May I indicate what I had in mind to ask about this, along these lines: I wanted to ask questions to find out whether it is being said that any bird other than the dark-bellied Brent goose is likely to suffer, by the Maplin Sands being taken away.

Inspector Well, I would think that this is a fair question to put; but I think Dr. George said that it may be better if replies to that particular point came from other witnesses.

Dr. *George* I am perfectly happy to say a few words . . .

Mr. *Conder* We do support, and have contributed to, the Nature Conservancy evidence, and those people are here. I shall be saying that we do support it in my submission.

Inspector Would the better answer to this type of question come from your witnesses, or from Dr. George?

Dr. *George* From the RSPB.

Mr. *Gregory* Then I shall spare Dr. George.

Inspector Are there any questions to Dr. George?

Cross-examined by Mr. Keene (Essex County Council)

2392 There is only one point to which I would like to draw attention, because it may be an issue which has not been clearly recognised as such; and that arises out of your Appendix (C).* You give in the fourth column there the maximum height of these various species in flight—Appendix C. Those heights, I imagine, would be the local movements, would they, rather than the migration? — Well, Sir, in fact this morning I have been given additional information relating to this question of height flight. I have a revised set of figures here, and I think probably the best thing to do would be to make these revised figures available.

* See also p. 219.
† p. 49.
‡ p 230.

* p. 224.

Printed image digitised by the University of Southampton Library Digitisation Unit

2393 Just before that—I would like to know on what the first set of figures were based, why they are being revised, and upon what the second set of figures are being based? — The second set?

2394 The first set. — The first set were figures made available to us in a very early stage in the preparation of this report. I am afraid I cannot answer precisely where these figures originated from. You will understand that we have been endeavouring to compile this report for a number of months, and this is almost historical now. It would appear that these figures were inserted, or were made available to us, and, as I have said, I cannot precisely determine where they came from. The revised set of figures have been made available by the Royal Society for Ornithology, whose expert witness will be called by the RSPB. These figures, as I have said, we will make available to the Commission, and you may wish to cross-examine the expert witness on those figures.

2395 He will be able to give them to me, will he? — Yes. I can read them aloud to you now if you wish to have these heights, but I would have thought this was detail.

Inspector Precisely the sort of difficulty I foresaw when I made the suggestion that Stage III with wet towels round people's heads was the better place to do this.

2396 Mr. *Keene* Perhaps, Dr. George, you can answer this last question: you say you cannot tell us precisely whom the information here came from in the first place, can you give us any sort of help at all as to where it came from, even approximately? — No, I cannot is the simple answer. This information is derived from really quite a large number of ornithologists and who it was who gave these precise figures to us I am afraid I just can't tell you.

Inspector Any other questions to the Nature Conservancy witness?

Cross-examined by Mrs. Boston (The Sheppey Group, Kent)

2397 Dr. George, I would just like to confirm our conversation we had earlier and to say whether or not you would agree that in paragraph 5* of your proof of evidence which lists various sites of special scientific interest you would agree that there are some Kent sites which you would be prepared to add to this list to submit to the Roskill Commission? — Yes, if I may answer that there are a number of sites scheduled by the Conservancy in Kent. I think these were not included on the list probably because the main threat to scheduled sites I think really apart from Foulness Point itself, the main threat does stem from urbanisation and we took the view, rightly or wrongly, that none of the sites on the other side of the Thames Estuary in Kent would in fact be affected by such urbanisation, but if the Commission would like to have a full list of the sites scheduled by the Conservancy we can of course make this available to you.

Inspector Thank you, Dr. George.

(*The witness withdrew*)

MR. P. CONDER* called

(*Royal Society for the Protection of Birds*)

Mr. *Conder* My name is Peter Conder. I am the Director of the Royal Society for the Protection of Birds and I am representing a list of 13 bodies who have been described as over-anxious. I do not propose to read out their names as they are on the paper. We are objecting to the proposal that London's third airport might be sited at Foulness on two main grounds, that is that one-fifth of the world population of the dark-bellied Brent goose winter at Foulness and that large numbers of waders and other birds use the mud flats and marshes at Foulness in winter and at times of migration.

I will be calling three expert witnesses who can answer questions and so on. I would wish to keep my own contribution as short as possible and would just like to re-emphasise we do and have contributed to the Nature Conservancy's evidence and adopt this as the basis for our own evidence.

The only other point that I would like to emphasise on page 2* is the enormous number of threats that there are on estuaries and coastal areas of wildlife importance. I have mentioned again in this document two or three, but even today there has been mention of two other estuaries going up for consideration or possible consideration as barrage reservoirs, something of that sort, one was of course the Crouch mentioned earlier, and I heard on the news this morning a proposal for blocking the Blackwater was made. This is the basis of our worries.

I am now going to call Dr. Geoffrey Matthews into the witness-box. I should apologise that we originally told you that we were going to produce Peter Scott who is Honorary Director of the Wildfowl Trust, but he has had to fly to Alaska to advise on some wildlife problem there, but I have here Dr. Geoffrey Matthews if I may put some questions to him to establish himself.

DR. GEOFFREY MATTHEWS called

examined by Mr. Conder

2398 Dr. Matthews, you are a Master of Arts and Doctor of Philosophy of the University of Cambridge? — That is so, yes.

2399 And you are the Director of Research to the Wildfowl Trust and have been for 14 years? — Yes.

* p. 219.

* See also p. 235.

Printed image digitised by the University of Southampton Library Digitisation Unit

2400 And you have recently been appointed Director of the International Wildfowl Research Bureau and I believe that in that capacity you are shortly convening a meeting of the Bureau's Executive Board? – Yes, that is so. There will be a five-day meeting of the Board opening in Vienna tomorrow at which representatives of eighteen European countries will be present.

2401 Will you be discussing Foulness? – Foulness particularly will be one of the matters under discussion and the more general matters such as the accelerating loss to development of estuarine marshes and mudflats and of course the general conservation of the Brent goose which has been one of the main concerns of this international body since its inception.

2402 Would you agree with the suggestion that the geese, that is the Brent geese, could simply go elsewhere if the airport is placed at Foulness? – In answer to that I would stress despite of what was said earlier today that the Brent geese are very selective feeders and that their numbers have declined. This has been in relation to the availability of stocks of their preferred food plant which is called *Zostera*. Supplies of this food plant and the alternative food plant *Enteromorpha* was in fact measured in the Essex estuaries on all the sites on which it occurred and at that time it was predicted that it would limit in due course the number of Brent wintering there. This limit now appears to have been reached and numbers have indeed levelled off, so we can conclude that there are not alternative sites within the county. In considering areas elsewhere in Britain very careful and regular counts have been made of Brent geese in all their other British haunts here. Here also the tendency has been towards a levelling off and we have figures now for the last winter which shows that the numbers are no higher than they were in 1960 so I anticipate they are likewise reaching a limit of food supplies. With regard to the only other wintering area on the coast of Northern and Western France, we have found that temporary increases in numbers there have been matched by decreases in England and vice-versa, that the number remains unchanged, so it suggests already that fluctuations in food supply are already forcing birds to move between their present resorts and that they have little room for expansion. So to sum up, to my knowledge there is nowhere left in their winter range where these Brent geese could be accommodated throughout the winter.

2403 One last question. It has been suggested that the growth of *Zostera* could be encouraged artificially in refuges set aside for the purpose. Do you think this is feasible? – No. I think the biology and ecology of *Zostera* has been very closely studied and indeed two international bibliographies have been compiled covering nearly 600 research papers on this plant and in no case have attempts to establish or encourage the plant by artificial means proven successful. This was so despite considerable expenditure of time and money in some of the attempts.

Inspector You have two other witnesses?

Mr. *Conder* Yes.

Inspector What areas are they going to cover?

Mr. *Conder* Dr. Matthews, Sir, covers paragraph 2 on page 3 of our submission, Appendices 2 and 3; Dr. Rudge will be covering paragraph 3 and appendix, and if you require him on paragraph 4, that is the bird strike hazards at Foulness, I have Dr. Bourne. I would normally be asking them three or four questions each.

Inspector Any questions by local authorities to Dr. Matthews?

Cross-examined by Mr. Wood (Paglesham Parish Council)

2404 Just one question that has nothing to do with Foulness. How does the goose know in one winter whether to go to France for their food or to come to Maplin Sands? – I don't think that they in fact do know until they get there. When they get there and find the food is short they have to move elsewhere.

Mr. *Wood* It is still a mystery.

Cross-examined by Mr. Gregory (Country Landowners' Association)

2405 I gather, Dr. Matthews, you are concerned only with the dark-bellied Brent goose as far as the evidence of your Association is concerned, is that not right? – That is my particular concern. We are also very concerned with the type of habitat on which other types of bird including the waders live, but one of the other witnesses can answer you in more detail on the waders.

2406 I just didn't want to ask you something with which somebody else could better deal. I gather one of the concerns of your sundry bodies is about the loss of estuarine habit by changes caused by development? – Yes.

2407 It is mentioned on page 1 of the first proof* paper that was put in that in the general area of the North Sea there are a number of major schemes either under way or being planned? – Yes.

2408 And then mention is made of Morecambe Bay. Is that a mistake or is that a Morecambe Bay I am not familiar with? – That one we generally refer to as Morecambe Bay is in Lancashire.

2409 Is that the one you are referring to here? – Yes.

2410 That is not frequented by Brent geese, is it? – No.

2411 And the Wash, you are thinking of a study which is made whether there should be a barrage at the Wash for fresh water by the River Resources Board, is that what you had in mind? – That is so, yes.

2412 Because that idea was scrapped, wasn't it, the original decision to go ahead with that study was scrapped and it was decided to make a desk study instead? – I would have thought this was a technical point whether you plan on your desk or go ahead with your plan. Certainly the study is going ahead. A number

* p. 235.

Printed image digitised by the University of Southampton Library Digitisation Unit

of alternative plans have been put forward and are being examined.

2413 Dr. Schaefer mentioned that the stomach contents of Brent geese had been examined to ascertain what foods they did eat, is this not so? – This has not been so recently as the Brent geese has been protected for a number of years and I think he was referring to ones which had been examined before the war, possibly.

2414 I think that must be so, they have been protected since 1952, is it? – 1954.

2415 Under the Protection of Birds Act? – Yes.

2416 Before they were protected of course they were shot at a lot, were they not? – Yes, indeed.

2417 And there was fear that the shooting was going to reduce their numbers so drastically they might become extinct? – This was so, but in the context of the catastrophic decline in their numbers from other causes the loss of their food plant processed through which spread throughout the whole area.

2418 Yes, but referring to those that were shot, the stomach contents were examined and it was found that they did feed on other substances than *Zostera*, is that not so? – In a small number of cases this was so; the main feeding is undoubtedly *Zostera*.

2419 Is it also not the case that Brent geese inhabited places then which they were driven away from, and have not returned to? – I would not like to take your "driven away from" at face value; they certainly have not returned to many places they occupied at one stage, but on the other hand the food plant has not returned to these areas at all. *Zostera* has returned to about one third of the places it was in before.

2420 You mean after the disease of the *Zostera*? – Yes.

2421 When was that disease? – In the 1930s.

2422 Take the period shortly before the Protection of Birds Act,* what I am asking, if you can help us on it, is this: were not they driven away from these places by excessive shooting, from some areas to which they have not returned, and not driven away by a shortage of food? – I think the situation was they had been seriously depleted by the shortage of food, and that further shooting would have been, as it were, the final straw and, indeed, since the shooting has been stopped in this country and most other countries the numbers have crept up as we said in our submission, certainly not up to the previous levels which were about three or four times as plentiful.

2423 The question that occurs to me, and please appreciate this is in the pursuit of knowledge, and I am in no way criticising any of your findings which I am sure are quite right, but if some birds have been found to eat other substances should there be a shortage of their preferred food, is there any reason to suppose that birds would turn to feeding on other substances rather than starve? – If this is really a question of finding information, certainly other geese have shown themselves much more adaptable. The pink footed geese, and the greylag goose in Scotland adapt themselves very well to agricultural conditions. But the Brent goose is undoubtedly an exception, and it does not adapt to feeding on land as a regular feature. In certain cold conditions they have been observed on land only on very rare occasions, and after the *Zostera* disease they did not take to feeding on agricultural land as a general feature, and their numbers thus crashed to about a quarter or less than their previous size.

2424 They are, of course, turning to other areas close by Foulness, are they not? – They are not turning to these areas; they have been in these areas for some time now.

2425 Is not it right they were in greater numbers formerly, before the Protection of Birds Act? – No, they were not there in greater numbers before the Protection of Birds Act; that is one reason why they were put on the Protected List in that Act.

2426 I see. I am not sure whether this was in the Nature Conservancy evidence or your own, but isn't it said that they are birds which are easily disturbed by noise? I am sorry, I have found it now. – I don't think . . .

2427 I must put it carefully; this is paragraph 25* of the Nature Conservancy submission, my question was wrong; it says: "Brent geese are easily disturbed by aircraft". – Yes, that is so.

2428 Is that by the noise of the aircraft or by aircraft, the sight of them flying over them? – It is the sight of aircraft and particularly in some degree also the speed of the aircraft; an aircraft flying slowly is more disturbing to them than one that is flashing straight up overhead.

2429 Because one of the National Farmers' Union farmers started to cross-examine Mr. Hooper, and he suggested that the gun firing did not disturb the Brent geese on the Maplin Sands, is that correct?† – This is definitely correct, and this is one of the features which has turned it into such a splendid refuge for the Brent geese, in that it keeps humans away.

2430 What are you suggesting then would happen at Foulness if the Maplin Sands were taken for another purpose? Would the Brent geese say: "Stop the world I want to get off"? – I think for the Brent geese it might well be the beginning of the end in view of both Foulness and all this other development of which I spoke. We must take this in an international context, and look to our responsibilities in that respect.

2431 What I am getting at is would they die or what? – Well, from the evidence that we have for the 1930s crash, yes, they would decline very drastically in numbers by certainly this amount which we are speaking of, 6,000 to 10,000, and if the Dutch schemes and so on go through I don't really see they will survive.

* 1967 (1967, chapter 46).

* p. 221.
† p. 477.

Printed image digitised by the University of Southampton Library Digitisation Unit

2432 Of course, in the 1930s there was a widespread loss of *Zostera* was there not? — Yes.

2433 Much more widespread than the loss that there would be by taking the Maplin Sands away? — There would probably be, yes, about a three-quarter loss, say, and we are now losing 20 per cent in this particular instance, but this is only one instance of many.

Inspector Any other questions? Essex?

Mr. *Keene* No questions.

Inspector I have no questions. Thank you. Any re-examination?

Mr. *Conder* No, thank you.

Inspector You need not get up, Mr. Conder, we will adjourn for lunch until 2.30.

(*A short adjournment*)

Mr. *Conder* Sir, I had intended to call two more expert witnesses—Dr. Rudge, on the nature of the local bird population, and Dr. Bourne, on the bird hazard aspect, in so far as that aspect can be dealt with at this stage. This morning you made it very clear that the Commission intend to examine very thoroughly the hazard question; and in this we would assure you that you have our support, because we believe very strongly that there is potentially an extremely serious hazard attached to an airport sited at Foulness. You have said, Sir, that you prefer that question of hazard should be dealt with in detail at later stages of the Inquiry, and I got the impression that you were supported. We have no wish to prolong this local hearing unnecessarily, and we have submitted further evidence because we disagree fundamentally—fundamentally!—with the views put forward by the Essex County Council. This evidence is the kind of evidence we intend to put before your Commission at later stages of the Inquiry, and we are prepared, in deference to your views, to forego this right to put forward evidence on hazard at this stage—provided that our disagreement with the other evidence already submitted is placed on record, and that it is understood that the matter will be dealt with in later stages of the Inquiry, including Stage V. Therefore, Sir—if this is acceptable to you—I am prepared to call only one witness at this stage—Dr. Rudge.

Mr. *Keene* I had a couple of questions to put to Mr. Bourne, but I am quite happy to leave these out for the moment and have them dealt with at a later stage of the Inquiry. I am in your hands, Sir.

Inspector Well, I think the issue—and, indeed, the conflict—is quite clearly shown in the evidence of Dr. Schaefer* and the supplementary proof put in by the Royal Society for the Protection of Birds.† Again, as I say, my feeling is that this type conflict is far better resolved in the first instance between experts at Stage IV, and any residue of disagreement come before the Stage V Inquiry. That, I am sure, is the best way. If there are any dissenting voices, we can . . .

Mr. *Keene* Certainly. Can we say that we put in the strike hazard evidence in Dr. Schaefer's evidence because it had been raised before, and I gather from Mr. Justice Roskill's remarks that he would welcome as much information as possible?

Inspector I think that is right, and what I am questioning is whether there is very much chance of resolving the conflict at this stage; and I think it is better to leave it until later stages.

Mr. *Keene* By all means.

Inspector Would anyone else wish to ask any questions of Mr. Conder's witness on bird striking, bearing in mind what I have said about Stages III, IV and V? . . . No reply. Very well, Mr. Conder.

Mr. *Conder* My next witness, and my last witness, is Dr. Peter Rudge, who is already in the box.

DR. PETER RUDGE* called

2434 Mr. *Conder* Dr. Rudge, you are a practising physician, being a Bachelor of Medicine and a Bachelor of Science at the University of London, and a member of the Royal College of Physicians? — Yes.

2435 You are a member of the British Ornithologists' Union? — Yes.

2436 And you are an amateur ornithologist, having studied the birds of Foulness Island at regular and frequent intervals during the past twelve years? — Yes.

2437 You have been assisted by a number of ornithologists who hold permits to visit the restricted War Department area? — Yes, that is right.

2438 I have three questions to ask you. What effect do you think the airfield will have on the behaviour of the gulls at Foulness? — I do not know basically. In the submission from the RSPB there was some data on gull movements—I am sure that everyone who has read this appreciates that there is a large roost of gulls on the Maplin Sands, and on the water of the Thames Estuary. This roost is present there for about eight to nine months of the year; it reaches a very high peak of 180,000—200,000 in September. The birds feed at Foulness itself—on this map here, on the island itself—and inland, probably up to 20, 30 miles inland, and they flight in to Foulness Island and the Maplin Sands in the evening and flight out at dawn. Obviously, they constitute a potential hazard to aircraft, but that is irrelevant at the moment. What effect would the airfield have on them? I do not think it really would be very much effect. It is a very broad-front movement? it goes on over many miles. They would certainly cross the airfield and land on the mud or on the estuaries, sandbanks, and water, beyond the airfield. They may even increase in number—certainly, experience elsewhere suggests they would—and probably stay around during the day as well, and anchor on the airfield.

* p. 49.
† p. 230.

* See also p. 235.

Printed image digitised by the University of Southampton Library Digitisation Unit

2439 Can you enlarge very briefly on the numbers of waders at Foulness in the winter? – Yes, wading birds such as curlews, dunlin, redshank–the data is in the submission*–are found in considerable numbers. These birds nest in the northern part of Europe and Asia, particularly the Arctic Circle, and they migrate southwards to winter quarters, further south than Britain, in, generally, Southern Europe, Africa, parts of Southern Asia. It is a long journey, and they stop off at various places which are essential for feeding *en route*. Foulness and the Thames Estuary in general is a very important feeding site–there are very few other sites in the southern North Sea, which almost funnels the birds through Northern Europe, and many of these are being drained–marsh, sea, places like this. Some of the birds do remain throughout the winter on Foulness, and up to 10,000 dunlin are found there, and rather more knot. The bar-tailed godwit is found there throughout the winter, and it is a large flock–one of the largest in Britain; and it is the main wintering quarter of the Essex flock.

2440 Thank you. I should have mentioned in the beginning that the section of our submission on which Dr. Rudge can answer questions is (3) on page 4,† and Appendix 4.

Cross-examined by Mr. Gregory (Country Landowners' Association)

2441 You did not mention the little terns, did you? – No–I did not get asked about that, actually.

2442 I see in the document it says, "The present proposals would almost certainly destroy the whole Foulness colony".

Inspector Reference?

2443 Mr. *Gregory* I am sorry–this is on page 5‡, under heading (d), of the RSPB blue document. (*to the witness*) I did not understand whether that meant that the birds would be destroyed, or whether the colony would be broken up. – How do you mean the birds? The colony would disappear in that the bank would disappear on which they nest.

2444 It is not being said that the birds would be lost? – They would be lost from Foulness. Are you implying that they would nest elsewhere?

2445 You see, what I think it is probably important to clear up is whether the taking of the shoalbank from Foulness is going to mean that Foulness is going to be deprived of the great pleasure of having little terns nesting there, or whether it means that the little terns are going to nest somewhere else? – The first part of the question–yes, they will vanish from Foulness. The second part–will they nest elsewhere?–this again is impossible to say. I would think it would not be the case. It is a species–as I am sure you appreciate, with your love of birds–that is decreasing in numbers: this colony at Foulness is about 10 per cent of the English population, and this is a significant proportion of the population. I think it unlikely that it would find alternative accommodation.

2446 I am not here as a birdlover, but as a farmerlover; I am more concerned about the preservation of the dark-bellied British farmer than the preservation of the dark-bellied Brent goose. But do you mean by that that the world population of little terns is likely to fall drastically? – No–I said the English population is likely to fall by about 10 per cent.

2247 But the world population will be affected? – No, obviously not by 10 per cent.

2248 In other words, it is not nearly the same sort of problem as with the Brent geese? – That is quite right.

2449 And on the question of the migration–I wonder if you could enlighten me in the same way. I thought that, as I understand it, you are saying they have a long migrating journey, and Foulness is an important stopping-off place for them? But if they were no longer able to stop there–are you saying there would be nowhere else? – No–what I said actually was that it is an important place. There is increasing pressure on all the areas within the region of the southern North Sea and the English coasts from various reclamation schemes. I would mention the Waddesee as a good example of that. It could be critical–you must look at it in the international way, and taken in that context it is an important manoeuvre, getting rid of this area.

2450 I understand that in Holland . . . the Waddesee is in Holland? – Yes.

2451 In Holland they do make provision for bird conservation–would not this be possible, for the migrants? – I think the problem here is this: as you can see from the map, there is a vast area of mud flats which are being lost. It is difficult to imagine where you can find a similar area of mud flats.

2452 But does that mean that the world population of migrants is going to be affected, or simply the Foulness population? – Well, the Foulness population will be affected fairly drastically. The world population will not be affected to such a marked extent. The birds do not take any notice of national boundaries, unfortunately!–you must consider this in the international context.

2453 I do not know whether this is something up your street; but I notice in the original paper* there are letters from various eminent men from other countries, obviously alarmed about the proposals for Foulness. I am just wondering how these were received–were they invited to comment? Perhaps you do not know this? – I do not know. I think probably Mr. Conder will answer that.

Mr. *Conder* I think these letters were addressed to Dr. Matthews, and I did in fact call to the attention of the Inquiry that he was prepared to answer questions on Appendix 2 and 3, when he was giving evidence.

* p. 242.
† p. 236.
‡ p. 236.

* pp. 239-241.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Gregory* I am sorry—would it be out of order to ask Dr. Matthews this question?

Inspector I do not think so.

2454 Mr. *Gregory* What I am wondering is, what information they had to go on—were they sent a circular letter of some kind and asked to comment, or what happened? (Dr. *Matthews*) Well, in the International Wildfowl Research Bureau the organisation is such that developments in each country are reported to other countries, and so everyone knows what is going on; and it is a common practice, if they also feel alarmed that their interests are threatened, they will write letters supporting the case when it is being considered in a particular country—as in this case.

2455 Mr. *Gregory* What information did they have to go on? When we came to this Inquiry, we knew little enough about it. What information did they have? (Dr. *Matthews*) They were already, of course, in possession of the facts as have been gathered over the last fifteen years, of the status of the Brent goose and the threats and disappearances of the various areas in which it occurs; and they did not really need much more information to see how serious this was, this latest threat—I use "threat" in our sense of the word.

2456 Mr. *Gregory* Sir, I was wondering if I could ask him something else which I completely overlooked in cross-examination before, I should have asked . . . (*to Dr. Matthews*) Have there not been two other panics, about the Brent geese, not very long ago?—one was when the Russians were monitored, as letting off nuclear explosions at a place called Novaya-Zemlya, at which there were 71 monitored explosions between November and December 1961: and was not it then thought that this was going to affect the breeding of the Brent goose? — I think it was thought it might affect the Brent geese, and other birds in the area—as indeed it might affect the humans in the area—but there was not a panic in the sense that you speak of. If anything, it was thought that the ornithologists would be of some use to deduce where the explosions were taking place, by investigating possible fallout on the geese's wings, that sort of thing. I am afraid this did not turn out to be the case, though.

2457 Mr. *Gregory* Certainly, any prophets of doom there were, were proved to be unjustified in the event, because the Brent goose population increased. — The prophets of doom were in this case experts—so-called experts—in the field of radioactive fallout, not ornithologists as such; and certainly experts have been proved wrong before.

2458 Mr. *Gregory* Well, the ornithologists were scared by the experts on fallout! — The ornithologists were hoping that they may be given some financial support to study the migration because of this new interest.

2459 Mr. *Gregory* The fact is that the Brent goose population did continue to increase, did it not? — Certainly. Well—"continue to increase"—as I said in my evidence, it now seems to have reached a larger number. It has not increased in recent years.

2460 Mr. *Gregory* Because of three bad breeding seasons, I was told by Dr. Rudge at lunch!

Dr. *Rudge* That is not quite true . . .

Dr. *Matthews* This is so, but I think there is a limit, even when you do have good breeding seasons. The survival is not as good as one might hope, but that is because of the winter feeding areas. There is an elimination on both factors, and if you eliminate this, this will be the last straw and the rest will disappear.

2461 Mr. *Gregory* The other . . .

Inspector You started off with one question—you are now in full spate!

2462 Mr. *Gregory* I wonder if my spate could last for one more question?—I do appreciate your very great tolerance. Dr. Matthews, the other was the Arctic conditions—in 1963, was it not so that the whole of the Maplin Sands were unfit for Brent geese to feed on because the food was under the ice? — I am not quite sure what your question is.

2463 Mr. *Gregory* My question is were the Brent geese unable to feed at the Maplin Sands in the winter of 1963 during the freeze-up? — "Yes" the answer is to that. As we have been told this morning some of them did come ashore in those circumstances and Dr. Rudge will also tell you that many of them were picked up dead.

2464 Mr. *Gregory* I have found your replies most helpful and I am most grateful, Dr. Matthews, but if I could turn to Dr. Rudge now of course a lot of other birds in fact every kind of bird was picked up dead during that appalling winter? — Not every kind of bird but quite a lot, yes.

Mr. *Gregory* I am most grateful to you for allowing me to cross-examine two witnesses simultaneously.

Inspector Any other questions to Dr. Rudge?

Mr. *Keene* No questions, Sir.

Inspector I have no questions, Dr. Rudge.

(*The witness withdrew*)

Mr. *Conder* I don't think I need add anything more, Sir.

MR. P. SMITH* called

(*University of Kent*)

Inspector Would you give your name?

Mr. *Smith* My name is Peter Smith. I am a Master of Philosophy and a Bachelor of Arts and Research Associate in the Faculty of Social Science at the University. I have been appointed by the Senate of the University to come here for cross-examination on their

* See also p. 234.

Printed image digitised by the University of Southampton Library Digitisation Unit

submission. I would like to add one or two very brief comments to our submission that you have before you. We are concerned as you see about the possible noise levels over the university that may result from the siting of an airport on Foulness. We are most anxious for additional information on the location of approach and take-off paths and of stacking areas since any effect upon the University will obviously vary markedly with these. In this respect we are particularly concerned about the possibility of locating a stack over East Kent.

We must also add that besides an opinion that noise at levels exceeding 30 NNI may prove detrimental to the efficient functioning of the university, we are also concerned at maximum levels of noise that may occur since occasional very loud noises can prove particularly bad in, for example, the conduct of delicate scientific experiments.

Finally, we would like to emphasise our feeling that there has been a great lack of research into possible noise levels resulting from a new airport. The variation of noise projections put out by different interested groups is indicative of this uncertainty. Since noise level is the prime social cause resulting from airport location, it is vital that noise is accurately assessed, and we look forward to the Commission's results on the cost benefit analysis of alternative sites. Similarly, we would like to call for publication of information on noise minimisation methods and land use planning policies to reduce noise which must be implemented at a new London airport.

Inspector Any questions from local authorities?

Cross-examined by Mr. Wood (Paglesham Parish Council)

2465 You have had access to the other evidence put in at Stage II? — I think we have had access to most of it. Some of it may have taken quite a bit of time to reach the outback, but I think we have had most of it.

2466 It has taken a lot of time to assimilate. There is a point that was raised in the Southend Council's evidence which suggested that with this urbanisation there might in fact be a possibility of establishing a university in Southend. Would you regard it as a reasonable environment looking at a university within eight miles of an international airport? — The first comment I would make on this is that there has been so little research done we are reserving our position, we don't know. All I can refer to is the published work that you must be aware of like the Wilson report* which reports on the detrimental effects of noise, but specifically for a university I am not certain. We are worried that it might be detrimental.

2467 A reasonable inference is that it would be detrimental? — I would suspect that Southend would be possibly in a worse position that we would in Kent.

2468 You are aware of the possibility that one of the holding areas will be in the area of Canterbury? — Yes, this is what we are most concerned about, that this appears to have been sited over Manston and this is the stack we are most worried about.

2469 From the social angle disturbance at night is particularly unfortunate? — Yes, I would agree, this is why we decided on a figure of 30 NNI which is the lowest figure used in the Wilson report and would be the lowest acceptable limit of tolerance because of the late studying in universities.

2470 You would not envisage having to conduct your studies in a sound-proofed environment? — This one suspects would be potentially harmful as well. We would certainly not enjoy doing this.

Cross-examined by Mr. Keene (Essex County Council)

2471 Would I be right in fact providing the noise from any stacking area should turn out to be the Manston area? — I appreciate it is not certain.

2472 Provided the noise from that would be below 30 NNI you would not be desperately unhappy? — We suspect that a level of 30 NNI would be tolerable. There again we are not certain. We would like more information on this and I also add the point we are concerned about the maximum level of noise as well or occasional noises.

Inspector I have no questions. Is Councillor King with us? If Councillor King is not with us that concludes our today's programme. Tomorrow there has been handed out a revised programme in which Miss Barren, Mr. Clarke and Mr. Francis are put first because being private individuals they may be dealt with perhaps quite quickly and leave for their other interests.

Mr. *Keene* I hope when you say tomorrow you mean Monday.

Inspector I beg your pardon, Monday. Also the Thames Estuary Development Company, the Thames Aeroport Group, Bernard Clark & Partners and the Royal Institute of British Architects (Eastern Region), and that I am informed will conclude the hearing of those who applied to be heard and have intimated they still wish to do so.

Mr. *Gregory* I am so sorry, I have been away for a few days at another inquiry but we were asked to let the yachtsmen know whether we wanted them to come I think next Thursday and I said I did. Have they been heard in my absence?

Inspector Mr. Miskin asked that if his authority (which is Burnham Council) and certain yacht clubs were required for questioning could they be informed by I think Wednesday or Thursday and in good time. I asked if anybody wished to have these people recalled would they let me know. I have not been approached by anybody and Mr. Miskin has not been approached to make his clients available.

Mr. *Gregory* I just wanted to clear up and make sure this was so. I in fact did telephone to his Solictor as we were asked to and simply to give them notice of what

* Cmnd 2056 (HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

were saying about the Crouch to give them an opportunity to deal with it.

Inspector I think that is perfectly in order because Mr. Miskin made it quite clear that in his questions to witnesses he had dealt with the points which concerned him and he was content to leave Stage II on that basis.

Mr. *Gregory* Thank you, Sir.

Adjourned until ten o'clock on Monday morning

Printed image digitised by the University of Southampton Library Digitisation Unit

Notes of Proceedings

MONDAY 19 MAY 1969

THE CIVIC CENTRE
SOUTHEND-ON-SEA, ESSEX

Before A. J. Hunt, Esq.

Oral evidence taken from:

Miss W. M. Barron
Mr. D. W. Clarke
Mr. H. Ellis
Thames Estuary Development Company (*Mr. M. Mann, Mr. J. A. Howard, and Mr. F. A. Hammond*)
Royal Institute of British Architects (*Mr. A. W. V. White*)
Mr. Francis
Mr. M. King
Thames Aeroport Group (*Mr. D. Thornton*)
Bernard Clark & Partners (*Mr. B. Clark*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Just a few words on what I hope will be the final day's programme. The first three names on the list: Miss W. M. Barron, Mr. D. W. Clarke, and Mr. G. W. K. Francis, I understand in their cases there have been no proofs circulated. There were letters put in to the Commission by way of application which dealt with some of the points which concerned them, but there are no proofs circulated. After Mr. Francis, I have had a request for Mr. Henry Ellis who is a Councillor for the Foulness area to speak very briefly on behalf of the residents of Foulness and the Foulness Area. I have agreed to him going in at no. 4. Finally, Mr. King, no. 66, or Councillor King, arrived on Thursday to give evidence as he was due to do, and found the inquiry had closed for the day, so he is coming back at 2.30 this afternoon in the hope of being able to fit in then.

Miss W. M. Barron?

Mr. *Wright* Before this witness is called, may I on behalf of Southend merely draw your attention to one or two somewhat troublesome slips which have got into the transcript on Day 3. In the opening statement of my learned friend, Mr. Ogden; he has asked me to draw your attention to them, because of course it will be the only record of this hearing for those who wish to consider what has been said. There were one or two slips which if taken on their face value would make one section taken with another somewhat misleading.

Inspector May I intervene at this stage. I understand the usual procedure is for those who have been misquoted—and it is all too easy—to give the shorthand writers a note and they will, unless it is quite clearly contrary to their record, issue an errata statement covering all the points raised. This applies to Southend and to all other persons who consider they have been misquoted: will they please follow that procedure.

Now, Miss Barron. Would you please give your name?

MISS WINIFRED MARY BARRON called

Miss *Barron* I am Miss Winifred Mary Barron. I am 54 years of age. I have lived in Shoeburyness most of my life. I have been a teacher all of my working life, and a headmistress for 17 years. I have been interested in history all my life. I refuse to be dismissed as an old fuddy-duddy, who does not know what she is talking about or one who is opposed to all forms of progress, but I do oppose the Foulness project with every fibre of my being. Do you, Mr. Hunt, know the future? Does anyone in the room know the future? When I was four years old the Atlantic was flown for the first time. A few days ago it was flown in just over four hours. Could anyone at the time have foreseen the tremendous advance in scientific expertise? By chance I happened to live in the first house in Shoeburyness where a wireless was installed . . .

Inspector I must intervene; this hearing, you must understand, is on the assumption that the airport may be built at Foulness. — Yes.

Inspector And the only purpose of the hearing is to ascertain local implications, should that happen. Could you please restrict your observations to your views on what would be the local implications if an airport was built at Foulness? — Oh well, I have got to alter everything that I have got to say because my entire evidence is on the fact that we just do not know the future. I can't forecast what will happen in say 30 years time, and in my opinion, and I feel . . .

Inspector May I just intervene again. One of the terms of reference of the Commission is the timing of the need for a third London airport. That aspect will be considered, investigated, at Stage III, which is the next one. You have a full right to submit your views on the timing for the need of a third London airport to the Commission in writing in the manner stated at Stage III, but this hearing, I repeat, is concerned with local implications on the assumption that the airport may come to Foulness.

Miss *Barron* I think, if it does come to Foulness, a beautiful health resort will be killed completely. I do know what I am talking about when I say that—I have been a teacher all my life and I have long holidays, and I have driven in all parts of the British Isles and overseas, and in my opinion this is one of the most beautiful health resorts in the British Isles. I think that the local reaction will be that the golf will go, the yachting will be killed, no one will want to be on the beaches, the pier will simply become no use at all. That is my claim—that people matter, that it matters that Londoners and the people who live here should have a beautiful health resort; because, in my opinion, the Foulness airport will become derelict and obsolete almost as soon as it is built—it is just a terrible expense with absolutely no purpose. We just do not know the future—as I said before—and an airport that is built in obsolescence will be absolutely wasted. Our coastline is unique; our wild bird life is irreplaceable; our soil is the finest in Europe; and we shall be left with a waste of concrete, a muddle of deserted hangars, silence where the cries of birds have reigned throughout history, empty houses and weeds everywhere. It will be a perpetual monument to man's stupidity.

All I am saying is—wait, ten years, fifteen years—what is that amount of time in the history of the world? If this monstrous white elephant of an airport is allowed to lumber into this part of the South-East of England, it will be one of the biggest mistakes in history. The local reaction is that no one will live here. It will not worry me, because I shall be retiring; and instead of spending a peaceful retirement here, I shall get the hell out of it—and I think everyone else will who can do so. We love our Southend, and we shall not be able to live in it if there is an airport here.

Inspector Are there any questions from local authorities? Any questions from any other persons? Essex County Council? . . . I have no questions—thank you. And do not forget to write to the Commission on your views about the need.

Printed image digitised by the University of Southampton Library Digitisation Unit

Miss *Barron* I certainly shall.

(*The witness withdrew*)

MR. D. W. CLARKE called

Inspector Give your name and other details for the shorthand writer.

Mr. *Clarke* First of all, I would like to say good morning to everybody present. I am a JP in the County Borough of Southend. I have been for 4½ years on the County Borough Council. I am not on the County Borough Council now. I have been the Chairman of the Pier Ward Ratepayers' Association which is quite an active branch of the Ratepayers' Association in this town and I am active publicly and have been for many years.

I have found that there are many people for the third London airport and just as many against. In general I could honestly say that the people who are for, the ordinary people this is I am talking about, are generally ill-informed about the possibilities and the prospects of the third London airport being placed at Foulness. We can only say at present that the rather small number of objectors are basically those people who have some perspective and some thought of the future of Southend and its environs, and the people who are for the third London airport usually have some selfish motivation which in fact justifies their being for this airport. There is a vast amount of negative opinion—I must insist and emphasise this fact—because the vast amount of negative opinion will in the long run become the objectors of tomorrow as the disturbance increases. It will not only come from the negative opinion which lives in or around the third London airport, it will come from people who live in or around, the communication branches that radiate out from—or not radiate but actually travel in a westward direction from the third London airport, so there as these things are installed so the objectors will rise in number and this must be recognised at this early stage in order to avoid it.

The evidence which we have already read or most of us have read has been both impressive and in many respects conflicting. When people have spoken either for or against they have introduced opinions which in actual fact have conflicted with their evidence. I do not know whether I could explain that a bit better, but when people talk about there will be no problem with roads and so forth at another time they say the roads already will not carry the existing load of traffic, well, this is the kind of conflicting evidence I am speaking about.

One of the things I shall speak about this morning is accessibility. It would be ridiculous for me to go through the whole range of reasons against, I think it would be better in this case to speak merely on one or two things. Transport and communications are most important, it is the life blood of the country and will be the life blood of this airport and whatever comes with it. Now Foulness as the lady has said before is historically a remote and virtually inaccessible part of the country. From the north it is protected by the Crouch, from the south it is protected by the Thames, and as has been pointed out in the evidence submitted earlier it is the westward more or less corridor which is the position of the transport system.

One other thing about the provision of roads and railways we must look at is the ground on which these roads will be placed and the railways. In general it is low lying, as you have heard, it is very waterlogged, in fact I understand from my experience on the Council that even in Shoebury there is a water table which is only 6 in. below the surface. This to my way of thinking creates engineering problems which although not insurmountable would in actual fact require a considerable amount of additional expense which would not be experienced in other parts of the country or some other parts of the country.

Inspector Mr. Clarke, you are off on comparison—please don't.

Mr. *Clarke* It is very difficult to . . .

Inspector It is very simple. This is an inquiry into the local implications.

Mr. *Clarke* I will do my very best. Therefore we have these engineering problems in this area which although not insurmountable would require that the financial aspect would have to be a more or less open ended sack, no contractor would specifically say that it would cost *x* number of pounds to produce a mile of road because we do not really know what is beneath the surface and—what do they call them?—trial borings have been taken.

Inspector The Commission are taking borings.

Mr. *Clarke* Yes, the Commission are taking borings, and although you take it in one particular place in this kind of topography it would be found that a few yards away a different kettle of fish altogether, but anyway the Commission as has been said by the Commission will find these things out, we hope.

The whole thing is based on the understanding that London will remain the hub of industry and commerce that it is at the present time, and yet it will be noticed by those people who are interested that already London is spreading out or the industry and commerce in London is spreading out and if these figures are projected into the future it could be a case that there is a greater requirement.

Inspector Mr. Clarke, our terms of reference are still for a third London airport.

Mr. *Clarke* This must bear relevance to that, Mr. Chairman, in respect that it is envisaged that this is going to supply the, shall we say, long distance communication centre for London and I am proposing that in actual fact in the future this may not necessarily be the case.

Inspector What I am proposing is that you keep Stage III material to Stage III and limit your observations here to the assumption that an airport is coming to Foulness and what are the local implications.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. *Clarke* Yes, Mr. Chairman, sorry. To get round this point I think I could honestly say that if in fact the third London airport is based on the requirements of London at its present stage then obviously we must consider the implications of industry moving out at the present time. As industry and commerce is moving out we already have quite a number of Government offices which are placed in Southend, which is a good indication of the position that will apertain in the future.

Town and country planning-wise, it must be understood that to place a third London airport in its present position at Foulness would require a considerable influx of people, as has been pointed out, and in actual fact the existing people in the town or the towns around must suffer to some degree because of the withdrawal of labour from their normal jobs to work on the third London airport. In that case it would mean that there would be a dearth of labour in many respects for some period of time and as the building and construction industry in the country is at the present time hard pressed to cope with the developments which are proceeding at present it would then mean that probably another wider grouping of towns would suffer. So therefore when we consider or when the Commission considers the influx of a great number of buildings and construction projects in this area then we must consider what it is going to do to the outlying districts. As you throw a stone in the pool the ripples go outward and therefore you must consider the towns outside Southend like Chelmsford and Colchester.

Inspector Mr. Clarke, you are making a statement without having followed the due procedure of submitting a proof which other participants in the hearing could have seen and commented on. I must ask you as much of this material has already been dealt with to please be brief. Your points will not lose their validity because they are brief.

Mr. *Clarke* Another thing about this, the vast number of services in this area. I mean, for instance, the hospital which we have here, the Southend General Hospital, which is just being extended after many many years, and this is based on the influx of population over the past, shall we say, 30 years. If you get a greater number of people coming into the area in a very short space of time then this hospital will in fact be unable to cope with the increased number of people, and this applies to all public services, without a doubt your sewage, your fire service, and what have you, will all suffer from the vast number of people who will come into the area. I don't personally see how it is going to be dealt with, and I think other learned people would support me in this because to start a project of the size envisaged without a due consideration of all the people who already are existing in the area—I think this is a rather diabolical thing. After all, we are here, and I think we should be considered first and foremost.

Finally, it has been said that the existing unemployment pattern of this area is one of high unemployment, and if a third London airport is positioned at Foulness this will absorb the unemployed people in the area. I am afraid I beg to differ on this view, because it has never yet been proved that more work in an area will produce no unemployment—let us put it that way. There will always be people who are unemployable in area, and as people are brought into the area so the figures of people who are available for employment will rise, and also the unemployable people will rise also. This is unfortunately a fact, therefore, I hope nobody will come away from this Commission with the idea we are going to solve that problem. In fact we shall not solve it; we shall increase the problem because of the greater number of people.

I am sorry, Mr. Inspector, that I digressed on a number of occasions, but I hope sincerely other people present will consider what I think and take account of it. Thank you very much, Sir; you are very kind.

Inspector Yes. Thank you. Any questions from the local authorities?

Mr. *Wright* For Southend-on-Sea . . .

Inspector I think it would be better if you came almost last. Any questions?

Mr. *Wood* I have no questions now that Southend are going last.

Inspector Any other questions from any other parties.

Cross-examined by Mr. Wright

2473 Mr. Clarke, you mention the fact that you were a member of the Pier Ward Ratepayers' Association. I would like to get it quite clear. Do you appear at all today as a representative of that Association, or on your own behalf? — I don't appear on behalf of any association or group of people at all. I would like to feel I am just a voice as a member of the public, and I would not like to be associated in any way, or my views associated with the Pier Ward Ratepayers, because they have many for and against.

2474 Then all I want to put to you is that the Pier Ward Ratepayers' Association held a meeting on this subject. — I believe so, yes, at which I was not in attendance.

2475 And passed a resolution relating to the third London airport. — I believe they were persuaded by people who were able to persuade other people.

2476 In fact the association approved by a majority the siting of the airport. — Yes, this has been done on a number of occasions.

2477 The only other thing I want to ask you is this: you mention the possibility of a deleterious effect on the development of Southend General Hospital. Have you read the submissions made on behalf of Southend? — I have glanced through them. I can't remember in particular the passage you are quoting.

2478 Do you remember Mr. Hill, the Southend Borough Engineer dealt specifically with the position of hospitals in his proof*? — Well, I honestly can't see how Brian

* p. 61.

Printed image digitised by the University of Southampton Library Digitisation Unit

Hill could have any connection with the Southend Hospital because he is not on the Management Committee and in fact would hardly have any reference whatsoever to it.

2479 Don't you think as the Borough Engineer he might have access to some information that might be helpful? – I think as the Borough Engineer he would have access to information in vast amounts which he would not be able to peruse in the best way he possibly could do.

Cross-examined by Mr. Frank (Essex County Council)

2480 Can you tell me what points you have made this morning that have not already been dealt with at least once at this Inquiry? – I can honestly say nobody could really attend this Inquiry and say that they had got some new evidence. In actual fact when reading the proofs I found almost every aspect was covered, and I think that this part of the Inquiry would be basically to emphasise particular facts, as I have done so.

Mr. *Frank* So the answer is "None".

Inspector Thank you.

(*The witness withdrew*)

Inspector Mr. G. V. K. Francis, is he here? No. Then Mr. Henry Ellis.

MR. HENRY ELLIS called

Mr. *Ellis* Thank you, Mr. Inspector, for allowing me to come at short notice.

Inspector Give your name and position to the shorthand writer.

Mr. *Ellis* My name is Harry Ellis. I am County Councillor for the Rochford South Division which also includes Foulness. I have been a member or was a Member of the Rochford Rural District Council for many years, and I would say I was very well informed with the local feelings and situations, and I would like to add that I have done my homework. I have offered myself as a witness should anyone like to call me and this has not been done. My views on the siting of the airport at Foulness are divided by the fact that my division is divided, that is until you get closer to Foulness when it is very much united. It gets deeper as you get nearer against the airport. But, my main reason for coming here is to make a plea on behalf of the government tenants on Foulness Island should the airport be on their doorstep. They are in a very special position, Mr. Inspector, because they are tenants of the War Office. They have got no individual owners whom they can go to and they are very worried people. I should have thought if we are going to get our priorities right before the government should give any consideration for an airport in a situation like that it should have given humanitarian thoughts to what may be going on at the back of these people's minds. They have not got a leg to stand on, and they might get a soldier's farewell. But, what this Commission can do is to recommend to the government at a very early stage that in the event of an airport going there an early assurance should be given by the government or the Ministry of Defence that they will be financially taken care of, and their real concern will be alleviated. This, in my view, is the top priority of anything that concerns human beings that have been out of touch with the community to a large extent. I have always said that persons who were in Foulness were prisoners of war, not so much because they are locked in but by virtue of the fact others are locked out. If you are going to turn these people out, whatever is going to happen to them nobody really knows but there will be a statement—I know the Ministry of Defence will probably oppose this site, but if they do it makes no difference, there should be an assurance that in the event of this coming about then the misery and worries of these people should be alleviated, and I would like this Commission to recommend at an early stage that this simple humanitarian act can be performed. That is all I have got to say.

Cross-examined by Mr. Wood. (Paglesham Parish Council)

2481 One question, Councillor Ellis: in your constituency of the Essex County Council you did hold a meeting, did you not, about the airport at Great Wakering? – I take pride in holding the first airport meeting in the area. People laughed at me and they said that it could not happen—this was three years ago. Since then these things have got more serious, and it is quite true I called a special meeting at Great Wakering, and it was a meeting that was confined to the remarks—although other people were welcome to come there the voting and remarks were confined to the constituents of my division.

2482 It was without any technical assistance, no one gave a lecture, quoting pros or cons? – No. I strictly ruled that out.

2483 Is it not true that at that meeting when you took a vote something like 75 per cent of your constituents were opposed to the airport? – Quite.

2484 Thank you. – Everyone had the opportunity to come, for and against.

Inspector Thank you. Any other questions?

(*The witness withdrew*)

Inspector I have a message from Mr. Francis to say he is delayed but he is on his way.

The Thames Estuary Development Company.

MR. M. MANN* called

(*Thames Estuary Development Company*)

Mr. *Mann* My name is Michael Mann. I appear on behalf of the Company. The company is, of course,

* See also p. 245.

Printed image digitised by the University of Southampton Library Digitisation Unit

familiar both to yourself and the Commission, but it has been referred to more than once in the course of the present proceedings, and I think it is plain that its nature and activities have excited some local interest. What I propose to do is to say a word or two about it.

The Company was formed in February 1968. Its object was first to investigate and plan the possibilities of developing and reclaiming for development land in and around the Thames Estuary.

Secondly, its object was to develop such land, if development was found to be possible and desirable. This second objective, that is the objective of actually developing the land is perhaps at the present time of little materiality, and I say that because the present operations of the company are in fact circumscribed by a consortium agreement which has been entered into between the members of the company. The five members are: The Port of London Authority, whose Chairman, Lord Simon, is Chairman of the Thames Estuary Development Company; the Southend County Borough Council; John Howard and Company Limited, from whom Sir John Howard is the Managing Director of the Development Company; London and Thames Haven Oil Wharves Limited, and John Mowlem and Company Limited.

The consortium agreement between those five members limits the present activity of the company to investigation and planning and I would emphasise that, "investigation and planning".

Amongst the projects which are being investigated are the practicability of establishing an international airport on the Maplin Sands. It is no secret, although I think immaterial for the purposes of this hearing, that we are also investigating the possibility of a new deep water port with an oil terminal in this vicinity. Our investigations are into the relevant aspect of the three projects, to which I have referred, and it is of course, apparent from our membership itself that we have within the organisation a very considerable body of expertise, but it is not, of course, all embracing, and where we need outside assistance upon some speciality we sought it, and we in fact encouraged consultants specialising in various technical fields.

This is not a pre-judged paper exercise that we are embarking upon, this is a study in depth by individual and I would hope unquestionably responsible persons, and persons who are prepared to spend money on investigations which may in the event prove all for nothing because, of course, the ultimate decision upon these various matters, be it an airport, an oil terminal or a deep water port, does not rest with the company at all.

Our investigations into no one of the three airports are yet complete, but we hope to have our investigations in sufficient detail to be able to give the Commission substantial assistance at Stage III of the investigation—that is to say, in about July of this year. But we thought it might be of interest to those locally concerned with the possibility of an airport at Maplin that we should indicate our latest thinking upon the reduction of noise nuisance, and it was for this reason that we lodged TED 8B,* which has been reproduced in a very much larger form; and we have taken the liberty of putting it upon the wall over there—a liberty which seems to have extinguished the Commission's noise contours. Sir, that drawing shows you that, by a particular arrangement of runways, and by a particular arrangement of flight paths (based, as I understand it, upon an arrangement used at Zürich), it is possible to achieve a situation whereby, as we believe, under one hundred people would be within the 40 NNI contour. Perhaps I may add in parenthesis that the stacking would also be carried out away from the land, at sea. Now, Sir, we hope that that diagram is a comfort and an assistance to those who have been apprehensive of the effects of noise and who have seen the Sheerness and Shoeburyness spurs upon the Commission's own diagram. We hope that the position as shown on the drawing which we have now displayed could be further improved: it is, for the moment, no more than the latest stage in a series of progressive reductions which we have been able to achieve. May I say, without any offence whatever to the Essex County Council, but merely to indicate the care with which we have approached the matter, that we think the noise pattern that is shown by the County Council's diagram represents a pattern which we passed some little while ago.

May I now turn to another matter upon which some concern has been expressed? That is the question of hydraulic investigations. Broadly, there are two aspects to these: the first concerns the feasibility of reclaiming an area of Maplin Sands, the most suitable shape for a reclamation area, and—I think not relevant to this Inquiry—the best location for deepwater approach channels. That is one aspect. The second aspect concerns the question of whether reclamation will increase the risk of flooding. Our present advice is that reclamation will not increase the risk of flooding, and our present advice is that reclamation of land at Maplin will cause less than half of one inch increase in the level of the Thames.

Returning for the moment to the first aspect of the hydraulic investigation—that is, the investigation to determine the feasibility of reclamation and the configuration of the reclaimed land. This aspect has three stages. The first is a desk study. For that, the field work has already been done, and as it happens by chance, the calculations are commencing today and will be complete by the end of June, when the result of the desk study will be submitted to the Commission. The second stage is the construction of a hydraulic model in order to check the results obtained from the desk study. The design and provision of that model and all the investigations will be undertaken by the Hydraulics Research Establishment at Wallingford—in other words, by the Government Research Establishment in exactly the same way as the local Member of Parliament suggested it should be—I think on Day 1 of this Inquiry. The third stage in the first aspect of the hydraulic investigation

* p. 247.

Printed image digitised by the University of Southampton Library Digitisation Unit

will be an enlargement of that physical model in order to deal with certain aspects of deepwater approach channels—with that, we are not concerned.

The second aspect of the hydrology—that of flooding—is not susceptible of investigation by means of a physical model. Of course, when one is dealing with limits as fine as less than half of one inch, such matters can be investigated only by means of a mathematical calculation, and such a model is being constructed, at the request of my Company, by Dr. Rossiter of Liverpool University, and he will in due course confirm or otherwise the correctness of the advice which we have so far received concerning the less than half of one inch.

Now, Sir, I have paused on these matters of hydraulics because there appeared, at certain stages of this Inquiry—at least from a perusal of the transcript—to be some doubt as to the objectivity of the Company's investigations. I hope from now onwards no one will have any doubt whatsoever about the objectivity of the investigations that we are undertaking, and that no one will have any doubt whatsoever about the depth and extent of those investigations, or the responsibility of those who undertake them.

That is all I desire to say; I shall now call Mr. Howard.

MR. JOHN ANTHONY HOWARD called

examined by Mr. Mann

2485 You are a Chartered Engineer, being a Member of the Institution of Civil Engineers? — I am.

2486 And you are from the Thames Estuary Development Company? — Yes.

2487 The greater part of your statement deals with the question of noise, does it not? — That is correct.

2488 A few moments ago I said certain words about the hydraulic investigations which are being undertaken by the Company, or on the Company's behalf: was what I said correct? — It was.

2489 I now tender Mr. Howard for cross-examination.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2490 I would like to ask a few questions about the constitution of the Thames Estuary Development Company, initially. It is a combination of private and public bodies—is that true? — That is true.

2491 And presumably its funds are obtained from both sorts of sources? — That is right.

2492 Both public and private—the rates on Southend . . . — Where the public authorities obtain their financial assistance—I am not at this point in time prepared to indicate. This is for them to indicate.

2493 And in the constitution, it would appear that you have a representative of a construction company, or two construction companies—Howard and Company and Mowlem and Company? — Yes.

2494 And the London and Thames Haven Oil Wharves Ltd.—presumably their main interest is from the oil terminal aspect? — That would be true.

2495 The Port of London Authority have a dual interest, I take it—as the public body dealing with development in the Estuary of the Thames, and secondly as the public body with the monopoly for the import and export of goods into the Port of London? — Yes. The PLA's participation in the consortium is as was indicated on Tuesday last, when Mr. Ordman was in front of you.

2496 The Southend Council's role in this—what is that?—a flat interest as the possible city centre of any urbanisation and the main local government body to administer the area? — They are the largest . . .

Mr. *Wright* Surely that is a question that ought to have been asked of Alderman Harris.

Inspector I think it is.

2497 Mr. *Wood* Sir, I found it extremely difficult to put questions to Alderman Harris, because at no level could we meet! Is it impossible for Mr. Howard to answer this?

Inspector I am not very sure, anyway, how far this is going to take us along in ascertaining the local implications of a possible airport.

2498 Mr. *Wood* I hope it will, in that at the moment I can see no airport interest in this consortium. I wonder if Mr. Harris can enlighten me in this? — If an airport were to be constructed at any one of the four sites that have been shortlisted . . .

2499 Mr. *Wood* We are making comparisons, Mr. Howard! — I am making a statement, not a comparison.

Inspector That is so.

Mr. *Howard* It will be presumably up to the British Airport Authority to decide upon the ultimate design of that airport.

2500 Mr. *Wood* And the British Airport Authority would be the authority that is responsible for any major modification, if it is chosen? — You should ask them—I imagine this would be the case.

2501 This would be so? — If you say so. All I have said, Mr. Wood, is that the British Airport Authority will be the ultimate designer and operator of an airport, wherever it may come.

2502 So in fact your interest in the airport is almost vicarious? — Whatever that word means—yes.

2503 I think it is in the Oxford Dictionary—I shall show it to you later, if you like! What I am trying to establish is, what your direct interest is in this. You see, this has fundamental bearings upon the model or models that you are constructing. Is your prime interest in the airport and docks, or is it in the docks? — Our prime interest is to reclaim land in this part of the world, and we are carrying out the investigations in order to obtain the most beneficial shape of reclamation. At the same time, upon that reclamation something will have to be

Printed image digitised by the University of Southampton Library Digitisation Unit

built. In opening remarks by our Counsel this was quite clearly indicated, what our intentions were.

2504 It is not quite clear to me. Is your interest in the airport a bonus on a basic scheme, or an absolutely essential feature of the scheme? – We maintain that whether the airport comes at Foulness or whether a port only comes at Foulness, either scheme is viable.

2505 Or both? – Or both.

2506 From your experience as an engineer, is there likely to be any difference in behaviour should there be only a dock complex–in other words, only that area reclaimed to be used as a dock complex, or only an area reclaimed to be used as an airport, or one that envisages both? Is there likely to be any variation in tidal flows and the effect on floods? – This is what we are carrying out now. We are investigating this sort of trend which you have put at this point in time.

2507 What is the model that you are having built? Does it include the whole complex–airport and . . . – It will include the airport on its own. It will include an airport and additional reclamation for a port complex, or just a port complex. We are investigating the full spectrum of hydraulic operation in this part of the Thames.

2508 Your Counsel did make reference to a half of one inch affected from your preliminary studies in the Thames: the picture immediately came to my mind of the little Dutch boy with his finger in a hole presumably less than half an inch. Would you agree that this difference could in fact be critical? – This we will be able to advise when we have defined that figure; but at this point in time, I think we should say that whatever the shape of the reclamation, the effect upon the Thames is very, very small.

2509 The Thames being the largest river, that might be so. In your investigation, have you yet progressed far enough to see what effect this would have upon the Crouch–a much smaller river–and the Roach–an even smaller river; and the tidal creeks which are a fundamental protection to the low-lying areas? – This is the first stage of our investigations. It will be available for the Commission at the end of June, pertaining to those areas which you have mentioned. This is our first item–and I think the first item on which the Commission would like us to report.

2510 So the "half inch in the Thames" may be considerably higher in other areas? – We will be able to fix this particular point when we have finished our investigations.

2511 The effect on the funnel-shaped estuary of the Thames will surely be affected to a greater extent? – You are correct in saying that.

2512 Your plan–you would agree that it is a radical change from the Roskill and also the Essex documents? – It is different to the Essex and Commission diagram, yes.

2513 Yes–radically, isn't it? – It takes into account various other factors of noise and aircraft routing, and the second thing is that with me in the hall this morning is the person whose organisation has done the work for us; and I would ask, Mr. Chairman, if there are any technical points that are to be raised on this matter, that this gentleman–Mr. Hammond–be asked to enlarge upon that, because I may give a slightly incorrect answer to the particular point.

Inspector Mr. Wood, how far do you want to pursue this question?–bearing in mind, of course, that the Roskill Commission gave one version of the noise contours, the Essex County Council a version, and this version; all these versions will be considered and evaluated in far greater detail. I leave it to you.

Mr. *Wood* Could we leave it that if any questions arise which are over-technical–I do not think that is likely, from this quarter!–perhaps, as has happened once before at this Inquiry, if there is a question which Mr. Howard finds it impossible to answer, I could perhaps ask Mr. Hammond that one?

Inspector I think so, yes.

2514 Mr. *Wood* (*to the witness*) The question of the siting of the runways, looking at your diagram* I notice that your four runways are considerably different–radically different–from the Roskill suggestions. – They are different in so much as the stagger of the runways is different.

2515 What about the distances of the most easterly one from the mainland?–that is considerably further, isn't it, surely? – The overall distance between the outside runways are within 500 ft of what the Commission has. We have moved the pattern of the runways away from the shore and we have moved it further north-east.

2516 So we are further away from the shore, and further to the north-east? – That is correct.

2517 And your bulge to the north-west–can you tell me how you arrived at that bulge? – I think the person who can answer that is Mr. Hammond.

Mr. *Hammond* I think the routings that are shown here are based upon a concept of being able to depart from any of the runways by selection, and the bulge that Mr. Wood is talking about is in fact a bulge showing departures from the outer one of the two runways which is closest to the land, departing in a northerly direction to pick up the northerly airway system, which is basically RED 1, and would intercept that RED 1 at some point along its route.

2518 Mr. *Wood* Could you tell me what percentage of take-offs using that runway would be–what percentage would take advantage of that route? (Mr. *Hammond*) It is a very good question. I think that already, both from the original statement to the Commission by Mr. Masefield and also by the technical evidence that has been given at this Inquiry, it has been shown that as aircraft get larger, take-offs in either of the two directions are possible in most of the cases. Let me say, in

* p. 247.

Printed image digitised by the University of Southampton Library Digitisation Unit

answer to you, it would be possible to take off in that direction, from the meteorological evidence that we have, on 60 per cent of the occasions that one would want to take off from this airport. Our procedure in planning this diagram has been to give preferential to the runway system. If you give 50 per cent in one direction and 50 per cent in the other direction, from the information available to us and the present thinking on the subject, it seems to us that we are catering for the worst cases in the situation.

2519 Mr. *Wood* It is not . . .

Inspector Just one moment, Mr. Wood. We have not got this witness now. If you are going to pursue the matter at some length, I think it is best to clear Mr. Howard first, and then have Mr. Hammond in the witness-box.

Mr. *Wood* Yes. There are certain points we must get clear on this.

Inspector I would far rather he came into the witness-box.

2520 Mr. *Wood* We will leave that entirely. This you would admit, Mr. Howard, goes some way to dealing with the noise nuisance arising from the airport? — It does.

2521 You are aware of course that noise is only a part of the consequences of having an airport on ones doorstep? — Yes.

2522 Perhaps the least important part. — As far as people are concerned I would think not.

2523 It might be? — I wouldn't agree with you. I think if you were placed in an intolerable noise pattern you would be one of the first people to complain about the noise.

2524 Also, is one of the complications of the airport the urbanisation which flows from it? — It depends what you mean by urbanisation and what scope you adopt at this point in time.

2525 Throughout this inquiry there has been a reference to urbanisation. That is an ugly word. I think it is an ugly word for an ugly thing and shows no indication of stopping. By this I mean the additional population which must come into the peninsula from Rayleigh to the east. — Yes.

2526 That you have not discussed or considered with your consortium in any way, I take it? — Before the consequences of Stage II were given to the Commission we obviously had consultations with the authority who would be most affected in this one, namely Essex, and I think you have had ample opportunity to study their proposals for this. We concur obviously with what they say as being the premier authority.

2527 You have had ample opportunity of discussing with Essex the flight paths and sitings of the airport and yet your conclusion is radically different from theirs. I wondered if in spite of the discussions you have had with Essex over this question of urbanisation your conclusions are as radically different as regards urbanisation as they are siting and sound? — No, we think what Essex have proposed hits the nail pretty squarely on the head.

2528 So in fact you would accept as Essex have accepted that in the main that peninsula will become almost entirely urbanised? — I would not accept that. I think Essex quite clearly indicated in cross-examination their intentions and I cannot add any more to what they have said.

2529 In my opinion they showed that it would become urbanisation.

Mr. *Frank* I suggest Mr. Wood might find it helpful to have a look at the map of the proposed urbanisation.

Mr. *Wood* I think I studied it in detail and I see no reason to change from my position.

Inspector Perhaps somebody ought to explain it to him some time.

2530 Mr. *Wood* You deal in 5(1) with communications. Here we may be trespassing on dangerous ground. You are aware of the distances involved? — Very much so.

2531 How remote Foulness is? — Depends what you mean by remote.

2532 50 miles from London. — It is not 50 miles from London.

2533 In your paragraph you also refer to associated industrial development. I wonder if you could help me on that? — If we are crystal gazing the indications are that this industrialisation would be on areas reclaimed from the sea and not on good agricultural land. The object of our investigations is to provide areas where an airport complex or an industrial complex could be constructed on reclaimed land.

2534 What sort of industrial activities had you in mind there? — A lot of industries. I think it would be wrong at this point in time to mislead anybody, but we are basically concerned with industries which would benefit from an airport, industries which would benefit from a deep water port, and whatever these industries may be to work in close conjunction with these various developments.

2535 Like an oil refinery? — This could be. We have not finalised it. It could be.

2536 Obviously it could contain container depots and the railway sidings that go with container depots; that would be an inseparable part of your scheme? — This would again be located on reclaimed land.

2537 It would? — It would.

2538 And you think that the acreage you can reasonably reclaim and which is incorporated in your model would be sufficient to do so? — That is correct.

2539 It would be interesting to see your model, I must say. — I think you will be very interested to see it.

2540 There is one further factor I am sure that you have gone into. You are imagining, in fact, because we are all looking into the crystal ball, aren't we, tankers in

Printed image digitised by the University of Southampton Library Digitisation Unit

the region of 300,000, 400,000, 500,000 tons to an oil terminal? — We are looking at oil tankers of 100,000 to 500,00 tons capacity, deadweight tonnage.

2541 There is during discharge of a tanker—of any tanker and presumably of a tanker of that size—nuisance caused particularly as regards smell? — I think not.

Inspector Mr. Wood, we are on the third London airport, of course.

Mr. *Wood* But these two things are so inseparable.

Inspector Not at this stage, from the Commission's point of view.

Mr. *Wood* If I can introduce the word "smell" we can deal with that later, possibly.

Inspector Not from the airport, surely?

Mr. *Wood* Aircraft are smelly things.

Inspector I don't mind you asking questions about that.

2542 Mr. *Wood* In your reclaimed land I take it you would have all the fuel storage tanks for the aircraft? — That is correct.

2543 Any idea as to what size would be required? — This again is part of our investigations, but an effective oil storage capacity of a million tons would be reasonable thinking for 500,000 ton deadweight tanker.

2544 They would have to be buried for safety's sake? — There are various ways in which you can deal with oil storage problems.

2545 All consuming a fair degree of space? — Again this is really not pertinent for this inquiry.

Inspector We are on the seaport.

2546 Mr. *Wood* No, this is the space covered by fuel tanks for the airport and with the size of aircraft and the number of aircraft that would be necessary to cope with 100 million passengers a year I think the area they would cover is considerable.

2547 *Inspector* Your question is related to oil storage for airport purposes and for no other purpose?

2548 Mr. *Wood* Absolutely, Sir. — I did not read the question that way. In answering the question as far as the airport is concerned, the oil storage tanks would be well away from the flight paths and any likely place of danger to flight of aircraft, this I would have thought a paramount objective. As far as their location and elevation to the ground level, this can be either underground or above ground, but rest assured, Mr. Wood, that if the airport comes to Foulness and oil storage capacity is required which would be adjacent to the airport that would be well coped with as far as safety is concerned. I think it is worthwhile to say here as well that Foulness, because it is adjacent to the sea, has this major advantage of cheapening of fuel that is taken aboard aircraft and by a considerable amount of money.

Inspector This is comparative.

Mr. *Howard* It is a statement, Mr. Chairman, that fuel taken aboard will be very much cheaper than probably at other airport sites.

2549 Mr. *Wood* This is problematical, I think. — It is not problematical, it is a fact.

2550 The point I am trying to establish is that if you have this fairly large area of oil storage which you accept you do have to have you have to store your fuel adjacent to the airport and it is all going to add up to a major chunk of reclamation? — Not necessarily, no. You would reclaim that much more land to put it on. This is the beauty of locating the airport at Foulness, this is the great and major advantage of any of the sites.

2551 And up goes the cost and up goes the complexity? — It cuts down the cost as far as the fuel into the tanks is concerned.

2552 Marginally, possibly. — It is not marginal, it is quite large. We will give this evidence at Stage III.

Mr. Wood I will leave it to Stage III.

Inspector Any other questions from local authorities?

Cross-examined by Mr. Peter Smith
(Barling Magna Parish Council)

2553 The picture which you have built up does seem very contrary to the picture presented to us by your associate the Port of London Authority. You see they indicated, really, and I point to their evidence here on Day 5, the port for the deposit of oil—oil refineries . . .

Inspector Can you give the day and reference?

2554 Mr. *Smith* Page 12, fifth day.* "The idea we have in mind is that there would be an oil discharging terminal within the Maplin Sands port area, and the oil would be fed to existing refineries by pipeline". — That is correct.

Inspector We are back on the seaport. We have left that.

2555 Mr. *Smith* Yes, but you see he is now accepting that he is saying he is having an oil refinery out there as well.

Inspector I am accepting nothing. I have heard it.

Mr. *Howard* Could I just try and beg a question? I think what you are trying to say is that what Mr. Ordman said was that an oil terminal was to be located within our overall conception of development, which is fact. The other point which I have just made as far as Mr. Wood is concerned is the fuel storage capacity that the airport would require, which is not the same thing as the tank for an oil terminal is concerned with.

2556 Mr. *Smith* You see, it does relate here because the Port of London Authority said this is just really going to be the end of a nozzle leading to other refineries, there would be very small primary employment involved, and yet you have built a picture which is

* p. 414, Q 1704.

Printed image digitised by the University of Southampton Library Digitisation Unit

really quite contrary to this, that there will be all these vast storage areas in which there would only be low primary employment. – I think the point here is what Mr. Ordman said, that the employees in a port complex which we are looking at are very small in number, the people employed is very small. What we are saying is that within the employing figure of the airport, which as the Commission has indicated is 65,000—we do not disagree with this although in our original submission we thought it was a little bit higher—this takes account of the people because they are primary people used to feed and service the aircraft and therefore the people that are used in the tanker farms they do not take a lot of people, they are very automatic, all you are doing is filling them up all the time and drawing it out the other end, this is normal procedure of any airport and they are not large employers of men.

2557 In view of what you said I am wondering why you are wanting deep water facilities for berthing for discharging oil. Is it necessary in fact that the actual oil should be discharged from the tankers at a berth? – The deep-water berth is for large tankers feeding a tank farm which is then going to feed the refineries. This is part of another question.

2558 *Inspector* And is nothing whatever to do with the third airport. – Exactly.

2559 Nothing whatever. – We are talking about a tank farm which is adjacent to the airport which has high-octane fuel or whatever it is that is used in aircraft which would come from a refinery up the Thames or it could come ashore as a finished product and pumped straight into that tank farm adjacent to the airport.

2560 Mr. *Smith* Why do you want a deep-water berth for discharging that within this area? – We are not saying that. We are saying that this could be one of the benefits of a deep-water terminal and the objective of the terminal is going outside the context of this inquiry, which is another matter.

2561 In fact I am told—perhaps you might care to investigate this—that there are already oil discharging facilities within the Thames already. – Very much so.

2562 Out at sea? – They are up the estuary.

2563 As in the Persian Gulf? – They do not go as far out as in the Persian Gulf, they are fixed berths.

2564 Coming back to the Port of London Authority evidence, you see this is what I cannot understand. On page 20* they had in mind that within this complex that you envisage there would be a freight container depot. – Yes. Mr. Wood raised this point again.

2565 They support your scheme and yet it is already brought out in their evidence that they have already completed or about to complete a similar depot at Orsett which is just . . .

Inspector Again, Mr. Smith, how is this relevant to the local implications of the third London airport?

* p. 416.

Mr. *Smith* I have not introduced these irrelevancies, they have.

Inspector Nor has this witness.

Mr. *Smith* Very well, then, I will ask you to examine these aspects.

Cross-examined by Mr. Knowles (Rochford Rural District Council)

2566 You have shown the complete arrangement of the runways in two sets of parallel lines which conflict with the typical layout I think is the word used in the Commission's report*? – They do not conflict, Mr. Knowles, all we have done is to alter the stagger on the runways.

2567 Is that stagger altered for any special reason concerning this particular site or is it some generalisation as to the manner in which an airport might be laid out? In other words, would this be a common factor to other, alternative sites or is there any special reason for it? – We think that the layout that the Commission have proposed is very gold plated.

2568 Very . . . – Gold plated and as a result takes a very large area of land. We consider that the stagger could be reduced but we think if the Commission decide they are going to recommend a stagger which they have proposed, so be it, we feel that the reclamation can still take care of whatever stagger they have put forward.

Mr. *Knowles* You have thought of the question I was going to ask.

Cross-examined by Mr. Wilks (The Sheppey Group, Kent)

2569 The proposal of your group is to reclaim the airport with sand and other materials dredged from channels in the Thames Estuary. Could you tell me what depth you intend to dredge those channels? – You are the expert here, I am not on this particular aspect. If one considers very large deep draught vessels, if one takes a 250,000-ton tanker its draught is in the region of 65 ft and if you go up to the ultimate—not the ultimate but a very large draughted vessel of 500,000 tons, it is about 85 ft and you would therefore need an underwater clearance of about 10 per cent, so we are talking then of channels of about 93 ft.

2570 What would be the approximate length of this channel? – We are in the process of determining which route this should be, there are two possible lengths.

Inspector I am not at all sure there is much purpose in going into all this material at Stage II. This is not questions directly relating to the construction of the airport. It could be, of course, the particular excavations might take the line that is now being discussed, but the detailed consequences are, I feel sure, better considered at Stages III and IV.

* *Short list of Sites and Site Information for Stage II Local Hearings. 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. xv.

Printed image digitised by the University of Southampton Library Digitisation Unit

2571 Mr. *Wilks* Very good. Could I ask some questions about the model that has been mentioned several times. Can you tell me the size of model it is proposed? — The size and physical area?

2572 The actual model, the size of the actual model. — The size of the model that . . .

2573 That you are going to build. — 250 ft by 175 ft.

2574 Has a model of this size ever been attempted in this country before? — Not of this size, but we are in the process of possibly dividing it down into two, in order to be able to arrive at the results slightly quicker.

2575 How long will it take to produce it? — The results of the model as far as this Inquiry is concerned will be available before the end of this year. This is a physical model to prove the mathematical calculations which will be available towards the end of June of this year.

2576 Can you guarantee the results you are to present to the Commission will be absolutely correct? — This is what we are aiming for; we are aiming as quickly as possible to produce the results.

2577 Yes. — As far as the third stage of the model is concerned, which does not involve the Commission this stage might be at a time when the Commission are reporting—I don't know.

2578 Surely you have to have the complete results of these models to know what the effect of a mass of airport on the bank of the Thames is going to have on the rest of the estuary? — No, the first two stages of the model will be completed will give the shape of the optimum shape of reclamation, its effect upon the local estuaries, which is the inner part of the Thames, the Medway, the Crouch, and its estuaries, and it will also be able to take into account what areas can be dredged adjacent to the airport.

2579 In your paragraph 6 of your proof of evidence you use the word "adverse". Supposing these models prove that there is an adverse effect on the whole estuary in building an airport on this site, will this mean that the airport will have to be abandoned, assuming that the site has been chosen by the Commission? — We think there will not be an adverse effect, but if we report that there is a deleterious effect on the Thames then we presumably pack up and go home, but I don't think this will be the case.

2580 It means two years might have been spent on these models and a negative result produced; the two years will have been wasted towards the building of a third London airport. — No, we are not referring to two years. We say the model, as far as the Commission is concerned, will be available before—that the results will be available before the end of this year, before the end of 1969. As far as the long-term policy is concerned, which is dealing with the approach channels, this goes on, and does not affect this Commission.

Cross-examined by Mr. Mathiesen

2581 I am concerned with the various varied noise contours we are being shown time after time here; we have a noise contour drawn there which is entirely different from any we have seen previously.

Inspector An air traffic witness is going to give evidence. He will be called afterwards.

Mr. *Mathiesen* He will be called? Only Counsel did say . . .

Inspector That is so, isn't it, Mr. Mann?

Mr. *Mann* That is indeed so.

Mr. *Mathiesen* Only Counsel did say Mr. Howard had concerned himself especially with noise.

Inspector I have no doubt that he has.

Mr. *Howard* No, that is Mr. Hammond.

Mr. *Mann* That is Mr. Hammond, not Mr. Howard, who is our expert.

Mr. *Mathiesen* I will wait then.

Inspector Any other questions? Southend?

Cross-examined by Mr. Wright (Southend Borough Corporation)

2582 Mr. Howard, have you before you, quite apart from your own drawing, the Commission's drawing CTA 1/3*? — I have.

2583 I think I am right in saying that your proposed lay-out† as pinned up on the wall behind you, by comparison with the Commission lay-out, has not only altered the degree, but you have also shifted the airport runways and general airport area fairly substantially, a fairly substantial distance north and east. — That is correct.

2584 You will know, of course, I imagine, having looked into the matter that that is a proposal which the Borough Council are putting forward with as much force as they can muster? — As I understand it, yes.

2585 From your own point of view, from your own experience, and the investigations you have so far made, subject, of course, to anything coming out of the Hydraulics Research model, do you see any technical or engineering objection to moving the runways in that direction? — None at all.

2586 As far as you can tell, any reclamation that may be needed for such movement can be carried out? — It can.

2587 Indeed, I would like you to consider it a little bit further. Do you think there would be any prospect of being able to move the runways further away from the shore-line? — This could be considered, and in time it will be considered, and the scope of our model will consider this as well.

---

* See attached wallet of maps and diagrams.

† p. 247.

Printed image digitised by the University of Southampton Library Digitisation Unit

2588 You see no difficulty in being able to do something of that kind? – None at all.

2589 The other matter I would like you to consider, if you will: it is not primarily necessary on your noise contours, but as you know, it has been established that even the Commission's contours can be made to affect a smaller number of people by "anglising" the runways to a greater north-south alignment. – As I understand it, yes.

2590 Here again, do you see any technical or engineering objection to such an angulation from the point of view of reclamation? – As far as reclamation I can't.

2591 Yes. – As far as air traffic control operations that is another matter.

2592 That is not your field. I was deliberately not asking you about it, but simply from the civil engineering point of view, the point of view of constructing the platform on which the airport is to be based you see no objection? – No objection.

2593 Can you help us: is there any particular point you have in mind that you would like to put before the Commission on the question of access routes into the actual airport area so far as road and rail traffic is concerned? – This will follow. I don't know if you are aware on our original submission to the Commission,* on that original submission which went in last October, we indicated that the access pattern, both rail and road at the ultimate stages would be very similar to that put forward by the Essex County Council.

2594 And you regard that as a reasonable proposal? – We think this is right, and so do our experts, Frederick Snell & Partners, who have done this exercise for us in conjunction with a lot of very detailed discussion with British Railways.

2595 The only other matter I want to ask you about, and this is going a little bit out of the immediate scope of this inquiry, but on the assumption that a third London airport comes to the Maplin Sands, and that at the same time or shortly thereafter a deep-water oil terminal is constructed somewhat in the same vicinity on a similar area of reclaimed land, have you any observations to offer us about the point that was raised about ten days ago, about the location of an oil terminal in connection with the flight paths? – Any industrial development whether it be oil terminal, a tank farm, or any other form of industrial development would be outside the flight paths of the airport.

2596 And here again, from the reclamation and civil engineering point of view do you see any difficulty in achieving that end? – I do not.

Inspector Essex?

Cross-examined by Mr. Frank (Essex County Council)

2597 Mr. Howard, I wonder if we can go just again through the timetable of the model and the tests at the risk of repetition, but, of course, it is rather important. Correct me if I am wrong about this: as I understand it the basic exercise which you carried out is likely to show that there would be no adverse effects on any of the rivers consequent on reclaiming land for an airport? – The model, the first part of the model, Mr. Frank, which will take account of various shapes of reclamation and its effects upon local estuaries will be available by the end of June of this year.

2598 The results of the model tests will be ready by . . . – I am sorry, mathematical computations will be available by the end of June of this year.

2599 So that by the end of June this year we shall have the results of mathematical computations so far as they affect the estuary? – That is right.

2600 And within another year or thereabouts we shall then have those computations confirmed or otherwise by the model? – Earlier than that, or by the end of this year; by the end of 1969 they will be proved on the model, on the physical model.

2601 And the other tests, those tests relating to a port will take rather longer? – This is so.

2602 I would like for emphasis to deal with this matter of the objectivity of your consortium. Supposing that everything is proved favourable, you will then not be–your consortium will then not be in a position as a consortium or any of them to carry out the project of reclamation of any kind without the sanction being passed. – That is correct.

2603 And, of course, in order to get sanction passed, all departments have to be consulted, the departments and authorities have to be consulted and the matter investigated by Parliament? – If this is so I accept your statement.

2604 Is it likely that you will be able to find out whether aggregates for concrete will be obtainable for the reclamation of your channels? – This source of investigation has not been mentioned here, but we are about to commence a very large exercise in boring the Thames Estuary; this is going to take into account the possible approach channels, and will also range over a far wider field, and we are about to commence at the beginning of next month the sinking of a large number of boreholes both in the possible radius of a possible approach channel, and in the other points of the estuary, whose job will be able to do two things: one is to determine the sort of material that is there and the second object is to determine what use that material could be, and this will include sands, aggregates, and what have you.

2605 Are you likely to get some results of those borings fairly soon? – We hope these will be available for us before the end of June.

2606 Before the end of June? – Yes, in the beginning of next month we are commencing this.

2607 Are you able to say what the area of reclamation may be, to what extent they could effect–how much of that will be taken up by an airport? – On the plan

* Site submission. Available for inspection at the offices of Sir John Howard, 13 Buckingham Gate, London SW1.

Printed image digitised by the University of Southampton Library Digitisation Unit

behind me the area which we have located is 7,600 acres; this pattern could be well housed, obviously, within that area. The pattern we produce could be well housed, could be located on that area of 7,600 acres.

2608 7,600 acres? What proportion will be required for the airport? — This will be for the airport.

2609 What additional would you reclaim if you were carrying out your port project? — We are extending, we are probably doubling that in size. We have ultimately got 30,000 acres, ultimately. When this comes in time is not for me to say; it could be over a very long and extended period.

Inspector Any re-examination, Mr. Mann?

Re-examined by Mr. Mann

2610 So far as that 30,000 acres is concerned, not one acre could be developed without the consent coming from outside the company? — That is correct.

2611 Be it Parliament or Planning Permission. The only other thing I want to ask you about was the half-inch. Was the source of the suggested less than half one inch effect upon the level of the Thames the Hydraulics Establishment at Wallingford? — That is fact.

2612 I think you consulted the Hydraulics Research Establishment already? — We have been in consultation with HRE, as we know it, for nearly two years now, over this, and over many other aspects of the Thames Estuary.

2613 Putting it generally, what are their preliminary views on this matter? — This again was given in our original statement of October last year, and at that point of time they said the shape of reclamation need not affect the tidal pattern in the Thames, and they had a proviso that this would have to be proved on a model, and this is what we are carrying out.

Mr. *Mann* I have no further questions.

(*A short adjournment*)

Mr. *Mann* I call Mr. Hammond. No statement of Mr. Hammond has been filed, because his presence here is explicable by the request for his evidence.

MR. F. A. HAMMOND called

examined by Mr. Mann

2614 You are Frederick Alexander Hammond? — I am.

2615 And are you Senior Partner of Aviation Property Consultants? — I am.

2616 And is that an organisation specialising in giving advice on the design and layout of airports? — It is.

2617 And, of course, consideration of aircraft routes and the noise effect of aircraft movement is a relevant factor of that work? — Yes, indeed.

2618 And is the drawing TED 8B,* which is, in inflated form, on the wall behind you, a step in the process of advices which have been given to the Thames Estuary Development Company? — It is.

Mr. *Mann* Sir, I tender Mr. Hammond for cross-examination.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2619 Mr. Hammond, you will agree that your plan is quite radically different from that of both the Roskill Commission and the Essex County Council, put before us? — No. I do not agree with that statement. You made it, Mr. Wood.

2620 Then don't you agree? — It is not radically different. It is a development; but not different.

2621 It is considerably different in that the runways are staggered in a different way, and that the runways are further away from the shore. — Yes.

2622 Than in the other two? — Yes.

2623 Isn't that radical? — It is a question of interpretation.

2624 My interpretation is that it is radical. — It is not mine.

2625 Would you further agree that at the end of this Inquiry, when the site is determined—wherever it might be—that the actual positioning of the runways, the detailed positioning, their alignment, and everything, will pass beyond the control of this Commission? — It is my understanding that the Commission are to look into the siting of a third London airport, that the detailed design of that airport in all its aspects will be dealt with by the Airport Authority; that the air traffic control procedures will presumably be dealt with by the Board of Trade.

2626 I understand that this Commission will in fact only decide the site, and that the runway alignment and the actual positions of the runway will be left to a later stage—is that your understanding? — This is my understanding; but I am not an expert in the Commission's terms of reference.

2627 So that this scheme of yours will be as much in the melting pot as any other scheme? — Without question, yes.

2628 These were . . . — Our aim has been in all of this, and indeed, our brief from TEDCO was to look at the technical aspects of an airport in this location, because it was felt by them, and agreed to by us, that this location was better than any others, that it could be developed so that it was completely satisfactory to all local residents from this noise-and-nuisance point of view, and that as well as that it was, and should be, an airport development to be technically excellent solution of the problem of producing a third London airport near London.

* p. 247.

Printed image digitised by the University of Southampton Library Digitisation Unit

2629 Do I understand from remarks you made previously that some of the critical data on which you based your suggestions as to the revision of flight paths was obtained from sites in Zürich, and Zürich airport? — No, what we have said is that there is a particular feature about the diagram which is on the wall, which is that the take-offs from the runways, that which is furthest out to sea, the procedure for aircraft would in fact be a take-off, and then a route which would take them over the top of the airfield in a west-bound direction. The point made by Mr. Mann is that there is a precedent for this procedure at this moment operating at Zürich airport, and we are therefore saying that this is a concept, an idea which we have, which deserves a more detailed study, and for which a precedent actually exists, at one major airport.

2630 The fact that the one major airport is inland, and not off-shore, and in mountainous country as opposed to being off-shore and in a dead flat area—the precedent would still be valid? — Very much so, yes.

2631 Am I further to understand—did you say that 60 per cent of the aircraft taking off from this proposed site of yours could take off to the north-east, and would join Red 1, and would turn to the north-west? — Yes. We said that, as aircraft get larger, so the need for them to take-off in a particular direction, into the wind, becomes less important, and on the normally, usually expected, tailwind of at least 7 knots—if one takes that as the criteria, as has been mentioned at this Commission hearing, it is quite feasible and possible for more than 25 per cent of aircraft to take off in a northerly direction, which was a figure I think Mr. Dunford put forward. We are saying that it is possible, and therefore should be considered, in the development of an air traffic control pattern from this airport, that air routing should be in a northerly direction so that in fact the traffic would tend to be as great in that direction as in a south-westerly direction.

2632 Does it affect load, and "all-up" weight, whether they take off into the 7-knot tail wind or not? — Yes, and it is a factor which of course depends on aircraft types and a lot of considerations, many of which have been mentioned here; but statistically we should show that, taking an assessment of the sort of aircraft, the sort of loads, the sort of weights and general conditions applying in an airport of this type, certainly in at least 50 per cent of occasions we could take off this way.

2633 And could one establish how many aircraft would be likely to be able to take off into the north-east? — At least a half.

2634 You would agree that Mr. Dunford did not in fact envisage this? — No. Mr. Dunford suggested that 75 per cent of landings and take-offs would be to the southwest. We are saying simply that this particular aspect is one which needs further detailed analysis, and we are continuing to do this because it is an important feature. As you have picked on, Mr. Wood, if you can in fact take off in the other direction, some of the noise nuisance can be directed towards the open sea and the river estuary towards the north, which will minimise the inconvenience in a southerly direction.

2635 This is true; but this is one of the fields, and a very profitable one, in which experts can disagree? — Absolutely.

2636 I think that you also made some reference to stacking areas, didn't you? And envisaged that stacking areas could be over the sea, in your configuration here? — Yes, we have said at this time; and stacking areas again is something which is part of the overall airway system. I think that it would be profitable for me to say just this: that right at the beginning of the Commission's work Mr. Masefield made a number of remarks about air traffic control, and the need to reconsider the whole of the London air traffic control pattern in the light of a major international airport being imposed on it. The position as far as this particular location is concerned, of course, as we all know, is that there is a gap in the existing airway-routing pattern, and one can therefore build an airport fairly satisfactorily into the existing pattern. The development of a major airport here, however, is going to involve a very fundamental computer analysis probably, and the whole of the London air traffic control zones; and therefore we have said that the principal stacking area would certainly be over sea. It is conceivable there may be another stacking area, which would be overland and at a height which would not cause noise nuisance; but the actual location of it must be determined on the overall analysis of what happens to the whole of the air traffic control zone in this area.

2637 This seems to be running counter to what has already been given to us by the Essex witness who suggested—if I have interpreted what he said correctly—that an airport at Foulness could be easily dovetailed into the existing flight paths without any radical alteration. — This is what I have said.

2638 You are on common ground? — Absolutely.

2639 But he also inferred that the stacking areas would in a sense be better—to put it no higher than that—situated overland, and he defined the two areas quite clearly. Furthermore, although he said that it would be practicable to site a stacking area over the sea, he envisaged the construction of at least two or three radar platforms out to sea, and suggested that this was inevitable in order to get a stacking area over the sea. — I think—if I can answer this—the theoretically ideal position for a stacking area is at a position 90° from the outer runway, at a position to be determined from the airway system; but you would have one at 90° back in land and another 90° out into the sea. We have said that this is quite practicable, to establish a beacon system; a single beacon would be perfectly acceptable as far as practice was concerned. It is perfectly practicable to establish a beacon in the sea; this is a perfectly satisfactory and acceptable place for a stacking area.

2640 He did suggest two. — Yes. We think that this again is a question of relating the whole thing to the whole picture. We think certainly that, in the total

Printed image digitised by the University of Southampton Library Digitisation Unit

development of this airport, when it is operating at maximum capacity, that two stacking areas will be necessary, one of which will certainly be over the sea and one certainly over the land. It will be high level stacking, and it will be in a position which will not create noise nuisance.

2641 The two I referred to are two radar platforms which he envisaged constructing out to the north-east of the runway. Would these have to be manned? — No.

2642 Entirely automatic? — Yes.

2643 If we could go just to one or two smaller points: do I understand that you envisage those aircraft that have to take off to the south west, that their flight paths would be over Sheerness, is it?—and then turning out over the . . . is that Sheppey?—no, it is Hoo: in All-hallows direction? As you go further to the west before you sweep up to the north? — Yes.

2644 That would be the flight path? — Yes.

2645 How distant is the Kent mainland, as it were, from the airport? — I have not checked the exact distance . . .

2646 Would it be 8 miles? 9 miles?—16 miles, would it be . . .? I am told the answer is 16. The fact that the air route would be over a major complex and concentration of refineries, oil storage tanks, and the like—that does not worry you? — No. We have got this as a straight pattern of aircraft taking off from the airport simply because we want to keep air movements from this airport as simple as we can in situations which do not create noise nuisance; therefore, the fact that the aircraft are taking off over the complex you mention does not worry me any more than aircraft taking off over the centre of London.

2647 It may be acceptable as far as human beings are concerned, but not as far as combustible and explosive materials are concerned. There was a crash at Gatwick, taking off, off the runway, and about 10–12 miles from the airport . . . — That was landing, not taking off.

2648 Very well—landing. — Yes, but normally, speaking statistically, we can show that the majority of accidents of the kind you talk of occur at distances within 6 miles of the airport.

2649 Would it be true to infer from this excellent diagram that this is the premium: you have taken advantage of every favourable circumstance, and envisaged that it is likely to develop on that premise? — No. We have developed a pattern in which we have tried to take advantage of the circumstances that will enable noise nuisance to be reduced to a minimum. It is not necessarily the premium from an air traffic control or airport point of view.

2650 No, but it is in fact an effort and an attempt at eliminating as far as possible the noise nuisance? — Yes.

2651 Taking every favourable aspect? — I would not say every favourable. It is a realistic and technical appraisal of the situation.

2652 I am not suggesting the Essex proposal was unrealistic. — We think this is another method of looking at some of the problems.

2653 I will be very interested to hear your discussion at Stages II and IV. — Thank you.

Cross-examined by Mr. Peter Smith (Barling Magna Parish Council)

2654 Just one point. You have mentioned that you think that 60 per cent of the aircraft should be able to take off in a northerly direction because the wind factor is diminishing? — I actually said 50.

2655 Well, by the same terms in landing the aircraft, will they in turn be landing in a southerly direction? — I am sorry, perhaps you could say the question again, I didn't quite understand.

2656 Well, what I am saying is that you are saying one can now get all our aircraft taking off in a northerly direction, but surely aircraft are going to land on this airport, are they also going to come from that direction and land in a southerly direction? — No. If the take-off procedure is in a northerly direction then aircraft will also land in a northerly direction approaching from the south.

2657 In fact they will come down from the south? — That is right, there would be an awful mess otherwise. We don't anticipate that, not until they bring the Harriers in for passenger services.

Cross-examined by Mrs. Boston (The Sheppey Group, Kent)

2658 Just one point I would like clarification on and I think this is where the pointer might be helpful. I am interested in the occasions when in fact the planes are landing south-west and I have done some measurements and assuming they have to line up 12 nautical miles from the end of the runway this would bring their lining up point just slightly south of Sheerness? — The reason for that line that you see is that at the Stansted inquiry the Board of Trade traffic control experts made quite a point of saying in the development of major international airports 16 miles was required from the runway threshold to the point at which the runway was commenced, and that is why you see the point there 16 miles out.

2659 I am interested to know how the aircraft in fact get to that point which is on this runway location. What I am interested in is how the aircraft if they get to that point, which unfortunately is still just over land from the flight path, where they are coming from. If you have a stacking area over Essex somewhere I can see how they cannot get to the most easterly landing path, what I cannot see is if you have got a stacking area and it is over the North Sea somewhere. I can see how they can get to the easterly landing path, what I am wondering is how from a stacking area over the North Sea they would get to that westerly path. — They would in fact make a manoeuvre. In fact, this is a mirror of the manoeuvre

Printed image digitised by the University of Southampton Library Digitisation Unit

that you see, the different lines approaching the runway. If the stacking area is over the North Sea there would be an outer marker (which is an unmanned locating point as far as aircraft is concerned) at the point of intersection of the centre line of the runway point coming out, so aircraft would pick up the outer marker from the stacking area approaching in that way but they would at that point be coming down to about 5,000 ft at that point so the noise nuisance would be minimal, the equivalent of aircraft coming over the centre of London.

2660 They would be about 3,000 ft by the time they got to Sheerness? — No, it would be 5,000. This is one of the advantages in that location of an airport in the way that this comes at the approach to the airport, as they come into the runway threshold they would be coming down through 5,000 ft at that time.

Cross-examined by Mr. Mathiesen (Southend-on-Sea Chamber of Trade and Industry)

2661 Mr. Dunford gave noise contours which are entirely different from what we see today and they related to approaching aircraft. I asked a question on this particular point and the noise contours which he produced provided 35 NNI. It seems to me to be such a fantastic discrepancy between the two contours that have been supplied to us that we must have an explanation because these are published and the public are concerned about these contours. For that reason I would like some explanation why these noise contours appear to be so much more favourable than what our expert provided us with last week. — I am very familiar with Mr. Dunford's evidence but I have not seen the contours that you mention. The contours that have been produced by the Commission's experts are in fact very comparable to these contours that you see here in a lot of respects. One has to remember that a noise contour is a plot of a noise level and the number of times it happens which is plotted on the route of an aircraft arriving or taking off from any airport, therefore the most important fundamental thing first of all is what paths are going to be taken to get into an air traffic system, how often the aircraft are going to use them. Having established that information, having taken the types of aircraft and assessment of it and the sort of PNdB levels under certain conditions you can produce the noise contours from it. What I am saying is that a noise contour is not just a mathematical line like the sort of level of a hill, it is a complicated series of factors which have to be built into it, and although one contour may look quite radically different from another it is built up from the same principles but if the original routes are different then it will look different. I think to answer your question although the answer is in fact in the statement the Chairman made at the beginning of this morning's session that this analysis is going to be done. The proposal from TEDCO that we and our team have been working in great detail to try and solve routings in and out of this airport are genuinely an attempt to reduce this noise nuisance to an absolute minimum and at the same time produce a technically acceptable solution to an airport on this site, and this drawing* that you see here as Mr. Mann has said is a development of this analysis. This is going to continue to be developed and if you can come into our drawing office next week you may find something has been modified still a bit more because other information comes to light. To do this properly all the information from the Board of Trade, the British Airports Authority, everybody has to be put together and properly analysed and in the ultimate this will only be done when the Commission has selected a site and when in fact the proper procedure is put down for the analysis to be done.

2662 Are you satisfied that the 16 miles which you have envisaged as being adequate for the final approach to the runways are adequate for an aircraft of the Concorde type, for example? — Yes, I am.

Cross-examined by Mr. Purchase (Bernard Clark & Partners)

2663 Can you tell me what you understand by the words "mono-airport control", which is I understand from the studies I made under consideration of the approach and landing from the same direction?

Inspector Mr. Purchase, I very much doubt whether going into detail is going to help anybody at Stage II. I allowed the last question from Mr. Mathiesen but I have said time and time again that NNI contours are built up on a series of complicated assumptions. Until the assumptions have been resolved then the NNI contours are going to differ.

2664 Mr. *Purchase* This is not NNI, this is approach and landing. I thought there was a certain amount of titter going round just now when such a thing was mentioned, the possibility of approaching and landing in the same direction.

Cross-examined by Mr. Wright (Southend-on-Sea County Borough Council)

2665 Mr Hammond, the 16 miles that you told us about between the threshold of the runway and the turning off point, is than an air traffic control requirement? — On a landing procedure this is an ideal requirement as laid down by the Board of Trade, yes.

2666 But take-off is not a requirement at all, is it? — Not a requirement.

2667 As I understand it you would agree with Mr. Dunford about this, that there is no reason why taking off aircraft if they wish to do so need not turn up the Thames Estuary after take-off? — There is no reason at all. We feel that from the measurements we have really been able to do on the initial thinking from the Commission that if you took the sort of little appendage that you see coming out from Southend we felt if you took the sea level performances of the 707 and the Concorde type of aircraft the height of the aircraft at the point where a turn would become necessary would only be of

* p. 247.

Printed image digitised by the University of Southampton Library Digitisation Unit

the order of 500 ft to 1,000 ft which we thought was unnecessarily low for a turning manoeuvre in its initial climb and obviously one would want to move further away from the airport than that, but you could certainly reach a point over the Thames Estuary where a turn would be possible and safe, yes.

2668 I think I am understanding you. You don't regard as a necessary consequence of placing the airport on the Maplin Sands the thumb that we heard so much about in the early stages of noise running up over Shoeburyness? — No. We think that the thumb as it was shown was in a position that was likely to be excessive from the information that we had and therefore it certainly is not a requirement of the airport at this point. Of Course, the Commission have the advantage of us because they have the details of the aircraft traffic routings that the contour was developed from.

2669 You agree with Mr. Dunford that the aircraft can quite safely be routed at a later stage and fly up the Thames Estuary? — I do indeed.

2670 You would presumably agree with Mr. Dunford that there is no air traffic control objection to moving the runways further north and east from the map shown on the Roskill plan*? — No objection at all.

2671 Equally do you see any air traffic control or any associated problem to tilting them in a more north/south direction? — No. I think as Mr. Dunford said our own analyses which we did at some considerable length on the information we had from the Shoeburyness Meteorological Station was that there is a considerable degree of flexibility in having the runways on this site. The criteria I suppose one should use is the only thing that could close the airport is a cross wind of more than 20 knots with a wet runway, and if one takes that as the criteria there is the degree of latitude which Mr. Dunford mentioned as the degree of latitude which is available, and I would agree with his statement.

2672 The only other matter I want to ask you about is this. A number of questions were asked at the early stages of this Inquiry about the effect of noise over areas which are largely covered by water. Can you help us in any way about that? Did you yourself carry out any experiments? — No. We have never carried out any experiments is the answer to your question. Our team have tried to get together the information which is available internationally on the subject and it is not great simply because, of course, the degree of noise movement horizontally across the surface of water depends upon the flatness of the water. If you have a rough and windy day then the noise movement is much less and therefore it depends upon wind conditions, the surface conditions of the water and the whole thing varies from minute to minute.

2673 You used what information is available in preparing your NNI charts to take account of that, that a lot of this noise is going to be generated over water? — We have taken the noise pressure, the PNdB levels, aircraft at the particular points, we have taken without a dispersion factor of any kind assuming they are over land and buildings and so on.

Inspector I have no questions.

Re-examined by Mr. Mann

2674 Just one matter. It has been suggested I think on more than one occasion in the course of your cross-examination that there is, to use the politest word, a discrepancy between the contour map which you have produced and other contour maps which have been produced during this Inquiry. Is it important to appreciate that there is no discrepancy at all but it depends wholly on the particular layout and particular postulants as to aircraft which you are making when drawing up your map? — Yes, that is exactly the case, and I think that the developments that we have now produced are exactly in accordance with, for instance, the principles laid down by Mr. Dunford and were quite in accord with our views on this.

Mr. *Smith* Mr. Fleming,* not Mr. Dunford.

Mr. *Hammond* That is quite right, Mr. Fleming.

Mr. *Mann* I do not wish to add anything to what has been said on behalf of the company, except just this. It was suggested by Mr. Smith in the course of cross-examination of Mr. Howard that there was a discrepancy between the words which had fallen from the Port of London Authority on Day 5 and the evidence of Mr. Howard. I have looked most carefully at the transcript for Day 5, and I can find no discrepancy at all, Sir.

Inspector Thank you. Is Mr. Francis with us? The Thames Aeroport Group? I find this most confusing. I have a long new proof on my desk apparently submitted late by the Thames Aeroport Group, and yet they are not here.

Mr. *Howard* I think they are here, Sir, but the gentleman is not in his seat at the moment. I have seen him here today.

Inspector Bernard Clark & Partners?

Mr. *Purchase* I must claim an adjournment on behalf of Bernard Clark & Partners, Sir.

Inspector Why is that?

Mr. *Purchase* Mr. Clark is travelling now. I understand he will be here this afternoon, but he had difficulty in starting this morning. There is another reason too for this. I have two programmes which have been issued here, and one which I have only received this morning shows a greater number of people ahead of our name, and it was anticipated there would be a late hearing on this, this morning.

Inspector The Royal Institute of British Architects, no. 50.

MR. ALBERT WALTER VOUSDON WHITE called

(*The Royal Institute of British Architects*†)

Mr. *White* My name is Albert Walter Vousdon White. I have a Diploma in Architectural Development in

* See attached wallet of maps and diagrams.

* p. 30. † See also p. 246.

Printed image digitised by the University of Southampton Library Digitisation Unit

Town Planning. I am a Fellow of the Royal Institute of British Architects, an Associate Member of the Town Planning Institute, and I am the Chairman of the Eastern Region of the RIBA. I appear here today in that capacity, Sir, in co-ordination with our South-Eastern Region. Our two regions represent some 6,000 architects in the United Kingdom. You have our report which we submitted, but we would like to add a little to it, if I may, this morning.

We have in making our report tried to avoid promoting or rejecting this site. Other people have much greater right and ability than we to do this, and they will take the opportunity to do so. We are a regional organisation, and we tried to look at this in the light of local implications. We have a local branch here in Southend representing some 200 of our members, but we have tried to look at the thing locally with a regional sort of bias. Our Southend members have made a brief statement which they wish me to read to you, if I may, Sir, it is not very long.

Inspector That is in addition to document 50?

Mr. *White* Yes, it is.

Inspector But not duplicating it?

Mr. *White* Not duplicating it, and it is not very long, I promise you.

"As Architects, one of our main concerns is that people should be able to live in an acceptable internal and external environment, i.e. sleep, work and enjoy leisure time under reasonable conditions.

The existing environment must be safeguarded particularly in regard to noise nuisance. The noise generated by day must not exceed 35 NNI—preferably less—to ensure that the present population and the newcomers to the area are able to live within tolerable limits. The noise level must not be exceeded at the time when the airport is commissioned, in the hope that reductions will take place in the future by the enactment of legislation. The control of noise at the source is essential. The siting and alignment of the runways, flight paths and stacking areas must be carefully considered in relation to the populated areas.

Southend with revised boundaries should form the nucleus of future development under the control of a single City Authority. Initially, the expanding development would make use of the existing amenities in Southend. The amenities would be expanded to keep pace with the demand.

Communications and services must be phased in parallel with the development of the airport. The problem of noise created by traffic on surface feeder routes requires careful planning in order to preserve existing amenity and environment.

The siting of the airport at Foulness would save valuable agricultural land and avoid spoiling the countryside but it must be borne in mind that the well-being of the large population of this area is of vital concern".

That is the end of my Southend members' statement, Sir, but I would just like to add a sort of summary of our own statement, to say that really we feel the document *A Strategy for the South-East** has hardly been referred to in other evidence . . .

Inspector For a very good reason; this Inquiry, this hearing, is concerned with local implications, not regional implications.

Mr. *White* With respect, Sir, it is concerned with local implications too. This decision whether or not to put the airport on Foulness or on other sites is the biggest scheme and planning decision we have been asked to take in this country in our lifetime, and it can't be purely local in its implications.

Inspector The Commission is fully aware of this; it has been called to its attention no less than 100 times. This Inquiry is not the place to deal with this issue; it is Stages III, IV and V. This hearing, Stage II, if you refer to the terms of reference is specifically to investigate local implications.

Mr. *White* The point I was going to make is with all these extra people coming here locally, the 400,000 additional people . . .

Inspector That is fine; that is local.

Mr. *White* That Essex County Council say are going to come here, are bound to upset this overall strategy. We show in our evidence a road map,† and we have suggested that we think that there will have to be connections to elsewhere in the country other than London. This is not local, but I think the effect of the road, which we feel will almost certainly become necessary, will have local affects. We feel that an airport of this size must generate traffic which will wish to go much further afield.

Inspector We say so . . .

Mr. *White* We feel because of this there will have to be another major road, a really major road cutting across country which will have a number of local effects; we hope this will be taken into account.

This is an occasion when we as a profession are going to be asked to design buildings some time in the future in this area which will have to be protected from sound from above. This is probably the first time we have been asked to carry out this sort of design approach. What we have tried to do is set down before you in the documents certain basic principles which we think are effective. We have not tried to be for or against Foulness as a site.

Inspector Thank you. Local authorities, any questions?

Cross-examined by Mr. Wood (Paglesham Parish Council)

2675 I am somewhat inhibited because of the terms of reference, but undoubtedly the Commission will treat

* HMSO; 15s.

† p.251.

Printed image digitised by the University of Southampton Library Digitisation Unit

this as irrelevant at this stage, that is those parts in the proof of evidence that deal with comparisons.

Inspector Yes.

Mr. *Wood* It being proper for me to comment on them.

Inspector Yes.

2676 Mr. *Wood* Page 5* of your submission under Housing 2(2). You say there will be a density of 40-60 persons per acre. Do you agree that that very ordinary planning criteria would not be regarded as minimum, but extremely high density? — 40-60?

2667 Yes. — I would not. I regard high density as figures over 100.

2678 But other expert witnesses have been talking in terms of 13 to 17 per acre. — I would not wish to argue on other witnesses . . .

2679 I am sorry, I have missed the point completely. Yes, these are persons as opposed to housing.

2680 *Inspector* No, no, the figures quoted by Basildon are 17 persons per acre gross, that is the difference, gross.

2681 Mr. *Wood* Yes, as opposed to 40-60.

2682 *Inspector* I am not giving evidence, but my understanding is the figure for Basildon is 17 persons per acre over all, and I think for Southend the figure is given somewhere as 60 persons per acre over all.

2683 Mr. *Wood* Yes. Why is there the discrepancy between your figures and those produced by Essex? — I can't answer for the Council, but in writing this we considered housing densities as we, as architects, deal with them, and this is on the basis of a density of the site on which the properties are situated. I imagine that the Basildon figures may well have been including all the industry, open spaces, and everything else. We take the site, plus half the roads, certain limitations to actual housing sites.

2684 I thought that might be the difference.—On page 6* I must confess I thought I was trespassing into "Doctor Who country" when I read that part. You envisage the type of development you state there, but it would in fact be quite revolutionary, would it not? — Which part of page 6?

2685 5 and 6, where you talk about flat-roofed houses with grass on top, with trees growing in pots, and a belt of conifers between the city and the airport. — I don't think it is revolutionary. Perhaps flat roofs with grass on is a little out of the ordinary in this country, but we cannot afford to have another situation where we have a lot of people living in very unpleasant circumstances. If we do this sort of thing it might go a fair way towards alleviating some of their problems, if you do a lot in the construction of the houses to reduce the sound that comes in from above it will be helpful. I don't think there is anything revolutionary about it; it is quite common abroad.

2686 Is it? — Yes.

2687 The closest I was aware of it was a thatched roof that had gone a bit to seed. — If you can get the insurance company to deal with thatched roofs it might be a very good idea.

2688 You say all bedrooms would be double glazed. How do you get fresh air into the bedroom if you have double glazed windows? — I am not sure of the connection between fresh air and double glazing. Do you mean we can't have double glazing because you can't have fresh air?

2689 It seems to me if you have double glazing, the necessary installation, and so on, to keep noise out, you have to have your windows shut down. — In my own house I have some double glazing, and all my heating is done by air, and except on the very hottest days we do not have our windows open, and we maintain an equitable temperature. I don't have air conditioning as such; I have no air conditioning, no cooling, but we use the air circulation plant. This is a fairly standard thing in modern housing.

2690 This sort of development is so revolutionary I can't even envisage it. — Perhaps you have not really noticed, because I don't think my house looks any different to what yours would.

2691 *Inspector* I might say the design will fortunately be the responsibility of the local authorities not the Roskill Commission . . . — I hope some of the local architects as well.

2692 Mr. *Wood* I must say I was rather relieved but surprised to find you envisaging sailing in the open air and not under some sort of cover.

Inspector Any other questions?

Cross-examined by Mr. Smith (Barling Magna Parish Council)

2693 Just one point on page 4,* one small passage, on transport: you envisage or you can't envisage anything else other than a six-lane urban motorway to cope exclusively with airport traffic. I am discouraged but in fact I believe the County's evidence was that a considerably smaller one, a three-lane motorway or something certainly considerably smaller than that. Can you amplify why you feel this should be so much greater? — Well, I can't say why our view differed from that of the County, because I was not there when they decided what they were going to do about it, but it would seem to us that this was the sort of magnitude of road that would be required, and a very big road. We did endeavour in those early paragraphs to build up some figures to show how we arrived at the number of people we understood were going to be there, the number of motor cars, and it seemed to us it required this sort of road, a very large road, in other words; but we would not want to argue with anybody to Stage IV, VI, or VIII, it is just a very large road.

* p. 249.

* p. 248.

Printed image digitised by the University of Southampton Library Digitisation Unit

2694 You go on to say these roads should be the exclusive fast routes into the capital. Having set down this pattern of exclusive fast routes, could you tell me what effects this would have on commuters? Let us take a place of straight pedestrian traffic, the high street, these are all parts of communities and form an integral part, but would you say this is because of exclusive fast routes? — No. I don't think you have really appreciated the point we are trying to make. This is going to have a big impact on the environment in which people are living, and it is not going to be like a high street; it can't be like a high street because it will not work. This has got to be of this sort of motorway nature, and this is going to have a big impact on people's environment. I am not saying that it can't be designed into an environment satisfactorily, but it will have an impact.

2695 In a word how would you see the impact of these fast routes? the word would be "severance". — I am sorry, I don't quite understand—severance from what?

2696 Severance of communities, severance; this would form barriers between communities. — Yes, they will have to be carefully planned in order to avoid this. It can be done; obviously it can be done, but if it is not carefully done—the point I am making is this must be carefully looked at because this is one of the things that could arise without care and good design. You just can't draw a line across the map and run your road across it.

2697 Would you agree with me that where you have an area, a peninsular area which in fact has already natural barriers, further severance due to such motorways that you have been talking about would cause considerable problems from a planning point of view, so that it would be very difficult to plan a cohesive whole. — I think they will cause considerable planning problems. I don't know that they are insurmountable which is perhaps what you are suggesting.

2698 No, but it would create problems in respect of the town planning criteria. — It will create another set of problems, yes, in addition to those that already exist at the moment, it will indeed; this is largely the point of what we are trying to say, I think.

Cross-examined by Mr. Arnold (Foulness Island Residents' Association)

2699 2(1)(a),* the placing of thickly wooded area—could you explain a little about this. How thick is "thickly wooded"? Are we . . .

Inspector Well, I think this is going to too much detail, surely. We have a hypothetical airport, not quite certain where this is going to be, with hypothetical roads, hypothetical urbanisation.

Mr. *Arnold* This is hypothetical trees.

Inspector What the witness is saying, he is recommending it, but it will be for the authorities implementing this to decide.

Mr. *White* We feel this would be a way of reducing the noise within proximity; they would obviously have to be planted in suitable positions when the time arose.

Inspector Any other questions.

Inspector Is Mr. Francis yet with us?

Mr. *Francis* Yes, Sir.

Inspector You have submitted no proof as requested: so could you be as brief as possible, please?

MR. G. V. K. FRANCIS called

Mr. *Francis* Yes, Sir. My name is Francis, and I have been connected with aviation since 1951: and I have been to various countries and I have seen various airports. It is not only myself—there are a couple of hundred of other people, some few hundred, who have been connected with aviation and who support this project entirely. Our reasons are that a place such as the Maplin Sands would be the most suitable site for this airport, the basic factors being the noise abatement—a lot of people complain about noise and disturbance at the present airport, and there has been a lot of objections in the past. I have not been able to be present at this Inquiry, throughout the hearing, but I have a fair idea from the newspapers and the local papers and the London papers as to what is going on. I believe that all the technical aspects of this particular hearing have been covered, by the Essex County Council, so I shall not mention these points, I think. But two major points are that this particular Maplin Sands site is for the benefit of the country. A third London airport has got to go somewhere. I shall take an example of a neighbouring country, in Europe—near Amsterdam . . .

Inspector Mr. Francis, you may not have been here before, but this is an Inquiry on the assumption that the airport will go on the Maplin Sands. What are the local implications?

Mr. *Francis* The local implications, Sir, are the noise factor, that it be minimised—as probably the Noise Abatement people have put it. There will be less noise as compared to the present airport. The second factor is the national importance. The third factor is about work being available and so on and so forth. The danger point—that is approaching and taking-off aircraft; doing it over the sea is minimum hazard—I should put it as far as that. The other interest would be if there is no such airport put here—I did mention in the local newspapers some time back, the big 747, the Concorde, which is coming through—these aircraft cannot be easily handled at other airfields, with the result that it could go to Europe—the closest . . .

Inspector Mr. Francis—local implications, please! No slipping in the odd non-local implication.

Mr. *Francis* Well, I shall be brief. I have not been able to prepare all this—I have been ill. It is not only myself, but there are hundreds of other people in the Borough who are in touch with me; we support this

*p. 248.

Printed image digitised by the University of Southampton Library Digitisation Unit

project entirely, one hundred per cent, and we welcome it.

Inspector Any questions?—local authorities?—any other questions? . . . Thank you, Mr. Francis. I think this is near enough to one o'clock to adjourn until 2-30.

(*A short adjournment*)

MR. M. KING called

Inspector Councillor King—no. 66.

Councillor *King* In the best tradition of witnesses, Sir, I would like to make a very minor amendment to the evidence. In the last paragraph, the penultimate sentence, it reads—"Residents in the Borough is that they would not object". That phrase should in fact be in quotation marks—"Residents in the Borough is that they 'would not object' ". It makes the paragraph read more satisfactorily.

Inspector I see; and could we have your full name, please, for the record?

Councillor *King* My name is Michael King; I am a Councillor, Member of the Southend-on-Sea County Borough Council. There are three points I would like to make in addition to the evidence. The first one is that in the opening, on the very first day, Mr. Frank, for Essex, said that the Stansted decision was not in any way due to the pressures put upon the Government or the Inquiry when it took place; the car stickers played no part in the eventual decision. One would like to agree; but I do not think one can whole-heartedly, because democracy seems to be more and more depending on pressure groups. But if we accept that, I put it to you, Sir, that we must not in any way be swayed by the somewhat strange attitude of the Essex Council or the Southend Council, or by the lack of cars with stickers saying "No Foulness!" I can say that we can leave it well in your hands, Sir, to decide this issue on the facts, rather than on the thoughts of the County Borough and the County Council, who have adopted in my view a somewhat odd attitude to this Inquiry from the very first day.

The second point is, we have had an enormous amount of expert evidence, the majority of which is based on considerable experience, but very little actual fact. All the diagrams and the plans we have had on noise, the possible effects upon the tides, were, as I say, based upon experience certainly, but not upon facts. It is, however, in my view, quite possible to prove the effects or the likely effects of the noise, and I believe it would not be at all unreasonable to expect the Commission to obtain the assistance either of the RAF or the Aeronautical Establishment at Farnborough to overfly Foulness in various conditions and to fly out in the traffic routes that the aircraft would take, and this, more than any other single thing, would prove or disprove the effect upon the people. The measurements of the sound could easily be made, and the uproar, or lack of it, on the part of the populace would give the Commission a far better idea of whether Foulness is an acceptable proposition or not. Most ordinary people like myself are very suspicious of experts, because experts so often ore proven wrong by what actually happens eventually—and then it is too late.

My last point is—and this is a difficult one, and I accept it—one which may come out at further stages of the Inquiry; but it is my view that the decision as to whether Foulness is indeed—I prefer "Great Britain's No. 1 Airport", not London's third—must be dependent upon the powers, either of the Commission or some body, to restrict further development of the airport, once it is so placed. I think this is a vital matter, because the British Airport Authority, being a statutory undertaking, has a position of considerable advantage, *vis-à-vis* either of the main local Authorities; and once a development has been started, with commercial pressures being what they are, it is very difficult to stem possible expansion. The scheme as put forward might be all right, but the scheme as amended in the light of experience of operation might create enormous problems, and I doubt whether either Essex or Southend are in the position of being able to stop further development of a statutory undertaking at Foulness. This, I think, is a very vital point which as far as I am aware has not been touched on before.

Other than that, I leave the matter as my written evidence.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2700 It is nice to meet a vocal member of the Southend Council! Are you prepared to answer questions both on policy and on the technical aspect? — To the best of my ability, yes.

2701 As regards the technical . . .

Inspector I hope it will have a bearing on the local merits.

2702 Mr. *Wood* Yes, Sir, I hope so. (*To the witness*) 2.2*—the point you are making there, I take it, is that the sound effect tends to be subjective? — Yes.

2703 Very much so? — Yes.

2704 It is most interesting, your suggestion about a fly-over. Do you think this a practical suggestion, that you make? — I do, yes. This goes back to some extent to my experience on Southend. There was for some two years before jets ever landed at Southend airport the possibility of jets arriving, and there was discussion about it; there was a report on it, plans—not of NNI contours but with decibel contours—these were published, and the matter tended to attract very little interest. When these jets stared coming in, then you got a considerable amount of uproar on the part of people affected by the noise. It is my belief that, had the jets been brought in and out of Southend airport at the first stage, before ever it was decided that they would be

* p.253.

Printed image digitised by the University of Southampton Library Digitisation Unit

allowed to operate, one could have made some alterations to the airport in order to make the noise somewhat more bearable. And similarly here, I think it is quite on the cards that one could fly over along the line of the runway and over the flight paths, either with a 707 or with a Vulcan, with one of the engines of the Concorde–which I understand can be fastened beneath the aircraft–and it would give an indication of the sort of noise. I would not suggest that it would necessarily be an accurate representation of it; but it would give an indication of it.

2705 And on page 2* of your submission, you refer in fact to the airport siting. I take it the point that you are establishing there is that until the site would be determined by the Commission–do you envisage the Southend Council or even the Essex County Council having any further control on runway location, runway alignment, and flight paths? — I think this is just the difficulty. We have some difficulty in controlling our own airport, albeit a comparatively small one, never mind the difficulty of controlling a large international airport like this. and I assume that our control over it would be almost non-existent, because, as I said, the PLA has a statutory undertaking, if they wish, to develop something, and the local authority does not wish them to carry out that development–the local authority could be in a position of having to pay the statutory undertaking for the development that it has not allowed it to do, which is the reverse of the normal situation with a developer–obviously.

2706 There has been recent legislation, hasn't there, I believe last year, giving the airport authorities very considerable additional power, so the local planning authority has little or no control over the development within the confines of the area? — That is right as I understand.

2707 The road communications, I believe there was an editorial in *The Times* on this subject, wasn't there.

Inspector I am well aware of the legislation in question.

2708 Mr. *Wood* I am sure your are, but there seemed to be others not quite so well aware. As regards the siting and the construction of the communication links from the airport this also would presumably be entirely the responsibility I take it of the Ministry of Transport? — I would have thought so.

2709 Ultimately the siting and the financing of it would come from public funds? — Yes.

2710 At page 3† of your submission you refer to the effect on the fishing industry. I don't know if you were here when the Leigh Fishing Cockling concerns were here giving their evidence, but do you agree that this means in fact the elimination of that particular sort of industry? — Yes, I do. I have had fairly close contact with these people over the years because I represent that particular area of the Borough and it should be said they are always up in arms about something, but in this particular case I don't think there is any doubt at all that they have a very firm and quite justified attitude that this is going to mean the end of their livelihood because as they said well enough this is indeed the prime area in the estuary and has been for many years.

2711 I am interested also in your observations on if the airport was to come to Foulness and the urbanisation which has been threatened flows from it. What do you consider would be the likely effects on the local government administration in this area? — Well, I would have thought that you were sitting in a Council Chamber and it was designed to be a reasonable seat of government anyway.

Cross-examined by Mr. Wright
(Southend-on-Sea County Borough)

2712 Mr. King, I would like to get one thing plain. You are not suggesting, are you, that you appear here other than on your own responsibility? — Yes. As I said when I answered the first question on the first day of the Inquiry, I am a member but not representing the Southend-on-Sea County Borough.

2713 I would like you to help me please about one or two matters. On page 2* of your submission, paragraph 3(a)(ii) you speak of a proposal to increase the size of the County Borough to 600,000 people. Where do you get that from? — This was considered in somebody's verbal evidence to be the likely figure of the population which would be directly connected to the existing County Borough but not obviously part of the County Borough.

2714 I am suggesting that at no stage so far as I am aware has it ever been suggested that the County Borough would increase to such a size. — Not the County.

2715 Did you read the evidence put forward on behalf of the Borough Council? — Yes, I did.

2716 Then you ought to be aware that the Borough Engineer told the Inquiry that the greatest anticipated increase in the Borough's population by 1981 was 50,000 people over the present level. You saw that, I hope? — One would perhaps make this more accurate if one said to increase the size of Southend to 600,000 people.

2717 I repeat, Mr. King, at what stage has anybody ever suggested that Southend is to be increased to a size of 600,000 people? — It was said in somebody's verbal evidence and presumably you read the newspapers and it has been in there fairly considerable times.

2718 You don't always believe what is in the newspapers? — No, agreed.

2719 Would you like to see what he said at pages 18 and 19,† paragraphs 73 to 74? The Borough Engineer told the Inquiry that the development plan provides for

* p.253.
† p.254.

* p. 253.
† p. 68.

Printed image digitised by the University of Southampton Library Digitisation Unit

an additional population of 34,000 by 1981. If you turn over the page, dealing with one additional piece of land that might be reinstated as a result of the advent of the airport he went on to say if that particular piece of land is reinstated a further 16,000 people could be accommodated within the Borough boundary by 1981, making a total of 50,000 people, that is over and above the present population of Southend which would produce a figure of something like 250,000. Are you aware of any other official proposals? — No, all right, let me rephrase that particular item. It is undoubtedly the situation which I trust you will not disagree with that it has been suggest many times during this inquiry that 600,000 people is the likely figure of people who will need to be housed within close proximity to the existing strip of development which is the County Borough.

2720 You are not seriously suggesting, are you, that the only strip of development which will be imported by this airport is within the boundaries of this county borough? — No, I am not saying that at all except that was a mistake of drafting on that particular page. I would accept that.

2721 Very well, you accept it is an error, we will leave it at that. The other matter I want to ask you about is this, page 3, paragraph 6. Are you suggesting that the motion which was passed by the Borough Council and as set out in Alderman Harris's evidence was not properly debated? — I am suggesting just that and a lot more besides, here.

2722 I am right in thinking, am I not, that there were two amendments or two motions on that particular motion, one was to refer it back and one was to alter the wording to the wording that you have put forward, namely they would not object? You and your fellow councillor, Councillor Herbert proposed the amendment? — Yes.

2723 And the amendment was defeated? — Yes.

2724 Do you know what the voting figures were? — Yes. There were two in favour of it and every other member of the Council against.

2725 There was then a subsequent motion to refer the motion back to Committee, is that right? — Yes.

2726 Again the voting was two in favour and everybody else against? — Quite so, yes.

2727 The two who voted to refer it back to the Committee weren't you or Councillor Herbert? — Quite so.

2728 Did you vote in favour of the motion unamended? — Yes.

Inspector I have no questions.

MR. D. THORTON called
(*Thames Aeroport Group**)

Mr. *Thorton* I am David Thornton. Firstly, may I apologise for the lateness of the submission of our proof. I have read, of course, of the uneasy feelings of certain representatives here about late submissions.

Inspector I am also uneasy. I am more than uneasy about it. The date of submission of this material was April 18th, the due date of submission. This material came in almost exactly one month later and it really is a little difficult to put a submission of this complexity before a hearing and expect any constructive comment upon it. What are the views of other parties on this?

Mr. *Frank* I share your view about it. It is of course much too late for me to get my own experts to consider this at all and I am not intending to ask any questions about it. I think if it is going to have any usefulness at all it should go in at Stage III and should be regarded as too late at this stage.

Inspector I was going to suggest this, Mr. Thorton. I think what I have to say goes to a certain extent for other material by site promoters too. I feel that the stage at which site promoters can make their greatest contribution is at Stages III and IV. This I should think should be regarded as a Stage III submission, but if you wish to speak quite briefly on your Group's interests and attitude to the Roskill Commission's proposals then I think that is perfectly fair to do that, but to leave this for subsequent examination at Stage III.

Mr. *Thorton* I think I would accept that, Sir, except on the question of the paper on urbanisation which is the second paper I have submitted, I have with me Mr. Richard Gray a partner of William Holford and it may be useful even at this late stage for him to give you some further explanatory information on the matters of urbanisation that we have raised. I gather he wants briefly to comment upon the map that we have circulated of our proposals which fall very much in line with those of Essex. I am only trying to be helpful, even though we are late.

Inspector Mr. Thornton, I think it is too late to submit this, it really isn't fair to put material of this obvious complexity at the very last moment, so I am going to rule that this cannot be submitted at this late stage to this Stage II hearing but it can be submitted during the course of Stages III and IV.

Mr. *Thornton* Which paper are you referring to?

Inspector This urbanisation paper.

Mr. *Thorton* I obviously accept that ruling, but if there are any questions raised Mr. Gray is here to answer them. If I could comment briefly on the first paper, in the last paragraph I urge that your Commission should seek wider terms of reference. I sat through this morning's hearing and I noted your disapproval on several occasions of people raising questions on docks and so forth, but I feel, Sir . . .

Inspector I was objecting to people going into the question of the merits of docks.

Mr. *Thornton* I accept that, but one is always wary about mentioning docks or industrial development in case we incur your wrath, but I think it is fair to say that

* See also p. 258.

Printed image digitised by the University of Southampton Library Digitisation Unit

the ancillary development which is proposed could have a profound effect upon this area and it does seem to me, in fact, that the Commission may have had this in mind where in paragraph 7* of Mr. Justice Roskill's letter to the President of the Board of Trade he uses two words "not least" in relation to certain town and country planning criteria and it may well be that he thought there were other criteria.

From the evidence that we have submitted and the evidence you have heard so far it is obvious that both the first- and the second-tier planning authorities in this area are not at all adverse to the prospect of a third London airport being on their doorstep and further I would suggest that these authorities will have had in mind the ancillary and complementary developments that my company and other site promoters have put forward. I will not go any further into these details except to analyse the conclusions that my company have reached, Sir, that if your Commission is to reach a just conclusion—and I mean just from the point of view of local inhabitants—then they must take into consideration the strong possibility that if this airport is in fact constructed on the Maplin Sands the case for the ancillary developments will become very strong indeed. May I comment briefly on the question of cost benefit analysis, Sir?

Inspector I am not sure that you can because cost benefit analysis is the very subject of Stage III. We are back here again to a local hearing about local implications.

Mr. *Thornton* The one point I wanted to mention was the point of local implication, not about the infrastructure costs or things like that, but representations have already been made to you, Sir, that any of the costs of this development or the airport should not fall on the ratepayers but the ratepayers will have in mind that the additional housing required could fall as a cost to them, in fact it is inevitable that some of the costs are bound to fall on the ratepayers and expanding population will require expanding services—schools, roads, libraries, local health and welfare amenities, and at the same time, of course, the incoming residents will of course be ratepayers then and they would contribute to some of this cost. But there is another point that perhaps may have escaped the Commission so far but is one of very strong local implication and that is the sort of housing that might be provided to house the incoming workers. I think it is fairly common ground amongst the pro-Foulness group that a new town in the form of a number of link settlements will be necessary to house the incoming population. If these houses are to be provided by local authorities then recent experience of local authority house building costs could well bring charges to the local ratepayers and I ask the Commission to consider the possibility that here is a chance for the first private enterprise town in this country. In this way the local authorities who have been objecting to the possible increase in rates, etc., would not be bearing any additional pressures on their local housing revenue accounts.

Inspector Forgive me for one moment. If they don't want to build Council houses I assume they are not obliged to and then they will surely encourage private housing. This is a matter for the local authorities themselves.

Mr. *Thornton* I am pointing out that the ratepayers are worried, and in a development of this size the government might suggest a Development Corporation, for example. I am trying to pose the other end. Of course this would cut out any extra pressures on the housing revenue accounts within such a new town. Even as a commercial enterprise my company would introduce attractive amenities not only for the local new population but for the existing population. I say this merely to emphasise the fact that at stages throughout this Inquiry there has been some aspersions cast upon the characters of commercial enterprises and I would want the local population to be aware of the fact that we are planning always conscious of human needs and we are not the sort of money grabbers that people do tend to make us out to be. I don't wish to add any more, but if anyone has any questions.

Cross-examined by Mr. Knowles (Rochford Rural District Council)

2729 Mr. Thornton, you are speaking on behalf of Thames Aeroport? — Yes.

2730 You have not told us yet who the group are. Would you mind telling us? — The promoters of the group include the following companies: Holland & Hannen & Cubits Ltd., London Dredging Co. Ltd., Limmer & Trinidad Co. Ltd., C. A. Blackwell (Contracts) Ltd., West's Piling & Construction Co. Ltd., General Asphalte Co. Ltd., Felnex Central Properties Ltd., Slough Estates Ltd., and there is in addition another eight companies, but I can't announce them today because we are awaiting to sign a formal agreement. In addition to this we have as our consultants William Holford & Partners, in association with Michael Twigg, Brown & Partners, consulting architects; Scott Wilson, Kirkpatrick & Partners, in association with Scott White & Hookins, as our engineer consultants, and Professor John Parry Lewis, of Manchester University, as our urban economist, and we do have other consultants in various other fields.

2731 You say in paragraph 1 of your proof that they are being formed into a limited liability company—has that been formed? — The papers are with the Board of Trade, and we await the Company Registration Certificate.

2732 All these people at present are joined together merely by some form of agreement. — Yes.

2733 Are you able to tell us the purpose of the group? — The purpose of the group is quite simply to plan and to achieve as much development as possible on

* *Short List of Sites and Site Information for Stage II Local Hearings 1. Foulness (off-shore).* (HMSO; 6s.) Reproduced at p. xv.

Printed image digitised by the University of Southampton Library Digitisation Unit

the Foulness peninsula in accordance with the outline proposals listed in paragraph 3.1-3.7.

2734 What do you mean by the Foulness peninsula? — The area bounded by the River Crouch to the north, the Thames to the south, and roughly Rayleigh in the west.

Cross-examined by Mr. Smith

2735 I am rather surprised, Mr. Thornton, as the Inspector was, on the lateness of your evidence, and your urbanisation suggestions, particularly as I find that in the *Estates Times* for the 3rd April you published the plans there of your scheme which is radically different from the proposal that you now submit.

Inspector I have ruled this is out of order for this hearing. I don't think there is much point in pursuing it.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2736 Obviously we have had no time to discuss this at all, and I am sure there are many points of detail which we would wish to challenge, and one must reserve one's position on that challenge to a later stage. We have not even got the phalanx of expertise behind us to go through this. Just one question. I don't know if your investigations have got to this stage yet, but what figure could you put on the possible costs of development you have in mind for the airport? — I am in danger of being ruled out of order because our total proposals go far beyond the third London airport, but we have estimated so far that the total cost of investment required for our total proposals would be in the order of £1,800 million.

2737 You would not be in a position to say what proportion of that would in fact be attributable to an airport and the ancillary development from it? — I would not; I would not commit myself at this stage, without the benefit of our own experts, but these figures should be available to the Commission by the 31st July.

2738 Your interest is in the airport and not the dock complex. — Exactly the opposite, I would think; our interest is in the total concept of our proposals because we believe it is nonsense to plan an isolated airfield in this area unless one deliberately planned the ancillary developments and the proper housing and amenities that would be required to giving a complete and a sociable community.

2739 Your ancillary development does not include the dock complex. — It does.

2740 It does? — Yes.

2741 Really on the same lines as the Thames Development Company? — I think so, roughly, but from what I heard this morning I would not say our proposals were based exclusively on reclaimed land.

2742 It would not be. In spite of the fact that reclaimed land does not figure predominantly in your development you still think in terms of £1,800 million? — Yes.

2743 *Inspector* Thank you. You will be in touch with the Commission at Stage III. — I take it our submissions on urbanisation now stand as they have been submitted to Stage III.

2744 *Inspector* Yes, but I would think a letter indicating that would be appropriate. — Yes.

Inspector Mr. Clark?

MR. B. CLARK* called

(*Bernard Clark & Partners*)

Inspector We have document 49 as your submission. Do you wish to add in any way to it, Mr. Clark?

Mr. *Clark* I would like to emphasise, Mr. Chairman, some of the points which we have presented in our various documents, because we have watched the discussions rather closely, and it does seem that there is a lot of misunderstanding with regard to the effect that these proposals will have on Southend, and that is why we prepared the scale model here, with a scale of miles, in an endeavour to indicate the noise effect in relation to something which the ordinary man understands.

I must say, of course, we're the instigators in this thing, so if anybody is to blame for us all being here it is us, but at the same time I would like to say that although it has been taken up by a lot of other people we are confident that this is the right place for such a project, and I would like with your permission, Mr. Inspector, just to describe on this model, if I may, just the proximity of the flight paths, and its scale so that those people here can get some sort of real idea of the magnitude. This one thing in which I feel difficulty; I have lectured over one hundred times, in all sorts of areas, and I find it most difficult to get over the scale of the project. It is very vast. If I may proceed, Sir?

Inspector Yes.

Mr. *Clark* Studying the Thames Estuary for something like 25 years, certainly not with an idea of an airport, but with reclamation comparable with that of Europoort, and seeing the impending change which industry has had, we have a great deal of knowledge of this estuary, and when the Stansted affair came along it seemed quite obvious this was the time to put an airport out in an area of reclaimed land; this started the ball rolling, and later in that same year, that is 1967, when the country ran into economic difficulties, we took opportunity then to present the bigger part of our brain child, if you like, and this is the combined dock and airport (*indicating model*).

Knowing, and having worked on airports for a long time we do know the vast areas which become sterile once an airport is in fact established. Now, in order to make people happy with the position, we propose for this airport (and I do appreciate Sir, that in your terms of reference you have not been able to consider the

* See also p. 259.

Printed image digitised by the University of Southampton Library Digitisation Unit

docks), we have shown these docks for the airport, and the four runways in the position we feel they ought to be. As an example, this scale is in miles, and from Southend, here, you will see it measures 15 miles, from Southend to the runways. That is just a little more than London airport is from Westminster. Equally, the distance to the Kent coast is very great indeed—14 miles from the end of the runway to the northern point of the Kent coast. Even to this point here, on Foulness, we are dealing with a distance from the nearest runway of 4 miles.

I don't suppose you will see it, but on this model there is—you will be able to see it later, it is to scale—there is a 747 aircraft at a height of 8,000 ft, 8 miles from the point of the runway, and it gives one an idea of just what magnitude we are really talking about, because I have during many of my lectures been asked some rather stringent questions about the enormous aircraft flying over the roof-tops of Southend and the like. Equally so, the poor population and such like of this area, but it is the scale which I found almost impossible to get over to people, and this is only reasonable. I suppose it would be impossible to get over to them the fact that even these great jumbo aircraft of the future will not worry them in the least because they are so far.

If we put the noise pattern, the NNI pattern on the map, and I must say that I feel that pattern is rather too long, it extends nearly 40 miles, the NNI pattern we find here only comes down to here. (*Indicating on the model*) If the airport is put in this position then noise and danger will be completely removed from the mainland. In fact, people round this area will hardly be conscious of aircraft flying over them. They certainly will not be flying at any lower altitude than they would be even if they were coming into London. This is really why we prepared this scale. The contours have been increased because it is so flat—it is 2½ miles to the inch, and the deep water we have is ten fathoms, which is extremely shallow. In this way we hope people can have a look at it, and that they will be a little happier with what is in fact going on. We have heard so much about the disruption that goes on, but as I say, it is so far away from the mainland it will have very little effect.

That area is 30,000 acres, 50 square miles, and most of it is on land which is uncovered at low water, and the effect on the tidal change is extremely small indeed. In fact it only amounts to a minute part, and it is only *here* where there is deeper water, and by closing in the deeper channels here we can benefit shipping in this area. The channel which you have probably seen, in our submission,* would be dredged out from here. This dredging would be such that the water level is almost insignificant.

The route for the motorway is varied, of course, but it is simple to choose a sensible route from here in a way which need not worry people either residentially or the other amenities which I know, of course, a lot of people here do enjoy.

Economics, this may be a little bit out of this field, but the cost of land reclamation is so small relative to the input of capital which should come like Europoort from industry itself. All the government does there is to provide the land reclamation; they just pump the sand and invite the big companies to come in and then bring in their own architects and engineers to do the work for their own things, and there is no loading on the taxpayer at all, and the income from such land can vary between £5,000 and £10,000 per acre per annum. So one can see, we were talking of a total area of 30,000 acres, that from that you will get something like 20,000 acres . . .

Inspector We are on local implications here.

Mr. *Clark* Yes, I agree, Mr. Inspector, but I feel that somehow, with due respect, the people of Southend are virtually sitting on a veritable gold mine. If you prefer me to stop on this point I am quite willing and will gladly do so, but it is the very local interests which they are concerned with. I would do the same thing if I were here. On the other hand, if the economic advantage and prosperity of the country was going to be so much more enhanced by this, and it is enormous, then Southend surely is very much interested, or should be, because they can contribute in the greatest manner possible at the present time on the eastern seaboard, because it is so close to Europoort. These waterways are so massive—I know we are not talking about waterways . . .

Inspector We are not.

Mr. *Clark* If you prefer to keep me away from that—But, if we do not want to do this now I would still like to see the airport will be there, with possibly the reclamation land across here. It means we are calling on a little more land, but it is not very extensive because here is the low-water line, and it would be far better to put that airport out in that position so that in the future any big development here will be completely free of the flight paths; the take-off and landing would be over the sea, and the approach lines over the sea.

In the last 12 months there have been seven major jet air crashes, and an extremely few people have been injured when they have been in the sea, whereas in fact over land it is catastrophic. This is the pattern which is being adopted with many of the Continental airports. I have the Dutch plan, to be called plan 2,000—three massive airports are being planned in the same way. It does enable one to have very close links with the sea, rail and road, something which no inland port can possibly have; it can certainly have a link with the rail and road, but it can't have a link with the sea, and the sea link is vital because our coastal shipping traffic is dropping off. Long-haul freight traffic which I think is possibly the biggest growing factor of this airport—it is essential that that freight can thus be redeposited in the cheapest possible manner and coastal traffic is extremely cheap. This cannot apply to anywhere further inland.

* Site Submission. Available for inspection at the offices of Bernard Clark & Partners, 39 Victoria St, London SW1.

Printed image digitised by the University of Southampton Library Digitisation Unit

There are many questions, of course, on things like silt and such like, but in the Thames Estuary the maximum flow current never exceeds two knots. The only material that moves is silt. The sand banks have in fact remained almost identical for the last 150 years, other than a few small deepenings and cuttings, like North and South Edinburgh Channels, Barrow Deep, and Black Deep, and Long John's Channel, by dredging, but generally these sand banks have remained for 150 years almost identical, because there is not sufficient current to worry us, and there is certainly no problem when it comes to reclaiming an area of land like this in an estuary of this magnitude.

I want to say that there was a question recently raised of a ship here, which has got some explosives in it, but as you can see, if the airport is here, the flight paths are well clear of it.

Another thing about an airport in this position is it does enable the modern aircraft to climb at maximum power and get to a great height very quickly, whereas on any inland airport it can only climb at maximum power for a short distance then it has to flatten out, and drop power because of the noise. Over the sea, the distance is so great that the noise is not affected, and it can climb and be away. Even here, that scale is 8,000 ft, and 8 miles off the runway, and you can see how relatively insignificant this aircraft would be when it starts coming over here, because these modern machines climb very rapidly all the time, and it will be 20,000 ft when they are over the mainland.

With regard to this NNI factor, I think this does want looking at again, because it is nearly 40 miles long; and, in comparison with London's Heathrow, it means that where I live, at Sanderstead, I should be in the 50 NNI figure; and I cannot remember the last time that I heard an aircraft going over me. We have taken records of aircraft approaching London airport—it is not very far from London airport, and they are not very troublesome. Certainly, as you get further in, they are troublesome, but we are well away from the mainland if we put the airport here. I know that on one of your submissions, Sir, the runways were put here—this I fully appreciate, because you were not able to consider the docks. But I would like to see this airport put in this position, or further out if possible. This question of the docks will arise at a later stage. I have no facts as to who will administer this thing—we know of the Port of London Authority, who are a perfectly able body, the BAA—this sort of thing. So it is just a question of accepting the principle of it, and letting private enterprise put the money in—and not load the taxpayer, other than the short-term loan in reclamation of the same.

If I may go across, Sir . . . (*moving to further set of plans*) we have some patterns here . . . if we put the sound patterns on these runways, you find they reach a great distance. This is nearly 40 miles, but if one puts them over London airport, it is something that we do understand—most of us know what London airport sounds like—these extremities reach from Bromley at one end to nearly Maidenhead at the other. So I think there is something a little wrong there.

Inspector This can be looked at. One is a four-runway airport, and the other a two-runway—but this is something which can be looked at at Stages III and IV.

Mr. *Clark* Well, I shall leave that. But of course this does apply to all the airports.

Cross-examined by Mr. Wood (Paglesham Parish Council)

2745 Some of the basic points are so basic, I will not take up time in asking them, Sir! How far would your site be, on which you have put your airport, from the coastline? About six, seven, miles? — Yes.

Inspector It was 4 miles that you quoted.

Mr. *Clark* It was more than that, Sir—yes, I am sorry. Four miles to the nearest runway, and six to the furthest.

2746 Mr. *Wood* Thank you. I noticed that you also have—is that on the top an east-west runway? — That is purely an emergency runway, and not a service runway; because with modern aircraft—and we are dealing with these at the moment, 747 and Galaxy aircraft—they are so big that if they do radio to the air traffic that they are in trouble on their hydraulics, then we feel that there should be an emergency landing runway so that otherwise, if they came down a main runway, there would be complete baulking of that runway.

2747 Would that be an essential feature of your plan? — Not essential—purely a safety factor, which would enable aircraft to use that in an emergency, and so prevent the possibility of one of the main runways being baulked. Because these are very big machines, and may not be moved very easily if the undercarriage collapsed.

2748 As your plan is the most adventurous one we have seen, have you yet got to the extent of costing it at all? — Yes, we have in fact. We have studied this a very long time. We have carried out seismatic soundings of the water here; we have the complete depth; we know the fields we need, heavy protection; fortunately, in this part of England we have a delta actually—England of course extends right out here and here—(*indicating*) and we are protected much more than the westward coast of Europe, such as Rotterdam and Dunkirk.

2749 Have you reached the stage of a figure? — A cost figure, you mean?

2750 Yes, a cost figure? — A cost figure—for the reclamation, of the land—about one hundred million.

2751 For the reclamation of the whole land? — Yes.

2752 That is before any construction, of course—this is just purely reclamation? — Yes; but bearing in mind that the construction is done entirely by the people who come in.

2753 This is quite irrelevant!—I am talking about actual figures. So you would say, one hundred million for the actual reclamation, and then you would start doing the building? — Yes.

Printed image digitised by the University of Southampton Library Digitisation Unit

2754 And just one other point—I am sure you are aware that the plans so far, except for the Thames Estuary Development Company, which were a minor modification from the others, would suggest that the airport should be sited much closer to the mainland than you have envisaged. — That they should be? Or that it is intended to be?

2755 No—you have seen the Roskill Commission plans? — Yes.

2756 And also the Essex County Council plans, I am sure? — Yes.

2757 They talked about minor re-alignments of runways, but the actual site was virtually adjacent to the coastline. — Yes. In fact, I would not like to see that here.

2758 You would have no major objections to them going there? — Well—it would rule out the possibility of building a port associated industry, because you would have these large aircraft—the 747 is a 370 tons, with 150 tons of fuel—you would have those sort of things flying over industrial areas, which are likely to be chemical plants, things of that sort. They have to be away. If they have it down here (*indicating*), then the people of Shenley will suffer, because it is so much closer.

2759 Where do you envisage the urbanisation—an essential concomitant of this plan—going? — There have been all sorts of figures quoted on this, but we do know, and I think Essex County Council will agree here, that there has been a paper out recently which indicates the potential employment figures, Southend, as 45,000, jobs available. There are several other areas around here which could quite well be employed here, rather than commute back to London, which seems rather a stupid thing to do. It is a waste of time. This part of Essex is in fact relatively undeveloped, and I cannot see these massive figures of population and even new towns necessary to go in to support a project. The airport is going to be more mechanised than London airport, if we establish a dock associated industry here. Here again, a very low intensity will be needed per acre, less than the ordinary manufacturing industry. In Rotterdam, you may hardly see a man—an enormous amount of plant and equipment, but hardly a man in sight. The income is enormous—the prosperity from it is astronomical.

2760 At one of your lectures, it was in fact the Council for the Preservation of Rural England, chiefly dealing with those residents in Chelmsford, to the north, there was a communication system that you had shown on one of your plans from the north-west side of the development through the Dengie Hundred to the north of the Crouch. Would you regard that as being a necessary part of any development? — Do you mean, coming down here? (*indicating on map*)

2761 No—it crossed the Crouch to the north, went over to the north side of the Crouch. — No—you must have misunderstood me.

2762 I did not; but I wondered whether that was in fact an essential part of your plan. — No. There is one thing we are interested in, and that is the reclamation of 15,000 acres of land for agricultural purposes.

2763 Not industrial purposes? — Agricultural.

2764 But . . .

Inspector But far outside this hearing.

Mr. *Wood* Very true, Sir. Thank you.

Cross-examined by Mr. Wilks (The Sheppey Group)

2765 In your proof, and in your little lecture, you mentioned that this enormous development in the Thames would not affect the regime of the river. Have you model tested this theory of yours? — Model testing is one of those things that a lot of people run to, and you can only use a model providing you have a yardstick to measure it by. Most of the big Dutch companies I have done work for put it into full scale. This is what was done at Europoort—the Rotterdam Municipality put forward a million pounds to put in a full-scale cutting of the whole channel.

2766 I have seen recently on British television a model of the whole Europoort set-up, by the Dutch, which they were working on for several years. — Yes—this is a very different thing. If you are talking about the complex of the delta system—it is a very complex system.

2767 So they do build a model? — For a different purpose. Some are being taken into fresh water, some are inland lakes, for reclamation . . .

2768 But for their port scheme they have a model that shows the flow of the currents . . . — Only inland . . .

2769 And all the Europoort system. — No, not the Europoort. Not the sea-side of Europoort. Inland, yes; but the Europoort was given full size to see the effect, and I was recently . . .

2770 I saw it very recently on BBC TV—a model of the Europoort being tested by the Dutch, and I believe they spent about ten years testing this. — With due respect—I organised that programme for the BBC.

Inspector With due respect—if it is relevant, let us chase it at Stage III.

2771 Mr. *Wilks* The only point I am trying to make is that they took about 16 years to do this, and we have to do this in about four years. — No—they have done it in 16 years; their tonnage now is 200 million—which is the largest in Europe—and by 15 years they reckon to top the 600 million tons, and they can take in 80-ft draft ships.

Inspector But it is very far away from local airport issues.

Mr. *Wilks* Well—we have been excluded from discussing the port, but it seems to be a brainwashing treatment, that every plan we see has a port tacked on.

Inspector I cannot stop this—unfortunately.

Mr. *Wilks* I appreciate, Sir, that you have done your best to stop it.

Mr. *Clark* That is where we get the sand from, Sir!

Printed image digitised by the University of Southampton Library Digitisation Unit

Cross-examined by Mr. Thornton (Thames Aeroport Group)

2772 Mr. Clark said that one could not build associated industry south of the airport, unless the runways are in the actual position he has on his plan. I wonder what sort of proof he can give for that statement? — Well—simply by the flight paths.

2773 It is only the flight paths? — Yes, the flight paths.

2774 But apart from the flight paths, one could have any other development, partly on reclaimed land and partly on the actual land at the moment? — Well—I would not like to . . .

2775 It is possible? — It is possible.

2776 So your statement that you could not build associated industry is not quite accurate. — We could, if we wanted to make a bit of a botch of it.

2777 Another question: Mr. Clark does not seem to think that there is a need for a new town in this area because of this development. I had in mind something of the type that Essex County Council have mentioned, and so have we—and that is a series of linked settlements. I wonder on what you have based this, because there have been various assumptions of growth in the area, up to half a million—if you do not house them in linked settlements or one new town, how are they to be housed? — Well, there is a booklet which has just come out which gives the essential figures of all the South-East part—it is a government booklet,* it came out a couple of weeks ago, I think, on employment and potentials. I know they find difficulty in finding employment in Essex—I know that the proportion of people unemployed in that area is low, but many others are leaving that area because of the lack of facilities and lack of efficiency, and thus this airport, with its industrial development, would bring back the efficiency to the Thames—it goes back to my pushing a barge years ago . . .

2778 But this is different from the growth of the area. — Well, no, because the Thames is decaying, and if we could do something about it . . .

2779 I was talking about the development in the Foulness peninsula, to house the people attracted by the airport and the development—how would these people be housed? — We understand from various local authorities that there is already quite a big potential in these existing areas, particularly south of Basildon, quite a lot of people in the next ten years . . .

2780 That is only half of the development. — I do not know . . .

2781 But the cost of land reclamation—you have estimated that 100 million would be the cost of reclamation. You did not mention the acreage that would be reclaimed. — Thirty thousand acres.

2782 How much is that per acre? Do you know the value of agricultural land in this area? — We are three and a half thousand an acre on average . . .

2783 I am sorry—I changed the question as you did not seem to have the answer at the tip of your fingers—do you know the value of agricultural land? — I doubt if anyone does, because to begin with the War Office own 20,000 acres . . .

2784 Yes—but agricultural land?

2785 *Inspector* Do you mean market value?

2786 Mr. *Thornton* Yes.

Inspector Because there is quite a bit of dispute on the value of agricultural land.

2787 Mr. *Thornton* Yes, but there is a standard market value. — I doubt whether one could put a value on this area, because I fly over this area very often and believe me, to put a value on that land—you see all those muddy creeks and the difficulty of farming and the communications . . .

2788 You did mention the flight paths from your alignment of runways, and, if I could refer to it, the question of the *Richard Montgomery*—I think it has been raised before. Mr. Clark said that the flight paths on his plan would mean that the noise would be clear of the *Richard Montgomery*—do you know the decibels that would be necessary to detonate the explosives? — You could do it by this method, because vibrations . . .

2789 I am just trying to establish it. — The biggest danger is from ships' propellers which are passing it, not aircraft.

2790 The final point is on the question of employment. You said I think that you didn't see anybody when you were at Rotterdam. Do you happen to know the labour employed at Europoort? — I know Europoort but I couldn't get a figure, I understand it is so vast, it is 30 kilometres long.

2791 You said there were not many people working there. — Relative per acre.

2792 I was just wondering if you had a figure. — Heinekens Brewery . . .

Inspector It is a simple question, if you haven't got an answer it doesn't matter. Any other questions? Thank you, Mr. Clark. That concludes my list of persons who wish to be heard. I did indicate on Day 2 that it would be in order for Essex to appear again to deal with new matters raised by various proofs or late proofs submitted during the Inquiry. Mr. Frank?

Mr. *Frank* I shall not keep the Inquiry long. The first matter I would like to mention is the documents* which were put in by the Action Committee for Foulness in which they made various criticisms of the evidence which had been given by my witnesses which had not been put to them in cross-examination. Sir, at one time I thought I would recall those witnesses and put the points to them at the Inquiry, but on reflection I

* *London's New Towns: a study of self-contained and balanced communities* by Ray Thomas. Political and Economic Planning Broadsheet 510. 1969, 10s.

* p. 140

Printed image digitised by the University of Southampton Library Digitisation Unit

decided this was not the best form and that they should make their observations in writing and they should be distributed. I understand that has been done and if the Action Committee of Foulness are not satisfied then of course they will pursue the matter at Stage III and Stage V.

Inspector I am sure this is by the far the most sensible course of action.

Mr. *Frank* Sir, the next matter that I wanted to deal with is Mr. Orchard's objection and the objection that other have raised notwithstanding my opening address at this Inquiry. In order that there can be no doubt as to the County Council's position—I thought it had been made clear more than once—can I repeat it. This time I propose with your permission to repeat it as it is put by those instructing me and so that there may be no mistake I will read what has been put to me about it because we have had this unfortunate attitude of Mr. Orchard which seems to be shared to a greater or lesser extent by some others. These are my instructions: "The County Council are concerned in this matter as the local planning authority and as the local authority for many of the services (e.g. education) in the area. The County Council has from the very beginning of the quest for a third London airport put forward positive suggestions as to where the airport could possibly be sited. As realists and on professional advice they recognised that in fact the nation needs a third airport serving the London area. It would, of course, have been open to them simply to say 'No' to every site in Essex and leave it at that. This is apparently what Mr. Orchard would have liked us to do. The County Council, however, considered that if a national need is made out then as a planning authority they should be constructive in finding a solution to that need. In short, the County Council as planning authority put forward Foulness as a sensible planning solution without telling the Commission what the final solution must be." I hope that has made it perfectly clear.

I do not propose to go into the question of whether I am a promoter or whether I am not a promoter or whatever I may be safe to say this, that if I were a promoter in the accepted sense of the word the Inquiry would not have really gone as it has done. A promoter is one who comes forward and seeks to achieve an end for himself as one of the site operators, they may go to Parliament or some other forum in order to secure for one of the groups you have heard today the right to reclaim the Maplin Sands and exploit them. In that case they are promoters. I have done my best at this Inquiry to be objective and have done nothing I hope to stand in the way of the free expression of opinions and apprehensions of other people, which I can well understand. Not even have I objected to the mutual so-called cross-examination of our friends at the back here, Mr. Wood and Mr. Smith. Of course, they were not cross-examining one another at all, all they were doing was using one another as their own witnesses. I think at this Inquiry that is fair enough, although I doubt whether they will be allowed to do it when we come to Stage V. Let me say this: we have had Mr. Smith and Mr. Wood and we have had the greatest good humour and if they felt any hostility to myself or the Essex County Council they have not shown it.

I said at the beginning that if one sites an airport anywhere someone is going to suffer and one is not unsympathetic to the respective views of those who suffer apprehension even if they are founded on falsities without true investigation of the facts. They are well understandable and it is right that the greatest possible attention should be given to the views of those who are most closely to be affected.

Let me say this, Sir, that if this Inquiry has done nothing else it has shown that there is a substantial and responsible number of people who object to Foulness as the third London airport. It is not just one or two cranks but quite a number of people who object, and when I say a substantial number of people I do not use that word comparatively, it is not directed to Mr. Wood, but I mean a sufficient number of people so that the Commission can say: "Fair enough, there is a case against Foulness". There are parish councils and a number of responsible individuals, there is a strongly felt objection to Foulness. It is no business really of mine to say this, I only do it to be helpful. The Chairman of the Commission has made suggestions that those who hold a common view should make a common cause. As it is at this Inquiry we have had quite a number of organisations and individuals who really have all got the same cause, the same objection, to Foulness, and the Chairman of the Commission, not me, has suggested that those bodies should really get together and have a joint representation. That is perhaps worthwhile throwing out for the ladies and gentlemen to think about.

As you said in your opening remarks it may well be that cross-examination should be mainly directed towards the finding rather than the resolving of the issue. I do not think it is shown that we have resolved a great deal at this Inquiry, I am not sure that very much new has come forward of which the Commission were not already aware and which has not been the subject of investigation. That there are matters that require further investigation there can be no doubt and the investigation is going on.

I must deal with the case that was put forward on behalf of the cockle fishermen and others. I was not here but I have read the transcript and one was a bit upset by their advocate. I do not know whether he had thought out the terms he was using or not or whether it was entirely inexperience, but he was grossly offensive in his terms to people who were not able to defend themselves. He referred to the "the Barley Barons of Stansted" in a way which was quite unjustified and of course he did it in a way which was intended to imply that the people of Stansted were people of wealth and standing and influence and because of that Stansted was not on your short list. I thought I dealt with the matter in opening but I say it again with all the emphasis I command that Stansted has not been put on the short list only because factually it does not deserve to be on the short list and it has got nothing whatever to do with barley barons whoever they may be. The Stansted Preservation Society

Printed image digitised by the University of Southampton Library Digitisation Unit

represent a very large number of people of every possible class and status one could conceive, and it was grossly unfair to refer to them in that way, particularly as I in my opening address to you emphasised the fact it did not require an advocate on behalf of the cockle fishermen to say this, I have already said it and made it quite clear that one of the matters that the Commission would take into account against Foulness was the fact that these people would lose their livelihood in consequence of the airport going there.

That leads to another matter which has been raised on a number of occasions, that is compensation. Now, Sir, the law relating to compensation is as it has been prescribed by Parliament and rightly or wrongly it is not something which the Commission can deal with at all, it would clearly be outside their terms of reference, but nevertheless the people of Foulness Island, the tenants there, the cockle fishers and the other people whose livelihood is in peril, are going to be subjected to such noise disturbance that life will become intolerable and ought to have something done about them. This is where the Members of Parliament come in. They cannot with great respect be of much assistance at these inquiries, but what they can do, and what they can do for the cockle fishers and the tenants on Foulness Island, is to persuade Parliament to make some provision for securing proper compensation for the people who are going to lose their livelihood or be intolerably disturbed. For what it is worth I make this suggestion: in the past we know, for example, that Parliament provided for those who suffered war damage to be compensated. We know that when there has been a national disaster provision has been made partly by voluntary funds, partly by public funds, to compensate those who suffer and it may be that one way of dealing with this matter would be the establishment of a Commission with sufficient public funds whose job it will be to see that those who suffer are properly compensated. I hope that Parish Councils, and the other organisations who have expressed concern in this matter will press their Members of Parliament to do something about it now, and not wait for any decision, because wherever the airport goes there are people who are going to suffer, and suffer seriously one way or another.

Can I say something now about NNIs. There has been a suspicion cast on the NNI limits used by the Commission and those used by the Essex County Council. There are those who think that we dare not go any lower. I would remind you in the maps to the Wilson Committee's report* they went down merely as low as the 50 contour. The government contours at Stansted were originally 50, although after they realigned the runway they showed 40 contours. We have gone down a bit lower than that. There must be some limit to this. One would think that we ought to have some firmer guidance as soon as it is possible from the Commission. It may be the Commission are awaiting the results of the more recent social survey, and I am sure it would be of assistance to everyone concerned if the results of that survey are made public as a matter of urgency, because until they are or until we have some further guidance on this we are going to go on with this difficulty and dispute—where do we draw the line? You have had, I don't know how many NNI maps before you at this Inquiry, and it would be helpful if we could get something more definite, at any rate, before we get to Stage V or preferably earlier than that.

Inspector I am sure we shall try.

Mr. *Frank* I am sure you will, Sir.

Now, Sir, under Movement of the Runways, which Southend Borough Council have advocated, and others, I can only say this: we have taken the reclaimed site as it was proposed by the Commission. Of course, as we can see it it would only at this stage make matters much more complicated if one had half a dozen sites or even more than one different site. Our attitude to it, that is the Essex County Council's attitude towards the movement of the runways is solely one of economics. If a movement to the north-east can be achieved without imposing too great a cost penalty then the County Council would thoroughly support it. Certainly we have no objection to it in principle, and we are very much in favour of it, subject, I say, to the cost benefit aspect of the matter, and I think really, too, that was Mr. Lloyd Jones's view as he expressed it when giving his evidence.* So that, I suppose, is essentially a Stage III matter when one comes to cost benefit in this, particularly one would have to see what additional cost would be involved, and to see then whether it could not be done. Clearly one has got to have regard to the cost all along the line, and every item must be examined in the light of overall cost benefit. I suggest this has got be a matter for investigation, and we will do all we can to help on it. I am bound to say my personal conclusion on it is that the Commission or anybody else are going to be very hard put to reach any finality in this matter for this reason. We have certainly got a mass of evidence on it, but whatever you conclude, even if on the bird strike hazard, the Commission conclude entirely against, the County Council, you would still be left with, as it were, one half only of your parameter, because you would not know unless there is some phrase to define it, what the safety factor is as a result of taking-off over the sea and landing over the sea, you would have to set off against that hazard. You will want obviously to explore those matters, and we will do our best to help. My view is that any conclusion is going to be difficult to arrive at.

I do not think, Sir, that there is any other matter I need address you on, or which I want to go into because most of the issues which the Commission have now to consider themselves have been repeated many times, and it would only be tedious for me to go through them in any way again.

I will end, Sir, by thanking you for your patience and your good humour in the context of this Inquiry, and also the Borough Council for the superb accommodation they have given us and all they have done to ensure our comfort.

* Cmnd. 2056 (HMSO; 19s. 6d.)

* p. 82.

Printed image digitised by the University of Southampton Library Digitisation Unit

Inspector Thank you. Before closing the hearing I would also wish to express our great appreciation to the Southend Borough Council both for the use of the building and its facilities, and also for the courtesy of the staff who have assisted us. This really has been a home-from-home for the Commission, this particular venue has anyway, and for my own part I am also very grateful for the reasonable way in which representations have been made. We have had our light-hearted moments, but we realise very much all the implications of a third London airport. We shall consider them very carefully in the stages yet to come.

Thank you very much.

Mr. *Wood* It would be quite churlish if I were to allow the Inquiry to be closed without thanking you personally, Sir, not only on my own behalf, but I am sure on behalf of every objector. We have had more than a fair hearing. I would like to thank you and also our friends from Essex who have been so tolerant, in fact, but this Inquiry has been most productive in every way. It has been a delightful experience. We thank you, Sir, and the other members of your Commission.

Inspector Thank you, Mr. Wood.

Mr. *Wright* On behalf of the Southend Borough Corporation, Sir, and those instructing me thank you and appreciate your kind remarks and those of Mr. Frank about the facilities.

Inspector The Inquiry is now closed.

(*The Inquiry was then closed*)

Printed image digitised by the University of Southampton Library Digitisation Unit

List of Appearances

Mr. P. Arnold appeared for Foulness Residents' Association.

Mr. E. A. Austerberry appeared on behalf of Tendring Rural District Council.

Mr. H. D. R. Bacon appeared on behalf of the Basildon Development Corporation.

Miss W. M. Barron appeared on her own behalf.

Mr. Hugh Bennett appeared on behalf of the Leigh-on-Sea Shellfish Merchants' Association and the Leigh-on-Sea Shallow Fish Merchants' association.

Mr. R. M. Blackall appeared on behalf of St. Clement's Ward Municipal Electors' Association.

Mr. R. Body, MP appeared on behalf of the Council for the Preservation of Rural England.

Mrs. Margaret Boston and **Mr. Wilks** appeared on behalf of the Sheppey Group, Kent.

Mr. F. Bowker appeared on behalf of the Witham Council.

Mr. Bernard Braine appeared as Member of Parliament for South-East Essex.

Mr. John H. Bryant appeared on his own behalf.

Mr. D. W. Clarke appeared on behalf of the Pier Ward Ratepayers' Association.

Mr. P. Conder and **Mr. David Lea** appeared on behalf of the Royal Society for the Protection of Birds.

Mr. J. Connell appeared on behalf of the Noise Abatement Society.

Mr. Henry Ellis appeared on his own behalf.

Mr. G. V. K. Francis appeared on his own behalf.

Mr. Douglas Frank, QC and **Mr. David Keene** appeared on behalf of Essex County Council, the Urban District Councils of Basildon, Canvey Island, Benfleet and Rayleigh, the County Councils of Buckinghamshire, Hertfordshire, Cambridge and the Isle of Ely associated with the case.

Mr. M. A. Gregory appeared on behalf of the Country Landowners' Association.

Mr. M. George appeared on behalf of the Nature Conservancy.

Mr. W. G. Heard appeared on behalf of the Rochford Parish Council.

Mr. J. A. Howard appeared on behalf of the Thames Estuary Development Company.

Mr. Hughes appeared on behalf of the Thames Estuary Development Company.

Mr. Ivor Hughes appeared on behalf of the Port of London Authority.

Mr. David Keene appeared on behalf of Essex County Council, the Urban District Councils of Basildon, Canvey Island, Benfleet and Rayleigh, the County Councils of Buckinghamshire, Herfordshire, Cambridge and the Isle of Ely associated with the case.

Mrs. P. Kelly appeared on behalf of the Shoebury Residents' Association.

Mr. Frank Kemball appeared on behalf of the Royal Burnham Yacht Club.

Mr. M. King appeared on his own behalf.

Mr. G. A. Knowles appeared on behalf of the Rochford Rural District Council and Canewdon Parish Council.

Mr. J. J. Lawrence appeared on behalf of Strood Rural District Council.

Mr. David Lea appeared on behalf of the Royal Society for the Protection of Birds.

Mr. P. H. G. Macey appeared on behalf of the Southend-on-Sea Ratepayers' Association and the Thorpe West Residents' Association.

Mr. Michael Mann, Mr. J. A. Howard and **Mr. Hughes** appeared on behalf of the Thames Estuary Development Company.

Mr. R. A. Mathiesen appeared on behalf of the Southend Chamber of Trade and Industry.

Mr. James Miskin, QC (instructed by Messrs. Coward Chance & Co.), appeared on behalf of the Burnham-on-Crouch Joint Clubs and Burnham-on-Crouch Urban District Council.

Mr. F. O. Morris appeared on behalf of the Working Men's Club and Institute Limited.

Mr. Newbery appeared on his own behalf.

Mr. Michael Ogden, QC and **Mr. Michael Wright** appeared on behalf of the Southend Borough Council.

Mr. Orchard appeared for Ashingdon Borough Council.

Mr. G. W. Porter appeared on his own behalf.

Mr. Purchase appeared on behalf of Bernard L. Clark & Partners.

Prof. J. P. Quilliam appeared on his behalf.

Mr. C. H. Ramsden appeared on behalf of the Clacton Urban District Council.

Mr. K. C. Robertson appeared on behalf of the Borough of Maldon.

Mr. P. Smith appeared on behalf of the University of Kent.

Mr. Peter Smith appeared on behalf of Barling Magna Parish Council.

Mr. R. B. Smith and **Mr. W. G. Heard** appeared on behalf of the Rochford Parish Council.

Mr. G. L. Sturgess appeared on behalf of the Essex River Authority.

Mr. D. Thornton appeared on behalf of the Thames Aeroport Group.

Mr. N. G. Wallace appeared on behalf of the National Farmers' Union.

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr. A. W. V. White appeared on behalf of the Royal Institute of British Architects.

Mr. Martin White appeared on behalf of the Kent County Council.

Mr. C. Whyman appeared on behalf of the City of Rochester.

Mr. Wilks appeared on behalf of the Sheppey Group, Kent.

Mr. F. T. Williams appeared on his own behalf.

Mr. D. C. Wood appeared for Paglesham Parish Council.

Mr. Michael Wright appeared on behalf of the Southend Borough Council.

Printed in England for Her Majesty's Stationery Office
by McCorquodale and Co. Ltd., London

HM 3527 Dd 147335 K16 12/69 McC. 3309

UNIVERSITY LIBRARY
OP
5 MR
1970

Printed image digitised by the University of Southampton Library Digitisation Unit

OP.1100.120.138

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings volume III

Stage II: Local Hearings

Foulness (off-shore)

LONDON
HER MAJESTY'S STATIONERY OFFICE
1969

Printed image digitised by the University of Southampton Library Digitisation Unit

Commission on the Third London Airport

Members of the Commission

The Hon. Mr. Justice Roskill	(*Chairman*)
Professor Colin Buchanan	Professor of Transport, Imperial College of Science and Technology
Mr. A. Goldstein	Partner in R. Travers Morgan and Partners, Consulting Engineers
Mr. A. J. Hunt	Principal Planning Inspector, Ministry of Housing and Local Government
Professor David Keith-Lucas	Professor of Aircraft Design, the College of Aeronautics, Cranfield
Mr. Arthur Knight	Finance Director, Courtaulds Ltd.
Professor A. A. Walters	Cassel Professor of Economics in the University of London

---

Mr. J. Caines	(*Secretary*)
Mr. F. P. Thompson	(*Director of Research*)

The Commission on the Third London Airport
Templar House
81-87 High Holborn
London WC1

Tel: 01-242 0161

SBN 11 510157 8

Printed image digitised by the University of Southampton Library Digitisation Unit

Preface

The Stage II Local Hearings are being published as volumes III to VI of the Papers and Proceedings as follows:

volume III	Foulness (off-shore)
volume IV	Nuthampstead
volume V	Cublington (Wing)
volume VI	Thurleigh.

For the convenience of users the text and the drawings of the four *Site Information* booklets (previously published separately) and of the additional site information issued for the Thurleigh Hearing will be included in each part. The page numbers of the four volumes will run consecutively so that they may, if desired, be bound up together. As the four volumes that form Stage II are being printed concurrently, it has been necessary to allocate to each part a block of page numbers that will not overlap with the other volumes. Consequently there will be gaps in the pagination between one volume and the next. These pages will be indicated thus: pages: 273-300 not used. The question numbers in the oral evidence will also run continuously. After the issue of the final volume a separate index to all the Stage II volumes will be published.

This volume contains the record of the proceedings of the Commission's Stage II public hearings in May 1969 on the local implications of the Foulness site. The oral evidence and the written proofs of evidence on which this was based are reproduced in full.

Some of those who were given leave to appear decided subsequently not to present their evidence in person at the hearings. The written proofs of the evidence which they submitted therefore fell to be considered together with other written representations. These proofs and the written representations are not reproduced in full. A list of the names of those concerned is given on page 261. Copies of all these submissions are available for inspection by arrangement at the Commission's offices.

The oral evidence is taken from the transcripts of the hearings. Such amendments to the transcripts as were notified have been incorporated.

The original maps and diagrams submitted to the Commission were not necessarily drawn with further reproduction in mind. Unavoidably, therefore, their consequent reproduction is not of a uniformly high standard.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Contents

	Page
Letter from the Chairman of the Commission on the Third London Airport, dated 24 February 1969, to the President of the Board of Trade	xi
Arrangements for Stage II Hearings and for submitting Stage III evidence	xiii
Site information for Stage II Local Hearings 1. Foulness.	xv

WRITTEN EVIDENCE

Day 1

Essex County Council:	
Evidence of Mr. F. A. Sharman	3
Evidence of Mr. D. Jennings Smith	10
Basildon Urban District Council	21
Benfleet Urban District Council	22
Rayleigh Urban District Council	23

Day 2

Essex County Council:	
Evidence of Mr. G. I. W. Dunford	27
Evidence of Mr. N. Fleming	30
Mr. Bernard Braine, MP	34
Essex County Council:	
Evidence of Mr. J. A. Springett	36
Evidence of Mr. D. E. Tanton	41
Chatham Borough Council	45

Day 3

Essex County Council:	
Evidence of Dr. G. W. Schaefer	49
Southend-on-Sea County Borough Council:	
Evidence of Mr. N. Harris	59
Evidence of Mr. T. B. Hill	61
Evidence of Mr. R. F. Lloyd-Jones	82
Kent County Council:	
Evidence of Mr. W. H. Deakin	86
Rochford Rural District Council:	
Evidence of Mr. G. A. Knowles	94
Mr. J. S. Orchard (personal capacity)	98

Day 4

Ashingdon Parish Council	103
Barling Magna Parish Council	104
Canewdon Parish Council	109
Foulness Island Parish Council	110
Paglesham and Barling Parish Councils	111
Rochford Parish Council	116
Tendring Rural District Council	117
Witham Urban District Council	119
Essex River Authority	
Evidence of Mr. E. L. Snell	120
Evidence of Mr. H. Fish	121

Printed image digitised by the University of Southampton Library Digitisation Unit

	Page
Basildon Development Corporation	122
Maldon Borough Council	124
Rochester City Council	126
Strood Rural District Council	127
Foulness Island Residents' Committee	128
St. Clement's Ward Municipal Electors' Association	135
Mr. R. Newbery	136
Action Committee against Foulness	137
Clacton Urban District Council	149
Day 5	
Thorpe West Residents' Association	153
Port of London Authority	155
Royal Burnham Yacht Club	155
Leigh-on-Sea Shellfish Merchants' Association	156
Mr. J. H. Bryant	161
Mr. F. G. Williams	163
Southend-on-Sea and District Chamber of Trade and Industry	164
Working Men's Club and Institute Union Ltd.	169
Sheppey Group:	
Evidence of Mr. R. J. Patrick	170
Evidence of Mrs. M. Boston	175
Evidence of Capt. P. Wilks	188
Evidence of Mr. W. L. Newman	188
Evidence of Mr. B. F. Hawkes	189
Amalgamated Union of Engineering and Foundry Workers	192
Day 6	
Noise Abatement Society	195
Professor J. P. Quilliam	197
Day 7	
National Farmers' Union	203
Additional evidence of Mr. J. E. Y. Hawkes	211
Country Landowners' Association:	
Evidence of Brigadier J. R. Fishbourne	214
Evidence of Mr. G. D. S. Hooper	216
Council for the Preservation of Rural England	218
Nature Conservancy	219
Royal Society for the Protection of Birds	230
University of Kent	234
Ornithological Societies and Interests	235
Day 8	
Thames Estuary Development Company Ltd.	245
Royal Institute of British Architects, Eastern Region	246
Councillor M. King	253
Thames Aeroport Group	255
Additional evidence of Mr. D. Thornton	258
Bernard Clark and Partners	259
Written representations without leave to appear	261

Printed image digitised by the University of Southampton Library Digitisation Unit

ORAL EVIDENCE

	Page
Day 1	
Mr. D. Frank (*Essex County Council*)	267
Mr. F. A. Sharman (*Essex County Council*)	273
Mr. D. Jennings Smith (*Essex County Council*)	283
Day 2	
Mr. G. I. W. Dunford (*Essex County Council*)	301
Mr. N. Fleming (*Essex County Council*)	313
Mr. B. Braine, MP	321
Mr. J. A. Springett (*Essex County Council*)	327
Mr. D. E. Tanton (*Essex County Council*)	330
Day 3	
Dr. G. W. Schaefer (*Essex County Council*)	341
Mr. M. Ogden (*Southend-on-Sea County Borough Council*)	351
Mr. N. Harris (*Southend-on-Sea County Borough Council*)	357
Mr. T. B. Hill (*Southend-on-Sea County Borough Council*)	359
Mr. R. F. Lloyd-Jones (*Southend-on-Sea County Borough Council*)	364
Mr. M. White (*Kent County Council*)	369
Mr. W. H. Deakin (*Kent County Council*)	370
Mr. G. A. Knowles (*Rochford Rural District Council*)	373
Mr. J. S. Orchard (*personal capacity*)	375
Day 4	
Mr. J. S. Orchard (*Ashingdon Parish Council*)	381
Mr. J. P. G. Smith (*Barling Magna Parish Council*)	382
Mr. G. A. Knowles (*Canewdon Parish Council*)	385
Mr. D. C. Wood (*Foulness Island Parish Council and Paglesham Parish Council*)	386
Mr. W. G. Heard (*Rochford Parish Council*)	389
Mr. C. H. Ransden (*Clacton Urban District Council*)	390
Mr. E. A. Austerberry (*Tendring Rural District Council*)	391
Mr. F. Bowker (*Witham Urban District Council*)	393
Mr. G. L. Sturgess (*Essex River Authority*)	393
Mr. E. L. Snell (*Essex River Authority*)	393
Mr. K. Guiver (*Essex River Authority*)	396
Mr. H. D. R. Bacon (*Basildon Development Corporation*)	400
Mr. K. C. Robertson (*Maldon Borough Council*)	403
Mr. C. Whyman (*Rochester City Council*)	404
Mr. J. J. Lawrence (*Strood Rural District Council*)	404
Mr. P. A. Arnold (*Foulness Island Residents' Committee and St. Clements' Ward Municipal Electors' Association, Southend-on-Sea*)	405
Mr. R. Newbery	407
Mrs. P. Kelly (*Shoeburyness Action Committee*)	407
Day 5	
Mr. P. Macey (*Southend Ratepayers' Association and Thorpe West Residents' Association*)	411
Mr. N. N. B. Ordman (*Port of London Authority*)	413
Mr. F. Kemball (*Royal Burnham Yacht Club*)	422
Mr. J. D. Knapp (*Leigh-on-Sea Shellfish Merchants' Association*)	423

Printed image digitised by the University of Southampton Library Digitisation Unit

	Page
Mr. R. S. Brown (*Leigh-on-Sea Shellfish Merchants' Association*)	424
Mr. E. Osborne (*Leigh-on-Sea Shellfish Merchants' Association*)	426
Mr. J. H. Bryant	429
Mr. F. G. Williams	430
Mr. R. A. Mathiesen (*Southend-on-Sea Chamber of Trade and Industry*)	431
Mr. F. O. Morris (*Working Men's Club and Institute Union Ltd.*)	434
Mr. A. Cole (*Tucker Browns Ltd.*)	435
Mr. R. J. Patrick (*Sheppey Group*)	440
Mrs. M. Boston (*Sheppey Group*)	444
Capt. P. Wilks (*Sheppey Group*)	447
Mr. W. S. Kirkip (*Amalgamated Union of Engineering and Foundry Workers*)	448
Day 6	
Mr. J. Connell (*Noise Abatement Society*)	453
Mr. G. Cowling (*Noise Abatement Society*)	453
Professor J. P. Quilliam	459
Mr. G. W. Porter	462
Day 7	
Mr. N. Wallace (*National Farmers' Union*)	467
Mr. J. Hawkes (*National Farmers' Union*)	467
Mr. W. R. Cottis (*National Farmers' Union*)	469
Mr. I. F. Burroughs (*National Farmers' Union*)	470
Mr. W. A. Squire (*National Farmers' Union*)	470
Mr. P. G. Philpot (*National Farmers' Union*)	471
Brigadier J. R. Fishbourne (*Country Landowners' Association*)	474
Mr. G. D. S. Hooper (*County Landowners' Association*)	476
Mr. R. Dreschfield (*Council for the Preservation of Rural England*)	481
Dr. M. George (*Nature Conservancy*)	484
Mr. P. Conder (*Royal Society for the Protection of Birds*)	485
Dr. G. Matthews (*Royal Society for the Protection of Birds*)	485
Dr. P. Rudge (*Royal Society for the Protection of Birds*)	488
Mr. P. Smith (*University of Kent*)	490
Day 8	
Miss W. M. Barron	495
Mr. D. W. Clarke	496
Mr. H. Ellis	498
Mr. M. Mann (*Thames Estuary Development Company*)	498
Mr. J. A. Howard (*Thames Estuary Development Company*)	500
Mr. F. A. Hammond (*Thames Estuary Development Company*)	507
Mr. A. W. V. White (*Royal Institute of British Architects*)	511
Mr. G. V. K, Francis	514
Mr. M. King	515
Mr. D. Thornton (*Thames Aeroport Group*)	517
Mr. B. L. Clark (*Bernard Clark and Partners*)	519
List of appearances	527

Printed image digitised by the University of Southampton Library Digitisation Unit

Illustrations contained within this Volume

	Page
Day 1	
FAS 1. Stage development of third London airport. (*Mr. F. A. Sharman, Essex County Council*)	9
Fig 1. Assumed growth of employment and population within 20 miles. (*Mr. D. Jennings Smith, Essex County Council*)	18
Fig 2. Foulness, 1981, absorption of population within 20 miles. (*Mr. D. Jennings Smith, Essex County Council*)	19
Urban areas: new roads. (*Mr. D. Jennings Smith, Essex County Council*)	20
Day 3	
Plan 5. Roskill 2-runway proposal. (*Kent County Council*)	91
Plan 6. Roskill 4-runway proposal. (*Kent County Council*)	92
Plan 3. Nature Conservancy areas, ancient monuments and listed buildings. (*Kent County Council*)	93
Foulness: suggested siting of airport. (*Rochford Rural District Council*)	100
Day 4	
Typical air traffic pattern for Foulness airport. (*Paglesham Parish Council*)	115
Noise level contour. (*Foulness Island Residents' Committee*)	134
Day 5	
NNI contours assuming 10 NNI reduction. (*Mr. R. J. Patrick, Sheppey Group*)	173
NNI contours assuming no reduction of 10 NNI. (*Mr. R. J. Patrick, Sheppey Group*)	174
MB 2. Holiday resorts and coastal facilities. (*Mrs. M. Boston, Sheppey Group*)	183
MB 3. Coastal preservation. (*Mrs. M. Boston, Sheppey Group*)	184
MB 4. Areas of outstanding natural beauty and scientific interest. (*Mrs. M. Boston, Sheppey Group*)	185
MB 5. Wreck of s.s. "Richard Montgomery". (*Mrs. M. Boston, Sheppey Group*)	186
MB 6. Flooding. (*Mrs. M. Boston, Sheppey Group*)	187
Day 7	
Map 1. Wildlife habitats in the Thames Estuary. (*Nature Conservancy*)	227
Map 2. Movement of wildfowl, waders and gulls in relation to the tide. (*Nature Conservancy*)	228
Map 3. Movement of wildfowl and gulls between their feeding and roosting sites. (*Nature Conservancy*)	229
Day 8	
TED 8B. NNI contours—take off and landing. (*Thames Estuary Development Company*)	247
Fig 1. RIBA and government economic planning regions. (*Royal Institute of British Architects*)	250
Fig 2. The South-East in relation to major European centres. (*Royal Institute of British Architects*)	250
Fig 3. National communications pattern. (*Royal Institute of British Architects*)	251
Fig 4. Application of planning principles to Foulness. (*Royal Institute of British Architects*)	252
Urbanisation suggestions. (*Thames Aeroport Group*)	257
1. Possible airport site with no provision for dock system. (*Bernard Clark and Partners*)	260
2. Possible airport site with provision for dock system. (*Bernard Clark and Partners*)	260

Printed image digitised by the University of Southampton Library Digitisation Unit

Illustrations in Attached Wallet

Short list sites (CTLA/5). (*Commission on the Third London Airport*)

Provisional airport plan (CTLA/1). (*Commission on the Third London Airport*)

Noise and Number Index: 2-runway airport (CTLA 1/2). (*Commission on Third London Airport*)

Noise and Number Index: 4-runway airport (CTLA 1/3). (*Commission on Third London Airport*)

Day 1

FAS 2. Services and utilities. (*Mr. F. A. Sharman, Essex County Council*)

FAS 3. Surface access links. (*Mr. F. A. Sharman, Essex County Council*)

Day 2

GD 1. Airport alignment and routes emanating. (*Mr. G. I. W. Dunfold, Essex County Council*)

NF 1. Noise contours: 55, 45 and 35 NNI; (*Mr. N. Fleming, Essex County Council*)

Day 3

Plan 1. The town in its regional setting. (*Mr. T. B. Hill, Southend-on-Sea County Borough Council*)

Plan 4. Main road network 1969. (*Mr. T. B. Hill, Southend-on-Sea County Borough Council*)

Plan 7. Main road network 1975. (*Mr. T. B. Hill, Southend-on-Sea County Borough Council*)

Plan 1. (*Kent County Council*)

Plan 2. (*Kent County Council*)

Day 4

The positions of Paglesham and Barling in relation to the proposed airport. (*Paglesham and Barling Parish Councils*)

Strood Rural District. (*Strood Rural District Council*)

Day 5

MB 1. Distribution of population. (With Key.) (*Mrs. M. Boston, Sheppey Group*)

Day 7

Country Landowners' Association members likely to be affected by proposed airport. (*Country Landowners' Association*)

Day 8

Urbanisation suggestions. (*Thames Aeroport Group*)

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT
Templar House, 81-87 High Holborn
London W.C.1
24th February 1969

The Right Hon.
Anthony Crosland, M.P.
President
The Board of Trade
1, *Victoria Street*
*London S.W.*1

Dear President,

I write to inform you that the Commission on the Third London Airport has now completed the first of the five stages of its work in accordance with the terms of reference which were announced in Parliament on 20th May, 1968.

2. The sites which the Commission has decided should be "short listed" and thus made the subject of more detailed examination hereafter are (in alphabetical order):

(a) Cublington (Wing)

(b) Foulness (off-shore)

(c) Nuthampstead

(d) Thurleigh (Bedford)

3. In Appendix 1 to this letter will be found sketch plans showing the approximate location of each of these four airport sites.*

4. The Commission decided at the outset of its work that it must go back to the beginning and search for every site within a wide radius of London which might prove suitable. A long list of possible sites was compiled including many suggested by the public. It was, in due course, reduced to a medium list of nearly thirty sites. The short list was then evolved with the aid of the Commission's own research staff, Government Departments and others in Universities and elsewhere too numerous to name individually though not to thank collectively.

5. In reaching its decision on the short list the Commission has had well in mind the factors listed in paragraph 1 of your announcement in Parliament. The application of cost/benefit analysis has enabled the Commission to identify those inland sites in the medium list which justify investigation in greater detail because on balance they offer advantage in respect of important criteria such as site costs, air traffic control, defence, noise and surface access (including user and capital costs).

6. There are, however, other relevant criteria which in the time available it has not been possible for the Commission to investigate in the same detail. These include town and country planning at all levels. The necessary detailed investigations will form an important part of the next stages of the work. The Commission looks forward to the assistance which it will obtain from evidence of a local character to be given at the public local hearings into all four short listed sites.

7. The off-shore site at Foulness ranks relatively low in the cost/benefit analysis carried out thus far but may offer substantial advantages over the inland sites, not least in relation to certain of the town and country planning criteria. The Commission has, therefore, decided to include this site in the short list.

8. You will have noticed that Stansted does not find a place upon the short list while Nuthampstead has been included. In the Commission's view, of the possible sites in that area, Nuthampstead offers most advantage over Stansted, particularly in respect of noise and of air traffic control compatibility with Heathrow.

9. The Commission's terms of reference also require it to inquire into the timing of the need for a third London airport. This side of the Commission's work has proceeded concurrently with the site selection. Whilst the apparent weight of the evidence thus far suggests that the need for such an airport is urgent, the contrary view has been submitted. The Commission at this stage expresses no view on the urgency of the need. Suffice it to say that the short list has been prepared on the assumption, necessarily made at this stage of its work, that a third international airport to serve the London area will be required. The timing of that need will require later detailed consideration.

---

*See attached wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

10. The Commission will now proceed to Stages II and III.

11. I understand that you agree with the Commission's proposal to publish this letter. On Tuesday, 4th March, 1969 the Commission will, therefore, do so. It will also then publish particulars of the arrangements for the Stage II local hearings and the material for the first of these hearings which will concern Foulness (off-shore). The Commission proposes at the same time to invite evidence for Stage III.

Yours sincerely,

EUSTACE ROSKILL

(The Hon. Mr. Justice Roskill)
Chairman, Commission on the Third London Airport

Printed image digitised by the University of Southampton Library Digitisation Unit

Arrangements for Stage II Hearings and for Submitting Stage III Evidence

Scope of Stage II Hearings

The main purpose of the Stage II hearing is to provide an opportunity for the Commission to be informed as early as possible of all the local implications which it should take into account in its further work on the short list sites. At the hearings the Commission will not be advancing proposals for an airport at the particular site in question but, on the assumption that an airport might be located there, will be asking for objections, comments and representations on the local consequences. The Stage II hearings are not intended to afford an opportunity for making comparisons between the site in question and other sites. Objections, comments and representations must, therefore, be confined to the site proposal in question. The opportunity for comparisons between the short listed sites will arise at Stage V.

2. The Stage II hearings are not ordinary planning inquiries. There will be nobody in the position of applicant for planning consent. Mr. A. J. Hunt, who is a Principal Planning Inspector and a member of the Commission, will preside. He will already be familiar with the main issues involved and will not be required to decide between any conflicting views put forward. It will be for the Commission as a whole to evaluate the evidence given after the Inspector has reported to it.

Procedure for the Stage II Hearings

3. The hearings will take place at a convenient town in the vicinity of each site.

4. The Commission will publish material well in advance relating to each site. This material should be sufficient to enable those concerned to appreciate the local implications of what is proposed.

5. Interested parties must apply to the Commission in writing for leave to be heard or represented at the hearings. All applications must be accompanied by a brief statement of the nature of the evidence which it is desired to give. Written applications will so far as possible be dealt with by the Commission without oral hearings but if the Commission requires any applicant to present his application orally he will be asked to attend a meeting for the purpose. Those given leave will later be invited to attend a private meeting to discuss what are the main issues to be covered and how the proceedings should best be conducted.

6. The Commission intends to ensure that the best use is made of the time available for the local hearings. Those given leave to appear or be represented must produce their statements, proofs and all other relevant documents well in advance of the hearing so that they can be made available to other interested parties before the hearing begins. This will largely avoid the need for examination in chief. The Commission asks that representative organisations or groups will, so far as possible, put forward a common view so that repetition of similar views and unnecessary cross-examination can be avoided.

7. In general the Inspector will have complete discretion and control over the proceedings. He will be entitled to withhold permission to call any witness whose evidence appears likely to be irrelevant or repetitive. There will be no appearance at the hearings on behalf of the Commission but any party given leave to appear or be represented may at the Inspector's discretion be allowed to cross-examine any witness called to the extent that such cross-examination is relevant to the issues before him.

8. The Inspector will before the hearing circulate to all concerned a programme of appearances and so far as possible agree this with them.

9. The hearings will be in public. A complete shorthand note will be taken. Copies of the transcript will be available for purchase from the shorthand writers, Messrs. Cherer & Co., 34 Essex Street, Strand, London WC2.

Provisional Time Table for the Stage II Hearings

10. The following provisional time table shows the proposed timing of the various phases of the procedure.

	First Site	Second Site	Third Site	Fourth Site
	Foulness	**Nuthampstead**	**Cublington**	**Thurleigh**
(a) Commission material published	4 March	1 April	29 April	28 May
(b) Applications for leave to appear or be represented by	21 March	18 April	16 May	13 June
(c) Date of hearing of applications (if required)	28 March	25 April	30 May	4 July
(d) Meeting to discuss procedure	1 April	28 April	2 June	7 July
(e) Statements, proofs and other documents to be received not later than	18 April	23 May	27 June	22 Aug.
(f) Start of hearings	5 May	9 June	14 July	8 Sept.

The First Hearing

11. The first hearing will relate to Foulness (off-shore). The material for this site is published herewith. As appears from the above time table, the Commission is now ready to receive applications for leave to appear or be represented at this hearing. These should reach the Secretary at Templar House, 81-87 High Holborn, London WC1 not later than Friday, 21 March 1969. The hearing will start at 10 a.m. on Monday, 5 May 1969 at a place to be announced.

Printed image digitised by the University of Southampton Library Digitisation Unit

Arrangements for Submitting Stage III Evidence

12. While the Stage II local hearings are taking place the Commission's detailed research work into the short listed sites (Stage III of its task) will continue. It is hoped to complete this, if all goes well, towards the end of 1969. The Commission invites all those who wish at this stage to supply relevant evidence likely to contribute usefully to the research and to the cost/benefit analysis of the short listed sites to do so not later than 31 July 1969. It would also assist if this evidence were prepared as far as possible under any of the following principal headings as indicated in the July 1968 call for Stage I evidence: timing of the need, regional planning considerations, employment benefits, cost of construction, provision of services and utilities, housing requirements, surface transport aspects (including links between airport and associated urbanisation), noise and nuisance conderations, amenity considerations, effect on defence installations, land use, air traffic control and other operational considerations and effect on other airports.

13. This evidence for Stage III should be submitted in writing addressed to the Secretary, Mr. J. Caines, Templar House, 81-87 High Holborn, London WC1 (Telephone: 01-242 0161). It would help the Commission if fifteen copies could be sent.

14. The Commission appreciates that some of the evidence that will be put before it may be of a confidential nature and, provided that this is clearly indicated when evidence is submitted, it will take this into account when preparing its report. However, it will reserve to itself a general right (to be exercised as it thinks fit) to publish any evidence, written or oral, that is made before it and to make it available to other interested parties; in the absence of any indication to the contrary it will assume that those making submissions recognise and accept this possibility.

Printed image digitised by the University of Southampton Library Digitisation Unit

Site Information for Stage II Local Hearings

1. Foulness (off-shore)

1. Introduction

The information set out below is intended to give a broad indication of what would be involved if the third London airport were to be located at Foulness (off-shore). At this early stage of the Commission's work it is not possible to give final detailed plans for an airport at this site or for the surface access arrangements which would be required. The material under the various headings should, however, enable local implications of an airport at Foulness (off-shore) to be assessed and should provide a suitable basis for objections, comments and representations at the Stage II local hearings.

2. As the Commission's work progresses and in the light of the evidence at the Stage II hearings, it will be possible to prepare more detailed plans. These will be available for the Stage V hearings.

3. The base maps used to illustrate this material are the latest published by the Ordnance Survey. They do not show the most recent developments.

2. Airport Layout

4. The Commission recognises that there is no single airport layout which is the best possible for all sites. Each site has to be carefully studied to establish factors, such as terrain and local geological conditions, so that the best layout at that particular site can be obtained. Detailed studies have not yet been carried out at any of the short listed sites. Nevertheless the Commission recognises the need for providing the public with some indication of the likely size and shape of a four runway airport.

5. The layout shown at plan CTLA/1 illustrates an arrangement which would be acceptable both to the National Air Traffic Control Services and to the British Airports Authority. An airport of this design could be constructed at all the short listed sites. It is emphasised that this is not the only possible configuration, but the basic runway separation distances, which control the amount of land required, are unlikely to be much less than is shown. The total land-take of an airport with this layout would be approximately 7500 acres (including the areas shown as "optional") but the possibility of a larger land-take being required cannot be excluded.

3. Runway Alignment

6. The runway alignment is 40 degrees east of north (grid). This is shown on the NNI (Noise and Number Index) contour plans CTLA/1/2 and CTLA/1/3. It takes into account the following important factors: noise disturbance, existing facilities and amenities, air traffic to other civil airports, air traffic patterns, military aviation, meteorological conditions and terrain. The Commission recognises that changes to this particular alignment may be justified as a result of further work and evidence.

4. Airport Site

7. An airport at Foulness could be sited wholly on reclaimed land on Maplin Sands or partly on Foulness Island and partly on reclaimed land. Plans CTLA/1/2 and 1/3 show a site located wholly on reclaimed land. The latter minimises the impact of aircraft noise in the neighbourhood of Southend and involves no loss of good agricultural land for the airport itself. The land could be reclaimed by using dredged sand and an embankment would be built on the seaward side for protection.

8. The site is currently used as part of a military firing range.

9. The trial soil borings conducted for the Commission have not revealed any reasons why a four runway airport should not be constructed on Maplin Sands. The precise layout of the airport on the site will, as has been explained in paragraph 4 above, need to be adjusted to suit the particular features of this site.

5. Noise and Disturbance

10. On the basis of the Registrar General's Annual Estimates of Population for 1968, it is estimated that about 200 people currently reside within 5 miles from the centre of the site.

11. Estimates have been made of the probable NNI* contours for the airport at the full capacity of two runways and again at the full capacity of four runways.

12. These contours are shown in plans CTLA/1/2 and 1/3. The Commission draws attention to the fact that they are of necessity only approximate but they give an indication of the areas likely to be affected. The reliability of the Noise and Number Index has been questioned. This is a matter which can be further investigated in due course. Separate night time NNI contours have not been prepared but, as the NNI is related to the number of aircraft movements and these are likely to be less at night than by day, it is a reasonable assumption at this stage that the night NNI contours will be less extensive than the day contours depicted. The contours relate to an average summer day—normally the busiest time of the year—with no special noise abatement procedures. It has been assumed in the NNI contours that noise certification regulations will be introduced and will lead to a reduction in the noise effect of aircraft by 10 NNI over the next 20 years.

13. The present populations (based on the 1966 Census) affected by the different NNI Contours are estimated to be:

Noise level	*NNI number*	*2 runways*	*4 runways*
Intrusive	40-45 NNI	7,500	19,500

* *Noise: Final Report of the Committee on the Problem of Noise.*
(Cmnd. 2056. HMSO; 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Intrusive/			
Annoying	45-50 NNI	2,500	6,500
Annoying	50+ NNI	200	500

The Report of the Committee on the Problem of Noise reached the tentative conclusion that the critical range of disturbance was 50-60 NNI by day and 30-45 NNI by night.

6. **Airport Employment**

14. The introduction of a large international airport into an area is bound to create an inward movement of population. There will be those directly engaged on the airport ("primary employment"). There will be those engaged in manufacturing industry and commercial projects attracted specifically by the location of the airport ("secondary employment"). There will be those engaged in providing for the needs of the primary and secondary workers and their dependants ("service employment").

15. At this stage, the Commission's best estimate of the primary employment which the airport will generate at the full capacity of two runways is 45,000 and at the full capacity of four runways is 65,000. These figures depend on many factors, including the extent to which airlines will set up engineering facilities at the new airport. These levels of primary employment are unlikely to be reached before the mid 1980s and mid 1990s respectively. The accuracy of this forecast must depend on the date of inauguration of the airport and the subsequent build-up of traffic. The estimates are based on an analysis of employment and air traffic at Heathrow.

16. The Commission expects to receive valuable evidence on the issue of resulting urbanisation at the local hearing.

7. **Surface Access**

17. The total annual number of passengers using the airport when two runways are running at full capacity is likely to be about 45 million. When four runways are running at full capacity it could be over 100 million. The forecasts are tentative and are put forward to give some indication of the scale of the surface access problem.

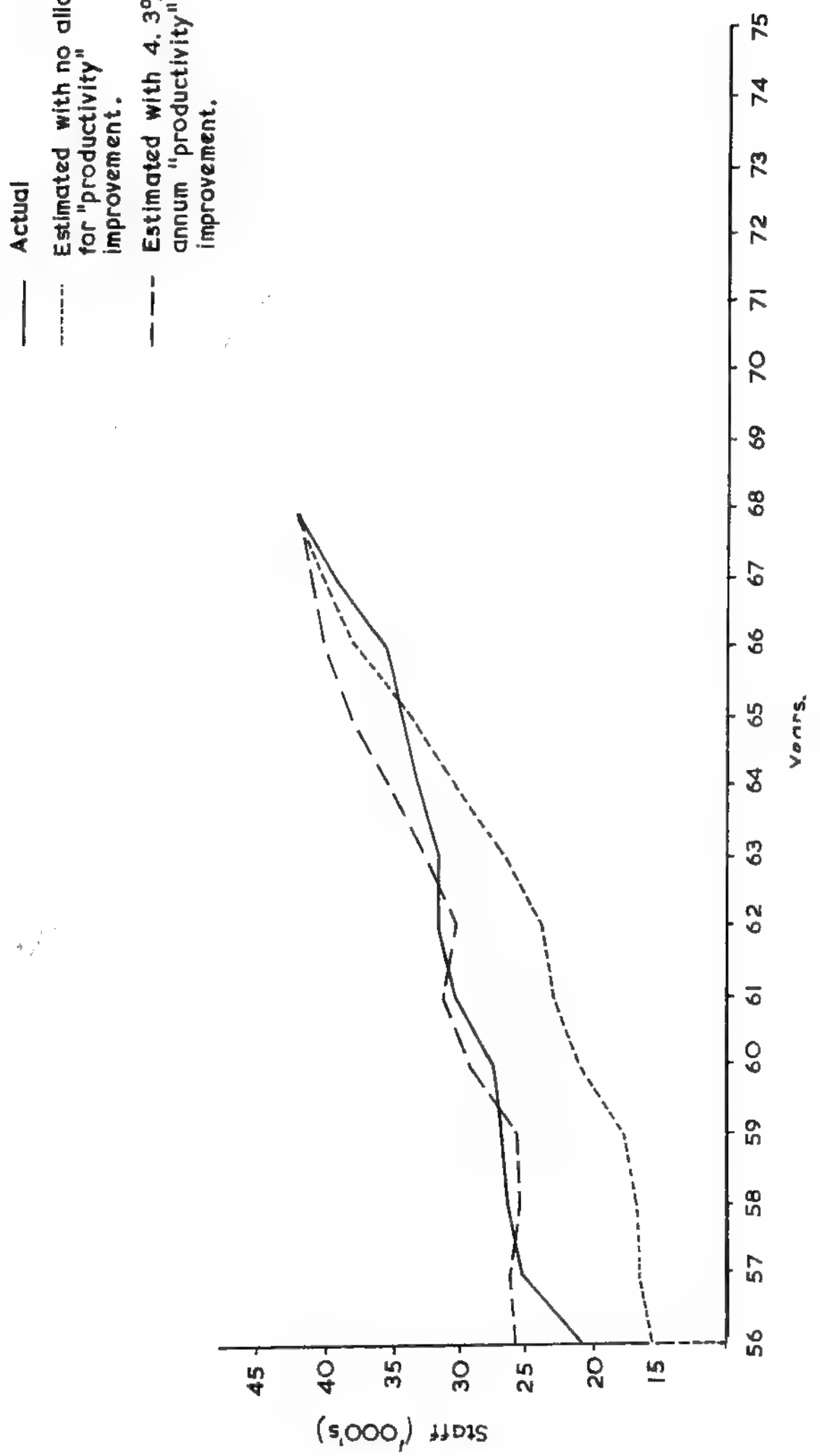
18. The Ministry of Transport and British Rail are not yet in a position to provide definite plans for this level of traffic, but it is thought desirable to provide some indication of the possibilities for use at Stage II local hearings. It is envisaged that at the outset the site would have to be connected to Southend by a road adequate to carry both the long distance traffic to and from London and other parts of the country and the local traffic to and from Southend. The existing roads from Southend westwards will have little spare capacity for the additional traffic which the airport will generate. Major road works will, therefore, be needed from a very early period, and ultimately a new pattern of highways leading to the site will be necessary.

19. When the airport comes into operation an extension from Shoeburyness into the airport of the existing railway line will be desirable. Ultimately a new rail link from a London terminal will be required. Whether this link should be based on the latest monorail or the latest duorail techniques will have to be considered.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX II

COMPARISON OF ACTUAL AND ESTIMATED STAFF AT HEATHROW



Printed image digitised by the University of Southampton Library Digitisation Unit

EXPECTED NOISE EXPOSURI
AIRPORT A

BEFORE PROPOSED REALIGNMENT

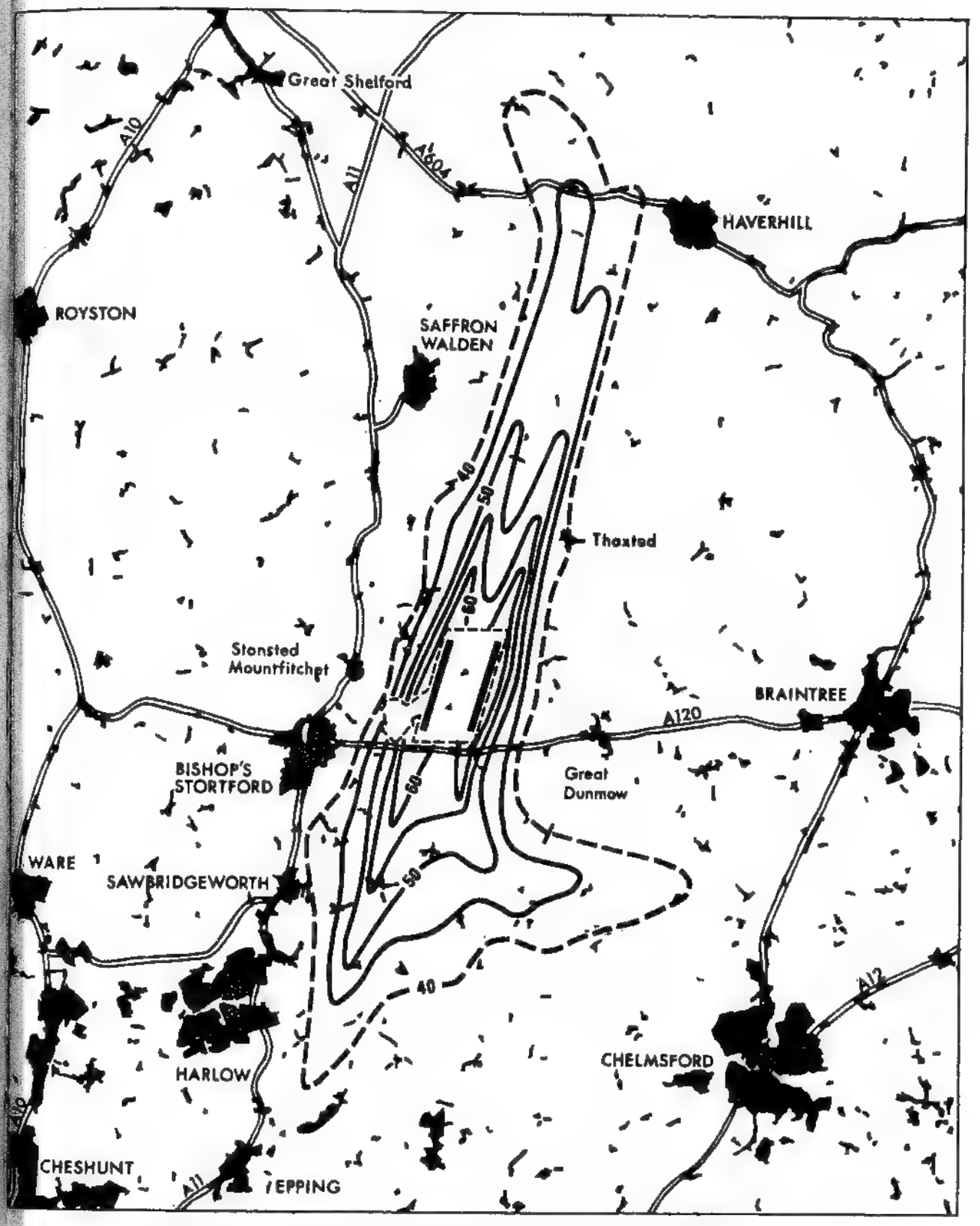
Built-up areas existing and planned

Approximate airport boundary and runways

Printed image digitised by the University of Southampton Library Digitisation Unit

AROUND A THIRD LONDON
STANSTED

AFTER PROPOSED REALIGNMENT



Noise, and Number Index lines, calculated for a Standard Busy Rate of 64 aircraft movements an hour —50—

MILES

0 5 10 15

Printed image digitised by the University of Southampton Library Digitisation Unit

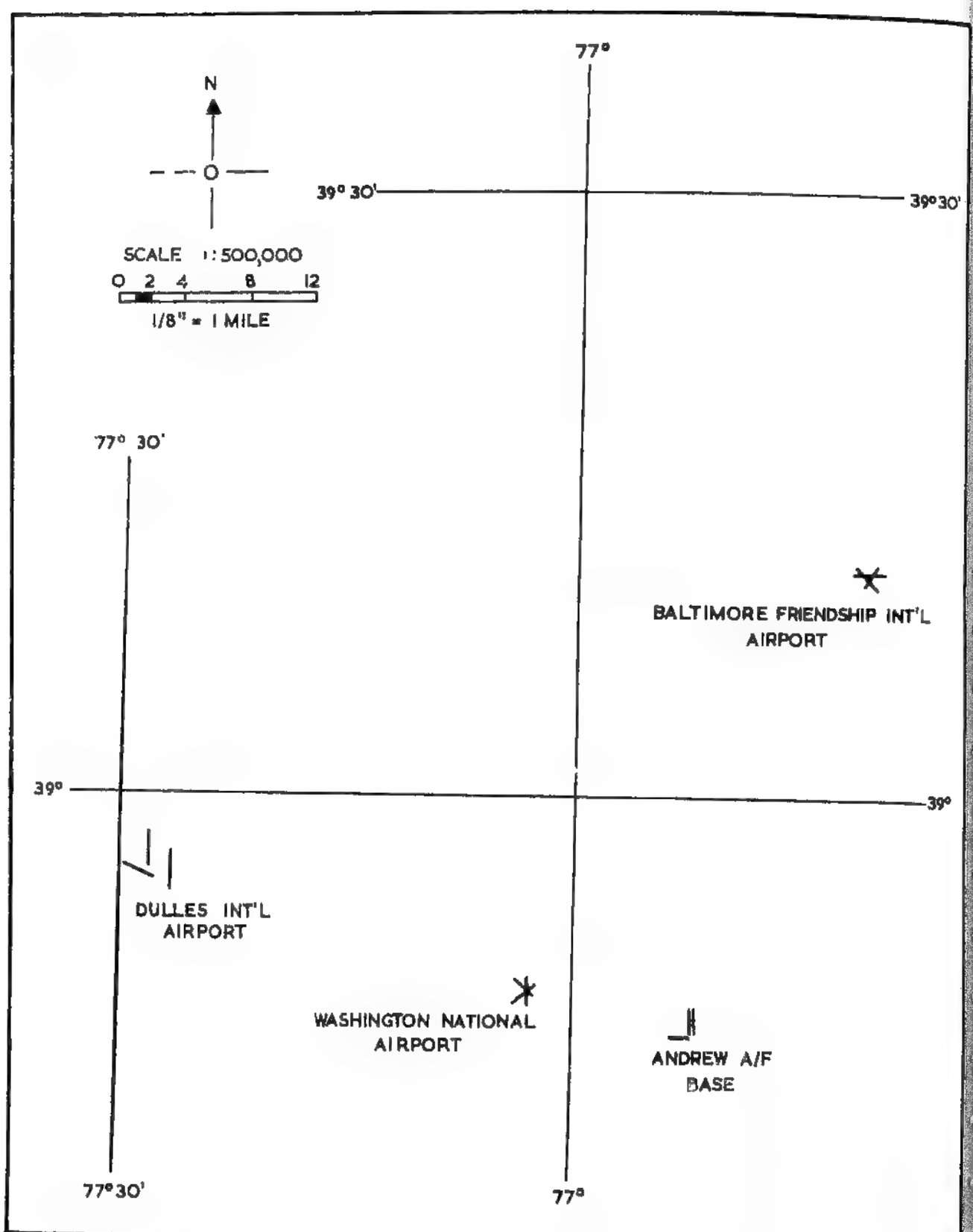


FIGURE 1. WASHINGTON D.C. AREA AIRPORTS

Printed image digitised by the University of Southampton Library Digitisation Unit

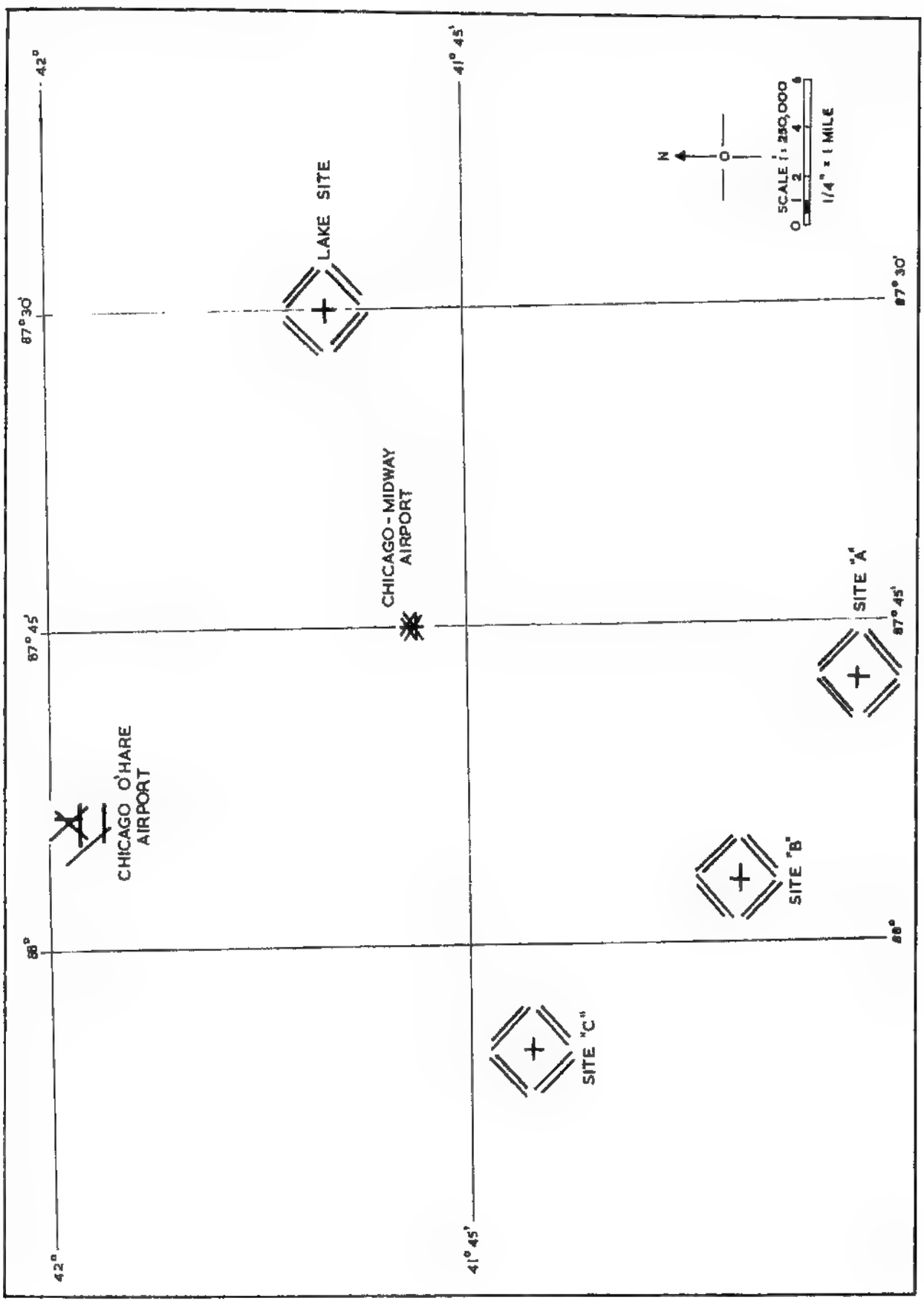


FIGURE 2. CHICAGO AREA AIRPORTS AND PROPOSED THIRD AIRPORT SITES

Printed image digitised by the University of Southampton Library Digitisation Unit

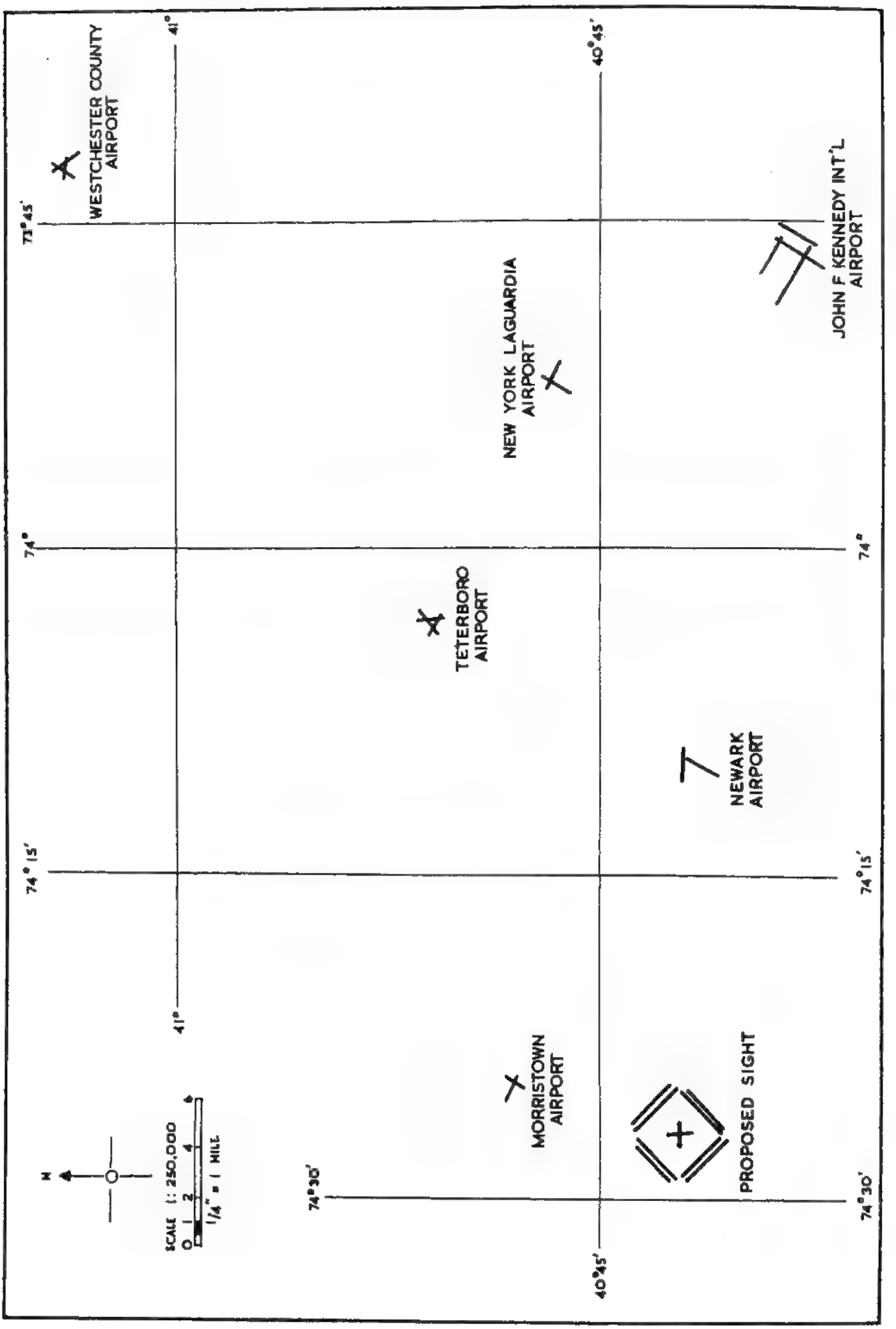


FIGURE 3. NEW YORK METROPOLITAN AREA AIRPORTS AND NEW JETPORT SITE

Printed image digitised by the University of Southampton Library Digitisation Unit

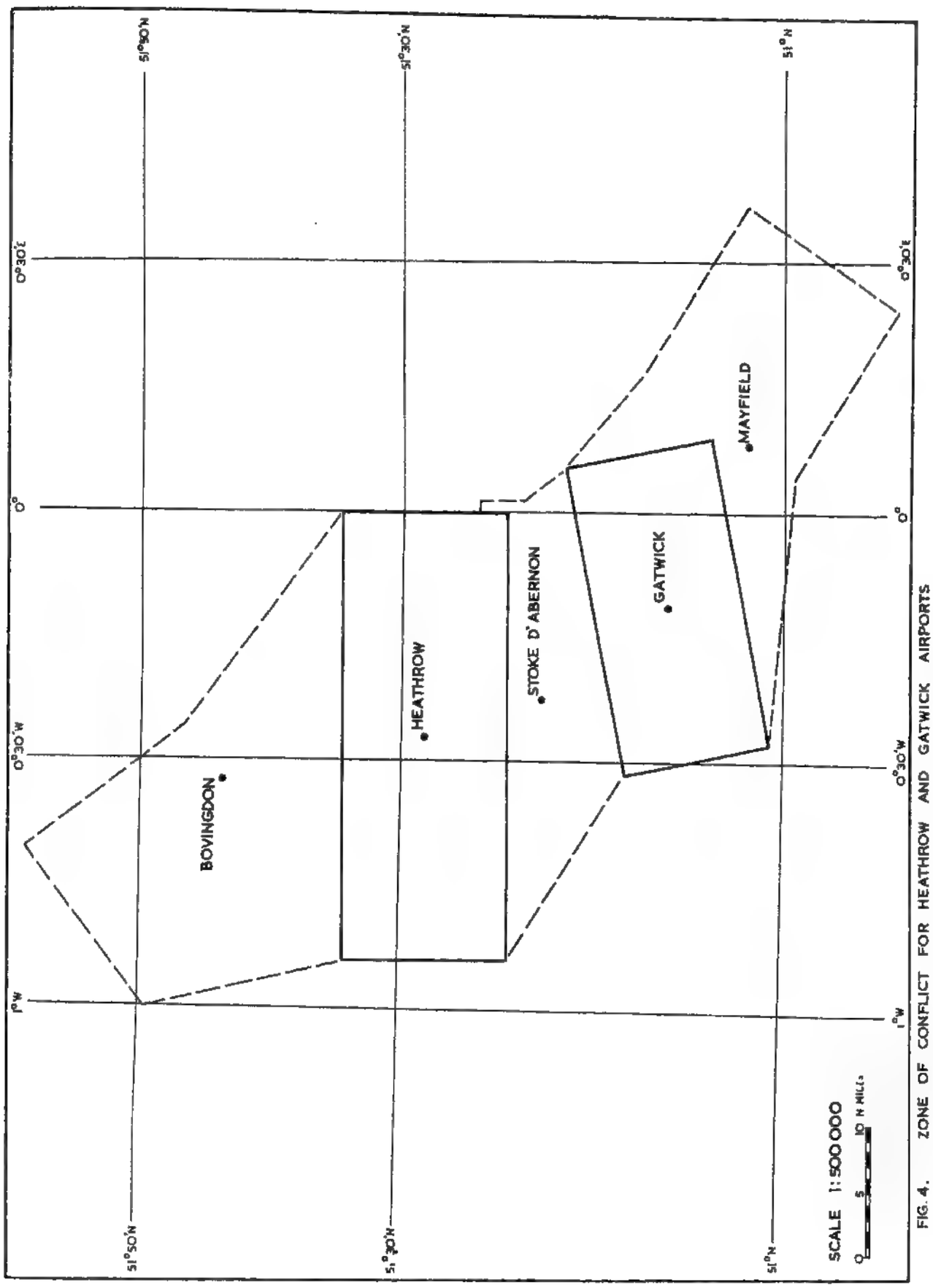
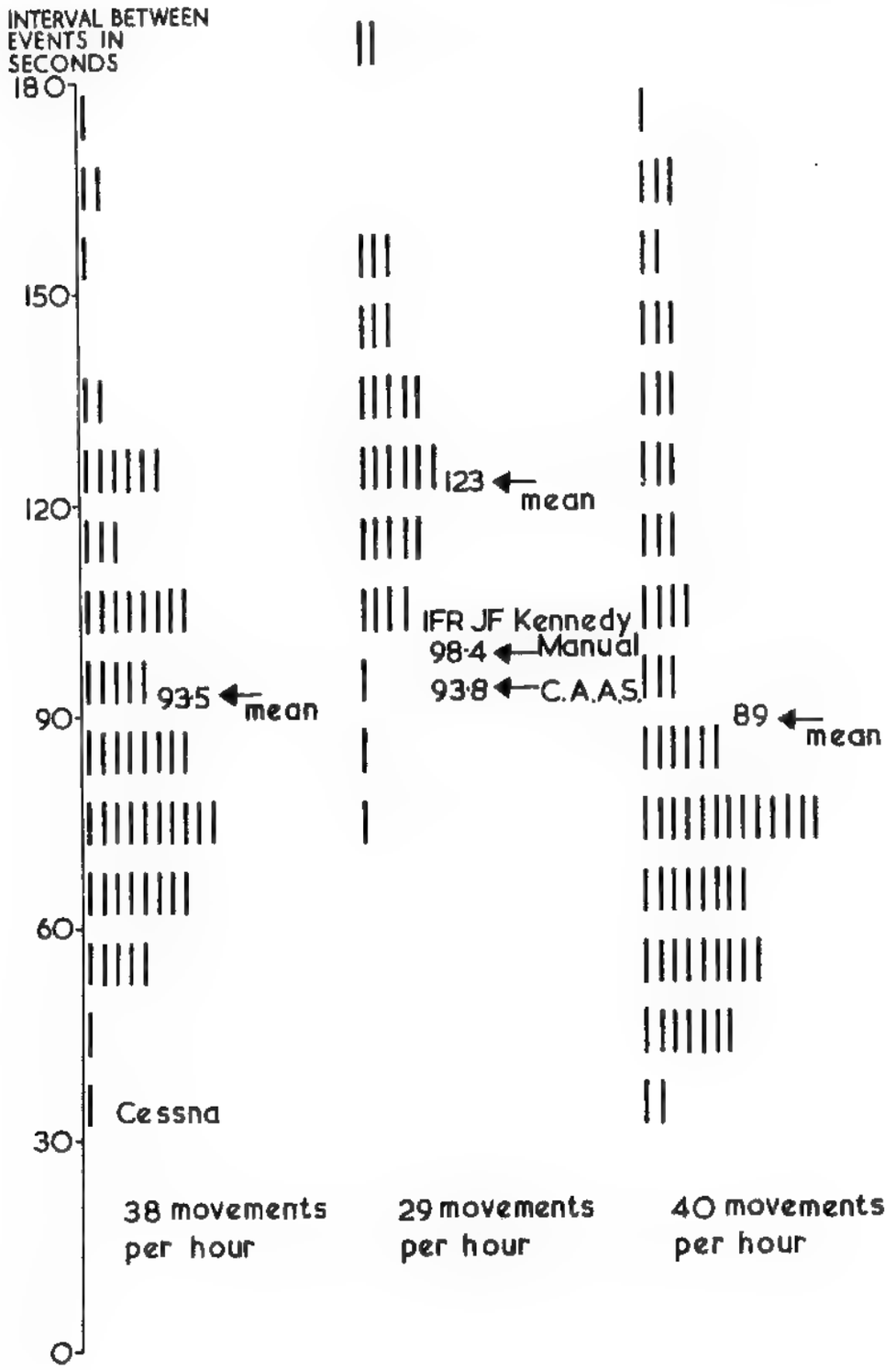


FIG. 4. ZONE OF CONFLICT FOR HEATHROW AND GATWICK AIRPORTS

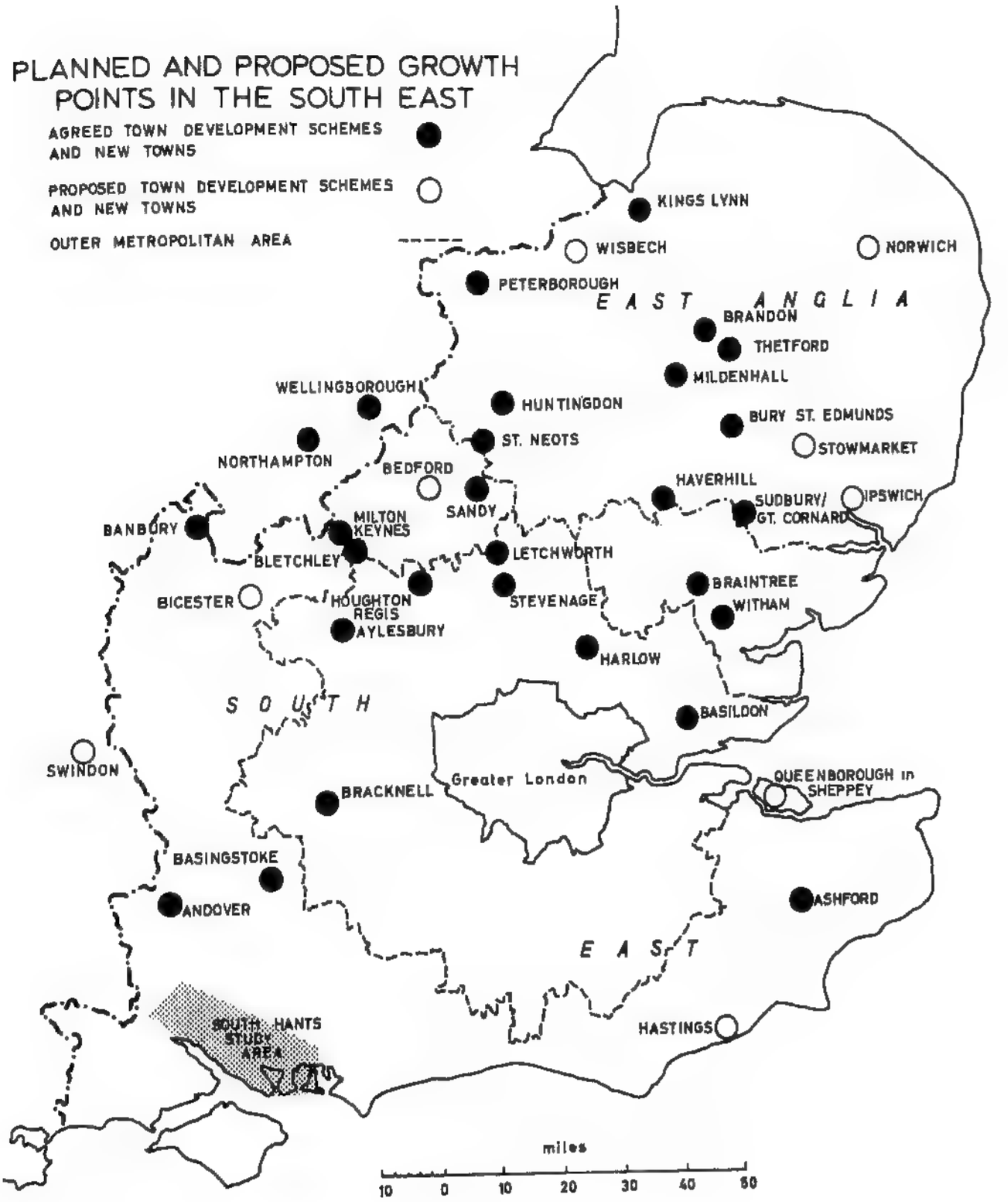
Printed image digitised by the University of Southampton Library Digitisation Unit

SUMMARY OF TIME STUDY OBSERVATIONS AT HEATHROW

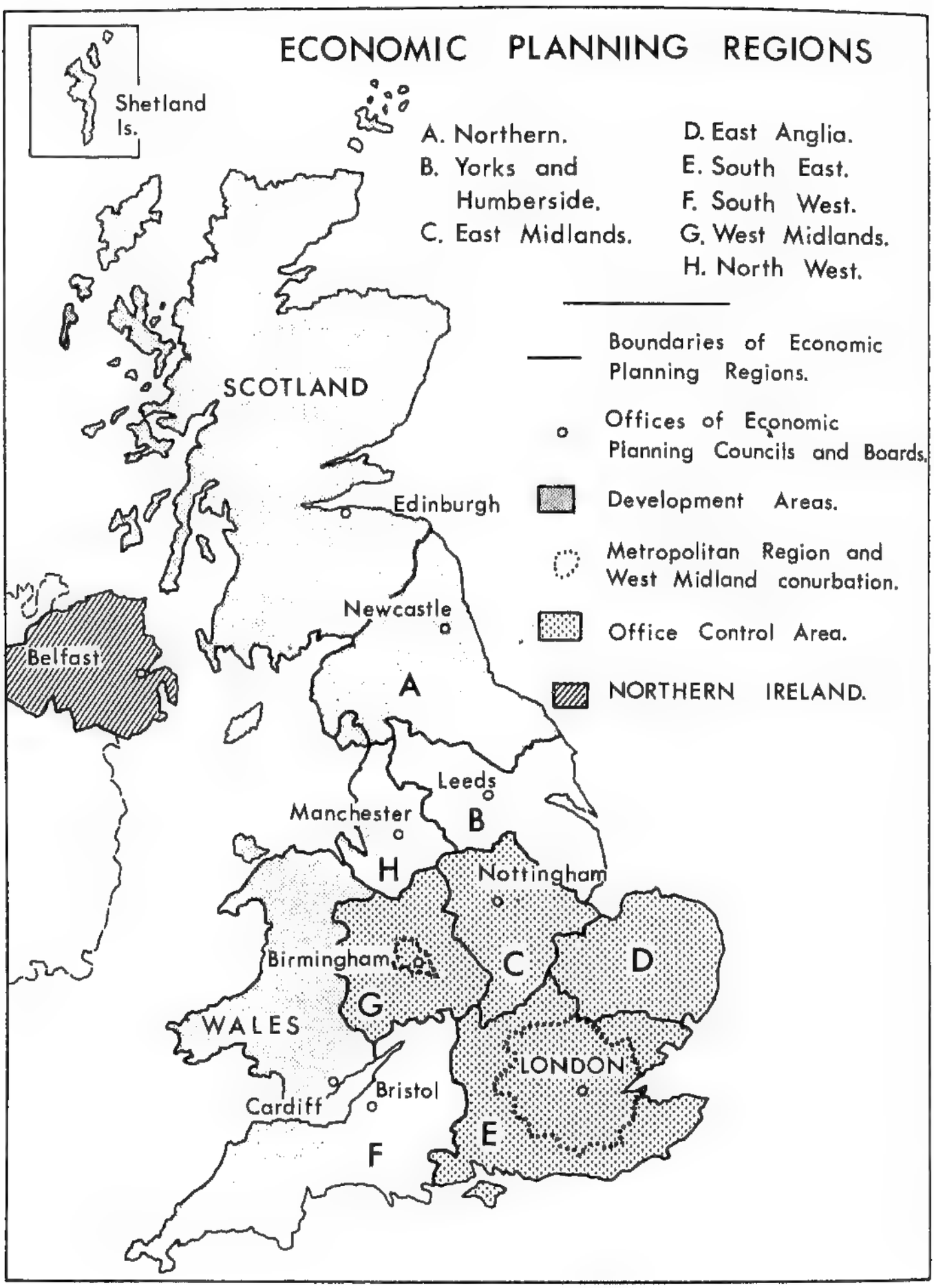
Interval between events on a single runway — Each stroke represent one event.



Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

General Observations by Mr. O. D. Bennett

Derived largely from a dissertation written, in 1967, on Airport Location while the writer was a postgraduate student at the University of Liverpool

1. Detailed consideration necessary

Before a particular site is recommended for governmental selection, it is very necessary that a thorough study can be seen to have been made. In this respect, I advocate the several studies conducted by the Port of New York Authority in connection with New York's proposed fourth airport as classics of their kind. (References 1 & 2.)

2. Inclusion of all relevant factors

The Commission's list of 13 factors is comprehensive, but I should like to draw attention to several factors which I think may be underemphasised:

(i) Effect of airport accessibility on traffic volume

Several American studies have shown this to be a vital consideration. Landrum and Brown, modified by Park (3) studied the effect of moving Detroit airport six miles from the city centre to a site 31 miles out. While the exact effect cannot be pinpointed, it was observed that the "natural" increase in the number of passengers was less, by between 12 and 42 per cent., than it would have been had the airport stayed nearer the town.

Landrum and Brown made a further study as part of the New York fourth airport programme, and produced two mathematical indices to measure the influence of accessibility on traffic potential at the various possible sites. A similar approach is required in the locational analysis for the third London airport and would make quite clear why certain sites more distant from London are economically impracticable (Landrum and Brown's second study found that at some sites, for example, Mount Holly/Burlington, 74 miles from Manhattan, the reduction in use by the region's potential air passengers was critical).

(ii) Easy airport interchange

Easy inter-airport travel, anyway necessary if London is to remain a major transit point, would also permit greater airport specialisation. If Heathrow can become a primarily short-haul airport, and the third airport primarily long-haul, then the latter can be situated farther from the centre of London. For although no statistical evidence has yet been produced, it is very probable that the effect of airport accessibility on traffic volumes decreases as trip length increases.

(iii) Providing for the motor vehicle

Any major airport to be planned in the foreseeable future must make full provision for the motor vehicle, particularly because:

(a) At no airport are traffic volumes yet sufficient, on their own, to support the capital cost of rapid transit systems.

(b) The continually increasing dispersion of origins and destinations around cities, makes car travel to airports particularly likely.

Printed image digitised by the University of Southampton Library Digitisation Unit

At the same time the area selected for a new airport must be able to absorb the new vehicular traffic (as well as the new population attracted by the airport). The scale is indicated by the estimate that at the final development stage Paris-Nord will generate more than 9,000 vehicles per hour in one direction, enough to saturate six lanes of highway.

(iv) Aspects of aircraft noise

It is now clearly apparent that airport planning must be conducted on the basis of present aircraft noise levels, and that any reduction in intensity from individual aircraft is likely to be more than outweighed by traffic growth. Apart from the social aspects of aircraft noise levels, there are other significant points:

(a) Warskow and Tiemann (4) have calculated that noise abatement procedures at Kennedy Airport, New York, are reducing annual airport capacity by about 8 per cent., and that the total cost of the added delay at the airport is approximately 2.1 million dollars.

(b) With severe night jet flight restrictions at Heathrow, and increasing pressure for similar restrictions at Gatwick, the third airport must be located so that a similar situation cannot occur. Otherwise night time capacity at London's airports could be seriously lower than demand.

(c) For the above two reasons alone, it will be very desirable for noise contour maps to be drawn for all feasible runway orientations at each potential site.

(v) Air traffic control and airport capacity

The Port of New York Authority study referred to above has made it clear that the cost of realigning or creating new airways or routes, however costly, is small in relation to the total cost involved in creating a new major airport. Thus while air traffic control is a vital consideration, it is suggested that the Commission view it basically as a flexible and not a rigid, unalterable structure.

(vi) Enhancement of environment

Rather than solely destroying amenity (as I believe the choice of Stansted would do), the Commission should endeavour to find a site where the expenditure of vast capital sums will most enhance the environment and benefit a wider society than merely air travellers and the air transport industry.

Conclusion

Mentioned above are some of the perhaps less obvious factors I believe the Commission should consider in relation to the 13 basic headings under which possible sites will be considered.

No site can satisfy all desirabilities, and the Commission will have to decide which of the various factors are the more important before a final recommendation is made. I do however hope the Commission will conduct a most thorough study before they reach this stage.

Works mentioned

(1) Port of New York Authority (1961). *A report on airport requirements and sites in the Metropolitan New Jersey–New York region.*

(2) PNYA (1966). *Airport requirements and sites to serve the New Jersey–New York metropolitan.*

Printed image digitised by the University of Southampton Library Digitisation Unit

(3) Park, R E (1966). Airport accessibility and Detroit passengers. *Journal of Aero-Space,* Transport Division, American Society of Civil Engineers, 92, p. 65-81.

(4) Warskow, N, and Tiemann, A (1966). Capacity of airport systems in metropolitan areas. *Jour. Aero-Space,* Trans. Division, Am. Soc. Civil Engineers, 92, 35-61.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the Bishop's Stortford Season Ticket Holders Association

Rail Access to Stansted Airport

1. This Association, which has been in continuous existence for many years, was formed for the object of safeguarding the interests of all regular travellers from the Bishop's Stortford district. Its membership for 1967-1968 was over 600 and it is expected that the membership figure for 1968-1969 will be approximately 750.

2. Until publication of the Government's White Paper (in May 1967) nominating Stansted to be developed as London's third airport, the committee of the association had taken no active part in any investigations concerning this airport. The committee had taken this course on the grounds that the association was not itself against the development of Stansted Airport *per se* and that members wishing to support or oppose Stansted's development could do so through other organisations specifically formed for those purposes. In deciding on this course of action the committee had presumed that adequate rail access links would be provided without detrimental effect upon its members' travelling conditions.

3. The proposals for the rail access link to Stansted Airport when published in the Government's White Paper came as a great shock to this committee. The proposals were (paragraph 64) "By the provision of a spur between the Airport and main line at Bishop's Stortford and by other minor works, Stansted could be brought (though admittedly by a circuitous route by way of King's Cross and Brixton) within about an hour's journey by train from Victoria". The cost of the "minor works" was subsequently given (paragraph 65) as £5m. It was immediately apparent to the committee that the government's suggestion that rail access could be provided to what was to become possibly the largest airport in the world at a mere cost of £5m was totally unrealistic.

4. The committee proceeded to prepare a report on the subject of rail access to Stansted and, in order to obtain all the necessary facts, conducted considerable correspondence with both the Eastern and Southern Regions of British Railways. From this correspondence we learned that BR had based their proposals upon a rail service providing only three trains an hour between Stansted and Victoria. However, at the beginning of February 1968, we received from the Divisional Manager (Eastern Region) a letter informing us that BR's plans were being scrapped and that they were starting again. The relevant part of his letter was as follows —

> "The information given in my previous letter was based on the original plan for a two-runway airport with an SBR of 64 aircraft movements per hour. The latest proposals for two pairs of parallel runways with an SBR of 128 aircraft movements per hour have altered the whole basis of planning. Furthermore, the traffic estimates which the British Airports Authority have now produced are almost

Printed image digitised by the University of Southampton Library Digitisation Unit

three times the original estimates given by the Ministry of Civil Aviation. We only received these new figures last November since when we have had to go back to the beginning and start planning on a fresh basis. This is now being done in conjunction with the BAA, GLC and Government departments concerned, but it is likely to be some time before firm proposals can be produced."

He continued —

"It would be absolutely out of the question to put Stansted traffic into Victoria as well. The proposal to use the widened lines route from Kentish Town to Ludgate Circus has therefore been abandoned and we are now looking at the King's Cross/St. Pancras area."

The admission by British Railways that they were scrapping previous plans (i.e. those incorporated in the White Paper) and were looking afresh at the whole problem came as very welcomed news to the committee and fully supported the doubts that they had had on the White Paper's proposals.

5. The report upon the committee's investigation into the rail access link to Stansted Airport was forwarded to the Prime Minister on 16th February 1968. (One copy of the report has been given to the Secretary of the Commission on the Third London Airport.*) In assessing the probable passenger requirements for transportation from the airport to Central London, many factors were taken into account. It soon became apparent that whilst these factors would affect the *rate of growth* of passenger traffic, it seemed unnecessary, for our purpose, to ascertain the exact time in the future when an exact number would be travelling. It was merely necessary to provide plans to handle the number of passengers that would be expected to use the airport when it will be operating at full capacity, i.e. with all four runways in operation and an overall SBR of 128. Whilst it was realised that the latter might not eventuate until the late 1980s, it was considered unrealistic to take this great planning decision on the basis of traffic to be handled in only the first year or two of the airport's existence. After taking all factors into account, the committee arrived at the conclusion that the rail access link must be capable of providing ten thousand seats per hour in each direction at periods of the day which might conflict with the main commuter peak hours. In view of the existing, and rather limited, facilities already available, it became apparent that it would be necessary to construct a fresh pair of tracks from the airport to Kentish Town in order to provide access to St Pancras (or Euston). *The cost of the proposed link was estimated to be £35m-£40m.*

6. Following editorial comment in the magazine *Modern Railways*, a letter was published in the June 1968 edition from H R Gomersall, Chief Officer, New Works, British Railways Board. Since this letter is so important, the whole of it is reproduced as follows:

"To the Editor, *Modern Railways.*

Sir,—Your editorial in the April issue dealing with the question of access to the third London Airport raises several points which need clarification.

Reference is made to "£5m plucked out of the air for the 1967 White Paper". This sum was a careful and considered estimate of the work

*Report on an Investigation into the Rail Access Links to the Third London Airport. (Available for inspection, by arrangement, at the offices of the Commission.)

Printed image digitised by the University of Southampton Library Digitisation Unit

needed in order to carry the airport traffic forecast originally, and only becomes invalid due to the revised forecasts to which we are required to work.

Reference is made to the sum of £35/40m estimated by the Bishop's Stortford Season Ticket Holders' Association. Although this figure does not necessarily agree with our own estimate, it is true that in order to carry, eventually, the maximum traffic forecast, the airport trains would need to run on their own tracks. It is difficult to understand, however, how the route proposed could be regarded as a circuitous one. It is also difficult to understand the meaning of the phrase "carved expensively across the North London periphery". The right question, surely is: "Expensive in relation to what?" If one accepts the fact that a mass transport right of way will be needed eventually, whatever system is proposed will certainly not cost much less than £35/40m but it should be borne in mind that the build-up of traffic to the point where a right of way is needed will take many years. Short of acquiring a non-circuitous route at great cost through a built-up area, what other sensible alternative is there than to follow existing rail alignments?

It does not seem a valid planning concept to suggest that the correct method of deciding the site for the third London Airport should be to slot it in with suburban network improvements unless this is only a fortuitous by-product, as indeed you yourself agree.

King's Cross is referred to as "an unsuitable London terminal area". No reason is given. It is true that the West End proper is obviously the most desirable location for an airport terminal, but it is obvious that the terminal location can only be related to the rail route which serves the third airport. It is obvious, also, that

(a) Even if the cross-London route to Victoria from King's Cross was not ruled out on a time basis, the extra check-in and baggage handling facilities needed for the third London airport could not be accommodated at Victoria in addition to the Heathrow facilities.

(b) The problem of external traffic generation at Victoria imposed by the Heathrow link can be solved. The imposition of the traffic generated in connection with the third London airport could not be adequately and properly dealt with at Victoria.

(c) When the Victoria Line is opened, public transport facilities at King's Cross will be more than adequate.

Because of the very strong emotions generated in connection with the choice of Stansted, the Government has announced its intention to hold a new inquiry. In this inquiry, the question of transport links may influence to some degree the location of the airport, but it is surely important to bear in mind that one of the most important criteria of selection will be the environmental effects on some ordinary communities. The selection of a rail route and its London terminal must be a secondary consideration.

H R GOMERSALL,
Chief Officer, New Works
BRB, London NW1"

Printed image digitised by the University of Southampton Library Digitisation Unit

7. We would particularly draw attention to the following salient points in Mr Gomersall's letter regarding access to Stansted Airport:

> "It is true that in order to carry, eventually, the maximum traffic forecast, the airport trains would need to run on their own tracks."
> "If one accepts the fact that a mass transport right of way will be needed eventually, whatever system is proposed will certainly not cost much less than £35/40m."

8. The cost of £35/40m is for rail access to a town terminal at St Pancras (or Euston). However, as was pointed out in the report, the committee considered that the use of these stations would be a "second best" solution. British Railways have stated:—" Victoria cannot be considered as a terminal for a third airport service, partly because of the road traffic problem . . . . and partly because it is virtually certain that we could not accommodate the extra rail services on the approaches into Victoria." BR's contention that Victoria would be unable to accept the third airport's traffic was based upon the fact that with the development of a Victoria/Heathrow service, and of Channel Tunnel traffic, the road traffic generated in the Victoria area would be so great that they, together with the GLC and Westminster Council, considered it would produce probably intolerable conditions. The committee have looked into the siting of the third airport's terminal to a considerable degree and we are firmly of the opinion that Victoria should, if at all possible, be the town terminal. In our view British Railways have given wrong priorities in their planning considerations. If, indeed, Victoria cannot handle all the possible traffic (and we are not convinced of this), then in the committee's opinion, the traffic that should be refused at Victoria should be that from Heathrow. The correct solution to the Heathrow problem is the extension of the underground from Hounslow West. Not only would this be a far cheaper way of linking Heathrow to central London, but it would have considerable advantages over a rail link into Victoria. Heathrow is so close to London that a rail link to a terminal at Victoria would, in fact, only handle some 30/40 per cent. of the traffic generated at Heathrow. By connecting the latter with the underground system a far larger proportion of airport passengers would use it and by being able to "fan out" before reaching central London, obviate the need for an expensive major town terminal to handle Heathrow's traffic. Furthermore, provided the tunnels to be constructed under Heathrow Airport are built sufficiently large to be capable of accepting BR's stock and by constructing a link between the underground extension in the vicinity of Hatton Cross and Southern Region's line in the vicinity of Feltham, it would be possible to provide a service of three or four trains an hour from Heathrow into Victoria at a relatively small cost to cater for those passengers still wishing to reach Victoria either because of the hotels, etc., in that area, or for the purposes of interchanging on to the links connecting the other airports, Channel Tunnel, etc. By so restricting Heathrow's traffic to Victoria, we consider that it will be possible for the latter to handle the third airport's traffic.

9. Should Stansted be nominated as London's Third Airport, then the cost of connecting it with Victoria would be considerably greater than the £35/40m already quoted as the cost to connect it to St Pancras (or Euston). The existing cross-London rail facilities are totally inadequate to handle the airport's traffic

Printed image digitised by the University of Southampton Library Digitisation Unit

as has been agreed by British Railways. It would therefore be necessary to construct an underground line through Central London capable of accepting BR trains. We have no accurate figures of costs for constructing such an underground line but we believe that it would be something in the order of £5m per mile. The total cost, therefore, of a pair of independent tracks throughout from Stansted to Victoria would be something in the order of £50/60m. We have considered the possibility of using existing rail links via East London and West London, but have come to the conclusion that such circuitous routes must be ruled out for, even if they were capable of accepting the traffic, the journey time via such routes would be unacceptable.

10. The conclusions of the committee are in the event of Stansted Airport being developed to any substantial extent:

(i) The town terminal should, if at all possible, be Victoria. The cost of providing a feasible rail link between Stansted and Victoria would be something in the order of £50/60m.

(ii) That if Victoria must be ruled out, then the cost of providing a rail link from Stansted to St Pancras (or Euston) would be in the order of £35/40m.

Printed image digitised by the University of Southampton Library Digitisation Unit

Memorandum on London Airports by Lord Bledisloe

It appears to me that the real problem is to decide on the best site for an International Airport capable of serving London. The problem is not whether Stansted would be a suitable site for a third London Airport or where such a third airport should be situated.

I would suggest that the ideal airport for this purpose should fulfil the following conditions:

(1) Its operation should cause the minimum nuisance to those living nearby.

This points inevitably to a site either on the coast or on the Thames estuary, where the approaches are largely over water.

(2) Its operation should cause the minimum nuisance to the inhabitants of London itself.

This means that the site should be at some considerable distance from London and not, like Heathrow, so placed that aircraft approaching to land in the prevailing wind conditions fly low over Chelsea and Kensington.

(3) As an international airport it should not only be capable of handling an increasing density of air traffic but should actively encourage the maximum use of its facilities.

In this connection Heathrow is engaged in curtailing its night traffic in deference to the, very understandable, complaints of the nuisance by noise which is involved.

(4) It should be served by a fast system of communication to central London either by conventional rail or monorail.

Heathrow fulfils none of these conditions and I anticipate that, as soon as a suitable site which does fulfil these conditions has been developed, air traffic in and out of Heathrow will inevitably decline. In those circumstances the expenditure of large sums of public money on developing and extending Heathrow would seem to be utterly unjustified.

No doubt a lot of public money has already been expended at Heathrow, but throwing good money away after bad is surely unsound; if a fundamental mistake has been made, the only sound solution is to cut the loss and start afresh on the right lines.

Neither Stansted nor Gatwick fulfils any of the above conditions, and indeed the development of Stansted would only add to the difficulties owing to the problem involved in dealing with in-transit passengers. Suppose, for example, a passenger flying from Stockholm to Bermuda finds that there is no direct flight available and so is routed via London. He would presumably fly on SAS airlines to Stansted and proceed by BOAC from Heathrow to Bermuda. How is he to get from Stansted to Heathrow? There is no railway connection, no through road and, if he goes by air, he would fly directly over London and so increase the already intolerable noise nuisance.

Printed image digitised by the University of Southampton Library Digitisation Unit

What I venture to suggest is required is an airport some 60 to 100 miles from London with its approaches (in the prevailing westerly winds) over water, connected to the centre of London by fast road or monorail. Customs officers should be available on the train who would carry out their duties during the journey to London and passengers would be taken direct from their aircraft to the train. In-transit passengers would simply change aircraft.

I do not pretend to have studied the merits or otherwise of all possible sites, but one site which would appear to fulfil all the conditions is Foulness, the airport being sited on land reclaimed from the sea.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the Board of Trade

Aircraft Noise

Introduction

The noise of arriving and departing aircraft is a prominent feature of the environment of a major airport. It causes annoyance: it interferes with some activities; and it reduces the general level of amenity. The total area affected, to a greater or lesser extent, can be quite large in comparison with the area occupied by the airport itself. For these reasons aircraft noise is likely to be one of the more important factors which have to be taken into account in assessing the relative merits of alternative sites for the Third London Airport.

2. Discussion of aircraft noise tends to generate conflicting views and considerable emotion. This is to be expected because of the great variety of conditions under which aircraft noise is heard and because of the great variability in human response to stimuli of this kind. These circumstances make it all the more imperative to develop and use objective and quantitative methods, even though this presents difficulties, and the results can be only approximate in certain respects.

3. One quantitative approach would require the following:

(a) Appropriate units for specifying the noisiness of individual aircraft.
(b) Appropriate units for specifying the total exposure to aircraft noise at given points on the ground in the vicinity of an airport.
(c) Methods for predicting likely total noise exposure in future years.
(d) Relationships between total noise exposure and the resulting nuisance.
(e) Methods for costing the nuisance caused by aircraft noise.

4. The purpose of this paper is to review various aspects of (a) to (d) above. The paper does not cover (e), methods for costing the nuisance caused by aircraft noise, since this has been referred to in the paper on Methodology already submitted to the Commission, and will be dealt with more fully in a separate paper.

(a) *Units of Noisiness*

5. The magnitude of a sound is measured in terms of the amplitude of the pressure variations, which are created by its passage through the air, expressed in decibels (dB) above a reference magnitude. Measurements made in this unit are inappropriate in the assessment of human response since the subjective effects of sound, such as loudness, noisiness, disturbance and annoyance do not accord well with this simple measure. By suitable weighting and combination of the measured amplitudes of the component frequencies making up the sound, calculations can be made of the sound levels in terms of a number of units which reflect certain of the human responses. The subjective units most commonly met in the field of aircraft noise are the dBA and the PNdB. The

Printed image digitised by the University of Southampton Library Digitisation Unit

dBA is widely used for the loudness of general continuous noises including, for example, road traffic noise, and is defined as the reading that is obtained on a sound level meter operating with what is known as the "A" weighting curve, which reflects the variation of the sensitivity of hearing with frequency. This curve and its tolerances have been defined by the International Electro-technical Commission in ref. 1. The PNdB—which is an abbreviation for Perceived Noise Decibel—has been derived from tests of people's judgments of noise representative of that of aircraft of different types, and the procedure for measuring and calculating it has been set out by the International Organisation for Standardisation in ref. 2.

6. The scales for these units correspond to a scale of the logarithm of the energy, that is to say equal intervals on the scales correspond to equal increments in the ratio of the energy levels. This contrasts with the more familiar linear scale where equal intervals represent equal increments in the quantity measured. For example, a series of values 0, 10, 20, 30 . . . . . on a logarithmic scale could translate into the series 1, 10, 100, 1,000 . . . . . of a linear scale. Logarithmic scales are generally more convenient than linear scales in the field of acoustics because the range of pressures to which the human ear is sensitive is very large and because a logarithmic scale is much more closely related to the way in which the human ear responds.

7. Neither the dBA nor the PNdB bear any constant relationship to the simple physical measure of sound pressure levels. However, in the context of aircraft noise, it is a reasonable working approximation in most instances to convert a noise level given in dBA to one in PNdB by adding about 15. For example, 65dBA is approximately equivalent to 80 PNdB.

8. To give some idea of the significance of numerical values, 50 PNdB is equivalent to the background noise level in a quiet rural area: 100 PNdB to the noise level inside a London tube train; and 110 PNdB is the noise limit applied to take-offs from Heathrow by day at monitoring points in the order of 4 miles from the start of the take-off run. An increase of 10 PNdB is judged on average to be equivalent to a doubling of noisiness.

9. When an aircraft flies near an observation point on the ground, the noise at that point rises to a maximum and then decreases again. It is usual to describe the noisiness in terms of the noise level at this maximum and it can be assumed that this is being done in the absence of any statement to the contrary. One measure of the duration of the noise is a simple statement of the length of time for which it exceeds a given level.

10. It should be noted here that recent work has been directed towards developing a more refined version of the PNdB, which is known as the Effective Perceived Noise Decibel—abbreviated to EPNdB. This new unit attempts to take into account the fact that human response to the noise of an aircraft flying past is affected both by the duration of the noise and by the presence of pure tones within it. The EPNdB is a complicated and time-consuming unit to use and its principal application will be in situations where high precision is needed, such as in the noise certification of aircraft: it is probably unnecessarily elaborate for the present context. Definition of the EPNdB is at present in process of being agreed within the International Organisation for Standardisation.

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) *Units of Total Noise Exposure*

11. It is to be expected that the nuisance caused by aircraft noise at any point must depend on some summation of the noises produced by all the aircraft heard at that point, which may be called the total noise exposure. If a unit for the measurement of total noise exposure is to be useful, it must have some relevance to the nature of the nuisance caused, which may be divided into three main categories:

(a) General annoyance of people in and around their homes.
(b) Interference with activities depending upon speech communication, for example in schools and offices.
(c) Interference with other activities such as outdoor recreations and the activities of hospitals.

12. The general annoyance of people in and around their homes has been studied in several countries with broadly similar results, although there are differences in detail. The basic work in the United Kingdom was carried out under the auspices of the Committee on the Problem of Noise, under the Chairmanship of Sir Alan Wilson, FRS, whose final report was published in July, 1963 (ref. 3). The Committee commissioned a social survey and an associated programme of noise measurement, which were carried out in an area of about 10 miles radius centred on Heathrow in the summer of 1961. One of the major conclusions drawn by the Committee from this work was as follows (ref. 1, para. 636(c)):

> "The survey provides a tentative basis for establishing a combined 'noise and number index', defining the total noise exposure which causes annoyance. We consider that the data showed that in causing annoyance a fourfold increase in the number of aircraft heard is very approximately equivalent to a rise in average peak noise level of 9 PNdB."

This conclusion led the Committee to define a noise and number index, abbreviated to NNI, by the following equation:

$$NNI = L + 15 \log_{10} N - 80$$

Where L = the logarithmic average peak noise level in PNdB
and N = the number of aircraft heard in a specified period, eg 1 day or 1 night

As an example of the way this formula works, an NNI of 45 would result from 100 aircraft heard of average peak noisiness 95 PNdB, or 46 aircraft of 100 PNdB, or 22 aircraft of 105 PNdB or 10 aircraft of 110 PNdB.

13. The work of the Wilson Committee on Aircraft Noise was the first of its kind in the UK and inevitably brought to light questions that needed further research. The Board of Trade therefore decided to carry out a second social and noise survey around Heathrow with the main objects of confirming (or amending) and refining the earlier findings. The field work was carried out with the co-operation of the Central Office of Information in the summer of 1967, but the very lengthy and complex analysis of the large volume of data obtained is unlikely to be completed before the early summer of 1969. Until a demonstrably better unit for the total noise exposure which causes annoyance becomes available, the Board of Trade considers it best to continue to use the NNI as formulated by the Wilson Committee.

Printed image digitised by the University of Southampton Library Digitisation Unit

14. When the nuisance results primarily from interference with speech communication, the NNI is probably not the appropriate measure of total exposure. Interference with speech communication occurs when an intruding noise exceeds levels which have been fairly well established but which depend on the circumstances of the case. The nuisance therefore is likely to depend on the number of interruptions or, more closely, on the total proportion of time during which speech communication is interrupted. Most of the research in this area has been concerned with the intrusion of continuous noise and this means that (i) it is current practice to use the dBA as the unit of noise level and (ii) there is need for further research into the effects of the special property of aircraft noise, which is that it rises to a maximum and decreases again over quite a short time.

15. When nuisance is caused by interference with activities other than speech communication, there is very little evidence to suggest what unit of total noise exposure would be appropriate. There may be cases where the NNI can be used, but it seems likely that the number of occasions or the proportion of time that a stated dBA level, dependent upon the activity, is exceeded would more often be the more relevant measure. This is an area where further research is needed.

(c) *Prediction of Total Noise Exposure*

16. It will be seen from what has been said that the quantification of total noise exposure is a complex operation. There is no question of being able at the present time to take a direct reading from an instrument of the total noise exposure at a given point now. In the context of assessing the relative merits of alternative sites for the Third London Airport, the requirement becomes the inevitably more difficult one of predicting future noise exposures. In order to do this, predictions under three other headings are required:

(a) The noisiness of individual aircraft in future years.
(b) The volume of traffic in future years, categorised according to the noise producing properties of the aircraft concerned.
(c) The three-dimensional geometry of air traffic patterns in the neighbourhood of the airport under consideration, together with the distribution of the forecast traffic by noise categories throughout these patterns.

17. Predicting the noisiness of future aircraft requires assessment of the net effect of opposing trends. On the one hand, there is the tendency for aircraft to increase in size and therefore in power and therefore to become noisier. On the other hand, improved technology is reducing noise and this process is likely to be accelerated by the introduction of a scheme for the noise certification of aircraft. It is thought that the average noisiness of aircraft will continue to increase for a few years but should be brought down again to present levels some time during the decade beginning 1980.

18. Prediction of the volume of traffic in future years is thought to be fundamental to the Inquiry for a variety of reasons, apart from noise. The special requirements in the noise context are that the forecasts should be in sufficient detail to show the noise category of aircraft as well as the very considerable quantity of information likely to be required for air traffic control planning purposes.

Printed image digitised by the University of Southampton Library Digitisation Unit

19. Predicting the geometry and utilisation of the air traffic patterns in the neighbourhood of the airport under consideration appears to be possible only after a good deal of air traffic control planning (including the effect of probable restrictions for noise abatement purposes) has been completed. It is thought that the output from such planning is unlikely to be available until the later stages of the Inquiry.

20. When these three sorts of predictions have been made it becomes possible to compute the NNI at a series of points around the airport and to draw contours corresponding to specified NNI levels. The complete computations are complex but can often be simplified by using certain assumptions. They are also lengthy and require the use of an appropriately programmed electronic computer. An example of earlier work is given in the attached diagram*, which shows the predictions that were made of the NNI contours for the two proposals for a Third London Airport at Stansted.

21. Means have not yet been developed for computing predicted total noise exposure in units other than NNI. There do not, however, seem to be fundamental difficulties, other than time, in doing this when the units have been defined.

(d) *Relationship between Total Noise Exposure and Nuisance*

22. This paper has been concerned so far with quantifying the noise environment of an airport. The next step is to consider the levels of nuisance generated by this environment.

23. Where the nuisance consists of the general annoyance of people in and around their homes, the Board of Trade believe that, pending the results of the 1967 survey, the best available guide lines are those developed by the Wilson Committee. Perhaps the most important of these is set out in paragraph 636(d) of their report (ref. 3): —

> "If the concept of a noise and number index is well founded, we believe that the results of the survey provide sufficient evidence for arriving at a NNI value at which the annoyance and disturbance could be regarded as unacceptable. We think that the most accurate estimate that can be made from the evidence is that the maximum acceptable level lies in the region between 50 and 60 NNI."

Another illustration of the Committee's assessment of the NNI scale was their finding that, for an NNI of 31, the populace rated themselves on average as a "little" annoyed: at 44 NNI the average rating became "moderately" annoyed and at 60 NNI "very much" annoyed.

24. In using these findings, the limitations of the work done for the Wilson Committee have to be borne in mind. For example, the NNI figures quoted above are in fact those for daytime and the Committee were only able to draw very tentative conclusions about the important problem of annoyance at night. Furthermore, the findings had to be based on the environmental conditions, the volume of traffic and the noise levels that existed around Heathrow in 1961. It is hoped that the significance of some of these limitations will be better understood when the results of the 1967 survey become available.

* See plates facing p.26

Printed image digitised by the University of Southampton Library Digitisation Unit

25. It has already been indicated that a good deal of research has been done on interference with speech communication. The Wilson Committee said (ref. 3, end of para. 119):

> "The Speech Interference Level is a reasonably well accepted criterion, and, although the point beyond which there will be interference will vary according to voice levels, distance between those communicating and so on, can be taken in general as 55 dBA."

This statement was not, however, made in the context of aircraft noise and further research is needed on this matter. Such research is particularly important in the case of schools, where there is some conflict between the large amount of interference that would be predicted on the basis of criteria developed from studies of continuous noise and the relatively small volume of complaint about actual interference around Heathrow. The Building Research Station, in collaboration with the Department of Education and Science, is actively engaged in investigation of the effects of aircraft noise on schools and the Board of Trade support this work being carried forward with all speed.

26. There is very little information about the relationship between total noise exposure and the remaining forms of nuisance. There is an investigation going on under Ministry of Health auspices of the problem of noise in hospitals, but this includes all sorts of noise and is not specifically related to aircraft noise. No other investigations are known to be underway.

27. The Commission may wish to know that the Ministry of Technology are considering the noise aspects of the operation of VTOL aircraft into built-up areas and, in this context, are arranging for an independent consultant to review the methods which are in use for quantifying noises as regards their nuisance value and for specifying criteria for maximum permissible noise. It is planned that this review should be a generalised one and comprehensive in nature, and the Board of Trade is encouraging its early completion in the belief that it may be of value in the Inquiry.

References

1. International Electrotechnical Commission. *Precision sound level meters.* Publication 179. 1965.
2. International Organisation for Standardization. *Procedure for Describing aircraft noise around an airport.* ISO Recommendation R507. October, 1966.
3. Committee on the Problem of Noise. *Noise. Final Report.* Cmnd 2056. July, 1963.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the British Airports Authority

Forecasting Employment at a Third London Airport

The Relationship Between Staff Numbers and Airport Traffic

1. In an effort to find a possible way of forecasting future employment, the relationship between the numbers of employees at Heathrow and the volume of airport traffic has been studied.

2. Airport traffic has three main elements—movements of air transport aircraft, passengers and cargo. Most airport staff can be said to perform duties related to those three elements. For reference purposes these staff may be termed "Related Staff", and categorised into three mutually exclusive groups as follows:

2.1 *Category A (ie staff with duties related to the movements of air transport aircraft)*
The staff in this group are concerned with the handling, scheduling, catering, servicing, operating and *routine* turn round of air transport aircraft. They include aircrew (pilots and cabin crew), staff concerned with air catering, apron servicing, air traffic control and marshalling.

2.2 *Category P (ie staff with duties related to passenger movements)*
The staff in this group are concerned with the handling, routeing, loading and unloading of passengers. They include ground hostesses and other airline staff in passenger terminals, baggage loaders, porters, shop assistants and the staff of passenger terminal caterers.

2.3 *Category C (ie staff with duties related to cargo movements)*
The staff in this group are concerned with the handling, routeing, loading and unloading of cargo. They include loaders and shipping agents' staff.

3. The remainder of the staff, whose functions cannot be said to be immediately related to airport traffic but who are for the most part essential to the running of the airport and are complementary to the activities of the "Related Staff", may be termed "Associated Staff" and categorised into two mutually exclusive groups as follows:

3.1 *Category* d_1
The staff in this group provide supporting services to the "Related Staff". They include clerical, cleaning, motor transport and accounting personnel and also airline base maintenance staff.

3.2 *Category* d_2
The staff in this group may be said to represent the "overheads" of the airport activity. Their numbers at Heathrow are inflated by the presence of airline headquarters staff (notably those of BOAC), who do not *per se* have to be located at the airport—BEA's headquarters staff are

Printed image digitised by the University of Southampton Library Digitisation Unit

located some distance away from the airport. Apart from the airline headquarters staff, this category includes airport managerial staff, public relations staff, caretakers, police and watchmen.

Appendix I gives the breakdown of the staff at Heathrow into these categories. In the light of this analysis a formula was devised to fit the current situation at Heathrow on the following assumption:

That the numbers of "Related Staff" are proportional to air transport aircraft, passenger and cargo movements and that the numbers of "Associated Staff" are proportional to those of "Related Staff".

4. The validity of the formula was tested by applying it to previous years' traffic at Heathrow and comparing the resulting staff numbers with the actual figures. As might have been expected, the gap between the calculated results and the actuals widened the further one went back in time. The reason for this was that the proportion of staff to traffic had not remained static. Appendix II* illustrates this. The formula was adjusted to produce a better fit to the actual figures and the result of applying the adjusted formula is also illustrated in Appendix II.

5. This exercise showed that over the period 1956-1968 the ratio of traffic to staff at Heathrow had increased at an average rate of 4.3% per annum which may be regarded as an annual improvement in "productivity"†. It is therefore most important, in forecasting future employment according to a formula based upon the ratios of airport staff to traffic at a particular point in time, to bear in mind that those ratios will change over time and to allow for that change.

6. In considering the use of such a formula to forecast the staff at the third airport it is necessary in the first instance to consider what the nature of the staff at the third airport might be in order to assess what adjustments should be made to the Heathrow-related formula.

The Nature of Staff at a Third London Airport

7. We know that staff numbers at Heathrow are inflated by the presence of British airlines' headquarters staff, who number about 3,000. Those airlines also have large aircraft base maintenance establishments there (notably those of BOAC and BEA) with staff amounting to about 9,000 (some foreign airlines also have small maintenance facilities). Since Heathrow is the hub for the great majority of services operated by the British Corporations, it is the reporting point for a large number of the aircrew and cabin crew (approximately 6,000 in total). All the 18,000 staff mentioned in this paragraph are included in Heathrow's current total of 42,598 and are covered by the formula referred to in Paragraph 3 above.

8. It is unlikely that airlines with headquarters at Heathrow will wish to re-locate them at a third airport and we consider that the headquarters staff element should therefore be omitted in any forecasting exercise.

* See plates facing p.26

† The term "productivity" is used in the context of the adjustment made to the formula, and is additional to the increase in productivity arising from the growth of productivity of aircraft.

Printed image digitised by the University of Southampton Library Digitisation Unit

9. It may be contended that the third airport will have base maintenance organisations at least as large as those at Heathrow. This, however, could apply only if either the two Corporations chose to transfer their Heathrow facilities to a third airport or if other British operators established themselves there on a similar scale. We consider that neither of these alternatives is the most likely. The Corporations have already made heavy investments of both capital equipment and staff in their existing bases at Heathrow and they are currently expanding them—BOAC are reconstructing a large area with very large hangars for 747s. Aircraft return to base for major checks and overhaul at relatively infrequent intervals, and it may well be possible and economically attractive for BOAC and BEA to schedule flights so that when an aircraft is due for major check it returns to Heathrow on a revenue flight from a third point, rather than on a "dead-leg" from the third airport. (It is the current BEA practice to bring their aircraft used on Scottish and internal German services back to Heathrow for base maintenance checks.) Furthermore, increases in reliability and technological progress are increasing the length of time between mandatory checks, while the productivity of large aircraft means that airline fleets are not increasing as fast as passenger and cargo traffic. We also have seen a recent report that BEA intend to maintain a portion of their fleet at Manchester. The introduction of an entirely new generation of aircraft types in later years—such as the second generation of supersonics and hypersonics—might see the establishment of main maintenance bases at the third airport especially for them, but this is as speculative as the characteristics of the aircraft themselves.

10. There can be no doubt that the third airport will have maintenance facilities, but we believe that for forecasting purposes an allowance will have to be made to reflect the continued and intensified use of the existing bases at Heathrow.

11. The numbers of aircrew and cabin crew at the third airport will depend mainly upon the extent to which British airlines operating from that airport will require such staff to report there. Assuming that the third airport will provide a range of services comparable to those at Heathrow, with a volume of traffic at least as great as that at Heathrow, we see no reason to make an allowance for a lower proportion of aircrew and cabin crew reporting to a third airport, at any rate in the longer term.

12. As a working hypothesis therefore, it seems reasonable to consider staff on-site at a third airport consisting of similar elements to those at Heathrow except for airline headquarters staff and with some reduction in scale of aircraft base maintenance staff. Aircrew and cabin crew may possibly not appear on the same scale in the early stages, if the airlines are able to roster these staff so as to keep Heathrow as the main reporting point for a time, but we should expect them in the longer run to assume proportions and relationships with traffic similar to that at Heathrow.

Forecasting Future Employment at a Third Airport

13. On the basis of these considerations, further analyses were made of the ratios of staff to traffic at Heathrow.

14. An examination was made of the ratio of the staff to traffic *excluding all airline headquarters, base maintenance, aircrew and cabin crew staff*. The

Printed image digitised by the University of Southampton Library Digitisation Unit

total of this staff was 24,225,* and Appendix III gives the breakdown in the various categories. A second formula was then drawn up using the same assumptions as before (see paragraph 3 above). The validity of the formula Cross-country gliding will be eliminated in the airspace over a further 1,000 American airports. Despite the diversity of their operations, five of them, ranging in passenger throughput from JFK (New York) to Zurich, gave reasonably accurate figures of employment (see Appendix IV). For Brussels, Paris and Amsterdam the formula underestimated employment but on further examination this proved to be due to the fact that those airports had large numbers of staff on site not covered by the formula. Using the first formula, i.e. that reflecting total Heathrow staff, a reasonable "fit" for those three airports was obtained. Appendix IV also shows the result of these comparisons. For the ninth airport, Washington National, the second formula over-estimated the actual employment; the reason for this may be found in the fact that that airport caters predominantly for domestic flights, many of which are of the "shuttle service" type; these services are operated at high frequency and with far fewer formalities than those required on international flights (which predominate at most of the other airports).

15. These exercises showed, by comparison between the current situations at Heathrow and at eight overseas airports, that the ratios of staff to traffic were similar. There was therefore reason to hope that a formula based upon those relationships might assist in forecasting on-site staff at a new airport. It was, however, essential for the chosen formula to reflect the nature of the staff at that airport, bearing in mind that the two formulae so far used represented two extremes, neither of which seemed intrinsically probable for the third airport.

16. A third formula was therefore drawn up to reflect the following assumed differences between the nature of the staff at a third airport and those currently at Heathrow:

16.1 There would be no airline headquarters staff in any significant numbers.

16.2 The proportion of base maintenance staff would be lower than at Heathrow.

16.3 Although the numbers of aircrew and cabin crew may be uncertain in the earlier years there was no reason to assume any significant difference from the Heathrow pattern in the longer term.

17. This third formula is described in Appendix V. It is based upon the same relationships between "Related Staff" and traffic as in the first formula. For the "Associated Staff" the formula provides for base maintenance staff at a level of half that at Heathrow; we consider that this would be sufficient to allow, not only for some element of base maintenance by the two British Corporations but also by a major British Independent Operator, should one seek to base himself at a third airport.

* The reason why this figure is less than the difference between the approximate figure of 18,000, mentioned in paragraph 7 above, and 42,598 is that there is a small element of maintenance, aircrew and headquarters staff of foreign airlines at Heathrow not included in the 18,000, which applies only to British airlines' staff.

Printed image digitised by the University of Southampton Library Digitisation Unit

18. The final point to consider was the improvement in "productivity" which should be assumed for future years. We had found that, historically at Heathrow, the improvement had been at a rate of 4.3 per cent. per annum, and this clearly gives an important guide. (See paragraph 5 above.)

19. We have therefore taken a set of traffic forecasts up to the year 1990, assuming that they fall within a range of probability of ±15 per cent. To this range of forecasts we have applied the formula described in paragraph 16 above and in Appendix V, using an improvement in "productivity" of 4.3 per cent. per annum. As an indication of the effect of improvements above and below 4.3 per cent., we have repeated the exercise using rates of 3 per cent. and 5.6 per cent.

20. We have also considered an alternative method whereby the improvement is not uniform over the whole traffic spectrum—i.e. assuming that the ratios of "Related Staff" to the three elements of airport activity (aircraft, passenger and cargo movements) improve at different rates. Air cargo is a rapidly evolving industry, and significant advances in handling techniques are already in the offing. The handling of aircraft movements, on the other hand, is a long-established activity, and it is not easy to foresee dramatic advances in productivity without the introduction on a substantial scale of automation in flying, air traffic control and routine turnround techniques; nevertheless further advances are within the scope of technology, and productivity cannot be expected to stagnate. There is undoubtedly scope for further advances in "productivity" in the handling of passengers in terms of economies of scale and new techniques. We have therefore applied different rates in accordance with the following broad criteria:

Air Transport Aircraft Movements — A relatively low rate of improvement.

Passenger Movements — A somewhat higher rate of improvement than that for air transport movements.

Cargo Movements — A relatively high rate of improvement.

Two sets of rates have been used, viz:

Air Transport Aircraft Movements —	1%	3%
Passengers —	3%	5%
Cargo —	5%	7%

and staff forecasts calculated on the basis of the same traffic forecasts as before.

21. The results of the calculations described in paragraphs 19 and 20 above are shown in Appendix VI. These give a range of total staff employed on the airport by the year 1990 of between 15,500 and 38,000. However, on the basis of the historical improvement in "productivity" at Heathrow of 4.3 per cent. per annum we get the much smaller range of 20,000 to 27,000.

22. Forecasting in 1969 the traffic demand as far ahead as 1990 is a highly speculative exercise. Forecasts beyond 1990 can be no more than pure "guesstimation"; nevertheless in order to give an illustration of the effect of the forecasting formula and varying rates of "productivity" in the very long term we have taken a single set of annual traffic figures, considerably higher than those already used, as follows:

Printed image digitised by the University of Southampton Library Digitisation Unit

Air Transport Aircraft Movements	400,000
Passenger Movements	75,000,000
Cargo Movements (short tons)	3,500,000

We have assumed that this level of traffic is reached on the one hand in the year 2000 and on the other hand in the year 2010. Applying the formula, and varying rates of "productivity" as before, produces the following results:

Year	*Staff*
2000	25,000 — 57,500
2010	14,500 — 45,500

23. However, on the basis of the historical improvement in "productivity" at Heathrow of 4.3 per cent. per annum, the range of the staff forecasts is narrowed to:

Year	*Staff*
2000	37,000
2010	24,500

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix I

Breakdown of Heathrow staff as at June 1968 into categories

		Category A	Category P	Category C	Category d_1	Category d_2	Total
Airline	*no.*	12,251	2,886	2,435	11,444	4,282	33,298
	%	36·8	8·7	7·3	34·4	12·9	100
Non-Airline	*no.*	967	2,745	881	3,206	1,501	9,300
	%	10·4	29·5	9·5	34·5	16·1	100
Total	*no.*	13,218	5,631	3,316	14,650	5,783	42,598
	%	31.0	13·2	7·8	34·4	13·6	100

Appendix III

Breakdown of Heathrow staff as at June 1968 into categories excluding airline headquarter, base maintenance and aircrew personnel

		Category A	Category P	Category C	Category d_1	Category d_2	Total
Airline	*no.*	6,346	2,886	2,435	2,215	1,043	14,925
	%	42·5	19·3	16·3	14·8	7·0	100
Non-Airline	*no.*	967	2,745	881	3,206	1,501	9,300
	%	10·4	29·5	9·5	34·5	16·1	100
Total	*no.*	7,313	5,631	3,316	5,421	2,544	24,225
	%	30·2	23·2	13·7	22·4	10·5	100

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX IV

Estimates of staff at nine overseas airports in the year 1967

	New York (JFK)	San Francisco	Copenhagen	Frankfurt	Zurich	Amsterdam	Brussels	Paris (Orly)	Washington (National)
Actual staff	40,980	26,071	9,649	13,200	7,278	17,100‡	11,137§	22,000‖	8,276
Estimated staff *	39,157	25,237	10,937	14,212	6,806	7,840	4,748	12,779	18,976
Estimated staff †						14,012	8,744	23,295	

* As estimated by the formula referred to in paragraph 14.

† As estimated by the formula referred to in paragraph 3.

‡ Amsterdam airport actual staff includes 3,000–3,500 staff of the Fokker Aircraft Manufacturing Company, and therefore the comparison should be made using a total of actual staff excluding this number.

§ There are a number of staff working at Brussels (some 2,000) who do not fall into the categories covered by the formula and do not form an essential part of Brussels' function as a civil airport.

‖ Estimated on basis of preceding and following years' actuals.

Formula used for estimating employment at a third London airport

GIVEN:

A_t . . . air transport movements in year t
P_t . . . number of passengers in year t
C_t . . . short tons of cargo in year t
aA_t . . staff proportional to air transport aircraft movements
bP_t . . staff proportional to passengers
cC_t . . staff proportional to cargo
d_1 . . . (see text, paragraph 3.1 for definition)
d_2 . . . (see text, paragraph 3.2 for definition)
$d_1 + d_2 = d(aA_t + bP_t + cC_t)$
q_{tn} . . . annual "productivity" factor for n years until year t

THUS:

$$X_t = \frac{1}{q_{tn}} (aA_t + bP_t + cC_t)(1 + d)$$

The values of the co-efficients:

a = 0.0572 per air transport movement
b = 0.4218 per 1,000 passengers
c = 0.0104 per short ton of cargo
d = 0.5700

The base year for q_{tn} is 1968

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX VI

Estimated staff at a third London Airport

	1980			1985			1990		
Traffic forecasts*	− 15%	*forecast*	+ 15%	− 15%	*forecast*	+ 15%	− 15%	*forecast*	+ 15%
4.3% productivity	9,000	10,500	12,000	15,000	17,500	20,000	20,000	23,500	27,000
3% productivity	10,500	12,500	14,500	18,500	21,500	24,500	26,500	31,000	35,500
5·6% productivity	8,000	9,000	10,000	12,000	14,000	16,000	15,500	18,000	20,500
1/3/5% productivity	11,000	13,000	15,000	19,500	23,000	26,500	28,000	33,000	38,000
3/5/7% productivity	9,000	10,500	12,000	14,000	16,500	19,000	18,500	21,500	24,500

* Traffic forecasts

	1980	1985	1990
Air transport movements (*thousands*)	80	145	215
Passengers (*millions*)	8·5	18	31
Cargo (*thousands of short tons*)	300	650	1,200

Guidance for Location of a Third London Airport

The London area air traffic control system, and its operation, has been reviewed by Airborne Instruments Laboratory (AIL). We find that the techniques and equipments utilized at these locations are similar to United States and Canadian practices. Some differences in application of separation standards have been noted, particularly in regard to a desire not to diminish terminal area aircraft spacing to the minimum as is practised at some major US airports. We propose to apply our experience and techniques gained in the study of other similar air traffic problems to the siting of a third London Airport.

As background for suggesting guidance criteria for site location it is pertinent to examine similar cases leading to the selection of a major airport site which have been resolved or are under study. The following paragraphs refer to new airport requirements in Washington, DC, Chicago and New York. Each case discusses the need for a major airport with multiple parallel runways, dual approach capability, and with the ability to function satisfactorily with omni-directional IFR traffic flow.

Washington DC

In the late 1950s, the United States Government selected the Dulles site for Washington DC's new international airport. AIL was the airspace consultant on the team which recommended the site. Dulles has since been constructed and placed into operation. Procedures serving this terminal are complementary to and do not interfere with other Washington DC terminal airports.

Figure 1* indicates the location of the Washington area airports.

Dulles is approximately 20 nautical miles from Washington National Airport; 29 miles from Andrews Air Force Base; 39 miles from Baltimore Friendship Airport. The three airports, National, Andrews and Friendship, have predominantly air carrier or military traffic and handled 742,355 operations in 1967.

Chicago, Illinois

The City of Chicago is now conducting studies to select a site for a new major airport. A result of the initial studies has been to reduce many sites under consideration to the four shown on Figure 2*. The respective distances (in nautical miles) from the two major airports are:

	From O'Hare	*From Midway*
Lake site	21	12
Site A	29	17
Site B	24	15
Site C	18	16

* See plates facing page 26

Printed image digitised by the University of Southampton Library Digitisation Unit

Preliminary Studies by AIL for the City of Chicago indicated that any one of these sites will be acceptable for major airport operations although extensive revision of the en-route and terminal air route structure will be needed and the terminal area control problem will become more complex. The Federal Aviation Agency is now planning a real-time simulation study to finalize their recommendations.

In 1967, O'Hare and Midway handled 904,855 movements.

New York, NY

The Port of New York Authority in 1959 announced the need for a fourth major airport to serve the New York Metropolitan area. Studies conducted by AIL found the Morristown site to be acceptable from an air space standpoint for an airport with dual ILS approach capability. The Federal Aviation Agency has endorsed the site.

Figure 3* indicates the relationship of that site to the other major airports. Distances (in nautical miles) are as follows from the Morristown site:

Newark	13
La Guardia	27
J F Kennedy	31

These three airports handled 1,070,480 movements in 1967.

During the intervening years, the possible use of Morristown has been abandoned because of lack of political and local community support. A site is still being sought. However, the findings regarding air space and airport location remain significant.

Guidance for Third London Airport

Since the selection of a major airport site involves many considerations, in addition to those of airspace, it has been found helpful in past studies to assist other parties engaged in selecting a site by defining the areas where a new airport *cannot* be located because of airspace conflict. These areas are referred to as "Zones of Conflict". Any site outside the zone of conflict is eligible for consideration but still must have a thorough airspace analysis to determine its acceptability. This procedure helps narrow the site search within practical limits. It further permits evaluation of trade offs between airspace efficiency and other siting factors such as surface accessibility, land costs, and other factors.

In developing zones of conflict, a criteria is used which has been developed in the Chicago and Boston studies which reserves for each existing major airport a zone designed to provide an adequate area for landing and take-off operations using IFR radar separation criteria. The zone may be enlarged to accommodate feeder fixes for inbound aircraft. However, it should be realized that establishment of feeder fixes is flexible and can be changed to satisfy local requirements. The minimum dimensions for the zone are 22 nautical miles plus runway length in the major direction, and 12 nautical miles plus runway length (and/or parallel runway separation) in the minor direction.

For Heathrow, the minimum length dimension of the zone has been enlarged to 34 nautical miles plus runway length because of the use of parallel instrument approaches, with a zone width of 13 nautical miles. For Gatwick, a smaller zone is used with a dimension of 24 × 13 nautical miles. Further, for

* See plates facing page 26

Printed image digitised by the University of Southampton Library Digitisation Unit

both Heathrow and Gatwick, the feeder fixes and associated low altitude holding space have been included. The resulting zone of conflict for the two major civil airports is shown on Figure 4*. The area enclosed by solid lines should not be encroached upon. The area enclosed by dotted lines is subject to some rearrangement provided the functional purpose can efficiently be served.

It is noted that current procedures provide only one feeder fix for Gatwick. When the second runway is built, a second feeder fix should be provided when full capacity operation is required. It would appear airspace would be needed to the south-east for Runway 27 and to the south-west for Runway 09. Consequently, it is suggested that no site be considered in those coastal areas.

Any potential site should be eligible for detailed analysis if the site is outside the zone of conflict and has no major encroachment on the zone when a 36 × 14 nautical mile rectangular area is laid on the site. (Zone size adjusted to accommodate an airport layout with four parallel runways with offset ends.) This will provide for another major airport with dual parallel approach capability and on a basis where it is probable the new and existing airports can operate at full capacity. To attain omnidirectional operation for all sites may, however, require circuitous routing and the extent of this should be evaluated. It is emphasized that any site outside the zone of conflict must be analyzed as to airspace need and runway direction to determine its acceptability. Such sites should be considered eligible for detailed examination.

This examination must include:

.....planning of approach and departure paths.

.....planning of inbound and outbound routes to provide omnidirectional operation.

.....changes in air route structure.

.....the resulting complexity of air traffic control.

.....an evaluation of any interference with other civil and military air operations.

.....evaluation of the operational efficiency of the airport system including existing airports and the new third airport.

The last item—operating efficiency—is particularly important, for it is by evaluation of this item that airspace problems can be related to the many other considerations involved in selecting an airport site. For example, it may be deemed in the public interest to accept a site which will result in a lower operating efficiency, provided there is a substantial offsetting gain in some other area such as convenience available to the travelling public. Analytic and/or simulation techniques are available to evaluate the operating efficiency of the airport system with comparative third airport sites, in order that a trade-off study can be performed. The results could be presented as a cost/benefit derived from total system delay for a given level of annual movements. The total delay would include any penalties resulting from interference to capacity operation at any airport and any circuitous routings needed to permit omnidirectional operation at all airports.

The above zone of conflict approach is recommended to permit detailed evaluation of numerous sites, some of which may result in changes in operating efficiency but which changes can be evaluated for comparison to other site selection factors.

* See plates facing page 26

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission by British European Airways

1. Having regard to the Commission's Terms of Reference BEA offers this submission so that, in arriving at a final choice of sites for a third London Airport, the Commission is aware of BEA's needs and long-term objectives.

2. BEA's requirements should be heeded because:

(a) BEA is London's biggest operator—we are responsible for about 40% both of air transport movements and of passengers carried at Heathrow.

(b) BEA has a considerable capital investment in Heathrow in terms of Engineering and Maintenance and Cargo operations. This amounts to a total of £25 million by 1971 of which £20 million has already been incurred or committed.

(c) The siting of the third airport, and the way in which its operations are developed, will have a marked effect on BEA's costs, fleet composition and share of the international market.

(d) BEA now earns £40 million a year in foreign currency—and we are planning to increase our foreign earnings annually to a cumulative total of £255 million over the next five years. To achieve this demands that BEA is free to operate efficiently and to preserve its market share.

3. We consider that it is commercially necessary for BEA to remain at Heathrow, together with BOAC, although we recognise that at some time in the future it may be necessary, in order to match the development of our commercial partners and competitors and to provide services to interline with long-haul carriers, to transfer some services to a third airport.

4. The Commission should consider the role of BEA (in which the Nation has already invested £120m and plans to increase this to £200m during the next 5 years) as an ultra-short haul operator to be of particular importance in consideration of the accessibility of the third airport. The effect of long or longer journey times from city-centre to airport assumes greater importance as the flight sector time decreases. For example, an increased ground journey of 15 or even 30 minutes may well be acceptable on a 7 hour journey but wholly unacceptable on a 60 minute flight to say Scotland, France or Holland.

5. Emphasis should be placed on the fact that this third airport is designated "London" and accordingly must serve that area and at the same time provide the necessary interline and inter-airfield communications between Heathrow, Gatwick and the proposed site. To consider links with Central London is not enough; the airport must, essentially, serve the needs of passengers and shippers; about half of BEA's passengers make their own way to and from the airport from and to a wide variety of addresses in Greater London and the Home Counties.

6. To preserve the use of Heathrow by BEA (and BOAC) we consider that operators providing mainly inclusive tour, charter and general aviation services should not be allowed to operate from Heathrow in such a way as to advance

Printed image digitised by the University of Southampton Library Digitisation Unit

the date by which Heathrow is regarded as "full". Such services can, without unreasonable penalty, use smaller or less convenient airports. We believe that the best return on the nation's great investment in the major London Airports will be achieved if the needs of national and international scheduled airlines are regarded as the determining factor.

7. We believe that Heathrow (and possibly Gatwick) should continue to cater for both short and long range operations and that a third airport should augment these services. We consider that the third airport should be as far as possible omni-directional in its air traffic capability.

8. We hold ourselves ready to answer any questions which may be raised and we should be grateful to be afforded the opportunity of commenting on sites short-listed by the Commission, when such a list is available.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the British Gliding Association

Summary

(1) Gliding is a growing sport of particular value to a nation aiming to keep in the forefront of technology.

(2) Modern gliders are capable of far-ranging cross-country flights and the ability to make such flights is an essential part of the sport. It is also necessary to be able to break records.

(3) Because gliders depend on the fine structure of the weather for their progress, arbitrary man-made barriers in the form of controlled airspace can make it impossible to continue. An excess of controlled airspace can kill the sport.

(4) Gliding sites must be situated near large centres of population but must also be clear of controlled airspace.

(5) A major airport suppresses all gliding over about 400-500 square miles. Cross-country gliding will be eliminated in the airspace over a further 1,000 square miles and will be affected with varying degrees of severity outside this area.

(6) Weather conditions over the sea (and usually for a further 10 miles inland) are unfavourable to cross-country gliding.

(7) Unless LAP3 is sited so that a major part of its controlled airspace is over the sea it will have a severely damaging effect on gliding.

(8) In weighing the importance of this argument it must be remembered that airspace is a valuable national asset on which there are, and will be, an increasing number of calls. The commercial interests are powerful and make out a strong case for siting LAP3 close in to London but it is relevant that the preponderance of their traffic is holidaymakers.

(9) The British Gliding Association strongly supports the siting of LAP3 at one of the Thames Estuary sites and the establishment of its associated controlled airspace over the sea. This is in any case the only way of solving the appalling noise problem.

Effect of the Third London Airport on Gliding

Preface

This paper is put forward by the British Gliding Association, which is the recognised governing body of the sport of gliding. The paper does not deal with specific problems of individual sites for LAP3 but states the broad way in which the decision about the site will affect gliding.

The sport of gliding

Gliding is a growing sport whose importance to the nation is recognized in the form of considerable support from the Ministry of Education. It is very much a sport of the modern era combining advanced technology in aviation

Printed image digitised by the University of Southampton Library Digitisation Unit

with the more usual aspects of sport such as open air, physical effort and endurance, mental and manual skills, competition, and even a trace of danger. Glider pilots learn more about the air than most power pilots ever learn; in other words gliding is a valuable source of air-mindedness.

It is estimated that some 51,500 people have gained A and B gliding certificates, i.e. have gone solo in gliders in Britain.

Gliding can be conveniently divided into two sections—training and cross-country soaring. It is the training that accounts for the greater proportion of gliding activity but it is extremely important to note that it is the prospect of cross-country soaring which accounts for the vast majority of the trainees. Similarly, cross-country soaring pilots are looking forward to competition flying as their next goal and finally competition pilots have an ultimate always in front of them in the form of breaking the current records. At all levels of proficiency there is always a further goal to be reached and yet each is a reasonable step from the previous one. This is the special charm of gliding, but it is also dangerous in that removal of any of the higher goals will lead to withering of the lower ones and ultimately of the whole sport. Already we have lost some of the goals due to the spread of controlled airspace. Too much of this will kill the sport.

We believe that gliding as a sport is an asset to the nation and must be taken into account when something as important to it as the siting of LAP3 is being considered. In this context it is important to remember that while the powerful voice of commercial aviation would have everyone believe that the main traffic of the airlines is business men and diplomats on missions of prime importance to the country, the true fact is that the preponderance of the traffic consists of nothing more than holidaymakers. This is not to say that gliding should be considered before commercial aviation but simply to ensure that its small voice, unaided by public relations officers and large budgets (indeed any budget), should be given due weight.

What does gliding consist of ?

Training. This section of gliding consists of an airfield within reasonable reach of a large centre of population at which a club or clubs sets up launching facilities and qualified instructors. The training consists of launches generally to 1,500 feet or less followed by short glides in the circuit and landing back at the start point. The amount of airspace required is small. The important point is the availability of suitable land within reach of the people and a minimal amount of free airspace.

Cross-country soaring. Gliders doing cross-country flights progress by finding rising columns of air called thermals (usually found under cumulus clouds), in which they circle and climb. They then fly substantially straight in search of the next thermal and repeat the process. Given suitable weather conditions, the modern glider is capable of averaging up to 60 knots and flying distances of 300 miles or more in a day. The point to note is that arbitrary man-made barriers in the form of controlled airspace can be disastrous to a cross-country flight in that the next thermal may be just the wrong side of the barrier; similarly a height limitation may prevent sufficient height being gained to glide to the next thermal.

Printed image digitised by the University of Southampton Library Digitisation Unit

The needs of gliding

The needs of gliding stem directly from its nature. The first requirement is sites both for training and from which to start cross-country flights; the second requirement is sufficient freedom from controlled airspace to enable satisfactory cross-country flying to be carried out. The meeting of these two requirements in South-East England will be greatly affected by the choice of site for LAP3.

The effect of LAP3 on gliding

When LAP3 is established, its control zone will sterilize the surrounding 400-500 square miles so completely that even a training only glider site will not be possible. It is already difficult to find sites near large centres of population; this problem will be severely compounded if LAP3 uses up so large an area of land in the immediate vicinity of London.

LAP3 will also make cross-country gliding impossible over a further 1,000 or so square miles and even outside this area its associated controlled airspace will be detrimental in varying degrees to cross-country gliding.

LAP3 therefore represents a severe threat to gliding if it is established in such a position that the associated controlled airspace is over land areas near London.

The siting of LAP3

For meteorological reasons there is no cross-country soaring over the sea, also there is frequently a band of sea air for up to 10 miles from the coast in which soaring is not possible. Therefore, from the gliding point of view there is one basic preference for the siting of LAP3; it must be a coastal site in such a position that the associated controlled airspace can be satisfactorily arranged over the sea. It is significant that the most practical solution to the noise problem points in the same direction.

Conclusion

The British Gliding Association therefore strongly supports the siting of LAP3 at one of the Thames Estuary sites.

In the foregoing only gliding has been mentioned, but the same arguments apply to virtually all the flying which takes place outside controlled airspace. This amounts to about three-quarters of all aviation in U.K.

Airspace is already a valuable national asset and will in future years become much more so. Very careful thought must be given to its use to the best advantage of the whole nation.

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission by British Overseas Airways Corporation

1. The choice of site of the Third London Airport should be such as to permit omni-directional flights throughout the 24-hours without undue restriction on account of aircraft noise.

2. The site must be such as to accommodate both subsonic and supersonic operations.

3. There must be direct and speedy access to the centre of London.

4. The site must, if possible, be such as to serve the convenience of passengers wishing to travel to or from distinct sectors of the Greater London region and that these sectors should be those with greater rather than lesser traffic potential. There should be adequate road and rail access to those parts of the region.

5. The siting and development of the Third Airport should not be such as to prejudice the continued use of Heathrow as a major airport for international services including of course Trans Atlantic services. BOAC has an investment of some £50m, in being and committed, in buildings and facilities at Heathrow and, whilst we would expect to operate services into the Third London Airport, we would not expect its development to prejudice our investment by turning Heathrow into a secondary airport for longhaul international operations.

Actual and projected movement of tourists to UK by sea and air

		Sea	% *Share*	*Air*	% *Share*	*Total*
ACTUAL	1955	497,000	62	310,000	38	808,000
	1960	601,000	47	684,000	53	1,285,000
	1966	1,694,000	42	2,305,000	58	3,999,000
PROJECTED	1970	2,200,000	37	3,700,000	63	5,900,000
	1975	2,850,000	30	6,650,000	70	9,500,000

Breakdown between holiday and business visitors

		Holiday	% *Share*	*Business*	% *Share*	*Total*
ACTUAL	1960	1,007,000	80	253,000	20	1,260,000
	1966	3,226,000	80	773,000	20	3,999,000
PROJECTED	1970	4,700,000	80	1,200,000	20	5,900,000
	1975	7,600,000	80	1,900,000	20	9,500,000

Figures for 1955 and 1960 relate to foreign nationals only. They therefore exclude Commonwealth visitors.

The figure for 1966 includes visitors from the Irish Republic, as do the forecasts for 1970 and 1975.

Source: 1955 and 1960—Home Office.
1966—International Passenger Survey.

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission by the British Travel Association

1. Tourist traffic to Britain has increased rapidly from a total of one million visits in 1956 to four million in 1967. Expenditure by overseas visitors in that year, including fare payments to British carriers was of the order of £350 million, making tourism Britain's fourth most valuable export and largest US dollar-earning export. Overseas visitor traffic is expected to exceed five million visitors by 1970 and to reach a total of 9½ million by 1975. Although business traffic to Britain is expected to increase, the major part of the extra demand for airport services will result from a massive expansion in holiday or tourist traffic. In 1955 38% of visitors to Britain travelled by air, and by 1966 the figure had risen to 58%. By 1975 the proportion travelling by air could reach 70%. (See Appendix.)

2. The Association is satisfied that the airlines are planning to expand their capacity at an adequate rate. The Government has provided incentives to the hotel industry to increase accommodation in Britain, and other measures are being taken to improve amenities and attractions for visitors and assist the expansion of tourism. Thus carriers and the tourist service trades are preparing for a massive expansion in Britain's tourist business which could double throughout the decade.

Development of additional airport facilities must take place in time to deal not only with the anticipated growth of traffic up to 1975, but with further growth in the next decade. It will not be possible to develop the overseas travel markets fully if the airport facilities of the country are inadequate. International tourism is highly competitive. The danger of potential visitors over-flying London is real and the subsequent loss of tourist earnings could seriously affect the country's prosperity and export earnings.

3. The Association is not technically competent to comment on the precise siting of a future airport. Research, however, suggests that the airport should be directly linked with London, the principal gateway for tourist visitors to Britain and the country's major tourist destination. There seems little possibility of the creation of a new traffic gateway to Britain far away from the capital. Problems of noise and disturbance of environment can also have repercussions on tourist development, but with improvements in transport to the city centre such a problem should not prevent the choice of a site within one hour's travelling distance of the centre of the city, which would seem essential, and with good access whether by road, rail or helicopter.

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission by Buckinghamshire County Council

County of Buckingham,
County Hall,
Aylesbury, Bucks.

28th October, 1968.

The Secretary,
Commission on the Third London Airport,
Templar House,
81-87 High Holborn,
London, W.C.1.

Dear Sir,

First Stage Evidence

The County Planning Committee have been considering the evidence which they should put before the Commission at the first stage, and in particular they have noted that detailed proposals in favour of any specific site should be submitted not later than 31st October, 1968.

This County already has considerable experience of the effect of a large airport by reason of the nearness of its southern part to Heathrow, and the Committee have not unnaturally been concerned at the possibility that the third London Airport may be established at Silverstone, a possibility which is no doubt under serious consideration by the Commission.

Perhaps inevitably their consideration of any positive suggestion for a site the third airport is linked with their views on the possibility of Silverstone.

The Committee have had before them a report prepared by the County Planning Officer and have reached certain conclusions.

*I enclose herewith twelve copies of the report, with the Committee's conclusions set out on page 11, and the Committee would be glad if the Commission would accept this report with their conclusions as this Council's evidence at the first stage.

You will see that the effect of this evidence is to favour the Foulness site, though this is dealt with more particularly by comparison with the Silverstone site.

If the Commission would wish for any further details from my Council at this stage, perhaps you would let me know, and I will do my best to supply them.

Yours faithfully,

R. E. MILLARD
Clerk of the County Council

* Available from County Planning Office, County Offices, Aylesbury, Buckinghamshire.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the Confederation of British Industry

An Integrated Air Transport System

1. The need for a third airport should be considered in the widest possible context of a national communications system. The President of the Board of Trade has described the project as "one of the most important investment and planning decisions which the nation must make in the next decade". If that is so, too much time has been lost already by arguments and inquiries which have not always revolved round the crucial question of Britain's air needs. On a small and crowded island an accessible airport conforming with ATC requirements is not likely to be developed anywhere without some disturbance and disappointment to different interests. Whatever is decided must be more of a compromise than an ideal solution, and it should be reached through a rigorous consideration of all the factors on a cost/benefit basis.

2. If the need for an integrated air transport policy is accepted, the Commission's terms of reference to an airport "serving the London area" seem unfortunate. They imply that London's needs have priority over, and are considered in isolation from, the needs of the rest of the country. The bases of the assumption that London must have a third airport are the growing pressure on Heathrow and somewhat scanty statistics showing that some 80% of London's international traffic is generated by the London conurbation and south-east England. In the Government's opinion this statistic, derived from a 1965 Board of Trade survey, demolished the possibility that much of London's traffic was provincial traffic compelled to use the Metropolitan centre. But the survey was admitted to lack precision, and the CBI believes that before a new site is established two questions need to be answered beyond doubt. These are:

(i) Has the urgency of the need to relieve Heathrow been varied by developments elsewhere or in aircraft potential?

(ii) Can reliable figures be produced to show that passenger and freight potential make a third London airport absolutely necessary?

3. The first question is one of timing. The CBI understands that the traffic build-up at Heathrow has not been as great as was thought likely and that the desired completion date for a third London airport could be extended, if only slightly. The pressures on Heathrow must be greater at some hours of the day than at others. Would more differential pricing encourage passengers to travel at off-peak periods, thus spreading the number of aircraft now concentrated at particular times? Or will larger aircraft reduce the pressure on air lanes? Less urgency would give the Commission more time for assessment, particularly of new developments.

4. The second question involves a multiplicity of considerations and it will not be answered without reliable and detailed statistics. Airlines appear to have difficulty in establishing exact information about the starting points and ultimate destinations of their passengers and freight. If 80% of London's international traffic is generated by the Home Counties it seems probable that more passengers

Printed image digitised by the University of Southampton Library Digitisation Unit

will originate from the South-West than from the South-East or North of London. To them Stansted would be a poor substitute for Heathrow. Nor is enough known about traffic potential—that is, people and freight at present travelling by other means because air services or airports do not meet their needs.

5. These are questions of basic market research which is nowadays more than competent to provide the answers, and passengers and consignors would probably welcome questionnaires leading to improvements in services. Samples of non-passengers would also have to be devised, and an early one might be concentrated on areas along the South Coast whose inhabitants are often loath to travel to a London airport in order to fly to the Continent. Is there a case for developing small airports in the South for short-haul traffic?

6. Such information, which might also identify a reluctance among Londoners to travel to Stansted to reach the Continent, would perhaps establish the extent to which provincial airports satisfy real and potential needs. In spite of the assumptions about London traffic several regular users of air services—including such experts as forwarding agents—have suggested to the CBI that the pressures on London could be eased by the development of provincial services, particularly in relation to freight (see penultimate section).

7. Bearing in mind that an ideal solution is not possible, the CBI believes that the Commission should study the capacities of other airports to find out if they are satisfying regional needs and if the nation's traffic could be more evenly distributed. Apart from the obvious logic of developing a nation-wide concept of airports, the Commission might conclude that the technical problems and pressures of a third London airport were such that a wider dispersal of resources offered the best solution. The tendency is for airlines to allocate their major international routes to major airports and the concentration becomes excessive unless checked. Between 1953 and 1967 traffic at Heathrow expanded by 560% and, according to Mr Peter Masefield, will double the airport's business every five or six years. At this rate dispersal may have to be enforced and people persuaded to make greater use of such airports as Manchester and Birmingham. Geographically these airports have obvious advantages as more central points for other parts of the country, and a greater range of services to and from them might convert more people to their use. This appears to be a challenge to salesmanship rather than, as at present, an assessment of existing traffic.

8. The CBI would not venture to assert where the third airport should be. It cannot, however, resist mentioning that the 1963 Report of the Inter-Departmental Committee on the Third London Airport, looking at traffic trends, suggested that a fourth London Airport might be needed after 1980. It based this belief on the possibility that by 1980 the pattern of air services over Britain might have changed, with less centralisation on London and many more Continental services from the provinces. If this seemed logical to the Committee in 1963, it reinforces the CBI's opinion that the prospects of dispersal should be examined in 1968—the year nominated by the Committee for an examination of the need for a fourth airport.

9. Apart from the difficulty of finding a fourth site if, as the Government believes, there is no alternative to Stansted as a site for a third airport, the CBI endorses the Committee's implication that the likely pattern of air services

Printed image digitised by the University of Southampton Library Digitisation Unit

should be assessed in a wider setting. So far the Stansted affair has been badly handled, and its attendant controversy widened by the superficial nature of earlier inquiries. The *ad hoc* efforts to meet objections, often on incomplete and untested data, have destroyed confidence. The Government's grounds for eliminating other sites have sometimes seemed arbitrary and open to question. For example, why is Shoeburyness the only possible site for a firing range? Why would its re-siting cost £25m? To have an area so close to London precluded from other use because of firing range requirements suggests a confusion of priorities. The question may be whether a firing range takes precedence over an airport in national needs.

10. In general, the costing of the various projects seems to have been casual and open to challenge. Certainly the price of a new airport is a major consideration and if one site could be developed for a third of the cost of another, it is a prime factor. As stated previously, the whole matter should be subjected to a rigorous cost/benefit analysis in the widest context, and the case should be stated as publicly as possible.

Ground Access

11. Whatever site is chosen must have access road and rail points which can sustain heavy and intermittent concentrations of traffic at any time. Since Stansted was nominated passenger estimates have increased and it seems doubtful whether the Stansted rail links could cope with the revised levels, though Silverstone probably could. The advantages of rapid air travel can be nullified by the frustrations of long terminal journeys on inadequate roads and railways. The average distance of the major international airports from their traffic centres is 11.9 miles. On this basis the 17 miles from Heathrow to London is reasonable but a distance of 28 miles puts Stansted, like Gatwick, among the most remote sites in the world league, and the 40-42 miles to Sheppey and Foulness are a positive deterrent. Though distance may be offset by the quality of road and rail facilities, they cannot entirely overcome its disadvantages, particularly if such linking forms of transport as the monorail and helicopter are found to be impracticable. Again, however, these expedients which are dismissed as too costly or impracticable should be costed against the price of a new airport nearer to traffic generating areas. An annual loss on helicopters might be less expensive.

12. Even if the stated objective of making the third airport multi-purpose is attainable, a degree of inter-airport traffic seems inevitable, and the fact that London lies between Stansted and Heathrow and Gatwick must reduce the prospects of rapid inter-change. Here again it is hoped that the Commission will study the problem in relation to the airport needs of the Midlands and the North of England. If it could be demonstrated that an airport further north than Stansted could serve these needs and those of the northern Home Counties, at the same time overcoming air traffic control difficulties, there might be a case for recasting the purpose of the third airport. Even if further away from London it would presumably reduce some of the pressure on Heathrow.

13. The CBI appreciates that the siting of an airport comparable to Heathrow raises problems which severely limit the choice of areas. With Gatwick as an added complication, the difficulties of omnidirectional traffic are obvious. They were outlined by the Inter-Departmental Committee which stated that

Printed image digitised by the University of Southampton Library Digitisation Unit

if Heathrow and the third airport were to me omnidirectional, the third would need to be more than 80 miles from central London. Nevertheless, the Government continued to make a case for Stansted as a multi-purpose airport catering for traffic to all points of the compass, and appeared to gloss over the air traffic control problems. The CBI believes they should be examined and stated in greater detail, though they should not be allowed to dominate the issue. Experts consider that modern electronic techniques can ease the problem, and that the advanced navigational capability of some aircraft will also help. The Commission should also have in mind the need for a site where 24-hour flying is not hampered by local population considerations—a need as obvious as it is difficult to achieve.

Airport Facilities

14. The Commission will probably agree that the irritation of air passengers and consignors often focuses on ground handling facilities rather than on scheduled services. Mr G D Blake, the Minister of Housing inspector who inquired into local objections to the Stansted project in 1966, questioned the Inter-Departmental Committee's forward passenger estimates and believed they would be materially exceeded, particularly—after 1972—in terms of the average number of passengers per aircraft. The facts of this matter should, as previously stated, now be established to determine the urgency of the new airport. The CBI agrees with Mr. Blake that provision should be made for handling maximum loads and not merely the average. If delays occur through heavy concentrations of passengers and cargo, irritation will increase. What travellers dread is the cattle-market treatment to which they are sometimes subjected on the ground—the herding into motor coaches and lounges, the scramble for luggage, the inquisition of the Customs, and the difficulties of finding their way round large modern airports. These are matters which demand attention even in present conditions. They are raised with the CBI by businessmen who are often travelling on important export assignments. For foreigners with an imperfect appreciation of British practices and the language, such inconvenience is all the greater. Airports have a special responsibility to create a favourable first impression on visitors to Britain, whether the visitors be tourists or foreign buyers. The public relations aspect should be a prime consideration at every airport.

15. Members have suggested to the CBI that rapid clearance of passengers and cargo should be an airport's first consideration after safety. The report time should be reduced, and the "trickle loading" system could be developed further in conjunction with "boarding fingers" running up to the aircraft. Moving pavements should be considered and adequate hotel accommodation near the airport is vital. Special "meeting points" should be established for visitors and their hosts, and secretarial services might be available for waiting businessmen.

Effect of Larger Aircraft

16. The importance of adequate handling facilities is increased by the prospect of larger aircraft which, while they may reduce the growth of pressure on air space, will intensify the pressure at airports. The CBI shares Mr Blake's doubts about the Inter-Departmental Committee's opinion that passenger aircraft in the early 1970s would not make greater demands on navigational and airport facilities. The technical progress of the past five years may well have

Printed image digitised by the University of Southampton Library Digitisation Unit

altered the situation, and the CBI would be happier if the Commission had been specifically instructed to take a longer view of air transport prospects. Admittedly the rapid technological development of air transport makes long-term planning hazardous, but it is a sector in which caution may be as costly as rash decision. To ensure as far as possible against taking decisions which might be inappropriate or outdated within a decade, the Commission should seek the opinions of as many aviation experts as possible. For instance, if vertical take-off becomes feasible, many of the ground problems of siting an airport will disappear. There will not be the problem of extra runways requiring hundreds of acres of prime agricultural land and the noise nuisance will not be so widespread. The confidence of the Inter-Departmental Committee that vertical take-off aircraft were unlikely within the next decade seems justified but should be re-examined because the range of problems raised by VTOL and jumbo-jet aircraft appear to be widely different from the problems of dealing with conventional aircraft. For instance, will supersonic planes on long haul have to be concentrated on one airport, and, if so, does this not recommend smaller airports for cheaper services on short haul?

Air Freight

17. This is a matter of major interest to the CBI and its members. It was noticed perfunctorily in the 1967 White Paper, and the CBI shares Mr Blake's surprise that it was neglected in the earlier stages of the Stansted debate.

18. Admittedly, air freight was slow to develop and it is still in its infancy, but the signs are that its growth may catch airport authorities unawares if they base their assessments on average carryings in the past. Already Heathrow is the third port in the UK in terms of value of goods passing through—exceeded only by London and Liverpool. This has been recognised by the development of a large new cargo terminal at Heathrow, and Mr Peter Masefield, chairman of the British Airports Authority, forecasts a time when revenue earnings from the carriage of goods by air will exceed that of passenger traffic. The International Air Transport Association believes that by 1975 world trade by air will be seven or eight times the 1965 level. The weight of cargo set down and picked up at UK airports in 1967 was about 490,000 tons, 6% less than in 1966 but 17% more than in 1965. At London area airports 270,000 tons of cargo were handled, 8% more than 1966. In the four years since 1963 weight of cargo at these airports, the major UK centres, doubled. Since 1963 cargo at Belfast increased by 147%, at Edinburgh by 133%, and at Prestwick by 112%. The average weight of increase of freight at London area airports has been about 20% a year, and Mr Masefield has stated that by the end of 1973 Heathrow and Gatwick will between them cope with 950,000 tons of cargo and mail.

19. In that case, airlines must soon revise their opinion of cargo as a by-product of their principal passenger-carrying activity. The fact that more than half the freight is carried in the holds of passenger aircraft may mean that its speedy delivery is secondary to the needs of travellers, both on the ground and on air routes. If this is so, it is bound to be an anxiety for those consignors who may be using air transport because their goods are perishable, have missed a surface service, or are required urgently by a customer. The airlines and airport authorities should regard these casual freight consignors as potential converts for permanent bookings, and give them favoured customer treatment.

Printed image digitised by the University of Southampton Library Digitisation Unit

20. Air freight is by no means confined to the casual and perishable categories described above. Obviously the bias will lie among expensive products of low weight but many other products figure in cargoes. Clothing, professional scientific instruments and watches, and medical and pharmaceutical products ranked first in exports by air in 1967, and electrical machinery was prominent. The Movement of Exports EDC last year (June 1967) stated that nearly 10% by value of British exports went by air, and a considerable entrepot trade was involved.

21. In its survey, Exports by Air, the EDC commented on Heathrow's inadequate freight handling facilities which put its position for both import-export traffic and entrepot trade in growing peril. Thus the new cargo terminal is an urgent necessity if trade is not to be lost, perhaps permanently, to European airports, and the significance for new airports is clear.

22. In the CBI's opinion, the virtual dismissal of the significance of freight traffic in the May 1967 White Paper is another example of the superficial approach of Government to the Stansted affair. The White Paper stated that the recent fast growth of air freight occurred only at the London airports, but little seems to have been done to study the origin and destination of the cargoes. It is at least worth examining whether demand would exist at other airports if fuller facilities were everywhere available. The White Paper also gives as a reason for resisting the concept of a national air freight centre the fact that over half of air freight is carried on passenger flights. This fact, according to the British Air Line Pilots Association in 1967, compounded the effect of inefficient processing procedures. BALPA was also concerned that, with the exception of the Argosy, there were at that time no aircraft designed as freighters—which probably accounts for the slow postwar expansion of air freight.

23. If, in spite of these difficulties, air freight is now increasing at a rapid rate it cannot be ignored in any consideration of a new airport. The CBI would not enter into the argument for or against a national freight airport. It would, however, urge the Commission to examine very closely the implications for freight, as well as for passengers, of the new and larger aircraft coming into commission. Mr Masefield states that about one in ten of Boeing 747s will be operated as all-cargo aircraft, and that large quantities of cargo will be carried in the holds of passenger 747s.

24. Provision for these developments must be made at airports, in management skill as well as in handling capacity. As in the case of passengers, delays on the ground may nullify the advantages of fast air transit. Moreover, freight, unlike passengers, can by modern methods be moulded into more economic units by the use of containers and pallets. Indeed, the greatest increases in traffic are likely to be in the container field. But consolidation of uneconomic small consignments into unit loads involves international standards of handling, documentation, etc., which in turn require the co-operation of governments, manufacturers, surface carriers, freight forwarders, airlines, and airport authorities. This, of course, is the significance of the "through transport" concept, and it calls for expert knowledge among the staffs concerned. It is generally agreed that the main hope of reducing ground operating costs lies in larger and unitized consignments. When this, together with the total distribution cost concept, is appreciated, and if airports can reduce their landing fees, the freight revolution will be well on its way.

Printed image digitised by the University of Southampton Library Digitisation Unit

25. In its consideration of the site for the new airport, the Commission should so far as possible consider access for freight traffic from industrial areas. As air freight grows, the placing of airports may influence the locational decisions of firms, and it has been a point against Stansted that it is not envisaged as an area for industrial development. On the other hand, it might be argued that it is better placed than some other sites for freight from the Midlands. It has been suggested to the CBI that if environs were scheduled for industrial development, as in the case of Shannon, the problem of noise nuisance to householders would not be so acute. At the same time, any such development should be kept below the point of causing congestion.

26. Here again, it has been put to the CBI by members that airport expansion at Manchester, Birmingham and other provincial centres might be the best solution to the present problem, and not only on the grounds of relieving Heathrow.

27. Much of the total of air freight is likely to originate from or be destined for the Midlands and the North. A leading forwarding agent claims that though Manchester and Midlands airports are not taxed to capacity, well over 40% of his Midlands freight has to be brought to London airports because the Midlands air services are inadequate for his needs. Yet lack of manpower at Heathrow involves him in delays and demurrage.

28. In line with the desired trend, he consolidates his freight. In both cases of incoming and outgoing cargo 30% may be from or for London, 40% from or for Birmingham, 20% from or for Manchester, and 10% from or for Scotland. The advantages of breaking it down in the Midlands instead of at London are obvious.

29. It should be noted that consignors of freight at various airports have found their lorries held up by inadequate clearance facilities. Goods have been delayed in customs sheds, particularly at weekends. Attention should be paid to these problems and bottlenecks may perhaps be avoided by airports co-operating in inland clearance depots.

30. Here again, as in the case of passenger traffic, airlines and airports should market their services. Consignors say that bulked freight facilities should be offered because bulking is far more likely to be achieved by airlines initiating it than by individual consignors asking for it.

Conclusion

31. The Movement of Exports EDC has drawn attention to the unfortunate fact that there is no effective co-ordinating organisation within the UK to plan services and facilities from a national standpoint. This accentuates the need for the Commission to do so, and the additional and sometimes differing requirements of air freight will complicate its task. But the CBI takes the view that the Commission will be doing what should have been done three years ago—considering all aspects of airport needs and locations. The CBI has not ventured opinions on the adequacy or otherwise of air services to different parts of the world. It has not distinguished between long-haul and short-haul needs or attempted a division of services between airports. It has not considered the feasibility or otherwise of helicopter or monorail connections between airports and centres of population. These, together with costs, are determining factors on which expert advice must be sought.

Printed image digitised by the University of Southampton Library Digitisation Unit

32. What the CBI is concerned to ensure is that the issue of another airport should be determined in the light of national needs and with regard to its impact on other airports. Industry appreciates that the success or failure of its contribution to the national economy depends in no small measure on readily available, rapid, and cheap means of transport, both for businessmen and for consignments. So far the requirements of industry have had scant notice in the Stansted debate, but if they are ignored the national economy will suffer.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of the Country Landowners' Association

Need to preserve good land

1. The Country Landowners' Association urges the Commission in selecting a site for the Third London Airport to give full weight to the need for this country to conserve its good agricultural land and to avoid as far as possible impeding efficiency in the agricultural industry.

2. Agriculture plays a key part in the economy of this country. Home food production is important for saving imports at a time when this country has a balance of payments problem and when many countries are seriously short of food. Official figures show that half of this country's food is imported, and whilst farm land is being lost to other uses at a high rate (variously estimated at 60,000 to 100,000 acres per annum net) the agricultural industry is constantly urged to increase its total annual production. The industry is at present achieving the programme of expansion set by the 1965 National Plan (see chapter 13). This programme called on the industry to maintain the rate of increase in productivity achieved in the years immediately preceding 1965, to obtain by 1970 an increase of £200 million of food for human consumption (at 1964 import prices, c.i.f.) plus "much of the cereals required for the increase in livestock production" (para 13.25 and table 13.2). The Economic Development Committee for Agriculture in studying the industry's potential contribution to import saving, has recently suggested a new expansion programme designed to accomplish a net import saving of £220 million a year by 1972/3 (Report issued June 1968, at present under consideration by the Government). The Report states (para 7):

> "At present, agriculture produces about 3% of the gross domestic product and employs a similar percentage of the working population. In value, its products approach £2,000 million a year at farm gate prices (including deficiency payments). About half of United Kingdom requirements of food and feedingstuffs, however, are still imported at a cost of about £1,600 million. Some imported food could not, of course, be grown here. Excluding such produce, the import bill is of the order of £1,000 million (including £70m for hard wheat, for which substitutes cannot readily be produced in this country)."

3. At the same time as agricultural land is being lost at a high rate the population is steadily increasing. The total population projections given in the Registrar General's Quarterly Return No. 476 for the quarter ended 31st December, 1967, Appendix F, show an estimated increase of population for England and Wales of 4½ million (i.e. 9%) for the period 1967–1981. The increase projected for the last twenty years of this century is 19%, making an increase of 13½ million in the period 1967–2001. In the circumstances the CLA contends that it would be foolish to assume that Britain will be able to continue to import half its food requirements, and in any event it will be necessary for home food production to continue to increase annually for an indefinite period.

Printed image digitised by the University of Southampton Library Digitisation Unit

4. The need to preserve our best agricultural land in the national interest has been confirmed in recent times by leading rural economists and in particular by the studies carried out by Professor G P Wibberley, BSc, MSc, PhD, and the Department of Economics at Wye College, University of London. In his Bledisloe lecture entitled "The Disappearance of Rural Britain" given at the Royal Agricultural College, Cirencester, on 30th September, 1967, and in his evidence given to the Ipswich New Town Inquiry in June 1968, Dr Wibberley expressed his findings. In his Ipswich statement (para 2) he said:

> "Studies, made under my direction and elsewhere, make it clear that competing land uses in Great Britain can be accommodated at a time of both agricultural and urban expansion only if care is taken to avoid placing new urban development on agricultural land of high productivity and profitability. This kind of care is particularly important in the South East part of England where so many people want to work and live and yet where agricultural expansion is showing a strong emphasis on the naturally good areas of land."

Impact of the airport on farming

5. Siting the airport on or adjacent to farmland would interfere with farming in ways which would not be confined merely to taking the land needed for the airport. It is common ground that there will be large scale ancillary development associated with the airport, viz. industrial, commercial and housing development. The airport and its ancillary development will also generate heavy road traffic in the area, and improved communications between the airport and London, and improved access to the airport will follow with extensive land requirements for traffic facilities.

6. In an agricultural area these ancillary developments would be likely to consume productive land on a large scale. Further, experience shows that major developments in or near agricultural areas unhappily result in impeding the efficient farming of neighbouring land through such problems as trespass, dumping, traffic problems (especially obstruction by parked vehicles), mischief-making, tampering with livestock and farm equipment and, only too often, thieving and vandalism. The CLA does not wish to over-emphasise this, but feels it cannot be overlooked that agriculture is most vulnerable to such interference due to ignorance and thoughtlessness about farming in such circumstances.

7. The Commission is asked to investigate in respect of each proposed site for the airport the effect of the total development upon (a) water supplies; and (b) drainage. As to (a), major developments (planned and existing) in certain areas, especially in the South East, are creating acute water supply problems, and it will be essential to ensure that the water demands of the airport and ancillary development will be met without curtailing water supplies to agricultural users. Adequate water supplies are, of course, essential to efficient farming. As to (b), it will be important to ensure that storm water running quickly off the new development can effectively be channelled and run to watercourses which will be capable of taking millions of gallons of storm water and so safeguarding neighbouring land from flooding. This will be a task calling for close liaison with river authorities long before a decision is reached to establish any inland international airport. In this context the Commission might like to

Printed image digitised by the University of Southampton Library Digitisation Unit

examine the steps which had to be taken by the Thames Conservancy to deal with so minor a development as the run-off from Gatwick Airport.

8. The noise nuisance associated with the airport could also adversely affect sensitive livestock and to some extent workers and the farming community, if the airport is sited in an agricultural area.

Other considerations

9. When farm land is taken for major developments, the loss is not only of production. Owing to the shortage of farms and the increasing number of displaced farmers in the country, a proportion of the displaced farmers can be expected not to farm again. Likewise skilled farm workers are likely to be lost to the industry. Public investment by way of production and improvement grants, as well as private investment in the land is wasted.

10. The displacement of farmers causes special hardship among the farming community because the farmer normally loses both his home and livelihood, and as indicated in para 9, cannot readily re-establish himself elsewhere.

11. The CLA, while recognising that many complex factors are involved, asks the Commission to give full consideration to the agricultural factors when making a "short list" of possible sites and also in the final selection of a site. The CLA would wish to appear before the Commission at a later stage.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the East Anglia Consultative Committee

Shire Hall,
Bury St. Edmunds,
1st August, 1968.

Dear Sir,

Commission on the Third London Airport

The East Anglia Consultative Committee (the East Anglian equivalent to the Standing Conference on London and South East Regional Planning) have recently given consideration to the siting of London's third Airport and they have asked me to inform you as Secretary of the Inquiry that they feel that in broad terms for the benefit of the East Anglia Region as a whole, particularly with regard to the attraction of new industry, an airport either north or east of London would be an advantage.

I have already written in similar terms to the Board of Trade, the Ministry of Housing and Local Government and the East Anglia Economic Planning Council.

Yours faithfully,
ALEX SKINNER
Honorary Secretary

J Caines, Esq.,
Templar House,
81-87 High Holborn,
London, W.C.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the East Anglia Economic Planning Council

Regional Planning Considerations

The Council in presenting its general observations consider that there is no suitable site in the East Anglia Economic Planning Region (i.e. Norfolk, East and West Suffolk, Cambridgeshire and Isle of Ely, and Huntingdon and Peterborough) for the location of the Third London Airport.

The Council feel that the East Anglia region as a whole would benefit, particularly with regard to the attraction of new industry, if the airport were situated either north or east of London. It would also satisfy the need for a major regional airport to serve East Anglia.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the East Midlands Airport Joint Committee

The East Midlands Airport Joint Committee do not suggest that the East Midlands Airport should be considered as a site for the Third London Airport. They do, however, suggest that the Committee should reconsider the Government's conclusion contained in paragraph 18 of the White Paper *The Third London Airport* rejecting the view "that the need for a third London Airport could be avoided, or at any rate postponed by the further and possibly induced development of regional airports and air services".

The Inter Departmental Committee on the Third London Airport reached its conclusion that ". . . no site outside one hour's journey from central London should be considered unless there was shown to be no alternative" on the basis of studies carried out for the Committee on the Planning of Helicopter Stations in the London Area (CAP 199 para 38). It is considered that studies so narrowly based are quite inadequate for the purpose of deciding the location of a major airport.

In the White Paper (Cmnd 3259) additional evidence was produced to show that the Government was correct in its original conclusion, namely an origin and destination survey of passengers using Heathrow and Gatwick (undertaken after the decision to develop Stansted had been taken) reinforced by the International Passenger Survey.

It is admitted that the origin and destination survey "was not conducted on such a scale that its results can be accepted with great precision". Statistical assumptions of dubious value were then applied to the results obtained by this limited survey (which was not in any case well-designed to provide the information sought from it in the White Paper) to reach the conclusion that "the potential demand for new direct services between regional airports and overseas is split up into fragments which are so small as not in the foreseeable future economically to justify a direct air service".

The inability of airlines to operate direct services from regional airports frequently arises from the refusal of the Air Transport Licensing Board and the Board of Trade to grant the licences to prevent the diversion of traffic from existing routes many of them operating from the London Airports. This inability to operate direct services from regional airports inevitably channels demand as to the existing services most of which are operated from the London Airports and this casts doubts upon the validity of the argument put forward in paragraphs 21 and 22 of the White Paper which suggests that the demand for services from the London Airports is self-generating.

The Joint Committee do not suggest that every regional airport existing should be developed to international standards but that the demand outside London should be met by developing three major airports to serve similar routes, providing these services for clearly defined contributory areas. Further relief from the London complex could also be obtained if one or more of the three regional airports could be developed as a freight airport. An airport to be

Printed image digitised by the University of Southampton Library Digitisation Unit

so developed should necessarily be located as near to the centre of England as possible, so offering equi-distance surface travel to most destinations in the UK. Such an airport would have to be provided with good road connections of motorway standard and adequate areas approved for development for warehousing, freight handling and road haulage purposes. The suggested diversion of pure freight traffic from the London area will not only go some way to relieving congestion on the surfaces, but as a distinct advantage in further contributing to the reduction of the noise disturbance at the London Airports where stringent limits have to be applied even now.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the Federation of Essex Women's Institutes

Women's Institutes are non-party political, have no business interests, and are in a rare and almost unique position to give opinions and assessments as they are free from all usual forms of bias. The Essex Federation of Women's Institutes wishes to present evidence under three headings, all of which have mandates on a National level throughout their movement.

1. **Noise**

   (a) This factor must be maximum at Stansted due to its central position. Lately this has increased beyond measure—places as far away as Brentwood are now complaining.

   (b) In villages round the airport it is impossible to hear telephone conversations at all when aircraft pass overhead. This is also true of the receiving end of the call.

   (c) There is unrestricted night flying at Stansted, and as the traffic increases steadily, children are awakened and become increasingly neurotic. Agricultural workers who have to rise early are in a similar plight.

2. **Loss of agricultural land**

   With the increase of hunger in the world and our own position as one of the "Have" countries it would seem somewhat absurd to lose this tremendous amount of food-producing land especially in view of our ever increasing trade gap. This part of Essex contains some of the best agricultural land in the country.

3. **Conservation of the countryside**

   With an ever increasing population this is one of our prime interests as rural women and this loss of countryside in the middle of our county is indeed serious.

We read that work is commencing on a £200,000 passenger terminal and in June 26,229 passengers used the Airport as compared with 653 in June last year. We trust that this has not become the third London Airport before the Commission has considered its findings.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the Hertfordshire Federation of Women's Institutes

The Hertfordshire Federation of Women's Institutes (the Federation) is affiliated to the National Federation of Women's Institutes (the NFWI). There are 145 local Institutes affiliated to the Federation in the rural areas of Hertfordshire, representing approximately 9,000 members. It is non party-political in character and is concerned to improve and develop the conditions of country life.

In this connection the Federation has followed with concern the proposals for a third London Airport at Stansted, and endorses the opinion of the Inspector for the Ministry of Housing and Local Government that such a development would be "a calamity for the neighbourhood".

The Federation has particularly in mind a number of objects, which are reinforced by resolutions passed by the NFWI and feels that these should be considered by the Commission. These concerns can be summarised as follows:

1. **Noise**

In May 1960 the NFWI resolved "to support the anti-noise campaign".

On November 7th 1968 the (Hertfordshire) Federation carried the following resolution at its Annual Meeting:

> "That this meeting deplores the menace to health and well being caused by the noise from the increasing use of jet aircraft and urges the Government to make an overall plan for siting airports at the coast, at places which will least spoil amenities."

In particular the Federation has in mind the dangers of sudden or continuous loud noises to pregnant mothers, to babies and young children, to hospital patients and to elderly people. In addition the aircraft noise places severe strain on teachers and affects all people who have to work in the open air. Finally, such noise has serious effects on farm animals and on old buildings, both those of public importance and those occupied by members.

2. **Agricultural land**

In June 1953 the NFWI resolved to deplore the "wastage of good agricultural land".

A large number of members obtain their living directly or indirectly from land and agriculture. The loss of land will not be limited to the area of the airport but will include housing, roads and other secondary construction and the conversion of local farmland to housing. All this will result in unemployment for many members of Institutes or their husbands, not all of whom will be able to find new jobs in the Stansted Complex.

3. **Planning and development**

In June 1926 the NFWI resolved to encourage comprehensive planning throughout the country, and in June 1938 pressed for the protection of the countryside, farmland and old buildings.

Printed image digitised by the University of Southampton Library Digitisation Unit

The Federation is concerned:

(a) at the spread of London through its third airport, particularly in view of the existing policy on New Towns. This is examined further below.

(b) that road and rail communications should be adequate both for the Stansted Complex and for the rest of the countryside. The present communications are insufficient for the proposed capacity of the airport and the Federation understands that rail services in particular are unlikely to be improved in the near future. Roads in the area are insufficient for increased traffic.

(c) that Historic Buildings and other places of interest should be protected. The local countryside and its buildings are used as amenities both by people from within the County and from London.

(d) that adequate sewage, rubbish disposal, water, electricity, gas, telephone and other services, together with sufficient schools, police, fire and other social services should be provided both for Stansted and the surrounding villages where many of the incoming population would need and choose to live.

4. **General disruption**

The Federation is a rural organisation and is concerned about the change in the pattern of life in areas throughout the County that would result from the simple existence of Stansted as a centre. Hitherto Hertfordshire has managed, despite its comparative closeness to London, to preserve a balance between town and country which has benefited all the people of the County. The Federation has serious objections to the imbalance that would be caused by the secondary and tertiary effects from the building of a third London airport at Stansted. Insufficient thought has been given to the sociological effects of the introduction of a new population of between a quarter of a million and a million people which would be spread through a wide radius around the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by Kent County Council

County Clerk's Office,
County Hall,
Maidstone.

13th September, 1968.

Dear Sir,

Third London Airport—Possible Sites in North Kent

I am instructed by the County Council to write in response to the notice on behalf of the Commission that appeared in *The Times* of the 18th July, 1968, inviting general evidence to be submitted by the 16th September, 1968.

Whilst the County Council itself is not able to suggest any suitable sites in Kent for a Third London Airport it has reason to believe that others may put forward suggestions which, on the evidence at present available to the County, would give rise to very serious problems.

The general observations contained in the following paragraphs are intended to help the Commission in its preliminary assessment of possibilities. If it is decided to proceed with a more detailed examination of one or more sites in the County then, of course, very careful and detailed consideration will be given to the proposal before any final conclusion is reached. In this connection the County Council will expect to have detailed information including details of the function of the airport, its size and layout and its probable consequences in terms of employment, additional population, surface transport and noise.

So far the only sites in Kent which have been mentioned in the 1963 Report of the Interdepartmental Committee, or at the Stansted Inquiry, as justifying serious consideration are at Cliffe and at Sheppey. During this early stage in the work of the Commission the County Council has therefore thought it right, and perhaps useful to the Commission, to prepare a report on the purely local considerations which apply in North Kent, which they believe is most likely to be looked at in the search for a site, including physical, geological, farming and landscape aspects, surface communications, population and the present background of planning policy.

Part I of the report* being prepared by the County Planning Officer is now at an advanced stage, and will of course be made available to the Commission in the near future. Part II of the County Planning Officer's Report, which will attempt to assess in detail the impact which an airport located at one of these two places would have will be commenced as soon as more technical information is available if the Commission decides not to rule out one or both of these possibilities from further consideration.

A number of possible locations in Kent as well as at Sheppey and Cliffe have been mentioned in the Press in connection with the search for an airport site. While the County Council believes that in practice only areas in North

* Available from County Planning Office, Maidstone, Kent.

Printed image digitised by the University of Southampton Library Digitisation Unit

Kent are likely to be thought of at all seriously, it would be glad to be informed of any proposals made to the Commission which may merit more than the most cursory examination and to know what claims are made to support such proposals in order that it may assist the Commission in arriving at a proper judgment upon them.

Although much work remains to be done before conclusions can be reached with any confidence, the County Council feels that at this early stage it should draw to the attention of the Commission some of the general circumstances affecting possible sites in Kent, and which, as it appears to the Council, might well militate against Kent as an area of search.

The first of these is the geographical position of the County, which would necessitate vastly improved land communications to the remainder of the country passing through or around the edge of London. There are proposals to improve road links around the south side of London, and across the River Thames, but these are not likely to be completed in the next decade, and would not, even when completed, wholly obviate the effect of the built-up mass of London as a barrier between Kent and the greater part of the country. In addition, the Channel Tunnel, if constructed, would add substantially to the traffic movement on these routes.

Second, the Commission is asked to note that the new and improved road communications planned in Kent do not provide for such a major traffic generator as an international airport at either Sheppey or Cliffe. Those roads, even if constructed in time, would become overloaded by airport traffic to a totally unacceptable degree. The County Council considers that airport generated traffic between the airport and London would necessitate a new dual 36 foot motorway into London, which would then be saturated by airport traffic alone. Mention is made later of the increased highway capacity that would be required in addition to enable airport workers to travel between the airport and their homes. As to rail links with London, these are already saturated during the peak hours, and it appears that this situation would create serious difficulties in any attempt to carry large numbers of air travellers, the movement of whom could not be excluded from the peak commuting period. The County Council has satisfied itself that the capacity on the British Rail system into and out of London in peak hours cannot be further increased by measures short of major engineering works, such as the construction of the "Fleet Line" on the Underground system enabling more longer distance trains to be run into the London main termini, and that expensive construction of this kind is unlikely to be undertaken for many years. Indeed, it is for this reason that Kent's ability to receive a greater share of the South East's population growth dependent on London for employment is restricted in comparison with other Counties around London where there is spare rail capacity. If the present British Rail system in Kent had to accept airport traffic it would follow that population growth in the County dependent on London for employment would have to be further curtailed.

Both the Cliffe Marshes and the Isle of Sheppey sites would no doubt require some improved form of rail link with the mainland rail system which, as already indicated, is itself severely strained for several hours each day. In addition, the Sheppey site would certainly require a high level road and rail bridge to link with the mainland, to replace the present lifting bridge, or alternatively a tunnel across the River Medway and a new link across the Isle of Grain. All of the

Printed image digitised by the University of Southampton Library Digitisation Unit

communication requirements mentioned would be expensive, and do not in themselves ease the problem of getting across or into London itself. It seems to the County Council that the problems of surface communication to serve an international airport in Kent are probably as great as those likely to be created by the provision of the airport site itself, and would give rise to delays militating against the possibility of a site in Kent being a viable proposition.

Thirdly, it is clear even at this early stage of the investigation that the accommodation of the very large number of additional population required to service the new airport would create a very great problem in Kent. The exact number that would have to be accommodated is not known, but what evidence there is suggests that the airport would support new population of between 100,000 and 200,000 people. The accommodation of such numbers would equal the creation of a major new city. This certainly could not be located on the Hoo Peninsula or the Isle of Grain in close proximity to Cliffe Marshes, where the necessary large areas of land do not exist, and where generally agricultural land is of exceptionally high quality. The Isle of Sheppey physically could accept some population growth, but has a present potential of only about 50,000 additional people; and it must be open to question whether even that amount of new development in close proximity might not in the future be a cause of restriction upon the development of the airport. Conversely the existence of the airport would be likely to prevent expansion on Sheppey even to that extent. It is equally clear that the existing towns in North Kent could not accommodate by peripheral expansion the order of growth required, nor could a new town be acceptably located upon the mainland within short distance of either Cliffe or Sheppey, where the very high quality of agricultural land and the valuable landscape of the North Downs conflict with prospects for large scale development. Ashford has been canvassed in the recent past as a suitable place for a large new town, although development on the scale under consideration was strenuously opposed in Kent and was rejected by the Minister of Housing and Local Government in present circumstances. Ashford, however, is over 20 miles from Sheppey, which is much closer than Cliffe, and if regarded as a suitable place to house the airport's service population would, as a prerequisite, need to be linked to the airport by a new highway, probably of motorway standard. It is worth observing that the advantages claimed for Sheppey and Cliffe at the Stansted Inquiry, namely that a coastal location enables at least some of the noise nuisance to be dispersed over the sea, operates against them in this respect, in that the hinterland they can look to to accommodate population and services is roughly halved as compared with inland sites. In short, while it may be urged upon the Commission by others that the airport itself could be sited at Cliffe or Sheppey on land which is not of the highest agricultural value, other development which would necessarily flow from this could only be accommodated at great loss to all sections of the community. The difficulty of a solution to meet the needs of greatly increased population stemming from the airport would also be likely to cause the same sort of delays as would the provision of sufficiently improved communications.

Fourth, the question of nuisance from noise cannot be adequately assessed at this stage, although it will be a subject of prime importance should a site in Kent be seriously considered. The Council, however, feels it should remind the Commission that, as well as any new population, there exists very substantial and increasing population along the North Kent coast, including Dartford,

Printed image digitised by the University of Southampton Library Digitisation Unit

Gravesend, the Medway Towns, Queenborough-in-Sheppey, Sittingbourne, Faversham, Whitstable and Herne Bay, much of which could well be seriously affected by noise from one or other of the two sites. The population in these towns and the districts between them is 491,500 and others in Essex might be affected by an airport at Cliffe.

Fifth and last, both Cliffe and Sheppey are part of the important recreation area covering much of the North Kent coast and the North Downs, in which are embraced nature reserves of great interest and which also provide seaside, sailing and countryside recreation and holidays for great numbers of people, in a part of the country where such facilities are scarce. A major airport could not fail to destroy the value of the area for those purposes. In addition a major airport on Sheppey would be in serious conflict with the present intentions, which the Government appears to favour, of promoting substantial growth on the north-western part of the Island as part of the solution of London's over-spill problems, allied with industrial and port development making use of the deep water off Sheerness and Queenborough such as exists only at few places on the coast of Southern England.

This letter is intended as a general indication of some of the important questions affecting the choice of any site in Kent. If any clarification or additional information is desired by the Commission I shall be pleased to try and assist. For the reasons mentioned, however, the County Council hopes that a site in Kent will not appear in the short list which the Commission will explore in greater detail.

As requested in the Public Notice, eleven extra copies of this letter are enclosed.

Yours faithfully,

G T Heckels,

Clerk of the County Council

J Caines, Esq.,
Secretary to the Commission on the Third London Airport,
Templar House,
81-87 High Holborn,
London, W.C.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the London Chamber of Commerce (Inc.)

The view of the Executive Committee of the Air Transport Section of the London Chamber of Commerce that the third airport should be located within easy access to London is based on the fact that Greater London and its nearby counties is the largest generator of freight and passenger traffic in the United Kingdom, that in absolute terms the present growth rate of air traffic into and out of London is higher than the national average or that of any other single region and that this trend will continue for a long time to come.

That London—the capital and also focal point of the busy, booming, expanding South East Region—must have a third airport to cope with existing, and potential demand, the Committee has no doubt.

Leaving aside such factors as London as the Capital City, seat of government and magnet attracting to itself the mass of tourists to this country, it has a commercial and industrial significance completely overshadowing that of any other region.

It has the country's largest workforce and largest and most concentrated community, it is a world centre of international trading markets, it is the heart of the country's communications network, and it is the focal point of the country's fastest growing and most prosperous commercial and industrial region.

Another factor, which is not so generally recognised, is that London or the South East Region are vast centres of industry, many of which in popular conception have their hearts elsewhere in the United Kingdom. Engineering is a case in point. London is by far the largest centre of the engineering and electrical industry in this country with a workforce of (thousands) 448.6. The figure for the rest of the South East Region is 400.1, West Midlands 301.3, East Midlands 149.0, North West 313.5 and Scotland 184.0. Using the same yardstick of measurement, the South East Region is the largest centre of agriculture, forestry and fishing; food, drink and tobacco; leather, clothing and footwear; bricks, pottery, glass, etc.; timber and furniture; etc. In fact of the 24 headings of industry listed by the Department of Employment and Productivity, there are only five in which either London or the South East do not appear as the largest. In this connection it is worthy of note that of the figure of (thousands) 59.2 for the air transport industry covering the whole country, London accounts for no less than (thousands) 45.8 and the rest of the South East Region (thousands) 6.5.

The foregoing, it is submitted, illustrates the dominant position occupied by London and its enveloping South East Region in the commercial and industrial fabric of this country from whichever angle it might be viewed.

This area is served by two major airports—Heathrow and Gatwick, and three smaller airports, Luton, Southend and Stansted. That the existing airports are unable to handle the traffic generated is beyond dispute and, therefore, a third major airport must be provided. The point at issue is where the additional airport should be located. It is the Committee's view that the third airport should

Printed image digitised by the University of Southampton Library Digitisation Unit

be located where it is likely to best serve the needs of commerce and industry and that in the Committee's unanimous and emphatic view should be easily accessible to London.

Passing reference has been made earlier to the growth potential of the South East Region. According to official forecasts, the population of the South East Economic Planning Region will increase by no less than 25 per cent between 1964 and 1981. The Region, with London, already the most populous in the country will outstrip the others increasingly as this growth takes place. Together London and the South East Region make a contribution to the United Kingdom's balance of payments much larger than any other region—the country leans very heavily on it in this respect.

Printed image digitised by the University of Southampton Library Digitisation Unit

Memorandum by the Executive Committee of the Air Transport Section of the London Chamber of Commerce

The membership of the Air Transport Section of the London Chamber of Commerce includes airline and other aircraft operators, commercial users of such services, and other business organisations with particular interests in commercial aviation. The Executive Committee of the Air Transport Section wishes to place before the Commission the following points for consideration in its inquiry into the siting of a third London Airport.

1) Any pressure to turn this inquiry into one covering the need for another national airport (perhaps in the Midlands) should be resisted. The need is for another London airport to serve London and its environs.

Passenger traffic at London's airports has been increasing—and continues to increase—at a rate much greater than the national average. In the first six months of this year the increase was 5 per cent against a national increase of 2 per cent. On conservative estimates not less than 23 million passengers will have to be provided for by the London airports by 1972.

Freight traffic is increasing even faster. During the January-June period of 1968 the increase for the London airports was 21 per cent. The national figure was 11 per cent.

Traffic surveys have shown that an overwhelming proportion of the passengers flying into and out of London's airports wishes to travel to and from the London area and does not wish to be carried to or from the Provinces. In detail, the breakdown is as follows:

33 per cent to or from Central London
34 per cent to or from the rest of the London Metropolitan Region
14 per cent for the rest of the United Kingdom
19 per cent transit traffic, which wishes to transfer to other flights through London.

In other words, 67 per cent of the passengers are destined for the Greater London area and more than 80 per cent—including transit passengers—want to stop over in London.

Thus, not only is traffic increasing fast, but the bulk of it is London traffic. Nearly 10 per cent (by value) of the United Kingdom's imports, exports and re-exports now passes through London's airports.

Lack of capacity is forcing the British Airports Authority to turn away traffic from Heathrow. Nearly 1,200 jet flights were refused at Heathrow in the summer of last year because of noise restrictions. European airports are all eager to accept traffic turned away from London and if this is allowed to build up on a massive scale the results on our national economy could be serious.

2) The foregoing gives a clear indication that there is an immediate need for further airport development, pending the establishmnt of London's third airport. The British Airports Authority have, therefore, put in hand and are implementing plans for the further development and utilisation of its existing resources. These include a greater usage of Stansted and an indication of what

Printed image digitised by the University of Southampton Library Digitisation Unit

has so far been achieved at this airport is given by the passenger figures. In the first six months of 1967 they were 4,660: for January-June of this year they were 37,333.

In the Committee's view, this action by the British Airports Authority is commercially sound. But in stating this, the Committee emphasises that it must in no way be regarded as a substitute for a third London Airport.

3) An early decision on the siting of the new airport is imperative—time is not on our side. As already stated the Continental airports are anxious and eager to accept traffic turned away from London. Heathrow handles more international passengers per year than any other of the world's airports, and if London is to maintain this pre-eminent position—and it is important to the national economy that it should—then it must be in a position to accept the traffic offered. All concerned with airport transport including airline operators, users, suppliers, etc., are anxious to get on with the job. All they ask for is an early decision. They will take it from there.

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission of Evidence by the London Gliding Club

Evidence was given by the London Gliding Club on day 29 of the Stansted Public Inquiry and this is recorded in Minutes of Proceedings of the Public Local Inquiry held in the Council Chamber, County Hall, Chelmsford. Since it is still relevant it is requested that the Commission should read this evidence in full. Pages 33-40 contain the main arguments. Pages 41-45 are merely detailed explanations of the technique of cross country flying in gliders.

We now wish to bring this evidence up to date in view of what has taken place since the Inquiry closed and also to suggest that advantage be taken of the Commission's terms of reference to tackle this problem from a new angle.

1. It was conceded by Sir Milner Holland, QC, on behalf of the Ministry of Aviation, that the advent of the third London Airport at Stansted would restrict gliding from Dunstable. Similarly the Assessor, Mr J W S Branker, reported (paragraph 75 of appendix 7) "However much one may wish to provide gliding facilities close to London, I do not think this can be allowed to stand in the way of choosing the best site for London Airport . . . There are a number of sports and pursuits which cannot be carried on close to an urban area and I am afraid that this may be one of them."

   The Ministry of Education appears to take a different view, for following the Inspector's Report that Ministry has provided a very substantial contribution towards the acquisition of further land and equipment for the express purpose of increasing the gliding activities at Dunstable. Dunstable is over 30 miles from central London and the London Gliding Club is located in an area scheduled for preservation as being of exceptional natural beauty.

2. The terms of reference for the Public Inquiry, like that some 12 years previously in connection with Gatwick, forbade any questioning of the "need" for the airport under consideration. The Commission appears to be under no such prohibition and we expect that its Inquiry into the timing of the need will inevitably lead it to carefully weigh that need in order to assess what can, if necessary, be sacrificed in order to meet it. We believe that by imposing such restrictive terms of reference at both these Inquiries the Government did a disservice to the cause of London's Airports, since only those members of the public who opposed the schemes were heard. It seems to us essential that that section of the public who is to suffer if a third London Airport is not to be proceeded with, must be identified and the real extent of their suffering assessed. If, as we pointed out in our previous evidence (page 38), the degree and extent of suffering is high enough, the problem of siting the Airport disappears. It is simply placed where it is most needed. From the technical evidence submitted at the Inquiry, it would seem that the simplest solution under such circumstances would be to increase Heathrow to about three times its present size, since

Printed image digitised by the University of Southampton Library Digitisation Unit

this is the most favoured location from the operators' view point. The topographic conditions are favourable for such an expansion.

3. We believe that this approach to the problem provides the best means of determining the timing of the need, for this is clearly the point in time when the public suffers greater hardship from the absence of the airport than from its existence.

4. Despite its duration, the Public Inquiry did nothing to assess the consequences so far as the public interest is concerned, of failure to provide the additional airport capacity proposed. Sections II and III of the White Paper merely point out that the business operations concerned, whether public or private, would be denied some increase of revenue. The reference to adverse effects upon the tourist trade was unfortunately timed. The Government has since found it necessary to restrict this activity in the interests of the national economy. We pointed out at the Inquiry (page 38) and wish to repeat now that it is not possible to select the best site for the third London Airport unless an assessment upon the above lines is carried out, for without this we cannot determine its relative importance. If the need is proved to be vital to the well being of the community at large, then we, and no doubt the Ministry of Education, will accept whatever hardship results for gliding at Dunstable with a good grace, in the same way that the noise created by road and rail vehicles and the erosion of amenities by the less welcome manifestations of public utilities such as gas, electricity, coal, sewage, etc., etc., is at this very moment being accepted by the majority of our community.

5. If, however, the need proves to be less than vital for London but it is considered that the opportunity for some profitable business should not be missed, then considerations governing the siting of this business should be no different from those which would be applied to any other business that by its nature results in the creation of some public nuisance. Only a site that reduces this nuisance to the absolute minimum is acceptable. On no account should a site having any significant population be selected outside the London area merely because the number of people subject to the nuisance there, is less than in London. By "absolute minimum" we mean an affected population that could, if it wished, be evacuated and resettled outside the area at an expenditure which could be borne by the finances of the enterprise we are considering.

6. Unless such rules are observed it is inevitable that a public outcry such as that which preceded the Stansted Inquiry will once more arise and an unpleasant amount of ill-will will be generated and may never wholly subside. This is because the underlying feeling is one of inequity and injustice, a subject which is still capable of rousing emotion in an otherwise unemotional people.

7. Owing to the fact that South East England is in general a very densely populated region there is very little choice if the third London Airport is to comply with the foregoing considerations. In fact there is, we submit, only Foulness. With it's runways aligned North-South the population affected would be minimal. Apart from the island itself the only other area affected is Dengie Marshes. We dealt with the objections raised against this site in

Printed image digitised by the University of Southampton Library Digitisation Unit

our previous evidence (pages 37-38). The firing range, we still maintain, could carry on its work as before. The reason lies in the comparatively short time that the shells are airborne and the fact that the paths of both shells and aircraft operating in or out of the airport, would be controlled. It is necessary only for a link to be forged between both the controllers to ensure that shells and aircraft never meet.

8. Since we last made the proposal that Southend Airport should be closed and its activities transferred to Foulness a Public Inquiry has considered the proposed extension of that airport and rejected it. As a result its future development is inhibited. The existing airport already creates a noise problem of no little magnitude, and the removal of operations to Foulness and the creation there of the third London Airport, would constitute a solution to this problem which actually resulted in a reduction of the overall noise nuisance. The location of additional airport facilities for London follows logically once their value to the public interest has been clearly established, or more accurately, whether this value falls above or below a certain critical level. To be assessed as rising above this level, the public for whom this facility is primarily intended, must accept that the development will take place only at established airports within the Metropolitan region (Heathrow) or at new sites within that region (Plumstead Marshes) or at sites adjacent to that region where further airport development has already been approved (Gatwick). If this level of need is not established, then the only practical alternative is to find a location where the objectors are sufficiently small in number to render their removal elsewhere a practical proposition. This means that between locations in or adjacent to London, and Foulness or a similar desolate area, there is no middle course. Stansted on these terms could involve resettlement of at least 21,000 people.

9. We wish to draw attention to the fact that since the Public Inquiry there have been further increases in controlled airspace around London. Both the Inspector's Report and the White Paper make it clear that economic considerations of air traffic routing, and the standard of "navigational technology" adopted for the routes, results in excessive volume of sky being banned to other users and prevents the location of airports in what might otherwise be regarded as suitable places. We should like to make two points here. Firstly, we maintain that it is not in the public interest that solutions to the air traffic problem should be rejected on the grounds that the routes proposed would result in higher costs to the operators. As we commented in our previous evidence "In the normal course of things operating costs are passed on to the consumer" and we see no good reason why air travel should be any exception. As regards "navigational technology" it is generally conceded that the equipment at present employed is neither the best available nor what could reasonably be expected if a larger proportion of the public funds available to aviation were channelled in this direction. The lact of progress here seems to us to stem from the fact that the authority concerned is under no pressure to do any better. It merely confiscates more airspace as the easiest way out of its problems.

10. There is a special danger connected with air traffic control that does not seem to have been fully realised by Planning Authorities. An example illustrating this point is Gatwick; the subject of a Public Inquiry reported

Printed image digitised by the University of Southampton Library Digitisation Unit

in Cmd 9215 of July 1954. Althougn approval was given for the development of this airport with two East-West runways essential for its role as London's second airport, this development has not so far taken place. The reason given in the Interdepartmental Report CAP 199 of June 1963, was that a revision of the air traffic control system for Heathrow conflicted with the proposed pattern for Gatwick. We do not know what discussion took place with the Planning Authority following this decision, but the result is clearly a classic example of Aborted Planning. To avoid such a recurrence in connection with the third London Airport, the Commission might do well to consider whether air routes and traffic zones should not be brought into line with roads and railways where planning permission and other statutory requirements are concerned.

11. We hesitate to suggest to the Commission the means whereby the assessment of the need for a third London Airport should be carried out as mentioned in our paragraphs 2-6 above, but it seems to us that this could be most speedily carried out by formal reference to the Greater London Council. We were surprised that they were not represented at the Public Inquiry, having regard to the fact that we gave notice of our intention to name Plumstead Marshes as a possible site and it does seem remarkable that the views of that body do not appear in any of the published reports upon this subject.

Appendix A

Mr Ellis: My name is Ellis and I am a member of the London Gliding Club, a member of the committee and a former chairman.

The London Gliding Club is a non-commercial organisation owned and operated by its members and devoted to the sport of gliding. It has been established at its site on Dunstable Downs since 1931 and although some distance from Stansted, is gravely concerned about the proposed development for the following reasons.

Any major airport of the type envisaged in the inter-departmental report will inevitably entail a local control zone in which glider flying will be prohibited. The precise limits have not yet been defined in this case but the area is unlikely to be less than 500 sq. miles. Even if they were indicated clearly at this stage we would have no guarantee that they would not be altered within two or three years. In addition to this, map 6 of the report makes it clear that airways Amber 2 and Red 1 will be extended to the east and north respectively, thus effectively restricting glider flying in this area to an altitude that is unacceptable for safe cross country gliding. The base of Amber 2 is at present located at 3,000 ft. above the Club's flying field, but representations have been made by both the Club and the British Gliding Association to have this raised to at least flight level 55, and we had thought that there was some prospect of such relief materialising in the near future. From what we have seen of the proposed traffic patterns for the new Stansted airport it is clear that this would not be possible and moreover the base of the airways extensions previously mentioned and immediately to the east of Dunstable must inevitably be lower. The result of this is to place such a serious handicap upon cross-country flying from Dunstable that our members would no longer find it attractive and it would certainly be more hazardous.

Paragraph 28(j) of the Inter-departmental Report, if I might refer to it, deals with the siting of London's third airport and says we have to take account of the following points: "The interest of other users of air space. The new airport should be sited so as to interfere as little as possible with air space needed for other purposes such as training"... . So far as we are concerned, this requirement has been ignored. We have never been approached by the Ministry for our views on this matter and neither have we been asked to consult with them in this matter. It is true that Stansted will not automatically put an end to gliding at Dunstable, but by

Printed image digitised by the University of Southampton Library Digitisation Unit

rendering the more advanced forms of the sport impractical it would most surely stifle and eventually smother it. No sport can prosper if it is impossible to advance from the elementary exercises to the higher levels of achievement. It is like telling the Alpine Club "You may practice rock climbing upon your local outcrops but you must never, never climb a mountain".

The restrictions imposed by the existing airways and the London Terminal Movements Area have proved increasingly troublesome for some time and the question of moving to another less restricted site has been raised by members and considered at some length by the Club committee. The reasons why no move has been made are, firstly, since the Club serves Londoners, it cannot be located much further from London than it already is; secondly, within this radius there is very little land suitable for our purpose, and the most promising area is that which is now affected by the proposed development; thirdly, a review of aeronautical maps published over the past 15 years will show that the pattern of controlled airspace is far from stable and changes in this pattern can be expected at any time. The members of the London Gliding Club have in their gliders, equipment and premises at Dunstable a stake conservatively estimated at £100,000. It would be extremely foolish to move this without an assurance that a similar situation would not arise at the new site. In view of what was disclosed at the public inquiry upon Gatwick Airport, it would not be unreasonable for our members to expect any such assurance to be backed by a suitable bond to indemnify their club against financial ruin.

In drawing your attention to the hardship which would necessarily fall upon the members of the London Gliding Club as a result of the third London airport being developed in this area, we do not wish it to be assumed that our plea for the preservation of free air space is of concern only to this small portion of the community. We would remind you that the most popular form of transport today, the motor car, was hindered in its early development and wellnigh stifled by repressive legislation. It is inevitable that an aerial form of personal transportation, more suitable for family needs than any existing today, will arise and eventually reduce the value of the public airlines in the same way as the motor car has devalued the railways. A mass market which is essential for the rapid growth of such a new form of transportation will be difficult to generate if the airspace for 80 miles around the metropolis is controlled in the interests of the public air transport operators.

We might also point out that a very large proportion of the passengers for whom this new airport is to be built will be, like us, engaged upon a matter of purely personal amusement and we have the strongest objection to these people obtaining their amusement at our expense.

Our only interest in the outcome of this inquiry is that the maximum of free air space should be preserved for the benefit of the flying public as distinct from those who have entered into a business relationship with a commercial undertaking, i.e. the customers of air transport companies. In the light of this definition the London Gliding Club is probably the only body at this Inquiry which represents the real flying public.

It follows from the nature of our objections that we wish any additional airports in the London Region to be placed under existing controlled air space. Despite protests from the London Gliding Club and the British Gliding Association there has in the past few years been a drastic extension of controlled airspace over Kent and Essex which has restricted the growth of our sport there and virtually abolished cross-country gliding. We do not agree that all of this control is necessary, but if the Ministry insist that it is, we for our part insist that it be used to the limit. This area contains no less than six sites reported upon by the Inter-departmental Committee as possible sites for a third London airport. They are Willingale, Boreham, Southend, Foulness, Cliffe and Sheppey. Stansted is located to the north of this area in what is at present free air space. Naturally we wish it to remain free. The Inter-departmental Committee report goes into this question of the problem of air traffic control in some detail in paragraph 31. We have an observation to make on this because it seems to us that a lot of these problems are largely generated by the Ministry themselves. In paragraph 31 there is an exposition of the problem that arises in the allocation of free air space and the difficulties. I should like to draw your attention to the sentence which says "Both courses are disliked by the airlines

Printed image digitised by the University of Southampton Library Digitisation Unit

because they will increase operating costs". We would be surprised, Sir, if the Minister accepted this as a development objection. In the normal course of things operating costs are passed on to the customer. We do not see why they should not be passed on in this case. If air traffic control authorities can use it in this way and favour a selected commercial operation, it does seem to be the fact that it is a concealed subsidy. We think this might be borne in mind.

This whole matter of control of air space is largely bound up with the difficulties of getting aircraft in and out of airports up to a desirable cruising altitude. Since this Inquiry opened we have been rather surprised to learn that at a time when we would have expected the Ministry to be doing everything to steepen take-off paths and to steepen glide paths, objectives which are obviously in the interest of air traffic control, we hear that they have accepted an international recommendation which makes it necessary to design new airports with an even flatter gliding angle than heretofore. We believe that it was said by one of the witnesses that this reduction in the gliding angle on the approach made no significant difference to the noiseiness. I am afraid, Sir, we have not been here for the whole of the Inquiry and we rather wonder whether this statement has been withdrawn.

SIR MILNER HOLLAND: It has not been withdrawn because it has not been made. I am afraid my friend is under a misapprehension about what was said.

THE INSPECTOR: I must say I do not remember it being said in that context.

MR ELLIS: It was in connection, Sir, with Mr Boydell's questions upon the patterns which are to be planned for Padworth. I understood him to say that the glide path which he proposed was unacceptable to the Ministry because it was more than was considered to be reasonable. I understood that at the same time the Ministry said they knew of an agreement ICAO made whereby the glide path could be even lower in future and that new airports would therefore have to satisfy this requirement for an even shallower approach path than at the moment and that this change in the glide path which the Ministry admitted was a matter of 1 or 2 degrees, would not introduce any appreciable increase in the noisiness.

SIR MILNER HOLLAND: I think that is where the misunderstanding has arisen. Of course, you will remember there is no question of any glide path being lower or indeed of any new ICAO recommendation for a lower glide path. There is some misunderstanding there; I do not know what it is.

THE INSPECTOR: The ICAO recommendation is that it should preferably be between 2½ and 4 degrees.

SIR MILNER HOLLAND: The recommended ICAO angle is 2½°. The maximum in special circumstances is 3° and 3° is what we operate at. There is no proposal to lower it. I think this gentleman has in some way or another misunderstood what was said. There is no proposal by us to lower the glide path.

THE INSPECTOR: The recommendation covered the bracket from 2½ to 4.

SIR MILNER HOLLAND: I shall have to address you about that. What is here being said is that there has been a new recommendation for a lower angle and we have lowered the angle. That is not right. There was a proposal put to our witness that the angle should be raised, which we do not accept.

MR ELLIS: I am delighted to hear that the Ministry wish to raise the angle.

THE INSPECTOR: No, the Ministry do not.

MR ELLIS: We have carefully studied the remarks made by the Committee in connection with the sites referred to in this already well-controlled part of south-east England. We do not understand the reference in paragraph 55 to the site at Foulness. We do not know that there is any proposal to place the airport upon this hard flat sand, or why this point has been laboured. All aircraft using this type of airport we are considering will fly upon well-defined paths and tracks. We see no problem at all why shells should not continue to be fired into this unique sand without interference; we should have thought this could have been arranged. Around the perimeters of most airports there are large areas of land which are never used. The interference which the Shoeburyness range already has upon flying activities in this area seems to be highly over-rated since the Interdepartmental Committee admits that the traffic at Southend (already higher than Gatwick) will grow further.

Printed image digitised by the University of Southampton Library Digitisation Unit

We do not see how it can, if it is maintained that this range is a problem. It is also worth noting that the controlled air space in this region, extended especially for the benefit of Southend's air traffic, bites deeply into the so-called danger area. This is obvious from Map No. 6 in the Report. You will see from that that the controlled air space goes into the danger zone. We can only imagine your air controlled space is there. The London terminal area also skirts the range; in fact, it goes inside the danger zone. This does not fit with the right way to treat the danger zone.

In the view of the Interdepartmental Committee, Foulness has poor access. I shall not labour this point because I expect it has been pointed out to you. Access to Foulness will be changed because there are large plans afoot for the development of new roads. In fact, the new routing for the M11 will mean that anyone travelling from Foulness in the years to come could enter London through the M11 having first of all travelled upon something called the radial route. I mention this only because it is quite obvious that the information given in the Interdepartmental Report on the time to and from these sites is seriously affected by these radial routes. Until these road developments are completed, it will be very difficult to find out what the time will be. In any case, we think there is no magic about the one hour which seems to be the criterion set down for a London airport.

As regards access, because of its geographical situation in relation to London, Stansted is condemned to be perpetually in competition with London bound traffic generated to the north and north-east. This can never apply to any point on the coast line.

The Interdepartmental Committee also stresses the conflict which would arise between a third London airport at Foulness and the existing airport at Southend. In assessing the over-all improvement which could be affected by considering these two airports separately they have overlooked the main attraction of the Foulness site, i.e. its size. Foulness is the only site considered in the Report that is suitable for three parallel runways of the dimensions and separations proposed in that Report. The proposals for Stansted mean that any third runway would not be of the length which they consider necessary, I think I am correct in saying. On the other hand, Foulness would be able to accommodate three runways of the full length.

If the criteria accepted for the second London airport are applied at Foulness (I am now referring to the separation which was accepted for the second runway at Gatwick) the possibilities are extended to no less than five parallel runways. I mention this only because it is important to realise there is enough space available at Foulness. At Stansted, you have at most two 12,000 ft. runways and one 9,000 ft. runway. At Foulness, with the east-west alignment, you could have one of 16,000 ft., one of 14,000 ft., and one of 12,000 ft. All this could be done by using the separation laid down in the Report, i.e. 6,000 ft. If you accepted the separation used at the moment at Heathrow, you could in fact have at Foulness no less than five parallel runways similar to those at Heathrow. If you accept the situation and separation arrived at for Gatwick, you could have five.

As to compatibility with Heathrow, this is clear from Map 2 in the Report, from which is it is obvious that Stansted is marginal in this respect; Foulness is quite all right. In view of what happened between Gatwick and Heathrow, after we had had every assurance that they would be compatible always, there is the possibility that the marginal situation which was approved for Stansted might prove to be too optimistic.

The Report, of course, also refers to the prospect of having to consider a fourth London airport in the future. We should have thought that, although the Committee felt it beyond their terms of reference, this is worth bearing in mind. In fact, the Interdepartmental Committee's Report said that they could see further difficulties if in fact the fourth London airport site had to be selected in a few years' time. It therefore seems suitable to bear this in mind at this stage. The prospects of expansion at Stansted, of course, are limited to the airway layout that I have already mentioned.

At Foulness, there is a great deal of flexibility available. One could arrange this so that you could in fact have a spare runway up your sleeve, if it were decided that the third London airport had become saturated. At Foulness there is a vast

Printed image digitised by the University of Southampton Library Digitisation Unit

amount of space which is not available at Stansted. The topography, of course, is important. I do not think the surface of the land varies by more than 10 ft. anywhere; this is a great help, of course. It must be borne in mind that the ends of all the runways will end on the seashore; the other ends will terminate in what is probably the most desolate and sparsely populated area to be found in the whole of south-east England.

Once an airport of this size is visualised, the possibility of obtaining substantial advantages from the incorporation of Southend airport within it becomes apparent, both from the over-all gain in airport capacity and from the alleviation of local public hardship. In these circumstances, Foulness becomes the only site where a third London airport would result in the reduction in the present level of noise nuisance; because, as mentioned in the Interdepartmental Report, Southend already has a considerable noise problem owing to the present airport's location next to a large residential area.

In this connection I must point out that the alignments for possible runways at Foulness, as stated in the Report, are most unfortunate from this point of view. They have selected an alignment which seems to be the worst possible from the noise nuisance aspect of Southend. If you accept alignments east-west or north-south, you can in fact achieve this reduction in noise nuisance to Southend. I have said north-south or east-west; it is quite possible to have both at Foulness.

In considering what alternative can be offered to Stansted, we are faced, and I imagine every other objector is similarly faced, with the problem that the Inter-departmental Report offers no guide upon one very important matter. The Report adequately describes the need for a third London airport in terms of potential traffic. When we come to compare Stansted with other possibilities we are faced with a dilemma: there is no yardstick by which we can gauge what can and what cannot be sacrificed to provide the people of London with this urgent need.

If London had a desert upon its doorstep, no sacrifice would be necessary and everyone would be glad that some use had been found for a useless piece of land. But this is not, of course, the case in south-east England today. On the other hand, if it became impossible to feed Londoners except by flying in their daily rations, there would again be no problem. The need would be so great that Hyde Park would be covered in concrete, Oxford Street and Piccadilly levelled, Mayfair flattened and everyone would say: "What a marvellous job."

We do not see how anyone can decide whether or not Stansted is the best place for the third London airport unless he knows the value that Londoners set upon this need. This Inquiry has presented the Ministry with an opportunity to remedy what appears to be an omission in the Inter-departmental Report. We expected that they would produce representatives from the GLC whose evidence would make us feel thoroughly ashamed at our selfishness in standing between these poor depressed Londoners and their badly needed third London airport.

Perhaps the problem here is that the Minister responsible for airports may not consider that his department has the authority to pronounce upon the value of airports in relation to other activities of national importance. With respect, we doubt whether your Minister is in any stronger position. May we be permitted to suggest that he consult with his colleagues at the Department for Economic Affairs before any decision is made on this matter. It might even be a worthwhile exercise for the National Economic Development Council.

We note from paragraph 4 of the Appendix that the Committee did not give consideration to the development of vertical take-off airliners within the next 15 years. But developments are going on in the engine field. We feel that, although they may not be developed in this period, development of these new engines may enable take-off paths of airliners to be drastically steepened. This would have two effects. The track distance required to reach cruising altitude is reduced; also, the area of excessive noise nuisance is reduced. Both of these point to the possibility of locating a third London airport much closer to central London. The fact mentioned by the Committee that the intensity of noise at the airport using such aircraft is increased conforms with the policy which we advocate, i.e. the nuisance should be concentrated if necessary at a higher level into small area rather than spread over an increasingly large proportion of the population. Since the government announcement that funds are now available to cover the cost of sound-proofing

Printed image digitised by the University of Southampton Library Digitisation Unit

in airport neighbourhoods, it is worth actively developing this policy, since for a given expenditure it is clear that more efficient protection can be given to individual householders if the areas of more intense nuisance are concentrated. If such development is foreseen in the next 15 years, it is necessary to define a suitable site which can take advantage of it. Reference to this is made in Chapter VI of the Report, para. 69, which states: "There is, too, a danger that, at the present rate of urban and industrial expansion in south-east England, any suitable sites for a fourth airport may be lost in the coming years through ignorance of their potentialities and of the need to preserve them."

The only one available which we can think of is the area generally at Plumstead Marshes. This was formerly part of the Royal Arsenal. An east-west runway alignment would be essential, but this has the natural advantage that both ends would affect areas consisting of wide reaches of the river Thames, large dock areas, enormous areas of gas, electricity and sewage installations, numerous areas of heavy industry and the minimum of residential property. Whilst it may be true that operations prior to the introduction of this new generation of airliners may be incompatible with Heathrow, we would point out that the distance between Heathrow and Gatwick is almost exactly the distance between Heathrow and Plumstead. We think that any decision to turn this possible site into a housing estate may yet prove to be an outstanding and very serious planning blunder. The site has an unusual feature, of course: the development of suitable craft (either hovercraft or hydrofoil craft) travelling on the river Thames would reduce the time from city centre to airport to an unprecedented degree. Of course, it would be independent of the snarl-up in road traffic which is becoming increasingly obvious in central London.

In the terms of reference of this Inquiry the phrase "third London airport" sounds a little misleading because we must all be aware that London has in fact only one and a bit. Gatwick, even after the completion of the second runway, cannot become fully effective as the second London airport. The reason for this is startling: the full operation of the second runway is said to interfere with Heathrow, this despite the fact that, at the public inquiry conducted into the proposed development of Gatwick and duly reported in Cmd. 9215 of 1954, one of the main reasons for selecting Gatwick was the conviction of the Ministry experts that Gatwick, unlike other proposed sites, did not interfere with Heathrow traffic.

If this failure to implement a plan approved by your Ministry has been due to some change in the London air traffic pattern, we wonder whether a similar situation might not arise again. This could render one of the runways at the third London airport being economic as the second runway at Gatwick. In fact, there seems to be every possibility that London could end up with only two airports for the price of three.

For this reason we seek an assurance that the completion of Gatwick and its operation to full capacity with two runways will take place before any further development is put in hand at Stansted.

The uncertainties about the nature and pattern of London's air traffic in the years ahead are made very clear in Chapter VI, paragraph 69 of the Interdepartmental Committee's Report: "We believe that in our present uncertainty it would be premature to recommend that a site should be reserved now for a fourth London airport; the question should rather be looked at again in about five years' time, when the future may be clearer." If Foulness is not required at any stage under this scheme, it is not wasted and Southend gets the benefit of it.

That, Sir, is all I have to say.

THE INSPECTOR: Mr Ellis, I have heard over the last couple of months masses of evidence on the siting of the airport and all the problems that arise. I was expecting you to tell me something about gliding. How many members has your gliding club?

MR ELLIS: 500.

THE INSPECTOR: Is it in any way in association with the British Gliding Association?

MR ELLIS: We are members of that Association.

THE INSPECTOR: That is an overall body, is it?

Printed image digitised by the University of Southampton Library Digitisation Unit

MR ELLIS: It is the national controlling body.

THE INSPECTOR: What sort of height limits do you require for gliding? Although I know you would like the whole country, what is a practicable area for you to glide in?

SIR MILNER HOLLAND: Sir, I was going to call evidence about this in any case.

MR ELLIS: The question is whether you merely want to perform an elementary exercise in a glider which is to fly round an aerodrome, or whether you wish to take part in what is a growing sport which involves flying the glider across country. In order to do that, the glider has to climb in rising currents of air and get as high as possible. You need to do that because this decides how far you can go. In a way, altitude can be regarded as the glider pilot's fuel. As soon as you have exhausted your altitude you have to refuel, so to speak, and you do this by finding another rising air current, gaining more altitude and taking aboard more fuel. This enables you to carry on. The important thing therefore is the height to which you can go in one of these glides. If you can go to only 1,500 ft., say, you will not be able to go very far—about four miles—before you will be in the rather desperate position of having to seek for an emergency landing field. In general, one tries to keep a safety factor in hand. Except for competition flying, we generally regard this as about 2,000 ft., that is to say, the fuel or altitude you use for progressing across country is the altitude you can achieve above 2,000 ft. If, therefore, you are able to climb in a current to 4,000 ft., you consider you have 2,000 ft. to devote to navigating yourself across country before you are in a position to have to decide whether you are going to search for more altitude. Therefore the altitude above 2,000 ft. is a critical one for us. If an airway is at 3,000 ft., it means we have about 1,000 ft. only which we can use safely for straight flying across country before we have to start thinking about finding another rising current to carry on in our cross country flying.

THE INSPECTOR: Thank you. I think I have the idea.

SIR MILNER HOLLAND: Sir, we do agree that you want to impose as little restriction as possible on gliding. We do agree also that Stansted will have some effect on Dunstable just as Padworth would on Lasham. However, Captain Hunt would like to describe to you the amount of restriction and its effect and extent so that you may report upon it in due course.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the London Transport Board

General

1. The Board at this stage would like to make a number of general points to the Commission which they feel should be taken into consideration during the first stage of the Inquiry.

2. Should the Commission require advice on the transport implications so far as London Transport are concerned in relation to any particular sites, to assist them in the process of elimination and choice of a short list, the Board would be pleased to consider in confidence the implications for any specific sites.

3. The Board would in any event wish to comment in greater detail on the transport implications so far as London Transport are concerned of the small number of sites to be identified at Stage 1 of the Inquiry for further consideration.

Rail Considerations

4. It seems likely that the distance from London of any chosen site will mean that the main task of providing any rail link between the airport and London will fall to British Rail. Assuming that a conventional rail link terminates at a main line station on the periphery of the central area of London, the task of providing onward distribution by public transport between the in-town terminal and the central area and connections to other termini and to the suburbs will fall to London Transport. Similarly, London Transport would be required to provide distributive facilities if an unconventional link were established between the airport and Central London.

5. The third London Airport will generate substantial traffics and because of the greater distance of any likely site from Central London a higher proportion will resort to a public transport link as opposed to private car/taxi. This traffic will be superimposed on existing traffics, some of it in the commuter peak period; it will have a marked effect upon existing flows and the probable repercussions of this will need careful examination. Broadly, the effect might be felt in two ways:

(a) Directly from additional traffic at the new in-town terminal of an airport link.

(b) Indirectly to the extent that British Rail might need to modify or divert existing services to accommodate an airport rail link, thereby altering the present distribution of traffic between existing lines and terminals.

6. London Transport have plans for a number of improvements to the Underground network in Central London; the time scale for the establishment of the third London Airport is such that they would wish to assess the effect on these plans of any proposed sites.

7. One other feature which may require examination is the extent to which the concentration of traffic at one in-town terminal might be eased by creating

Printed image digitised by the University of Southampton Library Digitisation Unit

an interchange station between the airport link and the Underground system at a point in the suburbs en route to the centre.

Road Considerations

8. Whilst the bulk of the airport traffic is likely to be handled by some form of special link, there will be a case for a fast coach service between London and the airport to cater for intermediate local traffic; although most of the sites are outside London Transport's operational area, they would certainly wish to provide such a service in the case of Stansted and would be concerned with the road access problem.

9. London Transport operate on behalf of British European Airways and all the associated air lines using West London Air Terminal the existing air/coach service to Heathrow Airport, which constitutes the major air/coach operation to and from this airport. As part of this facility they are also concerned with the provision of airport to airport connecting services and diversion services in the event of inclement weather, accidents, etc. The extent to which these various services are to be maintained in the future is open to doubt, but the Board would wish to comment on the problems which may be posed in this field in relation to specific sites.

10. London Transport have learned from their participation in the planning of the proposed in-town air terminal for Heathrow and Gatwick Airports at Victoria that the road traffic generated from such a terminal requires major highway improvements and traffic management measures to accommodate the increased flows. These can have a seriously disruptive effect on the intensive bus services likely to be operating in the area of any new terminal unless special measures are taken to protect their routeings. This needs to be considered in conjunction with the Highway Authorities when consideration is given to the road repercussions of in-town terminals associated with any particular sites. The extent to which good Underground railway facilities can be provided to a new in-town terminal will play a significant part in lessening the impact of road congestion at such a focal point.

Printed image digitised by the University of Southampton Library Digitisation Unit

A Representation by A J Lucking

Summary

This paper suggests that:

1. Air traffic can be segregated into two groups. The first group moves by day and needs rapid access to Central and West London: the second is the primary generator of night noise, but can accept routing via a remote airport.
2. The overall air transport policy which is derived from Sir Ronald Edward's report can have a significant effect on airport siting policy.
3. The tariff for landing fees should be used to channel traffic to the various airports in accordance with the overall policy. More use can be made of existing non-London airports in an interim phase, notably for outgoing tourists originating from London.
4. Luton airport should be exploited to the full, even though the site cannot accommodate four parallel runways.
5. Outside experts on Air Traffic Control should be invited to challenge the recommendations of the Board of Trade staff. Air Traffic Control considerations are a dominating factor in the timing of an investment of up to £150,000,000, and a few hundred thousand pounds spent on "Operational Analysis" might defer at least part of this massive expenditure.

Calculations are cheap, compared with concrete.

I. Introduction

The Writer is a user of air services for business travel and cargo carriage who has been caused to study the problem of air transport by deficiencies in the services available. This work has led to appearances before the Air Transport Licensing Board and to membership of a number of organisations concerned to develop the contribution of air transport to the National Economy. Earlier, work as a Management Consultant included study of air transport problems.

This paper has two purposes:

1. To suggest that certain classes of air traffic are the principal generators of night noise and that, coincidentally, the same categories can utilise airports remote from the city centre without serious degradation of the quality of service.
2. To suggest that the planning limitations advocated by the National Air Traffic Control Service should be challenged by experts from outside the service. Air Traffic Control considerations are likely to be a dominating factor in choosing a site, and in assessing the capacity of the existing airports, which determines the timing of the development, and large scale investment.

II. A Traffic Analysis Related to the Noise Problem

Though new aircraft are being engineered to reduce the noise nuisance, it

Printed image digitised by the University of Southampton Library Digitisation Unit

is and will remain a primary consideration for those opposing the construction of an airport near their homes or work-places. To those who must use airports frequently, however, the dominant factor is accessibility from their actual point of origin in terms of both journey time and number of transport modes involved. Thus, for example, a remote estuarial site may solve the noise problem, but would be relatively inaccessible. High speed links to the centre of London do not solve this problem, because surprisingly few journeys start there. The 1966 BAA surveys found that 40 per cent. of the passengers using Heathrow and 19 per cent. of those using Gatwick originated from points between Hammersmith and the City of London; though many others traversed the centre of the metropolis because of the layout of the transport system. Most of those starting from Central London are foreign visitors: British users of Heathrow tend to live west of Hammersmith.

The costs of the extra length of journeys to the more remote sites can be computed. For example, if two sites are considered, one involving an additional surface journey of 30 miles, the cost of transporting a million tons of freight per annum would be around £500,000 per annum. The extra cost of moving 20m passengers the same distance would be about £5m per annum.

Even more significant might be the loss of incoming tourists, if London obtained a reputation for being "inaccessible and inconvenient". In 1966 such visitors spent on average £50 each, £70 in the case of the 1 million North Americans, so that the loss of only 100,000 tourists would represent another £5m. In this context forecasts of incoming tourist volume through the airports will not be fulfilled if the necessary infrastructure of hotels is not provided too. There are already signs of a throttling effect through lack of hotel accommodation.

Thus, the Commission may find that a central problem is to balance the noise nuisance and the accessibility problem: in particular, aircraft noise that is objectionable at all times may become intolerable at night.

An analysis of the traffic at Heathrow indicates that the classes causing the maximum nuisance, or likely to cause it in the future, are clearly defined. Table 1 sets out the classification and the characteristics of each category of traffic are detailed below.

Category I Traffic. Business, professional and diplomatic passengers rarely move outside the hours 0730-2200 and flights are timed accordingly. Foreign visitors need fast access to the centre of London, and are often met on arrival, or need rapid connections with domestic airlines. The proximity of Heathrow Airport to central London aids British businessmen to "catch their man" when he is changing planes there, or can be persuaded to do so. The extra time needed to reach the Estuarial or other distant sites from central London would be a severe handicap to passengers in this category.

Category II Traffic. Incoming tourists generally use the same flights as Category I traffic, or chartered aircraft which tend to operate to similar timings. Many go to Central London hotels; parties tend increasingly to use coaches, for courier control and cost reasons. (This is the reason why 17 per cent. of Gatwick passengers use chartered road coaches against 43 per cent. using the rail link. The charter coach figure for Heathrow is 4 per cent., but is believed to be rising.) There is also a growing tendency for parties to motor directly from Heathrow to Provincial centres such as Oxford, Stratford and Winchester.

Printed image digitised by the University of Southampton Library Digitisation Unit

This Category differs little from Category I in noise/access characteristics, apart from the forthcoming night movements by supersonic aircraft at discounted fares, at timings which are unacceptable to Category I passengers. Because these latter passengers are securing a discount, however, they can be persuaded to endure a longer surface journey from a more remote airport and can be grouped with Category IV night traffic (see below).

Thus, these two categories of traffic are the least troublesome from the noise viewpoint, and at the same time generate the greatest demand for rapid access to Central London.

Category III Traffic. Cargo: Movement peaks at night. The cost of extra surface movement is low: for example, a reduction of £55 in the landing fee charged for a 45 ton payload cargo aircraft would compensate for a 30 mile extra surface journey.

The rate of growth of cargo traffic, which is at an early stage of development, is very much higher than passenger traffic, and an airport largely "reserved" for all cargo aircraft may be needed in 15 years' time.

A further factor is that much of the cargo shown in Board of Trade statistics as "London" traffic in fact originates elsewhere, notably in the Midlands. It is believed that a recent BEA survey has revealed that less than half their "London" traffic is "genuine". The probable reason is that Freight agents earn extra profits by charging IATA freight rates for shipment from Northern airports, then transporting the goods to Heathrow cheaply by road, where they can secure additional benefits from larger scale consolidation. This movement by road answers to some extent the objection that interlining is critical for cargo. It is clearly much less so than for Category I and II passenger traffic.

Explosive growth of cargo traffic will increase the proportion carried in all freight aircraft and diminish the relative significance of carriage on passenger flights.

In considering a site for an airport which may tend to specialise in freight, it will be important to determine the true pattern of freight origins and destinations. However, this will not alter the basic premise that freight can be handled at a remote airport, and should be, because its movement peaks at night.

Category IV Traffic. British tourists, travelling abroad. Apart from those using day scheduled services, the dominant feature of this traffic is that much of it moves at night: and that the growing bulk market is for low priced, single destination charter flights. The IATA scheduled airlines compete by operating night tourist flights, and by the non public, tour basing (ITX) fares.

A typical IT charter operation, lasting from April to October, consists of a cycle of 4 round flights each day, apart from short weekly breaks for maintenance. Because many of the passengers have to travel long distances from their homes to the airport, it is not practical to schedule the first departure before about 0900 hrs. This automatically sets the other three departures at 1500, 2100 and 0300: and the corresponding landing before the 0300 departure will be around 0200. Thus, this traffic creates a major night noise nuisance.

Another factor contributing to the popularity of night flights and influencing their timetable is Tariff Provision I, which the Board of Trade has directed the Air Transport Licensing Board to incorporate in the B Licences granted for Inclusive Tour Charters. Provision I has been modified for winter tours: but in

Printed image digitised by the University of Southampton Library Digitisation Unit

summer, it requires that tours shall not be priced below the IATA fare. Consequently the lowest priced holidays can only be offered on aircraft taking off after 2000 hrs., the earliest time that IATA airlines can offer Night Tourist rates. Thus this tariff provision also channels flying into the night hours, and leads to secondary movements between midnight and 0300.

If a new aircraft is built at a remote site, the airlines operating these flights would be required to make all movements between say 2300 and 0600 there.

For example a flight sequence might be:

2100	2320-2350	0220-0300	0520-0600	0820
Luton	Palma	new remote airport	Palma	Luton

BEA uses Heathrow-based aircraft in this way to operate their Gatwick-Channel Islands service. The airlines would be compensated by reducing landing fees at the new remote airport. Further to spread the peak, Tariff provision 1 should be modified.

Further use of the price mechanism would persuade tour operators to base their businesses at an otherwise unattractive site.

Another significant factor is that Category IV traffic originating in the provinces is being emplaned to an increasing extent at its point of origin. This will minimise the interlining problem.

Thus, analysis of the traffic categories has produced an outline plan for reconciling the conflict between accessibility and night noise generation. By segregating traffic, the conveniently sited airports at Heathrow, Gatwick and Luton, after expansion, could provide sufficient capacity to carry Categories I and II traffic for many years. By concentrating interline passenger traffic at these airports, notably Heathrow, a further major problem is overcome.

In an interim phase, much more Category III and IV traffic, together with discounted fare supersonic flights, can be accommodated at existing airports such as Southend, Stansted, Manston, Ashford, Lydd, Southampton, Hurn, and at Northern and Midland airports.

Luton is suggested as a 2 runway "business" airport because it has reasonably good road access to Central London and it serves a catchment area embracing several industrial centres and the residential areas north of Central London. In due course, demand will emerge there for services to the main provincial and Irish centres, and to the leading Continental destinations, such as Paris, Amsterdam, Brussels and Dusseldorf.

III. Air Traffic Control Considerations

The Inter-departmental Committee excluded Luton from consideration as a site for London's third airport, firstly for Civil Engineering reasons, now known to be partly invalid; and, secondly, because the Air Traffic Control (ATC) Service considered that a conflict arose with the Heathrow traffic. ATC considerations were said also to limit the capacity of Gatwick to 40 movements an hour.

The three airports lie on a line 42 miles long, at right angles to the prevailing wind. During 1967, about 350,000 movements were handled at the four London airports, including Stansted, with a peak in July and August. During the same period, with a less seasonal traffic flow, the three main New York airports, John

Printed image digitised by the University of Southampton Library Digitisation Unit

F Kennedy, La Guardia and Newark, handled 939,379 movements. These three airports are located in a triangle approximately analagous to one formed by Heathrow, Croydon and Redhill. The sides of the triangle are, respectively, 20 miles, 17 miles and 10 miles long. In considering reports of saturation on the US East Coast this summer, it is important to discover the impact of increased air traffic, both airline and General Aviation, and of any changes in Controller's working methods. There is evidence of a "work to rule".

It may be argued also that two mid-air collisions in eight years is too many. Nevertheless, about four times as many movements are being accomplished during the bad weather within a much smaller area. Much of this traffic consists of small propellor driven aircraft, which, when mixed into a stream of commercial Jet airliners, make the problems more difficult than are encountered here. It appears that more traffic could be handled at the existing London airports, without reaching a concentration approaching that achieved in the New York complex, if that level is judged to be too dangerous, or too likely to cause delays. Though all movements in the London area are nominally in accordance with Instrument Flight rules (IFR), there are signs that Controllers revert to visual rules on occasion. If this is so, the capacity of the airports in practice may be higher than is suggested by the Board of Trade ATC planners.

The planning rate used by the Inter-departmental Committee was 32 movements per runway hour. This rate appears to have been raised since to 36: but during the March 1968 runway repairs, 41 movements were observed on one runway in an hour, with vacant spaces still available in the sequence.

A Log of events on 17th March 1968 is shown in Table 2. By mixing take offs and landings, and by sequencing take offs into different sectors (serials 9-12, 20-23), a high rate of movement was achieved. When there were no departing aircraft available to "slot into" the landing stream (37-43), the three mile radar separation resulted in gaps of around 2 minutes between events. Another time loss occurred after event 23, because the BOAC 707 was not ready to take off; but such incidents are inevitable. The use of the intersecting runway 23 Right, for two landings A & B, probably because of cross wind conditions, involved longer intervals than if serials A & B had landed on 28 Right.

It appears that additional movements can be achieved on a landing runway, even when movements are under IFR, by admixture of take offs. Does the planned sustained rate of 36 movements per hour embrace this factor fully? Would high speed turn offs improve the rate significantly?

Heathrow traffic rose from a February trough of 15,000 movements per month to a July peak of 24,000 in 1966/67. Would delays become unreasonable if the summer plan included at least limited exploitation of visual Flight Rules? It is true that the Americans suffer serious delays on occasions: but they seem to plan on visual rules year round, and the New York traffic to Miami actually peaks when the weather is at its worst.

The Writer can do no more than draw the attention of the Commission to these aspects, and is not in a position to provide a technical solution.

It is clear, however, that the timing of airport investment is governed largely by Air Traffic Control considerations. It may be that in the past, financial and "General Management" aspects have been given insufficient weight. Technical experts are entitled to say: "If you do not accept our advice, we can take no responsibility for the hazards that may ensue." This does not absolve Government from the responsibility of overruling the advice and accepting the

Printed image digitised by the University of Southampton Library Digitisation Unit

responsibility in certain cases. The Commission may consider that this aspect is so crucial that countervailing expert evidence should be sought from outside the Air Traffic Control Service. Apart from International Aeradio and the American Consultancies who specialise in this work, certain British Equipment Manufacturers employ experts whose evidence might be of value, such as General Precisions Systems: Elliott Automation and Marconi. Unfortunately, Eurocontrol appears to be unimaginative in its approach.

IV. Scheduling the Investment. The Need for Operational Analysis

If it was possible to pre-compute the probable number of mid-air collisions during the 1,000 bomber air raid on Cologne in 1942, it would be surprising if the relative risk level of different Air Traffic Control strategies cannot be reduced to mathematical terms in 1968. A theory could be validated by applying it to the New York complex. Such an approach has been used to calculate satisfactory mid-air separations for the North Atlantic route. A few hundred thousand pounds spent on calculation now, might defer the expenditure of tens of millions of public money, with obvious advantage to the taxpayer and air traveller who would have to bear the burden of premature expenditure.

An additional argument for planning investment on a "step by step" basis, rather than as one mammoth project (e.g. a £150m island in the North Sea), is that the official traffic forecasts are based on a simple exponential formula. Experience in technological forecasting is that the general pattern is an "S" curve: that is, in this context, the traffic graphs will start to flatten out eventually. Taxpayers would feel aggrieved if this effect manifested itself just as a £150m airport was about to be opened. It would seem that a systematic prediction of the date when the traffic curve will flatten properly might form an element of the present enquiry. Such an investigation of the US market is understood to have been made by the Boeing Company.

Yet another factor in longer term forecasting is the expected introductic of VTOL aircraft. The current Ministry of Technology study should quantify the expected results of this development.

The Committee chaired by Sir Ronald Edwards may recommend policy changes which will effect the timing and siting of Britain's largest airport. For example, the introduction of subsidy for certain domestic services would increase the number of passengers demanding rapid access to central London. Setting "floor" charter rates for inclusive tour services, as is done in the United States, could cause changes to the pattern of outgoing tourist traffic. Merger of the two State Air Corporations could be coupled with allocation of non London Continental traffic to Independent Operators, and an unexpectedly rapid increase of International Services from Provincial Cities.

Though such factors undoubtedly affect the timing of the need for a new four runway airport, it is probable that one will be needed eventually.

V. Conclusion

A wrong decision on airport siting can lead to the wastage of a significant amount of the Nation's resources and to loss of profit from Air Commerce. Business passengers have been reluctant to use the remote airports at Edmonton, Washington (Dulles), Detroit, Stockholm (Atlanda) Sao Paulo and to a lesser extent Gatwick and Prestwick. The suggestions in this paper are aimed at overcoming this problem by a blend of financial incentives and regulatory

Printed image digitised by the University of Southampton Library Digitisation Unit

activity: at minimising the cost to the taxpayer and Air Passenger; and at reconciling the needs of Air Transport users, and of other Citizens.

(A Summary of suggestions is included in the Title Sheet.)

A J LUCKING

c/o Waddington & Duval (Holdings) Ltd.,
Brewhouse Street,
Putney, S.W.15.

Classification of traffic on the bases of night noise propensity and accessibility considerations

Traffic category	*Night noise propensity*	*Traffic sensitivity to accessibility city centre*
I. Business, Professional and Diplomatic (*a*) European routes (*b*) North Atlantic routes (*c*) Eastern and Southern routes (*d*) Domestic	NIL. Movements planned between 0730 and 2200 Very few night mail flights	HIGH.
II. Incoming Tourists (*a*) European routes (*b*) North Atlantic routes (*c*) Eastern and Southern routes	NIL as (I), but future night SST rebates will generate night tourist movements	HIGH though less than Cat. I—an increasing number of incoming tourists go directly to provincial centres. Often they stay in the centre of London so a fast surface link is appropriate.
III. Cargo	HIGH. Traffic peaks at night	LOW. Much originates in ex-urban and provincial factories. Extra surface movement costs around 4d per ton mile.
IV. Outgoing tourists (UK residents)	HIGH. Traffic peaks at night, or is carried on "round the clock" basis.	LOW. Highly price conscious and travels once or twice only each year. Long surface journey a minor hardship.

Printed image digitised by the University of Southampton Library Digitisation Unit

Activity on Runway 28 Right, Heathrow, 17th March 1968

(Runway 28 Left closed for maintenance)
Weather—overcast: Gusty wind from south west

Serial	Event		Timing		Interval	Notes
			Hrs.	*Secs.*	*Secs.*	
1	BEA Trident	L	1551	29		
2	Swissair	T	1552	09	40	
3	Alitalia	T	1553	28	79	
A	Eagle	L	(1556	06)		Runway 23 right
4	BEA Trident	T	1556	46		
B	BEA Vanguard	L	(1559	10)		Runway 23 right
5	AUA Viscount	T	1559	50		Turned left
6	Cambrian Viscount	T	1600	36	46	Turned right
7	Eagle	T	1601	33	57	Turned left
8	MEA VC10	L	1603	35	122	
9	BOAC VC10	T	1605	02	87	
10	BEA Trident	T	1606	20	78	
11	Iberia Caravelle	T	1607	28	68	Turned left
12	BEA Vanguard	T	1608	26	58	Turned right
13	BEA Trident	L	1609	50	84	
14	UAA Comet	T	1611	08	78	
15	BEA Trident	L	1612	05	57	
16	Aircraft not noted	T	1613	35	90	
17	BEA Trident	L	1615	15	100	
18	BEA Trident	T	1616	23	68	
19	BEA Vanguard	L	1617	10	47	
20	Iberia DC8	T	1618	18	68	Turned left
21	Aircraft not noted	T	1619	20	62	Straight ahead
22	Air France Caravelle	T	1620	30	70	Turned left
23	BEA Vanguard	T	1621	55	85	Turned right
24	BEA Trident	L	1624	50	175	
25	Alitalia Caravelle	L	1627	35	165	BOAC 707 was not ready after Serial 24
26	BOAC 707	T	1629	06	91	
27	BEA Viscount	T	1630	15	69	
28	PAA	T	1631	45	90	
29	BEA Vanguard	L	1632	48	63	
30	BOAC 707	T	1634	35	107	
31	Eagle Britannia	T	1635	45	70	"On the roll"
32	BEA Viscount	L	1636	17	32	
33	SAS	T	1637	33	76	
34	BEA Trident	L	1638	38	63	
35	BEA Vanguard	T	1639	40	62	
36	Cessna	T	1640	17	37	
37	Comet	L	1641	28	71	
38	Aircraft not noted	L	1643	25	117	
39	Olympic	L	1645	48	133	
40	BEA Trident	L	1648	35	167	
41	SAS Caravelle	T	1649	50	75	
42	BEA Trident	L	1651	50	120	
43	Aircraft not noted	L	1654	15	145	
44	Aircraft not noted	T	1655	55	100	
45	Aircraft not noted	L	1657	10	75	
46	Lufthansa 727	L	1700	40	210	
47	BOAC VC10	L	1603	18	158	

L = landed, timing as wheels touched.
T = take off, timing when aircraft started to move.

Printed image digitised by the University of Southampton Library Digitisation Unit

An Assessment of Runway Capacity by Time Study

The diagram* consolidates the results of 9 time studies made at Heathrow. All were made by the writer, and are similar to Table 2 in the paper dated 19th August, 1968. The original study sheets are available for examination. The total number of observations is limited, because frequently there is insufficient traffic to *form a queue,* and thus ensure that operation is at *maximum intensity.* However, no observations have been omitted unless there was an "abnormal" gap—of over 3 minutes—between events. This procedure is validated by the shape of the distributions obtained.

The average movement rate of 33 for equal numbers of take offs and landings agrees quite closely with the planning figure of 32 used by Mr Peter Masefield and the Inter-Departmental Committee. However, the time studies show that the overall average embraces a take off rate of 38 per hour, and a landing rate of 29. This latter figure compares very badly with the IFR rate achieved at John F Kennedy, New York, which is 36.5 manual, or 38.4 using an experimental "computer aided approach system". Eventually, this technique is expected to add 4 movements per hour, an improvement said to be worth £10,000,000 per annum at that airport alone (paper by S. Ratcliffe, Royal Radar Establishment, to GATCO convention, October 1968.)

Perhaps even more significant is the achieved rate of over 40 movements per hour when landings and take offs are alternated at Heathrow. The red strokes represent "a landing following a take off", and the black "a take off following a landing". Apart from any possibility of adopting this operating technique as standard at Heathrow, it is clear that the capacity of the existing single runway airports is substantially higher than stated by the Board of Trade and the BAA.

Table 2 to the paper indicated gaps for a further 7 movements during an hour when 41 were achieved, though one gap was lost through a minor delay to a BOAC 707 (serial 26).

It is believed that this further data reinforces the suggestion put to the Commission in the paper—that the runway capacity figures used by the Board of Trade and the BAA are far too low. Financial figures already given in evidence illustrate the huge sums of public money that can be saved by utilising the existing airport sites to the utmost, both by maximising the numbers of runways, and the capacity of each.

* See plates facing pages 26

Printed image digitised by the University of Southampton Library Digitisation Unit

Note by the Ministry of Housing and Local Government

Population growth in South East England

Introduction

1. The Ministry were asked by the Board of Trade to prepare a paper for the Commission identifying the projected growth areas and new towns in the south east of England, detailing decisions taken, and drawing attention to the current South East Joint Planning Study under the Ministry's Chief Planner, Mr Wilfred Burns.

Regional population growth

2. Projections of population growth in England and Wales, to 1971 and 1981, have been made by the General Register Office. They are available by planning regions and their broad sub-divisions. South East England is generally taken to comprise the South East region and the East Anglia region. The population of the South East region was estimated to be 17,072,000 in 1966, 17,526,000 in 1971 and 18,585,000 in 1981. The population of the East Anglia region was estimated to be 1,582,000 in 1966, 1,670,000 in 1971 and 2,008,000 in 1981. The projection for the South East region has been broken down into forecasts for Greater London, the Outer Metropolitan Area, i.e. the ring beyond London, approximately forty miles from Charing Cross, and five sub-divisions of the Outer South East. The projection for the East Anglia region has been broken down into the four sub-divisions of East Anglia. Up to date projections for smaller areas are not at present available, but could be prepared for particular areas in which the Commission are interested. Population forecasts for the later period up to the end of the century could also be provided for regions.

Current strategy for location of population growth in South East England up to 1981

3. The present strategy for physical development in South East England up to 1981 is the result of the Government's decisions taken in 1965 following the review of the South East Study. The original study had been prepared by the Ministry of Housing and Local Government under the previous administration. The review took account of the later information about population and employment which emerged from analysis of the 1961 census.

4. Briefly, the Government's decisions fell into two parts:

(a) that provision should be made for accommodating one million people, most of them from London, in new towns and planned expansions of existing towns under the Town Development Act; and

(b) that the balance of the population increase expected in the South East and East Anglia regions should be accommodated in and around existing towns and villages through the processes of normal development within the context of the local authorities' development plans.

Printed image digitised by the University of Southampton Library Digitisation Unit

5. A schedule of the new towns and town development schemes agreed, or proposed, is annexed together with a map*. New towns are designated by the Minister, under the New Towns Act 1965, who appoints a development corporation to plan the development of the town and to undertake much of the construction. Town development schemes under the Town Development Act 1952 are carried out by the local authorities with the assistance of the Greater London Council.

6. Most of the town development schemes are small in scale and many are not particularly significant as centres of population growth.

7. The new towns are larger and more significant. The latest new towns are based on sizeable existing communities, 60 to 80 miles away from London, and are each designed to take a substantial intake of new population—70,000 by 1981. The ultimate population for each new town will be of the order of 200-250,000 people.

8. The principal growth areas already decided or projected in or on the periphery of the South East and East Anglia regions are:

(a) The Milton Keynes/Northampton/Wellingborough area. Milton Keynes new town is to take 150,000 newcomers over 20 years and will grow ultimately to 250,000 people. Northampton new town nearby is to take 70,000 newcomers and grow to about 230,000 by 1981. Wellingborough is being expanded under the Town Development Act from 34,000 to 80,000 people by 1981.

(b) Peterborough new town in East Anglia will grow from 75,000 to 175,000 by 1981.

(c) Ipswich, also in East Anglia, where a decision is awaited on a new town draft designation order proposing growth of the existing town from about 125,000 up to about 250,000 by 1991.

(d) Swindon in the South West region, where a second major town development scheme of 75,000 people is now being considered by the Borough Council, Wiltshire County Council and the GLC.

(e) South Hampshire. There is strong natural growth in the Southampton/Portsmouth area, where the population is likely to increase from 850,000 to over 1 million people by 1981. In addition the possibility of some planned intake is being studied.

9. Some substantial planned growth is also continuing in the Basildon and Stevenage new towns and to a lesser extent at Basingstoke, Ashford and Andover under town development schemes.

Recent developments

10. The South East Economic Planning Council published its first report *A Strategy for the South East* last November. It suggested a strategy for urban development in the region up to the end of the century based on four main sectors of growth radiating from London to the edge of the region following the principal road and rail communications. The Council visualised the build up of city-regions at the end of the sectors as counter-magnets to London. These would develop around the major new and expanding town projects which the Government had agreed or which were proposed. As priorities the Council selected first for development the Portsmouth/Southampton area; second, the

* See plates facing page 26

Printed image digitised by the University of Southampton Library Digitisation Unit

Milton Keynes/Northampton/Wellingborough area; and third, the Ipswich/Colchester area. Other developments in the region should, in their view, largely be concentrated in the proposed sectors of growth.

11. The Standing Conference on London and South East Regional Planning, which represents the local planning authorities, have also been undertaking some strategy studies, but this work is now being passed to the South East Joint Planning Study for evaluation. As regards East Anglia, the East Anglia Economic Planning Council are expected to publish their first report in the autumn.

The Burns Study

12. The Government have neither accepted nor rejected the South East Economic Planning Council's strategy, but have invited the Council and the Standing Conference to join them in commissioning a new planning study designed to carry existing work forward to the point of reaching a definitive strategy for the South East Region. A Study Team composed of planners from the Department of Economic Affairs, the Ministry of Housing and Local Government, the Ministry of Transport, the South East Economic Planning Board and Standing Conference on London and South East Regional Planning, has been set up under the leadership of Mr Wilfred Burns, Chief Planner of the Ministry of Housing and Local Government. The Study Team are guided by a Steering Group, comprising senior officials of Government Departments, the Planning Board and Standing Conference under the chairmanship of the Permanent Secretary of the Department of Economic Affairs.

13. The Terms of reference of the South East Joint Planning Study are:

"To consider and report with recommendations on patterns of development for the South East, taking as a starting point the strategy proposals of the South East Economic Planning Council, but also taking account of the planning work of the Standing Conference on London and South East Regional Planning and having regard to Government policies, with the object of providing a regional framework—

(a) for the local planning authorities to carry out their planning responsibilities, including as appropriate the preparation of structure plans under the Town and Country Planning Bill now before Parliament, and

(b) for government decisions on investment, and economic and social policies relating to the Region's future development".

The Study Team have been asked to produce their report within the next eighteen months, i.e. by the end of 1969. The Commission will, no doubt, seek direct such assistance as they may require from the Study Team on regional planning considerations relevant to the siting of the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Existing town development and new town schemes

Location	*Estimated population mid-1967*	*Approximate capacity remaining in new or expanding town scheme*	*Completion date of new or expanding scheme*	*Estimated population of town at date of completion of scheme including natural increase*	*Notes*
South East Region					
OUTER METROPOLITAN AREA					
Aylesbury MB	35,190	5,000	1970	42,000	GLC and Aylesbury Borough Council are discussing a possible second stage town development scheme for perhaps 30,000 people.
Basildon New Town	72,000	29,500	1976	103,000	the ultimate population of the designated area is expected to be 140,000.
Bletchley UD	24,980	7,000	—	—	this scheme is now within the designated area of Milton Keynes. The forecast of population for Bletchley is included in that for Milton Keynes.
Bracknell New Town	27,000	26,500	1976	55,000	—
Harlow New Town	72,000	—	—	—	the master plan for Harlow provides for an ultimate population of 80,000. Although this is likely to be reached by natural growth alone, building has been agreed for a planned intake of about 7,000 in the next two years, pending further consideration of Harlow's future.
Letchworth UD	28,110	3,000	1973	34,000	—
Luton RD (Houghton Regis)	35,210	8,750	—	—	—
Stevenage New Town	58,690	See note	1975	80,000	the Minister has authorised the Development Corporation to continue to build for planned immigration until a population of 80,000 is reached in 1975. The ultimate population will be about 100,000.
OUTER SOUTH EAST					
Andover MB	21,980	17,000	1981	48,000	—
Ashford UD	34,070	11,500	1978	52,000	the Government have decided not to proceed with a major new town at Ashford earlier this year, but have asked local authorities to consider an extension of the present town development scheme to a further 20,000 people.

Banbury MB	26,540	4,250	1974	40,000	—
Basingstoke MB	38,230	29,000	1981	86,000	—
Braintree and Bocking UD	22,310	4,250	1981	33,000	—
Milton Keynes New Town	40,000	70,000	1981	130,000	designated but not started. The development of Milton Keynes is to continue after 1981 to a total population of quarter of a million people.
Sandy UD	4,750	2,500	1976	8,000	—
Witham UD	11,780	9,000	1981	26,000	—
EAST ANGLIA					
Bury St. Edmunds MB	24,260	8,000	1981	40,000	—
Haverhill UD	10,300	5,000	1971	19,000	agreement in principle has been reached for a further stage of town development or 5,250 people which would ultimately take the town to a population of 30,000.
Huntingdon MB	14,760	3,000	1973	22,000	—
King's Lynn MB	28,370	9,250	1981	54,000	—
Mildenhall RD	28,930	6,500	1978	39,000	one scheme at Mildenhall and one at Brandon.
Peterborough New Town	80,500	70,000	1981	175,000	designated but not started. Population estimate for 1981 includes villages in the designated area.
St. Neots UD	11,900	5,500	1981	About 25,000	—
Sudbury MB and Great Cornard (Melford RD)	10,820	6,000	1981	20,000	—
Thetford	10,400	5,500	1971	19,000	—
OTHER REGIONS					
Northampton New Town	About 130,000	70,000	1981	230,000	designated but not started. Population estimates include villages in the designated area.
Wellingborough UD	33,820	32,500	1981	80,000	—

Printed image digitised by the University of Southampton Library Digitisation Unit

Possible town development and new town schemes

	Estimated population mid-1967	*Possible size of scheme for London overspill by 1981*	*Notes*
South East			
OUTER SOUTH EAST			
Bedford MB	67,300	10,500	scheme under consideration by GLC and Bedford Borough Council.
Bicester UD	8,850	10,500	discussion of scheme deferred at present.
Hastings CB	66,660	30,000	discussion between GLC and Hastings County Borough Council currently taking place.
Queenborough in Sheppey BC	26,000	at least 10,000	schemes of various sizes, from 10,000 people upwards are under discussion by Kent CC and the Borough Council.
South Hampshire	about 850,000	—	the possibility of a planned intake of population is to be studied by the newly established South Hampshire Plan Advisory Committee (representing Hampshire CC, Portsmouth BC and Southampton BC.)
EAST ANGLIA			
Ipswich New Town	126,000	70,000	a public inquiry into the draft designation order has been held and a decision is awaited. The ultimate size of Ipswich suggested is 250,000 people by 1991.
Norwich	120,000	30,000	a decision is likely to depend on the outcome of the Norwich/Norfolk Growth Study.
Stowmarket	9,000	10,000	discussions have taken place between the local authorities and the GLC.
Wisbech	13,200	10,000	discussions have taken place between the local authorities and the GLC.
OTHER REGIONS			
Swindon	100,000	75,000	a proposal for a second town development scheme on a major scale is now being considered by the GLC, Swindon BC and Wiltshire CC.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by The National Farmers Union

Agricultural House,
Knightsbridge,
London, S.W.1.

J Caines, Esq.,
Commission Secretary,
Templar House,
81-87 High Holborn,
London, W.C.1.

17th September, 1968.

Dear Mr Caines,

Roskill Commission on the Third London Airport

1. We represent the great majority of those farmers who will possibly be affected by the siting of the Third London Airport. We welcome the invitation, therefore, issued both by the Minister in the House of Commons and also by the Commission itself, for interested parties to provide evidence to the Commission as to the best place for such an airport to be sited.

2. The Union asks the Commission, therefore, if it can take part in every stage in which evidence from outside bodies is permitted. The Union further requests that it should be supplied with all literature which is issued on this subject by the Commission.

3. The Union recognises that agriculture is not the only consideration in arriving at a suitable site for an airport; but in the submission of the Union agriculture is of paramount importance and certainly not less important than any of the other major considerations. The Union therefore welcomes the fact that, within the terms of reference of the Commission, "the effect on agriculture" has been given as one of the general planning issues which are particularly relevant to the enquiry into the site of London's Third Airport. The Union considers the matter should be investigated in detail. One major criticism of the enquiry into the Third London Airport being sited at Stansted was the fact that agriculture was practically written off by virtue of a brief acceptance, without amplification that agricultural land at Stansted is of high quality. In the Union's submission, the various considerations cannot properly be balanced against each other unless they have all been satisfactorily assessed and evaluated.

4. Clearly a site which does not involve the taking of agricultural land is prima facie most satisfactory to the Union. The Union hopes that serious consideration, therefore, will be given to proposals for an airport on coastal or estuarial sites, which would involve the use of reclaimed land. Where other interests also tend in the same direction (for example, where the noise factor would be reduced by landing approaches from the sea. or where the number

Printed image digitised by the University of Southampton Library Digitisation Unit

of people and buildings affected is minimal), the Union considers that the case must be very strong for an airport to be sited in such a place. It is a platitude perhaps, but nevertheless in important one, that an airport should be the servant of society, and not its master. Its primary aim should be to aid, and not to disrupt. There may perhaps be too high a price to pay for mere economic advantages in the siting of the airport, and the Union hopes that the Commission will give the interests of individuals affected a high priority in their consideration.

5. At the same time, the actual land which is taken for the airport is not the only point of agricultural importance. With an airport will go all kinds of ancillary development, in communications, in housing for airport employees, in service facilities, etc. It may be that a site which in itself involves land of comparatively unimportant agricultural value, may have a profound effect on land of much greater agricultural importance. While we are therefore not competent to suggest precisely where the best place for an airport might be, since we are only speaking on behalf of agriculture, we would request that the Union should be fully consulted on all sites proposed, so that it may comment in detail on the agricultural implications of each site.

6. The Union asked the Minister that an agricultural expert should be appointed to the Commission as one of its members. Since the Minister felt unable to accede to this request, the Union considers it especially important that agriculture should be fully and properly evaluated.

7. The Union recognises, when the Commission produces its Short List for possible sites for the Third London Airport, that probably some sites involving agricultural land will be on that list. In order to avoid illogicalities and inconsistencies and in order to assist the Commission to the fullest extent, the Union considers that probably the most helpful way to deal with each site would be to suggest certain criteria by which argriculture should be assessed, which should apply to each proposal. It would then be the Union's task to present its views on the agricultural importance of each site in relation to these criteria. Some sites would clearly be more agriculturally important than others, but as agriculture is not the only consideration, this may well not be the deciding factor for those farmers involved.

8. It is a cardinal point of Union policy that all productive agricultural land is worth saving unless it can be shown that no other land is reasonably available. The Union has constantly warned of the folly of reducing our reserves of agricultural land, in the light of increased population, and the possibility of a world famine as forecast by the United Nations Organisation for the year 1984. Economic assessments are not therefore the sole or even perhaps the most important criteria on which to base the siting of an airport. However, the cost of all food may well increase in this context. The Union would like to comment in more detail on this question of economic assessments at later stages. Suffice it to say here, that merely to contrast the income from an international airport with the cost of the land involved or the value of food produced is too naïve a way with which to assess the situation.

9. The Union considers that the Commission should study closely the importance of agriculture in national and regional planning contexts, and in the light of Government Policy. One immediate effect of this, for example, would be an assessment of the food replacement costs to the Nation of the siting of this airport. If good agricultural land is taken for an airport or its ancillary

Printed image digitised by the University of Southampton Library Digitisation Unit

development, the cost of producing an equivalent amount of food from an alternative amount of less valuable agricultural land may be thoroughly uneconomic.

10. In the Union's opinion, it would be not in the best interests either of agriculture or of the Commission, if there were to be a substantial difference of opinion as to the agricultural evidence. The Union will endeavour to ensure that its evidence agrees with the views of the Ministry of Agriculture. It urges that full consultations with the Ministry of Agriculture by the Commission should take place.

11. We believe that at local enquiries, the existence of an overall assessment of the effects on food-production, based on factors agreed by the Union, could obviate or substantially reduce the amount of technical evidence that would need to be called. Equally the existence of such an assessment might serve to concentrate the "testing of material" at Stage V on one main document concerned with effects on agriculture.

12. Our experience in connection with the proposal to site London's Third Airport at Stansted prompts our suggestions as to the factors which need to be taken into account in this agricultural assessment, and we think it might be helpful to explain this experience. The amount of land required for that proposed airport was initially put at less than 3,000 acres. In the final proposals which accompanied the plan for re-aligning the runways, the amount of land required had grown to 5,900 acres, and in the final stages of the Stansted controversy the Chairman of the British Airports Authority mentioned a figure of 7,500 acres. In addition to this uncertainty about the amount of land required for the airport itself, no official estimate was ever provided of the amount of land that would be absorbed in all the development associated with such an airport. This development would have been needed for the housing of the airport personnel and their families, for the housing of those servicing this new population, for hotels, schools, etc., for the industries which would be attracted to the area, and for the office accommodation which would be sought by many firms in the neighbourhood of such an airport. Our Essex County Branch, with the co-operation of the Planning Department of the Essex County Council, made careful estimates of the total amount of land that would be needed for the airport-plus-development, and from this point, with the co-operation of the National Agricultural Advisory Service, made estimates of the total value of food production that would be lost. These figures, which were widely quoted, and which were never questioned by any Government spokesman, were the only estimates ever given to the public of the total effect on agriculture. We feel sure that the Commission would not want this experience repeated.

13. We suggest, therefore, that in assessing the effect on agriculture of each site proposal, full account shall be taken of:

(1) the area of the airport, defined as accurately as possible;
(2) the amount of land estimated by planners to be needed for associated development;
(3) the likely siting of such development;
(4) the quality of the land concerned from the point of view of food production, based on a realistic formula agreed by all parties, and that the Ministry of Agriculture should then provide their assessment, based on local statistics available to them, of potential lost

Printed image digitised by the University of Southampton Library Digitisation Unit

food production from the actual land likely to be affected.

(5) Regional planning considerations.

14. We would also request that when the Commission is ready to move from Stage I to Stage II, the actual boundaries of the Short List of proposed airport sites should be defined as accurately as possible on large-scale maps. (The maps made available in connection with the original Stansted proposal were all on far too small a scale to enable some farmers to determine the extent to which farm buildings, etc., were likely to come within the perimeter of the airport.)

15. We think it is necessary to point out that it is too readily assumed by airport-promoters that the noise factor is of little or no account in rural areas. We hope it will be appreciated that noise can cause a very real disturbance of farming operations, and in the light of that fact it is hoped that full consideration will be given to the possibility of siting flight paths and stacking areas over the sea.

16. We hope it will also be appreciated that the siting of an airport, of the size contemplated, in a rural farming area, must cause disruption of farming over an area much wider than the site of the airport itself, in such matters as labour supplies, communications, and the whole character of the area concerned; and that increasing effort is needed to preserve such areas of the countryside from development.

17. We would emphasise, again, that the whole purpose of our representations is to ensure that when the site for the airport is decided, the effects on agriculture will have been fully weighed in the balance of arguments for and against the site chosen, and not, as in the Government's White Paper on Stansted, simply written off as "a disadvantage" without any recognition of the full extent of that disadvantage.

18. The foregoing paragraphs represent some of the general points which the Union considers are of importance in relation to the work of the Commission in selecting a site for a Third London Airport. It is not, however, suggested that this is a comprehensive or final statement. If therefore the Commission, either at this or any subsequent stage, requires any amplification of the Union's views they would always be readily forthcoming. The Union is holding a Conference, at which all the County Branches which may be involved in the siting of a Third London Airport will be called together, so that the views of farmers throughout the South East may be obtained. It may be that as a result of this Conference, and subsequent discussions, the Union will wish to amplify its views in this letter. The Union also, as already indicated, would wish to comment in detail on the methods of assessment of agricultural considerations, the economic criteria and so forth. It would welcome the Commission's suggestions as to when these might best be forwarded to the Commission.

19. In conclusion, the Union wishes to co-operate with the Commission to the fullest extent and at every stage, and wishes to place on record its appreciation of the helpfulness of Commission officials to date. It is anticipated that the Union will wish to write again, in any case, to the Commission before 31st October, 1968, in amplification of this letter.

I am, Sir, for and on behalf of the National Farmers' Union,

Yours sincerely,

N G WALLACE

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the National Union of Vehicle Builders, East London Office

Progress House
76 Rainham Road
Rainham, Essex
10 September 1968

Mr J Caines
Templar House
81/87 High Holborn
London, WC2

Dear Sir:

re: Stansted Airport
Roskill Commission

GENERAL EVIDENCE: On behalf of workers employed on the above airfield and who reside in—and around Stansted, also certain local inhabitants who support the development of the airport, I submit the following:

These persons are extremely conscious of the needs of our country to meet the increasing growth of international air travel, and the social and cultural advantages to the local community which would arise from the siting of London's third airport at Stansted.

Our members feel they are especially qualified to make known their views to the Commission, insofar as their knowledge of aircraft and their understanding of the high standard of air safety that constantly needs to be maintained in Britain today.

To this end, they feel there is an urgent need to divert a fair proportion of the heavy air traffic away from Heathrow airport, which incidentally would assist in eliminating part of the noise problem to residents in and around that airport.

In the aircraft industry itself, there has always been a general acceptance of insecurity regarding employment prospects and skilled aircraft maintenance workers are expected to transfer from one airline operator to another when an air-licence permit terminates, or travel many miles from one airfield to another when essential flight services are involved.

In some cases our members are expected to work unlimited overtime far into the night and early hours of the morning, to enable aircraft to fly to schedule.

The working people of Stansted realise that, with the development of Stansted airport, their working conditions should improve; there will be a higher standard of living, with new houses, better sanitation and sewerage, improved road and rail services, higher educational facilities, etc.

Printed image digitised by the University of Southampton Library Digitisation Unit

Approximately 20 adults in the village of Ugley Green (which is in close proximity to Stansted airport), have expressed their views in a letter sent to this office, emphasising their need for main drainage, proper toilets, better roads, etc.

They also complain that, because of the lack of jobs and opportunities many young people are leaving the area.

In these circumstances, it is felt an urgent need exists for the development of the airfield to begin as soon as possible.

Yours sincerely,

F BLAKE, *Organiser.*

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission by the North West Essex and East Herts Preservation Association

The North West Essex and East Herts Preservation Association (NWEPA) represents some 13,300 people and associations residing in the area of Stansted, Essex, and was formed in 1964 with the object of resisting the establishment and development of Stansted Airport as the Third London Airport. With this object in mind the Association presented a case at the Public Inquiry, held commencing on the 6th December 1965 to enquire into local objection to the proposed development of Stansted Airport. The Association maintained at that Inquiry that not only was Stansted Airport the wrong site for a third London Airport but that insufficient investigation had been carried out into the major aspects of the establishment of a major international airport.

In addition the Association has published the evidence in support of its case which it presented at the Inquiry under the title "Studies of the site for a Third London Airport" and this evidence was made available on sale to the public in July 1966 (Edited and published for the Association by Alan Stratford & Associates, Maidenhead, Berks). In addition the Association presented to the President of the Board of Trade further evidence under the title "The Stansted Black Book" in the form of an analysis of the White Paper *The Third London Airport* (Cmnd. 3259 of May 1967) by J W S Brancker (The Technical Assessor to the Inspector at the above Inquiry and formerly traffic Director of IATA) and secondly of certain considerations of Mr Brancker on National Airport Policy.

The Association have considered at all times that a suitable site for the Third London Airport should be capable of satisfying certain criteria. In the Association's view if any particular site fails to meet any one of such criteria it fails to qualify as a suitable site "for a four runway airport to cater for the growth of traffic of existing airports serving the London area". These criteria can be summarized under the following headings:

1. *Noise*: A four runway international airport should be sited in such a way that the noise developed by it does not cause grave inconvenience to the inhabitants, community life, facilities and amenities in the area of the airport wholly out of proportion to the likely benefit of the site to such inhabitants, community life, facilities and amenities and to the nation.

2. *Access*: The site for a four runway international airport should be such that the access to the site by road and rail is adequate for the demands of an international airport (that is to say travelling time between the airport and London, between the airports and the other two London airports and between the airport and the rest of the British Isles should be such as will compare favourably with travelling time between the airport and passenger flight origins and flight destinations outside the British Isles) or if inadequate should be capable of being rendered adequate for such demands.

3. *Air Traffic Control*: The site for a four runway international airport should be such as will not conflict with any necessarily immutable air traffic

Printed image digitised by the University of Southampton Library Digitisation Unit

pattern or such as will not conflict with or impede the movement of aircraft to and from another of the two London airports. Equally the site should be so placed so as not to be itself restricted or hindered by such movements. In considering the suitability of the site from an air traffic control point of view there should be taken into account the fact that existing air traffic control patterns are not immutable.

4. *Agriculture*: The site for a four runway international airport should not be such as to involve the loss to the nation of many acres of good agricultural land, the loss of which would be out of proportion to the likely advantages in other respects to the nation of the development of the site.

5. *Regional Planning*: The site for a four runway international airport should be such as will satisfy the requirements of regional planning and should be chosen after due consideration of the already established planning principles for the area in which it is to be located.

6. *General Disruption*: The site for a four runway international airport should be such as not to cause a general upheaval of the amenities of the area adjacent to it wholly out of proportion to the advantages to the nation and to the region to be derived from the site and which would cause hardship to people and organisations for which they could not be compensated. The Association draws attention to the following passage from the paper entitled "Modern Airport—and its future" delivered to the Royal Society of Arts by Mr Peter Masefield, Chairman of the British Airports Authority, on 8th May 1968.

> "The problem remains of where such a long disturbance area might be fitted into the social topography with a minimum of disturbance or upheaval."

The Association consider generally that, if there is to be a Third London Airport, having regard to the criteria referred to above the Commission should consider the sites suggested by Essex County Council and Hertfordshire County Council and in particular Foulness, Sheppey and Silverstone.

Paper for inclusion in support of submission by the North West Essex and East Herts Preservation Association

by J W S Brancker, ARAS, MInstT, FRSA

The preliminary proposals submitted by the Essex County Council set down a number of sites which might be considered in the search for a third London Airport.

No object would be served at this stage in repeating the arguments against Stansted, but clearly certain aspects must be examined again in comparison with what now appears to be the best of the alternative sites named by the Essex County Council. Each of the sites named has advantages and disadvantages, but the most attractive is clearly Maplin Sands.

In terms of air traffic control, it is on a par with Stansted; in each case omni-directional operations are possible, and there is no greater interference with air traffic using Heathrow and Gatwick. But when we turn to operating conditions they are essentially superior. Approaches to the runways in either direction are absolutely flat and without obstruction, being over water, and as virtually no noise abatement procedures are needed, air traffic control would be easier and

Printed image digitised by the University of Southampton Library Digitisation Unit

all operations could be carried out with the highest degree of economy and safety.

It must be remembered that the original plan for Stansted, as presented at the Chelmsford Inquiry has since been radically altered by the inclusion of two pairs of runways instead of the single pair originally required. This not only enlarges the area needed, but also has a material impact on the capacity of the airport, the noise effects and the problems of access.

It was very clear from the evidence given at Chelmsford that the noise impact from a single pair of runways at Stansted would have been considerable, and even changing the direction of the runways only served to reduce the size of the problem. But the addition of a second pair of runways would inevitably enlarge the size of the high noise area, and increased capacity and consequently a higher frequency of air movements would push the NNI contours farther out. There was every likelihood, in fact, of the full capacity of the airport having to be artificially limited by the application of noise restrictions with considerable economic penalties to the airport authority and the operators alike.

The noise impact on the public from an airport sited on Maplin Sands would be negligible, and quite apart from the absence of distress to residents, there would be no impediment to the full use of the facilities throughout the 24 hours.

As regards meteorological conditions, the records show that Maplin Sands would have a small cross-wind component than Stansted, and the few strong winds which are encountered there blow up and down the proposed line of the runways. In the context of visibility contrary to the traditional belief about the weather in the Thames Estuary, Maplin Sands would be clearly superior to Stansted, there being appreciably less than half the average number of occasions in one year when visibility would be below 440 yards, and only approximately two thirds of the occasions when visibility at Stansted was less than 220 yards.

And when we consider the use of land, the evidence is again strongly in favour of Maplin. At Stansted it would be necessary to sterilise a very large area of first class agricultural land, and further expansion could only be achieved at the expense of taking in more land of the same type. In addition, larger spaces also would be limited as to their use because they were in zones of high noise impact.

Under the plan for Maplin Sands, no existing land would be used, except for purposes of access, because the airport would be built on land reclaimed from the Thames estuary. Furthermore, expansion could be carried out by using the same means, still without encroaching on existing land and upsetting present agricultural production. Because the high noise area lies almost completely over water, there would be almost no restrictions on the use of land for any purposes. It would be extremely unwise to under-estimate the total area which is likely to be needed for full airport development. Where sites are already restricted, it is becoming fashionable to consider moving certain facilities to places outside the actual airport boundary, but this is merely a palliative for existing congestion, and the total amount of land used up remains the same. In the case of Stansted, the divorce of certain functions from the airport proper would not help solve the problem, because space for these would have to be found in the vicinity, and there are no areas available which are not presently in use. In both cases land will be needed for housing and other purposes. At

Printed image digitised by the University of Southampton Library Digitisation Unit

Maplin, development areas already exist at Southend, and the elimination of the Firing Range will also make considerable space available for these purposes.

The difference can be described more simply by saying that placing the airport at Stansted would be destructive, while siting it at Maplin would be constructive.

There are in fact a number of other factors which make the Maplin site attractive. The quantities of aviation fuel required will be very considerable, probably more than 600 million gallons per annum when the airport is in full operation. The delivery of this volume of fuel can be carried out relatively simply and cheaply at Maplin, by the construction of a pipeline to Shellhaven, which would be a more economic operation than providing increased facilities for Stansted.

We are left with the more difficult problem of access. In this context, it must not be forgotten that the existence of effective means of access to Stansted was never proved at the Chelmsford Inquiry, and this was in relation to a single pair of runways only, and assuming the construction of M.11. Although Maplin is further from London than Stansted, both points suffer from exactly the same bottle-neck in terms of road transport, and that is the journey from the centre of London to Hackney Wick. This particular problem is common to both sites. It was shown at the Inquiry, moreover, that because it would be fully used by ordinary traffic, the M.11 was really incapable of serving the needs of even a two-runway airport, much less the traffc requirements of four runways. It was demonstrated that a limited train service was possible from Stansted to Kings Cross, which might have provided some access to the airport in the first instance, but that considerable reconstruction would be necessary as traffic increased. The ultimate solution to provide adequate access to a four-runway airport was not examined, but it would certainly involve very much greater construction of new road and rail facilities than was envisaged at Chelmsford.

Consequently it is now necessary to consider the whole question of access afresh on the basis that almost completely new methods must be devised for both Stansted and Maplin, and indeed for any other site which is chosen. Existing transport facilities may help solve the problem, for a limited period, particularly in the field of delivering and collecting employees working at the airport, but it is extremely unlikely that they can provide capacity for peaks of more than 6,500 passengers per hour in one direction at speeds which would be acceptable, or allow for the movement of annual loads of some 7 million tons of cargo which may be handled.

In this respect, therefore, Maplin and Stansted are very much more similar than may be supposed, in spite of the difference in distance. In each case new means of access will be needed, and the ultimate success of the project should not be predicated on the fact that Stansted may have a temporary short term advantage.

The point will certainly be made that the siting of an airport at Maplin will make it necessary to abandon the Shoeburyness Firing Range. This is true, but it must be viewed in its right perspective. If a range of this kind is still required, and the replacement cost is £25 million, as stated by Government, then the development value of the land released will be very much more than this sum, so that the state will gain a handsome profit. A strip of this land will be close to the 112 Pndb contour and consequently may be considered as

Printed image digitised by the University of Southampton Library Digitisation Unit

unsuitable for housing, but subject to the requirements of planning it would be completely suitable for any industrial development connected with the airport or otherwise.

To summarise, the most attractive of the sites put forward by Essex County Council appears to be Maplin Sands, because this provides the best technical conditions, combined with the least public disturbance both in construction and operation. The problem of access, which must clearly be solved satisfactorily, is one which is common to every other site and while difficult, presents no greater difficulties than any other. Furthermore Maplin Sands represents a site which will permit both development and expansion if and when these are necessary, without dislocation or disruption, and can be used throughout the 24 hours without imposing unacceptable disturbance on the public.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the North West, Northern & West Midlands of England Advisory Committees for Civil Aviation

The Press release from the Board of Trade dated 15th July calls for evidence to the Commission and the above Advisory Committees have considered what submission of a helpful nature they might make. They note the paragraph in the Commission's Programme of Work, which reads "The Commission is also ready to receive any evidence of a general nature relevant to its task by September 16th 1968". It is on this basis and with some criticism of the Commission's Terms of Reference that their submission, as follows, is made:

2. Apart from the paragraph quoted above the Commission's Terms of Reference appear to preclude submissions from anybody but those with interests in a particular site and the words "Timing of the need for a four runway airport" will, with their implication that such an airport is the only solution, surely prove a handicap to the Commission's own work. Also, being aware of the Edwards' Inquiry into air services the Committees are surprised at the omission of any reference to the need for co-ordination between the Commission's work and the Inquiry's.

3. By the nature of their work the Committee's submission mostly concerns air services, but the Commission may come to the view, long held by the Committees, that without air services' planning there is little that can be done about airports. Firstly they are very conscious of weakness in the domestic services network. They believe that inter-city air services (particularly for those in Development Areas) are essential and they have encouraged airlines to undertake them. Unfortunately without exception such services have been a commercial failure, but this is more a point for the Edwards' Inquiry. No such weakness arises in domestic services connecting provincial Cities to London, most of these being commercially successful wherever they rise above the basic minimum of one service per working day. This factor will progressively add to the concentration of traffic at Heathrow unless something drastic is done because approaching half the passengers travelling on them do so in order to use the extensive interline facilities at Heathrow. The Committees believe that these interline passengers are a main root of the London problem and that they will remain so without some firm air services planning.

4. The Committees believe there is insufficient knowledge of International travel potential from the Provinces and that it has not been sufficiently exploited by BEA. They consider that information on it should be sought through Research and that if this led to the establishment of more direct Continental links from Provincial Airports the interline problem would be relieved together with some of the congestion at Heathrow. They are aware of the Survey completed in 1965 which showed 20% of Heathrow's passengers as originating in the Provinces and understand that this figure is being checked by a new Survey authorised by the Commission. Whether this percentage is confirmed or otherwise it is nevertheless true that the majority of it taken away from London

Printed image digitised by the University of Southampton Library Digitisation Unit

would be some relief. In this connection it is inconceivable for example, that Heathrow justifies 33 services per day to Paris and Manchester only two.

5. Another aspect of Airport Planning without thought of Air Services is very evident from the disparity of traffic at many neighbouring Airports. There are three examples of such proximity conflict in the North, namely, Manchester/Liverpool, Birmingham/Coventry and Newcastle/Tees-side; the poor relations in terms of Air Services being named second in each case. But London has its own example in Heathrow, Luton and Gatwick, for had the last two and particularly Gatwick been fully utilized by Scheduled Services the present saturation of Heathrow would not probably have arisen before 1974 at the earliest. Air Services' planning aimed at sharing the traffic evenly between these three London Airports could in fact have postponed the need for another airport in the vicinity of London for many more years than the White Paper (Cmnd. 3259) suggests. For example, the White Paper forecasts saturation for Heathrow and Gatwick together at a level of 109 movements (S.B.H.) in 1972/74 provided that traffic is transferred and a second runway at Gatwick is built. All efforts to achieve transfers however have so far been thwarted by the principal airlines and Gatwick has grown to its present level mainly through newly generated traffic. It certainly has not relieved Heathrow to the extent it could and it is unlikely it ever will without provision of efficient and speedy inter-airport access. Such access might eventually be achieved by Motorway but until then it could be provided by helicopter with immediate benefit to the sharing of traffic. There is much to be said therefore for the provision of a helicopter inter-airport link even if it required substantial subsidy because it seems likely that this could be more than offset by the saving on other Interest charges. With the interline access so taken care of Gatwick could and should be developed to its fullest extent.

6. With such an arrangement established between Heathrow and Gatwick it is difficult to see any reason why Luton and Stansted should not be brought in similarly in the future, particularly the former. If they were, the potential capacity of the four airports together would be about 170 movements (S.B.H.) which is double the present level for Heathrow and Gatwick. Because total movements for the London area are not expected to double before 1980 even on the forecast upper limit, it could be expected that the need for a large new airport would be indefinitely postponed.

7. A severe handicap on all airlines operating into London is the limitation at Heathrow on night movements of jet aircraft. It is suggested that if this is not solved by reduction of noise at source then it should be settled by the choice of a site somewhere on the Coast between Foulness and Southampton. A single runway so positioned as to give the least noise nuisance would cater for such movements for many years though it would need air connection both to Heathrow and to the centre of London.

8. Further relief might be achieved through a limitation of capacity allowed to BEA and their foreign partners at London (as one imagines it could be under the bi-lateral treaties) and if these airlines were offered similar capacity at Provincial Airports then, not only would over utilization of Heathrow be eased, but also the other airports would be busier.

Printed image digitised by the University of Southampton Library Digitisation Unit

9. In summary, the Committees suggest the following solution of the third London Airport problem:

(a) Research into the International Services requirement from Provincial centres (possibly sponsored by the Cities concerned) followed by their intensive development if necessary by direction under the bi-lateral treaties.

(b) Immediate provision of a helicopter link Heathrow/Gatwick followed by maximum transfer of services.

(c) Maintenance of Heathrow as the main International scheduled services facility.

(d) Provision of a helicopter link Heathrow/Luton followed by maximum transfer of services.

(e) Provision of a noise-free runway on the Coast for night movements of jets and SSTs.

(f) Reservation of Stansted for development similar to Gatwick and Luton.

Note: This paper is under consideration by the Economic Planning Councils in the North.

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission by the Northamptonshire County Council

The Northamptonshire County Council have given careful thought to a comprehensive report upon all aspects of the proposal that Silverstone should be considered as a site for the Third London Airport.

They have come to the conclusion that the level of noise and degree of disturbance associated with an international airport are such as to require it to be located on a coastal site where the maximum amount of aircraft movement can take place over the sea.

The Council feel that for this reason and having regard, in particular, to the prospective increase in size and power of passenger aircraft, no inland site merits serious consideration.

The Northamptonshire County Council therefore endorse the proposed alternative sites submitted by the Essex and Hertfordshire County Councils to the extent only that they refer to three possible locations at Foulness and one at Sheppey. They remain convinced that the overwhelming balance of advantage lies with a site in the general area of the Thames estuary.

Printed image digitised by the University of Southampton Library Digitisation Unit

Statement by the Port of London Authority

1. The Port of London Authority have an interest in the siting of a Third London Airport because, of the sites that have been publicly mentioned, three have a waterfront which is in the Port of London and therefore within the jurisdiction of the Port Authority (herinafter referred to as the PLA). These are:

(i) the PLA's land at Cliffe;
(ii) a site on the Isle of Sheppey;
(iii) the Maplin Sands off Foulness.

A plan showing the boundaries of the PLA's jurisdiction is enclosed.* From the date of its inception in 1909 until 1964, the seaward limit was a line from Havengore Creek to Warden Point. By the Port of London (Extension of Seaward Limit) Act 1964, the seaward limit was extended as shown on the enclosed plan.

2. No work of construction or reclamation below high water mark in the area of the PLA's jurisdiction can be undertaken without a licence from the PLA. This is by virtue of their statutory powers.

3. Quite apart from their powers as a licensing authority for works in the river Thames, the PLA have a statutory duty and a commercial interest to ensure that port facilities are provided to meet the rapidly changing needs of international maritime trade.

4. Developments in methods of handling cargo, and particularly the revolution which is coming about owing to the packing of cargo into containers, have led the PLA, over the last four years, to develop Tilbury as a container dock. One important reason for this was that container traffic needs large areas of land to back up port facilities. Ports, both here and abroad, are becoming "land-hungry" and this is one factor dictating the universal trend for port facilities to be built away from the cities where they began and much nearer the mouths of the rivers on which they stand. The development of Tilbury as a container dock is virtually complete and it will be fully operational in 1969. The PLA are already concerned about the sites for future development for larger ships. There are possibilities of development on the riverside downstream of Tilbury, which are being investigated.

5. But while developments in this area might be suitable for some of the large cargo ships of the future, they would not be suitable for very large bulk carriers. If, therefore, the reclamation of the Maplin Sands is feasible, the PLA would wish to consider the possibility of building a deep water dock there, where the approach channels could provide approximately 70 ft plus at low water and approximately 90 ft at high water, so that very large tankers of up to 500,000 tons could be received in the Thames Estuary.

6. A further consideration of significance in the siting of port facilities, is

* Not reprinted. Copies available from the Director of Engineering, Port of London Authority, Trinity Square, London, E.C.3.

Printed image digitised by the University of Southampton Library Digitisation Unit

that they should be developed in association with industries which are heavily dependent on imported raw materials. It is this concept which has dominated the contemporary planning of Rotterdam, Antwerp, Dunkirk, Le Havre and Marseilles, some of which are direct commercial rivals of the Port of London.

7. The PLA are interested in the possible development of a dock on the Maplin Sands, quite independently of the construction of an airport. However, it is a fact that the area is large enough to accommodate both a major airport of the dimensions needed in the future, and a major deep water dock. Therefore, if airport and sea port facilities can be built as neighbours, there would be benefits to both. A significant consideration is that the development of the joint airport/sea port and some industrial complex would provide a wide base over which to spread the benefits and cost of providing the road and rail links which, in any event, would be needed for an airport alone. Moreover, as the carriage of freight by air is increasing—though not as rapidly as once seemed likely—a sea port and airport adjoining could be complementary to each other. Transhipment from ship to ship has been commonplace in most of the major ports of the world. There might, in the future, be a need for transhipment from ship to aeroplane and vice-versa.

8. The arguments and the government policy against the establishment of additional industrial activities in the South East of England are well known. The PLA do not wish to comment on general policy of this kind, which is outside their competence. It is, however, evident that the position of the Thames Estuary in relation to the industrial heartland of northern Continental Europe makes it the natural point of entry and exit for Continental traffic. In fact, this has been one of the strong influences in the growth of the Port of London and, indeed, of the capital itself.

9. The PLA have substantial reasons for believing that the construction of a deepwater dock with an approach channel of 70-90 ft would be attractive to the major oil companies, and the kind of industries which might be established in the immediate hinterland would not make heavy demands on labour, nor on drinking water. They would be oil refineries, petro-chemical and other industries which are dependent on imported raw materials, are highly capital intensive, and would not only be near a very substantial UK market, but also have an export potential. The evidence at present available to the PLA indicates that there might well be transhipment to the Continent.

10. Of the sites in the Thames mentioned above, the only one which at present the PLA consider might be suitable for a deep water dock development, is the Maplin Sands, and, as stated above, the PLA will have to consider this area for development, whether or not part of it is needed for the Third London Airport. The PLA wish to emphasise, however, that they would have to be satisfied that reclamation of this area would not have a deleterious effect on the regime of the Estuary, and that deep water access to dock facilities in the area is both physically and economically feasible. Preliminary studies are being undertaken and more extensive studies must follow. However, it can be said that, subject to detailed investigation of any specific scheme for reclamation which may be put forward, the preliminary indications are that reclamation of part of the Maplin Sands would not have a deleterious effect on the approach channels.

Printed image digitised by the University of Southampton Library Digitisation Unit

11. To sum up: Although the PLA are not competent to express an opinion on the siting of a Third London Airport, from the point of view of passenger and air freight requirements, they wish to draw the Commission's attention to the fact that, if the Maplin Sands site is one which justified consideration on these grounds, then the Commission should know that the PLA are very interested in the building of a deep water dock on part of this site, and that this in turn could lead to some industrial development of the kind described above, which would not make heavy demands on labour. There could thus be created an airport/sea port/industrial development.

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission by the Scottish Advisory Committee for Civil Aviation

The invitation from the Commission for evidence of a general nature to be presented at the first stage of its Inquiry has been considered by the Committee who note that the stated requirement for a Third London Airport is based on the need to relieve the rapidly mounting congestion at Heathrow and Gatwick. The Committee are concerned that the Commission will bear in mind the two main requirements of Scottish air travellers in their deliberations on the siting of a new major airport.

(i) Rapid and easy direct access to and from Central London.

(ii) Interlining.

2. The former will be of primary concern to the Commission.

3. The latter is a facility which the Committee consider to be of fundamental importance if a London area complex of airports is to provide the air services required by the travelling public and would ask the Commission to consider an efficient and speedy inter-airport link as a prerequisite for services which are interdependent.

4. The Commission may consider that with the advent of a new major airport the efficient integration of air services will necessitate their planned redistribution. In determining the pattern of such redistribution prominence should be given to the needs of the heavily trafficked Scotland/London domestic services which primarily demand minimum overall journey times, i.e. minimum surface journey times, minimum flight sector distances and minimum delay due to conflicting air route patterns.

5. If air services from specifically designated areas are distributed among the three London Airports the provision of an efficient inter-airport link will need to be considered as an integral part of the concept of the London Airport pattern. The needs of the Scottish air traveller whose destination is, say, Paris or Brussels, will reasonably expect the minimum delay and inconvenience when interlining and this interest would be served if domestic and Continental services originated at the same airport. The Scottish air passenger will not accept the situation where he will spend as long travelling between the London Airports as he will from London to the Continent and the demand for increased direct services to and from the Continent and Scottish airports will be directly related to the efficiency of the interlining facility.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the Scottish Economic Planning Council

1. The Secretary of the Commission on the Third London Airport wrote to the Secretary of the Scottish Economic Planning Council on 16th July 1968, drawing attention to the invitation issued by that Commission in the Press inviting written evidence for its consideration in connection with its task. The terms of reference of the Commission are "To enquire into the timing of the need for a four runway airport to cater for the growth of traffic at existing airports serving the London area, consider the various alternative sites, and to recommend which site should be selected."

2. The terms of reference indicate that the need for a third major airport in the London area is accepted and that the Commission's main task is to consider the timing of its provision and the precise site which it should occupy within the London area. The Scottish Economic Planning Council is obviously not in a position to make recommendations relating to particular sites; this is within the province of Economic Planning Councils in the immediate area who will no doubt be consulted. There are however some general considerations from the Scottish point of view which the Council believe it would be helpful to mention at this time to the Commission.

3. The trunk domestic routes to and from London account for a significant proportion of movements at the London airports. The Scottish services are of very great importance for industry and commerce and for the development of the Scottish economy. The London-Glasgow route is BEA's busiest and is second only to London-Paris in density of traffic and the London-Edinburgh route is the fastest growing route in the country. The success and usefulness of the London-Scotland trunk routes depends to a large degree on the speed of transit to the city centres. At the Scottish end the services operate to and from airports very conveniently sited and easily accessible to the catchment areas they serve. At the southern end the bulk of the traffic at present goes via Heathrow which is 15 miles from London by road and with an express coach at the London end the transit time from the Scottish airport to the London city terminal is around 2 hours. One of the drawbacks of the site previously proposed at Stansted as far as domestic traffic is concerned is that it is 35 miles from London and this additional 20 miles must represent something approaching an additional thirty minutes' journey if it is to be by road and an additional twenty minutes even if a direct rail link is provided. The increased road journey time would represent an addition of approximately one-quarter to the transit time and would cancel out all the benefits of the improved and faster aircraft introduced on the domestic routes over the last five or six years.

4. The Council noted with some concern therefore that on the basis of the proposal to site the Third London Airport at Stansted there were suggestions in some quarters that this might lead to the chanelling of the main domestic trunk services to that airport. The Council appreciate that air traffic control considerations must enter into the choice of the site for the third airport but

Printed image digitised by the University of Southampton Library Digitisation Unit

they feel bound to urge that the trunk domestic services should continue to go in the main to the airport offering the shortest surface transit time to the centre of London. An addition to overall journey time is much less significant when it is related to an air journey of six hours over the North Atlantic than to one of sixty minutes to or from Scotland; and there are likely to be opportunities for substantial reductions in air transit times on long distance routes as the supersonic aircraft come into service.

5. The Council hope that the Commission will bear in mind the possibilities of using airports outside the London area altogether as a means of relieving pressure on facilities in London. They fully appreciate that this would not affect the basic need for a Third London Airport but it might have some marginal effect on the timing of that need and the relief of congestion could help to improve conditions for travellers to and from the London area itself.

6. What the Council have in mind is the possibility of encouraging the development of feeder/international services through airports in the North of England and Scotland. This is already happening to some extent by the connections which can be made from Glasgow via Manchester and Birmingham to Paris, Brussels, Zurich, Amsterdam, Dusseldorf and certain other destinations. This enables international services from regional airports to draw upon two rather than one catchment area and therefore increases their potential viability. There appears to be scope for encouraging the development of similar services from the North and Midlands of England via Glasgow to Scandinavian destinations. At present all such traffic by British carriers to and from Scotland and places such as Newcastle, Leeds, Manchester and Liverpool must go via London.

7. Similarly, the Council would like to see greater encouragement to trans-Atlantic traffic from the North of England to feed through Prestwick with its already established direct scheduled services to North America; and the Council believe that there is considerable scope for freight to go by feeder services through Prestwick to North America and through Glasgow to Scandinavia and Northern Europe instead of through London. In all these ways the Council would hope that regional airports both in Scotland and in England could make a growing contribution to the relief of congestion in the London area.

8. The Council recognise that even with the development of regional services on a much more substantial scale than has hitherto taken place it will still be necessary for Scottish travellers to a number of destinations to interline through London. They believe that it may not be easy to reconcile the needs of domestic travellers as noted in paragraph 3 above with those of certain of the interlining passengers unless either domestic services serve all three airports or a much improved system of inter-communications is developed between the three London Airports. This is clearly a difficult problem; on the one hand the need for rapid access to Central London has already been underlined and any significant fragmentation of the domestic services to split them between three airports in the London area would be likely to run counter to this; on the other hand satisfactory surface inter-connections between three airports in the London area are likely to be difficult to achieve. The Council would however suggest that there is a real problem as long as interlining continues to be necessary and ask that the Commission should not lose sight of it in selecting a site for the Third Airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

9. The Council would expect that with the dense civil and military air traffic which already enters and passes over the South of England one of the limiting factors on the choice of sites for the new airport may be the existence of service airfields in the area. The Council recognise that these have been sited in their present locations for good reasons and that there may be operational or defence objections to moving these establishments. Nevertheless, the Council would point out that there are a number of airfields in Scotland e.g. at Aberdeen (Dyce) and Inverness (Dalcross), where a good deal of additional flying could be absorbed and which would give access to relatively uncongested air space. If the relocation of service flying establishments were possible in these areas considerable benefit would accrue to the local economies and this is a factor which could have an important effect for regional development. The Council would therefore suggest to the Commission that they should keep in mind the availability of airfield facilities and airspace in Scotland.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the Scottish National Party

The Case Against Developing Stansted At This Time

Introduction

We believe that it is inappropriate to consider developing Stansted as a Third London Airport at this time. Accordingly, we wish to present a case against such development on the grounds that the alternative which we propose, if adopted, would mean the postponement of the need to develop Stansted, whilst catering for the needs of international air transport and dealing successfully with the attendant problems.

The Basic Problem Posed by the Centralisation Of UK Air Services

The essence of our case is that the existing pattern of air transport is NOT a natural one, in that it is dictated to a large extent by the licensing arrangements of the Board of Trade and by the Government's allocation of investment in developing airports in certain areas and not in others. It is self-evident that the policies, whether positive or passive, of successive Governments has led to centralisation of almost all international flights on London airports. At present, 95 per cent. of British international air services fly into the London area, which contains only 15 million people who live within two hours' driving time of the airports. As London has two international airports already, the population is well provided with air transport facilities. Further concentration would add little in benefit, but would mean disproportionate increase in costs, air congestion, noise inefficiency, etc. In short, a host of economic arguments and social welfare considerations can be advanced against Stansted at this time.

(To draw a parallel, it would be obviously ridiculous to ban all international sea transport from using all UK terminals except London, so that all passengers and freight movement was concentrated in one area whilst the other ports could only handle coastal traffic and an occasional overseas shipment. If this is a ridiculous suggestion for sea transport, then it surely gives rise to some searching questions as to why this heavily concentrated system is appropriate for air transport.)

Before expanding our arguments on why Stansted should not be developed at this time, we would like to lay down the common problems and conditions which the general centralisation of air services has had on the country.

The Effects of Centralised Services

The concentration of a huge volume of air traffic on the South East has caused many problems, but these are not given sufficient attention because either people become conditioned to them, or else a great deal of expenditure is incurred in attempting to overcome these drawbacks. As well as the large volume of civil air traffic, there is a great deal of military traffic in the area.

In the air, the result is that to handle the volume of traffic, there has to be careful air traffic control (with the attendant expenditure of capital and manpower). Congestion means that on approaching airports planes must "stack"

Printed image digitised by the University of Southampton Library Digitisation Unit

or circle, which is costly and time-consuming. Although the authorities insist that there is no danger from congestion, the recent air collision of a Canberra and V bomber in the South East Area is a warning. The situation places an ever-increasing strain on aircrew and traffic controllers, whilst hold ups and delays of different kinds place a strain on passengers as well. Delays are costly, if one includes in the calculations the salaries of businessmen held up, whether on the ground waiting to take off, or in the air waiting to land. The London area airports are also subject to problems because of fog and/or smog. Costly delay and confusion are the result.

On the ground the problems can be classified as either economic or relating to social welfare. The social welfare case against expansion of air traffic in densely populated areas has been frequently aired by medical, local authority and social welfare organisations. Stress and strain from noise, insomnia, increased fears of the possibility of a plane crashing whilst landing or taking-off (the two danger periods of a flight) as well as added air pollution from all the traffic.

For the travelling public the centralisation of air services on London has many disadvantages. In spite of technological advance, travelling time is not shortening appreciably because so much time is lost in delays on the ground and in the air; and because of poor interchange facilities with ground transport. Heathrow is an extremely difficult interchange airport and will become rapidly worse as congestion increases. Already there is evidence that, for example, Scots businessmen fly to Amsterdam (using BUA's new service) or Copenhagen, where interchange facilities are much more convenient. The existing facilities are inadequate for the volume of traffic flowing through London. Instead of examining the flow to see whether it could be accommodated in other, more efficient ways, it now appears that the Government is prepared to repeat the mistakes by developing Stansted. As that airport does not have the necessary land communications, a vast amount of the taxpayers' money is to be spent to attempt to rectify the ensuing problems. Packing too many travellers through too few outlets results in obvious drawbacks in the way of discomfort, cost in time and money, as well as inconvenience. The resulting inefficient system has adverse repercussions on the economy also.

For those who live outside the London catchment area (the vast bulk of the population of the UK) there are the following additional drawbacks: The dearth of overseas flights direct from their local airport (whether that be Manchester, Liverpool, Cardiff or Prestwick) means that they must suffer more loss of time (which is a cost to them and the country) as well as the extra cost of travelling considerable distances to London airports. They do so because frequent, regular flights are more important to them than the additional cash expenditure. As Britain depends on its international trade for a livelihood, and as communications are so important to industry and commerce, lack of adequate facilities in easy reach of centres outside the London region are yet another cause of the UK's recent poor performance. Only one part of the population is well catered for, as a consequence 80 per cent. of the air traffic comes from that part, whilst the others do not travel so much. The result is that the export drive suffers. For people flying to the UK on business or pleasure, the scarcity of convenient flights to other parts of the country besides London is another drawback. The argument against yet another airport being built in the London area is even greater when we consider the economic case against Stansted.

Printed image digitised by the University of Southampton Library Digitisation Unit

Centralisation of facilities has certain advantages in that there are some economic benefits to be gained from having a couple of airports handling the vast bulk of the traffic as you avoid duplication of facilities. However, it is our contention that because these benefits can be simply quantified there is a tendency to pay more attention than to the economic costs and disadvantages which, thongh harder to quantify, are greater in total. In outline, the economic case against centralised facilities and any Third London Airport development at this time is; That the whole movement to centralise all communications, production and population in the South East has led to congestion, the destruction of amenity and the creation of a high-cost inflationary situation. At the same time the economy has become ill-balanced because the rest of the country is starved of investment and growth. Attempts to solve the problems of the congested South East by building further facilities in the area are frustrated because this leads to an influx of more people. As has been found with motorways, the facilities generate more traffic. The result is a vicious circle with more and more people being drawn into the vortex. The whole system becomes even more congested and ever greater investment is needed to attempt to remedy the problems. The development of a Third London Airport at this time is just another example of a step in the circle. In a decade or so there will be a repeat performance for a Fourth or Fifth Airport.

The existing pressure on land, land transport, and amenities in the London area raises the cost of developing the Third Airport. The necessary ground facilities will be more costly and the lack of readily available manpower will drive up the wages of other industry (thus making it less competitive). The provision of housing and civic amenities in the area will entail a high level of investment in an already prosperous area, to the detriment of less well off areas which might have received it.

Any expansion of air traffic facilities in the South East violates every principle of Government policy as they set it out in the "National Plan" and have since reiterated in carrying out their regional development policies. If our proposals were to be adopted the needs of the public would be catered for without any clash with the Government's own policies, and without increasing the inconvenience to those living near major airports.

The Objections to Stansted

As we have pointed out, the need for a Third London Airport has been created by the fact that the travel pattern which has grown up over a number of years and which has been influenced to a large extent by Government policies and actions. BOAC, BEA and the British Airports Authority are all subject to Government control and licensing arrangements come under the President of the Board of Trade. It is the short-sightedness of previous Governments that has created the existing ill-balanced, inefficient and inconvenient situation. At present, Board of Trade policies as well as the policies of BEA and BOAC all inter-act to send a heavy stream of traffic to, from and through London, whilst other parts of the country are starved of communications with overseas.

The total flow of passengers using London Airports is made up of many categories. Before any plan is made to develop another airport to meet their supposed demands it would be wise to carry out detailed surveys to determine the composition of the traffic and its origins and destinations within the country. As mentioned in paragraphs 46 and 47 of the White Paper on Stansted, surveys

Printed image digitised by the University of Southampton Library Digitisation Unit

are needed to discover the true facts of the situation. We would suggest the following topics for such surveys:

The composition of traffic using London Airports at present.

The likely growth of traffic and resulting problems if Stansted is developed as the Third London Airport at this time.

The likely growth in traffic and results thereof if a rational policy of selected expansion of regional airports was carried out to reduce the demands on London.

To determine the needs of the population with regard to air services and what would be the optimal traffic pattern to deal with them.

As we wish to present the general case against developing Stansted in the near future we have restricted our own comments and suggestions to the different aspects of the main issue. We believe that there is a great need for such surveys, which are outside the scope of a private organisation, and hope that the Commission will be able to have them carried out.

Our contention is that people using London Airports at the present time can be split up into the following general categories:

People from overseas travelling	(a) To the London area. (b) To areas of the UK outside the London area but which are best served by London at present.
People passing through London in transit	(a) From N America to North and East Europe. (b) From N America to South Europe, Mediterranean and Asian countries. (c) From N and East Europe to N America. (d) From South Europe, Mediterranean and Asian countries to N America.
People from the UK	(a) From London area, going abroad or to other parts of the UK. (b) From outside the London area, having to travel through London, arriving by land and air transport, to travel abroad or to another part of the UK.

It can be seen that if we examine each section, there is a substantial proportion of passengers using London Airports although they do not specifically wish to do so themselves. The reason is that the provision (or non-provision) of facilities is such that they cannot fly direct from or to other areas of the country. For those in transit from one country to another, it is very often of no importance at which point in a country they touch. They are interested only in getting to their destination as quickly and cheaply as possible. There will be a section of transit passengers who may wish to stop-over in Britain. At present, the great majority stop-over in London because it is at London they call. If there were more direct links between other UK airports and other countries those wishing to go to London could still do so, while those who were interested in a short stay in Wales, Scotland or Northern England would be able to fly direct to those

Printed image digitised by the University of Southampton Library Digitisation Unit

areas and stay for a while knowing that there were direct flights going on to their destination when they required them. At present, direct flights to other airports are so few and disconnected that only those particularly wanting to stop-over in such an area for a reason, are willing to use other airports. Not everyone fancies spending their whole visit to Britain tramping London's streets but facilities elsewhere in Britain are so poor that the vast bulk of visitors do just that. (Incidentally, adding to the inflation of the South East.)

If the system was designed to cater for the needs of all passengers, and all of the population of the UK, instead of only some, it would be found that a shift in policies and attitudes of the Government agencies would siphon off a large proportion of the passengers who must, at present, use London Airports. The result would be that Stansted would be unnecessary in the immediate future and with the evolution of the means of transport it could well be that it will be impossible to site any airport near centres of population. As it is impossible to look very far into the future, we are advocating a policy designed to avoid the mistakes of the shortsighted policies which have lumbered us with the existing system, whilst avoiding the pitfall of committing too much for too long a period. The policy we advance would provide the maximum flexibility to deal with new developments in both air and ground transport.

Our case, therefore, is for a selective expansion programme for other airports outside the London area. We believe that this would have great advantages over the plan to develop Stansted in the near future. Before explaining our proposals in greater detail we would like to consider those people who should be catered for in any development of the air transport system. These are the people who fall into the following categories which we have mentioned already:
Those people from overseas travelling to parts of the UK outside the London area but which are served almost entirely by London at present.
People from overseas in transit between N America and North and Eastern Europe and vice versa.
Those who come from the UK but who are from outside the London area and who use London because of the lack of adequate facilities in their own area, and who are going abroad or to other parts of the UK.

It is our view that there is a wide section of such people who would willingly use flights from or to overseas countries, whether their destination was the UK or if they were merely in transit, and which used airports outside the London area. In the past such a stream of traffic has not developed because facilities were developed in the London area and not elsewhere, despite the natural advantages of such airports as Prestwick. Also because of the licensing policies of the ATLB which has prevented other airlines operating services from such airports because they would have competed successfully with BOAC and BEA who prefer the status quo. If determined efforts were made to overcome the initial problems a much more satisfactory and efficient system could be developed and at less cost than the total cost of developing Stansted and all its land links, re-housing, etc. A large number of feeder services fly into London Airports, at present, with people in transit for other destinations. If there were more direct international flights from regional airports many of these feeder services would become unnecessary and the total volume of air traffic movement in the London area would be substantially reduced.

Printed image digitised by the University of Southampton Library Digitisation Unit

The Case Against Stansted

The development of Stansted, in the manner suggested, will inevitably lead to a repeat of the mistakes made with the other London Airports. There will undoubtedly be a marked decline in the amenity of the area. The loss of good agricultural land as well as the need to knock down thousands of houses to make way for the airport and its land communications is bad enough. The high cost of carrying out such work, in an area where land values are among the highest in Britain, is another. The result will be to make the London area more congested both in the air and on the ground. The increased demand for labour will have an adverse effect on the area because there is no large surplus of labour to be brought into employment. The new town of Harlow may well be ruined because, instead of developing as planned, it will become a dormitory for Stansted workers. This would ruin the town's finances, as there would have to be a great increase of expenditure on services for these people, whilst there would be no off-setting increase in rateable value as happens with normal industrial expansion.

The provision of a large improvement in the infrastructure of a region which is already prosperous, the resulting increase in employment, and the provision of new housing, civic amenities, land communications, etc., all go against Government policies as already stated.

With two international airports within a short distance there would appear to be no strong case for Stansted based on the needs of the region. Freight transport is already well catered for and there is more potential growth from other regions than from London where the traffic is already well developed.

With the coming of supersonic transport aircraft the problem of noise becomes very much more important. It appears to us, that a point has been reached where the continuation of a policy of developing air transport facilities, centring most traffic on the London area, adds very little in benefit either to the people of the area or the country as a whole; whilst at the same time such development is at a high cost in loss of amenity to a large population in the London area and deprivation of facilities to other areas. At present London receives the most benefits and the worst problems. We believe that a more optimal pattern should be determined and an overall National Air Transport Plan should be developed to outline the policies and proposals for the change-over from the present system to a more optimal one. It is our opinion that the air transport system should evolve using a system of selective expansion. This would aim at sharing the benefits of air transport more equally among the population, whilst avoiding creating the problems of the London airports.

A Selective Expansion Programme

As an alternative to developing Stansted at this time, we wish to advocate a policy of planned re-allocation of investment by the Government, and a combined shift in policies of the airlines and BAA to the rest of the country. The aim would be to relieve the load on the London Airports and at the same time confer substantial benefits on the people of both London and the regions. Those in the South East will be left with fully adequate air services and with no further loss of amenity in the area. Those living outside the London area will benefit greatly from having direct international air services and their attendant economic benefits. Thus the areas most needing economic expansion will be

Printed image digitised by the University of Southampton Library Digitisation Unit

aided, whilst the total cost of the development could be far less than the full cost of Stansted and its auxiliary investment.

The airports which could be expanded might be, for example, Manchester, Prestwick, Cardiff. Liverpool and Newcastle might play a part in a wider dispersal of services.

The programme we envisage would be part of a National Air Transport Plan and would represent a step on the way to a more optimal solution. Because of the inter-action of a number of variables (of which Government agencies' policies are the prime mover) the present air transport system has developed in a lopsided way. To restore some sort of balance is difficult because of inbuilt resistance to change in policies and because there is the vicious circle already referred to. It is now proposed to take another, multi-million pound step in that circle. For every possible reason, economic, social and political we believe that this is the right time to break the circle and push forward development in a new, more efficient and equitable way. Our proposals to break the vicious circle are only some of the different methods which could be used. We are more concerned with urging the need for such action than arguing that it should be carried out in a particular way.

In our opinions there are two airports which should be the key elements in a selective development programme. (We do not suggest that by using them the need for Stansted will be removed completely, but the more vigorously our proposals are implemented, the less need for massive development at Stansted. Neither do we suggest that the system can be reformed overnight. It took twenty years to create the present set-up and all its problems.) However, Manchester and Prestwick could act as catalysts in a change from the present centralised system to a more evenly balanced one.

In Favour of Manchester

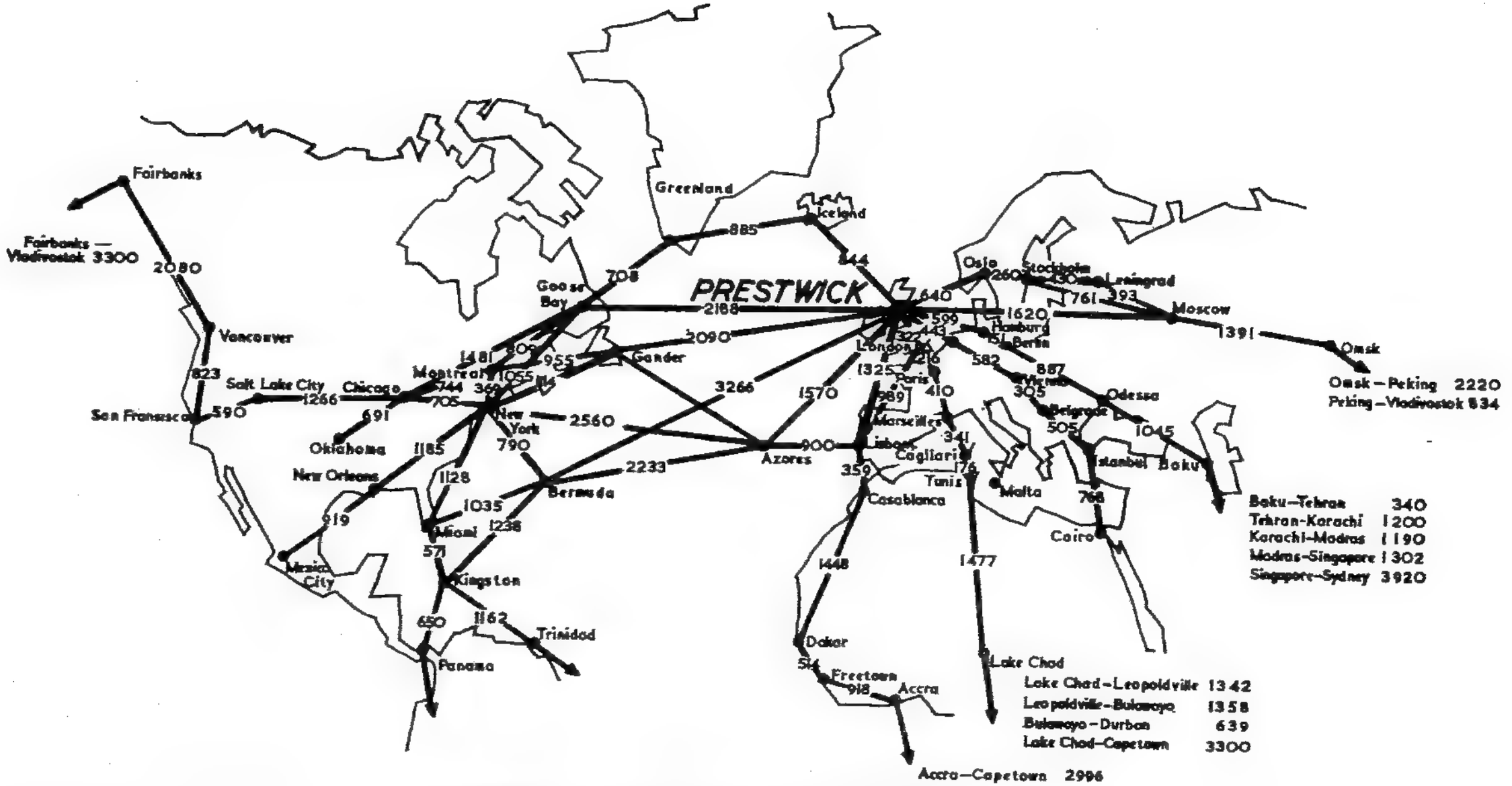
Manchester has many advantages in that it could be used to greater capacity, is an easier transit airport and 10 million people live within two hours drive of it. (As opposed to 15 million within two hours drive of the London Airports.) The new roads and motorways of the Midlands could increase the catchment area considerably.

In Favour of Prestwick

We believe that the natural situation of Prestwick has so many favourable features that only the Government's centralising policies have prevented its development as an important international airport. The airport is not situated amidst a built-up area and there is no large population in the vicinity to suffer from noise, unlike all the airports around London. As Prestwick is right on the coast, aircraft can climb, descend and accelerate or decelerate over the sea. Unlike all the other British airports Prestwick is almost completely free from fog. The airport could easily handle a lot more traffic than it does at present. If more runways and facilities became necessary the land is more readily available and there is no need to flatten large numbers of houses to obtain it. The provision of interchange facilities and land communications would be comparatively cheap. The rail line to Glasgow passes close to the terminal and a Gatwick-type station could be built easily and cheaply. As this line passes close to Abbotsinch that gap could be readily bridged. A new dual-carriageway road is shortly to be opened from Prestwick to Glasgow via Kilmarnock.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit



NORTH ATLANTIC AIR ROUTES

DISTANCE IN STATUTE MILES

The economic argument is entirely against a massive investment of Government funds in a prosperous part of the South East, whereas developing the regional airports would be in line with the major Government policies. It would boost the economy of the regions (and hence that of Britain) without creating more inflationary pressure. If a full cost-benefit analysis of the different solutions was carried out, we believe that the balance would be strongly in favour of the type of plan which we suggest.

One of the major advantages of developing Prestwick as part of a dispersal plan is that there are plenty of unemployed workers who could be brought into employment, unlike Stansted where they would have to be attracted away from other industries at higher wages. As a new town is being built at Irvine housing for the workers could be built as an integral part of the development, unlike Harlow where a lot of new housing schemes would have to be added on to the existing town. To maintain the balance of the economy of the region, we would hope to see the opportunity taken to establish an industrial estate as was done at Shannon. Although it might not be possible to offer the incentives of tax-relief and "free port" privileges, the provision of advance factories and investment incentives, coupled to a re-training scheme to provide an adequate supply of skilled labour, would prove a great attraction to industry. Such industry would make its contribution to the regional economy, boost the rateable value of Irvine and would also generate more traffic in freight and passengers for the air services.

In addition to the above arguments in favour of Prestwick the fact is that the routes between it and the international airports of N America and North and East Europe are shorter than between these places and London. Prestwick is much further north and as 'planes use "Great Circle" routes when possible, trans-Atlantic flights to Prestwick are cheaper and shorter. In that respect it is more efficient to develop Prestwick.

Joint Advantages

Despite the advantages enjoyed by both these airports there are obvious drawbacks to developing them. The chief being that once development has been set going in a particular way it develops its own momentum and the inertia of the movement is hard to overcome. To us, it appears that for the good of all the people involved the time has now come to decide firmly in favour of a new approach. As this will obviously be extremely difficult we would like to make some suggestions as to how it could be done.

We believe that a re-assessment of the pattern of traffic, between source and destination, would show that by developing Prestwick to serve as a transit point for all those travelling between N America and North and East Europe who want to reach their destination as quickly and cheaply as possible, a considerable reduction could be made in the number of flights into the London area. More frequent flights would encourage more people from Scotland and Northern England to fly direct from Prestwick rather than flying into London Airport to catch a plane from there.

To break the vicious circle of too few passengers, too few 'planes, too few passengers, our proposal is that inter-airport flights should be used to boost the number of flights from both Manchester and Prestwick to other countries, Prestwick-Manchester-South and East Europe, or Manchester-Prestwick-North and East Europe are suggested flows. The result would be a much more con-

Printed image digitised by the University of Southampton Library Digitisation Unit

venient and economical alternative to going via Heathrow. Passengers would not have to change aircraft, they would avoid the difficult interchange at Heathrow and the journey would be faster, because you avoid the high traffic density area around London and the routes would be more nearly a straight line. This type of development would be closely tied in with the introduction of Concorde and similar aircraft of the future, and would be an intermediary step to the position where the regional airports would have their own direct non-stop flights.

Concorde

Unlike other new aircraft brought into service, supersonic passenger aircraft pose unique problems for all involved with air travel. The most obvious problem is that of noise. In our view, using any airport in the densely populated South East of England is out of the question. The aircraft will have to climb, descend, accelerate to cruising speed, or decelerate, a long way out from such an airport. Unless a "straight-in" landing can be guaranteed every time, the aircraft will have to circle. Both the above manoeuvres are time consuming and costly. It is absolutely certain that there will be a considerable increase in noise levels in and around the airfield the aircraft uses.

It has been calculated that if one of these aircraft flew in and out of Heathrow every hour, the airport facilities and land communications would have to deal with many thousands more people every day because of the vast numbers meeting or seeing people off. Here again we would draw an analogy with other forms of transport. It is conceivable that if the Thames was dredged ocean liners could sail up to disgorge numbers of passengers comparable to a Concorde pay-load onto the Victoria embankment. Instead of this happening, with sea travel we have the sense to let ships go to regional ports, and then lay on the facilities such as boat trains to transport the people to their many destinations. Our view is that a similar arrangement should be made for Concorde. Because of its natural advantages Prestwick should be developed for the purpose of acting as the UK terminal and transit point for Concorde. This would divert an enormous amount of traffic away from the London area and would be in accordance with the arguments we have already put forward.

A large part of the Concorde traffic would be transit and with adequate interchange facilities to other air and land services the amount of extra traffic to London could be kept down. As already mentioned this would tie in with our proposals for inter-airport flights between Prestwick, Manchester and other countries. The amount of traffic generated by Concorde would be of great assistance in building up the amount and frequency of air services direct from Prestwick and Manchester to other countries. The introduction of Concorde coupled to the need for a decision for or against a Third London Airport at this time is a coincidence of such magnitude that the opportunity should be taken to develop UK air transport in a new way.

To develop Prestwick as the terminal for Concorde would cost a fraction of the full potential cost of Stansted. The return on money employed would be incomparably greater. Unlike Stansted or Heathrow, there would be no need for massive additional facilities to deal with the huge volume of arriving and departing passengers and their friends, as Prestwick would be mainly a transit point for the majority and they would be met nearer their destination.

Printed image digitised by the University of Southampton Library Digitisation Unit

What we would like to see happen with regard to the question of whether Stansted should be developed at this time or not

We would like to see the surveys we have suggested carried out to obtain a clearer picture of the existing position and its potential.

We would also like to see cost-benefit analyses carried out to ascertain the costs of different alternatives with all costs, direct and indirect, being considered.

We sincerely hope that for the good of the people of this country the Commission will decide against the development of Stansted at this time, and in the manner suggested.

Furthermore we hope that the Commission will advocate the immediate formulation of a National Air Transport Plan which should be co-ordinated with other proposals in a new and revised National Transport Plan.

We would hope to see the main point of such a National Air Transport Plan as being a more optimal and equitable pattern of air transport. And the urging of the need for an entirely different approach in the policies of all Government agencies. (The Board of Trade, The Air Transport Licensing Board, British Airports Authority, BEA and BOAC.)

As a means of obtaining a more optimal arrangement of air transport we advocate a selective expansion programme for regional airports and determined efforts to change the system by developing those routes which best suit the passengers rather than artificially concentrating traffic on London.

Printed image digitised by the University of Southampton Library Digitisation Unit

Preliminary Submission by the Sheppey Group

The Sheppey Group would like to place before the Hon Mr Justice Roskill, Chairman, and the Members of the Commission of Inquiry into the Siting of the Third London Airport the following brief preliminary submission. The submission is concerned solely with the initial work of the Commission in drawing up a short-list of possible sites which will be given further more detailed consideration at later stages of the Inquiry, and is in answer to the Commission's statement of 15th July, 1968 inviting evidence relevant to the first stage of its task.

The Group feels that there is one overriding reason why a site on the Isle of Sheppey or elsewhere in Kent should be ruled out altogether and submits that such a site should not therefore be among those to be placed on the short-list. It is clearly essential for the new airport to be easily accessible to as large a number of people as possible and to be so placed that it gives ready access over as wide an area of the country as possible. This is obviously necessary both for people from various parts of Britain travelling elsewhere and for people coming from abroad to various parts of Britain via the new airport. The Group submits that an airport sited in the area mentioned would be on the wrong side of London. It would be badly placed for access to parts of the country to the North of London, and notably to the Midlands. Passengers going to and from the airport would have to go through or round London. Because such a site would be out on a limb relative to London and the rest of the country, it would in fact be the worst possible area for an airport.

The Group considers that this overriding strategic reason against an airport in the area described outweighs all other considerations and suggests that it provides ample grounds for not short-listing a site in that area.

The Group wish to reserve the right to submit more detailed evidence if necessary at later stages of the Inquiry. There are many other reasons against an airport in the area mentioned which, the Group feels, would also result in its being similarly ruled out in the end. These other arguments are, however, more detailed and would be based largely upon comparisons with other sites showing that those other sites would be better or less undesirable. But the Group submits that the overriding strategic reason it has put forward overcomes the need for further detailed comparison and provides immediate grounds for ruling out altogether a site in the area mentioned.

Printed image digitised by the University of Southampton Library Digitisation Unit

Note submitted by Distribution of Industry Division, Board of Trade

Policy objectives

1. The main objective of the distribution of industry policy, which has been followed by successive administrations since the end of the war, is to promote a more balanced distribution of economic activity throughout the country and thereby to utilise more fully all the nation's resources, including manpower. This has been pursued by giving special encouragement to the movement of industry to, and the expansion of industry in, those areas of the country which for one reason or another have special need for industrial development. A parallel objective has been to restrain expansion in places where this would lead to excessive pressure on resources. The policy has concentrated mainly on influencing the location of industry since industry is a primary source of employment and it attracts other activities to places where it develops. The policy is, however, closely linked to other aspects of regional and manpower policy, such as the improvement of communications and the provision of training, and since 1965 the Government has had powers to control the growth of office development in certain parts of the country.

The problem of regional imbalance

2. Policies designed to secure similar objectives are pursued with varying degrees of rigour by most of the advanced industrialised countries, although the causes of the imbalance in development as between one area and another differ from country to country. In the United Kingdom the lack of balance has come about because over recent decades the most rapid economic development has been concentrated in the Midlands and South-East, whereas the older industrial regions have not merely failed to secure a significant share of growth industries, but have also experienced a decline in employment in traditional industries, such as coal mining, shipbuilding and heavy engineering. As a result, the prosperous areas of the country on the one hand have suffered from labour shortages often so acute as to prevent firms from working at full capacity—and inward migration, with inflated prices for land and housing and pressure on services. On the other hand, the older industrial areas have suffered from unemployment, outward migration, and wasted economic, social and human resources.

Instruments to secure a better distribution of industry and employment

3. The main instruments for carrying out the Government's policy of securing a better distribution of industry and employment throughout the country are of two kinds. The first is the provision of a wide range of financial incentives designed to encourage the expansion of industry in certain parts of the country or to encourage industry outside these areas to move to them. (The present development areas designated through powers exercised under the Industrial Development Act 1966, are shown in the map at Annex 1*.)

* See plates facing p.26

Printed image digitised by the University of Southampton Library Digitisation Unit

The second is the control of (i) new industrial building throughout the country through the system of industrial development certificates and (ii) new office building in the Midlands and the South-East through office development permits.

Industrial development certificates and office development permits

4. We assume that in its enquiry into possible locations of a third London airport, the aspect of the Government's distribution of industry and employment policy of principal interest to the Commission is the control over industrial and office building in the South-East and Midlands. The control of *industrial building* has been exercised for over 20 years. It is operated through the planning machinery of the Town and Country Planning Acts under which no building development can take place without planning permission from the local planning authority. Any valid application for planning permission for industrial building involving more than a specified area must be accompanied by an industrial development certificate (i.d.c.) from the Board of Trade certifying that the development in question "can be carried out consistently with the proper distribution of industry". The area of industrial floor space above which an i.d.c. is necessary is in general 5,000 sq ft but only 3,000 sq ft in the Midlands and the South-East, where proposals for new buildings are examined more critically. In considering applications for industrial development certificates the Board of Trade have a statutory obligation to pay particular regard to the need for providing appropriate new employment in the development areas. Subject to this priority, a further objective is the steering of industry, mainly from the London and Birmingham conurbations to the new and Expanded Towns being developed to take their overspill population. Against this background, each application for an i.d.c. is, however, considered on its merits and all relevant factors—including the firm's economic ties with the locality, export considerations and the need for efficiency—are taken into account.

5. The control of *office building*, on the other hand, is of comparatively recent origin, being introduced under the Control of Office and Industrial Development Act 1965. Initially the control applied in the London metropolitan region and Birmingham, but on 21 July 1966 it was extended to cover the whole of the South-East, East Anglia, and East and West Midland Planning Regions. East Anglia and certain rural areas in the East and West Midlands Economic Planning Regions have recently been excluded from the area of the control. In order to qualify for an office development permit (o.d.p.), applicants have to satisfy the Board of Trade that the activity cannot be carried on elsewhere; that no suitable alternative accommodation can be found; and unless the scheme is a small one, that the project is essential in the public interest; and in the case of modernisation or re-building schemes, that no extra employment on the site will result. The area of office space above which an o.d.p. is needed, is 10,000 sq ft except in the Greater London area where it is 3,000 sq ft. In view of the very substantial area of vacant or potentially available office space when the control was first introduced, few permits were granted, but as the amount of vacant space available in the area of the control has declined, more schemes have qualified for an o.d.p. The control is nevertheless administered rigorously.

The i.d.c. and o.d.p. controls and a third London airport

6. The choice of a site for a third airport will be determined by a number

Printed image digitised by the University of Southampton Library Digitisation Unit

of highly complex factors and the Government's i.d.c. and o.d.p. policy is only one of these. Nevertheless from what has been said above, members of the Commission will see that in the context of the Government's present regional priorities and of the present criteria for administration of the i.d.c. and o.d.p. controls, the establishment of a third London airport would present substantial problems. Given the existing pressing needs of the development areas for new job opportunities and the statutory obligations of the Industrial Development Act, the Board of Trade would not be able to grant in the vicinity of the third London airport an i.d.c. for any project which could reasonably be located in a development area. Experience in the operation of the i.d.c. control in relation to Heathrow and Gatwick indicates that firms frequently advance the need of close proximity to these airports as a reason for being allowed to locate to the west or south of London. The arguments advanced by firms may often seem persuasive: senior management need to be able to make flights abroad on urgent export business; potential customers from overseas are most likely to be persuaded to visit the firm if an airport is close at hand; or—and it seems likely that such an argument will be put forward with increasing frequency—much of the firm's output is exported by air freight, the benefits of which can be fully realised only if delivery to the airport is rapid. Close examination in individual cases, however, sometimes suggest that the real need is for reasonable access by road, rail or air feeder service to an international airport rather than close geographical proximity. As internal communications, and particularly road links, improve, industrial establishments over an increasingly wider range should find it possible to use the facilities of a particular international airport.

7. A major international airport would attract employment even if development were controlled. Part would be of people directly engaged in operating and servicing the airport and aircraft and would be essential. Part of the employment would be of a service character, and would have to be accepted if the airport were to fulfil its functions. Additionally, the growth of population generated by the airport would itself lead to a growth of employment (e.g. building workers, shopworkers, schoolteachers etc.) to meet the needs of the new population.

8. Difficulty would however arise over the desire of many firms (industrial and commercial) to be near to the airport purely because of its improved communications both via the airport and from the airport to London, and it is this element which the Government would, on present policies, wish to restrain (but not necessarily prohibit) both because of the need to limit congestion and because the risk of the less-favoured regions losing projects which might otherwise locate there.

9. The growth of airport employment would, unless there were an associated growth of population in the area, inevitably tighten the labour supply position in the surrounding communities. These possible repercussions would have to be considered in any location proposed.

10. Similar considerations apply at present to the o.d.p. control, although there are grounds for thinking that much office employment is so closely linked to the London area that the scope for movement outside the control area is more limited than is the case with industrial projects. It may also be the case that the indirect locational pull of an international airport is greater in the case of office activity than of industrial activity. Certainly Heathrow appears

Printed image digitised by the University of Southampton Library Digitisation Unit

to have been a major factor in the substantial office development that has occurred to the west of London in recent years. This suggests that the establishment of a third London airport would lead to pressure for office development along its links with London.

11. Office development needed to provide services for the airport itself would clearly have to be allowed. On the other hand, under present policy, the Board of Trade would be unable to grant an o.d.p. to any firm that wished to build offices because of the advantages of ease of access to the third London airport if, in the view of the Board, there were suitable alternative premises or the activity could reasonably be conducted outside the area of the control. It follows, however, that since many office employers can show other reasons why they must be near London and as the amount of available office accommodation has shrunk with the introduction of the o.d.p. control, the third London airport might become a powerful force affecting future office development in the South-East for projects which must be sited there.

12. As regards future policy, much will clearly depend on the success of the Government's present measures to correct the imbalance which now exists between different parts of the country. However, the problem of regional disparities is essentially a long-term one, and even when the gap has been narrowed, problems of congestion in the South-East may well remain. Thus it seems likely that control over development affecting employment will continue to be an instrument of Government policy, although the emphasis in its operation may be different as circumstances change. It is likely then that if the third London airport were sited in the South-East where there is general pressure on resources, particularly of labour, it will be necessary to limit the amount of projects setting up in the vicinity. This need would be greater if the site chosen were in an area not planned for a substantial growth of population.

Printed image digitised by the University of Southampton Library Digitisation Unit

Other Submissions

General evidence was also submitted by the following and is available for inspection, by arrangement, at the Commission's offices

Aeromedical International
Association of British Chambers of Commerce
F D B Folkstone
Lt Cdr W G Boaks
Mr A S Braithwaite
British Eagle International Airlines Ltd
British Road Federation
British United Airways Ltd
Mr Cyril Cadman
Mr A H Carter
Castle Donnington Rural District Council
Council for the Preservation of Rural England
Countryside Commission
Mrs E Crosbie-Trench
Mr Angus C Dargleish
Foreign airlines serving London (including Scandinavian Air Services, Swissair, Aer Lingus, Quantas, Trans-World Airlines)
Mr C A Haygreen
Joint Airports Committee of Local Authorities
Kingsclere and Whitchurch Rural District Council
Mr J L Lean
Maldon Rural District Council
Marshall of Cambridge (Engineering) Ltd
National Council on Inland Transport
Mr R E Norton
Mr G R Polgreen
Aerodrome Manager, Rolls Royce Limited
Mr P D A Taylor
Tracked Hovercraft Limited
Youth Hostels Association (England and Wales)

Printed image digitised by the University of Southampton Library Digitisation Unit

Site Suggestions

Site suggestions were submitted by the following and are available for inspection, by arrangement, at the Commission's offices

Mr William Bunting
Cardiff Incorporated Chambers of Commerce
*Bernard L Clarke and Partners
Communication Analysis Limited
*County Council of the West Riding of Yorkshire
Mr R A Cust
Dart Aircraft Limited
Devereux, Mitchell and Price Davies
Russell Diplock Associates
Economic Planning Council (South West Region)
*Essex and Hertfordshire County Councils
Mr W C Goldacre
Hampstead Association for Aircraft Noise Control
*Harris and Sutherland
*Sir John Howard
Mr H F Lane
Mr Leslie Lane
Leeds School of Town Planning
M. B L Le Gassick
Mr M Lutt
Mr M H Makins
Anthony Masters and Associates
Nachshen, Crofts and Leggatt
Mr G E Newson and Mr I M Fulton
*Noise Abatement Society
Sir Ian Scott
Mr D J Steel
Mr H Teggin
*Thames Aeroport Study Group
Thorne Rural District Council

***Copies can be obtained from, or inspected at, the offices of the authorities concerned.**

Printed image digitised by the University of Southampton Library Digitisation Unit

Mr R Trotter
Mr R G Turner
Mr Brian Waters and Mr Max Boisot
Sir Owen Williams and Partners
Anonymous (forwarded by the Town and Country Planning Association)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

INDEX

To Volumes 1 and 2

Note. The oral evidence, printed in volume 1, is indexed by question number. Written evidence is indexed by page number; italics are used for references to volume 2

Acton Residents Association, Q 595
Advanced Passenger Train *see* Surface access: rail links: advanced passenger train
Agricultural land *see* Land use: agricultural
Air cargo growth, Q 108-116
Air pollution, P 191-192, 208
Air safety, P 188-191, 206-207
Air traffic
  general aviation, Q 4
  passenger
    P 286–288, *35*, *36*
    Q 12, 234, 331–339
Air traffic control
  general aspects
    P 333–339, *66–67*, *79–81*
    Q 30–45, 121–123, 149–160, 928–1050
  air route structure
    P 337–339
    Q 935–954
  coastal site, Q 952–956, 1011–1021
  criteria, P 333
  future, Q 1036–1037, 1044–1048
  inland site, Q 933–953
  runway alignment, Q 1019–1025
  sequencing, Q 1044–1048
  Silverstone, Q 969, 997–1010
  United States
    P 338
    Q 963–967
Air traffic movements *see* Movements, air traffic
Aircraft envelope, P 20–21
Aircraft manufacture
  noise reduction
    P *14*
    Q 655–659, 724–732
Airline operations
  P *102–104*
  Q 16–17, 20–21, 99, 102, 346–355
Airline Scheduling Committee, Q 117
Airport capacity
  P 15–16, 18
  Q 4, 121, 1024–1026
Airport capacity: American experience, Q 117–123, 1050
Airport specification, P 7–10
Amenity
  comments BAA, Q 3, 128–133
  costs and benefits
    P 159-160, 165-166, 171, 194, 280, 305-306
    Q 128–133, 300–301, 305, 337–338, 392–402, 424, 746–753
Anti-Concorde Project Association, Q 595

BAA *see* British Airports Authority
BACAN *see* British Association for the Control of Aircraft Noise
BEA *see* British European Airways
BOAC *see* British Overseas Airways Corporation
Balance of payments, Q 123–125
Biggin Hill
  movements, air traffic, Q 27
Boeing 747 *see* Jumbo jets
British Airports Authority
  airport planning: general details concerning the outline specifications, P 19–27
  evidence
    P 1–32
    Q 1–243
  legal position, Q 76–90
  submission by chairman, P 1–18
British Association for the Control of Aircraft Noise
  evidence
    P 143–144
    Q 439–590
  letter to local authorities, P 147–149
British European Airways
  landing fees, Q 127
  maintenance staff, Q 174, 318, 342–346
British Overseas Airways Corporation
  landing fees, Q 127
  maintenance staff, Q 174, 318, 342–346
Burns, Dr. W. *see* South East Joint Planning Team
Butts Society, Q 595

Cargo
  P 95, *42*, *51–52*
  Q 103–116

P = page. Italic references are to volume 2
Q = question (all references are to volume 1)

Printed image digitised by the University of Southampton Library Digitisation Unit

Cargo: containers
P *43*
Q 111
Channel tunnel, Q 430
Chelmsford inquiry *see* Stansted
Chelsea and Kensington Action Committee on Aircraft Noise
evidence
P 152–158
Q 440
Chicago: O'Hare Airport, Q 94, 334, 963–967
Civil aerodromes
air traffic control, Q 955–957
Clapham Junction of the air, Q 99
Commission
members, Q 1
methodology, Q 1
terms of reference, Q 1
Communications *see* Surface access
Community Plans Inc., Los Angeles, Q 794–806
Concorde *see* Supersonic aircraft
Construction
general aspects
P 10
Q 46–57
costs
P 4
Q 236–242, 553–561
planning
P 24–27
Q 51–53
Controlled air space
P 334–339
Q 937–963, 998-1021
Cost responsibility, Q 555–561, 576-581, 744–753
Cranford & District Residents' Amenities Association, Q 440
Cranford & District Residents' Amenities Association
evidence, P 170-173
Crockett, Mrs. M. L. *see* Community Plans Inc., Los Angeles
Culcheth Society, Q 595

Defence
RAF, Q 946–950, 958–963
Docks: deep water
P 284–285, *106–108*
Q 431–436
Dolphin Square Residents Association, Q 595
Dorking and Horley Rural District Council, Q 439
Dorking and Horley Rural District Council
evidence, P 145–151

Employment *see* Population
Eton Rural District Council, Q 595

Faversham Society, Q 595, 647
Foulness
general aspects
P *37, 65–66*
Q 338, 461–463, 471–480, 514, 526
air traffic control, Q 981, 1011–1015, 1018–1021
Foulness—*continued*
runways, Q 739–742
surface access, Q 518–521, 818, 823
Freight *see* Cargo
Friends of Old Isleworth, Q 595

Gatwick
general aspects
P 145–147
Q 96–97, 448–449
controlled air space, Q 941–946, 974
movements, air traffic, Q 5, 8; capacity, P 13–14, 18, Q 34; growth rate, P 14–15, 18
noise, Q 582
property values, Q 504
surface access, Q 204
Gliding sites, P *32–34, 64–73*
Gliding sites: air traffic control, Q 956–957
Greater London Council Development Plan, Q 822

Harlow New Town, Q 181–182
Heathrow
air traffic control, Q 963
controlled air space, Q 937–946
future
P 156–157
Q 319, 458, 562–575
movements, air traffic: air transport, Q 15; capacity, P 13–14, 18, Q 4, 8, 34; growth rate, P 14–17, 157
noise
P 152–153
Q 447–449, 563-565
passenger origin and destination
P *38–39*
Q 210
population: working
P *18–23*
Q 95, 172, 325, 421
property value, Q 490–493
surface access: rail link, Q 204, 211; road link, Q 197–199, 210–216, 828; user statistics, Q 832
Helicopters, Q 161
Helicopters: noise, Q 162
Hovertrain, Q 637–641
Howard, Sir John, Q 433
Hypersonic aircraft, P 21

IFR *see* Instrument Flight Rules
ILS *see* Instrument Landing System
Industry and commerce
P *107-108*
Q 315, 326, 403–405, 430
Industry, distribution of, P *125-128*
Instrument Flight Rules, Q 31
Instrument Landing System, Q 149–150, 155, 1031
International Civil Aviation Organisation, Q 991

John Evelyn Society (Wimbledon), Q 595
Jumbo jets
P 21–22, *41–42*
Q 13, 102, 116, 163–164, 739–742

Printed image digitised by the University of Southampton Library Digitisation Unit

Kew Association for the Control of Aircraft Noise, Q 440
Kew Association for the Control of Aircraft Noise
evidence, P 159-169
Kew Society, Q 595
Knutsford Society, Q 595

LAANC *see* Local Authorities Aircraft Noise Council
Land reclamation
P *106*
Q 514–516
Land use
agricultural
P 172, *46-48*, *53*, *54*, *91*
Q 302, 362, 392–394
recreational
P *59*
Q 362–368, 396–399
Landing fees, Q 126–127, 350–355, 505–511
Layout
general aspects
P 19–24
Q 1039–1043
BAA comments
P 7–10
Q 134–160, 165–171
boundaries, P 8
central development zone, P 22–24, *41*
installations, P 8–9
overshoot, Q 148–152, 1040–1043
Local Authorities Aircraft Noise Council
evidence
P 206-209
Q 743–793
members, P 206
Local Authorities (Airport) Committee
evidence, P 216-225
members, P 216
London and South East Regional Planning, Standing Conference
activities, Q 390–391
evidence
P 75–85
Q 358–405
terms of reference, P 75
Los Angeles, Q 153–156, 352–355, 794–806
Luton
controlled air space, Q 942–946, 973
movements, air traffic, Q 5

Milton Keynes New Town, Q 267, 417–421, 437
Motorway box *see* Roads: development
Movements, air traffic
capacity
P 12–18, *82–84*
Q 4–45, 1024–1030, 1044, 1050
delays, Q 4, 117, 1026–1030
growth rate, P 15–17, Q 6–16, 568–575; air transport, P 15–17, Q 17–27
peak rate, Q 30–34
standard busy rate, Q 1031–1036, 1044
statistics, P 13–14, Q 4–11, 17–27, 61–75, 86-88; air transport, P 191-193, Q 17-27
Movements, air traffic—*continued*
sustained capacity rate
P 13–14
Q 30–34, 45, 1031–1036, 1050
training flights, Q 71

NAS *see* Noise Abatement Society
NATCS *see* National Air Traffic Control Service
NNI *see* Noise and number index
National Air Traffic Control Service
general aspects
P 333–339
Q 122, 928–1050
responsibilities and work
P 333–334
Q 928
National airports plan
need for
P *44–45*, *102–104*, *113–123*
Q 308
Navigation aids, P 23
New York: Kennedy Airport, Q 2, 117, 782, 967
New York: La Guardia, Q 227, 230–232, 967
Noise
general aspects
P 98, 143-226, *11-16*, *53*, *54*, *58*, *93*
Q 91, 221–222, 323, 377–378, 438–806
Commission's comments, Q 438
helicopter, Q 162
imperturbables, Q 586, 605–609, 767–788
levels
P 98, 161, 168-169, 170-173, 178, 184-187, 194, 199, 211-215, 217, 219-225, *11–14*
Q 480–487, 602–609, 619–628, 650–671, 698–723
local authorities' action, Q 582–584, 632–634
medical effect
P 155, 180-183
Q 669–671
ministry responsible
P 161–163
Q 621–631
Noise: final report (Wilson report), Q 481
population movement, Q 733–738
property values
P 201-205
Q 488–504, 531, 545–554, 585–591, 596–598
rating appeals, Q 531–540
road traffic
P 156, 222-225
Q 475, 635–636
social cost
P 155, 163-165, 170-173, 174, 177-185, 206-209
Q 541–554, 596–601, 609
sound proofing, P 172, 217, 220-223
supersonic aircraft, Q 105, 447
take off and landing
P 155
Q 614–619
vertical take off and landing, Q 162

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise Abatement Society
evidence
P 197-205
Q 650–742
members, P 197-205
Noise and number index
P 211, *12-19*
Q 480–487, 602–609, 650–655, 789–793, 928
Noise certification plan, P 163, 194
Noise measurement *see* Noise: levels
Noise zones, Q 582–584, 760

Omni-directional airports
P 95, 99
Q 98–102, 311–315, 383

Paris: airports, Q 153, 194
Population
general aspects, Q 268–301, 309, 337, 386–389
estimates: Third London airport
P *17–26, 58*
Q 173–184, 255–258, 271, 325–326, 360, 420–422, 426–430
housing, Q 255, 760–788
working, P 24, Q 316; travel, P 285, Q 642–646, 885–887
Ports *see* Docks: deep water
Property value
general aspects, P 201-205
Heathrow, Q 672–696
Kensington and Chelsea, Q 531–554
Los Angeles, Q 796–806
Putney Society, Q 595
Putney Society
evidence, P 174

Rating appeals, Q 531–540
Regional Economic Planning Council, Q 234
Regional Local Authorities, Standing Conference, Q 234
Regional planning
general aspects
P 75–100, 147, *49–50*
Q 2, 244–437
controls, Q 327
effects of Third London airport
P 76–79, 82–83, 91, 96–97, 99
Q 172–188, 234–235, 246, 355–357, 360–362
housing, Q 760–788
roads, Q 843
the South-east
P 79–80, 83–85, 86–87, 96–98, *85–90*
Q 247–253, 279, 309, 327–345, 356–357, 359–367, 374–375, 407–437
the South-east: communications, Q 262, 357, 362, 409–411
River Thames Society, Q 595
Roads
capacity, P 289–291
development
P 289–292, 303–304
Q 808–854, 917–927
development: costing
P 293–295
Q 888–894
Runways
cross wind, Q 60, 141–148, 153
number required
P 93–94, 98–99
Q 92–94, 315, 322–325, 339–348, 383–385, 450–470, 512–516, 739–742, 1024–1025
number required: air traffic control considerations, Q 1024–1025, 1049
number required: layout
P 7–8, 11, *70–72*
Q 137–148, 153–160, 166, 1038–1043
orientation
P 8
Q 36–39, 56–60, 141–160, 940
orientation: United States, Q 967

SBR *see* Movements, air traffic: standard busy rate
SCR *see* Movements, air traffic: sustained capacity rate
STOL *see* Short take off and landing
Sectorisation, Q 98–102, 565–567
Services and utilities
P 25–28
Q 185–193, 303–304
Short list
publication, Q 1
Short take off and landing
P 20–23
Q 161
Site search
general aspects
P 4–6, 159–161, *1, 27–29, 32–34, 49–52, 54–56, 60–63, 65, 68, 96, 98–101, 110–112, 113–123, 124*
Q 120, 193–195, 246, 259–304, 309–314, 328, 357, 369–382, 409–437, 460–480
accessibility, P 4–*5, 39–40, 110*
air traffic control
P 336
Q 1017–1023
BAA statement, Q 233
coastal
P 4–5, 92, 97–98, 143–144, 148, 150, 156–157, 195-196, 200, *37, 105*
Q 221–222, 226–232, 378, 460
Commission, Q 1
criteria, P 2–4, 9–10, *9–10, 27–29, 30–31, 35, 36, 97–98, 109*
inland
P 4
Q 128, 129–133, 221
South East Economic Planning Council
evidence
P 89–92
Q 406–437
South East Joint Planning Team
establishment, Q 390
evidence
P 86–88
Q 244–306
programme, Q 247–253
Strategy for the South-East, Q 249–253, 287
terms of reference, P 86, 88
Southend
movements, air traffic, Q 6

P = page. Italic references are to volume 2
Q = question (all references are to volume 1)

Printed image digitised by the University of Southampton Library Digitisation Unit

Stacking, Q 119, 756-759, 763, 775-785, 954, 971, 985–995, 1024, 1044–1048
Standing Conference of Regional Local Authorities *see* Regional Local Authorities, Standing Conference
Standing Conference on London and South East Regional Planning *see* London and South East Regional Planning, Standing Conference
Stansted
  general aspects
    P 5–6, *95–96, 97–101, 115–118*
    Q 271, 331, 414
  air traffic control, Q 975, 1004–1010
  BAA statement, Q 3
  movement, air traffic, Q 5, 61–75, 86; air transport statistics, Q 17–20, 88
  new terminal building, Q 63–90
  runways, Q 59
  surface access
    P *4–8*
    Q 839
Subsonic aircraft, P 20–23
Supersonic aircraft
  P 20-23, 196, 207, 217, *122*
  Q 102
Surface access
  general aspects
    P 40–41, 57–58, 273–306
    Q 283–287, 298–301, 357, 362, 409–411, 422–424, 462–467, 472–480, 806–927
  capital costs, P 277–280, 283
  comments BAA, Q 3, 193–220
  hovertrain
    P 304
    Q 637–641, 909
  Los Angeles airport, Q 801–806
  monorail
    P 302
    Q 196, 637, 906–908
  rail link: general aspects
    P 296–304, *74–75*
    Q 28–29, 196–222, 518–521, 637–641, 896–916, 924–927
  rail link: advanced passenger train
    P 165
    Q 29, 902–908, 912–916
  rail link: construction costs, P 298–299
  road: general aspects
    P 289, 293-295, *75*
    Q 196–199, 210–220, 409–411, 465–467, 472–480, 518–521, 828–829, 835–838, 846–854, 917
Surface access—*continued*
  road: planning preliminaries, Q 850–854
  user costs
    P 277–280, 299–302, 305–306, *76–79*
    Q 194, 400–402, 472–480, 855–882
  user statistics
    P 288
    Q 831–832, 883–884

Technology, Ministry of
  aerodromes, Q 946–950, 958
Terminal: in town
  P 157, 281–283, *7–8*
  Q 200–209, 518–521, 824, 896–900
Thamesmead, Q 925
Third London Airport
  BAA justification, Q 92, 234
  operational
    P 6
    Q 46–49
Timing of the need
  general aspects
    P 38, 62–63, 64–65
    Q 4
  comments, BAA
    P 2
    Q 2
Toronto Airport, Q 606
Town and Country Planning Association
  evidence
    P 93–100
    Q 307–357

UKFAAN *see* United Kingdom Federation Against Aircraft Nuisance
United Kingdom Federation Against Aircraft Nuisance
  evidence
    P 175-196
    Q 592–649
  members, P 175
Urbanisation, Q 267, 288, 368–382, 386–389

VTOL *see* Vertical take off and landing
Vertical take off and landing
  general aspects
    P 20–23, *71*
    Q 161
  noise
    P *16*
    Q 162

Washington: Dulles Airport, Q 3
Washington: National Airport, Q 193–194
Wilson Report, Q 481

P = page. Italic references are to volume 2
Q = question (all references are to volume 1)

UNIVERSITY OF CAMBRIDGE 12 AU 1969

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings

volume II

Stage I Public Hearings

Part 2

Other Written Evidence

LONDON

HER MAJESTY'S STATIONERY OFFICE

1969

17s. 6d. net

Printed image digitised by the University of Southampton Library Digitisation Unit

SBN 11 510156 X

Printed image digitised by the University of Southampton Library Digitisation Unit

Contents

	Page
Preface	v
Mr O D Bennett	1
Bishop's Stortford Season Ticket Holders' Association	4
Lord Bledisloe	9
Board of Trade: Aircraft Noise	11
Distribution of Industry	125
British Airports Authority	17
British European Airways	30
British Gliding Association	32
British Overseas Airways Corporation	35
British Travel Association	36
Buckinghamshire County Council	37
Confederation of British Industry	38
Country Landowners' Association	46
East Anglia Consultative Committee	49
East Anglia Economic Planning Council	50
East Midlands Airport Joint Committee	51
Federation of Essex Women's Institutes	53
Hertfordshire Federation of Women's Institutes	54
Kent County Council	56
London Chamber of Commerce (Inc)	60
London Gliding Club	64
London Transport Board	74
Mr A J Lucking	76
Ministry of Housing and Local Government	85
National Farmers Union	91
National Union of Vehicle Builders (East London Office)	95
North West Essex and East Herts Preservation Association	97
North West, Northern and West Midlands of England, Advisory Committees for Civil Aviation	102
Northamptonshire County Council	105
Port of London Authority	106
Scottish Advisory Committee for Civil Aviation	109
Scottish Economic Planning Council	110
Scottish National Party	113
The Sheppey Group	124
Other Submissions (*not reproduced*)	129
Site Suggestions (*not reproduced*)	130
Index	132

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Preface

In July 1968 the Commission on the Third London Airport issued a call for evidence of a general nature and for airport site suggestions. The Commission has decided to publish as early as possible the evidence received at Stage I rather than to delay publication until all steps of its work have been completed.

The greater part of the evidence is reproduced in full, either in this volume or in Volume 1. As indicated on page 129 the remainder is available for inspection by arrangement at the Commission's offices, or the offices of the authority concerned.

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission by the Chairman of the British Airports Authority

FIRST OF ALL may I place formally on record how much the British Airports Authority welcomes the setting up of the Commission of Inquiry into the siting of the projected Third London Airport which, under the terms of its Act, the Authority will be invited to own and to operate.

2. The Authority will, of course, extend to the Commission every possible assistance within its power in the search for a site for a new major international airport which, when it is selected, will not only *be* right but, when all factors have been weighed, will also be *seen* to be right by the public in general.

The Authority's responsibilities

3. It is, I think, also appropriate for me to place on record that the British Airports Authority, under the Airports Authority Act of 1965, is charged by Parliament with the responsibility, in the operation of its airports, of "having regard to" the development of air transport, efficiency, economy and safety. To undertake this duty the Authority must provide sufficient capacity at the major international airports under its control so as to meet the requirements of British trade and travel by air while, at the same time, achieving an adequate return on the national investment in the airports under its charge.

4. I am aware that, in certain quarters, a view has been held that the British Airports Authority is unshakably committed to the development of its airport at Stansted as the Third London Airport, and that the Authority proposes to develop Stansted "regardless". I must state emphatically that this is not correct. The Authority has no intention of so doing.

5. Until 22 February 1968—when the Government decided that a new Commission of Inquiry should be appointed—both the previous administration and the present Government had stated that Stansted was their choice as a Third London Airport. Ever since the Commission was constituted I have stated—and I wish to re-emphasise—that the Authority now regards the situation on the choice of a Third Airport for London as completely open and is concerned that the site which is eventually chosen by the Commission shall be the most satisfactory possible, not only to meet the need of the nation's air services, but also—and no less—to satisfy the wider considerations of amenity, planning and other community interests together with the safety, the operational, the technical and the economic requirements of a major airport.

6. In short, the Authority sees as the basic objective the achievement of:

Sufficient airport capacity for the London area which can be provided, at tolerable cost, in a location acceptable to users and to the nation at large,

Printed image digitised by the University of Southampton Library Digitisation Unit

so as to fulfil the purpose of meeting this country's requirements for increasing trade and travel by air.

7. May I state also, in the strongest possible terms, that the British Airports Authority—conscious though it is of the urgency of the requirement for a Third London Airport—has neither the desire nor the intention of doing anything to "ride roughshod" over public opinion on the selection of a site. As I have said, in the Authority's view all possible alternative sites start afresh on an equal footing for consideration.

Timing

8. With these observations as background, I feel bound to state that—on grounds of meeting the requirements of British overseas trade and travel, on grounds of safety, in order to prevent serious and costly delays and to avoid the prospect of turning away air traffic at peak periods—the Authority is convinced of the urgency of the need for a Third London Airport. The evidence which is currently available shows that, within the presently accepted and forecast limits set by Air Traffic Control and other operating techniques, air traffic into and out of the London area will require a Third London Airport by the middle 1970s, although there will be some, inevitable, air traffic congestion and difficulties at Heathrow from 1970 onwards. (See Annexe Two). The Authority is urgently continuing its investigations into forecasts of all aspects of traffic demands and available airport capacity. It wishes to co-operate fully with the Commission in making these forecasts as complete and as accurate as possible because problems of timing may well have a major influence on the Commission's recommendations.

Criteria

9. Any selected site—whatever its other attributes—must, of course, be operationally satisfactory for the air traffic which it is designed to serve. Under the terms of the Airports Authority Act the Authority has to pay its way. Therefore the new airport must also be economically satisfactory. The airport must be so situated that it can fulfil its purpose of being readily accessible to the growing volume of passenger and cargo traffic from London and its environs.

10. The essential requirements of a major international airport, and the question of minimising disturbance to the surrounding locality, clearly present a most difficult area for judgment between operational, national, local and the wider social interests—that is between the broad purposes to be served, the interests to be satisfied, the specifications to be achieved and the requirements to be met.

The basic requirements

11. With these matters in mind, the Authority believes that there are seven basic requirements against which the merits of all the alternative sites for a Third London Airport must be judged. They are:

11.1. Operational Suitability—including the terrain, weather, Air Traffic Control, compatibility with other airports and suitability for safe and economic operations:

Printed image digitised by the University of Southampton Library Digitisation Unit

11.2. Acceptability to Airlines—an airport which will be commercially satisfactory to airlines in a competitive situation:

11.3. Accessibility—within reasonable distance of the centres of population to be served, and of available road and rail systems:

11.4. Area for Development—for a four-runway airport with adequate space for runways of the required lengths and for the necessary separation between the runways:

11.5. Community Interests—the site must be such that the airport can be integrated satisfactorily with the prospective future social and economic patterns of the area:

11.6. Economic Viability—the capital and running costs chargeable to the Authority must be compatible with the airport paying its way at charges which users can reasonably be expected to pay: and

11.7. Timing—the site must be capable of development in time to meet the traffic requirements.

12. These seven requirements, which are basic to any new major airport, can—in the view of the Authority—be amplified in general terms as follows:

12.1. Operationally Sound. On present evidence, preferably in a sector from the North to the East of London, on grounds of Air Traffic Control, of traffic "catchment area" and of compatibility with Heathrow and Gatwick.

12.2. Acceptability to Airlines. A new airport to serve London's air traffic must satisfy the airlines' commercial requirements for the provision of services which will be competitive with those of other London airports —in total journey times and costs. It must be satisfactory to airlines in comparison with competitive airports across the Channel.

12.3. Satisfactory Access. As close in time and distance—(and hence reasonable in cost)—as can be achieved to the centre of London subject to the provisos of the other criteria.

12.4. Sufficient Area. Essentially having available an area of level land of not less than about 8,000 acres, preferably inclined on a North East/South West heading because of the prevailing wind.

12.5. Community Compatibility. Located to take full account of the effects on the neighbouring population, on land use, buildings and other objects of historic and social importance as well as taking account of the growth of population and employment opportunities.

12.6. Economics. Sited so that an airport, eventually with two pairs of parallel runways, can be constructed in stages and operated at an economic cost—including terminals, taxiways, access roads and other amenities—and hence be capable of paying its way at each completed stage of its development.

12.7. Timing. On present information, required to be available with one runway, not later than the mid-1970s.

13. Such outline requirements are set out as—in the opinion of the Authority —a "broad brush" appreciation of the desirable features to be sought in a Third London Airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

14. In essence, therefore, we believe that a site for a new major airport, would be acceptable to all the main interests concerned were it possible to reconcile the conflicting aspects of being seen to be:

14.1. Satisfactory to operate (Safe and Suitable).

14.2. Convenient for the air traveller (Near and Accessible).

14.3. Compatible with amenities (Secluded and Quiet).

14.4. Attractive for employment (Busy and Diverse).

14.5. Economic to the airlines (Accessible and Large).

14.6. Viable to the owner (Economic and Efficient).

14.7. Relevant on timing (Neither too little nor too late).

15. No location known to the Authority ideally meets all the requirements.

Coastal and inland sites

16. In some countries coastal sites have been selected for major airports. All of them possess the great advantage of a close proximity to the cities which they serve. In the United Kingdom some, more distant, coastal sites may be found, where the impact of noise on local communities would be less than at some inland sites—although such inland sites might be preferred on other grounds. The Authority is aware that consideration of this difficult balance of advantages (using the techniques of "cost-benefit" analysis) is being undertaken by the Commission and is outside the direct responsibility of the British Airports Authority. The Authority is confident that the Commission, in making its recommendations with regard to social cost and benefit, will also pay full attention to the Authority's statutory duties, including its financial obligation to earn a satisfactory return on its capital. Due account will, no doubt, also be taken of the fact that construction costs would be substantially higher on most of the coastal sites which have been proposed than at a number of possible inland sites. Too heavy a construction cost might impose upon the Authority a crippling burden of debt or on the air transport industry an unreasonable level of charges. The Authority's emphasis on this aspect does not spring from a narrow desire to maximise profits but from a conviction that the efficient management of national resources requires a proper regard to a sound commercial return on investment.

17. The Authority also wishes to underline its opinion that the Commission should pay due regard in its recommendations to the importance of accessibility. Satisfactory access has three main aspects:

17.1. It may not be possible to persuade airlines to accept a move to a relatively remote site (which might have serious competitive disadvantages in journey costs and time) when their competitors are still able to operate services through more accessible airports.

17.2. There would be a permanent advantage to the community—in time and money—if the new airport is built on a site which is easily accessible for passengers, cargo and the staff working at the airport.

17.3. The best operational layout will be of no use—and inconsistent with the Authority's duties and purpose—unless it is viable and is in a location

Printed image digitised by the University of Southampton Library Digitisation Unit

where the airlines and the travelling public will use it. In short—no amount of financial subsidy will prevent a "London Airport" too far from London being a white elephant.

The capacity problem

18. The Authority is certain that the Commission will pay the fullest attention to impending problems of airport capacity for London—which must inevitably cause concern. In the new circumstances following the Government's decision, last February, to reconsider the location of a Third London Airport, the Authority is urgently engaged in the complex task of re-appraising, in depth, a development strategy to provide more capacity at its existing airports for the mid 1970s.

19. In the longer term, this strategy must depend upon the recommendations of the Commission itself and upon the timing of the acceptance of those recommendations by the Government. In the shorter term, even were the Commission able to make recommendations at a relatively early date and were its recommendations to be for a relatively "easy" site, on present evidence of likely rates of traffic growth and of operating techniques it will be impossible to provide for traffic demands at Heathrow and Gatwick (even with some minor help from the smaller London airports) without substantial delays at peak periods. If, on the other hand, decision upon the Commission's recommendations is delayed, or if that decision is for a site which will require a lengthy period of construction—or for the provision of access—then, on the basis of present traffic predictions and present operating techniques, there will be a period during which existing airports in the London area will not be able to meet the traffic demands.

20. The view of the Authority that the growth of air traffic is likely to be such that saturation at peak periods will be reached at Heathrow and Gatwick before operations can start at the Third London Airport, is set out in some detail at Annexe Two. Relief may be possible by the diversion of some traffic to other airports—for example Luton or Stansted for air transport operations, and Biggin Hill or Northolt for general aviation. The Authority's present plans allow for a modest increase in air transport movements at Stansted and a new small interim terminal building is under construction to deal with this expected traffic.

Stansted's interim status

21. As indicated in its Second Annual Report*, the Authority expects during the next few years to continue to use Stansted with its existing runway as a regional airport. Longer term decisions about the future of Stansted must await the Report of the Commission.

22. In fulfilment of its duties the Authority proposes that Stansted shall be operated in the meantime to meet the interim traffic demands which, on present forecasts, will be well below the theoretical capacity of the existing runway. The Authority does not expect to plan any substantial addition to the interim terminal facilities before the currently expected date of the Commission's Report. The Authority will not embark upon any major permanent facilities at Stansted unless and until such action is consistent with the Government's decision after the Commission has made its recommendations.

* HC 418, Sess. 1967–68 (HMSO, 15*s*.).

Printed image digitised by the University of Southampton Library Digitisation Unit

The Choice

23. In answer to the specific question of "Which site presently known to it, in the view of the Authority, meets the seven basic requirements with least objections" the Authority must, first, re-emphasise that no site known to it meets the requirements in full measure and that it believes that all potential sites must be re-examined with an open mind upon their relative suitability in relation to the basic requirements. Until the re-opening of the whole issue in February 1968—the Authority regarded the Government's decision on Stansted as one which would enable it to provide in time an airport which would be acceptable and workable. If the Commission should recommend in favour of Stansted, the Authority would continue to regard that site as acceptable, and workable. If an alternative site were found which would, in sum, better meet the basic requirements, then the Authority would welcome it as the Third London Airport.

Conclusion

24. In summary, therefore, the Authority believes that:

24.1. A Third London Airport is, on the available evidence, required to be in operation by the mid-1970s to meet the national requirements.

24.2. Such a new major airport must be sited so that it can be both operationally and economically sound and readily accessible to the traffic it is designed to serve—with adequate room for development. Eventually a four-runway airport ought to have capacity for a Sustained Capacity Rate of more than 120 aircraft movements an hour which should make possible a throughput of around 600,000 movements a year.

24.3. With all this, the location of the airport must be such as to be acceptable to the community as a whole and satisfactory in terms of the social amenities and the long-term planning of the area.

25. The Authority is anxious not to attempt to prejudge in any way the outcome of the Commission's recommendations and deliberations. It reaffirms its intention of contributing in every way which the Commission considers will be helpful, to the achievement of a satisfactory outcome to its inquiries and to achieve a site which will provide the airport capacity needed to serve London and the South East of England.

ANNEXES

1. Outline airport requirements and possible layouts.

2. Heathrow and Gatwick airport capacities and forecasts of traffic demand.

Printed image digitised by the University of Southampton Library Digitisation Unit

An Outline Specification for the Topography of the Third London Airport

Introduction

A BROAD SPECIFICATION for a four-runway airport is outlined below to assist in an initial identification of possible locations. The specification is based upon a layout in which runways are arranged in two parallel pairs sufficiently separated from each other to permit a high capacity in terms of aircraft movements as well as to afford space for the manoeuvring of aircraft on the ground and for airport installations.

2. The exact position of the runways will depend upon local conditions at each possible site. The amount of longitudinal stagger between one pair of runways and the other can be varied within a relatively wide range according to the site. There is also scope for varying the longitudinal stagger between the individual runways of a parallel pair as well as other variations.

3. There is thus an opportunity for considerable flexibility and no single layout need be imposed upon all possible sites. Appendix A shows six diagrams to illustrate some possible patterns. The criteria should not be regarded as rigidly applicable in that circumstances may arise where requirements related to specific locations may require variations which can be accommodated satisfactorily.

Runway lengths

4. The requirement is for at least 12,000 feet of paved runway for all runways. A capability of extension to 14,000 feet of paved length for all runways is desirable, with a further area beyond each of the ends—typically a minimum of 1,500 feet of "overrun".

Runway separation

5. (*a*) **Distance between the inner runway of each pair of runways—7,500 feet** (With a "chevron" layout, separation down to 6,000 feet may be acceptable—see diagram 6 in Appendix A)

(*b*) **Distance between individual runways of each pair—2,500 feet** —except in the "chevron" layout.

Runway longitudinal stagger

6. (*a*) **Between pairs**—There is considerable flexibility in the extent to which this may be practicable and desirable, and it will depend upon individual site characteristics. The examples given in diagrams 1, 2 and 4 in Appendix A illustrate possible varieties of this stagger.

(*b*) **Between individual runways of each pair**—Again there is flexibility and a possible extent of this is illustrated in diagrams 1 to 4 of Appendix A.

Printed image digitised by the University of Southampton Library Digitisation Unit

The determination of more precise extents of possible stagger will arise in the consideration of selected locations for probable sites. It should be noted that for the patterns shown in diagrams 1, 2 and 4 the displacement of the inner runways is always to the North East and that any further stagger on these patterns would have to maintain the same kind of displacement.

Runway orientation

7. To obtain optimum usability the runways should be oriented in the direction of the prevailing wind. In south-east England this falls in the sector between NNE/SSW and ENE/WSW. It may be possible to consider a layout with runways on two different orientations within the preferred sector provided usability is not impaired. There may be areas where wind conditions make it necessary to have additional runways outside the preferred sector—but the cost will be substantial.

Airport boundary

8. As a general rule, the boundary running parallel to the outer runways should be at least 600 feet from the centre line of these runways and for certain layouts it should be not less than 4,000 feet from the end of the inner runways.

9. The desirable alignment of the remainder of the boundary will depend upon the extent to which one pair is staggered in relation to the other, upon local features and characteristics and also upon the extent to which non-parallel orientation between pairs may be considered.

The shape of the airport area

10. There are many different shapes possible within the criteria stated above. A few of them are shown in diagrams 1 to 4 at Appendix A. Diagram 5 shows a possible layout for a site at which additional runways are necessary in order to achieve a high usability. The patterns in the other diagrams of Appendix A could also have runways in different directions added on should local circumstances require and permit. Diagram 6 shows two parallel pairs of runways on slightly different orientations, a layout that might be considered for a long and narrow location.

11. The layouts shown in Appendix A are not all of equal merit, and some of them may offer more potential capacity in terms of runway utilisation than others. Many other factors have to be taken into account in later stages, and these may outweigh considerations of maximum capacity. In broad terms the maximum stagger (diagram 3) will offer the highest capacity.

Airport installations

12. The precise extent and nature of these installations will be a matter for detail design in due course when the final choice and timing of location becomes clear. In general terms, the main installations, apart from the runways themselves, are as follows:

(*a*) Navigational services connected with the landing, take-off and ground manoeuvring of aircraft.

Printed image digitised by the University of Southampton Library Digitisation Unit

(*b*) Taxiways affording aircraft access between the runways and the terminal and maintenance areas.

(*c*) Aprons for the parking of aircraft with space for the manoeuvring and parking of vehicles and equipment to service those aircraft.

(*d*) Passenger terminals and car parks.

(*e*) Cargo terminals.

(*f*) Areas for the major maintenance of aircraft.

(*g*) Airport road and other transport systems, including main accesses to terminal and maintenance areas and a perimeter road around the airport.

(*h*) Air Traffic Control tower.

(*i*) Aviation fuel facilities.

(*j*) Airport administrative and maintenance facilities, and police, fire and rescue services.

13. The above installations, other than those which by their nature cannot be so sited, would be located for the most part along the general area in between the two pairs of runways.

14. In the detailed examination of individual sites, some installations may be found to be better situated outside the area between the runways, thus involving a different shape for the boundary and a larger overall airport area, particularly in the case of layouts based on diagram 6.

15. The list of installations and facilities stated in paragraph 12 above does not cover all the activities that could be located within an airport boundary. A major airport can attract within its boundary many facilities (e.g. hotels, light industry or service companies associated with aircraft operations, and miscellaneous administrative and service buildings), and there are a number of ancillary individual installations which will undoubtedly be fitted in as developments require.

16. Thus the shape and area of the airport, although dependent primarily upon the runway layout, cannot be fixed in advance of detailed planning at a specific location. It may be necessary to vary the pattern of installations, thus affecting the boundaries and areas foreseen in Appendix A and in the course of time as traffic develops to seek further variations, possible relatively minor ones, in order to meet future demands.

Topographical tolerances

General

17. It is difficult to define specific criteria for determining whether a satisfactory airport can be built at a particular site. This question can be answered only after more detailed study of individual locations when identified. The general principles set out below, though necessarily limited in character, may, however, assist in the initial search.

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface criteria

18. An indication of the general terrain tolerances likely to offer practical possibilities may be gained from the following requirements, which will apply to a major international airport in its finished state:

(*a*) In the longitudinal direction of the finished runways the overall difference in levels between the ends of the runways should be not worse than a gradient of about 1 in 200. There will have to be an unbroken sight line in both directions to permit the operation of high performance radio aids (this will limit the permissible amount of "convexity" of the finished runways).

(*b*) In the transverse direction, the finished runways may be at different levels, provided that the overall gradient from side to side of the airport is not worse than about 1 in 100.

19. In the course of construction, it will be necessary to deal with ground deviations, i.e. dips and rises, in order to produce an acceptable finished article. The following additional information, which is related to the technicalities of construction, will give an indication of deviations that may not prove insuperable:

(*a*) General ground deviations should not exceed 30 feet above or below the overall tolerances mentioned in paragraph 18.

(*b*) Localised variations, provided they are reasonably isolated, may be acceptable up to an additional 30 feet above or below the general deviations in (*a*) above. This would involve "cutting or filling" operations in localised areas of up to 60 feet, but perferably these operations should not involve more than 50 feet.

(*c*) Individual isolated projections of up to 150 feet above (but not below) the overall tolerances may be acceptable provided that they can be dealt with by conventional earth-moving equipment.

Geological criteria

20. It may be impracticable to apply geological criteria in the initial search. But to the extent that it may be of assistance the following is an indication of some conditions which would rule out a location from the constructional point of view:

(*a*) Large quantities of material requiring excavation which could not be dealt with by conventional equipment (such as hard rock).

(*b*) Unstable underlying strata which are either too deep or too thick to permit removal.

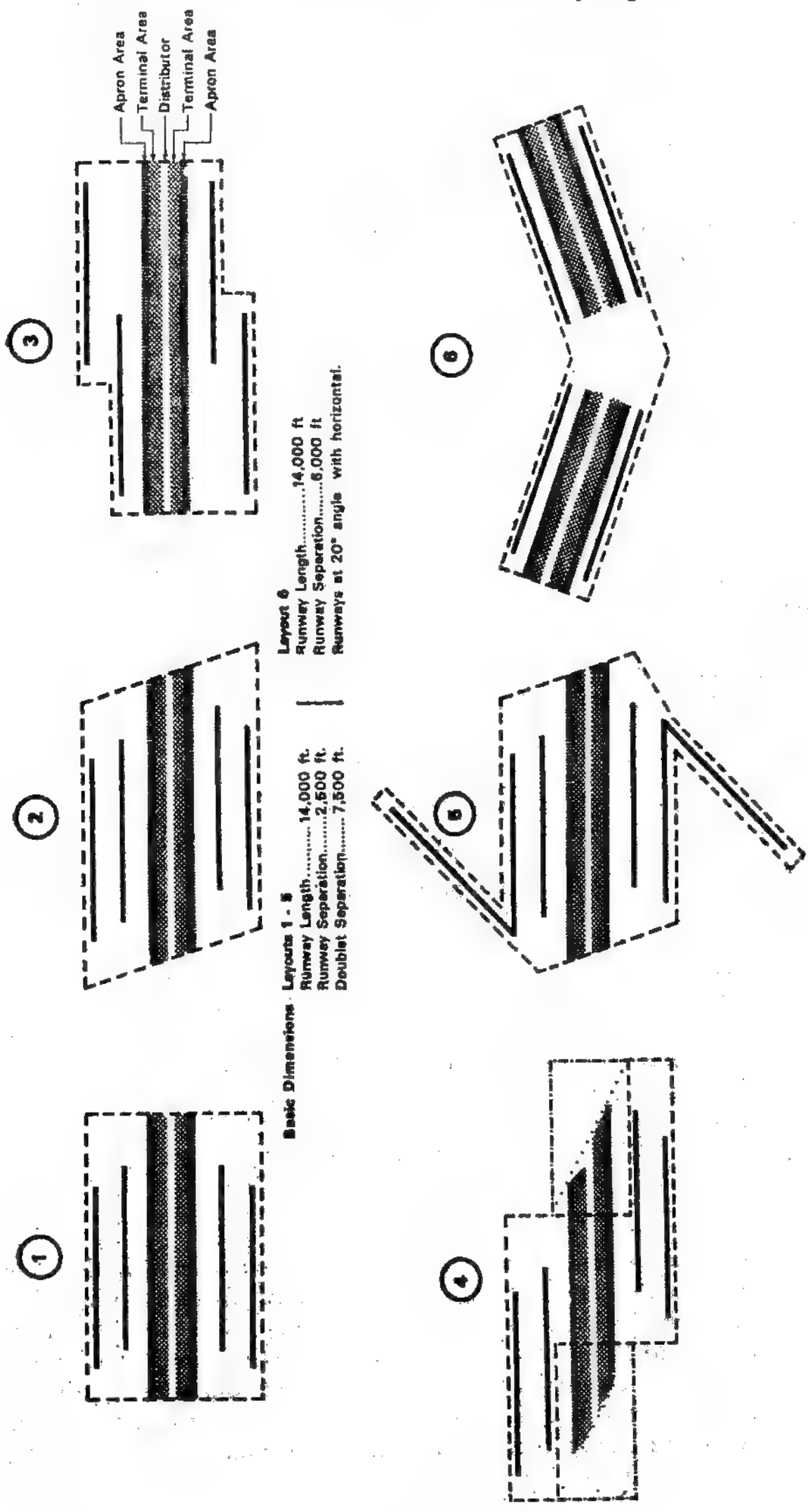
Obstructions around the airport

21. There are no general rules of thumb. The finished airport must be free from obstructions according to internationally determined criteria. These criteria are complicated and can be related only to specific locations and planned layouts which will emerge in later stages of detailed planning. The precise layout and alignment of runways (for which there are at this stage many alternatives) is the key factor.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX A

Possible alternatives for a multi-runway airport



Printed image digitised by the University of Southampton Library Digitisation Unit

Air Traffic Demand and Airport Capacities

With specific reference to Heathrow and Gatwick

AIRPORT CAPACITY is related to many factors—the air traffic control environment, the proximity of other aerodromes, the number of runways available and usable, the ground movement system, the number of aircraft stands, terminal building capacity, car parks, surface access, and the spread of the traffic demand. All must be made to be compatible one with another because each of them can be a determining factor towards the peak capacity and—flowing from it—the maximum number of aircraft movements likely to be achieved each year at an airport.

2. When all the work is done, the traffic throughput achieved (and therefore the sum total of all aspects) can be measured at any time by the number of aircraft movements which have been handled at an airport during a 12 months period—together with the numbers of passengers and the tonnage of air cargo which have stemmed from these annual movements. Within those totals there are contained all the significant components which contribute to peak traffic —built up from the totals achieved:

In the busiest month:

In the busiest week:

In the busiest day, and

In the busiest hour.

3. In essence, the capacity of an airport is reached when the air traffic demand matches the rates which can be achieved without significant delays during the busiest hours. Clearly, it would be ridiculous to require additional airport capacity just to meet the demands of one hour in a year. The fact is that, in spite of the high peak nature of air traffic, the individual peak demands in "the high season" are consistent enough at most airports to require a substantial increase in additional capacity over a period once the ceiling has been reached at a single point.

4. Airport capacity is, thus, a highly complex matter which—in the context of future requirements—can be examined fundamentally from the basis of runway capabilities in terms of aircraft movements. With this as the foundation, the other limiting factors can be attacked so as to bring them into balance. Even so, different centres of air traffic have, at the present, different limiting factors which may include not only runways but also the peak capacity of means of surface access, the handling capacity of terminal buildings or the number of aircraft "gates" available.

Printed image digitised by the University of Southampton Library Digitisation Unit

5. From such a starting point an airport may be considered to have reached saturation when, at specific periods, the average delay to aircraft wishing to land or take-off exceeds an acceptable figure—currently (and somewhat arbitrarily) defined as about four minutes. Even on this basis, experience shows that about two per cent of the delays will exceed 20 minutes—five times the average. Experience shows also that, once delays exceed an average of about four minutes they tend to "snowball"—that is to build up very rapidly.

"Historic" data

6. As a background to the situation as it exists, in the "current state of the art", experience during the past 12 months at Heathrow has been as follows—with two parallel runways concurrently active:

Aircraft movements achieved	*Heathrow*	*Approx. per runway per hour*
1. Annual total for 12 months ended 31st August 1968:	244,000	14
made up of: Commercial air transport	227,000	12
Other movements	17,000	2
2. Busiest month (August 1968)	25,624	17
3. Busiest week (ending 1st August)	5,989	17·5
4. Busiest day (1st August 1968)	901	19
5. Busiest hour (0900/1000 on 9th September)	71	35·5

7. Experience shows that, upon present evidence and in the current state of the art, each independently operated runway at a modern airport—when not materially influenced by the proximity of other airports—is capable of accommodating, without snowballing delays, a continuous rate of traffic of about 32 aircraft movements an hour under Instrument Flight Rules. For short periods the rate of aircraft movements may reach, or slightly exceed, 40 movements an hour. But such rates cannot, at present, be maintained continuously without the building up of serious delays in the air and on the ground.

8. When this data is related to the situation of Heathrow and Gatwick (and when, by 1970, the two main parallel runways at Heathrow are both of approximately the same length so as to permit independent operations in a balanced manner) on current information the capacities of the two airports—expressed as the "Sustained Capacity Rate" (SCR) will be approximately thus:

Airport	*SCR*
Heathrow (two runways)	64 movements an hour
Gatwick (one runway)	32 movements an hour
Gatwick (two runways)	45 movements an hour
Two airports (four runways)	109 movements an hour

9. The reason that the second runway at Gatwick is expected to add an additional capacity of only 13 movements an hour (compared with the theoretical 32) is because, with present methods, there is some conflict of airways traffic with Heathrow, because of the local topography and because of the too close lateral separation which is inevitable between the runways. As time goes on these limitations may be somewhat eased by improved techniques.

10. Thus, on present information (and applying the currently observed ratios of Sustained Capacity Rates under IFR to the other parameters) the

Printed image digitised by the University of Southampton Library Digitisation Unit

expected approximate capacities of Heathrow and Gatwick, each with two runways, without serious delays, becomes:

Aircraft movements	*Heathrow*	*Gatwick*	*Total (four runways)*
1. Sustained Capacity Rate per hour (SCR) ...	64	45	109
2. Peak rate	80	45	125
3. Peak day—about:	1,060	750	1,810
4. Approximate resulting maximum annual throughput (rounded)	300,000	200,000	500,000

11. Clearly the theoretical limiting factor is the combined total for the two airports of about 109 aircraft movements which will be capable of being achieved each hour for a continuous period. The other rates of throughput are related to this figure from current experience. They may be increased by the spreading of peak demands or, we may hope, by improved techniques. In the other direction such potential increases may be held down by increased restrictions on movements because of noise. There may be other bottlenecks from such factors as limited access or inadequate terminal buildings at specific points in time.

Air traffic demand

12. During the past year—that is during the 12 months ended 31 August 1968—the air traffic *demand* at Heathrow and Gatwick has been:

Aircraft movements	*Heathrow*	*Gatwick*	*Total*
Total for year	244,000	72,000	316,000
"High season" daily average	850	310	1,160
"Standard busy hour"	63	26	89

13. Thus in the peak periods of the past summer the air traffic demand at Heathrow, which has peaked at 71 movements an hour, compares with the forecast peak capacity of about 80 movements an hour, once the two main runways are balanced up in length. On present evidence, air traffic demand at Heathrow will be beginning to bump against the ceiling at peak periods by 1970, and the Standard Busy Rate of demand will reach the Sustained Capacity Rate for more and more hours in the day.

14. Gatwick still has some capacity available at the forecast sustained capacity rate for one runway (26 demand at the "standard busy hour" against 32 SCR available) and has at present a good deal of room for growth in relation to the expected capacity were a second runway available. The question of when the full capacity of the two airports will be reached depends upon such factors as:

1. *The extent* to which growth at Heathrow during the next few years can be kept to the less busy periods:
2. *The extent* to which larger aircraft can be used to keep frequency demands within available capacity:
3. *The extent* to which peak demands which cannot be satisfied at Heathrow can be accommodated by the agreement of airlines to transfer services to Gatwick:

Printed image digitised by the University of Southampton Library Digitisation Unit

4. *The date* at which a second runway can be made available at Gatwick:
5. *The extent* to which ATC methods can be improved:
6. *The extent* to which the Airline Scheduling Committee at Heathrow can continue to be effective in spreading services into less popular hours:
7. *The extent* to which commercial air transport can be given preference, in busy hours, over other forms of flying:

(During the average busy hours of the summer of 1968, commercial air transport accounted for 61 out of 63 movements at Heathrow and for 19 out of 26 at Gatwick—that is for 80 out of 89 of the combined total of aircraft movements at the "standard busy hours").

Growth in demand

15. Rates of air traffic increase in the London area have been remarkably consistent during the past 15 years in which they have averaged 7.2 per cent per annum in aircraft movements. During the past year—to 31 August 1968—they have increased at five per cent—that is an increase of 14,444 movements at the two airports during the past 12 months.

16. "Upper" and "lower" forecasts which have been made by the British Airports Authority show the growth of *air transport* movements at Standard Busy Rates and its relationship to the capacities of Heathrow and Gatwick (see Appendix 1). From this, and with an allowance for some possible spreading of peaks, we would expect the annual demands at Heathrow, in terms of air transport movements, to grow, between 1968 and the mid-70s, at between 14,000 and 17,000 movements each year—whereas those at Gatwick are expected to grow by between 2,500 and 3,000 air transport movements each year—that is by a combined total of between about 16,000 and 20,000 air transport movements a year. In addition, other movements—which include positioning flights, test and training, general aviation and military communications—would (unless some of them are restricted) add about a further 10,000 movements each year to the demand by the early 1970s.

17. If the new traffic maintains the same pattern and distribution as the existing traffic has done over the past many years under commercial influences, we can expect that—in every year—an additional four or five air transport movements will be trying to get into and out of Heathrow each hour during busy periods—together with an additional two air transport movements arriving and departing during each busy hour at Gatwick. The pressures to spread the peaks may thus result in an increase in annual throughput at a faster rate than the rate of increase at the busy hours.

18. On such a basis, and at the expected rates of increase of demand, clearly Heathrow has capacity for about one year's further growth at busy hours. In other words, from 1970 onwards air transport growth at Heathrow can be accommodated only during the less busy periods. Unless substantial delays are to be accepted, there must be transfers of services at busy periods.

19. Gatwick has capacity for a good deal of growth if non-air transport activity is restricted during the busy hours—a policy which can be adopted only

Printed image digitised by the University of Southampton Library Digitisation Unit

to a limited extent without economic "side effects". Gatwick would have room for Heathrow's overflow of air transport services at busy hours up to about 1975, *provided that* the second runway is available there and *provided that* none but air transport activities are accepted.

The peak problem

20. There seems little doubt, therefore, that the postponement of saturation of Heathrow and Gatwick during summer months to the mid-1970s depends upon a complex interflow of factors and to no small extent upon the degree of peak-spreading which may be possible. Experience shows that air traffic demand is conservative in this—as in many other—respects. The travelling public and cargo shippers have shown themselves to be highly resistant to attempts to force them off the "desirable hours" within the day, within the week and within seasons of the year. Examination of airport and air transport experience all over the world reveals a remarkable consistency in those respects—although the "desirable hours" vary considerably from place to place. We have to remember, of course, that the purpose of air transport is to serve the needs of its users and, so far as possible, at the times at which they desire to travel. That is what the business is all about.

21. If, however, we make the—slightly optimistic—assumption that some "peak spreading" can reduce the potential demand by one "busy hour movement" each year at Heathrow and by one "busy hour movement" every two years at Gatwick—then the combined demand-rate for air transport services at the two airports can be forecast to be likely to reach 106 movements at busy hours by 1974, on the "upper line" of estimates, and by 1976 on the "lower level". This figure is only just within the expected sustained capacity rate of 109 movements an hour for the two airports combined. In the following year —(1975 or 1977)—demand would reach 112, on the upper forecast and 111 on the lower level—both figures well above capacity. It is perhaps relevant to note that, up to the present, no responsible long-term forecast of air traffic growth has overestimated the actual demand which has transpired. Indeed the forecasts for air traffic at Heathrow and Gatwick made in the Government White Paper of April 1967 have already been overtaken by events.

Conclusion

22. We can, therefore, sum up the situation as follows:

22.1. *Heathrow and Gatwick combined*, have—(during the past year ended 31 August 1968)—successfully met, without undue delays, a rate of *demand* for aircraft movements which achieved:

89 *movements* during an average busy hour:

1,160 *movements* during an average busy day, and
316,000 *movements* during the 12 months period.

22.2. *These achieved rates* for the two airports, with three concurrently active runways, compare with the present forecast *capacity* of:

96 *movements* an average busy hour—which would probably result in about
1,590 *movements* during an average busy day, and about
450,000 *movements* during a 12 month period.

Printed image digitised by the University of Southampton Library Digitisation Unit

22.3. *These capacity figures* would be increased, when Gatwick has a second runway, to about:

109 *movements* during an average busy hour—which would probably result in about
1,830 *movements* during a peak day; and about
510,000 *movements* during a full year—
(subject to the willingness of airlines to transfer sufficient services).

22.4. *On present evidence,* and taking the above figures into account, Heathrow is likely to reach capacity during "standard busy hours" from 1970 onwards. Gatwick, with a second runway, (and provided that it is limited to commercial air transport at busy periods), might be able to absorb its own traffic-growth plus Heathrow's overspill up to 1976 at the latest. In practice because of a probable more than "lower forecast" rate of growth, because of problems of transfer, of spreading peaks and of the insistence of other-than-air-transport demands, the date of saturation of the two airports combined, will almost certainly be earlier than 1976.

22.5. *Taking all aspects into account* there seems every reason to believe that, in total, and not later than 1976, if serious delays are to be avoided, both the demand and the capacity at Heathrow and Gatwick will be likely to coincide at:

Aircraft movements	*Heathrow*	*Gatwick*	*Total*
Standard busy hour rate	64	45	109
Which will probably result in an annual total of air transport movements of about	280,000	120,000	400,000
Together with other movements of about ...	20,000	80,000	100,000
And so, Total annual movements and capacity...	300,000	200,000	500,000

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

RELATIONSHIP BETWEEN TRAFFIC DEMAND AND AIRPORT CAPACITY AT HEATHROW AND GATWICK

CAPACITY Sustained Runway Rate		DEMAND at Standard Busy Rate and at Upper and Lower Levels of Probability							
			Heathrow+Gatwick (one runway)				Heathrow+Gatwick (two runways)		
			Upper Level		Lower Level		Upper Level	Lower Level	
Airport	Capacity	Year	Within Capacity	In Excess of Capacity	Within Capacity	In Excess of Capacity	Within Capacity	In Excess of Capacity	Within Capacity	In Excess of Capacity
		1968	81		80		81		80	
		1969	85		84		85		84	
		1970	89		87		89		87	
		1971	92		90		92		90	
		1972	96		93		96		93	
		1973	96	+ 6	96	+ 1	102		97	
		1974	Capacity	+10	Capacity	+ 4	106		100	
		1975		+16		+ 7	109	+ 3	103	
		1976		+22		+10	Capacity	+ 9	106	
Heathrow+Gatwick (one runway)	98	1977		+31		+15		+18	109	+ 2
		1978		+38		+18		+25	Capacity	+ 5
		1979		+48		+22		+35		+ 9
Heathrow+Gatwick (one runway)	109	1980		+58		+27		+45		+14

Airport Planning—General Details Concerning the Outline Specification

PRESENTED BY THE BRITISH AIRPORTS AUTHORITY

Introduction

The topographical outline specification was drawn up with the sole objective of providing information of a general character appropriate to the initial site identification.

2. To enable such a specification to be drawn up, the British Airports Authority had in mind possibilities regarding the use of areas inside the airport boundary and the purpose of this paper is to provide the Commission with further information on this aspect and on other associated considerations.

General

3. Given that the Commission's terms of reference refer to a four-runway airport a primary consideration was the likely operational and safety requirements of aircraft using the airport in both the short- and the very long-term. Assumptions also had to be made on the possible layout of the main airport facilities to handle the aircraft and their loads of passengers and cargo, it being understood, however, that at this stage there are a number of factors which will not become identifiable with reasonable clarity until later stages of the Inquiry and that even then there could still remain areas of uncertainty as to long-term requirements (notably on future types of aircraft).

4. Flexibility was therefore a necessary consideration although it was appreciated at the same time that allowance for this should not unduly limit the scope of the site identification. It was, however, necessary to indicate that a runway, length of 14,000 feet would be desirable if it could be achieved since runway lengths were a significant factor in the area required.

Airport layout

5. To illustrate in more detail the way in which the areas of the airport may be used, the drawings at figs. 1–3* show three examples of layouts based upon different runway patterns. These patterns follow those in Diagrams 2, 3 and 6 of Appendix A† to the outline specification and have been selected as being representative of the main differences involved in all six drawings in that Appendix.

6. The possible uses of the main areas in between the runways and taxiways are shown in the form of development zones: the basic concept being a linear development on either side of a central distributor. This concept of development for airport terminal facilities has considerable advantages:

---

* See plates facing page 48. † p. 11.

Printed image digitised by the University of Southampton Library Digitisation Unit

(*a*) It enables facilities to be added with minimal disturbance to those already existing.

(*b*) It offers considerable flexibility to modify existing facilities with minimal disturbance to airport operation and traffic growth.

(*c*) It permits development to be geared more closely to the progressive demands of future traffic.

7. It will be apparent that these physical advantages also have potential financial advantages in offering a more gradual process of development and hence a more gradual process of capital commitment after the initial capital expenditure necessary to provide the essential infrastructure to enable the airport to start operating.

8. With layouts based upon four parallel runways arranged in two parallel pairs widely separated—as in figs. 1 and 2 or variations thereon—it is virtually impossible to plan on the basis of an apron and terminal etc. development other than in the area between the pairs of runways. To locate that development outside the area bounded by the runways would not only create a formidable ground movement problem but would also require a much larger overall airport area because the distance between the parallel pairs of runways could not be substantially reduced without adversely affecting airport capacity. Furthermore, the amount of practicable development area available might also be much less. This should not, however, be taken as ruling out other types of airport development beyond the outer runways—see paragraphs 34-36 below.

9. In the case of layouts based upon fig. 3 it might be possible, if absolutely necessary, to consider an alternative location for the terminals, etc. outside the area bounded by the runways. There would, however, still be considerable problems for reasons similar to those in the foregoing paragraph.

10. It will be apparent that layouts similar in character to fig. 2 and 3 offer more development area in between the pairs of runways than those similar to fig. 1; and that the central development areas in figs. 1 and 2 have the advantage of contiguity compared with that in fig. 3 which, for operational and safety reasons, has a very restricted area in the middle. To produce a larger area for central development in the case of layouts similar to fig. 1 it would be necessary to lengthen the area by repositioning the North East and South West boundaries, or possibly by increasing the separation between the pairs of runways (with a corresponding alteration to the other boundaries) or a combination of both.

11. The following paragraphs give details of parameters used in drawing up the specimen airport layouts and of certain general practical considerations which the Commission may wish to have at this stage.

Future aircraft characteristics assumed in drawing up the outline specification

12. The basic requirement is to determine an assumed dimensional "envelope" and an all up weight embracing the characteristics of aircraft which will use the third airport. In the field of civil air transport and in the light of forseeable developments it is reasonable to assume in the first instance that the third

Printed image digitised by the University of Southampton Library Digitisation Unit

airport may be required to accommodate the following categories of aircraft, in addition to current types, during its lifetime:

(*a*) Very large subsonic aircraft operating on short, medium and long-haul routes.

(*b*) Supersonic aircraft.

(*c*) STOL and VTOL aircraft.

Hypersonic aircraft may also be involved but their characteristics are unknown and it is hoped that they will not demand more than their forebears in terms of operating areas on the ground. Rocket vehicles have not been considered.

13. As to the three categories mentioned above, it is assumed that the area and weight demands of STOL and VTOL aircraft will not be significantly greater than those for the other categories and that, except for length, the demands of supersonic aircraft will not significantly exceed those of subsonic aircraft.

14. The most demanding of known current developments are:

(*a*) Boeing 747

Length	231 ft 4 in
Span	195 ft 8 in
Maximum weight	713,000 lb

(*b*) Lockheed C5A(L500)

Length	245 ft 11 in
Span	222 ft 9 in
Maximum weight	732,000 lb

15. The United States supersonic aircraft development is apparently being reconsidered but the latest information available to us is:

Length	318 ft
Span	174 ft 3 in
Maximum weight	675,000 lb

16. The pattern of history shows that aircraft manufacturers have subsequently produced "stretched" versions of basic designs. From discussions with Boeings we believe that a stretched version of the 747 may be produced if the airlines consider there is a demand for it and that the dimensions of such an aircraft would be of the order of:

Length	280 ft
Span	220 ft

with a corresponding increase in the maximum weight. The same may well be true of the C5A(L500) and US SST. Allowance must also be made for the possibility of larger and heavier aircraft.

17. Accordingly, the outline specification has been planned in relation to an "aircraft envelope" of the order of:

Length	350 ft
Span	250 ft
Maximum weight	1,500,000 lb and over

Printed image digitised by the University of Southampton Library Digitisation Unit

Runway and taxiway requirements

Runway Length

18. This must be related to existing as well as to future aircraft. Of the existing critical aircraft the requirements of the Boeing 707 on a hot day are as follows:

B707/300	11,000 ft
B707/436	12,000 ft

19. Current information on the forecast performance requirements of the Boeing 747 indicates that this aircraft should also be able to operate without penalty from well under 12,000 ft. The C5A requires much less.

20. Known SST developments are not expected to demand more than 12,000 ft.

21. The general tendency now seems to be for aircraft manufacturers to try to avoid producing aircraft requiring greater runway lengths. One cannot, however, be absolutely certain that 12,000 ft will be adequate for the longer term, particularly for unknown supersonic aircraft, and it has therefore been assumed that an extension to a total paved length of 14,000 ft may be desirable.

Runway Width

22. At the present time, and in accordance with international standards, runways at major international airports are 150 ft wide.

23. The introduction of very large aircraft, such as the stretched version of the Boeing 747 and the C5A, suggests that for new airports a runway width greater than the present minimum would be a wise precaution. Accordingly, a width of 200 ft has been assumed.

Separation between Runway and Taxiway

24. The current ICAO recommendation for the separation between the edge of a taxiway and the nearer edge of an instrument runway is 490 ft.

25. It is possible that the requirements associated with Category II and Category III operations may be more stringent than those associated with Category I operations; on the other hand it is likely that many existing airports built in accordance with present or earlier criteria will be cleared for Category II and Category III operations. It therefore seems unlikely that there will be any increase in the separation required between a runway and a parallel taxiway.

26. A separation of 500 ft between the edge of the runway and the nearer edge of the parallel taxiway has been assumed. With the runway and taxiway widths envisaged (namely 200 ft and 100 ft respectively) this results in a separation of 650 ft between centre lines.

Taxiway Width

27. The current ICAO recommendation is 75 ft. Although taxiways of this width are in use at many major international airports, it may be inadequate for future aircraft in the long term. A width of 100 ft has therefore been assumed.

Printed image digitised by the University of Southampton Library Digitisation Unit

Separation between Parallel Taxiways

28. The current ICAO recommendation is for 170 ft between the nearer edges or 245 ft. between centre lines. But this would give only 17 ft between the wing tips of two Boeing 747 aircraft (unstretched version) when opposite each other and displaced from the centre lines towards each other to the maximum extent.

29. To provide positive clearance for future large aircraft and allow an additional safety margin for unknown development a separation of 250 ft between the nearer edges has been assumed, which results in a separation between centre lines of 350 ft.

Numbers of Taxiways

30. The layout and number of taxiways depends upon the runway layout. The objective will be to minimise taxiing time between runway and apron area by providing as rapid and as unobstructed a route as possible. Thus layouts modelled on figs. 1 and 2 provide three taxiways parallel to each of the inner runways.

Navigation aids

31. Under the Airports Authority Act 1965, the Authority is precluded from providing navigational services except with the consent in writing of the Minister. The Minister has given his consent to the Authority providing visual aids (such as runway, taxiway and approach lighting).

32. Although the use of the runways is predicated on specific runways for landing and take-off (depending on wind direction), circumstances may require a landing runway to be used for take-off or vice-versa. In view of this and to offer optimum airport capacity at all times, the Authority would wish all the runways to be useable for either landing or take-off under all conditions. This would mean making all four runways instrument runways in both directions with visual and non-visual aids appropriate to Category III operations and auto-land. It would also mean having a ground movement guidance and control system to enable aircraft to move freely on the ground in meteorological conditions requiring automatic landing.

Central Development Zone

33. This consists of three main areas:

(*a*) A *central distributor* providing the main access route into and out of the airport with links at various points along its length to the terminal and other installations. The planning would allow for a road system and also for a supplementary system.

(*b*) Areas for *passenger, cargo and maintenance* facilities and other buildings either side of the central distributor. These facilities would include secondary distribution systems, terminal buildings, car parks and, in the case of aircraft maintenance facilities, hangars, workshops, etc.

(*c*) *Aircraft apron areas* for the handling and servicing of aircraft and their contents. Apart from individual aircraft stand positions, the apron area would include areas and roads for the parking and movement of the

Printed image digitised by the University of Southampton Library Digitisation Unit

many vehicles and other ground handling and servicing equipment; it would also include fixed apron services. Terminal aprons (i.e. those associated with passenger and cargo terminal facilities) are dynamic areas where aircraft do not remain parked for protracted periods, whereas in maintenance areas aircraft on repair or major overhaul often remain on the aprons for long periods of time.

34. The precise layout in the Central Development Zone will depend upon local characteristics, the type of traffic and the airlines involved. Activities concerned with the operational handling of aircraft and their contents should be kept separate from other activities which, although essential to the operation of the airport, do not have to be located in operational areas. As much flexibility as possible must be preserved for the long-term future against new techniques and developments.

35. An indication of the main airport installations and of other airport activities was given in the Outline Specification already provided to the Commission (paragraphs 12 and 15 refer); many of these would necessarily be located along the Central Zone, for others advantage would be taken of locations away from the Central Zone.

36. The Airports Authority will seek to exploit its assets to the best commercial advantage. Whereas the majority of development areas within the boundary must clearly be designated for terminal and maintenance facilities and for general airport administration and operation there will be areas less appropriate to those particular activities and suitable for other "airport-related" facilities. These other areas may predominate near the airport boundary, and their exploitation and development will depend upon local planning considerations.

Preliminary planning

37. Before any detailed design and construction work can begin, a master development plan for the airport has to be drawn up.

38. Its preparation will depend upon the final decision on location and timing of the airport, but the process of arriving at that decision will have covered aspects relevant to such a plan and the time required to prepare the plan subsequently will benefit from this.

39. The following list gives an indication of particular interests (apart from the Authority itself) who would be involved:

(*a*) Airline companies (particularly those who will be using the airport in its first few years).

(*b*) Board of Trade (notably from the Air Traffic Control and navigation services requirements at the airport).

(*c*) Local authorities, including highway authorities.

(*d*) Transport authorities (e.g. on road and rail connections to the airport).

(*e*) Customs and immigration.

Printed image digitised by the University of Southampton Library Digitisation Unit

(*f*) Fuel suppliers.

(*g*) The Post Office.

(*h*) Cargo interests.

40. In the course of its work, the Commission will no doubt also be concerned with most, if not all, of these interests.

Initial construction

41. The extent and type of initial construction will depend upon the traffic demand, its expected rate of growth and the nature of services which the airport may be expected to handle in the initial stages. It will also depend upon the local characteristics of the particular site.

42. Starting from the point of acceptance of the master plan, and assuming that the initial installations would comprise a 12,000 ft runway, parallel taxiway, link taxiways, holding areas, an aircraft apron for about 20 aircraft with terminal facilities, administration and air traffic control buildings, it is estimated that about six years of detailed design and construction would be required for completion *on an "average" site* (i.e. one not involving abnormal terrain or special constructional requirements).

43. The above rough estimate of time is an "optimum" figure in the sense that it should allow for work to be done under most favourable cost conditions resulting e.g. from competitive tender action and the avoidance of abnormal working hours. The period could be shortened by adopting "crash programme" techniques.

44. The time estimate assumes that an appreciable amount of survey work would be carried out beforehand and that the definition and allocation of responsibilities between authorities concerned with the provision of access and services would already have been settled. The time taken to carry out access workd, services, diversions, etc. has not been considered as these depend very much on local conditions at particular sites.

Special engineering services

45. This section describes certain services which the airport will need and gives an indication of their possible magnitude, but purely as illustrations, not forecasts.

Storm water drainage

46. The requirements cannot be clearly defined in the absence of a selected site. This particularly true of the storm water run-off from unpaved areas which entirely depend upon the nature of the soils on the site. It is also impossible to quantify the need for storm water balancing reservoirs since this depends on the nature of existing water courses and their acceptance rate. Where they are required, the location of balancing reservoirs could be inside or outside the main airport boundary depending on the site characteristics and space available within the boundary.

Printed image digitised by the University of Southampton Library Digitisation Unit

47. The only indication about run-off which can be given at this stage relates to that arising from possible paved areas according to an assumed rate of rainfall. The information given below is therefore by way of *illustration* only; the highest rate of discharge may arise from circumstances different from those assumed and its assessment and method of disposal can only be determined by reference to particular site characteristics.

48. On the basis of the initial construction described in paragraph 42 above (which could amount to a paved area of the order of 400 acres) the rate of run-off from the paved area would be about 22,000 cubic feet of water per minute, arising from a rainfall rate of one inch in one hour.

49. For the fully-developed airport, where the paved area might eventually amount to the order of 4,000 acres, the rate of run-off from that area arising from the same rainfall rate would be about 220,000 cubic feet per minute.

Other services

50. These comprise sewage, fresh water, electricity, gas and domestic fuel oil (as an alternative to gas).

51. Specimen assessments have been made using assumed figures for annual passengers and airport staff to provide an *illustration* of possible requirements. These are given in tabular form at Appendix A.

52. Basically, the *sewage* requirement is equal to the amount of fresh water consumed plus small quantities of surface water from the enclosed yards and from infiltration.

53. The *electricity* supply should be at extra high voltage and should be duplicated, preferably from different sources of supply against failure of one of the supply systems. In addition to the possible requirements illustrated in Appendix A there will be some small requirements for navigation services located outside the airport.

54. The choice of *domestic fuel* will depend upon its cost and upon the particular site, but with a general preference for gas with fuel oil as an alternative. Whatever fuel is in fact chosen it will be desirable to have a reserve capacity of six weeks of winter consumption readily available for use on the airport.

Fire—main services

55. It will be desirable to have at least two separate systems to reduce pressure losses from excessive pipe runs. The initial construction could be served by a single system, the second system being introduced when the parallel runway on the far side of the development area is constructed.

56. On sites where balancing reservoirs are needed, the reservoirs might also serve as fire-main storage provided they can be conveniently located for that purpose.

Printed image digitised by the University of Southampton Library Digitisation Unit

Aircraft fuel requirements

57. At this stage we must base future assumptions on the continued use of present types of hydrocarbon fuels, even though some alternative may eventually be developed. The consumption at Heathrow at present averages approximately 1,000 gallons per aircraft movement. The growth in aircraft size will increase the average consumption per movement and on the basis of known developments and past experience it may be assumed that the average may double during the next decade. Thus, *as an illustration*, a range of annual movements from 50,000 to 500,000 would produce a range of annual demand of 100,000,000 to 1,000,000,000 gallons.

58. The average consumption for the long-term future will depend upon the nature of the traffic and in particular the ratio between long-haul (requiring a greater uplift) and short-haul services. Airlines' commercial practice may also affect the position since to some extent they can take advantage of price differentials and restrict their uplift in more expensive areas.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX A

SPECIMEN SERVICE REQUIREMENTS—(Excluding storm water drainage)

(NOTE: These figures are for purposes of *illustration only*)

Assumed figures of demand	Sewage	Fresh water	Electricity	Domestic fuel—gas	Domestic fuel-oil (as an alternative to gas)
Through-put of: 5 million passengers per annum with 10,000–15,000 airport staff	110 cu ft per minute	180 m gall per annum	18 MVA	600 m cu ft per annum	3·3 m gall per annum
Through-put of: 50 million passengers per annum with 75,000 airport staff	620 cu ft per minute	1,000 m gall per annum	70 MVA	1,600 m cu ft per annum	9 m gall per annum

Printed image digitised by the University of Southampton Library Digitisation Unit

Bibliography of Existing and Proposed Airport and other Projects Involving Construction on Fill, Reclaimed Land and Over Water

PRESENTED BY THE BRITISH AIRPORTS AUTHORITY

A. Existing airports on reclaimed land (marine sites)

1. Kai Tak Airport, Hong Kong

Engineering News Record, 7 October 1954, p. 284
Journal ICE, June 1957, pp. 275–325
Proc. ICE, June 1961, pp. 157–184.

A new 8,350 ft runway built in relatively deep water in Hong Kong Harbour. 3·2 miles of sand and stone sea wall contain 3·3 million cu yd of pumped sand to reclaim 179 acres.

2. Palisadoes Airport, Kingston, Jamaica

Civil Engineering and Public Works Review, September 1959, pp. 1029–30
Airports and Airport Engineering, March and April 1959.

A new 7,600 ft runway built into Kingston Harbour at Palisadoes. The terminal area had unsuitable material removed before filling with pumped sand.

3. Singapore Airport

Journal ICE, no. 7, June 1939, pp. 69–104.

The site was bunded off into suitable areas and after allowing the sand to dry out, earth was placed in 2 ft layers "in the dry". The perimeter sea wall, approximately 5 ft wide by 10 ft high, was formed of coral blocks and capped with concrete.

The circular landing ground had a diameter of 3,000 ft and about 9,000,000 cu yd of filling was required to reclaim some 300 acres.

4. Rongotai Airport, Wellington, New Zealand

Royal Engineers Journal, vol. 73, December 1959, pp. 379–390
New Zealand Engineering, 15 March, 1958, pp. 28–29
15 September, 1960 pp. 325–332
pp. 333–340
15 December, 1960 pp. 445–451
15 April, 1961 pp. 130–132
15 August, 1961 pp. 273–278.

Part of airport constructed on area reclaimed from the sea. The fill was obtained by levelling a hill.

5. Genoa, Italy

Engineering News Record, vol. 161 no. 21, 20 November, 1958 pp. 46–7
Engineering News Record, vol. 152, 27 May, 1954
The Aeroplane, 28 February 1968.

Area Reclaimed: 250 acres.

The runway, the long leg of the "L" shaped reclamation, lies parallel to the coast and measures 6,300 ft. It can be extended to 7,100 ft. Concrete caissons for the runway sea wall measure 65 ft by 20 ft by about 35 ft deep and are sunk on a prepared rubble bed. Larger caissons form a parallel protective breakwater. Runway embankment constructed by hydraulic filling. Short leg tipped from the shore. The overall width of the main runway area is 1,066 ft.

6. San Francisco International Airport, USA

Civil Engineering ASCE, August 1948, pp. 52–4 and 84.

This is a description of the work involved in moving 9,500,000 cu yd of fill from a borrow area to the area to be reclaimed for the airport.

7. John F Kennedy Airport, New York, USA

Engineering News Record, 2 May 1957, pp. 30–34.

A general article on the development of the airport with a reference to the fact that the area was tidal marshland before being reclaimed by hydraulic filling with 70 million cu yd of sand and fill. Construction commenced in 1942.

Printed image digitised by the University of Southampton Library Digitisation Unit

8. Newark Airport, New Jersey, USA

Construction Methods and Equipment, vol. 47 no. 1, January 1965, pp. 98–101.

This is a description of the methods used to move 12,000,000 cu yd of sand fill 9 miles from the lower bay of New York Harbour and its placing at Newark Airport where it was used as a surcharge on 325 acres of marshland. The land reclaimed has been used for new airport facilities.

9. Philadelphia South West Airport, USA

Engineering News Record, 10 June 1948, pp. 86–87.

Sand and gravel fill used to reclaim tidal swamps on the banks of the Delaware River. The fill material was obtained from a borrow area 2 miles from the site.

10. Washington National Airport, USA

Civil Engineering ASCE, vol. 11 no. 3, March 1941, pp. 165–168.

350 acres of mud flats reclaimed, using 19,500,000 cu yd of hydraulic fill, for part of airport, which is on a bank of the Potomac River. The underlying compressive silt was removed and replaced with gravelly material dredged from the river.

11. San Diego, USA

Civil Engineering ASCE, vol. 11 no. 7, July 1941, pp. 421–422.

Areas for municipal and naval airfields were reclaimed on tidelands in conjunction with major improvements to the harbour. Dredged material consisting of sand, shell and clay had good bearing qualities. Lack of strong tides and currents facilitated the work. More than 100 million cu yd was dredged to reclaim several thousand acres for airports and other uses.

12. New Orleans, USA

Engineering News Record, vol. 155, 21 July 1955, p. 26.

Description of the construction of a Naval Air Base on swampland. Unsuitable material was removed from the runway area and replaced with sand dredged from the Mississippi River.

13. New Orleans, USA

Construction Methods and Equipment, vol. 43, April 1961, pp. 100–102.

Runway extended 2,000 ft into Lake Pontchartrain. Fill placed between timber bulkheads.

14. Tampa, USA

Engineering News Record, 15 June 1967, p. 64.

1·5 million cu yd of sand from Tampa Bay have been pumped to cover 170 acres to a depth of 8 ft in the development of the airport site.

15. Jacksonville, USA

Engineering News Record, 31 August 1967, pp. 48–49.

On a swampy 4,500 acre two-runway site, underlying clay pockets were replaced with 1,500,000 cu yd of sand.

16. Omaha, USA

Engineering News Record, 8 April 1954, p. 23
5 August, 1954, p. 25.

3·3 million cu yd of fill hydraulically moved from dredged area to form ramp for runway extension on flood plain of Missouri River.

17. Sattahip, Thailand

Engineering News Record, 1 December 1966, pp. 14–17.

Construction on drained marshland, 1·1 million cu yd of laterite were rolled in layers to form a 3 ft thick subgrade runway construction.

18. Tullamarine Airport, Melbourne, Australia

Engineering News Record, 29 September 1966, pp. 40–45.

On a 5,500 acre site, 1·6 million cu yd of unsuitable clayey rock were stripped and replaced with 2·5 million cu yd of crushed rock for an 8,900 ft runway.

Printed image digitised by the University of Southampton Library Digitisation Unit

19. La Guardia Airport, New York, USA

Proc. ASCE, vol. 76 Proc.-Separate 43. November 1950.

Describes the steps taken to prevent a recurrence of flooding of the original airfield, allowed by a settlement of 5 ft.

Transactions New York Academy of Sciences, sec. II vol. 27, January 1965

World Construction, vol. 18, no. 5, May 1965, pp. 22–28

Prestressed Concrete Institute Journal, vol. 11 no. 2, April 1966, pp. 73–78

Construction Methods and Equipment, vol. 47 no. 1, January 1965, pp. 98–101

Engineering News Record, vol. 173 no. 24, 10 December 1964, pp. 34–38

Engineering News Record, 19 September, 1963, p. 50

Civil Engineering ASCE, April 1964, vol. 34, p. 78

Civil Engineering ASCE, August 1966, vol. 36, p. 32

Dock and Harbour Authority, January 1967.

Description of the 50-acre extensions on piles and concrete deck structure over the East River.

20. Westland Heliport, London

Royal Aeronautical Society Journal, vol. 64, July 1960, pp. 399–407.

Offshore "T" shaped R.C. slab platform extends 103 ft into and over the River Thames.

21. Schiphol Airport, Amsterdam, Netherlands

Shell Aviation News, no. 337, 1966, pp. 12–15.

Runways built on fill above general polder level, using pumped sand.

B. Proposed airports on reclaimed land

1. Auckland Airport, New Zealand

New Zealand Engineering, vol. 10, 1955, pp. 210–214.

Description of the problems associated with the siting of an airport for Auckland.

2. Oakland International Airport, California, USA

Engineering News Record, vol. 155, 25 August 1955, p. 29

Proc. ASCE, vol. 81 Proc.-Separate 721, June 1955.

Description of the airport's 11·5 million dollar expansion programme which includes a 1,400 acre reclamation proposal.

3. Chicago, USA

Engineering News Record, 16 February 1967, p. 5
9 November 1967, p. 60
18 May 1967, p. 30.

A proposal has been made to de-water an area of Lake Michigan to provide land for Chicago's third airport.

4. Cleveland, USA

Engineering News Record, vol. 150, 2 April 1953, p. 50.

This article refers to a proposal to drain part of Lake Erie to provide land for an airport.

5. Los Angeles, USA (Santa Monica Bay)

Engineering News Record, 24 August 1967, p. 15.

The proposal is for a pile-supported platform 5 miles long by 2 miles wide in 240 ft of water to provide a 4 number 12,000 ft runway airport. A report in the Aeroplane of 1 May 1968 (p. 5) states that the project has been abandoned because of "astronomical cost".

6. San Francisco, USA

Engineering News Record, 3 February 1966, p. 15.

Proposed new airport on filled land in San Francisco Bay, adjacent to the existing airport. Hills in the area would be levelled to provide 30 million cu yd of earth.

7. Saltholm, Denmark

Aeroplane, 17 July 1968, pp. 4–7 inc.

Printed image digitised by the University of Southampton Library Digitisation Unit

C. Other existing airports (no literature on these has been found in the time available)

1. Gibraltar
2. Santos Dumont (Rio de Janeiro)
3. Sydney, Australia
4. Barcelona, Spain
5. Logan (Boston), USA
6. Papeete—Faaa—Tahiti
7. Sydenham, Belfast, N. Ireland
8. Kastrup (Copenhagen), Denmark

D. Existing reclamation schemes for other purposes

1. Rotterdam

Engineering News Record, 2 November 1967, pp. 26–27.

5,500 acres reclaimed for industrial and port development at the mouth of the Maas. Work done in consortium.

2. Malmo, Sweden

Ports and Terminals, August 1968, p. 36.

1,000 acres reclaimed using dredged mud and sand. In all 2,000 acres are to be reclaimed to increase dock area.

3. Kobe, Japan

Civil Engineering ASCE, vol. 34 no. 12, December 1964, pp. 76–77

Engineering News Record, 29 June 1961, pp. 36–37.

Reclamation of waterfront areas for industrial development. Rock fill from areas to be developed for residential housing to be used. Latter article says 100 million cu yd of rock to be used.

4. River Tees

Dock and Harbour Authority, January 1967, p. 282.

1,750 acres to be reclaimed in Seal Sands area. Work now in hand by various contractors.

5. Hong Kong

Dock and Harbour Authority, October 1966, pp. 174–182.

Various reclamation schemes in progress to provide land for industrial and commercial use. Mention also made of reclamation for airport.

6. Southampton

Civil Engineering and Public Works Review, vol. 47 no. 547, January 1952, pp. 42–45.

In the course of improving navigation channels to Southampton, some 2 million cu yds of dredged material were pumped on to marshland. (See also section on contractors).

7. Copenhagen, Denmark

Dock and Harbour Authority, January 1967, p. 298.

Over 90,000 sq metres reclaimed to provide for port improvement.

8. Port Elizabeth, New York, USA

Dock and Harbour Authority, January 1967, p. 269.

700 acres have been reclaimed for a new terminal by dredging 15 million cu yds of stiff clay and placing it on marshland. The clay is topped with a 3 ft thick blanket of sand. Underlying peat was compressed by placing sand surcharge 20 ft thick

E. Proposed reclamation schemes for other purposes

1. The Wash

Civil Engineering and Public Works Review, vol. 49 no. 574, April 1954, p. 397.

Research in hand to study ways of reclaiming 50,000 acres for farmland.

2. Lake Michigan, Indiana, USA

525 acres being reclaimed to provide land for two steel companies.

Printed image digitised by the University of Southampton Library Digitisation Unit

NOTES OF PROCEEDINGS
FRIDAY 1 NOVEMBER 1968

ROYAL COMMONWEALTH SOCIETY'S HALL
18 NORTHUMBERLAND AVENUE
LONDON WC2

Before: the Hon. Mr. Justice Roskill (*in the Chair*)
Professor Colin Buchanan
A. Goldstein, Esq.
A. J. Hunt, Esq.
Professor D. Keith-Lucas
Arthur Knight, Esq.
Professor A. A. Walters

J. Caines Esq. (*Secretary*)

Oral evidence taken from:
British Airports Authority
Mr. Peter Masefield

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

British Airports Authority

MR. PETER MASEFIELD called

1. *Chairman*: As this is the first meeting of the Commission, it might be of help if I were to say who is who. On my far right is Professor A. A. Walters, who is Sir Ernest Cassell Professor of Economics at the University of London and holds his Chair at the London School of Economics. Next to him is Mr. Arthur Knight, who is Finance Director of Messrs. Courtaulds Ltd. Next to him is Professor Keith-Lucas, who is Professor of Aircraft Design at the College of Aeronautics, Cranfield, and President of the Royal Aeronautical Society. On my left is Professor Colin Buchanan, Professor of Transport, who holds his Chair at the Imperial College of Science and Technology. On his left is Mr. A. Goldstein, Consulting Civil Engineer and partner in the firm of Messrs. R. Travers Morgan & Partners. On his left is Mr. A. J. Hunt, who is Principal Planning Inspector of the Ministry of Housing and Local Government. Those, together with myself, are the members of the Commission. On my immediate right is Mr. John Caines, Secretary of the Commission, and at the far end on the left is Mr. Frank Thompson, who is the Commission's Director of Research.

The circumstances in which the Commission was appointed last summer are well known and I do not think it is necessary to refer in detail to its terms of reference or to the five stages in which it will carry out the task which the Government has entrusted to it. But it may be helpful to explain that the Commission is currently engaged in the first stage of its task during which it is looking at all possible sites in order to identify a small number for more detailed consideration hereafter. Stage II will consist of public hearings, which will be conducted by Mr. Hunt, of local evidence on each of the short listed sites. This stage will run concurrently with Stage III which consists of investigation and research into matters relevant to the choice to be made between the short listed sites.

There will follow Stage IV when the Commission will be considering all the material which by that time will have been produced. Finally, we come to the last stage, Stage V, which will be a public inquiry and will allow all interested parties to test the material which has been produced during the earlier stages.

It may, however, be of some general interest if I say on behalf of the Commission that very shortly after its appointment the Commission decided that the only way in which it could properly discharge its task was to go back to the beginning and arrange for a full site search for another London airport which would take place throughout South-Eastern England.

The Commission has already received a number of valuable suggestions for sites from members of the public. Among the sites which have been suggested are certain coastal and off-shore sites, the possible suitability of which has been widely canvassed in the Press and elsewhere. For some of these the Commission has thought it necessary to establish at once whether there are any special features which would make airport construction there difficult or, indeed, impossible. This involves a programme of trial borings in a number of cases in the area of the Thames estuary. The Commission is therefore getting into touch with those organisations who have suggested some of these sites to discuss such a programme with them.

As regards possible non-coastal sites, it is likely to prove necessary to make more detailed checks than have hitherto been made of possible runway alignments and other features by inspecting some of these possible sites during the coming winter and early spring.

All these inspections and tests are a necessary part of the process of selecting the sites for the short list. These inspections and tests will be conducted with as little disturbance as possible. The Commission will be most grateful for the co-operation of landowners and their tenants when this is sought. The Commission emphasises the fact that these inspections and tests, which are, or will be taking place, must not for one moment be thought to be an indication for or against one site rather than others, and the Commission is particularly anxious that no alarm should be caused. It is for this reason that the Commission does not propose to make public the list of possible sites at present emerging from the search. Many of these sites are in any event unlikely for various reasons to find a place on the short list.

The Commission's terms of reference include the timing of the need for a third London airport. Some evidence which has already been submitted questions that need and suggests that existing airports within or without the London region could satisfactorily cater for likely traffic demands for a substantial time after the capacity of

Printed image digitised by the University of Southampton Library Digitisation Unit

the present London airports has been exhausted. The Commission has noted this view and will give it consideration in due course. It may be that Mr. Masefield will want to comment on this suggestion today.

As is well known, the Commission advertised last July for suggestions for possible sites and general evidence. It is very grateful for the response which has been forthcoming. If the Commission wishes the public oral amplification of points made by those who have been good enough to send in written submissions, this will be sought at public hearings of which today's is the first. This series of public hearings will be mainly directed to issues bearing upon the initial site selection. The Commission hopes to take evidence on such matters as airport capacity and design, surface access, air traffic control and regional planning. The Commission does not intend to explore matters of defence in public at this stage for obvious reasons of national security but the Commission has been considering, and will consider, very closely with the Ministry of Defence the effect of any third London airport on various defence installations in the area of the country with which the Commission is concerned.

During these series of hearings, witnesses will naturally be expressing their own views on the points upon which their help has been enlisted. At this stage, the Commission's task is mainly to listen. But the Commission wishes it to be clearly understood that the fact that a particular piece of evidence given at this series of public hearings goes or may go unchallenged or untested must not be taken as any indication that the Commission is accepting that evidence as correct. There will be ample opportunity at a later stage for the evidence to be tested thoroughly, particularly at Stage V of the Inquiry.

There will be ample opportunity at Stage II to put forward observations and objections of a local character about the possibility of an airport at each of the short-listed sites. At Stage V there will be a full-scale public inquiry bearing on all these issues, national and local, to the extent that the latter have not been already dealt with at the local inquiries at Stage II. The Government hopes that the Commission will finish its work in the course of the year 1970. The Commission will certainly do its best to achieve this, but if it is to do so unnecessary repetition of evidence and argument must be avoided at all stages.

The Commission hopes, if all goes well, to complete Stage I—that is, the identification and publication of the short list—by Easter 1969. As soon as this stage has been reached, arrangements will be made for the Stage II local hearings, which will take place in public.

During the present series of public hearings, a transcript of the evidence will be available to anyone who wishes to buy a copy. Wherever possible, documents referred to by a witness will be made public. I understand that Mr. Masefield, who is our sole witness today, has been good enough to have available copies of the papers by reference to which he will be giving evidence today.

The Commission's next public hearing in this series will be held next Friday, 8th November, at the City Temple Hall near Holborn Circus. Evidence will then be taken on the planning issues to which the problem with which the Commission is faced gives rise. I need hardly say that the public and the Press will as always be very welcome.

I conclude by expressing our thanks to the Royal Commonwealth Society for allowing us the use of their hall for the first meeting today.

I do not know whether there is anything you want to say by way of introduction, Mr. Masefield, or whether you would prefer me to start asking you questions?

2. *Mr. Masefield*: I wonder, Mr. Chairman, whether I might make a brief statement at the start. We from the British Airports Authority have listened with care and attention and, if I may say so, appreciation to what you have just said and your cogent outline of the importance of the work of the Commission. I would like to emphasise right at the start that we of the British Airports Authority stand ready to offer to the Commission every assistance within our power in the achievement of a satisfactory solution to this most complex problem. I am very grateful to you, Mr. Chairman, for the opportunity of stating very briefly at the start the position of the British Airports Authority towards the third London airport.

With your permission, Mr. Chairman, the first point I want to make is that we of the British Airports Authority very much welcome the setting up of the Commission and, as I have already said, we are ready to assist in every possible way in finding the right solution. I would like to emphasise that we are clear without any doubt whatever that a third airport is needed, and urgently needed, for London's traffic. In our view, this need is pressing. All the available evidence shows that Heathrow will be up to capacity in terms of aircraft

Printed image digitised by the University of Southampton Library Digitisation Unit

movements at peak periods from the summer of 1970 onwards—and I must emphasise "at peak periods".

That means that in the summer of 1970 and thereafter the required increases in air transport movements at Heathrow will be able to be accommodated only during the less busy periods of the day, which are, of course, less satisfactory to the travelling public and also less satisfactory to the airlines. After 1970, unless substantial delays and inconveniences are to be accepted at Heathrow, there must be transfers of services from that airport at busy periods. The experience of Kennedy Airport, New York, where there have been massive delays during the past summer is an indication of what happens when an airport goes above capacity. We now have data, valuable to us although unpleasant to Kennedy, on this which underlines the problems we may be facing.

3. I was going to ask you about that later in the morning, Mr. Masefield.—— I will not pursue that matter at this moment.

I would like to emphasise one further point, and it is fundamental to all that we are doing. We believe that the purpose of air transport, and, therefore, the purpose of airports, is to serve the travelling public—I am sure that that is what we are all here for—and shippers of cargo and, therefore, to serve an increasing proportion of the nation's trade and travel by air. To do that, we must have adequate capacity at the right place at the right time. This is the nub of the problem. Air transport and the airports which serve air transport must be accommodated within the wider aspects of our national life.

It has been suggested that we of the British Airports Authority have not regard for other than the strictly technical and economic considerations. But we fully understand the acute concern of many members of local communities and of the public as a whole on this subject of noise. I hope that we as people who also live in the social environment, and some of us near airports and who have been the targets of a number of brickbats on amenities around our airports fairly acutely understand the problems of reconciling this difficult issue of the national need for adequate airport capacity with that of fitting this need into our everyday life.

To complete this very brief statement, may I make four quick points. We have submitted a formal written statement* on our approach to this problem in documents which the Commission has and which I hope are now available to the Press. The first point which I must stress is that a new airport which will eventually and inevitably be the largest international airport in Europe is needed with urgency primarily to serve London's traffic which will begin to exceed the available capacity of Heathrow and Gatwick, with some minor help from other smaller airports, not later than the mid-1970s.

Secondly, in consideration of the many and exceedingly complex criteria which I know the Commission is so well aware of, the problem of access seems to us to stand very high. We are concerned that the new airport shall be located where airlines and passengers and shippers of cargo will willingly use it and can do so economically. If that is not fulfilled, we have great concern that a new airport might be a white elephant. There is, of course, one example of this, without being unkind to them, namely, Dulles in the United States, near Washington, and the over-capacity at Washington National. Because Dulles is not convenient, the airport is not being properly used. Therefore, we believe that accessability to the traffic and commercial acceptance of the site is tremendously important from an airport's point of view.

Thirdly, we in the British Airports Authority recognise the extreme importance of regional planning considerations. This is not just lip service to it. We recognise the close affinity between regional planning and accessibility and viability and the problems of the employment which a new airport will bring.

Finally, may I take this opportunity to deny publicly and quite emphatically that we are set on Stansted regardless. I know that this is thought to be so in certain quarters, but it is not so, and I would like to underline that we are looking to help you in finding the right site, wherever that site may be. We do not intend to make Stansted the third London airport by subterfuge, by back-door methods, or even by front-door methods. As far as we are concerned, the whole question was opened up anew when this Commission was set up, and all bets are off. In our view, all sites start afresh to be assessed on their merits. Our one concern is that the right site on all counts shall be chosen, wherever it may be, and we stand ready to help in any way we can to the achievement of a final and clearly right and acceptable solution as soon as possible, because the search for the third London

* Page 1.

Printed image digitised by the University of Southampton Library Digitisation Unit

airport has been exceeded only, I think, by the search to get the Channel Tunnel started in time.

May I, with respect, wish the Commission well in its mammoth task and thank you, Mr. Chairman, very much for your courtesy in permitting me to make this opening statement on behalf of the Authority which in the end will have the job of owning, building and operating the great new airport wherever it is located.

4. Thank you, Mr. Masefield. May I begin by going back to our basic terms of reference and upon which you touched at the beginning of what you have just said—the timing of the need for a four-runway airport, assuming that there is such a need. I want to ask you to elaborate what you have said and to give us and the public the benefit of some information on certain things which you published in one of your recent lectures, a copy of which I have before me. I refer to a lecture* which you gave at Bournemouth on 1st October last to the Guild of Air Traffic Control Officers. I am looking at page 11. Could you give us the figures for the total aircraft movements at the four London airports in 1967? Before you do so, may I ask you, so that there is no confusion in anybody's mind, to define the difference between aircraft movements and air transport movements? ——The problem of capacity is the nub of the question. May I first define the types of movement which have to be accommodated at various airports? One can divide them into three categories. There are, first, air transport movements, which include the scheduled air services, which are self-explanatory, and non-scheduled services, which are operated, not to a timetable, but largely to a seasonal demand. One has to associate with them a rather small number of additional associated flights which are positioning flights to get aircraft in the right position at particular airports, and essential test flights out of airline maintenance bases. That is the first category of traffic which a major international airport must accommodate, and that is its primary job in life—air transport services for the airlines, scheduled and non-scheduled.

The second category, which is large in America but is not yet large here, although it is growing fast, is business flying, the business flying aspect of what is known as general aviation. We are having to accommodate a growing amount of this traffic at our airports, and I am sure that it is right to do so because an increasing number of business houses are using their own aircraft, which range in size from quite small aircraft to aircraft of the size of the BAC 1-11. This type of flying is increasing by between 13 and 17 per cent per annum in this country, and faster than that in America.

The third category of operations that airports have to cope with in different degrees at different airports is what one might term miscellaneous—military communications flights, which are quite small, training, and particularly airline training, and private club flying, and so forth, which does not come into Heathrow to any extent but is significant in other locations. Those are the three categories of traffic—air transport movements, business flying and other movements.

If we include in the London pattern Heathrow, which is by far the largest, taking about 60 per cent of all traffic in the London area, Gatwick, Stansted, which is very small, Luton and Southend, for the full year ended 30th September—these are the latest figures—these five airports handled 318,000 air transport movements and 44,600 business movements; and with the miscellaneous, which are virtually none at Heathrow, or a very small number—under 100—to quite a large number at places like Southend and Luton, the total for the year was 434,000 movements at those five airports. Those represent the work load of the airports, the throughput in the year, when everything is added together—the peak traffic in the height of the summer and the much less traffic in the winter.

But the real thing which determines the capacity of the airport is how much can be accommodated during the peak season without unreasonable delays. Of course, "unreasonable delays" is something which needs definition. The definition which we are using and which is generally used among international airports is a delay of not more than four minutes on average. Heathrow currently is operating, and has operated through this past year, with average delays not exceeding four minutes. That does not mean to say that there are not occasions when delays are substantially more, and experience shows that about 2 per cent of movements are about five times the average. In other words, at Heathrow 2 per cent of flights in and out are delayed up to about 20 minutes when we have an average delay of four minutes.

* "Airports, Air Traffic Control and Air Traffic". Published in the *Journal of the Guild of Air Traffic Control Officers*, Autumn 1968, pages 8–13.

Printed image digitised by the University of Southampton Library Digitisation Unit

This is tolerable. What is not tolerable is the position which our friends across the water at Kennedy have got into this summer, which is average delays of more than half an hour, which means that 2 per cent of those are five times that amount—2½ hours.

In this current summer, at Heathrow we have touched a peak of 71 movements per hour. With two runways active independently at the same time, we shall, when we have extended one of them to make it balanced up with the other, have a peak hour capacity of about 80 movements. So we are at 71 at the moment at the peak, which is not just a very sharp peak, but a fairly flat top peak through the busy hours of the busy days of the summer. On all the evidence which we have in front of us, there seems no doubt that we shall be up to the 80 mark—in other words, hitting our head on the ceiling—by the summer of 1970 at Heathrow, and then we shall be in the position that to make progress——

5. May I interrupt you for a moment, Mr. Masefield? You are going a little ahead of the chronological order in which I want to elicit the evidence. You have given a figure for Heathrow down to the September quarter of 1968, but I began by asking you to go back to what you said in your lecture at Bournemouth on 1st October. I want you to bring out the 1967 figures and to show how the rate of growth is developing. If you look at the figures which you gave there, you see that your Heathrow figure of annual movements for 1967 is 236,000 in that calendar year. The total for the London area is 383,000, with related figures of 71,000 at Gatwick, 43,000 at Luton and 33,000 at Stansted. You have not included Southend. Why has that been left out?——The lecture from which you are quoting was given to air traffic control people and, therefore, Southend was not particularly relevant in that pattern. I was not necessarily considering the whole of the wider London operation.

6. What we are trying to get at, and what we are finding difficulty in getting accurate figures for, are the figures for the London area as a whole at any given period of time. You mentioned earlier a figure of 434,000 for the year ending last September, but the table I have before me gives the total air transport movements for that same period, including Southend, on an estimated figure as 318,300, with a total for Stansted of 37,502. I want your help in trying to elicity the overall picture for the London area, taking into account all the available airports which are being used now and which can be used hereafter for the purpose of disposing of whatever air traffic must come into or go out of London airports.——May I make two comments? First, on the question of growth, in the year 1967, Heathrow had for the calendar year 236,000 movements of all sorts. Nine months later, in the year ended September 1968, that had gone up to 245,000 movements. Gatwick was 71,000 in 1967, and it is virtually 72,000 in the nine months later full year period. Stansted had 33,000 in 1967. In the year ended September 1968 the figure had gone up to 37,500. Luton was 43,000 and is now 44,000. The general growth is going ahead at about 6 per cent at the moment, which is a little less than the average for the past 15 years, which has been just over 7 per cent. The reason for this is the recent restriction on travel.

7. What would you have expected the rate of growth to be if there had not been this restriction on travel in the last year or two?——I believe that it would have remained at 7 per cent, and there is some evidence that it is coming back to 7 per cent. It is a remarkably consistent average over the past 15 years.

8. Taking the figures which are in your original lecture and the figures which you have given for the last nine months, it appears that you are able to dispose of the traffic without undue difficulty around the available airports. You say that Heathrow will be exceeded in 1971. What about Gatwick?——The Gatwick situation is rather more complex. At Heathrow, we have a very wide variety of primarily scheduled services to all points of the world. It is going ahead steadily at the rate which I have said—about 6 per cent per annum. Gatwick has a very seasonal arrangement of services at the moment in which non-scheduled exceed the scheduled, because British United Airways is the only large scheduled airline operating out of Gatwick. Gatwick's capacity is not yet reached except at a very few weekends in the summer, when it is getting close.

The real issue is the extent to which airlines will be willing to off-load services out of Heathrow at peak periods to Gatwick. This is one of the imponderables which I am sure airline witnesses will give you valuable evidence about. Airlines find it very expensive and very difficult from a sales and operating point of view to have at the peak of the year a few services going

Printed image digitised by the University of Southampton Library Digitisation Unit

from different airports. All their sales activities must be reorganised; all the positioning flying for aircraft has to be altered. If we could achieve with airlines what we would like to achieve—that is, to overspill from Heathrow into Gatwick—Gatwick would be able to absorb a good deal of this additional demand for air transport and other services until about 1974–75, when it will in its turn be reaching capacity.

9. So far as I have been able to trace it through the documents which I have seen, almost every forecast of the rate of permanent growth made over the last seven years or more has been falsified in the event. May I turn to the Departmental Committee whose Report* was published in 1963? I notice that that Committee estimated that there would be 195,000 air transport movements by 1967. The actual figure was, I think, very much higher.—— Yes, this is true. It is a remarkable feature of air transport that all statisticians, for whose help we are most grateful, are chary of believing that the rate of growth will go on at the same rate. The Inter-Departmental Committee on the Third London Airport, which published its views in June 1963, said that Heathrow would, by 1967, require 195,000 movements. In fact, it was 221,000. For the total London area as defined, they said that the figure would be 279,000 by 1970. In fact, by 1967 it had already reached 258,000. When the Government published a White Paper in May 1967,† not all that long ago, they forecast for Heathrow an upper limit of 218,000 air transport movements. In fact, in the year 1967, 221,000 were achieved.

10. Those figures are air transport movements, not air traffic?——Yes.

11. Is the margin of error proportionately the same?——If anything, it is rather larger, because other types of flying have increased at a greater rate.

12. Am I right in thinking that the reason why all these forecasts have proved so wrong is that the number of passengers demanding air transport has increased far more than was expected?——Yes. Whereas the rate of movements over the past 15 years has averaged 7·2 per cent, the increase in passenger traffic has gone up at more than 14 per cent and cargo even more, at about 18 per cent.

13. What I was leading up to was this. We are moving now into the period of very much larger aircraft. We have the Boeing 747 and others like it coming along in the next few years. They will enable very much larger numbers of passengers to be carried. Will that affect the rate of growth?—— We hope that it may contain it to about the present rate. Without them, it would go ahead at a faster rate. The Boeing 747 will be used initially only on the very big, fat routes. Although they may reduce some frequencies at peak periods, there is the question of the on-carriage which they will promote—carrying passengers and spreading them round once they have arrived at London. London is the great Clapham Junction, not just of Europe, but of the world. These big aeroplanes will feed into London, and increased numbers of smaller aircraft will carry on the passengers—and when I say "smaller aircraft", I still mean 100 to 200 seater aircraft. In our view, and on the forecasts we are able to make with the airlines, the total growth in air transport in terms of aircraft movements will remain about the same. The growth of passenger traffic may well go up faster.

14. I realise that it is difficult to gaze into the crystal ball and to see these matters clearly, but if that is right, while you have your 7 per cent growth—and it may be more—you may be able to cope with that to some extent by means of using larger aircraft in so far as they are going to operate on the transatlantic routes?—— We have taken these into account in the forecasts. These are not just global forecasts. They are done route by route, and the total is added together. It appears that the rates we have taken between our upper and lower, optimistic and pessimistic—whatever way you look at it—forecasts of about 5 to 6 per cent per annum will not be too low. The actual rate will be greater, we think.

15. Have your research staff done any work on the extent to which you might get a drop in the number of aircraft transport movements while being able to contain the expected rate of growth in passengers and thus, perhaps, minimise the need for another London airport?——Yes, we have done that with some care. After 1970 the amount of other than air transport traffic at Heathrow will be relatively small. We believe that, if one takes an annual figure, Heathrow will be coming up to about

* *Report of the Inter-Departmental Committee on the Third London Airport* (CAP 199) (HMSO, 7s. 6d.).
† *The Third London Airport* (Cmnd. 3259; HMSO, 3s.).

Printed image digitised by the University of Southampton Library Digitisation Unit

280,000 transport movements, leaving only about 20,000 others to be spread among everything. Heathrow will gradually become almost wholly an air transport operation. But this means that further capacity must be provided in the London area at a number of smaller aerodromes for business flights and testing and training, and so forth.

16. Assume for the moment that your estimate of the growth in passengers is right. How do you propose in the years ahead, until any third London airport has been built, to distribute the aircraft which will be necessary, whatever their number, to cope with the totality of passengers which will have to be carried?——I wish that we could dispose. The fact is that airlines, who are the primary problem here, will naturally take their own view of where they should go and when they should go and what their economic problems are in staying or moving.

17. You have anticipated very usefully my next question, which is the extent to which you are masters of your own fate. ——In this respect, we are not, either wholly or even to a large extent, masters of our own fate, because airlines will move once they see a permanent home. What they are very reluctant to do is to move and then move again, because upheaving and putting a substantial number of services to other than their main airport is very expensive. It is all right when they can recruit staff locally and get their roots down, but if they can do it for only a short period, they are very reluctant to move and, in some cases, would rather incur considerable delays or move to an airport outside this country where they already have facilities and staff. It was interesting, to take an example, that when BOAC had some industrial problems, some of the airlines which they handled elected to go, not to Gatwick where they could have been handled, but to Amsterdam where they already had their own staff and facilities. Therefore, before I answer your question, I am merely saying that we cannot be sure what airline opinion will be, although we can make a guess.

If I might take that as a premise and look possibly to 1972, which is when we have got our head stuck through the ceiling at Heathrow and Gatwick is coming up fairly fast, we would expect that air transport movements in 1972 in the London area would be just under 400,000 possibly 395,000 on the best estimates we can make. Heathrow would still be taking the bulk of those—280,000. Gatwick would have gone up from its present 44,000 to about 65,000 by then. Stansted, which in this past year handled only 2,600 air transport movements out of 37,000 movements altogether—Stansted's operation is primarily training at the moment; the air transport movements are few as far as services are concerned—might be handling about 5,000 air transport movements; Luton perhaps 20,000; and Southend perhaps 25,000. That adds up to 395,000.

18. The 5,000 at Stansted would be inclusive of the present 2,600, would it? ——The present 2,600 would have virtually doubled to 5,000, which is still a very small number.

19. To meet that, would you have to cut down the other air transport movements? ——No. Stansted's total movements by then would have gone up to between 40,000 and 50,000.

20. From the present figure of 37,500? ——Yes—to maybe 50,000. But most of those would be non-air transport flights. The assumption I have made—and I must underline this—is that that would be a willing transfer by airlines of a substantial number of services to Gatwick.

21. Suppose that the airlines are unwilling to do that?——If they are unwilling, what we come to is two things. The first is unacceptable delays at Heathrow. They will be competing for "the golden hours", as they are called. So that the delay factor is bound to increase. A Kennedy position will be beginning to develop. I hope that, in those circumstances, we should be able to get them to reschedule into the less busy hours, to some extent; but there is very little room to manoeuvre. If you leave London at the wrong time for New York, you arrive at four o'clock in the morning, or something of that sort, when passengers are not willing to travel. This is uncommercial and airlines will not do it. The only other thing for them to do is to transfer services abroad. I think that this would be the inevitable result. The fact that some larger aircraft are coming along would enable the position to be held down a bit; but this is not significant in the total pattern.

22. Am I right in thinking then that your figure for 1972 is a total of about 470,000 aircraft movements?——That is our expectation of five airports—about 470,000

Printed image digitised by the University of Southampton Library Digitisation Unit

movements in the London area, of which Heathrow would handle 300,000 and be up to capacity.

23. Is that an aggregate figure, or does it leave anything out?——That leaves out of the equation the miscellaneous matters which I have mentioned, which are everything from military communications to private flying, and these could be a considerable figure.

24. Therefore, the global figure will be substantially higher than your 470,000? ——It could be close to 600,000.

25. In 1972?——Yes.

26. If one is looking at this globally, 470,000 is rather an over-conservative figure?——We would believe that that is so.

27. Then we have to assume that you as the airport authority, by 1972, which is perhaps, if all goes well, 18 months or two years after we shall have finished our labours, are going to have to dispose of about 600,000 aircraft movements in and around the London area?——In the London area as a whole. But I should mention that there are 29 aerodromes—I do not call them airports—of one sort and another in the London area. Biggin Hill is a great centre of what I term miscellaneous flying. They had 145,000 movements last year. We would be reluctant to do this, but if we have to bar Heathrow and later Gatwick to some of the smaller business aeroplanes, which is an uncomfortable thing to do because business people want to join flights from off airline places of origin, then Biggin Hill and possibly even Northolt, and a lot of smaller aerodromes, would be taking an increasing amount of traffic.

28. May I retrace my steps? Would your estimate of passenger growth be affected by the possible development of the advanced passenger trains—the development of faster trains?——No. In the analyses we have made, we have expected our domestic services into Heathrow and Gatwick to grow at a substantially lower rate than the major international flights. The interesting thing when you analyse domestic services in this country is that it is clear that the trains have made a very big impact on distances short of Manchester and Liverpool. Beyond that—to Edinburgh, Glasgow, Belfast, and so on—they have not had any effect, and we would not expect them to have much effect on the so-called long-distance internal flights. In fact, Edinburgh was one of the fastest growing routes out of Heathrow in the past year.

29. *Professor Walters*: I should like to put an additional question on that. The advanced passenger train will be travelling, it is said, at speeds of about 150 miles an hour. This puts Scotland within 2½ to 3 hours of London. This is quite closely competitive with the time taken by aircraft when one takes into account the time taken to get from the centre of the city to the airport. I wondered whether you have done any research on the effect of the Tokkaido line in Japan, which runs passenger trains at speeds of between 150 and 200 miles an hour. Could you shed some light on this? I wonder whether you could do that?—— There are two points here. First, the element concerned in the total pattern is relatively small. Therefore, a very big effect on that would have a relatively small effect on the whole pattern. Secondly, we would not expect this to be within the period I am talking about—this side of the mid-1970s, when we will be in problems. Equally, I am sure that the air transport industry will not take this lying down. We hope to have a much faster connection with Heathrow before long, thanks to rail. This is setting a rail service to catch a rail service. If we can get to Heathrow in 20 minutes, Manchester immediately comes back into the picture as far as air transport is concerned, particularly when 600 mph aircraft are operating. I feel that this is not significant, therefore, within the period we are talking about, up to about 1980.

30. *Chairman*: May I come back to the question of passenger capacity? I wish to refer to your red book which I received about 48 hours ago and in which there is a lot of valuable information. I have numbered the pages consecutively, in which case it is page 16. Alternatively, it is page 2 of Annexe 2, under the general heading "Air traffic demand and airport capacities". On the second page you give what you call some "historic data". You give the achieved aircraft movements for Heathrow as 244,000 for the twelve months ending last August.* Could you help us on the manner in which you calculated these capacities—peak rate, peak day, sustained capacity rate, and so on? I want to ask you about some of the particulars at the bottom of page 3 to see whether I have understood them correctly. Could you explain the

* Page 14.

Printed image digitised by the University of Southampton Library Digitisation Unit

underlying philosophy behind this in relation to the way in which it is done?—— I am not quite clear about your question.

31. How do you define your peak rate and your sustained capacity rate?—— The situation is fairly complex in relation to the number of runways available at an airport, which also has an inter-action with the air traffic control back-up of leading aircraft into and out of individual runways. All over the world, under Instrument Flight Rules—and this is what we are talking about, because the larger international airports are normally operating under Instrument Flight Rules—the peak rate which can be achieved on to an individual runway is about 40 movements an hour per runway as long as those runways are not interfering one with another. When one looks at it in detail, this is what is achieved at Heathrow, Kennedy, O'Hare at Chicago, Los Angeles. It is about the same all over the world—40 movements per hour at a peak short-term period.

"Sustained capacity rate"—what can be sustained for hours on end without going over the top, and "going over the top" means incurring serious delays—works out all over the world at about 32 movements per runway per hour. This means that at Heathrow we have a sustained capacity rate, in the present state of the art of air traffic control, of ground movements, and so on, of about 64 movements per hour, sustained without going above the average delay of about four minutes. Kennedy, New York, with three runways operating concurrently, has about the same rate, 96—32 multiplied by three. We have 32 multiplied by two, because we have two active parallel runways. That is defining the peak capacity of the airport spread over a number of hours at the busy time of year. On that basis, there falls out, when one takes into account the peaks and the valleys, the much less traffic at night, and so on, about 150,000 movements theoretically per annum per runway as being approximately, in broad brush terms, the capacity of a runway in IFR conditions.

32. I was a little puzzled when I read this. I did not find your figure of 32 very readily apparent in those calculations. I understand the figure of 64, because Heathrow has two runways. But the figure for Gatwick is given as 45, with one runway. Am I right in thinking that your throughput figure of 300,000 is calculated on the basis of a sustained capacity rate of 32?——Yes, sustained capacity rate, but modified by the fact that in the winter the pressure is off. At night we have not only restrictions on noise, but the fact that between the hours of about two and four in the morning people do not want to fly very much. That is why 150,000, which represents only about 17 movements per hour per runway throughout the year, is what falls out as a throughput over the year compared with 32 as a sustained capacity rate.

33. Therefore, the relevant figure in respect of the 300,000 at the bottom of page 3* is really 32 and not 64?—— Thirty-two per runway.

34. Why is Gatwick given as 45?—— I can better illustrate this rather complex point by a slide, slide 4 [Fig. 4†], which shows the capacity at Heathrow and Gatwick. At Heathrow we have two runways, each with a sustained capacity rate of 32 movements per hour. This slide shows the situation at Heathrow and Gatwick as we stand at present. (*A slide was shown.*) Heathrow, with two runways, has 32 movements per hour per runway as a sustained capacity rate; and for short periods at a peak it can go up to 80—that is, 40 per runway per hour. Gatwick, with one runway, has 32 and 40, exactly the same ratio as Heathrow, but when you bring a second runway into Gatwick, which we shall do in the early 1970s—the time we shall be able to do it depends on many things—we go up only by a relatively small amount, from 32 to 45 in a sustained case and in a peak. The reason we cannot go up higher than 45 to the theoretical 80, as we could at Heathrow, is that, first, there is, with present techniques of air traffic control, some interference between Gatwick with the second runway and traffic coming out of Heathrow. Unless we pull down Heathrow, we cannot put up Gatwick. Further, there are problems of a second runway at Gatwick being too close to the existing runway to give completely independent operations. One ideally wants the runways so spaced apart that they do not interfere with each other and each can perform landings and take-offs completely concurrently. We get a total by combining these together, which is shown on slide 5 [Fig. 5†], of 96 with three runways, two at Heathrow and one at Gatwick and 109, which is an addition of 64 and 45, with four runways between these two airports, combined with a peak short-term capacity

* Page 14.

† See insert facing page 48.

Printed image digitised by the University of Southampton Library Digitisation Unit

of 120 on three runways and 125 on four. I hope that in the later 1970s, with improvements in air traffic control methods, it will be possible to push up the Gatwick capacity; but we would be imprudent at this moment to reckon on more than I have shown there.

35. This matter of interference between Heathrow and Gatwick raises in an acute form the question of how far from Heathrow any new third London airport should be in order to prevent operations there interfering with Heathrow or, for that matter, Gatwick. What are your views on that?——Ideally, in a world where nothing matters except air traffic control, which is not the world we live in, the further away the better. On the other hand, from all other points of view, the nearer together, although reasonably dispersed, the better. At New York, they have a situation in which Kennedy and La Guardia are only seven or so miles apart and Newark is only about 18 miles from them. So that they have a very close pattern. Air traffic control procedures—and this is not our responsibility, and I must not usurp the responsibility of air traffic control—can be so arranged that interference is at a minimum. In the London pattern, where it is clear to us that three airports are required, a broad, roundabout system would reduce interference to an absolute minimum were three airports operating concurrently. That is not the position at the moment. We have criss-cross routes now. An aeroplane going out of Gatwick for Glasgow crosses just west of Heathrow. But it might be in future that an aeroplane going to Glasgow would go south from Gatwick and then east and up in a roundabout system. This would cause a small increase in flight distances and flight times. In answer to your question, from the point of view of those who want to use them, if we could keep these airports within 20 miles of each other, spread round London, this would be ideal. I do not suppose that we can do that. What one wants is an airport which both the travelling public and the airlines will use.

36. What would you regard as the minimum distance from the centre of Heathrow it would be wise to site a third London airport?——It depends on runway alignment, which is tremendously important.

37. I want you to assume for the purpose of answering my question that it is the ideal runway alignment.——Twenty miles is about suitable. But this is an elastic figure. One cannot be absolutely precise, because the location of the airport towards the city centre—

38. Twenty miles from Heathrow?——Gatwick is not much more than 20 miles from Heathrow.

39. But you get interference?——There is some interference in present methods. Air traffic control are working on a simulated model which will eliminate this interference, we hope, and I think they are relatively optimistic that this can be done.

40. This brings me back to the question which I should have asked earlier. Is the figure of 32 fixed for all time?——No, and I would hope that gradually it will be increased. But it is certainly a figure which is not improved upon anywhere in the world at the moment as a sustained rate.

41. Suppose that you have either improved air traffic control or high accuracy navigational equipment plus a high speed turnoff, that would push the figure of 32 up dramatically?——Not dramatically.

42. Substantially; let me alter the adverb. ——I think that if we had a 10 per cent improvement, we and everybody else would be happy.

43. Do you really say that it would produce an improvement of only 10 per cent?——Within the foreseeable future, this is the sort of figure which might be achieved.

44. What do you take as the period of "the foreseeable future"?——Between now and about 1976. Unfortunately, these things take time to develop. A new system of air traffic control is not just round the corner. Improvements in the present system are in hand. This Mediator plan, and so forth, on the present air traffic control operations will push the ceiling up a bit, but, in my view, the figure is not more than 10 per cent within the next 10 years.

45. Therefore, you think that we should work on a sustained capacity rate of not more than 35 or 36?——I hope that we shall achieve 36. At the moment, it can be achieved throughout a full hour, but if we could get it on a continuous basis that would be quite good going.

Printed image digitised by the University of Southampton Library Digitisation Unit

46. May I go into another matter? If a decision about a third London airport is taken in 1971, when would you expect it, first, to start operating, and, secondly, to be fully operational as a four-runway airport? ——We have looked at this matter in some detail. I wonder if I could come to a slide which shows the possibilities. It is slide 8 [Fig. 6*]. (*A slide was shown.*) We have made various calculations on various types of site. Assuming that a selected site is one in which there are no usable or adequate runways in existence, and supposing, for the sake of argument, that the date of the decision is 1st January 1971, we could have one runway and associated terminals in business by about the middle of 1976 at a fairly quick rate of progress, not dragging our feet in any way. Naturally, we should be anxious to get it going as quickly as possible. That is a 5½-year programme to get what one might call an easy site into business with one runway, and it would then go on being built afterwards. But that would be quite good going, and I do not think that we would beat that even by a crash programme. A difficult site might take a year more, or even longer—an inland site. If one can look at what one might call a typical off-shore site where there was reclaiming to be done, the period would go up to about 7½ to 8 years.

47. Before you got the first runway?—— Yes.

48. So that if the Commission recommended an off-shore site and the decision to build one was 1970–71, you would not expect to have the runway running until 1978?——Yes. We should, of course, do everything we could to speed it up, but there is a tremendous lot to go through, and reclaiming is not a quick business.

49. Are we right in understanding you to say that you think that there is as much as a two-year difference between making the first runway of an inland site and the first runway of an off-shore site?——Yes—at least that.

50. *Mr. Goldstein*: I am a little astonished to hear you say, Mr. Masefield, that for the minimal use of a new airport—that is, one runway and the minimum of new buildings required with an initially small use—you would require 5½ years, given that from the start you know the site and the technical processes. I should have thought that that was a long time for a crash programme. ——We are talking about one runway, with terminal buildings, taxiways, aprons, access within the airport and all the associated air traffic control and similar services operating. We think that 5½ years—

51. I do not mean all the associated operations and facilities.——Perhaps I was wrong in saying "all". Enough to make a safe and efficient operation; and that assumes that if there was a gap between the recommendations of the Commission and the Government endorsing them we were getting on with our planning during that period. There is a lot of work to be done, including going through the necessary land procedures, before we can start building.

52. *Chairman*: That depends how many procedures you have to go through after the matter has been pretty exhaustively looked at by us, as I hope it will be.——I would not wish to pretend to be an expert on planning procedures, but there is a great deal to be done concerning surveys, land acquisition and getting the detailed technical side worked out so that we make a proper job of it. The full design work on a new site must be gone into in considerable detail before we can start. We have to let tenders to get construction going, and then construction has to be hurried along.

53. *Mr. Goldstein*: These are not serial items; they can be run in parallel. I should have thought that you might do better with a crash programme. Bearing in mind the kind of construction programmes which have been achieved, if one can run these things in parallel form, you will not perhaps get the cheapest form of construction, but I should have thought that you would get a quicker form of construction.——We would, of course, do everything possible to get it forward quickly because of the urgency of the requirement. But, do what we would, we would not be able to beat this by a significant amount. New York, when they came to a new site and got on as fast as they could at Idlewild, now called Kennedy, it took 6 years from starting it to getting it into operation. We would try to beat that. Los Angeles took longer with theirs. We would not be dragging our feet. We think that 5½ years is about how long it would take.

54. *Chairman*: How long did Gatwick take to build?——Gatwick was quicker, but a great deal of work had gone on beforehand. It was very much smaller than

* See insert facing page 48.

Printed image digitised by the University of Southampton Library Digitisation Unit

we are talking about, and there was an airport in existence.

55. Will not you be able to make use of a good deal of the work we shall have done ourselves or cause to be done before we come down in favour of a particular site? ——We would, of course, hope that during the Commission we should have some idea of what seemed to be coming out in the wash and would try to get forward with outline planning in our own operations. But we are talking about putting down a long runway. It must be very much longer than Gatwick's runway. It must be strong enough to take the heaviest types of aircraft and, therefore, much thicker. The terminal buildings, taxiways, and so on, must all fit in with the end result, not just with one quick answer. I am not trying to be slow, but we would be wrong to say to you that it would be less than 5½ years. If it would be helpful, we would be glad to put in a paper in detail on this matter to the Commission.

56. I think that that would be helpful. Would I be right in thinking that, on the basis that you are right, it would be an advantage if the chosen site, if there has to be a third London airport, were a site with an existing runway?——It would be helpful to have a runway for this reason—an existing and acceptable runway. To be acceptable, it must be long enough and strong enough. The reason it would be helpful would be that airlines could start to transfer services to a site which they were going to remain at, a site which would be permanent, on to a temporary runway, as long as it is adequate, while construction was going on on the first of the permanent runways. The operation could be started around an existing acceptable runway, if there was such a place.

57. No existing runway at any of the existing London area airports would be a suitable runway as such?——Probably not for permanent operation, but possibly for getting started. There are two, and possibly three, places which would be suitable.

58. Those are?——Obviously Stansted. It has a 10,000 ft runway which is usable by large jets, not for the fullest load take-off for the West Coast of the United States, but adequate for operations of most aircraft up to full load. Bedford is another which has an excellent runway and could be used. There are one or two others which are military fields which possibly could be entertained as sites which have excellent runways. Some of them are rather far away.

59. Am I right in thinking that the present Stansted runway is not ideally orientated?——It is not ideally orientated from a noise point of view at Bishop's Stortford.

60. Or from a cross-wind point of view? ——No; it is good from a cross-wind point of view. It is about 12 degrees out of the prevailing wind. It has more than a 99 per cent usability. It is not ideal from the noise point of view. If Stansted were considered later as a possible site, I have no doubt that the final orientation of the runways would be different from the existing runway. But the existing runway could be used in an interim period.

61. I mentioned earlier that your 1st October lecture showed Stansted as having handled about 33,000 aircraft movements in 1967, and this morning you gave us a slightly higher figure for the year ending 30th September 1968. What is the present theoretical maximum of Stansted?——The theoretical capacity of the runway is the same as for any other runway. It is 32 scr per hour, which equates over a year to a theoretical total of about 150,000 movements per annum. That is the theoretical capacity from a runway point of view. But it is no good having a runway without associated terminal facilities.

62. What are the existing constraints upon your using Stansted to the extent of its full theoretical capacity?——The theoretical capacity of Stansted as far as movements on the runway are concerned could not be matched in any interim period by temporary buildings such as we are now constructing, because the site at which these buildings are being built is not adequate for major extensions, nor suitable for permanent operation.

63. My question was, what are the existing constraints on its use up to its full theoretical capacity?——The existing constraint really is the terminal building capacity, which is very small indeed, plus some aspects of air traffic control.

64. Let us consider terminal buildings. You are enlarging those at the moment? ——Up to the present, Stansted has got along with nissen huts originally put up by the United States Air Force. Recently we achieved planning permission for an

Printed image digitised by the University of Southampton Library Digitisation Unit

interim passenger terminal with a floor area of 24,000 sq ft which would be suitable to handle in an hour three Boeing 707s or two of the stretched DC 8s. In other words, its capacity is about 600 passengers per hour—300 each way, in and out. With the peaky nature of the type of operation that Stansted is handling, it is about 400,000 passengers a year in the current state of the art.

65. You anticipate using it to that extent up to 1971 or beyond when a third London airport is built?——We foresee no prospect of going above that capacity within the period we are talking about until we know where the third London airport will be.

66. My question was whether the process was going as far as that.——The answer definitely is "No". Our forecast for Stansted is that by 1972 we might have 5,000 air transport movements in the year; and if one looks further ahead, it is conceivable that they would more than have doubled by 1976 to, say, 10,000 air transport movements.

67. If that is right, you will, in fact, when you have finished the new terminal building for which you have planning permission from the Essex County Council, have a certain amount of spare capacity at Stansted?——We will have spare movement capacity.

68. I am obliged for the correction. You will have spare movement capacity?——Yes, that is correct.

69. What do you propose to do with it?——Well, we do not operate services. This is available.

70. What do you propose would be done with it?——We would expect, Chairman, that the movements of transport, air transport, would remain relatively small at Stansted, unless it is selected as a third London airport, the reason being that no airline is going to transport any significant amount of service to Stansted or anywhere else unless two things are known; one is that it is going to be a permanent site, so they will not have to move out again, and, two, that access is available which at the moment it is not.

71. It remains a fact that once this terminal building is finished—whatever your anticipation may be at the present—there is and will be some theoretical spare capacity.——There will be capacity in aircraft movements which is largely taken up at the moment by training flights, both airline training flights and lesser small aircraft on instrument training flights.

72. Would you expect that number of training flights to increase?——We would expect that by 1976 standards the total movement might be around 50,000 in the year, of which 10,000 would be air transport movements, 20,000 business flights—small business aircraft—and that means another 20,000 of training and miscellaneous flying.

73. That gives a global total increase of about 13,000 aircraft; is that right?——That is right.

74. Between now and 1976?——About of that order.

75. I do not want to enter into any controversy over the new Order* because it is no business of the Commission as to whether that is right or wrong as a policy. That is between you and the Government and Parliament. But I just wanted to understand its effect, with your help, upon the possible future development of Stansted. Although perhaps it is partly a legal point, I am sure you are much more familiar with this than I am. Am I right in thinking that back in 1962 when the Town and Country Planning Act was passed it created a certain number of authorities under the rather lugubrious title of statutory undertakers; is that right?——That is right.

76. At that time the Airports Authority did not of course exist, but when you were set up in 1965 you were given the privilege of joining the ranks of the statutory undertakers, were you not?——Yes.

77. Under the 1963 Order† which is referred to in the new Order, these statutory undertakers—not including yourself—got certain exemptions from the need to comply with the requirements which more ordinary mortals have to comply with under the Town and Country Planning Acts; that is right?——That is correct.

78. This recent Order brings you into those ranks; is that right?——That is correct, Sir.

* Town and Country Planning: General Developments (Amendment) Order 1968 (SI 1968, No. 1623) (HMSO).
† Town and Country Planning: General Development Order 1963 (SI 1963, No. 709) (HMSO).

Printed image digitised by the University of Southampton Library Digitisation Unit

79. And puts you in effect in the same position as if you had been brought in directly in 1962?——That is so.

80. Now can we just see a little further if we have got this right. You still cannot build new runways without planning permission?——That is correct. The permissions are hedged around with a number of safeguards.

81. Yes, but the position is not quite so clear is it regarding buildings. Am I right in thinking there are so many exceptions within exceptions; I am not quite sure I have got this right, but am I right in thinking you could in general build a completely new terminal building either at Stansted or Heathrow or anywhere else without planning permission from anybody?——We could in theory, Chairman, but we have already undertaken to the Minister in a letter which we wrote on 9th July to the Minister of Town and Country Planning that we would consult with local planning authorities about any proposed development.

82. I was going to ask you about that in a moment; I saw a reference to it in the press the other day. But can we just stick to the theoretical position. You are now, if this Order stands, in a position to build any new terminal at Stansted or anywhere else without seeking planning permission?—— We are empowered to do it.

83. And therefore had this been in force, say, a year ago you could have done what you are now doing at Stansted with the Essex County Council's consent without their consent?——We are empowered to do that, but there are safeguards—overriding safeguards—in Article 4, and that provides that if the Minister or the planning authority with the consent of the Minister are satisfied that it is expedient that a particular development should go forward under the normal full planning procedures on application that can happen and if that happens then permission given by the General Development Order ceases to apply and the statutory undertaker—which is us in this case—has to make an application for permission to the planning authority in the usual way, and we have so undertaken to do.

84. I am afraid I interrupted you. You were about to refer to or read a letter you said you had written to the Minister.—— We have undertaken, Chairman, to consult with planning authorities on any development at any of our airports, and the letter—which I will leave with the Commission—says, if I may read it out——

85. I have not in fact seen it. I saw reference to it in the press the other day. ——It is to the Minister of Town and Country Planning, 9th July 1968: "In connection with the making of the above Order I write"—and this is the Secretary to the Authority—"formally to confirm that the British Airports Authority recognise that development at an airport can have a marked effect on the amenity of adjoining land, and on other planning proposals for the area. It therefore gives this undertaking that, notwithstanding the permission granted by the amending Order, it will consult with the local planning authority before carrying out any development for which permission is given by that Order, save in the case of minor works urgently needed to enable the airport to function efficiently." Under that, if planning authorities felt, after we had consulted with them, that there were objections to our proposals, then they could ask, under Article 4 of the main Order of 1963, the Minister of Housing to have the matter dealt with under the full formal planning procedures, so we would be back on the original line.

86. Yes. Then is this right, just winding this up, that at the moment Stansted is running at the rate of about 37,000 aircraft movements, that is the global figure including a small number of air transport movements, per annum?——That is correct.

87. You cannot exceed that or substantially exceed that at the moment without your extension to the terminal building; is that right?——That is correct.

88. When that extension is finished, in fact you will have a considerable amount of what I ventured to call earlier—I do not think you like the phrase—spare capacity at Stansted, but that spare capacity it is not your intention to use at any foreseeable time between now and 1976, except up to about a total of 50,000 aircraft movements?——In general terms, Chairman, that is correct, but of course it is not for us to use it. We do not foresee and—I say this—we are sure in effect that no significant airline development will take place at Stansted beyond about four times the present amount of air transport movements up to about 10,000 this side of 1976. Now 10,000 is a quarter of Gatwick's air transport movements. This would be

Printed image digitised by the University of Southampton Library Digitisation Unit

within a total of about 50,000 which we believe would be about the maximum that Stansted would be used by that date, 50,000 total of which 10,000 would be air transport, and only four times the amount of air transport at the moment. What would probably happen is that the amount of training flying that is going on would be reduced proportionately.

89. *Professor Buchanan*: You said you addressed that letter with the undertaking to the Minister of Town and Country Planning. As we have not had a Minister of Town and Country Planning for fifteen years, did it reach its destination?——May I correct that. It was the Minister of Housing and Local Government under the Town and Country Planning General Development (Amendment) Order.

90. *Chairman*: It did reach its destination, I suppose?——Yes, it was addressed to the Minister of Housing.

91. Can I go now to another topic altogether: we have had a great deal of evidence sent to us and we are going to have a public hearing later on—in about three weeks' time—on the problem of noise, and some of it, if I may say so, was extremely impressive by its size and detail. It has been suggested by some of those who are concerned with the appalling noise of aircraft rising from Heathrow and Gatwick that if a third London airport were built it would be possible to close either Heathrow or Gatwick or both. What do you say about that?——In our view, Chairman, this is completely impossible.

92. I thought you might give that answer, but I thought the societies should have the benefit of knowing before they come along.——In the first place of course within the period that we are talking about —if I may say that I regard that as up to about 1975—Heathrow and Gatwick are going to be required flat out to meet the requirements. As I have said, we shall see Heathrow coming up to capacity in peak periods by 1970 and gradually the trough periods being filled in, and Gatwick from about 1974 coming up to capacity, and therefore they are going to be required to do the job, because there will be nowhere else that could replace them. But supposing academically that a monster airport could be put up to replace Heathrow and Gatwick and to allow for further traffic growth, it would require quite early on six runways and quite shortly after that going up towards ten runways to meet the scr as against the traffic which was demanding to be accepted.

93. I did a little homely arithmetic the other day on this—I probably got it wrong—and it came out somewhere between 9½ and 10 runways. Is that about right on the estimates that you have already given publicly as to the likely growth of air traffic?——I am delighted to know that your arithmetic and mine virtually correspond.

94. Has anybody—because this must be pursued seriously—any experience of operating an airport of that size anywhere in the world?——No, Chairman. The five runways are in operation at O'Hare, Chicago, but they are non-parallel runways and they cannot all be used all the time together, and efficiently. If we are going to get our 32 per hour per runway, we would have ten virtually parallel runways and the size of the airport required to accommodate that number of parallel runways would be certainly above 25 square miles of area. It would involve very long taxiing distances in some instances and a very time consuming amount of time spent on the ground getting into the terminal areas. It would not be possible to feed an approach system from Air Traffic Control into more than about four runways simultaneously without some interference one with the other and funnelling a vast amount of traffic all down into one area would be extremely difficult, but I think more important than this that if one airport was set to do all the work for the whole of the London and home counties area in one spot, it would be firstly incredibly inconvenient for those who did not live in that sector of London, and secondly the surface transport to carry eventually perhaps a hundred million passengers a year all into one place would be a mammoth undertaking, particularly when it came into London. I feel very strongly that the right answer not only for London but for all other major cities—and New York, Chicago, Los Angeles and San Francisco are certainly taking the same view—is a multiple airport solution to this enormous traffic problem—traffic in the air and of course traffic on the ground.

95. One association of considerable standing suggested that an airport twice the size of Heathrow—and any new airport on your basis would be twice the size or more —is too large a concept and that your needs, if such they be, ought to be met by two new London airports each about the

Printed image digitised by the University of Southampton Library Digitisation Unit

size of Heathrow in different sectors round London. Have BAA given any thought to that?——We have not considered this in detail, Chairman, no, but what we do consider is that at Heathrow when running at its capacity, capacity in aircraft movements will gradually get bigger in terms of throughput of passengers and aircraft get larger and more cargo capacity, and therefore the national investment and employment at Heathrow is getting more and more widespread and complex, but it is of course becoming a social centre of its own. On calculations that we did a short while ago, the working population of Heathrow—which is now 40,000—spent in the area around Heathrow about £70 million in the year on butchers and bakers and the normal problems of life, and this is therefore an economic centre all on its own, and I do not think we can see Heathrow moved. We certainly need this third airport to take about twice the traffic but we shall still need Gatwick with its large—reasonably large—capacity as well to give the variety of movements that are required.

96. But you will still need the second Gatwick runway?——We shall, I am sure, Chairman, and I think I must emphasise in this connection that we must not think only of air transport movements, there are others to be associated, but I wonder if I might show one other slide in this connection.

Chairman: Professor Buchanan just wants to ask one question.

97. *Professor Buchanan*: I do not think the suggestion was for one moment that we would be denying the expenditure of whatever it was—£70 million—round Heathrow. All we have said is that there is a two-runway airport at Heathrow, there is a sort of potential 1½ at Gatwick, and there is to be a four-runway airport somewhere else. The suggestion was going to be made to us that one might get a more equitable distribution round London by keeping Heathrow and instead of having a new four-runway airport having two two-runway airports the size of Heathrow, so that you got a more equal distribution.——I certainly, Chairman, would not wish to be dogmatic that that might not be a solution because Gatwick of course is not a four-runway airport now or potentially and it is only just a two-runway airport with improvements in methods of handling traffic. If the deliberations of the Commission led to a recommendation that a third airport should be in such a position that Gatwick could not be continued, then we should of course have to consider that very seriously. Supposing it was found or suggested that a third airport—and I have no reason to believe this—was in the segment of London south of the river there, in, say, the south eastern corner, this might well make Gatwick untenable for the amount of traffic that we hope it will take in the future. In that case, we should be coming to a two airport solution, with Heathrow and a second London airport instead of a third, but I think that later on we should then probably require a third, still up in that sector that I have described from the north to the east, which is unserved from a population point of view with any good air transport services.

98. *Chairman*: If I am not interrupting, this touches upon a number of different facets of this, for example, the possibility of what I believe is known as sectorisation in your field. What are your views on sectorisation, or the other side of it, whether or not a new airport should be omni-directional?——We feel that sectorisation is not tenable if air transport is to serve the travelling public, because what would happen in sectorisation is that people would have to go from the centre of London to elsewhere, to a particular airport for a particular destination. This is probably inevitable for some of the lesser destinations, but there is no doubt in our mind at all that from the airline point of view, from the air travelling public's point of view and the cargo shippers omni-directional airports are essential. Without that, with sectorisation, a passenger would have to change airports if he came into London from one centre and left for somewhere else, and this would put a severe problem on traffic and long delays in air journeys. Passengers living in the London area would have to choose their airport and if someone lived at, say, Ipswich and wanted to go to Paris and Gatwick was the only airport for Paris, he would have to come a much longer journey by surface to get to Gatwick than his air journey to Paris.

99. You would find yourself in much the same position as those of us who have wanted to go from La Guardia to Kennedy in a hurry.——Indeed. But foreign airlines operating through London would be in an impossible position with full schedules. Pan American or TWA if they came into London from the west and had to leave from another airport to go east would have dead flying between the two airports and this

Printed image digitised by the University of Southampton Library Digitisation Unit

sort of thing is not really tolerable. An airline based on London and on Heathrow, if it was sectorisation, would have to choose between ignoring certain sectors to serve from Heathrow or splitting their operations and having half their operations from one airport and half from another, which of course for other reasons they may have to do anyway, but this would put the thing on in a very severe way indeed and this would be enough to turn a number of airlines from London, I think, and deprive London from being the Clapham Junction of the air, which it certainly is at the moment.

100. *Professor Buchanan*: I am not quite clear. I think you have almost reached the point, as I understand it, of agreeing that possibly instead of a new four-runway airport it might be a feasible solution for London to, say, have three two-runway airports spaced equally round—just forgetting Gatwick for the moment; I am trying to get at the theoretical pattern—each one being omni-directional but each one being related to a broad sector of the London population.——I agree with the sector of the London population and I agree that at a particular period of time two runways at Heathrow and two fully usable runways elsewhere will meet the requirements, but that is only for a period of time.

101. And two more somewhere else? ——And two more somewhere else would help. Eventually we are going to need, as the Chairman has said, 10 runways operating in the London area to serve the traffic, up to 10 runways. Some of these of course do not have to be at major airports. We are going to have some of these 29 lesser aerodromes serving some of the lesser jobs, and airports such as Luton and Southend—if neither are selected as the third London airport—will probably go on serving regional needs. But we have to look at this as a whole, not just as two or three airports doing the whole job; you have got to have lots of little airports plus, I think, three big ones, to do the job properly.

102. *Professor Keith-Lucas*: Mr. Masefield, I would like to pursue this point of omni-directional airports just a little further, if I might. I see the force of your argument very clearly but there are two points which worry me. If you have got three omni-directional airports, you must obviously have a reduced frequency to any one destination from each airport compared to what you would have if you were operating from one sectorised airport. Now there are two factors coming into this, two new factors. One is with supersonic transport—the Concorde—the purpose of it is somewhat defeated if the frequency of operation is reduced, its purpose being to get there quickly; the other point being that when we come on to the Boeing 747 or jumbo jets, this again is going to reduce the frequency. Now is there really the traffic with the increase in the size of aircraft to justify a high enough frequency to justify the three omni-directional airports?——Yes. I think the answer to this is yes on the major destinations where the really fat routes are concerned. If we take the three biggest destinations served out of Heathrow at the moment which are Paris, New York and Glasgow, each of those today would justify at a satisfactory frequency operations out of three airports. They are of course being served to some extent out of two at the moment. Glasgow is being served out of both Heathrow and out of Gatwick at the moment, and New York certainly could usefully have a second airport operating at the present time. There is no doubt in my mind that the frequency on those fat routes will be enough out of three airports as we move into the era of a third London airport to justify different airlines operating on parallel services from different airports. New York, you see, at the moment is served by three airlines at Heathrow—more than three in fact, but three major airlines—BOAC, Pan American and TWA all flying from Heathrow to New York, all at high frequency. There would be adequate frequency. I am not suggesting at this moment that TWA should go to Gatwick and Pan American should go to a third London airport, leaving BOAC at Heathrow, but nevertheless that sort of concept would give very high frequency from different airports and would serve the travelling public better because people living in different segments outside of London would have a shorter journey to go to their destination than if they had to go to the one unique airport which could only serve a small sector of the public apart from this going on from the city centre. The 747 is going to help, I think, to contain the frequency to not very much increase immediately on our present frequency, in other words, the traffic is going to be accommodated at the same frequency in bigger aeroplanes instead of more frequencies in the present size of aeroplanes.

103. Thank you very much. This obviously brings us on to the question of

Printed image digitised by the University of Southampton Library Digitisation Unit

whether supersonic transport will operate only from one airport and whether freight will operate from all airports, but I think this is what the Chairman is going to come on to next.

104. *Chairman*: I think it is probably much better if you ask the question.——We would regard it as a very serious problem indeed, as far as Concorde or other supersonic transport aircraft are concerned, if it were found that they were not able to operate out of Heathrow. The fact is of course if they could not operate out of Heathrow then almost certainly they would not be able to operate.

105. *Professor Keith-Lucas*: Do you mean from the point of view of noise?—— Yes, on noise. If they were not able to operate from Heathrow on noise they would almost certainly not be able to operate out of Kennedy and O'Hare and a number of other airports on noise, and this would therefore be disaster for supersonic transport. It would be, I am sure, absolutely unsatisfactory to the progress of air transport and the job it tries to do if supersonic aircraft were pushed to a unique possibly distant airport on the grounds of noise, because the connections of one aircraft with another are so vital that this would ruin the economics of supersonic transport. I hope very much however that because the Concorde will not of course go to supersonic speeds anywhere near an airport that this problem is not going to be one which will cause grievous difficulty.

106. Could one take it then that you see the probable use of these airports to be by every type of air transport; supersonic passenger jet and the freight aircraft will operate from all three airports?——I am sure that this must be the objective, and I hope it will be achieved, because every form of transport operating into an airport is interlocking one with the other, and therefore we must have the maximum of variety of operation. Fifty per cent of air cargo comes in the hold of passenger aeroplanes, and then some is transferred to all-cargo aeroplanes for on-carriage and vice versa. It has been suggested at various times that a wholly cargo airport was an objective to be sought. I think this is wrong for the very reason that 50 per cent of all air cargo does now and will continue I think to fly in passenger aircraft and enjoys the frequency of service which this gives.

107. *Chairman*: Arising out of your last answer—I was coming to it in a moment—you I gather are strongly of the view that you should not have cargo airports?—— Yes, Chairman. I think there may later on be a case for a major new airport or development of existing airport in the Midlands which would have a large cargo content but that of course is quite different from a separate cargo airport.

108. I think I have read in one of the papers you have been good enough to submit some figures for the development in cargo traffic in recent years. What estimate do you give as to the likely rate of growth over, say, the next 10 or 15 years?—— Air cargo, as you know, is growing at a substantially faster rate than even passenger traffic, and over the past 15 years at Heathrow and Gatwick, taken together, air cargo has gone up at 17 per cent per annum which means doubling every four years, and though there has been a temporary reduction in the growth of passenger traffic through Heathrow in the past year, air cargo has not shown such a reduction and is in fact going ahead at the moment at rather more than 17 per cent per annum, and its great point indeed—and it is a fact—is that 11 per cent of all our national value of imports, exports and re-exports—that is, by value—is now going through airports in this country, and growing, as I have said, at the rate of about 17 to 18 per cent per annum, whereas the total national growth of imports, exports and re-exports by value is about 6 per cent.

109. Is there any evidence to show that industry is attracted to a site near the airport because of the existence of air freight facilities?——There is no very hard evidence yet and I think it is a thing that should be examined further, but it is a fact that round Heathrow there is quite a lot of light industry today which is using the airport.

110. What is American experience on this?——The American experience I think is similar, but we have not examined this in depth.

111. What would you regard as the likely effect upon the carriage of cargo by air of the construction of the Channel tunnel, if it happened in the next 15 years or so?——I would not think it would affect to any substantial manner the growth of air cargo, because what is interesting about the present air cargo distribution is that it is mostly long haul operations. There is a fair amount into Europe but the growth of the North Atlantic and long haul to Australia

Printed image digitised by the University of Southampton Library Digitisation Unit

is very considerable. The Channel tunnel might even stimulate it because one can visualise even with the 747 containerised traffic from North America flying in to Heathrow and being continued by liner train under the Channel tunnel. The new 8 by 8 containers will in fact be completely interchangeable from road, rail and air. So that the real influence of the Channel tunnel is more, I think, for the bulk, heavy goods, whereas the air is for the high value goods. Textiles at the moment are very high.

112. So is the corollary of this that to try to find a site for any third London airport, one should not have too much regard for the air freight demands and should have more regard for the passenger demands? ——The two are closely linked. I would say that what suits one will suit the other.

113. Is there any evidence that what will suit one will not suit the other?——No, I think not. I would like to consider that, but at first blush, no.

114. Cargo tends to follow passengers? ——Yes, indeed.

115. Is that because all airports hitherto have been built primarily for passenger traffic and cargo has been forced to follow? ——I think this is certainly true. Cargo, prior to a year or two ago, has been the weaker brother, but it is growing so fast now and beginning to be an increasingly significant proportion of an airline's revenue that more weight is being put on cargo operations.

116. Your new large cargo terminal has been necessitated by a tremendous amount of cargo growth, has it?——That is absolutely true and you will probably see it is filling up very rapidly now. The new jumbo jets have an enormous cargo capacity under the floor. Above the floor you have the passengers and under the floor is cargo. Those are much larger than anything we have had so far.

117. Now, Mr. Masefield, earlier you started talking about the American problems at La Guardia and Kennedy and I am afraid I cut you short and said I would come to it later on. What lessons do you think we have got to learn in recommending on a third London airport from what has happened and is happening and is going to happen in relation to the New York position at the moment?——I think the first lesson is that we are approaching a danger area—not I mean in terms of air transport safety but a danger area of going over the top, of air traffic hitting its head on the ceiling; I am mixing my metaphors. Of course, five years ago New York was quite happy, it was handling the traffic, it did not have significant delay, it was really getting along; it was really where we are today. Suddenly they bumped their head on the ceiling. Delays snowballed. There are peculiarities in that the scheduling of American air transport through La Guardia and Kennedy and Newark is not done as it is done here. We have had for many years in this country an Airline Scheduling Committee which shares out the desirable frequency. I mean, we do not have 12 aeroplanes all going off at 6 o'clock in the evening as a so-called golden hour, but they are spread between 6 and 6.20, and in this way they are a help to us. The first lesson of Kennedy is once you hit your head on the ceiling the whole thing snowballs and you have disastrous delays, from the point of view of economics. The second point I would say is that one should avoid having airports as close together as they have got. They are certainly too close both from the air access and also from the surface access, because everybody who comes out of Kennedy has to go past La Guardia and jams the same road. But beyond that it is really that enough airports—which means enough runways to meet the traffic—is the requirement that we have to try and achieve.

118. It was pointed out to us the other day by some of the Air Traffic Control people who have been helping us, what the disastrous effect at New York could have been if geography had not permitted the runways to all three airports to run north-east to south-west. Even with those geographical advantages they are full to overflowing.——That is true, and of course they have in the neighbourhood of those three large airports about a dozen smaller airports which also muddy the water.

119. Their stacking problems are such, I gather, that aircraft even sometimes have to put down and refuel at Boston before going on to New York?——That is true.

120. That is an argument, is it not, for siting any third London airport as far away as possible from Heathrow, so long as it is compatible with the other problems of surface access and all the rest?——I would not entirely agree with that. I would say so sited that it is compatible with these other

Printed image digitised by the University of Southampton Library Digitisation Unit

two airports, Heathrow primarily and Gatwick also.

121. It depends where you draw the line for compatibility?——Indeed, it does, but as I stressed earlier, access is one of the key points for an airport because unless you can get to it the whole purpose falls to the ground, and what is more the airlines will not go there, and so one has an airport that is stopped being used. The purpose of this illustration here (Fig. 7*) is to show that as far as the catchment area of traffic, and to a lesser extent from an Air Traffic Control point of view, it would be convenient—I do not say more than that—and preferable to have the sector from the north to the east, the most desirable site from an air transport aspect, for the location of another airport. This is not of course dogmatic. As I have said already, it could be in the southern sector where it would have influence on Gatwick, and that would have to be weighed up. What I think we should not do is to contemplate a third London airport which would seriously affect the capacity of Heathrow. One would hope it would not have to affect the capacity of Gatwick because there we have usable capacity which is going to be immensely valuable as time goes on.

122. *Professor Keith-Lucas*: Might we return for just a moment to this question of the future development in ATC and accurate navigation systems. It seems to me that the American experience is going to force the introduction of improved Air Traffic Control in some form, and my understanding is that the technical problems are a long way towards being solved, even though it may take a while to get really accurate navigation systems into operation. When those come, as come I should have thought they must, will it not mean that the interference between airports will be less and that one could site them more closely together?——I think at a period in time that is, one hopes, true. The demands of traffic, though, are such that we require first of all the safest solution because we must not contemplate dangers of collisions because the traffic is growing so fast. Point no. 1 is going to be safety and then it has got to be quick, with minimum delays. There is a great deal of work going on on the National Air Traffic Control side of the house and it would be wrong for me to go into their technical details, but we work closely with NATCS and we believe progress is being made, but there is no breakthrough in sight, and it is like running up the downward running escalator. We are charging up as fast as we can on the airport services side—and the Air Traffic Control people on their side—to keep pace with this growth of traffic. Firstly, safety and secondly, without delays, and those are the two constraints I think we have upon us, and while we are not going to see a breakthrough in these virtually technical problems we are trying to solve them, but more than that we are having to cope with, in the next 10 years, a doubling of the traffic without delays and without inferior safety standards, and doubling the traffic through the same amount of air space.

123. Yes, you do not believe that the American situation will force this breakthrough?——It will bring of course great pressures, but our conversations—we have had a great many in the past short while—with the Port of New York Authority show that next year they will be in more trouble than this year, and they freely say this; there is no solution; the only solution in the short term is to limit the frequency into their airports and this is what they are now planning to do, the distances being different of course in the United States than in London. If we have to put the shutters up on a certain level of traffic from Heathrow, there is only really one place that this traffic can go because we have not got enough capacity in the London area, and that is Amsterdam, Brussels, Frankfurt and Paris. In America it is slightly easier. The Chairman mentioned Boston, and there is Philadelphia, Chicago, Baltimore and so on, and still within their economic area, to which they can divert. Our problem is we lose our balance of payments very substantially if we divert traffic from London.

124. *Chairman*: Can you ever work out what is the proportion of the balance of payments that Heathrow makes?——Yes, Chairman. We have mentioned the figure in our annual report this year and it is of the order of £200 million per annum.

125. That is a gross figure?——That is the value of the passenger spending in this country who come in through Heathrow. I am quoting from memory; I will have to look it up to be sure.

Chairman: I know Professor Walters wants to ask one question.

126. *Professor Walters*: One of the possible ways of improving the utilisation of our airports is of course to charge differential fees for landing, so that you are

* See insert facing page 48.

Printed image digitised by the University of Southampton Library Digitisation Unit

charging, for instance, a high landing fee for those periods where the demand is greatest, and presumably one may also charge high landing fees for noisy aircraft to reflect the social costs involved. Would you give us an idea of what research has been done on this and whether the Authority has any views about this?——Yes, we have looked into this in some detail and the fact is that unless one was to increase the landing fees not by a little but by a massive amount —ten times or to that order—it would not have a really significant effect, because air traffic is inflexible to the landing fee because the landing fee is such a small proportion—and I say this as an ex-airline man—of the total operating costs of an airline. BEA has the highest percentage of landing fees because it is a short haul airline and lands more often than any other airline in the world, and BEA's proportion of their total costs in landing fees is of the order of 7 per cent. So that a 10 per cent increase in landing fees, you see, would have, over all their landings over the whole world, an effect of 0·7 per cent on their costs. Now the Heathrow component in this is around 2 per cent. So that to make any significant change we would have to have a really drastic increase in the landing fees. It is a fact that we are at the moment engaged in a very detailed study of airport charges as a whole as we are not at the moment satisfied that the present method of charging is necessarily the best. We do to some small extent have a differential at Heathrow because when we adjusted Heathrow's landing fees on international services to take account of devaluation, we did not do so at Gatwick and other airports, and this has made no difference to the amount of traffic that has come or not come. There has been a certain amount of binding about it, but that is the extent of it and traffic is landing.

127. Then if it does not make any difference to whether aircraft use the airport even though you increase the landing fees very substantially, this means then that BAA could raise a considerable amount of foreign exchange by increasing the landing fees within peak periods?——This is true, but we would have a great reaction from the airlines from this point of view. They would say "What happens in this country is followed elsewhere. If you raise your landing fees, everybody else is going to fall in line" and experience has shown it is true, and therefore it is not just Heathrow but everywhere else, and there would be a major row about it. But the fact is, as I have said, that BEA is the worst affected because of the number of landings they make and it is about 7 per cent of their costs. An airline like BOAC is under half that percentage of their total costs.

128. Can I follow with just one more comment on this. I think you are generally in favour of an inland site because a coastal site would involve you in rather high costs of construction, land-reclaiming and so on, but of course the cost to the community of an inland site includes, as you know, all the amenity costs. It seems to me then that the logic of that implies that if an inland site is chosen then the amenity costs should be reflected in your accounts. I wonder what your reaction would be to this?——This is such a complex issue that the question is how do you quantify such a figure and I am very hopeful that the Commission will give a national lead in quantifying this figure, because we have not been able to do it, but I am sure the Commission will be much better at it than we would be. Our problems, I think, are really twofold. Firstly, we must have—we believe we must have—an airport which would be used; that is no. 1. If it is not used, it is purposeless; it is trivial. Secondly, we have under our Act the duty of paying our way. Now this is pretty complex but nevertheless this statutory duty is upon us, we must pay our way. Unless the Government decides to alter our statutory obligation, we must look on ourselves as a commercial undertaking, not extravagantly in maximising profits, but to make a reasonable return for the nation on the investment in an airport, and our problem would be if a very expensive site was to be found which was also difficult of access, travel would possibly not make it very buoyant, and the costs would be very high and we could not look upon it as an economic proposition with the growth of air transport.

129. *Chairman*: Bringing it to a logical conclusion, if everything else pointed to a coastal site except your profit consideration, then the Commission ought not to recommend the coastal site, and that is rather a sweeping philosophy is it not, Mr. Masefield?——Mr. Chairman, I would pass the buck rapidly to you on that.

130. I thought you probably would, but that is the result of that philosophy, is it not?——The problem would be this, I think, that you might recommend that this matter should be disregarded and we should be empowered to develop such a site

Printed image digitised by the University of Southampton Library Digitisation Unit

without incurring the capital debt which it might represent.

131. But is it any different in principle from the same problem that has arisen, I believe, with the Victoria Tube or with which BOAC were concerned? Certain decisions were imposed upon nationalised bodies by the Government of the day which had certain economic consequences, one of which was that they were not profit-making. Nevertheless, it was considered that these policy making decisions were proper.——It is for you to recommend or the Government to decide. We could not depart from our statutory obligation except by a change approved by Parliament and if they did there would be one further point; it is not just capital costs that count; it is running costs.

132. Certainly, but this is the public bodies' approach to the problem, on the ground that each of these Government Acts enjoins them to operate as a commercial concern and make a profit?——That is true. It would then come to be a national balance sheet and this is what we are really about, what is the right national balance sheet for the provision of air transport services with the least destruction of our national amenity.

133. I do not know the standing criteria —one rather gathers none—but the suggestion in paragraph 16 of your most recent paper* is that anything which does not create a profit or enable you to fulfil your prima facie statutory duty should be excluded?——We would not say excluded. What I think we would ask you is to have regard for our statutory obligation, and other things being equal—which they never are—we would hope that the site when chosen would be commercially viable, but even more important, that it would be acceptable to the airlines.

Chairman: Ah, yes, that if I may say so is a separate problem, a pure financial one which I concede is linked to it.

(*Adjourned for a short time*)

134. *Chairman*: Mr. Masefield, you have had a long enough pause to recover. Perhaps we could go on, and I would like to turn, if it suits you, to the question of layout, and I have got in front of me your, if I may say so, absorbing lecture that you gave to the Royal Society of Arts† in May of the present year. Of course, I have also got your most recent paper on this. I want to begin, if I may, by asking you what you regard as the ideal layout of the various possibles which have been suggested. I do not know if you want any slides.——I have got some slides that might perhaps be helpful on this. If I could go to the first one (Fig. 8‡) (*showing slide*), the layout of course of an airport depends so essentially on the site which is being set that one cannot be dogmatic that there is a perfect site, perfect layout, although some are obviously very much better than others, and those three—and in a moment I would like to show three more, making six in all, but I will come back to the original three—are possible layouts which would be among others suitable for different sites. The top one of course would be on a site which was somewhat limited in length, but essentially it has the basic criteria which we think are essential, and that is four parallel runways, two primarily for landing, two primarily for take-off, all of which could be used independently, and at the same time, and on that layout the two inner would be landing runways and the two outer take-off runways on a site rather compressed of that sort. The essential dimensions are shown there, which is 7,500 feet between the two centre lines of the two inner runways, which gives room for the terminal area up the middle and the taxiing tracks and aprons between the runways and the terminal area and the runways.

135. Just identifying what you are referring to on the slide are sites which appear in your red paper; they follow the consecutive page 14 and it is page 6 I think of the typed numbering; is that right?——That is our Annexe 1 of the red book.

136. That is right.——No. 1 there corresponds to no. 1 in the book. The second one is a variation of the first on a lozenge shape which might suit particular sites better. Of those three, there is no doubt that the third is the preferred one because though it takes up more room it gives shorter taxiing distances and less interference one runway with another. The essential dimensions are however the same.

137. I notice the staggering on no. 3 involves a little more overlap than the comparable staggering in what you describe in your Royal Society of Arts lecture

* Page 14.

† "The Modern Airport—and its Future". Published in the *Journal of the Royal Society of Arts*, August 1968, pages 783–804.

‡ See insert facing page 48.

Printed image digitised by the University of Southampton Library Digitisation Unit

as the idealised concept on a major international airport.——That is true. The one I represented as an idealised site in that lecture was more idealised than I say that no. 3 is. No. 3 is perfectly tolerable and operational but the idealised one I have put in the lecture occupies more area and therefore from some points of view would be less satisfactory, because clearly more land would have to be purchased and the whole thing is spread out in greater degree. The important thing about it is that you have got 10,000 of the 14,000 feet before you overlap and most aircraft nowadays will certainly land and most of them will also take off in 10,000 feet except the very big aeroplanes up to the maximum load. One will be able to turn off a landing runway there before, if one was going from right to left, one reached the overlapping point. So that I would regard 3 as not far short of the ideal, but I think I must emphasise that these are flexible in their application in that one must look at the site first and then see what will fit most easily and satisfactorily from the noise and other points of view.

138. Yes, but there is so much else in this problem that you have got to begin somewhere and you have got to look at your possible sites in relation to the ideal airport; you have got to relate your ideal airport to your ideal site?——Yes.

139. What sort of acreage is involved in 3?——In 3 we should be getting up to—I have not measured it—rather more than 8,000—probably 7. No. 1 would be about 7, and they vary up to about 10. It depends whether one took into account the bite out of the top and the bottom in no. 3 which would be convenient for certain facilities, even under approach and take off paths.

140. And just for the sake of comparison, what is the acreage of Heathrow?——Heathrow is a very small acreage, 2,718.

141. This [Fig. 9] is about 2½-times-plus the size of Heathrow?——And of course with four runways instead of basically two. Other possible layouts are shown, purely as illustration there, and there is one very significant difference in no. 5 and that is cross-wind runways, two of them, which stick out like sore thumbs may be at a very awkward angle, and one would hope that we would be able to find a site which—as Heathrow and as Gatwick—has a prevailing wind of sufficient continuous character that we do not have to go into a cross-wind runway but can get adequate usability, and that must be more than, we hope, 99 per cent in a single direction. With moderate cross-wind characteristics of ability to land in cross-wind components of more than 20 knots, most places in the south of England could be operated on a unidirectional runway principle without going over that level, as long as they are inclined into the prevailing wind.

142. Perhaps it would be convenient to ask you about what is the ideal orientation?——The ideal orientation varies a little bit in the south of England, and of course we have at Heathrow almost due east-west, and at Gatwick almost due east-west, but ideally they would be northeast-southwest, and that is really the direction of the prevailing wind, about 215° magnetic, in this country.

143. How much tolerance do you regard as permissible?——If one was up to 20° out of wind it would not make a significant difference with a 20-knot-plus cross-wind component which even the light aeroplane now satisfy. We would with that sort of figure, or 20° either side get more than 99 per cent usability.

144. How much is the cross-wind at Heathrow?——At Heathrow we are averaging at the moment 99·1 per cent over a number of years actual usability.

145. Is that within your suggested tolerance?——That is within our tolerances, yes.

146. I put my question badly. What I meant was is the alignment of Heathrow within your suggested tolerance?——It is about 20° out of prevailing wind. If it was completely into wind—this is a figure that we have available—if it was northeast-southwest, it would get 99·7 per cent against actual east-west 99·1.

147. That is 0·6 per cent. What does that represent in terms of aircraft?——This in fact means that over the day it varies, and of course at the peak times of the year we are much less likely to get strong cross-winds—they are in November and February the strong cross-winds, not in June, July, August, September when we are getting the maximum peak requirements. ICAO lays down that not less than 95 per cent usability should be achieved with a 20-knot cross-wind component, and we satisfy that.

Printed image digitised by the University of Southampton Library Digitisation Unit

148. Unless I have misunderstood the position—I am now thinking back to the Government White Paper*—the orientation of the second Stansted runway was outside your figure of 20°, was it not?——No, Chairman, it was about 15° on the other side of the prevailing wind, compared with the existing runway, which is about 15° to the north. The existing alignment at Stansted actually at the present runway gives 99·3 theoretical. The proposed realignment would give 99·1—it is 0·2 of a per cent worse. But of course if we had a site that had a serious deviation, a serious percentage of deviation, of winds out of the prevailing at summer peaks, then we would have to get two cross-wind runways such as this is there, and this would be a very expensive addition in actually laying down two extra otherwise unrequired runways and taking a great deal of extra land. I hope very much we will not have to go to that. The sixth one is a chevron sort of pattern which we do not much like but there might be a conceivable site in which this was the only way in which to get four runways more or less parallel, but it is obviously worse than the others because two of those must be more out of wind whatever way the wind is, and the over-shoot case—that is, of trying to land and then having to go on again—would obviously be bad on that because if one was landing on the north-east runway, the top right-hand side, and then went over, one would be over-shooting over the terminal area. This is the less satisfactory feature, but these are all conceivable arrangements which could be put forward for particular sites.

149. *Professor Keith-Lucas*: Could I pick up this point about over-shoot. On your plans 1 and 2 you have got 2,500 feet separation between the elements of a pair. Is that the separation you require to ensure safety after an over-shoot?——No, this is really for a taxiing way between the runways and it is also an ATC requirement because one would have an ILS landing system on to each runway and they must have separation which gives good guarantee against the two landing beams getting mixed up when one is way back on the approach.

150. Does it in fact provide adequate separation for the case of when over-shoot coincides in time with a take-off, if you have got two aircraft flying away in parallel?——Clearly the further you can put them apart the easier that is, but the major criteria here is Air Traffic Control and the separation, in the landing case, of the ILS beams, and it could be that with improved ATC procedure that could be narrowed, but this is the current state of the art.

151. I was going to ask whether you could not have brought them closer on plan 3 though, if you have got separation in height after an overshoot, but that is not really relevant.——There is no doubt this is not a law of Medes and Persians—it can be altered—but it is primarily Air Traffic Control and this is a matter that would have to be hammered out in discussion with Air Traffic Control at a particular site.

152. Thank you.——Our objective of course would be to make it as compact as possible because our interest is really twofold. One is to use less land; secondly to cut down the taxiing time on the ground, both going and coming, and the closer they are together, the less taxiing time—but safety of course is the first requirement.

153. *Chairman*: What experience is there in any other countries of operating aircraft with layout as in 3, or with a bigger stagger than in 3? How does it compare with the new Paris airport or Los Angeles?——The new Paris airport is broadly on that principle but with a cross-wind runway which goes right away across what there is shown as the terminal area, but in general terms 3 is not very far different from the new Paris Nord solution, and it is very close to what we regard as probably the most satisfactory operational airport in the world, and that is Los Angeles. Los Angeles is more or less on that pattern but slightly more overlapping than we have shown in 3, which is pulled out; if that was possible on a different site.

154. There is slightly more overlapping?——Yes. Los Angeles is closer to 2, not closer to 2 than 3 but half way between 2 and 3 in its overlap.

155. Has that led to any trouble with aircraft landing there?——No, it has not led to any trouble of that sort. What it does mean is that an aeroplane going to take off on the bottom runway of no. 2 has to go round the end of runway 1, up from it. Therefore it is rather a long taxiing round the end and even then they are prevented from actually crossing the threshold of that runway while another aeroplane is landing

* Cmnd. 3259.

Printed image digitised by the University of Southampton Library Digitisation Unit

because it will be close to the ILS pattern and its tail pattern might even impinge on the ILS beam.

156. Does experience show any directional incapacity by reason of having this overlap?——What it does show is that the taxiing times are lengthened somewhat and therefore I think theoretically there is some small directional incapacity, but in general either of those two would be acceptable.

157. But ideally anything that leads to a reduction of capacity is to be avoided if your site permits it?——It is marginal I think, Chairman.

158. Do you regard the design in 3—or as near to it as is feasible—as capable of dealing with all future sizes and weights of aircraft that anybody can foresee at this moment?——I think I could say that all of those three—1, 2 and 3—shown there could all deal with all sizes of aircraft that we now know or would expect in the foreseeable future, and all of them should be capable of handling up to 160 movements an hour.

159. Am I right in thinking that the length of the ILS runways are only 12,000 or am I wrong?——That is correct, Chairman. At the moment we have 12,000 on one at Heathrow and we are extending the other runway at Heathrow to 12,800, and in our proposals we would start at 12,000 but we would have the ability to extend the hard runway to 14,000. We would not propose in the first place to go more than 12,000 but we must, I think, prudently reserve 14,000 feet of paved runway.

160. *Professor Buchanan*: What it seems to boil down to is we are being asked to look at an airport twice the size of London airport in capacity but, if one goes by diagram 3, four times this size?——Yes, it is not quite as big as that. I think that depends how those top and bottom parts are used. It will be below 10,000 acres—around 8,000. It would probably be able to be squeezed into there, but I would not like to be dogmatic. These are all hypothetical layouts. They have got to be made practical according to a site.

161. *Chairman*: Can I just ask you a question or two about the possible effect of the development in VTOL or STOL aircraft. How do you foresee this affecting this problem if there is a big breakthrough in that direction in the next five or ten years?——We of course would very much welcome the development of VTOL if and when it becomes economic because it would certainly ease the problems at airports, but all the evidence which we know and can gather is that VTOL, if it is referred to as jet lift or some variation of jet lift, is not economic within the next decade certainly and probably a good deal longer than that—I would say twenty years. Helicopters, possibly, with stowable blades, tractable blades, which would mean they could use a rotary wing for take off and then stow them and go forward with a small fixed wing, are possible, but the economic helicopter has been round the corner always five years away for the last twenty years, and as a year progresses it is still five years away. We are still five years off an economic helicopter, and I have an uncomfortable feeling that five years from now we shall still be five years off.

162. Some of us are old enough to remember when aircraft were put on to the flight deck of tankers during the war for the purpose of convoy work and the expectation that aroused as to the future development of the helicopter, and the result has been exceedingly disappointing.——I wish it was not so, but I am afraid it is, and I think when one comes to the economics the present helicopter is rather more than twice the cost per seat mile or ton mile of the equivalent size of fixed wing aircraft. The jet lift aeroplane is rather more than twice the economic cost per ton mile or per seat mile of the helicopter, so we have got a series of rising costs, and of course we have this very serious problem that goes with them unfortunately and that is of noise. It is impossible to get vertical take off without noise going with it, and I do not believe it will be possible to operate vertical take off into city centres on the scale needed—the size of vehicle needed—within the next decade. It is certainly true that the small helicopters are flying to the centre of cities like New York on to the top of the Pan American building and so forth. There has been a certain amount of problem of noise with them but they are relatively small and taking a very small proportion of the traffic for which very high fares are having to be charged and then a subsidy. We cannot foresee that with 20 million passengers a year who require to be brought into the centre of London this could be done with VTOL, or anyway within the next 10 years, and I believe a good deal longer than that. Nor would it be economic to operate this type of vehicle into major airports carrying

Printed image digitised by the University of Southampton Library Digitisation Unit

any sizeable proportion of the traffic. What is coming in and making progress is STOL, short take off and landing aircraft, at present of a relatively small size, which can operate into strips closer into city centres than major airports could be contemplated. The Americans are doing a lot of work. I think in the next decade we might see the increasing development of STOL aircraft, but still being not more than feeder lines into the main trunk routes.

163. What is the estimate of the life of the big new aircraft?——The Boeing 747, certainly twenty years.

164. We are now 1968. If these are coming in in 1970 you are going to have at least until 1990 before you have reached the end of the working life of large aircraft, which of course cannot on any view be redeveloped?——I think to a certain extent beyond that. One can foresee the 747—which is a breakthrough in size of aircraft and therefore one may hope to some extent an economy-being produced in successive facelifted form and certainly in stretched form for ten years at least as of course will the 707 and DC 8. We have 10 years productive life of this, so if the last one on the line has twenty years' life, we should still see it hauling passengers thirty years from now. We may not see it, but it will it be going on.

165. Some of us may be looking up and others looking down! May I just ask you one other question on layout. Do you envisage really for London airport assuming —as you obviously think we have got to cater for—light aircraft, business aircraft landing there, any special runway will be necessary for that?——I believe this is a pattern that will be developed. It is certainly already happening at both Kennedy and La Guardia; they are putting aside separate general aviation runways there so that they can feed in these lighter types of business aircraft, including the business jet, on to separate runways for them outside the normal pattern. I think when we eventually come to the layout of a third London airport we would be wise to try to fit in a general aviation runway in addition to the four main runways pattern. The importance of these business aircraft I think is growing, because the boards of large international businesses find it convenient to fly about on their business and to join scheduled services from off airline centres and I believe this is an important economic and national requirement which we ought to try and satisfy, as the Americans are finding they must as well.

166. Perhaps Mr. Knight knows more about people in large international concerns flying about than I do, but is this something which we ought to take into account in considering the acreage which this layout would cover or is it something which you would reckon could be fitted in within that acreage?——I think we will fit it in. I believe we can. The important thing is to fit it in without reducing the capacity of the four major runways. I believe this is entirely possible and you have got to use ingenuity so to do it.

167. I am looking at the diagram in your Royal Society of Arts lecture on page 793* and you appear to have fitted it in there. It really is between your two left hand runways, if I may so describe it, in the centre of the left hand side of the terminal part as shown on your slide.—— Whether that is the best place, I think this requires some examination.

168. My point is rather that you have fitted it in within the totality of the area.——That is indeed so, Chairman. I am sure this must be our aim and I hope it would not be very difficult.

169. That site shown on that sketch is 15,000 acres, is it not?——That is an idealised—underlined—airport, taking no account of availability of space. If money and space were of no object one would get the biggest possible area to get the best possible results; that would be about 15,000 acres. It is true to say that Chicago is looking at 18,000 acres for the third Chicago airport at the moment, but I hope we can be reasonably economical in space. We have got a small island, and we must do our job in getting good capacity out of minimum space.

170. Is there a general concensus of informed opinion that 3 or somethinglike 3 is the right layout to aim for, or is this a matter of controversy?——It is not controversial. If we had a site which would happily accept 3 and it was shown when the sums were done on the site that it was not enormously more expensive on that site than either 1 or 2, we would cheerfully go for 3, but it would be wrong for me to say

* As reprinted in the *Journal of the Royal Society of Arts*, August 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

that either 1 or 2 are not acceptable and could be got up to the same capacity. It might be that slightly longer taxiing times are required and a little more ingenuity in some arrangements, but they are acceptable plainly as possibilities.

171. In other words, on the site search we ought to have our eyes if possible on a site that would take something akin to 3?——If, Chairman, the Commission was able to look at 3 with a possible squash to 1 if essential, we would be happy.

172. I want if I may to turn to something different. I may to some extent be trespassing outside BAA's sphere, but this is something on which we would all like the benefit of your help, and that is the planning side. How many employees are there at Heathrow at the moment—not only of yourself; is it something like 45,000?——We have 42,000 at the moment—not of course of the Authority's employees; most of them are airlines. But 42,000 is the global figure at the moment.

173. What would you expect the corresponding figure to be for a four-runway third London airport—again employees of the airlines?——I cannot give you a short answer on this.

174. If I said 70,000-plus, would that be wrong?——Yes, I think that would be too much. We really have to take into account the fact that Heathrow is the major overhaul and maintenance base of BOAC and BEA, our biggest airlines in the United Kingdom, and likely to remain so. Therefore I would not expect that a complete duplication of BOAC and BEA's maintenance base would be necessary for the third London airport. Undoubtedly there would be maintenance facilities and they would grow, but Heathrow is peculiar as being the base as of now and probably for as far forward as we can see, because they are so well dug in there, of the maintenance for our two biggest national airlines and that has a big effect on employment. With consultants we have been examining this difficult problem and we have come up with a tentative formula which we hope to present to the Commission shortly which, taking into account a large number of side effects, might give some guide I think to the employment that one could expect from a third London airport site. One cannot of course take it without relating it to the throughput of traffic, and on a certain throughput which we have taken as 40 million passengers—which is way down in to the middle eighties—from 250,000 air transport movements and a million tons of cargo per annum, the figure comes out on present productivity to around 52,000 employees. We would hope—I am sure we would all hope—that productivity can be improved as time goes on, and we have taken some assumptions which we will hope to produce to the Commission later on of improvements in productivity which would reduce that figure from 52,000 to about 34,000, and I think these are within shooting ability—at least try to hit this sort of target. So that what I am really saying is that with a 40 million passengers throughput from 250,000 air transport movements way down in the course of a third London airport, the employment will be somewhere between 34,000 and 52,000.

175. The global figure being lower than Heathrow?——There is this productivity variation but of course the fact is 40 million passengers as against 13 million at Heathrow today. It is 250,000 air transport movements as against a good deal fewer at this moment at Heathrow. So it is a bigger throughput than Heathrow but not many more people because the maintenance bases would not be there on quite the same scale.

176. What I am leading to is this: we have got to form some sort of idea of what the number of people are for whom housing has got to be found as a result of this, and to make the arithmetic easier I will take the figure of 50,000. The probability is that the supporting population would be of the order of a couple of hundred thousand people?——A five times ratio is about right.

177. A quarter of a million?—I am not an expert on this, but I think Professor Buchanan is.

Professor Buchanan: Roughly the size of Southampton.

178. *Chairman*: One is faced with having to house a population equivalent, as Professor Buchanan says, to something like the size of Southampton.——This is probably right. It is probably or it is certainly a long term result because this will be very much a phased airport and start off with one runway and then two and then three and then four after 1985.

179. It is not much use increasing space unless the people who go there have

Printed image digitised by the University of Southampton Library Digitisation Unit

somewhere to live?——Surely. What I would hope would be that the population would not be close to the up-wind and down-wind ends of the runways.

180. So, I imagine, do we all. But what is puzzling all of us on this—and I think I speak for all the Commission—is that we have all come new on this in the last few months, and in all the reading that we have done, all the published work that was introduced, all the work by anyone who has had to consider this, down to and including the publication of the White Paper*, we have been able to find little or no consideration of the effect upon the south-eastern region of putting a population of about a quarter of a million, plus or minus, into that region. Can you give us any help on this? You will be one of the main employers.——I think, Chairman, that if this airport is looked at as a complete entity, it would have access for the employees built into the airport—rapid transit is the with-it phrase today—and therefore a substantial proportion of these 50,000 people eventually would come in from some distance. As you know, we hope that Heathrow will eventually have a tube access into the central area, with a tube station at the maintenance base and BOAC headquarters where much of the employment is. If that is so, one could contemplate towns around the area—wherever the area may be—will be able to absorb numbers of this sort without creating a new town, unless that seemed a desirable end product, right on the airport.

181. But may I tread on somewhat thorny ground for a moment. When the proposal was accepted that it would be Stansted, did anyone ever consider the impact of putting 200,000 people into that area and if so where do I find that evidence? ——This was not gone into in complete detail, certainly not by us, but of course there are places like Harlow New Town which are being developed within striking distance of Stansted which could absorb at least a proportion of the number.

Chairman: Professor Buchanan will correct me if I am wrong, but Harlow was designed for a population other than the population resulting from a third London airport.

182. *Professor Buchanan*: Harlow was designed along with the other New Towns of London for the purpose of assisting the general London overspill problem, and suddenly to divert part of the capacity for a third London airport would not necessarily be out of the question but would be somewhat departing from the purpose for which this New Town was designed.—— This is, I think, Chairman, part of our problem of our technological age. We need an airport for London; it will create a certain employment; this will be employment which with all the problems that it will bring with noise and disturbance and so forth, is necessary and vital to the national economy. Somehow this issue has to be solved and be able to fit into the sociological atmosphere and this is part of our problem of the future. It is not alone to this island but of course it is true that at the moment we have the largest international airport in the world at Heathrow.

183. *Chairman*: Yes, but this has got landed well and truly onto us and we want to get on. If there has been any past thinking on this, has it been suggested when Stansted was a live proposition where this amount of service population, to say nothing of anyone else, was going to be fitted in? I have not been able to find anything on this at all, but if there is anything I would very much like to be told. ——I think we can probably dig up something on this.

184. If we have got to start from scratch, well and good.——There is something but not in great depth.

185. *Chairman*: In one of the papers before us there is a very interesting survey of facilities which would be required. I am looking at Appendix A†; I am not quite sure how you describe the paper but it is headed "Airport Planning—General Details Concerning The Outline Specification". There are some very interesting figures of the throughput of sewage, fresh water, electricity, domestic fuel and gas of the third London airport, with cautionary tales at the top: "These figures are for purposes of illustration only".

186. *Professor Buchanan*: I think these are very interesting figures relating to the airport, and I should imagine that one of the matters that we will have to consider would be the feasibility of providing these services at any site which we might be considering. We would also of course be concerned to see that any association of

* Cmnd. 3259.
† Page 28.

Printed image digitised by the University of Southampton Library Digitisation Unit

urban development could also be serviced in the same way, and I should guess that the urban development requirements might in fact be very much in excess of those required for the airport.——I think that, Sir, is very probably true. I am no sewage expert, but I am informed that flows of 110 cubic feet per minute, which is related directly to 5 million passengers, and 620 cubic feet a minute, which is directly related to 50 million passengers, are a not problem.

187. *Chairman*: Not a problem to who? ——Of any likely site. I can only rely on the information I am given on this subject.

188. It seems if one has got to introduce into it, as one has, problems of sewage, drainage and fresh water on this sort of scale, one has got to look at these sites with extreme care. Was any work done in relation to the Stansted proposal before the White Paper?*——There has been a great deal of work on this in relation to the possible sites and we can furnish engineering data on this if required.

189. I would be awfully grateful. I have read so much paper in the last few months that it is very easy to forget what I have read, but I do not think I have seen anything on this at all until you produced these figures. We should very much like to see these.——These are broad figures, but I am sure that more can be provided.

190. *Mr. Goldstein*: I note that your advice is, Mr. Masefield, that pretty well any site can accommodate the requirement for the provision of these services, but I think, as you said, that there is a multiplier of 5, possibly more, for the associated population. To that extent, it would not be unreasonable to suppose that the figures here for services might be multiplied by 5, or in some cases certainly more. Would that advice you have received also apply to those figures?——As I say, I am no great expert on this, and we will certainly provide you with the relevant information, but I think that 50 million passengers a year, even though this sounds slightly insanitary, probably provide more sewage than 250,000 inhabitants; but I would like notice of that question.

Chairman: I wonder whether they consume as much fresh water.

Professor Buchanan: They do not have nearly as many baths, I would suspect.

191. *Chairman*: Then there is the problem of electricity and gas supplies, too.—— That is so. It is a very complex business.

192. We have already learned that. What we are trying to find is what data there are available on this, particularly what data there were last time when everybody said that Stansted was the right answer. I would imagine that a lot of work had been done on this both for Stansted and other sites.——With your agreement, Chairman, we will look into this in further detail and let you have the further information which I am sure is available in the background.

193. It has been very much buried in the background so far as anything that has come to us is concerned. What I would like to elucidate is whether on this we have got to start from scratch, as on so much else, or whether there is accurate and reliable information on which our research team can work. Anything you can do to relieve Mr. Thompson and his staff of work will be of immense assistance to us.

Can I turn to take quite briefly the problems of surface access and distance from London. Is there in your view any absolute figure beyond which it is generally unacceptable for members of the public to travel either by car or by train?—— This is obviously a very vital aspect of an airport. It is also another of the very complex issues. One of the complexities of this particular issue, I think, in relation to the London multi-airport solution, which is the same, as I have said already, for Paris, New York, Chicago, etc., is that airlines which are at one airport will look on other airlines operating over similar routes from another airport as competitive. A great problem which may not seem to be difficult on the surface, but certainly is, is that if airline A is flying from Heathrow to New York and has a certain journey time, perhaps with a rail link to Heathrow which means that it can get to New York in a little over five hours from city centre to city centre, a competitive airline flying from a third London airport to New York will be extremely dissatisfied, and perhaps even will not go there, if its total journey time, with the same time in the air, is, say, an hour longer. This is one of the very serious problems I think we face on this whole issue, which of course is bound up in the multi-directional philosophy here and in the fact that different airlines will be inevitably, I think, flying to the same

* Cmnd. 3259.

Printed image digitised by the University of Southampton Library Digitisation Unit

destinations from different airports around London. They will possibly be flying into different airports at New York. If, say, an American airline, for example, was penalised compared with, say, BOAC by being put to a very distant airport in the south-east of England somewhere, compared with BOAC going from a nearby airport such as Heathrow, it is quite possible that at the other end BOAC will be pushed off to a very distant airport from New York whereas the American airline will be close. That might be a satisfactory and reasonable solution. I mention it because it is one of the factors which has to be taken into account. The other point which I think we have to mention is that the average distance of all major international airports from the city centres which they serve is, when you analyse it a lot, 10·6 miles. This is an extraordinary figure. It is brought low by the fact that places like Boston are only three miles from the city centre. Washington DC is only four miles.

194. That is Washington National?——Washington National airport, yes. In France the great General has managed to find a site for a third Paris airport, which will eventually probably be the second one, because Le Bourget will be shut, only 12½ miles from the centre of Paris. So our problem is to reconcile what are basically irreconcilable, I think. One is that it should be as far away as possible from a noise and disturbance point of view. The other is that it should be as close as possible from a passenger and airline access point of view. Somewhere between the two we have to try to find an acceptable compromise with all these different and various conflicting requirements whistling around our ears. I would say, if you asked me, on a catch as catch can basis of what might be acceptable, that time is the best measure and that probably an hour is the most that one can possibly afford. But I would regard this as unacceptably or undersirably long. I would hope that it would be very much shorter.

But time and cost are mutually interchangeable. An airport which was an hour away by means of transport which cost *x* might be only half an hour away by means of transport which had ten time *x* put into its basic arrangements. I think, Chairman, I cannot be positive in this answer, but I can say that from an operating point of view we want it as close as possible and I suppose that from sociological points of view it should be as far as possible. But the airlines will not go to it if it is too far away, and therefore we would have a white elephant, and this may be a deciding factor.

195. So the answer to my question, "Is there any absolute figure beyond which it would be generally unacceptable" is that you do not know.——No. Heathrow gives us a sort of bogey for the course, I think. That, when we have this rail link, will be 22 minutes by rail from Victoria, and at the good time of day by road it will be half an hour and at the bad time it will be an hour and something.

196. That is perhaps a convenient lead in to the next question I was going to ask you. A number of people have written in to us pressing the claims of what I might call, to use a neutral expression, high speed forms of transport, sometimes of a very novel kind. What does the Authority think about some of the claims which are made for these high speed links?——I think, Chairman, we have two problems here. One is that none of them has been established; they are not proven. Attractive as they appear, and much as we are interested in seeing them and learning more about them, a great deal of development time, and certainly development money, would have to be put in before one could know the answer.

What we have got to come up with, I think, fairly quickly, and certainly very fast after your recommendations are known, is an answer on which we can pin our faith and decide that it will work for—before long—20 million people a year, about half of them coming into the city centre, the other half going on their own wheels—that means by road, of course—to all points east, west, south and north. Half the people will want to go away all over the place, very roughly speaking, and the other half want to come into the city centre and then go on. So we must have good road access. We must have some means of rapid transit as well, I think. Though the monorail is very fashionable and, let us hope, in the future might be very good, perhaps a with-it phrase would be that the duorail has great attractions and we do know that it works and, if the curves are not too sharp, it can go quite fast. I would say that the conventional rail pepped up, plus really good road access, are the vital things.

197. In effect, what you hope to have for Heathrow by 1971, I think.——I am afraid it will be a little later than that, but I

Printed image digitised by the University of Southampton Library Digitisation Unit

would hope not much later than 1972 or 1973. We are not going to have a good enough road to Heathrow, because the M4 is too narrow. We need a better road and we need good rail.

198. You have existed for—what it is now?—twenty years at Heathrow with no rail at all.——The problem is this new era. It is really the new era of these jumbo jets. We are going to have 500 passengers a time before very long coming in in dollops of six loads of 500 passengers a time, all within an hour, in the early mornings out of New York, Boston, Cleveland, and so forth, into London. This is a new problem—500 a time, which, if put in coaches, would be ten coaches. They would be nose to tail ahead from Heathrow all the way up to Cromwell Road if they were all in coaches.

199. I thought I had that at the moment on Friday evening when I try to get out that way.——But half of them will want to go by car; there is no doubt about this. It is not the complete solution to come in in packages of 500 and go away in packages of two, because the problem is transferred.

200. Arising out of that, have you any views on an in-town terminal for a third London airport. The original idea, if I read the papers correctly, was that the in-town terminal for Stansted, when it was thought to be Stansted, was Victoria.—— That was at one time examined and it appeared not to be the most sensible answer.

201. It involves a somewhat, as somebody described it in some paper I have read somewhere, bizarre trend.——It had great interest to the railway pundits, because it had not been done in one hundred years. We think that if it was in the north to east sector—somewhere along there—the King's Cross area would make a good terminal centre. The fact that there is a Victoria tube coming into operation which will link Victoria, which will be a town terminal eventually, we believe, with both Gatwick and Heathrow, so they are linked together, would make a good deal of sense.

202. Do you envisage BAA itself running the town terminal?——No. What we are working on at the moment is a consortium with British Rail, BEA, BOAC and possibly one or two other airlines, and ourselves, to own and operate this town terminal. One of the vital things that we have to do here is to try to achieve a means of ticket and baggage check-in at the town terminal so that people can be relieved of all their problems at the city centre until they get to their destination.

203. Has any work been done on this? You say you envisage a joint venture with British Rail, and so on. This to myself is something that is quite new.——It is well along the road and we shall hope to be able to announce the actual formation quite shortly. It is a joint effort.

204. In relation to a third London airport or generally?——This is in relation primarily to Heathrow and Gatwick—in fact, primarily Heathrow. Gatwick comes into it because Gatwick is also served from Victoria.

205. I must have misheard you. This is for Victoria.—Victoria.

206. I beg your pardon. Would you envisage the same thing for a third London airport at King's Cross?—It could quite easily extend, because the same parties are involved. British Rail would still be concerned, and so would ourselves and the airlines. So this consortium, virtually a joint subsidiary, could be used for that as well.

207. Has any work been done on this project in relation to a London terminal for a third London airport?——Not directly, no, because we do not know where the third London airport is going to be.

208. One runs up against the chicken and egg problem here, as on so many other aspects. You were suggesting a moment ago that King's Cross might be the right London terminal, assuming that the third London airport was east, north east, or even perhaps north. Has any work been done on such a terminal?——No, not directly, but Mr. Hole, the Chief Executive of the Authority, has been working directly on this consortium. Perhaps I could ask him to say a word on this.

209. Yes. Before you answer that, Mr. Hole, I was only wondering whether any consideration has been given to this in connection with the development of Euston or any of the problems which will arise in relation to Euston and St. Pancras. ——(*Mr. Hole*) As my Chairman has said, we are well on the road to a consortium for Heathrow-Victoria. We have discussed the question of the use of King's Cross,

Printed image digitised by the University of Southampton Library Digitisation Unit

Euston and those areas with British Rail, and it looks rather as if King's Cross would be the best terminal if the airport were in the northeast area, or even north. We have talked to British Rail on this, and once a decision is reached on the airport one would go ahead, I think, probably on the basis of the Victoria example.

Chairman: Thank you very much.

210. *Mr. Goldstein*: Mr. Masefield, you seemed rather certain a moment ago when you said that half of the passengers want to go by car from the airport. These are the facts at Heathrow, are they?——(*Mr. Masefield*) At the moment it is about 40 per cent. The access to city centre is not perfect, but with better access to city centre we shall find a greater number, I think, electing to come in. When one looks at the total passenger destination analysis for Heathrow—this has been established by questionnaires, a sampling process—34 per cent of the passengers want to come to Central London, another 25 per cent go to destinations in the London traffic survey area, and 9 per cent go to destinations in the London metropolitan region. So that leaves only 16 per cent over, other than those flying in and flying out, going elsewhere than in the Greater London area.

211. Taking those going to London, the 40 per cent going by car—you are saying that, if communications were better, more would elect to do so. What would be the impact of the Victoria tube, do you think—the transit link?——I am not absolutely sure I understand the question. We expect about between 40 per cent and 50 per cent to use the rail link straight into Victoria, when they would there be distributed by Victoria tube and all the other means.

212. I mean the rail link. You would expect half to go by the rail link and the other half to go by their own means?——Approximately.

213. I suppose this might be affected by the distance of the airport from Central London.——Yes. What I have said is in relation to Heathrow. These are more or less known figures. One can only guess at what might happen with a third London airport without knowing where it was. If it was very far away, I would have thought that the rail link would get more than 50 per cent, but if it was moderately close people would like to come into the suburbs of London by car.

214. The half and half split between the new rail link and the existing M4 at Heathrow would occur, I suppose, taking account of the fact that the conditions on M4 are as they are at the moment.——That is certainly true. Our problem is that we have to speak so hypothetically here, not knowing where the third London airport might be.

215. Heathrow.——Heathrow, yes. Heathrow is affected by the fact that the M4 is not as good as it might be. But not half of the people come into London by car. They come into Hampstead, Chiswick, Putney, Epsom, and so forth. They go to those other places by car and not directly into the centre of the city.

216. Would it be your view, therefore, that since to that extent the conditions on M4 would not come into play, even if the conditions on M4 were considerably better you would still get, from what you know about the habits of airport users at Heathrow, at least half, perhaps more, on the rail link?——I would certainly think that, because foreign visitors do not have cars, anyway. They use either taxis or hire cars if they have not got a rail link. Most of them come up to hotels in London. If there is a quick rail access right into the centre of the city and then a short taxi drive or other means to a hotel, this, I think, from the convenience point of view will suit them best. One can only guess on this and provide, and hope that the provision of the services will produce the traffic. I am sure this is right, though, because M4 is causing us great concern at the moment, in that it is jamming up at peak times and is going to get worse and there are only two lanes in each direction at some very critical points. It could be that Heathrow will be limited in the 1970s as Los Angeles is limited today by road access, if that was the only means of getting from the centre of London. At the moment road access is the limiting factor on Los Angeles.

217. *Chairman*: That is the corollory of your last answer, that it is of crucial importance, in view of the experience of the working of motorways, particularly of M4 in relation to your air traffic, that we should be watching very closely for adequate rail access.——I would agree with that—and road access, and so on. M11 is an important —we hope—Cambridge motorway which might be a direction which would be helpful.

Printed image digitised by the University of Southampton Library Digitisation Unit

218. Yes, but it may equally be that if an ideal site existed without road access the road access would have to be provided.——That is certainly true. If one can use a planned road, the cost and the time would be saved.

219. Then you get the jamming up, or you have to enlarge the road. I read or saw somewhere the other day the suggestion that if the airport was sited somewhere up the run of the M1, by 1984 the M1 would have to have eighteen lanes.——I have not done the arithmetic, Chairman—you have the advantage of me there—but I would have thought that was putting it a bit high.

220. Why is the M11 of particular relevance?——M11 is a new motorway provided which does go close to an interesting airport called Stansted. It also goes past some other possible sites, too.

221. May I turn just for a moment or two to the question of noise. I think I said this morning that we have had a tremendous weight of representations on this problem, many of them, if I may say so, most carefully and thoughtfully worked out. You have said since lunch that, even if VTOL did arrive, it would aggravate rather than minimise the noise problem. There are those who say that, if the third London airport is sited in an agricultural district, the noise does an enormous amount of damage to farming as well. How do you foresee this noise problem being dealt with in the years to come—the next quarter of a century? Is it something which you are saying we have just got to learn to live with, or is it something that can be minimised; and, if so, how?—Chairman, I think there are really two things. Firstly, the only really satisfactory way of dealing with noise is to cope with it at source. I wish that I could be more optimistic and say that we could see significant improvements in the bulk of the aircraft of the future within a reasonable period. I would be wrong to say other than that I believe on this; because I think, since existing aeroplanes are going to be with us for a long time and aircraft which are currently in manufacture will be with us for even longer, that we shall not see a significant improvement in the noise level from major airports within certainly the next fifteen years, although I hope that by then a beginning to be significant number of the newer aeroplanes coming into service will be a lot quieter. I think we can at least have that amount of optimism looking further ahead, but this really does not solve our immediate problem.

It seems to me that we have the problem here of either putting the airport where there is not any population, in which case, unless it is on a coastal site, we have the agricultural issue, or of getting it closer in where there is population and we get clobbered on noise. So on this it is very difficult to win. There is no doubt that a coastal site could be found which is less disturbing to the population as a whole and to local communities than an inland site, but if such a site was to be found it would be a very long way away. We come back to the other difficulties and problems, including that of whether the airlines would go there. It is unfortunately true that a number of possible coastal sites, because the coast of this country is quite heavily populated with coastal towns, would inevitably cause a great deal of noise to a number of coastal towns.

So it is not a black and white picture that coast is good and inland is bad. Some inland sites could be possibly better than some coastal sites, but this again is one of the great problems that we face of conflicting requirements in these two directions. How these are balanced, Chairman, I believe is one of your major problems, as it certainly is of concern to us. We recognise these problems and I can only say that I believe that possibly, when we have weighed all the things together, a satisfactory inland site might be found which would be better than a satisfactory coastal site, but this can only come out in the wash—and that is too far away!

222. I thought you meant the wash with a small "w".——The one with the capital "W" is too far away. We have put down seven basic criteria which we believe have to be satisfied in greater or lesser degree to achieve an airport that is a workable airport and which will meet the needs of the nation as a whole by being tolerable. These seven criteria I think sum up our view on these conflicts between distance and noise, open sites, coastal sites, and so forth.

223. Those are in paragraph 12 of what I call your red book,* are they not?——That is correct, Chairman.

224. May I just ask you this on paragraph 12.2. It is a curious fact that so far—it may be an oversight—we have had no evidence

* Page 3.

Printed image digitised by the University of Southampton Library Digitisation Unit

at all from any of the airlines to support what you have said in paragraph 12.2. It may be that it is coming. It may be that it is not.——You mean on "Acceptability to airlines"?

225. Yes. You may think it is self-evident.——I think that in due course some airlines, anyway, would be prepared to come along. I hope they will, because they are vitally concerned.

226. For myself—I think I speak for the other members of the Commission—I very much hope that all the airlines—the nationalised ones and the private ones—will give us the benefit of their views on this. May I just ask you one or two questions more on coastal sites. Quite clearly, you or your staff were good enough in one of the papers you sent to give us a bibliography* of existing and proposed airports and other projects involving construction with filled and reclaimed land and over water. There are 21 examples of existing airports on reclaimed land and a number of proposed airports on reclaimed land. Then there are a number of existing reclamation schemes for other purposes referred to there. This is very interesting. We are very grateful for it. Have there been any unfortunate experiences as a result of any of these existing airports being on reclaimed land?——I am afraid there have. I do not want to be thought to be anti coastal sites at a time when I hope you are looking at everything on its merits. There have been unfortunate incidents such as at Hong Kong, Gibraltar, and other places where aircraft have either undershot or overshot into the water. This is not necessarily true of a properly engineered and developed site which would have sufficient under-run and over-run to be able to take account of the majority of such incidents which historically, when one analyses accidents and incidents of this sort, have all happened fairly close to the threshold of the runway—either run off the end but within 1,000 feet, or under-shot, also within 1,000 feet. So an adequate airport might cope with those things.

227. I was struck the other day—it was merely a casual impression as a visitor, but I happened to fly out of La Guardia three times in a week—to notice that each time one took off one was straight away over water.——La Guardia is an example of one runway projecting into water. They have had one or two problems. They have had the same problem there as we would have here, in that in the winter the water gets very cold and there have been several instances of overshoots into the water where the survival period has been of the order of ninety seconds, once you get into very cold water.

228. Have there been accidents at La Guardia through overshoot?——Yes.

229. There have?——Unfortunately, yes, but I do not say this is endemic to a coastal site, because with experience one would fill up the amount of over-run which historically has been shown to occur. But it does get more expensive. The problems of coastal sites are obviously peculiar to coastal sites. There are similar problems with inland sites, and it is a balance between the two. I could expand on that, if you wish.

Chairman: I do not think we need trouble you now.

230. *Mr. Goldstein*: The other aspect which bears on coastal sites, Mr. Masefield, is: do you know the record of reclaimed or partially reclaimed runways with respect to settlement over a long period?——La Guardia I think is the prize example. This was on fill. It was a city rubbish dump originally. I think the figure was fourteen feet required of fill which went on sinking for a period. Again, I think we should not be too dogmatic on these things, because there is a great deal of experience, not only here but in reclaimed land in Holland and elsewhere, and at a cost all these things can be got right. The problem which concerns us in one respect of coastal sites is that, first of all, it would take a great deal longer—we think two years—and, secondly, it would be a great deal more expensive and somebody has got to pay, and it looks uncomfortably as if it might be us. The other thing is that somebody has got to use it even if it is a long way away.

231. La Guardia is the only example of serious settlement after operations had started, as far as you know?——Yes, as far as I know, but I would like notice of that question.

232. I am sure we would all be very interested in any details.——I think we should be able to provide quite a lot of information on this.

233. *Chairman*: Mr. Masefield, I think we have almost finished with this stage of

* Page 29.

Printed image digitised by the University of Southampton Library Digitisation Unit

the inquisition. Before I ask Professor Buchanan to ask one question which I think he wants to ask you, may I just ask you this, prefacing the question with the warning that I sometimes have to give people in another place, that they are not obliged to answer it if they do not want to. Do you wish to say anything as to what you personally or the Authority regard as the most suitable site?——This is the 64 million dollar question, Chairman. I would say that in relation to the criteria we have outlined there, and which are backed up with a great deal of detail, no site known to us meets all the desirable criteria ideally, or even close to ideally. I think it would be fair for me to say that up to the time that the whole issue was reopened in February 1968 the Authority regarded the Government's decision at that date on Stansted as one which would enable the Authority to provide in time an airport which would be acceptable and workable. If the Commission should, after it has been over all the ground, recommend in favour of Stansted, we would continue to regard that site as acceptable and workable. But I do not say that in our view that is the only acceptable and workable site. If a site is found which better meets the basic requirements, then we shall welcome it and we shall do our best to make it into a really good third London airport.

234. *Professor Buchanan*: I just want to ask about regional planning. We are being constantly encouraged to ensure that we take account of regional planning. As far as I can see, this involves two separate aspects. One is that, given a locality for the airport which we know will work from the airport point of view—the operational point of view, the surface access—I imagine we shall have to satisfy ourselves that the urban development can be fitted in locally and one can get satisfactory sites and places for people to live and that it will work in rather a local sense and tie in with local communities. There is that aspect of it.

The other aspect is much more the strategic aspect of putting this very big development down in the south-east of England. A lot of work has gone on in the last few years regarding the future planning and development policies for Greater London and, indeed, the south-east. There have been a variety of studies. There was the South-East Study.* There was the Report of the Regional Economic Planning Council.† Then there was the Standing Conference of Regional Local Authorities; I do not think they actually published a report, but we know that they have got certain views. Now there is a group working at Government level really reconciling the various views which have been put forward. The Regional Economic Planning Council, for instance, put forward a finger plan for London. Very important concepts are brewing here for the future accommodation and deployment of population and industry in the south-east. What we are concerned with is bound to be a major item in this: we are dealing with a very big development. I wondered whether you had come across this strategic question —whether, for example, you had had any consultations with the Regional Economic Planning Council or the Standing Conference.——We have had informal discussions. We have had no formal meetings. We have had a number of informal discussions. This is a matter of great concern and of major national importance. The observation I think that I would like to make on this is that it is the south-east which has so many problems in other directions which generates the traffic which calls for a third London airport. This is part of the problem of the south-east, because London is the honeypot which collects all the bees in the air transport complex. They come into London because London is the centre. However much we wish that it was wider spread—and we certainly do—the fact is that London is this centre. It is not only a centre in itself for terminating traffic, but, as I said before, it is also a Clapham Junction for on carriage.

So this is our problem. The requirements are from London. Heathrow and Gatwick handled 15 million passengers. Manchester and Glasgow, which are the next two biggest in total, handled only 1½ million passengers each, and those included a great many domestic. As far as international passengers are concerned, Heathrow handled 10 million last year, Manchester 0·7 million, and Glasgow only 0·2 million. So London is the centre. This is our problem. It is because the traffic is growing so fast, because people want to come to London and to the south-east, and because this is an interchange point, that we have the problem of having to have a third London airport or turn the traffic away. Though I fully, I hope, understand the concern of everyone, and not least Professor Buchanan's point here, this I think is one of the problems of our technological age. We have

* *The South-East Study*, 1961–1981 (HMSO, 15s.).
† *A Strategy for the South-East* (HMSO, 15s.).

Printed image digitised by the University of Southampton Library Digitisation Unit

created a requirement. Now we have the problem of how to meet it without ruining everything else. If we, Chairman, can do anything to assist in this task, as you know, and as I have said before, we stand ready to do it.

235. I do not think you quite understood my question. I was not really trying to pursue the point that there might not be a need for a third London airport. I was merely saying that certain strategic policies are evolving on how to accommodate policy and employment in the south-east. For example, the possibility has been canvassed of putting a very large population increase in the area of Portsmouth and Southampton, perhaps amounting to 1¾ million people. Would a factor like that in your view have a bearing on this question—a big nodal population one-fifth the size of London?——I think that it obviously would have some bearing but, I think, not a major bearing and I think that within the period we are talking about, when the requirement for a third London airport is already upon us, it would not be of any major significance. Our problem is now with us and we shall in 1970 be starting into the position that New York was in last summer. This is our problem—how can we cope?

236. *Chairman*: Have you made any calculation as to the cost of a third London airport in terms of direct cost?——Yes, Chairman. We have looked at this fairly closely. We have tried to look at it in phases. A four-runway airport handling 600,000 movements a year will not happen immediately, nor will it be required immediately. What we have looked at is the first phase in some detail of a third London airport operational with one runway of adequate length available with its taxiways, its aprons, its terminal area and access fully operational as a one-runway site. The cost to us—this is our cost of construction, etc.—at today's prices—obviously one must emphasise that—of providing our part of this single runway complex—it does not include the air traffic control or the airlines' part of the surface transport—has been estimated in round figures at approximately £60 million for a typical inland site, for this one runway and all the things that go with it, operational.

For an off-shore site of minimum difficulty—a coastal site which is an easy coastal site—the estimate is £85 million and about two years later. That I think is an important point, because it is time as well as cost that comes into it. A difficult off-shore site would, in our view, and having looked at it in a certain amount of detail, be about £115 million, two years later than an inland site.

Those give a broad parameter of £60 million for the easy one, £115 million for a relatively difficult one, and then an onwards expenditure converting from one runway gradually to two runways, to three and four, running at about £10 million a year for about 18–20 years. But as we have never stopped building Heathrow yet, the period is one about which one would have some reservations.

237. What is your global figure for this four-runway airport if it were built in one continuous operation rather than being spread over eighteen years?——Clearly, Chairman, one gets into complex problems of discounted cash flow and that sort of thing. If you multiply 18 years by £10 million a year and add on £60 million, you are getting well up above the £200 figure. Again, when you are going in for that sort of period you must look at it on discounted cash flow, so the straight figure of £X is not really relevant. I think I would be right in answering your question: it would be £60–£115 million phase 1 (one runway), and then it would go on at the rate, at today's prices, of about £10 million a year, which one would then have to discount. From our point of view as an Authority, we would hope to be able to finance about 50 per cent, or perhaps a little more, of that out of our own resources from the revenue as we go. So this cannot be said to be a straight figure, because we should be internally financing out of the revenues from each phase as we went along. So half of it—and I would hope a little more, perhaps—would be internally provided.

238. *Mr. Goldstein*: I wonder, Mr. Masefield, if you could simplify this for us. Just to get the feel of it, we know that if you build one runway on an inland site this would be £60–£65 million, as you said. Supposing you were to set yourselves the task of building a four-runway inland site complete in one go as quickly as feasible, what would you substitute for the figure of £65 million?——I do not want to dodge this question, but I think this is not a practical possibility. We could not build a four-runway airport within that period. We certainly could not do it, nor could we finance it.

239. That is quite right, Mr. Masefield. We can do the calculations and discount

Printed image digitised by the University of Southampton Library Digitisation Unit

as happily as the next man and get the figures. To set us a sort of framework, if you had the money and you wanted simply to get an idea of what would be the physical shopping cost of buying a four-runway airport, have you any ideas about this?——It would be very much less than the figure I have taken, but it would be very much more to the nation as a whole—I am deliberately dissembling here—because we would have no revenue to set against it. Therefore, it would be a nonsense, if you will forgive my saying so, from a financing point of view and a nonsense from our point of view; nor could we do it. So I hope you will forgive my going round that question. I do not think you can just multiply £60 million by four and say that is the answer. You certainly could not.

Mr. Goldstein: That is why I asked the question.

240. *Chairman*: I imagine that that is what underlay Mr. Goldstein's question. You cannot do it that way, can you?—— The answer is that you cannot do it straight away. The right answer is that over a period it is rather more than £100 million of which we would finance half ourselves.

241. If I may say so, you are looking at it, I think, rather from the direction whether you finance it yourselves or how it is financed. I do not think that Mr. Goldstein or I were pursuing the mode of finance. We were simply pursuing the question of what he calls "the shopping price". Can you give us any help on that? Forget whether the finance comes direct from your revenue or direct from the Treasury or in 101 different ways.——The answer is well over £100 million, but I think, Chairman, if you would like a really considered answer to that question on what I am quite sure is an academic approach, because we would not do it that way, nor could we do it in that way, then we will furnish it.

242. I am not sure that it is all that academic. At some stage I suppose we have got to have some idea of what it would cost without necessarily taking eighteen years to do it.——I think the important thing that I would like to get without being unhelpful on this is that we ought to try to proceed in phases, making the thing viable as it goes, or as nearly viable as we can, because we must match the runway capacity provided against the traffic requirements which are going thundering ahead; and as soon as we have finished the first one we should certainly be starting on the second and we might be starting on the third at the same time as we were starting on the second. This has to be very carefully phased if we are going to make a financial success for the nation. Whoever finances it, it is still money which has got to be provided by the nation—quite a lot of money. We have tried to do it in a way where it would finance itself so far as possible. I think the right answer is that it is certainly well over £100 million if it was done all at once—a good deal over £100 million. If we did it the way we are thinking it would be self-financing as to half the total sum eventually.

243. Mr. Masefield, thank you very much indeed, and thank those of your staff who have been good enough to come along to help you. We are very much obliged to you. I have no doubt that we shall be wanting some more help from you later, and when stage 5 comes along I have no doubt there will be a large number of gentlemen wanting to ask you a lot of questions about what you have said today. Thank you very much indeed.——Thank you, Sir, very much for your courtesy. We will put our exercise books and pads down for the next round.

(*The proceedings then terminated; next public hearing Friday, 8th November*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written and Oral Evidence

8 November 1968

Regional Planning

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Statement by the Standing Conference on London and South East Regional Planning

Introduction

The Standing Conference on London and South East Regional Planning is a consultative, advisory and co-ordinative organisation established by the local planning authorities of South East England. The constitution and membership of the Conference are set out in the accompanying document (LRP 720*).

The Conference on 2 May 1968 agreed to participate with government departments in a regional planning study of the South East, which is due to be completed before the end of 1969 and has the following terms of reference:

> To consider and report with recommendations on patterns of development for the South East, taking as a starting point the strategy proposals of the South East Economic Planning Council, but also taking account of the planning work of the Standing Conference on London and South East Regional Planning and having regard to Government policies, with the object of providing a regional framework—
>
> (a) for the local planning authorities to carry out their planning responsibilities, including as appropriate the preparation of structure plans under the Town and Country Planning Bill now before Parliament, and
>
> (b) for Government decisions on investment, and economic and social policies relating to the region's future development.

The Conference wishes to play its part in ensuring that the Commission is fully informed on the regional and local planning considerations relevant to its task. On the basis of the Government statement of 20 May 1968 on the setting up of the Commission, its terms of reference and the procedure envisaged, it appears appropriate for the Conference to submit evidence at this first stage of the Commission's work. As the work of the Commission proceeds the local planning authorities individually and corporately will no doubt wish to re-examine the situation and perhaps to submit further more specific evidence on their own initiative or at the request of the Commission.

Summary of Evidence

The theme of the Conference's evidence is that the development of a four-runway international airport, to cater for the growth of traffic at existing airports serving the London area, has significant implications for the economic, social and physical development and planning not only of the area in the near vicinity of the new airport, but also of the South East as a whole. Indeed some implications are of national significance. This is because of the scale of economic activity and employment demand generated by the airport, its workers and its users; the pressures which will be exerted by a wide range of commercial and

*Not reprinted

Printed image digitised by the University of Southampton Library Digitisation Unit

industrial organisations seeking the advantages of locating in places accessible to the airport; the very extensive surface movements which will be generated, including those of passengers and freight to and from the airport; and the potential effects on land use and amenity.

The main propositions put forward by the Conference in this evidence are:

(i) a site for the airport should be chosen where the Government and the local planning authorities will feel able to accept and to plan for associated growth not only for services for the airport, its workers and its users but also particularly for related industry and commerce;

(ii) there would be advantages in the airport being located in proximity to areas where a physical and economic infrastructure of appropriate scale and characteristics to absorb a substantial order of population and of new economic activity either exists or is developing;

(iii) the development of the airport and its surrounding area must be acceptable in terms of the development of the region as a whole;

(iv) this development must be shown to offer the prospect of an acceptable situation to potential populations in terms of the avoidance of nuisance from aircraft noise.

Chapter 1

Effects of a third London airport

1. The main effects of concern to the local planning authorities which would follow from the establishment of a third London airport can be noted under four heads.

Airport employment

2. In the debates on the proposal to site a third London airport at Stansted, it was recognised that a very considerable number of workers would be directly employed on airport work. The White Paper *The Third London Airport* (*Cmnd.* 3259) expected that there would be over 20,000 people employed directly by a new two-runway airport in that location. Other estimates anticipated that the numbers involved would be nearer the experience of Heathrow which, at the present time, directly employs some 40,000 people. The proposal now is for a four-runway airport, and presumably this will entail somewhat more employment than a two-runway airport. The employment demand will not only be substantial in total numbers but will cover a wide range of occupations. Some of the occupations will be specialised.

Secondary growth pressures

3. Important though the issues may be which are raised by the creation and location of such a major concentration of new employment, there are other effects of the airport which are of considerably greater potential importance. The airport employees and their families will require services and social facilities. The airport and its users will create demands for hotels, restaurants,

Printed image digitised by the University of Southampton Library Digitisation Unit

cleaning contractors, taxis, car hiring, and the like. It has been calculated that Heathrow provides economic support directly and indirectly for a total population of between 200,000 and 250,000.

4. In addition, an airport of this nature will generate considerable further pressures for development in the immediate vicinity and beyond. A major airport, as Heathrow and even Gatwick have shown, becomes a natural focus of a wide range of commercial and industrial enterprises. Access to good air communications is a vital factor for many firms and will surely become more so. Firms employing a high proportion of international representatives, headquarters of international companies, exporting agencies, industrial plants manufacturing high value/low weight goods for export, traders in perishable commodities or with rapidly changing markets, persons engaged in news and entertainment media, offices for which locational prestige is an important factor and many others, all seem likely to seek locations in the general area of the airport.

Effect on surface traffics

5. The airport will generate and be the focal point of considerable surface traffic flows, not only of air passengers but of workers, visitors, suppliers and freight. In addition a general increase in surface traffic flows can be expected in its area from the secondary population and economic growth the airport will generate.

Development, land use and amenity questions

6. The construction of the airport and its effects in terms of direct employment, secondary growth pressures and surface traffic have implications for existing buildings and land uses and for new development over a wide field of public and private activity, such as housing, retail services, education, health services, road works, public utilities and the like. The economic, social and physical characteristics of substantial areas could be transformed.

7. The development involved could result in the diminished value or loss of good agricultural land, areas of high landscape quality, areas of special scientific interest, areas suitable for open air recreation, and buildings or villages of special architectural or historic interest. Height restrictions and other constraints on future development will need to be imposed for the whole life of the airport. The operation of the airport will result in some areas—particularly those under take-off and landing paths—being subjected permanently to considerable noise from aircraft.

Chapter 2

A closer look at these effects

8. Considerable difficulties begin to arise when the attempt is made to translate these general statements into estimates for planning purposes of the scale, distribution and other characterisitics of these effects, which might be expected

Printed image digitised by the University of Southampton Library Digitisation Unit

to eventuate in practice. It might be thought that estimates of the new employment and economic activity to be expected could be made and used as a basis for calculating population and traffic growth and the demand for housing and services, on the assumption that these concomitants of the establishment of the airport would be net additions to the existing economic, social and physical infrastructure, perhaps forming a fairly self-contained unit of new urban development. Whether such a result would be likely in reality, however, would be dependent on a complex of considerations of which the most important for the purpose of this evidence are the characteristics of the existing and developing infrastructure of the area eventually selected for the location of the airport.

9. For example, if it were to be estimated that the airport might provide economic support for a population of 150,000 this figure could be related to a figure of about 50,000 dwellings with appropriate numbers of schools, shopping facilities, etc. It cannot however be concluded that that population would consist entirely of newcomers to the area, that those dwellings would have to be added to the existing stock, or that a directly proportional supplementation of services and facilities would be needed. To do so would be to ignore the existing and developing circumstances of the area selected for the airport and the possibility of other changes in the economy of the area, and of airport-generated employment to some degree replacing rather than adding to existing employment. In this connection it is interesting to recall that the question of providing labour, homes and services as a result of the employment created both directly and indirectly by Heathrow airport was never an acute issue, no doubt because of its proximity to London and to neighbouring towns with considerable capacity for absorbing changes, even of the magnitude generated by Heathrow.

10. While 85 per cent of Heathrow's airport workers live within 10 miles of the airport, where a great range of housing is available, many airport personnel live in villages and towns far removed from the airport itself (e.g. south Oxfordshire)—a markedly dispersed distribution. It might well be that those workers living close to the airport do so for the convenience in travelling to work—those working early, late or night shifts might be instanced. But this journey to work factor might be susceptible to significant change in the circumstances of the new airport and having regard to the increasing use of private cars rather than public transport for such journeys.

11. In broad, the Conference considers that it should be in mind that the necessary work force for the airport could well be drawn from a catchment area containing a very considerably larger total workforce; to presume a neat and tidy relationship between the airport's employment and the workers available in the nearby population would be unwise.

12. The desire of industrial and commercial concerns to locate near the airport could also vary considerably, depending on the area chosen for the airport's location. Ancillary benefits to industry and commerce might be higher in some areas than in others. Some locations may be in areas where a heavy demand for new industrial and commercial development would arise. Other areas, say ones relatively remote, might be subjected to much less such demand despite the advent of the airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

13. As regards the effect of the airport on surface traffics, attention has been concentrated hitherto on the movements of passengers between the airport and London. It may well be that these movements will constitute the largest single flows of traffic to be expected in the foreseeable future. But the movements of workers, visitors, suppliers and freight and the traffic generated by development stimulated by the airport must also receive consideration, and these are more difficult to estimate, not least because of the hazards just outlined in predicting the totality of population and economic change in the area of the airport.

14. The way in which the airport will operate as a transport facility (that is, the services it will offer to the inhabitants and organisations of the region—an aspect on which the Conference is not submitting evidence) could have important effects on the scale and pattern of surface traffics. If, as was mooted at one time, the third London airport were to form part of a greater whole with Heathrow and Gatwick (i.e., the flights to and from each of the airports being limited to separate sectors of international airspace), then significant surface movements between the airports themselves, and between each airport and London, could be expected. But if each of the airports were to offer omnidirectional air services, the new airport's services being comparable to Heathrow's, then inter-airport surface movements would probably be less significant. Subject to factors such as suitability of flight times, passengers and freight operators might tend to use the airport most accessible to them, and so give rise to a different pattern of surface movements.

15. Another possibility which comes to mind, looking ahead ten years or more, is that there might be functional specialisation among airports, some becoming passenger terminals and others becoming freight terminals. If such a development in air transport were to lead to, say, the new airport handling mainly freight, with Heathrow and Gatwick concentrating on passenger movements, then quite different surface traffic implications could arise. Such a development could also be expected to give rise to different patterns and characteristics of secondary growth pressures than if each airport were to offer omnidirectional passenger and freight services.

Chapter 3

The regional planning issues at stake

16. The effects of the airport, however they may eventuate, are obviously of profound and wide-ranging significance to the planning authorities, in their function of securing the best interests of the community at large, and the decision on the location of the third London airport must be one of the highest importance for them. The new airport will be a major focus of new employment in its own right, and will stimulate the growth of secondary employment. Whatever the precise number of airport workers which may come to be needed, the Conference suggests that this number appears likely to be of a magnitude which will have significant implications for planning the supply and distribution of employment not only in the vicinity of the location eventually selected for the airport, but also in other parts of the South East. These implications become even more significant if the employment *multiplier* effects of the airport are taken into account. The location of the airport will affect to a material degree the

Printed image digitised by the University of Southampton Library Digitisation Unit

distribution of economic activity and population in the South East; its potential effects on adjoining regions and nationally cannot be ignored. It is an important factor in any consideration of the broad development structure of the region, including its main surface communications.

17. In its work, the Conference has often been faced with the dilemma that proposals and policies for development in the South East might run counter to long-standing national policies which aim to restrain growth in the South East in the interests of the social and economic health of other regions. The new airport will be a major addition to the economic strength and attractions of the South East. The question arises of whether and how to limit the resultant increase in the South East's *pull* in relation to other regions.

18. At the same time, full regard must be had to the fact that the new airport will be a major national investment in its own right, with relevance for the efficient functioning of a range of industrial and commercial activities important to the national economy. The issues arising from the pressures to be expected from commerce and industry to locate in places accessible to the airport seem to the Conference to merit particular consideration. There are potential locations for the airport, suitable on technical grounds, which are in areas which either do not offer fertile conditions for appropriate commercial and industrial growth associated with the airport or which are not suitable, for other reasons, for such growth. Such locations would limit development of the economic growth potential offered by the airport and the return on the nation's investment in the airport.

19. The Conference attaches importance to adequate and timely provisions being made for the housing and servicing (including transportation facilities) of the population and activities directly and indirectly resulting from the establishment of the airport, and therefore stresses the need for attention to be given to the availability and commitment of resources and of finance for such provisions. These will vary as between different locations for the airport. This could be a crucial factor in the cost evaluations of different locations. If the new airport were to be near existing population areas, it is possible that, at least initially, costs in some fields would be low. Alternatively, if the new airport were to be located in a sparsely developed area and not readily accessible to areas of existing urban development, then early commitment of resources and of public finance would be necessary.

20. The dependence on the existing characteristics of the area would be especially significant during the years in which the airport was being developed. The establishment of an isolated airport town of the size likely to be required would clearly raise many problems in providing utility and social services economically and in step with demand.

Chapter 4

The Conference's approach to the location of the airport

21. Reflection on all these considerations bearing on the location of a third London airport has led the Conference to the view that there are advantages in

Printed image digitised by the University of Southampton Library Digitisation Unit

the airport being located in proximity to areas where a physical and economic infrastructure of appropriate scale and characteristics to absorb a substantial order of population growth and of new economic activity, either exists or is developing. Bound up with this approach is its view that the airport should be located where an appropriate scale of associated industrial and commercial development will be acceptable.

22. In this connection, the Conference notes that there are areas where it would be highly disadvantageous to locate the airport. In a series of reports, the Conference has stressed the need to preserve the scale of the remaining extensive tracts of countryside in the South East in the interest of agricultural efficiency and of landscape, and to continue to guard against development and ancillary pressures in such areas. As these areas have very restricted existing infrastructures, the location of the airport in them would necessitate considerable growth of existing towns, perhaps the development of new towns and the partial urbanisation of hamlets and villages. Such development would be in direct conflict with the Conference's policies. In such areas, there would be opposition to associated industrial and commercial growth and, to the extent that such development was prevented, the economic growth advantages of the airport would be foregone. In these terms any decision to locate the airport in relatively sparsely populated areas of attractive landscape or high quality agricultural land would be open to even greater objection then has been suggested hitherto.

23. On the other hand, neither would a location contiguous with the developed area of London be acceptable, because of the implications in terms of development, traffic, and noise nuisance to residential areas.

24. The bearing on the selection of a location for the airport of the surface traffic considerations which arise is far from straightforward. In connection with the situation hitherto, when the only surface traffic movements to receive attention were those which would occur between the third airport and London, the point must be made that even though the need as seen at this time is for a third airport serving principally London, the situation may well change. At present, the distribution of population and of employment in the South East region is roughly half in Greater London and half in the rest of the region. Greater London's share of the region's increasing total of people and jobs is steadily declining. Current expectations are that by the end of the century the proportions will be nearer one-third in London and two-thirds in the rest of the region. Meanwhile development outside the region will further affect the potential distribution of demand for access to the airport.

25. As this evidence has noted earlier, however, the consideration of surface traffic implications must include estimates of important other traffic changes which might result from the establishment of the airport. And any study of these total surface traffic demand possibilities must be related to existing traffics and how these traffics might develop apart from the effect of the airport. These demands for surface transport facilities will in turn need to be set against the background of existing and programmed investment in facilities and estimates of spare capacities and of over-loadings. Conference would wish to see any

Printed image digitised by the University of Southampton Library Digitisation Unit

transport provision proposed for the airport and related development based on the needs of the transportation system as a whole and on the contribution that such investment in facilities could make to that system.

26. Other considerations apart and assuming an omnidirectional freight and passenger airport, it might be thought that, as Heathrow and Gatwick already serve not only London but also areas to the south and west of London, it would be advantageous for the third airport to be located to serve other parts of the region. A location having existing or prospective good surface links with appropriate access points on national motorway and railway networks as well as with London would have attractions from the surface traffic point of view.

27. The selection of such an area as is indicated for the location of the airport offers some incidental advantages. Thus it would limit the area's economic dependence on the airport alone, which might be thought socially desirable. It would appear to offer prospects of facilitating change in the deployment of the labour force, which becomes necessary with industrial change over time.

28. This then is the Conference's approach to the selection of a location for a third airport for London, having regard to the regional planning considerations. The Conference hopes that its approach finds favour with the Commission. Its view that the airport be located in an area with an existing large population or where large-scale population growth is taking place or is planned, is subject always to the need for the airport to be so related to populated areas, in detailed location and design, as to avoid noise nuisance. The Conference suggests that its approach takes account of the interests of South East regional planning and of the national economic interests which have been mentioned, and at the same time contributes to the avoidance of conflict with the government's policies to aid less prosperous regions.

29. Conference material sent with this evidence provides the Commission with a guide to the existing and planned distribution of the region's population, the infrastructure elements of the South East, and its agricultural and landscape areas.

30. The Conference has formed no view on specific possible locations for the airport. The assessment of the advantages and disadvantages of specific sites depends on other considerations as well as those of regional planning; and on the findings of detailed regional planning and other studies yet to be carried out.

Chapter 5

Local planning considerations

31. When the advantages and disadvantages of specific possible sites for the airport come to be argued, the local planning authorities will need to give consideration in detail to the economic, social and physical developments and changes which might ensue in their areas, the ways and means by which they

Printed image digitised by the University of Southampton Library Digitisation Unit

might come about and their timing. Examples of the assessments under this head that will be required are:

(i) the scale and charcteristics of the employment and economic activities created by the airport, and their possible distribution;

(ii) the demand for surface transport facilities;

(iii) the capacity of the area, in terms of existing settlements, services and communications, to absorb change and growth and how the capacity can be augmented;

(iv) effects on the economic and social structure of the area which will, according to the site chosen, be subject to a changed economy and more or less rapid and large scale influx of population;

(v) new development needed, apart from the airport itself;

(vi) effects of rapid development on local finances; experience has shown it represents severe difficulties, especially during the early stages.

32. There are also questions arising from the effect on the amenities and visual character of the area as a result of airport and road and building construction generally; and of the subsequent operation of the airport and the changed activities in the area.

33. The local planning authorities will undoubtedly accord paramount importance to avoiding nuisance from aircraft noise, which is bound up with the alignment of runways and flight paths, stacking areas and other operational matters. Detailed studies will be essential. Large populations must obviously be protected from day to day noise nuisance. Less concentrated populations are equally entitled to such protection. In the conditions of the South East, conflict can be envisaged as arising between protecting such populations and preserving a reasonable degree of quietness and solitude in still less populated areas for more occasional, though no less important, leisure time enjoyment.

Chapter 6

Planning information and views

34. Finally in this evidence the Conference submits copies of the following documents it has prepared in its work of collecting and assessing the facts of the regional situation and of formulating views on the development of the region:

The Conference Area in the long term—LRP 680, 780, 880, 980*.

The South East: A framework for regional planning—LRP 1180*.

Road construction and improvement prospects in the Conference area—LRP 602*.

*Not reprinted

Printed image digitised by the University of Southampton Library Digitisation Unit

35. The commission may find these helpful as a guide to the regional planning aspects of its task while more up-to-date studies are continuing. Attention is drawn particularly to:

(a) the analysis in LRP 1180 of the regional planning function (chapter 2) and the regional planning process (chapters 3 & 4);

(b) the identification in LRP 1180 of all material elements in the South East regional planning situation (chapters 5 & 6), suggested objectives for the region's development (chapter 7) and possible changes in the region's population distribution up to and beyond 1981 (chapter 8);

(c) the paucity of material and analyses on the region's developing economy and its functioning, especially economic linkages and interrelationships; the analysis of the economic context for the physical planning of the region in LRP 780—Report of Economic and Social Sub-Panel;

(d) the Conference's approach to the development of roads to carry regional and national traffics; including advocacy of a separate network of roads for such traffics, planned both to encourage and to integrate with a desired physical structuring and economic and social functioning of the region (see for example LRP 680, chapter 5); the estimate of the order of inter-urban road construction in the region which can be envisaged (see LRP 602);

(e) the danger of using existing definitions of land quality (landscape and agricultural) as part of a *sieve* process aimed at identifying those areas which, *prima facie*, would not be suitable for an airport and its accompanying development, and, as a corollary, those areas in which search for an airport site should begin. Areas of natural beauty and areas of landscape value have been separately identified within each county according to varying criteria. They are thus measured relative to their location and to the quality of land in the immediate vicinity. They are not in any sense absolute measures capable of comparison between one part of the region and another. The placing of land in a category of agricultural significance is no measure of its absolute value or its comparative value in relation to land in a higher or lower category (see pages 25 to 27 of LRP 1180 for a fuller exposition);

(f) the need to include scale in judgments of the worth of particular stretches of countryside as well as their agricultural or landscape quality (see report of Coast and Countryside Sub-Panel in LRP 780); this consideration means that large-scale country areas not necessarily defined as of special landscape or agricultural value could nevertheless be considered unsuitable for development;

(g) the extent to which maps can present a misleading impression—LRP 880 plate 7 illustrates this by showing a larger-scale presentation (still misleading) of a sample area of a smaller-scale map of urban areas;

(h) the considerable variety of settlement distribution and of physical, economic and social characteristics even within areas of similar overall population or development density;

Printed image digitised by the University of Southampton Library Digitisation Unit

(i) the relevance of journey time/cost/convenience, as well as distance, when comparing transportation advantages of different locations for the airport;

(j) constraints on the ability to accommodate population growth in certain locations. In certain cases (e.g. water shortages in parts of Essex) the constraints could be overcome, though at a price; in others (e.g., where development might lead as an ancillary to extra commuting to London but where the services or routes are already severely overloaded) costs could prove unacceptable (see chapter 6 of LRP 1180 for a general exposition on constraints on development in the region).

Printed image digitised by the University of Southampton Library Digitisation Unit

South East Plan and the Third London Airport

STATEMENT BY THE DIRECTOR OF THE SOUTH EAST JOINT PLANNING TEAM

1. The South East Joint Planning Team was commissioned in May 1968 by a body representing, at Ministerial level, the Department of Economic Affairs, the Ministry of Housing and Local Government and the Ministry of Transport, together with the South East Economic Planning Council and the Standing Conference for London and South East Regional Planning.

2. The Terms of Reference (see Annex) require the Team to produce by December 1969 a regional plan for South East England to act as a framework within which Government can take decisions on public investment and local planning authorities can fulfil their commitments for producing the local structure plans required under the Town and Country Planning Act 1968.

3. A professional team covering a wide range of economic and physical planning disciplines began to operate on a small scale in May and has been in full operation with a professional staff of forty since August. In addition, three groups of consultants are closely integrated with the Team in the fields of transport, employment and sociology. The Team has at its disposal all relevant material available to both central and local government.

4. The objective is first to secure the best possible understanding of the region; how it has evolved, how it operates now in physical economic and social terms and the strength of the economic and social forces at work within it. This will be viewed as far as possible against a background of national data, government policies, and current development in Western Europe.

To this end the Team aims to collate the main data available by the end of 1968. This work is proceeding satisfactorily as scheduled.

5. The second stage will be to produce a realistic regional framework based on the understanding of the strengths and weaknesses of the region. The process will itself be constrained by the time available, especially in the complex field of transport testing. Time will only allow the Team to design and test in detail two alternative transportation plans. This does not exclude the subjective examination of other alternatives.

6. It is intended to complete three "blocks" of transportation and other tests by the end of 1969. The first will be a test of the pattern in 1981 which can be expected to result from commitments in existing land use plans and Government decisions and the broad present intentions of the highway, railway and airport planners within foreseeable limits of investment. In view of existing commitments, it is not expected that the pattern deriving from present trends can be materially altered before 1981.

Printed image digitised by the University of Southampton Library Digitisation Unit

7. The other tests will be of two alternative plans broadly to the year 2000—although time will not permit testing in any detail beyond 1991. The initial Terms of Reference require one of these tests to be of a definitive plan based on the radial corridor strategy for the South East proposed by the South East Economic Planning Council. This will follow immediately after the 1981 test.

8. The third test, also in detail only to 1991, will be of a materially different framework selected as the most realistic of a wide range of theoretical possibilities in the light of the Team's collation of existing and new research.

9. Movement of employment and population to new areas of growth, both within and beyond the South East and the effects of movement on the "exporting areas" are fundamental to any regional plan. The future financial situation of the country in the long term and related changes in social demand, car ownership, working hours and recreational needs are inter-related and equally important aspects of the future society. Both alternative plans will pay special regard to the realistic financial, economic and social possibilities of all these factors.

10. The work of the Team is the first exercise of its kind on a regional scale in a Western country which possesses the necessary machinery to implement regional plans. Methods of operation and the evolution of a regional planning process will be developed as the work proceeds. The results cannot form a definitive "end state" plan. They will however provide a starting point which will be further tested by practical application in more detail in the local structure, district and action area plans required under the new Town and Country planning legislation. There will be an inevitable "feed-back" to an evolving regional plan which will be open-ended but never finite.

11. The job of the South East Joint Planning Team is to ensure that major growth of employment, population and traffic can be realistically accommodated within a satisfactory overall plan for the South East. If major growth is to be created by a third airport it must be provided for within the regional framework. When the decision on the location of the airport is finally known, adjustments may be necessary in the form of the regional plan and in the physical structure of specific areas or sectors of the South East.

12. It is hoped that close liaison will be achieved between the Roskill Commission and the South East Joint Planning Team as the work proceeds.

Printed image digitised by the University of Southampton Library Digitisation Unit

ANNEX

South East Joint Planning Team: Terms of Reference

(*as agreed by a meeting of the Commissioning Body on 2nd May* 1968)

To consider and report with recommendations on patterns of development for the South East, taking as a starting point the strategy proposals of the South East Economic Planning Council, but also taking account of the planning work of the Standing Conference on London and South East Regional Planning and having regard to Government policies, with the object of providing a regional framework—

(a) for the local planning authorities to carry out their planning responsibilities, including, as appropriate, the preparation of structure plans under the Town and Country Planning Bill now before Parliament, and

(b) for Government decisions on investment, and economic and social policies relating to the region's future development.

It was agreed that the aim should be to complete the work within about eighteen months.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence submitted by the South East Economic Planning Council

The Council do not propose at this stage to make specific recommendations on whether particular sites would or would not be appropriate, but they present in this memorandum general observations on the regional planning considerations involved in the location of the Third London Airport, with the objective of assisting the Commission in their initial task of selecting a small number of sites for further detailed study.

Locations outside the South East region

2. The Council would first wish to emphasise that a location for the new airport outside the region ought not to be ruled out altogether. The Commission's terms of reference are not specific on this point and an airport at some distance away could still serve the London area. The Council is aware that the results of the origin and destination surveys carried out on airport passengers some years ago are not universally accepted as valid and they feel that this data ought now to be supplemented by more recent and more informative evidence. This should also take into account the possible effects of a Channel Tunnel in diverting passenger traffic between London and the nearer European cities away from the airports. In addition, the recent development and extremely rapid growth of air freight traffic is a most important factor to be taken into account and, if the new airport is to cater for such traffic, new location criteria may be appropriate.

3. Furthermore, the Council are convinced that full consideration must be given to the economic impact of such an airport on the surrounding area. Some of these effects are discussed in more detail below, but clearly the opportunities for economic growth both directly and indirectly associated with a major airport are of national importance, and the fullest development of this potential is essential if scarce investment resources are to be properly deployed.

Location within the South East

4. The Council recognise, however, that on present evidence the new airport will probably need to be within easy reach of London, which suggests a site in the region, and the remainder of this paper explores the situation which would then arise. In this context regional planning factors ought to be of major importance; and in the Council's view the considerations set out below on the future development of the South East should preclude the selection of any site which does not meet regional planning criteria.

5. What are these criteria? In the first place it will be most important to relate the location of the Third London Airport to the broad planning strategy for the South East Region. This is now being examined by a Study Team under Dr. Wilfred Burns, Chief Planning Adviser to the Minister of Housing and Local Government, and jointly established by the Government, the Standing Conference of local planning authorities and the Planning Council. The starting point

Printed image digitised by the University of Southampton Library Digitisation Unit

for this Study is the strategy put forward by the Council in their report *A Strategy for the South East*, of which a copy is enclosed*. It is suggested that the Commission should take account of these strategic proposals in their choice of sites for study and it is clearly of great importance, whatever the oucome of the present Study, for the new airport's location to be determined in relation to the existing centres of population and to any new areas of major urban growth proposed for the future.

The Planning Council's strategy proposals

6. The Council's report recommended a pattern for future distribution of population based on a number of radial sectors for growth broadly following the main lines of road and rail communication, existing and proposed, and leading from London towards the edges of the region. The objective is as far as possible to concentrate future growth of population and employment into these sectors, although inevitably there would continue to be some growth of population and small-scale industry at a much slower rate on other parts of the region. In the context of this strategy it is quite clear that the Third London Airport, with all its implications for such growth, and its need for rapid access both to/from London and to/from other parts of the country, would in our view be most appropriately located along or adjacent to one of the growth sectors proposed by the Council. (We recognise, of course, that the noise problems associated with a large airport would make fairly wide areas in its vicinity unsuitable for housing and other development, but this would not be an insuperable difficulty as long as the areas affected by noise could be identified and new development planned accordingly). Location in any other part of the region would be likely to create a new minor sector leading from London to the new airport and, although the strategy is not final and is open to variations, such a departure from it would seem likely to be damaging to areas which the Council felt should be retained for agriculture and for other countryside activities.

7. In contrast the least desirable areas for the airport would clearly be those which the Council have proposed as country zones. In these areas (which are for the most part already designated as of Outstanding Natural Beauty or of great landscape value) the establishment of an airport would clearly be contrary to all past principles of development control, and would besides be severely detrimental to amenity and certain to provoke a public storm of protest.

8. But there are also considerable areas in the rest of the region outside the sectors for growth where the location of an airport would not be desirable. In a region already relatively densely populated, and with considerable further growth of population in prospect, the retention of wide areas of natural landscape is of particular amenity and recreational importance. Furthermore, an airport in these areas would be extremely damaging to agriculture which is still an industry of great economic importance in the region; and it would be likely to introduce rapid employment growth in these areas, which the Council think is not appropriate. The Council therefore pointed out, in paragraph 37 of their report, that the Stansted decision presented major difficulties in the light of their strategy proposals, and in the light of the factors mentioned above there are clearly extremely strong objections to Stansted on regional planning grounds.

*Not reprinted

Printed image digitised by the University of Southampton Library Digitisation Unit

Growth implications

9. These indications, based on the Council's strategy, and pointing to a location adjacent to or along one of the radial sectors are strongly supported by the employment implications of the airport. The Council's objective of concentrating employment growth in future largely within these sectors means that the wide range of labour, from which the airport will have to recruit its necessary staff, is likely to be found only in these areas. It has been provisionally estimated that between 30,000 and 60,000 people could be employed at the airport by 1981, of whom about one-third would work in occupations directly connected with the operation of the airport, and the remainder in secondary occupations connected with it—and this may turn out to be a conservative estimate. At the same time the population required to supply a labour force even of this size would probably be between 100,000 and 150,000 people and such an expansion would clearly only be appropriate in one of the major sectors for growth.

10. The airport will also inevitably be a focal point for growth, attracting to its vicinity a wide variety of commercial and industrial firms and supporting services. It will be most important for the economy that we should take as much advantage as possible of this situation, and the Council has also expressed the view that it would not be practicable to restrict growth around the Third London Airport too much. Adequate provision for the growth of such enterprises must be made, especially in cases where a location reasonably close to the airport can be justified, e.g. for a firm with a large export business in goods suitable for air freight or requiring frequent contacts with overseas clients or suppliers; and this should be recognised from the start as an essential part of the planning of the airport's development. This view may present some difficulties in the light of present policies for distribution of industry within the region, which will have to be faced; but, from the regional planning point of view, it is desirable to plan and provide for this industrial expansion in a growth sector.

11. Communications will be another major factor in selecting the airport site since convenient and rapid access to London will be of importance. In drawing up their strategy, the Council thought it sensible to base their plans primarily on the road and rail plans already drawn up for the early 1970s; and the growth sectors, which are based on these plans, therefore offer very good links of a high standard which could also serve the new airport. This does not rule out, of course, the provision of special communications for the airport, but, if it is to be in service during the 1970s it will be necessary to rely in the early stages on the routes already available. But if new communications links, or improvements, were necessary, they would in these areas serve the dual purpose of giving access to the airport as well as better communications to the growth sector concerned.

Conclusions

12. These considerations indicate that from a regional planning point of view several of the sites hitherto suggested would be suitable. For example, to the east of London there are already large concentrations of population who at present have to travel through London to an airport, journeys which could perhaps be avoided. In the future the Council expects further growth both north and south of the Thames and an airport in this area would also serve future

Printed image digitised by the University of Southampton Library Digitisation Unit

population in the growth sectors to the north-east and south-east of London. On the other hand, sites along the London-Birmingham axis might well have industrial advantages (for air freight), and would spread the economic benefits into other regions. Here too a substantial increase in population between now and the year 2000 is expected.

13. Finally, the problem of aircraft noise ought not to be overlooked. In a region as densely populated as the South East the effects of noise can be disturbing to many thousands of people and this must have major implications for airport location in the area. In the Council's view the least difficult location is likely to be at a coastal site where aircraft approaches and departures can take place over the sea. The fact that land in the region is one of the scarcest resources and already under most severe pressure for housing, industrial developments, roads, agriculture, amenity and other uses also supports such a location and must tell heavily against any inland site.

14. Fortunately locations that are suitable in this respect exist in the region and could be provided with reasonable access to London. The Council recognise that there are disadvantages also to most of the sites suggested but the arguments in their favour are very strong. Indeed, if it were possible to combine an airport with a deep water port, as has been proposed in one area of the Thames estuary, the Council would see considerable economic advantages in a plan which linked complementary investment in this fashion.

15. The Council would welcome a further opportunity to comment in greater detail on the implications of particular sites when the Commission has completed the first stages of its work and made a preliminary selection of sites which merit detailed study and investigation.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence Submitted by the Town and Country Planning Association

1. Introduction

The Association expressed its views on the question of a third airport for London during the period prior to the setting up of the present Commission, when it was intended the airport should be built at Stansted. The statement which the Association published in May 1967 and the text of a leading article by Professor Peter Self, Chairman of the Association's Executive Committee, published in the July 1967 issue of *Town and Country Planning* contain comments which we believe are still relevant even though consideration is now being given to other possible sites than Stansted.

Notwithstanding its previous comments, the Association wishes to affirm some of the points it made and we intend to concentrate on the three factors which we consider most important in determining the location of the airport. These are the *function* of the proposed airport in relation to regional demands, *the regional planning* considerations, and *noise*. First, however, there is the important issue of the airport's *size*. A summary of the following comments is contained in the Conclusion at the end.

2. Size of the airport

The Commission's terms of reference are in some respects very broad. They are, however, specific in so far as it is a *four*-runway airport for which a site has to be found. This is a doubling in size relative to the original proposals, argued at the Stansted Inquiry, and yet there has been no explanation in public of the reasons for this change. It is a change, however, that carries profound planning implications—sufficient, in fact, to call in question the Commission's terms of reference. For it by no means follows, even assuming that future demand for air travel has been correctly assessed at the four-runway level, that a concentration of facilities in one gigantic airport is acceptable on planning grounds. In fact, it may be said that the making of this proposition without public discussion suggests an unawareness of the role which urban form must play in the siting of airports.

A major airport is a key determinant of the way in which any metropolitan region must develop. Such an airport can no longer be regarded—as was possible in the old days of municipal airports—merely as an excrescence to a town. Rather, it now has a vital impact upon the location of industry and of housing and upon major ground communications. The Association holds *prima facie* doubts as to whether there is a location in the south east where a growth commitment on the scale of a single four-runway airport should be entered into.

The Association would go further. The pattern of metropolitan regional growth in the second half of the twentieth century militates against the kind of concentrated development represented by a four-runway airport. Rather, this pattern of growth lends itself to the multiple decentralisation of every kind of facility, including airports. Hitherto, the self-interest of the airlines in particular

Printed image digitised by the University of Southampton Library Digitisation Unit

has enforced the centralisation of airport facilities. Current experience in America, however, is pointing towards the inevitability of a multiplicity of airports in any one metropolitan region. Indeed, in principle, the pattern of airports in relation to urban growth is likely to become precisely inverse to that to which the railways have accustomed us: instead of terminals in the city centre, each serving a separate sector radiating therefrom, airports in a metropolitan region will be obliged each to serve a part of that region, with routes radiating in every direction. Insofar as the additional capacity provided by a four-runway airport may be necessary at some time in the future to serve the whole of the London metropolitan region, it is doubtful if the region will be properly served if this capacity is concentrated in one airport. We may wish to have second thoughts about where the third and fourth runway capacity should be located and the Association therefore urges that no fixed commitment to a four-runway airport should yet be entered into.

There is a secondary reason for calling in question the wisdom of stipulating a four-runway airport. In the absence of any official explanation, it would be common sense to assume that this requirement derives, not from any anticipated short-run increase in air traffic over against that postulated in the Stansted proposals, but rather from a desire to obviate the search in due course for a fourth London airport. If this is so, it must raise doubts about the wisdom of planning so far ahead in a sphere of such rapid technological change. In twenty years time, say, present-day runway requirements may be obsolete. It would not be easy to justify planning blight, for so long, upon so many thousands of acres. Even more important, perhaps, the impact upon metropolitan regional planning of such a dubious long-term commitment could prove dangerously misleading.

This reasoning points inescapably to the impossibility of locating an airport or airports in the London metropolitan region except as part of the exercise of planning that region. It is a major weakness of the Commission's position that it has been conceived separately from that excercise. The Association, in section 4 below, outlines its views upon the planning of the London metropolitan region. Whether or not the Commission feels itself able to assess these views, the Association does request the Commission as a matter of practicability to consult closely and continuously with the team under Dr. Wilfred Burns now re-examining the planning of the South East.

3. Airport function and regional demand

The function of the airport can be looked at from three aspects:

(a) Should it be multipurpose or not, i.e. should it act as a regional, national, European and inter-continental airport simultaneously; and should it cater for freight as well as passengers, or passengers only?

(b) Should it be omni-directional, having flights travelling to America, Africa and Asia and places in between, or only flights in one or two of these directions?

(c) Should it serve all or part of the region (the South East) in which it is located?

Printed image digitised by the University of Southampton Library Digitisation Unit

When the proposal was to have the third airport at Stansted it was apparently the Government's intention for it to be as multipurpose and as omni-directional as possible. On balance we think this is the right approach. It is desirable that the airport should operate to the maximum convenience of the travelling public and an airport that is multi-purpose and omni-directional, subject to other factors, provides this convenience. Passengers living near or visiting the area around the airport are offered the greatest choice of service; and passengers travelling en route for other destinations by air can do so without making the tedious journey to another airport. (Even with rapid transit links via central London the journey would be quite a long one). We know that passengers in these categories are at present a minority of the total and that most of the passengers using Heathrow are either coming from or going to Greater London (though we have our doubts as to the validity of the survey results which produced this conclusion). This group must not be inconvenienced by an airport which was single purpose or which served destinations in a few directions only. However, we believe that, as decentralisation of population and industry from Greater London continues and people live further out, and as car ownership increases, passengers whose origin or destination is Greater London will be a diminishing proportion of the total. It will therefore become all the more important to provide airports for London of a kind which are convenient for the people living in that sector of the region where each airport is located i.e. multi-purpose and omni-directional airports. It will of course still be essential for all London's airports to have rapid communications with central London and this will be particularly important for the new airport which is likely to be further from central London than either Heathrow or Gatwick.

There is, however, a modification to the idea of all London's airports being multi-purpose and omni-directional which could be considered. It is perhaps of greater importance for short and medium haul flights that the London airports should be multi-purpose and omni-directional, on the principle that the shorter the actual air journey the shorter should be the ground journey to and from the airport. For inter-continental flights people might be prepared to make a longer ground journey before or after the flight. An arrangement may thus be workable where all the London airports are multi-purpose and omni-directional so far as short and medium haul services are concerned but inter-continental flights are handled predominantly by only one of them.

If such an arrangement proved workable, it is in our view the new, third airport, which should predominantly handle the inter-continental flights since the capacities of both Heathrow and Gatwick are limited. However, one possible repercussion of such an arrangement would be that those firms which have located themselves near to Heathrow in order to have access to a full range of air services would have the bulk of the inter-continental services removed to another airport. On the other hand as air freight traffic increases freight may increasingly be carried in exclusively freight aircraft. Thus to enable firms to make the best use of these services there is a case for all three London airports also being multi-purpose and omni-directional for the carriage of freight. The suggestion for one of the airports predominantly to handle inter-continental flights should thus apply to passenger flights only.

Printed image digitised by the University of Southampton Library Digitisation Unit

There is, however, a possible disadvantage to the third airport being multi-purpose and omni-directional even on the modified basis outlined above. It is that by duplicating (or triplicating) services provided from the other London airports it will be wasteful to the airlines. If the three airports were used by different airlines this disadvantage would be overcome but it would be difficult to get the airlines' agreement to such an arrangement as it would favour those using Heathrow, since it is nearer to London, unless there were differential landing charges between the three airports. The only source from which the Commission can get an answer to this problem is from the airlines themselves. We therefore urge the Commission, as soon as possible, to seek the airlines' opinion on whether they would provide services from, and full maintenance facilities at, both a new four-runway airport, Heathrow and Gatwick, or whether they could economise among themselves by some airlines operating mainly from Heathrow or Gatwick and others mainly from the third airport.

With regard to whether the new airport serves all or part of the region we have already indicated (section 2 above) that the need is for airports increasingly to serve that part of the region in which they are located. This being so, and assuming that Heathrow and Gatwick will continue in operation, the need is for an airport to serve that sector of the region running from the north-west of London eastwards to the Thames Estuary including part of Kent.

These points, (the extent to which all three airports should be multi-purpose and omni-directional, the way in which the airlines would react if they were, the need for the airports to serve different sectors of the region, and the operation covered in section 2 of the airport's size), all suggest that if the Commission is to recommend a site having taken all factors into account, it should, as part of its task, prepare an airport development plan for the London metropolitan region. This is undoubtedly a lot to ask but we see no alternative if the airport is to be sited and planned in relation to the airport needs of the whole region.

4. Regional planning

We have already mentioned the impact which a major new airport will have on a wide area surrounding it. Estimates were made when consideration was being given to Stansted as the third airport that it might employ between 20,000 and 40,000 people, based on the situation at Heathrow which employs 40,000. We have not found any evidence that the third airport (if only two runways) would employ less than Heathrow, and if it is four runways it might therefore employ up to 80,000 people. This represents a population, to be accommodated and serviced, of about 400,000 to 500,000 or the equivalent of a new city substantially larger than any currently proposed.

To this figure should be added the population which will be attracted to the area of the airport as the result of its economic magnetism. This is difficult to estimate. However, the employment created by the manufacturing firms, warehousing concerns, transport firms and hotels, etc., who would locate themselves near the airport could be at least as much again as the number employed serving the airport and its employed population. The total growth potential of a four-runway airport might thus generate a new city of up to 1 million population.

Printed image digitised by the University of Southampton Library Digitisation Unit

It is our view, as implied already, that a magnet of this size must be located in such a way that it relates to an overall framework for the development of the South East region. Certain conclusions flow from this.

A strategy for the South East region has not yet been agreed, and we must assume that those strategies drawn up so far have been shelved, in view of the South East Joint Planning team having been set up to prepare yet another strategy for the region. However, some basic aspects of the previous strategies seem unlikely to be changed. One of these is that every effort should be made to see that the South East region does not attract more people to it from other parts of the country than leave it; it should accommodate the natural increase of the region only. The Association strongly supports this policy not only to avoid congestion in the South East but also to avoid further drain of population and employment from other regions. However, a magnet the size of the third airport could seriously upset this policy if it is located too near neighbouring regions. The effect would be to draw population and employment into the South East. On this ground we consider that any location more than 40 to 50 miles from London in the direction of a neighbouring region, is ruled out. (Locations beyond 50 miles are probably also ruled out because of the need for rapid communications with London).

There is also the factor, which the Commission will need to consider, that peripheral locations of this kind, *and* possibly some locations closer to London, would delay the build-up of regional airports in the regions around the South East. A third airport to the north or north west of London, at Silverstone, for example, would, (unless it provided inter-continental services only which we have said is impracticable for other reasons) delay the development of air services from the Midlands to Europe and the rest of U.K. We think it is important that the third airport should not have this effect since the build-up of regional airports is an integral part of their whole economic growth.

A further aspect of regional strategy for the South East which we think is unlikely to change is the need to provide relief for London by the decentralisation of employment and population. The Association has recently outlined how it thinks this can best be done in a memorandum on planning for the South East of England, published in August 1968. The principle outlined is that relief of London can best be achieved by building on the poles of growth that have already manifested themselves in the region. We suggest the dispersal of jobs and population principally to the Outer Metropolitan Area, some 40 to 50 miles from central London. This is an area which has already shown itself to have great potential for growth and to which employment and hence population from London could readily be attracted. We urge that the employment and population which moves to this area must be accommodated in planned settlements, possibly using new town machinery or a modified version of it. We think that the third airport should be located on the same principle; that is where the growth which it will generate will be maximised. It would indeed be wasteful to do otherwise.

This argument points to some areas as unsuitable locations and suggests others which are suitable. The general area around Stansted, for example, is

Printed image digitised by the University of Southampton Library Digitisation Unit

ruled out. Apart from its value as an area of high amenity it is not, apart from Harlow, an area with suitable growth potential. On the other hand, areas such as those south west of Heathrow, or central or north Hertfordshire, or the Thames estuary are all suitable on the grounds of growth potential. However, the first two of these are ruled out for other reasons. In both areas the problem of air traffic control would probably be insurmountable and the area south west of Heathrow is also unsuitable because it is already served by Heathrow, and the north and east sectors of the region would still not be catered for. The Thames estuary, on the other hand, presents much less serious problems for air traffic control yet has advantages from the regional planning point of view. The completion of orbital communications around Greater London and beyond, together with a new route across the Thames either by bridge, tunnel or barrage, will link the area with the national communications network and the proposed cross channel link. The damage to landscape is likely to be less than in almost any other area in the South East. It is well away from other parts of the country and is thus unlikely to draw excessive population into the south east. Communications to central London especially north of the river are reasonably good, though they will certainly need to be improved.

The two sites which have already been much discussed are, of course, Sheppey and Foulness. We know that these sites have disadvantages but we strongly urge the Commission to consider whether these are outweighed by their great advantages on regional planning grounds. In our view they are.

5. Noise

Consideration of the noise factor also points to the advantages of a Thames estuary site. We know that technical improvements and the introduction of the Government's noise certification scheme achieve reductions in noise levels from aircraft but we do not think this should be relied upon when considering the site for the third airport. All the indications are that noise levels will increase before they can be materially reduced. While a fourth airport of two runways might certainly be sited in the 1980s or later on the expectation that noise levels would be reduced, a two or four-runway airport for the 1970s should not be. Thus a site where noise nuisance is minimised is highly desirable and an estuarial site has the advantage that much of the noise could be distributed over water rather than built-up areas.

Apart from the benefit of less annoyance to the public which this would produce there is also the possible consequential advantage that there could be less restriction on night flights. This would enable the airport to be used more to its full theoretical capacity with obvious advantage to everyone. the British Airports Authority, the airline operators, the public and the economy in general.

6. Conclusion

(a) *Size*

The Commission's terms of reference stipulating a four-runway airport calls for explanation as it represents a doubling in size from what was earlier proposed at Stansted. The effect which such a large airport would have on the form of

Printed image digitised by the University of Southampton Library Digitisation Unit

development in the South East is so great that the Association doubts if there is a suitable location in the South East where such a growth commitment should be made.

Moreover, though an airport on this scale may meet the capacity requirements of the region for many years to come, the Association believes that the region will be inadequately served if this additional capacity is concentrated in one airport. The need will increasingly be for each sector of the region to be served by its own airport. For this reason, and also because in twenty years or so technical developments may make present-day runways obsolete, the Association does not think a commitment to a *four*-runway airport should be entered into.

(b) *Airport function and regional demand*

With regard to the airport's function the Association concludes that the third airport (and also Heathrow and Gatwick) should be multi-purpose and omni-directional both for passengers and freight because this will provide greater convenience both for firms and an increasing number of passengers in the future. However, consideration should be given to the idea that the three airports might be multi-purpose and omni-directional for medium and short haul flights only, while only one airport, the new one, should be used for inter-continental passenger services. People might be prepared to make a longer ground journey if their air journey was also to be long. It will of course be essential for the new airport, as well as Heathrow and Gatwick, to have rapid communications with central London.

A possible disadvantage to London's airports being multi-purpose and omni-directional is that the airlines may have to duplicate or triplicate their services, with consequential cost to them. The Commission is therefore urged to seek the airlines' opinion on how they could overcome this problem.

The need for London's airports increasingly to serve the parts of the region in which they are located points to the greatest need being to the north and east of London.

The Association concludes that the function of the proposed new airport and the regional demands upon it are so interrelated with London's existing airports that the Commission will need to prepare an airport development plan for the London metropolitan region if the new airport is to be sited taking all considerations into account.

(c) *Regional planning*

The Association estimates that a four-runway airport could create direct employment for up to 80,000 people and that, with the additional employment created by firms attracted to sites near the airport, a total population of up to 1 million might be generated.

Printed image digitised by the University of Southampton Library Digitisation Unit

The location of a magnet this size must be related to a regional plan for the South East and the Commission are urged to consult closely and continuously with the recently established South East Joint Planning team under Dr. W. Burns.

The basic principles governing the airport's location are that it should not be so close to neighbouring regions as to draw population into the South East from them; or delay the development of their own regional airports. The airport should be located where the growth it will generate will be maximised and this suggests a location within the booming outer metropolitan area.

The conclusion is that a site on the Thames estuary offers the best location on regional planning grounds where damage to landscape would be minimised, where easy access could be made to the proposed orbital communications around Greater London and the national network, and where the impact on neighbouring regions will be minimal. The choice of a site where noise nuisance is minimised is of great importance, and this too points to the advantages of a site on the Thames estuary.

Printed image digitised by the University of Southampton Library Digitisation Unit

NOTES OF PROCEEDINGS
FRIDAY 8 NOVEMBER 1968

CITY TEMPLE HALL,
LONDON EC4

Before: the Hon. Mr. Justice Roskill (*in the chair*)

Professor Colin Buchanan

A. Goldstein, Esq.

A. J. Hunt, Esq.

Professor D. Keith-Lucas

Arthur Knight, Esq.

Professor A. A. Walters

J. Caines, Esq. (*Secretary*)

Oral evidence taken from:

The South East Joint Planning Team
(*Dr. W. Burns*)

The Town and Country Planning Association
(*Prof. Self, Mr. D. Hall and Mr. Thorburn*)

The Standing Conference on London and South East Regional Planning
(*Lord Nugent of Guildford, Mr. C. N. Saunders and Mr. B. Howell*)

The South East Economic Planning Council
(*Mr. M. Hackett and Mr. C. T. Higgins*).

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

DR. W. BURNS called

244. *Chairman:* Dr. Burns, is there anybody you want to come with you to the table?——(Dr. *W. Burns*) No.

245. Dr. Burns, first of all, I would like, on behalf of all of us, to thank you very much for coming today, for the help that you have already given us in your papers, and for the help which I have no doubt that you and others with whom you are at present working will give us in the future. I think that it might be easier, because this is a field which Professor Buchanan has very much been concerned with, if today I leave him to make most of the running, whereas perhaps last week I made most of the running. So I will ask Professor Buchanan to start the questioning today.

246. Professor *Buchanan:* Dr. Burns, I think it might be useful for everybody if we just mentioned the scale of the project as we see it. It is to be a four-runway airport; that is to say, it will be handling about twice the traffic of Heathrow. In physical area it will be very much larger than Heathrow. We are not absolutely clear at the moment how much, but it will be possibly three to four times larger in physical area.

Another matter we are considering is employment. From figures we have been given so far it could be of the order of 52,000. So one is beginning to get a big supporting population, perhaps 150,000. The estimates vary from perhaps 100,000 in the early stages building up to 250,000, all depending upon the degree of diversification of employment one gets.

As we are beginning to understand the matter we can see that there are two aspects to what normally goes under the heading of regional planning. One is the strategic siting of this airport and its development in the South East. Secondly, when one has got an idea of where strategically the airport would best be sited, then there is the question of the capability of that locality to receive this urbanisation.

We are very much aware of the work that has been done over the last twenty-five years on regional planning of the South-East, starting from Abercrombie's plan, green belt, new towns, new town belt maps, procedures, *The South East Study**, the work of the Economic Planning Council, the Standing Conference, and now your own study.——Yes.

247. I think perhaps we can be forgiven if we feel at the end of all this slightly confused as to what the regional planning situation is in the South-East into which our project must fit. We are very anxious to do our best on this, but we are very far from clear at the moment as to what all the various policies are, how they are evolving, and what influence they are likely to have on our task. I could put it in this way, that we are not really quite clear whether the project we are dealing with is going to be a major influence upon the regional planning policies or whether the regional planning policies are such that we have got to fit in with them. We are in a curious chicken and egg stage here. I think it would be very helpful if you would indicate to us the method in which your particular assignment arose and if you would say what you think the implications of your work are likely to be for the project which we have got to decide, and in particular how the timetables are going to work out for our two exercises.——Yes. The uniqueness of our activities, I think, is that for the first time we are able to draw together the teams that have previously been working separately and putting forward separate plans. You referred to the Economic Planning Council's plan† and there have been plans or ideas put out through the Standing Conference. We have now a multi-disciplinary team—staff from the Standing Conference, staff from the South East Economic Planning Council or the Board, and staff from three Government Departments, all reporting to a commissioning body comprising three Ministers, the Standing Conference of local planning authorities in the South-East, and the Economic Planning Council. So we have here a machinery that will perhaps be able to come to a unanimous view on what planning in the South-East should be aiming at. At least, that is the hope of the team and of the commissioning body.

Our work is divided into two main phases. The first phase is a study of the many separate problems that one has to deal with in the South-East—the growth of employment, the growth of population, the

* *The South East Study*, 1961-1981 (HMSO, 15*s*.).
† *A Strategy for the South East* (HMSO, 15*s*.).

Printed image digitised by the University of Southampton Library Digitisation Unit

role of tourism, a whole variety of matters that affect planning in the South-East—and then to try to draw these together so that one can understand the way in which the South-East functions and see some of the factors that are leading to change of the present structure and to see how far we can guide that structure.

The second main phase of the work, which will begin in March, the first phase ending in March, will be to test three possible plans for the South-East. The first will be a plan for 1981. This has substantially—not entirely, but substantially—to be based on proposals that have already been approved. The time scale in building new towns or in building major roads is such that by 1981 the situation in the South-East will reflect decisions that have already been taken. Then there will be alternative plans for 1991, bearing in mind the possibilities for 2000.

The siting of an international airport is obviously of considerable importance in such a plan. In itself it will produce the need for a large population settlement. It may be that a very much larger population settlement than would be justified simply by the workers required for the airport, together with the service industries that would flow from it, would be the sensible kind of development to go for. This, however, it is not possible to be definite about until I think both the Commissions and my team are further ahead with their work.

I see us first of all deciding on the constraints in the area—that is, areas where one should on the face of it not develop—and areas of possibilities. I would hope, though obviously one cannot be clear about this, that the areas of possibility from a regional planning point of view would be such as to enable the urban development required for the airport to fit in with that appreciation of the regional situation and be appropriately located for the airport.

If this does not in the event materialise—and this we shall be a little clearer about when you have your short list of sites and I have completed my analysis in March—then we have two alternatives. One is to treat the airport as something outside regional planning with the minimum population required to service it, but even then this population is likely to be something substantial, or to regard it as such an important factor in regional planning that the alternative plan should be re-designed so that the network of communications, the linkage between settlements, fits in better with the possible airport sites. The difficulty about this is that we will be dealing with more than one airport site at the time that I am doing the designs for the regional plan. Whether this will create difficulties that we cannot overcome I cannot say until we see your short list of sites and my team is further ahead with its work.

248. Dr. Burns, can we just get the timetable a little clearer, because I think what you have been saying indicates that there should be an interaction between our two efforts. Our timetable is a pretty rigid one which we have not worked out: it has been laid down for us. We shall be having to start the local inquiries into the Stage II sites certainly in about May of next year. ——My timetable also has been laid down by the commissioning body for the end result, but to get to the end date the timetable is rather like this. The main phase of the analytical work has to be completed by March, and at that time we have to be in a position to put forward for testing the plan for 1981, based, as I said earlier, very largely on decisions that have already been taken. That process will take four months. At the end of that four-month period I have to be in a position to put forward the first possibility, which will be based on the principles of the South East Economic Planning Council's radial strategy. Four months from March we have to be in a position to put forward the first possibility for 1991. At the end of that four-month testing period we will put forward the second alternative for 1991. So we expect to complete all our work, including testing and final writing up, by the spring of 1970.

249. I think there is one point which I certainly would like to raise about your starting point here. We have realised that you have got to start somewhere. I think when it comes to testing various alternatives, naturally with the 1981 one you are testing the projection of the present plan, because there is not a great possibility of altering things. Then I believe you are taking as a starting point *A Strategy for the South East*. This really as far as we are concerned is the only sort of definitive idea of the strategy that we are aware of. It is the only really tight, concise study that has been put before us. What we are puzzled about is, I think, to know exactly how much weight to give to this. Would I be right in saying that your assignment has in a sense arisen out of a conflict of ideas, and is it possible that what finally emerges from your considerations will be quite different from that one?——This is possible. The

Printed image digitised by the University of Southampton Library Digitisation Unit

first test as at the 1991 position will be based on the principles behind the South East Economic Planning Council's document. But that document deals with principles. This is a radial strategy. It does not deal with the siting of settlements. Each of the corridors of growth will have to be split up into settlements for testing. But the basic principle is a radial one. This is the first test that we were asked to do, but we are also to do an alternative test that could be based on a quite different philosophy of development for this area. That is not a development along radial corridors at all but some other concept that would guide development in a way that would pull away the pressure from the centre rather than having the possibility of the pressure being increased through the radial strategy. We do not know at the moment until all the testing has been done whether the pressure would be increased through a radial strategy in the centre, but there are other alternatives where one could be quite certain that the pressure would be reduced if these are possible in economic terms when we have worked out the whole idea.

250. Your final recommendations will depend upon the results of these tests? ——This is right.

251. Will you just refresh our memories? When will that testing procedure be finished?——The 1981 test will be finished by July, by November for the 1991 first test, by February for the alternative 1991 test, and we would hope then the evaluation of the difference between these—the advantages and disadvantages—will be clear enough for us to report by the spring —March or April—of 1970.

252. So simply on the question of the timetable, you really will not be reaching any conclusions on *A Strategy for the South East* and the other main alternative really until long after we have drawn up our short list and, indeed, held our local inquiries? That is the difficulty we will be finding ourselves in.——We will not be reaching any conclusions, but it is at the beginning of the testing period that we have to design the plan to be tested, and therefore the designs will have to be based on your short list rather than on knowledge coming from the public hearings.

253. I think it would be helpful to all of us if you could just tell us what "testing" means, because the idea of testing a strategy is a difficult concept.——I think you will know that it requires about a three-hour lecture to deal with this adequately, but in a few minutes I would divide it into four main groups of testing. The first is transportation. If you have settlements, then you have got movement of traffic between them. If you have got a large number of settlements, then you have got a large number of movements to account for. In the conditions of the South-East, these movements have to be accounted for through the road network and through the rail network. So it becomes necessary to build a transportation model—this is being done for us by consultants—that can work out the traffic flowing between the at least 65 zones and perhaps 300 zones or areas of settlement within the South-East and also see those in relation to flows outside the area, because obviously traffic affecting the South-East may be going to Birmingham or any other part of the country and you therefore have to analyse it on that basis. Therefore, we have to test whether the siting of population and employment that we are proposing produces completely impossible conditions for a road network or for a rail network. Most of this is done through computer analysis.

The second main body of testing would be in the economic field. If a plan is designed that is so costly that it cannot on the best assumptions one can make ever be achieved, then the plan is useless. So we have to look at the likely availability of money for public investment. We have to on the plan decide on the likely differences in cost of the various aspects that have to be provided for urban settlement—water supply, the roads that I have already mentioned, the different kinds of public facilities that have to be financed—and see that these are of an order that can be financed.

In this economic field, too, it is really not very much good in regional planning proposing a settlement based on a large amount of employment if when you study the linkages of employment, the growth in different employment centres, and so on it is unlikely that employment will end up there. Therefore, we have on this economic side to be looking at that as well and testing that on each of the plans. Can the plan be implemented through the ordinary economic forces or through any other policies that would enable employment to emerge where the plan suggests it should, and can all this be afforded?

The third aspect of testing is the sociological one, where we want to see whether the alternatives we are putting forward are

Printed image digitised by the University of Southampton Library Digitisation Unit

likely to meet the changing life styles of people as one looks ahead into the future, the relationship between settlements for recreation, for cultural activities, the disposition of socio-economic groups throughout the area that are related to employment, and the like.

Fourthly—this we are not clear about—we would like to test it through discussions with specialist and informed bodies of opinion who would be in some way contributing to the implementation of the plan or have studied the area. This is a public participation exercise, but "public" in a somewhat restricted sense.

254. Chairman, not only do we have to work to a timetable in our whole exercise, but we have to work to a timetable today. I wonder whether, with your agreement, Sir, the other members of the Commission would like to ask Dr. Burns any broad questions on the nature of the strategic studies and if after that we might devote the remaining time with him to trying to tempt him into some indiscretions which would directly bear on the task which we have in the very near future.

255. *Chairman:* By all means. I do not know whether I am tempting you into an indiscretion or not, Dr. Burns. I think I have now read virtually the whole of the transcript of the Chelmsford inquiry.* I have read a good deal else besides. I am unable to find that at any time until your team was set up and this Commission was set up the problem of the third London airport and any related housing for those working there was ever considered in the context of planning for the South-East as a whole. By "the South-East" I do not just mean the south-eastern counties. I mean the whole of the south-east of this country, including areas to the north-east and north-west of London. Is that right?——That would be my impression, yes.

256. How did that come about?——I think it is rather easy today when one looks back to say that certain things were not done. I think in truth regional planning techniques have not been available in the past to do the job as we would now see it should be done.

257. I am talking of less than three years ago.——This is true.

258. There has been this dramatic advance in techniques in the last three years?——There have been advances in techniques. There have been, more importantly perhaps, advances in the recognition that regional planning was a possible activity and could be done. This is the first time a professional team has been set up to do it.

259. Have you got any broad principles of which you would like to give us the benefit as to what we should be looking for in siting first of all the airport and then in planning how to deal with the population which the airport would attract? What ought to be the guiding principles? Let us take the airport first.——I think you will clearly have these set out better than I can give them now. One needs to be concerned with the impact on surrounding areas. This brings in the geographical factors of the land lie, and also urban settlement, the effect of noise, and so on. I think one needs to be concerned with the movement of people to that airport, not only from London but seeing it in its national context. The additional survey work you have commissioned as to origin and destination of passengers will obviously give some guide in this. I would myself not look at it simply as being connected to London. I think it must be connected to the rest of the country.

The siting of the settlement in relation to the airport in itself, it seems to me, may in part condition the siting of the airport. If you have a very large population, then this can only be, in my view, economically successful if it is joined to the remaining major urban settlements in the country so that you develop economic linkages. Goods have to be transported between one place and another. The whole of the processing through manufacturing consists of transferring articles about. This means that the siting of any large settlement has to have regard to the national communications pattern in both road and rail. Siting in a position that does not give easy access between the major economic centres in the country would probably, with the size of town that would have to flow from an airport, so have amended the national communications pattern that these could be achieved. This, then, comes to a question of whether the scale of alteration can in fact ever be achieved with the money that we have available.

---

* Ministry of Housing and Local Government. *Report of the Inquiry into the Local Objections to the Proposed Development of Land at Stansted as the Third London Airport* (HMSO, 5*s.* 6*d.*).

Printed image digitised by the University of Southampton Library Digitisation Unit

260. *Professor Buchanan:* If I can take it up from there, Dr. Burns, I really would like to try to pin you down as far as possible. Do your considerations to date and the ideas which you have just put out indicate any direction in the South-East where it would perhaps be desirable to concentrate our search or any areas which are clearly out?——No, I could not say that at the moment. I shall be able to say that in March when I have all the constraints properly mapped and one can evaluate these constraining factors. At the moment I could not.

261. You said something fairly definite just now about the need, as I understood it, to have a fairly close linkage to other parts of the country.——Yes.

262. Would we be right in saying that this might act adversely against a very remote site but perhaps be in favour of a site which swung round towards that big industrial axis between London, the Midlands and up to the North?——Yes. I said it would act adversely if one could not afford to provide the communications pattern that would re-achieve the linkages. I am not saying that one necessarily has to build it on present communication patterns. I think in siting a large settlement and an airport one will have to have regard to the scale of investment needed to bend the communications system so that it is properly linked in.

263. *Chairman:* Does not that really amount to saying that if there are two possible sites and one is a great deal better than the other but equally a great deal more expensive you ought to exclude the better site simply on the grounds of expense? ——I think it is impossible to say that until one has got the alternatives actually on a map in front of one. I find it difficult to give an answer to that. One never gets it as black and white as that when one is dealing with settlement.

264. *Professor Buchanan:* How are we to proceed, Dr. Burns? Ideally, if both parties had ample time, what do you think would be the best procedure? Would it be best if the Commission, say, produced a short list of sites which from the airport point of view appeared to meet the needs and then passed them over to you for an assessment, and would you be in a position to give an assessment on those sites?—— Yes.

265. In what period?——In the period March-July next year.

266. We shall be having to make arrangements for local inquiries, certainly in March I should imagine. In fact, on the timetable which we have been given, the short list of sites will have to be perhaps in our minds before that.——Yes. The sooner they are in your minds the easier it will be for me in designing the possible alternative plans, if the short list of sites turns out to be such that it does not really get us into immense difficulties in altering communications patterns and water supply, and all the rest of it. This one cannot say until one has all these facts in front of one.

267. Our difficulty is that until we know something of the regional factor we cannot get at the short list. However, I am sure that we shall find a way round that. I wondered if I could just ask you a few other questions. We get suggestions every now and then that it might be desirable to attach this airport, from the point of view of the urbanisation, to some existing big project which is going ahead, such as Milton Keynes New Town: it is suggested that this would solve the urbanisation problem rather economically. Would you have anything to say about that? If one suddenly put this huge employing project down by a new town in the course of development, would this upset other decentralisation plans?——No, not as far as I can see. If some of the alternatives are in positions where we could solve the urbanisation problem based on decisions that have already been taken, then my job and the team's job in regional planning is going to be very much easier.

268. Those decisions on, say, putting the population at Milton Keynes have been taken on another set of assumptions and not on the assumption that the employment would be a large airport. This makes me ask: when this airport settles down somewhere, how in fact do you think it will be manned up? Where are the people going to come from?——I wish I knew that, too, because this is going to affect the population levels of the South-East that we are planning for.

269. Do you see this being tied to the London decentralisation programme which, I understand, is still a pressing factor in your considerations?——Ideally, yes.

Printed image digitised by the University of Southampton Library Digitisation Unit

270. So this would not be a matter of taking employment out of London. It would be a matter of a big new employing agency arriving but people coming out. ——Yes.

271. *Chairman:* Arising out of Professor Buchanan's last few questions, Dr. Burns, I wonder if you could help me on something which has struck me very much coming in completely fresh. Almost the only thing that people seem to have been all agreed on at the Chelmsford inquiry was that, if the airport was to be at Stansted, there would be no need to put a new town there. It was suggested by some people who gave evidence, notably by town and country planning officers, that Harlow and other towns could absorb the resulting population. At that time they were dealing with a proposed working population of 20,000 to 30,000 and a proposed ancillary population of probably not more than about 80,000 plus. If Mr. Masefield's figures last week were anything like right, we are dealing with a working population of about 50,000 and an overall population of about a quarter of a million—as Professor Buchanan said last week, something about the size of Southampton. On the basis of a four-runway airport, with that sort of employment and with that sort of ancillary population, do you envisage it being possible any where in the south-east region, whether it goes north, south, east or west of London, to house that population by extending existing resources and without building a new town? ——It is very unlikely.

272. You would regard it, so far as it could be judged at the moment, as almost inevitable that the need to supply that sort of population could be met only with a new town?——Yes.

273. From that does it not follow that one ought to look at the possible expansion of either an existing or a planned new town as giving some indication of the area where the airport ought to go?——I do not think one can say "Yes" or "No" to that. I do not know at the moment whether, irrespective of the airport, I should be concerned in putting forward proposals that are based on expansion of existing towns into large cities or in siting large cities or in siting a larger number of small towns. This I am not certain about yet, becasue the analysis has not reached this stage. The movement has been towards building up larger settlements rather than small towns, because of the diversity of employment that is offered. There are the physical constraints that one has to deal with in the South-East that do not make an easy decision possible.

274. *Professor Buchanan:* Accepting for a moment what I think is your view, that this would probably necessitate a new town, it is clear that it would be a fairly large new town. It would be bigger than what we have called the first generation of new towns around London.——Yes.

275. Considerably bigger. Do you think from your knowledge of the area and knowledge of planning such a town that considerations could arise in connection with the planning of that town which could be perhaps decisive in the choice between three or four sites which otherwise would be suitable for the airport?——Yes. I think this is true, especially if we are defining, as I am defining, "new town" as not simply a green field new town but a very large development that may be added on to an existing settlement. This brings in questions of redevelopment, how the whole thing can be serviced, and the urban consequences between two equally acceptable sites from airport point of view ought to be evaluated to see which are more important.

276. I am anxious to get the scale of this. When you talk about enlarging an existing town, would you mean a town of perhaps 20,000 or 30,000 people for part of it and adding so much population to it that it virtually becomes a new town?——Yes, as in our present proposals for Peterborough and Northampton.

277. It is not a matter of adding a few housing estates to an existing town.——No. It changes the thing completely. You end up with a quite different product.

278. It is a sort of product which we have been in fact coming to call a new town development, because the new stuff is on such a scale compared with the old?—— Yes, that is right.

279. *Mr. Goldstein:* Dr. Burns, I suspect that you will have seen the evidence by the TCPA.——Yes.

280. I think that the discussion over the last few minutes has put a picture in my mind of the extension of towns, which tends to make one look virtually north of London and somewhat east of north as well from the regional planning point of view. Would this be a reasonable interpretation of what

Printed image digitised by the University of Southampton Library Digitisation Unit

we have been listening to over the last quarter of an hour or so?——It would not be my interpretation. I would not try to interpret it in spatial terms at the moment.

281. You will know that the Town and Country Planning Association's evidence is very strong towards an airport on an eastern coastal site.——Yes.

282. Would you care to comment on the implications in the ambience of a new town of the size which has been discussed of such a proposal?——There have been proposals, and there are proposals in the strategy document*—the green document that you have—for major urban expansion in that sector, so in terms of urban expansion there are possibilities to be explored. Siting in that situation would lead one to explore very carefully indeed the communications between that area and the rest of the country as well as London—the point I made earlier. I do not think it is possible to evaluate these just in discussions. These have got to be worked out in costings.

283. It would be fair to say that until detailed analysis is done, looking at the picture of the South-East generally, and taking it purely from the regional planning point of view, as between an eastern coastal site and a site on a north exis, as put by Professor Buchanan, we can have a fairly even assessment of probabilities and difficulties?——They both have to be explored. I think one of the difficulties is that one tends to look at present communications and say, "There is a good road in this direction, Therefore, let us have an airport", or anything else for that matter—a new town in the terms that I shall be dealing with. This is the whole point of transportation testing. The size of settlement at either end of a road or railway determines the amount of traffic very largely and the growth of these settlements in the future will determine the future level of traffic, and this may be quite different. A road that appears to be capable of taking a lot more development today or a lot more traffic today may well be overloaded if plans at the other end, somewhere else outside the South-East or outside the area one is looking at, are such that the population is going substantially to increase. So one has got to get this back into figures in the end rather than generalities.

284. I recognise the transport difficulty and also recognise—I am sure we all recognise—the fact that it may be an unprofitable exercise to press you for answers until you have done the exploration and the analysis of the work. What I really have in mind is not the evaluation of the transport implications, or indeed the costing of the transport and other implications of different sectors, because this is a process which will take some time and will have to be gone through. I was thinking of the placing of an airport and a new town as a positive tool of planning and management for the South-East. It may well be that until your team is further along you will not be able to answer this, but I wonder whether at this stage you feel that we should take any views about this from you.——I would not give any views at the moment, because I just cannot pull something out of the air. There is a logical process of analysis, of sieving, of seeing the constraints, that in the end gives one areas of opportunity that one can then consider. We are not at that stage at the moment. The only considerations where decisions have been taken are in respect of places such as Milton Keynes and Northampton. Ipswich has been the subject of a public inquiry, though no decision has been taken. There is a study in the Southend corridor.

285. *Chairman*: Is this right, Dr. Burns, because this may be not without its importance? In your view at least, one ought not to regard the presence of existing communications such as existing roads and existing railways as too great a constraint in the siting of the third London airport and ought to be ready to look for the creation of new facilities, both road and rail?—A.—If the airport is associated with a very large urban settlement and this works in with what we are trying to do in the South-East Plan, then I think the answer is "No", subject to the tests on the economic side proving that we can afford it.

286. It is almost inevitable that it will be associated with a large urban settlement, in the light of what you said a few moments ago.——It will be associated in the terms of what I think Professor Buchanan said—a quarter of a million. It may well be, if this fits in with the regional possibilities that the team are exploring, that one is talking about one million people.

287. Why I ventured to ask this question is that I have been reading with some interest the green book that Professor

* *A Startegy for the South East.*

Printed image digitised by the University of Southampton Library Digitisation Unit

Buchanan was holding in his hand a few moments ago*. I notice from paragraph 30 on page 8 that the Strategy Map suggests that it ought to have very much in the forefront existing and programmed investment in the communications system. This rather suggests, does it not—it may well be right—that in the comprehensive operation on which we are embarked one really must not trouble to regard that as too much of a constraint?——That would be my view.

288. We can see three scales of urbanisation here. One is a minimum urbanisation to man the airport up?——Yes.

289. Secondly, we can see a deliberate policy of diversifying that employment pattern there so as not to have the whole place dependent on the airport?——Yes.

290. The third possibility is that this place would get going willy nilly?——Yes.

291. Which I think is the view that the Town and Country Planning Association is to put to us. We shall be asking the Association about that. It has visualised a population build-up to one million. So we do not quite know where we stand on the size of the project that we are dealing with. Would you be of the opinion that there is possibly something here which would grow willy nilly?——There are almost certainly areas likely to come out of our techniques where growth in a very substantial way would go willy nilly, as you say, or irrespective of the airport. If some of the short-listed sites happen to fit in with these, this would be quite an important factor, because your population and the amenities that they want, the diversification of employment, would be provided with much less difficulty than when trying to force this kind of solution. One needs some diversification in the settlement. It cannot be all one employer, as it were. There ought to be some diversification. It is much easier if this is coming naturally than if it has to be forced.

292. *Chairman*: Then I take it that you would go with the argument which is contained in a statement we have recently received from the Essex and Hertfordshire County Councils*—I am looking at Chapter II, page 3—to the effect that the most appropriate site would be in or adjacent to one of the growth centres and the least suitable in one of the country zones?——This is based on the strategy document, of course. If the strategy is shown to be right when we have tested alternatives, then I would agree with that statement. I would agree with the basis behind the statement, whether the strategy turns out to be right or not, namely, that if a different set of growth factors are worked out it would be very much easier in implementation and in every other respect if the airport could be associated with an area that was going to grow naturally. But airports are difficult things to site and the balance between these is something that I think we are going to have to work out very carefully with you during the next year.

293. Is there any area in the South-East region which you would regard as preferable to any other area for our purposes?——At this stage of consideration, no.

294. You regard the entire field as open at this stage?——Yes.

295. Whether it be north, south, east or west of London?——Yes.

296. *Professor Buchanan*: But we are, Dr. Burns, by our terms of reference dealing with the third London airport. So it has got to be related to London and careful consideration must be given to the linkage back to London. Have you yourself formed any idea of the possible distance at which it might be?——I think this depends on the communications to it and the technological developments you are prepared to take into account.

297. One possibility that might arise and which in fact has arisen in certain work which I myself have been involved in is the question of increasing the commuting load into London.——Yes.

298. If one got a large new urban area of the order of a quarter of a million, or possibly even larger, within perhaps 30–40 miles of London, is there a risk that that could increase the ordinary commuting problem? I am not thinking of the travel in and out for airport purposes, but simply the fact that there is this big urban area.——Yes. This adds on to a problem of commuting that we cannot see the solution to yet. We may not be able to even when our analysis work is complete. But with the relative decline in population in relation to

* *A Strategy for the South East.*
* Submission of the Essex and Hertfordshire County Councils to the Commission on The Third Aorport. Statement on proposed sites. Availsble from Offices of the Clerk of the Council, County Hall, Chelmsford, Essex. £4 4s. 0d.

Printed image digitised by the University of Southampton Library Digitisation Unit

employment in the concentrated urban core, we are faced with either planning on a continuing and increasing shortage of labour for the jobs or finding some way in which we can disperse the jobs. If we cannot find this way of dispersing the jobs, then increased commuting is inevitable. When I in answer to an earlier point you made said that population should go outwards—one would man up the airport from the population outwards—that would be based on present policies of trying to ensure the maximum dispersal of industry from the South-East. Some of this comes about by the pressure of labour shortage. I am trying to assess in more detail just what the situation is likely to be in the South-East and whether this is a legitimate objective to continue with. Until one has got this, I think the answer on commuting is very difficult indeed; but if we are unable to get greater mobility of employment than we have been getting, and if the population continues to decrease in the main urban core, then increased commuting is inevitable.

299. The position then is that in the central core the population is decreasing but the jobs are not decreasing.——Yes.

300. So that there is some problem of manning up the central area jobs?——Yes. You either get increased commuting or you get an immense shortage of labour and the factors that flow from that.

301. I think we have dealt with the question whether in your view it would be better to have one settlement or several settlements. I think your view was in favour of probably one settlement, but would you exclude the possibility that there might be two substantial expansions if that were found to be convenient?——No. I think it depends entirely on the site. There may be a number of settlements that can be expanded. What I would be concerned about is working on an assumption that people wanted to travel long distances to work. Some people accept this; some people in fact like it; but the great majority of people do not and the travel to work distance wants to be at a reasonable minimum having regard to noise barriers and the like. It is conceivable that two or three, or even four, settlements could act as the major living areas for people working at the airport. It depends entirely on where we are talking about.

302. Two other points which are being pressed on us, both of which were canvassed at Stansted, are, first, the loss of good quality agricultural land. The second, which I think was pressed very strongly at Stansted, was the contention that the airport was going to be put down in a very valuable tract or wedge of what you might call London's countryside. Have you any help that you could give us in respect of either of these matters? Are there any areas which from your knowledge of the area or knowledge which your team has accumulated we really ought to keep off? Obviously we are not going to go on hilly country. We have got to find an area of fairly flat land.——We are analysing the areas where recreational demand should be satisfied on a technique that the team has been able to work out. We are mapping for the whole area the landscape characteristics so that we can have an evaluation of the areas where *prima facie* one would try to avoid having development. This work is nearing completion but is not yet complete. We are also mapping the agricultural characteristics. In both fields one would adopt as a first constraint avoiding the best agricultural land and avoiding land that has amenity characteristics that would help to solve some of the recreational problems. I say that one does this as the first shot, because in all of these it is a question of looking at it in terms of costs and benefits. You can use agricultural land at a certain cost to the national economy and someone has to decide whether it is worth while using agricultural land and putting up with the results that flow from it, or, alternatively, using land that is of high amenity value because the disadvantages of not using it outweigh the advantages. In our work we will have to try to use cost benefit techniques or planning balance techniques as far as we are able to. This is not a simple problem. It is an immensely complicated problem.

303. Perhaps we can switch to another constraint, the question of water supply and sewerage. This will be at the least a very big development and one has heard of cases of projected developments in the South-East where water, in particular, has caused a good deal of anxiety. Do you think we are going to run into difficulties in either of these respects—water supply or sewerage?——As I understand the position it is likely that one could solve all the problems in water supply more or less wherever settlements might be proposed. This does not mean to say that there are

Printed image digitised by the University of Southampton Library Digitisation Unit

not situations where it will be more costly than at other situations; or that solutions could be found by given dates; or that the provision could be made by given dates. I am waiting for reports from the engineers working in this field.

304. Do you happen to know whether in the case of Stansted this question of water supply was investigated and whether any difficulties were likely to arise there? ——I do not know whether it was investigated or not.

Chairman: It was gone into to some extent but not in very great detail.

305. *Professor Walters*: Dr. Burns, I was interested to hear you talk about trying to apply some cost benefit analysis to amenity provisions. Is this the team's general attitude, that you should try to do this, should try to apply cost benefit techniques to the evaluation of amenity?——Yes, it is the team's approach to all the aspects. I think what is not technically possible today is to apply cost benefit techniques to the whole plan. This is so complex that I think it is not possible within the human mind to do it. We are therefore trying to apply cost benefit techniques in all the separate analyses that we are doing to try to seek the range over which we should be looking for solutions.

306. *Chairman*: Dr. Burns, we are extremely grateful to you for coming today and giving us an hour of your time and submitting to all the questions you have been asked. I have no doubt that your staff and ours will be keeping in very close touch, and I have no doubt that the Commission will be wanting to keep in very close touch with you and others in your study group. Meanwhile, I can only thank you. We are deeply grateful to you.——Thank you.

(*The witness withdrew*)

Printed image digitised by the University of Southampton Library Digitisation Unit

The Town and Country Planning Association

PROF. PETER SELF, MR. DAVID HALL and MR. THORBURN called

307. *Chairman*: We will go on with the representations of the Town and Country Planning Association.

Professor Self, I would like to thank you and those who have been good enough to come with you for the papers* you have put in. If I may say so, they were of particular value. We have got a certain amount to ask you on it, but it is quite clear that an enormous amount of trouble has been taken for our benefit, and I would like publicly to thank you yourself for what has been done.

I will ask Professor Buchanan to make the initial running.

308. Professor *Buchanan*: You have listened, I notice, Professor Self, to the questions which we have already been asking Dr. Burns, so I think you will know the kind of problems that are perplexing us.

I think you really make in your submission four main points. You question our terms of reference; you suggest that we have been given an airport which is too big and that it would perhaps be better to have two smaller airports, and that there should be more of an idea of sector service to London, with an airport serving the various sectors. Then I think you go on to say if there is to be a third airport then it might be better to have all three omnidirectional and multi-purpose for short-range flights, but to have one for the long-distance intercontinental flights. From that you conclude I think quite rightly, that an airport development plan is needed—and I think we would accept that this is the sort of exercise that we are indeed involved in—obviously then, to consider the relationship of the new airport to the other airports. Then you suggest that a four runway airport could create an urbanisation up to a million, and I am sure we should be very interested to hear your views on that, as to why and how long and what the implications of that would be for siting. Then lastly, on page 9 of your proof, you come back to the big question where you say that our project must be related to a regional plan and we are in the position that there is not a regional plan.

Could I invite you to present your views now. It might be helpful if we took the broad division which I indicated previously, namely the real strategic considerations affecting this, and then within a locality which appears suitable for an airport the more detailed considerations which should apply to the urbanisation associated with it.——(Professor *Self*) Yes. Would you like us to take up any of these points you have just summarised, because you gave an excellent summary of our views?

309. I would like to leave it to you. We want to make the best use we possibly can of the hour, but I think we ought to give you the opportunity, if you would like, to re-summarise your views as you put them to us.——I will not cover all the points in the memorandum, but I would like to stress one or two factors which we think are important.

Now in the first place, although we have not got a definitive plan or strategy for the region, as Dr. Burns has just been explaining, as yet nonetheless we can see certain trends and developments that are going on in the region, certain problems that will be there whatever the exact nature of any eventual regional plan. One of these trends is of course dispersal of population outwards. Just to give an illustration of this, in this green document *Strategy for the South East**——

310. Might I interrupt? Are these current trends or are these planned trends?——Well, it is very hard to draw a distinction, because the Registrar-General's projection of population trends takes account of intended planned developments, so the two cannot in fact be separated. I am afraid I cannot give you a better answer than that, but going on the Registrar-General's projection, and as I understand on that basis, we find the situation, just to give one example from the green document, *Strategy for the South East*, that whilst the population of Greater London itself is expected to remain roughly static at around 8 million, the population of the remainder of the South-East economic planning region is expected to increase by about 25 per cent

* Page 93.
* *A Strategy for the South East*, (HMSO, 15*s*.).

Printed image digitised by the University of Southampton Library Digitisation Unit

in the 17 years between 1964 and 1981—which is the figure there—bringing it from 8.8 million to 10.9 million. Incidentally, since these estimates, there has been some evidence that the population of Greater London is in fact declining and likely to decline further, and to the extent that that occurs, as we in the Association tend to think it will occur, the growth in the outer part of the region will be correspondingly greater. Then again, this Commission will be looking well ahead to 2,000 and further. One has every reason to expect these trends to continue and a very substantial growth of population to occur beyond Greater London itself. That is one starting fact.

A second starting fact is the likelihood of an increased ownership of cars, and further the increase in air travel. Probably air travel to European cities will become very much more frequent in the future, and probably more and more people will want to make their ground connections by car.

If we put together these various factors, we reach the conclusion that the importance of central London, the hub of London, as the focal point which we think of when we think of our air communications, the importance of this focal point though it will still be considerable will decline, and that on the other side of the picture you will have a more dispersed region with more people wanting to drive to airports and more people wanting to fly, probably particularly on the medium distance haul to Europe, for example. If this is true, there is going to be a demand from the travelling public in this dispersed and more populous and more mobile region for easier access to airports. People living, to take an example, on the east side of London in what are likely to be the developing sectors of population growth, running along through Essex into or up as far as Ipswich, and running through North Kent, people living in these areas and on the east side of Greater London itself will not want to go over to Heathrow—and not expect to—to get their 'plane. They will not want to go through central London at all. They will want an airport serving that sector of the region. I hesitate to use the word "sectorisation" because this has a different meaning in airport language, but there will be a demand from these people for an airport, and consequently we see the natural development of the region in terms of consumer demand to be one of multiple airports, probably four major airports eventually, distributed around the London region in such a way as to serve different sectors or parts of the region, including part of course of London itself. This is the pattern we see as likely to develop.

311. *Chairman*: May I interrupt to ask you this. Is the corollary of that that you anticipate there will be a full set of services, both European and trans-atlantic, from each of your four assumed airports?——Well, this is a question we do not feel competent to pronounce on fully.

312. But it is a necessary corollary, is it not?——No, I think it is a necessary corollary of our argument that from each of these regional airports, if we so call them, there would be a full range of services on the most popular and the most frequented routes, and that would imply many European cities and it would probably imply New York, for example, but it would not follow that from each of these airports one would be able to take a 'plane to Tokyo or to Honolulu.

313. But it is very nearly an inescapable dilemma, on the assumption that you have three or four airports in and around the London region, that either you have got to have full sets of services from each or else you have got to have very speedy means of getting from one to the other?——I want to qualify that because I think that if I am setting out to go to Honolulu I am willing to take rather more trouble about getting there than if I am wanting to go to, say, Paris or Rome. I think this is a reasonable hypothesis, that if my journey is relatively long and esoteric I shall expect rather more trouble in getting to the airport, and particularly with supersonic aeroplanes and problems of noise and so on which they produce, it is reasonable that I should have rather more trouble in doing this. Therefore, it seems to me that all that would be necessary, that our proposals would be met, if there were four airports, so to speak, good general purpose airports, and one of them also handled the really long distance esoteric type of traffic. It would then only be necessary to get your feeder services into this one airport which you would anyhow be getting because it would be larger than the others and also handling, for example, European traffic.

314. Professor *Buchanan*: Would this be met, do you think, if one had three airports? Say you have got one at Heathrow, you have got one at Gatwick, and if we put another one in what is fairly obviously the vacant sector, without mentioning any sites, would this be a suitable distribution, do you think, with three instead of four?

Printed image digitised by the University of Southampton Library Digitisation Unit

——Well, if it be true that air traffic is going to grow—I think Mr. Masefield argued at our last hearing that the equivalent of ten runways was going to be necessary; some of these could be taken up in minor aerodromes, but the major aerodromes would need something like eight runways—it would therefore follow from this analysis that two other two-runway airports are probably going to be needed, if they are not all to be put in one place.

Would it be in order to say a word more on this? I think that there are advantages on the ground in avoiding the monster airport concept, if we can put it that way. We have not come to this point yet, but the larger the airport, the greater its growth effects, the greater the related population, industrial development and so on, and it may well be this comes back to some of your earlier discussion with Dr. Burns, it may well be that it would be more beneficial to the region not to over-concentrate all these growth effects in one place, but to locate them in, say, two places.

315. Perhaps it would be convenient if you came on to the suggestion that this could build up to a million on a four-runway airport.——I am aware that this is perhaps a rather rash proposition, and I think our figure of a million must be admitted to be the extreme limit of hypothesis, but I think we would all agree—though maybe we would not all put it in quite the same way—that the argument about a quarter of a million which Mr. Masefield produced the other day is inadequate. Perhaps I could just make two points on this. One is —although this is perhaps a rather technical matter—the argument that the maintenance staffs will stay at Heathrow, which you heard the other day, seems to me as a layman in this a little surprising because if—and it was all postulated on this hypothesis—this is to be a four-runway airport, it is going to be much the most dominant airport in the region and one would have thought it would be the most important base for the airlines. Either they will move there and make it their major base, or it will never do what it is supposed to do in terms of the arguments being put forward; I do not see that one can have it both ways. It seems to me in thinking about airport problems I always come to the point that airlines have an affinity, a liking for Heathrow and I think they will have to get over this liking in fact.

So I think the first point would be that one suspects that the staff employed in the airport and directly ancillary to it would be more than about 50,000.

Secondly, there is the question of the growth effects of the airport on industry. We think there is evidence to suggest that these growth effects could be very considerable. The trouble is that it is difficult to be precise on figures here because the location of an airport is only one factor, albeit a very important one, in explaining the location of manufacturing industry and other forms of economic activities. Thus nobody can be dogmatic as to exactly how important the airport is, but we do think it is important, and I would like if I might to ask Mr. David Hall and then Mr. Maurice Ash to supplement my answer a little on this point.

316. *Chairman*: Before you leave, may I bring you back to something which interests me very much. You envisage, if I followed you correctly, that one effect of the four-runway airport would be to reduce the amount of employment at Heathrow. If Mr. Masefield's forecast—I do not know if you have seen the transcript* of his evidence?——Yes.

317. If his forecasts are anywhere near right, this would mean, would it not, that Heathrow from about 1976–1977 onwards would be working below capacity, because if it is working to capacity at that stage it will require the number of employees that he is postulating are working there and will be working there. Is not that a necessary result of your view, Professor Self, that there would be a run-down at Heathrow? ——Perhaps Mr. Hall can answer that. (*Mr. Hall*): My comment as you were speaking on that would be this does not necessarily mean a run-down in capacity of Heathrow because in fact what would shift would be the maintenance staffs because there would be simply the greater amount of traffic at the third airport, but the actual amount of traffic at Heathrow would still be up to capacity.

318. Professor *Buchanan*: I think the information we have so far suggests that I believe something like a quarter of the employment at London Airport is concerned with engineering maintenance of BEA and BOAC, and as we understood it

* Page 35.

Printed image digitised by the University of Southampton Library Digitisation Unit

there is considerable capital invested in those buildings and plant and equipment there. It is not clear that that would in fact move at least for a period of time.——Professor *Self:* Could I just offer a comment on that. Naturally one hesitates to stick one's neck out on such a technical question, but after all you as a Commission are looking very far ahead, and if one looks very far ahead is it not likely that if you can get a successful airport covering 2½ times the size of Heathrow and handling twice the traffic, does it seem likely in the long run if this comes about that the major British airlines would not want to move their basic facilities there. It seems to me at least possible that they would wish so to do on a long enough view when they can write off their present inveestment.

319. *Chairman*: I think you have got to handle this the other way. It is very unlikely, wherever the site may ultimately be, that it will be nearer the centre of London than Heathrow is.——That, if I may say so, Mr. Chairman, I see as the contradiction you have somehow to resolve, that Heathrow has unique advantages for access to central London which no other airport site can emulate. The airlines therefore are reluctant to leave Heathrow, yet they must leave Heathrow. How is this to be resolved? My own view is that it is Heathrow which eventually will appear the anachronism. Could we look forward in time thirty or forty years we should see people smiling at the thought that anyone could think of putting an airport as near the centre of London as Heathrow now is, and I would prophesy at that period of time Heathrow will have shrunk to one of a number of regional airports which would be commended for its continuing proximity to London but it would be cursed for its noise problems and it would be criticised for its limited space perhaps and its relatively obsolete handling facilities. It seems to me that Mr. Masefield is very preoccupied with, so to speak, the next ten years, but I take it that the Commission is very preoccupied, is very concerned, with the next fifty years.

Chairman: I think you are doing Mr. Masefield slightly less than justice on this. He is immediately preoccupied with the next ten years because he has got somehow to get through the period when, as he put it, Heathrow and Gatwick hit the ceiling, but I did not understand him last week—nor do the written papers support this—to be myopic only to ten years. Rather I thought he was looking very much beyond —a lot of his forecasts related to 1984 and beyond.

320. Mr. *Goldstein*: You have mentioned we are looking a very long way ahead. You have mentioned in general planning matters one might conceive a limit of any realistic kind of planning being perhaps the turn of the century, that kind of figure. Do you feel in air transport the situation is the same, because I think we have heard evidence to suggest that you cannot really plan more than about twenty years ahead in air transport matters?——That may be so, but one has to try and do so nevertheless, presumably, because of the scale of investment involved and the enormous consequences for growth on the ground.

321. Professor *Buchanan*: I think our problem here is that you have some difficulties perhaps in planning an airport and seeing what is going to be the air traffic twenty years ahead, but when you get a big urban area associated with it you are building up there something which is the ordinary sort of thing and it cannot just melt away if the airport changes; you permanently change that bit of territory. ——Indeed.

322. Professor *Walters*: Could I ask Professor Self about some of your strictures against planning for one four-runway airport. One of them is of course the fact that you envisage general sectorisation—though I hate the word. I think you would not object, for instance, to the Commission or a general airport policy which looked for an airport site which could conceivably develop into a four-runway airport were there not a fourth airport site readily available. This is a matter of contingency planning I think.——Yes. I find it hard to believe, frankly, that if the best course is four-airport planning, such as we are inclined to favour, it would be technically impossible to find all these sites within a dispersed regional framework.

323. Can I ask an additional question on this. One of the advantages of a four-runway airport is of course that the noise problem is very much more contained than if you had two two-runway airports. This suggests it is rather inconsistent with the point you make in your paper under 5, that is to say, a four-runway airport would give rise to less noise than two two-runway airports. Secondly, of course, it is likely that the four-runway airport would have greater capacity than two two-runway airports. Thirdly, of course, it is likely that

Printed image digitised by the University of Southampton Library Digitisation Unit

there would be great economies of scale in having all the runways concentrated in one place. Fourthly, there is this problem to which you referred of keeping one airport for long distance services. There is evidence on many of these points, concrete quantitative cost-wise evidence. Have you surveyed much of this evidence in making these decisions?——We have studied some. I do not know whether we have studied all the evidence you have in mind. We have certainly studied some of it. I appreciate your points about the economies and advantages of a four-runway airport as regards noise and economies of scale, and certainly this strengthens the case for such an airport, particularly if it can be put in a place where, for example, noise would be minimised, to take one of your own examples. If that is so, that certainly strengthens the case for a four-runway airport. I think what we express here in our paper is some doubt that the four-runway airport is necessarily the best solution. That is the burden of our stress. We do not dogmatically say that it will be wrong. We say that it has yet to be shown that it is right in the light of the other considerations that I have stressed.
Professor *Walters:* Thank you.

324. Professor *Buchanan:* I think you were going to ask Mr. Hall to say something.——

Mr. *Hall*: If I could perhaps just add two points on that particular aspect, this is perhaps a sort of personal view which is only partly reflected in our statement, but I think I would say the chief reason why I think it would be a mistake to go the whole hog, so to speak, on a four-runway airport would be the prospect of changes in the next twenty years—technical changes in the next twenty years—which might alter the type of requirement for what under present circumstances we would provide for by an extra two runways. This was partly raised at the hearing last week with such questions as STOL which Mr. Masefield seemed to think had some chance of being developed. There is also the question of the noise possibly being reduced and therefore a fourth airport could conceivably be sited in a place which on the current arrangements might in fact be less suitable.

Now the second point is the scale—and I shall come on to this in a moment—of a four-runway airport, the scale of impact of a four-runway airport, as I think we all admit, conceivably to a varying degree. If one puts all one's eggs in one basket, and if as we suggest the best site for the third airport would be an estuary site, then one in fact is going to create a magnet on the east side of London which would, so to speak, attenuate the build up area of London into a very strong east–west pattern. We have to decide whether or not that is the right thing to do and this we cannot know until Dr. Burns has in fact pronounced more clearly on what the strategy for the South-East should be.

325. Professor *Buchanan*: That has not prevented you from making a fairly positive suggestion?——No, we do regard ourselves as "discussion open", if I may say so. If I can come back to the other point about the size of the impact, about the size of growth of employment and population in a four-runway airport—and this is what the rest of our paper was concerned with—I think there is some reason to doubt, and I very much hesitate to do this particularly since Mr. Masefield had the advantage of far better technical advice and expertise available to him, but I cannot imagine that 50,000 is going to be the limit of the number of people employed on a four-runway airport on the basis of my limited knowledge of the thing. But if one looks at it comparing the amount of traffic that Heathrow now carries with the amount of traffic in terms of passengers that the four-runway airport would carry, this is an increase of 3 to 3½ times, and yet we are only going to see in fact a 1.2 increase in relation to Heathrow in relation to the four-runway airport on Mr. Masefields' estimate. There have in fact been estimates made also to show that the number of people employed at Heathrow will go up to 60,000 by 1981, so that if that is likely to happen there this is another reason to suppose that the full amount of people to be employed at the four-runway airport, at the third London airport, might be correspondingly greater. So on this basis we worked on simply a doubling of the number of people employed at Heathrow, balancing out all these factors to be employed at a four-runway airport, and that was not only including those directly employed, but the proportion of about 10 per cent—the Essex and Hertfordshire people use this figure—who would be employed in the directly ancillary services—hotels, car hire and the like. This one would convert into a population of about 400,000 to 500,000 people, and the way one does this is by using the means of a service industry multiplier—I do not know if the Commission are familiar with this—which one can derive from employment figures already

Printed image digitised by the University of Southampton Library Digitisation Unit

available, simply the number of people that are needed to take in the washing of anybody employed in one particular job, so to speak. I can in fact elaborate on that if you would like me to. This produces a direct population figure of 400,000 to 500,000 people. This still leaves out a very large component indeed, and it is admittedly the hardest part to estimate altogether, that is to say, the people who will be employed in those industries which will be attracted to the general locality of the airport because of its economic magnetism, its general attractiveness to industry.

326. We are back now to what I referred to earlier as the willy-nilly growth?—— Yes, the willy-nilly growth point is a good definition because it shows that in fact so little research has been done into this, but there are some good estimates available. The figures obtained from the Port of New York Authority give a range of between 10,000 to 70,000 jobs created by the large airports in the United States, but there again there are a number of factors why one would think that the third London airport might attract more than the usual amount of this type of job. In the first place, we are hoping—we are certainly saying in our evidence—that this airport will be located where its growth potential will be maximised, where it will in fact create the maximum amount of jobs of this kind. This will be more than has been done for any other airport in this country so far, and possibly the rest of the world too, though I would not be firm about that. This means to say there will be much more cooperation in an accepted policy with the planning authorities and Government and so on, there will be much more encouragement to industries who want to take advantage of this than in the case of Heathrow where there has really been rather a lot of discouragement to industry to locate itself in the general area.

Then too there is the point that air transport for freight is likely to become increasingly important and there again industry might want to take advantage of this more than they do now.

So all in all—and one has to admit it is a "guesstimate"—we have assumed a similar figure of 80,000 which is 10,000 more than the top of the range for the New York Port Authority's estimate of jobs created by this willy-nilly growth, and this of course produces another 400,000 to 500,000. Hence how our estimate of how it could be up to a million population is made up.

327. Mr. Hall, is not this controllable? Have not the Government through the Board of Trade and the Distribution of Industry Act been controlling the growth of population in the London area for the last twenty years, and to some purpose? What you are suggesting, would it not amount to driving a coach and horses through those controls as they have been exercised over the last twenty years?——I would not see it as driving a coach and horses through those controls.

328. Well, a VC-10?——Let me put it another way. There is certainly a big risk of those controls being severely affected if an economic magnet of this size—we say this in our evidence too—is located close to other regions, because this would in fact bring into the South-East a large amount of employment and population which is not here already. We are suggesting that if an estuary site is picked for this airport, then in fact the growth which will be attracted can be contained within the South-East, but I think I would in answer——

329. *Chairman*: What do you mean by the South-East for that purpose, if I may interrupt you on that? For example, what about Foulness or one of the similar sites? ——Roughly the area south-east of the line from the Wash to Southampton, Bournemouth, including East Anglia in this particular context. But it does affect what I have just said I think. Can I partly give an answer that I would have given to what you put to Dr. Burns about whether there would be an effect on the decentralisation policy, the overspill problem, for Greater London. I think in fact there certainly would be because it would mean that a very, very large proportion of the total population which one would consider being, so to speak, overspilt from London would go towards this airport magnet rather than into the places which it is currently thought it will go, Peterborough, Northampton and so on.

330. If you take as what I may call your absorbing area an area from the Wash to Southampton, I do not see why there is any greater advantage from that point of view of a coastal site rather than an inland site, because either site would have that amount of absorbing area available to absorb the resultant increase in population.——Well, perhaps I did not put the point well enough. If I understand the question correctly, the point is if one was, for example, simply to locate this magnet, this airport, up near

Printed image digitised by the University of Southampton Library Digitisation Unit

Huntingdon, for example, then it would be that much closer to the Midlands and we make the point about the effect this might have, the effect on the Midlands airports but also the rest of the country to the extent that it would draw in population and employment to the South-East which would not otherwise come. In other words, the further away it is from the rest of the country, the more self-contained it can be in terms of magnetism to the South-East alone.

331. Is this leading to the argument that the airport would not be east or south-east of London?——That it would not be west or south-west or north.

Mr. *Ash*: I wonder if I could come in at this point. I should explain that I am a Vice-Chairman of the Executive of this Association and had some say in the production of the document you have.

I would like to try and shed my weak shaft of light on this. I think it does need saying that we are all involved in exploring new territory—yourselves and us—and it is partly the interest of the whole exercise. London is very much what we call a spread city to start with, compared with, say, Paris or Chicago, which are so much more compact, or even New York. London has inherent difficulties in this area and we are discussing the difficulties of serving the whole from any one point. I think that therefore it follows naturally—and this perhaps is why this inquiry is of such worldwide interest—that any attempt at increasing such a service to the whole might be conducive to changing the very form of London. I think one of the members of the Commission has already made this point this morning, that an airport of the character we are now discussing must be an agent for changing urban form and it is not, as hitherto we have regarded an airport, a part of the urban syndrome. This is the sort of municipal airport which has dominated until now thinking on this subject. We have got to change that simple view.

I think this underlies some of the Chairman's difficulties which he expressed this morning and which he expressed last week, that he could not find anywhere in the Stanstead Inquiry* transcripts significant reference to the effect of the airport upon the surrounding area, upon the regional planning aspect of the matter. In my personal opinion, it is the regional planning aspect of the matter that occasioned the Stansted outcry which has brought this Commission about, because to ordinary people there seems to be no rationality to the thing, no pattern to how it might be fitted in, it does not make sense and did not make sense because there has been no regional plan for the London metropolitan region, and I suppose the prime document in this case is the *South-East Study*† which has been mentioned already today, which really turns its back on the London metropolitan region, it does not acknowledge its existence as something in the plan, and Stansted is the first chicken which has come home to roost; there are others on the way but you happen to be handling that problem. So we are treading fresh ground. In a sense you find yourselves in a somewhat pragmatic British way as planners—you are not really here to arbitrate between one site and another—and you are inescapably involved in planning the London metropolitan region.

Well now, although in the past one has viewed airports, as I say, as if they were just municipal airports tacked on to an existing urban settlement, I do not think it is very difficult really, if we set our minds to it, to isolate the factors which are relevant as of magnetic importance, in this changed situation, that are relevant to a changing urban form, nor even to quantify some of the factors, and I would like to look at it rather in a different way to the way it has normally been looked at. I would like to pose the question of what are the requirements of the success of an airport of this kind. It seems to me this is vitally important. Mr. Masefield, quite rightly I think, stressed the danger of a white elephant being produced, and I think it is entirely proper that this sphere should be mentioned. I feel it more positive myself to look at it from this point of view, of what must be ensured is around this airport if this airport is to justify the investment in it. If we look at it this way, we are bound to bring in a concept, a tool as it were of our thought, namely the catchment area of this airport. We have to be very careful in defining this catchment area, but I think it is the root principle given to us by the indication given to us right the way through from 1963, before this inquiry started, right to Mr. Masefield's evidence last week that an airport should be within sixty minutes journey time at maximum of those who are going to use it. I think this idea of

* Ministry of Housing and Local Government. *Report of the Inquiry into the Local Objections to the Proposed Development of land at Stansted as the Third London Airport.* (HMSO, 1967, 5*s.* 6*d.*).
† HMSO, 15*s.*

Printed image digitised by the University of Southampton Library Digitisation Unit

the catchment area needs qualification quite clearly because some people are going to use the airport who are further away and so on, but as a general tool to help us we think we must make use of this. I think if you accept this, then one can begin to draw up the factors which are relevant to that catchment area. I think personally that the thing we have been discussing so much, namely the employment factor of the airport directly and the resultant dependency upon those employed there, is almost the least important of all these catchment area factors. I am prepared quite simply to accept a round figure of a quarter of a million which seems to have been generally agreed upon already as accounting for that part. But there now come in many as yet unknown weights which must be determined, and I am sure you are setting about discovering these by survey, that have to be attached to the other elements in the equation. We have to know what proportion of the people using the area are visitors to this region and what proportion residents. The evidence so far as one can make it out is uncertain about it, but I would for the sake of discussion say about fifty-fifty. I would like to build up an illustrative example as we go on. It would be hopelessly inaccurate, but I think it is better than being entirely abstract. If you assume for a four-runway airport an annual throughput of 50 million passengers a year—this is higher than Mr. Masefield used; he used 40 million——

332. Mr. *Hunt*: For two-runway operation.——I think it was for four runways; am I incorrect on that? I think it must be four runways because Heathrow at present has 13 million and O'Hare 27½ million.

333. 250,000 air movements is less than Heathrow.——I am talking of passenger throughput rather than air movements.

334. I think 40 million by implication is probably tied to a two-runway user at a new airport.——I cannot believe it would be. O'Hare is only putting through 27½ million and Heathrow is 13 million with two runways. I cannot conceive that would be possible. But I am only using this as illustrative material anyway. Can I put this over? If I assume half this throughput is visitors to the area, we can then by making various assumptions arrive at the hotel population to be served by this airport.

335. Professor *Buchanan*: What do you mean by visitors to the area?——This also needs definition, of course, but I would say people who are not domiciled there.

336. Which area?——Another factor which we have to determine is the length of stay of visitors——

337. Which area?——This is my concept of the catchment area in order to make this airport a success. You can determine the hotel population at any given time if you know the length of stay, occupancy rates, etc., of hotels. All these factors in my opinion need to be discovered. My rough calculations will show on a three day stay on 8 per cent occupancy a staff ratio etc., etc., with hotel to visitors and population something of the order of 150,000 generated by visitors to the airport, 150,000 at any one period of time, year in, year out. I am only giving you the factors in question.

You then go to the residential components of your catchment area and you must make certain assumptions or you must find out as much as you can about the factors that go into this, the number of air journeys made, for instance, per quotient of population during the year, how many of your residents are travellers, and you must discover what the impact is in economic terms, the demand elasticity of airlines, where the income elasticity of demand is over years, how many more people as they become more affluent would travel by air, and so forth.

If for the sake of illustrative argument you say that by the nineteen eighties one person in two in your catchment area will be an air traveller during the year, you arrive at the round figure of residents in this catchment area of the order of 16 million. This is highly suspect—I do not want to draw any conclusion from it—but it happens very nearly to coincide with what the population of the London metropolitan region will be at that time.

But I think the point that does emerge, if this is of any sort of order of realism, is that the catchment area within a sixty minute journey time of such an airport could not possibly be the whole of London metropolitan region and that any sector —or I think we should use the word segment when we are talking about the land—any segment of the London area could not conceivably service such an airport. In other words, if one reverts to the old Stansted argument, the whole controversy over Stansted, I think all the way along, there was an element of self-peception about how close Stansted was

Printed image digitised by the University of Southampton Library Digitisation Unit

to the area which it was supposed to serve, namely that it was never anything like within sixty minutes journey time from central London even given the M.11.

338. *Chairman*: Is Foulness?——No, this is equally true of Foulness. So that if Stansted were to succeed it would have required not that Stansted be left in the kind of isolated aloneness which the amenity argument seemed to dictate but that considerable industry and population should have been attracted towards the Stansted catchment area. This applies with equal force I think to Foulness. The development would have to take place to make Foulness a success in my opinion very considerably indeed within the catchment area of Foulness.

I started by saying that an airport may be the agent of change in our new urban——

339. Professor *Buchanan:* When you are talking about the catchment area, as I understood the proposition which the Association were putting to us, you were really suggesting—at least this was what I understood from what Professor Self was saying—that there should be four airports to serve London, each one serving a segment of London, and so the catchment area as I am thinking of it is a quarter segment of London, on lines radiating out from the very middle of London, like cutting a circle into four. Is that the catchment area you are talking about? If so, it is a catchment area containing an enormous population.——The catchment area of each of these segments would be of the order of four million, a quartile of the London metropolitan region, so that the common sense conclusion of all I am saying is that to serve a segment, to find an effective catchment area for the kind of airport that we want to be successful, you have to look to the smaller airports than four-runway airports, and you have got to have them spread around the London metropolitan region.

340. You are really saying that four-runway airports would not work?——I am indeed saying that. I am saying that a four-runway airport requires of planning policy and of planning powers forces and strengths which are really quite beyond planning to achieve. You could not divert so much industry, population, development to the area of any four-runway airport to make that airport successful.

341. *Chairman:* On what grounds, planning or economic?——Because I think as Professor Self said earlier an airport is only one factor determining the growth of a great metropolitan region. The growth is of an organic nature and is determined by the people's requirements for space, etc., etc., and that is not going to grow, it is not going to allow itself to grow in any form that would be determined simply by the requirements of an airport.

342. Mr. *Goldstein:* If we are given four two-runway airports, say, are you still maintaining that you would get BEA and BOAC out of Heathrow?——I do not think it is within our province to say that.

343. Professor Self earlier said that with the new airport a major much bigger kind of enterprise, and given his premise even of it being the sole international or sole esoteric journey airport, I thought he took the view fairly strongly that the maintenance provision at Heathrow would in fact be diverted to the new airport. One can see that point, whether one agrees with it or not, in the case of a new airport of that scale.——Yes.

344. If you have two two-runway airports of the same scale as Heathrow, is not there an inconsistency there between these two points of view?—I do not think so, no, because Professor Self has, as I understand it, argued from the hypothesis of a four-runway airport. If that hypothesis is not accepted, or if you are arguing from another one, the argument does not apply.

345. You accept it would be much more difficult, perhaps impossible, to change the pattern of establishment from Heathrow to perhaps a new two-runway airport twice the distance out?——You are talking about the pattern.——

346. Of maintenance establishment.——I think it probably would, but you are raising a very important question which is outside our province as to whether nations in future will have to exercise control upon their state airlines at a bargaining counter.

347. If they can exercise that control over them. You have just told us it is impossible to exercise control with regard to the four-runway airport.——I have said so?

Printed image digitised by the University of Southampton Library Digitisation Unit

348. I thought you disliked the four-runway airport—I am only trying to get your point clear—because it would not be possible to legislate to make it grow to the economic size?——That is perfectly correct.

349. But is it possible to tell state airlines where to go?——Oh, yes, I should have thought so.

350. Can I ask you something on a factual basis. You say that in fact the landing fees would influence airlines' choice of airport?——We do.

351. Have you any evidence?——We do say that in our paper, but personally I am impressed by some of the evidence given by Mr. Masefield, which was not available to us, as to the elasticity of that.

352. When you are considering the direction of airlines, you are not thinking of an economic magnetism by landing fees, you are thinking of it purely by legislation? ——I think that is how this is likely to come about. In the Los Angeles area—which I think is the closest parallel to London; it is the most spread city, together with London, in the world—I understand there are perhaps six significant airports operating in the Los Angeles region, apart from the international airport, from which scheduled flights go to the short-haul distances within the West Coast of America, and I would have thought this foreshadowed the kind of pattern which is happening through economics. Airlines have to make money.

353. In Los Angeles are you saying there is legislative direction of airports? ——I am not sure. I do not think there is. I think they have certain powers there which could make this more effective.

354. I am not entirely clear and possibly you would say that this is really a matter for discussion and looking at?——Yes, indeed.

355. In the light of the discussion?—— Yes, indeed. I am only trying to put the factors which I think I must put into the debate, and the debate proceeds. (Professor *Self*.) There are several points which have got intertwined. Could I just briefly try and summarise our views about the growth effects of airports. First of all, we regard in principle these growth effects as beneficial, in other words, we completely oppose those people who say put down an airport of whatever size and then keep its growth effects to a minimum and control land use so that no industry can settle anywhere near or anything of that sort. We think that is wrong because we think it is right that industry should reap the advantages where appropriate of being close to such a facility, and we do not think the nation can afford to neglect the growth advantages.

356. Professor *Buchanan:* Even if that were to involve some switch of policies? ——Yes, exactly, but even this point should be taken into account right along the line in deciding where to put the airport. Now Professor Buchanan at an earlier point said, quite rightly, that it is Government policy to control industrial and economic growth in the South-East; what then is the point of stressing the growth effects, if I followed you. I think our argument essentially there is that there will be a lot of economic growth in the South-East but it is important it should be located in the best part of the South-East to receive it, to tie in, in other words, with the best patterns of dispersal of London; we regard this as very important.

As a further point, however, we would stress that we ourselves do not want to see more growth taking place in the South-East than we must, so to speak. We accept regional development policy. We accept the importance of airport development in other regions for lessening the magnetism of the South-East—this is perhaps outside your sphere. This is also very much in our minds as part of the total picture.

As regards our specific comments on the sites and interplay of regional pressures, Mr. Thorburn who is another member of our Executive, has if there is time a brief comment to make on this final point.

357. *Chairman:* If it is brief. I do not want to appear discourteous to Mr. Thorburn but we have got a fairly full programme. Can you do it in three or four minutes?——(Mr. *Thorburn*). Yes. The emphasis has already been made on drawing people in from the other regions, and if one thinks of a site east or south of London we do not really need to worry too much about the effect that the airport might have as a magnet for other regions, and we think therefore if you are thinking of a site east or south of London you need take little account of the consideration of the Midlands regions and the south-west part of the country in your deliberations. But if you begin to think of a site towards

Printed image digitised by the University of Southampton Library Digitisation Unit

these regions from London, we think that you are beginning to affect the regional planning policies of those regions as well as those of the London area, and we see a number of particular points that might emerge.

Firstly, there seems to be some feeling in some quarters that the growth of an airport north-west of London would help the Midlands regions. As we see it the opposite is true in that there are regional airports in the Midlands who would be considerably inhibited either for Air Traffic Control reasons or because of competition because of a new major airport north-west of London. We think this is harmful in the sense that it is less convenient for the people living in the regions and that they have to go further to the airport, and even though that airport's services would be better, they would seldom need the really good services.

More important than that, the growth potential from the regions associated with their individual regional airports are likely to be drawn off to a major airport in this sector, if one decides on this, and we see this as considerably changing the growth pattern of the regions in what appears at first sight to be a harmful way in at least one or two respects, although one could not say this of the Birmingham airport probably. Indeed, we come back to Mr. Goldstein's point of trying to use the regional airport as well as the third London airport as planning management tools.

Our final worry is regarding the communication pattern in this sector. It looks now and in the long term as if the north-west side of London is going to be the most difficult one to provide with really good communications and that the congestion which might be caused by a major airport in that sector could well add very heavy loading to the M.1 and A.1 we have at the moment and even on their replacement, on the A.34 route from Southampton to the Midlands, because obviously if you have an airport of four-runway character, the south coast is going to be using the roads from their area to that airport to make their inter-continental flights, etc., and we think that it is doubtful whether the inter-structure can be provided in terms of communication in this quarter bearing in mind the other pressures on the quarter for expansion.

Chairman: Thank you very much. Professor Self, I would like to thank you very much for the help you have given us. You have raised some very interesting points and, if I may say so, you have elaborated them with great skill, and given us a lot more food for thought—not that we have not got enough already.

Printed image digitised by the University of Southampton Library Digitisation Unit

Standing Conference on London and South East Regional Planning

LORD NUGENT OF GUILDFORD, MR. C. N. SAUNDERS and MR. BRANDON HOWELL called

358. *Chairman:* Lord Nugent, I would like to thank you and those with you, and those whom you represent, for the tremendous trouble which has been taken in preparing this memorandum*. The fact that it has been printed has also been of tremendous help. I am going to ask Professor Buchanan to put the questions this afternoon because, as I said this morning, this is a field which is very close to him.

359. Professor *Buchanan:* You know generally the size of the project we are dealing with; a very large airport and considerable urbanisation is going to be attached to it. We are being constantly encouraged and enjoined to take account of regional planning. As we see it, there are two aspects to it: one is the strategic questions of where in the South-East this big development should be put down; and, secondly, having decided on the locality, what are going to be the local implications of the development and how can the urbanisation be organised. We heard this morning from Dr. Burns's team, we have heard from the Town and Country Planning Association, and this afternoon we have two organisations which, up to date, have been very much concerned with regional problems in the South-East—your own Standing Conference, and after yourselves the Economic Planning Council. I think we are possibly justified in finding it rather difficult to see a track through all the work which has been done in regional studies at the moment. As somebody said this morning, we get a lot of discussion openers, everybody is ready to open the discussion with us. Our difficulty is to close it in any direction which is any good to ourselves. I wonder if we could start by inviting you to give us the salient points from your memorandum, without going into great detail. It would be useful if you could do that. Then perhaps we could pursue the matter generally.——(Lord *Nugent* of Guildford.) Thank you, my Lord and Gentlemen, for your words of welcome and introduction to us. I think you understand our position as one of the bodies commissioning the joint study team by central Government and local Government on which Dr. Burns was giving evidence this morning. Therefore, our evidence is bound to be pretty general at this stage. It would have been much easier for us if either you had completed your work first or we had completed ours. We could then have given you a very much clearer view on the merits of the case. Therefore, such evidence as we can give today is bound to be in general terms, but I hope it will be as helpful as we can make it. I would just like to reserve the position of the individual counties. As you know, we are a Standing Conference representing London and the county authorities in the South-East, who have come together on a voluntary basis to do their planning in a joint perspective of the region. Therefore, at the second stage of your work, my Lord, when you have made, so to speak, a short list of the possibilities, obviously the counties immediately concerned will have some more direct evidence than I as the spokesman of the Standing Conference will have today.

360. *Chairman:* Your members may at that stage be divided among themselves.—— That could easily be so. If I gave more direct evidence at this stage, I think they would be dividing me as well. Today, my Lord, my evidence will simply be on the general principles. The first one is that in looking at this picture of the development of the region over the next twenty or thirty years, first of all to 1981 and then to the end of the century, we are very directly concerned with a major development of this kind as to where its location is to be first of all for itself, and secondly for the huge generation of employment and therefore general development which it entails. We would think that the figure put in the Government's last White Paper† was a somewhat conservative one as far as the extra employment involved was concerned. We are tending to base our conclusions on the developments at Heathrow which already show an employ-

* Page 75.
† *The Third London Airport.* (Cmnd. 3259) (HMSO, 3*s*.).

Printed image digitised by the University of Southampton Library Digitisation Unit

ment of something of the order of 40,000, with a population of something of the order of 200,000 to 250,000 directly or indirectly connected with the airport.

361. May I interrupt you, Lord Nugent. You would accept, would you, those sorts of figures as reasonably reliable—a quarter of a million?——With this qualification: you are considering a four runway airport, and what eventual size of employment and general implications that achieves we just do not know. We would have thought that the Heathrow example is a matter of fact, and therefore we can safely start building on that excepting that with a four runway airport we would have something considerably bigger.

362. This morning the figure was mentioned of a possible population, to be dealt with one way or another, of as high as one million.——That is a new figure to us, my Lord, but it could certainly be half a million on the basis of the Heathrow experience. This is a very big figure indeed. We are, therefore, intimately concerned to see that as far as possible in terms of the region it gets into the best place. Just one comment on communications. The general consideration on communications up to date has been the best possible communication with London, but we think it is relevant to have in mind at this stage that this airport is going to serve the South-East in the latter part of this century and, indeed, into the next century. The general strategy of population development is to keep the Greater London population static at around the seven or eight million mark, and the extra population growth—including the population growth of London—will therefore find its place in the outer region beyond the existing green belt. Therefore, whereas at present in the region the split of population is about fifty-fifty between London and the rest of the region, by the end of the century it will be very much nearer to two-thirds outside and one-third inside, assuming that the present rate of population growth continues. This does, I think, emphasise the need to see that the transport and communication arrangements for this third airport are adequate to serve the rest of the region, and that is an equal consideration with the communication with London. In this context, I dare say this morning you heard from Dr. Burns what a decisive factor transport costs are—that is particularly road building costs—in regional development. All kinds of attractive plans and strategies can be got out, but at the end of the day they have to be tested against the test of what they will cost. The building of roads and communications is one of the greatest costs and one of the most limiting factors, as is inevitable in any national economy is the amount of finance available. So that this would seem to us a point to have in mind when considering the location. On the one hand, it probably will be more and more serving the population outside London, as indeed all the airports will; and the cost of new communication is a very, very heavy factor indeed. The third point I would like to make is perhaps slightly a negative one, but it may be helpful. We have attempted, as you may have seen from our written evidence to define the areas of greatest rural value in the region, areas which have official definitions now like areas of outstanding natural beauty, and the like. There is a map in one of these many documents, this one called "*The South East: a framework for regional planning*"*. On page 27 of that document you will see a sketch, fig. no. 20, which defines the landscape merit. The general policy we have been following, and are following now, in this joint planning team with government, is to define these areas of outstanding rural beauty to be preserved as far as it is humanly possible from the general development. This is partially in the agricultural interest, partially in the recreational interest, and partially in the amenity interest of the years ahead. On the question of where the extra population is to go, this is tending to push us to certain other areas per force, and this, I apprehend, is the way the general strategy will eventually come out. We would hope, my Lord, that in the conclusions you reach you will accept that these areas of outstanding natural beauty and the like are of such value that they should be preserved in their entirety for the interests of either agriculture, amenity or recreation. There is a further implication in that, if I may just make it, and that is that we have already made the point that the development of an airport of this size involves a very big population and a great deal of ancillary employment. In the particular rural areas to which I refer that does not exist at all at the moment. Therefore, if it were decided for some overriding reason to develop a third airport

* (LRP 1180). Available from the Standing Conference on London and South East Regional Planning, 26 Old Queen Street, London, S.W.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

there, the cost of doing so would be that much higher because you would be, so to speak, starting from scratch, whereas it would be preferable, if possible, to start in an area where there was already a good deal of economic and social development as a basis on which you would build the major development.

363. Would you be prepared to translate that into more specific terms and define that criterion by reference to specific areas.——I would not try to do it exhaustively, but I could give you a few simple examples of the areas which we think are of such rural value that they should be preserved and not developed. Starting from the south coast there are certain coastal areas, then the South Downs, the North Downs, the Chilterns, the Thames Valley. These are typical areas which we are all familiar with which we feel have such value to the community as a whole that they should be preserved in any event. That is not exhaustive at all. There are others which we have met and defined.

364. Looking at your fig. no. 20 on page 27 I notice that some of the areas in western Essex, which have been subject to a certain amount of controversy do not seem to be included among the areas bearing any of the three different shades of line or shading.——That is so.

365. I take it that not everyone would necessarily agree with that colouration? ——No, I am sure they would not, but this is the considered view of the Conference which is built up on the expert views of all the County Planning Officers.

366. Professor *Buchanan:* While we are on that figure, what exactly is the meaning of "An area of outstanding natural beauty proposed"? Are you going to create natural beauty in some way? I do not quite understand.——I think I must ask Mr.Saunders that.——(Mr. *Saunders.*) The position is that the areas of outstanding natural beauty are given that official designation under the 1949 Act.* There are certain further areas which have not yet had that official accolade from the Government but which have been put to the Government for them to approve, so that at the moment they are proposed.

367. *Chairman:* I happened to see in the local paper in Northamptonshire that there was some controversy between the county council and the RDC as to whether such an area should be excluded from an area about to be designated "proposed natural beauty". It is really a question of designation under the 1949 Act.—— That is so.

368. Professor *Buchanan:* Would you admit that we might find ourselves in the position of having to draw up rather a difficult balance sheet between the advantages which could come to the community from having an airport in a certain position and the advantages to the community which would come from retaining that land as an area of natural beauty. There are conflicts that we might get involved in. Would you have any advice for us on how we could draw up that plan? Have you any formula which we should be able to put on an area of natural beauty to bring it into the balance sheet?—— (Lord *Nugent* of Guildford): It would be beyond our competence to do that at this stage. I would agree with your point that there is a conflict. On the one hand there is a development. It gives opportunity of employment. On the other hand you have the destruction of amenity and the noise problem that goes with it. This at the end of the day is obviously a matter of judgment. When you have got all the factors before you, both social, economic, financial and transport, then it simply must be a matter of judgment. I do not think it would ever be possible to lay down exact criteria.

369. Could we pursue the urbanisation question a little further. I think the interesting point you make here is that in general you are suggesting that the airport should positively be put near fairly populous areas, partly because we might by that means be less likely to go into one of the areas we have just been discussing; also because there would be a base from which to work. There would be some population there which would be of particular value in the early stages of development. Have you taken that point any further? Can you give us any idea of any areas where you think . . ?——It would not be possible for us to be very helpful on this. If I can observe the obvious, we have already got an airport on the west of London, at Heathrow.

* National Parks and Access to the Countryside Act 1949.

Printed image digitised by the University of Southampton Library Digitisation Unit

We have got another one on the South, at Gatwick. So obviously logic takes you to look to the east, the north-east and the north. Further than that, it would be impossible for us to go at present. I am sure, my Lord, that Professor Buchanan realises that we are so very much in the same position as your Commission is, in that we are just now engaged on this joint study with Government, and by the end of next year I think we should be able to give you a much more precise answer on this. I am most anxious not to make a guess at this stage. As you, an expert, well know, one has to test all these things to see whether they really are valid in practice. I am afraid we cannot be more helpful on that.

370. I notice in paragraph 19 of your document you stress the fact that considerations affecting the housing and the transportation, and matters connected with the urbanisation, will vary as between different locations for the airport, and this could be a crucial factor in the cost evaluations of different locations. Am I right in saying that this is referring to the urbanisation there?——Substantially, yes.

371. What you are suggesting we have got to do is not merely evaluate different sites for the airport as such, but also evaluate the implications for the urbanisation. We could turn up something there which was critical in deciding us between three or four possible sites for the airport. ——Yes.

372. Have you formed any views on this matter? Bearing in mind that we are dealing with a population of perhaps a quarter of a million at least, ought we to be thinking in terms—even if we find a site near a populous area—of one new development or splitting it between two or three different existing settlements? Have you any helpful notions on that?——I do not think we have. We do indicate in our written evidence that we think that this population working at, or concerned with, the airport will be drawn from a considerable area. Obviously personal transport is going to increase, and indeed the Heathrow experience shows that the journeys to work are tending to increase all the time. I think we do not have a specific view on that. It depends a great deal where you put it in relation to the kind of developments we are contemplating coming out of our studies.

373. It is quite clear, I should think, that we are not going to repeat a kind of Heathrow site. We are very unlikely to choose a site which is tucked into the fringe of London, although one can see that that has at Heathrow great advantages as a location for employment, disregarding the question of noise. We are probably certain to go further afield. This is a big urbanisation project. Would we be right in simply saying that this could look after itself, that people could be drawn in from a large area. I cannot reconcile what you have just said with what you have said before?——As I understood your question, it was: would we see the development drawing in its population from more than one urban area? My answer is that in effect it could. Some of the workers may come from some distance, but we would certainly stick to the view we have put forward, that this airport should be based on an area which we in our general strategy expect to see far more developed in the future. Certainly this is our view.

374. I am trying to get clear in my mind what you would mean by an area where there is a fair amount of development already. Is it a scatter of villages?—— There are areas throughout the south-east where the development is fairly strong already, and there are indications the development will be denser there in the future. This is the kind of area I mean.

375. Could we be more specific on that? Just give us an idea of where these areas are, without committing yourself to an airport site. What directions?——Again I do not want to try and guess where this most suitably might be, but to give Professor Buchanan an idea of an already fairly heavily developed area which may be developed more in the future, but which would obviously be unsuitable for this purpose, you could take the area, say, between Guildford and Reading. Obviously you would not put another airport down there because it would be almost touching on to Heathrow. But that is the kind of thinking I would have personally, that there you already have a strong population and this may well build up in the future.

376. *Chairman:* Then is the underlying philosophy that one should look for a site sufficiently near where there was already a considerable amount of urbanisation so that that area where the urbanisation

Printed image digitised by the University of Southampton Library Digitisation Unit

already exists could absorb the population, be it a quarter of a million, half a million, or whatever it was.——Yes, my Lord, where it could at any rate provide part of it, and would probably be the area where we would think, in the development of this region over the next twenty or thirty years, a large part of the additional population should come. The logic of defining certain areas of great rural value which we think should not be developed at all means other areas must be more densely developed if this population is to be contained.

377. Then, of course, you walk straight into the noise problem.——Certainly you do. This is one of the problems, to know how to locate an airport of this size in an area where there is a good deal of population, and some of it dense, without making an intolerable noise nuisance. That I am afraid we cannot pretend to answer.

378. Professor *Buchanan:* Coastal sites have been suggested to us as offering possibilities for overcoming the noise nuisance. These, of course, will be looked at. Have you any comments to make on the various coastal possibilities with regard to the urbanisation aspect?—— I do not think we have really studied them. Obviously it is very attractive, but from the point of view of putting it down somewhere where the noise objection disappears, we have not studied the transport implications and so we cannot give you an informed comment on it.

379. In your paragraph 31 you mention there, "When the advantages and disadvantages of specific possible sites for the airport come to be argued, the local planning authorities will need to give consideration in detail to the economic, social and physical developments and changes which might ensue in their areas . . ." Reading that, it sounds as though you have got some ideas about our procedures. You say, "When the advantages and disadvantages . . . come to be argued". Who is going to argue them in that case? Have you got some consultative machinery in mind? We have had our procedures laid down for us. I was wondering whether you were proposing a variation of that, or does this correspond to our stage two?——(Mr. *Saunders.*) There will be public local inquiries when you have made your short list, and this will inevitably lead to public debate in each area.

380. This is quite an interesting point from the point of view of stage two inquiries. As we are visualising the stage two inquiries, a proposition will be put before the public with regard to the airport. You expect that the local planning authorities will then come forward and be prepared to argue the advantages and disadvantages from the point of view of urbanisation. What would you regard our responsibilities in respect of the urbanisation are in Stage II? What obligation is there on us to pursue it up to that point? ——(Lord *Nugent* of Guildford.) I do not think I have given any specific thought to this one. This is a statement of fact that we have already referred to, that there are advantages in such a development in employment opportunity, and there will be opportunities for new employment in the region in the coming years as the population grows. Those have to be set against obvious objections from the point of view of amenity. It could be that some local authorities would see the balance one way and some another. This certainly does not refer to what your Commission might do. It simply refers to what people and local authorities will be saying.

381. I am thinking really of a fairly practical point here. We are under an obligation to hold inquiries at Stage II of our task. At Stage II we will have narrowed the thing down to a short list. We will have held a local inquiry. You say here, "When the advantages and disadvantages of specific possible sites for the airport come to be argued, the local planning authorities will need to give consideration . . ." to this, that and the other. I am trying to get clear what the local authorities will expect to have from us at the stage two inquiry. Local authorities are constituent bodies.——Local authorities will have heard from you what is your short list, that you are considering putting an airport in their area. We are simply stating the obvious here, that they must weigh up the advantages against the disadvantages. No more than that.—— (Mr. *Saunders.*) I think they would hope to have at that stage from the Commission's work, advice on the function of the airport, these arguments as to whether it is to be omnidirectional and multi-purpose or not, an authoritative indication of the scale of employment of the airport. That is the type of additional information and informed authoritative statement that would help the local associations in forming a view on the individual site.

Printed image digitised by the University of Southampton Library Digitisation Unit

382. Would they know where the urbanisation would be?——I would think they would not expect this, no sir.

383. *Chairman:* May I take you back two answers. You mentioned omnidirectional. Have you, or those with you, any views on whether the third airport should be omnidirectional? I ask you because it was suggested this morning by the Town and Country Planning Association that it might be much better if, instead of being one new third London airport there were perhaps one more or perhaps two more two runway airports filling in the gaps around London where there are no airports at the moment to enable the population in those areas to act as independent catchment areas for such a new and much smaller airport. If that were accepted, that in turn would seem to put limits on the capacity of such airports to be omnidirectional.——It is an interesting thought. I would not feel the Conference is competent in this field. This is a matter on which presumably you will obtain information from the airport operators. This is really their field; not our field.——(Lord *Nugent* of Guildford.) We have noted that there seems to be a trend in America, where, of course, airport development is a much bigger problem than here, much more often, to the two-runway airport, or even the four, in order to spread out the development. But what the merits are we are not in a position to advise. We have no expertise on it.

384. I fully accept this. It raises a problem of planning with which you are concerned because a two-runway airport is going to generate much less employment, will take less space, and so on, and we were wondering whether you or your friends had any views on that or not. ——We can only say it obviously has attractions, but it is bad enough finding one site!

385. I do not know whether you have had the opportunity of reading the transcript of Mr. Masefield's evidence. He was very enthusiastic about the prospect of having one or two small ones followed by one large one.——I think we would accept the logic of that.

386. Professor *Buchanan:* Coming back to urbanisation, paragraph 28.* There is a reference there to the Conference's view that the airport "be located in an area with an existing large population or where large-scale population growth is taking place or is planned . . ." I read that as you are inviting us in a positive way to look for some place where major growth is taking place.——We think this is inevitable.

387. Or is planned.——Yes.

388. We do not know where it is going to be planned, but could you help us on where it is taking place?——We think this is inevitable.

389. *Chairman:* In which areas do you think this is being planned at the moment—the growth of population? If we accept paragraph 28, as Professor Buchanan says, that is a pointer.——May I refer you to this booklet† with the inset map which gives an indication of what is already existing in the way of development, and the red dots are the land for further development. This, of course, does not take account of the planning which we are now doing in the Joint Planning Team exercise with Government Departments which would have to make a broad indication of where the extra population is going up to the end of the century. This simply shows where development is already taking place or is likely to take place as of now.

390. Professor *Buchanan:* Have we got it right, that Dr. Burns's study has come into existence because of a certain difference in approach and ideas between your views and the Planning Council's views? ——No, I would not think that was quite a complete explanation. The reason that the Joint Planning Team has been set up is that this Standing Conference was set up about six years ago with the purpose of assisting the county authorities, including London, to get out their development plans for the coming decades. A great deal of close consultation has gone on with Government Departments, and it soon became clear that it is impossible to sketch out a regional plan for ten, twenty, thirty years ahead by local government alone, or indeed by central government alone. In order to make any sense of this it has to be done by a joint team of the central government planners and the local

---

* Page 82.
† *The South East: a framework for regional planning.*

Printed image digitised by the University of Southampton Library Digitisation Unit

government planners together, in order to get the most realistic sketch possible. Even then, as I am quite sure Professor Buchanan would agree, it is only going to be a sketch. It will be flexible. The vagaries of humanity are quite unknown. It will have to be adjusted as the years go by, but at least it will be a broad sketch on which to work. Really this joint planning team is the evolution of the work we have been doing for the last six years. The Economic Planning Council came into being two or three years ago and has produced its strategy which is a valuable document which the joint planning team is considering.

391. What eventually emerges from the joint planning team may be quite different from what is in the *Strategy for the South-East** and in the various maps which you have kindly provided us with. ——It could be. A good deal of the work that the Standing Conference has done has been tested as far as the counties can test it, but until it is tested also by the tests of central government you cannot really say it is valid. I would think it would be some of each.

392. Mr. *Goldstein:* I understood you to say when you were discussing the evaluation of amenities that there are profound difficulties in putting a cash evaluation on amenity and in the end it may have to become a matter of judgment. Could I ask you to advise us as to the view of Conference on the evaluation of agriculture because in paragraph 35(e)† the document comments that the general grading of agricultural land is a matter of significance and does not *prima facie* give the value to be attributed to the land. How would you say that this evaluation should be made?——Agricultural land has a sort of rough grading. It is not a very scientific affair. We would think that the assessment of these areas has to be a combination of the amenity values and the agricultural values together before we as a Conference would be able to put our authority behind it and say we think that area should be left undeveloped.

393. I understand that, but if your view is that agriculture must be linked to amenity, it would follow you are saying that you cannot value agriculture as you told us earlier that amenity must be a matter of judgment. Am I understanding this correctly because the Commission will be faced with making some tests, both as to amenity and as to value of agriculture, and I wonder whether Conference knows how to value this land. It could be argued that one could take the market value. There is no readily discernible market value for amenity. How do we do it with respect to agriculture?——I do not think you can. If you look at experience, Heathrow is set down on some of the best agricultural land in England, certainly some of the best market gardening land, and it has gone to make an airport of great national importance. The only point I could make here which might be helpful is that we feel that in defining these rural areas which should not be developed, that they should be kept as large as possible, they are going to lose their value for the purpose we all want them for if they become chopped up into relatively small bits.

394. In your view, then, we cannot feed in any quantified calculation, the *prima facie* value of agricultural land.——I do not hold myself up as an expert witness in this context. I would say this must be one of the factors. If this is good agricultural land, producing valuable crops, obviously it ought not to be taken unless other factors have an overriding component force. You must judge it in the context of the amenity value as well as in the area in which it finds itself.

395. Professor *Walters:* Could I follow with a question on this general topic. Dr. Burns told us this morning that it was intended to attempt a cost benefit analysis of amenity. There is an inconsistency between Dr. Burns's view and the views you have just expressed.——I do not know what Dr. Burns said because I was not here, but he is a professional in this field and if he is able to put a cost benefit assessment on amenity I would be the first to salute him. I shall look at it with much interest.

Chairman: So shall we. We want to see it.

396. Professor *Walters:* Could I follow this with another question about areas designated of great natural beauty, and so

---

* HMSO, 15*s*.
† Page 84.

Printed image digitised by the University of Southampton Library Digitisation Unit

on. Does it follow that by designating them you are encouraging higher costs than you would do if you were not so to designate them? Does it not follow that designating these areas of natural beauty means that you are incurring costs which imply you have assigned to them some minimum valuation, that is you value the areas of natural beauty more than the additional cost incurred by so designating them?——I cannot say we have studied that and so I must give you an answer off the cuff, but I think my answer would be that I do not know whether I would entirely agree with your thesis. Although you have reserved those areas to remain undeveloped, it does not automatically mean that the more dense development of other areas is going to cost more. It would cost a good deal anyhow to develop those undeveloped areas without a pretty close study. I am not sure that your thesis is necessarily correct.

397. Can I make it a little harder, then. This means, for instance, that people in the absence of any such designation would locate themselves in areas where their private costs were lowest.——You mean the value of a plot of land?

398. No, the private costs they incur in making any development. In the absence of constraints or controls they would move to areas which are presumably lowest cost for highest value. You are constraining them to areas other than those which they would normally choose under free conditions. Therefore, does it not follow that by interfering with their free choice you are encouraging higher private costs. You may incur lower social costs, but this is a matter which must be argued in quantitative terms.——I would agree with your first postulation but I think that the social costs—the social services, roads, etc., and so on—may very well outweigh the extra private costs involved for the individual. I really do not think that your thesis is proved, although I must add that our policy on this issue has not been founded solely on economic considerations, it has been founded broadly on our belief that people need areas of recreation and amenity, and as the population grows in density, unless a positive policy exists to preserve these areas within another twenty or thirty years all these areas will be sporadically developed and there will be no areas of natural beauty at all in the South-East. That is our basic reason for saying that the point has come when we must preserve this area in the general interest.

399. At some specified cost?——It would be interesting to study your thesis to see if you are right. All I am saying is that there are additional costs in developing undeveloped areas.

Professor *Walters:* May I correct what you have said for the record, it is not a thesis but a mere hypothesis.

400. *Chairman:* May I ask you one or two more questions on your paper. I am going to take you, if I may, to the last page, paragraph 35(i),* the penultimate sub-paragraph. Under (a) to (j) you list a number of factors which you say so rightly that we ought to have regard to. You come to (i), "the relevance of journey time/cost/convenience, as well as distance, when comparing transportation advantages of different locations for the airport;" Have you any advice to give us as to how we should approach that problem of costing journey time?——I think I would like one of ny professional colleagues to answer.

401. Would Mr. Howell like to answer that.——(*Mr. Howell*): I cannot give a reasoned opinion on this. I think the purpose of this little sub-paragraph was to suggest that these elements—journey time cost and convenience—were as important as pure distance. It is so often the case that a study of location merely takes into consideration the distance involved, where journey time cost and convenience are additional factors which should be taken into account and where there need to be methods to measure and compare.

402. We have been given approximate figures which run into so many million pounds per mile. If you take a site which is some distance from London, take one of the coastal sites, your journey time in cost, when you bring that into the balance sheet, is going to be a crucial factor in whether the advantages of such a site are going to be outweighed or outbalanced by the very heavy debit figure of journey cost. Have you any figures or information on this? Or was this put in as something we ought to take into account without any clear basis for it in terms of actual quantification?——I am afraid we have no data.

* Page 85.

Printed image digitised by the University of Southampton Library Digitisation Unit

This is a check list of items which should not be overlooked.

403. May I take it that the same answer goes for all the others? It is really a check list to see we do our work properly, but not telling us how to do it. May I just ask you something on one other matter, and it arises at the beginning in paragraph 4*: "A major airport, as Heathrow and even Gatwick have shown, becomes a natural focus of a wide range of commercial and industrial enterprises. Access to good air communications is a vital factor for many firms and will surely become more so." Have you any specific information on the results of any specific research on which that is based?—— (Mr. *Saunders*.) This is information from the County Planning Officers in the counties surrounding Heathrow and Gatwick who, in their day-to-day dealings with development applications, do indeed come across many cases where commercial concerns are anxious for permission to develop at a place which gives them quick access.

404. It is really based on the information regarding planning applications. Why I asked you was that we did ask Mr. Masefield about this last week. The reference is page 44, letters E–F of the transcript†. He replied: "There is no very hard evidence yet and I think it is a thing that should be examined further, but it is a fact that round Heathrow there is quite a lot of light industry today which is using the airport." As you say, this is based more on information from planning officers.—— (Lord *Nugent* of Guildford.) If it would be helpful to you, we could gather the information we have got from the planning officers concerned.

405. If it is not putting too much upon you, we would be awfully grateful because this may be an important factor, particularly with the great growth that is going on in the amount of cargo trade being carried. It is one of the many hundreds of things we have got to look at, both in connection with employment and other factors: the likelihood of the new airport drawing certain types of industry into its periphery because of the proximity of trade facilities. ——We will certainly get together what is available and let you have a note on it.

Chairman: That will be most kind. I hope we have not subjected you to too hard an inquisition. Once again, we are most grateful to you, Mr. Howell and Mr. Saunders, both for your help today and for the trouble you have taken in the preparation of the papers.

* Page 77.
† Page 52.

Printed image digitised by the University of Southampton Library Digitisation Unit

MR. M. HACKETT and MR. C. T. HIGGINS called

406. *Chairman*: Mr. Hackett, we would like to thank you for the thought that you have given, and are very grateful to you for preparing the paper*, which we have all had and read; If I may, I am going to turn you over to the tender mercies of Professor Buchanan to start with.

407. Professor *Buchanan:* Mr. Hackett, we have been having a day on regional planning today; it is one of the factors which everyone has been telling us we must take account of. We have had Dr. Burns this morning; then we had the Town and Country Planning Association. We have just had the Standing Conference; now we have got the Economic Planning Council. We are extremely anxious to take all possible account of regional planning considerations if we can. Our difficulty is to find out just what those considerations are in the present position of regional planning in the South-East, so anything that you can help us, any indications you can give of the way the policies are evolving and the implications they can have, would be extremely useful. We are very grateful to you for your document. I wonder if I would be right in summarising your document really under two points, that as I saw it you are putting two main points to us. One is that we must be certain to consult with Dr. Burns' group; the second point is that nevertheless we would be well advised to take serious account of the strategy set out in that document. That is the gist of what you are suggesting to us. (Mr. *Hackett.*) Yes, Chairman, we very much hope that you will take very serious consideration of the strategy provided by the only body set up by the Government for the specific purpose of providing strategy for the South-East. That has been done, and we did ask, in connection with the strategy, and it is mentioned in the document, that if the Government accepted in principle that this was a strategy that had possibilities, that it should be examined in detail by professional consultants and others to prove it. The Government has accepted that this is a strategy which needs now to be examined in great detail, and indeed to fix certain things. We are hoping that as a result of the study, growth sectors will be fixed in a way which is only diagrammatical as far as the Council is concerned; at the moment there is no other strategy before the Government. We feel very confident that this, or something very like it, but in greater detail, will be the strategy which will come from the Study Group.

408. I think we find ourselves in a slight difficulty here, because this was a very positive strategy; you have only got to look at the map given with the report to see there is a very positive idea of fingers of development radiating from London. We did press Dr. Burns on this point this morning, and as I understood it, he said his terms of reference required him to take this, and also the ideas of the Standing Conference, as a starting point; but he did agree that eventually, when the various alternatives have all been tested out, something could emerge which is quite different from this, so I do not think we really know where we stand on this.——The Council does not accept that you will find in the end a strategy very different from this one, and I can only repeat that the Government set up the Council for this very purpose, and this is the Government's Council's strategy for the South-East which is now being looked at. The alternatives which have been looked at have also been looked at by the Council and rejected. There are no other major strategies before the Study Group other than this one, no major alternatives; there are slight rearrangements of the ideas put forward in this strategy.

409. *Chairman:* May I give one illustration where there may be a departure in relation to the siting of the third London airport, which we were discussing this morning. If I understand the green book† correctly, the suggestion was that the broad line of development should be radial along existing routes, or enlargement of the existing routes as they run out of London. It has been suggested to us that those routes are quite insufficient to

* Page 89.
† *A Strategy for the South East.*

Printed image digitised by the University of Southampton Library Digitisation Unit

absorb the resulting traffic which will follow wherever the third London airport is sited, and that therefore in siting the third London airport, we ought to have in mind not so much the existing or planned routes, but new arterial roads designed very largely for the purpose of coping with the airport traffic. You see, there is a conflict straight away, is there not?——(Mr. *Higgins.*) May I come in, Chairman, on the question of the communications. I think our strategy recognised that in modern thinking, a good communications plan is fundamental to a sound land use plan. This was recognised in fact in a piece of legislation recently, the London Government Act*. We, looking both historically and at possible forecasts of capital investment in communications, could not see that the resources available within a foreseeable time (and the period we were studying was in fact to 1980/81) but looking further than that, we could not see from the pattern of history, or possible forecasts of economic circumstances, that there would be the available capital to invest in major new lines of radial communications from the capital city. The siting of a third London airport will be dependent very much in the future on its communications, both with the capital and with other major centres, conurbations, in the country. I think if we look at history, we see there was not, of course, a great deal of communications planning so far as land communications were concerned with regard to the first two London airports, particularly Heathrow, which has only very recently had anything like adequate road communications, and still has not yet rail communications with the capital city. We wanted to suggest that the siting of a third London airport should have very close regard to what has happened in the past, and what is likely to happen in the way of capital investment in communications in the future. Knowing these resources were limited, our strategy based itself on this, and said that the best use of these resources was to improve existing, well established historical lines of radial communication with London, and, of course, to put a little more investment in the orbital communications around London.

410. Which in your view is the right approach, to look for the right site for the third London airport, and then demand, if that is the right word, that the necessary surface access be provided, or to look first and see what surface access there is, present or planned, and then site the third London airport in what may be the second best site in order to make such use as one can of existing or planned surface access?——I think clearly in my mind the latter point. I know nothing about the air transport requirements technically, but the two major factors from the land use planning and investment angles seem to me the communications, and, of course, the fact that an airport inevitably, from the experience we have gained, certainly with Heathrow, attracts quite a lot of employment, either of itself, or if it is fairly isolated from the centre of London, it will require considerable service other than direct employment.

411. Can you think of any sector—I do not want to mention specific sites—around London where the third London airport could be put, expecting it to make use of existing or planned surface access, without its hopelessly jamming up those roads? Is there any place where that would not happen, if one follows the philosophy of looking first to see what the planned or existing roads are?——From all the statistics we have had presented to us—I am a layman, as you are, of course, Sir, in these matters—it is very difficult to make such a rash forecast. There is one site one has in mind where an extension of the existing services beyond the point at which they now terminate could reach a site. This is a possible investment which is new in one sense, but might be worth while.

412. Professor *Buchanan:* I am still puzzled about the status of your strategy, because Mr. Hackett said just now that this is the only strategy which is at present extant, but, of course, this is a report. It has not been adopted in any statutory sense by the local authorities, and as we heard Dr. Burns' programme this morning, he is going to test out three things, one, a projection of current trends; he is also going to look at, as I understood, a 1991 plan based on the *Strategy for the South East.* He is also going to look at a quite different strategy, and when he was asked: "Which is likely to emerge?", he obviously could not commit himself to that, but he did say something could emerge from that which was quite different to the notions which have been canvassed

* 1967.

Printed image digitised by the University of Southampton Library Digitisation Unit

to date. I just find myself in some difficulty in accepting this completely as the strategy on which we should base our location of the third London airport.——(Mr. *Hackett.*) I think that is a fair comment, Chairman, but it is the only strategy before you, or anyone else, prepared by the Council set up by the Government to produce a strategy, and just as Dr. Burns is looking at other ideas and forms, we have already looked at other ideas and forms, and we have rejected them. This is the best solution that we could find; it is our very firm conviction that in fact in the end Dr. Burns will come to this. One hopes so, because the Study is set up to look at this as a direct result of producing this study, and, indeed, because there is no other strategy available some decisions are being made based on this very strategy because there is no other one on which to balance priorities throughout the region. Therefore we come to you quite firmly believing that this is the strategy, and that, apart from fairly minor alterations and adaptations, this will be the strategy that will ultimately come before the Standing Conference, Government Departments and ourselves as the joint commissioning body for the South-East strategy. (Mr. *Higgins.*) May I make one other point, Chairman, having sat on both the Standing Conference and the Economic Planning Council, the report of the Standing Conference, which was made in July last, does not, of course, present any kind of strategy; that was not the objective of the Standing Conference, but we find from the Economic Council's point of view, there is very little of a major nature that could be read into the Standing Conference report* of last July which would indicate that the strategy we have produced for the South-East is wildly wrong, or is questioned.

413. Professor *Buchanan:* I hope you do not think that we are trying to pit your project against the Standing Conference. It is not that; I think what we are genuinely puzzled about is: what is Dr. Burns doing, if he is not having a pretty fundamental look at your ideas and other ideas with the possibility something quite different may emerge. That is the point we are concerned with.——I think what Prof. Buchanan has put is absolutely right; there is nothing finite before you at all as far as strategy is concerned, and, of course, other things could emerge. We do not seriously think that is so, but that is merely our opinion.

414. *Chairman:* When I read and re-read, as I have, the *Strategy*, where do I find anything in it which tells me where the third London airport, which has been described by the Government as the biggest planned investment project at present under consideration, ought to go? ——(Mr. *Hackett.*) You will not find it in the *Strategy.* What we do say is that the proposal to have the third London airport at Stansted, we had objections to on regional planning grounds. May I just tell you why you do not find anything about it here is that the Council was appointed and had its first meeting the week after the original inquiry on Stansted finished. We then applied very much and immediately to the Council and the Ministers concerned to put a point of view about the third London airport, but on legal grounds we were refused, because if a new body put up evidence, then the whole thing, for some reason or other, became open again. Parliament then debated this, and the decision on Stansted was made. Having been made at that level, of course the Council accepted it, we had nothing further to say. But when the additional £10 million was to be spent on realigning the runways, we then informed the Government that in our opinion this reopened the subject, and the whole of the economic possibilities of other sites should be looked at. The day after we said that, the Government decided to appoint the Commission which would look into this. We have not gone any further than that, because the information and the kind of things we would ask for to form an opinion, we now know are going to you. We would have thought it wrong for us to get all this information from Departments, and elsewhere, which is coming to you. We have posed in our evidence to you some of the points where we would have pursued the matter, but which we know very well you are going to.

415. It is fair to say this, that that green book†, with all the valuable data and views it contained, was prepared on the basis that Stansted was a *fait accompli*, and now that it is no longer a *fait accompli*, we have got to fit what we have here into an over-all regional planning scheme,

* *The Third Airport.* (LRP 1177). Available from the Standing Conference on London and South-East Regional Planning, 26 Old Queen Street, London, S.W.1.
† *A Strategy for the South East.*

Printed image digitised by the University of Southampton Library Digitisation Unit

including a strategy which was prepared on a different basis from that which now exists? That is the difficulty, is it not?——Yes, it is.

416. Is this not one of the things Dr. Burns is going to have to look at very closely?——Yes, but the strategy remains; quite apart from the problem of an airport-we pinpointed the fact that it did not fit in with the Regional Planning objectives of the Council, the decision had been made by the Government, and that was that. The point is now reopened, and I think we state fairly sound reasons for saying that it was in the wrong position, it remains a bad position from the point of view of over-all regional planning, and that there are other centres which meet other needs of transferred population and work and growth, which clearly indicate that the third international airport, if we are indeed to have one, if it is necessary to have one, should go in a different direction.

417. I have got open in front of me, or rather, Prof. Buchanan has got open in front of him, the map that comes out of your green book. In the light of the strategic considerations in the green book, would you care to help us with any views as to where, in sectors rather than in site, you think the airport should go, if there is to be one?——We have mentioned particularly two. We do say that in connection with the growth of services and employment at a major new international airport, if in fact the airport is necessary, and if it must be in the South-East region, it should be along one of these growth sectors, and if it can well serve other centres as well as London, so much the better. We particularly specify two areas where we think it would be possible. One is to the north-east or south-east of London on the Thames estuary; other things being equal, they are growth sectors, and would ultimately have the advantage of dealing with the noise factor. If all other things were equal, we think the balance would come down on an airport in the estuary, on the noise factor. The other sector where we think an international airport of this size and consequence would serve both the London region and other regions—and may I just interpose here to say that looking further away from the region, my colleagues, as Chairman of other Planning Councils, my Council would accept with those Chairmen that the biggest contribution we could make to the development of the North would be a major international airport, if that were possible as an alternative. But as a contribution, both to the London need, and the South-East need, and to the Midlands need, and to the lower part of the Northern area's need, the very big development along the north-west between London and Birmingham, and the conurbation of Northampton, Milton Keynes and Bedford, which is fixed, Mr. Chairman, by Government policy, and will not be altered by Dr. Burns or anybody else, is in fact a point with a new city of 150,000 by 1981, which can cater for the transfer of population of the work and services of a major airport. We do state specifically in our evidence here——

418. You are talking about Milton Keynes, I take it?——Milton Keynes, yes, and what we call the city region of Milton Keynes and Northampton. That area, if technically—and we are not, of course, qualified to discuss technically the needs of an airport—but if the location is suitable, and the distance is suitable, and it has to be a third international airport to serve mainly London and the South-East, that would be one of the areas where we think it should have prime consideration.

419. So that the Council's view really is this, that we ought to be looking somewhere where there are already existing growth areas, being areas which could absorb any additional necessary urbanisation—does that do justice to your views?——That is very much our view. The Stansted point, or any airport which, apart from the general environmental background to a population of 18 million, growing to 23 million in the year 2000, the environmental importance of the wider, open areas we think are self evident. But an airport with all the population and public investment involved of housing, of roads and schools, might, we think, much better be more sensibly met by having this airport in a place where the Government, and we, and almost everybody connected with the South-East strategy, is committed now, and will not be altered to certain developments to take the population and the growth. We get in that way the best of both worlds. As all these major extensions, whether they be Ipswich, Northampton, Peterborough, Milton Keynes, are already on lines of communication, the main railway network, electrified in the main, and the main motorways, either already established or actually planned, built now or to be built by 1975—here

Printed image digitised by the University of Southampton Library Digitisation Unit

we have, at least in the first years of such an international airport, the best use of public investment, and the best means of providing the basic communications. It remains to be proved, Chairman, and has not yet been proved, that an airport on any of these main lines which have already been fixed, could not in fact cope. I think there are all kinds of things to be looked at. For instance, if this were, for example, the M.1, a great deal of traffic comes down the M.1 to the airport at Heathrow; a great deal of traffic will go in the opposite direction should the airport be otherwise sited, apart from the advantages to all the great Midland conurbations, and an easier distance, perhaps, from the North. But that is one site we mention as an example of what we mean, and we also mention the estuarial sites.

420. Mr. *Goldstein:* With reference to Milton Keynes, you refer to a population envisaged, a growth of 150,000. This morning we heard various views as to the likely urbanisation figures resulting from the airport. But some views we heard would suggest that ½ million people might ultimately be more right. Indeed the Town and Country Planning Association I think thought in the long term this might be as much as 1 million. I wonder whether the views you expressed to us with respect to the North-West sector, having the M.1, and having the planned growth by some 150,000 at Milton Keynes, would really be compatible with an urbanisation of so much bigger figures?——I am not sure I understand. (Mr. *Higgins.*) Our figures are not of such a scale. Of course, the only evidence we have had available is the rather sketchy evidence of Heathrow and Gatwick, and what has happened in different planning circumstances, probably, in the United States and elsewhere. I think with our sophisticated system of planning control, there is a lot that we can do to control what happens with regard to the siting of an airport. But having said that, there is a great deal of direct employment, the exact amount depending, I understand, upon whether you service aircraft actually at the airport or somewhere else, which is a possibility. Of course, there is the question of servicing the people who are in fact employed. We reckon with regard to jobs, the ratio of population is acknowledged to be as 1 is to approximately 3. So that one can envisage that if there are 10,000 people employed at an airport, there are 30,000 people to be sited within reasonable distance of that airport, anyway. If there are 20,000, there are 60,000 plus other possibilities if they require amenities.

421. Given that, I think it is probably common ground by all concerned that the present employed population at Heathrow is some 40,000. There are views that have been held that this would grow, even at Heathrow. Taking a multiplier of 1 to perhaps 4 or 5, to allow for the service growth, this would lead to something, in the case of Heathrow, of perhaps 200,000. That is a two-runway airport, and we are considering a four-runway airport. The view put to us was that it would at any rate be something like 60,000, or perhaps 80,000 jobs, employment, on the Heathrow pattern. Using the same multiplier one gets into a growth that is considerably greater than Milton Keynes as planned at the moment.——(Mr. *Hackett.*) Yes, I think it is a little difficult for us to get into particular places. What we are trying to say is that in connection with a possible number of sites, there are a number of areas quite definitely designated, apart from the corridors of growth leading to them, designated by Government with settled figures. All kinds of experts, and all kinds of bodies can come forward quoting additional figures of what the ultimate population may be, but this strategy is based on actual figures given to us by a Planning Board of Government Departments on the best figures available, and the scope and development of these places has been fixed at 77,000 additional for Ipswich, 77,000 for Northampton, 180,000 up to 1981 for Milton Keynes, and ¼ million to the end of the century; further expansion of Bedford, which altogether gives a great deal of possible expansions in what we call the city region area of those three towns; a similar sort of expansion, perhaps not on the same vast scale, for the Ipswich, Colchester, Harwich area. Of course, if one adds, and we have not added it here, a major new international airport, one adds generally to what is to be a development area anyway.

422. It is precisely that point to which I was addressing myself, because I understood you to say the advantage of following an existing growth corridor, existing communications, is that they can be used. Would it not be reasonable to suppose *prima facie* that if by the presence of a new international airport the population growth in a particular place is going to be considerably exceeded from that planned, as

Printed image digitised by the University of Southampton Library Digitisation Unit

you just said, similarly the existing or planned communications means, the roads or the railways, would not do the job?—— I think that remains to be proved, that it would not do the job. There are all kinds of things that would happen; there will be commuting up and down the line to an airport or to a city region, but at least it can be said that the things are already planned, and in being, and still have to be tested against the kind of growth that is to take place. Strategy or no, it is to take place.

423. The reason I ask this, Mr. Hackett, is this, that I think Mr. Higgins put the point first, that we should look at the existing communications plans, or communications that are in the programme in the first instance, but is this not merely one factor that can in fact be quantified in terms of cost. Would it not be reasonable to take the contrary view—an alternative view, that you put the airport where it seems best for any reason. If this means the construction of new communications methods, growth, then this is a cost penalty which you attribute to that particular site. Provided the total cost penalty, taking all factors into consideration, is favourable, then the fact that there are no existing planned communications does not seem to be a bar to the siting of the airport in that place.——(Mr. *Higgins.*) I would certainly accept that, but there is no historical evidence to support that we have in fact followed up such developments in the past, or certainly not preceded them, even followed them within reasonable time with major capital investment in communications. Our view, taking a very honest look at the economic possibilities of investment in communications, particularly roads, as the railways seem capable of taking care of themselves at the moment, there seems no, or little, likelihood, unless a Government took specifically the view that this was part of the investment in the airport, that this could happen. I would accept that were we to take that course, which has no historical basis or precedent, as far as I can see, then, of course, it could be supported—providing the communications were fully used. I have considerable experience of the stretch of road between London and Heathrow, for instance, and one doubts whether the traffic to Heathrow alone would support anything like the investment in a modern highway from the centre of London to Heathrow. I am not an expert in these fields, but I have lived on the periphery of them for long enough to learn a few lessons, some from Professor Buchanan, Chairman.

424. I think what Mr. Higgins is saying, is that the principle is right, the historical evidence as to following up with investment in communications is scant. What it amounts to is this, that in the past there may not have been a cost benefit study of the enterprise, and indeed there has not been so far for the South-East strategy. Given that there is such a study, would you be very doubtful about the implications of that study, once a recommendation comes out, and is accepted, and has been followed up, because every alternative to the particular choice would cost more, though perhaps not more in terms of communications.—No, if we make a conscious national investment in this manner, then of course, it would be beyond criticism from me. The two points I made, Chairman, were communications and the creation of jobs. The creation of additional employment in the South-East on a major scale of this kind would have to be looked at very carefully, because it would tend to negate most of our present policies with regard to the South-East, unless we had regard to some major removal of other sources of employment from the South-East to other developing areas on the periphery.

425. Professor *Buchanan:* The policy of your Council is explicitly put in your document here; in paragraph 3* you say: "The opportunities for economic growth both directly and indirectly associated with a major airport are of national importance, and the fullest development of this potential is essential".——That is what we think, and we think anything else would be a compromise.

426. So that you would agree, would you, with the Town and Country Planning Association that we might be dealing here with something that is going up to 1 million population.——Not necessarily; I think it is very airy-fairy to make those kind of estimates at this stage.

427. It might be considerably bigger than the 250,000 sort of minimum one industry town, population if you are going to get the fullest development of this potential.——I do not know that we have

* Page 89.

Printed image digitised by the University of Southampton Library Digitisation Unit

any evidence, either nationally or internationally, that an airport of considerable size would necessarily create the opportunity for growth to a population of 1 million of its own accord.

428. With respect, you are the Economic Planning Council; you made a categoric statement here that it is of national importance that you develop the potential to the full.——Yes.

429. You surely know what the potential is?——No, I would hesitate to say we know fully what the potential is. There is one other great imponderable for the South East—

430. *Chairman:* Forgive me for asking: if you do not know what the potential is, how do you develop it to the full?—— (Mr. *Hackett.*) They can control the amount of development. All we say, what we have tried to say, in fact we have not said it well enough, is that this investment means that there should be some opportunity for industry and development, apart from actual employment at the airport. This would be well chosen, as indeed the placing of industry at the present time is well chosen, in all parts of the country. But one can anticipate that if the best use is to be taken of this public investment, some special industry having need of an international airport, in the nature of its goods or services, would need to be near the airport. We have not thought, and in the advice we have had we have not got into the millions, and certainly not gone beyond the 250,000.

(Mr. *Higgins.*) Mr. Chairman, can I say there is historical evidence for our sophisticated planning system having great control over the growth of jobs; certainly so far as the London area is concerned it has been a policy pursued and initiated by the London County Council. May I say that all the industry that was provided in the main for the London New Towns came from the centre of London under a controlled plan. One assumes that our planning control would still go on, so that the amount of development we can associate with an airport would be to a degree under our control, but we are not yet certain, or able to quantify exactly what interest it would in the future generate of its own accord. We have estimated something of the order, fluctuating, of maybe between 100,000 and 250,000, but we are not able to quantify it exactly. (Mr. *Hackett.*) It follows very much the attitude over planning, with which my Council agrees, in connection with the establishment of a Channel tunnel. It would be very pleasant, and one can see some advantages in an enormous new industrial complex at Ashford because of access to the tunnel. But it is not going to happen; it is going to be a limited development because of the needs of other parts of the country. In the same way, in the development of industry around the airport, there ought to be some of it to take advantage of the public investment; it ought to be very carefully selected, and would be. I do not think any estimate of millions can be taken seriously unless one anticipates that all kinds of control over the placing of industry are going to be lifted.

431. *Chairman:* May I just take you back, Mr. Hackett, to something you were good enough to say about a quarter of an hour ago, which was in connection with the possible estuary sites. Right at the end of your statement, and I think really it is the last thing I want to ask you about, in paragraph 14* you say: "Indeed, if it were possible to combine an airport with a deep water port, as has been proposed in one area of the Thames estuary, the Council would see considerable economic advantages in a plan which linked complementary investment in this fashion". May I ask you two questions on that. First, to what proposals are you referring there, the proposal to link the airport with a deep sea water port?—— We are thinking of proposals that are, perhaps, tentative now. I understand that you have been made aware of some of them?

432. Yes.——Of the development of the north side of the Thames.

433. I just wanted to be sure it was that proposal. It is Sir John Howard and his consortium?——Yes.

434. It is that proposal you are talking about?——Yes.

435. Secondly, have you got any evidence at all from other countries, or anywhere else that these two things can be married together, an airport and a maritime port, married together beneficently,

* Page 92.

Printed image digitised by the University of Southampton Library Digitisation Unit

I mean?——The answer is No, but that is something that we are expecting the Commission to decide.

436. But we want to know where to start investigating this. So far as I personally am aware, this duplication has never been tried anywhere, has it?——We would not know that, but it is a very large area, a very large area indeed, and it follows development downstream from Tilbury, which will happen almost in any case, but there are very great justifications for the recalmation of land at Foulness for this purpose for deep sea traffic, on a scale not looked at before, or thought of before in connection with Tilbury or the docks here. Of course, the communications for docks, for containerisation on a bigger scale, for the maritime industrial estate which would go with the taking of deep sea traffic through the new channels to reclaimed land, some 40 square miles, which would be big enough, we would assume—but we can only assume it; we have not had a chance to look at this in detail. We would think that you would normally be looking at this very large area of land indeed, and needing very considerable pressure indeed to get both the reclamation and the land behind, which is now very important indeed.

437. Mr. *Knight:* Mr. Hackett mentioned two possible areas in which we might look, the Thames estuary area and the Milton Keynes area. Talking of the second, he referred to the advantages which would arise because of the developments which are already planned in that area. I wonder if he is able to help us by giving us some idea of the sum of money which might be saved if we were to go into that area, where developments are already afoot, as against the estuary area?——I am sorry, we have no kind of figures of that sort. I do hope that I made the position clear, that we have not examined individual sites, because the Commission is doing that.

Chairman: Precisely. Mr. Hackett we really are most grateful to you and Mr. Higgins, and your other colleagues, for the help you have given us, and the trouble you have taken in preparing your paper. Thank you very much indeed.

(*The proceedings then terminated; next public hearing Friday, 22nd November.*)

Printed image digitised by the University of Southampton Library Digitisation Unit

WRITTEN AND ORAL EVIDENCE

22 November 1968

Noise

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Memorandum of Evidence Submitted by the British Association for the Control of Aircraft Noise

1. Excessive noise of aircraft has become a heavy burden for many who reside in the vicinity of existing major airports or their approaches. The growing menace of this particular nuisance has been recognised in the Wilson report on *Noise* (Cmnd. 2056) and by Government spokesmen. Its existence is amply confirmed by the experience of this Association, which is a national co-ordinating agency for agencies advocating the proper control of aircraft noise. The Government relies on technology to provide a significant reduction in the volume of aircraft noise, but concedes that it will be many years before the bulk of aircraft engines function at an acceptable level of noise. Government spokesmen also recognise that the limit of what may be achieved by operational procedures to minimise the nuisance of aircraft noise has virtually been reached. They predict a steady and considerable increase in the volume of air transport within the next few years; see for example the White Paper *The Third London Airport** (Cmnd. 3259), the speech of the Minister of State in winding up the debate on civil aviation on 23 July last; the report for 1968 of the Chairman of the British Airports Authority (*The Times*, 11 September 1968) is to the same effect.

2. Accordingly, this Association maintains that in the siting of any new airport, the amount of noise that will be inflicted on residential areas is a consideration of the first importance. Too little regard was paid to it in the choice of both Heathrow and Gatwick, with well recognised grievous consequences and compromises over their use that satisfy nobody. Furthermore, the proposed development of a third airport for London affords an opportunity of relieving some of the burden on the hard pressed population presently affected by air transport operations at Heathrow and Gatwick. (This opportunity should not be lost.)

3. This Association proposes that there are therefore two basic requirements to be satisfied by any site selected for detailed examination of its suitability for development as a third airport for London.

(*a*) That the arrival and departure of aircraft using the new airport should be over uninhabited areas. This points to a coastal site.

(*b*) That the site should be capable of sufficient expansion to make possible a substantial drawing off of the present volume of traffic at Heathrow and Gatwick. The requirements of such an airport are described in paragraph 31 of *The Third London Airport* (Cmnd. 3259)—three pairs of parallel runways demanding an area of seven by four miles.

4. A coastal site would enjoy the following advantages:

(*a*) It would permit full and unrestricted use of the airport by aircraft by night as well as by day without causing a nuisance to people on the ground, because operational procedures such as taking-off, landing and stacking could be carried out over the sea.

* HMSO, 3s.

Printed image digitised by the University of Southampton Library Digitisation Unit

(*b*) Aircraft which could not be made to conform to the requirements of the projected noise certification scheme or which could only be adapted to those requirements at considerable expense, could continue in use at such an airport.

(*c*) The present difficult and frustrating noise alleviation procedure imposed at Heathrow and Gatwick, which add considerably to the strain of piloting aircraft and to the cost of operating them at those aerodromes, without satisfying the reasonable demands of those affected by aircraft noise, would, at a coastal site, be unnecessary.

(*d*) Likewise zoning schemes, restricting residential development and extravagant of land, already enforced on the Gatwick area and to be expected shortly around other aerodromes, would be unnecessary.

(*e*) Sound-proofing arrangements which are always expensive but never provide a satisfactory solution to the problem of aircraft noise, would be unnecessary.

(*f*) Noise free accommodation for the employees of the airport could more readily be found at a coastal rather than an inland site.

(*g*) The extent of the Board of Trade's impossible task of trying to reconcile the claims of aviation and the demands of those affected by aircraft noise, would be substantially reduced.

5. If the result of not inflicting noise of aircraft on people on the ground is a longer journey to the airport, then that, in the view of this Association, is a price which the users of air transport must be prepared to pay.

6. Finally, this Association suggests that a proper assessment of the cost of developing coastal sites, taking into account benefits and potentialities such as the freedom to operate aircraft round the clock, satisfaction in full of air traffic control requirements, elimination of much interchange between airports, and reduction in general disturbance, would show that if is not significantly more expensive than an inland site would be. But if the cost of a coastal site is demonstrably greater than that of an inland site, that again is something that the air transport industry must be prepared to pay. This Association accepts that the development of aviation is necessary but believes that the development is compatible with the elimination of the nuisance of aircraft noise. What is not reasonable is that air transport operations should be conducted in ways and in places that cause widespread disturbance and annoyance to residential populations.

Printed image digitised by the University of Southampton Library Digitisation Unit

Statement of Evidence Submitted by the Dorking and Horley Rural District Council

THIS Statement of Evidence with respect to the siting of London's third airport is submitted to the Commission by the Dorking and Horley Rural District Council (hereinafter referred to as "the Council").

Herewith are sent the following documents:

* (i) Report of an Inquiry into the proposed development of Gatwick airport—Cmd. 9215.

(ii) Copy letter dated 10 August 1968, The British Association for the Control of Aircraft Noise to the Council.

(iii) Copy letter dated 16 August 1968, the Council to The British Association for the Control of Aircraft Noise.

(iv) Copy letter dated 19 August 1968, The British Association for the Control of Aircraft Noise to the Council.

(v) A map—scale 2½ inches to the mile—of the Dorking and Horley Rural District.

† (vi) Copy extract from the report of the Surrey County Council's Town and Country Planning Committee re noise at Gatwick airport.

† (vii) A map defining noise contours in relation to Gatwick airport.

General Submissions

1. The Council do not wish to be heard at the public inquiry to be held during Stages II and V of the Commission's investigation.

2. London (Gatwick) airport lies within the parish of Charlwood within the Dorking and Horley Rural District.

3. The Council have considered the letter dated 10 August 1968 from The British Association for the Control of Aircraft Noise, and have affirmed that they have insufficient authoritative information upon which to base evidence as to the most satisfactory site for London's third airport. The kind of information which the Council lacks concerns the questions of need for a third airport, how near to the city it should be, the existing and proposed road and rail services from the airport to the city, operational considerations, the problems of air traffic control in relation to existing patterns around Heathrow airport and Gatwick airport and any proposed new airport site, possible interference with operational service airfields and the cost factor.

4. The Council's submissions about airport siting generally stem from their experiences in relation to the development of Gatwick airport. In this respect the Council endorse what has been stated by The British Association for the Control of Aircraft Noise in their letter to the Council of the 10 August 1968, with respect to noise, in so far as all or any of the points enumerated 2 to 16 therein are relevant.

---

* HMSO, 2s.

† Available for inspection at the offices of Surrey County Council, County Hall, Kingston-upon-Thames.

Printed image digitised by the University of Southampton Library Digitisation Unit

Submissions as to Noise

5. The Commission's attention is drawn to the report of the Inquiry into the development of Gatwick airport—Cmd. 9215, particularly to paragraphs 23, 26, 31, 45, 46, 156, 177, 180, 181, 182, 186, 258, 259, 271, 280 and 281.

6. A busy airport and thickly populated areas are incompatible neighbours; this has been proved by the number and strength of the complaints which have come, and which continue to come, from populated areas around London's two main airports.

The disturbance from noise, particularly when aircraft are taking off under full power, is annoying and depressing to the people who have to put up with it day after day and night after night. There is little or no relief from this barrage of noise, often disturbing sleep and making normal conversation impossible, for the people living in areas which are close to airports or in line with flight paths. As aircraft get bigger and bigger and carry more and more passengers so, it would seem, they will become noisier and consequently there will be a higher level of disturbance for people to endure, at any rate until this dilemma has been resolved by the production of much quieter engines or improved procedures on take off and climbing. But this is likely to be a very long term solution, if, indeed, it ever succeeds.

7. In the Council's opinion the choice of Gatwick as the site for an international airport was a bad one, as most likely it would be in any rural area around London. As will be seen from the map (document no. (v)) immediately to the south of Gatwick lies the new town of Crawley with its population of over 60,000 and a higher planned population; immediately to the north-east lies the town of Horley with its population of over 18,000 and a higher planned population; further to the north and the north-west lies the towns of Reigate and Redhill with their population of over 55,000 and a higher planned population and Dorking with its population of over 23,000 and a higher planned population and immediately to the west lies the hapless village of Charlwood almost directly in line with the main runway and in the direction of take off.

The flight paths from Gatwick airport and the flight paths from Heathrow airport mean that few people living and working in these parts of Surrey are free from the noise and disturbance of aircraft. Noise cannot be kept from pervading people's homes, and such sound proofing methods that can be used are costly and merely help to alleviate the nuisance; they do not remedy it.

8. An airport has a deleterious effect on land and property; people wishing to escape (if this is possible) the noise and disturbance caused by aircraft may find their properties less saleable and may, therefore, suffer a reduction in value. Furthermore people who invested in property before the airport came are, with perhaps few exceptions, unable to realise their investment because of restrictions which, because of public safety and noise factors, must of necessity be placed upon its development.

The map (document no. (vii)) showing the noise contours relevant to Gatwick airport illustrate the extent to which noise has adversely affected the areas around the airport and, indeed, for some distance away from the airport.

The extract from the report of the Surrey Town and Country Planning Committee (document no. (vi)) describes the factors which were examined by that Committee before proposing that the Surrey County Council, as the local

Printed image digitised by the University of Southampton Library Digitisation Unit

planning authority, should adopt the policies contained in the recommendations 1 and 2 of that report.

Submissions as to Planning

9. The Commission's attention is drawn to the Report of the Inquiry into the development of Gatwick airport—Cmd. 9215—particularly to paragraphs 24, 25, 150, 152, 153, 176, 185, 243, 260 and 270.

10. A major airport creates a number of problems for the local planning authority. These are of two kinds. First is the effect on the allocation for development and use of land of the incidence of noise and operational restrictions. Land which may be otherwise suitable for development and, indeed, much needed for development can be so affected by aircraft noise or by operational restrictions that this development is precluded. The needs for which the development is required have therefore to be met elsewhere. The result can be altogether unsatisfactory. Certainly the pattern of development is likely to be distorted because the local planning authority's plans have been drawn against artificial barriers.

Second is the pressure which the airport creates for accommodating those who work there and the various services and facilities related to the functioning of the airport. Housing and associated public services must be available. Car parking accommodation is needed for airport passengers many of whom will be travelling on holiday and will wish to leave their cars at or near the airport while they are away. The airport will attract to the area commercial interest providing services (for example flight catering) needed at the airport. Already the Council have experienced these problems in the case of Gatwick airport; for example the unauthorised use of private premises outside the airport for long term car parking.

11. The airport therefore both restricts the selection of areas for development and, at the same time, leads to pressure for development. These influences present a continuing dilemma to the local planning authority and any district councils acting on their behalf.

Final Submissions

12. Once the site for the third London airport has been decided its development will be facilitated if there is the fullest consultation with the local authorities both prior to and during its development. This will enable the local authorities to make proper provision for the services which will be required at and in connection with the efficient running of the airport, e.g. drainage, roads, refuse collection, housing, health and welfare etc.

13. Consideration should be given to the formation of an airport consultative committee similar to the consultative committee which has been appointed for Gatwick airport. This committee consists of representatives of the local authorities and the Airport Authority. The consultative committee's terms of reference are as follows:

"1. To advise the Aerodrome Commandant on any matter which he may refer to them.

2. To consider any question in connection with the problems of the airport as they affect communities represented.

Printed image digitised by the University of Southampton Library Digitisation Unit

3. To make suggestions to the Aerodrome Commandant on any matter connected with the administration of the airport, which can further the interests of the communities represented.

4. To stimulate the interest of the local population in the achievements of the airport.

Note: If the Commandant is unable to accept a recommendation of the Committee, and if after discussion the Committee so desires, the Commandant will undertake to bring the recommendation to the notice of the Minister."

14. A high priority should be given to research into the production of much quieter aircraft engines and into improved procedures on take off and climbing. Effective measures should be introduced to make certain that flight instructions are strictly adhered to, particularly at take off and so as to avoid flying over populated areas near to the airport. Night flights, particularly of jet aircraft, should be kept minimal. Sufficient land should be acquired for the airport at the very outset so that all requirements, airport and ancillary, can be contained within the airport boundaries. The most generous compensation should be paid to property owners who lose their homes and/or businesses because of the development of the third London airport. Care should be taken to avoid the severance and isolation of communities such as happened in the case of the village of Lowfield Heath, adjacent to Gatwick airport.

15. The greatest possible care must, therefore, be exercised when choosing the site for the third London airport. In these small islands with their densely populated areas it is, perhaps, physically impossible to find the ideal site for an airport. The choice will be a difficult one, and it serve little purpose to move a proposed site from one location to another to avoid disturbance to a particular neighbourhood if this would involve more flying over other, and perhaps larger, residential areas.

16. If in the end a coastal site offers the best possible solution to the problem having regard to all material considerations as, indeed, it would appear it must do in the Council's opinion, then the cost of developing and operating an airport from such a site ought not to be the deciding factor against it. In the event the third airport should be made large enough so that two airports can cater for all London's needs, thus dispensing altogether, in time, with Gatwick airport.

BRITISH ASSOCIATION FOR THE CONTROL OF AIRCRAFT NOISE
2, Serjeants' Inn
London EC4
10 August, 1968

The Clerk
Dorking & Horley RDC
Chalkpit Lane
Dorking, Surrey

Dear Sir,

As you may know, the Commission on the Third London Airport is now sitting and has asked for evidence from interested parties to be sent to it as soon as possible and *before* 16 September. BACAN will of course itself be giving evidence

Printed image digitised by the University of Southampton Library Digitisation Unit

in detail at various stages of the Enquiry, but we cannot stress sufficiently the value of your own evidence to the Commission, which has specifically requested information from Associations and Councils such as yourselves, as you are very much an interested party.

The following are some of the points which have been suggested as being particularly relevant:

1. The Association is only interested in the problem of noise, both round the actual airport and under the flight paths.
2. If London's third airport were to be in London, there is no area now available free of people and with traffic lanes extending ten miles on each side devoid of people. This only leaves a coastal site.
3. Aircraft using a coastal site would affect fewer people in the immediate area of the airport and under flight paths.
4. Stacking could be over the Channel.
5. The continued increase in frequency of flights using Heathrow and Gatwick would cease.
6. Noisier aircraft using Heathrow and Gatwick could be diverted to a coastal site.
7. Problems of re-engining old aircraft to comply with lower noise levels, and premature obsolescence of aircraft which cannot be re-engined would be eased, as these could use a coastal site.
8. Increased landing fees for noisy aircraft and/or reduced maximum noise levels at Heathrow and Gatwick would make a coastal site more inviting to operators.
9. Concord's landing and take-off noise may prevent its use at Heathrow (the only airport large enough to take this aircraft). Its noise would be no problem at a coastal site.
10. The 2707, 747 and Galaxy are far noisier than present maximum noise levels would allow at Heathrow and Gatwick. They could use a coastal site without expensive design alterations to make the noise level acceptable.
11. No zoning requirements sterilising valuable land as at Gatwick are necessary for a coastal site.
12. Employees at a coastal site would be able to live near their work in a quiet area.
13. Unlimited expansion of a coastal airport is possible without taking more land and subjecting more people to noise.
14. A coastal site would enable steady reductions in noise levels and frequency of flights at Heathrow and Gatwick.
15. As air traffic increases, so will the necessity to give soundproofing grants to more and more areas. A coastal site will save this financial outlay.
16. As frequency of flights increases, so does the risk of accidents affecting people under flight paths near Heathrow and Gatwick. A coastal site would eliminate the possibility of a major disaster of this nature.

This list is by no means exhaustive; some points are not relevant to your specific area, and you will undoubtedly wish to add more of your own, which you

Printed image digitised by the University of Southampton Library Digitisation Unit

consider at least as important. You will also wish to use your own words and phraseology and the points are only given as a guide.

We cannot stress sufficiently the necessity for every organisation to make their views known to the Commission by the 16 September. We consider that a coastal airport is one of the really practical possible solutions to the problem of aircraft noise and your evidence is vital.

Please send your written evidence to:

The Secretary to the Commission on the Third London Airport,
Mr. J. Caines,
Templar House,
81/87 High Holborn,
London, W.C.1.

Yours sincerely,
(*Sgd.*) ERIC EPSON
Chairman.

DORKING AND HORLEY RURAL DISTRICT COUNCIL
Council Offices
Chalkpit Lane
Dorking, Surrey
16 August 1968

MLR/JSA/G.3

Dear Mr. Epson,

Third London Airport

Thank you for your letter of 10 August.

With respect I do not think the Council has sufficient authoritative information as to the need for a third London airport, or as to its siting in relation to operational considerations, air traffic control and accessibility to London to affirm that if it is to come then it must be at a coastal site. Moreover, whatever relief may or may not accrue to Gatwick airport through the third London airport would doubtless stem from these considerations and would, therefore, apply wherever the third London airport were to be sited. At most I feel that all that the Council should be asked to do is to endorse the Association's points regarding the noise factor, in so far as these are relevant.

The Council would, I believe, wish to hear from you whether a letter in similar terms to your letter of 10 August has been sent to any other local authorities in the vicinity of London and Gatwick airports, and if so what the response has been.

Yours sincerely,
(*Sdg.*) MAURICE RIDGERS
Clerk to the Council.

E. Epson, Esq
Chairman
British Association for the Control of Aircraft Noise
2 Serjeants' Inn
London EC4

Printed image digitised by the University of Southampton Library Digitisation Unit

British Association for the Control of Aircraft Noise
2 Serjeants' Inn
London EC4

19 August 1968

M. L. Ridgers, Esq
Clerk to Dorking & Horley RDC
Council Offices
Chalkpit Lane
Dorking, Surrey

Dear Mr. Ridgers,

re: Third London Airport

In Mr. Epson's absence on holiday, I am replying to your letter of 16 August on his behalf.

We of course appreciate that you feel that your Council does not have sufficient authoritative information as to the need for or siting of London's third airport. However, the Commission which is now sitting has already stated that many of those who wish to submit evidence are in no position to give expert technical information in support of their evidence and that this must not prevent any individual or organisation from putting its views. The Commission realises that a wealth of highly detailed technical information will be forthcoming from many sources, and has particularly asked that the lack of such expert supporting evidence should not deter anyone from making submissions. Your Council may therefore like to reconsider the question of sending their views to the Commission.

A letter in similar terms to the one dated 10 August sent to your Council has also been sent to the following local authorities:

London Borough of Camden	Reigate Borough Council
London Borough of Lambeth	East Grinstead UDC
London Borough of Hounslow	Uckfield RDC
London Borough of Richmond	Bletchingley Parish Council
London Borough of Bexley	Felbridge Parish Council
London Borough of Merton	Chelsham Parish Council
Royal Borough of Windsor	Godstone RDC
London Borough of Wandsworth	Limpsfield Parish Council

These authorities are members of BACAN. At present, only acknowledgments have been received, but I will ask Mr. Epson to keep you informed.

Yours sincerely,
(*Sgd.*) Helen M. Davies
BACAN Committee.

Printed image digitised by the University of Southampton Library Digitisation Unit

Chelsea & Kensington Action Committee on Aircraft Noise

CHELSEA AND KENSINGTON ACTION COMMITTEE ON AIRCRAFT NOISE
30 Mallord Street
Chelsea
London SW3

The Hon. Sir Eustace Roskill
Chairman
Commission for Inquiry into the Siting of the Third London Airport
Royal Courts of Justice
Strand WC2

SIR,

We greatly welcomed the announcement made by the President of the Board of Trade in the House of Commons on 20 May that a non-statutory Commission was to be set up under your Chairmanship to consider the siting of a new airport for London.

We have studied with close attention the Terms of Reference outlined by Mr. Crosland and have noted with interest the phrase "the timing of the need for a four-runway airport".

Now that your Commission has begun its preliminary investigations, we should be grateful if we might be allowed to lay before you for your consideration certain observations both on this problem of timing and of the question of the relationship of the future airport to those already in existence and in particular to Heathrow.

1. From the point of view of the residents and workers in the western area of London, lying within a radius of some fifteen miles of Heathrow, the need for the establishment of the new airport is a matter of the utmost urgency.

Although the British Airports Authority apparently do not regard Heathrow as having yet reached saturation point, any increase whatsoever on the present traffic load in the overcrowded air lanes leading to it would be wholly intolerable to people on the ground who already endure:

(*a*) Serious loss of sleep.

(*b*) Fatigue and nervous strain from both night and day flights.

(*c*) Serious interruption to communications and consequent disruption of work and leisure activities during peak air traffic periods when overflights occur at intervals of from two and a half to one and half minutes for up to four hours at a time.

(*d*) Consequent deprivation of the peaceful enjoyment of their houses and places of work, worship and study, which they have always regarded not only as an essential part of civilised amenities, but also as an inalienable Common Law right.

(*e*) The rapid worsening of road traffic congestion on the main routes from central London to the west, owing to the continued passage of coaches, lorries, taxis and private cars serving Heathrow airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

(*f*) The constant dread of a serious air accident involving large numbers of people in very densely built up areas.

We therefore naturally regard any proposals for enlarging the traffic-handling capacity of Heathrow as wholly inimical to the social and economic well-being of west London, and, since the numbers of people on the ground must at all times necessarily far exceed the number of those in the air, we consider the earliest possible measures for the diminution of the Heathrow ground and air traffic to be a matter of paramount importance.

2. With these considerations in mind, we feel that the consideration of the relative status of the London airports is a question deserving a urgent examination, although it has not been specifically included in the Terms of Reference laid down by the President of the Board of Trade.

We are not, of course, in a position to make any representations concerning the future of Gatwick airport, since its operations do not affect us; but in November 1966 Mr. Marcus Worsley, MP presented to the then President of the Board of Trade on our behalf a petition (supported by 9,043 signatures gathered in less than five weeks in the southern area of the borough alone) urging the President to establish a main London airport on a coastal promontory site, and to transfer to it by stages all the operations now centred at Heathrow, which should then be closed and redeveloped.

We hope later this year to present to the Commission a detailed report on aircraft nuisance as it affects this area, not only because it will support our case for the phasing-out of Heathrow, but also because we believe that the evidence we have to offer on conditions in areas beneath the glide path, though at a distance of between ten and twelve miles from the central airport, might be useful to the Commission when considering the proximity of built up areas to various sites proposed for the new airport.

I am, Sir,
Your obedient servant,
MARGOT E. EATES.

Preliminary Submission of the Chelsea and Kensington Action Committee on Aircraft Noise

THE Chairman and members of the Chelsea and Kensington Action Committee on Aircraft Noise would be grateful if they might be permitted to lay before the Hon. Mr. Justice Roskill, Chairman, and the members of the Commission of Inquiry into the Siting of the Third London Airport their forthcoming report on the effects upon the Royal Borough of Kensington and Chelsea of nuisance from aircraft using Heathrow.

The members of the Chelsea and Kensington Action Committee on Aircraft Noise (hereinafter referred to as the Action Committee) respectfully suggest that their factual evidence and incidental observations may be of service to the Commission for the following reasons:

A. Terms of Reference

Since the Terms of Reference of the Commission are "to inquire into the timing of the need for a four-runway airport to cater for the growth of traffic at existing airports serving the London area, to consider the various alternative

Printed image digitised by the University of Southampton Library Digitisation Unit

sites and to recommend which site should be selected", it is the contention of the Action Committee that the Commission should consider evidence from residents in areas affected by the nuisance from the present scale of operations, both because this is relevant to the question of the timing for the new airport and the decisions governing its future status in relation to Heathrow and Gatwick, and also because it provides additional information as to the geographical extent of the nuisance that may be expected from the operations of the new airport.

B. Points for Consideration

Of the five main points to which the attention of the Commission is directed by the President of the Board of Trade, the evidence of the Action Committee appears to be relevant to three, viz:

(*a*) *General planning*, under which the Action Committee's report is relevant to noise, amenity and effect upon existing property.

(*c*) *Surface access*, under which the Action Committee's report is relevant to the disadvantages of present modes of access to Heathrow. Under this same heading the Action Committee has certain observations of a general character to make.

(*e*) *Cost*, including cost/benefit analysis, to which evidence of the social and economic effects of Heathrow upon surrounding communities over a wide area is applicable. Under this heading the Action Committee has certain observations to offer on the possibility of financing the construction of the new airport by phasing out operations at Heathrow and realising its site value.

C. Procedural Stages

The forthcoming Report of the Action Committee therefore appears to be in varying degrees relevant to Stages I, III and IV of the Procedure laid down for the Commission.

The Forthcoming Report of the Action Committee

Since the Action Committee was first convened in September 1966, its members have collected a considerable body of evidence concerning aircraft noise nuisance as it affects the limited area of the Royal Borough of Kensington and Chelsea and the regions immediately adjacent to its boundaries. This material was assembled with the object of preparing and publishing a detailed report for submission to Ministers, Members of Parliament whose constituencies are affected by the operations at Heathrow, Government Departments, Aviation and Airport Authorities, Local Government Authorities, Amenity Societies, and other interested bodies and persons.

The report, which is now being finalised for publication, is therefore of a general character and was not in the first instance specifically intended for submission to the Commission of Inquiry. Since, however, it covers so many points which appear to be of relevance to the inquiry, it is hoped that the Commission will be prepared to take its findings into account.

Pending the publication of the report, which it is hoped to offer to the Commission before the end of October, it may be convenient to summarise its contents and indicate its probable form in the following pages.

Printed image digitised by the University of Southampton Library Digitisation Unit

Summary of the Forthcoming Report on the Effects upon the Royal Borough of Kensington and Chelsea of Nuisance from Aircraft using Heathrow Airport

I. **Area, population and character of the borough** and its geographical position in relation to Heathrow and the main air lanes over west London. (*Plan.*)

II. **History of aircraft nuisance affecting the borough**

(i) First serious incidence of nuisance in 1960.

(ii) Beginning of protests in 1961.

(iii) Conditions from 1961 to 1965. Growth of protests, culminating in small Petition to Borough Council in 1965.

(iv) Increase of nuisance and growth of public indignation in 1966. Formation of Action Committee in September. Organisation of petition to President of the Board of Trade. 9,043 signatures gathered most in southern part of Borough in only five weeks, without any paid advertising, at a total cost of £85. Support given and resolutions passed by local organisations.

(v) Conditions during 1967 and 1968. Negotiations with air traffic control and slight improvements in first half of 1968.

III. **Character of the noise nuisance**

(i) Detailed examination (with sketch plan) of approach routes to Heathrow. Observed courses of aircraft overshooting ILS beam. Worst affected areas of borough identified.

(ii) Variations in height and noise, variations in control techniques for similar types of aircraft, and varying intensity of annoyance in different types of buildings. Outdoor effects.

(iii) Incidence of summer and winter schedules. Numbers of overflights during peak periods, based on 1967 observations. 2,800 overflights during first 16 days of July 1967. Duration of peak periods. Night flying.

IV. **Analysis of evidence from people living and working in the area**

Evidence, gathered by the Committee from replies to questionaires, letters, telephone calls and conversations, from schools and colleges, churches, doctors, shops and offices, private residents, professional, clerical and manual workers.

The evidence clearly indicates that, in the areas worst affected, there is:

(i) Loss of sleep and consequent fatigue.

(ii) Nervous tension arising from long periods of noise exposure during the summer months.

(iii) Disruption of concentration, continuity and communication in teaching, worship, medical examinations, public meetings and performances, telephone conversations, operation of tape recorders, use of radio and television, and ordinary conversation.

(iv) Disturbance and consequent loss of enjoyment in private gardens and public open spaces and outdoor entertainment.

The Action Committee notes that, far from "learning to live with the jet", every increase in the nuisance brings a commensurate increase in public indignation, as was shown by the evidence of 22 July 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

The Committee further notes the frequently expressed fears of an accident over so densely built-up an area, especially after every report of an accident. Particular apprehension is felt in connection with the development of "jumbo jets" and SSTs.

V. **Surface traffic congestion**

(i) Principal east-west routes through London to Heathrow all traverse the borough, and traffic to and from the airport—coaches, lorries, taxis, private cars—increase delays at various bottlenecks, greatly exacerbating already acute traffic problems.

(ii) The scattered air terminals of operating companies are situated either in or to the east of the borough, thereby increasing the problems of both residents and passengers.

(iii) There is a consequent increase of ground traffic noise and air pollution.

VI. **Conclusions**

In the course of their enquiries the members of the Committee have found that certain areas of the borough are worse affected than others.

Without having the resources to undertake detailed statistical surveys, they are not in a position to state what proportion of the population is acutely sensitive to the nuisance, but they have reason to believe that the Wilson Committee's estimate of 30 per cent unaffected, 60 per cent varyingly affected and 10 per cent acutely affected by noise nuisance probably holds good for the area, and they can certainly confirm the view of Professor E. J. Richards that every increase in the intensity of the nuisance produces a directly related increase in the number of objectors.

The members of the Committee have noted the relief expressed by people in all walks of life at the amelioration of conditions during the first half of 1968—an amelioration due in part to the prevelance of E. and N.E. winds, and in part to the efforts of air traffic control to "fan" approach routes and to keep aircraft at a greater height before joining the glide path. As a result of this amelioration a direct standard of comparison with conditions in the two previous years has been provided, and it has become apparent that the community is no longer prepared to tolerate any resumption of the high noise exposures to which they were subjected in 1966 and 1967, and that any even temporary increase in the nuisance is now widely regarded as an intolerable and unwarranted infringement of their right to live their lives and carry on their work in peace.

Future developments

In view of the findings outlined above, the members of the Action Committee believe that the siting of a major airport in such close proximity to a vast and densely built-up conurbation is wholly unjustifiable and that the only solution to the urgent problem of London's airports lies in the establishment of a four-runway airport, capable of still further extension, on a coastal promontary site, and they are convinced that its construction should be put in hand with the least possible delay. They believe that, following the opening of the first runways of the new airport, it is essential that Heathrow should be gradually phased out and finally closed, and they suggest that the new work could be partly financed from

Printed image digitised by the University of Southampton Library Digitisation Unit

the exploitation of Heathrow's large gravel reserves and the subsequent redevelopment of the site (after employing the pits for rubbish tipping) as a trading or housing estate.

The need for an early decision on these lines appears to the Committee to be extremely urgent, in view of the great growth in air freighting and of the unexpectedly rapid increase in air traffic in the United States, where there is a great discrepancy between the estimated and actual growth.

The members of the Action Committee have certain suggestions to make on the advantages, both for passengers and for London as a whole, of establishing a single unified air terminal in London, and of segregating ground transport to the airport, and these will be embodied in the conclusions of the report.

THE CHAIRMAN AND MEMBERS OF THE ACTION COMMITTEE, on behalf of the 9,043 signatories to the 1966 petition, offer their evidence to the COMMISSION in the hope that it may prove of service to the inquiry. In doing so, they wish to emphasise that they are in no way opposed to air transport as such, and fully realise the importance of air transport to the national economy. They are, moreover, themselves users of Heathrow and Gatwick, and many of them undertake frequent air journeys throughout the year. They are, nevertheless, mindful of the fact that at all times the number of people on the ground is, and always will be, vastly greater than the number in the air, and they are convinced that a solution must speedily be found to the problems of air transport for London, which does not impose upon large built-up areas a wholly intolerable economic and social burden.

Printed image digitised by the University of Southampton Library Digitisation Unit

CHELSEA & KENSINGTON ACTION COMMITTEE ON AIRCRAFT NOISE
30, Mallord Street
Chelsea
London SW3

31 October 1968

The Hon. Sir Eustace Roskill
Chairman
Third Airport Commission
Templar House, High Holborn, WC1

Dear Sir,

I have much pleasure in laying before you on behalf of my Committee our Principal Submissions, the gist of which was outlined in our Preliminary Submissions, which we placed in your hands in August.

The Principal Submissions take the form of our general report on the nuisance of aircraft noise, as it is experienced in the Royal Borough of Kensington and Chelsea.

From our two year study of these conditions, we draw the inevitable conclusion that any further increase whatsoever in air traffic at Heathrow airport would have the gravest possible effects upon the economic and social well-being of the community within a radius of 15 miles, and that it is therefore imperative that a decision on the siting of the new airport should be made without loss of time.

We furthermore conclude that the whole of the principal traffic at present using Heathrow should be diverted to the new airport, and that the phasing out of Heathrow should be begun as soon as the new facilities are available elsewhere, in order that it may be finally closed and its immense site value be realised to facilitate the transfer.

I may add that the site for the new airport most favoured by my Committee on grounds of minimum noise nuisance and maximum safety, is Foulness.

The report* which we are now submitting will be published for wider circulation on 12 November.

Yours faithfully,
MARGOT E. EATES
Chairman.

---

* *A Study of the Effects of Aircraft Noise upon the Royal Borough of Kensington and Chelsea.* Available from Chelsea and Kensington Action Committee on Aircraft Noise, 30 Mallord Street, London SW3 (7s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Preliminary Memorandum from the Kew Association for the Control of Aircraft Noise

1. The Kew Association for the Control of Aircraft Noise (KACAN) was spontaneously formed by residents in November 1966, to protect not only Kew but a wide range of neighbouring areas from unreasonable interference by noise of aircraft.

2. The Association recognises the importance of developing air transport, and has held full discussions and consultations on a realistic basis with governmental and other authorities concerned with aircraft operation and its noise problems. In the light of these practical and balanced exchanges about difficulties facing all concerned, the Association submits this preliminary memorandum in the hope that it may assist the Commission at the first stage of its inquiry.

3. KACAN submits that the search for a solution to the problem of establishing further airport facilities for London should proceed on the following basis—

(*a*) the solution should diminish, and preferably in due course remove, the present heavy burden of noise on Kew and other areas east of London Airport, without transferring part or all of that burden to other thickly populated areas:

(*b*) no site should be excluded from the Commission's consideration which offers a solution on these lines, notably sites on the East Coast which will result in the aircraft noise being concentrated principally over the sea.

4. KACAN asks the Commission to recognise and apply the following principles—

(*a*) The need for *development* of air transport must be recognised but the *means* of development must have regard to the amenities to which the overflown populations are entitled.

(*b*) The following are, in this context, basic amenities of life—

(i) the right to enjoy open air relaxation and pleasure;

(ii) the right to sleep without being deprived of normal ventilation or being confined to soundproofed structures;

(iii) the right to carry on indoor activities (e.g. teaching, hospital work, using the telephone, enjoyment of music, television or other entertainment, conversation, reading, writing and thinking) without being deprived of normal ventilation or being confined to soundproofed structures.

Excessive noise destroys these amenities. Schemes for soundproofing buildings, even if state-aided, must not be looked upon as a substitute for moderation of aircraft noise.

(*c*) The amount of flying over closely populated areas should be reduced to the minimum.

Printed image digitised by the University of Southampton Library Digitisation Unit

(*d*) Where there are alternative means of fostering the development of air transport, those which inflict the least inconvenience and disturbance on overflown populations must be preferred, even at any cost short of prohibitive operational cost.

(*e*) The need to solve the problem of disturbance to overflown populations should be approached on the basis of the disturbance created by aircraft of present types and of types likely to be flown in the near future, and not based on possible quieter aircraft that may be hoped for at some indeterminate future date.

(*f*) Where existing airports are wrongly placed for achieving these objectives, the choosing of a new site which would replace them and enable them to be discontinued should be given first preference.

(*g*) Limitations which are imposed by present technical methods of operation (e.g. which limit a single airport to four runways) should not prevent the Commission from choosing an airport site which could be expanded, by adding more than four runways or otherwise, as improved technical methods develop.

(*h*) Traffic problems between an airport and the main centre of population it is to serve are soluble by special means, and the necessity of doing so should not be allowed to preclude the selection of a site which gives effect to the foregoing principles.

5. The siting of any new airport (preferably in substitution and not as an addition to existing airports serving the London area) should be determined on the basis of the foregoing principles.

6. Unless any other and preferable solution is brought forward which satisfies all the forgoing requirements, KACAN favours selection of an East Coast site as indicated in paragraph 2 above, and asks that such sites shall be among those chosen for detailed examination.

7. If, in the course of its inquiry, the Commission feels doubt about the availability of a site fulfilling all the above requirements, KACAN would desire at that stage to submit recommendations as to the requirements which should be made basic conditions of operation of any site likely to be selected by the Commission.

8. KACAN fully appreciates that the Commission faces an arduous and complex task, and wishes to ensure that any contribution it can make shall be as brief and relevant as possible. In particular, it wishes to concentrate its submissions and evidence upon matters which arise, in relation to any sites submitted at stage I, under the heads set out in this memorandum. We accordingly make the following requests—

(*a*) that we should be informed as soon as possible of the full list of sites submitted at stage I to the Commission from which to make their selection;

(*b*) that we should be given the opportunity of submitting to the Commission at stage I evidence in relation to such of those sites as appear to us to involve consideration of the points made in this memorandum;

Printed image digitised by the University of Southampton Library Digitisation Unit

(*c*) that we should be at liberty to submit to the Commission also at stage I such evidence as we have of the adverse effects of aircraft noise in Kew and neighbouring areas, and the operation of such precautions as are at present intended to alleviate the burden of aircraft noise. Some of this material is still the subject of investigation, and the results will not be available until after 16 September 1968.

In addition to the procedural matters dealt with in this paragraph, we hope that the Commission will give full weight to the considerations regarding procedure set out in my letter to the Chairman of the Commission, dated 5 July 1968.

Further Memorandum from the Kew Association for the Control of Aircraft Noise

1. We regret that the material now presented comes rather later than we had hoped. This Association is a democratically constituted body, and the approval of the Committee is required for statements such as this; inevitably that produces some delay.

2. In addition we had hoped to present to the Commission the results of noise measurements taken, at our suggestion, in Richmond-upon-Thames, by the Scientific Adviser to the Greater London Council. The purpose of this was to provide an independent study of the physical extent of aircraft noise in this area, there being no regular measurement of it by the Board of Trade (as is made clear by the *Second Report of the Parliamentary Commissioner*—Session Papers 1967–68, No. 47*, paragraph 26). In the event we have received the results of these measurements only on the day of compiling this memorandum and we therefore append them without comment. (see Appendix A.)

3. Heathrow represents in an acute form the consequences of inadequate forward thinking about the development of air traffic. Our experience of the resultant difficulties is, we believe, of direct relevance to an inquiry into the siting of a new airport. In addition we make no secret of the fact that we see in the development of a third airport for London the hope of substantially reducing air traffic activities at Heathrow, but without imposing the scourge of aircraft noise on other human beings elsewhere.

4. Those who advocate the siting of an airport near an urban population argue that compatibility with amenity interests is to be sought through some form of consultation; we believe that it is relevant to consider our experience, in this context, in attempting to voice our complaints in official quarters.

The greatest difficulty in the way of those who wish to combat the increase in aircraft noise by way of the official channels is the lack of any Government agency charged with the responsibility of investigating noise in all its aspects and reporting its findings to the highest planning agency. On the occasion of a meeting with Mr. J. P. W. Mallalieu, Minister of State, the Board of Trade, on 31 October 1967, we discovered that the most senior officer exclusively

* HMSO, 1s. 6d.

Printed image digitised by the University of Southampton Library Digitisation Unit

concerned with the control of aircraft noise in the Government service holds the rank of Assistant Secretary in the Board of Trade, and works under a superior officer who is responsible for the development of airports and their full economic exploitation. The Assistant Secretary was charged with the duty of co-ordinating the efforts of four agencies:

The National Air Traffic Control Service
The Ministry of Technology
The Divisional Organisations
The British Airports Authority

(see Appendix B.)

It is clear that this Assistant Secretary could effect little more than a liaison service between the large agencies. The fact that he is the only officer at the the Board of Trade exclusively concerned with aircraft noise says little for the seriousness of the Board's attitude to the noise nuisance, and his office can scarcely be considered an adequate channel for public reaction to the noise problem.

While lacking any machinery for consultation with public opinion and for agreeing with elected bodies or voluntary associations on acceptable methods of measuring noise and estimating the population's reaction to it, the Board of Trade nevertheless recognises a potential reaction of enormous proportions to any increase of disturbance by night flying, and therefore has for some year past maintained the limit on night flying unaltered. At our meeting with the Minister of State already mentioned, he declined to give any undertaking regarding the future of night flying, and this is still the position.

Elected authorities are not a wholly satisfactory channel for the expression of public opinion on the aircraft noise question, as was recognized by the present Minister of State, the Board of Trade, Mr. William Rodgers, in the course of the debate on the Civil Aviation Bill (*Hansard*, Commons, 19 July 1968, c.1871). Upon our recent enquiry about implementing at Heathrow the implications of his expressed view, the same Minister bilked, alleging the great size of the Heathrow Consultative Committee, and the adequacy of amenity representation by the borough elected members serving on it.

Our request to the Greater London Council that it should consider the appointment of a committee exclusively concerned with air noise was declined on the plea that the General Purposes Committee of that Council is competent on this matter, enjoying the advice of the Heathrow Consultative Committee and of its own Scientific Adviser. Our Association is severely critical of the composition of the Heathrow Consultative Committee which seems to us a better forum for the noise makers than their opponents.

In both cases we have cited, the official side has argued that it is adequately informed on air noise and concerned to combat it, but neither the Board of Trade nor the Greater London Council will consider creating a specialised agency of anything approaching the competence and status which the air noise threat to civilized living warrants. This Association has felt sufficiently strongly on this issue to address this memorandum on the subject to nearly all Members of Parliament and some two hundred Peers (see Appendix C).

Printed image digitised by the University of Southampton Library Digitisation Unit

A practical demonstration of the ineffectiveness of the machinery for the control of aircraft noise is the fact that on no occasion on which a complaint has been made about an aircraft by a member of this Association has it been possible for the responsible authority to confirm or deny infringement of height regulations in the particular case.

5. Ever since the International Conference on the Reduction of Noise and Disturbance caused by Civil Aircraft, held in November 1966, those who speak for the Government have stressed the importance of noise certification. The principal policy statement was made by Mr. Douglas Jay in a written answer of 15 March 1967 (*Hansard*, Commons, WA, c. 25). There is some evidence that the Government's statements have been misunderstood as meaning that certification would bring early relief; see, e.g., the *Richmond Herald* for 10 November 1967, p. 1, c. a and b (Appendix D.)

The Government has now taken powers to introduce noise certification, and in the course of the debates and discussions in the House, primary importance has again been accorded by Government spokesmen to noise certification as a means of ameliorating the aircraft noise nuisance.

We have submitted our comments on the Noise Certification Plan (see Appendix E), and have taken the opportunity of referring our views to other agencies for their comments. One reply in particular, from the National Aircraft Noise Abatement Council (of the United States), is of such importance that we offer it to the Commission (see Appendix F). The National Aircraft Noise Abatement Council is an air transport industry sponsored and sustained organisation. It will be seen that it contends that the state of the art does not make possible the introduction of such maximum levels of noise under the certification plan as will produce a solution to the problem of aircraft noise within the foreseeable future. The solutions strongly recommended by NANAC are zoning and soundproofing. This is striking reinforcement of the caution contained in the report *Aircraft Noise*,* HMSO, ref. 84810, pp. 3 and 62, para. 5. 'Reservations'.

6. The members of the Kew Association have been concerned to see whether their reactions to aircraft noise were in any way peculiar or untypical of human beings subjected to this experience. We have adopted three methods of testing our personal reactions against those of others.

(*a*) We have studied the Wilson report on *Noise*, 1963, HMSO† (Cmnd. 2056), and the Social Surveys which formed the basis of Appendix 11 of that Report, *Aircraft Noise Annoyance Around London* (*Heathrow*) *Airport*, Central Office of Information, SS337. Our experience confirms the conclusions drawn in these surveys.

(*b*) We have communicated with a considerable number of associations of people affected by the noise of large airports in Europe and, more particularly, in the United States of America. In the latter country the disturbance produced by National Airport, Washington; Kennedy Airport, New York; Logan Airport, Boston, and Los Angeles International Airport, seems to resemble closely that at Heathrow, and we have received

* HMSO, 8s.
† 13s.

Printed image digitised by the University of Southampton Library Digitisation Unit

a considerable quantity of literature from associations similar to our own in the vicinity of those airports which we shall be happy to offer to the Commission if so required. This material shows very clearly the nuisance caused by air traffic wherever it impinges on large urban populations. We regret that our resources do not permit us to copy this voluminous literature. We find that many of the points we have been making have been made, independently, by these associations abroad, and we conclude, therefore, that our reactions are the reactions that will be aroused in ordinary people wherever they are affected by aircraft noise. We note also that these American associations advocate particularly the restriction of air operations and the location of airports in sparcely populated areas as the best solutions to the problems of aircraft noise. The Los Angeles associations, in particular, have on their committees, many individuals qualified in aeronautical matters. The information we receive from them confirms that alleviation of noise at the source is a very distant prospect indeed.

Our correspondents with societies abroad similar to our own emboldens us to suggest that the Commission might find it fruitful to secure evidence that would enable it to compare the experience of other major cities with airports sited near them to those of London,

(i) to determine what measures have been taken to prevent the nuisance there, and

(ii) where overflying is permitted, what the effects are of heavier traffic than is currently handled by Heathrow, e.g. at Kennedy Airport, New York.

(*c*) We have endeavoured to ascertain general reactions to aircraft noise in the vicinity of the eastern glidepath to Heathrow, in particular during April and May 1967. We have found ample confirmation of our own reactions among the public at large.

Further, as the Wilson Social Survey collected little information about the effect of aircraft noise on schools, hospitals, churches and similar institutions (S.S. 337, para. 2.3) we have endeavoured to obtain such information, and have secured clear evidence of the substantial disturbance caused by air traffic at Heathrow to the activities of such institutions. We believe that the Commission may care to see a selection of up to date letters conveying the attitudes to aircraft noise of those responsible for various institutions in this locality. Copies of these letters are appended (Appendix G). We draw particular attention to the letter of Sir George Taylor, Director of the Royal Botanic Gardens, Kew, of 13 November 1968, the implications of which will, we feel sure, be apparent to the Commission.

We have recognised that our resources did not enable us to conduct up to date investigations of the type carried out on behalf of the Wilson Committee. We understood over a year ago that the Government had conducted such a survey over a large area around Heathrow (see the report of our meeting with Mr. Mallaieu, heading 1(*d*) on p 3, Appendix B.) Eighteen months after the groundwork for this survey was carried out, the results of it are still not available.

In an effort to ascertain the particular ways in which our members were affected by aircraft noise, we have conducted an enquiry within the membership

Printed image digitised by the University of Southampton Library Digitisation Unit

of this Association. We realise that our questionnaire was answered by those who were already sufficiently perturbed by aircraft noise to join a protest association. Nevertheless we feel that the results will be of some interest to the Commission. The questionnaire is appended (Appendix H).

The members who responded live in an area approximately five to ten miles distance from the airport within the London Boroughs of Richmond-upon-Thames and Hounslow. Some 250 completed returns were analysed. Of these, 97 per cent affirmed that aircraft noise "actually interrupted them"—e.g. when telephoning, using radio or television, or carrying on a conversation. 88 per cent said that aircraft noise affected the use of their gardens. Exactly half of the respondents stated that they had seriously considered moving house because of the aircraft noise disturbance; some indeed have since moved. 44 per cent had been driven to complain to the airport authorities, their MP, the Board of Trade, or, in some cases, the Prime Minister—many having complained on more than one occasion. In reply to the question, "What do you find more annoying: (*a*) the frequency with which aircraft pass overhead? (*b*) the average noise of each aircraft? (*c*) the occasional exceptionally noisy aircraft? (*d*) any other noise characteristic?, 42 per cent gave (*a*) as their first choice, and 38 per cent gave it as a second choice. Most people were disturbed during the daytime, particularly weekends, but 15 per cent found aircraft noise most disturbing at night. The clear conclusion is that there is scarcely any domestic activity that remains unaffected by the noise of aircraft.

7. The Minister of Transport's reply to Mr. John Osborn in the House of Commons on 11 November last about the advanced passenger train project contained no reference to the revolutionary significance of this development in the context of national airport planning. The importance of this train, which employs the principle of a power controlled roll system, is that it is capable of average running speeds of 150 mph on existing permanent way—and that it is expected to be in service by 1974. An article describing the project, by Mr. S. F. Smith, Director of Research, British Railways Research Department, Derby, appeared in the *Railway Gazette* for 7 June 1968 (See Appendix J). Mr. Smith has confirmed to us the excellent prospects of this project. Thus, before any new airport for the metropolis is likely to be operational, there should be in general use a means of providing a surface link to it that makes it reasonable to consider a much wider range of sites in unpopulated coastal areas.

8. In calculations of the cost of alternative sites that we have seen, notably in the White Paper, *The Third London Airport*,* Cmnd. 3259, no account is taken of the cost of continuing to use Heathrow at high capacity. This Association contends that in the consideration of any site for an additional airport for London that will not allow of a substantial running down of Heathrow airport, there must be an evaluation of,

(i) the full economic costs of congestion for the traffic using the access roads to Heathrow, such as the M4 and the Cromwell Road extension, but which is not going to or from the airport. This calculation should be both on existing flows and for suitable forecast reference years—say 1970, 1975 and 1980, and should include vehicle operating costs,

* HMSO, 3s.

Printed image digitised by the University of Southampton Library Digitisation Unit

driver's time and passenger and other users' time costs arising from journey delays.

(ii) the full economic cost of the time lost through interruptions to professional and commercial activities in areas affected by aircraft noise; this should be done on direct time loss and impaired overall efficiency.

9. It is remarkable that the largest single source of nuisance in West London should derive from a national undertaking. We have observed that spokesmen for the British Airports Authority often suggest that the Authority has to be operated as a commercial enterprise; see e.g., BAA *Annual Report*,* 1967–8, p. viii. The actual financial duties of the Authority are described in s. 3 of the Airports Authority Act 1965. That section clearly shows that responsibility for the financial side of the enterprise is retained by the Government. In the matter of Heathrow the Government has a bad record. It is all the more necessary that the new airport, which will also be controlled by the British Airports Authority, should be located where it cannot become another disturber of the peace of the people on the ground.

Appendices

A Aircraft Noise Measurements in Richmond-upon-Thames taken by the Scientific Adviser to the Greater London Council, June–September 1968.

†B Report of a meeting with Mr. J. P. W. Mallalieu, Minister of State the Board of Trade, 31 October 1967.

†C Memorandum sent by KACAN to Members of Parliament and selected peers, dated September 1967.

†D The *Richmond Herald* for 10 November 1967, p. 1.

†E KACAN's comments on the Noise Certification Scheme.

†F Part of a letter from the National Aircraft Noise Abatement Council (of the United States) to KACAN, dated 4 November 1968.

†G Selected letters recently received from persons responsible for schools and other institutions on the disturbance caused by aircraft noise:—

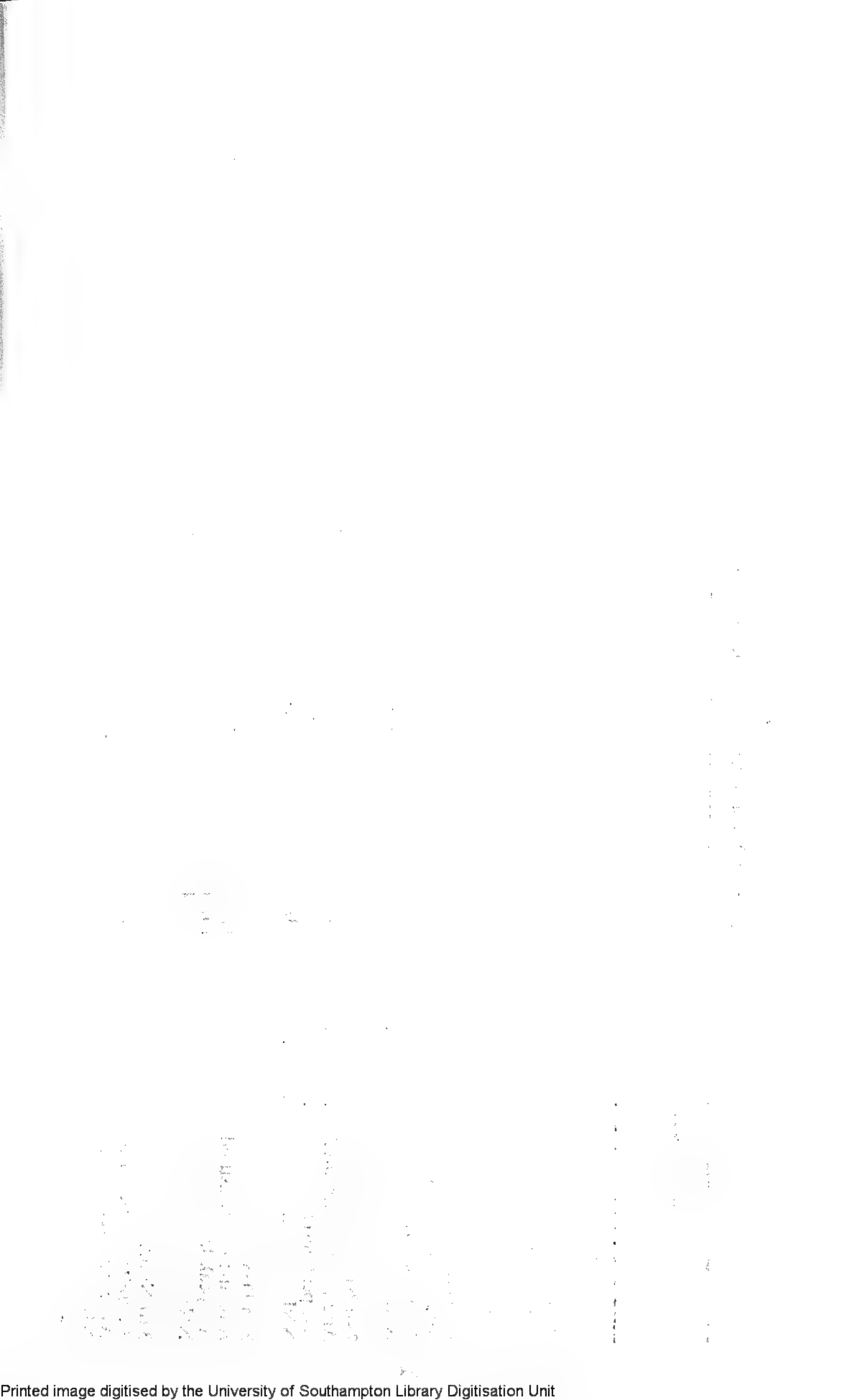
(*a*) Richmond Institute of Adult Education, 11 November 1968
(*b*) Digby Stuart College of the Sacred Heart, 11 November 1968
(*c*) Maria Grey College, 12 September 1968
(*d*) Borough Road College, Isleworth, 12 November 1968
(*e*) Shene School, 6 November 1968
(*f*) Isleworth Grammar School, 8 November 1968
(*g*) Richmond County School for Girls, 12 November 1968
(*h*) The Green School for Girls, Isleworth, 11 November 1968
(*j*) The Vineyard Infants School, Richmond
(*k*) Twickenham Film Studios Ltd., 14 November 1968
(*l*) The Director, Royal Botanic Gardens, Kew, 13 November 1968
(*m*) Statement by Dr. N. F. Coghill, MA, MB, FRCP, West Middlesex Hospital (extract).

†H Questionnaire for members of KACAN, dated 31 May 1968.

†J "The Advanced Passenger Train" an article by Mr. S. F. Smith, published in the *Railway Gazette*, Vol. 124 No. 11 (7 June 1968).

* HC 418, 1967–68 (HMSO, 15s.).
† Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit



Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Appendix A

Aircraft Noise 1968 at Richmond-Upon-Thames*

Measurement points	York House, Kew	Kew Pumping Station*	Taggs Yard (off Upper Richmond Road)	57 Hartingdon Road	Kew Gardens†
Measuring period:	*18.6.68–21.6.68*	*5.7.68–8.7.68*	*26.7.68–29.7.68*	*26.7.68–27.7.68*	*27.9.68.–30.9.68*
1st Night					
Aircraft: no. measured	30	46	69	26	153
Av. peak level	98.7	86.9	82.1	85.6	97.8
NNI	40.8	31.8	29.7	26.8	50.5
1st Day					
Aircraft: no. measured	101	132	148	138	75
Av. peak level	101.2	93.6	87.8	89.9	91.5
NNI	51.3	45.4	40.4	42.0	39.6
2nd Night					
Aircraft: no. measured	34	98	108		131
Av. peak level	95.6	89.4	87.2		96.1
NNI	38.5	39.3	37.7		47.9
2nd Day					
Aircraft: no. measured	117	135	97		226
Av. peak level	101.4	94.7	88.9		95.1
NNI	52.4	46.7	38.7		50.5
3rd Night					
Aircraft: no. measured	26	31	37		40
Av. peak level	93.9	88.4	86.6		84.5
NNI	35.2	30,8	30.1		28.6

* See also tables on pp. 186, 212–215.

Traffic pattern	Approaching Heathrow	Departing except 05.54–08.38 and 14.08–23.59 on 6th 00.12–11.10 and 03.55–9.–09.00 on 8th	Departing except 05.19–09.48 and 20.20–23.59 on 27th and 00.01–07.18 on 28th		Approaching Heathrow, cross runway used 09.26–17.59 hrs. on 28th
Summary					
Average peak levels					
TAKE OFF					
Day		95.4	87.6	85.7	
Night		87.8	83.5	89.8	
Combined		93.6	85.8	88.4	
LANDING					
Day	101.3	92.8	89.3	89.8	93.1
Night	96.5	89.2	88.3	89.8	96.3
Combined	99.1	91.8	88.9		95.0

Note: All peak levels are given in PNdB
NNI based on periods 6 a.m.–6 p.m. and 6 p.m.–6 a.m.
*near West Hall Road.
†near the Lake.

Printed image digitised by the University of Southampton Library Digitisation Unit

Cranford & District Residents' Amenities Association

CRANFORD AND DISTRICT RESIDENTS' AMENITIES ASSOCIATION
(Abatement of Aircraft Nuisances)

13 September 1968

The Secretary to the Commission on the Third London Airport
Mr. J. Caines
Templar House
81–87 High Holborn
London WC1

Dear Sir,

London's Third Airport

We would like to offer to the Commission our experiences, as an indication of how careful one must be when selecting a site for a major international airport. Our Association was formed 18 years ago to combat aircraft noise and nuisance at Heathrow. Cranford is situated one mile from the eastern end of No. 1 runway.

Our experience has been, that the noise nuisance has got steadily worse year by year in spite of statements by Ministers etc., that this would not happen. It appears that no one in authority can be trusted, and there is no one who can control this nuisance. We have never campaigned for the removal of Heathrow, only to be allowed to live in a reasonably quiet environment. Things have now got so bad that our only recourse, is to demand that Heathrow be given a limit to the number of aircraft movements allowed, and to institute new and realistic noise limits. As this is contrary to the present trend in air commerce, it makes the necessity of another airport a matter of urgency.

We list below, some of the adverse effects of having a large international airport close to a densely populated area.

1. We would like to explain the extent to which the noise has been allowed to grow more or less unchecked at Heathrow. At the present time there are limits on take-off noise *only* measured at the first *major* built up areas, Cranford is one of these. The take-off noise limit at night is 102 PNdBs, anything in excess constitutes an infringement of the regulations. However, aircraft landing over Cranford often produce between 120 and 125 PNdBs, this is over four times as noisy as the take-off limit allows and yet no regulations are broken, because none exist. This noise must now be considered a danger to health, but all we are promised is an even noisier time in the near future with the introduction of the Concorde.

2. It must not be forgotten that many communities around this airport are too close to be covered by the take-off noise limits.

Printed image digitised by the University of Southampton Library Digitisation Unit

3. As the total of aircraft movements increase, so do the number of "over-shoots", and we now have aircraft over Cranford at 300 feet on full power. In the case of the forthcoming Concorde, this will probably mean physical damage to peoples hearing, as well as to property.

4. At Heathrow are established BEAs and BOACs maintenance bases and the BOAC hangers and run-up areas are close to us at Cranford. We therefore suffer the maintenance engine testing, quite often at night. Although testing is carried out on the mufflers the noise is still considerable.

5. Because of the prevailing wind, we are subjected to unpleasant paraffin fumes from the airport generally, the maintenance areas and from landing aircraft.

6. Our property is often affected by vibration but damage his difficult to prove. The writer has recently had three holes made in the roof of his house by vortices shed from landing aircraft. We know of other cases.

7. As you are probably aware, Heathrow is unique among international airports in that it is situated on the wrong side of the city it serves. The prevailing winds demand that most of the landing approaches are made across 20 miles of built-up, densely populated areas. The fear of a catastrophic crash in this area has been mentioned by many people. Although this may only be a million to one chance time is running out, when one remembers that approximately 80,000 approaches over London were made last year alone, to which must be added a lesser number of take-offs. There have already been a number of major accidents at the airport which could so easily have been major tragedies.

8. We are now entering the era of automatic landings, and of approaches being made in conditions of bad visibility. This can be very nerve-racking if one resides under the flight path. The heights of aircraft over the nearest and farthest houses in Cranford, from No. 1 runway, being 278 feet and 388 feet respectively.

9. Loss of amenities. This has been mentioned many times by many people, but is very important. Aircraft noise interrupts the hearing of radio and television and causes distortion of television pictures. One has to stop talking while using the telephone as a plane passes by. The landing rate during busy times reaches one every $1\frac{3}{4}$ minutes, and often averages one every $2\frac{3}{4}$ minutes for five or six hours. During these periods it is hopeless to try and sit in one's garden. Much of the landing noise under the flight path is around 115-125 PNdBs and is painful to the ears. At night of course, it greatly disturbs the sleep of thousands of people. If one is ill or sick there is no escape. Although a number of our residents have applied for a reduction in their rates, none have been granted. This is another farcical situation when one compares it with other reasons for which reductions are allowed.

It should be remembered that last year almost 13,000,000 people passed through the airport, and 1,600,000 during the busiest month, to which should be added over 40,000 employees who travel to the airport daily. The resulting road traffic causes further noise and fumes.

Printed image digitised by the University of Southampton Library Digitisation Unit

10. Loss of valuable land. Apart from the original loss of land we have the constant nibbling away of open land, much of it Green Belt. At the present time there are negotiations pending for selling 15.7 acres of Green Belt land for extending No. 1 runway. During the next years or so, we expect to hear of an application for a further 300 acres of Green Belt land to build a passenger terminal on the west side of the airport. Land is now being acquired to extend the Victoria/Feltham railway into the airport, and powers have been granted for the extension of the Underground from Hounslow West into the airport. BEA have built themselves an extensive training and office complex at Heston. BOAC have done likewise at the south side of Cranford. To this must be added a large fuel tank farm outside the airport boundary, and a cross country underground fuel pipeline. An existing gravel pit has been adapted to take the enormous volumes of rainwater from the extensive paved areas. Of course other areas are taken by ancillary buildings e.g. hotels, garages and car parks, landing aids, etc. Altogether a very large area of valuable land has been taken, far more than one realises.

11. Soundproofing always comes last on our list. The only true answer to aircraft noise is to have quieter aircraft. There is a nagging feeling that all the publicity being given to the soundproofing grant scheme is being used to offset the present unnecessarily high and dangerous noise levels, and to cover over the next generation which promises to be even noisier. "Progress" and "In the national interest" are always bandied about in an attempt to justify the increased noise. We would like to see some attempt made to equate this against the cost. The soundproofing costs alone are tremendous. The noise is already alleged to have cost £100,000 in soundproofing the recently completed Medical block at the West Middlesex Hospital, and an approximate figure of £10,000 is estimated for soundproofing the new Catholic church in Cranford. The London Borough of Hounslow have got as far as formulating conditions for the compulsory soundproofing of all new homes, both private and council and will discuss their proposals with the British Airports Authority and the Greater London Council. Implementing this policy will again cost hundreds of thousands of pounds. The new hotels in the area are double and triple glazed. Another expense imposed on business organisations, local government, schools, the courts, etc., etc., is the cost of time wasted while waiting for a passing aircraft, so that conversation can be resumed. We feel that most of this cost can be avoided at the new London international airport by careful and realistic planning now.

We would like to make a plea on behalf of the people who will be affected by the new airport. Will the Commission lay down guide lines and rules to protect those affected, we suggest the following as a basis:

(*a*) Adequate and fair compensation to all affected parties.

(*b*) That realistic contours be prepared covering all known noise sources, e.g., take-off and landing noise, noise while on the runways and taxi ways, and noise from the maintenance areas. Realistic noise limits should be determined and enforced.

(*c*) Payment of generous soundproofing grants, requiring only token payments by the affected parties, and exemption from rate increases.

(*d*) A completely new approach at public relations so that the present secrecy, mystery and lies concerning aircraft noise and nuisance, can be eliminated.

Printed image digitised by the University of Southampton Library Digitisation Unit

(*e*) No new building should be allowed within the funnels of land under the take-off and landing paths, to and from the runways.

Our association over the years, has acquired a great deal of experience on the above problems and has extensive technical files. We have found that the authorities controlling the airport do not know or appreciate all of the problems affecting the adjacent areas. We would be pleased to supply any further information if you so desire.

Careful consideration of the above adverse effects of having Heathrow situated in a densely populated area leads logically to the conclusion that a coastal site will prove to be the most practical solution.

Yours faithfully,

J. E. LEECH

Chairman.

Printed image digitised by the University of Southampton Library Digitisation Unit

Summary of Evidence Presented by the Putney Society

Introduction

The Putney Society, registered with the Civic Trust as an Amenity Society, presents the following summary of evidence concerning the effect of noise, pollution and hazard upon the amenity of the neighbourhood of Putney created by aircraft landing and taking off at a nearby major urban airport, viz. No. 1 London Airport at Heathrow, 8–10 miles distant.

Extent of disturbance

1. Numbers of flights 1963–1967 increased well over 50 per cent.
2. Increase of jet flights rose a great deal higher between 1963 and 1967 creating noise levels above those already stated to be maximum in the Wilson report.*
3. Fear of future when supersonic and larger aircraft (air-bus and jumbo-jets) will be involved.
4. Miscellaneous facts.

Effect of noise

1. Interference with sleep—injurious effect on well being and thus ability to work as well the following day.
2. Interference with work itself.
3. Interference with leisure hours, both outdoor and indoor activities and weekend relaxation when noise is particularly excessive.
4. Miscellaneous examples.

Citizens' reactions

1. Reference Putney Parliamentary petition 1967 4,927 signatures.
2. Private questionnaires sponsored by Putney Society to medical and musical professions.
3. Sleep interference questionnaire.
4. Interference to leisure and relaxation questionnaire.
5. Miscellaneous.

Summary

The Society will give wholehearted support to any proposal for the siting of a third airport in a coastal position for heavy jet traffic which will make use of landing and take off routes which avoid inhabited areas as far as possible so that the greater part of the noise may be disseminated over the sea, and with the resulting running down of traffic at Heathrow to 1963–64 levels.

---

* *Noise: final report of the Committee on the Problem of Noise* (Cmnd. 2056) (HMSO, 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence of United Kingdom Federation Against Aircraft Nuisance (UKFAAN)

Member Societies

The River Thames Society
The Putney Society } founder members

The Town & Country Planning Association

The Anti-Concorde Project Association
(Against all civil supersonic aviation)

Eton Rural District Council

The Faversham Society

The John Evelyn Society

The Butts Society

The Knutsford Society

The Heathrow Campaign Committee

The Dolphin Square Residents Association

The Culcheth Society

Acton Residents Association

The Friends of Old Isleworth

The Kew Society

The Noise Abatement Society has appointed an Observer to the Committee.

Associate Members as Advisers

Pollution	—Dr. Stanley Rundle (*Consultant Chemist*)
Acoustics	—Dr. R. W. B. Stephens (*Department of Physics of Imperial College*)
Environmental health	—Mr. G. Holmes (*Chief Health Inspector for the Royal Borough of New Windsor*)
Vibration	—not yet appointed
Medical	—not yet appointed
Legal Adviser	—Mr. T. C. H. Retallack.

Officers of the Federation

Chairman—John Watson Parton

Hon. Secretary & International Co-Ordinator—Mrs. M. St. A. Moore

Hon. Minutes Secretary—Miss M. G. Moyle

Hon. Treasurer—R. D. St. A. Moore.

Printed image digitised by the University of Southampton Library Digitisation Unit

INDEX

Introduction General aims of UKFAAN

Brief indication of extent of disturbance

Evidence based on experience of Heathrow (1st London airport)

1. NOISE: EFFECT ON POPULATION

   A EFFECTS ON WORK

   (1) by interrupting concentration in exacting brain work

   (2) by interrupting skill requiring delicate perception

   (3) by increasing liability to error

   (4) by interference with communication

   (5) by disturbance to health

   (i) Physical

   (ii) Psychological

   B EFFECTS ON LEISURE
   by interference with basic social needs

   C *Summary of Section* 1
   General Comments on Section 1

2. DANGER FROM AIRCRAFT

3. POLLUTION OF THE ATMOSPHERE

4. THE IMPORTANCE OF THE SITING OF THE THIRD LONDON AIRPORT in the light of problems created by Heathrow

5. THE NEED FOR NATIONAL OR REGIONAL PLANNING

*APPENDIX 1. Putney Society Parliamentary Petition

*APPENDIX 2. Putney Society Medical Questionnaire

*APPENDIX 3. Putney Society Questionnaire among Musicians

*APPENDIX 4. Putney Society Questionnaire on Sleep

*APPENDIX 5. Putney Society Questionnaire on Leisure

*APPENDIX 6. Anti-Concorde Project Evidence

*APPENDIX 7. Sonic boom.

* Available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

The United Kingdom Federation Against Aircraft Nuisance (a federation of societies with the aim of reducing aircraft nuisance of noise, air-pollution and hazards to safety etc.) attaches particular importance to the siting of airports as a means of attaining these ends.

As a result of a fortuitous choice of a ready-made, disused Service airfield, Heathrow airport necessitates a long run-in over heavily populated areas, which as a result suffer from:

(i) Noise
(ii) Danger from aircraft
(iii) Air-pollution.

Extent of Disturbance

Current annual air traffic movements: 560,000 at Heathrow airport/London.

Peter Masefield, Chairman British Airports Authority, in *Financial Times* 16 September 1968.

Night jet flights: (11.30 p.m.–6 a.m. April–October 1968): 3,500

Source: *Daily Telegraph* 3 February 1968.

1. Noise: Effect of Noise on the Population

A. Interference with Work

(1) *By interrupting concentration in exacting brain work.*

(*a*) Dr. G. S. Wigley, MRCS, LRCP, Deputy Medical Adviser to GLC.

"It would be true to say that sensitive and intelligent people tolerate noise less well than dull and insensitive people."

Source: "Medical Aspects of Human Response"* (Part 2).

(*b*) House to house canvass in connection with Putney Society questionnaire on Effect of Aircraft Noise on Musical Pursuits, (see Appendix 2), supported Dr. Wigley's view; people engaged in creative work (writers, professional muscians—including composers) complaining of interrupted concentration.

A loss to the community results if the powers of this group are impaired, or their sensibilities blunted. Fear of this happening also intensifies the tension of the sufferer. One intelligent mother was distressed by the lack of sensitivity to sound (due to acclimatization) of her children. (See (*b*) above.)

(2) *By interrupting skill, requiring delicate perception.*

(*a*) Dr. G. S. Wigley:

"Bitter complaints come from the medical staffs of the area (Heathrow) who find it impossible adequately to examine him (the patient) or safely to operate on him in the presence of loud intermittent noise."

Source: "Medical Aspects of Human Response"* (Part 2).

(*b*) Dr. N. Coghill, Physician to W. Middlesex Hospital, Isleworth.

"Listening to the heart and lungs cannot be carried out when a plane is nearby. Ill and breathless patients, who have been sat up for the back of

* Paper given at the Enfield College of Technology's Symposium in April 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

the chest to be listened to, may have to wait like this for a quarter to half minute while a plane goes over, or lie back again and be further exhausted being sat up when the plane has gone. Such examinations often have to be hurried to get them completed between planes, which in the summer often come over at the rate of one a minute, or more frequently. It is not possible to use a stethoscope with extraneous noise at levels greater than about 50 PNdb, which now pertain for a total of 10 minutes or more in every hour for much of the year."

Source: "The Thunderers"—an article in *New Scientist*, 29.6.67, pp. 768–770.

(*c*) Results of Putney Society's questionnaire to musicians.

In the spring of 1968 the Society organised a questionnaire among musicians, many of them well known, living in and near the area (including Barnes, Richmond, Twickenham, etc.) (See Appendix 2). The 32 completed questionnaires are available for inspection. The answers to the principal question may be tabulated thus:

Does aircraft noise interfere with your work as a professional musician?

Affirmative	Qualified Affirmative (e.g. "occasionally"/ "slightly")	Total of 1 and 2	Negative	No reply to this question
22	7	29	2	1

(3) *By increasing liability to error*

(*a*) Dr. Broadbent, Applied Psychology Unit, Cambridge.

It has been demonstrated by Broadbent that more errors are made by a worker in the presence of an irritating noise. Work requiring skill or concentration is disturbed to a greater degree than repetitive or unskilled work.

Handbook of Noise Measurements p. 3(13),

(*b*) Dr. Wigley, MRCS, LRCP, DPh, Deputy Medical Adviser to the GLC.

"The figure of 90 dB has been quoted as the significant level beyond which the number of errors increase but the effect of the noise factor on efficiency depends upon the nature and quality of the task and for many tasks the level will be well below the 90 dB figure."

Source: "Medical Aspects of Human Response". (Part 2)

(*c*) Dr. Wigley quotes as an example of this contention that interference with the work of a hospital staff by aircraft noise is not only due to the fact "that it is manifestly impossible to listen to a chest or communicate with the patient under these conditions, but because the over-aroused, over-stimulated physician or surgeon is liable to make errors."

Source: as for (*b*).

(*d*) Dr. N. Coghill—Physician to the West Middlesex Hospital, Isleworth.

"I believe that people are less attentive and make more mistakes when subjected to loud noise. This could be a potential danger hazard."

Printed image digitised by the University of Southampton Library Digitisation Unit

Dr. Coghill also refers to the difficulty of auscultation and of interruption in communicating with his patients owing to aircraft noises, adding "Anything which interferes with a doctor's work is a hazard for patients."

Source: *Daily Telegraph Magazine*, no. 185, 19.4.68.

(*e*) Dr. Boulanger. Director of a neuro-psychiatric establishment (Var) France.

"Noise can make verbal information inaudible."

Source: "The Neurosis of Noise". Article in *Silence*, no. 27, 1967. Review of "La Ligue française contre le Bruit".

The additional danger of an unheard or mis-heard instruction in conjunction with (*c*) and (*d*) add to the hazards of a patient in hospital and to workers in other fields.

(4) *By interference with communication dependent on the spoken work—doctors and patients, teachers, lecturers, assemblies, religious services, etc.*

(*a*) Dr. Boulanger.

"First of all it is the zone of hearing corresponding to the voice which is first affected. It is the first one to be destroyed by prolonged exposure to excessive noise. The non-excessive noise, not sufficiently intense to diminish auditory acuity, is sufficient to inconvenience or even interrupt conversation."

Source: as in 3(*e*).

(*b*) Dr. Coghill.

"A lecturer may have to stop and wait ten to fifteen seconds for a plane to go over, and in summer when windows are open this may happen repeatedly. It is sometimes temporarily impossible to converse with a patient or colleague."

Source: "The Thunderers"—Article in *New Scientist*, 29.6.67, pp. 768–770.

(*c*) Mme. Guinot and Mme. Gateau—head teachers.

In a study of effects of aircraft noise on schools near Orly airport noted:

Effects on Children

(i) Loss of previous interest when attention is distracted.

(ii) A dulling of mental quickness associated with fatigue.

(iii) A long term inability to concentrate for any except the briefest periods.

(iv) Risk of degeneration into the "unstable" category—a disability likely to persist for life.

Effects on Work of Children

Each 40 to 50 second interruption can, as a result of (i) above and the necessity for recapitulation, entail a loss of time of 4 minutes.

Source: A report presented to the 3rd International Congress against Noise—Paris, May 1964, and published in *Silence*, no. 23, 1966.

The report states that similar conditions prevail at other international airports and it is common knowledge that schools, near and under the glide path to

Printed image digitised by the University of Southampton Library Digitisation Unit

Heathrow are no exception and recognised by the GLC's Deputy Medical Adviser Dr. Wigley, and by the Wilson report.*

(*d*) "The harmful effects of the noise of jet engines constantly interrupts work and breaks one's concentration. It ranks amongst the modern causes of fatigue for all and of the bad scholastic results among children." Report following Conference on 4 November 1966.

Source: *A Solemn Appeal by the Doctors of the Communes adjacent to the Airport of Orly.*

(5) *By Disturbance to Health*

Physiological

(*a*) Prof. Grognot 1960–62, has established evidence of the specific effects of noise on the sympathetic nervous system, the heart, the circulatory, digestive and nervous systems and on the endocrine glands through an abnormal liberation of ACTH causing diminution of vitamin C and cholesterol.

(*b*) Profs. Calvet, Dussert, Laredo, Beteille (Clinic ORL Toulouse University), have amassed evidence from a wealth of research by Cannon 1929, Land and Smith, Grandjean 1960, Barbaso 1965, Lehmann 1960–64, Jansen and Schultze, Hennecker 1965, and Grognot which established facts of great significance to current noise levels of aircraft:

(i) Respiration is affected at 96 dB.

(ii) Circulation (particularly in the peripheral artery system) is affected by noise of medium intensity (65 phons) and in sleep (50 phons) without waking the sleeper.

(iii) The digestive tract is affected by noise at 85 dB.

(iv) The endocrine glands are affected by noise at 95 dB.

Source: *La Nuisance des Bruits d'Avions.*

NB The effects of noise on the neuro-vegetative system can be proved by means of the encephalograph.

Effect of Noise on Hearing

(*c*) Dr. S. Rosen—Emeritus Clinical Prof. of Otology, Mount Sinai School of Medicine, New York.

Loss of hearing has long been judged to arise only as a result of continual exposure to intense noise but the studies of Dr. Rosen among a tribe in a noise-free environment in the States compared with observations of New York citizens, suggest that body tension resulting from noise causes capillary constrictions affecting blood nutrition to the ear, so that the progressive loss of hearing occurring with the ageing process may be hastened by a noisy environment. Dr. Rosen ends his article thus:

"As doctors aware of the dangers to the health and well-being of our patients we should be involved in the campaign against noise pollution." Source: ("An appeal for more medical involvement in the world-wide problem of noise pollution." *International Medical Tribune of Great Britain*, 11 January, 1968.)

---

* *Noise: final report of the Committee on the Problem of Noise* (Cmnd. 2056), (HMSO, 19s. 6d.)

Printed image digitised by the University of Southampton Library Digitisation Unit

By Interference with Health through Loss of Sleep

(*d*) Dr. Lawrence Monro, Psychologist at University of Chicago.

Dr. Monro after experiments supported by electro-Encephalograph demonstrated that "dream sleep" should alternate with deep sleep. The tendency of light sleepers "to spend the second half of the night in irregular sleep cycles" would obviously be aggravated by aircraft noise. Laboratory tests showed that deep sleep was necessary for physical health "to mobilise energy for the day ahead" while a sleeper deprived of "dream sleep" might exhibit disturbed or even neurotic behaviour.

(*e*) National Research Council of Canada.

"Noise can disrupt the dreaming process and dreaming is deemed essential for mental health."

Source: *Evening Standard*, 5 July, 1968, of the Congress in Ottawa of the National Research Council of Canada.

(*f*) Dr. Wigley, MRCS, LRCP, Deputy Medical Adviser to the GLC.

Refers to the Standford Research Institute's studies which "show that the encephalographical patterns of sleeping patients are radically altered by sound levels that do not wake them."

Source: "Medical Aspects of Human Response."

(*g*) Dr. Richter of the Neuro-Electrographical Institute at Basle and the Encephalographical Department of Basle University.

"In the light of the electro-encephalographic experience it is apparent that any nervous contribution during sleep, preferably auditory, is followed by internal awakening . . . thus noise even of low intensity disturbs rest, the phase of night restoration indispensable to general well-being that is to say, health. The din of our towns, of the roads, of the railways, of the aircraft, is, at the present time, an ideal auditory stimulant for disturbing the night's rest of a great part of our population."

Source: "The Din of our Towns" in *Silence* review of "La Ligue française contre le Bruit" No. 23.

(*h*) Dr. Jansen—Prof. Lehmann and Max Planck Institut, Dortmund.

These collaborators demonstrated reactions in patients (i.e. peripheral vasoconstriction and enlargement of pupils of the eye) in sleep with noise over 70 dB even to sounds lasting only 300 milliseconds, and also to sounds of moderate intensity (between 55 and 80 dB) and severe reaction to short sound impulses of sudden onset, or alternating sound. These reactions showed:

(i) "that noise created nervous tension in sleep"

(ii) "that noise in sleep affects the more primitive parts of the brain so that acclimatization to noise cannot take place during sleep."

Dr. Jansen concluded that "noise represents a serious threat to human health."

(*i*) The effect of "infra-sound" on health has only recently been appreciated through the work of Prof. Valdimir Gavreau of the Centre National de Recherches Scientifiques, Marseilles.

Printed image digitised by the University of Southampton Library Digitisation Unit

Effects on health have been noted by sound waves undetected by the ear. An air-conditioner in a factory was found to be the cause of considerable sickness and consequent loss of working time. More serious effects on the organs of the body (heart and lungs) can result and experiments have shown that infra-sound could be used as an offensive weapon with lethal effects.

The effects of airborne vibrations of aircraft on the human body has not been fully considered as yet as a health hazard.

(*j*) Mr. G. Granier, Engineer IEG. Architect.

"Vibrations due to infra-sounds with a frequency lower than 30–35 Herz although barely perceptible to the hearing are not tolerated, without painful consequences, by the body."

Source: "Les Bruits Industriels et le Voisinage" in *Silence* no. 29, 1967. Journal of "La ligue française contre le Bruit."

Psychological

Exact measurement in this field is hampered by the subjective estimate of noise, according to temperament and circumstance. As Dr. Wigley remarks "the throaty bellow of a racing car is music to the ears of the young "aficionado" to his grandmother it is insupportable." But the effect of noise (not necessarily excessive) on the nervous system is leading medical opinion to suspect that noise is responsible for states of anxiety, depression and even neuroses.

(*k*) Dr. Richter MD Neuro-electrographic Institute Basle and EEG Department of the Neurological Clinic, University of Basle.

"Sleep deprivation leads to phsychic alteration as irritability, tiredness, delirious and even paranoic states". He quotes findings by West that long-term sleep deprivation may cause irreversible changes in the nervous system."

Source: "Disturbed EEG Sleep Patterns by Traffic Noise."

Subjective attitudes cannot, therefore, be ignored.

(*l*) Dr. S. Wigley, MRCS, LRCP

"This lack of measured evidence must not be taken to mean that a high level of aircraft noise does not cause anxiety—neuroses, but simply that the technical difficulties in quantifying it are formidable."

Source: "Medical Aspects of Human Response" (Part 2).

(*m*) Mr. J. C. Ballantyne, FRCS, DLO, ENT consultant, Royal Free Hospital, Royal Northern Hospital.

"We know, without being doctors, that some noises are a bad thing and others are not. The dripping of a tap may have 5 decibels but it drives me mad."

Source: From a speech at a meeting of doctors on Aircraft Noise called by the Noise Abatement Society, 16 November.

(*n*) The French Academy of Medicine cites noise as a contributory factor in 52 per cent of heart and nervous ailments.

(*o*) M. G. Granier Ingenieur IEG Architecte. (On noise disseminated through the air)

Printed image digitised by the University of Southampton Library Digitisation Unit

"Sound meters through defining volume and frequency of noise do not wholly register the effect on human perception of noise. One would be tempted to assume that the non-measurable can be wholly negligible but sometimes the threshold of danger is determined by factors due to circumstance."

Source: "Effect of Industrial Noise on Surroundings." Reported in *Silence* no. 27, October–December 1967. Journal of "La Ligue française contre le Bruit" France.

Even though the exact measurement of psychological damage is in its early stages, commonsense will accept that sleep, leisure and enjoyment of outdoor amenities is particularly necessary under the pressure of modern life with the insistent demands on workers, professional and otherwise, to keep abreast of new techniques and changing conditions, and in cities where residents are already exposed to noise due to mechanisation, and where aircraft noise imposes additional stress from which they cannot escape even in their own homes.

The fact that the BMA in giving evidence to the Wilson Committee had little experience of patients' reactions to aircraft noise was due, more probably, to a lack of awareness of some doctors, than to a negative attitude of the patients, and is in contrast to the experience of some British members of the medical profession who have been questioned on the subject (see Putney Society's questionnaire to members of the medical profession) and of vast numbers of doctors, psychiatrists and others, engaged in medical research in other countries, a few of whom have already been quoted. It is also borne out by many of the detailed answers to the Putney Society's questionnaire on the "Effect of Aircraft Noise on Leisure" and on "Sleep" (Appendix 3 and 4).

The GLC has shown a more realistic attitude. Dr. Wigley, Deputy Medical Adviser is contemplating making an "attitudes survey", for it is the hearer's attitude to a specific noise which may determine its psychological effect. The fact that there is no escape from aircraft noise which is particularly intrusive, unpleasant and often of long duration, over a wide area, and that there is no means of redress through the law, induces feelings of tension and in the last resort depression, when complaints seem to be useless, which is often mistakenly ascribed by the authorities as "acclimatization". Dr. Wigley, referring to the annoyance caused by the "cacophony" of aircraft noise near the airport, remarks "if they (the population) do not protest it is because they are resigned and resignation to a serious irritation is not an entirely wholesome reaction."

Source: "Medical Aspects of Human Response."

B. Interference with Leisure

By interference with basic social needs. The need for communication by the human voice for social purposes.

(*a*) Dr. Boulanger on the masking effect of noise on speech:

"It impedes conversation and thus disturbs human relationships and stimulates human aggressiveness and irritability."

Source: "The Neurosis of Noise", as above.

The need for communication by speech is vital and is deeply rooted in man's social development. Dr. Boulanger also refers to the "social and effective

Printed image digitised by the University of Southampton Library Digitisation Unit

isolation of the individual" due to the "masking" of the voice by noise. These comments apply equally to conversation by telephone, listening to music, television, radio or to speeches in public assemblies.

(*b*) Dr. G. S. Wigley

"I live at Barnes 13 miles from the airport (8–10 as the crow flies) and on the approach path for landing, and find, in the open, communication by speech may be disrupted by a passing jet for something like 10 seconds. Interruption of speech interferes with efficiency and has a particularly irritating effect on the individual. The frequency with which this occurs varies greatly of course, but on a summer's day, in the holiday period, interruption in the open may be at almost one minute intervals."

Source: "Medical Aspects of Human Response" (Part 2).

(*c*) Dr. Boulanger

"Noise can make inaudible verbal information—the signal upon which the life of individuals depend." (A verbal warning).

Source: "The Neurosis of Noise," as above.

It is no exaggeration to say that under the Heathrow approach path at least 8 miles from the airport this danger is present:

(*a*) to the pedestrian in traffic areas in which the masking effect of aircraft is greater than that of the traffic,

(*b*) to citizens exposed to danger e.g. sudden onset of illness or accident, to fire or even criminal violence, and deprived of the effect of the voice (a basic need) as a means of protection.

The need for leisure recreation

Outdoor sports and exercise are similarly interrupted by inability to hear the human voice (tennis, golf, sailing).

Outdoor leisure relaxation

The enjoyment of gardens and open spaces for relaxation is prevented when most enjoyable—the summer—and when most needed—weekends—these being peak periods of aircraft traffic. Indoor relaxation in summer (with windows open) is also almost impossible.

Michael Rodda.

"Unfortunately the specified noise level at Heathrow is 110 PNdB (approximately 96 DbA). This standard is a fairly common one and as Ingersley (1962) has stated "these high values should never be considered as satisfactory. They are the utmost limit for noise exposure and all efforts must be expended to reduce the noise, thus giving the people living near the airports decent living conditions." He further suggests that in designing new airports, a limit of 80 dB during the daytime and 60 dB at night is a "worthy aim".

Source: Condensed from *Noise and Society* by Michael Rodda (publ. Contemporary Science Paperbacks).

Sound levels registered at Putney 8, 9 and 10 miles from Heathrow by members of Putney Society reached, on occasions, levels of over 96 dBA—110 PNdB approx. at 2 p.m.

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise measurements taken on behalf of the Council of the London Borough of Wandsworth by the Scientific Department of the GLC with similar equipment as that in use at Heathrow airport, London. These measurements were taken at three different points in the Putney area in January 1968 and at one in Wandsworth.

Summary of Section 1

Effects of Aircraft Noise on the Population

1. Aircraft noise is particularly intrusive and inescapable.
2. It causes serious time wastage in work, particularly in the professions already under pressure through lack of staff (medical and teaching).
3. It increases liability to error particularly where such error can have the most serious consequences.
4. It disturbs most seriously those whose work precludes unreasonable noise levels for concentration and who are those most sensitive to noise.
5. It disturbs health both physical and mental.
6. It has serious social effects, causing additional tensions in our crowded urban society, yet, paradoxically, isolating the individual at vital moments.

General Comments on Section 1

(*a*) Growing awareness of aircraft noise is reflected in the increasing frequency of such phrases as "noise-pollution", "the scourge" or "menace" of aircraft noise, by the growth of anti-noise societies, by petitions, Questions in Parliament, and the concern of many MPs of all parties and of many countries, and it may well be that noise can be a contributory factor to the social unease of modern society. It is an accepted fact that it is one of the causes of irritability.

(*b*) For these reasons we consider that the "principle" for the siting of new airports should be in accordance with the *World Health Organisation's concept of health being "a state of optimal mental, physical, and social well-being and not merely an absence of disease.*" Health at this level cannot be maintained by a community suffering noise to the degree already mentioned which disrupts social and working life. As Dr. Richter of Basle University comments (in a paper concerning noise from both traffic and aircraft) "Man has *the right* to rest and not be incommoded by noise." and Dr. Wigley states: "The most important aspect of aircraft noise is that it impairs the quality of life".

These principles and the means of attaining them have been re-stated by the Council of Europe at its consultative assembly on 19th September 1968 and sent resolutions to ICAO, the WHO, and ECAC, and recommends that they should be notified to all societies and leagues dealing with noise.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Aircraft Noise 1968 at Wandsworth*

Measurement points	Wandsworth Municipal Buildings, S.W.18	Dover Park Drive, W.18	Crown Park Court, S.W.15	"Fair Acres" Roehampton Lane, S.W.15
Measuring period	*18.12.67–19.12.67*	*5.1.68–6.1.68*	*2.2.68–5.2.68*	*5.2.68–6.2.68*
Results				
1ST NIGHT				
Aircraft: no. measured		93	97	89
Av. peak level		92.0	90.6	94.6
NNI		41.6	40.4	43.8
1ST DAY				
Aircraft: no. measured	32	14.00–21.00: 16	158	127
Av. peak level	88.0		90.8	89.2
NNI	30.6		43.8	40.8
2ND NIGHT				
Aircraft: no. measured	35		58	
Av. peak level	89.2		88.9	
NNI	32.4		35.4	
2ND DAY				
Aircraft: no. measured	58		94	
Av. peak level	85.4		87.6	
NNI	31.8		37.2	

* See also tables on pp. 168, 212–215.

3RD NIGHT				
Aircraft: no. measured				22
Av. peak level				77.7
NNI				17.8
Traffic pattern	Approaching Heathrow	Approaching Heathrow	Approaching Heathrow	Approaching Heathrow
Summary				
Average peak levels				
TAKE OFF				
Day				
Night				
Combined				
LANDING				
Day	86.9		89.5	89.2
Night	89.2	92.0	88.2	94.6
Combined	88.2		88.9	92.7

Note: All peak levels are given in PNdB
NNI based on periods 6 a.m.–6 p.m. and 6 p.m.–6 a.m.
The NNI has risen considerably in Putney if one compares it with this. For 1963: Dr. Elfyn Richards considered 35 NNI a reasonable figure in an urban area above which nuisance from aircraft noise is material. He also considered 90/95 PNdB as the limit above which interference with health occurred.
Source: *Report on the Inquiry into local objection to the proposed development of land at Stansted as the Third London Airport* (HMSO, 5s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

II. Danger from Aircraft

(1) Safety should be another consideration in determining the siting of an airport. The long overflying of London of up to 18 miles to Heathrow exposes millions below to a continual risk, since air accidents are most likely to occur on take-off or landing. Although the safety record of Heathrow has so far been outstanding, a number of crashes have already occurred at or within a few minutes' flying distance of Heathrow. By the law of averages, London cannot expect complete immunity. The potential danger (in extent of damage and number of casualties) in a built up area is enormous.

(a) Recent accidents at or near British airports as reported in the national press (BOT figures)

Date	*Aircraft*	*Operator*	*Location*	*Damage*	*Casualities*
20.6.65	Viscount	Cambrian Airways	Speke (Liverpool)	Lost propeller which crashed through factory roof	4 killed
27.10.67	Vanguard	BEA	Heathrow	Destroyed	39 killed
20.4.67	Britannia	British Eagle	Manston	Substantial	Nil
4.6.67	Canadair C4	British Midland Airways	Stockport	Destroyed	72 killed 12 seriously injured
1.7.67	Cessna 337A	Stellaris Ltd.	Bath	Substantial	1 minor injury
9.8.67	Dakota 3	Cambrian Airways	Nr. Glasgow	Substantial	Nil
19.8.67	Hawker Siddeley 748 (reg. G-ATEH)	Channel Airways	Portsmouth	Substantial	Nil
15.8.67	Hawker Siddeley 748 (reg. G-ATEK)	Channel Airways	Portsmouth	Substantial	Nil
3.9.67	Herald	Autair	Luton	Substantial	Nil
14.9.67	Ambassador	Autair	Luton	Substantial	Nil
21.9.67	Viscount	Aer Lingus	Lulsgate (Bristol)	Substantial	10 injured
4.11.67	Caravelle	Iberia	Nr. Blackdown	Destroyed	37 killed
4.12.67	Argosy	BEA	Stansted	Crashed on take-off and caught fire	1 slight
8.4.68	Boeing 707	BOAC	Heathrow	Destroyed. Engine fell off in gravel pit near Staines	5 killed 41 injured
10.4.68	Boeing 707	TWA	Heathrow	Emergency landing, on fire	Nil
3.5.68	Viscount	Channel Airways	Southend	Crashed on railway substantial damage	8 serious 6 minor injuries
8.5.68	Hawker Siddeley 748	Skyways Coach-Air	Manston	Substantial	2 minor
13.6.68	Comet	Danair	Gatwick	Emergency landing— smoke-filled cabin	Nil
3.7.68	Ambassador	BKS Air Transport	Heathrow	Destroyed. Destroyed 1 Trident. Great damage to 2nd Trident. Damaged new terminal	6 killed 4 seriously injured all horses killed

(Accidents to aircraft on the runway are omitted) (e.g. horses from Deauville)

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) Evidence of recognition of growing danger to London

The first serious crash on a capital city—that on the Empire State Building New York 1945 evoked no response in Britain till 1968 when similar conditions of an airport reaching saturation point led to *City of London's Air Crash Tests* (to mobilise all emergency services).

Source: Reported in national press 9.8.68–10.8.68. This was far from realistic.

The safety record of independent operators is even less good than that of the state-owned airlines:

(*c*) "In an analysis of 181 accidents to airliners in service between January 1955 and June 1967, the report says that in 59 lack of competence by the pilot was to blame and in 37 there was poor judgement or lack of discipline by the pilot. Of the 59 accidents 38 involved independent operators, aircraft and of the 37, 26 involved independent airlines."

Source: *Daily Telegraph* 14.5.68 a report on "*The Safety Performance of United Kingdom Airline Operators: a special review*, 1968. HMSO ch. 4 (pp. 18–24) and table 1 (p. 73). Cause or factors concerning 181 accidents to British aircraft above £5,000 on public transport flights during period 1.1.55–30.6.67.

(This report emphasises the high incidence of risk due to human error. This operates especially at take-off and landing.)

(*d*) **Zhivko D. Angelluschef MD**

Academy of Medicine, New York, Academy of Sciences, New York, Head of Hearing & Speech Centres, City Hospital, New York.

(i) "Investigation of the Union of Pilots revealed that the sub-sonic, four-motor jet has contributed tremendously to the *fatigue and air accidents*, compared with the conventional airplane. 50 per cent of the accidents are attributed to human failure."

(ii) In a letter to the Prime Minister, Harold Wilson, December 10th 1964 pleading for a contribution "to the welfare of people of many countries by cancelling the proposed SST programme."

A Rediffusion television programme stressed the dangers of:

(*a*) overworked pilots
(*b*) the use of old aircraft
(*c*) the use of new airfields with few aids to pilots
(*d*) the pressure to keep expenses low in cheap inclusive holidays

} by some independent airlines

Source: "What Price Air Safety?"—an interview with pilots, an air hostess and an independent airline operator, and Mr. Mallalieu. 3 August 1967.

There is also additional danger from objects falling from aircraft

A piece of thick perspex fell in a garden near a resident in Putney, London.

Source: 4.8.67. *Wandsworth Boro. News.*

A Dakota propeller crashed through a house near Glasgow

Source: 10.8.67. *Daily Telegraph*

Printed image digitised by the University of Southampton Library Digitisation Unit

A piece of wing-flap fell from a BOAC aircraft near Kennedy Airport, New York.
Source: 10.8.67. *Evening Standard.*

Pieces fell out of one of the engines of a Boeing near Bonn, Germany.
Source: 15.8.67. *Daily Telegraph*

An undercarriage door fell from a BEA Trident over Slough, Bucks.
Source: *Daily Telegraph*

Blocks of ice fell at Sevenoaks, Kent. 1968.
Source: *Daily Express* or *Daily Mail*

Boeing aircraft which crashed at Heathrow on 9.4.68 lost an engine in a gravel pit (miraculously!) near Staines.

Comparative standards of safety are not reassuring

Source: *The Times* leader 4.5.68 on a Governmental review "Although the safety records in the UK are good, it is not as good as that in the US."

United States Congressional Committee reported: "463 'near-misses' in America's crowded corridors 1966-67".
Source: *Daily Telegraph* 25.7.67.

(2) Traffic Intensification Increases Risks

The following considerations also give cause for concern. Heathrow is becoming potentially more dangerous as it approaches saturation point (already arrived at in New York, where circling over stacking-areas is commonplace while aircraft queue for landing space at Kennedy and La Guardia Airports.)

> Testimony of The Hon. Ralph Caso, Presiding Supervisor, of Hempstead, New York, to Congress.
>
> Detailed report on danger (and nuisance) near Kennedy Airport due to queuing of aircraft despite thickening techniques at an airport which has reached saturation point.

In view of this, the fact that, at a television interview, the former Minister of State (BOT), Mr. Mallalieu, declared that he would not be entirely happy until conditions in this country were at least as safe as in the United States, is not reassuring.

Source: Rediffusion Television Ltd. "What Price Air Safety."

BOT report on findings of government inquiry into air safety.
Source: *The Times* and *Daily Telegraph* 14.5.67.

> "The ratio between 'near-misses' and mid-air collisions (to public transport aircraft) is in the region of 900:1 which means that there can be expected to be some 25 'near-misses' in the US every week."
> Source: *Flight International* 4.4.68, page 447.
>
> NB. 1,300 per year as compared with 463 in 1966–67 i.e. an increase of nearly three times that of 1966–67 corresponding to an increase of only 25 per cent in world airline fleets.

(3) A hazard even more realised since the recent Viscount disaster near Munich is the safe control near airports of aircraft of widely different performances, such as jet and propeller-driven aircraft. An extraordinary accident

Printed image digitised by the University of Southampton Library Digitisation Unit

occurred over Milwaukee, Wisconsin, when a collision between a small plane and a jet aircraft resulted in the airliner landing with the light aircraft embedded in the airliner.

Source: *Daily Express* 3.6.68.

A senior British air-traffic controller is reported as holding the view that the "laid down minimum distance" of five miles between two aircraft on the same altitude level is insufficient. Residents may well be perturbed, therefore, by the recent Heathrow policy of encouraging more turbo-prop aircraft so as to avoid having to increase the number of night jet flights, but thereby increasing overall traffic.

(4) Future outlook: thickening of air traffic inevitable

New Scientist 11.1.68.

> The thickening of aircraft at already busy airports is being achieved by the relaxing of ICAO's former rule that only one aircraft should use the runway at the same time. The intention is to cut the rate of aircraft which can land or take-off, from one every two minutes, to one per minute. "Circumstances are evidently as important as takeoff landing distance. One of the most significant is the risk of turbulence caused by vortices in the wake of aircraft using powerful engines. These are known to persist over distances of more than a mile . . . the risk is increasing as engine power rises and it may become serious when supersonic aircraft begin operations . . . the clear presumption is that traffic intensity is going to increase despite the promise of monsters like the "Jumbo" and the airbus, and ways will have to be found to close up the flow like a concertina at and near the airports."
>
> "The world's air passenger traffic will increase passenger carrying nearly two and a half times by 1980. Airliner fleets will increase by 25 per cent." IATA, Annual Report.
>
> Source: *Daily Telegraph* 27.9.68.

III. Pollution of the Atmosphere

Indications that pollution of the atmosphere by jet aircraft may exist are as follows:

(*a*) the presence of clinker-like dust on exposed surfaces beneath the glide-path;

(*b*) the smell of burnt oil in districts under the glide-path but remote from road traffic;

(*c*) the recent emergence at Kew of micro-organisms which are capable of utilising hydro-carbons as the sole source of carbon. This implies that for a few years there has been a constant contamination of the soil with uncombusted hydro-carbon. This may well be off-loaded from aircraft.

Source: Dr. Stanley Rundle (Consultant Chemist).

(*d*) dark staining after snow on the grass at the Royal Mid-Surrey golf course under direct flightpath to London airport suggestive of pollution of snow before falling (Dr. E. O. Walwayn-Jones, MRCP, MRCS).

(*e*) new pests destroying horse-chestnut trees at Kew possibly due to changes in heredity caused by pollution of some kind according to Dr. Rundle.

Printed image digitised by the University of Southampton Library Digitisation Unit

The investigations on air pollution referred to may disclose the source of such pollution, whether traffic or aircraft as suggested by *The Times* correspondent.

Source: *The Times* 26 March 1968.

(*f*) The BOT, in a reply to a Fulham constituent's complaint of air pollution by jet aircraft, admitted that "the incomplete combustion of slightly rich fuel and air mixture led to smoke, and therefore some contamination and unpleasant smell was possible." Though this was stated to be less than that at ground level from road traffic, it should be remembered that the public is in the middle of the "sandwich" of pollution.

Source: *Fulham Chronicle* 9 February and 1 March 1968.

As a result of representations made to them by the United Kingdom Federation Against Aircraft Nuisance, the National Association for Clean Air has instigated tests by Warren Springs Laboratory (Ministry of Technology), to investigate the source of pollution. Admiral Sharp, Director of the National Society for Clean Air, with support from a Health Inspector for the Borough of Hillingdon, has now referred the matter to the Clean Air Council, for official investigation.

As with noise, so with pollution, the operating companies seem to be exempt from the law which governs householders in a smokeless zone. This nuisance, like that of noise pollution, could be lessened by dispersal over the sea at a coastal airport.

IV. The Importance of the Siting of the Third London Airport in the Light of Problems Created by Heathrow

A. **The rapid growth of airports** due to phenomenal technological progress has caused equally rapid extension of the area of consequent nuisance (noise, danger, air pollution etc.). For example:

In late 1956 London Transport was advertising London airport as a novel excursion, an airfield complete with trippers' delights joy flights and pony rides, a miniature railway and sandpits for the children!

By 1963 surveys carried out by the Wilson Committee showed in areas near airports, that public reaction to aircraft noise was greater than its reaction to other noises and also to other factors causing discontent with environment. With the arrival of jet aircraft it was significant that there had been an increasing proportion of complaints on aircraft landing.

Source: Wilson Report, section 271.

This "area of discontent" has by 1968 spread from the perimeter to at least 10 to 12 miles beyond. Heathrow aircraft movements have risen this year to a record figure.

TOTAL AIRCRAFT MOVEMENTS, 1967: 221,004.

The future holds the menace both of (*a*) increasing air traffic and of (*b*) the increased noise of larger and more powerful aircraft.

One airline alone states that the traffic increased by 52 per cent in the last 4 years and an increase of 100 per cent is expected in the next 5 years.

The Chairman of British Airports Authority is quoted, in a lecture to the Royal Society of Arts (this year), as estimating 50 million passengers a year for a future airport.

Printed image digitised by the University of Southampton Library Digitisation Unit

During the period from and including 1963 to and including 1967 the number of flights into and out of Heathrow increased by over 40 per cent. During the same period the number of jet flights increased by 100 per cent.

Source: Letter from BAA Operations Department to Hon. Sec. UKFAAN dated 26 September 1968.

The following figures illustrate the necessity for a modern airport:

1. to be sited away from towns
2. to be capable of expansion with a minimum of nuisance:

(*a*) *World Air Transport Statistics*

Number of passenger flights North Atlantic route

Actual	1957	968,000
	1959	1,367,000
	1961	1,919,000
	1964	3,069,000
	1967	4,987,000

Source: *Financial Times*, 16 September 1968, by Knut Hammarskjold, Director General International Air Transport Association using *World Air Transport Statistics* as evidence.

Estimated growth

1970	7,650,000
1975	13,900,000

(*b*) *Growth rate of traffic BEA*

Air Commodore E. M. Donaldson on speech by Sir Giles Guthrie. In last four year period 52 per cent overall growth: 12 per cent passenger, 26 per cent cargo: future estimate to double capacity in next five years.

Source: *Daily Telegraph* 9 August 1968.

(*c*) *Number of flights per day in relation to saturation of airport capacity*

Mr. Peter G. Masefield, Chairman, British Airports Authority forecast that the current rate of increase will cause the total air traffic movements at London airport to approach the present saturated New York levels by mid 1970s. (The New York totals for the year 1967 were 1,360,000 equal 2½ times the current London 560,000 aircraft movements.

Source: *Financial Times* 16 September 1968.

(*d*) *Increase in size of aircraft*

Examples:

Lockhead 1011 long range airbuses to seat up to 345 passengers
Boeing 707 164 seaters (in present use)
Boeing 747 about 350 seaters
Increase in production of large aircraft forecast.

B. Vulnerability of Population affected by an Airport

The fact that the private citizen has by the Civil Aviation Act of 1949 been deprived of redress in the matter of aircraft noise, should make it the more essential for the Minister to give him the maximum of protection.

In fact, however, the demands of the national economy coupled with pressure from the airline operators, usually reduce this protection to the minimum level tolerable to the public. For example:

Printed image digitised by the University of Southampton Library Digitisation Unit

(*a*) 1961 night flights, previously banned, were first scheduled between 11 p.m. and 7 a.m.

There is mounting pressure on the Board of Trade by the operators, for an increase in night jet flights at Heathrow from the present 3,500 in the peak period to 5,000.

Source: *Daily Telegraph* 3 February 1968.

(*b*) 1968 certification of aircraft which must conform to noise regulations has been promised but not as yet implemented and the aircraft of the immediate future (which will be flying for many years), jumbo-jets and supersonic aircraft, will not be subject to certification.

Many reports concerning the future type of aircraft give rise to the fear of a corresponding increase in noise and air pollution.

Set out below are a number of tangible reasons for fear.

1. A fear that the forecast increase in flights will take place (with proportional increase in noise offences committed against the public) without effective control by responsible authorities.
2. A fear that the responsible authorities, under pressure from airway commercial interests, will not provide effective legislation to limit aircraft noise levels.
3. A fear that the assurance that supersonic aircraft will fly at subsonic speeds over populated areas will in the event prove to be worthless and that the extent of the area affected by noise will cover most of the UK.
4. A fear that a noise pollution will reach proportions similar to that of 19th century air pollution which has only recently been controlled by legislation.
5. A fear that any palliatives offered to residents near airports are likely to remain ineffective.
6. A fear that the cost of the research for producing "quiet" jets will not be met by commerce and that the Government will not subsidise this research sufficiently.

Loss of Amenity is due mainly, but not entirely, to Noise Nuisance which affects life, in work and leisure, indoors and outdoors, over a wide area, for long periods thus making such a palliative as "soundproofing" of homes a half-measure of little value. The extent of the nuisance is evidenced by the results of the Parliamentary petition of the Putney Society (a member of UKFAAN) which was organised by the Society in July 1967 (see appendix 1) and also by the fact that the Parliamentary Commissioner Sir Edmund Compton, in a reply to complainants living in the Putney and other areas exposed the fact that no monitoring could be carried out beyond 7 nautical miles from the airport, thus nullifying any enquiry into the complaints submitted to him as all the complainants living at a greater distance from the airport.

Deprived of redress by the law, and subject to the pressure of financial interests (private and national) there remain only two hopes for the citizens:—

(*a*) International agreement on tolerable noise levels to lift the problems of noise out of the competitive commercial arena.

(*b*) The best possible siting of airports to reduce all forms of pollution by aircraft. The necessity for a regional, or even a national, airport plan is thus indicated.

Printed image digitised by the University of Southampton Library Digitisation Unit

See (1) Report of Town and Country Planning Association—A member society of UKFAAN—who are giving oral evidence on Friday, 8 November.

Conclusions

A new airport will be faced with a noise and nuisance problem (including pollution and danger) already proved to be unacceptable not only in this country but in the US (where 134 lawsuits relating to Kennedy airport are pending), in France (where there are also law suits), Germany and Switzerland, where sonic boom is also already outlawed and both in Tokyo and Stockholm, where a night curfew is operated.

Plans for a future airport should plan for the future. An inland airport would, at best, be only a temporary stop-gap. New methods of swift transport to city centres now being investigated should make unnecessary and indeed obsolete the short-sighted policy favoured by some air operators for an airport "as near the city centre as possible".

It is, perhaps, salutary to remember when considering the "nuisance value" of a 40–50 mile journey from an airport to the city centre, that at any given time the number of people in the air is infinitesimal compared with those on the ground suffering not occasionally but constantly the "nuisance value" of the airport, a point which the British Airport Authority never appears to take into account.

To quote the Wilson report:

> "It is important that the lesson of Heathrow should be applied to other airports. The important lesson is that as the noise extends far beyond the physical perimeter of the airport the environs must be as carefully planned as the airport."

Airports removed from cities and capable of expansion without making life intolerable to the population is also the recommendation of Dr. Angeluscheff (previously quoted) of the Academy of Medicine and of Sciences, New York. Source: In Sud Kurier Konstanz 16 October 1968.

This principle is now being applied to Paris-Nord Airport, Roissy-en-France, but is increasingly difficult to apply in rapidly developing S.E. England, except on the coast.

Nuisance from Heathrow has reached the level which the Wilson Committee in 1963 suggested would not be tolerated by those living under it. Plans for a third London airport should, be relieving it of inter-continental air traffic, envisage the gradual running down of Heathrow to pre-1964 levels with a night curfew.

Again to quote the Wilson Report in conclusion:

> "Difficulties arise largely at Heathrow because it is almost surrounded by thickly populated areas, unlike many airports which have either the sea, or sparsely populated areas on at least one side".

The United Kingdom Federation would suggest that this sentence points the way to an international airport with both sea on one side and sparsely populated areas on the others as the best means of reconciling the interests of the population with those of the national economy and of the operators.

Such an airport would dissipate much of its noise and pollution seawards and it would also have the additional advantage of the extra dimension of sea communication. Suggestions have been made that it might be "twinned" with a sea port.

Printed image digitised by the University of Southampton Library Digitisation Unit

Although The Faversham Society wishes to dissociate itself from the siting of an airport in the Thames Estuary, it fully supports the rest of the evidence of the Federation.

The River Thames Society supports the evidence submitted by the Federation and opposes strongly the setting up of a third London airport in the vicinity of populated areas. It bases its evidence on the noise nuisance from aircraft in Thames-side towns of Windsor, Datchet, Reading, Richmond, Kingston, Putney and SW London. The society supports wholeheartedly the establishment of a third London airport in a coastal or estuary site and would prefer the formation of an airport linked with a shipping port at Foulness, with full facilities being given to road, rail, water and air transportation.

Supersonic Flying

Additional evidence from the "Anti-Concorde Project" (an organisation against all supersonic civil-aviation) and a member society of the Federation, underlines the overwhelming problem of supersonic flying and the impossibility of Concorde being allowed to take off from Heathrow, due to the very great lateral noise at take off.

This organisation therefore supports the Federations' recommendation for a coastal airport.

See Appendix No. 6.

The fact that several private commercial undertakings have considered this project not only feasible but likely to be profitable, even at the cost of reclaiming land from the sea, puts the plan on a firm basis for consideration.

For these reasons, The United Kingdom Federation Against Aircraft Nuisance considers that it is absolutely essential that the third London airport should be sited near the coast. Any possible additional inconvenience to passengers would be balanced by advantages to the community as a whole, and by the increased advantages of air travel, less hampered by the restrictions essential in a built-up area, as indeed the Council of Europe at its Consultative Assembly (26 September 1968) (Order No. 278—on aircraft noise abatement) recommended:

> "that new airports should be situated so as to avoid densely populated areas, and that subsequent development of the surrounding land should be controlled or restricted to uses which are compatible with relatively high noise levels".

England is not alone in asking for an airport away from highly populated areas.

France has under consideration for its third airport, Vernon (approximately 100 kilometres from Paris).

Furthermore, at the Conference of the European Union Against the Nuisance of Aircraft (France, Germany, Switzerland and the United Kingdom) held in Germany on 12 October 1968, a proposal put forward by the United Kingdom Federation's Delegate (Mrs. Moore) that a resolution "that there should be no new airports or extension to existing airports near densely populated areas and that there should be limitation of existing traffic", should be put to the United Nations on behalf of UKFAAN by Mr. Julian Ridsdale MP (Harwich) and Vice-President of the UN Parliamentary Association, was adopted unanimously as well as the suggestion that each member Federation of the Union do the same in their respective countries.

Printed image digitised by the University of Southampton Library Digitisation Unit

Evidence given by the Noise Abatement Society

Speaking for and on behalf of individual members of the Society who are affected by aircraft noise and/or the decision of the Commission and for over 1,000 Group Members among whom are the following:

Corporation of London
Greater London Council
London Boroughs of:
- Barking
- Brent
- Bexley
- Bromley
- Camden
- Croydon
- Ealing
- Enfield
- Hackney
- Hammersmith
- Havering
- Hillingdon
- Hounslow
- Islington
- Kingston-upon-Thames
- Lambeth
- Lewisham
- Merton
- Richmond-upon-Thames
- Southwark
- Sutton
- Tower Hamlets
- Wandsworth
- City of Westminster

Bedfordshire County Council
Buckinghamshire County Council
Cambridgeshire County Council
Essex County Council
Hertfordshire County Council

Basildon Urban District Council
Bishops Stortford Urban District Council
Burton Latimer Urban District Council
Bury St. Edmunds Borough Council
City of Cambridge
Cheshunt Urban District Council
Clacton Urban District Council
Dunmow Rural District Council
Dunstable Borough Council
Ely Rural District Council
Epping Urban District Council
Epping & Ongar Rural District Council
Harlow Urban District Council
Hemel Hempstead Borough Council
Higham Ferrers Borough Council
Hitchin Urban District Council
Hitchin Rural District Council
Hoddesdon Rural District Council
Kettering Borough Council
Letchworth Urban District Council
Northfleet Urban District Council
Rayleigh Urban District Council
Benfleet Urban District Council
Royston Urban District Council
Saffron Walden Rural District Council
Stevenage Urban District Council
Watford Borough Council
Watford Rural District Council
Wellingborough Rural District Council
Wing Rural District Council, Leighton Buzzard
Rural District Councils Association and some 400 other County and Local Authorities.

Amalgamated Engineering Union
National Union General & Municipal Workers
National Union of Teachers
Civil Service Clerical Association and other Trade Unions representing some 3,000,000 workers.
British Medical Association
Central Council for Health Education

National Federation of the Blind
Cyclists Touring Club
Ramblers Association

Printed image digitised by the University of Southampton Library Digitisation Unit

Royal College of Veterinary Surgeons
County Gentlemen's Association
National League of the Blind and other National Associations.
Chelsea & Kensington Action Group
Youth Hostels Association
Luton & District Association for the Control of Aircraft Noise

and other Residents and Ratepayers Associations, Preservation and Protections Societies and Noise Abatement Groups in areas affected by the third London airport proposals.

From our experience in dealing with thousands of noise nuisance cases and from the vast amount of information we continually receive from world sources and in our press cuttings covering hundreds of thousands of column inches of news about noise, we feel qualified to express the opinion that noise inflicts physical, psychological and physiological injuries on largely helpless individuals. It can be the root cause of many diseases and disabilities, especially those of psychosomatic origin. In extreme cases, noise nuisance can lead to assault, murder and suicide. Noise also generates a feeling of frustration leading to bitter hatred in the hearts of its victims, especially when circumstances prevent retaliation or adequate protection such as in the case of aircraft noise.

Hatred is a most destructive emotion affecting both hater and hated and it was the discovery of this basic effect of noise which led to the formation of the Noise Abatement Society in the summer of 1959.

Perhaps the most terrifying aspect of aircraft noise in this country is the futility of complaining because the law, as it stands, expressly forbids even legal action for noise nuisance against airports, airlines and pilots. This leads to a weakening of the will to resist and many people living near airports are forced to lead a Zombie-like existence with their lives governed by forces over which they have no control.

At the recent six-day International Noise Abatement Congress organised by the Noise Abatement Society at the Queen Elizabeth Hall, experts from 23 countries gave 69 papers all of which stressed the damage that noise inflicts upon people, animals and buildings. Copies of these papers have been submitted to the Commission.

In view of the fact that aircraft noise is likely to increase with the advent of jumbo jets and Concorde, it is as well to bear in mind the potential of noise force. The Biblical story of the trumpets which caused the walls of Jericho to come tumbling down is echoed in the news that French engineers have invented a machine which, by producing noise of certain frequency, can utterly destroy buildings.

An American scientific magazine gave news of a machine which can produce noise of sufficient intensity to reduce living flesh to the consistency of face cream.

But we have been given to understand that the Commission will base its decision mainly upon the overall economic considerations and the Society has been asked therefore to give evidence relating to the financial aspects of aircraft noise.

This is not the simple task it might appear to be.

Printed image digitised by the University of Southampton Library Digitisation Unit

How does one begin to evaluate in monetary terms the amenities commonly enjoyed by the 95 per cent of the population who are fortunate enough to live away from airports and flight paths?

What is it worth to walk in God's fresh air and be able to listen without interruption to the song of the birds; the wind rustling through the trees?

What is the value of a quite, peaceful, environment in which to work, study or converse?

What is the value of a continuous uninterrupted telephone conversation; the boon of watching television and listening to the radio without distortion?

What is the value to pupils and teachers of lessons unmarred by the obscene scream of jets every two minutes?

What value is to be placed on the loss of educational and cultural accomplishment suffered by pupils attending schools near airports?

What loss is entailed personally and to the country of spending fabulous sums on education to produce a crop of morons?

What benefit to hospitals when sick recover normally?

What benefit to the medical profession to be able to use a stethoscope?

How much does it cost the country to support 500,000 unfortunate persons whose minds have been disturbed largely because of noise?

Mr. Hugh Delargy, Labour Member for Thurrock, stated in Parliament that noise costs this country £1,000 million every year in lost production—a figure which has not been denied nor challenged.

Various Government Departments now emphasise that noise reduces efficiency, causes accidents and has deleterious effect upon health and have ordered both reductive and protective measures to be taken against it.

The Ministry of Public Building and Works in its leaflet *Noise Control on Building Sites* states as follows: "Noise from building operations can cause disturbance, danger and damage. It frequently disturbs people living nearby and may even prevent them doing their normal work efficiently. Danger of accidents is more likely if men working on the site cannot hear instructions clearly and noise can permanently damage men's hearing."

The leaflet compares these dangerous noises: pile hammer: 99 decibels; tractor scraper: 94 decibels; unmuffled concrete breaker: 84 decibels; with aircraft noise at 120 decibels. The decibel is the unit by which sound is measured on a scale which rises in logarithmic progression. A rise of 10 decibels indicates a tenfold increase in sound pressure level, 20 decibels hundredfold, 30 decibels thousandfold.

Thus what the Government deems to be dangerous noise for building workers is but a fraction of that which British Airports Authority deems to be acceptable to its workers and which is enforced upon ordinary people whose only crime is that they happen to live within range of attack by aircraft noise!

The Board of Trade propose to limit the noise of aircraft not yet on the drawing boards to the dangerous level of 95 decibels which is higher than they are prepared to allow on building sites, in factories or on the roads.

But it will take 10–15 years before even such alleviation is felt by those living near airports or under flight paths.

Printed image digitised by the University of Southampton Library Digitisation Unit

Heathrow affects more people than any other airport in this country. In 1959 the Noise Abatement Society was approached by local authorities and residents associations in connection with the aircraft noise nuisance at that time and to propose a solution.

After examining the matter very carefully, we concluded that the only sensible solution would be to close the airport. Heathrow was never intended to be a major airport. It is in the centre of a large population and aircraft fly over London itself causing noise nuisance to millions of people. It is only by the Grace of God and the skill of the pilots that London has not yet suffered a major disaster. By the laws of probability we are fast running out of time.

We are fully aware of the importance of air travel and its effect upon the economy of the country. We therefore searched the whole of the South-East of England to see if there was a site where an airport could be built large enough to handle the whole of London's traffic for the foreseeable future, where airlines could operate their craft 24 hours a day, 7 days a week, 52 weeks in the year, without causing noise nuisance to existing residents.

Such a site was discovered. It is Foulness and the Maplin Sands.

The Ministry of Aviation felt themselves unable to consider removing Heathrow to a coastal site, mainly because of the £39,000,000 of taxpayers' money already invested. To overcome this objection we approached developers, insurance companies, banks, etc., and were able to offer the services of a consortium who would build an airport four times the size of Heathrow at no cost to the taxpayer, recovering their outlay by being allowed to develop what would then be the obsolete Heathrow airport into a new town for 250,000 inhabitants. Monorail manufacturers offered to build a thirty-minute communication with Central London, at no cost to the Government, provided they could collect the fares.

Then followed a pantomine of reasons why not and included the social upheaval which would be caused to airport workers, the loss of profit to shopkeepers around the airport, etc. Finally the Ministry (now itself obsolete) played its trump card "that the War Office would not part with the site because they were used to firing experimental cannonballs into the sea and recovering them at low tide and it would be difficult to find a similar site so near to London". The fact that their activities present a coffin-like barrier, 30,000 feet high, 6 miles wide, 20 miles long, to aircraft approaching England seems to have escaped their notice. We feel confident that we can today interest a similar consortium to build the new airport on the same terms.

It is a pity that so much money has been poured into Heathrow since we made our proposals and those who allowed it did so in the full knowledge that sooner or later Heathrow must close down. Had commonsense prevailed, peace and quiet would now reign in London and airlines and British Airports Authorities would be operating at a handsome profit.

But of course, airports create jobs; workers like to live near their work and seem to be fully prepared to sacrifice themselves and their families to day and night bombardment by noise in return for dubious financial benefit. They are prepared to waive the right, common throughout nature, of a good night's sleep not only for themselves but also for others living in the area who are not compensated for the suffering endured.

Printed image digitised by the University of Southampton Library Digitisation Unit

The demand thus created for houses near airports makes it difficult to assess the financial loss caused by aircraft noise.

So far as public expenditure due to airport noise is concerned, I would draw the attention of the Commission to the fact that Hounslow ratepayers are faced with a bill of hundreds of thousands of pounds to soundproof Cranford school where lessons have become impossible because of aircraft noise. In the event, the Council have decided to spend an additional £313,000 to resite the school completely.

The same Council with a severe housing shortage is also being forced to abandon plans for a new estate because of aircraft noise.

Jet noise at Harrow may cost the Education Committee a new comprehensive school. The cost of the new school will be over £1,000,000 but to enlarge an existing school and soundproof it would cost £900,000, therefore the Committee feel it would be more worthwhile to spend the extra on a school out of line of the flight path of the airport.

Fortunately a survey of property values around Heathrow airport was commissioned by the journal *Architect and Building News* and was carried out by Chartered Surveyor, Mr. Bryan Anstey, BSC, FRICS, FAI, FIAS, FRVA, senior partner in the firm of Anstey Horne & Company, St. Margaret's House, 9 Ironmonger Lane, Cheapside, London EC2.

The Survey will be published in the *Architect and Building News* in three parts—Noise Zones and Numbers, Noise and Land Values, Social Cost of Noise—commencing January 1969 but the Editor, Mr. Barfoot, has kindly given us permission to quote from its findings and Mr. Brian Anstey is here to give evidence and answer questions from Members of the Commission.

Financial Loss Caused by Aircraft Noise Nuisance by Bryan Anstey

The survey shows that there is a relationship between the interference zones delineated by the Noise and Number Index contours of the surveys and the effect upon property values which the noise they represent has.

A Land Value Contour Map delineates zones in which the land value lies between certain limits. There will be peaks, ridges of value plateaux and other features analogous to topographical contours. For example, a ridge of high value will usually be found along the main shopping thoroughfare of a suburban centre, falling rapidly to much lower levels where the shopping area ends and the residential areas take over.

Certain factors such as exposure to aircraft noise may be found linked with depressions in the value topography.

The survey advises that local authorities should set up value contour maps for their own areas because the intrusive noise will already have had an influence on land values and at a later stage it will be difficult to disentangle this from other influences altering values. For example, during the same time that the noise from aircraft using Heathrow has been rising and the Noise and Number Indices have been stretching out their fingers towards, say, Richmond, other factors have been complicating the land value pattern. In the case of this riverside suburb they have been as diverse as proposals to close the Richmond-Broad Street railway line, the transfer of Richmond from the jurisdiction of the Surrey County Council to the Greater London area, the present ripeness for redevelopment of a great

Printed image digitised by the University of Southampton Library Digitisation Unit

many old buildings in the area and, say, the rise of interest in sailing, canoeing and such like water based activities. Systematic plotting of land value contour maps, with calculation of overall losses or gains and careful analysis of the change in pattern or other methods may be used. Market values of property are, by definition, not merely actual *prices* as evidenced by transactions, for these in a particular range which it is desired to investigate may be few, but anticipated prices in the estimation of persons qualified to judge.

A questionnaire was sent out to a number of surveyors, valuers and estate agents in the districts surrounding London airport on a selective basis—designed to avoid over-lapping—but covering approximately the area of the NNI maps. The very first returned, completed, questionnaire had the answer "Yes" to the question: "Would the whole character of the area change?", reckoned that medium-class residential properties would improve in value by 20 per cent if aircraft noise were so reduced that the area could be called truly quiet, but put the high-class properties at only 5 per cent increase and the cheapest class at 10 per cent; approximately 10,000 properties were expected to be affected in this correspondent's area. In another case it was considered that values of high-class properties would go up by 20 per cent, the whole character of the area being expected to change, and that both the medium-class and the cheapest would rise 5 per cent in respect of 5,000 properties. In two others, one a 1,000 and the other a 5,000 sample, high-class properties were expected to rise by 10 per cent and the others by 5 per cent but it was not considered the whole character of the area would change; another estimated roughly 10 per cent increase on all classes of property in a 5,000 area. One correspondent said: "I do not think that aircraft noise much affects prices in this area" but has said "Yes" to Question 1(*a*), and expected a rise of 5 per cent in value in the cheapest class. A fair summary of the questionnaires supports the thesis that the noise depresses property values by between 5 per cent and 20 per cent, according to class, the percentage tending to rise as the value of the property rises. It would be fair to add that opinion is about evenly divided as to whether the whole character of the area would change or not and there was one (but only one) dissentient voice which said that the noise had no effect on property values at all. Most of my correspondents were careful to point out that the presence of the airport creates a demand which has, in general, an upward influence on prices. This is fair enough but the point being examined here, is whether it is economically worthwhile to reduce aircraft noise. It is clear that very large values are involved. Suppose only 25,000 houses are affected and that their average value is about £4,000, that gives a cool £100 million worth of property which, at 10 per cent, is £10 million. My guess is that this is certainly a very conservative under-estimate and in the third article in this series I compare it with that given by a different approach. One correspondent quoted me a specific instance where a good class property in a bad (noise) area was sold to a local man at "40 per cent below its value in a quiet area". Another made this careful comment: "It should be borne in mind that one side . . . is much more seriously affected by aircraft noise than the remainder . . ." (a point made by several); "(certain) areas" (he continued) "are very close to the main runways and prices in those districts would easily increase by 20 per cent if there were no noise . . . some . . . have been reduced in value by approximately 50 per cent due to being in the main flight path. As a result . . . in the last two years, builders have been developing the area with very cheap houses, and this has further depreciated the value of the better properties." Several correspondents stressed that the really bad noise is experienced

Printed image digitised by the University of Southampton Library Digitisation Unit

only over the flying paths. One, a chartered surveyor, laid particular emphasis on actual structural damage as proof that values must be materially affected in such positions but he, too, mentioned the fact that great demand offset the otherwise depressing effect of noise on value.

This stressing of offset is, of course, perfectly right and proper in valuation terms except that we are not here trying to get a whole picture of the values of property in the vicinity of airports but of the specific effect of one factor only, namely noise. My impression of the total effect of these replies is that if the noise could be removed or effectively reduced, the change in values would be even greater than my correspondents specify because they are, in fact, to some extent being led into the position of thinking that it does not matter too much, simply because people "have to live in this area"—or become inured (as they think) to the noise, through long usage.

There are other and more insidious effects of exposure to heavy noise which should not be forgotten when assessing the social cost. Repeated or continuous exposure to high noise levels can result in permanent hearing loss and the relation between such exposure and hearing impairment has been investigated carefully in a number of studies.

In a classic example, quoted by Leo B. Beranek, of the USA, the effect was observed on 400 men engaged in a noisy occupation which exposed them to a noise level averaging 90 decibels for a long period of years. The men suffered substantial hearing losses during the early years of their exposure, some of those who had been exposed for 10 years, even young men of 30, had so much impairment that they found it difficult to understand speech. The fact that the incidence of injury is variable, and almost unpredictably so in the individual case, should not be allowed to obscure the reality of it in the case of other individuals and as a statistical certainty. Neither should we lose sight of the fact that loss of hearing is a measurable injury, whereas in other realms, such as that of psychological consequences, the fact that it is hard to find a basis of measurement does not mean that there is no effect. In ten years, exposure to severe noise can result in a hearing loss comparable to the average reduction in hearing brought about by 40 years of normal life. If the hidden psychological stresses occur at the same rate, our virile young 30 year olds, in the vicinity of airports will, if they have been there since they left school, be turned into ear-cupping and querulous old men.

We might now usefully consider what Mr. Peter Masefield, Chairman of the British Airports Authority, said recently (May 1968) in a paper read to the Royal Society of Arts. I must emphasise that his paper was concerned with a whole range of modern airport activity but perhaps this only makes more significant what he had to say about noise. Indeed, one of his first quotations was from the Prophet Ezekiel—"At the sound of the cry of thy pilots the suburbs shall shake". Dealing with the setting up of Heathrow—the airport Mark 2—he says:

> "The problems of noise from jet transport aircraft were not foreseen in 1943 . . . Traffic at Heathrow has expanded during the past fifteen years from 1.93 million to 12.6 million passengers per annum (and) there is plenty of evidence that traffic will continue to expand at a rate which will further double the business every five or six years."

Dealing with the noise pattern, of the sort of airport which he thinks will be necessary to cope with the increased traffic already foreseen, he says:

Printed image digitised by the University of Southampton Library Digitisation Unit

> "The noise pattern of such a layout—down to the 'low disturbance' level of some 40 NNI—would stretch about 2,000 yards outwards from the sides of the outer runways, about twelve miles along the approach paths and eight miles up the take-off paths. The 'airport disturbance area' might therefore be said to be roughly a parallelogram whose total length would be 23 miles and width about four and a half miles, taking accounts of operations in both directions."

That is an area of about 100 square miles. Suppose only half this area is developed with houses and that that area is developed at only ten houses to the acre. We then get a total of the order of 320,000 houses affected, that is to say, more than ten times the estimate I gave in my second article, so that if this second estimate is nearer the mark, then the *loss* in value of property arising solely from the noise, is £100 million. Incidentally, those estimates of the loss in value of property were made in the light of recent experience of noise, not of the projected increase in noise which will result from the heavier use, larger aircraft and higher speeds. According to Mr. Masefield, in the London area in the 1980's, "probably 360 take-offs and landings an hour will be required." Incidentally, very shortly after this statement, he remarked that "the national and international investment in Heathrow is now so great and so many people who live in the neighbourhood are directly and indirectly dependent upon the airport for their livelihood, that no upheaval to remove the airport elsewhere is socially or economically tolerable."

Perhaps we could now consider whether the British Airports Authority could afford to do something about it. It should not be forgotten that it is charged with operating commercially at a profit and with publishing its annual accounts in detail, and that during its first year of operation it made an operating profit of £5.4 million which represented a return of 10 per cent on the average capital employed. In its report on the foundation of such an authority, the Select Committee on estimates of 1961 said that such an undertaking should be run on competitive business lines and should be able to react in a commercial manner to what is essentially a commercial situation. Now, if any private commercial undertaking emitted so much noise that its neighbour's property was depreciated by 10 per cent, that neighbour or those neighbours could certainly apply to the Court for an injunction restraining the undertaking from continuing the nuisance and/or damages. The practical result of that would equally certainly be that the undertaking would take advice and spend a good deal of money on making its operations quieter. Now if it is said that it cannot be afforded, the question may reasonably be asked: "Is it reasonable, or unreasonable, to ask the 40 million passengers 'handled' by the airport at an average of 'about 28.0d. for each passenger coming or going' to pay a little more for the quietening (if not the silencing of their aircraft, so that the one million or so people within the noise zone can have their health safeguarded and the value of their property preserved?". It may (or may not) be possible at Gatwick to solve the problem by keeping people away from the noise but at Heathrow that solution is clearly out of the question. Surely, what we need is not to take people away from the noise, but to take the noise away from the people. For my part I would prefer this solution to the American one, and what is more, such a solution might prove to be a highly successful and profitable export. The corresponding import is offered to us in a paper by Mr. Gene Conger, MAI, on Noise Damage in Florida, Oregon and Washington. He was one of the appraisers for the defendant, Port of Seattle, in a case involving some 250 ownerships over two or three years.

Printed image digitised by the University of Southampton Library Digitisation Unit

"Our research work into comparable sales", he says, "was quite exhaustive . . . over a period of some five years. It is obvious that this type of case will continue to increase and the solution appears to be for the airports to acquire larger clear zone areas." In the event, the award for damages was 10 per cent of the market value of the subject property. Would it not be cheaper to make the aircraft quieter?

Questionnaire: Noisy areas

If aircraft noise (but nothing else) were so reduced that your area could be called truly "quiet" in this respect

(1) Would residential value
- (*a*) go UP .....
- (*b*) go DOWN .....

(2) If UP by how much?
- (*c*) high class..... 5%, 10%, 20%, 50%
- (*d*) medium class.....
- (*e*) cheapest class.....

(3) if DOWN by how much?
- (*f*) .....
- (*g*) .....
- (*h*) .....

(4) Would the whole character of the area change?
- (*k*) Yes.....
- (*l*) No .....

(5) Approximately how many properties would be affected in a radius of say a mile round your office?
- (*m*) 500, 1,000, 2,000, 5,000, 10,000?

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission by the Local Authorities Aircraft Noise Council

1. The Local Authorities Aircraft Noise Council is an association of local authorities whose areas either adjoin London (Heathrow) Airport or are underneath the flight paths of aircraft approaching or leaving that airport. The following local authorities are members of the association:

Berkshire County Council.
London Borough of Brent.
London Borough of Hammersmith.
London Borough of Kingston upon Thames.
London Borough of Richmond.
London Borough of Wandsworth.
Royal Borough of New Windsor.
Esher Urban District Council.
Walton and Weybridge Urban District Council.
Bagshot Rural District Council.
Cookham Rural District Council.
Eton Rural District Council.
Windsor Rural District Council.
Datchet Parish Council.
Wraysbury Parish Council.

2. The Council has been in existence since December 1957 and has always been concerned with the problem of the effect of aircraft noise on people resident in the areas beneath the flight paths of such aircraft.

3. The Council's experience is that the noise from aircraft approaching and leaving Heathrow varies from intolerable in the immediate vicinity of the airport to the unpleasant at the limits of the areas of the local authorities represented on the Council as far as ten miles from the end of the main runways of the London (Heathrow) airport.

4. The effect of aircraft noise has been recognised by Her Majesty's Government in that they have made arrangements for grants to be payable to owners of properties within a limited area around the airport towards the cost of soundproofing their homes against aircraft noise. The limits of this area are, in my Council's opinion, drawn far too close to the airport, and they have made representations to that effect to the Authorities concerned. Outside this area the Council has received many complaints from residents affected by the noise of aircraft, the complaints being:

(*a*) that they have been awakened from sleep or prevented from sleeping by the noise of the aircraft;

(*b*) that they cannot enjoy normal conversation whilst aircraft passed overhead;

(*c*) that they have been unable to hear conversations on the telephone whilst aircraft passed overhead;

(*d*) that the passing of aircraft causes distortion and disruption of television pictures and makes it impossible to listen to radio programmes.

5. At the back of the mind of every member of the Council there is always the fear of an aircraft crashing on approach or take-off at Heathrow on to the

Printed image digitised by the University of Southampton Library Digitisation Unit

densely populated area beneath, with the enormous additional loss of life such a tragedy would involve.

6. For all these reasons the Council would urge on the Commission that it is essential that the areas immediately beneath the flight paths to and from the airport, including the stacking areas, should be free from residential accommodation for a distance of at least ten miles from each end of the runways concerned. This is obviously an impractical proposition in this extremely densely populated country, and points quite clearly to the advantages of an airport in the coastal regions where the stacking beacons and the approach and take-off flight paths can be over the sea where they will cause the minimum of discomfort to residents.

7. The Council is extremely apprehensive of the effect of the next generation of aircraft, namely supersonic aircraft such as the Concorde and the jumbo-jets such as the proposed Boeing 747, Galaxy, and other similar aircraft which they fear will generate more noise, especially on landing and take-off, because of the extra power needed to propel them than the present aircraft. In my Council's view no increase in aircraft noise must be allowed, and the Authorities concerned must be seeking a reduction in aircraft noise. If, however, the airport were sited so that the area above the stacking beacon and the flight paths to and from the airport were over uninhabited areas such as the sea, the problem of noise suppression does not become so urgent, provided that steps are taken to divert noisier aircraft away from airports situated in built-up areas such as the London (Heathrow) and London (Gatwick) airports.

8. Furthermore, in these circumstances it would be possible to reduce by degrees the maximum noise levels permitted at London (Heathrow) and London (Gatwick) airports either by direct prohibition of aircraft not complying with the noise limits or by vastly increased landing fees being imposed on aircraft which exceeded set noise limits.

9. The Council recognises the disadvantage of siting an airport in the coastal area in the length of the journey necessary from the airport to business and tourist centres, but feels that the expense involved in providing the rapid transport facilities is more than offset by the advantages to those who at present suffer from aircraft noise and those who are likely to suffer therefrom if London's third airport is sited in a populated area. My Council therefore hopes that the Commission will report that in their view London's third airport, and indeed all future major airports, should be sited on a coastal site such as Foulness so that the flight paths to and from the Airport and the stacking areas can be situated out at sea away from the land and in particular the people who live there.

Notes on contents of letters of complaint on aircraft noise*

Almost all complain that radio, television, telephone and normal conversation is badly affected.

That night flying disturbs their sleep and that of the children. Some claim that their health and efficiency at work is affected through this loss of sleep.

Many complain of nervous exhaustion and/or nervous tension, some fear a mental breakdown either for themselves or their ageing parents.

Others mention specific illnesses brought on by long exposure to aircraft noise and the frustrations suffered because of it.

Printed image digitised by the University of Southampton Library Digitisation Unit

Concern has been expressed for the health of small children, particularly the affect on their hearing and nervous fear caused by the low flying and very noisy large jet aircraft.

A number of people stated that they have had to resort to prescribed drugs, some that in spite of sleeping pills and other drugs their sleep and health is still adversly affected.

Many state that it is impossible to sit in their gardens or enjoy open air relaxation.

Air pollution and unburned fuel deposits are mentioned and fear of further health hazards expressed. Such pollution makes nonsense of the Clean Air Act.

Both parents and teachers describe the frequent interruptions caused by aircraft noise and deplore the affect of loss of "concentration and interest" on the childrens' education. Adult students also state that much of the spoken word goes unheard.

Religious services are interrupted and spoiled, both ministers and worshipers complain.

Doctors express concern for the health of the people subjected to prolonged noise and state that noise and vibration affects patients, delicate instruments, makes some work impossible, e.g. listening to heart or chest examinations.

Damage to property through vibration etc. causing cracks to the windows and walls and ceilings.

Soundproofing is generally regarded as inadequate, and in some cases unfair and in any case does not solve the problem of noise outside the home or place of work. Opinion is expressed that the airline companies should pay the cost of soundproofing especially of hospitals and schools, where such cost has to be made at the expense of further and much needed buildings.

Almost all speak of the total disregard for the man on the ground, many express the fear of a major aircraft crash or disaster and support the view that the third London airport should be sited on the coast and away from densely built-up areas.

Young and old people complain and seem to be equally disturbed by aircraft nuisances. Those who have resided in the areas affected for a number of years state that the noise is now intolerable and that there is no question of "getting used to it".

Permitted aircraft noise makes a nonsense of the proposed road traffic noise control.

It was suggested the noise from low flying aircraft was a contributary cause of some road accidents. Strong complaints were made about "ground running" of aircraft at night. Many felt that all night flights should be banned.

Almost all expressed grave concern at the prospect of the Jumbo Jets and the possibility of "Concorde" using Heathrow. Those who can now hear the engines starting up while the aircraft is still on the ground, fear the noise of Concordes' engines may actually cause deafness.

Many complain the aircraft noise now causes them pain.

All say that repeated complaints to the Airport Authorities, Government Ministers, to MPs, or Local Councils has had no affect, their complaints seem to be disregarded.

Printed image digitised by the University of Southampton Library Digitisation Unit

Most letters reflect a state of despair, frustration, loss of liberty or actual suffering.

**Note by the Commission:* attached hereto was a list of

12 Local Authorities
5 Schools
13 Associations and organisations
13 Business and trade firms
160 Individuals

from whom letters of complaint had been received. A further list was submitted before the public hearing. All this material is available for inspection, by arrangement, at the offices of the Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Aircraft Noise Measurements in West London Boroughs

EXPLANATORY NOTE BY THE SCIENTIFIC ADVISER TO THE GREATER LONDON COUNCIL

The results given in the accompanying tables have been calculated from readings taken since December 1967. Measurements were made over periods lasting 2–3 days, usually at weekend, at sites in the west London Boroughs of Hammersmith, Hounslow, Richmond-on-Thames and Wandsworth.*

The sites were chosen for their low background noise and were away from traffic and railway noise.

Bruel and Kjar equipment was used to record noise levels on a waxed chart running at a speed of 0.1 mm a second.

The passing of an aircraft is readily detected from the character of the chart recording and the peak levels of individual aircraft have been read visually.

Since PNdB cannot at present be measured directly, the A weighting was used for the chart recorder. The levels being read off directly as dBA and converted by PNdB by the numerical addition of 13. The Wilson Committee on the Problem of Noise considered that the conversion of dBA to PNdB by the addition of 13 was a very close approximation foı jet aircraft and the method is used for monitoring purposes.

The NNI figures have been calculated according to the formula proposed by the Wilson Committee which is:

$$NNI = (\text{average peak noise level}) + 15 \log_{10} N - 80$$

when N is the number of aircraft in a specified period, e.g., one day or one night.

The average peak noise level is a logarithmic average.

The NNI figures and contours used in the Wilson report are based on a day period of 6 a.m.–6 p.m. The Committee did not quote NNI figures for the night periods. The night figures given in the tables are based on the period 6 p.m.–6 a.m.

Two other night periods have been quoted officially; they are the period 1 p.m. to 7 a.m. during which a noise level of 102 PNdB must not be exceeded on the ground at the nearest built-up area, and the period 11.30 p.m.–6 a.m. when the number of jet aircraft movements to and from Heathrow must not exceed 3500 during the months 1 April to 31 October.

NNI figures based on these periods are being calculated and will be available shortly.

The NNI method of evaluating noise nuisance is only used in this country but the aircraft numbers and individual peak noise levels can be used in other formulae such as those used abroad. The results now available and the results of future measurements will, therefore, be coded on punched cards so that most methods of computation can be carried out rapidly and compared with each other.

Arrangements have been made to take further measurements in the boroughs already mentioned and in the Royal Borough of Kensington and Chelsea.

* See also tables on pp. 168 and 186.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Aircraft Noise 1968 at Hammersmith

Measurement Points	Hurlingham Lodge, SW6	Western Fever Hospital, SW6	Drake Court, W12
Measuring period:	*22.1.68–25.1.68*	*9.2.68–12.2.68*	*16.2.68–.19.2.68*
1ST NIGHT			
Aircraft: no. measured	44	54	32
Av. peak level	86.0	87.6	83.2
NNI	30.6	33.6	25.8
1ST DAY			
Aircraft: no. measured	76	41	55
Av. peak level	92.7	85.3	89.1
NNI	40.9	29.5	35.3
2ND NIGHT			
Aircraft: no. measured	38	16	26
Av. peak level	88.4	82.0	87.6
NNI	28.1	20.0	28.8
2ND DAY			
Aircraft: no. measured	63	130	61
Av. peak level	90.2	83.6	90.2
NNI	37.2	25.7	36.9
3RD NIGHT			
Aircraft: no. measured	38	14	29
Av. peak level	86.8	83.1	89.7
NNI	30.5	20.3	31.6
3RD DAY			
Aircraft: no. measured	89		
Av. peak level	86.8		
NNI	36.1		

Traffic pattern	Approaching Heathrow	Departing except between 14.50 hrs. on 9th to 08.51 hrs. on 10th.	Approaching Heathrow
Summary			
Average peak levels			
TAKE OFF			
Day		82.3	
Night		82.6	
Combined		82.4	
LANDING			
Day	90.5	87.7	89.7
Night	85.8	87.6	87.6
Combined	88.8	87.7	88.8

Note: All peak levels are given in PNdB.
NNI based on periods 6 a.m.–6 p.m. and 6 p.m.–6 a.m.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Aircraft Noise 1968 at Hounslow

Measuring points	Mogden Sewage Treatment Works Office Building	58 Broad Walk, Heston	Woodford Sec. School	William Byrd School	Wellington Primary School	Spring Grove Grammar School	Syon School	Heston Sec. School	Hounslow Manor Grammar School	Bedfont Junior School
Measuring period:	*2.8.68–5.8.68*		*21.8.68–22.8.68*	*22.8.68–23.8.68*	*23.8.68–26.8.68*		*30.8.68–3.9.68*	*30.8.68–31.8.68*	*6.9.68–9.9.68*	*27.9.68–30.9.68*
Results										
1ST NIGHT										
Aircraft: no. measured	138	65	127	94	127	120	153	178	132	107
Av. peak level ..	98.9	107.5	92.1	104.0	93.7	93.1	96.6	88.5	87.1	93.7
NNI	51.0	54.7	43.6	53.6	45.2	44.3	49.4	42.3	38.9	44.1
1ST DAY										
Aircraft: no. measured	198	155			227	223	277		211	167
Av. peak level ..	97.2	106.5			93.5	94.1	98.3		91.6	93.4
NNI	51.6	59.4			48.8	49.4	54.9		46.4	46.7
2ND NIGHT										
Aircraft: no. measured	121	101			105	94	146		95	86
Av. peak level ..	98.0	104.0			93.6	92.7	97.6		89.6	90.2
NNI	49.3	54.1			43.9	42.3	50.1		39.4	39.2
2ND DAY										
Aircraft: no. measured	149	237			221	182	248		210	213
Av. peak level ..	83.9	105.0			96.1	93.2	99.6		91.2	99.4
NNI	36.5	60.6			51.2	47.1	55.5		46.1	54.4
3RD NIGHT										
Aircraft: no. measured	82	112			89	79	122		107	114
Av. peak level ..	84.9	100.0			95.5	92.5	96.6		83.4	99.4
NNI	33.6	50.7			44.8	41.0	47.9		33.8	50.2

3RD DAY										
Aircraft: no. measured								190		
Av. peak level ..								97.7		
NNI								51.9		
4TH NIGHT										
Aircraft: no. measured								114		
Av. peak level ..								87.6		
NNI								38.4		
Traffic pattern ..	Departing except 15.00 on 2nd; 21.47 on 3rd and 04.42–11.45 and 19.01–20.34 on 4th		Approaching Heathrow		Departing from Heathrow		Approaching Heathrow			Approaching Heathrow
Summary										
Average peak level										
TAKE OFF										
Day	89.3	100.7			95.0	93.7				
Night	97.4	98.4			93.4	92.8				
Combined	94.3	100.2			94.3	93.3				
LANDING										
Day	95.4	106.5						98.6		96.8
Night	97.3	105.8	92.1	104.0				95.9	88.5	96.1
Combined	96.4	106.4						97.4		96.5

Note: All peak levels are given in PNdB.
NNI based on periods 6 a.m.–6 p.m. and 6 p.m.–6 a.m.

Printed image digitised by the University of Southampton Library Digitisation Unit

Submission by the Local Authorities (Airport) Committee

30 September, 1968.

SIR,

THIRD LONDON AIRPORT

I beg to make the following submissions on behalf of the Local Authorities (Airport) Committee

(1) The Local Authorities (Airport) Committee was formed in 1952 to deal with problems arising from noise, and generally, in connection with the London (Heathrow) airport.

(2) The Committee consists of representatives formally appointed by the following Local Authorities—

Beaconsfield Urban District Council
London Borough of Ealing
Egham Urban District Council
Eton Rural District Council
London Borough of Hillingdon
London Borough of Hounslow
Borough of Slough
Staines Urban District Council
Sunbury-on-Thames Urban District Council
Royal Borough of New Windsor
The Committee has a representative on the
Heathrow Airport London Consultative Committee.

(3) The Committee has over the years obtained a very wide experience in the operation of Heathrow airport and its attendant difficulties and has frequently made representations to the Government Departments which were from time to time responsible for the administration of the airport. Its representatives met the President of the Board of Trade recently raising a number of problems which affect the Local Authorities represented at the present time. These submissions it is hoped will be of interest and value to the Commission.

(4) The submissions by the Local Authorities Aircraft Noise Council, with which this Committee co-operates, have been made to the Commission, and the Committee desire to associate themselves to the full with these submissions.

(5) The following paragraphs are the submissions of this Committee.

(6) It is considered that the existing scheme in connection with the insulation of dwellings against aircraft noise should be re-modelled in order to make it more effective from a practical point of view and to make it less expensive to the owners of private dwellings and to local authorities.

The scheme at present does not fully carry out the soundproofing of houses, and it is usually confined to a very few rooms. The cost to owners is much too high, and the grant which is available to them to mitigate the nuisance which they are compelled to suffer is quite inadequate. Local Authorities and private builders are required under Town Planning powers to soundproof houses (at

Printed image digitised by the University of Southampton Library Digitisation Unit

their own expense) which they erect within certain areas in the vicinity of the airport, and they are compelled to bear the total cost of such soundproofing. This is clearly quite inequitable, and the whole cost should be borne by the Airport Authorities.

(7) The existing contour lines relating to Heathrow airport, upon which the noise levels and studies of aircraft noise are based (i.e. those in the "Wilson" report upon Noise) should be reviewed so that they may be brought up-to-date and formulated upon a more realistic study, and soundproofing grants should be made on the basis of a lower noise and number index than that which is now applied.

(8) In 1966/67 the British Airports Authority set aside £100,000 to meet the cost of grants for soundproofing in that year. The amount set aside for this purpose for 1967/68 was £150,000. The Authority should be required to make available a much larger figure in future to meet the complete cost of soundproofing houses in selected areas under a scheme. It has been noted that, in the year 1966/67, the Authority made a trading profit of £5,441,625 and in 1967/68 the profit was £6,255,718. This profit has been maintained at the expense of the physical discomfort of many residents in the areas represented by the Local Authorities (Airport) Committee, and every effort should be made to mitigate the discomfort from which they suffer by adequate grants.

(9) Experience shows that from time to time lapses in the control of aircraft using the airport take place. It will no doubt be known to the Commission that aircraft leaving the airport are expected to gain an altitude over the perimeter of one thousand feet, and it is felt that this stringent restriction is not invariably complied with. This requirement should be imposed strictly and the landing angles and flight paths of aircraft should be observed by all aircraft.

(10) The present limited user of the airport by aircraft at night has done much to make the lives of residents in the vicinity of the airport more comfortable but, even now, much suffering is caused by night flying. The frequency of user should be held at least at its present level and an effort should be made to reduce the number of night flights as far as possible.

(11) It is considered that the responsible authorities should ensure that all new aircraft using the airport, whether they be British or non-British, should be so constructed as to comply with a strict rule against the production of excessive noise. The Government should continue to make every effort to secure international agreement governing these requirements, and any noise limit should bring about an actual reduction in noise, if possible.

The Committee have noted that efforts to this end are being made by the Government, and they hope that they will come to a successful conclusion.

(12) The Concorde aircraft is expected to come into service during the next year or two, and the public should be assured that the noise created by its take-off and landing will be certainly no greater than the noise levels of aircraft using the airport at the present time. A similar assurance should also be given in connection with any other aircraft which are under development, or which will be constructed in the future, and the assurance should be strictly adherred to.

(13) The Local Authorities in the vicinity of the airport have been compelled by force of circumstances and the indifference of Government Departments, to

Printed image digitised by the University of Southampton Library Digitisation Unit

provide much additional housing solely for employees at the airport. The Airport Authorities have made efforts in this direction, but their efforts have been minimal in meeting problems which have been faced by the Local Authorities.

When a third airport is established it should be made certain that the Local Authorities in its neighbourhood are not faced with the same exaggerated housing problem as that which was faced, and continues to be faced, by Local Authorities in the vicinity of Heathrow airport.

Similar problems arise in connection with schools and every other service provided by a Local Authority.

Coupled with these difficulties are the inevitable problems of providing road and rail access to the airport and accommodation, such as garages and hotels outside its perimeter, and a full examination should be made of the demands which the provision of these services make on land in the vicinity of the airport.

It is well known that the demands arising at Heathrow airport for providing services of this nature are remarkably high, and it is also desirable to consider what demands will be made by the many industries which appear to follow the establishment of an airport of the size of Heathrow airport.

(14) I am the Borough Solicitor to the London Borough of Hounslow, and I have had the advantage of obtaining a copy of a report prepared by the Borough Planning Officer on the effect on residents in the Borough of noise created by aircraft using Heathrow Airport.

I enclose a copy of the Report and of the maps which accompany it, and commend it to your attention.

Certain paragraphs in the Report dealing with noise arising from motorways may also be of interest.

The Report has been accepted by the London Borough of Hounslow as setting out very fully their problems in relation to noise arising from the airport. It is possible that some disagreement with the measurement of aircraft noise may arise, but the broad principles of the Report are correct, and the maps which are attached to it show how significant is the effect of noise on residents within the Borough.

These representations have taken the form of illustrating the experience of Local Authorities within the vicinity of London airport and, in particular, of the experience of the London Borough of Hounslow, and it is hoped that they will be of help to the Commission.

The Committee desire to be of assistance to the Commission, and they will be very happy to answer any questions which may be raised on these submissions.

I am, Sir,

Your obedient Servant,

M. W. COUPE.

Honorary Secretary,

Local Authorities (Airport) Committee.

Mr. J. Caines
Secretary to the Commission
Templar House
81/87 High Holborn
London WC1

Printed image digitised by the University of Southampton Library Digitisation Unit

Sound Protection of New Residential Buildings in the Light of Noise from Aircraft using London Airport and from Other Factors

REPORT OF THE BOROUGH PLANNING OFFICER,
LONDON BOROUGH OF HOUNSLOW

History

Noise from London airport first entered planning consideration about 1957 when the Ministry of Aviation, on being consulted on applications for residential development close to London airport, used to indicate the noise level on the site, and if this was of the order of 90 decibels or more the Ministry urged the planning authority not to grant consent as the noise level has passed the state of "tolerability" and residential living would now be "intolerable". The consultation was primarily made not with regard to noise, but with reference to height of buildings and its effect on radar and on flight paths. Nevertheless the Ministry gratuitously gave the advice on noise. Apart from giving this advice the Ministry gave no further assistance to a planning authority. If, as a result of a refusal of consent, a purchase notice was served or a claim for compensation arose, no assistance was forthcoming from the Ministry, the planning authority had to bear all burdens.

Some years later, as a result of two air crashes, one at Staines and one at Manchester, the Ministry instituted "public safety zones" extending outwards from the ends of runways. Consultation on all applications in these zones was compulsory and the Ministry had the power to direct refusal. In these zones development was normally refused consent if it attracted any degree of persons to the site, and the Ministry met any claims for compensation or purchase notices that might arise from a refusal of consent.

In 1963 the Ministry of Aviation called a conference of local authorities around London airport and produced graphs to show the then existing noise levels around the Airport. It was then explained that at 80 decibels conversation generally became difficult, and at 100 decibels residential consent ought to be refused, and the Ministry then offered to give expert evidence at appeals into refusals of consent, although they intended to give themselves no particular powers of direction, the discretion in these matters was still to rest with the planning authority. Information given at that time was that jet aircraft movements in 1960 were 70 per day but would be likely to rise to 500 per day by 1970 when at peak times a departure could be expected of one every two minutes by day and one every five minutes by night.

The graphs then produced showed the perceived noise levels in decibels on the ground for different types of aircraft both on take-off and on landing. The aircraft that produced the most noise was the Boeing 707, and Map 1* shows the noise effect on the Borough of this plane both on take-off and on landing when using runways 1 and 5 and the plan thus indicates the outline of areas where high noise level is experienced whether caused on "take-off" or "landing". The map also shows the area covered by the Ministry Grants Scheme.

* See wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

2. Decibels

To illustrate the decibel figure, table 1 shows comparisons of noise with their decibel equivalents, the information is taken from a Greater London Council publication *Traffic Noise* and from *Acoustics Noise and Buildings* by Parking and Humphreys.

It will be seen from the right hand side of the table that Hounslow's noise levels operate over the scale 90–130 PNdB. The Wilson Report "a very tentative estimate of noise levels" which should not be exceeded inside living rooms and bedrooms as:

	Day	*Night*
Country area	40 dBA	30 dBA
Suburban areas (away from main traffic)	45 dBA	35 dBA
Busy urban areas	50 dBA	35 dBA

The Scientific Adviser to the Greater London Council has taken samples of noise levels in Inner London in residential areas not affected with any special form of noise and these are:

Day	*Night*
65 dBA	53 dBA

In 1965 the question of sound protection was advanced further by the Minister's decision at Heston Farm, when he imposed a planning condition on a consent to erect residential buildings that these should be subject to sound insulation to the satisfaction of the local planning authority. The reason for imposing this condition was not given but it seems clear that it was partly due to aircraft noise and partly due to noise from the M4 motorway.

3. Grants scheme

In 1966 British Airports Authority issued its noise insulation grants scheme for sound insulation of existing buildings. This scheme empowered the Authority to make a grant up to a £100 which was to be half the cost of sound insulation of existing buildings carried out in the following manner:

(1) The replacement by or conversion to double windows of all existing windows in each room in accordance with the specification in paragraph 29.

(2) The provision and installation in each room of one ventilator unit of a type conforming to the standards of ventilation and acoustic performance specified in paragraphs 30 and 31 including connecting the fan unit by wiring of not less than 5 amps capacity to the nearest convenient point in the existing electric supply circuit, or to the electric mains switchboard.

(3) The adaption of an existing airbrick in the external wall of each room for supplying fresh air for the ventilator unit, or the provision of a new air supply duct to the unit from outside and the blocking up of the existing airbrick.

(4) The provision of a new external cowl to shield the supply duct or airbrick through which fresh air for the ventilator unit is supplied.

(5) The space between ceiling joists in the roof shall be filled with loose, pelleted, dense mineral wool to a depth that will result in a weight of 3 lb per square foot. This requirement is optional.

Printed image digitised by the University of Southampton Library Digitisation Unit

The full specification for this work was set out in the report to the Planning Committee dated 22 September 1966 and was intended to be so carried out that it resulted in a lowering of noise inside the building by 30 decibels at the low frequency of 100 cycles per second increasing to 53 decibels at 3 Kc.

In Hounslow the grant system operates in the wards:

East Bedfont
Feltham North
Hounslow West
Hounslow Central
Hounslow South
Hounslow Heath
Cranford
Heston West
Heston East
Spring Grove
Isleworth South

and the outline of the area containing these wards is very roughly similar to the outline of the 100 PNdB noise contour.

4. Functioning of London airport

However, the issue is not really as simple as this since the following factors apply:

(1) Not all runways are equally used. Mostly planes take off on the long runways 1 and 5 to the west over Staines in Surrey and come in to land from the east over Hounslow. But there are days when the opposite takes place and on these days Hounslow by day and night experiences the "take-off" level of noise.

(2) Some runways are used more than others and this has led the Ministry of Aviation to devise a system whereby the actual ground noise is weighted by a figure relating to the number of aircraft movements that usually occur on a particular runway. Contours result which are known as NNI —"Noise and Number Index". The disadvantage of using this system is that whilst the noise may not greatly change over the years, the frequency of a runway use may well change and the site nuisance alter. Indeed as increased use of London airport occurs there may be a tendency towards greater use of the lesser used runways, thus making NNI figures come closer to actual decibels (dBA). The NNI contours are shown on Map 2* and the wards where the grant scheme operates is rather larger than the 50 NNI contour.

(3) London airport operates a monitoring system whereby planes using No. 1 runway for take-off over Cranford are "monitored back" to a figure of 110 PNdB during daytime and 102 PNdB at night. Where a pilot fails to follow the monitoring the matter is taken up with the airline concerned.

It may be unwise to base a policy of sound protection on monitoring and frequency of use procedures which could change in the future if found necessary. The actual noise experienced on the ground is probably a safer guide.

* See wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

5. Motorway and main road noise

Experience alongside the M.4 motorway has shown that close to the motorway vehicular noise can be nearly as great a source of complaint as aircraft noise.

The Greater London Council publication *Traffic Noise* gives a kerbside figure for heavily used traffic roads as follows:

	Day	*Night*
1. Motorways	83 dBA	75 dBA
2. Class I roads	76 dBA	68 dBA
3. Class II roads	72 dBA	57 dBA

At a distance of 180 feet from a motorway the loudness is halved (—10 dBA). In addition the provision of a 10 feet high barrier along the motorway halves the sound immediately and at 90 feet away the sound is halved again (total —20 dBA). Some guidance is also given as to the design of buildings alongside roads so as to mitigate the worst effects of vehicle noise.

6. Types of sound protection

Three suggestions for sound insulation are made:

(*a*) *Full sound protection for residential buildings*
This is based on the grants scheme and amounts to double glazing of all living rooms and bedrooms provision of a ventilation unit to the standard set out in the grants scheme. Provision of airbrick and cowl in the manner described in the grants scheme and provision of roof insulation.

(*b*) *Partial sound protection for residential buildings*
Three rooms including one bedroom in the case of a dwelling containing five or more habitable rooms or two rooms including one bedroom in the case of a dwelling containing four or less habitable rooms shall be soundproofed in the manner suggested for (*a*) above. In addition the dwellings shall be so constructed as to render practicable insulation works in accordance with the scheme being extended to further rooms as may be desired in the future.
A private developer who voluntarily undertook to provide sound protection for new two bedroom maisonettes at Bedfont, has provided the information that for an increase of cost that worked out at £80 per room, it was possible to provide double glazing—one window per room—to insulate the roof to the grants standard with vermiculite, and to provide two air units, one to extract the air and another to draw air in. The work was, however, limited to two rooms only and electric fires provided the means of heating. This figure seems to be a little on the low side.

(*c*) *Future sound protection for residential buildings*
That dwellings shall be so constructed that whilst no sound protection is inserted at the present time, the insertion of soundproofing will be practicable if at some future date this becomes desirable.

Other Buildings

Schools

No recommendation is made for this. It is felt that the Education Authority will make its own arrangements under Regulations made by the Department of Education and Science.

Printed image digitised by the University of Southampton Library Digitisation Unit

Offices

It is suggested that an applicant should be informed of the desirability of installing double glazing and air conditioning in suitable cases.

Other Structures

It is suggested that the applicants be informed if a proposed building is within an area where soundproofing is generally desirable.

For the purpose of administering sound insulation a residential building should be defined as one in which people normally live and will include hotels, hostels and all residential institutions.

7. Where to apply sound protection requirements

Map No. 1 shows the incidence of heavy aircraft noise over the whole of the borough whether or not it results from tak-off or landing or is experienced frequently or not so frequently.

It is felt that this is a safer guide for deciding on the locality where sound-proofing should be required rather than basing a policy, as does the Wilson Report, on a combination of noise and frequency of occurrence projected only until 1971 and embodying features which could change.

(1) *From the information collected for this report it would seem only right to aim at a noise level inside a living or a bedroom of a figure not greater than* 60 *dBA, and if the full soundproofing envisaged by the grants scheme is taken as a guide then this, as outlined in* 6(*a*), *ought to be insisted upon wherever the district noise level is* 100 *PNdB or greater.* This assumes that the sound-protection at average frequencies produces a reduction of around 40 dBA.

(2) *Outside the* 100 *PNbB contour and descending to* 90 *PNdB the partial sound-protection mentioned in* 6(*b*) *should be insisted upon,* and it will be noticed that this area goes considerably beyond the area covered by the grants scheme. Nevertheless these are the noise levels inflicted upon the Borough. 90 dB a point twice as loud as the point where "normal conversation is difficult" and it is suggested that this fact should be recognised and steps to mitigate the nuisance should be taken accordingly.

Map No. 3* is also included as an illustration of the incidence of complaints from aircraft noise based on this Council's Social Survey carried out in 1967. The map shows the percentage of all respondents in an area where major complaint about the locality was aircraft noise. It will be seen how this map supports the findings of Map No. 1 and that Chiswick was by no means exempt from complaints. Indeed the Hartington Road area has as high a percentage of complaints as parts of Heston and Bedfont and this is borne out by Map No. 1 where a 90 PNdB band crosses the Hartington Road area, although remote from London airport.

8. Motorway and main road noise

According to the Scientific Adviser to the Greater London Council a motorway without baffles or barriers is liable to produce a continuous noise of 83 dBA by day, a level which will fall to 73 dBA at a distance of 360 feet away.

(3) *In general therefore residential building should be discouraged at distances closer than* 360 *feet to a motorway both to overcome noise nuisance and to provide parkway treatment. Where, however, refusal of consent is impracticable, it is suggested that sound proofing should be insisted upon for a distance of* 200 *feet from the motorway and according to circumstances partial soundproofing for a*

* See wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

further 100 feet. When, as will often occur in Hounslow, a steady motorway noise adds itself to a higher figure of aircraft noise, full sound-protection should be insisted upon, although when two random sounds are added the increase is not very great. The aim, it is suggested, should always be so to arrange the detailed planning and soundproofing that residents enjoy a noise level in the building that does not exceed 60 dBA.

Each case will have to be considered on its merits. The noise from a motorway is lessened by baffle walls if placed in a cutting. Elevation on its own does not apparently assist in noise reduction. In all cases the aim will be to achieve by appropriate sound-protection a room level of noise not exceeding 60 dBA.

(4) *Similarly with regard to main roads. Mostly these are built up, but applications for new dwellings will continue to occur. The 76 dBA noise level will call for sound protection on the frontage, where partial sound-protection should be sufficient, but at 200 feet away—65 dBA—a dwelling should not require sound protection as screening will probably reduce the noise impact still further. If, however, aircraft noise is adding itself to traffic noise, sound protection may be found to be necessary if a new building is to enjoy the 60 dBA quiet that should be the aim of planning control. Again the addition of two random noises does not greatly increase the level over one noise on its own.*

9. Noise nuisance likely to arise in the future

This is a subject which can hardly be ignored but on which detailed guidance is not possible. The Greater London Council have indicated a general intention to provide part of a motorway box across Grove Park, Chiswick. The exact alignment is not known, nor is it known if any noise mitigating features will be included in its construction. Little of the sort was attempted during the construction of the M.4, though at that time the noise aspect was probably not fully appreciated.

The Chertsey Road will become a motorway feeder to the M.3, and this Council has road proposals such as the Heston/Norwood bye-pass road.

(5) *It is suggested that it would not be unreasonable where projects of this nature are expected to take place, however uncertain the details may be, to insist at least upon a form of building construction which would readily permit of sound protection in the future if this should become desirable.*

When details of any such proposals are reasonably settled then it would be the duty of the Planning Authority to apply the principles outlined in Section 8 of this report to all applications for new residential buildings.

This report is submitted as a set of suggestions for sound protection based upon the information supplied by London Airport. The Committee may be prepared to accept these suggestions provisionally or some modification of them. It would be most desirable, however, for the report to be scrutinised by British Airports Authority, particularly with regard to developments at London Airport, and by the Scientific Adviser to the Greater London Council whose statistics have been used in preparing the suggestions. A further report would then be submitted in the light of these consultations.

IT IS RECOMMENDED ACCORDINGLY.

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 1

Comparative Chart of Noise Levels

	Decibels	
Threshold of pain and injury	130	Present maximum noise level experienced outside London Airport and resulting from Boeing 707 on take-off
Riveting on steel plate at 6 feet distance	120	Maximum noise for Boeing 707 on landing and only experienced close to London airport boundary
Electric train on steel bridge at 20 feet distance	110	Level of day monitoring over Cranford by Airport Control
	102	Level of night monitoring over Cranford by Airport Control
	100	In 1963 at this level Ministry urged refusal of planning consent for housing
Heavy diesel vehicle about 25 feet away	92	
	90	Point at which Ministry of Aviation were accustomed to urge that planning consent for dwellings should not be granted as living conditions would be "intolerable". Now "sound protection" is urged instead
Daytime kerbside noise from motorway	83	
Ringing alarm clock at 2 feet	80	Above this point normal conversation is difficult
Daytime noise at kerbside of busy traffic road Inside compartment of suburban electric train	76	
Inside small sports car at 30 mph	72	
Vacuum cleaner in private residence at 10 feet away	69	
Noise in a typing pool	65	
Soft whisper at 5 feet	34	

The decibel system of measuring sound levels is a logarithmic and an inexact one and is basically a measure of pressure on the ear drum. It varies with frequency since with a constant output but with a change in frequency the decibel figure will vary, increasing upwards as frequency increases.

There is no exact point at which one sound can be assessed as being twice as loud as any other sound, but experiments seem to show that when the decibel figure has advanced by 10 the sound appears to be twice as loud as previously.

"PNdB", "dBA" and "dB" are different methods of measuring noise levels. According to the system used, results may differ to some extent.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

NOTES OF PROCEEDINGS
FRIDAY 22 NOVEMBER 1968

CHURCH HOUSE,
GREAT SMITH STREET, LONDON SW1

Before: the Hon. Mr. Justice Roskill (*in the Chair*)

Professor Colin Buchanan

A. Goldstein, Esq.

A. J. Hunt, Esq.

Professor D. Keith-Lucas

Arthur Knight, Esq.

Professor A. A. Walters

J. Caines, Esq. (*Secretary*)

Oral evidence taken from:

The British Association for the Control of Aircraft Noise
(*Mr. E. Epson, Miss I. M. Eates and Mr. R. Briggs*)

United Kingdom Federation against Aircraft Nuisance
(*Mr. G. Holmes, Mrs. M. St. A. Moore, Dr. S. Rundle and Dr. R. W. V. Stephens*)

Noise Abatement Society
(*Mr. J. Connell and Mr. B. Anstey*)

Local Authorities Aircraft Noise Council
(*Councillor J. T. Goss, Mr. L. E. Holland and Mr. G. N. Waldram*)

Community Plans Inc., Los Angeles
(*Mrs. M. L. Crockett*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

438. *Chairman*: It might be helpful if I were to say a little about the background to this session and the way in which the Commission decided it should be organised.

When we put out our call for evidence last July, we received from a large number of different associations and individuals a considerable volume of evidence about aircraft noise and nuisance. The Commission thought that the importance of the subject and the evident public interest in it were sufficiently great to justify setting aside a whole day during a whole series of public hearings so that some at least of the main points could be discussed and, if necessary, clarified in public.

But we have had evidence from so many different organisations and individuals that our decision requires us to determine which of the large number of organisations and persons should be asked to come and discuss their evidence and present it to us. As I think most of you who have been good enough to come today know, the Commission decided in the end that we would ask three groups only to come and represent all of those who had made written submissions to us. We hope that that solution has commended itself to all of you as both sensible and practical. Its purpose is to ensure that all the main points are covered while avoiding unnecessary references and also placing too large a burden on the time of individuals concerned.

I should like on behalf of my colleagues and myself to express our gratitude to the three nominated groups for their readiness to come and act as co-ordinators and spokesmen. In addition to those three, the Commission decided to invite the Noise Abatement Society to help because one part of its written material contains some useful reference about the cost of noise which justified that being considered as a separate matter at this session. We propose to deal with that this afternoon.

I should like to take this opportunity of emphasising that this is very far from being the only opportunity which those of you who are interested in the problems of noise and aircraft nuisance will have of bringing those problems to the Commission's attention. When we get to the Stage II local hearings, noise will almost certainly be one of the issues which will fall to be covered and it again will be almost certainly covered, perhaps in depth, at the final Stage V public inquiry.

There is one other thing which I want to emphasise in conclusion to which the Commission attaches a great deal of importance. I must ask witnesses to be good enough to listen carefully to what I am going to say. We attach an enormous amount of importance to the problem of noise and its relation to any third London airport, and we recognise that lessons can be learned from the experiences to date at both Heathrow and Gatwick. But people must not think that it is any part of our power or duty to deal with day-to-day problems of noise at those two airports and we cannot allow ourselves, and we shall not allow ourselves today or at any other time, to become the focal point of complaints about noise and nuisance at those two airports. I hope that witnesses today will be good enough to keep that in mind, because we shall have to keep witnesses to the points on which we want the benefit of their help, and we are not concerned, as I have said and as I repeat, to become the focal point for large numbers of complaints which may or may not be justified about what people are suffering from as a result of noise at Heathrow and Gatwick. However, the lessons to be learned from there are of great value to us in siting, if we have to site, a third London airport.

British Association for the Control of Aircraft Noise

MR. E. EPSON, MISS I. M. EATES and MR. R. BRIGGS called

439. *Chairman*: Mr. Epson, you have been good enough to come, together with Mr. Briggs and Miss Eates, from the British Association for the Control of Aircraft Noise. Am I right in thinking that, in addition to representing your own Association, you are covering the case of the Dorking and Horley Rural District Council?——(Mr. *Epson*) Yes, that is correct.

440. Together with the Kew Association, the Chelsea and Kensington Action Committee and the Cranford Association?——Yes.

441. You are the Chairman of BACAN?——Yes.

442. Mr. Briggs is Secretary of the Kew Association and Miss Eates is Chairman of the Chelsea and Kensington Committee. Would you begin by helping us on one matter, because it is not always easy, coming from the outside to this problem, to know how the various organisations fit

Printed image digitised by the University of Southampton Library Digitisation Unit

in one with another. How do you fit in with the Noise Abatement Society and the other organisations which are coming today?——I think that I can best illustrate this by explaining that we are a co-ordinated body of 66 associations and local authorities throughout England. We have associations at most of the airports. We are interested only in the control of aircraft noise. When we were formed, the specific thing which was laid down was that we were in favour of the control of aircraft noise, but not in favour of any interference with the aircraft industry more than was absolutely necessary. We are not against aircraft. Does that answer your question, Sir?

443. Not entirely. What is your relationship with the other organisations? I want to avoid duplication as much as possible. ——The Noise Abatement Society covers all aspects of noise. Broadly speaking, our policies are similar. In regard to the London Aircraft Noise Council, and so on, I do not know the third organisation.

444. Have you any connection with the United Kingdom Federation Against Aircraft Nuisance, who are coming at half-past eleven?——None.

445. Would I be right in thinking that the main philosophy of your Association is that ground users should have complete priority over airport and aircraft users? ——No.

446. How far do you go?——Aircraft must learn to live with people. The operative word is "learn". We consider that in the end the aviation industry must continue and work so as not to interfere with people, but this is going to take an immensely long time. This, we hope, will be the result of a noise certification scheme, or a similar idea —the gradual reduction of noise at source. But until that time, we need a series of palliative measures to improve the situation. However, they cannot occur immediately, because this is just impossible in the present state of the art.

447. What palliative measures do you suggest?——The biggest problem in England is Heathrow. I do not want to go into the details; you have read them, and other people will be bringing the matter up today. But the position there is pretty appalling. The one thing that can give some relief is an airport on the coast or in a position where unlimited noise could be made. There are many reasons for this which I have given in our written evidence to you. The first is that it will at least prevent the new and very much noisier aircraft from coming to Heathrow. This would be the end for the people round Heathrow. They have put up with an awful lot. We have the problem of the Concorde. In the evidence you have before you, there is a statement by Mr. Abel, who is the Chief Engineer of BOAC*. He points out that it may not be possible to have the Concorde at Heathrow because of sideline noise. If the aircraft is too noisy to go to Heathrow at the present noise limits, either you do not have it at Heathrow, in which case where do you have it?—and Mr. Masefield in his evidence said that it was essential that it went to Heathrow— or you change the noise limits at Heathrow to allow it to go there. This has happened time and again. People round the airports have had to take the responsibility for the increased noise of aircraft. I think that the Concorde is just too much for them to accept. The 747 is another aircraft which is coming. They have the possibility of the civilian version of the Galaxy—another very, very large and noisy aircraft. All these will come to England. If they have to come to Heathrow, it will very much increase the burden they are taking at the moment. On the other hand, if there is a coastal airport, they can go to it.

448. Is it part of your policy that any third London airport should enable Heathrow or Gatwick to be closed down?——No. I do not think that this is practical; I do not think that it is possible. There is too much invested in Heathrow. There are too many jobs and other things. But we think that there are many advantages which could occur from this airport on the coast, not only to the people of Heathrow, which must be the prime consideration, but to the people who would otherwise be affected, and, thirdly, to the aircraft industry itself.

449. Am I right in thinking that you are not urging that the new airport should be of such size as would enable Heathrow and Gatwick to be closed?——No. When it comes to the size of the airport, this is beyond our competence. We are merely interested in relieving Heathrow from its heavier, noisy aircraft and from some of the extra flights which will obviously come, and not subject another area to the same type of noise.

450. In paragraph 3(*b*) of your first memorandum of evidence, you refer to paragraph 31 of the Government White Paper†. You appear to favour a six-runway airport.——This is possible.

*Not reprinted.
†*The Third London Airport* (Cmnd. 3259, HMSO, 3s.).

Printed image digitised by the University of Southampton Library Digitisation Unit

451. What is possible?——We favour a six-runway, but Mr. Masefield, in his evidence, suggested that you merely need ten runways altogether.

452. That is a different point; stick to the point for the moment. Are you favouring a six-runway airport?——Yes.

453. Have you any evidence at all of the successful operation of any six-runway airport anywhere in the world?——No; but this was not our suggestion. This was the suggestion in the Paper.

454. Forgive me for correcting you, but it was not the suggestion in the Paper. It was a statement, rightly or wrongly, of what purported to be a fact. Are you proposing that there should be a six-runway airport?——No.

455. Then I do not quite follow the purpose of including paragraph 3(*b*) in your paper.——A six-runway airport would be sufficient to take the increase in traffic and for the traffic which would be necessary.

456. What evidence have you got for that?——I think that the evidence of Mr. Masefield the other day would be sufficient.

457. Mr. Masefield did not say that the other day. Have you read the transcript?* ——Yes, I have. He wanted ten runways altogether.

458. He said that if you closed Heathrow and Gatwick you would have to have a ten-runway airport.——Yes.

459. Are you suggesting that this should be a six-runway airport to enable a reduction in traffic to be made at Heathrow?——Yes.

460. Where do you suggest that it should go?——On the coast.

461. Where?——We would not state a definite place. There have been suggestions of Foulness. We have not the competence to explain exactly where the airport should go.

462. Have you considered the implications from the traffic and noise point of view of the land traffic generated by a six-runway airport?——In regard to the traffic, this is beyond our competence. In regard to noise, this is not as great a problem, in our consideration, as the problem of noise at Heathrow at the moment.

463. Have you considered any single coastal site which could take a six-runway airport?——I believe that the Foulness site could.

464. Have you seen any drawing, suggestion or plan from anybody to the effect that it could be a six-runway airport? ——One of the schemes suggested that this could be a four-runway airport and that, if necessary, it could be extended.

465. Nobody has put that suggestion to us as a concrete proposition as yet. How are you going to fit in all the resulting surface traffic?——Are you referring to roads and rail?

466. Roads and rail and the resulting noise.——As was said when Mr. Masefield was questioned, roads and rail is a matter of how much one is prepared to spend.

467. Noise from that traffic is not a matter of how much one is prepared to spend.——Road noise is, to a certain extent, controlled. The maximum noise level of vehicles is controlled. Road noise is at least at the side of one's house. It is not over the house or in the back garden. Road noise is controllable by the individual; aircraft noise is not.

468. Let me come back to the suggestion of a six-runway airport. Have you any evidence to put before us as to the practicability of operating such an airport?——No.

469. What reason have you to suggest that experience in any other country suggests that it is a practical proposition? ——The experience in other countries of six-runway airports is, as far as I know, nil. On the other hand, experience of aircraft noise in other countries is immense and everybody is trying to do something about the problem. To our mind, the only real solution is a large airport.

470. But a large airport will create even more noise than small ones.——Not if it is correctly sited.

471. You do not have a positive site to suggest beyond a general reference to Foulness?——A reference to an airport where the line is not over people.

*Q.92.

Printed image digitised by the University of Southampton Library Digitisation Unit

472. I do not know whether you have considered this, but if you reduce Heathrow and shift the major part of the emphasis to another airport on the coast or somewhere else, one of the problems is that all the traffic which is at present going to Heathrow from the Midlands must go east of London. Have you considered the effect of that on the people living in the big conurbations in the Midlands?——No.

473. Their interests are to be wholly ignored?——No.

474. How do you deal with their interests?——The problem of transport to an airport is not as major a matter as the problem of aircraft noise round Heathrow at the moment, or round a future airport inland.

475. The complaint of one of Miss Eates's associations concerns the amount of road traffic on the M.4. So far as the Chelsea and Kensington Association is concerned, that seems to be a matter of which they complain very much. Do you share their view or not?——Road noise in London is a problem; but if you are taking a large road from the Midlands to an eastern seaport, you are not bringing it through London where you already have such a high noise level.

476. Where is the large road from the Midlands to an eastern seaport?——Not to the seaport—to the airport.

477. Where is the large road?——If this is a problem, you have to bring people there, forward and backwards, somehow or other.

478. The distance from, say, Birmingham would be, I suppose, about 140 or 150 miles. You expect people to have to travel 150 miles in order to fly to America so that the noise problem is lessened for someone else?——If they have to fly from Heathrow, they must get down the M.4. Anyone who tries to do that knows that it is not exactly pleasant———

479. That is returning one argument with another; it does not meet the point. Anybody going from the Midlands to Foulness must travel an enormous distance by road.——They have to travel to London through London now anyway.

480. They do not have to travel through London at the moment. They skirt it and come round the west. Let me turn to something else. Do you accept NNI as an appropriate way of measuring noise?——Yes.

481. Do you agree with the Wilson report* that the maximum acceptable level is between 55 and 65 by day and 30 and 40 by night?——No.

482. What do you accept?——I would say about 40 to 45. This is the type of level which is now being taken———

483. Day or night?——By day.

484. What about night time?——About 15 under that—about 30.

485. Why do you quarrel with the Wilson report?——Because I think that the attitude to aircraft noise is getting less complacent. Things were accepted which are no longer being accepted. We accept that 50 or 60 is intolerable. I think that a figure less than this would be very much more preferable.

486. Of course it would be; but the question is not what is preferable. The question is, what is acceptable?——I do not consider 50 to 60 acceptable.

487. If you look at paragraph 304 of their final report, you will see that they thought that it was above that that the annoyance became intolerable. Have you any evidence to contradict the view of this very experienced body of gentlemen?——The evidence of people living within the areas. I have continual complaints—we all have—from very many areas where you do not get to 50 NNI. I would say that a figure between 50 and 60 is not acceptable on these grounds—that people continually complain of the noise level above this figure.

488. There is one very striking fact—and I hope that we shall have evidence from Mr. Anstey this afternoon on this—and that is the extraordinarily small amount of evidence there is about the effect of aircraft noise on the value of property. Can you help us on this?——Yes, I think so.

489. We should be very grateful if you could.——When you get an airport in a community, there is, by definition, a large number of workers who wish to work at the airport and to live nearby. There is thus a great pressure to buy houses near the

**Noise, Final Report* (Cmnd. 2056, HMSO, 19s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

airport. What happens is that those people who can afford it move out. Those people who cannot afford it live nearby.

490. I was told the other day that some people who work at Heathrow would like to live near Heathrow but cannot afford the houses there.——In London there is an immense pressure which keeps the price of houses up.

491. I am not talking about London; I am talking about houses at Heathrow. ——There is this terrific pressure from the number of workers there who wish to live near the airport.

492. And, therefore, they are prepared to put up with the noise, awful though it may be from time to time, rather than have the burden of motoring or going by public transport long journeys. This is one of the curious features.——In many cases, they cannot get accommodation anywhere else. People who have not much money have not a great choice about where they live.

493. Some of the lower paid workers live further away because it is cheaper to live further from than near to Heathrow. There is some evidence of that. I am not saying whether it is right or wrong.—— There will always be, because, as the Wilson report showed, there is a percentage of people who are not affected by aircraft noise.

494. This is one of the extraordinary facets of this problem. Paragraph 298 of the Wilson report says: "There are, in fact, many people intensely annoyed at all levels of exposure to noise covered in the survey (10 per cent of the adult population in the outermost zone), and by contrast there are also many (about 30 per cent of the adult population in all zones) who are unconcerned by the noise whatever its level". Do you accept that?——Yes.

495. This is what makes this an intractable problem.——It makes it extremely difficult, because those people affected by noise usually move out; they just disappear from the area. People who are not affected move close to the airport.

496. Have you anything on which to base that statement?——I live near an airport.

497. Have you anything on which to base that statement?——That people move away, or that people who are not affected move close?

498. Would the shorthand writer read out the witness's statement?

(The shorthand writer read the following answer: "It makes it extremely difficult, because those people affected by noise usually move out; they just disappear from the area. People who are not affected move close to the airport".)

499. Have you any evidence to support that, Mr. Epson?——I would say personal knowledge and common sense.

500. Never mind about common sense. What is your personal knowledge?—— That those people I have known who did not like noise fullstop have moved away from the airport.

501. How many?——In one's personal knowledge, perhaps half a dozen.

502. A very small number, is it not?—— A small number of my personal friends; whereas people who live round an airport, particularly those who need to live round an airport because of travelling distances, (*a*) are not affected because they accept it, and (*b*) think that it is part of their job anyway.

503. You said earlier that you also represent the Dorking and Horley RDC. ——Yes.

504. They have been good enough to put in a paper*. In paragraph 8 they refer to a drop in property values caused by airports and aircraft noise. Is there any evidence of that? We should be interested to have it if there is. The paragraph refers to Gatwick. It is very easy for people to come and make these statements about the effects, and then when one probes them a little to find the evidence one finds little on which to base these wide general statements. We have to make up our minds about how important noise is. Can you tell us what evidence there is to support the allegation that there is a drop in property values caused by airports and aircraft noise?——No, I cannot. I know of instances of expensive houses having dropped markedly in value. I could have that information sent to you. I cannot show any evidence of a drop in the value of cheaper houses because the pressure for housing is so very great.

*p. 143.

Printed image digitised by the University of Southampton Library Digitisation Unit

505. In paragraph 8 of a letter sent to us which your organisation wrote to the Dorking and Horley RDC on 10th August* it is suggested that there should be an increase in landing fees for noisy aircraft. Have you seen what Mr. Masefield said about that?——Yes.

506. Do you wish to comment on it?——No. I only wish that he had given me those facts when I once discussed this with him.

507. Now that you have the facts, if they be the facts as he gave them to us, do you wish to comment on them?——I am trying to get some evidence to see whether he is right or wrong. I presume that he is correct.

508. We should like to know, because this is important.——It is something that we had based our suggestions on for many years—a variation in landing fees. It always struck us as the one method by which you would obtain quiet aircraft—by giving a financial incentive to manufacturers to produce quiet aircraft. This struck us as the most practical way of doing it. But, according to him, the part that the landing fees take in the costs of an airline are very, very small.

509. Therefore, it seems to follow, if he is right, that you have to have what one might call a swingeing differential to have any effect?——He suggested ten times.

510. Yes, something like that. Have you considered, if this country started to do that, what may happen in other countries?——One would hope that it would not necessarily be a vast increase—I am thinking on my feet now—but a vast variation; not necessarily that the total landing fees would be increased, but there would be a very great variation between the noisier and quieter aircraft.

511. Once you start introducing discrimination as between one airport and another in one country, other countries take it up, or they may do so?——One would hope that they would.

512. The Kew Association† have also referred to the possibility of an airport with more than four runways. I do not want to go over the whole ground, but am I right in thinking that, like you, they have nothing concrete to go on as to the feasibility of a six-runway airport?——(Mr. *Briggs*) I had better answer that as I am here on behalf of the Kew Association. May I say, first, that I am not, as you mentioned, Sir, the Secretary of the Association. I am merely an officer.

Chairman: I was misinformed. I am sorry if I demoted, or promoted, you.——I mention that because the Secretary is here today. We take the view that it is not for us to find a solution; it is not for us to state the need. I think that that represents our view.

513. The point is that it is difficult to know how to meet the need.——But one of the necessary parts of the operation is to find out exactly what the problem is. This is what we have concentrated on. I should like to quote what Senator Kennedy said on this at a meeting which he organised at Logan Airport in Boston. He stated: "It goes without saying that none of us are experts. We must rely almost totally on second-hand information and opinion. We cannot by ourselves answer the complaints of our constituents intelligently. Yet when we look for assistance we find that we cannot even make an intelligent choice as to where among the many responsible agencies, organisations, corporations and individuals we can get an adequate answer". This shows that the problem is very similar all over the world—or, at any rate, at the big places.

514. I do not think that anybody would dissent from that. The problem is to find a solution.——I am hoping that in the course of your Inquiry you will hear evidence on this subject. We have examined the three reports that have been presented in regard to Foulness. I refer to those reports put forward by the Noise Abatement Society,‡ that offered by Bernard Clark & Partners§ and that offered by Sir John Howard & Co.¶ The two latter ones certainly seem to offer the possibility of reclaiming sufficient land to produce physically an area large enough for more than four runways. There is some evidence on the question of whether it is possible to operate more than four runways simultaneously. I think that Mr. Masefield's evidence to this Inquiry made it clear that there might be some improvement in air traffic control techniques which would make that possible. We hope that that is so, but we cannot say; we are not experts.

515. It is true that there have been suggestions that you could get in extra runways by reclaiming. But when I said

*p. 148. †p. 159.
‡Available from The Noise Abatement Society, £3 3s. 0d.
§Available from Bernard Clarke & Partners, 39 Victoria Street, London, SW1.
¶Available from Thames Estuary Development Company, Craven House, Kingsway, London, WC1.

Printed image digitised by the University of Southampton Library Digitisation Unit

what I said earlier, I was not referring to reclaiming; I was referring to existing land. So far as I am aware, nobody has suggested a site which would take six runways on existing land.——I am sure that you are right.

516. I do not know whether you have anything to say on the question of the cost of reclaiming land on a sufficient scale to enable this mammoth airport to be built? ——What everybody says when this question is raised is, "Look at the Dutch." We have not looked closely at the Dutch, but we have seen in general terms the kind of operations they have undertaken. It appears that this is physically possible. The question of cost is very complicated because it depends so much on how you approach the question—how you evaluate cost, whether you take into account cost benefit, the loss of amenity, and so forth. Apart from amentiy, there is the question of transport costs which are involved in matters such as congestion at Heathrow caused to traffic not going to the airport, the enormous amount of congestion caused to non-airport traffic by the airport traffic.

517. And vice versa?——Yes, of course.

518. I do not know whether you would rather deal with this or Miss Eates, but one of the complaints of Chelsea and Kensington* is the immense load of extra traffic that Heathrow necessitates going down the Cromwell Road to the M.4. Many of us are familiar with that. Why will it be any better if the airport is put at Foulness? ——(Miss *Eates*) The expert member of my Committee on this, Professor Hugh Ford, the head of the Mechanical Engineering Department of Imperial College, made the suggestion to us that if Foulness, which is the site we have always favoured, were to be used, a vast central traffic terminus which would take all the London traffic could be placed, say, at St. Pancras Station, which would provide an ideal site, with its large disused marshalling yards, and so on, behind it. We are all agreed absolutely that traffic to an airport essentially must be segregated from all other traffic. It means vast engineering costs for providing both rail and road facilities, because we are fully aware that, although passengers probably should be, to take Mr. Masefield's line, processed at the passenger terminal in London, presumably this would not apply to freight, which would need road facilities. Passengers joining from the Midlands and other areas could not be necessarily brought in to your central terminal at, say, St. Pancras; it might be necessary to provide a series of stops en route for them to join. But Professor Ford felt very strongly that if the main communication for passengers was based even on conventional traction at the rate of 150 miles an hour, joined to a road system possibly built under or over the railway which would provide your freighting facilities, and for those people wishing to join there from other points by car, this would entirely remove the airport traffic from interfering with——

519. You are envisaging for your suggested airport at Foulness an enormous motorway and new railway in from Foulness to St. Pancras and the King's Cross area?——This would be essential.

520. Have you any idea what that would cost?——We have not gone into the cost. We feel that this is the problem which must be faced if a satisfactory solution is to be found. It is not for an organisation like ours, which is examining only the effects of aircraft noise upon our area, to bring forward anything in the way of expert suggestions.

521. If Foulness were the right site but it was not an economic proposition to put a road or rail link specially there, at any rate at first, all that your suggestion would do would be to transfer the present M.4 problem to the East End of London and make it worse?——Yes; we face that. But the provision for aircraft on the scale that we are to have in future—to provide for the Concorde and other supersonics, and to provide even for jumbo jets—seems to us to call for a national solution. When one considers that we are throwing away £600 million on Concorde—and I say that advisedly—it seems to be ridiculous that we should not be prepared to think in the same terms for providing facilities for the reception of those aircraft.

522. Professor *Buchanan:* I should like to ask one question, because I think that your evidence, Miss Eates, puts us in a difficulty. In your document†, you said that an area of about 15 miles radius round a major airport is adversely affected. ——Yes.

*p. 152.

†Chelsea and Kensington Action Committee on Aircraft Noise. A Report: a Study of the effects of aircraft noise upon the Royal Borough of Kensington and Chelsea. 1968. p. 33. 7s. 6d. Available from CKACAN, 30 Mallard Street, London, SW3.

Printed image digitised by the University of Southampton Library Digitisation Unit

523. You went on to say that with supersonic transports and jumbo jets that might go up to 20 to 25 miles.——On that we have no evidence.

524. I am not thinking at the moment of the noise impact on existing towns—we are fully aware of the fact that there is this risk of noise on existing settlements—but somewhere, associated with an airport of the size we are considering, there must be a major urban development, perhaps of a quarter of a million people. If the suggestion for a six-runway airport were adopted, it would be about half a million people. Therefore, the problem we are faced with is that if we follow your advice we would put a city of a quarter of a million people 25 miles from the airport. So, not only are we involved in the great difficulty of communication with London, but you have an even bigger problem arising than Heathrow of just getting people to work at the airport.——I do not think that this happens. Whereas with a land airport the lines of communication from the various stacks of aircraft pass over land altogether, if the aircraft were stacked over the water—and again I have the various Foulness plans in view in saying this—and the approach routes are therefore from the main stacks to the airport mainly over water, the chief difficulty does not arise, because the distance that we have mentioned of at present up to 15 miles and possibly later up to 20 or more miles is a difficulty connected only with approach routes. The dispersal on take-off is very much faster, and we are not concerned with take-off nuisance in the Borough of Kensington and Chelsea. Occasionally we hear aircraft which are leaving, but the extent to which they trouble us is minimal. On the other hand, we are worn out by approach noise. It is therefore only the question of approach noise which must be considered when you are siting your town. If you take your approach over the sea, you could bring your airport town much nearer to the airport if it were on the coast.

525. May we therefore modify your radius of 20 miles to a semi-circle of 20 miles?——In the case of a coastal airport, yes; but I do not think it operates in the case of an inland one.

526. I do not follow that. If you take Foulness, for example, to the west of Foulness is a considerable built-up area round Southend.——The approach routes on most of the plans I have seen seem to be able to avoid the Foulness conurbation. The nearer you come to the airport, the narrower are the approach routes, whereas the dispersal of the aircraft coming in from the stacks to the approach route is what causes the large area which is affected to be on the immediate radius of the airport itself.

527. *Chairman*: May I come back to the pathetic picture of the inhabitants of Kensington and Chelsea being absolutely worn out. Why do people live in Chelsea and Kensington if they are absolutely worn out?——It would be rather difficult for most of us to move away from Kensington and Chelsea if our jobs make it essential for us to do so.

528. There are many people who live in Chelsea and Kensington who do not work there.——They do not work there, but it may be particularly convenient for their job. Where do we move to which will not be affected in West London by the growing traffic at Heathrow?

529. Quite a substantial number of people who live in both Kensington and Chelsea are in an income group which gives them about as wide choice of where they wish to live as anybody would want. ——Yes. We have direct evidence already of people moving out because of aircraft noise.

530. I wish that you would let us have it.——Yes, indeed.

531. Have you any evidence about the diminution of property values in Chelsea and Kensington because of aircraft noise? ——No, not so far of diminution of property values. But I have evidence of one successful rating appeal, and eleven rating appeals are pending on the subject of aircraft noise.

532. I should like particulars of them. We have been trying to get evidence about rating appeals.——The rating appeals came to my notice only after we had sent in our statement.

533. When did it take place?—The case is pending.

534. I thought that you said that there had been one successful rating appeal and ——The successful one was two years ago.

535. On what ground did the valuation tribunal make a reduction?——The valuation tribunal reduced it on the ground that

Printed image digitised by the University of Southampton Library Digitisation Unit

the man who appealed was suffering nervously very badly from noise to which he had not been accustomed when he first went to the property.

536. Where was the property?——In Embankment Gardens.

537. Can you let us have particulars and details of the valuation tribunal's reasons? ——I will try to obtain them.

538. What about the other eleven cases? ——The eleven new cases concern recently constructed houses in Edwardes Square. The proposal put forward by the valuation officials has been disputed by the incoming tenants of these new properties, and one of the main grounds of their objection is aircraft noise, which is now worse in that area than when the properties were first planned.

539. Are you sure that it was aircraft noise in the case of Embankment Gardens and not surface traffic noise?——In the case of Embankment Gardens, the particular flats are not on the Embankment itself; they are on a little enclave running back from it.

540. Not very far back?——No.

541. Mr. *Knight*: May we take further this interesting point about the cost? You mentioned an individual who suffered as a result of noise. Is there any evidence of medical costs that might be incurred by individuals or by the State?——We have tried to give a selection of cases—it is a very small selection—from our enormous files. We have stated perfectly frankly that we cannot see any method of putting on paper a cost evaluation for this. On the other hand, it is quite clear that if people are doing a limited amount of work in a given period owing to aircraft noise, there is a definite cost disadvantage. In the case of the use of tape recorders, this is quite definitely a financial hazard which we cannot evaluate—because how do you evaluate it? Very frequently, if a tape is being transcribed on a typewriter by a typist, she may not be able to follow it. She may have to hold up the correspondence and go back to her employer to find out about it. In the case which I have cited of a journalist and author who is now working on memoirs, the disadvantage is not so great because he is doing the transcription. But I am sure that I could get one or two of these tapes for the Commission if it would be of use.

542. As you have indicated, the problem is to evaluate this evidence because, as you say, of the large cost which might be incurred. May we take the other point? You mentioned earning power. Have you any evidence of people's earning power suffering?——May I take my own example in this case because it is one of the most practical things to do. I was recently engaged on translating an extremely difficult Italian work of fiction written in a particular style which requires to be rendered if one is to make it acceptable to the English reader. On many occasions during the peak period, I simply found it absolutely impossible to find the right word. It is not that the text is difficult, but the rendering of the nuance of the text is almost impossible. This became so frequent an experience that I used to try to make the periods which I spent on this work coincide with those periods when I knew that the traffic was not likely to be so heavy. That is a fairly good instance of a definite cost disadvantage. I cannot assess my time. If you like to put my time at £2 an hour, I suppose that I could work out some figure based on the hours that I was held up.

543. Has your Association tried to collect more general evidence which might help us?——We will certainly set forth and see if we can gather more on the basis of what we have done. What we have put out in the report is only a tiny part of the evidence which has reached us by letter, by telephone, and in conversation.

544. You will realise from the general drift of our questions that we are looking very much for a valuation, the money effect. We are conscious of the problem. ——We are very concerned with this cost benefit aspect and we are very conscious of the necessity of it.——(Mr. *Briggs*) I wonder whether you would permit me to say a word?

545. Professor *Walters*: One of our difficulties, as we have said often enough, is that we can read evidence which takes the form of a large number of letters of complaint, but it is very difficult to put numbers on it and to put it into a consistent system of valuation. I wonder whether you or your associations would be willing to accept a certain principle of valuation of noise. May I refer to the Dorking and Horley evidence* of a drop in property values? It seems to me quite astounding that there is a drop in property values, because the evidence we have is

*p. 145.

Printed image digitised by the University of Southampton Library Digitisation Unit

that property values have increased quite substantially. What I think one might suggest is that the whole of the valuation of noise might be taken into account in differential property values. Would the associations accept this as a major principle of valuation?

Let me give an illustration. Suppose that we found that from 1950 or something like that to 1968 houses in the flight path of Heathrow were increasing in value at a rate which was much less than the rate at which houses off the flight path into Heathrow were increasing in value. Would that differential applied over that area represent what you would accept as a valuation of noise, or would you want to add or subtract certain things?——(Miss *Eates*) The difficulty in using this particular standard is that when people who have not previously lived in an area arrive in it they are not immediately conscious of the effects of aircraft noise on that area. This we have tried to bring out in our report very strongly. Our experience is that it is a cumulative disadvantage. It is not the first month or necessarily even the first year which puts such a heavy burden on the sufferer from it. After a certain time, it becomes with every passing month a worse and worse experience. Therefore, I do not think that property values are necessarily a sensitive index. Somebody may say, "I would like to buy a house on Cheyne Walk", which is right within the area of the ILS beam. That is a very fashionable area with a high snob appeal. Somebody going there will hear some aircraft. He will visit the property four or five times before deciding to buy it. But I do not think that until he has been resident there for some time will he have any notion that he has been let into a major aircraft noise area. That is one of the reasons why. Also you have the seasonal factor that with the drop in traffic during the winter period, if property changes hands during the winter, the prospective buyer would not be put off in the same way as he might be put off in the summer.

546. *Chairman*: Let me take up the question of the cumulative effect which you do not realise when you first live in Cheyne Walk. Why is it that property values remain at so high a level? One would have thought that it would become widely known that anybody going and living in that part of London was mad.——(Mr. *Briggs*). May I say something about this?

547. I would rather like an answer to the question. Can you give one, Miss Eates?——(Miss *Eates*) Yes. The westward spread of London, the spread out from Mayfair, has such a pressure still that people are not aware of it. People have only become much more acutely aware of the aircraft nuisance within the last two years because we are getting a much greater proportion of larger aircraft; and with the dense traffic pattern and the earlier junction into the final glidepath, we are getting a much higher proportion of aircraft at 2,000 than 3,000 feet.

548. Are you really saying that? The Wilson Committee reported in March 1963. They were appointed in April 1960. This has been a red hot problem for the last ten years.——I am sorry. I should have defined my statement by saying that I was applying it to our borough. I am concerned only with the evidence from the Chelsea and Kensington areas.

549. Professor *Walters*: You are suggesting then that the majority of people buy houses in Kensington and Chelsea believing that the noise is not nearly as bad as they subsequently experience it. In other words, large numbers of people are being fooled? ——Frankly, yes. (Cries of "Hear, hear".) We have already undertaken the heavy expense of double glazing our studio, and we are now considering the enormously heavy expense of sound proofing our roofs, which may cost anything between £500 and £1,000.

550. I find this extremely difficult to follow, Miss Eates, because we all read the newspapers and we see continuously accounts of the dreadful aircraft noise in the borough, and yet you still say that people do not take this into account when they are buying houses?——It is quite extraordinary. I quite agree with you. I do not account for it in any way; I merely give it as a fact.

551. If it is a fact there must be evidence for it. What evidence have you?——That they do not take it into account?

552. Yes.——The fact that they buy is the evidence, I think.

553. Then the evidence is that they do buy at these high prices and in fact prices have not depreciated. Is that the consequence of this argument?——So far as I am aware, prices have not dropped in Kensington and Chelsea on this account. Whether following this rating case this may happen I naturally would not be able to project. I think it is possible.

Printed image digitised by the University of Southampton Library Digitisation Unit

Professor *Walters*: I am seeking to follow this through, because the Dorking and Horley people have apparently seen house prices dropping. The evidence is getting quite inconsistent here, because house prices have not dropped in Chelsea. They have apparently dropped in Dorking.

554. *Chairman*: I was intending to ask Mr. Epson in a moment whether he had any evidence to support it.——I think this is quite accountable, because we have got to admit that a certain ambient noise—of traffic, and so on—is much greater in Chelsea and Kensington than it is in Horley. People go to country places expecting an absolute rural quiet. They are not asking the same standard of quietness in Chelsea and Kensington. I think this is partly it, and also there is still the fashion element of our borough which we must take into account. This is the only way I can answer the question.

Professor *Walters*: I am completely confused by this. I do not think we shall get any further on this.

555. Mr. *Goldstein*: Miss Eates, I understood you and your colleagues to say that in your view the right answer would be to go to a coastal site, entailing the construction of new motorways and the new separate transit rail link to King's Cross and St. Pancras, notwithstanding the possibly quite onerous additional cost.——Yes.

556. Who would pay this additional cost, in your view?——The country—quite frankly, all of us, because this is a social benefit as well as being an economic benefit. We now place vast investments even in purely prestige projects such as the Concorde. We also regard social welfare as being of pre-eminent importance. I think, therefore, that it is fair to say that we ought to face such a social cost if it is shown, as we feel that it is shown, that there is at present an enormous economic and welfare disadvantage for the population as a whole.

557. I understand that. I think there was some suggestion that possibly the aircraft manufacturers or the airlines would pay. I take your view that it should be a general payment made by every citizen, by way of taxes and that kind of thing.——Yes.

558. There is a difference between that kind of payment, is there not, and, shall we say, payment for National Health and social welfare, which benefits everyone? Would you agree with that?——Yes, but even there not entirely, because not all of us are in need of the services of hospitals.

559. You are extraordinarily lucky. Not all the time?——Not all the time, so it does not seem in fact so very different.

560. Did you consider this mainly as a tax revenue?——I think a tax revenue.

561. That is really all I want to know.——We linked it with the closure of Heathrow and possible recovery there.

562. *Chairman*: Mr. Briggs, you wanted to say something a few moments ago and I cut you short, I am afraid.——(Mr. *Briggs*) You have asked Mr. Epson about the question of running down Heathrow and whether his Association represented the views of the various other Associations. You will appreciate that to some extent the manner in which this evidence has been presented has been forced upon the Associations by the Inquiry. I do not quarrel with that at all.

563. I fully appreciate that. It was inevitable, as I said right at the beginning, unless we were to have a couple of hundred people here.——Naturally. In regard to the running down of Heathrow, Kew Association for the Control of Aircraft Noise takes its stand on two paragraphs in the Wilson Report. The first is paragraph 306, which says that the noise of aircraft from Heathrow has become intolerable for some people. The second paragraph is paragraph 300 which, in our view, is a most important paragraph, because it expresses the concept of nuisance being caused not only by the volume of the noise, but also by the number of aircraft. If this concept is a valid one, and we accept it, that both the noise and the number have to be considered, then if, as the evidence seems to suggest—I am talking now about the technological evidence—the noise of each aircraft cannot be reduced significantly, the other thing which can be done is to reduce the number of aircraft. We therefore say that the proper principle to be applied here is, indeed, to run down Heathrow to such a level that the number of aircraft, never mind about their noise, still does not inflict nuisance in accordance with the operation of this principle which the Wilson report put forward.

564. That view, if it is pursued to its logical conclusion, has at least two consequences, has it not? The first is that you probably have to get Heathrow down to

Printed image digitised by the University of Southampton Library Digitisation Unit

the level of a comparatively small airport and compensate by an increase in the size of the third London airport. The second is that there is, as you know better than I do, a very large investment by the airlines in Heathrow, all of which would then have to be sacrificed.——I entirely agree, but the fact that Heathrow is there is not necessarily conclusive of the question. I know that this is the view expressed by Mr. Masefield.

565. I was not saying that the point was a valid one. I was merely putting it to you as a point.——Mr. Masefield says, "The facts of life are that Heathrow is there to stay". We would rather put it the other way and say that the facts of life are that people are affected by the nuisance of this operation. If it were not the privileged air transport industry that was causing this nuisance, this nuisance would be controlled by the courts straight away. If this kind of nuisance were caused on the ground, there would be no messing about. Again, Mr. Masefield has said that he would love to be able to tear up Heathrow and start again. So clearly the original concept of Heathrow was not a very satisfactory one. There was not sufficient foresight in the whole question. What we are urging now is that there should be foresight at this stage which will enable Heathrow to be diminished. I am not suggesting that Heathrow should be reduced to the position of a third class aerodrome. It may well be that the solution would be to have a restricted number of international flights to Heathrow and the other air traffic elsewhere: I do not know.

566. That is what is called "sectorisation".——It may be so.

567. Which so far all the evidence has been bitterly hostile to on the operational side.——I understand that. I fully understand that air operators will put before you evidence which suits them. All I am trying to do is to put forward the opposite point of view and suggest possible solutions to the problem. It may be that somebody will have to decide that, despite the inconvenience to the air operators, some such solution will have to be adopted.

568. That is very helpful, Mr. Briggs. Have you got any evidence at all as to the accuracy or inaccuracy of Mr. Masefield's traffic forecasts?——The only thing I would say is that we notice that Mr. Masefield's forecasts conflict with those given by the Government in the Stansted White Paper*; but we have no means of making a decision.

569. There is this striking fact. The figures which have been produced by way of forecasts over the last ten years or so have all been wrong; and they have all been wrong by being far too low.——I think that is right, except possibly, I believe, for the last year, in which there was a fall-off in traffic.

570. It is probable—Mr. Masefield says it is certain—that that was due to the £50 travel allowance.—It may well be.

571. It did not produce a reduction. It merely produced a lessening of the rate of increase.——I think there is no question about this. On the other hand, dealing with the implication of your question here, if people want to travel by air they must pay the proper cost for doing so.

572. I fully see the force of that. What I want the benefit of your help on is this. Do you accept that from the point of view of evaluating the noise problem in siting any third London airport we ought to work on the basis that the forecasts we have been given by Mr. Masefield or anybody else as to the position over the next fifteen years are right; or do you say that they are unduly pessimistic, or optimistic—it depends which way you look at it?——In this matter I assume that Mr. Masefield knows his business. It is, after all, his business and he is in a position and has the equipment and the information to make forward forecasts.

573. You quite rightly referred to the forecasts given in the White Paper* which was published only eighteen months ago and which have proved hopelessly wrong already.——Yes. One could go further back.

574. As you rightly say, you could go further back. The Report of the Interdepartmental Committee in 1963† was even more wrong.——I suppose the answer is that it is a very difficult matter to forecast with a high degree of accuracy. One really ought to accept a bracket. It is not very easy. We see no reason to quarrel with Mr. Masefield (on this aspect, I should emphasise), who has all the information at his fingertips.

*_The Third London Airport_ (Cmnd. 3259).
†_Report of the Interdepartmental Committee on the Third London Airport_ (CAP 199) (HMSO, 7s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

575. You see how important it is on your side of the matter?——We do, of course, for this very reason. We are fighting desperately to hold the level of Heathrow to its present size and, if possible, to get it down. That is really what we want.

576. Mr. *Goldstein*: Mr. Briggs, did I understand you to say just now that the air traveller ought to pay the cost?——Yes.

577. Miss Eates said that we all ought to pay it.——That depends on whether you regard the air transport industry as a prestige matter. If it is a matter of national prestige——

578. I am sorry. I can take the different points of view. I wondered what your point of view was. I understood you to say that any cost of this sort should be borne by the air traveller.——That is right. We take the view that we are taxpayers. We do not, unless we travel by air, see any necessity to pay for air passengers. We should like to see air passengers pay the full cost of their desire to travel by air.

579. That is the other point of view. ——It is ours.

580. It affects very much how one approaches the cost/benefit aspect. Have you thought of the possible effect of this on incoming traffic?——The effect on incoming traffic is, I would have thought, little different from that on home-based traffic in this respect. If people travelling to this country wish to do so by air, once again they must pay.

581. If they can travel a little more cheaply to Paris, then this might be quite an incentive, leaving aside the other incentives of Paris.——I am prepared to face that. I think Paris can probably take care of itself in the matter of aircraft noise, and passengers will probably find that they have to pay just as much in the end to go to Paris.

582. Professor *Buchanan*: I think your delegation is speaking for Dorking and Horley RDC. One very interesting matter I found in their submission was that the Surrey County Council was presented on 30th April with a report from the Town and Country Planning Committee* which actually set out three zones round Gatwick, defined by NNI contours, and proposed very definite planning action within those zones, namely, that right out to Zone 3 there will be a refusal of permission for residential development after infilling. What I am unable to discover is whether that proposal was adopted by the County Council and whether it is in force.——(Mr. *Epson*) That was adopted and it is in force. I am Vice-Chairman of the Dorking and Horley Rural District Council. We actually enforce these regulations at the moment.

583. This seems to be a case where a public planning authority has taken a very positive stand in defining certain noise standards and has said that if this standard is exceeded there will not be development. ——There was immense pressure locally that something should be done, because, as I think Mr. Masefield said at a previous hearing——

584. *Chairman*: This is really the reverse action. It is stopping people from putting themselves into the lion's jaws.——This is one of the methods you have got to adopt. You have got noise; and you have got people. You have got to separate the two. One method obviously is to take the airport away, as we hope you would do. The other is to move the people away, or at least prevent them from coming, because this is the incredible thing, as was mentioned by my two colleagues. Even though people read about the effect of aircraft noise—they read about it; they hear about it—they will still buy a house where there is aircraft noise. They will still build a house where there is aircraft noise. You try to stop them; you tell them; but they still do it. A year later they come screaming to tell you, "It is noisy". I cannot understand it any more than anybody else can, but nobody who has not experienced it can believe what it is like. They think you are exaggerating.

585. Professor *Buchanan*: Have you considered the possibility of depopulating Chelsea and Kensington?——(Miss *Eates*) It might be a pleasant idea, but I feel it is perhaps an academic point. (Mr. *Briggs*) May I take up a point here. Professor Walters asked my two colleagues whether they accepted the principle of the loss of property values. We certainly do not in Kew. It seems to us that what actually occurs is a kind of Darwinian process of natural selection. Those who cannot stand noise get out, if they can.

586. *Chairman*: *The Origin of Species*, so far as I can remember, has not got a paragraph on noise.——I do not think it

*Available for inspection by arrangement, at the offices of The Commission.

Printed image digitised by the University of Southampton Library Digitisation Unit

has. We say that to approach the question in this way is far too cynical. You cannot simply say that the thing will even itself out, because what will happen will be that the 30 per cent. of imperturbables, to use the phrase that the Wilson report uses, who do not care what the noise is at whatever level it is—they could have howitzers firing alongside them and still be able to sleep—will gradually increase until there are 100 per cent of imperturbables around Heathrow. This attitude is entirely cynical, if I may say so. We would urge the contrary proposition, that you have to take account of the nuisance in the same way that any other nuisance is taken account of. One does not at a rule in trying to evaluate a nuisance—for example, in court, or something like that—refer to property values. It is not done in this way. You get your injunction on other evidence. You do not necessarily have to call evidence of the loss of value.

587. Not necessarily, but it is not unknown, when people are seeking an injunction because their property is allegedly affected by a nuisance, to call evidence to show, among other things, that its value has depreciated rapidly.——I certainly agree that that is useful evidence, if one can get it. The point I was trying to make was that one can get one's remedy without recourse to evidence of loss of property values.

588. Parliament decided as far back as 1920 that that remedy should not exist. ——As you have mentioned it, that is certainly the case, but I have looked at the debates on this particular Act,* which was introduced by Sir Winston Churchill, and there is no evidence at all that any of the Members who were then legislating appreciated the volume of disturbance of this nature.

589. That Act was passed almost entirely, as I have always understood, to avoid the technical legal consequences of trespass, because of the theory that a man owned the air space above his land.—— Yes, of course. To put it in context, there was one rather comical speech by a Member who stressed the great danger of aircraft taking off or landing otherwise than over the airport. So one can see straight away how things have changed. The whole concept of the matter has altered.

590. Professor *Buchanan:* I think what you are saying is that one gets one's advance in these matters by defining standards.——Yes.

591. Much as we got the advance in many public health matters by defining standards.——You have put it far better than I could have done. That is exactly our point of view.——(Miss *Eates*) That is certainly our point of view in Kensington and Chelsea, very strongly.

Chairman: We are very much obliged to you for all the written material you have put in and for your willingness to come here today and answer so many questions. Thank you very much.

(*The witnesses withdrew*)

United Kingdom Federation against Aircraft Nuisance

MR. G. HOLMES, MRS. M. ST. A. MOORE, DR. S. RUNDLE and DR. R. W. V. STEPHENS called

592. Professor *Walters*: Dr. Rundle, are you the spokesman for this group?——(Dr. *Rundle*) No. Mrs. Moore is.

593. Mrs. Moore, perhaps you can begin by telling us what your organisation represents and how you relate to the other ones which are appearing before us today.——(Mrs. *Moore*) We represent fifteen societies to date. We invited the other organisations to join us, but they refused. Three have joined us. I can give you the names of the Associations, if you like: I will read them out.

594. I think we can take them as read. ——The Noise Abatement Society has done us the honour of appointing an Observer to our Committee.

595. You represent broadly the interests of residents in what area?——It covers quite a big area. The River Thames Society and ourselves (the Putney Society) are founder members. The Town and Country Planning Association joined, and gave evidence to you last week. The Anti-Concorde Project Association, which is against all supersonic aviation, is also a

*Air Navigation Act 1920 (10 & 11 Geo. 5. c. 80).

Printed image digitised by the University of Southampton Library Digitisation Unit

member. We have Eton Rural District Council, the Faversham Society, the John Evelyn Society, which is Wimbledon, the Butts Society, the Knutsford Society, which is Cheshire or Lancashire—my geography is not good—the Dolphin Square Residents Association, which has a vast number (about 1,800), the Culcheth Society, the Acton Residents Association, the Friends of Old Isleworth, and the newly formed Kew Society which is replacing the old Kew Ratepayers.

596. You have heard the previous evidence and will have gathered that our problem is not so much to recognise the existence of the difficulty. Our problem is much more to assess the social costs which arise from noise. I wonder whether you can help us by pointing to any evidence which you know of which will enable us more accurately to assess these social costs? Can you help us? Let us think, first, of property values, because there has been a good deal of discussion about effect on property values. Have you anything to add to that?——Not very much. I was asked that very question on a broadcast when we did the petition. I was asked, "Why do you not move?" I think the answer is that very many people cannot afford to move due to the high costs nowadays. Many people—I, I may admit, amongst them—would like to get away from noise, not because we do not like the area. We went to the area and chose what we thought was a high amenity area, in the sense of quiet and fresh air, in Roehampton particularly. It has been a problem for ten years. It got very much worse since 1963 or 1964, with the advent of the jet. Those who live under the glide path, which are a great many of the Associations we represent, at the peak periods get them every forty seconds. You get the receding noise of one while the other one is already arriving. It is absolutely continuous for sometimes two hours at a time. On the question of costs, it really boils down to whether people can afford it. I heard one previous speaker say that it should be the State who supports it. Another said it should be the aircraft manufacturers. I do not think it is for a Federation like ours to assess it. I have not had an opportunity of asking that question of my members and I would not like to commit them.

597. For the moment I am much more concerned, not with who pays, but with what is the cost. I understand you to say that in so far as values are concerned you have nothing to add to what we have been told.——I think———

598. Can we then turn to medical cost. Is there any evidence you have to give us on that score?——No. We have not concentrated on that, for one good reason. In this country the medical profession has not given as much attention to it as it has in other countries, as you will have seen from our Paper. One doctor, the Deputy Medical Adviser to the GLC, is very concerned, and there is a doctor at Cambridge who is concerned, though other people have not written as much on the subject. Therefore, people hesitate to go to their doctors, who do not all of them understand the problem. It is considered by many as being mainly a psychological problem, whereas it is now being proved that it is very much a physiological problem. We have quoted various people from abroad.

May I add one thing on what you asked me before about the drop in property values. I have noticed one point which was taken up—that is, the question of people who come to us and then at the end of a year find two things. I had a new member of my Society who said, "I moved in last year. The noise is ghastly. What do I do?" I had to answer her politely, being the Convener of the Aircraft Panel of Putney Society. My instinct, with due respect to the Chairman, was to say that it was a question of *caveat emptor*; it was something they should have found out before they came and not afterwards.

599. Can we turn to the third aspect which was referred to in earlier evidence, that of earning power. Has your Federation anything to tell us on the effect of noise on people's earning power?——I think our musical questionnaire would show that.

600. We have seen the evidence there. Again we are faced with the problem of evaluating.——This is not a point we had thought of going into. It is a delicate point which one does not like to approach unless one is asked to specially. It gives them more work: they have to spend more time, which I think one can equate to a certain amount of loss of earning power, or more strain.

601. Would your colleagues have any comment on any of the three questions I have put so far, because they are fundamental to our task?——(Dr. *Rundle*.) I would add one thing. I have heard the Commission say several times that the

Printed image digitised by the University of Southampton Library Digitisation Unit

damage caused by aircraft noise should be reflected by the drop in property values, that people should move out if they do not like it and find somewhere different. I venture to suggest that people regard aircraft noise in quite a different category. I would be very cross if a man built a house on flood land and then expected us all to put it right. This is the sort of parallel which I think the Commission has in mind. I think people's view of aircraft noise is that it is something which could have been stopped and could have been avoided; it is something which should not be there. It is something which they—I nearly said "close their eyes to", but close their ears to for as long as they possibly can. I think, as a previous witness said, that the attitude of trying to reduce this problem to pounds, shillings and pence entirely is a very cynical one. Many of us suffer many frustrations in life, like waiting at queues for buses and what not, but we do not leave the district. We do not assess it by saying, "I have lost £2 a week, because I could have done a little more work". I urge the Commission to think more in terms of social amenity and in terms of happy lives of people rather than just £ s d.

602. Can I ask Mrs. Moore and Dr. Rundle to pursue this a little further? What they have suggested is that property values are not sufficient. I think that Miss Eates and Mr. Briggs took the same line. I believe that the last question which was addressed to the last group of witnesses in fact was, "Do you accept, then, that it should be a matter of standards?" Some of the evidence we heard this morning was in terms of reducing the NNI index to 40 and 30 respectively. You would accept this principle that it should be defined in terms of a standard? I wonder whether you would accept this as a principle, as I think that Miss Eates and the other witnesses did this morning.——(Mrs. *Moore*.) I think this is established internationally. I have a cutting here from France concerning Mr. Jay, when he was President of the Board of Trade, and a certification scheme which has not gone very far and which, unfortunately, is not apparently going to take in jumbo jets and airbuses. They are trying to establish international standards.

603. This is quite different. This is a certification scheme for aircraft. What I am talking about in this respect is the NNI index, which was referred to this morning in terms of setting a standard. It was argued this morning that what we should do is look at a standard and somehow try to achieve that standard rather than try to assess noise in any other way. Is this your position?——I think so, and I have evidence that the NNI in our area—an official measurement taken in Wandsworth*, amongst others in my house last January—has gone up 6 points from about 35. I do not think it was 35 in 1963, but Dr. Elfyn Richards†—Professor Richards, as he was then in those days—had said that that was the highest tolerable figure which people could be expected to accept: that was in the Wilson report. It has now risen to 41. In some cases the rise has been of a different order. I have the figures here. I understood that the GLC was supplying you with these figures. They have gone up in this area by about 6 in Wandsworth, which is all I am concerned with.

604. I think we can leave the facts to speak for themselves at a later stage.—— I think from those figures you can judge for yourselves.

605. I think the thing we are interested in is how would you fix a standard. You referred to the Wilson report. The Wilson report also refers to this 30 per cent of imperturbables, as I think they are called. You are fixing a standard with respect to the whole population, presumably. You are saying that the population should not incur an NNI above 40. How do you fix this standard? Why do you fix it at 40, and not at 35, or 45, or 50?——We have not fixed it at anything. Perhaps we could refer to Dr. Stephens on this.

606. You did suggest that you accepted this principle of fixing a standard. If you accept the principle of fixing a standard, then you accept a number. I am not suggesting that you accept at this moment a particular number, but you would accept in fact that a number is an appropriate standard for all people in the United Kingdom. Is this correct?——Unfortunately, we live in an age where we are bound to have air travel. It is no good not facing the facts. Therefore, we have to accept a certain standard. There is a standard above which it becomes intolerable. You talked of the people who were not affected, and there was a lot of talk about the houses around Heathrow. Those could be lived in by the people who are not affected and other areas should not. There are a lot of trials going on all over the

*p. 185.
†Professor E. J. Richards, OBE, MA, DSC, FRAeS.

Printed image digitised by the University of Southampton Library Digitisation Unit

world. For instance, in Toronto the air procedure is completely different from what it is in the ICAO arrangements at the moment. There they take off at full power up to 1,000 feet. Then they go on to climb power straight up to 2,500 feet on the runway heading. After that, they go up on course. Whether they have to bank or go straight up does not matter. They are clear of the area. That means that round the airport is more or less a desert of noise and the areas beyond that are clear of noise. That has been applied at Toronto. I also know that the Airlines Pilots Association of America have been trying out the same procedure, though they have not yet brought it in. That would be my answer. You used a word I have now forgotten: you said there were 30 per cent.—

607. Of imperturbables.——The imperturbables could live in this four-mile desert round the airport.

608. So for them you would not impose any standards?——Not if that system were brought in. Otherwise I think standards are imperative.

609. So you think there should be a continuous variation in noise according to people's ability to stand it? Those people who are imperturbables should live in the noisy areas. Those who are not should live in the non-noisy area.——They could.

Chairman: A new form of apartheid.——If you like, my Lord.——(Mr. *Holmes*.) Imperturbables are going to have children who are not necessarily imperturbables. This is a ridiculous state of affairs: you cannot have people gravitating to an area because they can stand noise, because they will have children who may not be able to stand it. They will have other relations who may not be able to stand it. Perhaps the wife cannot stand it but the husband can. You will get all sorts of frictions and reactions. I think this is quite unrealistic. This noise is a poison. You are asking about the cost. How can you cost damage to ears? It is just like air pollution; it is a similar thing. Noise is a poison, just as is air pollution where the lungs are poisoned, or the body is poisoned by the effect of the lungs being clogged up. Here the body is poisoned by the ears—or the hearing—being permanently damaged. This cannot be evaluated. It is there. There are very many other things that you mention—other costs. There is the cost of the disturbance to business in areas around the airport, for many miles around. I come from Windsor, which is about eight miles away. When the aircraft are coming in and going out of the airport, which can last for hours on end and for days on end, possibly every two minutes, the noise interference—the actual cessation of any kind of conversation or communication in business can last for as long as thirty seconds, even forty seconds. This must create a vacuum somewhere—a loss in business efficiency. It no doubt could be evaluated, but I think it is so considerable that the Commission ought to take it fully into account, as I am sure you will.

610. Professor *Buchanan*: Mr. Holmes, are you appearing for the Association as an expert, or are you appearing for the Royal Borough?——I am appearing for the Federation.——(Mrs. *Moore*.) Mr. Holmes is Adviser on Environmental Health.

611. I wondered whether the Royal Borough was associated with your representation.——They are in the Association of Local Authorities. (Mr. *Holmes*.) I am their Chief Health Inspector. Obviously they are very conscious of this. They are directly represented by the local authorities Association.

612. We heard from Chelsea and Kensington that their main concern was with aircraft coming in—gliding in.——Yes.

613. Would I be right in saying that at Windsor your main problem is from take-off?——No. With respect, the main problem in Windsor is the flight path in. We are in direct line with one of the runways, and the aircraft are beamed on to this runway. I have been to the control tower and seen this happening. The aircraft are beamed in. When you go to the control tower, there is no little dot saying "Windsor Castle" or something like that. There are some very important residents there who also get upset. There is no evasion like that. There is just a beam that they have to come in on. They just fly in over that when the wind is in the right direction—that is, when it is in the east. Then we get periods of good weather when we tend to get the aircraft, and you cannot sit in your garden, unfortunately. If it was in bad weather, it would not be so bad—but somebody else would be getting it then. We are near enough, however, to get aircraft causing a nuisance on the flight out. They should diverge before Windsor, either south or north, but a very large proportion do come out over Windsor.

614. I am trying to establish whether the real complaint is against aircraft coming in

Printed image digitised by the University of Southampton Library Digitisation Unit

or going out.——(Mrs. *Moore.*) In our area, and in most areas, it is incoming. It depends entirely on the wind. When the wind is in the west, they come in. When the wind is reversed and it is in the east, they take off. There we suffer equally from take-off. Because of the noise abatement procedure at the airport, there are fixed points for monitoring. Then they have to cut out, which is not being done at Toronto. They make up for that further on by putting on full boost. It is in the 8–10 mile area where this occurs. About three months ago I went to a lecture at Imperial College given by Dr. Bowsher of Surrey University. He used to work at the NPL. He pointed this out then. It is because of the noise abatement procedure that the outlying areas suffer so much from take-off.

615. Noise abatement produces noise nuisance.——Yes—in the form that it is at present. I would like to draw the attention of the Commission to another thing which is under consideration, and has been for some time, between three countries —between the States, France and England; not necessarily in that order. I think we took the lead on it, although perhaps America did. It is what is known as step-down or two-step approach on a high beam for the first period and only flattening out for the 2½ or 3 degree landing angle for the last four miles. That is essential for safety, I understand. The reason it has not been brought in—it could be brought in—is again purely £ s d. It is because it would mean re-equipping the aircraft. It would need, first, two beams—one at 6 degrees and the existing one at 3. It would mean re-equipping of aircraft with different instrumentation, and retraining the pilots. If that can be brought in, that would again solve the problem, because an aircraft coming down at a steep angle causes much less noise than the other. I think that is correct.

616. Professor *Keith-Lucas*: This is something which would require major modifications, not only to the air transport and air traffic control system, but probably to the aircraft also, would it not?——Yes. I understand that. I said that it was a question of cost largely, though it has been considered. I have had letters from the Board of Trade informing me of that. I have had information of that from France. I know that it has been done in America.

617. You are putting forward there a two-stage approach in an elevation, if you like.——Yes.

618. Why not a two-stage approach in azimuth instead of in elevation? They could come in on a dog-leg course, missing the main centres of population in that way. ——Frankly, I have not had that put to me. I would not be competent to answer.

619. It just sounded to me rather easier to do. That is what I am asking.——I am quite certain you know a great deal more about it than I ever could. My Lord, may I say one thing which I did not have a chance to say at the beginning? Our Chairman, Mr. Parton, has sent his apologies. Unfortunately, he has a court case which he tried to adjourn, but was not able to. Otherwise he would have been present.

Chairman: I sympathise. (Mr. *Holmes.*) A question was asked on standards. We said that we agreed that there should be standards. A very important thing, we think, is that these standards appear to be set down by the wrong people. The whole control of this noise and many other aspects of our environment is by the wrong people. The Board of Trade are responsible for aircraft and airports. They are usurping the powers of the former Ministry of Health, now Health and Social Security. We feel that levels, if any, should be laid down by the Ministry of Health, or, as it is now, the Ministry of Health and Social Security or whatever it is, and not by the Board of Trade, as apparently they are, who are in control finally of the airports.—(Dr. *Rundle.*) May I add a word to that. Professor Walters asked the question in the first place as to whether we agreed to the general idea of a standard. I think without hesitation we say "Yes"; but it is, as my colleague points out, who fixes the standard and what the standard is that matters. Many people are not very vocal about this. They somehow feel that aircraft noise is something they must learn to live with. There are people who are more vocal, like ourselves who are here before you today. The fixing of this standard is something which should not be unilateral. This is where we who are fighting for a little more peace and quiet should somehow or other fight a rearguard action and say, "No, you do not come any higher than this. We want to push this down as low as we can". I cannot help feeling that there was much truth in what a witness said earlier this morning, namely, that if the noise were made on the ground there would soon have been strict methods for dealing with it. Fifty years ago or so when the motor car first came out, it could have made one hell

Printed image digitised by the University of Southampton Library Digitisation Unit

of—I am sorry, my Lord; a great deal of noise. All these explosions every minute was asking for trouble. But we very soon clamped down on motor car noise and it is at quite a small level now. We are a funny people, and I cannot help feeling that this was not done to save the people from noise but because we were afraid that it would make horses bolt. I somehow wish that we had more horses now; then we might stop aircraft noise.

620. Professor *Walters*: May I interject another question here, because I think the important point—at least, I feel it is important—that I was trying to elicit from you was not which Ministry should lay down a standard, which does not seem to me of absolutely crucial importance, though administratively it might be quite important. What I was trying to elicit from you were the criteria by which you would want a standard to be decided. We heard a lot of information about how doctors are troubled, and so on, and about how health is damaged, but we did not hear, I think, any set of criteria which you would use to determine the standard; nor did we see why a particular number was going to be used. What I would like to see in particular is an argument about the criteria which should be used.——(Mrs. *Moore*.) May I answer that, Professor Walters? The Wilson report stated that 35 NNI was the highest tolerable figure. It has gone far beyond that now. Dr. Stephens is the expert on acoustics; he is in charge of acoustics at Imperial College and is a prominent member of the Acoustical Society. He can give you more information than I could possibly give you. ——(Dr. *Stephens*.) The question of standards is one which I think demands some review and bringing the various scientists and medical people together. Certain standards which have been proposed or accepted by the American aircraft people differ somewhat—just by a small amount, I think—from what some others would think of. A small difference in standard makes a considerable difference in cost to an aircraft company. I think there is a need for a review of these standards to produce a basis, not only of audio standards, but of subsonic standards. This is a field which has been rather neglected. These are very low frequency sounds which could be quite harmful to the general structure of the body other than hearing. Some of you may be aware that in cars, for example, there are vibrations very near the chest vibrations. There is the question of being coupled to the aircraft by belts as in a car, which might accentuate this problem. So there is a very big field open for ratification of these standards from many points of view. There is the physiological side. There is the medical side. There is the scientific side.

Then, in fixing a standard there is also the problem of environment, whether you are fixing a standard in a house or in the open. There again, you have conflicting properties in connection with meteorological conditions. In the siting of a new airport in Denmark, where they have been considering locating it on an island between Denmark and Sweden, they have had to bring in considerations of meteorological conditions. This is not a short-term job. It is a question of a long period where you have got an averaging of meteorological conditions, and so on.

621. Mr. *Knight*: Can I put this question to you, Dr. Stephens? We have got a job to do. We are required to make a report with a recommendation about the location for a third London airport. What you have said suggests that we cannot look for any help in the time that we have available from any new work on standards. What you are leading me to suggest is that we must use those standards which we have and make the best of them. Would that be right?—— We must accept that it would be a long-term job. As a final issue, I think, looking ahead one wants to improve on standards and be more exacting in them.

Mr. *Knight*: We have a timetable to work to.——(Mrs. *Moore*.) Might I qualify one statement made by Mr. Holmes? There is one point which has always been troublesome on the questions of standards of noise. That is that the same Department —in other words, the old Ministry of Aviation, now the Board of Trade—are responsible both for boosting our trade—in other words, our aircraft industry—and at the same time for stating the levels of noise. Mr. Holmes suggested that it should be in the hands of the Ministry of Health. That should, I think, logically be the answer. Unfortunately, the Ministry of Health is not responsible.

622. *Chairman*: Is the first part of your proposition correct, that the Board of Trade is responsible for boosting the aircraft industry? I thought it was the Ministry of Technology.——Are not the Board of Trade responsible? I do not know about boosting. That may have been an unfortunate word. They are responsible for trade.

Printed image digitised by the University of Southampton Library Digitisation Unit

623. Professor *Keith-Lucas*: There is a confusion here because of the distinction between the aircraft industry, meaning the manufacturing industry, and the airline industry. The Board of Trade are concerned only with the airline industry. The Ministry of Technology is concerned with the aircraft industry.——I mean the airline industry.

624. *Chairman*: I thought you meant the aircraft industry. That is why I ventured to intervene.——Not the manufacturers, but the airlines. Unfortunately, the Ministry of Health, though they should in our opinion be responsible, cannot be. They are not responsible for noise. I think I am right in saying that it is the Ministry of Town and Country Planning who are responsible for noise.

625. Professor *Buchanan*: That Ministry departed from the scene about fifteen years ago. It is the Ministry of Housing and Local Government now.——Thank you. It is the same one in effect, is it not?

626. Mr. *Goldstein*: Has anyone ever asked the Minister of Health to give a view on this matter?——I have not had the privilege of asking the Minister, but I have asked the Ministry and I have been told flatly that they are not interested.

627. Is not this somewhat strange?——I agree.

628. Presumably there are a number of medical gentlemen in that Ministry.——I could not agree with you more. (Mr. *Holmes*.) It is the same with food hygiene. I can speak from experience on this. We get some danger to food and we write to the Ministry of Health formally, and they write back and say, "This is not our responsibility. It is the responsibility of the Ministry of Agriculture, Fisheries and Food". It is an absolutely fantastic situation.

629. *Chairman*: Fortunately, Mr. Holmes, we do not have to investigate that. ——It is the same principle. Ministries—in this case the Board of Trade—tend to take—I know they are responsible people, of course—the course which is expedient and not the one which is really necessary to safeguard health.

630. Mr. *Goldstein*: Do you think that the Minister of Health would take a quite different departmental approach or view? ——Yes.

631. But what you have said about the Ministry's not being interested in problems of food hygiene does not lead one to be very hopeful.——I believe they have the will, but there is somebody up above who stops them from doing what they should be doing.

632. Professor *Buchanan*: Mr. Holmes, has your Borough done what Surrey County Council has done and actually prescribed standards and said, "Within this zone there will be no further residential development?"——We are completely developed. We are just suffering torments.

633. Do you know whether the Berkshire County Council and surrounding areas have taken that line?——I understand they are considering it, as are most of the local authorities in that area, because they are very interested in this; but they do not feel like sterilising their land, because the situation is already there. They have the land. It is built on in the area.

634. My point was that one does not necessarily have to wait for the Ministries to define standards. In the case of Surrey, the County Council, as a large, responsible public authority, seems to have taken a line. ——Quite, They are in desperation driven to take some action to try to safeguard people's welfare and environment by sterilising land.

635. *Chairman*: Mrs. Moore, I wonder if you could help me on one matter. Perhaps I should have asked Miss Eates this. You are all very familiar with the Wilson report. You may not have known that in paragraph 566 there appears this statement: "In London (and, no doubt, in other large towns) road traffic is, at the present time, the predominant source of annoyance from noise, and no other single noise is of comparable importance."——The noises off made by the electronics system were very descriptive of traffic noise then, my Lord. I believe that it is a fact that traffic noise is the worst. The GLC has conducted some experiments, and probably Dr. Stephens, who has been responsible for these measurements, could help you. Traffic noise is one of the worst. Dr. Hans Richter* of Basle considers it one of the worst if you are on one of the main arteries. If you are not on one of the main arteries, the aircraft noise drowns the traffic noise.

*Dr. Hans Richter of the Neuro-Electrographical Institute at Basle and the Encephalographical Department at Basle University.

Printed image digitised by the University of Southampton Library Digitisation Unit

636. Do you agree with this as a statement or not in paragraph 566?——I disagree by and large, unless you are on a motorway or a main road; and in any case I would point out that the Wilson report which we keep referring to was made in 1963. That is five years ago and things have changed considerably since then. Jet traffic has increased, I believe I am right in saying from figures I have got, 100 per cent. ——(Mr. *Holmes*.) In answer to your enquiry, my Lord, one of the reasons that aircraft noise is so much worse than traffic noise is that it comes at a very much higher peak. Dr. Langdon of the Building Research Station was speaking of this last week; he gave a paper on noise generally. He was saying that, although he agreed that traffic was the most widespread noise, the really acute noise nuisance and distress comes from the high peak noises, of which aircraft was an illustration. Traffic noise—for instance, if it levels out into a broad band of noise at a fairly similar level—is not so unacceptable. You can come to accept it. You cannot come to accept this sudden noise which comes at you at a high peak as does aircraft noise and then dies again. Then you get a quietness, and then it comes again. You are waiting for it. There is a very great difference between the type of noise.

637. Mrs. Moore, may I ask you a few questions about your Paper,* which we have read with great care. On page 25, paragraph 2 of your conclusions, what are the "new methods of swift transport to city centres" that you are referring to?——(Mrs. *Moore*.) I have in mind the new hovercraft train or the suspension one which is being developed. The hovercraft company have announced that they will have something ready by 1970. On the other hand, I have been seeking to get information from France. It is much more advanced there. The linear engine is in full operation there and it was going to be tested out between the new Roissy-en-France airport and Paris. They have two types of train. One is what they call the urban one, which goes at a mere 150 kilometres an hour. I have not worked that out in miles per hour. Then there is the inter-urban one, which goes at 250 kilometres an hour.

638. You are not referring to the APT—the advanced passenger train? You are referring to the hovercraft?——The hovercraft using the linear engine, which is noiseless.

639. Are you suggesting that that will be a feasible proposition in this country.——They are using it.

640. Are you suggesting that that will be a feasible proposition in this country by 1970?——If it is feasible abroad, I cannot see why it cannot be feasible here.

641. Professor *Buchanan*: My understanding of the position is that an experimental track is about to be started by the hovertrain people on a bit of fenland near Cambridge. It will be, I think, a three-quarter full size model and it may take about ten years to get the development research done.——Yes, Professor, I know, but I am saying that the French one is very much more advanced. I have been seeking to get information. I have got information on the linear engine. I have not yet obtained the necessary information on the tests which have been made or which are in course of being made. When I get them I will forward them on to you, if I may.

642. *Chairman*: Will you be good enough, Mrs. Moore, to go to the next page of your Paper, where you suggest that the site ought to be one which has "sea on one side and sparsely populated areas on the others". What do you propose should happen to the supporting population?——I am afraid I do not quite follow the question.

643. It is the second full paragraph, which begins: "The United Kingdom Federation would suggest".——But I did not quite follow your question.

644. Perhaps I put it clumsily. In this paragraph you suggest that the airport should be on a site which has the "sea on one side and sparsely populated areas on the others". Where are you proposing the supporting population of the new airport should live?——I think they could live beyond this 20-mile area that everybody has been talking about. People who work in London have to commute to their work 10, 12 and 15 miles. Some come up from much further by train. I cannot see why it should not apply to an airport. That has been adopted at the new Paris Nord airport which will replace Le Bourget. They have zoned it. Habitation is not allowed within a certain distance.

645. I just wanted to be sure that I understood the proposal. It is that everybody working at the new airport—it may

*p. 175.

Printed image digitised by the University of Southampton Library Digitisation Unit

be 50,000, 60,000, 70,000 people—should have to travel upwards of twenty miles a day?——They would be no different, in my view, from the rest of the population.

646. That may be. That is the argument? ——Yes, that is the argument.

647. Would you care to tell us where the Faversham Society thought the airport should be?——They have not confided in us.

648. They did not want it on a coastal site?——They merely wrote to us. When they joined us, they said they supported us entirely, except on that one point.

649. They were not prepared to put up any positive alternative?——I did not ask them. I felt it was up to them.

Chairman: Thank you very much. We are most grateful to you and your group, as to your predecessors, for all the trouble you have taken. We appreciate the enormous amount of work you must have put in to prepare this Paper. Thank you very much for coming.

Mrs. *Moore*: If I get information on the hovertrain, I may forward it?

Chairman: We should be very grateful for that.

(*The witnesses withdrew*)

(*Adjourned till 2 p.m.*)

Noise Abatement Society

MR. J. CONNELL and MR. B. ANSTEY called

650. *Chairman*: Mr. Connell, we are very grateful to you for coming, and for the papers* you have put in; and also for the very elaborate site suggestions paper† which you have put in about which, although we are not discussing site suggestions, there is one thing I want to ask you merely to clear up something which puzzles me. Can I just begin by asking you one or two things. Do you, like the other witnesses this morning, accept the NNI as a sufficiently adequate measure?——(Mr. *Connell.*) No. I do not accept NNI.

651. What do you suggest is its substance?——This presupposes that a person can stand a number of shocks, and this number of shocks is evened out over twenty-four hours in a day. Our policy has always been to try to reduce all noise from all sources down to a level at which it causes no reaction, either mentally or physically.

652. You do not accept the conclusions of the Wilson report‡?——No, sir, not in that way.

653. You do not accept their views on NNI?——No, I do not.

654. You do not accept the conclusion that the principal source of noise in London, and most places in England, is road traffic and service traffic rather than aircraft?—— As far as road traffic is concerned, I would agree with the witness this morning, that on main roads—especially Cromwell Road—traffic is probably a very great source of annoyance.

655. If you reject the NNI, what do you put in its place?——We want to reduce all noise to a matter of a maximum of 60 dB, and this is quite possible technically.

656. How?——It is simply a matter of money. It is a matter of getting manufacturers used to the idea that they should consider people.

657. How do you set about it?——As I have submitted in my evidence to you, over the last nine and a half years we have been conducting a very large campaign to try to bring to people and manufacturers the dangers of noise.

658. I take it you mean aircraft manufacturers?——I am talking about all manufacturers now.

659. Yes, but we are particularly concerned with aircraft.——We have, of course, been directing a great deal of our efforts against aircraft manufacturers. In fact, at an interview I had with Lord Portal —who was, and I believe still is, Chairman of the British Aircraft Corporation—he

* p. 196.
†Available from Noise Abatement Society, £3 3s. 0d.
‡*Noise, Final Report* (Cmnd. 2056) (HMSO, 19s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

said that it is possible to produce a quiet aircraft, but we are in a competitive business.

660. Professor *Walters*: In one of Mr. Connell's answers he said that he did not accept the NNI. I am not perfectly certain what you meant by saying you did not accept it. Does it mean you do not accept it as a measure of noise nuisance, as it were? ——That is right.

661. Can I go on and ask another question which follows from there, if you do not accept it. You implicitly said that you accepted some decibel count as being an alternative—perceived decibels.——No, a straightforward 60 dB taken at seven metres, which is the international measurement.

662. Therefore, one of the interesting aspects of the NNI is, of course, it does try to take into account the peaks in noise and the fact that noise occurs intermittently and peaks rather markedly, for example, in the case of aircraft. The NNI takes this into account and weighs it rather heavily as against, for instance, the number count which the NNI increases as the logarythm of the number. So this means, then, that you as a Society are not particularly concerned at peaky noise but continuous noise. Is that one of the implications of rejecting the NNI and accepting a constant decibel count?——What we are saying is that there should be no noise from any source above 60 dB. That is all.

663. That is to say continuous noise at 59 dB would be quite acceptable. A peak of 61 dB and complete silence for two hours would not be acceptable.——This is the implication of what I am saying because we know that continuous noise over 60 dB does have certain mental and physical effects. I know that the NNI system was brought out to try and bring a compromise between the aircraft manufacturers and the people who suffer from aircraft noise, but because they decided on this it does not mean to say it is right.

664. May I say that one of the implications of the evidence we heard this morning was that aircraft noise was quite different from traffic noise because traffic noise was continuous and served in many cases the purpose of masking other noise intrusions. Indeed, there is some considerable evidence that many people like a certain amount of masking noise.——I agree.

665. In some cases, according again to the evidence of psychologists who have done surveys of this kind, quite a high degree of masking noise. But the whole burden of your evidence is that this peakiness in the noise is over-emphasised by the NNI, that in fact you are concerned merely with this threshhold of 60 and you are not much concerned with peakiness apart from that.——I would not permit peakiness. You are suggesting that a person, because he only gets a noise of 120 dB—as poor people do round airports—on occasions, that this is quite acceptable. I say it is not.

666. I was not arguing whether or not it was acceptable. I am trying to find out what the attitude of the Noise Abatement Society is to the measurement of noise. Whether it is acceptable or not is a matter anyone can debate at length. In other words, I am asking what standards you are setting, and whether you have, in fact, taken account of the NNI in the very important way in which it takes account of peaks as distinct from constant masking noise.—— If I understand it rightly, NNI presumes that a person can stand a number of loud noises provided there are not too many of them in the course of a day.

667. There is also, if I may refer you to various reports—the Wilson report amongst others—the various research on which that was based. They have some evidence that NNI is associated with nuisance. NNI does appear to be associated, for instance, with complaints about aircraft noise, and that sort of thing. Have you any evidence to discredit the NNI as a measure in the sense that you have discovered a negative association as distinct from a positive association which the Wilson Committee reported on?——It depends on how they assess the complaints. At Heathrow airport they state that they only have 600 or 700 complaints in a year. We know that some people complain as many as three or four times a day. But that three or four times a day, amounting to perhaps a thousand a year, is taken and assessed as only one complaint because these complaints perhaps come from the same person.

668. You are questioning the Wilson Committee's evidence on this, I gather, and you have evidence to question their evidence?——We know from our own members the number of times they complain, but if they complain a thousand times it is only taken as one complaint during the course of a year.

Printed image digitised by the University of Southampton Library Digitisation Unit

669. You nave not, I gather, then employed the Social Survey, as indeed the Wilson Committee used the Social Survey evidence, to check the validity of the NNI measure? You have not got alternative evidence of this kind?——We do not need to, sir, we know from our experience on a world-wide basis. We have thirty countries which are members of the Noise Abatement Society, and in other countries a great deal more attention is paid to the medical effect of noise than in this country.

670. You regard your experience, then, as of more validity than the Social Survey which was done in respect of noise?—— It is not my personal experience, because I take care that I do not allow myself to be subjected to noise.

671. In the experience of your members. That was the evidence you were calling, and which you said you thought at least discredited the Wilson Committee's views on this matter.——This is evidence from reports, some of which I have already submitted to the Commission. We had a Congress* last May at which sixty-nine papers were given, many of them on the medical effect of noise on people. It is that sort of evidence, given by top experts from some twenty-three countries, that we rely on. I would not presume to rely on my own evidence because this would be far too great a presumption. But we do know that any continuous noise of over 60 dB has a deleterious effect upon mental or physical health.

672. Can I leave that and go on to another matter. We have been very interested indeed in the evidence which you have submitted to the Commission. One of the difficulties, of course, with the evidence you have submitted is that we have not got all the information yet on which it is based. However, one particular piece of evidence which I think we are most interested in is the information which was obtained from Mr. Anstey's paper† with respect to the valuations by surveyors and estate agents around Heathrow. We should be very interested to see the basis of this evidence. At the moment we have only got rather a fragmentary account of it. We wondered whether you had any suggestions as to how this fits in with the evidence collected in the Chelmsford Inquiry‡ where, you will recall, evidence was suggested which showed that there was very little, if any, differential effect between house valuation as affected by noise and those which are not affected by noise. I wonder if you would like to comment on this.——(Mr. *Anstey.*) Yes, if you wish me to do so. May I first make a short statement as to my position. Mr. Connell quotes me as saying that the *Architect and Building News* commissioned a survey. I am not fighting with him, but in fact I was merely writing some articles for them on the subject of noise, and I did this survey on my own as a matter of interest and for my own information. It is not such an extensive survey as I should willingly see undertaken. I would not like to overstress the value of it. But, on the other hand, I do have experience in this field through town planning cases, and people bringing complaints against factories, and so on, and so I know the background of the subject. On this question of property values and what local surveyors say, as you will see in the quotations from my paper which is not yet published, what I did was to set out as simple a questionnaire as I could in the hopes of getting intelligible answers, because as Chairman of a Committee on another subject I have some experience of how difficult it is to get unequivocal answers to a questionnaire. I sent this out to a number of my professional colleagues in areas. I selected firms with a view to covering the probable area affected and to try and avoid overlapping. But, of course, I am bound to have got some overlapping and probably missed some areas. However, the questionnaire was quite simple. It asked just three questions. "If aircraft noise but nothing else was so reduced that your area could be called truly quiet in this respect, would residential values go up or down? If up, by how much?" I analysed that into three classes of property. "If down, by how much?" "Would the whole character of the area change? Approximately how many properties would be affected in a radius of, say, a mile round your office?" Then I picked a number of offices to try to cover the area. I got a number of replies. They were not done for the purposes of this Committee, or I would have taken a lot more trouble to analyse it all.

673. *Chairman*: We are tremendously indebted to you. This is the first attempt anyone has made to tackle it. When Mr. Connell sent it to us we all jumped on it

*Vth International Congress for Noise Abatement. Held at Queen Elizabeth Hall, London, May 1968.
†p. 196.
‡Stansted airport inquiry, 6–23 December, 1965 and 5 January–11 February, 1966. Minutes of proceedings of a public local inquiry. (W. B. Gurney & Sons, 39 Victoria Street, London, SW1.)

Printed image digitised by the University of Southampton Library Digitisation Unit

and said we want to see Mr. Anstey to see what help he can give.——I will give you all the help I can. I roughly analysed it, and I got a range of 10–40 per cent in answer to my question "If down, by how much?" No, sorry, it is the other way round, correction. "If it were truly quiet, by how much would the value go up?" I got a range of from 5–40 per cent out of the majority of the answers. I have said in my paper that some said it would not be affected at all, but when I analysed those answers I had to admit that my questions were not quite clear evidently because my respondents had confused the question of mere value due to demand and the isolation of the factor of noise which I was trying to get at. But they range here from 10, 20, 5, 20, 40, 5–10, 10–5, in the high class. This is the expected improvement in values if the area were truly quiet.

674. This is based on a mere matter of opinion, is it, however informed, or is it based on specific concrete examples of comparable properties within and without the area?——I take the point entirely. It is largely a matter of opinion of chartered surveyors, chartered auctioneers in the area, and in my letter of inquiry attached to the questionnaire I wrote as a chartered surveyor asking for an objective professional opinion as a courtesy to me as a fellow practitioner. One or two of them do quote specific instances. The 40 per cent one was a specific instance in which the man said that in his opinion this property which he had to sell with great difficulty would have fetched 40 per cent more but for the noise.

675. What area was that in, do you happen to know?——I do, yes, sir. If you can give me a moment I can find it. It was in the Staines area.

676. Professor *Keith-Lucas*: You have not plotted this figure of additional value on a map, have you?——I have not yet. I was hoping to do this, but I took my selection of places within the area covered by Wilson's NNI map for Heathrow. The areas were Hounslow, Southall, Teddington. I went as far as Iver, Hillingdon, Staines, Hayes, Slough, Windsor, Richmond, Greenford, Datchet, Wraysbury, Colnbrook, which is roughly the spread of the Wilson NNI. I got a total number of probable houses there of about 40,000, and in my paper I say let us take 25,000 as a basis because I might have had overlapping. I could not pretend to be very sure that that is the right figure, but it is the best shot I could get on this limited survey.

677. Professor *Walters*: Following from that, these estate agents whom you circulated, they not only sold property in the Hounslow area but they also sold it outside so they had some control information. Is that correct?——Yes, some had multiple offices in Reading and other places.

678. So they had standards of comparison?——Yes.

679. Did you feel it worth while to chase any of these instances further and find out whether there were actual prices being quoted for similar houses?——I would think this is extraordinarily worth while, but this is only additional information for a series of articles dealing with the whole subject of noise, which is my brief. Also, as I say, I do practise in this field as well. I was not commissioned to do such a wide survey. I would think it would be most helpful and interesting.

680. *Chairman*: Mr. Anstey, it would be an enormous help, if it is not either trespassing on what you have already done or involving you in any embarrassment, if you could let our research staff have this data. Would you see any objection, or would it put you in an embarrassing position?——I will go as far as I can in that direction, but I did in my letter say I was writing privately as one surveyor to another.

681. That is why I put in the safeguards, but one of the things which would be very interesting, if we could get the data, and which has never been done, would be to take, for example, the Wilson report, NNI plan, and superimpose upon that concentric circles, radii, going out from the centre of Heathrow, plotting your various properties and seeing which of them are within either the radii or the NNI contours, or both, and then seeing what the difference was between the values within and without the NNI contour. This seems never to have been subjected to cross-examination, and we were wondering whether you would care to do that, or if you could let our staff have the data on which this could be done.——I could do something to help here, I hope. I heard some of the evidence this morning, and I noticed that point very interestingly. The question was put: "Suppose houses in the flight path over a

Printed image digitised by the University of Southampton Library Digitisation Unit

period increased in value at a lesser rate than those in quiet areas, would that be a good approach?" I think that was the question. I considered that this morning, and I see some value in that approach, but I would think it would have to be very carefully controlled. Indeed, I am very hesitant about putting the evidence I have before the Commission because I do realise that this sort of matter needs to be very carefully controlled as a genuine research effort.

682. So many people have committed themselves in generalities here, one way or the other. We had one this morning: there is a drop around Gatwick. We were asked for evidence and were told there was none. You are one of the first people to approach this scientifically on albeit a very limited data.——Thank you, sir, but I appreciate the data is limited. Had I known it would be coming before this Commission I would have taken a lot more trouble to get it accurate. I feel that the responses I have received go as far as indicating a line of approach which could provide useful data if it were more carefully pursued.

683. Mr. *Goldstein*: How many questionnaires did you send out?——In the order of fifteen. At any rate, I got about fifteen returned.

684. That was my next question!—— I got most of them back. It may have been twenty I sent out. I got about fifteen back. These were personal letters.

685. I have had some experience in my profession of this kind of thing, and know how difficult it is. Do you know how many you sent out and what percentage were returned?——I cannot give it to you exactly, but from the quick table I made it is of the order of 20 out and 15 back. This is a high proportion but then I accompanied it with a personal letter.

686. As you have said yourself, the conclusions had to bear in mind that this is a limited random sample of individual professional men exercising their opinion. ——It was not quite random, to be frank. I picked the men who I thought would give me the most sober answers.

687. I would hope all your colleagues are sober!——There are a lot of agents in the area from whom I might not have got much help.

688. Having got the answers, have you done any checks on correspondence between them?——No, I have not. I finished this work by the way in September. I only started it in June. I finished it in September. The articles were ready for press.

689. I am sure if the research team could have the data which you have so helpfully obtained that this kind of statistical check, and so on, is something which they are very well qualified to make and it would be most helpful. But your general conclusion, as I think you say in your letter, a fair summary of this information in your opinion is the noise appears to depress property values by between 5 and 20 per cent. This would be looking at the replies in the round.——I think that is a fair summary.

690. *Chairman*: Within how big a radius of Heathrow?——It is not exactly a radius, sir. It is, as the place names indicate, an oblong more or less corresponding to the 51 contour.

691. You are quite right. Although you said that you had done this within the contour, I wonder whether you could superimpose, as it were, a radius on that and see how far it goes, just to see whether there is any diminution in value the further out you go, or anything like that.——No, I think my replies would not enable me to do that in more than a very general way. The man at Iver, if I remember rightly, said not affected in Iver, but the same man with offices nearer in did find some effect, if I have got it right.

692. Have you read the evidence which was given by a valuer from the Estates Duty Office at the Chelmsford Inquiry? ——I am very sorry, I have not.

693. You might find it very interesting for your research. He never seems really to have been properly tested in the way you have tested it when he was cross-examined. ——I might find that interesting to study.

694. Mr. *Goldstein*: I have some questions for Mr. Connell, but one last point to Mr. Anstey. As a matter of interest, did any one of your respondents say that the value would go down rather than up?—— No, some said it would not be affected.

695. This is the difficulty of separating noise from other criteria.——Yes, quite.

Printed image digitised by the University of Southampton Library Digitisation Unit

696. How many of your fifteen said that there would not be any change?—— Certainly two, probably three or four, but they nearly always added "Because there is so much demand for houses anyway". (Mr. *Goldstein.*) That is the problem we are faced with too. That is why I feel that any evidence of this kind, as the Chairman has said, would be most helpful to the research team. Thank you very much.

697. *Chairman*: Mr. Anstey, would it be trespassing on your time too much—I know you are under great professional pressure—to ask you if you could get in touch with Mr. Thompson, our Director of Research, because he has already done a limited amount of work on this, and if you could pool your work it would be of great help. Or is it trespassing too much on your time?——If I could have time I could write to all these people and ask them if I might pass on their letters. I will gladly do this.

Chairman: That would be a great help. Thank you very much indeed for very valuable help.

698. Mr. *Goldstein*: Mr. Connell, I was interested in your reply to Professor Walters, that you took an absolute threshhold level of 60 dB, and you do not admit the peakiness, if one may call it that, as being a real measure of the noise nuisance. Do you consider the frequency of the noise?——(Mr. *Connell.*) The decibels on the A scale.

699. It is the decibels on the A scale. So you do consider the frequency, do you, although you do not consider the peakiness?——Obviously if you had 60 dB at an extraordinary high frequency or at an extraordinarily low frequency this would have more deleterious effects than dBA, but it is generally recognised that normal measurements should be taken on the decibel A scale.

700. I am afraid I have heard experts argue that the A scale is not, perhaps, the most relevant scale, but at any rate you go along with the Wilson report to the extent that, as the Report does, decibels on the A scale are the units in which you like to express your criteria.——This is the unit which is generally used. There are many other ways of expressing noise, and experts have been known to disagree on other matters.

701. You are then saying that 60 dB on the A scale is the threshhold above which no one should be subjected.——I think so.

702. So you do not agree with Wilson, not only on the NNI but also on his estimate of what decibels on the A scale ought to be permissible in country areas, in living rooms, bedrooms, and so on?—— We were referring to outside noise, sir. This is noise which strikes the person. If you are talking about noise inside buildings, this level would be far too high. The noise in a quiet office could be as low as 30 or 35, but I was referring to the noise striking the window of a house, or the roof of a house.

703. I was wondering really whether you agreed with paragraph 576 of the Wilson report which suggests that decibels on the A scale as criteria for living rooms, bedrooms by day and by night in three different areas——There they say 40 and 30, do they not?

704. Do you agree with that?——This is inside living rooms.

705. You agree with that?——Yes.

706. He does not, in fact, produce that as a threshhold. What the Wilson report says is that these are levels which should not be exceeded for more than 10 per cent of the time.——I think we are being confused here, sir. What I was saying is that the noise which strikes a roof or strikes a house or a pedestrian on the pavement should not exceed 60 dB; a noise striking a factory worker, for example, should not exceed 60 dB. This means that if you put up normal glazing you can easily attain the 30–40 dB recommended by the Wilson Committee.

707. Or 50 in the busy urban areas. What I was really inviting your comments on was that in giving these criteria Wilson, in fact, does not present them——We are not now talking about the NNI at all, we are talking about living rooms, and so on. It does not matter what the criteria are because there is a difference between inside and outside, but he does not present them as threshhold figures. He says we all know the difficulties under which this particular team worked at that time, that these particular levels should be the ones not to be exceeded for more than 10 per cent of the time.——Yes, this is inside. These criteria are adopted by public health inspectors in various countries. A noise striking a house or a factory in Switzerland must not exceed 45 dB by the time it gets inside.

Printed image digitised by the University of Southampton Library Digitisation Unit

708. Is that the same as Wilson, 45 in this paragraph?——Probably. In Germany it is 50 and in this country it is taken as 53.

709. They do not really say that, they say it should not be exceeded for a certain proportion of the time. They do not say it is a threshhold. You are saying, as I understand you to say—and what I am after, really, is to see what you agree with in Wilson and what you do not—that 60 dB (and I am not quarrelling about the level) should be an absolute threshhold. You do not want anyone to have more than 60 dB at any time. For indoors Wilson happens to put it at 50 dB in busy urban areas, but that does not matter for the purposes of my question. What Wilson does is to accept that for a small proportion of the time the noise levels may be considerably more.—— That is what he says, but I say why?

710. You do not agree with paragraph 576?——I only agree with paragraph 576 in so far as it prescribes a limit for noises inside a building. That is all.

711. It does do that, but it does it in a manner that admits that for a short period of time, a short proportion of the time, these limits may be exceeded.——That is what he says; I do not.

712. You do not accept that?——Why should I?

713. Is there anything in the Wilson report with which you do agree?——Of course, there are many things. The whole fact that this Commission was formed was due to the fuss we kicked up in 1960, and the Government took refuge in appointing a Commission to press on taking measures.

714. I do not think we can say that Wilson had pre-vision. This report is dated 1963. It does seem to me rather important that a prominent society which you represent, when faced with a report of considerable authority on noise, on two very important issues does not, in fact, agree with it.——I am sorry, but that is the position. I am quite sure that Sir Alan Wilson and the other members of the Commission would not say that they are completely infallible.

715. And I am sure you would say that also.——I agree, but all I am saying is that our experience, which covers nearly ten years of getting information from all over the world, leads us to this conclusion.

716. You said for indoors 60 dBA would be too high, but whatever you take it as you prefer that someone is subjected, as Professor Walters said, to 59 dB on the A scale continuously, rather than to 61 for one hour in the day and to 30 for the remaining 23 hours?——This is taking it to a pedantic conclusion, if I may say so.

717. With respect, you have said it is fundamental to say this.——This is what we are aiming for, that the noise striking people in factories, where they have to be subjected to machinery, rooms of houses or pedestrians on the pavement, should be at a maximum of 60 dB, and that manufacturers of engines, appliances and other machinery should be forced to come down to this level. In fact, many of them are so doing. If we adopt this criterion, why should there by any exception? If a man commits a crime, it is no good his saying, "Oh well, I am one of the 10 per cent exceptions which is allowed to commit a crime."

718. This is really the point I was eliciting; that you do believe that 60 dB on the A scale forms a maximum threshhold.——I think so.

719. It would follow that you would prefer for a man to live most of his time in a not quiet environment of 50–60 dB on the A scale, rather than living most of his time in a very quiet one with some 65 and 70's just for a very small proportion of his time?——I do not think it is necessary for this to be so. If our campaign succeeds, as I am quite sure it will within the next few years, the feeling of people over the world against noise is growing so strong that manufacturers are now looking to their laurels, and they are producing the quiet machinery, appliances, engines, and so on.

720. Do you know what the decibel rating of a thunder clap is?——Yes I do. That is nature.

721. *Chairman*: Would you like to tell me because I do not know. What is it?—— It can be as high as 120 dB.

722. Mr. *Goldstein*: Perhaps you are making submissions in the right quarters. ——I would please ask to be allowed to state that we confine ourselves to mechanical, man-made noise, rather than natural noises. We get asked to intervene in cases of noisy children, etc., but this we cannot do. Dogs we can cope with, but not children and not thunder claps!

Printed image digitised by the University of Southampton Library Digitisation Unit

723. Professor *Buchanan*: I think what you are saying is that if a baby is woken once in a night, then that is the end of the night's sleep and it does not matter how many aircraft go over; if the first one wakens a baby, it needs one aircraft to upset the whole thing.——That is true, but we cannot legislate for children—their own noise.

Chairman: They are man-made, are they not!

724. Professor *Keith-Lucas*: I would like to go back to what you were saying at the very beginning, because I think we changed the subject. Did I not hear something which might have been rather interesting? You were talking about your conversation with with manufacturers, in particular with Lord Portal, and his statement that we are in a competitive business. What were you going to suggest?——I did suggest to IATA, the International Air Transport Association, that they should use their enormous powers to deal as an association for all national airlines, to tell the manufacturers that we want aircraft which will not produce a noise of more than 60 dB on the ground. This would be possible. Unfortunately, the aircraft industry operates in exactly the same way as the armaments industry. The arms salesman goes to one country and says "Here we have a beautiful big gun and it will kill so many people in so many minutes", and then he goes to another country and says "This fellow has got this one, we have got a much bigger gun which will overcome his gun".

725. I do not think that is strictly relevant, is it?——It is, sir.

726. Surely the situation here is a directly competitive one. If any one country produced aircraft which were less efficient, more expensive to operate, then the airlines of that country would buy from abroad and you would have won nothing. The important approach was not to the manufacturers, it was to IATA.—— No, sir, I said that I did talk to Lord Portal and he said that as long as he was manufacturing for British aircraft he had to compete with aircraft made in America, and if his aircraft had to take fewer passengers because of noise nuisance or go slower he could not sell his aircraft.

727. This is so, of course, and therefore that conversation really leads us nowhere, does it?——So I then went to IATA because the only way to overcome this problem is for an international body to undertake it.

728. Or to have a system of licensing within the country to prevent any aircraft operating within this country which have not been certificated on noise.——This, of course, would raise other problems because it might mean that a country would be barred to the aircraft of the world. If you said, for example right now, we are not going to have any aircraft making more than 60 dB of noise coming over England, you would immediately stop all the Boeings belonging to various countries coming here.

729. If you put it as low as that, of course, yes.——I am quite certain it is possible.

730. So you do not see any future in the present approach of noise certification? You really see a future in international agreement through IATA.——That is right. Certification is a compromise to try to keep people like us in other countries quiet, but it will not. The noise limits they are talking about are far higher than our own Ministry of Housing and Local Government is permitting for building workers.

731. Yes. I am sorry you take that line because I hoped it might do some good, and if we start by feeling it will do no good it will not be pursued quite so energetically. ——It will not make any difference, with the greatest respect, for the next ten or fifteen years, in any case. What we are trying to do is force the manufacturers and various governments to do something about this intolerable aircraft noise which they are producing at the moment. It is a disgraceful thing that in this country nobody is allowed to take legal proceedings against any air line, airport or pilot for noise nuisance. It is utterly disgraceful.

Chairman: We are getting rather outside the Commission's terms of reference.

732. Professor *Keith-Lucas*: May I finish by remarking that the proposal is to reduce the noise level by 10 dB below the existing aircraft level, and that means halving the noisiness. I would have thought that was something enormously worth doing.—— It is a step in the right direction, but it would not satisfy us, and I think the only answer is for manufacturers to be persuaded, if you like, to produce a quiet

Printed image digitised by the University of Southampton Library Digitisation Unit

aircraft. They say that it is not feasible, not because they cannot do it but because of cost. (Professor *Keith-Lucas.*) We have been over this. It would not work.

733. *Chairman*: I wonder if you could just help me on one small point that has puzzled me rather. Have you got in front of you a copy of your site submissions.* Could you be so good as to turn to page 23. I see you have got a copy of the Wilson report in front of you as well, have you not? Would you be so kind as to turn to pages 213 and 214 of that report. On page 23, I have been looking at the top plan or graph under the blueprint of noise, and then there has been rubber stamped at the bottom "People—Reasons for Moving". Do you follow? Would you be good enough to look at fig. 7 at the bottom of 213 and fig. 8 on page 214, the graph showing the percentage of people giving particular reasons for wanting to move is not the graph which you have reproduced as your fig. 9. You have reproduced the figure on fig. 7 which is graph of the percentage of people liking their area now less than in the past, for various reasons. Am I right?——It looks like it, yes sir.

734. Then you have taken the key on fig. 8, applied it to the graph on fig. 7, and not unnaturally have found that it does not work. Somebody has then reversed the order of the key so that what was 5—to get away from aircraft noise—has become 1, and what was 1 has become 5. In point of fact, the true figure, if the original graph is right, of percentage of people wanting to move runs between 10 and 20, or from 1 per cent, and not 50 or above.——This is obviously an error.

735. It is a little unfortunate, is it not? ——It is information obviously taken from the Wilson report.

736. If we had not taken the trouble to check that against the Wilson report, that, without offence, is rather misleading.—— I do apologise. We had this report produced by the best experts we could find.

737. Someone has palpably taken the wrong graph and has consciously, it would seem—otherwise it is inexplicable—applied a different key; has realised it was wrong and has altered the key to make it fit.—— I do apologise.

738. This sort of thing makes one then want to check every other thing, and it puts the Commission to an awful lot of trouble, when we do one check to see if it is right and find something that is as wildly wrong as that. This has been published. You published this, did you not?——It was sent out.

739. I hope there are no other mistakes. Thank you, Mr. Connell and Mr. Anstey, we are most grateful.——During the lunch hour I checked on one thing which you asked this morning, that you might be interested to know. It was stated that only four runways would be possible at Foulness, and one witness said that ten were needed. I checked up on the reason why our people only said four runways, and they said that they were looking forward to the jumbo jets which carry 1,000 passengers instead of 150, but there is no earthly reason why double that number of runways could not be provided on the Foulness and Maplin Sands because there is an area which is covered by the Ministry of Defence which we would propose to use which is 20 miles by six.

740. It depends how much land you reclaim, does it not, and it also depends on the viability or otherwise of an eight-runway airport.——I checked with air traffic control consultants and they say that an eight-runway airport is quite feasible.

741. It may be feasible as far as land is concerned, but as far as I am aware there is not an eight-runway airport in the world. ——There is nothing to stop it.

742. I think you will find opinions differ. ——This is a very good source of information.

Chairman: It is right to remind you—the reference is Day I of the Public Hearings, pages 14 and 15†—that Mr. Masefield did say that he had taken the 747 and the jumbo jets into account in making his passenger and aircraft movement forecasts.

Thank you very much, Mr. Connell. I am very much obliged to you.

Mr. *Anstey*: My articles, as they are published in their present form, will be a little more provocative and interesting than the very sober evidence given to this Commission. I hope no disrespect will be thought.

---

*Available from Noise Abatement Society, £3 3s. 0d.
†Q. 13.

Printed image digitised by the University of Southampton Library Digitisation Unit

Chairman: to whom?

Mr. *Anstey*: To the Commission. I did not realise they would be quoted to you.

Chairman: Sometimes it is the provocative articles which make the interesting reading. Thank you very much indeed.

The Local Authorities Aircraft Noise Council

Mr. *Briggs*: I wonder if I might mention a matter that would be a help to the Commission. It so happens there is in this Hall today Mrs. Mary Crockett, who is one of the Vice-Presidents of an organisation with which we are in touch in Los Angeles called Community Plans. She, as it happens, is professionally concerned in what in America is known as real estate. I simply put this forward as a suggestion. She would be willing to give the Commission the benefit of her experience of both aspects of the matter, if the Commission wished to hear it, in connection with Los Angeles International Airport. (*Chairman.*) How long is Mrs. Crockett in this country?

Mr. *Briggs*: She is leaving tomorrow; she is going back to America tomorrow. (*Chairman.*) It is so difficult to digest a lot of this rather technical evidence unless one sees it in writing in advance. (Mr. *Briggs.*) It was simply on the question of property values, as the Commission seemed particularly interested in that, I thought I would bring this to your attention. (*Chairman.*) I am most grateful to you, Mr. Briggs, and Mrs. Crockett for volunteering. I wonder whether we might finish the evidence on the Agenda, and see where we are.

Mr. *Briggs*: I just made the suggestion. (*Chairman.*) I am very grateful to you.

Councillor J. T. Goss, Mr. L. E. Holland and Mr. G. N. Waldram called

Chairman: Councillor Goss, Mr. Waldram and Mr. Holland, we are very grateful to you for coming; thank you very much for the trouble you have taken in the admirable and succinct paper* that you have put in. I have not myself a great deal to ask you. Mr. Knight?

743. Mr. *Knight*: I think, Chairman, the main question I would like to put is the one that has been running through most of our questioning today, and it is this: we have had in your evidence certain suggestions about the way in which noise could be avoided by a location more remote from where population lives. You recognise, I think, that that imposes costs, and therefore the question is whether you have evidence that you could give us which helps us to assess the cost of the loss of amenity which people are now suffering?—— (Councillor *Goss.*) No, Sir, we have not got evidence of that sort. All we as a Local Authority Committee have sought to do was to gather together public opinion and frustration and put it before, now the Board of Trade, or as it was, the Ministry of Civil Aviation. At no time have we gone into any technicalities.

744. *Chairman*: I was particularly interested in paragraph 9 of your paper. This touches on a point we have already been dealing with, with the other people who have been good enough to come today, the question of who is going to pay the extra expense, if you site the airport a long way from London, simply to avoid noise. ——A certain amount of money will obviously come from the Airlines by increased landing charges, and so forth, and rents, and the public as a whole will have to get the thing off the ground.

745. Suppose you have something like a 20 mile distance—let us take two theoretical sites, one coastal, one otherwise suitable inland but the noise problem is less at the coastal site than the inland site. The increase in journey costs in taking the coastal site rather than the inland one could be measured in terms of many tens of millions of pounds to the income of the country, could it not?——I accept that, but over a period of what will be a large number of years, and the welfare of many millions of people, this surely is a matter that the general public as a whole, that the Government will have to pay for.

746. I stand to be corrected by Professor Walters on this, but is this not a continuing cost, Professor?

*p. 206.

Printed image digitised by the University of Southampton Library Digitisation Unit

Professor *Walters*: Yes, indeed.——I think if people do not wish to live under a glidepath or the take-off path, then they will have to pay, both the people on the ground and the people that operate the airlines by increased fares and increased charges.

747. *Chairman*: If you take the journey costs—I am taking a round figure, I am not suggesting this is really precise or accurate—of something like £5m. or £6m. a mile, there are 20 miles of accumulated journey costs of £120m. That has to be carried by the community as a whole rather than those who journey from the more distant airport?——Yes.

748. Your thesis is—I am not saying it is wrong—that the air travelling community should carry that journey cost, because they are the people who make the journey, for the benefit of people otherwise living on the ground, to avoid the noise problem? ——I do not think that is feasible. I think the whole of the public, if they want to live in better amenities, then they will have to subscribe towards those amenities.

749. How do the whole of the rest of the public subscribe?——Through the Government. The Government seem to levy it if they want it. If they want to get £120m., there is no trouble in getting it in.

750. I think it requires a little closer reasoning, now the contributions come from the non-travelling members of the community.——(Mr. *Waldram*.) Could I come in here, Sir, to suggest that the comparison is probably between those parents who send their children to private schools and pay the educational costs themselves, and still have to pay for the costs of State education through their rates.

751. Professor *Walters*: I am afraid I cannot follow the argument. I think a number of points have come up, about who is paying for it, and how reimbursement is going to be distributed. I think one of the implications of your argument is rather a serious one, that if the airport is located at the coast, then British Airport Authority should be subsidised for this decision. Have you faced that?——(Councillor *Goss*.) It is already subsidised, and it makes a loss.

752. *Chairman*: It makes a very large profit.——It does at the moment, but it has made losses.

Professor *Walters*: It has only been going two years.

Chairman: It made a substantial profit both years.

753. Professor *Walters*: It is true that at one time airports were making a loss, but since the British Airport Authority was established they made at least accounting profits. But I want to pursue this a little further. The argument is not whether it is or is not subsidised at the moment, but whether you would give an additional subsidy, this was my question, in view of the fact that we would force BAA to locate at the coast rather than an inland site. Was that the implication of your argument?——I think the people who are suffering at the moment would be quite prepared to do something to alleviate their present suffering; to what extent, I have not given thought. Obviously you have got the questions prepared, and I have not got the answers to them.

Professor *Walters*: I have not got this question prepared; you put it into my mind.

Chairman: In my own defence, may I say I have not got prepared questions, either.

754. Professor *Walters*: I only ask this because it seemed to me to be an obvious logical implication of what you say. I thought you had prepared an answer. I apologise.——I believe you have a national problem, and I think that with the jumbo jets coming along, if they are coming to London Airport, people living at either end of the main runways, Richmond, Twickenham and Windsor being the focal points, are going to have an extremely rough time, and I would think that it is going to be wellnigh impossible to live there in reasonable comfort. You mentioned just now this plane that went over at 65 dB, but in the court at Windsor, you would have to pack up entirely, you would not hear a thing, and that was a plane we would not have noticed. I understand the same situation obtains at Twickenham and Richmond; it is a question of degree.

755. *Chairman*: I can assure you that there are at least two periods of three minutes every day I sit in the Law Courts when you have to stop proceedings while an aeroplane goes over, one at quarter to 12, and the other about half past 3.——(Mr. *Waldram*.) May I say, Sir, you are

Printed image digitised by the University of Southampton Library Digitisation Unit

very fortunate it is only two periods per day. (*Chairman.*) That is what somebody said to me the other day when I complained.——(Councillor *Goss.*) It is a fact at Windsor, and I think Richmond, a constant every minute or two minutes during the day when the wind is in a particular direction that people have to stop, and if it gets worse, as it is obviously appearing to get worse, what does one do? You just cannot sit down and tolerate it. We as a Local Authority have tried to persuade the Government to move to the coast. It seems to be the only logical thing to do. It is a question, as Stansted has come up, and the local inhabitants there have forced this Inquiry because of their knowledge of what is going on in the area of London airport, so this must be exercising considerable concern in Government circles.

756. Professor *Buchanan*: Mr. Goss, our inquiry, of course, is not really into the situation at London airport. I think what we are doing is to look at the London airport situation, and draw on all the lessons we can for the siting of another airport. You really have given us some very specific advice in your paragraph 6,* quite refreshingly specific advice. You say: "The Council would urge on the Commission that it is essential that the areas immediately beneath the flight paths to and from the airport, including the stacking areas, should be free from residential accommodation for a distance of at least ten miles from each end of the runways concerned", very precise. I have been keeping a check on all the various representations that have been made as to the distance and the alignment where those complaints have actually originated from, and I think what I have picked up so far agrees with this. I think the furthest complaints we seem to be getting eastwards from London airport are round about 10 miles. It almost seems as though they stop on the east side of Kensington, Chelsea, but do not go on very much further east than that. What I am a little puzzled about is that you include the stacking areas. We have not, I do not think, had any complaints so far from people who are under the stacking areas. I do not think even on your list there is a local authority here under the two stacking areas of Garston and Epsom. If that is a serious point, why have not we had representations ——I think we are representing Esher Urban District Council, who in turn, I think, represent the residents of Stoke d'Abernon, who have made considerable representations about the stacking area over Epsom, and bringing planes in on a marker beacon that was sited at Stoke d'Abernon. I think the Epsom beacon was moved into Stoke d'Abernon, because representations were made by the hospitals in Epsom. Immediately that happened, than the Stoke d'Abernon people made their representations to us, and to the Esher RDC.

757. I am really just trying to go back to the point that arose his morning, when it was represented that really one needs to draw a circle of about 15 miles radius, and ideally one would not have anyone living in that area at all.——This I think is true. The Local Authorities Aircraft Committee was formed some ten years ago because of this increase in noise in that area, say 6 miles to 15 miles from London airport. There used to be, and there still is the Local Authorities Airport Committee, which was formed because of all the complaints of noise at the airport, and immediately on take-off some 16 years ago, and when that was first formed, the authorities that I represent were not unduly concerned. It was the advent of the jet and the much heavier planes that brought our Local Authorities Aircraft Noise Committee into being.

Mr. *Waldram*: Would it help; I have a plan here showing the area of the Local Authorities who are members of the Aircraft Noise Committee, and of the Airport Committee; if that would be of assistance, it is available to the Commission.

Professor *Buchanan*: I think it would be helpful, yes.

758. *Chairman*: May we have that?——Certainly. If you look at that plan, it is a plan showing the areas of Local Authorities as now existing; the areas which are coloured yellow are in the membership of the Local Authorities Aircraft Noise Council; those in the areas surrounded in green and cross-hatched green are members of the Airport Committee, and the blue dot in the centre is the position of London Airport.

759. Professor *Buchanan*: So that you have got one stacking area in, but not the other?——That is correct; there is some overlapping of membership of the two

*p. 207.

Printed image digitised by the University of Southampton Library Digitisation Unit

bodies. The yellow bits appear to be slightly different due to the colouring underneath in places.

760. The other interesting point that came up in the evidence this morning was that Surrey County Council have actually adopted what you might call a zoning scheme in the area around Gatwick, and are refusing planning permissions for certain types of development in certain of the zones. This is a very positive act of planning by a local planning authority. I do not know whether it has been tested out on appeal yet, but it is fairly recently, June of this year. Are any of the Local Authorities in the area you are concerned with taking similar action?——(Councillor *Goss*.) Not that we know of. It may well be that the Airport Committee of Hounslow may be doing that. I cannot answer for them; they are not here today unfortunately, but Berkshire County Council have not implemented that yet.——(Mr. *Waldram*.) It may be they consider the area is past praying for, from the planning point of view; everything has been completely developed. (Mr. *Holland*.) That side of Berkshire near the airport is already built up; the other part of Berkshire would not be affected by Heathrow airport.

761. There is always redevelopment going on, converting houses into flats, all sorts of things, in an area one thinks is fully developed.——(Mr. *Waldram*.) I think by comparison with Gatwick, Sir, there is much more open countryside which a developer would consider ripe for development in Surrey than there is in the areas epresented by the Local Authorities of his organisation.

762. The point of your comparison really was that in the case of Surrey there is an authority that has really set itself a standard in quite a specific way.——(Mr. *Holland*.) If I may say so, in regard to Professor Buchanan's remarks about the area of, say 15 miles around an airport, that is of course what has happened to Heathrow airport, and it is one of the things which we want to avoid happening at any future airport. That is part of our reason for coming here today, in some hope that mistakes will not be made in future that have been made at London airport, where all round the perimeter of the airport, houses have been allowed to go up piecemeal.

763. I am sure we can all accept that; we are very anxious ourselves to avoid making any mistake, but the point that is just puzzling me, I do not know whether this applies to other members of the Commission, but I managed to get in my mind a picture of an airport, perhaps in a north-east/south-westerly direction, and a great big cigar shaped area round it, but very elongated, perhaps going out 10 miles each way, and broadly speaking, one would endeavour not to have any large amount of residential accommodation in the cigar. But what has come into my mind as a result of today is that possibly the cigar is not right, and that in the other direction, at right-angles to the cigar, there should also be a tight control, and this is beginning to puzzle me, because if the airport is going to be on land, or even in the Thames Estuary, we have got to find a site for a sizeable amount of residential development. It was seriously maintained this morning that the development could well be 20 to 25 miles away from the airport, that no-one should be living closer to the airport than 25 miles. This is beginning to pose a pretty serious journey to work problem.——(Mr. *Goss*.) On this particular problem, I know in the area of London airport you can be within a mile or a mile and a half of the airport, and not be in any way inconvenienced by planes landing or taking off.

Chairman: This reflects the point I was endeavouring to put to Mr. Anstey this afternoon.

Mr. *Waldram*: Can I take it a little further. To take Professor Buchanan's cigar shape, I think that whether that should be bulged one way or the other depends entirely on the pattern of air traffic as it approaches the airport, and where it is held in stacking beacons before it makes its final approach to land and the routes that the aircraft have to follow once they have left the airport on take-off, this is why in our evidence we suggest that the stacking beacons are also put over the sea, if this is a practical possibility from the air traffic control point of view. But aircraft come in to join the final approach path and join it at heights of 2,000 ft. down to perhaps as low as 1,500 ft. and when they are flying at that height they do generate sufficient noise to be a confounded nuisance.

764. Professor *Walters*: Can I ask a question which is on this general line. Do I understand you rightly when you are concerned with, so to speak, sterilising the area against future housing development in the noise path, the flight path; is that

Printed image digitised by the University of Southampton Library Digitisation Unit

correct? You are concerned with trying to prevent any housing development in the possible "sausage" of the high NNI contour; is that correct?——(Mr. *Waldram.*) We are saying this is desirable from the point of view of the convenience of the people who would live in those houses, but we do question whether it is a practical possibility with the densely populated island in which we live, and we have come to the conclusion that it would be better if these areas were over the sea where people do not normally live.

765. One of the difficulties about having them over the sea is that you cannot live there, to put the paradox completely.——In other words, it is useless from the residential point of view.

766. Yes. The thing that struck me was that many people, of course, as we know from all the evidence, do not mind the noise, so presumably they would prefer to live near to their place of work at the airport, in spite of the noise.——That is true; there are people, in fact I have had two letters from people saying that they regard the convenience of living near London airport with the transport facilities overweighs the disadvantage of the aircraft noise. Those, I may say, were two out of 250 letters I have received since the 11th of this month. It is possible that individuals are less affected by the noise of aircraft. I personally am in the happy position of being a sound sleeper, and I am rarely woken by aircraft.

767. I am not referring to casual evidence; I am sure everybody offers casual evidence at the drop of a hat—that is probably an unfortunate simile. What I was referring to was rather more scientifically based evidence from surveys, properly organised statistical surveys. We know from that evidence there is this high fraction of people who have been referred to as the impeturbables. It does seem to me it may well be a short-sighted policy, then, if you in fact try to limit development in these noisy areas, because it is, of course, throwing away land in that sense which would be ripe for residential development, and have a lot of other advantages. So it may well be a good idea to rethink this policy, and think of it in terms of the imperturbables moving in there.——Sir, how does one guarantee it is only imperturbables who move and live in any particular area?

768. I am not suggesting one has a guarantee; I am suggesting if you give people free choice, they will, of course, move to noisy areas if they do not mind the noise. If they do mind the noise, they will not.——(Mr. *Holland.*) If people have not a home, they will move there and complain afterwards.

769. We have objective evidence of this high fraction of imperturbables, and this does seem to me a factor which should be taken into account. As far as I can see it has not been taken into account in the various submissions we have had.——(Councillor *Goss.*) What we have taken into account are the people who were there before the airport was established, to the extent that it is today. This is the real hub of the problem, surely. If you are going to site a new airport, and people want to move into the vicinity of that airport, that is up to them, but it is the people who are already there that have established a way of life, and they moved to a particular area for one reason or another. One of those reasons would be comparative peace, and suddenly have an airport on their doorstep.

770. I think this is a different question. One of the questions to which we are addressing ourselves is the development that comes as a consequence of the airport, as a source of employment and so on, which means new houses, and the considerable increase of population; something like ¼m. to ½m. has been the figure suggested. I entirely agree with you about people who have been caught, who have gone there for other purposes.——The London Airport Committee have done three surveys* for you, have they not, on the noise factor as it affects the Hounslow area? I think they submitted it to you. That may be of some use in establishing your cigar shape.——(Mr. *Waldram.*) I think we still have the question unanswered from Professor Walters. He is questioning whether, in view of the fact that there appear to be a high percentage of the population, or a percentage of the population who are not affected by aircraft noise, it is a correct planning policy to sterilise for residential development Professor Buchanan's cigar. I think the answer to that is that it is awfully difficult to persuade people who have not had experience of the noise that you suffer from being under the flight paths of major airports, to get it across to them precisely what the nuisance

*Available for inspection, by arrangement, at the offices of the Commission as part of the evidence submitted by the Local Authorities (Airport) Committee.

Printed image digitised by the University of Southampton Library Digitisation Unit

of the noise is. They have no idea, and words somehow do not seem to be able to put it across to them. I cannot help feeling that if development were permitted within the cigar, that there would be a lot of people who would go in there saying: Oh, yes, there is aircraft noise, but I can stand it. They then find that they could not stand it, and start to complain to the unfortunate Local Authority for the area concerned for allowing them to go there in the first place.

771. Professor *Buchanan*: I think you are saying that at the very least, you would like to see the cigar over water?——Yes.

772. Suppose the cigar came over a pretty sparsely populated rural area, would you admit that as a possibility, an area which is perhaps of high agricultural value, and is not going to be developed anyhow, there are other good reasons for not having development, would you accept that as a possibility?——I think that would be acceptable, but it would be difficult to put any precise figure or precise definition of a sparsely populated area. This, I think, would be a question which could only be answered by applying it to a specific site and a specific area.

773. Let us say an agricultural area which has not got anyone living in it at all. ——I have no veterinary evidence as to whether aircraft noise has any effect on animals, but I would say, subject to that, I have no objection.

774. The point I am really leading up to is this. You start by saying: we will have the cigar over an area where no-one is living. Then you find there are some people living there, then you shift it to another place and find more people living there. There comes a point at which you start balancing things out and costing things up. We might say; if there are 100 people living in the cigar, really the balance of advantage to the community is to compensate those people, or perhaps move them, or let them find another place to live in the interest of the advantages to the community. But as the population increases, perhaps the balance might swing the other way. It is not absolutely rigid.—— No, I think one must apply a measure of reason, striking the balance that you have mentioned.

775. *Chairman*: May I bring you back to Professor Buchanan's point about stacking areas, because this is the first time, as far as I recall, it has been raised. I think I am right in saying that the stacking areas do not come below 5,000 feet?——(Mr. *Waldram*.) I think that is correct. But the fact that an aircraft beacon started operating at Stoke d'Abernon produced quite a flood of correspondence to me as Secretary of the Aircraft Noise Council, most of them being bitter complaints about the disturbance to the peace and quiet which they previously enjoyed in the area, due to noisy aircraft. Some other complaints were of low flying aircraft, and the residents of the area have been extremely vociferous in their complaints as a result of the moving of this aircraft beacon from Epsom to Stoke d'Abernon.

776. Do you know anything about Garston, near Watford, which is the other stacking area for Heathrow?——Watford is not a member of our community, and we have had no complaints; personally I have received no complaints from that area. Whether it is that the inhabitants under the Garston and Epsom stacks were used to the noise, whereas the residents of Stoke d'Abernon were not, I do not know.

777. That is just the point that was occurring to me.——It is probably the reason for the complaints.

778. Professor *Keith-Lucas*: It sounds as if there was a second factor there, if there were low flying aircraft.——These were the complaints I received in a letter; whether they were in fact low flying, I have no idea. (Mr. *Holland*.) I think the type of aircraft nuisance is different in each case. In the case of the stacking area, it is more of a continuous noise rather than a very high dB, but of course in the flight path, taking off or landing, the aircraft is flying much lower, the noise is more, but it is not quite so continuous, perhaps.

779. Professor *Buchanan*: The stacking areas are not by any means continuously used, are they?——They are.——(Mr. *Waldram*.) The stacking area is a form of reservoir for the aircraft coming into the airport. I suppose it is like the cistern in a house. Sometimes it is full, sometimes it gets below.

780. *Chairman*: That is right, but it is not continuously in use, in the sense it is in use all daylight hours, or all round the clock.——(Mr. *Holland*.) Sometimes they are in the stacking area for several hours at a time.

Printed image digitised by the University of Southampton Library Digitisation Unit

781. Not in this country. (Councillor *Goss*.) At holiday periods.

782. Not several hours at a time. The worst that happens, as far as I know, happens at Kennedy, where they get up to four hours, but not here.——(Mr. *Waldram*.) It obviously varies from time to time. We have no certain statistics as to the number of aircraft in the stack, and how long they are there. It obviously varies with the general pattern of aircraft.

783. The exact vertical width is 55,000 to 35,000, so that is covering 20,000 ft, which is 3½ miles high.——Nevertheless, we have had bitter complaints about noisy aircraft from the residents in the Stoke d'Abernon area.

784. I am most grateful to you for mentioning it, because it is the first time it has been mentioned.——If your Secretary wishes to see the letters of complaint, they are all available.

785. That is very nice of you. If you tell us you have had the complaints, that is good enough for us.——It is a question of how the strict rules of evidence apply. (*Chairman*.) They do not.

786. Professor *Walters*: I would like to come back to your answer to my question which I thank you for, Mr. Waldram; it was very explicit. It has certain other implications, though. I am rather concerned about those. What you are suggesting is that the local authority can better decide what people really want rather than the people themselves, that is to say, the Local Authorities' judgment of what people are really going to enjoy is better than the people's judgment themselves. This is, I think, rather a serious decision to make, and I would like to know whether this is the view to which you subscribe?—— I do not think I meant to imply in my answer that the Local Authority was the mother that knows best, but a Local Authority has great experience of local conditions, which someone coming in from outside the area does not have. I think the answer I gave to you was—someone might think he is an imperturbable to aircraft noise, but has never tested it by actual experience of aircraft noise whether he is or not. He then commits himself to the purchase of a house within the area under the flight path, and finds that he is not an imperturbable, whatever he may have thought before. The last person he blames in my experience is himself; usually the first person he writes to, or one of the first persons he writes to in my experience is either the Town Clerk or his local Council.

787. You would not subscribe to the idea, then, that since this is his mistake, he should pay the consequences?——I should subscribe to that view, but that does not prevent him trying to make the Local Authority pay for it.

Professor *Walters*: I agree, Thank you.

788. Professor *Buchanan*: I do not want to cross swords with a fellow member of the Commission, but am I not right in saying that under the Town and Country Planning Acts, certainly for the last 25 years planning authorities have had very onerous duties put on them to try to tell people in effect what is good for them and what is bad for them in respect of all sorts of matters?——Quite true, but they have only been able to do that usually by saying: You cannot do that, because it is bad for you.

Professor *Walters*: That is quite true; I agree.

789. Mr. *Goldstein*: Mr. Waldram, do you and your colleagues accept the Wilson NNI criteria?——We accept it as a criterion, but as I think the Local Authorities Airport Committee say in their evidence, they do question whether the contours drawn in that report should not be re-examined in the light of subsequent experience, of the operation of London Airport.

790. You accept the principle, you think that 45———No, we wonder whether the contours are drawn in the right position.

791. *Chairman*: They were correct at the time, in 1963; they are no longer correct. ——That is the point.

792. Mr. *Goldstein*: But as to the actual criteria, you do not dissent from them?—— No.

793. Provided the Commission draws the contours correctly?——That is the point.

Chairman: Gentlemen, thank you very much indeed for your help; we are very grateful to you for your trouble in coming.

Printed image digitised by the University of Southampton Library Digitisation Unit

MRS. MARY LOU CROCKETT called

794. *Chairman*: Is Mrs. Crockett here? We would very much like her help. (Mr. *Briggs.*) We have two copies of photographs of Los Angeles airport. (*Documents handed in.*)

795. *Chairman*: Mrs. Crockett, for the record, may we have your full name, and know who you are and what you do?——I am Mary Lou Crockett, and I am Vice-President of Community Plans Incorporated, which is the Citizens Planning Group in Westchester, which is a community in Los Angeles, and we live adjacent to Los Angeles International Airport.

796. That is Westchester, Los Angeles, not Westchester, New York?——Yes. We are the community north of the airport in the photograph, about 60,000 residents, 13 square miles, and it is mostly an area developed after the war. 1945 to 1955 is when the houses were built. The airport was there, and we have grown together. I am a realtor, and I grew up in the community, and have lived there all my adult life, and own a home there, and am raising my children there, and that kind of thing. Having watched the problems that you have been discussing today, only ours are far more along the road of being complex than what you will have coming in the future with air transportation increasing the way it is.

797. How many runways are there at Los ngeles?——There are three right now, nd there is a fourth runway under con- truction, which is 1,000 feet from the esidential area. You can see the one to the orth; there is another one going in 750 feet orth of that.

798. Am I holding it the right way up? —Yes, that is the ocean to the west; the cean is down at the bottom. The planes and to the west, towards the ocean, and hey take off going out over the ocean, so ve do not have the problem of take-off over he city, but we have them as they land. t is a large radius of our city, as yours, nly ours is even more populated for a arger amount of area. This is the west; he airport is 3,000 acres in the middle. This s our community, right here. Ours is ,000 acres. It is all single family dwelling omes, built between 1945 and 1955, anging in price from about 25,000 dollars apiece up to about 125,000 dollars. Now what is happening is that the property right here, 1,000 houses, are being bought by the airport at the cost of 40m. dollars. At the other end of the runway they spent 17m. dollars acquiring 400 homes in beautiful beach front property; you can never replace it, there is no place like it. They already had bought in 1959 189 houses. This is the third acquisition, the 1,000. There is no acquisition like this that has gone on anywhere yet in connection with airport growth. The problems are just unbelievable. The Airport Commission themselves are unable to deal with them, because they have no idea what is going to happen, our local problems in control. They have bought 400 of these houses, and the people have voluntarily sold because they are right under the runway, and the jets are 200 ft over the houses. The elementary school that is in the middle has just closed in September; the children went to school here with the airplanes 200 ft over their heads at every 2 or 3 minute intervals, sometimes every 40 seconds, until June 1968.

799. Are people trying to get away from Los Angeles and sell their houses, or do they stay there in spite of those conditions? ——It is the same thing in Los Angeles, the problem is really becoming acute in the last two years. We could live with it; but in the last two years it has become intolerable.

800. Are people moving out? Are there empty houses?——They are not empty; they are rented. The demand for housing is very high, just like it is here. We have had no building for three or four years, all the subjective things that have taken place, but the character of the neighbourhood changes, because what was once a 99 per cent owner occupied community is now 75 per cent owner occupied, and it continues to deteriorate, and as the rental properties continue, the factor goes up, the property value deteriorates. We are just getting to the point where we have facts about property values, because it has increased at about 5 per cent a year for the last 15 years steadily. But again, there are other reasons that it has begun to decrease, not just aircraft noise, so it is difficult to just place it to aircraft noise, except those properties that are directly adjacent to the runways when they have 120 dB; that

Printed image digitised by the University of Southampton Library Digitisation Unit

would be the measurement, and more day and night. Who can live there? But they are living there, and people will rent them at very high prices. But it is hard to get them to buy them, of course.

801. Am I right in thinking that you have got the most appalling surface access problem to get to the airport in Los Angeles?——That is right, we have no freeway to the airport.

802. When I was in America in the summer they told us that this was the worst of all the airports to get to.——Yes, but we go on building; we are putting another 500m. dollars into it, because we do not want to locate a third airport and take the time you have been taking to go into all those problems, we just dump it into what we have got. 500m. dollars is what we appropriated last month.

803. You accept the consequence of that is the appalling noise problem to the community that is there.——You see, the problems are all just coming into focus together. These people at the airport, they spend their time building an airport, naturally, whereas these people over here, us, we have got jobs and living and so forth. As we become more and more dispirited, we spend more and more time on it. Now we are trying to take an approach to get them to have a system of airports, have a regional approach. You see, we have the city having control over this airport, it is municipal, but because of the problems in locating a third airport with all it involves, you know, who wants it where, no-one wants to take the responsibility for it, and the easy way out was to build a monumental traffic jam, and that is what we are going to have. It will be another ten years before we get a freeway in, so when you talk about M.4 and Cromwell Road—but you have, of course, a marvellous system of transportation, but we only have an automobile to get around in.

804. Do tell me which is our marvellous system?——We just defeated a bond for rapid transit which would have given us a leg, supposedly, to get to the airport. It was added in political haste within the last few months before the bond was put on the ballot, but it did not pass. We have no other way to move people except automobiles, and it is a problem. These are some of the things that hopefully you will be able not to get into the situation we have gotten, 18 schools and churches, fabulous institutions that were built in the early 60's; one of the most expensive junior high schools in the city, and that was built right under this runway, and it will be closed next year—it is 6 years old, several million dollars. It is irreplaceable. Churches —beautiful—our best public facilities are 2,000 feet from the runway. Two libraries—you know, so if you can avoid these disasters, it is a real shame. How we get out of it at this point, we have a citizens' group, and we have the airport working together; it is the first time that the airport has realised that there is a community next door, and they have to plan for the community as well as air traffic. So we are making progress, and things are taking place right now while I am here that should be interesting by the time I get back. Things are happening quickly.

805. Mr. *Hunt*: Why are the Commission buying the 400 houses, and the others?——1,000—because for reasons, No. 1, they are putting part of the approach pattern into a small area, it is 179 acres that they are acquiring, and they want to put the approach lights there for the instrument landing system, and the noise will pose such problems that they are buying as much as they can now to eliminate the problems from the neighbours.

806. They are fearing action by neighbours if they do not buy the properties now; is that the position?——That is right, they are putting themselves into the position that there is about 200m. dollars worth of property that is affected just north of the airport. When this runway is finished, either the zoning is going to have to be changed, the requirement for noise is going to have to be changed, on what they are going to allow at the airport, or they are going to have to buy the property, it will be intolerable. So I do not know what the solution is. 200m. dollars is a lot of money, and when you talk about the public funds, for instance, can we afford to put an airport far away—who is going to pay for it? These are the prices that you are paying in the long run, things that money cannot buy.

Chairman: Thank you very much, Mrs. Crockett, we are most grateful to you.

The next public meeting will take place next Friday at half past 10 at the City Temple Hall, where the last one was. We have the morning only for the purpose of discussing certain surface access problems.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX

Letter from the chairman of the Commission to organisations who were not called to give oral evidence

COMMISSION ON THE THIRD LONDON AIRPORT
Templar House
81–87 High Holborn
London, W.C.1

22nd October, 1968

Dear Sir,

I am writing this letter to all those organisations and individuals who have submitted written evidence on the problem of aircraft noise and nuisance in relation to the location of a third London airport.

We have been very impressed by the volume and the weight of that evidence but it has created a problem. As was made plain in the press notice we issued in July, we have to decide what oral evidence we should take at this stage to elucidate the written submissions made, there being no right to give oral evidence. We have, however, decided to put aside some time during our public hearings for oral evidence on the noise and nuisance problems. Unfortunately, we cannot allocate enough time to allow everyone who has written to appear separately before us. In any event many of the submissions received do cover the same ground and make similar suggestions. It therefore seems to us that a whole day should be made available. We have decided to invite three representative organisations to appear before us on that day, which would be 22 November, 1968. The organisations are the British Association for the Control of Aircraft Noise, the Local Authorities Noise Council and the United Kingdom Federation Against Aircraft Nuisance; separate invitations are being sent to these three organisations. We leave it to them to arrange how they present their oral evidence.

The purpose of this letter is to thank you for the help you have given, to say that the written evidence we have received from you will be taken fully into account in our further work and to explain our reasons for the decision we have reached.

Finally, if you wish to join with any of the three organisations in appearing before us, or to have any special points brought up by them, I would ask you to get into touch with them direct.

Yours sincerely,

THE HON. SIR EUSTACE ROSKILL

Printed image digitised by the University of Southampton Library Digitisation Unit

Board of Trade press notice concerning call for oral evidence

The Commission on the Third London Airport has held a number of meetings at which it has given preliminary consideration to the scope and nature of its task. It accepts the outline procedure suggested by the President of the Board of Trade in his announcement on 20 May (columns 39 and 40 of the House of Commons Official Report, volume 765, No. 121).

During the first stage of the Inquiry, the Commission will consider in a broad way the whole range of alternative sites, eliminate those which are clearly unsuitable and identify the small number which require more detailed consideration. The second stage will consist of the hearing of evidence of a local character concerning the short-listed sites. The third stage will consist of investigation and research into matters relevant to the choice to be made between the short-listed sites. The material produced during this stage would be considered by the Commission in the fourth stage. The fifth and final stage allows for interested parties to test the material produced during the earlier stages.

The Commission is now ready to receive evidence relevant to the first stage of its task. It asks that evidence should be submitted in writing in twelve copies addressed to the Secretary, Mr. J. Caines, Templar House, 81–87 High Holborn, London, W.C.1 (Telephone: 01–242 0161). The Commission will decide whether to invite any oral evidence during Stage I to elucidate the matters it is considering when it has studied the documents submitted to it. At this stage there will be no right of representation before the Commission. There will be full scope for interested parties to be represented at subsequent stages of the Commission's work (i.e. Stage II and Stage V). Unless otherwise requested, the proceedings of the Commission when oral evidence is received will be public.

As the Commission's first requirement is to draw up a list of suggested sites, it would ask that any proposals, limited to the name of the site and the precise location of it, showing proposed runway positions and alignments, should be submitted by 16 September, 1968. Detailed proposals in favour of any specific site should be submitted not later than 31 October, 1968. So that the Commission is able to evaluate such proposals on a systematic basis, it would ask that they be presented under some or all of the following principal headings: timing of the need, regional planning considerations, employment benefits, cost of construction, provision of services and utilities, housing requirements, surface transport aspects (including any new towns), noise and nuisance considerations, amenity considerations, effect on defence installations, land use, air traffic control and other operational considerations, and effect on other airports.

The Commission is also ready to receive any evidence of a general nature relevant to its task by 16 September, 1968.

The Commission appreciates that some of the evidence that will be put before it may be of a confidential nature, and, provided that this is clearly indicated when evidence is submitted, it will take this into account when preparing its report. However, it will reserve to itself a general right (to be exercised as it thinks fit) to publish any evidence, written or oral, that is made before it and to make it available to other interested parties; in the absence of any indication to the contrary it will assume that those making submissions recognise and accept this possibility.

The Commission's Terms of Reference are:—

> "To inquire into the timing of the need for a four-runway airport to cater for the growth of traffic at existing airports serving the London area, to consider the various alternative sites and to recommend which site should be selected."

Board of Trade,
1 Victoria Street,
London, S.W.1.

15th July, 1968

Printed image digitised by the University of Southampton Library Digitisation Unit

List of other organisations that submitted written evidence

Written evidence and representations on noise, other than evidence which was the subject of the public hearing on 22 November, 1968, were received from:

Mr. O. D. Bennett

Lord Bledisloe

Chelsham Parish Council

Mr. A. Coomber

Datchet Residents' Association

Ealing Federation of Residents' Associations

East Grinstead Urban District Council

Egham Riverside Residents' Association

Gatwick Anti-Noise Executive

Hampstead Association for Aircraft Noise Control

Heathrow Campaign Committee

Hertfordshire Federation of Womens' Institutes

Heston Ratepayers Association

Horley Private Residents' Association

London Borough of Bexley

London Borough of Enfield

London Borough of Merton

London Borough of Wandsworth

London Federation of Trade Councils Transport Council

Longford Residents' Association

Molesey Residents' Association

National Council on Inland Transport

Messrs. K. E. Parker, V. F. Desbrough, J. Jarratt

Mr. John Regan

Science of Life Fellowship.

Southend Jet Aircraft Protest Association

Strawberry Hill Residents' Association

Tendring Rural District Council

Welwyn Rural District Council

Windsor and Eton Society

Windsor Noise Abatement Group

Wraysbury Association

This evidence is available for inspection, by arrangement, at the Commission's premises.

Printed image digitised by the University of Southampton Library Digitisation Unit

Written and Oral Evidence

22nd November 1968

Surface Access

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Surface Access

MEMORANDUM BY THE MINISTRY OF TRANSPORT

Contents

1. **Introduction**
   - 1.1. Purpose of this Paper
   - 1.2. Distribution of Functions

2. **General Factors Affecting Surface Access**
   - 2.1. General Economic Factors
   - 2.2. Consideration of Amenity
   - 2.3. Town Terminals
   - 2.4. Cost Sharing with other Major Developments
   - 2.5. Secondary Transport Needs of the Airport

3. **Traffic Forecasts**
   - 3.1. Air Passenger Traffic
   - 3.2. Surface Transport Requirements

4. **Access by Road**
   - 4.1. The Road Programme
   - 4.2. Capacities of Urban and Inter-Urban Roads
   - 4.3. Traffic Conditions on Radial Routes
   - 4.4. Traffic Conditions on Ring Roads and Distributive Systems
   - 4.5. Cost of Major Highway Construction and Maintenance
   - 4.6. Road Construction Cost Differentials of Possible Sites

5. **Access by rail**
   - 5.1. Capacities of Railways
   - 5.2. Present and likely Future States of Main Lines
   - 5.3. Cost of Railway Construction

Printed image digitised by the University of Southampton Library Digitisation Unit

6. **User costs**

6.1. Road User Costs

6.2. Fixed Link User Costs

6.3. Combined User Costs

7. **Technical developments**

7.1. Existing Unconventional Systems

7.2. Possible Future Developments

Appendices

1. Methods used in the Evaluation of Time

*2. Map of Major Radial and Orbital Network in the South East Economic Planning Region

*3. Map of Capital Road Construction Cost Differentials

*4. Map of London Primary Highway Network

*5. Map of Main Rail Routes from London

* See wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

1. Introduction

1.1. Purpose of the Paper

1.1.1. This paper reviews the factors in the field of surface transport relevant to a decision on the site of London's third airport and attempts to indicate, as far as possible in quantitative terms, their importance. It does not attempt to deal definitively with the surface transport costs of particular sites. Separate papers on sites chosen by the Commission for detailed appraisal will be submitted in due course if required.

1.1.2. The principal factors affecting surface access are discussed in chapter 2. Some of the points there made, are elaborated and quantified in chapters 4, 5 and 6. Chapters 4 and 5 are concerned with the costs and other relevant characterisitics of road and rail transport repsectively, considered in relation to traffic forecasts and assumptions described in chapter 3. Chapter 6 deals with costs to travellers that would arise from siting the airport at different distances from London. The paper ends with a discussion in chapter 7 of the possibilities of relevant new technical developments in the transport field.

1.1.3. The Ministry is indebted to British Railways for most of the material in chapter 5 relating to the capacities and costs of railways and terminals. British Railways have also offered to provide estimates in respect of specific short-listed sites on receipt of detailed information of the nature of which they have already given particulars to the Commission.

1.1.4. It must be strongly emphasised that all cost figures quoted in this paper are tentative. They have been worked out as averages on broad assumptions which will apply with perhaps widely varying degrees of accuracy to particular sites. They are intended to illustrate the way in which surface transport costs are likely to vary between different sectors around London, and at different distances from it, and are neither fully comprehensive nor precise. The most important assumptions on which they are based are stated in chapter 3.

1.2. Distribution of Functions

1.2.1. The Ministry is concerned in varying ways with a number of matters affecting the siting of the third airport. It is directly responsible for the planning and construction of trunk roads in England, whether all-purpose or motorway, and contributes 75 per cent of the cost of building or improving principal roads—that is to say, other roads of regional or substantial urban importance. It also has a general responsibility for levels of expenditure on roads by local authorities. The Minister's approval is necessary for major investment projects undertaken by British Railways (BR) and London Transport (LT) and if a new form of surface transport were used for communications with the airport the Ministry would have to be satisfied of its safety and reliability before it could be introduced into public service.

Printed image digitised by the University of Southampton Library Digitisation Unit

It should be noted, however, that the initiative in providing road improvements at the London or airport ends of the route may lie formally with the Greater London Council (GLC) and the appropriate County Council as local highway authorities. Similarly the formal initiative in providing a rail link would rest with BR.

1.2.2. The general pattern of transport facilities in the south-east of England and its relation to the social and economic development of the region as a whole is a concern of the South East Regional Economic Planning Council.

1.2.3. Special arrangements exist between the Ministry and GLC for the joint planning of trunk roads and principal roads in Greater London. These form part of the machinery of the Transport Co-ordinating Council for London, which also provides for detailed consultations between the Ministry, the GLC, BR, LT, and other interested parties about all aspects of transport in London. New proposals for strengthening transport planning are contained in the White Paper on *Transport in London** issued in July 1968 (Cmnd. 3686). Under these the GLC will become the overall transport planning authority for their area, and will (after consultation with the Ministry, BR, LT, and other bodies) draw up transport plans covering the whole range of transport needs and facilties in London. The Ministry will take account of these plans when considering investment proposals. London Transport will come under the policy direction of the GLC, which in consequence will exercise effective control over new investment in "underground" railways in the London area. The Council will also have the right to be consulted about proposals for investment by BR in their London commuter services.

1.2.4. Research and development in the transport field is the concern of both the Ministry of Transport and the Ministry of Technology who have established joint machinery for its supervision. Work is being done by many different agencies, including BR on an advanced form of passenger train, the National Research Development Corporation on the hovertrain, and a number of private companies here and abroad on various unconventional transport systems. Notes on some of these are contained in chapter 7 below. Any firm proposal to provide a link to an airport by means of any novel system would ordinarily be initiated by the developers.

1.2.5. The Transport Act, 1968, Section 56 provides for the payment by the Minister of "infrastructure grants" towards the capital cost of public transport facilities. But projects to deal with urban commuting problems have the first call on available funds and public transport links to an airport would not be eligible for grant under the scheme now starting to be operated.

1.2.6. Construction of any link between the airport and London would in most cases entail statutory land use planning procedures in respect of the

* HMSO, 7s. 6d.

Printed image digitised by the University of Southampton Library Digitisation Unit

town terminal and in some cases for the route. Approval would be required both from the relevant local planning authoritites (in Greater London the GLC) and, in certain circumstances the Minister of Housing and Local Government.

1.2.7. Any proposal to run a coach service by road between London and a new airport outside the Greater London area would be initiated by the proposed operators; in most cases an airline or its agent. It would be subject to licensing by the Traffic Commissioners, who act in this matter in a judicial capacity independently of the Ministry.

2. General Factors Affecting Surface Access

2.1. General Economic Factors

2.1.1. The surface transport costs of the new airport will be of two kinds: capital costs incurred in the provision of new or improved transport facilities, and user costs incurred year after year by those who travel by road, rail, or other means, between the airport and various origins and destinations. The total cost attributable to the airport on transport account will be the sum of capital and user costs.

2.1.2. Capital costs can be classified according to purpose as the costs of providing:

(a) connecting links from the airport to the existing main road or railway network;

(b) extra capacity on the network, especially on radial route out of London, and

(c) terminal facilities at the London end, including station costs (railway or coach) and associated street improvements.

Terminal and distribution costs inside the airport boundary are the responsibility of the airport authority and are not dealt with in this paper. It should be noted, however, that the method chosen for distributing traffic inside the airport could affect the passenger's choice of mode to reach it. The cost of any direct high-speed link between London and the airport would partly take the place of (a) and (b) above, but terminal costs would still be additional.

2.1.3. Capital costs can be classified also according to their timing as:-

(a) immediate costs which must be incurred at the outset when the airport is built, and

(b) deferred costs which will need to be incurred some years after it is completed in order to meet the later growth of airport traffic.

The two must be added together to arrive at the total, but deferred costs are subject to discount in respect of the time between the opening of the airport and the date of their having to be incurred. The rate of discount used

Printed image digitised by the University of Southampton Library Digitisation Unit

in this memorandum is 8 per cent, the rate used generally in Government investment calculations. The effect is, for example, that £2 to be spent in 1984 is counted as £1 in 1975—the year that has been taken in this paper as the base date for the opening of the airport. It follows from this that, although the volume of airport traffic might be the same for two different sites, and the eventual costs of providing for it not dissimilar, the effective costs would be widely different if the burden of traffic were to fall in one case on to overloaded routes requiring immediate new construction and in the other on to routes which will have substantial amounts of unused capacity when the airport opens.

2.1.4. User costs include three main elements: operating costs for road vehicles or trains, the cost of accidents, and the value of time lost in travelling. These are standard ingredients used in cost/benefit analyses for comparing alternative proposals for investment in transport facilities, and each of them has been the subject of a good deal of research. In many cases the most significant of the three is the value of time. Different values are assigned for leisure and for working time. A note on the method used in calculating these values is contained in Appendix 1. The average values used by the Ministry in calculations of surface transport costs are 3s. 0d. per hour for leisure time and 13s. 6d. per hour for working time in 1967, with an assumed growth of 3¼ per cent per annum. In default of any established values for the time of air travellers as a separate class these average values have been used throughout the paper.

2.1.5. In an ordinary cost/benefit study, when alternative investment proposals are compared, benefits, i.e., savings of operating costs, time, etc., that would result from each proposal compared with the situation that would exist if the investment were not made are calculated. Extra journeys generated by the existence of the new facility also contribute an element of benefit. The differences between benefits and costs, including capital costs, are estimated year by year for the life of the project, discounted back to the base year, and summed to produce the "net present value" of the investment. The objective is to find the project with the best surplus of benefits over costs. The objective in the present paper is the more limited one of indicating how surface transport costs may vary between sites in different areas. For this purpose, all user costs must be regarded as net additions to capital costs, and in cost/benefit terms have a negative "net present value".

2.1.6. The heavy weight of air traffic that is forecast through the 1980s and the manifest impossibility of finding a site for the third airport close to the centre of London make it virtually certain that long term plans will have to provide for both road and rail, or other fixed track public transport, communications of high quality. The needs in the early years, when traffic will be comparatively light, are less clear. But, at a minimum, road access of a high standard, to enable cars to travel at good average speeds and coach services to operate with regularity and punctuality, will be needed and ready access to an existing main line with spare capacity would be a very considerable advantage.

Printed image digitised by the University of Southampton Library Digitisation Unit

2.1.7. The capital costs of providing surface transport infrastructure to serve the airport vary from sector to sector round London chiefly because of the differences in the amount of capacity available for airport traffic on existing roads and railways. They will also, of course, vary with distance. Figures given in section 4.6 broadly indicate the discounted road construction costs that might be incurred by siting the airport at different locations along the main radials. At a radius of 40 miles they range from a negligible amount on the M.11/A.11 to Cambridge to about £30 million on the A.24/A.29 to Horsham and Worthing. The critical nature of scheduling problems makes it impossible to work out railway costs on a similar general basis sector by sector. But an indication is given in Section 5.2 of which existing routes would prove less and which more costly to adapt to the needs of the third airport and section 5.3 gives some general data on costs of railway construction. It is argued in chapter 7 that no novel alternative to conventional duorail would be likely to provide a cheaper means of connecting the airport to London.

2.1.8. Figures are given in chapter 6 showing part of the user costs for road and a fixed track link (in the example chosen a conventional railway). These are marignal mileage costs only, i.e. the extra costs that would be incurred by air passengers and service traffic for each mile added to the distance of the airport from London. They range, in various assumptions about division of traffic between road and fixed-track link and about prevailing speeds on the roads, from £5·3 million per mile net present value up to £8·5 million per mile. These figures leave out of account important elements of total user costs such as, in the case of a public transport link, passengers costs in getting to and from the town terminal. They also leave out of account possible costs to other travellers caused by increased congestion around terminals or en route. They illustrate, however, the important effect of distance from London on surface transport costs.

2.1.9. They illustrate also, the importance, for any accurate calculation of surface transport costs, of determining the likely division of travellers between car and public transport. This is the problem of determining the so-called "modal split". In general, it might be expected that the further the third airport was sited from London the greater would be the proportion of travellers to London who would find the advantage of a fast public transport link outweigh those of direct travel by car. It might be expected also that use of faster forms of public transport such as the Advanced Passenger Train would intensify this effect. It has not been possible with the data available to quantify this effect but cost figures have been given for three hypothetical modal splits between car, coach and train.*

2.1.10. Most of the figures in this paper relate primarily to the transport costs of traffic passing between the airport and London itself, but this will be by no means all the traffic to be catered for. How much else there is and the costs of handling it may depend to some extent upon the site chosen. An airport to the east or south east, for example would be likely to draw more

* A further paper is being prepared for the Commission on the effect on mileage costs of progressive change of modal split with distance.

Printed image digitised by the University of Southampton Library Digitisation Unit

of its traffic from or via London than one situated, say, north-west of the city where it would be able to draw directly on the catchment area of the Midlands to the North. To estimate the importance of possible effects of this kind, and to calculate user costs in general it will be desirable to have more information than is at present available on the origins and destinations of air travellers. It is understood that the Commission have already put further studies in hand. Meanwhile, figures in this paper have been based on what is already known about the origins and destinations of traffic to Heathrow.

2.2. Considerations of Amenity

2.2.1. Any means of surface access provided for the third airport will have an impact on the environment through which it passes. The Commission will be receiving an important weight of evidence from the many bodies concerned with the planning aspects of the proposal and with the preservation of amenities; and when different sites for the airport are being considered from this point of view it must be remembered that considerations of a similar nature, though on a different scale, will apply to the construction of new roads and railways as to the building of the airport itself. They will also apply with particular force to any proposal which would involve substantial new works at a central London terminal or its surrounding area.

2.2.2. Great attention is paid by the Ministry and local highway authorities to minimising the visual intrusion of new roads in rural areas, but often great opposition to them by local interests remain. In urban areas also visual intrusion is important, particularly where overhead structures are necessary, and there is an increasing awareness of the undesirable effects of noise, vibration and fumes from major traffic arteries on neighbouring areas. Similar considerations apply in principle to railways and other forms of fixed track transport.

2.2.3. The question how much advantage in terms of lower financial costs should be sacrificed for the sake of beauty and quietness is at present essentially a matter for subjective judgement. The Building Research Station is doing work on behalf of the Ministry on the response of people to noise from roads and on methods of reducing its effect. GLC are doing work in the same field. But at the moment, there seems no immediate prospect of being able to allot objective costs to loss of amenity due to construction of new roads near residential areas .

2.2.4. In the selection of sites for an airport, it is suggested that observation of the following general principles would help to minimise the amount of any necessary interference with amenity caused by surface access media.

(a) A site requiring more extensive new roads, improvements to existing roads, or fixed-track links than another (or requiring them earlier in its development) is likely, other things being equal, to cause more damage to amenity.

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) The greater the proportion of airport traffic that is attracted to public transport, rather than private cars, the less new roads will be necessary. Sites at which fast public services can be cheaply provided will therefore have an advantage.

(c) Penetration to central London by new surface or overhead public transport links would be likely to cause serious damage to amenities, though this could be reduced, at some expense, by tunnelling. The Commission may find the report of the Manchester Rapid Transit Study, volume 2, section 6, useful in assessing the possible impact of such links.

2.2.5. These considerations suggest that sites that could be served by fast rail services on existing track would have amenity advantages over sites that could not. But the major differences that exist in present levels of amenity between one area and another and therefore in the extent of possible damage, may in practice prove more important than differences in the nature or scale of the transport facilities provided.

2.3. Town Terminals

2.3.1. A survey conducted in 1967 showed that about 40 per cent of Heathrow passengers start or finish their journeys in the hotel and business areas of central London and that the majority of the remainder are bound to or from other parts of the London region. Public transport from central London to the airport is by coach services which operate from a number of terminals belonging to different airlines. BEA's West London Air Terminal at Cromwell Road and BOAC's Airways Terminal at Victoria between them handle most of the traffic.

2.3.2. The problems of dealing with the increasing coach traffic are mounting and the Transport Co-ordinating Council for London after an extensive study has recommended that a rail link should be provided terminating at Victoria station. The Council concluded that to connect the airport to the London Underground system by extending the Piccadilly line from Hounslow would not, by itself, provide adequately for the airport traffic. Although this solution would offer the attraction of dispersing the traffic at once, via the many stations of the underground system, it cannot offer baggage-handling facilities and, at rush hours, there is no spare seating capacity. Further, because of the particular servicing system necessary, the underground cannot offer a full 24-hour service.

2.3.3. Similar conclusions would be likely to apply to a public transport link to the third airport. If a non-stop train or fixed-track other service is provided, as recommended for Heathrow, it is a reasonable assumption that a substantial proportion, perhaps more than half, of the passenger traffic of the new airport will be collected and distributed via a terminal in central London. In absolute terms the flows might be in the region of 2,000 to 3,000 passengers in the peak hour by the mid 1980s and 3,000 to 4,000 by 1990. Although such volumes are small compared with the numbers of commuters (between 40,000 and 50,000 an hour) handled by some of the

Printed image digitised by the University of Southampton Library Digitisation Unit

big London termini such as Liverpool Street and Waterloo, the traffic they generated would impose considerable strains on central London's transport systems if concentrated at one terminal at a point short of capacity to handle them. From the present London air terminals 70 per cent of air passengers use car and taxis, compared with 1 per cent of commuters from the stations. If the site of the terminal were ill-chosen, the cost of the congestion induced by the extra road traffic could well exceed the direct cost of the terminal itself. If the numbers using the rail link were larger still, handling them at any town terminal, even a well sited one could raise major problems for the traffic authority.

2.3.4. It was at one time thought that a common terminal at Victoria for Heathrow, Gatwick and the third airport would have considerable advantages in easing interchange. Detailed work on planning the Heathrow link, however, has shown that this would lead to considerable capacity problems at and around Victoria Station. Furthermore, assuming that the third airport will be omni-directional, i.e. that its air services, like those operating from Heathrow, will serve all parts of the world, the demand for direct interchange with Heathrow or Gatwick is likely to be small compared with the total volume of traffic carried by its link. The balance of advantage is likely therefore to lie in siting the terminal to cater as effectively as possible for terminating traffic and relying on the ordinary means of interchange across central London (taxi and underground) to deal with such traffic in transit as does not travel direct between airports by road or other means.

2.3.5. It is natural to look for potential sites among the London main-line termini. Most of them are already well connected to the distributive system of central London, and whatever form of fixed link may finally be chosen for the airport easy access to good train services is likely to be of advantage in the early years of growth before traffic could support a fully specialised link. A number of them have spare capacity.

2.3.6. *Euston* and *Paddington* have potential capacity to handle additional trains. *St. Pancras* and *Marylebone*, similarly have potential capacity, but there are tentative plans for diverting their services to other stations, so that they can be closed. These plans could, however, probably be modified to take account of requirements for an airport link.

King's Cross would have some surplus capacity if effect can be given to a plan for electrifying and reorganising suburban services terminating there. Facilities for an airport link service could be included in a scheme for reconstruction of King's Cross station.

Liverpool Street and *Fenchurch Street* have no spare capacity at peak periods and cater primarily for the City rather than the West End.

Broad Street has spare capacity. But it, too, is badly placed for air travellers and all lines at present linked to it have direct access also to other termini (i.e., Euston and King's Cross) situated closer to the West End.

Printed image digitised by the University of Southampton Library Digitisation Unit

Waterloo and *London Bridge* could have some platform capacity at peak periods, but extensive investment would be necessary to their approaches. London Bridge, in any case however is unlikely to be suitable because of its position.

Victoria will be working to its full potential if and when the Heathrow air link and Channel tunnel projects reach fruition, assuming the need to take account also of additional services designed to provide relief to the Thamesmead estate.

2.3.7. The Euston/King's Cross/St. Pancras area stands out as the most promising for a new air terminal, as capacity might be made available both on the rail approaches and at the terminals themselves. Its underground connections, already good, will be improved in 1969 by direct connection to Oxford Circus, Green Park and Victoria via the new Victoria underground line. It also lies near the planned route through Camden Town of the North Cross Route—the northern side of the Motorway Box planned by the GLC at the innermost element of London's future system of primary roads. In a feasibility study of the transportation aspects of BR's King's Cross/St. Pancras rationalisation plans the GLC are making allowance for the possibility of an air terminal being sited there.

2.3.8. Reasonably fast journeys could be made by rail to King's Cross or St. Pancras from most places north of London or eastward on the north side of the river. In assessing the terminal costs associated with various sites it may therefore be convenient to assess those of a terminal in this area first and, if these prove high, the possible economies to be achieved (taking into account associated highway congestion costs) of siting the terminal elsewhere.

2.4. Cost Sharing with Other Major Developments

2.4.1. Transport improvements made for the airport might serve other purposes as well and it would be reasonable in assessing the costs attributable to a site to offset incidental benefits of this kind. Particularly relevant to a choice between sites might be cases in which improvements needed for other purposes could be combined with improvements needed by the airport with cost saving to each. Major road developments that are already in hand or in prospect and might affect the transport costs of possible sites are discussed in chapter 4 below. No account is taken in this paper of proposals that may arise later, for example as a result of work at present being undertaken by the South East Planning Study Group. The recommendations of the Group, which has been set up by the Government to consider matters arising from the report of the South East Regional Planning Council *A Strategy for the South East* could possibly lead to revised concepts of transport priorities affecting both road and rail planning during the next 15 years.

2.4.2. A further transport development that could affect costs at some sites (although it is at present only a contingent possibility) would be the deliberate development of a major port/industrial area on the Rotterdam

Printed image digitised by the University of Southampton Library Digitisation Unit

model on reclaimed land. The Government and the National Ports Council, with the help of consultants, have for some time been examining the possibility of a development of this kind. If it is decided to go ahead with such a project, its location will have to be selected with full regard to economic, industrial and regional planning considerations, and the latter may point to a site away from south-east England. Both Foulness and the Medway area (together with the flats along the south shore of the Thames towards Cliffe) are among the half-dozen or so sites which have been identified as physically most suitable, and if either were chosen the possibilities of sharing facilities with an airport in the area would arise.

2.4.3. Should the Commission decide to examine a site where a port/industrial complex could be developed, they may wish to have further evidence on the the questions of the actual cost savings to the airport of such shared facilities. But as development of such a complex would have to be phased over a long period it is probable that the airport element would be the initiator of transport requirements. Traffic associated with the airport would probably remain the determining factor, and the cost savings to the airport might not be great.

2.4.4. On the relationship between airports and sea ports generally, the consultants who studied the possible sites for "maritime industrial development areas" ("Midas") (Sir William Halcrow and Partners) have this to say:

> "The relationship between airports and sea ports has, in the past, appeared to be tenuous. Even in New York where the same authority controls both and where one airport is close to the most modern and rapidly-growing marine facilities (Newark-Elizabeth) the link has been largely negative to ensure minimum interference rather than organically positive. Airports have been passenger-orientated while, in general, passenger traffic has declined in importance for sea ports. It has been suggested that an organic link can be created out of the demand, on noise-amenity grounds, for sea sites for new airports with the search for Midas sites (e.g. Foulness and Sheppey). In the present context this suggestion cannot be sustained. It is however possible that a useful sharing of new transport and service facilities could be achieved and capital investment thereby reduced. Midas traffic would probably have little peak-time or peak-load character or any that it did show would not coincide with peak flows to an international airport. This argument cannot however be regarded as very important relative to the other criteria for the choice of either airport or Midas location.
>
> It must however be realised that when the time for all-freight airports has been reached (analogous to the separation of freight and passenger terminals on railways), the opportunity for an organic air cargo—Midas link may present itself. The phenomenal growth, in value terms, of air-cargo traffic and the introduction of new generation freight planes with payloads in the 100—200 ton range, suggests that this situation may not be too far off even though it is not possible to define it at the moment. In any case air-cargo, even if eventually part of the land-sea container and unit load system, will have its strongest links with the secondary rather

Printed image digitised by the University of Southampton Library Digitisation Unit

than the primary Midas industries. Perhaps all that can be safely said at this moment is that a Mida with the potential of a further 2,000—3,000 acres available for an eventual cargo airport, properly located for noise-amenity consideration, would, *ceteris paribus*, offer the greatest attraction."

2.5. Secondary Transport Needs of the Airport

2.5.1. Considerable demands on transport facilities in the neighbourhood of the airport will be made by people working there, many of whom will use cars to and from work, and by service and other ancillary traffic. The Ministry understands that the British Airports Authority has commissioned a survey of employment and population likely to result from the impact of a third airport. This survey would provide information relevant to these ancillary transport requirements.

2.5.2. A labour force of, say, 20,000 at the airport might give rise in the peak hours to road traffic on the connecting links equivalent at a rough estimate to 2,500 cars per hour. If this traffic were concentrated in one direction (as it might be if a new town were associated with the airport) it might demand a road of up to dual two-lane carriageway standard. The possible cost per mile of providing such a road can be estimated from the information given in section 4.5. below. A larger labour force would make correspondingly larger demands. Airport workers would also incur user costs in travelling between their homes and their work.

2.5.3. There is no *prima facie* reason to expect costs of this kind to vary widely between sites. But sites unusually distant from possible residential areas, or separated from them by major natural obstacles, would clearly be at a disadvantage.

2.5.4. Growth of local population generated by the airport will create other secondary transport needs. New residential areas will require connection to existing centres of population and, in particular, to London. The London rail commuting area now extends to a radius of 50 miles or more. Any large new population centre generated by the airport within this area would give rise to commuting by dependents of airport employees and of those engaged in secondary industries. How far this might give rise to important costs would depend upon the sector in which the commuting occurred as well as upon the extent. Section 5.2 below gives an assessment of spare railway capacity in the various sectors round London. To cater for substantial extra commuting in difficult areas such as North Kent or South Essex might well entail rail improvements costing £10 million or more.

2.5.5. At a later stage of the investigation, when information is available about the probable size of the associated residential development and its location for each of the short-listed alternative sites, net cost estimates could be made covering these additional requirements.

Printed image digitised by the University of Southampton Library Digitisation Unit

3. Traffic Forecasts

3.1. Air Passenger Traffic

3.1.1. Estimates of the cost of providing surface access to the airport must start from assumptions about the extent of the traffic to be handled. The Board of Trade and the British Airports Authority are already jointly engaged in the preparation of new traffic forecasts for the London airports, and no doubt the Commission will itself be studying this question. In the meantime, however, in the absence of up-to-date forecasts of the air passenger traffic likely to pass through the third London airport we have used in this paper estimates based on two earlier forecasts of the growth of London's airport traffic. These have been taken as the upper and lower limits within which it has been assumed the actual traffic volume will lie, and calculations have been based on the mean of the two. The figures are shown in table 1 below.

TABLE 1

Year	Total Passenger Traffic (both directions) *millions of passengers*			Standard Busy Rate* (one direction) *passengers per hour*		
	Lower Limit	Upper Limit	Mean	Lower Limit	Upper Limit	Mean
1975	0	2·5	1·25	0	500	250
1980	5	12	8·5	1,200	2,500	1,850
1985	16	20	18	4,000	5,000	4,500
1990	30	32	31	7,000	7,000	7,000

* The standard busy rate is the rate applicable to the 30th busiest hour in the year.

3.1.2. If air traffic grew more rapidly in the early stages, as might happen, for example, if air services were transferred from Heathrow more quickly than would be necessary simply to meet capacity problems there, the costs discussed later in this paper would, in general, be brought forward in time and therefore, in discounted terms, be increased. Detailed effects, however, would depend upon the curve of traffic growth.

3.2. Airport Surface Traffic

3.2.1. Besides air passengers, airport surface traffic consists of freight, passengers' friends, other visitors, business vehicles of various kinds, sightseers and airport workers. The costs of dealing with most of these classes of traffic will be to a large extent governed by the ease or difficulty of travel between the airport and London. As explained in section 2.5., however, the costs of dealing with the transport requirements of airport workers seem likely to vary with local circumstance rather than with the position of the airport relative to London. Later calculations of relative costs therefore ignore this class of traffic.

3.2.2. The only guidance at present available to the likely relationships between surface traffic and air traffic at the third airport is the 1966 Heathrow Traffic Survey. This Survey enables ratios to be derived between air passengers and other forms of traffic at Heathrow, and between the

Printed image digitised by the University of Southampton Library Digitisation Unit

numbers of arriving and departing passengers and the numbers of journeys made to and from the airport by cars and coaches. For the purposes of calculation it has been assumed in this paper that similar ratios will in most respects apply to traffic at the third airport.

3.2.3. Assumptions made on this basis are as follows:

(a) that 15 per cent of passengers will be "transfer" passengers who will not leave the airport;

(b) that of the remainder 85 per cent will travel to or from the direction of London;

(c) that one car or taxi will enter the airport to put down or pick up passengers (or for an associated purpose) for each departing air passenger who travels to the airport by car or taxi, and that the same number of cars will leave as enter;

(d) that coaches will carry, on average, 25 air passengers each;

(e) that all service traffic (i.e. all traffic other than that associated with passengers or airport workers) will go by road, and its volume will be directly proportional to the number of air passengers in a ratio of 750 vehicles per hour (one way) to 20 million passengers per annum;

(f) that 50 per cent of service vehicles will circulate within 10 miles of the airport and the remainder travel between the airport and the London area.

3.2.4. Airport traffic is subject to hourly, daily and seasonal fluctuations, and these will affect the requirements of surface transport in so far as they co-incide with the normal traffic peaks which are caused by journeys to and from work. The 1966 Heathrow study showed that the morning peak hour of departing passengers is from 1100 to 1200 hours. The study did not cover passengers arriving in the evening, but for the purpose of assessing road requirements in this paper it has been assumed that the maximum hourly flow on the road system will be due to a combination of air passenger and other traffic at the evening peak from 1700 to 1800 hours. A rate of 20 per cent above the "standard busy rate" shown in table 1 above has been taken as the peak for air passenger traffic (the absolute peak is reckoned to be 25 per cent above the SBR), and the volume of such traffic coinciding with the peak hour on the road has been assumed to be two-thirds of that peak rate.

3.2.5. A major factor affecting the costs of handling the airport traffic, however, will be its "modal split" between road and rail, or other fixed link, and, in the case of road traffic, between coaches and cars, The Heathrow Survey gives inadequate guidance to the choices individuals may make between modes in the varied circumstances that could arise in relation to the third airport. In principle, given sifficient data about the behaviour of people in comparable situations, the numbers that will choose alternative modes in a new situation can be predicted. But most of the work that has been done in this field has been in relation to people's journeys to and from work. Journeys between city and airport are more complex and involve many

Printed image digitised by the University of Southampton Library Digitisation Unit

different factors which have not yet been evaluated. Besides such basic factors as time, cost, and the frequency and reliability of services, and their relation to the requirements of air passengers and their means, these would include, for example, the relative convenience of transporting baggage and the extent to which the passenger may wish to be accompanied by friends and relatives. The modal split will, in any case, be strongly influenced by the location of the site, particularly its distance from London. Later chapters in this paper indicate the wide differences that may exist in the quality of the road access and of the rail services that might be available for different locations, and at different times for the same location—factors which will also have a strong influence.

3.2.6. For the purpose of this paper, therefore, three possibilities have been assessed:

CASE I that no fixed link will be provided and 50 per cent of the air passengers will travel by coach and 50 per cent by car or taxi;

CASE II that a fixed link will be provided and that it will carry two-thirds of air passengers, the remaining one-third going by car, with no coaches;

CASE III that one-third will go by fixed link and two-thirds by car and coach.

3.2.7. Peak hour road traffic on the London radial associated with case I and case II estimated on the basis of the assumptions given above and on the mean levels of passengers stated in table 1, is shown in table 2 below. It is expressed in "passenger car units" (p.c.u.s). Under this system lorries, buses and coaches are counted as equivalent, in rural areas, to 3 passenger cars each. The road traffic associated with case III would fall somewhere between that for cases I and II depending upon the subsidiary modal split between car and coach.

TABLE 2

Road Traffic towards London in Evening Peak Hour

(*p.c.u.s*)

Year		Air Passengers	Service	Total
1975	Case I	75	35	110
	Case II	50	35	85
1980	Case I	550	250	800
	Case II	350	250	600
1985	Case I	1,325	525	1,850
	Case II	875	525	1,400
1990	Case I	2,100	900	3,000
	Case II	1,350	900	2,250

Printed image digitised by the University of Southampton Library Digitisation Unit

4. Access by Road

4.1. The Road Programme

4.1.1. Road traffic on inter-urban roads is at present increasing at an average rate of about 6 per cent per annum and total traffic is likely to have doubled by about 1990. The trunk road system is not fully adequate to handle present traffic levels and although road expenditure is also increasing rapidly it will be many years before arrears of building can be overtaken and the network made adquate to handle future levels of demand. In central and inner London it will not be possible in the foreseeable future to handle the full demand and measures of restraint may be permanently necessary.

4.1.2. In this situation the Ministry allocates available funds according to a programme in which priorities are determined on a broad value-for-money basis. Schemes are tested as far as possible against economic criteria and those giving the greatest value for money, are carried out first. Value is judged chiefly in terms of time and accident savings. On current criteria, and on the assumption about air traffic given earlier in this paper, a major road (as distinct from local works to relieve bottlenecks) could not be provided specially for the airport for may years to come except at the cost of foregoing more economically justifiable road improvements elsewhere.

4.1.3. When road schemes are carried out, however, capacity is provided to cope with foreseen traffic growth. Possibilities will exist of siting the airport so as to take advantage of temporary unfilled capacity of this kind and until the late 1970s the standard of the airport's road connections are likely to depend in practice on the success with which this can be done. The map at Appendix 2 shows for outer London and the rest of the South-East Economic Planning Region existing high-standard radial and orbital roads together with those lengths of road which, on a broad assessment of forecast needs up to the mid 1980s, appear to warrant construction or improvement to a similar standard.

4.1.4. The GLC have long-term plans for the future shape of London's major road network which have been co-ordinated with the Ministry's plans for trunk roads. These will form part of the Greater London Development Plan which has yet to undergo public inquiry and be considered by the Government. They must therefore be considered tentative at this stage.

4.1.5. The map at Appendix 4 shows the London primary network (both GLC and Ministry roads) as it will exist by the middle or late 1980s if GLC plans are fulfilled. Improvements to roads other than those shown are likely to consist mainly of schemes designed to assist traffic flow and particularly to improve access to and from the primary network of roads.

4.2. Capacities of Urban and Inter-Urban Roads

4.2.1. Traffic flows and speeds on individual roads vary hour by hour and day by day. It is useful, for practical purposes broadly to categorize the many different conditions that can arise. The definitions of the terms used in this paper to describe different traffic states are as follows:

Printed image digitised by the University of Southampton Library Digitisation Unit

"Design capacity" means the maximum level of traffic that a road can carry without the motorist being hindered from travelling at or close to the speed he desires.

"Limiting capacity" means the maximum level of traffic that a road can carry without a considerable adverse effect on travel conditions producing an increase in journey times and an appreciable rise in accident rate.

"Overload" is any degree of load in excess of the design capacity.

"Heavy overload" means load in excess of the limiting capacity.

4.2.2. When traffic reaches the design capacity ,which, in a typical case, it might do about 15 years after construction, the road is technically overloaded, but it will continue to be able reasonably to accommodate additional loaded, but it will continue to be able reasonably to accommodate additional traffic such as might be generated by a new development. There would be some drop in the level of service to the road user, but this would be tolerable until limiting capacity was reached. Ideally, the road should be widened or a new road be built and ready for use by the time traffic volume reaches limiting capacity but shortage of resources is likely to dictate for many years to come the acceptance in the South-East Economic Planning Region, and particularly in the London area, of widespread heavy overloading of this kind before roads are improved or relieved.

4.2.3. Design capacities about to be published by the Ministry for new high-capacity roads with various types of carriageway are shown in table 3 below. They are expressed in terms of "passenger car units" or "p.c.u.s" per day or per hour. As explained in para 3.2.7. above, lorries, buses, and coaches are considered to be equivalent in rural areas to 3 passenger car units each. In urban areas a lorry is considered to be equivalent to 2 p.c.u.s and a bus or coach to 3 p.c.u.s. There are further modifications to these values which affect junction design in urban areas.

TABLE 3

Design Capacity of New Roads

(*p.c.u.s*)

Carriageway	Inter-urban		Urban	
	per day (both ways)	per hour (one way)	per day (both ways)	per hour (one way)
24 ft. single 2-lane	9,000	900		
33 ft. single 3-lane	15,000	1,500		
2 x 24 ft. dual 2-lane	33,000	2,000	60,000	3,000
2 x 36 ft. dual 3-lane	50,000	3,000	90,000	4,500
2 x 48 ft. dual 4-lane	66,000	4,000	120,000	6,000

4.2.4. Design of inter-urban roads is based, in general, on daily flows. Those given above are for an average August day from 6 a.m. to 10 p.m. They allow for the very considerable fluctuation that occurs in the pattern of hourly flows throughout the day and year and also the wide variety of

Printed image digitised by the University of Southampton Library Digitisation Unit

degrees of obstruction to the free flow of traffic that can occur as a result of weather, accidents, repairs, etc. Design of urban roads is usually based on peak hour flows.

4.2.5. As explained above, road schemes are in practice programmed on a value-for-money basis in the light of the funds available. For the purpose of assessing relative costs it has been assumed in this paper, however, that roads will be improved when the level of traffic on them reaches the "limiting capacity" since this is the point at which the economic loss from traffic delays and increased accidents begins to reach unacceptable proportions even on a good quality road. Experience indicates that on a single-carriageway two-lane inter-urban road designed to modern standard an overload of 100 per cent (18,000 p.c.u.s per day) is about the limiting capacity. At this volume of traffic, speeds are low and delays high, particularly at intersections. For modern single three-lane carriageways similar conditions occur at an overload of 60 per cent (24,000 p.c.u.s per day). Practical experience of travelling conditions on overloaded modern dual carriageway two-lane and three-lane roads is inevitably more limited but observations, for example, on the two-lane section of the M.4 suggest that an overload of 100 per cent probably represents the critical limiting capacity on these dual carriageway roads and that beyond that point conditions must be expected to deteriorate rapidly.

4.2.6. The same general considerations apply in the urban situation as in the inter-urban ,but the effect of overload on the free-flow of traffic is less predictable, due in the main to the complex effects of intersections, generally lower speeds and smaller headways. The limiting capacity of urban roads is considered to be 2,000 p.c.u.s per hour per lane, i.e. an overload of 33⅓ per cent.

4.3. Traffic Conditions on Radial Routes

4.3.1. Traffic volumes on particular routes are difficult to forecast beyond about 1980; but preliminary assessments indicate that within Greater London (broadly, that is to say, within the "D" ring) most radial trunk roads, including existing motorways, are likely despite local improvements to be overloaded. The exceptions will be those on which major new construction or reconstruction is planned. These are the inner continuations of M.1, A.1, M.11, Radial Route 7 (which links A.12 to M.11), A.20 and M.23.

4.3.2. Outside Greater London, existing routes and new routes and improvements already planned should ensure a good system of dual carriageway radial trunk roads and motorways extending by the late 1970s for distances, in general, of 40 miles or more beyond the GLC boundary. As these will have been developed over a period of time, and to varying standards, their capacity to carry the traffic using them will also vary considerably. Because of the great increase in traffic since they were built, sections of the existing motorways (M.1, M.2 and M.4) are already carrying traffic flows which exceed design capacities on many days of the year, and at times are carrying peak hourly traffic which puts them in a "heavily overloaded" condition. They are likely to be continually overloaded by the

Printed image digitised by the University of Southampton Library Digitisation Unit

early 1980s. Additional lanes are planned for the Slough and Maidenhead By-pass sections of M.4, and the new M.40 will relieve the M.1 to some degree. Other new motorways M.23, M.3 and M.11 should be completed by the mid '70s, relieving existing adjacent low-standard trunk roads. The new motorways will have capacity to cater for ordinary traffic growth into the late 1980s before the "heavy overload" condition is reached.

4.3.3. There is also scope, in varying degrees, for increasing the capacity of certain sections of non-motorway dual carriageways by the addition of grade separations, restriction of access, or provision of additional carriageways, as an alternative to providing completely new routes. The treatment of these will depend on availability of funds and the physical and other difficulties met in planning possible new routes.

4.4. Traffic Conditions on Ring Roads and Distributive Systems

4.4.1. The North Circular Road is being progressively improved as part of the C Ring Route to full dual carriageway standards with grade separation where practicable. But even with these improvements, the present degree of heavy overload will continue on certain sections, notably in the west and north. On the eastern sections the situation will be somewhat better because major new routes for the C Ring are planned connecting with a new bridge (or tunnel) across the Thames at Woolwich.

4.4.2. The D Ring which is to be provided from M.3 to M.11 west and north of London is not expected in general to be loaded to limiting capacity before the mid-1980s if it is built, as seems likely, to dual three-lane standard. Major decisions have yet to be made about the location and timing of construction of the D Ring between A.40 and A.1 and between M.11 and the Dartford tunnel, but it is hoped that it will be possible to build these by the mid 1980s.

4.4.3. A good orbital system of primary roads is unlikely to exist in the south and south east of Greater London until the 1980s and the main distribution in this area will have to take place until then on secondary roads.

4.4.4. Further out, the South Orbital Motorway M.25 between Wrotham on A.20 to the east and Staines on A.30 to the west is likely to be completed before 1980. The North Orbital linking M.3, M.4 and M.40 with M.1 is unlikely to be completed until the early '80s and its timing will depend on decisions on the location and timing of the parallel D Ring in this section.

4.4.5. Differences between the ease of orbital distribution in different sectors of London are likely, in general, to be more marked in the early years of the airport's life than in the later. They would be likely to give rise to differences of user costs between the different sectors because, for example, traffic from an airport to the South scattering laterally through the secondary road network would be more delayed than the equivalent traffic from an airport in the North using the "D" or "C" ring roads. It has not been possible, however, in this paper to quantify this effect.

Printed image digitised by the University of Southampton Library Digitisation Unit

4.5 Cost of Major Highway Construction and Maintenance

4.5.1. The different types of road entail different capital costs. Apart from this, the main variables in major highway construction costs are costs of land and property, structures, and earthworks. The range of costs in both rural and urban situations is wide. Some indication of typical costs for modern roads is given in table 4 below. Both land and construction costs are significantly affected by the number of intersections.

TABLE 4

Road Construction Costs

£ million per mile

Carriageway	Inter-urban		Urban	
	Land	Construction	Land	Construction
Dual 2-lane all-purpose	0·02–0·2	0·4–1·0	n.a.	n.a.
Dual 2-lane motorway	0·02–0·2	0·5–1·1	n.a.	n.a.
Dual 3-lane motorway	0·03–0·3	0·7–1·3	0·2–2·6	1·0–6·4
Dual 4-lane motorway	0·03–0·3	0·9–2·0	0·5–2·7	1·3–7·4

4.5.2. It will be seen that, in general, inter-urban are much less variable than urban construction costs. This applies even more to land costs which can be very high in urban areas. A figure of 10 per cent of total cost for land and property is a reasonable estimating figure for inter-urban roads. Construction costs greater than the higher figures quoted above could occur on inter-urban roads in exceptional circumstances, e.g. where complex intersections or major bridges or tunnels are needed. In London, within the C ring the total cost of dual four-lane motorway will, in some cases, be higher than the upper limits shown in the table and may reach £16m. per mile. Outside the C ring opportunities for construction at the lower costs shown will be rare and likely costs are upward of £3.5m. per mile for dual three-lane and of £4m. per mile for dual four-lane motorways. The Department would, if so desired, assist the Commission in costing road proposals relevant to their inquiry.

4.5.3. Road maintenance costs for new high capacity roads are small compared with construction costs, amounting typically to between £1,500 and £2,000 per mile per annum on dual carriageway roads. Differences in maintenance costs on the different radials are considered to be insignificant and have therefore been ignored in later calculations in this paper.

4.6. Road Construction Cost Differentials of Possible Sites

4.6.1. On the basis of the assumptions and estimates about airport traffic stated in chapter 3 and the information summarized in the foregoing sections of this chapter it is possible to assess comparative costs of catering for the traffic demands of the third airport if it were sited at various distances along the 15 major radial routes into London. The assessments are necessarily approximate because of difficulties of prediction. Nor are they

Printed image digitised by the University of Southampton Library Digitisation Unit

completely comprehensive because, for example, for the reasons explained in para. 3.2.1., they take no account of possible traffic along the radial due to workers at the airport.

4.6.2. If the rate of growth of road traffic in general continues as predicted most of the major radials will need to be duplicated or improved in time. This will occur in stages according to need. On the assumption that new facilities will not be provided exlusively for airport use, the addition of flows due to a third airport will simply bring forward in time the date at which improvements to the radial or radials affected will become necessary. Assessment of the cost of improving a particular radial to deal with the extra traffic from the airport therefore entails:

(a) deciding the dates at which the relevant roads will need improvement or new roads will be needed:

(i) if the airport is sited along the radial,

(ii) if it is not,

(b) estimating the cost of works in each case,

(c) discounting these costs to a common base year and finding the difference.

4.6.3. This process has been carried out for 10 mile sections of each radial out to a distance of 60 miles from Charing Cross. It has been assumed that the airport will open in 1975 and this has also been taken as the base year for purposes of discounting. Improvements needed up to 1990 have been taken into account. Supplementary assumptions were:

(a) that 25 per cent of air passenger traffic using the London radial will join or branch off from it at the 'C' ring and another 25 per cent at the 'D' ring;

(b) that the proportion of service traffic travelling between London and the airport will distribute itself along the radial in similar manner.

(c) that improvements will be made at the point in time when existing roads reach their limiting capacity, as defined in para. 4.2.5.

4.6.4. For non-airport traffic, a common growth rate based on the national forecasts of growth adopted by the Ministry for inter-urban road design was used throughout the area covered, including Greater London. This will not apply in practice, but differences are not likely to be significant in the present context. Costs per mile within the ranges given in table 4 (para. 4.5.1.) were used. More accurate assessments of cost are likely to be desirable in considering particular sites selected for detailed exmination. But these will require a close examination of the engineering problems likely to be encountered on the routes affected.

4.6.5. Table 5 below shows cumulative costs derived in this way for each of the main routes radiating from London. Separate figures are given for the

Printed image digitised by the University of Southampton Library Digitisation Unit

different modal splits of case I and case II (see section 3.2 above). Costs for case III would, in general, fall between those shown. The map at Appendix 3 shows the ten mile sections considered, with their corresponding cost figures.

TABLE 5

Increases in the Cost of Road Construction on Main London Radials caused by siting the Airport at possible sites at 10-mile intervals

£ million 1975 *to* 1990 *discounted to* 1975

	At 20 miles		At 30 miles		At 40 miles		At 50 miles		At 60 miles	
	Case I	Case II	Case I	Case II	Case I	Case II	Case I	Case II	Case I	Case II
M.1	3	3	7	7	12	10	17	13	22	16
A.1/A.1(M)	2	2	7	6	11	10	16	14	21	18
A.11/M.11	1	1	1	1	1	1	3	2	7	4
A.12/RR.7	6	5	10	7	14	9	19	13	22	16
A.127/RR.7	6	4	10	7	16	12	22	18	n.a.	n.a.
A.2/M.2	1	1	5	4	10	8	15	12	18	12
A.20/M.20	1	1	5	4	9	7	14	11	17	13
A.21	7	5	10	8	14	10	18	12	21	13
A.23/M.23	5	4	6	4	9	6	19	14	29	22
A.24/A.29	21	21	25	24	31	28	37	32	42	35
A.3	18	18	22	21	26	24	32	28	38	32
M.3	3	3	6	6	9	8	12	10	15	11
M.4	7	5	12	9	16	12	20	13	24	13
A.40/M.40	16	16	20	19	24	21	26	22	29	25
A.41/M.1	3	3	7	6	11	8	18	15	26	22

4.6.6. No cost differences inside the C Ring are included. The road network in this inner area is dense and general traffic flows very great. It is unlikely in practice, therefore, that flows due to the airport would lead to isolatable changes in plans to improve particular routes. Possible exceptions might be the roads serving a main town terminal for the airport. But differences of cost in this case would depend upon the choice of terminal as well as upon the choice of site for the airport.

4.6.7. Cost differences between the C and D rings have been included. But the physical, social and financial problems of providing for general traffic in this area at the standard envisaged in the calculations are likely to be great and it is possible that in particular cases improvements could not be made by the dates at which it is foreseen they would be needed. In such cases, although capital expenditure would be postponed or avoided, costs to road users, including travellers to the airport, would be increased.

4.6.8. In view of the many assumptions and simplifications made in arriving at the figures shown in table 5 they should be regarded as indicating those sectors, and parts of sectors, in which flows due to the airport would create fewest problems of road investment rather than as data on which further calculations can reliably be based. They show, as might be expected, that provision for the airport could be made at the least additional road construction cost in sectors where high standard radial roads are about to be built. The cost of connecting any particular site to the appropriate radial would depend chiefly on its distance away from it and might be of the order of £1 million per mile.

Printed image digitised by the University of Southampton Library Digitisation Unit

5. Access by Rail

5.1. Capacity of Railways

5.1.1. The capacity of a line depends upon a number of factors, principally those concerned with the type of service operated, the relative speeds of consecutive trains, the signalling system, and the extent to which it is affected by trains converging, diverging or crossing at junctions and terminal points. Capacity is likely to be at its maximum where all trains operate at an even speed under multiple-aspect signalling and where "bottle-necks" have been eliminated. The inter-working of fast, slow, and stopping services over a particular section of line may severely restrict the number of trains that can be operated. Thus, a line with four tracks on which fast and slow services are segregated can have considerably more than double the capacity of a two-track line on which "mixed" services are operated.

5.1.2. Under modern signalling a headway of between two and three minutes is practicable in any weather conditions. In other words, a single track can carry between twenty and thirty trains per hour. This represents a range of about 10,000 to 30,000 seats per hour in each direction on an ordinary dual track railway, depending upon the design of the rolling stock and the length of train. The rail link to the airport would therefore be unlikely to occupy the whole capacity of a conventional railway in the foreseeable future and exclusive use of track might not be justified. A more economic arrangement, particularly on a route where "slow" and "fast" lines already exist would be for the airport link service to share the "fast" line with other services operating at similar speeds. The possibility of arranging this would, of course, depend on the extent to which such lines are at present operating to capacity. On certain routes into London additional services could be operated at relatively low additional costs whilst on others the potential in peak hours has been realised and to provide any additional services at these times would entail extensive works. To provide an airport service of high frequency (as distinct from high capacity) during the periods of existing commuter peaks would in nearly all cases entail very high costs.

5.1.3. The speed characteristics of modern railways and possible future developments in the direction of faster trains are dealt with in chapter 7 below.

5.2. Present and Likely Future States of Main Lines

5.2.1. There are two principal factors which determine the capacity of a rail system to cope with additional traffic: route capacity, especially of the lines at the approaches to the terminal; and terminal capacity. The situation at the main London termini has been discussed in section 2.3 above and this section is concerned only with route capacity.

5.2.2. At present, following electrification, modernisation, and adjustments to services, there is considerable potential capacity on certain of the approach routes into London. In the longer-term, when rationalisation

Printed image digitised by the University of Southampton Library Digitisation Unit

proposals are completed, the capacity of the rail network will be in line with requirements taking into account allowances to meet anticipated growth and other contingencies. But for the time being the approach routes to London from the north and west are in general capable of accommodating additional traffic at much lower cost than those from the south and east.

5.2.3. A schematic diagram of the main railway lines serving London is at Appendix 5. The three principal routes with capacity available under existing conditions which could all provide high-speed services of the necessary frequency for an airport link are:

(a) the London Midland Region main line recently electrified from Euston to the West Midlands and the north-west via Watford, Bletchley and Rugby,

(b) the Western Region main line from Paddington to Bristol, the West of England and South Wales via Reading and Didcot/Newbury,

(c) the Eastern Region main line from King's Cross to the north-east via Hatfield, Hitchin and Peterborough/Cambridge.

Capacity could also fairly easily, although at some cost, be made available on:

(d) The London Midland Region line from St. Pancras to Leicester via St. Albans, Luton and Bedford,

(e) The Western Region line from Paddington to the West Midlands via High Wycombe and Bicester. This line is also connected at present with Marylebone.

In the case of (d) two tracks are in part, and subject to certain conditions, surplus to existing requirements. The British Railways Board plan to remove them and would have to be compensated for any loss arising from their retention for eventual use for an airport link. In the case of (e) existing surplus track is already being removed and re-instatement would be necessary.

5.2.4. Other routes north of the Thames have less potential capacity and to accommodate additional services at peak periods would entail extensive engineering work. These routes are:

(a) the Eastern Region Cambridge line from Liverpool Street via the Lea Valley, Broxbourne and Bishops Stortford;

(b) the Eastern Region Norwich line from Liverpool Street via Shenfield, Chelmsford and Colchester;

(c) the Eastern Region Shoeburyness line from Fenchurch Street via Upminster and Southend;

(d) the route from Aylesbury serving Marylebone Station. This route is operated over London Transport lines between Harrow-on-the-Hill and Amersham.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.2.5. South of the Thames all the approach routes to London form part of the intensively-used Southern Region suburban system much of which is working to full capacity at peak periods. As an example, building the Victoria-Heathrow airport link would be likely to entail considerable reconstruction of the route serving Victoria (together with the approaches to that station) and also to the Richmond/Hounslow/Clapham Junction sections of the Waterloo/ Windsor line.

5.2.6. In certain cases it would be feasible to divert airport link services to London termini other than those which primarily serve the line on which the airport lies. For example, a connecting link could be provided to enable services using the Lea Valley Line or the Southend Line to operate into King's Cross, which could then become the London termini for services to either Stansted or Foulness.

5.3. Railway Construction and Operating Costs

5.3.1. It is difficult to generalise on rail construction costs and to quote any specific examples could be misleading. Costs vary significantly with the location of the route, the number of bridges, viaducts and junctions involved, the extent to which existing track layouts have to be modified and the amount and nature of the land which will need to be acquired.

5.3.2. But in order to give some indication, typical rail construction costs for a mile of double track, exclusive of land acquisition, will be of the order of £0.3m. This will be reduced slightly under very favourable conditions. The land required is 9 acres per route mile. Electrification would add only some 8 to 10 per cent to construction costs in the case of a new railway. On the other hand, the cost of tunnelling for a double-track surface railway may vary between £3m. and £5m. per mile, depending on the subsoil. For a tube railway, the cost of twin tunnels (based on the new Victoria line and exclusive of station costs), would be about £1.6m. per mile. Bridging for a double-track surface railway over water can cost up to approximately £5m. per mile. The cost of a double-track line on viaduct, between 25 and 30 feet high, over reasonably firm land might be of the order of £1.75m. per mile. Allowance must also be made for other construction costs relating to alterations to existing lines and to the layout of terminals.

5.3.3. The cost of rolling stock would not vary significantly between alternative sites assuming that no sites are beyond 80 miles of London.

5.3.4. The amount of new construction that would be necessary would depend upon a number of factors of which the more important are:

(a) the extent to which existing facilities could be used for the airport link service;

(b) the relationship of the trunk rail route to the airport site, and whether the spur to the airport was to be underground or on the surface;

(c) the extent to which provision might have to be made for peak capacity that would be under-utilised at other times.

Printed image digitised by the University of Southampton Library Digitisation Unit

5.3.5. If during the initial stages an airport service could be integrated with existing rail services, as happens at present at Gatwick, a reasonably frequent service could be provided without the need to invest in track and equipment which would not otherwise be fully used. Without this arrangement there could be a prolonged period during the build-up when costs could be very high in relation to traffic.

5.3.6. Total railway costs (excluding specialised terminal facilities) can in favourable circumstances be attractively low, approaching 1d. per passenger mile, but in unfavourable circumstances with poor utilisation the overall cost could well exceed 6d. per passenger mile. In order to produce realistic estimates British Railways will need to have detailed information on the characteristics of the service to be provided and the topography of the route to be followed as well as an indication of the volume of traffic and the arrangements which are to be conducted at the town terminal.

6. User Costs

6.1. Road User Costs

6.1.1. In addition to the costs of road construction, continuing costs will be incurred by the traffic which uses the roads. The most important factor determining these costs in respect of airport traffic is the distance of the airport from London, but the quality of the road access, through its effect on average speeds and on the frequency of accidents, is also significant.

6.1.2. As already mentioned the three main elements of user costs are operating costs, accidents, and time. Vehicle operating costs include fuel, oil, tyres, maintenance, and appropriate labour. Accidents impose costs both in terms of lost resources and of suffering. Current values used by the Ministry for various purposes are £1,285 per personal injury accident in rural areas and £1,048 in urban areas. These figures allow for damage to vehicles, medical and police expenses and loss of output, and include an element for personal suffering. Also included in the figures is an allowance for damage-only accidents (which are not mandatorily recorded) in proportion. A detailed note on the valuation of time is given at Appendix 1.

6.1.3. Combining these three components, estimates have been made of the road user costs of air passenger and serviee traffic attributable to each additional mile travelled, taking alternative assumptions as to average vehicle speeds. Using the traffic estimates given in table 2 (paragraph 3.2.7.) above for the years up to 1990, and making, in the absence of more distant forecasts, the very conservative assumption that the number of air passengers will thereafter remain constant at the 1990 level—the annual incremental costs for the 30 years from 1975 to 2005 were estimated and their discounted values at 1975 calculated and aggregated, to give the following results:

Printed image digitised by the University of Southampton Library Digitisation Unit

TABLE 6

Road User Costs

£ million per mile.
Aggregate discounted values at 1975

Modal split of air passenger traffic	Average speed of traffic					
	50 mph			35 mph		
	Air passenger	*Service*	*Total*	*Air passenger*	*Service*	*Total*
CASE I (one-half car, one-half coach, no link)	3·8	2·7	6·5	4·9	3·6	8·5
CASE II (one-third car, two-thirds fixed link)	2·0	2·7	4·7	2·6	3·6	6·2

6.1.4. The general assumptions* used in the calculation are those stated in para. 3.2.3. above. Further assumptions are that 80 per cent of the time of air passengers is reckonable at the ordinary rate for leisure time (3s. 0d. per hour) and 20 per cent at the rate for working time (13s. 6d. per hour) and that average occupancy of cars entering and leaving the airport will be 2.4. A modal split of one-third link and two-thirds car and coach (case III in para. 3.2.6. above) would give figures somewhere between those stated, depending upon the distribution of passengers between car and coach.

6.2. Fixed Link User Costs

6.2.1. Corresponding estimates have been made of user costs per extra mile for a fixed link. These are based on costs applicable to a main-line railway and the same three components—operating costs, accidents, and time—make up the total. Nothing has been included in respect of service traffic, which has been assumed elsewhere will all travel by road, nor for persons other than air passengers: the number of people accompanying air passengers by rail seems unlikely to be great and their numbers will be an inverse function of trip time and cost.

6.2.2. In estimating operating costs the following assumptions* have been made:

(a) that the relevant train speed will be 100 mph;

(b) that the average train load will be about 350 persons;

(c) that train operating cost will be 10s. per train mile.

Track and signalling maintenance costs are small by comparison with other costs and have been omitted.

* The sensitivity of the estimates to variation in assumptions will be dealt with in a further memorandum.

Printed image digitised by the University of Southampton Library Digitisation Unit

6.2.3. Accident costs have been applied at the same rate per million passenger miles as was achieved by BR in the years 1962 to 1966. Only railway passenger accident deaths have been counted, and these have been valued at £8,725 per person. The same values have been taken for time and the same ratio of work to leisure time as for road costs.

6.2.4. On the foregoing basis, the aggregate discounted values at 1975 of fixed link user costs for the years 1975-2005 are estimated as follows:

CASE II two-thirds air passengers by rail: £0.6 million per mile

CASE III one-third air passengers by rail: £0.3 million per mile

It should be emphasised that these costs do *not* correspond with financial costs to travellers, which would arise from fares set so as to contribute towards capital as well as cover operating costs. They represent simply a social cost similar to that calculated above for road travellers.

6.3. Combined User Costs

6.3.1. Combining road user costs as given in Table 6 for a 50 mph average speed with the rail user costs above the following results are obtained.

TABLE 7

Combined User Costs

£ million per mile.
Aggregate discounted values at 1975.

Modal Split	Air passenger		Service	Total
	Road	Fixed link		
CASE I (50% car, 50% coach, no fixed link)	3·8	—	2·7	6·5
CASE II (one-third car, two-thirds fixed link)	2·0	0·6	2·7	5·3
CASE III (one-third link, two-thirds car and coach)	2·9 (say)	0·3	2·7	5·9

Corresponding totals for a 35 mph average speed on the roads are: Case I, £8.5 million per mile; Case II, £6.8 million per mile and Case III, £7.7 million per mile.

6.3.2. These figures must be interpreted with caution. They are incomplete to the extent that they omit costs that fixed-link passengers would incur in reaching the town terminal and other terminal costs, such as car parking charges. Nor do they take account of costs to airport workers. They make no allowance for the inverse relationship that would apply to traffic reaching the airport from directions opposite to London; this traffic might be of significant volume along radials towards, for example, the Midlands. They are largely based on values of time that, as explained in Appendix 1, have

Printed image digitised by the University of Southampton Library Digitisation Unit

been derived for general application and may not be strictly applicable to air travellers. They would be sensitive to a change in the assumption that service traffic will continue to go by road, whether or not a fixed link is provided. Nevertheless they indicate that in any comparison between sites on a cost/benefit basis distant sites will be at a large inherent disadvantage compared with sites nearer to London.

7. Technical Developments

7.1. Existing Unconventional Fixed Track Systems

7.1.1. The Commission will want to consider how far new and unconventional forms of transport such as monorails might affect the relative attractiveness of different sites, and, in particular whether they might be able to bring more distant sites economically within shorter travelling time of central London than would be possible by conventional modes.

7.1.2. No system of tracked transport besides the railway is in regular service on fast inter-city routes, but some unconventional systems are operating on test tracks and a few are in public service on city routes. A number of these systems have demonstrated their ability to operate at the moderate speeds appropriate to "rapid transit" service, i.e. on routes in urban or suburban areas on which trains are required to run at from 20 to 40 mph with frequent stops. Their top speeds are about 60 mph. These systems were investigated in 1966/67 by the Manchester Rapid Transit Study for possible application to a proposed 16-mile route through Manchester, of which one terminal was at Ringway airport. Only three of them were found to have reached a stage of development sufficiently advanced for detailed costings to be made.

7.1.3. Two of these systems were monorails, namely *Alweg* and *Safege*. *Alweg* is a straddle monorail which is in operation at five locations including a link to Tokyo airport. The *Safege* system is a suspended monorail and has so far only been demonstrated with a single test vehicle on a one-mile track near Paris. The third system was one designed by *Westinghouse* consisting of electric rubber-tyred vehicles on special roadways with centre beam guidance. This system has a prototype train running on a two-mile track, with stations, in Pittsburgh. The US government has approved a grant for its extension and it is believed that the developers are negotiating a possible application for it at Tampa Airport (Florida).

7.1.4. In overall cost, including both cost of construction and rolling stock and also operating and maintenance costs, all three systems were estimated to be more expensive for the Manchester route than a modern electric railway. All of them run on rubber tyres, but they were judged to be only slightly if at all, quiter than steel on steel. As regards visual intrusion, they were not found to offer advantages of such a nature as to make any of them acceptable where conventional duorail was not. No doubt these new systems, and others, will be developed in future years to incorporate technical advances, e.g. in methods of construction and of train control. But such advances will also benefit railway construction and operation, and there is no reason to think that monorails will compare more favourably with the latest electric railway system in ten years time than they do now.

Printed image digitised by the University of Southampton Library Digitisation Unit

7.1.5. The *Alweg*, *Safege* and *Westinghouse* systems were also considered in 1967 by the Transport Co-ordinating Council for London for possible use as fixed public transport links to Heathrow Airport. The Council concluded that none of them offered a net advantage over extension of the existing railway network.

7.1.6. One of the principal advantages claimed for monorails over duorails is the narrow width and ease of construction of their supporting tracks when built on an elevated structure. Such a structure is most likely to prove its competitive advantage in built-up areas, but here considerations of amenity impose severe restrictions. The report on the Manchester study did not regard an elevated system as acceptable along residential roads or within 150 feet of residential property. The GLC report on *Monorails in London* (1967) states that it would be difficult to integrate overhead structures with the London environment.

7.1.7. All conventional systems of tracked transport suffer from the disadvantage of being incompatible with the main railway network. The economies of scale in the production and maintenance of equipment for a big network, the ability to provide extra seating capacity to meet special demands, and the capacity to offer through services and connections to many different parts of the country, give the conventional railway economic advantages which an unconventional system, to be competitive, must offset by techincal advantages of a high order.

7.1.8. Having regard to all these considerations and to all the information that is available regarding the technical capacity of the systems concerned, it does not appear that their existence need be considered to affect the choice between possible sites for the third airport.

7.2. Possible Future Developments

7.2.1. Technical advances of a far-reaching nature are now in prospect in a number of different transport fields. It is, however, one thing to describe the physical possibilities which new engineering techniques have opened up and another to predict how long they will take to become developed to public service standards and what will be their costs.

7.2.2. The speeds of conventional transport modes at present suitable and available for airport links are:

roads — maximum speed on inter-city routes: 70 mph

railways — cruise at 100 mph on main lines.

By 1980 when traffic at the third airport is starting to become significant maximum speeds on roads may have risen to 80 mph but average speeds are unlikely to exceed 60 mph in rural areas and 30-45 mph in urban areas; and on stretches of road where congestion is heavy, peak hour speeds will be substantially less. British Railways can be expected to have developed

Printed image digitised by the University of Southampton Library Digitisation Unit

their advanced passenger trains* to give main-line cruise speeds on conventional track of 125 to 150 mph. Average speeds will depend on the conditions of the route. They may not, in general, be significantly different from what they are now over distances of up to 80 miles from London but, given reserved or partly reserved track, substantially higher average speeds should be achievable on particular routes. Helicopters able to cruise at 150 mph are also available, and speeds may be expected to go up to 250 mph by 1980 and operating costs reduced. But it seems unlikely, in view of their present high level of operating costs and other factors, that development could take place which would make helicopters suitable for mass transport between airports and city centres in the foreseeable future.

7.2.3. To achieve cruising speeds beyond 150 mph on conventional railways would entail special track design and would demand more gradual curves than are found on most existing lines. But with track improvements, —especially in alignment, BR's advanced passenger train could, they consider, be developed to cruise at 200 mph. To maintain very high speeds, trains would require the exclusive use of reserved track for most of the route.

7.2.4. The net costs per passenger mile of the 125/150 mph advanced passenger train are not expected to differ substantially from those of present-day trains.

7.2.5. New ranges of speed have recently been brought into the realm of practical possibility by the development of Vertical Take-Off and Landing (VTOL) aircraft and Hovertrains. The former, however, appear to be relevant to provision of services direct from one city centre to another rather than to travel from airport to city centre.

7.2.6. The hovertrain now being developed by Tracked Hovercraft Ltd., a subsidiary of the National Research and Development Corporation, is a train that runs on a fixed track on which it is supported by the hovercraft principle on a cushion of air, and propelled electro-magnetically by linear induction. It is expected to be able to cruise at between 200 and 300 mph making comparatively little noise. It will need special track with curves gradual enough to permit these high speeds. Tracked Hovercraft Ltd. believe that it would be possible, given high utilization, to operate a hovertrain link commercially at fares in the region of first class rail fares. But it is difficult to say, until work on the project has proceeded further, how soon this objective may be achieved and hovertrains developed to public service standards.

7.2.7. It should be technically possible by 1980, therefore, when traffic at the third airport is starting to become significant, to move passengers by existing modes of transport other than road considerably faster between the airport and central London than at present. New possibilities for high speed mass transport are being opened up by advanced passenger trains using conventional track and, at still higher speeds, by the hovertrain. Despite these developments, however, the cost of increasing the distance of the airport site from London would remain high.

---

* The Government is supporting a £10 million development programme for these trains and it is expected that prototypes will be under test by 1971 or 1972.

Printed image digitised by the University of Southampton Library Digitisation Unit

APPENDIX 1

The Derivation of Values for Time

(*See paragraphs* 2.1.4. *and* 6.1.2.)

1. The purpose of this appendix is to describe the methods and assumptions which the Ministry has adopted for the derivation of the time values used in investment appraisal. To do this it is convenient to divide time into two categories; working and non-working or leisure time.

2. The valuation of working time is relatively straightforward. Labour is normally paid for per unit of time and it is not difficult to derive for any particular group the average hourly cost to the employer of using that category of labour. It is reasonable to regard this as a direct measure of the economic value of the worktime to employers. The cost of labour to an employer is, however, normally rather higher than the earnings of the employee. Items such as National Insurance, Selective Employment Tax and certain other costs usually classed as overheads can be associated with an individual employee, in the sense that they would be saved if the need to employ him were removed. The figure of 13s. 6d. quoted in the text includes allowances for all these items.

3. The valuation of non-working or leisure time is a much more difficult matter. Although leisure time is not paid for like working time, there are circumstances in which people do spend money to save time. They may, for example, pay a toll to avoid a circuitous trip, or they may prefer to travel by a more expensive but quicker means of transport when alternatives exist. The figure for leisure time quoted in the text is derived from studies of the choices people make in situations of this kind.

4. The choice situation which has been most studied and for which the available data and analysis appear most reliable is that between different modes of transport for the journey to work, where a choice frequently exists between public and private transport or a combination of the two. The private trip will normally be more expensive but quicker. These studies have produced a range of values of from 15 per cent to 30 per cent of hourly earnings, with the most likely values lying between 20 per cent and 30 per cent. The figure of 3s. quoted in the text has been chosen to fall within this range.

5. This value has been applied to other situations and to non-earners partly because there is no equally reliable evidence of valuation in other circumstances and partly because it seems reasonable to assume that the price people are prepared to pay to save time on journeys to and from work will not be too dissimilar from that which they are prepared to pay at other times. It is reasonable to assume the same value of time for adult non-earners as for earners.

6. The values of time quoted are average values over the whole population. It is possible to make more refined analyses. Thus, the value of working time for car drivers can be derived by averaging the earnings of the various groups that use cars in working time. This value is higher than that for working time as a whole because it is known that car drivers come in general from better paid occupations. The values of leisure time for different groups can be differentiated in the same way.

7. For most highway investment there is no ground for thinking that the group of people likely to use a particular road will be significantly different from the average (apart, perhaps, from regional differences); but in the case of air passengers travelling to or from an airport there is evidence which suggests that this assumption may not be valid. Information is not available to allow a precise estimate of the incomes of those using air transport, but data from various sources suggests, as might be expected, that air passengers have higher than average incomes.

8. There are other reasons why the time values appropriate for most transport investments may be unsuitable for air passengers. For example, the price per hour which an air passenger pays for a flight is much higher than the price of an hour's journey by road or rail, and it might be argued that he therefore values his time on the occasion of an air journey higher than for surface journeys. On the other hand, it can be argued that since the average trip length in terms of time is much greater for air

Printed image digitised by the University of Southampton Library Digitisation Unit

journeys than for journeys by most other modes, any savings represent a proportionately small part of the total trip, and on this account might be valued less than in circumstances where they formed a large proportion of total trip lengths. It has also been argued that time lost by foreign visitors should be left out of account in judging the relative advantages of possible airport sites to the UK community. The Commission may wish to consider investigating whether non-standard values should be applied to the time of air travellers.

Printed image digitised by the University of Southampton Library Digitisation Unit

NOTES OF PROCEEDINGS
FRIDAY 29 NOVEMBER 1968

CITY TEMPLE HALL
LONDON EC4

Before: the Hon. Mr. Justice Roskill (*in the chair*)

Professor Colin Buchanan

A. Goldstein, Esq.

A. J. Hunt, Esq.

Professor D. Keith-Lucas

Arthur Knight, Esq.

Professor A. A. Walters

J. Caines, Esq. (*Secretary*)

Oral evidence taken from:

The Ministry of Transport
(*Mr. A. E. A. Bain, Mr. J. Garlick and Mr. A. J. Rosenfield*)

and the Greater London Council
(*Mr. P. F. Stott*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Ministry of Transport

Greater London Council

MR. A. E. A. BRAIN, MR. J. GARLICK, MR. A. J. ROSENFELD and MR. P. F. STOTT called

806. *Chairman:* Mr. Garlick, I want to begin by thanking you, Mr. Rosenfeld and Mr. Brain from the Ministry of Transport for the great help that we have had from the Department from the inception of the Commission's work and for the paper* you have prepared for us, most of the material in which you have agreed should become public at this stage. This is a paper from which we have had very great help, and I should like, on behalf of the Commission, to record our thanks to the Ministry in general, and to you and your Division in particular, for the work which has been done on this. It is one of the most valuable papers which has been put before us. We are very glad that you are prepared to make it public today.——Thank you very much, Mr. Chairman.

807. Mr. Stott, may I say that we are very grateful to you for coming along from the Greater London Council. It should, I think, be realised by those who do not realise it already that the physical gap between you and Mr. Garlick represents a real gap, in the sense that you are completely independent one from another, and you are merely here today because you both cover different aspects of the same problem which we are to discuss today. From you and your staff we have had a great deal of help, and we are most grateful for it.——Thank you.

808. I do not know how you would like to begin. I was wondering whether we might begin by taking a subject which is common to both of you—that is, what the plans are over the next twenty years for the development of main roads around London. I include in "around London" that part of the area which is within your jurisdiction, Mr. Stott, as well as the part within the jurisdiction of the Ministry of Transport. You have, I think, brought with you and had enlarged a number of plans. Mr. Garlick, would you like to begin and deal with this. Let us work from outwards inwards. What are the plans for the development of the roads from the east, the north-east, and the south-east into London? ——(Mr. *Garlick.*) Mr. Chairman, I think the best map on which to focus the discussion is probably this one, which is entitled "Roads"†. The main roads which are going to be the subject of improvement are those which are included in this map in various colours. The significance of the colours here is related to the cost of improvements to meet aircraft traffic and is not related to the programmed time in which we are at present expecting to develop these roads.

Perhaps I could say first that this concentrates on the radial routes in and out of London. The traffic problems from the airport can be regarded, I think, as falling into three categories. There is the traffic which will wish to distribute itself generally around the country in a direction other than through London or towards London. Apart from perhaps small bottlenecks or comparatively small problems, it will be possible, with an airport sited, perhaps, 20, 30, 40 or 50 miles from London, for the distribution of that traffic which does not wish to travel in the direction of London to be handled comparatively easily. Small road improvements may be needed, but the expense and engineering problems should not be great. We have, therefore, concentrated discussion in the memorandum, and indeed the roads on this map, on the radial roads into London, which we expect to carry a significant proportion of the road traffic leaving the airport.

The Ministry's road programme at present is a programme that is made up of a number of schemes which are already under construction and others which are at such a point in the developing road programme as to be committed in varying degrees to planning and construction. We can see with some certainty the improvements which are likely to take place up to about 1975. In fact, the problems of planning, designing and constructing a road are such that there is very little possibility

* Page 273.
† See wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

in the present road programme of altering very much what we are planning to have on the ground and working in 1975. Beyond 1975 there is increasing opportunity for adjusting the priorities in the programme to suit the traffic situation which we would then foresee.

809. To translate that into practical terms, if I may interrupt, if we recommend a site that happens to be convenient for that which you have already got planned so much the better. If we recommend a site which does not, then is it right to assume that you would be unlikely to be able to reap any result in increased traffic accommodation until after 1975?——In general for a major length of road, yes, Mr. Chairman. It is obviously possible for minor bottlenecks on routes to be improved at comparatively short notice. If it is a question of the construction of a major new route or a very extensive improvement, such as turning into a dual carriageway an existing single carriageway route, requiring the acquisition of land and possibly re-housing people, and so on, this is a programme of such length that there is very little scope now for making changes in what is actually on the ground in 1975.

810. I am afraid I interrupted you.——Not at all. The then Minister of Transport announced some years ago a programme of motorway construction including the completion of about 1,000 miles of motorways by before the middle of the 1970s. This programme includes a number of routes as shown on this map, in particular, starting from *this* direction and going round, the M.11 route out towards Bishops Stortford and Cambridge. The M.1 route is already constructed. The M.40 route, which is in parallel with the A.40- towards Oxford, is partly under construction. The M.4 is already under construction. The M.3, a route to the direction of Portsmouth, is programmed for completion by the middle 1970s as well; and also the M.23, a route going towards the direction of Brighton. The M.2 is already in existence for part of its length and is being progressively improved at the London end as well.

I do not know, Mr. Chairman, if you would like a more detailed discussion of the timing of individual parts of these routes and their available capacity. If so, I would like to ask Mr. Brain, as the engineer concerned with our general highway planning, to report on this aspect.

811. It might be convenient to take that next, if you would be so good, Mr. Brain.——(*Mr. Brain.*) I shall be referring to this map, which in your papers is given at Appendix 2*. The press has copies of it. This could be very detailed, Mr. Chairman. I will deal with it fairly briefly and leave it for questions perhaps to elucidate finer points.

812. If you will.——As Mr. Garlick has said, M.11 is due to be built along the general alignment in the early 1970s. We hope to start in 1970 and finish by 1974. The decision has been made to build it as a dual three-lane carriageway road. It will in fact be a motorway. To change from that design width would impose a penalty in time: we would not be able to complete by 1974. If an airport were to be sited at Stansted, there would be increased volumes, and the view has been taken by the Ministry that, if that were to materialise, there would be a long-term need—a future need—to relieve this route.

813. If I may interrupt you just to clarify that point, am I right in thinking that the original design and purpose of the M.11 was wholly independent of the possibility that the airport might be at Stansted?——Yes. The M.11 was conceived in the late 1950s as part of a 1,000 mile motorway programme. Since 1963, when I think the first decision to site a third London airport at Stansted was taken, the planning of it has taken into account the airport traffic flows arising from the airport.

814. Suppose the airport does not in the end go to Stansted, am I right in thinking that M.11 will be left little unaffected and will be built as at present planned?——It will be built as a dual three-lane carriageway motorway.

815. As at present planned.?——As at present planned.

816. So it comes to this, does it, that on your existing plans, if I may use a colloquialism, Stansted would get a bonus from the planning of M.11 but M.11 will go ahead quite irrespective of where the airport goes?——Yes, because it forms part of our 1,000-mile motorway pro-

* See wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

gramme. It is not the only route where an airport would have a bonus. Along the M.40, for example, and along the M.23 and along the M.3 that would also be true, but there may be other reasons why one does not want an airport along those particular radials. I will now go round the rest of the motorway radials. M.2, as Mr. Garlick has said, exists along the length indicated on the map. A.2 is being widened towards London and this route will all be complete by 1974 to 1975 out to near Canterbury. The construction of M.23 will start fairly soon and will extend from the C Ring in South London to a point just south of Crawley and will be completed in the early 1970s. The first contract for M.3 has been let, and the remainder will be let, within the next year or so, which will take us to Sunbury Cross where it will join the London road network going in towards London. The improvement of that road is also programmed. M.4 has been built in the vicinity of Heathrow Airport and will be extended very shortly now right through to the Severn Bridge and will be complete throughout by about 1971.

817. So, talking in general terms, you have got something planned for almost every direction except due east of London; is that right?——Not only due east. A.12 has been improved, not as a motorway, but to a very high standard which is close to motorway standards. The gaps will be filled in before 1975. A.127 out towards Southend has only a small amount of improvement programmed for it at the present time. It is a dual carriageway, but there is trouble at the intersections already, and those intersections are due to be dealt with. But it will want further improvement to cater for the longer-term flows, with or without an airport.

818. Is A.127, the Southend road, which is the one with which we are vitally concerned in connection with Foulness, scheduled for any improvement at the moment?——Only these junction works until one gets to the GLC area. We have the Radial Route 7 proposals which take us into the C Ring where, incidentally, it links up with the M.11 proposals. I will leave Mr. Stott to talk about that area in more detail if you would like that.

819. Is there anything more you want to say in outline at this stage, otherwise I think it might be convenient now to ask Mr. Stott to take the routes you have dealt with into the London area?——I have not covered all the radials shown on that map. I do not know if you would like me to.

820. Please.——Continuing round, M.11, A.12, A.127, A.2 and M.2 have already been mentioned. The A.20 route is linked with the provision of the Channel tunnel, and assuming that that goes ahead we are prepared to build that as a motorway also along that particular route. The A.21 towards Hastings is not a trunk road. It is the responsibility of the local authorities. There are proposals for improvement: the Sevenoaks bypass has been constructed; the Tonbridge bypass has been authorised. Apart from that, there are no improvements programmed. I have dealt with A.23 and M.23. Coming to A.24 towards Worthing, there are some improvements between Leatherhead and Dorking and south of Dorking, but apart from that very little more is programmed. A.3 is due to be improved through to Guildford, but beyond that there are no programmed improvements, though planning studies are going ahead. I have earlier dealt with M.3 and M.4. The A.40 route is due to be improved by construction as a motorway through to Oxford and studies are going ahead westwards of Oxford as to what to do. On A.41, apart from schemes in the vicinity of Berkhamsted there is very little else programmed. M.1 exists and no changes are programmed for that route at the present time, though we are investigating the dual two-lane carriageway section just north of Watford. A.1 will be provided as a dual carriageway road throughout to the North as part of our programme up to 1975. I think that has covered all these fifteen radials round London.

821. Thank you very much indeed. Mr. Stott, would you like to take up the story from there so far as concerns the plans for the relevant developments within the GLC area?——(*Mr. Stott.*) Mr. Chairman, perhaps I should first make it clear that by agreement, and with your concurrence, I shall be speaking about some projects and planning which are the responsibility of the Minister of Transport alone.

822. Certainly.——Because there are parts of the national road system, both motorways and trunk roads, which come into the GLC area. The officials of the GLC and the Ministry of Transport

Printed image digitised by the University of Southampton Library Digitisation Unit

maintain a very close liaison on the planning and priorities of road developments inside London, so that the administrative status of the roads should not affect the development of a sound road structure.

The GLC has as one of its principal duties the formulation of a Greater London Development Plan and a pattern —a structure—of primary roads of motorway or near motorway standard is being proposed by the GLC as a principal component of that development plan. As this structure forms part of the development plan, it will be subject to public inquiry as part of the proceedings by which the Government examine the plan and eventually approve it for adoption. In the meanwhile, particular links which fit into that proposed pattern are being treated on their merits when there is an opportunity for development in the shorter term rather than in the longer term. In other words, anything which seems good on its merits is being proceeded with, although the pattern as a whole will be subject to a full public inquiry as part of the development plan proceedings.

This broadly shows the structure which is looked to, which is three concentric link roads. This diagram shows what is new and what is existing. Any development such as this must be based on what exists and take London forward from there. You will see that there are the radial routes already established. These full black lines show where there is an existing road. It does not necessarily follow that what exists will be satisfactory at its present standards, but there is a road of substantial quality where these black lines are at the moment—M.1, A.1, A.10, A.13, A.2, and so on, all the way round. These are black lines. Most of them are radia. The one which is not radial is the North Circular Road round here.

Not only would the GLC like to see this pattern incorporated in the development plan, but it would like to get cracking and get something built. So it has looked at the costs involved and said that, in term of priority, the important thing for London is to get such a pattern developed, not always to the width of road which might possibly be required in the longer-term, but to get a complete pattern.

The colours on this diagram* show the progress which is likely in the short term between the Ministry of Transport and the Council itself in developing the pattern. The red sections—you will note M.23, M.11, Radial Route 7, and this route through Blackwall tunnel extending north and south—are programmed constructions. The blue sections are in preparation; it has been publicly announced that these sections are being prepared in detail so that they can form a basis of choice for extension of the programme as that becomes necessary.

In addition to those specifically marked blue, the Ministry of Transport has in hand an extensive programme of improvements on the existing North Circular routes. Taking the black lines and the coloured lines, the ones which are already black and the parts that are coloured, those are the sections which are likely to be complete up to a standard in the mid-1970s. In other words, those are the ones which are either there at the moment or on which work is now proceeding with a view to early action.

823. It is fairly clear, is it not, Mr. Stott, looking at that plan, that if the airport was sited to the east of London there is going to be very considerable difficulty in getting any increased flow of traffic into and through the East End of London?——That is quite true, Sir. What you will see, in terms of colour—the balance of colour, is a very marked improvement in the standard of service by road to the east side of the Lea Valley. That is not a good area at the moment, and there will be a very marked improvement. But nothing is in hand at the moment to deal with what is one of the most serious problems of London's roads at present, and that is the very few connections across the Lea Valley—there are very few crossings of the Lea Valley at the moment—and a lack of suitable roads which go onwards towards North and Central London. Most of the roads there pass through the housing areas of the East End, and it is an area where increasing volumes of traffic have forced their way through rat runs and generally added to the deterioration of what is already a difficult housing area. The element in this this plan which could do most to relieve that problem is the North Cross route, which broadly speaking, to locate it, is intended, as far as the feasibility studies have gone so far, to run from Hackney Wick, which is this corner, just north of King's Cross in this area.

* Not reproduced. Reprinted in *London's Roads: a programme for action* (p.10). Available free from the Greater London Council, County Hall, London S.E.1.

Printed image digitised by the University of Southampton Library Digitisation Unit

824. I was going to ask you later on about the London terminal. If a London terminal for the third London airport, wherever the airport were, was sited at or near King's Cross, that would be a very important additional factor pointing towards that as the right site for the terminal, would it not?——Yes, it would.

825. When would you expect to get to work on the North Cross route?——It will not surprise you, with the present demand for movement by road in London, to hear that there are a lot of competitors for another stage beyond here. The Commission will see that, bearing in mind these stages which have been reached, without going into extreme technicalities, there is a very strong attraction towards building a high quality route across South London, which does not exist. I think somebody has referred to the existing South Circular Road as a row of signposts. It is really nothing more. As such, it is against that sort of priority that any work on such a section as this would have to compete.

826. I am right in thinking, am I not, that the whole of the GLC plan, and indeed the whole of the Ministry of Transport plan, when it was first given birth to some years ago was phased without regard to any question of where any third London airport might go?——Yes, that is quite true. In fact, the most important criterion for the formulation of this plan is the internal need of London itself. Something like 90 per cent. of the journeys which are made on the roads of London are entirely within the Greater London boundary. The journeys which are very often imagined to pass through London from one part of the country to another are only about one-tenth of 1 per cent—about 1 in 1,000. The remaining 9 per cent odd are journeys by Londoners in and out, or by other people into London and out. Although the generation of traffic by any large airport is substantial, when it comes into the London area and diffuses it becomes rather a small proportion of the general traffic.

827. On the other hand, it is a very important factor when you are making provision for traffic coming into the London area from whatever direction it may be. The recent gumming up of the M.4 shows that, does it not?——Yes.

828. Just help me on this, if you will. It follows, does it not, from the fact that you and the Ministry of Transport have made no plans taking the third London airport into consideration that, when a site is chosen for it, one of two things has got to happen? Either the extra traffic generated has got to be absorbed into the existing or planned roads or you have got to alter your plans to provide increased road capacity?——Yes, that must be true. I perhaps repeat myself in another way by saying that it depends on the demand which you are serving. The existing pattern from Heathrow is a large, relatively concentrated demand to come to the central area. A large proportion wish to come to the central area. Almost an equal number wish to come into the London region somewhere. They wish to disperse themselves inside the London area. It is unlikely that an airport flow in terms of the dispersed movement would be sufficient on any individual link to warrant any special consideration. You would hardly notice it in volume. The volume you would notice is a volume which wished to come into the central area. In dealing with that type of traffic, I think one must have regard to the general transport policies of London. There is no policy at the moment for facilitating a large increase in movements by road to the central area. London is already equipped with a very extensive system of railways which serves personal movements to the centre—not goods movements—and present policies are that road investment should be not specifically directed to serving this area but should serve the dispersed movement outside the centre. The question you raised, Mr. Chairman, is a matter as to what mode of transport you envisage the service to the centre being.

829. I may have expressed myself badly. What I had in mind in the question I asked was the question of getting the extra traffic into the wider London area before it began to disperse. There is no reason to expect that what will come in from the third London airport, by whatever means it may be, will be less than that which is coming in from Heathrow, and it is very likely to be very much more on present forecasts. Therefore, you have got to get that traffic in before any question of its dispersal arises.—Yes. It is a question which, I imagine, broadly would be: what is the provision made for radial movement up to this second ring, because that is when the largest dispersion

Printed image digitised by the University of Southampton Library Digitisation Unit

will already have taken place. It then comes back to the question you were addressing to Mr. Garlick and Mr. Brain: what provision is being made for improvements of the radial roads which go out nationally, as it were, beyond the Greater London boundaries?

830. Would it be for you, as you have raised the question of dispersal, or for Mr. Garlick or one of his colleagues from the Ministry, to deal with what appears on the left-hand plan, namely, what I think you call the scatter of traffic as it comes into London?——I think perhaps my colleagues from the Ministry would like to speak to their figures.

831. Mr. Garlick, are you going to deal with this?——(*Mr. Garlick.*) The purpose of this diagram* is to illustrate graphically the sort of assumptions that have to go into a discussion about the road traffic into Central London and the significance of the various parts of the assumption in relation to the total traffic movements that one finishes up with. These two diagrams merely represent two different cases of the split of traffic between public and private transport. *This* case is that where we assume that there exists some rail link carrying two-thirds of the traffic. In *this* case there is no rail link: all the traffic is going by road, but half of it by car and half by coach.

The significance of some people going by coach is that the road space requirements for people who are moving in coaches are much less than the road space requirements if they all go by car. We use in this the concept of the passenger car unit, which is a measure of the congestion-forming capacity of various sorts of vehicle. We take the passenger car as unity. Coaches are rated as 3, which means that in terms of traffic space on the road they are regarded as taking up the same space as three cars, but the number of passengers they carry is so much greater that they represent a saving in road space. These flows of traffic, which are related to the peak hour on the roads in 1990, assume that of the passengers arriving at the airport 15 per cent, which is the figure which applies at Heathrow at present, remain within the airport to transfer to other aircraft. This leaves 85 per cent of the passengers arriving wanting to leave the airport.

Of the number who leave, we have assumed that 15 per cent—this little piece on top—go out in a direction other than the radial flow into London. As I said earlier, we do not expect any insuperable difficulty in being able to meet that rather scattered movement in all directions from the airport. This leaves 85 per cent of the passengers leaving the airport coming towards London, either for destinations on the way to London, in London, or beyond London.

We have assumed here certain proportions of them dispersing at various points—5 per cent before they reach the D Ring. The D Ring, you will remember, is this road which is very roughly on the outer boundary of Greater London Council. We have assumed a 15 per cent diversion of passengers at the D Ring and a further 15 per cent at the C ring, which is the North Circular Road and the potential South Circular Road. That leaves the remainder of the traffic to come on to London. We have built this up with the air passenger traffic on this side and the service traffic of the airport on this side, a smaller amount. The significance of this is that the assumptions about the amount of traffic that disperses at various points has a quite considerable effect on the total traffic that is arriving in Central London.

The information which we have got about origins and destinations of passengers coming into London airports is not as extensive and detailed as we would like, and if it were possible to refine the distribution of passengers it would be possible to make a more accurate estimate of traffic flows into Central London and the extent of the diversion at various points on the way in. This suggests that it is an important field of investigation to know how much traffic comes on.

The second diagram* here is merely a counterpart to this in the case where there is also a rapid transit system—a rail system of some sort—taking two-thirds of the traffic. We have then assumed that all the remaining traffic goes by car, on the ground that, if there is a rail link or equivalent from an airport to the centre of London, there will not be any significant role for a coach service. So, although the number of passengers coming by road is much less, the traffic by road in terms of the highway capacity which has to be provided may not be much less, because the passengers who are going by road are

* See wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

going in cars, which are comparative space-consuming compared with the significant number in coaches here.

832. *Professor Buchanan*: I wonder whether you can give us a practical figure at present of traffic out to Heathrow on M.4, because it has been suggested to us on a number of occasions—or we have been given the impression, shall I say—that the Heathrow traffic is really seriously gumming up M.4. As a constant user of M.4 I wonder what the truth is and whether you have any figure to give us. At the moment, say at the evening peak hour, how much is airport-bound and how much is not? I find it very difficult to get an idea on this.——(*Mr. Stott.*) I have these figures here. Perhaps it would be helpful if I put them in the context of the general airport traffic. In 1966, 36,000 vehicles came to Heathrow Airport in 16 hours. Of these, 3,500 came from the west on M.4—that is, from out of London, coming into London on M.4—and 9,000 came from the east on M.4—that is, coming from the direction of Central London towards the airport. Those are really all-day figures.

Taking the heavy movements on the motorway from the east, in the evening peak the movement is between 400 and 500 vehicles an hour, while in the morning the movement is higher—800 vehicles an hour. There is the distinction that in the morning the larger number of vehicles—800—is moving against the commuter flow—in other words, it has a fairly clear run—while in the evening the airport traffic joins in the general heavy stream which is leaving London at that time. The current total flow out of London on M.4 at the evening peak is 3,300. So the airport flow is about a seventh of the total movement on M.4 at the evening peak going out of London.

833. Am I right in thinking that the cross routes which you have mentioned in fact constitute the motorway box about which one reads something in the papers every day?——That is quite right. What has been referred to as "the motorway box" is this pattern of routes here. It is very important to keep this radial view of London in perspective. This distance is about nine miles, and this is about five. It is a rather big box. The current situation is that the east side of the box is now well under way. Some work has been put in hand on the west side.

834. One gets the impression that the motorway box is a somewhat controversial proposition at the moment.——Indeed. That is why I said that this pattern, which includes the motorway box, will form part of the Greater London development plan and will be inquired into as a complete proposition as part of that process. Anyone with a close knowledge of moving about in London can understand that, for instance, the duplication of the Blackwall tunnel and the provision of new approaches to it north and south is a project which stands on its merits. It happens that it can be brought in as part of this wider pattern, but this is now being developed on its own merits.

835. I think the only other point I want to ask, Chairman, is this. I think Mr. Garlick said that there was very little possibility of adjusting the programme up to 1975. Am I right in thinking that this is really due to the sheer inertia of the whole planning and development process—the acquisition of property, the holding of inquiries—and not primarily a matter of investment? If you got all the money you wanted by tomorrow morning for a new link to the third London airport, wherever this link may be, do you still say that their is such an inertia in the process that it would not really make much difference?

(*Mr. Garlick.*) Broadly yes. I did differentiate between a major new route where land had to be acquired and, as a consequence, planning and land acquisition procedures gone through, and extensions. In the case of a major new route involving planning and land acquisition procedures, the total length of the process, coupled with the actual building time—I was talking about the time to get a new route completed and opened to traffic—is such that the middle of the 1970s is the earliest date by which anything could be changed.

I differentiated slightly between that and the case of smaller improvements to junctions, and so on, which can often be done much more quickly.

Perhaps I could add, in reference to a point which I think related both to the Ministry's position on this and to the Greater London Council's, that when a decision is taken about the location of the third London airport and the traffic forecasts are available of the traffic to be generated, it will be possible to take this into account in the planning which will then go on from that point of time of road programmes and road priorities. I think you, Mr. Chairman, put it that

Printed image digitised by the University of Southampton Library Digitisation Unit

when the airport comes into existence it will either have to use the roads that happen to be available then or new road facilities will have to be constructed. I would make it clear that the Ministry's programme would automatically take account of decisions that would affect the traffic pattern and traffic requirements in the south-east of England generally.

836. *Chairman*: Let me suppose that we report towards the end of 1970 and that we report in favour of a site in relation to which there was no current provision. Let me suppose that that site started to become operational in 1976/77 at the earliest. That would mean, if what you have just said is correct, that there would be no prospect of getting an adequate road access system for that new airport for probably the first five years, maybe seven years, of its operational existence. Would that be right, Mr. Garlick?——I would not put it quite like that, Mr. Chairman. The planning and construction time for a major new route, depending a little on the extent to which it goes through particularly difficult urban parts of the South-East, might be something like five to seven years, but if a decision were taken about an airport in 1971——

837. I was giving the Government of the day a short time to digest the report. ——If a decision were taken, to take a hypothetical case, in 1970, it would be possible to reflect the traffic that this would generate in roads which could come into use by 1977 or 1978, depending on the complexity of the route one was talking about. This would perhaps be not quite as long a period as you suggested beyond the coming into operation of the airport itself.

838. Is the logic of that that we ought not to be too frightened in planning the site of the third London airport of traffic restrictions which at present look formidable?——From one point of view, Mr. Chairman, that is true. I think one would qualify it slightly by saying that as well as the actual engineering formidability of providing a new traffic route to any particular site, there is the financial and resources angle which is represented by building a new route. The fact is that some of these routes that we were talking about earlier have effectively spare capacity on them for some of the period which is particularly critical before any new provision could be built. In a sense there is, I think your word was, a bonus, in that it would not be necessary if the airport were in some positions to make such a big investment in new transport facilities to meet the traffic requirements of the airport as if it were put in other places.

839. You mentioned earlier that even if it went to Stansted M.11 would need enlarging at a future date. How long do you reckon that M.11 as planned could absorb both the traffic which it is at present planned to absorb and any extra airport traffic generated by siting the airport either at Stansted or somewhere else up in that area?——In a word, it could absorb it for quite a long time. To be a little more specific, the ordinary traffic—the non-airport traffic—that we are now forecasting for M.11 is an amount which requires us to put in dual three-lane carriageways, but, even by 1985 or 1990, the traffic will not fully fill the dual three-lane. The point is that the next size down, which is dual two-lane, has only two-thirds of the capacity, so road capacity has to go in fairly big jumps. It happens that the non-airport traffic, which we estimate by the design year for that road will be about 2,250 passenger car units per hour, warrants the provision of dual three-lane carriageways. In fact, a dual three-lane road will be capable of carrying, before the overloading conditions get very serious, something like 6,000 passenger car units per hour in each direction. This allows a considerable margin which could in fact absorb the likely airport traffic which we have assumed, certainly until 1990. If a fixed link were also provided so that the amount of traffic on the road was not as high as it might otherwise be, then it might be that M.11 could absorb both the present non-airport traffic on which it is planned and any airport traffic for some while beyond 1990.

840. You have given some figures in table 3 on page 20 of your paper*.——That is right. These figures are what we call design capacities, as the table says. You will see that the last line but one—2x36 dual three-lane, to inter-urban standards—is shown as having a design capacity of 3,000 passenger car units per hour each way. I mentioned that we expect the non-airport traffic on the M.11 route for the design year to be about

* Page 290.

Printed image digitised by the University of Southampton Library Digitisation Unit

2,250 passenger cat units, so we go to the dual three-lane standard. As we explain further in this memorandum, a road of this sort can carry an overload of up to about 100 per cent before the consequent delays to traffic and the level of accidents rise to an unacceptable point. So in a case when we build a road to our design capacity we are building for the future to quite a large extent. We are building in some spare capacity before the overloading situation becomes so critical on it that it is necessary to make major improvements to it.

841. Do you regard M.4 as having reached either overload or heavy overload as you have defined those terms on page 20 of your paper?——Yes. At peak times M.4 is, I think, the dual two-lane section—

842. The Slough-Maidenhead section? ——Not I think the Slough-Maidenhead piece. The inner end is actually operating at a heavy overload condition, just about at the point of what we call heavy overload.

843. *Professor Buchanan*: Mr. Garlick, you said that these plans were not influenced by any ideas which have developed so far for the siting of the third London airport. What are they influenced by? How does the work of the Ministry relate to the work which we have heard about—the various propositions which have been discussed for the South-East? There is the *South East Study**. We have heard of the work of the Standing Conference. We have heard about the South East Economic Council and its radial finger plan, which appears to be cashing in on these radial lines of communication by putting development along them. Then there is the Burns Committee which, as far as we understand, is really carrying out a re-examination of these various projects and which could, I think we were told, emerge at the end of next year with some possibly drastic modifications. How do your projects link in to all that regional planning work? If I could throw in another question, what would be the effect, wherever we eventually think the third London airport should go, of the major urban development which it seems has got to accompany the airport—possibly a quarter of a million people—put out somewhere near a new airport? How would all this be brought into your projects?——Generally, the development of the Ministry's road programme for the South-East reflects the growing demands of traffic of all sorts—commercial, private car, goods, and so on. Towards the end of the 1950s, the then Minister of Transport announced a programme of major road improvements—the so-called 1,000-mile motorway programme—which was designed to provide a network of strong road links in corridors which were clearly foreseen as having heavy traffic movements on them. This programme we have already referred to. In addition, there are the non-motorway links which we have also referred to. All this adds up to a programme of improving existing roads and putting in new roads along corridors where it seems that the general growth of the country's economy will result in peak demands for traffic movement. You have referred, Professor Buchanan, to the South-East Study carried out by the South East Economic Planning Council. I think you used the phrase, "cashing in".

844. That was not the South-East Study. That was *A Strategy for the South East**. ——I beg your pardon—*A Strategy for the South East* produced by the South East Economic Planning Council. I think it is fair to say that the Council's proposals, which take account of a number of firm decisions for highway improvements, again reflect this bonus capacity that exists once one builds a major new traffic route. Very close to London the major new routes can very quickly become filled up because of the traffic which they either attract or generate. But when we are talking about the more inter-urban parts of the road system in the South-East, the programme and the design capacities which the Ministry uses in deciding what size of road to provide result in a period, once a road has been built, when there is spare capacity in effect on that road which can be very conveniently used by new developments which are going to generate traffic demands. So *A Strategy for the South-East*, which takes into account the announced Government programmes about transport improvements in the South-East, indeed links its development proposals—proposals for the regional growth of the area—with the known transport network improvements. I am not sure if that answers your question entirely.

* HMSO, 15*s*.

Printed image digitised by the University of Southampton Library Digitisation Unit

845. I think you have clarified it a lot. We are possibly understandably a little nervous about adopting it as a principle that we should site this project somewhere where it can cash in on some capacity in some existing transport route. That might be all right from that point of view, but it seems possible—and I think this is the impression we got from Dr. Burns—that it might not in fact be the best result and the best land use pattern for the South-East region if we did that. I am wondering whether the programmes which you have announced could be affected if when Dr. Burns reports at the end of next year he in fact produces a different land use pattern from anything which has been considered so far. I presume that your plans would then be adjustable and would presumably have to be adjusted.——Indeed. Programmes and plans, subject to the point you have already discussed about the inertia of road building programmes, are continuously adjusted to take account of any new developments which generate a lot of traffic, whether they be of the airport type or whether they be the sort of developments which more generally Dr. Burns and his team are considering. It is quite right that should he come up with proposals for a radically different pattern of development, in so far as it was operationally possible we would take account, when decisions were taken about the pattern of development in the South-East, of those decisions in our road planning.

846. So far you have obviously given some thought to the traffic implications that a new airport would have. You have told us about that. Have you given any specific thought to the implications of the development which could go with the airport—in other words, the possibility that one would be getting somewhere a very sizable city, possibly of a quarter of a million, something bigger than is planned, for example, for Milton Keynes? Have you considered what the effect of this could be on the links back to London, for example?——The general answer to that is that the sort of traffic flows we are talking about here do not represent any more than the airport and the immediately associated traffic. If the airport were to become a considerable centre, a considerable industrial development, this could obviously create considerable additional traffic flows. We have not based our sums so far on that possibility. Could I ask Mr. Brain to speak on that? (*Mr. Brain.*) I would like to say a word or two about the South-East Study, Mr. Chairman. My understanding is that this is a long-term study, certainly post-1975 and possibly post-1980. It is therefore unlikely to have any impact on our present programme but might begin to have some impact on what we would do between 1975 and 1980 and certainly would influence what we do beyond 1980.

847. The South-East Study to which you refer is the Study Group under Dr. Burns?——The Burns Study, yes.

848. *Chairman*: Mr. Brain, have you read the transcript of Dr. Burns's evidence?——No.

849. Then perhaps it is not quite fair to ask you about it. While Professor Buchanan was asking the question I was turning up day 2*, page 18, where in the middle of the page I asked Dr. Burns this: "In your view, at least, one ought not to regard the presence of existing communications such as existing roads and existing railways as too great a constraint in the siting of the third London airport and ought to be ready to look for the creation of new facilities, both road and rail?" Dr. Burns answered: "If the airport is associated with a very large urban development and this works in with what we are trying to do in the South-East Plan, then I think the answer is 'No', subject to the tests on the economic side proving that we can afford it." I understood Dr. Burns, rightly or wrongly, to be taking the view that one really ought, in siting the airport, and looking at it through his "planning-scope", to look at it as something which ought to be the subject of what in modern parlance I suppose one should call a package deal—site the airport, the urban development, and all the road traffic facilities and rail facilities—and look at it anew rather than regard oneself as too much hampered by existing, or even planned, communications.——Yes. Perhaps I ought to qualify what I said. One can foresee this South-East Study by Dr. Burns having an impact on our road programme as regards the non-radial traffic—that is, communications between any new development to house the workers for the airport—but comparatively little effect on the radial roads—the

* Page 109.

Printed image digitised by the University of Southampton Library Digitisation Unit

traffic towards London—because the new town will have a limited effect on the traffic flows to and from London, limited in relation to what is already travelling on these routes.

850. *Mr. Goldstein*: Mr. Garlick, you will have heard the Chairman say just now that perhaps one ought not to be too constrained by the existing pattern. I want to revert to your suggestion that it might take six or seven years, I think you said, to take on board, so to speak, independent planning requirements which emerge from the siting of the third London airport as regards the implementation of a new route. I wonder if you feel that seven years is a time span which the Commission should consider if the airport were to be sited—because, say, we are not too constrained by existing communications—in a position where a new motorway was required, 20 or 30 miles away, perhaps more. Would you feel that seven years would be a safe margin to allow for the implementation?——(*Mr. Garlick.*) You are asking really whether seven years is long enough to plan and build a major new facility in a corridor which we previously were not proposing to do?

851. Quite so.——In round terms, yes. Obviously the problem of road building and land acquisition gets much more difficult in built-up areas or in areas where other special circumstances of some sort apply. It is therefore difficult to generalise. Certainly I think the London part of any road, if it were necessary to construct a significant link to London, could create very difficult problems which would tend to throw the time scale out still further. (*Mr. Stott.*) I agree with that. (*Mr. Garlick.*) But for the generality of inter-urban roads, subject to anything Mr. Brain has to say, I should have thought seven years was about right.

(*Mr. Brain.*) It can be reduced if everything goes favourably. The first parts of M.1 were built very quickly from the early planning stage, but recent experience would suggest that you cannot get below 7 years, unless you apply some special procedures, like possibly a Parliamentary Bill, though there are difficulties, even with that. Some of our current motorways are taking 9 or 10 years to go from initiation to the completion of construction.

852. This really leads to the next question. I wonder whether the Commission ought perhaps to consider, bearing in mind that the airport, as I understand it, would eventually be done by this special development order, as at present planned, and laid before Parliament, whether as part of the package deal to which the Chairman referred, any necessary links, be they road or rail, might not be handled the same way? It depends whether the Commission feels there might be a short fall; if there is not a short fall, using the normal procedure, obviously this would go through in the normal way.——(*Mr. Garlick.*) I think the actual design processes of selecting a route, perhaps 30 miles long, and finding a suitable alignment for it, may require an amount of time which is different, because of the detail into which it has got to be looked at, from the time to determine the position of the perimeter of the airport.

853. What I had in mind was that if the Commission were to consider that these circumstances presented a real difficulty, that in the same way that the procedural aspects of the airport were done by Special Development Order initially, first of all, as soon as the link had been planned, that could also be done by Special Development Order as part of the same sequential procedure, would you feel this was the sort of thing the Commission ought to look at if it felt troubled about that length of time we have been discussing?——I think what I want to say on that is that I think you have in mind, when the alignment for the route has already been determined, and my concern is that this process itself is a lengthy one. I am not quite sure at what point the Special Development Order procedure that you are visualising might possibly come to the aid of the time table?

854. What I had in mind really is to substitute for the procedure of the Highways Act, a procedure of Special Development Order, or similar, as part of the airport package, so that as soon as the technical studies have been done, instead of proceding through the Highways Act, which might, as you have said, involve time, and in difficult areas might involve a great deal longer, you switch to a different procedure, and make it part of the airport special development procedure.——Assuming that the road were going to be a general purpose road—I do not mean in the sense of being a non-motorway, but a road open to all traffic, including airport

Printed image digitised by the University of Southampton Library Digitisation Unit

traffic,—I think one would want to look closely at whether the procedure which was appropriate for a thing like an airport was also appropriate for a more general objective.

855. I am changing the subject: I wonder if you or one of your colleagues would like to say something about the user costs of travel. An important aspect of the Commission's work is going to be to put a value to the cost of travel to and from the airport, by all modes of transport, and a user cost features prominently in that. I wonder if you would like to explain to us how the Ministry currently tackles this problem, and if Mr. Stott does it differently, perhaps he might indicate?—— Yes, we use the term "user cost" to refer not to the capital cost of providing any road or rail link, but the continuing costs which are incurred by airport travellers, both passengers and people meeting them, people seeing them off, and so on. These in our view are costs which will go on indefinitely into the future, so long as passengers travel to the airport. They take account in the sums that we have done of the running costs of vehicles, and of accidents and time, of which the last, the time costs, are usually the most important. Working out costs in money terms of something which includes time obviously involves putting a value on time, and we have taken, as we explained in our memorandum, two values, one for working time, and one for leisure time. We have taken a value of, I think 13s. 6d. for working time, and 3s. for leisure time. The time which people spend in getting to the airport obviously depends on how fast they are travelling, and how far they have to go. What we have attempted to do, trying to be of some help to the Commission, is to express the user costs in terms of the extra costs per mile of a more distant location of the airport from London, and these appear, I think, in table 7 in the memorandum. Some of the assumptions that we have taken, as well as the value of time, are, of course, the split of passengers between road and rail, and we have taken two main assumptions here, the two that are referred to in these two cases on this scatter diagram of destinations and origins. The first case, involving no rail link at all, means that everyone is coming by road, and we have taken as the most likely marginal running time 50 miles per hour—by "marginal running time" I mean the rate at which the vehicle is travelling for an additional mile or an additional 5 miles. It does not represent necessarily the average end to end speed; that it may be lower. What we have been trying to evaluate is the effect of moving the airport a distance of some miles or tens of miles either way, further in or out. For the railway we have taken a running time of 100 miles per hour, so that again this does not represent the average end to end time, but it represents the maximum speed that a train would be running at. We have taken in the case of the existence of a rail link a split between the two modes, rail and road, of $\frac{2}{3}$ by rail and $\frac{1}{3}$ by road. This is, as I said earlier, a fairly arbitrary split, in the sense that we have not got very much information on which to say this is sensible. What we do suggest is that to get $\frac{2}{3}$ of the travellers on to the rail probably represents a fairly significant role for a fixed link, as significant as we are likely to achieve in practice. Therefore it represents the best case, so to speak, from the point of view of the rise in the user costs with extra distance, because with $\frac{2}{3}$ of the people on the rail link, we have a high proportion of people travelling at the highest speed, twice as high as the speed on the road. Therefore we have the user cost rising at as low a rate as seems to us likely to arise. As the final total column on table 7 on page 34* of our note shows, we finish up with costs which were worked out for the year 1975, for 30 years on from then until 2005, and the costs in each year discounted back at 8 per cent to 1975, giving a range of total user costs ranging from £5.3m. per mile to £6.5m. per mile in the case of no fixed link, and all the traffic going by road. What this really means is that we are estimating that the cost to the community, chiefly in time terms, but also in operating cost terms of each additional mile that the airport is placed further away from London, is worth the equivalent of something between £5½m. and £6½m. in values discounted back to 1975.

856. That is a substantial penalty for distance, is it not?——It is, indeed.

857. An extra 10 miles on that basis would take something of the region of £50m.——Yes.

858. Plus the 10 miles construction.—— Yes, indeed.

* Page 301.

Printed image digitised by the University of Southampton Library Digitisation Unit

859. I wonder if you would like to say—you mentioned, I think, there is a lot of time in this, there is a lot of time valuation in this—if you would express a view how sensitive it is. You know, your Department has submitted some figures, but I think it would be interesting to those concerned with this problem generally if you could give some example of how sensitive these sort of sums are, to the assumption, for example, of leisure time being valued at 3s.?——We have in preparation some sensitivity tests to indicate this, as far as we can. I am not sure if my colleagues here have got some figures which we can quote to you at the moment in anticipation of a piece of paper which will set the thing out more fully.

860. I suspect they may have. If we take a very simple example of what would happen if everybody travelled by car?——(*Mr. Rosenfeld.*) Yes, I have some figures of that here. Taking the 50 miles an hour case, you asked for sensitivity to changing leisure time. We are assuming here that we keep our working time constant at 13s. 6d. per hour, and if we take our basic assumption at 3s. an hour for leisure time, we get a value of £5.7m. This is purely for passengers, disregarding the service traffic travelling 100 per cent. in cars. If we cast out of this altogether leisure time, and just leave the working time in, we come down from 5.7 to just over 4m. If we double the value of leisure time from 3s. to 6s. we go up from £5.7m. to £7.3 m. This gives some idea of the sensitivity if you alter the values of leisure time.

861. That I think you probably agree is not all that sensitive for leisure time?——No.

862. Allowing for the fact we have taken an extreme example of 100 per cent by car.——Yes, that is true. In the table which you find in the memorandum, we have only got about half that.

863. If you do the same for working time, keeping the leisure time constant at the 3s.—?——We start off again with our figure of 5.7, then if we take working time down from 13s. 8d. to 8s. we bring the sum of money down to 4.8m. per mile. If we take it up from 13s. 6d. to £1 per hour, we go up from 5.7 to 6.4.

864. Could you perhaps for simplicity take the 10s. and 20s. values, so that one can see the effect of doubling the value of working time.——At 10s. you have just over £5m., £5.1m. Doubling it to 20s. gives you £6.4m.

865. Again, I think you will agree, not so very sensitive?——Not so very.

866. Would it be a fair conclusion from this to suggest that although you have done obviously the best you can in valuing working time and non-working time—and I suppose these value of 13s. 6d. and 3s. could be the subject of considerable debate, not least by economists, I suspect—that in fact with the sensitivity you have demonstrated, it would not matter all that much if, instead of 3s., it was 3s. 6d. or 4s.?——Indeed, this is true. The values we have given are the values that we use in the Ministry in assessing road schemes, a very generalized values. You can argue that for a special purpose, such as a road to the airport, where there is an unusual mix of traffic, the value could be different, but you can double it, and it does not make all that difference.

867. In any event, notwithstanding any possible argument that the Commission may hear about the value of time, it seems unarguable that there is a very heavy penalty for distance?——I am afraid so, yes.

868. *Mr. Knight*: If for the moment we do accept the figures you have in table 7, and look at the case of an airport, let us say 40 miles from London, then we are talking of a user cost of between £240m. and £260m.——(*Mr. Rosenfeld.*) One must not fall into the trap here of calculating these costs as though they are all avoidable. They are not all avoidable. If you put an airport in the centre of London, you would still have user costs by people travelling inwards to it. All these costs are expressing are the costs of the extra marginal mile. This is assuming you have already got to put your airport 20 miles or more away, then stretch out that distance by an extra mile. This is the cost of doing that. You cannot really extend the reasoning back to saying that the total cost——

869. For our purpose, and as you know, our purpose is to assess these costs as

Printed image digitised by the University of Southampton Library Digitisation Unit

against other costs in various locations—how would you suggest that we arrive at a total figure of the user cost involved in an airport, let us say, 40 miles from London?——That would be a more complex calculation than we have been able to attempt on a general basis here. If it can be narrowed down to particular routes, and you can begin to take views of the origins and destinations of the air travellers on the map for the airports at a particular locations, then you can begin to handle more complex sums, and assess these total costs, but it is still very complex; it is still the sort of thing for which you programme a computer, and do a lot of work. This is something I imagine your research staff will be tackling.

Chairman: I am not sure we are quite pleased with that.

870. *Mr. Goldstein*: I am not sure we are on all fours. Is not the answer to Mr. Knight's question that if you have one airport at 40 miles and another airport at 30 miles, then the one at 40 miles is in fact penalised compared with the one at 30 miles by these sort of figures multiplied by ten?——Yes.

871. *Mr. Knight*: I am getting rather at a different point, if I may. Let me for the moment, accepting your point, take a 40 miles distant airport, and say: Well, I do not quite know what is costs for the first 20, but the extra 20 I am going to multiply by your £6m. because I am talking about £120m.——Yes.

872. If I go back to your table 5*, and I start looking at an airport towards the north-east that uses the M.11, and an airport towards the north-west that uses A.41/M.1, and I am still talking about 40 miles from London, and if I take case 1, I find that the additional construction costs if I go to the north-west are put at £10m.——Yes.

873. Whereas my user costs for a 40 mile distant airport are £120m. on the assumptions I have just made?——Yes.

874. Therefore, if I am looking to the north-west where population is denser, I do not have to find many more travellers within the vicinity of the airport to completely overweight the effect of having to build a little more towards the north-west, and not to use your spare capacity on the M.11; would that be right?——This would turn on the proportions of travellers that were still to come from London, and the ones you were collecting locally, or from the other direction.

875. I am suggesting in some locations you find more people living in the area?——I think one needs to put figures down on paper to assess this kind of thing accurately, but my impression is that as long as you were still drawing the major proportion of your passengers from London, the penalty of moving it outwards would still remain heavy.

876. I have not put my question clearly. I am still talking of 40 miles from London, either to the north-east or to the north-west. I am suggesting that in the north-west you find a denser population, quite different to what happens, coming from within the vicinity of the airport, and therefore not from London.——I take your point.

877. I am suggesting if that is true, you do not have to find many such additional passengers to completely off-set your spare capacity of M.11?——(*Mr. Garlick.*) I think this does depend entirely on how many.

878. But not too many.——One would like to look at the figures, but in principle it is absolutely right, and it is true the user costs are big compared with some of the construction costs. It all depends on the figures.

879. *Professor Walters*: May I follow Mr. Knight's point in a rather different way. I see in your table 7* it seems as though there is a net advantage, of course, in having a fixed link, which increases according to the proportion of passengers who use the fixed link. But I was wondering how it was, in your paragraph 6.3.2. you say that the figures on which table 7 has been based do exclude the distribution costs of passengers who arrive on the fixed link in London, and who proceed from some place in London to the terminal where the fixed link arrives. It does seem to me that this does bias the figures considerably in favour of the fixed link. I wondered whether a little arithmetic one might do would show in fact that it is perhaps possible that the fixed link does not provide the lower figures. Let me give

* Page 295.

Printed image digitised by the University of Southampton Library Digitisation Unit

a little example. Supposing each passenger, for instance, does about 3 miles round trip to get to the terminal in London. We know that the cost of passengers moving in London by taxi or car, or any other means, is extremely high, something like three-fold or four-fold, perhaps the cost on your radial links. This means you have got to take a very heavy element, let us take it something like 2s. 6d. a mile, which I think is a figure that is not drastically inconsistent with the figure you have in the Smeed report* on road prices. That means that you have quite a large figure to add to your fixed link costs here, which might make them much more expensive than depending entirely on the road. I think this is probably more important in case 2 than case 3 in your table 7. Is that the situation?——(*Mr. Rosenfeld.*) This is true. There are extra costs that we have not fed in here; to a certain extent they are not material to the concept we are examining here of stretching the main route out from the airport. They are fixed costs in this concept, except insofar as stretching the route out entails drawing more people on to your fixed link. Then the extra costs you are incurring by shifting the modal split do become relevant. But while we are taking this very simplified assumption that we have taken here, that the modal split remains fixed over the distance you are examining, although what you are referring to is a real cost, it is a fixed cost not affected by the changes.

880. I do not understand this, because surely it would follow that the greater the distance from London, the greater the likelihood that a fixed link will be profitable?——This is true.

881. Therefore there is the interaction back to these costs which are involved in Central London.——These are very simplified assumptions here. We have not taken account of that effect. In fact we hope to put another paper to the Commission which deals with this rather complex effect of shift of modal split with distance which I think will take account of your point.

882. I do not think it is constant with respect to both of these cases, that is with respect to case I and cases 2 and 3, because it does follow, surely, that if there are a larger fraction of passenger cars which operate, then they will turn off on the radials, and there will not be so many passengers ending up in Central London? Would that be the case?——You are right. If one were attempting by means of this table to assess the advantage of having a fixed link or not a fixed link, then this would be a serious error. We were not putting it forward for that purpose. We were just putting it forward as samples of this marginal cost per mile in different cases. We were not intending that one should use this table to compare the advantages of case 1 with case 2.

Professor Walters: Thank you; that answers my question.

883. *Professor Keith-Lucas*: I would like to ask about one very minor point, but it puzzles me a bit, and that is your use of the passenger car unit. I can see that this is a most convenient simplification, but surely the equivalent passenger car units of a coach are totally different things on a motorway and in urban conditions. My guess would be about 1¼ on a motorway and about 5 under thick traffic conditions. Does not this make rather a difference when we are considering the additional traffic that would go to an airport in which quite a lot of the addition would be in the form of coaches?——(*Mr. Brain.*) In the Ministry of Transport we use two relationships between the goods vehicle and the bus and the passenger car. In the urban area it is a lower relationship than for the inter-urban areas. Yes, this is what we have found, in the urban area the lorry, I think on a straight road is still 3, but at roundabouts and signal intersections it is less than 3. In the rural, inter-urban situation it is taken as 3 throughout. There is another difference between inter-urban and urban in that for the inter-urban situation our design capacity is 1,000 passenger car units per lane. In the urban situation it is 1,200 passenger car units per lane, so that in effect in the urban area your road is taking more vehicles.——(*Mr. Garlick.*) Could I come in on that one, and add one word to that, that these figures are empirical figures, they are not based primarily on any theoretical analysis at all, but by observations by the Road Research Laboratory of the effect on traffic flows of different compositions of traffic flow, and the measured capacity that gets along roads or through junctions

* *Road Pricing: economic and technical possibilities.* (HMSO, 4*s*. 6*d*.).

Printed image digitised by the University of Southampton Library Digitisation Unit

when one has different compositions. It is an empirical relationship.

884. I see that. The thought I had in mind when I asked the question was this, that there are obviously two things in this; one is the sheer size of the animal; the other is the acceleration. In urban conditions, and roundabouts and so forth, the slow acceleration of the bus or coach holds up traffic, whereas on a motorway, we are not concerned with acceleration, and I cannot see that a large coach really takes any more motorway, or very little more motorway, than one car. It is a matter of spacing between them, is it not?——(*Mr. Brain.*) In general, the average speeds of bigger vehicles are lower than the cars, and this creates a potential traffic congestion problem; there is a problem of overtaking, therefore that is itself something which may reduce the basic road capacity if there is a wide variation of speed between different vehicles.

885. *Professor Buchanan*: I want to ask this point that occurred to me. I presume many of the considerations that have been mentioned would also apply to travel between the airport and whatever urban area is associated with it, and this is a factor which we should take into account? We might find a site for an airport which was suitable, but would involve putting the urban area at a considerable distance, and it was seriously suggested to us last week at the session on noise that no location of an urban area should be within 15 to 20 miles away. This surely is going to impose all these sort of costs we are talking about in connection with work people travelling backwards and forwards of whom there might be 40,000, 50,000 or 60,000, possibly a bigger factor than the passengers travelling in and out of London. ——Yes, indeed; I am not sure it would be bigger than the passengers travelling in and out of London; we have not made up to now any allowance for meeting the needs of work journeys to the airport, because at this stage we had no assumptions to go on about what the physical relationship might be in terms of distance, or geography of the airport and the main location of its work force.

886. We can quite see that, but this is a factor that we surely will have to bear in mind?——Yes.

887. Especially if we were guided by the views put forward last week that it should be a very considerable distance.—I entirely agree, it is an important factor in the situation.

888. *Professor Walters*: There is just one point I would like to raise for clarification, and that is the use of the discount rate of 8 per cent. which emerged like a phoenix from a Government committee, I believe. I would like to make this clear, to make it perfectly clear what this means. This is 8 per cent. real rate of interest, is it not; that this is a rate of constant prices? ——Yes.

889. This implies, of course, that if you expect a 4 per cent price inflation, this would give a comparable money rate of interest of 12 per cent.——(*Mr. Rosenfeld.*) Yes.

890. You work out all your values out in terms of constant prices, today's prices discounted to 1975?——Yes, back to 1975.

891. 1975 present day values?——Yes.

892. *Mr. Goldstein*: I wonder whether you could confirm this; it may be that people will think that these travel costs in many respects could be transfers of money from one Government Department to another. I believe, for example, they do not include petrol tax?——(*Mr. Garlick.*) No.

893. They are in fact net of tax?——Yes.

894. Net of licences, are they?——Yes, basically they are real resources; costs including time here as a real resource.

895. I thought it was that; I felt it ought to be said.——Yes.

896. *Chairman*: I wonder whether we could go to one or two other matters: Town terminal—have either you or Mr. Stott got anything to help us with on that? ——Would it be helpful if we showed a map* of the railway links which are very relevant to the town terminal?

897. Yes.—I think there are two aspects of the town terminal problem. One is the actual problem at the terminal itself of

* See wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

the physical space for the terminal facilities, whatever they may be, and the immediate traffic problems of the areas around the terminal. There is also the problem of the capacity of a railway line if one is having a fixed link to feed any particular terminal. This map shows the main radial railway lines which are at present linked to a small number of separate terminals, and the colours are to indicate—the three green lines, this being the line from Paddington to the West; this the line from Euston; this is the electrified line from Euston to Watford and Bletchley, and this the King's Cross line towards Cambridge. These three have spare capacities, and in general there is also spare capacity at the station ends, so that there would be both the possibility of the physical terminal near to the inboard end of these lines, and the possibility of being able to feed the terminal by rail. The two yellow lines are those on which it would be possible at some expense to provide rail capacity inwards. This is the line from St. Pancras, the Midland line to Luton, Bedford and the North, and this the line from Marylebone through to Aylesbury and beyond. Both these lines have capacity, and potential terminal space at the London end, but both are the subject of consideration for reductions of services, or rather transfer of services. The red lines are those lines which have very severe limitations on them in terms of additional traffic on the line itself, and in general they would require very heavy expenditure to increase the capacity to meet a significant amount of airport traffic. They also have problems at their terminals. These are the Southern Region lines on the south side here, and the London terminals of them are either not too suitably situated, such as they approach not a very convenient place for a terminal in relation to air travellers into London, or they have, as Victoria does, bids on their space which would make it very difficult for them to accommodate traffic from a third London airport. The three red lines in this quadrant are the lines from Fenchurch St. to Southend, the other line from Southend which comes into Liverpool St., and the other half of the Shenfield railway and the line from the Lee Valley into Liverpool St. Those are the lines which have either terminal problems, or severe capacity problems on the lines themselves, but it would be quite feasible in terms of terminals in this part of London to divert railway trains coming in either on the Fenchurch St. line from Southend, or the Liverpool St. line, or from the other Liverpool St. line here into a terminal in the King's Cross/St. Pancras area. As I was saying earlier, the St. Pancras and King's Cross have potentially spare space for a terminal.

898. Am I right in thinking Euston has at the moment, but is unlikely to have for very much longer?——In terms of terminal space?

899. I meant in terms of line capacity. ——(*Mr. Rosenfeld.*) This depends on physical developments up that corridor. ——(*Mr. Garlick.*) There is a rapidly growing traffic on that line. There may be big increases in movement on that line from commuters, and so on.

900. But the balance, Mr. Garlick, as I understand it, is very strongly tipped, leaving all other considerations out, in favour of a terminal at or near King's Cross, both from the point of view of line capacity, and from the point of view of terminal capacity; is that not right?——Yes. The gloss that I was trying to add to that, Mr. Chairman, is that the lines that one can think of in terms of using a terminal in the King's Cross/St. Pancras area go slightly wider than the lines which at present traditionally use them for ordinary passenger services, because there are some rail links in North London which give some flexibility as to which lines could finish up without undue additional cost in the King's Cross/St. Pancras region.

901. Since we have got on to rail, is there anything the Ministry want to say to us on rail, or is that more a matter we should discuss, if we want to further, with British Rail?——I think the Commission may want to talk about that with British Rail. I do not think there is much in addition to what I have said, Mr. Chairman, from the Ministry point of view on rail services generally.

902. Do you want to say anything to us about the APT?——As was announced in the press the other day, the Ministry and British Rail have agreed on a research and development programme costing about £10m. of which the Ministry and British Rail are each contributing half, for the further development of this so-called Advanced Passenger Train. This is a development which would use basically existing type of tracks, but would enable trains to run at 125 or 150 miles per hour.

Printed image digitised by the University of Southampton Library Digitisation Unit

We think that the prospects of being able to produce trains that run satisfactorily on existing type of tracks at that sort of speed is sufficiently good to justify this research and development effort. One of the things which we are not clear about yet is what the cost of running trains in this way will be, the cost being not only the train itself, but the interaction of running some trains at that speed on tracks which are also perhaps carrying other types of train. There is an operating problem with consequential cost to the operator of how he handles other services. All this is to say that we think there is a good prospect of it being technically possible within a few years by, say, 1971, 72 or 73, to have prototype trains at 125, or something in the 125 to 150 miles per hour bracket. The benefit to be got from this sort of speed, of course, rises with distance.

903. It has been suggested to us it is of some help, but not much help, anything under about 50 miles from London.——Yes.

904. —because of the inevitable slowing down of trains getting into London.——Indeed. In fact the absolute saving, even if one is talking about travelling for 20 or 30 miles at 150 miles an hour instead of 100, turns out to be comparatively small. The big benefits of this are on longer journeys.

905. I noticed a letter in yesterday's *Times* dealing with the noise problem, suggesting that the arrival of the APT, if that is the right word, ought to encourage us to recommend a site a long way from ondon.——There was the reference in *ie Times*, but the benefits of it are alisable on a large scale only when one is alking of a total distance where the total user costs are going to be very high anyway. So although it may produce a benefit, it is a benefit in a situation which is already going to be an unattractive one in some ways.

906. Whilst we are on this topic, I wonder if I can ask your views, and invite your help, on what a number of people have written in about, on what I believe is known as unconventional link. Has the Ministry got any views on this, the monorail and all the rest of it?——Perhaps Mr. Stott might say something about that, in connection with the existing London airport, but the rest of the Ministry's experience on the possible use of unconventional forms of transport has done nothing to lead us to think that there are developments which are likely to take place which will provide any significant benefit that one can see at present over the developments which are possible in the conventional forms, and I am including here the Advanced Passenger Train, that is a steel wheel on steel rail form of transport. Such studies as we have done in relation to particular locations have done nothing other than really confirm the suitability, as far as we can see, for the next decade or more of the conventional form of transport.

907. So far as the Ministry is aware, has anybody tried any of these unconventional forms, and made a success of it?——Not, I think, in any conventional situation. Unconventional forms of transport are attractive in international fairs, and that sort of thing, and they may well be successful there, but in terms of the sort of transport situation that I think is arising here, there is a monorail in Tokyo, but I do not think it has been regarded as altogether commercially successful.

908. Mr. Stott, have you got anything to help us on this aspect?——(*Mr. Stott.*) Very little, beyond what Mr. Garlick has said; in an indefinite field like the possible future technological developments, you have really got to ask yourself what conceivable benefit can you be looking for, what would help the particular problem you are aiming to tackle. In this relation, the attraction of the Advanced Passenger Train is clear for the long journeys; in other words, with a higher speed, you can get a very significant proportional reduction in journey time. Unless an airport location is selected where that factor is a great advantage, if it was in fact much closer, the proportional advantage one is likely to gain by some unlooked for development in technology, or the full development of some things which have been talked about already, is not such, in my view, as to make it likely to radically change the situation, particularly as any new development must, as Mr. Garlick said, compete with the best that can be done with what exists. There is a great deal of internal capital investment already available in terms of track and space to build on.

909. *Professor Buchanan*: Do your remarks cover the hovertrain, where I

Printed image digitised by the University of Southampton Library Digitisation Unit

think there is a sizeable research and development programme now being undertaken? I am not sure who is financing it, but it is the NRDC, I think. It is obviously being treated as a serious possibility, because there is a sizeable track being developed near Cambridge. That apparently offers speed a good deal higher above even the APT, and I have heard suggestions that this could be tunnelled in. Is there anything in those ideas worthy of being considered?——There may well be. I was not intending to discount that these things could, perhaps, do the job which is required better than what we have at the moment. I was really speculating on the margin of benefit that was likely to be achieved, and the competitive position of any new investment in relation to what already exists. I think if you imagine, say, the airport as being 40 miles away from the centre of London, with what is known at present, it is quite conceivable that that could be a 35 or 30 minute run. That is the margin which any new form of transport, that is the figure which any new form of transport is going to be attacking. It is a matter of judgment as to what you will be prepared to pay for erosion of that margin, bearing in mind that the speed in the centre of the journey must be very high indeed to get a very significant change in the overall journey speed on a distance of that sort. This is the approach I was taking. It is clear that if you double the distance of the airport and ask the same questions, there is a great deal more available to attack in terms of margin.

910. You are really committing yourself to the view that an airport 40 miles away could, with the technologies being spoken of, conventional ones, give a journey time of 30 minutes in any serious period we are looking ahead? I am looking now at a 1 inch map of London, and I confess the prospect of really achieving that seems.——One comes from Brighton in an hour.

911. *Chairman*: Let us take some of the areas that have been canvassed, Mr. Stott. Let us take Foulness, at the moment, and assume a rail link with Foulness, going round to King's Cross. I cannot see the detail of that map, but I was looking at the map last night. I think I am right in saying that it has got, in order to get across the Lee Valley, to go quite a long way to the north, has not it, and then come south again into King's Cross—a good deal more complicated than if it could go straight into Liverpool St.?——Yes.

912. Under those sort of conditions, even if the track is improved, there are more curves and more bridges, you are not going to get a journey time of 30 minutes for 45 miles in those rail conditions, or anything like approaching it—or are you? I do not know.——I am sorry if I misled the Commission. I am not an expert on rail technology. All I was saying to myself was really that a mile a minute start to stop, with improvements to alignment, seems to me clearly a reasonable objective; even a modification of the principles which are being used in the Advanced Passenger Train, which enable difficult alignments —which are presumed to enable difficult alignments for high speed vehicles to be used when they were not thought capable of use up till now, might produce that margin.

913. Unless I misunderstood you; I thought you said 40 miles in 30 minutes, which is more than a mile a minute.——That is quite right, but what I was saying is that if one starts now looking at the stream of advance in technology where 40 miles in 40 minutes I think everyone would expect to be obtainable, compared with the rather speculative advantages you may get from some of the unconventional ones, you might well expect to get a further margin of development of the conventional ones. This was really my point.

914. I follow. In other words, you are saying that the foreseeable possibility of technological improvement suggests that you may get a further improvement for your conventional fixed link transport.——This tends to be one's experience; one could say no more than that.——(*Mr. Garlick.*) Could I illustrate this, Mr. Chairman, possibly numerically as well, by reference to our table 7*, where we put the time factors into numerical terms. You will notice that case 2 there, which is with $\frac{4}{5}$ of the traffic on a fixed link, we have still got the situation where the $\frac{1}{5}$ going by road are generating user costs of £2m. for each mile distance, while the passengers on the fixed link are generating costs only at £0.6m. The significance of this is that the amount of scope one has got for saving effort expressed in time costs here is limited, and it is on that

* Page 301.

Printed image digitised by the University of Southampton Library Digitisation Unit

£0.6m. that one would be working with faster trains and the total scope for reducing even if one went at so to speak infinite speed by train, the benefit in terms of total user cost that distance is still only affected by about 10 per cent. This is because the speeds assumed in here for trains are already comparatively high, 100 miles an hour for the marginal mile, and because so much of the costs arise from residual road use anyway, so I am suggesting that again the practical scope for national benefit from the much higher speeds compared with the other constraints and losses that occur is limited.——(*Mr. Rosenfeld.*) Could I add, over and above that, you have to being in Prof. Walters' point that this fixed link, however fast it travels, has got to be reached, so you have still got your 2s. 6d. a mile in the town to reach it.

915. *Mr. Goldstein*: In respect of the Advanced Passenger Train, would you like to express a view as to what kind of extra costs per passenger mile might be involved over 40 to 50 miles, as compared to the—I am afraid not.——(*Mr. Garlick.*) I do not know whether British Railways would be able to say. As far as we are concerned, this is one of the things we hope will come out of the development programme. We have got this gap between taking a view of what we think the technological problems are, and what the economics of it are, and the operational consequences. I am sorry not to be able to help.

916. Let me put it another way. Would it surprise you to hear the view that whatever may be the cost in the long distance, under 200 miles, that for a short journey of the order of 40 or 50 miles, the passenger/mile costs could be double what they would be in the case of the APT?——I would not be surprised, but I do not think my surprise or lack of surprise, if I may say, is of much help to the Commission here.

917. *Chairman*: Mr. Garlick, can I bring you back to a couple of points I should have raised earlier, and I am afraid I forgot. Suppose the third airport was sited up in the north-west, Northamptonshire, Buckinghamshire, what would you expect to be the effect upon the M.1?——The M.1 is a road which is already carrying very heavy traffic, principally, of course, because it is in a corridor which links very heavy development. The road at the southern end is already carrying a considerable degree of overload in fact. The siting of an airport there would obviously increase the local traffic, including road traffic. The amount of traffic on the road would depend to some extent on whether it was convenient to provide a fixed rail link of some sort on one of the railway services, but the increasing traffic in that sector, which is already increasing because of the development that it serves, of the additional airport traffic would undoubtedly require us to review how to provide sufficient road capacity in the general sector towards Northamptonshire and through Buckinghamshire.

918. It would almost inevitably, would it not, involve increasing the size of the M.1 very substantially?——Whether, Mr. Chairman, we would do it by actually increasing the size of M.1—the point I was making was that we would need additional road capacity in that sector, but the M.40 will provide some relief, in that general direction, particularly Mr. Brain referred to the needs beyond Oxford which include needs in the direction of Birmingham as well, and are therefore parallel in some way with the M.1 function.

919. Let us take one site that has been canvassed to a certain extent, Silverstone. The M.40 is not going to help much in that, is it?——The M.40 will help in this way, if it is strengthened beyond Oxford it might provide an alternative for some of the traffic which is at present on M.1, which will reduce the pressure on M.1. What I am really trying to say is that the needs of that corridor, that sector down there, would be increased if there were an airport there. It is unlikely, I think, that one would try and widen the M.1. The engineering problems of doing that are very considerable. Whether one would try and increase its capacity by some other means, or take a new alignment in the same general direction, is one of the things we would need to have a look at.

920. Now let me swing about 180 degrees around the compass and say a word about Kent. What is the position there? Some of the sites canvassed have been, as you know, in the north of the coast of Kent. You have got no road facilities there planned at all, have you, above the north of the A.2?——(*Mr. Brain.*) Nothing of any importance.

921. Therefore if something like Sheppey or Cliffe or any of those things were under

Printed image digitised by the University of Southampton Library Digitisation Unit

consideration, one has got to envisage a link down to the M.2 or the A.2?——Something of that sort, yes.

922. Through a pretty heavily built up area?——Topographically a difficult area, yes.

923. And start off, I suppose, almost in the wrong direction from London?——Unless one faces up to going through Chatham dockyard, yes.

924. What about rail? What do you consider is the position there? I have not looked at the map.——(*Mr. Garlick.*) The railway problems just to the south of this area on the south bank of the Thames?

925. Yes.——The railway problems down here are considerable, Mr. Chairman, because there are proposals for a big new development at Thamesmead which will generate some traffic between East and Central London, and put additional pressure on the railway lines coming in on the Southern Region from the south-east corner of London. This is a sector of the Southern Region which is already heavily loaded, and there is quite a lot of proposals being looked at for strengthening the rail network down there. It is quite clear the cost of doing so is going to be high.

926. Cost-wise, I suppose either road-wise or rail-wise, this is going to be more expensive down there, more than almost anywhere else?——I think particularly rail-wise, because the existing traffics there are already heavy, and there are commitments in the form of Thamesmead, particularly, that represent an increase in potential traffic. It would be very difficult in fact to provide for the sort of quality of service in terms of frequency and speed which would be wanted for a rail link to an airport there. I think this is one of the things which could only be looked at in more detail if and when.

927. If and when it were necessary?——Yes.

Chairman: Gentlemen, I would like to repeat what I said at the beginning, which is to thank you all very much indeed for having given us the whole morning, and other time you and the other officers have given us before at private hearings and the rest. We have had enormous help from you. We are deeply grateful, and I have no doubt we shall seek further help before we are finished. Thank you very much indeed.

The next public hearing will be here next Friday morning only, and it will be on air traffic control.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written and Oral Evidence

6 December 1968

Air Traffic Control

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Air Traffic Control Considerations

PRESENTED BY THE NATIONAL AIR TRAFFIC CONTROL SERVICES

Introduction

The aim of the air traffic control service is to ensure, in so far as this is practicable, that aircraft can fly when, where and how they wish free from risk of collision. Its responsibility for providing safe separation between aircraft (and, on the airport manoeuvring area, between aircraft and vehicles) begins when an aircraft starts to move off the apron and, in the case of most air transport aircraft, continues without break until the aircraft reaches the apron at its airport of destination.

2. In deciding how best to provide this service the ATC organisation is by no means a free agent. There are many requirements to be met and the most important of these can be summed up as follows:

(a) all air transport aircraft must be allowed, subject only to considerations of safety, to proceed on their way from start of taxying to final stop by the shortest possible time path;

(b) if deviation from the optimum path is necessary in the interests of safety then the manoeuvre which least affects economy of operation must be chosen (e.g. a change of track may be preferable to a change in height);

(c) military and general aviation aircraft must be given the maximum possible freedom of flight;

(d) routes to and from adjacent countries must line up with the air route systems of those countries;

(e) any extra load placed on air-crew for ATC reasons requires to be justified by a corresponding improvement in the total flight or ground movement operation;

(f) so far as possible, the ATC system must work efficiently without calling for installation in aircraft of special equipment exclusively for ATC purposes.

ATC services

3. The services provided by ATC range from the provision of information alone to the securing of positive and continuous separation of each aircraft from others. The grade of service depends on the type of airspace in which the flight is conducted and is promulgated accordingly. The service applicable to a third major airport for London and to the access and approach routes feeding it should provide positive and continuous separation as for Heathrow and Gatwick today. For brevity this will be referred to subsequently as a "full ATC service". The colloquial expression for it is "positive control".

Printed image digitised by the University of Southampton Library Digitisation Unit

The airways system

4. A full ATC service from take-off to touch-down is provided only in what is termed "controlled airspace" consisting of control zones, terminal control areas and "airways" linking the main centres of air transport activity. Before flight is permitted in controlled airspace certain requirements have to be met by the operator in the form of pilot qualifications and the carriage in the aircraft of suitable navigation and communications equipment. Also, flights have to be carried out in accordance with laid down procedures and patterns which limit the degree of "in-flight freedom" that might be otherwise enjoyed. Thus, while providing for those who require it a comprehensive safety service, the system is of necessity restrictive on others wishing to use the same airspace. For this reason, the total volume of controlled airspace has to be finely tailored to meet the real need.

5. The main factors which govern the volume of controlled airspace required are:

(a) the performance characteristics of the aircraft (e.g. permissible rates of turn, climb and descent);

(b) the number and juxtaposition of the access routes required;

(c) the volume of the traffic to be handled;

(d) the "separation standards" applied to maintain safe separation between aircraft.

6. The amount of controlled airspace in SE England is already fairly extensive. It consists essentially of the London Terminal Control Area, embracing Zones for Heathrow, Gatwick and Southend, and consideration is now being given to its possible enlargement to meet the growing needs of Luton. Between them these four airports handle the bulk of the air transport movements in the London area and Home counties, the figures for 1965 to 1967 being as under:

Airport	*Annual air transport movements*		
	1965	*1966*	*1967*
Heathrow	192,368	209,306	221,004
Gatwick	28,604	33,239	36,887
Southend	30,133	29,076	27,360
Luton	3,895	6,033	7,839

A number of airways radiates from the London Terminal Area to the rest of the UK and to link up with the airways sytems in adjacent countries.

Airspace requirements

7. The amount of controlled airspace provided for the new airport should be sufficient to cover the following:

(a) for departing aircraft, as direct as possible a flight path, permitting climb at the optimum rate for the aircraft concerned, free from conflict with other traffic;

Printed image digitised by the University of Southampton Library Digitisation Unit

(b) for arriving aircraft, a clear descent path at the optimum rate of descent from cruising level to the landing runway;

(c) for transit aircraft, a clear flight path at the flight level required by the pilot;

(d) for all airborne aircraft, a "safe haven" where each aircraft can wait in safety if for any reason the traffic flow has to be temporarily halted: this situation arises, for example, if the runway becomes obstructed, if the weather deteriorates below safe flying limits or if any aircraft has to be given priority treatment because of illness on board, engine failure or for any other reason.

8. The task of the ATC service is, of course, to keep the traffic flowing smoothly at all times since delays are particularly expensive in the air transport business. But it is necessary on occasions to stop the flow and, in the case of aircraft already airborne, this is normally done by directing them into laterally separated "holding areas". In each of these, relative velocity is reduced to zero in the vertical plane by "stacking" the aircraft one above the other at 1,000 ft. intervals.

9. The amount of airspace needed for these "holding areas" is considerable because forward speeds are high and passenger carrying aircraft cannot be subjected to steep turns. Air-speeds increase with height and for this reason the size of a holding area also has to increase with height. At 10,000 ft., for example, it measures some 20 miles by 15 miles and at 20,000 ft. about 30 miles by 20 miles. At very high levels, vertical separation between aircraft has to be increased from 1,000 ft. to 2,000 ft. because of altimeter characteristics and the area becomes arger still.

High density operation

10. If a multi-runway airport is to be capable of handling the maximum amount of traffic it needs virtually exclusive use of airspace as under:

(a) a fan-shaped area extending about 16 miles beyond the end of each runway for aircraft landing and taking-off;

(b) enough space for a number of diverging departure paths leading, clear of descent paths, to the airways served;

(c) space in which arriving aircraft can be manoeuvred, clear of departures, into an orderly sequence for final approach to land;

(d) holding or "stacking" areas, one per landing runway, sited preferably from ten to fifteen miles from the middle of the runway and aligned at right angles to it.

11. An inescapable complication arises from the need to make provision for changes in the direction of the traffic flow consequent upon changes in wind velocity. The complexity of the traffic patterns in south east England can be gauged by reference to Map No. 1 in the *Report of the Inter-Departmental Committee on the Third London Airport* (CAP 199) (HMSO, 7s. 6d.).

Printed image digitised by the University of Southampton Library Digitisation Unit

Areas of SE England not suitable for ATC reasons

12. An ATC system can be designed to cater for any airport at any site in the sense of securing safety but it would not be thought a successful one if safety had to be bought by seriously limiting the traffic or by frequently imposing costly and infuriating delays. *What is significant is the practicability of making available the airspace needed by the aircraft themselves for their various manoeuvres.* That a considerable amount of airspace is required can be judged from the fact that, at a forward speed of 240 knots, an aircraft needs a circle of more than five miles in diameter to make a complete turn and will cover sixty nautical miles in descending from 30,000 ft. to ground level at a descent rate of 2,000 ft/min. For efficient, safe high density operation an airport thus needs a lot of airspace and making this available is bound to involve some curtailment or cessation of other flying activity, re-deployment in some cases of military units and some loss of amenities in the widest sense of the term.

13. As indicated in the previous paragraph, no site can be ruled out purely on ATC grounds unless there are qualifying or limiting factors to be considered. If, for example, it is stipulated that existing airports or aerodromes should continue to function unaffected by the new airport then the latter must be sited sufficiently far away to prevent interference between the respective departure and arrival paths and holding areas. How far this should be depends to a great extent on the orientation of the runways concerned and their disposition in relation to the routes to be served. In very general terms it can be said that two major airports should be separated by at least sixty miles to achieve independent omni-directional operation at maximum capacity but this figure can be used only as a rough guide.

14. It is hard to see how serious reduction of aircraft movements at Heathrow and Gatwick could be avoided if any site were developed on the scale envisaged in the busiest part of the existing London Terminal Control Area. Additionally, in view of the high traffic density on routes to the south of London, no site between the London Terminal Area and the south coast could be used unless traffic at Heathrow and/or Gatwick were reduced proportionately.

November 1968.

Printed image digitised by the University of Southampton Library Digitisation Unit

Route Patterns and Airspace Requirements for a Major City Airport

PRESENTED BY THE NATIONAL AIR TRAFFIC CONTROL SERVICE

Introduction

Evidence on the route patterns and air space requirements for a major civil airport was given to the Commission with the aid of a series of projected slides and overlays. This summary describes briefly what they showed.

Background information

2. The first slide* showed the pattern of air transport routes in current use over the UK. It was followed by two more* showing the actual positions of aircraft under civil control on two days in July 1967: first the picture "frozen" as it was at 1030 hours on the 21st July, the second being an enlarged picture of the SE England area at 1042 hours on the 23rd July. These slides illustrated the concentration of routes and traffic in the SE area. Reference was made to the fact that this sort of picture changes rapidly owing to the high speed of modern aircraft.

3. The next slide* was the main "base" slide used for much of the presentation. It covered an area of SE England, about 140 nm (160 sm) square, with the coastline drawn in. Also shown were the positions of the airports mentioned in paragraph 6 of the Introductory paper*, i.e. Heathrow, Gatwick, Southend and Luton. Overlays* were added to show the amount of controlled airspace currently in use.

4. In paragraph 10 of the Introductory paper reference is made to airspace needed almost exclusively by a high density multi-runway airport. The dimensions of the airspace likely to be required for such an airport in the mid-1970s were indicated by means of a coloured overlay*. Locating this over Heathrow and moving a second similar overlay round it illustrated the significance of the separation distance of sixty miles quoted in paragraph 13 of the Introductory paper.

5. The same two overlays were used to demonstrate how runway orientation could become an important factor and how, given the requisite combination of separation distance and runway orientation, suitably related to en route requirements, airspace could be conserved by routeing aircraft from one airport over the top of the other at the higher levels.

Route patterns

6. The next series of slides* illustrated in diagrammatic form the types of departure and arrival route patterns that would be subjected to detailed study and simulation in the case of airports sited respectively to the SW, W†, NW, NE, E and SE of London.

---

* See wallet of maps and diagrams.
† NB: SW and W aspects have been combined. See fig. (i)

Printed image digitised by the University of Southampton Library Digitisation Unit

7. Reference was made to some additional factors needing consideration such as the restrictive effect the traffic at the new airport would have on cross-country flying by aircraft of all kinds and how, in the case of a site in the SE, the airspace needed would encroach upon French territory.

8. In each case a coloured overlay* indicated the extent of the areas in which other aerodromes, civil and military, might be affected. The locations of all these aerodromes, and of gliding sites not located on active aerodromes, were shown by a further series of coloured overlays.

Some comparisons between London, Chicago and New York

9. Comparisons are sometimes made between air traffic control arrangements in the UK and the USA without due appreciation of the difference in scale. Three sets of slides were therefore produced to put matters into their correct perspective.

10. The first of these slides* showed the North American continent with its "golden triangle" bounded by lines joining New York, Washington and Chicago. An overlay, showing the mainland of England and Wales to the same scale, enabled a number of direct comparisons to be drawn. It also served to illustrate into how comparatively small an area it was necessary in the UK to contain all civil, military and research and development flying.

London compared with Chicago

11. The second series of slides and overlays showed how the airways system had developed in the Chicago area since 1946* in which year the main airport, then Midway, handled a total of about 190,000 movements.

12. Slides drawn to the same scale as the UK "base" slide were superimposed upon it to give a direct comparison. It was demonstrated that in 1950* Chicago had a comparable amount of controlled airspace to that available for London in 1968 for a comparable number of movements i.e. about 240,000 a year.

13. Additional overlays were used to show that by 1953* Chicago had absorbed the equivalent of the whole of the Salisbury Plain and Oxford areas as well as a large portion of East Anglia. By 1968 the entire area had become available for routeing traffic into and out of Chicago.

London compared with New York

14. It has recently been announced by the FAA that the bad weather capacities of La Guardia, Newark and Kennedy airports are respectively 60, 60 and 65 movements per hour. A slide* was shown to illustrate how the runway orientations and geographical relationship of the three airports made this possible, despite their being sited fairly close together. The new airport for London would however, have to be capable of handling considerably more traffic than any of these three.

---

* See wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

15. It was also mentioned that the majority of USA domestic traffic operated to the west or south west with international traffic using routes to the east for which Kennedy airport was conveniently sited. In contrast, London's traffic was largely international and omni-directional.

16. The last set of slides* showed how the New York traffic patterns looked when superimposed upon the UK. They also served to illustrate how, in some cases, the use of a number of airports sited close to each other necessitated the use of detours which, in the UK, would considerably increase route mileage and possibly prove unacceptable to the European short-haul operators.

* See wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

NOTES OF PROCEEDINGS
FRIDAY 6 DECEMBER 1968

CITY TEMPLE HALL,
LONDON EC4

Before: the Hon. Mr. Justice Roskill (*in the chair*)

Professor Colin Buchanan

A. Goldstein, Esq.

A. J. Hunt, Esq.

Professor D. Keith-Lucas

Arthur Knight, Esq.

Professor A. A. Walters

J. Caines ,Esq. (*Secretary*)

Oral evidence taken from

The National Air Traffic Control Services
(*Mr. E. J. Dickie and Mr. G. W. Stallibrass*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

National Air Traffic Control Service

MR. G. W. STALLIBRASS and MR. E. J. DICKIE called

928. *Chairman:* Before we turn to the subject of air traffic control, I do not know if there is anyone here representing any of the noise organisations, if I may so describe them, but if there is they may be interested to see that among the plans which have been put up by the Air Traffic Control Service at the back is the very latest official map* showing the Noise and Number Index figure for the summer of 1967 which the Board of Trade has very recently produced and which has only in the last few days come into the possession of the Commission.

It is just one of those things that sometimes happens that it was not available on the day on which we were dealing with the question of noise a fortnight ago. For those who are interested in the problems of noise, I wanted to draw public attention to the fact that the map is there, can be looked at, is extremely interesting, is the latest up-to-date information on the Heathrow problem, and shows the strength of the NNI into London and into the suburbs of London. I did not want anyone who was interested in the noise problem not to appreciate that it was now available.

As I think is known, we are discussing today air traffic control problems, and we have got the benefit of having with us as the two witnesses Mr. Stallibrass and Mr. Dickie. Mr. Stallibrass, merely for the record perhaps you would not mind telling us your own position and that of Mr. Dickie.——(*Mr. Stallibrass*) I work in the National Air Traffic Control Service, and my position is Joint Field Commander at Field Headquarters at Uxbridge. This consists of a military component and a civil component and its task is the day-to-day running of the military and civil units which through the National Air Traffic Control Service provide area and airways control service to on-route aircraft in the UK and, for civil aviation, the aerodrome control at 21 civil aerodromes.

Mr. Dickie is a Deputy Director of Control Policy in the National Air Traffic Control Service whose particular task at the moment is concentrated upon the requirements of your Commission for information on this subject.

929. The Air Traffic Control Service, as I understand, is the joint responsibility of the Ministry of Defence and the Board of Trade.——That is so.

930. Mr. Stallibrass, I would like to begin by saying publicly what I have already had the pleasure of saying to you privately—how much the Commission value the great help they have had already in their task from your organisation, and particularly the help that you are giving us today and the great trouble which has been taken in putting up these absorbingly interesting plans and charts and bringing, no doubt at considerable inconvenience, that very large model to which you will be referring in due course, I think. Can we begin by trying to get the problem of air traffic control in relation to the third London airport in its proper perspective? We are concerned here, as you know, with a proposed four-runway airport. Talking quite generally at the start, what are the main problems to which a proposed four-runway airport will give rise so far as concerns your Service?——The main problems are the sheer increase in traffic density which have led to the need, or would lead to the need, for such an airport. Taking today's capacity figures as an index, we would expect that in bad weather such an airport will handle anything between 120 and 150 movements an hour. To put that into perspective, that is not far short of the total bad weather capacity of the three largest New York airports today. It is considerably more than the combined capacity of Heathrow and Gatwick. So the problem is to find an air space, or so to locate the aerodrome that the air space required for its own traffic near it—that is, arriving and departing and being sequenced—and also for the routes that must lead to its own areas for aircraft leaving it for other destinations and arriving from other places, can be supplied without inhibiting the full use of Heathrow and Gatwick and without depriving the other air users, who have considerable activities in the air space, of their proper needs. These other air users are military, technical research, general

* See wallet of maps and diagrams.

Printed image digitised by the University of Southampton Library Digitisation Unit

aviation, charter flying, gliding and sporting flying.

931. Is this right, then, that one is faced here with an air traffic control problem of the like of which there is no previous experience, either in this country or anywhere else?——It is true of this country. I also think it is true of America, because it is fair to say that the Americans did not plan their present New York area situation. They had to develop their methods as the situation grew on them, and it is conceivable that, had they been able to plan ten or fifteen years ahead, which is one of the problems in front of us, I gather, they would not have had the situation they have today. So I think you are right, Sir: it is pretty unique. The French may be facing it, but whatever else is said about the UK we still have more civil air traffic than any other country in Europe and our problems to that extent are more pressing and more difficult.

932. So that we at least have got the advantage, if it be an advantage, that the Americans did not have in relation to this? We are in a position to plan ahead, whereas the Americans had to evolve from that which was already there.——Yes. I am thinking of Dr. Johnson's saying. We are also in the position of a man who, knowing that he is going to hang in a fortnight's time, finds it concentrates his mind wonderfully.

933. I will bear that in mind. I wonder if with that introduction you or Mr. Dickie—I do not know which of you is going to deal with it—would care to talk quite generally about the problems special to the placing of this airport, from your point of view of course, in the London area.——If it will please you, Mr. Dickie has some notes illustrated by transparencies, and if it meets with your approval I suggest that he, as you have indicated, should outline the general background in the London area—or first, I think we should say, in the southern UK and then in the London area, proceeding roughly round the compass.

934. I inaccurately used the phrase "the London area". I meant to say "the southern area of the country". Mr. Dickie, would you care to start from there? I have seen your slides already.——(*Mr. Dickie*) We thought, Mr. Chairman, that it would in fact help the Commission if we supplemented the information given in our introductory paper by a few slides and overlays, which we will show right now.

935. If you do not mind, as points arise we can take them as we go through the slides.——As you wish. (*Slide**) The first one shows the existing air route structure over the country. There are some additional routes in this area introduced since this map was drawn, but the main purpose of showing this particular slide is to illustrate that as expected there is a high concentration of air transport routes in this south-east area. The second slide——

936. Before you leave the first slide, can you indicate, for the benefit of those people here who do not know, which those main routes are? You may prefer to do it on the model. I do not know which is easier.——Yes, I certainly can. On this diagram the main airways run up from the London area up to Manchester and through to Scotland. There is an East-West airway coming across this way, and this one leading out to Shannon and the North Atlantic. There are two airways leading to Paris, one for outbound aircraft and the other for inbound aircraft. There is a similar one-way routing system towards Belgium and West Germany. This airway here is the main route out to Scandinavia and points beyond. This is a cross route across the middle of the country feeding in from Northern Europe to the Manchester and Liverpool area and across to Ireland. There is an airway across here which feeds up to Northern Ireland across the Isle of Man and on to the North Atlantic. These routes up here are what we call advisory. They are not densely populated, but these are the routes used by the Scottish Highlands and Islands services. The airways system is mainly confined in this area here. There are above most of the airways what we call upper air routes—this is above 25,000 ft—where the high flying aircraft operate, quite a number crossing our country from America to Europe.

937. I am sorry; I interrupted you as you were just going to the next slide.——(*Slide*†) The next one in fact is the same illustration as is shown on one of the displays at the back of the hall. It shows frozen, as it were, the aircraft under civil control on these airways and air routes at a particular point in time. It was in fact 10.30 on a day in July last year. For those who are interested, each individual aircraft can be identified from

* Fig. A in wallet of maps and diagrams.
† Fig. B.

Printed image digitised by the University of Southampton Library Digitisation Unit

the display board at the back. Again, there is the concentration in this area with which we are mainly concerned.

(*Slide**) The next slide that we have is an enlarged version of the south-east area of England. This again was taken at a given point in time. In all, there are 53 aircraft under control. You will note that there is a fair concentration of traffic here and here. but the Paris airways look rather thinly populated at this particular time. The explanation is quite a simple one. The early morning arrivals have arrived, the early morning departures have gone, and the next flood of arrivals are only just beginning. With the high speeds of modern aircraft, a picture of this kind changes very rapidly indeed as the aircraft proceed on their way.

(*Slide*†) The next slide we have is simply a reproduction of the distribution diagram with which I think, Sir, you are already familiar. It shows the distribution of traffic by percentages from the London area to all points of the compass. We have checked this. The figures are still substantially the same. In broad terms, 50 per cent of all the traffic wants to fly to the South and the South-East from the London area.

(*Slide*) The next slide is what perhaps I might term the main base slide which will be used as a base for many of the pictures that we are going to superimpose upon it. It covers an area of about 140 nautical miles (160 statute miles) square. We have shown here as red circles the locations of the four airports referred to in our introductory paper—Heathrow, Gatwick, Southend and Luton. (*Overlay*‡) We can superimpose on top of that the existing airways which are also shown on the model here. The yellow area is what we call controlled air space in which full control, as mentioned in the introductory paper, is exercised at the present time. We will remove the colour, because it may be a bit confusing for some future overlays, and just leave the outline of the airways shown. The introductory paper makes reference to a certain amount of air space needed almost exclusively for a very large multi-runway airport of the type you have mentioned—four runways working to a high density and providing air traffic services in all directions of the compass.

(*Overlay*§) We have a small overlay here which we can locate over Heathrow. It indicates the probable dimensions of the air space which this major airport would require for its own use. The figures are not precise. The diagram can be changed in shape to some extent. I would like to mention specifically that this red area is the area in which control would be exercised right down to ground level, so that it is unlikely that any other aerodrome could function in that particular area.

938. What is the size of the red area?—The red area, on our present estimates, is 16 nautical miles in this direction and 8 in that direction centred on the runways. The base of the blue area would probably be about 2,000 ft. This area would be used extensively by aircraft on their descent into the runways on the one side and climbing out from the runways in the other direction. A small aerodrome with light aircraft could probably operate within that area.

939. May we again have the dimensions of the blue area?——The dimensions in this case are about 46 nautical miles in this direction and 20 in that direction.

940. It is not very clear from the diagram.——I appreciate that, Perhaps I should read them out. As for the yellow areas, we believe that the base here could be rather higher in future than it is today, perhaps about 5,000 feet. The width here is the same as the blue area—that is, 46 nautical miles. The length from top to bottom here, from the one peak to the other, is about 68 nautical miles. These yellow areas would be used for arriving aircraft when they are descending from altitude and being marshalled into order for final approach to the runways, one area feeding one runway and the other area feeding the other runway. They would be used to contain the so-called stacks when we have to stop the traffic flight for any reason, aircraft being held one above the other at 1,000-ft. intervals if this has to be done; and also departing aircraft, for example leaving in this direction, which wanted to fly on services in that direction would double back and fly through that area. So in these yellow areas there would be quite a lot of aircraft flying in various directions, but there is 5,000 ft's worth of air space underneath where other aerodromes could exist with a certain amount of restriction, depending on the type of operation. A military base could probably not live underneath this area, but a smaller aerodrome might proceed quite happily.

* Fig. C.
† Fig. D.
‡ not reproduced.
§ Fig. E. (not reproduced in colour).

Printed image digitised by the University of Southampton Library Digitisation Unit

There is one point I would like to illustrate here. When we are considering the effect which this new airport is likely to have on other aerodromes, runway alignment is one most significant factor. If, for example, there were a military aerodrome in this area at that distance from this airport and its runway, we will say, were in that direction, then quite likely it could continue to operate. If, however, the runway lay in that direction, then it is quite probable that with high performance aircraft, owing to the need to have extended approach into there and take-off from there, that aerodrome might have to close. It is not only distance from the new airport that matters, but also the runway alignment and the type of traffic.

941. Before you leave that slide, one thing that that brings out very noticeably is that Gatwick is well inside the yellow area with its centre imposed upon Heathrow. ——This is correct. Gatwick lies there.

942. And also Luton.——Luton is in the yellow area there. This is also correct.

943. What restriction does that impose upon the operation of Gatwick, or what restriction does Gatwick impose upon the operation of Heathrow, to put it the other way round?——One regards Heathrow as the major airport, and the significance really is that Gatwick cannot, we believe, build up to handle as many aircraft as we can handle at Heathrow. Its capacity, in other words, whether it has one or two runways, is not likely to equal the capacity which we can achieve at Heathrow itself.

944. Nor can Gatwick achieve its own maximum capacity, then. Is that right?——Gatwick could handle more aircraft with two runways working through and up there.

945. What about Luton?——Luton is in very much the same position. It lies north of London much the same distance as Gatwick lies south, and the problem is very similar.

946. On the point that you brought out a moment ago about the co-existence of small aerodromes under the umbrella of the control area, am I right in thinking that there are in fact under that umbrella shown by that slide a number of airports quite apart from Gatwick and Luton.——That is quite correct. I have a slide later on to show their locations. (*Overlay*) What I would like to do next is to take another of these overlays and align it with the runway, if we assume for the moment that the new airport has a runway roughly in a north-east/south-west direction. If I manoeuvre this round the area of the one located over Heathrow so that the areas do not overlap at all—that is, achieving something approaching the ideal situation from the air traffic control point of view—then that distance between the centre of the two red areas approximates to the 60 miles we have referred to in our introductory paper as being the order of separation desirable between two large airports if each is going to handle the maximum number of aircraft the runways can handle and if each is going to provide services omni-directionally to all points of the compass.

There is another point here. Runway alignment once again becomes quite important. With the airport in one area the problems become very different from those with the airport in another area from a routing point of view, although the distance between the two is precisely the same. I think we will now remove this and illustrate the types of route which would be appropriate to a major airport located in different areas around London.

(*Slide*) First of all, the convention we have used on all these slides is green for departures, solid lines for the new airport, and broken lines for Heathrow. These dotted lines indicate the path taken by departing aircraft taking off in the unusual direction. In other words, westerly or south-westerly is the normal takeoff direction. In the opposite direction of takeoff, there are these dotted lines doubling back to feed into the main route. That is the sort of pattern which might well emerge from a new airport were it sited in the South-West or West.

The arrival routes might be something very much like that—red for arrivals feeding into the main marshalling areas for the new airport and for Heathrow, broken lines for Heathrow, solid lines for the new airport. These are not finite plans. They are an indication of the type of route structure which an airport in the West or South-West might require. These yellow areas are those which, should an airport go in the South-West, we would have to examine from the point of view of interference between the new airport and existing aerodromes.

(*Overlay*) I can show quickly the locations of Ministry of Defence and Ministry of Technology aerodromes in those areas. One or two are shown not in the yellow and already under controlled air space, but they

Printed image digitised by the University of Southampton Library Digitisation Unit

have to be considered because their outlet to free air space is now by a much longer path. The red lines indicate the runway directions at the Ministry of Defence aerodromes. The line is about 12 miles long to give scale. Green has been used for Ministry of Technology research and development aerodromes—Farnborough in this case and Boscombe Down there.*

(*Overlay*) This is the same sort of picture for an aerodrome if it were in the West rather than in the South-West. The aerodromes likely to be affected are much the same, but there are a few more added because one has spread slightly north. These are again Ministry of Defence and Ministry of Technology aerodromes only. I have a separate series of slides showing the civil airports, which I will put on in a few moments.

(*Overlay*†) Moving on up now to the north-west, we have the same convention —green for departure routes of the type which might be applicable to an airport somewhere in the north-westerly area; arrival routes similarly. One point I think I should make here is that, with a major airport in this area and with controlled air space extending lower than it does now, two problems may arise. This could form somewhat of a barrier with not many loopholes, blocking the aircraft which today fly across from one side of the country to the other at the lower levels underneath the airway.

947. Might I interrupt you to ask what sort of aircraft you are referring to?—— These are private aircraft, light aircraft, communications aircraft of the defence forces, in the main. There are also aircraft, civil and military, which cross through the present airway at the moment, on flights in these directions. These are given a clearance from the centre or a radar-controlled crossing. Both of those procedures would, again, be rather more difficult, we feel, with traffic of that intensity in that particular area.

(*Overlay*) This shows the aerodromes which such a site might affect. These very large yellow areas look frightful, but no one site in the North-West would affect aerodromes in the whole of these areas. This really shows the worst picture. It shows the locations and runways, again, of the Ministry of Defence and Ministry of Technology research and development aerodromes. This is Pershore. This is Bedford.

948. Is "BS" Bassingbourn?——Yes.

949. "SD" is Stansted?——Yes.

950. "WX" is Wethersfield?——Yes. Wethersfield, for example, might not necessarily be affected by an aerodrome in the north-west if it were over this side.

951. Professor Buchanan has just pointed out to me that there may be some confusion in people's minds. You used the phrase, I think, that the red lines represented the runway alignment and were drawn 12 miles along. That might suggest to some people that the runways were 12 miles long.—— No.

952. Will you just say what the 12 miles is intended to represent?——Yes. I mentioned the 12 miles to give an idea of scale. In fact the line represents a runway, shall we say, extended about 5 miles or so from each end. In other words, these are rather critical paths in so far as takeoff and landing aircraft are concerned.

(*Overlay*‡) Moving round into the north-east area, this shows once again departure routes, new airport, arrival routes. (*Overlay*) This shows the area in which aerodromes may be affected according to the precise location of the new airport. There is a slight encroachment on the west side here. This is because with a site well to the west of the north-easterly area we would probably have to push Heathrow's traffic over a little bit farther or get the traffic from the new airport round it. So we think there would probably be some encroachment in that particular area.

953. That shows very clearly in relation to that sector that there is no encroachment at all over the possible coastal sites; is that right?——Down there?

954. Yes.——Perhaps I should make it clear that I am talking at the moment only about the effect the new airport will have on other aerodromes. It could be that with the growth of traffic generally, for routing purposes we might run into difficulty round there. This area is specifically to show where aerodromes are likely to be affected in some degree or other by the new airport. I am not showing the complete routing system. (*Overlay*§) We come to the

* Fig. F. (i)
† Fig. F. (ii)
‡ Fig. F. (iii)
§ Fig. F. (iv)

Printed image digitised by the University of Southampton Library Digitisation Unit

estuary area now. This is an example of departure routes which might be used. It has one rather nice feature from our point of view, in that here we can, as you will see, get one-way routes fairly neatly organised —departures together here, departures together there, departures together there, and arrivals again on a one-way routing system. The merit of one-way routes is that one can get the maximum amount of traffic flowing within the minimum amount of air space. The amount of air space we have available in this country leads us to watch this matter very carefully.

(*Slide*) These are the areas where aerodromes are likely to be affected by an airport in the coastal region. (*Overlay*) Military ones now begin to reduce a little in number. (*Overlay*) The final routing diagram is one for a new airport down in the South-East. Those are the kinds of departure routes we might use. One point I would like to emphasise here is that the French coast is only some 25 miles away, and if we attempted to introduce a major airport down in that area* one of our holding areas would in fact extend into French territory.

955. That, I take it, is unlikely to be popular.——It is unlikely to be popular with the General. (*Overlay*) Once again, this shows the areas where aerodromes might be affected and the number of military and Ministry of Defence aerodromes to be looked at. Once again, there s a need here, were an airport to be in this area, to get a bit more room by spreading farther to the west. (*Overlay*) We now have the slides I promised to show you of civil aerodromes in this 140 nautical mile square. This first slide shows what I will call the main public transport aerodromes, with their names. I will remove the names, because this may cause confusion later on—(*Overlay*)—and add some further airports used by public transport aircraft, but not the same intensity as the red ones. (*Overlay*) The green aerodromes here are those used by the various aircraft manufacturers. We have also included on this slide the two aerodromes used by the College of Aeronautics (at Cranfield) and the College of Air Training (at Hamble).

956. That shows very clearly the point I was trying to make earlier, that there are quite a number of aerodromes apart from Gatwick and Luton which are under what I call the Heathrow yellow umbrella.——This is perfectly correct. There are still more to come. You may have felt from the earlier slides that there are rather a lot of military aerodromes about the country. There are quite a lot of civil ones, too. These open black circles are small aerodromes, many of them grass fields from which light aircraft, in the main, operate. (*Overlay*) Finally, we have gliding sites. Gliding takes place at many active aerodromes as well. The blue dots on this overlay are the sites from which gliding alone takes place; they are pure gliding sites.

957. Does that slide show everything from the last three slides, or only the last slide?——That shows all the civil aerodromes and gliding sites. The red ones are the main transport bases. These orange-coloured ones are the smaller public transport aerodromes. The green ones are the manufacturers and the Colleges. The open black circles are the small grass fields, in the main, and the blue dots are the pure gliding sites.

958. Mr. Dickie, I have never seen that one before. It is something of a revelation. Is it physically possible to superimpose the military aerodromes as well to give some idea?——We rather expected you might like to see that. I am not quite sure how the light will stand up to it, but we will certainly have a try.

959. I should be grateful if you would have a shot at it. It means going back about 13 or 14 slides.——(*Overlays*) Some of these miltary ones become duplicated on successive slides, but we will endeavour to get them suitably overlaid. (*Having arranged overlays*†): That is an air traffic control problem.

960. That is so good that the Tate Gallery will be wanting to buy it. It seems to suggest that there is a rather limited choice of sites, does it not?——Indeed. I think this is absolutely true.

961. Has any other country got a pattern of airfields and aerodromes adjacent to its capital or main city that in any way resembles that?——I imagine there are certain areas in the United States where the pattern is not dissimilar from this. The effect is somewhat exaggerated, in that the runways, as I mentioned earlier, are not 12 miles long. Nevertheless, air activity takes

* Fig. F. (v)
† Fig. G.

Printed image digitised by the University of Southampton Library Digitisation Unit

place round all these areas and, as I said just now, there is an air traffic problem if a new major airport is located in any area where there is already a lot of traffic.

962. *Professor Keith-Lucas:* Mr. Dickie, are not these military airfields which you show there the ones which were drawn on the maps to indicate the extra interference due to a third London airport?——Yes.

963. Does that mean that there may be further ones in South-East England which are not on this map?——No, there are not. We did show an overlay of aerodromes which would be affected by a new airport in the South-East area as well. In fact, this rather blank looking area here from the military point of view is simply the result of the fact that civil aviation has grown and, if my military colleagues will pardon my saying so, we have rather pushed them out. There used to be military aerodromes—Biggin Hill, West Malling, and so on—in this area, but this particular area has now been largely taken over by civil aircraft receiving 50 per cent of the total traffic from the London area to the east and the south-east. Though this area looks thin on the map, it is thin as far as aerodromes are concerned on the ground, but once you get off the ground there is quite a lot of traffic there.

The next short series of slides give a comparison between operations in this country and in the United States. If you would like to see these, I think they help to put into perspective the positions in our two countries. (*Slide**) The first slide shows the North American continent with, coloured in, the so-called "golden triangle" with New York at its top, Washington here, and Chicago over here. I can superimpose on this England and Scotland to the same scale. (*Overlay*) This yellow area is the square we have been looking at for the past few minutes. I believe this helps to get matters in their proper perspective.

If we place London over New York, for example, Washington appears down in Cornwall and Chicago off the North of Scotland. An alternative way of looking at it is that a flight from New York to Chicago is comparable to one from London to Geneva. Yet another comparison I could make is by reference to Long Island. I have heard people talk about aerodromes and their density of operation at Long Island as though this were a sort of Isle of Dogs or Isle of Sheppey. In fact, if we towed it up the English Channel it would stretch from the Isle of Wight to the tip of Kent; or if we towed it up to the North Sea it would reach from Gravesend to Great Yarmouth. America is, as we all know, quite a large place.

(*Slide*) After those, I would like to show one or two slides comparing directly our own London area with Chicago. The coloured base you have seen already. It represents our existing airways system. (*Overlay*) Superimposed upon that to the same scale, with Chicago's main airport, which was then Midway, located over Heathrow, we can see in black outline the American airways feeding Chicago as they were in 1946. (*Overlay*†) The next one is perhaps rather more interesting, because by 1950 the Chicago airways system had grown to the extent of the airways you see in black outline on this overlay. At this time in 1950‡ Chicago was handling about 240,000 movements a year, which is almost precisely the number which London is handling this year. So we have in fact a comparable amount of controlled air space in total volume for our current traffic to that which Chicago had in 1950.

(*Overlay*) By 1953§ Chicago movements had risen to about 330,000 and the volume of air space they used for controlling this traffic had also grown. In fact, these shaded areas are the only bits left in Chicago where the aircraft using the main Chicago airport were not flying. The rest of it was used for controlling the transport traffic in and out of that airport. You will see that they had in fact, to bring it over to this country again, swallowed up the whole of Salisbury Plain, most of the Oxford area, and had bitten fairly deep into East Anglia as well.

(*Overlay*) Moving right up to date to 1968,¶ with Chicago handling many more movements—I am afraid I have not got the actual figure—the American situation is like this. We have on this overlay superimposed O'Hare, now the main airport, over Heathrow. These circles are the American VHF omni-range navigation beacons. The black lines denote the centre lines of all the routes they use for feeding the aircraft in and out of O'Hare, with Midway flights there. The whole of our 140-mile square has been absorbed. This coloured area is what the Americans term an area of concentrated bad weather traffic above 3,500 ft. They still permit aircraft to fly under what we call visual flight rules in

* Fig. H.
† Fig. J. (i)
‡ Fig. J. (ii)
§ Fig. J. (iii)
¶ Fig. J. (iv)

Printed image digitised by the University of Southampton Library Digitisation Unit

this air space, whereas in our own airways this is not allowed. So much for Chicago. I would like to move across now to New York.

964. *Chairman:* Just before you leave Chicago, Mr. Dickie, can you superimpose that on the United Kingdom so as to show the relative positions in the United Kingdom of where some of those stacking areas would be?——Yes. (*Overlay*) Heathrow, Gatwick, Luton and Southend.

965. Taking the west stacking area there, am I right in thinking that it is somewhere a bit north of Bristol, perhaps Gloucester? ——Which airport?

966. The one on the extreme west. Those are beacons?——These are navigation beacons.

967. I misunderstood you.——I may have misled you, because I said that here is Midway, and Midway had a beacon on it. Those circles are navigation beacons, not aerodromes, although some are located on aerodromes. (*Slide*) I would like to illustrate one thing about New York which I think is quite important. We have the FAA's figures of 60 bad weather movements per hour from Newark, 60 from La Guardia, and 65 from Kennedy Airport—none of them, you will note, handling 120 or anything like it in bad weather, but between them handling quite a lot of traffic and being fairly close to each other. Here is the scale in nautical miles—5 and 10 miles.

The reason they can achieve these movement rates of 60, 60 and 65 is that the runways at these airports are parallel with each other so that they can marshall all the arrivals in at one end and disperse all the departures from the other; and the airports lie side by side, as it were. If, for example, the runways at La Guardia had been aligned in that direction instead of parallel with these two*, they would be in big trouble in trying to achieve the movement rates they get. Similarly, had Newark been located the same distance from La Guardia but in line with La Guardia, instead of beside it, the capacity of those two airports would be nothing like the capacity that it is today. Once again it is runway alignment disposition—all these factors add up to make or break the capacity of a particular airport.

(*Overlay*) My final series shows, in a similar way to that for Chicago, a direct comparison between the New York area and the London area. These black lines† here are the American airways to the same scale as the UK base as they were in 1954, with J. F. Kennedy Airport located over Heathrow. We have shown here La Guardia, Newark, Teterboro, and also an airport at Westchester. We have included this one because of its proximity to Luton, which helps us to draw one or two comparisons later on. That was the controlled air space used by the New York airways in 1954.

(*Overlay*) Moving on to 1968, New York is using a vast amount of air space, but it is handling a vast amount of traffic as well. This overlay shows, as in the case of Chicago, the navigation beacons and the centre lines of all the routes they use. The green solid lines here are the standard bad weather departure routes out of J. F. Kennedy, the pecked ones from La Guardia, and the dotted ones from Newark. (*Overlay*‡) We can superimpose on this their bad weather arrival routes, first of all into Kennedy. These are the red solid lines feeding into their two main holding or marshalling areas. On top of this there are the other routes feeding into the other airports. I need not go through them in detail. I think the picture explains itself.

One thing I would like to mention particularly is that there is another difference between their problem and ours. Most of their domestic traffic wishes to fly anyway to the west, south-west, and south. Their international traffic coming over the North Atlantic comes in from the east; and for this Kennedy, being to the east of the other airports, is quite conveniently sited. Heathrow is very different from Kennedy, in that it is essentially an international airport and we have to cater for aircraft, whatever the passengers do, coming in from one direction—from the west, from America—and wishing to fly on to places like Frankfurt. So we have international operations crisscrossing our area the whole time.

(*Overlay*) Finally, we will put on top of this the holding areas that are currently used for these New York aerodromes. The large ones—the red ones—are for J. F. Kennedy. The blue ones are for La Guardia. The yellow ones—or green, whatever the colour looks like—are for Newark. The holding area up here is for Westchester. I mention this particularly, because there it sits very close in our terminology to Luton. Having so many airports so close together, with so much traffic,

* Fig. K.
† Fig. L.
‡ Fig. M.

Printed image digitised by the University of Southampton Library Digitisation Unit

there is a major routing problem. So by tracing the routes which are shown here one can see as an example that, if an aircraft wished to fly from Westchester (alias Luton) down in this direction—in our parish, Paris—the route it might have to take could well be via Oxford, Bristol, the Channel Islands, and it might well have to return via Brussels. This is the scale of operations and the scale of detours that become necessary, we feel, when there are a number of aerodromes rather close together handling a great deal of traffic. Sir, those are all the slides we have to show you, and that is all I have to say.

968. Mr. Dickie, I am sure that the Commission would wish me to thank you for a most lucid and interesting talk and illustration. Just before you leave those, there are a number of questions which I myself, and I am sure other members of the Commission, would like to ask. Do you mind going back to what I might call your base slide which showed Heathrow, Gatwick, Luton and Southend? (*Slide*) Add to that, if you will, the existing airways out. (*Overlay*) Can you go on and add the civil aerodromes? (*Overlays*) Can you point, first to Silverstone, and secondly to Stansted?——I am sorry; I have not got the name "Silverstone" on, but it is about here. Stansted is there.

969. Would you be good enough to put your umbrella—first of all, your first umbrella over Heathrow?——Yes, the stained glass windows. (*Overlay*) There it is over Heathrow.

970. Would you take your second stained glass window and put it in a line in the ideal way, north-east/south-west, on to Silverstone?——It is about there.

971. Can you give any idea in terms of percentage how much interference there is there?——I would not like to quote figures at all, but the interference is in this area where holding areas would overlap, certainly at higher levels. It might be possible to get one or two aircraft holding, if one had to hold, at the lower levels where they do not take up so much space, one feeding into that airport and one feeding into the other. This would require quite detailed examination, which we are happy to undertake, should you so wish.

972. Would you get quite a substantial degree of interference with Heathrow if the third London Airport was sited at or near Silverstone?——There would be interference, certainly. I would not like to say that it would necessarily be substantial. I believe I mentioned that there is, apart from interference between these two, the problem of blocking the cross-country flying. That is a separate issue.

973. Bring your top stained glass window down to the area around Bedford, what I might call the Buckinghamshire or Bedford area. Put it on or near Luton, if you like. There you get your two areas overlapping.——One is beginning to get into big trouble there, yes.

974. If you put it on to Gatwick it is worse, as Mr. Goldstein just said to me, or nearly as bad.——The runways at Gatwick are very nearly parallel, and we have the one holding area over here for Gatwick.

975. Now will you put it on to Stansted? ——On what sort of runway alignment?

976. Ideal.——Ideal from our point of view?

977. Ideal from your point of view, yes. ——From an air traffic control point of view the best alignment is parallel with Heathrow.

978. Now put it on what Mr. Masefield would consider ideal from the point of view of the BAA—that is north-east/south-west.——North-east/south-west is very much the existing alignment.

979. So there you have got your blue areas overlapping.——This is true.

980. Whereas with Silverstone I think I am right in saying only your yellow ones overlapped.——This is correct.

981. Now put it on to Foulness, if you will.——I think that is right, there.

982. They either just do or just do not touch.——I think I can confidently say they do not touch.

983. *Mr. Goldstein:* Mr. Dickie, that seems to cover the whole of the airlane.—— This is absolutely true—the existing airlane. With an airport here, we would have to extend our airways up in a northerly direction.

984. A fair amount.——But there is the added point that the air space above the blue area is not very much used by the

Printed image digitised by the University of Southampton Library Digitisation Unit

aerodrome underneath. The aircraft are lower on their descents and have not gained their altitude on their climb-out. So we would endeavour to exploit this. For example, if the airport were there, we believe departures to the west from this airport could come this way straight over the top at Heathrow at fairly high altitudes, too high to create any noise problem. Similarly, this air space might well be usable for aircraft arriving at high altitude for Heathrow.

985. *Professor Keith-Lucas:* I did not get quite clear the influence of the stacking areas on the routing of aircraft to and from the airports. Going back to the very last slide you showed, we had these homing areas.——These were the New York ones?

986. Yes. Two of them were actually overlapping. What does that mean?——(*Slide*) The two in fact do overlap. I think one is Kennedy's and one is La Guardia's. Kennedy would be holding at the high level only, here. This would be used by Kennedy aircraft at the high levels feeding off to this for the lower levels before descent into Kennedy. This little blue area here would be used, and in fact is used, by La Guardia for holding at low levels.

987. The red one is a sloping stack?——Here?

988. Yes.——Yes; "a sloping stack" might well be the expression. They would be holding at high level here and transferring across to this one as they descend to a certain level, to make room in fact for a few aircraft to hold for La Guardia. It is the sort of thing they have had to do. It is not the sort of thing one would wish to do, and one would not want to design a system with this sort of complication.

989. Does one have to have separate stacking areas to serve different airports, or could a single stacking area serve more than one airport?——One can feed more than one airport from one stack, certainly. However, there are two problems—or there may be problems—according to the density. We have found that it needs one stack complete to keep one landing runway supplied with enough aircraft. So, if you in fact share a stack between two airports, then neither airport can operate to its maximum. If there is not the traffic demand to call for that, it does not pose any problem. The other unfortunate thing which can happen is that you may have aircraft at 4,000, 5,000, 6,000, 7,000, 8,000 and 9,000 ft waiting to get into one airport, whereas the one at 10,000 ft wants to go into the other airport but is too high and just cannot get down. These are the sorts of problems that arise when stacks are shared.

990. So what determines the number of stacks you have to have?——We are estimating that for the time scale we are talking about each runway requires one holding or stacking area for its exclusive use if we are to keep the airport adequately fed with traffic at the rate the runways can accept them. One of these areas is required for each landing runway. In order to conserve space, we are not proposing to hold aircraft at high levels so close in. In fact, the yellow areas on my umbrella allow for aircraft to be held, when they have to be, up to about 15,000 ft. If there were weather conditions, for example, which halted the traffic flow completely and we had to hold elsewhere, then additional aircraft beyond those accommodated up to 15,000 ft would be held back down the routes at holding areas more remote from the London area. This again, is what happens in New York. Apart from Kennedy, as you will see, they have enough space for only small low level holding areas and their supplementary holding areas are dotted around in various places which equate in our language to Colchester, Bath, Southampton, and so on. They have got holding areas dotted round the outside. We would do the same.

991. Why I am asking you all this is that I was taking aboard your point about the long detour they have to make to get round. I was only wondering what determined the number, spacing, placing, all the rest, of these stacking areas.——The size of the stacking area is determined by international agreement. The International Civil Aviation Organsiation lays down these standards. They are rather complicated patterns, and because of higher speeds and possibly higher cross winds they get larger as one goes higher. I do not know whether that answers your question.

992. I do not think I can expect a complete answer to this. I just wanted to get a picture of the number and the spacing of these stacks.——(*Mr. Stallibrass*) Could I come in on that? The American stacks have been located in that way because they have learned from experience that there is a confluence of traffic because of the direction from which the routes come in at particular points. So they have placed their

Printed image digitised by the University of Southampton Library Digitisation Unit

radio navigational aids partly where the traffic naturally tends to be flowing to, and therefore it is convenient for the traffic to be held if it has to be held, and partly because from those points a convenient pattern can be arranged for taking aircraft off on a pattern based on that point towards the runway. These are usually designed in relation to the situation as it exists, starting with the direction from which the traffic is coming in the heaviest amounts, taking into account the best shape of flight path from there to the runway concerned, and separation from other routes. These are, you might say, special decisions according to circumstances.

993. *Professor Buchanan:* Is not that what has given us the stacking area at Garston and Epsom?——Yes.

994. I thought in a rather simple way that aircraft coming in from the north-west were stacked at Garston and those coming from the Continent, the south, and the south-east were stacked at Epsom.——That is so. I wonder, Sir, if I could also with your permission just for the record correct one point—it may only be academic. I think it would be premature to rule out, if it were considered important, the prospects of ever being able to hold traffic over another country's territory. It is very much an international business, this Air Traffic Control, and I would not rule out the possibility of ever negotiating that. The airport for Geneva is actually half on French territory and there is a perfectly good working arrangement between Swiss and French. I think it would be looked at on its merits, because if countries do not help each other in this sort of business the trouble is caused for themselves. The French already permit us, for example, to take over control of our aircraft over French territory, so I do not think this should be ruled out as a matter of principle.

995. *Chairman:* Yes. I was coming actually whilst we are on Mr. Dickie, as it were to go round the clock, taking London as the centre of the clock, and point out—I think it is fairly obvious from what has been said already—those areas in which it is really from an ATC point of view almost impossible to site a third London airport and those where it remains possible. Take the south-east, the area most crucially affected by stacking over France. Take as a purley hypothetical site Lydd, Dungeness or somewhere down there. If you site it there you are going to site it absolutely straight under one of these areas, are you not? (*Mr. Dickie*) Going quickly round the clock, and if one assumes that all existing aerodromes must continue to function, the south coast area here I think one can rule out, mainly on account of the massive amount of traffic moving between Heathrow and Gatwick, to and from the continent. Remember that in this area we have in fact 50 per cent roughly, or almost exactly, of the total traffic. In the west and south-west area here, this is a very busy area for the Ministry of Defence, both the Royal Air Force and the Army, and the flying which goes on in that area now—also from Boscombe Down as well—would I believe be incompatible with the flying that a major new airport would involve. In this area of Oxford, there is quite a bit, as you have seen, of military flying and quite a lot of civil flying as well. So there would certainly be complications in that area. Moving across towards the north-east, we did discuss, Sir, when you raised a few questions about Silverstone in particular, one or two problems there related to Heathrow, also to the fairly large cluster of small civil aerodromes in this particular area and to the possible effect of putting a barrier up and down the country, the possible effect that would have on cross-country flying generally. In the north-east area the problems are not so bad until one begins to push up into this territory which is very heavily used by the Royal Air Force for Strike Command and operations of various kinds. Over in the east I think the problem really centres on Southend airport itself and on the Shoeburyness range. Coming round to the south-east, we get back to General de Gaulle.

996. I did happen to notice, looking at a few paragraphs emphasising the importance of runway alignment, particularly with regard to the New York picture, for the first time that Birmingham and Coventry seem to run, as it were, straight into each other. Does that cause a problem?——I think that was by accident rather than design, Sir. It does not cause any particular problem because neither is terribly busy, but it is undesirable.

997. I wonder if I can come back to Silverstone and some of the problems there. I understood you to say in the course of your talk that one of the difficulties of siting it there was that it would be immediately under or almost immediately under the main airway up, and problems would arise not only in getting other aircraft

Printed image digitised by the University of Southampton Library Digitisation Unit

through but also in getting assumed third London airport traffic up into the lane; is that right?——The last mentioned, Sir, would not be a particular problem. One could get aircraft from the new airport into the air lanes. One could also arrange by securing sufficient air space for Heathrow's traffic also to fly up and down in this area. The point I was wishing to emphasise was that at the moment with all the aircraft in this lane being, say, 6,000 feet as a minimum and higher, there is space underneath for light aircraft, and with the aircraft in the airway itself flying north-west south-east, so, it is a relatively easy job with not too wide an area involved for a radar controller to take an aircraft across through this other traffic, an aircraft that is not flying the airway system that wants to fly from there, within the airways levels.

998. But then is the problem, the Air Traffic Control problem, in relation to a possible site at Silverstone the problem of getting traffic across more than the problem of getting hypothetical traffic using the third London airport up into the lane?—— Yes.

(*Mr. Stallibrass*): I am sorry, Sir, I really would have to put a gloss on that. Mr. Dickie did say before that this could be dealt with by extending the airspace. You drew attention quite correctly to the existence of other users of the air space besides those who would be using the third London airport, and this is a major point—again a point Mr. Dickie made—there is very little air space. I do not consider it would be at all easy to devise air routes for Silverstone without expanding the controlled air space. If it could be expanded it could be done, but expansion itself is not to be had just for the asking.

999. *Chairman:* In saying that, Mr. Stallibrass, did you have Brize Norton in mind or what?——I have very much in mind both sides of the airway, partly what is termed the Brize Norton area which is an area of 14 or 16 aerodromes with considerable varied activities, and partly the eastern side of the airway as well. I speak with first hand knowledge of this because we are examining the possibility of getting just such an extension now for our existing needs and it is proving extremely difficult.

1000. You mean widening the existing air lane?——Yes.

1001. On the east side or the west?—— On the east side.

1002. That leads me to another line of thought.——On the west side you have covered it with reference to the Brize Norton area.

1003. You cannot widen on the west because of Brize Norton, or without reducing or interfering with Brize Norton? ——Yes.

1004. Now on the east can you widen without running into a comparable problem if the third London airport was sited at Stansted or near Stansted?——No, I think this would apply to both. Wherever the airport is, if its routes require a widening of the amber airways, those main airways running north-west south-east, the problem would be the same.

1005. Is this a fair conclusion, that given such importance as attaches to what you have just said it is a point which applies either side, either to Silverstone or Stansted, or anything in either of those two areas?——On the eastern side of the airway only, you mean?

1006. Well, let me go back. Perhaps I did not make my question clear. You have made your point very forcibly, if I may say so, in relation to Silverstone, and not only Silverstone but any area near Silverstone. Now go across to the other side. I understood you to say that if the airway was widened, as you say may happen, the same problem is going to arise if you site the third London airport at Stansted or anywhere in that area.——No. What I meant to say was this. Any airport whether Silverstone, Stansted or any other airport which requires a widening of the ambers to the east, would involve exactly the same problem. But Silverstone might not require a widening to the east; it might require something in another direction. The only point I was trying to make was that expansion of controlled air space cannot be taken as something for which no price has to be paid.

1007. No, but it is a corollary of that, if I follow you correctly, that the price which has to be paid may be a price of not putting the third London airport in that area, because that would prevent any price having to be paid.——This is where it is difficult to give a general reply. The reason is that wherever the airport goes, if a sufficient proportion of its traffic is going to go northwards, it is going to place a load on

Printed image digitised by the University of Southampton Library Digitisation Unit

the air space which possibly could only be met by expansion. What that expansion would be would really have to be determined for particular sites rather than generalised on.

1008. Well, I gave you two particular sites, merely because they are ones that have been mentioned a good deal. It must follow must it not, that given the problems are as you say they are—let me of course accept that for the moment—those same problems are going to arise if you site the third London airport sufficiently near the existing lane, or the existing lane as expanded? ——Yes. The only point I was trying to establish was this. Depending on where that airport is, the expansion of the lane might need to be to the east or to the west. The problems of expanding to the east might be different from those of expanding to the west; whether greater or less one would really have to go into detail.

1009. Yes, that I entirely follow, but the more you expand your controlled air space to the east—and as you rightly say wherever you expand the price has got to be paid—the more you run into possible conflict with other already existing demands for that air space in the east.——Yes.

1010. Whether that demand comes from Stansted as it at present is or from private aerodromes up in the north-east.——That is correct.

1011. While we are on that area—I want to come back later if I may to something Mr. Dickie said—I wonder, Mr. Stallibrass whether I can invite your help on another and very crucial problem. I do not know how far you can help us; if you cannot at this stage I hope you will not hesitate to say so. Let us come down to Foulness. We know that there is a range there and we know that the presence of that range freezes, if I may use the phrase, a very large area of air space around it and over it. Can you give us any idea of what that area is in terms of square miles? I have read it somewhere in one of the documents. Is it something like 200 square miles?——I would guess from the map in front of me something under 200 square miles.

1012. Covering the Thames estuary and an area north of the Thames estuary and south of it?——North.

1013. North only. Given the enormous expansion that you mentioned right from the beginning which we have got to contemplate of a fourth London airport—never mind where it is sited for the moment—with a capacity equal to that of the three present airports of New York and a good deal more than the present capacity of Heathrow, are you going in any event, wherever the airport may be sited, to need that 200 square miles that is at present frozen?——It is quite obviously going to become increasingly difficult. In looking at this one has had to make assumptions that the 100 per cent increase in aircraft movements that we are thinking about would be roughly in accordance with the present distribution of traffic, which in very rough figures would mean that in the airway that is shown going east and west at the moment there might be 350 movements a day, and the other effect of that range which would be if one wanted to by-pass the London area with traffic going to and from the south between the Continent and an airport somewhere to the north of London—and for this I had better assume the north-east of London because if it were to the west then obviously the traffic would be detoured to the west. Without going into quite detailed traffic flow studies it is not possible to be categorical, but it is obvious there will be a huge increase in demand on the air space if this airport is needed—it follows.

1014. You see if you come back to what I lightheartedly called Mr. Dickie's Tate Gallery picture, you see the quite staggering demands on air space to the west and north-west and south-west of London that exist at the moment. Those, I suppose, on that side of London alone are more likely to increase than diminish in the years ahead. You see at the moment a slightly less demand on the east side. Now if we have got to cater for this vast increase in traffic—and nobody has yet said we have not—is it not almost inevitable that the capacity that one is going to seek to use will be in the east because there is none left in the west? ——One would have to sub-divide the demand for capacity in the east, I think, very crudely in the need for capacity in the east to get additional north-south flows and the need for capacity in the east for straightforward east-west flows. There are ways of increasing the capacity up to a point with the continued existence of Shoeburyness range. Beyond that it would become increasingly hard. My difficulty here, sitting here and now, is to forecast where the difficult would become impossible. But this I think would require detailed studies of a

Printed image digitised by the University of Southampton Library Digitisation Unit

particular site or particular sites in particular areas, but on first principles it is going to become harder and harder to handle a huge increase of air traffic with an impediment to the unrestricted use of air space for that purpose.

1015. You see, one of the advantages that the Americans have over us is that we are a small country and they are a large one. Mr. Dickie's slide show the quite appalling problem that even in their large country they are facing in the golden triangle as it is called. But can we with a small country, if we are going to try and fit this third London airport in, afford if there is any other escape to have 200 square miles of that air space which is at present frozen remaining frozen?——It is going to be increasingly difficult.

1016. *Chairman:* Mr. Dickie, can I come in with one thing. Professor Buchanan put it in my mind while you were talking; I did not like to interrupt you and I then forgot to ask it. Your umbrellas, as we call them, you put one on Heathrow and you put one in various other places. The second represented a proposed four runway airport. Heathrow is a two-runway airport of course. Is it right that you have two of the same size, for the purpose of testing these various points, that you make two umbrellas of the same size?——(*Mr. Dickie*): Yes. The answer is that the size of the umbrella, the size of the red area, the blue area and the yellow area, is determined by he aircraft's own flying characteristics, heir speeds and their turning circles.

1017. *Professor Keith-Lucas:* Could we have a little more explanation of the reason for the shape of the umbrella, because I believe you said, Mr. Dickie, that it could be warped around a bit?——Yes, indeed. Very briefly indeed, what we have tried to do is to conserve air space and by having these holding or marshalling areas at right angles to the runways we can then within this air space comfortably hold and marshall aircraft regardless of the direction of landing, whether they are landing in this direction or in this direction. If, for example, we could not have a holding area here, we could certainly have one over here (*indicating on slide*), which would be satisfactory for feeding aircraft into that runway, but it would be very unsatisfactory if we had to drag aircraft right across here in order to land in this direction; unsatisfactory in two senses, it is too far away to get the flow neatly packed and over all there is more air space eaten up. But there is flexibility, certainly. These stacks do not have to be precisely in these yellow areas; they can be slid a bit one way or the other. By turning the holding pattern round in this direction, the corner can be lopped off there. There is quite a lot one can do. But this has to be looked at how much one can do in a specific case by relation to a specific site and with regard to other aerodromes in that particular area. It is not rigid, it is not precise, it is an indication of the amount of air space, the absolutely minimum amount of air space which we believe this airport is likely to need to operate efficiently. It is not rigid, Sir; it can be changed.

1018. *Professor Buchanan:* You have told us something about the problems of getting the siting of the airport under the main amber airway, say, at Silverstone. I wonder if you could just tell us a little more about the problems that would arise at the Foulness area, assuming there were no problems from the range, because just on the face of it Silverstone is just merely under one air lane but at Foulness it seems to be under the confluence of two air lanes and on the face of it one might think that would be slightly more difficult.——(*Mr. Stallibrass*): The first point is that that route is not so busily used as the north-south route. The north-south route, speaking from memory—perhaps I had better not speak from memory; perhaps I had better look up my figures.

1019. Could we just have the airlane up back on the screen again?——(*Slide*) My recollection as being in the air traffic control centres is that in fact one point on that route, Lichfield, is the busiest point on any area we have in the United Kingdom, and I see to my relief that my recollection is right. However, the next point is that it appears to us that the geographical separation of Foulness from Heathrow and also from Gatwick, and an assumed freedom to choose the most favourable runway alignment that is compatible with the needs of the aircraft and also is favourable to Air Traffic Control, that the basic pattern of flying from there is less likely to conflict with the pattern from Heathrow than from an aerodrome somewhere in the Silverstone area. I think those are the two main ones really. The geographical situation is less difficult and the route is somewhat less busy. I should perhaps explain that the main routes you see there, or would have seen if the stained glass window were not in

Printed image digitised by the University of Southampton Library Digitisation Unit

the way, is one two-way airway and one one-way airway. I wonder if it would be possible to have the airways shown. Now if Mr. Dickie could put his pencil on Red 1 (*indicating on slide*) that is a two-way airway. That would move to Blue 29. Blue 29 is a one-way airway. Traffic moves only from east to west and we take it from Germany, Holland and points beyond, and that traffic is usually picked off that airway by radar, sometimes before it has even got to Clacton—that is the inbound traffic—and brought in. So that again it becomes less concentrated in the Foulness area, and it is in these circumstances that if one is looking at this situation and thinking of Foulness as an eligible site the attraction of doing away with Shoeburyness comes under a different heading. Instead of being in the way of Foulness alone it would also interfere with the quick shoot across Eastwards from Heathrow if you wanted to avoid Foulness. But basically we feel that the Foulness area gives us more room for manoeuvre than the Silverstone area for the reasons I have stated.

1020. Would you be prepared to venture a comparison between the Foulness area—in rather the same terms you have just done between Foulness and Silverstone—and, say, the Essex gap, out in the north-easterly direction, north-east of London, but that empty area of Essex; I am not specifically naming Stansted, but that sector?——On the whole, I would have thought that the Foulness area would give us more room for, as it were, tailoring an Air Traffic Control system to feed such an airport than an area further north, but north-west of Foulness. The main thing is its sheer geographical relationship to Heathrow and Gatwick; it is advantageous.

1021. *Chairman:* This is the 60 mile point?——Yes, this is the good side of it.

1022. I would like to take that up with you. I do not know if you have read Mr. Masefield's evidence on the very first public hearing we had on day 1, page 23, letters D to F*, but I asked him this: "What would you regard as the minimum distance from the centre of Heathrow that you could wisely site a third London airport?——It depends on runway alignment which is tremendously important". Pausing there, I do not suppose you would quarrel with that. "(Q) I want you to assume for the purpose of answering my question that it is the ideal runway alignment. (A) 20 miles is about suitable. But this is an elastic figure. One cannot be absolutely precise, because the location of the airport towards the city centre" and then I am afraid I interrupted him, "20 miles from Heathrow? (A) Gatwick is not much more than 20 miles from Heathrow." That is a very much lower figure than the 60 we have been talking about. Do you agree with that or not?——As I read the report, Sir, I thought Mr. Masefield was really thinking of 20 miles in terms of the ideal from the point of view of the factors other than Air Traffic Control, because he says earlier on "from the point of view of those who want to use them"—'them' being the airports—"if we could keep these airports within 20 miles of each other, spread round London, this would be ideal".

1023. Then I do not quite see, if that is the explanation, why the reference to runway alignment comes in.——I think perhaps he had in mind Gatwick, but from the purely Air Traffic Control point of view 20 miles is certainly not an ideal, but as New York has shown you can make a system work down to something like 20 miles or even less provided you accept something less than the maximum potential you are aiming for. I would say 20 miles is closer than the ideal from the point of view of Air Traffic Control.

1024. *Mr. Knight:* May I take up an answer Mr. Dickie gave to, I think, the last but one question from the Chairman who put the question, "If you have your stained glass window covering Heathrow and then you prepare a second one in relation to a four runway airport, should not the second one be bigger in terms of the yellow area than the first one?" and the answer Mr. Dickie gave, I believe, was "Well, the size of the yellow area is determined by the space an aircraft needs in which to manoeuvre", But in reply to an earlier question from Professor Keith-Lucas, I think, it was said you need one stacking area for every runway if the proper use is to be made of that runway, from which it would appear that if we are talking of a four runway airport we need twice the yellow area that we need in dealing with Heathrow, or have I misunderstood?——No, I think this is throwing light on what might be a dark area. As I have understood it, the concept of a four-runway airport has been for two runways for landings simultaneously and two runways for take-offs. This is on the

* page 39.

Printed image digitised by the University of Southampton Library Digitisation Unit

assumption that over a reasonable period there is a rough balance between take-offs and landings, although you will get landing peaks for short periods and take-off peaks for short periods. If an airport were designed for simultaneous landings we will say on three runways rather than two, then I think you would need more than two holding areas if you were going to get the maximum capacity from three landing runways, but it is my impression that the four-runway airport has usually been discussed on the basis of most of the time at any rate only two runways for landing and two for take-off.

1025. *Professor Keith-Lucas:* I am rather surprised at that answer because I thought one got quite a big increase in the total capacity of an airport by using the runways in the best possible way for the immediate circumstances.——That is absolutely right. The highest capacity you can get is really alternating landings and take-offs on the same runway—that is the highest movement rate you can get. It sounds terribly priggish but we are a service and we have to serve the customers as they come, and if aircraft do not present themselves in that order we have to handle them in the order in which they occur. There is one way you can impose your will on the customer, and that is by having such long queues of aircraft waiting that at any given moment you can take them in the order that you are best able to handle them. That means you are getting a higher movement rate at the expense of a higher average delay which may not of course be what the customer wants. So we can only apply the highest movement rate in particular circumstances, because at other times the traffic will not be offered in that way.

1026. *Chairman:* I have never understood this enthusiasm for calculating things be reference to a thing called an average delay. It always seems to me to be utterly misleading. Two people go to Heathrow or Kennedy or wherever it may be, and one is kept waiting for a large number of times for a few minutes and the other one is kept waiting once for three hours, and you then take an average and say, "Oh, but the average delay is something a little above three minutes". The fact remains that someone has been kept waiting for three hours. I do not see why this average figure should be treated as being an acceptable one.——I think the reason for it being used is not evident from, as you say, the description of it as an average delay because, again for the reasons you have stated, when you are beaten over the head by the customer it is not because the average delay has gone up to five minutes, it is because someone has been kept waiting for an hour and a half. There is a mathematical reason, though, for using this measuring point of a four minutes average delay which I could describe to you although I am not a mathematician, but the conclusion seems to be borne out in practice. It would need drawing on there if I might do that.

1027. Yes, do please. There is a blackboard behind you.——Thank you. It is a figure, I should say, which is commonly used both by the International Air Transport Association and by the Americans and in discussions on capacity here but the title is, I think, misleading for the reasons you have stated. If I could perhaps explain the theory whilst the chalk is being brought, it dates from the nineteen forties and it is basically a mathematical theory, using various assumptions about queueing, and it deduces a relationship between the total percentage of your capacity which you take up at a given moment, that is to say, supposing we could handle 100 aircraft an hour whether we took up 50 per cent and said "We'll take 50 an hour", or 80 per cent and said "We'll take 80 an hour", and then the delays that you must expect to start to appear as you try and take up more and more of your capacity. Now this is expressed in terms of the landing interval, or movement interval. I find this very difficult, Sir, without chalk.

1028. Would you rather use Mr. Dickie's machine?——Thank you. Now these are what are known as the delay factors, (*demonstrating on slide*) and these are not minutes. You multiply the movement interval by the factor. For example, supposing you have a movement every two minutes, this 2 would correspond to 4. Along here is the proportion with which you take up your movement capacity, so that 50 would be here, and I am going to cheat a little because this is the important figure 80 here, and 25 here. Now if the delays are plotted against the percentage capacity that is taken up, it is found that the curve goes something like this. It stays very flat—and these are now average delays —until you get to something like 80 per cent, and then the delays begin to mount very, very rapidly indeed, and what this is showing is that the more you are operating up to the limits of your capacity, the more seriously things go wrong when they go

Printed image digitised by the University of Southampton Library Digitisation Unit

wrong at all. It is rather like on the underground. If you have a train every minute going through a station, and there is a hold up for 10 minutes, you have a terrible queue of nine or 10 trains whereas if you only had trains going through the station every five minutes you would only have a hold up of two trains. This is the basis of the four minute delay. The big change-over took place somewhere round about the 2X factor here, so that from the delays going up quite slowly they went up very steeply indeed. At the time this was got out which was 1949 the assumed movement interval was two minutes and so 2 x 2 came to 4 and that is why the four minute average delay has been taken. This general theory has been illustrated frequently and most spectacularly in New York this year—this summer—where for a fairly small increase in traffic over last year's traffic the delays went right up in the way this curve shows them going up. That I think is the general way in which the four minutes delay is used. But in itself as a four minutes average then, as you say, Sir, it does not really mean very much. It is relevant to illustrating this risk.

1029. To call it an average is itself misleading.——Yes.

1030. That is really the answer to the question.——We were very upset when IATA caned us two years ago. They did a study of the movement delays at Zurich, Copenhagen, London and Rome, and although we came top of the list with an average arrival delay of 59 seconds, we were at the bottom of the list with the departure delays which were something like five minutes, but when we saw what the maximum delays had been where something had gone very wrong indeed—they were up in the sort of two hour limit—this illustrated your very point, Sir, that a five minute average was quite misleading if it had been completely biased by a few very big delays.

1031. Thank you very much indeed. There is one matter we might perhaps raise with you which has been raised by some of what I might call the noise organisations, and it really arises out of the possibility of improvements in the ATC systems which I also want to discuss with you. To take the smaller point first, is there any possibility of the use of a curved or split ILS beam, as improving the SBR?——It is technically possible to produce either a curved ILS beam or the apparatus in the aircraft which will reproduce on the receiver the same indication as though the ILS beam were curved. I cannot see any value of this for increasing Air Traffic Control movement rate. The context in which I have seen it being discussed is to vary the approach paths in such a way as to spread the noise more evenly for people who live close to the airport in the direction of approach.

1032. Yes, it is really a noise solution?——So far as the ILS localiser one is concerned, completely. I see no Air Traffic Control application for it.

1033. Now I think it is fair to say we have all been working, as you know, on a rate of 32 per runway. Do you see any chance of that ever being substantially improved in the next few years?——I am very sorry, Sir, I missed your question.

1034. Do you see any chance of it being substantially improved in the next few years, the rate of 32?——I see it being improved. We know that we can do better than 32. The difficulty is that beyond that you soon start to have to make assumptions about the behaviour of various other links in this chain that leads to an aircraft movement, which is made up of the airport design, the Air Traffic Control procedures, the Air Traffic Controller's performance, and the pilot's reactions to the clearance he gets. The answer is yes we can see an improvement of perhaps—this is for a sustained rate, I should say—four or five. Beyond that one gets into the intuitive realm and it is very hard to say. Certainly I would expect to see the 32 go up by four or five.

1035. Can you see any likelihood of improvement which would enable what I will call the growth of rate to be absorbed in the next twenty years by means of existing facilities around London without the building of a third London airport at all?——No, not unless all the forecasts of increased demands are wrong.

1036. *Professor Keith-Lucas:* If we had an accurate and improved aerial navigation system in all aircraft would that make any substantial difference to your sustained rate?——May I divide that into two parts? The biggest effect it would have would be on the en route operation. We should be able to handle more aircraft and more aerodromes without a corresponding expansion of the controlled air space. That is because the lateral separation between

Printed image digitised by the University of Southampton Library Digitisation Unit

air routes could be reduced if the navigational aid was sufficiently accurate. To take an illustration, in a 10 mile airway we could get three tracks or certainly two tracks where at the moment we are only allowed to get one, that is, unless we use radar direction as well. There would also be a pay-off obviously as regards safety, because you would have two systems operating, the ground radar system and the airborne system. But when it comes to the movement on the runway it is difficult to see how this would affect the SBR, the standard busy rate, in a way in which one could quantify. Normally a pilot is in the fastest movement system when the aircraft are vectored or given direct heading changes by a ground radar controller to bring them at the right intervals or as close to the closest intervals permitted when the landing aircraft cross the threshold. At the moment I must concentrate on the landing case. There are ways of improving this by the use of computers which will enable the man on the ground to give a higher accuracy to his spacing. If we had a super-navigational aid so that instead of giving the aircraft a heading change he could be told to change to track B or track Z, which on a chart in front of him would indicate a particular trombone pattern or a curved pattern, this would relieve the man on the ground of some of the radar direction work and would leave the pilot in complete charge of the navigation situation. But without enormous simulation I do not really know that that would increase the runway movement rate over what you should already be able to achieve by ground radar improved perhaps by computer aid sequencing. Now with take-off, yes, I should think we might get some assistance on take-off, because if aircraft were being shot off one after the other and could turn from the extended centre line of the runway after take-off to another route and take it up with complete accuracy, we might be able to get another aircraft off more quickly than otherwise because we could reduce the separation by being able to make use of a different route. It is very hard to quantify this because you have to do it situation by situation.

1037. And to carry out a simulation on this would be a very long and expensive job, I take it?——To do it properly. The work itself does not take long, but mounting it does take a very long time, yes. You might wonder why this has not been done. The reason is that this is not one of the things that is within the reach of the British to achieve because the present navigational aids have been given a recognised life internationally by the international organisations until I think 1975, and this is not the sort of thing that you can renege on unilaterally, and suddenly insist that everybody has to carry something different.

1038. I appreciate that. You mentioned just now the other factors which are coming into the limitation on the sustained rate and one of them was, I think you said, airport design or runway design.——Yes.

1039. Could you say anything on, for example, the effect of staggering the runways because this can be important when it comes to considering the amount of real property required?——Yes, it is tremendously important in this respect. If you take the crudest case of two parallel runways in a four-runway aerodrome, it follows sort of by definition that they must be in pairs more or less so that you will always get two runways side by side—usually the layout shows two, then the terminal area and then the other two runways. Now if the two runways side by side are exactly—how can I say?—symmetrical with each other, their thresholds are abreast of each other, you enormously increase the taxiing distance because aircraft going to or from the outer runway must go far enough round to avoid the threshold of the other one. It would involve very long taxiing distances. Generally speaking, it is desirable from the point of view of movement rate to try to keep taxiing distances down because you have a better control over the timing that different operations take. When the runways are staggered there comes a point where aircraft can taxi to and from one runway without having any staggering of movement, without waiting for one aircraft to land before they can taxi across to take off on the other runway. This is very important from the point of view of achieving the maximum runway potential. Of course it is only one of the factors to be taken into account in total cost but it can make a big difference. At the extreme point you will actually have to delay some take-offs while another aircraft landed even though you have got separate runways.

1040. Yes. Does this stagger have any important influence on the safety in the event of an over-shoot?——Yes, it does, because there is a better chance that the aircraft will have a bigger height separation if the runways have been staggered, de-

Printed image digitised by the University of Southampton Library Digitisation Unit

pending on which way they are staggered, of course.

1041. But the angled arrangement which was shown by British Airports Authority is not so good from that point of view; is that right?——I am sorry, this is referred to as the chevron?

1042. The chevron, yes.——Yes, I had not seen it before. Yes, there is an over-shoot problem. The reason is quite simply if you extend the landing paths back from the threshold or the over-shoot paths forward from the far end of the runway, you do get an intersection, and this is a terribly important thing, this over-shoot problem. If I might spend a minute on that, Sir, or two minutes, it is this. You can reduce your target for separating aircraft on final approach according to various things but one of them is the number of over-shoots you are prepared to accept. If I may take an absurd example to illustrate this, if you choose a spacing of 10 miles between successive landing aircraft, it is most unlikely that something will go wrong with the first landing aircraft—either its slowness to clear the runway or something like that—to make a second aircraft over-shoot. If you choose a spacing of one mile, you will get a much higher probability that either because the second pilot suddenly feels unhappy at seeing the chap ahead of him still on the runway, or the chap ahead of him has found his brakes are not so good and he is taking that little bit longer to get off that you will get a certain risk of over-shoot. Following sufficient observations of the working of the system you can in fact decide what the risks are in terms of percentage of over-shoots for given separations, and normally you choose a pretty low figure. If you choose a higher figure, the law of diminishing returns quickly comes in. You find the system is getting clogged with having to fit over-shooting aircraft back into the pattern and you are getting some pretty angry telephone calls too, and we regard pilot tranquility of spirit as one of the things in the total safety situation that you should aim for. So the over-shoot problem is one to be borne in mind, but—I am sorry, Sir, I have been very long—yes, I think the chevron one has disadvantages from the over-shoot point of view.

1043. That would in fact mean a restriction on the rate at which you could accept aircraft?——I think it would. At some stage it would mean a restriction which would not exist with another layout.

1044. *Professor Walters:* May I follow Professor Keith-Lucas's question with another one. Could you give us some impression of the increasing capacity which you would expect from improvement of sequencing, and whether improvement of sequencing would affect firstly your stacking area, the actual area you need for stacking, and secondly, the location of the stack?——May I answer those questions in the reverse order?

1045. Yes.——You would need just the same area for sequencing because you would still have to provide for something going wrong with your sequencing procedures, so that you would still have to have a holding area. You would still have to have the same size holding area but you would need to use it less often. Now improvements in sequencing; at the moment the minima which by international agreement one is not permitted to reduce are not less than three nautical miles sequencing on final approach. This has to be within 40 miles of the radar head which we can take for granted. You then have to consider how near people are geting to that with the present methods of operating radar which is done by a trained and experienced radar controller estimating the future flight paths of aircraft and giving heading changes in order to bring the aircraft round at an approach spacing which will achieve the right spacing at the threshold even though 10 miles back it may have been different because of variation in aircraft speeds. There are as far as I know no good figures on this yet which one can take for planning purposes. What is going on here is first of all a study of the performance of the human controller in achieving what he is aiming at, in other words, if he is asked to aim at a five mile separation, on 95 per cent of occasions is he getting within 5½ miles or 4½ miles, or what, and how does that move when it goes down to three miles, and if there is a big variation is it something inherent in the use of human beings for this purpose, or is it something we can improve by training. Alongside that is a study of how far, given a form of radar data processing and identification, a computer picking up the information of aircraft position and velocity and direction from the radar display could display to the controller the heading changes he ought to give to number 2 aircraft to bring it round so that it crosses the threshold at an interval

Printed image digitised by the University of Southampton Library Digitisation Unit

corresponding to a three mile separation from number 1 aircraft. Now the only figures I have seen on this so far have resulted from some American trials and are on too exiguous a basis—this is no criticism; this is the best that there are but I think it was 500 observations—to draw a conclusion. All one can say is that we expect to improve the standard busy rate by improving sequencing, but this will only apply to half the capacity of an airport if we assume that half are landings so we have to be careful to say a 20 per cent increase in landing capacity will only be 10 per cent overall. We cannot quantify it yet. It is one of the things we have taken into account in sticking our necks out and saying yes we are quite sure we are going to do four or five better than 32 at least, but once you get down to these sort of intervals of moving then amounts of 10 or 15 seconds start to have a crucial effect on what the total is you get to the hour. I am sorry this is terribly long. We do expect an improvement but we are trying to allow for it.

1046. Could I take the first answer to my last question and look again through Mr. Dickie's glass darkly, and one of the points which you made I think in reply to it was that if we had sequencing an aircraft would not need to use the stack nearly so often. That means that the location of the stack is not so critically important as it is with present technology. Would that be correct? ——Not quite, because it is like other things, you may not need it often but when you do need it you need it very badly indeed. You need it because you have got a queue and you have got to get the aircraft down.

1047. You do not think that sequencing will give us any more degree of freedom with respect to the location of the holding area?——No, I think in some respects we might find that to achieve perfection in sequencing we might be more restricted in where we could put the holding areas. This is a thing still to be found out. It derives from something that another speaker raised earlier about the improvement in navigational aids and the accuracy with which you can get an aircraft to leave a beacon. At the moment it is very hard to get it accurately because of the navigational aids. When we look on the radar tube we see a swarm of golden bees in a particular area and they are over Garston or over Epsom, but which is which we cannot tell yet.

1048. *Professor Keith-Lucas:* This ability to identify the aircraft in the stack and pull it out of the stack when it is in the right part of the circuit to come out is one important factor in putting up the rate, is it?——It is an important factor in helping the Air Traffic Control officer to achieve his rate more often. Without it it makes his task harder, and the extent to which it makes it harder increases the failure rate, if you like, of achieving perfection and to that extent it reduces the SBR but I cannot quantify it again.

1049. *Professor Buchanan:* Serious suggestions have been put to us in the course of the evidence we have received on the one hand that there should not be a new four-runway airport but there should be two two-runway airports, and on the other hand that there should not be a new four-runway airport but there should be a new six- or eight- or multi-runway airport, possibly eventually coupled with the closure of Heathrow. Could you just help us to assess those possibilities; first two two-runway airports instead of a four-runway airport, and second a possibility of a giant multi-runway airport. From the Air Traffic Control point of view, what problems arise?——If one were faced with two two-runway airports, the first task would be very much easier, that is, locating the first two-runway airport. At this moment I am not confident that we could ever place the fourth airport, for the sheer air routing and air space problems. From this point of view a single four-runway airport is less difficult than two two-runway airports. When it comes however to the big jump to the six-or eight-runway airport and with the background you gave, Sir, this means at least four landing runways because Heathrow has got two and the new airport would have to have at least two, and then little Gatwick—there would have to be five landing runways—I think again the law of diminishing returns would come in here and we should find that to devise a control system for that would be such a complicated one that it would become too vulnerable to errors. About twenty years ago, Sir, when the then Idlewild Airport—now John F. Kennedy Airport—was planned they did in fact plan for six runways to be used simultaneously each at the rate of 60 movements an hour, and this was generally referred to as a 360 movements an hour airport. This proved totally impracticable and I have not seen anywhere any indications that even with radar, which was not really used so much then, there is any

Printed image digitised by the University of Southampton Library Digitisation Unit

practicability of producing an efficient system on this scale, It would become far too vunerable. Indeed, the holding areas would have to be so far away because of the number of them near the airport, that this in itself would reduce the accuracy, I think, of spacing. It really would require a highly detailed study, but in general these would be the general disadvantages and difficulties. On the ground it would become a nightmare. Jacques Tate would have to make a new film.

1050. *Mr. Knight:* Can I come back to the Chairman's question about the sustained capacity rate of 32, and you said "well, we can see a possibility perhaps of adding four or five to that but beyond that it is a matter of intuition." Now Mr. Masefield in the paper he gave to the Air Traffic Control officers in October this year relates the 32 sustained capacity rate to annual movements of 150,000 per runway, and in that same paper he shows that in a number of American airports you get average movements per runway per annum of 248,000, 247,000, 242,000 and 241,000. Now if it were possible to achieve that sort of use of runways, you would put off the need for this third London airport for many years. I wonder what comment you have on that.——I think it is basically, Sir, that the American traffic keeps up throughout the dark hours much more than British traffic does, although we have a surprising number of movements at night. It is quite incredible the people who are put down at their destinations at half past two in the morning. Yet relative to the total traffic it is very light indeed, whereas the American society which their air transport system serves requires movements on a much bigger scale throughout the night. I think that is basically the reason. Our movements start to die away very considerably round about seven o'clock in the evening and they come up with a bang between seven and eight o'clock in the morning, and in between—certainly after 10 o'clock—apart from the peaks of inclusive tours in the summer which are going off at cheap rates at 11 o'clock at night, it dips right down. The other thing is I think we have a much bigger seasonal fluctuation than the Americans have. Normally our January figures at Heathrow—I am sorry but I keep thinking of Heathrow—are only about half the July figures, give or take 10 per cent, and this seems to be a feature of the European demand for transport which again the Americans do not suffer from. It is surprising to learn that whereas our peaks are on Saturdays and Sundays, the American peaks are on working days. This again is a difference in the situation. Instead of people rushing off for pleasant occasions on the Continent, the people who have been rushing off on business Monday, to Friday, are staying at home on Saturday and Sunday.

Chairman: Thank you very much, Mr. Stallibrass and Mr. Dickie, for some very, very interesting, and if I may say so, characteristically helpful evidence, as well as all the illustrations and taking the trouble to get all this here.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

INDEX

To Volumes 1 and 2

Note: The oral evidence, printed in volume 1, is indexed by question number. Written evidence is indexed by page number; italics are used for references to volume 2.

Acton Residents Association, Q 595
Advanced Passenger Train *see* Surface access: rail links: advanced passenger train
Agricultural land *see* Land use: agricultural
Air cargo growth, Q 108–116
Air pollution, P 191–192, 208
Air safety, P 188–191, 206–207
Air traffic
  general aviation, Q 4
  passenger
    P 286–288, *35*, *36*
    Q 12, 234, 331–339
Air traffic control
  general aspects
    P 333–339, *66–67*, *79–81*
    Q 30–45, 121–123, 149–160, 928–1050
  air route structure
    P 337–339
    Q 935–954
  coastal site, Q 952–956, 1011–1021
  criteria, P 333
  future, Q 1036–1037, 1044–1048
  inland site, Q 933–953
  runway alignment, Q 1019–1025
  sequencing, Q 1044–1048
  Silverstone, Q 969, 997–1010
  United States
    P 338
    Q 963–967
Air traffic movements *see* Movements, air traffic
Aircraft envelope, P 20–21
Aircraft manufacture
  noise reduction
    P *14*
    Q 655–659, 724–732
Airline operations
  P *102–104*
  Q 16–17, 20–21, 99, 102, 346–355
Airline Scheduling Committee, Q 117
Airport capacity
  P 15–16, 18
  Q 4, 121, 1024–1026
Airport capacity: American experience, Q 117–123, 1050
Airport specification, P 7–10
Amenity
  comments BAA, Q 3, 128–133
  costs and benefits
    P 159–160, 165–166, 171, 194, 280, 305–306
    Q 128–133, 300–301, 305, 337–338, 392–402, 424, 746–753
Anti-Concorde Project Association, Q 595

BAA *see* British Airports Authority
BACAN *see* British Association for the Control of Aircraft Noise
BEA *see* British European Airways
BOAC *see* British Overseas Airways Corporation
Balance of payments, Q 123–125
Biggin Hill
  movements, air traffic, Q 27
Boeing 747 *see* Jumbo jets
British Airports Authority
  airport planning: general details concerning the outline specifications, P 19–27
  evidence
    P 1–32
    Q 1–243
  legal position, Q 76–90
  submission by chairman, P 1–18
British Association for the Control of Aircraft Noise
  evidence
    P 143–144
    Q 439–590
  letter to local authorities, P 147–149
British European Airways
  landing fees, Q 127
  maintenance staff, Q 174, 318, 342–346
British Overseas Airways Corporation
  landing fees, Q 127
  maintenance staff, Q 174, 318, 342–346
Burns, Dr. W. *see* South East Joint Planning Team
Butts Society, Q 595

Cargo
  P 95, *42*, *51–52*
  Q 103–116
Cargo: containers
  P *43*
  Q 111
Channel tunnel, Q 430
Chelmsford inquiry *see* Stansted
Chelsea and Kensington Action Committee on Aircraft Noise
  evidence
    P 152–158
    Q 440
Chicago: O'Hare Airport, Q 94, 334, 963–967

P = Page (italic references are to volume 2)
Q = Question (all references are to volume 1)

Printed image digitised by the University of Southampton Library Digitisation Unit

Civil aerodromes
air traffic control, Q 955–957
Clapham Junction of the air, Q 99
Commission
members, Q 1
methodology, Q 1
terms of reference, Q 1
Communications *see* Surface access
Community Plans Inc., Los Angeles, Q794–806
Concorde *see* Supersonic aircraft
Construction
general aspects
P 10
Q 46–57
costs
P 4
Q 236–242, 553–561
planning
P 24–27
Q 51–53
Controlled air space
P 334–339
Q 937–963, 998–1021
Cost responsibility, Q 555–561, 576–581, 744–753
Cranford & District Residents' Amenities Association, Q 440
Cranford & District Residents' Amenities Association
evidence, P 170–173
Crockett, Mrs. M. L. *see* Community Plans Inc., Los Angeles
Culcheth Society, Q 595

Defence
RAF, Q 946–950, 958–963
Docks: deep water
P 284–285, *106–108*
Q 431–436
Dolphin Square Residents Association, Q 595
Dorking and Horley Rural District Council, Q 439
Dorking and Horley Rural District Council
evidence, P 145–151

Employment *see* Population
Eton Rural District Council, Q 595

Faversham Society, Q 595, 647
Foulness
general aspects
P *37*, *65–66*
Q 338, 461–463, 471–480, 514, 526
air traffic control, Q 981, 1011–1015, 1018–1021
runways, Q 739–742
surface access, Q 518–521, 818, 823
Freight *see* Cargo
Friends of Old Isleworth, Q 595

Gatwick
general aspects
P 145–147
Q 96–97, 448–449
controlled air space, Q 941–946, 974
movements, air traffic, Q 5, 8; capacity, P 13–14, 18, Q 34; growth rate ,P 14–15, 18
noise, Q 582
property values, Q 504
surface access, Q 204
Gliding sites, P *32–34*, *64–73*
Gliding sites: air traffic control, Q 956–957
Greater London Council Development Plan, Q 822

Harlow New Town, Q 181–182
Heathrow
air traffic control, Q 963
controlled air space, Q 937–946
future
P 156–157
Q 319, 458, 562–575
movements, air traffic: air transport, Q 15; capacity, P 13–14, 18, Q 4, 8, 34; growth rate, P 14–17, 157
noise
P 152–153
Q 447–449, 563–565
passenger origin and destination
P *38–39*
Q 210
population: working
P *18–23*
Q 95, 172, 325, 421
property value, Q 490–493
surface access: rail link, Q 204, 211; road link, Q 197–199, 210–216, 828; user statistics, Q 832
Helicopters, Q 161
Helicopters: noise, Q 162
Hovertrain, Q 637–641
Howard, Sir John, Q 433
Hypersonic aircraft, P 21

IFR *see* Instrument Flight Rules
ILS *see* Instrument Landing System
Industry and commerce
P *107–108*
Q 315, 326, 403–405, 430
Industry, distribution of, P 125–128
Instrument Flight Rules, Q31
Instrument Landing System, Q 149–150, 155, 1031
International Civil Aviation Organisation, Q 991

John Evelyn Society (Wimbledon), Q 595
Jumbo jets
P 21–22, *41–42*
Q 13, 102, 116, 163–164, 739–742

Kew Association for the Control of Aircraft noise, Q440
evidence, P 159–169

Printed image digitised by the University of Southampton Library Digitisation Unit

Kew Society, Q 595
Knutsford Society, Q 595

LAANC *see* Local Authorities Aircraft Noise Council

Land reclamation
P *106*
Q 514–516

Land use
agricultural
P 172, *46–48*, *53*, *54*, *91*
Q 302, 362, 392–394
recreational
P *59*
Q 362–368, 396–399

Landing fees, Q 126–127, 350–355, 505–511

Layout
general aspects
P 19–24
Q 1039–1043
BAA comments
P 7–10
Q 134–160, 165–171
boundaries, P 8
central development zone, P 22–24, *41*
installations, P 8–9
overshoot, Q 148–152, 1040–1043

Local Authorities Aircraft Noise Council
evidence
P 206–209
Q 743–793
members, P 206

Local Authorities (Airport) Committee
evidence, P 216–225
members, P 216

London and South East Regional Planning, Standing Conference
activities, Q 390–391
evidence
P 75–85
Q 358–405
terms of reference, P 75

Los Angeles, Q 153–156, 352–355, 794–806

Luton
controlled air space, Q 942–946, 973
movements, air traffic, Q 5

Milton Keynes New Town, Q 267, 417–421, 437

Motorway box *see* Roads: development

Movements, air traffic
capacity
P 12–18, *82–84*
Q 4–45, 1024–1030, 1044, 1050
delays, Q 4, 117, 1026–1030
growth rate, P 15–17, Q 6–16, 568–575; air transport, P 15–17, Q 17–27
peak rate, Q 30–34
standard busy rate, Q 1031–1036, 1044
statistics, P 13–14, Q 4–11, 17–27, 61–75, 86–88; air transport, P 191–193, Q 17–27

Movements, air traffic—*continued*
sustained capacity rate
P 13–14
Q 30–34, 45, 1031–1036 1050
training flights, Q 71

NAS *see* Noise Abatement Society

NATCS *see* National Air Traffic Control Service

NNI *see* Noise and number index

National Air Traffic Control Service
general aspects
P 333–339
Q 122, 928–1050
responsibilities and work
P 333–334
Q 928

National airports plan
need for
P *44–45*, *102–104*, *113–123*
Q 308

Navigation aids, P 23

New York: Kennedy Airport, Q 2, 117, 782, 967

New York: La Guardia, Q 227, 230–232, 967

Noise
general aspects
P 98, 143–226, *11–16*, *53*, *54*, *58*, *93*
Q 91, 221–222, 323, 377–378, 438–806
Commission's comments, Q 438
helicopter, Q 162
imperturbables, Q 586, 605–609, 767–788
levels
P 98, 161, 168–169, 170–173, 178, 184–187, 194, 199, 211–215, 217, 219–225, *11–14*
Q 480–487, 602–609, 619–628, 650–671, 698–723
local authorities' action, Q 582–584, 632–634
medical effect
P 155, 180–183
Q 609–671
ministry responsible
P 161–163
Q 621–631
Noise: final report (Wilson report), Q481
population movement, Q 733–738
property values
P 201–205
Q 488–504, 531, 545–554, 585–591, 596–598
rating appeals, Q 531–540
road traffic
P 156, 222–225
Q 475, 635–636
social cost
P 155, 163–165, 170–173, 174, 177–185, 206–209
Q 541–554, 596–601, 609
sound proofing, P 172, 217, 220–223
supersonic aircraft, Q 105, 447
take off and landing
P 155
Q 614–619
vertical take off and landing, Q 162

P = Page (italic references are to volume 2)
Q = Question (all references are to volume 1)

Printed image digitised by the University of Southampton Library Digitisation Unit

Noise Abatement Society
evidence
P 197–205
Q 650–742
members, P 197–205
Noise and number index
P 211, *12–19*
Q 480–487, 602–609, 650–655, 789–793, 928
Noise certification plan, P 163, 194
Noise measurement *see* Noise: levels
Noise zones, Q 582–584, 760

Omni-directional airports
P 95, 99
Q 98–102, 311–315, 383

Paris: airports, Q 153, 194
Population
general aspects, Q 268–301, 309, 337, 386–389
estimates: Third London Airport
P *17–26*, *58*
Q 173–184, 255–258, 271, 325–326, 360, 420–422, 426–430
housing, Q 255, 760–788
working, P 24, Q 316; travel, P 285, Q 642–646, 885–887
Ports *see* Docks: deep water
Property value
general aspects, P 201–205
Heathrow, Q 672–696
Kensington and Chelsea, Q 531–554
Los Angeles Q 796–806
Putney Society, Q 595
Putney Society
evidence, P 174

Rating appeals, Q 531–540
Regional Economic Planning Council, Q 234
Regional Local Authorities, Standing Conference, Q 234
Regional planning
general aspects
P 75–100, 147, *49–50*
Q 2, 244–437
controls, Q327
effects of Third London Airport
P 76–79, 82–83, 91, 96–97, 99
Q 172–188, 234–235, 246, 355–357, 360–362
housing, Q 760–788
roads, Q 843
the South-east
P 79–80, 83–85, 86–87, 96–98, *85–90*
Q 247–253, 279, 309, 327–345, 356–357 359–367, 374–375, 407–437
the South-east: communications, Q 262, 357, 362, 409–411
River Thames Society, Q 595
Roads
capacity, P 289–291
development
P289–292, 303–304
Q 808–854, 917–927
Roads—*continued*
development: costing
P 293–295
Q 888–894
Runways
cross wind, Q 60, 141–148, 153
number required
P 93–94, 98–99
Q 92–94, 315, 322–325, 339–348, 383–385, 450–470, 512–516, 739–742, 1024–1025
number required: air traffic control considerations, Q 1024–1025, 1049
number required: layout
P 7–8, 11, *70–72*
Q 137–148, 153–160, 166, 1038–1043
orientation
P 8
Q 36–39, 56–60, 141–160, 940
orientation: United States, Q 967

SBR *see* Movements, air traffic: standard busy rate
SCR *see* Movements, air traffic: sustained capacity rate
STOL *see* Short take off and landing
Sectorisation, Q 98–102, 565–567
Services and utilities
P 25–28
Q 185–193, 303–304
Short list
publication, Q1
Short take off and landing
P 20–23
Q 161
Site search
general aspects
P 4–6, 159–161, *1*, *27–29*, *32–34*, *49–52*, *54–56*, *60–63*, *65*, *68*, *96*, *98–101*, *110–112*, *113–123*, *124*
Q 120, 193–195, 246, 259–304, 309–314, 328, 357, 369–382, 409–437, 460–480
accessibility, P 4–5, *39–40*, *110*
air traffic control
P 336
Q 1017–1023
BAA statement, Q 233
coastal
P 4–5, 92, 97–98, 143–144, 148, 150, 156–157, 195–196, 200, *37*, *105*
Q 221–222, 226–232, 378– 460
Commission, Q1
criteria, P 2–4, 9–10, *9–10*, *27–29*, *30–31*, *35*, *36*, *97–98*, *109*
inland
P 4
Q 128, 129–133, 221
South East Economic Planning Council
evidence
P 89–92
Q 406–437
South East Joint Planning Team
establishment, Q 390
evidence
P 36–88
Q 244–306

Printed image digitised by the University of Southampton Library Digitisation Unit

South East Joint Planning Team—*continued*
programme, Q 247–253
Strategy for the South-East, Q 249–253, 287
terms of reference, P 86, 88
Southend
movements, air traffic, Q6
Stacking, Q 119, 756–759, 763, 775–785, 954, 971, 985–995, 1024, 1044–1048
Standing Conference of Regional Local Authorities *see* Regional Local Authorities, Standing Conference
Standing Conference on London and South East Regional Planning *see* London and South East Regional Planning, Standing Conference
Stansted
general aspects
P 5–6, *95–96*, *97–101*, *115–118*
Q 271, 331, 414
air traffic control, Q 975, 1004–1010
BAA statement, Q3
movement, air traffic, Q 5, 61–75, 86; air transport statistics, Q 17–20, 88
new terminal building, Q 63–90
runways, Q 59
surface access
P *4–8*
Q 839
Subsonic aircraft, P 20–23
Supersonic aircraft
P 20–23, 196, 207, 217, *122*
Q 102
Surface access
general aspects
P 40–41, 57–58, 273–306
Q 283–287, 298–301, 357, 362, 409–411, 422–424, 462–467, 472–480, 806–927
capital costs, P 277–280, 283
comments BAA, Q 3, 193–220
hovertrain
P 304
Q 637–641, 909
Los Angeles airport, Q 801–806
monorail
P 302
Q 196, 637, 906–908
rail link: general aspects
P 296–304, *74–75*
Q 28–29, 196–222, 518–521, 637–641, 896–916, 924–927
rail link: advanced passenger train
P 165
Q 29, 902–908, 912–916
rail link: construction costs, P 298–299
road: general aspects
P 289, 293–295, *75*
Q 196–199, 210–220, 409–411, 465–467, 472–480, 518–521, 828–829, 835–838, 846–854, 917
Surface access—*continued*
road: planning preliminaries, Q 850–854
user costs
P 277–280, 299–302, 305–306, *76–79*
Q 194, 400–402, 472–480, 855–882
user statistics
P 288
Q 831–832, 883–884

Technology, Ministry of
aerodromes, Q 946–950, 958
Terminal: in town
P 157, 281–283, *7–8*
Q 200–209, 518–521, 824, 896–900
Thamesmead, Q925
Third London Airport
BAA justification, Q 92, 234
operational
P 6
Q 46–49
Timing of the need
general aspects
P 38, 62–63, 64–65
Q 4
comments, BAA
P 2
Q 2
Toronto Airport, Q 606
Town and Country Planning Association
evidence
P 93–100
Q 307–357

UKFAAN *see* United Kingdom Federation against Aircraft Nuisance
United Kingdom Federation against Aircraft Nuisance
evidence
P175–196
Q 592–649
members, P 175
Urbanisation, Q 267, 288, 368–382, 386–389

VTOL *see* Vertical take off and landing
Vertical take off and landing
general aspects
P 20–23, *71*
Q 161
noise
P *16*
Q 162

Washington: Dulles Airport, Q 3
Washington: National Airport, Q 193–194
Wilson Report, Q481

P = Page (italic references are to volume 2)
Q = Question (all references are to volume 1)

Printed in England for Her Majesty's Stationery Office by McCorquodale, London W.1.
Dd. 152203. K40. 5/69.

Printed image digitised by the University of Southampton Library Digitisation Unit

OP. 1100. 120. 137

COMMISSION ON THE THIRD LONDON AIRPORT

Papers and Proceedings volume 1

Stage I: Public Hearings

part 1

Written and Oral Evidence

1 November – 6 December 1968

LONDON

HER MAJESTY'S STATIONERY OFFICE

1969

Printed image digitised by the University of Southampton Library Digitisation Unit

COMMISSION OF INQUIRY to inquire into the timing of the need for a 4-runway airport to cater for the growth of traffic at existing airports serving the London area, to consider the various alternative sites, and to recommend which site should be selected.

Members of the Commission

The Hon. Mr. Justice Roskill	(*Chairman*)
Professor Colin Buchanan	Professor of Transport, Imperial College of Science and Technology
Mr. A. Goldstein	Partner in R. Travers Morgan and Partners, Consulting Engineer
Mr. A. J. Hunt	Principal Planning Inspector, Ministry of Housing and Local Government
Professor D. Keith-Lucas	Professor of Aircraft Design, College of Aeronautics, Cranfield President of the Royal Aeronautical Society
Mr. Arthur Knight	Finance Director, Courtaulds Ltd.
Professor A. A. Walters	Cassel Professor of Economics, University of London
Mr. J. Caines	*(Secretary)*
Mr. F. P. Thompson	(*Director of Research*)

Printed image digitised by the University of Southampton Library Digitisation Unit

Contents

page

Introduction vii

Airport Layout and Capacity: 1 November 1968

British Airports Authority:

Submission by the Chairman 1

Airport planning—general details concerning the outline specification 19

Bibliography of existing and proposed airport and other projects involving construction on fill, reclaimed land and over water 29

Transcript of oral evidence:

British Airports Authority (*Mr. Peter Masefield*) 35

Regional Planning: 8 November 1969

Standing Conference on London and South East Regional Planning: Evidence 75

South East Joint Planning Team: Statement by the Director 86

South East Economic Planning Council: Evidence 89

Town and Country Planning Association: Evidence... ... 93

Transcript of oral evidence:

South East Joint Planning Team (*Dr. W. Burns*) 103

Town and Country Planning Association (*Prof. P. Self, Mr. D. Hall and Mr. Thorburn*) 113

Standing Conference on London and South East Regional Planning (*Lord Nugent of Guildford, Mr. C. N. Saunders and Mr. B. Howell*) 124

South East Economic Planning Council (*Mr. M. Hackett and Mr. C. T. Higgins*) 133

Noise: 22 November 1968

British Association for the Control of Aircraft Noise: Evidence 143

Dorking and Horley Rural District Council: Evidence ... 145

Chelsea and Kensington Committee on Aircraft Noise:

Preliminary submission (with covering letter) 152

Covering letter to principal submission 158

Kew Association for the Control of Aircraft Noise:

Preliminary memorandum 159

Further memorandum 161

Cranford and District Residents' Amenities Association: Letter 170

Printed image digitised by the University of Southampton Library Digitisation Unit

page

Putney Society: Summary of evidence... 174

United Kingdom Federation against Aircraft Nuisance: Evidence 175

Noise Abatement Society: Evidence] 197

Local Authorities' Aircraft Noise Council: Submission ... 206

Scientific Advisor to the Greater London Council: Explanatory note—Aircraft noise measurement in West London... 211

Local Authorities (Airport) Committee:

Submission 216

Report of the Borough Planning Officer, London Borough of Hounslow—Sound protection of new residential buildings in the light of noise from aircraft using London airport, and other factors 219

Transcript of oral evidence

British Association for the Control of Aircraft Noise (*Mr. E. Epson, Miss I. M. Eates and Mr. R. Briggs*) ... 229

United Kingdom Federation Against Aircraft Nuisance (*Mr. J. W. Parton and Mrs. M. St. A. Moore*) 242

Noise Abatement Society (*Mr. J. Connell and Mr. B. Anstey*) 250

Local Authorities Aircraft Noise Council (*Councillor J. T. Goss, Mr. L. E. Holland and Mr. G. N. Waldram*) ... 259

Community Plans Inc., Los Angeles (*Mrs. M. L. Crockett*) 266

Appendix

Letter from the Chairman of the Commission to organisations who were not called to give oral evidence... ... 268

Board of Trade press notice concerning call for evidence... 269

List of other organisations that submitted written evidence 270

Surface Access: 29 November 1968

Ministry of Transport: Evidence, with related diagrams ... 273

Transcript of oral evidence:

Ministry of Transport (*Mr. A. E. A. Brain, Mr. J. Garlick, and Mr. A. J. Rosenfeld*) 309

Greater London Council (*Mr. P. F. Stott*) 309

Air Traffic Control: 6 December 1968

National Air Traffic Control Services:

Air traffic control considerations 333

Route patterns and airspace requirements 337

Transcript of oral evidence:

National Air Traffic Control Services (*Mr. E. J. Dickie and Mr. G. W. Stallibrass*)... 343

Index

Printed image digitised by the University of Southampton Library Digitisation Unit

Illustrations contained within Vol. 1

page

Airport layout and capacity

Possible alternatives for a multi-runway airport 11

Figures *facing page* 48

1–3 Airport layout diagram

4 Forecast capacity at busy hours: Heathrow and Gatwick

5 Forecast capacity: Heathrow and Gatwick combined

6 Forecast completion dates for a Third London Airport

7 Catchment areas

8–9 Possible alternatives for a multi-runway airport

Illustrations in Attached Wallet

Noise

Aircraft noise. Maps 1–4

Heathrow airport London, summer 1967: NNI contours

Surface access

Major radial and orbital network (roads)

Cost differential assessment (roads)

Increases in cost of road construction

London primary network (roads)

Main rail routes from London

Railway routes

Assumed scatter of air passengers: peak hour 1990 (*2 diagrams*)

Air traffic control

Figure

A UK air route structure

B UK controlled air traffic at 10.30 hrs., 21 July 1967

C Controlled air traffic (London Air Traffic Control Centre) at 10.42 hrs., 23 July 1967

Printed image digitised by the University of Southampton Library Digitisation Unit

D	Approximate distribution of aircraft movements to and from Heathrow and Gatwick	
E	Approximate dimensions of a terminal control area	
F	Routing systems appropriate to potential area locations:	
i		W & SW
ii	ditto	NW
iii	ditto	NE
iv	ditto	E
v	ditto	SE
G	Aerodromes in the South-East	
H	Comparison between the UK mainland and the N. American continent	
J	SE England with Chicago airways system super-	
i	imposed:	1946
ii	ditto	1950
iii	ditto	1953
iv	ditto	1968
K	Significance of runway alignment	
L	New York airways system 1954	
M	New York main traffic routes superimposed on SE England	

Printed image digitised by the University of Southampton Library Digitisation Unit

Introduction

Reproduced in this volume is the written evidence which was the subject of the five public hearings the Commission held during Stage I of its work, together with the report of proceedings at the hearings. The hearings were devoted to airport layout and capacity (1 November 1968), regional planning (8 November 1968), noise (22 November 1968), surface access (29 November 1968) and air traffic control (6 December 1968).

The Commission received a large amount of written evidence on noise during Stage I. Four representative organisations were invited to appear before the Commission at an oral hearing on 22 November 1968. Their evidence is reproduced on pages 227–265. Others who had written on the subject were invited by means of a letter from the Chairman (reproduced on page 267) to join with these organisations in their oral appearance. A list of the people and organisations concerned appears on page 269. Their submissions are available for inspection by arrangement at the Commission's offices.

Printed image digitised by the University of Southampton Library Digitisation Unit

Printed image digitised by the University of Southampton Library Digitisation Unit

Written and Oral Evidence

1 November 1968

Airport Layout and Capacity

Printed image digitised by the University of Southampton Library Digitisation Unit